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NEW PRODUCTS

The patented Viper DVH End Mill, was designed and developed specifically for high efficiency machining of aluminum and other non ferrous materials.

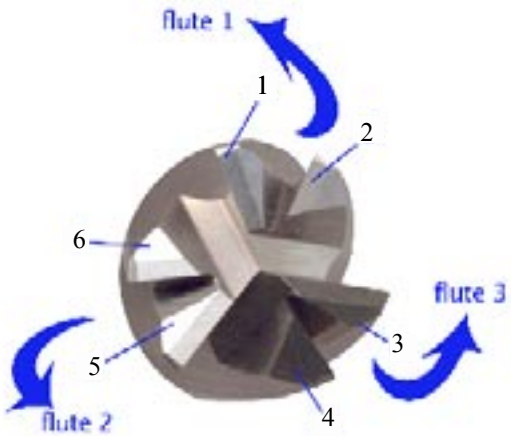
The patented Diamond Back DVH Rougher End Mill, was designed and developed specifically for high efficiency machining of aluminum and other non ferrous materials.

The patented Raptor DVH End Mill, was designed and developed specifically for high efficiency machining of stainless, titainium, inconel and other high temp alloys. Altin coated

The patent pending Raptor 3/6 End Mill, was designed and developed for extended tool life and superior surface finish on stainless, titanium inconel and other high temp alloys. Altin coated

NEW FEATURES

Altin Coated



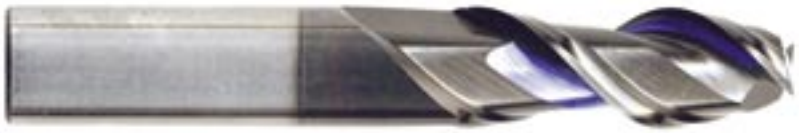
New 3 Flute with 6 cutting teeth design

DVH = Double Variable Helix Design where the helix changes within the fulte. With 8 helixes on a 4 flute end mill

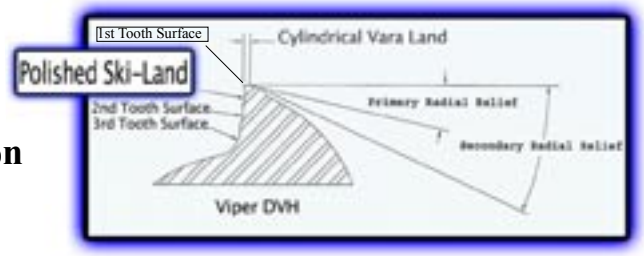
NEW! Spiral Coolant Grooves

NEW FEATURES

Double Variable Helix Design for improved corner strength and allowing high feed rate settings



3 pass flute face geometry for high efficiency chip evacuation



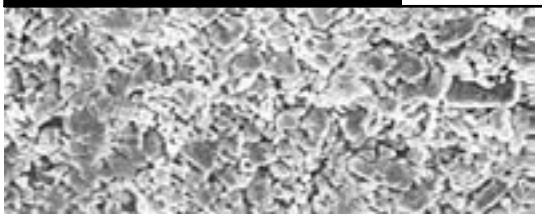
Substrate plus Geometry equals performance

Carbide Specifications

Standard Micro Grain

Cobalt Percentage:	10%
Grain Size: Average:	1.0 to 3.0
Rockwell Hardness:	91.0
Transverse Rupture:	310,000 psi
Density (GM/CC):	14.97

Others



Ultra Fine Micro Grain

Cobalt Percentage:	10%
Grain Size:	Less than .9 μm
Rockwell Hardness:	92.0
Transverse Rupture:	Avg. 580,000 psi
Density (GM/CC):	14.50

Destiny Tool

Specifications

New Technology Breakthrough!

Corner Radius now available in continuous flute through Radius!
Great for finishing and faster feeds.

Part Number Identification

i.e. P/N # DVH4321616RCG

DVH = Raptor Endmill: DVH
4 = Four (4) Flute
32 = Diameter (32/64' = 1/2")
16 = Length of Cut/LOC (16/16" = 1")
16 = Length Below Shank/LBS (16/8" = 2")
R = Radius
C = Altin Coating, Stocked
G = Coolant Grooves

Tolerance for RAPTORS
Endmills Diameter + .000 - .002

Part Number Identification

i.e. P/N # V2321616 (S)

V = Viper Endmill: 45 Degree Helix
2 = Two (2) Flute
32 = Diameter (32/64' = 1/2")
16 = Length of Cut/LOC (16/16" = 1")
16 = Length Below Shank/LBS (16/8"=2")
S = Black Stealth Coating

Tolerance for Vipers
Endmills Diameter = -.0001 - .0003

Tolerance for Flat Profile Roughers / Raptors
Endmills Diameter + .000 - .002

Tolerance for Diamond Backs
Endmills Diameter =-.0001 - .0003

Shank Diameter: +.000 - .0003
Ball Nose: +.001 - .001

Pricing for Corner Radius

Size of Radius	Add to List Price:
.001 to .014	$7.00
.015 to .045	$8.40
.046 to .070	$11.20
.071 to .094	$15.80
.095 to .125	$16.80
.126 to .186	$19.60
.189 to .250	$21.00

assigned part #'s for specials

Add'l pricing may apply should radius exceed 20% of the diameter. Please call for quote.

Pricing for Ball Endmills

Diameter	Add to List Price:
1/8, 3/16, 1/4, 5/16, 3/8	40%
7/16, 1/2	35%
5/8, 3/4	35%
7/8, 1"	30%

Add B to beginning of part number for example: BP52416X

Pricing for Weldon Flats

Diameter	Add to List Price:
3/8, 1/2, 5/8, 3/4	$10.00
7/8, 1"	$16.00
1 1/4	$22.00

Add W at the end of part number for example: P52416W

Pricing for Length Below Shank (LBS)

Diameter	Add to List Price:
1/2"	$12.00
3/4"	$16.00
1"	$20.00
1 1/4	$30.00

Pricing for Coolant Grooves

Diameter	Add to List Price:
1/2"	$12.00
3/4"	$16.00
1"	$20.00
1 1/4	$30.00

Viper DVH™

For high efficiency machining of aluminum, plastics and other non-ferrous materials.

Regular, 2 Flute, 45 Degree Helix

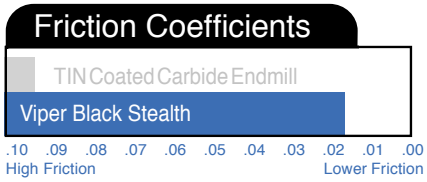
Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
V20804	V20804S	1/8	1/8	1/4	1-1/2	2
V20805	V20805S	1/8	1/8	5/16	1-1/2	2
V20806	V20806S	1/8	1/8	3/8	1-1/2	2
V20808	V20808S	1/8	1/8	1/2	1-1/2	2
V20810	V20810S	1/8	1/8	5/8	2	2
V20812	V20812S	1/8	1/8	3/4	2	2
V20816	V20816S	1/8	1/8	1	2-1/2	2
V21005	V21005S	5/32	3/16	5/16	2	2
V21009	V21009S	5/32	3/16	9/16	2	2
V21205	V21205S	3/16	3/16	5/16	2	2
V21206	V21206S	3/16	3/16	3/8	2	2
V21210	V21210S	3/16	3/16	5/8	2-1/2	2
V21212	V21212S	3/16	3/16	3/4	2-1/2	2
V21216	V21216S	3/16	3/16	1	2-1/2	2
V21406	V21406S	7/32	1/4	3/8	2	2
V21412	V21412S	7/32	1/4	3/4	2-1/2	2
V21606	V21606S	1/4	1/4	3/8	2	2
V21608	V21608S	1/4	1/4	1/2	2	2
V21610	V21610S	1/4	1/4	5/8	2-1/2	2
V21612	V21612S	1/4	1/4	3/4	2-1/2	2
V21616	V21616S	1/4	1/4	1	2-1/2	2
V21618	V21618S	1/4	1/4	1-1/8	2-1/2	2
V21620	V21620S	1/4	1/4	1-1/4	3	2
V21624	V21624S	1/4	1/4	1-1/2	3	2
V21632	V21632S	1/4	1/4	2	4	2
V22007	V22007S	5/16	5/16	7/16	2	2
V22008	V22008S	5/16	5/16	1/2	2	2
V22013	V22013S	5/16	5/16	13/16	2-1/2	2
V22018	V22018S	5/16	5/16	1-1/8	2-1/2	2
V22020	V22020S	5/16	5/16	1-1/4	3	2
V22024	V22024S	5/16	5/16	1-1/2	3	2
V22032	V22032S	5/16	5/16	2	3	2
V22408	V22408S	3/8	3/8	1/2	2	2
V22410	V22410S	3/8	3/8	5/8	2	2
V22412	V22412S	3/8	3/8	3/4	2-1/2	2
V22416	V22416S	3/8	3/8	1	2-1/2	2
V22420	V22420S	3/8	3/8	1-1/4	3	2
V22424	V22424S	3/8	3/8	1-1/2	4	2
V22432	V22432S	3/8	3/8	2	4	2
V22440	V22440S	3/8	3/8	2-1/2	5	2

S: Stealth Coating

PATENTED DOUBLE VARIABLE HELIX

ALUMINUM

*Black Stealth is an invisible, lubristic coating that is covered in a black material to support identification between uncoated and coated tools.



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Viper DVH™

For high efficiency machining of aluminum, plastics and other non-ferrous materials.

Wiper flat for improved corner strength and bottom finish

Regular, 2 Flute, 45 Degree Helix (continued)

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
V22809	V22809S	7/16	7/16	9/16	2-3/4	2
V22816	V22816S	7/16	7/16	1	2-3/4	2
V23210	V23210S	1/2	1/2	5/8	3	2
V23212	V23212S	1/2	1/2	3/4	3	2
V23216	V23216S	1/2	1/2	1	3	2
V23220	V23220S	1/2	1/2	1-1/4	3	2
V23224	V23224S	1/2	1/2	1-1/2	4	2
V23232	V23232S	1/2	1/2	2	4	2
V23236	V23236S	1/2	1/2	2-1/4	5	2
V23240	V23240S	1/2	1/2	2-1/2	5	2
V23248	V23248S	1/2	1/2	3	6	2
V23264	V23264S	1/2	1/2	4	8	2
V24012	V24012S	5/8	5/8	3/4	3-1/2	2
V24020	V24020S	5/8	5/8	1-1/4	3-1/2	2
V24026	V24026S	5/8	5/8	1-5/8	4	2
V24032	V24032S	5/8	5/8	2	5	2
V24040	V24040S	5/8	5/8	2-1/2	5	2
V24044	V24044S	5/8	5/8	2-3/4	5	2
V24052	V24052S	5/8	5/8	3-1/4	6	2
V24064	V24064S	5/8	5/8	4	8	2
V24816	V24816S	3/4	3/4	1	4	2
V24826	V24826S	3/4	3/4	1-5/8	4	2
V24832	V24832S	3/4	3/4	2	5	2
V24836	V24836S	3/4	3/4	2-1/4	5	2
V24840	V24840S	3/4	3/4	2-1/2	5	2
V24848	V24848S	3/4	3/4	3	6	2
V24852	V24852S	3/4	3/4	3-1/4	6	2
V24856	V24856S	3/4	3/4	3-1/2	6	2
V24864	V24864S	3/4	3/4	4	7	2
V24880	V24880S	3/4	3/4	5	8	2
V26420	V26420S	1	1	1-1/4	4	2
V26424	V26424S	1	1	1-1/2	4	2
V26432	V26432S	1	1	2	5	2
V26436	V26436S	1	1	2-1/4	5	2
V26440	V26440S	1	1	2-1/2	5	2
V26448	V26448S	1	1	3	6	2
V26456	V26456S	1	1	3-1/2	6	2
V26464	V26464S	1	1	4	7	2
V26488	V26488S	1	1	5-1/2	8	2

S: Stealth Coating

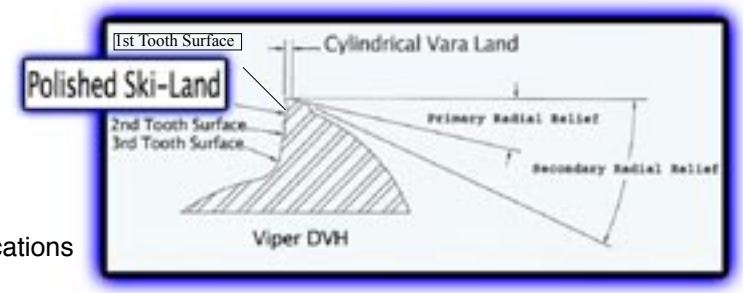
PATENTED DOUBLE VARIABLE HELIX

ALUMINUM

Tolerances: Viper Endmills

Diameter:	- .0001	-.0003
Shank:	- .0001	-.0003

- Stealth Coated Vipers allow greater feed rates over conventional two flute cutters
- Produce superior surface finishes
- Unique geometry provides longer tool life
- Provide an excellent finish on both walls and improve dimensional accuracy in slotting operations
- Stabilize end mill in cornering operations, allowing higher feed rates through the pass
- Reduce “squall” in deep axial cuts and thin wall applications
- Reduce cutter vibration
- Reinforced core diameter



