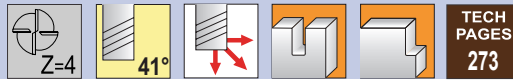


**TOLERANCES**

<i>d1</i>	+0.000" - .002" (+.000mm - .050mm)
<i>d2</i>	h6
<i>r</i>	+0.001" - .001" (+.025 - .025mm)



**NEW ITEMS**

**Series VRX**

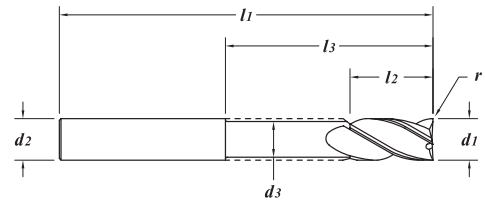
.0591" - .1181"  
(1.500mm - 3.000mm)

Recommended for inconel, pH materials, titanium and tool steels >40RC

**Square End, Corner Radius, Ball End**  
**AlTiN Coating**

Solid submicron grain carbide end mill - center cutting  
The standard in high performance milling  
Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity  
Staggered flute geometry

*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)	<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
		Decimal	Metric										
61084	-	.0591	1.500	3.0	38	3.0	-	-	-	14.50	13.87	13.24	12.61
61086	-	.0591	1.500	3.0	38	3.0	0.20	-	-	16.45	15.73	15.02	14.30
61088	-	.0591	1.500	3.0	38	3.0	BALL	-	-	16.45	15.73	15.02	14.30
61090	-	.0591	1.500	3.0	38	6.0	-	-	-	14.50	13.87	13.24	12.61
61092	-	.0591	1.500	3.0	38	6.0	0.20	-	-	16.45	15.73	15.02	14.30
61094	-	.0591	1.500	3.0	38	6.0	BALL	-	-	16.45	15.73	15.02	14.30
61096	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	-	-	13.66	13.07	12.47	11.88
61098	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	.010"	-	15.49	14.82	14.14	13.47
61100	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	BALL	-	15.49	14.82	14.14	13.47
61102	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	-	-	13.66	13.07	12.47	11.88
61104	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	.010"	-	15.49	14.82	14.14	13.47
61106	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	BALL	-	15.49	14.82	14.14	13.47
61108	-	.0787	2.000	3.0	38	4.0	-	-	-	13.66	13.07	12.47	11.88
61110	-	.0787	2.000	3.0	38	4.0	0.20	-	-	15.49	14.82	14.14	13.47
61112	-	.0787	2.000	3.0	38	4.0	BALL	-	-	15.49	14.82	14.14	13.47
61114	-	.0787	2.000	3.0	38	8.0	-	-	-	13.66	13.07	12.47	11.88
61116	-	.0787	2.000	3.0	38	8.0	0.20	-	-	15.49	14.82	14.14	13.47
61118	-	.0787	2.000	3.0	38	8.0	BALL	-	-	15.49	14.82	14.14	13.47
61120	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	-	-	13.05	12.49	11.92	11.35
61122	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.010"	-	14.93	14.28	13.63	12.98
61124	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	BALL	-	14.93	14.28	13.63	12.98
61126	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	-	-	13.05	12.49	11.92	11.35
61128	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.010"	-	14.93	14.28	13.63	12.98
61130	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	BALL	-	14.93	14.28	13.63	12.98
61877	-	.1181	3.000	3.0	38	8	-	-	-	12.26	11.73	11.19	10.66
27420	-	.1181	3.000	3.0	50	8	0.20	-	-	13.79	13.19	12.59	11.99
61132	-	.1181	3.000	3.0	50	8	0.30	-	-	13.79	13.19	12.59	11.99
27425	-	.1181	3.000	3.0	50	8	0.50	-	-	13.79	13.19	12.59	11.99
61134	-	.1181	3.000	3.0	50	8	BALL	-	-	13.79	13.19	12.59	11.99
61887	-	.1181	3.000	3.0	38	12	-	-	-	12.26	11.73	11.19	10.66
27430	-	.1181	3.000	3.0	50	12	0.20	-	-	13.79	13.19	12.59	11.99
61136	-	.1181	3.000	3.0	50	12	0.30	-	-	13.79	13.19	12.59	11.99
27435	-	.1181	3.000	3.0	50	12	0.50	-	-	13.79	13.19	12.59	11.99
61138	-	.1181	3.000	3.0	50	12	BALL	-	-	13.79	13.19	12.59	11.99

HIGH PERFORMANCE END MILLS

MATERIAL HARDNESS (Rc) 70 35 0

continued →

Series VRX (continued)

.1250" - .1969"  
(3.175mm - 5.000mm)

