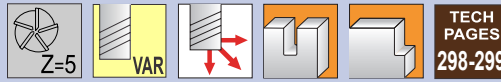


d_1	+0.000" - .002" (+.000mm - .050mm)
d_2	h6
r	+0.011" - .001" (+.025 - .025mm)

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



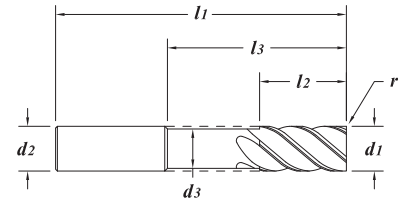
Recommended for titanium and tool steels under 45Rc

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



MATERIAL HARDNESS (Rc) 70
35
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EDP#	d_1 † Diameter	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter							
								1-11	12-24	25-49	50-100			
(plain) (weldon)	Decimal Metric													
50000	-	.2362	6.000	6.0	50	13	-	-	-	22.92	21.92	20.93	19.93	
50001	-	.2362	6.000	6.0	50	13	0.5	-	-	26.51	25.36	24.20	23.05	
50002	-	.2362	6.000	6.0	65	19	-	-	-	25.83	24.71	23.58	22.46	
50003	-	.2362	6.000	6.0	65	19	0.5	-	-	29.37	28.09	26.82	25.54	
50004	-	.2362	6.000	6.0	65	13	-	20	5.4	34.45	32.96	31.46	29.96	
50005	-	.2362	6.000	6.0	65	13	0.5	20	5.4	38.00	36.34	34.69	33.04	
50006	-	.2362	6.000	6.0	65	13	1.0	20	5.4	38.00	36.34	34.69	33.04	
50007	-	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	21.15	20.23	19.31	18.39	
51000	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.010"	-	25.51	24.40	23.29	22.18	
50008	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.015"	-	25.51	24.40	23.29	22.18	
51001	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-	25.51	24.40	23.29	22.18	
50009	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.030"	-	25.51	24.40	23.29	22.18	
51002	-	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-	22.00	21.04	20.09	19.13	
51003	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.010"	-	25.51	24.40	23.29	22.18	
51004	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-	25.51	24.40	23.29	22.18	
50011	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	24.93	23.85	22.76	21.68	
51005	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	28.23	27.01	25.78	24.55	
50012	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	28.23	27.01	25.78	24.55	
50013	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	28.23	27.01	25.78	24.55	
50014	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	28.23	27.01	25.78	24.55	
50015	-	.2500	1/4"	6.350	1/4"	3"	1"	-	-	38.09	36.43	34.78	33.12	
51006	-	.2500	1/4"	6.350	1/4"	3"	1"	.010"	-	41.86	40.04	38.22	36.40	
51007	-	.2500	1/4"	6.350	1/4"	3"	1"	.015"	-	41.86	40.04	38.22	36.40	
50016	-	.2500	1/4"	6.350	1/4"	3"	1"	.030"	-	41.86	40.04	38.22	36.40	
50113	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	41.86	40.04	38.22	36.40	
50017	-	.2500	1/4"	6.350	1/4"	4"	1/2"	.015"	1-1/4"	.235"	54.74	52.36	49.98	47.60
51008	-	.2500	1/4"	6.350	1/4"	4"	1/2"	.015"	2-1/8"	.235"	54.74	52.36	49.98	47.60
50023	-	.2756		7.000	8.0	65	22	0.2	-	45.46	43.48	41.51	39.53	
50018	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	-	-	35.57	34.02	32.48	30.93	
50019	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.015"	-	38.28	36.62	34.95	33.29	
50021	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	38.28	36.62	34.95	33.29	
50022	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	-	38.28	36.62	34.95	33.29	