DESTINY TOOL
the mark of performance

Viper DVH™

Regular, 2 Flute, 45 Degree Helix, Long Shank Series with Reduced Neck LBS*

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes
V2080304	V2080304S	1/8	1/8	3/16	1/2	.110	1-1/2	2
V2120404	V2120404S	3/16	3/16	1/4	1/2	.170	2	2
V2160605	V2160605S	1/4	1/4	3/8	5/8	.235	2	2
V2160609	V2160609S	1/4	1/4	3/8	1-1/8	.235	2-1/2	2
V2160617	V2160617S	1/4	1/4	3/8	2-1/8	.235	4	2
V2161217	V2161217S	1/4	1/4	3/4	2-1/8	.235	4	2
V2200605	V2200605S	5/16	5/16	3/8	5/8	.291	2	2
V2200708	V2200708S	5/16	5/16	7/16	1	.291	2-1/2	2
V2200717	V2200717S	5/16	5/16	7/16	2-1/8	.291	4	2
V2240809	V2240809S	3/8	3/8	1/2	1-1/8	.355	2-1/2	2
V2240817	V2240817S	3/8	3/8	1/2	2-1/8	.355	4	2
V2241617	V2241617S	3/8	3/8	1	2-1/8	.355	4	2
V2321011	V2321011S	1/2	1/2	5/8	1-3/8	.475	3	2
V2321017	V2321017S	1/2	1/2	5/8	2-1/8	.475	4	2
V2321048	V2321048S	1/2	1/2	5/8	6	.475	8	2
V2321227	V2321227S	1/2	1/2	3/4	3-3/8	.475	6	2
V2321232	V2321232S	1/2	1/2	3/4	4	.475	6	2
V2401212	V2401212S	5/8	5/8	3/4	1-1/2	.590	3-1/2	2
V2401219	V2401219S	5/8	5/8	3/4	2-3/8	.590	5	2
V2401227	V2401227S	5/8	5/8	3/4	3-3/8	.590	6	2
V2401232	V2401232S	5/8	5/8	3/4	4	.590	6	2
V2401248	V2401248S	5/8	5/8	3/4	6	.590	8	2
V2481612	V2481612S	3/4	3/4	1	1-1/2	.715	4	2
V2481620	V2481620S	3/4	3/4	1	2-1/2	.715	5	2
V2481627	V2481627S	3/4	3/4	1	3-3/8	.715	6	2
V2482627	V2482627S	3/4	3/4	1-5/8	3-3/8	.715	6	2
V2481632	V2481632S	3/4	3/4	1	4	.715	6	2
V2481648	V2481648S	3/4	3/4	1	6	.715	8	2
V2641612	V2641612S	1	1	1	1-1/2	.960	4	2
V2641617	V2641617S	1	1	1	2-1/8	.960	5	2
V2642027	V2642027S	1	1	1-1/4	3-3/8	.960	6	2
V2642032	V2642032S	1	1	1-1/4	4	.960	6	2
V2642432	V2642432S	1	1	1-1/2	4	.960	6	2
V2642035	V2642035S	1	1	1-1/4	4-3/8	.960	7	2
V2642048	V2642048S	1	1	1-1/4	6	.960	8	2

PATENTED DOUBLE VARIABLE HELIX

ALUMINUM

Regular, 2 Flute, 45 Degree Helix, Long Shank Series NNK*

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	NNK*	OAL	No. of Flutes
V208040	V208040S	1/8	1/8	1/4	NNK	3	2
V212040	V212040S	3/16	3/16	1/4	NNK	3	2
V216080	V216080S	1/4	1/4	1/2	NNK	4	2
V220070	V220070S	5/16	5/16	7/16	NNK	4	2
V224080	V224080S	3/8	3/8	1/2	NNK	4	2

*LBS: Length Below Shank
*NNK: No Neck

Viper DVH™

PATENTED DOUBLE VARIABLE HELIX

Regular, 2 Flute, 45 Degree Helix, Long Shank Series NNK* (continued)

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	NNK*	OAL	No. of Flutes
V224160	V224160S	3/8	3/8	1	NNK	4	2
V2321000	V2321000S	1/2	1/2	5/8	NNK	8	2
V232120	V232120S	1/2	1/2	3/4	NNK	6	2
V232200	V232200S	1/2	1/2	1-1/4	NNK	6	2
V240120	V240120S	5/8	5/8	3/4	NNK	6	2
V2401200	V2401200S	5/8	5/8	3/4	NNK	8	2
V248160	V248160S	3/4	3/4	1	NNK	6	2
V2481600	V2481600S	3/4	3/4	1	NNK	8	2
V264160	V264160S	1	1	1	NNK	5	2
V264200	V264200S	1	1	1-1/4	NNK	6	2
V2642000	V2642000S	1	1	1-1/4	NNK	8	2

ALUMINUM

Radius, 2 Flute, 45 Degree Helix

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	Radius
V21612R015	V21612R015S	1/4	1/4	3/4	2-1/2	2	.015
V21612R030	V21612R030S	1/4	1/4	3/4	2-1/2	2	.030
V21612R060	V21612R060S	1/4	1/4	3/4	2-1/2	2	.060
V22416R030	V22416R030S	3/8	3/8	1	2-1/2	2	.030
V22416R060	V22416R060S	3/8	3/8	1	2-1/2	2	.060
V22416R093	V22416R093S	3/8	3/8	1	2-1/2	2	.093
V23220R030	V23220R030S	1/2	1/2	1-1/4	3	2	.030
V23220R060	V23220R060S	1/2	1/2	1-1/4	3	2	.060
V23220R093	V23220R093S	1/2	1/2	1-1/4	3	2	.093
V23220R125	V23220R125S	1/2	1/2	1-1/4	3	2	.125
V24826R030	V24826R030S	3/4	3/4	1-5/8	4	2	.030
V24826R060	V24826R060S	3/4	3/4	1-5/8	4	2	.060
V24826R093	V24826R093S	3/4	3/4	1-5/8	4	2	.093
V24826R125	V24826R125S	3/4	3/4	1-5/8	4	2	.125

ALUMINUM

Ball, 2 Flute, 45 Degree Helix

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
BV20805	BV20805S	1/8	1/8	5/16	1-1/2	2
BV20806	BV20806S	1/8	1/8	3/8	1-1/2	2
BV20808	BV20808S	1/8	1/8	1/2	1-1/2	2
BV21206	BV21206S	3/16	3/16	3/8	2	2
BV21210	BV21210S	3/16	3/16	5/8	2-1/2	2

ALUMINUM

S: Stealth Coating
*NNK: No Neck

(continued on next page)

Ball, 2 Flute, 45 Degree (continued)

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
BV21608	BV21608S	1/4	1/4	1/2	2	2
BV21612	BV21612S	1/4	1/4	3/4	2-1/2	2
BV22008	BV22008S	5/16	5/16	1/2	2	2
BV22013	BV22013S	5/16	5/16	13/16	2-1/2	2
BV22410	BV22410S	3/8	3/8	5/8	2	2
BV22416	BV22416S	3/8	3/8	1	2-1/2	2
BV23212	BV23212S	1/2	1/2	3/4	3	2
BV23216	BV23216S	1/2	1/2	1	3	2
BV23220	BV23220S	1/2	1/2	1-1/4	3	2
BV24012	BV24012S	5/8	5/8	3/4	3-1/2	2
BV24020	BV24020S	5/8	5/8	1-1/4	3-1/2	2
BV24026	BV24026S	5/8	5/8	1-5/8	4	2
BV24816	BV24816S	3/4	3/4	1	4	2
BV24826	BV24826S	3/4	3/4	1-5/8	4	2
BV26420	BV26420S	1	1	1-1/4	4	2
BV26432	BV26432S	1	1	2	5	2

ALUMINUM

Ball, 2 Flute, 45 Degree Helix, Long Shank Series with Reduced Neck LBS*

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes
BV2161217	BV2161217S	1/4	1/4	3/4	2-1/8	.235	4	2
BV2200717	BV2200717 S	5/16	5/16	7/16	2-1/8	.291	4	2
BV2241617	BV2241617S	3/8	3/8	1	2-1/8	.355	4	2
BV2240817	BV2240817S	1/2	1/2	1/2	2-1/8	.475	4	2
BV2321017	BV2321017S	1/2	1/2	5/8	2-1/8	.475	4	2
BV2321227	BV2321227S	1/2	1/2	5/8	3-3/8	.475	6	2
BV2401227	BV2401227S	5/8	5/8	3/4	3-3/8	.590	6	2
BV2481627	BV2481627S	3/4	3/4	1	3-3/8	.715	6	2

ALUMINUM

Ball, 2 Flute, Long Shank Series NNK*

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	NNK*	OAL	No. of Flutes
BV232200	BV232200S	1/2	1/2	1-1/4	NNK	6	2
BV264200	BV264200S	1	1	1-1/4	NNK	6	2

ALUMINUM

S: Stealth Coating
*LBS: Length Below Shank
*NNK: No Neck

Viper DVH™

ALUMINUM

Regular, 3 Flute, 45 Degree Helix

PATENTED DOUBLE VARIABLE HELIX

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
V30805	V30805S	1/8	1/8	5/16	1-1/2	3
V30806	V30806S	1/8	1/8	3/8	1-1/2	3
V30808	V30808S	1/8	1/8	1/2	1-1/2	3
V30812	V30812S	1/8	1/8	3/4	2	3
V31206	V31206S	3/16	3/16	3/8	2	3
V31210	V31210S	3/16	3/16	5/8	2-1/2	3
V31216	V31216S	3/16	3/16	1	2-1/2	3
V31606	V31606S	1/4	1/4	3/8	2	3
V31608	V31608S	1/4	1/4	1/2	2	3
V31612	V31612S	1/4	1/4	3/4	2-1/2	3
V31620	V31620S	1/4	1/4	1-1/4	3	3
V32008	V32008S	5/16	5/16	1/2	2	3
V32013	V32013S	5/16	5/16	13/16	2-1/2	3
V32020	V32020S	5/16	5/16	1-1/4	3	3
V32410	V32410S	3/8	3/8	5/8	2	3
V32416	V32416S	3/8	3/8	1	2-1/2	3
V32420	V32420S	3/8	3/8	1-1/4	3	3
V32424	V32424S	3/8	3/8	1-1/2	4	3
V33210	V33210S	1/2	1/2	5/8	3	3
V33212	V33212S	1/2	1/2	3/4	3	3
V33216	V33216S	1/2	1/2	1	3	3
V33220	V33220S	1/2	1/2	1-1/4	3	3
V33224	V33224S	1/2	1/2	1-1/2	4	3
V33232	V33232S	1/2	1/2	2	4	3
V33240	V33240S	1/2	1/2	2 1/2	5	3
V33248	V33248S	1/2	1/2	3	6	3
V34012	V34012S	5/8	5/8	3/4	3-1/2	3
V34020	V34020S	5/8	5/8	1-1/4	3-1/2	3
V34026	V34026S	5/8	5/8	1-5/8	4	3
V34032	V34032S	5/8	5/8	2	5	3
V34816	V34816S	3/4	3/4	1	4	3
V34826	V34826S	3/4	3/4	1-5/8	4	3
V34832	V34832S	3/4	3/4	2	5	3
V34836	V34836S	3/4	3/4	2-1/4	5	3
V34848	V34848S	3/4	3/4	3	6	3
V34852	V34852S	3/4	3/4	3-1/4	6	3
V36424	V36424S	1	1	1-1/2	4	3
V36432	V36432S	1	1	2	5	3
V36436	V36436S	1	1	2-1/4	5	3
V36440	V36440S	1	1	2-1/2	5	3
V36448	V36448S	1	1	3	6	3
V36452	V36452S	1	1	3-1/4	6	3
V38036	V38036S	1-1/4	1-1/4	2-1/4	5-1/2	3

S: Stealth Coating

Double Variable Helix for improved corner strength

3 Flute face geometry for high efficiency chip evacuation

Viper DVH™

Regular, 3 Flute, 45 Degree Helix, Long Shank Series with Reduced Neck, LBS*

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes
V3160809	V3160809S	1/4	1/4	1/2	1-1/8	.235	4	3
V3200717	V3200717S	5/16	5/16	7/16	2-1/8	.291	4	3
V3241017	V3241017S	3/8	3/8	5/8	2-1/8	.355	4	3
V3321011	V3321011S	1/2	1/2	5/8	1-3/8	.475	3	3
V3321017	V3321017S	1/2	1/2	5/8	2-1/8	.475	4	3
V3321227	V3321227S	1/2	1/2	3/4	3-3/8	.475	6	3
V3401227	V3401227S	5/8	5/8	3/4	3-3/8	.590	6	3
V3481627	V3481627S	3/4	3/4	1	3-3/8	.715	6	3
V3642027	V3642027S	1	1	1-1/4	3-3/8	.960	6	3

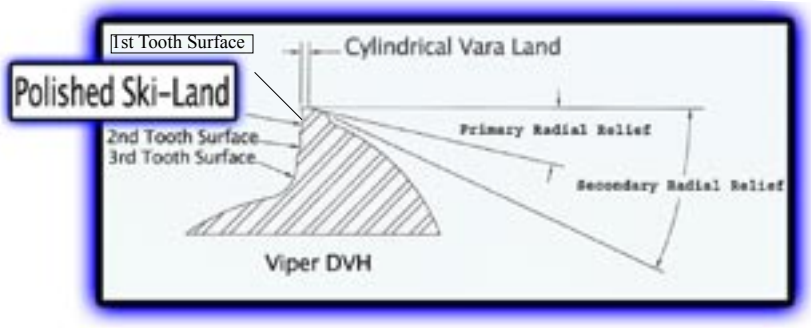
ALUMINUM

Regular, 3 Flute, 45 Degree Helix, Long Shank Series NNK*

Part # Uncoated	Part # Stealth	Dia. of Cut	Shank Dia.	LOC	NNK*	OAL	No. of Flutes
V3642000	V3642000S	1	1	1-1/4	NNK	8	3
V380320	V380320S	1-1/4	1-1/4	2	NNK	7-1/2	3
V3803200	V3803200S	1-1/4	1-1/4	2	NNK	12	3

PATENTED DOUBLE VARIABLE HELIX

S: Stealth Coating
*LBS: Length Below Shank
*NNK: No Neck



EXTENDED NECK CARBIDE ENDMILLS ARE IDEAL FOR HIGH SPEED STEP DOWN MACHINING IN LONG REACH APPLICATIONS:

- Unique design provides higher rigidity and stability
- Reduced chatter
- High metal removal rates and higher spindle speeds
- Stronger tool
- Excellent surface finish on the part
- Perfect blend—No step marks
- Tool can also be used for roughing

Diamond Back DVH™

Flat Profile Roughers.

