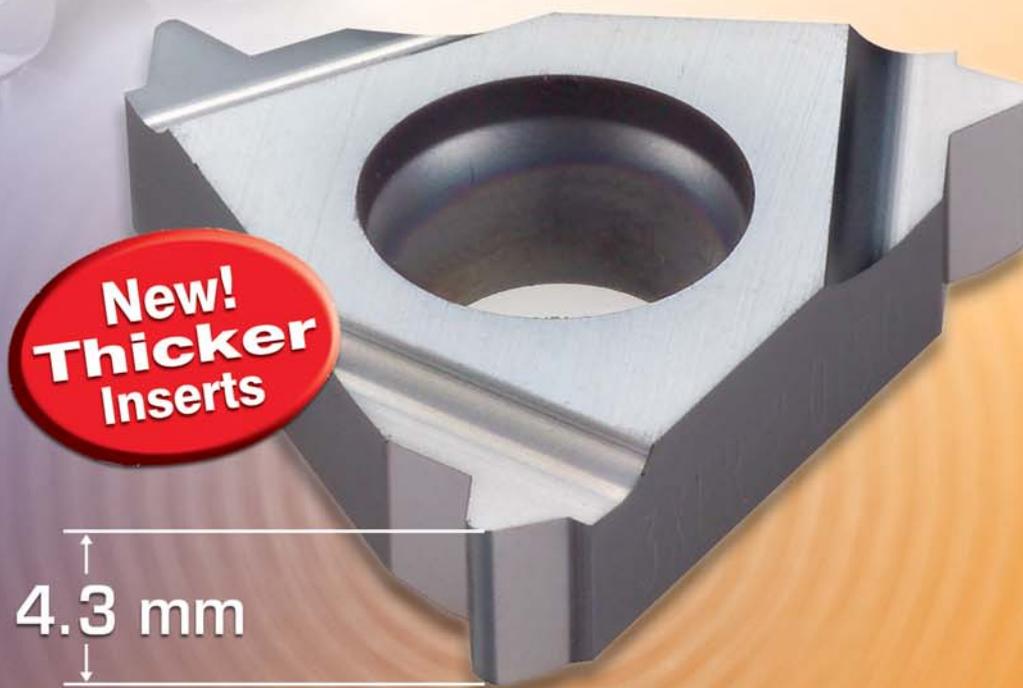




# REDLINE

## A New Line of **VARDEX** Threading Inserts

- Fits toolholders for 4.3 mm thick inserts
- Two superior carbide grades:  
**GBX** for general use and steel; **GMX** for stainless steel
- Available in all popular profiles



