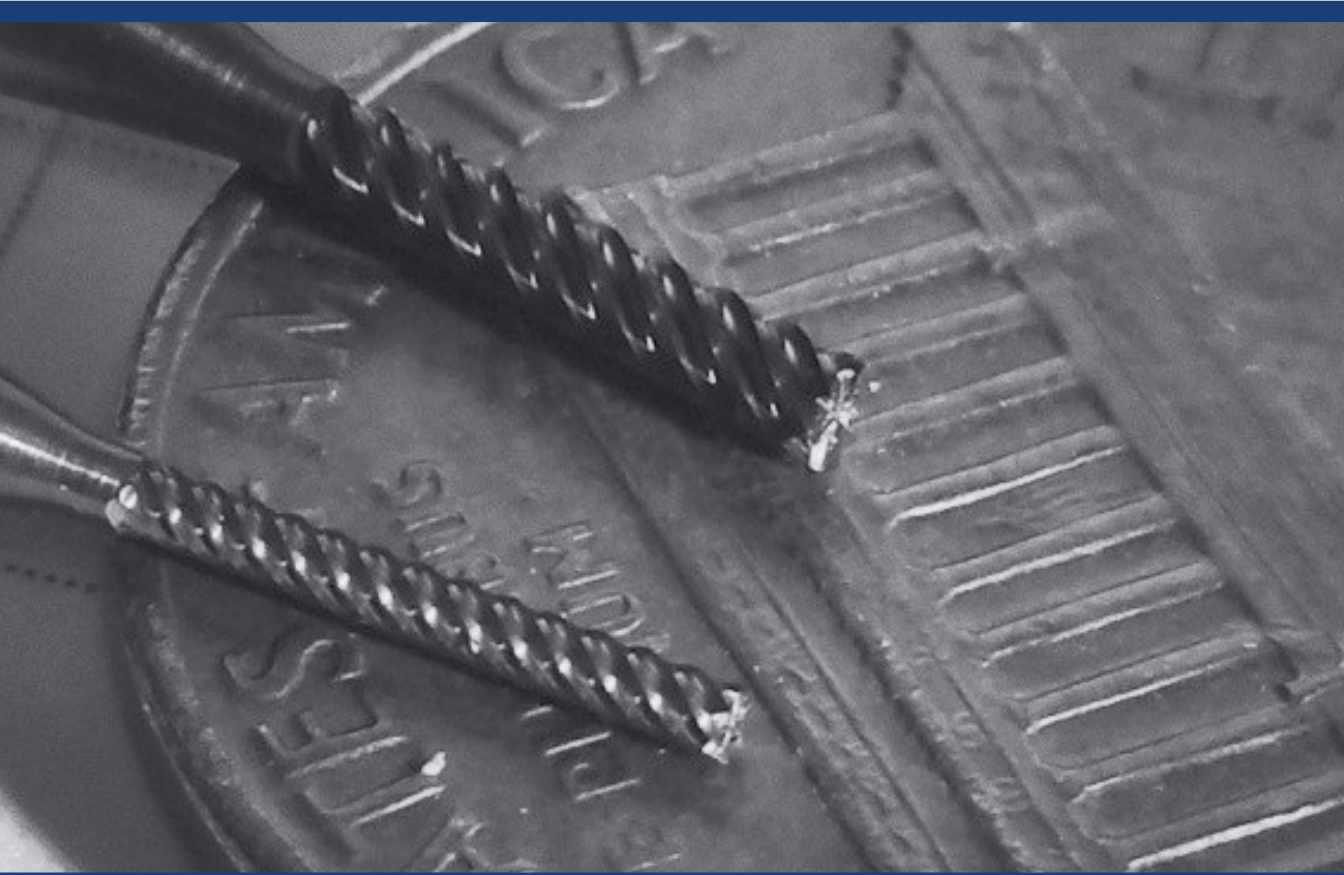




FEATURED SOLUTIONS

Finishing

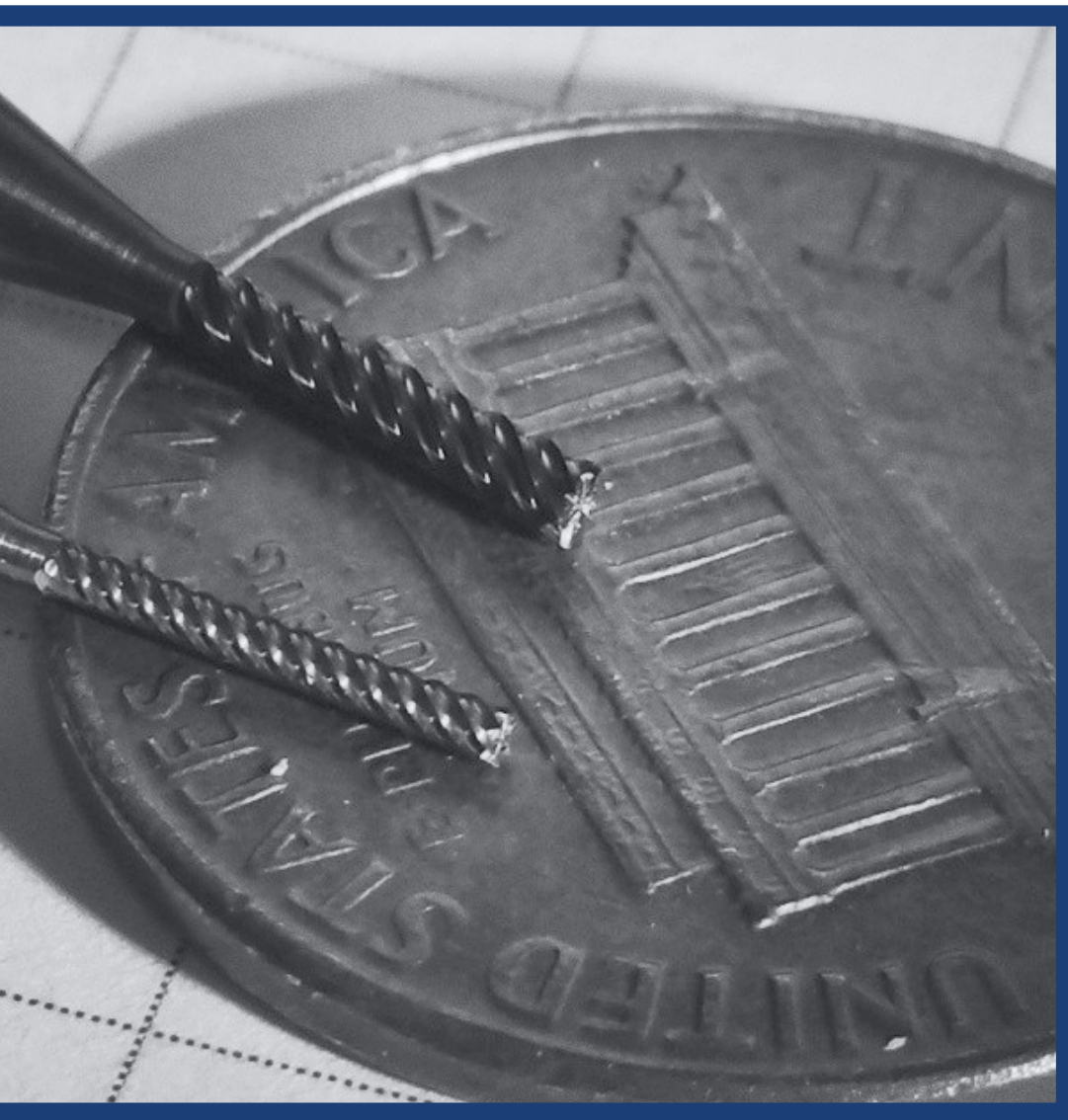


Photo courtesy of Philip G.

"I used these .031 and .047 six flute HarveyTool end mills to get into some of the really tight areas of the titanium prybar bottle opener I did for Kings Arsenal, it blows my mind! Harvey Tool, you guys are incredible."

– Philip G.

Finishing

Achieving **optimal surface finish** is a critical goal for any machinist, but not all tools are designed with finish requirements in mind. Harvey Tool has a wide selection of finishing tools with **material-specific geometries** designed to ensure **tight part tolerances** and **reduce witness marks**.

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END MILLS FOR HARDENED STEELS

Finishers – Ball

HARDENED STEELS



Stub Flute and Large Rigid Core

- **Designed to profile and finish hardened tool, die, and mold steels 46Rc to 68Rc**
- Select carbide grade for improved edge retention
- Latest generation AlTiN Nano coating offers superior hardness and heat resistance
- Geometry includes stub flute, large rigid core diameter, and eccentric relief
- Increased shank diameter to maintain strength and stiffness
- h6 shank tolerance for high precision tool holders
- Center cutting
- Reduced neck diameter to avoid heeling
- CNC ground in the USA

CUTTER DIAMETER			LENGTH OF CUT	OVERALL REACH	SHANK DIAMETER	OVERALL LENGTH	AlTiN NANO 2 FLUTE		AlTiN NANO 3 FLUTE	
D ₁			L ₂	L ₃	D ₂ (h6)	L ₁	2 FL	PRICE	3 FL	PRICE
+ .0000"	+ .000mm	decimal	+ .010"	+ .010"						
- .0006"	- .014mm	equivalent	- .000"	- .000"						
.008	.0080	.0080	.006	.012 (1.5x)	1/4	2-1/2	37808-C6	106.80		
.008	.0080	.0080	.006	.025 (3x)	1/4	2-1/2	31408-C6	106.80		
.008	.0080	.0080	.006	.040 (5x)	1/4	2-1/2	38708-C6	112.00		
.010	.0100	.0100	.008	.015 (1.5x)	1/4	2-1/2	37810-C6	96.90		
.010	.0100	.0100	.008	.031 (3x)	1/4	2-1/2	31410-C6	96.90		
.010	.0100	.0100	.008	.050 (5x)	1/4	2-1/2	38710-C6	101.50		
.015 (1/64)	.0150	.0150	.012	-	1/4	2-1/2	958315-C6	81.80		
.015 (1/64)	.0150	.0150	.012	.023 (1.5x)	1/4	2-1/2	37815-C6	76.70		
.015 (1/64)	.0150	.0150	.012	.047 (3x)	1/4	2-1/2	31415-C6	76.70	813115-C6	82.50
.015 (1/64)	.0150	.0150	.012	.062 (4x)	1/4	2-1/2	881515-C6	79.50		
.015 (1/64)	.0150	.0150	.012	.078 (5x)	1/4	2-1/2	38715-C6	79.50	812915-C6	85.30
.015 (1/64)	.0150	.0150	.012	.125 (8x)	1/4	2-1/2	32015-C6	85.00		
.015 (1/64)	.0150	.0150	.012	.187 (12x)	1/4	2-1/2	33815-C6	104.50		
.020	.0200	.0200	.016	-	1/4	2-1/2	958320-C6	81.00		
.020	.0200	.0200	.016	.031 (1.5x)	1/4	2-1/2	37820-C6	76.70		
.020	.0200	.0200	.016	.062 (3x)	1/4	2-1/2	31420-C6	76.70		
.020	.0200	.0200	.016	.080 (4x)	1/4	2-1/2	881520-C6	79.50		
.020	.0200	.0200	.016	.100 (5x)	1/4	2-1/2	38720-C6	79.50		
.020	.0200	.0200	.016	.160 (8x)	1/4	2-1/2	32020-C6	80.30		
.020	.0200	.0200	.016	.200 (10x)	1/4	2-1/2	919120-C6	93.50		
.025	.0250	.0250	.020	.038 (1.5x)	1/4	2-1/2	37825-C6	76.70		
.025	.0250	.0250	.020	.075 (3x)	1/4	2-1/2	31425-C6	76.70		
.025	.0250	.0250	.020	.125 (5x)	1/4	2-1/2	38725-C6	80.30		
.031 (1/32)	.0310	.0310	.025	-	1/4	2-1/2	958331-C6	69.70		
.031 (1/32)	.0310	.0310	.025	.047 (1.5x)	1/4	2-1/2	37831-C6	65.60		
.031 (1/32)	.0310	.0310	.025	.093 (3x)	1/4	2-1/2	31431-C6	65.60	813131-C6	70.60
.031 (1/32)	.0310	.0310	.025	.125 (4x)	1/4	2-1/2	881531-C6	69.70		
.031 (1/32)	.0310	.0310	.025	.156 (5x)	1/4	2-1/2	38731-C6	71.80	812931-C6	77.40
.031 (1/32)	.0310	.0310	.025	.187 (6x)	1/4	2-1/2	858031-C6	73.20		
.031 (1/32)	.0310	.0310	.025	.218 (7x)	1/4	2-1/2	863231-C6	74.40		
.031 (1/32)	.0310	.0310	.025	.250 (8x)	1/4	2-1/2	32031-C6	75.70		
.031 (1/32)	.0310	.0310	.025	.312 (10x)	1/4	2-1/2	919131-C6	89.60		
.031 (1/32)	.0310	.0310	.025	.375 (12x)	1/4	2-1/2	33831-C6	89.60		
.031 (1/32)	.0310	.0310	.025	.470 (15x)	1/4	2-1/2	973231-C6	103.00		

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END MILLS FOR HARDENED STEELS

Finishers – Ball (cont.)

continued from previous page

CUTTER DIAMETER			LENGTH OF CUT	OVERALL REACH	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO 2 FLUTE		AITIN NANO 3 FLUTE	
D ₁ +.0000" -.0006" +.000mm -.014mm decimal equivalent			L ₂ +.010" -.000" +.125mm -.000mm	L ₃ +.010" -.000" +.125mm -.000mm	D ₂ (h6)	L ₁	2 FL	PRICE	3 FL	PRICE
.039		.0390	.031	-	1/4	2-1/2	958339-C6	70.30		
.039		.0390	.031	.062 (1.5x)	1/4	2-1/2	37839-C6	65.60		
.039		.0390	.031	.117 (3x)	1/4	2-1/2	31439-C6	65.60		
.039		.0390	.031	.156 (4x)	1/4	2-1/2	881539-C6	71.80		
.039		.0390	.031	.203 (5x)	1/4	2-1/2	38739-C6	71.80		
.039		.0390	.031	.312 (8x)	1/4	2-1/2	32039-C6	75.70		
.039		.0390	.031	.468 (12x)	1/4	2-1/2	33839-C6	89.60		
1.0 mm		.0393	.80 mm	3.00 mm (3x)	6 mm	63 mm	882922-C6	71.80		
1.0 mm		.0393	.80 mm	5.00 mm (5x)	6 mm	63 mm	881722-C6	78.50		
.040		.0400	.032	.062 (1.5x)	1/4	2-1/2	37840-C6	65.60		
.040		.0400	.032	.125 (3x)	1/4	2-1/2	31440-C6	66.20		
.047 (3/64)		.0470	.038	-	1/4	2-1/2	958347-C6	69.70		
.047 (3/64)		.0470	.038	.071 (1.5x)	1/4	2-1/2	37847-C6	65.60		
.047 (3/64)		.0470	.038	.141 (3x)	1/4	2-1/2	31447-C6	65.60	813147-C6	71.30
.047 (3/64)		.0470	.038	.187 (4x)	1/4	2-1/2	881547-C6	71.80		
.047 (3/64)		.0470	.038	.250 (5x)	1/4	2-1/2	38747-C6	71.80	812947-C6	77.40
.047 (3/64)		.0470	.038	.375 (8x)	1/4	2-1/2	32047-C6	75.70		
.047 (3/64)		.0470	.038	.470 (10x)	1/4	2-1/2	919147-C6	89.60		
.047 (3/64)		.0470	.038	.564 (12x)	1/4	2-1/2	33847-C6	89.60		
.047 (3/64)		.0470	.038	.710 (15x)	1/4	2-1/2	973247-C6	103.00		
.050		.0500	.040	.078 (1.5x)	1/4	2-1/2	37850-C6	65.60		
.050		.0500	.040	.150 (3x)	1/4	2-1/2	31450-C6	66.20		
.060		.0600	.048	.093 (1.5x)	1/4	2-1/2	37860-C6	65.60		
.060		.0600	.048	.180 (3x)	1/4	2-1/2	31460-C6	66.20		
.062 (1/16)		.0620	.050	-	1/4	2-1/2	958362-C6	69.70		
.062 (1/16)		.0620	.050	.093 (1.5x)	1/4	2-1/2	37862-C6	65.60		
.062 (1/16)		.0620	.050	.187 (3x)	1/4	2-1/2	31462-C6	65.60	813162-C6	70.60
.062 (1/16)		.0620	.050	.250 (4x)	1/4	2-1/2	881562-C6	69.70		
.062 (1/16)		.0620	.050	.312 (5x)	1/4	2-1/2	38762-C6	71.80	812962-C6	76.70
.062 (1/16)		.0620	.050	.375 (6x)	1/4	2-1/2	858062-C6	73.20		
.062 (1/16)		.0620	.050	.437 (7x)	1/4	2-1/2	863262-C6	74.40		
.062 (1/16)		.0620	.050	.500 (8x)	1/4	2-1/2	32062-C6	75.70		
.062 (1/16)		.0620	.050	.625 (10x)	1/4	2-1/2	919162-C6	97.60		
.062 (1/16)		.0620	.050	.750 (12x)	1/4	4	33862-C6	97.60		
.062 (1/16)		.0620	.050	.950 (15x)	1/4	4	973262-C6	111.30		
.078 (5/64)		.0780	.062	-	1/4	2-1/2	958378-C6	70.30		
.078 (5/64)		.0780	.062	.117 (1.5x)	1/4	2-1/2	37878-C6	65.60		
.078 (5/64)		.0780	.062	.234 (3x)	1/4	2-1/2	31478-C6	65.60	813178-C6	70.60
.078 (5/64)		.0780	.062	.312 (4x)	1/4	2-1/2	881578-C6	72.50		
.078 (5/64)		.0780	.062	.406 (5x)	1/4	2-1/2	38778-C6	71.80	812978-C6	77.40
.078 (5/64)		.0780	.062	.625 (8x)	1/4	2-1/2	32078-C6	75.70		
.078 (5/64)		.0780	.062	.781 (10x)	1/4	2-1/2	919178-C6	97.60		
.078 (5/64)		.0780	.062	.937 (12x)	1/4	4	33878-C6	97.60		
.078 (5/64)		.0780	.062	1.187 (15x)	1/4	4	973278-C6	111.30		

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HARDENED STEELS

END MILLS FOR HARDENED STEELS

Finishers – Ball (cont.)

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CUTTER DIAMETER			LENGTH OF CUT	OVERALL REACH	SHANK DIAMETER	OVERALL LENGTH	AITiN NANO 2 FLUTE		AITiN NANO 3 FLUTE	
D ₁ +.0000" -.0006"			L ₂ +.010" -.000" +.125mm -.000mm	L ₃ +.010" -.000" +.125mm -.000mm	D ₂ (h6)	L ₁	2 FL	PRICE	3 FL	PRICE
2.0 mm			.0787	1.60 mm	6.00 mm (3x)	6 mm	63 mm	882945-C6	71.80	
2.0 mm			.0787	1.60 mm	10.00 mm (5x)	6 mm	63 mm	881745-C6	77.80	
.093 (3/32)			.0930	.074	-	1/4	2-1/2	958393-C6	69.70	
.093 (3/32)			.0930	.074	.140 (1.5x)	1/4	2-1/2	37893-C6	65.60	
.093 (3/32)			.0930	.074	.281 (3x)	1/4	2-1/2	31493-C6	65.60	813193-C6 70.60
.093 (3/32)			.0930	.074	.375 (4x)	1/4	2-1/2	881593-C6	69.70	
.093 (3/32)			.0930	.074	.500 (5x)	1/4	2-1/2	38793-C6	71.80	812993-C6 77.40
.093 (3/32)			.0930	.074	.585 (6x)	1/4	2-1/2	858093-C6	73.90	
.093 (3/32)			.0930	.074	.670 (7x)	1/4	2-1/2	863293-C6	75.10	
.093 (3/32)			.0930	.074	.750 (8x)	1/4	2-1/2	32093-C6	75.70	
.093 (3/32)			.0930	.074	.937 (10x)	1/4	4	919193-C6	97.60	
.093 (3/32)			.0930	.074	1.125 (12x)	1/4	4	33893-C6	97.60	
.093 (3/32)			.0930	.074	1.400 (15x)	1/4	4	973293-C6	111.30	
.118			.1180	.094	.177 (1.5x)	1/4	2-1/2	37905-C6	74.30	
.118			.1180	.094	.354 (3x)	1/4	2-1/2	31505-C6	74.30	
.118			.1180	.094	.625 (5x)	1/4	2-1/2	38805-C6	83.50	
3.0 mm			.1181	2.40 mm	9.00 mm (3x)	6 mm	63 mm	882957-C6	80.30	
3.0 mm			.1181	2.40 mm	15.00 mm (5x)	6 mm	63 mm	881757-C6	90.60	
.125 (1/8)			.1250	.100	-	1/4	2-1/2	958408-C6	78.50	
.125 (1/8)			.1250	.100	.187 (1.5x)	1/4	2-1/2	37908-C6	73.60	
.125 (1/8)			.1250	.100	.375 (3x)	1/4	2-1/2	31508-C6	73.60	813208-C6 78.50
.125 (1/8)			.1250	.100	.500 (4x)	1/4	2-1/2	881608-C6	81.50	
.125 (1/8)			.1250	.100	.625 (5x)	1/4	2-1/2	38808-C6	83.50	813008-C6 88.60
.125 (1/8)			.1250	.100	.750 (6x)	1/4	2-1/2	858108-C6	85.20	
.125 (1/8)			.1250	.100	.875 (7x)	1/4	2-1/2	863308-C6	87.70	
.125 (1/8)			.1250	.100	1.000 (8x)	1/4	2-1/2	32108-C6	88.60	
.125 (1/8)			.1250	.100	1.250 (10x)	1/4	4	919208-C6	105.50	
.125 (1/8)			.1250	.100	1.500 (12x)	1/4	4	33908-C6	105.50	
.125 (1/8)			.1250	.100	1.875 (15x)	1/4	4	973308-C6	119.10	
D ₁ +.000" -.001"			L ₂ +.020" -.000" +.500mm -.000mm	L ₃ +.020" -.000" +.500mm -.000mm	D ₂ (h6)	L ₁	2 FL	PRICE	3 FL	PRICE
.140 (9/64)			.1406	.112	.220 (1.5x)	1/4	2-1/2	37909-C6	77.60	
.140 (9/64)			.1406	.112	.425 (3x)	1/4	2-1/2		813209-C6	77.60
.156 (5/32)			.1560	.125	.235 (1.5x)	1/4	2-1/2	37910-C6	73.60	
.156 (5/32)			.1560	.125	.470 (3x)	1/4	2-1/2	31510-C6	73.60	
.156 (5/32)			.1560	.125	.750 (5x)	1/4	2-1/2	38810-C6	83.50	
.187 (3/16)			.1870	.150	-	1/4	2-1/2	958412-C6	78.50	
.187 (3/16)			.1870	.150	.285 (1.5x)	1/4	2-1/2	37912-C6	73.60	
.187 (3/16)			.1870	.150	.570 (3x)	1/4	2-1/2	31512-C6	73.60	813212-C6 79.20
.187 (3/16)			.1870	.150	.750 (4x)	1/4	2-1/2	881612-C6	84.30	
.187 (3/16)			.1870	.150	1.000 (5x)	1/4	2-1/2	38812-C6	83.50	813012-C6 89.40
.187 (3/16)			.1870	.150	1.500 (8x)	1/4	4	32112-C6	97.80	
.187 (3/16)			.1870	.150	2.250 (12x)	1/4	4	33912-C6	119.10	
6.0 mm			.2362	4.80 mm	18.00 mm (3x)	6 mm	63 mm	882966-C6	79.50	
6.0 mm			.2362	4.80 mm	30.00 mm (5x)	6 mm	63 mm	881766-C6	90.60	

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END MILLS FOR HARDENED STEELS

Finishers – Ball (cont.)

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CUTTER DIAMETER			LENGTH OF CUT	OVERALL REACH	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO 2 FLUTE		AITIN NANO 3 FLUTE	
D ₁			L ₂	L ₃	D ₂ (h6)	L ₁	2 FL	PRICE	3 FL	PRICE
	+ .000" - .001"	+ .000mm - .018mm decimal equivalent								
.250 (1/4)		.2500	.200	-	1/4	2-1/2	958416-C6	78.50		
.250 (1/4)		.2500	.200	.375 (1.5x)	1/4	2-1/2	37916-C6	73.60		
.250 (1/4)		.2500	.200	.750 (3x)	1/4	2-1/2	31516-C6	83.50	813216-C6	89.40
.250 (1/4)		.2500	.200	1.000 (4x)	1/4	2-1/2	881616-C6	84.30		
.250 (1/4)		.2500	.200	1.250 (5x)	1/4	2-1/2	38816-C6	83.50	813016-C6	89.40
.250 (1/4)		.2500	.200	1.500 (6x)	1/4	3	858116-C6	90.70		
.250 (1/4)		.2500	.200	1.750 (7x)	1/4	3	863316-C6	91.50		
.250 (1/4)		.2500	.200	2.000 (8x)	1/4	4	32116-C6	98.70		
.312 (5/16)		.3120	.250	.470 (1.5x)	5/16	2-1/2	37920-C6	97.30		
.312 (5/16)		.3120	.250	1.000 (3x)	5/16	2-1/2	31520-C6	102.90		
.375 (3/8)		.3750	.300	.570 (1.5x)	3/8	2-1/2	37924-C6	103.70		
.375 (3/8)		.3750	.300	1.125 (3x)	3/8	2-1/2	31524-C6	109.40		
.375 (3/8)		.3750	.300	2.000 (5x)	3/8	4	38824-C6	123.50		

HARDENED STEELS

GUIDELINES FOR MILLING HARDENED STEELS

Rigid machining enhances tool life by centering and balancing tool holders, which minimizes vibration.

