

# SERIES HIGHLIGHT

Series V5

HIGH PERFORMANCE  
END MILLS

S M P K

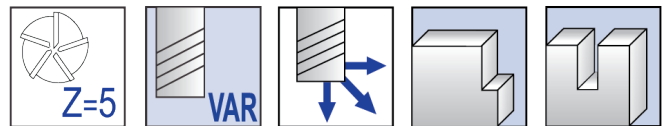
High Performance End Mills  
AlCrN Coated

Target Materials:  
Titanium  
Tool steels under 45Rc

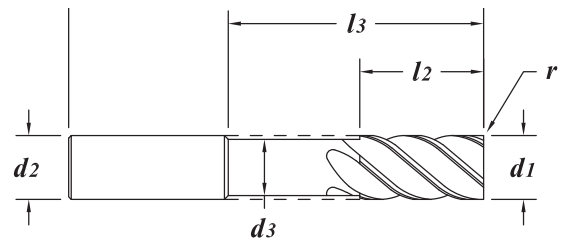


V5

V5C



CALCULATE IDEAL PARAMETERS  
FOR THE V5 AND V5C IN YOUR  
APPLICATION WITH THE  
GARR TECHNICAL ADVISOR

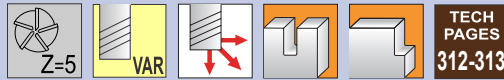


View the V5 →



TOLERANCES	
$d1$	+0.000" - .002" (+.000mm - .050mm)
$d2$	h6
$r$	+0.011" - .001" (+.025 - .025mm)

.2362" - .3125"  
(6.000mm - 7.938mm)



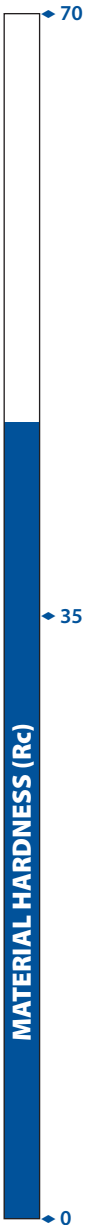
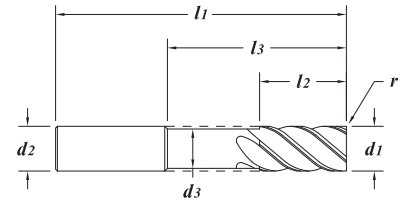
Recommended for titanium and tool steels under 45Rc

**Variable Helix End Mill**

**AlCrN Coating**

- Solid submicron grain carbide end mill - center cutting
- Engineered for High Efficiency Milling
- Staggered flutes to control harmonics
- Variable flute design helps with chip evacuation in slots and pockets
- PCT (Polish Carbide Treatment) enhances tool life
- 12mm and larger tools offered with weldon flat
- .375" and larger diameters can be modified within 48 hours

*The combination of an extended flute length with a weldon flat may cause the flute washout to reach inside some end mill holders*



EDP#	(plain) (weldon)	$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	$r$ Corner Radius	$l3$ Reach Length	$d3$ Neck Diameter	LIST PRICE
		Decimal	Metric							
50000	-	.2362	6.000	6.0	50	13	-	-	-	21.72
50001	-	.2362	6.000	6.0	50	13	0.5	-	-	25.12
50002	-	.2362	6.000	6.0	65	19	-	-	-	24.48
50003	-	.2362	6.000	6.0	65	19	0.5	-	-	27.84
50004	-	.2362	6.000	6.0	65	13	-	20	5.4	32.66
50005	-	.2362	6.000	6.0	65	13	0.5	20	5.4	36.01
50006	-	.2362	6.000	6.0	65	13	1.0	20	5.4	36.01
50007	-	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	20.85
51000	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.010"	-	24.18
50008	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.015"	-	24.18
51001	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-	24.18
50009	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.030"	-	24.18
51002	-	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-	20.85
51003	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.010"	-	24.18
51004	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-	24.18
50011	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	23.63
51005	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	26.76
50012	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	26.76
50013	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	26.76
50014	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	26.76
50015	-	.2500	1/4"	6.350	1/4"	3"	1"	-	-	36.10
51006	-	.2500	1/4"	6.350	1/4"	3"	1"	.010"	-	39.68
51007	-	.2500	1/4"	6.350	1/4"	3"	1"	.015"	-	39.68
50016	-	.2500	1/4"	6.350	1/4"	3"	1"	.030"	-	39.68
50113	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	39.68
50017	-	.2500	1/4"	6.350	1/4"	4"	1/2"	.015"	1-1/4"	51.88
51008	-	.2500	1/4"	6.350	1/4"	4"	1/2"	.015"	2-1/8"	51.88
50023	-	.2756		7.000	8.0	65	22	0.2	-	43.09
50018	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	-	-	33.71
50019	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.015"	-	36.29
50021	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	36.29
50022	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	-	36.29