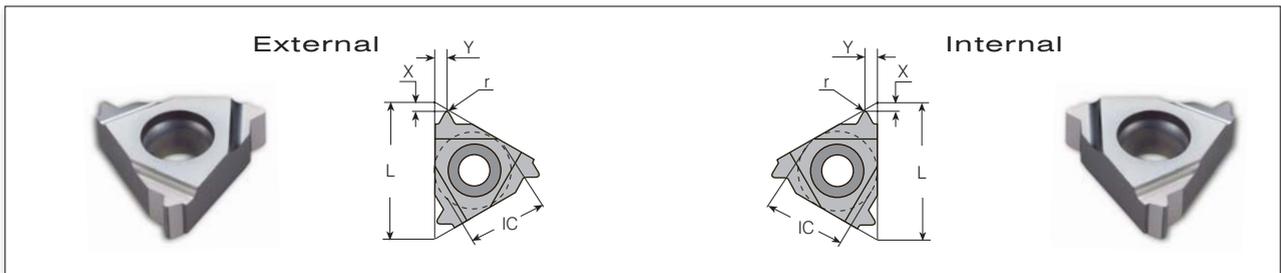
**New!  
Thicker  
Inserts**

4.3 mm

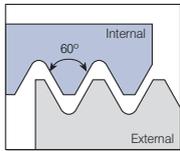


Metric

## External/Internal Profiles: Partial, ISO

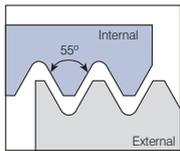


### Partial 60°



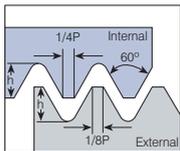
	Insert Size		Pitch		Ordering Code	Dimensions mm		
	IC	L mm	mm	tpi	Ordering Code	r	X	Y
<b>External</b>	3/8"	16	1.75-3.0	14-8	3XERG60...	0.27	1.2	1.7
			0.5-3.0	48-8	3XERAG60...	0.08	1.2	1.7
<b>Internal</b>	3/8"	16	1.75-3.0	14-8	3XIRG60...	0.16	1.2	1.7
			0.5-3.0	48-8	3XIRAG60...	0.05	1.2	1.7

### Partial 55°



	Insert Size		Pitch		Ordering Code	Dimensions mm		
	IC	L mm	mm	tpi	Ordering Code	r	X	Y
<b>External</b>	3/8"	16	1.75-3.0	14-8	3XERG55...	0.21	1.2	1.7
			0.5-3.0	48-8	3XERAG55...	0.07	1.2	1.7
<b>Internal</b>	3/8"	16	1.75-3.0	14-8	3XIRG55...	0.21	1.2	1.7
			0.5-3.0	48-8	3XIRAG55...	0.07	1.2	1.7

### ISO

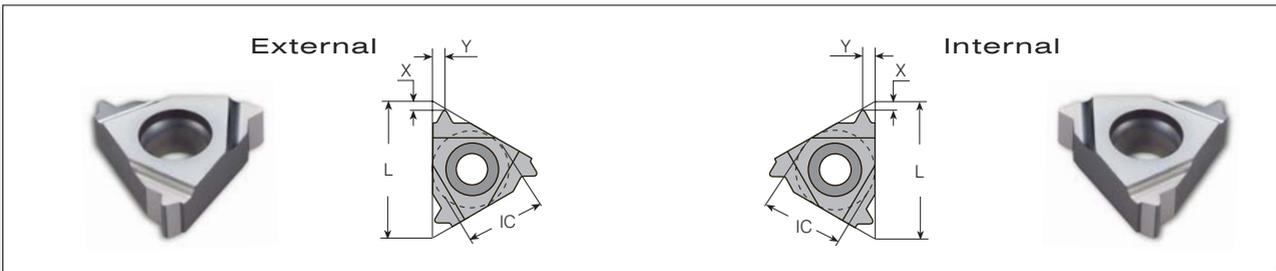


Defined by: R262 (DIN 13)  
Tolerance class: 6g/6H

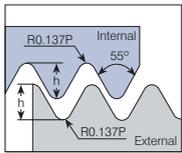
	Insert Size		Pitch		Ordering Code	Dimensions mm		
	IC	L mm	mm	tpi	Ordering Code	h min	X	Y
<b>External</b>	3/8"	16	0.75		3XER0.75ISO...	0.46	0.6	0.6
			0.8		3XER0.8ISO...	0.49	0.6	0.6
			1.0		3XER1.0ISO...	0.61	0.7	0.7
			1.25		3XER1.25ISO...	0.77	0.8	0.9
			1.5		3XER1.5ISO...	0.92	0.8	1.0
			1.75		3XER1.75ISO...	1.07	0.9	1.2
			2.0		3XER2.0ISO...	1.23	1.0	1.3
			2.5		3XER2.5ISO...	1.53	1.1	1.5
			3.0		3XER3.0ISO...	1.84	1.2	1.6
<b>Internal</b>	3/8"	16	0.75		3XIR0.75ISO...	0.43	0.6	0.6
			0.8		3XIR0.8ISO...	0.46	0.6	0.6
			1.0		3XIR1.0ISO...	0.58	0.6	0.7
			1.25		3XIR1.25ISO...	0.72	0.8	0.9
			1.5		3XIR1.5ISO...	0.87	0.8	1.0
			1.75		3XIR1.75ISO...	1.01	0.9	1.2
			2.0		3XIR2.0ISO...	1.15	1.0	1.3
			2.5		3XIR2.5ISO...	1.44	1.1	1.5
			3.0		3XIR3.0ISO...	1.73	1.1	1.5