Mist or air coolant is recommended for material hardness of 45Rc or more.

Enter workpiece slowly by ramping or helical interpolation to avoid potential chipping or breakage.

Climb Milling will extend tool life and improve workpiece finish.

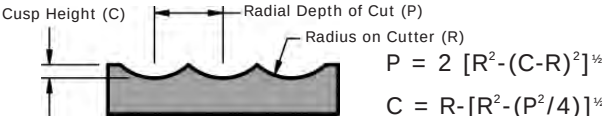
SPEEDS & FEEDS (End Mills for Hardened Steels – Ball)

Important Note:

Values in table are in inches and are based on 2 flute end mills. For end mills with more flutes, table values of IPT must be reduced (for 3 Flutes, reduce to 90%). For complete speeds and feeds charts, please see [www.harveytool.com](#).

Material Hardness	SFM	Chip Load Per Tooth (IPT) By Cutter Diameter												Depth of Cut		
		.015	.031	.047	.062	.078	.093	.125	.187	.250	.312	.375	.500	Radial*	Axial	
45-55 Rc	700	Finishing (.8x Reach)	.00028	.00058	.00088	.00116	.00146	.00174	.00234	.00350	.00468	.00584	.00702	.00936	.10 x Dia	.04 x Dia
		Finishing (1.5x Reach)	.00027	.00056	.00084	.00111	.00140	.00167	.00224	.00335	.00449	.00560	.00673	.00897	.10 x Dia	.04 x Dia
		Finishing (3x Reach)	.00026	.00053	.00081	.00106	.00134	.00160	.00215	.00321	.00429	.00535	.00644	.00858	.10 x Dia	.04 x Dia
		Finishing (4x Reach)	.00025	.00051	.00077	.00102	.00128	.00152	.00205	.00306	.00410	.00511	.00614	.00819	.10 x Dia	.04 x Dia
		Finishing (5x Reach)	.00023	.00048	.00073	.00097	.00122	.00145	.00195	.00292	.00390	.00487	.00585	.00780	.10 x Dia	.04 x Dia
		Finishing (6x Reach)	.00022	.00046	.00070	.00093	.00117	.00139	.00187	.00280	.00374	.00467	.00562	.00749	.10 x Dia	.03 x Dia
		Finishing (7x Reach)	.00022	.00044	.00067	.00089	.00112	.00133	.00179	.00268	.00359	.00448	.00538	.00718	.10 x Dia	.03 x Dia
		Finishing (8x Reach)	.00021	.00043	.00065	.00085	.00107	.00128	.00172	.00257	.00343	.00428	.00515	.00686	.10 x Dia	.03 x Dia
		Finishing (10x Reach)	.00019	.00039	.00059	.00077	.00097	.00116	.00156	.00233	.00312	.00389	.00468	.00624	.10 x Dia	.02 x Dia
		Finishing (12x Reach)	.00016	.00034	.00051	.00068	.00085	.00102	.00137	.00204	.00273	.00341	.00410	.00546	.08 x Dia	.02 x Dia
56-68 Rc	600	Finishing (15x Reach)	.00015	.00031	.00048	.00063	.00079	.00094	.00127	.00190	.00254	.00316	.00380	.00507	.08 x Dia	.01 x Dia
		Finishing (.8x Reach)	.00022	.00046	.00070	.00093	.00117	.00139	.00187	.00280	.00374	.00467	.00562	.00749	.07 x Dia	.04 x Dia
		Finishing (1.5x Reach)	.00022	.00044	.00067	.00089	.00112	.00133	.00179	.00268	.00359	.00448	.00538	.00718	.07 x Dia	.04 x Dia
		Finishing (3x Reach)	.00021	.00043	.00065	.00085	.00107	.00128	.00172	.00257	.00343	.00428	.00515	.00686	.07 x Dia	.04 x Dia
		Finishing (4x Reach)	.00020	.00041	.00062	.00081	.00102	.00122	.00164	.00245	.00328	.00409	.00491	.00655	.07 x Dia	.04 x Dia
		Finishing (5x Reach)	.00019	.00039	.00059	.00077	.00097	.00116	.00156	.00233	.00312	.00389	.00468	.00624	.07 x Dia	.04 x Dia
		Finishing (6x Reach)	.00018	.00037	.00056	.00074	.00093	.00111	.00150	.00224	.00300	.00374	.00449	.00599	.07 x Dia	.03 x Dia
		Finishing (7x Reach)	.00017	.00036	.00054	.00071	.00090	.00107	.00144	.00215	.00287	.00358	.00431	.00574	.07 x Dia	.03 x Dia
		Finishing (8x Reach)	.00016	.00034	.00052	.00068	.00086	.00102	.00137	.00205	.00275	.00343	.00412	.00549	.07 x Dia	.03 x Dia
		Finishing (10x Reach)	.00015	.00031	.00047	.00062	.00078	.00093	.00125	.00187	.00250	.00312	.00374	.00499	.07 x Dia	.02 x Dia
		Finishing (12x Reach)	.00013	.00027	.00041	.00054	.00068	.00081	.00109	.00163	.00218	.00273	.00328	.00437	.06 x Dia	.02 x Dia
		Finishing (15x Reach)	.00012	.00025	.00038	.00050	.00063	.00075	.00101	.00152	.00203	.00253	.00304	.00406	.06 x Dia	.01 x Dia

* Operator must consider proper Radial Depth of Cut since it relates directly to cusp height and part finish



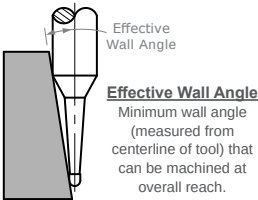
END MILLS FOR HARDENED STEELS

Finishers – Ball – Tapered Reach

HARDENED STEELS

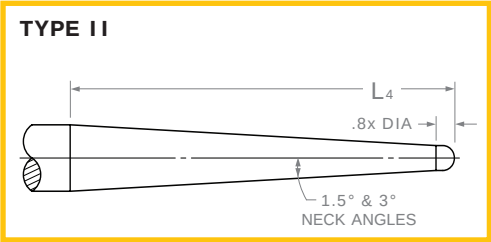
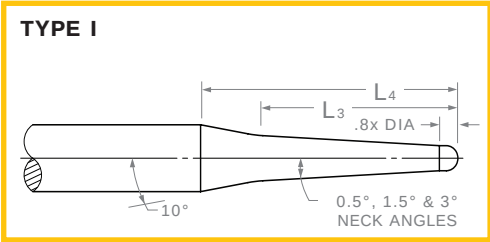


- **Designed to profile and finish hardened tool, die, and mold steels 46Rc to 68Rc**
- Solid tapered neck for increased rigidity and strength
- Select carbide grade for improved edge retention
- Latest generation AlTiN Nano coating offers superior hardness and heat resistance
- Geometry includes stub flute, large rigid core diameter, and eccentric relief
- Increased shank diameter to maintain strength and stiffness
- h6 shank tolerance for high precision tool holders
- 2 flutes
- Center cutting
- CNC ground in the USA



NECK ANGLE	CUTTER DIAMETER	LENGTH OF CUT	TYPE	TAPERED REACH	OVERALL REACH	EFFECTIVE WALL ANGLE	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
	D1 ^{+0.0000"} _{-.0006"}	L2 ^{+0.010"} _{-.000"}		L3	L4		D2 (h6)	L1	2 FL	PRICE
0.5°	.031 (1/32)	.025	I	.093	.757	8.4°	1/4	2-1/2	998703-C6	68.50
	.031 (1/32)	.025	I	.156	.817	7.8°	1/4	2-1/2	998706-C6	75.70
	.031 (1/32)	.025	I	.250	.906	7.0°	1/4	2-1/2	998709-C6	78.70
	.047 (3/64)	.038	I	.156	.772	7.7°	1/4	2-1/2	998712-C6	69.80
	.047 (3/64)	.038	I	.250	.862	6.9°	1/4	2-1/2	998715-C6	75.70
	.047 (3/64)	.038	I	.375	.981	6.1°	1/4	2-1/2	998718-C6	78.70
	.062 (1/16)	.050	I	.312	.879	6.4°	1/4	2-1/2	998721-C6	68.50
	.062 (1/16)	.050	I	.500	1.057	5.3°	1/4	2-1/2	998724-C6	75.70
	.062 (1/16)	.050	I	.750	1.295	4.3°	1/4	2-1/2	998727-C6	78.00
	.078 (5/64)	.062	I	.437	.953	5.4°	1/4	2-1/2	998730-C6	69.80
	.078 (5/64)	.062	I	.625	1.131	4.5°	1/4	2-1/2	998733-C6	75.70
	.078 (5/64)	.062	I	1.000	1.488	3.4°	1/4	3	998736-C6	86.30
	.093 (3/32)	.074	I	.500	.971	4.9°	1/4	2-1/2	998739-C6	68.50
	.093 (3/32)	.074	I	.750	1.208	3.9°	1/4	2-1/2	998742-C6	74.30
	.093 (3/32)	.074	I	1.125	1.565	3.0°	1/4	3	998745-C6	86.30
	.125 (1/8)	.100	I	.625	1.000	3.9°	1/4	2-1/2	998748-C6	74.00
	.125 (1/8)	.100	I	1.000	1.357	2.8°	1/4	2-1/2	998751-C6	74.80
	.125 (1/8)	.100	I	1.500	1.832	2.1°	1/4	3	998754-C6	87.50

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END MILLS FOR HARDENED STEELS

Finishers – Ball – Tapered Reach (cont.)

continued from previous page

NECK ANGLE	CUTTER DIAMETER	LENGTH OF CUT	TYPE	TAPERED REACH	OVERALL REACH	EFFECTIVE WALL ANGLE	SHANK DIAMETER	OVERALL LENGTH	AITiN NANO COATED	
	D ₁ ^{+0.000"} -0.006"	L ₂ ^{+0.010"} -0.000"		L ₃	L ₄		D ₂ (h6)	L ₁	2 FL	PRICE
1.5°	.031 (1/32)	.025	I	.250	.875	7.3°	1/4	2-1/2	997407-C6	75.70
	.031 (1/32)	.025	I	.500	1.088	5.9°	1/4	2-1/2	997414-C6	78.70
	.047 (3/64)	.038	I	.375	.938	6.4°	1/4	2-1/2	997421-C6	74.30
	.062 (1/16)	.050	I	.500	1.004	5.6°	1/4	2-1/2	997428-C6	74.30
	.062 (1/16)	.050	I	1.000	1.429	3.9°	1/4	3	997435-C6	86.30
	.078 (5/64)	.062	I	.625	1.066	4.8°	1/4	2-1/2	997442-C6	75.70
	.078 (5/64)	.062	I	1.250	1.599	3.2°	1/4	3	997449-C6	86.30
	.093 (3/32)	.074	I	.750	1.132	4.2°	1/4	2-1/2	997456-C6	74.30
	.093 (3/32)	.074	I	1.500	1.771	2.7°	1/4	3	997463-C6	86.30
	.125 (1/8)	.100	I	1.000	1.258	3.0°	1/4	2-1/2	997470-C6	76.30
	.125 (1/8)	.100	II	2.487	2.487	1.5°	1/4	4	997477-C6	86.70
3.0°	.031 (1/32)	.025	I	.312	.714	8.9°	1/4	2-1/2	994907-C6	78.30
	.031 (1/32)	.025	I	.750	1.067	6.0°	1/4	2-1/2	994914-C6	79.80
	.047 (3/64)	.038	I	.875	1.140	5.2°	1/4	2-1/2	994921-C6	78.30
	.047 (3/64)	.038	I	1.250	1.442	4.1°	1/4	3	994928-C6	87.10
	.062 (1/16)	.050	I	.875	1.114	5.0°	1/4	2-1/2	994935-C6	77.50
	.062 (1/16)	.050	II	1.844	1.844	3.0°	1/4	3	994942-C6	87.10
	.078 (5/64)	.062	I	1.125	1.288	4.0°	1/4	2-1/2	994949-C6	77.50
	.078 (5/64)	.062	II	1.703	1.703	3.0°	1/4	3	994956-C6	86.30
	.093 (3/32)	.074	I	1.000	1.162	4.1°	1/4	2-1/2	994963-C6	77.50
	.093 (3/32)	.074	II	1.572	1.572	3.0°	1/4	3	994970-C6	87.10
	.125 (1/8)	.100	II	1.293	1.293	2.9°	1/4	2-1/2	994977-C6	85.90
	.125 (1/8)	.100	II	2.485	2.485	3.0°	3/8	4	994984-C6	124.70

HARDENED STEELS



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END MILLS FOR HARDENED STEELS

Finishers – Corner Radius

HARDENED STEELS



- **Designed to profile and finish hardened tool, die, and mold steels 46Rc to 68Rc**
- Select carbide grade for improved edge retention
- Latest generation AlTiN Nano coating offers superior hardness and heat resistance
- Geometry includes stub flute, large rigid core diameter, and eccentric relief
- Increased shank diameter to maintain strength and stiffness
- h6 shank tolerance for high precision tool holders • Center cutting
- CNC ground in the USA



Reduced Neck Diameter to Avoid Heeling

CUTTER DIAMETER	CORNER RADIUS	LENGTH OF CUT	OVERALL REACH	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO 2 FLUTE		AITIN NANO 4 FLUTE	
D ₁ ^{+0.000"} _{-.0006"}	R ^{+0.0002"} _{-.0002"}	L ₂ ^{+0.010"} _{-.000"}	L ₃ ^{+0.010"} _{-.000"}	D ₂ (h6)	L ₁	2 FL	PRICE	4 FL	PRICE
.010	.002	.008	.015 (1.5x)	1/4	2-1/2	40210-C6	93.90		
.010	.002	.008	.031 (3x)	1/4	2-1/2	30610-C6	93.90		
.015 (1/64)	.002	.012	.023 (1.5x)	1/4	2-1/2	40215-C6	74.30	951415-C6	75.40
.015 (1/64)	.002	.012	.047 (3x)	1/4	2-1/2	30615-C6	74.30		
.015 (1/64)	.002	.012	.078 (5x)	1/4	2-1/2	40615-C6	83.00		
.015 (1/64)	.002	.012	.125 (8x)	1/4	2-1/2	31015-C6	84.30		
.015 (1/64)	.002	.012	.187 (12x)	1/4	2-1/2	33015-C6	99.30		
.020	.004	.016	.031 (1.5x)	1/4	2-1/2	40220-C6	74.30	951420-C6	75.40
.020	.004	.016	.062 (3x)	1/4	2-1/2	30620-C6	74.30	938720-C6	75.40
.020	.004	.016	.100 (5x)	1/4	2-1/2	40620-C6	80.30	996320-C6	81.50
.025	.004	.020	.038 (1.5x)	1/4	2-1/2	40225-C6	74.30		
.025	.004	.020	.075 (3x)	1/4	2-1/2	30625-C6	74.30		
.025	.004	.020	.125 (5x)	1/4	2-1/2	40625-C6	79.50		
.031 (1/32)	.005	.025	.047 (1.5x)	1/4	2-1/2	40231-C6	65.60	951431-C6	66.80
.031 (1/32)	.005	.025	.093 (3x)	1/4	2-1/2	30631-C6	64.90	938731-C6	66.20
.031 (1/32)	.005	.025	.156 (5x)	1/4	2-1/2	40631-C6	71.00	996331-C6	71.80
.031 (1/32)	.005	.025	.250 (8x)	1/4	2-1/2	31031-C6	75.10	999031-C6	76.40
.031 (1/32)	.005	.025	.375 (12x)	1/4	2-1/2	33031-C6	85.00		
.031 (1/32)	.005	.025	.470 (15x)	1/4	2-1/2	942431-C6	99.50		
.031 (1/32)	.010	.025	.093 (3x)	1/4	2-1/2	982631-C6	67.90		
.031 (1/32)	.010	.025	.156 (5x)	1/4	2-1/2	957431-C6	73.50		
.039 (1 mm)	.005	.031	.062 (1.5x)	1/4	2-1/2	40239-C6	64.90	951439-C6	66.80
.039 (1 mm)	.005	.031	.117 (3x)	1/4	2-1/2	30639-C6	65.60	938739-C6	66.80
.039 (1 mm)	.005	.031	.203 (5x)	1/4	2-1/2	40639-C6	70.30	996339-C6	71.80
.039 (1 mm)	.005	.031	.312 (8x)	1/4	2-1/2	31039-C6	75.10		
.039 (1 mm)	.005	.031	.468 (12x)	1/4	2-1/2	33039-C6	85.00		
.047 (3/64)	.008	.038	.071 (1.5x)	1/4	2-1/2	40247-C6	64.90		
.047 (3/64)	.008	.038	.141 (3x)	1/4	2-1/2	30647-C6	64.90	938747-C6	66.80
.047 (3/64)	.008	.038	.250 (5x)	1/4	2-1/2	40647-C6	70.30	996347-C6	71.80
.047 (3/64)	.008	.038	.375 (8x)	1/4	2-1/2	31047-C6	74.40	999047-C6	75.70
.047 (3/64)	.008	.038	.564 (12x)	1/4	2-1/2	33047-C6	85.00		
.047 (3/64)	.008	.038	.710 (15x)	1/4	2-1/2	942447-C6	99.50		

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END MILLS FOR HARDENED STEELS

Finishers – Corner Radius (cont.)

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CUTTER DIAMETER	CORNER RADIUS	LENGTH OF CUT	OVERALL REACH	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO 2 FLUTE		AITIN NANO 4 FLUTE	
D ₁ ^{+0.000"} _{-0.006"}	R ^{+0.0002"} _{-0.0002"}	L ₂ ^{+0.010"} _{-0.000"}	L ₃ ^{+0.010"} _{-0.000"}	D ₂ (h6)	L ₁	2 FL	PRICE	4 FL	PRICE
.062 (1/16)	.005	.050	.187 (3x)	1/4	2-1/2	893162-C6	64.90		
.062 (1/16)	.010	.050	-	1/4	2-1/2	870362-C6	64.00	862262-C6	65.10
.062 (1/16)	.010	.050	.093 (1.5x)	1/4	2-1/2	40262-C6	64.90	951462-C6	66.20
.062 (1/16)	.010	.050	.187 (3x)	1/4	2-1/2	30662-C6	64.90	938762-C6	66.20
.062 (1/16)	.010	.050	.250 (4x)	1/4	2-1/2	784162-C6	67.90	783762-C6	69.30
.062 (1/16)	.010	.050	.312 (5x)	1/4	2-1/2	40662-C6	70.30	996362-C6	71.80
.062 (1/16)	.010	.050	.375 (6x)	1/4	2-1/2	783362-C6	72.30	782562-C6	73.80
.062 (1/16)	.010	.050	.437 (7x)	1/4	2-1/2	782962-C6	73.60	782162-C6	74.90
.062 (1/16)	.010	.050	.500 (8x)	1/4	2-1/2	31062-C6	74.40	999062-C6	75.70
.062 (1/16)	.010	.050	.750 (12x)	1/4	4	33062-C6	95.50	924162-C6	96.70
.062 (1/16)	.010	.050	.950 (15x)	1/4	4	942462-C6	109.60		
.062 (1/16)	.020	.050	.187 (3x)	1/4	2-1/2	991562-C6	67.90		
.062 (1/16)	.020	.050	.312 (5x)	1/4	2-1/2	953162-C6	72.80		
.078 (5/64)	.010	.062	.117 (1.5x)	1/4	2-1/2	40278-C6	65.60		
.078 (5/64)	.010	.062	.234 (3x)	1/4	2-1/2	30678-C6	64.90	938778-C6	66.80
.078 (5/64)	.010	.062	.406 (5x)	1/4	2-1/2	40678-C6	70.30	996378-C6	71.80
.078 (5/64)	.010	.062	.625 (8x)	1/4	2-1/2	31078-C6	75.10	999078-C6	75.70
.078 (5/64)	.010	.062	.937 (12x)	1/4	4	33078-C6	95.50		
.093 (3/32)	.005	.074	.281 (3x)	1/4	2-1/2	893193-C6	65.60		
.093 (3/32)	.010	.074	.281 (3x)	1/4	2-1/2	982693-C6	65.60		
.093 (3/32)	.015	.074	-	1/4	2-1/2	850893-C6	64.00		
.093 (3/32)	.015	.074	.140 (1.5x)	1/4	2-1/2	40293-C6	64.90	951493-C6	66.80
.093 (3/32)	.015	.074	.281 (3x)	1/4	2-1/2	30693-C6	64.90	938793-C6	66.20
.093 (3/32)	.015	.074	.375 (4x)	1/4	2-1/2	783993-C6	67.90	783593-C6	69.30
.093 (3/32)	.015	.074	.500 (5x)	1/4	2-1/2	40693-C6	70.30	996393-C6	71.80
.093 (3/32)	.015	.074	.585 (6x)	1/4	2-1/2	783193-C6	72.30	782393-C6	73.80
.093 (3/32)	.015	.074	.670 (7x)	1/4	2-1/2	782793-C6	73.60	781993-C6	74.90
.093 (3/32)	.015	.074	.750 (8x)	1/4	2-1/2	31093-C6	75.10	999093-C6	75.70
.093 (3/32)	.015	.074	1.125 (12x)	1/4	4	33093-C6	95.50	924193-C6	96.70
.093 (3/32)	.030	.074	.281 (3x)	1/4	2-1/2	963393-C6	67.90		
.093 (3/32)	.030	.074	.500 (5x)	1/4	2-1/2	946393-C6	72.80		
.118 (3 mm)	.015	.094	.177 (1.5x)	1/4	2-1/2	40305-C6	70.30		
.118 (3 mm)	.015	.094	.354 (3x)	1/4	2-1/2	30705-C6	70.30		
.125 (1/8)	.005	.100	.375 (3x)	1/4	2-1/2	893208-C6	70.30		
.125 (1/8)	.010	.100	.375 (3x)	1/4	2-1/2	982708-C6	70.30		
.125 (1/8)	.015	.100	-	1/4	2-1/2	850908-C6	68.60		
.125 (1/8)	.015	.100	.187 (1.5x)	1/4	2-1/2	40308-C6	69.70	951508-C6	70.80
.125 (1/8)	.015	.100	.375 (3x)	1/4	2-1/2	30708-C6	69.70	938808-C6	70.80
.125 (1/8)	.015	.100	.500 (4x)	1/4	2-1/2	784008-C6	73.70	783608-C6	76.30
.125 (1/8)	.015	.100	.625 (5x)	1/4	2-1/2	40708-C6	76.40	996408-C6	83.50
.125 (1/8)	.015	.100	.750 (6x)	1/4	2-1/2	783208-C6	78.80	782408-C6	85.80
.125 (1/8)	.015	.100	.875 (7x)	1/4	2-1/2	782808-C6	80.40	782008-C6	87.10
.125 (1/8)	.015	.100	1.000 (8x)	1/4	2-1/2	31108-C6	81.00	999108-C6	88.80
.125 (1/8)	.015	.100	1.500 (12x)	1/4	4	33108-C6	102.20	924208-C6	110.10
.125 (1/8)	.030	.100	.375 (3x)	1/4	2-1/2	963408-C6	72.00		
.125 (1/8)	.030	.100	.625 (5x)	1/4	2-1/2	946408-C6	79.00	781808-C6	87.00

continued on next page

HARDENED STEELS

END MILLS FOR HARDENED STEELS

Finishers – Corner Radius (cont.)

continued from previous page

CUTTER DIAMETER	CORNER RADIUS	LENGTH OF CUT	OVERALL REACH	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO 2 FLUTE		AITIN NANO 4 FLUTE	
						2 FL	PRICE	4 FL	PRICE
D1 $\begin{smallmatrix} +.000" \\ -.001" \end{smallmatrix}$	R $\begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	L2 $\begin{smallmatrix} +.020" \\ -.000" \end{smallmatrix}$	L3 $\begin{smallmatrix} +.020" \\ -.000" \end{smallmatrix}$	D2 (h6)	L1				
.156 (5/32)	.015	.125	.235 (1.5x)	1/4	2-1/2	40310-C6	70.30		
.156 (5/32)	.015	.125	.470 (3x)	1/4	2-1/2	30710-C6	69.70		
.187 (3/16)	.015	.150	.285 (1.5x)	1/4	2-1/2	40312-C6	69.70	951512-C6	70.80
.187 (3/16)	.015	.150	.570 (3x)	1/4	2-1/2	30712-C6	69.70	938812-C6	70.80
.187 (3/16)	.015	.150	1.000 (5x)	1/4	2-1/2	40712-C6	76.40	996412-C6	83.50
.187 (3/16)	.015	.150	1.500 (8x)	1/4	4	31112-C6	92.20		
.187 (3/16)	.015	.150	2.250 (12x)	1/4	4	33112-C6	109.60		
.187 (3/16)	.060	.150	.570 (3x)	1/4	2-1/2	939212-C6	80.70	934412-C6	86.90
.250 (1/4)	.015	.200	.375 (1.5x)	1/4	2-1/2	40316-C6	69.70	951516-C6	70.80
.250 (1/4)	.015	.200	.750 (3x)	1/4	2-1/2	30716-C6	73.00	938816-C6	79.80
.250 (1/4)	.015	.200	1.000 (4x)	1/4	2-1/2	784016-C6	75.40	783616-C6	82.10
.250 (1/4)	.015	.200	1.250 (5x)	1/4	2-1/2	40716-C6	76.40	996416-C6	83.80
.250 (1/4)	.015	.200	2.000 (8x)	1/4	4	31116-C6	92.20		
.250 (1/4)	.030	.200	1.000 (3x)	1/4	2-1/2			750716-C6	82.10
.250 (1/4)	.060	.200	.750 (3x)	1/4	2-1/2	939216-C6	80.70	934416-C6	86.90
.312 (5/16)	.030	.250	1.000 (3x)	5/16	2-1/2			938820-C6	87.90
.375 (3/8)	.030	.300	.570 (1.5x)	3/8	2-1/2			951524-C6	98.50
.375 (3/8)	.030	.300	1.125 (3x)	3/8	2-1/2			938824-C6	101.60
.375 (3/8)	.030	.300	2.000 (5x)	3/8	4			996424-C6	106.50
.500 (1/2)	.030	.400	1.500 (3x)	1/2	3			938832-C6	128.20

HARDENED STEELS

GUIDELINES FOR MILLING HARDENED STEELS

- Rigid machining centers and balanced tool holders that minimize vibration and TIR will enhance tool life.
 - Mist or air coolant is recommended for material hardness of 45Rc or more.
- Enter workpiece slowly by ramping or helical interpolation to avoid potential chipping or breakage.
 - Climb Milling will extend tool life and improve workpiece finish.

