



Oil&Gas

Professional Threading Solutions



METRIC

VARDEX

Advanced Threading Solutions



Professional Threading Solutions

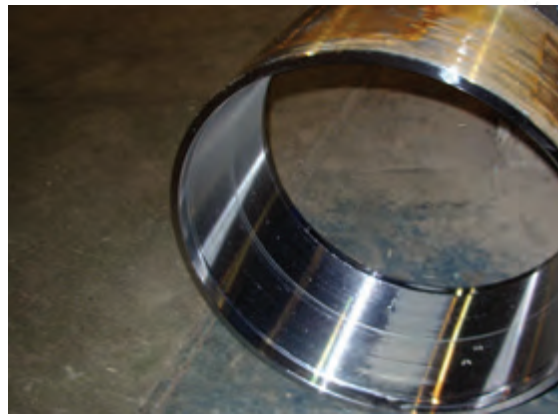
Expanded Line of Thread Turning Solutions for the Oil and Gas Industry



Solutions for Pipes and Couplings

Vardex's advanced threading solutions for the oil and gas industry, now includes specialized solutions for tough and challenging applications in the following insert profiles:

- APIRD
- VAM
- Buttress
- New VAM
- Extreme Line
- Hughes H-90



Solutions for Rotary Drill Stem Connections

Unique insert design with strengthened cutting edge and increased tool life for the following Rotary Drill stem connections:

- NC - Number Connection
- REG -Regular Style
- FH - Full Hole
- IF - Internal Flash





Professional Threading Solutions

Specialized Thread Milling Solutions for the Oil & Gas Industry

Ask us about our specialized solutions for frac pump and valves manufacturers. Contact your local Vargus distributor for ordering information.

Frac Pumps

Application
Common threads:
 5.5"-6" -4 ABUT, 3/4"-10UNC



Recommended Solutions

Shell Mill (5/8" V Style)



V Style



Deep Threading - Full & Partial Profile



Valves

Application
Common threads:
 UN, UNC, ACME, STACME, NPT, BSP

Ball



Gas Pipe



Butterfly



Recommended Solutions

MiTM 40 Standard



MiTM 40 Shell Mill



TM Solid - Helical Flutes with Thru-Hole Coolant



TMSD Vertical



TMSD U Style



TMSD L Style (3/8"L)



Professional Threading Solutions

Solutions for Machining Seal Components in Premium Connections

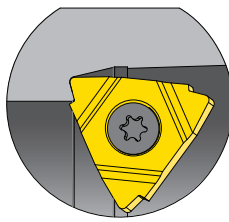
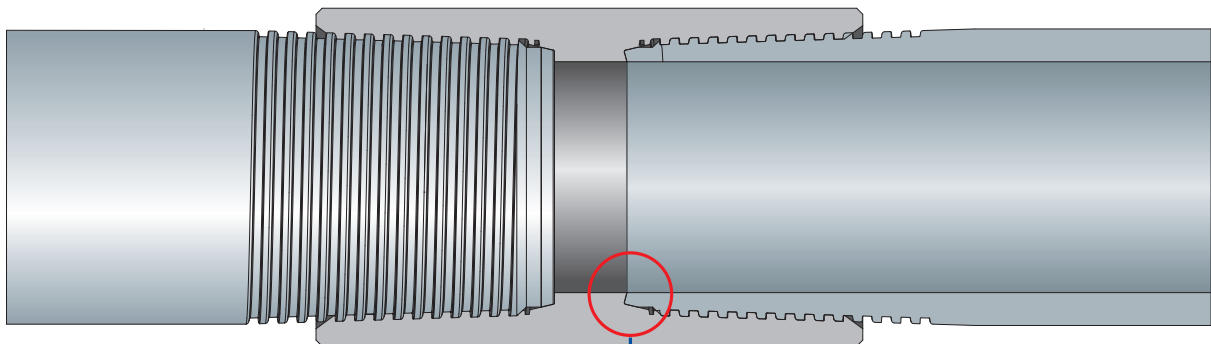
Vargus' new high precision inserts for the Oil & Gas industry are specially designed to reproduce a variety of different insert profile geometries accurately and consistently onto the component for optimized manufacturing of seal components.

Quotations on tailor-made solutions are available upon receipt of the seal component geometry.

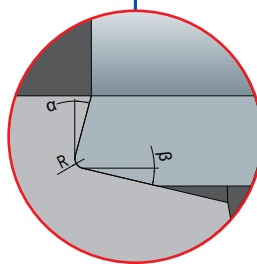
Advantages:

- High indexability of insert cutting edges: $\pm 0.02\text{mm}$ ($\pm .0008''$)
- Profile geometry can be tailored to specific applications
- Economical inserts with 3 cutting corners
- Insert profile is copied onto the component for significantly reduced machining cycle times
- Shorter set-up time
- Simple CNC programming

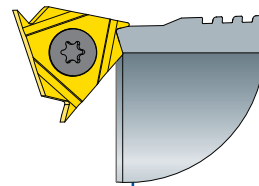
Seal Component Machining



Profile Copied to the Coupling



Sample Seal Component Geometry



Profile Copied to the Pipe

Special Toolholder Solutions (See Pages 45-46)



OIL & GAS CATALOG

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SPECIAL SOLUTIONS

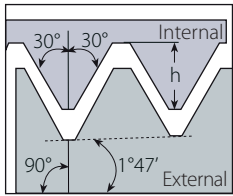
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TECHNICAL DATA

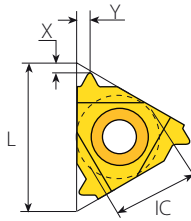
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NPT

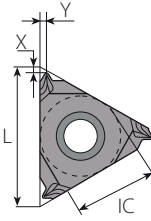
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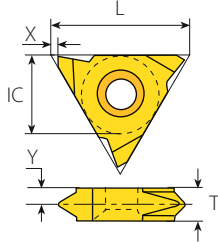
Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



Standard





SCB Sintered
Chipbreaker




Slim Throat

Standard

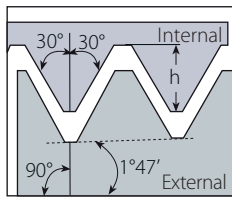
	Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder
	IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	
	1/4"	11	27	2ER27NPT...	2EL27NPT...	0.66	0.7	0.8	-	-	NL..-2 (LH)
			18	2ER18NPT...	2EL18NPT...	1.01	0.8	1.0			
			14	2ER14NPT...	2EL14NPT...	1.33	0.8	1.0			
 SCB	3/8"	16	27	3ER27NPT...	3EL27NPT...	0.66	0.7	0.8	YE3	YI3	AL..-3 (LH)
			18	3ER18NPT...	3EL18NPT...	1.01	0.8	1.0			
			14	3ER14NPT...	3EL14NPT...	1.33	0.9	1.2			
			11.5	3ER11.5NPT...	3EL11.5NPT...	1.64	1.1	1.5			
3/8" SCB	16	8	27	3ER8NPT...	3EL8NPT...	2.42	1.3	1.8	YE3	-	AL..-3
			18	3JER18NPT...		1.01	0.6	0.8			
			14	3JER14NPT...		1.33	1.1	1.5			
			11.5	3JER11.5NPT...		1.64	1.1	1.5			

Slim Throat

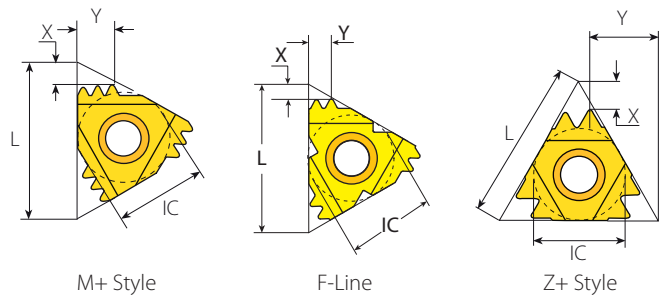
	Insert Size		Pitch	Ordering Code		Dimensions mm			Toolholder	
	IC	L mm	TPI	RH	LH	h min	X	Y		T
	1/4"V	11	27	2VER27NPT...	2VEL27NPT...	0.66	0.7	2.0	3.2	NL..-2V (LH)
			18	2VER18NPT...	2VEL18NPT...	1.01	0.7	1.8	3.2	
			14	2VER14NPT...	2VEL14NPT...	1.33	0.7	1.8	3.2	
			11.5	2VER11.5NPT...	2VEL11.5NPT...	1.64	0.7	2.1	3.2	
3/8"V	16	8	27	3VER27NPT...	3VEL27NPT...	0.66	1.1	2.9	3.6	NL..-3V (LH)
			18	3VER18NPT...	3VEL18NPT...	1.01	1.1	2.6	3.6	
			11.5	3VER11.5NPT...	3VEL11.5 NPT...	1.64	1.1	2.1	3.6	

NPT (con't)

External



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



M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
3/8"	16	14	2	3ER14NPT2M+...	1.33	2.0	3.0	YE3M	AL...-3
1/2"	22	11.5	2	4ER11.5NPT2M+...	1.64	2.2	3.4	YE4M	AL...-4
5/8"	27	11.5	3	5ER11.5NPT3M+...	1.64	3.5	5.6	YE5M	AL...-5
		8	2	5ER8NPT2M+...	2.42	3.1	4.9		

F-Line M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2" F	23	11.5	2	4FER11.5NPT2M+...	1.64	2.2	3.4	YE4M2F	AL...-4MF

Z+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	11.5	2	4ER11.5NPT2Z+...	1.64	2.7	10.0	YE4Z	AL...-4Z
		8	2	4ER8NPT2Z+...	2.42	3.4	9.6		

NPT (con't)

Internal

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

Standard

SCB
Sintered Chipbreaker

M+ Style

F-Line

Z+ Style

Standard

	Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder
	IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	
	1/4"	11	27	2IR27NPT...	2IL27NPT...	0.66	0.7	0.8	-	-	NVR...-2 (LH)
			18	2IR18NPT...	2IL18NPT...	1.01	0.8	1.0	-	-	
			14	2IR14NPT...	2IL14NPT...	1.33	0.8	1.0	-	-	
	1/4" SCB	11	27	2JIR27NPT...		0.66	0.6	0.8	-	-	NVR...-2
			18	2JIR18NPT...		1.01	0.6	0.8	-	-	
			14	2JIR14NPT...		1.33	0.6	0.8	-	-	
	3/8"	16	27	3IR27NPT...	3IL27NPT...	0.66	0.7	0.8	YI3	YE3	AVR...-3 (LH)
			18	3IR18NPT...	3IL18NPT...	1.01	0.8	1.0			
			14	3IR14NPT...	3IL14NPT...	1.33	0.9	1.2			
			11.5	3IR11.5NPT...	3IL11.5NPT...	1.64	1.1	1.5			
			8	3IR8NPT...	3IL8NPT...	2.42	1.3	1.8			
	3/8" SCB	16	27	3JIR27NPT...		0.66	0.6	0.8	YI3	-	AVR...-3
			18	3JIR18NPT...		1.01	0.6	0.8			
			14	3JIR14NPT...		1.33	1.1	1.5			
			11.5	3JIR11.5NPT...		1.64	1.1	1.5			
			8	3JIR8NPT...		2.42	1.0	1.5			

M+ Style

	Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
	IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
	3/8"	16	14	2	3IR14NPT2M+...	1.33	2.0	3.0	YI3M	AVR...-3
			11.5	2	4IR11.5NPT2M+...	1.64	2.2	3.4	YI4M	AVR...-4
			11.5	3	5IR11.5NPT3M+...	1.64	3.5	5.6	YI5M	AVR...-5M
8	2	5IR8NPT2M+...	2.42	3.1	4.9					

F-Line M+ Style



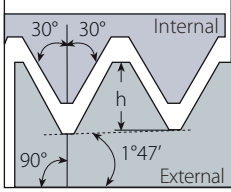
	Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
	IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
	1/2" F	23	11.5	2	4FIR11.5NPT2M+...	1.64	2.2	3.4	YI4M2F	AVRC...-4MF

Z+ Style

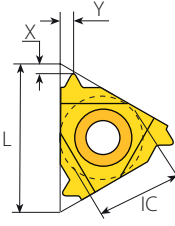
	Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
	IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
	1/2"	22	11.5	2	4IR11.5NPT2Z+...	1.64	2.7	10.0	YI4Z	AVR...-4Z
			8	2	4IR8NPT2Z+...	2.42	3.4	9.6		

NPTF

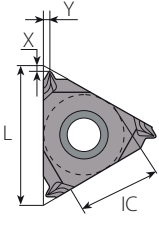
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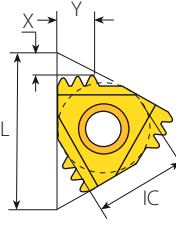
Defined by: ANSI B1.2.3-1976
Tolerance class: Class 2



Standard


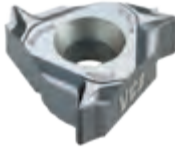



SCB
Sintered Chipbreaker




M+ Style

Standard

	Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder
	IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	
	1/4"	11	27	2ER27NPTF...	2EL27NPTF...	0.64	0.7	0.8	-	-	NL...-2 (LH)
			18	2ER18NPTF...	2EL18NPTF...	1.00	0.8	1.0	-	-	
			14	2ER14NPTF...	2EL14NPTF...	1.35	0.8	1.0	-	-	
	3/8"	16	27	3ER27NPTF...	3EL27NPTF...	0.64	0.7	0.8	YE3	YI3	AL...-3 (LH)
			18	3ER18NPTF...	3EL18NPTF...	1.00	0.8	1.0			
			14	3ER14NPTF...	3EL14NPTF...	1.35	0.9	1.2			
			11.5	3ER11.5NPTF...	3EL11.5NPTF...	1.63	1.1	1.5			
	3/8" SCB	16	8	3ER8NPTF...	3EL8NPTF...	2.38	1.3	1.8	YE3	-	AL...-3
			27	3JER27NPTF...		0.64	0.7	0.8			
			18	3JER18NPTF...		1.00	0.6	0.8			
			14	3JER14NPTF...		1.35	1.1	1.5			
			11.5	3JER11.5NPTF...		1.63	1.1	1.5			

M+ Style

	Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
	IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
	3/8"	16	14	2	3ER14NPTF2M+...	1.35	2.0	3.0	YE3M	AL...-3

NPTF (con't)

Internal


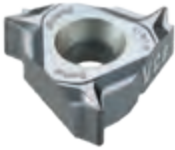
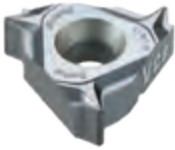
Defined by: ANSI B1.2.3-1976
Tolerance class: Class 2

Standard


SCB
Sintered Chipbreaker

M+ Style

Standard

	Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder	
	IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH		
	1/4"	11	27	2IR27NPTF...	2IL27NPTF...	0.64	0.7	0.8	-	-	NVR..-2 (LH)	
			18	2IR18NPTF...	2IL18NPTF...	1.00	0.8	1.0	-	-		
			14	2IR14NPTF...	2IL14NPTF...	1.35	0.8	1.0	-	-		
	1/4" SCB	11	27	2JIR27NPTF...		0.64	0.7	0.8	-	-	NVR..-2	
			18	2JIR18NPTF...		1.00	0.6	0.8	-	-		
			27	3IR27NPTF...	3IL27NPTF...	0.64	0.7	0.8	YI3	YE3		AVR..-3 (LH)
			18	3IR18NPTF...	3IL18NPTF...	1.00	0.8	1.0				
14	3IR14NPTF...	3IL14NPTF...	1.35	0.9	1.2							
11.5	3IR11.5NPTF...	3IL11.5NPTF...	1.63	1.1	1.5							
	3/8" SCB	16	27	3JIR27NPTF...		0.64	0.7	0.8	YI3	-	AVR..-3	
			18	3JIR18NPTF...		1.00	0.6	0.8				
			14	3JIR14NPTF...		1.35	1.1	1.5				
			11.5	3JIR11.5NPTF...		1.63	1.1	1.5				
			8	3JIR8NPTF...		2.38	1.1	1.5				

M+ Style

	Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
	IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
	3/8"	16	14	2	3IR14NPTF2M+...	1.35	2.0	3.0	YI3M	AVR..-3

API

External

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

Standard - External

F-Line

On Edge

Standard

IC	Insert Size		Pitch	Thread	Taper	Ordering Code	Size	Dimensions mm			Anvil	
	L mm	TPI						h min	X	Y	RH	Toolholder
	1/2"	22	4	V-0.038R	2	4ER4API382...	NC23-NC50, 2 3/8" - 6 5/8" IF	3.09	2.1	2.8	YEI 4-API-1P or YE4	AL...-4 5BUT/API or AL...-4 (LH)
			4	V-0.038R	3	4ER4API383...	NC56-NC77	3.08	2.1	2.8		
			5	V-0.040	3	4ER5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6		
			4	V-0.050	2	4ER4API502...	6 5/8" REG, 5 1/2" FH, 6 5/8" FH	3.75	2.0	2.9		
			4	V-0.050	3	4ER4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2.0	2.9		
			6	V-0.055	1.5	4ER6API551...	NC10-NC16	1.41	2.6	2.0		
	5/8"	27	4	V-0.038R	2	5ER4API382...	NC23-NC50, 2 3/8" - 6 5/8" IF	3.09	2.1	2.8	YE50IL	AL...-5 OIL (LH)
			4	V-0.038R	3	5ER4API383...	NC56-NC77	3.08	2.1	2.8		
			5	V-0.040	3	5ER5API403...	2 3/8"-4 1/2" REG	2.99	1.9	2.7		
			4	V-0.050	2	5ER4API502...	6 5/8" REG, 5 1/2" FH, 6 5/8" FH	3.75	2.1	3.1		
			4	V-0.050	3	5ER4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2.1	3.1		

