



**▶ REDLINE**

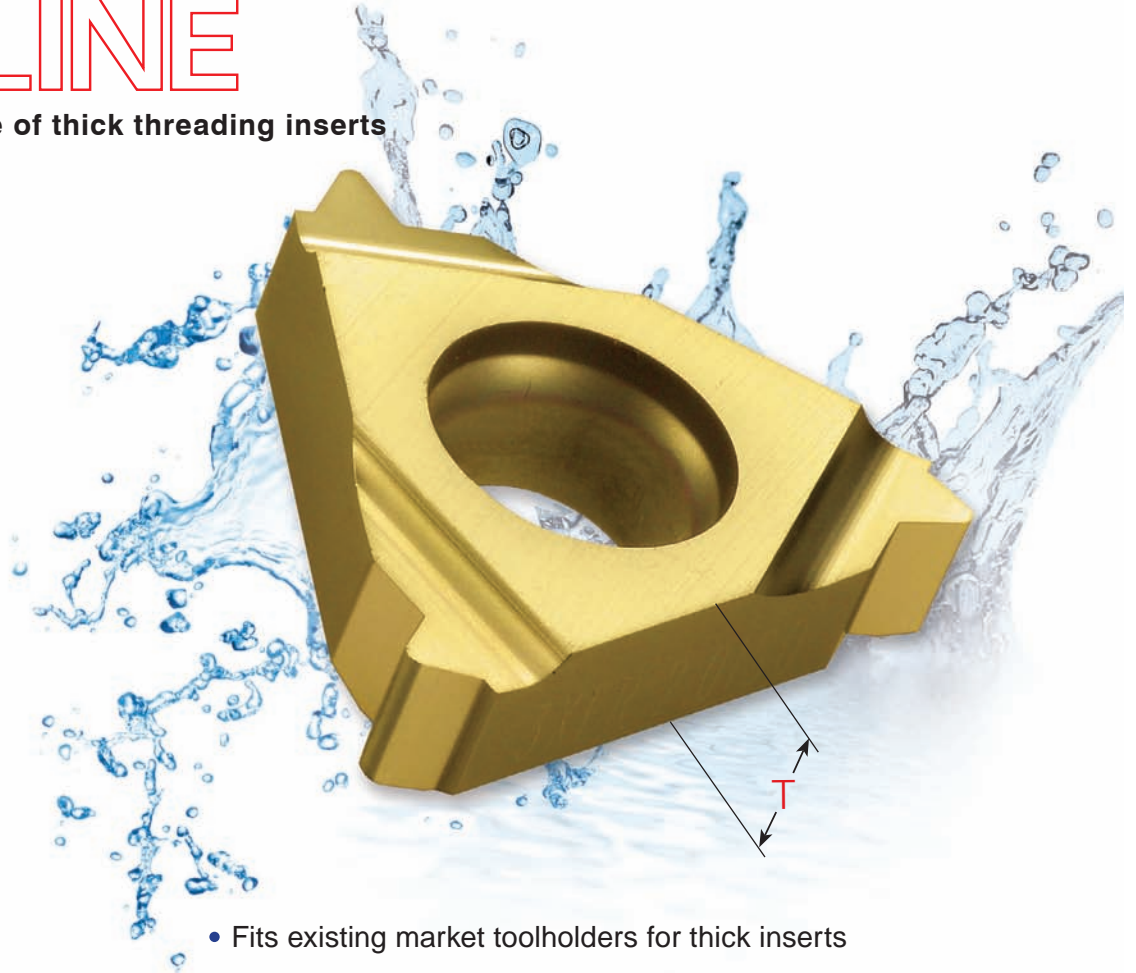
Comprehensive Line of  
Thick Threading Inserts



INCH



Comprehensive line of thick threading inserts

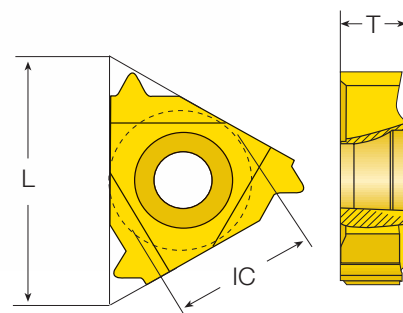


- Fits existing market toolholders for thick inserts
- Does not require tool replacement
- Produced in VKX, the superior grade for general use



**Redline Insert Thickness (T)**

I.C.	L	T - Standard	T - Redline
1/4"	.43"	.125"	.133"
3/8"	.63"	.142"	.169"
1/2"	.87"	.187"	.232"



# REDLINE CATALOG

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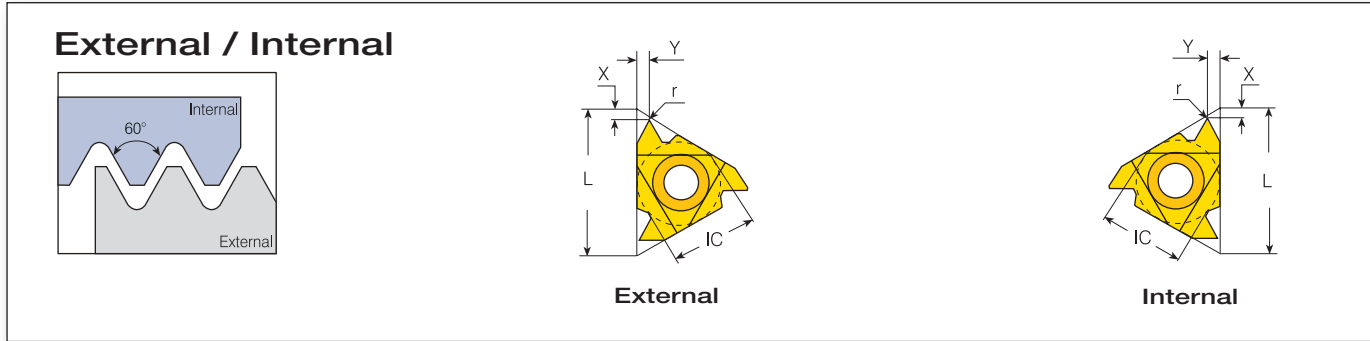
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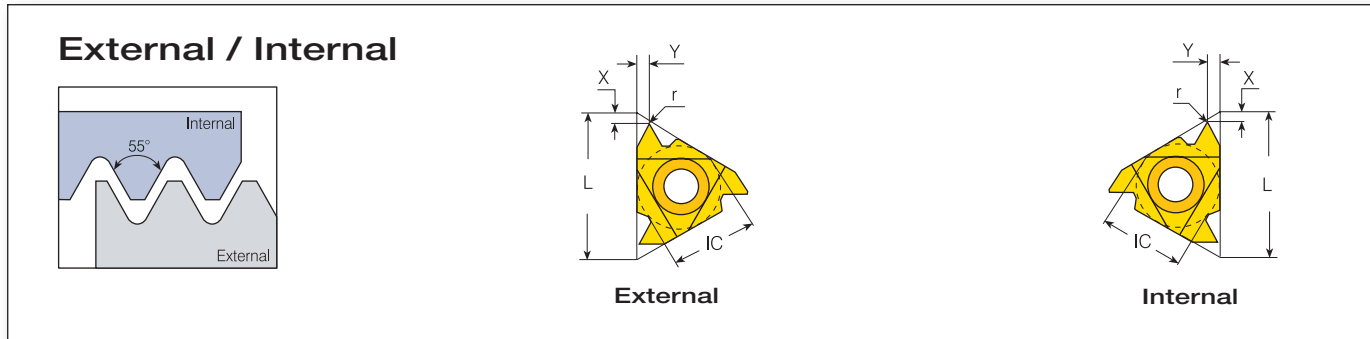
TT Gen Software and updated versions can be downloaded from [www.vargususa.com](http://www.vargususa.com)

