

1 Indexable Drilling

Holemaking

2 Indexable Boring

3 Reaming

4 Indexable Turning

Turning

5 Parting and Grooving

6 Multifunction

Milling

7 Indexable Milling

8 Solid Milling

9 Material examples and
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CERATIZIT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **CERATIZIT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

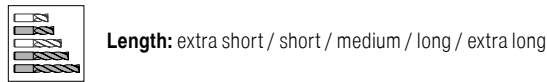
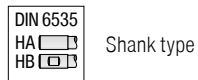
CERATIZIT \ Standard

Quality tools for standard applications.

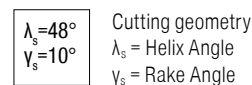
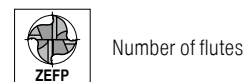
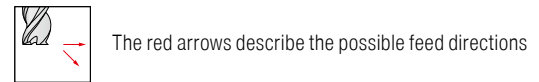
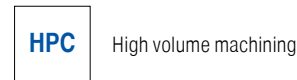
The quality tools of the **CERATIZIT Standard** product line are high quality, powerful and reliable and enjoy the highest trust of our customers worldwide. Tools from this product line are the first choice for many standard applications and guarantee optimal results.

Symbol explanation

Shank



Application

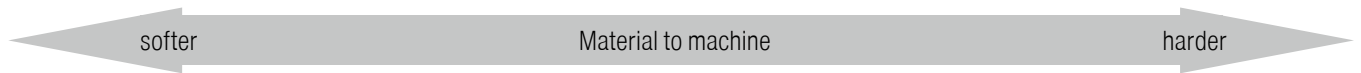


Cutting edge preparation



- = Main Application
- = Extended application

Toolfinder



Finish milling

P		•		•	Steel
M		•		•	Stainless steel
K		•		•	Cast iron
N	•				Non-ferrous metals
S		•			Heat resistant alloys
H				•	Hardened steel
O					Non metal materials

7-16	17-48	36-46
69-93	82-93	94-95
94-95	96-101	96-101

Rough and finish machining

P		•		•	Steel
M		•		•	Stainless steel
K		•		•	Cast iron
N	•				Non-ferrous metals
S		•			Heat resistant alloys
H				•	Hardened steel
O					Non metal materials


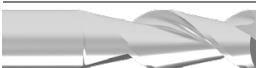

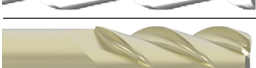










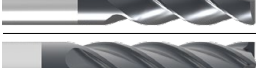








49+50	51-60	36-46
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Rough machining





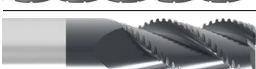


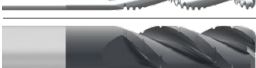


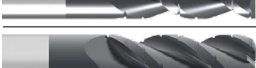


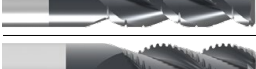








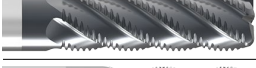








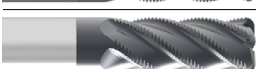



































P		•		•	Steel
M		•		•	Stainless steel
K		•		•	Cast iron
N	•				Non-ferrous metals
S		•			Heat resistant alloys
H				•	Hardened steel
O					Non metal materials

56+57	61-68
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Overview High Performance Milling Cutters

Image	Series	Tool type	Number of flutes 	Diameter in inch Ø DC	Material compatibility						Geometry				Tool design	coated <input type="checkbox"/>	uncoated <input type="checkbox"/>	CERATIZIT Standard <input type="checkbox"/>	CERATIZIT Performance <input type="checkbox"/>
					Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Tempered steel	Non-metal materials	Square end	Corner chamfer	Corner radius					
	P220	AL	2	1/8"-3/4"	HA													7	
	S142	AL	2	1/8"-1"	HA													8+9	
	P109	AL	3	1/8"-1"	HA													10+11	
	P362	AL	3	3/16"-1"	HA									HPC				12	
	P362	AL	3	3/16"-1"	HA									HPC				13-15	
	P376	AL	6	1/4"-1"	HA													16	
	S642	UN	2	1/16"-1"	HA													17+18	
	S642	UN	2	1/8"-3/4"	HA													19+20	
	S643	UN	3	1/16"-1"	HA													21+22	
	S643	UN	3	1/8"-1"	HA													23	
	S644	UN	4	1/32"-1"	HA													25+26	
	S644	UN	4	1/8"-1"	HA													27-35	
	S645	UN	5	1/8"-1"	HA													36	
	P007	UN	4	1/8"-1"	HA									HPC				37	
	P007	UN	4	1/8"-1"	HA									HPC				38-41	
	P556	UN	5	1/4"-1"	HA									HPC				42	
	P556	UN	5	1/4"-1"	HA									HPC				43-46	
	P160	UN	7	1/4"-1"	HA									HPC				47	
	P161	UN	7	1/4"-1"	HA									HPC				48	
	P119	AL	3	1/8"-1"	HA													49+50	
	P117	UN	3	1/8"-3/4"	HA													51	
	P120	UN	4	3/8"-1"	HA									HPC				52-54	




Overview High Performance Milling Cutters

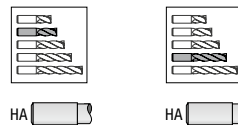
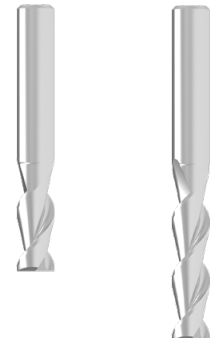
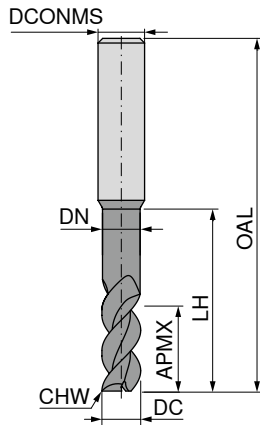
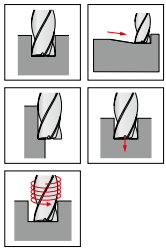
Image	Series	Tool type	Number of flutes 	Diameter in inch Ø DC	Material compatibility						Geometry				Tool design	Coating		CERATIZIT Standard	CERATIZIT Performance
					Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Tempered steel	Non-metal materials	Square end	Corner chamfer	Corner radius		Full Radius	Length		
	P121	UN	5	3/4"-1"	●	●	●	●	●	●						HPC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	55
	P102	AL	3	3/16"-1"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	56-58
	P190	UN	4	3/16"-1"	●	●	●	●	●	●	<input checked="" type="checkbox"/>					HPC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	59
	P191	UN	4	3/16"-1"	●	●	●	●	●	●						HPC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	60
	P100	UN	3	3/16"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	61
	P100	UN	4	1/4"-3/4"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	62+63
	P100	UN	5	1"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	64
	P101	Ti	3	3/16"	●	●	●	●	●	●						HPC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	65
	P101	Ti	4	1/4"-3/4"	●	●	●	●	●	●						HPC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	66+67
	P101	Ti	5	1"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	68
	S662	UN	2	1/16"-1"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	69+70
	S663	UN	3	1/8"-1"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	71-73
	P157	UN	4	1/8"-1"	●	●	●	●	●	●						HPC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	74
	S664	UN	4	1/32"-1"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	75+76
	P250	ST	2	1/8"-1/2"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	77
	P251	UN	2	0.031"-0.187"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	78
	P252	UN	2	0.031"-0.187"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	79
	P253	UN	2	0.031"-0.187"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	80
	P254	UN	2	0.031"-0.187"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	81
	P501	UN	4	0.005"-0.120"	●	●	●	●	●	●	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input type="checkbox"/>	82-84
	P504	UN	4	0.005"-0.120"	●	●	●	●	●	●	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input type="checkbox"/>	85-87
	P503	UN	4	0.005"-0.120"	●	●	●	●	●	●							<input checked="" type="checkbox"/>	<input type="checkbox"/>	88-90

Overview High Performance Milling Cutters

Image	Series	Tool type	Number of flutes 	Diameter in inch Ø DC	Material compatibility						Geometry				Tool design	Coating		CERATIZIT \ Standard	CERATIZIT \ Performance
					Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Tempered steel	Non-metal materials	Square end	Corner chamfer	Corner radius		Full Radius	Length		
	P506	UN	4	0.005-0.120	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	91-93	
	P137	UN	2	0.010-0.155	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	94	
	P139	UN	4	0.010-0.155	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	95	
	P132	UN	2	1/8-1/2	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	96	
	P133	UN	4	1/4-1/2	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	97	
	P134	UN	2	1/8-1/2	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	98	
	P135	UN	4	1/4-1/2	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	99	
	P130	UN	2	1/4-1/2	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	100	
	P131	UN	4	1/4-1/2	●	●	●	●	●	●						<input checked="" type="checkbox"/>	<input type="checkbox"/>	101	

End milling cutter

P220
AL
 $\lambda_s=50^\circ$
 $\nu_s=7^\circ$






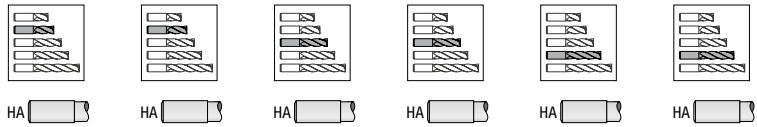
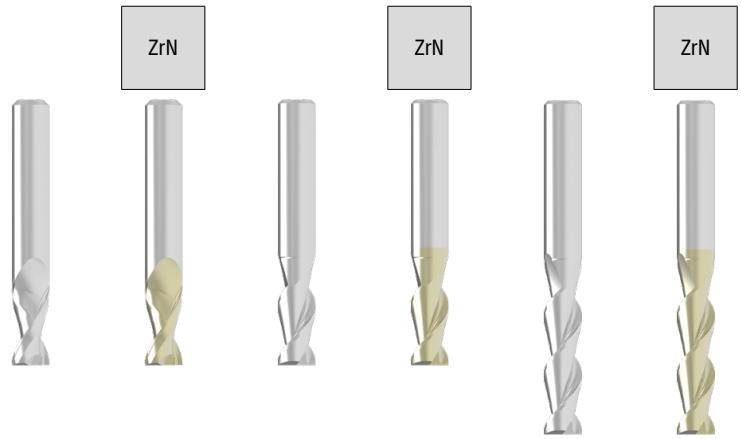
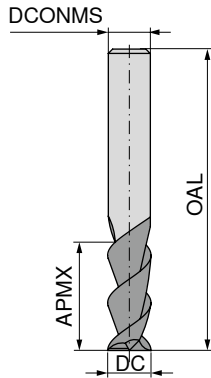
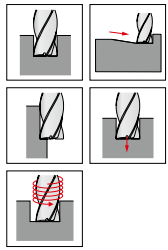
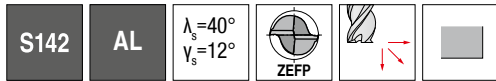
59 003 ...	59 003 ...
12530	
18824	
	25020
	31324
	37523
50020	
	50025
	62520
	75020

DC $+0.000/-0.002$	APMX	DN	LH	OAL	DCONMS $-0.0001/-0.0004$	CHW	ZEFP
inch	inch	inch	inch	inch	inch	inch	
1/8	3/8	0.120	3/4	2	1/8	0.006	2
3/16	7/16	0.180	3/4	2	3/16	0.006	2
1/4	1/2	0.240	13/16	2 1/2	1/4	0.006	2
5/16	3/4	0.300	1	3	5/16	0.006	2
3/8	7/8	0.360	1 1/8	3	3/8	0.006	2
1/2	1	0.480	1 3/8	3	1/2	0.006	2
1/2	1 1/4	0.480	1 5/8	3 1/2	1/2	0.006	2
5/8	1 1/4	0.600	1 7/8	4	5/8	0.006	2
3/4	1 1/2	0.720	2 1/4	5	3/4	0.006	2

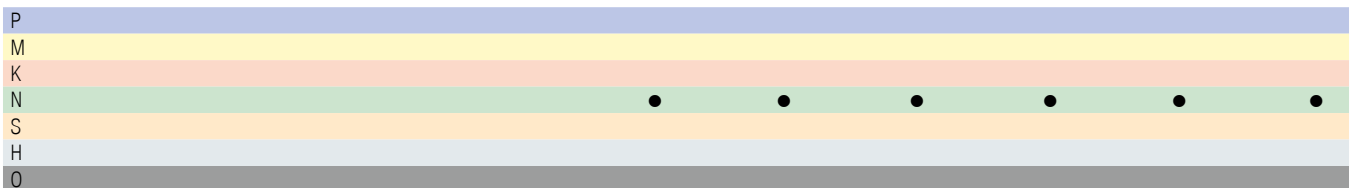
P
M
K
N
S
H
O

→ v_c/f_z Page 103

End milling cutter

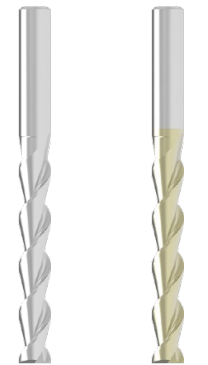
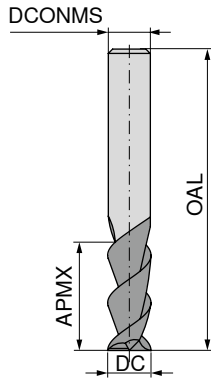
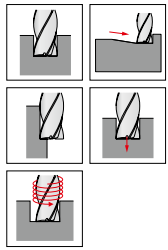


DC	APMX	OAL	DCONMS	ZEFP	59 053 ...	59 054 ...	59 053 ...	59 054 ...	59 053 ...	59 054 ...
<small>+0.0001/-0.002</small>	<small>inch</small>	<small>inch</small>	<small>-0.0001 / -0.0004</small>							
1/8	1/4	1 1/2	1/8	2	12520	12520				
1/8	3/8	1 1/2	1/8	2					12530	12530
5/32	5/16	2	3/16	2	15620	15620			15636	15636
5/32	9/16	2	3/16	2					18830	18830
3/16	5/16	2	3/16	2	18817	18817				
3/16	9/16	2	3/16	2					18830	18830
7/32	3/8	2	1/4	2	21917	21917				
1/4	3/8	2	1/4	2	25015	25015				
1/4	3/4	2 1/2	1/4	2					25030	25030
5/16	13/16	2 1/2	5/16	2	31326	31326				
5/16	1 1/4	4	5/16	2					31340	31340
11/32	1	2 1/2	3/8	2	34429	34429				
3/8	1/2	2 1/2	3/8	2	37513	37513				
3/8	1	2 1/2	3/8	2			37527	37527		
3/8	1 1/2	4	3/8	2					37540	37540
1/2	5/8	2 1/2	1/2	2	50013	50013				
1/2	1 1/4	3	1/2	2					50025	50025
1/2	2	4	1/2	2			50040	50025	50025	50040
5/8	15/8	3 1/2	5/8	2					62526	62526
3/4	1	4	3/4	2	75013	75013				
3/4	15/8	4	3/4	2			75022	75022		
3/4	3	6	3/4	2					75040	75040
1	2	5	1	2					99920	99920



End milling cutter

S142
AL
 $\lambda_s=40^\circ$
 $\nu_s=12^\circ$
ZEFP



ZrN



HA

HA

DC <small>+0.000/-0.002</small> inch	APMX inch	OAL inch	DCONMS <small>-0.0001/-0.0004</small> inch	ZEFP
1/4	1 1/4	3 1/2	1/4	2
5/16	2 1/8	4	5/16	2
3/8	2 1/2	6	3/8	2
1/2	3	6	1/2	2
3/4	4	7	3/4	2
1	3	6	1	2

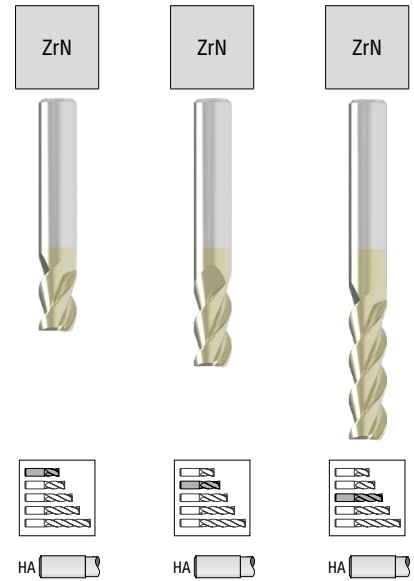
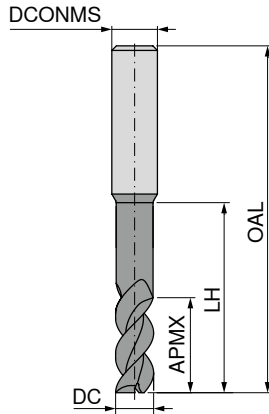
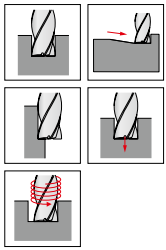
59 053 ...	59 054 ...
25050	25050
31368	31368
37567	37567
50060	50060
75053	75053
99930	99930

P	
M	
K	
N	● ●
S	
H	
O	

→ v_c/f_z Page 104

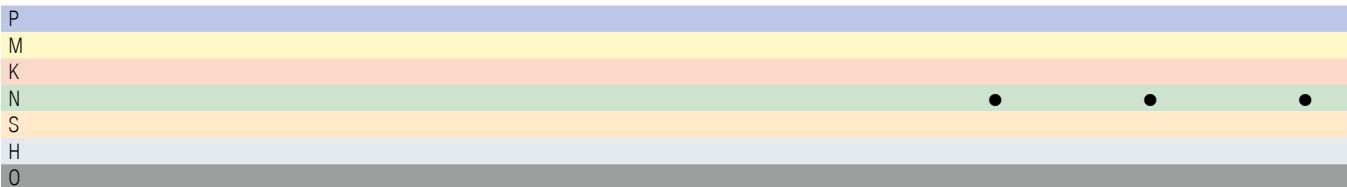
End milling cutter

P109 **AL** $\lambda_s=40^\circ$
 $\nu_s=15^\circ$



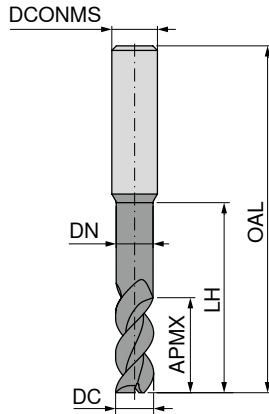
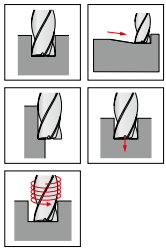
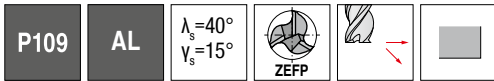
DC $+0.000/-0.002$ inch	APMX inch	OAL inch	DCONMS $-0.0001/-0.0004$ inch	ZEFP
1/8	1/4	1 1/2	1/8	3
5/32	3/8	2	3/16	3
3/16	3/8	2	3/16	3
7/32	3/8	2	1/4	3
1/4	3/8	2	1/4	3
1/4	3/4	2 1/2	1/4	3
1/4	1 1/4	3	1/4	3
9/32	1/2	2 1/2	5/16	3
5/16	1/2	2 1/2	5/16	3
3/8	5/8	2	3/8	3
3/8	7/8	2 1/2	3/8	3
3/8	1 1/2	3 1/2	3/8	3
7/16	1	2 3/4	7/16	3
1/2	5/8	2 1/2	1/2	3
1/2	1 1/2	3 1/2	1/2	3
5/8	7/8	3	5/8	3
5/8	1 3/4	4	5/8	3
3/4	1	3	3/4	3
3/4	2 1/2	5	3/4	3
1	2 3/4	5	1	3

59 027 ...	59 027 ...	59 027 ...
	12520	
	15624	
	18820	
	21917	
25015		
	25030	
		25050
	28118	
	31316	
37517		
	37523	
		37540
	43823	
	50013	
		50030
	62514	
		62528
	75013	
		75033
		99928



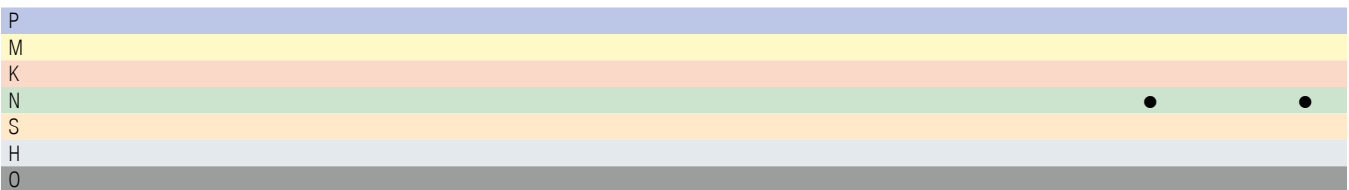
→ v_c/f_z Page 105

End milling cutter



DC <small>+0.000/-0.002</small>	APMX	DN	LH	OAL	DCONMS <small>-0.0001/-0.0004</small>	ZEFP
inch	inch	inch	inch	inch	inch	
1/8	1/2			1 1/2	1/8	3
5/32	1/2			2	3/16	3
3/16	5/8			2	3/16	3
7/32	3/4			2 1/2	1/4	3
1/4	3/4	0.240	2 1/8	4	1/4	3
1/4	1 1/2			3 1/2	1/4	3
9/32	3/4			2 1/2	5/16	3
5/16	3/4			2 1/2	5/16	3
3/8	1	0.360	2 3/8	6	3/8	3
3/8	2			4	3/8	3
1/2	1 1/4			3	1/2	3
1/2	2			4	1/2	3
9/16	1 1/4			3 1/2	9/16	3
5/8	1 1/4			3 1/2	5/8	3
5/8	2 1/2			5	5/8	3
3/4	1 5/8			4	3/4	3
3/4	3 1/4			6	3/4	3
1	1 3/4			4	1	3
1	3 3/8			6	1	3

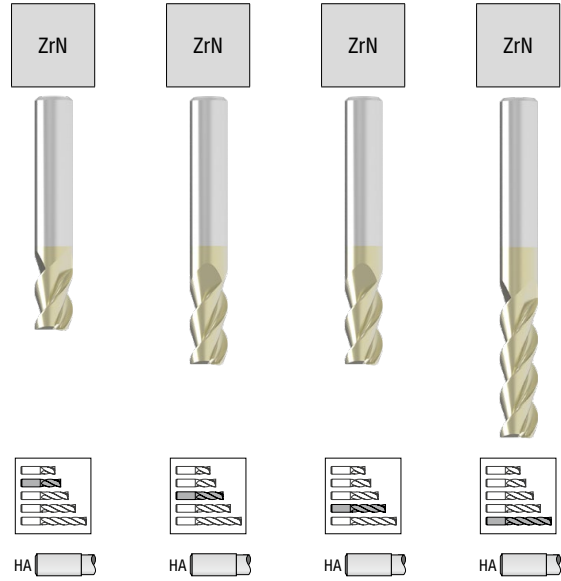
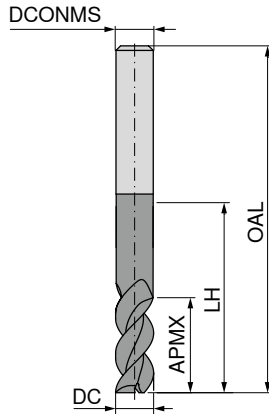
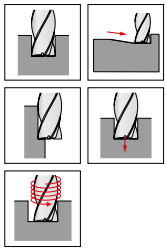
59 027 ...	59 027 ...
12540	
15632	
18833	
21934	
25130	
	25060
28127	
31324	
37527	
	37553
50025	
	50040
56322	
62520	
	62540
75022	
	75043
99918	
	99934



→ v_c/f_z Page 105

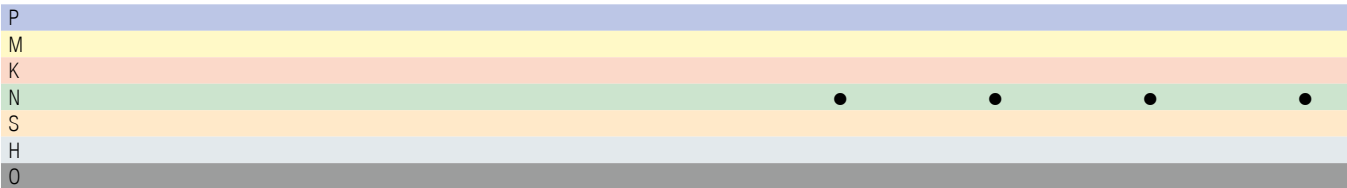
End milling cutter

P362
AL
 $\lambda_s=43^\circ$
 45°
 48°
 $\gamma_s=13^\circ$
ZEFP
HPC



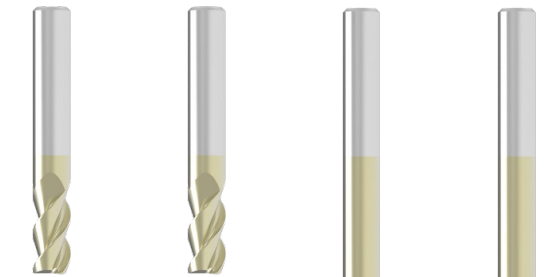
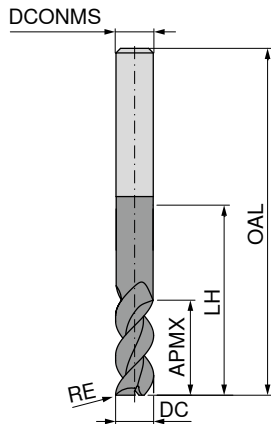
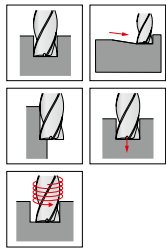
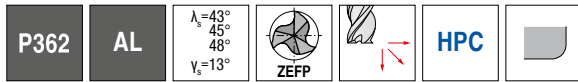
DC $+0.000/-0.002$	APMX	OAL	DCONMS $-0.0001/-0.0004$	ZEFP
inch	inch	inch	inch	
3/16	3/8	2	3/16	3
3/16	3/4	2 1/2	3/16	3
3/16	1	3	3/16	3
1/4	3/8	2	1/4	3
1/4	3/4	2 1/2	1/4	3
1/4	1	3	1/4	3
3/8	1/2	2	3/8	3
3/8	1	2 1/2	3/8	3
3/8	1 1/2	3 1/2	3/8	3
1/2	5/8	2 1/2	1/2	3
1/2	1	3	1/2	3
1/2	1 1/4	3	1/2	3
1/2	1 5/8	4	1/2	3
1/2	2	4	1/2	3
5/8	3/4	3	5/8	3
5/8	1 1/4	3 1/2	5/8	3
5/8	1 5/8	4	5/8	3
3/4	1	3	3/4	3
3/4	1 5/8	4	3/4	3
3/4	2 1/4	5	3/4	3
1	1 1/4	4	1	3
1	2	5	1	3
1	3 1/4	6	1	3

59 004 ...	59 004 ...	59 004 ...	59 004 ...
18820		18840	18853
25015		25030	25040
37513		37527	37540
50013	50020	50025	50033
			50040
62512	62520	62526	
75013		75022	75030
99913		99920	99933



End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$



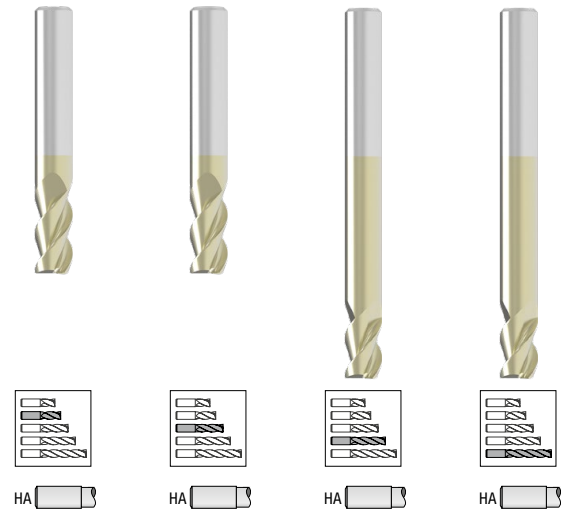
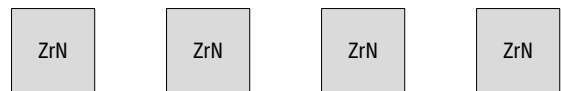
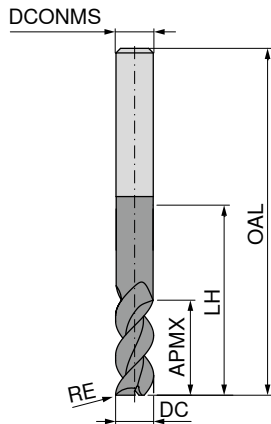
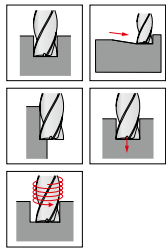
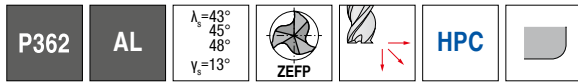
DC +0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001/-0.0004 inch	ZEFP
3/16	0.015	3/8	2	3/16	3
3/16	0.030	3/8	2	3/16	3
3/16	0.015	3/4	2 1/2	3/16	3
3/16	0.030	3/4	2 1/2	3/16	3
3/16	0.015	1	3	3/16	3
3/16	0.030	1	3	3/16	3
1/4	0.015	3/8	2	1/4	3
1/4	0.030	3/8	2	1/4	3
1/4	0.060	3/8	2	1/4	3
1/4	0.015	3/4	2 1/2	1/4	3
1/4	0.030	3/4	2 1/2	1/4	3
1/4	0.060	3/4	2 1/2	1/4	3
1/4	0.015	1	3	1/4	3
1/4	0.030	1	3	1/4	3
1/4	0.060	1	3	1/4	3
3/8	0.015	1/2	2	3/8	3
3/8	0.030	1/2	2	3/8	3
3/8	0.060	1/2	2	3/8	3
3/8	0.090	1/2	2	3/8	3
3/8	0.015	1	2 1/2	3/8	3
3/8	0.030	1	2 1/2	3/8	3
3/8	0.060	1	2 1/2	3/8	3
3/8	0.090	1	2 1/2	3/8	3
3/8	0.015	1 1/2	3 1/2	3/8	3
3/8	0.030	1 1/2	3 1/2	3/8	3
3/8	0.060	1 1/2	3 1/2	3/8	3
3/8	0.090	1 1/2	3 1/2	3/8	3
1/2	0.015	5/8	2 1/2	1/2	3
1/2	0.030	5/8	2 1/2	1/2	3
1/2	0.060	5/8	2 1/2	1/2	3
1/2	0.090	5/8	2 1/2	1/2	3
1/2	0.125	5/8	2 1/2	1/2	3
1/2	0.015	1	3	1/2	3
1/2	0.030	1	3	1/2	3
1/2	0.060	1	3	1/2	3
1/2	0.090	1	3	1/2	3
1/2	0.125	1	3	1/2	3
1/2	0.015	1 1/4	3	1/2	3
1/2	0.030	1 1/4	3	1/2	3

59 004 ...	59 004 ...	59 004 ...	59 004 ...
90020			
90120			
		90040	
		90140	
			90053
			90153
90015			
90115			
90215			
		90030	
		90130	
		90230	
			90240
			90340
			90440
90013			
90113			
90213			
90313			
90027			
90127			
90227			
90327			
			90540
			90640
			90740
			90840
90413			
90513			
90613			
90713			
90813			
	90220		
	90320		
	90420		
	90520		
	90620		
		90025	
		90125	

P				
M				
K				
N				
S				
H				
O				

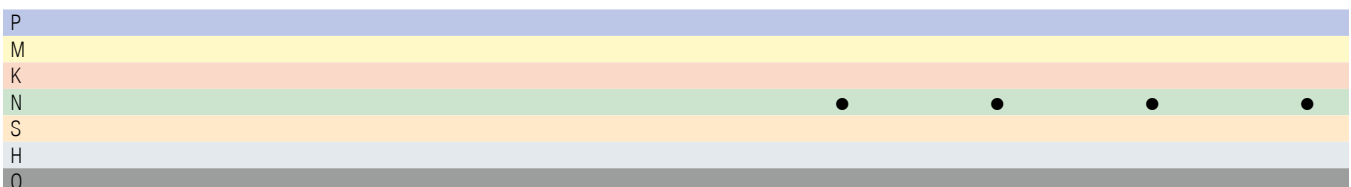
End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$



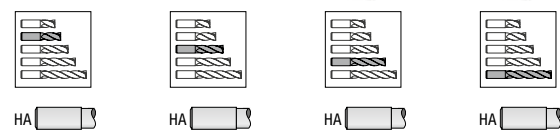
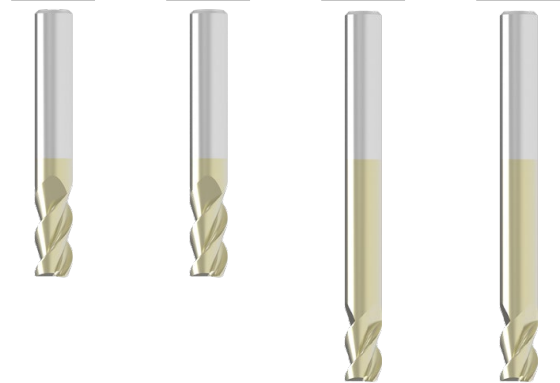
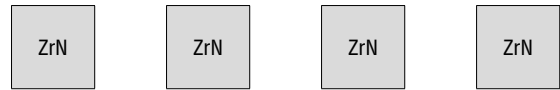
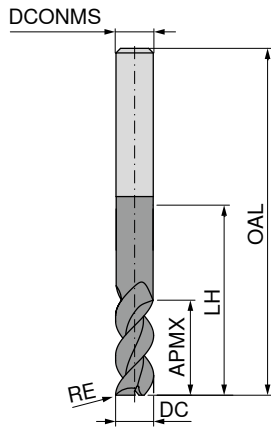
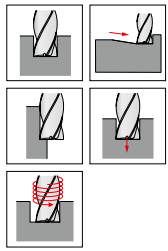
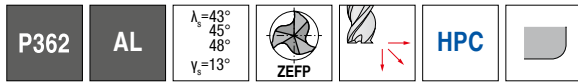
59 004 ... 59 004 ... 59 004 ... 59 004 ...

DC +0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEFP				
1/2	0.060	1 1/4	3	1/2	3				
1/2	0.090	1 1/4	3	1/2	3				
1/2	0.125	1 1/4	3	1/2	3				
1/2	0.015	1 5/8	4	1/2	3				
1/2	0.030	1 5/8	4	1/2	3				90033
1/2	0.060	1 5/8	4	1/2	3				90133
1/2	0.090	1 5/8	4	1/2	3				90233
1/2	0.125	1 5/8	4	1/2	3				90333
1/2	0.015	2	4	1/2	3				90433
1/2	0.030	2	4	1/2	3				90940
1/2	0.060	2	4	1/2	3				91040
1/2	0.090	2	4	1/2	3				91140
1/2	0.125	2	4	1/2	3				91240
1/2	0.030	3/4	3	5/8	3				91340
5/8	0.060	3/4	3	5/8	3	90012			
5/8	0.090	3/4	3	5/8	3	90112			
5/8	0.125	3/4	3	5/8	3	90212			
5/8	0.030	1 1/4	3 1/2	5/8	3	90312			
5/8	0.060	1 1/4	3 1/2	5/8	3		90720		
5/8	0.090	1 1/4	3 1/2	5/8	3		90820		
5/8	0.125	1 1/4	3 1/2	5/8	3		90920		
5/8	0.030	1 5/8	4	5/8	3		91020		
5/8	0.060	1 5/8	4	5/8	3			90026	
5/8	0.090	1 5/8	4	5/8	3			90126	
5/8	0.125	1 5/8	4	5/8	3			90226	
3/4	0.030	1	3	3/4	3			90326	
3/4	0.060	1	3	3/4	3	90913			
3/4	0.090	1	3	3/4	3	91013			
3/4	0.125	1	3	3/4	3	91113			
3/4	0.190	1	3	3/4	3	91213			
3/4	0.250	1	3	3/4	3	91313			
3/4	0.030	1 5/8	4	3/4	3	91413			
3/4	0.060	1 5/8	4	3/4	3			90022	
3/4	0.090	1 5/8	4	3/4	3			90122	
3/4	0.125	1 5/8	4	3/4	3			90222	
3/4	0.190	1 5/8	4	3/4	3			90322	
3/4	0.250	1 5/8	4	3/4	3			90422	
3/4	0.030	2 1/4	5	3/4	3			90522	
3/4	0.060	2 1/4	5	3/4	3				90330
									90430



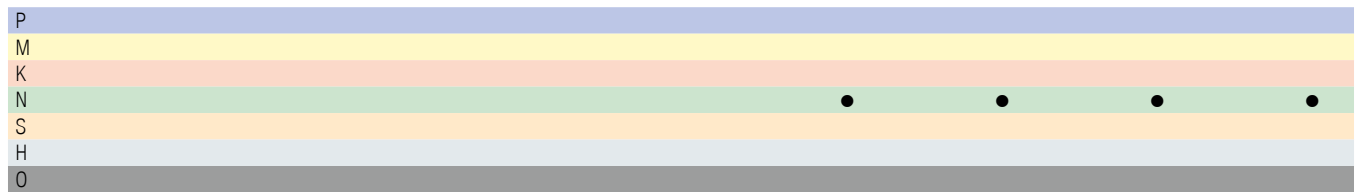
End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$



59 004 ...	59 004 ...	59 004 ...	59 004 ...
			90530
			90630
			90730
			90830
91513			
91613			
91713			
91813			
91913			
92013			
	91120		
	91220		
	91320		
	91420		
	91520		
	91620		
			90533
			90633
			90733
			90833
			90933
			91033

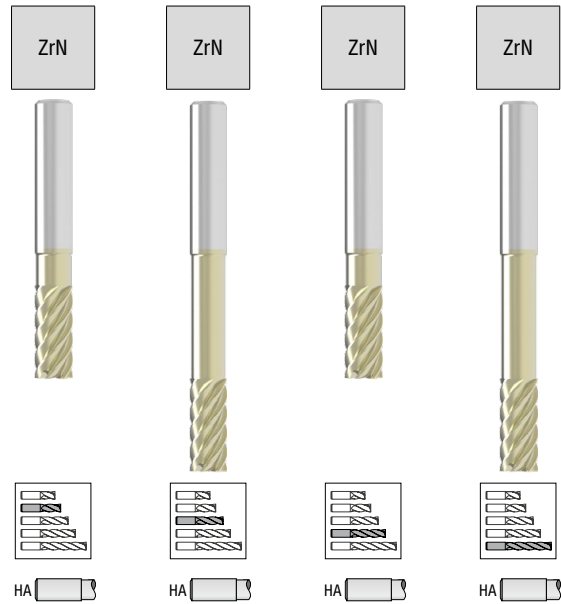
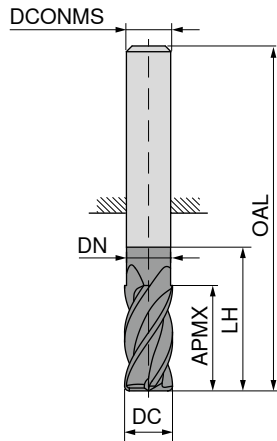
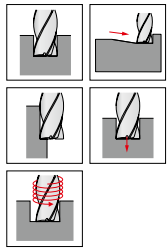
DC +0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEFP
3/4	0.090	2 1/4	5	3/4	3
3/4	0.125	2 1/4	5	3/4	3
3/4	0.190	2 1/4	5	3/4	3
3/4	0.250	2 1/4	5	3/4	3
1	0.030	1 1/4	4	1	3
1	0.060	1 1/4	4	1	3
1	0.090	1 1/4	4	1	3
1	0.125	1 1/4	4	1	3
1	0.190	1 1/4	4	1	3
1	0.250	1 1/4	4	1	3
1	0.030	2	5	1	3
1	0.060	2	5	1	3
1	0.090	2	5	1	3
1	0.125	2	5	1	3
1	0.190	2	5	1	3
1	0.250	2	5	1	3
1	0.030	3 1/4	6	1	3
1	0.060	3 1/4	6	1	3
1	0.090	3 1/4	6	1	3
1	0.125	3 1/4	6	1	3
1	0.190	3 1/4	6	1	3
1	0.250	3 1/4	6	1	3



→ v_c/f_z Page 106

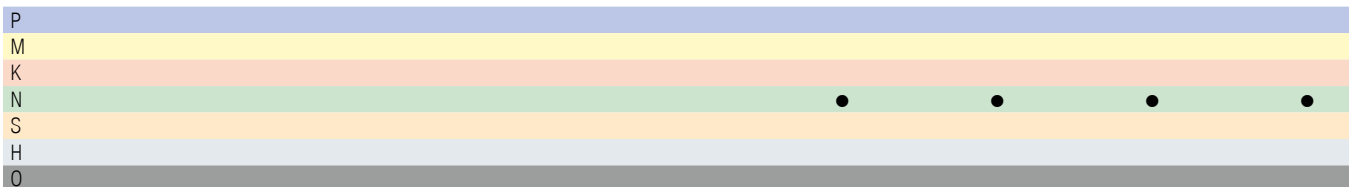
End milling cutter

P376 **AL** $\lambda_s=44^\circ$
 $\gamma_s=47^\circ$
 $\nu_s=21^\circ$



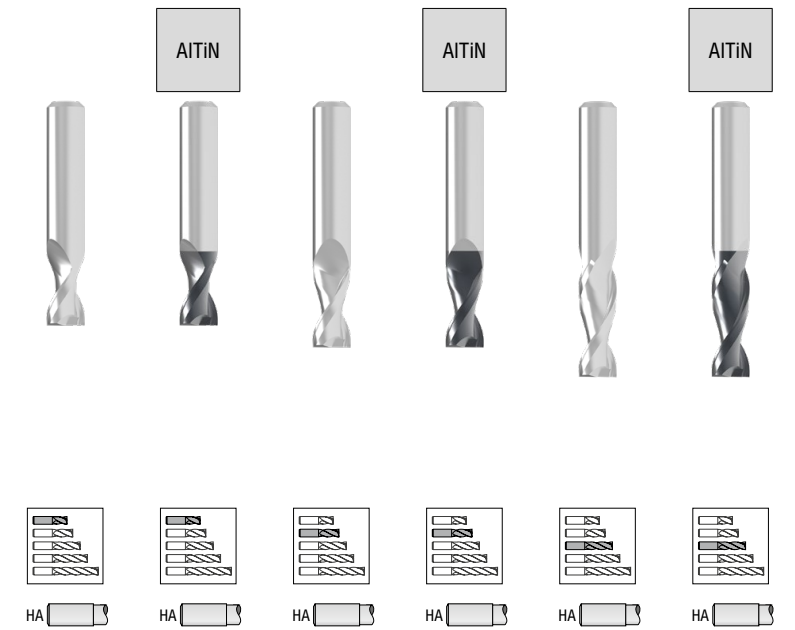
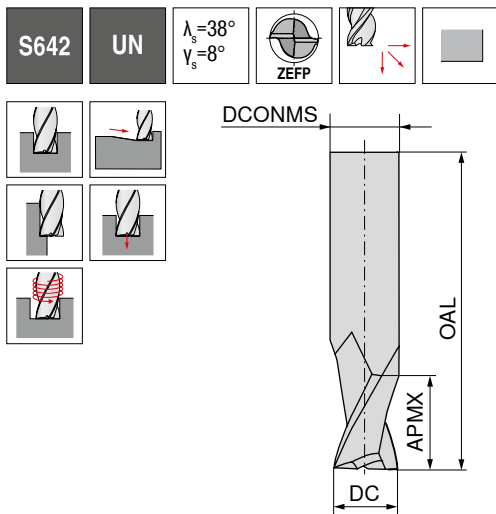
DC $+0.000/-0.002$	APMX	DN	LH	OAL	DCONMS $-0.0001/-0.0004$	ZEFP
inch	inch	inch	inch	inch	inch	
1/4	5/8	0.240	7/8	2 1/2	1/4	6
1/4	5/8	0.240	1 5/8	3	1/4	6
5/16	3/4	0.300	1	2 1/2	5/16	6
5/16	3/4	0.300	2 3/8	4	5/16	6
3/8	1	0.360	1 1/4	3	3/8	6
3/8	1	0.360	2 1/4	4	3/8	6
1/2	1	0.480	1 1/4	3	1/2	6
1/2	1 1/4	0.480	1 1/2	3 1/2	1/2	6
1/2	1 1/4	0.480	3	5	1/2	6
1/2	1 7/8			5	1/2	6
5/8	1 1/4	0.600	1 1/2	3 1/2	5/8	6
5/8	1 1/4	0.600	3 5/8	6	5/8	6
5/8	2 1/2			6	5/8	6
3/4	1 5/8	0.720	2	4	3/4	6
3/4	1 5/8	0.720	3 5/8	6	3/4	6
1	2	0.960	3 7/8	6	1	6

59 005 ...	59 005 ...	59 005 ...	59 005 ...
		25025	25125
		31324	31424
		37527	37627
50020			
	50125	50025	50038
	62620	62520	62540
		75022	75122
			99920



End milling cutter

▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 / -0.002



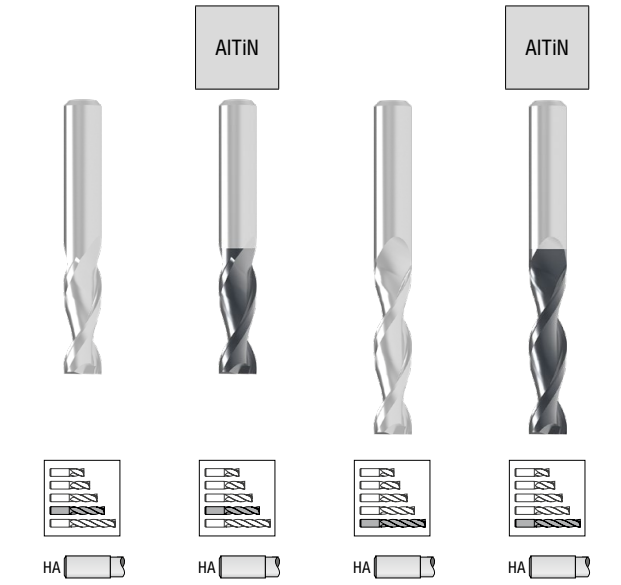
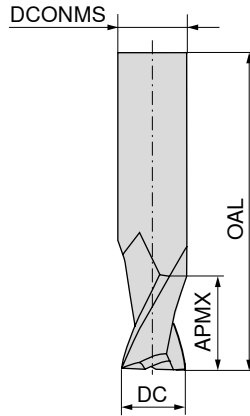
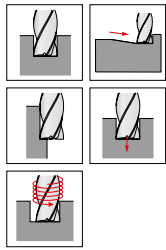
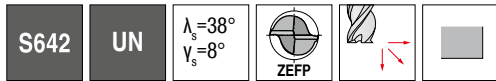
DC inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEFP	59 068 ...	59 069 ...	59 068 ...	59 069 ...	59 068 ...	59 069 ...
1/16	1/8	1 1/2	1/8	2			06320	06320		
3/32	3/16	1 1/2	1/8	2			09420	09420		
1/8	1/4	1 1/2	1/8	2	12520	12520	12540	12540		
1/8	1/2	1 1/2	1/8	2					12660	12660
1/8	3/4	3	1/8	2						
5/32	3/8	2	3/16	2			15624	15624	12660	12660
3/16	3/8	2	3/16	2	18820	18820				
3/16	5/8	2	3/16	2			18833	18833		
3/16	1	2 1/2	3/16	2					18853	18853
7/32	3/8	2	1/4	2			21917	21917		
1/4	3/8	2	1/4	2			25015	25015		
1/4	1 1/8	3	1/4	2					25045	25045
1/4	1	4	1/4	2					25040	25040
9/32	1/2	2	5/16	2			28118	28118		
5/16	1/2	2	5/16	2	31316	31316				
5/16	3/4	2 1/2	5/16	2			31324	31324		
5/16	1 3/8	3	5/16	2					31344	31344
5/16	1	4	5/16	2					31332	31332
3/8	5/8	2	3/8	2	37517	37517				
3/8	7/8	2 1/2	3/8	2			37523	37523		
3/8	1 3/8	3	3/8	2					37537	37537
3/8	1	4	3/8	2					37527	37527
1/2	5/8	2 1/2	1/2	2	50013	50013				
1/2	1	3	1/2	2			50020	50020		
1/2	1	4	1/2	2					50120	50120
5/8	7/8	3	5/8	2	62514	62514				
5/8	1 1/4	3 1/2	5/8	2			62520	62520		
5/8	2	6	5/8	2					62532	62532
3/4	1	3	3/4	2	75013	75013				
3/4	1 1/2	4	3/4	2			75020	75020		
3/4	2	6	3/4	2					75027	75027
1	1 3/4	4	1	2			99918	99918		
1	2	6	1	2					99920	99920

