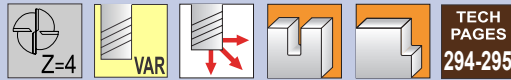


**TOLERANCES**

$d_1$	+ .000" - .002" (+.000mm - .050mm)
$d_2$	h6
$r$	+ .001" - .001" (+.025 - .025mm)
ball radius	+ .000" - .001" (+.000 - .025mm)

# HIGH EFFICIENCY MILLING

Series V4S, V4R, V4B



**NEW ITEMS**

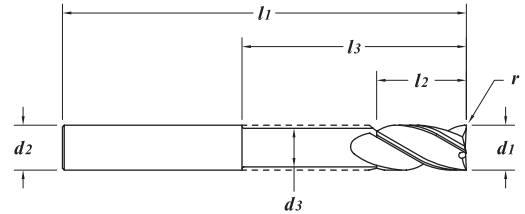
.1562" - .2188"  
(3.967mm - 5.558mm)

Recommended for titanium, inconel, and stainless steel

## Variable Helix End Mill

### AlCrN Coating

- Solid submicron grain carbide end mill - center cutting
- Engineered for High Efficiency Milling
- Helix geometry varies over length of flutes
- Variable flute design helps with chip evacuation in slots and pockets
- Variable rake aids in chip formation
- PCT (Polish Carbide Treatment) enhances tool life
- Minimizes burr on part
- Smaller diameters can be modified with a flat 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*



NEW	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										
NEW	50171	-		.1562	5/32"	3.967	1/4"	2"	1/2"	-	-	23.64	22.62	21.59	20.56
NEW	50172	-		.1562	5/32"	3.967	1/4"	2"	1/2"	.010"	-	25.70	24.59	23.47	22.35
NEW	50173	-		.1562	5/32"	3.967	1/4"	2"	1/2"	.015"	-	25.70	24.59	23.47	22.35
NEW	50174	-		.1562	5/32"	3.967	1/4"	2"	1/2"	.020"	-	25.70	24.59	23.47	22.35
NEW	50175	-		.1562	5/32"	3.967	1/4"	2"	1/2"	.030"	-	25.70	24.59	23.47	22.35
NEW	50176	-		.1562	5/32"	3.967	1/4"	2"	1/2"	BALL	-	25.70	24.59	23.47	22.35
NEW	50177	-		.1575		4.000	6.0	50	12	-	-	26.32	25.18	24.03	22.89
NEW	50178	-		.1575		4.000	6.0	50	12	0.20	-	26.74	25.58	24.41	23.25
NEW	50179	-		.1575		4.000	6.0	50	12	0.30	-	26.74	25.58	24.41	23.25
NEW	50180	-		.1575		4.000	6.0	50	12	0.50	-	26.74	25.58	24.41	23.25
NEW	50181	-		.1575		4.000	6.0	50	12	BALL	-	26.74	25.58	24.41	23.25
NEW	50182	-		.1875	3/16"	4.763	1/4"	2"	1/2"	-	-	23.18	22.18	21.17	20.16
NEW	50183	-		.1875	3/16"	4.763	1/4"	2"	1/2"	.010"	-	25.20	24.10	23.01	21.91
NEW	50184	-		.1875	3/16"	4.763	1/4"	2"	1/2"	.015"	-	25.20	24.10	23.01	21.91
NEW	50185	-		.1875	3/16"	4.763	1/4"	2"	1/2"	.020"	-	25.20	24.10	23.01	21.91
NEW	50186	-		.1875	3/16"	4.763	1/4"	2"	1/2"	.030"	-	25.20	24.10	23.01	21.91
NEW	50187	-		.1875	3/16"	4.763	1/4"	2"	1/2"	BALL	-	25.20	24.10	23.01	21.91
NEW	50188	-		.1969		5.000	6.0	65	20	-	-	28.16	26.94	25.71	24.49
NEW	50189	-		.1969		5.000	6.0	65	20	0.20	-	29.03	27.76	26.50	25.24
NEW	50190	-		.1969		5.000	6.0	65	20	0.30	-	29.03	27.76	26.50	25.24
NEW	50191	-		.1969		5.000	6.0	65	20	0.50	-	29.03	27.76	26.50	25.24
NEW	50192	-		.1969		5.000	6.0	65	20	BALL	-	29.03	27.76	26.50	25.24
NEW	50193	-		.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	-	-	25.61	24.50	23.38	22.27
NEW	50194	-		.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.010"	-	27.95	26.73	25.52	24.30
NEW	50195	-		.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.015"	-	27.95	26.73	25.52	24.30
NEW	50196	-		.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.020"	-	27.95	26.73	25.52	24.30
NEW	50197	-		.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.030"	-	27.95	26.73	25.52	24.30
NEW	50198	-		.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	BALL	-	27.95	26.73	25.52	24.30

HIGH PERFORMANCE END MILLS

70

35

MATERIAL HARDNESS (Rc)

0

continued →

Series V4S, V4R, V4B (continued)

.2362" - .2500"  
(6.000mm - 6.350mm)

70  
35  
0  
MATERIAL HARDNESS (Rc)