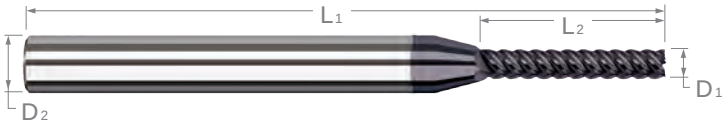
SPEEDS & FEEDS (End Mills for Hardened Steels – Corner Radius)

Important Note: Values in table are in inches and based on 2 flute end mills. For end mills with more flutes, table values of IPT must be reduced (for 4 flutes, reduce to 80%). For complete speeds and feeds charts, please see www.harveytool.com.

Material Hardness	SFM	Chip Load Per Tooth (IPT) By Cutter Diameter												Depth of Cut		
		.015	.031	.047	.062	.078	.093	.125	.187	.250	.312	.375	.500	Radial	Axial	
45-55 Rc	700	Finishing (0.8x Reach)	.00014	.00029	.00044	.00058	.00073	.00087	.00117	.00175	.00234	.00292	.00351	.00468	.35 x Dia	.02 x Dia
		Finishing (1.5x Reach)	.00013	.00028	.00042	.00056	.00070	.00083	.00112	.00168	.00224	.00280	.00336	.00449	.35 x Dia	.02 x Dia
		Finishing (3x Reach)	.00013	.00027	.00040	.00053	.00067	.00080	.00107	.00160	.00215	.00268	.00322	.00429	.35 x Dia	.02 x Dia
		Finishing (4x Reach)	.00013	.00025	.00039	.00050	.00064	.00077	.00103	.00153	.00205	.00255	.00308	.00410	.35 x Dia	.02 x Dia
		Finishing (5x Reach)	.00012	.00024	.00037	.00048	.00061	.00073	.00098	.00146	.00195	.00243	.00293	.00390	.35 x Dia	.02 x Dia
		Finishing (6x Reach)	.00012	.00023	.00036	.00046	.00059	.00070	.00094	.00140	.00187	.00233	.00281	.00374	.35 x Dia	.02 x Dia
		Finishing (7x Reach)	.00011	.00022	.00034	.00044	.00056	.00067	.00090	.00134	.00179	.00224	.00270	.00359	.35 x Dia	.02 x Dia
		Finishing (8x Reach)	.00010	.00021	.00032	.00043	.00054	.00064	.00086	.00128	.00172	.00214	.00257	.00343	.35 x Dia	.02 x Dia
		Finishing (12x Reach)	.00008	.00017	.00026	.00034	.00043	.00051	.00068	.00102	.00137	.00170	.00205	.00273	.35 x Dia	.01 x Dia
		Finishing (15x Reach)	.00008	.00016	.00024	.00031	.00040	.00047	.00063	.00095	.00127	.00158	.00190	.00254	.35 x Dia	.01 x Dia
56-68 Rc	600	Finishing (0.8x Reach)	.00011	.00023	.00035	.00046	.00058	.00070	.00094	.00140	.00187	.00234	.00281	.00374	.25 x Dia	.02 x Dia
		Finishing (1.5x Reach)	.00011	.00022	.00034	.00044	.00056	.00067	.00090	.00134	.00179	.00224	.00269	.00359	.25 x Dia	.02 x Dia
		Finishing (3x Reach)	.00010	.00021	.00032	.00043	.00054	.00064	.00086	.00128	.00172	.00214	.00257	.00343	.25 x Dia	.02 x Dia
		Finishing (4x Reach)	.00009	.00020	.00030	.00041	.00051	.00061	.00082	.00123	.00164	.00205	.00246	.00328	.25 x Dia	.02 x Dia
		Finishing (5x Reach)	.00009	.00019	.00029	.00039	.00049	.00058	.00078	.00117	.00156	.00195	.00234	.00312	.25 x Dia	.02 x Dia
		Finishing (6x Reach)	.00009	.00018	.00028	.00037	.00047	.00056	.00075	.00112	.00150	.00187	.00225	.00300	.25 x Dia	.02 x Dia
		Finishing (7x Reach)	.00008	.00017	.00027	.00036	.00045	.00053	.00072	.00108	.00144	.00179	.00215	.00287	.25 x Dia	.02 x Dia
		Finishing (8x Reach)	.00008	.00017	.00026	.00034	.00043	.00051	.00069	.00103	.00137	.00171	.00206	.00275	.25 x Dia	.02 x Dia
		Finishing (12x Reach)	.00007	.00014	.00021	.00027	.00034	.00041	.00055	.00082	.00109	.00136	.00164	.00218	.25 x Dia	.01 x Dia
		Finishing (15x Reach)	.00006	.00013	.00019	.00025	.00032	.00038	.00051	.00076	.00101	.00127	.00152	.00203	.25 x Dia	.01 x Dia

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square



Up to 7
Flutes!

- Optimized for titanium alloys, Inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Variable helix design (approx. 41°) reduces chatter and harmonics improving finish
- Large core and eccentric relief for improved tool life
- Latest generation AlTiN Nano coating offers superior hardness and heat resistance
- h6 shank tolerance for high precision tool holders
- End cutting (not center cutting) • Solid carbide • CNC ground in the USA

CUTTER DIAMETER	LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AlTiN NANO COATED	
D1 + .0005" - .0005" + .00 mm - .02 mm decimal equivalent	L2 + .010" - .000" + .25 mm - .00 mm		D2 (h6)	L1	TOOL #	PRICE
.2 mm .0078	.60 mm (3x)	4	4 mm	50 mm	967604-C6	60.40
.2 mm .0078	1.00 mm (5x)	4	4 mm	50 mm	974504-C6	69.40
.2 mm .0078	1.60 mm (8x)	4	4 mm	50 mm	976104-C6	71.20
.010 .0100	.030 (3x)	4	1/8	1-1/2	57810-C6	59.50
.010 .0100	.050 (5x)	4	1/8	2-1/2	62610-C6	68.30
.3 mm .0118	.90 mm (3x)	4	4 mm	50 mm	967606-C6	55.70
.015 (1/64) .0150	.023 (1.5x)	4	1/8	1-1/2	946115-C6	46.50
.015 (1/64) .0150	.045 (3x)	4	1/8	1-1/2	57815-C6	46.50
.015 (1/64) .0150	.062 (4x)	4	1/8	2-1/2	890115-C6	57.80
.015 (1/64) .0150	.078 (5x)	4	1/8	2-1/2	62615-C6	57.80
.015 (1/64) .0150	.125 (8x)	4	1/8	2-1/2	59015-C6	59.90
.015 (1/64) .0150	.156 (10x)	4	1/8	2-1/2	941815-C6	70.00
.4 mm .0157	1.20 mm (3x)	4	4 mm	50 mm	967609-C6	53.00
.4 mm .0157	2.00 mm (5x)	4	4 mm	50 mm	974509-C6	62.10
.4 mm .0157	3.20 mm (8x)	4	4 mm	50 mm	976109-C6	64.00
.5 mm .0196	1.50 mm (3x)	4	4 mm	50 mm	967611-C6	53.00
.5 mm .0196	2.50 mm (5x)	4	4 mm	50 mm	974511-C6	60.60
.5 mm .0196	4.00 mm (8x)	4	4 mm	50 mm	976111-C6	62.80
.020 .0200	.030 (1.5x)	4	1/8	1-1/2	946120-C6	45.60
.020 .0200	.060 (3x)	4	1/8	1-1/2	57820-C6	45.60
.020 .0200	.080 (4x)	4	1/8	2-1/2	890120-C6	57.50
.020 .0200	.100 (5x)	4	1/8	2-1/2	62620-C6	57.50
.020 .0200	.160 (8x)	4	1/8	2-1/2	59020-C6	59.70
.020 .0200	.200 (10x)	4	1/8	2-1/2	941820-C6	70.00
.6 mm .0236	1.80 mm (3x)	4	4 mm	50 mm	967613-C6	53.00
.6 mm .0236	3.00 mm (5x)	4	4 mm	50 mm	974513-C6	60.60
.6 mm .0236	4.80 mm (8x)	4	4 mm	50 mm	976113-C6	62.80
.025 .0250	.075 (3x)	4	1/8	1-1/2	57825-C6	42.80
.025 .0250	.125 (5x)	4	1/8	2-1/2	62625-C6	55.40
.025 .0250	.203 (8x)	4	1/8	2-1/2	59025-C6	57.70
.025 .0250	.250 (10x)	4	1/8	2-1/2	941825-C6	67.50
.7 mm .0275	2.10 mm (3x)	4	4 mm	50 mm	967615-C6	52.70
.030 .0300	.090 (3x)	6	1/8	1-1/2	57830-C6	42.80
.030 .0300	.156 (5x)	6	1/8	2-1/2	62630-C6	56.40

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HIGH TEMP ALLOYS

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square (cont.)

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CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁			L ₂		D ₂ (h6)	L ₁	TOOL #	PRICE
+ .0005" - .0005"	+ .00 mm - .02 mm	decimal equivalent	+ .010" - .000" + .25 mm - .00 mm					
.031 (1/32)		.0310	.047 (1.5x)	6	1/8	1-1/2	946131-C6	38.30
.031 (1/32)		.0310	.093 (3x)	6	1/8	1-1/2	57831-C6	38.30
.031 (1/32)		.0310	.125 (4x)	6	1/8	2-1/2	890131-C6	53.00
.031 (1/32)		.0310	.156 (5x)	6	1/8	2-1/2	62631-C6	53.00
.031 (1/32)		.0310	.187 (6x)	6	1/8	2-1/2	868531-C6	54.10
.031 (1/32)		.0310	.218 (7x)	6	1/8	2-1/2	881331-C6	54.10
.031 (1/32)		.0310	.250 (8x)	6	1/8	2-1/2	59031-C6	55.10
.031 (1/32)		.0310	.312 (10x)	6	1/8	2-1/2	941831-C6	64.60
.031 (1/31)		.0310	.375 (12x)	6	1/8	2-1/2	69131-C6	69.40
.8 mm		.0314	2.40 mm (3x)	6	4 mm	50 mm	967618-C6	47.10
.8 mm		.0314	4.00 mm (5x)	6	4 mm	50 mm	974518-C6	55.20
.8 mm		.0314	6.50 mm (8x)	6	4 mm	50 mm	976118-C6	56.90
.035		.0350	.105 (3x)	6	1/8	1-1/2	57835-C6	42.00
.035		.0350	.187 (5x)	6	1/8	2-1/2	62635-C6	43.60
.9 mm		.0354	2.70 mm (3x)	6	4 mm	50 mm	967620-C6	45.80
1.0 mm		.0393	1.50 mm (1.5x)	6	4 mm	50 mm	846722-C6	45.80
1.0 mm		.0393	3.00 mm (3x)	6	4 mm	50 mm	967622-C6	45.80
1.0 mm		.0393	4.00 mm (4x)	6	4 mm	50 mm	726422-C6	51.30
1.0 mm		.0393	5.00 mm (5x)	6	4 mm	50 mm	974522-C6	56.80
1.0 mm		.0393	8.00 mm (8x)	6	4 mm	50 mm	976122-C6	60.10
1.0 mm		.0393	10.00 mm (10x)	6	4 mm	50 mm	938322-C6	67.70
.040		.0400	.060 (1.5x)	6	1/8	1-1/2	946140-C6	38.30
.040		.0400	.120 (3x)	6	1/8	1-1/2	57840-C6	38.30
.040		.0400	.160 (4x)	6	1/8	2-1/2	890140-C6	54.00
.040		.0400	.203 (5x)	6	1/8	2-1/2	62640-C6	53.00
.040		.0400	.240 (6x)	6	1/8	2-1/2	868540-C6	54.60
.040		.0400	.325 (8x)	6	1/8	2-1/2	59040-C6	55.10
1.1 mm		.0433	3.00 mm (3x)	6	4 mm	50 mm	967624-C6	44.60
.045		.0450	.135 (3x)	6	1/8	1-1/2	57845-C6	42.00
.045		.0450	.225 (5x)	6	1/8	2-1/2	62645-C6	44.00
.047 (3/64)		.0470	.071 (1.5x)	6	1/8	1-1/2	946147-C6	39.30
.047 (3/64)		.0470	.141 (3x)	6	1/8	1-1/2	57847-C6	38.30
.047 (3/64)		.0470	.187 (4x)	6	1/8	2-1/2	890147-C6	53.00
.047 (3/64)		.0470	.250 (5x)	6	1/8	2-1/2	62647-C6	53.00
.047 (3/64)		.0470	.281 (6x)	6	1/8	2-1/2	868547-C6	54.10
.047 (3/64)		.0470	.328 (7x)	6	1/8	2-1/2	881347-C6	54.10
.047 (3/64)		.0470	.375 (8x)	6	1/8	2-1/2	59047-C6	55.10
.047 (3/64)		.0470	.480 (10x)	6	1/8	2-1/2	941847-C6	64.60
.047 (3/64)		.0470	.570 (12x)	6	1/8	2-1/2	69147-C6	70.00
1.2 mm		.0472	3.50 mm (3x)	6	4 mm	50 mm	967627-C6	46.30
1.2 mm		.0472	6.00 mm (5x)	6	4 mm	50 mm	974527-C6	57.30
1.2 mm		.0472	9.50 mm (8x)	6	4 mm	50 mm	976127-C6	60.10
.050		.0500	.075 (1.5x)	7	1/8	1-1/2	946150-C6	39.30
.050		.0500	.150 (3x)	7	1/8	1-1/2	57850-C6	38.30
.050		.0500	.250 (5x)	7	1/8	2-1/2	62650-C6	53.00
.050		.0500	.400 (8x)	7	1/8	2-1/2	59050-C6	55.10

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VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square (cont.)

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CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁ +.0005" -.0005"			L ₂ +.010" -.000" +.25 mm -.00 mm		D ₂ (h6)	L ₁	TOOL #	PRICE
	1.3 mm	.0511	4.00 mm (3x)	7	4 mm	50 mm	967629-C6	46.30
.055		.0550	.165 (3x)	7	1/8	1-1/2	57855-C6	41.40
.055		.0550	.275 (5x)	7	1/8	2-1/2	62655-C6	42.50
	1.4 mm	.0551	4.00 mm (3x)	7	4 mm	50 mm	967631-C6	45.80
	1.4 mm	.0551	7.00 mm (5x)	7	4 mm	50 mm	974531-C6	56.80
	1.4 mm	.0551	11.00 mm (8x)	7	4 mm	50 mm	976131-C6	60.10
	1.5 mm	.0590	2.20 mm (1.5x)	7	4 mm	50 mm	846733-C6	44.70
	1.5 mm	.0590	4.50 mm (3x)	7	4 mm	50 mm	967633-C6	44.70
	1.5 mm	.0590	7.50 mm (5x)	7	4 mm	50 mm	974533-C6	55.20
	1.5 mm	.0590	12.00 mm (8x)	7	4 mm	50 mm	976133-C6	58.40
	1.5 mm	.0590	15.00 mm (10x)	7	4 mm	50 mm	938333-C6	69.10
.060		.0600	.090 (1.5x)	7	1/8	1-1/2	946160-C6	37.80
.060		.0600	.180 (3x)	7	1/8	1-1/2	57860-C6	37.80
.060		.0600	.312 (5x)	7	1/8	2-1/2	62660-C6	48.90
.060		.0600	.500 (8x)	7	1/8	2-1/2	59060-C6	51.10
.062 (1/16)		.0620	.093 (1.5x)	7	1/8	1-1/2	946162-C6	37.80
.062 (1/16)		.0620	.186 (3x)	7	1/8	1-1/2	57862-C6	37.80
.062 (1/16)		.0620	.250 (4x)	7	1/8	2-1/2	890162-C6	50.00
.062 (1/16)		.0620	.312 (5x)	7	1/8	2-1/2	62662-C6	50.00
.062 (1/16)		.0620	.375 (6x)	7	1/8	2-1/2	868562-C6	51.20
.062 (1/16)		.0620	.437 (7x)	7	1/8	2-1/2	881362-C6	51.20
.062 (1/16)		.0620	.500 (8x)	7	1/8	2-1/2	59062-C6	52.00
.062 (1/16)		.0620	.625 (10x)	7	1/8	2-1/2	941862-C6	65.80
.062 (1/16)		.0620	.750 (12x)	7	1/8	2-1/2	69162-C6	74.60
.062 (1/16)		.0620	.950 (15x)	7	1/8	2-1/2	68762-C6	93.90
	1.6 mm	.0629	5.00 mm (3x)	7	4 mm	50 mm	967636-C6	44.70
	1.6 mm	.0629	8.00 mm (5x)	7	4 mm	50 mm	974536-C6	55.20
	1.6 mm	.0629	13.00 mm (8x)	7	4 mm	50 mm	976136-C6	58.40
	1.7 mm	.0669	5.00 mm (3x)	7	4 mm	50 mm	967638-C6	44.30
.070		.0700	.210 (3x)	7	1/8	1-1/2	57870-C6	35.70
.070		.0700	.375 (5x)	7	1/8	2-1/2	62670-C6	50.00
.070		.0700	.570 (8x)	7	1/8	2-1/2	59070-C6	52.00
	1.8 mm	.0708	5.50 mm (3x)	7	4 mm	50 mm	967640-C6	44.70
	1.8 mm	.0708	9.00 mm (5x)	7	4 mm	50 mm	974540-C6	55.20
	1.8 mm	.0708	14.00 mm (8x)	7	4 mm	50 mm	976140-C6	58.40
	1.9 mm	.0748	5.50 mm (3x)	7	4 mm	50 mm	967642-C6	44.70
.078 (5/64)		.0780	.117 (1.5x)	7	1/8	1-1/2	946178-C6	35.70
.078 (5/64)		.0780	.234 (3x)	7	1/8	1-1/2	57878-C6	35.70
.078 (5/64)		.0780	.312 (4x)	7	1/8	2-1/2	890178-C6	50.00
.078 (5/64)		.0780	.406 (5x)	7	1/8	2-1/2	62678-C6	50.00
.078 (5/64)		.0780	.475 (6x)	7	1/8	2-1/2	868578-C6	51.20
.078 (5/64)		.0780	.550 (7x)	7	1/8	2-1/2	881378-C6	51.20
.078 (5/64)		.0780	.625 (8x)	7	1/8	2-1/2	59078-C6	52.00
.078 (5/64)		.0780	.800 (10x)	7	1/8	2-1/2	941878-C6	65.80
.078 (5/64)		.0780	.940 (12x)	7	1/8	2-1/2	69178-C6	74.60
.078 (5/64)		.0780	1.187 (15x)	7	1/8	2-1/2	68778-C6	93.90

HIGH TEMP ALLOYS

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square (cont.)

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CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁			L ₂		D ₂ (h6)	L ₁	TOOL #	PRICE
+.0005"	+.00 mm	decimal	+.010"					
-.0005"	-.02 mm	equivalent	-.000"					
			+.25 mm					
			-.00 mm					
2.0 mm	.0787		3.00 mm (1.5x)	7	4 mm	50 mm	846745-C6	44.30
2.0 mm	.0787		6.00 mm (3x)	7	4 mm	50 mm	967645-C6	44.30
2.0 mm	.0787		10.00 mm (5x)	7	4 mm	50 mm	974545-C6	54.90
2.0 mm	.0787		16.00 mm (8x)	7	4 mm	50 mm	976145-C6	58.00
.080	.0800		.120 (1.5x)	7	1/8	1-1/2	946180-C6	38.50
.080	.0800		.240 (3x)	7	1/8	1-1/2	57880-C6	35.70
.080	.0800		.406 (5x)	7	1/8	2-1/2	62680-C6	50.90
.080	.0800		.650 (8x)	7	1/8	2-1/2	59080-C6	52.50
.090	.0900		.270 (3x)	7	1/8	1-1/2	57890-C6	36.40
.090	.0900		.450 (5x)	7	1/8	2-1/2	62690-C6	50.00
.090	.0900		.750 (8x)	7	1/8	2-1/2	59090-C6	52.50
.093 (3/32)	.0930		.074 (0.8x)	7	1/8	1-1/2	836593-C6	39.20
.093 (3/32)	.0930		.140 (1.5x)	7	1/8	1-1/2	946193-C6	35.70
.093 (3/32)	.0930		.279 (3x)	7	1/8	1-1/2	57893-C6	35.70
.093 (3/32)	.0930		.375 (4x)	7	1/8	2-1/2	890193-C6	50.00
.093 (3/32)	.0930		.500 (5x)	7	1/8	2-1/2	62693-C6	50.00
.093 (3/32)	.0930		.585 (6x)	7	1/8	2-1/2	868593-C6	51.20
.093 (3/32)	.0930		.670 (7x)	7	1/8	2-1/2	881393-C6	51.20
.093 (3/32)	.0930		.750 (8x)	7	1/8	2-1/2	59093-C6	52.00
.093 (3/32)	.0930		.950 (10x)	7	1/8	2-1/2	941893-C6	66.40
.093 (3/32)	.0930		1.125 (12x)	7	1/8	2-1/2	69193-C6	73.90
.093 (3/32)	.0930		1.400 (15x)	7	1/8	3	68793-C6	93.40
2.5 mm	.0984		7.50 mm (3x)	7	4 mm	50 mm	967651-C6	44.30
.100	.1000		.150 (1.5x)	7	1/8	1-1/2	960100-C6	36.60
.100	.1000		.300 (3x)	7	1/8	1-1/2	57900-C6	35.70
.100	.1000		.500 (5x)	7	1/8	2-1/2	62700-C6	50.00
.100	.1000		.800 (8x)	7	1/8	2-1/2	59100-C6	52.00
.109 (7/64)	.1090		.327 (3x)	7	1/8	1-1/2	57902-C6	35.70
.109 (7/64)	.1090		.570 (5x)	7	1/8	2-1/2	62702-C6	50.00
.109 (7/64)	.1090		.900 (8x)	7	1/8	2-1/2	59102-C6	54.60
3.0 mm	.1181		4.50 mm (1.5x)	7	4 mm	50 mm	846757-C6	44.70
3.0 mm	.1181		9.00 mm (3x)	7	4 mm	50 mm	967657-C6	44.30
3.0 mm	.1181		12.00 mm (4x)	7	4 mm	50 mm	773057-C6	44.70
3.0 mm	.1181		15.00 mm (5x)	7	4 mm	50 mm	974557-C6	45.70
3.0 mm	.1181		24.00 mm (8x)	7	4 mm	50 mm	976157-C6	50.10

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HIGH TEMP ALLOYS

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square (cont.)

