MILLING - ValMILL

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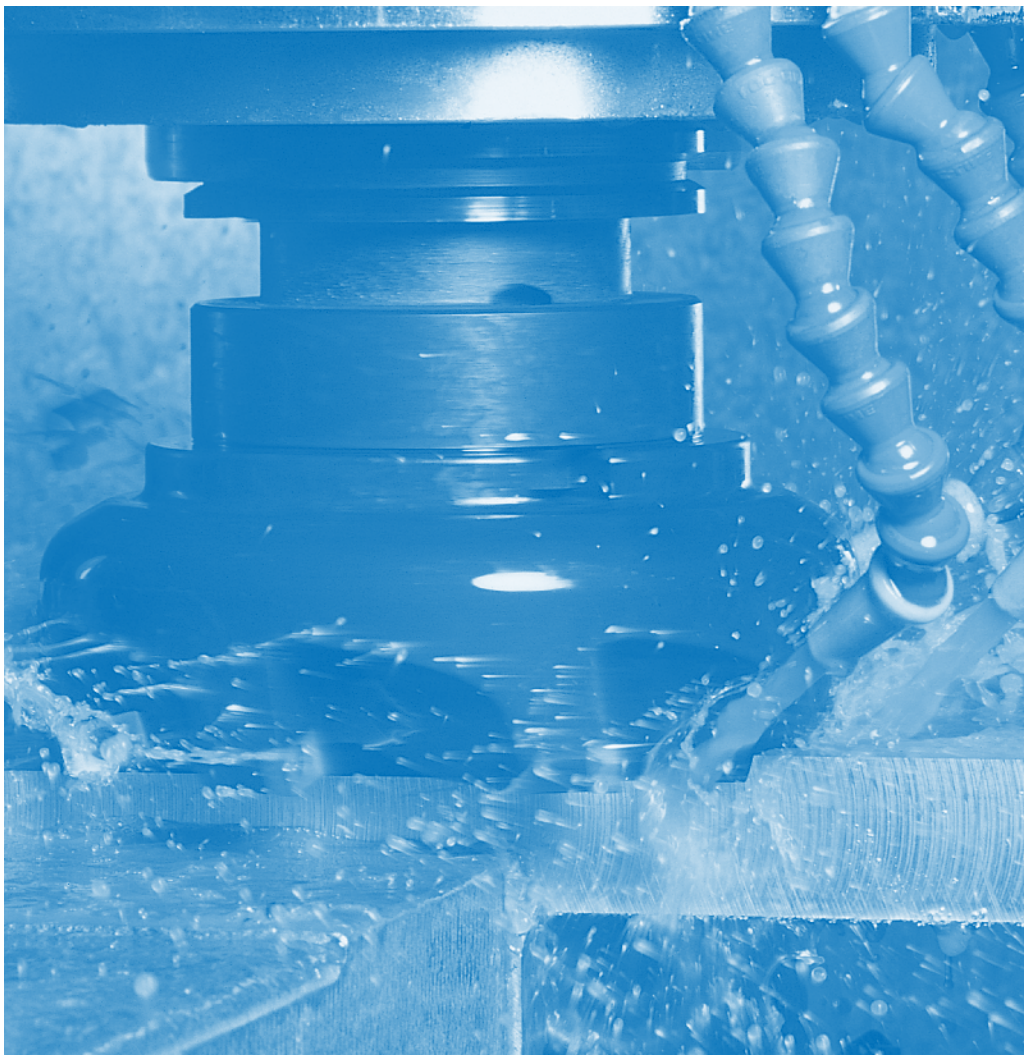

END MILLS & SHELL MILLS

V400 SINGLE INSERT BALL NOSE END MILLS

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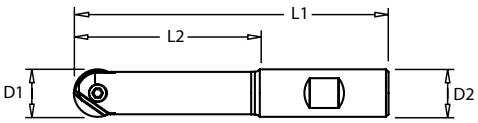
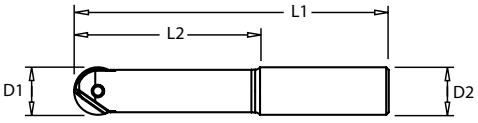


Weldon Shank (W)



Cylindrical Shank (C)

WELDON SHANK

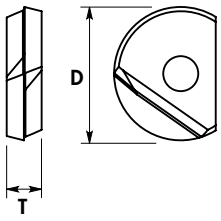
Part Number	Shank Style	Dimensions				Torque in/lbs.	Wt. lbs.	Max. RPM	EDP#
		D1	D2	L1	L2				
V 400 A 038 038 WA 15	W	0.375	0.500	3.29	1.51	13	0.14	40,000	**50395**
V 400 A 050 050 WA 21	W	0.500	0.500	3.89	2.11	23	0.17	40,000	**50396**
V 400 A 062 062 WB 25	W	0.625	0.625	4.55	2.48	35	0.33	36,000	**50397**
V 400 A 075 075 WC 29	W	0.750	0.750	4.97	2.93	54	0.52	40,000	**50398**
V 400 A 100 100 WD 36	W	1.000	1.000	5.83	3.55	65	1.00	37,100	**50399**
V 400 A 125 125 WE 42	W	1.250	1.250	6.49	4.21	230	1.68	32,500	**50400**

CYLINDRICAL SHANK

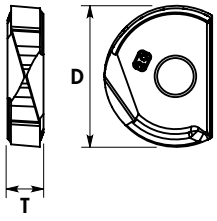
Part Number	Shank Style	Dimensions				Torque in/lbs.	Wt. lbs.	Max. RPM	EDP#
		D1	D2	L1	L2				
V 400 A 038 038 CA 15	C	0.375	0.500	6.25	1.51	13	0.14	40,000	**50150**
V 400 A 050 050 CB 21	C	0.500	0.625	6.25	2.11	23	0.17	40,000	**50151**
V 400 A 062 062 CC 25	C	0.625	0.750	7.88	2.48	35	0.33	36,000	**50160**
V 400 A 075 075 CD 29	C	0.750	1.000	9.75	2.93	54	0.52	40,000	**50161**
V 400 A 100 100 CE 36	C	1.000	1.250	9.75	3.55	65	1.00	37,100	**50162**
V 400 A 125 125 CE 42	C	1.250	1.250	9.75	4.21	230	1.68	32,500	**50164**

V400
INSERTS

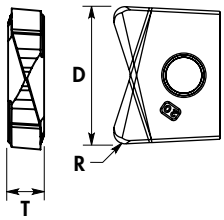
	Insert Number	Dimensions			Available Grades/ EDP#	
		Dia.	T	R	VP5007	VP5035
ECO	RG A 038 A	0.375	0.102	-	**00629**	**00770**
	RG A 050 A	0.500	0.118	-	**00772**	**00649**
	RG A 062 A	0.625	0.157	-	**00879**	**00653**
	RG A 075 A	0.750	0.197	-	**00886**	**00655**
	RG A 100 A	1.000	0.236	-	**00896**	**00658**
	RG A 125 A	1.250	0.276	-	**02659**	
PRECISION	RG A 038 B	0.375	0.102	-	**02654**	
	RG A 050 B	0.500	0.118	-	**02655**	
	RG A 062 B	0.625	0.157	-	**02656**	
	RG A 075 B	0.750	0.197	-	**02657**	
	RG A 100 B	1.000	0.236	-	**02658**	
	RG A 125 B	1.250	0.276	-	**02659**	
TORO	RG A 038 T08	0.375	0.102	0.031	**00771**	
	RG A 038 T16	0.375	0.102	0.062	**00631**	
	RG A 050 T08	0.500	0.118	0.031	**01212**	
	RG A 050 T16	0.500	0.118	0.062	**00651**	
	RG A 075 T08	0.750	0.197	0.031	**00893**	
	RG A 075 T16	0.750	0.197	0.062	**00657**	
	RG A 100 T16	1.000	0.236	0.062	**00660**	



PRECISION



ECO



TORO

Spare Parts

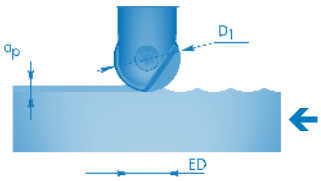
End Mill Size	Insert Screw		Driver / Wrench	
	Part #	EDP#	Part #	EDP#
0.380	DVF3429	**61924**	TX208PLUS	**61930**
0.500	DVF3430	**61925**	TX210PLUS	**61931**
0.620	DVF3431	**61926**	TX215PLUS	**61932**
0.750	DVF3432	**61927**	TX220PLUS	**61933**
1.000	DVF3433	**61928**	DMP3139	**61922**
1.250	DVF3434	**61929**	DMP3441	**61923**

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

ValMILL™

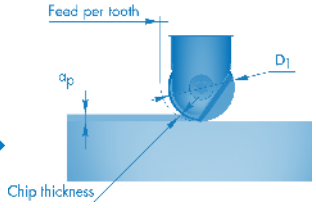
V400 TECHNICAL GUIDELINES

When the axial depth of cut, a_p is 1/2 the insert diameter, the effective diameter of the cutter is equal to the cutter diameter, and the actual chip thickness is equal to the feed per tooth. The axial depth of cut, a_p in normal use of the ValMILL400 cutter is significantly less than 1/2 the insert diameter. As a result:



The effective diameter is less than the cutter diameter The table below provides the Effective Diameter, ED for each cutter when used at a specific axial depth of cut a_p

The actual chip thickness is less than the feed per tooth (feed per rev/2) The table below provides a Feed/Tooth Multiplication Factor F to compensate for chip thinning



EFFECTIVE DIAMETER (ED) Cutter Diameter (D1)						Axial DOC a_p	FEED / TOOTH MULTIPLICATION FACTOR (F) Cutter Diameter (D1)					
0.375	0.500	0.625	0.750	1.000	1.250		0.375	0.500	0.625	0.750	1.000	1.250
.121	.140	.157	.172	.199	.223	0.010	3.60	4.16	4.64	5.08	5.86	6.56
.169	.196	.220	.242	.280	.314	0.020	2.34	2.72	3.02	3.30	3.82	4.26
.203	.237	.267	.294	.341	.383	0.030	1.90	2.18	2.44	2.66	3.06	3.40
.232	.271	.306	.37	.392	.440	0.040	1.66	1.90	2.10	2.28	2.62	2.92
.275	.325	.368	.407	.475	.534	0.060	1.38	1.56	1.72	1.88	2.14	2.38
	.367	.418	.463	.543	.612	0.080		1.38	1.52	1.64	1.86	2.06
		.458	.510	.600	.678	0.100			1.38	1.48	1.68	1.86
			.550	.650	.736	0.120				1.37	1.55	1.71
				.733	.835	0.160					1.37	1.50
					.917	0.200						1.37

$$RPM = \frac{SFM \text{ (see guide above)}}{(.262 \times ED)}$$

Feed / Rev (adjusted) = Feed / Rev (see guide above) x F

V400 APPLICATION GUIDE

MATERIALS		Max Axial DOC a_p	MAXIMUM CHIP THICKNESS CUTTER DIAMETER .375 .500	.625 .750	1.00 1.25	SFM Grade VP5007	VP5035
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	D1/15	.008 - .016	.010 - .020	.012 - .024	400 - 600	800 - 600
	Alloy Steels and Easy To Machine Tool Steels 25 - 35 Rc	D1/20	.006 - .016	.008 - .016	.010 - .020	300 - 500	350 - 600
	Tool Steels and Die Steels 35 - 45 Rc	D1/20	.006 - .016	.008 - .016	.010 - .020	200 - 400	200 - 350
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	D1/15	.008 - .016	.010 - .020	.012 - .024	300 - 400	350 - 500
	Austenitic 140 - 180 Bhn	D1/20	.008 - .016	.010 - .020	.012 - .024	250 - 400	300 - 450
	PH and Duplex 220 - 260 Bhn	D1/15	.006 - .016	.008 - .016	.010 - .020	200 - 300	200 - 400
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	D1/10	.008 - .016	.010 - .020	.012 - .024	400 - 750	
	Gray Cast Iron 200 - 240 Bhn	D1/10	.008 - .016	.010 - .020	.012 - .024	350 - 700	
	Chromium Alloy Cast Iron 35 - 45 Rc	D1/15	.008 - .016	.010 - .020	.012 - .024	300 - 600	
HIGH TEMPERATURE ALLOYS	Nickel Base Alloys 25 - 35 Rc	D1/30	.006 - .016	.008 - .016	.010 - .020	100 - 150	175 - 200
	Cobalt Base Alloys 25 - 35 Rc	D1/30	.006 - .016	.008 - .016	.010 - .020	80 - 125	100 - 150
	Titanium Alloys 30 - 40 Rc	D1/20	.008 - .016	.010 - .020	.012 - .024	125 - 200	150 - 200
ALUMINUM AND Non-Ferrous MATERIALS	Aluminum Alloys < 7% Silicon	D1/6	.010 - .020	.010 - .025	.010 - .030	1500 - 2500	
	Aluminum Alloys >7% Silicon	D1/6	.010 - .020	.010 - .025	.010 - .030	1000 - 1800	
	Non-Ferrous	D1/10	.010 - .020	.010 - .025	.010 - .030	800 - 1200	
HARDENED STEELS	Tool & Die Steel 45 - 50 Rc	D1/20	.006 - .008	.006 - .010	.006 - .012	150 - 300	350 - 450
	Tool & Die Steel 50 - 60 Rc	D1/20	.006 - .008	.006 - .010	.006 - .012	100 - 250	200 - 350

V440 BALL NOSE END MILL

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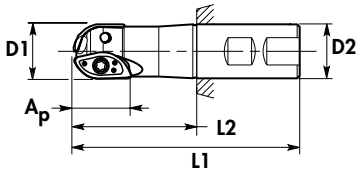
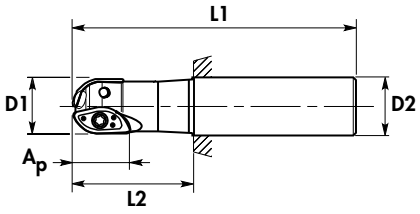
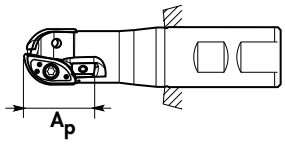


WELDON SHANK



CYLINDRICAL SHANK



W/ PROTECTION INSERT

STANDARD LENGTH - WELDON SHANK

Part Number	Dimensions					Main Insert	No. Req'd	Protection Insert	No. Req'd	Max RPM	Wt. lbs.	EDP#
	D1	D2	L1	L2	Ap							
V 440 A 050 050 WC 15	0.500	0.750	3.531	1.500	0.42	YP ..	2			25,000	0.4	**55344**
V 440 A 062 062 WC 15	0.625	0.750	3.531	1.500	0.56	YP ..	2			25,000	0.4	**62531**
V 440 A 075 075 WD 20	0.750	1.000	4.281	2.000	0.67	YP ..	2			24,000	0.7	**62532**
V 440 A 100 100 WD 23	1.000	1.000	4.531	2.250	0.89	YP ..	2			24,000	0.9	**62533**
V 440 A 125 125 WE 28	1.250	1.250	5.031	2.750	1.11	YP ..	2	APMW ..	1	18,500	1.3	**62534**
V 440 A 150 150 WF 40	1.500	1.500	6.687	4.000	1.30	YP ..	2	APMW ..	2	8,000	3.0	**62535**
V 440 A 200 200 WG 50*	2.000	2.000	8.250	5.000	1.79	YP ..	2	APMW ..	2	7,000	5.4	**62536**

EXTENDED LENGTH - WELDON SHANK

* Requires two shim seats DAN2391, supplied with cutter

Part Number	Dimensions					Main Insert	No. Req'd	Protection Insert	No. Req'd	Max RPM	Wt. lbs.	EDP#
	D1	D2	L1	L2	Ap							
V 440 A 125 125 WE 40	1.250	1.250	6.25	4.00	1.66	YP..	2	APMW ..	1	18,500	1.7	**55388**
V 440 A 150 150 WF 60	1.500	1.500	8.76	6.07	2.43	YP..	2	APMW ..	2	8,000	3.5	**56036**
V 440 A 200 200 WG 70	2.000	2.000	10.25	7.00	2.92	YP..	2	APMW ..	2	7,000	6.3	**56038**

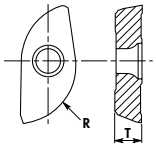
CYLINDRICAL SHANK

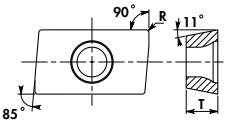
Part Number	Dimensions					Main Insert	No. Req'd	Protection Insert	No. Req'd	Max RPM	Wt. lbs.	EDP#
	D1	D2	L1	L2	Ap							
V 440 A 050 050 CC 15	0.500	0.750	7.87	1.50	0.42	YP..	2			25,000	0.9	**55343**
V 440 A 062 062 CC 15	0.625	0.750	7.87	1.50	0.56	YP..	2			25,000	0.9	**55349**
V 440 A 075 075 CD 20	0.750	1.000	7.87	2.00	0.67	YP..	2			24,000	1.5	**55350**
V 440 A 100 100 CD 23	1.000	1.000	7.87	2.25	0.89	YP..	2			24,000	1.6	**56515**
V 440 A 125 125 CE 28	1.250	1.250	9.84	2.75	1.11	YP..	2	APMW..	1	18,500	2.0	**55351**
V 440 A 150 150 CF 40	1.500	1.500	9.84	4.00	1.30	YP..	2	APMW..	2	8,000	4.5	**55694**
V 440 A 200 200 CG 50*	2.000	2.000	9.84	5.00	1.79	YP..	2	APMW..	2	7,000	6.8	**56037**

V440 INSERTS

(ROUGH)

(SEMI-FINISH)





Cutter Diameter	Insert Number	Dimensions		Grade/EDP#	
		R	T	VP5040	VP5005
.0500	YP A 050 31	0.250	0.094	**02447**	**02844**
0.625	YP A 062 71	0.313	0.125	**14661**	
0.625	YP A 062 31	0.313	0.125	**02448**	**02854**
0.750	YP A 075 71	0.375	0.156	**14662**	
0.750	YP A 075 31	0.375	0.156	**02449**	**02931**
1.000	YP A 100 71	0.500	0.187	**14663**	
1.000	YP A 100 31	0.500	0.187	**02451**	**02951**
1.250*	YP A 125 71	0.625	0.250	**14664**	
1.250*	YP A 125 31	0.625	0.250	**02452**	**02952**
1.500*	YP A 150 71	0.750	0.313	**14665**	
1.500*	YP A 150 31	0.750	0.313	**02453**	**02976**
2.000*	YP A 200 71	1.000	0.313	**14666**	
2.000*	YP A 200 31	1.000	0.313	**02454**	**03128**
*	APMW 1604 PDTR	0.031	0.187	**14660**	

Spare Parts

Insert Number	Insert Screw		Driver	
	Part #	EDP#	Part #	EDP#
YP A 050...	DVF2564	**62521**	TX208PLUS	**61930**
YP A 062...	DVF2564	**62521**	TX208PLUS	**61930**
YP A 075...	DVF3455	**62523**	TX210PLUS	**61931**
YP A 100...	DVF3456	**62524**	TX215PLUS	**61932**
YP A 125...	DVF3133	**62522**	TX220PLUS	**61933**
YP A 150...	DVF2193	**62520**	DMP3139	**61922**
YP A 200...	DVF3457	**62525**	DMP3460	**62527**
Protection Insert				
APMW 1604 PDTR	DVF0089	**62518**	TX215PLUS	**61932**

Insert Number	Insert Shim Seat		Shim Screw	
YP A 200 71	DAN2391	**14653**	DVF0089*	**62518**

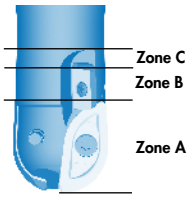
Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

ValMILL™

V440 TECHNICAL GUIDELINES

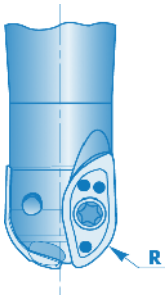
Number of Effective Teeth

The number of effective teeth depends on the axial DOC.If the axial DOC is within zone C, there are two (2) effective teeth. When the axial DOC includes A or B, there is one effective tooth and feed rate should not exceed .008 ipr.



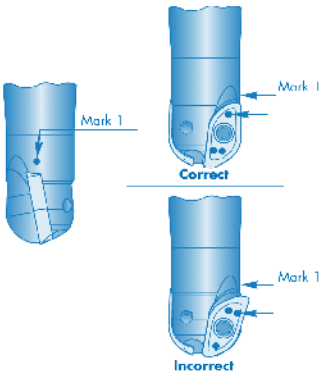
Assembled Cutter Tolerance

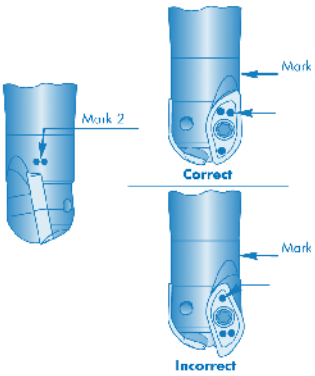
Cutter Diameter	Radius, R
0.625	**0.313** +.001/-.005
0.750	**0.375** +.001/-.005
1.000	**0.500** +.002/-.006
1.250	**0.625** +.004/-.007
1.500	**0.750** +.007/-.010
2.000	**1.000** +.009/-.012



Installation of Inserts

Cutter and Insert marks must match. Example (• with •) and (•• with ••)





V440 APPLICATION GUIDE

Materials		Cutter Diameter / Maximum Chip Thickness				Grade / SFM	
		0.500 - 0.625	0.750	1.000 - 1.500	2.000	VP5005	VP5040
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	950 - 1250	800 - 600
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	650 - 850	600 - 450
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	375 - 500	450 - 350
	Tool Steels and Die Steels 220 - 260 Bhn	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	300 - 400	350 - 200
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	750 - 900	500 - 350
	Austenitic 140 - 180 Bhn	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	550 - 750	450 - 300
	PH and Duplex 220 260 Bhn	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	450 - 650	400 - 200
HIGH TEMPERATURE ALLOYS	Iron Base Alloys A 286, Discalloy, Incoloy	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)		250 - 200
	Nickel Base Alloys - Monel, Hastelloy, Inconel, Waspaloy	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	150 - 200	200 - 175
	Cobalt Base Alloys - Haynes Stellite	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)		150 - 100
	Titanium Alloys 6Al 4V	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	175 - 250	200 - 150
Non-Ferrous MATERIALS	Aluminum < 7% Silicon	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	2750 - 3500	
	Aluminum > 7% Silicon	.003 (.003 - .006)	.004 (.004 - .008)	.005 (.005 - .010)	.010 (.010 - .016)	1275 - 1600	

V440 TECHNICAL GUIDELINES

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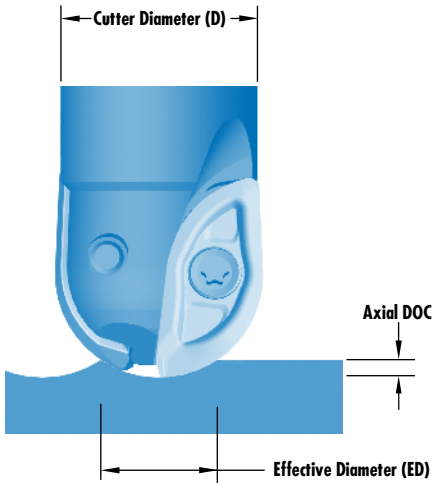
Adjustment for Effective Diameter

When the axial DOC is less than 1/2 the cutter diameter, the effective diameter is less than the nominal diameter of the cutter the table below provides the effective diameter (ED) based on the axial DOC.

EFFECTIVE DIAMETER (ED)

Axial DOC	Cutter Diameter, D						
	.500	0.625	0.750	1.000	1.250	1.500	2.000
0.025	.217	.245	.269	.312	.350	.384	.444
0.050	.300	.339	.374	.436	.490	.539	.624
0.100	.400	.458	.510	.600	.678	.748	.872
0.200	.489	.583	.663	.800	.917	1.020	1.200
0.250	.500	.614	.707	.866	1.000	1.120	1.323
0.375			.750	.968	1.146	1.299	1.561
0.500				1.000	1.225	1.414	1.732
0.750						1.500	1.936
1.000							2.000



Calculate the RPM

1) Find the recommended SFM for your material and operation in the Application Guide.
2) Calculate the RPM for your Effective Cutter Diameter (ED)
RPM = (3.82 x SFM) / ED3)
Find the maximum RPM for your selected cutter. If the calculated RPM exceeds the maximum, reduce the RPM.

Calculate the Table Feed, IPM

Where N is the number of teeth in the cutter
IPM = FPT x RPM x N

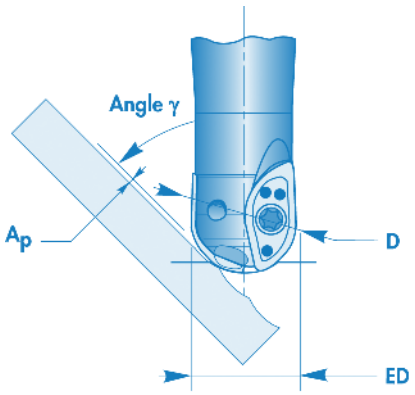
Example

Calculate the RPM required for an actual 700 SFM when the cutter diameter is 1.25 inches and the axial DOC is .200 inch.

1) Find the effective diameter (ED) at the intersection of the 1.25 inch cutter diameter column and the .200 inch Axial DOC row.
ED = .917
2) Calculate the adjusted RPM
RPM = (3.82 x 700) / .917
RPM = 2916

Effective Diameter When Milling on an Inclined Face

The formula below provides a close approximation of the effective cutter diameter when milling an inclined face.



ED = D x cos angle γ

Calculate the RPM

1) Determine the angle of the inclined face (γ).
2) Calculate the Effective Cutter Diameter (ED) using the formula:**ED = cos γ x D**
3) Calculate the RPM for your Effective Cutter Diameter (ED)**RPM = (3.82 x SFM) / ED**
4) Find the maximum RPM for your selected cutter. If the calculated RPM exceeds the maximum, reduce the RPM.

Example

Calculate RPM required for an actual 400 SFM when the cutter diameter is 1.00 inches and the angle of the inclined face (γ) is 40 degrees.

1) Calculate the Effective Cutter Diameter (ED)**ED = cos 40 degees x 1.00 = 0.776**
2) Calculate the RPM for your Effective Cutter Diameter (ED)
RPM = (3.82 x SFM) / ED
3) **RPM = 1969**

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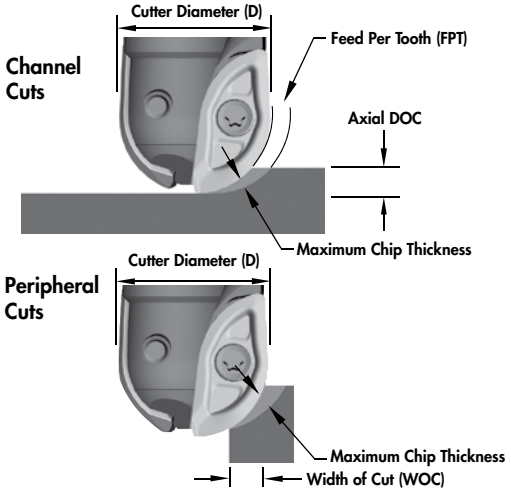
V440 TECHNICAL GUIDELINES

Adjustment of Feed Per Tooth

When the axial DOC or radial WOC is less than half the cutter diameter the chip thinning that occurs can significantly affect performance. If no adjustment is made, chatter and vibration may occur.

FEED/TOOTH MULTIPLICATION FACTOR (CF)

DOC / WOC	Cutter Diameter, D						
	0.500	0.625	0.750	1.000	1.250	1.500	2.000
0.025	2.304	2.552	2.785	3.203	3.571	3.906	4.500
0.050	1.667	1.843	2.004	2.294	2.552	2.785	3.203
0.100	1.250	1.364	1.471	1.667	1.843	2.004	2.229
0.200	1.022	1.072	1.131	1.250	1.364	1.471	1.667
0.250	1.000	1.021	1.061	1.155	1.250	1.342	1.512
0.375			1.000	1.033	1.091	1.155	1.281
0.500				1.000	1.021	1.061	1.155
0.750						1.000	1.033
1.000							1.000



Calculate Feed Per Tooth, FPT

1) Find the recommended Desired Chip Thickness for your operation in the Application Guide.
2) Find the Correction Factor (CF) based on the Radial WOC and Cutter Diameter, D in the table above.
3) Calculate the adjusted Feed Rate Per Tooth (FPT) using the formula:
FPT = Desired Maximum Chip Thickness x CF

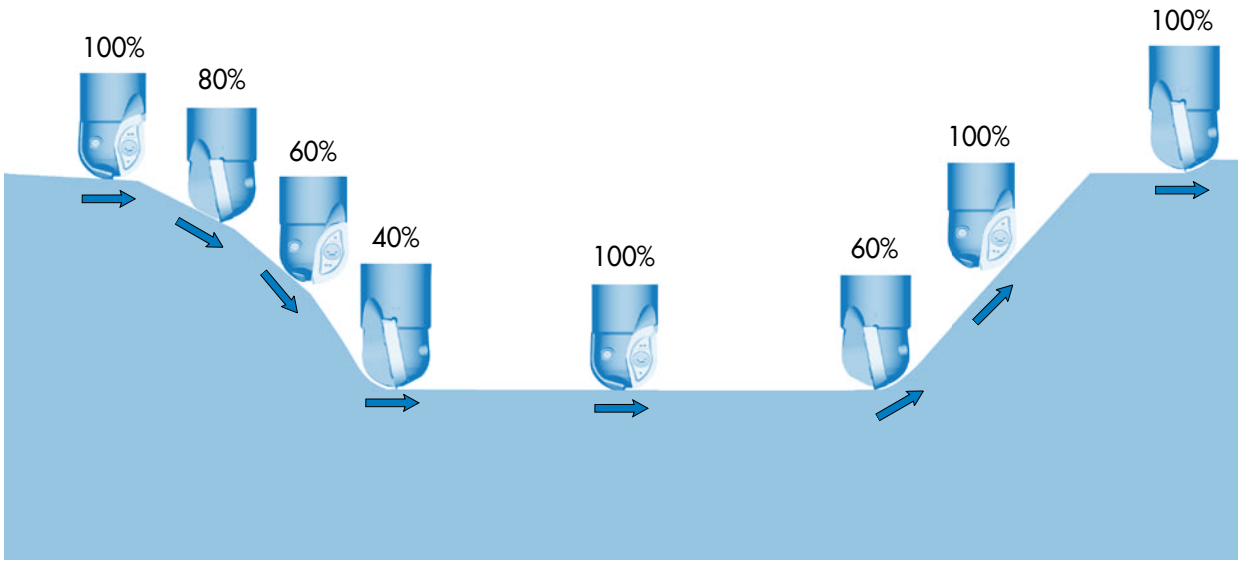
Example

Calculate the adjusted feed per tooth for a 1.25 inch diameter cutter with a .200 inch Radial WOC to produce a .004 chip thickness.

1) Find the CF at the intersection of the 1.25 inch cutter diameter column and the .200 inch radial WOC row.
CF = 1.364
2) Calculate the adjusted feed per tooth
FPT = .004 x 1.364
FPT = .006

Feed Rate Correction for Profiling

For best performance the feed rate should be reduced when profiling according to the diagram.