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										
50236	-	.2362	6.000	6.0	65	12	-	-	-	24.73	23.65	22.58	21.50
50199	-	.2362	6.000	6.0	65	12	0.30	-	-	28.11	26.88	25.66	24.44
50200	-	.2362	6.000	6.0	65	12	0.50	-	-	28.11	26.88	25.66	24.44
50201	-	.2362	6.000	6.0	65	12	0.75	-	-	28.11	26.88	25.66	24.44
50202	-	.2362	6.000	6.0	65	12	1.00	-	-	28.11	26.88	25.66	24.44
50203	-	.2362	6.000	6.0	65	12	1.50	-	-	28.11	26.88	25.66	24.44
50252	-	.2362	6.000	6.0	65	12	BALL	-	-	28.11	26.88	25.66	24.44
50237	-	.2362	6.000	6.0	65	19	-	-	-	24.73	23.65	22.58	21.50
50204	-	.2362	6.000	6.0	65	19	0.30	-	-	28.11	26.88	25.66	24.44
50205	-	.2362	6.000	6.0	65	19	0.50	-	-	28.11	26.88	25.66	24.44
50206	-	.2362	6.000	6.0	65	19	1.00	-	-	28.11	26.88	25.66	24.44
50253	-	.2362	6.000	6.0	65	19	BALL	-	-	28.11	26.88	25.66	24.44
50540	-	.2500	6.350	1/4"	2"	3/8"	-	-	-	21.15	20.23	19.31	18.39
50489	-	.2500	6.350	1/4"	2"	3/8"	.010"	-	-	24.40	23.34	22.28	21.22
50490	-	.2500	6.350	1/4"	2"	3/8"	.015"	-	-	24.40	23.34	22.28	21.22
50491	-	.2500	6.350	1/4"	2"	3/8"	.020"	-	-	24.40	23.34	22.28	21.22
NEW 50708	-	.2500	6.350	1/4"	2"	3/8"	.030"	-	-	24.40	23.34	22.28	21.22
NEW 50709	-	.2500	6.350	1/4"	2"	3/8"	.040"	-	-	24.40	23.34	22.28	21.22
NEW 50710	-	.2500	6.350	1/4"	2"	3/8"	.060"	-	-	24.40	23.34	22.28	21.22
NEW 50711	-	.2500	6.350	1/4"	2"	3/8"	.090"	-	-	24.40	23.34	22.28	21.22
50560	-	.2500	6.350	1/4"	2"	3/8"	BALL	-	-	24.40	23.34	22.28	21.22
50645	-	.2500	6.350	1/4"	2"	1/2"	-	-	-	21.15	20.23	19.31	18.39
50614	-	.2500	6.350	1/4"	2"	1/2"	.010"	-	-	24.40	23.34	22.28	21.22
50616	-	.2500	6.350	1/4"	2"	1/2"	.015"	-	-	24.40	23.34	22.28	21.22
50618	-	.2500	6.350	1/4"	2"	1/2"	.020"	-	-	24.40	23.34	22.28	21.22
NEW 50712	-	.2500	6.350	1/4"	2"	1/2"	.030"	-	-	24.40	23.34	22.28	21.22
NEW 50713	-	.2500	6.350	1/4"	2"	1/2"	.040"	-	-	24.40	23.34	22.28	21.22
NEW 50714	-	.2500	6.350	1/4"	2"	1/2"	.060"	-	-	24.40	23.34	22.28	21.22
NEW 50715	-	.2500	6.350	1/4"	2"	1/2"	.090"	-	-	24.40	23.34	22.28	21.22
50238	-	.2500	6.350	1/4"	2-1/2"	3/4"	-	-	-	23.86	22.83	21.79	20.75
50207	-	.2500	6.350	1/4"	2-1/2"	3/4"	.010"	-	-	27.03	25.85	24.68	23.50
50208	-	.2500	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	27.03	25.85	24.68	23.50
50620	-	.2500	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	27.03	25.85	24.68	23.50
50209	-	.2500	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	27.03	25.85	24.68	23.50
NEW 50716	-	.2500	6.350	1/4"	2-1/2"	3/4"	.040"	-	-	27.03	25.85	24.68	23.50
50210	-	.2500	6.350	1/4"	2-1/2"	3/4"	.060"	-	-	27.03	25.85	24.68	23.50
NEW 50717	-	.2500	6.350	1/4"	2-1/2"	3/4"	.090"	-	-	27.03	25.85	24.68	23.50
50254	-	.2500	6.350	1/4"	2-1/2"	3/4"	BALL	-	-	27.03	25.85	24.68	23.50
NEW 50653	-	.2500	6.350	1/4"	3"	1-1/8"	-	-	-	36.31	34.73	33.15	31.57
50493	-	.2500	6.350	1/4"	3"	1-1/8"	.030"	-	-	40.03	38.29	36.55	34.81
NEW 50677	-	.2500	6.350	1/4"	3"	1-1/8"	BALL	-	-	40.03	38.29	36.55	34.81

	EDP#	$d1^{\dagger}$		$d2$	$l1$	$l2$	$r$	$l3$	$d3$	1-11	12-24	25-49	50-100			
		(plain)	(weldon)											Decimal	Diameter	Metric
NEW	50654	-		.2500	1/4"	6.350	1/4"	4"	1-1/2"	-	-	-	39.07	37.37	35.67	33.97
NEW	50681	-		.2500	1/4"	6.350	1/4"	4"	1-1/2"	BALL	-	-	42.86	41.00	39.13	37.27
NEW	50655	-		.2500	1/4"	6.350	1/4"	4"	1-3/4"	-	-	-	39.07	37.37	35.67	33.97
NEW	50718	-		.2500	1/4"	6.350	1/4"	4"	1-3/4"	.020"	-	-	42.86	41.00	39.13	37.27
NEW	50682	-		.2500	1/4"	6.350	1/4"	4"	1-3/4"	BALL	-	-	42.86	41.00	39.13	37.27
NEW	50656	-		.2500	1/4"	6.350	1/4"	4"	2"	-	-	-	39.07	37.37	35.67	33.97
NEW	50683	-		.2500	1/4"	6.350	1/4"	4"	2"	BALL	-	-	42.86	41.00	39.13	37.27
NEW	50651	-		.2500	1/4"	6.350	1/4"	3"	3/8"	-	1-1/8"	.237"	45.77	43.78	41.79	39.80
NEW	50678	-		.2500	1/4"	6.350	1/4"	3"	3/8"	BALL	1-1/8"	.237"	49.54	47.39	45.23	43.08
	50600	-		.2500	1/4"	6.350	1/4"	4"	3/8"	-	1-1/8"	.237"	48.73	46.61	44.49	42.37
	50211	-		.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	1-1/4"	.230"	52.37	50.09	47.82	45.54
	50474	-		.2500	1/4"	6.350	1/4"	4"	3/8"	BALL	1-1/8"	.237"	52.37	50.09	47.82	45.54
NEW	50679	-		.2500	1/4"	6.350	1/4"	4"	3/8"	BALL	1-1/2"	.237"	52.37	50.09	47.82	45.54
NEW	50652	-		.2500	1/4"	6.350	1/4"	4"	3/8"	-	2"	.237"	48.73	46.61	44.49	42.37
NEW	50680	-		.2500	1/4"	6.350	1/4"	4"	3/8"	BALL	2"	.237"	52.37	50.09	47.82	45.54
NEW	50719	-		.2500	1/4"	6.350	1/4"	6"	3/8"	.010"	4"	.230"	65.94	63.07	60.21	57.34
NEW	50684	-		.2500	1/4"	6.350	1/4"	6"	3/8"	BALL	4"	.230"	65.94	63.07	60.21	57.34
NEW	50720	-		.3125	5/16"	7.937	5/16"	2"	3/8"	.030"	-	-	33.32	31.87	30.42	28.97
	50541	-		.3125	5/16"	7.937	5/16"	2"	7/16"	-	-	-	29.21	27.94	26.67	25.40
	50622	-		.3125	5/16"	7.937	5/16"	2"	7/16"	.010"	-	-	33.32	31.87	30.42	28.97
	50624	-		.3125	5/16"	7.937	5/16"	2"	7/16"	.015"	-	-	33.32	31.87	30.42	28.97
	50492	-		.3125	5/16"	7.937	5/16"	2"	7/16"	.020"	-	-	33.32	31.87	30.42	28.97
NEW	50721	-		.3125	5/16"	7.937	5/16"	2"	7/16"	.125"	-	-	33.32	31.87	30.42	28.97
	50561	-		.3125	5/16"	7.937	5/16"	2"	7/16"	BALL	-	-	33.32	31.87	30.42	28.97
	50239	-		.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	-	-	-	34.02	32.54	31.06	29.58
	50626	-		.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.010"	-	-	36.60	35.01	33.42	31.83
	50628	-		.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.015"	-	-	36.60	35.01	33.42	31.83
	50212	-		.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.020"	-	-	36.60	35.01	33.42	31.83
	50213	-		.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.030"	-	-	36.60	35.01	33.42	31.83
NEW	50722	-		.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.060"	-	-	36.60	35.01	33.42	31.83
NEW	50723	-		.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.125"	-	-	36.60	35.01	33.42	31.83
	50255	-		.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	BALL	-	-	36.60	35.01	33.42	31.83
NEW	50657	-		.3125	5/16"	7.937	5/16"	3"	1-1/4"	-	-	-	46.43	44.41	42.39	40.37
NEW	50724	-		.3125	5/16"	7.937	5/16"	3"	1-1/4"	.015"	-	-	51.06	48.84	46.62	44.40
NEW	50725	-		.3125	5/16"	7.937	5/16"	3"	1-1/4"	.030"	-	-	51.06	48.84	46.62	44.40
NEW	50726	-		.3125	5/16"	7.937	5/16"	3"	1-1/4"	.060"	-	-	51.06	48.84	46.62	44.40
NEW	50685	-		.3125	5/16"	7.937	5/16"	3"	1-1/4"	BALL	-	-	51.06	48.84	46.62	44.40
NEW	50658	-		.3125	5/16"	7.937	5/16"	3"	7/16"	-	1-1/2"	.295"	57.55	55.04	52.54	50.04
NEW	50686	-		.3125	5/16"	7.937	5/16"	3"	7/16"	BALL	1-1/2"	.295"	62.18	59.48	56.77	54.07
	50602	-		.3150		8.000	8.0	50	12	-	-	-	30.27	28.95	27.64	26.32
	50630	-		.3150		8.000	8.0	50	12	0.50	-	-	34.56	33.06	31.55	30.05
	50240	-		.3150		8.000	8.0	65	22	-	-	-	35.25	33.72	32.18	30.65
	50214	-		.3150		8.000	8.0	65	22	0.50	-	-	37.98	36.33	34.68	33.03
	50356	-		.3150		8.000	8.0	65	22	0.75	-	-	37.98	36.33	34.68	33.03
	50215	-		.3150		8.000	8.0	65	22	1.00	-	-	37.98	36.33	34.68	33.03
NEW	50727	-		.3150		8.000	8.0	65	22	1.20	-	-	37.98	36.33	34.68	33.03
	50357	-		.3150		8.000	8.0	65	22	1.50	-	-	37.98	36.33	34.68	33.03
	50358	-		.3150		8.000	8.0	65	22	2.00	-	-	37.98	36.33	34.68	33.03
NEW	50728	-		.3150		8.000	8.0	65	22	3.00	-	-	37.98	36.33	34.68	33.03
	50256	-		.3150		8.000	8.0	65	22	BALL	-	-	37.98	36.33	34.68	33.03