## Partial Profile 60°



		Insert Size		Pitch		Ordering Code	EDP No.	Dimensions inch			Anvil	
		IC	L inch	mm	tpi	RH	VKX	r	X	Y	RH	Toolholder
	<b>External</b>	3/8"	.63	0.5-1.5	48-16	3XERA60...	54383	.002	.04	.04		
				1.75-3.0	14-8	3XERG60...	54384	.011	.04	.06	YE3	AL...-3X
				0.5-3.0	48-8	3XERAG60...	54372	.003	.05	.07		
		1/2"	.87	3.5-6.0	7-5	4XERP60...	54385	.021	.02	.11	YE4	AL...-4X
	<b>Internal</b>	1/4"	.43	0.5-1.5	48-16	2XIRA60...	54386	.002	.03	.04	-	NVR...-2X
				0.5-1.5	48-16	3XIRA60...	54387	.002	.04	.04		
				1.75-3.0	14-8	3XIRG60...	54388	.006	.04	.06	YI3	AVR...-3X
				0.5-3.0	48-8	3XIRAG60...	54389	.002	.05	.06		
				3.5-6.0	7-5	4XIRP60...	54390	.012	.03	.10	YI4	AVR...-4X

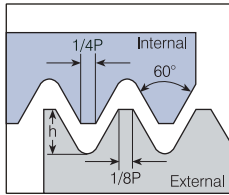
## Partial Profile 55°



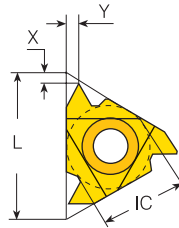
		Insert Size		Pitch		Ordering Code	EDP No.	Dimensions inch			Anvil	
		IC	L inch	mm	tpi	RH	VKX	r	X	Y	RH	Toolholder
	<b>External</b>	3/8"	.63	0.5-1.5	48-16	3XERA55...	54391	.002	.04	.04		
				1.75-3.0	14-8	3XERG55...	54392	.008	.04	.06	YE3	AL...-3X
				0.5-3.0	48-8	3XERAG55...	54393	.003	.04	.07		
		1/2"	.87	3.5-6.0	7-4	4XERP55...	54394	.017	.01	.11	YE4	AL...-4X
	<b>Internal</b>	1/4"	.43	0.5-1.5	48-16	2XIRA55...	54395	.002	.03	.04	-	NVR...-2X
				0.5-1.5	48-16	3XIRA55...	54396	.002	.04	.04		
				1.75-3.0	14-8	3XIRG55...	54397	.008	.04	.06	YI3	AVR...-3X
				0.5-3.0	48-8	3XIRAG55...	54398	.003	.04	.07		
				3.5-6.0	7-4	4XIRP55...	54399	.017	.01	.11	YI4	AVR...-4X

# American UN

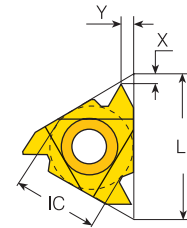
## External / Internal





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



**External**

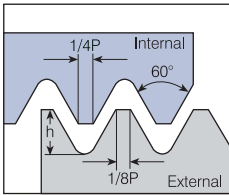


**Internal**

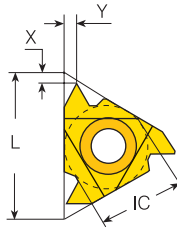
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
	IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
 <b>External</b>	3/8"	.63	32	3XER32UN...	54379	.019	.05	.02	YE3	AL...-3X
			28	3XER28UN...	54380	.022	.05	.03		
			24	3XER24UN...	54433	.026	.05	.03		
			20	3XER20UN...	54381	.031	.05	.03		
			18	3XER18UN...	54375	.034	.05	.04		
			16	3XER16UN...	54374	.038	.05	.04		
			14	3XER14UN...	54382	.044	.05	.05		
			13	3XER13UN...	54448	.047	.05	.06		
			12	3XER12UN...	54373	.051	.05	.06		
			8	3XER8UN...	54434	.077	.05	.06		
 <b>Internal</b>	1/4"	.43	32	2XIR32UN...	54435	.018	.03	.02	-	NVR...-2X
			28	2XIR28UN...	54436	.020	.03	.03		
			24	2XIR24UN...	54437	.024	.03	.03		
			20	2XIR20UN...	54438	.029	.03	.04		
			18	2XIR18UN...	54439	.032	.03	.04		
			16	2XIR16UN...	54440	.036	.03	.04		
			14	2XIR14UN...	54441	.041	.03	.04		
	3/8"	.63	20	3XIR20UN...	54442	.029	.05	.03	YI3	AVR...-3X
			18	3XIR18UN...	54443	.032	.05	.04		
			16	3XIR16UN...	54444	.036	.05	.04		
			14	3XIR14UN...	54445	.041	.05	.05		
			13	3XIR13UN...	54449	.044	.05	.06		
			12	3XIR12UN...	54446	.048	.05	.06		
8	3XIR8UN...	54447	.072	.05	.06					