continued from previous page

CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁			L ₂		D ₂ (h6)	L ₁	TOOL #	PRICE
+ .000" - .002"	+ .00 mm - .04 mm	decimal equivalent	+ .030" - .000" + .75 mm - .00 mm					
.125 (1/8)		.1250	.100 (0.8x)	7	1/8	1-1/2	836608-C6	37.90
.125 (1/8)		.1250	.187 (1.5x)	7	1/8	1-1/2	960108-C6	34.30
.125 (1/8)		.1250	.375 (3x)	7	1/8	1-1/2	57908-C6	33.60
.125 (1/8)		.1250	.500 (4x)	7	1/8	2-1/2	890208-C6	49.10
.125 (1/8)		.1250	.625 (5x)	7	1/8	2-1/2	62708-C6	49.10
.125 (1/8)		.1250	.750 (6x)	7	1/8	2-1/2	868608-C6	50.40
.125 (1/8)		.1250	.875 (7x)	7	1/8	2-1/2	881408-C6	50.40
.125 (1/8)		.1250	1.000 (8x)	7	1/8	2-1/2	59108-C6	51.20
.125 (1/8)		.1250	1.250 (10x)	7	1/8	2-1/2	941908-C6	65.10
.125 (1/8)		.1250	1.500 (12x)	7	1/8	3	69208-C6	74.00
.125 (1/8)		.1250	1.875 (15x)	7	1/8	3	68808-C6	95.70
.140 (9/64)		.1406	.220 (1.5x)	7	3/16	2	960109-C6	47.60
.140 (9/64)		.1406	.425 (3x)	7	3/16	2	57909-C6	47.10
.140 (9/64)		.1406	.750 (5x)	7	3/16	3	62709-C6	49.10
.140 (9/64)		.1406	1.125 (8x)	7	3/16	3	59109-C6	53.40
.156 (5/32)		.1562	.235 (1.5x)	7	3/16	2	960110-C6	38.80
.156 (5/32)		.1562	.470 (3x)	7	3/16	2	57910-C6	38.30
.156 (5/32)		.1562	.625 (4x)	7	3/16	3	890210-C6	39.10
.156 (5/32)		.1562	.750 (5x)	7	3/16	3	62710-C6	51.70
.156 (5/32)		.1562	1.250 (8x)	7	3/16	3	59110-C6	56.60
.187 (3/16)		.1875	.150 (0.8x)	7	3/16	2	836612-C6	42.50
.187 (3/16)		.1875	.285 (1.5x)	7	3/16	2	960112-C6	38.80
.187 (3/16)		.1875	.570 (3x)	7	3/16	2	57912-C6	38.30
.187 (3/16)		.1875	.750 (4x)	7	3/16	3	890212-C6	52.70
.187 (3/16)		.1875	1.000 (5x)	7	3/16	3	62712-C6	51.70
.187 (3/16)		.1875	1.156 (6x)	7	3/16	3	868612-C6	55.30
.187 (3/16)		.1875	1.312 (7x)	7	3/16	3	881412-C6	55.80
.187 (3/16)		.1875	1.500 (8x)	7	3/16	3	59112-C6	56.20
5.0 mm		.1968	25.00 mm (5x)	7	6 mm	63 mm	974564-C6	53.40
.218 (7/32)		.2187	.660 (3x)	7	1/4	2-1/2	57814-C6	51.90
.218 (7/32)		.2187	1.125 (5x)	7	1/4	4	62714-C6	65.80
6.0 mm		.2362	18.00 mm (3x)	7	6 mm	63 mm	967666-C6	50.30
6.0 mm		.2362	30.00 mm (5x)	7	6 mm	63 mm	974566-C6	53.40
.250 (1/4)		.2500	.200 (0.8x)	7	1/4	2-1/2	836616-C6	54.30
.250 (1/4)		.2500	.375 (1.5x)	7	1/4	2-1/2	960116-C6	50.60
.250 (1/4)		.2500	.750 (3x)	7	1/4	2-1/2	57916-C6	49.80
.250 (1/4)		.2500	1.000 (4x)	7	1/4	4	890216-C6	64.70
.250 (1/4)		.2500	1.250 (5x)	7	1/4	4	62716-C6	63.50
.250 (1/4)		.2500	1.500 (6x)	7	1/4	4	868616-C6	68.30
.250 (1/4)		.2500	1.750 (7x)	7	1/4	4	881416-C6	68.30
.250 (1/4)		.2500	2.000 (8x)	7	1/4	4	59116-C6	68.40
.312 (5/16)		.3125	.470 (1.5x)	7	5/16	2-1/2	960120-C6	69.70
.312 (5/16)		.3125	1.000 (3x)	7	5/16	2-1/2	57920-C6	67.40
.375 (3/8)		.3750	.570 (1.5x)	7	3/8	2-1/2	960124-C6	77.60
.375 (3/8)		.3750	1.125 (3x)	7	3/8	2-1/2	57924-C6	77.00
.375 (3/8)		.3750	2.000 (5x)	7	3/8	4	62724-C6	99.60
.500 (1/2)		.5000	.750 (1.5x)	7	1/2	3	960132-C6	101.70
.500 (1/2)		.5000	1.500 (3x)	7	1/2	3	57932-C6	101.70

HIGH TEMP ALLOYS

PLEASE SEE SPEEDS & FEEDS ON PAGE 158-159

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square (cont.)

HIGH TEMP ALLOYS

SPEEDS & FEEDS (Finishers for High Temp Alloys)														
Material	Hardness (HBn)	SFM	Chip Load Per Tooth (IPT) By Cutter Diameter										Depth of Cut	
			.015	.031	.047	.062	.078	.093	.125	.187	.250	Radial	Axial	
Stainless Steels: 40x, 41x, 42x, 43x, 44x, 13-8, 15-5, 15-7, 17-4, 17-7	275 - 300 300 - 350	400 350	Finishing (0.8x LOC)	.00013	.00026	.00040	.00053	.00066	.00079	.00106	.00158	.00212	< .10x Dia	.5x - 1.5x Dia
			Finishing (1.5x LOC)	.00012	.00024	.00036	.00048	.00060	.00072	.00096	.00144	.00193	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00011	.00022	.00033	.00043	.00055	.00065	.00088	.00131	.00175	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00010	.00021	.00031	.00042	.00052	.00062	.00084	.00125	.00167	< .10x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00008	.00016	.00025	.00033	.00041	.00049	.00066	.00098	.00131	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00007	.00015	.00022	.00030	.00037	.00044	.00060	.00089	.00119	< .07x Dia	.5x - 6x Dia
			Finishing (7x LOC)	.00006	.00013	.00020	.00026	.00032	.00039	.00052	.00078	.00104	< .05x Dia	.5x - 7x Dia
			Finishing (8x LOC)	.00006	.00012	.00018	.00024	.00030	.00036	.00048	.00072	.00096	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00011	.00017	.00023	.00028	.00034	.00046	.00068	.00091	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00011	.00016	.00022	.00027	.00033	.00044	.00065	.00088	< .04x Dia	.5x - 12x Dia
Finishing (15x LOC)	-	-	-	.00020	.00025	.00029	.00039	.00059	.00079	< .02x Dia	.5x - 15x Dia			
Tool Steels: D, H, M, T, S series	300 - 350	500	Finishing (0.8x LOC)	.00013	.00026	.00040	.00053	.00066	.00079	.00106	.00158	.00212	< .10x Dia	.5x - 1.5x Dia
			Finishing (1.5x LOC)	.00012	.00024	.00036	.00048	.00060	.00072	.00096	.00144	.00193	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00011	.00022	.00033	.00043	.00055	.00065	.00088	.00131	.00175	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00010	.00021	.00031	.00042	.00052	.00062	.00084	.00125	.00167	< .10x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00008	.00016	.00025	.00033	.00041	.00049	.00066	.00098	.00131	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00007	.00015	.00022	.00030	.00037	.00044	.00060	.00089	.00119	< .07x Dia	.5x - 6x Dia
			Finishing (7x LOC)	.00006	.00013	.00020	.00026	.00032	.00039	.00052	.00078	.00104	< .05x Dia	.5x - 7x Dia
			Finishing (8x LOC)	.00006	.00012	.00018	.00024	.00030	.00036	.00048	.00072	.00096	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00011	.00017	.00023	.00028	.00034	.00046	.00068	.00091	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00011	.00016	.00022	.00027	.00033	.00044	.00065	.00088	< .04x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00020	.00025	.00029	.00039	.00059	.00079	< .02x Dia	.5x - 15x Dia
	350 - 400	250	Finishing (0.8x LOC)	.00010	.00021	.00032	.00042	.00053	.00063	.00085	.00127	.00169	< .10x Dia	.5x - 1.5x Dia
			Finishing (1.5x LOC)	.00009	.00019	.00029	.00038	.00048	.00057	.00077	.00115	.00154	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00008	.00017	.00026	.00035	.00044	.00052	.00070	.00105	.00140	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00008	.00017	.00025	.00033	.00042	.00050	.00067	.00100	.00134	< .10x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00006	.00013	.00020	.00026	.00033	.00039	.00053	.00079	.00105	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00006	.00012	.00018	.00024	.00030	.00035	.00048	.00071	.00095	< .07x Dia	.5x - 6x Dia
			Finishing (7x LOC)	.00005	.00010	.00016	.00021	.00026	.00031	.00042	.00062	.00083	< .05x Dia	.5x - 7x Dia
			Finishing (8x LOC)	.00005	.00010	.00014	.00019	.00024	.00029	.00039	.00058	.00077	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00009	.00014	.00018	.00023	.00027	.00036	.00054	.00073	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00009	.00013	.00017	.00022	.00026	.00035	.00052	.00070	< .04x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00016	.00020	.00023	.00032	.00047	.00063	< .02x Dia	.5x - 15x Dia
	400 - 540	200	Finishing (0.8x LOC)	.00008	.00017	.00026	.00034	.00043	.00051	.00069	.00103	.00138	< .10x Dia	.5x - 1.5x Dia
			Finishing (1.5x LOC)	.00008	.00016	.00024	.00031	.00039	.00047	.00063	.00094	.00125	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00007	.00014	.00021	.00028	.00035	.00042	.00057	.00085	.00114	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00007	.00013	.00020	.00027	.00034	.00040	.00054	.00081	.00109	< .10x Dia	.5x - 5x Dia
			Finishing (5x LOC)	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00064	.00085	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00005	.00010	.00015	.00019	.00024	.00029	.00039	.00058	.00077	< .07x Dia	.5x - 6x Dia
			Finishing (7x LOC)	.00004	.00008	.00013	.00017	.00021	.00025	.00034	.00050	.00067	< .05x Dia	.5x - 7x Dia
			Finishing (8x LOC)	.00004	.00008	.00012	.00016	.00020	.00023	.00031	.00047	.00063	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00007	.00011	.00015	.00018	.00022	.00030	.00044	.00059	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00007	.00011	.00014	.00018	.00021	.00028	.00043	.00057	< .04x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00013	.00016	.00019	.00026	.00038	.00051	< .02x Dia	.5x - 15x Dia

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VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square (cont.)

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SPEEDS & FEEDS (Finishers for High Temp Alloys)														
Material	Hardness (HBn)	SFM	Chip Load Per Tooth (IPT) By Cutter Diameter										Depth of Cut	
			.015	.031	.047	.062	.078	.093	.125	.187	.250	Radial	Axial	
Titanium: All alloys	275 - 300 300 - 350	300 200	Finishing (0.8x LOC)	.00006	.00012	.00018	.00023	.00029	.00035	.00047	.00070	.00094	< .10x Dia	.5x - 1.5x Dia
			Finishing (1.5x LOC)	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00064	.00085	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00005	.00010	.00015	.00019	.00024	.00029	.00039	.00058	.00078	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00004	.00009	.00014	.00018	.00023	.00028	.00037	.00055	.00074	< .10x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00003	.00007	.00011	.00014	.00018	.00022	.00029	.00043	.00058	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00003	.00007	.00010	.00013	.00016	.00020	.00026	.00039	.00053	< .07x Dia	.5x - 6x Dia
			Finishing (7x LOC)	.00003	.00006	.00009	.00011	.00014	.00017	.00023	.00034	.00046	< .05x Dia	.5x - 7x Dia
			Finishing (8x LOC)	.00003	.00005	.00008	.00011	.00013	.00016	.00021	.00032	.00043	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00040	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00005	.00007	.00010	.00012	.00014	.00019	.00029	.00039	< .04x Dia	.5x - 12x Dia
	Finishing (15x LOC)	-	-	-	.00009	.00011	.00013	.00017	.00026	.00035	< .02x Dia	.5x - 15x Dia		
	350 - 400 400 - 425	150 100	Finishing (0.8x LOC)	.00005	.00009	.00014	.00019	.00023	.00028	.00038	.00056	.00075	< .10x Dia	.5x - 1.5x Dia
			Finishing (1.5x LOC)	.00004	.00008	.00013	.00017	.00021	.00025	.00034	.00051	.00068	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00004	.00008	.00012	.00015	.00019	.00023	.00031	.00046	.00062	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00004	.00007	.00011	.00015	.00019	.00022	.00030	.00044	.00059	< .10x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00003	.00006	.00009	.00012	.00015	.00017	.00023	.00035	.00047	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00003	.00005	.00008	.00010	.00013	.00016	.00021	.00032	.00042	< .07x Dia	.5x - 6x Dia
			Finishing (7x LOC)	.00002	.00005	.00007	.00009	.00011	.00014	.00018	.00028	.00037	< .05x Dia	.5x - 7x Dia
			Finishing (8x LOC)	.00002	.00004	.00006	.00008	.00011	.00013	.00017	.00026	.00034	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00004	.00006	.00008	.00010	.00012	.00016	.00024	.00032	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00004	.00006	.00008	.00010	.00012	.00016	.00023	.00031	< .04x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00007	.00009	.00010	.00014	.00021	.00028	< .02x Dia	.5x - 15x Dia
Nickel Alloys: Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy			275 - 300 300 - 350	150 100	Finishing (0.8x LOC)	.00002	.00005	.00007	.00010	.00012	.00015	.00020	.00029	.00039
	Finishing (1.5x LOC)	.00002			.00004	.00007	.00009	.00011	.00013	.00018	.00027	.00036	< .10x Dia	.5x - 1.5x Dia
	Finishing (3x LOC)	.00002			.00004	.00006	.00008	.00010	.00012	.00016	.00024	.00033	< .10x Dia	.5x - 3x Dia
	Finishing (4x LOC)	.00002			.00004	.00005	.00007	.00009	.00011	.00014	.00021	.00029	< .10x Dia	.5x - 4x Dia
	Finishing (5x LOC)	.00001			.00002	.00004	.00005	.00006	.00007	.00010	.00015	.00020	< .05x Dia	.5x - 5x Dia
	Finishing (6x LOC)	.00001			.00002	.00003	.00005	.00006	.00007	.00009	.00014	.00018	< .05x Dia	.5x - 6x Dia
	Finishing (7x LOC)	.00001			.00002	.00003	.00004	.00005	.00006	.00007	.00011	.00015	< .03x Dia	.5x - 7x Dia
	Finishing (8x LOC)	.00001			.00002	.00003	.00004	.00005	.00006	.00008	.00011	.00015	< .03x Dia	.5x - 8x Dia
	Finishing (10x LOC)	-			.00002	.00003	.00003	.00004	.00005	.00007	.00010	.00014	< .02x Dia	.5x - 10x Dia
	Finishing (12x LOC)	-			.00002	.00002	.00003	.00004	.00005	.00007	.00010	.00013	< .02x Dia	.5x - 12x Dia
	Finishing (15x LOC)	-	-	-	.00003	.00004	.00004	.00006	.00009	.00011	< .01x Dia	.5x - 15x Dia		
	350 - 400 400 - 425	80 60	Finishing (0.8x LOC)	.00002	.00004	.00006	.00008	.00010	.00012	.00016	.00024	.00031	< .10x Dia	.5x - 1.5x Dia
			Finishing (1.5x LOC)	.00002	.00004	.00005	.00007	.00009	.00011	.00014	.00021	.00029	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00002	.00003	.00005	.00006	.00008	.00010	.00013	.00019	.00026	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00001	.00003	.00004	.00006	.00007	.00009	.00011	.00017	.00023	< .10x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00001	.00002	.00003	.00004	.00005	.00006	.00008	.00012	.00016	< .05x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00001	.00002	.00003	.00004	.00005	.00005	.00007	.00011	.00015	< .05x Dia	.5x - 6x Dia
			Finishing (7x LOC)	.00001	.00001	.00002	.00003	.00004	.00004	.00006	.00009	.00012	< .03x Dia	.5x - 7x Dia
			Finishing (8x LOC)	.00001	.00002	.00002	.00003	.00004	.00005	.00006	.00009	.00012	< .03x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00001	.00002	.00003	.00003	.00004	.00006	.00008	.00011	< .02x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00001	.00002	.00003	.00003	.00004	.00005	.00008	.00010	< .02x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00002	.00003	.00003	.00005	.00007	.00009	< .01x Dia	.5x - 15x Dia

HIGH TEMP ALLOYS

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square – Long Reach



HIGH TEMP ALLOYS

- Optimized for titanium alloys, Inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Long reach design for deep cavities and increased rigidity
- Length of cut = 3x diameter
- Variable helix design (approx. 41°) reduces chatter and harmonics improving finish
- Large core and eccentric relief for improved tool life
- Latest generation AlTiN Nano coating offers superior hardness and heat resistance
- h6 shank tolerance for high precision tool holders
- Solid carbide

CUTTER DIAMETER			LENGTH OF CUT	OVERALL REACH	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITiN NANO COATED	
D ₁			L ₂	L ₃		D ₂ (h6)	L ₁	TOOL #	PRICE
+ .0005"	+ .00mm	decimal	+ .010"	+ .010"					
- .0005"	- .02mm	equivalent	- .000"	- .000"					
			+ .25mm	+ .25mm					
			- .00mm	- .00mm					
.015 (1/64)	.0150		.045	.078 (5x)	4	1/8	2-1/2	940715-C6	62.10
.015 (1/64)	.0150		.045	.125 (8x)	4	1/8	2-1/2	962115-C6	64.20
.015 (1/64)	.0150		.045	.187 (12x)	4	1/8	2-1/2	951815-C6	68.30
.020	.0200		.060	.160 (8x)	4	1/8	2-1/2	962120-C6	56.70
.025	.0250		.075	.203 (8x)	4	1/8	2-1/2	962125-C6	56.10
.031 (1/32)	.0310		.093	.156 (5x)	6	1/8	2-1/2	940731-C6	54.70
.031 (1/32)	.0310		.093	.187 (6x)	6	1/8	2-1/2	792531-C6	54.70
.031 (1/32)	.0310		.093	.250 (8x)	6	1/8	2-1/2	962131-C6	56.10
.031 (1/32)	.0310		.093	.312 (10x)	6	1/8	2-1/2	862831-C6	58.60
.031 (1/32)	.0310		.093	.375 (12x)	6	1/8	2-1/2	951831-C6	59.70
1.0 mm	.0393		3.00 mm	8.0 mm (8x)	6	4 mm	50 mm	924722-C6	57.20
.040	.0400		.120	.325 (8x)	6	1/8	2-1/2	962140-C6	56.70
.047 (3/64)	.0470		.141	.250 (5x)	6	1/8	2-1/2	940747-C6	54.70
.047 (3/64)	.0470		.141	.375 (8x)	6	1/8	2-1/2	962147-C6	56.10
.047 (3/64)	.0470		.141	.570 (12x)	6	1/8	2-1/2	951847-C6	59.70
.050	.0500		.150	.250 (5x)	7	1/8	2-1/2	940750-C6	54.70
.050	.0500		.150	.400 (8x)	7	1/8	2-1/2	962150-C6	56.10
1.5 mm	.0590		4.50 mm	12.0 mm (8x)	7	4 mm	50 mm	924733-C6	57.20
.060	.0600		.180	.500 (8x)	7	1/8	2-1/2	962160-C6	56.10
.062 (1/16)	.0620		.186	.312 (5x)	7	1/8	2-1/2	940762-C6	52.20
.062 (1/16)	.0620		.186	.375 (6x)	7	1/8	2-1/2	792562-C6	52.20
.062 (1/16)	.0620		.186	.500 (8x)	7	1/8	2-1/2	962162-C6	53.80
.062 (1/16)	.0620		.186	.625 (10x)	7	1/8	2-1/2	862862-C6	55.70
.062 (1/16)	.0620		.186	.750 (12x)	7	1/8	2-1/2	951862-C6	57.50
.070	.0700		.210	.570 (8x)	7	1/8	2-1/2	962170-C6	54.30
.078 (5/64)	.0780		.234	.406 (5x)	7	1/8	2-1/2	940778-C6	52.20
.078 (5/64)	.0780		.234	.625 (8x)	7	1/8	2-1/2	962178-C6	53.80
.078 (5/64)	.0780		.234	.940 (12x)	7	1/8	2-1/2	951878-C6	57.50
2.0 mm	.0787		6.00 mm	16.0 mm (8x)	7	4 mm	50 mm	924745-C6	54.90

continued on next page

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Square – Long Reach (cont.)

continued from previous page

CUTTER DIAMETER			LENGTH OF CUT	OVERALL REACH	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁			L ₂	L ₃		D ₂ (h6)	L ₁	TOOL #	PRICE
+ .0005" - .0005"	+ .00 mm - .02 mm	decimal equivalent							
.080		.0800	.240	.650	(8x)	7	1/8	2-1/2	962180-C6 54.30
.090		.0900	.270	.750	(8x)	7	1/8	2-1/2	962190-C6 54.30
.093 (3/32)		.0930	.279	.500	(5x)	7	1/8	2-1/2	940793-C6 52.20
.093 (3/32)		.0930	.279	.585	(6x)	7	1/8	2-1/2	792593-C6 52.70
.093 (3/32)		.0930	.279	.750	(8x)	7	1/8	2-1/2	962193-C6 53.80
.093 (3/32)		.0930	.279	.950	(10x)	7	1/8	2-1/2	862893-C6 56.20
.093 (3/32)		.0930	.279	1.125	(12x)	7	1/8	2-1/2	951893-C6 57.50
.100		.1000	.300	.800	(8x)	7	1/8	2-1/2	962200-C6 53.80
.109 (7/64)		.1094	.327	.570	(5x)	7	1/8	2-1/2	940802-C6 52.20
.109 (7/64)		.1094	.327	.900	(8x)	7	1/8	2-1/2	962202-C6 53.80
3.0 mm		.1181	9.00 mm	24.0 mm	(8x)	7	4 mm	50 mm	924757-C6 54.30

D ₁ ^{+ .000"} - .002"		L ₂ ^{+ .030"} - .000"		L ₃ ^{+ .030"} - .000"		D ₂ (h6)	L ₁	TOOL #	PRICE
.125 (1/8)	.1250	.375	.625 (5x)	7	1/8	2-1/2	940808-C6	50.50	
.125 (1/8)	.1250	.375	.750 (6x)	7	1/8	2-1/2	792608-C6	50.90	
.125 (1/8)	.1250	.375	1.000 (8x)	7	1/8	2-1/2	962208-C6	51.90	
.125 (1/8)	.1250	.375	1.250 (10x)	7	1/8	3	862908-C6	54.10	
.125 (1/8)	.1250	.375	1.500 (12x)	7	1/8	3	951908-C6	55.30	
.140 (9/64)	.1406	.425	.703 (5x)	7	3/16	3	940809-C6	54.30	
.140 (9/64)	.1406	.425	1.125 (8x)	7	3/16	3	962209-C6	55.80	
.156 (5/32)	.1562	.470	.750 (5x)	7	3/16	3	940810-C6	50.50	
.156 (5/32)	.1562	.470	1.250 (8x)	7	3/16	3	962210-C6	51.90	
.187 (3/16)	.1875	.570	1.000 (5x)	7	3/16	3	940812-C6	53.50	
.187 (3/16)	.1875	.570	1.500 (8x)	7	3/16	3	962212-C6	55.40	
.250 (1/4)	.2500	.750	1.250 (5x)	7	1/4	4	940816-C6	64.60	
.250 (1/4)	.2500	.750	2.000 (8x)	7	1/4	4	962216-C6	67.40	

PLEASE SEE SPEEDS & FEEDS ON PAGE 162



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HIGH TEMP ALLOYS

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

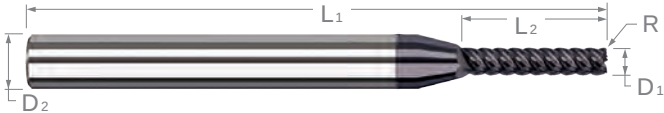
Finishers – Square – Long Reach (cont.)

