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VP2-End Mill

High Performance Milling

veri4 Coating + Latest Edge Prep Techniques

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MADE IN THE
USA

VP2-End Mill

High Performance Solid Carbide Single End Mills

Honed Cutting Edge
Enhanced Edge Strength & Tool Life

veri4 Coating
Aluminum Chromium Titanium Nitride
Maximum Toughness, Wear Resistance & Lubricity

10% Cobalt Submicron Carbide

Stub, Regular, Long & Extra Long

Square End and Corner Radius

Runs In a Wide Variety of Materials

Variable Flute Geometry

MORSE®

**PRODUCTION
SOLUTIONS**

**MADE IN THE
USA**

VP2-MILL Diameter Tolerances		
Mill Diameter: $+.000/-0.002$ (All Sizes)		
Shank Diameter: h6		
Shank Dia. Range		Tolerance
< 3mm .1181"	≤ 6mm .2362"	$+.000\text{mm}/-.008\text{mm}$ $+.0000"/-.00031"$
> 6mm .2362"	≤ 10mm .3937"	$+.000\text{mm}/-.009\text{mm}$ $+.0000"/-.00035"$
> 10mm .3937"	≤ 18mm .7087"	$+.000\text{mm}/-.011\text{mm}$ $+.0000"/-.00043"$
> 18mm .7087"	≤ 30mm 1.1811"	$+.000\text{mm}/-.013\text{mm}$ $+.0000"/-.00051"$

SUCCESSFUL MACHINING

Tool Holding – High quality tool holders should be used to minimize run-out and maximize rigidity.

Machine – A rigid machine with a high quality spindle is required.

Workholding – The workpiece should be securely held to prevent movement and vibration while machining.

Coolant – A high quality coolant under adequate pressure should be used to enhance chip control and improve tool life.

Plunging – When plunging or ramping the feed rate should be reduced 50%.

Tool Choice – The shortest tool that will do the job is recommended to reduce chatter and deflection.

Speed and Feed – Using correct speed and feed rates will provide a better surface finish and improve tool life.

VP2-End Mill High Performance Variable Flute veri4 Coated Solid Carbide Single End Mills



List No. 5980 4-Flute - Square End

Center Cutting - Honed Cutting Edge
10% Cobalt Submicron Carbide
veri4 - Aluminum Chromium Titanium Nitride Coating

VP2-End Mill excels at High Performance Milling in a Wide Range of Materials.

Honed Cutting Edge for enhanced edge strength and tool life.

veri4 Coating for maximum toughness, wear resistance and lubricity.

Speeds & Feeds: Page 6

Honed Cutting Edge

List No. 5980 - 4-Flute - Square End

DIA.	SHANK DIA.	LOC	OAL	EDP NO.
STUB LENGTH				
1/8	1/8	1/4	1-1/2	95820
3/16	3/16	3/8	2	95821
1/4	1/4	7/16	2	95822
5/16	5/16	1/2	2	95823
3/8	3/8	5/8	2	95824
1/2	1/2	5/8	2-1/2	95825
5/8	5/8	3/4	3	95826
3/4	3/4	1	3	95827
REGULAR LENGTH				
1/8	1/8	1/2	1-1/2	95830
3/16	3/16	5/8	2	95831
1/4	1/4	3/4	2-1/2	95832
5/16	5/16	13/16	2-1/2	95833
3/8	3/8	1	2-1/2	95834
7/16	7/16	1	2-3/4	95835
1/2	1/2	1	3	95836
1/2	1/2	1-1/4	3	95837
5/8	5/8	1-1/4	3-1/2	95838
3/4	3/4	1-1/2	4	95839
1	1	1-1/2	4	95840
LONG LENGTH				
1/8	1/8	3/4	2-1/4	95845
3/16	3/16	3/4	2-1/2	95846
1/4	1/4	1-1/8	3	95847
5/16	5/16	1-1/8	3	95848
3/8	3/8	1-1/8	3	95849
7/16	7/16	2	4	95850
1/2	1/2	1-1/2	4	95851
1/2	1/2	2	4	95852
5/8	5/8	2-1/4	5	95853
3/4	3/4	2-1/4	5	95854
1	1	2-1/4	5	95855
EXTRA LONG LENGTH				
1/8	1/8	1	3	95860
3/16	3/16	1-1/8	3	95861
1/4	1/4	1-1/2	4	95862
5/16	5/16	1-5/8	4	95863
3/8	3/8	1-3/4	4	95864
7/16	7/16	3	6	95865
1/2	1/2	3	6	95866
5/8	5/8	3	6	95867
3/4	3/4	3	6	95868
3/4	3/4	4	7	95869
1	1	3	6	95870
1	1	4	7	95871

See Morse Catalog for Complete Selection of End Mills

MORSE

PRODUCTION SOLUTIONS

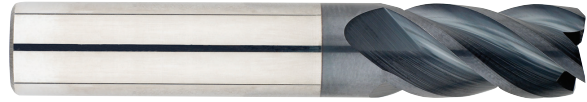
VP2-End Mill

High Performance

Variable Flute

veri4 Coated

Solid Carbide Single End Mills



List No. 5981 4-Flute - Corner Radius

Center Cutting - Honed Cutting Edge
 10% Cobalt Submicron Carbide
 veri4 - Aluminum Chromium Titanium Nitride Coating

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Honed Cutting Edge for enhanced edge strength and tool life.