For high effinciency machining of aluminum.

Regular, 2 Flute, Roughers

Part Number	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	Radius
DR21612R020	1/4	1/4	3/4	2	2	.020
DR21612R020S	1/4	1/4	3/4	2	2	.020
DR21612R020Z	1/4	1/4	3/4	2	2	.020
DR22416R020	3/8	3/8	1	2	2	.020
DR22416R020S	3/8	3/8	1	2	2	.020
DR22416R020Z	3/8	3/8	1	2	2	.020
DR23220R030	1/2	1/2	1-1/4	3	2	.030
DR23220R030S	1/2	1/2	1-1/4	3	2	.030
DR23220R030Z	1/2	1/2	1-1/4	3	2	.030
DR24026R030	5/8	5/8	1-5/8	4	2	.030
DR24026R030S	5/8	5/8	1-5/8	4	2	.030
DR24026R030Z	5/8	5/8	1-5/8	4	2	.030
DR24826R030	3/4	3/4	1-5/8	4	2	.030
DR24826R030S	3/4	3/4	1-5/8	4	2	.030
DR24826R030Z	3/4	3/4	1-5/8	4	2	.030
DR24836R030	3/4	3/4	2-1/4	5	2	.030
DR24836R030S	3/4	3/4	2-1/4	5	2	.030
DR24836R030Z	3/4	3/4	2-1/4	5	2	.030

PATENTED DOUBLE VARIABLE HELIX

ALUMINUM

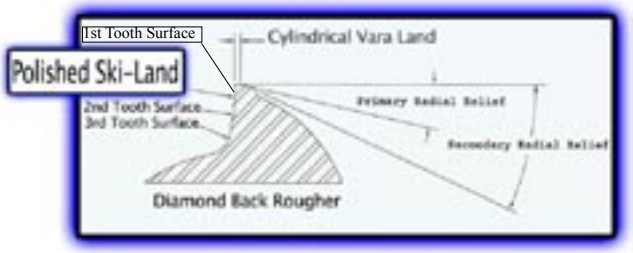
Regular, 2 Flute, Roughers, Long Shank Series with Reduced Neck, LBS*

Part Number	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes	Radius
DR2160817R020	1/4	1/4	1/2	2-1/8	.235	4	2	.020
DR2160817R020S	1/4	1/4	1/2	2-1/2	.235	4	2	.020
DR2160817R020Z	1/4	1/4	1/2	2-1/2	.235	4	2	.020
DR2240817R020	3/8	3/8	1/2	2-1/8	.355	4	2	.020
DR2240817R020S	3/8	3/8	1/2	2-1/8	.355	4	2	.020
DR2240817R020Z	3/8	3/8	1/2	2-1/8	.355	4	2	.020
DR2321227R030	1/2	1/2	3/4	3-3/8	.475	6	2	.030
DR2321227R030S	1/2	1/2	3/4	3-3/8	.475	6	2	.030
DR2321227R030Z	1/2	1/2	3/4	3-3/8	.475	6	2	.030
DR2401227R030	5/8	5/8	3/4	3-3/8	.590	6	2	.030
DR2401227R030S	5/8	5/8	3/4	3-3/8	.590	6	2	.030
DR2401227R030Z	5/8	5/8	3/4	3-3/8	.590	6	2	.030
DR2481627R030	3/4	3/4	1	3-3/8	.715	6	2	.030
DR2481627R030S	3/4	3/4	1	3-3/8	.715	6	2	.030
DR2481627R030Z	3/4	3/4	1	3-3/8	.715	6	2	.030

ALUMINUM

S: Stealth Coating, Stocked
Z: Zirconium Coating, Limited Stock
*LBS: Length Below Shank

Diamond Back™



Ball, 2 Flute, Roughers

Part Number	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
BDR21612	1/4	1/4	3/4	2	2
BDR21612S	1/4	1/4	3/4	2	2
BDR21612Z	1/4	1/4	3/4	2	2
BDR22416	3/8	3/8	1	2	2
BDR22416S	3/8	3/8	1	2	2
BDR22416Z	3/8	3/8	1	2	2
BDR23220	1/2	1/2	1-1/4	3	2
BDR23220S	1/2	1/2	1-1/4	3	2
BDR23220Z	1/2	1/2	1-1/4	3	2
BDR24026	5/8	5/8	1-5/8	4	2
BDR24026S	5/8	5/8	1-5/8	4	2
BDR24026Z	5/8	5/8	1-5/8	4	2
BDR24826	3/4	3/4	1-5/8	4	2
BDR24826S	3/4	3/4	1-5/8	4	2
BDR24826Z	3/4	3/4	1-5/8	4	2
BDR24836	3/4	3/4	2-1/4	5	2
BDR24836S	3/4	3/4	2-1/4	5	2
BDR24836Z	3/4	3/4	2-1/4	5	2

ALUMINUM

Ball, 2 Flute, Long Shank Series with Reduced Neck, LBS*

Part Number	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes
BDR2160817	1/4	1/4	1/2	2-1/8	0.235	4	2
BDR2160817S	1/4	1/4	1/2	2-1/8	0.235	4	2
BDR2160817Z	1/4	1/4	1/2	2-1/8	0.235	4	2
BDR2240817	3/8	3/8	1/2	2-1/8	0.355	4	2
BDR2240817S	3/8	3/8	1/2	2-1/8	0.355	4	2
BDR2240817Z	3/8	3/8	1/2	2-1/8	0.355	4	2
BDR2321227	1/2	1/2	3/4	3-3/8	0.475	6	2
BDR2321227S	1/2	1/2	3/4	3-3/8	0.475	6	2
BDR2321227Z	1/2	1/2	3/4	3-3/8	0.475	6	2
BDR2401227	5/8	5/8	3/4	3-3/8	0.590	6	2
BDR2401227S	5/8	5/8	3/4	3-3/8	0.590	6	2
BDR2401227Z	5/8	5/8	3/4	3-3/8	0.590	6	2
BDR2481627	3/4	3/4	1	3-3/8	0.715	6	2
BDR2481627S	3/4	3/4	1	3-3/8	0.715	6	2
BDR2481627Z	3/4	3/4	1	3-3/8	0.715	6	2

ALUMINUM

S: Stealth Coating, Stocked
Z: Zirconium Coating, Limited Stock
*LBS: Length Below Shank

Diamond Back DVH™

3 Flute, Roughers

Part Number	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	Radius
DR31606R020	1/4	1/4	3/8	2	3	.020
DR31606R020S	1/4	1/4	3/8	2	3	.020
DR31606R020Z	1/4	1/4	3/8	2	3	.020
DR31608R020	1/4	1/4	1/2	2	3	.020
DR31608R020S	1/4	1/4	1/2	2	3	.020
DR31608R020Z	1/4	1/4	1/2	2	3	.020
DR31612R020	1/4	1/4	3/4	2	3	.020
DR31612R020S	1/4	1/4	3/4	2	3	.020
DR31612R020Z	1/4	1/4	3/4	2	3	.020
DR32410R020	3/8	3/8	5/8	2	3	.020
DR32410R020S	3/8	3/8	5/8	2	3	.020
DR32410R020Z	3/8	3/8	5/8	2	3	.020
DR32416R020	3/8	3/8	1	2	3	.020
DR32416R020S	3/8	3/8	1	2	3	.020
DR32416R020Z	3/8	3/8	1	2	3	.020
DR33210R030	1/2	1/2	5/8	3	3	.030
DR33210R030S	1/2	1/2	5/8	3	3	.030
DR33210R030Z	1/2	1/2	5/8	3	3	.030
DR33216R030	1/2	1/2	1	3	3	.030
DR33216R030S	1/2	1/2	1	3	3	.030
DR33216R030Z	1/2	1/2	1	3	3	.030
DR33220R030	1/2	1/2	1-1/4	3	3	.030
DR33220R030S	1/2	1/2	1-1/4	3	3	.030
DR33220R030Z	1/2	1/2	1-1/4	3	3	.030
DR33232R030	1/2	1/2	2	4	3	.030
DR33232R030S	1/2	1/2	2	4	3	.030
DR33232R030Z	1/2	1/2	2	4	3	.030
DR34012R030	5/8	5/8	3/4	3-1/2	3	.030
DR34012R030S	5/8	5/8	3/4	3-1/2	3	.030
DR34012R030Z	5/8	5/8	3/4	3-1/2	3	.030
DR34020R030	5/8	5/8	1-1/4	4	3	.030
DR34020R030S	5/8	5/8	1-1/4	4	3	.030
DR34020R030Z	5/8	5/8	1-1/4	4	3	.030
DR34026R030	5/8	5/8	1-5/8	4	3	.030
DR34026R030S	5/8	5/8	1-5/8	4	3	.030
DR34026R030Z	5/8	5/8	1-5/8	4	3	.030
DR34816R030	3/4	3/4	1	4	3	.030
DR34816R030S	3/4	3/4	1	4	3	.030
DR34816R030Z	3/4	3/4	1	4	3	.030
DR34826R030	3/4	3/4	1-5/8	4	3	.030
DR34826R030S	3/4	3/4	1-5/8	4	3	.030
DR34826R030Z	3/4	3/4	1-5/8	4	3	.030
DR34836R030	3/4	3/4	2-1/4	5	3	.030
DR34836R030S	3/4	3/4	2-1/4	5	3	.030
DR34836R030Z	3/4	3/4	2-1/4	5	3	.030

S: Stealth Coating, Stocked
Z: Zirconium Coating, Limited Stock

(continued on next page)

Diamond Back DVH™

3 Flute, Roughers (continued)

Part Number	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	Radius
DR34852R030	3/4	3/4	3-1/4	6	3	.030
DR34852R030S	3/4	3/4	3-1/4	6	3	.030
DR34852R030Z	3/4	3/4	3-1/4	6	3	.030
DR36424R030	1	1	1-1/2	4	3	.030
DR36424R030S	1	1	1-1/2	4	3	.030
DR36424R030Z	1	1	1-1/2	4	3	.030
DR36436R030	1	1	2-1/4	5	3	.030
DR36436R030S	1	1	2-1/4	5	3	.030
DR36436R030Z	1	1	2-1/4	5	3	.030
DR36452R030	1	1	3-1/4	6	3	.030
DR36452R030S	1	1	3-1/4	6	3	.030
DR36452R030Z	1	1	3-1/4	6	3	.030

*Additional radius sizes in stock. Call for availability.

3 Flute, Roughers, Long Shank Series with Reduced Neck, LBS*

Part Number	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes	Radius
DR3321011R030	1/2	1/2	5/8	1-3/8	.475	3	3	.030
DR3321011R030S	1/2	1/2	5/8	1-3/8	.475	3	3	.030
DR3321011R030Z	1/2	1/2	5/8	1-3/8	.475	3	3	.030
DR3321017R030	1/2	1/2	5/8	2-1/8	.475	4	3	.030
DR3321017R030S	1/2	1/2	5/8	2-1/8	.475	4	3	.030
DR3321017R030Z	1/2	1/2	5/8	2-1/8	.475	4	3	.030
DR3321227R030	1/2	1/2	3/4	3-3/8	.475	6	3	.030
DR3321227R030S	1/2	1/2	3/4	3-3/8	.475	6	3	.030
DR3321227R030Z	1/2	1/2	3/4	3-3/8	.475	6	3	.030
DR3401227R030	5/8	5/8	3/4	3-3/8	.590	6	3	.030
DR3401227R030S	5/8	5/8	3/4	3-3/8	.590	6	3	.030
DR3401227R030Z	5/8	5/8	3/4	3-3/8	.590	6	3	.030
DR3481627R030	3/4	3/4	1	3-3/8	.715	6	3	.030
DR3481627R030S	3/4	3/4	1	3-3/8	.715	6	3	.030
DR3481627R030Z	3/4	3/4	1	3-3/8	.715	6	3	.030
DR3642027R030	1	1	1-1/4	3-3/8	.960	6	3	.030
DR3642027R030S	1	1	1-1/4	3-3/8	.960	6	3	.030
DR3642027R030Z	1	1	1-1/4	3-3/8	.960	6	3	.030

S: Stealth Coating
Z: Zirconium Coating
*LBS: Length Below Shank

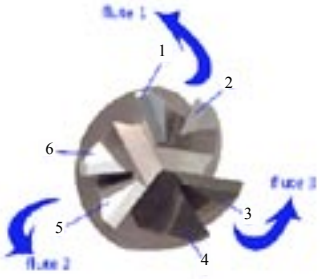
DIAMOND BACK ROUGHER BENEFITS:

- Feed as fast as your machine will allow
- Extended tool life
- Improved chip ejection with high feed rates at both high and low spindle speeds
- Free cutting
- Chatter-free
- New high strength substrate
- Proven to reduce cost per part

Raptor 3/6™

FOR HIGH EFFICIENCY MACHINING, PROFILING AND FINISHING IN STAINLESS STEEL , TITANIUM, INCONEL AND OTHER HIGH TEMP ALLOYS.

