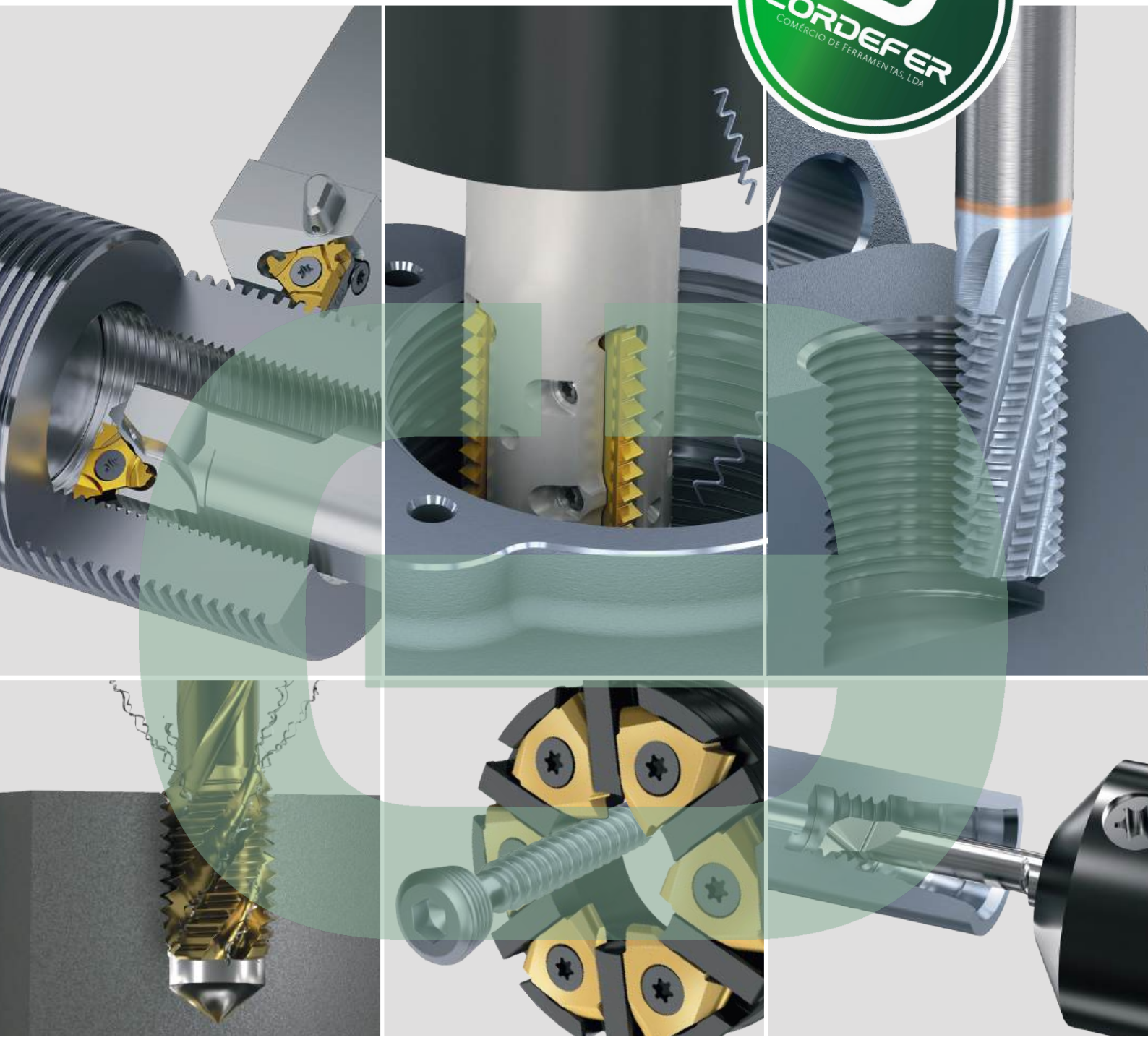
vargus
NEUMO Ehrenberg Group

CORDEFER
COMÉRCIO DE FERRAMENTAS, LDA



VARDEX
Advanced Threading Solutions

MAIN CATALOG

METRIC

THREAD TURNING

THREAD MILLING

Company Profile

NEUMO Ehrenberg Group

VARGUS is a world leading developer, manufacturer and supplier of high-quality, precision threading, grooving, turning and hand deburring tools.

Established in 1960, VARGUS is the cutting tools division of the NEUMO Ehrenberg Group, a multinational organization headquartered in Germany.