EDP#	(plain) (weldon)	$d1$ †		$d2$	$l1$	$l2$	$r$	$l3$	$d3$	1-11	12-24	25-49	50-100	
		Decimal	Diameter											Metric
61917	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	-	-	-	12.26	11.73	11.19	10.66
27440	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.010"	-	-	13.79	13.19	12.59	11.99
61140	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.015"	-	-	13.79	13.19	12.59	11.99
61073	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.030"	-	-	13.79	13.19	12.59	11.99
61142	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	BALL	-	-	13.79	13.19	12.59	11.99
61144	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	-	-	-	12.26	11.73	11.19	10.66
61146	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.010"	-	-	13.79	13.19	12.59	11.99
61148	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.015"	-	-	13.79	13.19	12.59	11.99
61074	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.030"	-	-	13.79	13.19	12.59	11.99
61149	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	BALL	-	-	13.79	13.19	12.59	11.99
61927	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	-	-	-	12.26	11.73	11.19	10.66
27450	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.010"	-	-	13.79	13.19	12.59	11.99
61150	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.015"	-	-	13.79	13.19	12.59	11.99
27455	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	-	-	13.79	13.19	12.59	11.99
61075	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.030"	-	-	13.79	13.19	12.59	11.99
61152	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	BALL	-	-	13.79	13.19	12.59	11.99
61154	-	.1562	5/32"	3.967	3/16"	2"	5/16"	-	-	-	16.16	15.46	14.75	14.05
27460	-	.1562	5/32"	3.967	3/16"	2"	5/16"	.010"	-	-	19.01	18.18	17.36	16.53
61156	-	.1562	5/32"	3.967	3/16"	2"	5/16"	.015"	-	-	19.01	18.18	17.36	16.53
61076	-	.1562	5/32"	3.967	3/16"	2"	5/16"	.030"	-	-	19.01	18.18	17.36	16.53
61077	-	.1562	5/32"	3.967	3/16"	2"	5/16"	BALL	-	-	19.01	18.18	17.36	16.53
61158	-	.1562	5/32"	3.967	3/16"	2"	1/2"	-	-	-	16.16	15.46	14.75	14.05
27470	-	.1562	5/32"	3.967	3/16"	2"	1/2"	.010"	-	-	19.01	18.18	17.36	16.53
61160	-	.1562	5/32"	3.967	3/16"	2"	1/2"	.015"	-	-	19.01	18.18	17.36	16.53
61078	-	.1562	5/32"	3.967	3/16"	2"	1/2"	.030"	-	-	19.01	18.18	17.36	16.53
61079	-	.1562	5/32"	3.967	3/16"	2"	1/2"	BALL	-	-	19.01	18.18	17.36	16.53
61162	-	.1575		4.000	6.0	50	8	-	-	-	23.01	22.01	21.01	20.01
27480	-	.1575		4.000	6.0	50	8	0.30	-	-	23.37	22.35	21.34	20.32
61164	-	.1575		4.000	6.0	50	8	0.50	-	-	23.37	22.35	21.34	20.32
28470	-	.1575		4.000	6.0	50	8	BALL	-	-	23.37	22.35	21.34	20.32
61977	-	.1575		4.000	6.0	50	12	-	-	-	23.01	22.01	21.01	20.01
27490	-	.1575		4.000	6.0	50	12	0.30	-	-	23.37	22.35	21.34	20.32
27495	-	.1575		4.000	6.0	50	12	0.50	-	-	23.37	22.35	21.34	20.32
28480	-	.1575		4.000	6.0	50	12	BALL	-	-	23.37	22.35	21.34	20.32
61166	-	.1575		4.000	6.0	65	19	-	-	-	25.52	24.41	23.30	22.19
61168	-	.1575		4.000	6.0	65	19	0.30	-	-	25.90	24.77	23.65	22.52
62007	-	.1875	3/16"	4.763	3/16"	2"	5/16"	-	-	-	15.46	14.78	14.11	13.44
27500	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.010"	-	-	17.32	16.57	15.81	15.06
61170	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.015"	-	-	17.32	16.57	15.81	15.06
61172	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.020"	-	-	17.32	16.57	15.81	15.06
28490	-	.1875	3/16"	4.763	3/16"	2"	5/16"	BALL	-	-	17.32	16.57	15.81	15.06
61174	-	.1875	3/16"	4.763	3/16"	2"	7/16"	-	-	-	15.46	14.78	14.11	13.44
61176	-	.1875	3/16"	4.763	3/16"	2"	7/16"	.010"	-	-	17.32	16.57	15.81	15.06
61178	-	.1875	3/16"	4.763	3/16"	2"	7/16"	.015"	-	-	17.32	16.57	15.81	15.06
62017	-	.1875	3/16"	4.763	3/16"	2"	9/16"	-	-	-	15.46	14.78	14.11	13.44
27520	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.010"	-	-	17.32	16.57	15.81	15.06
61180	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.015"	-	-	17.32	16.57	15.81	15.06
27521	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.020"	-	-	17.32	16.57	15.81	15.06
61182	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.030"	-	-	17.32	16.57	15.81	15.06
28500	-	.1875	3/16"	4.763	3/16"	2"	9/16"	BALL	-	-	17.32	16.57	15.81	15.06
61184	-	.1875	3/16"	4.763	3/16"	3"	1"	.010"	-	-	29.64	28.35	27.06	25.77
61186	-	.1875	3/16"	4.763	3/16"	3"	1-1/4"	.010"	-	-	29.64	28.35	27.06	25.77
63100	-	.1875	3/16"	4.763	3/16"	4"	5/16"	.010"	-	-	32.26	30.86	29.45	28.05
61188	-	.1969		5.000	6.0	50	10	-	-	-	22.54	21.56	20.58	19.60
27522	-	.1969		5.000	6.0	50	10	0.30	-	-	22.90	21.90	20.91	19.91
61190	-	.1969		5.000	6.0	50	10	0.50	-	-	22.90	21.90	20.91	19.91
28510	-	.1969		5.000	6.0	50	10	BALL	-	-	22.90	21.90	20.91	19.91

MATERIAL HARDNESS (Rc)

70

35

0

EDP#	(plain) (weldon)	$d_1$ †		$d_2$	$l_1$	$l_2$	$r$	$l_3$	$d_3$	1-11	12-24	25-49	50-100	
		Decimal	Diameter											Metric
62057	-	.1969		5.000	6.0	65	15	-	-	-	24.61	23.54	22.47	21.40
27524	-	.1969		5.000	6.0	65	15	0.30	-	-	25.37	24.27	23.16	22.06
27526	-	.1969		5.000	6.0	65	15	0.50	-	-	25.37	24.27	23.16	22.06
27528	-	.1969		5.000	6.0	65	15	1.00	-	-	25.37	24.27	23.16	22.06
28520	-	.1969		5.000	6.0	65	15	BALL	-	-	25.37	24.27	23.16	22.06
63110	-	.1969		5.000	6.0	100	10	0.30	-	-	48.61	46.50	44.38	42.27
61192	-	.1969		5.000	6.0	100	10	0.30	55	4.70	56.93	54.45	51.98	49.50
61194	-	.2188	7/32"	5.558	1/4"	2"	3/8"	-	-	-	19.00	18.17	17.35	16.52
61196	-	.2188	7/32"	5.558	1/4"	2"	3/8"	.010"	-	-	22.02	21.07	20.11	19.15
27525	-	.2188	7/32"	5.558	1/4"	2"	3/8"	.015"	-	-	22.02	21.07	20.11	19.15
61198	-	.2188	7/32"	5.558	1/4"	2"	3/8"	BALL	-	-	22.02	21.07	20.11	19.15
61200	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	-	-	-	21.56	20.63	19.69	18.75
61202	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.010"	-	-	24.43	23.36	22.30	21.24
27530	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.015"	-	-	24.43	23.36	22.30	21.24
61204	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.020"	-	-	24.43	23.36	22.30	21.24
61206	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	BALL	-	-	24.43	23.36	22.30	21.24
61208	-	.2188	7/32"	5.558	1/4"	3"	1-1/4"	.015"	-	-	36.20	34.63	33.05	31.48
63120	-	.2188	7/32"	5.558	1/4"	4"	3/8"	.015"	-	-	46.94	44.90	42.86	40.82
61210	-	.2188	7/32"	5.558	1/4"	4"	3/8"	.015"	2-1/4"	.205"	55.26	52.86	50.45	48.05
62077	-	.2362		6.000	6.0	50	12	-	-	-	19.16	18.33	17.49	16.66
27535	-	.2362		6.000	6.0	50	12	0.30	-	-	22.16	21.20	20.23	19.27
61212	-	.2362		6.000	6.0	50	12	0.50	-	-	22.16	21.20	20.23	19.27
61214	-	.2362		6.000	6.0	50	12	0.75	-	-	22.16	21.20	20.23	19.27
28530	-	.2362		6.000	6.0	50	12	BALL	-	-	22.16	21.20	20.23	19.27
62087	-	.2362		6.000	6.0	65	19	-	-	-	21.60	20.66	19.72	18.78
61216	-	.2362		6.000	6.0	65	19	0.20	-	-	24.56	23.50	22.43	21.36
27540	-	.2362		6.000	6.0	65	19	0.30	-	-	24.56	23.50	22.43	21.36
27545	-	.2362		6.000	6.0	65	19	0.50	-	-	24.56	23.50	22.43	21.36
61218	-	.2362		6.000	6.0	65	19	0.75	-	-	24.56	23.50	22.43	21.36
27547	-	.2362		6.000	6.0	65	19	1.00	-	-	24.56	23.50	22.43	21.36
27548	-	.2362		6.000	6.0	65	19	1.50	-	-	24.56	23.50	22.43	21.36
28540	-	.2362		6.000	6.0	65	19	BALL	-	-	24.56	23.50	22.43	21.36
61220	-	.2362		6.000	6.0	75	26	0.30	-	-	36.54	34.95	33.36	31.77
61222	-	.2362		6.000	6.0	75	26	0.50	-	-	36.54	34.95	33.36	31.77
61224	-	.2362		6.000	6.0	75	38	0.30	-	-	36.54	34.95	33.36	31.77
61226	-	.2362		6.000	6.0	75	38	0.50	-	-	36.54	34.95	33.36	31.77
63130	-	.2362		6.000	6.0	100	12	0.30	32	5.70	47.39	45.33	43.27	41.21
62137	-	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	-	18.39	17.59	16.79	15.99
61228	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.010"	-	-	21.32	20.39	19.47	18.54
27560	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.015"	-	-	21.32	20.39	19.47	18.54
61230	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-	-	21.32	20.39	19.47	18.54
28570	-	.2500	1/4"	6.350	1/4"	2"	3/8"	BALL	-	-	21.32	20.39	19.47	18.54
61232	-	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-	-	18.39	17.59	16.79	15.99
61234	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-	-	21.32	20.39	19.47	18.54
62147	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	-	20.85	19.94	19.04	18.13
27570	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	-	23.62	22.59	21.57	20.54
27580	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	23.62	22.59	21.57	20.54
61236	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	23.62	22.59	21.57	20.54
27581	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	23.62	22.59	21.57	20.54
61238	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.040"	-	-	23.62	22.59	21.57	20.54
27583	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	-	-	23.62	22.59	21.57	20.54
28580	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	BALL	-	-	23.62	22.59	21.57	20.54