# ISO Metric

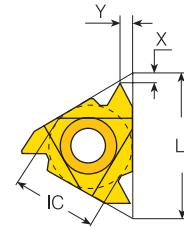
## External / Internal



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



**External**



**Internal**



**External**

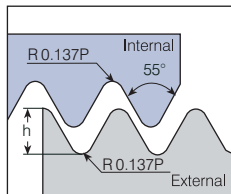


**Internal**

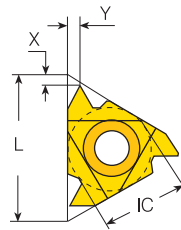
Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
IC	L inch	mm	RH	VKX	h min	X	Y	RH	Toolholder
3/8"	.63	0.5	3XER0.5ISO...	54400	.012	.05	.02	YE3	AL...-3X
		0.75	3XER0.75ISO...	54401	.018	.05	.02		
		0.8	3XER0.8ISO...	54402	.019	.05	.02		
		1.0	3XER1.0ISO...	54403	.024	.05	.03		
		1.25	3XER1.25ISO...	54404	.030	.05	.03		
		1.5	3XER1.5ISO...	54405	.036	.05	.04		
		1.75	3XER1.75ISO...	54406	.042	.05	.05		
		2.0	3XER2.0ISO...	54407	.048	.05	.06		
		2.5	3XER2.5ISO...	54408	.060	.05	.06		
		3.0	3XER3.0ISO...	54409	.072	.05	.07		
1/2"	.87	3.5	4XER3.5ISO...	54410	.085	.07	.09	YE4	AL...-4X
		4.0	4XER4.0ISO...	54411	.096	.07	.09		
		4.5	4XER4.5ISO...	54412	.109	.07	.09		
		5.0	4XER5.0ISO...	54413	.121	.05	.10		
		6.0	4XER6.0ISO...	54414	.145	.03	.11		
1/4"	.43	0.5	2XIR0.5ISO...	54415	.011	.03	.02	-	NVR...-2X
		0.75	2XIR0.75ISO...	54416	.017	.03	.02		
		1.0	2XIR1.0ISO...	54417	.023	.03	.03		
		1.5	2XIR1.5ISO...	54418	.034	.03	.04		
3/8"	.63	0.75	3XIR0.75ISO...	54420	.017	.05	.02	YI3	AVR...-3X
		1.0	3XIR1.0ISO...	54421	.023	.05	.03		
		1.25	3XIR1.25ISO...	54422	.028	.05	.03		
		1.5	3XIR1.5ISO...	54423	.034	.05	.04		
		1.75	3XIR1.75ISO...	54424	.040	.05	.05		
		2.0	3XIR2.0ISO...	54425	.045	.05	.06		
		2.5	3XIR2.5ISO...	54426	.057	.05	.06		
		3.0	3XIR3.0ISO...	54427	.068	.05	.07		
1/2"	.87	3.5	4XIR3.5ISO...	54428	.080	.06	.09	YI4	AVR...-4X
		4.0	4XIR4.0ISO...	54429	.091	.06	.09		
		4.5	4XIR4.5ISO...	54430	.102	.06	.09		
		5.0	4XIR5.0ISO...	54431	.114	.05	.10		
		6.0	4XIR6.0ISO...	54432	.136	.03	.09		

## Whitworth - BSW, BSP, BSF, BSB

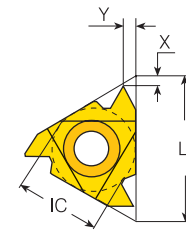
### External / Internal




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



External

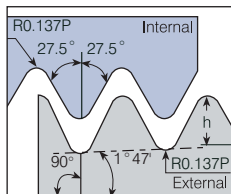


Internal

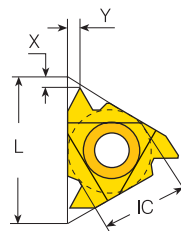
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
	IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
 <b>External</b>	3/8"	.63	28	3XER28W...	54450	.023	.05	.03	YE3	AL...-3X
			19	3XER19W...	54378	.034	.05	.03		
			16	3XER16W...	54451	.040	.05	.04		
			14	3XER14W...	54452	.046	.05	.06		
 <b>Internal</b>	1/4"	.43	19	2XIR19W...	54453	.034	.03	.04	-	NVR...-2X
			14	2XIR14W...	54454	.046	.03	.04		
	3/8"	.63	16	3XIR16W...	54455	.040	.05	.04	YI3	AVR...-3X
			14	3XIR14W...	54456	.046	.05	.05		
			11	3XIR11W...	54457	.058	.05	.06		

## BSPT

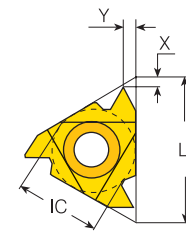
### External / Internal





Defined by: B.S. 21:1985  
Tolerance class: Standard BSPT



External

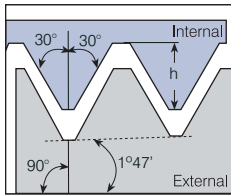


Internal

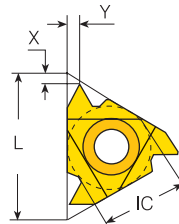
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
	IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
 <b>External</b>	3/8"	.63	19	3XER19BSPT...	54458	.034	.05	.03	YE3	AL...-3X
			14	3XER14BSPT...	54459	.046	.05	.05		
			11	3XER11BSPT...	54460	.058	.05	.06		
 <b>Internal</b>	1/4"	.43	19	2XIR19BSPT...	54461	.034	.03	.03	-	NVR...-2X
			14	2XIR14BSPT...	54462	.046	.03	.04		
	3/8"	.63	14	3XIR14BSPT...	54463	.046	.05	.05	YI3	AVR...-3X
			11	3XIR11BSPT...	54464	.058	.05	.06		