## External/Internal Profiles: BSW, UN, NPT



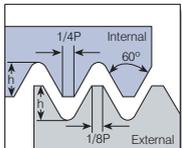
### BSW



Defined by: B.S.84:1956,  
DIN 259, ISO228/1:1982  
Tolerance class: Medium Class A

	Insert Size		Pitch	Ordering Code	Dimensions mm		
	IC	L mm	tpi	Ordering Code	h min	X	Y
<b>External</b>	3/8"	16	19	3XER19W...	0.86	0.8	1.0
			14	3XER14W...	1.16	1.0	1.2
			11	3XER11W...	1.48	1.1	1.5
<b>Internal</b>	3/8"	16	19	3XIR19W...	0.86	0.8	1.0
			14	3XIR14W...	1.16	1.0	1.2
			11	3XIR11W...	1.48	1.1	1.5

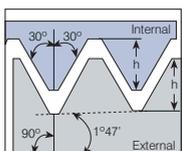
### UN



Defined by: ANSI B1.1:74  
Tolerance class: 2A/2B

	Insert Size		Pitch	Ordering Code	Dimensions mm		
	IC	L mm	tpi	Ordering Code	h min	X	Y
<b>External</b>	3/8"	16	32	3XER32UN...	0.49	0.6	0.6
			28	3XER28UN...	0.56	0.6	0.7
			20	3XER20UN...	0.78	0.8	0.9
			18	3XER18UN...	0.87	0.8	1.0
			16	3XER16UN...	0.97	0.9	1.1
			14	3XER14UN...	1.11	1.0	1.2
			12	3XER12UN...	1.30	1.1	1.4
			8	3XER8UN...	1.95	1.2	1.6
<b>Internal</b>	3/8"	16	32	3XIR32UN...	0.51	0.6	0.6
			28	3XIR28UN...	0.52	0.6	0.7
			20	3XIR20UN...	0.73	0.8	0.9
			18	3XIR18UN...	0.81	0.8	1.0
			16	3XIR16UN...	0.92	0.9	1.1
			14	3XIR14UN...	1.05	0.9	1.2
			12	3XIR12UN...	1.22	1.1	1.4
			8	3XIR8UN...	1.83	1.1	1.5

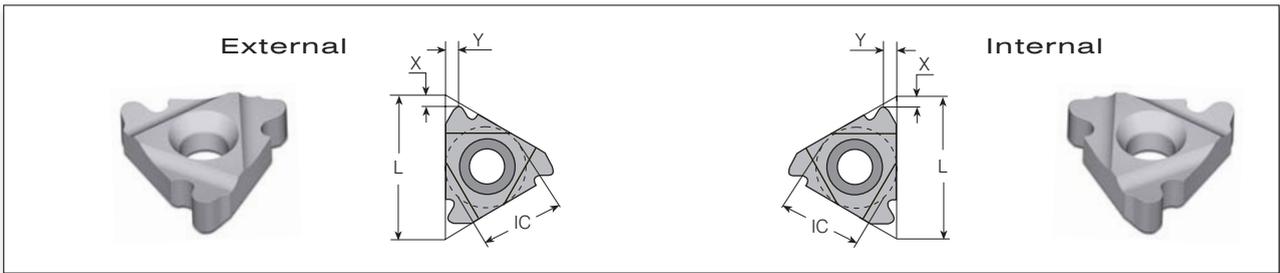
### NPT



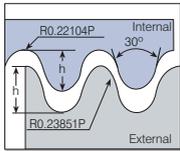
Defined by: USAS B2.1.1968  
Tolerance class: Standard NPT