70

35

MATERIAL HARDNESS (Rc)

0

continued →

# Series V4S, V4R, V4B (continued)

.3150" - .3937"  
(8.000mm - 10.000mm)

MATERIAL HARDNESS (Rc)  
70  
35  
0

	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
NEW	50659	-	.3150	8.000	8.0	75	32	-	-	-	48.36	46.26	44.15	42.05	
NEW	50687	-	.3150	8.000	8.0	75	32	BALL	-	-	53.23	50.92	48.60	46.29	
NEW	50660	-	.3150	8.000	8.0	100	12	-	50	7.50	66.56	63.67	60.77	57.88	
NEW	50688	-	.3150	8.000	8.0	100	12	BALL	50	7.50	71.93	68.81	65.68	62.55	
	50542	-	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	34.45	32.96	31.46	29.96	
	50632	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.010"	-	39.34	37.63	35.92	34.21	
NEW	50729	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.015"	-	39.34	37.63	35.92	34.21	
	50494	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	39.34	37.63	35.92	34.21	
	50634	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	-	39.34	37.63	35.92	34.21	
NEW	50730	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.060"	-	39.34	37.63	35.92	34.21	
NEW	50732	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.090"	-	39.34	37.63	35.92	34.21	
NEW	50733	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.120"	-	39.34	37.63	35.92	34.21	
NEW	50734	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.125"	-	39.34	37.63	35.92	34.21	
	50562	-	.3750	3/8"	9.525	3/8"	2"	1/2"	BALL	-	39.34	37.63	35.92	34.21	
	50241	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	-	-	40.15	38.40	36.66	34.91	
	50216	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.010"	-	42.76	40.90	39.04	37.18	
NEW	50735	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.015"	-	42.76	40.90	39.04	37.18	
	50217	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	42.76	40.90	39.04	37.18	
	50218	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	42.76	40.90	39.04	37.18	
NEW	50736	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.040"	-	42.76	40.90	39.04	37.18	
	50219	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.060"	-	42.76	40.90	39.04	37.18	
	50636	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.090"	-	42.76	40.90	39.04	37.18	
NEW	50737	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.120"	-	42.76	40.90	39.04	37.18	
NEW	50738	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.125"	-	42.76	40.90	39.04	37.18	
	50257	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	BALL	-	42.76	40.90	39.04	37.18	
NEW	50661	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	-	-	51.21	48.98	46.76	44.53	
NEW	50739	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-	56.28	53.83	51.39	48.94	
	50637	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	56.28	53.83	51.39	48.94	
NEW	50740	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.060"	-	56.28	53.83	51.39	48.94	
NEW	50689	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	BALL	-	56.28	53.83	51.39	48.94	
NEW	50662	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	-	-	57.87	55.35	52.84	50.32	
NEW	50741	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.015"	-	63.33	60.58	57.82	55.07	
NEW	50742	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.030"	-	63.33	60.58	57.82	55.07	
NEW	50743	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.060"	-	63.33	60.58	57.82	55.07	
NEW	50744	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.120"	-	63.33	60.58	57.82	55.07	
NEW	50690	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	BALL	-	63.33	60.58	57.82	55.07	
NEW	50745	-	.3750	3/8"	9.525	3/8"	6"	2-1/2"	.060	-	87.69	83.88	80.06	76.25	
	50604	-	.3750	3/8"	9.525	3/8"	4"	1/2"	-	1-1/8"	.355"	70.27	67.21	64.16	61.10
	50220	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.020"	1-7/8"	.350"	75.58	72.29	69.01	65.72
	50476	-	.3750	3/8"	9.525	3/8"	4"	1/2"	BALL	1-1/8"	.355"	75.58	72.29	69.01	65.72
	50606	-	.3937	10.000	10.0	50	14	-	-	-	44.25	42.33	40.40	38.48	
	50638	-	.3937	10.000	10.0	50	14	0.50	-	-	47.48	45.42	43.35	41.29	
	50242	-	.3937	10.000	10.0	70	22	-	-	-	48.13	46.04	43.94	41.85	
NEW	50746	-	.3937	10.000	10.0	70	22	0.25	-	-	51.64	49.39	47.15	44.90	
	50221	-	.3937	10.000	10.0	70	22	0.50	-	-	51.64	49.39	47.15	44.90	
	50359	-	.3937	10.000	10.0	70	22	0.75	-	-	51.64	49.39	47.15	44.90	
	50360	-	.3937	10.000	10.0	70	22	1.00	-	-	51.64	49.39	47.15	44.90	
	50361	-	.3937	10.000	10.0	70	22	1.50	-	-	51.64	49.39	47.15	44.90	
	50362	-	.3937	10.000	10.0	70	22	2.00	-	-	51.64	49.39	47.15	44.90	
NEW	50747	-	.3937	10.000	10.0	70	22	3.00	-	-	51.64	49.39	47.15	44.90	
	50258	-	.3937	10.000	10.0	70	22	BALL	-	-	51.64	49.39	47.15	44.90	
	50608	-	.3937	10.000	10.0	70	26	-	-	-	48.13	46.04	43.94	41.85	
NEW	50748	-	.3937	10.000	10.0	70	26	1.50	-	-	51.64	49.39	47.15	44.90	
NEW	50663	-	.3937	10.000	10.0	70	30	-	-	-	48.13	46.04	43.94	41.85	
NEW	50691	-	.3937	10.000	10.0	70	30	BALL	-	-	51.64	49.39	47.15	44.90	

