OSG's HY-PRO CARB® Variable Geometry Lineup

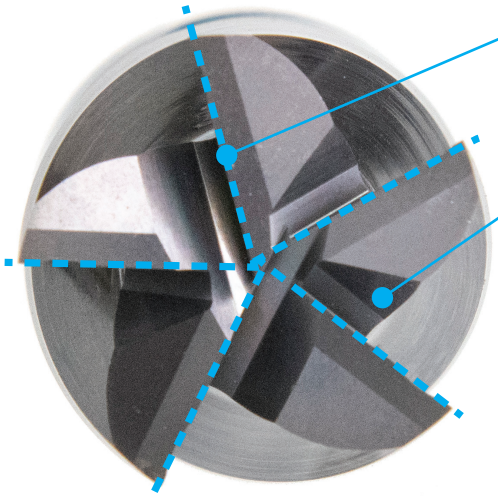
Vol 1

VGM Series

5 Flute

HY-PRO® CARB VGM

Features & Benefits



Variable Index

Reduces vibration during machining.

Unique Flute Geometry

Maintains excellent cutting edge sharpness and tool rigidity.

EXO Coating

Provides longer tool life through exceptional wear and heat resistance.

Variable Index & Unique Flute Geometry

Reduces Vibration and Chatter & Promotes Smooth, Stable Cutting w/Low Cutting Forces

Variable Index:

Unequal flute spacing reduces vibration during machining by altering the timing of each flute engaging in the workpiece.

Unique Flute Geometry:

Sharp rake angle, high helix and adjusted core diameter maintain excellent cutting edge sharpness and tool rigidity to promote smooth, stable cutting with low cutting force.

EXO Coating

Provides Long Tool Life

OSG's proprietary multi-layer coating provides longer tool life through higher wear and heat resistance than conventional TiAlN coatings.

Series	Coating	Type	Hardness (HV)	Thickness (µm)	Coefficient of Friction	Oxidation Temp (C)
VGx	TiAlN	TiAlN	2,800	3	0.3	800
VGM	EXO	TiAlN Multilayer	2,800	3	0.3	**850**

VGM Series Comprehensive Offering

5-, 6-, and 7-Flute Lineups

OSG's VGM offering features 5-, 6-, and 7-flute lineups, and is available with multiple Lengths of Cut, with both Square End and Corner Radius variations.

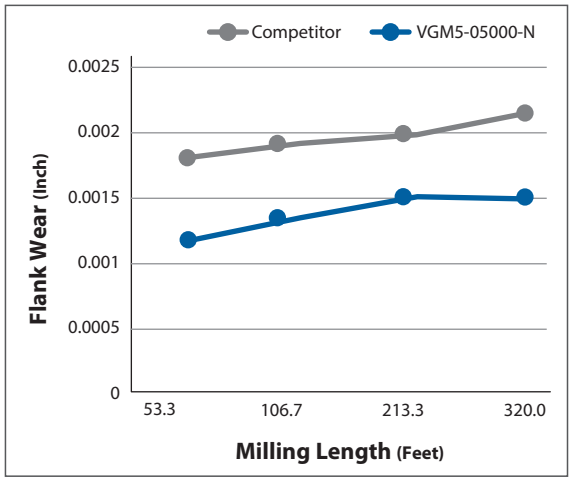
Name	No. of Flutes	Reduced Neck	LOC	Neck Length	Total # of EDPs
VGM-5	5	SQ & CR	N/A	1.25 to 6xD	**277**
VGM-5-LN	5	SQ & CR	Yes	1.25xD	**211**
* VGM-6	6	SQ & CR	N/A	1.25 to 6xD	**186**
* VGM-7	7	SQ & CR	N/A	1.25 to 6xD	**110**

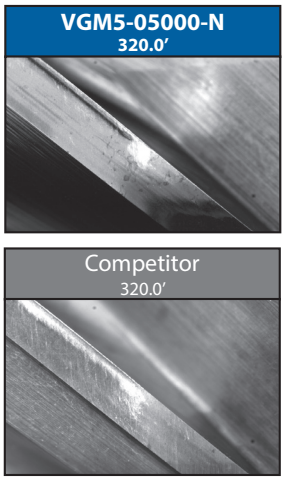
**VGM 6 & 7 Coming Soon!*

Stable Performance Even in Stainless Steel

304 Stainless Steel

Tool	VGM5-05000-N	Competitor
Tool Size	1/2"	
Work Material	304 Stainless Steel	
Milling Method	Side Milling	
Cutting Speed	250 SFM(1,910 RPM)	
Feed	33.4 IPM(.0035IPT)	
Depth of Cut	Aa=1.2", Ar=0.05"	
Coolant	Water-Soluble	
Machine	Vertical Machining Center (CAT50)	

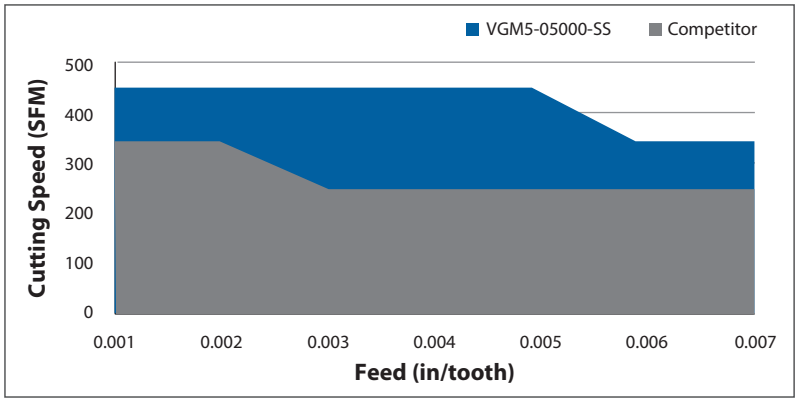




Stable Performance in a Wide Range of Conditions

304 Stainless Steel

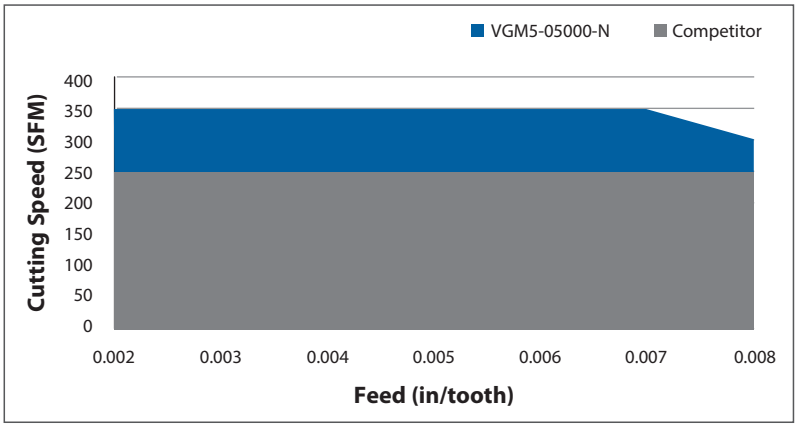
Tool Size	1/2"
Work Material	304 Stainless Steel
Milling Method	Side Milling
Depth of Cut	Aa=0.625", Ar=0.075"
Coolant	Water-Soluble
Machine	Vertical Machining Center (CAT50)



Stable Performance in a Wide Range of Conditions

304 Stainless Steel

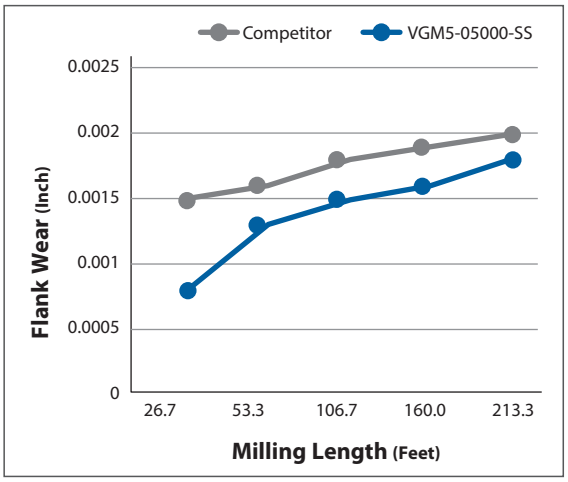
Tool Size	1/2"
Work Material	304 Stainless Steel
Milling Method	Side Milling
Depth of Cut	Aa=1.25", Ar=0.05"
Coolant	Water-Soluble
Machine	Vertical Machining Center (CAT50)