*Altin Coated



3/6 Flute, Stub Length with Radius, 6 Teeth Profiling

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	RAD
R61606RC	1/4	1/4	3/8	2	3/6	.015-.020
R61606RCG	1/4	1/4	3/8	2	3/6	.015-.020
R62008RC	5/16	5/16	1/2	2	3/6	.015-.020
R62408RC	3/8	3/8	1/2	2	3/6	.015-.020
R62408RCG	3/8	3/8	1/2	2	3/6	.015-.020
R63210RC	1/2	1/2	5/8	3	3/6	.025-.030
R63210RCG	1/2	1/2	5/8	3	3/6	.025-.030
R64012RC	5/8	5/8	3/4	3	3/6	.035-.040
R64012RCG	5/8	5/8	3/4	3	3/6	.035-.040
R64816RC	3/4	3/4	1	3	3/6	.035-.040
R64816RCG	3/4	3/4	1	3	3/6	.035-.040
R66416RC	1	1	1	3	3/6	.035-.040
R66416RCG	1	1	1	3	3/6	.035-.040

*Altin Coated

3/6 Flute, Regular Length with Radius, 6 Teeth Profiling

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	RAD
R61608RC	1/4	1/4	1/2	2-1/2	3/6	.015-.020
R61608RCG	1/4	1/4	1/2	2-1/2	3/6	.015-.020
R62013RC	5/16	5/16	13/16	2-1/2	3/6	.015-.020
R62414RC	3/8	3/8	7/8	2-1/2	3/6	.015-.020
R62414RCG	3/8	3/8	7/8	2-1/2	3/6	.015-.020
R63216RC	1/2	1/2	1	3	3/6	.025-.030
R63216RCG	1/2	1/2	1	3	3/6	.025-.030
R63220RC	1/2	1/2	1-1/4	3	3/6	.025-.030
R64020RC	5/8	5/8	1-1/4	3-1/2	3/6	.035-.040
R64020RCG	5/8	5/8	1-1/4	3-1/2	3/6	.035-.040
R64824RC	3/4	3/4	1-1/2	4	3/6	.035-.040
R64824RCG	3/4	3/4	1-1/2	4	3/6	.035-.040
R66424RC	1	1	1-1/2	4	3/6	.035-.040
R66424RCG	1	1	1-1/2	4	3/6	.035-.040

G = SPIRAL COOLANT GROOVES (limited stock)

*Patent Pending

NEW

*Patent Pending

*Altin Coated

3/6 Flute, Medium Length with Radius, 6 Teeth Profiling

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	RAD
R61612RC	1/4	1/4	3/4	2-1/2	3/6	.015-.020
R62420RC	3/8	3/8	1-1/4	3	3/6	.015-.020
R63232RC	1/2	1/2	2	4	3/6	.025-.030
R64836RC	3/4	3/4	2-1/4	5	3/6	.035-.040
R66436RC	1	1	2-1/4	5	3/6	.035-.040
R66452RC	1	1	3-1/4	6	3/6	.035-.040

STAINLESS STEEL & TITANIUM

*Altin Coated

3/6 Flute, Long Shank Series with Radius, 6 Teeth Profiling

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	RAD
R616080RC	1/4	1/4	1/2	4	3/6	.015-.020
R620130RC	5/16	5/16	13/16	4	3/6	.015-.020
R624140RC	3/8	3/8	7/8	5	3/6	.015-.020
R632160RC	1/2	1/2	1	6	3/6	.025-.030
R6321600RC	1/2	1/2	1	7	3/6	.025-.030
R640200RC	5/8	5/8	1-1/4	6	3/6	.035-.040
R6401600RC	5/8	5/8	1	7	3/6	.035-.040
R648240RC	3/4	3/4	1-1/2	6	3/6	.035-.040
R6481600RC	3/4	5/8	1	7	3/6	.035-.040
R664240RC	1	1	1-1/2	6	3/6	.035-.040
R6642400RC	1	1	1-1/2	7	3/6	.035-.040

STAINLESS STEEL & TITANIUM

*Altin Coated

3/6 Flute, Long Shank Series with Reduced Neck, Radius, LBS*

Part # Coated	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes	Radius
R6240815RC	3/8	3/8	1/2	1-7/8	.360	4	3/6	.015-.020
R6321011RC	1/2	1/2	5/8	1-3/8	.480	3	3/6	.025-.030
R6321017RC	1/2	1/2	5/8	2-1/8	.480	4	3/6	.025-.030
R6401218RC	5/8	5/8	3/4	2-1/4	.605	5	3/6	.025-.030
R6481618RC	3/4	3/4	1	2-1/4	.730	5	3/6	.035-.040
R6481626RC	3/4	3/4	1	3-1/4	.730	6	3/6	.035-.040

STAINLESS STEEL & TITANIUM

NEW

Raptor 3/6™

FOR HIGH EFFICIENCY MACHINING, PROFILING AND FINISHING IN STAINLESS STEEL , TITANIUM, INCONEL AND OTHER HIGH TEMP ALLOYS.

*Altin Coated

3/6 Flute, Stub Length, Square End, 6 Teeth Profiling

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
R61606C	1/4	1/4	3/8	2	3/6
R61606CG	1/4	1/4	3/8	2	3/6
R62008C	5/16	5/16	1/2	2	3/6
R62408C	3/8	3/8	1/2	2	3/6
R62408CG	3/8	3/8	1/2	2	3/6
R63210C	1/2	1/2	5/8	3	3/6
R63210CG	1/2	1/2	5/8	3	3/6
R64012C	5/8	5/8	3/4	3	3/6
R64012CG	5/8	5/8	3/4	3	3/6
R64816C	3/4	3/4	1	3	3/6
R64816CG	3/4	3/4	1	3	3/6
R66416C	1	1	1	3	3/6
R66416CG	1	1	1	3	3/6

STAINLESS STEEL & TITANIUM

*Altin Coated

3/6 Flute, Regular Length, Square End, 6 Teeth Profiling

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
R61608C	1/4	1/4	1/2	2-1/2	3/6
R61608CG	1/4	1/4	1/2	2-1/2	3/6
R62013C	5/16	5/16	13/16	2-1/2	3/6
R62414C	3/8	3/8	7/8	2-1/2	3/6
R62414CG	3/8	3/8	7/8	2-1/2	3/6
R63216C	1/2	1/2	1	3	3/6
R63216CG	1/2	1/2	1	3	3/6
R63220C	1/2	1/2	1-1/4	3	3/6
R64020C	5/8	5/8	1-1/4	3-1/2	3/6
R64020CG	5/8	5/8	1-1/4	3-1/2	3/6
R64824C	3/4	3/4	1-1/2	4	3/6
R64824CG	3/4	3/4	1-1/2	4	3/6
R66424C	1	1	1-1/2	4	3/6
R66424CG	1	1	1-1/2	4	3/6

STAINLESS STEEL & TITANIUM

NEW

G = SPIRAL COOLANT GROOVES (limited stock)

*Altin Coated

3/6 Flute, Medium Length, Square End, 6 Teeth Profiling

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	RAD
R61612C	1/4	1/4	3/4	2-1/2	3/6	
R62420C	3/8	3/8	1-1/4	3	3/6	
R63232C	1/2	1/2	2	4	3/6	
R64836C	3/4	3/4	2-1/4	5	3/6	
R66436C	1	1	2-1/4	5	3/6	
R66452C	1	1	3-1/4	6	3/6	

STAINLESS STEEL & TITANIUM

*Altin Coated

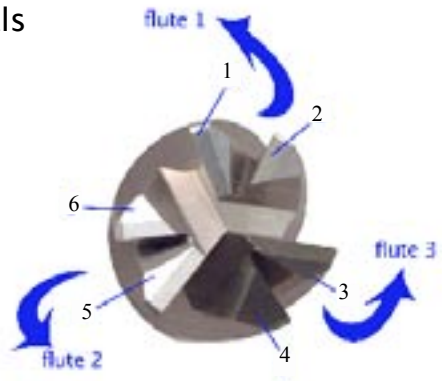
3/6 Flute, Long Shank Series with Reduced Neck, Square End LBS*

Part # Coated	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes
R6240815C	3/8	3/8	1/2	1-7/8	.360	4	3/6
R6321011C	1/2	1/2	5/8	1-3/8	.480	3	3/6
R6321017C	1/2	1/2	5/8	2-1/8	.480	4	3/6
R6401218C	5/8	5/8	3/4	2-1/4	.605	5	3/6
R6481618C	3/4	3/4	1	2-1/4	.730	5	3/6
R6481626C	3/4	3/4	1	3-1/4	.730	6	3/6

STAINLESS STEEL & TITANIUM

Raptor 3/6 Benefits

- Chip load per tooth based on 6 cutting teeth for double metal removal rates.
- **Double cutting tooth feature per flute for smooth cutting operations**
- Superior profiling and finishing end mill in all ferrous materials
- 3 to 6 times extended tool life depending on material



NEW

Raptor DVH™

FOR HIGH EFFICIENCY SLOTTING AND HEAVY PROFILING IN STAINLESS STEEL, TITANIUM, INCONEL AND OTHER HIGH TEMP ALLOYS.

*Altin Coated

STAINLESS STEEL & TITANIUM

4 Flute, Stub Length, with Radius

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	RAD
DVH40804RC	1/8	1/8	1/4	1-1/2	4	.008-.012
DVH41205RC	3/16	3/16	5/16	2	4	.008-.012
DVH41606RC	1/4	1/4	3/8	2	4	.015-.020
DVH42408RC	3/8	3/8	1/2	2	4	.015-.020
DVH43210RC	1/2	1/2	5/8	3	4	.025-.030
DVH44012RC	5/8	5/8	3/4	3	4	.035-.040
DVH44816RC	3/4	3/4	1	3	4	.035-.040
DVH46416RC	1	1	1	3	4	.035-.040

*Altin Coated

STAINLESS STEEL & TITANIUM

4 Flute, Regular and Medium Length, with Radius

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	RAD
DVH40806RC	1/8	1/8	3/8	1-1/2	4	.008-.012
DVH41207RC	3/16	3/16	7/16	2	4	.008-.012
DVH41608RC	1/4	1/4	1/2	2-1/2	4	.015-.020
DVH41612RC	1/4	1/4	3/4	2 1/2	4	.015-.020
DVH42008RC	5/16	5/16	1/2	2	4	.015-.020
DVH42013RC	5/16	5/16	13/16	2 1/2	4	.015-.020
DVH42414RC	3/8	3/8	7/8	2-1/2	4	.015-.020
DVH42420RC	3/8	3/8	5/8	2	4	.015-.020
DVH43216RC	1/2	1/2	1	3	4	.025-.030
DVH43220RC	1/2	1/2	1-1/4	3	4	.025-.030
DVH43232RC	1/2	1/2	2	4	4	.025-.030
DVH44020RC	5/8	5/8	1-1/4	3-1/2	4	.035-.040
DVH44036RC	5/8	5/8	2-1/4	5	4	.035-.040
DVH44824RC	3/4	3/4	1-1/2	4	4	.035-.040
DVH44836RC	3/4	3/4	2-1/4	5	4	.035-.040
DVH44852RC	3/4	3/4	3-1/4	6	4	.035-.040
DVH46424RC	1	1	1-1/2	4	4	.035-.040
DVH46436RC	1	1	2-1/4	5	4	.035-.040
DVH46452RC	1	1	3-1/4	6	4	.035-.040

NEW

*Altin Coated

4 Flute, Long Shank Series, with Radius

Part # Coated	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	Radius
DVH420130RC	5/16	5/16	13/16	4	4	.015-.020
DVH424140RC	3/8	3/8	7/8	5	4	.015-.020
DVH432160RC	1/2	1/2	1	6	4	.025-.030
DVH4321600RC	1/2	1/2	1	7	4	.025-.030
DVH4401600RC	5/8	5/8	1	7	4	.035-.040
DVH440200RC	5/8	5/8	1-1/4	6	4	.035-.040
DVH4481600RC	3/4	3/4	1	7	4	.035-.040
DVH448240RC	3/4	3/4	1-1/2	6	4	.035-.040
DVH464240RC	1	1	1-1/2	6	4	.035-.040
DVH4642400RC	1	1	1-1/2	7	4	.035-.040

STAINLESS STEEL & TITANIUM

*Altin Coated

4 Flute, Long Shank Series with reduced neck, Radius

Part # Coated	Dia. of Cut	Shank Dia.	LOC	LBS*	Neck Dia.	OAL	No. of Flutes	Radius
DVH4240815RC	3/8	3/8	1/2	1-7/8	.360	4	4	.015-.020
DVH4321011RC	1/2	1/2	5/8	1-3/8	.480	3	4	.025-.030
DVH4321017RC	1/2	1/2	5/8	2-1/8	.480	4	4	.025-.030
DVH4401218RC	5/8	5/8	3/4	2-1/4	.605	5	4	.035-.040
DVH4481618RC	3/4	3/4	1	2-1/4	.730	5	4	.035-.040
DVH4481626RC	3/4	3/4	1	3-1/4	.730	6	4	.035-.040

ADDITIONAL RADIUS SIZES

Part Number	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	Radius
DVH43216R010C	1/2	1/2	1	3	4	.010
DVH43216R060C	1/2	1/2	1	3	4	.060
DVH43216R090C	1/2	1/2	1	3	4	.090
DVH44020R060C	5/8	5/8	1-1/4	4	4	.060
DVH44020R090C	5/8	5/8	1-1/4	4	4	.090
DVH44824R060C	3/4	3/4	1-1/2	4	4	.060
DVH44824R125C	3/4	3/4	1-1/2	4	4	.125

*Additional radius sizes in stock. Call for availability.

