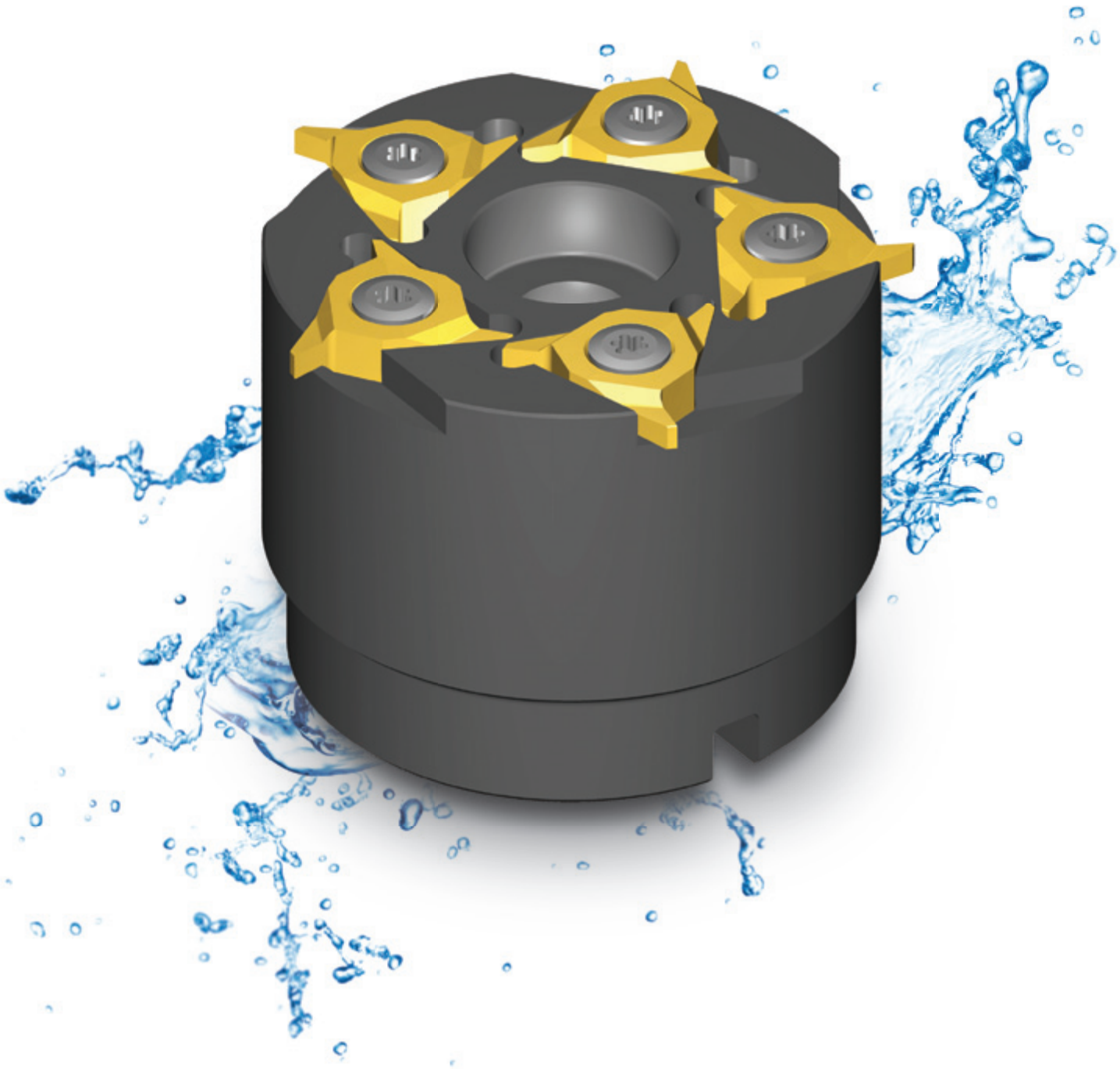
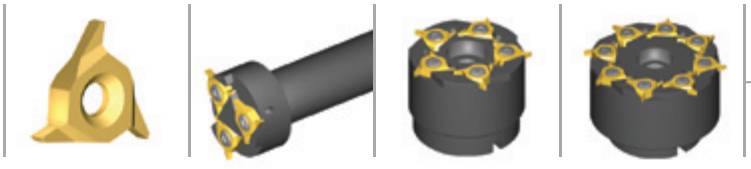