With 14 international subsidiaries, and a network of distributors, warehouses and certified ISO 9001 manufacturing facilities, VARGUS Ltd. serves customers in more than 100 countries around the globe. A customer-focused organization, VARGUS Ltd. is committed to providing products and solutions of the highest quality and excellent value, and is renowned for its technical expertise and uncompromising service.

COMPANY PRODUCTS:

VARDEX Advanced Threading Solutions is the company's prominent product line for Thread Turning, Thread Milling, Gear Milling, Tapping, and Whirling Solutions. The revolutionary MACH line for TT and TM applications offers unmatched productivity, machining twice as fast as standard tools.

Thread Turning: The VARDEX TT tools offer an extensive collection of pitches and standards in different grades, IC ranges and types of insert styles.

Thread Milling: The VARDEX TM line provides a wide range of applications and solutions in multi-tooth, single-tooth for deep holes, and solid carbide tools.

Gear Milling: The VARDEX Gear Milling line is an innovative concept for gear, rack, and spline applications, offered in indexable inserts and solid carbide tools.

V-Taps: The VARDEX Advanced Tapping Solutions include the most popular ISO Metric and American UN threading application standards with four different geometries in an assortment of types.

V-Whirling: The new high precision whirling system by VARGUS for Medical and Micromachining applications.

VARGUS GENius™: VARGUS' industry-leading Thread Turning, Thread Milling, Whirling and Tapping solutions are seamlessly complimented by the VARGUS GENius™ software – the most powerful tool selector, cutting data and CNC program generating software.

GROOVEX Innovative Grooving & Turning Solutions provides advanced solutions for grooving, boring and turning, in a wide range of applications. The Microscope line includes an extensive range of solid carbide internal tools for boring, grooving, chamfering, and threading in bores as small as 0.5mm (.020").

SHAVIV Leading Deburring Solutions, manufactures world leading hand deburring solutions for metals and plastics.

SV Burr: The new line of premium carbide burrs by SHAVIV includes a wide range of Tungsten Carbide tools to remove burrs and smoothen sharp metal edges when cutting or machining processes are completed.

VARGUS Industrial Solutions

Oil & Gas: Advanced threading and general machining solutions for the Oil and Gas industry, now include specialized solutions for tough and challenging applications.

Medical & Miniature: Leading threading and creative grooving and turning solutions in difficult to machine and delicate applications for the miniature, medical and dental industries.

EGMO
Neumo Ehrenberg Group
vargus

VARDEX
Advanced Threading Solutions

This updated and extended version of the MAIN VARDEX CATALOG now includes the newest VARDEX products as they appear in the **MACH Supersonic Threading Catalog Edition 06** with INTERNAL and EXTERNAL tools and MACH 25 tools, the **2023 Catalog Supplement**, followed by **V-WHIRLING, V-TAPS** and the **VARDEX MAIN CATALOG, Edition 02**.

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V-WHIRLING High Precision Whirling System for Medical and Micromachining Applications