EDP#	<i>d1</i> † Diameter	<i>d2</i> Shank Diameter	<i>l1</i> Overall Length	<i>l2</i> Flute Length	<i>r</i> Corner Radius	<i>l3</i> Reach Length	<i>d3</i> Neck Diameter	LIST PRICE			
									(plain)	(weldon)	Decimal
50024	-	.3150	8.000	8.0	65	22	0.2	-	-	37.65	
50025	-	.3150	8.000	8.0	65	22	0.5	-	-	37.65	
50026	-	.3150	8.000	8.0	75	19	-	26	7.2	58.46	
50027	-	.3150	8.000	8.0	75	19	0.5	26	7.2	63.25	
50028	-	.3150	8.000	8.0	75	19	1.0	26	7.2	63.25	
50029	-	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	34.04	
50031	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.015"	-	38.98	
50032	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	38.98	
50033	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	-	38.98	
50034	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	-	-	39.77	
50035	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.015"	-	42.38	
50036	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	42.38	
50037	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	42.38	
50038	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.060"	-	42.38	
51009	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-	55.76	
50114	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	55.76	
51010	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.015"	-	62.76	
50039	-	.3750	3/8"	9.525	3/8"	4"	2"	-	-	57.40	
50041	-	.3750	3/8"	9.525	3/8"	4"	2"	.030"	-	62.76	
51011	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	1-1/8"	.355"	74.89
50042	-	.3750	3/8"	9.525	3/8"	4"	7/8"	.015"	1-7/8"	.355"	74.89
51012	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	2-1/8"	.355"	99.02
51013	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	3-1/8"	.355"	99.02
51014	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	4-1/8"	.355"	99.02
50043	-	.3937	10.000	10.0	70	22	-	-	-	47.70	
51015	-	.3937	10.000	10.0	70	22	0.30	-	-	51.18	
50044	-	.3937	10.000	10.0	70	22	0.50	-	-	51.18	
51016	-	.3937	10.000	10.0	70	22	0.75	-	-	51.18	
51017	-	.3937	10.000	10.0	70	22	1.00	-	-	51.18	
50045	-	.3937	10.000	10.0	75	22	-	32	9.0	66.12	
50046	-	.3937	10.000	10.0	75	22	0.50	32	9.0	71.33	
51018	-	.3937	10.000	10.0	75	22	0.75	32	9.0	71.33	
50047	-	.3937	10.000	10.0	75	22	1.00	32	9.0	71.33	
51019	-	.4724	12.000	12.0	65	19	-	-	-	58.06	
51020	-	.4724	12.000	12.0	65	19	0.50	-	-	67.54	
50484	50485	.4724	12.000	12.0	75	26	-	-	-	61.96	
51021	-	.4724	12.000	12.0	75	26	0.30	-	-	75.36	
50486	50487	.4724	12.000	12.0	75	26	0.50	-	-	75.36	
51022	-	.4724	12.000	12.0	75	26	0.75	-	-	75.36	
51023	-	.4724	12.000	12.0	75	26	1.00	-	-	75.36	
50112	-	.4724	12.000	12.0	75	26	2.00	-	-	75.36	
50115	-	.4724	12.000	12.0	75	26	2.50	-	-	75.36	
50048	50299	.4724	12.000	12.0	75	32	-	-	-	61.96	
51024	-	.4724	12.000	12.0	75	32	0.30	-	-	75.36	
50049	50300	.4724	12.000	12.0	75	32	0.50	-	-	75.36	
51025	-	.4724	12.000	12.0	75	32	0.75	-	-	75.36	
51026	-	.4724	12.000	12.0	75	32	1.00	-	-	75.36	
51027	-	.4724	12.000	12.0	100	38	-	-	-	82.81	
51028	-	.4724	12.000	12.0	100	38	0.50	-	-	87.69	
50423	-	.4724	12.000	12.0	100	42	-	-	-	82.81	
50425	-	.4724	12.000	12.0	100	42	0.30	-	-	87.69	
50427	-	.4724	12.000	12.0	100	42	0.50	-	-	87.69	
50429	-	.4724	12.000	12.0	100	42	1.00	-	-	87.69	
50431	-	.4724	12.000	12.0	100	42	2.00	-	-	87.69	
51029	-	.4724	12.000	12.0	100	52	-	-	-	82.81	
51030	-	.4724	12.000	12.0	100	52	0.50	-	-	87.69	
50051	50301	.4724	12.000	12.0	100	26	-	38	10.8	94.88	
50052	50302	.4724	12.000	12.0	100	26	0.50	38	10.8	99.77	
50053	50303	.4724	12.000	12.0	100	26	1.00	38	10.8	99.77	