Groove Milling

> Inserts
> Toolholders
> Technical Data



- VARDEX Ordering Code ..... Page 324
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- O Ring DIN 3770 ..... Page 326
- O Ring BS 1806, DIN 3601, DIN 3771 ..... Page 327
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Vardex Ordering Code System

Groove Milling Inserts

4	W	GM	1.6	C	-	D3770	S	-	1.38	VKX
1	2	3	4	5		6	7		8	9

1- Insert Size	2 - Insert Style	3 - System	4 - Groove Std. Width
4 - IC1/2"	W -Vertical Wide Inserts	GM - Groove Milling	0.043 - 0.124

5 - Profile Shape	6 - Groove Standard	7 - Groove Type	8 - Groove Depth
C - With Chamfer	CIRC - Circlip DIN471/472 DIN3770D DIN3770S BS1806 BS4518	D - Dynamic S - Static DP- Dynamic pneumatic DH- Dynamic hydraulic	0.012 - 0.150

9 - Carbide Grade
VKX

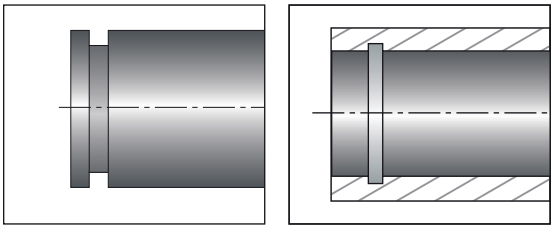
Groove Milling Shell Mill

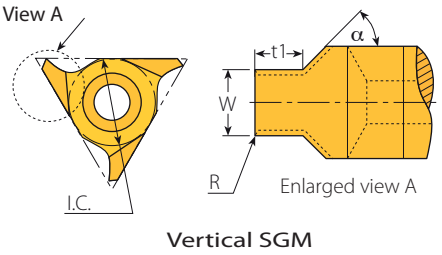
SGM	-	D189	-	100	-	4
1		2		3		4

1- System	2 - Cutting Dia.	3 - Drive Hole Dia.	4 - Insert Size
SGM - Shell Groove Milling	1.89, 2.48, 3.15	0.75, 100	4 - IC1/2"

Circlip Non Standard

External / Internal





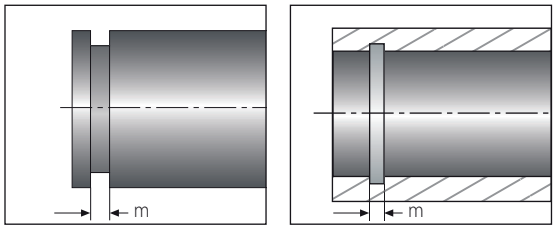
Vertical SGM

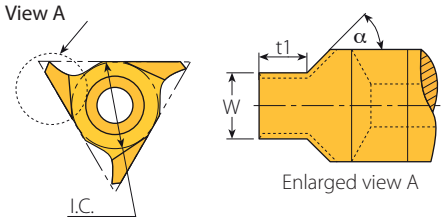
Vertical SGM

Insert Size		Ordering Code	Dimensions inch			α	
IC	L inch		W	R	t1		Toolholder
1/2"	0.87	4WGM.031C-CIRC-.06...	0.31	0.005	0.050	45°	SGM-D..-..-4
		4WGM.047C-CIRC-.083...	0.47	0.010	0.075		
		4WGM.058C-CIRC-.083...	0.58	0.010	0.075		
		4WGM.062C-CIRC-.102...	0.62	0.010	0.094		
		4WGM.072C-CIRC-.102...	0.72	0.010	0.094		
		4WGM.078C-CIRC-.102...	0.78	0.010	0.094		
		4WGM.088C-CIRC-.102...	0.88	0.010	0.094		
		4WGM.094C-CIRC-.157...	0.94	0.010	0.150		
		4WGM.097C-CIRC-.157...	0.97	0.010	0.150		
		4WGM.105C-CIRC-.157...	0.105	0.010	0.150		
		4WGM.110C-CIRC-.157...	0.110	0.010	0.150		
		4WGM.122C-CIRC-.157...	0.122	0.010	0.150		
		4WGM.125C-CIRC-.157...	0.125	0.010	0.150		
		4WGM.142C-CIRC-.157...	0.142	0.015	0.150		
		4WGM.156C-CIRC-.157...	0.156	0.010	0.150		