HIGH TEMP ALLOYS

SPEEDS & FEEDS (Finishers – Long Reach for High Temp Alloys)														
Material	Hardness (HBn)	SFM	Chip Load Per Tooth (IPT) By Cutter Diameter										Depth of Cut	
			.015	.031	.047	.062	.078	.093	.125	.187	.250	Radial	Axial	
Stainless Steels: 40x, 41x, 42x, 43x, 44x, 13-8, 15-5, 15-7, 17-4, 17-7	275 - 300 300 - 350	400 350	Finishing (5x Reach)	.00009	.00020	.00030	.00039	.00049	.00059	.00079	.00118	.00158	< .10x Dia	.5x - 3x Dia
			Finishing (6x Reach)	.00009	.00018	.00028	.00037	.00046	.00055	.00074	.00111	.00148	< .07x Dia	.5x - 3x Dia
			Finishing (8x Reach)	.00008	.00016	.00025	.00032	.00041	.00049	.00065	.00098	.00131	< .07x Dia	.5x - 3x Dia
			Finishing (10x Reach)	.00007	.00015	.00023	.00031	.00039	.00046	.00062	.00093	.00124	< .05x Dia	.5x - 3x Dia
			Finishing (12x Reach)	.00007	.00015	.00022	.00029	.00037	.00044	.00059	.00088	.00118	< .05x Dia	.5x - 3x Dia
Tool Steels: D, H, M, T, S series	300 - 350	500	Finishing (5x Reach)	.00009	.00020	.00030	.00039	.00049	.00059	.00079	.00118	.00158	< .10x Dia	.5x - 3x Dia
			Finishing (6x Reach)	.00009	.00018	.00028	.00037	.00046	.00055	.00074	.00111	.00148	< .07x Dia	.5x - 3x Dia
			Finishing (8x Reach)	.00008	.00016	.00025	.00032	.00041	.00049	.00065	.00098	.00131	< .07x Dia	.5x - 3x Dia
			Finishing (10x Reach)	.00007	.00015	.00023	.00031	.00039	.00046	.00062	.00093	.00124	< .05x Dia	.5x - 3x Dia
			Finishing (12x Reach)	.00007	.00015	.00022	.00029	.00037	.00044	.00059	.00088	.00118	< .05x Dia	.5x - 3x Dia
	350 - 400	250	Finishing (5x Reach)	.00008	.00016	.00024	.00031	.00039	.00047	.00063	.00094	.00126	< .10x Dia	.5x - 3x Dia
			Finishing (6x Reach)	.00007	.00015	.00022	.00029	.00037	.00044	.00059	.00089	.00118	< .07x Dia	.5x - 3x Dia
			Finishing (8x Reach)	.00006	.00013	.00020	.00026	.00033	.00039	.00052	.00078	.00105	< .07x Dia	.5x - 3x Dia
			Finishing (10x Reach)	.00006	.00012	.00019	.00025	.00031	.00037	.00050	.00074	.00100	< .05x Dia	.5x - 3x Dia
			Finishing (12x Reach)	.00006	.00012	.00018	.00023	.00029	.00035	.00047	.00071	.00095	< .05x Dia	.5x - 3x Dia
	400 - 540	200	Finishing (5x Reach)	.00006	.00013	.00019	.00025	.00032	.00038	.00051	.00077	.00102	< .10x Dia	.5x - 3x Dia
			Finishing (6x Reach)	.00006	.00012	.00018	.00024	.00030	.00036	.00048	.00072	.00096	< .07x Dia	.5x - 3x Dia
			Finishing (8x Reach)	.00005	.00011	.00016	.00021	.00027	.00032	.00042	.00064	.00085	< .07x Dia	.5x - 3x Dia
			Finishing (10x Reach)	.00005	.00010	.00015	.00020	.00025	.00030	.00040	.00060	.00081	< .05x Dia	.5x - 3x Dia
			Finishing (12x Reach)	.00005	.00010	.00014	.00019	.00024	.00029	.00038	.00057	.00077	< .05x Dia	.5x - 3x Dia
Titanium: All alloys	275 - 300 300 - 350	300 200	Finishing (5x Reach)	.00004	.00009	.00013	.00017	.00022	.00026	.00035	.00052	.00070	< .10x Dia	.5x - 3x Dia
			Finishing (6x Reach)	.00004	.00008	.00012	.00016	.00020	.00024	.00033	.00049	.00066	< .07x Dia	.5x - 3x Dia
			Finishing (8x Reach)	.00003	.00007	.00011	.00014	.00018	.00022	.00029	.00043	.00058	< .07x Dia	.5x - 3x Dia
			Finishing (10x Reach)	.00003	.00007	.00010	.00014	.00017	.00020	.00028	.00041	.00055	< .05x Dia	.5x - 3x Dia
			Finishing (12x Reach)	.00003	.00006	.00010	.00013	.00016	.00019	.00026	.00039	.00052	< .05x Dia	.5x - 3x Dia
	350 - 400 400 - 425	150 100	Finishing (5x Reach)	.00003	.00007	.00010	.00014	.00017	.00021	.00028	.00042	.00056	< .10x Dia	.5x - 3x Dia
			Finishing (6x Reach)	.00003	.00007	.00010	.00013	.00016	.00020	.00026	.00039	.00052	< .07x Dia	.5x - 3x Dia
			Finishing (8x Reach)	.00003	.00006	.00009	.00011	.00014	.00017	.00023	.00035	.00046	< .07x Dia	.5x - 3x Dia
			Finishing (10x Reach)	.00003	.00005	.00008	.00011	.00014	.00016	.00022	.00033	.00044	< .05x Dia	.5x - 3x Dia
			Finishing (12x Reach)	.00003	.00005	.00008	.00010	.00013	.00016	.00021	.00031	.00042	< .05x Dia	.5x - 3x Dia
Nickel Alloys: Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	275 - 300 300 - 350	150 100	Finishing (5x Reach)	.00002	.00004	.00005	.00007	.00009	.00011	.00015	.00022	.00029	< .10x Dia	.5x - 3x Dia
			Finishing (6x Reach)	.00001	.00002	.00004	.00005	.00006	.00007	.00010	.00014	.00019	< .05x Dia	.5x - 3x Dia
			Finishing (8x Reach)	.00001	.00002	.00003	.00004	.00005	.00007	.00009	.00013	.00018	< .05x Dia	.5x - 3x Dia
			Finishing (10x Reach)	.00001	.00002	.00003	.00004	.00005	.00006	.00008	.00012	.00016	< .03x Dia	.5x - 3x Dia
			Finishing (12x Reach)	.00001	.00002	.00003	.00003	.00004	.00005	.00007	.00010	.00014	< .03x Dia	.5x - 3x Dia
	350 - 400 400 - 425	80 60	Finishing (5x Reach)	.00001	.00003	.00004	.00006	.00007	.00009	.00012	.00018	.00023	< .10x Dia	.5x - 3x Dia
			Finishing (6x Reach)	.00001	.00002	.00003	.00004	.00005	.00006	.00008	.00012	.00015	< .05x Dia	.5x - 3x Dia
			Finishing (8x Reach)	.00001	.00002	.00003	.00003	.00004	.00005	.00007	.00011	.00014	< .05x Dia	.5x - 3x Dia
			Finishing (10x Reach)	.00001	.00002	.00002	.00003	.00004	.00005	.00006	.00010	.00013	< .03x Dia	.5x - 3x Dia
			Finishing (12x Reach)	.00001	.00001	.00002	.00003	.00003	.00004	.00005	.00008	.00011	< .03x Dia	.5x - 3x Dia

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Corner Radius



- Optimized for titanium alloys, Inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Variable helix design (approx. 41°) reduces chatter and harmonics improving finish
- Latest generation AlTiN Nano coating offers superior hardness and heat resistance
- h6 shank tolerance for high precision tool holders
- End cutting (not center cutting)
- Solid carbide
- CNC ground in the USA

HIGH TEMP ALLOYS

CUTTER DIAMETER			CORNER RADIUS	LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AlTiN NANO COATED	
D ₁ +.0005" -.0005" +.00mm -.02mm decimal equivalent			R +.001" -.001" +.025mm -.025mm	L ₂ +.010" -.000" +.25mm -.25mm		D ₂ (h6)	L ₁	TOOL #	PRICE
.015 (1/64)		.0150	.003	.045 (3x)	4	1/8	1-1/2	775615-C6	43.50
.015 (1/64)		.0150	.003	.078 (5x)	4	1/8	2-1/2	774715-C6	58.60
.020		.0200	.003	.060 (3x)	4	1/8	1-1/2	775620-C6	43.50
.020		.0200	.003	.100 (5x)	4	1/8	2-1/2	774720-C6	58.60
.020		.0200	.005	.060 (3x)	4	1/8	1-1/2	873020-C6	43.50
.020		.0200	.005	.100 (5x)	4	1/8	1-1/2	874620-C6	58.00
.031 (1/32)		.0310	.005	.093 (3x)	6	1/8	1-1/2	873031-C6	41.00
.031 (1/32)		.0310	.005	.156 (5x)	6	1/8	2-1/2	874631-C6	55.90
.031 (1/32)		.0310	.010	.093 (3x)	6	1/8	1-1/2	882631-C6	41.40
.031 (1/32)		.0310	.010	.156 (5x)	6	1/8	2-1/2	885431-C6	56.40
1.0 mm		.0393	.10 mm	3.00 mm (3x)	6	4 mm	50 mm	749122-C6	43.30
1.0 mm		.0393	.10 mm	5.00 mm (5x)	6	4 mm	50 mm	748522-C6	58.40
.040		.0400	.005	.120 (3x)	6	1/8	1-1/2	873040-C6	41.40
.040		.0400	.010	.120 (3x)	6	1/8	1-1/2	882640-C6	56.40
.047 (3/64)		.0470	.005	.141 (3x)	6	1/8	1-1/2	873047-C6	41.00
.047 (3/64)		.0470	.005	.250 (5x)	6	1/8	2-1/2	874647-C6	56.40
.047 (3/64)		.0470	.010	.141 (3x)	6	1/8	1-1/2	882647-C6	41.00
.047 (3/64)		.0470	.010	.250 (5x)	6	1/8	2-1/2	885447-C6	56.40
.062 (1/16)		.0620	.005	.186 (3x)	7	1/8	1-1/2	873062-C6	40.80
.062 (1/16)		.0620	.005	.312 (5x)	7	1/8	2-1/2	874662-C6	53.50
.062 (1/16)		.0620	.010	.186 (3x)	7	1/8	1-1/2	882662-C6	40.80
.062 (1/16)		.0620	.010	.312 (5x)	7	1/8	2-1/2	885462-C6	53.50
.078 (5/64)		.0780	.005	.234 (3x)	7	1/8	1-1/2	873078-C6	38.90
.078 (5/64)		.0780	.005	.406 (5x)	7	1/8	2-1/2	874678-C6	53.50
.078 (5/64)		.0780	.010	.234 (3x)	7	1/8	1-1/2	882678-C6	39.30
.078 (5/64)		.0780	.010	.406 (5x)	7	1/8	2-1/2	885478-C6	53.50
2.0 mm		.0787	.20 mm	6.00 mm (3x)	7	4 mm	50 mm	748745-C6	43.30
2.0 mm		.0787	.20 mm	10.00 mm (5x)	7	4 mm	50 mm	747945-C6	58.40
.093 (3/32)		.0930	.005	.279 (3x)	7	1/8	1-1/2	873093-C6	38.90
.093 (3/32)		.0930	.005	.500 (5x)	7	1/8	2-1/2	874693-C6	53.50
.093 (3/32)		.0930	.010	.279 (3x)	7	1/8	1-1/2	882693-C6	38.90
.093 (3/32)		.0930	.010	.500 (5x)	7	1/8	2-1/2	885493-C6	53.50
.093 (3/32)		.0930	.020	.279 (3x)	7	1/8	1-1/2	774093-C6	39.30
3.0 mm		.1181	.20 mm	9.00 mm (3x)	7	4 mm	50 mm	748757-C6	43.30
3.0 mm		.1181	.20 mm	15.00 mm (5x)	7	4 mm	50 mm	747957-C6	58.40

continued on next page

VARIABLE HELIX END MILLS FOR HIGH TEMP ALLOYS

Finishers – Corner Radius (cont.)

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CUTTER DIAMETER		CORNER RADIUS	LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁ ^{+ .000"} _{– .002"}	decimal equivalent	R ^{+ .001"} _{– .001"}	L ₂ ^{+ .030"} _{– .000"}		D ₂ (h6)	L ₁	TOOL #	PRICE
.125 (1/8)	.1250	.005	.187 (1.5x)	7	1/8	1-1/2	872308-C6	34.50
.125 (1/8)	.1250	.005	.375 (3x)	7	1/8	1-1/2	873108-C6	34.50
.125 (1/8)	.1250	.005	.625 (5x)	7	1/8	2-1/2	874708-C6	37.30
.125 (1/8)	.1250	.010	.187 (1.5x)	7	1/8	1-1/2	880108-C6	34.50
.125 (1/8)	.1250	.010	.375 (3x)	7	1/8	1-1/2	882708-C6	34.50
.125 (1/8)	.1250	.010	.625 (5x)	7	1/8	2-1/2	885508-C6	37.30
.125 (1/8)	.1250	.015	.375 (3x)	7	1/8	1-1/2	813808-C6	34.50
.125 (1/8)	.1250	.020	.375 (3x)	7	1/8	1-1/2	774108-C6	34.50
.125 (1/8)	.1250	.030	.187 (1.5x)	7	1/8	1-1/2	890508-C6	35.50
.125 (1/8)	.1250	.030	.375 (3x)	7	1/8	1-1/2	892708-C6	34.50
.156 (5/32)	.1560	.005	.470 (3x)	7	3/16	2	873110-C6	38.60
.156 (5/32)	.1560	.010	.470 (3x)	7	3/16	2	882710-C6	38.60
.187 (3/16)	.1870	.005	.285 (1.5x)	7	3/16	2	872312-C6	38.80
.187 (3/16)	.1870	.005	.570 (3x)	7	3/16	2	873112-C6	38.60
.187 (3/16)	.1870	.010	.285 (1.5x)	7	3/16	2	880112-C6	39.90
.187 (3/16)	.1870	.010	.570 (3x)	7	3/16	2	882712-C6	38.60
.187 (3/16)	.1870	.015	.570 (3x)	7	3/16	2	813812-C6	38.60
.187 (3/16)	.1870	.020	.570 (3x)	7	3/16	2	774112-C6	38.60
.187 (3/16)	.1870	.030	.285 (1.5x)	7	3/16	2	890512-C6	39.20
.187 (3/16)	.1870	.030	.570 (3x)	7	3/16	2	892712-C6	38.60
.250 (1/4)	.2500	.005	.375 (1.5x)	7	1/4	2-1/2	872316-C6	50.00
.250 (1/4)	.2500	.005	.750 (3x)	7	1/4	2-1/2	873116-C6	49.70
.250 (1/4)	.2500	.010	.375 (1.5x)	7	1/4	2-1/2	880116-C6	50.50
.250 (1/4)	.2500	.010	.750 (3x)	7	1/4	2-1/2	882716-C6	49.70
.250 (1/4)	.2500	.010	1.250 (5x)	7	1/4	4	885516-C6	54.20
.250 (1/4)	.2500	.015	.750 (3x)	7	1/4	2-1/2	813816-C6	49.70
.250 (1/4)	.2500	.020	.750 (3x)	7	1/4	2-1/2	774116-C6	49.70
.250 (1/4)	.2500	.030	.375 (1.5x)	7	1/4	2-1/2	890516-C6	50.50
.250 (1/4)	.2500	.030	.750 (3x)	7	1/4	2-1/2	892716-C6	49.70

PLEASE SEE SPEEDS & FEEDS ON PAGE 158

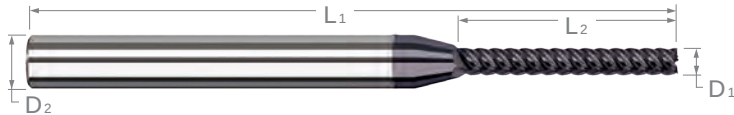


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VARIABLE HELIX END MILLS FOR MEDIUM ALLOY STEELS

Finishers – Square



◀ Down to .2 mm!

- Optimized for readily machinable medium alloy steels, stainless steels, and tool steels
- Multi-flute, high helix (approx. 44°), coated design improves finishing in carbon steels, 300 and 400 stainless steels, and machinable tool steels
- Can be used in light duty roughing and profiling applications
- AlTiN Nano coating offers superior hardness and heat resistance
- h6 shank tolerance for high precision tool holders
- End cutting (not center cutting)
- Solid carbide
- CNC ground in the USA

MEDIUM ALLOY STEELS

CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITiN NANO COATED	
D ₁			L ₂		D ₂ (h6)	L ₁	TOOL #	PRICE
+ .0005"	+ .00 mm	decimal						
– .0005"	– .02 mm	equivalent	+ .010"					
			– .000"					
			+ .25 mm					
			– .00 mm					
.010	.2 mm	.0078	.60 mm (3x)	4	4 mm	50 mm	977704-C6	56.70
	.2 mm	.0078	1.00 mm (5x)	4	4 mm	50 mm	980104-C6	65.60
	.2 mm	.0078	1.60 mm (8x)	4	4 mm	50 mm	981704-C6	67.20
	.3 mm	.0100	.050 (5x)	4	1/8	2-1/2	53310-C6	57.10
.015 (1/64)	.3 mm	.0118	.90 mm (3x)	4	4 mm	50 mm	977706-C6	52.40
	.015 (1/64)	.0150	.045 (3x)	4	1/8	1-1/2	24315-C6	46.00
	.015 (1/64)	.0150	.078 (5x)	4	1/8	2-1/2	53315-C6	57.10
	.015 (1/64)	.0150	.125 (8x)	4	1/8	2-1/2	62815-C6	58.30
.020	.4 mm	.0157	1.20 mm (3x)	4	4 mm	50 mm	977709-C6	49.90
	.4 mm	.0157	2.00 mm (5x)	4	4 mm	50 mm	980109-C6	58.30
	.4 mm	.0157	3.20 mm (8x)	4	4 mm	50 mm	981709-C6	60.30
	.5 mm	.0196	1.50 mm (3x)	4	4 mm	50 mm	977711-C6	49.20
.025	.5 mm	.0196	2.50 mm (5x)	4	4 mm	50 mm	980111-C6	56.70
	.5 mm	.0196	4.00 mm (8x)	4	4 mm	50 mm	981711-C6	59.30
	.020	.0200	.030 (1.5x)	4	1/8	1-1/2	935920-C6	45.20
	.020	.0200	.060 (3x)	4	1/8	1-1/2	24320-C6	44.80
.030	.020	.0200	.080 (4x)	4	1/8	1-1/2	835320-C6	47.20
	.020	.0200	.100 (5x)	4	1/8	2-1/2	53320-C6	56.10
	.020	.0200	.160 (8x)	4	1/8	2-1/2	62820-C6	57.80
	.6 mm	.0236	1.80 mm (3x)	4	4 mm	50 mm	977713-C6	49.20
.031 (1/32)	.6 mm	.0236	3.00 mm (5x)	4	4 mm	50 mm	980113-C6	57.20
	.6 mm	.0236	4.80 mm (8x)	4	4 mm	50 mm	981713-C6	59.30
	.025	.0250	.038 (1.5x)	4	1/8	1-1/2	935925-C6	42.10
	.025	.0250	.075 (3x)	4	1/8	1-1/2	24325-C6	42.10
.031 (1/32)	.025	.0250	.125 (5x)	4	1/8	2-1/2	53325-C6	54.30
	.025	.0250	.203 (8x)	4	1/8	2-1/2	62825-C6	55.50
	.7 mm	.0275	2.10 mm (3x)	4	4 mm	50 mm	977715-C6	49.20
	.030	.0300	.156 (5x)	5	1/8	2-1/2	53330-C6	52.70
.031 (1/32)	.031 (1/32)	.0310	.047 (1.5x)	5	1/8	1-1/2	935931-C6	37.10
	.031 (1/32)	.0310	.093 (3x)	5	1/8	1-1/2	24331-C6	37.10
	.031 (1/32)	.0310	.125 (4x)	5	1/8	2-1/2	835331-C6	52.20
	.031 (1/32)	.0310	.156 (5x)	5	1/8	2-1/2	53331-C6	52.20
.031 (1/32)	.031 (1/32)	.0310	.250 (8x)	5	1/8	2-1/2	62831-C6	53.70
	.031 (1/32)	.0310	.312 (10x)	5	1/8	2-1/2	882431-C6	61.50
	.031 (1/32)	.0310	.375 (12x)	5	1/8	2-1/2	68531-C6	65.60
	.8 mm	.0314	2.40 mm (3x)	5	4 mm	50 mm	977718-C6	42.90
.031 (1/32)	.8 mm	.0314	4.00 mm (5x)	5	4 mm	50 mm	980118-C6	54.00
	.8 mm	.0314	6.50 mm (8x)	5	4 mm	50 mm	981718-C6	55.60
	.9 mm	.0354	2.70 mm (3x)	5	4 mm	50 mm	977720-C6	42.90

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VARIABLE HELIX END MILLS FOR MEDIUM ALLOY STEELS

Finishers – Square (cont.)

continued from previous page

CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁			L ₂		D ₂ (h6)	L ₁	TOOL #	PRICE
+ .0005" - .0005"	+ .00mm - .02mm	decimal equivalent	+ .010" - .000" + .25mm - .00mm					
1.0 mm	.0393		1.50 mm (1.5x)	5	4 mm	50 mm	778522-C6	43.30
1.0 mm	.0393		3.00 mm (3x)	5	4 mm	50 mm	977722-C6	43.30
1.0 mm	.0393		5.00 mm (5x)	5	4 mm	50 mm	980122-C6	53.50
1.0 mm	.0393		8.00 mm (8x)	5	4 mm	50 mm	981722-C6	55.60
.040	.0400		.060 (1.5x)	5	1/8	1-1/2	935940-C6	37.40
.040	.0400		.120 (3x)	5	1/8	1-1/2	24340-C6	37.40
.040	.0400		.160 (4x)	5	1/8	2-1/2	835340-C6	52.20
.040	.0400		.203 (5x)	5	1/8	2-1/2	53340-C6	52.20
.040	.0400		.325 (8x)	5	1/8	2-1/2	62840-C6	53.20
1.1 mm	.0433		3.00 mm (3x)	5	4 mm	50 mm	977724-C6	43.30
.047 (3/64)	.0470		.071 (1.5x)	5	1/8	1-1/2	935947-C6	37.10
.047 (3/64)	.0470		.141 (3x)	5	1/8	1-1/2	24347-C6	37.10
.047 (3/64)	.0470		.187 (4x)	5	1/8	2-1/2	835347-C6	47.90
.047 (3/64)	.0470		.250 (5x)	5	1/8	2-1/2	53347-C6	52.20
.047 (3/64)	.0470		.375 (8x)	5	1/8	2-1/2	62847-C6	53.20
.047 (3/64)	.0470		.480 (10x)	5	1/8	2-1/2	882447-C6	61.50
.047 (3/64)	.0470		.570 (12x)	5	1/8	2-1/2	68547-C6	66.20
1.2 mm	.0472		3.50 mm (3x)	5	4 mm	50 mm	977727-C6	42.90
1.2 mm	.0472		6.00 mm (5x)	5	4 mm	50 mm	980127-C6	54.00
1.2 mm	.0472		9.50 mm (8x)	5	4 mm	50 mm	981727-C6	55.60
.050	.0500		.075 (1.5x)	5	1/8	1-1/2	935950-C6	37.80
.050	.0500		.150 (3x)	5	1/8	1-1/2	24350-C6	37.40
.050	.0500		.250 (5x)	5	1/8	2-1/2	53350-C6	52.20
.050	.0500		.400 (8x)	5	1/8	2-1/2	62850-C6	53.20
1.3 mm	.0511		4.00 mm (3x)	5	4 mm	50 mm	977729-C6	43.30
1.4 mm	.0551		4.00 mm (3x)	5	4 mm	50 mm	977731-C6	43.30
1.4 mm	.0551		7.00 mm (5x)	5	4 mm	50 mm	980131-C6	54.00
1.4 mm	.0551		11.00 mm (8x)	5	4 mm	50 mm	981731-C6	55.60
1.5 mm	.0590		4.50 mm (3x)	5	4 mm	50 mm	977733-C6	41.40
1.5 mm	.0590		7.50 mm (5x)	5	4 mm	50 mm	980133-C6	52.40
1.5 mm	.0590		12.00 mm (8x)	5	4 mm	50 mm	981733-C6	53.80
.060	.0600		.090 (1.5x)	5	1/8	1-1/2	935960-C6	37.80
.060	.0600		.180 (3x)	5	1/8	1-1/2	24360-C6	37.40
.060	.0600		.312 (5x)	5	1/8	2-1/2	53360-C6	52.20
.060	.0600		.500 (8x)	5	1/8	2-1/2	62860-C6	53.20
.062 (1/16)	.0620		.093 (1.5x)	5	1/8	1-1/2	935962-C6	34.90
.062 (1/16)	.0620		.186 (3x)	5	1/8	1-1/2	24362-C6	34.90
.062 (1/16)	.0620		.250 (4x)	5	1/8	2-1/2	835362-C6	48.70
.062 (1/16)	.0620		.312 (5x)	5	1/8	2-1/2	53362-C6	49.20
.062 (1/16)	.0620		.375 (6x)	5	1/8	2-1/2	778362-C6	49.20
.062 (1/16)	.0620		.437 (7x)	5	1/8	2-1/2	726262-C6	49.90
.062 (1/16)	.0620		.500 (8x)	5	1/8	2-1/2	62862-C6	49.90
.062 (1/16)	.0620		.625 (10x)	5	1/8	2-1/2	882462-C6	62.10
.062 (1/16)	.0620		.750 (12x)	5	1/8	2-1/2	68562-C6	70.00
.062 (1/16)	.0620		.950 (15x)	5	1/8	2-1/2	68962-C6	88.30
1.6 mm	.0629		5.00 mm (3x)	5	4 mm	50 mm	977736-C6	41.40
1.6 mm	.0629		8.00 mm (5x)	5	4 mm	50 mm	980136-C6	52.20
1.6 mm	.0629		13.00 mm (8x)	5	4 mm	50 mm	981736-C6	53.70
1.7 mm	.0669		5.00 mm (3x)	5	4 mm	50 mm	977738-C6	41.40

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MEDIUM ALLOY STEELS

NEW

VARIABLE HELIX END MILLS FOR MEDIUM ALLOY STEELS

Finishers – Square (cont.)