*Altin Coated

Raptor DVH Benefits

- Double helix design per tooth
- **Variable helix design between flutes**
- High efficiency slotting at up to 2 times diameter
- No chatter
- Eliminates harmonic distortion
- Reduction in net tooling cost

NEW

Python™

For general machining of stainless steel & aluminum.

3 Flute, 45 Degree Rapid Helix, Radius

Part # Uncoated	Part # X-treme	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes	RAD
P30706R	P30706RX	7/64	1/8	3/8	1-1/2	3	.015-.020
P30805R	P30805RX	1/8	1/8	5/16	1-1/2	3	.008-.012
P30808R	P30808RX	1/8	1/8	1/2	1-1/2	3	.008-.012
P30906R	P30906RX	9/64	3/16	3/8	2	3	.015-.020
P31206R	P31206RX	3/16	3/16	3/8	2	3	.008-.012
P31210R	P31210RX	3/16	3/16	5/8	2-1/2	3	.008-.012

STAINLESS STEEL & TITANIUM

3 Flute, 45 Degree Rapid Helix

Part # Uncoated	Part # X-treme	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
P30706	P30706X	7/64	1/8	3/8	1-1/2	3
P30805	P30805X	1/8	1/8	5/16	1-1/2	3
P30808	P30808X	1/8	1/8	1/2	1-1/2	3
P30812	P30812X	1/8	1/8	3/4	2	3
P30906	P30906X	9/64	3/16	3/8	2	3
P31206	P31206X	3/16	3/16	3/8	2	3
P31210	P31210X	3/16	3/16	5/8	2-1/2	3
P31212	P31212X	3/16	3/16	3/4	2-1/2	3

STAINLESS STEEL & TITANIUM

5 Flute, 45 Degree Rapid Helix

Part # Uncoated	Part # X-treme	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
P50805	P50805X	1/8	1/8	5/16	1-1/2	5
P50808	P50808X	1/8	1/8	1/2	1-1/2	5
P50812	P50812X	1/8	1/8	3/4	2	5
P51206	P51206X	3/16	3/16	3/8	2	5
P51210	P51210X	3/16	3/16	5/8	2-1/2	5
P51212	P51212X	3/16	3/16	3/4	2-1/2	5
P51608	P51608X	1/4	1/4	1/2	2	5
P51612	P51612X	1/4	1/4	3/4	2-1/2	5
P51618	P51618X	1/4	1/4	1-1/8	2-1/2	5
P52008	P52008X	5/16	5/16	1/2	2	5
P52013	P52013X	5/16	5/16	13/16	2-1/2	5
P52018	P52018X	5/16	5/16	1-1/8	2-1/2	5
P52410	P52410X	3/8	3/8	5/8	2	5
P52416	P52416X	3/8	3/8	1	2-1/2	5
P52420	P52420X	3/8	3/8	1-1/4	3	5

STAINLESS STEEL & TITANIUM

X: X-treme Coating

(continued on next page)

Python™

For general machining

of stainless steel & aluminum.

5 Flute, 45 Degree Rapid Helix

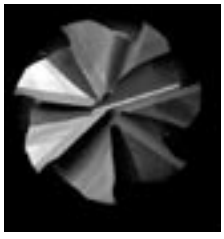
Part # Uncoated	Part # X-treme	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
P52809	P52809X	7/16	7/16	9/16	2-3/4	5
P52816	P52816X	7/16	7/16	1	2-3/4	5
P53212	P53212X	1/2	1/2	3/4	3	5
P53216	P53216X	1/2	1/2	1	3	5
P53220	P53220X	1/2	1/2	1-1/4	3	5
P53224	P53224X	1/2	1/2	1-1/2	4	5
P53232	P53232X	1/2	1/2	2	4	5
P54012	P54012X	5/8	5/8	3/4	3-1/2	5
P54020	P54020X	5/8	5/8	1-1/4	3-1/2	5
P54026	P54026X	5/8	5/8	1-5/8	3-1/2	5
P54032	P54032X	5/8	5/8	2	5	5
P54036	P54036X	5/8	5/8	2-1/4	5	5
P54052	P54052X	5/8	5/8	3-1/4	6	5
P54816	P54816X	3/4	3/4	1	4	5
P54826	P54826X	3/4	3/4	1-5/8	4	5
P54832	P54832X	3/4	3/4	2	5	5
P54836	P54836X	3/4	3/4	2-1/4	5	5
P54840	P54840X	3/4	3/4	2-1/2	5	5
P54852	P54852X	3/4	3/4	3-1/4	6	5
P56424	P56424X	1	1	1-1/2	4	5
P56432	P56432X	1	1	2	4	5
P56440	P56440X	1	1	2-1/2	5	5
P56452	P56452X	1	1	3-1/4	6	5
P56464	P56464X	1	1	4	7	5

- Recommended for ferrous and non-ferrous applications
- New geometry resulting in superior finish results
- 45 Degree Helix
- Harmonically balanced for the ultimate in smooth cutting performance
- Achieve a 20-40% improvement in production rates over four flute end mills while clearing chips faster and smoother than a six flute end mill
- Strong core allows for heavy cuts

5 Flute, Double End, 45 Degree Rapid Helix

Part # Uncoated	Part # X-treme	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
P50804D	P50804DX	1/8	1/8	1/4	1-1/2	5
P51005D	P51005DX	5/32	3/16	5/16	2	5
P51205D	P51205DX	3/16	3/16	5/16	2	5
P51408D	P51408DX	7/32	1/4	1/2	2-1/2	5
P51608D	P51608DX	1/4	1/4	1/2	2-1/2	5
P52008D	P52008DX	5/16	5/16	1/2	2-1/2	5
P52409D	P52409DX	3/8	3/8	9/16	2-1/2	5
P52809D	P52809DX	7/16	7/16	9/16	2-3/4	5
P53210D	P53210DX	1/2	1/2	5/8	3	5

STAINLESS STEEL & TITANIUM



7 Flute, 45 Degree Rapid Helix

Part # Uncoated	Part # X-treme	Dia. of Cut	Shank Dia.	LOC	OAL	No. of Flutes
P78020	P78020 X	1-1/4	1-1/4	1-1/4	4-1/2	7
P78032	P78032X	1-1/4	1-1/4	2	4-1/2	7
P78050	P78050X	1-1/4	1-1/4	3-1/4	6	7
P78080	P78080X	1-1/4	1-1/4	5	7-1/2	7

X: X-treme Coating

CarbideChamferTools™

2 Flute, Single End, 60 Degree

Part Number	Dia. of Cut	OAL	No. of Flutes
AS21660	1/4	2-1/2	2
AS21660N	1/4	2-1/2	2
AS21660X	1/4	2-1/2	2
AS22460	3/8	2-1/2	2
AS22460X	3/8	2-1/2	2
AS23260	1/2	3	2
AS23260X	1/2	3	2

2 Flute, Single End, 82 Degree

Part Number	Dia. of Cut	OAL	No. of Flutes
AS20882	1/8	1-1/2	2
AS20882N	1/8	1-1/2	2
AS20882X	1/8	1-1/2	2
AS21682	1/4	2-1/2	2
AS21682N	1/4	2-1/2	2
AS21682X	1/4	2-1/2	2
AS22482	3/8	2-1/2	2
AS22482X	3/8	2-1/2	2
AS23282	1/2	3	2
AS23282X	1/2	3	2

2 Flute, Single End, 90 Degree

Part Number	Dia. of Cut	OAL	No. of Flutes
AS20890	1/8	1-1/2	2
AS20890N	1/8	1-1/2	2
AS20890X	1/8	1-1/2	2
AS21290	3/16	2	2
AS21290N	3/16	2	2
AS21290X	3/16	2	2
AS21690	1/4	2-1/2	2
AS21690N	1/4	2-1/2	2
AS21690X	1/4	2-1/2	2
AS22490	3/8	2-1/2	2
AS22490N	3/8	2-1/2	2
AS22490X	3/8	2-1/2	2
AS23290	1/2	3	2
AS23290N	1/2	3	2
AS23290X	1/2	3	2
AS24890	3/4	4	2
AS24890X	3/4	4	2

N: TICN Coating
X: X-treme Coating

2 Flute, Double End, 90 Degree

Part Number	Dia. of Cut	OAL	No. of Flutes
AD20890	1/8	1-1/2	2
AD20890N	1/8	1-1/2	2
AD20890X	1/8	1-1/2	2
AD21290	3/16	2	2
AD21290N	3/16	2	2
AD21290X	3/16	2	2
AD21690	1/4	2-1/2	2
AD21690N	1/4	2-1/2	2
AD21690X	1/4	2-1/2	2
AD22490	3/8	2-1/2	2
AD22490N	3/8	2-1/2	2
AD22490X	3/8	2-1/2	2
AD23290	1/2	3	2
AD23290N	1/2	3	2
AD23290X	1/2	3	2
AD24890	3/4	4	2
AD24890N	3/4	4	2
AD24890X	3/4	4	2

2 Flute, Single End, 120 Degree

Part Number	Dia. of Cut	OAL	No. of Flutes
AS232120	1/2	3	2
AS232120X	1/2	3	2

3 Flute, Single End, 90 Degree with Helix (built on helical platform)

Part # Uncoated	Dia. of Cut	Tip Dia.	OAL	No. of Flutes
AS31690	1/4	.060	2-1/2	3
AS32490	3/8	.060	2-1/2	3
AS33290	1/2	.060	3	3

4 Flute, Single End, 60 Degree

Part # Uncoated	Part # X-treme	Dia. of Cut	Tip Dia.	OAL	No. of Flutes
AS41660	AS41660X	1/4	.060	2-1/2	4
AS42460	AS42460X	3/8	.060	2-1/2	4
AS43260	AS43260X	1/2	.060	3	4

4 Flute, Single End, 82 Degree

Part # Uncoated	Part # X-treme	Dia. of Cut	Tip Dia.	OAL	No. of Flutes
AS41682	AS41682X	1/4	.060	2-1/2	4
AS42482	AS42482X	3/8	.060	2-1/2	4
AS43282	AS43282X	1/2	.060	3	4

4 Flute, Single End, 90 Degree

Part Number	Dia. of Cut	Tip Dia.	OAL	No. of Flutes
AS41690	1/4	.060	2-1/2	4
AS41690N	1/4	.060	2-1/2	4
AS41690X	1/4	.060	2-1/2	4
AS42490	3/8	.060	2-1/2	4
AS42490N	3/8	.060	2-1/2	4
AS42490X	3/8	.060	2-1/2	4
AS43290	1/2	.060	3	4
AS43290N	1/2	.060	3	4
AS43290X	1/2	.060	3	4
AS44890	3/4	.060	4	4
AS44890N	3/4	.060	4	4
AS44890X	3/4	.060	4	4

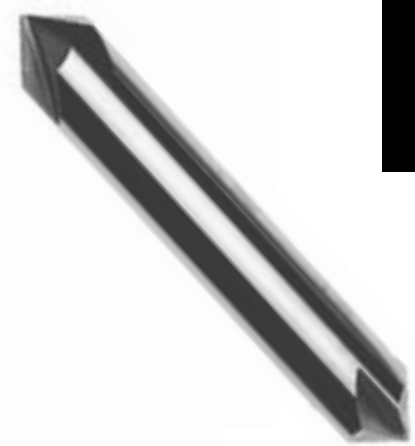
4 Flute, Double End, 90 Degree

Part Number	Dia. of Cut	Tip Dia.	OAL	No. of Flutes
AD41690	1/4	.060	2-1/2	4
AD41690N	1/4	.060	2-1/2	4
AD41690X	1/4	.060	2-1/2	4
AD42490	3/8	.060	2-1/2	4
AD42490N	3/8	.060	2-1/2	4
AD42490X	3/8	.060	2-1/2	4
AD43290	1/2	.060	3	4
AD43290N	1/2	.060	3	4
AD43290X	1/2	.060	3	4
AD44890	3/4	.060	4	4
AD44890N	3/4	.060	4	4
AD44890X	3/4	.060	4	4

4 Flute, Single End, 120 Degree

Part # Uncoated	Part # X-treme	Dia. of Cut	Tip Dia.	OAL	No. of Flutes
AS432120	AS432120X	1/2	.060	3	4

