



Oil&Gas

Professional Threading Solutions



METRIC

VARDEX
Advanced Threading Solutions



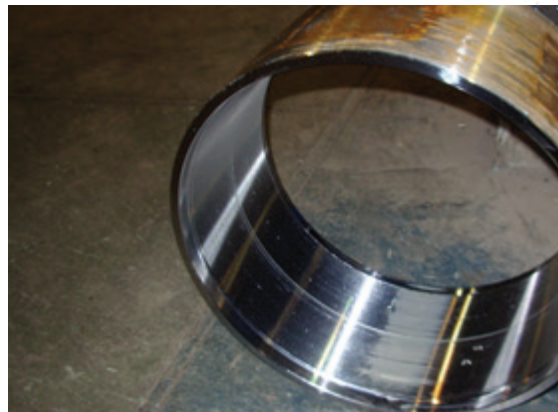
Professional Threading Solutions

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
- Buttress
- Extreme Line
- VAM
- New VAM
- 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

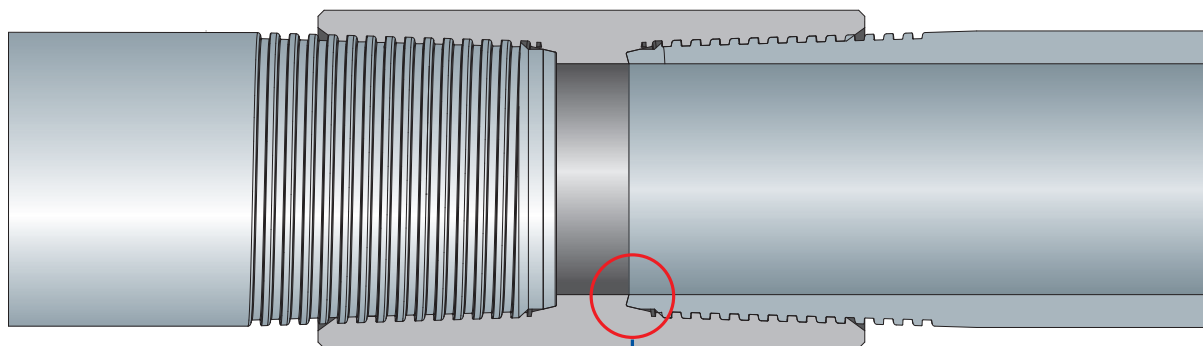
Vargus' new high precision inserts for the Oil & Gas industry are specially designed to reproduce a variety of different insert profile geometries accurately and consistently onto the component for optimized manufacturing of seal components.

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

THREAD TURNING INSERTS

■ NPT	Page 6
■ NPTF	Page 9
■ API	Page 11
■ API Buttress Casing	Page 13
■ API Round Casing & Tubing	Page 17
■ American ACME	Page 21
■ Stub ACME	Page 23
■ VAM	Page 25
■ New VAM	Page 27
■ EL-Extreme Line	Page 28
■ Hughes H-90	Page 29

EXTERNAL THREAD TURNING TOOLHOLDERS

■ API with coolant	Page 30
■ Oil & Gas	Page 30
■ Z+ Style with coolant	Page 31
■ Z+ Style	Page 31
■ 14D Standard with coolant	Page 32
■ 14D Standard	Page 32
■ T+ Style with coolant	Page 33
■ T+ Style	Page 33
■ Standard with coolant	Page 34
■ Standard	Page 34
■ Standard with Clamp	Page 35
■ U Style	Page 36
■ U Style with Clamp	Page 36
■ Slim Throat	Page 37
■ V Style	Page 37

INTERNAL THREAD TURNING TOOLHOLDERS

■ Oil & Gas	Page 38
■ Z+ Style	Page 38
■ T+ Style	Page 39
■ M+ Style	Page 39
■ 14D	Page 40
■ 14D with clamp	Page 40
■ Standard	Page 41
■ Standard with Clamp	Page 42
■ U Style	Page 43
■ U Style with Clamp	Page 43
■ V Style	Page 43

SPECIAL SOLUTIONS

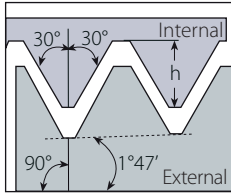
■ Special Toolholder Solutions	Page 45
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TECHNICAL DATA

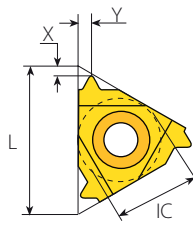
■ Calculating the Helix Angle and Choosing the Right Anvil	Page 47
■ Anvils	Page 48
■ Technical Data	Page 49
■ Recommended Grades and Cutting Speeds	Page 50

NPT

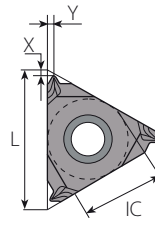
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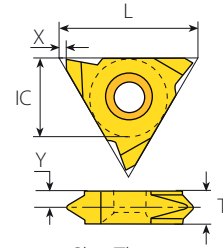
Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



Standard



SCB Sintered
Chipbreaker



Slim Throat

Standard



SCB

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			
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			
		8	3ER8NPT...	3EL8NPT...	2.42	1.3	1.8			
3/8" SCB	16	27	3JER27NPT...		0.66	0.6	0.8	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			
		8	3JER8NPT...		2.42	1.0	1.5			

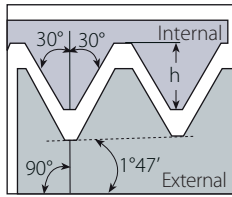
Slim Throat



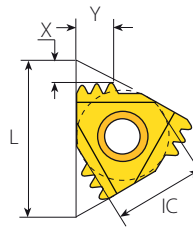
Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
1/4"V	11	27	2VER27NPT...	2VEL27NPT...	0.66	0.7	2.0	3.2	NL..-2V (LH)
		18	2VER18NPT...	2VEL18NPT...	1.01	0.7	1.8	3.2	
		14	2VER14NPT...	2VEL14NPT...	1.33	0.7	1.8	3.2	
		11.5	2VER11.5NPT...	2VEL11.5NPT...	1.64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

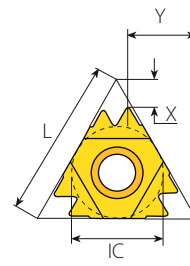
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Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



M+ Style



Z+ Style

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		

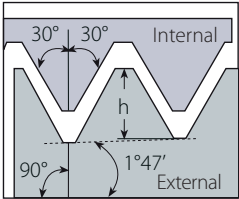
Z+ Style



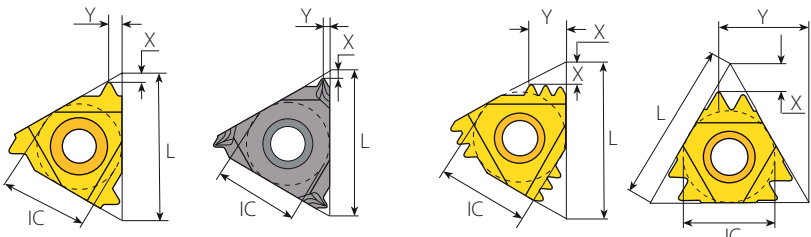
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	11.5	2	4ER11.5NPT2Z+...	1.64	2.7	10.0	YE4Z	AL...-4Z
		8	2	4ER8NPT2Z+...	2.42	3.4	9.6		

NPT (con't)

Internal



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



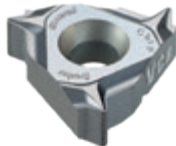
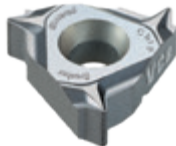
Standard

SCB
Sintered Chipbreaker

M+ Style

Z+ Style

Standard

		Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
	IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder	
	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				
	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

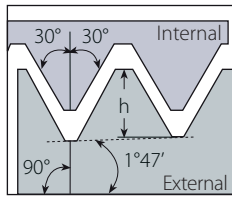
	Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
	IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
	3/8"	16	14	2	3IR14NPT2M+...	1.33	2.0	3.0	YI3M	AVR...-3
	1/2"	22	11.5	2	4IR11.5NPT2M+...	1.64	2.2	3.4	YI4M	AVR...-4
	5/8"	27	11.5	3	5IR11.5NPT3M+...	1.64	3.5	5.6	YI5M	AVR...-5M
			8	2	5IR8NPT2M+...	2.42	3.1	4.9		

Z+ Style

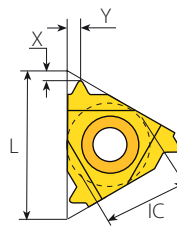
	Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
	IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
	1/2"	22	11.5	2	4IR11.5NPT2Z+...	1.64	2.7	10.0	YI4Z	AVR..-4Z
			8	2	4IR8NPT2Z+...	2.42	3.4	9.6		

NPTF

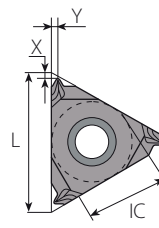
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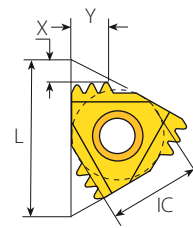
Defined by: ANSI B1.2.3-1976
Tolerance class: Class 2



Standard

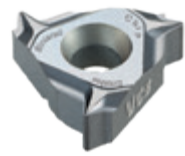


SCB
Sintered Chipbreaker



M+ Style

Standard



SCB

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			
		8	3ER8NPTF...	3EL8NPTF...	2.38	1.3	1.8			
3/8" SCB	16	27	3JER27NPTF...		0.64	0.7	0.8	YE3	-	AL...-3
		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			
		8	3JER8NPTF...		2.38	1.1	1.5			

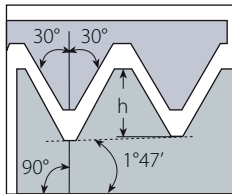
M+ Style



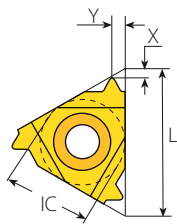
Insert Size		Pitch	Teeth	Ordering Code		Dimensions mm			Anvil	
IC	L mm	TPI		RH		h min	X	Y	RH	Toolholder
3/8"	16	14	2	3ER14NPTF2M+...		1.35	2.0	3.0	YE3M	AL...-3

NPTF (con't)

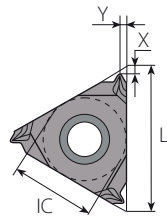
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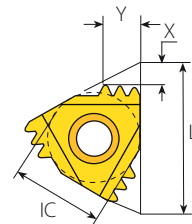
Defined by: ANSI B1.2.3-1976
Tolerance class: Class 2



Standard



SCB
Sintered Chipbreaker



M+ Style

Standard



SCB

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			
3/8"	16	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			
		8	3IR8NPTF...	3IL8NPTF...	2.38	1.3	1.8			
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			

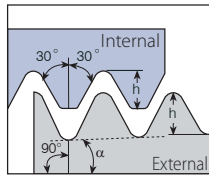
M+ Style



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

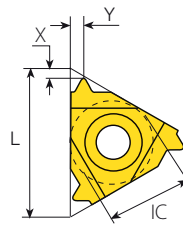
API

External

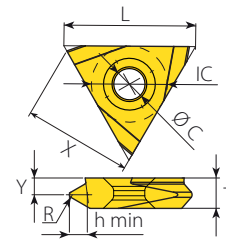


$$\alpha = \arctg(IPF/24)$$

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



Standard - External



On Edge - External

Standard - External



Insert Size		Pitch	Thread	Taper	Ordering Code		Size	Dimensions mm			Anvil	
IC	L mm	TPI		IPF	RH			h min	X	Y	RH	Toolholder
1/2"	22	4	V-.038R	2	4ER4API382...	NC23-NC50		3.09	2.1	2.8	YEI 4-API-1P or YE4	AL...4 5BUT/API or AL...4 (LH)
		4	V-.038R	3	4ER4API383...	NC56-NC77		3.08	2.1	2.8		
		4	V-.050	2	4ER4API502...	6 5/8" REG, 5 1/2 FH, 6 5/8" FH	3.75	2.0	2.9			
		4	V-.050	3	4ER4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2.0	2.9			
		5	V-.040	3	4ER5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6			
		6	V-.055	1.5	4ER6API551...	NC10-NC16	1.41	2.6	2.0			
5/8"	27	4	V-.038R	2	5ER4API382...	NC23-NC50		3.09	2.1	2.8	YE50IL	AL...5 OIL (LH)
		4	V-.038R	3	5ER4API383...	NC56-NC77		3.08	2.1	2.8		
		4	V-.050	2	5ER4API502...	6 5/8" REG, 5 1/2 FH, 6 5/8" FH	3.75	2.1	3.1			
		4	V-.050	3	5ER4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2.1	3.1			
		5	V-.040	3	5ER5API403...	2 3/8"-4 1/2" REG	2.99	1.9	2.7			
		4	V-.065	2	5ER4API652...	2 3/8"IF- 5 1/2"IF	2.81	2.3	2.8			