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	1-11	12-24	25-49	50-100			
												(plain)	(weldon)	Decimal
50024	-	.3150	8.000	8.0	65	22	0.2	-	-	39.72	37.99	36.27	34.54	
50025	-	.3150	8.000	8.0	65	22	0.5	-	-	39.72	37.99	36.27	34.54	
50026	-	.3150	8.000	8.0	75	19	-	26	7.2	61.67	58.99	56.31	53.63	
50027	-	.3150	8.000	8.0	75	19	0.5	26	7.2	66.73	63.83	60.93	58.03	
50028	-	.3150	8.000	8.0	75	19	1.0	26	7.2	66.73	63.83	60.93	58.03	
50029	-	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	35.91	34.35	32.79	31.23	
50031	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.015"	-	41.12	39.34	37.55	35.76	
50032	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	41.12	39.34	37.55	35.76	
50033	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	-	41.12	39.34	37.55	35.76	
50034	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	-	-	41.96	40.14	38.31	36.49	
50035	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.015"	-	44.71	42.77	40.82	38.88	
50036	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	44.71	42.77	40.82	38.88	
50037	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	44.71	42.77	40.82	38.88	
50038	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.060"	-	44.71	42.77	40.82	38.88	
51009	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-	58.83	56.28	53.72	51.16	
50114	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	58.83	56.28	53.72	51.16	
51010	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.015"	-	66.22	63.34	60.46	57.58	
50039	-	.3750	3/8"	9.525	3/8"	4"	2"	-	-	60.56	57.93	55.29	52.66	
50041	-	.3750	3/8"	9.525	3/8"	4"	2"	.030"	-	66.22	63.34	60.46	57.58	
51011	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	1-1/8"	.355"	79.02	75.58	72.15	68.71
50042	-	.3750	3/8"	9.525	3/8"	4"	7/8"	.015"	1-7/8"	.355"	79.02	75.58	72.15	68.71
51012	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	2-1/8"	.355"	104.47	99.92	95.38	90.84
51013	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	3-1/8"	.355"	104.47	99.92	95.38	90.84
51014	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	4-1/8"	.355"	104.47	99.92	95.38	90.84
50043	-	.3937	10.000	10.0	70	22	-	-	-	50.32	48.14	45.95	43.76	
51015	-	.3937	10.000	10.0	70	22	0.30	-	-	53.99	51.65	49.30	46.95	
50044	-	.3937	10.000	10.0	70	22	0.50	-	-	53.99	51.65	49.30	46.95	
51016	-	.3937	10.000	10.0	70	22	0.75	-	-	53.99	51.65	49.30	46.95	
51017	-	.3937	10.000	10.0	70	22	1.00	-	-	53.99	51.65	49.30	46.95	
50045	-	.3937	10.000	10.0	75	22	-	32	9.0	69.76	66.73	63.69	60.66	
50046	-	.3937	10.000	10.0	75	22	0.50	32	9.0	75.26	71.98	68.71	65.44	
NEW 51018	-	.3937	10.000	10.0	75	22	0.75	32	9.0	75.26	71.98	68.71	65.44	
50047	-	.3937	10.000	10.0	75	22	1.00	32	9.0	75.26	71.98	68.71	65.44	
51019	-	.4724	12.000	12.0	65	19	-	-	-	61.26	58.60	55.93	53.27	
51020	-	.4724	12.000	12.0	65	19	0.50	-	-	71.25	68.16	65.06	61.96	
50484	50485	.4724	12.000	12.0	75	26	-	-	-	65.37	62.52	59.68	56.84	
51021	-	.4724	12.000	12.0	75	26	0.30	-	-	79.51	76.05	72.60	69.14	
50486	50487	.4724	12.000	12.0	75	26	0.50	-	-	79.51	76.05	72.60	69.14	
51022	-	.4724	12.000	12.0	75	26	0.75	-	-	79.51	76.05	72.60	69.14	
51023	-	.4724	12.000	12.0	75	26	1.00	-	-	79.51	76.05	72.60	69.14	
50112	-	.4724	12.000	12.0	75	26	2.00	-	-	79.51	76.05	72.60	69.14	
50115	-	.4724	12.000	12.0	75	26	2.50	-	-	79.51	76.05	72.60	69.14	
50048	50299	.4724	12.000	12.0	75	32	-	-	-	65.37	62.52	59.68	56.84	
51024	-	.4724	12.000	12.0	75	32	0.30	-	-	79.51	76.05	72.60	69.14	
50049	50300	.4724	12.000	12.0	75	32	0.50	-	-	79.51	76.05	72.60	69.14	
51025	-	.4724	12.000	12.0	75	32	0.75	-	-	79.51	76.05	72.60	69.14	
51026	-	.4724	12.000	12.0	75	32	1.00	-	-	79.51	76.05	72.60	69.14	
51027	-	.4724	12.000	12.0	100	38	-	-	-	87.37	83.57	79.77	75.97	
51028	-	.4724	12.000	12.0	100	38	0.50	-	-	92.52	88.50	84.47	80.45	
50423	-	.4724	12.000	12.0	100	42	-	-	-	87.37	83.57	79.77	75.97	
50425	-	.4724	12.000	12.0	100	42	0.30	-	-	92.52	88.50	84.47	80.45	
50427	-	.4724	12.000	12.0	100	42	0.50	-	-	92.52	88.50	84.47	80.45	
50429	-	.4724	12.000	12.0	100	42	1.00	-	-	92.52	88.50	84.47	80.45	
50431	-	.4724	12.000	12.0	100	42	2.00	-	-	92.52	88.50	84.47	80.45	
51029	-	.4724	12.000	12.0	100	52	-	-	-	87.37	83.57	79.77	75.97	
51030	-	.4724	12.000	12.0	100	52	0.50	-	-	92.52	88.50	84.47	80.45	
50051	50301	.4724	12.000	12.0	100	26	-	38	10.8	100.11	95.76	91.40	87.05	
50052	50302	.4724	12.000	12.0	100	26	0.50	38	10.8	105.26	100.68	96.11	91.53	
50053	50303	.4724	12.000	12.0	100	26	1.00	38	10.8	105.26	100.68	96.11	91.53	