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MATERIAL HARDNESS (Rc)

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continued →

Series V5 (continued)

.5000"  
(12.700mm)

EDP#		$d1$ †		$d2$	$l1$	$l2$	$r$	$l3$	$d3$	LIST PRICE	
(plain)	(weldon)	Decimal	Diameter	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter		
50054	50304	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	55.68	
50106	50305	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	64.77	
50055	50306	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	64.77	
50107	50307	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	64.77	
50056	50308	.5000	1/2"	12.700	1/2"	3"	1"	-	-	59.49	
50108	50309	.5000	1/2"	12.700	1/2"	3"	1"	.010"	-	72.29	
50057	50310	.5000	1/2"	12.700	1/2"	3"	1"	.020"	-	72.29	
50109	50311	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	72.29	
50058	50312	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	59.49	
50111	50313	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	72.29	
50059	50314	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	72.29	
50061	50315	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	72.29	
50062	50316	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	72.29	
50063	50317	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.045"	-	72.29	
50064	50318	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	72.29	
50065	50319	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	72.29	
50433	50435	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.010"	-	85.42	
51031	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.015"	-	85.42	
51032	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	85.42	
50436	50437	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	80.50	
50438	50439	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.010"	-	85.42	
50440	50441	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.020"	-	85.42	
50442	50443	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.030"	-	85.42	
50444	50445	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.040"	-	85.42	
50446	50447	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.060"	-	85.42	
50067	50321	.5000	1/2"	12.700	1/2"	4"	2-1/8"	-	-	80.50	
51033	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.015"	-	85.42	
50068	50322	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	85.42	
51034	-	.5000	1/2"	12.700	1/2"	6"	1"	.030"	-	120.82	
51035	-	.5000	1/2"	12.700	1/2"	6"	3-1/8"	-	-	115.43	
51036	-	.5000	1/2"	12.700	1/2"	6"	3-1/8"	.030"	-	120.82	
51037	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	1-1/2"	.475"	97.52
51038	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	2-1/4"	.475"	97.52
50066	50320	.5000	1/2"	12.700	1/2"	4"	1-1/4"	.030"	2-1/4"	.475"	97.52
51039	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	3-3/8"	.475"	132.94
51040	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	4-1/8"	.475"	132.94

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MATERIAL HARDNESS (Rc)