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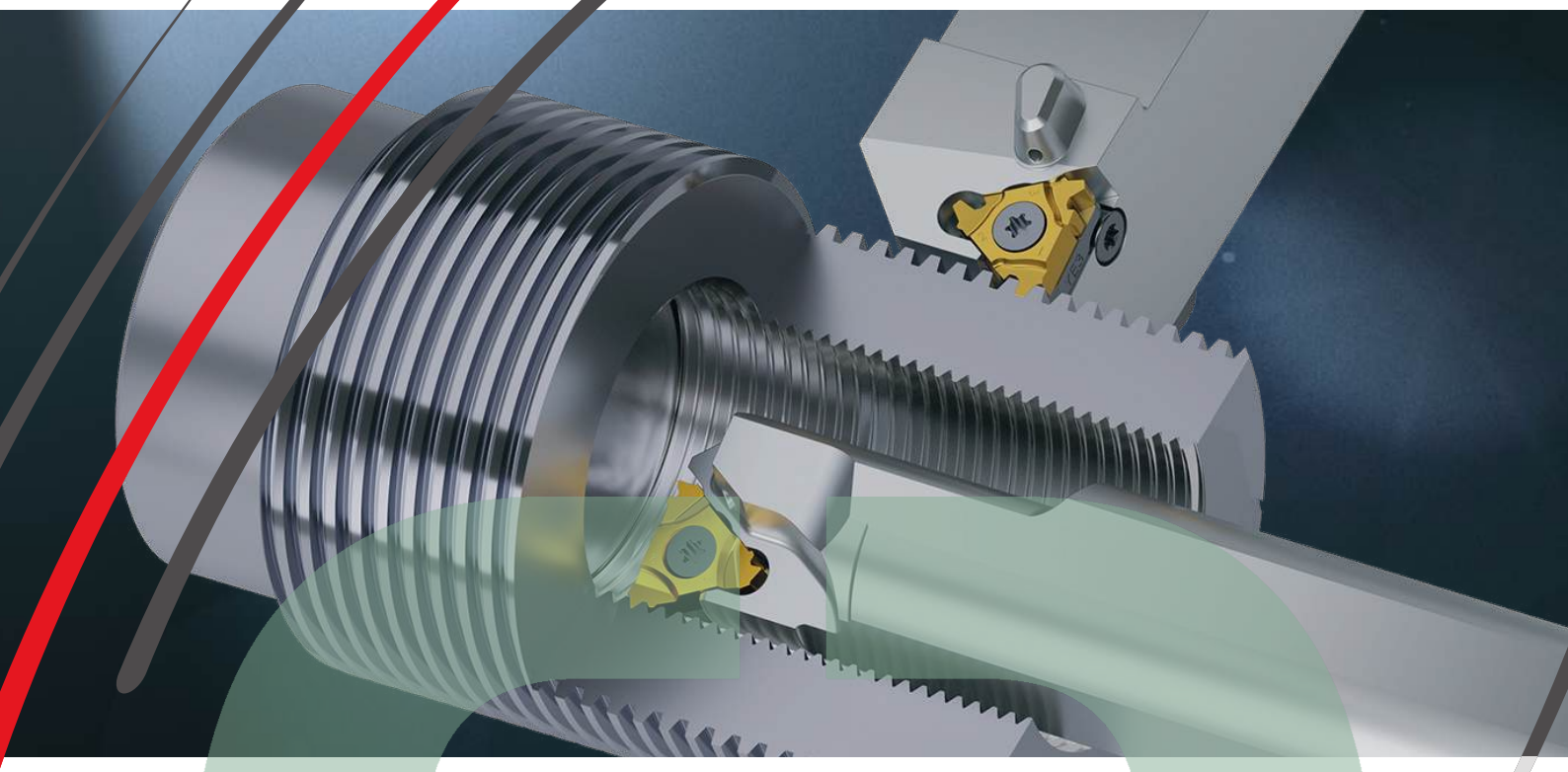
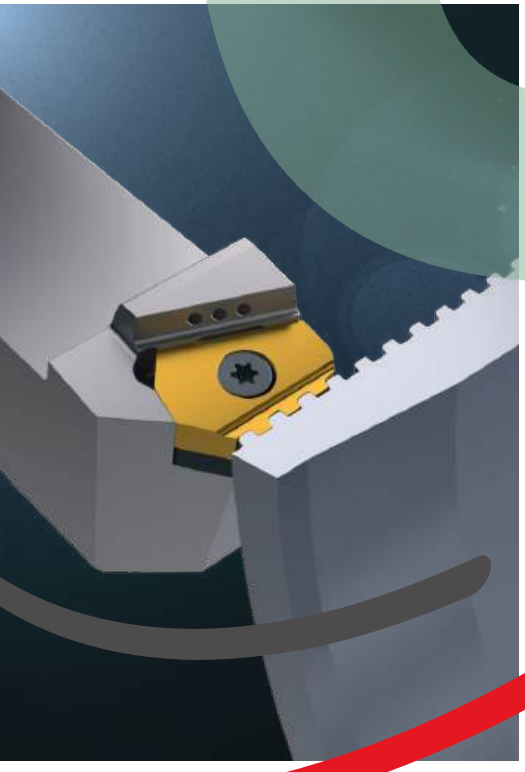
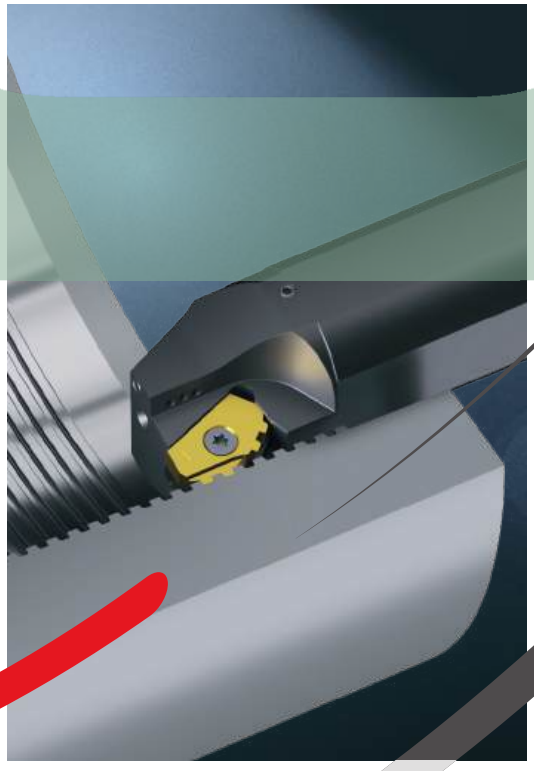
vargus
NEUMO Ehrenberg Group