F LINE

IC	Insert Size		Pitch	Thread	Taper	Ordering Code	Size	Dimensions mm			Anvil	
	L mm	TPI						h min	X	Y	RH	Toolholder
	1/2" F	w23	4	V-0.038R	2	4FER4API382...	NC23-NC50, 2 3/8" - 6 5/8" IF	3.09	2.1	2.8	YE4F	AL...-4F
			4	V-0.038R	3	4FER4API383...	NC56-NC77	3.08	2.1	2.8		
			5	V-0.040	3	4FER5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6		
			4	V-0.050	2	4FER4API502...	6 5/8" REG, 5 1/2" FH, 6 5/8" FH	3.75	2	2.9		
			4	V-0.050	3	4FER4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2	2.9		
			6	V-0.055	1.5	4FER6API551...	NC10-NC16	1.41	2.6	2		

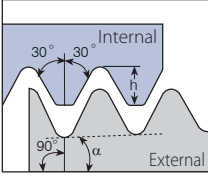
On Edge*

IC	Insert Size		Pitch	Thread	Taper	Ordering Code	Size	Dimensions mm				Position	
	L mm	TPI						R	h min	T	Ø C	X	Y
	5/8"	27	4	V-0.038R	2	TNEC55ER4API382...	NC23-NC50, 2 3/8" - 6 5/8" IF	0.97	3.10	7.94	6.50	23.4	5.0
			4	V-0.038R	3	TNEC55ER4API383...	NC56-NC77	0.97	3.10	7.94			5.0
			5	V-0.040	3	TNEC54ER5API403...	2 3/8"-4 1/2" REG	0.51	3.00	6.35			3.9
			4	V-0.050	2	TNEC55ER4API 502...	6 5/8" REG, 5 1/2" FH, 6 5/8" FH	0.64	3.76	7.94			5.0
			4	V-0.050	3	TNEC55ER4API503...	5 1/2", 7 5/8", 8 5/8" REG	0.64	3.76	7.94			5.0

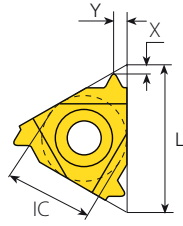
* On Edge inserts are suited to existing toolholders on the market

API (con't)

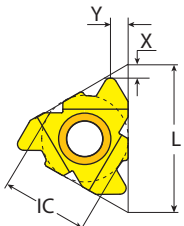
Internal



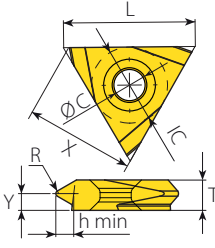
Defined by: API SPEC. 7:1990
Tolerance class: Standard API



Standard



F-Line



On Edge

Standard

IC	L mm	Pitch TPI	Thread IPF	Taper RH	Ordering Code	Size	Dimensions mm			Anvil RH	Toolholder
							h min	X	Y		
1/2"	22	4	V-0.038R	2	4IR4API382...	NC23-NC50, 2 3/8" - 6 5/8" IF	3.09	2.1	2.8	YEI 4-API-1P or YE4	AVRC...4 5BUT/API or AVR...4 (LH)
		4	V-0.038R	3	4IR4API383...	NC56-NC77	3.08	2.1	2.8		
		5	V-0.040	3	4IR5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6		
		4	V-0.050	2	4IR4API502...	6 5/8" REG, 5 1/2" FH, 6 5/8" FH	3.75	2.1	3.1		
		4	V-0.050	3	4IR4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2.0	2.9		
		6	V-0.055	1.5	4IR6API551...	NC10-NC16	1.41	2.6	2.0		
5/8"	27	4	V-0.038R	2	5IR4API382...	NC23-NC50, 2 3/8" - 6 5/8" IF	3.09	2.1	2.8	YI50IL	AVR...5 OIL (LH)
		4	V-0.038R	3	5IR4API383...	NC56-NC77	3.08	2.1	2.8		
		5	V-0.040	3	5IR5API403...	2 3/8"-4 1/2" REG	2.99	1.9	2.7		
		4	V-0.050	2	5IR4API502...	6 5/8" REG, 5 1/2" FH, 6 5/8" FH	3.75	2.1	3.1		
		4	V-0.050	3	5IR4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2.1	3.1		

F LINE

IC	L mm	Pitch TPI	Thread IPF	Taper RH	Ordering Code	Size	Dimensions mm			Anvil RH	Toolholder
							h min	X	Y		
1/2" F	23	4	V-0.038R	2	4FIR4API382...	NC23-NC50, 2 3/8" - 6 5/8" IF	3.09	2.1	2.8	YI4F	AVRC...-4F
		4	V-0.038R	3	4FIR4API383...	NC56-NC77	3.08	2.1	2.8		
		5	V-0.040	3	4FIR5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6		
		4	V-0.050	2	4FIR4API502...	6 5/8" REG, 5 1/2" FH, 6 5/8" FH	3.75	2.1	3.1		
		4	V-0.050	3	4FIR4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2	2.9		
		6	V-0.055	1.5	4FIR6API551...	NC10-NC16	1.41	2.6	2		

On Edge*

IC	L mm	Pitch TPI	Thread IPF	Taper RH	Ordering Code	Size	Dimensions mm					Position
							R	h min	T	Ø C	X	
5/8"	27	4	V-0.038R	2	TNEC55IR4API382...	NC23-NC50, 2 3/8" - 6 5/8" IF	0.97	3.10	7.94	6.50	23.4	3.9
		4	V-0.038R	3	TNEC55IR4API383...	NC56-NC77	0.97	3.10	7.94			
		5	V-0.040	3	TNEC54IR5API403...	2 3/8"-4 1/2" REG	0.51	3.00	6.35			
		4	V-0.050	2	TNEC55IR4API502...	6 5/8" REG, 5 1/2" FH, 6 5/8" FH	0.64	3.76	7.94			
		4	V-0.050	3	TNEC55 IR4API503...	5 1/2", 7 5/8", 8 5/8" REG	0.64	3.76	7.94			

* On Edge inserts are suited to existing toolholders on the market

API Buttress Casing

External

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

Standard



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
1/2"	22	5	0.75	4ER5BUT75...	4 1/2"-13 3/8"	1.55	3.1	1.9	YEI 4-BUT	AL...-4 5BUT/API
		5	1	4ER5BUT1...	16"-20"				YE4	AL...-4

F LINE



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
1/2" F	23	5	0.75	4FER5BUT75...	4 1/2"-13 3/8"	1.57	3.1	1.9	YE4F	AL...-4F
		5	1	4FER5BUT1...	16"-20"	1.57	3.1	1.9		

M+ Style



Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF		RH		h min	X	Y	RH	Toolholder
5/8"	27	5	0.75	2	5ER5BUT752M+...	4 1/2"-13 3/8"	1.55	4.8	6.8	YE5M	AL...-5

T+ Style



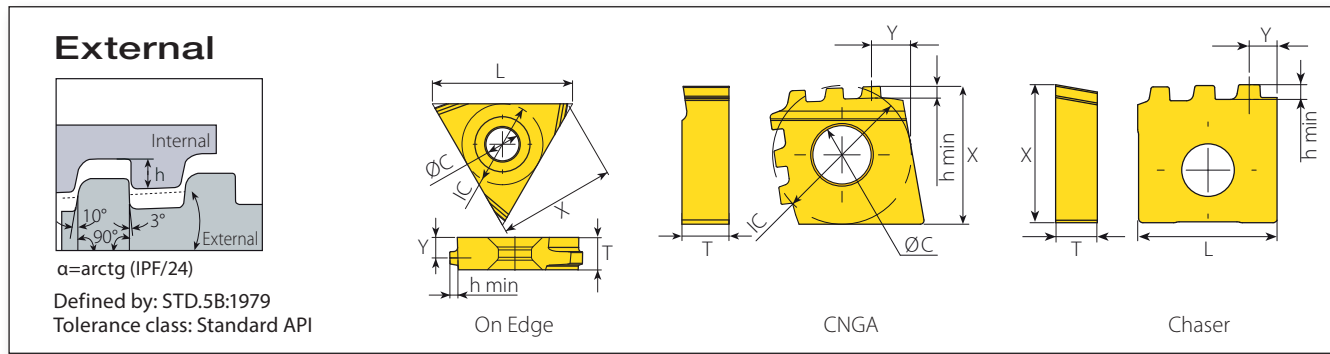
Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF		RH		h min	X	Y	RH	Toolholder
1/2" T	22	5	0.75	3	4ER5BUT753T+...	4 1/2"-13 3/8"	1.55	2.5	16.1	Y4T	AL...-4T
			1		4ER5BUT13T+...	16"-20"					

14D



Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm		Anvil	
IC	TPI	IPF					h min	Y		Toolholder
14D	5	0.75	2		14DER5BUT752T+...	4 1/2"-9 5/8"	1.55	10.0	Y14DER-5 BUT	AL...-14D
						10 3/4"-13 3/8"			Y14DER-5BUT-4N	
14D	5	1	2		14DER5BUT12T+...	16"-20"			Y14DER-5BUT-4N	AL...-14D

API Buttress Casing (con't)

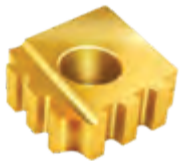


On Edge*



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	27	5	0.75	TNEC54ER5BUT75...	4 1/2"-13 3/8"	1.55	6.35	6.5	23.4	4.0
		5	1	TNEC54ER5BUT1...	16"-20"					

CNGA*



Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
IC	TPI	IPF		RH		h min	T	Ø C	X	Y
3/4"	5	0.75	3	CNGA64ER5BUT75T3...	4 1/2"-13 3/8"	1.55	6.35	8.0	18.9	5.6
	5	1	3	CNGA64ER5BUT1T3...	16"-20"					5.5

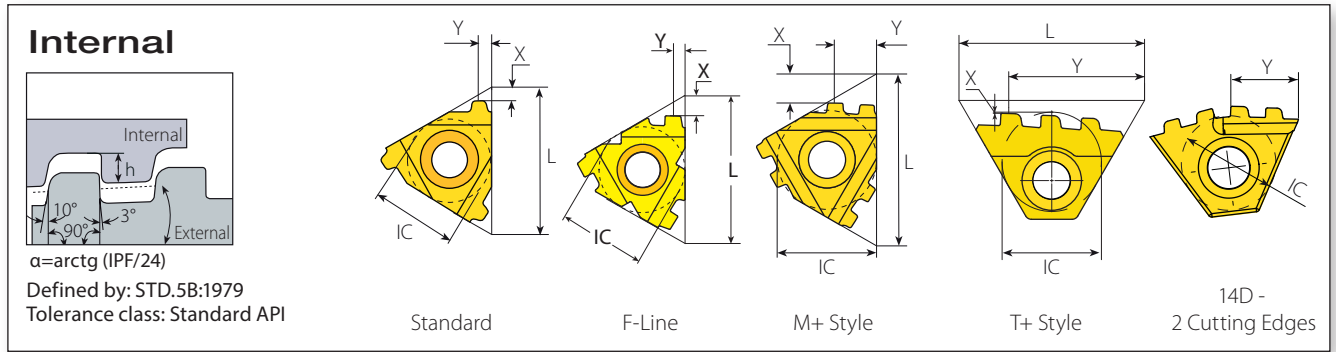
Chaser*



Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
L	TPI	IPF		RH		h min	T	X	Y	
15.75	5	0.75	3	1616ER5BUT753S+...	4 1/2"-13 3/8"	1.55	4.76	15.7	3.2	
	5	1	3	1616ER5BUT13S+ ...	16"-20"					

* On Edge, CNGA and Chaser inserts are suited to existing toolholders on the market

API Buttress Casing (con't)



Standard



Insert Size		Pitch	Taper	Ordering Code		Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH			h min	X	Y	RH	Toolholder
1/2"	22	5	0.75	4IR5BUT75...		4 1/2"-13 3/8"	1.55	2.8	1.9	YEI 4-BUT Y14	AVRC...-4 5BUT/API AVR...-4
		5	1	4IR5BUT1...		16"-20"					

F LINE



Insert Size		Pitch	Taper	Ordering Code		Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH			h min	X	Y	RH	Toolholder
1/2" F	23	5	0.75	4FIR5BUT75...		4 1/2"-13 3/8"	1.57	2.8	1.9	Y14F	AVRC...-4F
		5	1	4FIR5BUT1...		16"-20"					

M+ Style



Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF		RH		h min	X	Y	RH	Toolholder
5/8"	27	5	0.75	2	5IR5BUT752M+...	4 1/2"-13 3/8"	1.55	4.8	6.7	Y15M	AVR...5M

T+ Style



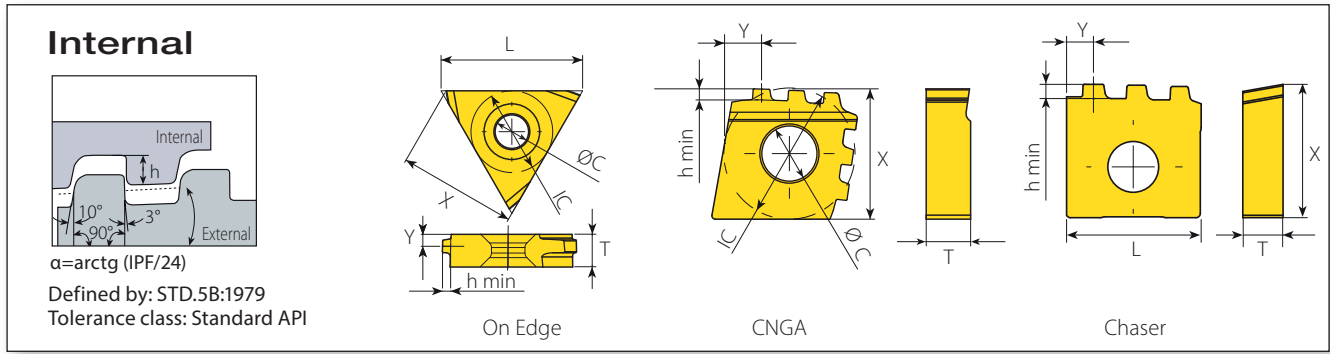
Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF		RH		h min	X	Y	RH	Toolholder
1/2" T	22	5	0.75	3	4IR5BUT753T+...	4 1/2"-13 3/8"	1.55	2.5	16.1	Y4T	AVR...-4T
			1		4IR5BUT13T+...	16"-20"					

14D



Insert size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm		Anvil
IC	TPI	IPF					h min	Y	Toolholder
14D	5	0.75	2	14DIR5BUT752T+ ...	4 1/2"-9 5/8"	1.55	10.0	Y14DIR-5 BUT Y14DIR-5BUT-4N	AVRC...-14D
					10 3/4"-13 3/8"				
14D	5	1	2	14DIR5BUT12T+ ...	16"-20"	1.55	10.0	Y14DIR-5BUT-4N	AVRC...-14D

API Buttress Casing (con't)

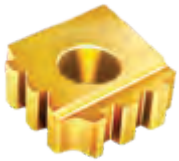


On Edge*



Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm			Position		
					IC	L mm	TPI	IPF	RH	h min
5/8"	22	5	0.75	TNEC54IR5BUT75...	4 1/2"-13 3/8"	1.55	6.35	6.5	23.4	4.3
		5	1	TNEC54IR5BUT1...	16"-20"					

CNGA*



Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
						IC	TPI	IPF	RH	h min
3/4"	5	0.75	3	CNGA64IR5BUT75T3...	4 1/2"-13 3/8"	1.55	6.35	8.0	18.9	5.6
		0.75	2	CNGA64IR5BUT75T2...	4 1/2"-13 3/8"					10.4
		1	3	CNGA64IR5BUT1T3...	16"-20"					5.5

Chaser*

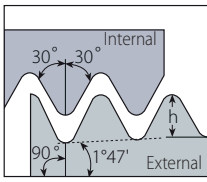


Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm		Position	
						L	TPI	IPF	RH
15.75	5	0.75	3	1616IR5BUT753S+...	4 1/2"-13 3/8"	1.55	4.76	15.7	3.2
	5	1	3	1616IR5BUT13S+...	16"-20"				

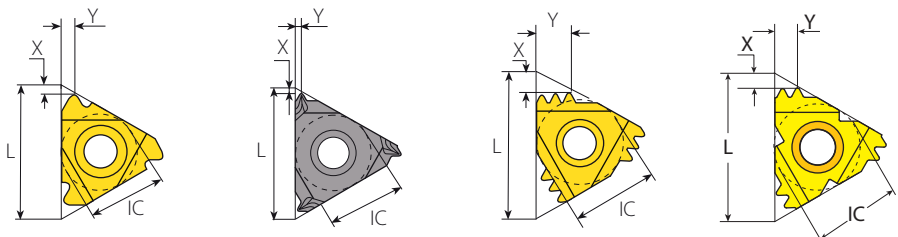
* On Edge, CNGA and Chaser inserts are suited to existing toolholders on the market