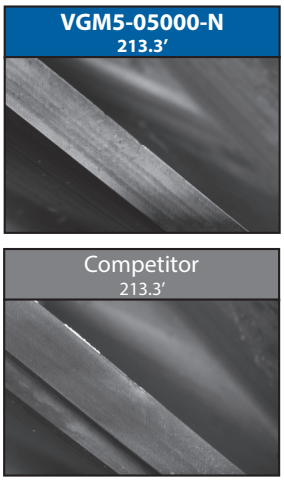


Stable Performance in 1045

1045 Medium Carbon Steel

Tool	VGM5-05000-SS	Competitor
Tool Size	1/2"	
Work Material	1045 Medium Carbon Steel	
Milling Method	Side Milling	
Cutting Speed	550 SFM (4,200 RPM)	
Feed	100 IPM (0.0045IPT)	
Depth of Cut	Aa=0.625", Ar=0.2"	
Coolant	Water-Soluble	
Machine	Vertical Machining Center (CAT50)	

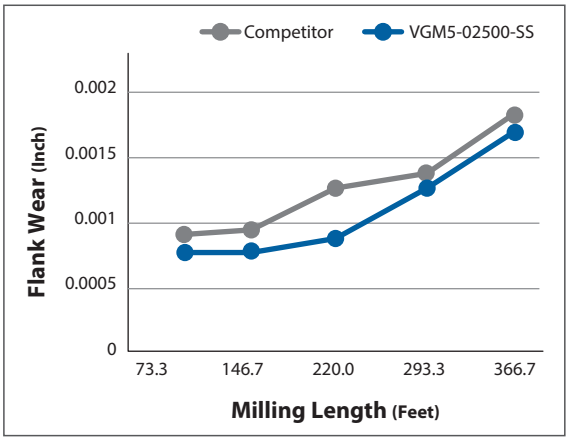


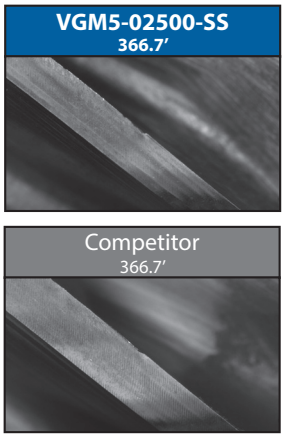


Stable Performance in 1045

1045 Medium Carbon Steel

Tool	VGM5-02500-SS	Competitor
Tool Size	1/4"	
Work Material	1045 Medium Carbon Steel	
Milling Method	Side Milling	
Cutting Speed	450 SFM(6,870 RPM)	
Feed	68.7 IPM(.002IPT)	
Depth of Cut	Aa=0.375", Ar=0.075"	
Coolant	Water-Soluble	
Machine	Vertical Machining Center (CAT50)	

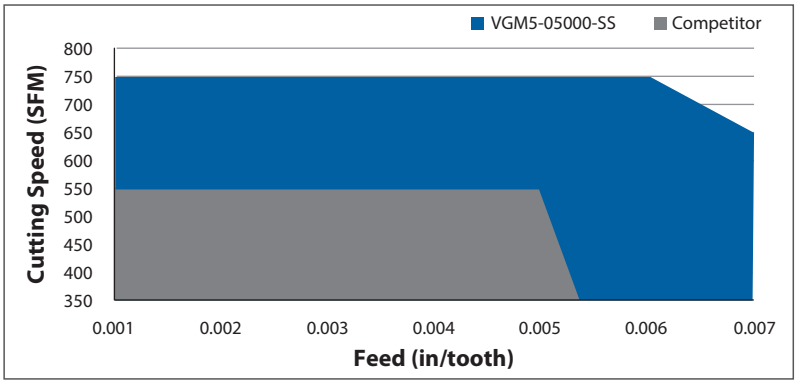




Stable Performance in a Wide Range of Conditions

1045 Medium Carbon Steel

Tool Size	1/2"
Work Material	1045
Milling Method	Side Milling
Depth of Cut	Aa=0.625", Ar=0.15"
Coolant	Water-Soluble
Machine	Vertical Machining Center (CAT50)

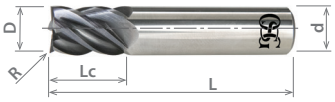


List VGM5

5 Flute, Multiple Lengths, Square & Corner Radius

NEW | SPEED FEED P15 | CARBIDE | EXO | 40° | SHRINK FIT

Milling Diameter Tolerance	
1/8≤D≤1	0/-.0011"



Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter	Aspect Ratio
	D	R	L	Lc	d	Lc/D
VGM5-0001	1/8	-	1 1/2	3/16	1/8	1.5
VGM5-0002	1/8	0.010	1 1/2	3/16	1/8	1.5
VGM5-0003	1/8	-	1 1/2	1/4	1/8	2.0
VGM5-0004	1/8	0.010	1 1/2	1/4	1/8	2.0
VGM5-0005	1/8	0.015	1 1/2	1/4	1/8	2.0
VGM5-0006	1/8	0.030	1 1/2	1/4	1/8	2.0
VGM5-0007	1/8	-	1 1/2	3/8	1/8	3.0
VGM5-0008	1/8	0.010	1 1/2	3/8	1/8	3.0
VGM5-0009	1/8	-	2 1/4	1/2	1/8	4.0
VGM5-0010	1/8	0.010	2 1/4	1/2	1/8	4.0
VGM5-0011	1/8	0.015	2 1/4	1/2	1/8	4.0
VGM5-0012	1/8	0.030	2 1/4	1/2	1/8	4.0
VGM5-0013	1/8	-	2 1/4	5/8	1/8	5.0
VGM5-0014	1/8	0.010	2 1/4	5/8	1/8	5.0
VGM5-0015	1/8	-	2 1/4	3/4	1/8	6.0
VGM5-0016	1/8	0.010	2 1/4	3/4	1/8	6.0
VGM5-0017	1/8	0.015	2 1/4	3/4	1/8	6.0
VGM5-0018	1/8	0.030	2 1/4	3/4	1/8	6.0
VGM5-0019	5/32	-	2	15/64	5/32	1.5
VGM5-0020	5/32	0.010	2	15/64	5/32	1.5
VGM5-0021	5/32	-	2	5/16	5/32	2.0
VGM5-0022	5/32	0.010	2	5/16	5/32	2.0
VGM5-0023	5/32	-	2 1/4	15/32	5/32	3.0
VGM5-0024	5/32	0.010	2 1/4	15/32	5/32	3.0
VGM5-0025	3/16	-	2	9/32	3/16	1.5
VGM5-0026	3/16	0.010	2	9/32	3/16	1.5
VGM5-0027	3/16	0.015	2	9/32	3/16	1.5
VGM5-0028	3/16	0.030	2	9/32	3/16	1.5
VGM5-0029	3/16	-	2	3/8	3/16	2.0
VGM5-0030	3/16	0.010	2	3/8	3/16	2.0
VGM5-0031	3/16	-	2 1/4	9/16	3/16	3.0
VGM5-0032	3/16	0.010	2 1/4	9/16	3/16	3.0
VGM5-0033	3/16	0.015	2 1/4	9/16	3/16	3.0
VGM5-0034	3/16	0.030	2 1/4	9/16	3/16	3.0
VGM5-0035	3/16	-	2 1/4	3/4	3/16	4.0
VGM5-0036	3/16	0.010	2 1/4	3/4	3/16	4.0
VGM5-0037	3/16	0.030	2 1/4	3/4	3/16	4.0
VGM5-0038	3/16	-	2 1/4	15/16	3/16	5.0
VGM5-0039	3/16	0.010	2 1/4	15/16	3/16	5.0
VGM5-0040	3/16	0.015	2 1/4	15/16	3/16	5.0
VGM5-0041	7/32	-	2	21/64	7/32	1.5
VGM5-0042	7/32	0.010	2	21/64	7/32	1.5
VGM5-0043	7/32	-	2 1/2	7/16	7/32	2.0
VGM5-0044	7/32	0.010	2 1/2	7/16	7/32	2.0
VGM5-0045	1/4	-	2	3/8	1/4	1.5
VGM5-0046	1/4	0.010	2	3/8	1/4	1.5
VGM5-0047	1/4	0.015	2	3/8	1/4	1.5
VGM5-0048	1/4	0.020	2	3/8	1/4	1.5
VGM5-0049	1/4	0.030	2	3/8	1/4	1.5
VGM5-0050	1/4	0.060	2	3/8	1/4	1.5
VGM5-0051	1/4	-	2 1/2	1/2	1/4	2.0
VGM5-0052	1/4	0.010	2 1/2	1/2	1/4	2.0
VGM5-0053	1/4	0.015	2 1/2	1/2	1/4	2.0