Corner Radius strengthens the end mill to minimize chipping and reduce corner wear. Also used when the finished part requires a radius.

veri4 Coating for maximum toughness, wear resistance and lubricity.

Corner Radius

Honed Cutting Edge

List No. 5981 - 4-Flute - Corner Radius

DIA.	SHANK DIA.	LOC	OAL	CORNER RADIUS	EDP NO.
STUB LENGTH					
1/8	1/8	1/4	1-1/2	.010	95880
3/16	3/16	3/8	2	.010	95881
1/4	1/4	7/16	2	.015	95882
5/16	5/16	1/2	2	.015	95883
3/8	3/8	5/8	2	.015	95884
1/2	1/2	5/8	2-1/2	.030	95885
5/8	5/8	3/4	3	.030	95886
3/4	3/4	1	3	.030	95887
REGULAR LENGTH					
1/8	1/8	1/2	1-1/2	.010	95900
1/8	1/8	1/2	1-1/2	.030	95901
3/16	3/16	5/8	2	.010	95902
3/16	3/16	5/8	2	.030	95903
1/4	1/4	3/4	2-1/2	.015	95904
1/4	1/4	3/4	2-1/2	.030	95905
1/4	1/4	3/4	2-1/2	.060	95906
5/16	5/16	13/16	2-1/2	.015	95907
5/16	5/16	13/16	2-1/2	.030	95908
5/16	5/16	13/16	2-1/2	.060	95909
3/8	3/8	1	2-1/2	.015	95910
3/8	3/8	1	2-1/2	.030	95911
3/8	3/8	1	2-1/2	.060	95912
7/16	7/16	1	2-3/4	.030	95913
7/16	7/16	1	2-3/4	.060	95914
1/2	1/2	1	3	.030	95915
1/2	1/2	1	3	.060	95916
1/2	1/2	1	3	.090	95917
1/2	1/2	1	3	.125	95918
5/8	5/8	1-1/4	3-1/2	.030	95919
5/8	5/8	1-1/4	3-1/2	.060	95920
3/4	3/4	1-1/2	4	.030	95921
3/4	3/4	1-1/2	4	.060	95922
3/4	3/4	1-1/2	4	.090	95923
1	1	1-1/2	4	.030	95924
1	1	1-1/2	4	.060	95925
1	1	1-1/2	4	.090	95926
1	1	1-1/2	4	.125	95927

(continued)

Speeds & Feeds: Page 6

See Morse Catalog for Complete Selection of End Mills

MORSE PRODUCTION SOLUTIONS

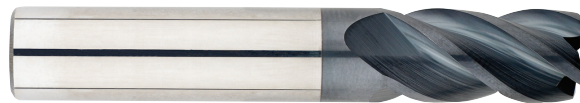
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List No. 5981 4-Flute - Corner Radius

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Corner Radius

Honed Cutting Edge

List No. 5981 - 4-Flute - Corner Radius (continued)

DIA.	SHANK DIA.	LOC	OAL	CORNER RADIUS	EDP NO.
LONG LENGTH					
1/8	1/8	3/4	2-1/4	.015	95945
3/16	3/16	3/4	2-1/2	.015	95946
1/4	1/4	1-1/8	3	.015	95947
1/4	1/4	1-1/8	3	.030	95948
5/16	5/16	1-1/8	3	.015	95949
5/16	5/16	1-1/8	3	.030	95950
3/8	3/8	1-1/8	3	.015	95951
3/8	3/8	1-1/8	3	.030	95952
3/8	3/8	1-1/8	3	.060	95953
1/2	1/2	1-1/2	4	.030	95954
1/2	1/2	1-1/2	4	.060	95955
1/2	1/2	2	4	.030	95956
1/2	1/2	2	4	.060	95957
5/8	5/8	2-1/4	5	.030	95958
5/8	5/8	2-1/4	5	.060	95959
3/4	3/4	2-1/4	5	.030	95960
3/4	3/4	2-1/4	5	.060	95961
1	1	2-1/4	5	.030	95962
1	1	2-1/4	5	.060	95963
EXTRA LONG LENGTH					
1/8	1/8	1	3	.015	95975
3/16	3/16	1-1/8	3	.015	95976
1/4	1/4	1-1/2	4	.015	95977
1/4	1/4	1-1/2	4	.030	95978
5/16	5/16	1-5/8	4	.015	95979
5/16	5/16	1-5/8	4	.030	95980
3/8	3/8	1-3/4	4	.015	95981
3/8	3/8	1-3/4	4	.030	95982
1/2	1/2	3	6	.030	95983
1/2	1/2	3	6	.060	95984
5/8	5/8	3	6	.030	95985
5/8	5/8	3	6	.060	95986
3/4	3/4	3	6	.030	95987
3/4	3/4	3	6	.060	95988
3/4	3/4	4	7	.030	95989
3/4	3/4	4	7	.060	95990
1	1	3	6	.030	95991
1	1	4	7	.030	95992
1	1	4	7	.060	95993