P	•	•	•	•	•	•
M	•	•	•	•	•	•
K	•	•	•	•	•	•
N	•	•	•	•	•	•
S	•	•	•	•	•	•
H						
O						

→ v_c/f_z Page 108

End milling cutter

▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 / -0.002






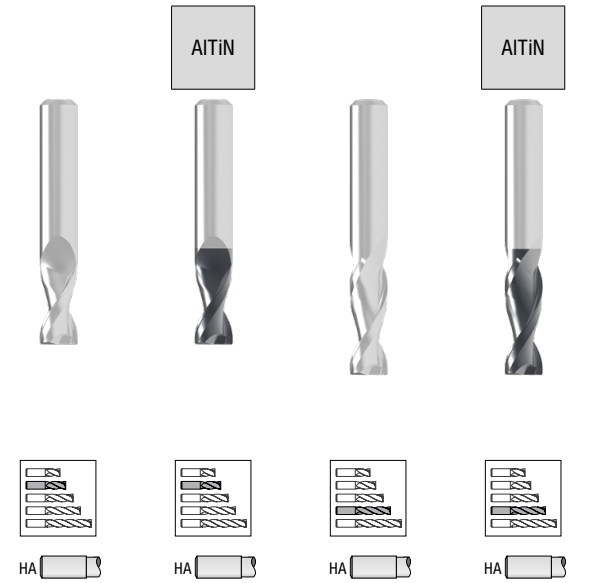
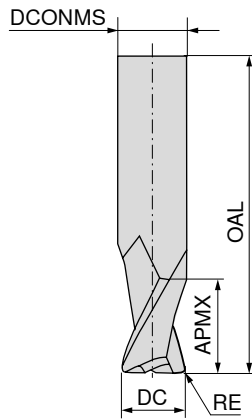
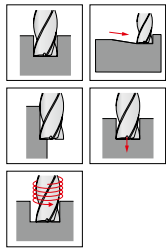
DC inch	APMX inch	OAL inch	DCONMS inch	ZEFP	59 068 ...	59 069 ...	59 068 ...	59 069 ...
1/16	3/16	1 1/2	1/8	2	06330	06330		
3/32	9/32	1 1/2	1/8	2	09430	09430		
1/8	3/4	2 1/2	1/8	2	12560	12560		
1/8	1	3	1/8	2			12580	12580
5/32	1/2	2	3/16	2	15632	15632		
5/32	3/4	2 1/2	3/16	2			15648	15648
3/16	3/4	2 1/2	3/16	2	18840	18840		
3/16	1 1/8	3	3/16	2			18860	18860
3/16	1	4	3/16	2			18953	18953
7/32	5/8	2 1/2	1/4	2	21929	21929		
7/32	1	3	1/4	2			21946	21946
1/4	3/4	2 1/2	1/4	2	25030	25030		
1/4	1 1/4	3	1/4	2			25050	25050
1/4	1 1/2	4	1/4	2			25060	25060
1/4	1 1/2	6	1/4	2			25160	25160
9/32	3/4	2 1/2	5/16	2	28127	28127		
9/32	1 1/4	3	5/16	2			28144	28144
5/16	1 1/8	3	5/16	2	31336	31336		
5/16	1 5/8	4	5/16	2			31352	31352
5/16	1 1/2	6	5/16	2			31348	31348
3/8	1 1/8	3	3/8	2	37530	37530		
3/8	1 3/4	4	3/8	2			37547	37547
3/8	1 1/2	6	3/8	2			37540	37540
3/8	3	6	3/8	2			37580	37580
1/2	1 1/2	3 1/2	1/2	2	50030	50030		
1/2	2	4	1/2	2			50040	50040
1/2	1 1/2	6	1/2	2			50130	50130
1/2	3	6	1/2	2			50060	50060
5/8	2 1/8	4 5/8	5/8	2	62534	62534		
5/8	3	6	5/8	2			62548	62548
3/4	2 1/4	5	3/4	2	75030	75030		
3/4	3	6	3/4	2			75040	75040
1	2 1/4	5	1	2	99923	99923		
1	3	6	1	2			99930	99930

P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001

S642 **UN** $\lambda_s=38^\circ$ $\nu_s=8^\circ$   



DC +0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEPF
1/8	0.010	1/2	1 1/2	1/8	2
1/8	0.015	1/2	1 1/2	1/8	2
1/8	0.020	1/2	1 1/2	1/8	2
1/8	0.030	1/2	1 1/2	1/8	2
1/8	0.045	1/2	1 1/2	1/8	2
3/16	0.010	5/8	2	3/16	2
3/16	0.015	5/8	2	3/16	2
3/16	0.020	5/8	2	3/16	2
3/16	0.030	5/8	2	3/16	2
3/16	0.045	5/8	2	3/16	2
3/16	0.060	5/8	2	3/16	2
1/4	0.010	3/4	2 1/2	1/4	2
1/4	0.015	3/4	2 1/2	1/4	2
1/4	0.020	3/4	2 1/2	1/4	2
1/4	0.030	3/4	2 1/2	1/4	2
1/4	0.045	3/4	2 1/2	1/4	2
1/4	0.060	3/4	2 1/2	1/4	2
1/4	0.090	3/4	2 1/2	1/4	2
5/16	0.010	3/4	2 1/2	5/16	2
5/16	0.015	3/4	2 1/2	5/16	2
5/16	0.020	3/4	2 1/2	5/16	2
5/16	0.030	3/4	2 1/2	5/16	2
5/16	0.045	3/4	2 1/2	5/16	2
5/16	0.060	3/4	2 1/2	5/16	2
5/16	0.090	3/4	2 1/2	5/16	2
3/8	0.010	7/8	2 1/2	3/8	2
3/8	0.015	7/8	2 1/2	3/8	2
3/8	0.020	7/8	2 1/2	3/8	2
3/8	0.030	7/8	2 1/2	3/8	2
3/8	0.045	7/8	2 1/2	3/8	2
3/8	0.060	7/8	2 1/2	3/8	2
3/8	0.090	7/8	2 1/2	3/8	2
3/8	0.125	7/8	2 1/2	3/8	2

59 068 ...	59 069 ...	59 068 ...	59 069 ...
90040	90040		
90140	90140		
90240	90240		
90340	90340		
90440	90440		
90033	90033		
90133	90133		
90233	90233		
90333	90333		
90433	90433		
90533	90533		
		90030	90030
		90130	90130
		90230	90230
		90330	90330
		90430	90430
		90530	90530
		90630	90630
90024	90024		
90124	90124		
90224	90224		
90324	90324		
90424	90424		
90524	90524		
90624	90624		
90023	90023		
90223	90223		
90323	90323		
90423	90423		
90523	90523		
90623	90623		
90723	90723		
90123	90123		

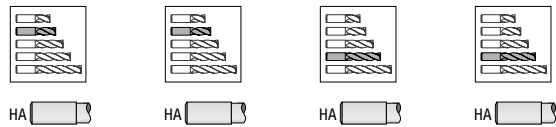
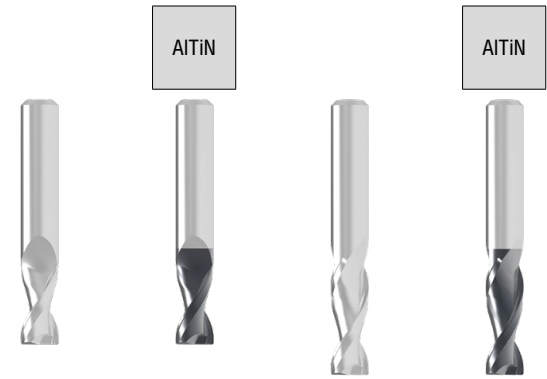
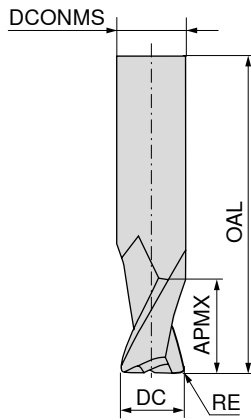
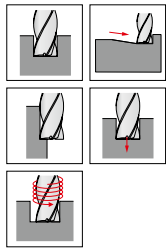
P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	•	•	•	•
S	•	•	•	•
H				
O				

→ v_c/f_z Page 108

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001

S642
UN
 $\lambda_s=38^\circ$
 $\nu_s=8^\circ$
ZEPF

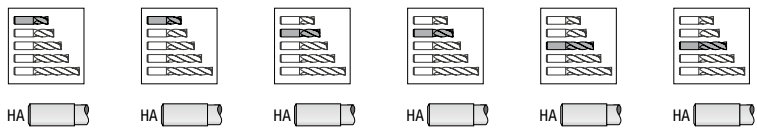
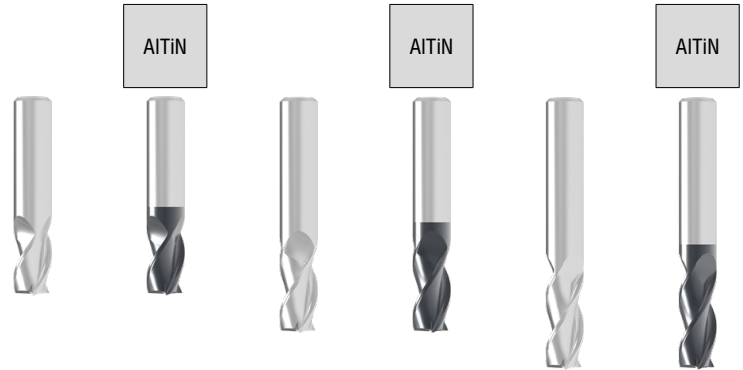
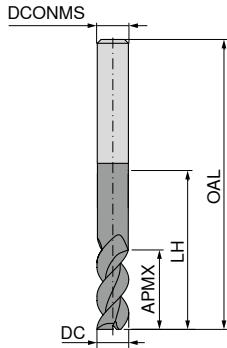
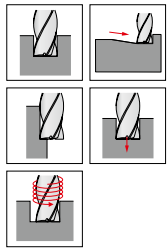
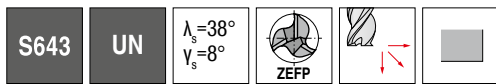


DC <small>+0.000/-0.002</small> inch	RE inch	APMX inch	OAL inch	DCONMS <small>-0.0001 / -0.0004</small> inch	ZEPF	59 068 ...	59 069 ...	59 068 ...	59 069 ...
1/2	0.010	1	3	1/2	2	90020	90020		
1/2	0.015	1	3	1/2	2	90220	90220		
1/2	0.020	1	3	1/2	2	90320	90320		
1/2	0.030	1	3	1/2	2	90420	90420		
1/2	0.045	1	3	1/2	2	90520	90520		
1/2	0.060	1	3	1/2	2	90620	90620		
1/2	0.090	1	3	1/2	2	90720	90720		
1/2	0.125	1	3	1/2	2	90120	90120		
5/8	0.030	1 1/4	3 1/2	5/8	2			90920	90920
5/8	0.045	1 1/4	3 1/2	5/8	2			91020	91020
5/8	0.060	1 1/4	3 1/2	5/8	2			91120	91120
5/8	0.090	1 1/4	3 1/2	5/8	2			91220	91220
5/8	0.125	1 1/4	3 1/2	5/8	2			90820	90820
3/4	0.030	1 1/2	4	3/4	2			91420	91420
3/4	0.045	1 1/2	4	3/4	2			91520	91520
3/4	0.060	1 1/2	4	3/4	2			91620	91620
3/4	0.090	1 1/2	4	3/4	2			91720	91720
3/4	0.125	1 1/2	4	3/4	2			91320	91320
P						●	●	●	●
M						●	●	●	●
K						●	●	●	●
N						●	●	●	●
S						●	●	●	●
H									
O									

→ v_c/f_z Page 108

End milling cutter

▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 / - 0.002

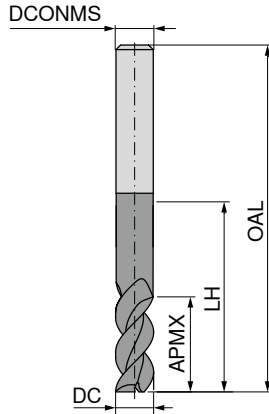
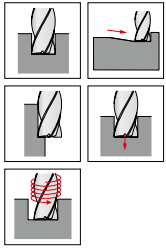
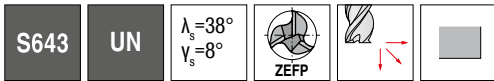


DC inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEFP	59 070 ...	59 071 ...	59 070 ...	59 071 ...	59 070 ...	59 071 ...
1/16	1/8	1 1/2	1/8	3				06320	06320	
5/64	1/4	1 1/2	1/8	3				07832	07832	
3/32	3/16	1 1/2	1/8	3				09420	09420	
1/8	1/4	1 1/2	1/8	3	12520	12520				
1/8	1/2	1 1/2	1/8	3			12540	12540		
1/8	3/4	3	1/8	3					12660	12660
5/32	3/8	2	3/16	3			15624	15624		
3/16	3/8	2	3/16	3	18820	18820				
3/16	5/8	2	3/16	3			18833	18833		
3/16	1	2 1/2	3/16	3					18853	18853
7/32	3/8	2	1/4	3			21917	21917		
1/4	3/8	2	1/4	3	25015	25015				
1/4	3/4	2 1/2	1/4	3			25030	25030		
1/4	1 1/8	3	1/4	3					25045	25045
9/32	1/2	2	5/16	3			28118	28118		
5/16	1/2	2	5/16	3	31316	31316				
5/16	3/4	2 1/2	5/16	3			31324	31324		
5/16	1 1/8	3	5/16	3					31336	31336
3/8	5/8	2	3/8	3	37517	37517				
3/8	7/8	2 1/2	3/8	3			37523	37523		
3/8	1 1/8	3	3/8	3					37530	37530
3/8	1 1/2	6	3/8	3					37540	37540
1/2	5/8	2 1/2	1/2	3	50013	50013				
1/2	1	3	1/2	3			50020	50020		
1/2	1 1/2	6	1/2	3					50030	50030
5/8	7/8	3	5/8	3	62514	62514				
5/8	1 1/4	3 1/2	5/8	3			62520	62520		
5/8	2 1/8	4 5/8	5/8	3					62534	62534
3/4	1	3	3/4	3	75013	75013				
3/4	1 1/2	4	3/4	3			75020	75020		
3/4	2 1/4	5	3/4	3					75030	75030
1	1 3/4	4	1	3			99918	99918		
1	2 1/4	5	1	3					99923	99923
P					•	•	•	•	•	•
M					•	•	•	•	•	•
K					•	•	•	•	•	•
N					•	•	•	•	•	•
S					•	•	•	•	•	•
H										
O										

→ v_c/f_z Page 109

End milling cutter

▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 /- 0.002

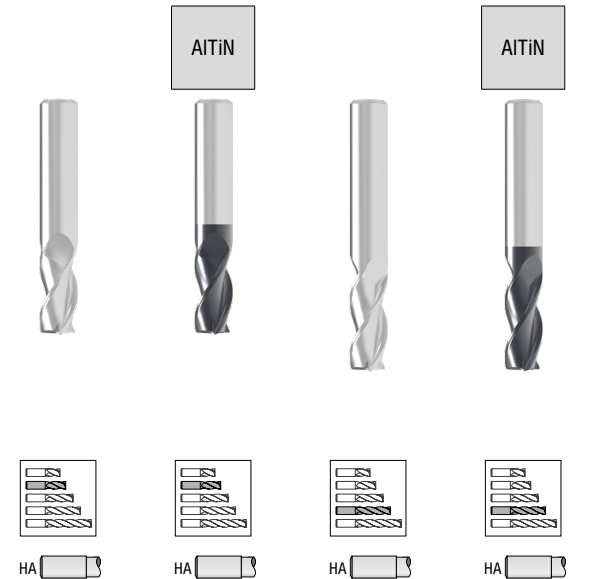
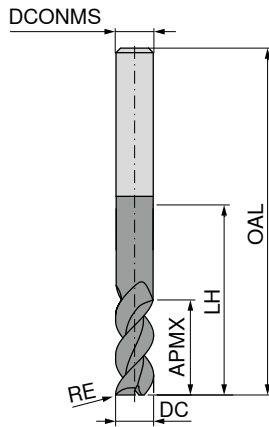
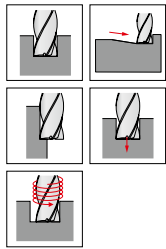
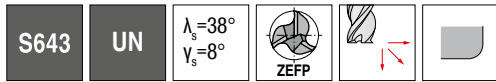


	AITiN		AITiN	
	59 070 ...	59 071 ...	59 070 ...	59 071 ...
HA	●	●	●	●
P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

DC	APMX	OAL	DCONMS	ZFP	59 070 ...	59 071 ...	59 070 ...	59 071 ...
inch	inch	inch	inch					
1/16	3/16	1 1/2	1/8	3	06330	06330		
3/32	9/32	1 1/2	1/8	3	09430	09430		
1/8	3/4	2 1/2	1/8	3	12560	12560		
1/8	1	3	1/8	3			12580	12580
5/32	1/2	2	3/16	3	15632	15632		
3/16	3/4	2 1/2	3/16	3	18840	18840		
3/16	1	4	3/16	3			18953	18953
3/16	1 1/8	3	3/16	3			18860	18860
7/32	5/8	2 1/2	1/4	3	21929	21929		
1/4	1	4	1/4	3	25040	25040		
1/4	1 1/2	6	1/4	3			25160	25160
1/4	1 1/2	4	1/4	3			25060	25060
9/32	3/4	2 1/2	5/16	3	28127	28127		
5/16	1	4	5/16	3	31332	31332		
5/16	1 1/2	6	5/16	3			31348	31348
5/16	1 5/8	4	5/16	3			31352	31352
3/8	1	4	3/8	3	37527	37527		
3/8	1 3/4	4	3/8	3			37547	37547
3/8	3	6	3/8	3			37580	37580
1/2	1	4	1/2	3	50120	50120		
1/2	2	4	1/2	3			50040	50040
1/2	3	6	1/2	3			50060	50060
5/8	2	6	5/8	3	62532	62532		
5/8	3	6	5/8	3			62548	62548
3/4	2	6	3/4	3	75027	75027		
3/4	3	6	3/4	3			75040	75040
1	2	6	1	3	99920	99920		
1	3	6	1	3			99930	99930

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001

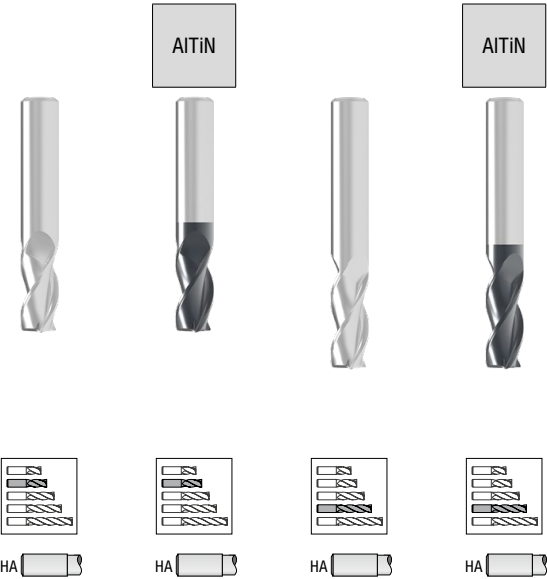
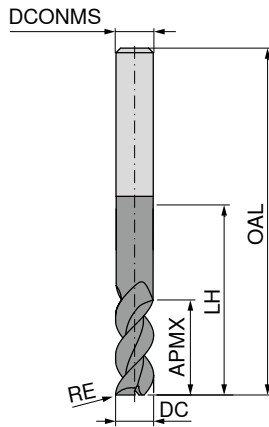
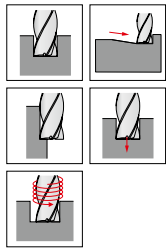
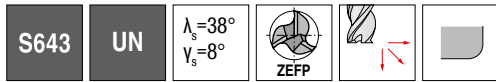


DC	RE	APMX	OAL	DCONMS	ZEPF	59 070 ...	59 071 ...	59 070 ...	59 071 ...
<small>+0.000/-0.002</small>	<small>+0.000/-0.002</small>			<small>-0.0001 / -0.0004</small>					
inch	inch	inch	inch	inch					
1/8	0.010	1/2	1 1/2	1/8	3	90040	90040		
1/8	0.015	1/2	1 1/2	1/8	3	90140	90140		
1/8	0.020	1/2	1 1/2	1/8	3	90240	90240		
1/8	0.030	1/2	1 1/2	1/8	3	90340	90340		
1/8	0.045	1/2	1 1/2	1/8	3	90440	90440		
3/16	0.010	5/8	2	3/16	3	90033	90033		
3/16	0.015	5/8	2	3/16	3	90133	90133		
3/16	0.020	5/8	2	3/16	3	90233	90233		
3/16	0.030	5/8	2	3/16	3	90333	90333		
3/16	0.045	5/8	2	3/16	3	90433	90433		
3/16	0.060	5/8	2	3/16	3	90533	90533		
1/4	0.010	3/4	2 1/2	1/4	3			90030	90030
1/4	0.015	3/4	2 1/2	1/4	3			90130	90130
1/4	0.020	3/4	2 1/2	1/4	3			90230	90230
1/4	0.030	3/4	2 1/2	1/4	3			90330	90330
1/4	0.045	3/4	2 1/2	1/4	3			90430	90430
1/4	0.060	3/4	2 1/2	1/4	3			90530	90530
1/4	0.090	3/4	2 1/2	1/4	3			90630	90630
5/16	0.010	3/4	2 1/2	5/16	3	90024	90024		
5/16	0.015	3/4	2 1/2	5/16	3	90124	90124		
5/16	0.020	3/4	2 1/2	5/16	3	90224	90224		
5/16	0.030	3/4	2 1/2	5/16	3	90324	90324		
5/16	0.045	3/4	2 1/2	5/16	3	90424	90424		
5/16	0.060	3/4	2 1/2	5/16	3	90524	90524		
5/16	0.090	3/4	2 1/2	5/16	3	90624	90624		
3/8	0.010	7/8	2 1/2	3/8	3	90023	90023		
3/8	0.015	7/8	2 1/2	3/8	3	90223	90223		
3/8	0.020	7/8	2 1/2	3/8	3	90323	90323		
3/8	0.030	7/8	2 1/2	3/8	3	90423	90423		
3/8	0.045	7/8	2 1/2	3/8	3	90523	90523		
3/8	0.060	7/8	2 1/2	3/8	3	90623	90623		
3/8	0.090	7/8	2 1/2	3/8	3	90723	90723		
3/8	0.125	7/8	2 1/2	3/8	3	90123	90123		
P						•	•	•	•
M						•	•	•	•
K						•	•	•	•
N						•	•	•	•
S						•	•	•	•
H									
O									

→ v_c/f_z Page 109

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001



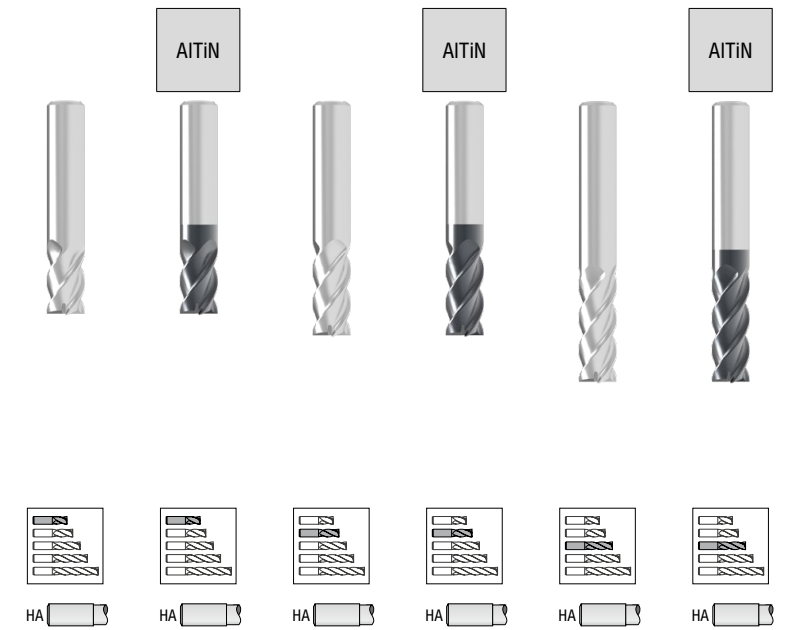
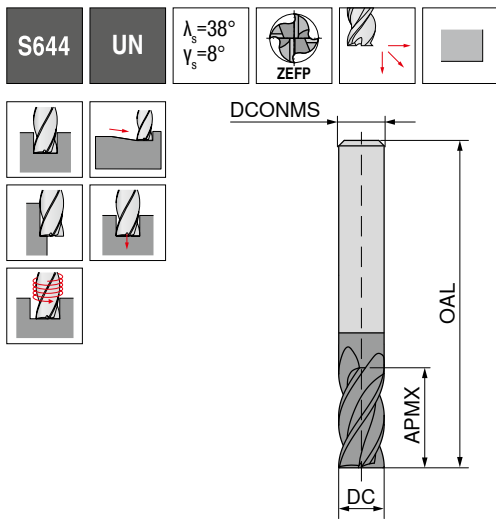
59 070 ... 59 071 ... 59 070 ... 59 071 ...

DC +0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEPF	59 070 ...	59 071 ...	59 070 ...	59 071 ...
1/2	0.010	1	3	1/2	3	90020	90020		
1/2	0.015	1	3	1/2	3	90220	90220		
1/2	0.020	1	3	1/2	3	90320	90320		
1/2	0.030	1	3	1/2	3	90420	90420		
1/2	0.045	1	3	1/2	3	90520	90520		
1/2	0.060	1	3	1/2	3	90620	90620		
1/2	0.090	1	3	1/2	3	90720	90720		
1/2	0.125	1	3	1/2	3	90120	90120		
5/8	0.015	1 1/4	3 1/2	5/8	3			90920	90920
5/8	0.020	1 1/4	3 1/2	5/8	3			91020	91020
5/8	0.030	1 1/4	3 1/2	5/8	3			91120	91120
5/8	0.045	1 1/4	3 1/2	5/8	3			91220	91220
5/8	0.060	1 1/4	3 1/2	5/8	3			91320	91320
5/8	0.090	1 1/4	3 1/2	5/8	3			91420	91420
5/8	0.125	1 1/4	3 1/2	5/8	3			90820	90820
3/4	0.020	1 1/2	4	3/4	3			91620	91620
3/4	0.030	1 1/2	4	3/4	3			91720	91720
3/4	0.045	1 1/2	4	3/4	3			91820	91820
3/4	0.060	1 1/2	4	3/4	3			91920	91920
3/4	0.090	1 1/2	4	3/4	3			92020	92020
3/4	0.125	1 1/2	4	3/4	3			91520	91520
1	0.030	1 3/4	4	1	3	90118	90118		
1	0.045	1 3/4	4	1	3	90218	90218		
1	0.060	1 3/4	4	1	3	90318	90318		
1	0.090	1 3/4	4	1	3	90418	90418		
1	0.125	1 3/4	4	1	3	90018	90018		
P						●	●	●	●
M						●	●	●	●
K						●	●	●	●
N						●	●	●	●
S						●	●	●	●
H									
O									

→ v_c/f_z Page 109

End milling cutter

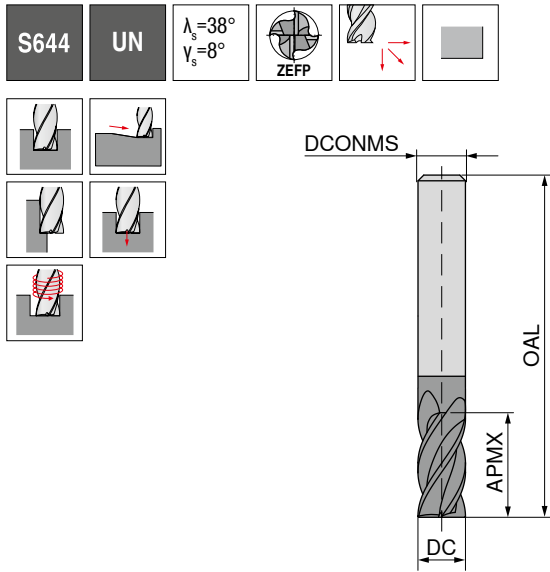
▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 /- 0.002



DC inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZFPP	59 072 ...	59 073 ...	59 072 ...	59 073 ...	59 072 ...	59 073 ...
1/32	1/16	1 1/2	1/8	4			03120	03120		
3/64	3/32	1 1/2	1/8	4			04720	04720		
1/16	1/8	1 1/2	1/8	4			06320	06320		
5/64	1/4	1 1/2	1/8	4			07832	07832		
3/32	3/16	1 1/2	1/8	4			09420	09420		
7/64	3/16	1 1/2	1/8	4			10917	10917		
1/8	1/4	1 1/2	1/8	4	12520	12520				
1/8	1/2	1 1/2	1/8	4			12540	12540		
1/8	3/4	3	1/8	4					12660	12660
5/32	3/8	2	3/16	4			15624	15624		
3/16	3/8	2	3/16	4	18820	18820				
3/16	5/8	2	3/16	4			18833	18833		
3/16	1	2 1/2	3/16	4					18853	18853
7/32	3/8	2	1/4	4			21917	21917		
1/4	3/8	2	1/4	4	25015	25015				
1/4	3/4	2 1/2	1/4	4			25030	25030		
1/4	1 1/4	3	1/4	4					25050	25050
1/4	1	4	1/4	4					25040	25040
9/32	1/2	2	5/16	4			28118	28118		
5/16	1/2	2	5/16	4	31316	31316				
5/16	3/4	2 1/2	5/16	4			31324	31324		
5/16	1 3/8	3	5/16	4					31344	31344
5/16	1	4	5/16	4					31332	31332
3/8	5/8	2	3/8	4	37517	37517				
3/8	7/8	2 1/2	3/8	4			37523	37523		
3/8	1 1/8	3	3/8	4					37530	37530
3/8	1 3/8	3	3/8	4					37537	37537
1/2	5/8	2 1/2	1/2	4	50013	50013				
1/2	1	3	1/2	4			50020	50020		
1/2	1 1/2	3 1/2	1/2	4					50030	50030
1/2	1 1/2	6	1/2	4					50130	50130
5/8	7/8	3	5/8	4	62514	62514				
5/8	1 1/4	3 1/2	5/8	4			62520	62520		
5/8	2 1/8	4 5/8	5/8	4					62534	62534
3/4	1	3	3/4	4	75013	75013				
3/4	1 1/2	4	3/4	4			75020	75020		
3/4	2 1/4	5	3/4	4					75030	75030
1	1 3/4	4	1	4			99918	99918		
1	2 1/4	5	1	4					99923	99923
P					•	•	•	•	•	•
M					•	•	•	•	•	•
K					•	•	•	•	•	•
N					•	•	•	•	•	•
S					•	•	•	•	•	•
H										
O										

End milling cutter

▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 / -0.002



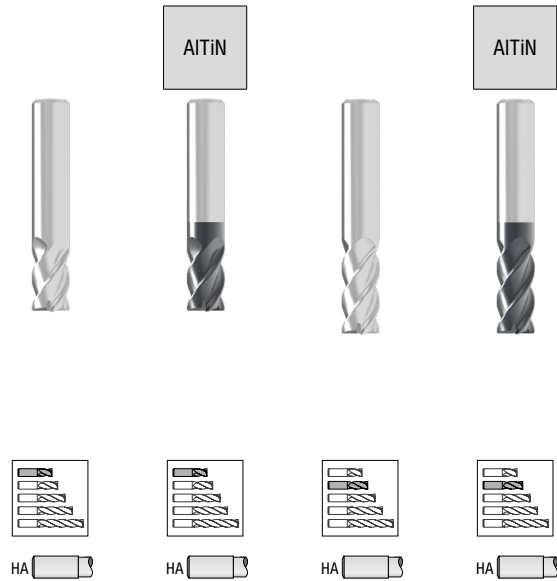
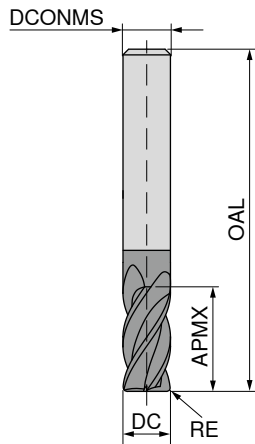
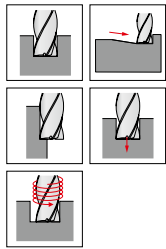
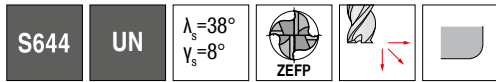
	AITiN	AITiN		
59 072 ...	59 073 ...	59 072 ...	59 073 ...	
03130	03130			
04730	04730			
06330	06330			
09430	09430			
10934	10934			
12560	12560			
		12580		12580
15632	15632			
		15648		15648
18840	18840			
		18860		18860
		18953		18953
21929	21929			
		21946		21946
25045	25045			
		25060		25060
		25160		25160
28127	28127			
		28144		28144
31336	31336			
		31352		31352
		31348		31348
37527	37527			
		37547		37547
		37540		37540
		37580		37580
50120	50120			
		50040		50040
		50060		50060
62532	62532			
		62548		62548
75027	75027			
		75040		75040
99920	99920			
		99930		99930

DC inch	APMX inch	OAL inch	DCONMS inch	ZEFP
1/32	3/32	1 1/2	1/8	4
3/64	9/64	1 1/2	1/8	4
1/16	3/16	1 1/2	1/8	4
3/32	9/32	1 1/2	1/8	4
7/64	3/8	1 1/2	1/8	4
1/8	3/4	2 1/2	1/8	4
1/8	1	3	1/8	4
5/32	1/2	2	3/16	4
5/32	3/4	2 1/2	3/16	4
3/16	3/4	2 1/2	3/16	4
3/16	1 1/8	3	3/16	4
3/16	1	4	3/16	4
7/32	5/8	2 1/2	1/4	4
7/32	1	3	1/4	4
1/4	1 1/8	3	1/4	4
1/4	1 1/2	4	1/4	4
1/4	1 1/2	6	1/4	4
9/32	3/4	2 1/2	5/16	4
9/32	1 1/4	3	5/16	4
5/16	1 1/8	3	5/16	4
5/16	1 5/8	4	5/16	4
5/16	1 1/2	6	5/16	4
3/8	1	4	3/8	4
3/8	1 3/4	4	3/8	4
3/8	1 1/2	6	3/8	4
3/8	3	6	3/8	4
1/2	1	4	1/2	4
1/2	2	4	1/2	4
1/2	3	6	1/2	4
5/8	2	6	5/8	4
5/8	3	6	5/8	4
3/4	2	6	3/4	4
3/4	3	6	3/4	4
1	2	6	1	4
1	3	6	1	4

P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001



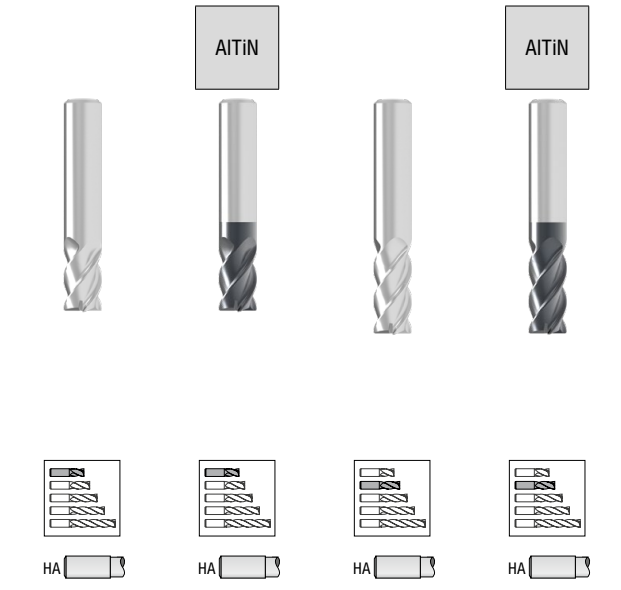
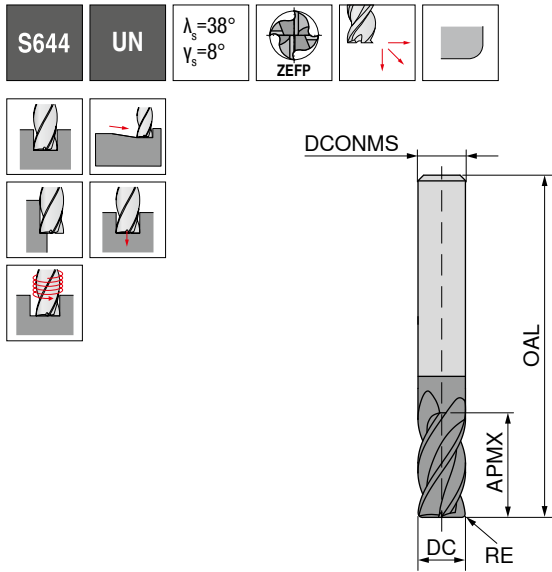
59 072 ... 59 073 ... 59 072 ... 59 073 ...

DC	RE	APMX	OAL	DCONMS	ZEFP				
<small>+0.000/-0.002</small>				<small>-0.0001 / -0.0004</small>					
inch	inch	inch	inch	inch					
1/8	0.010	1/4	1 1/2	1/8	4			92120	92120
1/8	0.015	1/4	1 1/2	1/8	4			92220	92220
1/8	0.020	1/4	1 1/2	1/8	4			92320	92320
1/8	0.030	1/4	1 1/2	1/8	4			92420	92420
1/8	0.045	1/4	1 1/2	1/8	4			92520	92520
3/16	0.010	3/8	2	3/16	4			92620	92620
3/16	0.015	3/8	2	3/16	4			92720	92720
3/16	0.020	3/8	2	3/16	4			92820	92820
3/16	0.030	3/8	2	3/16	4			92920	92920
3/16	0.045	3/8	2	3/16	4			93020	93020
3/16	0.060	3/8	2	3/16	4			93120	93120
1/4	0.010	3/8	2	1/4	4	90015	90015		
1/4	0.015	3/8	2	1/4	4	90115	90115		
1/4	0.020	3/8	2	1/4	4	90215	90215		
1/4	0.030	3/8	2	1/4	4	90315	90315		
1/4	0.045	3/8	2	1/4	4	90415	90415		
1/4	0.060	3/8	2	1/4	4	90515	90515		
1/4	0.090	3/8	2	1/4	4	90615	90615		
1/4	0.010	3/4	2 1/2	1/4	4			90030	90030
1/4	0.015	3/4	2 1/2	1/4	4			90130	90130
1/4	0.020	3/4	2 1/2	1/4	4			90230	90230
1/4	0.030	3/4	2 1/2	1/4	4			90330	90330
1/4	0.045	3/4	2 1/2	1/4	4			90430	90430
1/4	0.060	3/4	2 1/2	1/4	4			90530	90530
1/4	0.090	3/4	2 1/2	1/4	4			90630	90630
5/16	0.010	1/2	2	5/16	4	90016	90016		
5/16	0.015	1/2	2	5/16	4	90216	90216		
5/16	0.020	1/2	2	5/16	4	90316	90316		
5/16	0.030	1/2	2	5/16	4	90416	90416		
5/16	0.045	1/2	2	5/16	4	90516	90516		
5/16	0.060	1/2	2	5/16	4	90616	90616		
5/16	0.090	1/2	2	5/16	4	90716	90716		
5/16	0.125	1/2	2	5/16	4	90116	90116		
5/16	0.010	3/4	2 1/2	5/16	4			90024	90024
5/16	0.015	3/4	2 1/2	5/16	4			90224	90124
5/16	0.020	3/4	2 1/2	5/16	4			90324	90224
5/16	0.030	3/4	2 1/2	5/16	4			90424	90324
5/16	0.045	3/4	2 1/2	5/16	4			90524	90424
5/16	0.060	3/4	2 1/2	5/16	4			90624	90524
5/16	0.090	3/4	2 1/2	5/16	4			90724	90624

P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001

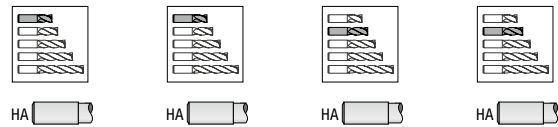
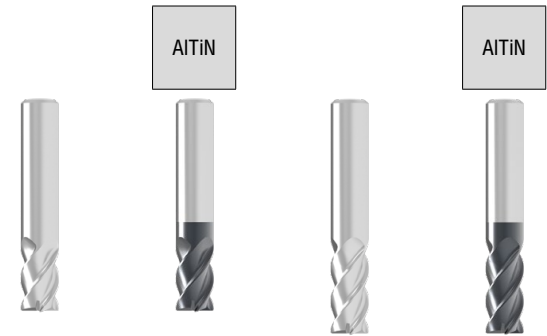
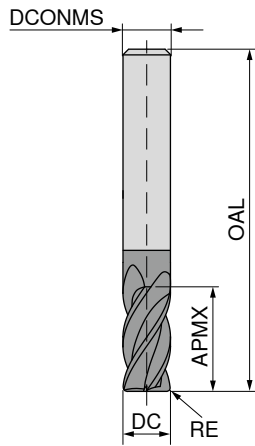
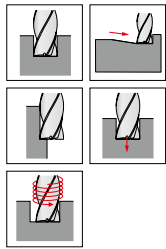


DC	RE	APMX	OAL	DCONMS	ZEFP	59 072 ...	59 073 ...	59 072 ...	59 073 ...
inch	inch	inch	inch	inch					
5/16	0.125	3/4	2 1/2	5/16	4			90124	
3/8	0.010	5/8	2	3/8	4	90017	90017		
3/8	0.015	5/8	2	3/8	4	90217	90217		
3/8	0.020	5/8	2	3/8	4	90317	90317		
3/8	0.030	5/8	2	3/8	4	90417	90417		
3/8	0.045	5/8	2	3/8	4	90517	90517		
3/8	0.060	5/8	2	3/8	4	90617	90617		
3/8	0.090	5/8	2	3/8	4	90717	90717		
3/8	0.125	5/8	2	3/8	4	90117	90117		
3/8	0.010	7/8	2 1/2	3/8	4			90023	90023
3/8	0.015	7/8	2 1/2	3/8	4			90223	90223
3/8	0.020	7/8	2 1/2	3/8	4			90323	90323
3/8	0.030	7/8	2 1/2	3/8	4			90423	90423
3/8	0.045	7/8	2 1/2	3/8	4			90523	90523
3/8	0.060	7/8	2 1/2	3/8	4			90623	90623
3/8	0.090	7/8	2 1/2	3/8	4			90723	90723
3/8	0.125	7/8	2 1/2	3/8	4			90123	90123
1/2	0.010	5/8	2 1/2	1/2	4	90013	90013		
1/2	0.015	5/8	2 1/2	1/2	4	90213	90213		
1/2	0.020	5/8	2 1/2	1/2	4	90313	90313		
1/2	0.030	5/8	2 1/2	1/2	4	90413	90413		
1/2	0.045	5/8	2 1/2	1/2	4	90513	90513		
1/2	0.060	5/8	2 1/2	1/2	4	90613	90613		
1/2	0.090	5/8	2 1/2	1/2	4	90713	90713		
1/2	0.125	5/8	2 1/2	1/2	4	90113	90113		
1/2	0.010	1	3	1/2	4			90020	90020
1/2	0.015	1	3	1/2	4			90220	90220
1/2	0.020	1	3	1/2	4			90320	90320
1/2	0.030	1	3	1/2	4			90420	90420
1/2	0.045	1	3	1/2	4			90520	90520
1/2	0.060	1	3	1/2	4			90620	90620
1/2	0.090	1	3	1/2	4			90720	90720
1/2	0.125	1	3	1/2	4			90120	90120
1/2	0.010	1	4	1/2	4			93720	93720
1/2	0.015	1	4	1/2	4			93920	93920
1/2	0.020	1	4	1/2	4			94020	94020
1/2	0.030	1	4	1/2	4			94120	94120
1/2	0.045	1	4	1/2	4			94220	94220
1/2	0.060	1	4	1/2	4			94320	94320
1/2	0.090	1	4	1/2	4			94420	94420
P						●	●	●	●
M						●	●	●	●
K						●	●	●	●
N						●	●	●	●
S						●	●	●	●
H									
O									

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001

S644 **UN** $\lambda_s=38^\circ$
 $\nu_s=8^\circ$



59 072 ...	59 073 ...	59 072 ...	59 073 ...
		93820	93820
		90920	90920
		91020	91020
		91120	91120
		91220	91220
		91320	91320
		91420	91420
		90820	90820
		91620	91620
		91720	91720
		91820	91820
		91920	91920
		92020	92020
		91520	91520
		90118	90118
		90218	90218
		90318	90318
		90418	90418
		90018	90018