	Insert Size		Pitch	Ordering Code	Dimensions mm		
	IC	L mm	tpi	Ordering Code	h min	X	Y
<b>External</b>	3/8"	16	14	3XER14NPT...	1.33	0.9	1.2
			11.5	3XER11.5NPT...	1.64	1.1	1.5
			8	3XER8NPT...	2.42	1.3	1.8
<b>Internal</b>	3/8"	16	14	3XIR14NPT...	1.33	0.9	1.2
			11.5	3XIR11.5NPT...	1.64	1.1	1.5
			8	3XIR8NPT...	2.42	1.3	1.8

## External/Internal Profiles: Round (DIN 405)



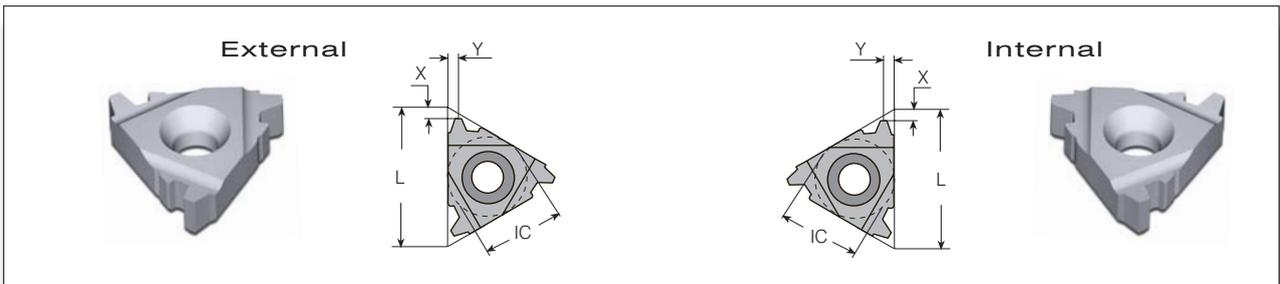
### Round (DIN 405)



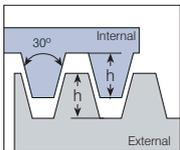
Defined by: DIN 405  
Tolerance class: 7h/7H

	Insert Size		Pitch	Ordering Code	Dimensions mm		
	IC	L mm	tpi	Ordering Code	h min	X	Y
<b>External</b>	3/8"	16	10	3XER10RD...	1.27	1.1	1.2
			8	3XER8RD...	1.59	1.4	1.3
			6	3XER6RD...	2.12	1.5	1.7
<b>Internal</b>	3/8"	16	10	3XIR10RD...	1.27	1.1	1.2
			8	3XIR8RD...	1.59	1.4	1.4
			6	3XIR6RD...	2.12	1.4	1.5

## External/Internal Profiles: Trapez



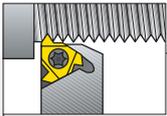
### Trapez



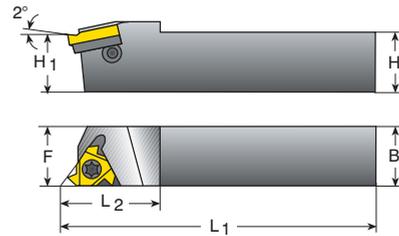
Defined by: DIN 103  
Tolerance class: 7e/7H

	Insert Size		Pitch	Ordering Code	Dimensions mm		
	IC	L mm	mm	Ordering Code	h min	X	Y
<b>External</b>	3/8"	16	1.5	3XER1.5TR...	0.90	1.0	1.1
			2.0	3XER2.0TR...	1.25	1.1	1.3
			3.0	3XER3.0TR...	1.75	1.3	1.5
<b>Internal</b>	3/8"	16	1.5	3XIR1.5TR...	0.90	1.0	1.1
			2.0	3XIR2.0TR...	1.25	1.1	1.3
			3.0	3XIR3.0TR...	1.75	1.3	1.5

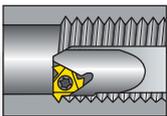
Note: Additional profiles are available by request.