V490 SQUARE SHOULDER FACE MILLS

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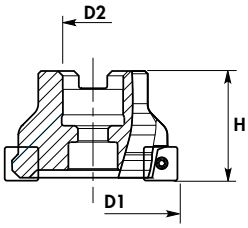


Part Number	Dimensions				Insert Style	No. Req'd	MaxRPM	Wt.(lbs.)	EDPOrder#
	D1	D2	H	Ar					
V490 A 15 0200 G 04R	2.00	0.750	1.500	0.625	SD..15	4	14,000	0.61	**62493**
V490 A 15 0250 G 05R	2.50	0.750	1.750	0.625	SD..15	5	12,000	1.04	**62494**
V490 A 15 0300 H 06R	3.00	1.000	2.000	0.625	SD..15	6	10,700	1.85	**62495**
V490 A 15 0400 K 08R	4.00	1.500	2.000	0.625	SD..15	8	8,900	3.93	**62496**
V490 A 15 0500 K 09R	5.00	1.500	2.375	0.625	SD..15	9	7,900	6.30	**62497**
V490 A 15 0600 K 10R	6.00	1.500	2.375	0.625	SD..15	10	7,100	9.52	**62498**

Insert screws and driver included with each cutter

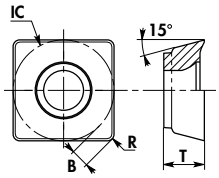
Spare Parts

Insert Number	Insert Screw**		Driver**	
	Part#	EDP#	Part#	EDP#
SD... 15	DVF2097	**62499**	DMP2099	**62500**

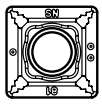
Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head. **Advanced TORX PLUS® locking mechanism

Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

V490 INSERTS



SDMT EN21



SDMT SN81

Insert Number	Dimensions				EDP Order# Grades			
	IC	T	R	B	VP5020	VP5040	VP5135	VP1120
SDMT 150608 EN21	0.625	0.25	0.031	0.116	**14716**	**14717**	**14718**	**19594***
SDMT 150608 SN81	0.625	0.25	0.031	0.116	**14719**	**14720**	**14721**	**19595***

* Available Q2 2005

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V490 INSERT APPLICATION

Material		Operation	Desired Chip Thickness	SFM (Surface Feet Per Minute) Coated Grades			
				VP5020	VP5040	VP5135	VP1120
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing	.002 - .005 .006 - .012	1100 800	900 700	800 600	
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012	800 600	700 500	600 400	
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012	700 500	550 400	450 350	
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012	500 350	400 300	350 250	
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012	700 500	550 400	500 350	
	Austenitic 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012	600 400	500 350	450 300	
	PH and Duplex 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012	500 350	400 300	350 250	
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012	700 600			1000 800
	Gray Cast Iron 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012	600 500			800 700
	Ductile and Malleable Cast Iron 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012	600 500			800 700
	Ductile and Malleable Cast Iron 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012	500 400			700 500
HIGH TEMPERATURE ALLOYS	Iron Base Alloys A 286, Discalloy, Incoloy	Finishing Roughing	.002 - .005 .006 - .012	250 225		225 200	
	Nickel and Cobalt Base Alloys - Hastelloy, Inconel, Haynes Stellite	Finishing Roughing	.002 - .005 .006 - .012	175 150		150 100	
	Titanium Alloys 6Al 4V	Finishing Roughing	.002 - .005 .006 - .012	225 200			
ALUMINUM AND NON-FERROUS MATERIALS	Aluminum Alloys < 7% Silicon	Finishing Roughing	.002 - .005 .006 - .012	3000 - 2000 2500 - 1500			
	Aluminum Alloys 7% - 12% Silicon	Finishing Roughing	.002 - .005 .006 - .012	2500 - 1500 2000 - 1250			
	Aluminum Alloys 12% - 18% Silicon	Finishing Roughing	.002 - .005 .006 - .012	2500 - 1500 2000 - 1250			
	Non-Ferrous	Finishing Roughing	.002 - .005 .006 - .012	1400 - 800 1200 - 600			

Operation and Insert Geometry

Insert Geometries	Steel			Stainless Steel			Cast Iron			Aluminum & Non-Ferrous Materials			High Temperature Alloys			Feed per Tooth
	F	SF	R	F	SF	R	F	SF	R	F	SF	R	F	SF	R	
EN 21	❍	●		❍	●		❍	●		❍	●	❍	❍	●	❍	.001 .005
SN 81		❍	●		❍	●		❍	●							.002 .012

● Primary Operation ❍ Secondary Operation F Finishing SF Semi Finishing R Roughing

V490 TECHNICAL GUIDELINES

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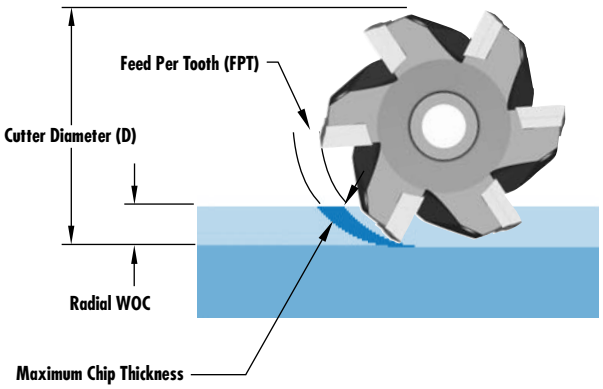
Adjustment of Feed Per Tooth

The Radial Width of Cut (WOC) in end mill operations is frequently less than 1/2 the cutter diameter. In these applications the actual chip thickness is less than the nominal feed per tooth.

When the Radial WOC is a small portion of the cutter diameter the chip thinning that occurs significantly affects performance.



Calculate Feed Per Tooth, FPT

1) Find the recommended Desired Chip Thickness for your operation in the Application Guide on the opposite page.
2) Find the Correction Factor (CF) based on the Radial WOC and Cutter Diameter, D in the table above.
3) Calculate the adjusted Feed Rate Per Tooth, FPT using the formula:
FPT = Desired Chip Thickness x CF

CORRECTION FACTOR (CF)

Radial WOC	Cutter Diameter, D					
	2.0	2.5	3.0	4.0	5.0	6.0
0.25	1.512	1.667	1.809	2.066	2.290	5.004
0.50	1.150	1.250	1.342	1.512	1.667	1.809
0.75	1.030	1.091	1.155	1.281	1.400	1.512
1.00	1.000	1.021	1.061	1.155	1.250	1.342
1.50			1.000	1.033	1.091	1.155
2.00				1.000	1.021	1.061
2.50					1.000	1.014
3.00						1.000

The table at the left provides a correction factor (CF) to quickly calculate the adjusted feed rate for a desired chip thickness.

As an alternative to the table, feed per tooth (FPT) can be calculated for any Radial WOC and any Cutter Diameter (D) using the formula

$$FPT = \frac{1/2\,(D / \text{Radial WOC})}{\sqrt{(D / \text{Radial WOC})\ 1}} \times \text{Maximum Chip Thickness}$$

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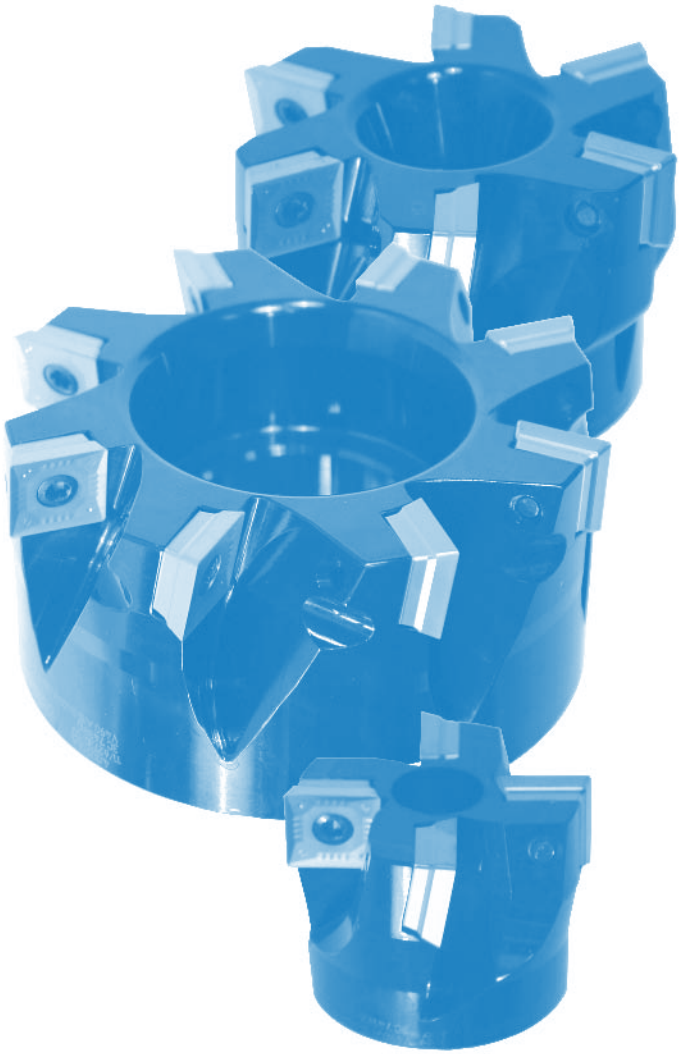
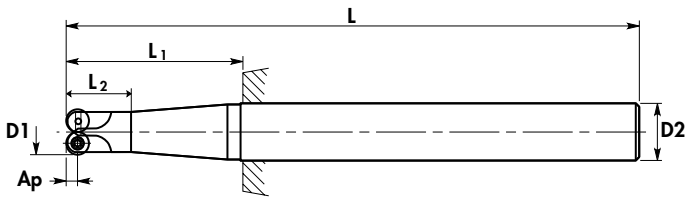


V500 COPY END MILLS - WELDON SHANK

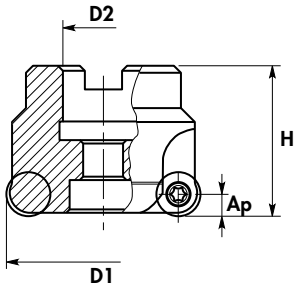
0° AXIAL RAKE
0° RADIAL RAKE



Part Number	Dimensions						No. Req'd	Insert	Wt. lbs.	Max RPM	EDP#
	D1	D2	L	L1	L2	Ap					
V 500 A 07 050 WB 20	0.500	0.625	4.07	2.00	0.79	0.13	2	RD..07	0.28	25,000	**62475**
V 500 A 08 062 WB 20	0.625	0.625	4.07	2.00	0.98	0.16	2	RD..08	0.29	25,000	**55347**
V 500 A 08 062 WC 20	0.625	0.750	4.28	2.25	0.98	0.16	2	RD..08	0.41	25,000	**62476**
V 500 A 10 075 WC 17	0.750	0.750	3.73	1.70	1.18	0.20	2	RD..10	0.38	25,000	**62559**
V 500 A 10 075 WD 32	0.750	1.000	5.53	3.25	1.18	0.20	2	RD..10	0.88	25,000	**62477**
V 500 A 12 100 WD 32	1.000	1.000	5.53	3.25	1.18	0.24	2	RD..12	1.04	22,000	**62478**
V 500 A 12 100 WD 47	1.000	1.000	7.03	4.75	1.18	0.24	2	RD..12	1.33	22,000	**62479**
V 500 A 12 125 WD 47	1.250	1.000	7.03	4.75	0.59	0.24	2	RD..12	1.56	22,000	**62480**
V 500 A 12 150 WD 32	1.500	1.000	5.53	3.25	0.59	0.24	3	RD..12	1.37	22,000	**62481**
V 500 A 16 150 WF 47	1.500	1.500	7.44	4.75	1.57	0.31	2	RD..16	3.21	20,000	**62482**

V500 COPY FACE MILLS

0° AXIAL RAKE
0° RADIAL RAKE



Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

Part Number	Mount	Dimensions				No. Req'd	Insert	Wt. lbs.	Max RPM	EDP#
		D1	D2	H	Ap					
V 500 A 12 0200 G 05R	G	2.000	0.750	1.500	0.24	5	RD..12	0.54	19,000	**62560**
V 500 A 16 0200 G 04R	G	2.000	0.750	1.500	0.31	4	RD..16	0.54	18,800	**62483**
V 500 A 16 0250 G 04R	G	2.500	0.750	1.750	0.31	4	RD..16	0.92	16,100	**62484**
V 500 A 16 0300 H 05R	H	3.000	1.000	2.000	0.31	5	RD..16	1.79	14,300	**62485**
V 500 A 16 0400 K 07R	K	4.000	1.500	2.000	0.31	7	RD..16	2.39	12,000	**62486**
V 500 A 16 0600 K 09R	K	6.000	1.500	2.375	0.31	9	RD..16	7.80	9,500	**62487**

Spare Parts

Insert Number	Insert Screw**		Driver**		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
RDMT 07 ...	DVF2833	**62492**	TX208PLUS	**62930**	8
RDMT 08 ...	DVF2910	**62491**	TX208PLUS	**62930**	8
RDMT 10...	DVF3503	**62490**	TX215PLUS	**62932**	35
RDMT 12...	DVF3504	**62489**	TX215PLUS	**62932**	35
RDMT 16...	DVF3020	**62488**	TX220PLUS	**62933**	54

Note: Insert screws and driver included with each cutter. Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head. **Advanced TORX PLUS® locking mechanism

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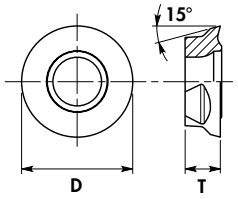
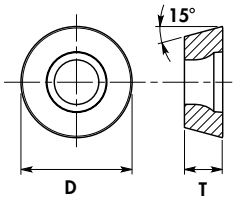


RDMT 61



RDMW 91

V500
INSERTS

Insert Number	Dimensions		EDP# /Grade			
	D	T	VP5020	VP5040	VP5135	VP1120
RDHW 07 T1 MO EN 91	0.275	0.078	**17834**	**17835**		**19586***
RDHW 08 T2 MO EN 91	0.315	0.109	**17699**	**17700**		**19587***
RDHW 10 03 MO EN F6 91	0.394	0.125	**17701**	**17702**		**19588***
RDHW 12 T3 MO EN F6 91	0.472	0.156	**17936**	**17937**		**19589***
RDMT 07 T1 MO SN 61	0.275	0.078		**14705**		
RDMT 08 T2 MO SN 61	0.315	0.109		**14706**	**14707**	
RDMT 10 03 MO SN F6 61	0.394	0.125		**14708**	**14709**	
RDMT 12 T3 MO SN F6 61	0.472	0.156		**14710**	**14711**	
RDMT 16 04 MO SN F6 61	0.630	0.187		**14713**	**14714**	
RDMW 16 04 MO SN F6	0.630	0.187			**14715**	**19590***

*Available Q2 2005

V500 APPLICATION GUIDE

Material		Operation	Desired Chip Thickness (Range) Insert Size					Grade / SFM			
			07	08	10	12	16	VP5020	VP5040	VP5135	VP1120
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing	.0025	.0030	.0035	.0040	.0045	1100	900	800	
		Roughing	.0040	.0045	.0060	.0070	.0100	800	700	600	
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing	.0025	.0030	.0035	.0040	.0045	800	600	600	
		Roughing	.0040	.0045	.0060	.0070	.0100	600	500	400	
	Alloy Steels and Easy to Machine Tool Steels 200 - 240 Bhn	Finishing	.0025	.0030	.0035	.0040	.0045	700	550	450	
		Roughing	.0040	.0045	.0060	.0070	.0100	500	400	350	
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing	.0025	.0030	.0035	.0040	.0045	500	400	350	
		Roughing	.0040	.0045	.0060	.0070	.0100	350	300	250	
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing	.0020	.0025	.0030	.0035	.0040	700	550	500	
		Roughing	.0040	.0045	.0045	.0060	.0070	500	400	350	
	Austenitic 140 - 180 Bhn	Finishing	.0020	.0025	.0030	.0035	.0040	600	500	450	
		Roughing	.0040	.0045	.0045	.0060	.0070	400	350	300	
	PH and Duplex 220 - 260 Bhn	Finishing	.0020	.0025	.0030	.0035	.0040	500	400	350	
		Roughing	.0040	.0045	.0045	.0060	.0070	350	300	250	
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing									1000
		Roughing									800
	Gray Cast Iron 220 - 260 Bhn	Finishing									800
		Roughing									700
	Ductile and Malleable Cast Iron 140 - 180 Bhn	Finishing									800
		Roughing									700
	Ductile and Malleable Cast Iron 220 - 260 Bhn	Finishing									700
		Roughing									500
HIGH TEMPERATURE ALLOYS	Iron Base Alloys - A 286, Discalloy, Incoloy	Finishing	.0020	.0020	.0025	.0030	.0040	250		225	
		Roughing	.0040	.0040	.0045	.0050	.0060	225		200	
	Nickel Base Alloys - Monel, Hastelloy, Inconel, Waspaloy	Finishing	.0020	.0020	.0025	.0030	.0040	175		150	
		Roughing	.0040	.0040	.0045	.0050	.0060	150		125	
	Cobalt Base Alloys - Haynes Stellite	Finishing	.0020	.0020	.0025	.0030	.0040	175		100	
		Roughing	.0040	.0040	.0045	.0050	.0060	150		75	
	Titanium Alloys - 6Al 4V	Finishing	.0020	.0020	.0025	.0030	.0040	275		200	
		Roughing	.0040	.0040	.0045	.0050	.0060	225		150	

V500 TECHNICAL GUIDELINES

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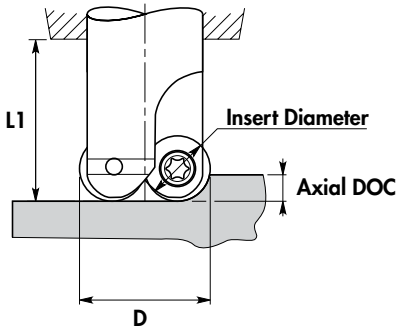
Feed Rate Calculation

Chip thinning can occur in two ways when using V500 Copy Mills:
1. When the axial DOC is less than 1/2 the cutter diameter
2. When the radial WOC is less than 1/2 the insert diameter.

The tables below provide correction factors for specific cases shown.

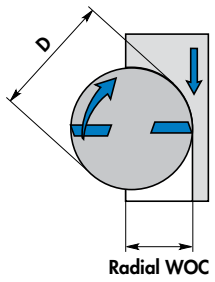
As an alternative to the tables, the formulas below allow calculation for any combination of axial DOC and radial WOC.

Axial DOC	Correction Factor (CF1)				
	Insert Size				
	07	08	10	12	16
0.010	2.67	2.85	3.18	3.47	4.00
0.025	1.74	1.85	2.05	2.23	2.56
0.050	1.30	1.37	1.50	1.62	1.85
0.100	1.04	1.07	1.15	1.22	1.37
0.150		1.00	1.03	1.07	1.17
0.200				1.01	1.07
0.250					1.02
0.300					1.00



$$CF1 = \frac{1/2\ (\text{Insert Diameter}/\text{Axial DOC})}{\sqrt{(\text{Insert Diameter}/\text{Axial Doc})\ 1}}$$

Radial WOC	Correction Factor (CF2)										
	Cutter Diameter (D)										
	0.50	0.63	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	6.00
0.125	1.16	1.25	1.34	1.51							
0.250	1.00	1.02	1.06	1.16	1.25	1.34	1.51	1.68	1.81	2.07	2.50
0.500				1.00	1.02	1.06	1.15	1.25	1.34	1.51	1.81
0.750						1.00	1.03	1.09	1.16	1.28	1.51
1.000							1.00	1.02	1.06	1.16	1.34
1.500									1.00	1.03	1.16
2.000										1.00	1.06
2.500											1.01
3.000											1.00



$$CF2 = \frac{1/2\ (D\ /\ \text{Radial WOC})}{\sqrt{(D\ /\ \text{Radial WOC}) - 1}}$$

Calculate the Feed per Tooth (FPT)

1) Find the recommended desired chip thickness in the application guide.
2) Find the correction factor (CF1) based on the axial DOC and insert diameter in table located above.
3) Find the correction factor (CF2) based on the radial WOC and cutter diameter in table located above.
4) Calculate the adjusted Feet Per Tooth (FPT) using the formula:
   FPT = Desired Chip Thickness x CF1 x CF2

Example

Calculate the adjusted Feed per Tooth for a 2.00" diameter cutter using size 16 inserts to produce a .004" chip thickness, when the radial WOC is .250" and the axial DOC is .050".

1) Find the Correction Factor (CF1) at the intersection of the .050" axial DOC row and the 16 insert size column.
   CF1 = 1.850
2) Find the Correction Factor (CF2) at the intersection of the .250" radial WOC row and the 2.00" cutter diameter column.
   CF2 = 1.512
3) Calculate the required FPT for a .004" desired chip thickness.
   FPT = .004 x 1.850 x 1.512
   FPT = .011

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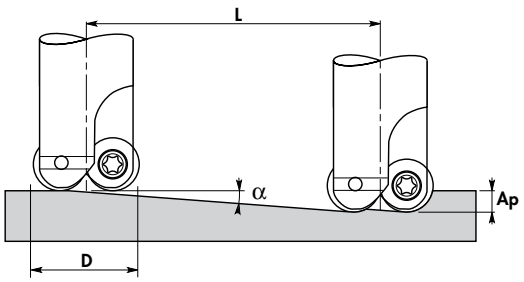
V500 TECHNICAL GUIDELINES

Ramping Angles

The table below gives the maximum ramping angle α based on insert size and cutter diameter.

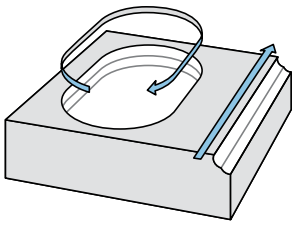
Insert Size	Cutter Diameter (D)										
	0.50	0.63	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	6.00
07	20°										
08		34°									
10			39°								
12				42°	19°	13°					
16						20°	6°	6°	5°	4°	2°

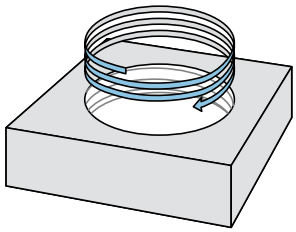
Formulas:
Ap Max = 1/2 Insert Diameter
Lmin = Ap / TAN α

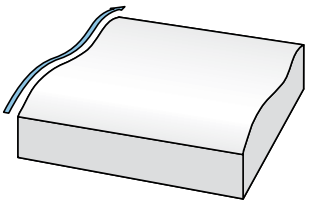


Multi Axis Operations

When roughing or semi finishing, the V500 Copy Mill cutters are well adapted in 3 axis moving to produce cavities by cylindrical or helical interpolation.



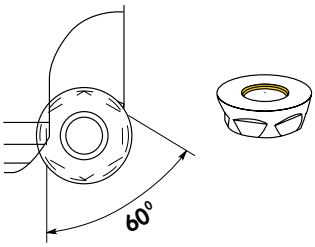




Insert Indexing

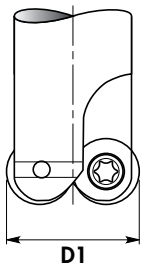
Insert diameters 10 - 16 can be indexed per a hexagonal pattern located on the back of the inserts.

This pattern immobilizes the insert during machining allowing for a controlled index to unworn areas on the insert.



Cutting Diameter Tolerance

Insert Size	Cutting Diameter (D1)
RD..07..MO	+.0016/-.0071
RD..08..MO	+.0016/-.0071
RD..10..MO	+.0016/-.0071
RD..12..MO	+.0031/-.0087
RD..16..MO	+.0063/-.0110



V520 Drilling Endmill

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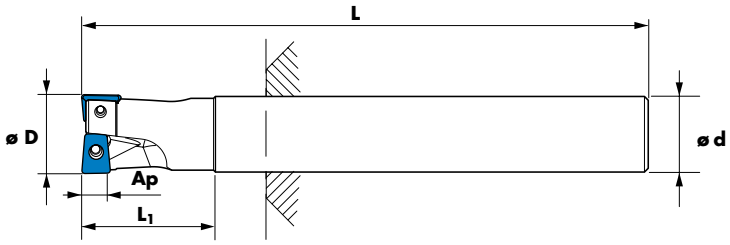


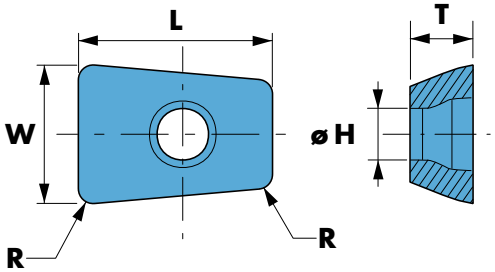
Cylindrical Inch Shanks

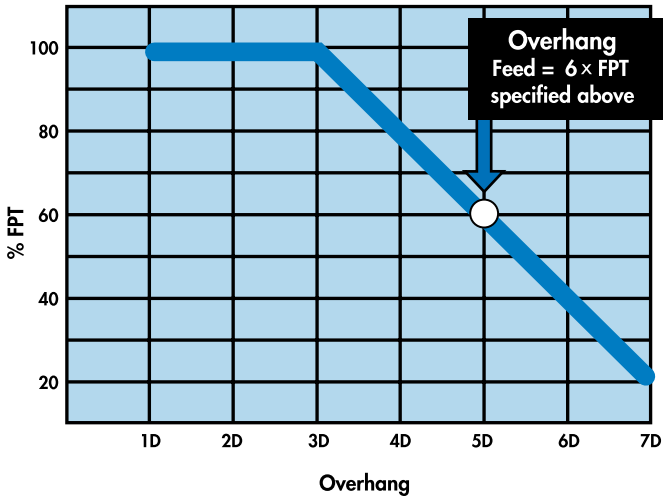
Part Number	Dimensions (inches)						Inserts Required	Wt lbs	Max RPM	EDP/Order Number
	Insert Size	D	d	L	L_1	Ap				
V520 A 10 082 CC 13	PG...10	0.826	0.750	6.30	1.38	0.23	2	0.710	11,000	**62561**
V520 A 13 102 CD 15	PG...13	1.023	1.000	7.87	1.57	0.31	2	1.552	9,000	**62562**
V520 A 16 129 CE 19	PG...16	1.299	1.250	9.84	1.97	0.39	2	3.062	7,000	**62563**

V520 Insert Application

Grade VP5020		P Steel		M Stainless Steel	K Cast Iron	
		<220 Bhn Carbon Steel	Tool & Die Steel		Gray Cast Iron	Ductile & Malleable
DRILLING (Overhang 5 x Dia.)	Cutting Speed (SFM)	390 - 590	260 - 390	260 - 460	390 - 650	330 - 460
	Tooth feed (FPT)	.002	.0015	.001 - .002	.003	.0024
PLUNGING (Overhang 5 x Dia.)	Cutting Speed (SFM)	390 - 590	260 - 390	260 - 460	390 - 650	390 - 525
	Tooth feed (FPT)	.0012 - .0047	.0012 - .0024	.001 - .003	.003 - .007	.0016 - .0047
CONVENTIONAL MILLING (Overhang 3 x Dia.)	Cutting Speed (SFM)	330 - 590	195 - 390	230 - 460	390 - 650	330 - 590
	Tooth feed (FPT)	.002 - .007	.0020 - .0047	.002 - .005	.002 - .012	.002 - .007

Note:
The conventional milling speed and feed values are recommended for overhangs as specified. With a greater overhang, the feed values must be reduced according to the graph opposite.





Inserts

Insert Number	Dimension (inches)						Grade/EDP #
	Cutter Dia.	L	T	R	W	H	VP5020
PG 100308N 81	0.826	0.413	0.134	0.031	0.295	0.110	**17695**
PG 130408N 81	1.023	0.512	0.177	0.031	0.370	0.134	**17696**
PG 160408N 81	1.299	0.650	0.187	0.031	0.449	0.173	**17697**

Grade Descriptions

VP5020 - Highly versatile milling with muti-layer PVD TiAlN/TiN coating combined with micrograin substrate. Primarily used for finishing and semi-finishing operations on steels, stainless steels, cast irons, refractory alloys, titanium and aluminum alloys.

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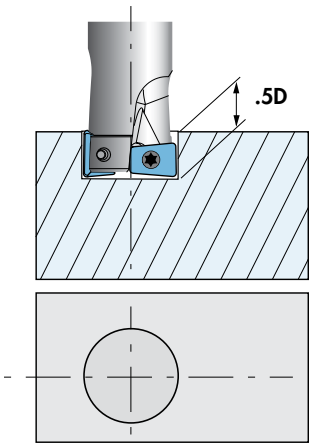
V520 TECHNICAL GUIDELINES

OPENING A CAVITY

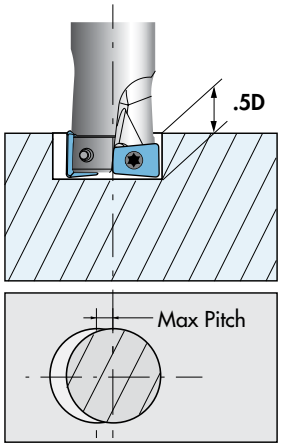
Step 1
DRILLING

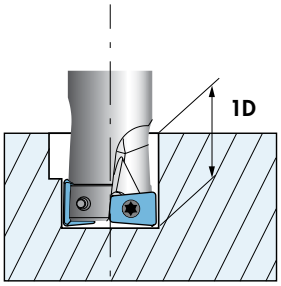
- Descend in Z axis to a max depth of .5D.
- Retract to a position in Z axis clear of the surface.



Step 2
PLUNGING / DRILLING

- Reposition the tool up to a max pitch shown below.
- Descend in Z axis at drill feed a further .5D.
- Retract to a position in Z axis clear of the surface.

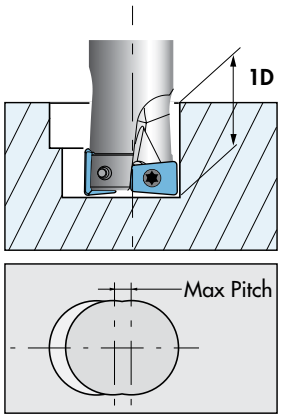


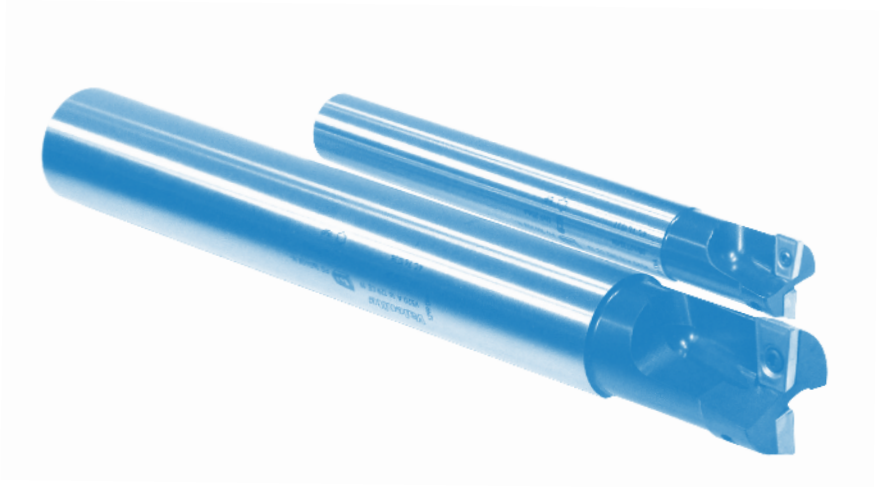


Ø Cutter	Max Pitch
.826	.264
1.023	.338
1.299	.756

Step 3
PLUNGING

- Reposition tool up to a max pitch shown below.
- Descend in Z axis at plunging feed, to a max depth of 1D.
- Retract to a position in Z axis clear of the surface.