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MATERIAL HARDNESS (RC)

continued →

Series VRX (continued)

.2500" - .3438"  
(6.350mm - 8.733mm)

EDP#	<i>d1</i> †	<i>d2</i>	<i>l1</i>	<i>l2</i>	<i>r</i>	<i>l3</i>	<i>d3</i>	1-11	12-24	25-49	50-100	Diameter		
												Shank	Overall	Flute
(plain)	(weldon)	Decimal	Metric	Diameter	Length	Length	Radius	Length	Diameter					
61240	-	.2500	1/4"	6.350	1/4"	3"	1"	.015"	-	-	34.99	33.47	31.95	30.43
NEW 61241	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	-	34.99	33.47	31.95	30.43
61242	-	.2500	1/4"	6.350	1/4"	3"	1-1/2"	.015"	-	-	34.99	33.47	31.95	30.43
61244	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	3/4"	.240"	45.77	43.78	41.79	39.80
63140	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	1-1/4"	.240"	45.77	43.78	41.79	39.80
61246	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	2-1/8"	.240"	45.77	43.78	41.79	39.80
27585	-	.2756		7.000	8.0	50	12	0.30	-	-	34.58	33.08	31.57	30.07
27590	-	.2756		7.000	8.0	65	22	0.30	-	-	38.01	36.36	34.70	33.05
61248	-	.2812	9/32"	7.142	5/16"	2"	7/16"	-	-	-	29.08	27.82	26.55	25.29
27595	-	.2812	9/32"	7.142	5/16"	2"	7/16"	.015"	-	-	33.33	31.88	30.43	28.98
61250	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	-	-	-	34.04	32.56	31.08	29.60
61252	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.010"	-	-	36.64	35.05	33.45	31.86
27597	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.015"	-	-	36.64	35.05	33.45	31.86
61254	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.020"	-	-	36.64	35.05	33.45	31.86
63150	-	.2812	9/32"	7.142	5/16"	4"	7/16"	.015"	-	-	63.30	60.54	57.79	55.04
62207	-	.3125	5/16"	7.938	5/16"	2"	7/16"	-	-	-	25.42	24.31	23.21	22.10
61256	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.010"	-	-	29.13	27.86	26.60	25.33
61258	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.015"	-	-	29.13	27.86	26.60	25.33
27600	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	-	-	29.13	27.86	26.60	25.33
61260	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.030"	-	-	29.13	27.86	26.60	25.33
28610	-	.3125	5/16"	7.938	5/16"	2"	7/16"	BALL	-	-	29.13	27.86	26.60	25.33
62217	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	-	-	-	29.74	28.45	27.15	25.86
27610	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.010"	-	-	32.02	30.62	29.23	27.84
61262	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.015"	-	-	32.02	30.62	29.23	27.84
27620	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	-	32.02	30.62	29.23	27.84
27622	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	-	-	32.02	30.62	29.23	27.84
61264	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.040"	-	-	32.02	30.62	29.23	27.84
27624	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.060"	-	-	32.02	30.62	29.23	27.84
28620	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	BALL	-	-	32.02	30.62	29.23	27.84
61266	-	.3125	5/16"	7.938	5/16"	3"	1-1/4"	.015"	-	-	44.63	42.69	40.75	38.81
63160	-	.3125	5/16"	7.938	5/16"	4"	7/16"	.020"	1-7/8"	.300"	61.72	59.04	56.35	53.67
62257	-	.3150		8.000	8.0	50	12	-	-	-	26.46	25.31	24.16	23.01
61268	-	.3150		8.000	8.0	50	12	0.30	-	-	30.20	28.89	27.57	26.26
27630	-	.3150		8.000	8.0	50	12	0.50	-	-	30.20	28.89	27.57	26.26
61270	-	.3150		8.000	8.0	50	12	0.75	-	-	30.20	28.89	27.57	26.26
28630	-	.3150		8.000	8.0	50	12	BALL	-	-	30.20	28.89	27.57	26.26
62267	-	.3150		8.000	8.0	65	22	-	-	-	30.82	29.48	28.14	26.80
27635	-	.3150		8.000	8.0	65	22	0.30	-	-	33.21	31.77	30.32	28.88
27640	-	.3150		8.000	8.0	65	22	0.50	-	-	33.21	31.77	30.32	28.88
61272	-	.3150		8.000	8.0	65	22	0.75	-	-	33.21	31.77	30.32	28.88
27642	-	.3150		8.000	8.0	65	22	1.00	-	-	33.21	31.77	30.32	28.88
27643	-	.3150		8.000	8.0	65	22	1.50	-	-	33.21	31.77	30.32	28.88
61274	-	.3150		8.000	8.0	65	22	2.00	-	-	33.21	31.77	30.32	28.88
28640	-	.3150		8.000	8.0	65	22	BALL	-	-	33.21	31.77	30.32	28.88
61276	-	.3150		8.000	8.0	75	38	0.50	-	-	46.53	44.51	42.48	40.46
61278	-	.3150		8.000	8.0	100	50	0.50	-	-	53.15	50.84	48.53	46.22
63170	-	.3150		8.000	8.0	100	12	0.50	47	7.60	63.85	61.07	58.30	55.52
61280	-	.3438	11/32"	8.733	3/8"	2"	1/2"	-	-	-	33.98	32.51	31.03	29.55
27645	-	.3438	11/32"	8.733	3/8"	2"	1/2"	.020"	-	-	38.89	37.20	35.51	33.82
61282	-	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	-	-	-	39.70	37.97	36.25	34.52
27650	-	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	.020"	-	-	42.29	40.45	38.61	36.77
61284	-	.3438	11/32"	8.733	3/8"	3"	1-1/4"	.015"	-	-	55.65	53.23	50.81	48.39