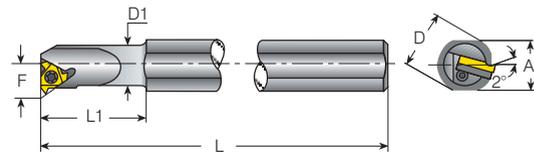
## External Toolholders



Insert Size						Spare Parts				
IC	Ordering Code	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
3/8"	AL12-3X	12	16	83.2	22	SA3TS	SY3T	K3T	YE3	Y13
	AL16-3X	16	16	100.0	20.5					
	AL20-3X	20	20	128.6	30					
	AL25-3X	25	25	153.6	30					
	AL32-3X	32	32	173.6	30					



## Internal Toolholders

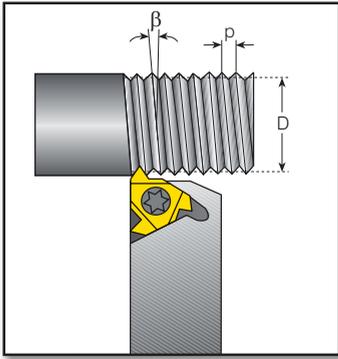


Insert Size									Spare Parts				
IC	Ordering Code	A	L	L1	D	D1	F	Min. Bore dia. mm	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
3/8"	NVRC13-3X	18.0	180	32	20	12.7	10.3	17	SN3TS	-	K3T	-	-
	NVRC16-3X	18.0	180	40	20	16.0	11.5	20					
	AVRC20-3X	18.0	180	40	20	20.0	13.4	24	SA3TS	SY3T	K3T	Y13	YE3
	AVRC25-3X	29.0	250	60	32	25.0	16.3	29					
	AVRC32-3X	29.0	250	60	32	32.0	19.6	36					
	AVRC40-3X	36.0	300	60	40	40.0	23.8	44					

The above toolholders have a 1.5° helix angle.  
 Toolholders with prefix "N" cannot be used with an anvil.

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code.