V555 FACE MILLS
CUTTERS

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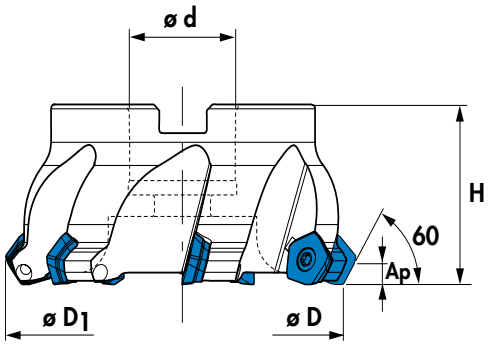
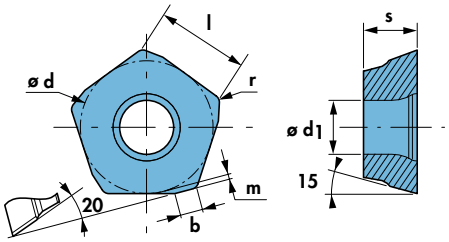


Part Number	Dimensions (inches)						Inserts Required	Wt lbs	Max RPM	Optional Coolant Screw	EDP #
	Insert Size	D	D1	d	H	Max DOC Ap					
V555 A 09 0200 G04R	PD...09...	2.00	2.35	0.75	1.50	.21	4	0.71	19,000	PT 888	**56039**
V555 A 09 0250 G05R	PD...09...	2.50	2.85	0.75	1.75	.21	5	1.06	16,000	PT 888	**56040**
V555 A 09 0300 H06R	PD...09...	3.00	3.35	1.00	2.00	.21	6	2.05	14,000	PT 870	**56041**
V555 A 09 0400 K07R	PD...09...	4.00	4.35	1.50	2.00	.21	7	4.06	12,000	PT 890	**56042**
V555 A 09 0500 K08R	PD...09...	5.00	5.35	1.50	2.38	.21	8	6.00	10,000	PT 872	**56043**
V555 A 09 0600 K09R	PD...09...	6.00	6.35	1.50	2.38	.21	9	7.39	9,000	PT 872	**56044**

Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

V555
INSERTS



Part Number	Dimensions							Feeds	Grades/EDP #				
	l	d	s	d1	m	b	r	(min - max)	VP5020	VP5040	VP5135	VPUK20	VP1120
PDMT 09 05 DE SR81	.354	.531	.215	.216	.020	.090	.031	.006 - .016	**02499**		**02500**		**19585***
PDKT 09 05 DE ER41	.354	.531	.215	.216	.020	.090	.031	.004 - .010	**02458**	**02459**	**02460**		**19584***
PDKT 09 05 DE ER11	.354	.531	.215	.216	.020	.090	.031	.001 - .005	**02457**				**19583***
PDKT 09 05 DE FR11	.354	.531	.215	.216	.020	.090	.031	.001 - .006				**02462**	

*Available Q2 2005

Spare Parts

Insert Size	Insert Screw**		Torx Driver**		Torque in lbs.
	Part Number	EDP #	Part Number	EDP #	
PD...09...	DVF2097	**62499**	TX220PLUS	**61933**	54

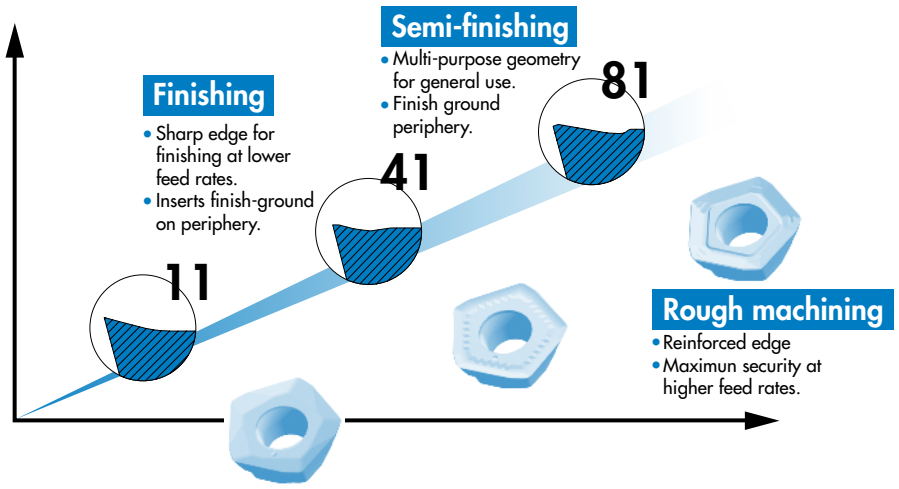
Insert screw and TORX driver included with each cutter
**Advanced TORX Plus® locking mechanism

ValMILL™

V555 TECHNICAL GUIDELINES

Step 1 . . . .

- Pick the Right Geometry; 11, 41 or 81



Step 2 . . . . .

Pick the Proper Edge Prep & Grade Based on Material

Application	Geometry	Edge	Grades	P Steels	M Stainless Steels	K Cast Irons	S High Temperature Alloys	N Aluminum / Non Ferrous Materials	H Hard Materials
Finishing	ER-11	Hone	VP5020	■	■	■	■	■	
	FR-11	Up Sharp	VPUK20					■	
General	ER-41	Hone	VP5020	■	■	■	■		■
			VP5040	■	■		■		■
			VP5135	■	■		■		
Roughing	SR-81	Land	VP5020	■	■	■	■		
			VP5135	■	■		■		

Grade Descriptions

VP5020 - Highly versatile milling grade with muti-layer PVD TiAlN/TiN coating combined with micrograin substrate. Primarily used for finishing and semi-finishing operations on steels, stainless steels, cast irons, refractory alloys, titanium and aluminum alloys.

VP5040 - Rough milling grade with multi-layer PVD TiAlN/TiN coating combined with tough substrate. For general machining and roughing steels and stainless steels.

VP5135 - Milling grade with maximum toughness features TiCN/Al_2O_3/TiN MTCVD coating and high cobalt substrate. Ideal for rough milling and poor machining conditions on steels, stainless steel and high temperature alloys.

VPUK20 - Uncoated grade for finishing, semi-finishing and general machining of cast irons, high temperature alloys, aluminum alloys, and non-ferrous materials. Reliable performance with good balance of wear resistance and toughness.

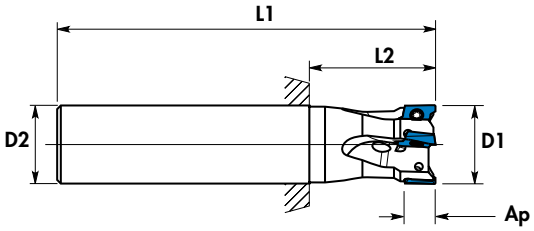
V555 APPLICATION GUIDE

ValMILL™

Material		Operation	Desired Chip Thickness	SFM (Surface Feet Per Minute)				
				Coated Grades				Uncoated
				VP5020	VP5040	VP5135	VP1120	VPUK20
STEELS	**Free Machining and Low Carbon Steels 120 - 170 Bhn**	Finishing	0.002	1230	-	-		
		Semi-Finishing	0.004	1099	951	787		
		Roughing	0.008	919	787	656		
			0.012	-	591	492		
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing	0.002	853	-	-		
		Semi-Finishing	0.004	771	755	623		
		Roughing	0.008	623	591	492		
			0.012	-	492	410		
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing	0.002	591	-	-		
		Semi-Finishing	0.004	558	492	410		
		Roughing	0.008	443	394	328		
			0.012	-	328	262		
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing	0.002	476	-	-		
		Semi-Finishing	0.004	410	427	361		
		Roughing	0.008	344	344	279		
			0.012	-	262	213		
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing	0.002	820	-	-		
		Semi-Finishing	0.004	755	574	459		
		Roughing	0.008	591	427	328		
			0.012	-	328	-		
	Austenitic 140 - 180 Bhn	Finishing	0.002	771	-	-		
		Semi-Finishing	0.004	705	509	394		
		Roughing	0.008	558	361	230		
			0.012	-	-	-		
	PH and Duplex 220 - 260 Bhn	Finishing	0.002	771	-	-		
		Semi-Finishing	0.004	702	509	394		
		Roughing	0.008	558	361	230		
			0.012	-	-	-		
CAST IRONS	Gray Cast Iron 180 - 220 BHN	Finishing	0.002	1083				
		Semi-Finishing	0.004	984			1000	
		Roughing	0.008	902			800	
			0.012	-				
	Gray Cast Iron 220 - 260 BHN	Finishing	0.002	853				
		Semi-Finishing	0.004	787			800	
		Roughing	0.008	656			700	
			0.012	-				
	Ductile and Malleable Cast Iron 140 -180 BHN	Finishing	0.002	853				
		Semi-Finishing	0.004	787			800	
		Roughing	0.008	656			700	
			0.012	-				
	Ductile and Malleable Cast Iron 220-260 BHN	Finishing	0.002	755				
		Semi-Finishing	0.004	689			700	
		Roughing	0.008	525			500	
			0.012	-				
HIGH TEMPERATURE ALLOYS	Iron Base Alloys - A-286, Discalloy, Incoloy	Finishing	0.002	213	-	-		
		Semi-Finishing	0.004	197	98	98		
		Roughing	0.008	180	82	82		
			0.012	-	66	66		
	Nickel and Cobalt Base Alloys - Hastelloy, Inconel, Haynes Stellite	Finishing	0.002	180				
		Semi-Finishing	0.004	164				
		Roughing	0.008	141				
			0.012	-				
	Titanium Alloys 6Al-4V	Finishing	0.002	295		-		
		Semi-Finishing	0.004	269		197		
		Roughing	0.008	213		148		
			0.012	-		-		
ALUMINUM AND NON-FERROUS MATERIALS	Aluminum Alloys < 7% Silicon	Finishing	0.002	3445				-
		Semi-Finishing	0.004	3182				2756
		Roughing	0.008	2756				2559
			0.012	-				-
	Aluminum Alloys 7% - 12% Silicon	Finishing	0.002	2510				-
		Semi-Finishing	0.004	2297				2001
		Roughing	0.008	1993				1837
			0.012	-				-
	Aluminum Alloys 12% - 18% Silicon	Finishing	0.002	1575				-
		Semi-Finishing	0.004	1411				1247
		Roughing	0.008	1230				1115
			0.012	-				-
	Non-Ferrous	Finishing	0.002	1968				-
		Semi-Finishing	0.004	1772				1575
		Roughing	0.008	1542				1411
			0.012	-				-

ValMILL™

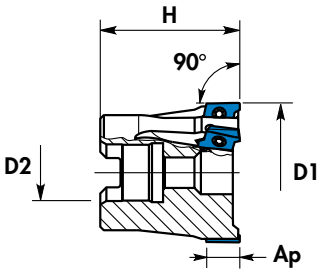
V590 SQUARE SHOULDER END MILLS

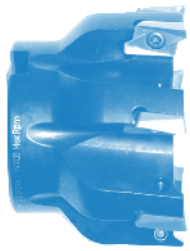


Part Number	Dimensions (inches)						Inserts Required	Wt lbs	Max RPM	EDP#
	Insert Size	D1	D2	L1	L2	Ap				
V590 A 10 062 WB 09	AP 10 ..	0.625	0.625	3.00	0.93	0.35	2	0.19	40,000	**62538**
V590 B 10 075 WC 15	AP 10 ..	0.750	0.750	3.50	1.47	0.35	3	0.30	40,000	**62549**
V590 A 10 075 WC 15	AP 10 ..	0.750	0.750	3.50	1.47	0.35	2	0.33	40,000	**62539**
V590 A 10 100 WD 17	AP 10 ..	1.000	1.000	4.00	1.72	0.35	3	0.61	40,000	**62540**
V590 A 10 125 WE 17	AP 10 ..	1.250	1.250	4.00	1.72	0.35	5	1.17	40,000	**62541**
V590 A 10 150 WE 21	AP 10 ..	1.500	1.250	4.40	2.12	0.35	5	1.38	36,500	**62551**
V590 A 13 100 WD 17	AP 13 ..	1.000	1.000	4.00	1.72	0.48	3	0.21	35,000	**62546**
V590 A 13 125 WE 17	AP 13 ..	1.250	1.250	4.00	1.72	0.48	4	0.35	30,000	**62547**
V590 A 13 150 WE 21	AP 13 ..	1.500	1.250	4.40	2.12	0.48	5	0.60	26,700	**62548**

Note: In order to obtain optimum performance with this cutter, it may be necessary to reduce depth of cut and/or width of cut depending on material cut.

V590 SQUARE SHOULDER FACE MILLS





Part Number	Dimensions (inches)					Inserts Required	Wt lbs	Max RPM	EDP#
	Insert Size	D1	D2	H	Ap				
V590 A 10 0150 G 05R	AP 10..	1.50	0.75	1.50	0.35	5	0.41	36,500	**62537**
V590 A 13 0200 G 06R	AP 13..	2.00	0.75	1.50	0.48	6	0.70	22,400	**62542**
V590 A 13 0250 G 07R	AP 13..	2.50	0.75	1.75	0.48	7	1.05	19,700	**62543**
V590 A 13 0300 H 09R	AP 13..	3.00	1.00	2.00	0.48	9	2.07	17,800	**62544**
V590 A 13 0400 K 10R	AP 13..	4.00	1.50	2.00	0.48	10	3.83	15,200	**62545**
V590 A 13 0500 K 13R	AP 13..	5.00	1.50	2.38	0.48	13	5.66	13,400	**62552**
V590 A 13 0600 K 16R	AP 13..	6.00	1.50	2.38	0.48	16	8.21	12,200	**62553**

Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

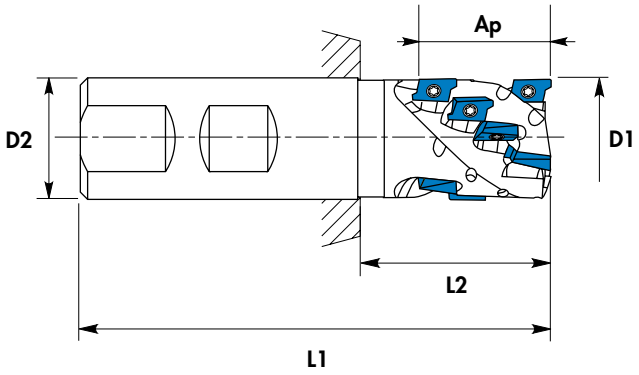
Spare Parts

Insert Size	Insert Screw**		Driver**		Torque in-lbs
	Part Number	EDP#	Part Number	EDP#	
AP 10	DVF3509	**62526**	TX208PLUS	**61930**	8
AP 13	DVF0943	**62519**	TX209PLUS	**62530**	13

**Advanced TORX PLUS® locking mechanism

V595 SQUARE SHOULDER END MILLS

ValMILL™



WELDON SHANKS - FULL EFFECTIVE LONG EDGE END MILL

Part Number	Dimensions (inches)						Inserts Required	EFF Teeth	Wt lbs	Max RPM	EDP #
	Insert Size	D1	D2	L1	L2	Ap					
V595 A 10 100 WD 09	AP 10 ..	1.000	1.000	3.856	1.576	0.98	6	2	0.67	30,000	**56405**
V595 A 10 125 WE 13	AP 10 ..	1.250	1.250	4.053	1.773	1.33	12	3	1.129	30,000	**56407**
V595 A 10 150 WF 13	AP 10 ..	1.500	1.500	4.459	1.769	1.33	16	4	1.883	27,000	**56408**
V595 A 13 125 WE 18	AP 13 ..	1.250	1.250	4.053	1.773	1.38	6	2	1.116	22,000	**56410**
V595 A 13 150 WF 18	AP 13 ..	1.500	1.500	4.853	2.163	1.81	12	3	1.936	20,000	**56411**
V595 A 13 200 WG 22	AP 13 ..	2.000	2.000	5.612	2.362	1.81	16	4	4.074	16,000	**56412**

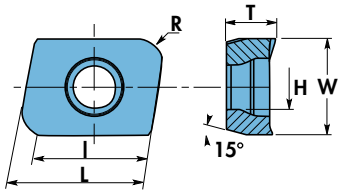
CYLINDRICAL SHANKS - FULL EFFECTIVE LONG EDGE END MILL

Part Number	Dimensions (inches)						Inserts Required	EFF Teeth	Wt lbs	Max RPM	EDP#
	Insert	D1	D2	L1	L2	Ar					
V595 A 10 100 CD 09	AP 10 ..	1.000	1.000	4.724	3.148	0.98	6	2	0.875	30,000	**56404**
V595 A 10 125 CE 13	AP 10 ..	1.250	1.250	5.118	3.345	1.33	12	3	1.512	30,000	**56406**

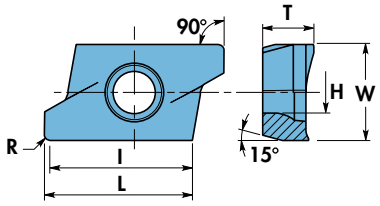
Insert Screw & TORX PLUS® drive included with each cutter

ValMILL™

V590 & V595 INSERTS



RC31



FR11, ER31, ER81

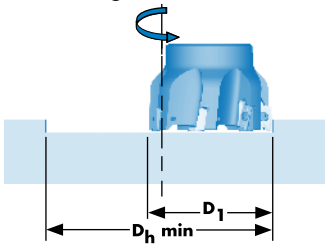
Insert Size	Part Number	Dimensions (inches)						EDP# Grades					
								Coated				Uncoated	Cermet
		L	I	T	R	W	H	VP5020	VP5040	VP5135	VP1120	VPUK20	VP6020
AP10	AP 100304 ER81	0.385	0.371	0.134	0.016	0.250	0.114	**14723**	**14728**				
AP10	AP 100304 FR11	0.385	0.370	0.134	0.016	0.250	0.114					**14744**	
AP10	AP 100305 ER31	0.385	0.366	0.134	0.020	0.250	0.114	**17929**	**17930**				
AP10	AP 100308 ER31	0.386	0.356	0.134	0.031	0.250	0.114	**14724**			**19579***		
AP10	AP 100308 ER81	0.354	0.353	0.134	0.031	0.250	0.114	**14725**	**14729**				
AP10	AP 100316 ERC31	0.346	0.273	0.131	0.063	0.250	0.114	**17931**	**17932**				
AP13	AP 130404 ER31	0.504	0.487	0.177	0.016	0.312	0.134	**02501**	**02502**				
AP13	AP 130408 FR11	0.504	0.474	0.177	0.031	0.312	0.134					**14745**	
AP13	AP 130408 ER31	0.504	0.472	0.177	0.031	0.312	0.134	**14726**	**14730**		**19580***		
AP13	AP 130408 ER81	0.504	0.472	0.177	0.031	0.312	0.134	**14727**	**14731**	**14732**			
AP13	AP 130412 ER31	0.504	0.497	0.177	0.047	0.312	0.134	**02053**	**02504**	**02505**	**19581***		**17940**
AP13	AP 130412 FR31	0.504	0.497	0.177	0.047	0.312	0.134					**02506**	
AP13	AP 130416 ER31	0.504	0.443	0.177	0.063	0.312	0.134	**02507**	**02508**		**19582***		
AP13	AP 130416 FR31	0.504	0.443	0.177	0.063	0.312	0.134					**02509**	
AP13	AP 130424 ERC31	0.441	0.339	0.172	0.094	0.312	0.134	**02511**	**02512**				
AP13	AP 130424 FRC31	0.441	0.339	0.172	0.094	0.312	0.134					**02561**	
AP13	AP 130432 ERC31	0.441	0.299	0.170	0.126	0.312	0.134	**02564**	**02566**				
AP13	AP 130432 FRC31	0.441	0.299	0.170	0.126	0.312	0.134					**02575**	
AP13	AP 130448 ERC31	0.441	0.222	0.170	0.189	0.312	0.134	**02576**	**02579**				
AP13	AP 130448 FRC31	0.441	0.222	0.170	0.189	0.312	0.134					**02584**	

*Available Q2 2005

V590 & V595 TECHNICAL GUIDELINES

ValMILL™

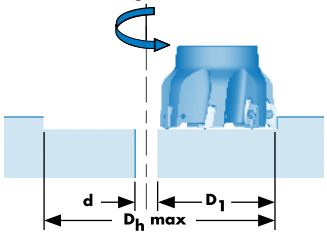
Minimum Drilling Diameter



$D_h = (D_1 - W) \times 2$

Example:
Cutter Dia. (D1) = 1.000
W = (see below)
Dh min = (1.000 - .102) x 2 = 1.796

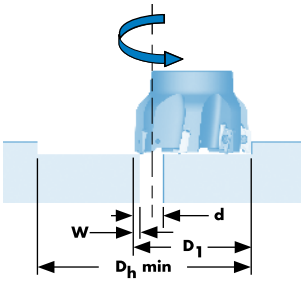
Maximum Drilling Diameter with an Existing Hole



$D_h = (D_1 \times 2) + d$

Example:
Cutter Dia. (D1) = 1.000
Hole Dia. = .250
Dh max = (1.000 x 2) + .250 = 2.250

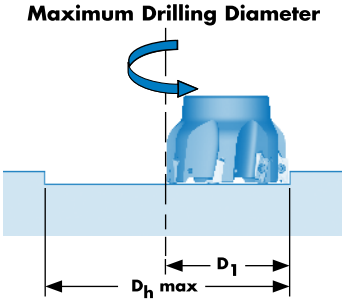
Minimum Drilling Diameter with an Existing Hole



$D_h = (D_1 - (d/2 + W)) \times 2$

Example:
Cutter Dia. (D1)= 1.000
W = (see below)
Hole Dia. = .250
Dh min = (1.000 - (.250/2 + .102)) x 2 = 1.546

Maximum Drilling Diameter



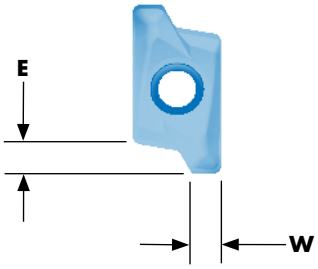
$D_h = D_1 \times 2$

Example:
Cutter Dia. (D1) = 1.000
Dh max = 1.000 x 2 = 2.000.

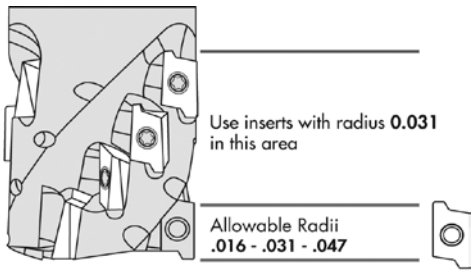
E & W Values

In some cases the values "E & W" must be known in order to calculate feed per revolution, drilling capability, or bore diameters when helical interpolating.

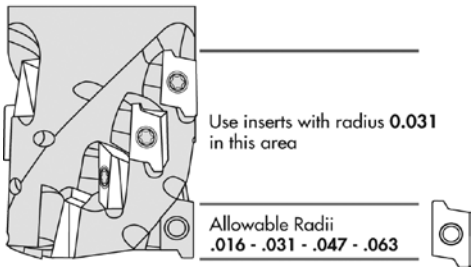
Value	Insert Size	
	AP10	AP13
W	0.071	0.102
E	0.083	0.110



When using AP10... inserts in V595



When using AP13... inserts in V595



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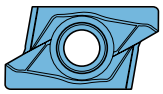
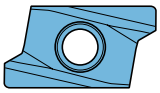
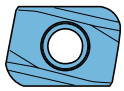
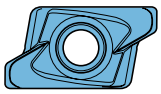
V590 & V595 TECHNICAL GUIDELINES

Insert Geometries

FR11	ER31	ERC31/FRC 31	ER81
			
Semi-Finishing and Finishing	Semi-Finishing and Finishing		Roughing and Semi-Finishing
Edge Preparations: F - Sharp, E - Hone			

Operation and Insert Geometry

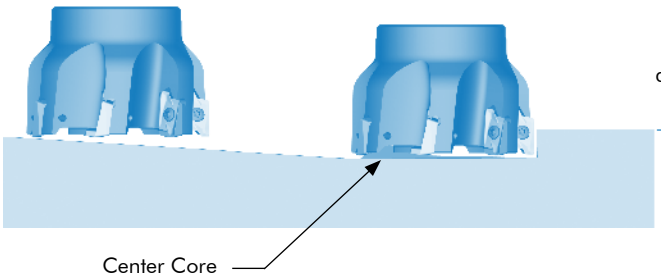
Insert Geometries	Steel		Stainless Steel		Cast Iron		Graphite Aluminum		Heat Resistant Alloys		Feed per Tooth
	F	SF, R	F	SF, R	F	SF, R	F	SF, R	F	SF, R	
FR-11/FRC-31							●	❍	●	❍	.001 - .005
ER-31/ERC-31	●	❍	●	❍	●	❍	●		●	❍	.001 - .008
ER-81		❍	❍	●	❍	●	❍	●	❍	●	.002 - .012

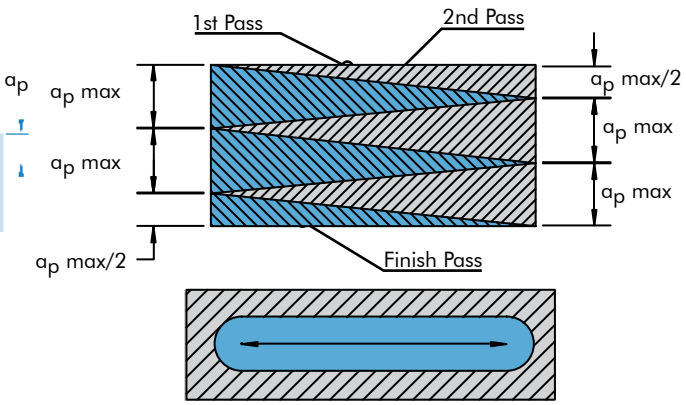
● Primary Operation
❍ Secondary Operation

F - Finishing
SF, R - Semi-Finishing, Roughing

Ramp Angle

Insert Size	a_p Max.	Cutter Diameter										
		0.63	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00	6.00
AP10	0.35	11.7°	8.3°	6.1°	4.4°	3.4°						
AP13	0.48			8.6°	6.4°	5.1°	3.6°	2.8°	2.2°	1.6°	1.3°	1.1°





In case of multiple ramping. The first pass must not exceed ap max/2 or the maximum ramping angle established above.

V590 & V595 INSERT APPLICATION

ValMILL™

Material		Operation	Recommended Chip Thickness		Available Grades / SFM (Surface Feet Per Minute)					
			10mm Insert	13mm Insert	VP5020	VP5040	VP5135	VPUK20	VP7120	VP6020
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	1100 800	900 00	800 600			1400 800
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	800 600	600 500	600 400			1300 700
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	700 500	550 400	450 350			1250 650
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	500 350	400 300	350 250			800 500
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	700 500	550 400	500 350			
	Austenitic 140 - 180 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	600 400	500 350	450 300			
	PH and Duplex 220 - 260 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	500 350	400 300	350 250			
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	700 600			400 250	1000 800	
	Gray Cast Iron 220 - 260 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	600 500			300 200	800 700	
	Ductile and Malleable Cast Iron140 - 180 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	600 500			350 225	800 700	
	Ductile and Malleable Cast Iron 220 - 260 Bhn	Finishing Roughing	0.002 0.004	0.003 0.006	500 400			300 200	700 500	
HIGH TEMPERATURE ALLOYS	Iron Base Alloys - A 286, Discalloy, Incoloy	Finishing Roughing	0.002 0.004	0.003 0.006	250 225		225 200	200 150		
	Nickel and Cobalt Base Alloys - Hastelloy, Inconel, Haynes Stellite	Finishing Roughing	0.002 0.004	0.003 0.006	175 150		150 125	100 75		
	Titanium Alloys 6Al 4V	Finishing Roughing	0.002 0.004	0.003 0.006	275 225		200 150	150 100		
NON-FERROUS MATERIALS	Aluminum Alloys < 7% Silicon	Finishing Roughing	0.002 0.004	0.003 0.006	3000 - 2000 2500 - 1500			2000 - 1500 1750 - 1000		
	Aluminum Alloys 7% - 12% Silicon	Finishing Roughing	0.002 0.004	0.003 0.006	2500 - 1500 2000 - 1250			1750 - 1000 1500 - 800		
	Aluminum Alloys 12% - 18% Silicon	Finishing Roughing	0.002 0.004	0.003 0.006	1500 - 1000 1200 - 800			1000 - 700 800 - 500		
	Non-Ferrous	Finishing Roughing	0.002 0.004	0.003 0.006	1400 - 800 1200 - 600			1000 - 600 800 - 400		

Chip Thickness vs. Depth of Cut Correction for V595 Cutter.
As depth of cut increases, reduce chip thickness (C.T.) as indicated below.

Insert Size	.25 x Ap	.50 x Ap	.75 x Ap	1.00 x Ap
10mm	0.004 C.T.	0.003 C.T.	0.003 C.T.	0.002 C.T.
13mm	0.006 C.T.	0.005 C.T.	0.004 C.T.	0.003 C.T.

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V590 & V595 APPLICATION INFORMATION

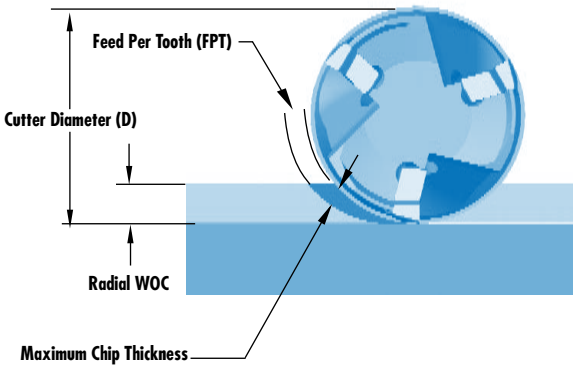
Adjustment of Feed Per Tooth

The Radial Width of Cut (WOC) in end mill operations is frequently less than 1/2 the cutter diameter. In these applications the actual chip thickness is less than the nominal feed per tooth.

When the Radial WOC is a small portion of the cutter diameter the chip thinning that occurs significantly affects performance.

Calculate Feed Per Tooth (FPT)

1) Find the recommended Maximum Chip Thickness for your operation in the Application Guide on the opposite page.
2) Find the Correction Factor (CF) based on the Radial WOC and Cutter Diameter (D) in the table above.
3) Calculate the adjusted Feed Rate Per Tooth (FPT) using the formula: **FPT = Desired Maximum Chip Thickness x CF**



CORRECTION FACTOR (CF)

Radial WOC	Cutter Diameter, D				
	0.625	0.750	1.000	1.250	1.500
0.031	2.39	2.61	3.00	3.35	3.66
0.062	1.70	1.84	2.11	2.34	2.56
0.094	1.41	1.52	1.73	1.92	2.09
0.125	1.26	1.35	1.52	1.68	1.82
0.188	1.09	1.16	1.28	1.40	1.52
0.250	1.02	1.06	1.16	1.25	1.35
0.375		1.00	1.03	1.09	1.16
0.500			1.00	1.02	1.06
0.750				1.00	1.00
1.000					1.00

The table at the left provides a correction factor (CF) to quickly calculate the adjusted feed rate for a desired maximum chip thickness.

As an alternative to the table, feed per tooth (FPT) can be calculated for any Radial WOC and any Cutter Diameter (D) using the formula

$$FPT = \frac{1/2\ (D\ /\ \text{Radial WOC})}{\sqrt{(D\ /\ \text{Radial WOC}) - 1}} \times \text{Maximum Chip Thickness}$$

Grade Descriptions

VP5020 - Highly versatile milling grade with multi-layer PVD TiAlN/TiN coating combined with micrograin substrate. Primarily used for finishing and semi-finishing operations on steels, stainless steels, cast irons, refractory alloys, titanium and aluminum alloys.

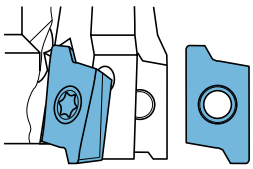
VP5040 - Rough milling grade with multi-layer PVD TiAlN/TiN coating combined with a tough substrate. For general machining and roughing steels and stainless steels.

VP5135 - Milling grade with maximum toughness features TiCN/Al_2O_3/TiN MTCVD coating and high cobalt substrate. Ideal for rough milling and poor machining conditions on steel, and stainless steel and high temperature alloys.

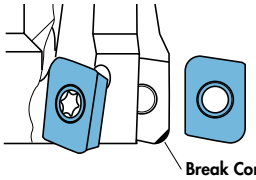
VPUK20 - Uncoated grade for finishing, semi-finishing and general machining of cast irons, high temperature alloys, aluminum alloys, and non-ferrous materials. Reliable performance with good balance of wear resistance and toughness.

Cutter Modification for V590

RC31 size corner radius inserts require modification to the cutter body.