MATERIAL HARDNESS (Rc)

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**TOLERANCES**

<i>d1</i>	+0.000" - .002" (+.000mm -.050mm)
<i>d2</i>	h6
<i>r</i>	+0.001" - .001" (+.025 - .025mm)



Series VRX (continued)

.3438" - .3937"  
(8.733mm - 10.000mm)

Recommended for Inconel, pH materials, titanium and tool steels >40Rc



HIGH PERFORMANCE  
END MILLS

**AlTiN Coating**

Solid submicron grain carbide end mill - center cutting

The standard in high performance milling

Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity

Staggered flute geometry

EDP#	(plain) (weldon)	<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	
		Decimal	Metric											
63180	-	.3438	11/32"	8.733	3/8"	4"	1/2"	.020"	-	-	67.77	64.82	61.88	58.93
27655	-	.3543		9.000	10.0	50	14	0.50	-	-	46.95	44.91	42.87	40.83
62287	-	.3543		9.000	10.0	65	22	-	-	-	47.59	45.52	43.45	41.38
27657	-	.3543		9.000	10.0	65	22	0.50	-	-	51.04	48.82	46.60	44.38
62317	-	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	-	30.03	28.72	27.42	26.11
27658	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.010"	-	-	34.37	32.88	31.38	29.89
61286	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.015"	-	-	34.37	32.88	31.38	29.89
27660	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	-	34.37	32.88	31.38	29.89
27662	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	-	-	34.37	32.88	31.38	29.89
61288	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.060"	-	-	34.37	32.88	31.38	29.89
28670	-	.3750	3/8"	9.525	3/8"	2"	1/2"	BALL	-	-	34.37	32.88	31.38	29.89
62327	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	-	-	-	35.09	33.56	32.04	30.51
27670	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	-	-	37.39	35.76	34.14	32.51
61290	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	-	-	37.39	35.76	34.14	32.51
27680	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	-	-	37.39	35.76	34.14	32.51
27682	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	-	-	37.39	35.76	34.14	32.51
61292	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.040"	-	-	37.39	35.76	34.14	32.51
61294	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.050"	-	-	37.39	35.76	34.14	32.51
27684	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	-	-	37.39	35.76	34.14	32.51
61296	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.094"	-	-	37.39	35.76	34.14	32.51
28680	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	BALL	-	-	37.39	35.76	34.14	32.51
61298	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-	-	49.20	47.06	44.92	42.78
NEW 61299	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	-	49.20	47.06	44.92	42.78
61300	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.015"	-	-	55.36	52.95	50.55	48.14
61302	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	BALL	-	-	55.36	52.95	50.55	48.14
61304	-	.3750	3/8"	9.525	3/8"	4"	2"	.015"	-	-	55.36	52.95	50.55	48.14
61306	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	1-1/8"	.360"	66.07	63.20	60.32	57.45
63190	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.020"	1-7/8"	.360"	66.07	63.20	60.32	57.45
61308	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	2-1/8"	.360"	66.07	63.20	60.32	57.45
61310	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	3-1/8"	.360"	87.35	83.56	79.76	75.96
61312	-	.3937		10.000	10.0	50	16	-	-	-	38.69	37.00	35.32	33.64
27690	-	.3937		10.000	10.0	50	16	0.50	-	-	41.50	39.70	37.89	36.09
61314	-	.3937		10.000	10.0	50	16	1.00	-	-	41.50	39.70	37.89	36.09
28690	-	.3937		10.000	10.0	50	16	BALL	-	-	41.50	39.70	37.89	36.09
62397	-	.3937		10.000	10.0	70	22	-	-	-	42.08	40.25	38.42	36.59
27698	-	.3937		10.000	10.0	70	22	0.30	-	-	45.14	43.18	41.21	39.25
27700	-	.3937		10.000	10.0	70	22	0.50	-	-	45.14	43.18	41.21	39.25
61316	-	.3937		10.000	10.0	70	22	0.75	-	-	45.14	43.18	41.21	39.25
27702	-	.3937		10.000	10.0	70	22	1.00	-	-	45.14	43.18	41.21	39.25
28700	-	.3937		10.000	10.0	70	22	BALL	-	-	45.14	43.18	41.21	39.25
61318	-	.3937		10.000	10.0	70	32	0.50	-	-	45.14	43.18	41.21	39.25
61320	-	.3937		10.000	10.0	100	38	0.50	-	-	70.09	67.05	64.00	60.95
61322	-	.3937		10.000	10.0	100	50	0.50	-	-	70.09	67.05	64.00	60.95
63200	-	.3937		10.000	10.0	100	14	0.50	47	9.50	80.80	77.29	73.77	70.26

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MATERIAL HARDNESS (Rc)

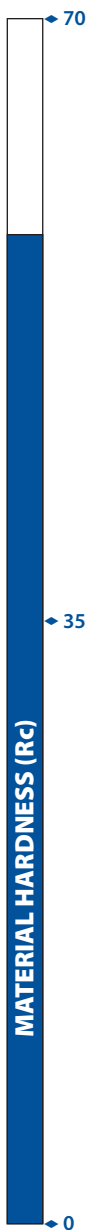
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continued →

Series VRX (continued)

.4375" - .5000"  
(11.113mm - 12.700mm)