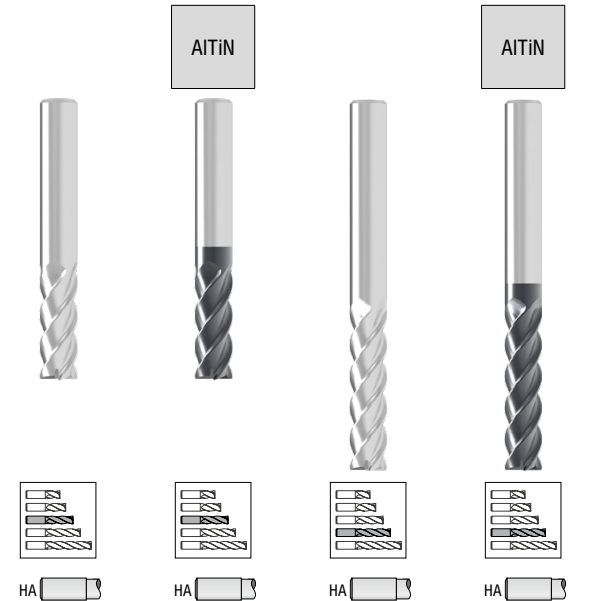
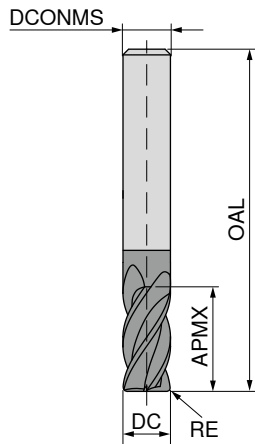
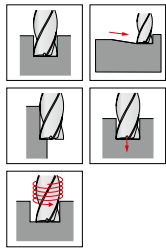
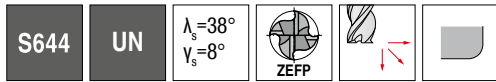
DC $+0.000/-0.002$ inch	RE inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP
1/2	0.125	1	4	1/2	4
5/8	0.015	1 1/4	3 1/2	5/8	4
5/8	0.020	1 1/4	3 1/2	5/8	4
5/8	0.030	1 1/4	3 1/2	5/8	4
5/8	0.045	1 1/4	3 1/2	5/8	4
5/8	0.060	1 1/4	3 1/2	5/8	4
5/8	0.090	1 1/4	3 1/2	5/8	4
5/8	0.125	1 1/4	3 1/2	5/8	4
3/4	0.020	1 1/2	4	3/4	4
3/4	0.030	1 1/2	4	3/4	4
3/4	0.045	1 1/2	4	3/4	4
3/4	0.060	1 1/2	4	3/4	4
3/4	0.090	1 1/2	4	3/4	4
3/4	0.125	1 1/2	4	3/4	4
1	0.030	1 3/4	4	1	4
1	0.045	1 3/4	4	1	4
1	0.060	1 3/4	4	1	4
1	0.090	1 3/4	4	1	4
1	0.125	1 3/4	4	1	4

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	•	•	•	•
S	•	•	•	•
H				
O				

→ v_c/f_z Page 110

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001

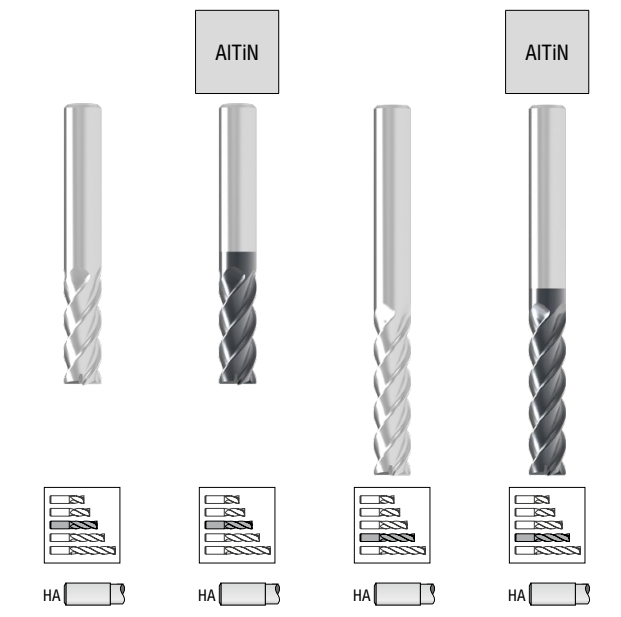
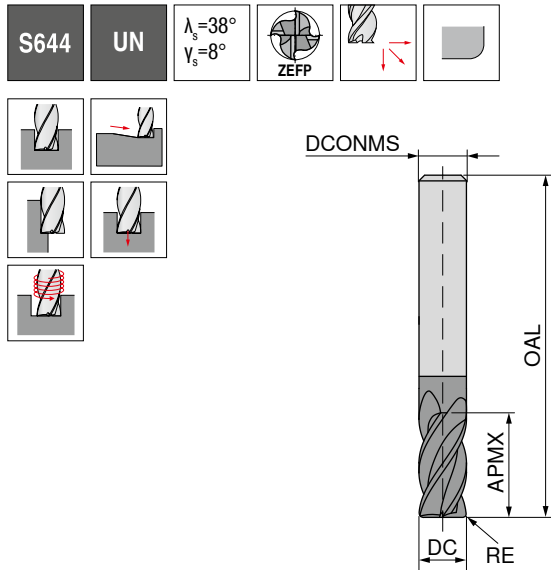


DC	RE	APMX	OAL	DCONMS	ZEFP	59 072 ...	59 073 ...	59 072 ...	59 073 ...
+0.000/-0.002				-0.0001 / -0.0004					
inch	inch	inch	inch	inch					
1/8	0.010	1/2	1 1/2	1/8	4			90040	90040
1/8	0.015	1/2	1 1/2	1/8	4			90140	90140
1/8	0.020	1/2	1 1/2	1/8	4			90240	90240
1/8	0.030	1/2	1 1/2	1/8	4			90340	90340
3/16	0.010	5/8	2	3/16	4	90033	90033		
3/16	0.015	5/8	2	3/16	4	90133	90133		
3/16	0.020	5/8	2	3/16	4	90233	90233		
3/16	0.030	5/8	2	3/16	4	90333	90333		
3/16	0.045	5/8	2	3/16	4	90433	90433		
3/16	0.060	5/8	2	3/16	4	90533	90533		
3/16	0.010	1	4	3/16	4			90053	90153
3/16	0.015	1	4	3/16	4			90153	90253
3/16	0.020	1	4	3/16	4			90253	90353
3/16	0.030	1	4	3/16	4			90353	90453
3/16	0.045	1	4	3/16	4			90453	90553
3/16	0.060	1	4	3/16	4			90553	90653
1/4	0.010	1	4	1/4	4	91840	91840		
1/4	0.015	1	4	1/4	4	91940	91940		
1/4	0.020	1	4	1/4	4	92040	92040		
1/4	0.030	1	4	1/4	4	92140	92140		
1/4	0.045	1	4	1/4	4	92240	92240		
1/4	0.060	1	4	1/4	4	92340	92340		
1/4	0.090	1	4	1/4	4	92440	92440		
1/4	0.010	1 1/8	3	1/4	4			90045	90045
1/4	0.015	1 1/8	3	1/4	4			90145	90145
1/4	0.020	1 1/8	3	1/4	4			90245	90245
1/4	0.030	1 1/8	3	1/4	4			90345	90345
1/4	0.045	1 1/8	3	1/4	4			90445	90445
1/4	0.060	1 1/8	3	1/4	4			90545	90545
1/4	0.090	1 1/8	3	1/4	4			90645	90645
5/16	0.010	1	4	5/16	4	90032	90032		
5/16	0.015	1	4	5/16	4	90232	90232		
5/16	0.020	1	4	5/16	4	90332	90332		
5/16	0.030	1	4	5/16	4	90432	90432		
5/16	0.045	1	4	5/16	4	90532	90532		
5/16	0.060	1	4	5/16	4	90632	90632		
5/16	0.090	1	4	5/16	4	90732	90732		
5/16	0.125	1	4	5/16	4	90132	90132		
5/16	0.010	1 1/8	3	5/16	4	90036	90036		
5/16	0.015	1 1/8	3	5/16	4	90236	90236		

P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

End milling cutter with corner radius

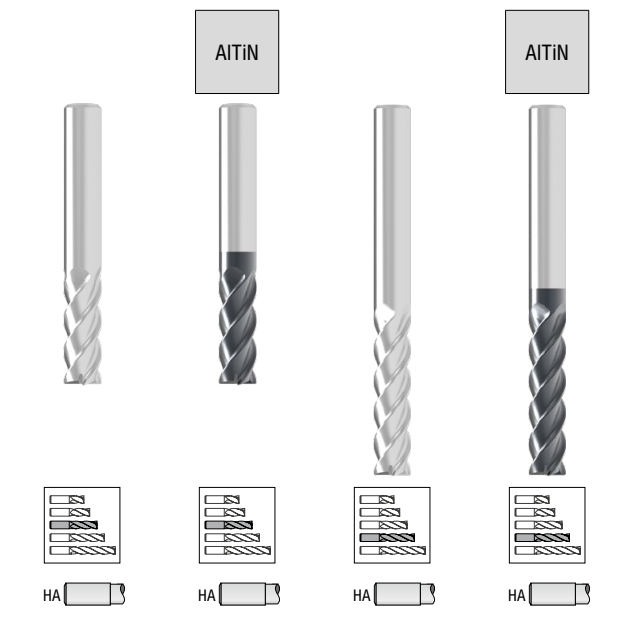
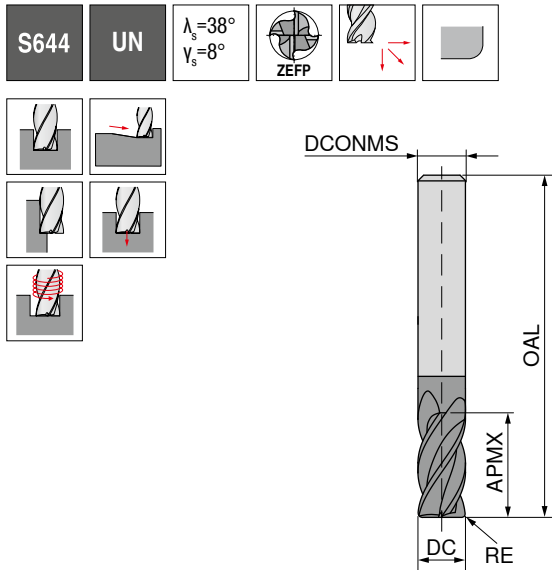
▲ Radius accuracy: +/- 0.001



DC	RE	APMX	OAL	DCONMS	ZEFP	59 072 ...	59 073 ...	59 072 ...	59 073 ...
inch	inch	inch	inch	inch					
5/16	0.020	1 1/8	3	5/16	4	90336	90336		
5/16	0.030	1 1/8	3	5/16	4	90436	90436		
5/16	0.045	1 1/8	3	5/16	4	90536	90536		
5/16	0.060	1 1/8	3	5/16	4	90636	90636		
5/16	0.090	1 1/8	3	5/16	4	90736	90736		
5/16	0.125	1 1/8	3	5/16	4	90136	90136		
5/16	0.010	1 1/2	6	5/16	4			90748	90748
5/16	0.015	1 1/2	6	5/16	4			90948	90948
5/16	0.020	1 1/2	6	5/16	4			91048	91048
5/16	0.030	1 1/2	6	5/16	4			91148	91148
5/16	0.045	1 1/2	6	5/16	4			91248	91248
5/16	0.060	1 1/2	6	5/16	4			91348	91348
5/16	0.090	1 1/2	6	5/16	4			91448	91448
5/16	0.125	1 1/2	6	5/16	4			90848	90848
3/8	0.010	1	4	3/8	4	90027	90027		
3/8	0.015	1	4	3/8	4	90227	90227		
3/8	0.020	1	4	3/8	4	90327	90327		
3/8	0.030	1	4	3/8	4	90427	90427		
3/8	0.045	1	4	3/8	4	90527	90527		
3/8	0.060	1	4	3/8	4	90627	90627		
3/8	0.090	1	4	3/8	4	90727	90727		
3/8	0.125	1	4	3/8	4	90127	90127		
3/8	0.010	1 1/8	3	3/8	4	90730	90730		
3/8	0.015	1 1/8	3	3/8	4	90930	90930		
3/8	0.020	1 1/8	3	3/8	4	91030	91030		
3/8	0.030	1 1/8	3	3/8	4	91130	91130		
3/8	0.045	1 1/8	3	3/8	4	91230	91230		
3/8	0.060	1 1/8	3	3/8	4	91330	91330		
3/8	0.090	1 1/8	3	3/8	4	91430	91430		
3/8	0.125	1 1/8	3	3/8	4	90830	90830		
3/8	0.010	1 1/2	6	3/8	4			92540	92540
3/8	0.015	1 1/2	6	3/8	4			92740	92740
3/8	0.020	1 1/2	6	3/8	4			92840	92840
3/8	0.030	1 1/2	6	3/8	4			92940	92940
3/8	0.045	1 1/2	6	3/8	4			93040	93040
3/8	0.060	1 1/2	6	3/8	4			93140	93140
3/8	0.090	1 1/2	6	3/8	4			93240	93240
3/8	0.125	1 1/2	6	3/8	4			92640	92640
3/8	0.010	1 3/4	4	3/8	4			90047	90047
3/8	0.015	1 3/4	4	3/8	4			90247	90247
P						●	●	●	●
M						●	●	●	●
K						●	●	●	●
N						●	●	●	●
S						●	●	●	●
H									
O									

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001



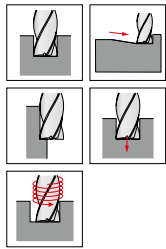
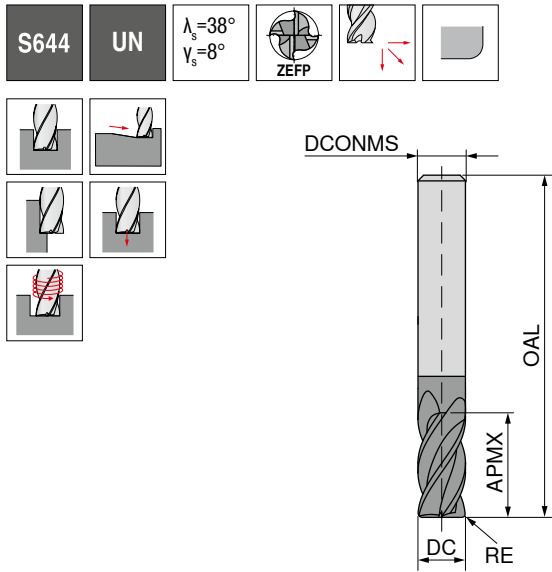
59 072 ... 59 073 ... 59 072 ... 59 073 ...

DC	RE	APMX	OAL	DCONMS	ZEFP				
inch	inch	inch	inch	inch					
3/8	0.020	1 3/4	4	3/8	4				
3/8	0.030	1 3/4	4	3/8	4				
3/8	0.045	1 3/4	4	3/8	4				
3/8	0.060	1 3/4	4	3/8	4				
3/8	0.090	1 3/4	4	3/8	4				
3/8	0.125	1 3/4	4	3/8	4				
1/2	0.010	1 1/2	6	1/2	4				
1/2	0.015	1 1/2	6	1/2	4	92630	92630		
1/2	0.020	1 1/2	6	1/2	4	92830	92830		
1/2	0.030	1 1/2	6	1/2	4	92930	92930		
1/2	0.045	1 1/2	6	1/2	4	93030	93030		
1/2	0.060	1 1/2	6	1/2	4	93130	93130		
1/2	0.090	1 1/2	6	1/2	4	93230	93230		
1/2	0.125	1 1/2	6	1/2	4	93330	93330		
1/2	0.010	2	4	1/2	4	92730	92730		
1/2	0.015	2	4	1/2	4			90440	90440
1/2	0.020	2	4	1/2	4			90640	90640
1/2	0.030	2	4	1/2	4			90740	90740
1/2	0.045	2	4	1/2	4			90840	90840
1/2	0.060	2	4	1/2	4			90940	90940
1/2	0.090	2	4	1/2	4			91040	91040
1/2	0.125	2	4	1/2	4			91140	91140
5/8	0.015	2	6	5/8	4			90540	90540
5/8	0.020	2	6	5/8	4	90932	90932		
5/8	0.030	2	6	5/8	4	91032	91032		
5/8	0.045	2	6	5/8	4	91132	91132		
5/8	0.060	2	6	5/8	4	91232	91232		
5/8	0.090	2	6	5/8	4	91332	91332		
5/8	0.125	2	6	5/8	4	91432	91432		
5/8	0.015	2 1/8	4 5/8	5/8	4	90832	90832		
5/8	0.020	2 1/8	4 5/8	5/8	4			90134	90134
5/8	0.030	2 1/8	4 5/8	5/8	4			90234	90234
5/8	0.045	2 1/8	4 5/8	5/8	4			90334	90334
5/8	0.060	2 1/8	4 5/8	5/8	4			90434	90434
5/8	0.090	2 1/8	4 5/8	5/8	4			90534	90534
5/8	0.125	2 1/8	4 5/8	5/8	4			90634	90634
3/4	0.020	2	6	3/4	4			90034	90034
3/4	0.030	2	6	3/4	4	90927	90927		
3/4	0.045	2	6	3/4	4	91027	91027		
3/4	0.060	2	6	3/4	4	91127	91127		
3/4	0.060	2	6	3/4	4	91227	91227		

P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001



	AITiN		AITiN	
	59 072 ...	59 073 ...	59 072 ...	59 073 ...
91327	91327			
90827	90827			
			91630	91630
			91730	91730
			91830	91830
			91930	91930
			92030	92030
			91530	91530
93320	93320			
93420	93420			
93520	93520			
93620	93620			
93220	93220			
			90923	90923
			91023	91023
			91123	91123
			91223	91223
			90823	90823

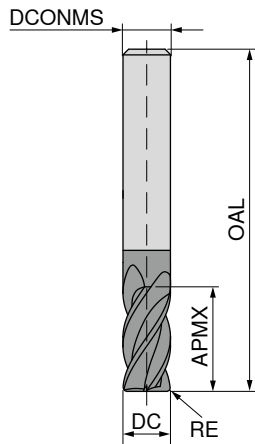
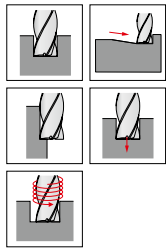
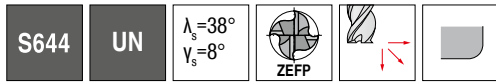
DC	RE	APMX	OAL	DCONMS	ZEFP
inch	inch	inch	inch	inch	
3/4	0.090	2	6	3/4	4
3/4	0.125	2	6	3/4	4
3/4	0.020	2 1/4	5	3/4	4
3/4	0.030	2 1/4	5	3/4	4
3/4	0.045	2 1/4	5	3/4	4
3/4	0.060	2 1/4	5	3/4	4
3/4	0.090	2 1/4	5	3/4	4
3/4	0.125	2 1/4	5	3/4	4
1	0.030	2	6	1	4
1	0.045	2	6	1	4
1	0.060	2	6	1	4
1	0.090	2	6	1	4
1	0.125	2	6	1	4
1	0.030	2 1/4	5	1	4
1	0.045	2 1/4	5	1	4
1	0.060	2 1/4	5	1	4
1	0.090	2 1/4	5	1	4
1	0.125	2 1/4	5	1	4

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	•	•	•	•
S	•	•	•	•
H				
O				

→ v_c/f_z Page 110

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001






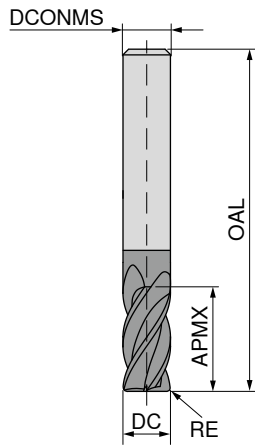
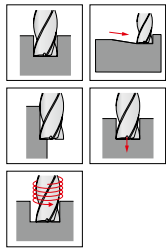
DC	RE	APMX	OAL	DCONMS	ZEPF	59 072 ...	59 073 ...
<small>+0.000/-0.002</small>				<small>-0.0001 / -0.0004</small>			
inch	inch	inch	inch	inch			
1/8	0.010	1	3	1/8	4	90080	90180
1/8	0.015	1	3	1/8	4	90180	90280
1/8	0.020	1	3	1/8	4	90280	90380
1/8	0.030	1	3	1/8	4	90380	90480
1/8	0.045	1	3	1/8	4	90480	90580
3/16	0.010	1 1/8	3	3/16	4	90060	90160
3/16	0.015	1 1/8	3	3/16	4	90160	90260
3/16	0.020	1 1/8	3	3/16	4	90260	90360
3/16	0.030	1 1/8	3	3/16	4	90360	90460
3/16	0.045	1 1/8	3	3/16	4	90460	90560
3/16	0.060	1 1/8	3	3/16	4	90560	90660
1/4	0.010	1 1/2	4	1/4	4	90660	90760
1/4	0.015	1 1/2	4	1/4	4	90760	90860
1/4	0.020	1 1/2	4	1/4	4	90860	90960
1/4	0.030	1 1/2	4	1/4	4	90960	91060
1/4	0.045	1 1/2	4	1/4	4	91060	91160
1/4	0.060	1 1/2	4	1/4	4	91160	91260
1/4	0.090	1 1/2	4	1/4	4	91260	91360
1/4	0.010	1 1/2	6	1/4	4	92160	92260
1/4	0.015	1 1/2	6	1/4	4	92260	92360
1/4	0.020	1 1/2	6	1/4	4	92360	92460
1/4	0.030	1 1/2	6	1/4	4	92460	92560
1/4	0.045	1 1/2	6	1/4	4	92560	92660
1/4	0.060	1 1/2	6	1/4	4	92660	92760
1/4	0.090	1 1/2	6	1/4	4	92760	92860
5/16	0.010	1 5/8	4	5/16	4	90052	90152
5/16	0.015	1 5/8	4	5/16	4	90252	90352
5/16	0.020	1 5/8	4	5/16	4	90352	90452
5/16	0.030	1 5/8	4	5/16	4	90452	90552
5/16	0.045	1 5/8	4	5/16	4	90552	90652
5/16	0.060	1 5/8	4	5/16	4	90652	90752
5/16	0.090	1 5/8	4	5/16	4	90752	90852
5/16	0.125	1 5/8	4	5/16	4	90152	90252
3/8	0.010	3	6	3/8	4	90580	90680
3/8	0.015	3	6	3/8	4	90780	90880
3/8	0.020	3	6	3/8	4	90880	90980
3/8	0.030	3	6	3/8	4	90980	91080
3/8	0.045	3	6	3/8	4	91080	91180
3/8	0.060	3	6	3/8	4	91180	91280
3/8	0.090	3	6	3/8	4	91280	91380

P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H		
O		

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001

S644 **UN** $\lambda_s=38^\circ$ $\nu_s=8^\circ$   

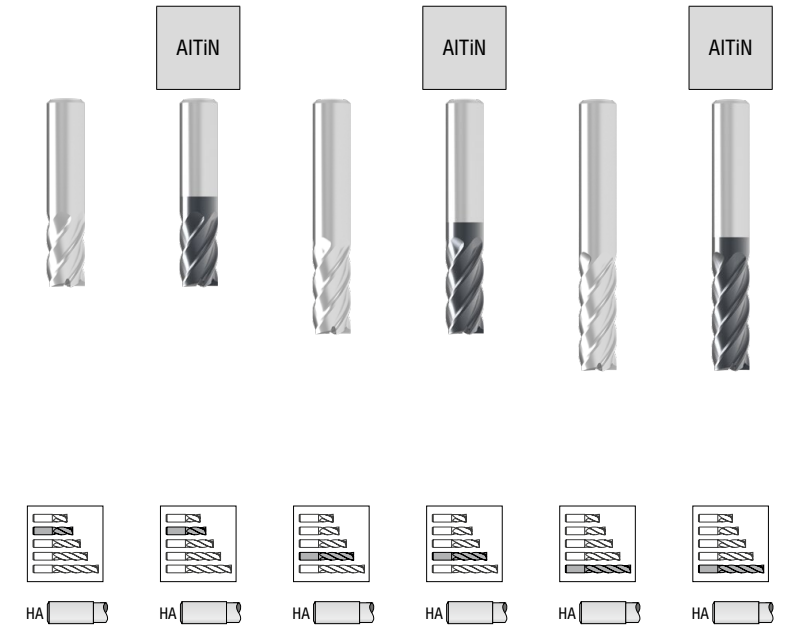
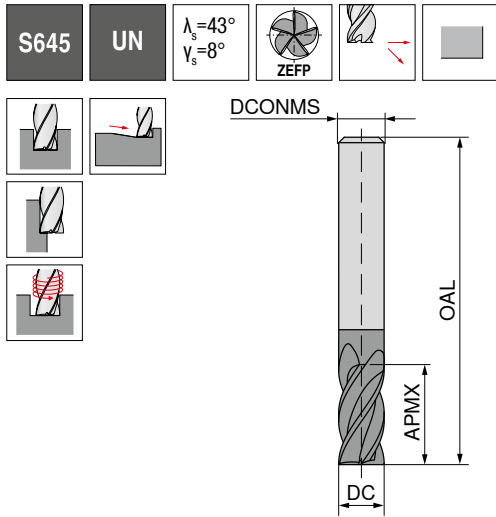


DC <small>+0.000/-0.002</small>	RE	APMX	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEFP	59 072 ...	59 073 ...
inch	inch	inch	inch	inch			
3/8	0.125	3	6	3/8	4	90680	90780
1/2	0.010	3	6	1/2	4	91360	91460
1/2	0.015	3	6	1/2	4	91560	91660
1/2	0.020	3	6	1/2	4	91660	91760
1/2	0.030	3	6	1/2	4	91760	91860
1/2	0.045	3	6	1/2	4	91860	91960
1/2	0.060	3	6	1/2	4	91960	92060
1/2	0.090	3	6	1/2	4	92060	92160
1/2	0.125	3	6	1/2	4	91460	91560
5/8	0.015	3	6	5/8	4	90148	90148
5/8	0.020	3	6	5/8	4	90248	90248
5/8	0.030	3	6	5/8	4	90348	90348
5/8	0.045	3	6	5/8	4	90448	90448
5/8	0.060	3	6	5/8	4	90548	90548
5/8	0.090	3	6	5/8	4	90648	90648
5/8	0.125	3	6	5/8	4	90048	90048
3/4	0.020	3	6	3/4	4	91340	91340
3/4	0.030	3	6	3/4	4	91440	91440
3/4	0.045	3	6	3/4	4	91540	91540
3/4	0.060	3	6	3/4	4	91640	91640
3/4	0.090	3	6	3/4	4	91740	91740
3/4	0.125	3	6	3/4	4	91240	91240
1	0.030	3	6	1	4	92230	92230
1	0.045	3	6	1	4	92330	92330
1	0.060	3	6	1	4	92430	92430
1	0.090	3	6	1	4	92530	92530
1	0.125	3	6	1	4	92130	92130

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→ v_c/f_z Page 110

End milling cutter



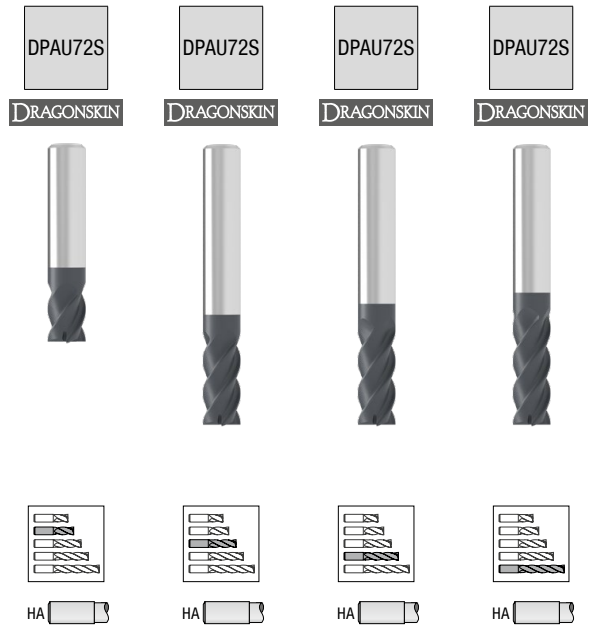
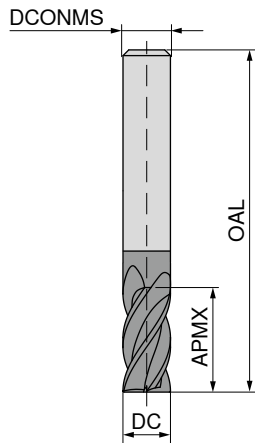
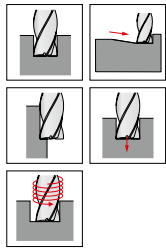
DC +0.0001/-0.002 inch	APMX inch	OAL inch	DCONMS -0.0001/-0.0004 inch	ZEFP	59 074 ...	59 075 ...	59 074 ...	59 075 ...	59 074 ...	59 075 ...
1/8	1/4	1 1/2	1/8	5	12520	12520				
1/8	1/2	1 1/2	1/8	5			12540	12540		
5/32	5/16	2	3/16	5	15620	15620				
5/32	9/16	2	3/16	5			15636	15636		
3/16	5/16	2	3/16	5	18817	18817				
3/16	9/16	2	3/16	5			18830	18830		
7/32	3/8	2	1/4	5	21917	21917				
7/32	3/4	2 1/2	1/4	5			21934	21934		
1/4	3/8	2	1/4	5	25015	25015				
1/4	3/4	2 1/2	1/4	5			25030	25030		
1/4	1 1/4	4	1/4	5					25050	25050
5/16	7/16	2	5/16	5	31314	31314				
5/16	13/16	2 1/2	5/16	5			31326	31326		
3/8	1/2	2	3/8	5	37513	37513				
3/8	1	2 1/2	3/8	5			37527	37527		
3/8	1 1/2	4	3/8	5					37540	37540
1/2	5/8	2 1/2	1/2	5	50013	50013				
1/2	1 1/4	3	1/2	5			50025	50025		
1/2	2	4	1/2	5					50040	50040
5/8	3/4	3	5/8	5	62512	62512				
5/8	1 5/8	3 1/2	5/8	5			62526	62526		
5/8	2 1/2	5	5/8	5					62540	62540
3/4	1	3	3/4	5	75013	75013				
3/4	1 5/8	4	3/4	5			75022	75022		
3/4	3 1/4	6	3/4	5					75043	75043
1	1 1/4	3	1	5	99913	99913				
1	2	4	1	5			99920	99920		
1	3 1/4	6	1	5					99933	99933

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→ v_c/f_z Page 111

End milling cutter

P007
UN
 $\lambda_s = 35^\circ$
 $\nu_s = 38^\circ$
 $\nu_s = 9^\circ$
ZEPF
HPC

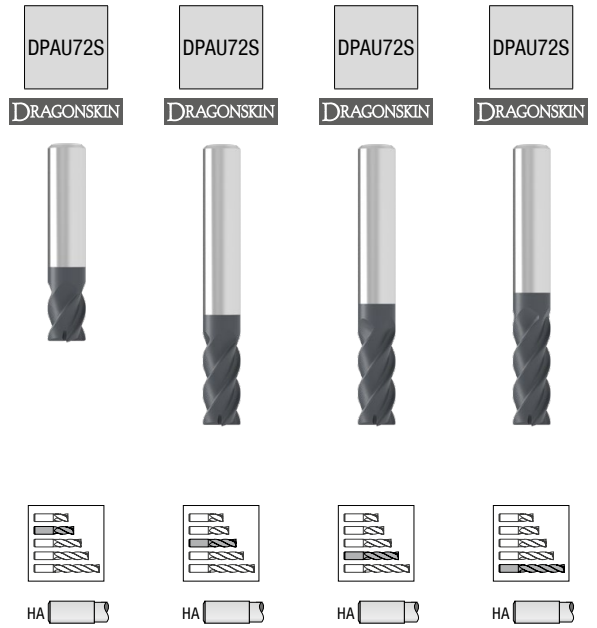
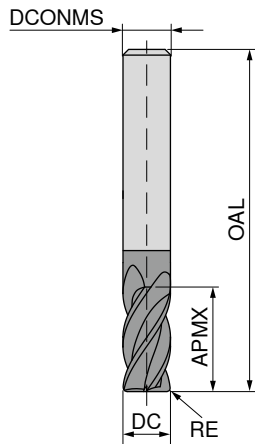
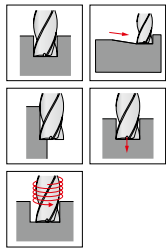
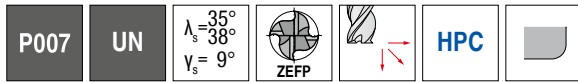


DC	APMX	OAL	DCONMS	ZEPF	59 002 ...	59 002 ...	59 002 ...	59 002 ...
<small>+0.0001/-0.002</small>	<small>inch</small>	<small>inch</small>	<small>-0.0001 / -0.0004</small>					
1/8	1/4	1 1/2	1/8	4	12520			
1/8	1/2	2 1/2	1/8	4				12640
3/16	5/16	2	3/16	4	18817			
3/16	5/8	2 1/2	3/16	4			18833	
1/4	3/8	2	1/4	4	25015			
1/4	1/2	2 1/2	1/4	4		25020		
1/4	3/4	2 1/2	1/4	4			25030	
1/4	1	3	1/4	4				25040
5/16	1/2	2	5/16	4	31316			
5/16	3/4	2 1/2	5/16	4		31324		
5/16	1 1/4	3	5/16	4			31340	
3/8	1/2	2	3/8	4	37513			
3/8	7/8	3	3/8	4		37523		
3/8	1	3	3/8	4			37527	
3/8	1 1/4	3	3/8	4				37533
1/2	5/8	2 1/2	1/2	4	50013			
1/2	1	3	1/2	4		50020		
1/2	1 1/4	3	1/2	4			50025	
1/2	1 5/8	4	1/2	4				50033
5/8	3/4	3	5/8	4	62512			
5/8	1 1/4	3 1/2	5/8	4		62520		
5/8	1 5/8	3 1/2	5/8	4			62526	
5/8	2	4	5/8	4				62532
5/8	3 1/4	6	5/8	4				62552
3/4	7/8	3	3/4	4	75012			
3/4	1 1/4	4	3/4	4		75017		
3/4	1 5/8	4	3/4	4			75022	
3/4	2 1/4	5	3/4	4				75030
3/4	3 1/4	6	3/4	4				75043
1	1 1/2	4	1	4	99915			
1	2	4 1/2	1	4		99920		
1	2 5/8	5	1	4			99926	
1	3	6	1	4				99930
1	4 1/4	7	1	4				99943
P					•	•	•	•
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→ v_c/f_z Page 112

End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$

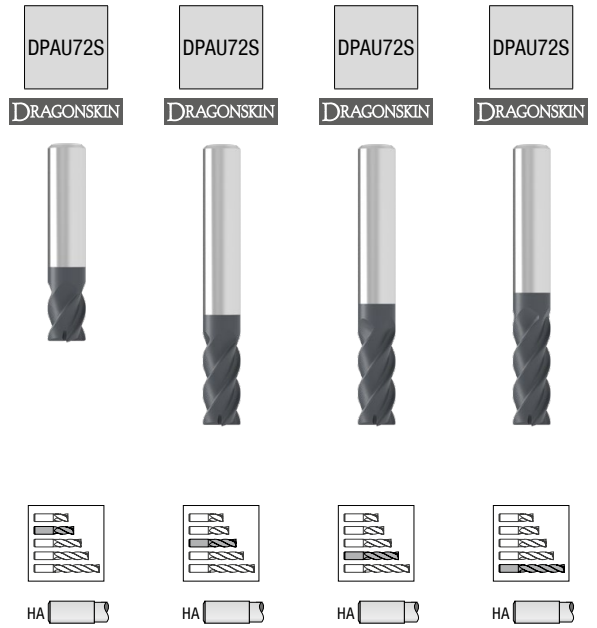
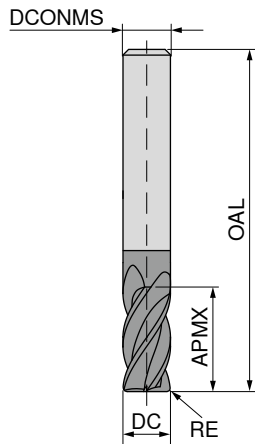
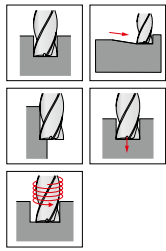
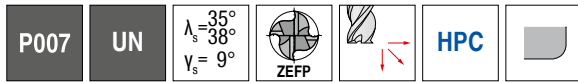


DC ±0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEFP	59 002 ...	59 002 ...	59 002 ...	59 002 ...
1/8	0.010	1/4	1 1/2	1/8	4	90020			
1/8	0.030	1/4	1 1/2	1/8	4	90120			
1/8	0.010	1/2	2 1/2	1/8	4			90040	
1/8	0.030	1/2	2 1/2	1/8	4				90140
3/16	0.010	5/16	2	3/16	4	90017			
3/16	0.030	5/16	2	3/16	4	90117			
3/16	0.010	5/8	2 1/2	3/16	4			90033	
3/16	0.030	5/8	2 1/2	3/16	4			90133	
1/4	0.020	3/8	2	1/4	4	90015			
1/4	0.030	3/8	2	1/4	4	90115			
1/4	0.060	3/8	2	1/4	4	90215			
1/4	0.020	1/2	2 1/2	1/4	4		90220		
1/4	0.030	1/2	2 1/2	1/4	4		90320		
1/4	0.060	1/2	2 1/2	1/4	4		90420		
1/4	0.020	3/4	2 1/2	1/4	4			90030	
1/4	0.030	3/4	2 1/2	1/4	4			90130	
1/4	0.060	3/4	2 1/2	1/4	4			90230	
1/4	0.020	1	3	1/4	4				90240
1/4	0.030	1	3	1/4	4				90340
1/4	0.060	1	3	1/4	4				90440
5/16	0.020	1/2	2	5/16	4	90016			
5/16	0.030	1/2	2	5/16	4	90116			
5/16	0.060	1/2	2	5/16	4	90216			
5/16	0.020	3/4	2 1/2	5/16	4		90024		
5/16	0.030	3/4	2 1/2	5/16	4		90124		
5/16	0.060	3/4	2 1/2	5/16	4		90224		
5/16	0.020	1 1/4	3	5/16	4			90540	
5/16	0.030	1 1/4	3	5/16	4			90640	
5/16	0.060	1 1/4	3	5/16	4			90740	
3/8	0.020	1/2	2	3/8	4	90013			
3/8	0.030	1/2	2	3/8	4	90113			
3/8	0.060	1/2	2	3/8	4	90213			
3/8	0.090	1/2	2	3/8	4	90313			
3/8	0.020	7/8	3	3/8	4		90023		
3/8	0.030	7/8	3	3/8	4		90123		
3/8	0.060	7/8	3	3/8	4		90223		
3/8	0.090	7/8	3	3/8	4		90323		
3/8	0.020	1	3	3/8	4			90027	

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End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$



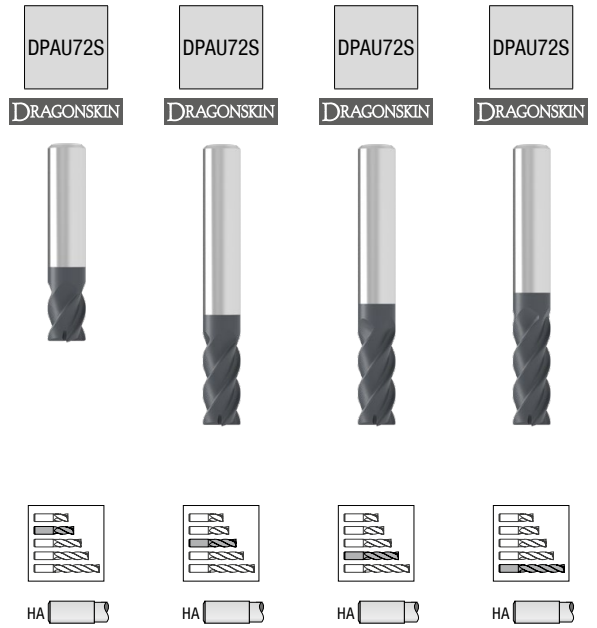
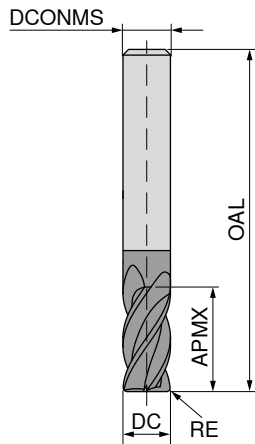
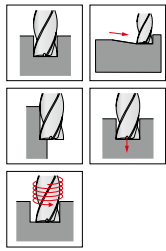
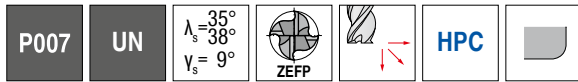
DC ±0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001/-0.0004 inch	ZFP
3/8	0.030	1	3	3/8	4
3/8	0.060	1	3	3/8	4
3/8	0.090	1	3	3/8	4
3/8	0.020	1 1/4	3	3/8	4
3/8	0.030	1 1/4	3	3/8	4
3/8	0.060	1 1/4	3	3/8	4
3/8	0.090	1 1/4	3	3/8	4
1/2	0.020	5/8	2 1/2	1/2	4
1/2	0.030	5/8	2 1/2	1/2	4
1/2	0.060	5/8	2 1/2	1/2	4
1/2	0.090	5/8	2 1/2	1/2	4
1/2	0.125	5/8	2 1/2	1/2	4
1/2	0.020	1	3	1/2	4
1/2	0.030	1	3	1/2	4
1/2	0.060	1	3	1/2	4
1/2	0.090	1	3	1/2	4
1/2	0.125	1	3	1/2	4
1/2	0.020	1 1/4	3	1/2	4
1/2	0.030	1 1/4	3	1/2	4
1/2	0.060	1 1/4	3	1/2	4
1/2	0.090	1 1/4	3	1/2	4
1/2	0.125	1 1/4	3	1/2	4
1/2	0.020	1 5/8	4	1/2	4
1/2	0.030	1 5/8	4	1/2	4
1/2	0.060	1 5/8	4	1/2	4
1/2	0.090	1 5/8	4	1/2	4
1/2	0.125	1 5/8	4	1/2	4
5/8	0.030	3/4	3	5/8	4
5/8	0.060	3/4	3	5/8	4
5/8	0.090	3/4	3	5/8	4
5/8	0.125	3/4	3	5/8	4
5/8	0.030	1 1/4	3 1/2	5/8	4
5/8	0.060	1 1/4	3 1/2	5/8	4
5/8	0.090	1 1/4	3 1/2	5/8	4
5/8	0.125	1 1/4	3 1/2	5/8	4
5/8	0.030	1 5/8	3 1/2	5/8	4
5/8	0.060	1 5/8	3 1/2	5/8	4
5/8	0.090	1 5/8	3 1/2	5/8	4

59 002 ...	59 002 ...	59 002 ...	59 002 ...
		90127	
		90227	
		90327	
			90233
			90333
			90433
			90533
90413			
90513			
90613			
90713			
90813			
	90520		
	90620		
	90720		
	90820		
	90920		
		90025	
		90125	
		90225	
		90325	
		90425	
			90633
			90733
			90833
			90933
			91033
90012			
90112			
90212			
90312			
	91020		
	91120		
	91220		
	91320		
		90026	
		90126	
		90226	

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End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$



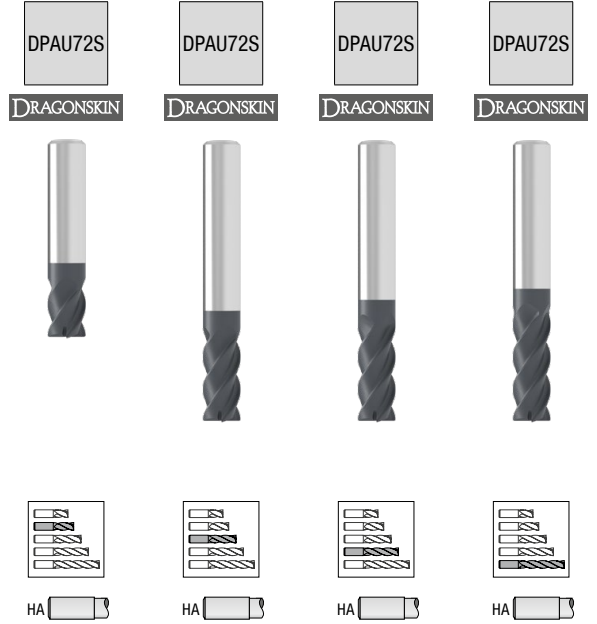
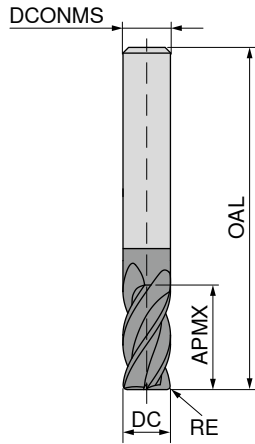
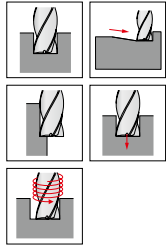
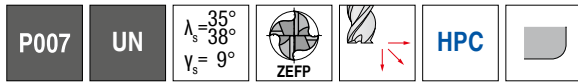
59 002 ... 59 002 ... 59 002 ... 59 002 ...