API Round Casing & Tubing

External



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



Standard

SCB
Sintered
Chipbreaker

M+ Style

F-Line

Standard



Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI	RH	h min	X	Y	RH	Toolholder
3/8"	16	10	3ER10APIRD...	1.41	1.2	1.4	YEI3-APIRD YE3	AL...-3 APIRD AL...-3
		8	3ER8APIRD...	1.81	1.3	1.5		
3/8" SCB	16	10	3JER10APIRD...	1.41	1.2	1.5	YE3	AL...-3
		8	3JER8APIRD...	1.81	1.3	1.5		

M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	2	4ER10APIRD2M+...	1.41	2.3	3.8	YE4M	AL...-4
5/8"	27	10	3	5ER10APIRD3M+...	1.41	3.9	6.3	YE5M	AL...-5M
		8	2	5ER8APIRD2M+...	1.81	2.9	4.5		

Multiplus

F LINE

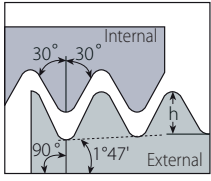


Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2" F	23	10	2	4FER10APIRD2M+...	1.41	2.3	3.8	YE4M2F	AL...-4MF

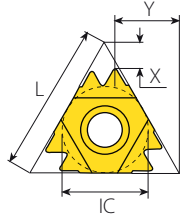
Multiplus

API Round Casing & Tubing (con't)

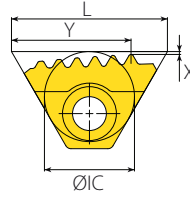
External



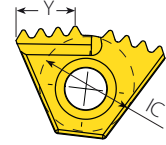
Defined by: API STD. 5B:1979
Tolerance class: Standard API RD



Z+ Style



T+ Style



14D -
2 Cutting Edges

Z+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	2	4ER10APIRD2Z+...	1.41	3.0	9.9	YE4Z	AL...-4Z
		8	2	4ER8APIRD2Z+...	1.81	3.7	9.6		

T+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	6	4ER10APIRD6T+...	1.41	0.2	16.2	Y4T	AL...-4T
		8	3	4ER8APIRD3T+...	1.81	0.2	14.2		
		8	5	4ER8APIRD5T+...	1.81	0.2	16.7		

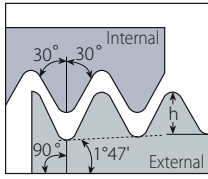
14D



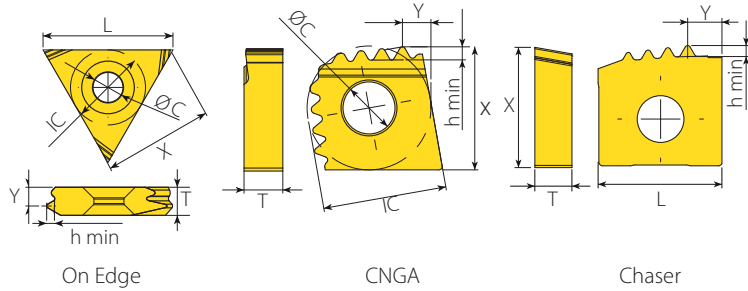
Insert size	Pitch	Teeth	Ordering Code	Size	Dimensions mm		Anvil	
IC	TPI				h min	Y		Toolholder
14D	10	4	14DER10APIRD4T+...	2 3/8" and up	1.41	8.7	Y14DER-10 APIRD	AL...-14D
14D	10	3	14DER10APIRD3T+...	2 3/8" and up		8.8	Y14DER-10 APIRD-3+	AL...-14D
14D	8	3	14DER8APIRD3T+...	2 3/8" and up	1.81	8.1	Y14DER-8 APIRD	AL...-14D

API Round Casing & Tubing (con't)

External



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

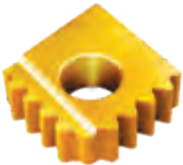


On Edge*



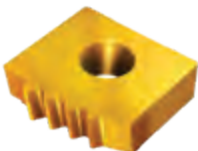
Insert Size		Pitch	Ordering Code	Dimensions mm			Position	
IC	L mm	TPI	RH	h min	T	ØC	X	Y
1/2"	22	10	TNEC43ER10APIRD...	1.41	4.76	5.2	18.6	3.2
		8	TNEC43ER8APIRD...	1.81				

CNGA*



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Position	
IC	TPI			RH	h min	T	ØC	X	Y
3/4"	10	5		CNGA64ER10APIRDT5...	1.41	6.35	8.0	18.9	4.5
	8	4		CNGA64ER8APIRDT4...	1.81				

Chaser*

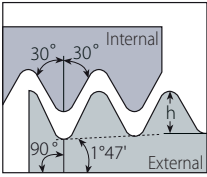


Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Position	
L	TPI			RH	h min	T	X	Y	
15.75	10	4		1616ER10APIRD4S+...	1.41	4.76	15.4	4.4	
	8	3		1616ER8APIRD3S+...	1.81		15.9		

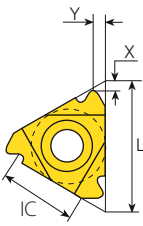
* On Edge, CNGA and Chaser inserts are suited to existing toolholders on the market

API Round Casing & Tubing (con't)

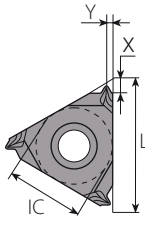
Internal



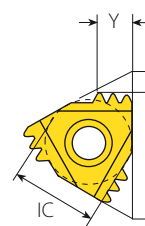
Defined by: API STD. 5B:1979
Tolerance class: Standard API RD



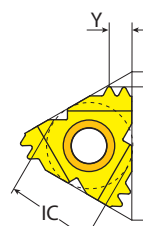
Standard



SCB Sintered
Chipbreaker



M+ Style



F-Line

Standard



SCB

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI	RH	h min	X	Y	RH	Toolholder
3/8"	16	10	3IR10APIRD...	1.41	1.2	1.4	YEI3-APIRD YI3	AVRC... 3APIRD AVRC...-3
		8	3IR8APIRD...	1.81	1.3	1.5		
3/8" SCB	16	10	3JIR10APIRD...	1.41	1.2	1.5		
		8	3JIR8APIRD...	1.81	1.3	1.5		

M+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	2	4IR10APIRD2M+...	1.41	2.4	3.7	YI4M	AVR...-4
		8	2	4IR8APIRD2M+...	1.81	2.9	4.5		
5/8"	27	10	3	5IR10APIRD3M+...	1.41	3.9	6.3		
		8	2	5IR8APIRD2M+...	1.81	2.9	4.5		

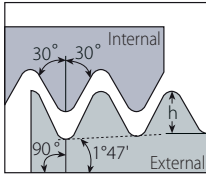
F-LINE



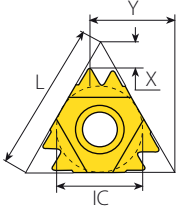
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2" F	23	10	2	4FIR10APIRD2M+...	1.41	2.4	3.7	YI4M2F	AVRC ...-4MF

API Round Casing & Tubing (con't)

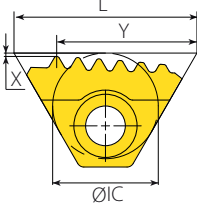
Internal



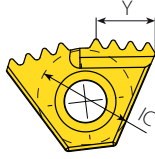
Defined by: API STD. 5B:1979
Tolerance class: Standard API RD



Z+ Style



T+Style



14D -
2 Cutting Edges

Z+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	2	4IR10APIRD2Z+...	1.41	3.0	9.9	Y14Z	AVR..-4Z
		8	2	4IR8APIRD2Z+...	1.81	3.7	9.6		

T+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	6	4IR10APIRD6T+...	1.43	0.2	16.8	Y4T	AVR..-4T
		8	3	4IR8APIRD3T+...	1.81	0.2	14.2		
		8	5	4IR8APIRD5T+...	1.81	0.2	16.7		

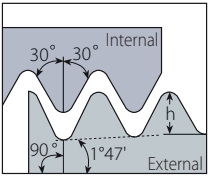
14D



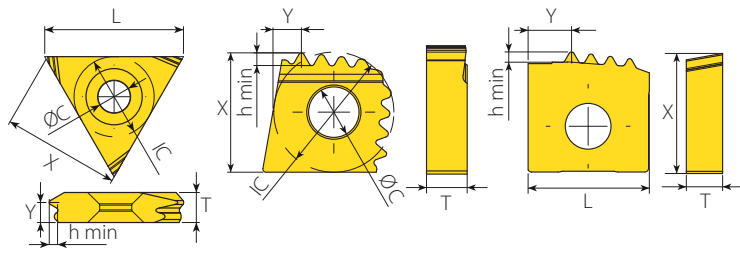
Insert size	Pitch	Teeth	Ordering Code	Size	Dimensions mm		Anvil	
IC	TPI				h min	Y		Toolholder
14D	10	4	14DIR10APIRD4T+...	2 3/8" and up	1.41	8.71	Y14DIR-10 APIRD	AVRC...-14D
14D	10	3	14DIR10APIRD3T+...	2 3/8" and up		8.79	Y14DIR-10 APIRD-3+	AVRC...-14D
14D	8	3	14DIR8APIRD3T+...	2 3/8" and up	1.81	8.10	Y14DIR-8 APIRD	AVRC...-14D

API Round Casing & Tubing (con't)

Internal



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



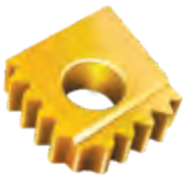
On Edge CNGA Chaser

On Edge*



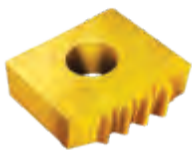
Insert Size		Pitch	Ordering Code	Dimensions mm			Position	
IC	L mm	TPI	RH	h min	T	Ø C	X	Y
1/2"	22	10	TNEC43IR10APIRD...	1.41	4.76	5.2	18.6	3.2
		8	TNEC43IR8APIRD...	1.81				

CNGA*



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Position	
IC	TPI		RH	h min	T	Ø C	X	Y	
3/4"	10	5	CNGA64IR10APIRDT5...	1.41	6.35	8.0	18.9	4.5	
	8	4	CNGA64IR8APIRDT4...	1.81					

Chaser*



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Position	
L	TPI		RH	h min	T	X	Y		
15.75	10	4	1616IR10APIRD4S+...	1.41	4.76	15.4	5.7		
	8	3	1616IR8APIRD3S+...	1.81		15.9	4.4		

* On Edge, CNGA and Chaser inserts are suited to existing toolholders on the market

American ACME

External

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

Standard F-Line U Style V Style On Edge

Standard

IC	Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder		
	L mm	TPI	RH	LH	h min	X	Y	RH	LH				
1/4"	11	16	2ER16ACME...	2EL16ACME...	0.92	1.0	1.1	-	-	NL..-2 (LH)			
			3ER16ACME...	3EL16ACME...	0.92	1.0	1.1	-	-				
		3/8"	22	14	3ER14ACME...	3EL14ACME...	1.03	1.1	1.2		YE3	YI3	AL..-3 (LH)
				12	3ER12ACME...	3EL12ACME...	1.19	1.2	1.3				
				10	3ER10ACME...	3EL10ACME...	1.52	1.3	1.4				
				8	3ER8ACME...	3EL8ACME...	1.84	1.4	1.5				
1/2"	27	7	3ER7ACME...	3EL7ACME...	2.08	1.9	2.2	YE4	YI4	AL..-4 (LH)			
		6	3ER6ACME...	3EL6ACME...	2.37	1.7	1.9				YE3AC6	YI3AC6	
		7	4ER7ACME...	4EL7ACME...	2.08	1.9	2.2				-	-	
5/8"	27	6	4ER6ACME...	4EL6ACME...	2.37	1.8	2.1	YE5	YI5	AL..-5 (LH)			
		5	4ER5ACME...	4EL5ACME...	2.79	2.0	2.3						

F LINE

IC	Insert Size		Pitch	Ordering Code		Dimensions mm			RH	Toolholder
	L min	TPI	RH	LH	h min	X	Y			
1/2" F	23	6	4FER6ACME...	4EL6ACME...	2.37	1.8	2.1	YE4F	AL...-4F	
		5	4FER5ACME...	4EL5ACME...	2.79	2.0	2.3			

U Style

IC	Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder
	L mm	TPI	RH+LH	LH	h min	X	Y	RH	LH		
1/2" U	22	3	4UE3ACME...	4EL3ACME...	4.49	3.0	11.0	YE4U	YI4U	AL..-4U (LH)	
		4	4UE4ACME...	4EL4ACME...	3.43	2.3	11.0				
5/8" U	27	3	5UE3ACME...	5EL3ACME...	4.49	3.0	13.7	YE5U	YI5U	AL..-5U (LH)	

V Style

IC	Insert Size		Pitch	Ordering Code		Dimensions mm				Toolholder
	L mm	TPI	RH	LH	h min	X	Y	T		
5/8" V	27	4	5VER4ACME...	5VEL4ACME...	3.43	1.0	3.3	6	NL..-5V-6 (LH)	
		3.5	5VER3.5ACME...	5VEL3.5ACME...	3.85	1.0	3.3	6		
		3	5VER3ACME...	5VEL3ACME...	4.49	1.0	3.3	6		
		2	5VER2ACME...	5VEL2ACME...	6.60	1.0	5.2	10		NL..-5V-10 (LH)

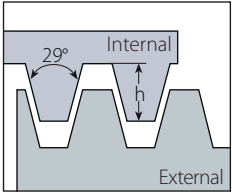
On Edge*

IC	Insert Size		Pitch	Ordering Code		Dimensions mm				
	L mm	TPI	RH	LH	h min	T	ØC	X	Y	
1/2"	22	4	TNEC43EI4ACME...	TVEL43EI4ACME...	3.43	4.76	5.2	0.5	2.4	
		6	TNEC43EI6ACME...	TVEL43EI6ACME...	2.36					
		8	TNEC43EI8ACME...	TVEL43EI8ACME...	1.83					
		10	TNEC43EI10ACME...	TVEL43EI10ACME...	1.52					
		12	TNEC43EI12ACME...	TVEL43EI12ACME...	1.19					
5/8"	27	4	TNEC54EI4ACME...	TVEL54EI4ACME...	3.43	6.35	6.5	3.2		
		3	TNEC54EI3ACME...	TVEL54EI3ACME...	4.50					
3/4"	32	2	TNEC56EI2ACME...	TVEL56EI2ACME...	6.60	9.53	8.0	4.8		

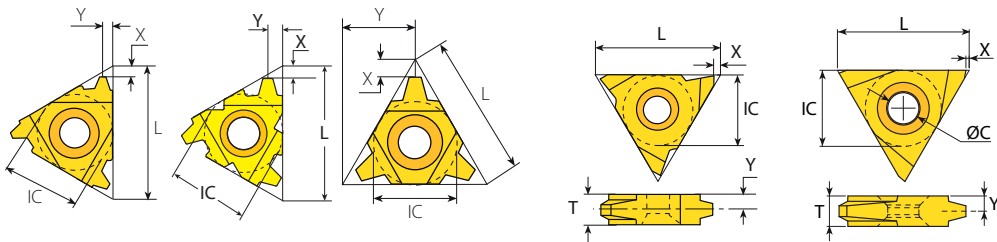
* On Edge inserts are suited to existing toolholders on the market

American ACME (con't)

Internal



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



Standard
F-Line
U Style
V Style
On Edge

Standard



IC	L mm	Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder		
			RH	LH	h min	X	Y	RH	LH			
1/4"	11	16	2IR16ACME...	2IL16ACME...	0.92	0.9	0.9	-	-	NVR..-2 (LH)		
			3IR16ACME...	3IL16ACME...	0.92	1.0	1.1					
		3/8"	16	14	3IR14ACME...	3IL14ACME...	1.03	1.1	1.2			
				12	3IR12ACME...	3IL12ACME...	1.19	1.2	1.3	YI3	YE3	AVR..-3 (LH)
				10	3IR10ACME...	3IL10ACME...	1.52	1.2	1.3			
8	3IR8ACME...	3IL8ACME...	1.84	1.4	1.5							
1/2"	22	6	4IR6ACME...	4IL6ACME...	2.37	1.7	1.9	YI3AC6	YE3AC6			
		5	4IR5ACME...	4IL5ACME...	2.79	1.8	2.1	YI4	YE4	AVR..-4 (LH)		
5/8"	27	4	5IR4ACME...	5IL4ACME...	3.43	2.3	2.6	YI5	YE5	AVR..-5 (LH)		

F-Line



IC	L min	Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder
			RH	LH	h min	X	Y	RH	LH	
1/2" F	23	6	4FIR6ACME...		2.37	1.8	2.1			AVRC...-4F
			5	4FIR5ACME...		2.79	2.0	2.3	YI4F	

U Style



IC	L mm	Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder
			RH+LH	LH	h min	X	Y	RH	LH	
1/2" U	22	4	4UI4ACME...		3.43	2.3	11.0			AVR..-4U (LH)
			3	4UI3ACME...		4.49	2.9	11.0	YI4U	
5/8" U	27	3	5UI3ACME...		4.49	2.9	13.7	YI5U	YE5U	AVR..-5U(LH)

