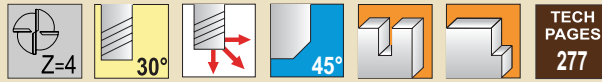


Series VHM

.1575" - .3543"
(4.000mm - 9.000mm)

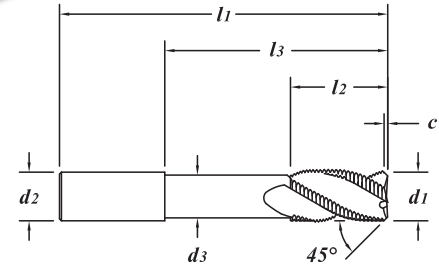


TOLERANCES	
d1	+0.000" - .002" (+.000 - .050mm)
d2	h6
d3	+0.000" - .005" (+.000 - .127mm)

Recommended for stainless steel, inconel, pH materials, cold rolled steel, titanium, cast iron and tool steels under 40Rc

Staggered Flute Knuckle Rougher / Ripper AlTiN Coating

- Solid submicron grain carbide end mill - center cutting
- State-of-the-art rougher using VRX technology
- Reduces tool pressure for more aggressive machining
- Recommended for pocket milling
- Variable flute geometry



EDP#	d1 † Diameter		d2 Shank Diameter	l1 Overall Length	l2 Flute Length	c Chamfer Length	l3 Reach Length	d3 Neck Diameter	1-11	12-24	25-49	50-100	
	Decimal	Metric											
49450	.1575	4.000	6.0	50	8	0.30	-	-	36.36	34.78	33.20	31.62	
49455	.1575	4.000	6.0	50	12	0.30	-	-	36.36	34.78	33.20	31.62	
49460	.1575	4.000	6.0	65	10	0.30	30	3.4	42.27	40.44	38.60	36.76	
49465	.1575	4.000	6.0	75	15	0.30	40	3.4	54.18	51.82	49.47	47.11	
49470	.1875	3/16"	4.763	2"	5/16"	.015"	-	-	30.31	29.00	27.68	26.36	
49475	.1875	3/16"	4.763	2"	9/16"	.015"	-	-	30.31	29.00	27.68	26.36	
49480	.1875	3/16"	4.763	3"	1"	.015"	-	-	42.50	40.66	38.81	36.96	
49485	.1875	3/16"	4.763	3"	1/2"	.015"	1-1/2"	.165"	45.94	43.95	41.95	39.95	
49490	.2362	6.000	6.0	50	12	0.50	-	-	36.11	34.54	32.97	31.40	
49500	.2362	6.000	6.0	65	19	0.50	-	-	39.99	38.25	36.51	34.77	
49505	.2362	6.000	6.0	100	15	0.50	40	5.4	55.51	53.10	50.68	48.27	
49510	.2362	6.000	6.0	100	20	0.50	60	5.4	55.51	53.10	50.68	48.27	
49520	.2500	1/4"	6.350	2"	3/8"	.020"	-	-	34.68	33.18	31.67	30.16	
49540	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	39.56	37.84	36.12	34.40	
49543	.2500	1/4"	6.350	1/4"	4"	1-1/2"	.020"	-	50.46	48.27	46.07	43.88	
49547	.2500	1/4"	6.350	1/4"	4"	1"	.020"	2"	.225"	53.90	51.56	49.21	46.87
49550	.2756	7.000	8.0	50	12	0.50	-	-	49.12	46.98	44.85	42.71	
49555	.2756	7.000	8.0	65	22	0.50	-	-	53.11	50.80	48.49	46.18	
49570	.2812	9/32"	7.142	5/16"	2"	7/16"	.020"	-	48.24	46.15	44.05	41.95	
49575	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.020"	-	51.96	49.70	47.44	45.18	
49580	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	-	42.15	40.32	38.48	36.65	
49600	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	45.43	43.45	41.48	39.50	
49603	.3125	5/16"	7.938	5/16"	4"	1-1/2"	.020"	-	64.04	61.26	58.47	55.69	
49605	.3125	5/16"	7.938	5/16"	4"	1"	.020"	2"	.285"	67.48	64.55	61.61	58.68
49610	.3150	8.000	8.0	50	12	0.50	-	-	43.03	41.16	39.29	37.42	
49620	.3150	8.000	8.0	65	22	0.50	-	-	46.38	44.36	42.35	40.33	
49622	.3150	8.000	8.0	100	40	0.50	-	-	65.99	63.12	60.25	57.38	
49623	.3150	8.000	8.0	100	20	0.50	60	7.4	69.44	66.42	63.40	60.38	
49624	.3150	8.000	8.0	150	40	0.50	100	7.4	92.39	88.37	84.36	80.34	
49625	.3438	11/32"	8.733	3/8"	2"	1/2"	.025"	-	54.72	52.34	49.96	47.58	
49630	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	.025"	-	62.25	59.54	56.84	54.13	
49635	.3543	9.000	10.0	50	14	0.50	-	-	67.10	64.19	61.27	58.35	
49637	.3543	9.000	10.0	65	22	0.50	-	-	72.93	69.76	66.59	63.42	