## NPT

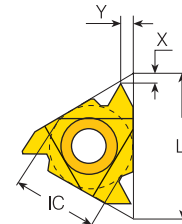
### External / Internal



Defined by: USAS B2.1:1968  
Tolerance class: Standard NPT



**External**

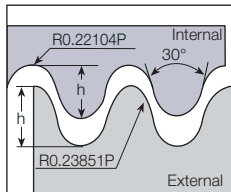


**Internal**

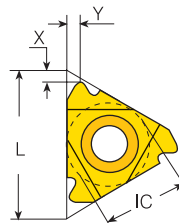
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
	IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
 <b>External</b>	3/8"	.63	27	3XER27NPT...	54465	.026	.04	.03		
			18	3XER18NPT...	54466	.040	.04	.04		
			14	3XER14NPT...	54377	.052	.04	.05	YE3	AL...-3X
			11.5	3XER11.5NPT...	54371	.065	.04	.06		
 <b>Internal</b>	1/4"	.43	18	2XIR18NPT...	54467	.040	.03	.03	-	NVR...-2X
			14	2XIR14NPT...	54468	.052	.03	.04		
	3/8"	.63	14	3XIR14NPT...	54469	.052	.04	.05		
			11.5	3XIR11.5NPT...	54470	.065	.04	.06	Y13	AVR...-3X
			8	3XIR8NPT...	54471	.095	.04	.06		

## Round (DIN 405)

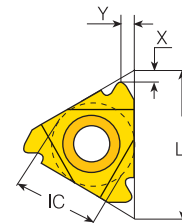
### External / Internal



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



**External**

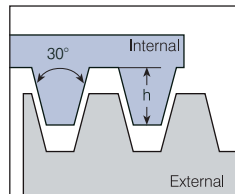


**Internal**

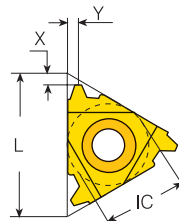
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
	IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
 <b>External</b>	3/8"	.63	6	3XER6RD...	54472	.083	.06	.06	YE3	AL...-3X
			1/2"	.87	4	4XER4RD...	54473	.125	.08	.08
 <b>Internal</b>	3/8"	.63	6	3XIR6RD...	54474	.083	.06	.06	Y13	AVR...-3X
			1/2"	.87	4	4XIR4RD...	54475	.125	.09	.09

## Trapez

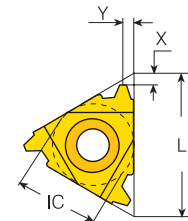
### External / Internal




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



External

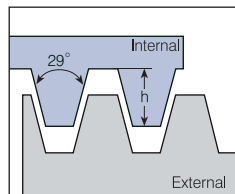


Internal

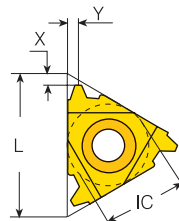
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
	IC	L inch	mm	RH	VKX	h min	X	Y	RH	Toolholder
 <b>External</b>	3/8"	.63	2.0	3XER2.0TR...	54476	.049	.05	.04	YE3	AL...-3X
			3.0	3XER3.0TR...	54477	.069	.05	.05		
	1/2"	.87	4.0	4XER4.0TR...	54478	.089	.06	.10	YE4	AL...-4X
			5.0	4XER5.0TR...	54479	.108	.06	.10		
			6.0	4XER6.0TR...	54480	.138	.03	.09		
			6.0	4XER6.0TR...	54485	.138	.03	.09		
 <b>Internal</b>	3/8"	.63	2.0	3XIR2.0TR...	54481	.049	.06	.04	YI3	AVR...-3X
			3.0	3XIR3.0TR...	54482	.069	.05	.06		
	1/2"	.87	4.0	4XIR4.0TR...	54483	.089	.06	.10	YI4	AVR...-4X
			5.0	4XIR5.0TR...	54484	.108	.06	.10		
			6.0	4XIR6.0TR...	54485	.138	.03	.09		
			6.0	4XIR6.0TR...	54485	.138	.03	.09		

## American ACME

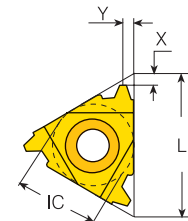
### External / Internal



Defined by: ANSI B1.5:1988  
Tolerance class: 3G



External

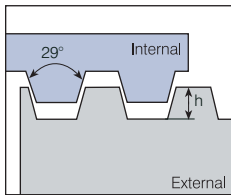


Internal

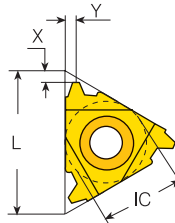
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
	IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
 <b>External</b>	3/8"	.63	12	3XER12ACME...	54486	.047	.05	.05	YE3	AL...-3X
			10	3XER10ACME...	54487	.060	.05	.05		
			8	3XER8ACME...	54488	.072	.06	.05		
	1/2"	.87	6	4XER6ACME...	54489	.093	.05	.10	YE4	AL...-4X
			5	4XER5ACME...	54490	.110	.05	.10		
			4	4XER4ACME...	54491	.135	.03	.09		
 <b>Internal</b>	3/8"	.63	12	3XIR12ACME...	54492	.047	.05	.05	YI3	AVR...-3X
			10	3XIR10ACME...	54493	.060	.05	.05		
			8	3XIR8ACME...	54494	.072	.05	.05		
	1/2"	.87	6	4XIR6ACME...	54495	.093	.05	.09	YI4	AVR...-4X
			5	4XIR5ACME...	54496	.110	.05	.09		
			4	4XIR4ACME...	54497	.135	.03	.09		

## Stub ACME

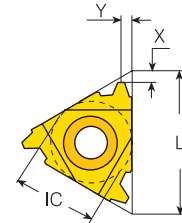
### External / Internal



Defined by: ANSI B1.8:1988  
Tolerance class: 2G



External

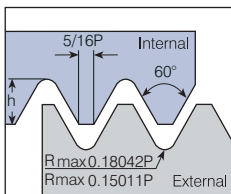


Internal

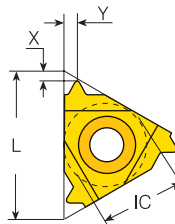
		Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
		IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
	<b>External</b>	3/8"	.63	12	3XER12STACME...	54538	.030	.05	.04	YE3	AL...-3X
				10	3XER10STACME...	54498	.040	.05	.05		
				8	3XER8STACME...	54499	.048	.04	.05		
				6	3XER6STACME...	54500	.060	.07	.06		
	<b>Internal</b>	3/8"	.63	12	3XIR12STACME...	54501	.030	.05	.04	Y13	AVR...-3X
				10	3XIR10STACME...	54502	.040	.05	.05		
				8	3XIR8STACME...	54503	.048	.04	.04		
				6	3XIR6STACME...	54504	.060	.07	.06		