NEW SPIRAL FLUTED HELICAL CHAMFERMILLS



Carbide Engraving Cutters

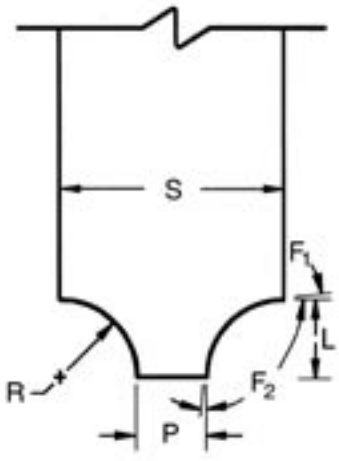
Part # Uncoated	Part # X-treme	Tip Degree	Shank Dia.	OAL
ENG0860	ENG0860X	60 TIP	1/8	1-1/2
ENG1260	ENG1260X	60 TIP	3/16	2
ENG1660	ENG1660X	60 TIP	¼	2-1/2
ENG1240	ENG1240X	40 TIP	3/16	2
ENG1640	ENG1640X	40 TIP	¼	2-1/2

Carbide Corner Rounding End Mills

Micro Grain CBD CNC Ground 2 Flute Double End with 30 Degree Helix

Part # Uncoated	Part # X-treme	RAD	Pilot Dia.	Shank Dia.	OAL
CRC08R010047	CRC08R010047X	.010	047	1/8	1-1/2
CRC08R015047	CRC08R015047X	.015	047	1/8	1-1/2
CRC08R020047	CRC08R020047X	.020	047	1/8	1-1/2
CRC08R025047	CRC08R025047X	.025	047	1/8	1-1/2
CRC08R031047	CRC08R031047X	.031	047	1/8	1-1/2
CRC08R039047	CRC08R039047X	.039	047	1/8	1-1/2
CRC12R047047	CRC12R047047X	.047	047	3/16	2
CRC12R050047	CRC12R050047X	.050	047	3/16	2
CRC12R062047	CRC12R062047X	.062	047	3/16	2
CRC16R048047	CRC16R048047X	.048	047	1/4	2-1/2
CRC16R093047	CRC16R093047X	.093	047	1/4	2-1/2
CRC20R060047	CRC20R060047X	.060	047	5/16	2-1/2
CRC24R093125	CRC24R093125X	.093	125	3/8	2-1/2
CRC24R125115	CRC24R125115X	.125	115	3/8	2-1/2
CRC32R125235	CRC32R125235X	.125	235	1/2	3
CRC32R125240	CRC32R125240X	.125	240	1/2	4

X: X-treme Coating



R: _____ Radius
P: _____ Pilot
F1: _____ Flare
F2: _____ Flare
S: _____ Shank
L: _____ Length
_____ Quantity
_____ Part Material

○ Single End
○ Double End

2 Flutes, Delivery in 3 Days

DESTINY TOOL
the mark of performance

Toll Free: 800-527-8665
T: 408-988-8898
F: 408-988-2606
F: 800-870-1933

Name: _____
Company: _____
Phone: _____
Fax: _____ E-mail: _____

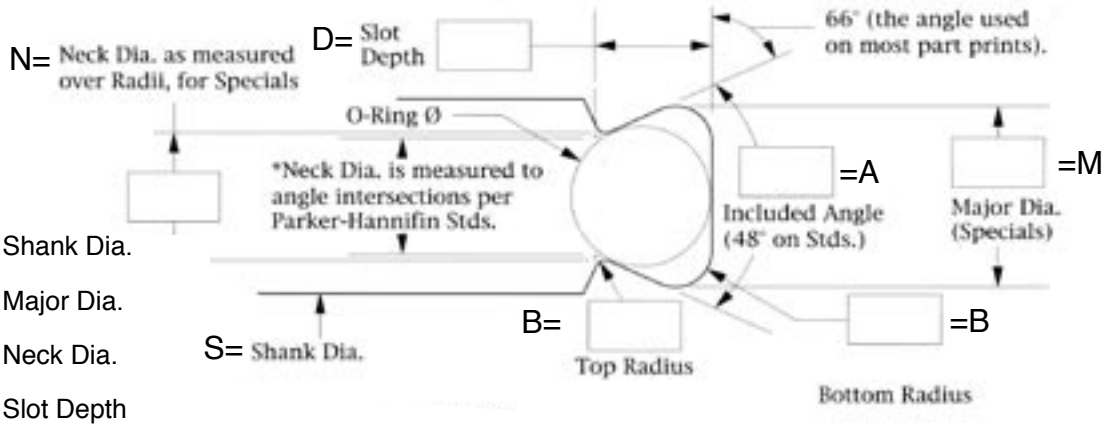
Solid Carbide Dovetail Cutters for O-Ring Grooves

The following conform to the standards suggested by the Seal Division or Parker Hannifin Corp.

Made with Helical Platform

EDP DN	OAL	Shank Diam.	O Ring Size Rad N	Neck @ Diam. M	Major T	Rad OD B	Rad OD FLT	LOC Sharp APD*
DT062-5	3/16 x 2"	070	1/16"	.0595	.0830	.005	.015	2 .051± 001 .052*
DT062	3/16 x 2"	070	1/16"	.0640	.0880	.005	.015	2 .051± 001 .057*
DT093-8	3/16 x 2"	103	3/32"	.0850	.1320	.010	.015	2 .082± 001 .077*
DT093	3/16 x 2"	103	3/32"	.0930	.1400	.010	.015	2 .082± 001 .085*
DT0125-10	1/4 x 2-1/2"	139	1/8"	.1150	.1710	.010	.031	3 .112± 001 .105*
DT0125	1/4 x 2-1/2"	139	1/8"	.1250	.1810	.010	.031	3 .112± 001 .115*
DT0187-12	5/16 x 2-1/2"	210	3/16"	.1760	.2810	.015	.031	3 .172± 001 .161*
DT0187	5/16 x 2-1/2"	210	3/16"	.1880	.2930	.015	.031	3 .172± 001 .173*
DT0250-15	3/8 x 2-1/2"	275	1/4"	.2330	.3580	.015	.062	3 .2325± 001 .218*
DT0250	3/8 x 2-1/2"	275	1/4"	.2480	.3730	.015	.062	3 .2325± 001 .233*
DT0375-15	1/2 x 3"	375	3/8"	.3240	.4850	.020	.093	3 .317± 002 .302*
DT0375	1/2 x 3"	375	3/8"	.3390	.5000	.020	.093	3 .317± 002 .317*

Special Order Form



_____ S = Shank Dia.

_____ M = Major Dia.

_____ N = Neck Dia.

_____ D = Slot Depth

_____ A = Incl. Angle

_____ T = Top Radius

_____ B = Bottom Radius

We will ship special Dove Tails in 2-3 working days and FAX a 10X drawing for final approval upon your order.

Entrance Hole: Yes ____ No ____ Size_____

OAL: _____

Specify Tolerance

Special Carbide Cutter for: O-Ring Grooves:	to 1/4 Major Diameter	2 @ $ 70.00 each
	.251 thru .375 Major Diameter	2 @ $ 85.00 each
	.376 thru .500 Major Diameter	2 @ $ 110.00 each

Toll Free: 800-527-8665 T: 408-988-8898

F: 408-988-2606 F: 800-870-1933

Thread Mills

Single Profile Thread Mills Part #	Thread Size	Cut Dia.	Shank Dia.	LOC	No. of Flutes	Neck Dia.	Min. Pitch	Max. Pitch	OAL
DESTM098L	#6	.098	3/16	.250	3	.049	32	64	2
DESTM098L	#6	.098	3/16	.400	3	.049	32	64	2
DESTM120	#8	.120	3/16	.300	3	.07	32	56	2
DESTM120L	#8	.120	3/16	.500	3	.07	32	56	2
DESTM138	#10	.138	3/16	.400	3	.073	24	56	2
DESTM138L	#10	.138	3/16	.600	3	.073	24	56	2
DESTM182	1/4	.182	1/4	.400	4	.104	20	56	2.
DESTM182L	1/4	.182	1/4	.650	4	.104	20	56	2.5
DESTM240	5/16	.240	1/4	.500	4	.153	18	48	2.5
DESTM240L	5/16	.240	1/4	.800	4	.153	18	48	2.5
DESTM290	3/8	.290	3/8	.600	4	.192	16	40	3
DESTM290L	3/8	.290	3/8	1.000	4	.192	16	40	3
DESTM372	1/2	.372	3/8	.750	4	.24	12	32	3
DESTM372L	1/2	.372	3/8	1.200	4	.24	12	32	3
DESTM488	5/8	.488	1/2	.850	5	.34	11	32	3.5
DESTM488L	5/8	.488	1/2	1.350	5	.34	11	32	3.5

Helical Thread Mills	60 Degree UN Helical Flute Thread Mills					Tialn Coated
Part #	Min. Thread Dia./Pitch	Cutter Dia.	Shank Dia.	LOC	OAL	No. of Flutes
DESTM-6-32-H	6-32	.085	1/8	7/32	2	2
DESTM-8-32-H	8-32	.120	1/8	1/4	2	3
DESTM-10-24-H	10-24	.140	3/16	5/16	2.5	3
DESTM-10-28-H	10-28	.140	3/16	5/16	2.5	3
DESTM-10-32-H	10-32	.140	3/16	5/16	2.5	3
DESTM-1/4-20-H	1/4-20	.180	3/16	1/2	2.5	3
DESTM-1/4-28-H	1/4-28	.180	3/16	1/2	2.5	3
DESTM-1/4-32-H	1/4-32	.180	3/16	1/2	2.5	3
DESTM-5/16-18-H	5/16-18	.235	1/4	5/8	2.5	3
DESTM-5/16-24-H	5/16-24	.235	1/4	5/8	2.5	3
DESTM-5/16-32-H	5/16-32	.235	1/4	5/8	2.5	3
DESTM-3/8-16-H	3/8-16	.300	5/16	3/4	3	4
DESTM-3/8-24-H	3/8-24	.300	5/16	3/4	3	4
DESTM-7/16-14-H	7/16-14	.345	3/8	3/4	3.5	4
DESTM-7/16-20-H	7/16-20	.345	3/8	3/4	3.5	4
DESTM-1/2-13-H	1/2-13	.370	3/8	7/8	3.5	4
DESTM-1/2-20-H	1/2-20	.370	3/8	7/8	3.5	4
DESTM-1/2-28-H	1/2-28	.370	3/8	7/8	3.5	4
DESTM-9/16-12-H	9/16-12	.450	1/2	7/8	3.5	4
DESTM-9/16-18-H	9/16-18	.450	1/2	7/8	3.5	4
DESTM-5/8-10-H	5/8-10	.490	1/2	1.000	3.5	6
DESTM-5/8-11-H	5/8-11	.490	1/2	1.000	3.5	6
DESTM-5/8-12-H	5/8-12	.490	1/2	1.000	3.5	6
DESTM-5/8-18-H	5/8-18	.490	1/2	1.000	3.5	6
DESTM-3/4-12-H	3/4-12	.600	5/8	1.000	3.5	6
DESTM-3/4-16-H	3/4-16	.600	5/8	1.000	3.5	6

*Straight Flute Available

- High cutting speeds and feeds
- Precise thread depth control
- Optimum position accuracy
- Less chatter
- Better chip removal
- Less spindle torque
- Less cutting pressure

NPT Pipe Helical Flute						
DESTM-1/4-18NPT-S	1/4-18NPT	.360	5/16	.750	3.5	4
DESTM-3/8-18NPT-S	3/8-18NPT	.382	5/16	.750	3.5	4
DESTM-1/2-14NPT-S	1/2-14NPT	.490	1/2	1.000	3.5	6

Understanding thread mills

Any three axis mill that is capable of helical interpolation can be used for thread milling. Helical interpolation involves three axes moving simultaneously. Two axes, “X” and “Y”, move in a circular motion while the “Z” axis moves in a linear motion. For example, the path from point A to point B (Fig. 1) on the periphery of the cylinder combines a circular movement in the “X-Y” plane with linear movement along the “Z” axis. The “X” and “Y” circular motion will determine the diameter of the thread. The “Z” axis linear motion will cut the pitch (or lead) of the thread.

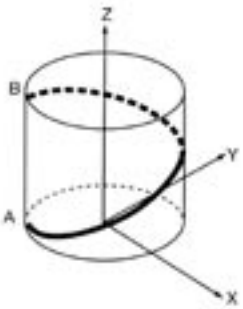


Figure 1

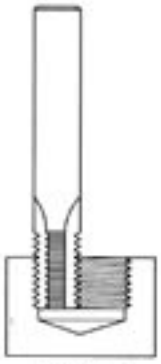


Figure 2


Figure 3

How to order thread mills

Thread mills must completely enter the minor thread diameter before cutting the internal thread. (See Fig. 2) Thus, our catalog lists the smallest internal thread that each thread mill can produce. The same thread mill can also produce any larger size thread of that same pitch. Also, for small sizes, it is best to use our helical thread mills whenever possible. Any of our thread mills over 0.187 diameter can cut both internal and external threads. One thread mill can cut any size external thread—only the pitch must match. (See Fig. 3) Helical fluted thread mills are also designed to reduce side cutting pressure by distributing the cutting pressure along a helical flute. High performance design allows for less chatter and higher feed rates, better finish, chip removal.