V Style



IC	L mm	Pitch	Ordering Code		Dimensions mm				Toolholder	
			RH	LH	h min	X	Y	T		
5/8" V	27	4	5VIR4ACME...	5VIL4ACME...	3.43	1.0	3.3	6	NVR..-5V (LH)	
			3.5	5VIR3.5ACME...	5VIL3.5ACME...	3.85	1.0	3.3		6
			3	5VIR3ACME...	5VIL3ACME...	4.49	1.0	3.3		6
			2	5VIR2ACME...	5VIL2ACME...	6.60	1.0	5.2		10

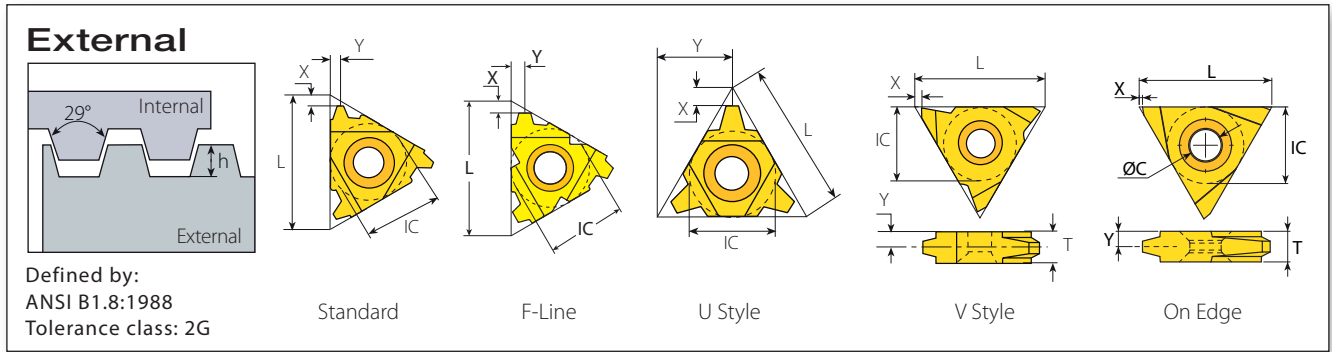
On Edge*



IC	L mm	Pitch	Ordering Code		Dimensions mm					
			RH	LH	h min	T	ØC	X	Y	
1/2"	22	4	TNEC43EI4ACME...		3.43					
			6	TNEC43EI6ACME...		2.36				
			8	TNEC43EI8ACME...		1.83	4.76	5.2		2.4
			10	TNEC43EI10ACME...		1.52				
			12	TNEC43EI12ACME...		1.19				
5/8"	27	4	TNEC54EI4ACME...		3.43					
			3	TNEC54EI3ACME...		4.50	6.35	6.5		3.2
3/4"	32	2	TNEC56EI2ACME...		6.60	9.53	8.0		4.8	

* On Edge inserts are suited to existing toolholders on the market

Stub ACME



Standard

Insert Size	Pitch		Ordering Code		Dimensions mm			Anvil		Toolholder
	IC	L mm	TPI	RH	LH	h min	X	Y	RH	
1/4"	11	16	2ER16STACME...	2EL16STACME...	0.60	1.0	1.0	-	-	NL...-2 (LH)
		16	3ER16STACME...	3EL16STACME...	0.60	1.0	1.0	-	-	NL...-2 (LH)
3/8"	16	14	3ER14STACME...	3EL14STACME...	0.67	1.1	1.1	YE3	YI3	AL...-3 (LH)
		12	3ER12STACME...	3EL12STACME...	0.76	1.2	1.2			
		10	3ER10STACME...	3EL10STACME...	1.02	1.2	1.3			
		8	3ER8STACME...	3EL8STACME...	1.21	1.4	1.5			
		6	3ER6STACME...	3EL6STACME...	1.52	1.7	1.8			
1/2"	22	6	4ER6STACME...	4EL6STACME...	1.52	1.7	1.8	YE4	YI4	AL...-4 (LH)
		5	4ER5STACME...	4EL5STACME...	1.78	2.1	2.3			
5/8"	27	4	5ER4STACME...	5EL4STACME...	2.16	2.3	2.4	YE5	YI5	AL...-5 (LH)
		3	5ER3STACME...	5EL3STACME...	2.79	2.9	2.9			

F-Line



Insert Size	Pitch		Ordering Code		Dimensions mm			Anvil		Toolholder
	IC	L mm	TPI	RH	LH	h min	X	Y	RH	
1/2" F	23	6	4FER6STACME...	4FL6STACME...	1.52	1.7	1.8	YE4F	YI4F	AL...-4F
		5	4FER5STACME...	4FL5STACME...	1.78	2.1	2.3			
		4	4FER4STACME...	4FL4STACME...	2.16	2.3	2.3			

U Style

Insert Size	Pitch		Ordering Code		Dimensions mm			Anvil		Toolholder
	IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	
1/2" U	22	4	4UE4STACME...	4UL4STACME...	2.16	2.6	11.0	YE4U	YI4U	AL...-4U (LH)
		3	4UE3STACME...	4UL3STACME...	2.79	3.4	11.0			

V Style

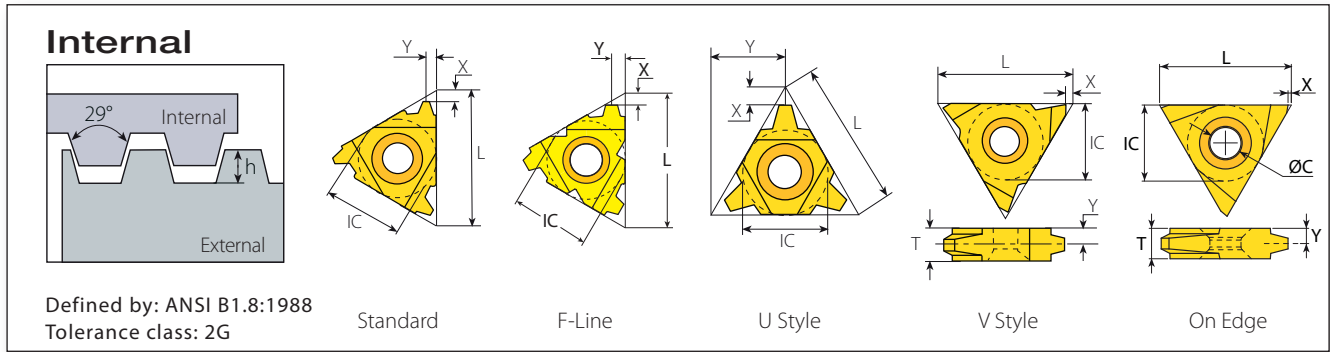
Insert Size	Pitch		Ordering Code		Dimensions mm				Toolholder
	IC	L mm	TPI	RH	LH	h min	X	Y	
5/8" V	27	4	5VER4STACME...	5VEL4STACME...	2.16	1.0	3.3	6	NL...-5V-6 (LH)
		3	5VER3STACME...	5VEL3STACME...	2.79	1.0	3.3	6	
		2	5VER2STACME...	5VEL2STACME...	4.06	1.0	4.3	6	

On Edge*

Insert Size	Pitch		Ordering Code		Dimensions mm				
	IC	L mm	TPI	RH	h min	T	ØC	X	Y
3/8"	16	10	TNEC32EI10STACME...	TNEC32E10S...	1.02	3.18	3.8	1	1.6
		12	TNEC32EI12STACME...	TNEC32E12S...	0.76				
		8	TNEC32EI8STACME...	TNEC32E8S...	1.22				
1/2"	22	4	TNEC43EI4STACME...	TNEC43E4S...	2.16	4.76	5.2	0.5	2.4
		6	TNEC43EI6STACME...	TNEC43E6S...	1.52				
		8	TNEC43EI8STACME...	TNEC43E8S...	1.22				
		10	TNEC43EI10STACME...	TNEC43E10S...	1.02				
5/8"	27	4	TNEC54EI4STACME...	TNEC54E4S...	2.16	6.35	6.5	3.2	

* On Edge inserts are suited to existing toolholders on the market

Stub ACME (con't)



Standard

IC	Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		Toolholder
	L mm	TPI		RH	LH	h min	X	Y	RH	LH	
1/4"	11	16	2IR16STACME...	2IL16STACME...	0.60	1.0	1.0	-	-	NVR...-2 (LH)	
			3IR16STACME...	3IL16STACME...	0.60	1.0	1.0	YI3	YE3		
			14	3IR14STACME...	3IL14STACME...	0.67	1.1				1.1
			12	3IR12STACME...	3IL12STACME...	0.76	1.1				1.2
			10	3IR10STACME...	3IL10STACME...	1.02	1.2				1.3
			8	3IR8STACME...	3IL8STACME...	1.21	1.4				1.5
3/8"	16	6	3IR6STACME...	3IL6STACME...	1.52	1.7	1.8	YI4	YE4	AVR...-4 (LH)	
			6	4IR6STACME...	4IL6STACME...	1.52	1.7				1.8
			5	4IR5STACME...	4IL5STACME...	1.78	2.1				2.3
1/2"	22	4	4IR4STACME...	4IL4STACME...	2.16	2.3	2.3	YI5	YE5	AVR...-5 (LH)	
			4	5IR4STACME...	5IL4STACME...	2.16	2.3				2.4
5/8"	27	3	5IR3STACME...	5IL3STACME...	2.79	2.9	2.9				

F LINE

IC	Insert Size		Pitch	Ordering Code		Dimensions mm			RH	Toolholder
	L mm	TPI		RH	LH	h min	X	Y		
1/2" F	23	6	4FIR6STACME...		1.52	1.7	1.8	YI4F	AVRC...-4F	
			5	4FIR5STACME...		1.78	2.1			2.3
			4	4FIR4STACME...		2.16	2.3			2.3

U Style

IC	Insert Size		Pitch	Ordering Code		Dimensions mm			RH	LH	Toolholder
	L mm	TPI		RH+LH	LH	h min	X	Y			
1/2" U	22	4	4UI4STACME...		2.16	2.5	11.0	YI4U	YE4U	AVR...-4U (LH)	
			3	4UI3STACME...		2.79	3.3				11.0

V Style

IC	Insert Size		Pitch	Ordering Code		Dimensions mm				Toolholder
	L mm	TPI		RH	LH	h min	X	Y	T	
5/8" V	27	4	5VIR4STACME...	5VIL4STACME...	2.16	1.0	3.3	6	NVR...-5V (LH)	
			3	5VIR3STACME...	5VIL3STACME...	2.79	1.0	3.3		6
			2	5VIR2STACME...	5VIL2STACME...	4.06	1.0	4.3		8

On Edge*

IC	Insert Size		Pitch	Ordering Code		Dimensions mm				
	L mm	TPI		RH	LH	h min	T	ØC	X	Y
3/8"	16	10	TNEC32EI10STACME...		1.02	3.175	3.8	1	1.6	
			12	TNEC32EI12STACME...						0.76
			8	TNEC32EI8STACME...						1.22
1/2"	22	4	TNEC43EI4STACME...		2.16	4.76	5.2	0.5	2.4	
			6	TNEC43EI6STACME...						1.52
			8	TNEC43EI8STACME...						1.22
			10	TNEC43EI10STACME...						1.02
5/8"	27	4	TNEC54EI4STACME...		2.16	6.35	6.5		3.2	

* On Edge inserts are suited to existing toolholders on the market

VAM

External

a = arctg (IPF/24)
 Defined by: VAM
 Tolerance class: Standard VAM

VAM F-Line On Edge

Standard



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
3/8"	16	8	0.75	3ER8VAM...	2 3/8", 2 7/8"	0.97	1.7	1.8	YE3	AL...-3
1/2"	22	6		4ER6VAM...	3 1/2"	0.97	2.4	2.4	YE4	AL...-4
		5	4ER5VAM...	5"-9 5/8"	1.55	2.4	2.7			

F LINE



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
1/2" F	23	6	0.75	4FER6VAM...	3 1/2"	0.97	2.4	2.4	YE4F	AL...-4F
		5	0.75	4FER5VAM...	5"-9 5/8"	1.54	2.4	2.7		

On Edge*



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
1/2"	22	8	0.75	TNEC43ER8VAM...	2 3/8", 2 7/8"	0.97	4.76	5.2	18.6	3.3
		6		TNEC43ER6VAM...	3 1/2"	0.97	4.76			2.9
5/8"	27	5		TNEC54ER5VAM...	5"-9 5/8"	1.55	6.35	6.5	23.4	4.0

* On Edge inserts are suited to existing toolholders on the market

VAM (con't)

Internal

Defined by: VAM
Tolerance class: Standard VAM

VAM F-Line On Edge CNGA

Standard



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
3/8"	16	8	0.75	3IR8VAM...	2 3/8", 2 7/8"	1.02	1.7	1.8	Y13	AVR...-3
1/2"	22	6		4IR6VAM.....	3 1/2"	1.02	2.5	2.5	Y14	AVR...-4
		5	4IR5VAM...	5"-9 5/8"	1.55	2.4	2.5			

F-LINE



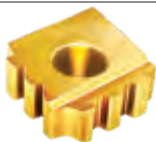
Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
1/2" F	23	6	0.75	4FIR6VAM...	3 1/2"	1.04	2.5	2.5	Y14F	AVRC...-4F
		5	0.75	4FIR5VAM...	5"-9 5/8"	1.54	2.4	2.5		

On Edge*



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
1/2"	22	8	0.75	TNEC43IR8VAM...	2 3/8", 2 7/8"	1.02	4.76	5.2	18.6	3.2
		6		TNEC43IR6VAM...	3 1/2"	1.02	4.76			3.1
5/8"	27	5		TNEC54IR5VAM...	5"-9 5/8"	1.55	6.35	6.5	23.4	4.2

CNGA*

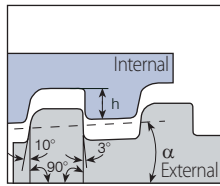


Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
IC	TPI	IPF		RH		h min	T	Ø C	X	Y	
3/4"	5	0.75	2	CNGA64IR5VAM75T2...	5"-9 5/8"	1.55	6.35	8.0	18.9	9.3	

* On Edge and CNGA inserts are suited to existing toolholders on the market

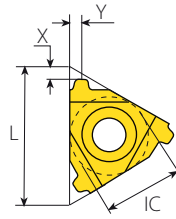
New VAM

External

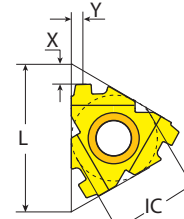


$a = \arctg (IPF/24)$

Defined by: VAM
Tolerance class: Standard VAM



Standard



F-Line

Laydown



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	
3/8"	16	8	0.75	3ER8NVAM...	2 3/8", 2 7/8"	0.97	1.8	1.8	YE3	AL...-3
1/2"	22	6		4ER6NVAM...	3 1/2"	0.97	2.3	2.3	YE4	AL...-4
		5	4ER5NVAM...	5"-9 5/8"	1.55	2.3	2.3			

F-LINE



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	
1/2" F	23	6	0.75	4FER6NVAM...	3 1/2"	0.97	2.2	2.1	YE4F	AL...-4F
		5	0.75	4FER5NVAM...	5"-9 5/8"	1.55	2.5	2.3		

NEW VAM (con't)

Internal

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

Defined by: VAM
Tolerance class: Standard VAM

Standard
F-Line
On Edge
CNGA

Laydown - Internal



Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	Toolholder	
					IC	L mm	TPI			IPF
3/8"	16	8	3IR8NVAM...	2 3/8", 2 7/8"		1.23	1.8	1.8	Y13	AVR...-3
1/2"	22	6	4IR6NVAM...	3 1/2"		1.23	2.5	2.5	Y14	AVR...-4
		5	4IR5NVAM...	5"-9 5/8"		1.77	2.3	2.5		

F-LINE - Internal



Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	Toolholder	
					IC	L mm	TPI			IPF
1/2" F	23	6	4FIR6NVAM...	3 1/2"		1.23	2.0	1.8	Y14F	AVRC...-4F
		5	4FIR5NVAM...	5"-9 5/8"		1.76	2.1	2.1		

On Edge* - Internal



Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm					
					IC	L mm	TPI	IPF	RH	h min
1/2"	22	8	TNEC43IR8NVAM...	2 3/8" - 2 7/8"		1.23	4.76	5.2	18.6	3.2
		0.75	TNEC43IR6NVAM...	3 1/2" - 4 1/2"		1.23	4.76	5.2	23.4	3.1
5/8"	27	5	TNEC54IR5NVAM...	5"-16"		1.77	6.35	6.5		4.2

CNGA* - Internal



Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position		
						IC	TPI	IPF	RH	h min	T
3/4"	6	0.75	2	CNGA64IR6NVAM75T2...	3 1/2" - 4 1/2"		1.23	6.35	8	18.9	9.3
				CNGA64IR5NVAM75T2...	5"-16"		1.77	6.35			

* On Edge and CNGA inserts are suited to existing toolholders on the market

EL-Extreme Line

External / Internal

Defined by: API STD,5B:1979
Tolerance class: Standard

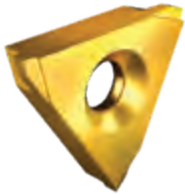
Standard - External Standard - Internal On Edge - External On Edge - Internal