Series V4S, V4R, V4B (continued)

.3937" - .5000"  
(10.000mm - 12.700mm)

HIGH PERFORMANCE  
END MILLS

	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										
NEW	50749	-	.3937	10.000	10.0	70	22	0.50	30	9.40	62.76	60.03	57.30	54.57
NEW	50750	-	.3937	10.000	10.0	100	12	0.30	50	9.40	91.31	87.34	83.37	79.40
NEW	50692	-	.3937	10.000	10.0	100	14	BALL	50	9.40	91.31	87.34	83.37	79.40
	50450	50449	.4724	12.000	12.0	75	26	-	-	-	62.54	59.82	57.10	54.38
	50363	50369	.4724	12.000	12.0	75	26	0.30	-	-	76.05	72.74	69.44	66.13
	50364	50370	.4724	12.000	12.0	75	26	0.50	-	-	76.05	72.74	69.44	66.13
	50365	50366	.4724	12.000	12.0	75	26	0.75	-	-	76.05	72.74	69.44	66.13
	50367	50371	.4724	12.000	12.0	75	26	1.00	-	-	76.05	72.74	69.44	66.13
	50372	50373	.4724	12.000	12.0	75	26	1.50	-	-	76.05	72.74	69.44	66.13
	50374	50375	.4724	12.000	12.0	75	26	2.00	-	-	76.05	72.74	69.44	66.13
	50470	-	.4724	12.000	12.0	75	26	BALL	-	-	76.05	72.74	69.44	66.13
	50243	50283	.4724	12.000	12.0	75	32	-	-	-	62.54	59.82	57.10	54.38
	50222	50270	.4724	12.000	12.0	75	32	0.50	-	-	76.05	72.74	69.44	66.13
	50223	50271	.4724	12.000	12.0	75	32	1.00	-	-	76.05	72.74	69.44	66.13
	50259	50291	.4724	12.000	12.0	75	32	BALL	-	-	76.05	72.74	69.44	66.13
NEW	50664	-	.4724	12.000	12.0	88	36	-	-	-	80.49	76.99	73.49	69.99
NEW	50751	-	.4724	12.000	12.0	88	36	0.30	-	-	85.46	81.74	78.03	74.31
NEW	50752	-	.4724	12.000	12.0	88	36	0.50	-	-	85.46	81.74	78.03	74.31
NEW	50753	-	.4724	12.000	12.0	88	36	1.00	-	-	85.46	81.74	78.03	74.31
NEW	50754	-	.4724	12.000	12.0	88	36	1.50	-	-	85.46	81.74	78.03	74.31
NEW	50755	-	.4724	12.000	12.0	88	36	3.00	-	-	85.46	81.74	78.03	74.31
NEW	50693	-	.4724	12.000	12.0	88	36	BALL	-	-	85.46	81.74	78.03	74.31
	50564	-	.4724	12.000	12.0	100	42	-	-	-	83.58	79.95	76.31	72.68
	50566	-	.4724	12.000	12.0	100	42	0.30	-	-	88.50	84.66	80.81	76.96
	50568	-	.4724	12.000	12.0	100	42	0.50	-	-	88.50	84.66	80.81	76.96
	50570	-	.4724	12.000	12.0	100	42	1.00	-	-	88.50	84.66	80.81	76.96
	50572	-	.4724	12.000	12.0	100	42	2.00	-	-	88.50	84.66	80.81	76.96
	50574	-	.4724	12.000	12.0	100	42	3.00	-	-	88.50	84.66	80.81	76.96
	50576	-	.4724	12.000	12.0	100	42	BALL	-	-	88.50	84.66	80.81	76.96
NEW	50665	-	.4724	12.000	12.0	100	48	-	-	-	83.58	79.95	76.31	72.68
NEW	50756	-	.4724	12.000	12.0	100	48	0.30	-	-	88.50	84.66	80.81	76.96
NEW	50757	-	.4724	12.000	12.0	100	48	0.50	-	-	88.50	84.66	80.81	76.96
NEW	50758	-	.4724	12.000	12.0	100	48	1.00	-	-	88.50	84.66	80.81	76.96
NEW	50759	-	.4724	12.000	12.0	100	48	1.50	-	-	88.50	84.66	80.81	76.96
NEW	50760	-	.4724	12.000	12.0	100	48	3.00	-	-	88.50	84.66	80.81	76.96
NEW	50761	-	.4724	12.000	12.0	100	48	4.00	-	-	88.50	84.66	80.81	76.96
NEW	50694	-	.4724	12.000	12.0	100	48	BALL	-	-	88.50	84.66	80.81	76.96
NEW	50695	-	.4724	12.000	12.0	100	14	BALL	50	11.40	100.73	96.35	91.97	87.59
	50543	-	.5000	12.700	1/2"	2-1/2"	5/8"	-	-	-	56.33	53.88	51.43	48.98
	50640	-	.5000	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	65.35	62.51	59.67	56.83
NEW	50762	-	.5000	12.700	1/2"	2-1/2"	5/8"	.015"	-	-	65.35	62.51	59.67	56.83
	50496	50497	.5000	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	65.35	62.51	59.67	56.83
	50642	-	.5000	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	65.35	62.51	59.67	56.83
NEW	50763	-	.5000	12.700	1/2"	2-1/2"	5/8"	.060"	-	-	65.35	62.51	59.67	56.83
NEW	50764	-	.5000	12.700	1/2"	2-1/2"	5/8"	.090"	-	-	65.35	62.51	59.67	56.83
NEW	50765	-	.5000	12.700	1/2"	2-1/2"	5/8"	.120"	-	-	65.35	62.51	59.67	56.83
	50644	-	.5000	12.700	1/2"	2-1/2"	5/8"	.125"	-	-	65.35	62.51	59.67	56.83
NEW	50766	-	.5000	12.700	1/2"	2-1/2"	5/8"	.156"	-	-	65.35	62.51	59.67	56.83
NEW	50767	-	.5000	12.700	1/2"	2-1/2"	5/8"	.190"	-	-	65.35	62.51	59.67	56.83
	50563	-	.5000	12.700	1/2"	2-1/2"	5/8"	BALL	-	-	65.35	62.51	59.67	56.83

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MATERIAL HARDNESS (Rc)

0

continued →

Series V4S, V4R, V4B (continued)

.5000"  
(12.700mm)

MATERIAL HARDNESS (Rc)

