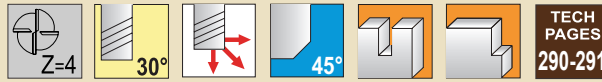


Series VHM

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

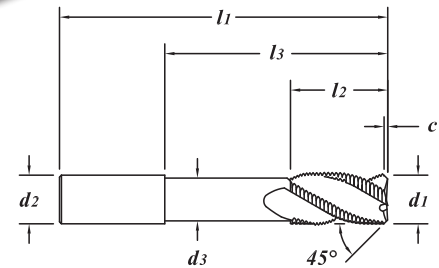


TOLERANCES	
d1	+0.000" - .002" (+.000 - .050mm)
d2	h6
d3	+0.000" - .005" (+.000 - .127mm)

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



70
35
0
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	-	-	37.81	36.17	34.52	32.88	
49455	.1575	4.000	6.0	50	12	0.30	-	-	37.81	36.17	34.52	32.88	
49460	.1575	4.000	6.0	65	10	0.30	30	3.4	43.96	42.05	40.14	38.23	
49465	.1575	4.000	6.0	75	15	0.30	40	3.4	56.34	53.89	51.44	48.99	
49470	.1875	3/16"	4.763	2"	5/16"	.015"	-	-	31.52	30.15	28.78	27.41	
49475	.1875	3/16"	4.763	2"	9/16"	.015"	-	-	31.52	30.15	28.78	27.41	
49480	.1875	3/16"	4.763	3"	1"	.015"	-	-	44.21	42.28	40.36	38.44	
49485	.1875	3/16"	4.763	3"	1/2"	.015"	1-1/2"	.165"	47.78	45.71	43.63	41.55	
49490	.2362	6.000	6.0	50	12	0.50	-	-	37.56	35.93	34.29	32.66	
49500	.2362	6.000	6.0	65	19	0.50	-	-	41.58	39.78	37.97	36.16	
49505	.2362	6.000	6.0	100	15	0.50	40	5.4	57.73	55.22	52.71	50.20	
49510	.2362	6.000	6.0	100	20	0.50	60	5.4	57.73	55.22	52.71	50.20	
49520	.2500	1/4"	6.350	2"	3/8"	.020"	-	-	36.08	34.51	32.94	31.37	
49540	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	41.15	39.36	37.57	35.78	
49543	.2500	1/4"	6.350	1/4"	4"	1-1/2"	.020"	-	52.49	50.20	47.92	45.64	
49547	.2500	1/4"	6.350	1/4"	4"	1"	.020"	2"	.225"	56.05	53.61	51.18	48.74
49550	.2756	7.000	8.0	50	12	0.50	-	-	51.08	48.86	46.64	44.42	
49555	.2756	7.000	8.0	65	22	0.50	-	-	55.23	52.83	50.43	48.03	
49570	.2812	9/32"	7.142	5/16"	2"	7/16"	.020"	-	50.17	47.99	45.81	43.63	
49575	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.020"	-	54.04	51.69	49.34	46.99	
49580	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	-	43.84	41.93	40.03	38.12	
49600	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	47.24	45.19	43.13	41.08	
49603	.3125	5/16"	7.938	5/16"	4"	1-1/2"	.020"	-	66.61	63.71	60.82	57.92	
49605	.3125	5/16"	7.938	5/16"	4"	1"	.020"	2"	.285"	70.18	67.13	64.08	61.03
49610	.3150	8.000	8.0	50	12	0.50	-	-	44.76	42.81	40.87	38.92	
49620	.3150	8.000	8.0	65	22	0.50	-	-	48.23	46.13	44.04	41.94	
49622	.3150	8.000	8.0	100	40	0.50	-	-	68.63	65.65	62.66	59.68	
49623	.3150	8.000	8.0	100	20	0.50	60	7.4	72.22	69.08	65.94	62.80	
49624	.3150	8.000	8.0	150	40	0.50	100	7.4	96.08	91.91	87.73	83.55	
49625	.3438	11/32"	8.733	3/8"	2"	1/2"	.025"	-	56.90	54.43	51.95	49.48	
49630	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	.025"	-	64.75	61.93	59.12	56.30	
49635	.3543	9.000	10.0	50	14	0.50	-	-	69.78	66.75	63.71	60.68	
49637	.3543	9.000	10.0	65	22	0.50	-	-	75.85	72.56	69.26	65.96	