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

continued on next page

HPC

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
VGM5	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	○		

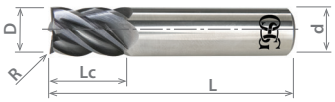
○ good ◎ best

List VGM5

5 Flute, Multiple Lengths, Square & Corner Radius

NEW | SPEED FEED P15 | CARBIDE | EXO | 40° | SHRINK FIT

Milling Diameter Tolerance	
1/8≤D≤1	0/-.0011"



Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter	Aspect Ratio
	D	R	L	Lc	d	Lc/D
VGM5-0054	1/4	0.020	2 1/2	1/2	1/4	2.0
VGM5-0055	1/4	0.030	2 1/2	1/2	1/4	2.0
VGM5-0056	1/4	0.060	2 1/2	1/2	1/4	2.0
VGM5-0057	1/4	-	2 1/2	3/4	1/4	3.0
VGM5-0058	1/4	0.010	2 1/2	3/4	1/4	3.0
VGM5-0059	1/4	0.015	2 1/2	3/4	1/4	3.0
VGM5-0060	1/4	0.020	2 1/2	3/4	1/4	3.0
VGM5-0061	1/4	0.030	2 1/2	3/4	1/4	3.0
VGM5-0062	1/4	0.060	2 1/2	3/4	1/4	3.0
VGM5-0063	1/4	-	3	1	1/4	4.0
VGM5-0064	1/4	0.010	3	1	1/4	4.0
VGM5-0065	1/4	0.015	3	1	1/4	4.0
VGM5-0066	1/4	0.020	3	1	1/4	4.0
VGM5-0067	1/4	0.030	3	1	1/4	4.0
VGM5-0068	1/4	0.060	3	1	1/4	4.0
VGM5-0069	1/4	-	3	1 1/4	1/4	5.0
VGM5-0070	1/4	0.020	3	1 1/4	1/4	5.0
VGM5-0071	1/4	-	3	1 1/2	1/4	6.0
VGM5-0072	1/4	0.020	3	1 1/2	1/4	6.0
VGM5-0073	9/32	-	2 1/2	27/64	9/32	1.5
VGM5-0074	9/32	0.020	2 1/2	27/64	9/32	1.5
VGM5-0075	9/32	-	2 1/2	9/16	9/32	2.0
VGM5-0076	9/32	0.020	2 1/2	9/16	9/32	2.0
VGM5-0077	9/32	-	3	27/32	9/32	3.0
VGM5-0078	9/32	0.020	3	27/32	9/32	3.0
VGM5-0079	5/16	-	2	15/32	5/16	1.5
VGM5-0080	5/16	0.010	2	15/32	5/16	1.5
VGM5-0081	5/16	0.020	2	15/32	5/16	1.5
VGM5-0082	5/16	0.030	2	15/32	5/16	1.5
VGM5-0083	5/16	0.060	2	15/32	5/16	1.5
VGM5-0084	5/16	-	2 1/2	5/8	5/16	2.0
VGM5-0085	5/16	0.010	2 1/2	5/8	5/16	2.0
VGM5-0086	5/16	0.020	2 1/2	5/8	5/16	2.0
VGM5-0087	5/16	0.030	2 1/2	5/8	5/16	2.0
VGM5-0088	5/16	0.060	2 1/2	5/8	5/16	2.0
VGM5-0089	5/16	-	3	15/16	5/16	3.0
VGM5-0090	5/16	0.020	3	15/16	5/16	3.0
VGM5-0091	5/16	0.030	3	15/16	5/16	3.0
VGM5-0092	5/16	0.060	3	15/16	5/16	3.0
VGM5-0093	5/16	-	3	1 1/4	5/16	4.0
VGM5-0094	5/16	0.020	3	1 1/4	5/16	4.0
VGM5-0095	3/8	-	2	9/16	3/8	1.5
VGM5-0096	3/8	0.010	2	9/16	3/8	1.5
VGM5-0097	3/8	0.015	2	9/16	3/8	1.5
VGM5-0098	3/8	0.020	2	9/16	3/8	1.5
VGM5-0099	3/8	0.030	2	9/16	3/8	1.5
VGM5-0100	3/8	0.060	2	9/16	3/8	1.5
VGM5-0101	3/8	0.090	2	9/16	3/8	1.5
VGM5-0102	3/8	-	2 1/2	3/4	3/8	2.0
VGM5-0103	3/8	0.010	2 1/2	3/4	3/8	2.0
VGM5-0104	3/8	0.020	2 1/2	3/4	3/8	2.0
VGM5-0105	3/8	0.030	2 1/2	3/4	3/8	2.0
VGM5-0106	3/8	0.060	2 1/2	3/4	3/8	2.0
VGM5-0107	3/8	0.090	2 1/2	3/4	3/8	2.0
VGM5-0108	3/8	-	3	1 1/8	3/8	3.0
VGM5-0109	3/8	0.010	3	1 1/8	3/8	3.0
VGM5-0110	3/8	0.015	3	1 1/8	3/8	3.0
VGM5-0111	3/8	0.020	3	1 1/8	3/8	3.0
VGM5-0112	3/8	0.030	3	1 1/8	3/8	3.0
VGM5-0113	3/8	0.060	3	1 1/8	3/8	3.0
VGM5-0114	3/8	0.090	3	1 1/8	3/8	3.0
VGM5-0115	3/8	-	4	1 1/2	3/8	4.0