EDP#		d1 †			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				
27705	-	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.020"	-	-	45.21	43.24	41.28	39.31
28705	-	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	BALL	-	-	45.21	43.24	41.28	39.31
62437	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	-	-	-	42.18	40.35	38.51	36.68
27708	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	.010"	-	-	45.21	43.24	41.28	39.31
27710	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	.020"	-	-	45.21	43.24	41.28	39.31
28710	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	BALL	-	-	45.21	43.24	41.28	39.31
63210	-	.4375	7/16"	11.113	7/16"	6"	1"	.020"	-	-	97.45	93.21	88.98	84.74
62475	-	.4724		12.000	12.0	65	19	-	-	-	51.22	48.99	46.77	44.54
27712	-	.4724		12.000	12.0	65	19	0.30	-	-	59.58	56.99	54.40	51.81
27715	-	.4724		12.000	12.0	65	19	0.50	-	-	59.58	56.99	54.40	51.81
28715	-	.4724		12.000	12.0	65	19	BALL	-	-	59.58	56.99	54.40	51.81
61324	-	.4724		12.000	12.0	75	26	-	-	-	54.65	52.27	49.90	47.52
61326	-	.4724		12.000	12.0	75	26	0.50	-	-	66.47	63.58	60.69	57.80
62485	-	.4724		12.000	12.0	75	32	-	-	-	54.65	52.27	49.90	47.52
27718	-	.4724		12.000	12.0	75	32	0.30	-	-	66.47	63.58	60.69	57.80
27720	-	.4724		12.000	12.0	75	32	0.50	-	-	66.47	63.58	60.69	57.80
61328	-	.4724		12.000	12.0	75	32	0.75	-	-	66.47	63.58	60.69	57.80
27722	-	.4724		12.000	12.0	75	32	1.00	-	-	66.47	63.58	60.69	57.80
27730	-	.4724		12.000	12.0	75	32	1.50	-	-	66.47	63.58	60.69	57.80
27735	-	.4724		12.000	12.0	75	32	2.00	-	-	66.47	63.58	60.69	57.80
61330	-	.4724		12.000	12.0	75	32	3.00	-	-	66.47	63.58	60.69	57.80
28720	-	.4724		12.000	12.0	75	32	BALL	-	-	66.47	63.58	60.69	57.80
61332	-	.4724		12.000	12.0	100	38	-	-	-	74.53	71.29	68.05	64.81
61334	-	.4724		12.000	12.0	100	38	0.50	-	-	78.74	75.32	71.89	68.47
61336	-	.4724		12.000	12.0	100	42	-	-	-	74.53	71.29	68.05	64.81
61338	-	.4724		12.000	12.0	100	42	0.50	-	-	78.74	75.32	71.89	68.47
61340	-	.4724		12.000	12.0	100	52	-	-	-	74.53	71.29	68.05	64.81
61342	-	.4724		12.000	12.0	100	52	0.50	-	-	78.74	75.32	71.89	68.47
63220	-	.4724		12.000	12.0	150	19	0.50	57	11.50	117.27	112.17	107.07	101.97
62525	62527	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-	49.12	46.98	44.85	42.71
27739	27738	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	57.13	54.65	52.16	49.68
61344	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.015"	-	-	57.13	54.65	52.16	49.68
27741	27740	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	57.13	54.65	52.16	49.68
27743	27742	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	57.13	54.65	52.16	49.68
61346	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	-	-	57.13	54.65	52.16	49.68
28751	28750	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	BALL	-	-	57.13	54.65	52.16	49.68
61348	-	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	52.47	50.19	47.91	45.63
61350	-	.5000	1/2"	12.700	1/2"	3"	1"	.015"	-	-	63.77	61.00	58.22	55.45
61352	-	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	63.77	61.00	58.22	55.45
61354	-	.5000	1/2"	12.700	1/2"	3"	1"	.060"	-	-	63.77	61.00	58.22	55.45
61356	-	.5000	1/2"	12.700	1/2"	3"	1"	.125"	-	-	63.77	61.00	58.22	55.45
61358	-	.5000	1/2"	12.700	1/2"	3"	1"	BALL	-	-	63.77	61.00	58.22	55.45
62535	62537	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	52.47	50.19	47.91	45.63
27751	27750	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	63.77	61.00	58.22	55.45
61360	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	63.77	61.00	58.22	55.45
27761	27760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	63.77	61.00	58.22	55.45
27763	27762	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	63.77	61.00	58.22	55.45
61362	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.040"	-	-	63.77	61.00	58.22	55.45
61364	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.050"	-	-	63.77	61.00	58.22	55.45
27767	27764	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	63.77	61.00	58.22	55.45
61366	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.078"	-	-	63.77	61.00	58.22	55.45
63398	63399	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-	63.77	61.00	58.22	55.45



EDP# (plain)	(weldon)	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	
		Decimal	Metric											
61368	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.094"	-	-	63.77	61.00	58.22	55.45
61370	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.100"	-	-	63.77	61.00	58.22	55.45
27769	27768	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	-	63.77	61.00	58.22	55.45
61372	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	63.77	61.00	58.22	55.45
28761	28760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	BALL	-	-	63.77	61.00	58.22	55.45
28771	28770	.5000	1/2"	12.700	1/2"	4"	5/8"	BALL	-	-	75.36	72.08	68.81	65.53
61374	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	-	-	-	71.01	67.93	64.84	61.75
63401	63400	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.010"	-	-	75.36	72.08	68.81	65.53
61376	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.015"	-	-	75.36	72.08	68.81	65.53
63411	63410	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	-	75.36	72.08	68.81	65.53
63421	63420	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.060"	-	-	75.36	72.08	68.81	65.53
NEW 63424	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.125"	-	-	75.36	72.08	68.81	65.53
61378	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	BALL	-	-	75.36	72.08	68.81	65.53
61380	-	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.015"	-	-	75.36	72.08	68.81	65.53
61382	-	.5000	1/2"	12.700	1/2"	4"	1-3/4"	.015"	-	-	75.36	72.08	68.81	65.53
62565	62567	.5000	1/2"	12.700	1/2"	4"	2"	-	-	-	71.01	67.93	64.84	61.75
63431	63430	.5000	1/2"	12.700	1/2"	4"	2"	.010"	-	-	75.36	72.08	68.81	65.53
61384	-	.5000	1/2"	12.700	1/2"	4"	2"	.015"	-	-	75.36	72.08	68.81	65.53
63441	63440	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	75.36	72.08	68.81	65.53
63451	63450	.5000	1/2"	12.700	1/2"	4"	2"	.060"	-	-	75.36	72.08	68.81	65.53
61386	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.015"	-	-	75.36	72.08	68.81	65.53
63241	63240	.5000	1/2"	12.700	1/2"	6"	2"	.020"	-	-	106.57	101.94	97.30	92.67
61388	-	.5000	1/2"	12.700	1/2"	6"	2-1/2"	.015"	-	-	106.57	101.94	97.30	92.67
61390	-	.5000	1/2"	12.700	1/2"	6"	2-1/2"	.030"	-	-	106.57	101.94	97.30	92.67
61392	-	.5000	1/2"	12.700	1/2"	6"	3-1/4"	.030"	-	-	106.57	101.94	97.30	92.67
61394	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	1-1/2"	.480"	86.02	82.28	78.54	74.80
61396	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	2-1/4"	.480"	86.02	82.28	78.54	74.80
63231	63230	.5000	1/2"	12.700	1/2"	4"	5/8"	.020"	2-1/4"	.480"	86.02	82.28	78.54	74.80
61398	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	3-3/8"	.480"	117.23	112.13	107.04	101.94
61400	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	4-1/8"	.480"	117.23	112.13	107.04	101.94
27766	27765	.5512		14.000	14.0	75	19	0.50	-	-	94.09	90.00	85.91	81.82
28781	28780	.5512		14.000	14.0	75	19	BALL	-	-	94.09	90.00	85.91	81.82
27771	27770	.5512		14.000	14.0	88	32	0.50	-	-	96.70	92.50	88.29	84.09
28786	28785	.5512		14.000	14.0	88	32	BALL	-	-	96.70	92.50	88.29	84.09
63261	63260	.5512		14.000	14.0	150	50	0.50	-	-	145.16	138.85	132.54	126.23
63251	-	.5512		14.000	14.0	150	19	0.50	57	13.50	155.86	149.08	142.31	135.53
62625	62627	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	-	-	-	87.26	83.47	79.67	75.88
61402	-	.6250	5/8"	15.875	5/8"	3"	3/4"	-	-	-	94.08	89.99	85.90	81.81
63461	63460	.6250	5/8"	15.875	5/8"	3"	3/4"	.010"	-	-	98.77	94.48	90.18	85.89
61404	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.015"	-	-	98.77	94.48	90.18	85.89
27781	27780	.6250	5/8"	15.875	5/8"	3"	3/4"	.025"	-	-	98.77	94.48	90.18	85.89
61406	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.060"	-	-	98.77	94.48	90.18	85.89
28796	28795	.6250	5/8"	15.875	5/8"	3"	3/4"	BALL	-	-	98.77	94.48	90.18	85.89
62655	62657	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	96.83	92.62	88.41	84.20
27791	27790	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.010"	-	-	101.52	97.11	92.69	88.28
61408	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	-	-	101.52	97.11	92.69	88.28
61410	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	101.52	97.11	92.69	88.28
27801	27800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.025"	-	-	101.52	97.11	92.69	88.28
61412	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	101.52	97.11	92.69	88.28
61414	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.040"	-	-	101.52	97.11	92.69	88.28
27803	27802	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	101.52	97.11	92.69	88.28
61416	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.078"	-	-	101.52	97.11	92.69	88.28
61418	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.094"	-	-	101.52	97.11	92.69	88.28
27805	27804	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	101.52	97.11	92.69	88.28
61420	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.125"	-	-	101.52	97.11	92.69	88.28
28801	28800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	BALL	-	-	101.52	97.11	92.69	88.28