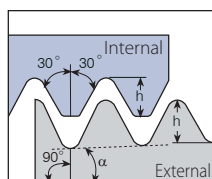
On Edge* - External



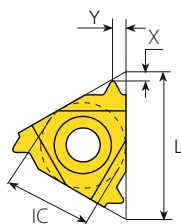
Insert Size	Pitch	Thread	Taper	Ordering Code	Size	Dimensions mm				Position	
IC	L mm	TPI	IPF	RH		R	h min	T	Ø C	X	Y
5/8"	27	5	V-.040	3	TNEC54ER5API403...	2 3/8"-4 1/2" REG	0.51	3.00	6.35	6.50	3.9
		4	V-.050	2	TNEC55ER4API 502...	6 5/8" REG, 5 1/2 FH, 6 5/8 FH	0.64	3.76	7.94		5.0
		4	V-.050	3	TNEC55ER4API503...	5 1/2", 7 5/8", 8 5/8" REG	0.64	3.76	7.94		5.0
		4	V-.038	2	TNEC55ER4API382...	NC23-NC50, 2 3/8 - 6 5/8 IF	0.97	3.10	7.94		5.0
		4	V-.038	3	TNEC55ER4API383...	NC56-NC77	0.97	3.10	7.94		5.0

API (con't)

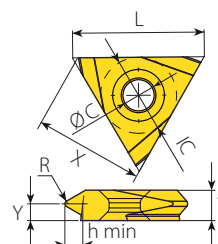
Internal



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



Standard - Internal



On Edge - Internal

Standard - Internal



Insert Size		Pitch	Thread	Taper	Ordering Code		Size	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI		IPF		RH		h min	X	Y	RH	
1/2"	22	4	V-.038R	2	4IR4API382...	NC23-NC50		3.09	2.1	2.8	YEI 4-API-1P or YE4	AVRC...4 5BUT/API or AVR...4 (LH)
		4	V-.038R	3	4IR4API383...	NC56-NC77		3.08	2.1	2.8		
		4	V-.050	2	4IR4API502...	6 5/8" REG, 5 1/2 FH, 6 5/8" FH		3.75	2.1	3.1		
		4	V-.050	3	4IR4API503...	5 1/2", 7 5/8", 8 5/8" REG		3.74	2.0	2.9		
		5	V-.040	3	4IR5API403...	2 3/8"-4 1/2" REG		2.99	1.8	2.6		
		6	V-.055	1.5	4IR6API551...	NC10-NC16		1.41	2.6	2.0		
5/8"	27	4	V-.038R	2	5IR4API382...	NC23-NC50		3.09	2.1	2.8	YI50IL	AVR...5 OIL (LH)
		4	V-.038R	3	5IR4API383...	NC56-NC77		3.08	2.1	2.8		
		4	V-.050	2	5IR4API502...	6 5/8" REG, 5 1/2 FH, 6 5/8" FH		3.75	2.1	3.1		
		4	V-.050	3	5IR4API503...	5 1/2", 7 5/8", 8 5/8" REG		3.74	2.1	3.1		
		5	V-.040	3	5IR5API403...	2 3/8"-4 1/2" REG		2.99	1.9	2.7		
		4	V-.065	2	5IR4API652...	2 3/8" IF- 5 1/2" IF		2.81	2.3	2.8		

On Edge* - Internal



Insert Size		Pitch	Thread	Taper	Ordering Code		Size	Dimensions mm			Position	
IC	L mm	TPI		IPF		RH		R	h min	T	ØC	X Y
5/8"	27	5	V-.040	3	TNEC54IR5API403...	2 3/8"-4 1/2" REG		0.51	3.00	6.35	6.50	3.9
		4	V-.050	2	TNEC55IR4API502...	6 5/8" REG, 5 1/2 FH, 6 5/8 FH		0.64	3.76	7.94		5.0
		4	V-.050	3	TNEC55 IR4API503...	5 1/2", 7 5/8", 8 5/8" REG		0.64	3.76	7.94		5.0
		4	V-.038	2	TNEC55IR4API382...	NC23-NC50, 2 3/8 - 6 5/8 IF		0.97	3.10	7.94		5.0
		4	V-.038	3	TNEC55IR4API383...	NC56-NC77		0.97	3.10	7.94		5.0

* 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

M+ Style

T+ Style

14D - 2 Cutting Edges

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 YE4	AL...-4 5BUT/API AL...-4
		5	1	4ER5BUT1...		16"-20"					

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"					

M+ Style



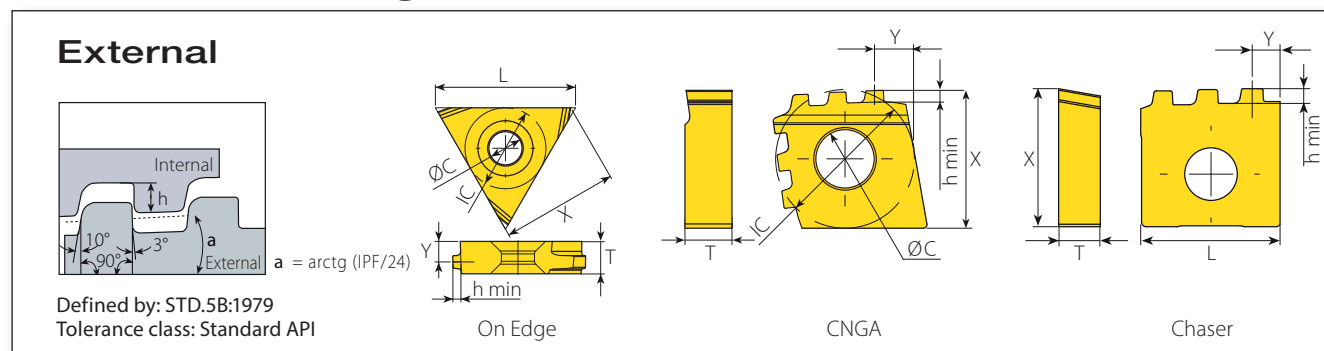
Insert Size		Pitch	Taper	Teeth	Ordering Code		Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF		RH			h min	X	Y	RH	Toolholder
5/8"	27	5	0.75	2	5ER5BUT752M+...		4 1/2"-13 3/8"	1.55	4.8	6.8	YE5M	AL...-5

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	
							10 3/4"-13 3/8"				Y14DER-5BUT-4N	
14D	5	1		2	14DER5BUT12T+...		16"-20"				Y14DER-5BUT-4N	

API Buttress Casing (con't)

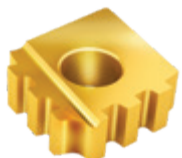


On Edge*



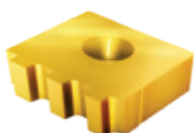
Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	27	5	0.75	TNEC54ER5BUT75...	4 1/2"-13 3/8"	1.55	6.35	6.5	23.4	4.0
		5	1	TNEC54ER5BUT1...	16"-20"					

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

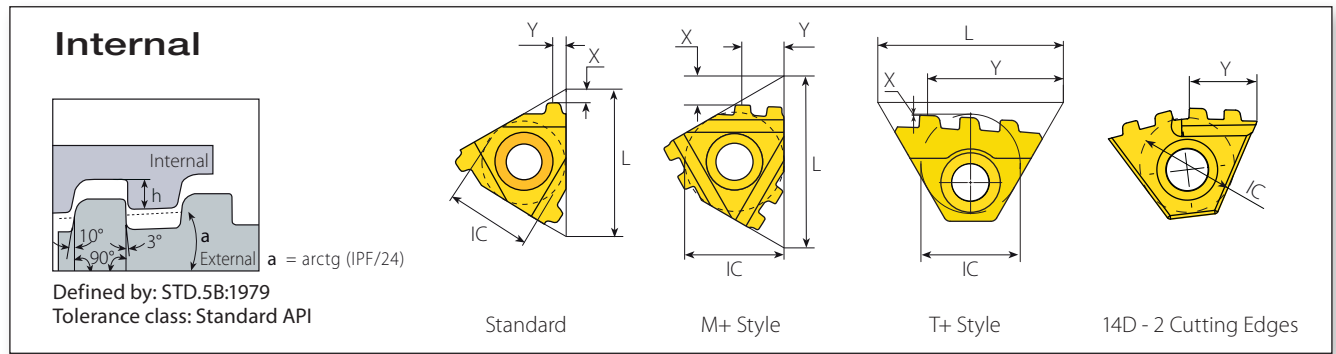
Chaser*



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"					

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



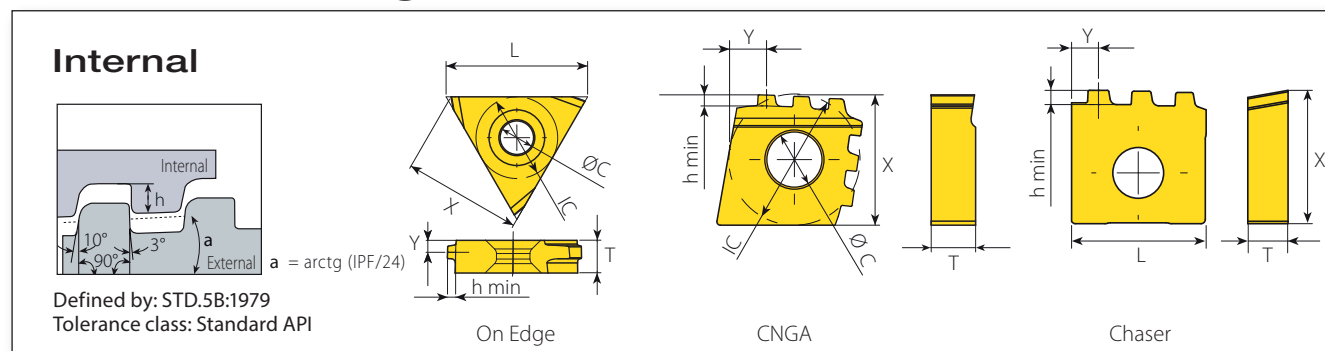
Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF		RH		h min	X	Y	RH	Toolholder
1/2"T	22	5	0.75	3	4IR5BUT753T+...	4 1/2"-13 3/8"	1.55	2.5	16.1	Y4T	AVR...-4T
			1		4IR5BUT13T+...	16"-20"					

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 ½"-9 ⅝"	1.55	10.0	Y14DIR-5 BUT
					10 ¾"-13 ⅜"			Y14DIR-5BUT-4N
14D	5	1	2	14DIR5BUT12T+ ...	16"-20"	1.55	10.0	Y14DIR-5BUT-4N

API Buttress Casing (con't)

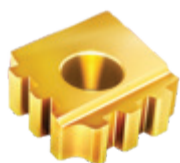


On Edge*



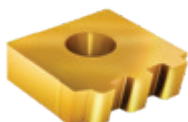
Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	22	5	0.75	TNEC54IR5BUT75...	4 1/2"-13 3/8"	1.55	6.35	6.5	23.4	4.3
		5	1	TNEC54IR5BUT1...	16"-20"					