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MATERIAL HARDNESS (Rc)

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continued →

Series V5 (continued)

.5000"
(12.700mm)

EDP#		$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	r Corner Radius	$l3$ Reach Length	$d3$ Neck Diameter	1-11	12-24	25-49	50-100	
(plain)	(weldon)	Decimal	Metric											
50054	50304	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-	58.74	56.19	53.63	51.08
50106	50305	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	68.33	65.36	62.39	59.42
50055	50306	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	68.33	65.36	62.39	59.42
50107	50307	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	68.33	65.36	62.39	59.42
50056	50308	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	62.77	60.04	57.31	54.58
50108	50309	.5000	1/2"	12.700	1/2"	3"	1"	.010"	-	-	76.27	72.95	69.64	66.32
50057	50310	.5000	1/2"	12.700	1/2"	3"	1"	.020"	-	-	76.27	72.95	69.64	66.32
50109	50311	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	76.27	72.95	69.64	66.32
50058	50312	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	62.77	60.04	57.31	54.58
50111	50313	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	76.27	72.95	69.64	66.32
50059	50314	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	76.27	72.95	69.64	66.32
50061	50315	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	76.27	72.95	69.64	66.32
50062	50316	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	76.27	72.95	69.64	66.32
50063	50317	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.045"	-	-	76.27	72.95	69.64	66.32
50064	50318	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	76.27	72.95	69.64	66.32
50065	50319	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-	76.27	72.95	69.64	66.32
50433	50435	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.010"	-	-	90.13	86.21	82.29	78.37
51031	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.015"	-	-	90.13	86.21	82.29	78.37
51032	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	-	90.13	86.21	82.29	78.37
50436	50437	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	-	84.93	81.24	77.54	73.85
50438	50439	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.010"	-	-	90.13	86.21	82.29	78.37
50440	50441	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.020"	-	-	90.13	86.21	82.29	78.37
50442	50443	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.030"	-	-	90.13	86.21	82.29	78.37
50444	50445	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.040"	-	-	90.13	86.21	82.29	78.37
50446	50447	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.060"	-	-	90.13	86.21	82.29	78.37
50067	50321	.5000	1/2"	12.700	1/2"	4"	2-1/8"	-	-	-	84.93	81.24	77.54	73.85
51033	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.015"	-	-	90.13	86.21	82.29	78.37
50068	50322	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	-	90.13	86.21	82.29	78.37
51034	-	.5000	1/2"	12.700	1/2"	6"	1"	.030"	-	-	127.47	121.92	116.38	110.84
51035	-	.5000	1/2"	12.700	1/2"	6"	3-1/8"	-	-	-	121.79	116.49	111.20	105.90
51036	-	.5000	1/2"	12.700	1/2"	6"	3-1/8"	.030"	-	-	127.47	121.92	116.38	110.84
51037	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	1-1/2"	.475"	102.89	98.42	93.94	89.47
51038	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	2-1/4"	.475"	102.89	98.42	93.94	89.47
50066	50320	.5000	1/2"	12.700	1/2"	4"	1-1/4"	.030"	2-1/4"	.475"	102.89	98.42	93.94	89.47
51039	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	3-3/8"	.475"	140.25	134.16	128.06	121.96
51040	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	4-1/8"	.475"	140.25	134.16	128.06	121.96