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

HPC

List VGM5

NEW | SPEED FEED P15 | CARBIDE | EXO | 40° | SHRINK FIT

5 Flute, Multiple Lengths, Square & Corner Radius

Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter	Aspect Ratio
	D	R	L	Lc	d	Lc/D
VGM5-0116	3/8	0.010	4	1 1/2	3/8	4.0
VGM5-0117	3/8	0.020	4	1 1/2	3/8	4.0
VGM5-0118	3/8	0.030	4	1 1/2	3/8	4.0
VGM5-0119	3/8	0.060	4	1 1/2	3/8	4.0
VGM5-0120	3/8	0.090	4	1 1/2	3/8	4.0
VGM5-0121	1/2	-	2 1/2	5/8	1/2	1.3
VGM5-0122	1/2	0.010	2 1/2	5/8	1/2	1.3
VGM5-0123	1/2	0.015	2 1/2	5/8	1/2	1.3
VGM5-0124	1/2	0.020	2 1/2	5/8	1/2	1.3
VGM5-0125	1/2	0.030	2 1/2	5/8	1/2	1.3
VGM5-0126	1/2	0.060	2 1/2	5/8	1/2	1.3
VGM5-0127	1/2	0.090	2 1/2	5/8	1/2	1.3
VGM5-0128	1/2	0.120	2 1/2	5/8	1/2	1.3
VGM5-0129	1/2	0.125	2 1/2	5/8	1/2	1.3
VGM5-0130	1/2	-	3	1	1/2	2.0
VGM5-0131	1/2	0.010	3	1	1/2	2.0
VGM5-0132	1/2	0.015	3	1	1/2	2.0
VGM5-0133	1/2	0.020	3	1	1/2	2.0
VGM5-0134	1/2	0.030	3	1	1/2	2.0
VGM5-0135	1/2	0.060	3	1	1/2	2.0
VGM5-0136	1/2	0.090	3	1	1/2	2.0
VGM5-0137	1/2	0.120	3	1	1/2	2.0
VGM5-0138	1/2	0.125	3	1	1/2	2.0
VGM5-0139	1/2	-	3	1 1/4	1/2	2.5
VGM5-0140	1/2	0.010	3	1 1/4	1/2	2.5
VGM5-0141	1/2	0.015	3	1 1/4	1/2	2.5
VGM5-0142	1/2	0.020	3	1 1/4	1/2	2.5
VGM5-0143	1/2	0.030	3	1 1/4	1/2	2.5
VGM5-0144	1/2	0.060	3	1 1/4	1/2	2.5
VGM5-0145	1/2	0.090	3	1 1/4	1/2	2.5
VGM5-0146	1/2	0.120	3	1 1/4	1/2	2.5
VGM5-0147	1/2	0.125	3	1 1/4	1/2	2.5
VGM5-0148	1/2	-	4	1 1/2	1/2	3.0
VGM5-0149	1/2	0.010	4	1 1/2	1/2	3.0
VGM5-0150	1/2	0.030	4	1 1/2	1/2	3.0
VGM5-0151	1/2	0.060	4	1 1/2	1/2	3.0
VGM5-0152	1/2	0.090	4	1 1/2	1/2	3.0
VGM5-0153	1/2	0.120	4	1 1/2	1/2	3.0
VGM5-0154	1/2	0.125	4	1 1/2	1/2	3.0
VGM5-0155	1/2	-	4	2	1/2	4.0
VGM5-0156	1/2	0.010	4	2	1/2	4.0
VGM5-0157	1/2	0.030	4	2	1/2	4.0
VGM5-0158	1/2	0.060	4	2	1/2	4.0
VGM5-0159	1/2	0.120	4	2	1/2	4.0
VGM5-0160	1/2	-	5	2 1/2	1/2	5.0
VGM5-0161	1/2	0.010	5	2 1/2	1/2	5.0
VGM5-0162	1/2	0.030	5	2 1/2	1/2	5.0
VGM5-0163	1/2	0.060	5	2 1/2	1/2	5.0
VGM5-0164	1/2	0.120	5	2 1/2	1/2	5.0
VGM5-0165	5/8	-	3	25/32	5/8	1.3
VGM5-0166	5/8	0.020	3	25/32	5/8	1.3
VGM5-0167	5/8	0.030	3	25/32	5/8	1.3
VGM5-0168	5/8	0.060	3	25/32	5/8	1.3
VGM5-0169	5/8	0.090	3	25/32	5/8	1.3
VGM5-0170	5/8	0.120	3	25/32	5/8	1.3
VGM5-0171	5/8	-	3	15/16	5/8	1.5
VGM5-0172	5/8	0.020	3	15/16	5/8	1.5
VGM5-0173	5/8	0.030	3	15/16	5/8	1.5

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

continued on next page

HPC

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
VGM5	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	○		

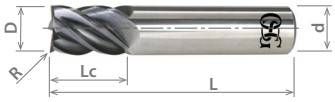
○ good ◎ best

List VGM5

5 Flute, Multiple Lengths, Square & Corner Radius

NEW | SPEED FEED P15 | CARBIDE | EXO | 40° | SHRINK FIT

Milling Diameter Tolerance	
1/8≤D≤1	0/-.0011"



Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter	Aspect Ratio
	D	R	L	Lc	d	Lc/D
VGM5-0174	5/8	0.060	3	15/16	5/8	1.5
VGM5-0175	5/8	0.090	3	15/16	5/8	1.5
VGM5-0176	5/8	0.120	3	15/16	5/8	1.5
VGM5-0177	5/8	-	3 1/2	1 1/4	5/8	2.0
VGM5-0178	5/8	0.020	3 1/2	1 1/4	5/8	2.0
VGM5-0179	5/8	0.030	3 1/2	1 1/4	5/8	2.0
VGM5-0180	5/8	0.060	3 1/2	1 1/4	5/8	2.0
VGM5-0181	5/8	0.090	3 1/2	1 1/4	5/8	2.0
VGM5-0182	5/8	0.120	3 1/2	1 1/4	5/8	2.0
VGM5-0183	5/8	-	3 1/2	1 9/16	5/8	2.5
VGM5-0184	5/8	0.020	3 1/2	1 9/16	5/8	2.5
VGM5-0185	5/8	0.030	3 1/2	1 9/16	5/8	2.5
VGM5-0186	5/8	0.060	3 1/2	1 9/16	5/8	2.5
VGM5-0187	5/8	0.090	3 1/2	1 9/16	5/8	2.5
VGM5-0188	5/8	0.120	3 1/2	1 9/16	5/8	2.5
VGM5-0189	5/8	-	5	1 7/8	5/8	3.0
VGM5-0190	5/8	0.020	5	1 7/8	5/8	3.0
VGM5-0191	5/8	0.030	5	1 7/8	5/8	3.0
VGM5-0192	5/8	0.060	5	1 7/8	5/8	3.0
VGM5-0193	5/8	0.090	5	1 7/8	5/8	3.0
VGM5-0194	5/8	0.120	5	1 7/8	5/8	3.0
VGM5-0195	5/8	-	5	2 1/2	5/8	4.0
VGM5-0196	5/8	0.020	5	2 1/2	5/8	4.0
VGM5-0197	5/8	0.030	5	2 1/2	5/8	4.0
VGM5-0198	5/8	0.060	5	2 1/2	5/8	4.0
VGM5-0199	5/8	0.090	5	2 1/2	5/8	4.0
VGM5-0200	5/8	0.120	5	2 1/2	5/8	4.0
VGM5-0201	3/4	-	3	15/16	3/4	1.3
VGM5-0202	3/4	0.020	3	15/16	3/4	1.3
VGM5-0203	3/4	0.030	3	15/16	3/4	1.3
VGM5-0204	3/4	0.060	3	15/16	3/4	1.3
VGM5-0205	3/4	0.090	3	15/16	3/4	1.3
VGM5-0206	3/4	0.120	3	15/16	3/4	1.3
VGM5-0207	3/4	0.190	3	15/16	3/4	1.3
VGM5-0208	3/4	0.250	3	15/16	3/4	1.3
VGM5-0209	3/4	-	4	1 1/8	3/4	1.5
VGM5-0210	3/4	0.020	4	1 1/8	3/4	1.5
VGM5-0211	3/4	0.030	4	1 1/8	3/4	1.5
VGM5-0212	3/4	0.060	4	1 1/8	3/4	1.5
VGM5-0213	3/4	0.090	4	1 1/8	3/4	1.5
VGM5-0214	3/4	0.120	4	1 1/8	3/4	1.5
VGM5-0215	3/4	0.190	4	1 1/8	3/4	1.5
VGM5-0216	3/4	0.250	4	1 1/8	3/4	1.5
VGM5-0217	3/4	-	4	1 1/2	3/4	2.0
VGM5-0218	3/4	0.020	4	1 1/2	3/4	2.0
VGM5-0219	3/4	0.030	4	1 1/2	3/4	2.0
VGM5-0220	3/4	0.060	4	1 1/2	3/4	2.0
VGM5-0221	3/4	0.090	4	1 1/2	3/4	2.0
VGM5-0222	3/4	0.120	4	1 1/2	3/4	2.0
VGM5-0223	3/4	0.190	4	1 1/2	3/4	2.0
VGM5-0224	3/4	0.250	4	1 1/2	3/4	2.0
VGM5-0225	3/4	-	5	2 1/4	3/4	3.0
VGM5-0226	3/4	0.020	5	2 1/4	3/4	3.0
VGM5-0227	3/4	0.030	5	2 1/4	3/4	3.0
VGM5-0228	3/4	0.060	5	2 1/4	3/4	3.0
VGM5-0229	3/4	0.090	5	2 1/4	3/4	3.0
VGM5-0230	3/4	0.120	5	2 1/4	3/4	3.0
VGM5-0231	3/4	0.190	5	2 1/4	3/4	3.0
VGM5-0232	3/4	0.250	5	2 1/4	3/4	3.0
VGM5-0233	3/4	-	6	3	3/4	4.0
VGM5-0234	3/4	0.020	6	3	3/4	4.0
VGM5-0235	3/4	0.030	6	3	3/4	4.0