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CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁ +.0005" -.0005"			L ₂ +.010" -.000" +.25mm -.00mm		D ₂ (h6)	L ₁	TOOL #	PRICE
.070		.0700	.210 (3x)	5	1/8	1-1/2	24370-C6	35.20
.070		.0700	.375 (5x)	5	1/8	2-1/2	53370-C6	49.20
.070		.0700	.570 (8x)	5	1/8	2-1/2	62870-C6	50.40
1.8 mm		.0708	5.50 mm (3x)	5	4 mm	50 mm	977740-C6	41.80
1.8 mm		.0708	9.00 mm (5x)	5	4 mm	50 mm	980140-C6	52.40
1.8 mm		.0708	14.00 mm (8x)	5	4 mm	50 mm	981740-C6	54.30
1.9 mm		.0748	5.50 mm (3x)	5	4 mm	50 mm	977742-C6	41.80
.078 (5/64)		.0780	.117 (1.5x)	5	1/8	1-1/2	935978-C6	34.90
.078 (5/64)		.0780	.234 (3x)	5	1/8	1-1/2	24378-C6	34.90
.078 (5/64)		.0780	.312 (4x)	5	1/8	2-1/2	835378-C6	44.90
.078 (5/64)		.0780	.406 (5x)	5	1/8	2-1/2	53378-C6	49.20
.078 (5/64)		.0780	.475 (6x)	5	1/8	2-1/2	778378-C6	49.20
.078 (5/64)		.0780	.625 (8x)	5	1/8	2-1/2	62878-C6	49.90
.078 (5/64)		.0780	.800 (10x)	5	1/8	2-1/2	882478-C6	62.70
.078 (5/64)		.0780	.940 (12x)	5	1/8	2-1/2	68578-C6	70.00
.078 (5/64)		.0780	1.187 (15x)	5	1/8	2-1/2	68978-C6	89.10
2.0 mm		.0787	6.00 mm (3x)	5	4 mm	50 mm	977745-C6	41.40
2.0 mm		.0787	10.00 mm (5x)	5	4 mm	50 mm	980145-C6	51.90
2.0 mm		.0787	16.00 mm (8x)	5	4 mm	50 mm	981745-C6	54.30
.080		.0800	.120 (1.5x)	5	1/8	1-1/2	935980-C6	35.60
.080		.0800	.240 (3x)	5	1/8	1-1/2	24380-C6	35.20
.080		.0800	.406 (5x)	5	1/8	2-1/2	53380-C6	49.20
.080		.0800	.650 (8x)	5	1/8	2-1/2	62880-C6	50.40
.090		.0900	.270 (3x)	5	1/8	1-1/2	24390-C6	35.20
.090		.0900	.450 (5x)	5	1/8	2-1/2	53390-C6	49.20
.090		.0900	.750 (8x)	5	1/8	2-1/2	62890-C6	50.40
.093 (3/32)		.0930	.140 (1.5x)	5	1/8	1-1/2	935993-C6	34.90
.093 (3/32)		.0930	.279 (3x)	5	1/8	1-1/2	24393-C6	34.90
.093 (3/32)		.0930	.375 (4x)	5	1/8	2-1/2	835393-C6	48.70
.093 (3/32)		.0930	.500 (5x)	5	1/8	2-1/2	53393-C6	49.20
.093 (3/32)		.0930	.585 (6x)	5	1/8	2-1/2	778393-C6	49.20
.093 (3/32)		.0930	.750 (8x)	5	1/8	2-1/2	62893-C6	49.90
.093 (3/32)		.0930	.950 (10x)	5	1/8	2-1/2	882493-C6	62.10
.093 (3/32)		.0930	1.125 (12x)	5	1/8	2-1/2	68593-C6	70.70
.093 (3/32)		.0930	1.400 (15x)	5	1/8	3	68993-C6	89.80
2.5 mm		.0984	7.50 mm (3x)	5	4 mm	50 mm	977751-C6	41.40
2.5 mm		.0984	12.00 mm (5x)	5	4 mm	50 mm	980151-C6	52.00
.100		.1000	.150 (1.5x)	5	1/8	1-1/2	936000-C6	35.60
.100		.1000	.300 (3x)	5	1/8	1-1/2	24399-C6	35.20
.100		.1000	.500 (5x)	5	1/8	2-1/2	53399-C6	49.20
.100		.1000	.800 (8x)	5	1/8	2-1/2	53400-C6	50.40
.109 (7/64)		.1090	.327 (3x)	5	1/8	1-1/2	24402-C6	35.40
.109 (7/64)		.1090	.570 (5x)	5	1/8	2-1/2	63502-C6	49.20
3.0 mm		.1181	9.00 mm (3x)	5	4 mm	50 mm	977757-C6	41.40
3.0 mm		.1181	15.00 mm (5x)	5	4 mm	50 mm	980157-C6	51.50
3.0 mm		.1181	24.00 mm (8x)	5	4 mm	50 mm	981757-C6	54.00

continued on next page

MEDIUM ALLOY STEELS

VARIABLE HELIX END MILLS FOR MEDIUM ALLOY STEELS

Finishers – Square (cont.)

continued from previous page

CUTTER DIAMETER		LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN NANO COATED	
D ₁ ^{+ .000"} - .002"	decimal equivalent	L ₂ ^{+ .030"} - .000"		D ₂ (h6)	L ₁	TOOL #	PRICE
.125 (1/8)	.1250	.187 (1.5x)	5	1/8	1-1/2	936008-C6	31.00
.125 (1/8)	.1250	.375 (3x)	5	1/8	1-1/2	795408-C6	31.30
.125 (1/8)	.1250	.500 (4x)	5	1/8	1-1/2	24408-C6	31.00
.125 (1/8)	.1250	.625 (5x)	5	1/8	2-1/2	776908-C6	47.60
.125 (1/8)	.1250	.750 (6x)	5	1/8	2-1/2	63508-C6	47.60
.125 (1/8)	.1250	.875 (7x)	5	1/8	2-1/2	726308-C6	49.20
.125 (1/8)	.1250	1.000 (8x)	5	1/8	2-1/2	53408-C6	49.20
.125 (1/8)	.1250	1.125 (10x)	5	1/8	2-1/2	882508-C6	61.10
.125 (1/8)	.1250	1.500 (12x)	5	1/8	3	68608-C6	69.70
.125 (1/8)	.1250	1.875 (15x)	5	1/8	3	69008-C6	87.90
.140 (9/64)	.1406	.500 (3x)	5	3/16	2	24409-C6	46.50
.140 (9/64)	.1406	.750 (5x)	5	3/16	3	63509-C6	48.50
.156 (5/32)	.1562	.235 (1.5x)	5	3/16	2	936010-C6	38.50
.156 (5/32)	.1562	.562 (3x)	5	3/16	2	24410-C6	38.20
.156 (5/32)	.1562	.625 (4x)	5	3/16	3	835410-C6	51.20
.156 (5/32)	.1562	.875 (5x)	5	3/16	3	63510-C6	51.70
.156 (5/32)	.1562	1.250 (8x)	5	3/16	3	53410-C6	52.50
.187 (3/16)	.1875	.285 (1.5x)	5	3/16	2	936012-C6	35.60
.187 (3/16)	.1875	.625 (3x)	5	3/16	2	24412-C6	35.60
.187 (3/16)	.1875	.750 (4x)	5	3/16	3	835412-C6	46.20
.187 (3/16)	.1875	1.000 (5x)	5	3/16	3	63512-C6	51.70
.187 (3/16)	.1875	1.500 (8x)	5	3/16	3	53412-C6	52.50
.250 (1/4)	.2500	.375 (1.5x)	5	1/4	2-1/2	936016-C6	45.30
.250 (1/4)	.2500	.750 (3x)	5	1/4	2-1/2	24416-C6	45.30
.250 (1/4)	.2500	1.250 (5x)	5	1/4	4	63516-C6	63.10
.250 (1/4)	.2500	2.000 (8x)	5	1/4	4	53416-C6	64.30
.375 (3/8)	.3750	1.125 (3x)	5	3/8	2-1/2	24424-C6	72.10
.500 (1/2)	.5000	.750 (1.5x)	5	1/2	3	936032-C6	96.90
.500 (1/2)	.5000	1.500 (3x)	5	1/2	3	24432-C6	93.80
.500 (1/2)	.5000	2.625 (5x)	5	1/2	4	63532-C6	104.40

PLEASE SEE SPEEDS & FEEDS ON PAGE 186

MEDIUM ALLOY STEELS

VARIABLE HELIX END MILLS FOR MEDIUM ALLOY STEELS

Finishers

MEDIUM ALLOY STEELS

SPEEDS & FEEDS (High-Helix Finishers for Medium Alloy Steels)														
Material	Hardness (HbN)	SFM	Chip Load Per Tooth (IPT) By Cutter Diameter										Depth of Cut	
				.015	.031	.047	.062	.078	.093	.125	.187	.250	Radial	Axial
Carbon Steels: 1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xxx & 50Lxxx, 51xxx & 51Lxxx, 52xxx & 52Lxxx, 6xxx, 8xxx, 9xxx	225 - 250 250 - 275	600 550	Finishing (1.5x LOC)	.00020	.00041	.00062	.00082	.00103	.00123	.00165	.00247	.00330	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00018	.00037	.00056	.00074	.00094	.00112	.00150	.00224	.00300	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00016	.00032	.00049	.00065	.00081	.00097	.00131	.00195	.00261	< .09x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00014	.00028	.00042	.00056	.00070	.00084	.00113	.00168	.00225	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00011	.00023	.00035	.00047	.00059	.00070	.00094	.00140	.00188	< .07x Dia	.5x - 5x Dia
			Finishing (8x LOC)	.00010	.00020	.00031	.00041	.00051	.00061	.00083	.00123	.00165	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00019	.00029	.00039	.00049	.00058	.00078	.00117	.00156	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00019	.00028	.00037	.00047	.00056	.00075	.00112	.00150	< .04x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00033	.00042	.00050	.00068	.00101	.00135	< .02x Dia	.5x - 15x Dia
	275 - 300	500	Finishing (1.5x LOC)	.00018	.00038	.00057	.00075	.00094	.00113	.00151	.00226	.00303	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00017	.00034	.00052	.00068	.00086	.00102	.00138	.00206	.00275	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00014	.00030	.00045	.00059	.00075	.00089	.00120	.00179	.00239	< .09x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00012	.00026	.00039	.00051	.00064	.00077	.00103	.00154	.00206	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00010	.00021	.00032	.00043	.00054	.00064	.00086	.00129	.00172	< .07x Dia	.5x - 5x Dia
			Finishing (8x LOC)	.00009	.00019	.00028	.00038	.00047	.00056	.00076	.00113	.00151	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00018	.00027	.00035	.00045	.00053	.00072	.00107	.00143	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00017	.00026	.00034	.00043	.00051	.00069	.00103	.00138	< .04x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00031	.00039	.00046	.00062	.00093	.00124	< .02x Dia	.5x - 15x Dia
Stainless Steels: 201, 202, 203, 205, 301, 302, 304, 304L, 308, 309, 310, 314, 316, 316L, 317, 321, 329, 330, 347, 348, 385, 403, 405, 409, 410, 413, 414, 42x, 43x, 44x, 501, 502 Tool Steels: A, L, O, P, W series	225 - 250 250 - 275	500 500	Finishing (1.5x LOC)	.00017	.00034	.00052	.00068	.00086	.00102	.00138	.00206	.00275	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00015	.00031	.00047	.00062	.00078	.00093	.00125	.00187	.00250	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00013	.00027	.00041	.00054	.00068	.00081	.00109	.00163	.00218	< .09x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00011	.00023	.00035	.00047	.00059	.00070	.00094	.00140	.00188	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00009	.00019	.00029	.00039	.00049	.00058	.00078	.00117	.00156	< .07x Dia	.5x - 5x Dia
			Finishing (8x LOC)	.00008	.00017	.00026	.00034	.00043	.00051	.00069	.00103	.00138	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00016	.00024	.00032	.00041	.00048	.00065	.00097	.00130	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00014	.00021	.00028	.00035	.00042	.00056	.00084	.00113	< .04x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00028	.00035	.00042	.00056	.00084	.00113	< .02x Dia	.5x - 15x Dia
	275 - 300 300 - 350	500 500	Finishing (1.5x LOC)	.00015	.00031	.00047	.00061	.00077	.00092	.00124	.00185	.00248	< .10x Dia	.5x - 1.5x Dia
			Finishing (3x LOC)	.00014	.00028	.00042	.00056	.00070	.00084	.00113	.00168	.00225	< .10x Dia	.5x - 3x Dia
			Finishing (4x LOC)	.00012	.00024	.00037	.00049	.00061	.00073	.00098	.00146	.00196	< .09x Dia	.5x - 4x Dia
			Finishing (5x LOC)	.00010	.00021	.00032	.00042	.00053	.00063	.00084	.00126	.00169	< .07x Dia	.5x - 5x Dia
			Finishing (6x LOC)	.00008	.00017	.00026	.00035	.00044	.00052	.00070	.00105	.00141	< .07x Dia	.5x - 5x Dia
			Finishing (8x LOC)	.00007	.00015	.00023	.00031	.00039	.00046	.00062	.00093	.00124	< .05x Dia	.5x - 8x Dia
			Finishing (10x LOC)	-	.00015	.00022	.00029	.00037	.00044	.00059	.00088	.00117	< .04x Dia	.5x - 10x Dia
			Finishing (12x LOC)	-	.00014	.00021	.00028	.00035	.00042	.00056	.00084	.00113	< .04x Dia	.5x - 12x Dia
			Finishing (15x LOC)	-	-	-	.00025	.00032	.00038	.00051	.00076	.00101	< .02x Dia	.5x - 15x Dia

VARIABLE HELIX END MILLS FOR FREE MACHINING STEELS

Finishers – Square



- Optimized for free machining varieties of carbon steels and stainless steels
- Variable helix design (approx. 47°) reduces chatter and harmonics, improving finish
- High helix for effective chip evacuation
- h6 shank tolerance for high precision tool holders
- End cutting (not center cutting)
- Solid carbide
- CNC ground in the USA

CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AISI 316 COATED	
D1			L2		D2 (h6)	L1	TOOL #	PRICE
+ .0005"	+ .00mm	decimal	+ .010"					
- .0005"	- .02mm	equivalent	- .000"					
			+ .25mm					
			- .00mm					
.015 (1/64)		.0150	.045 (3x)	4	1/8	1-1/2	967815-C3	46.00
.015 (1/64)		.0150	.078 (5x)	4	1/8	2-1/2	972415-C3	56.50
.015 (1/64)		.0150	.125 (8x)	4	1/8	2-1/2	983615-C3	57.80
.020		.0200	.060 (3x)	4	1/8	1-1/2	967820-C3	45.20
.020		.0200	.100 (5x)	4	1/8	2-1/2	972420-C3	56.70
.025		.0250	.075 (3x)	4	1/8	1-1/2	967825-C3	42.50
.025		.0250	.125 (5x)	4	1/8	2-1/2	972425-C3	54.30
.031 (1/32)		.0310	.047 (1.5x)	5	1/8	1-1/2	935131-C3	37.40
.031 (1/32)		.0310	.093 (3x)	5	1/8	1-1/2	967831-C3	37.40
.031 (1/32)		.0310	.156 (5x)	5	1/8	2-1/2	972431-C3	52.20
.031 (1/32)		.0310	.250 (8x)	5	1/8	2-1/2	983631-C3	53.20
1.0 mm		.0393	3.00 mm (3x)	5	4 mm	50 mm	921922-C3	43.30
1.0 mm		.0393	5.00 mm (5x)	5	4 mm	50 mm	916422-C3	54.00
.040		.0400	.120 (3x)	5	1/8	1-1/2	967840-C3	38.50
.040		.0400	.203 (5x)	5	1/8	2-1/2	972440-C3	53.40
.047 (3/64)		.0470	.141 (3x)	5	1/8	1-1/2	967847-C3	37.80
.047 (3/64)		.0470	.250 (5x)	5	1/8	2-1/2	972447-C3	52.20
.047 (3/64)		.0470	.375 (8x)	5	1/8	2-1/2	983647-C3	53.20
.050		.0500	.150 (3x)	5	1/8	1-1/2	967850-C3	38.20
.050		.0500	.250 (5x)	5	1/8	2-1/2	972450-C3	53.40
.060		.0600	.180 (3x)	5	1/8	1-1/2	967860-C3	38.50
.060		.0600	.312 (5x)	5	1/8	2-1/2	972460-C3	53.40
.062 (1/16)		.0620	.093 (1.5x)	5	1/8	1-1/2	935162-C3	35.60
.062 (1/16)		.0620	.186 (3x)	5	1/8	1-1/2	967862-C3	35.20
.062 (1/16)		.0620	.312 (5x)	5	1/8	2-1/2	972462-C3	49.20
.062 (1/16)		.0620	.500 (8x)	5	1/8	2-1/2	983662-C3	49.90
.078 (5/64)		.0780	.234 (3x)	5	1/8	1-1/2	967878-C3	35.20
.078 (5/64)		.0780	.406 (5x)	5	1/8	2-1/2	972478-C3	49.20
.078 (5/64)		.0780	.625 (8x)	5	1/8	2-1/2	983678-C3	50.40
2.0 mm		.0787	6.00 mm (3x)	5	4 mm	50 mm	921945-C3	41.40
2.0 mm		.0787	10.00 mm (5x)	5	4 mm	50 mm	916445-C3	52.40

continued on next page

FREE MACHINING STEELS

VARIABLE HELIX END MILLS FOR FREE MACHINING STEELS

Finishers – Square (cont.)

continued from previous page

CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	AITIN COATED	
D ₁			L ₂		D ₂ (h6)	L ₁	TOOL #	PRICE
+ .0005" - .0005" + .00mm - .02mm decimal equivalent			+ .010" - .000" + .25mm - .00mm					
.093 (3/32)		.0930	.140 (1.5x)	5	1/8	1-1/2	935193-C3	35.20
.093 (3/32)		.0930	.279 (3x)	5	1/8	1-1/2	967893-C3	35.20
.093 (3/32)		.0930	.500 (5x)	5	1/8	2-1/2	972493-C3	49.20
.093 (3/32)		.0930	.750 (8x)	5	1/8	2-1/2	983693-C3	49.90
.100		.1000	.300 (3x)	5	1/8	1-1/2	967900-C3	36.10
.100		.1000	.500 (5x)	5	1/8	2-1/2	972500-C3	49.70
3.0 mm		.1181	9.00 mm (3x)	5	4 mm	50 mm	921957-C3	41.40
3.0 mm		.1181	15.00 mm (5x)	5	4 mm	50 mm	916457-C3	51.90

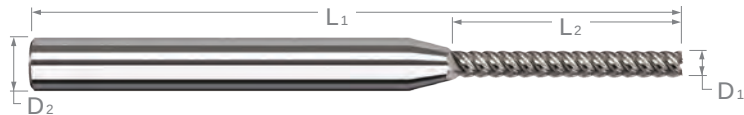
D ₁			L ₂		D ₂ (h6)	L ₁	TOOL #	PRICE
+ .000" - .002" decimal equivalent			+ .030" - .000"					
.125 (1/8)		.1250	.187 (1.5x)	5	1/8	1-1/2	935208-C3	33.80
.125 (1/8)		.1250	.375 (3x)	5	1/8	1-1/2	967908-C3	33.40
.125 (1/8)		.1250	.625 (5x)	5	1/8	2-1/2	972508-C3	48.00
.125 (1/8)		.1250	1.000 (8x)	5	1/8	2-1/2	983708-C3	49.20
.156 (5/32)		.1562	.470 (3x)	5	3/16	2	967910-C3	38.50
.156 (5/32)		.1562	.750 (5x)	5	3/16	3	972510-C3	51.20
.187 (3/16)		.1875	.570 (3x)	5	3/16	2	967912-C3	38.20
.187 (3/16)		.1875	1.000 (5x)	5	3/16	3	972512-C3	51.20
.187 (3/16)		.1875	1.500 (8x)	5	3/16	3	983712-C3	52.50
.250 (1/4)		.2500	.750 (3x)	5	1/4	2-1/2	967916-C3	48.90
.250 (1/4)		.2500	1.250 (5x)	5	1/4	4	972516-C3	63.10
.250 (1/4)		.2500	2.000 (8x)	5	1/4	4	983716-C3	64.30

FREE MACHINING STEELS

SPEEDS & FEEDS (High-Helix Finishers for Free Machining Steels)														
Material	Hardness (HBn)	SFM	Chip Load Per Tooth (IPT) By Cutter Diameter										Depth of Cut	
			.015	.031	.047	.062	.078	.093	.125	.187	.250	Radial	Axial	
Carbon Steels: 10xx - 1030 & all 10Lxx, 11xx - 1140 & all 11Lxx, 12xx - 1215 & all 12Lxx	100 - 125	500	Finishing (1.5x LOC)	.00025	.00051	.00078	.00102	.00129	.00153	.00206	.00309	.00413	< .10x Dia	.5x - 1.5x Dia
	125 - 150	425	Finishing (3x LOC)	.00023	.00047	.00071	.00093	.00117	.00140	.00188	.00281	.00375	< .10x Dia	.5x - 3x Dia
	150 - 175	400												
Stainless Steels: 203 EZ, 303 (all types), 416, 416 Se, 416 Plus X, 420 F, 420 F Se, 440 F, 440 F Se	175 - 200	375	Finishing (5x LOC)	.00017	.00035	.00053	.00070	.00088	.00105	.00141	.00210	.00281	< .07x Dia	.5x - 5x Dia
	200 - 225	350	Finishing (8x LOC)	.00012	.00026	.00039	.00051	.00064	.00077	.00103	.00154	.00206	< .05x Dia	.5x - 8x Dia

VARIABLE HELIX END MILLS FOR ALUMINUM ALLOYS

Finishers – Square



- Optimized for aluminum and aluminum alloys with excellent performance in copper, brass, and bronze alloys
- Variable helix design (approx. 50°) reduces chatter and harmonics, improving finish
- High helix for effective chip evacuation • h6 shank tolerance for high precision tool holders
- End cutting (not center cutting) • Solid carbide • CNC ground in the USA

CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		TiB ₂ COATED	
D ₁ + .0005" - .0005" + .00mm - .02mm decimal equivalent			L ₂ + .010" - .000" + .25mm - .00mm		D ₂ (h6)	L ₁	TOOL #	PRICE	TOOL #	PRICE
.015 (1/64)		.0150	.078 (5x)	4	1/8	2-1/2	66715	50.10	66715-C8	57.70
.015 (1/64)		.0150	.125 (8x)	4	1/8	2-1/2	67115	49.80	67115-C8	57.40
.020		.0200	.100 (5x)	4	1/8	2-1/2	66720	47.80	66720-C8	55.40
.020		.0200	.160 (8x)	4	1/8	2-1/2	67120	50.40	67120-C8	58.00
.025		.0250	.125 (5x)	4	1/8	2-1/2	66725	46.50	66725-C8	54.10
.025		.0250	.203 (8x)	4	1/8	2-1/2	67125	47.60	67125-C8	55.20
.031 (1/32)		.0310	.093 (3x)	5	1/8	1-1/2	948831	31.70	948831-C8	39.30
.031 (1/32)		.0310	.156 (5x)	5	1/8	2-1/2	66731	44.40	66731-C8	52.00
.031 (1/32)		.0310	.250 (8x)	5	1/8	2-1/2	67131	45.60	67131-C8	53.20
.031 (1/32)		.0310	.312 (10x)	5	1/8	2-1/2	917631	58.20	917631-C8	65.80
	1.0 mm	.0393	5.00 mm (5x)	5	4 mm	50 mm	915522	46.00	915522-C8	54.00
	1.0 mm	.0393	8.00 mm (8x)	5	4 mm	50 mm	907122	48.00	907122-C8	56.00
.040		.0400	.203 (5x)	5	1/8	2-1/2	66740	44.40	66740-C8	52.00
.040		.0400	.325 (8x)	5	1/8	2-1/2	67140	45.60	67140-C8	53.20
.047 (3/64)		.0470	.141 (3x)	5	1/8	1-1/2	948847	31.70	948847-C8	39.30
.047 (3/64)		.0470	.250 (5x)	5	1/8	2-1/2	66747	44.40	66747-C8	52.00
.047 (3/64)		.0470	.375 (8x)	5	1/8	2-1/2	67147	45.60	67147-C8	53.20
.050		.0500	.250 (5x)	5	1/8	2-1/2	66750	44.40	66750-C8	52.00
.050		.0500	.400 (8x)	5	1/8	2-1/2	67150	45.60	67150-C8	53.20
.060		.0600	.312 (5x)	5	1/8	2-1/2	66760	41.20	66760-C8	48.80
.060		.0600	.500 (8x)	5	1/8	2-1/2	67160	42.50	67160-C8	50.10
.062 (1/16)		.0620	.186 (3x)	5	1/8	1-1/2	948862	29.60	948862-C8	37.20
.062 (1/16)		.0620	.312 (5x)	5	1/8	2-1/2	66762	41.20	66762-C8	48.80
.062 (1/16)		.0620	.500 (8x)	5	1/8	2-1/2	67162	42.50	67162-C8	50.10
.062 (1/16)		.0620	.625 (10x)	5	1/8	2-1/2	917662	62.50	917662-C8	70.10
.078 (5/64)		.0780	.234 (3x)	5	1/8	1-1/2	948878	29.60	948878-C8	37.20
.078 (5/64)		.0780	.406 (5x)	5	1/8	2-1/2	66778	41.20	66778-C8	48.80
.078 (5/64)		.0780	.625 (8x)	5	1/8	2-1/2	67178	42.50	67178-C8	50.10
	2.0 mm	.0787	10.00 mm (5x)	5	4 mm	50 mm	915545	45.00	915545-C8	53.00
	2.0 mm	.0787	16.00 mm (8x)	5	4 mm	50 mm	907145	46.00	907145-C8	54.00
.093 (3/32)		.0930	.279 (3x)	5	1/8	1-1/2	948893	29.60	948893-C8	37.20
.093 (3/32)		.0930	.375 (4x)	5	1/8	2-1/2	829493	40.70	829493-C8	48.30
.093 (3/32)		.0930	.500 (5x)	5	1/8	2-1/2	66793	41.20	66793-C8	48.80
.093 (3/32)		.0930	.750 (8x)	5	1/8	2-1/2	67193	42.50	67193-C8	50.10
.093 (3/32)		.0930	.950 (10x)	5	1/8	2-1/2	917693	63.70	917693-C8	71.30

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ALUMINUM ALLOYS

VARIABLE HELIX END MILLS FOR ALUMINUM ALLOYS

Finishers – Square (cont.)