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MATERIAL HARDNESS (Rc)

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EDP#		$d1^{\dagger}$			$d2$	$l1$	$l2$	r	$l3$	$d3$	1-11	12-24	25-49	50-100
(plain)	(weldon)	Decimal	Diameter	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter				
50069	50323	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	115.81	110.77	105.74	100.70
51041	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	121.42	116.14	110.86	105.58
50071	50324	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	121.42	116.14	110.86	105.58
50072	50325	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	121.42	116.14	110.86	105.58
50401	50402	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	121.42	116.14	110.86	105.58
51042	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	123.68	118.31	112.93	107.55
51043	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	131.99	126.25	120.51	114.77
51044	-	.6250	5/8"	15.875	5/8"	4"	2-1/8"	-	-	-	123.68	118.31	112.93	107.55
51045	-	.6250	5/8"	15.875	5/8"	4"	2-1/8"	.030"	-	-	131.99	126.25	120.51	114.77
51046	-	.6250	5/8"	15.875	5/8"	6"	2-1/2"	.030"	-	-	181.69	173.79	165.89	157.99
50403	50404	.6250	5/8"	15.875	5/8"	6"	3-1/8"	.030"	-	-	181.69	173.79	165.89	157.99
51047	-	.6250	5/8"	15.875	5/8"	6"	3-1/8"	.060"	-	-	181.69	173.79	165.89	157.99
51048	-	.6250	5/8"	15.875	5/8"	6"	3-1/2"	.030"	-	-	181.69	173.79	165.89	157.99
51049	-	.6250	5/8"	15.875	5/8"	4"	3/4"	.030"	1-5/8"	.590"	143.09	136.87	130.65	124.43
50073	50326	.6250	5/8"	15.875	5/8"	4"	1-1/4"	.030"	2-1/4"	.590"	143.09	136.87	130.65	124.43
51050	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	2-3/8"	.590"	194.45	186.00	177.54	169.09
51051	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	3-3/8"	.590"	194.45	186.00	177.54	169.09
51052	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-1/8"	.590"	194.45	186.00	177.54	169.09
51053	-	.6299		16.000	16.0	75	19	-	-	-	117.59	112.48	107.36	102.25
51054	-	.6299		16.000	16.0	75	19	0.50	-	-	123.31	117.95	112.59	107.23
50074	50327	.6299		16.000	16.0	88	32	-	-	-	120.82	115.57	110.31	105.06
50075	50328	.6299		16.000	16.0	88	32	0.50	-	-	126.70	121.19	115.68	110.17
50420	-	.6299		16.000	16.0	88	32	1.00	-	-	126.70	121.19	115.68	110.17
51055	-	.6299		16.000	16.0	88	32	2.00	-	-	126.70	121.19	115.68	110.17
50422	-	.6299		16.000	16.0	88	32	3.00	-	-	126.70	121.19	115.68	110.17
50424	-	.6299		16.000	16.0	88	32	4.00	-	-	126.70	121.19	115.68	110.17
50430	-	.6299		16.000	16.0	100	40	0.50	-	-	134.72	128.87	123.01	117.15
50432	-	.6299		16.000	16.0	100	40	1.00	-	-	134.72	128.87	123.01	117.15
50434	-	.6299		16.000	16.0	100	40	3.00	-	-	134.72	128.87	123.01	117.15
50076	50329	.6299		16.000	16.0	100	32	-	50	14.4	139.62	133.55	127.48	121.41
50077	-	.6299		16.000	16.0	100	32	0.50	50	14.4	145.84	139.50	133.16	126.82
50426	-	.6299		16.000	16.0	100	32	1.00	50	14.4	145.84	139.50	133.16	126.82
51056	-	.6299		16.000	16.0	100	32	2.00	50	14.4	145.84	139.50	133.16	126.82
50428	-	.6299		16.000	16.0	100	32	3.00	50	14.4	145.84	139.50	133.16	126.82
50078	-	.7087		18.000	18.0	100	32	0.75	-	-	181.88	173.98	166.07	158.16

continued →

Series V5 (continued)

.7500"
(19.050mm)

MATERIAL HARDNESS (Rc)