## UNJ

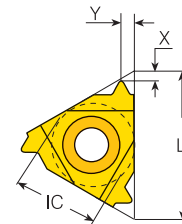
### External / Internal



Defined by: MIL-S-8879C  
Tolerance class: 3A/3B



External

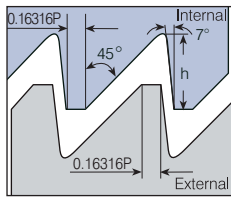


Internal

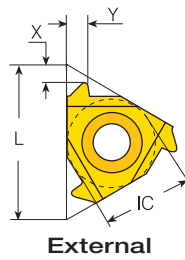
		Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
		IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
	<b>External</b>	3/8"	.63	24	3XER24UNJ...	54505	.024	.05	.03	YE3	AL...-3X
				20	3XER20UNJ...	54506	.029	.05	.03		
				18	3XER18UNJ...	54507	.032	.05	.04		
				16	3XER16UNJ...	54508	.036	.05	.04		
				12	3XER12UNJ...	54509	.048	.05	.06		
	<b>Internal</b>	1/4"	.43	18	2XIR18UNJ...	54510	.029	.03	.04	-	NVR...-2X
				14	2XIR14UNJ...	54511	.037	.03	.04		
		3/8"	.63	16	3XIR16UNJ ...	54512	.033	.05	.04	Y13	AVR...-3X
				12	3XIR12UNJ ...	54513	.044	.05	.06		

## American Buttress

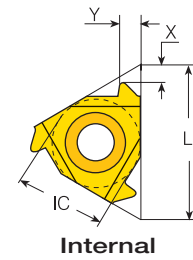
### External / Internal



Defined by: ANSI B1.9.1973  
Tolerance class: Class 2



External



Internal



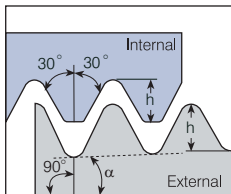
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil	
	IC	L inch	tpi	RH	VKX	h min	X	Y	RH	Toolholder
<b>External</b>	3/8"	.63	12	3XER12ABUT...	54514	.055	.06	.06	YE3	AL...-3X



<b>Internal</b>	3/8"	.63	12	3XIR12ABUT...	54515	.055	.06	.06	YI3	AVR...-3X
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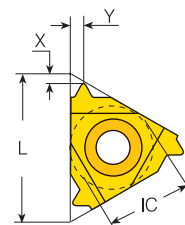
## API

### External / Internal

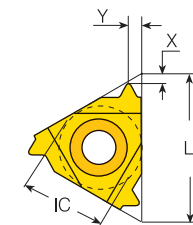


Defined by: API SPEC. 7:1990  
Tolerance class: Standard API

$$\alpha = \arctg (IPF/24)$$



External



Internal

For additional information regarding the standard dimensions and tolerances, see page 15.



	Insert Size	Pitch	Thread	Taper	Ordering Code	Size	EDP No.	Dimensions inch			Anvil		
								IC	L inch	tpi		IPF	RH
<b>External</b>	1/2"	.87	4	V-0.038R	2	4XER4API382...	NC23-NC50	54516	.122	.07	.10		
			4	V-0.038R	3	4XER4API383...	NC56-NC77	54517	.121	.07	.11		
			4	V-0.050	2	4XER4API502...	6 5/8" REG	54518	.148	.04	.11	YE4	AL...-4X
			4	V-0.050	3	4XER4API503...	5 1/2", 7 5/8", 8 5/8" REG	54519	.147	.04	.11		
<b>Internal</b>	1/2"	.87	5	V-0.040	3	4XER5API403...	2 3/8" - 4 1/2" REG	54520	.118	.05	.10		
			4	V-0.038R	2	4XIR4API382...	NC23-NC50	54521	.122	.06	.10		
			4	V-0.038R	3	4XIR4API383...	NC56-NC77	54522	.121	.06	.11		
			4	V-0.050	2	4XIR4API502...	6 5/8" REG	54523	.148	.04	.11	YI4	AVR...-4X
			4	V-0.050	3	4XIR4API503...	5 1/2", 7 5/8", 8 5/8" REG	54524	.147	.04	.11		
			5	V-0.040	3	4XIR5API403...	2 3/8" - 4 1/2" REG	54525	.118	.05	.10		

## API Buttress Casing

**External / Internal**

$\alpha = \arctg (IPF/24)$

Defined by: **STD.5B.1979**  
Tolerance class: **Standard API**

**External** **Internal**

For additional information regarding the standard dimensions and tolerances, see page 15.



	Insert Size		Pitch	Taper	Ordering Code	EDP No.	Dimensions inch			Anvil		
	IC	L inch	tpi	IPF	RH	VKX	h nominal	X	Y	RH	Toolholder	
	<b>External</b>	1/2"	.87	5	0.75	4XER5BUT75...	54526	.062	.08	.10	YE4	AL...-4X
				5	1	4XER5BUT1...	54527	.062	.08	.09		
	<b>Internal</b>	1/2"	.87	5	0.75	4XIR5BUT75...	54528	.062	.08	.11	Y14	AVR...-4X
				5	1	4XIR5BUT1...	54529	.062	.08	.08		

## API Round Casing & Tubing

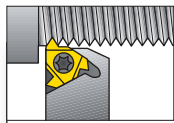
**External / Internal**

Defined by: **API STD. 5B:1979**  
Tolerance class: **Standard API RD**

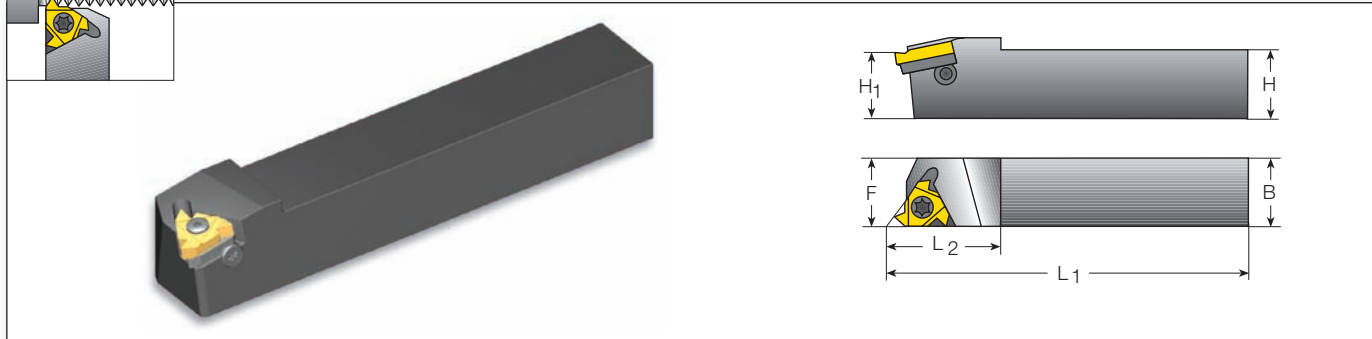
**External** **Internal**

For additional information regarding the standard dimensions and tolerances, see page 15.