DC +0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEFP				
5/8	0.125	1 5/8	3 1/2	5/8	4				90326
5/8	0.030	2	4	5/8	4				90032
5/8	0.060	2	4	5/8	4				90132
5/8	0.090	2	4	5/8	4				90232
5/8	0.125	2	4	5/8	4				90332
5/8	0.030	3 1/4	6	5/8	4				90052
5/8	0.060	3 1/4	6	5/8	4				90152
5/8	0.090	3 1/4	6	5/8	4				90252
5/8	0.125	3 1/4	6	5/8	4				90352
3/4	0.030	7/8	3	3/8	4	90412			
3/4	0.060	7/8	3	3/8	4	90512			
3/4	0.090	7/8	3	3/8	4	90612			
3/4	0.125	7/8	3	3/8	4	90712			
3/4	0.190	7/8	3	3/8	4	90812			
3/4	0.250	7/8	3	3/8	4	90912			
3/4	0.030	1 1/4	4	3/4	4		90217		
3/4	0.060	1 1/4	4	3/4	4		90317		
3/4	0.090	1 1/4	4	3/4	4		90417		
3/4	0.125	1 1/4	4	3/4	4		90517		
3/4	0.190	1 1/4	4	3/4	4		90617		
3/4	0.250	1 1/4	4	3/4	4		90717		
3/4	0.030	1 5/8	4	3/4	4			90022	
3/4	0.060	1 5/8	4	3/4	4			90122	
3/4	0.090	1 5/8	4	3/4	4			90222	
3/4	0.125	1 5/8	4	3/4	4			90322	
3/4	0.190	1 5/8	4	3/4	4			90422	
3/4	0.250	1 5/8	4	3/4	4			90522	
3/4	0.030	2 1/4	5	3/4	4				90330
3/4	0.060	2 1/4	5	3/4	4				90430
3/4	0.090	2 1/4	5	3/4	4				90530
3/4	0.125	2 1/4	5	3/4	4				90630
3/4	0.190	2 1/4	5	3/4	4				90730
3/4	0.250	2 1/4	5	3/4	4				90830
3/4	0.030	3 1/4	6	3/4	4				90043
3/4	0.060	3 1/4	6	3/4	4				90143
3/4	0.090	3 1/4	6	3/4	4				90243
3/4	0.125	3 1/4	6	3/4	4				90343
3/4	0.190	3 1/4	6	3/4	4				90443

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End milling cutter with corner radius

▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$



DC +0.000/-0.002 inch	RE inch	APMX inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEFP	59 002 ...	59 002 ...	59 002 ...	59 002 ...
3/4	0.250	3 1/4	6	3/4	4				90543
1	0.030	1 1/2	4	1	4	90315			
1	0.060	1 1/2	4	1	4	90415			
1	0.090	1 1/2	4	1	4	90515			
1	0.125	1 1/2	4	1	4	90615			
1	0.190	1 1/2	4	1	4	90715			
1	0.250	1 1/2	4	1	4	90815			
1	0.030	2	4 1/2	1	4		91420		
1	0.060	2	4 1/2	1	4		91520		
1	0.090	2	4 1/2	1	4		91620		
1	0.125	2	4 1/2	1	4		91720		
1	0.190	2	4 1/2	1	4		91820		
1	0.250	2	4 1/2	1	4		91920		
1	0.030	2 5/8	5	1	4			90426	
1	0.060	2 5/8	5	1	4			90526	
1	0.090	2 5/8	5	1	4			90626	
1	0.125	2 5/8	5	1	4			90726	
1	0.190	2 5/8	5	1	4			90826	
1	0.250	2 5/8	5	1	4			90926	
1	0.030	3	6	1	4				90930
1	0.060	3	6	1	4				91030
1	0.090	3	6	1	4				91130
1	0.125	3	6	1	4				91230
1	0.190	3	6	1	4				91330
1	0.250	3	6	1	4				91430
1	0.030	4 1/4	7	1	4				90643
1	0.060	4 1/4	7	1	4				90743
1	0.090	4 1/4	7	1	4				90843
1	0.125	4 1/4	7	1	4				90943
1	0.190	4 1/4	7	1	4				91043
1	0.250	4 1/4	7	1	4				91143

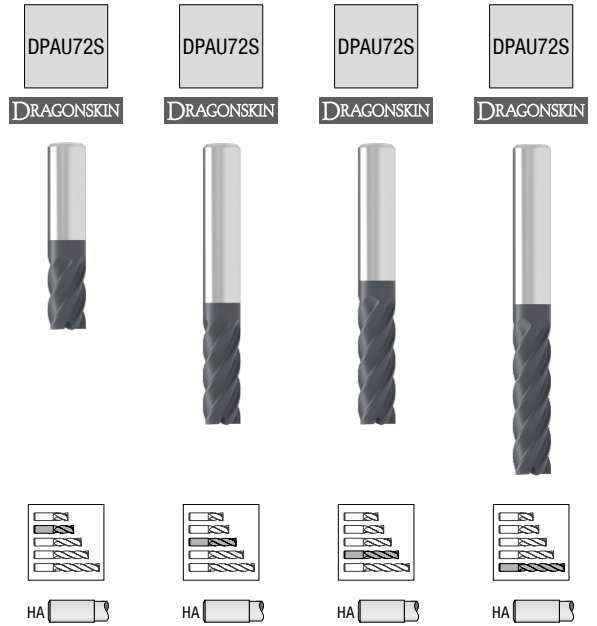
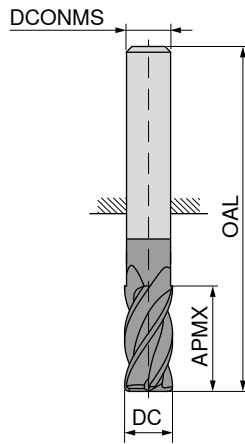
P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	•	•	•	•
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H				
O				

→ v_c/f_z Page 112

End milling cutter

▲ Cutting edges with irregular pitch

P556
UN
 $\lambda_s=38^\circ$
 $\nu_s=07^\circ$
ZEFP
HPC



DC +0.0001/-0.002 inch	APMX inch	OAL inch	DCONMS -0.0001/-0.0004 inch	ZEFP
1/4	3/8	2	1/4	5
1/4	1/2	2 1/2	1/4	5
1/4	3/4	2 1/2	1/4	5
1/4	1	3	1/4	5
1/4	1 1/4	3	1/4	5
3/8	1/2	2	3/8	5
3/8	1	3	3/8	5
3/8	1 1/4	3	3/8	5
3/8	1 1/2	3 1/2	3/8	5
1/2	5/8	2 1/2	1/2	5
1/2	1	3	1/2	5
1/2	1 1/4	3	1/2	5
1/2	1 5/8	4	1/2	5
1/2	2	4	1/2	5
5/8	3/4	3	5/8	5
5/8	1 1/4	3 1/2	5/8	5
5/8	1 5/8	3 1/2	5/8	5
5/8	2 1/4	4	5/8	5
5/8	2 1/2	5	5/8	5
3/4	1	3	3/4	5
3/4	1 5/8	4	3/4	5
3/4	2 1/4	5	3/4	5
3/4	2 3/4	5	3/4	5
3/4	3 1/4	6	3/4	5
1	1 1/4	4	1	5
1	2	4 1/2	1	5
1	2 5/8	5	1	5
1	3 1/4	6	1	5
1	4 1/4	7	1	5

59 006 ...	59 006 ...	59 006 ...	59 006 ...
25015			
	25020		
		25030	
			25040
			25050
37513			
	37527		
		37533	
			37540
50013			
	50020		
		50025	
			50033
			50040
62512			
	62520		
		62526	
			62536
			62540
75013			
	75022		
		75030	
			75037
			75043
99913			
	99920		
		99926	
			99933
			99943

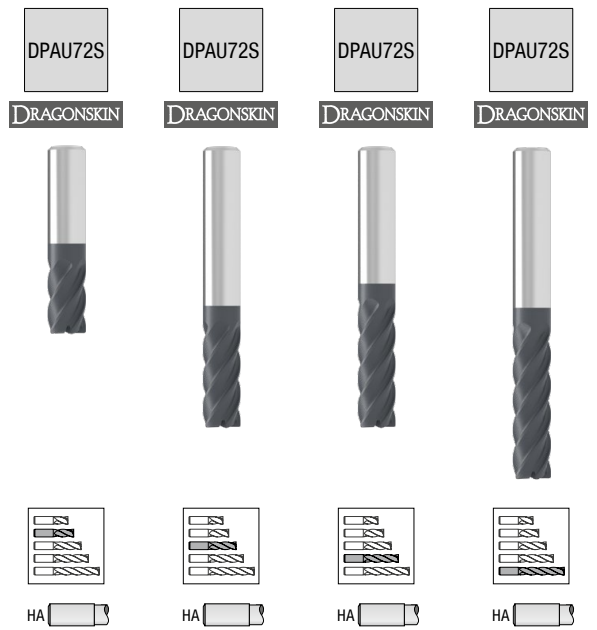
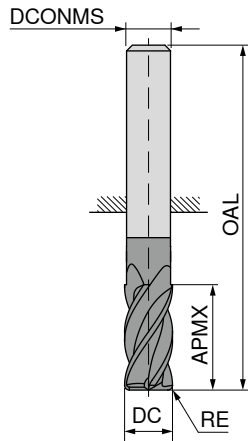
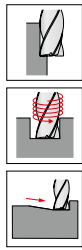
P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	•	•	•	•
S	•	•	•	•
H				
O				

→ v_c/f_z Page 113

End milling cutter with corner radius

- ▲ Cutting edges with irregular pitch
- ▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$

P556
UN
 $\lambda_s=38^\circ$
 $\nu_s=07^\circ$
ZEP
HPC



DC	RE	APMX	OAL	DCONMS	ZEP
$\pm 0.000/-0.002$				$-0.0001 / -0.0004$	
inch	inch	inch	inch	inch	
1/4	0.015	3/8	2	1/4	5
1/4	0.030	3/8	2	1/4	5
1/4	0.060	3/8	2	1/4	5
1/4	0.015	1/2	2 1/2	1/4	5
1/4	0.030	1/2	2 1/2	1/4	5
1/4	0.060	1/2	2 1/2	1/4	5
1/4	0.015	3/4	2 1/2	1/4	5
1/4	0.030	3/4	2 1/2	1/4	5
1/4	0.060	3/4	2 1/2	1/4	5
1/4	0.015	1	3	1/4	5
1/4	0.030	1	3	1/4	5
1/4	0.060	1	3	1/4	5
1/4	0.015	1 1/4	3	1/4	5
1/4	0.030	1 1/4	3	1/4	5
1/4	0.060	1 1/4	3	1/4	5
3/8	0.015	1/2	2	3/8	5
3/8	0.030	1/2	2	3/8	5
3/8	0.060	1/2	2	3/8	5
3/8	0.090	1/2	2	3/8	5
3/8	0.015	1	3	3/8	5
3/8	0.030	1	3	3/8	5
3/8	0.060	1	3	3/8	5
3/8	0.090	1	3	3/8	5
3/8	0.015	1 1/4	3	3/8	5
3/8	0.030	1 1/4	3	3/8	5
3/8	0.060	1 1/4	3	3/8	5
3/8	0.090	1 1/4	3	3/8	5
3/8	0.015	1 1/2	3 1/2	3/8	5
3/8	0.030	1 1/2	3 1/2	3/8	5
3/8	0.060	1 1/2	3 1/2	3/8	5
3/8	0.090	1 1/2	3 1/2	3/8	5
1/2	0.015	5/8	2 1/2	1/2	5
1/2	0.030	5/8	2 1/2	1/2	5
1/2	0.060	5/8	2 1/2	1/2	5
1/2	0.090	5/8	2 1/2	1/2	5
1/2	0.125	5/8	2 1/2	1/2	5
1/2	0.015	1	3	1/2	5

59 006 ...	59 006 ...	59 006 ...	59 006 ...
90015			
90115			
90215			
	90020		
	90120		
	90220		
		90030	
		90130	
		90230	
			90040
			90140
			90240
			90050
			90150
			90250
90013			
90113			
90213			
90313			
	90027		
	90127		
	90227		
	90327		
		90033	
		90133	
		90233	
		90333	
			90340
			90440
			90540
			90640
90413			
90513			
90613			
90713			
90813			
	90320		

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N				
S	•	•	•	•
H				
O				

End milling cutter with corner radius

- ▲ Cutting edges with irregular pitch
- ▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$

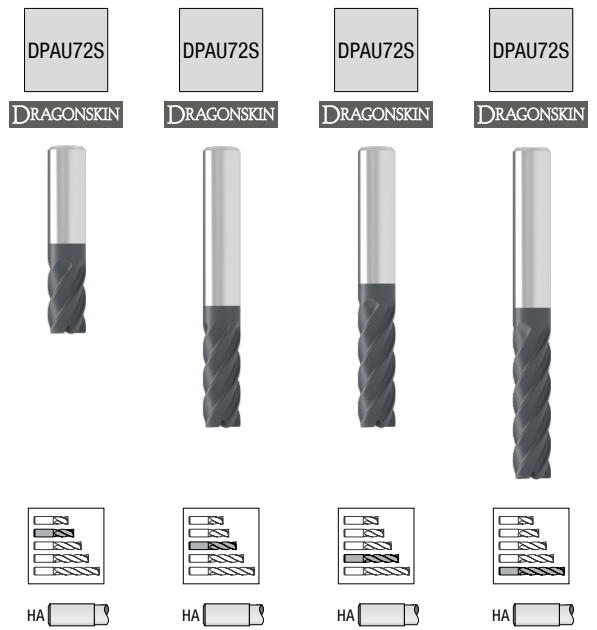
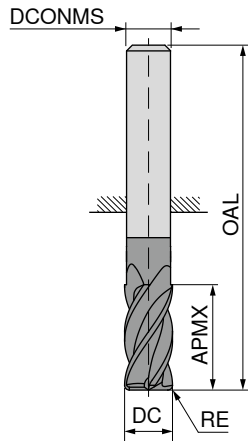
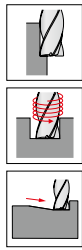
P556

UN

$\lambda_s = 38^\circ$
 $\nu_s = 07^\circ$

ZEFP

HPC



DC	RE	APMX	OAL	DCONMS	ZEFP
<small>+0.000/-0.002</small>				<small>-0.0001 / -0.0004</small>	
inch	inch	inch	inch	inch	
1/2	0.030	1	3	1/2	5
1/2	0.060	1	3	1/2	5
1/2	0.090	1	3	1/2	5
1/2	0.125	1	3	1/2	5
1/2	0.015	1 1/4	3	1/2	5
1/2	0.030	1 1/4	3	1/2	5
1/2	0.060	1 1/4	3	1/2	5
1/2	0.090	1 1/4	3	1/2	5
1/2	0.125	1 1/4	3	1/2	5
1/2	0.015	1 5/8	4	1/2	5
1/2	0.030	1 5/8	4	1/2	5
1/2	0.060	1 5/8	4	1/2	5
1/2	0.090	1 5/8	4	1/2	5
1/2	0.125	1 5/8	4	1/2	5
1/2	0.015	2	4	1/2	5
1/2	0.030	2	4	1/2	5
1/2	0.060	2	4	1/2	5
1/2	0.090	2	4	1/2	5
1/2	0.125	2	4	1/2	5
5/8	0.030	3/4	3	5/8	5
5/8	0.060	3/4	3	5/8	5
5/8	0.090	3/4	3	5/8	5
5/8	0.125	3/4	3	5/8	5
5/8	0.030	1 1/4	3 1/2	5/8	5
5/8	0.060	1 1/4	3 1/2	5/8	5
5/8	0.090	1 1/4	3 1/2	5/8	5
5/8	0.125	1 1/4	3 1/2	5/8	5
5/8	0.030	1 5/8	3 1/2	5/8	5
5/8	0.060	1 5/8	3 1/2	5/8	5
5/8	0.090	1 5/8	3 1/2	5/8	5
5/8	0.125	1 5/8	3 1/2	5/8	5
5/8	0.030	2 1/4	4	5/8	5
5/8	0.060	2 1/4	4	5/8	5
5/8	0.090	2 1/4	4	5/8	5
5/8	0.125	2 1/4	4	5/8	5
5/8	0.030	2 1/2	5	5/8	5
5/8	0.060	2 1/2	5	5/8	5

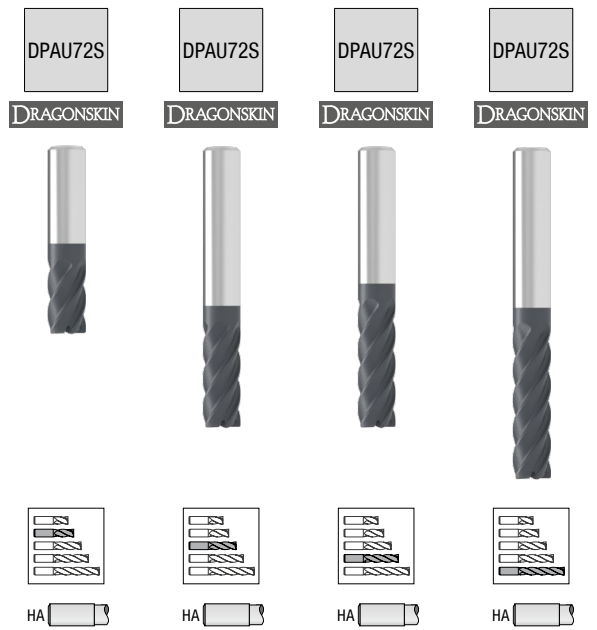
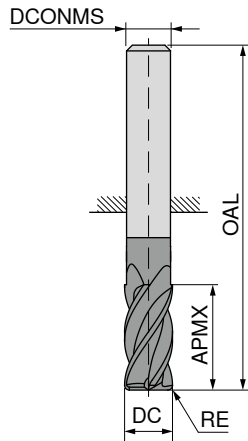
59 006 ...	59 006 ...	59 006 ...	59 006 ...
	90420		
	90520		
	90620		
	90720		
		90025	
		90125	
		90225	
		90325	
		90425	
			90433
			90533
			90633
			90733
			90833
			90740
			90840
			90940
			91040
			91140
90012			
90112			
90212			
90312			
	90820		
	90920		
	91020		
	91120		
		90026	
		90126	
		90226	
		90326	
			90036
			90136
			90236
			90336
			91240
			91340

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N				
S	•	•	•	•
H				
O				

End milling cutter with corner radius

- ▲ Cutting edges with irregular pitch
- ▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$

P556
UN
 $\lambda_s=38^\circ$
 $\nu_s=07^\circ$
ZEP
HPC



DC	RE	APMX	OAL	DCONMS	ZEP
<small>+0.000/-0.002</small>				<small>-0.0001 / -0.0004</small>	
inch	inch	inch	inch	inch	
5/8	0.090	2 1/2	5	5/8	5
5/8	0.125	2 1/2	5	5/8	5
3/4	0.030	1	3	3/4	5
3/4	0.060	1	3	3/4	5
3/4	0.090	1	3	3/4	5
3/4	0.125	1	3	3/4	5
3/4	0.190	1	3	3/4	5
3/4	0.250	1	3	3/4	5
3/4	0.030	1 5/8	4	3/4	5
3/4	0.060	1 5/8	4	3/4	5
3/4	0.090	1 5/8	4	3/4	5
3/4	0.125	1 5/8	4	3/4	5
3/4	0.190	1 5/8	4	3/4	5
3/4	0.250	1 5/8	4	3/4	5
3/4	0.030	2 1/4	5	3/4	5
3/4	0.060	2 1/4	5	3/4	5
3/4	0.090	2 1/4	5	3/4	5
3/4	0.125	2 1/4	5	3/4	5
3/4	0.190	2 1/4	5	3/4	5
3/4	0.250	2 1/4	5	3/4	5
3/4	0.030	2 3/4	5	3/4	5
3/4	0.060	2 3/4	5	3/4	5
3/4	0.090	2 3/4	5	3/4	5
3/4	0.125	2 3/4	5	3/4	5
3/4	0.190	2 3/4	5	3/4	5
3/4	0.250	2 3/4	5	3/4	5
3/4	0.030	3 1/4	6	3/4	5
3/4	0.060	3 1/4	6	3/4	5
3/4	0.090	3 1/4	6	3/4	5
3/4	0.125	3 1/4	6	3/4	5
3/4	0.190	3 1/4	6	3/4	5
3/4	0.250	3 1/4	6	3/4	5
1	0.030	1 1/4	4	1	5
1	0.060	1 1/4	4	1	5
1	0.090	1 1/4	4	1	5
1	0.125	1 1/4	4	1	5
1	0.190	1 1/4	4	1	5

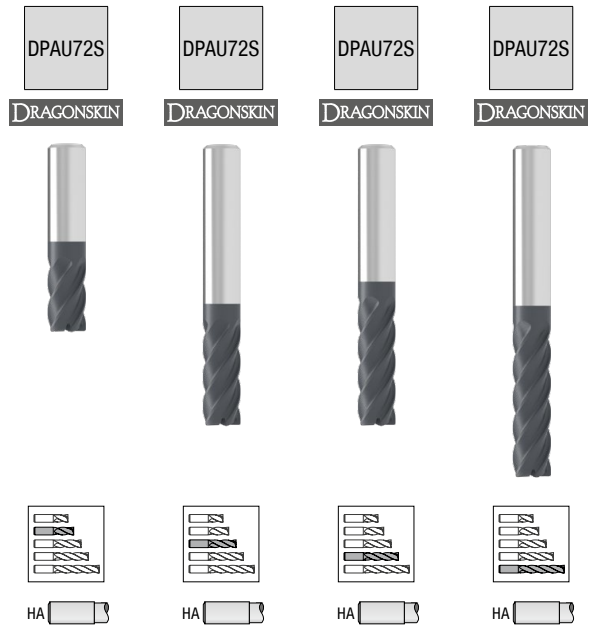
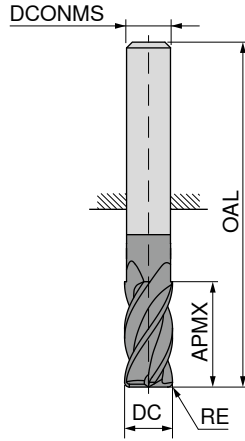
59 006 ...	59 006 ...	59 006 ...	59 006 ...
			91440
			91540
90913			
91013			
91113			
91213			
91313			
91413			
	90022		
	90122		
	90222		
	90322		
	90422		
	90522		
		90330	
		90430	
		90530	
		90630	
		90730	
		90830	
			90037
			90137
			90237
			90337
			90437
			90537
			90043
			90143
			90243
			90343
			90443
			90543
91513			
91613			
91713			
91813			
91913			

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N				
S	•	•	•	•
H				
O				

End milling cutter with corner radius

- ▲ Cutting edges with irregular pitch
- ▲ Radius accuracy: +/- 0.001 for $\varnothing \leq 0.060$
+/- 0.0015 for $\varnothing > 0.060$

P556
UN
 $\lambda_s=38^\circ$
 $\nu_s=07^\circ$
ZFP
HPC



DC <small>+0.000/-0.002</small>	RE	APMX	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZFP	59 006 ...	59 006 ...	59 006 ...	59 006 ...
inch	inch	inch	inch	inch					
1	0.250	1 1/4	4	1	5	92013			
1	0.030	2	4 1/2	1	5		91220		
1	0.060	2	4 1/2	1	5		91320		
1	0.090	2	4 1/2	1	5		91420		
1	0.125	2	4 1/2	1	5		91520		
1	0.190	2	4 1/2	1	5		91620		
1	0.250	2	4 1/2	1	5		91720		
1	0.030	2 5/8	5	1	5			90426	
1	0.060	2 5/8	5	1	5			90526	
1	0.090	2 5/8	5	1	5			90626	
1	0.125	2 5/8	5	1	5			90726	
1	0.190	2 5/8	5	1	5			90826	
1	0.250	2 5/8	5	1	5			90926	
1	0.030	3 1/4	6	1	5				90933
1	0.060	3 1/4	6	1	5				91033
1	0.090	3 1/4	6	1	5				91133
1	0.125	3 1/4	6	1	5				91233
1	0.190	3 1/4	6	1	5				91333
1	0.250	3 1/4	6	1	5				91433
1	0.030	4 1/4	7	1	5				90643
1	0.060	4 1/4	7	1	5				90743
1	0.090	4 1/4	7	1	5				90843
1	0.125	4 1/4	7	1	5				90943
1	0.190	4 1/4	7	1	5				91043
1	0.250	4 1/4	7	1	5				91143

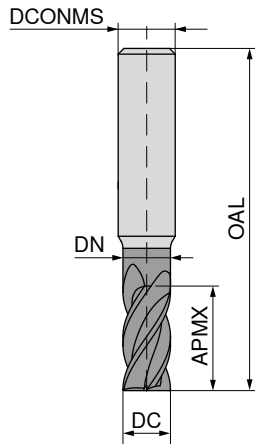
P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N				
S	•	•	•	•
H				
O				

→ v_c/f_z Page 113

End milling cutter

▲ Cutting edges with irregular pitch

P160
UN
 $\lambda_s=38^\circ$
 $\nu_s=10^\circ$
ZEFP
HPC



DC <small>+0.000/-0.002</small>	APMX	DN	LH	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEFP
inch	inch	inch	inch	inch	inch	
1/4	3/4			2 1/2	1/4	7
3/8	7/8			2 1/2	3/8	7
3/8	1 1/4			3	3/8	7
3/8	1/2	0.360	3 1/8	6	3/8	7
1/2	1 1/4			3	1/2	7
1/2	1 5/8			4	1/2	7
1/2	5/8	0.480	3 1/8	6	1/2	7
5/8	1 5/8			3 1/2	5/8	7
5/8	2 1/8			4	5/8	7
5/8	3/4	0.600	3 1/8	6	5/8	7
3/4	1 5/8			4	3/4	7
3/4	2 1/4			5	3/4	7
3/4	1	0.720	3 1/8	6	3/4	7
1	2			4	1	7
1	2 5/8			5	1	7

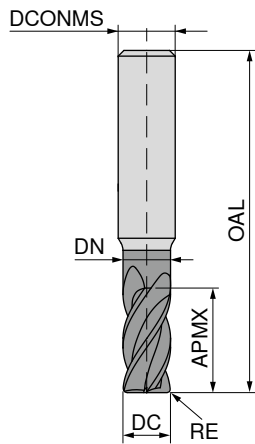
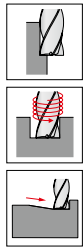
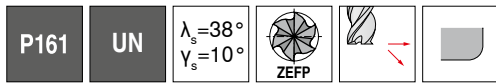
59 057 ...	59 057 ...	59 057 ...
25030		
37523		
	37533	
		37513
50025		
	50033	
		50013
62526		
	62534	
		62512
75022		
	75030	
		75013
99920		
		99926

P	•	•	•
M	•	•	•
K	•	•	•
N	•	•	•
S	•	•	•
H			
O			

→ v_c/f_z Page 114

End milling cutter with corner radius

▲ Cutting edges with irregular pitch



DC <small>+0.000/-0.002</small>	RE	APMX	DN	LH	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEFP
inch	inch	inch	inch	inch	inch	inch	
1/4	0.020	3/4			2 1/2	1/4	7
1/4	0.030	3/4			2 1/2	1/4	7
1/4	0.020	1 1/8			3	1/4	7
1/4	0.030	3/8	0.240	2 1/2	4	1/4	7
1/4	0.020	3/8	0.240	2 1/2	4	1/4	7
3/8	0.020	7/8			2 1/2	3/8	7
3/8	0.030	7/8			2 1/2	3/8	7
3/8	0.030	1 1/4			3	3/8	7
3/8	0.020	1 1/4			3	3/8	7
3/8	0.020	1/2	0.360	3 1/8	6	3/8	7
1/2	0.020	1 1/4			3	1/2	7
1/2	0.030	1 1/4			3	1/2	7
1/2	0.030	1 5/8			4	1/2	7
1/2	0.020	1 5/8			4	1/2	7
1/2	0.030	5/8	0.480	3 1/8	6	1/2	7
1/2	0.020	5/8	0.480	3 1/8	6	1/2	7
5/8	0.030	1 5/8			3 1/2	5/8	7
5/8	0.030	2 1/8			4	5/8	7
5/8	0.030	3/4	0.600	3 1/8	6	5/8	7
3/4	0.030	1 5/8			4	3/4	7
3/4	0.030	2 1/4			5	3/4	7
3/4	0.030	1	0.720	3 1/8	6	3/4	7
1	0.030	2 5/8			5	1	7




59 058 ...	59 058 ...	59 058 ...
25030		
90030		
	25045	
		90015
		25015
37523		
90023		
	90033	
	37533	
		37513
50025		
90025		
	90133	
	50033	
		90013
		50013
62526		
	62534	
		62512
75022		
	75030	
		75013
	99926	

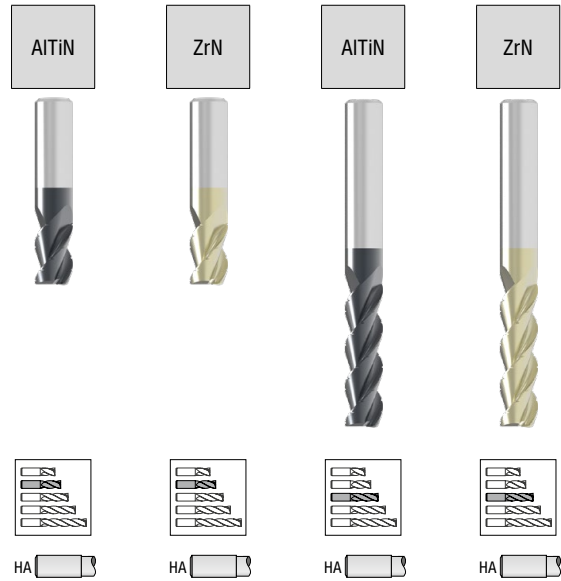
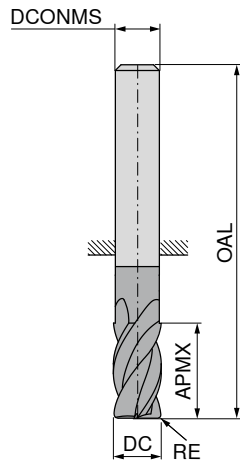
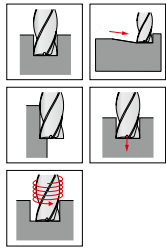
P	●	●	●
M	●	●	●
K	●	●	●
N	●	●	●
S	●	●	●
H			
O			

→ v_c/f_z Page 114

End milling cutter with corner radius

▲ with chip breaker

P119 **AL** $\lambda_s=40^\circ$ $\nu_s=15^\circ$   



	59 029 ...	59 030 ...	59 029 ...	59 030 ...
	12520	12520		
	15624	15624		
	18820	18820		
	21917	21917		
	25015	25015		
			25050	25050
	28118	28118		
	31316	31316		
	34418	34418		
	37517	37517		
			37540	37540
	43823	43823		
	50013	50013		
			50030	50030
	62514	62514		
			62528	62528
	75013	75013		
			75033	75033
			99928	99928

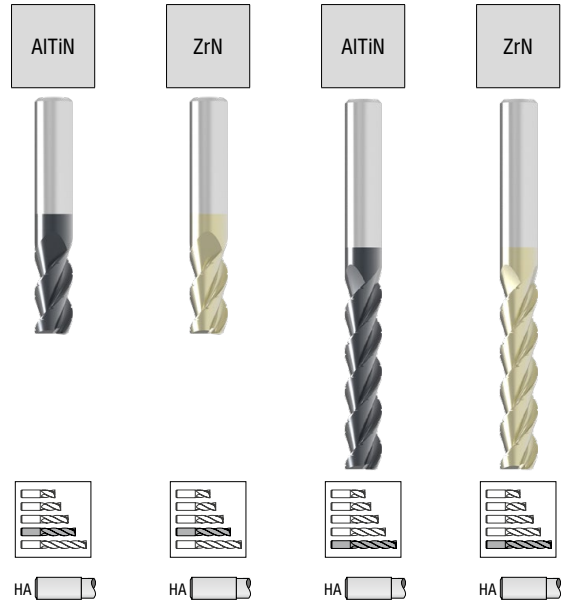
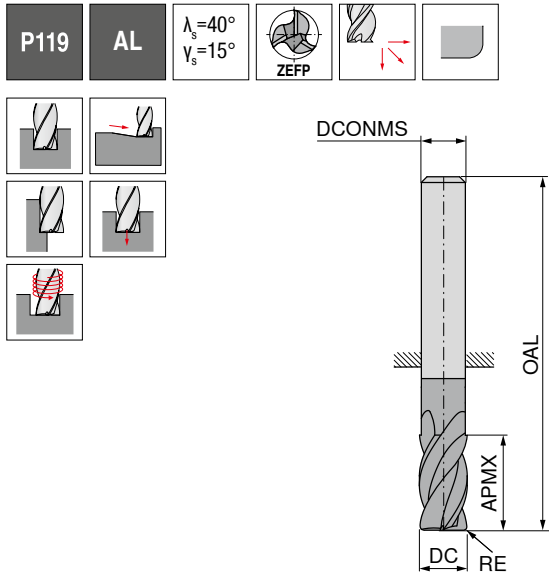
DC	RE	APMX	OAL	DCONMS	ZEFP
$\pm 0.000/-0.002$	± 0.001			$-0.0001 / -0.0004$	
inch	inch	inch	inch	inch	
1/8	0.010	1/4	1 1/2	1/8	3
5/32	0.010	3/8	2	3/16	3
3/16	0.010	3/8	2	3/16	3
7/32	0.020	3/8	2	1/4	3
1/4	0.020	3/8	2	1/4	3
1/4	0.020	1 1/4	3	1/4	3
9/32	0.020	1/2	2 1/2	5/16	3
5/16	0.020	1/2	2 1/2	5/16	3
11/32	0.020	5/8	2	3/8	3
3/8	0.020	5/8	2	3/8	3
3/8	0.020	1 1/2	3 1/2	3/8	3
7/16	0.020	1	2 3/4	7/16	3
1/2	0.020	5/8	2 1/2	1/2	3
1/2	0.020	1 1/2	3 1/2	1/2	3
5/8	0.030	7/8	3	5/8	3
5/8	0.030	1 3/4	4	5/8	3
3/4	0.030	1	3	3/4	3
3/4	0.030	2 1/2	5	3/4	3
1	0.030	2 3/4	5	1	3

P	
M	
K	
N	•
S	•
H	
O	

→ v_c/f_z Page 115

End milling cutter with corner radius

▲ with chip breaker



DC <small>+0.000/-0.002</small>	RE <small>±0.001</small>	APMX	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEPF
inch	inch	inch	inch	inch	
1/8	0.010	1/2	1 1/2	1/8	3
5/32	0.010	1/2	2	3/16	3
3/16	0.010	5/8	2	3/16	3
7/32	0.020	3/4	2 1/2	1/4	3
1/4	0.020	3/4	2 1/2	1/4	3
1/4	0.020	1 1/2	3 1/2	1/4	3
9/32	0.020	3/4	2 1/2	5/16	3
5/16	0.020	3/4	2 1/2	5/16	3
11/32	0.020	7/8	2 1/2	3/8	3
3/8	0.020	7/8	2 1/2	3/8	3
3/8	0.020	2	4	3/8	3
1/2	0.020	1 1/4	3	1/2	3
1/2	0.020	2	4	1/2	3
9/16	0.030	1 1/4	3 1/2	9/16	3
5/8	0.030	1 1/4	3 1/2	5/8	3
5/8	0.030	2 1/2	5	5/8	3
3/4	0.030	1 5/8	4	3/4	3
3/4	0.030	3 1/4	6	3/4	3
1	0.030	1 3/4	4	1	3
1	0.030	3 3/8	6	1	3

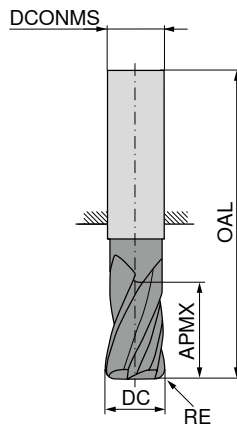
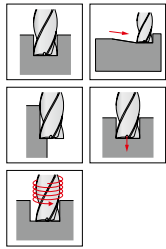
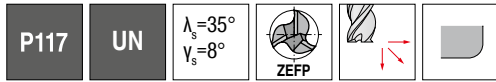
59 029 ...	59 030 ...	59 029 ...	59 030 ...
12540	12540		
15632	15632		
18833	18833		
21934	21934		
25030	25030		
		25060	25060
28127	28127		
31324	31324		
34425	34425		
37523	37523		
		37553	37553
50025	50025		
		50040	50040
56322	56322		
62520	62520		
		62540	62540
75022	75022		
		75043	75043
99918	99918		
		99934	99934

P				
M				
K				
N		•	•	•
S				
H				
O				

→ v_c/f_z Page 115

End milling cutter with corner radius

▲ with chip breaker



DC	RE	APMX	OAL	DCONMS	ZEFP
<small>+0.000/-0.002</small>	<small>±0.001</small>			<small>-0.0001 / -0.0004</small>	
inch	inch	inch	inch	inch	
1/8	0.010	1/2	1 1/2	1/8	3
3/16	0.010	5/16	2	3/16	3
3/16	0.010	5/8	2	3/16	3
1/4	0.020	3/8	2	1/4	3
1/4	0.020	3/4	2 1/2	1/4	3
5/16	0.020	13/16	2 1/2	5/16	3
3/8	0.020	1	2 1/2	3/8	3
7/16	0.020	5/8	2 3/4	7/16	3
7/16	0.020	1	2 3/4	7/16	3
1/2	0.020	5/8	2 1/2	1/2	3
1/2	0.020	1 1/4	3	1/2	3
5/8	0.030	1 1/4	3 1/2	5/8	3
3/4	0.030	1 5/8	4	3/4	3

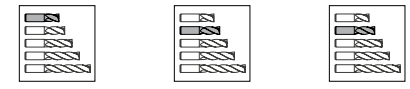
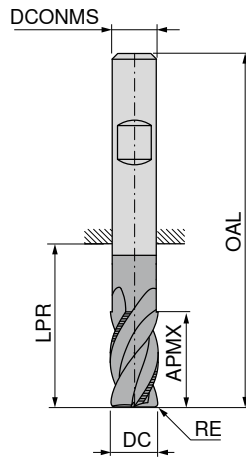
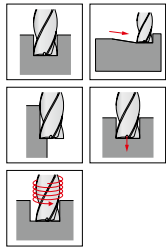
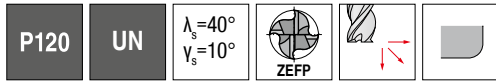
59 028 ...	59 028 ...
12540	
18817	
	18833
25015	
	25030
31326	
37527	
43814	
	43823
50013	
	50025
	62520
	75022

P	•	•
M	•	•
K	•	•
N	•	•
S	•	•
H		
O		

→ v_c/f_z Page 116

End milling cutter with corner radius

▲ with chip breaker



DC <small>+0.000/-0.002</small>	RE <small>±0.001</small>	APMX	LPR	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEFP
inch	inch	inch	inch	inch	inch	
1/8	0.010	1/4		1 1/2	1/8	4
5/32	0.010	3/8		2	3/16	4
3/16	0.010	3/8		2	3/16	4
7/32	0.020	3/8		2	1/4	4
1/4	0.020	3/8		2	1/4	4
9/32	0.020	1/2		2 1/2	5/16	4
5/16	0.020	1/2		2 1/2	5/16	4
11/32	0.020	5/8	0.825	2	3/8	4
3/8	0.020	5/8	0.825	2	3/8	4
3/8	0.020	7/8	0.960	2 1/2	3/8	4
7/16	0.020	1	1.165	2 3/4	7/16	4
1/2	0.020	5/8	0.735	2 1/2	1/2	4
1/2	0.020	1 1/4	1.235	3	1/2	4
5/8	0.030	7/8	1.113	3	5/8	4
3/4	0.030	1	1.228	3	3/4	4

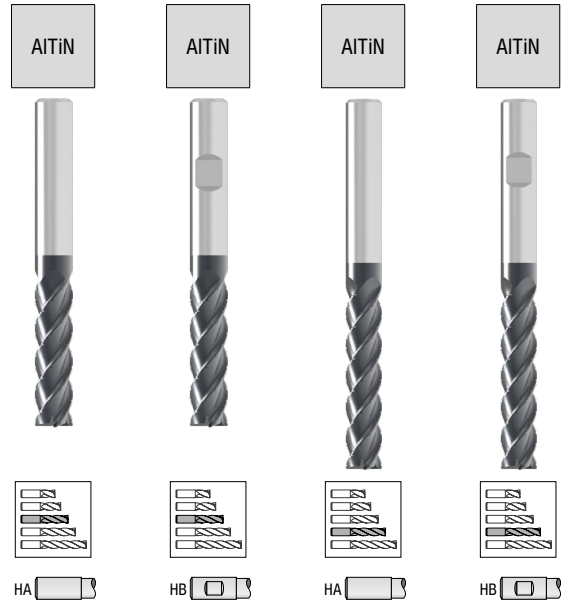
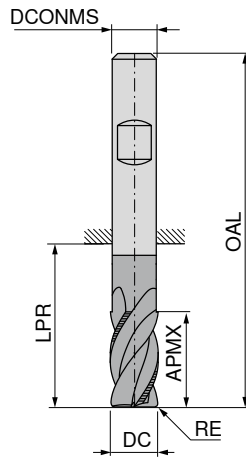
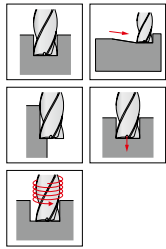
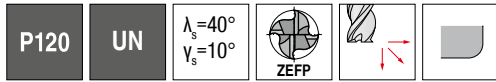
59 032 ...	59 031 ...	59 032 ...
	12520	
	15624	
	18820	
	21917	
	25015	
	28118	
	31316	
		34418
37517		37523
		43823
50013		
		50025
		62514
		75013

P	•	•	•
M			
K	•	•	•
N			
S			
H			
O			

→ v_c/f_z Page 117

End milling cutter with corner radius

▲ with chip breaker



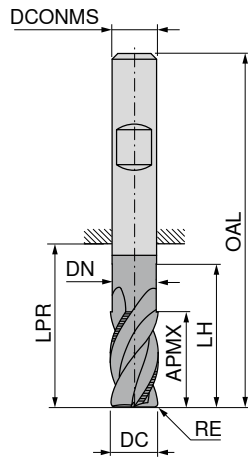
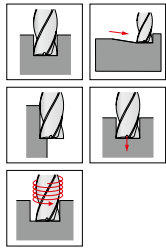
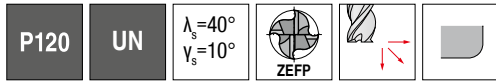
DC	RE	APMX	LPR	OAL	DCONMS	ZEFP	59 031 ...	59 032 ...	59 031 ...	59 032 ...
1/8	0.010	1/2		1 1/2	1/8	4				
5/32	0.010	1/2		2	3/16	4			12540	
3/16	0.010	5/8		2	3/16	4			15632	
7/32	0.020	3/4		2 1/2	1/4	4			18833	
1/4	0.020	3/4		2 1/2	1/4	4			21934	
1/4	0.020	1 1/4		3	1/4	4	25030		25050	
9/32	0.020	3/4		2 1/2	5/16	4			28127	
5/16	0.020	3/4		2 1/2	5/16	4			31324	
11/32	0.020	7/8	0.960	2 1/2	3/8	4				34425
3/8	0.020	1 1/2	1.960	3 1/2	3/8	4		37540		
3/8	0.020	2	2.460	4	3/8	4				37553
1/2	0.020	1 1/2	1.735	3 1/2	1/2	4				
1/2	0.020	2	2.235	4	1/2	4		50030		50040
9/16	0.030	1 1/4	1.675	3 1/2	9/16	4				56322
5/8	0.030	1 1/4	1.613	3 1/2	5/8	4		62520		
5/8	0.030	1 3/4	2.113	4	5/8	4				62528
3/4	0.030	1 5/8	1.978	4	3/4	4				75022

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	•	•	•	•
S	•	•	•	•
H	•	•	•	•
O	•	•	•	•

→ v_c/f_z Page 117

End milling cutter with corner radius

▲ with chip breaker



59 031 ...	59 032 ...
25130	
25060	
37523	
37623	
50020	
50120	
	62540
75022	
	99918



DC <small>+0.000/-0.002</small>	RE <small>±0.001</small>	APMX	DN	LH	LPR	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEFP
inch	inch	inch	inch	inch	inch	inch	inch	
1/4	0.020	3/4	0.240	2 1/8		4	1/4	4
1/4	0.020	1 1/2				3 1/2	1/4	4
3/8	0.020	7/8	0.360	2 1/8		4	3/8	4
3/8	0.020	7/8	0.360	3 3/8		6	3/8	4
1/2	0.020	1	0.480	2 3/8		6	1/2	4
1/2	0.020	1	0.480	3 3/8		6	1/2	4
5/8	0.030	2 1/2			3.1	5	5/8	4
3/4	0.030	1 5/8	0.720	2 1/2		6	3/4	4
1	0.030	1 3/4			1.7	4	1	4

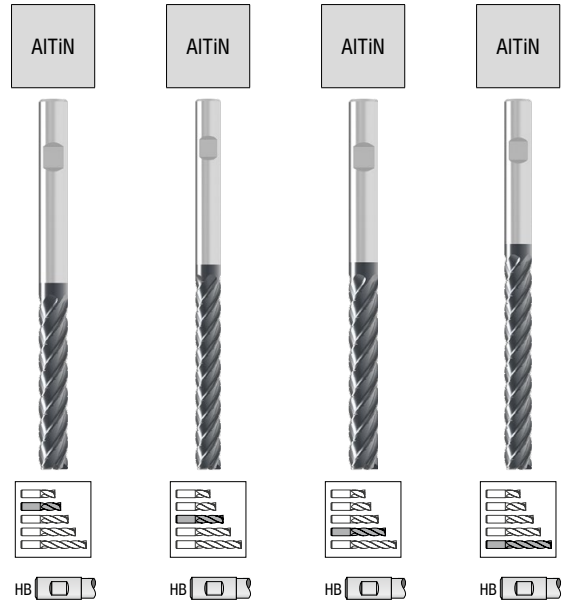
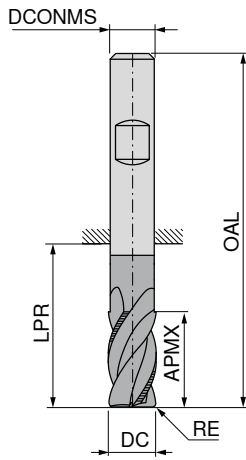
P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 117

End milling cutter with corner radius

▲ with chip breaker

P121
UN
 $\lambda_s=40^\circ$
 $\nu_s=10^\circ$
ZEPF





59 035 ...	59 035 ...	59 035 ...	59 035 ...
75033	75043	99928	99934

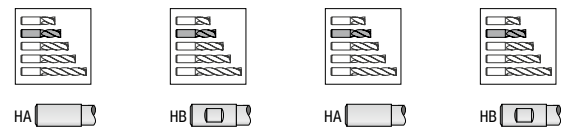
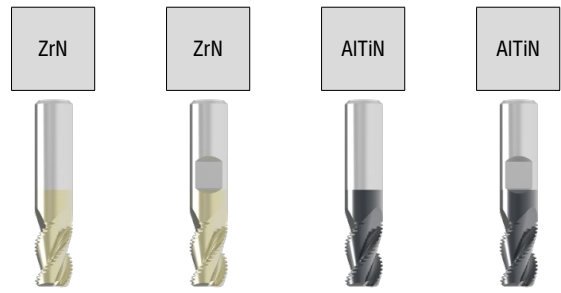
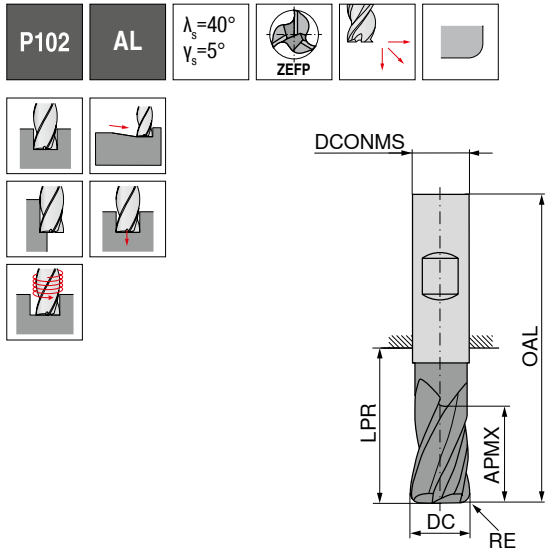
DC $+0.000/-0.002$	RE ± 0.001	APMX	LPR	OAL	DCONMS $-0.0001/-0.0004$	ZEPF
inch	inch	inch	inch	inch	inch	
3/4	0.030	2 1/2	2.9	5	3/4	5
3/4	0.030	3 1/4	3.9	6	3/4	5
1	0.030	2 3/4	2.7	5	1	5
1	0.030	3 3/8	3.7	6	1	5