70

35

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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	1-11	12-24	25-49	50-100	
(plain)	(weldon)	Decimal		Metric										
50079	50332	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	161.60	154.57	147.55	140.52
51103	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.015"	-	-	170.43	163.02	155.61	148.20
50081	50333	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	170.42	163.01	155.60	148.19
51057	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.060"	-	-	170.43	163.02	155.61	148.20
51105	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.120"	-	-	170.43	163.02	155.61	148.20
51107	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.015"	-	-	174.12	166.55	158.98	151.41
51058	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.030"	-	-	174.12	166.55	158.98	151.41
51109	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.060"	-	-	174.12	166.55	158.98	151.41
50082	50334	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	165.31	158.13	150.94	143.75
51111	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-	174.12	166.55	158.98	151.41
50083	50335	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	174.12	166.55	158.98	151.41
50084	50336	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	174.12	166.55	158.98	151.41
51059	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.078"	-	-	174.12	166.55	158.98	151.41
50085	50337	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	174.12	166.55	158.98	151.41
51113	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.190"	-	-	174.12	166.55	158.98	151.41
51060	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	-	165.31	158.13	150.94	143.75
51115	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.015"	-	-	174.12	166.55	158.98	151.41
51061	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	174.12	166.55	158.98	151.41
51119	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.060"	-	-	174.12	166.55	158.98	151.41
51062	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	165.31	158.13	150.94	143.75
51121	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-	174.12	166.55	158.98	151.41
51063	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	174.12	166.55	158.98	151.41
51123	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.060"	-	-	174.12	166.55	158.98	151.41
50086	50338	.7500	3/4"	19.050	3/4"	5"	2-1/8"	-	-	-	221.88	212.23	202.59	192.94
51125	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.015"	-	-	241.53	231.03	220.53	210.03
50087	50339	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.030"	-	-	241.53	231.03	220.53	210.03
51064	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.060"	-	-	241.53	231.03	220.53	210.03
51065	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.120"	-	-	241.53	231.03	220.53	210.03
51127	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.015"	-	-	241.53	231.03	220.53	210.03
51066	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.030"	-	-	241.53	231.03	220.53	210.03
51129	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.060"	-	-	241.53	231.03	220.53	210.03
51131	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.015"	-	-	241.53	231.03	220.53	210.03
51067	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-	241.53	231.03	220.53	210.03
51133	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.060"	-	-	241.53	231.03	220.53	210.03
51135	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.015"	-	-	241.53	231.03	220.53	210.03
51068	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.030"	-	-	241.53	231.03	220.53	210.03
51137	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.060"	-	-	241.53	231.03	220.53	210.03
50089	50341	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	259.66	248.37	237.08	225.79
51139	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.015"	-	-	286.90	274.43	261.95	249.48
50091	50342	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	286.90	274.43	261.95	249.48
51141	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.060"	-	-	286.90	274.43	261.95	249.48
51143	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.015"	-	-	361.84	346.10	330.37	314.64
51145	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.030"	-	-	361.84	346.10	330.37	314.64
51147	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.060"	-	-	361.84	346.10	330.37	314.64
51069	-	.7500	3/4"	19.050	3/4"	4"	1"	.030"	2"	.705"	186.91	178.78	170.66	162.53
51070	-	.7500	3/4"	19.050	3/4"	5"	1"	.030"	2-1/2"	.705"	254.33	243.28	232.22	221.16
50088	50340	.7500	3/4"	19.050	3/4"	5-1/2"	1-1/2"	.030"	3-1/4"	.705"	299.74	286.70	273.67	260.64
51071	-	.7500	3/4"	19.050	3/4"	6"	1"	.030"	4-1/8"	.705"	299.74	286.70	273.67	260.64