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CUTTER DIAMETER			LENGTH OF CUT	FLUTES	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		TiB ₂ COATED	
D ₁			L ₂	D ₂ (h6)	L ₁		TOOL #	PRICE	TOOL #	PRICE
+ .0005" - .0005"	+ .00mm - .02mm	decimal equivalent								
.100		.1000	.500 (5x)	5	1/8	2-1/2	66800	41.20	66800-C8	48.80
.100		.1000	.800 (8x)	5	1/8	2-1/2	67200	42.50	67200-C8	50.10
.109 (7/64)		.1090	.570 (5x)	5	1/8	2-1/2	66802	41.20	66802-C8	48.80
.109 (7/64)		.1090	.900 (8x)	5	1/8	2-1/2	67202	42.50	67202-C8	50.10
3.0 mm		.1181	15.00 mm (5x)	5	4 mm	50 mm	915557	44.60	915557-C8	52.60
3.0 mm		.1181	24.00 mm (8x)	5	4 mm	50 mm	907157	46.00	907157-C8	54.00

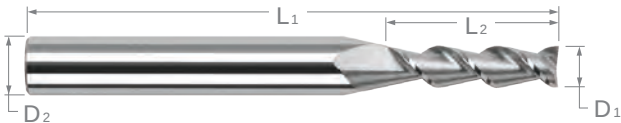
D ₁ ^{+.000"} ^{-.002"}	decimal equivalent	L ₂ ^{+.030"} ^{-.000"}		D ₂ (h6)	L ₁	TOOL #	PRICE	TOOL #	PRICE
.125 (1/8)	.1250	.187 (1.5x)	5	1/8	1-1/2	856908	27.40	856908-C8	35.00
.125 (1/8)	.1250	.375 (3x)	5	1/8	1-1/2	948908	27.40	948908-C8	35.00
.125 (1/8)	.1250	.500 (4x)	5	1/8	2-1/2	829508	39.70	829508-C8	47.30
.125 (1/8)	.1250	.625 (5x)	5	1/8	2-1/2	66808	40.20	66808-C8	47.80
.125 (1/8)	.1250	1.000 (8x)	5	1/8	2-1/2	67208	41.70	67208-C8	49.30
.125 (1/8)	.1250	1.125 (10x)	5	1/8	2-1/2	917708	62.30	917708-C8	69.90
.156 (5/32)	.1562	.750 (5x)	5	3/16	3	66810	43.00	66810-C8	50.60
.156 (5/32)	.1562	1.250 (8x)	5	3/16	3	67210	45.60	67210-C8	53.20
.187 (3/16)	.1875	.285 (1.5x)	5	3/16	2	856912	32.30	856912-C8	39.90
.187 (3/16)	.1875	.570 (3x)	5	3/16	2	948912	32.30	948912-C8	39.90
.187 (3/16)	.1875	1.000 (5x)	5	3/16	3	66812	43.00	66812-C8	50.60
.187 (3/16)	.1875	1.500 (8x)	5	3/16	3	67212	45.60	67212-C8	53.20
.187 (3/16)	.1875	1.875 (10x)	5	3/16	4	917712	63.30	917712-C8	71.50
.250 (1/4)	.2500	.375 (1.5x)	5	1/4	2-1/2	856916	42.60	856916-C8	50.80
.250 (1/4)	.2500	.750 (3x)	5	1/4	2-1/2	948916	42.60	948916-C8	50.80
.250 (1/4)	.2500	1.250 (5x)	5	1/4	4	66816	52.50	66816-C8	61.70
.250 (1/4)	.2500	2.000 (8x)	5	1/4	4	67216	54.90	67216-C8	64.10
.375 (3/8)	.3750	1.125 (3x)	5	3/8	2-1/2	948924	59.50	948924-C8	80.60
.500 (1/2)	.5000	1.500 (3x)	5	1/2	3	948932	80.10	948932-C8	104.90

ALUMINUM ALLOYS

SPEEDS & FEEDS (High Helix Finishers for Aluminum & Non-Ferrous Alloys)												
Cutter Series	Material	SFM	Chip Load Per Tooth (IPT)									
Uncoated	Aluminum Alloys: Casting (2xx, 5xx, 7xx, 8xx)	750	Finishing (3x LOC)	.015	.031	.047	.062	.078	.093	.125	.187	.250
	Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000		.00027	.00056	.00085	.00112	.00140	.00167	.00225	.00337	.00450
	Magnesium Alloys: All alloys	1500										
	Zinc Alloys: All alloys	800	Finishing (4x LOC)	.00024	.00049	.00074	.00098	.00123	.00146	.00197	.00295	.00394
	Copper Alloys: High Coppers - 90%+ (C1xxx)	225		.00020	.00042	.00063	.00084	.00105	.00126	.00169	.00252	.00338
	Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C66400-C69800)	500		.00015	.00031	.00047	.00061	.00077	.00092	.00124	.00185	.00248
	Phosphor Bronzes (Copper Tin alloys, C5xxxx)	225	Finishing (5x LOC)	.00014	.00029	.00044	.00058	.00073	.00087	.00117	.00175	.00234
	Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500		.00035	.00073	.00110	.00145	.00183	.00218	.00293	.00438	.00585
	Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500		.00031	.00063	.00096	.00127	.00160	.00190	.00256	.00383	.00512
	Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx)	225	Finishing (8x LOC)	.00026	.00054	.00082	.00109	.00137	.00163	.00219	.00328	.00439
TiB ₂	Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550	Finishing (10x LOC)	.00018	.00038	.00057	.00075	.00095	.00113	.00152	.00228	.00304
	Aluminum: Casting (2xx, 5xx, 7xx, 8xx)	1000	Finishing (3x LOC)	.00019	.00040	.00060	.00080	.00100	.00120	.00161	.00241	.00322
	Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1400	Finishing (4x LOC)	.00019	.00040	.00060	.00080	.00100	.00120	.00161	.00241	.00322
	Magnesium Alloys: All alloys	2000	Finishing (5x LOC)	.00018	.00038	.00057	.00075	.00095	.00113	.00152	.00228	.00304
	Zinc Alloys: All alloys	1100	Finishing (8x LOC)	.00018	.00038	.00057	.00075	.00095	.00113	.00152	.00228	.00304

HIGH HELIX END MILLS FOR ALUMINUM ALLOYS

45° Helix – Square



Down to .010"!

- 2 flute and 3 flute, high helix design improves results in aluminum and other non-ferrous applications
- 45° helix for faster chip removal and better finish
- h6 shank tolerance for high precision tool holders
- Center cutting
- Solid carbide
- CNC ground in the USA

Outstanding in Aluminum!



CUTTER DIAMETER	LENGTH OF CUT	SHANK DIA.	OVERALL LENGTH	UNCOATED			ZrN COATED		TiB ₂ COATED		
				2 FL	3 FL	PRICE	2 FL	PRICE	2 FL	3 FL	PRICE
D ₁ ^{+0.0005"} _{-.0005"}	L ₂ ^{+0.10"} _{-.000"}	D ₂ (h6)	L ₁								
.010	.030 (3x)	1/8	1-1/2	24110		32.00			24110-C8		39.60
.015 (1/64)	.045 (3x)	1/8	1-1/2	24115		31.20			24115-C8		38.80
.020	.060 (3x)	1/8	1-1/2	24120		29.30			24120-C8		36.90
.025	.075 (3x)	1/8	1-1/2	24125		27.20			24125-C8		34.80
.030	.090 (3x)	1/8	1-1/2	24130		23.60			24130-C8		31.20
.031 (1/32)	.047 (1.5x)	1/8	1-1/2	935531		23.60			935531-C8		31.20
.031 (1/32)	.093 (3x)	1/8	1-1/2	24131	747431	23.60	24131-C7	29.50	24131-C8	747431-C8	31.20
.031 (1/32)	.156 (5x)	1/8	2-1/2	932031		30.30			932031-C8		37.90
.039 (1 mm)	.117 (3x)	1/8	1-1/2	24139		23.60			24139-C8		31.20
.040	.120 (3x)	1/8	1-1/2	24140		23.60	24140-C7	29.50	24140-C8		31.20
.040	.203 (5x)	1/8	2-1/2	932040		30.30			932040-C8		37.90
.047 (3/64)	.071 (1.5x)	1/8	1-1/2	935547		23.60			935547-C8		31.20
.047 (3/64)	.141 (3x)	1/8	1-1/2	24147	747447	23.60	24147-C7	29.50	24147-C8	747447-C8	31.20
.047 (3/64)	.250 (5x)	1/8	2-1/2	932047		30.30			932047-C8		37.90
.050	.150 (3x)	1/8	1-1/2	24150		23.60	24150-C7	29.50	24150-C8		31.20
.050	.250 (5x)	1/8	2-1/2	932050		30.30			932050-C8		37.90
.060	.180 (3x)	1/8	1-1/2	24160		23.60	24160-C7	29.50	24160-C8		31.20
.060	.312 (5x)	1/8	2-1/2	932060		32.00			932060-C8		39.60
.062 (1/16)	.093 (1.5x)	1/8	1-1/2	935562		20.60			935562-C8		28.20
.062 (1/16)	.186 (3x)	1/8	1-1/2	24162	747462	20.60	24162-C7	26.50	24162-C8	747462-C8	28.20
.062 (1/16)	.250 (4x)	1/8	2-1/2	789662		31.40			789662-C8		39.00
.062 (1/16)	.312 (5x)	1/8	2-1/2	932062		31.40	932062-C7	37.00	932062-C8		39.00
.070	.210 (3x)	1/8	1-1/2	24170		20.60	24170-C7	26.50	24170-C8		28.20
.078 (5/64)	.117 (1.5x)	1/8	1-1/2	935578		20.60			935578-C8		28.20
.078 (5/64)	.234 (3x)	1/8	1-1/2	24178	747478	20.60	24178-C7	26.50	24178-C8	747478-C8	28.20
.078 (5/64)	.406 (5x)	1/8	2-1/2	932078		31.40			932078-C8		39.00
.080	.240 (3x)	1/8	1-1/2	24180		20.60	24180-C7	26.50	24180-C8		28.20
.090	.270 (3x)	1/8	1-1/2	24190		20.60	24190-C7	26.50	24190-C8		28.20
.093 (3/32)	.140 (1.5x)	1/8	1-1/2	935593		20.60			935593-C8		28.20
.093 (3/32)	.279 (3x)	1/8	1-1/2	24193	747493	20.60	24193-C7	26.50	24193-C8	747493-C8	28.20
.093 (3/32)	.375 (4x)	1/8	2-1/2	789693		31.40			789693-C8		39.00
.093 (3/32)	.500 (5x)	1/8	2-1/2	932093		31.40			932093-C8		39.00
.100	.300 (3x)	1/8	1-1/2	24199		20.60	24199-C7	26.50	24199-C8		28.20
.109 (7/64)	.327 (3x)	1/8	1-1/2	24202		31.20			24202-C8		38.80
.118 (3 mm)	.354 (3x)	1/8	1-1/2	24205		30.90			24205-C8		38.50

ALUMINUM ALLOYS

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HIGH HELIX END MILLS FOR ALUMINUM ALLOYS

45° Helix – Square (cont.)

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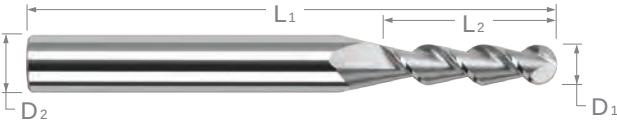
CUTTER DIAMETER	LENGTH OF CUT	SHANK DIA.	OVERALL LENGTH	UNCOATED			ZrN COATED		TiB ₂ COATED		
D ₁ ^{+0.000"} _{-.002"}	L ₂ ^{+0.030"} _{-.000"}	D ₂ (h6)	L ₁	2 FL	3 FL	PRICE	2 FL	PRICE	2 FL	3 FL	PRICE
.125 (1/8)	.187 (1.5x)	1/8	1-1/2	935608		18.60			935608-C8		26.20
.125 (1/8)	.375 (3x)	1/8	1-1/2	752708	747508	18.80			752708-C8	747508-C8	26.40
.125 (1/8)	.500 (4x)	1/8	1-1/2	24208		18.60	24208-C7	24.50	24208-C8		26.20
.125 (1/8)	.625 (5x)	1/8	2-1/2	932108		25.70			932108-C8		33.30
.140 (9/64)	.500 (3x)	3/16	2	24209		25.60			24209-C8		33.20
.156 (5/32)	.235 (1.5x)	3/16	2	935610		21.20			935610-C8		28.80
.156 (5/32)	.562 (3x)	3/16	2	24210		21.20	24210-C7	27.60	24210-C8		28.80
.156 (5/32)	.750 (5x)	3/16	3	932110		25.70			932110-C8		33.30
.187 (3/16)	.285 (1.5x)	3/16	2	935612		21.20			935612-C8		28.80
.187 (3/16)	.625 (3x)	3/16	2	24212		21.00	24212-C7	27.40	24212-C8		28.60
.187 (3/16)	1.000 (5x)	3/16	3	932112		25.70			932112-C8		33.30
.250 (1/4)	.375 (1.5x)	1/4	2-1/2	935616		26.20			935616-C8		34.40
.250 (1/4)	.750 (3x)	1/4	2-1/2	24216		26.20	24216-C7	35.30	24216-C8		34.40
.250 (1/4)	1.250 (5x)	1/4	4	932116		32.20			932116-C8		41.40
.375 (3/8)	1.125 (3x)	3/8	2-1/2	752724		35.70			752724-C8		56.80

ALUMINUM ALLOYS

SPEEDS & FEEDS (45° Helix)											
Important Note: Values in table are in inches and are based on standard (3x Dia) length of cut end mills. For shorter lengths of cuts, table values of IPT must be increased (for 1.5x, increase to 110%). For longer lengths of cut, table values of IPT must be reduced (for 4x, reduce to 90%; for 5x, reduce to 80%). For complete speeds and feeds charts, please see www.harveytool.com											
SERIES	MATERIAL	SFM	CHIP LOAD PER TOOTH (IPT) BY CUTTER DIAMETER								
Uncoated	Aluminum Alloys:										
	Casting (2xx, 5xx, 7xx, 8xx)	750									
	Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000									
	Copper Alloys:										
	High Coppers - 90%+ (C1xxx)	225	Slotting	.00031	.00047	.00062	.00078	.00093	.00125	.00187	.00250
	Brass (Copper Zinc alloys, C2xxx, C3xxx, C4xxx, C66400-C69800)	500	Roughing	.00037	.00056	.00074	.00094	.00112	.00150	.00224	.00300
	Phosphor Bronzes (Copper Tin alloys, C5xxx)	225	Finishing	.00025	.00038	.00050	.00062	.00074	.00100	.00150	.00200
	Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500									
	Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500									
	Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxx)	225	Radial Depth of Cut*: Slotting: 1x Dia Roughing: .5x Dia			Axial Depth of Cut*: Slotting: 1x Dia Roughing: .5x - 1x Dia					
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550										
Magnesium Alloys	1500										
Zinc Alloys	800	Finishing: .1x Dia			Finishing: 1x - 3x Dia						
ZrN	Aluminum Alloys (High Silicon):										
	Casting - 3% - 5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	2500									
	Casting - 5% - 8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	2000									
	Casting - 8% - 12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	1500									
	Casting - 12% - 16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	1000									
	Wrought - 5% - 8% Si (4xxx)	2200									
	Wrought - 8% - 12% Si (4xxx)	1700									
	Copper Alloys:										
	High Coppers - 90%+ (C1xxx)	800	Slotting	.00039	.00059	.00078	.00098	.00116	.00156	.00234	.00313
	Brass (Copper Zinc alloys, C2xxx, C3xxx, C4xxx, C66400-C69800)	1500	Roughing	.00042	.00063	.00084	.00105	.00126	.00169	.00252	.00338
	Phosphor Bronzes (Copper Tin alloys, C5xxx)	800	Finishing	.00031	.00047	.00062	.00078	.00093	.00125	.00187	.00250
	Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	1000									
	Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	1000									
	Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxx)	800	Radial Depth of Cut*: Slotting: 1x Dia Roughing: .5x Dia Finishing: .1x Dia			Axial Depth of Cut*: Slotting: .5x Dia Roughing: .5x - 1x Dia Finishing: 1x - 3x Dia					
	Cast Copper Alloys (C80100-C82800, C86300, C90200-C91700, C96200-C96600, C99300)	150									
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	750										
Magnesium Alloys	2000										
Zinc Alloys	1100										
TiB ₂	Aluminum Alloys:										
	Casting (2xx, 5xx, 7xx, 8xx)	1000									
	Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1400									
	Magnesium Alloys	2000									
	Zinc Alloys	1100									

HIGH HELIX END MILLS FOR ALUMINUM ALLOYS

45° Helix – Ball



- 2 flute, high helix design improves results in aluminum and other non-ferrous applications
- 45° helix for faster chip removal and better finish
- h6 shank tolerance for high precision tool holders
- Center cutting
- Solid carbide
- CNC ground in the USA

Outstanding in Aluminum!

CUTTER DIAMETER	LENGTH OF CUT	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		ZrN COATED		TiB ₂ COATED	
				2 FL	PRICE	2 FL	PRICE	2 FL	PRICE
D ₁ ^{+ .0005"} _{- .0005"}	L ₂ ^{+ .010"} _{- .000"}	D ₂ (h6)	L ₁						
.015 (1/64)	.045 (3x)	1/8	1-1/2	27815	35.90			27815-C8	43.50
.020	.060 (3x)	1/8	1-1/2	27820	33.50			27820-C8	41.10
.031 (1/32)	.047 (1.5x)	1/8	1-1/2	894831	27.20			894831-C8	34.80
.031 (1/32)	.093 (3x)	1/8	1-1/2	27831	27.20	27831-C7	33.10	27831-C8	34.80
.031 (1/32)	.156 (5x)	1/8	2-1/2	887631	33.60			887631-C8	41.20
.040	.120 (3x)	1/8	1-1/2	27840	27.20	27840-C7	33.10	27840-C8	34.80
.047 (3/64)	.141 (3x)	1/8	1-1/2	27847	27.20	27847-C7	33.10	27847-C8	34.80
.050	.150 (3x)	1/8	1-1/2	27850	27.20	27850-C7	33.10	27850-C8	34.80
.060	.180 (3x)	1/8	1-1/2	27860	27.20	27860-C7	33.10	27860-C8	34.80
.062 (1/16)	.093 (1.5x)	1/8	1-1/2	894862	25.70			894862-C8	33.30
.062 (1/16)	.186 (3x)	1/8	1-1/2	27862	25.70	27862-C7	31.60	27862-C8	33.30
.062 (1/16)	.312 (5x)	1/8	2-1/2	887662	33.60			887662-C8	41.20
.070	.210 (3x)	1/8	1-1/2	27870	26.20	27870-C7	32.10	27870-C8	33.80
.078 (5/64)	.234 (3x)	1/8	1-1/2	27878	25.70	27878-C7	31.60	27878-C8	33.30
.080	.240 (3x)	1/8	1-1/2	27880	25.70	27880-C7	31.60	27880-C8	33.30
.090	.270 (3x)	1/8	1-1/2	27890	26.20	27890-C7	32.10	27890-C8	33.80
.093 (3/32)	.140 (1.5x)	1/8	1-1/2	894893	25.70			894893-C8	33.30
.093 (3/32)	.279 (3x)	1/8	1-1/2	27893	25.70	27893-C7	31.60	27893-C8	33.30
.093 (3/32)	.500 (5x)	1/8	2-1/2	887693	34.30			887693-C8	41.90
.100	.300 (3x)	1/8	1-1/2	27899	25.70	27899-C7	31.60	27899-C8	33.30
.118 (3 mm)	.354 (3x)	1/8	1-1/2	27905	35.00			27905-C8	42.60

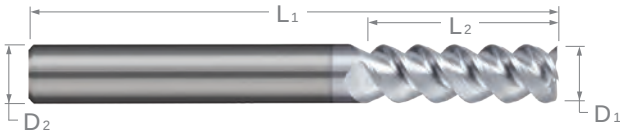
D ₁ ^{+ .000"} _{- .002"}	L ₂ ^{+ .030"} _{- .000"}	D ₂ (h6)	L ₁	2 FL	PRICE	2 FL	PRICE	2 FL	PRICE
.125 (1/8)	.187 (1.5x)	1/8	1-1/2	894908	23.90			894908-C8	31.50
.125 (1/8)	.500 (4x)	1/8	1-1/2	27908	23.20	27908-C7	29.10	27908-C8	30.80
.125 (1/8)	.625 (5x)	1/8	2-1/2	887708	29.20			887708-C8	36.80
.156 (5/32)	.562 (3x)	3/16	2	27910	25.20			27910-C8	32.80
.187 (3/16)	.625 (3x)	3/16	2	27912	25.20	27912-C7	31.60	27912-C8	32.80
.250 (1/4)	.750 (3x)	1/4	2-1/2	27916	28.80	27916-C7	37.90	27916-C8	37.00

ALUMINUM ALLOYS

PLEASE SEE SPEEDS & FEEDS ON PAGE 218

HIGH HELIX END MILLS FOR ALUMINUM ALLOYS

60° Helix – Square



- 60° helix for excellent finishing operations in aluminum and other non-ferrous materials
- High helix design for faster chip removal
- h6 tolerance for high precision holders
- Center cutting
- Solid carbide
- CNC ground in the USA

Outstanding in Aluminum!



