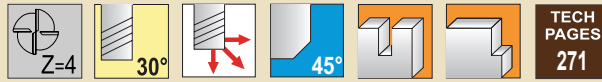


Series VHM

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

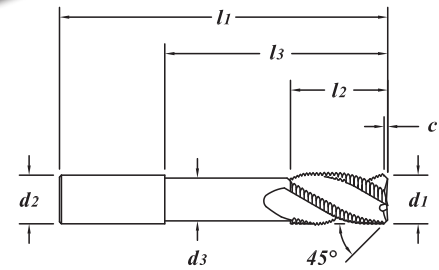
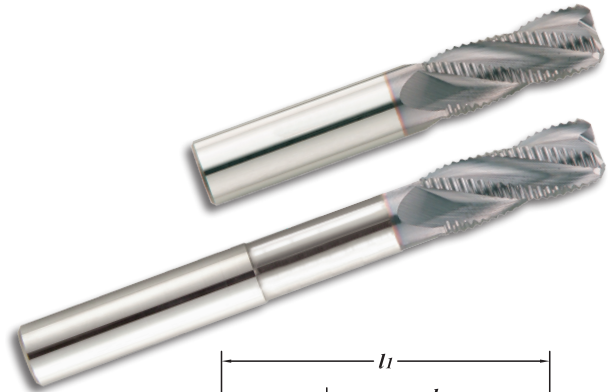


TOLERANCES	
d1	+0.000" - .002" (+.000 - .050mm)
d2	h6
d3	+0.000" - .005" (+.000 - .127mm)

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



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MATERIAL HARDNESS (Rc)

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	-	-	34.63	33.12	31.62	30.11	
49455	.1575	4.000	6.0	50	12	0.30	-	-	34.63	33.12	31.62	30.11	
49460	.1575	4.000	6.0	65	10	0.30	30	3.4	40.26	38.51	36.76	35.01	
49465	.1575	4.000	6.0	75	15	0.30	40	3.4	51.60	49.36	47.11	44.87	
49470	.1875	3/16"	4.763	2"	5/16"	.015"	-	-	28.87	27.61	26.36	25.10	
49475	.1875	3/16"	4.763	2"	9/16"	.015"	-	-	28.87	27.61	26.36	25.10	
49480	.1875	3/16"	4.763	3"	1"	.015"	-	-	40.48	38.72	36.96	35.20	
49485	.1875	3/16"	4.763	3"	1/2"	.015"	1-1/2"	.165"	43.76	41.86	39.95	38.05	
49490	.2362	6.000	6.0	50	12	0.50	-	-	34.39	32.89	31.40	29.90	
49500	.2362	6.000	6.0	65	19	0.50	-	-	38.08	36.42	34.77	33.11	
49505	.2362	6.000	6.0	100	15	0.50	40	5.4	52.87	50.57	48.27	45.97	
49510	.2362	6.000	6.0	100	20	0.50	60	5.4	52.87	50.57	48.27	45.97	
49520	.2500	1/4"	6.350	2"	3/8"	.020"	-	-	33.03	31.59	30.16	28.72	
49540	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	37.67	36.04	34.40	32.76	
49543	.2500	1/4"	6.350	1/4"	4"	1-1/2"	.020"	-	48.06	45.97	43.88	41.79	
49547	.2500	1/4"	6.350	1/4"	4"	1"	.020"	2"	.225"	51.34	49.11	46.88	44.64
49550	.2756	7.000	8.0	50	12	0.50	-	-	46.78	44.75	42.71	40.68	
49555	.2756	7.000	8.0	65	22	0.50	-	-	50.58	48.38	46.18	43.98	
49570	.2812	9/32"	7.142	5/16"	2"	7/16"	.020"	-	45.94	43.95	41.95	39.95	
49575	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.020"	-	49.48	47.33	45.18	43.03	
49580	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	-	40.14	38.39	36.65	34.90	
49600	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	43.26	41.38	39.50	37.62	
49603	.3125	5/16"	7.938	5/16"	4"	1-1/2"	.020"	-	61.00	58.35	55.70	53.04	
49605	.3125	5/16"	7.938	5/16"	4"	1"	.020"	2"	.285"	64.27	61.48	58.68	55.89
49610	.3150	8.000	8.0	50	12	0.50	-	-	40.99	39.20	37.42	35.64	
49620	.3150	8.000	8.0	65	22	0.50	-	-	44.17	42.25	40.33	38.41	
49622	.3150	8.000	8.0	100	40	0.50	-	-	62.85	60.12	57.38	54.65	
49623	.3150	8.000	8.0	100	20	0.50	60	7.4	66.13	63.25	60.38	57.50	
49624	.3150	8.000	8.0	150	40	0.50	100	7.4	87.99	84.16	80.34	76.51	
49625	.3438	11/32"	8.733	3/8"	2"	1/2"	.025"	-	52.11	49.84	47.58	45.31	
49630	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	.025"	-	59.28	56.71	54.13	51.55	
49635	.3543	9.000	10.0	50	14	0.50	-	-	63.91	61.13	58.35	55.57	
49637	.3543	9.000	10.0	65	22	0.50	-	-	69.46	66.44	63.42	60.40	