CNGA*



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

Chaser*

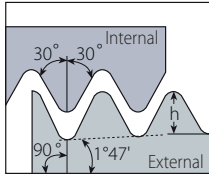


Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
L	TPI	IPF		RH		h min	T		X	Y
15.75	5	0.75	3	1616IR5BUT753S+...	4 1/2"-13 3/8"	1.55	4.76		15.7	3.2
	5	1	3	1616IR5BUT13S+...	16"-20"					

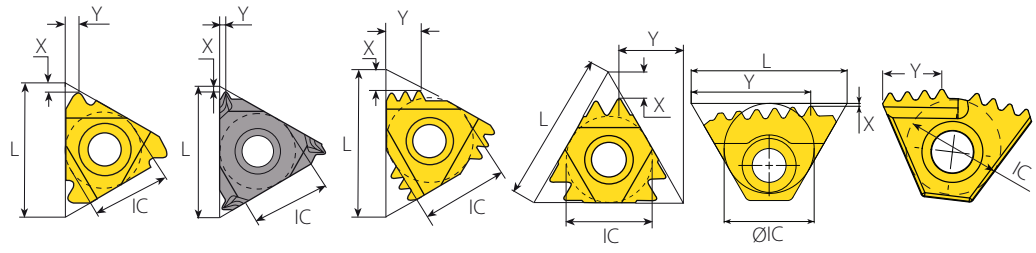
* On Edge, CNGA and Chaser inserts are suited to existing toolholders on the market

API Round Casing & Tubing

External



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



Standard

SCB
Sintered Chipbreaker

M+ Style

Z+ Style

T+ Style

14D -
2 Cutting Edges

Standard



SCB

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		
		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		
		8	2	5ER8APIRD2M+...	1.81	2.9	4.5	YE5M	AL...-5M

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"T	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		

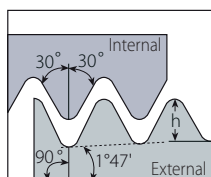
14D



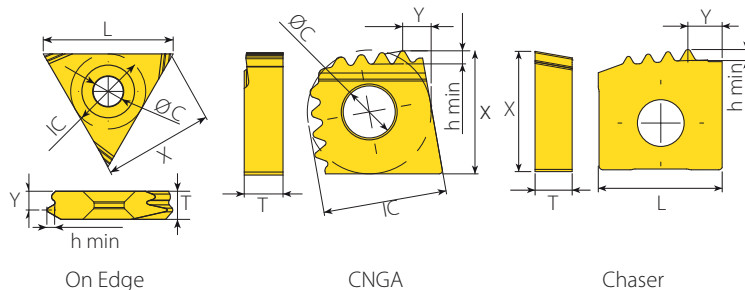
Insert size	Pitch	Teeth	Ordering Code	Size	Dimensions mm		Anvil	
IC	TPI				h min	Y		Toolholder
14D	10	4	14DER10APIRD4T+...	2 3/8" and up	1.41	8.7	Y14DER-10 APIRD	AL...-14D
14D	10	3	14DER10APIRD3T+...	2 3/8" and up		8.8	Y14DER-10 APIRD-3+	AL...-14D
14D	8	3	14DER8APIRD3T+...	2 3/8" and up	1.81	8.1	Y14DER-8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

API Round Casing & Tubing (con't)

External



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

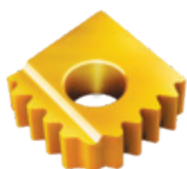


On Edge*



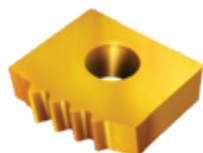
Insert Size		Pitch	Ordering Code	Dimensions mm			Position	
IC	L mm	TPI	RH	h min	T	Ø C	X	Y
1/2"	22	10	TNEC43ER10APIRD...	1.41	4.76	5.2	18.6	3.2
		8	TNEC43ER8APIRD...	1.81				

CNGA*



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

Chaser*

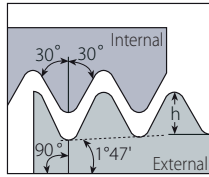


Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm		Position	
L	TPI		RH	h min	T	X	Y
15.75	10	4	1616ER10APIRD4S+...	1.41	4.76	15.4	4.4
	8	3	1616ER8APIRD3S+...	1.81		15.9	

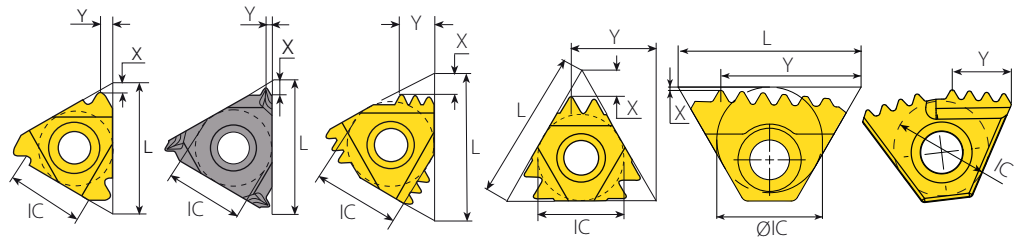
* On Edge, CNGA and Chaser inserts are suited to existing toolholders on the market

API Round Casing & Tubing (con't)

Internal



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



SCB

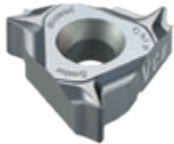
M+ Style

Z+ Style

T+Style

14D -
2 Cutting Edges

Standard



SCB

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI	RH	h min	X	Y	RH	
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	
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	YI5M	AVR...-5M
		8	2	5IR8APIRD2M+...	1.81	2.9	4.5		

Z+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI		RH	h min	X	Y	RH	
1/2"	22	10	2	4IR10APIRD2Z+...	1.41	3.0	9.9	YI4Z	AVR...-4Z
		8	2	4IR8APIRD2Z+...	1.81	3.7	9.6		

T+ Style



Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI		RH	h min	X	Y	RH	
1/2"T	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		

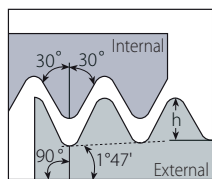
14D



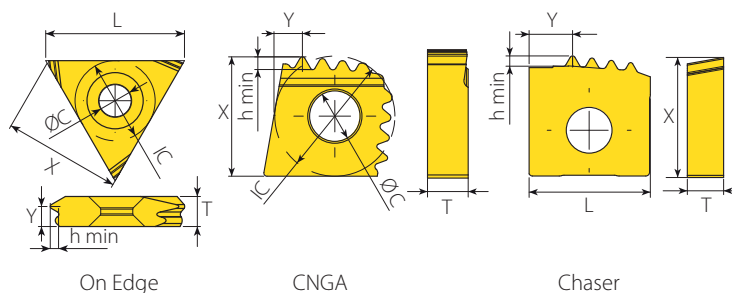
Insert size	Pitch	Teeth	Ordering Code	Size	Dimensions mm		Anvil	Toolholder
IC	TPI				h min	Y		
14D	10	4	14DIR10APIRD4T+...	2 3/8" and up	1.41	8.71	Y14DIR-10 APIRD	AVRC...-14D
14D	10	3	14DIR10APIRD3T+...	2 3/8" and up		8.79	Y14DIR-10 APIRD-3+	AVRC...-14D
14D	8	3	14DIR8APIRD3T+...	2 3/8" and up	1.81	8.10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

API Round Casing & Tubing (con't)

Internal



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

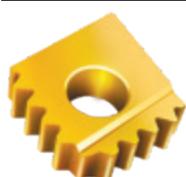


On Edge*



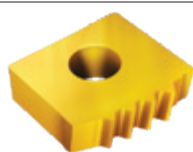
Insert Size		Pitch	Ordering Code	Dimensions mm			Position	
IC	L mm	TPI	RH	h min	T	Ø C	X	Y
1/2"	22	10	TNEC43IR10APIRD...	1.41	4.76	5.2	18.6	3.2
		8	TNEC43IR8APIRD...	1.81				

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*

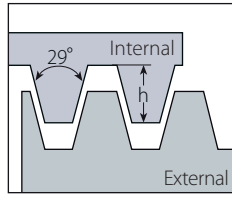


Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm			Position	
L	TPI		RH	h min	T	X	Y	
15.75	10	4	1616IR10APIRD4S+...	1.41	4.76	15.4	5.7	
	8	3	1616IR8APIRD3S+...	1.81		15.9	4.4	

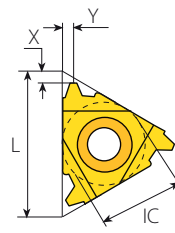
* On Edge, CNGA and Chaser inserts are suited to existing toolholders on the market

American ACME

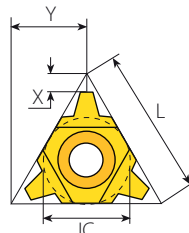
External



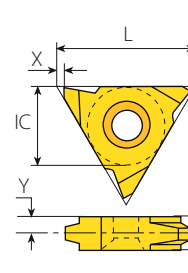
Defined by: ANSI B1.5:1988
Tolerance class: 3G



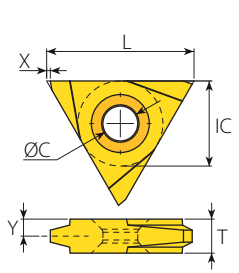
Standard



U Style



V Style



On Edge

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	16	2ER16ACME...	2EL16ACME...	0.92	1.0	1.1	-	-	NL..-2 (LH)
		16	3ER16ACME...	3EL16ACME...	0.92	1.0	1.1	YE3	YI3	AL..-3 (LH)
		14	3ER14ACME...	3EL14ACME...	1.03	1.1	1.2			
		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			
3/8"	22	7	3ER7ACME...	3EL7ACME...	2.08	1.9	2.2	YE3AC6	YI3AC6	
		6	3ER6ACME...	3EL6ACME...	2.37	1.7	1.9			
		7	4ER7ACME...	4EL7ACME...	2.08	1.9	2.2			
		6	4ER6ACME...	4EL6ACME...	2.37	1.8	2.1	YE4	YI4	AL..-4 (LH)
		5	4ER5ACME...	4EL5ACME...	2.79	2.0	2.3			
		4	5ER4ACME...	5EL4ACME...	3.43	2.4	2.7	YE5	YI5	AL..-5 (LH)

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	3	4UE3ACME...		4.49	3.0	11.0	YE4U	YI4U	AL..-4U (LH)
		4	4UE4ACME...		3.43	2.3	11.0			
5/8"U	27	3	5UE3ACME...		4.49	3.0	13.7	YE5U	YI5U	AL..-5U (LH)

V Style



Insert Size		Pitch	Ordering Code		Dimensions mm				Toolholder
IC	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)

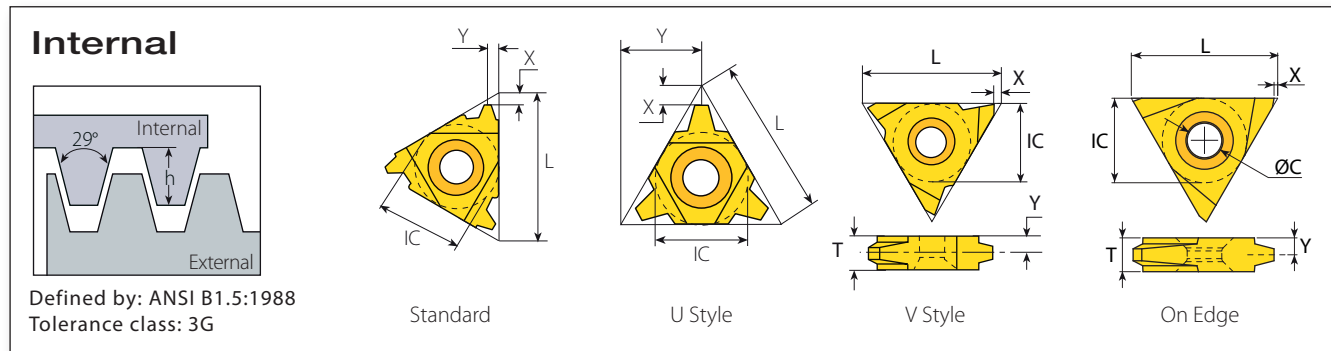
On Edge*



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

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

American ACME (con't)