Standard - External



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
1/2"	22	6	1.5	4ER6EL15...	5"-7 5/8"	1.21	1.9	1.9	YE4	AL..-4 (LH)
		5	1.25	4ER5EL125...	8 5/8"-10 3/4"	1.71	2.3	2.4		

On Edge* - External



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	27	6	1.5	TNEC54ER6E15...	5"-7 5/8"	1.21	6.35	6.5	23.4	4.8
		5	1.25	TNEC54ER5E125...	8 5/8"-10 3/4"	1.71	6.35			4.3

Standard - Internal



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
1/2"	22	6	1.5	4IR6EL15...	5"-7 5/8"	1.39	1.8	1.9	Y14	AVR..-4 (LH)
		5	1.25	4IR5EL125...	8 5/8"-10 3/4"	1.91	2.2	2.4		

On Edge* - Internal



Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	27	6	1.5	TNEC54IR6EL15...	5"-7 5/8"	1.39	6.35	6.5	23.4	4.8
		5	1.25	TNEC54IR5EL125...	8 5/8"-10 3/4"	1.91	6.35			4.3

* On Edge inserts are suited to existing toolholders on the market

Hughes H-90

External / Internal

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

Defined by: API STD, 5B:1979
Tolerance class: Standard

U Style On Edge - External On Edge - Internal

U Style - External



Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil		
					IC	L mm	TPI	IPF	RH	Toolholder
1/2" U	22	3.5	2	4UER3.5H902...	3 1/2" - 6 5/8"	2.50	4.2	11	YE4U-H90	AL..-4U (LH)
5/8" U	27	3.5	3	4UER3.5H903...	7" - 8 5/8"	2.50	4.2	11	YE5U-H90	AL..-5UH90 (LH)
		3	1.25*	5UER3H90SL...	2 3/8" - 3 1/2"	2.24	5.5	13.7		

* H-90 Slimline

On Edge* - External



Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm			Position		
					IC	L mm	TPI	IPF	RH	h min
5/8"	27	3 1/2	2	TNEC55ER3.5H902...	3 1/2" - 6 5/8"	2.50	7.93	6.5	23.4	4.3
		3 1/2	3	TNEC55ER3.5H903...	7" - 8 5/8"	2.50	7.93			
		3	1 1/4	TNEC56ER3H90SL...	2 3/8" - 3 1/2"	2.24	9.53	5.7		

U Style - Internal



Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil		
					IC	L mm	TPI	IPF	RH	Toolholder
1/2" U	22	3.5	2	4UIR3.5H902...	3 1/2" - 6 5/8"	2.50	4.2	11	YI4U-H90	AVR..-4U (LH)
5/8" U	27	3.5	3	4UIR3.5H903...	7" - 8 5/8"	2.50	4.2	11	YI5U-H90	AVR..-5UH90 (LH)
		3	1.25*	5UIR3H90SL...	2 3/8" - 3 1/2"	2.24	5.5	13.7		

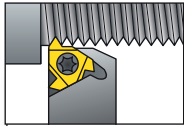
* H-90 Slimline

On Edge* - Internal

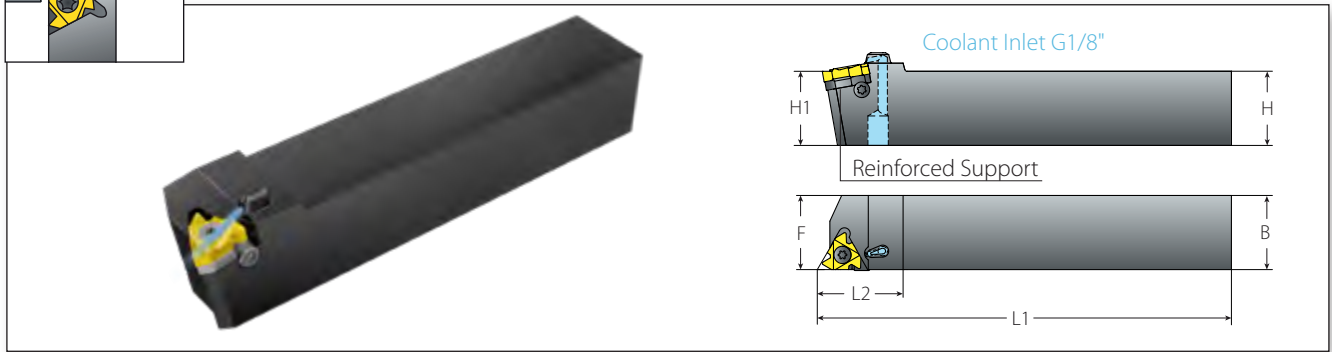


Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm			Position		
					IC	L mm	TPI	IPF	RH	h min
5/8"	27	3 1/2	2	TNEC55IR3.5H902...	3 1/2" - 6 5/8"	2.49	7.93	6.5	23.4	4.3
		3 1/2	3	TNEC55IR3.5H903...	7" - 8 5/8"	2.49	7.93			
		3	1 1/4	TNEC56IR3H90SL...	2 3/8" - 3 1/2"	2.24	9.53	5.7		

* On Edge inserts are suited to existing toolholders on the market

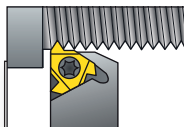


External Toolholders

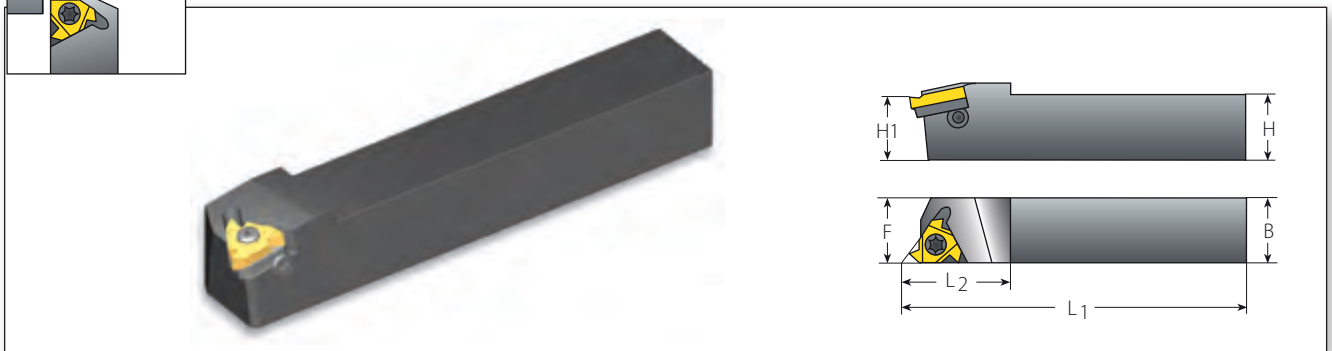


API with Coolant

API with Coolant						Spare Parts			
Insert Size	Ordering Code		Dimensions mm						
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2"	ALC32-4-5BUT/API	32	32	177	37	SA4T	SY4T	K4T	YEI4-API-1P YEI4-5BUT
	ALC40-4-5BUT/API	40	40	205	37				



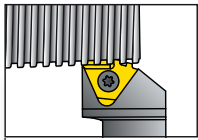
External Toolholders



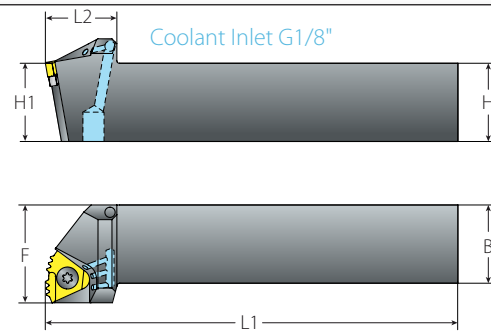
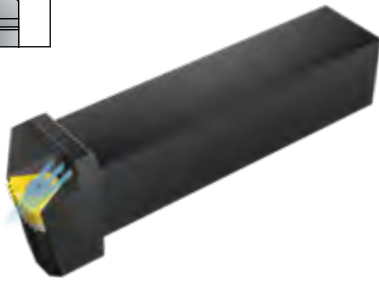
Oil & Gas

Oil & Gas								Spare Parts				
Insert Size	Ordering Code	Thread Form	Connection no. or size	Dimensions mm			Helix Angle					
IC	RH			H=H1=B=F	L1	L2		Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
3/8"	AL32-3-APIRD	APIRD 8	2.375"-20"	32	173	28.8	1	SA3T	SY3T	K3T	YEI3 APIRD	
	AL40-3-APIRD	APIRD 10	1.05"-3.5"	40	205	37.4	1					
1/2"	AL32-4-5BUT/API	5BUT, V0.038R, V0.050, V0.040, V0.055	4 1/2"-20"	32	177	36.6	0	SA4T	SY4T	K4T	YEI4-API-1P YEI4-5BUT	
	AL40-4-5BUT/API			40	204	34.5	0					
5/8"	AL32-5OIL	V0.038R, V0.050	NC10-NC77 all sizes	32	175.9	40	1.5	SA5T	SY5T	K5T	YE5OIL	YI5OIL
	AL40-5OIL			40	205.9	40	1.5					

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code. (Example AL20-3 LH).



14D External Toolholders

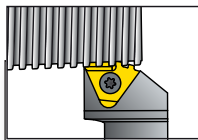


14D Standard with Coolant

Insert Size	Ordering Code	Dimensions mm			
		H=H1=B	F	L1	L2
14D	ALC32-14D	32	32	170	30
	ALC40-14D	40	40	200	30

Spare Parts

Insert Screw	Anvil Screw & Washer	Torx Key	Anvil Key
SA5T	M4X6(14D)	KT15	K5T



14D External Toolholders



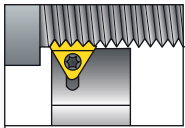
14D Standard

Insert Size	Ordering Code	Dimensions mm			
		H=H1=B	F	L1	L2
14D	AL25-14D	25	32	150	25
	AL32-14D	32	40	170	25
	AL40-14D	40	40	200	30

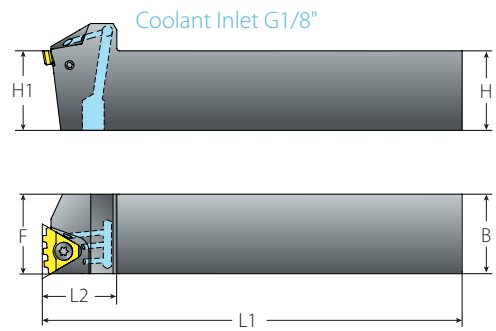
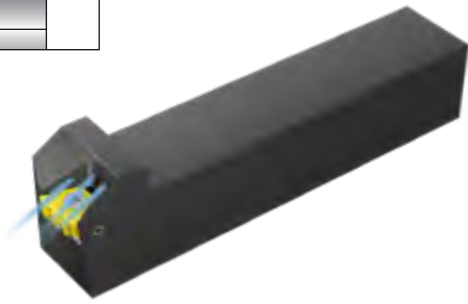
Spare Parts

Insert Screw	Anvil Screw & Washer	Torx Key	Anvil Key
SA5T	M4x6(14D)	KT15	K5T

14D holders are supplied without anvils.
For specific applications, please use the anvils indicated in the table on page 52.



External Toolholders

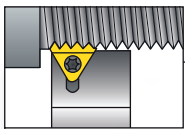


T+ Style with Coolant

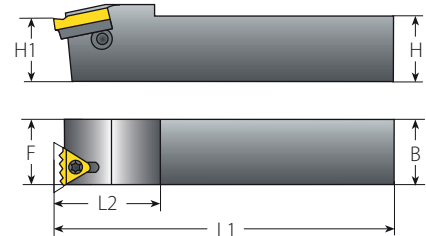
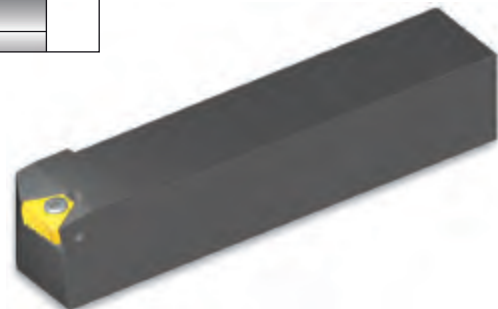
Insert Size	Ordering Code	Dimensions mm			
IC	RH	H=H1=B	F	L1	L2
1/2" T	ALC32-4T	32	32	170	30
	ALC40-4T	40	40	200	30

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil Key	Anvil RH
SA4T	SY4K2	K4T	K2	Y4T



External Toolholders



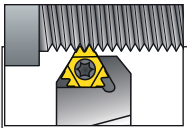
T+ Style

Insert Size	Ordering Code	Dimensions mm			
IC	RH	H=H1=B	F	L1	L2
1/2" T	AL25-4T	25	27	150	30
	AL32-4T	32	34	170	30
	AL40-4T	40	42	200	30

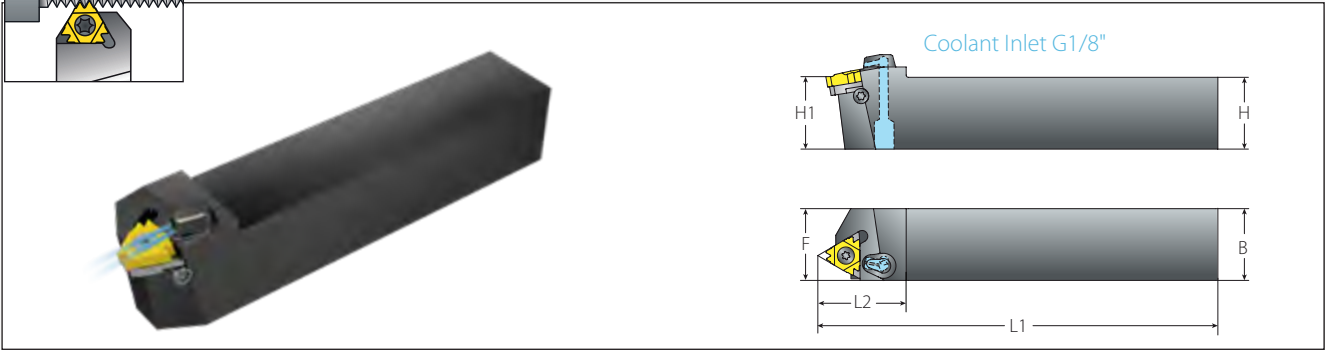
Spare Parts

Insert Screw	Anvil Screw	Insert Torx Key	Anvil Torx Key	Anvil RH/LH
SA4T	SY4K2	K4T	K2	Y4T

All T+ Style toolholders have a 0° helix angle.

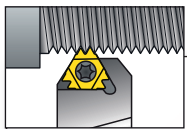


External Toolholders

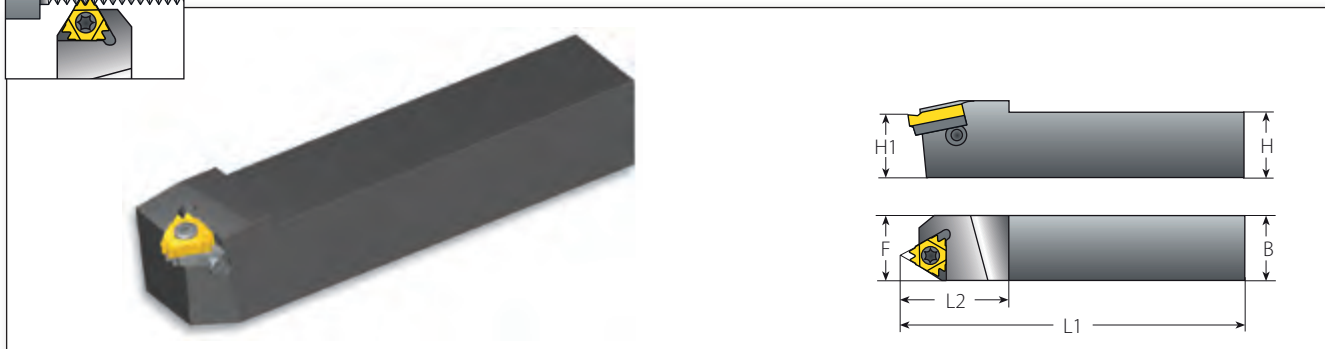


Z+ Style with Coolant

Z+ Style with Coolant						Spare Parts			
Insert Size	Ordering Code	Dimensions mm							
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2"Z	ALC32-4Z	32	32	178	37	SA4T	SY4T	K4T	YE4Z
	ALC40-4Z	40	40	208	37				



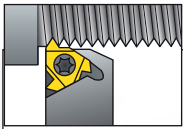
External Toolholders



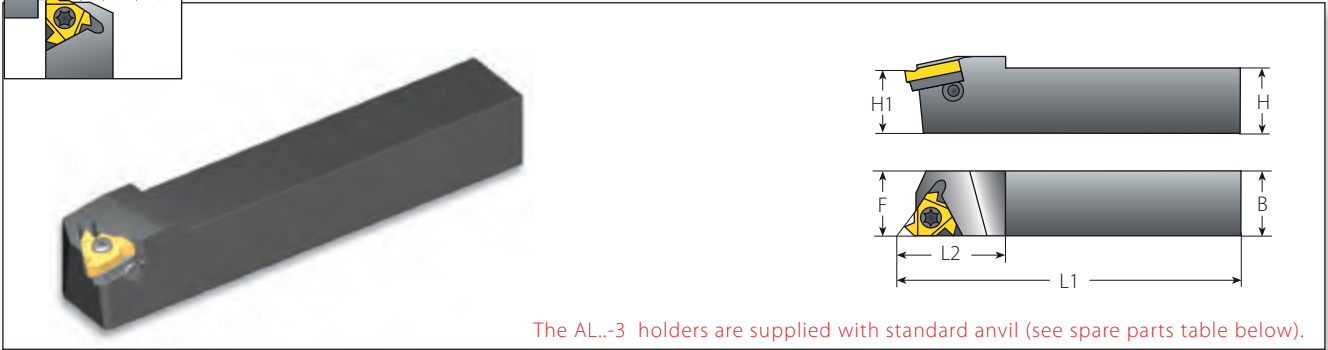
Z+ Style

Z+ Style						Spare Parts				
Insert Size	Ordering Code	Dimensions (mm)								
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
1/2"Z	AL32-4Z	32	32	178.4	38	SA4T	SY4T	K4T	YE4Z	YI4Z
	AL40-4Z	40	40	208.4	38					

All Z+ Style toolholders have a 1.5° helix angle.
 The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example AL32-4Z LH).