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	•	•	•	•
S	•	•	•	•
H				
O				

→ v_c/f_z Page 118

End milling cutter with corner radius

- ▲ with coarse pitch profile
- ▲ Radius accuracy: +/- 0.001



59 023 ...	59 024 ...	59 025 ...	59 026 ...
18820		18820	
25015		25015	
31316		31316	
	37517		37517
	43823		43823
	50013		50013

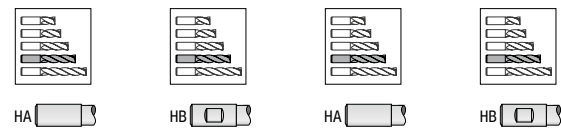
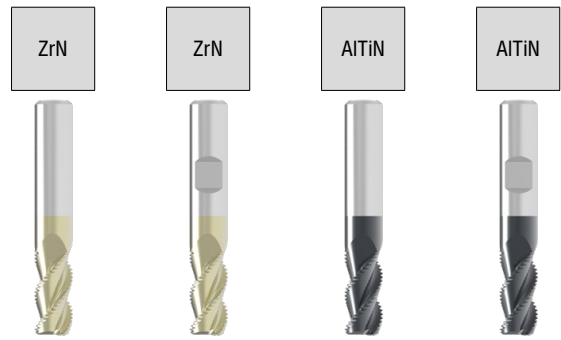
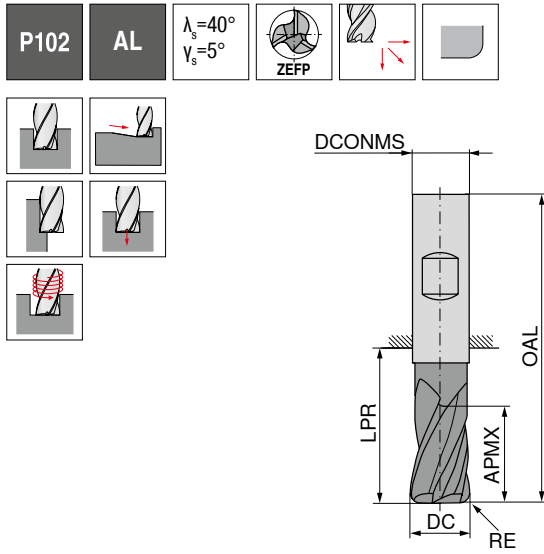
DC	RE	APMX	LPR	OAL	DCONMS	ZEPF
inch	inch	inch	inch	inch	inch	
3/16	0.030	3/8		2	3/16	3
1/4	0.045	3/8		2	1/4	3
5/16	0.045	1/2		2	5/16	3
3/8	0.060	5/8	0.825	2	3/8	3
7/16	0.060	1	1.165	2 3/4	7/16	3
1/2	0.060	5/8	0.735	2 1/2	1/2	3

P				
M				
K				
N				
S				
H				
O				

→ v_c/f_z Page 119

End milling cutter with corner radius

- ▲ with coarse pitch profile
- ▲ Radius accuracy: +/- 0.001



59 023 ...	59 024 ...	59 025 ...	59 026 ...
18833		18833	
25030		25030	
31324		31324	
	37523		37523
	50025		50025
	56322		56322
	62520		62520
	75022		75022
	99918		99918

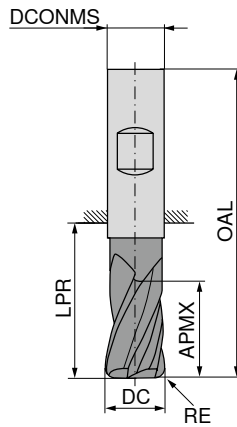
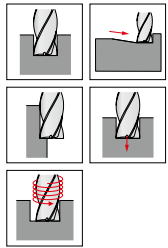
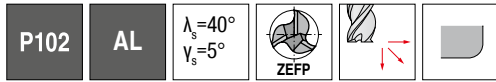
DC	RE	APMX	LPR	OAL	DCONMS	ZEPF
inch	inch	inch	inch	inch	inch	
3/16	0.030	5/8		2	3/16	3
1/4	0.045	3/4		2 1/2	1/4	3
5/16	0.045	3/4		2 1/2	5/16	3
3/8	0.060	7/8	0.960	2 1/2	3/8	3
1/2	0.060	1 1/4	1.235	3	1/2	3
9/16	0.060	1 1/4	1.675	3 1/2	9/16	3
5/8	0.060	1 1/4	1.613	3 1/2	5/8	3
3/4	0.060	1 5/8	1.978	4	3/4	3
1	0.060	1 3/4	1.733	4	1	3

P				
M				
K				
N				
S				
H				
O				

→ v_c/f_z Page 119

End milling cutter with corner radius

- ▲ with coarse pitch profile
- ▲ Radius accuracy: +/- 0.001



DC	RE	APMX	LPR	OAL	DCONMS	ZEFP
<small>+0.000/-0.002</small>	<small>-/-0.001</small>				<small>-0.0001 / -0.0004</small>	
inch	inch	inch	inch	inch	inch	
1/2	0.060	1 1/2	1.735	3 1/2	1/2	3
3/4	0.060	2 1/4	2.978	5	3/4	3
1	0.060	2 5/8	2.733	5	1	3




59 024 ...	59 026 ...
50030	50030
75030	75030
99926	99926

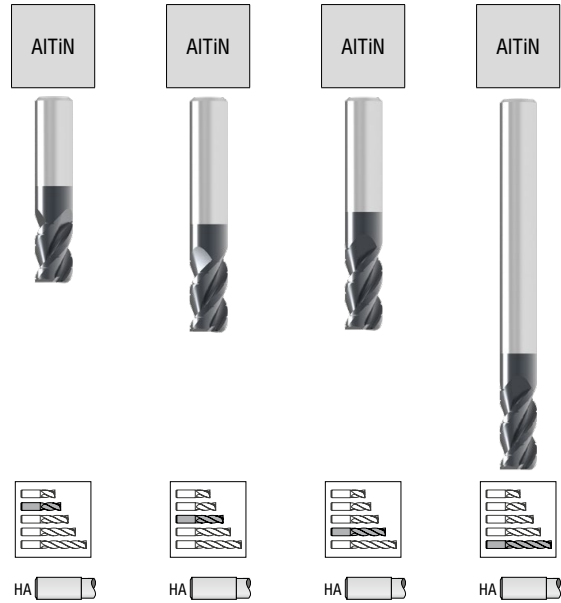
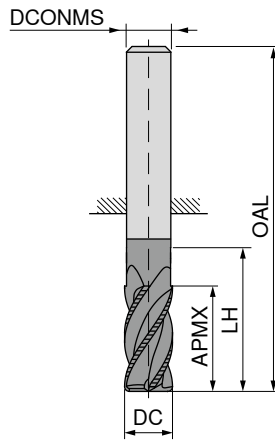
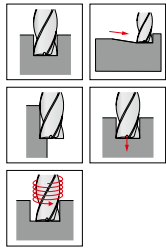
P	
M	
K	
N	●
S	●
H	
O	

→ v_c/f_z Page 119

End milling cutter

▲ with chip breaker

P190 **UN** $\lambda_s=40^\circ$ $\nu_s=10^\circ$   



DC <small>+0.000/-0.002</small>	APMX	LH	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEFP
inch	inch	inch	inch	inch	
3/16	5/8		2	3/16	4
1/4	3/8		2	1/4	4
1/4	3/4		2 1/2	1/4	4
5/16	3/4		2 1/2	5/16	4
3/8	5/8		2	3/8	4
3/8	7/8		2 1/2	3/8	4
3/8	7/8	2.125	4	3/8	4
1/2	5/8		2 1/2	1/2	4
1/2	1	2.375	6	1/2	4
1/2	1 1/4		3	1/2	4
1/2	2		4	1/2	4
5/8	7/8		3	5/8	4
5/8	1 1/4		3 1/2	5/8	4
3/4	1		3	3/4	4
3/4	1 5/8		4	3/4	4
1	1 3/4		4	1	4

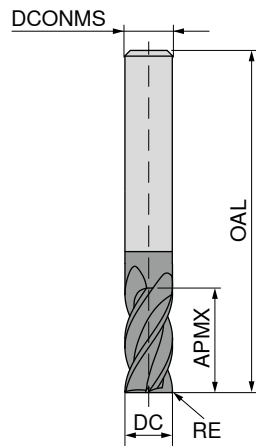
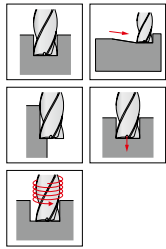
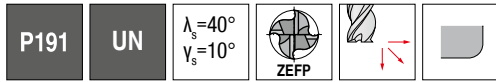
59 059 ...	59 059 ...	59 059 ...	59 059 ...
18833			
25015			
		25030	
31324			
37517			
		37523	
			37623
50013			
			50020
		50025	
	50040		
62514			
		62520	
75013			
		75022	
		99918	

P	•	•	•	•
M				
K	•	•	•	•
N				
S				
H				
O				

→ v_c/f_z Page 120

End milling cutter with corner radius

▲ with chip breaker



DC	RE	APMX	OAL	DCONMS	ZEFP
<small>+0.000/-0.002</small>	<small>-/-0.001</small>			<small>-0.0001 / -0.0004</small>	
inch	inch	inch	inch	inch	
3/16	0.010	5/8	2	3/16	4
1/4	0.020	3/4	2 1/2	1/4	4
5/16	0.020	3/4	2 1/2	5/16	4
3/8	0.020	7/8	2 1/2	3/8	4
3/8	0.030	7/8	2 1/2	3/8	4
1/2	0.030	5/8	2 1/2	1/2	4
1/2	0.020	5/8	2 1/2	1/2	4
1/2	0.030	1 1/4	3	1/2	4
1/2	0.020	1 1/4	3	1/2	4
1/2	0.030	2	4	1/2	4
1/2	0.020	2	4	1/2	4
5/8	0.030	1 1/4	3 1/2	5/8	4
3/4	0.030	1 5/8	4	3/4	4
1	0.030	1 3/4	4	1	4




59 061 ...	59 061 ...	59 061 ...
18833		
25030		
31324		
37523		
90023		
90013		
50013		
	90025	
	50025	
		90040
		50040
	62520	
	75022	
	99918	

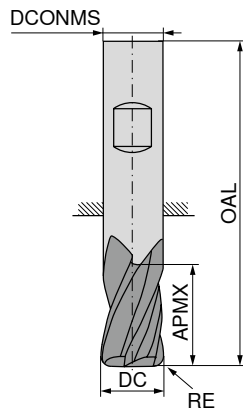
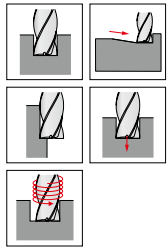
P	•	•	•
M			
K	•	•	•
N			
S			
H			
O			

→ v_c/f_z Page 120

End milling cutter with corner radius

- ▲ with coarse pitch profile
- ▲ Radius accuracy: +/- 0.001

P100 **UN** $\lambda_s=30^\circ$ $\nu_s=5^\circ$   



59 011 ...	59 011 ...
18820	18833

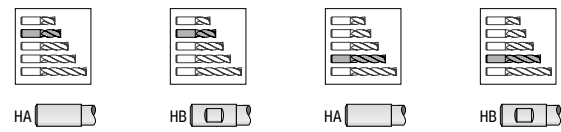
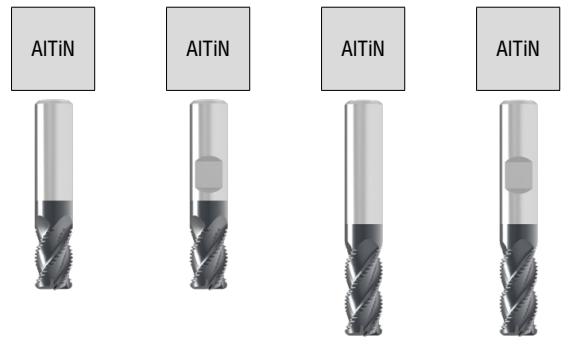
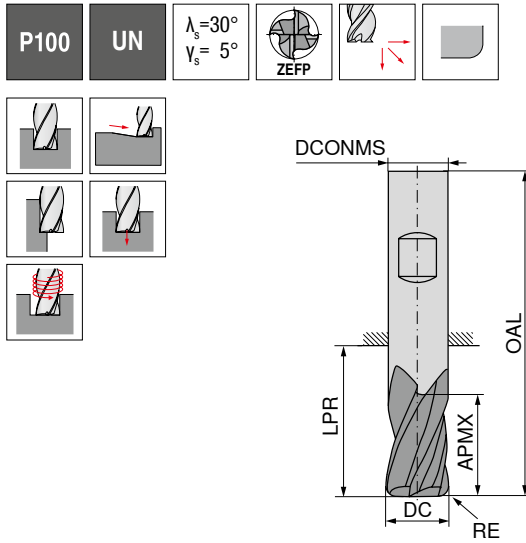
DC	RE	APMX	OAL	DCONMS	ZEFP
$+0.000/-0.002$	$+/-0.001/+/-0.001$	inch	inch	$-0.0001 / -0.0004$	
inch	inch	inch	inch	inch	
3/16	0.030	3/8	2	3/16	3
3/16	0.030	5/8	2	3/16	3

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 121

End milling cutter with corner radius

- ▲ with coarse pitch profile
- ▲ Radius accuracy: +/- 0.001



DC	RE	APMX	LPR	OAL	DCONMS	ZEPF
inch	inch	inch	inch	inch	inch	
1/4	0.045	3/8		2	1/4	4
1/4	0.045	3/4		2 1/2	1/4	4
5/16	0.045	1/2		2 1/2	5/16	4
5/16	0.045	3/4		2 1/2	5/16	4
3/8	0.060	5/8	0.8	2	3/8	4
3/8	0.060	7/8	0.9	2 1/2	3/8	4
7/16	0.060	1	1.1	2 3/4	7/16	4
1/2	0.060	5/8	0.7	2 1/2	1/2	4
1/2	0.060	1 1/4	1.2	3	1/2	4
9/16	0.060	1 1/4	1.6	3 1/2	9/16	4
5/8	0.060	7/8	1.1	3	5/8	4
5/8	0.060	1 1/4	1.6	3 1/2	5/8	4
3/4	0.060	1	1.2	3	3/4	4
3/4	0.060	1 5/8	1.9	4	3/4	4

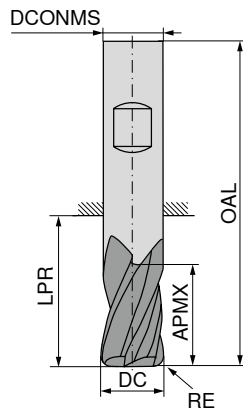
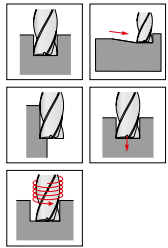
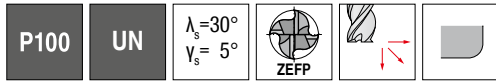
59 012 ...	59 013 ...	59 012 ...	59 013 ...
25015		25030	
31316		31324	
	37517		37523
	43823		
	50013		50025
			56322
	62514		62520
	75013		75022

P	•	•	•	•
M				
K	•	•	•	•
N				
S				
H				
O				

→ v_c/f_z Page 121

End milling cutter with corner radius

- ▲ with coarse pitch profile
- ▲ Radius accuracy: +/- 0.001



AITIN



HB

59 013 ...




DC +0.000/-0.002 inch	RE +/-0.001 inch	APMX inch	LPR inch	OAL inch	DCONMS -0.0001/-0.0004 inch	ZEFP	
1/2	0.060	1 1/2	1.735	3 1/2	1/2	4	50030
5/8	0.060	2	2.113	4	5/8	4	62532
3/4	0.060	2 1/4	2.978	5	3/4	4	75030

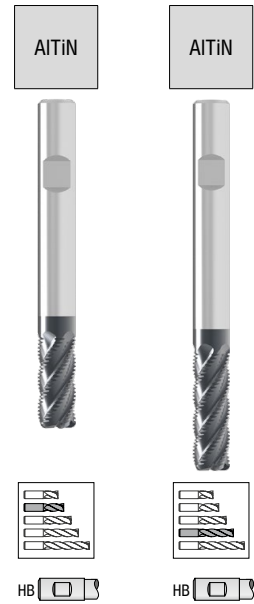
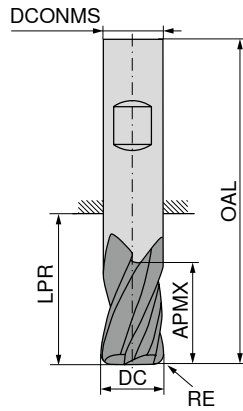
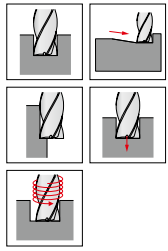
P	•
M	
K	•
N	
S	
H	
O	

→ v_c/f_z Page 121

End milling cutter with corner radius

- ▲ with coarse pitch profile
- ▲ Radius accuracy: +/- 0.001

P100 **UN** $\lambda_s=30^\circ$ $\nu_s=5^\circ$   



DC <small>+0.000/-0.002</small>	RE <small>+/-0.001</small>	APMX	LPR	OAL	DCONMS <small>-0.0001/-0.0004</small>	ZEFP
inch	inch	inch	inch	inch	inch	
1	0.060	1 3/4	1.733	4	1	5
1	0.060	2 5/8	2.733	5	1	5

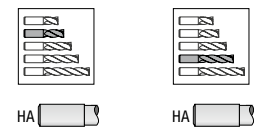
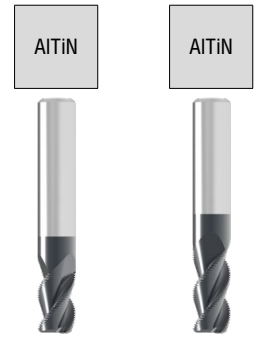
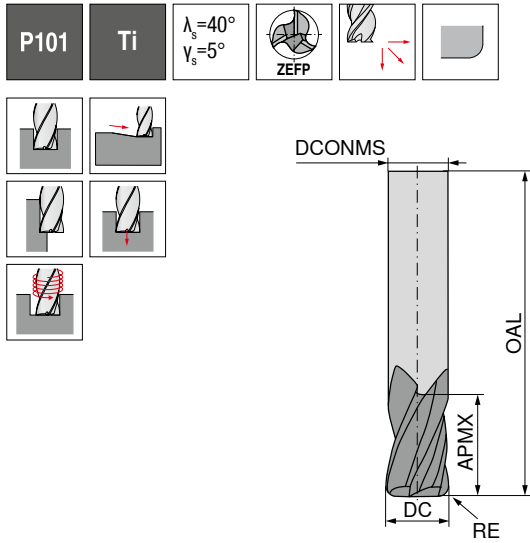
59 014 ...	59 014 ...
99918	99926

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 121

End milling cutter with corner radius

- ▲ with fine pitch profile
- ▲ Radius accuracy: +/- 0.001



DC	RE	APMX	OAL	DCONMS	ZEPF
<small>+0.000/-0.002</small>	<small>+/-0.001</small>			<small>-0.0001 / -0.0004</small>	
inch	inch	inch	inch	inch	
3/16	0.030	3/8	2	3/16	3
3/16	0.030	5/8	2	3/16	3

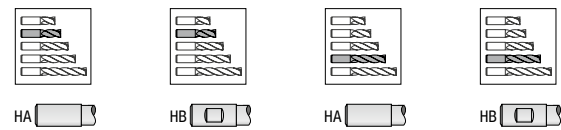
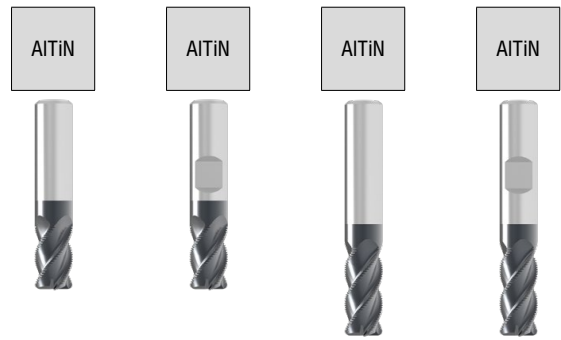
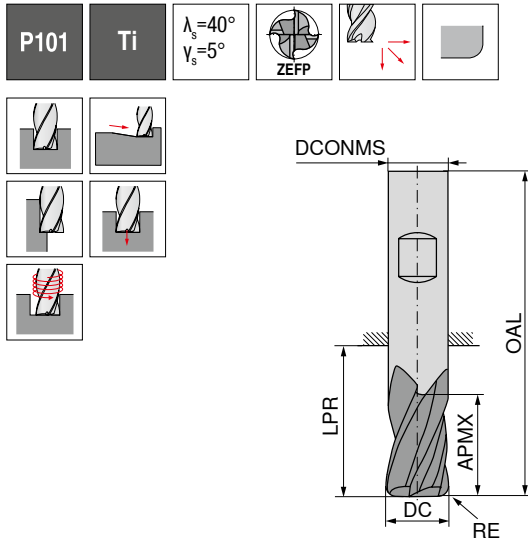
	59 015 ...	59 015 ...
P	•	•
M		
K	•	•
N		
S		
H		
O		

HA	59 015 ...	59 015 ...
HA	18820	18833

→ v_c/f_z Page 122

End milling cutter with corner radius

- ▲ with fine pitch profile
- ▲ Radius accuracy: +/- 0.001



DC	RE	APMX	LPR	OAL	DCONMS	ZEFP
inch	inch	inch	inch	inch	inch	
1/4	0.045	3/8		2	1/4	4
1/4	0.045	3/4		2 1/2	1/4	4
5/16	0.045	1/2		2 1/2	5/16	4
5/16	0.045	3/4		2 1/2	5/16	4
3/8	0.060	5/8	0.825	2	3/8	4
3/8	0.060	7/8	0.960	2 1/2	3/8	4
7/16	0.060	1	1.165	2 3/4	7/16	4
1/2	0.060	5/8	0.735	2 1/2	1/2	4
1/2	0.060	1 1/4	1.235	3	1/2	4
9/16	0.060	1 1/4	1.675	3 1/2	9/16	4
5/8	0.060	7/8	1.113	3	5/8	4
5/8	0.060	1 1/4	1.613	3 1/2	5/8	4
3/4	0.060	1	1.228	3	3/4	4
3/4	0.060	1 5/8	1.978	4	3/4	4

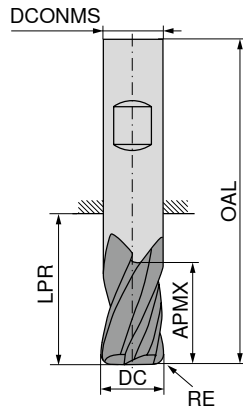
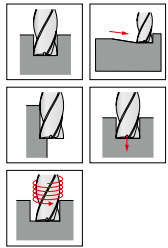
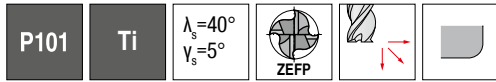
59 016 ...	59 017 ...	59 016 ...	59 017 ...
25015			
31316		25030	
		31324	
	37517		37523
	43823		
	50013		50025
			56322
	62514		62520
	75013		75022

P	•	•	•	•
M				
K	•	•	•	•
N				
S				
H				
O				

→ v_c/f_z Page 122

End milling cutter with corner radius

- ▲ with fine pitch profile
- ▲ Radius accuracy: +/- 0.001



AITIN



HB

59 017 ...

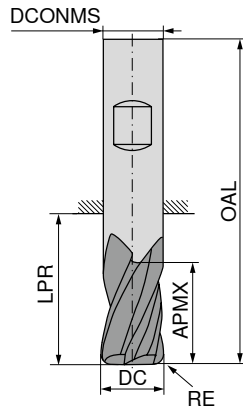
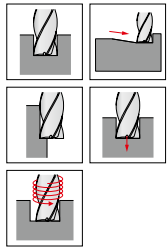
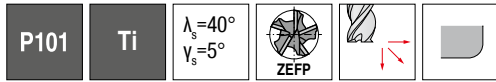
DC +0.000/-0.002 inch	RE +/-0.001 inch	APMX inch	LPR inch	OAL inch	DCONMS -0.0001/-0.0004 inch	ZEFP	
1/2	0.060	1 1/2	1.735	3 1/2	1/2	4	50030
5/8	0.060	2	2.113	4	5/8	4	62532
3/4	0.060	2 1/4	2.978	5	3/4	4	75030

P	•
M	
K	•
N	
S	
H	
O	

→ v_c/f_z Page 122

End milling cutter with corner radius

- ▲ with fine pitch profile
- ▲ Radius accuracy: +/- 0.001



DC +0.000/-0.002 inch	RE +/-0.001 inch	APMX inch	LPR inch	OAL inch	DCONMS -0.0001/-0.0004 inch	ZEFP
1	0.060	1 3/4	1.733	4	1	5
1	0.060	2 5/8	2.733	5	1	5

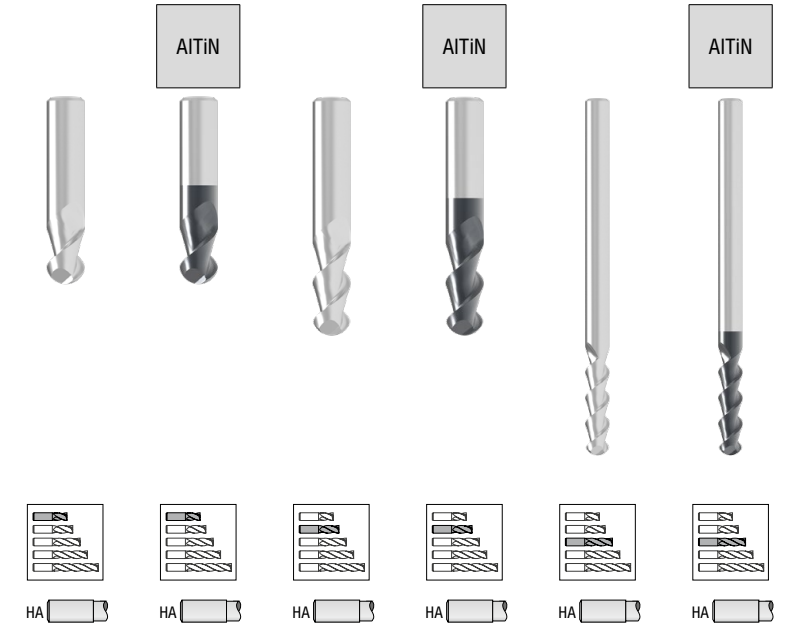
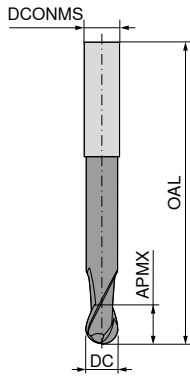
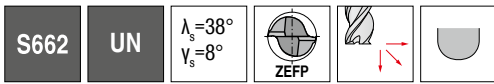
	59 022 ...	59 022 ...
P	●	●
M		
K	●	●
N		
S		
H		
O		

DC	RE	APMX	LPR	OAL	DCONMS	ZEFP	59 022 ...	59 022 ...
1	0.060	1 3/4	1.733	4	1	5	99918	
1	0.060	2 5/8	2.733	5	1	5		99926

→ v_c/f_z Page 122

Ball Nosed Cutter

- ▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 /- 0.002
- ▲ Radius accuracy: +/- 0.001

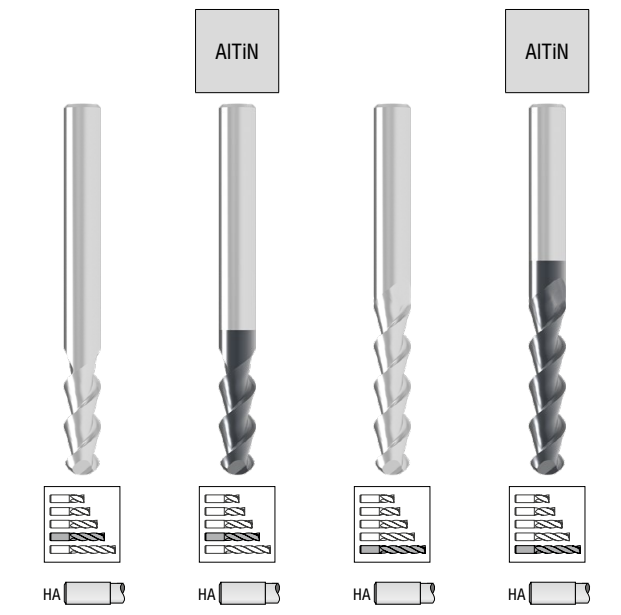
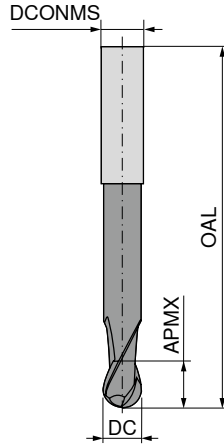
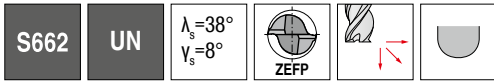


DC inch	APMX inch	OAL inch	DCONMS _{-0.0001/-0.0004} inch	ZEFP	59 076 ...	59 077 ...	59 076 ...	59 077 ...	59 076 ...	59 077 ...
1/16	1/8	1 1/2	1/8	2			06320	06320		
1/8	1/4	1 1/2	1/8	2	12520	12520				
1/8	1/2	1 1/2	1/8	2			12540	12540		
1/8	3/4	3	1/8	2					12660	12660
3/16	3/8	2	3/16	2	18820	18820	18833	18833	18853	18853
3/16	5/8	2	3/16	2						
3/16	1	4	3/16	2						
1/4	3/8	2	1/4	2	25015	25015	25030	25030	25045	25045
1/4	3/4	2 1/2	1/4	2						
1/4	1 1/8	3	1/4	2						
5/16	1/2	2	5/16	2	31316	31316			31336	31336
5/16	3/4	2 1/2	5/16	2			31324	31324		
5/16	1 1/8	3	5/16	2						
3/8	5/8	2	3/8	2	37517	37517	37523	37523	37540	37540
3/8	7/8	2 1/2	3/8	2						
3/8	1 1/2	6	3/8	2						
1/2	5/8	2 1/2	1/2	2	50013	50013	50020	50020	50030	50030
1/2	1	3	1/2	2						
1/2	1 1/2	6	1/2	2						
5/8	7/8	3	5/8	2	62514	62514			62534	62534
5/8	1 1/4	3 1/2	5/8	2			62520	62520		
5/8	2 1/8	4 5/8	5/8	2						
3/4	1	3	3/4	2	75013	75013				
3/4	1 1/2	4	3/4	2			75020	75020	75030	75030
3/4	2 1/4	5	3/4	2					99920	99920
1	2	6	1	2						
1	2 1/4	5	1	2			99923	99923		
P					•	•	•	•	•	•
M					•	•	•	•	•	•
K					•	•	•	•	•	•
N					•	•	•	•	•	•
S					•	•	•	•	•	•
H										
O										

→ v_c/f_z Page 123

Ball Nosed Cutter

- ▲ DC tolerance:
 ≤ ∅ 7/64 inch: +/- 0.0005
 ≥ ∅ 1/8 inch: 0 /- 0.002
- ▲ Radius accuracy: +/- 0.001






DC inch	APMX inch	OAL inch	DCONMS inch	ZEFP
1/16	3/16	1 1/2	1/8	2
1/8	3/4	2 1/2	1/8	2
1/8	1	3	1/8	2
3/16	3/4	2 1/2	3/16	2
3/16	1 1/8	3	3/16	2
1/4	1	4	1/4	2
1/4	1 1/2	4	1/4	2
1/4	1 1/2	6	1/4	2
5/16	1	4	5/16	2
5/16	1 1/2	6	5/16	2
5/16	1 5/8	4	5/16	2
3/8	1	4	3/8	2
3/8	1 1/8	3	3/8	2
3/8	1 3/4	4	3/8	2
3/8	3	6	3/8	2
1/2	1	4	1/2	2
1/2	2	4	1/2	2
1/2	3	6	1/2	2
5/8	2	6	5/8	2
5/8	3	6	5/8	2
3/4	2	6	3/4	2
3/4	3	6	3/4	2
1	1 3/4	4	1	2
1	3	6	1	2

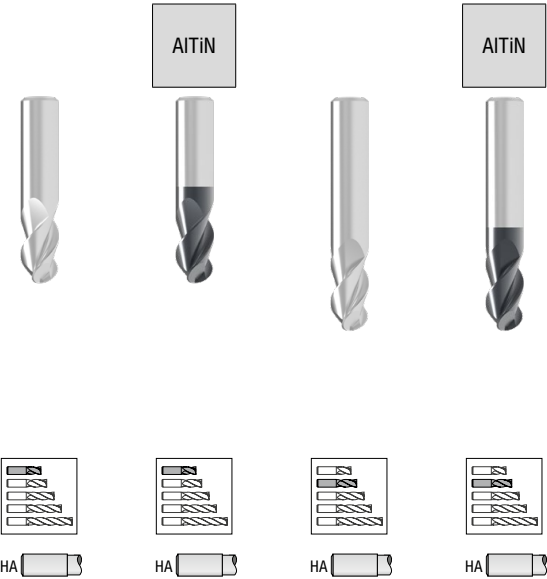
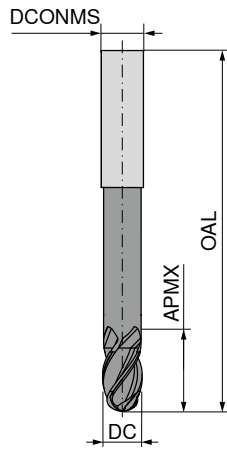
59 076 ...	59 077 ...	59 076 ...	59 077 ...
06330	06330		
12560	12560		
		12580	12580
18840	18840		
		18860	18860
25040	25040		
		25060	25060
		25160	25160
31332	31332		
		31348	31348
		31352	31352
37527	37527		
37530	37530		
		37547	37547
		37580	37580
50120	50120		
		50040	50040
		50060	50060
62532	62532		
		62548	62548
75027	75027		
		75040	75040
99918	99918		
		99930	99930

P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

Ball Nosed Cutter

▲ Radius accuracy: +/- 0.001

S663 **UN** $\lambda_s=38^\circ$
 $\nu_s=8^\circ$   



DC $+0.000/-0.002$ inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZFP
1/8	1/4	1 1/2	1/8	3
1/8	1/2	1 1/2	1/8	3
3/16	3/8	2	3/16	3
3/16	5/8	2	3/16	3
1/4	3/8	2	1/4	3
1/4	3/4	2 1/2	1/4	3
5/16	3/4	2 1/2	5/16	3
3/8	5/8	2	3/8	3
3/8	7/8	2 1/2	3/8	3
1/2	5/8	2 1/2	1/2	3
1/2	1	3	1/2	3
5/8	1 1/4	3 1/2	5/8	3
3/4	1 1/2	4	3/4	3
1	1 3/4	4	1	3

59 078 ...	59 079 ...	59 078 ...	59 079 ...
12520	12520		
18820	18820	12540	12540
25015	25015	18833	18833
		25030	25030
		31324	31324
37517	37517		
50013	50013	37523	37523
		50020	50020
		62520	62520
		75020	75020
		99918	99918

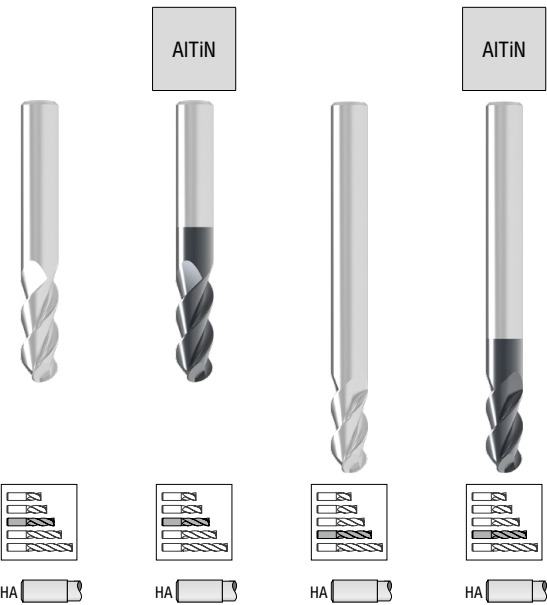
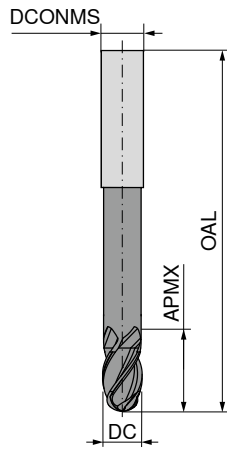
P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

→ v_c/f_z Page 124

Ball Nosed Cutter

▲ Radius accuracy: +/- 0.001

S663 **UN** $\lambda_s=38^\circ$ $\nu_s=8^\circ$ ZEPF





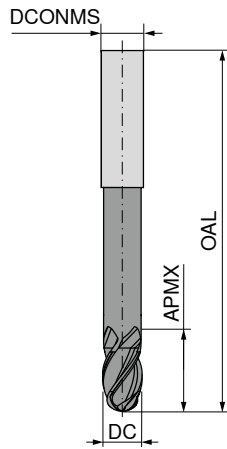
DC <small>+0.000/-0.002</small>	APMX	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEPF	59 078 ...	59 079 ...	59 078 ...	59 079 ...
inch	inch	inch	inch					
1/8	3/4	2 1/2	1/8	3			12560	12560
1/8	3/4	3	1/8	3	12660	12660		
3/16	1	2 1/2	3/16	3	18853	18853		
3/16	3/4	2 1/2	3/16	3			18840	18840
1/4	1 1/8	3	1/4	3			25045	25045
1/4	1	4	1/4	3	25040	25040		
5/16	1	4	5/16	3			31332	31332
3/8	1 1/8	3	3/8	3	37530	37530		
3/8	1	4	3/8	3			37527	37527
3/8	1 1/2	6	3/8	3	37540	37540		
1/2	1	4	1/2	3			50120	50120
1/2	1 1/2	6	1/2	3	50030	50030		
5/8	2 1/8	4 5/8	5/8	3	62534	62534		
5/8	2	6	5/8	3			62532	62532
3/4	2 1/4	5	3/4	3	75030	75030		
3/4	2	6	3/4	3			75027	75027
1	2 1/4	5	1	3	99923	99923		
1	2	6	1	3			99920	99920
P					●	●	●	●
M					●	●	●	●
K					●	●	●	●
N					●	●	●	●
S					●	●	●	●
H								
O								

→ v_c/f_z Page 124

Ball Nosed Cutter

▲ Radius accuracy: +/- 0.001

S663
UN
 $\Lambda_s=38^\circ$
 $V_s=8^\circ$
ZEP



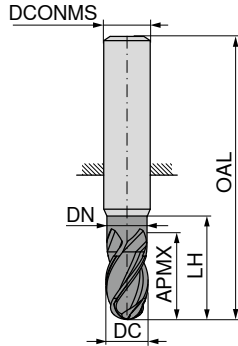
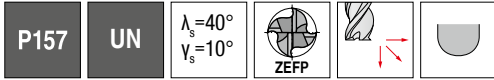


DC <small>+0.000/-0.002</small>	APMX	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEP	59 078 ...	59 079 ...
inch	inch	inch	inch			
1/8	1	3	1/8	3	12580	12580
3/16	1 1/8	3	3/16	3	18860	18860
3/16	1	4	3/16	3	18953	18953
1/4	1 1/2	4	1/4	3	25060	25060
1/4	1 1/2	6	1/4	3	25160	25160
5/16	1 1/2	6	5/16	3	31348	31348
3/8	1 3/4	4	3/8	3	37547	37547
3/8	3	6	3/8	3	37580	37580
1/2	2	4	1/2	3	50040	50040
1/2	3	6	1/2	3	50060	50060
5/8	3	6	5/8	3	62548	62548
3/4	3	6	3/4	3	75040	75040
1	3	6	1	3	99930	99930
P					●	●
M					●	●
K					●	●
N					●	●
S					●	●
H						
O						

→ v_c/f_z Page 124

Ball Nosed Cutter

- ▲ Cutting edges with irregular pitch
- ▲ Radius accuracy: +/- 0.001"



DC +0.000/-0.002 inch	APMX inch	DN inch	LH inch	OAL inch	DCONMS -0.0001 / -0.0004 inch	ZEFP
1/8	1/4			1 1/2	1/8	4
1/8	1/2			1 1/2	1/8	4
5/32	1/2			2	3/16	4
3/16	3/8			2	3/16	4
3/16	5/8			2	3/16	4
7/32	3/8			2	1/4	4
7/32	3/4			2 1/2	1/4	4
1/4	3/8			2	1/4	4
1/4	3/4			2 1/2	1/4	4
1/4	3/4	0.240	2 1/8	4	1/4	4
5/16	3/4			2 1/2	5/16	4
5/16	1/2			2 1/2	5/16	4
3/8	5/8			2	3/8	4
3/8	7/8			2 1/2	3/8	4
3/8	7/8	0.360	2 3/8	4	3/8	4
1/2	5/8			2 1/2	1/2	4
1/2	1			3	1/2	4
1/2	1	0.480	2 3/8	6	1/2	4
1/2	1	0.480	3 3/8	6	1/2	4
9/16	1 1/4			3 1/2	9/16	4
5/8	1 1/4			3 1/2	5/8	4
5/8	1 1/4	0.600	3 3/8	6	5/8	4
3/4	1 5/8			4	3/4	4
1	1 3/4			4	1	4
1	2 3/4			5	1	4
1	1 7/8	0.960	3 3/8	6	1	4

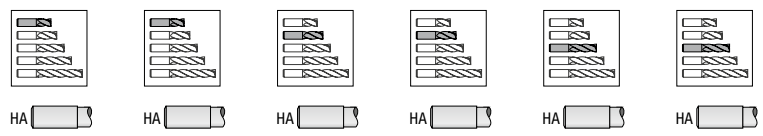
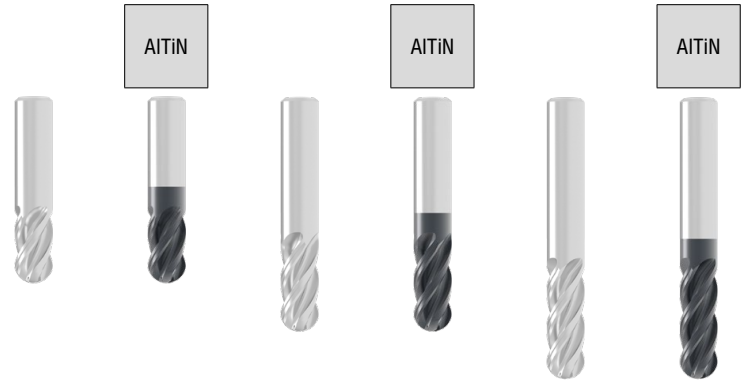
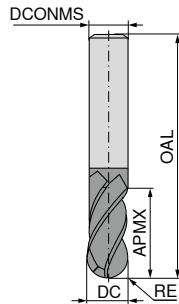
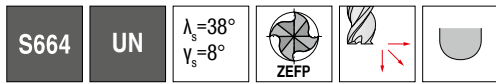
59 055 ...	59 055 ...	59 055 ...	59 055 ...
12520			
		12540	
15632			
18820			18833
		21934	
21917			
		25015	
			25030
			31324
31316			
37517			37523
			37623
50013			
		50020	
	50120		
			50220
		56322	
		62520	
			62620
		75022	
		99918	
	99928		
			99919

P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S				
H				
O				

→ v_c/f_z Page 128

Ball Nosed Cutter

- ▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 / - 0.002
- ▲ Radius accuracy: +/- 0.001

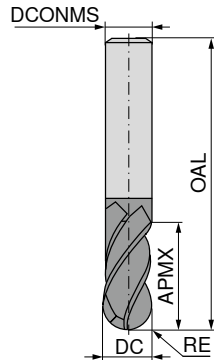
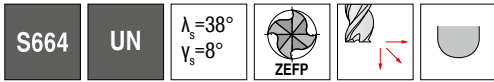


DC inch	APMX inch	OAL inch	DCONMS inch	ZEFP	59 080 ...	59 081 ...	59 080 ...	59 081 ...	59 080 ...	59 081 ...
1/32	3/32	1 1/2	1/8	4					03130	03130
3/64	9/64	1 1/2	1/8	4					04730	04730
1/16	1/8	1 1/2	1/8	4					06320	06320
3/32	3/16	1 1/2	1/8	4					09420	09420
1/8	1/4	1 1/2	1/8	4	12520	12520			12540	12540
1/8	1/2	1 1/2	1/8	4						
1/8	3/4	3	1/8	4					12660	12660
5/32	3/8	2	3/16	4					15624	15624
3/16	3/8	2	3/16	4	18820	18820			18833	18833
3/16	5/8	2	3/16	4						
3/16	1	4	3/16	4					18853	18853
1/4	3/8	2	1/4	4	25015	25015				
1/4	3/4	2 1/2	1/4	4					25030	25030
1/4	1 1/8	3	1/4	4						
5/16	1/2	2	5/16	4	31316	31316				
5/16	3/4	2 1/2	5/16	4					31324	31324
5/16	1 1/8	3	5/16	4						
3/8	5/8	2	3/8	4					31336	31336
3/8	7/8	2 1/2	3/8	4	37517	37517				
3/8	1 1/8	3	3/8	4					37523	37523
3/8	1 1/2	6	3/8	4						
1/2	5/8	2 1/2	1/2	4					37530	37530
1/2	1	3	1/2	4					37540	37540
1/2	1 1/2	6	1/2	4	50013	50013				
5/8	7/8	3	5/8	4					50020	50020
5/8	1 1/4	3 1/2	5/8	4						
5/8	2 1/8	4 5/8	5/8	4					50030	50030
3/4	1	3	3/4	4						
3/4	1 1/2	4	3/4	4	62514	62514				
3/4	2 1/4	5	3/4	4					62520	62520
1	1 3/4	4	1	4						
1	2 1/4	5	1	4	75013	75013			62534	62534
									75020	75020
									75030	75030
									99918	99918
									99923	99923
P					•	•	•	•	•	•
M					•	•	•	•	•	•
K					•	•	•	•	•	•
N					•	•	•	•	•	•
S										
H										
O										

→ v_c/f_z Page 126

Ball Nosed Cutter

- ▲ DC tolerance:
 ≤ Ø 7/64 inch: +/- 0.0005
 ≥ Ø 1/8 inch: 0 / - 0.002
- ▲ Radius accuracy: +/- 0.001



	AITiN	AITiN		
59 080 ...	59 081 ...	59 080 ...	59 081 ...	
06330	06330			
09430	09430			
12560	12560			
		12580	12580	
15632	15632			
18840	18840			
		18860	18860	
		25060	25060	
25040	25040			
		25160	25160	
31332	31332			
		31348	31348	
		37547	37547	
37527	37527			
		37580	37580	
		50040	50040	
50120	50120			
		50060	50060	
		62548	62548	
62532	62532			
		75040	75040	
75027	75027			
		99930	99930	
99920	99920			

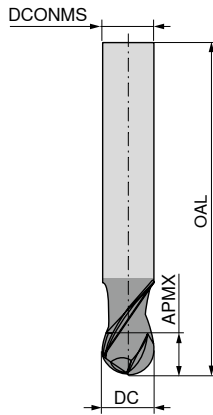
DC inch	APMX inch	OAL inch	DCONMS inch	ZEPF
1/16	3/16	1 1/2	1/8	4
3/32	9/32	1 1/2	1/8	4
1/8	3/4	2 1/2	1/8	4
1/8	1	3	1/8	4
5/32	1/2	2	3/16	4
3/16	3/4	2 1/2	3/16	4
3/16	1 1/8	3	3/16	4
1/4	1 1/2	4	1/4	4
1/4	1	4	1/4	4
1/4	1 1/2	6	1/4	4
5/16	1 5/8	4	5/16	4
5/16	1	4	5/16	4
5/16	1 1/2	6	5/16	4
3/8	1 3/4	4	3/8	4
3/8	1	4	3/8	4
3/8	3	6	3/8	4
1/2	2	4	1/2	4
1/2	1	4	1/2	4
1/2	3	6	1/2	4
5/8	3	6	5/8	4
5/8	2	6	5/8	4
3/4	3	6	3/4	4
3/4	2	6	3/4	4
1	3	6	1	4
1	2	6	1	4

P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	●	●	●	●
H				
O				

Ball Nosed Cutter

▲ Radius accuracy: + 0.000 / - 0.0004

P250
ST
 $\lambda_s = 30^\circ$
 $\nu_s = 8^\circ$
ZEFP



DC <small>+0.000/-0.002</small>	APMX	OAL	DCONMS <small>-0.0001 / -0.0004</small>	ZEFP	59 063 ...	59 063 ...
inch	inch	inch	inch			
1/8	1/8	3	1/8	2		12510
3/16	3/16	3	3/16	2		18810
1/4	1/4	4	1/4	2		25010
3/8	3/8	4	3/8	2	37510	37610
3/8	3/8	6	3/8	2		
1/2	1/2	4	1/2	2	50010	50110
1/2	1/2	6	1/2	2		

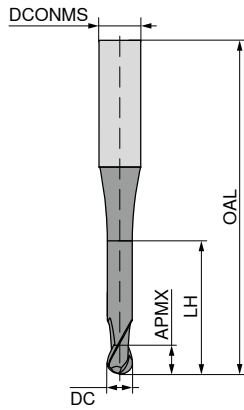
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H		
O		

→ v_c/f_z Page 127

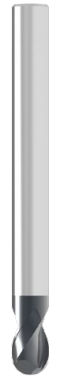
Ball Nosed Cutter

▲ Radius accuracy: + 0.000 / - 0.0004

P251
UN
 $\lambda_s = 30^\circ$
 $\nu_s = 8^\circ$
ZEP



AITiN



HA

59 064 ...