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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											
50452	50453	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	60.04	57.43	54.82	52.21
50379	50380	.5000	1/2"	12.700	1/2"	3"	1"	.010"	-	-	72.94	69.77	66.60	63.43
NEW	50768	-	.5000	1/2"	12.700	1/2"	3"	1"	.015"	-	72.94	69.77	66.60	63.43
50381	50382	.5000	1/2"	12.700	1/2"	3"	1"	.020"	-	-	72.94	69.77	66.60	63.43
50383	50384	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	72.94	69.77	66.60	63.43
50385	50386	.5000	1/2"	12.700	1/2"	3"	1"	.060"	-	-	72.94	69.77	66.60	63.43
NEW	50769	-	.5000	1/2"	12.700	1/2"	3"	1"	.090"	-	72.94	69.77	66.60	63.43
NEW	50770	-	.5000	1/2"	12.700	1/2"	3"	1"	.120"	-	72.94	69.77	66.60	63.43
NEW	50771	-	.5000	1/2"	12.700	1/2"	3"	1"	.125"	-	72.94	69.77	66.60	63.43
NEW	50772	-	.5000	1/2"	12.700	1/2"	3"	1"	.190"	-	72.94	69.77	66.60	63.43
50472	50473	.5000	1/2"	12.700	1/2"	3"	1"	BALL	-	-	72.94	69.77	66.60	63.43
50244	50284	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	60.04	57.43	54.82	52.21
50224	50272	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	72.94	69.77	66.60	63.43
NEW	50773	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	72.94	69.77	66.60	63.43
50225	50273	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	72.94	69.77	66.60	63.43
50226	50274	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	72.94	69.77	66.60	63.43
50227	50275	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	72.94	69.77	66.60	63.43
NEW	50774	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	72.94	69.77	66.60	63.43
NEW	50775	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	72.94	69.77	66.60	63.43
NEW	50776	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	72.94	69.77	66.60	63.43
NEW	50777	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.156"	-	72.94	69.77	66.60	63.43
NEW	50778	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.190"	-	72.94	69.77	66.60	63.43
50260	50292	.5000	1/2"	12.700	1/2"	3"	1-1/4"	BALL	-	-	72.94	69.77	66.60	63.43
NEW	50666	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	-	-	78.14	74.75	71.35	67.95
NEW	50779	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.010"	-	83.15	79.53	75.92	72.30
NEW	50780	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.015"	-	83.15	79.53	75.92	72.30
NEW	50781	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.020"	-	83.15	79.53	75.92	72.30
NEW	50782	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.030"	-	83.15	79.53	75.92	72.30
NEW	50783	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.060"	-	83.15	79.53	75.92	72.30
NEW	50784	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.090"	-	83.15	79.53	75.92	72.30
NEW	50785	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.120"	-	83.15	79.53	75.92	72.30
NEW	50696	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	BALL	-	83.15	79.53	75.92	72.30
50578	50579	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	-	81.24	77.70	74.17	70.64
50580	50581	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.010"	-	-	86.22	82.47	78.72	74.97
50582	50583	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.020"	-	-	86.22	82.47	78.72	74.97
50584	50585	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.030"	-	-	86.22	82.47	78.72	74.97
50586	50587	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.040"	-	-	86.22	82.47	78.72	74.97
50588	50589	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.060"	-	-	86.22	82.47	78.72	74.97
50590	50591	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.120"	-	-	86.22	82.47	78.72	74.97
50592	50593	.5000	1/2"	12.700	1/2"	4"	1-5/8"	BALL	-	-	86.22	82.47	78.72	74.97
50646	-	.5000	1/2"	12.700	1/2"	4"	1-3/4"	-	-	-	81.24	77.70	74.17	70.64
50647	-	.5000	1/2"	12.700	1/2"	4"	2"	-	-	-	81.24	77.70	74.17	70.64
50245	50285	.5000	1/2"	12.700	1/2"	4"	2-1/8"	-	-	-	81.24	77.70	74.17	70.64
NEW	50786	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.010"	-	86.22	82.47	78.72	74.97
NEW	50787	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.015"	-	86.22	82.47	78.72	74.97
NEW	50788	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.020"	-	86.22	82.47	78.72	74.97
NEW	50789	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	86.22	82.47	78.72	74.97
NEW	50790	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.060"	-	86.22	82.47	78.72	74.97
NEW	50791	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.090"	-	86.22	82.47	78.72	74.97
NEW	50792	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.120"	-	86.22	82.47	78.72	74.97
NEW	50793	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.125"	-	86.22	82.47	78.72	74.97
NEW	50794	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.190"	-	86.22	82.47	78.72	74.97
50261	50293	.5000	1/2"	12.700	1/2"	4"	2-1/8"	BALL	-	-	86.22	82.47	78.72	74.97

Series V4S, V4R, V4B (continued)

.5000" - .6250"  
(12.700mm - 15.875mm)

HIGH PERFORMANCE  
END MILLS

	EDP#		$d1$ †		$d2$	$l1$	$l2$	$r$	$l3$	$d3$	1-11	12-24	25-49	50-100	
	(plain)	(weldon)	Decimal	Diameter											Metric
NEW	50668	-	.5000	1/2"	12.700	1/2"	6"	3"	-	-	-	116.92	111.84	106.75	101.67
NEW	50795	-	.5000	1/2"	12.700	1/2"	6"	3"	.020"	-	-	121.92	116.62	111.32	106.02
NEW	50796	-	.5000	1/2"	12.700	1/2"	6"	3"	.030"	-	-	121.92	116.62	111.32	106.02
NEW	50797	-	.5000	1/2"	12.700	1/2"	6"	3"	.060"	-	-	121.92	116.62	111.32	106.02
NEW	50798	-	.5000	1/2"	12.700	1/2"	6"	3"	.120"	-	-	121.92	116.62	111.32	106.02
NEW	50799	-	.5000	1/2"	12.700	1/2"	6"	3"	.190"	-	-	121.92	116.62	111.32	106.02
NEW	50699	-	.5000	1/2"	12.700	1/2"	6"	3"	BALL	-	-	121.92	116.62	111.32	106.02
	50610	-	.5000	1/2"	12.700	1/2"	4"	5/8"	-	2-1/4"	.475"	93.38	89.32	85.26	81.20
	50228	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.020"	2-1/4"	.470"	98.42	94.14	89.86	85.58
NEW	50900	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.030"	2-1/4"	.470"	98.42	94.14	89.86	85.58
NEW	50901	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.060"	2-1/4"	.470"	98.42	94.14	89.86	85.58
NEW	50902	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.120"	2-1/4"	.470"	98.42	94.14	89.86	85.58
	50478	-	.5000	1/2"	12.700	1/2"	4"	5/8"	BALL	2-1/4"	.475"	98.42	94.14	89.86	85.58
NEW	50667	-	.5000	1/2"	12.700	1/2"	6"	5/8"	-	3-1/8"	.475"	129.16	123.54	117.93	112.31
	50235	-	.5000	1/2"	12.700	1/2"	6"	5/8"	-	4-1/8"	.475"	129.16	123.54	117.93	112.31
	50594	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.020"	4-1/8"	.470"	134.15	128.32	122.48	116.65
	50596	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.030"	4-1/8"	.470"	134.15	128.32	122.48	116.65
NEW	50697	-	.5000	1/2"	12.700	1/2"	6"	5/8"	BALL	3-1/8"	.475"	134.15	128.32	122.48	116.65
	50598	-	.5000	1/2"	12.700	1/2"	6"	5/8"	BALL	4-1/8"	.475"	134.15	128.32	122.48	116.65
NEW	50698	-	.5000	1/2"	12.700	1/2"	6"	1"	BALL	4-1/2"	.475"	134.15	128.32	122.48	116.65
	50545	50546	.6250	5/8"	15.875	5/8"	3"	3/4"	-	-	-	104.75	100.20	95.64	91.09
NEW	50903	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.010"	-	-	113.00	108.09	103.17	98.26
NEW	50904	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.015"	-	-	113.00	108.09	103.17	98.26
	50498	50499	.6250	5/8"	15.875	5/8"	3"	3/4"	.020"	-	-	113.00	108.09	103.17	98.26
	50500	50501	.6250	5/8"	15.875	5/8"	3"	3/4"	.030"	-	-	113.00	108.09	103.17	98.26
	50502	50503	.6250	5/8"	15.875	5/8"	3"	3/4"	.060"	-	-	113.00	108.09	103.17	98.26
NEW	50905	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.090"	-	-	113.00	108.09	103.17	98.26
NEW	50906	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.120"	-	-	113.00	108.09	103.17	98.26
NEW	50907	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.125"	-	-	113.00	108.09	103.17	98.26
NEW	50908	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.156"	-	-	113.00	108.09	103.17	98.26
NEW	50909	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.190"	-	-	113.00	108.09	103.17	98.26
NEW	50910	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.250"	-	-	113.00	108.09	103.17	98.26
	50246	50286	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	110.77	105.95	101.14	96.32
NEW	50911	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.010"	-	-	116.13	111.08	106.03	100.98
NEW	50912	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	-	-	116.13	111.08	106.03	100.98
	50229	50277	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	116.13	111.08	106.03	100.98
	50534	50535	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	116.13	111.08	106.03	100.98
	50536	50537	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.040"	-	-	116.13	111.08	106.03	100.98
	50538	50539	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	116.13	111.08	106.03	100.98
NEW	50913	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.090"	-	-	116.13	111.08	106.03	100.98
	50230	50278	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	116.13	111.08	106.03	100.98
NEW	50914	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.125"	-	-	116.13	111.08	106.03	100.98
NEW	50915	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.156"	-	-	116.13	111.08	106.03	100.98
NEW	50916	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.190"	-	-	116.13	111.08	106.03	100.98
NEW	50917	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.250"	-	-	116.13	111.08	106.03	100.98
	50262	50294	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	BALL	-	-	116.13	111.08	106.03	100.98