Standard cutter body



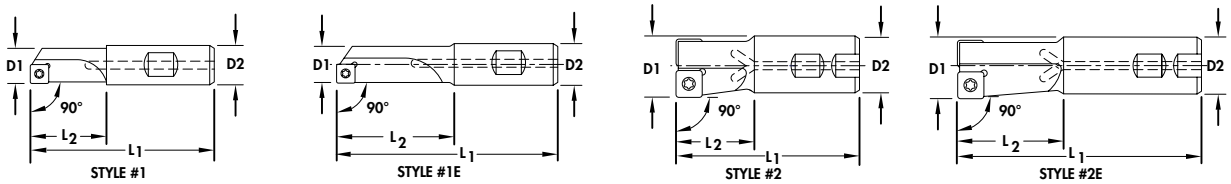
Alteration to cutter body required.
AP10 size inserts: Break corner (radius of the insert minus 0.020") x 45°

AP13 size inserts: Break corner (radius of the insert minus 0.041") x 45°

Centre Dex® CENTER CUTTING END MILLS

WELDON SHANK, AXIAL RAKE 0°, RADIAL RAKE 0°

ValMILL™



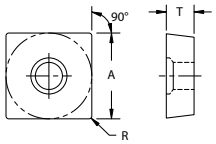
STYLE #1 | STYLE #1E | STYLE #2 | STYLE #2E

Part Number	Dimensions				Cutter Style	Insert Style	Inserts Req'd	Torque in lbs	Wt. lbs.	EDP#
	D1	D2	L1	L2						
S VMSP 048R 90CCC	0.480	0.500	2.880	1.000	1	SECW212...	1	6	0.16	**50675**
S VMSP 060R 90CCC	0.605	0.625	3.310	1.250	1	SECW2515...	1	8	0.24	**50676**
S VMSP 073AR 90CCC	0.730	0.750	3.060	1.000	1	SD322D	1	21	0.32	**50677**
S VMSP 073AR 90CCEC	0.730	0.750	4.240	2.180	1E	SD322D	1	21	0.42	**50678**
S VMSP 098R 90CCC	0.980	0.750	3.310	1.250	1	SD422P	1	21	0.40	**50680**
S VMSP 150R 90CCC	1.500	1.250	1.820	1.820	2	SD422P	2	21	1.06	**50689**
S VMSP 100R 90CCC	1.000	0.750	3.310	1.250	2	SD322P	2	21	0.36	**50681**
S VMSP 100R 90CCEC	1.000	1.000	5.120	1.620	2E	SD322P	2	21	0.90	**50682**
S VMSP 112R 90CCC	1.125	0.750	3.310	1.250	2	SD322P	2	21	0.40	**50683**
S VMSP 125R 90CCC	1.250	1.250	3.820	1.500	2	SD422P	2	21	0.98	**50685**
S VMSP 125R 90CCEC	1.250	1.250	5.500	2.000	2E	SD422P	2	21	1.46	**50686**
S VMSP 138R 90CCC	1.375	1.250	3.820	1.500	2	SD422P	2	21	1.02	**50688**
S VMSP 150R 90CCEC	1.500	1.250	5.500	2.000	2E	SD422P	2	21	1.46	**50690**
S VMSP 175R 90CCC	1.750	1.250	3.820	1.500	2	SD532P	2	63	1.10	**50692**
S VMSP 200R 90CCC	2.000	1.250	3.820	1.500	2	SD532P	2	63	1.20	**50694**
S VMSP 200R 90CCEC	2.000	1.250	5.500	2.000	2E	SD532P	2	63	1.72	**50695**

Cutters are supplied with Insert Screw and less insert. Can be used in plunge mode (center cutting). When exceeding 2000 RPM, cutter and adapter should be balanced. Coolant holes are standard

Centre Dex® and Mini-Mills®

COMPATIBLE INSERTS



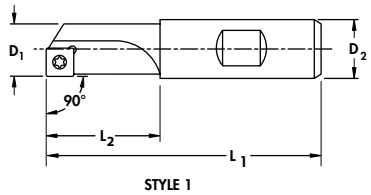
Part Number	Dimensions			Available Grades / EDP#												
	A	T	R	SM225	SM245	SM318	V1N	VC2	VC29	VC35M	VC101	VC630	VC902	VC911	VC912	VC935	VP1120
SD 322D	3/8	0.125	0.031	-	**07376**	-	**05405**	**09601**	-	**09603**	-	-	-	-	-	-	-
SD 322D 3P	3/8	0.125	0.031	-	**07468**	-	**05759**	-	-	-	-	-	-	-	-	-	-
SD 322P	3/8	0.125	0.031	**04828**	**07402**	-	**05406**	**09604**	**09605**	**09607**	**09606**	**40764**	**06177**	-	-	**06178**	-
SD 322P 3P	3/8	0.125	0.031	-	**07469**	-	**05760**	-	-	-	-	-	-	-	-	-	-
SD 322P CM	3/8	0.125	0.031	**04696**	**07377**	**07470**	-	-	-	-	-	-	**06428**	-	**07941**	-	-
SD 422P	1/2	0.125	0.031	**04830**	**07403**	-	**05407**	**09608**	**09609**	**09611**	-	-	-	-	-	-	**19596***
SD 422P 3P	1/2	0.125	0.031	-	**07471**	-	**05761**	-	-	-	-	-	-	-	-	-	-
SD 422P CM	1/2	0.125	0.031	**04697**	**07380**	**07472**	-	-	-	-	-	-	**06429**	**07942**	**07943**	-	-
SD 532P	5/8	0.187	0.031	**04832**	**07404**	-	**05408**	**09612**	-	**09613**	-	-	-	-	-	-	-
SD 532P 3P	5/8	0.187	0.031	-	-	-	**05762**	-	-	-	-	-	-	-	-	-	-
SD 532P CM	5/8	0.187	0.031	-	**07381**	-	-	-	-	-	-	-	**06430**	-	-	-	-
SD 532P T00720	5/8	0.187	0.031	**04833**	-	-	-	-	-	-	-	-	-	-	-	-	-
SECW21.21	1/4	0.078	0.015	-	**07406**	-	**05409**	-	-	-	-	-	-	-	-	-	-
SECW21.21J	1/4	0.078	0.015	-	-	-	-	**09627**	-	-	-	-	-	-	-	-	-
SECW2.51.51	5/16	0.094	0.015	-	**07407**	-	**05410**	-	-	-	-	-	-	-	-	-	-
SECW2.51.51J	5/16	0.094	0.015	-	-	-	-	**09628**	-	-	-	-	-	-	-	-	-
SPMW 2521	5/16	0.125	0.015	-	-	-	-	-	**09734**	-	-	-	-	-	-	-	-
SPMW 2522	5/16	0.125	0.031	-	-	-	**05471**	**09735**	-	-	-	-	-	-	**07789**	-	-

Note: See advanced materials section for additional inserts

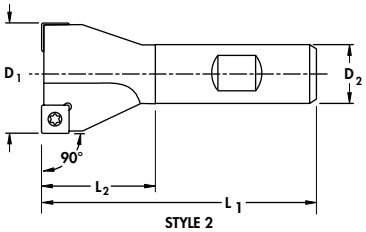
*Available Q2 2005

ValMILL™

Mini-Mills® NON CENTER CUTTING
WELDON SHANK 90° LEAD
0° AXIAL RAKE
0° RADIAL RAKE



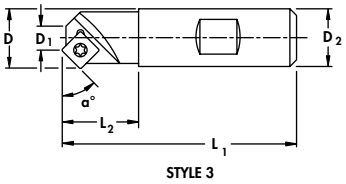
STYLE 1



STYLE 2

Part Number	Style	Lead	Dimensions				Insert Style	Inserts Req'd	Wt. lbs.	EDP#
			D1	D2	L1	L2				
S VMSP 075R1	1	90°	.75	.750	3.06	1.00	SD 322P	1	0.36	**62022**
S VMSP 100R2	1	90″	1.00	.750	3.31	1.25	SD 322P	2	0.42	**62023**
S VMSP 125R3	2	90°	1.25	.750	3.56	1.50	SD 322P	3	0.48	**50720**

Mini-Mills® NON CENTER CUTTING
WELDON SHANK 30°, 45°, 60° LEAD
0° AXIAL RAKE
0° RADIAL RAKE



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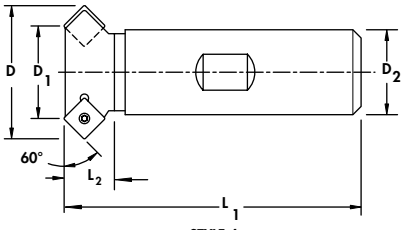

Part Number	Style	a°	Dimensions					Insert Style	Inserts Req'd	Wt. lbs.	EDP#
			D	D1	D2	L1	L2				
S VMSP 138R 30CF	4	30°	1.38	0.75	.750	3.47	.67	SD 322P	2	0.48	**62025**
S VMSP 081R 45 *	3	45°	0.81	0.31	.750	3.06	1.00	SD 322P	1	0.36	**50717**
S VMSP 100R 45CF	3	45°	1.00	0.58	.500	2.94	.58	SPMW 2.5...	2	0.18	**50719**
S VMSP 125R 45CF	3	45°	1.25	0.75	.625	2.96	.68	SD 322P	2	0.30	**62024**
S VMSP 138R 45CF	4	45°	1.38	0.88	.750	3.50	.68	SD 322P	2	0.48	**50724**
S VMSP 150R 45CF	4	45°	1.50	1.00	.750	3.50	.72	SD 322P	2	0.50	**62026**
S VMSP 175R 45CF	4	45°	1.75	1.07	1.000	3.94	1.44	SD 422P	2	0.90	**50726**
S VMSP 200R 45CF	4	45°	2.00	1.32	1.000	3.94	1.44	SD 422P	3	0.98	**62027**
S VMSP 125R 60CF	4	60°	1.25	0.88	.750	3.50	1.47	SD 322P	2	0.42	**50722**

Inserts must be ordered separately. # L.H. End Mills are subject to quotation: I.E. S VMSP 100L 45.

Spare Parts for Centre Dex and Mini-Mills®

Insert Size	Insert Screw		Torx Wrench		Torque in lbs
	Part#	EDP#	Part#	EDP#	
SECW 21...	PT 594T	**52300**	T 7 Torx Wrench	**50101**	6
SECW 2.5...	PT-865T	**52301**	T 8 Torx Wrench	**50104**	8
SPMW 2.5...	PT 543T	**52287**	T 8 Torx Wrench	**50104**	14
SD 3...D	PT 618T	**52262**	T 10 Torx Wrench	**50083**	21
SD 3...P	PT 317T	**52261**	T 10 Torx Wrench	**50083**	21
SD 3...P	PT 618T	**52262**	T 10 Torx Wrench	**50083**	21
SD 4...	PT 318T	**52262**	T 10 Torx Wrench	**50083**	21
SD 5...	PT 319T	**52263**	T 20 Torx Wrench	**50091**	63

Note: Valenite Recommends the use of PT445 antiseize lubricant (EDP# 50050) on insert screw threads and head.

Centre Dex® and Mini-Mills® APPLICATION GUIDELINES

ValMILL™

Mini-Mills® NON CENTER CUTTING - 0° Lead

Material	Hardness	SFM	FPT
STEELS	150 - 180 Bhn 180 - 250 Bhn	300 - 450 200 - 300	.005 - .008
STAINLESS STEELS **300 Series**	180 - 300 Bhn	200 - 300	.005 - .008
STAINLESS STEELS **15-5, 17-4 PH, 13-8 PH**	250 - 300 Bhn 350 Bhn	150 - 250100	.005 - .008 .005
INCONELS	350 Bhn	75 - 125	.004 - .006
TITANIUM ALLOYS	300 Bhn	75 - 150	.004 - .006
ALUMINUM	80 Bhn	1500 - 3000	.005 - .010

Mini-Mills® NON CENTER CUTTING - 30°/45°/60° Lead

Material	Hardness	SFM	FPT
STEELS **Mild and Alloy**	150 - 180 Bhn 180 - 250 Bhn	300 - 450 200 - 300	.005 - .008
STAINLESS STEELS **200 & 300 Series**	300 Bhn	200 250	.005 - .008
STAINLESS STEELS **15 5, 17 4 PH**	300 Bhn	150 - 250	.005 - .008
STAINLESS STEELS **13 8 PH**	350 Bhn	100	.005
TITANIUM ALLOYS	300 Bhn	75 - 125	.004 - .007
ALUMINUM	80 Bhn	750 - 3000	.005 - .015

Centre Dex CENTER CUTTING END MILLS

Material	Hardness	SFM	IPM
STEELS	180 - 220 Bhn	250 - 450	4 - 10
STAINLESS STEELS	180 - 240 Bhn	200 - 300	3 - 7
CAST IRONS	180 - 260 Bhn	250 - 400	3 - 10
TITANIUM ALLOYS	110 Bhn	100 - 130	1.5 - 3.5
NON-FERROUS MATERIALS	80 Bhn	700 - Up	8 - 16

Note: Air Blast must be used with .480 diameter when channeling at .150 or greater axial depth while limiting feed per revolution to .003 - .004 Feed Per Tooth.

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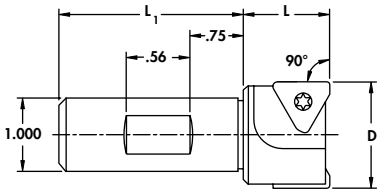
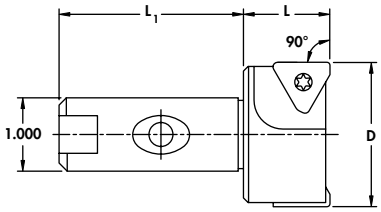
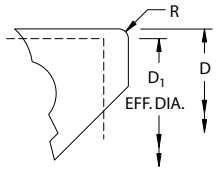
ECON-O-MIZER®
90° HIGH SHEAR END MILLS



STYLE 1



STYLE 2

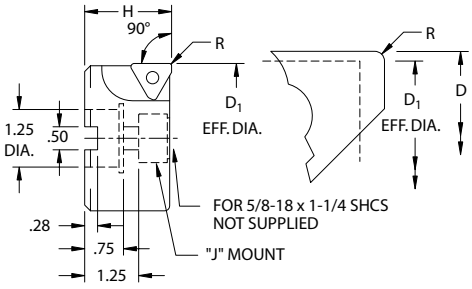


Part Number	Style	Max. D.O.C.	Dimensions				Insert Screw	Inserts Req'd	Wt. lbs.	EDP#
			Eff. D1	Max. D	L	L1				
STE90 150 4.5R1 075S	1	.50	1.47	1.50	1.75	2.03	PT 588T	1	0.86	**62042**
STE 90 200 4.5R2 075S	1	.50	1.97	2.00	1.75	2.03	PT 484T	2	1.22	**50751**
STE90 150 4.5R1 100W	2	.50	1.47	1.50	1.75	2.28	PT 588T	1	1.14	**62043**
STE90 200 4.5R2 100W	2	.50	1.97	2.00	1.75	2.28	PT 484T	2	1.46	**62151**

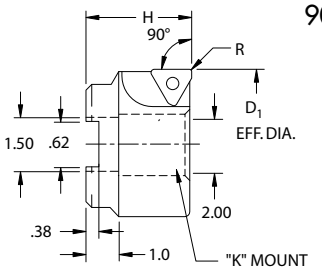
Note: Effective diameter is given to a .015 insert.

CAUTION: Do not use 075S Shank End Mills on machines with greater than 10 horsepower.

ECON-O-MIZER®
90° HIGH SHEAR SHELL MILLS



STYLE 3



STYLE 4

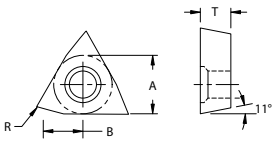
Part Number	Style	Max. D.O.C.	Dimensions				Insert Screw	Inserts Req'd	Wt. lbs.	EDP#
			Eff. D1	Max. D	H	L1				
STE 90 31 2 4.5R3 125F	3	.50	3.12	3.15	1.97	—	PT 484T	3	N.A.	**62151**
STE90 489 4.5R4 150F	4	.50	4.89	4.92	2.48	—	PT 484T	4	2.34	**62152**

Spare Parts

Insert Size	Insert Screw		Driver		Torque in lbs
	Part#	EDP#	Part#	EDP#	
ALL	PT 588T	**52294**	T 20 Torx Wrench	**50091**	70
ALL	PT 484T	**52278**	T 20 Torx Wrench	**50091**	70

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

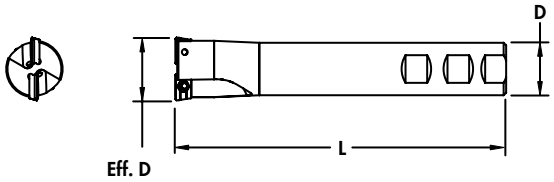
ECON-O-MIZER®
INSERTS



TEGA 453...

Part Number	Dimensions				Available Grades / EDP#		
	A	T	R	B	V1N	VC2	VC728
TEGA 453015PJ 1S	0.562	0.187	0.015	.380	-	**13654**	-
TEGA 453031PJ 1S	0.562	0.187	0.031	.380	-	**10188**	-
TEGA 453062PJ 1S	0.562	0.187	0.062	.380	-	**13655**	-
TEGA 453093PJ 1S	0.562	0.187	0.093	.380	-	**13656**	-
TEGA 453125PJ 1S	0.562	0.187	0.125	.380	-	**10191**	-
TEGA 453015PI 1S 2G	0.562	0.187	0.015	.380	-	-	**40102**
TEGA 453015PTA 1S	0.562	0.187	0.015	.380	**05941**	-	-
TEGA 453031PTA 1S	0.562	0.187	0.031	.380	**05942**	-	-

AXIAL FEED
END MILLS



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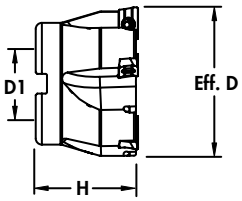
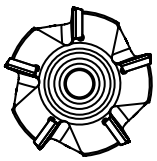
Note: When rough milling with a Valenite Axial Feed Mill, it is advisable to apply air at the cutting interface whenever possible. This helps clear chips away from the cutting area, preventing re-cutting of chips that can damage the cutter's inserts.

Part Number	Style	Max. W.O.C.	Dimensions			Insert Style	InsertsReq'd	Wt. lbs.	EDP#
			Eff. D	D1	L				
VEZA90A6150WE02	WELDON	0.40	1.50	1.25	7.88	XPHT1604...L...	2	2.7	**51397**
VEZA90A6200WE03	WELDON	0.40	2.00	1.25	7.88	XPHT1604...L...	3	3.5	**51398**

AXIAL FEED
SHELL MILLS





Part Number	Style	Max. W.O.C.	Dimensions			Insert Style	InsertsReq'd	Wt. lbs.	EDP#
			Eff. D	D1	H				
VFZA90A60250G05	G	0.40	2.50	0.75	1.50	XPHT1604...L...	5	1.5	**51399**
VFZA90A60300H05	H	0.40	3.00	1.00	2.00	XPHT1604...L...	5	1.8	**51400**
VFZA90A60400J05	J	0.40	4.00	1.25	2.38	XPHT1604...L...	5	4.4	**51401**
VFZA90A60500K06	K	0.40	5.00	1.50	2.38	XPHT1604...L...	6	6.7	**51402**
VFZA90A60600K08	K	0.40		1.50	2.38	XPHT1604...L...	8	8.6	**51403**

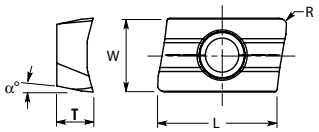
Spare Parts

Insert Size	Insert Screw		Torx Wrench		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
ALL	PT 962T	**50066**	T15 Torx Wrench	**50087**	30

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

AXIAL FEED MILL
INSERTS



XPHT

	Dimensions				Available Grades s/EDP#		
INSERTS	L	W	R	T	VPUK20	SMO54	SM307
XPHT 16 04 12 L	0.635	0.375	0.046	0.187	**04435**	**06396**	**10275**
XPHT 16 04 16 L	0.632	0.375	0.062	0.187	**17871**	**06414**	
XPHT 16 04 16 L AL*	0.632	0.375	0.062	0.187	**17872**	-	

*For aluminum and Non-Ferrous materials

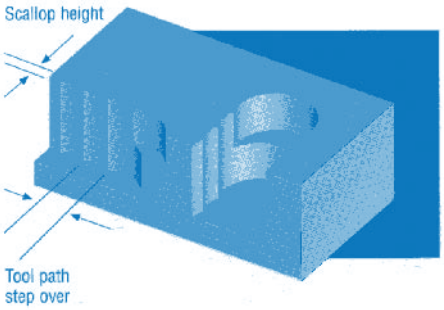
ValMILL™

AXIAL FEED MILLS APPLICATION DATA

Material		Operation	SFM Available Grades SMO54	SFM Available Grades UK20	Feed / Tooth
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing	700 650		.004 - .018
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing	625 525		.004 - .016
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing	500 450		.004 - .014
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing	400 300		.004 - .010
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing	560 450	400 360	.004 - .014
	Austenitic 140 - 180 Bhn	Finishing Roughing	375 325	300 260	.004 - .012
	PH and Duplex 220 260 Bhn	Finishing Roughing	350 300	250 200	.004 - .010
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing Roughing		450 350	.004 - .016
	Ductile and Malleable Cast Iron 140 -180 Bhn	Finishing Roughing	500 425	350 300	.004 - .014
	Ductile and Malleable Cast Iron 220 - 260 Bhn	Finishing Roughing	400 350	300 260	.004 - .010
HIGH TEMPERATURE ALLOYS	Iron Base Alloys A 286, Discalloy, Incoloy	Finishing Roughing			.004 - .008
	Nickel and Cobalt Base Alloys Hastelloy, Inconel, Haynes Stellite	Finishing Roughing			.004 - .008
	Titanium Alloys 6Al 4V	Finishing Roughing			.004 - .008
ALUMINUM	Aluminum Alloys < 7% Silicon	Finishing Roughing		2000 - 2500 1500 - 2000	.004 - .020

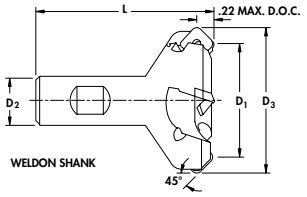
Step Over Application Guidelines

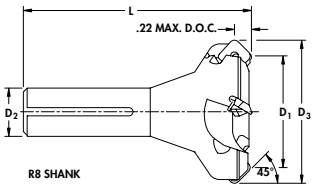
Step Over(inches)	Scallop Height / Cutter Diameter 1.5"	2.0"	2.5"	3.0"	4.0"	5.0"	6.0"
0.187	0.006	0.004	0.003	0.003	0.002	0.002	0.001
0.250	0.010	0.008	0.006	0.005	0.004	0.003	0.002
0.375	0.024	0.018	0.014	0.012	0.009	0.007	0.006
0.500	0.043	0.032	0.025	0.021	0.016	0.012	0.010
0.625	0.068	0.050	0.040	0.033	0.024	0.019	0.016
0.750	0.100	0.073	0.058	0.048	0.035	0.028	0.023
0.875	0.141	0.101	0.079	0.065	0.048	0.038	0.032
1.000	0.191	0.134	0.104	0.086	0.063	0.050	0.042
1.250	0.335	0.219	0.167	0.136	0.100	0.079	0.066
1.500		0.338	0.250	0.201	0.146	0.115	0.095
1.750			0.357	0.281	0.201	0.158	0.130
2.000			0.500	0.382	0.268	0.209	0.171
2.250					0.346	0.267	0.219
2.500					0.439	0.335	0.273
2.750						0.412	0.333
3.000						0.500	0.402
3.250							0.478
Max. Step Over	1.414	1.732	2.000	2.236	2.646	3.000	3.316



VSR SHEAR MILL
END MILLS

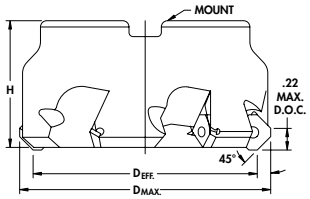
ValMILL™





Part Number	Style	Dimensions				No. Req'd	Insert Style	Max. D.O.C.	Max. RPM	Wt. lbs.	EDP#
		D1	D2	D3	L						
VSRDA 4 R 1500 W06 03	Weldon	1.50	0.750	2.024	3.250	3	SE..42	0.22	12,000	0.63	**50866**
VSRDA 4 R 1500 R8 03	R8	1.50	0.949	2.024	5.000	3	SE..42	0.22	12,000	1.20	**50865**
VSRDA 4 R 2000 W06 04	Weldon	2.00	0.750	2.516	3.250	4	SE..42	0.22	12,000	0.94	**50868**
VSRDA 4 R 2000 W10 04	Weldon	2.00	1.250	2.516	3.250	4	SE..42	0.22	12,000	1.60	**50870**
VSRDA 4 R 2000 W08 04	Weldon	2.00	1.000	2.516	3.250	4	SE..42	0.22	12,000	1.40	**50869**
VSRDA 4 R 2000 R8 04	R8	2.00	0.949	2.516	5.000	4	SE..42	0.22	12,000	1.37	**50867**
VSRDA 4 R 2500 W08 05	Weldon	2.50	1.000	3.016	3.760	5	SE..42	0.22	10,000	1.75	**50872**
VSRDA 4 R 2500 W10 05	Weldon	2.50	1.250	3.016	3.250	5	SE..42	0.22	10,000	2.08	**50873**
VSRDA 4 R 2500 R8 05	R8	2.50	0.949	3.016	5.250	5	SE..42	0.22	10,000	2.00	**50871**

VSR SHEAR MILL
FACE MILLS



Part Number	Mount	Dimensions				No. Req'd	Insert Style	Max. D.O.C.	Max. RPM	Wt. lbs.	EDP#
		D1	D2	D3	H						
VSRDA 4 R 0200 G 04	G	2.000	0.750	2.520	1.500	4	SE..42	0.22	12,000	1.30	**51391**
VSRDA 4 R 0300 H 06	H	3.000	1.000	3.520	1.750	6	SE..42	0.22	10,000	2.56	**51392**
VSRDA 4 R 0400 K 06	K	4.000	1.500	4.520	2.000	6	SE..42	0.22	9,000	4.90	**51393**
VSRDA 4 R 0500 K 07	K	5.000	1.500	5.510	2.375	7	SE..42	0.22	8,000	8.50	**51394**
VSRDA 4 L 0500 K 07*	K	5.000	1.500	5.510	2.375	7	SE..42	0.22	8,000	8.50	**51388**
VSRDA 4 R 0600 K 07	K	6.000	1.500	6.510	2.375	7	SE..42	0.22	7,000	12.50	**51395**
VSRDA 4 L 0600 K 07*	K	6.000	1.500	6.510	2.375	7	SE..42	0.22	7,000	12.50	**51389**
VSRDA 4 R 0800 C 08	C	8.000	2.500	8.510	2.375	8	SE..42	0.22	5,500	22.44	**51396**
VSRDA 4 L 0800 C 08*	C	8.000	2.500	8.510	2.375	8	SE..42	0.22	5,500	22.44	**51390**
VSRDB 4 R 0200 G 04	G	2.000	0.750	2.520	1.500	4	SE..43	0.22	11,500	1.30	**50874**
VSRDB 4 R 0250 G 05 •	G	2.500	0.750	3.010	1.500	5	SE..43	0.22	10,000	2.00	**50875**
VSRDB 4 R 0300 H 05	H	3.000	1.000	3.520	1.750	5	SE..43	0.22	9,800	2.56	**50876**
VSRDB 4 R 0400 K 06	K	4.000	1.500	4.520	2.000	6	SE..43	0.22	8,500	4.87	**50877**
VSRDB 4 R 0500 K 07 •	K	5.000	1.500	5.510	2.375	7	SE..43	0.22	7,800	8.50	**50878**
VSRDB 4 R 0600 K 08	K	6.000	1.500	6.510	2.375	8	SE..43	0.22	6,700	12.50	**50879**
VSRDC 5 R 0600 K 07	K	6.000	1.500	6.620	2.375	7	SE..53	0.31	6,300	11.31	**50880**
VSRDC 5 R 0800 C 09 •	C	8.000	2.500	8.620	2.375	9	SE..53	0.31	5,600	21.05	**50881**

• Denotes Non Stock * Denotes LH Rotation

Spare Parts

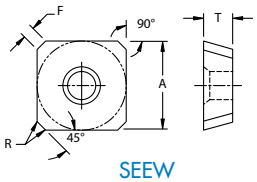
Insert Size	Insert Screw		Torx Wrench		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
42	PT 700T	**52307**	T 15 Torx Wrench	**50087**	32
43	PT 546T	**52290**	T 20 Torx Wrench	**50087**	63
53	PT 711T	**52308**	T 20 Torx Wrench	**50087**	63

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

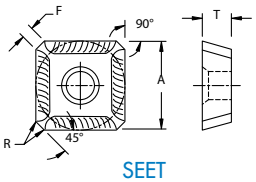
Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

ValMILL™

VSR SHEAR MILL
INSERTS



SEEW



SEET

Insert Number	Dimensions				Available Grades / EDP#								
	A	T	R	F	VC2	SM225	SM245	SM318	VC728	VC902	VC912	VC935	V1N
SEET42AFER	1/2	.120	.044	.094	-	04701	07524	07525	-	06481	-	-	05925
SEET43AFER	1/2	.188	.015	.094	-	04702	07526	-	-	06482	-	-	05926
SEET53AFER	5/8	.188	.015	.094	-	-	04704	07528	-	-	-	-	-
SEEW42A7AT00420	1/2	.125	.005	.053	-	03633	07529	-	-	-	-	-	05765
SEEW42A7J	1/2	.125	.005	.053	13647	-	-	-	-	-	07947	-	-
SEEW43AEFNJ	1/2	.188	.015	.057	13648	-	-	-	-	-	-	-	-
SEEW43AEJR2G	1/2	.188	.015	.057	-	-	-	-	40069	-	-	-	-
SEEW43AESN	1/2	.188	.015	.057	-	-	-	-	-	-	-	-	05927
SEEW43AFFN	1/2	.188	.015	.057	-	-	-	-	-	06431	-	-	-
SEEW43AFFN2G	1/2	.188	.015	.057	-	-	-	-	40070	-	-	-	-
SEEW43AFFNJ	1/2	.188	.015	.057	10179	-	-	-	-	-	-	-	-
SEEW43AFSN	1/2	.188	.046	.057	-	04705	07533	-	-	-	-	-	-
SEEW43AFTN	1/2	.188	.046	.057	-	-	-	07534	-	-	-	06484	-
SEEW53AFFNJ	5/8	.188	.015	.094	10180	-	-	-	-	-	-	-	-

Note: See advanced materials section for additional inserts

VSR SHEAR MILL INSERT APPLICATION DATA

Material		Operation	Feed/Tooth	SFM (Surface Feet Per Minute) Coated Grades								
				VC2	SM225	SM245	SM318	VC728	VC902	VC912	VC935	V1N
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing	.002 - .005 .006 - .012		1200 1000	900 700					800 700	700 600
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012		1000 800	800 600					700 500	500 400
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012		800 600	600 500					450 375	400 350
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012		625 425	475 400					425 400	300 200
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012		800 600	600 450						450 350
	Austenitic 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012	275 225	525 400	400 300			350 275	525 425	350 275	350 275
	PH and Duplex 220 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012	250 200		350 300			300 275	450 350	300 275	300 275
CAST IRONS	Gray Cast Iron 180 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012	450 350			1000 800		800 600	700 550		
	Gray Cast Iron 220 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012	350 300			800 700		600 500			
	Ductile and Malleable Cast Iron 140 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012	350 300			800 700		600 500			400 325
	Ductile and Malleable Cast Iron 220 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012	300 260			600 500		500 400			350 275
HIGH TEMPERATURE ALLOYS	Iron Base Alloys A 286, Discalloy, Incoloy	Finishing Roughing	.002 - .005 .006 - .012									
	Nickel and Cobalt Base Alloys - Hastelloy, Inconel, Haynes Stellite	Finishing Roughing	.002 - .005 .006 - .012	80 - 100 60 - 80					100 - 150 80 - 100	150 100	100 - 150 80 - 100	
	Titanium Alloys 6Al 4V	Finishing Roughing	.002 - .005 .006 - .012									
ALUMINUM		Finishing Roughing	.002 - .005 .006 - .012	2000-2500 1000-2000				1000-7000	2000-3000 1500-2500	1500-2500 1000-2000		

SERRA SINE III
LONG EDGE MILLS

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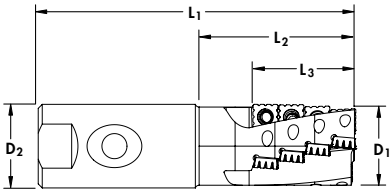
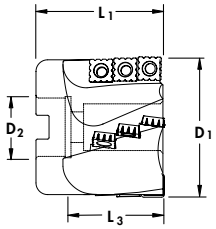
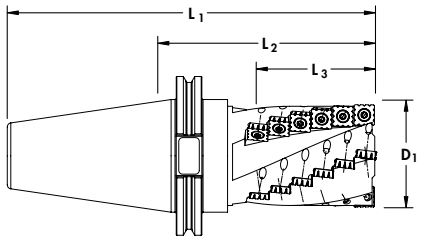