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"	-	-	46.05	44.04	42.04	40.04
49660	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.025"	-	-	52.41	50.13	47.85	45.57
49662	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.025"	-	-	60.16	57.54	54.93	52.31
49664	.3750	3/8"	9.525	3/8"	4"	1-5/8"	.025"	-	-	66.03	63.16	60.29	57.42
49667	.3750	3/8"	9.525	3/8"	4"	1"	.025"	2"	.355"	69.31	66.30	63.28	60.27
49670	.3937		10.000	10.0	50	16	0.50	-	-	56.48	54.02	51.57	49.11
49680	.3937		10.000	10.0	70	22	0.50	-	-	61.36	58.70	56.03	53.36
49682	.3937		10.000	10.0	100	40	0.50	-	-	76.76	73.42	70.08	66.75
49684	.3937		10.000	10.0	100	20	0.50	40	9.4	80.04	76.56	73.08	69.60
49686	.3937		10.000	10.0	100	30	0.50	60	9.4	80.04	76.56	73.08	69.60
49690	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.025"	-	-	61.66	58.98	56.30	53.62
49700	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.025"	-	-	61.66	58.98	56.30	53.62
49710	.4724		12.000	12.0	65	19	0.80	-	-	66.22	63.34	60.46	57.58
49720	.4724		12.000	12.0	75	32	0.80	-	-	73.89	70.68	67.46	64.25
49725	.4724		12.000	12.0	100	50	0.80	-	-	87.52	83.71	79.91	76.10
49730	.4724		12.000	12.0	100	25	0.80	60	11.4	90.79	86.84	82.89	78.95
49735	.4724		12.000	12.0	150	40	0.80	100	11.4	123.43	118.06	112.70	107.33
* 49740	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	63.40	60.64	57.89	55.13
* 49760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	70.85	67.77	64.69	61.61
* 49761	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	83.75	80.11	76.47	72.83
* 49762	.5000	1/2"	12.700	1/2"	4"	1"	.030"	2"	.480"	87.03	83.25	79.46	75.68
* 49764	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.030"	4"	.480"	121.73	116.44	111.14	105.85
* 49765	.5512		14.000	14.0	75	19	0.80	-	-	104.81	100.25	95.70	91.14
* 49770	.5512		14.000	14.0	88	32	0.80	-	-	107.73	103.05	98.36	93.68
* 49780	.6250	5/8"	15.875	5/8"	3"	3/4"	.035"	-	-	109.97	105.19	100.41	95.63
* 49800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.035"	-	-	112.88	107.98	103.07	98.16
* 49820	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.035"	-	-	118.94	113.77	108.60	103.43
* 49824	.6250	5/8"	15.875	5/8"	4"	1"	.035"	2"	.605"	122.22	116.91	111.59	106.28
* 49826	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	3"	.605"	172.44	164.94	157.44	149.95
* 49828	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	4"	.605"	172.44	164.94	157.44	149.95
* 49830	.6299		16.000	16.0	75	19	1.00	-	-	114.83	109.84	104.84	99.85
* 49840	.6299		16.000	16.0	88	32	1.00	-	-	117.85	112.73	107.60	102.48
* 49842	.6299		16.000	16.0	100	50	1.00	-	-	125.41	119.96	114.50	109.05
* 49843	.6299		16.000	16.0	100	20	1.00	50	15.4	128.69	123.09	117.50	111.90
* 49844	.6299		16.000	16.0	150	40	1.00	100	15.4	174.12	166.55	158.98	151.41
* 49850	.7087		18.000	18.0	100	38	1.00	-	-	169.42	162.05	154.69	147.32
* 49860	.7500	3/4"	19.050	3/4"	3"	7/8"	.040"	-	-	158.80	151.90	144.99	138.09
* 49880	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.040"	-	-	162.08	155.03	147.99	140.94
* 49882	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.040"	-	-	224.84	215.06	205.29	195.51
* 49886	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	3"	.730"	270.34	258.59	246.83	235.08
* 49887	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	4"	.730"	270.34	258.59	246.83	235.08
* 49890	.7874		20.000	20.0	75	22	1.00	-	-	224.47	214.71	204.95	195.19
* 49900	.7874		20.000	20.0	100	38	1.00	-	-	229.38	219.41	209.43	199.46
* 49902	.7874		20.000	20.0	100	30	1.00	50	19.4	232.66	222.54	212.43	202.31
* 49904	.7874		20.000	20.0	150	40	1.00	100	19.4	285.28	272.88	260.47	248.07
* 49915	.9843		25.000	25.0	100	25	1.00	-	-	263.06	251.63	240.19	228.75
* 49920	.9843		25.000	25.0	100	38	1.00	-	-	263.06	251.63	240.19	228.75
* 49925	1.000	1"	25.400	1"	4"	1"	.040"	-	-	272.24	260.40	248.57	236.73
* 49930	1.000	1"	25.400	1"	4"	1-1/2"	.040"	-	-	272.24	260.40	248.57	236.73
* 49940	1.000	1"	25.400	1"	5"	2"	.040"	-	-	335.20	320.63	306.05	291.48

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MATERIAL HARDNESS (Rc)

* - Tools with weldon flats