DC ± 0.0005 inch	APMX inch	LH inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEP	
0.031	0.031	5/8	4	1/4	2	03110
0.060	0.060	1 1/4	4	1/4	2	06010
0.080	0.080	1 5/8	4	1/4	2	08010
0.094	0.094	1 7/8	4	1/4	2	09410
0.125	0.125	2 1/2	4	1/4	2	12510
0.188	0.188	2.265	4	1/4	2	18810

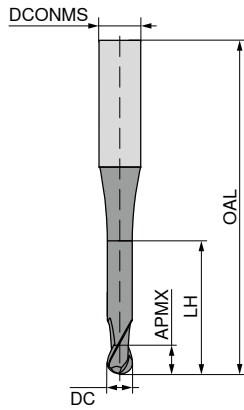
P	●
M	●
K	●
N	●
S	●
H	
O	

→ v_c/f_z Page 128

Ball Nosed Cutter

▲ Radius accuracy: + 0.000 / - 0.0004

P252
UN
 $\lambda_s = 30^\circ$
 $\nu_s = 8^\circ$
ZEFP



AITiN



HA

59 065 ...

DC ± 0.0005 inch	APMX inch	LH inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.031	0.031	2.125	4	1/4	2	03110
0.060	0.060	1.875	4	1/4	2	06010
0.080	0.080	1.704	4	1/4	2	08010
0.094	0.094	1.584	4	1/4	2	09410
0.125	0.125	1.324	4	1/4	2	12510
0.188	0.188	0.785	4	1/4	2	18810

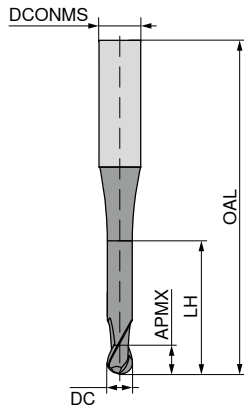
P	●
M	●
K	●
N	●
S	●
H	
O	

→ v_c/f_z Page 128

Ball Nosed Cutter

▲ Radius accuracy: + 0.000 / - 0.0004

P253
UN
 $\lambda_s = 30^\circ$
 $\nu_s = 8^\circ$
ZEPF



AITiN



HA

59 066 ...

DC ± 0.0005 inch	APMX inch	LH inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEPF	
0.031	0.031	1.282	4	1/4	2	03110
0.060	0.060	1.175	4	1/4	2	06010
0.080	0.080	1.084	4	1/4	2	08010
0.094	0.094	1.018	4	1/4	2	09410
0.125	0.125	0.897	4	1/4	2	12510
0.188	0.188	0.687	4	1/4	2	18810

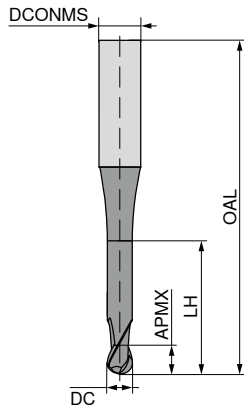
P	●
M	●
K	●
N	●
S	●
H	
O	

→ v_c/f_z Page 128

Ball Nosed Cutter

▲ Radius accuracy: + 0.000 / - 0.0004

P254
UN
 $\lambda_s = 30^\circ$
 $\nu_s = 8^\circ$
ZEPF



AITiN



HA

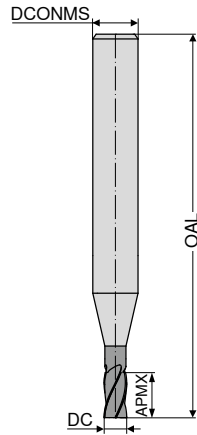
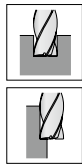
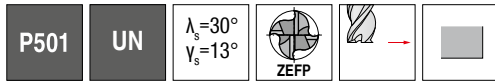
59 067 ...

DC ± 0.0005 inch	APMX inch	LH inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEPF	
0.031	0.031	0.773	4	1/4	2	03110
0.060	0.060	0.726	4	1/4	2	06010
0.080	0.080	0.690	4	1/4	2	08010
0.094	0.094	0.750	4	1/4	2	09410
0.125	0.125	0.636	4	1/4	2	12510
0.188	0.188	0.454	4	1/4	2	18810

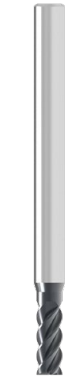
P	●
M	●
K	●
N	●
S	●
H	
O	

→ v_c/f_z Page 128

Micro end milling cutter



AlTiN



HA

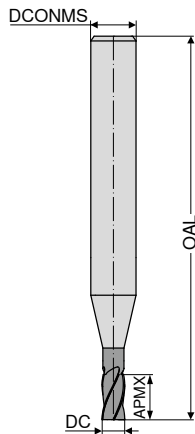
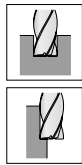
59 007 ...

DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.005	0.015	1 1/2	1/8	4	00530
0.006	0.018	1 1/2	1/8	4	00630
0.007	0.021	1 1/2	1/8	4	00730
0.008	0.024	1 1/2	1/8	4	00830
0.009	0.027	1 1/2	1/8	4	00930
0.010	0.030	1 1/2	1/8	4	01030
0.011	0.033	1 1/2	1/8	4	01130
0.012	0.036	1 1/2	1/8	4	01230
0.013	0.039	1 1/2	1/8	4	01330
0.014	0.042	1 1/2	1/8	4	01430
0.015	0.045	1 1/2	1/8	4	01530
0.016	0.048	1 1/2	1/8	4	01630
0.017	0.051	1 1/2	1/8	4	01730
0.018	0.054	1 1/2	1/8	4	01830
0.019	0.057	1 1/2	1/8	4	01930
0.020	0.060	1 1/2	1/8	4	02030
0.021	0.063	1 1/2	1/8	4	02130
0.022	0.066	1 1/2	1/8	4	02230
0.023	0.069	1 1/2	1/8	4	02330
0.024	0.072	1 1/2	1/8	4	02430
0.025	0.075	1 1/2	1/8	4	02530
0.026	0.078	1 1/2	1/8	4	02630
0.027	0.081	1 1/2	1/8	4	02730
0.028	0.084	1 1/2	1/8	4	02830
0.029	0.087	1 1/2	1/8	4	02930
0.030	0.090	1 1/2	1/8	4	03030
0.031	0.093	1 1/2	1/8	4	03130
0.032	0.096	1 1/2	1/8	4	03230
0.033	0.099	1 1/2	1/8	4	03330
0.034	0.102	1 1/2	1/8	4	03430
0.035	0.105	1 1/2	1/8	4	03530
0.036	0.108	1 1/2	1/8	4	03630
0.037	0.111	1 1/2	1/8	4	03730
0.038	0.114	1 1/2	1/8	4	03830
0.039	0.117	1 1/2	1/8	4	03930
0.040	0.120	1 1/2	1/8	4	04030
0.041	0.123	1 1/2	1/8	4	04130
0.042	0.126	1 1/2	1/8	4	04230
0.043	0.129	1 1/2	1/8	4	04330
0.044	0.132	1 1/2	1/8	4	04430
0.045	0.135	1 1/2	1/8	4	04530

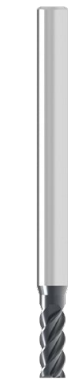
P	•
M	•
K	•
N	•
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H	
O	

Micro end milling cutter

P501
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEFP



AITiN



HA

59 007 ...

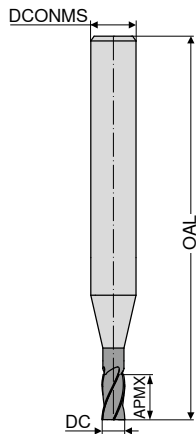
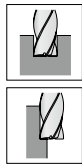
DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.046	0.138	1 1/2	1/8	4	04630
0.047	0.141	1 1/2	1/8	4	04730
0.048	0.144	1 1/2	1/8	4	04830
0.049	0.147	1 1/2	1/8	4	04930
0.050	0.150	1 1/2	1/8	4	05030
0.051	0.153	1 1/2	1/8	4	05130
0.052	0.156	1 1/2	1/8	4	05230
0.053	0.159	1 1/2	1/8	4	05330
0.054	0.162	1 1/2	1/8	4	05430
0.055	0.165	1 1/2	1/8	4	05530
0.056	0.168	1 1/2	1/8	4	05630
0.057	0.171	1 1/2	1/8	4	05730
0.058	0.174	1 1/2	1/8	4	05830
0.059	0.177	1 1/2	1/8	4	05930
0.060	0.180	1 1/2	1/8	4	06030
0.061	0.183	1 1/2	1/8	4	06130
0.062	0.186	1 1/2	1/8	4	06230
0.063	0.189	1 1/2	1/8	4	06330
0.064	0.192	1 1/2	1/8	4	06430
0.065	0.195	1 1/2	1/8	4	06530
0.066	0.198	1 1/2	1/8	4	06630
0.067	0.201	1 1/2	1/8	4	06730
0.068	0.204	1 1/2	1/8	4	06830
0.069	0.207	1 1/2	1/8	4	06930
0.070	0.210	1 1/2	1/8	4	07030
0.071	0.213	1 1/2	1/8	4	07130
0.072	0.216	1 1/2	1/8	4	07230
0.073	0.219	1 1/2	1/8	4	07330
0.074	0.222	1 1/2	1/8	4	07430
0.075	0.225	1 1/2	1/8	4	07530
0.076	0.228	1 1/2	1/8	4	07630
0.077	0.231	1 1/2	1/8	4	07730
0.078	0.234	1 1/2	1/8	4	07830
0.079	0.237	1 1/2	1/8	4	07930
0.080	0.240	1 1/2	1/8	4	08030
0.081	0.243	1 1/2	1/8	4	08130
0.082	0.246	1 1/2	1/8	4	08230
0.083	0.249	1 1/2	1/8	4	08330
0.084	0.252	1 1/2	1/8	4	08430
0.085	0.255	1 1/2	1/8	4	08530
0.086	0.258	1 1/2	1/8	4	08630

P	•
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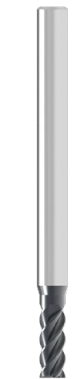
→ v_c/f_z Page 130

Micro end milling cutter

P501
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEP



AlTiN



HA

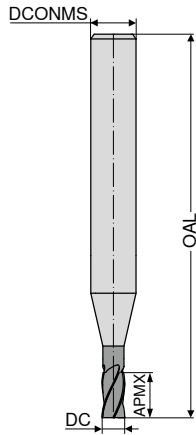
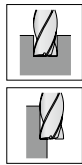
59 007 ...

DC $_{\pm 0.0005}$ inch	APMX inch	OAL inch	DCONMS $_{-0.0001 / -0.0004}$ inch	ZEP	
0.087	0.261	1 1/2	1/8	4	08730
0.088	0.264	1 1/2	1/8	4	08830
0.089	0.267	1 1/2	1/8	4	08930
0.090	0.270	1 1/2	1/8	4	09030
0.091	0.273	1 1/2	1/8	4	09130
0.092	0.276	1 1/2	1/8	4	09230
0.093	0.279	1 1/2	1/8	4	09330
0.094	0.282	1 1/2	1/8	4	09430
0.095	0.285	1 1/2	1/8	4	09530
0.096	0.288	1 1/2	1/8	4	09630
0.097	0.291	1 1/2	1/8	4	09730
0.098	0.294	1 1/2	1/8	4	09830
0.099	0.297	1 1/2	1/8	4	09930
0.100	0.300	1 1/2	1/8	4	10030
0.101	0.303	1 1/2	1/8	4	10130
0.102	0.306	1 1/2	1/8	4	10230
0.103	0.309	1 1/2	1/8	4	10330
0.104	0.312	1 1/2	1/8	4	10430
0.105	0.315	1 1/2	1/8	4	10530
0.106	0.318	1 1/2	1/8	4	10630
0.107	0.321	1 1/2	1/8	4	10730
0.108	0.324	1 1/2	1/8	4	10830
0.109	0.327	1 1/2	1/8	4	10930
0.110	0.330	1 1/2	1/8	4	11030
0.111	0.333	1 1/2	1/8	4	11130
0.112	0.336	1 1/2	1/8	4	11230
0.113	0.339	1 1/2	1/8	4	11330
0.114	0.341	1 1/2	1/8	4	11430
0.115	0.345	1 1/2	1/8	4	11530
0.116	0.348	1 1/2	1/8	4	11630
0.117	0.351	1 1/2	1/8	4	11730
0.118	0.354	1 1/2	1/8	4	11830
0.119	0.357	1 1/2	1/8	4	11930
0.120	0.360	1 1/2	1/8	4	12030

P	•
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Micro end milling cutter

P504
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEFP



AITiN



HA

59 009 ...

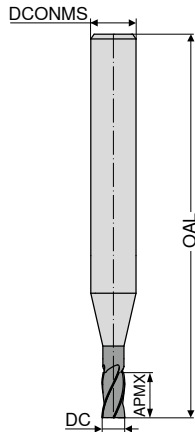
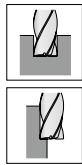
DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.005	0.008	1 1/2	1/8	4	00516
0.006	0.009	1 1/2	1/8	4	00615
0.007	0.011	1 1/2	1/8	4	00716
0.008	0.012	1 1/2	1/8	4	00815
0.009	0.014	1 1/2	1/8	4	00916
0.010	0.015	1 1/2	1/8	4	01015
0.011	0.017	1 1/2	1/8	4	01115
0.012	0.018	1 1/2	1/8	4	01215
0.013	0.020	1 1/2	1/8	4	01315
0.014	0.021	1 1/2	1/8	4	01415
0.015	0.023	1 1/2	1/8	4	01515
0.016	0.024	1 1/2	1/8	4	01615
0.017	0.026	1 1/2	1/8	4	01715
0.018	0.027	1 1/2	1/8	4	01815
0.019	0.029	1 1/2	1/8	4	01915
0.020	0.030	1 1/2	1/8	4	02015
0.021	0.032	1 1/2	1/8	4	02115
0.022	0.033	1 1/2	1/8	4	02215
0.023	0.035	1 1/2	1/8	4	02315
0.024	0.036	1 1/2	1/8	4	02415
0.025	0.038	1 1/2	1/8	4	02515
0.026	0.039	1 1/2	1/8	4	02615
0.027	0.041	1 1/2	1/8	4	02715
0.028	0.042	1 1/2	1/8	4	02815
0.029	0.044	1 1/2	1/8	4	02915
0.030	0.045	1 1/2	1/8	4	03015
0.031	0.047	1 1/2	1/8	4	03115
0.032	0.048	1 1/2	1/8	4	03215
0.033	0.050	1 1/2	1/8	4	03315
0.034	0.051	1 1/2	1/8	4	03415
0.035	0.053	1 1/2	1/8	4	03515
0.036	0.054	1 1/2	1/8	4	03615
0.037	0.056	1 1/2	1/8	4	03715
0.038	0.057	1 1/2	1/8	4	03815
0.039	0.059	1 1/2	1/8	4	03915
0.040	0.060	1 1/2	1/8	4	04015
0.041	0.062	1 1/2	1/8	4	04115
0.042	0.063	1 1/2	1/8	4	04215
0.043	0.065	1 1/2	1/8	4	04315
0.044	0.066	1 1/2	1/8	4	04415
0.045	0.068	1 1/2	1/8	4	04515

P	•
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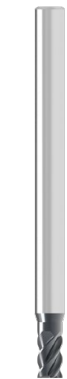
→ v_c/f_z Page 129

Micro end milling cutter

P504
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEFP



AITiN



HA

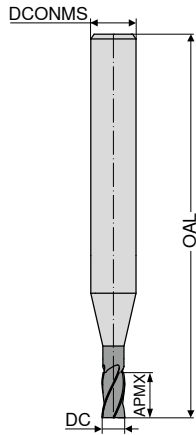
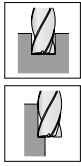
59 009 ...

DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.046	0.069	1 1/2	1/8	4	04615
0.047	0.071	1 1/2	1/8	4	04715
0.048	0.072	1 1/2	1/8	4	04815
0.049	0.074	1 1/2	1/8	4	04915
0.050	0.075	1 1/2	1/8	4	05015
0.051	0.077	1 1/2	1/8	4	05115
0.052	0.078	1 1/2	1/8	4	05215
0.053	0.080	1 1/2	1/8	4	05315
0.054	0.081	1 1/2	1/8	4	05415
0.055	0.083	1 1/2	1/8	4	05515
0.056	0.084	1 1/2	1/8	4	05615
0.057	0.086	1 1/2	1/8	4	05715
0.058	0.087	1 1/2	1/8	4	05815
0.059	0.089	1 1/2	1/8	4	05915
0.060	0.090	1 1/2	1/8	4	06015
0.061	0.092	1 1/2	1/8	4	06115
0.062	0.093	1 1/2	1/8	4	06215
0.063	0.095	1 1/2	1/8	4	06315
0.064	0.096	1 1/2	1/8	4	06415
0.065	0.098	1 1/2	1/8	4	06515
0.066	0.099	1 1/2	1/8	4	06615
0.067	0.101	1 1/2	1/8	4	06715
0.068	0.102	1 1/2	1/8	4	06815
0.069	0.104	1 1/2	1/8	4	06915
0.070	0.105	1 1/2	1/8	4	07015
0.071	0.107	1 1/2	1/8	4	07115
0.072	0.108	1 1/2	1/8	4	07215
0.073	0.110	1 1/2	1/8	4	07315
0.074	0.111	1 1/2	1/8	4	07415
0.075	0.113	1 1/2	1/8	4	07515
0.076	0.114	1 1/2	1/8	4	07615
0.077	0.116	1 1/2	1/8	4	07715
0.078	0.117	1 1/2	1/8	4	07815
0.079	0.119	1 1/2	1/8	4	07915
0.080	0.120	1 1/2	1/8	4	08015
0.081	0.122	1 1/2	1/8	4	08115
0.082	0.123	1 1/2	1/8	4	08215
0.083	0.125	1 1/2	1/8	4	08315
0.084	0.126	1 1/2	1/8	4	08415
0.085	0.128	1 1/2	1/8	4	08515
0.086	0.129	1 1/2	1/8	4	08615

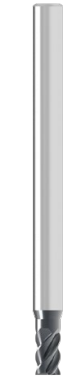
P	•
M	•
K	•
N	•
S	•
H	
O	

Micro end milling cutter

P504
UN
 $\lambda_s=30^\circ$
 $\gamma_s=13^\circ$
ZEPF



AITiN



HA

59 009 ...

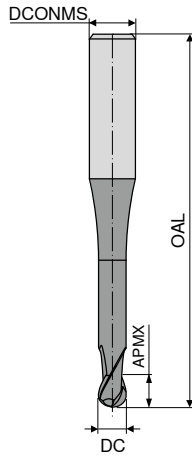
DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEPF	
0.087	0.131	1 1/2	1/8	4	08715
0.088	0.132	1 1/2	1/8	4	08815
0.089	0.134	1 1/2	1/8	4	08915
0.090	0.135	1 1/2	1/8	4	09015
0.091	0.137	1 1/2	1/8	4	09115
0.092	0.138	1 1/2	1/8	4	09215
0.093	0.140	1 1/2	1/8	4	09315
0.094	0.141	1 1/2	1/8	4	09415
0.095	0.143	1 1/2	1/8	4	09515
0.096	0.144	1 1/2	1/8	4	09615
0.097	0.146	1 1/2	1/8	4	09715
0.098	0.147	1 1/2	1/8	4	09815
0.099	0.149	1 1/2	1/8	4	09915
0.100	0.150	1 1/2	1/8	4	10015
0.101	0.152	1 1/2	1/8	4	10115
0.102	0.153	1 1/2	1/8	4	10215
0.103	0.155	1 1/2	1/8	4	10315
0.104	0.156	1 1/2	1/8	4	10415
0.105	0.158	1 1/2	1/8	4	10515
0.106	0.159	1 1/2	1/8	4	10615
0.107	0.161	1 1/2	1/8	4	10715
0.108	0.162	1 1/2	1/8	4	10815
0.109	0.164	1 1/2	1/8	4	10915
0.110	0.165	1 1/2	1/8	4	11015
0.111	0.167	1 1/2	1/8	4	11115
0.112	0.168	1 1/2	1/8	4	11215
0.113	0.170	1 1/2	1/8	4	11315
0.114	0.171	1 1/2	1/8	4	11415
0.115	0.173	1 1/2	1/8	4	11515
0.116	0.174	1 1/2	1/8	4	11615
0.117	0.176	1 1/2	1/8	4	11715
0.118	0.177	1 1/2	1/8	4	11815
0.119	0.179	1 1/2	1/8	4	11915
0.120	0.180	1 1/2	1/8	4	12015

P	•
M	•
K	•
N	•
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H	
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→ v_c/f_z Page 129

Micro ball nosed cutter

P503
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEFP



AITiN




HA

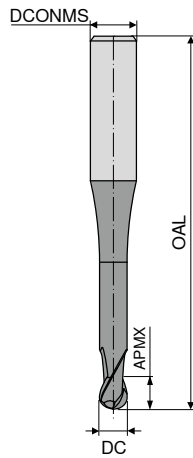
59 008 ...

DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.005	0.015	1 1/2	1/8	4	00530
0.006	0.018	1 1/2	1/8	4	00630
0.007	0.021	1 1/2	1/8	4	00730
0.008	0.024	1 1/2	1/8	4	00830
0.009	0.027	1 1/2	1/8	4	00930
0.010	0.030	1 1/2	1/8	4	01030
0.011	0.033	1 1/2	1/8	4	01130
0.012	0.036	1 1/2	1/8	4	01230
0.013	0.039	1 1/2	1/8	4	01330
0.014	0.042	1 1/2	1/8	4	01430
0.015	0.045	1 1/2	1/8	4	01530
0.016	0.048	1 1/2	1/8	4	01630
0.017	0.051	1 1/2	1/8	4	01730
0.018	0.054	1 1/2	1/8	4	01830
0.019	0.057	1 1/2	1/8	4	01930
0.020	0.060	1 1/2	1/8	4	02030
0.021	0.063	1 1/2	1/8	4	02130
0.022	0.066	1 1/2	1/8	4	02230
0.023	0.069	1 1/2	1/8	4	02330
0.024	0.072	1 1/2	1/8	4	02430
0.025	0.075	1 1/2	1/8	4	02530
0.026	0.078	1 1/2	1/8	4	02630
0.027	0.081	1 1/2	1/8	4	02730
0.028	0.084	1 1/2	1/8	4	02830
0.029	0.087	1 1/2	1/8	4	02930
0.030	0.090	1 1/2	1/8	4	03030
0.031	0.093	1 1/2	1/8	4	03130
0.032	0.096	1 1/2	1/8	4	03230
0.033	0.099	1 1/2	1/8	4	03330
0.034	0.102	1 1/2	1/8	4	03430
0.035	0.105	1 1/2	1/8	4	03530
0.036	0.108	1 1/2	1/8	4	03630
0.037	0.111	1 1/2	1/8	4	03730
0.038	0.114	1 1/2	1/8	4	03830
0.039	0.117	1 1/2	1/8	4	03930
0.040	0.120	1 1/2	1/8	4	04030
0.041	0.123	1 1/2	1/8	4	04130
0.042	0.126	1 1/2	1/8	4	04230
0.043	0.129	1 1/2	1/8	4	04330
0.044	0.132	1 1/2	1/8	4	04430
0.045	0.135	1 1/2	1/8	4	04530

P	•
M	•
K	•
N	•
S	•
H	
O	

Micro ball nosed cutter

P503
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEFP




AITiN




HA

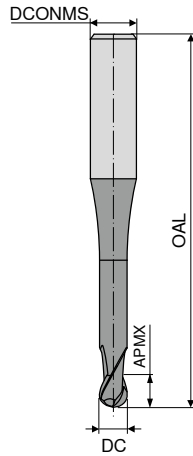
59 008 ...

DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.046	0.138	1 1/2	1/8	4	04630
0.047	0.141	1 1/2	1/8	4	04730
0.048	0.144	1 1/2	1/8	4	04830
0.049	0.147	1 1/2	1/8	4	04930
0.050	0.150	1 1/2	1/8	4	05030
0.051	0.153	1 1/2	1/8	4	05130
0.052	0.156	1 1/2	1/8	4	05230
0.053	0.159	1 1/2	1/8	4	05330
0.054	0.162	1 1/2	1/8	4	05430
0.055	0.165	1 1/2	1/8	4	05530
0.056	0.168	1 1/2	1/8	4	05630
0.057	0.171	1 1/2	1/8	4	05730
0.058	0.174	1 1/2	1/8	4	05830
0.059	0.177	1 1/2	1/8	4	05930
0.060	0.180	1 1/2	1/8	4	06030
0.061	0.183	1 1/2	1/8	4	06130
0.062	0.186	1 1/2	1/8	4	06230
0.063	0.189	1 1/2	1/8	4	06330
0.064	0.192	1 1/2	1/8	4	06430
0.065	0.195	1 1/2	1/8	4	06530
0.066	0.198	1 1/2	1/8	4	06630
0.067	0.201	1 1/2	1/8	4	06730
0.068	0.204	1 1/2	1/8	4	06830
0.069	0.207	1 1/2	1/8	4	06930
0.070	0.210	1 1/2	1/8	4	07030
0.071	0.213	1 1/2	1/8	4	07130
0.072	0.216	1 1/2	1/8	4	07230
0.073	0.219	1 1/2	1/8	4	07330
0.074	0.222	1 1/2	1/8	4	07430
0.075	0.225	1 1/2	1/8	4	07530
0.076	0.228	1 1/2	1/8	4	07630
0.077	0.231	1 1/2	1/8	4	07730
0.078	0.234	1 1/2	1/8	4	07830
0.079	0.237	1 1/2	1/8	4	07930
0.080	0.240	1 1/2	1/8	4	08030
0.081	0.243	1 1/2	1/8	4	08130
0.082	0.246	1 1/2	1/8	4	08230
0.083	0.249	1 1/2	1/8	4	08330
0.084	0.252	1 1/2	1/8	4	08430
0.085	0.255	1 1/2	1/8	4	08530
0.086	0.258	1 1/2	1/8	4	08630

P	•
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Micro ball nosed cutter

P503
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEFP




AlTiN



HA

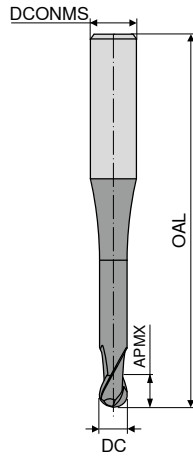
59 008 ...

DC $_{\pm 0.0005}$ inch	APMX inch	OAL inch	DCONMS $_{-0.0001 / -0.0004}$ inch	ZEFP	
0.087	0.261	1 1/2	1/8	4	08730
0.088	0.264	1 1/2	1/8	4	08830
0.089	0.267	1 1/2	1/8	4	08930
0.090	0.270	1 1/2	1/8	4	09030
0.091	0.273	1 1/2	1/8	4	09130
0.092	0.276	1 1/2	1/8	4	09230
0.093	0.279	1 1/2	1/8	4	09330
0.094	0.282	1 1/2	1/8	4	09430
0.095	0.285	1 1/2	1/8	4	09530
0.096	0.288	1 1/2	1/8	4	09630
0.097	0.291	1 1/2	1/8	4	09730
0.098	0.294	1 1/2	1/8	4	09830
0.099	0.297	1 1/2	1/8	4	09930
0.100	0.300	1 1/2	1/8	4	10030
0.101	0.303	1 1/2	1/8	4	10130
0.102	0.306	1 1/2	1/8	4	10230
0.103	0.309	1 1/2	1/8	4	10330
0.104	0.312	1 1/2	1/8	4	10430
0.105	0.315	1 1/2	1/8	4	10530
0.106	0.318	1 1/2	1/8	4	10630
0.107	0.321	1 1/2	1/8	4	10730
0.108	0.324	1 1/2	1/8	4	10830
0.109	0.327	1 1/2	1/8	4	10930
0.110	0.330	1 1/2	1/8	4	11030
0.111	0.333	1 1/2	1/8	4	11130
0.112	0.336	1 1/2	1/8	4	11230
0.113	0.339	1 1/2	1/8	4	11330
0.114	0.341	1 1/2	1/8	4	11430
0.115	0.345	1 1/2	1/8	4	11530
0.116	0.348	1 1/2	1/8	4	11630
0.117	0.351	1 1/2	1/8	4	11730
0.118	0.354	1 1/2	1/8	4	11830
0.119	0.357	1 1/2	1/8	4	11930
0.120	0.360	1 1/2	1/8	4	12030

P	•
M	•
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H	•
O	

Micro ball nosed cutter

P506
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEFP



AITiN



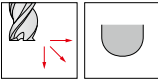
HA

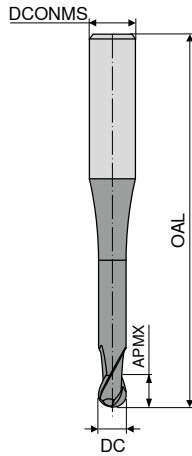
59 010 ...

DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.005	0.008	1 1/2	1/8	4	00516
0.006	0.009	1 1/2	1/8	4	00615
0.007	0.011	1 1/2	1/8	4	00716
0.008	0.012	1 1/2	1/8	4	00815
0.009	0.014	1 1/2	1/8	4	00916
0.010	0.015	1 1/2	1/8	4	01015
0.011	0.017	1 1/2	1/8	4	01115
0.012	0.018	1 1/2	1/8	4	01215
0.013	0.020	1 1/2	1/8	4	01315
0.014	0.021	1 1/2	1/8	4	01415
0.015	0.023	1 1/2	1/8	4	01515
0.016	0.024	1 1/2	1/8	4	01615
0.017	0.026	1 1/2	1/8	4	01715
0.018	0.027	1 1/2	1/8	4	01815
0.019	0.029	1 1/2	1/8	4	01915
0.020	0.030	1 1/2	1/8	4	02015
0.021	0.032	1 1/2	1/8	4	02115
0.022	0.033	1 1/2	1/8	4	02215
0.023	0.035	1 1/2	1/8	4	02315
0.024	0.036	1 1/2	1/8	4	02415
0.025	0.038	1 1/2	1/8	4	02515
0.026	0.039	1 1/2	1/8	4	02615
0.027	0.041	1 1/2	1/8	4	02715
0.028	0.042	1 1/2	1/8	4	02815
0.029	0.044	1 1/2	1/8	4	02915
0.030	0.045	1 1/2	1/8	4	03015
0.031	0.047	1 1/2	1/8	4	03115
0.032	0.048	1 1/2	1/8	4	03215
0.033	0.050	1 1/2	1/8	4	03315
0.034	0.051	1 1/2	1/8	4	03415
0.035	0.053	1 1/2	1/8	4	03515
0.036	0.054	1 1/2	1/8	4	03615
0.037	0.056	1 1/2	1/8	4	03715
0.038	0.057	1 1/2	1/8	4	03815
0.039	0.059	1 1/2	1/8	4	03915
0.040	0.060	1 1/2	1/8	4	04015
0.041	0.062	1 1/2	1/8	4	04115
0.042	0.063	1 1/2	1/8	4	04215
0.043	0.065	1 1/2	1/8	4	04315
0.044	0.066	1 1/2	1/8	4	04415
0.045	0.068	1 1/2	1/8	4	04515

P	•
M	•
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Micro ball nosed cutter

P506
UN
 $\lambda_s=30^\circ$
 $\nu_s=13^\circ$
ZEFP




AITiN



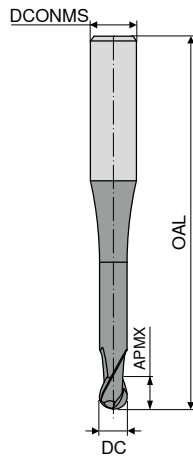
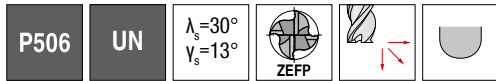
HA

59 010 ...

DC $_{\pm 0.0005}$ inch	APMX inch	OAL inch	DCONMS $_{-0.0001 / -0.0004}$ inch	ZEFP	
0.046	0.069	1 1/2	1/8	4	04615
0.047	0.071	1 1/2	1/8	4	04715
0.048	0.072	1 1/2	1/8	4	04815
0.049	0.074	1 1/2	1/8	4	04915
0.050	0.075	1 1/2	1/8	4	05015
0.051	0.077	1 1/2	1/8	4	05115
0.052	0.078	1 1/2	1/8	4	05215
0.053	0.080	1 1/2	1/8	4	05315
0.054	0.081	1 1/2	1/8	4	05415
0.055	0.083	1 1/2	1/8	4	05515
0.056	0.084	1 1/2	1/8	4	05615
0.057	0.086	1 1/2	1/8	4	05715
0.058	0.087	1 1/2	1/8	4	05815
0.059	0.089	1 1/2	1/8	4	05915
0.060	0.090	1 1/2	1/8	4	06015
0.061	0.092	1 1/2	1/8	4	06115
0.062	0.093	1 1/2	1/8	4	06215
0.063	0.095	1 1/2	1/8	4	06315
0.064	0.096	1 1/2	1/8	4	06415
0.065	0.098	1 1/2	1/8	4	06515
0.066	0.099	1 1/2	1/8	4	06615
0.067	0.101	1 1/2	1/8	4	06715
0.068	0.102	1 1/2	1/8	4	06815
0.069	0.104	1 1/2	1/8	4	06915
0.070	0.105	1 1/2	1/8	4	07015
0.071	0.107	1 1/2	1/8	4	07115
0.072	0.108	1 1/2	1/8	4	07215
0.073	0.110	1 1/2	1/8	4	07315
0.074	0.111	1 1/2	1/8	4	07415
0.075	0.113	1 1/2	1/8	4	07515
0.076	0.114	1 1/2	1/8	4	07615
0.077	0.116	1 1/2	1/8	4	07715
0.078	0.117	1 1/2	1/8	4	07815
0.079	0.119	1 1/2	1/8	4	07915
0.080	0.120	1 1/2	1/8	4	08015
0.081	0.122	1 1/2	1/8	4	08115
0.082	0.123	1 1/2	1/8	4	08215
0.083	0.125	1 1/2	1/8	4	08315
0.084	0.126	1 1/2	1/8	4	08415
0.085	0.128	1 1/2	1/8	4	08515
0.086	0.129	1 1/2	1/8	4	08615

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Micro ball nosed cutter



AITiN



HA

59 010 ...



DC ± 0.0005 inch	APMX inch	OAL inch	DCONMS $-0.0001 / -0.0004$ inch	ZEFP	
0.087	0.131	1 1/2	1/8	4	08715
0.088	0.132	1 1/2	1/8	4	08815
0.089	0.134	1 1/2	1/8	4	08915
0.090	0.135	1 1/2	1/8	4	09015
0.091	0.137	1 1/2	1/8	4	09115
0.092	0.138	1 1/2	1/8	4	09215
0.093	0.140	1 1/2	1/8	4	09315
0.094	0.141	1 1/2	1/8	4	09415
0.095	0.143	1 1/2	1/8	4	09515
0.096	0.144	1 1/2	1/8	4	09615
0.097	0.146	1 1/2	1/8	4	09715
0.098	0.147	1 1/2	1/8	4	09815
0.099	0.149	1 1/2	1/8	4	09915
0.100	0.150	1 1/2	1/8	4	10015
0.101	0.152	1 1/2	1/8	4	10115
0.102	0.153	1 1/2	1/8	4	10215
0.103	0.155	1 1/2	1/8	4	10315
0.104	0.156	1 1/2	1/8	4	10415
0.105	0.158	1 1/2	1/8	4	10515
0.106	0.159	1 1/2	1/8	4	10615
0.107	0.161	1 1/2	1/8	4	10715
0.108	0.162	1 1/2	1/8	4	10815
0.109	0.164	1 1/2	1/8	4	10915
0.110	0.165	1 1/2	1/8	4	11015
0.111	0.167	1 1/2	1/8	4	11115
0.112	0.168	1 1/2	1/8	4	11215
0.113	0.170	1 1/2	1/8	4	11315
0.114	0.171	1 1/2	1/8	4	11415
0.115	0.173	1 1/2	1/8	4	11515
0.116	0.174	1 1/2	1/8	4	11615
0.117	0.176	1 1/2	1/8	4	11715
0.118	0.177	1 1/2	1/8	4	11815
0.119	0.179	1 1/2	1/8	4	11915
0.120	0.180	1 1/2	1/8	4	12015

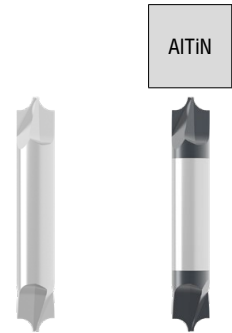
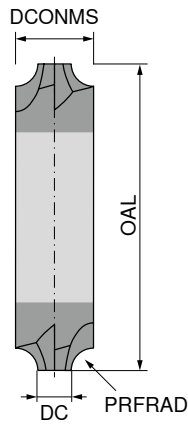
P	•
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→ v_c/f_z Page 129

Profile end milling cutter

- ▲ PRFRAD ≤ 1.397 [Inch] Tol. = ± 0.01
- ▲ PRFRAD > 1.397 [Inch] Tol. = ± 0.015

P137 **UN** $\lambda_s = 0^\circ$
 $\gamma_s = -5^\circ$  



HA  HA 

59 049 ...	59 050 ...
12510	
	12510
12515	
	12515
12520	
	12520
12525	
	12525
12531	
	12531
12535	
	12535
12540	
	12540
12546	
	12546
18850	
	18850
18855	
	18855
18862	
	18862
25072	
	25072
25078	
	25078
25085	
	25085
25094	
	25094
25000	
	25000
25009	
	25009
31318	
	31318
31325	
	31325
37540	
	37540
37556	
	37556

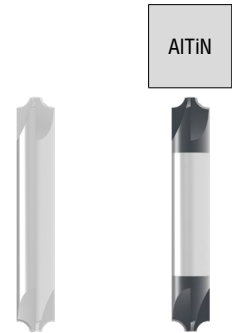
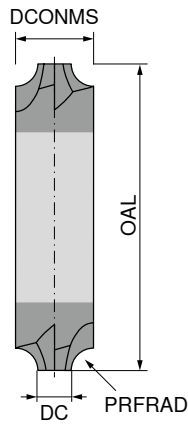
PRFRAD	DC ^{+0.000/-0.002}	OAL	DCONMS ^{-0.0001/-0.0004}	ZEFP
inch	inch	inch	inch	
0.010	0.125	1 1/2	1/8	2
0.010	0.125	1 1/2	1/8	2
0.015	0.125	1 1/2	1/8	2
0.015	0.125	1 1/2	1/8	2
0.020	0.125	1 1/2	1/8	2
0.020	0.125	1 1/2	1/8	2
0.025	0.125	1 1/2	1/8	2
0.025	0.125	1 1/2	1/8	2
0.031	0.125	1 1/2	1/8	2
0.031	0.125	1 1/2	1/8	2
0.035	0.125	1 1/2	1/8	2
0.035	0.125	1 1/2	1/8	2
0.040	0.125	1 1/2	1/8	2
0.040	0.125	1 1/2	1/8	2
0.046	0.125	1 1/2	1/8	2
0.046	0.125	1 1/2	1/8	2
0.050	0.188	2	3/16	2
0.050	0.188	2	3/16	2
0.055	0.188	2	3/16	2
0.055	0.188	2	3/16	2
0.062	0.188	2	3/16	2
0.062	0.188	2	3/16	2
0.072	0.250	2 1/2	1/4	2
0.072	0.250	2 1/2	1/4	2
0.078	0.250	2 1/2	1/4	2
0.078	0.250	2 1/2	1/4	2
0.085	0.250	2 1/2	1/4	2
0.085	0.250	2 1/2	1/4	2
0.094	0.250	2 1/2	1/4	2
0.094	0.250	2 1/2	1/4	2
0.100	0.250	2 1/2	1/4	2
0.100	0.250	2 1/2	1/4	2
0.109	0.250	2 1/2	1/4	2
0.109	0.250	2 1/2	1/4	2
0.118	0.313	2 1/2	5/16	2
0.118	0.313	2 1/2	5/16	2
0.125	0.313	2 1/2	5/16	2
0.125	0.313	2 1/2	5/16	2
0.140	0.375	2 1/2	3/8	2
0.140	0.375	2 1/2	3/8	2
0.156	0.375	2 1/2	3/8	2
0.156	0.375	2 1/2	3/8	2

P	•	•
M		
K	•	•
N		
S		
H		
O		

Profile end milling cutter

- ▲ PRFRAD ≤ 1.397 [Inch] Tol. = ± 0.01
- ▲ PRFRAD > 1.397 [Inch] Tol. = ± 0.015

P139 **UN** $\lambda_s=0^\circ$
 $\gamma_s=3,5^\circ$ **ZEFP**



HA HA

59 051 ...	59 052 ...
18810	18810
18910	18910
19010	19010
19110	19110
19210	19210
19310	19310
25010	25010
25110	25110
25210	25210
25410	25410
25310	25310
37510	37510
37610	37610
37710	37710
37810	37810
37910	37910
50010	50010

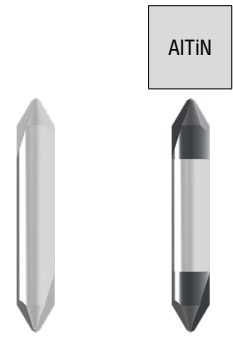
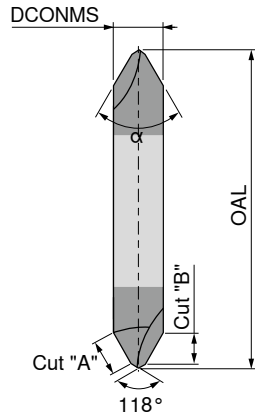
PRFRAD	DC	APMX	OAL	DCONMS	ZEFP
inch	^{+0.000/-0.002} inch	inch	inch	^{-0.0001/-0.0004} inch	
0.010	3/16	3/16	2	3/16	4
0.015	3/16	3/16	2	3/16	4
0.020	3/16	3/16	2	3/16	4
0.025	3/16	3/16	2	3/16	4
0.031	3/16	3/16	2	3/16	4
0.035	3/16	3/16	2	3/16	4
0.040	1/4	1/4	2 1/2	1/4	4
0.046	1/4	1/4	2 1/2	1/4	4
0.050	1/4	1/4	2 1/2	1/4	4
0.055	1/4	1/4	2 1/2	1/4	4
0.062	1/4	1/4	2 1/2	1/4	4
0.078	3/8	3/8	2 1/2	3/8	4
0.094	3/8	3/8	2 1/2	3/8	4
0.100	3/8	3/8	2 1/2	3/8	4
0.118	3/8	3/8	2 1/2	3/8	4
0.125	3/8	3/8	2 1/2	3/8	4
0.156	1/2	1/2	3	1/2	4

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 133

Chamfer milling cutter 60°

P132
UN
 $\lambda_s=0^\circ$
 $\nu_s=0^\circ$
ZEFP



$\alpha = 60^\circ$ HA
 $\alpha = 60^\circ$ HA

59 041 ...	59 042 ...
12506	12506
18806	18806
25006	25006
37506	37506
50006	50006

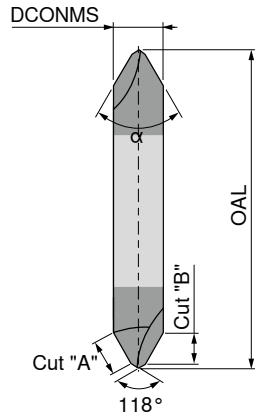
DC inch	Cut "A" inch	Cut "B" inch	OAL inch	DCONMS inch	ZEFP
1/8	0.098	0.085	1 1/2	1/8	2
3/16	0.147	0.127	2	3/16	2
1/4	0.200	0.173	2 1/2	1/4	2
3/8	0.313	0.271	2 1/2	3/8	2
1/2	0.430	0.372	3	1/2	2

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 134-135

Chamfer milling cutter 60°

P133
UN
 $\lambda_s=0^\circ$
 $\nu_s=0^\circ$
ZEFP



DC inch	Cut "A" inch	Cut "B" inch	OAL inch	DCONMS inch	ZEFP
1/4	0.200	0.173	2 1/2	1/4	4
3/8	0.313	0.271	2 1/2	3/8	4
1/2	0.430	0.372	3	1/2	4