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EDP#		$d1$ † Diameter			$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	$r$ Corner Radius	$l3$ Reach Length	$d3$ Neck Diameter	LIST PRICE
(plain)	(weldon)	Decimal	5/8"	Metric	5/8"	3-1/2"	1-1/4"				
50069	50323	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	109.76
51041	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	115.08
50071	50324	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	115.08
50072	50325	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	115.08
50401	50402	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	115.08
51042	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	117.23
51043	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	125.10
51044	-	.6250	5/8"	15.875	5/8"	4"	2-1/8"	-	-	-	117.23
51045	-	.6250	5/8"	15.875	5/8"	4"	2-1/8"	.030"	-	-	125.10
51046	-	.6250	5/8"	15.875	5/8"	6"	2-1/2"	.030"	-	-	172.21
50403	50404	.6250	5/8"	15.875	5/8"	6"	3-1/8"	.030"	-	-	172.21
51047	-	.6250	5/8"	15.875	5/8"	6"	3-1/8"	.060"	-	-	172.21
51048	-	.6250	5/8"	15.875	5/8"	6"	3-1/2"	.030"	-	-	172.21
51049	-	.6250	5/8"	15.875	5/8"	4"	3/4"	.030"	1-5/8"	.590"	135.63
50073	50326	.6250	5/8"	15.875	5/8"	4"	1-1/4"	.030"	2-1/4"	.590"	135.63
51050	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	2-3/8"	.590"	184.31
51051	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	3-3/8"	.590"	184.31
51052	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-1/8"	.590"	184.31
51053	-	.6299		16.000	16.0	75	19	-	-	-	111.45
51054	-	.6299		16.000	16.0	75	19	0.50	-	-	116.88
50074	50327	.6299		16.000	16.0	88	32	-	-	-	114.52
50075	50328	.6299		16.000	16.0	88	32	0.50	-	-	120.09
50420	-	.6299		16.000	16.0	88	32	1.00	-	-	120.09
51055	-	.6299		16.000	16.0	88	32	2.00	-	-	120.09
50422	-	.6299		16.000	16.0	88	32	3.00	-	-	120.09
50424	-	.6299		16.000	16.0	88	32	4.00	-	-	120.09
50430	-	.6299		16.000	16.0	100	40	0.50	-	-	127.69
50432	-	.6299		16.000	16.0	100	40	1.00	-	-	127.69
50434	-	.6299		16.000	16.0	100	40	3.00	-	-	127.69
50076	50329	.6299		16.000	16.0	100	32	-	50	14.4	132.34
50077	-	.6299		16.000	16.0	100	32	0.50	50	14.4	138.23
50426	-	.6299		16.000	16.0	100	32	1.00	50	14.4	138.23
51056	-	.6299		16.000	16.0	100	32	2.00	50	14.4	138.23
50428	-	.6299		16.000	16.0	100	32	3.00	50	14.4	138.23
50078	-	.7087		18.000	18.0	100	32	0.75	-	-	172.39

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MATERIAL HARDNESS (Rc)

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continued →

Series V5 (continued)

.7500"  
(19.050mm)

MATERIAL HARDNESS (Rc)

70

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EDP#		$d1$ † Diameter			$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	$r$ Corner Radius	$l3$ Reach Length	$d3$ Neck Diameter	LIST PRICE
(plain)	(weldon)	Decimal		Metric							
50079	50332	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	153.17
51103	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.015"	-	-	161.54
50081	50333	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	161.53
51057	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.060"	-	-	161.54
51105	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.120"	-	-	161.54
51107	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.015"	-	-	165.04
51058	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.030"	-	-	165.04
51109	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.060"	-	-	165.04
50082	50334	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	156.69
51111	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-	165.04
50083	50335	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	165.04
50084	50336	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	165.04
51059	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.078"	-	-	165.04
50085	50337	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	165.04
51113	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.190"	-	-	165.04
51060	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	-	156.69
51115	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.015"	-	-	165.04
51061	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	165.04
51119	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.060"	-	-	165.04
51062	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	156.69
51121	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-	165.04
51063	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	165.04
50086	50338	.7500	3/4"	19.050	3/4"	5"	2-1/8"	-	-	-	210.30
51125	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.015"	-	-	228.93
50087	50339	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.030"	-	-	228.93
51064	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.060"	-	-	228.93
51065	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.120"	-	-	228.93
51127	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.015"	-	-	228.93
51066	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.030"	-	-	228.93
51129	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.060"	-	-	228.93
51131	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.015"	-	-	228.93
51067	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-	228.93
51133	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.060"	-	-	228.93
51135	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.015"	-	-	228.93
51068	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.030"	-	-	228.93
51137	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.060"	-	-	228.93
50089	50341	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	246.11
51139	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.015"	-	-	271.93
50091	50342	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	271.93
51141	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.060"	-	-	271.93
51143	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.015"	-	-	342.96
51145	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.030"	-	-	342.96
51147	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.060"	-	-	342.96
51069	-	.7500	3/4"	19.050	3/4"	4"	1"	.030"	2"	.705"	177.16
51070	-	.7500	3/4"	19.050	3/4"	5"	1"	.030"	2-1/2"	.705"	241.06
50088	50340	.7500	3/4"	19.050	3/4"	5-1/2"	1-1/2"	.030"	3-1/4"	.705"	284.10
51071	-	.7500	3/4"	19.050	3/4"	6"	1"	.030"	4-1/8"	.705"	284.10