External Toolholders

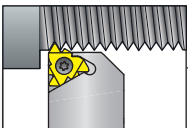


The AL..-3 holders are supplied with standard anvil (see spare parts table below).

Standard

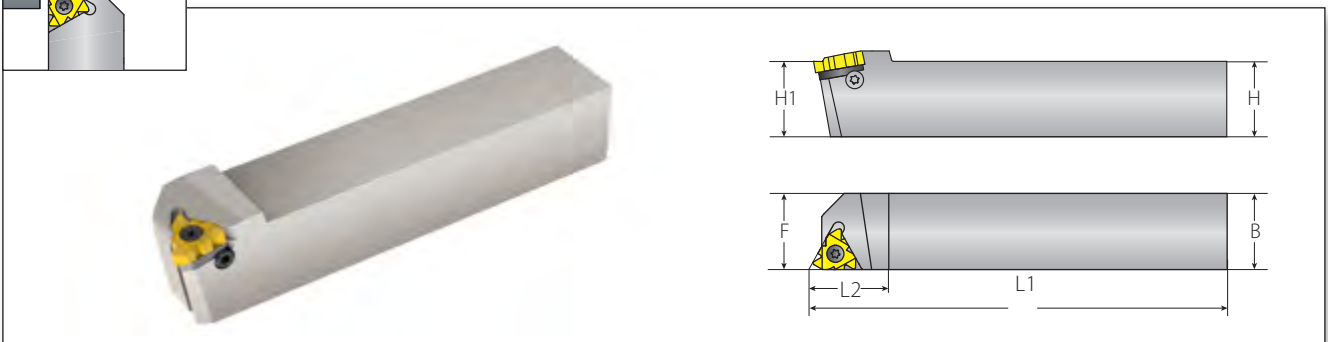
Standard						Spare Parts				
Insert Size	Ordering Code	Dimensions mm								
IC	RH/LH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
3/8"	NL12-3	12	16	83.2	22	SA3T	-	K3T	-	-
	AL3/8-3	9.52	16	63.6	20.5	SA3T	SY3T	K3T	YE3	YI3
	AL12-3	12	16	83.2	22					
	AL16-3	16	16	100.0	20.5					
	AL20-3	20	20	128.6	30					
	AL25-3	25	25	153.6	30					
1/2"	AL32-3	32	32	173.6	30	SA4T	SY4T	K4T	YE4	YI4
	AL25-4	25	25	155.7	36					
	AL32-4	32	32	175.7	36					
5/8"	AL40-4	40	40	205.7	36	SA5T	SY5T	K5T	YE5	YI5
	AL25-5	25	32	151.6	35					
	AL32-5	32	32	176.6	40					
	AL40-5	40	40	206.6	40					
	AL50-5	50	50	256.6	40					

The above toolholders have a 1.5° helix angle. For other helix angles, see page 51.



External Toolholders

FLINE



F-Line Standard

F-Line Standard						Spare Parts			
Insert Size	Ordering Code	Dimensions mm							
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2" F	AL25-4F	25	25	155	33	SA4T	SY4T	K4T	YE4F
	AL32-4F	32	32	175	33				
	AL40-4F	40	40	205	33				

External Toolholders



Standard with Clamp

(Dual System, Screw or Clamp)

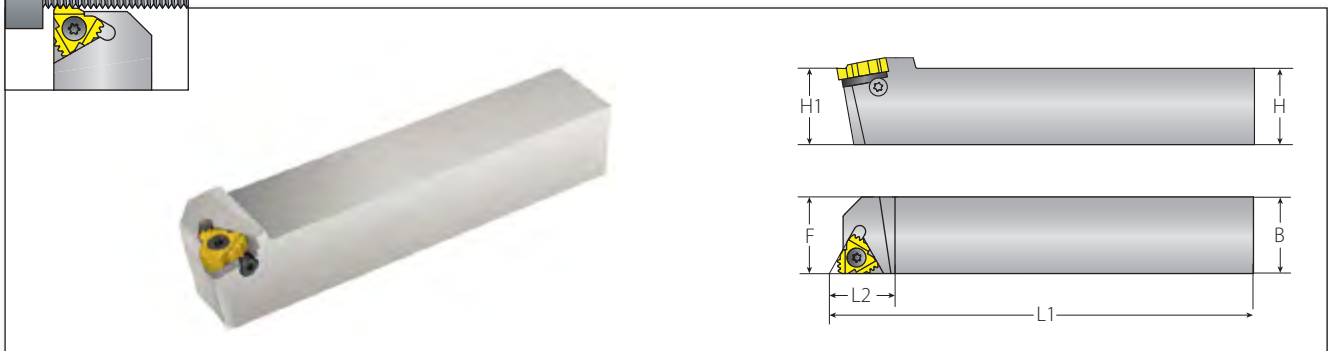
Spare Parts

Insert Size	Ordering Code	Dimensions mm				Spare Parts							
		IC	RH/LH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Clamp	Torx Key	Anvil RH	Anvil LH
3/8"	AL16-3C			16	16	100.0	20.5	SA3T	SY3T	C3	K3CT	YE3	YI3
	AL20-3C			20	20	128.6	30						
	AL25-3C			25	25	153.6	30						
	AL32-3C			32	32	173.6	30						
1/2"	AL25-4C			25	25	155.7	36	SA4T	SY4T	C4	K4T	YE4	YI4
	AL32-4C			32	32	175.7	36						
	AL40-4C			40	40	205.7	36						
5/8"	AL25-5C			25	32	151.6	35	SA5T	SY5T	C5	K5T	YE5	YI5
	AL32-5C			32	32	176.6	40						
	AL40-5C			40	40	206.6	40						
	AL50-5C			50	50	256.6	40						

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code. (Example AL20-3 LH). The above toolholders have a 1.5° helix angle. For other helix angles, see page 51.

External Toolholders

FLINE

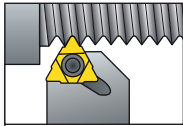


F-Line Multi+ Style

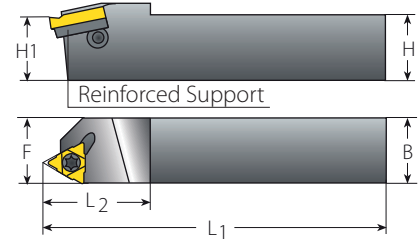
Spare Parts

Multiplus

Insert Size	Ordering Code	Dimensions mm				Spare Parts					
		IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2" F	AL32-4MF			32	32	175	33	SA4T	SY4T	K4T	YE4M2F
	AL40-4MF			40	40	205	33				

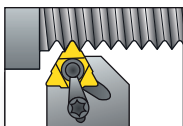


External Toolholders

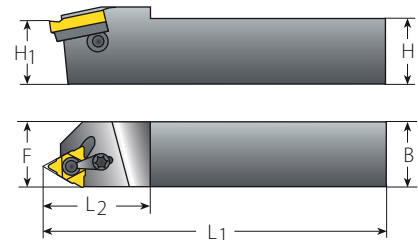


U Style

Insert Size		Ordering Code		Dimensions mm			Spare Parts				
IC	RH/LH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH	
1/2"U	AL25-4U	25	25	178.4	38	SA4T	SY4T	K4T	YE4U	YI4U	
	AL32-4U	32	32	178.4	38						
	AL40-4U	40	40	208.4	38						
5/8"U	AL25-5U	25	25	179.1	40	SA5T	SY5T	K5T	YE5U	YI5U	
	AL32-5U	32	32	179.1	40						
	AL40-5U	40	40	209.1	40						
	AL50-5U	50	50	259.1	40						



External Toolholders



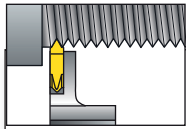
U Style with Clamp

(Dual System, Screw or Clamp)

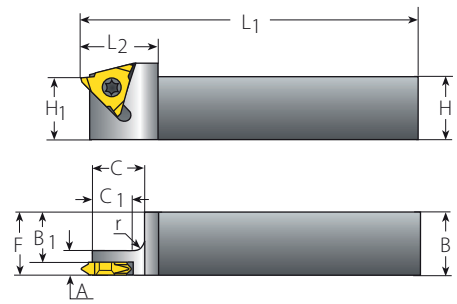
Insert Size		Ordering Code		Dimensions mm			Spare Parts					
IC	RH/LH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Clamp	Torx Key	Anvil RH	Anvil LH	
1/2"U	AL32-4UC	32	32	178.4	38	SA4T	SY4T	C4	K4T	YE4U	YI4U	
	AL40-4UC	40	40	208.4	38							
5/8"U	AL32-5UC	32	32	179.1	40	SA5T	SY5T	C5	K5T	YE5U	YI5U	
	AL40-5UC	40	40	209.1	40							
	AL50-5UC	50	50	259.1	40							

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code. (Example AL25-4U LH).

All U Style Toolholders have a 1.5° helix angle. For other helix angles see page 51.



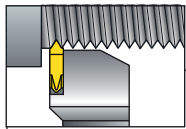
External Toolholders



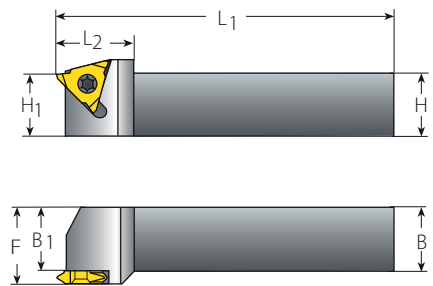
Slim Throat

Insert Size		Ordering Code	Dimensions mm								Spare Parts	
IC	RH/LH	H=B=F	H1	A	B1	C	C1	L1	L2	r	Insert Screw	Torx Key
1/4"V	NL8-2V	8	10	7	4.8	12.5	11.5	60	14.0	1	SN2T	K2T
	NL10-2V	10	10	7	6.8	12.5	11.5	70	14.0	1		
	NL12-2V	12	12	7	8.8	14.5	11.5	80	14.0	3		
	NL16-2V	16	16	7	12.8	14.5	11.5	100	14.0	3		
3/8"V	NL10-3V	10	14	7	6.4	14.5	11.5	70	18.5	3	SN3TV	K3T
	NL12-3V	12	14	7	8.4	14.5	11.5	80	18.5	3		
	NL16-3V	16	16	7	12.4	14.5	11.5	100	25.0	3		
	NL20-3V	20	20	7	16.4	16.5	11.5	125	30.0	3		
	NL25-3V	25	25	7	21.4	16.5	11.5	150	30.0	5		
	NL32-3V	32	32	7	28.4	16.5	11.5	170	30.0	5		
1/2"V	NL40-3V	40	40	7	36.4	16.5	11.5	200	30.0	5	SN4T	K4T
	NL25-4V	25	25	12	20.2	16.5	11.5	150	30.0	5		
	NL32-4V	32	32	12	27.2	16.5	11.5	170	30.0	5		
	NL40-4V	40	40	12	35.2	16.5	11.5	200	30.0	5		

All Slim Throat toolholders have a 1.5° helix angle.



External Toolholders



V Style

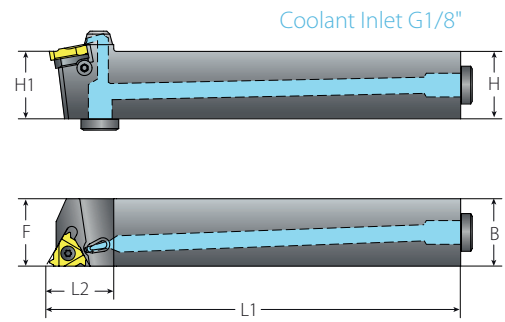
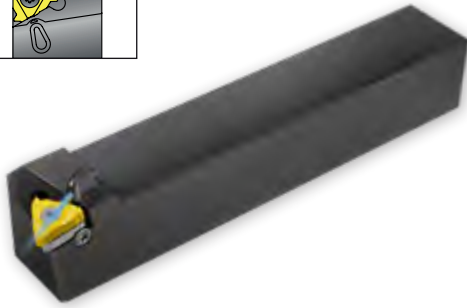
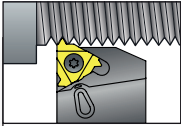
Insert Size		Ordering Code	Dimensions mm					Spare Parts	
IC	RH	H=H1=B	B1	F	L1	L2	Insert Screw	Torx key	
5/8"V	NL32-5V-6	32	25.5	32.0	170	40	SN6T	K6T	
	NL32-5V-8	32	25.5	34.1	170	40			
	NL32-5V-10	32	25.5	35.8	170	40			
	NL32-5V-10ABUT*	32	25.5	35.8	170	40			
	NL40-5V-6	40	33.5	40.0	200	40			
	NL40-5V-8	40	33.5	42.1	200	40			
	NL40-5V-10	40	33.5	43.8	200	40			
	NL40-5V-10ABUT*	40	33.5	43.8	200	40			

All V Style toolholders have a 1° helix angle.

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code. (Example NL32-5V-6 LH).

* To be used only with inserts 5VER2.5ABUT

External Toolholders



Standard with Coolant

Insert Size	Ordering Code	Dimensions mm			
IC	RH	H=H1=B	F	L1	L2
3/8"	ALC16-3	16	16	100	24.5
	ALC20-3	20	20	129	30.0
	ALC25-3	25	25	154	30.0
	ALC32-3	32	32	174	30.0

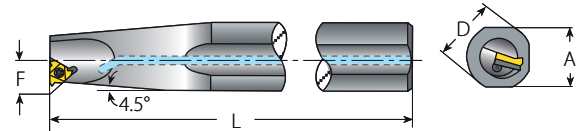
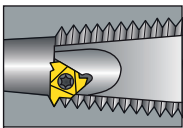
Spare Parts



Insert Screw Anvil Screw Torx Key Anvil RH Plug Screw

SA3T SY3T K3T YE3 Plug G1/8"

Internal Toolholders



Oil & Gas

Insert Size	Ordering Code	Thread Form	Connection No. or Size	Dimensions mm				Helix Angle
				A	L	D	F	
3/8"	AVRC25-3-APIRD	APIRD 8 APIRD 10	2.375"-20" 1.315"-3.5"	29	250	25	14.5	1
	AVRC32-3-APIRD	APIRD 8 APIRD 10	2.375"-20" 1.66"-3.5"	29	250	32	19.6	1
	AVRC40-3-APIRD	APIRD 8 APIRD 10	2.375"-20" 1.9"-3.5"	36	300	40	22	1
1/2"	AVRC40-4BUT/API	5BUT, V.038R, V.050, V.040, V.055	4 1/2"-20" NC10-NC77 all sizes	36	300	40	24.2	0
5/8"	AVR50-5OIL	V0.038R	NC23-NC38	45	300	50	22.6	1.5
	AVRC50-5OIL	V0.038R	NC23-NC38	45	300	50	22.6	1.5
	AVR80-5OIL	V0.050R	NC40-NC77	72	400	80	39.7	1.5
	AVRC80-5OIL	V0.050R	NC40-NC77	72	400	80	39.7	1.5

Spare Parts



Insert Screw Anvil Screw Torx Key Anvil RH Anvil LH

SA3T SY3T K3T YEI3-APIRD

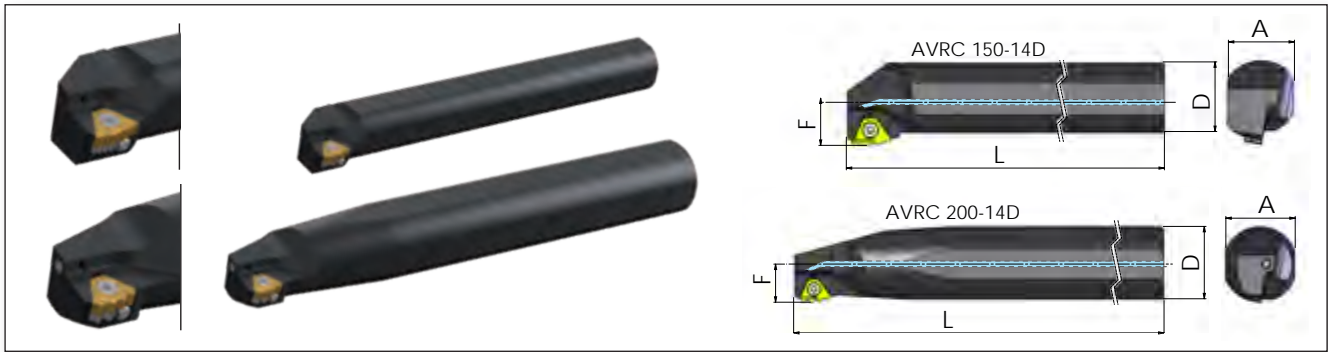
SA4T SY4T K4T YEI4-API-1P
YEI4-5BUT

SA5T SY5T K5T YI5OIL YE5OIL

Toolholders ordered with an internal coolant channel have an internal BSP 1/2" thread for connection to the flexible coolant pipe.