WELDON



SHELL MILL



CAT

Part Number	Shank Style	Dimensions					Inserts Req'd	Insert Style	Wt. lbs.	EDP#
		D1	D2	L1	L2	L3				
SS3 1253R06 100W	Weldon	1.250	1.000	4.730	1.970	0.760	6	SP_W 32.5..	1.28	**50794**
SS3 1253R12 100W	Weldon	1.250	1.000	4.730	2.470	1.530	12	SP_W 32.5..	1.30	**50795**
SS3 1253R12 125W	Weldon	1.250	1.250	4.730	2.490	1.530	12	SP_W 32.5..	1.60	**50796**
SS3 1503R20 150W	Weldon	1.500	1.500	5.740	3.000	1.960	20	SP_W 32.5..	2.50	**50797**
SS3 1503R20 40CT	CAT 40	1.500		6.070	3.380	1.960	20	SP_W 32.5..	3.88	**50798**
SS3 2003R12 075F	Shell Mill G	2.000	0.750	1.980		1.200	12	SP_W 32.5..	1.50	**50799**
SS3 2003R28 150W	Weldon	2.000	1.500	6.190	3.500	2.750	28	SP_W 32.5..	4.33	**50800**
SS3 2003R28 200W	Weldon	2.000	2.000	6.750	3.500	2.750	28	SP_W 32.5..	5.44	**50801**
SS3 2003R28 50CT •	CAT 50	2.000		8.360	4.360	2.750	28	SP_W 32.5..	9.00	**50802**
SS3 2504R24 50CT •	CAT 50	2.500		9.000	5.000	3.130	24	SP_W 43..	10.20	**50803**
SS3 4004R18 150F	Shell Mill K	4.000	1.500	2.720		1.600	18	SP_W 43..	6.22	**50809**

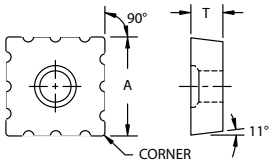
• Denotes Non Stock

Spare Parts

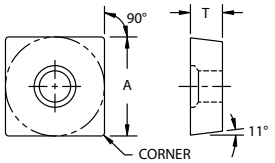
Insert Size	CutterDiameter	Insert Screw		Torx Wrench		Torque in-lbs
		Part#	EDP#	Part#	EDP#	
32.5	1.25	PT 559T	**52292**	T 15 Torx Scr Dr	**50086**	32
32.5	1.50 - 2.00	PT 700T	**52307**	T 15 Torx Scr Dr	**50086**	32
43.0	2.50 - 4.00	PT 546T	**52290**	T 20 Torx Scr Dr	**50086**	63

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

SERRA SINE III
INSERTS



SPEW



SPMW

Insert Number	Dimensions			Available Grades / EDP#								
	A	T	Corner	SM225	SM245	VC29	SM318	VC902	VC911	VC929	V1N	V01
SPEW 32.5A017A 1H	3/8	0.156	.017 x 45°	**03635**	**07477**	-	**07478**	**06438**	**07953**	-	**05772**	-
SPEW 32.5A017B 1H	3/8	0.156	.017 x 45°	**03636**	**07479**	-	-	-	-	-	**05773**	-
SPMW 32.51	3/8	0.156	.016 R	-	-	**09736**	**07450**	-	-	-	**05472**	-
SPMW 32.52	3/8	0.156	.031R	**04866**	**07451**	**09738**	-	-	-	-	**05475**	-
SPEW 43A022A 1H	1/2	0.187	.022 x 45°	**03637**	**07480**	-	-	**06439**	-	-	**05774**	-
SPEW 43A022B 1H	1/2	0.187	.022 x 45°	**03638**	-	-	-	-	-	-	**05775**	-
SPMW 432	1/2	0.187	.031R	**04867**	**07453**	**09741**	**07454**	-	-	**06193**	**05478**	**05479**

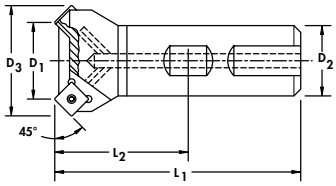
Note: See advanced materials section for additional inserts

ValMILL™

SERRA-SINE III INSERT APPLICATION

Material		Operation	Desired Chip Thickness	SFM (Surface Feet Per Minute) Available Grades							
				SM225	SM245	V1N	SM318	VC902	VC911	VC929	VC29
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing	.002 - .005 .006 - .012	1050 925	950 775	700 650					
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012	900 800	800 600	500 400					
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012	800 640	600 500	400 350					
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012	625 425	475 400	300 200					
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012	800 600	600 450	500 450					
	Austenitic 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012	525 400	400 300	300 250		350 275	475 375		300 250
	PH and Duplex 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012		350 300	250 225		300 250	425 325		250 225
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012				900 700	800 600			500 450
	Gray Cast Iron 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012				750 650	600 500			450 400
	Ductile and MalleableCast Iron 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012			400 300	750 700	600 500			
	Ductile and MalleableCast Iron 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012			350 275	600 500	500 400			
HIGH TEMPERATURE ALLOYS	Iron Base Alloys A 286, Discalloy, Incoloy	Finishing Roughing	.002 - .005 .006 - .012						125 80		100 - 150 60 - 100
	Nickel and Cobalt Base Alloys - Hastelloy, Inconel, Haynes Stellite	Finishing Roughing	.002 - .005 .006 - .012						125 80		100 - 150 60 - 100
	Titanium Alloys6Al 4V	Finishing Roughing	.002 - .005 .006 - .012								
NON-FERROUS MATERIALS	Aluminum < 7% Silicon	Finishing Roughing	.002 - .005 .006 - .012					2000-3000 1500-2000	1250-2000 1000-1750	1500-2500 1000-2000	1500-2500 1000-2000
	Aluminum > 7% Silicon	Finishing Roughing	.002 - .005 .006 - .012					2000-3000 1500-2000			1500-2500 1000-2000

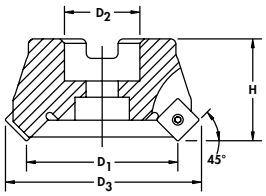
V066
END MILLS



ValMILL™

Part Number	A D.O.C.	Dimensions					Insert Req'd	Insert Style	Max. RPM	Wt. lbs.	EDP#
		D1	D2	D3	L1	L2					
539 62 622	.236	0.750	0.750	1.293	3.281	1.250	2	SN.. 43.5	17,000	0.66	**62067**
539 62 624	.236	0.750	1.000	1.293	3.531	1.250	2	SN.. 43.5	17,000	0.70	**62068**
539 62 626	.236	1.000	0.750	1.539	3.531	1.500	2	SN.. 43.5	15,000	0.73	**50904**
539 62 628	.236	1.000	1.000	1.539	3.781	1.500	2	SN.. 43.5	15,000	0.75	**62069**
539 62 630	.236	1.250	0.750	1.785	3.781	1.750	3	SN.. 43.5	13,500	1.43	**50906**
539 62 632	.236	1.250	1.000	1.785	4.031	1.750	3	SN.. 43.5	13,500	1.50	**50907**
539 62 634	.236	1.500	0.750	2.035	3.781	1.750	4	SN.. 43.5	12,000	1.76	**62070**
539 62 636	.236	1.500	1.000	2.035	4.031	1.750	4	SN.. 43.5	12,000	1.82	**50909**

V066
FACE MILLS



Part Number	A D.O.C.	Dimensions				Insert Req'd	Insert Style	Max. RPM	Wt. lbs.	EDP#
		D1	D2	D3	H					
539 62 650	.236	2.000	0.750	2.531	1.500	4	SN.. 43.5	12,500	1.00	**51469**
539 62 652	.236	2.500	0.750	3.031	1.500	5	SN.. 43.5	11,000	1.50	**51470**
539 62 654*	.236	3.000	1.000	3.528	2.000	6	SN.. 43.5	9,900	2.50	**51471**
539 62 656*	.236	4.000	1.500	4.528	2.000	7	SN.. 43.5	8,900	3.50	**51472**
539 62 658*	.236	5.000	1.500	5.524	2.500	8	SN.. 43.5	7,900	6.20	**51473**
539 62 660	.236	6.000	1.500	6.524	2.500	10	SN.. 43.5	7,000	9.00	**51474**
539 62 682	.315	2.500	0.750	3.169	1.500	5	SN.. 15	10,800	1.70	**51475**
539 62 684*	.315	3.000	1.000	3.665	2.000	6	SN.. 15	9,800	2.80	**51476**
539 62 686*	.315	4.000	1.500	4.665	2.000	7	SN.. 15	8,600	3.80	**51477**
539 62 688*	.315	5.000	1.500	5.661	2.500	8	SN.. 15	7,500	6.50	**51478**
539 62 690	.315	6.000	1.500	6.661	2.500	10	SN.. 15	6,500	9.50	**51479**
539 62 692	.315	8.000	2.500	8.661	2.500	13	SN.. 15	4,300	15.00	**62071**

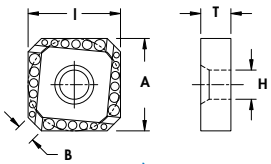
Spare Parts

Insert Size	Insert Screw		Torx Wrench		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
12	PT967T	**50067**	T 20 Torx Wrench	**50091**	47
15	PT967T	**50067**	T 20 Torx Wrench	**50091**	47
43	PT967T	**50067**	T 20 Torx Wrench	**50091**	47

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

* Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

V066
INSERTS



SNKT/SNMT

Insert Number	Dimensions			Available Grades / EDP#								Cermet
	A	T	B	VC91A	SMO54	VP5142	SM307	VPUK20	VC902	SM318	VP1120	VP6020
SNKT 43 5 21	0.500	0.219	0.061	-	-	**03529**	**05886**	-	**02588**	-	**19605**	**17941**
SNKT 43 5 31	0.500	0.219	0.061	**07883**	**04594**	**03538**	**05938**	**03534**	-	**17970**	**19606**	
SNMT 43 5 31	0.500	0.219	0.061	-	**04618**	**03547**	**03036**	-	-	**17968**	**19607**	
SNKT 15 05 AZR 31	0.625	0.219	0.079	-	**04557**	**04569**	**05936**	-	-	-	**19604**	

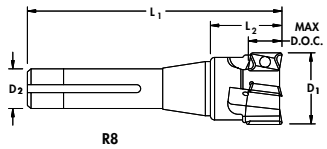
ValMILL™

V066 INSERT APPLICATION DATA

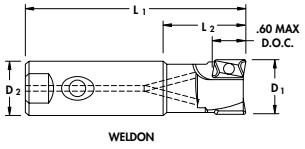
Material		Operation	Desired Chip Thickness	SFM (Surface Feet Per Minute)								
				Availables Grades						Cermet	902	
				VC91A	SMO54	VP5142	SM307	VPUK20	VP1120	VP6020	318	918
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing	.002 - .005 .006 - .012	900 750	700 650	1050 925				1400 800		
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012		625 525	850 700				1300 700		
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012		500 450	775 640				1250 650		
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012		400 300	625 400				800 500		
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012	700 500	500 450	800 650		400 360				
	Austenitic 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012		375 325	525 450		300 260				
	PH and Duplex 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012		350 300	400 350		250 200				
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012				925 775	450 350	1000 800		850 700	1200 1000
	Gray Cast Iron 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012				700 600	350 300	800 700		700 600	1000 800
	Ductile and Malleable Cast Iron 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012		500 425		775 650	350 300	800 700		700 600	1000 800
	Ductile and Malleable Cast Iron 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012		400 350		500 450	300 260	700 500		550 450	700 600
HIGH TEMPERATURE ALLOYS	Iron Base Alloys A 286, Discalloy, Incoloy	Finishing Roughing	.002 - .005 .006 - .012					100 75				
	Nickel and Cobalt Base Alloys - Hastelloy, Inconel, Haynes Stellite	Finishing Roughing	.002 - .005 .006 - .012					100 75				
	Titanium Alloys 6Al 4V	Finishing Roughing	.002 - .005 .006 - .012									
NON-FERROUS MATERIALS	Aluminum < 7% Silicon	Finishing Roughing	.002 - .005 .006 - .012					2000-2500 1500-2000				
	Aluminum > 7% Silicon	Finishing Roughing	.002 - .005 .006 - .012					2000-2500 1500-2000				

VE90A END MILLS

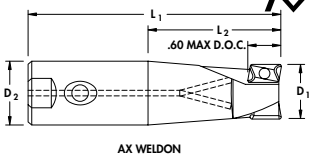
ValMILL™



R8



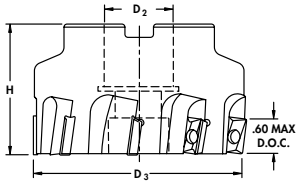
WELDON



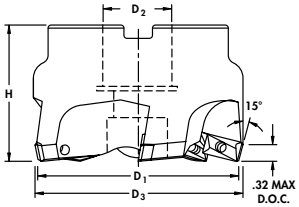
AX WELDON

Part Number	Shank Style	Dimensions				Max. D.O.C.	Insert Req'd.	Insert Style	Max. RPM	Wt. lbs.	EDP#
		D1	D2	L1	L2						
VE90AS 100 W 075	Weldon	1.000	0.750	3.250	1.220	0.60	2	APET 16..	25,000	0.56	**50825**
VE90AS 100 W 100	Weldon	1.000	1.000	4.000	1.500	0.60	2	APET 16..	25,000	0.81	**50826**
VE90AS 125 R8	R8	1.250	0.949	7.080	1.460	0.60	3	APET 16..	23,000	1.40	**50827**
VE90AS 125 W 075	Weldon	1.250	0.750	3.500	1.460	0.60	3	APET 16..	23,000	1.00	**50828**
VE90AS 125 W 125	Weldon	1.250	1.250	4.500	1.500	0.60	3	APET 16..	23,000	1.38	**50829**
VE90AS 150 R8	R8	1.500	0.949	5.620	1.460	0.60	4	APET 16..	20,000	1.70	**50830**
VE90AS 150 W 075	Weldon	1.500	0.750	3.500	1.460	0.60	4	APET 16..	20,000	1.56	**50831**
VE90AS 150 W 125	Weldon	1.500	1.250	4.500	1.500	0.60	4	APET 16..	20,000	2.00	**50832**
VE90AS 200 R8	R8	2.000	0.949	7.080	1.460	0.60	5	APET 16..	17,000	1.80	**50833**
VE90AS 200 W 125	Weldon	2.000	1.250	4.500	1.500	0.60	5	APET 16..	17,000	2.00	**50834**
VE90AX 100 W 125	Weldon	1.000	1.250	6.000	3.000	0.60	2	APET 16..	11,500	1.62	**50835**
VE90AX 125 W 125	Weldon	1.250	1.250	6.500	3.500	0.60	3	APET 16..	9,200	1.94	**50836**

VF90A/VF75A FACE MILLS



VF90



VF75

Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

Series 90 Face Mills

Part Number	Mount	Dimensions			Insert Req'd	Insert Style	Max. RPM	Wt. lbs.	EDP#
		D1	D2	H					
VF90AS 200 F 075	G	2.000	0.750	1.500	5	APET 16..	17,000	0.81	**50854**
VF90AS 300 T 100	H	3.000	1.000	1.750	5	APET 16..	13,500	2.18	**50855**
VF90AS 300 F 100	H	3.000	1.000	1.750	7	APET 16..	13,500	2.18	**50855**
VF90AS 400 F 150	K	4.000	1.500	2.000	8	APET 16..	11,500	4.56	**50856**
VF90AS 500 F 150	K	5.000	1.500	2.380	9	APET 16..	10,200	8.38	**50857**
VF90AS 600 F 150	K	6.000	1.500	2.380	10	APET 16..	9,000	12.00	**50858**
VF90AS 800 F 250	C	8.000	2.500	2.380	12	APET 16..	7,900	22.00	**50859**

Series 75 Face Mills

Part Number	Mount	Dimensions				No. Req'd	Insert Style	Max. RPM	Wt. lbs.	EDP#
		D1	D2	D3	H					
VF75AS 200 F 075	G	2.000	0.750	2.190	1.500	3	APET 16..	18,000	0.81	**50848**
VF75AS 300 F 100	H	3.000	1.000	3.190	1.750	5	APET 16..	14,000	2.18	**50849**
VF75AS 400 F 150	K	4.000	1.500	4.190	2.000	6	APET 16..	12,000	4.56	**50850**
VF75AS 500 F 150	K	5.000	1.500	5.190	2.380	7	APET 16..	10,500	8.38	**50851**
VF75AS 600 F 150	K	6.000	1.500	6.190	2.380	8	APET 16..	9,500	12.00	**50852**
VF75AS 800 F 250	C	8.000	2.500	8.190	2.380	10	APET 16..	8,000	22.00	**50853**

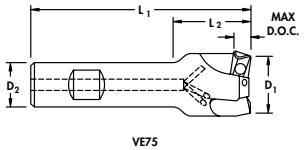
Spare Parts

Insert Size	Insert Screw		Torx Wrench		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
16	PT 700T	**52307**	T 15 Torx Wrench	**50087**	32

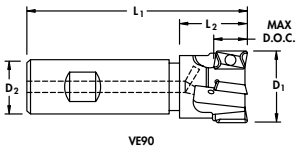
Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

ValMILL™

VE90B/75B END MILLS



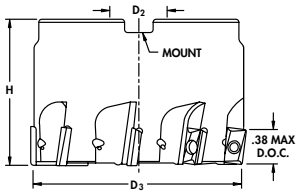
VE75



VE90

Part Number	Shank Style	Dimensions				Max. D.O.C.	Inserts Req'd.	Insert Style	Max. RPM	Wt. lbs.	EDP#
		D1	D2	L1	L2						
VE90BS 0375 W 050	Weldon	0.38	0.500	3	0.57	0.38	1	APET 10..*	20,000	0.20	**50837**
VE90BS 0500 W 062	Weldon	0.50	0.625	3.25	1.00	0.38	1	APET 10..*	18,000	0.25	**50838**
VE90BS 0625 W062	Weldon	0.63	0.625	3.25	1.00	0.38	2	APET 10..*	16,000	0.25	**50839**
VE90BS 0750 W075	Weldon	0.75	0.750	3.38	1.00	0.38	2	APET 10..	14,500	0.38	**50840**
VE90BS 1000 W075	Weldon	1.00	0.750	3.38	0.88	0.38	4	APET 10..	14,500	0.44	**50841**
VE90BS 1250 R8	R8	1.25	0.949	5.250	1.09	0.38	5	APET 10..	9,200	0.81	**50842**
VE90BS 1250 W075	Weldon	1.25	0.750	4.47	1.22	0.38	5	APET 10..	9,200	0.81	**50843**
VE90BS 1250 W100	Weldon	1.25	1.000	3.61	1.06	0.38	5	APET 10..	9,200	1.25	**50844**
VE90BS 1500 R8	R8	1.5	0.949	5.25	1.09	0.38	6	APET 10..	7,600	1.12	**50845**
VE90BS 1500 W075	Weldon	1.5	0.750	4.47	1.22	0.38	6	APET 10..	7,600	1.12	**50846**
VE90BS 1500 W100	Weldon	1.5	1.000	4.00	1.25	0.38	6	APET 10..	7,600	1.35	**50847**
VE75BS 1000 W075	Weldon	1.00	0.750	3.37	1.25	0.22	2	APET 10..	11,500	0.50	**50820**
VE75BS 1250 W075	Weldon	1.25	0.750	3.75	1.40	0.22	3	APET 10..	9,200	0.69	**50821**
VE75BS 1500 R8	R8	1.50	0.949	5.25	1.09	0.22	4	APET 10..	7,600	1.10	**50822**
VE75BS 1500 W075	Weldon	1.50	0.750	3.31	1.09	0.22	4	APET 10..	7,600	1.10	**50823**
VE75BS 1500 W100	Weldon	1.50	1.000	4.00	1.45	0.22	4	APET 10.	7,600	1.40	**50824**

VF90B FACE MILLS



Part Number	Mount	Dimensions			Inserts Req'd	Insert Style	Max. RPM	Wt. lbs.	EDP#
		D1	D2	H					
VF90BS 150 F075	G	1.500	0.750	1.500	6	APET 10..	7,650	0.44	**50861**
VF90BS 200 F075	G	2.000	0.750	1.500	7	APET 10..	5,700	0.94	**50862**
VF90BS 250 F100	H	2.500	1.000	1.750	9	APET 10..	4,600	1.12	**50863**
VF90BS 300 F100	H	3.000	1.000	1.750	11	APET 10..	3,800	2.31	**50864**

Spare Parts

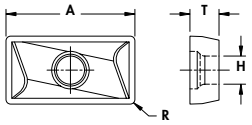
Insert Size	Insert Screw		Torx Wrench		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
APET10	PT 598T	**52302**	T 7 Torx Scr Dr	**50100**	6
APET10*	PT 920T	**52343**	T 7 Torx Scr Dr	**50100**	6

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

Insert Screw & TORX PLUS® drive included with each cutter

* Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

VE90/75
INSERTS



APET

ValMILL™

Insert Number	Dimensions			Available Grades / EDP#											
	A	T	R	VC2	SM225	SM245	SM318	VC902	VC911	VC919	91N	VC929	VC941	V1N	VP1120
APET 100 305ER	0.421	0.139	0.020		04685	07491		06468						05904	
APET 100 308ER	0.421	0.139	0.031			07494	07495								19575
APKT 100 304ER	0.421	0.139	0.015			07359									
APKT 100 305ER	0.421	0.139	0.020		07361	07362	07363	07364							
APKT 100 316ER	0.421	0.139	0.062		07365	07366									
APET 160 404HS	0.665	0.207	0.015	07496		07497			07934	07935					
APET 160 408ER	0.665	0.207	0.031		04686	07498	07499					06470		05905	19576
APET 160 408HS	0.665	0.207	0.031	09527		07500					07937		06471		
APET 160 416ER	0.665	0.207	0.062		04687	07501	07502					06472		05906	19577
APET 160 416HS	0.665	0.207	0.062			07503					07938		06473		
APET 160 424ER	0.664	0.207	0.094		04688	07504								05907	
APET 160 424HS	0.664	0.207	0.094			07506									
APET 160 432ER	0.661	0.207	0.125		04689	07507						06474		05908	19578
APET 160 432HS	0.661	0.207	0.125			07508							06475		
APET 160 448ER	0.655	0.207	0.187		04690	07509									
APET 160 464ER	0.645	0.207	0.250		04691	07510								05910	
APET 160 464HS	0.645	0.207	0.250			07511									

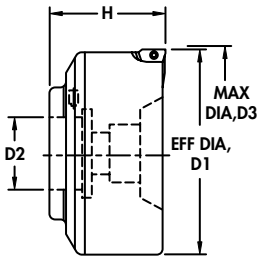
VE90AS/75AS/90AX END MILL INSERT APPLICATION

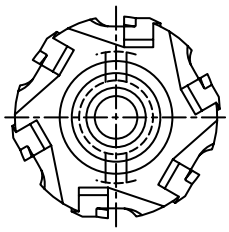
Material		Operation	Desired Chip Thickness	AVAILABLE GRADE / SFM (Surface Feet Per Minute)										
				VC2	SM225	SM245	SM318	VC902	VC911	VC919	91N	929	V1N	VP1120
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing	.002 - .005 .006 - .012		1200 1000	900 750					900 750		700 650	
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012		1000 800	800 600							500 400	
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012		800 600	500 400							400 350	
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012		400 350	350 250							200 175	
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing	.002 - .005 .006 - .012		800 600	600 450					700 500		400 350	
	Austenitic 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012		500 400	400 300			475 375				300 250	
	PH and Duplex 220 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012			350 300		350 300	425 325			350 300	250 225	
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing Roughing	.002 - .005 .006 - .012	475 375			1000 800	800 600		750 550		800 600		1000 800
	Gray Cast Iron 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012				800 700	600 500				600 500		800 700
	Ductile and MalleableCast Iron 140 - 180 Bhn	Finishing Roughing	.002 - .005 .006 - .012				800 700	600 500				600 500		800 700
	Ductile and MalleableCast Iron 220 - 260 Bhn	Finishing Roughing	.002 - .005 .006 - .012				600 500	500 400				500 400		700 500
HIGH TEMPERATURE ALLOYS	Iron Base Alloys A 286, Discalloy, Incoloy	Finishing Roughing	.002 - .005 .006 - .012						125 80					
	Nickel and Cobalt Base Alloys - Hastelloy, Inconel, Haynes Stellite	Finishing Roughing	.002 - .005 .006 - .012						125 80					
	Titanium Alloys 6Al 4V	Finishing Roughing	.002 - .005 .006 - .012	150 115					125 80					
NON-FERROUS MATERIALS	Aluminums	Finishing Roughing	.002 - .005 .006 - .012	1000-2000 750-1500				2000-3000 1500-2500	1250-2000 1000-1750	1500-3000 1000-2500		2000-3000 1500-2500		

FACE MILLS

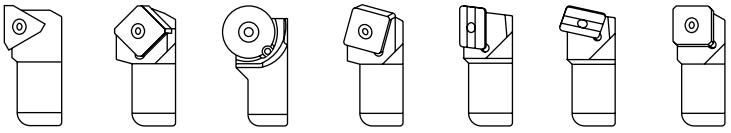
MASTERMILL® FACE MILLS - CUTTER ASSEMBLIES

ValMILL™



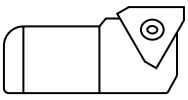
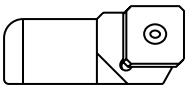
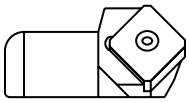
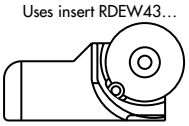
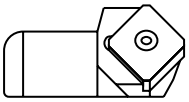
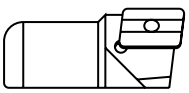
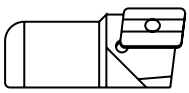
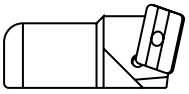


CARTRIDGE STYLES



Note: Assemblies are supplied complete with parts, cartridges and wrenches, less inserts.

• Denotes Non-stock

Cartridge Style	Cutter Assembly Part Number	Dimensions				Number of Cartridges	Mounting Style	EDP#
		D1	D2	D3	H			
MMCST9033PPD **EDP# 50613** Uses insert TPEW322PD…  ST90	MM035ST90RH	2.940	1.00	2.94	2.00	5	H	**50989**
	MM046ST90RJ	3.940	1.25	3.94	2.00	6	J	**50998**
	MM058ST90RK	4.940	1.50	4.94	2.38	8	K	**51007**
	MM0610ST90RK	5.940	1.50	5.94	2.38	10	K	**51016**
	MM0812ST90RC	7.940	2.50	7.94	2.38	12	C	**51026**
MMCSS9043P **EDP# 50610** Uses inserts SPMW43…/[WC]SPEW436  SS90	MM035SS90RH	2.880	1.00	2.88	2.00	5	H	**50988**
	MM046SS90RJ	3.880	1.25	3.88	2.00	6	J	**50997**
	MM058SS90RK	4.880	1.50	4.88	2.38	8	K	**51006**
	MM0610SS90RK	5.880	1.50	5.88	2.38	10	K	**51015**
	MM0812SS90RC	7.880	2.50	7.88	2.38	12	C	**51025**
MMCSS7543P **EDP# 50609** Uses inserts SPEW43ED…/SPEWX43ED…/ SPEW43…/SPMW43…  SS75	MM035SS75RH	3.000	1.00	3.27	2.00	5	H	**50987**
	MM046SS75RJ	4.000	1.25	4.27	2.00	6	J	**50995**
	MM058SS75RK	5.000	1.50	5.27	2.38	8	K	**51004**
	MM0610SS75RK	6.000	1.50	6.27	2.38	10	K	**51013**
	MM0812SS75RC	8.000	2.50	8.27	2.38	12	C	**51023**
MMCSS4543AEF **EDP# 50607** Uses insert SPEW43A…  SS45	MM035SS45RH	2.750	1.00	3.27	2.00	5	H	**50986**
	MM046SS45RJ	3.750	1.25	4.27	2.00	6	J	**50994**
	MM058SS45RK	4.750	1.50	5.27	2.38	8	K	**51003**
	MM0610SS45RK	5.750	1.50	6.27	2.38	10	K	**51012**
	MM0812SS45RC	7.750	2.50	8.27	2.38	12	C	**51022**
MMCSR0043D **EDP# 50606** Uses insert RDEW43…  SR00	MM035SR00RH	2.750	1.00	3.27	2.00	5	H	**50984**
	MM046SR00RJ	3.750	1.25	4.27	2.00	6	J	**50992**
	MM058SR00RK	4.750	1.50	5.27	2.38	8	K	**51001**
	MM0610SR00RK	5.750	1.50	6.27	2.38	10	K	**51010**
	MM0812SR00RC	7.750	2.50	8.27	2.38	12	C	**51020**
MMCSS4543AF **EDP# 50608** Uses inserts SEET43…/SEEW43…  SS45	MM035SS45FRH	2.750	1.00	3.27	2.00	5	H	**50985**
	MM046SS45FRJ	3.750	1.25	4.27	2.00	6	J	**50993**
	MM058SS45FRK	4.750	1.50	5.27	2.38	8	K	**51002**
	MM0610SS45FRK	5.750	1.50	6.27	2.38	10	K	**51011**
	MM0812SS45FRC	7.750	2.50	8.27	2.38	12	C	**51021**
MMCVF901003P **EDP# 50615** Uses inserts APET10…/APKT10…  VF90	MM035VF9010RH	2.940	1.00	3.00	2.00	5	H	**50812**
	MM046VF9010RJ	3.940	1.25	4.00	2.00	6	J	•
	MM058VF9010RK	4.940	1.50	5.00	2.38	8	K	**50816**
	MM0610VF9010RK	5.940	1.50	6.00	2.38	10	K	**50818**
	MM0812VF9010RC	7.940	2.50	8.00	2.38	12	C	**50819**
MMCVF901604P **EDP# 50616** Uses insert APET16…  VF90	MM035VF9016RH	2.940	1.00	3.00	2.00	5	H	**50990**
	MM046VF9016RJ	3.940	1.25	4.00	2.00	6	J	**50999**
	MM058VF9016RK	4.940	1.50	5.00	2.38	8	K	**51008**
	MM0610VF9016RK	5.940	1.50	6.00	2.38	10	K	**51017**
	MM0812VF9016RC	7.940	2.50	8.00	2.38	12	C	**51028**
MMCVF751003P **EDP#** • Uses inserts APET10…/APKT10…  VF75	MM035VF7510RH	3.000	1.00	3.12	2.00	5	H	**50811**
	MM046VF7510RJ	4.000	1.25	4.12	2.00	6	J	**50813**
	MM058VF7510RK	5.000	1.50	5.12	2.38	8	K	**50815**
	MM0610VF7510RK	6.000	1.50	6.12	2.38	10	K	**50817**
	MM0812VF7510RC	8.000	2.50	8.12	2.38	12	C	**51027**

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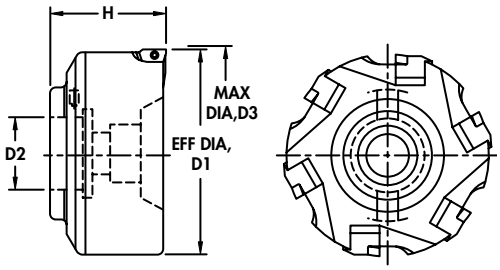
MASTERMILL® FACE MILLS



CUTTER BODIES ONLY

Part Number	Dimensions		Cartridges Req'd	Mounting Style	EDP#
	Nom. D1	Nom. H			
MM0305R100F	3.000	2.00	5	H	**50983**
MM0406R125F	4.000	2.00	6	J	**50991**
MM0508R150F	5.000	2.38	8	K	**51000**
MM06010R150F	6.000	2.38	10	K	**51009**
MM08012R250F	8.000	2.38	12	C	**51018**

Note: Order cartridges seperately. Bodies are supplied complete with wedge lock assembly, locating pin and cam wrench, less cartridges and inserts.

ADDITIONAL CARTRIDGES STYLES

Part Number	EDP#	Used with Insert #
MMCASS89325P	**50600**	SPMW32.5…
MMCM1001204D	•	RDMT1204MOTX
MMCM1001605D	**50602**	RDMT1605MOTX
MMCM1001606C	**50603**	RCMT1605MOTX
MMCM6601205	•	SNKT43…/SNMT43…
MMCM6801604	**50605**	XPHT16…/XPNT16…
MMCSS9043PA	•	SPEW434 / SPEW120416 / WCSPEW436 / WCSPEW120424
MMCSS9043PB	•	SPEW434 / SPEW120416 / WCSPEW436 / WCSPEW120424

Order cutter body seperately. Cartridges are supplied complete with lock screw, less inserts.