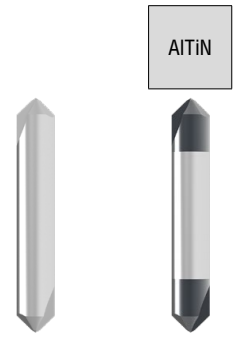
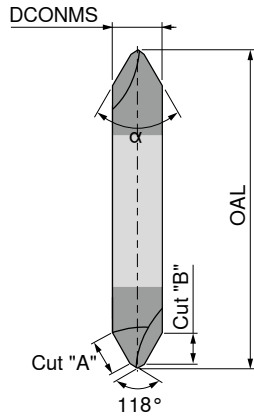
59 043 ...	59 044 ...
25006	25006
37506	37506
50006	50006

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 136-137

Chamfer milling cutter 90°

P134
UN
 $\lambda_s=0^\circ$
 $\nu_s=0^\circ$
ZEFP



59 045 ...	59 046 ...
12509	12509
18809	18809
25009	25009
37509	37509
50009	50009

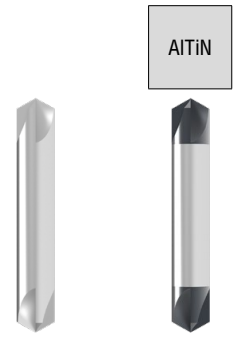
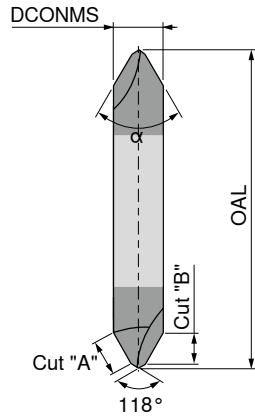
DC inch	Cut "A" inch	Cut "B" inch	OAL inch	DCONMS inch	ZEFP
1/8	0.071	0.050	1 1/2	1/8	2
3/16	0.107	0.076	2	3/16	2
1/4	0.141	0.100	2 1/2	1/4	2
3/8	0.221	0.157	2 1/2	3/8	2
1/2	0.304	0.215	3	1/2	2

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 134-135

Chamfer milling cutter 90°

P135
UN
 $\lambda_s=0^\circ$
 $\nu_s=0^\circ$
ZEFP



$\alpha = 90^\circ$ HA
 $\alpha = 90^\circ$ HA

59 047 ...	59 048 ...
25009	25009
37509	37509
50009	50009

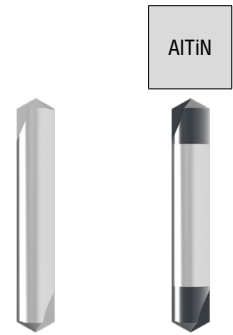
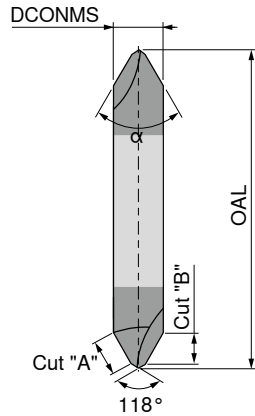
DC inch	Cut "A" inch	Cut "B" inch	OAL inch	DCONMS inch	ZEFP
1/4	0.141	0.100	2 1/2	1/4	4
3/8	0.221	0.157	2 1/2	3/8	4
1/2	0.304	0.215	3	1/2	4

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 136-137

Chamfer milling cutter 120°

P130
UN
 $\lambda_s=0^\circ$
 $\nu_s=0^\circ$
ZEFP



$\alpha = 120^\circ$ HA
 $\alpha = 120^\circ$ HA

DC inch	Cut "A" inch	Cut "B" inch	OAL inch	DCONMS inch	ZEFP
1/4	0.124	0.062	2 1/2	1/4	2
3/8	0.199	0.100	2 1/2	3/8	2
1/2	0.266	0.133	3	1/2	2

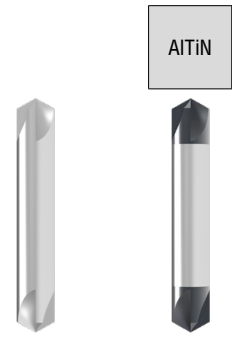
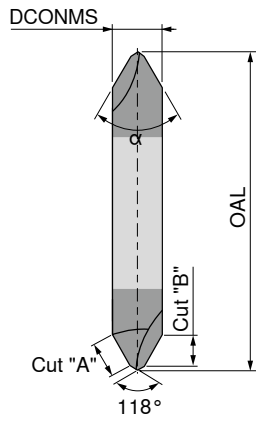
59 037 ...	59 038 ...
25012	25012
37512	37512
50012	50012

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 134-135

Chamfer milling cutter 120°

P131
UN
 $\lambda_s=0^\circ$
 $\nu_s=0^\circ$
ZEFP



$\alpha = 120^\circ$ HA
 $\alpha = 120^\circ$ HA

59 039 ...	59 040 ...
25012	25012
37512	37512
50012	50012

DC inch	Cut "A" inch	Cut "B" inch	OAL inch	DCONMS inch	ZEFP
1/4	0.144	0.072	2 1/2	1/4	4
3/8	0.217	0.108	2 1/2	3/8	4
1/2	0.289	0.144	3	1/2	4

P	•	•
M		
K	•	•
N		
S		
H		
O		

→ v_c/f_z Page 136-137

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment	Tensile strength lbf/in ² / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0.15 % C Annealed	60900 lbf/in ² / 125 HB	1.0401	1015	1.0301	1010
		P.1.2	< 0.45 % C Annealed	92800 lbf/in ² / 190 HB	1.1191	1045	1.0737	12L14
		P.1.3	< 0.45 % C Tempered	121800 lbf/in ² / 250 HB	1.1191	1045	1.0503	1043
		P.1.4	< 0.75 % C Annealed	132000 lbf/in ² / 270 HB	1.1223	1060	1.0535	1055
		P.1.5	< 0.75 % C Tempered	146500 lbf/in ² / 300 HB	1.1223	1060	1.1274	1095
	Low-alloy steel	P.2.1	Annealed	88500 lbf/in ² / 180 HB	1.7131	5115	1.6523	8620
		P.2.2	Tempered	134900 lbf/in ² / 275 HB	1.7131	5115	1.6582	4340
		P.2.3	Tempered	146500 lbf/in ² / 300 HB	1.7225	4142	1.7131	5115
		P.2.4	Tempered	174000 lbf/in ² / 375 HB	1.7225	4142	1.7223	4140
	High-alloy steel and high-alloy tool steel	P.3.1	Annealed	98600 lbf/in ² / 200 HB	1.4021	420	1.2379	D2
		P.3.2	Hardened and tempered	159500 lbf/in ² / 300 HB	1.2343	H11	1.3343	M2
		P.3.3	Hardened and tempered	188500 lbf/in ² / 400 HB	1.2343	H11	1.2363	A2
	Stainless steel	P.4.1	Ferritic / martensitic Annealed	98600 lbf/in ² / 200 HB	1.4016	430	1.4125	440C
		P.4.2	Martensitic Tempered	117500 lbf/in ² / 250 HB	1.4112	S44003	1.4021	420
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic Quenched	88500 lbf/in ² / 200 HB	1.4301	304	1.4401	316
		M.2.1	Austenitic Tempered	300 HB	1.4841	314	1.4568	17-7 PH
		M.3.1	Austenitic / ferritic (Duplex)	113100 lbf/in ² / 230 HB	1.4462	S32205	1.4410	S32750
K	Grey cast iron	K.1.1	Pearlitic / ferritic	88500 lbf/in ² / 180 HB	0.6010	A48-20B	0.6025	A48-40 B
		K.1.2	Pearlitic (martensitic)	127600 lbf/in ² / 260 HB	0.6030	A48-45B	0.6040	A48-60 B
	Spherulitic graphite cast iron	K.2.1	Ferritic	78300 lbf/in ² / 160 HB	0.7040	60-40-18	0.7050	65-45-12
		K.2.2	Pearlitic	122600 lbf/in ² / 250 HB	0.7070	100-70-03	0.7660	A439 Type D2
	Malleable iron	K.3.1	Ferritic	63800 lbf/in ² / 130 HB	0.8035	GTW-35-04		
		K.3.2	Pearlitic	113100 lbf/in ² / 230 HB	0.8170	70003		
N	Aluminium wrought alloy	N.1.1	Non-hardenable	60 HB	3.0255	A91060	3.0255	A91060
		N.1.2	Hardenable	49300 lbf/in ² / 100 HB	3.1355	2024	3.1355	2024
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable	36300 lbf/in ² / 75 HB	3.2581	A04130 / A413-0	3.2581	A04130 / A413-0
		N.2.2	≤ 12 % Si, hardenable	43500 lbf/in ² / 90 HB	3.2134	G-AISi5Cu1Mg		
		N.2.3	> 12 % Si, non-hardenable	63800 lbf/in ² / 130 HB		G-AISi17Cu4Mg		
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %	54400 lbf/in ² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0380	C37700
		N.3.2	CuZn, CuSnZn	43500 lbf/in ² / 90 HB	2.0331	CuZn15	2.0331	C34000
		N.3.3	CuSn, lead-free copper and electrolytic copper	49300 lbf/in ² / 100 HB	2.0060	E-Cu57		
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys	70 HB	3.5612	MgAl6Zn		
	S	Heat-resistant alloys	S.1.1	Fe - basis Annealed	98600 lbf/in ² / 200 HB	1.4864	X12NiCrSi 36-16	1.4864
S.1.2			Fe - basis	137800 lbf/in ² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4980	S66286
S.2.1			Ni or Co basis Annealed	121800 lbf/in ² / 250 HB	2.4856	Inconel 625	2.4812	Hastelloy C
S.2.2			Ni or Co basis	171100 lbf/in ² / 350 HB	2.4952	Nimonic 80A	2.4668	Inconel 718
S.2.3			Ni or Co basis Cast	156600 lbf/in ² / 320 HB	2.4674	Nimocast PK24	2.4670	Nimocast 713
Titanium alloys		S.3.1	Pure titanium	5800 lbf/in ²	3.7025	Ti99,8		
		S.3.2	Alpha + beta alloys	152300 lbf/in ²	3.7165	TiAl6V4		
		S.3.3	Beta alloys	203100 lbf/in ² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr		
H	Hardened steel	H.1.1	Hardened and tempered	46-55 HRC				
		H.1.2	Hardened and tempered	56-60 HRC				
		H.1.3	Hardened and tempered	61-65 HRC				
		H.1.4	Hardened and tempered	66-70 HRC				
	Chilled iron	H.2.1	Cast	400 HB				
	Hardened cast iron	H.3.1	Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic	≤ 21800 lbf/in ²				
		O.1.2	Plastics, thermoplastic	≤ 14500 lbf/in ²				
		O.2.1	Aramid fibre-reinforced	≤ 145000 lbf/in ²				
		O.2.2	Glass/carbon-fibre reinforced	≤ 145000 lbf/in ²				
		O.3.1	Graphite					

* Tensile Strength at Rupture (Rm)

Cutting Data – P220 – End Milling Cutter, short – long

59 003 ...												
Ø DC =			1/8"	3/16"	1/4–5/16"	3/8"	1/2"	5/8"	3/4"	● 1st choice ○ suitable		
			$a_{p \times DC}$	$a_{p \times DC}$	$a_{p \times DC}$	$a_{p \times DC}$	$a_{p \times DC}$	$a_{p \times DC}$	$a_{p \times DC}$			
Index	V_c ft/min	$a_{p \max} \times DC$	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	Emulsion	Compressed air	MMS
P.1.1												
P.1.2												
P.1.3												
P.1.4												
P.1.5												
P.2.1												
P.2.2												
P.2.3												
P.2.4												
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1												
K.1.2												
K.2.1												
K.2.2												
K.3.1												
K.3.2												
N.1.1	1970	1.0	0.0015	0.0019	0.0029	0.0036	0.0050	0.0053	0.0060	●	○	○
N.1.2	1970	1.0	0.0015	0.0019	0.0029	0.0036	0.0050	0.0053	0.0060	●	○	○
N.2.1	1180	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	●	○	○
N.2.2	1180	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	●	○	○
N.2.3	790	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	●	○	○
N.3.1	790	1.0	0.0010	0.0013	0.0020	0.0026	0.0036	0.0039	0.0044	●	○	○
N.3.2	790	1.0	0.0010	0.0013	0.0020	0.0026	0.0036	0.0039	0.0044	●	○	○
N.3.3	560	1.0	0.0010	0.0013	0.0020	0.0026	0.0036	0.0039	0.0044	●	○	○
N.4.1	720	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	●	○	○
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

Cutting Data – S142 – End Milling Cutter, short – extra long

59 053 ... / 59 054 ...													
		Ø DC =									● 1st choice		
		5/32"	3/16"	1/4–5/16"	11/32–3/8"	1/2"	5/8"	3/4"	1"	○ suitable			
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch			
P.1.1													
P.1.2													
P.1.3													
P.1.4													
P.1.5													
P.2.1													
P.2.2													
P.2.3													
P.2.4													
P.3.1													
P.3.2													
P.3.3													
P.4.1													
P.4.2													
M.1.1													
M.2.1													
M.3.1													
K.1.1													
K.1.2													
K.2.1													
K.2.2													
K.3.1													
K.3.2													
N.1.1	980	1.0	0.0015	0.0019	0.0029	0.0036	0.0050	0.0053	0.0060	0.0069	●	○	○
N.1.2	980	1.0	0.0015	0.0019	0.0029	0.0036	0.0050	0.0053	0.0060	0.0069	●	○	○
N.2.1	590	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.2.2	590	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.2.3	390	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.3.1	390	1.0	0.0010	0.0013	0.0020	0.0026	0.0036	0.0039	0.0044	0.0050	●	○	○
N.3.2	390	1.0	0.0010	0.0013	0.0020	0.0026	0.0036	0.0039	0.0044	0.0050	●	○	○
N.3.3	280	1.0	0.0010	0.0013	0.0020	0.0026	0.0036	0.0039	0.0044	0.0050	●	○	○
N.4.1	360	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
S.1.1													
S.1.2													
S.2.1													
S.2.2													
S.2.3													
S.3.1													
S.3.2													
S.3.3													
H.1.1													
H.1.2													
H.1.3													
H.1.4													
H.2.1													
H.3.1													
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													

Cutting Data – P109 – End Milling Cutter, extra short – extra long

59 027 ...															
		Ø DC =													
		1/8–5/32"	3/16"	7/32"	1/4–9/32–5/16"	3/8"	7/16"	1/2"	9/16–5/8"	3/4"	1"	● 1st choice	○ suitable		
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS	
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch				
P.1.1															
P.1.2															
P.1.3															
P.1.4															
P.1.5															
P.2.1															
P.2.2															
P.2.3															
P.2.4															
P.3.1															
P.3.2															
P.3.3															
P.4.1															
P.4.2															
M.1.1															
M.2.1															
M.3.1															
K.1.1															
K.1.2															
K.2.1															
K.2.2															
K.3.1															
K.3.2															
N.1.1	1380	1.0	0.0012	0.0015	0.0019	0.0025	0.0031	0.0038	0.0044	0.0047	0.0054	0.0062	●	○	○
N.1.2	1380	1.0	0.0012	0.0015	0.0019	0.0025	0.0031	0.0038	0.0044	0.0047	0.0054	0.0062	●	○	○
N.2.1	830	1.0	0.0011	0.0014	0.0017	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.2.2	830	1.0	0.0011	0.0014	0.0017	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.2.3	550	1.0	0.0011	0.0014	0.0017	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.3.1	550	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.2	550	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.3	390	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.4.1	510	1.0	0.0011	0.0014	0.0017	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
S.1.1															
S.1.2															
S.2.1															
S.2.2															
S.2.3															
S.3.1															
S.3.2															
S.3.3															
H.1.1															
H.1.2															
H.1.3															
H.1.4															
H.2.1															
H.3.1															
O.1.1															
O.1.2															
O.2.1															
O.2.2															
O.3.1															

Cutting Data – P362 – End Milling Cutter, short – extra long

59 004 ...												
		Ø DC =								<input checked="" type="radio"/> 1st choice <input type="radio"/> suitable		
		3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"				
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC				
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	Emulsion	Compressed air	MMS
P.1.1												
P.1.2												
P.1.3												
P.1.4												
P.1.5												
P.2.1												
P.2.2												
P.2.3												
P.2.4												
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1												
K.1.2												
K.2.1												
K.2.2												
K.3.1												
K.3.2												
N.1.1	1970	1.0	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.1.2	1970	1.0	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.2.1	1180	1.0	0.0014	0.0023	0.0029	0.0040	0.0043	0.0049	0.0056	●	○	○
N.2.2	1180	1.0	0.0014	0.0023	0.0029	0.0040	0.0043	0.0049	0.0056	●	○	○
N.2.3	790	1.0	0.0014	0.0023	0.0029	0.0040	0.0043	0.0049	0.0056	●	○	○
N.3.1	790	1.0	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.2	790	1.0	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.3	560	1.0	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.4.1	720	1.0	0.0014	0.0023	0.0029	0.0040	0.0043	0.0049	0.0056	●	○	○
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

Cutting Data – P376 – End Milling Cutter, short – extra long

59 005 ...											
		Ø DC =							<input checked="" type="radio"/> 1st choice <input type="radio"/> suitable		
		1/4–5/16"	3/8"	1/2"	5/8"	3/4"	1"				
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC				
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	Emulsion	Compressed air	MMS
P.1.1											
P.1.2											
P.1.3											
P.1.4											
P.1.5											
P.2.1											
P.2.2											
P.2.3											
P.2.4											
P.3.1											
P.3.2											
P.3.3											
P.4.1											
P.4.2											
M.1.1											
M.2.1											
M.3.1											
K.1.1											
K.1.2											
K.2.1											
K.2.2											
K.3.1											
K.3.2											
N.1.1	1640	1.0	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○
N.1.2	1640	1.0	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○
N.2.1	980	1.0	0.0009	0.0012	0.0017	0.0018	0.0020	0.0023	●	○	○
N.2.2	980	1.0	0.0009	0.0012	0.0017	0.0018	0.0020	0.0023	●	○	○
N.2.3	690	1.0	0.0009	0.0012	0.0017	0.0018	0.0020	0.0023	●	○	○
N.3.1	690	1.0	0.0009	0.0012	0.0017	0.0018	0.0020	0.0023	●	○	○
N.3.2	690	1.0	0.0009	0.0012	0.0017	0.0018	0.0020	0.0023	●	○	○
N.3.3	490	1.0	0.0009	0.0012	0.0017	0.0018	0.0020	0.0023	●	○	○
N.4.1	660	1.0	0.0009	0.0012	0.0017	0.0018	0.0020	0.0023	●	○	○
S.1.1											
S.1.2											
S.2.1											
S.2.2											
S.2.3											
S.3.1											
S.3.2											
S.3.3											
H.1.1											
H.1.2											
H.1.3											
H.1.4											
H.2.1											
H.3.1											
O.1.1											
O.1.2											
O.2.1											
O.2.2											
O.3.1											

Cutting Data – S642 – End Milling Cutter, extra short – extra long

59 068... / 59 069 ...																	
		Ø DC =												● 1st choice			
		1/16"	3/32"	1/8–5/32"	3/16"	7/32"	1/4–9/32–5/16"	3/8"	1/2"	5/8"	3/4"	1"	○ suitable				
		a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC					
Index	V _c ft/min	a _{pmax} x DC	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	Emulsion	Compressed air	MMS		
P.1.1	220	1.0	0.0006	0.0007	0.0008	0.0010	0.0011	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○	
P.1.2	180	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.1.3	180	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.1.4	160	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.1.5	160	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.2.1	180	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.2.2	140	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.2.3	140	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.2.4	110	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.3.1																	
P.3.2																	
P.3.3																	
P.4.1	98	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●			
P.4.2	79	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●			
M.1.1	79	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●			
M.2.1	98	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●			
M.3.1	98	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●			
K.1.1	260	1.0	0.0009	0.0011	0.0013	0.0016	0.0018	0.0023	0.0028	0.0037	0.0039	0.0044	0.0050	●	○	○	
K.1.2	240	1.0	0.0009	0.0011	0.0013	0.0016	0.0018	0.0023	0.0028	0.0037	0.0039	0.0044	0.0050	●	○	○	
K.2.1	260	1.0	0.0006	0.0008	0.0009	0.0011	0.0013	0.0016	0.0019	0.0025	0.0026	0.0030	0.0033	●	○	○	
K.2.2	240	1.0	0.0006	0.0008	0.0009	0.0011	0.0013	0.0016	0.0019	0.0025	0.0026	0.0030	0.0033	●	○	○	
K.3.1	260	1.0	0.0009	0.0011	0.0013	0.0016	0.0018	0.0023	0.0028	0.0037	0.0039	0.0044	0.0050	●	○	○	
K.3.2	240	1.0	0.0009	0.0011	0.0013	0.0016	0.0018	0.0023	0.0028	0.0037	0.0039	0.0044	0.0050	●	○	○	
N.1.1																	
N.1.2																	
N.2.1																	
N.2.2																	
N.2.3																	
N.3.1	390	1.0	0.0006	0.0008	0.0010	0.0012	0.0014	0.0018	0.0022	0.0030	0.0031	0.0035	0.0040	●	○	○	
N.3.2	390	1.0	0.0006	0.0008	0.0010	0.0012	0.0014	0.0018	0.0022	0.0030	0.0031	0.0035	0.0040	●	○	○	
N.3.3	280	1.0	0.0006	0.0008	0.0010	0.0012	0.0014	0.0018	0.0022	0.0030	0.0031	0.0035	0.0040	●	○	○	
N.4.1																	
S.1.1	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.1.2	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.2.1	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.2.2	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.2.3	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.3.1	98	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●			
S.3.2	39	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●			
S.3.3																	
H.1.1																	
H.1.2																	
H.1.3																	
H.1.4																	
H.2.1																	
H.3.1																	
O.1.1																	
O.1.2																	
O.2.1																	
O.2.2																	
O.3.1																	

Cutting Data – S643 – End-Milling-Cutter, extra short – extra long

59 070... / 59 071 ...																	
		Ø DC =												● 1st choice			
		1/16–5/64"	3/32"	1/8–5/32"	3/16"	7/32"	1/4–9/32–5/16"	3/8"	1/2"	5/8"	3/4"	1"	○ suitable				
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS		
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch					
P.1.1	220	1.0	0.0004	0.0005	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.1.2	180	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.3	180	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.4	160	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.5	160	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.1	180	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.2	140	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.3	140	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.4	110	1.0	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.3.1																	
P.3.2																	
P.3.3																	
P.4.1	100	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
P.4.2	80	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
M.1.1	79	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
M.2.1	98	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
M.3.1	98	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
K.1.1	260	1.0	0.0007	0.0009	0.0011	0.0013	0.0015	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.1.2	240	1.0	0.0007	0.0009	0.0011	0.0013	0.0015	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.2.1	260	1.0	0.0006	0.0007	0.0008	0.0010	0.0011	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○	
K.2.2	240	1.0	0.0006	0.0007	0.0008	0.0010	0.0011	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○	
K.3.1	260	1.0	0.0007	0.0009	0.0011	0.0013	0.0015	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.3.2	240	1.0	0.0007	0.0009	0.0011	0.0013	0.0015	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○	
N.1.1																	
N.1.2																	
N.2.1																	
N.2.2																	
N.2.3																	
N.3.1	390	1.0	0.0004	0.0006	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
N.3.2	390	1.0	0.0004	0.0006	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
N.3.3	280	1.0	0.0004	0.0006	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
N.4.1																	
S.1.1	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.1.2	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.2.1	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.2.2	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.2.3	59	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.3.1	98	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.3.2	39	1.0	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
S.3.3																	
H.1.1																	
H.1.2																	
H.1.3																	
H.1.4																	
H.2.1																	
H.3.1																	
O.1.1																	
O.1.2																	
O.2.1																	
O.2.2																	
O.3.1																	

Cutting Data – S644 – End Milling Cutter, extra short – extra long

59 043... / 59 044 ... / 59 072... / 59 073 ...																		
Index	V _c ft/min	a _{9max} x DC	Ø DC =													1st choice suitable		
			1/32"	3/64"	1/16– 5/64"	3/32– 7/64"	1/8– 5/32"	3/16"	7/32"	1/4–9/32 –5/16"	3/8"	1/2"	5/8"	3/4"	1"	Emulsion	Compressed air	MMS
			a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	f _z inch	f _z inch	f _z inch
P.1.1	450	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.1.2	430	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.1.3	430	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.1.4	410	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.1.5	410	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.2.1	430	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.2.2	410	1.0	0.0002	0.0002	0.0004	0.0006	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.2.3	390	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.2.4	370	1.0	0.0002	0.0002	0.0004	0.0006	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.3.1	390	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.3.2	370	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.3.3	310	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.4.1	220	1.0	0.0000	0.0000	0.0002	0.0003	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
P.4.2	180	1.0	0.0000	0.0000	0.0002	0.0003	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.1.1	220	1.0	0.0000	0.0000	0.0002	0.0003	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.2.1	220	1.0	0.0000	0.0000	0.0002	0.0003	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.3.1	220	1.0	0.0000	0.0000	0.0002	0.0003	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
K.1.1	430	1.0	0.0003	0.0003	0.0006	0.0009	0.0012	0.0015	0.0019	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
K.1.2	390	1.0	0.0003	0.0003	0.0006	0.0009	0.0012	0.0015	0.0019	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
K.2.1	410	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.2.2	370	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.3.1	390	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.3.2	350	1.0	0.0003	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
N.1.1																		
N.1.2																		
N.2.1																		
N.2.2																		
N.2.3																		
N.3.1	690	1.0	0.0003	0.0003	0.0006	0.0009	0.0012	0.0015	0.0019	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.3.2	690	1.0	0.0003	0.0003	0.0006	0.0009	0.0012	0.0015	0.0019	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.3.3	550	1.0	0.0003	0.0003	0.0006	0.0009	0.0012	0.0015	0.0019	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.4.1																		
S.1.1	59	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.1.2	59	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.1	59	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.2	59	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.3	59	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.1	180	1.0	0.0002	0.0002	0.0004	0.0006	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●		
S.3.2																		
S.3.3																		
H.1.1																		
H.1.2																		
H.1.3																		
H.1.4																		
H.2.1																		
H.3.1																		
O.1.1																		
O.1.2																		
O.2.1																		
O.2.2																		
O.3.1																		

Cutting Data – P645 – End Milling Cutter, short – extra long

59 074 ... / 59 075 ...															
		Ø DC =										● 1st choice			
		1/8–5/32"	3/16"	7/32"	1/4–5/16"	3/8"	1/2"	5/8"	3/4"	1"	○ suitable				
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC					
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	Emulsion	Compressed air	MMS	
P.1.1	410	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.1.2	390	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.1.3	390	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.1.4	370	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.1.5	370	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.2.1	390	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.2.2	370	1.0	0.0006	0.0007	0.0009	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●	○	○	
P.2.3	350	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.2.4	330	1.0	0.0006	0.0007	0.0009	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●	○	○	
P.3.1	350	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.3.2	330	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.3.3	280	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
P.4.1	200	1.0	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●			
P.4.2	160	1.0	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●			
M.1.1	200	1.0	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●			
M.2.1	200	1.0	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●			
M.3.1	200	1.0	0.0005	0.0006	0.0007	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●			
K.1.1	390	1.0	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○	
K.1.2	350	1.0	0.0009	0.0012	0.0014	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○	
K.2.1	370	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
K.2.2	330	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
K.3.1	350	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
K.3.2	310	1.0	0.0007	0.0010	0.0012	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○	
N.1.1															
N.1.2															
N.2.1															
N.2.2															
N.2.3															
N.3.1															
N.3.2															
N.3.3															
N.4.1															
S.1.1															
S.1.2															
S.2.1															
S.2.2															
S.2.3															
S.3.1															
S.3.2															
S.3.3															
H.1.1															
H.1.2															
H.1.3															
H.1.4															
H.2.1															
H.3.1															
O.1.1															
O.1.2															
O.2.1															
O.2.2															
O.3.1															

Cutting Data – P007 – High Performance End Milling Cutter, short – extra long

59 002 ...													
Ø DC =			1/8"	3/16"	1/4–5/16"	3/8"	1/2"	5/8"	3/4"	1"	● 1st choice ○ suitable		
			a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch			
P.1.1	750	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.1.2	720	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.1.3	720	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.1.4	690	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.1.5	690	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.2.1	720	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.2.2	690	1.0	0.0007	0.0010	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.2.3	660	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.2.4	620	1.0	0.0007	0.0010	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.3.1	660	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.3.2	620	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.3.3	520	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
P.4.1	360	1.0	0.0005	0.0006	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
P.4.2	300	1.0	0.0005	0.0006	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.1.1	360	1.0	0.0005	0.0006	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.2.1	360	1.0	0.0005	0.0006	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.3.1	360	1.0	0.0005	0.0006	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
K.1.1	720	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
K.1.2	660	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
K.2.1	690	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.2.2	620	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.3.1	660	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.3.2	590	1.0	0.0009	0.0012	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
N.1.1													
N.1.2													
N.2.1													
N.2.2													
N.2.3													
N.3.1	1150	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.3.2	1150	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.3.3	920	1.0	0.0012	0.0015	0.0025	0.0031	0.0044	0.0047	0.0054	0.0062	●	○	○
N.4.1													
S.1.1	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.1.2	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.1	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.2	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.3	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.1	300	1.0	0.0007	0.0010	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●		
S.3.2													
S.3.3													
H.1.1													
H.1.2													
H.1.3													
H.1.4													
H.2.1													
H.3.1													
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													

Cutting Data – P556 – High Performance End milling cutter, short – extra long

59 006 ...											
Ø DC =			1/4"	3/8"	1/2"	5/8"	3/4"	1"	● 1st choice ○ suitable		
			a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch			
P.1.1	690	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.1.2	660	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.1.3	660	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.1.4	620	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.1.5	620	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.2.1	660	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.2.2	620	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●	○	○
P.2.3	590	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.2.4	560	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●	○	○
P.3.1	590	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.3.2	560	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.3.3	460	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.4.1	330	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
P.4.2	260	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.1.1	330	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.2.1	330	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.3.1	330	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
K.1.1	660	1.0	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.1.2	590	1.0	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.2.1	620	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
K.2.2	560	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
K.3.1	590	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
K.3.2	520	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
N.1.1											
N.1.2											
N.2.1											
N.2.2											
N.2.3											
N.3.1											
N.3.2											
N.3.3											
N.4.1											
S.1.1	180	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●		
S.1.2	180	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●		
S.2.1	180	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●		
S.2.2	180	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●		
S.2.3	180	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●		
S.3.1	390	1.0	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●		
S.3.2	260	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●		
S.3.3											
H.1.1											
H.1.2											
H.1.3											
H.1.4											
H.2.1											
H.3.1											
O.1.1											
O.1.2											
O.2.1											
O.2.2											
O.3.1											

Cutting Data – P160 / P161 – Multi-flute milling cutter, short – extra long

59 041 ... / 59 042 ...											
Ø DC =			1/4"	3/8"	1/2"	5/8"	3/4"	1"	● 1st choice ○ suitable		
			a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS
Index	v_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch			
P.1.1	850	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.1.2	820	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.1.3	820	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.1.4	750	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.1.5	750	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.2.1	820	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.2.2	750	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●	○	○
P.2.3	720	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.2.4	690	1.0	0.0012	0.0015	0.0022	0.0023	0.0026	0.0030	●	○	○
P.3.1	720	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.3.2	690	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.3.3	570	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
P.4.1	390	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
P.4.2	330	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.1.1	390	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.2.1	390	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
M.3.1	390	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
K.1.1	820	1.0	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.1.2	720	1.0	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
K.2.1	750	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
K.2.2	690	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
K.3.1	720	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
K.3.2	660	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●	○	○
N.1.1											
N.1.2											
N.2.1											
N.2.2											
N.2.3											
N.3.1	1410	1.0	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
N.3.2	1410	1.0	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
N.3.3	1150	1.0	0.0019	0.0023	0.0032	0.0034	0.0039	0.0044	●	○	○
N.4.1											
S.1.1	130	1.0	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.1.2	130	1.0	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.1	130	1.0	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.2	130	1.0	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.3	130	1.0	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.1	660	1.0	0.0016	0.0020	0.0028	0.0030	0.0033	0.0039	●		
S.3.2	410	1.0	0.0010	0.0013	0.0019	0.0020	0.0023	0.0026	●		
S.3.3											
H.1.1											
H.1.2											
H.1.3											
H.1.4											
H.2.1											
H.3.1											
O.1.1											
O.1.2											
O.2.1											
O.2.2											
O.3.1											

Cutting Data – P130 – Chamfer milling cutter

59 029 ... / 59 030 ...															
		Ø DC =													
		1/8–5/32"	3/16"	7/32"	1/4–3/32 –5/16"	3/8"	7/16"	1/2"	3/16–5/8"	3/4"	1"	● 1st choice ○ suitable			
		$a_{p1 \times DC}$	$a_{p1 \times DC}$	$a_{p1 \times DC}$	$a_{p1 \times DC}$	$a_{p1 \times DC}$	$a_{p1 \times DC}$	$a_{p1 \times DC}$	$a_{p1 \times DC}$	$a_{p1 \times DC}$	$a_{p1 \times DC}$				
Index	V_c ft/min	$a_{pmax} \times DC$	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	Emulsion	Compressed air	MMS
P.1.1															
P.1.2															
P.1.3															
P.1.4															
P.1.5															
P.2.1															
P.2.2															
P.2.3															
P.2.4															
P.3.1															
P.3.2															
P.3.3															
P.4.1															
P.4.2															
M.1.1															
M.2.1															
M.3.1															
K.1.1															
K.1.2															
K.2.1															
K.2.2															
K.3.1															
K.3.2															
N.1.1	1970	1.0	0.0012	0.0015	0.0019	0.0025	0.0031	0.0038	0.0044	0.0047	0.0054	0.0062	●	○	○
N.1.2	1970	1.0	0.0012	0.0015	0.0019	0.0025	0.0031	0.0038	0.0044	0.0047	0.0054	0.0062	●	○	○
N.2.1	1180	1.0	0.0011	0.0014	0.0017	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.2.2	1180	1.0	0.0011	0.0014	0.0017	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.2.3	790	1.0	0.0011	0.0014	0.0017	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.3.1	790	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.2	790	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.3	560	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.4.1	720	1.0	0.0011	0.0014	0.0017	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
S.1.1															
S.1.2															
S.2.1															
S.2.2															
S.2.3															
S.3.1															
S.3.2															
S.3.3															
H.1.1															
H.1.2															
H.1.3															
H.1.4															
H.2.1															
H.3.1															
O.1.1															
O.1.2															
O.2.1															
O.2.2															
O.3.1															

Cutting Data – P117 – Rough-Finishing Cutter with corner radius, short – long

59 028 ...													
		Ø DC =									● 1st choice ○ suitable		
		1/8"	3/16"	1/4–5/16"	3/8"	7/16"	1/2"	5/8"	3/4"				
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC				
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	Emulsion	Compressed air	MMS
P.1.1	360	1.0	0.0007	0.0008	0.0012	0.0015	0.0018	0.0020	0.0022	0.0024	●	○	○
P.1.2	300	1.0	0.0006	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	●	○	○
P.1.3	300	1.0	0.0006	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	●	○	○
P.1.4	260	1.0	0.0006	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	●	○	○
P.1.5	260	1.0	0.0006	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	●	○	○
P.2.1	300	1.0	0.0006	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	●	○	○
P.2.2	230	1.0	0.0006	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	●	○	○
P.2.3	230	1.0	0.0006	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	●	○	○
P.2.4	180	1.0	0.0006	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	●	○	○
P.3.1													
P.3.2													
P.3.3													
P.4.1	160	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
P.4.2	130	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
M.1.1	130	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
M.2.1	160	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
M.3.1	160	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
K.1.1	430	1.0	0.0011	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	●	○	○
K.1.2	400	1.0	0.0011	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	●	○	○
K.2.1	420	1.0	0.0008	0.0010	0.0014	0.0017	0.0020	0.0023	0.0024	0.0027	●	○	○
K.2.2	400	1.0	0.0008	0.0010	0.0014	0.0017	0.0020	0.0023	0.0024	0.0027	●	○	○
K.3.1	430	1.0	0.0011	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	●	○	○
K.3.2	400	1.0	0.0011	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	●	○	○
N.1.1													
N.1.2													
N.2.1													
N.2.2													
N.2.3													
N.3.1	660	1.0	0.0007	0.0010	0.0016	0.0020	0.0024	0.0028	0.0030	0.0033	●	○	○
N.3.2	660	1.0	0.0007	0.0010	0.0016	0.0020	0.0024	0.0028	0.0030	0.0033	●	○	○
N.3.3	460	1.0	0.0007	0.0010	0.0016	0.0020	0.0024	0.0028	0.0030	0.0033	●	○	○
N.4.1													
S.1.1	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
S.1.2	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
S.2.1	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
S.2.2	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
S.2.3	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
S.3.1	160	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
S.3.2	66	1.0	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0017	●		
S.3.3													
H.1.1													
H.1.2													
H.1.3													
H.1.4													
H.2.1													
H.3.1													
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													

Cutting Data – P120 – Roughing-Finishing cutter with corner radius, extra short – extra long

59 031 ... / 59 032 ...																
Ø DC =			1/8–5/32"	3/16"	7/32"	1/4–9/32", 5/16"	11/32–3/8"	7/16"	1/2"	9/16–5/8"	3/4"	1"	● 1st choice	○ suitable		
			a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	Emulsion	Compressed air	MMS	
Index	V _c ft/min	a _{pmax} x DC	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch				
P.1.1	310	1.0	0.0007	0.0008	0.0009	0.0012	0.0015	0.0018	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.1.2	260	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.3	260	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.4	230	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.5	230	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.1	250	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.2	200	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.3	200	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.4	180	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.3.1																
P.3.2																
P.3.3																
P.4.1																
P.4.2																
M.1.1																
M.2.1																
M.3.1																
K.1.1	390	1.0	0.0011	0.0013	0.0015	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.1.2	330	1.0	0.0011	0.0013	0.0015	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.2.1	390	1.0	0.0008	0.0010	0.0011	0.0014	0.0017	0.0020	0.0023	0.0024	0.0027	0.0031	●	○	○	
K.2.2	330	1.0	0.0008	0.0010	0.0011	0.0014	0.0017	0.0020	0.0023	0.0024	0.0027	0.0031	●	○	○	
K.3.1	390	1.0	0.0011	0.0013	0.0015	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.3.2	330	1.0	0.0011	0.0013	0.0015	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○	
N.1.1																
N.1.2																
N.2.1																
N.2.2																
N.2.3																
N.3.1																
N.3.2																
N.3.3																
N.4.1																
S.1.1																
S.1.2																
S.2.1																
S.2.2																
S.2.3																
S.3.1																
S.3.2																
S.3.3																
H.1.1																
H.1.2																
H.1.3																
H.1.4																
H.2.1																
H.3.1																
O.1.1																
O.1.2																
O.2.1																
O.2.2																
O.3.1																

Cutting Data – P121 – Roughing-Finishing cutter with corner radius, short – extra long

59 035 ...							
Ø DC =			3/4"	1"	● 1st choice		
			a_p 1 x DC	a_p 1 x DC	○ suitable		
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	Emulsion	Compressed air	MMS
P.1.1	480	1.0	0.0033	0.0039	●	○	○
P.1.2	460	1.0	0.0033	0.0039	●	○	○
P.1.3	460	1.0	0.0033	0.0039	●	○	○
P.1.4	440	1.0	0.0033	0.0039	●	○	○
P.1.5	440	1.0	0.0033	0.0039	●	○	○
P.2.1	460	1.0	0.0033	0.0039	●	○	○
P.2.2	440	1.0	0.0026	0.0030	●	○	○
P.2.3	410	1.0	0.0033	0.0039	●	○	○
P.2.4	390	1.0	0.0026	0.0030	●	○	○
P.3.1	410	1.0	0.0033	0.0039	●	○	○
P.3.2	390	1.0	0.0033	0.0039	●	○	○
P.3.3	320	1.0	0.0033	0.0039	●	○	○
P.4.1	230	1.0	0.0023	0.0026	●		
P.4.2	180	1.0	0.0023	0.0026	●		
M.1.1	230	1.0	0.0023	0.0026	●		
M.2.1	230	1.0	0.0023	0.0026	●		
M.3.1	230	1.0	0.0023	0.0026	●		
K.1.1	460	1.0	0.0039	0.0044	●	○	○
K.1.2	410	1.0	0.0039	0.0044	●	○	○
K.2.1	440	1.0	0.0033	0.0039	●	○	○
K.2.2	390	1.0	0.0033	0.0039	●	○	○
K.3.1	410	1.0	0.0033	0.0039	●	○	○
K.3.2	370	1.0	0.0033	0.0039	●	○	○
N.1.1							
N.1.2							
N.2.1							
N.2.2							
N.2.3							
N.3.1							
N.3.2							
N.3.3							
N.4.1							
S.1.1	130	1.0	0.0026	0.0030	●		
S.1.2	130	1.0	0.0026	0.0030	●		
S.2.1	130	1.0	0.0026	0.0030	●		
S.2.2	130	1.0	0.0026	0.0030	●		
S.2.3	130	1.0	0.0026	0.0030	●		
S.3.1	280	1.0	0.0039	0.0044	●		
S.3.2	180	1.0	0.0026	0.0030	●		
S.3.3							
H.1.1							
H.1.2							
H.1.3							
H.1.4							
H.2.1							
H.3.1							
O.1.1							
O.1.2							
O.2.1							
O.2.2							
O.3.1							

Cutting Data – P102 –Rough milling cutter with corner radius, short – extra long

59 023 ... / 59 024 ... / 59 025 ... / 59 026 ...													
Index	V _c ft/min	a _{pmax} x DC	Ø DC =								● 1st choice ○ suitable		
			3/16"	1/4–5/16"	3/8"	7/16"	1/2"	3/16–5/8"	3/4"	1"	Emulsion	Compressed air	MMS
			a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC			
			f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch			
P.1.1													
P.1.2													
P.1.3													
P.1.4													
P.1.5													
P.2.1													
P.2.2													
P.2.3													
P.2.4													
P.3.1													
P.3.2													
P.3.3													
P.4.1													
P.4.2													
M.1.1													
M.2.1													
M.3.1													
K.1.1													
K.1.2													
K.2.1													
K.2.2													
K.3.1													
K.3.2													
N.1.1	1970	1.0	0.0015	0.0025	0.0031	0.0038	0.0044	0.0047	0.0054	0.0062	●	○	○
N.1.2	1970	1.0	0.0015	0.0025	0.0031	0.0038	0.0044	0.0047	0.0054	0.0062	●	○	○
N.2.1	1180	1.0	0.0014	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.2.2	1180	1.0	0.0014	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.2.3	790	1.0	0.0014	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
N.3.1	790	1.0	0.0011	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.2	790	1.0	0.0011	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.3	560	1.0	0.0011	0.0017	0.0022	0.0026	0.0031	0.0033	0.0037	0.0043	●	○	○
N.4.1	720	1.0	0.0014	0.0023	0.0029	0.0035	0.0040	0.0043	0.0049	0.0056	●	○	○
S.1.1													
S.1.2													
S.2.1													
S.2.2													
S.2.3													
S.3.1													
S.3.2													
S.3.3													
H.1.1													
H.1.2													
H.1.3													
H.1.4													
H.2.1													
H.3.1													
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													

Cutting Data – P190 / P191 – Rough milling cutter, short – extra long

59 059 ... / 59 061 ...												
Index	V _c ft/min	a _{pmax} x DC	Ø DC =							<input checked="" type="radio"/> 1st choice <input type="radio"/> suitable		
			3/16"	1/4–5/16"	3/8"	1/2"	5/8"	3/4"	1"	Emulsion	Compressed air	MMS
			a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	f _z inch	f _z inch	f _z inch
P.1.1	310	1.0	0.0007	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○
P.1.2	260	1.0	0.0006	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.3	260	1.0	0.0006	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.4	230	1.0	0.0006	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.5	230	1.0	0.0006	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.1	250	1.0	0.0006	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.2	200	1.0	0.0006	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.3	200	1.0	0.0006	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.4	180	1.0	0.0006	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1	390	1.0	0.0011	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.1.2	330	1.0	0.0011	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.2.1	390	1.0	0.0008	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○
K.2.2	330	1.0	0.0008	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○
K.3.1	390	1.0	0.0011	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.3.2	330	1.0	0.0011	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1												
N.3.2												
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

Cutting Data – P100 – Rough milling cutter with corner radius, short – extra long

59 011 ... / 59 012 ... / 59 013 ... / 59 014 ...														
Ø DC =			3/16"	1/4–5/16"	3/8"	7/16"	1/2"	9/16–5/8"	3/4"	1"	● 1st choice ○ suitable			
Index	V _c ft/min	a _{pmax} x DC	a _p 1 x DC									Emulsion	Compressed air	MMS
			f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch			
P.1.1	312	1.0	0.0008	0.0012	0.0015	0.0018	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.1.2	262	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.3	262	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.4	230	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.5	230	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.1	246	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.2	197	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.3	197	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.4	180	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.3.1														
P.3.2														
P.3.3														
P.4.1														
P.4.2														
M.1.1														
M.2.1														
M.3.1														
K.1.1	390	1.0	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.1.2	330	1.0	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.2.1	390	1.0	0.0010	0.0014	0.0017	0.0020	0.0023	0.0024	0.0027	0.0031	●	○	○	
K.2.2	330	1.0	0.0010	0.0014	0.0017	0.0020	0.0023	0.0024	0.0027	0.0031	●	○	○	
K.3.1	390	1.0	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.3.2	330	1.0	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○	
N.1.1														
N.1.2														
N.2.1														
N.2.2														
N.2.3														
N.3.1														
N.3.2														
N.3.3														
N.4.1														
S.1.1														
S.1.2														
S.2.1														
S.2.2														
S.2.3														
S.3.1														
S.3.2														
S.3.3														
H.1.1														
H.1.2														
H.1.3														
H.1.4														
H.2.1														
H.3.1														
O.1.1														
O.1.2														
O.2.1														
O.2.2														
O.3.1														

Cutting Data – P101 – Rough milling cutter with corner radius, short – extra long

59 015 ... / 59 016 ... / 59 017 ... / 59 022 ...																		
Index	V _c ft/min	a _{9max} x DC	Ø DC =								<input checked="" type="radio"/> 1st choice <input type="radio"/> suitable							
			3/16"	1/4–5/16"	3/8"	7/16"	1/2"	9/16–5/8"	3/4"	1"	Emulsion	Compressed air	MMS					
			a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch
P.1.1	310	1.0	0.0008	0.0012	0.0015	0.0018	0.0020	0.0022	0.0024	0.0028	●	○	○					
P.1.2	260	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○					
P.1.3	260	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○					
P.1.4	230	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○					
P.1.5	230	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○					
P.2.1	250	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○					
P.2.2	200	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○					
P.2.3	200	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○					
P.2.4	180	1.0	0.0007	0.0011	0.0013	0.0016	0.0018	0.0019	0.0022	0.0025	●	○	○					
P.3.1																		
P.3.2																		
P.3.3																		
P.4.1																		
P.4.2																		
M.1.1																		
M.2.1																		
M.3.1																		
K.1.1	390	1.0	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○					
K.1.2	330	1.0	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○					
K.2.1	390	1.0	0.0010	0.0014	0.0017	0.0020	0.0023	0.0024	0.0027	0.0031	●	○	○					
K.2.2	330	1.0	0.0010	0.0014	0.0017	0.0020	0.0023	0.0024	0.0027	0.0031	●	○	○					
K.3.1	390	1.0	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○					
K.3.2	330	1.0	0.0013	0.0020	0.0024	0.0028	0.0033	0.0035	0.0039	0.0045	●	○	○					
N.1.1																		
N.1.2																		
N.2.1																		
N.2.2																		
N.2.3																		
N.3.1																		
N.3.2																		
N.3.3																		
N.4.1																		
S.1.1																		
S.1.2																		
S.2.1																		
S.2.2																		
S.2.3																		
S.3.1																		
S.3.2																		
S.3.3																		
H.1.1																		
H.1.2																		
H.1.3																		
H.1.4																		
H.2.1																		
H.3.1																		
O.1.1																		
O.1.2																		
O.2.1																		
O.2.2																		
O.3.1																		