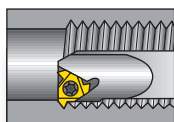
	Insert Size		Pitch	Ordering Code	EDP No.	Dimensions inch			Anvil		
	IC	L inch	tpi	RH	VKX	h nominal	X	Y	RH	Toolholder	
	<b>External</b>	3/8"	.63	10	3XER10APIRD...	54530	.056	.05	.05	YE3	AL...-3X
				8	3XER8APIRD...	54531	.071	.05	.06		
		1/2"	.87	10	4XER10APIRD...	54532	.056	.07	.09	YE4	AL...-4X
				8	4XER8APIRD...	54533	.071	.07	.09		
	<b>Internal</b>	3/8"	.63	10	3XIR10APIRD...	54534	.056	.05	.05	Y13	AVR...-3X
				8	3XIR8APIRD...	54535	.071	.05	.06		
		1/2"	.87	10	4XIR10APIRD...	54536	.056	.06	.09	Y14	AVR...-4X
				8	4XIR8APIRD...	54537	.071	.06	.09		



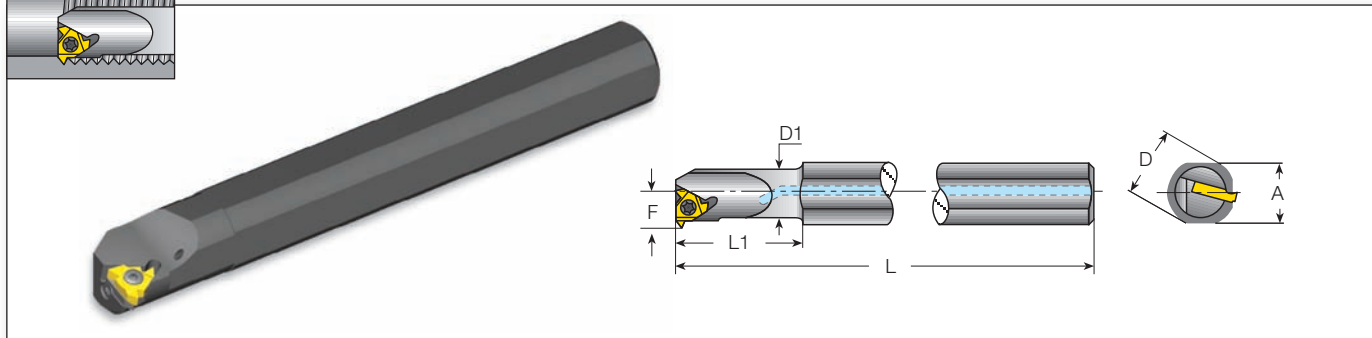
## External Toolholders



Insert Size	Ordering Code	EDP No.	Dimensions inch				Spare Parts (Ordering Code & EDP No.)				
			IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key
3/8"	AL050-3X	66349	.50	.63	3.27	.87	SA3TS (70030)	SY3T (70044)	K3T (70021)	YE3 (70052)	YI3 (70134)
	AL0625-3X	66353	.63	.63	5.00	1.02					
	AL075-3X	66350	.75	.75	5.00	1.02					
	AL100-3X	66351	1.00	1.00	6.00	1.20					
	AL125-3X	66352	1.25	1.25	7.00	1.18					
1/2"	AL100-4X	66375	1.00	1.00	5.93	1.18	SA4TS (70031)	SY4T (70045)	K4T (70022)	YE4 (70070)	YI4 (70155)
	AL125-4X	66376	1.25	1.25	6.93	1.38					

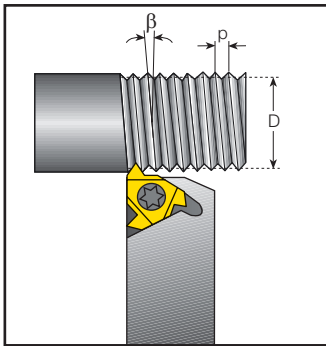


## Internal Toolholders



Insert Size	Ordering Code	EDP No.	Dimensions inch							Min. Bore dia. inch	Spare Parts (Ordering Code & EDP No.)				
			IC	RH	A	L	L1	D	D1		F	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/4"	NVRC0375-2X	66377	.67	7.0	.98	.75	.38	.25	.47	SN2TS (70047)	-	K2T (70020)	-	-	
	NVRC050-2X	66378	.67	7.0	1.30	.75	.50	.31	.59						
3/8"	NVRC050-3X	66354	.67	7.0	1.25	.75	.50	.40	.67	SN3TS (70034)	-	K3T (70021)	-	-	
	NVRC0625-3X	66359	.67	7.0	1.50	.75	.62	.46	.80						
	AVRC075-3X	66355	.67	7.0	1.50	.75	.75	.51	.90						
	AVRC100-3X	66356	1.12	10.0	2.50	1.25	1.00	.65	1.20						
	AVRC125-3X	66357	1.12	10.0	2.50	1.25	1.25	.77	1.45						
	AVRC150-3X	66358	1.34	12.0	2.50	1.50	1.50	.90	1.65						
1/2"	NVRC075-4X	66379	.67	7.0	1.93	.75	.74	.53	1.00	SN4TS (70048)	-	K4T (70022)	-	-	
	AVRC100-4X	66380	1.12	10.0	2.40	1.25	1.00	.65	1.24						
	AVRC125-4X	66381	1.12	10.0	2.40	1.25	1.24	.76	1.48						