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MATERIAL HARDNESS (Rc)

continued →



Series VRX (continued)

.6250" - .7500"  
(15.875mm - 19.050mm)

MATERIAL HARDNESS (Rc)

70

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EDP#		$d1$ †			$d2$	$l1$	$l2$	$r$	$l3$	$d3$	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				
61422	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	-	-	-	103.41	98.91	94.42	89.92
63501	63500	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.010"	-	-	110.35	105.56	100.76	95.96
61424	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.015"	-	-	110.35	105.56	100.76	95.96
63511	63510	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.030"	-	-	110.35	105.56	100.76	95.96
63521	63520	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.060"	-	-	110.35	105.56	100.76	95.96
61426	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	103.41	98.91	94.42	89.92
61428	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.015"	-	-	110.35	105.56	100.76	95.96
61430	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	110.35	105.56	100.76	95.96
61432	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.060"	-	-	110.35	105.56	100.76	95.96
62675	62677	.6250	5/8"	15.875	5/8"	4"	1-3/4"	-	-	-	103.41	98.91	94.42	89.92
63531	63530	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.010"	-	-	110.35	105.56	100.76	95.96
63541	63540	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.030"	-	-	110.35	105.56	100.76	95.96
63551	63550	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.060"	-	-	110.35	105.56	100.76	95.96
63281	63280	.6250	5/8"	15.875	5/8"	6"	2"	.025"	-	-	151.92	145.31	138.71	132.10
NEW 63283	-	.6250	5/8"	15.875	5/8"	6"	2"	.090"	-	-	151.92	145.31	138.71	132.10
NEW 63285	-	.6250	5/8"	15.875	5/8"	6"	2"	.125"	-	-	151.92	145.31	138.71	132.10
28806	28805	.6250	5/8"	15.875	5/8"	6"	2"	BALL	-	-	151.92	145.31	138.71	132.10
61434	-	.6250	5/8"	15.875	5/8"	6"	2-1/2"	.030"	-	-	151.92	145.31	138.71	132.10
61436	-	.6250	5/8"	15.875	5/8"	6"	3-1/4"	.030"	-	-	151.92	145.31	138.71	132.10
61438	-	.6250	5/8"	15.875	5/8"	4"	3/4"	.030"	1-5/8"	.600"	121.03	115.76	110.50	105.24
61440	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	2-3/8"	.600"	162.59	155.52	148.45	141.38
63271	63270	.6250	5/8"	15.875	5/8"	6"	3/4"	.025"	3-1/4"	.600"	162.59	155.52	148.45	141.38
61442	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-1/8"	.600"	162.59	155.52	148.45	141.38
61444	-	.6299		16.000	16.0	75	19	-	-	-	98.33	94.05	89.78	85.50
27809	-	.6299		16.000	16.0	75	19	0.30	-	-	103.11	98.63	94.14	89.66
27811	27810	.6299		16.000	16.0	75	19	0.50	-	-	103.11	98.63	94.14	89.66
61446	-	.6299		16.000	16.0	75	19	1.00	-	-	103.11	98.63	94.14	89.66
28811	28810	.6299		16.000	16.0	75	19	BALL	-	-	103.11	98.63	94.14	89.66
62715	62717	.6299		16.000	16.0	88	32	-	-	-	101.02	96.62	92.23	87.84
27819	27818	.6299		16.000	16.0	88	32	0.30	-	-	105.94	101.33	96.73	92.12
27821	27820	.6299		16.000	16.0	88	32	0.50	-	-	105.94	101.33	96.73	92.12
61448	-	.6299		16.000	16.0	88	32	0.75	-	-	105.94	101.33	96.73	92.12
27823	27822	.6299		16.000	16.0	88	32	1.00	-	-	105.94	101.33	96.73	92.12
61450	-	.6299		16.000	16.0	88	32	1.50	-	-	105.94	101.33	96.73	92.12
27825	27824	.6299		16.000	16.0	88	32	2.00	-	-	105.94	101.33	96.73	92.12
61452	-	.6299		16.000	16.0	88	32	3.00	-	-	105.94	101.33	96.73	92.12
28821	28820	.6299		16.000	16.0	88	32	BALL	-	-	105.94	101.33	96.73	92.12
63581	63580	.6299		16.000	16.0	100	38	0.30	-	-	112.64	107.75	102.85	97.95
61454	-	.6299		16.000	16.0	100	38	0.50	-	-	112.64	107.75	102.85	97.95
61456	-	.6299		16.000	16.0	100	42	0.50	-	-	112.64	107.75	102.85	97.95
63291	63290	.6299		16.000	16.0	150	19	0.50	82	15.25	162.59	155.52	148.45	141.38
27831	-	.7087		18.000	18.0	75	22	0.80	-	-	148.74	142.27	135.81	129.34
28831	-	.7087		18.000	18.0	75	22	BALL	-	-	148.74	142.27	135.81	129.34
27836	27835	.7087		18.000	18.0	100	38	0.80	-	-	152.09	145.48	138.86	132.25
28836	28835	.7087		18.000	18.0	100	38	BALL	-	-	152.09	145.48	138.86	132.25
63301	-	.7087		18.000	18.0	150	25	0.80	82	17.25	237.00	226.70	216.39	206.09
61458	-	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	135.26	129.38	123.50	117.62
27841	27840	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	142.49	136.29	130.10	123.90
61460	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.060"	-	-	142.49	136.29	130.10	123.90
28841	28840	.7500	3/4"	19.050	3/4"	3"	7/8"	BALL	-	-	142.49	136.29	130.10	123.90
61462	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	-	-	-	138.22	132.21	126.20	120.19
61464	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.030"	-	-	145.59	139.26	132.93	126.60
62775	62777	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	138.22	132.21	126.20	120.19
27851	27850	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-	145.59	139.26	132.93	126.60
27861	27860	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	145.59	139.26	132.93	126.60
27865	27864	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	145.59	139.26	132.93	126.60
27867	27866	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	145.59	139.26	132.93	126.60
28861	28860	.7500	3/4"	19.050	3/4"	4"	1-1/2"	BALL	-	-	145.59	139.26	132.93	126.60