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example: AVRC 50-5OIL LH).

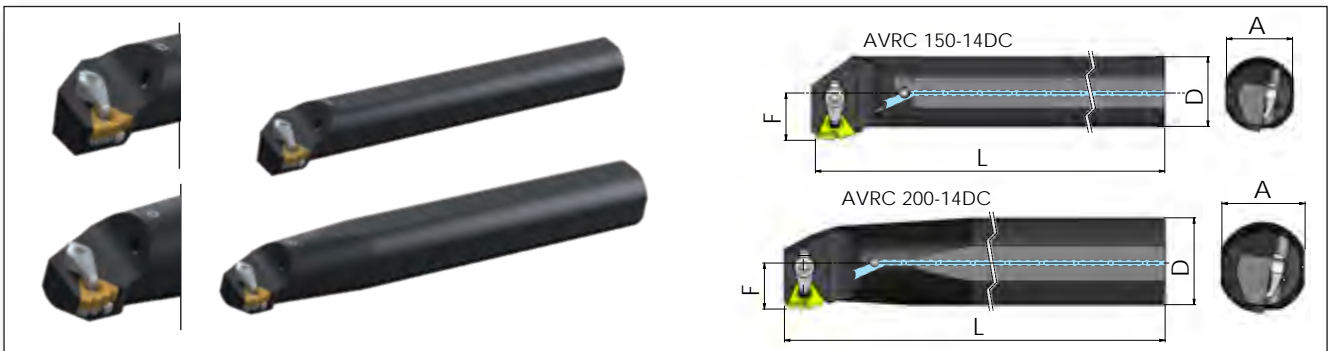
14D Internal Toolholders



14D Standard*

Insert Size	Ordering Code	Dimensions mm					Spare Parts			
		A	L	D	F	Min. Bore Dia.	Insert Screw	Anvil Screw & Washer	Insert Key	Anvil Key
14D	AVRC40-14D	37	300	40	26	54.5	SA5T	M4x6(14D)	K5T	KT15
14D	AVRC50-14D	46	300	50	25	54.5	SA5T	M4x6(14D)	K5T	KT15

14D Internal Toolholders with Clamp

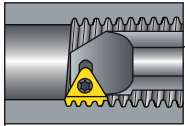


14D Standard with Clamp*

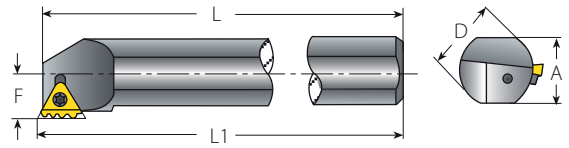
Insert Size	Ordering Code	Dimensions mm					Spare Parts				
		A	L	D	F	Min. Bore Dia.	Insert Screw	Anvil Screw & Washer	Clamp	Insert Key	Anvil Key
14D	AVRC40-14DC	37	300	40	26	54.5	SA5T	M4x6(14D)	C5	K5T	KT15
14D	AVRC50-14DC	46	300	50	25	54.5	SA5T	M4x6(14D)	C5	K5T	KT15

* 14D holders are supplied without anvils. For specific applications, please use the anvils indicated in the table on page 52. Toolholders ordered with an internal coolant channel have an internal BSP 1/2" thread for connection to the flexible coolant pipe.

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example: AVRC 40-14D LH).



Internal Toolholders

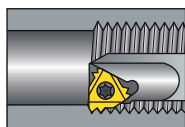


T+ Style

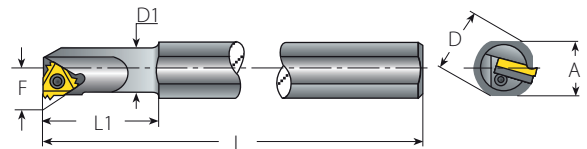
Insert Size	Ordering Code	Dimensions mm						Min. Bore dia.	Spare Parts				
		IC	RH	A	L	L1	D		F	mm	Insert Screw	Anvil Screw	Torx Key
1/2" T	AVR40-4T	36	300	302	40	23.3	60						
	AVR50-4T	45	350	352	50	28.3	70	SA4T	SY4K2	K4T	K2	Y4T	
	AVR60-4T	54	400	402	60	33.3	80						

All T+ style toolholders have a 0° helix angle.

Holders with coolant channel available as standard. (Example: AVRC50-4T)



Internal Toolholders



M+ Style

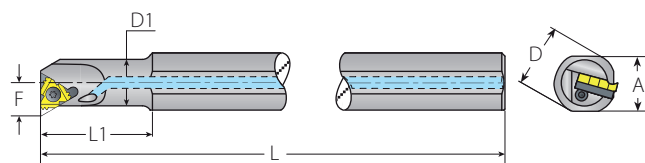
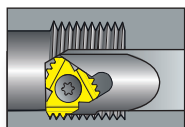
Insert Size	Ordering Code	Dimensions mm							Min. Bore Dia.	Spare Parts				
		IC	RH	A	L	L1 (max)	D	D1		F	mm	Insert Screw	Anvil Screw	Torx Key
5/8" M	AVR32-5M	29	250	128	32	32	22.4	40						
	AVR40-5M	36	300	160	40	40	26.4	48						
	AVR50-5M	45	350	200	50	50	31.4	58	SA5T	SY5T	K5T	Y15M	YE5M	
	AVR60-5M	54	400	240	60	60	36.4	69						

Multiplus

The above toolholders have a 1.5° helix angle. For other helix angles, see page 51.

Holders with coolant channel available as standard (Example AVRC32-4Z).

Internal Toolholders

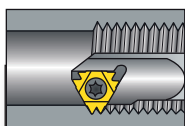


F-Line Multi+ Style

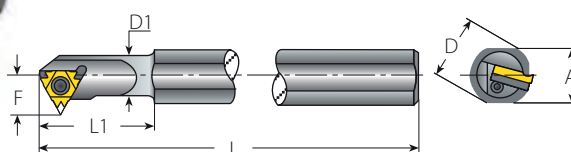
Spare Parts

Insert Size	Ordering Code	Dimensions mm							Min. Bore dia.
IC	RH	A	L	L1	D	D1	F	mm	
1/2" F	AVRC25-4MF	29.0	250	60	32	25.0	17.9	32	
	AVRC25D-4MF	22.6	200	100	25	24.6	17.9	32	
	AVRC32-4MF	29.0	250	128	32	32.0	21.4	39	
	AVRC40-4MF	36.0	300	160	40	40.0	25.6	47	
	AVRC50-4MF	45.0	350	200	50	50.0	30.6	57	

Insert Screw	Anvil Screw	Torx Key	Anvil RH
SA4T	SY4T	K4T	YI4M2F



Internal Toolholders



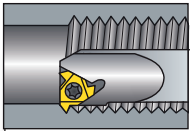
Z+ Style

Spare Parts

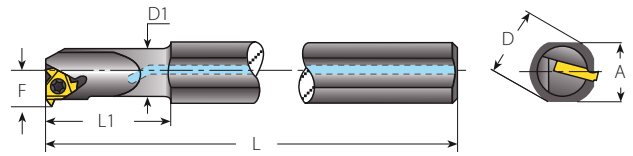
Insert Size	Ordering Code	Dimensions mm							Min. Bore dia.
IC	RH	A	L	L1	D	D1	F	mm	
1/2" Z	AVR32-4Z	29	250	60	32	32	25.5	42	
	AVR40-4Z	36	300	60	40	40	29.5	51	

Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
SA4T	SY4T	K4T	YI4Z	YE4Z

All Z+ style toolholders have a 1.5° helix angle.








Internal Toolholders



The AVR..-3 holders are supplied with standard anvil (see spare parts table below).

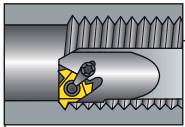
Standard

Standard									Spare Parts					
Insert Size	Ordering Code	Dimensions mm							Min. Bore Dia.					
IC	RH/LH	A	L	L1 (max)	D	D1	F	mm	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH	
3/8"	NVR13-3	18.0	180	32	20	12.7	10.3	17	SN3T	-	K3T	-	-	
	NVR16-3	18.0	180	40	20	16.0	11.5	20						
	NVR16D-3	15.2	150	64	16	16.0	11.3	20						
	AVR20-3	18.0	180	80	20	20.0	13.4	24						
	AVR25-3	29.0	250	60	32	25.0	16.3	29						
	AVR25D-3	22.6	200	100	25	24.6	16.1	29						
	AVR32-3	29.0	250	128	32	32.0	19.6	36						
1/2"	AVR40-3	36.0	300	160	40	40.0	23.8	44	SA3T	SY3T	K3T	YI3	YE3	
	NVR20-4	18.0	180	80	20	20.0	15.6	27						
	AVR25-4	29.0	250	60	32	25.0	17.4	32						
	AVR25D-4	22.6	200	100	25	24.6	17.2	32						
	AVR32-4	29.0	250	128	32	32.0	21.5	39						
	AVR40-4	36.0	300	160	40	40.0	25.8	47						
5/8"	AVR50-4	45.0	350	200	50	50.0	30.8	57	SN4T	-	K4T	-	-	
	AVR32-5	29.0	250	128	32	32.0	22.4	40						
	AVR40-5	36.0	300	160	40	40.0	26.4	48						
	AVR50-5	45.0	350	200	50	50.0	31.4	58						
	AVR60-5	54.0	400	240	60	60.0	36.4	69						

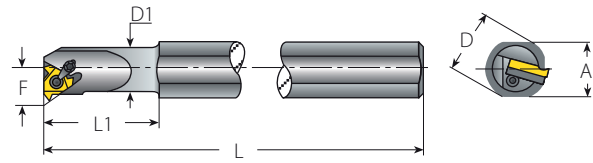
The above toolholders have a 1.5° helix angle. For other helix angles, see page 51.

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 (Example: NVR10-2 LH).



Internal Toolholders



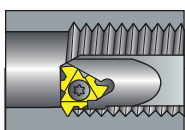
The AVR..-3C holders are supplied with standard anvil (see spare parts table below).

Standard with Clamp (Dual System, Screw or Clamp)

Spare Parts

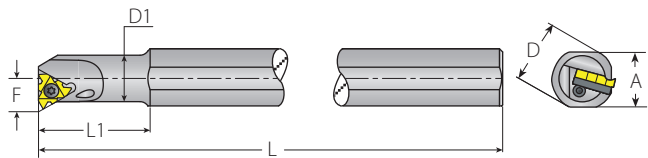
Insert Size	Ordering Code	Dimensions mm							Min. Bore dia.						
IC	RH	A	L	L1	D	D1	F	mm	Insert Screw	Anvil Screw	Clamp	Torx Key	Anvil RH	Anvil LH	
3/8"	AVR20-3C	18.0	180	50	20	20.0	13.4	24	SA3T	SY3T	C3	K3CT	Y13	YE3	
	AVR25-3C	28.0	250	60	32	25.0	16.3	29							
	AVR25D-3C	22.6	200	45	25	24.6	16.1	29							
	AVR32-3C	29.0	250	60	32	32.0	19.6	36							
	AVR40-3C	36.0	300	60	40	40.0	23.8	44							
1/2"	AVR25-4C	29.0	250	60	32	25.0	17.4	32	SA4T	SY4T	C4	K4T	Y14	YE4	
	AVR25D-4C	22.6	200	45	25	24.6	17.2	32							
	AVR32-4C	29.0	250	60	32	32.0	21.5	39							
	AVR40-4C	36.0	300	60	40	40.0	25.8	47							
5/8"	AVR32-5C	29.0	250	60	32	32.0	22.4	40	SN5T	SY5T	C5	K5T	Y15	YE5	
	AVR40-5C	36.0	300	60	40	40.0	26.4	48							
	AVR50-5C	45.0	350	75	50	50.0	31.4	58							
	AVR60-5C	54.0	400	75	60	60.0	36.4	69							

The above toolholders have a 1.5° helix angle. For other helix angles, see page 51.
Holders with coolant channel available as standard (Example AVRC20-3C).



Internal Toolholders

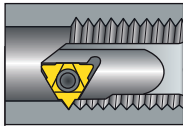
FLINE



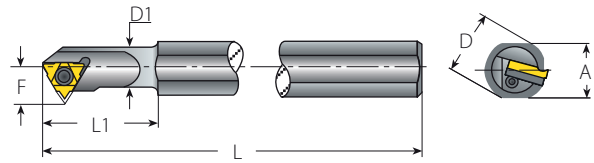
F-Line Standard

Spare Parts

Insert Size	Ordering Code	Dimensions mm							Min. Bore dia.				
IC	RH	A	L	L1	D	D1	F	mm	Insert Screw	Anvil Screw	Torx Key	Anvil RH	
1/2" F	AVRC25-4F	29.0	250	60	32	25.0	17.9	32	SA4T	SY4T	K4T	Y14F	
	AVRC25D-4F	22.6	200	100	25	24.6	17.9	32					
	AVRC32-4F	29.0	250	128	32	32.0	21.6	39					
	AVRC40-4F	36.0	300	160	40	40.0	25.4	47					
	AVRC50-4F	45.0	350	200	50	50.0	30.6	57					

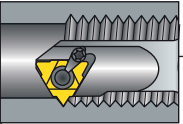


Internal Toolholders

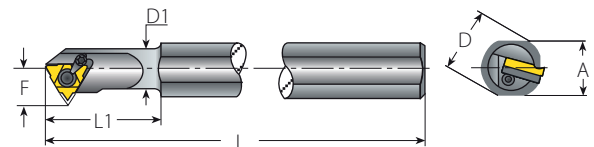


U Style

Insert Size	Ordering Code	Dimensions mm							Min. Bore dia.	Spare Parts				
		IC	RH	A	L	L1	D	D1		F	mm	Insert Screw	Anvil Screw	Torx Key
1/2"U	AVR32-4U	29	250	60	32	32	25.5	42	SA4T	SY4T	K4T	Y14U	YE4U	
	AVR40-4U	36	300	60	40	40	29.5	51	SN5T	-	K5T	-	-	
5/8"U	NVR32-5U	29	250	60	32	32	24.7	42	SA5T	SY5T	K5T	Y15U	YE5U	
	AVR40-5U	36	300	60	40	40	29.4	53						
	AVR50-5U	45	350	75	50	50	34.3	63						
	AVR60-5U	54	400	75	60	60	39.3	74						



Internal Toolholders



U Style with Clamp

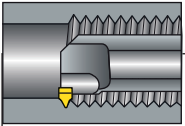
(Dual System, Screw or Clamp)

Insert Size	Ordering Code	Dimensions mm							Min. Bore dia.	Spare Parts					
		IC	RH	A	L	L1	D	D1		F	mm	Insert Screw	Anvil Screw	Clamp	Torx Key
1/2"U	AVR32-4UC	29.0	250	60	32	32.0	25.5	42	SA4T	SY4T	C4	K4T	Y14U	YE4U	
	AVR40-4UC	36.0	300	60	40	40.0	29.5	51							
5/8"U	AVR40-5UC	36.0	300	60	40	40.0	29.4	53	SA5T	SY5T	C5	K5T	Y15U	YE5U	
	AVR50-5UC	45.0	350	75	50	50.0	34.4	63							
	AVR60-5UC	54.0	400	75	60	60.0	39.3	74							

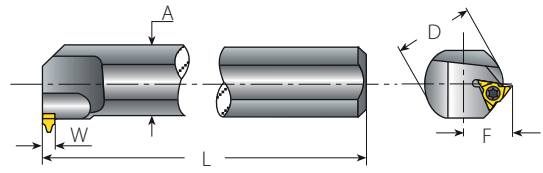
The above toolholders have a 1.5° helix angle. For other helix angles, see page 51.

Toolholders with prefix "N" cannot be used with an anvil. Holders with coolant channel available as standard. (Example AVRC20-3C).

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code. (Example AVR20-3C LH).



Internal Toolholders



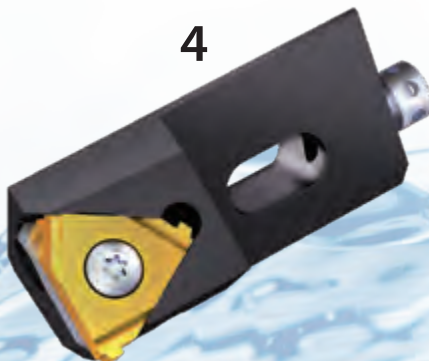
V Style

Insert Size		Ordering Code		Dimensions mm				Spare Parts	
IC	RH	A	L	D	F	W	Min. Bore dia.	Insert Screw	Torx Key
5/8"V	NVR40-5V	36	300	40	28.4	6.5	49	SN6T	K6T
	NVR50-5V	45	350	50	33.4	6.5	59		
	NVR60-5V	54	400	60	38.0	6.5	69		

The above toolholders have a 1.0° helix angle.