Circlip DIN 471/472

External / Internal





Vertical SGM

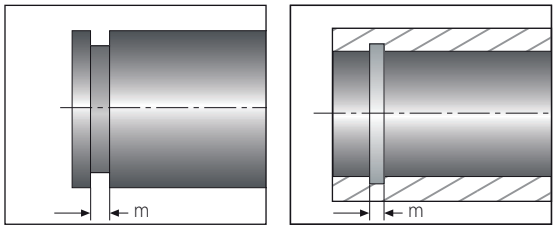
Vertical SGM

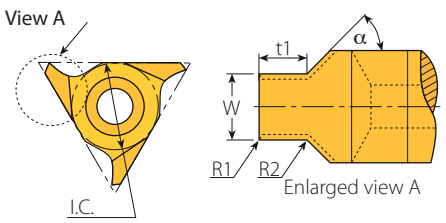
Insert Size		Ordering Code	Groove Std.			α	
IC	L inch		*m(H13)	W	t1		Toolholder
1/2″	0.87	4WGM1.1C-D471/472-0.35...	1.10	0.047	0.012	45°	SGM-D..-..-4
		4WGM1.1C-D471/472-0.40...	1.10	0.047	0.016		
		4WGM1.3C-D471/472-0.50...	1.30	0.055	0.016		
		4WGM1.3C-D471/472-0.55...	1.30	0.055	0.02		
		4WGM1.6C-D471/472-0.70...	1.60	0.067	0.024		
		4WGM1.6C-D471/472-0.85...	1.60	0.067	0.031		
		4WGM1.6C-D471/472-1.00...	1.60	0.067	0.035		
		4WGM1.85C-D471/472-1.25...	1.85	0.076	0.043		
		4WGM1.85C-D471/472-1.00...	1.85	0.076	0.035		
		4WGM2.15C-D471/472-1.50...	2.15	0.088	0.055		
		4WGM2.65C-D471/472-1.50...	2.65	0.108	0.055		
		4WGM2.65C-D471/472-1.75...	2.65	0.108	0.063		
		4WGM3.15C-D471/472-1.75...	3.15	0.128	0.063		

* Standard groove width in mm.

O Ring DIN 3770

External / Internal





Vertical SGM

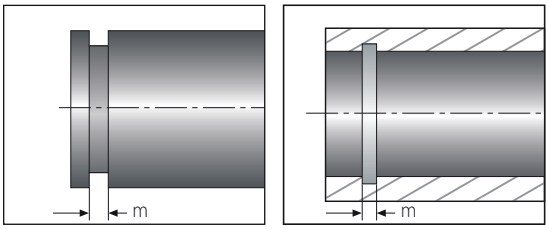
Vertical SGM

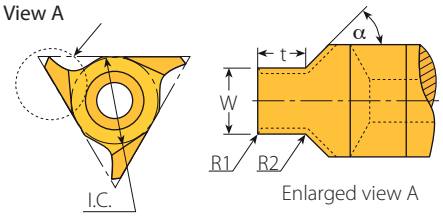
Insert Size			Ordering Code	Groove Std.					α	
IC	L inch	St.Dy		*m(H13)	W	t	R1	R2		Toolholder
1/2″	0.87	St.	4WGM1.6C-D3770S-1.38...	1.60	0.078	0.054	0.010	0.004	75°	SGM-D..-..-4
			4WGM2.0C-D3770S-1.72...	2.00	0.093	0.068	0.010	0.004		
			4WGM2.5C-D3770S-2.15...	2.50	0.119	0.085	0.010	0.004		
			4WGM3.15C-D3770S-2.70...	3.15	0.148	0.106	0.024	0.008		
		Dy.	4WGM1.6C-D3770D-1.47...	1.60	0.078	0.058	0.010	0.004		
			4WGM2.0C-D3770D-1.83...	2.00	0.093	0.072	0.010	0.004		