EDP#	<i>d1</i> †	<i>d2</i>	<i>l1</i>	<i>l2</i>	<i>r</i>	<i>l3</i>	<i>d3</i>	1-11	12-24	25-49	50-100			
												(plain)	(weldon)	Decimal
61466	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	-	138.22	132.21	126.20	120.19
61468	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.015"	-	-	145.59	139.26	132.93	126.60
61470	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	145.59	139.26	132.93	126.60
61472	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.060"	-	-	145.59	139.26	132.93	126.60
61474	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	BALL	-	-	145.59	139.26	132.93	126.60
62785	62787	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	138.22	132.21	126.20	120.19
63601	63600	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-	145.59	139.26	132.93	126.60
27869	27868	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	145.59	139.26	132.93	126.60
63611	63610	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.060"	-	-	145.59	139.26	132.93	126.60
61476	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.094"	-	-	145.59	139.26	132.93	126.60
63621	63620	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.120"	-	-	145.59	139.26	132.93	126.60
61478	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.190"	-	-	145.59	139.26	132.93	126.60
61480	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	BALL	-	-	145.59	139.26	132.93	126.60
62795	62797	.7500	3/4"	19.050	3/4"	5"	2"	-	-	-	185.52	177.45	169.39	161.32
63631	63630	.7500	3/4"	19.050	3/4"	5"	2"	.015"	-	-	201.94	193.16	184.38	175.60
63311	63310	.7500	3/4"	19.050	3/4"	5"	2"	.030"	-	-	201.94	193.16	184.38	175.60
63641	63640	.7500	3/4"	19.050	3/4"	5"	2"	.060"	-	-	201.94	193.16	184.38	175.60
61482	-	.7500	3/4"	19.050	3/4"	5"	2"	.094"	-	-	201.94	193.16	184.38	175.60
61484	-	.7500	3/4"	19.050	3/4"	5"	2"	.125"	-	-	201.94	193.16	184.38	175.60
28866	28865	.7500	3/4"	19.050	3/4"	5"	2"	BALL	-	-	201.94	193.16	184.38	175.60
61486	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	-	-	-	185.52	177.45	169.39	161.32
61488	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-	201.94	193.16	184.38	175.60
62805	62807	.7500	3/4"	19.050	3/4"	6"	3"	-	-	-	217.11	207.67	198.23	188.79
63651	63650	.7500	3/4"	19.050	3/4"	6"	3"	.015"	-	-	239.88	229.45	219.02	208.59
63661	63660	.7500	3/4"	19.050	3/4"	6"	3"	.030"	-	-	239.88	229.45	219.02	208.59
63671	63670	.7500	3/4"	19.050	3/4"	6"	3"	.060"	-	-	239.88	229.45	219.02	208.59
61490	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	217.11	207.67	198.23	188.79
61492	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	239.88	229.45	219.02	208.59
61494	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	-	-	-	272.68	260.82	248.97	237.11
61496	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.030"	-	-	302.54	289.39	276.23	263.08
63321	63320	.7500	3/4"	19.050	3/4"	6"	1"	.030"	3-1/4"	.730"	250.63	239.73	228.84	217.94
NEW 63323	-	.7500	3/4"	19.050	3/4"	6"	1"	.060"	3-1/4"	.730"	250.63	239.73	228.84	217.94
NEW 63325	-	.7500	3/4"	19.050	3/4"	6"	1"	.090"	3-1/4"	.730"	250.63	239.73	228.84	217.94
NEW 63327	-	.7500	3/4"	19.050	3/4"	6"	1"	.125"	3-1/4"	.730"	250.63	239.73	228.84	217.94
NEW 63329	-	.7500	3/4"	19.050	3/4"	6"	1"	.190"	3-1/4"	.730"	250.63	239.73	228.84	217.94
61498	-	.7874		20.000	20.0	75	22	-	-	-	182.62	174.68	166.74	158.80
61500	-	.7874		20.000	20.0	75	22	0.50	-	-	201.50	192.74	183.98	175.22
27871	27870	.7874		20.000	20.0	75	22	1.00	-	-	201.50	192.74	183.98	175.22
28871	28870	.7874		20.000	20.0	75	22	BALL	-	-	201.50	192.74	183.98	175.22
62825	62827	.7874		20.000	20.0	100	38	-	-	-	186.74	178.62	170.50	162.38
27879	27878	.7874		20.000	20.0	100	38	0.50	-	-	206.05	197.09	188.13	179.17
61502	-	.7874		20.000	20.0	100	38	0.75	-	-	206.05	197.09	188.13	179.17
27881	27880	.7874		20.000	20.0	100	38	1.00	-	-	206.05	197.09	188.13	179.17
27891	27890	.7874		20.000	20.0	100	38	1.50	-	-	206.05	197.09	188.13	179.17
61504	-	.7874		20.000	20.0	100	38	3.00	-	-	206.05	197.09	188.13	179.17
28881	28880	.7874		20.000	20.0	100	38	BALL	-	-	206.05	197.09	188.13	179.17
61506	-	.7874		20.000	20.0	100	42	0.50	-	-	206.05	197.09	188.13	179.17
61508	-	.7874		20.000	20.0	125	52	0.50	-	-	228.42	218.49	208.56	198.63
63331	63330	.7874		20.000	20.0	150	25	1.00	82	19.30	263.96	252.48	241.01	229.53
27911	-	.8661		22.000	22.0	100	38	1.00	-	-	226.34	216.50	206.66	196.82

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MATERIAL HARDNESS (Rc)

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continued →

## Series VRX (continued)

.9843" - 1.000"  
(25.000mm - 25.400mm)