Cutting Data – P662 – Ball nosed Cutter, extra short – extra long

59 074 ... / 59 075 ...														
Index	V _c ft/min	a _{pm} x DC	Ø DC =									1st choice suitable		
			1/16"	1/8"	3/16"	1/4–5/16"	3/8"	1/2"	5/8"	3/4"	1"	Emulsion	Compressed air	MMS
			a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC			
P.1.1	350	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.2	310	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.3	310	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.4	300	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.5	300	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.1	330	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.2	280	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.3	280	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.4	260	1.0	0.0003	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.3.1														
P.3.2														
P.3.3														
P.4.1	200	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
P.4.2	80	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.1.1	98	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.2.1	98	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.3.1	98	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
K.1.1	240	1.0	0.0007	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.1.2	160	1.0	0.0007	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.2.1	240	1.0	0.0006	0.0008	0.0010	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○
K.2.2	390	1.0	0.0006	0.0008	0.0010	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○
K.3.1	240	1.0	0.0007	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.3.2	200	1.0	0.0007	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
N.1.1														
N.1.2														
N.2.1														
N.2.2														
N.2.3														
N.3.1	390	1.0	0.0004	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.2	390	1.0	0.0004	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.3	280	1.0	0.0004	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.4.1														
S.1.1	59	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.1.2	59	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.1	59	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.2	59	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.3	59	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.1	98	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.2	39	1.0	0.0002	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.3														
H.1.1														
H.1.2														
H.1.3														
H.1.4														
H.2.1														
H.3.1														
O.1.1														
O.1.2														
O.2.1														
O.2.2														
O.3.1														

Cutting Data – S663 – Ball nosed Cutter, extra short – extra long

59 078 ... / 59 079 ...													
		Ø DC =									● 1st choice ○ suitable		
		1/8"	3/16"	1/4–5/16"	3/8"	1/2"	5/8"	3/4"	1"				
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC				
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	Emulsion	Compressed air	MMS
P.1.1	590	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.2	520	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.3	520	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.4	490	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.5	490	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.1	560	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.2	460	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.3	460	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.4	430	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.3.1													
P.3.2													
P.3.3													
P.4.1	330	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
P.4.2	130	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.1.1	160	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.2.1	160	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.3.1	160	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
K.1.1	390	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.1.2	260	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.2.1	390	1.0	0.0008	0.0010	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○
K.2.2	660	1.0	0.0008	0.0010	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○
K.3.1	390	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.3.2	330	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
N.1.1													
N.1.2													
N.2.1													
N.2.2													
N.2.3													
N.3.1	660	1.0	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.2	660	1.0	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.3	460	1.0	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.4.1													
S.1.1	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.1.2	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.1	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.2	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.2.3	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.1	160	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.2	66	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
S.3.3													
H.1.1													
H.1.2													
H.1.3													
H.1.4													
H.2.1													
H.3.1													
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													

Cutting Data – P157 – Ball nosed cutter, short – extra long

59 055 ...														
Ø DC =			1/8–5/32"	3/16"	7/32"	1/4–5/16"	3/8"	1/2"	9/16"	3/4"	1"	● 1st choice	○ suitable	
Index	V _c ft/min	a _{pmax} x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	a _p 1 x DC	Emulsion	Compressed air	MMS
			f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch			
P.1.1	430	1.0	0.0007	0.0008	0.0009	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○
P.1.2	360	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.3	360	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.4	310	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.1.5	310	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.1	360	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.2	280	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.3	280	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.2.4	210	1.0	0.0006	0.0007	0.0008	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○
P.3.1														
P.3.2														
P.3.3														
P.4.1	200	1.0	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
P.4.2	160	1.0	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.1.1	160	1.0	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.2.1	200	1.0	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
M.3.1	200	1.0	0.0004	0.0005	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●		
K.1.1	510	1.0	0.0011	0.0013	0.0015	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.1.2	480	1.0	0.0011	0.0013	0.0015	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.2.1	510	1.0	0.0008	0.0010	0.0011	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○
K.2.2	480	1.0	0.0008	0.0010	0.0011	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○
K.3.1	510	1.0	0.0011	0.0013	0.0015	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
K.3.2	480	1.0	0.0011	0.0013	0.0015	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○
N.1.1														
N.1.2														
N.2.1														
N.2.2														
N.2.3														
N.3.1	790	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.2	790	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.3.3	560	1.0	0.0008	0.0011	0.0013	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○
N.4.1														
S.1.1														
S.1.2														
S.2.1														
S.2.2														
S.2.3														
S.3.1														
S.3.2														
S.3.3														
H.1.1														
H.1.2														
H.1.3														
H.1.4														
H.2.1														
H.3.1														
O.1.1														
O.1.2														
O.2.1														
O.2.2														
O.3.1														

Cutting Data – S664 – Ball nosed Cutter, extra short – extra long

59 080... / 59 081 ...																		
		Ø DC =													● 1st choice		○ suitable	
		1/32"	3/64"	1/16"	3/32"	1/8–5/32"	3/16"	1/4–5/16"	3/8"	1/2"	5/8"	3/4"	1"					
		a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC	a _e 1 x DC					
Index	V _c ft/min	a _{pmax} x DC	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	Emulsion	Compressed air	MMS	
P.1.1	260	1.0	0.0003	0.0003	0.0004	0.0005	0.0007	0.0008	0.0012	0.0015	0.0020	0.0022	0.0024	0.0028	●	○	○	
P.1.2	220	1.0	0.0002	0.0002	0.0003	0.0004	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.3	220	1.0	0.0002	0.0002	0.0003	0.0004	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.4	190	1.0	0.0002	0.0002	0.0003	0.0004	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.1.5	190	1.0	0.0002	0.0002	0.0003	0.0004	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.1	220	1.0	0.0002	0.0002	0.0003	0.0004	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.2	170	1.0	0.0002	0.0002	0.0003	0.0004	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.3	170	1.0	0.0002	0.0002	0.0003	0.0004	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.2.4	130	1.0	0.0002	0.0002	0.0003	0.0004	0.0006	0.0007	0.0011	0.0013	0.0018	0.0019	0.0022	0.0025	●	○	○	
P.3.1																		
P.3.2																		
P.3.3																		
P.4.1	120	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
P.4.2	100	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
M.1.1	98	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
M.2.1	120	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
M.3.1	120	1.0	0.0001	0.0001	0.0002	0.0003	0.0004	0.0005	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	●			
K.1.1	310	1.0	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.1.2	290	1.0	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.2.1	310	1.0	0.0004	0.0005	0.0006	0.0007	0.0008	0.0010	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○	
K.2.2	290	1.0	0.0004	0.0005	0.0006	0.0007	0.0008	0.0010	0.0014	0.0017	0.0023	0.0024	0.0027	0.0031	●	○	○	
K.3.1	310	1.0	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○	
K.3.2	290	1.0	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0020	0.0024	0.0033	0.0035	0.0039	0.0045	●	○	○	
N.1.1																		
N.1.2																		
N.2.1																		
N.2.2																		
N.2.3																		
N.3.1	470	1.0	0.0002	0.0003	0.0004	0.0006	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○	
N.3.2	470	1.0	0.0002	0.0003	0.0004	0.0006	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○	
N.3.3	330	1.0	0.0002	0.0003	0.0004	0.0006	0.0008	0.0011	0.0017	0.0022	0.0031	0.0033	0.0037	0.0043	●	○	○	
N.4.1																		
S.1.1																		
S.1.2																		
S.2.1																		
S.2.2																		
S.2.3																		
S.3.1																		
S.3.2																		
S.3.3																		
H.1.1																		
H.1.2																		
H.1.3																		
H.1.4																		
H.2.1																		
H.3.1																		
O.1.1																		
O.1.2																		
O.2.1																		
O.2.2																		
O.3.1																		

Cutting Data – P250 – Ball Nosed Cutter, medium long – extra long

59 063 ...										
Ø DC =			1/8"	3/16"	1/4"	3/8"	1/2"	● 1st choice ○ suitable		
			a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch			
P.1.1	350	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.1.2	310	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.1.3	310	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.1.4	300	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.1.5	300	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.2.1	330	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.2.2	280	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.2.3	280	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.2.4	260	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.3.1										
P.3.2										
P.3.3										
P.4.1	200	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
P.4.2	80	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
M.1.1	100	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
M.2.1	100	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
M.3.1	100	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
K.1.1	240	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	●	○	○
K.1.2	160	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	●	○	○
K.2.1	240	1.0	0.0008	0.0010	0.0014	0.0017	0.0023	●	○	○
K.2.2	390	1.0	0.0008	0.0010	0.0014	0.0017	0.0023	●	○	○
K.3.1	240	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	●	○	○
K.3.2	200	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	●	○	○
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1	390	1.0	0.0008	0.0011	0.0017	0.0022	0.0031	●	○	○
N.3.2	390	1.0	0.0008	0.0011	0.0017	0.0022	0.0031	●	○	○
N.3.3	280	1.0	0.0008	0.0011	0.0017	0.0022	0.0031	●	○	○
N.4.1										
S.1.1	59	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
S.1.2	59	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
S.2.1	59	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
S.2.2	59	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
S.2.3	59	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
S.3.1	98	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
S.3.2	39	1.0	0.0004	0.0005	0.0008	0.0010	0.0014	●		
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

Cutting Data – P251, P251, P253, P254 – Ball nosed cutter, extra long

		59 064 ... / 59 065 ... / 59 066 ... / 59 067 ...								
		Ø DC =								
		1/32"	.060"	3/32"	1/8"	3/16"	● 1st choice ○ suitable			
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS	
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch				
P.1.1	300	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.1.2	260	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.1.3	260	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.1.4	250	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.1.5	250	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.2.1	280	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.2.2	230	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.2.3	230	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.2.4	210	1.0	0.0002	0.0003	0.0004	0.0006	0.0007	●	○	○
P.3.1										
P.3.2										
P.3.3										
P.4.1	160	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
P.4.2	70	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
M.1.1	82	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
M.2.1	82	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
M.3.1	82	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
K.1.1	200	1.0	0.0004	0.0007	0.0009	0.0011	0.0013	●	○	○
K.1.2	130	1.0	0.0004	0.0007	0.0009	0.0011	0.0013	●	○	○
K.2.1	200	1.0	0.0004	0.0006	0.0007	0.0008	0.0010	●	○	○
K.2.2	330	1.0	0.0004	0.0006	0.0007	0.0008	0.0010	●	○	○
K.3.1	200	1.0	0.0004	0.0007	0.0009	0.0011	0.0013	●	○	○
K.3.2	160	1.0	0.0004	0.0007	0.0009	0.0011	0.0013	●	○	○
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1	330	1.0	0.0002	0.0004	0.0006	0.0008	0.0011	●	○	○
N.3.2	330	1.0	0.0002	0.0004	0.0006	0.0008	0.0011	●	○	○
N.3.3	230	1.0	0.0002	0.0004	0.0006	0.0008	0.0011	●	○	○
N.4.1										
S.1.1	49	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
S.1.2	49	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
S.2.1	49	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
S.2.2	49	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
S.2.3	49	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
S.3.1	82	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
S.3.2	33	1.0	0.0001	0.0002	0.0003	0.0004	0.0005	●		
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

Cutting Data – P504, P506 – Micro end milling cutter, short

59 009 ... / 59 010...												
Ø DC =			0.005–015"	0.015–031"	0.031–047"	0.047–062"	0.062–078"	0.078–093"	0.093–0120"	● 1st choice	○ suitable	
Index	V _c ft/min	a _{pmax} x DC	a _e 0.30 x DC	a _e 0.30 x DC	a _e 0.30 x DC	a _e 0.60 x DC	a _e 0.60 x DC	a _e 0.60 x DC	a _e 0.60 x DC	Emulsion	Compressed air	MMS
			f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch	f _z inch			
P.1.1	600	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
P.1.2	600	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
P.1.3	200	1.0	0.00006	0.00013	0.00019	0.00022	0.00028	0.00033	0.00045	●		
P.1.4	200	1.0	0.00006	0.00013	0.00019	0.00022	0.00028	0.00033	0.00045	●		
P.1.5	200	1.0	0.00006	0.00013	0.00019	0.00022	0.00028	0.00033	0.00045	●		
P.2.1	200	1.0	0.00006	0.00013	0.00019	0.00022	0.00028	0.00033	0.00045	●		
P.2.2	200	1.0	0.00006	0.00013	0.00019	0.00022	0.00028	0.00033	0.00045	●		
P.2.3	200	1.0	0.00006	0.00013	0.00019	0.00022	0.00028	0.00033	0.00045	●		
P.2.4	100	1.0	0.00003	0.00006	0.00010	0.00011	0.00014	0.00017	0.00022	●		
P.3.1	150	1.0	0.00004	0.00008	0.00012	0.00014	0.00017	0.00021	0.00028	●		
P.3.2	150	1.0	0.00004	0.00008	0.00012	0.00014	0.00017	0.00021	0.00028	●		
P.3.3	90	1.0	0.00002	0.00004	0.00006	0.00007	0.00009	0.00012	0.00018	●		
P.4.1	450	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
P.4.2	450	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
M.1.1	200	1.0	0.00006	0.00013	0.00019	0.00022	0.00028	0.00033	0.00045	●		
M.2.1	200	1.0	0.00003	0.00006	0.00010	0.00011	0.00014	0.00017	0.00022	●		
M.3.1	100	1.0	0.00003	0.00006	0.00010	0.00011	0.00014	0.00017	0.00022	●		
K.1.1	400	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
K.1.2	400	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
K.2.1	300	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
K.2.2	300	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
K.3.1	250	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
K.3.2	250	1.0	0.00007	0.00014	0.00021	0.00024	0.00031	0.00036	0.00049	●		
N.1.1	1000	1.0	0.00022	0.00045	0.00068	0.00078	0.00099	0.00118	0.00158	●		
N.1.2	1000	1.0	0.00022	0.00045	0.00068	0.00078	0.00099	0.00118	0.00158	●		
N.2.1	750	1.0	0.00022	0.00045	0.00068	0.00078	0.00099	0.00118	0.00158	●		
N.2.2	750	1.0	0.00022	0.00045	0.00068	0.00078	0.00099	0.00118	0.00158	●		
N.2.3												
N.3.1	500	1.0	0.00017	0.00036	0.00055	0.00063	0.00079	0.00094	0.00127	●		
N.3.2	800	1.0	0.00017	0.00036	0.00055	0.00063	0.00079	0.00094	0.00127	●		
N.3.3	400	1.0	0.00017	0.00036	0.00055	0.00063	0.00079	0.00094	0.00127	●		
N.4.1	1500	1.0	0.00022	0.00045	0.00068	0.00078	0.00099	0.00118	0.00158	●		
S.1.1	70	1.0	0.00004	0.00008	0.00012	0.00014	0.00017	0.00021	0.00028	●		
S.1.2	50	1.0	0.00002	0.00004	0.00006	0.00007	0.00009	0.00012	0.00018	●		
S.2.1	70	1.0	0.00004	0.00008	0.00012	0.00014	0.00017	0.00021	0.00028	●		
S.2.2	50	1.0	0.00002	0.00004	0.00006	0.00007	0.00009	0.00012	0.00018	●		
S.2.3	50	1.0	0.00002	0.00004	0.00006	0.00007	0.00009	0.00012	0.00018	●		
S.3.1	200	1.0	0.00004	0.00008	0.00012	0.00014	0.00017	0.00021	0.00028	●		
S.3.2	150	1.0	0.00004	0.00008	0.00012	0.00014	0.00017	0.00021	0.00028	●		
S.3.3	75	1.0	0.00002	0.00004	0.00006	0.00007	0.00009	0.00012	0.00018	●		
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

Cutting Data – P501, P503 – Micro End Milling Cutter, long

59 007 ... / 59 008 ...												
Ø DC =			0.005–015"		0.015–031"		0.031–047"		0.047–062"		0.062–078"	
			a_e 0.13 x DC	a_e 0.25 x DC	a_e 0.13 x DC	a_e 0.25 x DC	a_e 0.13 x DC	a_e 0.25 x DC	a_e 0.13 x DC	a_e 0.25 x DC	a_e .13 x DC	a_e 0.25 x DC
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch	f_z inch
P.1.1	600	3.0	0.00005		0.00010		0.00015			0.00170		0.00021
P.1.2	600	3.0	0.00005		0.00010		0.00015			0.00170		0.00021
P.1.3	200	3.0	0.00004		0.00009		0.00013			0.00020		0.00025
P.1.4	200	3.0	0.00004		0.00009		0.00013			0.00020		0.00025
P.1.5	200	3.0	0.00004		0.00009		0.00013			0.00020		0.00025
P.2.1	200	3.0	0.00004		0.00009		0.00013			0.00015		0.00019
P.2.2	200	3.0	0.00004		0.00009		0.00013			0.00015		0.00019
P.2.3	200	3.0	0.00004		0.00009		0.00013			0.00015		0.00019
P.2.4	100	3.0	0.00002		0.00004		0.00007			0.00008		0.00100
P.3.1	150	3.0	0.00003		0.00006		0.00008			0.00010		0.00012
P.3.2	150	3.0	0.00003		0.00006		0.00008			0.00010		0.00012
P.3.3	90	3.0	0.00001		0.00003		0.00004			0.00005		0.00006
P.4.1	450	3.0	0.00005		0.00010		0.00015			0.00017		0.00021
P.4.2	450	3.0	0.00005		0.00010		0.00015			0.00017		0.00021
M.1.1	200	3.0	0.00004		0.00009		0.00013			0.00015		0.00019
M.2.1	200	3.0	0.00002		0.00004		0.00007			0.00008		0.00100
M.3.1	100	3.0	0.00002		0.00004		0.00007			0.00008		0.00100
K.1.1	400	3.0	0.00005		0.00010		0.00015			0.00017		0.00021
K.1.2	400	3.0	0.00005		0.00010		0.00015			0.00017		0.00021
K.2.1	300	3.0	0.00005		0.00010		0.00015			0.00017		0.00021
K.2.2	300	3.0	0.00005		0.00010		0.00015			0.00017		0.00021
K.3.1	250	3.0	0.00005		0.00010		0.00015			0.00017		0.00021
K.3.2	250	3.0	0.00005		0.00010		0.00015			0.00017		0.00021
N.1.1	1000	3.0	0.00015		0.00031		0.00047			0.00055		0.00069
N.1.2	1000	3.0	0.00015		0.00031		0.00047			0.00055		0.00069
N.2.1	750	3.0	0.00015		0.00031		0.00047			0.00055		0.00069
N.2.2	750	3.0	0.00015		0.00031		0.00047			0.00055		0.00069
N.2.3												
N.3.1	500	3.0	0.00012		0.00025		0.00038		0.00044		0.00055	
N.3.2	800	3.0	0.00015		0.00031		0.00048		0.00055		0.00069	
N.3.3	400	3.0	0.00012		0.00025		0.00038		0.00044		0.00055	
N.4.1	1500	3.0	0.00015		0.00031		0.00048		0.00055		0.00069	
S.1.1	70	3.0	0.00003		0.00006		0.00009			0.00010		0.00012
S.1.2	50	3.0	0.00001		0.00003		0.00004			0.00005		0.00006
S.2.1	70	3.0	0.00003		0.00006		0.00009			0.00010		0.00012
S.2.2	50	3.0	0.00003		0.00006		0.00009			0.00010		0.00012
S.2.3	50	3.0	0.00001		0.00003		0.00004			0.00005		0.00006
S.3.1	200	3.0	0.00003		0.00006		0.00008			0.00010		0.00012
S.3.2	150	3.0	0.00003		0.00006		0.00008			0.00010		0.00012
S.3.3	75	3.0	0.00001		0.00003		0.00004			0.00005		0.00006
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

		59 007 ... / 59 008 ...						
		0.078-093"		0.093-0120"		●	1st choice	
		0.13 x DC		0.25 x DC		○	suitable	
		a_p	a_p	a_p	a_p	Emulsion	Compressed air	MMS
		0.13 x DC	0.25 x DC	0.13 x DC	0.25 x DC			
Index	f_z	f_z	f_z	f_z	f_z			
	inch	inch	inch	inch	inch			
P.1.1			0.00025		0.00034	●		
P.1.2			0.00025		0.00034	●		
P.1.3			0.00030		0.00040	●		
P.1.4			0.00030		0.00040	●		
P.1.5			0.00030		0.00040	●		
P.2.1			0.00023		0.00031	●		
P.2.2			0.00023		0.00031	●		
P.2.3			0.00023		0.00031	●		
P.2.4			0.00012		0.00016	●		
P.3.1			0.00014		0.00019	●		
P.3.2			0.00014		0.00019	●		
P.3.3			0.00007		0.00010	●		
P.4.1			0.00025		0.00034	●		
P.4.2			0.00025		0.00034	●		
M.1.1			0.00023		0.00031	●		
M.2.1			0.00012		0.00016	●		
M.3.1			0.00012		0.00016	●		
K.1.1			0.00025		0.00034	●		
K.1.2			0.00025		0.00034	●		
K.2.1			0.00025		0.00034	●		
K.2.2			0.00025		0.00034	●		
K.3.1			0.00025		0.00034	●		
K.3.2			0.00025		0.00034	●		
N.1.1			0.00082		0.00110	●		
N.1.2			0.00082		0.00110	●		
N.2.1			0.00082		0.00110	●		
N.2.2			0.00082		0.00110	●		
N.2.3								
N.3.1	0.00065			0.00088		●		
N.3.2	0.00082			0.00110		●		
N.3.3	0.00065			0.00088		●		
N.4.1	0.00082			0.00110		●		
S.1.1			0.00014		0.00019	●		
S.1.2			0.00007		0.00010	●		
S.2.1			0.00014		0.00019	●		
S.2.2			0.00014		0.00019	●		
S.2.3			0.00007		0.00010	●		
S.3.1			0.00014		0.00019	●		
S.3.2			0.00014		0.00019	●		
S.3.3			0.00007		0.00010	●		
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1								
O.1.2								
O.2.1								
O.2.2								
O.3.1								

Cutting Data – P137 – Profile milling cutter

		59 049 ... / 59 050 ...								
		Ø DC =		1/8"	3/16"	1/4–5/16"	3/8"	● 1st choice ○ suitable		
				a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS
Index	v_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch				
P.1.1	310	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.1.2	260	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.1.3	260	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.1.4	230	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.1.5	230	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.2.1	250	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.2.2	200	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.2.3	200	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.2.4	180	1.0	0.0006	0.0007	0.0011	0.0013	●	○	○	
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1	390	1.0	0.0011	0.0013	0.0020	0.0024	●	○	○	
K.1.2	330	1.0	0.0011	0.0013	0.0020	0.0024	●	○	○	
K.2.1	390	1.0	0.0008	0.0010	0.0014	0.0017	●	○	○	
K.2.2	330	1.0	0.0008	0.0010	0.0014	0.0017	●	○	○	
K.3.1	390	1.0	0.0011	0.0013	0.0020	0.0024	●	○	○	
K.3.2	330	1.0	0.0011	0.0013	0.0020	0.0024	●	○	○	
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1										
N.3.2										
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

Cutting Data – P139 – Profile milling cutter

		59 051 ... / 59 052 ...								
		Ø DC =		3/16"	1/4"	3/8"	1/2"	● 1st choice		
				a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	○ suitable		
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch	f_z inch	Emulsion	Compressed air	MMS	
P.1.1	310	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.1.2	260	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.1.3	260	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.1.4	230	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.1.5	230	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.2.1	250	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.2.2	200	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.2.3	200	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.2.4	180	1.0	0.0007	0.0011	0.0013	0.0018	●	○	○	
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1	390	1.0	0.0013	0.0020	0.0024	0.0033	●	○	○	
K.1.2	330	1.0	0.0013	0.0020	0.0024	0.0033	●	○	○	
K.2.1	390	1.0	0.0010	0.0014	0.0017	0.0023	●	○	○	
K.2.2	330	1.0	0.0010	0.0014	0.0017	0.0023	●	○	○	
K.3.1	390	1.0	0.0013	0.0020	0.0024	0.0033	●	○	○	
K.3.2	330	1.0	0.0013	0.0020	0.0024	0.0033	●	○	○	
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1										
N.3.2										
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

Cutting Data – P132/P134 – Chamfer milling cutter

		59 041 ... / 59 042 ... / 59 045 ... / 59 046 ...								
		Ø DC =								
		1/8"	3/16"	1/4"	3/8"	1/2"	● 1st choice ○ suitable			
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS	
Index	V_c ft/min	$a_{p,max}$ x DC	f_z inch	f_z inch	f_z inch	f_z inch				f_z inch
P.1.1	310	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.1.2	260	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.1.3	260	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.1.4	230	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.1.5	230	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.2.1	250	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.2.2	200	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.2.3	200	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.2.4	180	1.0	0.0006	0.0007	0.0011	0.0013	0.0018	●	○	○
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1	390	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	●	○	○
K.1.2	330	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	●	○	○
K.2.1	390	1.0	0.0008	0.0010	0.0014	0.0017	0.0023	●	○	○
K.2.2	330	1.0	0.0008	0.0010	0.0014	0.0017	0.0023	●	○	○
K.3.1	390	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	●	○	○
K.3.2	330	1.0	0.0011	0.0013	0.0020	0.0024	0.0033	●	○	○
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1										
N.3.2										
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

Cutting Data – P130 – Chamfer milling cutter

		59 037 ... / 59 038 ...						
		Ø DC =						
		1/4"	3/8"	1/2"	● 1st choice	○ suitable		
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS	
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch				f_z inch
P.1.1	310	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.2	260	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.3	260	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.4	230	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.5	230	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.1	250	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.2	200	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.3	200	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.4	180	1.0	0.0011	0.0013	0.0018	●	○	○
P.3.1								
P.3.2								
P.3.3								
P.4.1								
P.4.2								
M.1.1								
M.2.1								
M.3.1								
K.1.1	390	1.0	0.0020	0.0024	0.0033	●	○	○
K.1.2	330	1.0	0.0020	0.0024	0.0033	●	○	○
K.2.1	390	1.0	0.0014	0.0017	0.0023	●	○	○
K.2.2	330	1.0	0.0014	0.0017	0.0023	●	○	○
K.3.1	390	1.0	0.0020	0.0024	0.0033	●	○	○
K.3.2	330	1.0	0.0020	0.0024	0.0033	●	○	○
N.1.1								
N.1.2								
N.2.1								
N.2.2								
N.2.3								
N.3.1								
N.3.2								
N.3.3								
N.4.1								
S.1.1								
S.1.2								
S.2.1								
S.2.2								
S.2.3								
S.3.1								
S.3.2								
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1								
O.1.2								
O.2.1								
O.2.2								
O.3.1								

Cutting Data – P133 – Chamfer milling cutter

59 043 ... / 59 044 ...								
Ø DC =			1/8"	3/16"	1/4"	● 1st choice	○ suitable	
			a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch	f_z inch			
P.1.1	310	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.2	260	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.3	260	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.4	230	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.5	230	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.1	250	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.2	200	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.3	200	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.4	180	1.0	0.0011	0.0013	0.0018	●	○	○
P.3.1								
P.3.2								
P.3.3								
P.4.1								
P.4.2								
M.1.1								
M.2.1								
M.3.1								
K.1.1	390	1.0	0.0020	0.0024	0.0033	●	○	○
K.1.2	330	1.0	0.0020	0.0024	0.0033	●	○	○
K.2.1	390	1.0	0.0014	0.0017	0.0023	●	○	○
K.2.2	330	1.0	0.0014	0.0017	0.0023	●	○	○
K.3.1	390	1.0	0.0020	0.0024	0.0033	●	○	○
K.3.2	330	1.0	0.0020	0.0024	0.0033	●	○	○
N.1.1								
N.1.2								
N.2.1								
N.2.2								
N.2.3								
N.3.1								
N.3.2								
N.3.3								
N.4.1								
S.1.1								
S.1.2								
S.2.1								
S.2.2								
S.2.3								
S.3.1								
S.3.2								
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1								
O.1.2								
O.2.1								
O.2.2								
O.3.1								

Cutting Data – P131/P135 – Chamfer milling cutter

		59 039 ... / 59 040 ... / 59 047 ... / 59 048 ...						
		Ø DC =						
		1/4"	3/8"	1/2"	● 1st choice	○ suitable		
		a_p 1 x DC	a_p 1 x DC	a_p 1 x DC	Emulsion	Compressed air	MMS	
Index	V_c ft/min	a_{pmax} x DC	f_z inch	f_z inch				f_z inch
P.1.1	310	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.2	260	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.3	260	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.4	230	1.0	0.0011	0.0013	0.0018	●	○	○
P.1.5	230	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.1	250	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.2	200	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.3	200	1.0	0.0011	0.0013	0.0018	●	○	○
P.2.4	180	1.0	0.0011	0.0013	0.0018	●	○	○
P.3.1								
P.3.2								
P.3.3								
P.4.1								
P.4.2								
M.1.1								
M.2.1								
M.3.1								
K.1.1	390	1.0	0.0020	0.0024	0.0033	●	○	○
K.1.2	330	1.0	0.0020	0.0024	0.0033	●	○	○
K.2.1	390	1.0	0.0014	0.0017	0.0023	●	○	○
K.2.2	330	1.0	0.0014	0.0017	0.0023	●	○	○
K.3.1	390	1.0	0.0020	0.0024	0.0033	●	○	○
K.3.2	330	1.0	0.0020	0.0024	0.0033	●	○	○
N.1.1								
N.1.2								
N.2.1								
N.2.2								
N.2.3								
N.3.1								
N.3.2								
N.3.3								
N.4.1								
S.1.1								
S.1.2								
S.2.1								
S.2.2								
S.2.3								
S.3.1								
S.3.2								
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1								
O.1.2								
O.2.1								
O.2.2								
O.3.1								

Technical references

Feedrate Adjustment

If the rpm indicated in the tables cannot be obtained by the machine spindle, the feed rate is to be reduced proportionally to the max rpm.

Example:

according to table = n 50000/min. and v_f 40 inch/min.,
maximum machine rpm = 40000/min.

Calculation of feed rate which can be applied:

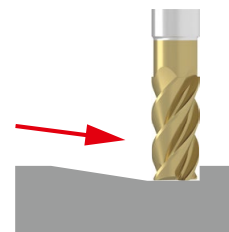
$40000 = 80\%$ of 50000/min. accordingly 80% of 40 = 32 inch/min.

Feed rate which can be applied = **32 inch/min.**

Angled ramping with solid carbide cutters

Angled ramping with solid carbide cutters is possible at an angle of 3° to 6° depending on the cutter type.

A protective edge chamfer or corner radius is an advantage.



S.F.M./R.P.M. CONVERSION CHART
DIAMETER

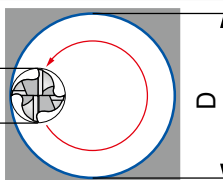
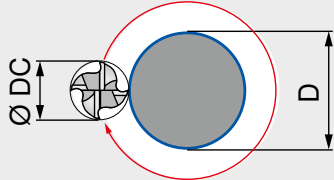
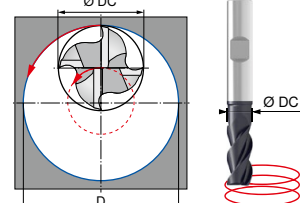
S.F.M.	1/16	3/32	1/8	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
50	3.050	2.040	1.530	1.220	1.020	875	765	610	510	440	380	310	250	220	190
75	4.580	3.060	2.290	1.830	1.530	1.310	1.150	920	760	660	570	460	380	330	285
100	6.100	4.080	3.050	2.450	2.040	1.750	1.530	1.220	1.020	870	760	610	510	440	385
125	7.630	5.100	3.820	3.050	2.550	2.180	1.920	1.530	1.270	1.100	950	770	630	550	475
150	9.150	6.120	4.570	3.670	3.060	2.620	2.290	1.83	1.530	1.310	1.140	920	760	660	575
175	10.680	7.140	5.350	4.270	3.570	3.060	2.680	2.140	1.780	1.540	1.330	1.080	880	770	665
200	12.200	8.150	6.100	4.900	4.070	3.500	3.100	2.450	2.00	1.750	1.500	1.200	1.000	875	750
300	18.500	12.200	9.200	7.300	6.100	5.250	4.600	3.700	3.100	2.600	2.300	1.800	1.500	1.300	1.100
400	24.500	16.300	12.200	9.800	8.150	7.000	6.100	4.900	4.100	3.500	3.050	2.450	2.050	1.750	1.525
500	30.500	20.400	15.300	12.200	10.200	8.700	7.600	6.100	5.100	4.400	3.800	3.100	2.500	2.200	1.900
750	45.800	36.700	22.900	18.300	15.300	13.100	11.500	9.200	7.600	6.550	5.700	4.600	3.800	3.700	2.850
1.000	-	40.800	30.600	24.500	20.400	17.500	15.300	12.200	103200	8.750	7.650	6.100	5.100	4.400	3.800
1.500	-	-	45.900	36.700	30.600	26.200	22.900	18.300	15.300	13.150	11.300	9.200	7.600	6.500	5.700
2.000	-	-	-	49.000	40.800	35.000	30.600	24.400	20.400	17.500	15.300	12.200	10.200	8.700	7.600
3.000	-	-	-	-	-	52.500	45.900	36.600	30.600	26.250	22.900	18.300	15.300	13.100	11.400
4.000	-	-	-	-	-	-	-	48.800	40.800	35.000	30.600	24.400	20.400	17.500	15.200
5.000	-	-	-	-	-	-	-	-	-	43.700	38.200	30.600	25.500	21.800	19.000

General formula for calculating the cutting parameters

Designation	Abbreviation	Unit	Formula	Example
Number of revolutions	n	min ⁻¹	$n = \frac{v_c \times 12}{DC \times \pi}$	$v_c = 80 \text{ ft/min}$ $DC = 0.75 \text{ inch}$ $n = \frac{80 \times 12}{0.75 \times \pi} = 408 \text{ min}^{-1}$
Cutting speed	v_c	ft/min	$v_c = \frac{DC \times \pi \times n}{12}$	$n = 400 \text{ min}^{-1}$ $DC = 0.75 \text{ inch}$ $v_c = \frac{0.75 \times \pi \times 400}{12} = 78 \text{ ft/min}$
Feed per tooth	f_z	inch	$f_z = \frac{v_f}{Z \times n}$	$v_f = 12.8 \text{ inch/min}$ $n = 400 \text{ min}^{-1}$ $Z = 4$ $f_z = \frac{12.8}{4 \times 400} = 0.008 \text{ inch}$
Feed per revolution	f	inch/rev	$f = f_z \times Z$	$f_z = 0.008 \text{ inch}$ $Z = 4$ $f = 0.008 \times 4 = 0.032 \text{ inch/rev}$
Feed rate	v_f	inch/min.	$v_f = f_z \times Z \times n$	$f_z = 0.008$ $Z = 4$ $n = 400 \text{ min}^{-1}$ $v_f = 0.008 \times 4 \times 400 = 12.8 \text{ inch/min}$
Average chip thickness	h_m	inch	$h_m = f_z \times \sqrt{\frac{a_e}{DC}}$	$f_z = 0.008 \text{ inch}$ $a_e = 0.012 \text{ inch}$ $DC = 0.75$ $h_m = 0.008 \times \sqrt{\frac{0.012}{0.75}} = 0.001 \text{ inch}$

Z = Number of flutes
 a_e = cutting width

Calculation of the feed rate on the midpoint path of the milling cutter (v_{fM})

Designation	Abbreviation	Unit	Formula	Example
Internal contour	v_{fM}	inch/min.	$v_{fM} = \frac{v_f \times (D - DC)}{D}$	
Outside profile	v_{fM}	inch/min.	$v_{fM} = \frac{v_f \times (D + DC)}{D}$	
Helical ramping	v_{fM}	inch/min.	$v_{fM} = \frac{n \times f_z \times Z \times (D - D_c)}{D}$	

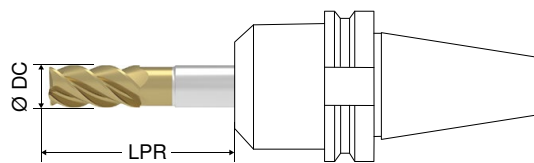
Tips for Tool Selection

Rake and helix angles combined with the coating are decisive factors for the operational area.

Characteristics	Benefits
Helix angle with slow spiral	
<ul style="list-style-type: none"> ▲ For materials with high tensile strength ▲ For high material removal rates ▲ For slot milling, pocket milling, rough milling 	<ul style="list-style-type: none"> ▲ High edge stability ▲ Low tendency to edge chipping
Helix angle with quick spiral	
<ul style="list-style-type: none"> ▲ For soft steels, non ferrous metals, etc. ▲ For low material removal rates ▲ Typical for finishing processes 	<ul style="list-style-type: none"> ▲ Soft cut ▲ Low cutting forces
Small rake angles are applied	
<ul style="list-style-type: none"> ▲ For hard, brittle materials ▲ For high material removal rates ▲ For rough machining 	<ul style="list-style-type: none"> ▲ High edge stability ▲ Low tendency to edge chipping
Large rake angles are applied	
<ul style="list-style-type: none"> ▲ For soft materials ▲ For low material removal rates ▲ For finishing 	<ul style="list-style-type: none"> ▲ Soft cut ▲ Low cutting forces ▲ Favorable chip flow ▲ Low tendency to stick

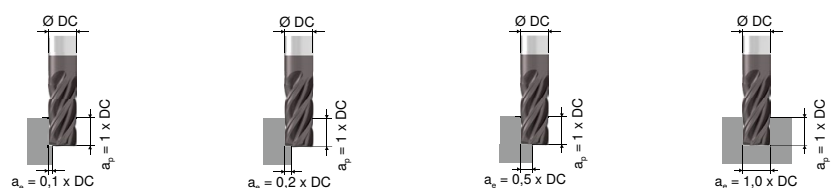
Correction factor for solid carbide milling cutters

Factors for cutting speed (v_c) and feed rate (f_z) in relation to the overhang length (LPR)



Length					
Overhang length (LPR)	1.5 x DC	4 x DC	8 x DC	12 x DC	> 12 x DC
Factor for v_c ($K_f v_c$)	1.0	1.0	0.9	0.85	0.7
Factor for f_z ($K_f f_z$)	1.2	1.0	0.8	0.7	0.5

Factors for cutting speed (v_c) and feed rate (f_z) in relation to the cutting depth (a_p) and cutting width (a_e)



Factor for v_c ($K_f v_c$)	1.3	1.1	1.0	0.85
Factor for f_z ($K_f f_z$)	1.5	1.3	1.0	0.8

Calculation aid for copy milling

Theoretical surface roughness (R_{th}) and step over (b_r)

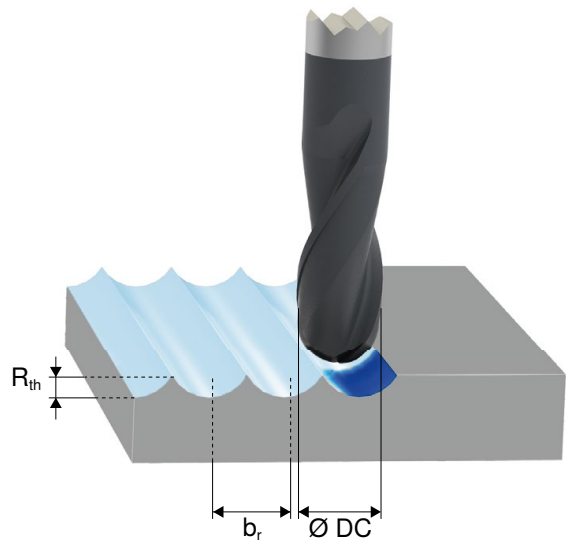
$$R_{th} = r - \sqrt{\frac{(r \times 2)^2 - b_r^2}{4}}$$

$$b_r = 2 \times \sqrt{R_{th} \times (r \times 2 - R_{th})}$$

$$R_{th} \approx R_a / 0.1$$

$$R_a \approx 0.1 \times R_{th}$$

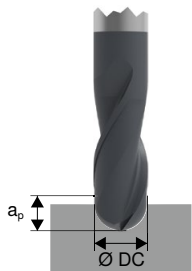
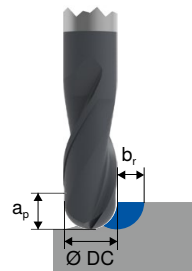
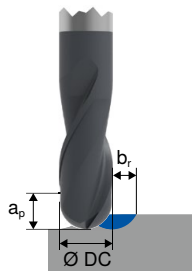
When copy milling, in order to achieve as smooth a surface as possible, the step over b_r should be adapted to the cutter diameter DC. The smaller the cutter diameter DC is, the smaller the step over b_r must be.



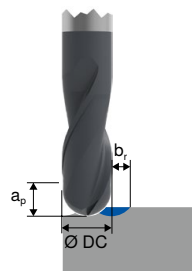
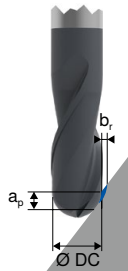
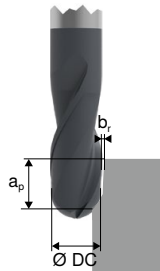
RPM correction factor (Kf n) for copy milling

$$n = \frac{v_c \times 12}{DC \times \pi} \times Kf n$$

Rough machining

	Peripheral and ball nose copy milling	Ball nose copy milling	
			
Axial milling depth a_p	0.5 x DC	> 0.5 x DC	0.2 x DC - 0.5 x DC
Step over b_r	1 x DC	0.2 x DC - 0.5 x DC	0.2 x DC - 0.5 x DC
Correction factor (Kf n)	1	1	1.1

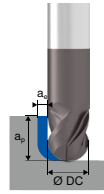
Finish milling

	Ball nose copy milling		
			
Axial milling depth a_p	< 0.2 x DC	0.2 x DC - 0.5 x DC	> 0.5 x DC
Step over b_r	< 0.2 x DC	< 0.2 x DC	< 0.2 x DC
Correction factor (Kf n)	2	1.3	1

Calculation aid for copy milling

For peripheral milling or ball nosed copy milling at cutting depths of $a_p \geq 0.5 \times DC$ and $a_e = 0.2 \text{ to } 0.5 \times DC$ the rpm can be calculated with the following formula:

$$n = \frac{v_c \times 12}{DC \times \pi}$$

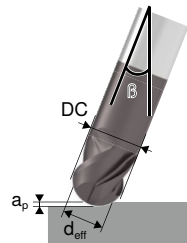
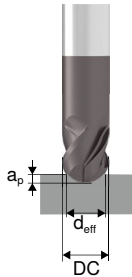


When ball milling the effective milling diameter d_{eff} must be determined using the following formula:

Ball nose milling cutters

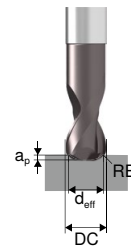
$$d_{eff} = 2 \times \sqrt{a_p \times (DC - a_p)}$$

$$d_{eff} = DC \times \sin \left(\beta \pm \arccos \left(\frac{DC - 2a_p}{DC} \right) \right)$$



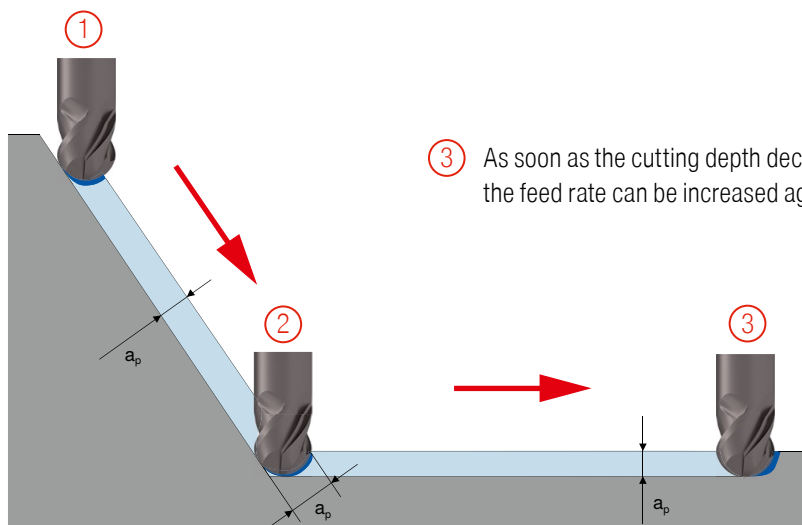
Torus end milling cutters

$$d_{eff} = (DC - 2RE) + 2 \times \sqrt{a_p \times (2RE - a_p)}$$



Information concerning plunge and draw milling

- ① When machining the profile flanks relatively high feed rates are possible as the cutting depth is relatively low (area highlighted in blue).
- ② A large increase in cutting depth occurs when the base of the profile is reached. Here the feed rate must be reduced as otherwise tool breakage can occur due to vibrations, misalignment or chattering.
- ③ As soon as the cutting depth decreases during the machining of the profile base, the feed rate can be increased again.



Rule:

The steeper the angle, the lower the feed rate.
The shallower the angle, the larger the feed rate.

ⓘ When plunge or draw milling dies, the feed rate has to be adapted to the various milling positions. Otherwise the cutting edge can be damaged due to overload (vibrations, misalignment or chattering).

Tool types

AL	Aluminium and Non-Ferrous Material
ST	Steel and Steel Alloys

Ti	Titanium and Titanium Alloys
UN	Universal

Coatings

ALTiN	<ul style="list-style-type: none"> ▲ Monolayer coating ▲ HV0.05 = 3500 ▲ Coefficient of friction (against steel) = 0.30 ▲ Maximum application temperature: 1000°C
ZrN	<ul style="list-style-type: none"> ▲ Monolayer coating ▲ HV0.05 = 2500 ▲ Coefficient of friction (against steel) = 0.30 ▲ Maximum application temperature: 650°C

DPAU72S DRAGONSKIN	<ul style="list-style-type: none"> ▲ Monolayer coating ▲ HV0.05 = 3800 ▲ Coefficient of friction (against steel) = 0.35 ▲ Maximum application temperature: 1100°C
DPXU72S DRAGONSKIN	<ul style="list-style-type: none"> ▲ ALCrN/SiN Nano Composite coating ▲ HV0.05 = 3700 ▲ Coefficient of friction (against steel) = 0.30 ▲ Maximum application temperature: 1100°C