## Calculating the Helix Angle $\beta$



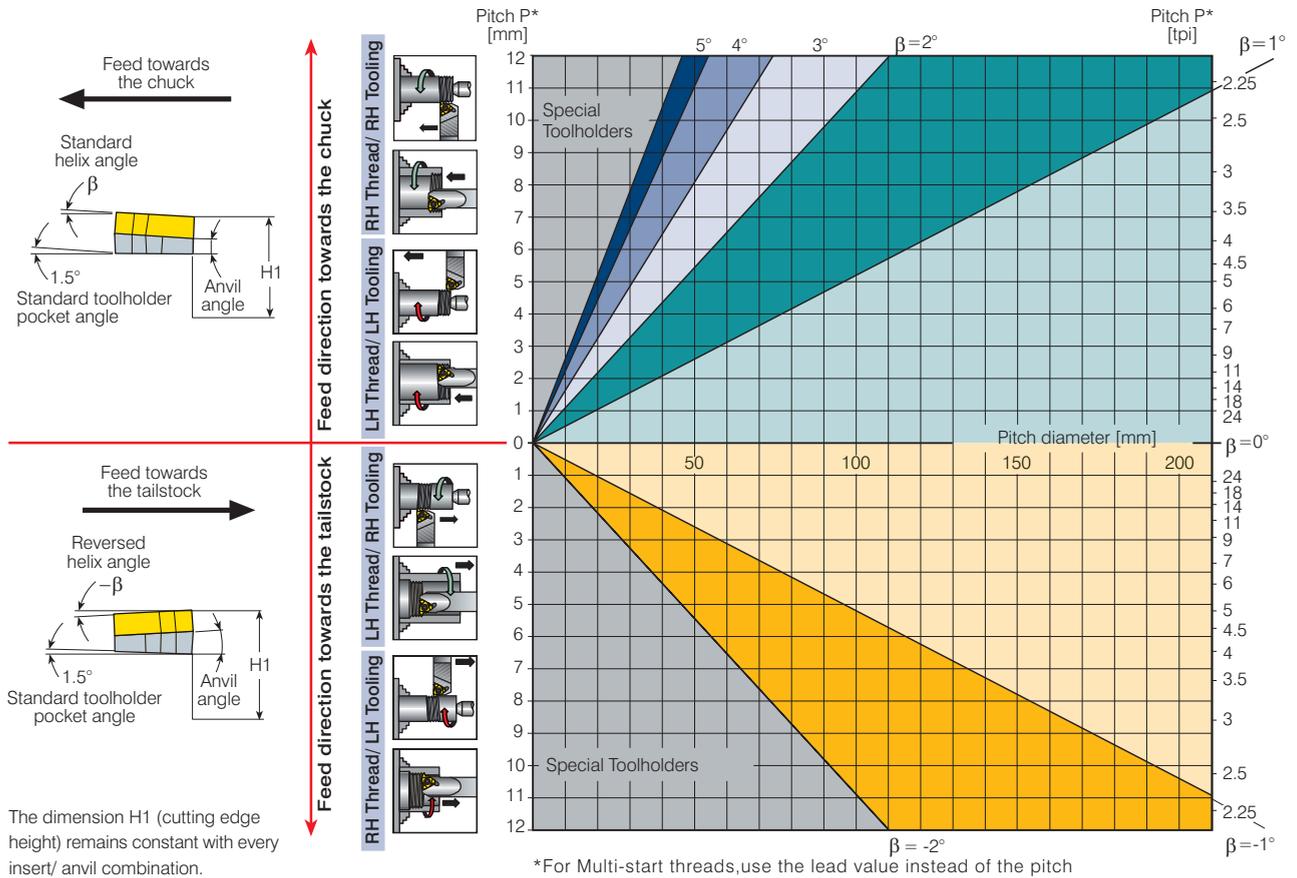
The helix angle is calculated by the following formula:

$$\beta = \arctan \frac{P \times N}{\pi \times D}$$

$\beta$  - Helix angle [°]  
 P - Pitch [mm]  
 N - No. of starts  
 D - Pitch diameter [mm]  
 Lead = P x N

The helix angle can also be found from the diagram below.

## Helix Angle Diagram



The dimension H1 (cutting edge height) remains constant with every insert/ anvil combination.

## Anvils

Resultant Helix Angle		4.5°	3.5°	2.5°	1.5°	0.5°	0°	-0.5°	-1.5°	
Insert Size	Holder	Ordering Code								
IC	L mm									
3/8"	16	ER / IL	YE3-3P	YE3-2P	YE3-1P	YE3	YE3-1N	YE3-1.5N	YE3-2N	YE3-3N
		EL / IR	YI3-3P	YI3-2P	YI3-1P	YI3	YI3-1N	YI3-1.5N	YI3-2N	YI3-3N



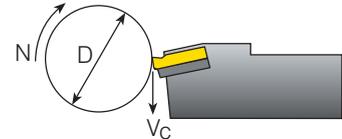
## Recommended Grades and Cutting Speeds Vc [m/min]