How to use thread mills

To produce internal threads, drill the minor thread diameter to its appropriate size. Then, position the thread mill to the required depth. Next, mill either the “X” or “Y” axis to the required thread pitch diameter. With small sizes and with difficult to cut material, it may be necessary to remove material in several passes. It is always best to “arc in” and “arc out” when thread milling. Any “arc in” and “arc out” movements must have a corresponding “Z” axis motion during the “X-Y” circular moves. For example, if the “arc in” is over 90 degrees, the “Z” axis departure must be 1/4 of the thread pitch. (90 degrees is 1/4 of a circle). A right-hand thread is produced by orbiting in a counterclockwise direction while bringing the “Z” axis up one pitch per 360 degrees. A left-hand thread is produced by orbiting in a clockwise direction while bringing the “Z” axis up one pitch per 360 degrees. The entire process can be achieved by interpolating in a downward direction and reversing the orbit direction. External threads must have the major diameter milled to size before the thread mill is used. Right-had threads are cut by interpolating up and in a clockwise directions. The same threads can be cut by interpolating down and changing the orbit direction. NPT threads are usually produced while interpolating the tool in a downward direction. since these tools are crest cutting, it is not absolutely necessary to ream the internal minor diameter or mill the external diameter to size. However, it is highly advisable to do so since the tools will have much less material to remove. If the tool is to be interpolated in an upward direction, spiral interpolation must be used.

The same surface feet per minute can be used for helical thread mills as for end mills of the same size. However, since thread milling often involves unfavorable length-to-diameter rations, slow feed rate accordingly. Also, keep in mind that the thread mills have more surface area contact than an end mill of equal length. Most CNC mills are programmed in inches per minute which is applied at the center line of the spindle. In internal applications, the outside diameter of the tool will be traveling faster than the center line of the tool. The reverse is true for external applications.

DESTINY TOOL
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Tool Reconditioning

No Taper ▪ No Burning ▪ Refluting Capabilities ▪ Run Outs NO More

We recondition: Carbide End mills, High Speed Steel End mills, Angle Mills, Ball Mills, Taps, Counter Sinks, Drills, Spot Drills, Reamers, Shell Mills, Counter Bores, Chamfer Mills, and more!

All Tools are reconditioned on Walter CNC Grinders

Carbide Endmills	Uncoated	Recoated	Recoated w/Radius
1/8" thru 3/8"			
*reconditioned	6.25	11.25	13.75
*end only	5.00	10.00	12.50
26/64" thru 1/2"			
*reconditioned	10.00	16.35	20.00
*end only	7.50	13.75	17.50
33/64" thru 3/4"			
*reconditioned	15.00	20.00	30.00
*end only	12.50	22.50	27.50
49/64" thru 1"			
*reconditioned	18.75	30.00	37.50
*end only	15.00	27.50	33.77

*Prices reflect standard sizes with regular LOC, per end. Extra length subject to additional cost. Call for pricing.

	High Performance Carbide Drills		
	Sandvik Delta 411.5 Point	Other Points	Add for Coating
Thru 1/4"	12.00	18.00	2.00
1/4" thru 3/8"	16.00	22.00	4.00
3/8" thru 1/2"	21.00	27.00	6.00
1/2" thru 5/8"	25.00	32.00	8.00
5/8" thru 3/4"	30.00	38.00	12.00
3/4" thru 1"	35.00	42.00	15.00
1: thru 1-1/8"	45.00	60.00	25.00

*Other points are: Sumitomo: Mitsubishi BRS, BRA, MZE: Waukesha Gemini: Kennametal Superpoint; Sandvik DeltaC; Hertel; Kennametal 2 & 3 flute Dynapoint Drills; Guhring GS 200 Core Drill Point; Nitsubish Nu-Point

We offer an approximate turn-around of three weeks following receipt of purchase order. Special arrangements may be available for a shorter turn-around time, upon availability.

Pick-up and Delivery Service Upon Availability:

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Special Step Drills

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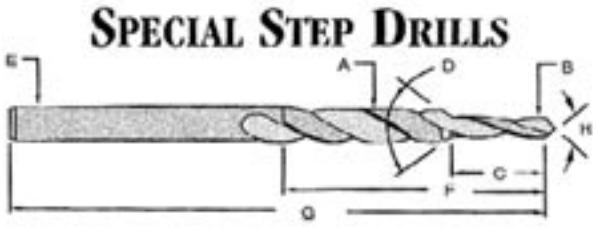

A. Diameter of Drill & Type _____

B. Pilot Diameter _____

C. Length of Pilot _____

D. Included Angle _____

E. Shank Diameter _____

F. Total Length of Cut _____

G. Overall Length _____

H. Drill Point Incl. Angle _____

Quantity (MIN. 2 PCS.): _____

Material Being Drilled: _____

Drill Material: ○ H.S.S. ○ Cobalt ○ Carbide

Account Name: _____ Date: _____

Street: _____ E-mail: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____

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Tool Quote Form

3233 De La Cruz Blvd. #C Santa Clara, CA 95054-0264 Toll Free: 800-527-8665
T: 408-988-8898
F: 408-988-2606
F: 800-870-1933

Customer's Name: _____ Contact: _____

Phone: _____ Fax: _____ E-mail: _____

1. Is this a repeat inquiry / order: Yes____ No ____
   If yes, please identify by customer part #: _____ Destiny Part #: _____
2. Single End or Double End? _____
3. Number of Flutes? _____ (Tapered are 3 Flute generally)
4. Cutting Diameter & Tolerance: _____
5. Length of Cut: _____
6. Length Below Shank, LBS: _____
7. Overall Length: _____
8. Shank Diameter and Type: _____
9. Hand of Cut and Helix Angle: _____
10. Type of End-Square, Cut to Center or Ball: _____
11. Type and Hardness of Material to be Machined: _____
12. Coating Required: Annual Usage: _____
13. Quantity Required: _____
14. Quantity shipping Variation is +I-10% (Unless otherwise stated): _____
15. Style of Special End Mill: Conventional, Tapered, or Rougher: _____
16. Taper per side: _____ Taper incl. angle: _____ Tip diameter: _____

    _____
17. Comments: _____

NOTE: To avoid delays in the manufacturing or inquiry of our tools, it is essential that all information is provided. All orders or inquiries for special end mills must show the customer's name. This important procedure makes for much faster reference should it be necessary. If you want an immediate quote on specials, Fax your specifications to:

Fax: 800-870-1933 or Call: 1-800-527-TOOL

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Inquiry & Consultation Report

3233 De La Cruz Blvd. #C Santa Clara, CA 95054-0264

Toll Free: 800-527-8665
T: 408-988-8898
F: 408-988-2606
F: 800-870-1933

Destiny Tool is committed to working with you to help reduce your cost on all milling. Simply photo copy this page, fill it in and send us the information requested. We will provide you with our best advice.

Account Name: _____ Date: _____

Street: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____ E-mail: _____

Contact: _____ Title: _____

Description of Tool Currently Being Used:

Brand Name: _____ Part #. _____

HSS: _____ Carbide: _____ Coated: _____

Diameter: _____ No. of Flutes: _____

Flute Length Engated in the Cut: _____

Depth of Material Being Cut per Pass: _____

Current RPM: _____ Current Feed Rate: _____

Description of Material Being Machined:

Name of Material: _____ AISI Number: _____

Condition of Material: Brinnel ____ Rockwell ____ Other _____

Type of Cut: Profile _____ Slot _____ Pocket _____

Climb Milling: _____ Conventional Milling: _____

Material to be Milled: Length _____ Width _____

Description of Machine Tool and Fixtures:

Machine Make: _____

Vertical: _____ Horizontal: _____ Horsepower: _____

Spindle Speed Range: _____ Table Feed Range: _____

Coolant Available: Flood: _____ Dry: _____

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Tool Performance Report

3233 De La Cruz Blvd. #C ▪ Santa Clara, CA 95054-0264

Toll Free: 800-527-8665
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F: 800-870-1933

Account Name: _____ Date: _____

Street: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____ E-mail: _____

Contact: _____ Title: _____

Application: _____

Brand Name: _____ Part No. _____

Technical Data: _____

Machine Type: _____ HP: _____ # Spindles: _____

RMS Req.: _____ Coolant: _____

Speed: _____ RPM: _____ SFM: _____

Feed: _____ IPM: _____

Material: _____ Hardness: _____

Chip Load Per Tooth: _____ Majority of Cuts: _____

Depth Per Cut: _____ _____ Shallow Slotting _____ DeepSlotting<1xd.

Axial = A: _____ _____ Med. Radial <.25 x d.

Radial = R: _____ _____ Med. Radial >.300 x d.

Tool Specification:

Diam: _____ Shank Diam.: _____ LOC: _____

OAL: _____ No. Flts: _____ Hand of Cut: _____

End Style: _____ Tool Mat'l.: _____ Helix: _____

Coating: _____ Neck reach Relieved (LBS): _____

Destiny Tool Distributor: _____ Contact: _____

Destiny Tool Representative: _____

Comments: _____

_____

_____

Results: _____

_____

Note: All request for Credit will require this form, and a sample tool for evaluation

More Metal Removal with Destiny Tool Products! Save Money!

DESTINY TOOL'S COST EVALUATION WORKSHEET			
Date of Test:	Company:		
Contact Person:	Distributor:		
Destiny Tool Rep:	Destiny Rep Present During Test?:	(yes)	(no)
Machine (Mfg./Model #):	Tool Holder:	HP:	
Workpiece Material:	Tensile Strength/Hardness:	Heat Treatment:	
Operation: (Slotting)	(Profiling)	(Finishing)	(Other) :

Tool Costs:	Current	Destiny Tool		
Raptor:				
Viper:				
Part #:				
Coating: Altin Stealth				
Price per Tool:	$	$		
# of Parts Machined per Tool:				
Tool Cost per Part:	$	$	=	(price per tool) ÷ (# of parts machined)
Total Parts per Year:				
Total Tool Costs/Year:	$	$	=	(total cost per part) × (total parts per year)
Savings/Year:		$	=	(current total tool costs) − (Destiny total tool costs)

PLACE TOTAL IN SECTION "A" AT BOTTOM OF PAGE

Machine Costs:	Current	Destiny Tool		
Tool Diameter:				
Number of Flutes/Teeth:				
Cutting Speed (SMM):			=	(SMM) × (318.057) ÷ (tool diameter)
Spindle Speed (RPM):				
Feed Rate (mm/minute):			=	(rpm) × (feed per tooth) × (# of flutes)
Total Cutting Time per part min:				
Hourly Rate of Machine:	$	$		
Machining Costs per Part:	$	$	=	(hourly rate) ÷ (60) × (total cutting time)
Total Parts per Year:				
Total Machining Costs/Year:	$	$	=	(machining cost per part) × (total parts per year)
Savings/Year:		$	=	(current total machining costs) − (Destiny total machining costs)

PLACE TOTAL IN SECTION "B" AT BOTTOM OF PAGE

Tool Changing Costs:	Current	Destiny Tool		
Tool Changing Time (min.):				
Hourly Shop Rate:	$	$		
Cost per Tool Change:	$	$	=	(hourly rate) ÷ (60) × (tool changing time)
Total Changes per Year:			=	(total parts per year) ÷ (# of parts machined per tool)
Total Tool Changing Costs/Year:	$	$	=	(tool changes per year) ÷ (cost per tool change)
Savings/Year:		$	=	(current tool changing costs) − (Destiny tool changing costs)

PLACE TOTAL IN SECTION "C" AT BOTTOM OF PAGE

Tool Presetting Costs:	Current	Destiny Tool		
Total Tool Presetting Time (min):				
Hourly Rate of Presetter:	$	$		
Cost per Tool Presetting:	$	$	=	(hourly rate) ÷ (60) × (tool presetting time)
Total Tool Presettings per Year:			=	(total parts per year) ÷ (# of parts machined per tool)
Total Presettings Costs/Year:	$	$	=	(tool presettings per year) ÷ (cost per tool presetting)
Savings/Year:		$	=	(current tool presetting costs) − (Destiny tool presetting costs)

PLACE TOTAL IN SECTION "D" AT BOTTOM OF PAGE

Use this page to calculate your actual savings when applying Destiny Tool products to your specific application.