Spare Parts

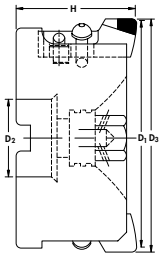
Cutter Body	Wedge		Wedge Screw		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
ALL	DLW 8	**50442**	DLS 8	**50642**	105

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

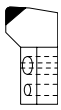
Cutter Body	Locating Pin		Cam Wrench	
	Part#	EDP#	Part#	EDP#
ALL	PT 624	**50645**	PT 625	**50033**

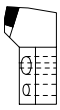
MASTERMILL® HVA FACE MILLS

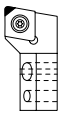
CUTTER ASSEMBLIES

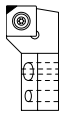


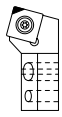
CARTRIDGE STYLES


STYLE 1


STYLE 2


STYLE 3


STYLE 4


STYLE 5

Note: Assemblies are supplied complete with parts, cartridges and wrenches, less inserts.

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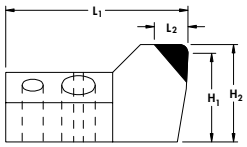
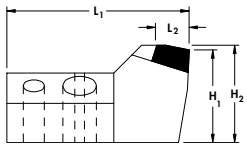
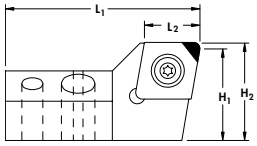
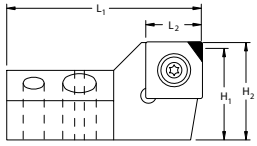
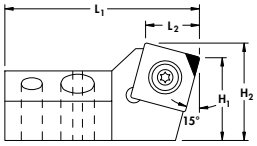
Cartridge Style	Cutter Assembly Part Number	Dimensions				Number of Cartridges	Mounting Style	Max. RPM	EDP#
		D1	D2	D3	H				
VFAB 90BAR **EDP# 50622**  STYLE 1	VF 1A 90CA025H3R •	2.5	1.00	2.68	2.00	3	H	15,000	**56516**
	VF 1A 90CA030H4R •	3	1.00	3.18	2.00	4	H	13,500	**51033**
	VF 1A 90CA040J5R •	4	1.25	4.18	2.00	5	J	11,500	**51034**
	VF 1A 90CA050K6R •	5	1.50	5.18	2.38	6	K	10,500	**51035**
	VF 1A 90CA060K8R	6	1.50	6.18	2.38	8	K	9,500	**51036**
	VF 1A 90CA080C10R •	8	2.50	8.18	2.38	10	C	8,000	**51037**
	VF 1A 90CA100C12R •	10	2.50	10.18	2.38	12	C	7,000	**51038**
	VF 1A 90CA120F14R •	12	2.50	12.18	2.38	14	F	6,500	**51039**
VFAB 75BAR **EDP# 50621**  STYLE 2	VF 2A 75CA025H3R •	2.5	1.00	2.60	2.00	3	H	15,000	**56517**
	VF 2A 75CA030H4R	3	1.00	3.10	2.00	4	H	13,500	**51040**
	VF 2A 75CA040J5R	4	1.25	4.10	2.00	5	J	11,500	**51041**
	VF 2A 75CA050K6R •	5	1.50	5.10	2.38	6	K	10,500	**51042**
	VF 2A 75CA060K8R	6	1.50	6.10	2.38	8	K	9,500	**51043**
	VF 2A 75CA080C10R •	8	2.50	8.10	2.38	10	C	8,000	**51044**
	VF 2A 75CA100C12R •	10	2.50	10.10	2.38	12	C	7,000	**51045**
	VF 2A 75CA120F14R •	12	2.50	12.10	2.38	14	F	6,500	**51046**
VFAA 90SCR **EDP# 50619**  STYLE 3	VF 3A 90CA025H3R •	2.5	1.00	2.56	2.00	3	H	15,000	**56518**
	VF 3A 90CA030H4R	3	1.00	3.06	2.00	4	H	13,500	**51047**
	VF 3A 90CA040J5R	4	1.25	4.06	2.00	5	J	11,500	**51048**
	VF 3A 90CA050K6R •	5	1.50	5.06	2.38	6	K	10,500	**51049**
	VF 3A 90CA060K8R	6	1.50	6.06	2.38	8	K	9,500	**51050**
	VF 3A 90CA080C10R •	8	2.50	8.06	2.38	10	C	8,000	**51051**
	VF 3A 90CA100C12R •	10	2.50	10.06	2.38	12	C	7,000	**51052**
	VF 3A 90CA120F14R •	12	2.50	12.06	2.38	14	F	6,500	**51053**
VFAA 90SSR **EDP# 50620**  STYLE 4	VF 4A 90CA025H3R •	2.5	1.00	2.56	2.00	3	H	15,000	**56519**
	VF 4A 90CA030H4R	3	1.00	3.06	2.00	4	H	13,500	**51054**
	VF 4A 90CA040J5R	4	1.25	4.06	2.00	5	J	11,500	**51055**
	VF 4A 90CA050K6R •	5	1.50	5.06	2.38	6	K	10,500	**51056**
	VF 4A 90CA060K8R	6	1.50	6.06	2.38	8	K	9,500	**51057**
	VF 4A 90CA080C10R •	8	2.50	8.06	2.38	10	C	8,000	**51058**
	VF 4A 90CA100C12R •	10	2.50	10.06	2.38	12	C	7,000	**51059**
	VF 4A 90CA120F14R •	12	2.50	12.06	2.38	14	F	6,500	**51060**
VFAA 75SSR **EDP# 50617**  STYLE 5	VF 5A 75CA030H4R	3	1.00	3.23	2.00	4	H	13,500	**51061**
	VF 5A 75CA040J5R	4	1.25	4.23	2.00	5	J	11,500	**51062**
	VF 5A 75CA050K6R	5	1.50	5.23	2.38	6	K	10,500	**51063**
	VF 5A 75CA060K8R	6	1.50	6.23	2.38	8	K	9,500	**51064**
	VF 5A 75CA080C10R •	8	2.50	8.23	2.38	10	C	8,000	**51065**
	VF 5A 75CA100C12R	10	2.50	10.23	2.38	12	C	7,000	**51066**
	VF 5A 75CA120F14R •	12	2.50	12.23	2.38	14	F	6,500	**51067**

• Denotes non-stock standard.

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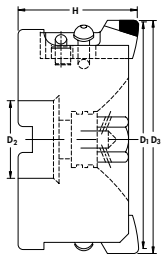


MASTERMILL® HVA FACE MILL
CUTTER BODIES

Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

Cutter Bodies Only

Part Number	Dimensions		Cartridges Req'd	Mounting Style	EDP#
	Nom. D1	Nom. H			
VFA 025 3R BDY	2.500	2.00	3	H	**62564**
VFA 030 4R BDY	3.000	2.00	4	H	**51068**
VFA 040 5R BDY	4.000	2.00	5	J	**51069**
VFA 050 6R BDY	5.000	2.38	6	K	**51070**
VFA 060 8R BDY	6.000	2.38	8	K	**51071**
VFA 080 10R BDY	8.000	2.38	10	C	**51072**
VFA 100 12R BDY	10.000	2.38	12	C	**51073**
VFA 120 14R BDY	12.000	2.38	14	F	**51074**

Order cartridges seperately

MASTERMILL® HVA FACE MILL
CARTRIDGES

Part Number	Edge Style	Grade	Lead	Axial Rake	Radial Rake	Corner Radius	Dimensions				EDP#
							L1	L2	H1	H2	
VFAB 90BAR	PCD Tip brazed onto cartridge body	VC728	0°	0° pos.	7° pos.	.090 R, .075 Flat	1.500	0.250	0.548	0.638	**50622**
VFAB 75BAR	PCD Tip brazed onto cartridge body	VC728	15°	10° pos.	7° pos.	.015 R, .113 Flat	1.500	0.150	0.548	0.599	**50621**
VFAA 90SCR	CPEW32.52PDFR-2F	VC727/VC728	0°	10° pos.	7° pos.	.031 R	1.500	0.160	0.548	0.578	**50619**
	CPEW32.52PDJR	VC902	0°	10° pos.	7° pos.	.073 Flat	1.500	0.160	0.548	0.578	
	CPEX 32.52 4FA-HVA	VC722	0°	10° pos.	7° pos.	.031 R	1.500	0.160	0.548	0.578	
	CPEW 32.52 PDFR-4FA	VC722	0°	10° pos.	7° pos.	.031 R	1.500	0.160	0.548	0.578	
VFAA 90SSR	SPMW32.52-2F SPMW32.52J	VC727/VC728 VC2	0°	5° pos.	3° neg.	.031 R	1.500	0.160	0.548	0.578	**50620**
VFAA 75SSR	SPMW32.52-2F SPMW32.52J	VC727VC728 VC2	15°	0° pos.	5° pos.	.031 R	1.500	0.375	0.58	0.661	**50617**

Note: See advanced materials section for additional inserts

Spare Parts

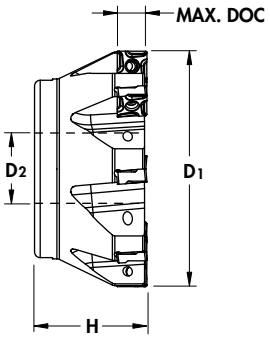
Cutter Body	Insert Screw		Mounting Screw		Adjustment Pin	
	Part#	EDP#	Part#	EDP#	Part#	EDP#
ALL	PT 700T	**52307**	CSC 1A	**52818**	PT 863 PIN	**50646**

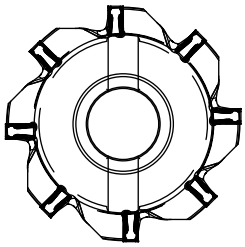
Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

Cutter Body	Insert Wrench		Torque in-lbs
	Part#	EDP#	
ALL	T 15 Torx Wrench	**50087**	6

QC FACE MILLS FOR CAST IRON

0° LEAD FACE MILLS
SCREW HELD INSERTS
AXIAL RAKE +0°
RADIAL RAKE +0°





Part Number	Dimensions			Max. DOC	Mount	Inserts Req'd	Max. RPM	Wt. lbs.	EDP#
	D1	D2	H						
VFQS 90SE 0300 H05R	3.00	1.00	1.75	0.380	H	5	9,400	2.0	**51420**
VFQS 90SE 0400 J07R	4.00	1.25	2.00	0.380	J	7	7,900	3.5	**51421**
VFQS 90SE 0400 K07R	4.00	1.50	2.00	0.380	K	7	7,900	4.0	**51422**
VFQS 90SE 0500 K08R	5.00	1.50	2.38	0.380	K	8	6,900	6.5	**51423**
VFQS 90SE 0600 K10R	6.00	1.50	2.38	0.380	K	10	6,300	8.5	**51424**
VFQS 90SE 0800 C12R	8.00	2.50	2.38	0.380	C	12	5,300	18.0	**51425**
VFQS 90SE 1000 C16R	10.00	2.50	2.38	0.380	C	16	4,700	31.0	**51426**
VFQS 90SE 1200 F18R	12.00	2.50	2.38	0.380	F	18	4,300	50.0	**51427**

All cutters come complete less insert.

Spare Parts

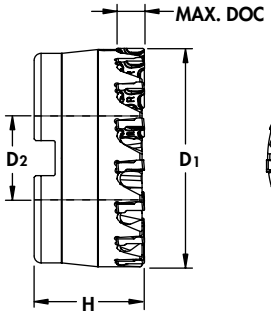
Screw Held Inserts	Insert Screw		Torx Wrench		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
All	PT711T	**52308**	T 20 Torx Scr Dr	**50090**	65

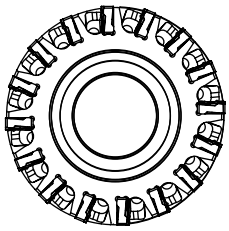
Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

QC FACE MILLS FOR CAST IRON

0° LEAD FACE MILLS
WEDGE HELD INSERTS
AXIAL RAKE +0°
RADIAL RAKE +0°





Note: Use hex wrench M2.5DIN911 (included with cutter) for wedge screw and adjustment screw. Torque wedge screw to 35 in/lbs. (torque wrench VMTW 103W is available for optional purchase).

Part Number	Dimensions			Max. DOC	Mount	Inserts Req'd	#Adj. Pockets	Max. RPM	Wt. lbs.	RH EDP#	LH EDP#
	D1	D2	H								
VFQF 90SD 0200 G06R/L	2.00	0.75	2.00	0.250	G	6	1	7,700	2.6	**62550**	•
VFQF 90SD 0300 H12R/L	3.00	1.00	1.75	0.250	H	12	2	7,700	2.6	**51405**	**51404**
VFQF 90SD 0400 J16R/L	4.00	1.25	2.00	0.250	J	16	2	6,500	4.7	**51407**	**51406**
VFQF 90SD 0400 K16R/L	4.00	1.50	2.00	0.250	K	16	2	6,500	5.2	**51409**	**51408**
VFQF 90SD 0500 K20R/L	5.00	1.50	2.38	0.250	K	20	4	5,700	8.3	**51411**	**51410**
VFQF 90SD 0600 K24R/L	6.00	1.50	2.38	0.250	K	24	4	5,200	11.0	**51413**	**51412**
VFQF 90SD 0800 C32R/L	8.00	2.50	2.38	0.250	C	32	4	4,450	22.0	**51415**	**51414**
VFQF 90SD 1000 C40R/L	10.00	2.50	2.38	0.250	C	40	8	4,000	37.0	**51417**	**51416**
VFQF 90SD 1200 F48R/L	12.00	2.50	2.38	0.250	F	48	8	3,600	54.0	**51419**	**51418**

Spare Parts

Wedge Held Inserts	Wedge Screw		Insert Wedge		Adjustment Screw		Adjustment Sleeve		Torque in-lbs
	Part#	EDP#	Part#	EDP#	Part#	EDP#	Part#	EDP#	
R Hand	LS104	**52895**	PT1105	**50027**	PT1151	**50483**	PT1152	**50484**	35
L Hand	LS104	**52895**	PT1106	**50028**	PT1151	**50483**	PT1153	**50485**	35

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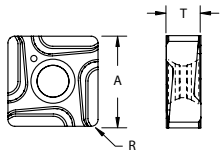
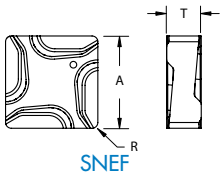
QC FACE MILLS FOR CAST IRON
SCREW HELD INSERTS



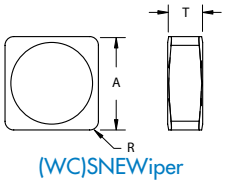
SNEX

Insert Number	Dimensions			Available Grades / EDP#			
	A	R	T	SM307	SM 318	VC918	VP1120
SNEX 15T612 ERQC	0.625	0.046	0.280	**05935**	**06453**	**07952**	**19603**

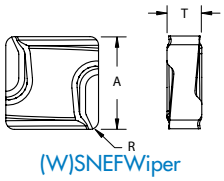
QC FACE MILLS FOR CAST IRON
WEDGE HELD INSERTS



SNEF



(WC)SNEWiper



(W)SNEFWiper

Insert Number	Dimensions			Available Grades / EDP#			
	A	R	T	SM307	SM 318	VC918	VP1120
SNEF 120408 ERQC	0.500	0.031	0.187	**05933**	**05934**	**07951**	**19602**
SNEF 120408 ELQC	0.500	0.031	0.187	**05931**	**05932**	**07950**	**19601**
(WC) SNE120412	0.500	0.046	0.187	-	**05947**	**07954**	-
(W) SNEF 120408 ER	0.500	0.031	0.187	-	**05949**	**07957**	-
(W) SNEF 120408 EL	0.500	0.031	0.187	-	**05948**	-	-

QC INSERT APPLICATION DATA

Materials	Operation	SFM				Feed/Tooth	
		Available Grades				General Purpose Coarse Pitch	Adjustable Style Fine Pitch
		SM307	SM318	VC918	VP1120		
Gray Cast Iron 180 - 220 Bhn	Finishing Roughing	1000 800	850 700	1200 1000	1000 800	.006 - .010 .010 - .020	.004 - .008 .006 - .012
Gray Cast Iron 220 - 260 Bhn	Finishing Roughing	800 700	700 600	1000 800	800 700	.006 - .010 .008 - .016	.004 - .008 .006 - .010
Ductile and Malleable Cast Iron 140 - 180 Bhn	Finishing Roughing	800 700	700 600	1000 800	800 700	.006 - .010 .010 - .020	.004 - .008 .006 - .012
Ductile and Malleable Cast Iron 220 - 260 Bhn	Finishing Roughing	600 500	550 450	700 600	700 500	.006 - .010 .008 - .016	.004 - .008 .006 - .010
Compacted Graphite Cast Iron 180 - 240 Bhn	Finishing Roughing	700 600	650 550	850 700	700 500	.006 - .010 .008 - .016	.004 - .008 .006 - .010

V057 MILLING SYSTEM FOR IRON
45° LEAD FACE MILLS

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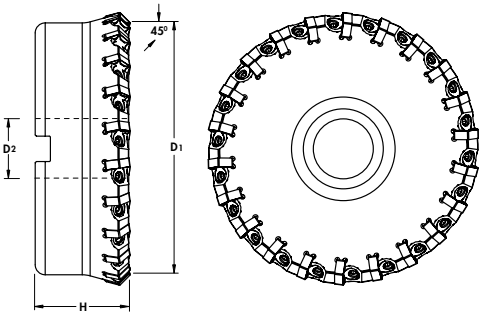


45° LEAD ROUGHER

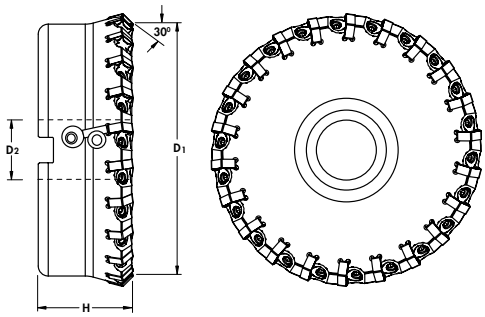
Part Number	Max. DOC	Dimensions			Mount	Inserts Req'd	Wt. lbs.	R Hand EDP#	L Hand EDP#
		D1	D2	H					
VFHX45HR0394K14R/L	.250	3.94	1.50	2.38	K	14	6	**51453**	**51452**
VFHX45HR0492K18R/L	.250	4.92	1.50	2.38	K	18	10	**51455**	**51454**
VFHX45HR0630K22R/L	.250	6.30	1.50	2.38	K	22	18	**51457**	**51456**
VFHX45HR0787C28R/L	.250	7.87	2.50	2.38	C	28	27	**51459**	**51458**
VFHX45HR0984F36R/L	.250	9.84	2.50	2.38	F	36	44	**51461**	**51460**
VFHX45HR1240F46R/L	.250	12.40	2.50	2.38	F	46	71	**51463**	**51462**

Spare Parts

Cutter	Wedge Screw		Lock Wedge		Inserts		
	Part#	EDP#	Part#	EDP#	HNGX 090508MH	HNGX 090516MR	HNEX 0905ZZS
ALL	2748600900	**50017**	2748358200	**50016**			

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on threads.

V057 MILLING SYSTEM FOR IRON
30° LEAD FACE MILLS



30° LEAD ROUGHER

Part Number	Max.* DOC	Dimensions			Mount	Anvils Req'd	Inserts Req'd	Wt. lbs.	R Hand EDP#	L Hand EDP#
		D1	D2	H						
VFHX30HR0394K10R/L	.315	3.94	1.50	2.38	K	2	10	6	**51441**	**51440**
VFHX30HR0492K15R/L	.315	4.92	1.50	2.38	K	3	15	11	**51443**	**51442**
VFHX30HR0630K20R/L	.315	6.30	1.50	2.38	K	4	20	19	**51445**	**51444**
VFHX30HR0787C25R/L	.315	7.87	2.50	2.38	C	5	25	27	**51447**	**51446**
VFHX30HR0984F30R/L	.315	9.84	2.50	2.38	F	6	30	44	**51449**	**51448**
VFHX30HR1240F40R/L	.315	12.40	2.50	2.38	F	8	40	72	**51451**	**51450**

Note: * Max DOC = .150 when using HNEX inserts
Set anvil inserts in line with fixed pocket inserts.

Spare Parts

Cutter	Wedge Screw		Lock Wedge		Adjustment Wedge		Anvil		Inserts		
	Part#	EDP#	Part#	EDP#	Part#	EDP#	Part#	EDP#	HNGX 090508MH	HNGX 090516MR	HNEX 0905ZZS
Right Hand	2748600900	**50017**	2748358200	50016	2748308500	**50015**	2748500200	**50668**			
Left Hand	2748600900	**50017**	2748358200	50016	2748308500	**50015**	2748500100	**50667**			

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on threads.

V057 MILLING SYSTEM (FORMERLY M750)

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V057 MILLING SYSTEM FOR IRON
30° LEAD FACE MILLS

30° LEAD FINISHER

Part Number	Max. DOC	Dimensions			Mount	Anvils Req'd	Inserts Req'd	Wt. lbs.	R Hand EDP#	L Hand EDP#
		D1	D2	H						
VFHX30HF0394K10R/L	.315	3.94	1.50	2.38	K	2	8 + 2	6	**51429**	**51428**
VFHX30HF0492K15R/L	.315	4.92	1.50	2.38	K	3	12 + 3	11	**51431**	**51430**
VFHX30HF0630K20R/L	.315	6.30	1.50	2.38	K	4	16 + 4	19	**51433**	**51432**
VFHX30HF0787C25R/L	.315	7.87	2.50	2.38	C	5	20 + 5	27	**51435**	**51434**
VFHX30HF0984F30R/L	.315	9.84	2.50	2.38	F	6	24 + 6	44	**51437**	**51436**
VFHX30HF1240F40R/L	.315	12.40	2.50	2.38	F	8	32 + 8	72	**51439**	**51438**

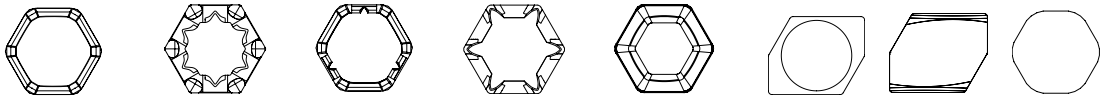
Set anvil inserts .002" ahead of fixed pocket inserts • Inserts must be ordered separately

Spare Parts

Cutter	Lock Wedge		Wedge Screw		Adjustment Wedge		Anvil		Pocket Insert + Anvil Insert
	Part#	EDP#	Part#	EDP#	Part#	EDP#	Part#	EDP#	
Right Hand	2748358200	**50016**	2748600900	**50017**	2748308500	**50015**	2748500400	**50670**	HNGX090508MH + HNGF090504MT HNGX090504MM + HNGX090504MF
Left Hand	2748358200	**50016**	2748600900	**50017**	2748308500	**50015**	2748500300	**50669**	HNGX090508MH + HNGF090504MT HNGX090504MM + HNGX090504MF

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

V057 MILLING SYSTEM FOR IRON
INSERTS



HNGF MF | HNGX MM | HNGF MT | HNGX MH | HNGX MR | WCXNE | WXNE | HNEX

Insert Number	Dimensions			Available Grades / EDP#						
	Max DOC	Edges	Cutter Body	SM307	VP1120	VC918	VPUK20	Q6	Q65	Q60
HNGF090504MF	.040	12	30	**05919**	**00140**	-	-	-	-	-
HNGX090504MM	.040	12	30	**05921**	**00206**	-	-	-	-	-
HNGF090504MT	.315	6 + 6	30	**05920**	**00204**	-	-	-	-	-
HNGX090508MH	.315	12	30 & 45	**05922**	**00211**	-	**03134**	-	-	-
HNGX090516MR	.315	12	30 & 45	**05923**	**00212**	-	-	-	-	-
WCXNE200508	.040	2R + 2L	30	-	-	**07955**	-	-	-	-
WXNE200508	.040	2R + 2L	30	-	-	**07958**	-	-	-	-
HNEX0905ZZS	.150	12	30 & 45	-	-	-	-	**40655**	**40503**	**40502**

V057 INSERT APPLICATION DATA

Material	Operation	Available Grades / SFM							Feed/Tooth	
		SM307	VC918	VP1120	VPUK20	Q65	Q6	Q60	30 deg. lead	45 deg. lead
Gray Cast Iron 180 - 220 Bhn	Finishing	1000	1000	1000	450	3000 - 4200	2000 - 3000	2500 - 3800	.004 - .008	.005 - .010
	Roughing	800	800	800	350	2300 - 3300	1600 - 2000	2000 - 2800	.008 - .020	.010 - .022
Gray Cast Iron 220 - 260 Bhn	Finishing	800	800	800	350	2000 - 3000	1400 - 1800	1800 - 2800	.004 - .006	.005 - .008
	Roughing	700	700	700	300	1500 - 2500	1000 - 1400	1400 - 2000	.008 - .016	.010 - .018
Ductile Cast Iron 140 - 180 Bhn	Finishing	800	800	800	350				.004 - .008	.005 - .010
	Roughing	700	700	700	300				.008 - .020	.010 - .022
DuctileCast Iron 220 - 260 Bhn	Finishing	700	700	700	300				.004 - .006	.005 - .008
	Roughing	500	500	500	260				.008 - .016	.010 - .018
Malleable Cast Iron 140 - 180 Bhn	Finishing	850	850	850	350				.004 - .008	.005 - .010
	Roughing	750	750	750	300				.008 - .020	.010 - .022
Malleable Cast Iron 220 - 260 Bhn	Finishing	750	750	750	300				.004 - .006	.005 - .008
	Roughing	550	550	550	260				.008 - .016	.010 - .018

RIPPER FACE MILLS
45° HIGH SHEAR

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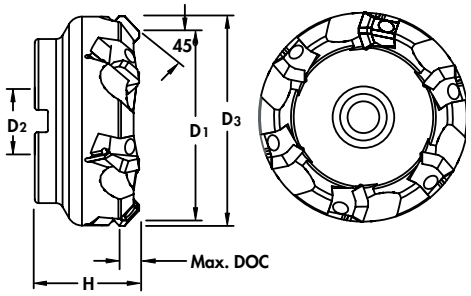


Part Number	Dimensions				Max. D.O.C.	Mount	Inserts Req'd	Insert Style	Max. RPM	Wt. lbs.	EDP#
	D1	D2	D3	H							
VHSM 02R 04 F075	2.000	0.750	2.516	1.750	0.22	G	4	SE..42...	5,500	1.42	**51097**
VHSM 03R 06 F100	3.000	1.000	3.516	1.750	0.22	H	6	SE..42...	4,500	3.20	**51099**
VHSM 04R 06 F150	4.000	1.500	4.514	2.000	0.22	K	6	SE..42...	4,000	5.66	**51101**
VHSM 05R 07 F150 •	5.000	1.500	5.513	2.000	0.22	K	7	SE..42...	3,700	8.84	**51103**
VHSM 06R 07 F150 •	6.000	1.500	6.513	2.000	0.22	K	7	SE..42...	3,200	12.18	**51105**
VHSM 08R 08 F250 •	8.000	2.500	8.513	2.000	0.22	C	8	SE..42...	2,800	21.62	**51107**
VHSM 02R 04 F075A3	2.000	0.750	2.516	1.750	0.22	G	4	SE..43...	5,400	1.46	**51098**
VHSM 03R 06 F100A3	3.000	1.000	3.516	1.750	0.22	H	6	SE..43...	4,300	3.32	**51100**
VHSM 04R 06 F150A3 •	4.000	1.500	4.514	2.000	0.22	K	6	SE..43...	3,800	5.76	**51102**
VHSM 05R 07 F150A3 •	5.000	1.500	5.513	2.000	0.22	K	7	SE..43...	3,400	8.90	**62118**
VHSM 06R 07 F150A3	6.000	1.500	6.513	2.000	0.22	K	7	SE..43...	3,000	12.18	**62119**
VHSM 08R 08 F250A3 •	8.000	2.500	8.512	2.000	0.22	C	8	SE..43...	2,600	21.74	**51108**

• Denotes Non Stock

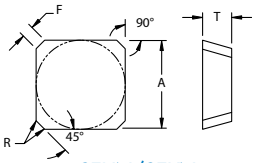
Spare Parts

Insert Size	Wedge		Wedge Screw		Wrench		Torque in-lbs
	Part#	EDP#	Part#	EDP#	Part#	EDP#	
SE...42...	PT814	**50486**	LS32	**59223**	**1/8 THand Wrench**	**57312**	61
SE...43...	PT815	**50487**	LS32	**59223**	**1/8 THand Wrench**	**57312**	61

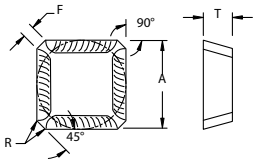
Note: Face mills are designed to allow use of Valenite Coolant Screws. See Milling Technical Section for application information

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

RIPPER FACE MILL
INSERTS



SEHN/SEKN



SEER/SEKR

Insert Number	Dimensions				Available Grades / EDP#											
	A	T	B	F	SM225	SM245	SM307	SM318	SM35M	VC902	VC911	VC929	VC935	VC941	V1N	VP1120
SEER 42 AFER	1/2	0.125	0.057	0.094	**04699**	**07520**	-	**07521**	-	**06479**	-	-	-	-	**05924**	**19597**
SEER 43 AFER	1/2	0.187	0.056	0.094	**04700**	**07522**	-	**07523**	-	-	**07946**	-	-	-	-	**19598**
SEHN 42 AFEN	1/2	0.125	0.057	0.094	-	-	**19887***	-	-	-	-	**06433**	-	-	-	**19599**
SEHN 42 AFFN	1/2	0.125	0.057	0.094	-	-	-	-	-	**06434**	-	**06435**	-	**07991**	-	-
SEHN 42 AFSN	1/2	0.125	0.057	0.094	**04706**	**07536**	-	-	**13856**	-	-	-	-	-	**05928**	-
SEHN 42 AFTN	1/2	0.125	0.057	0.094	-	**07537**	-	-	-	-	-	-	**06485**	-	-	-
SEHN 43 AFFN	1/2	0.187	0.057	0.094	-	-	-	-	-	**06436**	-	**06437**	-	**07993**	-	-
SEHN 43 AFSN	1/2	0.187	0.057	0.094	**04707**	**07538**	-	-	-	-	-	-	-	-	**05929**	**19600**
SEHN 43 AFTN	1/2	0.187	0.057	0.094	-	**07539**	-	-	-	-	-	-	-	-	-	-