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"	-	-	50.28	48.09	45.91	43.72
49660	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.025"	-	-	57.22	54.74	52.25	49.76
49662	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.025"	-	-	65.70	62.84	59.99	57.13
49664	.3750	3/8"	9.525	3/8"	4"	1-5/8"	.025"	-	-	72.11	68.97	65.84	62.70
49667	.3750	3/8"	9.525	3/8"	4"	1"	.025"	2"	.355"	75.68	72.39	69.10	65.81
49670	.3937		10.000	10.0	50	16	0.50	-	-	61.67	58.99	56.31	53.63
49680	.3937		10.000	10.0	70	22	0.50	-	-	67.01	64.10	61.18	58.27
49682	.3937		10.000	10.0	100	40	0.50	-	-	83.82	80.18	76.53	72.89
49684	.3937		10.000	10.0	100	20	0.50	40	9.4	87.40	83.60	79.80	76.00
49686	.3937		10.000	10.0	100	30	0.50	60	9.4	87.40	83.60	79.80	76.00
49690	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.025"	-	-	67.33	64.41	61.48	58.55
49700	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.025"	-	-	67.33	64.41	61.48	58.55
49710	.4724		12.000	12.0	65	19	0.80	-	-	72.31	69.17	66.02	62.88
49720	.4724		12.000	12.0	75	32	0.80	-	-	80.68	77.18	73.67	70.16
49725	.4724		12.000	12.0	100	50	0.80	-	-	95.58	91.42	87.27	83.11
49730	.4724		12.000	12.0	100	25	0.80	60	11.4	99.15	94.84	90.53	86.22
49735	.4724		12.000	12.0	150	40	0.80	100	11.4	134.79	128.93	123.07	117.21
* 49740	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	69.24	66.23	63.22	60.21
* 49760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	77.37	74.01	70.64	67.28
* 49761	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	91.46	87.48	83.51	79.53
* 49762	.5000	1/2"	12.700	1/2"	4"	1"	.030"	2"	.480"	95.04	90.90	86.77	82.64
* 49764	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.030"	4"	.480"	132.93	127.15	121.37	115.59
* 49765	.5512		14.000	14.0	75	19	0.80	-	-	114.46	109.48	104.51	99.53
* 49770	.5512		14.000	14.0	88	32	0.80	-	-	117.63	112.52	107.40	102.29
* 49780	.6250	5/8"	15.875	5/8"	3"	3/4"	.035"	-	-	120.09	114.87	109.65	104.43
* 49800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.035"	-	-	123.27	117.91	112.55	107.19
* 49820	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.035"	-	-	129.88	124.23	118.59	112.94
* 49824	.6250	5/8"	15.875	5/8"	4"	1"	.035"	2"	.605"	133.46	127.66	121.85	116.05
* 49826	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	3"	.605"	188.31	180.13	171.94	163.75
* 49828	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	4"	.605"	188.31	180.13	171.94	163.75
* 49830	.6299		16.000	16.0	75	19	1.00	-	-	125.38	119.93	114.48	109.03
* 49840	.6299		16.000	16.0	88	32	1.00	-	-	128.69	123.09	117.50	111.90
* 49842	.6299		16.000	16.0	100	50	1.00	-	-	136.94	130.99	125.03	119.08
* 49843	.6299		16.000	16.0	100	20	1.00	50	15.4	140.53	134.42	128.31	122.20
* 49844	.6299		16.000	16.0	150	40	1.00	100	15.4	190.14	181.87	173.61	165.34
* 49850	.7087		18.000	18.0	100	38	1.00	-	-	185.01	176.97	168.92	160.88
* 49860	.7500	3/4"	19.050	3/4"	3"	7/8"	.040"	-	-	173.41	165.87	158.33	150.79
* 49880	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.040"	-	-	177.00	169.30	161.61	153.91
* 49882	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.040"	-	-	245.53	234.85	224.18	213.50
* 49886	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	3"	.730"	295.21	282.37	269.54	256.70
* 49887	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	4"	.730"	295.21	282.37	269.54	256.70
* 49890	.7874		20.000	20.0	75	22	1.00	-	-	245.12	234.47	223.81	213.15
* 49900	.7874		20.000	20.0	100	38	1.00	-	-	250.48	239.59	228.70	217.81
* 49902	.7874		20.000	20.0	100	30	1.00	50	19.4	254.07	243.02	231.98	220.93
* 49904	.7874		20.000	20.0	150	40	1.00	100	19.4	311.52	297.98	284.43	270.89
* 49915	.9843		25.000	25.0	100	25	1.00	-	-	287.27	274.78	262.29	249.80
* 49920	.9843		25.000	25.0	100	38	1.00	-	-	287.27	274.78	262.29	249.80
* 49925	1.000	1"	25.400	1"	4"	1"	.040"	-	-	297.29	284.36	271.44	258.51
* 49930	1.000	1"	25.400	1"	4"	1-1/2"	.040"	-	-	297.29	284.36	271.44	258.51
* 49940	1.000	1"	25.400	1"	5"	2"	.040"	-	-	366.03	350.12	334.20	318.29

70

35

MATERIAL HARDNESS (Rc)

0

* - Tools with weldon flats