CUTTER DIAMETER	LENGTH OF CUT	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		TiB ₂ COATED	
				3 FL	PRICE	3 FL	PRICE
D ₁ $\begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	L ₂ $\begin{smallmatrix} +.010" \\ -.000" \end{smallmatrix}$	D ₂ (h6)	L ₁				
.031 (1/32)	.093 (3x)	1/8	1-1/2	745231	24.80	745231-C8	32.40
.062 (1/16)	.186 (3x)	1/8	1-1/2	745262	21.80	745262-C8	29.40
.093 (3/32)	.279 (3x)	1/8	1-1/2	745293	21.80	745293-C8	29.40

CUTTER DIAMETER	LENGTH OF CUT	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		TiB ₂ COATED	
				3 FL	PRICE	3 FL	PRICE
D ₁ $\begin{smallmatrix} +.000" \\ -.002" \end{smallmatrix}$	L ₂ $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	D ₂ (h6)	L ₁				
.125 (1/8)	.375 (3x)	1/8	1-1/2	745308	19.80	745308-C8	27.40
.187 (3/16)	.563 (3x)	3/16	2	745312	22.30	745312-C8	29.90
.250 (1/4)	.750 (3x)	1/4	2-1/2	745316	27.60	745316-C8	35.80
.375 (3/8)	1.125 (3x)	3/8	2-1/2	745324	37.60	745324-C8	58.70

ALUMINUM ALLOYS

SPEEDS & FEEDS (High Helix for Aluminum & Non-Ferrous Alloys)														
Important Note : Values in table are in inches and are based on standard (3x Dia) length of cut end mills. For shorter lengths of cuts, table values of IPT must be increased. For longer lengths of cut, table values of IPT must be reduced (for 4x, reduce to 90%; for 5x, reduce to 80%). For complete speeds and feeds charts, please see www.harveytool.com														
Cutter Series	Material	SFM	Chip Load Per Tooth (IPT)										Depth of Cut	
			.015	.031	.047	.062	.078	.093	.125	.187	.250	Radial	Axial	
Uncoated	Aluminum Alloys: Casting (2xx, 5xx, 7xx, 8xx)	750	Slotting	.00014	.00028	.00043	.00049	.00062	.00074	.00099	.00148	.00198	1x Dia	.5x Dia
	Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000												
	Magnesium Alloys	1500												
	Zinc Alloys	800	Roughing	.00014	.00028	.00043	.00049	.00062	.00074	.00099	.00148	.00198	.5x Dia	.5x - 1x Dia
	Phosphor Bronzes (Copper Tin alloys, C5xxxx)	225												
	Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500	Finishing	.00017	.00036	.00054	.00062	.00078	.00093	.00125	.00187	.00250	.1x Dia	1x - 3x Dia
	Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	225												
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx)	550													
TiB ₂	Aluminum: Casting (2xx, 5xx, 7xx, 8xx)	1000	Slotting	.00018	.00037	.00056	.00064	.00080	.00096	.00129	.00193	.00257	.12x Dia	.5x Dia
	Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1400												
	Magnesium Alloys	2000	Roughing	.00018	.00037	.00056	.00064	.00080	.00096	.00129	.00193	.00257	.05x Dia	.5x - 1x Dia
	Zinc Alloys	1100	Finishing	.00022	.00046	.00070	.00081	.00102	.00121	.00163	.00243	.00325	1x Dia	1x - 3x Dia

END MILLS FOR PLASTICS

Finishers – Square Upcut – 3 Flute (Slow Helix)



Wiper Flat
Option for an
Improved Finish

- 3 flute design strengthens rigidity and improves wall finish
- Choose from two types:
 - Without Wiper Flat (Type I): Standard end geometry designed with a dish angle to a sharp corner
 - With Wiper Flat (Type II): Wiper flat end geometry that enhances bottom finish by reducing traditional circular marks; with a slight chamfer to protect corners
- Slower helix (approx. 22°) reduces lifting forces for fiber-reinforced applications and vacuum table setups
- Center cutting • Solid carbide • CNC ground in the USA

CUTTER DIAMETER	LENGTH OF CUT	TYPE	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		AMORPHOUS DIAMOND	
					3 FL	PRICE	3 FL	PRICE
D ₁ ^{+0.000"} _{-.001"}	L ₂ ^{+0.010"} _{-.000"}		D ₂	L ₁				
1/32	3/32 (3x)	II	1/8	1-1/2	915631	52.70		
1/32	5/32 (5x)	II	1/8	1-1/2	986431	52.20		
1/32	1/4 (8x)	II	1/8	1-1/2	992331	57.20		
3/64	1/4 (5x)	II	1/8	1-1/2	986447	40.20		
3/64	3/8 (8x)	II	1/8	2	992347	44.20		
D ₁ ^{+0.000"} _{-.002"}	L ₂ ^{+0.030"} _{-.000"}		D ₂	L ₁	3 FL	PRICE	3 FL	PRICE
1/16	3/16 (3x)	I	1/8	1-1/2	770262	33.30		
1/16	3/16 (3x)	II	1/8	1-1/2	915662	33.30		
1/16	5/16 (5x)	I	1/8	2	769662	39.10		
1/16	5/16 (5x)	II	1/8	2	986462	38.70	986462-C4	58.00
1/16	1/2 (8x)	II	1/8	2	992362	42.90		
1/16	5/8 (10x)	II	1/8	2	871662	54.30		
5/64	13/32 (5x)	II	1/8	2	986478	39.10		
5/64	5/8 (8x)	II	1/8	2	992378	42.90		
3/32	9/32 (3x)	I	1/8	1-1/2	770293	33.30		
3/32	9/32 (3x)	II	1/8	1-1/2	915693	33.00		
3/32	1/2 (5x)	I	1/8	2	769693	39.10		
3/32	1/2 (5x)	II	1/8	2	986493	38.70	986493-C4	58.00
3/32	3/4 (8x)	II	1/8	2	992393	42.90		
1/8	3/8 (3x)	I	1/8	1-1/2	770308	33.30		
1/8	3/8 (3x)	II	1/8	1-1/2	915708	33.00		
1/8	5/8 (5x)	I	1/8	2	769708	39.10		
1/8	5/8 (5x)	II	1/8	2	986508	38.70	986508-C4	58.00
1/8	1 (8x)	II	1/8	2	992408	42.90		
1/8	1-1/4 (10x)	II	1/8	2-1/2	871708	54.30		

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TYPE I - WITHOUT WIPER



TYPE II - WITH WIPER FLAT



END MILLS FOR PLASTICS

Finishers – Square Upcut – 3 Flute (Slow Helix) (cont.)

continued from previous page

CUTTER DIAMETER	LENGTH OF CUT	TYPE	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		AMORPHOUS DIAMOND	
					3 FL	PRICE	3 FL	PRICE
D ₁ ^{+0.000"} _{-.002"}	L ₂ ^{+0.030"} _{-.000"}		D ₂	L ₁				
5/32	15/32 (3x)	II	3/16	2	915710	51.70		
5/32	3/4 (5x)	II	3/16	3	986510	53.50		
3/16	9/16 (3x)	I	3/16	2	770312	51.70		
3/16	9/16 (3x)	II	3/16	2	915712	51.20		
3/16	1 (5x)	I	3/16	3	769712	54.00		
3/16	1 (5x)	II	3/16	3	986512	53.50	986512-C4	71.60
3/16	1-1/2 (8x)	II	3/16	3	992412	64.50		
1/4	3/8 (1.5x)	II	1/4	2-1/2	869316	51.10		
1/4	3/4 (3x)	I	1/4	2-1/2	770316	54.00		
1/4	3/4 (3x)	II	1/4	2-1/2	915716	53.50		
1/4	1-1/4 (5x)	I	1/4	3	769716	61.10		
1/4	1-1/4 (5x)	II	1/4	3	986516	60.50	986516-C4	81.10
1/4	2 (8x)	II	1/4	4	992416	80.30		
3/8	9/16 (1.5x)	II	3/8	3	869324	86.90		
3/8	1-1/8 (3x)	II	3/8	3	915724	89.30		
3/8	2 (5x)	II	3/8	4	986524	96.60		
1/2	3/4 (1.5x)	II	1/2	4	869332	149.50		
1/2	1-1/2 (3x)	II	1/2	4	915732	155.10		
1/2	2-5/8 (5x)	II	1/2	5	986532	163.90		

PLEASE SEE SPEEDS & FEEDS ON PAGE 257

PLASTICS

END MILLS FOR PLASTICS

Finishers – Square Upcut – 3 Flute (High Helix)



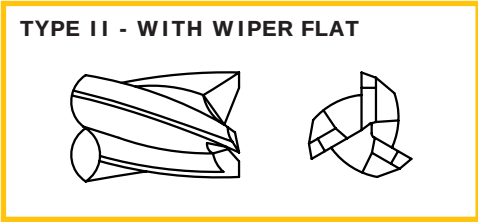
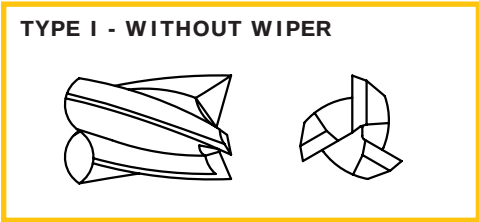
Wiper Flat
Option for an Improved Finish

- 3 flute, higher helix (approx. 40°) design strengthens rigidity and increases cutting action to improve wall finish
- Choose from two types:
 - Without Wiper Flat (Type I): Standard end geometry designed with a dish angle to a sharp corner
 - With Wiper Flat (Type II): Wiper flat end geometry that enhances bottom finish by reducing traditional circular marks; with a slight chamfer to protect corners
- Design is ideally suited for thin-walled applications and tightly secured workpieces
- Center cutting
- Solid carbide
- CNC ground in the USA

CUTTER DIAMETER	LENGTH OF CUT	TYPE	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		AMORPHOUS DIAMOND	
					3 FL	PRICE	3 FL	PRICE
D ₁ ^{+0.000"} _{-.001"}	L ₂ ^{+0.010"} _{-.000"}		D ₂	L ₁				
1/32	3/32 (3x)	II	1/8	1-1/2	902131	51.70		
1/32	5/32 (5x)	II	1/8	1-1/2	941231	53.80		
1/32	1/4 (8x)	II	1/8	1-1/2	900731	58.90		
3/64	1/4 (5x)	II	1/8	1-1/2	941247	41.70		

D ₁ ^{+0.000"} _{-.002"}	L ₂ ^{+0.030"} _{-.000"}		D ₂	L ₁	3• FL	PRICE	3 FL	PRICE
1/16	3/16 (3x)	I	1/8	1-1/2	736762	38.50		
1/16	3/16 (3x)	II	1/8	1-1/2	902162	38.20		
1/16	5/16 (5x)	I	1/8	2	769862	40.50		
1/16	5/16 (5x)	II	1/8	2	941262	40.20	941262-C4	59.50
1/16	1/2 (8x)	II	1/8	2	900762	44.20		
1/16	5/8 (10x)	II	1/8	2	854662	46.80		
5/64	13/32 (5x)	II	1/8	2	941278	40.20		
3/32	9/32 (3x)	I	1/8	1-1/2	736793	38.50		
3/32	9/32 (3x)	II	1/8	1-1/2	902193	38.20		
3/32	1/2 (5x)	I	1/8	2	769893	40.50		
3/32	1/2 (5x)	II	1/8	2	941293	40.20	941293-C4	59.50
3/32	3/4 (8x)	II	1/8	2	900793	44.20		
1/8	3/8 (3x)	I	1/8	1-1/2	736808	38.50		
1/8	3/8 (3x)	II	1/8	1-1/2	902208	38.20		
1/8	5/8 (5x)	I	1/8	2	769908	40.20		
1/8	5/8 (5x)	II	1/8	2	941308	40.20	941308-C4	59.50
1/8	1 (8x)	II	1/8	2	900808	44.20		
1/8	1-1/4 (10x)	II	1/8	2-1/2	854708	46.80		

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PLEASE SEE SPEEDS & FEEDS ON PAGE 258

END MILLS FOR PLASTICS

Finishers – Square Upcut – 3 Flute (High Helix) (cont.)

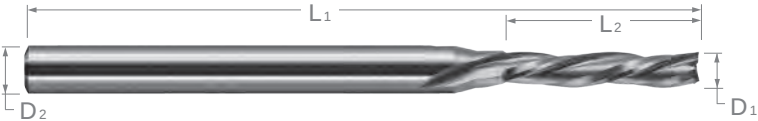
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CUTTER DIAMETER	LENGTH OF CUT	TYPE	SHANK DIAMETER	OVERALL LENGTH	UNCOATED		AMORPHOUS DIAMOND	
					3 FL	PRICE	3 FL	PRICE
D ₁ ^{+0.000"} _{-0.002"}	L ₂ ^{+0.030"} _{-0.000"}		D ₂	L ₁				
5/32	15/32 (3x)	II	3/16	2	902210	51.50		
5/32	3/4 (5x)	II	3/16	3	941310	53.50		
3/16	9/16 (3x)	I	3/16	2	736812	52.00		
3/16	9/16 (3x)	II	3/16	2	902212	51.50		
3/16	1 (5x)	I	3/16	3	769912	54.00		
3/16	1 (5x)	II	3/16	3	941312	53.50	941312-C4	71.60
3/16	1-1/2 (8x)	II	3/16	3	900812	58.60		
1/4	3/8 (1.5x)	II	1/4	2-1/2	852016	56.50		
1/4	3/4 (3x)	I	1/4	2-1/2	736816	59.30		
1/4	3/4 (3x)	II	1/4	2-1/2	902216	58.80		
1/4	1-1/4 (5x)	I	1/4	3	769916	61.10		
1/4	1-1/4 (5x)	II	1/4	3	941316	60.50	941316-C4	81.10
1/4	2 (8x)	II	1/4	4	900816	80.30		
3/8	9/16 (1.5x)	II	3/8	3	852024	87.10		
3/8	1-1/8 (3x)	II	3/8	3	902224	89.30		
3/8	2 (5x)	II	3/8	4	941324	97.50		
1/2	3/4 (1.5x)	II	1/2	4	852032	148.30		
1/2	1-1/2 (3x)	II	1/2	4	902232	153.80		
1/2	2-5/8 (5x)	II	1/2	5	941332	162.40		

PLASTICS

END MILLS FOR PLASTICS

Finishers – Square Downtcut – 3 Flute (Slow Helix)



- 3 left hand spiral, right hand cut flute design strengthens rigidity and improves wall finish
- Slower helix (approx. 22°) ideal for overhung, less secure parts
- Center cutting
- Solid carbide
- CNC ground in the USA

CUTTER DIAMETER	LENGTH OF CUT	SHANK DIAMETER	OVERALL LENGTH	UNCOATED	
D ₁ ^{+.000"} _{-.001"}	L ₂ ^{+.010"} _{-.000"}	D ₂	L ₁	3 FL	PRICE
1/32	5/32 (5x)	1/8	1-1/2	880431	52.70

D ₁ ^{+.000"} _{-.002"}	D ₁ ^{+.030"} _{-.000"}	D ₂	L ₁	3 FL	PRICE
1/16	5/16 (5x)	1/8	2	880462	42.20
3/32	1/2 (5x)	1/8	2	880493	42.20
1/8	5/8 (5x)	1/8	2	880508	42.20
3/16	1 (5x)	3/16	3	880512	55.50
1/4	1-1/4 (5x)	1/4	3	880516	62.60
3/8	1-1/8 (3x)	3/8	3	878124	91.40
1/2	1-1/2 (3x)	1/2	4	878132	154.80

SPEEDS & FEEDS (3 Flute Plastic Finisher – Slow Helix)

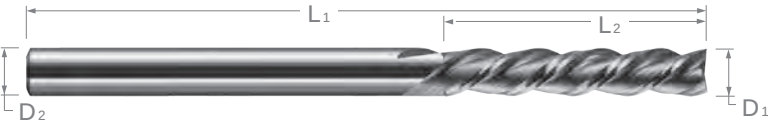
Important Note: Values in table are in inches and are based on standard (5x Dia) length of cut end mills. For shorter lengths of cuts, table values of IPT must be increased (for 1.5x, increase to 120%; for 3x, increase to 110%). For longer lengths of cut, table values of IPT must be reduced (for 8x, reduce to 66%; for 10x, reduce to 55%). For complete speeds and feeds charts, please see www.harveytool.com

Material Type		SFM	Chip Load Per Tooth (IPT) By Cutter Diameter															Depth of Cut	
				.015	.031	.047	.062	.078	.093	.125	.187	.250	.312	.375	.500	.625	.750	Radial	Axial
Unfilled	Unfilled	800-1200	Semi-Roughing	.00041	.00084	.00128	.00168	.00212	.00253	.00340	.00508	.00679	.00721	.00866	.01155	.01444	.01732	.35 x Dia	1 x Dia
			Finishing	.00013	.00028	.00042	.00055	.00070	.00083	.00112	.00167	.00223	.00237	.00285	.00379	.00474	.00569	.10 x Dia	5 x Dia
Filled Plastics	Carbon/Glass Filled 5% < 20%	600-800	Semi-Roughing	.00041	.00084	.00128	.00168	.00212	.00253	.00340	.00508	.00679	.00721	.00866	.01155	.01444	.01732	.35 x Dia	1 x Dia
			Finishing	.00013	.00028	.00042	.00055	.00070	.00083	.00112	.00167	.00223	.00237	.00285	.00379	.00474	.00569	.10 x Dia	5 x Dia
	Carbon/Glass Filled 21% < 40%	500-700	Semi-Roughing	.00033	.00069	.00104	.00138	.00173	.00207	.00278	.00416	.00556	.00590	.00709	.00945	.01181	.01417	.35 x Dia	1 x Dia
			Finishing	.00011	.00023	.00034	.00045	.00057	.00068	.00091	.00137	.00183	.00194	.00233	.00310	.00388	.00466	.10 x Dia	5 x Dia
Fiber Reinforced	Carbon/Glass Fiber 5% < 20%	500-700	Semi-Roughing	.00041	.00084	.00128	.00168	.00212	.00253	.00340	.00508	.00679	.00721	.00866	.01155	.01444	.01732	.35 x Dia	1 x Dia
			Finishing	.00013	.00028	.00042	.00055	.00070	.00083	.00112	.00167	.00223	.00237	.00285	.00379	.00474	.00569	.10 x Dia	5 x Dia
	Carbon/Glass Fiber 21% < 40%	300-400	Semi-Roughing	.00033	.00069	.00104	.00138	.00173	.00207	.00278	.00416	.00556	.00590	.00709	.00945	.01181	.01417	.35 x Dia	1 x Dia
			Finishing	.00011	.00023	.00034	.00045	.00057	.00068	.00091	.00137	.00183	.00194	.00233	.00310	.00388	.00466	.10 x Dia	5 x Dia

PLASTICS

END MILLS FOR PLASTICS

Finishers – Square Downcut – 3 Flute (High Helix)



- 3 left hand spiral, right hand cut flute, higher helix (approx. 40°) design strengthens rigidity and increases cutting action to improve wall finish
- Design is ideally suited for thin-walled applications
- Solid carbide
- Center cutting
- CNC ground in the USA

CUTTER DIAMETER	LENGTH OF CUT	SHANK DIAMETER	OVERALL LENGTH	UNCOATED	
D ₁ ^{+ .000"} _{-.001"}	D ₁ ^{+ .010"} _{-.000"}	D ₂	L ₁	3 FL	PRICE
1/32	5/32 (5x)	1/8	1-1/2	864331	59.00

D ₁ ^{+ .000"} _{-.002"}	D ₁ ^{+ .030"} _{-.000"}	D ₂	L ₁	3 FL	PRICE
1/16	5/16 (5x)	1/8	2	864362	47.80
3/32	1/2 (5x)	1/8	2	864393	46.30
1/8	3/8 (3x)	1/8	1-1/2	873808	36.90
1/8	5/8 (5x)	1/8	2	864408	40.70
3/16	9/16 (3x)	3/16	2	873812	49.80
3/16	1 (5x)	3/16	3	864412	56.00
1/4	3/4 (3x)	1/4	2-1/2	873816	56.70
1/4	1-1/4 (5x)	1/4	3	864416	62.60
3/8	1-1/8 (3x)	3/8	3	873824	91.40
1/2	1-1/2 (3x)	1/2	4	873832	156.00

PLASTICS

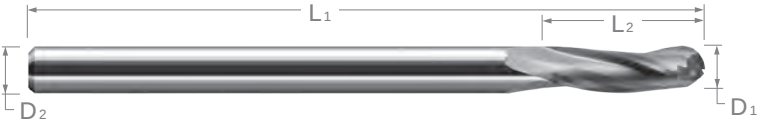
SPEEDS & FEEDS (3 Flute Plastic Finisher – High Helix)

Important Note: Values are in inches and are based on standard (3x Dia) length of cut end mills. For shorter lengths of cut, table values of IPT must be increased (for 1.5x, increase 115%). For longer lengths of cuts, table values of IPT must be reduced (for 5x, reduce to 90%). For complete speeds and feeds charts, please see www.harveytool.com

Material Type		SFM	Chip Load Per Tooth (IPT) By Cutter Diameter														Depth of Cut		
			.015	.031	.047	.062	.078	.093	.125	.187	.250	.312	.375	.500	.625	.750	Radial	Axial	
Unfilled	Unfilled	800-1200	Semi-Roughing	.00043	.00089	.00135	.00178	.00224	.00267	.00359	.00536	.00717	.00761	.00914	.01219	.01524	.01829	.35 x Dia	1 x Dia
			Finishing	.00024	.00049	.00074	.00097	.00123	.00146	.00196	.00294	.00393	.00417	.00501	.00668	.00835	.01002	.10 x Dia	3 x Dia
Filled Plastics	Carbon/Glass Filled 5% < 20%	600-800	Semi-Roughing	.00043	.00089	.00135	.00178	.00224	.00267	.00359	.00536	.00717	.00761	.00914	.01219	.01524	.01829	.35 x Dia	1 x Dia
			Finishing	.00024	.00049	.00074	.00097	.00123	.00146	.00196	.00294	.00393	.00417	.00501	.00668	.00835	.01002	.10 x Dia	3 x Dia
	Carbon/Glass Filled 21% < 40%	500-700	Semi-Roughing	.00035	.00073	.00110	.00146	.00183	.00218	.00293	.00439	.00587	.00622	.00748	.00997	.01247	.01496	.35 x Dia	1 x Dia
			Finishing	.00019	.00040	.00060	.00080	.00100	.00120	.00161	.00240	.00321	.00341	.00410	.00546	.00683	.00820	.10 x Dia	3 x Dia
Fiber Reinforced	Carbon/Glass Fiber 5% < 20%	500-700	Semi-Roughing	.00043	.00089	.00135	.00178	.00224	.00267	.00359	.00536	.00717	.00761	.00914	.01219	.01524	.01829	.35 x Dia	1 x Dia
			Finishing	.00024	.00049	.00074	.00097	.00123	.00146	.00196	.00294	.00393	.00417	.00501	.00668	.00835	.01002	.10 x Dia	3 x Dia
	Carbon/Glass Fiber 21% < 40%	300-400	Semi-Roughing	.00035	.00073	.00110	.00146	.00183	.00218	.00293	.00439	.00587	.00622	.00748	.00997	.01247	.01496	.35 x Dia	1 x Dia
			Finishing	.00019	.00040	.00060	.00080	.00100	.00120	.00161	.00240	.00321	.00341	.00410	.00546	.00683	.00820	.10 x Dia	3 x Dia

END MILLS FOR PLASTICS

Finishers – Ball Upcut – 3 Flute (Slow Helix)



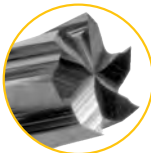
- Ball end has increased rake and relief for improved cutting action at the tip
- 3 flute design strengthens rigidity and improves wall finish
- Slower helix reduces lifting forces for fiber-reinforced applications and vacuum table set ups
- Center cutting
- Ultrafine grain carbide to create a sharp cutting edge
- CNC ground in the USA

CUTTER DIAMETER $D_1 \begin{smallmatrix} +.000" \\ -.002" \end{smallmatrix}$	LENGTH OF CUT $L_2 \begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	SHANK DIAMETER D_2	OVERALL LENGTH L_1	UNCOATED	
				3 FL	PRICE
1/16	.186 (3x)	1/8	1-1/2	808762	38.20
3/32	.279 (3x)	1/8	1-1/2	808793	38.20
1/8	3/8 (3x)	1/8	1-1/2	808808	37.90
3/16	.570 (3x)	3/16	2	808812	58.10
1/4	3/4 (3x)	1/4	2-1/2	808816	61.10
3/8	1-1/8 (3x)	3/8	3	808824	97.30
1/2	1-1/2 (3x)	1/2	4	808832	165.80

PLEASE SEE SPEEDS & FEEDS ON PAGE 257

END MILLS FOR COMPOSITES

Finisher



Type I
Bur-Style End



Type II
Center Cutting

- Optimized geometry and high flute count for finishing in composite materials with high fiber or fill concentration
- Slow helix improves finish and minimizes fraying of fiber-reinforced and layered materials by reducing vertical forces on the workpiece
- Choose from two types:
 - Type I: Bur-style end allows for shallow ramping (not suited for plunge cutting)
 - Type II: Center cutting end allows for plunge cutting, reduced flute count prevents chip packing, designed specifically for CFRP
- Solid carbide
- CNC ground in the USA

CUTTER DIAMETER	LENGTH OF CUT	TYPE FLUTES		SHANK DIAMETER	OVERALL LENGTH	UNCOATED		AMORPHOUS DIAMOND		CVD DIAMOND (9 µm)	
D ₁ ^{+0.000"} _{-.001"}	L ₂ ^{+0.010"} _{-.000"}			D ₂	L ₁	TOOL #	PRICE	TOOL #	PRICE	TOOL #	PRICE
1/32	3/32 (3x)	I	4	1/8	1-1/2	944731	53.80	944731-C4	66.90		
3/64	9/64 (3x)	I	4	1/8	1-1/2	944747	53.80	944747-C4	66.90		
1/16	.186 (3x)	I	6	1/8	1-1/2	944762	51.30	944762-C4	64.40	798862	122.20
1/16	5/16 (5x)	I	6	1/8	1-1/2	889262	53.80	889262-C4	66.90		
5/64	15/64 (3x)	I	6	1/8	1-1/2	944778	51.30	944778-C4	64.40		
3/32	9/64 (1.5x)	I	6	1/8	1-1/2	794793	51.80	794793-C4	64.90		
3/32	.279 (3x)	I	6	1/8	1-1/2	944793	51.30	944793-C4	64.40	798893	122.20
3/32	1/2 (5x)	I	6	1/8	1-1/2	889293	53.80	889293-C4	66.90		
3/32	3/4 (8x)	I	6	1/8	2	751693	57.90	751693-C4	77.20		

D ₁ ^{+0.000"} _{-.002"}	L ₂ ^{+0.030"} _{-.000"}			D ₂	L ₁	TOOL #	PRICE	TOOL #	PRICE	TOOL #	PRICE
1/8	3/16 (1.5x)	I	8	1/8	1-1/2	794808	50.00	794808-C4	63.10		
1/8	3/8 (3x)	I	8	1/8	1-1/2	944808	49.50	944808-C4	62.60	798908	119.10
1/8	3/8 (3x)	II	5	1/8	1-1/2	756808	46.60			731208	110.90
1/8	5/8 (5x)	I	8	1/8	2	889208	52.00	889208-C4	65.30		
1/8	1 (8x)	I	8	1/8	2-1/2	751708	55.10	751708-C4	68.20		
3/16	9/16 (3x)	I	8	3/16	2	944812	54.70	944812-C4	72.80	798912	137.60
3/16	9/16 (3x)	II	5	3/16	2	756812	51.40			731212	128.30
3/16	1 (5x)	I	8	3/16	2-1/2	889212	57.30	889212-C4	75.40		
3/16	1-1/2 (8x)	I	8	3/16	3	751712	60.30	751712-C4	78.40		
1/4	3/8 (1.5x)	I	8	1/4	2-1/2	794816	65.60	794816-C4	86.20		
1/4	3/4 (3x)	I	8	1/4	2-1/2	944816	65.60	944816-C4	86.20	798916	152.40
1/4	3/4 (3x)	II	5	1/4	2-1/2	756816	61.70			731216	142.00
1/4	1-1/4 (5x)	I	8	1/4	2-1/2	889216	79.90	889216-C4	100.50		
3/8	1-1/8 (3x)	I	10	3/8	3	944824	107.80	944824-C4	132.60		
3/8	1-1/8 (3x)	II	5	3/8	3	756824	101.30			731224	202.40
1/2	1-1/2 (3x)	I	10	1/2	4	944832	189.70	944832-C4	219.50	798932	382.60
1/2	1-1/2 (3x)	II	5	1/2	4	756832	178.30			731232	356.30

COMPOSITES