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

HPC

List VGM5

NEW | SPEED FEED P15 | CARBIDE | EXO | 40° | SHRINK FIT

5 Flute, Multiple Lengths, Square & Corner Radius

Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter	Aspect Ratio
	D	R	L	Lc	d	Lc/D
VGM5-0236	3/4	0.060	6	3	3/4	4.0
VGM5-0237	3/4	0.090	6	3	3/4	4.0
VGM5-0238	3/4	0.120	6	3	3/4	4.0
VGM5-0239	3/4	0.190	6	3	3/4	4.0
VGM5-0240	3/4	0.250	6	3	3/4	4.0
VGM5-0241	3/4	-	7	3 3/4	3/4	5.0
VGM5-0242	3/4	0.020	7	3 3/4	3/4	5.0
VGM5-0243	3/4	0.030	7	3 3/4	3/4	5.0
VGM5-0244	3/4	0.060	7	3 3/4	3/4	5.0
VGM5-0245	3/4	0.090	7	3 3/4	3/4	5.0
VGM5-0246	3/4	0.120	7	3 3/4	3/4	5.0
VGM5-0247	3/4	0.190	7	3 3/4	3/4	5.0
VGM5-0248	3/4	0.250	7	3 3/4	3/4	5.0
VGM5-0249	1	-	4	1 1/4	1	1.3
VGM5-0250	1	0.030	4	1 1/4	1	1.3
VGM5-0251	1	0.060	4	1 1/4	1	1.3
VGM5-0252	1	0.090	4	1 1/4	1	1.3
VGM5-0253	1	0.120	4	1 1/4	1	1.3
VGM5-0254	1	0.190	4	1 1/4	1	1.3
VGM5-0255	1	0.250	4	1 1/4	1	1.3
VGM5-0256	1	-	5	2	1	2.0
VGM5-0257	1	0.030	5	2	1	2.0
VGM5-0258	1	0.060	5	2	1	2.0
VGM5-0259	1	0.090	5	2	1	2.0
VGM5-0260	1	0.120	5	2	1	2.0
VGM5-0261	1	0.190	5	2	1	2.0
VGM5-0262	1	0.250	5	2	1	2.0
VGM5-0263	1	-	6	3	1	3.0
VGM5-0264	1	0.030	6	3	1	3.0
VGM5-0265	1	0.060	6	3	1	3.0
VGM5-0266	1	0.090	6	3	1	3.0
VGM5-0267	1	0.120	6	3	1	3.0
VGM5-0268	1	0.190	6	3	1	3.0
VGM5-0269	1	0.250	6	3	1	3.0
VGM5-0270	1	-	7	4	1	4.0
VGM5-0271	1	0.030	7	4	1	4.0
VGM5-0272	1	0.060	7	4	1	4.0
VGM5-0273	1	0.090	7	4	1	4.0
VGM5-0274	1	0.120	7	4	1	4.0
VGM5-0275	1	0.190	7	4	1	4.0
VGM5-0276	1	0.250	7	4	1	4.0

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

HPC

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
VGM5	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	○		

○ good ◎ best

List VGM5-LN

NEW | SPEED FEED P15 | CARBIDE | EXO | 40° | SHRINK FIT

5 Flute, Long neck, Square & Corner Radius

Milling Diameter Tolerance	
1/8≤D≤1	0/-.0011"

Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck length	Neck Diameter	Shank Diameter	Aspect Ratio
	D	R	L	Lc	L1	d1	d	L1/D
VGM5-1001	1/8	-	2 1/4	5/32	3/8	0.118	1/8	3
VGM5-1002	1/8	0.010	2 1/4	5/32	3/8	0.118	1/8	3
VGM5-1003	1/8	0.015	2 1/4	5/32	3/8	0.118	1/8	3
VGM5-1004	1/8	0.030	2 1/4	5/32	3/8	0.118	1/8	3
VGM5-1005	1/8	-	2 1/4	5/32	1/2	0.118	1/8	4
VGM5-1006	1/8	0.010	2 1/4	5/32	1/2	0.118	1/8	4
VGM5-1007	1/8	0.015	2 1/4	5/32	1/2	0.118	1/8	4
VGM5-1008	1/8	0.030	2 1/4	5/32	1/2	0.118	1/8	4
VGM5-1009	1/8	-	3	5/32	3/4	0.118	1/8	6
VGM5-1010	1/8	0.010	3	5/32	3/4	0.118	1/8	6
VGM5-1011	1/8	0.015	3	5/32	3/4	0.118	1/8	6
VGM5-1012	1/8	0.030	3	5/32	3/4	0.118	1/8	6
VGM5-1013	1/8	-	3	5/32	1	0.118	1/8	8
VGM5-1014	1/8	0.010	3	5/32	1	0.118	1/8	8
VGM5-1015	1/8	0.015	3	5/32	1	0.118	1/8	8
VGM5-1016	1/8	0.030	3	5/32	1	0.118	1/8	8
VGM5-1017	3/16	-	2	15/64	9/16	0.178	3/16	3
VGM5-1018	3/16	0.010	2	15/64	9/16	0.178	3/16	3
VGM5-1019	3/16	0.015	2	15/64	9/16	0.178	3/16	3
VGM5-1020	3/16	0.030	2	15/64	9/16	0.178	3/16	3
VGM5-1021	3/16	-	2	15/64	3/4	0.178	3/16	4
VGM5-1022	3/16	0.010	2	15/64	3/4	0.178	3/16	4
VGM5-1023	3/16	0.030	3	15/64	3/4	0.178	3/16	4
VGM5-1024	3/16	-	3	15/64	1 1/8	0.178	3/16	6
VGM5-1025	3/16	0.010	3	15/64	1 1/8	0.178	3/16	6
VGM5-1026	3/16	0.015	3	15/64	1 1/8	0.178	3/16	6
VGM5-1027	3/16	0.030	3	15/64	1 1/8	0.178	3/16	6
VGM5-1028	3/16	-	3	15/64	1 5/16	0.178	3/16	7
VGM5-1029	3/16	0.010	3	15/64	1 5/16	0.178	3/16	7
VGM5-1030	3/16	0.030	3	15/64	1 5/16	0.178	3/16	7
VGM5-1031	1/4	-	4	5/16	3/4	0.237	1/4	3
VGM5-1032	1/4	0.010	4	5/16	3/4	0.237	1/4	3
VGM5-1033	1/4	0.015	4	5/16	3/4	0.237	1/4	3
VGM5-1034	1/4	0.020	4	5/16	3/4	0.237	1/4	3
VGM5-1035	1/4	0.030	4	5/16	3/4	0.237	1/4	3
VGM5-1036	1/4	0.060	4	5/16	3/4	0.237	1/4	3
VGM5-1037	1/4	-	4	5/16	1	0.237	1/4	4
VGM5-1038	1/4	0.010	4	5/16	1	0.237	1/4	4
VGM5-1039	1/4	0.015	4	5/16	1	0.237	1/4	4
VGM5-1040	1/4	0.020	4	5/16	1	0.237	1/4	4
VGM5-1041	1/4	0.030	4	5/16	1	0.237	1/4	4
VGM5-1042	1/4	0.060	4	5/16	1	0.237	1/4	4
VGM5-1043	1/4	-	4	5/16	1 1/4	0.237	1/4	5
VGM5-1044	1/4	0.010	4	5/16	1 1/4	0.237	1/4	5
VGM5-1045	1/4	0.015	4	5/16	1 1/4	0.237	1/4	5
VGM5-1046	1/4	0.020	4	5/16	1 1/4	0.237	1/4	5
VGM5-1047	1/4	0.030	4	5/16	1 1/4	0.237	1/4	5
VGM5-1048	1/4	0.060	4	5/16	1 1/4	0.237	1/4	5
VGM5-1049	1/4	-	4	5/16	1 1/2	0.237	1/4	6
VGM5-1050	1/4	0.010	4	5/16	1 1/2	0.237	1/4	6
VGM5-1051	1/4	0.015	4	5/16	1 1/2	0.237	1/4	6
VGM5-1052	1/4	0.020	4	5/16	1 1/2	0.237	1/4	6
VGM5-1053	1/4	0.030	4	5/16	1 1/2	0.237	1/4	6
VGM5-1054	1/4	0.060	4	5/16	1 1/2	0.237	1/4	6
VGM5-1055	1/4	-	4	5/16	2	0.237	1/4	8
VGM5-1056	1/4	0.020	4	5/16	2	0.237	1/4	8
VGM5-1057	1/4	-	4	5/16	2 1/2	0.237	1/4	10
VGM5-1058	1/4	0.020	4	5/16	2 1/2	0.237	1/4	10
VGM5-1059	3/8	-	4	15/32	1 1/8	0.356	3/8	3
VGM5-1060	3/8	0.010	4	15/32	1 1/8	0.356	3/8	3
VGM5-1061	3/8	0.015	4	15/32	1 1/8	0.356	3/8	3
VGM5-1062	3/8	0.020	4	15/32	1 1/8	0.356	3/8	3