70

35

MATERIAL HARDNESS (Rc)

0

continued →

# Series V4S, V4R, V4B (continued)

.6250" - .6299"  
(15.875mm - 16.000mm)

MATERIAL HARDNESS (Rc)  
70  
35  
0

	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											
NEW	50669	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	-	-	-	118.30	113.16	108.01	102.87
NEW	50918	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.010"	-	-	126.25	120.76	115.27	109.78
NEW	50919	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.015"	-	-	126.25	120.76	115.27	109.78
NEW	50920	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.020"	-	-	126.25	120.76	115.27	109.78
NEW	50921	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.030"	-	-	126.25	120.76	115.27	109.78
NEW	50922	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.060"	-	-	126.25	120.76	115.27	109.78
NEW	50923	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.090"	-	-	126.25	120.76	115.27	109.78
NEW	50924	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.120"	-	-	126.25	120.76	115.27	109.78
NEW	50925	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.125"	-	-	126.25	120.76	115.27	109.78
NEW	50926	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.156"	-	-	126.25	120.76	115.27	109.78
NEW	50927	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.190"	-	-	126.25	120.76	115.27	109.78
NEW	50928	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.250"	-	-	126.25	120.76	115.27	109.78
NEW	50700	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	BALL	-	-	126.25	120.76	115.27	109.78
	50612	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	118.30	113.16	108.01	102.87
NEW	50670	-	.6250	5/8"	15.875	5/8"	4"	1-3/4"	-	-	-	118.30	113.16	108.01	102.87
NEW	50701	-	.6250	5/8"	15.875	5/8"	4"	1-3/4"	BALL	-	-	126.25	120.76	115.27	109.78
	50547	-	.6299		16.000	16.0	75	19	-	-	-	109.53	104.76	100.00	95.24
	50504	-	.6299		16.000	16.0	75	19	0.50	-	-	117.97	112.84	107.71	102.58
	50506	-	.6299		16.000	16.0	75	19	1.00	-	-	117.97	112.84	107.71	102.58
	50508	-	.6299		16.000	16.0	75	19	3.00	-	-	117.97	112.84	107.71	102.58
NEW	50929	-	.6299		16.000	16.0	75	19	4.00	-	-	117.97	112.84	107.71	102.58
NEW	50930	-	.6299		16.000	16.0	75	19	5.00	-	-	117.97	112.84	107.71	102.58
NEW	50931	-	.6299		16.000	16.0	75	19	6.00	-	-	117.97	112.84	107.71	102.58
	50247	50287	.6299		16.000	16.0	88	32	-	-	-	115.58	110.55	105.53	100.50
	50231	50279	.6299		16.000	16.0	88	32	0.50	-	-	121.20	115.93	110.66	105.39
	50409	50410	.6299		16.000	16.0	88	32	0.75	-	-	121.20	115.93	110.66	105.39
	50411	50412	.6299		16.000	16.0	88	32	1.00	-	-	121.20	115.93	110.66	105.39
	50413	50414	.6299		16.000	16.0	88	32	1.50	-	-	121.20	115.93	110.66	105.39
	50415	50416	.6299		16.000	16.0	88	32	2.00	-	-	121.20	115.93	110.66	105.39
NEW	50932	-	.6299		16.000	16.0	88	32	2.50	-	-	121.20	115.93	110.66	105.39
	50417	50418	.6299		16.000	16.0	88	32	3.00	-	-	121.20	115.93	110.66	105.39
NEW	50933	-	.6299		16.000	16.0	88	32	4.00	-	-	121.20	115.93	110.66	105.39
NEW	50934	-	.6299		16.000	16.0	88	32	5.00	-	-	121.20	115.93	110.66	105.39
NEW	50935	-	.6299		16.000	16.0	88	32	6.00	-	-	121.20	115.93	110.66	105.39
	50263	50295	.6299		16.000	16.0	88	32	BALL	-	-	121.20	115.93	110.66	105.39
NEW	50671	-	.6299		16.000	16.0	100	48	-	-	-	122.87	117.52	112.18	106.84
NEW	50936	-	.6299		16.000	16.0	100	48	0.50	-	-	128.87	123.27	117.66	112.06
NEW	50937	-	.6299		16.000	16.0	100	48	1.00	-	-	128.87	123.27	117.66	112.06
NEW	50938	-	.6299		16.000	16.0	100	48	1.50	-	-	128.87	123.27	117.66	112.06
NEW	50939	-	.6299		16.000	16.0	100	48	2.00	-	-	128.87	123.27	117.66	112.06
NEW	50940	-	.6299		16.000	16.0	100	48	3.00	-	-	128.87	123.27	117.66	112.06
NEW	50941	-	.6299		16.000	16.0	100	48	4.00	-	-	128.87	123.27	117.66	112.06
NEW	50942	-	.6299		16.000	16.0	100	48	5.00	-	-	128.87	123.27	117.66	112.06
NEW	50943	-	.6299		16.000	16.0	100	48	6.00	-	-	128.87	123.27	117.66	112.06
NEW	50702	-	.6299		16.000	16.0	100	48	BALL	-	-	128.87	123.27	117.66	112.06