* Standard groove width in mm.
St. = Static Dy. = Dynamic

O Ring BS 1806, DIN3601, DIN 3771

External / Internal





Vertical SGM

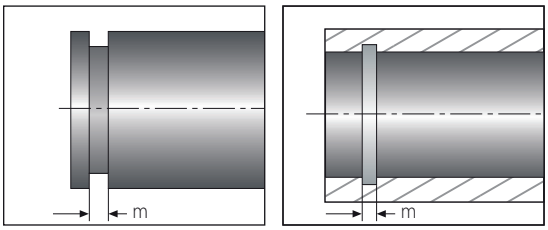
Vertical SGM

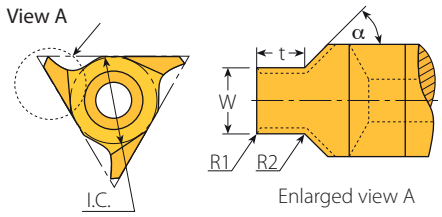
Insert Size			Ordering Code	Groove Std.					α	
IC	L inch	St.Dy		*m(H13)	W	t	R1	R2		Toolholder
1/2"	0.87	St.	4WGM1.80C-BS1806S-1.3...	1.80	0.093	0.051	0.008	0.024	75°	SGM-D..-..-4
			4WGM2.65C-BS1806S-2.0...	2.65	0.141	0.079	0.008	0.024		
		Dy.	4WGM1.80C-BS1806D-1.57...	1.80	0.093	0.061	0.008	0.024		
			4WGM2.65C-BS1806D-2.38...	2.65	0.141	0.091	0.008	0.024		

* Standard groove width in mm.
St. = Static
Dy. = Dynamic

BS 4518

External / Internal





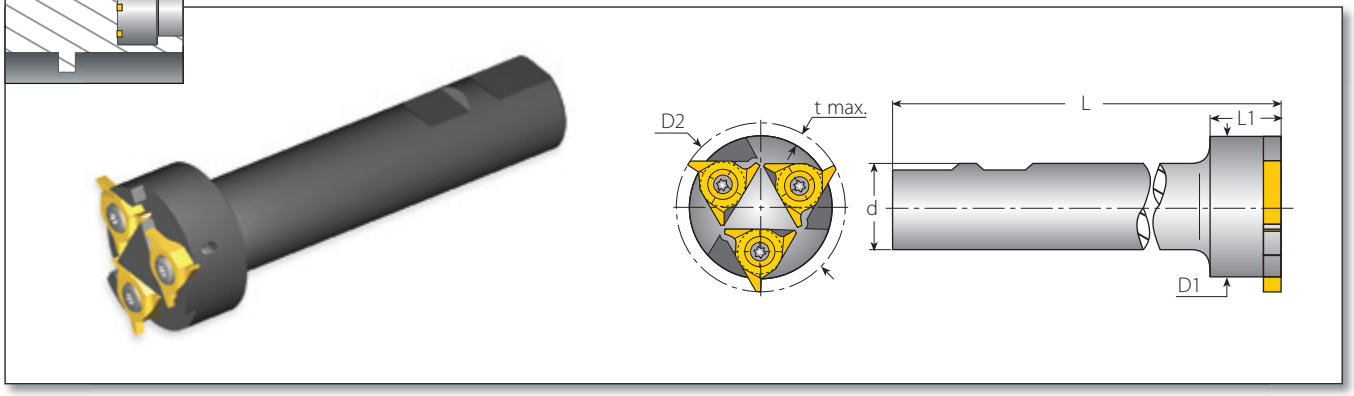
Vertical SGM

Vertical SGM

Insert Size			Ordering Code	Groove Std.					α	
IC	L inch	St.Dy		*m(H13)	W	t	R1	R2		Toolholder
1/2"	0.87	St.	4WGM1.6C-BS4518S-1.25...	1.60	0.093	0.049	0.020	0.008	75°	SGM-D..-..-4
			4WGM2.4C-BS4518S-1.95...	2.40	0.125	0.077	0.020	0.008		
			4WGM3.0C-BS4518S-2.51...	3.00	0.148	0.099	0.039	0.008		
		DyP	4WGM2.4C-BS4518DP-2.20...	2.40	0.129	0.087	0.020	0.008		
			4WGM3.0C-BS4518DP-2.77...	3.00	0.160	0.109	0.039	0.008		
		DyH	4WGM2.4C-BS4518DH-2.09...	2.40	0.129	0.082	0.020	0.008		
			4WGM3.0C-BS4518DH-2.60...	3.00	0.160	0.102	0.039	0.008		

* Standard groove width in mm.
St. = Static
DyP = Dynamic pneumatic
DyH = Dynamic hydraulic