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	16	2IR16ACME...	2IL16ACME...	0.92	0.9	0.9	-	-	NVR..-2 (LH)
3/8"	16	16	3IR16ACME...	3IL16ACME...	0.92	1.0	1.1	YI3	YE3	AVR..-3 (LH)
		14	3IR14ACME...	3IL14ACME...	1.03	1.1	1.2			
		12	3IR12ACME...	3IL12ACME...	1.19	1.2	1.3			
		10	3IR10ACME...	3IL10ACME...	1.52	1.2	1.3			
		8	3IR8ACME...	3IL8ACME...	1.84	1.4	1.5			
		6	3IR6ACME...	3IL6ACME...	2.37	1.7	1.9	YI3AC6	YE3AC6	
1/2"	22	6	4IR6ACME...	4IL6ACME...	2.37	1.8	2.1	YI4	YE4	AVR..-4 (LH)
		5	4IR5ACME...	4IL5ACME...	2.79	2.0	2.3			
5/8"	27	4	5IR4ACME...	5IL4ACME...	3.43	2.3	2.6	YI5	YE5	AVR..-5 (LH)

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	4UI4ACME...		3.43	2.3	11.0	YI4U	YE4U	AVR..-4U (LH)
		3	4UI3ACME...		4.49	2.9	11.0			
5/8"U	27	3	5UI3ACME...		4.49	2.9	13.7	YI5U	YE5U	AVR..-5U (LH)

V Style



Insert Size		Pitch	Ordering Code		Dimensions mm				Toolholder
IC	L mm	TPI	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	

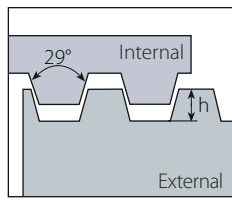
On Edge*



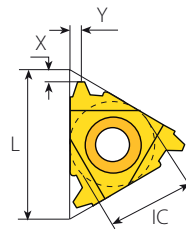
Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	h min	T	ØC	X	Y	
1/2"	22	4	TNEC43EI4ACME...	3.43	4.76	5.2	0.5	2.4	
		6	TNEC43EI6ACME...	2.36					
		8	TNEC43EI8ACME...	1.83					
		10	TNEC43EI10ACME...	1.52					
		12	TNEC43EI12ACME...	1.19					
5/8"	27	4	TNEC54EI4ACME...	3.43	6.35	6.5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

Stub ACME

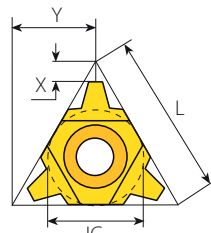
External



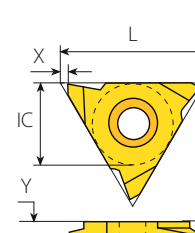
Defined by: ANSI B1.8:1988
Tolerance class: 2G



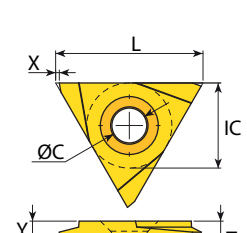
Standard



U Style



V Style



On Edge

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	16	2ER16STACME...	2EL16STACME...	0.60	1.0	1.0	-	-	NL..-2 (LH)
		16	3ER16STACME...	3EL16STACME...	0.60	1.0	1.0	YE3	YI3	AL..-3 (LH)
		14	3ER14STACME...	3EL14STACME...	0.67	1.1	1.1			
		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			
3/8"	16	6	3ER6STACME...	3EL6STACME...	1.52	1.7	1.8	YE4	YI4	AL..-4 (LH)
		6	4ER6STACME...	4EL6STACME...	1.52	1.7	1.8			
		5	4ER5STACME...	4EL5STACME...	1.78	2.1	2.3			
		4	4ER4STACME...	4EL4STACME...	2.16	2.3	2.3			
		4	5ER4STACME...	5EL4STACME...	2.16	2.3	2.4	YE5	YI5	AL..-5 (LH)
		3	5ER3STACME...	5EL3STACME...	2.79	2.9	2.9			
1/2"	22	4	5ER4STACME...	5EL4STACME...	2.16	2.3	2.4	YE5	YI5	AL..-5 (LH)
5/8"	27	3	5ER3STACME...	5EL3STACME...	2.79	2.9	2.9			

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...		2.16	2.6	11.0	YE4U	YI4U	AL..-4U (LH)
		3	4UE3STACME...		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	T	
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	NL..-5V-8 (LH)

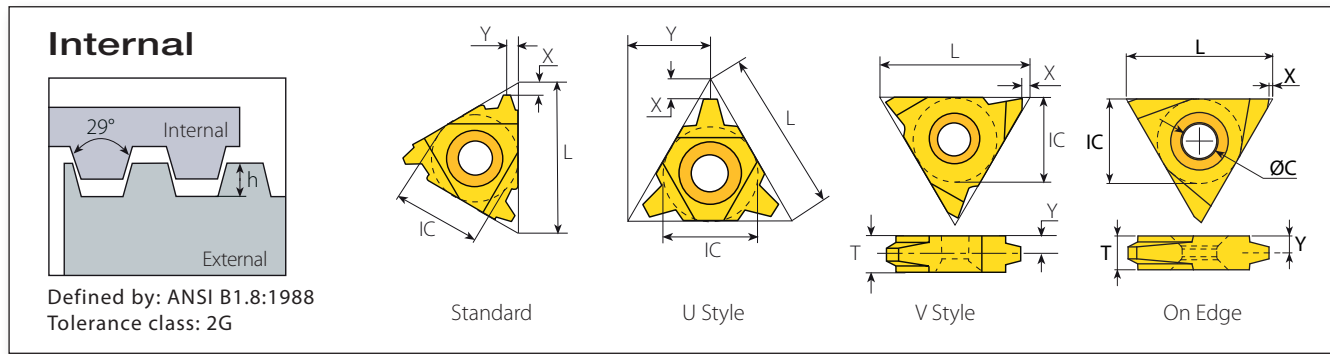
On Edge



Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	T	Ø C	X	Y
3/8"	16	10	TNEC32EI10STACME...		1.02	3.18	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				
		12	TNEC43EI12STACME...		0.76				
5/8"	27	4	TNEC54EI4STACME...		2.16	6.35	6.5		3.2

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

Stub ACME (con't)



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	16	2IR16STACME...	2IL16STACME...	0.60	1.0	1.0	-	-	NVR...-2 (LH)
		16	3IR16STACME...	3IL16STACME...	0.60	1.0	1.0			
		14	3IR14STACME...	3IL14STACME...	0.67	1.1	1.1			
		12	3IR12STACME...	3IL12STACME...	0.76	1.1	1.2	YI3	YE3	AVR...-3 (LH)
		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			
		6	4IR6STACME...	4IL6STACME...	1.52	1.7	1.8	YI4	YE4	AVR...-4 (LH)
		5	4IR5STACME...	4IL5STACME...	1.78	2.1	2.3			
		4	4IR4STACME...	4IL4STACME...	2.16	2.3	2.3			
		4	5IR4STACME...	5IL4STACME...	2.16	2.3	2.4	YI5	YE5	AVR...-5 (LH)
		3	5IR3STACME...	5IL3STACME...	2.79	2.9	2.9			

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	4UI4STACME...	2.16	2.5	11.0		YI4U	YE4U	AVR...-4U (LH)
		3	4UI3STACME...	2.79	3.3	11.0				

V Style



Insert Size		Pitch	Ordering Code		Dimensions mm				Toolholder
IC	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*

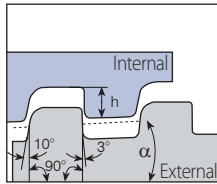


Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	h min	T	ØC	X	Y	
3/8"	16	10	TNEC32EI10STACME...	1.02	3.175	3.8	1	1.6	
		12	TNEC32EI12STACME...	0.76					
		8	TNEC32EI8STACME...	1.22					
1/2"	22	4	TNEC43EI4STACME...	2.16	4.76	5.2	0.5	2.4	
		6	TNEC43EI6STACME...	1.52					
		8	TNEC43EI8STACME...	1.22					
		10	TNEC43EI10STACME...	1.02					
5/8"	27	12	TNEC43EI12STACME...	0.76	6.35	6.5			
		4	TNEC54EI4STACME...	2.16					

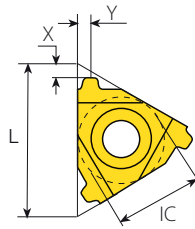
* On Edge inserts are suited to existing toolholders on the market

VAM

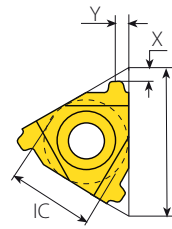
External / Internal



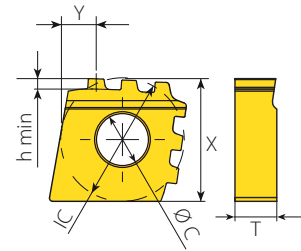
$\alpha = \arctg (IPF/24)$
Defined by: VAM
Tolerance class: Standard VAM



VAM - External



VAM - Internal



CNGA - Internal

VAM - External



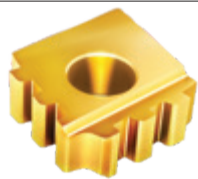
Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	Toolholder
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	
3/8"	16	8	0.75	3ER8VAM...	2 3/8", 2 7/8"	0.97	1.7	1.8	YE3	AL...-3
1/2"	22	6		4ER6VAM...	3 1/2"	0.97	2.4	2.4	YE4	AL...-4
		5		4ER5VAM...	5"-9 5/8"	1.55	2.4	2.7		

VAM - Internal



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	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		

CNGA* - Internal

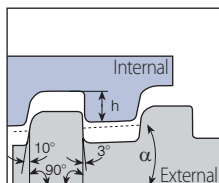


Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
IC	TPI	IPF			RH		h min	T	Ø C	X	Y
3/4"	5	0.75	2		CNGA64IR5VAM75T2...	5"-9 5/8"	1.55	6.35	8.0	18.9	9.3

* CNGA inserts are suited to existing toolholders on the market

VAM

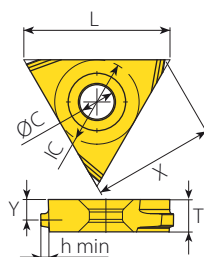
External / Internal



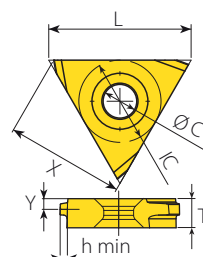
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Defined by: VAM

Tolerance class: Standard VAM



On Edge - External



On Edge - Internal

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
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

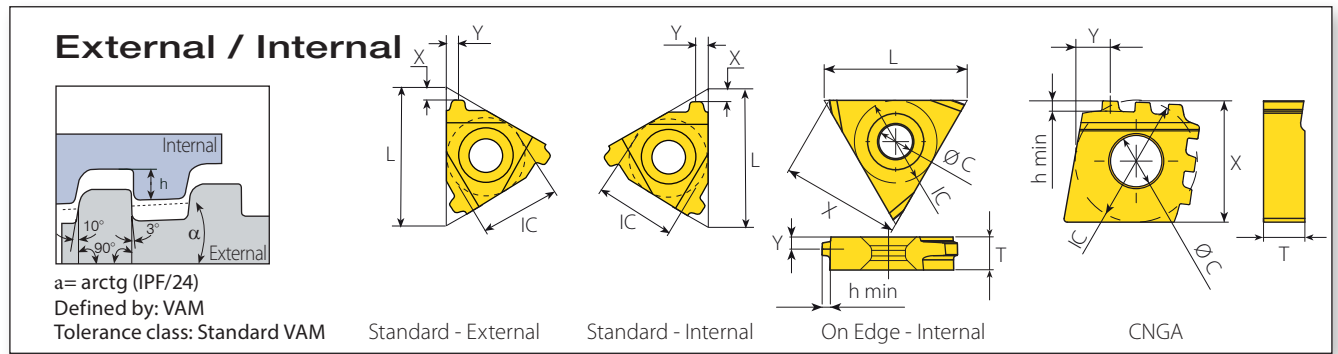
On Edge* - Internal



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

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

New VAM

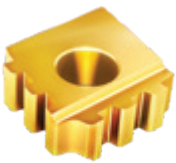


On Edge* - Internal



Insert Size	Pitch	Taper	Ordering Code	Size	Dimensions mm
IC	L mm	TPI	IPF	RH	h min T Ø C X Y
1/2"	22	8		TNEC43IR8NVAM...	2 3/8" - 2 7/8" 1.23 4.76 5.2 18.6 3.2
	27	6	0.75	TNEC43IR6NVAM...	3 1/2" - 4 1/2" 1.23 4.76 5.2 23.4 3.1
5/8"		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 Ø C X Y	
3/4"	6	0.75	2	CNGA64IR6NVAM75T2...	3 1/2" - 4 1/2"	1.23 6.35	8 18.9 9.3
	5	3/4	2	CNGA64IR5NVAM75T2...	5" - 16"	1.77 6.35	