	EDP#		$d1$ †		$d2$	$l1$	$l2$	$r$	$l3$	$d3$	1-11	12-24	25-49	50-100	
	(plain)	(weldon)	Decimal	Diameter											Metric
			.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	154.74	148.02	141.29	134.56
NEW	50548	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.010"	-	-	163.00	155.91	148.83	141.74
NEW	50944	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.015"	-	-	163.00	155.91	148.83	141.74
NEW	50945	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.020"	-	-	163.00	155.91	148.83	141.74
NEW	50946	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	163.00	155.91	148.83	141.74
NEW	50556	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.060"	-	-	163.00	155.91	148.83	141.74
NEW	50947	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.120"	-	-	163.00	155.91	148.83	141.74
NEW	50948	-	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	158.13	151.25	144.38	137.50
	50549	50550	.7500	3/4"	19.050	3/4"	4"	1"	-	-	-	166.54	159.30	152.06	144.82
NEW	50949	-	.7500	3/4"	19.050	3/4"	4"	1"	.010"	-	-	166.54	159.30	152.06	144.82
NEW	50950	-	.7500	3/4"	19.050	3/4"	4"	1"	.015"	-	-	166.54	159.30	152.06	144.82
	50510	50511	.7500	3/4"	19.050	3/4"	4"	1"	.020"	-	-	166.54	159.30	152.06	144.82
	50512	50513	.7500	3/4"	19.050	3/4"	4"	1"	.030"	-	-	166.54	159.30	152.06	144.82
	50514	50515	.7500	3/4"	19.050	3/4"	4"	1"	.060"	-	-	166.54	159.30	152.06	144.82
NEW	50951	-	.7500	3/4"	19.050	3/4"	4"	1"	.090"	-	-	166.54	159.30	152.06	144.82
NEW	50952	-	.7500	3/4"	19.050	3/4"	4"	1"	.120"	-	-	166.54	159.30	152.06	144.82
NEW	50953	-	.7500	3/4"	19.050	3/4"	4"	1"	.190"	-	-	166.54	159.30	152.06	144.82
NEW	50954	-	.7500	3/4"	19.050	3/4"	4"	1"	.250"	-	-	166.54	159.30	152.06	144.82
NEW	50955	-	.7500	3/4"	19.050	3/4"	4"	1"	.3125"	-	-	166.54	159.30	152.06	144.82
	50248	50288	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	158.13	151.25	144.38	137.50
NEW	50956	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.010"	-	-	166.54	159.30	152.06	144.82
NEW	50957	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-	166.54	159.30	152.06	144.82
	50516	50517	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.020"	-	-	166.54	159.30	152.06	144.82
	50232	50280	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	166.54	159.30	152.06	144.82
	50518	50519	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	166.54	159.30	152.06	144.82
NEW	50958	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.090"	-	-	166.54	159.30	152.06	144.82
	50520	50521	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	166.54	159.30	152.06	144.82
NEW	50959	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.125"	-	-	166.54	159.30	152.06	144.82
NEW	50960	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.156"	-	-	166.54	159.30	152.06	144.82
NEW	50961	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.190"	-	-	166.54	159.30	152.06	144.82
NEW	50962	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.250"	-	-	166.54	159.30	152.06	144.82
NEW	50963	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.3125"	-	-	166.54	159.30	152.06	144.82
	50264	50296	.7500	3/4"	19.050	3/4"	4"	1-1/2"	BALL	-	-	166.54	159.30	152.06	144.82
	50551	50552	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	158.13	151.25	144.38	137.50
NEW	50964	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.010"	-	-	166.54	159.30	152.06	144.82
NEW	50965	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-	166.54	159.30	152.06	144.82
	50522	50523	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.020"	-	-	166.54	159.30	152.06	144.82
	50524	50525	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	166.54	159.30	152.06	144.82
	50526	50527	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.060"	-	-	166.54	159.30	152.06	144.82
NEW	50966	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.090"	-	-	166.54	159.30	152.06	144.82
NEW	50967	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.120"	-	-	166.54	159.30	152.06	144.82
NEW	50968	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.125"	-	-	166.54	159.30	152.06	144.82
NEW	50969	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.156"	-	-	166.54	159.30	152.06	144.82
NEW	50970	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.190"	-	-	166.54	159.30	152.06	144.82
NEW	50971	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.250"	-	-	166.54	159.30	152.06	144.82
NEW	50972	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.3125"	-	-	166.54	159.30	152.06	144.82

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MATERIAL HARDNESS (Rc)

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continued →

# Series V4S, V4R, V4B (continued)

.7500" - .7874"  
(19.050mm - 20.000mm)

MATERIAL HARDNESS (Rc)

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	EDP#		d1 †		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											
	50553	50554	.7500	3/4"	19.050	3/4"	5"	2-1/8"	-	-	-	212.23	203.01	193.78	184.55
NEW	50973	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.010"	-	-	231.02	220.98	210.93	200.89
NEW	50974	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.015"	-	-	231.02	220.98	210.93	200.89
NEW	50975	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.020"	-	-	231.02	220.98	210.93	200.89
NEW	50976	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.030"	-	-	231.02	220.98	210.93	200.89
NEW	50977	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.060"	-	-	231.02	220.98	210.93	200.89
NEW	50978	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.090"	-	-	231.02	220.98	210.93	200.89
NEW	50979	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.120"	-	-	231.02	220.98	210.93	200.89
NEW	50980	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.125"	-	-	231.02	220.98	210.93	200.89
NEW	50981	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.156"	-	-	231.02	220.98	210.93	200.89
NEW	50982	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.190"	-	-	231.02	220.98	210.93	200.89
NEW	50983	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.250"	-	-	231.02	220.98	210.93	200.89
NEW	50984	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.3125"	-	-	231.02	220.98	210.93	200.89
NEW	50672	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	-	-	-	212.23	203.01	193.78	184.55
NEW	50985	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.010"	-	-	231.02	220.98	210.93	200.89
NEW	50986	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.015"	-	-	231.02	220.98	210.93	200.89
NEW	50987	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.020"	-	-	231.02	220.98	210.93	200.89
NEW	50988	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-	231.02	220.98	210.93	200.89
NEW	50989	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.060"	-	-	231.02	220.98	210.93	200.89
NEW	50990	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.090"	-	-	231.02	220.98	210.93	200.89
NEW	50991	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.120"	-	-	231.02	220.98	210.93	200.89
NEW	50992	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.125"	-	-	231.02	220.98	210.93	200.89
NEW	50993	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.156"	-	-	231.02	220.98	210.93	200.89
NEW	50994	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.190"	-	-	231.02	220.98	210.93	200.89
NEW	50995	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.250"	-	-	231.02	220.98	210.93	200.89
NEW	50996	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.3125"	-	-	231.02	220.98	210.93	200.89
NEW	50703	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	BALL	-	-	231.02	220.98	210.93	200.89
	50555	-	.7874		20.000	20.0	100	25	-	-	-	213.65	204.36	195.07	185.78
	50249	50289	.7874		20.000	20.0	100	38	-	-	-	213.65	204.36	195.07	185.78
NEW	50997	-	.7874		20.000	20.0	100	38	0.50	-	-	235.72	225.47	215.22	204.97
	50528	-	.7874		20.000	20.0	100	38	1.00	-	-	235.72	225.47	215.22	204.97
NEW	50530	-	.7874		20.000	20.0	100	38	2.00	-	-	235.72	225.47	215.22	204.97
NEW	50998	-	.7874		20.000	20.0	100	38	2.50	-	-	235.72	225.47	215.22	204.97
	50532	-	.7874		20.000	20.0	100	38	3.00	-	-	235.72	225.47	215.22	204.97
NEW	50999	-	.7874		20.000	20.0	100	38	4.00	-	-	235.72	225.47	215.22	204.97
NEW	50121	-	.7874		20.000	20.0	100	38	5.00	-	-	235.72	225.47	215.22	204.97
NEW	50122	-	.7874		20.000	20.0	100	38	6.00	-	-	235.72	225.47	215.22	204.97
NEW	50123	-	.7874		20.000	20.0	100	38	8.00	-	-	235.72	225.47	215.22	204.97
	50265	50297	.7874		20.000	20.0	100	38	BALL	-	-	235.72	225.47	215.22	204.97
NEW	50673	-	.7874		20.000	20.0	100	48	-	-	-	213.65	204.36	195.07	185.78
NEW	50124	-	.7874		20.000	20.0	100	48	0.50	-	-	235.72	225.47	215.22	204.97
NEW	50125	-	.7874		20.000	20.0	100	48	1.00	-	-	235.72	225.47	215.22	204.97
NEW	50126	-	.7874		20.000	20.0	100	48	1.50	-	-	235.72	225.47	215.22	204.97
NEW	50127	-	.7874		20.000	20.0	100	48	2.00	-	-	235.72	225.47	215.22	204.97
NEW	50128	-	.7874		20.000	20.0	100	48	2.50	-	-	235.72	225.47	215.22	204.97
NEW	50129	-	.7874		20.000	20.0	100	48	3.00	-	-	235.72	225.47	215.22	204.97
NEW	50131	-	.7874		20.000	20.0	100	48	4.00	-	-	235.72	225.47	215.22	204.97
NEW	50132	-	.7874		20.000	20.0	100	48	5.00	-	-	235.72	225.47	215.22	204.97
NEW	50133	-	.7874		20.000	20.0	100	48	6.00	-	-	235.72	225.47	215.22	204.97
NEW	50134	-	.7874		20.000	20.0	100	48	8.00	-	-	235.72	225.47	215.22	204.97
NEW	50704	-	.7874		20.000	20.0	100	48	BALL	-	-	235.72	225.47	215.22	204.97