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

HPC

List VGM5-LN

NEW | SPEED FEED P15 | CARBIDE | EXO | 40° | SHRINK FIT

5 Flute, Long neck, Square & Corner Radius

Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck length	Neck Diameter	Shank Diameter	Aspect Ratio
	D	R	L	Lc	L1	d1	d	L1/D
VGM5-1063	3/8	0.030	4	15/32	1 1/8	0.356	3/8	3
VGM5-1064	3/8	0.060	4	15/32	1 1/8	0.356	3/8	3
VGM5-1065	3/8	0.090	4	15/32	1 1/8	0.356	3/8	3
VGM5-1066	3/8	-	4	15/32	1 1/2	0.356	3/8	4
VGM5-1067	3/8	0.010	4	15/32	1 1/2	0.356	3/8	4
VGM5-1068	3/8	0.020	4	15/32	1 1/2	0.356	3/8	4
VGM5-1069	3/8	0.030	4	15/32	1 1/2	0.356	3/8	4
VGM5-1070	3/8	0.060	4	15/32	1 1/2	0.356	3/8	4
VGM5-1071	3/8	0.090	4	15/32	1 1/2	0.356	3/8	4
VGM5-1072	3/8	-	4	15/32	1 7/8	0.356	3/8	5
VGM5-1073	3/8	0.010	4	15/32	1 7/8	0.356	3/8	5
VGM5-1074	3/8	0.015	4	15/32	1 7/8	0.356	3/8	5
VGM5-1075	3/8	0.020	4	15/32	1 7/8	0.356	3/8	5
VGM5-1076	3/8	0.030	4	15/32	1 7/8	0.356	3/8	5
VGM5-1077	3/8	0.060	4	15/32	1 7/8	0.356	3/8	5
VGM5-1078	3/8	0.090	4	15/32	1 7/8	0.356	3/8	5
VGM5-1079	3/8	-	5	15/32	2 1/4	0.356	3/8	6
VGM5-1080	3/8	0.010	5	15/32	2 1/4	0.356	3/8	6
VGM5-1081	3/8	0.020	5	15/32	2 1/4	0.356	3/8	6
VGM5-1082	3/8	0.030	5	15/32	2 1/4	0.356	3/8	6
VGM5-1083	3/8	0.060	5	15/32	2 1/4	0.356	3/8	6
VGM5-1084	3/8	0.090	5	15/32	2 1/4	0.356	3/8	6
VGM5-1085	3/8	-	6	15/32	3	0.356	3/8	8
VGM5-1086	3/8	0.010	6	15/32	3	0.356	3/8	8
VGM5-1087	3/8	0.020	6	15/32	3	0.356	3/8	8
VGM5-1088	3/8	0.030	6	15/32	3	0.356	3/8	8
VGM5-1089	3/8	0.060	6	15/32	3	0.356	3/8	8
VGM5-1090	3/8	0.090	6	15/32	3	0.356	3/8	8
VGM5-1091	1/2	-	4	5/8	1 1/2	0.475	1/2	3
VGM5-1092	1/2	0.010	4	5/8	1 1/2	0.475	1/2	3
VGM5-1093	1/2	0.015	4	5/8	1 1/2	0.475	1/2	3
VGM5-1094	1/2	0.020	4	5/8	1 1/2	0.475	1/2	3
VGM5-1095	1/2	0.030	4	5/8	1 1/2	0.475	1/2	3
VGM5-1096	1/2	0.060	4	5/8	1 1/2	0.475	1/2	3
VGM5-1097	1/2	0.090	4	5/8	1 1/2	0.475	1/2	3
VGM5-1098	1/2	0.120	4	5/8	1 1/2	0.475	1/2	3
VGM5-1099	1/2	0.125	4	5/8	1 1/2	0.475	1/2	3
VGM5-1100	1/2	-	4	5/8	2	0.475	1/2	4
VGM5-1101	1/2	0.010	4	5/8	2	0.475	1/2	4
VGM5-1102	1/2	0.015	4	5/8	2	0.475	1/2	4
VGM5-1103	1/2	0.020	4	5/8	2	0.475	1/2	4
VGM5-1104	1/2	0.030	4	5/8	2	0.475	1/2	4
VGM5-1105	1/2	0.060	4	5/8	2	0.475	1/2	4
VGM5-1106	1/2	0.090	4	5/8	2	0.475	1/2	4
VGM5-1107	1/2	0.120	4	5/8	2	0.475	1/2	4
VGM5-1108	1/2	0.125	4	5/8	2	0.475	1/2	4
VGM5-1109	1/2	-	5	5/8	2 1/2	0.475	1/2	5
VGM5-1110	1/2	0.010	5	5/8	2 1/2	0.475	1/2	5
VGM5-1111	1/2	0.015	5	5/8	2 1/2	0.475	1/2	5
VGM5-1112	1/2	0.020	5	5/8	2 1/2	0.475	1/2	5
VGM5-1113	1/2	0.030	5	5/8	2 1/2	0.475	1/2	5
VGM5-1114	1/2	0.060	5	5/8	2 1/2	0.475	1/2	5
VGM5-1115	1/2	0.090	5	5/8	2 1/2	0.475	1/2	5
VGM5-1116	1/2	0.120	5	5/8	2 1/2	0.475	1/2	5
VGM5-1117	1/2	0.125	5	5/8	2 1/2	0.475	1/2	5
VGM5-1118	1/2	-	6	5/8	3	0.475	1/2	6
VGM5-1119	1/2	0.010	6	5/8	3	0.475	1/2	6
VGM5-1120	1/2	0.030	6	5/8	3	0.475	1/2	6

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

continued on next page HPC

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
VGM5-LN	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	○		

○ good ◎ best

List VGM5-LN

5 Flute, Long neck, Square & Corner Radius

NEW | SPEED FEED P15 | CARBIDE | EXO | | 40° | SHRINK FIT

Milling Diameter Tolerance	
1/8≤D≤1	0/-.0011"

Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck length	Neck Diameter	Shank Diameter	Aspect Ratio
	D	R	L	Lc	L1	d1	d	L1/D
VGM5-1121	1/2	0.060	6	5/8	3	0.475	1/2	6
VGM5-1122	1/2	0.090	6	5/8	3	0.475	1/2	6
VGM5-1123	1/2	0.120	6	5/8	3	0.475	1/2	6
VGM5-1124	1/2	0.125	6	5/8	3	0.475	1/2	6
VGM5-1125	1/2	-	6	5/8	4	0.475	1/2	8
VGM5-1126	1/2	0.010	6	5/8	4	0.475	1/2	8
VGM5-1127	1/2	0.030	6	5/8	4	0.475	1/2	8
VGM5-1128	1/2	0.060	6	5/8	4	0.475	1/2	8
VGM5-1129	1/2	0.120	6	5/8	4	0.475	1/2	8
VGM5-1130	1/2	-	7	5/8	5	0.475	1/2	10
VGM5-1131	1/2	0.010	7	5/8	5	0.475	1/2	10
VGM5-1132	1/2	0.030	7	5/8	5	0.475	1/2	10
VGM5-1133	1/2	0.060	7	5/8	5	0.475	1/2	10
VGM5-1134	1/2	0.120	7	5/8	5	0.475	1/2	10
VGM5-1135	5/8	-	5	25/32	1 7/8	0.593	5/8	3
VGM5-1136	5/8	0.020	5	25/32	1 7/8	0.593	5/8	3
VGM5-1137	5/8	0.030	5	25/32	1 7/8	0.593	5/8	3
VGM5-1138	5/8	0.060	5	25/32	1 7/8	0.593	5/8	3
VGM5-1139	5/8	0.090	5	25/32	1 7/8	0.593	5/8	3
VGM5-1140	5/8	0.120	5	25/32	1 7/8	0.593	5/8	3
VGM5-1141	5/8	-	6	25/32	2 1/2	0.593	5/8	4
VGM5-1142	5/8	0.020	6	25/32	2 1/2	0.593	5/8	4
VGM5-1143	5/8	0.030	6	25/32	2 1/2	0.593	5/8	4
VGM5-1144	5/8	0.060	6	25/32	2 1/2	0.593	5/8	4
VGM5-1145	5/8	0.090	6	25/32	2 1/2	0.593	5/8	4
VGM5-1146	5/8	0.120	6	25/32	2 1/2	0.593	5/8	4
VGM5-1147	5/8	-	6	25/32	3 1/8	0.593	5/8	5
VGM5-1148	5/8	0.020	6	25/32	3 1/8	0.593	5/8	5
VGM5-1149	5/8	0.030	6	25/32	3 1/8	0.593	5/8	5
VGM5-1150	5/8	0.060	6	25/32	3 1/8	0.593	5/8	5
VGM5-1151	5/8	0.090	6	25/32	3 1/8	0.593	5/8	5
VGM5-1152	5/8	0.120	6	25/32	3 1/8	0.593	5/8	5
VGM5-1153	5/8	-	6	25/32	3 3/4	0.593	5/8	6
VGM5-1154	5/8	0.020	6	25/32	3 3/4	0.593	5/8	6
VGM5-1155	5/8	0.030	6	25/32	3 3/4	0.593	5/8	6
VGM5-1156	5/8	0.060	6	25/32	3 3/4	0.593	5/8	6
VGM5-1157	5/8	0.090	6	25/32	3 3/4	0.593	5/8	6
VGM5-1158	5/8	0.120	6	25/32	3 3/4	0.593	5/8	6
VGM5-1159	3/4	-	4	15/16	2 1/4	0.712	3/4	3
VGM5-1160	3/4	0.020	4	15/16	2 1/4	0.712	3/4	3
VGM5-1161	3/4	0.030	4	15/16	2 1/4	0.712	3/4	3
VGM5-1162	3/4	0.060	4	15/16	2 1/4	0.712	3/4	3
VGM5-1163	3/4	0.090	4	15/16	2 1/4	0.712	3/4	3
VGM5-1164	3/4	0.120	4	15/16	2 1/4	0.712	3/4	3
VGM5-1165	3/4	0.190	4	15/16	2 1/4	0.712	3/4	3
VGM5-1166	3/4	0.250	4	15/16	2 1/4	0.712	3/4	3
VGM5-1167	3/4	-	6	15/16	3	0.712	3/4	4
VGM5-1168	3/4	0.020	6	15/16	3	0.712	3/4	4
VGM5-1169	3/4	0.030	6	15/16	3	0.712	3/4	4
VGM5-1170	3/4	0.060	6	15/16	3	0.712	3/4	4
VGM5-1171	3/4	0.090	6	15/16	3	0.712	3/4	4
VGM5-1172	3/4	0.120	6	15/16	3	0.712	3/4	4
VGM5-1173	3/4	0.190	6	15/16	3	0.712	3/4	4
VGM5-1174	3/4	0.250	6	15/16	3	0.712	3/4	4
VGM5-1175	3/4	-	6	15/16	3 3/4	0.712	3/4	5
VGM5-1176	3/4	0.020	6	15/16	3 3/4	0.712	3/4	5
VGM5-1177	3/4	0.030	6	15/16	3 3/4	0.712	3/4	5
VGM5-1178	3/4	0.060	6	15/16	3 3/4	0.712	3/4	5
VGM5-1179	3/4	0.090	6	15/16	3 3/4	0.712	3/4	5
VGM5-1180	3/4	0.120	6	15/16	3 3/4	0.712	3/4	5
VGM5-1181	3/4	0.190	6	15/16	3 3/4	0.712	3/4	5
VGM5-1182	3/4	0.250	6	15/16	3 3/4	0.712	3/4	5

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

HPC

List VGM5-LN

NEW | SPEED FEED P15 | CARBIDE | EXO® | 40° | SHRINK FIT

5 Flute, Long neck, Square & Corner Radius

Units: Inch

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck length	Neck Diameter	Shank Diameter	Aspect Ratio
	D	R	L	Lc	L1	d1	d	L1/D
VGM5-1183	3/4	-	7	15/16	4 1/2	0.712	3/4	6
VGM5-1184	3/4	0.020	7	15/16	4 1/2	0.712	3/4	6
VGM5-1185	3/4	0.030	7	15/16	4 1/2	0.712	3/4	6
VGM5-1186	3/4	0.060	7	15/16	4 1/2	0.712	3/4	6
VGM5-1187	3/4	0.090	7	15/16	4 1/2	0.712	3/4	6
VGM5-1188	3/4	0.120	7	15/16	4 1/2	0.712	3/4	6
VGM5-1189	3/4	0.190	7	15/16	4 1/2	0.712	3/4	6
VGM5-1190	3/4	0.250	7	15/16	4 1/2	0.712	3/4	6
VGM5-1191	1	-	6	1 1/4	3	0.95	1	3
VGM5-1192	1	0.030	6	1 1/4	3	0.95	1	3
VGM5-1193	1	0.060	6	1 1/4	3	0.95	1	3
VGM5-1194	1	0.090	6	1 1/4	3	0.95	1	3
VGM5-1195	1	0.120	6	1 1/4	3	0.95	1	3
VGM5-1196	1	0.190	6	1 1/4	3	0.95	1	3
VGM5-1197	1	0.250	6	1 1/4	3	0.95	1	3
VGM5-1198	1	-	6	1 1/4	4	0.95	1	4
VGM5-1199	1	0.030	6	1 1/4	4	0.95	1	4
VGM5-1200	1	0.060	6	1 1/4	4	0.95	1	4
VGM5-1201	1	0.090	6	1 1/4	4	0.95	1	4
VGM5-1202	1	0.120	6	1 1/4	4	0.95	1	4
VGM5-1203	1	0.190	6	1 1/4	4	0.95	1	4
VGM5-1204	1	0.250	6	1 1/4	4	0.95	1	4
VGM5-1205	1	-	7	1 1/4	5	0.95	1	5
VGM5-1206	1	0.030	7	1 1/4	5	0.95	1	5
VGM5-1207	1	0.060	7	1 1/4	5	0.95	1	5
VGM5-1208	1	0.090	7	1 1/4	5	0.95	1	5
VGM5-1209	1	0.120	7	1 1/4	5	0.95	1	5
VGM5-1210	1	0.190	7	1 1/4	5	0.95	1	5
VGM5-1211	1	0.250	7	1 1/4	5	0.95	1	5

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.