	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											
	61510	-	.9843	25.000	25.0	100	26	-	-	-	213.26	203.98	194.71	185.44	
<b>NEW</b>	61512	-	.9843	25.000	25.0	100	26	0.50	-	-	236.15	225.89	215.62	205.35	
	62855	62857	.9843	25.000	25.0	100	38	-	-	-	213.26	203.98	194.71	185.44	
	61514	-	.9843	25.000	25.0	100	38	0.50	-	-	236.15	225.89	215.62	205.35	
	27941	27940	.9843	25.000	25.0	100	38	1.00	-	-	236.15	225.89	215.62	205.35	
	27951	-	.9843	25.000	25.0	100	38	1.50	-	-	236.15	225.89	215.62	205.35	
<b>NEW</b>	61516	-	.9843	25.000	25.0	100	38	3.00	-	-	236.15	225.89	215.62	205.35	
	28901	28900	.9843	25.000	25.0	100	38	BALL	-	-	236.15	225.89	215.62	205.35	
	61518	-	.9843	25.000	25.0	100	42	-	-	-	213.26	203.98	194.71	185.44	
<b>NEW</b>	61520	-	.9843	25.000	25.0	100	42	0.50	-	-	236.15	225.89	215.62	205.35	
	61522	-	.9843	25.000	25.0	125	50	0.50	-	-	294.83	282.01	269.19	256.37	
	63351	63350	.9843	25.000	25.0	125	50	1.00	-	-	294.83	282.01	269.19	256.37	
	63361	63360	.9843	25.000	25.0	150	32	1.00	82	24.40	395.36	378.17	360.98	343.79	
	61524	-	1.000	1"	25.400	1"	4"	1"	-	-	206.49	197.52	188.54	179.56	
	27959	27958	1.000	1"	25.400	1"	4"	1"	.015"	-	248.55	237.74	226.94	216.13	
	27961	27960	1.000	1"	25.400	1"	4"	1"	.035"	-	248.55	237.74	226.94	216.13	
	-	27962	1.000	1"	25.400	1"	4"	1"	.060"	-	248.55	237.74	226.94	216.13	
	28911	28910	1.000	1"	25.400	1"	4"	1"	BALL	-	248.55	237.74	226.94	216.13	
	62885	62887	1.000	1"	25.400	1"	4"	1-1/2"	-	-	206.49	197.52	188.54	179.56	
	27967	27966	1.000	1"	25.400	1"	4"	1-1/2"	.015"	-	248.55	237.74	226.94	216.13	
	61526	-	1.000	1"	25.400	1"	4"	1-1/2"	.025"	-	248.55	237.74	226.94	216.13	
	27971	27970	1.000	1"	25.400	1"	4"	1-1/2"	.035"	-	248.55	237.74	226.94	216.13	
	27981	27980	1.000	1"	25.400	1"	4"	1-1/2"	.060"	-	248.55	237.74	226.94	216.13	
	27991	-	1.000	1"	25.400	1"	4"	1-1/2"	.090"	-	248.55	237.74	226.94	216.13	
	61528	-	1.000	1"	25.400	1"	4"	1-1/2"	.125"	-	248.55	237.74	226.94	216.13	
	61530	-	1.000	1"	25.400	1"	4"	1-1/2"	.190"	-	248.55	237.74	226.94	216.13	
	61532	-	1.000	1"	25.400	1"	4"	1-1/2"	.250"	-	248.55	237.74	226.94	216.13	
	28916	28915	1.000	1"	25.400	1"	4"	1-1/2"	BALL	-	248.55	237.74	226.94	216.13	
	61534	-	1.000	1"	25.400	1"	4"	1-5/8"	.030"	-	248.55	237.74	226.94	216.13	
	62895	62897	1.000	1"	25.400	1"	4"	1-3/4"	-	-	206.49	197.52	188.54	179.56	
	28001	28000	1.000	1"	25.400	1"	4"	1-3/4"	.015"	-	248.55	237.74	226.94	216.13	
	61536	-	1.000	1"	25.400	1"	4"	1-3/4"	.030"	-	248.55	237.74	226.94	216.13	
	28011	28012	1.000	1"	25.400	1"	4"	1-3/4"	.060"	-	248.55	237.74	226.94	216.13	
	28021	-	1.000	1"	25.400	1"	4"	1-3/4"	.090"	-	248.55	237.74	226.94	216.13	
	61538	-	1.000	1"	25.400	1"	4"	1-3/4"	.125"	-	248.55	237.74	226.94	216.13	
<b>NEW</b>	61540	-	1.000	1"	25.400	1"	4"	1-3/4"	.190"	-	248.55	237.74	226.94	216.13	
<b>NEW</b>	61542	-	1.000	1"	25.400	1"	4"	1-3/4"	.250"	-	248.55	237.74	226.94	216.13	
	62905	62907	1.000	1"	25.400	1"	5"	2"	-	-	276.41	264.40	252.38	240.36	
	63369	63368	1.000	1"	25.400	1"	5"	2"	.015"	-	305.81	292.51	279.22	265.92	
	63371	63370	1.000	1"	25.400	1"	5"	2"	.035"	-	305.81	292.51	279.22	265.92	
	63373	63372	1.000	1"	25.400	1"	5"	2"	.060"	-	305.81	292.51	279.22	265.92	
	63375	63374	1.000	1"	25.400	1"	5"	2"	.090"	-	305.81	292.51	279.22	265.92	
	61544	-	1.000	1"	25.400	1"	5"	2"	.125"	-	305.81	292.51	279.22	265.92	
	61546	-	1.000	1"	25.400	1"	5"	2"	.250"	-	305.81	292.51	279.22	265.92	
	28931	28930	1.000	1"	25.400	1"	5"	2"	BALL	-	305.81	292.51	279.22	265.92	
	61548	-	1.000	1"	25.400	1"	5"	2-1/2"	-	-	276.41	264.40	252.38	240.36	
	61550	-	1.000	1"	25.400	1"	5"	2-1/2"	.030"	-	305.81	292.51	279.22	265.92	
	62915	62917	1.000	1"	25.400	1"	6"	3"	-	-	360.04	344.39	328.73	313.08	
	61552	-	1.000	1"	25.400	1"	6"	3-1/4"	.030"	-	398.85	381.51	364.17	346.83	
	61554	-	1.000	1"	25.400	1"	7"	4-1/4"	.030"	-	486.71	465.55	444.39	423.23	
	61556	-	1.000	1"	25.400	1"	7"	4-1/4"	.060"	-	486.71	465.55	444.39	423.23	
<b>NEW</b>	61558	-	1.000	1"	25.400	1"	6"	1-1/4"	.030"	2-5/8"	.980"	413.10	395.14	377.18	359.22
	63381	63380	1.000	1"	25.400	1"	6"	1-1/4"	.035"	3-1/4"	.980"	413.10	395.14	377.18	359.22
<b>NEW</b>	61560	-	1.000	1"	25.400	1"	6"	1-1/4"	.060"	3-1/4"	.980"	413.10	395.14	377.18	359.22
	61562	-	1.000	1"	25.400	1"	7"	1-1/4"	.030"	4-1/4"	.980"	500.96	479.18	457.40	435.62

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MATERIAL HARDNESS (Rc)  
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