	EDP#		$d1^{\dagger}$		$d2$ 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										
NEW	50674	-	.7874	20.000	20.0	150	60	-	-	-	268.07	256.41	244.76	233.10
NEW	50135	-	.7874	20.000	20.0	150	60	0.50	-	-	289.78	277.18	264.58	251.98
NEW	50136	-	.7874	20.000	20.0	150	60	1.00	-	-	289.78	277.18	264.58	251.98
NEW	50137	-	.7874	20.000	20.0	150	60	3.00	-	-	289.78	277.18	264.58	251.98
NEW	50138	-	.7874	20.000	20.0	150	60	6.00	-	-	289.78	277.18	264.58	251.98
NEW	50705	-	.7874	20.000	20.0	150	60	BALL	-	-	289.78	277.18	264.58	251.98
	50250	50290	1.000	1"	25.400	1"	4"	1-1/2"	-	-	236.23	225.96	215.69	205.42
NEW	50139	-	1.000	1"	25.400	1"	4"	1-1/2"	.020"	-	284.34	271.98	259.61	247.25
	50233	50281	1.000	1"	25.400	1"	4"	1-1/2"	.030"	-	284.34	271.98	259.61	247.25
NEW	50141	-	1.000	1"	25.400	1"	4"	1-1/2"	.060"	-	284.34	271.98	259.61	247.25
NEW	50142	-	1.000	1"	25.400	1"	4"	1-1/2"	.090"	-	284.34	271.98	259.61	247.25
NEW	50143	-	1.000	1"	25.400	1"	4"	1-1/2"	.120"	-	284.34	271.98	259.61	247.25
	50557	-	1.000	1"	25.400	1"	4"	1-1/2"	.125"	-	284.34	271.98	259.61	247.25
NEW	50144	-	1.000	1"	25.400	1"	4"	1-1/2"	.156"	-	284.34	271.98	259.61	247.25
NEW	50145	-	1.000	1"	25.400	1"	4"	1-1/2"	.190"	-	284.34	271.98	259.61	247.25
NEW	50146	-	1.000	1"	25.400	1"	4"	1-1/2"	.250"	-	284.34	271.98	259.61	247.25
NEW	50147	-	1.000	1"	25.400	1"	4"	1-1/2"	.3125"	-	284.34	271.98	259.61	247.25
NEW	50148	-	1.000	1"	25.400	1"	4"	1-1/2"	.375"	-	284.34	271.98	259.61	247.25
	50266	50298	1.000	1"	25.400	1"	4"	1-1/2"	BALL	-	284.34	271.98	259.61	247.25
NEW	50675	-	1.000	1"	25.400	1"	4-1/2"	2"	-	-	277.83	265.75	253.67	241.59
NEW	50149	-	1.000	1"	25.400	1"	4-1/2"	2"	.020"	-	317.10	303.31	289.53	275.74
NEW	50151	-	1.000	1"	25.400	1"	4-1/2"	2"	.030"	-	317.10	303.31	289.53	275.74
NEW	50152	-	1.000	1"	25.400	1"	4-1/2"	2"	.060"	-	317.10	303.31	289.53	275.74
NEW	50153	-	1.000	1"	25.400	1"	4-1/2"	2"	.090"	-	317.10	303.31	289.53	275.74
NEW	50154	-	1.000	1"	25.400	1"	4-1/2"	2"	.120"	-	317.10	303.31	289.53	275.74
NEW	50155	-	1.000	1"	25.400	1"	4-1/2"	2"	.156"	-	317.10	303.31	289.53	275.74
NEW	50156	-	1.000	1"	25.400	1"	4-1/2"	2"	.190"	-	317.10	303.31	289.53	275.74
NEW	50157	-	1.000	1"	25.400	1"	4-1/2"	2"	.250"	-	317.10	303.31	289.53	275.74
NEW	50158	-	1.000	1"	25.400	1"	4-1/2"	2"	.3125"	-	317.10	303.31	289.53	275.74
NEW	50706	-	1.000	1"	25.400	1"	4-1/2"	2"	BALL	-	317.10	303.31	289.53	275.74
	50234	50282	1.000	1"	25.400	1"	5"	2-1/8"	.030"	-	349.85	334.64	319.43	304.22
NEW	50676	-	1.000	1"	25.400	1"	5"	2-1/2"	-	-	316.23	302.48	288.73	274.98
NEW	50159	-	1.000	1"	25.400	1"	5"	2-1/2"	.020"	-	349.85	334.64	319.43	304.22
NEW	50161	-	1.000	1"	25.400	1"	5"	2-1/2"	.030"	-	349.85	334.64	319.43	304.22
NEW	50162	-	1.000	1"	25.400	1"	5"	2-1/2"	.060"	-	349.85	334.64	319.43	304.22
NEW	50163	-	1.000	1"	25.400	1"	5"	2-1/2"	.090"	-	349.85	334.64	319.43	304.22
NEW	50164	-	1.000	1"	25.400	1"	5"	2-1/2"	.120"	-	349.85	334.64	319.43	304.22
NEW	50165	-	1.000	1"	25.400	1"	5"	2-1/2"	.156"	-	349.85	334.64	319.43	304.22
NEW	50166	-	1.000	1"	25.400	1"	5"	2-1/2"	.190"	-	349.85	334.64	319.43	304.22
NEW	50167	-	1.000	1"	25.400	1"	5"	2-1/2"	.250"	-	349.85	334.64	319.43	304.22
NEW	50168	-	1.000	1"	25.400	1"	5"	2-1/2"	.3125"	-	349.85	334.64	319.43	304.22
NEW	50707	-	1.000	1"	25.400	1"	5"	2-1/2"	BALL	-	349.85	334.64	319.43	304.22

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MATERIAL HARDNESS (Rc)

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