## Calculating the Helix Angle $\beta$



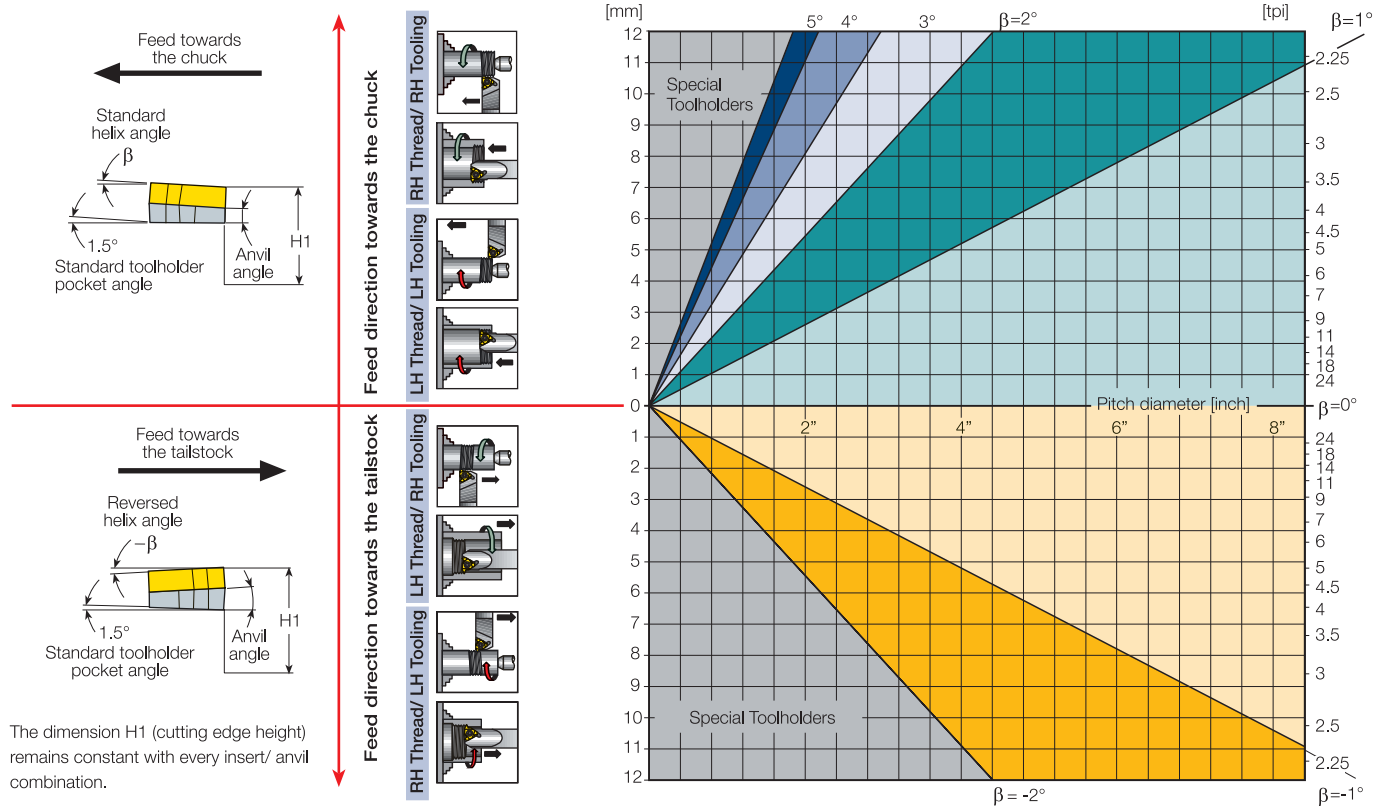
The helix angle is calculated by the following formula:

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

$\beta$  - Helix angle [ ° ]  
 P - Pitch [inch]  
 N - No. of starts  
 D - Pitch diameter [inch]  
 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.

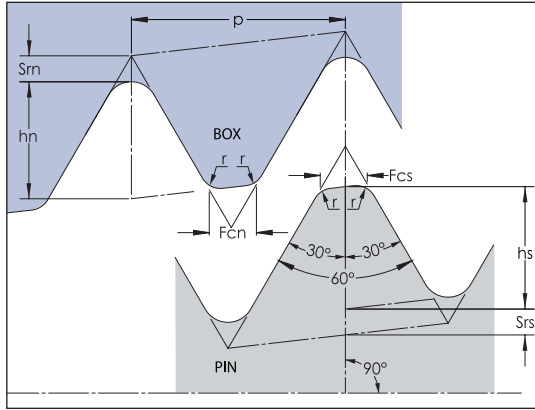
\*For Multi-start threads, use the lead value instead of the pitch

## Anvils

Resultant Helix Angle		4.5°	3.5°	2.5°	1.5°	0.5°	0°	-0.5°	-1.5°	
Insert Size	Holder	Ordering Code & EDP No.								
IC	L Inch									
3/8"	.63	ER / IL	YE3-3P	YE3-2P	YE3-1P	YE3	YE3-1N	YE3-1.5N	YE3-2N	YE3-3N
		EL / IR	(70063)	(70061)	(70059)	(70052)	(70058)	(70057)	(70060)	(70062)
	.87	ER / IL	YI3-3P	YI3-2P	YI3-1P	YI3	YI3-1N	YI3-1.5N	YI3-2N	YI3-3N
		EL / IR	(70146)	(70144)	(70141)	(70134)	(70140)	(70139)	(70143)	(70145)
1/2"	.63	ER / IL	YE4-3P	YE4-2P	YE4-1P	YE4	YE4-1N	YE4-1.5N	YE4-2N	YE4-3N
		EL / IR	(70081)	(70079)	(70077)	(70070)	(70076)	(70075)	(70078)	(70080)
	.87	ER / IL	YI4-3P	YI4-2P	YI4-1P	YI4	YI4-1N	YI4-1.5N	YI4-2N	YI4-3N
		EL / IR	(70166)	(70164)	(70162)	(70155)	(70161)	(70160)	(70163)	(70165)