Material	Hardness Brinell HB	Vc[m/min]			
		Coated			
		GBX	GMX		
<b>P</b>	Unalloyed steel	Low carbon (C=0.1-0.25 %)	125	130-225	
		Medium carbon (C=0.25-0.55 %)	150	110-185	
		High carbon (C=0.55-0.85 %)	170	100-175	
	Low alloy steel (alloying elements ≤ 5%)	Non hardened	180	85-150	
		Hardened	275	75-130	
		Hardened	350	70-125	
	High alloy steel (alloying elements > 5%)	Annealed	200	60-125	
		Hardened	325	60-110	
	Cast steel	Low alloy (alloying elements <5%)	200	75-140	
		High alloy (alloying elements >5%)	225	60-110	
<b>M</b>	Stainless steel Ferritic	Non hardened	200	60-125	70-150
		Hardened	330	50-110	60-125
	Stainless steel Austenitic	Austenitic	180	65-140	90-160
		Super austenitic	200	30-110	40-120
	Stainless steel Cast ferritic	Non hardened	200	65-120	90-150
		Hardened	330	45-110	65-120
	Stainless steel Cast austenitic	Austenitic	200	60-110	85-120
		Hardened	330	45-100	60-110
	High temperature alloys	Annealed (Iron based)	200	45-70	
		Aged (Iron based)	280	30-50	
Annealed (Nickel or Cobalt based)		250	20-30		
Aged (Nickel or Cobalt based)		350	15-25		
Titanium alloys	Pure 99.5 Ti	400Rm	140-200		
	α+β alloys	1050Rm	50-70		
<b>K</b>	Extra hard steel	Hardened & tempered	55HRc	45-60	
	Malleable cast iron	Ferritic (short chips)	130	45-175	
		Pearlitic (long chips)	230	45-175	
	Grey cast iron	Low tensile strength	180	55-170	
		High tensile strength	260	45-120	
	Nodular SG iron	Ferritic	160	95-200	
		Pearlitic	260	75-120	
	Aluminium alloys Wrought	Non aging	60	1000-1500	
		Aged	100	350-550	
	Aluminium alloys	Cast	75	400-500	
Cast & aged		90	250-300		
Aluminium alloys	Cast Si 13-22%	130	200-275		
Copper and copper alloys	Brass	90	200-275		
	Bronze and non leaded copper	100	150-200		

## Calculation of N [RPM]

$$N = \frac{1000 \times V_C}{\pi \times D}$$

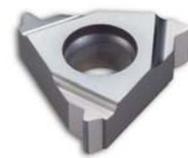
$$V_C = \frac{N \times \pi \times D}{1000}$$



N - Revolution Per Minute [RPM]  
 V<sub>C</sub> - Cutting Speed [m/min]  
 D - Workpiece Diameter [mm]

## 2 Grades:

### GBX



1st choice for:

- Steel
- General use

### GMX



1st choice for:

- Stainless steel

## Number of Passes

Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
	tpi	48	32	24	20	16	14	12	10	8
No. of passes		4-6	4-7	4-8	5-9	6-10	7-12	7-12	8-14	9-16

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## **VARDEX**

THREADING SOLUTIONS

Vargus Ltd.

Head Office - Israel

1 Hayotsrim Street

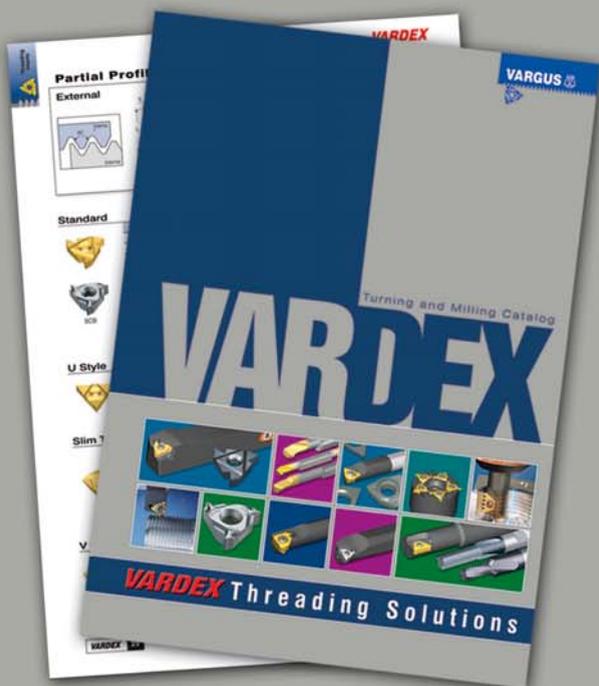
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