Speeds & Feeds: Page 6

See Morse Catalog for Complete Selection of End Mills

MORSE PRODUCTION SOLUTIONS

VP2-End Mill

Speed and Feed Recommendations

	WORKPIECE MATERIAL	HARDNESS	TYPE OF CUT	SURFACE SPEED (SFM)	FEED PER TOOTH BY END MILL DIAMETER					
					1/8"	1/4"	1/2"	3/4"	1"	
ISO P	Plain Steels - Low and Medium Carbon 1018, 12L12, 1108, 1213	175 BRN	Profile	600	0.0004	0.0015	0.0034	0.0043	0.0047	
		-	Slot	480	0.0003	0.0011	0.0027	0.0034	0.0038	
	Plain Steels - Low and Medium Carbon 1018, 12L12, 1108, 1213	275 BRN	Profile	480	0.0004	0.0015	0.0034	0.0043	0.0047	
		28 HRc	Slot	385	0.0003	0.0011	0.0027	0.0034	0.0038	
	Alloy Steels - Medium Carbon 4140, 4150, 4340	275 BRN	Profile	480	0.0003	0.0011	0.0028	0.0039	0.0045	
		28 HRc	Slot	385	0.0002	0.0009	0.0022	0.0031	0.0036	
	Alloy Steels - Medium Carbon 4140, 4150, 4340	375 BRN	Profile	360	0.0003	0.0011	0.0028	0.0039	0.0045	
		41 HRc	Slot	290	0.0002	0.0009	0.0022	0.0031	0.0036	
	Mold & Die Steels O1, A2, D2, H13, P20	275 BRN	Profile	215	0.0002	0.0011	0.0028	0.0039	0.0045	
		28 HRc	Slot	175	0.0002	0.0009	0.0022	0.0031	0.0036	
	ISO M	300 Series Stainless Steels 304, 316, 416, 440F	275 BRN	Profile	345	0.0003	0.0011	0.0028	0.0039	0.0047
			28 HRc	Slot	275	0.0002	0.0009	0.0022	0.0031	0.0038
400 Series Stainless Steels 430, 436		325 BRN	Profile	290	0.0003	0.0011	0.0028	0.0039	0.0047	
		35 HRc	Slot	230	0.0002	0.0009	0.0022	0.0031	0.0038	
Precipitation Hardened Stainless Steels 17-4PH, 15-4PH		325 BRN	Profile	290	0.0002	0.0011	0.0025	0.0034	0.0045	
		35 HRc	Slot	230	0.0002	0.0009	0.0020	0.0027	0.0036	
ISO K	Cast Iron Gray	200 BRN	Profile	580	0.0004	0.0013	0.0034	0.0043	0.0047	
		-	Slot	460	0.0003	0.0011	0.0027	0.0034	0.0038	
	Cast Iron Ductile	300 BRN	Profile	265	0.0003	0.0011	0.0034	0.0037	0.0047	
		32 HRc	Slot	210	0.0002	0.0009	0.0027	0.0029	0.0038	
ISO S	Titanium Alloys Ti-6Al-4V, ASTM B367 Grades C-3, C-4	300 BRN	Profile	300	0.0003	0.0011	0.0028	0.0030	0.0039	
		32 HRc	Slot	240	0.0002	0.0009	0.0022	0.0025	0.0031	
	High Temperature Alloys Inconel, Hastelloy, Waspaloy	300 BRN	Profile	75	0.0002	0.0008	0.0022	0.0028	0.0036	
		32 HRc	Slot	60	0.0002	0.0007	0.0018	0.0022	0.0029	

Speeds and Feeds are suggested starting points and may be increased or decreased depending on actual material and machining conditions.

In general, use lower speeds and feeds for hard and difficult-to-machine materials. Use higher speeds and feeds for easy-to-machine materials. Use higher speeds for lighter cuts, smaller tools, and better finishes. Higher feed rates can improve tool life and performance in softer materials and more abrasive materials.

For long and extra long tools reduce feed rates by 50%.

NOTE: Information in this chart is for reference only. We will not be held liable for any consequential damages or economic loss due to the use of information contained within this chart.



MORSE CUTTING TOOLS



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PRODUCTION SOLUTIONS

PRODUCTION TOOLS
HIGH PERFORMANCE TOOLS
SPECIAL APPLICATION TOOLS

2016 CATALOG

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- Oxide Over Nitride & Titanium Nitride Coated

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Certificate of Registration

This certifies that the Quality Management System of

Morse Cutting Tools

31695 Stephenson Hwy.
Madison Heights, Michigan, 48071-1672, United States

has been assessed by NSF-ISR and found to be in conformance to the following standard(s):

ISO 9001:2008

Scope of Registration:

The design of cutting tools and accessories including distribution services and sales thereof.



Certificate Number: 64541-IS3
Certificate Issue Date: 07-MAY-2015
Registration Date: 29-AUG-2015
Expiration Date *: 28-AUG-2018

Carl Blazik,
Director, Technical
Operations & Business Units,
NSF-ISR, Ltd.

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