Cost Evaluation Totals	Savings/Year
Tool Costs - Savings/Year	**A:** $
Machine Costs - Savings/Year	**B:** $
Tool Changing Costs - Savings/Year	**C:** $
Tool Presetting Costs - Savings/Year	**D:** $
Total Savings/Year with Destiny Tool	**TOTAL:** $

DESTINY TOOL
the mark of performance

800-527-8665
www.destinytool.com

Destiny Tool "Diamond Back" Rough Speeds & Feeds

"TOC" (3/4" Shallow Slot 1xd), x (Stub), x (Big-Plus 50), x ("S" Stealth Coating), x (# Flutes), x (RPM) =

Starting IPM

Example: .012 x 1.15 x 1.60 x 1.30 x 3 FL x 8,500 = 732 IPM

Suggested Starting Chiploads (Reg. Length Uncoated) for (40 "V" "BT") Taper Machining Center
(HSK-63 x 1.10), (Big-Plus 40 x 1.20), (50 "V", "BT" x 1.35), (HSK-100 x 1.45), (Big-Plus 50 x 1.60)

Multiply Based Upon Length of Cut / or Extended Reach
(Stub Length x 1.15), (Medium Length x .75), (Long Length x .60), ("HSM" Neck-Reach x .50)

Multiply Based Upon Coating Lubricity
("S"-Stealth x 1.30, Stocked)

DIAMOND BACK SPEEDS & FEEDS

Type of Cut "TOC"		1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"	Comments
Shallow Slotting	<1/2 x Dia.	.008	.010	.012	.016	.018	.022	.026	Kick up the feed rates, Use your machine's H.P.
	3/4 - 1 x Dia.	.005	.006	.008	.010	.012	.016	.020	Watch coolant supply, Recommend coatings.
Deep Slotting	< 1-1/2 x Dia.	.003	.004	.006	.008	.010	.012	.014	Stealth, Z-Coat coatings avoid material loadup.
	> 2 x Dia.	.002	.003	.004	.006	.008	.010	.012	Stealth, Z-Coat coatings mandatory. High pressure coolant blasting should be used.
Deep Pocketing "HSM" Method	"HSM" < .5 x Dia.	.007	.008	.010	.014	.016	.020	.024	Recommended for optimum productivity in deeper pockets & long reach parts.
	"HSM" 1 x Dia.	.005	.006	.008	.010	.012	.016	.018	Use when machine's feed capabilities cannot keep up with Diamond Back's feed capability
Medium Radial	Box In / Out < .3 x Dia.	.007	.009	.014	.016	.022	.024	.028	Maximize feed capability of your machine. High cubic-inch removal.
	Box In < .5 x Dia.	.006	.008	.012	.014	.018	.020	.024	Since chip evacuation is releasing well, deep feed rates up.
Heavy Radial	Box In / Out > .3 x Dia.	.005	.006	.008	.010	.012	.016	.020	Coatings help here, be careful of chip packing at high feed rates.
	Box In > .5 x Dia.	.004	.005	.007	.009	.010	.014	.016	High pressure coolant blasting is essential, use stealth coating for longer runs

Destiny Tool "Viper" Finisher Speeds & Feeds

VIPER SPEEDS & FEEDS

Heavy Slotting	<.25 x Dia.	.005	.007	.008	.010	.012	.012	.012	Destiny Tool's advanced coatings can help with lubricity & edge life.
Light Radial	< .1 x Dia.	.008	.010	.010	.010	.012	.012	.012	Be aware of serious chip thinning here, keep chipload UP to avoid premature edge dulling.
Super Finishing	Spring .010-.015	.002	.002	.003	.003	.003	.004	.004	Adjust feed for desired part finish & wall straightness.

RPM Info: There is really "NO RPM LIMIT" for Aluminum (2024, 6061, 7050, 7075, etc.)
Diecast <6% Silicon - 800-1200 SFM, >9% Silicon - 400-600 SFM
When taking roughing cuts, it is best to check your machine's torque / H.P. curve chart

Ex: A typical 7,500 RPM / 40 taper machine has max. H.P. / torque around 5,500 RPM
Evaluate your machine for optimum cutting capabilities and cubic inch removal rate / h.p.

If part/setup is unstable or flimsy, reduce D.O.C. and/or feed rates

RAPTOR™

APPLICATION MATERIALS

Mild Steels	Medium Alloys		Titanium
1018	A36	304SS	Titanium
1020	4340	410SS	
		316SS	

MILD STEEL

Surface Feet per Minute (SFPM)

Depth of Cut % of Dia	Slotting Altin Coating			Peripheral Altin Coating			Depth of Cut % of Dia
Axial	**Conservative**	**Moderate**	**Aggressive**	**Conservative**	**Moderate**	**Aggressive**	**Radial**
50%	500	550	700	550	600	750	25%
100%	400	500	550	500	550	700	50%
150%	350	450	500	400	500	550	100%

MEDIUM ALLOYS AND DIE / MOLD

Surface Feet per Minute (SFPM)

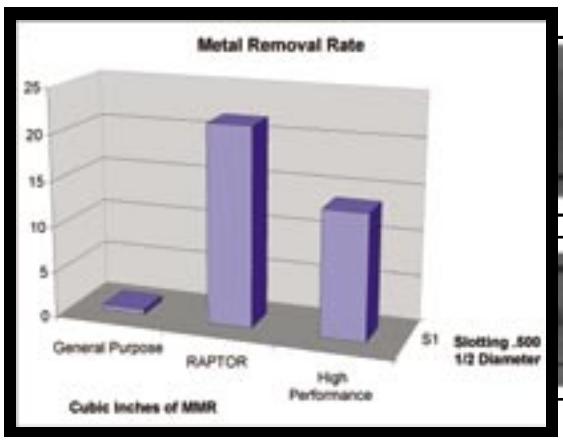
Depth of Cut % of Dia	Slotting Altin Coating			Peripheral Altin Coating			Depth of Cut % of Dia
Axial	**Conservative**	**Moderate**	**Aggressive**	**Conservative**	**Moderate**	**Aggressive**	**Radial**
50%	350	425	500	350	450	550	25%
100%	250	350	450	350	425	500	50%
150%	250	325	375	250	350	450	100%

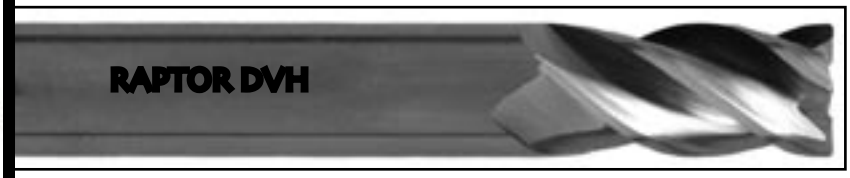
TITANIUM

Surface Feet per Minute (SFPM)

Depth of Cut % of Dia	Slotting Altin Coating			Peripheral Altin Coating			Depth of Cut % of Dia
Axial	**Conservative**	**Moderate**	**Aggressive**	**Conservative**	**Moderate**	**Aggressive**	**Radial**
50%	150	200	250	200	250	300	25%
100%	125	175	225	150	200	250	50%
150%	100	160	200	125	175	225	100%

Feed per tooth by tool diameter						
1/8”	**1/4”**	**3/8”**	**1/2”**	**5/8”**	**3/4”**	**1”**
.0005 - .0013	.0008 - .0018	.001 - .0024	.001 - .0035	.0015 - .0035	.002 - .0045	.002 - .0055





Recommended Starting Speeds and Feeds for Raptor DVH and Raptor 3/6

Materials Group (Under 32 HRC)	Con-cerv SFM	Mod-erate SFM	Aggres-sive SFM	Feed (Inch / Tooth) End Mill							
				1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEEL											
Precipitation - PH 13-8 MD, 15-5PH, AM 350-355	**250**	**290**	**315**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
Austentic - 200 series, 302, 303, 304L , 316L	**300**	**345**	**375**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
Morensitic - 403, 410, 416	**400**	**460**	**500**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
HIGH TEMP ALLOYS											
Cobalt Base - Slate, HS 21, Haynes 25 / 188, x-40, L-605	**120**	**140**	**150**	.0002	.0004	.0008	.0015	.002	.0025	.003	.0035
Nickel Base - INCONEL 600/625, Nickel 200-270, Manel 400-405 K-Manel, PermaNickel 300, Incoly 600-800	**110**	**130**	**140**	.0002	.0004	.0008	.0015	.002	.0025	.003	.0035
Iron Base - Incoly 600-802, Multiment N-155, Timken 16-25-6	**120**	**140**	**150**	.0002	.0004	.0008	.0015	.002	.0025	.003	.0035
STEELS											
High Steels Strength-4340, 6150,52100, H-11, H13	**400**	**460**	**500**	.0003	.0005	.001	.002	.0025	.003	.003	.004
High Alloy Steels Mold & Die A-2,/6/10, P-3/10,01,02,06	**180**	**200**	**230**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
Medium Alloy Steels - 200, 250, 300	**400**	**460**	**500**	.0003	.0005	.001	.002	.0025	.003	.004	.005
Low Alloy Steels Maraging-10XX, 11XX, 13XX	**500**	**580**	**625**	.0004	.0006	.0015	.0025	.003	.0035	.005	.005
CAST IRON											
Ductile Cast Iron	**500**	**580**	**625**	.0004	.0006	.0015	.0025	.003	.0035	.004	.005
Grey Cast Iron	**500**	**580**	**625**	.0004	.0006	.0015	.0025	.003	.0035	.004	.005
TITANIUM											
High Steels Strength 4340, 6150,52100, H-11, H13	**300**	**345**	**375**	.0003	.001	.0015	.002	.0025	.003	.0035	.004

Materials Group (Over 32 HRC)	Con-cerv SFM	Mod-erate SFM	Aggres-sive SFM	Feed (Inch / Tooth) End Mill							
				1/8"	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
STAINLESS STEEL											
Precipitation - PH 13-8 MD, 15-5PH, AM 350-355	**180**	**200**	**230**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
Austentic - 200 series, 302, 303, 304L , 316L	**200**	**230**	**250**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
Morensitic - 403, 410, 416	**250**	**290**	**320**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
HIGH TEMP ALLOYS											
Cobalt Base - Slate, HS 21, Haynes 25 / 188, x-40, L-605	**90**	**100**	**120**	.0002	.0004	.0008	.0015	.002	.0025	.003	.0035
Nickel Base - INCONEL 600/625, Nickel 200-270, Manel 400-405 K-Manel, PermaNickel 300, Incoly 600-800	**75**	**90**	**100**	.0002	.0004	.0008	.0015	.002	.0025	.003	.0035
Iron Base - Incoly 600-802, Multiment N-155, Timken 16-25-6	**90**	**100**	**120**	.0002	.0004	.0008	.0015	.002	.0025	.003	.0035
STEELS											
High Steels Strength 4340M, EDT-150, 300M, D6-Ac, 11-1C	**300**	**345**	**375**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
High Alloy Steels Mold & Die Hy-Tugg, Stressproof, ArmorPlate	**150**	**180**	**195**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
Medium Alloy Steels - 200, 250, 300	**300**	**345**	**375**	.0003	.0005	.001	.002	.0025	.003	.0035	.004
Low Alloy Steels Maraging - 23XX, 31XX	**400**	**460**	**500**	.0004	.0006	.0015	.0025	.003	.0035	.004	.005
CAST IRON											
Ductile Cast Iron	**250**	**290**	**320**	.0004	.0006	.0015	.0025	.003	.0035	.004	.005
Cast Iron - Malleable, Chilled	**250**	**290**	**320**	.0004	.0006	.0015	.0025	.003	.0035	.004	.005
TITANIUM											
Titanium Alloys - SAL - 2.5n-Eli, BAI-1, Mo-1V	**180**	**200**	**225**	.0003	.0005	.001	.002	.0025	.003	.0035	.004

Coatings

For Ferrous Materials

Extreme (Black color)				Stocked Python
3,000 HV	0.4	1-3 microns	1740 F Constant	Titanium Aluminum Nitride is recommended for higher heat applications, when running increased SFPM.

Altin (Black color)				Stocked Raptor
3,000 HV	0.15-.2	2-6 microns	1740 F Constant	High heat application such as stainless steel nickel based alloys for high efficiency machining.

For Non- Ferrous Materials

Stealth (Black color) Transparent				Stocked (Vipers, Diamond Backs)
Hardness	Coefficient	Thickness	Heat Range	Application Comments
n/a	0.023	.5 - 1 microns	n/a	A new low friction coating technology this coating actually bonds to the carbide substrate and is invisible to the naked eye, a black coating covers the surface for a visual affect. Increasing chip loads 2 to 4x will show the benefit of this coating.

Zirconium Plus (Yellow Gold color)				Limited Stock
3,100 HV	0.06	3 microns	1560 F Constant	Recommended for all non-ferrous materials, Aluminum, Copper, Brass etc...Improved lubricity which gives excellent chip evacuation and improved surface finishes.

Coating Notes:

Altin coatings are designed for higher SFPM, Hardlube, Nano etc...
Smaller diameters below 1/8" will not see the benefits of these coatings, look for softer thin coatings designed with lubricity in mind.

Terms & Conditions

Terms
2% Ten days,
Net 30 days.

Shipping
F.O.B. Santa Clara, California

All shipments ship ground, unless otherwise specified.

Orders must be in by 3:00 p.m. for same day shipping.

Direct shipment orders by fax only.

Customer Alterations
DESTINY TOOL cannot be responsible for the performance of, or compliance of Specifications, nor can we accept, for return, any tool that has been altered in any way by our customers. This includes surface treatments, coatings, flats, tangs, markings, or any geometry alterations.

Product Warranty
We guarantee our products will conform to the specifications listed on the customer's blueprints, orders, and quotation requests. Dimensions, specifications, and tolerances not listed, will be furnished to the current Destiny Tool manufacturing standards. Our warranty is limited to the repair, replacement, or full credit for the tools found not to be within specifications, at our option.

Return Policy
No merchandise can be returned without prior authorization. Credit will not be issued for merchandise returned without a return authorization number. Stock over 3 months old may not be returned. All returns will be subject to a 15% restocking fee.

Specials
Orders for special tools, non - catalog or modified tools, are accepted on a no cancellation basis, and tools are not returnable. A confirming purchase order is required before any work begins on special tools. A 10% over or under shipment on a special is acceptable based on industry standards, unless no over shipment is stated at time of order. Shop minimum $50 for all specials.

Claims
Although goods are considered sold, and our responsibility ceases when delivery is made to the transportation company, in the event of goods being lost in transit, we will make every effort on behalf of customers to have lost goods found, or to have the transportation company make proper restitution for loss. Damage claims must be made against the carrier.

Errors
DESTINY TOOL cannot be held responsible for incorrect parts made with our products, due to mislabeling, or defect. We assume all tools used by our customers are inspected before use, and that first part inspection in customer's plant is the rule. We will replace or credit tools in those situations.

Trademarks
Trademarks are the property of their perspective owners.

PRICES are subject to change without notice.