MATERIAL HARDNESS (Rc)
70
35
0

EDP#	$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	c Chamfer Length	$l3$ Reach Length	$d3$ Neck Diameter	1-11	12-24	25-49	50-100	
	Decimal	Metric											
49640	.3750	3/8"	9.525	3/8"	2"	1/2"	.025"	-	-	48.35	46.24	44.14	42.04
49660	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.025"	-	-	55.03	52.64	50.24	47.85
49662	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.025"	-	-	63.17	60.42	57.68	54.93
49664	.3750	3/8"	9.525	3/8"	4"	1-5/8"	.025"	-	-	69.33	66.32	63.30	60.29
49667	.3750	3/8"	9.525	3/8"	4"	1"	.025"	2"	.355"	72.77	69.61	66.44	63.28
49670	.3937		10.000	10.0	50	16	0.50	-	-	59.31	56.73	54.15	51.57
49680	.3937		10.000	10.0	70	22	0.50	-	-	64.43	61.63	58.83	56.03
49682	.3937		10.000	10.0	100	40	0.50	-	-	80.60	77.10	73.59	70.09
49684	.3937		10.000	10.0	100	20	0.50	40	9.4	84.04	80.39	76.73	73.08
49686	.3937		10.000	10.0	100	30	0.50	60	9.4	84.04	80.39	76.73	73.08
49690	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.025"	-	-	64.75	61.93	59.12	56.30
49700	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.025"	-	-	64.75	61.93	59.12	56.30
49710	.4724		12.000	12.0	65	19	0.80	-	-	69.53	66.51	63.48	60.46
49720	.4724		12.000	12.0	75	32	0.80	-	-	77.58	74.21	70.83	67.46
49725	.4724		12.000	12.0	100	50	0.80	-	-	91.90	87.90	83.91	79.91
49730	.4724		12.000	12.0	100	25	0.80	60	11.4	95.34	91.19	87.05	82.90
49735	.4724		12.000	12.0	150	40	0.80	100	11.4	129.61	123.97	118.34	112.70
* 49740	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	66.57	63.68	60.78	57.89
* 49760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	74.39	71.16	67.92	64.69
* 49761	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	87.94	84.12	80.29	76.47
* 49762	.5000	1/2"	12.700	1/2"	4"	1"	.030"	2"	.480"	91.38	87.41	83.43	79.46
* 49764	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.030"	4"	.480"	127.81	122.25	116.70	111.14
* 49765	.5512		14.000	14.0	75	19	0.80	-	-	110.06	105.27	100.49	95.70
* 49770	.5512		14.000	14.0	88	32	0.80	-	-	113.11	108.20	103.28	98.36
* 49780	.6250	5/8"	15.875	5/8"	3"	3/4"	.035"	-	-	115.47	110.45	105.43	100.41
* 49800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.035"	-	-	118.53	113.38	108.22	103.07
* 49820	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.035"	-	-	124.89	119.46	114.03	108.60
* 49824	.6250	5/8"	15.875	5/8"	4"	1"	.035"	2"	.605"	128.33	122.75	117.17	111.59
* 49826	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	3"	.605"	181.07	173.20	165.32	157.45
* 49828	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	4"	.605"	181.07	173.20	165.32	157.45
* 49830	.6299		16.000	16.0	75	19	1.00	-	-	120.57	115.32	110.08	104.84
* 49840	.6299		16.000	16.0	88	32	1.00	-	-	123.74	118.36	112.98	107.60
* 49842	.6299		16.000	16.0	100	50	1.00	-	-	131.68	125.95	120.23	114.50
* 49843	.6299		16.000	16.0	100	20	1.00	50	15.4	135.13	129.25	123.38	117.50
* 49844	.6299		16.000	16.0	150	40	1.00	100	15.4	182.83	174.88	166.93	158.98
* 49850	.7087		18.000	18.0	100	38	1.00	-	-	177.89	170.16	162.42	154.69
* 49860	.7500	3/4"	19.050	3/4"	3"	7/8"	.040"	-	-	166.74	159.49	152.24	144.99
* 49880	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.040"	-	-	170.19	162.79	155.39	147.99
* 49882	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.040"	-	-	236.08	225.82	215.55	205.29
* 49886	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	3"	.730"	283.85	271.51	259.17	246.83
* 49887	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	4"	.730"	283.85	271.51	259.17	246.83
* 49890	.7874		20.000	20.0	75	22	1.00	-	-	235.69	225.45	215.20	204.95
* 49900	.7874		20.000	20.0	100	38	1.00	-	-	240.84	230.37	219.90	209.43
* 49902	.7874		20.000	20.0	100	30	1.00	50	19.4	244.29	233.67	223.05	212.43
* 49904	.7874		20.000	20.0	150	40	1.00	100	19.4	299.54	286.52	273.49	260.47
* 49915	.9843		25.000	25.0	100	25	1.00	-	-	276.22	264.21	252.20	240.19
* 49920	.9843		25.000	25.0	100	38	1.00	-	-	276.22	264.21	252.20	240.19
* 49925	1.000	1"	25.400	1"	4"	1"	.040"	-	-	285.86	273.43	261.00	248.57
* 49930	1.000	1"	25.400	1"	4"	1-1/2"	.040"	-	-	285.86	273.43	261.00	248.57
* 49940	1.000	1"	25.400	1"	5"	2"	.040"	-	-	351.96	336.66	321.35	306.05

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MATERIAL HARDNESS (Rc)

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* - Tools with weldon flats