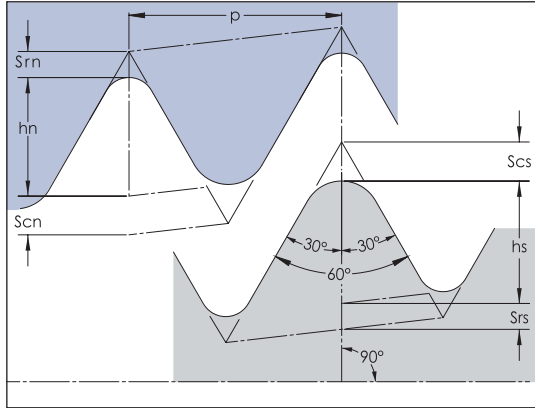
# API Standard Drawings

## API



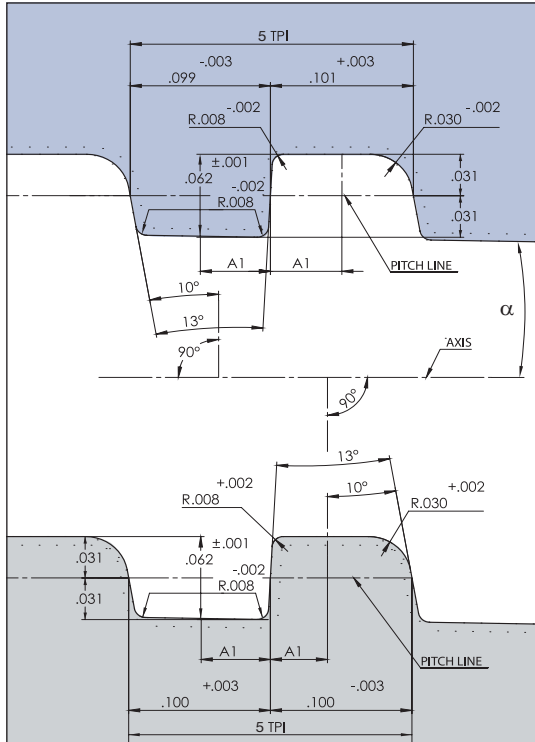
Thread form	IPF	Thread height truncated $h_s = h_n$	Root Truncation $S_{rn} = S_{rs}$	Width of flat $F_{cn} = F_{cs}$	Radius at thread corners (r)	Pitch (TPI)
V 0.038R	2	+ .001 - .003 .1218	+ .001 - .001 .038	+ .002 .065	+ .002 - .002 .015	4
V 0.038R	3	+ .001 - .003 .1214	+ .001 - .001 .038	+ .002 .065	+ .002 - .002 .015	4
V0.040	3	+ .001 - .003 .11784	+ .001 - .001 .02	+ .002 .04	+ .002 - .002 .015	5
V0.050	2	+ .001 - .003 .1478	+ .001 - .001 .025	+ .002 .05	+ .002 - .002 .015	4
V0.050	3	+ .001 - .003 .1473	+ .001 - .001 .025	+ .002 .05	+ .002 - .002 .015	4

## API Round Casing & Tubing



Thread Data	8 TPI	10 TPI
$h_s = h_n$	+ .002 - .004 .07125	+ .002 - .004 .0556
$S_{rn} = S_{rs}$	.017	.014
$S_{cs} = S_{cn}$	.020	.017

## API Buttress Casing



Taper	A1, inch	$\alpha$	Profile Height
0.75	-	1°47'24"	$\pm .001$
1	.05	2°23'17"	.062

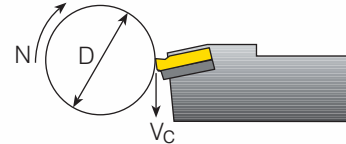
# Recommended Grades and Cutting Speeds Vc [ft/min]

Material Group	Vardex No.	Material	Hardness Brinell HB	Vc [ft/min]	
				Coated	VKX
<b>P</b> Steel	1	Unalloyed steel	Low carbon (C=0.1-0.25%)	125	377-623
	2		Medium carbon (C=0.25-0.55%)	150	328-574
	3		High carbon (C=0.55-0.85%)	170	295-541
	4	Low alloy steel (alloying elements ≤5%)	Non hardened	180	328-590
	5		Hardened	275	246-459
	6		Hardened	350	230-443
	7	High alloy steel (alloying elements >5%)	Annealed	200	262-394
	8		Hardened	325	164-328
	9	Cast steel	Low alloy (alloying elements ≤5%)	200	230-426
	10		High alloy (alloying elements >5%)	225	197-394
<b>M</b> Stainless Steel	11	Stainless steel Ferritic	Non hardened	200	230-426
	12		Hardened	330	197-377
	13	Stainless steel Austenitic	Austenitic	180	295-459
	14		Super Austenitic	200	131-360
	15	Stainless steel Cast ferritic	Non hardened	200	295-394
	16	Hardened	330	213-360	
	17	Stainless steel Cast austenitic	Austenitic	200	279-360
	18	Hardened	330	197-328	
<b>K</b> Cast Iron	28	Malleable Cast iron	Ferritic (short chips)	130	197-230
	29		Pearlitic (long chips)	230	197-476
	30	Grey Cast iron	Low tensile strength	180	230-426
	31		High tensile strength	260	197-377
	32	Nodular SG iron	Feritic	160	410-525
	33		Pearlitic	260	295-394
<b>N(K)</b> Non-Ferrous Metals	34	Aluminium alloys Wrought	Non aging	60	328-1197
	35		Aged	100	262-722
	36	Aluminium alloys Cast	Cast	75	656-1312
	37		Cast & aged	90	656-590
	38	Aluminium alloys Cast Si 13-22%		130	197-590
	39	Copper and copper alloys	Brass	90	262-738
	40		Bronze and non leaded copper	100	262-837
	<b>S(M)</b> Heat Resistant Material	19	High temperature alloys	Annealed (Iron based)	200
20		Aged (Iron based)		280	98-164
21		Annealed (Nickel or Cobalt based)		250	66-98
22		Aged (Nickel or Cobalt based)		350	49-82
23		Titanium alloys	Pure 99.5 Ti	400Rm	459-558
24			α+β alloys	1050Rm	164-230
<b>H(K)</b> Hardened Material	25	Extra hard steel	Hardened & tempered	45-50HRc	148-197
	26			51-55HRc	131-164

## Calculation of N [RPM]

$$N = \frac{12 \times V_c}{\pi \times D}$$

$$V_c = \frac{N \times \pi \times D}{12}$$



N - Revolution Per Minute [RPM]  
Vc - Cutting Speed [ft/min]  
D - Workpiece Diameter [inch]

## Grade:

**VKX**



Superior general purpose grade, excellent in steels and stainless steels. TiN coated.

## Number of Passes

Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
	tpi	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4
No. of passes		4-6	4-7	4-8	5-9	6-10	7-12	7-12	8-14	9-16	10-18	11-18	11-19	12-20	12-20	12-20