Special Toolholder Solutions

Tailor-made toolholder solutions are available upon request through your local Vargus distributor. Please indicate the toolholder number when making a request for quotation.



Special Toolholder Solutions

8



11



9



12



10

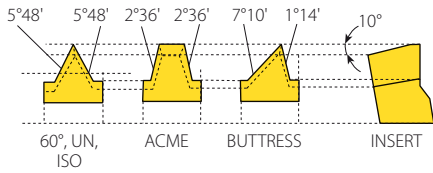


13

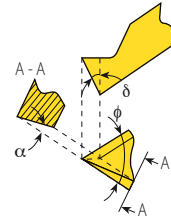


Calculating the Helix Angle and Choosing The Right Anvil

Flank Clearance Angle α (For External Inserts)



Vardex toolholders are designed to tilt the insert when seated in the toolholder (10° for external, 15° for internal tooling). This results in the differing flank clearance angles, based on the geometry of the insert. To ensure that the side of the insert cutting edge will not rub on the workpiece, it is most important that the insert helix angle be correct - especially in profiles with small enclosed flank angles. This correction is provided by Vardex anvils.

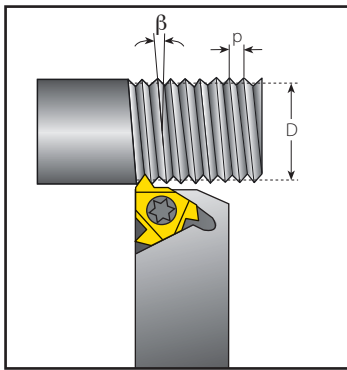


$$\alpha = \arctan(\tan(\frac{\phi}{2} \times \tan \delta))$$

Where: α - Flank clearance angle
 δ - Tilt angle
 ϕ - Enclosed flank angle

To ensure that the side of the insert cutting edge will not rub on the workpiece, it is most important that the insert helix angle be correct - especially in profiles with small enclosed flank angles. This correction is provided by Vardex anvils.

Calculating the Helix Angle β



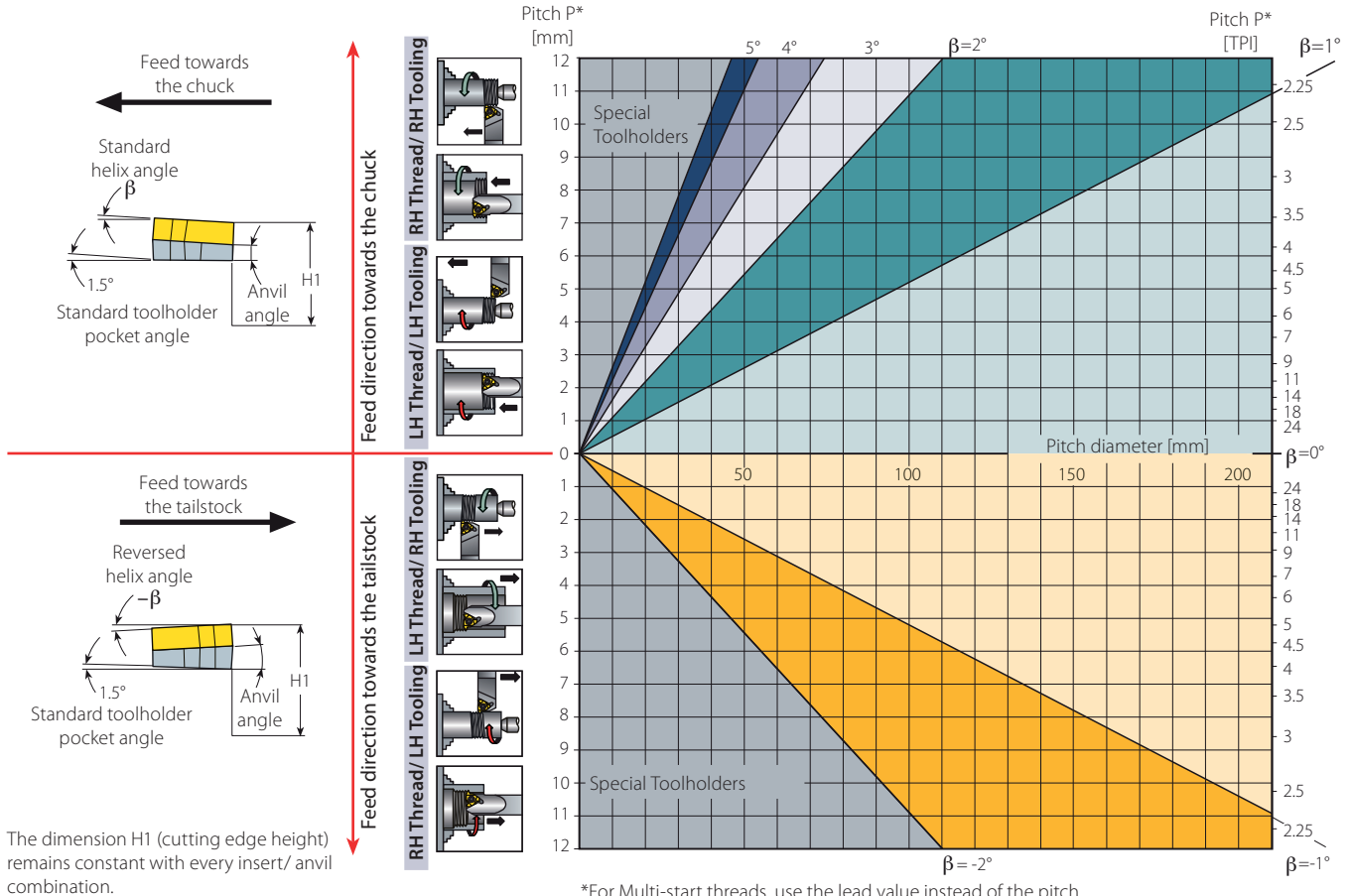
The helix angle is calculated by the following formula:

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

β - 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.

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

Anvils

Resultant Helix Angle		4.5°	3.5°	2.5°	1.5°	.5°	0°	-.5°	-1.5°	
Insert Size	Holder	Ordering Code								
IC mm	L mm									
3/8"	16	ER / IL	YE3-3P	YE3-2P	YE3-1P	YE3 YEI3 APIRD	YE3-1N	YE3-1.5N	YE3-2N	YE3-3N
		EL / IR	YI3-3P	YI3-2P	YI3-1P	YI3 YEI3 APIRD	YI3-1N	YI3-1.5N	YI3-2N	YI3-3N
1/2"	22	ER / IL	YE4-3P	YE4-2P	YE4-1P	YE4YEI4- APIYEI4-5BUT	YE4-1N	YE4-1.5N	YE4-2N	YE4-3N
		EL / IR	YI4-3P	YI4-2P	YI4-1P	YI4YEI4- APIYEI4-5BUT	YI4-1N	YI4-1.5N	YI4-2N	YI4-3N
1/2"F		ER	YE4F-3P	YE4F-2P	YE4F-1P	YE4F	YE4F-1N	YE4F-1.5N		
		IR	YI4F-3P	YI4F-2P	YI4F-1P	YI4F	YI4F-1N	YI4F-1.5N		
1/2"F 2M+	23	ER	—	—	YE4M2F-1P	YE4M2F	YE4M2F-1N	YE4M2F		
1/2"F 3M+			—	—	YE4M3F-1P	YE4M3F	YE4M3F-1N	YE4M3F-1.5N		
1/2"F 2M+		IR	—	—	YI4M2F-1P	YI4M2F	YI4M2F-1N	YI4M2F-1.5N		
1/2"U			ER / IL	YE4U-3P	YE4U-2P	YE4U-1P	YE4U	YE4U-1N	YE4U-1.5N	YE4U-2N
	22	EL / IR	YI4U-3P	YI4U-2P	YI4U-1P	YI4U	YI4U-1N	YI4U-1.5N	YI4U-2N	YI4U-3N
		ER / IL	YE5-3P	YE5-2P	YE5-1P	YE5	YE5-1N	YE5-1.5N	YE5-2N	YE5-3N
5/8"	27	EL / IR	YI5-3P	YI5-2P	YI5-1P	YI5	YI5-1N	YI5-1.5N	YI5-2N	YI5-3N
5/8"U		ER / IL	YE5U-3P	YE5U-2P	YE5U-1P	YE5U	YE5U-1N	YE5U-1.5N	YE5U-2N	YE5U-3N
	27	EL / IR	YI5U-3P	YI5U-2P	YI5U-1P	YI5U	YI5U-1N	YI5U-1.5N	YI5U-2N	YI5U-3N
		ER / IL			YE3M-1P	YE3M	YE3M-1N	YE3M-1.5N	YE3M-2N	
3/8"M	16	EL / IR			YI3M-1P	YI3M	YI3M-1N	YI3M-1.5N		
1/2"M		ER / IL			YE4M-1P	YE4M	YE4M-1N	YE4M-1.5N	YE4M-2N	
	22	EL / IR			YI4M-1P	YI4M	YI4M-1N	YI4M-1.5N		
		ER / IL				YE5M	YE5M-1N	YE5M-1.5N		
5/8"M	27	EL / IR				YI5M	YI5M-1N	YI5M-1.5N		
1/2"Z		ER / IL			YE4Z-1P	YE4Z	YE4Z-1N			
	22	EL / IR			YI4Z-1P	YI4Z	YI4Z-1N			
		ER / IL				Y4T				
1/2"T	22	ER / IL								

Standard Anvil		U Style Anvil		M Style Anvil		Z Style Anvil		T Style Anvil		FLINE Anvil		FLINE M+ Style Anvil	
ER / IL	ER / IL	ER / IL	ER / IL	ER / IL	ER / IL	ER / IL	ER / IL	ER / IL	ER / IL Same anvil turned over	ER	IR	ER	IR





Oil&Gas Anvils





Standard	Application	Anvils with Protected Second Cutting Edge			
		Ordering Code External Application		Ordering Code Internal Application	
API Round Casing & Tubing	10 TPI from Ø 2 3/8" and up	Y14DER-10APIRD (4 teeth)		Y14DIR-10APIRD (4 teeth)	
	10 TPI from Ø 2 3/8" and up	Y14DER10APIRD-3+ (3 teeth)		Y14DIR10APIRD-3+ (3 teeth)	
	8 TPI from Ø 2 3/8" and up	Y14DER-8APIRD		Y14DIR-8APIRD	
API Buttress Casing	5 TPI for Ø 4 1/2" - Ø 9 5/8"	Y14DER-5 BUT		Y14DIR-5 BUT	
	5 TPI for Ø 10 3/4" and up	Y14DER-5BUT-4N		Y14DIR-5BUT-4N	

Oil&Gas - Anvils

Resultant Helix Angle	3°	2°	1°	0°	0.5°
Insert Size					
3/8 APIRD			YEI3-APIRD		
1/2 API	YEI4-API-3P	YEI4-API-2P	YEI4-API-1P		
1/2 BUT					YEI4-BUT-0.5N

Grades and their Applications

Oil&Gas General Use for Oil & Gas Materials			
VRXP	VTXP	VKXP	VRKP NEW
			
Premium submicron grade with reinforced cutting edge for the oil & gas industry. Ideal for steel and stainless steel in unstable cutting conditions. AlTiN alloyed PVD coated.	Excellent all-purpose grade, tailor-made to the oil & gas industry with reinforced cutting edge. Recommended for non-rigid cutting conditions. TiAlN coated.	General purpose grade, excellent in steel and stainless steel, and highly recommended for rigid cutting conditions. Special design with reinforced cutting edge for the oil & gas industry. TiN coated.	Specially designed for the oil and gas industry. Suitable for extreme cutting speeds. Available upon request for 14D & T+ style inserts.

General Use			
VRX	VTX/VCB	VKX	VM7
			
Premium multipurpose submicron grade for stronger wear resistance and improved productivity. AlTiN alloyed PVD coated.	General purpose grade with tough submicron substrate. Provides good fracture toughness in non-rigid cutting conditions. TiAlN coated.	General purpose grade, excellent in steel and stainless steel, recommended for rigid cutting conditions. Ground or sintered chipbreaker styles. TiN coated.	Specialty grade for threading stainless steel. Multi-layer PVD coated.

Cutting Speed Recommendations for Materials Specified by API STB 5

Material	J55-K55	N80-L80-C95-TN70	TN95-P110-TN110
Cutting Speed (m/min)	170-200	150-180	130-160

Cutting Pass Division Recommendations for Multi Tooth Inserts

The following table provides the optimal cutting pass division options, depending on the material, machine stability and clamping conditions:

Application	No. of Passes/ Pass No.	1	2	3	4	5	6
APIRD 8 Ex, In	3 passes	0.89	0.81	0.11			
	4 passes	0.6	0.58	0.52	0.11		
	5 passes	0.47	0.47	0.43	0.33	0.11	
	6 passes	0.39	0.41	0.37	0.29	0.24	0.11
APIRD 10 Ex, In	3 passes	0.67	0.63	0.11			
	4 passes	0.44	0.45	0.41	0.11		
	5 passes	0.34	0.37	0.33	0.26	0.11	
	6 passes	0.28	0.32	0.29	0.22	0.19	0.11
BUT 5 Ex, In	3 passes	0.760	0.705	0.110			
	4 passes	0.506	0.501	0.458	0.110		
	5 passes	0.395	0.409	0.374	0.287	0.110	
	6 passes	0.329	0.353	0.324	0.249	0.210	0.110
OTTM 5 Ex, In	3 passes	0.760	0.730	0.110			
	4 passes	0.506	0.501	0.483	0.110		
OTTG 5 Ex, In	5 passes	0.395	0.409	0.374	0.312	0.110	
	6 passes	0.329	0.353	0.324	0.249	0.235	0.110

Recommended Grades and Cutting Speeds Vc [m/min] for General Use

Material Group	Vardex No.	Material		Hardness Brinell HB	Vc [m/min]			
					Coated			
					VKX(P)	VCB	VM7	VTX(P), VRX(P)
P Steel	1	Unalloyed steel	Low carbon (C=0.1-0.25%)	125	115-190	115-190		115-190
	2		Medium carbon (C=0.25-0.55%)	150	100-175	100-165		100-175
	3		High carbon (C=0.55-0.85%)	170	90-165	90-155		90-165
	4	Low alloy steel (alloying elements ≤5%)	Non hardened	180	100-180	100-180		100-180
	5		Hardened	275	75-140	75-140		75-140
	6		Hardened	350	70-135	70-135		70-135
	7	High alloy steel (alloying elements >5%)	Annealed	200	80-120	80-120		80-120
	8		Hardened	325	50-100	50-100		50-100
	9	Cast steel	Low alloy (alloying elements <5%)	200	70-130	70-130		70-130
	10		High alloy (alloying elements >5%)	225	60-120	60-120		60-120
M Stainless Steel	11	Stainless steel Ferritic	Non hardened	200	70-130	70-130	70-150	70-130
	12		Hardened	330	60-115	50-95	60-125	60-115
	13	Stainless steel Austenitic	Austenitic	180	90-140	80-120	90-160	90-140
	14		Super Austenitic	200	40-110	30-100	40-120	40-110
	15	Stainless steel Cast ferritic	Non hardened	200	90-120	90-120	90-150	90-120
	16		Hardened	330	65-110	65-110	65-120	65-110
	17	Stainless steel Cast austenitic	Austenitic	200	85-110	85-110	85-120	85-110
	18		Hardened	330	60-100	60-100	60-110	60-100
K Cast Iron	28	Malleable Cast iron	Ferritic (short chips)	130	60-70	70-120		60-70
	29		Pearlitic (long chips)	230	60-145	70-120		60-145
	30	Grey Cast iron	Low tensile strength	180	70-130	70-130		70-130
	31		High tensile strength	260	60-115	60-100		60-115
	32	Nodular SG iron	Ferritic	160	125-160	125-160		125-160
	33		Pearlitic	260	90-120	90-120		90-120
N(K) Non-Ferrous Metals	34	Aluminium alloys Wrought	Non aging	60	100-365	100-250		100-365
	35		Aged	100	80-220	80-180		80-220
	36	Aluminium alloys	Cast	75	200-400	200-400		200-400
	37		Cast & aged	90	200-280	200-280		200-280
	38	Aluminium alloys	Cast Si 13-22%	130	60-180	60-150		60-180
	39	Copper and copper alloys	Brass	90	80-225	80-210		80-225
	40		Bronze and non leaded copper	100	80-255	80-210		80-255
	S(M) Heat Resistant Material	19	High temperature alloys	Annealed (Iron based)	200	45-60	45-60	
20		Aged (Iron based)		280	30-50	30-50		30-50
21		Annealed (Nickel or Cobalt based)		250	20-30	20-30		20-30
22		Aged (Nickel or Cobalt based)		350	15-25	15-25		15-25
23		Titanium alloys	Pure 99.5 Ti	400Rm	140-170	140-170		140-170
24			α+β alloys	1050Rm	50-70	50-70		50-70
H(K) Hardened Material	25	Extra hard steel	Hardened & tempered	45-50HRC	45-60	45-60		45-60
	26			51-55HRC	40-50	40-50		40-50

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