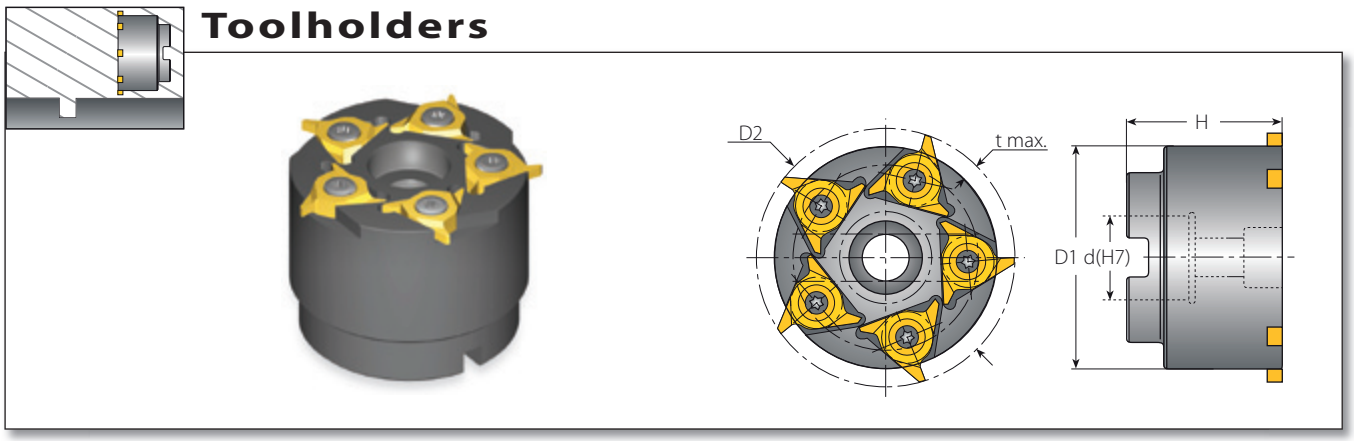
Toolholders



Multi Insert Holders (3)

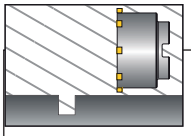
Insert Size	Ordering Code	EDP No.	Dimensions inch						Spare Parts	
IC			D2	t max	L	L1	d(H7)	D1	Insert Screw	Torx Key
1/2"	SGM-D189-100-4	67717	1.89	0.137	5.0	0.874	1.0	1.574	SN4T-90	HK4T

Toolholders

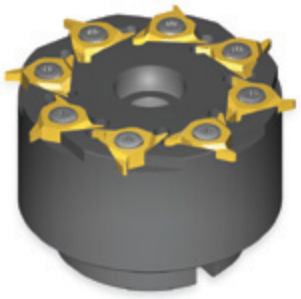


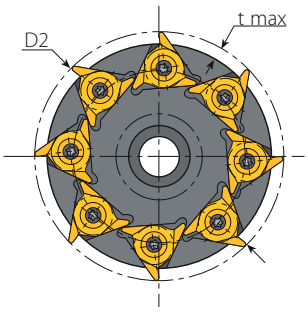
Multi Insert Holders (5)

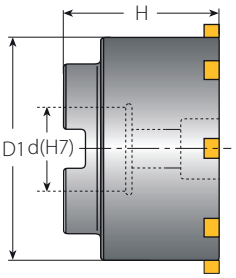
Insert Size	Ordering Code	EDP No.	Dimensions inch					Spare Parts		
IC			D2	t max	d(H7)	D1	H	Insert Screw	Torx Key	Holder Screw
1/2"	SGM-D250-0.75-4	67721	2.48	0.137	3/4	2.342	1.614	SN4T-90	HK4T	3/8 - 24



Toolholders







Multi Insert Holders (8)

Insert Size	Ordering Code	EPD No.	Dimensions inch					Spare Parts		
										
IC			D2	t max	d(H7)	D1	H	Insert Screw	Torx Key	Holder Screw
1/2"	SGM-D300-100-4	67729	3.15	0.137	1.0	2.834	1.968	SN4T-90	HK4T	1/2 - 20

Recommended Grades, Cutting Speeds Vc [ft/min], Feed f [inch/ tooth].