Laydown - External



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		3ER8NVAM...	2 3/8", 2 7/8" 0.97 1.8 1.8	YE3 AL...-3
1/2"	22	6	0.75	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	

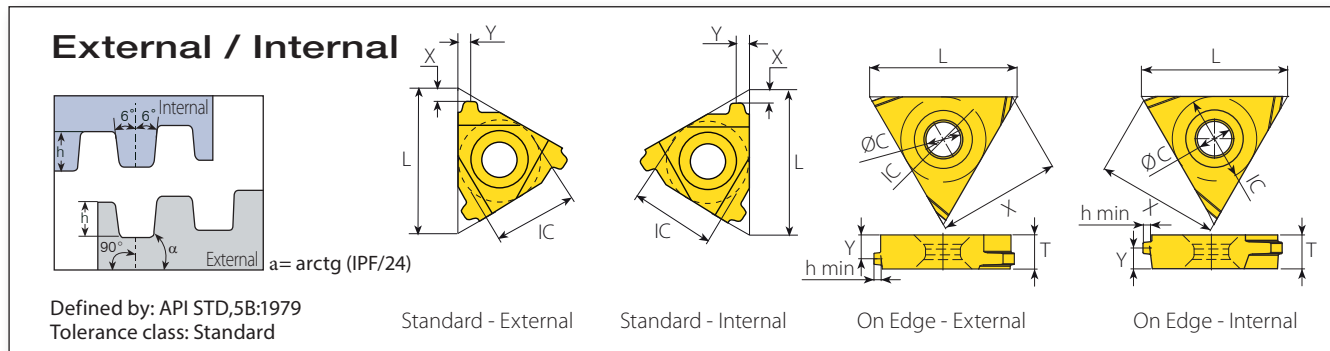
Laydown - Internal



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		3IR8NVAM...	2 3/8", 2 7/8" 1.23 1.8 1.8	Y13 AVR...-3
1/2"	22	6	0.75	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	

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

EL-Extreme Line



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		

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* - 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

On Edge* - Internal

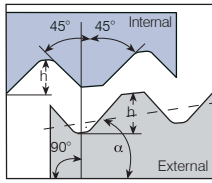


Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	27	6	1.5	TNEC54IR6E15...	5"-7 5/8"	1.39	6.35	6.5	23.4	4.8
		5	1.25	TNEC54IR5E125...	8 5/8"-10 3/4"	1.91	6.35			4.3

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

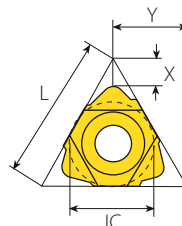
Hughes H-90

External / Internal

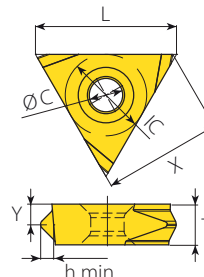


$$\alpha = \arctg (IPF/24)$$

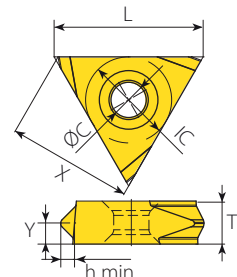
Defined by: API STD,5B:1979
Tolerance class: Standard



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		h min	X	Y	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

U Style - 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" 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* - External



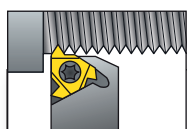
Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	27	3 1/2	2	TNEC55ER3.5H902...	3 1/2"- 6 5/8"	2.50	7.93	6.5	23.4	4.3
		3 1/2	3	TNEC55ER3.5H903...	7"- 8 5/8"	2.50	7.93			4.3
		3	1 1/4	TNEC56ER3H90SL...	2 3/8"- 3 1/2"	2.24	9.53			5.7

On Edge* - Internal

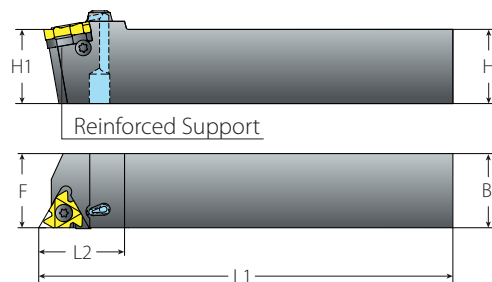
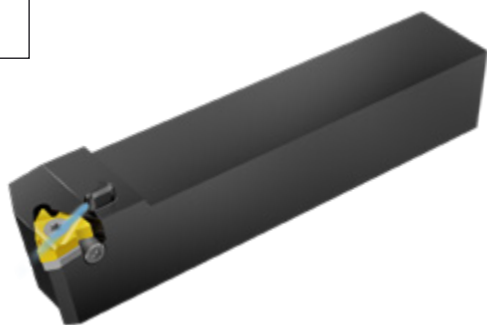


Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	27	3 1/2	2	TNEC55IR3.5H902...	3 1/2"- 6 5/8"	2.49	7.93	6.5	23.4	4.3
		3 1/2	3	TNEC55IR3.5H903...	7"- 8 5/8"	2.49	7.93			4.3
		3	1 1/4	TNEC56IR3H90SL...	2 3/8"- 3 1/2"	2.24	9.53			5.7

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

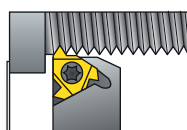


External Toolholders

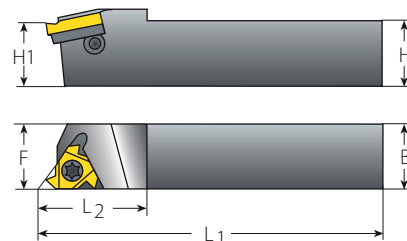
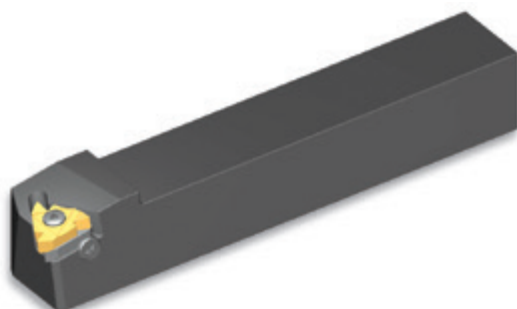


API with Coolant

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



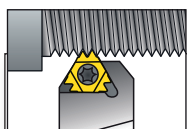
Oil & Gas

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					

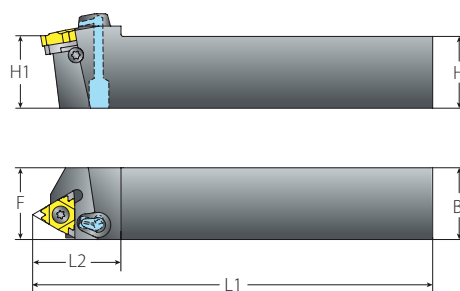
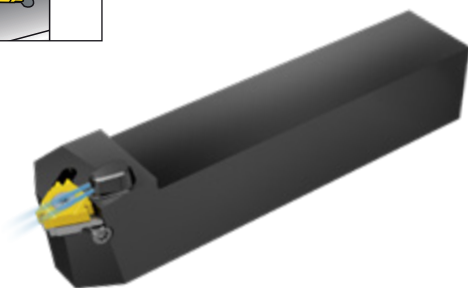
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code. (Example AL20-3 LH).

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 AL20-3 LH).



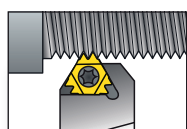
External Toolholders



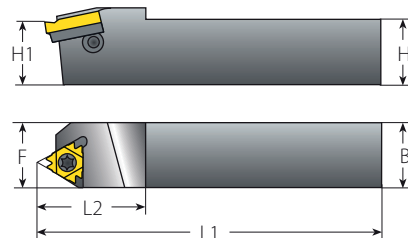
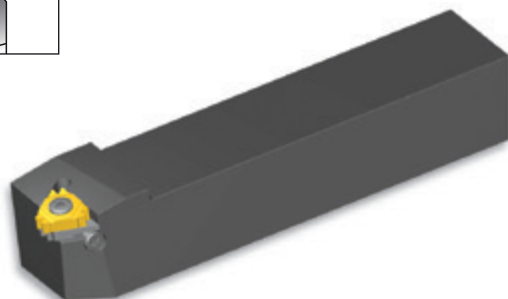
Z+ Style with Coolant

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"Z	ALC32-4Z	32	32	178	37	SA4T	SY4T	K4T	YE4Z
	ALC40-4Z	40	40	208	37				

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



External Toolholders

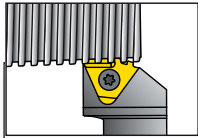


Z+ Style

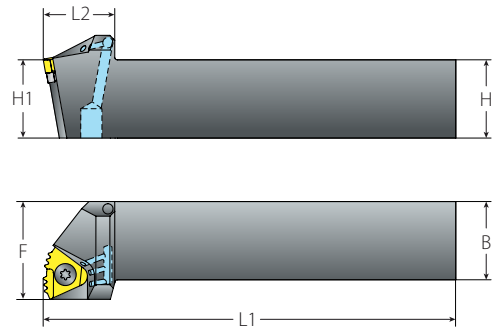
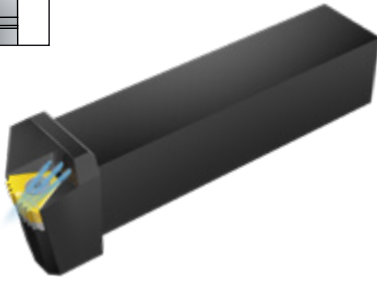
Insert Size Ordering Code Dimensions (mm)						Spare Parts				
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
1/2"Z	AL32-4Z	32	32	178.4	38	SA4T	SY4T	K4T	YE4Z	YI4Z
	AL40-4Z	40	40	208.4	38					

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).