EDP#		$d1^\dagger$		$d2$	$l1$	$l2$	r	$l3$	$d3$	1-11	12-24	25-49	50-100
(plain)	(weldon)	Decimal	Metric	Shank Diameter	Overall Length	Flute Length	Corner Radius	Reach Length	Neck Diameter				
50092	50343	.7874	20.000	20.0	100	38	-	-	-	223.34	213.63	203.92	194.21
51072	-	.7874	20.000	20.0	100	38	0.50	-	-	246.43	235.72	225.00	214.29
50093	50344	.7874	20.000	20.0	100	38	0.75	-	-	246.43	235.72	225.00	214.29
51073	-	.7874	20.000	20.0	100	38	1.00	-	-	246.43	235.72	225.00	214.29
51074	-	.7874	20.000	20.0	100	38	1.50	-	-	246.43	235.72	225.00	214.29
51075	-	.7874	20.000	20.0	100	38	2.00	-	-	246.43	235.72	225.00	214.29
51076	-	.7874	20.000	20.0	100	38	3.00	-	-	246.43	235.72	225.00	214.29
51077	-	.9843	25.000	25.0	100	38	-	-	-	255.07	243.98	232.89	221.80
51078	-	.9843	25.000	25.0	100	38	0.50	-	-	282.45	270.17	257.89	245.61
NEW 51079	-	.9843	25.000	25.0	100	38	0.75	-	-	282.45	270.17	257.89	245.61
51080	-	.9843	25.000	25.0	100	38	1.50	-	-	282.45	270.17	257.89	245.61
51081	-	.9843	25.000	25.0	100	38	3.00	-	-	282.45	270.17	257.89	245.61
50094	-	1.000	25.400	1"	4"	1-1/4"	-	-	-	246.96	236.23	225.49	214.75
50095	-	1.000	25.400	1"	4"	1-1/4"	.030"	-	-	297.28	284.35	271.43	258.50
NEW 51082	-	1.000	25.400	1"	4"	1-1/4"	.120"	-	-	297.28	284.35	271.43	258.50
-	50348	1.000	25.400	1"	4"	1-1/2"	-	-	-	237.46	227.14	216.81	206.49
-	50349	1.000	25.400	1"	4"	1-1/2"	.030"	-	-	285.84	273.42	260.99	248.56
-	50350	1.000	25.400	1"	4"	1-1/2"	.060"	-	-	285.84	273.42	260.99	248.56
51083	-	1.000	25.400	1"	4"	1-1/2"	.120"	-	-	297.28	284.35	271.43	258.50
NEW 50116	-	1.000	25.400	1"	4"	1-1/2"	.125"	-	-	297.28	284.35	271.43	258.50
50097	-	1.000	25.400	1"	4"	1-3/4"	-	-	-	246.96	236.23	225.49	214.75
50098	-	1.000	25.400	1"	4"	1-3/4"	.030"	-	-	297.28	284.35	271.43	258.50
50099	-	1.000	25.400	1"	4"	1-3/4"	.060"	-	-	297.28	284.35	271.43	258.50
51084	-	1.000	25.400	1"	4"	1-3/4"	.120"	-	-	297.28	284.35	271.43	258.50
51085	-	1.000	25.400	1"	4-1/2"	2"	.030"	-	-	331.51	317.10	302.68	288.27
51086	-	1.000	25.400	1"	4-1/2"	2"	.060"	-	-	331.51	317.10	302.68	288.27
51087	-	1.000	25.400	1"	4-1/2"	2"	.120"	-	-	331.51	317.10	302.68	288.27
51088	-	1.000	25.400	1"	4-1/2"	2"	.250"	-	-	331.51	317.10	302.68	288.27
51089	-	1.000	25.400	1"	5"	2-1/2"	.030"	-	-	365.75	349.84	333.94	318.04
51090	-	1.000	25.400	1"	5"	2-5/8"	.030"	-	-	365.75	349.84	333.94	318.04
50104	50354	1.000	25.400	1"	6"	3-1/4"	-	-	-	430.63	411.91	393.18	374.46
50105	-	1.000	25.400	1"	6"	3-1/4"	.030"	-	-	477.02	456.28	435.54	414.80
51091	-	1.000	25.400	1"	6"	3-3/8"	.060"	-	-	477.02	456.28	435.54	414.80
51092	-	1.000	25.400	1"	7"	4-1/4"	.030"	-	-	582.12	556.81	531.50	506.19
51093	-	1.000	25.400	1"	7"	4-1/4"	.060"	-	-	582.12	556.81	531.50	506.19
51094	-	1.000	25.400	1"	5"	1-1/4"	.030"	2-5/8"	.940"	378.56	362.10	345.64	329.18
50101	-	1.000	25.400	1"	5-1/2"	1-3/4"	.030"	3-1/4"	.940"	485.02	463.94	442.85	421.76
50102	50352	1.000	25.400	1"	5-1/2"	1-3/4"	.060"	3-1/4"	.940"	485.02	463.94	442.85	421.76
51095	-	1.000	25.400	1"	6"	1-1/4"	.030"	3-3/8"	.940"	489.82	468.52	447.23	425.93
51096	-	1.000	25.400	1"	7"	1-1/4"	.030"	4-1/4"	.940"	595.15	569.27	543.40	517.52

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MATERIAL HARDNESS (Rc)

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