EDP#		$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	$r$ Corner Radius	$l3$ Reach Length	$d3$ Neck Diameter	LIST PRICE
(plain)	(weldon)	Decimal	Metric							
50092	50343	.7874	20.000	20.0	100	38	-	-	-	211.69
51072	-	.7874	20.000	20.0	100	38	0.50	-	-	233.58
50093	50344	.7874	20.000	20.0	100	38	0.75	-	-	233.58
51073	-	.7874	20.000	20.0	100	38	1.00	-	-	233.58
51074	-	.7874	20.000	20.0	100	38	1.50	-	-	233.58
51075	-	.7874	20.000	20.0	100	38	2.00	-	-	233.58
51076	-	.7874	20.000	20.0	100	38	3.00	-	-	233.58
51077	-	.9843	25.000	25.0	100	38	-	-	-	241.76
51078	-	.9843	25.000	25.0	100	38	0.50	-	-	267.71
51079	-	.9843	25.000	25.0	100	38	0.75	-	-	267.71
51080	-	.9843	25.000	25.0	100	38	1.50	-	-	267.71
51081	-	.9843	25.000	25.0	100	38	3.00	-	-	267.71
50094	-	1.000	1" 25.400	1"	4"	1-1/4"	-	-	-	234.08
50095	-	1.000	1" 25.400	1"	4"	1-1/4"	.030"	-	-	281.77
51082	-	1.000	1" 25.400	1"	4"	1-1/4"	.120"	-	-	281.77
-	50348	1.000	1" 25.400	1"	4"	1-1/2"	-	-	-	225.07
-	50349	1.000	1" 25.400	1"	4"	1-1/2"	.030"	-	-	270.93
-	50350	1.000	1" 25.400	1"	4"	1-1/2"	.060"	-	-	270.93
51083	-	1.000	1" 25.400	1"	4"	1-1/2"	.120"	-	-	281.77
50116	-	1.000	1" 25.400	1"	4"	1-1/2"	.125"	-	-	281.77
50097	-	1.000	1" 25.400	1"	4"	1-3/4"	-	-	-	234.08
50098	-	1.000	1" 25.400	1"	4"	1-3/4"	.030"	-	-	281.77
50099	-	1.000	1" 25.400	1"	4"	1-3/4"	.060"	-	-	281.77
51084	-	1.000	1" 25.400	1"	4"	1-3/4"	.120"	-	-	281.77
51085	-	1.000	1" 25.400	1"	4-1/2"	2"	.030"	-	-	314.21
51087	-	1.000	1" 25.400	1"	4-1/2"	2"	.120"	-	-	314.21
51088	-	1.000	1" 25.400	1"	4-1/2"	2"	.250"	-	-	314.21
51089	-	1.000	1" 25.400	1"	5"	2-1/2"	.030"	-	-	346.66
51090	-	1.000	1" 25.400	1"	5"	2-5/8"	.030"	-	-	346.66
50104	50354	1.000	1" 25.400	1"	6"	3-1/4"	-	-	-	408.16
50105	-	1.000	1" 25.400	1"	6"	3-1/4"	.030"	-	-	452.13
51091	-	1.000	1" 25.400	1"	6"	3-3/8"	.060"	-	-	452.13
51092	-	1.000	1" 25.400	1"	7"	4-1/4"	.030"	-	-	551.75
51093	-	1.000	1" 25.400	1"	7"	4-1/4"	.060"	-	-	551.75
51094	-	1.000	1" 25.400	1"	5"	1-1/4"	.030"	2-5/8"	.940"	358.81
50101	-	1.000	1" 25.400	1"	5-1/2"	1-3/4"	.030"	3-1/4"	.940"	459.72
50102	50352	1.000	1" 25.400	1"	5-1/2"	1-3/4"	.060"	3-1/4"	.940"	459.72
51095	-	1.000	1" 25.400	1"	6"	1-1/4"	.030"	3-3/8"	.940"	464.26
51096	-	1.000	1" 25.400	1"	7"	1-1/4"	.030"	4-1/4"	.940"	564.10

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