HPC

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
VGM5-LN	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	○		

○ good ◎ best

List VGM5 - HY-PRO® CARB VGM

Side Milling

Hardness	–		Up to 30 HRC		–		–		–		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Cast Iron		Hardened Steel	
Cutting	350-650 SFM		350-650 SFM		200-350 SFM		200-350 SFM		350-750 SFM		200-350 SFM	
Depth of Cut	Aa = up to Max LOC, Ar= 0.3xD						Aa = up to Max LOC, Ar= 0.2xD		Aa = up to Max LOC, Ar= 0.3xD		Aa = up to Max LOC, Ar= 0.15xD	
Mill Dia. Inch	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM
1/8	16,794	84.0	16,794	84.0	7,634	38.2	7,634	38.2	16,794	84.0	7,634	38.2
5/32	13,435	86.1	13,435	86.1	6,107	39.1	6,107	39.1	13,435	86.1	6,107	39.1
3/16	11,196	88.2	11,196	88.2	5,089	40.1	5,089	40.1	11,196	88.2	5,089	40.1
7/32	9,597	90.3	9,597	90.3	4,362	41.0	4,362	41.0	9,597	90.3	4,362	41.0
1/4	8,397	92.4	8,397	92.4	3,817	42.0	3,817	42.0	8,397	92.4	3,817	42.0
9/32	7,464	94.5	7,464	94.5	3,393	42.9	3,393	42.9	7,464	94.5	3,393	42.9
5/16	6,718	96.6	6,718	96.6	3,053	43.9	3,053	43.9	6,718	96.6	3,053	43.9
3/8	5,598	98.0	5,598	98.0	2,545	44.5	2,545	44.5	5,598	98.0	2,545	44.5
1/2	4,198	88.2	4,198	88.2	1,908	40.1	1,908	40.1	4,198	88.2	1,908	40.1
5/8	3,359	70.5	3,359	70.5	1,527	32.1	1,527	32.1	3,359	70.5	1,527	32.1
3/4	2,799	61.6	2,799	61.6	1,272	28.0	1,272	28.0	2,799	61.6	1,272	28.0
1	2,099	46.2	2,099	46.2	954	21.0	954	21.0	2,099	46.2	954	21.0

1. The above milling condition is a guideline for aspect ratio 1.25 and 1.5.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed.
   Adjustments may be necessary depending on the rigidity or the workpiece, fixture, and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel and titanium alloy.
7. Reduce speed and feed as well as depth of cut when high precision is required.

Speed & Feed Reduction Chart by Aspect Ratio

Hardness	–		Up to 30 HRC		–		–		–		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Cast Iron		Hardened Steel	
Aspect Ratio	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM
2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2.5	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
3	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
4	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
5	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
6	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%

Aa & Ar Adjustment Chart by Aspect Ratio

Hardness	–		Up to 30 HRC		–		–		–		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Cast Iron		Hardened Steel	
Aspect Ratio	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar
2	Up to Max. LOC	0.2 x D	Up to Max. LOC	0.2 x D	Up to Max. LOC	0.2 x D	Up to Max. LOC	0.15 x D	Up to Max. LOC	0.2 x D	Up to Max. LOC	0.1 x D
2.5		0.2 x D		0.2 x D		0.2 x D		0.15 x D		0.2 x D		0.1 x D
3		0.15 x D		0.15 x D		0.15 x D		0.1 x D		0.15 x D		0.05 x D
4		0.1 x D		0.1 x D		0.1 x D		0.05 x D		0.1 x D		0.03 x D
5		0.1 x D		0.1 x D		0.1 x D		0.05 x D		0.1 x D		0.03 x D
6		0.05 x D		0.05 x D		0.05 x D		0.03 x D		0.05 x D		0.02 x D

List VGM5-LN - HY-PRO® CARB VGM

Side Milling

Hardness	–		Up to 30 HRC		–		–		–		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Cast Iron		Hardened Steel	
Cutting	350-650 SFM		350-650 SFM		200-350 SFM		200-350 SFM		350-750 SFM		200-350 SFM	
Depth of Cut	Aa = up to Max LOC, Ar= 0.3xD						Aa = up to Max LOC, Ar= 0.2xD		Aa = up to Max LOC, Ar= 0.3xD		Aa = up to Max LOC, Ar= 0.15xD	
Mill Dia. Inch	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM
1/8	16,794	84.0	16,794	84.0	7,634	38.2	7,634	38.2	16,794	84.0	7,634	38.2
3/16	11,196	88.2	11,196	88.2	5,089	40.1	5,089	40.1	11,196	88.2	5,089	40.1
1/4	8,397	92.4	8,397	92.4	3,817	42.0	3,817	42.0	8,397	92.4	3,817	42.0
3/8	5,598	98.0	5,598	98.0	2,545	44.5	2,545	44.5	5,598	98.0	2,545	44.5
1/2	4,198	88.2	4,198	88.2	1,908	40.1	1,908	40.1	4,198	88.2	1,908	40.1
5/8	3,359	70.5	3,359	70.5	1,527	32.1	1,527	32.1	3,359	70.5	1,527	32.1
3/4	2,799	61.6	2,799	61.6	1,272	28.0	1,272	28.0	2,799	61.6	1,272	28.0
1	2,099	46.2	2,099	46.2	954	21.0	954	21.0	2,099	46.2	954	21.0

1. The above milling condition is a guideline for aspect ratio 3.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed.
   Adjustments may be necessary depending on the rigidity or the workpiece, fixture, and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel and titanium alloy.
7. Reduce speed and feed as well as depth of cut when high precision is required.

Speed & Feed Reduction Chart by Aspect Ratio

Hardness	–		Up to 30 HRC		–		–		–		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Cast Iron		Hardened Steel	
Aspect Ratio	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM	Speed RPM	Feed IPM
4	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
5	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
6	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
7	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
8	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
9	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
10	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

Aa & Ar Adjustment Chart by Aspect Ratio

Hardness	–		Up to 30 HRC		–		–		–		35 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V		Cast Iron		Hardened Steel	
Aspect Ratio	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar
4	1 x D	0.3 x D	1 x D	0.3 x D	1 x D	0.3 x D	1 x D	0.2 x D	1 x D	0.3 x D	1 x D	0.15 x D
5	0.75 x D		0.75 x D		0.75 x D		0.75 x D		0.75 x D		0.75 x D	
6	0.6 x D		0.6 x D		0.6 x D		0.6 x D		0.6 x D		0.6 x D	
7	0.5 x D		0.5 x D		0.5 x D		0.5 x D		0.5 x D		0.5 x D	
8	0.4 x D		0.4 x D		0.4 x D		0.4 x D		0.4 x D		0.4 x D	
9	0.2 x D		0.2 x D		0.2 x D		0.2 x D		0.2 x D		0.2 x D	
10	0.2 x D		0.2 x D		0.2 x D		0.2 x D		0.2 x D		0.2 x D	

shaping your dreams

⚠ Safe use of cutting tools

- Use safety cover, safety glasses and safety shoes during operation.
- Do not touch cutting edges with bare hands.
- Do not touch cutting chips with bare hands. Chips will be hot after cutting.
- Stop cutting when the tool becomes dull.
- Stop cutting operation immediately if you hear any abnormal cutting sounds.
- Do not modify tools.
- Please use appropriate tools for the operation. Check dimensions to ensure proper selection.

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