Material Group	Vardex No.	Material		Hardness Brinell HB	Vc [ft/min]	Feed f[inch/tooth]
					VKX	f
P Steel	1	Unalloyed steel	Low carbon (C=0.1-0.25%)	125	327 - 719	0.002 - 0.0039
	2		Medium carbon (C=0.25-0.55%)	150	327 - 556	0.0012 - 0.0028
	3		High Carbon (C=0.55-0.85%)	170	327 - 523	0.0008 - 0.002
	4	Low alloy steel (alloying elements≤5%)	Non hardened	180	262 - 491	0.002 - 0.0035
	5		Hardened	275	229 - 458	0.0012 - 0.0028
	6		Hardened	350	229 - 425	0.0008 - 0.002
	7	High alloy steel (alloying elements>5%)	Annealed	200	229 - 392	0.0012 - 0.0028
	8		Hardened	325	229 - 327	0.0012 - 0.002
	9	Cast steel	Low alloy (alloying elements <5%)	200	229 - 360	0.0012 - 0.002
	10		High alloy (alloying elements >5%)	225	164 - 262	0.0008 - 0.002
M Stainless Steel	11	Stainless steel Feritic	Non hardened	200	262 - 491	0.0012 - 0.0028
	12		Hardened	330	262 - 491	0.0012 - 0.002
	13	Stainless steel Austenitic	Austenitic	180	196 - 392	0.0012 - 0.0028
	14		Super Austenitic	200	196 - 392	0.0012 - 0.002
	15	Stainless steel Cast Feritic	Non hardened	200	196 - 392	0.0008 - 0.002
	16		Hardened	330	196 - 392	0.0004 - 0.0012
	17	Stainless steel Cast austenitic	Austenitic	200	164 - 327	0.0012 - 0.002
	18		Hardened	330	164 - 327	0.0004 - 0.0012
K Cast Iron	28	Malleable Cast iron	Ferritic (short chips)	130	196 - 360	0.0008 - 0.002
	29		Pearlitic (long chips)	230	164 - 327	0.0004 - 0.0012
	30	Grey cast iron	Low tensile strength	180	196 - 360	0.0012 - 0.0028
	31		High tensile strength	260	164 - 262	0.0012 - 0.002
	32	Nodular SG iron	Feritic	160	164 - 327	0.0012 - 0.002
	33		Pearlitic	260	131 - 229	0.0012 - 0.002
N(K) Non-Ferrous Metals	34	Aluminium alloys Wrought	Non aging	60	327 - 654	0.0028 - 0.0059
	35		Aged	100	327 - 491	0.0012 - 0.002
	36	Aluminium alloys	Cast	75	327 - 589	0.0028 - 0.0059
	37		Cast & aged	90	196 - 392	0.002 - 0.0039
	38	Aluminium alloys	Cast Si 13-22%	130	327 - 491	0.002 - 0.0039
	39	Copper and copper alloys	Brass	90	196 - 392	0.002 - 0.0039
	40		Bronze and non leaded copper	100	164 - 327	0.0118 - 0.0031
S(M) Heat Resistant Material	19	High temperature alloys	Annealed (Iron based)	200	65 - 147	0.0004 - 0.0012
	20		Aged (Iron based)	280	65 - 98	0.0004 - 0.0012
	21		Annealed (Nickel or Cobalt based)	250	33 - 65	0.0004 - 0.0012
	22		Aged (Nickel or Cobalt based)	350	33 - 49	0.0004 - 0.0012
	23	Titanium alloys	Pure 99.5 Ti	400Rm	196 - 392	0.0008 - 0.002
	24		α+β alloys	1050Rm	65 - 164	0.0004 - 0.0012
H(K) Hardned Material	25	Extra hard steel	Hardened & tempered	45-50HRc	49 - 147	0.002 - 0.0039
	26			51-55HRc	49 - 131	0.002 - 0.0039

* Peripheral feed

Grades and Their Application

Grade	Application Type	Sample
VKX	Excellent for general use TiN coated	

$$N = \frac{12 \times Vc}{\pi \times D} \qquad Vc = \frac{N \times \pi \times D}{12}$$

N - Rotational Velocity [R.P.M.]
V - Cutting Speed [ft/min]
D2 - Toolholder Cutting Dia. [inch]
F1 - Tool Feed Rate at the Cutting Egde [inch/min]
z - No. of Cutting Edges
f - Feed per Tooth per Rotation [inch/rev]