*Available Q2 2005

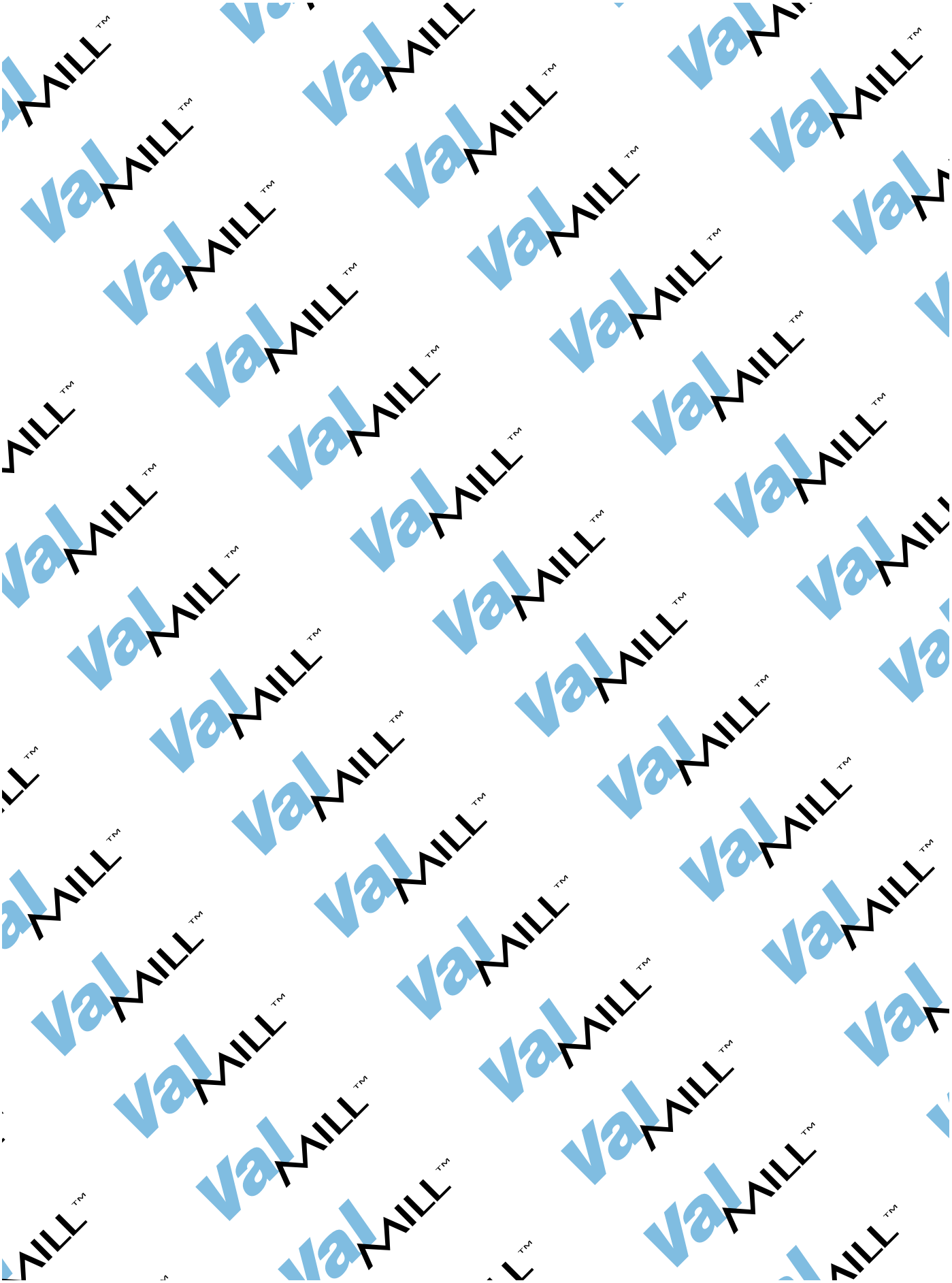
Note: See advanced materials section for additional inserts

ValMILL™

RIPPER® INSERT APPLICATION DATA

Material		Operation	Available Grades / SFM (Surface Feet Per Minute)								Feed / Tooth
			SM225	SM245	SM307	SM318	VP1120	VP5142	VC35M	SMO54	
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing	1050 925	950 775				1050 925	640 600	750 675	.002 - .005 .006 - .012
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing	900 800	800 600				900 800	450 400	600 450	.002 - .005 .006 - .012
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing	800 640	600 500				800 640	350 300	425 365	.002 - .005 .006 - .012
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing	625 425	475 400				625 425	250 175	350 300	.002 - .005 .006 - .012
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing		600 500	800 600			800 600	400 360	550 475	.002 - .005 .006 - .012
	Austenitic 140 - 180 Bhn	Finishing Roughing		400 300	525 400			525 400	300 260	375 260	.002 - .005 .006 - .012
	PH and Duplex 220 - 260 Bhn	Finishing Roughing		350 300					275 250	275 250	.002 - .005 .006 - .012
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing Roughing			1000 800	900 700	1000 800				.002 - .005 .006 - .012
	Gray Cast Iron 220 - 260 Bhn	Finishing Roughing			800 700	750 650	800 700				.002 - .005 .006 - .012
	Ductile and Malleable Cast Iron 140 - 180 Bhn	Finishing Roughing			800 700	750 650	800 700			425 325	.002 - .005 .006 - .012
	Ductile and Malleable Cast Iron 220 - 260 Bhn	Finishing Roughing			650 550	600 500	700 500			375 280	.002 - .005 .006 - .012

Material		Operation	Available Grades / SFM (Surface Feet Per Minute)						Feed / Tooth
			VC902	VC911	VC929	VC935	VC941	V1N	
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	Finishing Roughing				800 700		700 650	.002 - .005 .006 - .012
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	Finishing Roughing						500 400	.002 - .005 .006 - .012
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	Finishing Roughing						400 350	.002 - .005 .006 - .012
	Tool Steels and Die Steels 220 - 260 Bhn	Finishing Roughing						300 200	.002 - .005 .006 - .012
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	Finishing Roughing				600 450		500 450	.002 - .005 .006 - .012
	Austenitic 140 - 180 Bhn	Finishing Roughing	350 275	475 375	350 275			300 250	.002 - .005 .006 - .012
	PH and Duplex 220 - 260 Bhn	Finishing Roughing	300 275	425 325	300 275			250 225	.002 - .005 .006 - .012
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	Finishing Roughing							.002 - .005 .006 - .012
	Gray Cast Iron 220 - 260 Bhn	Finishing Roughing							.002 - .005 .006 - .012
	Ductile and Malleable Cast Iron 140 - 180 Bhn	Finishing Roughing						400 300	.002 - .005 .006 - .012
	Ductile and Malleable Cast Iron 220 - 260 Bhn	Finishing Roughing						350 275	.002 - .005 .006 - .012
HIGH TEMPERATURE ALLOYS	Iron Base Alloys A 286, Discalloy, Incoloy	Finishing Roughing	100 - 150 80 - 100	125 80	100 - 150 80 - 100				.002 - .005 .006 - .012
	Nickel and Cobalt Base Alloys - Hastelloy, Inconel, Haynes Stellite	Finishing Roughing	100 - 150 80 - 100	125 80	100 - 150 80 - 100				.002 - .005 .006 - .012
	Titanium Alloys 6Al 4V	Finishing Roughing					225 175		.002 - .005 .006 - .012
NON - FERROUS MATERIALS	Aluminum < 7% Silicon	Finishing Roughing	2000-3000 1500-2500	1250-2000 1000-1750	2000-3000 1500-2500				.002 - .005 .006 - .012
	Aluminum > 7% Silicon	Finishing Roughing	2000-3000 1500-2500		2000-3000 1500-2500				.002 - .005 .006 - .012


ValMILL™

SLOTTING MILLS

V350 SLOTTING CUTTERS

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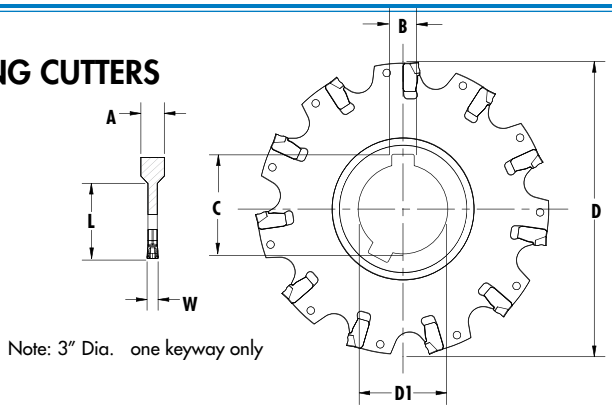
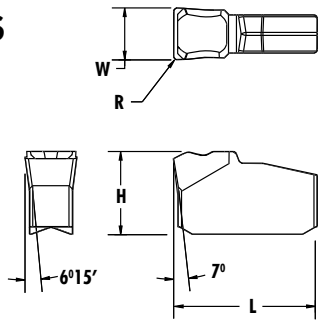


Note: 3" Dia. one keyway only

Part Number	Slot Width W	Max DOC L	Dimensions					Inserts Req'd	Seat Size	Max RPM	EDP#
			D	D1	A	B	C				
V350A0830B08	.084	.659	3.000	1.000	.315	.250	1.110	8	20	1000	**62438**
V350A0840C10	.084	.982	4.000	1.250	.315	.312	1.400	10	20	800	**62439**
V350B1250D11	.104	1.390	5.000	1.500	.315	.375	1.680	11	25	640	**62456**
V350B1260D14	.104	1.890	6.000	1.500	.315	.375	1.680	14	25	500	**62457**
V350A1230B07	.125	.670	3.000	1.000	.315	.250	1.110	7	30	1000	**62440**
V350A1240C09	.125	.993	4.000	1.250	.315	.312	1.400	9	30	800	**62441**
V350A1250D11	.125	1.375	5.000	1.500	.315	.375	1.680	11	30	640	**62442**
V350A1260D14	.125	1.875	6.000	1.500	.315	.375	1.680	14	30	500	**62443**
V350A1280E18	.125	2.560	8.000	2.000	.315	.500	2.200	18	30	400	**62444**
V350A1640C08	.164	1.000	4.000	1.250	.315	.312	1.400	8	40	800	**62445**
V350A1650D10	.164	1.382	5.000	1.500	.315	.375	1.680	10	40	640	**62446**
V350A1660D13	.164	1.882	6.000	1.500	.315	.375	1.680	13	40	500	**62447**
V350A1680E17	.164	2.567	8.000	2.000	.315	.500	2.200	17	40	400	**62448**
V350A2040C08	.204	.989	4.000	1.250	.394	.312	1.400	8	50	640	**62449**
V350A2050D10	.204	1.371	5.000	1.500	.394	.375	1.680	10	50	510	**62450**
V350A2060D13	.204	1.871	6.000	1.500	.394	.375	1.680	13	50	400	**62451**
V350A2080E17	.204	2.556	8.000	2.000	.394	.500	2.200	17	50	320	**62452**
V350A2460D12	.243	1.860	6.000	1.500	.472	.375	1.680	12	60	400	**62454**
V350A2480E16	.243	2.545	8.000	2.000	.472	.500	1.680	16	60	320	**62455**
V350A2410E19	.243	3.545	10.000	2.000	.472	.500	2.200	19	60	250	**62453**

Insert key supplied with cutter

V350 INSERTS



For complimentary insert styles that can be used in the V350 Series cutters, see the Grooving - Threading Section in this catalog.

V350 Insert Seat Size Interchangeability

Insert Seat Size	Fits in Slatting Cutter Seat:	Insert Seat Size	Fits in Slatting Cutter Seat:
20	20	40	40 & 50
25	25 & 30	50	50 & 40
30	30 & 25	60	60

Check for sufficient clearance between tool body & insert.

Inserts from ValGROOVE system are also interchangeable with V350 inserts relative the above chart.

Part Numbers	Dimensions					Seat Size	EDP# Available Grades	
	W(mm)	W(in)	R	L	H		VP5815	VP5845
VSG2.06N20 SC	2.06	.081	.007	.315	.164	20	**12823**	**12824**
VSG2.60N25 SC	2.60	.102	.008	.394	.217	25	**12826**	**12827**
VSG3.10N30 SC	3.10	.123	.012	.394	.220	30	**12832**	**12833**
VSG4.12N40 SC	4.12	.162	.012	.504	.282	40	**12837**	**12838**
VSG5.14N50 SC	5.14	.202	.015	.504	.289	50	**12843**	**12844**
VSG6.12N60 SC	6.12	.241	.015	.602	.347	60	**12849**	**12850**

Spare Parts

Seat Size	Insert Key	
	Part#	EDP#
20	PT1211	**62397**
25	PT1211	**62397**
30	PT1211	**62397**
40	PT1210	**62396**
50	PT1210	**62396**
60	PT1210	**62396**

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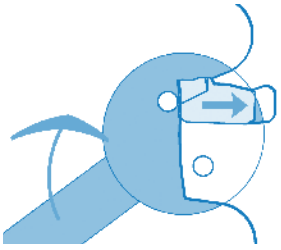
V350 APPLICATION INFORMATION

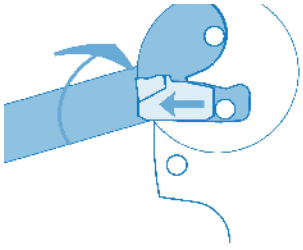
Material		Insert Seat Size	Maximum Chip Thickness (Operating Range)	SFM (Surface Feet Per Minute) Coated Grades VP5815	VP5845
STEELS	Free Machining and Low Carbon Steels 120 - 170 Bhn	20, 30, 40	**.002** (.001 - .003)	800 - 700	750 - 650
		50, 60	**.003** (.001 - .005)	700 - 600	650 - 500
	Medium Carbon and High Carbon Steels 180 - 220 Bhn	20, 30, 40	**.002** (.001 - .003)	750 - 650	700 - 600
		50, 60	**.003** (.001 - .005)	650 - 500	600 - 500
	Alloy Steels and Easy To Machine Tool Steels 200 - 240 Bhn	20, 30, 40	**.002** (.001 - .003)	600 - 500	550 - 450
		50, 60	**.003** (.001 - .005)	500 - 400	450 - 350
	Tool Steels and Die Steels 220 - 260 Bhn	20, 30, 40	**.002** (.001 - .003)	450 - 350	400 - 300
		50, 60	**.003** (.001 - .005)	350 - 300	300 - 250
STAINLESS STEELS	Ferritic and Martensitic 180 - 240 Bhn	20, 30, 40	**.002** (.001 - .003)	600 - 500	550 - 450
		50, 60	**.003** (.001 - .005)	500 - 400	450 - 350
	Austenitic 140 - 180 Bhn	20, 30, 40	**.002** (.001 - .003)	550 - 450	500 - 400
		50, 60	**.003** (.001 - .005)	450 - 350	400 - 350
	PH and Duplex 220 - 260 Bhn	20, 30, 40	**.002** (.001 - .003)	400 - 300	350 - 250
		50, 60	**.003** (.001 - .005)	300 - 250	250 - 200
CAST IRONS	Gray Cast Iron 180 - 220 Bhn	20, 30, 40	**.002** (.001 - .003)	700 - 550	
		50, 60	**.003** (.001 - .005)	550 - 450	
	Gray Cast Iron 220 - 260 Bhn	20, 30, 40	**.002** (.001 - .003)	550 - 400	
		50, 60	**.003** (.001 - .005)	400 - 300	
	Ductile and MalleableCast Iron 140 - 180 Bhn	20, 30, 40	**.002** (.001 - .003)	500 - 350	
		50, 60	**.003** (.001 - .005)	350 - 300	
	Ductile and MalleableCast Iron 220 - 260 Bhn	20, 30, 40	**.002** (.001 - .003)	400 - 300	
		50, 60	**.003** (.001 - .005)	300 - 225	
HIGH TEMPERATURE ALLOYS	Iron and Nickel Base Alloys Monel, Hastelloy, Inconel	20, 30, 40	**.002** (.001 - .003)	200 - 150	175 - 125
		50, 60	**.003** (.001 - .005)	150 - 100	125 - 100
	Cobalt Base Alloys Haynes Stellite	20, 30, 40	**.002** (.001 - .003)	175 - 125	150 - 125
		50, 60	**.003** (.001 - .005)	150 - 100	125 - 80
	Titanium Alloys 6Al 4V	20, 30, 40	**.002** (.001 - .003)	300 - 250	250 - 200
		50, 60	**.003** (.001 - .005)	250 - 200	200 - 150
ALUMINUM AND Non-Ferrous MATERIALS	Aluminum Alloys < 7% Silicon	20, 30, 40	**.002** (.001 - .003)	800 - 700	
		50, 60	**.003** (.001 - .005)	700 - 600	
	Aluminum Alloys 7% 12% Silicon	20, 30, 40	**.002** (.001 - .003)	800 - 700	
		50, 60	**.003** (.001 - .005)	700 - 600	
	Aluminum Alloys 12% 18% Silicon	20, 30, 40	**.002** (.001 - .003)	700 - 600	
		50, 60	**.003** (.001 - .005)	650 - 550	
	Non-Ferrous	20, 30, 40	**.002** (.001 - .003)	800 - 700	
		50, 60	**.003** (.001 - .005)	700 - 600	

INSERT INDEXING

Inserting Insert:
Locate key in bottom hole and in front of the insert as shown. Pull up on handle to set insert.



Extracting Inserts:
Locate key behind the insert and above the insert against the cutter body as shown. Not in the lower hole. Pull up carefully to extract insert.



V350 APPLICATION INFORMATION

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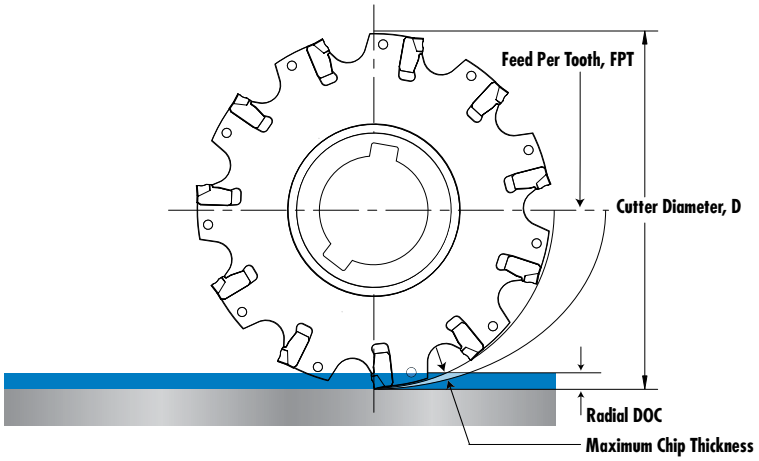
Adjustment of Feed Per Tooth

The Radial DOC in slotting operations is typically less than 1/2 the cutter diameter. As a result the actual chip thickness is less than the nominal feed per tooth.

When the Radial DOC is a small portion of the cutter diameter the chip thinning that occurs significantly affects performance.

If no adjustment is made, chatter and vibration may occur and tool life will be adversely affected.



CORRECTION FACTOR, CF

Radial DOC	Cutter Diameter, D					
	3.0	4.0	5.0	6.0	8.0	10.0
0.050	3.90	4.50	5.02	5.50	6.34	7.09
0.100	2.78	3.20	3.57	3.90	4.50	5.02
0.250	1.81	2.06	2.29	2.50	2.87	3.20
0.500	1.34	1.51	1.66	1.81	2.06	2.29
0.750		1.28	1.40	1.51	1.71	1.90
1.000			1.25	1.34	1.51	1.66
1.250			1.15	1.23	1.37	1.51
1.500				1.15	1.28	1.40
1.750				1.10	1.21	1.32
2.000					1.15	1.25
2.500					1.08	1.15
3.000						1.09
3.500						1.04

The table at the left provides a correction factor, CF to quickly calculate the adjusted feed rate for a desired chip thickness.

As an alternative to the table, feed per tooth, FPT can be calculated for any Radial DOC and any Cutter Diameter, D using the formula

$$FPT = \frac{1/2\,(D / \text{Radial DOC})}{\sqrt{(D / \text{Radial DOC}) - 1}} \times \text{Maximum Chip Thickness}$$

Calculate Feed Per Tooth, FPT

1) Find the recommended Maximum Chip Thickness for your operation in the Application Guide on the opposite page.
2) Find the Correction Factor, CF based on the Radial DOC and Cutter Diameter, D in the table above.
3) Calculate the adjusted Feed Rate Per Tooth, FPT using the formula:
FPT = Maximum Chip Thickness x CF.

Calculate the RPM

1) Find the recommended SFM for your material and operation in the Application Guide on the opposite page.
2) Calculate the RPM for your Cutter Diameter, D
RPM = .262 x SFM x D
3) Find the maximum RPM for your cutter on page 3. If the calculated RPM exceeds the minimum, reduce the RPM.

Calculate the Table Feed, IPM

Where N is the number of teeth in the cutter
IPM = FPT x RPM x N

Example

Calculate the adjusted feed per tooth for a 5 inch diameter cutter for a .250 inch Radial DOC to produce a .003 chip thickness.

1) Find the CF at the intersection of the 5 inch Cutter diameter column and the .250 inch Radial DOC row,
CF = 2.29

2) Calculate the adjusted feed per tooth
FPT = .003 x 2.29
FPT = .007

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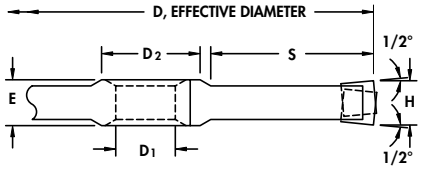


VST SLOTTING CUTTER
53 SERIES VAL U MILL 1° LEAD

Part Number	Adj. Cutter Width	Dimensions				S Max Slot Depth	Inserts Req'd	Insert Style	Key Way	Wt lbs.	EDP#
		Eff. D	D1	D2	E (± .001)						
VST 04 2 08 25 31 •	.250 - .312	4.00	1.250	—	.250	1.00	8	SPE2...	5/16	0.80	**50920**
VST 05 2 08 25 31 •	.250 - .312	5.00	1.250	—	.250	1.50	8	SPE2...	5/16	1.34	**50922**
VST 06 2 12 25 31 •	.250 - .312	6.00	1.500	—	.250	1.81	12	SPE2...	3/8	1.78	**62077**
VST 08 2 18 25 31	.250 .312	8.00	1.500	~	.250	2.81	18	SPE2...	3/8	3.16	**50930**
VST 04 3 08 38 44	.380 - .440	4.00	1.250	1.75	.380	1.00	8	SPE3...	5/16	1.14	**62075**
VST 05 3 08 38 44	.380 - .440	5.00	1.250	1.75	.380	1.50	8	SPE3...	5/16	1.37	**62076**
VST 06 3 12 38 44 •	.380 - .440	6.00	1.500	2.12	.380	1.81	12	SPE3...	3/8	3.08	**50926**
VST 06 3 12 48 54	.480 - .540	5.00	1.250	1.75	.500	1.50	8	SPE3...	5/16	2.04	**62078**
VST 06 3 12 48 54	.480 - .540	6.00	1.500	2.12	.500	1.81	12	SPE3...	3/8	3.00	**62078**
VST 08 3 16 48 54 •	.480 - .540	8.00	1.500	2.12	.500	2.81	16	SPE3...	3/8	5.66	**62081**
VST 08 4 16 60 66 •	.605 - .665	8.00	1.500	2.12	.625	2.81	16	SPE4...	3/8	6.80	**50932**
VST 06 4 12 73 79 •	.730 - .790	6.00	1.500	2.12	.750	1.81	12	SPE4...	3/8	4.34	**62080**
VST 08 4 16 73 79	.730 - .790	8.00	1.500	2.12	.750	2.81	16	SPE4...	3/8	8.34	**62082**
VST 08 5 16 98 106 •	.980 - 1.062	8.00	1.500	2.12	1.000	2.81	16	SPE5...	3/8	10.66	**62083**

• Denotes Non Stock

1. Chip splitter insert is recommended for cutting steel in this width range.
2. These cutters require equal quantities of R.H. and L.H. wedges.
3. Note: Add 3 after cutter number for 3/16" thick insert option (no charge). Example: VST 06 4 12 73 793). This option is available only for the 1/2 I.C. square insert. The wedge for the 3/16" thick insert option is No. W91.1.4.
4. Inserts SPE 422. SPE 424. and SPE 433 may be used with .605 - .665 & .730 - .790 width cutters. Cutters are open pocket design. Inserts must be set when indexing or replacing. Cutter supplied with two keyways for stacking. Cutters are shipped complete with wedge and wedge screws less inserts. Special widths, diameters and pitches quoted on request. Inserts in cutters can be set to a specific width at an additional charge. Matched diameters can be supplied at an additional charge. Inserts must be ordered separately.

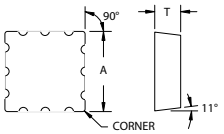
Spare Parts

Insert Size	Wedge		Wedge Screw		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
SPE2...	W53.25, W53.25L	**50491/50492**	LS90	**52902**	14
SPE3...	W85.0	**50505**	LS91	**52903**	24.5
SPE422	W9113	**50510**	LS92	**52904**	45.5
SPE4...	W9114	**50511**	LS92	**52904**	45.5
SPE5...	W82.2	**50504**	LS93	**52905**	105

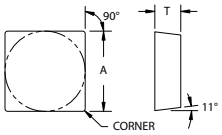
Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

VST INSERTS

Note: See advanced materials section for additional inserts



SPE...



SPE

Insert Number	Available Grades / EDP#							
	V1N	VC28	SM225	SM245	VC902	VC928	SM318	Q6
SPEX 221 1H	**05449**	-	-	**07440**	-	-	-	-
SPE 322 1H	**05428**	-	**04840**	**07422**	-	-	-	-
SPE 322	**05426**	-	-	-	-	-	-	-
SPE 422	**05429**	**09677**	-	-	**06182**	-	-	-
SPE 422 1H	**05430**	-	-	**07424**	-	-	-	-
SPE 424	**05432**	**09678**	-	-	-	**06183**	-	-
SPE 432	-	-	-	-	-	-	**07427**	-
SPE 433	**05436**	**09681**	-	-	-	-	**07429**	**40702**
SPE 433 1H	**05438**	-	-	**07430**	-	-	-	-
SPE 434	**05439**	**09682**	-	**07431**	-	-	-	-
SPE 533	**05441**	**09684**	-	**07432**	-	-	-	-
SPE 533 1H	**05442**	-	-	**07433**	-	-	-	-
SPE 534	**05443**	**09685**	-	-	-	-	-	-

VS2C SLOTTING CUTTERS
WITH ON EDGE INSERTS

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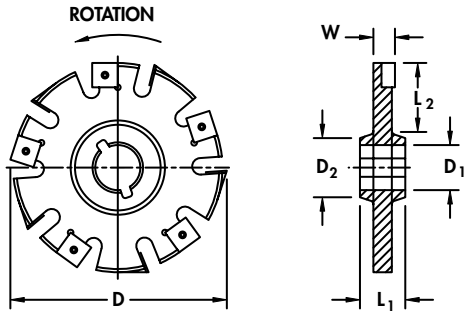


Part Number	Dimensions						Inserts Req'd	Insert	Wtlbs	EDP#
	D	D1	D2	L1	L2	W				
VS2C 4187 5B125	4.00	1.250	1.75	.500	1.00	.188	10	SNCX 1103 2C	0.76	**62088**
VS2C 4250 5B125	4.00	1.250	1.75	.500	1.00	.250	10	SNCX 11T3 2C	0.88	**62089**
VS2C 6187 8B150	6.00	1.500	2.12	.500	1.80	.188	16	SNCX 1103 2C	1.58	**50942**
VS2C 6250 8B150 •	6.00	1.500	2.12	.500	1.80	.250	16	SNCX 11T3 2C	1.47	**50944**
VS2C 8250 10B150	8.00	1.500	2.12	.500	2.80	.250	20	SNCX 11T3 2C	3.08	**62090**

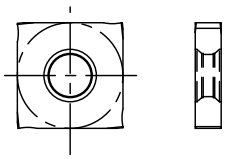
• Denotes Non Stock

Spare Parts

Insert	Torx Wrench		Lock Screw		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
SNCX 1103 2C	T 7 Torx Wrench	**50101**	PT 590T	**52296**	10.5
SNCX 11T3 2C	T 7 Torx Wrench	**50101**	PT 591T	**52297**	10.5
SNCX 1205 2C	T 15 Torx Wrench	**50087**	PT 593T	**52299**	35
SNCX 1203 2C	T 15 Torx Wrench	**50087**	PT 593T	**52299**	35

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

VS2C SLOTTING CUTTER
INSERTS



SNCX

Insert Number	Available Grades / EDP#		
	V1N	VC28	SM245
SNCX 1103 2C	**05766**	-	-
SNCX 11T3 2C	**05767**	**13649**	**07541**
SNCX 1205 2C	**05769**	-	-
SNCX 1203 2C	**05768**	-	-

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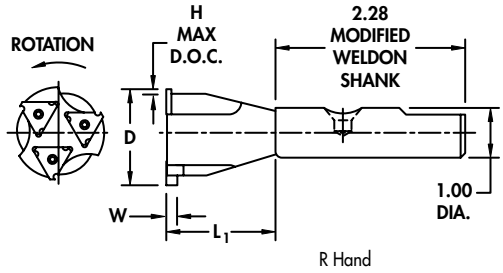
VGM GROOVE / SLOTTING END MILL



R Hand

Part Number	Dimensions			Insert Req'd	EDP#
	D,Eff. Diameter	L1	H, Max. D.O.C.		
VGM150 NG2 100W	1.500	2.09	.11	3	**62094**

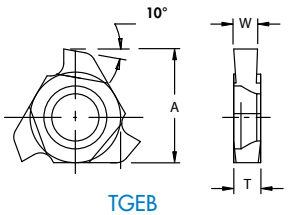
Note: Special width inserts (W) are Available on a quotation basis. Support under inserts must be altered when "W" on insert is less than .094".