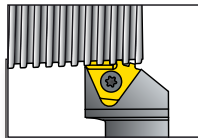


14D External Toolholders

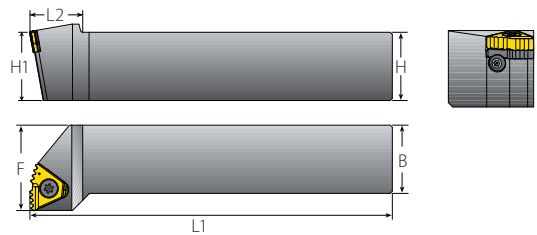
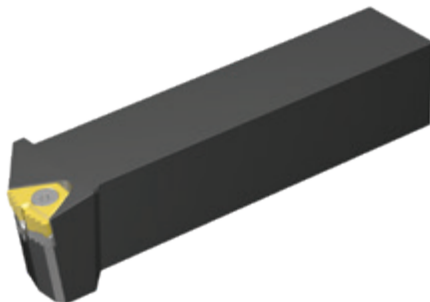
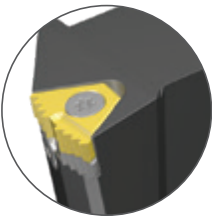


14D Standard with Coolant

14D Standard with Coolant						Spare Parts			
Insert Size	Ordering Code	Dimensions mm							
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw & Washer	Torx Key	Anvil Key
14D	ALC32-14D	32	32	170	30	SA5T	M4X6(14D)	KT15	K5T
	ALC40-14D	40	40	200	30				



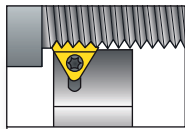
14D External Toolholders



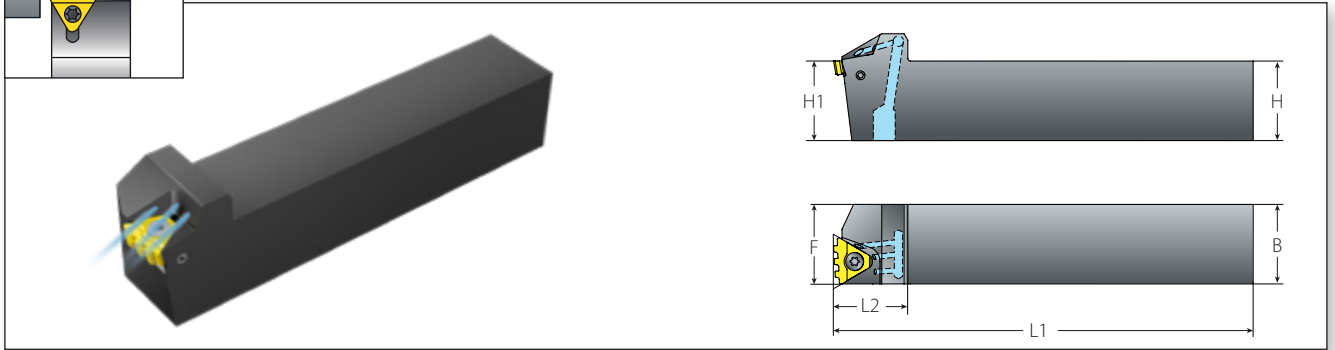
14D Standard

14D Standard						Spare Parts			
Insert Size	Ordering Code	Dimensions mm							
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw & Washer	Torx Key	Anvil Key
14D	AL25-14D	25	32	150	25	SA5T	M4x6(14D)	KT15	K5T
	AL32-14D	32	40	170	25				
	AL40-14D	40	40	200	30				

14D holders are supplied without anvils. For specific applications, please use the anvils indicated in the table on page 48.

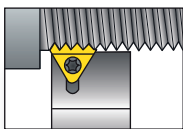


External Toolholders

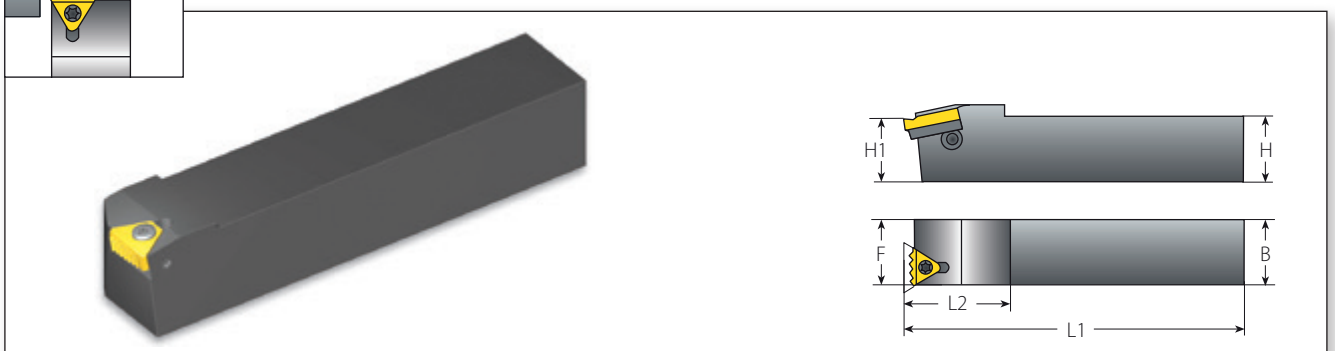


T+ Style with Coolant

Insert Size Ordering Code Dimensions mm						Spare Parts				
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil Key	Anvil RH
1/2" T	ALC32-4T	32	32	170	30	SA4T	SY4K2	K4T	K2	Y4T
	ALC40-4T	40	40	200	30					



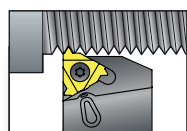
External Toolholders



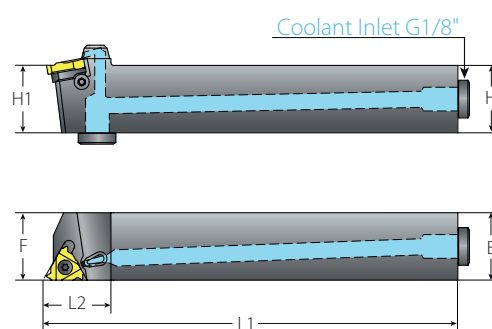
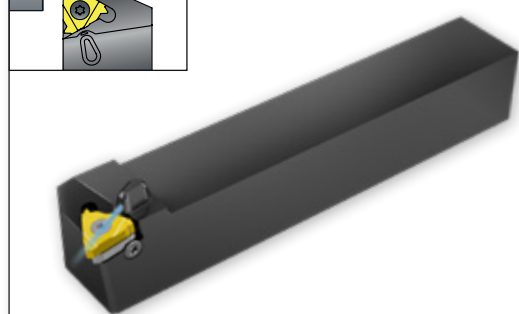
T+ Style

Insert Size Ordering Code Dimensions mm						Spare Parts				
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Insert Torx Key	Anvil Torx Key	Anvil RH/LH
1/2" T	AL25-4T	25	27	150	30	SA4T	SY4K2	K4T	K2	Y4T
	AL32-4T	32	34	170	30					
	AL40-4T	40	42	200	30					

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



External Toolholders

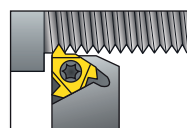


Standard with Coolant

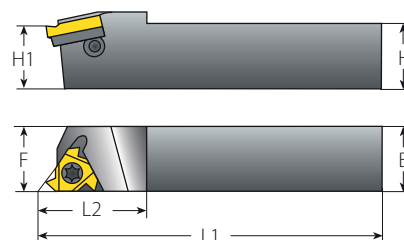
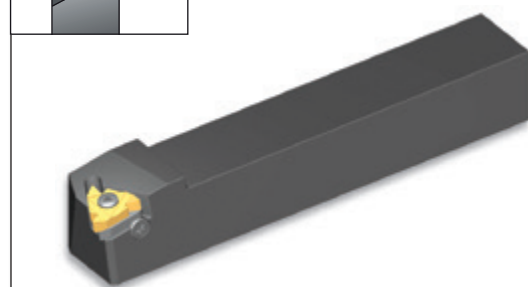
Insert Size	Ordering Code	Dimensions mm			
IC	RH	H=H1=B	F	L1	L2
3/8"	ALC16-3	16	16	100	24.5
	ALC20-3	20	20	129	30.0
	ALC25-3	25	25	154	30.0
	ALC32-3	32	32	174	30.0

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil RH	Plug Screw
SA3T	SY3T	K3T	YE3	Plug G1/8"



External Toolholders



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

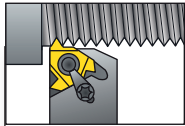
Standard

Insert Size	Ordering Code	Dimensions mm			
IC	RH/LH	H=H1=B	F	L1	L2
3/8"	NL12-3	12	16	83.2	22
	AL3/8-3	9.52	16	63.6	20.5
	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
	AL32-3	32	32	173.6	30
1/2"	AL25-4	25	25	155.7	36
	AL32-4	32	32	175.7	36
	AL40-4	40	40	205.7	36
5/8"	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

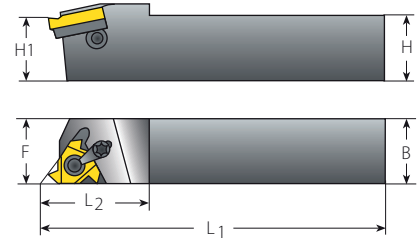
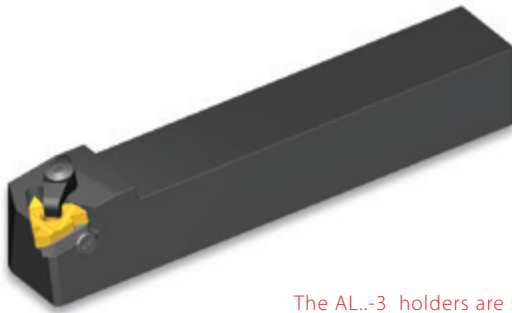
Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
SA3T	-	K3T	-	-
SA3T	SY3T	K3T	YE3	YI3
SA4T	SY4T	K4T	YE4	YI4
SA5T	SY5T	K5T	YE5	YI5

The above toolholders have a 1.5° helix angle. For other helix angles, see page 47.



External Toolholders

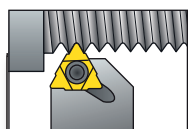


The AL...-3 holders are supplied with standard anvil (see spare parts table below).

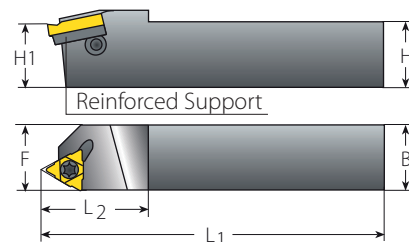
Standard with Clamp (Dual System, Screw or Clamp)

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
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 47.

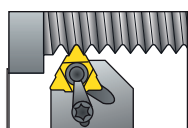


External Toolholders

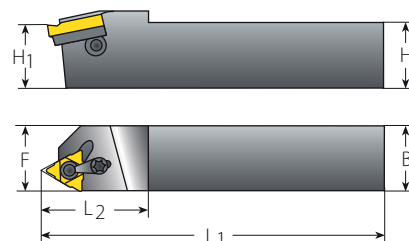
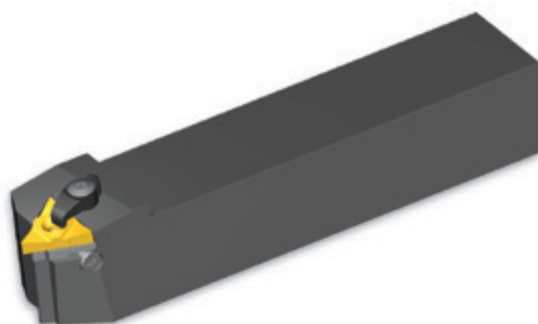


U Style

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



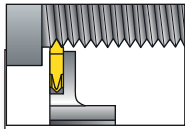
U Style with Clamp

(Dual System, Screw or Clamp)

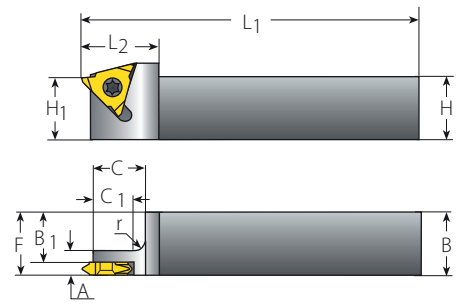
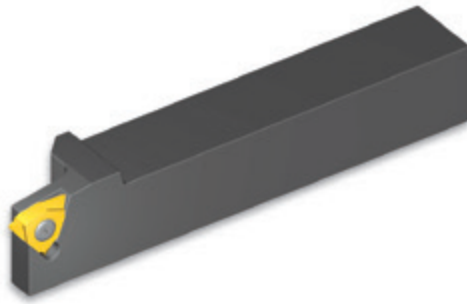
Insert Size Ordering Code Dimensions mm						Spare Parts					
IC	RH/LH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Clamp	Torx Key	Anvil RH	Anvil LH
1/2"U	AL32-4UC	32	32	178.4	38	SA4T	SY4T	C4	K4T	YE4U	YI4U
	AL40-4UC	40	40	208.4	38						
5/8"U	AL32-5UC	32	32	179.1	40	SA5T	SY5T	C5	K5T	YE5U	YI5U
	AL40-5UC	40	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 47.



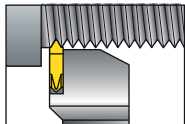
External Toolholders



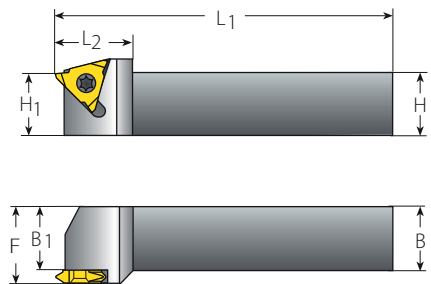
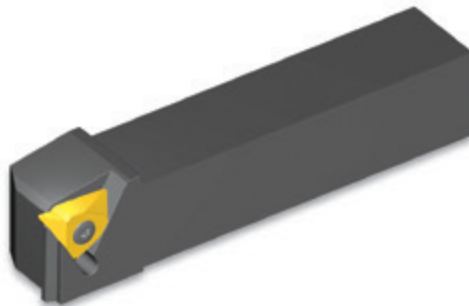
Slim Throat

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



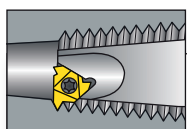
V Style

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			

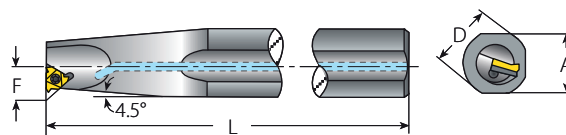
All V Style toolholders have a 1° helix angle.

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



Internal Toolholders



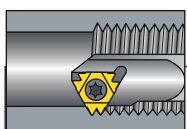
Oil & Gas

Spare Parts

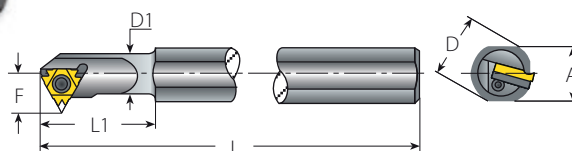
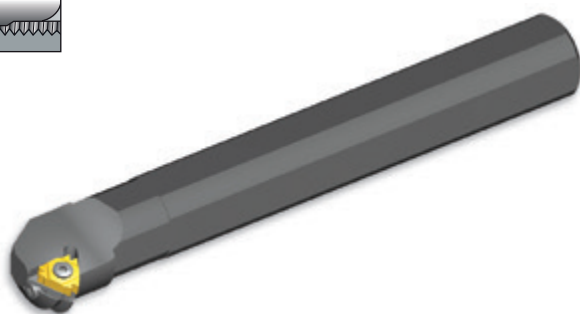
Insert Size	Ordering Code	Thread Form	Connection No. or Size	Dimensions mm				Helix Angle	    				
IC	RH			A	L	D	F		Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
3/8"	AVRC25-3-APIRD	APIRD 8 APIRD 10	2.375"-20" 1.315"-3.5"	29	250	25	14.5	1	SA3T SY3T K3T YEI3-APIRD				
	AVRC32-3-APIRD	APIRD 8 APIRD 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	SA4T SY4T K4T YEI4-API-1P YEI4-5BUT				
5/8"	AVR50-5OIL	V0.038R	NC23-NC38	45	300	50	22.6	1.5	SA5T SY5T K5T YI5OIL YE5OIL				
	AVRC50-5OIL	V0.038R	NC23-NC38										
	AVR80-5OIL	V0.050R	NC40-NC77	72	400	80	39.7	1.5					
	AVRC80-5OIL	V0.050R	NC40-NC77										

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: AVR 50-5OIL LH).



Internal Toolholders

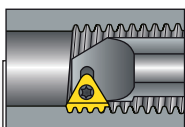


Z+ Style

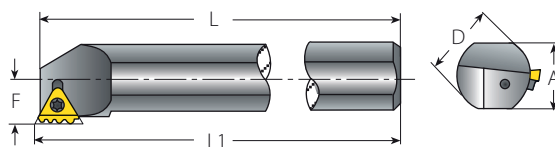
Spare Parts

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	Anvil LH
1/2"Z	AVR32-4Z	29	250	60	32	32	25.5	42		SA4T SY4T K4T YI4Z YE4Z				
	AVR40-4Z	36	300	60	40	40	29.5	51						

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



Internal Toolholders



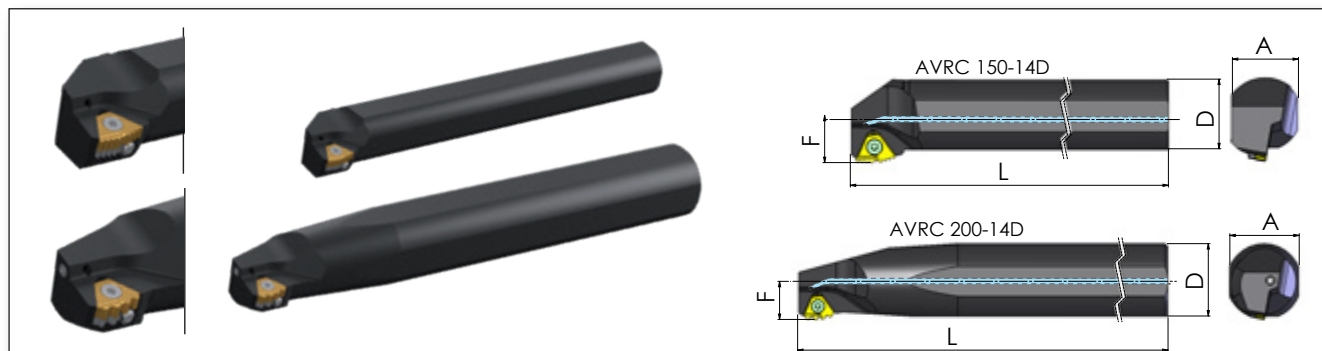
T+ Style

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	Anvil Torx Key	Anvil RH/LH
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)

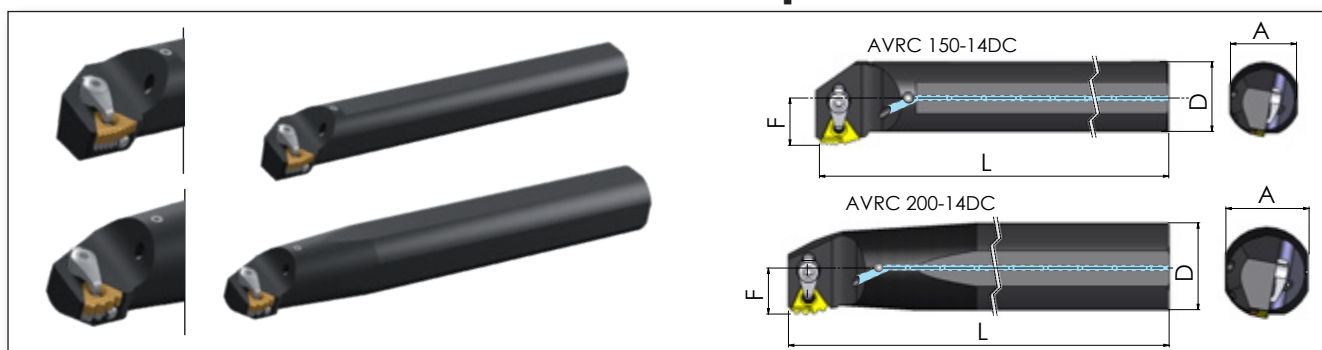
14D Internal Toolholders



14D*

14D*							Spare Parts			
Insert Size	Ordering Code	Dimensions mm								
IC		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

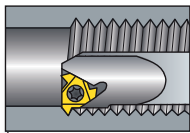


14D*

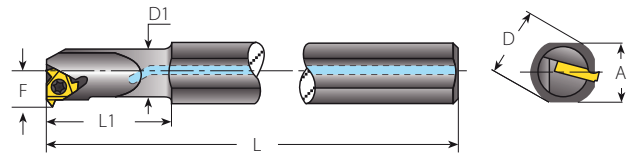
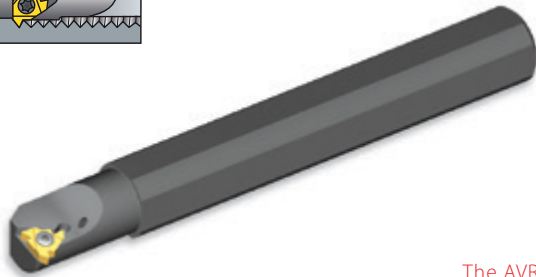
14D*							Spare Parts				
Insert Size	Ordering Code	Dimensions mm									
IC		A	L	D	F	Min. Bore Dia.	Insert Screw	Anvil Screw & Washer	Clamp	Insert Key	Anvil Key
14D	AVRC40-14DC	37	300	40	26	54.5	SA5T	M4x6(14D)	C5	K5T	KT15
14D	AVRC50-14DC	46	300	50	25	54.5	SA5T	M4x6(14D)	C5	K5T	KT15

* 14D holders are supplied without anvils. For specific applications, please use the anvils indicated in the table on page 48.

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



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

Standard

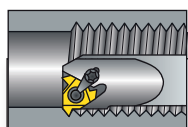
Spare Parts

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		SA3T	SY3T	K3T	YI3	YE3
	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		SN4T	-	K4T	-	-
	NVR20-4	18.0	180	80	20	20.0	15.6	27						
	AVR25-4	29.0	250	60	32	25.0	17.4	32		SA4T	SY4T	K4T	YI4	YE4
	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		SN5T	SY5T	K5T	YI5	YE5
	AVR32-5	29.0	250	128	32	32.0	22.4	40						
	AVR40-5	36.0	300	160	40	40.0	26.4	48		SA5T	SY5T	K5T	YI5	YE5
	AVR50-5	45.0	350	200	50	50.0	31.4	58						
	AVR60-5	54.0	400	240	60	60.0	36.4	69						

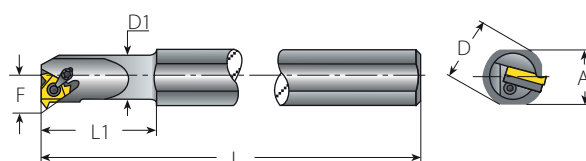
The above toolholders have a 1.5° helix angle. For other helix angles, see page 47

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



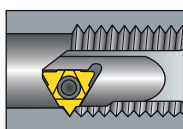
The AVR..-3C holders are supplied with standard anvil (see spare parts table below).

Standard with Clamp (Dual System, Screw or Clamp)

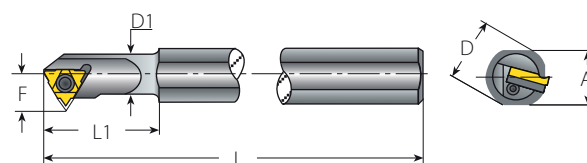
Spare Parts								
Insert Size	Ordering Code	Dimensions mm						Min. Bore dia.
IC	RH	A	L	L1	D	D1	F	mm
3/8"	AVR20-3C	18.0	180	50	20	20.0	13.4	24
	AVR25-3C	28.0	250	60	32	25.0	16.3	29
	AVR25D-3C	22.6	200	45	25	24.6	16.1	29
	AVR32-3C	29.0	250	60	32	32.0	19.6	36
	AVR40-3C	36.0	300	60	40	40.0	23.8	44
1/2"	AVR25-4C	29.0	250	60	32	25.0	17.4	32
	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
	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 47.