Spare Parts

Insert	Torx Wrench		Lock Screw		Torque in-lbs
	Part#	EDP#	Part#	EDP#	
TGEB 3.52NGML...	T 20 Torx Wrench	**50091**	PT 546T	**52290**	70

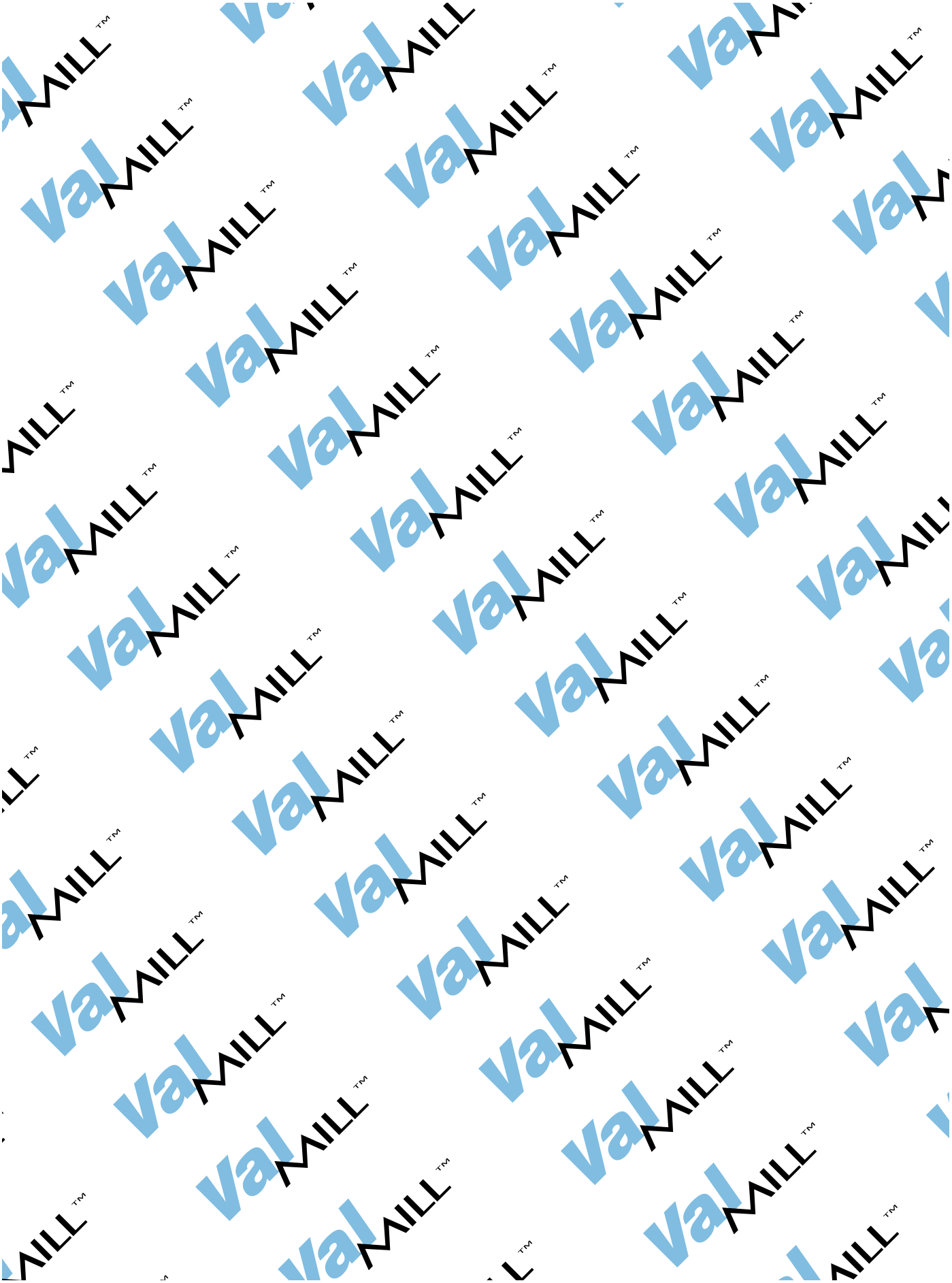
Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

VGM GROOVE / SLOTTING END MILL
INSERTS



TGEB

Insert Number	Dimensions					Grade	EDP#
	A	T	B	D	W		
TGEB 3.52NGML 125	.437	.125	.330	.056	.125	**V1N**	**06953**
TGEB 3.52NGML 094	.437	.125	.330	.056	.094	**V1N**	**06952**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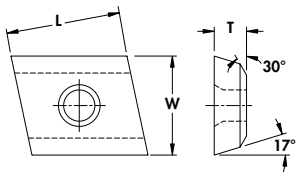
SELECT MILLING INSERTS

CDEW INSERTS

USE WITH VAL-U-EDGE® CUTTERS



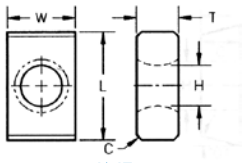
CDEW

Part Number	Grade	Dimensions				EDP#
		W	T	R	L	
CDEW312241L	VC28	.375	.150	.015	.312	**13848**
CDEW312242R	VC29	.375	.150	.031	.312	**13849**
CDEW312242R2F	VC728	.375	.150	.031	.312	**40035**
CDEW315242L	VC28	.375	.150	.031	.375	**13850**
CDEW32242L	V1N	.375	.150	.031	.500	**05911**
CDEW32242L	VC28	.375	.150	.031	.500	**13851**
CDEW32242L	SM245	.375	.150	.031	.500	**07512**
CDEW32242L	SM318	.375	.150	.031	.500	**07513**
CDEW32242L	VC928	.375	.150	.031	.500	•
CDEW32242L	VC101	.375	.150	.031	.500	**13852**
CDEW32242L	SM225	.375	.150	.031	.500	**04692**
CDEW32242R	VC28	.375	.150	.031	.500	**10488**
CDEW32242R	V1N	.375	.150	.031	.500	**05912**
CDEW32242R	SM225	.375	.150	.031	.500	**04693**
CDEW32242R	VC101	.375	.150	.031	.500	**13853**
CDEW32242R	VC928	.375	.150	.031	.500	**06464**
CDEW32242R	VC935	.375	.150	.031	.500	**06478**
CDEW32242R	SM318	.375	.150	.031	.500	**07515**
CDEW32242R	SM245	.375	.150	.031	.500	**07514**
CDEW32244L	V1N	.375	.150	.062	.500	**05914**
CDEW32244R	VC28	.375	.150	.062	.500	**10491**
CDEW32244R	V1N	.375	.150	.062	.500	**05915**
CDEW32244R	SM225	.375	.150	.062	.500	**04694**
CDEW32244R	SM245	.375	.150	.062	.500	**07517**
CDEW32246L	VC101	.375	.150	.094	.500	**13847**
CDEW32246R	V1N	.375	.150	.094	.500	**05916**
CDEW32246R	VC101	.375	.150	.094	.500	**13855**
CDEW32248R	SM245	.375	.150	.125	.500	**07518**

Note: See advanced materials section for additional inserts. • Denotes non-stock standard

ValMILL™

LNE INSERTS
USE WITH VAL-U-EDGE® CUTTERS

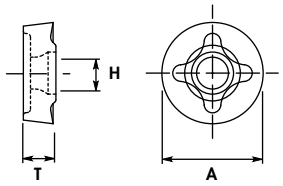


LNE

Part Number	Grade	Dimensions					EDP#
		W	T	H	L	C	
LNE32530345	VC28	.375	.187	.170	5/8	.03 x 45	**10469**
LNE32530345	VC928	.375	.187	.170	5/8	.03 x 45	**06457**
LNE32530345	SM318	.375	.187	.170	5/8	.03 x 45	**07465**
LNE32530345	V1N	.375	.187	.170	5/8	.03 x 45	**05894**
LNE32530345	VO1	.375	.187	.170	5/8	.03 x 45	**05895**
LNE32530345	SM225	.375	.187	.170	5/8	.03 x 45	**03629**
LNE32530345T	Q6	.375	.187	.170	5/8	.03 x 45	**40656**
LNE32534	VC928	.375	.187	.170	5/8	.062	**06460**
LNE32534	V1N	.375	.187	.170	5/8	.062	**05896**
LNE32540345	VC928	.375	.250	.170	5/8	.03 x 45	**06461**
LNE45340345	SM245	.562	.250	.170	3/4	.03 x 45	**07467**
LNE45340345	VC928	562	.250	.170	3/4	.03 x 45	**064462**
LNE45340345	SM225	562	.250	.170	3/4	.03 x 45	**03631**
LNE45340345T	Q6	.562	.250	.217	3/4	.03 x 45	**40657**
LNE45344	VC928	.562	.250	.217	3/4	.062	**06463**

Note: See advanced materials section for additional inserts

RGCT INSERTS
USE WITH SINGLE INSERT
BALL END MILL CUTTERS

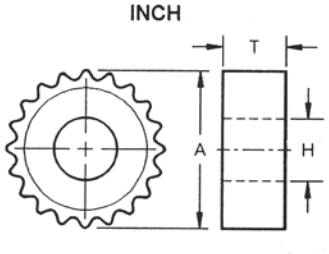


RCGT

Part Number	Grade	Dimensions			EDP#
		A (IC)	T	H	
RCGTX342A	V1N	.426	.125	.134	**05390**
RCGTX4325B	V1N	.546	.156	.134	**05391**
RCGTX533B	V1N	.667	.188	.173	**05392**
RCGTX633B	V1N	.788	.188	.217	**05393**
RCGTX733B	V1N	.909	.188	.256	**05394**

RNMC-SS INSERT
USE WITH ECONO-MIZER
END MILLS & SHELL MILLS

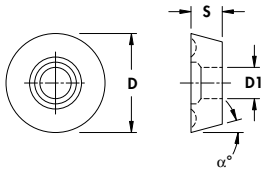
INCH



Part Number	Dimensions			Available Grades/EDP#				
	A	T	H	V1N	SM225	35M	307	VP1120
RNMC524SS	0.655	0.25	0.251	**03089**	**04026**	**08496**	**04027**	**19591**

RCMT INSERTS
USE WITH V001 CUTTERS

Grade: VP5142
VPUK20

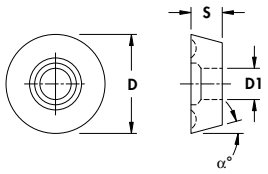


RCMT

Part Number	Grade	Dimensions				EDP#
		D	S	D1	α	
RCMT1606MO43	91A	0.216	0.630	0.250	7°	**07882**
RCMT1606MO43	VP5142	0.216	0.630	0.250	7°	**02563**
RCMT1606MOTX	SMO54	0.216	0.630	0.250	7°	**04524**
RCMT1606MOTX	VP5142	0.216	0.630	0.250	7°	**02410**
RCMT1606MOTX	VPUK20	0.216	0.630	0.250	7°	**02411**

RDMT INSERTS
USE WITH V001 CUTTERS

Grade: VP5142



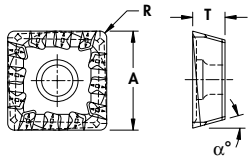
RDMT

Part Number	Grade	Dimensions				EDP#
		D	S	D1	α	
RDMT1204MOTX	SMO54	0.472	0.187	0.173	15°	**04529**
RDMT1204MOTX	VP5142	0.472	0.187	0.173	15°	**17681**
RDMT1204MOTX	SM318	0.472	0.187	0.173	15°	**17966**
RDMT1605MOTX	SMO54	0.630	0.219	0.216	15°	**04542**
RDMT1605MOTX	VP5142	0.630	0.219	0.216	15°	**02439**

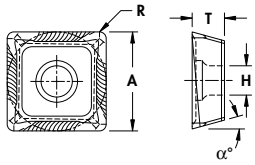
ValMILL™

SDMT INSERTS
USE WITH V096 CUTTERS

Grade: VP5142



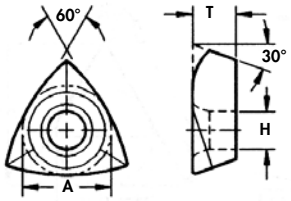
SDMT...MH



SDMT...ML

Part Number	Grade	Dimensions					EDP#
		A (IC)	T	H	R	α	
SDMT1506PDRMH	SMO54	0.625	0.250	0.216	0.047	15°20′	**04544**
SDMT1506PDRMH	VC307	0.625	0.250	0.216	0.047	15°20′	**03033**
SDMT1506PDRMH	VP5142	0.625	0.250	0.216	0.047	15°20′	**02649**
SDMT1506PDRHH	SM318	0.625	0.250	0.216	0.047	15°20′	**17967**
SDMT1506PDRMH	VP1120	0.625	0.250	0.216	0.047	15°20′	**19592**
SDMT1506PDRML	VP5142	0.625	0.248	0.216	0.047	15°20″	**03523**
SDMT1506PDRML	VCO54	0.625	0.248	0.216	0.047	15°20′	**05639**
SDMT1506PDRML	VC307	0.625	0.248	0.216	0.047	15°20′	**03035**
SDMT1506PDRML	VP1120	0.625	0.250	0.216	0.047	15°20′	**19593**

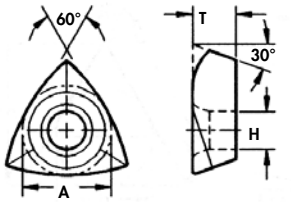
TEGX INSERTS
USE WITH MULTI INSERT
BALL NOSE CUTTERS



TEGX

Part Number	Grade	Dimensions			EDP#
		A (IC)	T	H	
TEGXBNI264312	V1N	.264	.105	.110	**05780**
TEGXBNI291375	V1N	.291	.125	.110	**05781**
TEGXBNI296500	V1N	.296	.125	.110	**05782**
TEGXBNI296500	SM245	.296	.125	.110	**07484**
TEGXBNI356625	V1N	.356	.167	.135	**05783**
TEGXBNI356625	SM245	.356	.167	.135	**07485**
TEGXBNI422750	V1N	.422	.171	.173	**05784**
TEGXBNI4271000	V1N	.427	.171	.173	**05785**

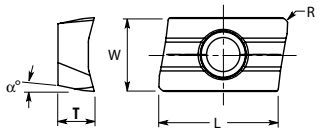
TGGX INSERTS
USE WITH MULTI INSERT
BALL NOSE CUTTERS



TGGX

Part Number	Grade	Dimensions			EDP#
		A (IC)	T	H	
TGGXBNI7231000	V1N	.723	.3125	.256	**05786**
TGGXBNI7231000	SM245	.723	.3125	.256	**07488**
TGGXBNI7231000	VC935	.723	.3125	.256	**06442**

XPHT/XPNT INSERTS
USE WITH V086/AXIAL FEED CUTTERS



XPHT/XPNT/XDHT

ValMILL™

Grades: VP5142
VPUK20

Part Number	Grade	Dimensions						EDP#
		W	T	H	R	L	α	
XPHT160404	SM307	0.375	0.187	0.172	0.015	0.635	11°	**05954**
XPHT160404	VP5142	0.375	0.187	0.172	0.015	0.635	11°	**02607**
XPHT160404	SMO54	0.375	0.187	0.172	0.015	0.635	11°	**05955**
XPHT160404	VP1120	0.375	0.187	0.172	0.015	0.635	11°	**19611**
XPHT160408	SMO54	0.375	0.187	0.172	0.031	0.635	11°	**06390**
XPHT160408	VP5142	0.375	0.187	0.172	0.031	0.635	11°	**02612**
XPHT160408	SM307	0.375	0.187	0.172	0.031	0.635	11°	**05956**
XPHT160408	VC91A	0.375	0.187	0.172	0.031	0.635	11°	**07884**
XPHT160408	VC91D	0.375	0.187	0.172	0.031	0.635	11°	**07885**
XPHT160408	VP1120	0.375	0.187	0.172	0.031	0.635	11°	**19612**
XPHT160408FR	VP1120	0.375	0.187	0.172	0.031	0.635	11°	**19613**
XPHT160408AL	VPUK20	0.386	0.187	0.172	0.031	0.635	11°	**03597**
XPHT160408AL	VC91B	0.386	0.187	0.172	0.031	0.635	11°	**07886**
XPHT160412	SM307	0.375	0.187	0.172	0.047	0.635	11°	**05958**
XPHT160412	SMO54	0.375	0.187	0.172	0.047	0.635	11°	**05959**
XPHT160412	VP5142	0.375	0.187	0.172	0.047	0.635	11°	**02615**
XPHT160412	VC91A	0.375	0.187	0.172	0.047	0.635	11°	**07887**
XPHT160412	VPUK20	0.375	0.187	0.172	0.047	0.635	11°	**02617**
XPHT160412	SM318	0.375	0.187	0.172	0.047	0.635	11°	**17974**
XPHT160412	VP1120	0.375	0.187	0.172	0.047	0.635	11°	**19614**
XPHT160412AL	VPUK20	0.386	0.187	0.172	0.047	0.635	11°	**03704**
XPHT160412AL	VC91B	0.386	0.187	0.172	0.047	0.635	11°	**07888**
XPHT160416	SM307	0.375	0.187	0.172	0.063	0.635	11°	**05961**
XPHT160416	VP5142	0.375	0.187	0.172	0.063	0.635	11°	**02627**
XPHT160416	SMO54	0.375	0.187	0.172	0.063	0.635	11°	**05962**
XPHT160416	VP1120	0.375	0.187	0.172	0.063	0.635	11°	**19615**
XPHT160416AL	VPUK20	0.386	0.187	0.172	0.063	0.635	11°	**04465**
XPHT160420	SMO54	0.375	0.187	0.172	0.079	0.635	11°	**06415**
XPHT160425	SMO54	0.375	0.187	0.172	0.098	0.635	11°	**06417**
XPHT160425AL	VPUK20	0.386	0.187	0.172	0.098	0.635	11°	**04483**
XPHT160432	SMO54	0.375	0.187	0.172	0.125	0.635	11°	**06423**
XPHT160432AL	VPUK20	0.386	0.187	0.172	0.125	0.635	11°	**17683**
XPHT160440	SMO54	0.375	0.187	0.172	0.157	0.635	11°	**06445**
XPNT160412	SMO54	0.375	0.187	0.172	0.047	0.635	11°	**06447**
XPNT160412	VP5142	0.375	0.187	0.172	0.047	0.635	11°	**02645**
XPNT160412	SM307	0.375	0.187	0.172	0.047	0.635	11°	**02644**
XPNT160412	SM318	0.375	0.187	0.172	0.047	0.635	11°	**17969**
XPNT160412	VP1120	0.375	0.187	0.172	0.047	0.635	11°	**19616**

XDHT INSERTS
USE WITH V086 CUTTERS

Grades: VP5142
VPUK20

Part Number	Grade	Dimensions						EDP#
		W	T	H	R	L	α	
XDHT090304	SMO54	0.250	0.125	0.110	0.015	0.381	15°	**04634**
XDHT090304	SM307	0.250	0.125	0.110	0.015	0.381	15°	**02596**
XDHT090304	VP5142	0.250	0.125	0.110	0.015	0.381	15°	**02597**
XDHT090304	VPUK20	0.250	0.125	0.110	0.015	0.381	15°	**02601**
XDHT090304	VP1120	0.250	0.125	0.110	0.015	0.381	15°	**19608**
XDHT090308	SMO54	0.250	0.125	0.110	0.031	0.381	15°	**04642**
XDHT090308	VP5142	0.250	0.125	0.110	0.031	0.381	15°	**02603**
XDHT090308	VPUK20	0.250	0.125	0.110	0.031	0.381	15°	**02604**
XDHT090308	SM307	0.250	0.125	0.110	0.031	0.381	15°	**05952**
XDHT090308	SM318	0.250	0.125	0.110	0.031	0.381	15°	**17973**
XDHT090308	VP1120	0.250	0.125	0.110	0.031	0.381	15°	**19609**

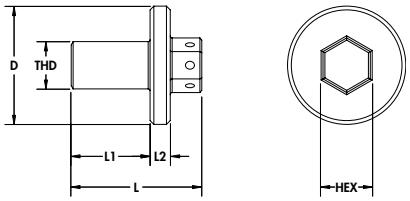
TECHNICAL SECTION

SHOWER HEAD COOLANT CAPS AND SCREWS

ValMILL™

- Unique multi-port "Shower Head" mounting screw delivers through-the-spindle cutting fluid.
- Centrifugal force accelerates cutting fluid to ensure efficient chip evacuation.
- Compatible with Valenite's shell mill adapters to make through-the-spindle coolant machines more effective for face milling.

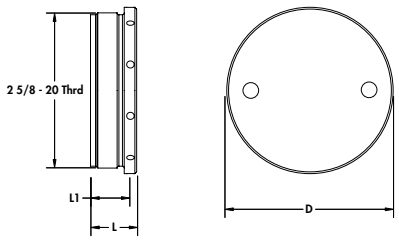
COOLANT SCREWS



Part Number	Dimensions				Thread Size	Hex	Torque ft-lbs Steel/Alum.	Mount	Cutter Height
	D	L	L1	L2					
PT-888	0.56	1.38	1.00	0.12	3/8-24	.375	33/23	G	
PT-889	0.75	1.79	1.25	0.14	1/2-20	.50	65/45	H	1.75
PT-870	0.75	2.11	1.25	0.44	1/2-20	.50	65/45	H	2.00
PT-871	0.94	2.11	1.25	0.44	5/8-18	.625	80/56	J	2.00
PT-890	1.88	2.07	1.25	0.32	3/4-16	.75	150	K	2.00
PT-872	1.88	2.44	1.25	0.69	3/4-16	.75	150	K	2.38
PT-942	0.709	1.81	1.18	0.25	M12-1.75	.472	65/45	Special	

Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

COOLANT CAP



Part Number	Dimensions			Thread Size	Hex	Mount
	D	L	L1			
PT-873	2.81	.78	.57	2 5/8 - 20	.375	C

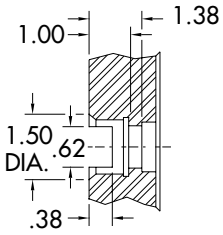
Note: Valenite Recommends the use of PT745 antiseize lubricant (EDP# 50050) on insert screw threads and head.

Spare Parts

Coolant Cap (only)	Wrench	
	Part#	EDP#
PT 873	PT876	**52334**

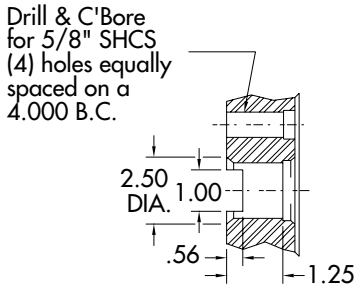
ValMILL™

FACE MILL MOUNTING DATA

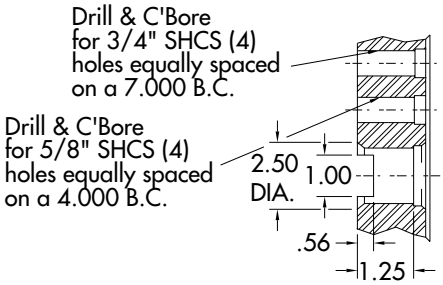


Used with 3/4-16X1-3/4" SHCS

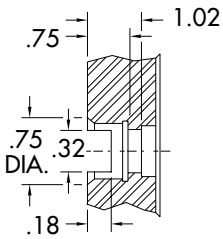
A



C

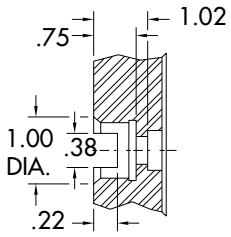


F



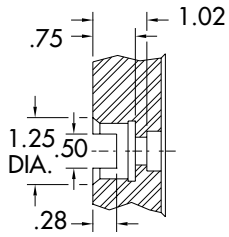
Used with 3/8-24X1" SHCS

G



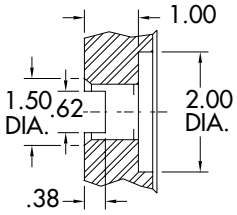
Used with 1/2-20X1-1/4" SHCS

H



Used with 5/8-18X1-1/4" SHCS

J



Used with #5005 UNIV SCR.

K

TORQUE WRENCHES AND DRIVING ACCESSORIES

ValMILL™

TORQUE WRENCHES (bits ordered seperately)

Part Number	Torque Value	EDP#	Color
VMTW103W	35 lb-in	**50119**	Green
VMTW54W	54 lb-in	**50127**	Black
VMTW92W	65 lb-in	**50129**	Yellow
VMTW33W	80 lb-in	**61956**	Red
VMTW101W	115 lb-in	**50118**	Blue
VMTW320W	132 lb-in	**50124**	Gray
VMTW400W	156 lb-in	**50126**	Orange

DRIVERS (bits ordered seperately)

Part Number	Torque Value	EDP#
H25 Hand Driver	-	**50025**
VMTW9SD	9 lb-in	**50130**
VMTW13SD	13 lb-in	**61955**
VMTW23SD	23 lb-in	**50138**

BITS

Part Number	Size	EDP#
VMHK185-0	5/64	**50107**
VMHK185-1	3/32	**50108**
VMHK185-9	7/64	**61954**
VMHK185-2	1/8	**50109**
VMHK185-3	5/32	**50111**
VMHK18525mm	2.5mm	**61953**
VMHK1853mm	3mm	**50112**
VMHK185-3	4mm	**50111**
T7TORXBIT	T7	**50099**
T8TORXBIT	T8	**50102**
T10TORXBIT	T10	**50081**
T15TORXBIT	T15	**50085**
T20TORXBIT	T20	**50089**
T25TORXBIT	T25	**50093**
T30TORXBIT	T30	**50095**
T7TORXPLUSBIT	T7IP	**62569**
T8TORXPLUSBIT	T8IP	**62570**
T10TORXPLUSBIT	T10IP	**62575**
T15TORXPLUSBIT	T15IP	**62566**
T20TORXPLUSBIT	T20IP	**62567**
T25TORXPLUSBIT	T25IP	**62568**
T30TORXPLUSBIT	T30IP	**62362**

T-WRENCHES

Part Number	Size	EDP#
764HEXWRENCH	7/64	**57330**
18THANDWRENCH	1/8	**57312**
M25TWRENCH	2.5mm	**55436**
M2TWRENCH	2mm	**55437**
M3TWRENCH	3mm	**55438**
M4TWRENCH	4mm	**55439**
M5TWRENCH	5mm	**55440**
M6TWRENCH	6mm	**55441**
T15THANDWRENCH	T15	**50084**
T20THANDWRENCH	T20	**50088**
T25THANDWRENCH	T25	**50092**
DMP3139	T25IP	**61922**
DMP3460	T30IP	**50148**
DMP3441	T40IP	**61923**

WRENCHES

Part Number	Size	EDP#
764HEXWRENCH	7/64	**57336**
116HEXWRENCH	1/16	**57305**
316HEXWRENCH	3/16	**57314**
516HEXWRENCH	5/16	**57330**
18HEXWRENCH	1/8	**57311**
332HEXWRENCH	3/32	**57317**
532HEXWRENCH	5/32	**57331**
564HEXWRENCH	5/64	**57333**
T5TORXWRENCH	T5	**50097**
T6TORXWRENCH	T6	**50098**
T7TORXWRENCH	T7	**50101**
T8TORXWRENCH	T8	**50104**
T10TORXWRENCH	T10	**50083**
T15TORXWRENCH	T15	**50087**
T20TORXWRENCH	T20	**50091**
T25TORXWRENCH	T25	**50094**
T30TORXWRENCH	T30	**50096**

DRIVERS

Part #	Size	EDP#
T7TORXSCRDR	T7	**50100**
T8TORXSCRDR	T8	**50103**
T10TORXSCRDR	T10	**50082**
T15TORXSCRDR	T15	**50086**
T20TORXSCRDR	T20	**50090**
TX207PLUS	T7IP	**50147**
TX208PLUS	T8IP	**61930**
TX209PLUS	T9IP	**62530**
TX210PLUS	T10IP	**61931**
TX215PLUS	T15IP	**61932**
TX220PLUS	T20IP	**61933**

PT 745 ANTI SEIZE (For insert and wedge screws)

Part Number - PT745 , **EDP# 50050**
ANTI SEIZE contains solid lubricants, powered metals and corrosion inhibitors in mineral oil. This product aids in assembly of threaded and non-threaded components while ensuring non-destructive disassembly. This product contains release and sealing properties, excellent aging resistance, a high service temperature range (-40° to +2100°, F) and will not affect torque values on threaded connections.

ValMILL™

GENERAL TORQUE SPECIFICATIONS

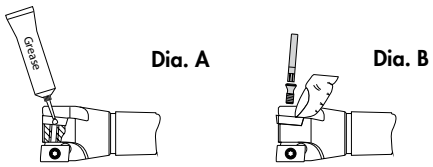
By Thread Size		
Thread Size	Torque (in/lb)	Torque (N/cm)
M2	4	45
M2.2	6	68
M2.5	8	90
M3	15	169
M3.5	21	237
M4	35	395
M4.5	48	542
M5	71	802
M6	119	1345
M8	288	3254
M10	575	6497
#4-40	12	136
#5-40	17	192
#6-32	23	260
#8-32	39	441
#10-24	53	599
#10-32	60	678
1/4-20	125	1412
1/4-28	145	1638
5/16-18	263	2972
5/16-24	290	3277
3/8-16	470	5310
3/8-24	530	5988

Inch and Metric Screws Have A 50% Torque Safety Factor

	By Wrench Size		
	Wrench Size	Torque (in/lb)	Torque (N/cm)
HEX	0.050	5	56
	1/16	9	102
	5/64	18	203
	3/32	32	362
	7/64	50	565
	1/8	74	836
	9/64	106	1198
	5/32	145	1638
	3/16	250	2825
	7/32	397	4485
	1/4	593	6700
TORX	T6	4	45
	T7	6	68
	T8	8	90
	T9	14	158
	T10	21	237
	T15	47	531
	T20	65	734
	T25	108	1220
TORX-PLUS	06IP	6.4	72
	07IP	12	136
	08IP	20	226
	09IP	24	271
	10IP	31	350
	15IP	56	633
	20IP	94	1062
	25IP	137	1548
	27IP	202	2282
	30IP	275	3107
	40IP	478	5401

Notes

1. Tighten screws to the lowest torque value shown, based on either thread or drive size.
2. If Valenite "PT-746 LUBE" is used reduce torque values by 1/3. Apply to threads & head (if applicable)
3. For best results, use a torque wrench from the chart on page 170. Locate the closest (either lower or higher) torque value from the torque chart, then identify the wrench from the torque value.



Instructions for assembly of inserts with screws

- Make sure all surfaces are clean.
- Inspect screw for wear and replace as necessary.
- PT745 lubricant must be applied regularly to the screw threads when assembling inserts into the cutter body (Dia. A).
- Before tightening the insert screw, make sure that the bottom of the insert is in contact with the seating surface by pressing on the back of the insert with your thumb (Dia. B).

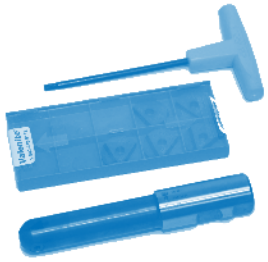
Never pull the insert into position using only the screw as this will result in poor positioning of the insert, and improper insert retention.

- Tighten screw to the recommended torque value. Valenite recommends the use of a torque driver/torque wrench to avoid damaging the screws and to insure the proper torque value is applied.
- This simple procedure is essential to achieve optimum performance and is applicable for all tools where the inserts are retained by a screw.

Note: Do not exceed the maximum recommended RPM. Cutter body, pocket area, inserts and screws require periodic inspection. Do not use if damaged!

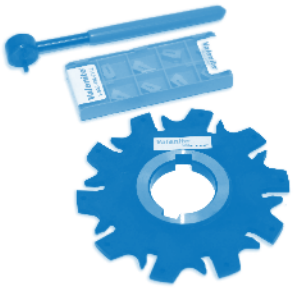
TOOL KITS

ValMILL™



Finishing Ball Nose E.M.

Roughing Ball Nose End Mill



Slotting Cutters

Double Positive End Mill

Copy Mill

	Kit Number	Cutter #	Insert #	Grade	Insert Qty	EDP#
V400 KITS	ValMILLKit001	V 400 A 038 038 WA 15	RGA038B	5007	5	**50189**
	ValMILLKit002	V 400 A 050 050 WA 21	RGA050B	5007	5	**50190**
	ValMILLKit003	V 400 A 062 062 WB 25	RGA062B	5007	5	**50191**
	ValMILLKit004	V 400 A 075 075 WC 29	RGA075B	5007	5	**50192**
	ValMILLKit005	V 400 A 100 100 WD 36	RGA100B	5007	5	**50193**
	ValMILLKit006	V 400 A 125 125 WE 42	RGA125B	5007	5	**50194**
	ValMILLKit007	V 400 A 038 038 WA 15	RGA038A	5007	10	**50195**
	ValMILLKit008	V 400 A 050 050 WA 21	RGA050A	5007	10	**50196**
	ValMILLKit009	V 400 A 062 062 WB 25	RGA062A	5007	10	**50197**
	ValMILLKit010	V 400 A 075 075 WC 29	RGA075A	5007	10	**50198**
	ValMILLKit011	V 400 A 100 100 WD 36	RGA100A	5007	10	**50199**
	ValMILLKit012	V 400 A 125 125 WE 42	RGA125A	5007	10	**50200**
V440 KITS	ValMILLKit034	V440 A062062WC15	YP A 062 71	5040	10	**50272**
	ValMILLKit035	V440 A075075WD20	YP A 075 71	5040	10	**50394**
	ValMILLKit036	V440 A100100WD23	YP A 100 71	5040	10	**50401**
V350 KITS	ValMILLKit013	V350A0830B08	VSG2.06N20-SC	5845	10	**50201**
	ValMILLKit014	V350A0840C10	VSG2.06N20-SC	5845	10	**50202**
	ValMILLKit015	V350A1230B07	VSG3.10N30-SC	5845	10	**50205**
	ValMILLKit016	V350A1240C09	VSG3.10N30-SC	5845	10	**50206**
	ValMILLKit017	V350A1640C08	VSG4.12N40-SC	5845	10	**50210**
	ValMILLKit018	V350A1650D10	VSG4.12N40-SC	5845	10	**50214**
	ValMILLKit019	V350A2040C08	VSG5.14N50-SC	5845	10	**50218**
	ValMILLKit020	V350A2050D10	VSG5.14N50-SC	5845	10	**50222**
V590 KITS	ValMILLKit021	V590A 10062WB09	AP100308ER31	5020	10	**50226**
	ValMILLKit022	V590A 10075WC15	AP100308ER31	5020	10	**50247**
	ValMILLKit023	V590B10075WC15	AP100308ER31	5020	10	**50250**
	ValMILLKit024	V590A 10100WD17	AP100308ER31	5020	10	**50251**
	ValMILLKit025	V590A 10125WE17	AP100308ER31	5020	10	**50253**
	ValMILLKit026	V590A 100150G05R	AP100308ER31	5020	10	**50256**
	ValMILLKit027	V590A13100WD17	AP130408ER31	5020	10	**50259**
	ValMILLKit028	V590A13125WE17	AP130408ER31	5020	10	**50260**
	ValMILLKit029	V590A13150WE21	AP130408ER31	5020	10	**50262**
	ValMILLKit030	V590A 130200G06R	AP130408ER31	5020	10	**50263**
	ValMILLKit031	V590A 130250G07R	AP130408ER31	5020	10	**50264**
	ValMILLKit032	V590A 130300H09R	AP130408ER31	5020	10	**50270**
	ValMILLKit033	V590A 130400K10R	AP130408ER31	5020	10	**50271**
V500 KITS	ValMILLKit037	V500A07050WB20	RDMT07T1MOSN-61	5040	10	**50403**
	ValMILLKit038	V500A08062WC20	RDMT08T2MOSN-61	5040	10	**50408**
	ValMILLKit039	V500A10075WD32	RDMT1003MOSNF661	5040	10	**50409**
	ValMILLKit040	V500A12100WD32	RDMT12T3MOSNF661	5040	10	**50410**
	ValMILLKit041	V500 A160200G04R	RDMT1604MOSNF661	5040	10	**50411**
	ValMILLKit042	V500 A160300H05R	RDMT1604MOSNF661	5040	10	**50412**