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

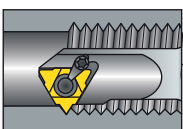


Internal Toolholders

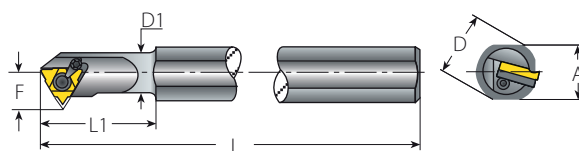


U Style

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	Anvil RH	Anvil LH
1/2"U	AVR32-4U	29	250	60	32	32	25.5	42	SA4T	SY4T	K4T	YI4U	YE4U
	AVR40-4U	36	300	60	40	40	29.5	51					
5/8"U	NVR32-5U	29	250	60	32	32	24.7	42	SN5T	-	K5T	-	-
	AVR40-5U	36	300	60	40	40	29.4	53					
	AVR50-5U	45	350	75	50	50	34.3	63	SA5T	SY5T	K5T	YI5U	YE5U
	AVR60-5U	54	400	75	60	60	39.3	74					



Internal Toolholders



U Style with Clamp

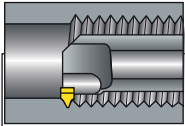
(Dual System, Screw or Clamp)

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	Anvil RH	Anvil LH
1/2"U	AVR32-4UC	29.0	250	60	32	32.0	25.5	42	SA4T	SY4T	C4	K4T	YI4U	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						
	AVR50-5UC	45.0	350	75	50	50.0	34.4	63	SA5T	SY5T	C5	K5T	YI5U	YE5U
	AVR60-5UC	54.0	400	75	60	60.0	39.3	74						

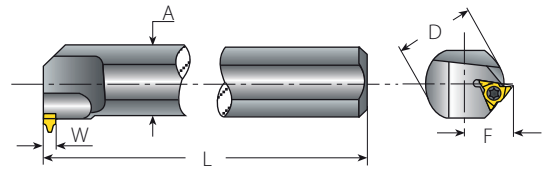
The above toolholders have a 1.5° helix angle. For other helix angles, see page 47.

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



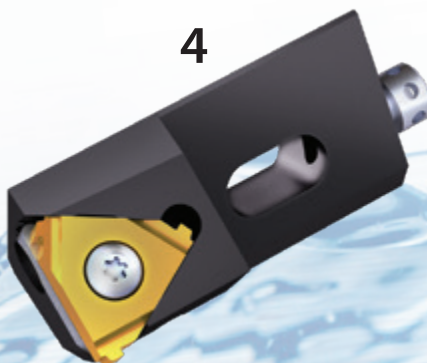
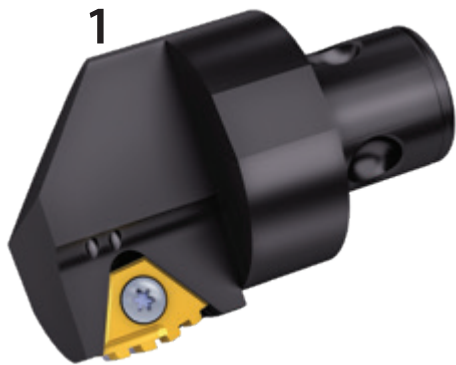
V Style

Insert Size		Ordering Code		Dimensions mm				Spare Parts	
IC	RH	A	L	D	F	W	Min. Bore dia.		
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.

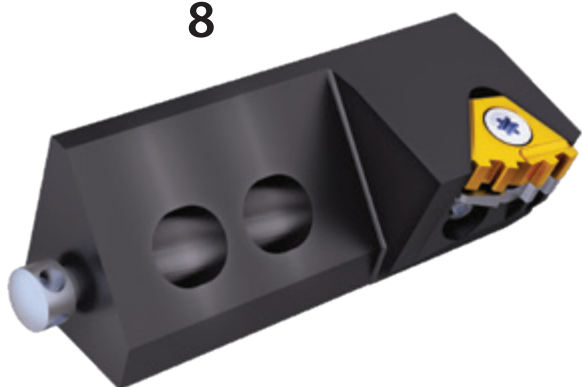
Special Toolholder Solutions

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

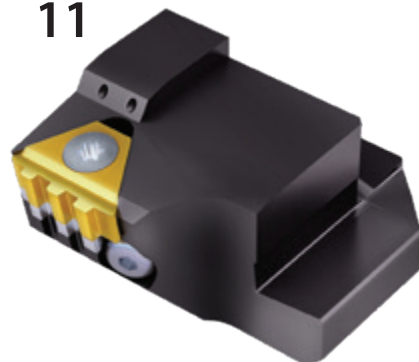


Special Toolholder Solutions

8



11



9



12



10

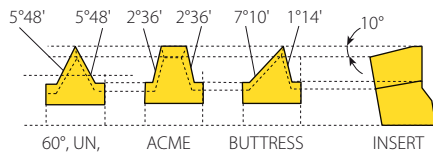


13



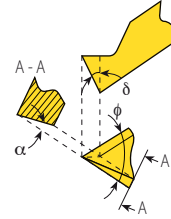
Calculating the Helix Angle and Choosing The Right Anvil

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).

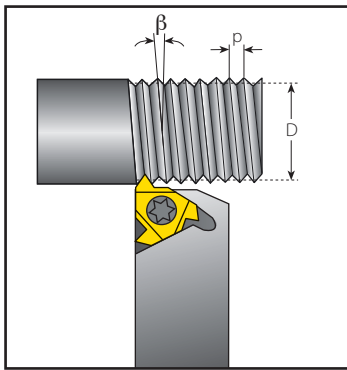
This results in the differing flank clearance angles, based on the geometry of the insert. To ensure that the side of the insert cutting edge will not rub on the workpiece, it is most important that the insert helix angle be correct - especially in profiles with small enclosed flank angles. This correction 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

Calculating the Helix Angle β



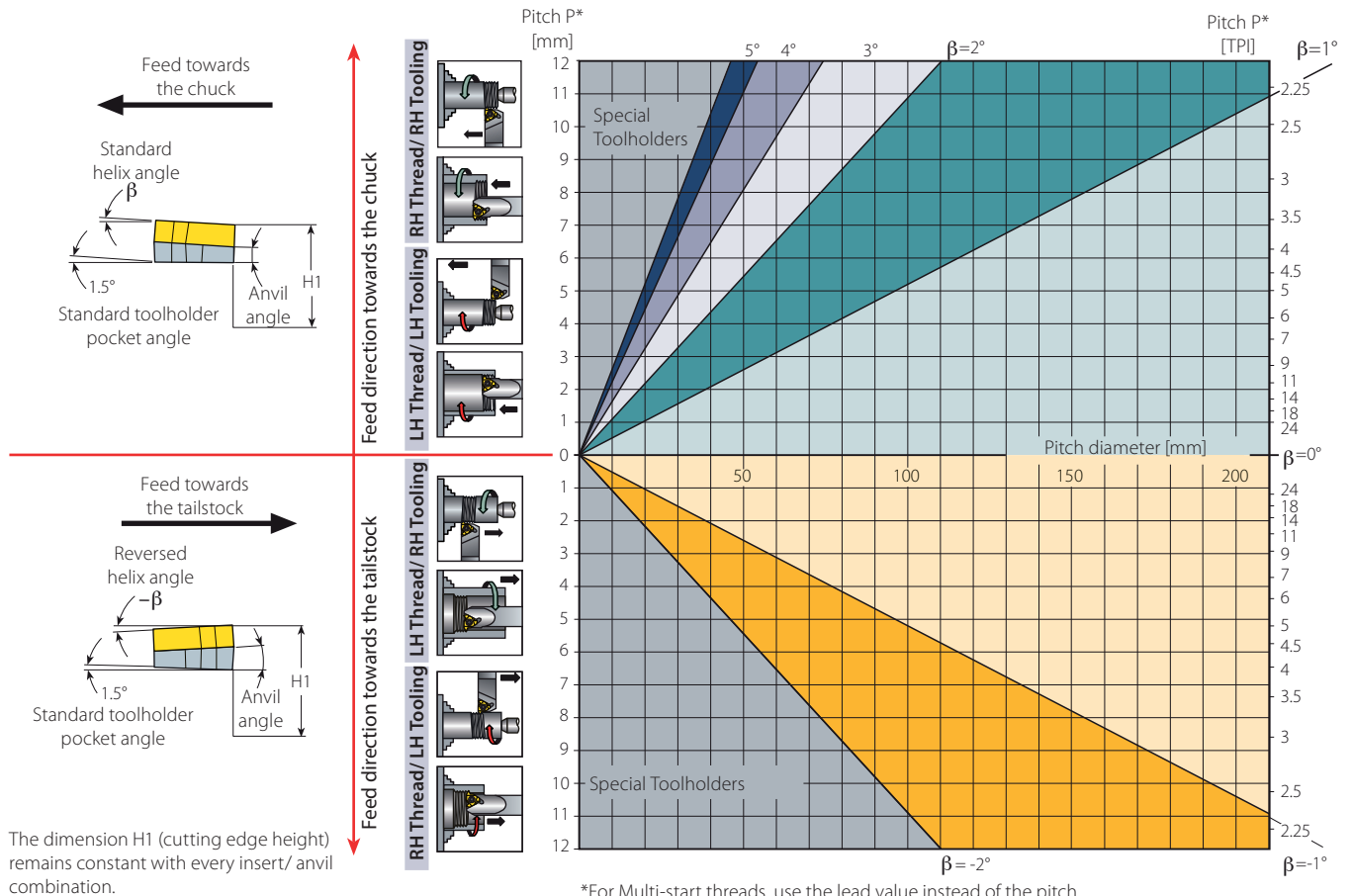
The helix angle is calculated by the following formula:

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

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



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"U	22	ER / IL	YE4U-3P	YE4U-2P	YE4U-1P	YE4U	YE4U-1N	YE4U-1.5N	YE4U-2N	YE4U-3N
		EL / IR	YI4U-3P	YI4U-2P	YI4U-1P	YI4U	YI4U-1N	YI4U-1.5N	YI4U-2N	YI4U-3N
5/8"	27	ER / IL	YE5-3P	YE5-2P	YE5-1P	YE5	YE5-1N	YE5-1.5N	YE5-2N	YE5-3N
		EL / IR	YI5-3P	YI5-2P	YI5-1P	YI5	YI5-1N	YI5-1.5N	YI5-2N	YI5-3N
5/8"U	27	ER / IL	YE5U-3P	YE5U-2P	YE5U-1P	YE5U	YE5U-1N	YE5U-1.5N	YE5U-2N	YE5U-3N
		EL / IR	YI5U-3P	YI5U-2P	YI5U-1P	YI5U	YI5U-1N	YI5U-1.5N	YI5U-2N	YI5U-3N
3/8"M	16	ER / IL			YE3M-1P	YE3M	YE3M-1N	YE3M-1.5N	YE3M-2N	
		EL / IR			YI3M-1P	YI3M	YI3M-1N	YI3M-1.5N		
1/2"M	22	ER / IL			YE4M-1P	YE4M	YE4M-1N	YE4M-1.5N	YE4M-2N	
		EL / IR			YI4M-1P	YI4M	YI4M-1N	YI4M-1.5N		
5/8"M	27	ER / IL				YE5M	YE5M-1N	YE5M-1.5N		
		EL / IR				YI5M	YI5M-1N	YI5M-1.5N		
1/2"Z	22	ER / IL			YE4Z-1P	YE4Z	YE4Z-1N			
		EL / IR			YI4Z-1P	YI4Z	YI4Z-1N			
1/2"T	22	ER / IL				Y4T				
		ER / IL								

Standard Anvil		U Style Anvil		M Style Anvil		Z Style Anvil		T 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

Oil&Gas Anvils

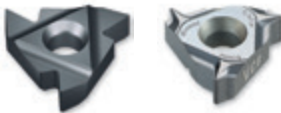
Standard	Application	Anvils with Protected Second Cutting Edge	
		Ordering Code External Application	Ordering Code Internal Application
API Round Casing & Tubing	10 TPI from Ø 2 3/8" and up	Y14DER-10APIRD (4 teeth)	Y14DIR-10APIRD (4 teeth)
	10 TPI from Ø 2 3/8" and up	Y14DER10APIRD-3+ (3 teeth)	Y14DIR10APIRD-3+ (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 OTTG 5 Ex, In	3 passes	0.760	0.730	0.110			
	4 passes	0.506	0.501	0.483	0.110		
	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		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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