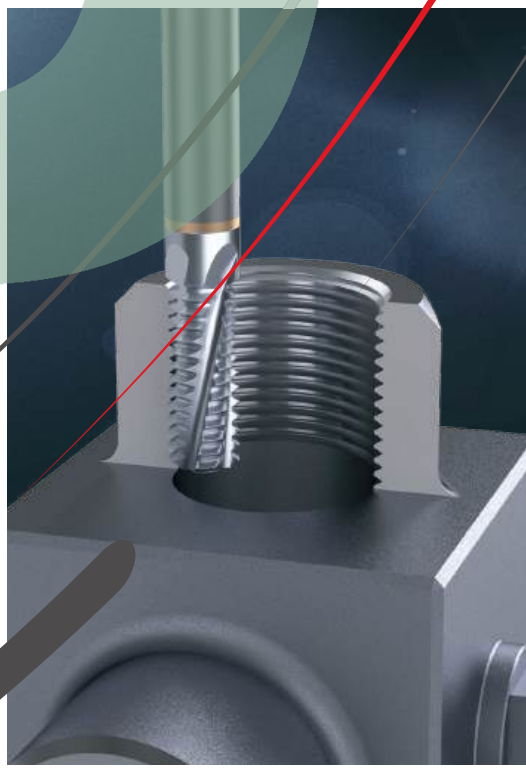


MACH
Supersonic Threading

UNMATCHED PRODUCTIVITY







METRIC
CORDEFER
FERRAMENTAS PARA A INDÚSTRIA

VARDEX
Advanced Threading Solutions
WWW.CORDEFER.PT

UNMATCHED PRODUCTIVITY

MACH TT
Supersonic Thread Turning

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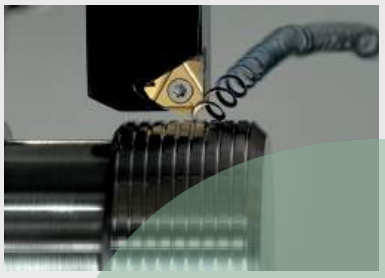
MORE THAN 2 TIMES FASTER

MACH Supersonic Threading

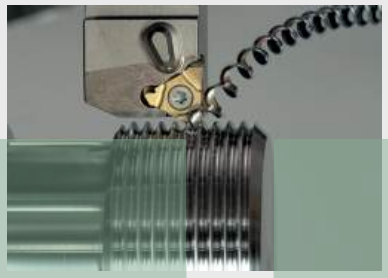
MACH TT External

Application: M64x3.0x33 | Material: SAE 4140 | Cutting Speed: Vc = 100 m/min

STANDARD
15 Passes | 40 sec.



MACH TT
6 Passes | 15 sec.



60% less passes

60% less machining time

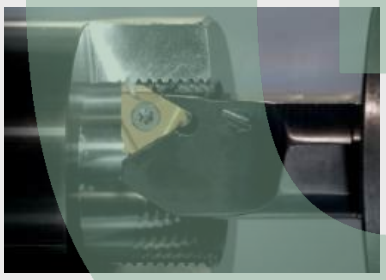
50% more tool life

FEWER PASSES FOR MACHINING MACH TT

MACH TT Internal

Application: M36x2.0x17 | Material: SAE 4140 | Cutting Speed: Vc = 100 m/min

STANDARD
12 Passes | 13 sec.



MACH TT
5 Passes | 5 sec.

60% less passes

60% less machining time

50% more tool life

FEWER PASSES FOR MACHINING MACH TT

MACH TM

Application: M10x1.5x20 | Material: SAE 4140 | Cutting Speed: Vc = 90 m/min

STANDARD (3 Flutes)
feed 0.15 mm/rev | 7 sec.

MACH TM (4 Flutes)
feed 0.4 mm/rev | 3 sec.

100% higher feed (mm/flute)

60% less machining time

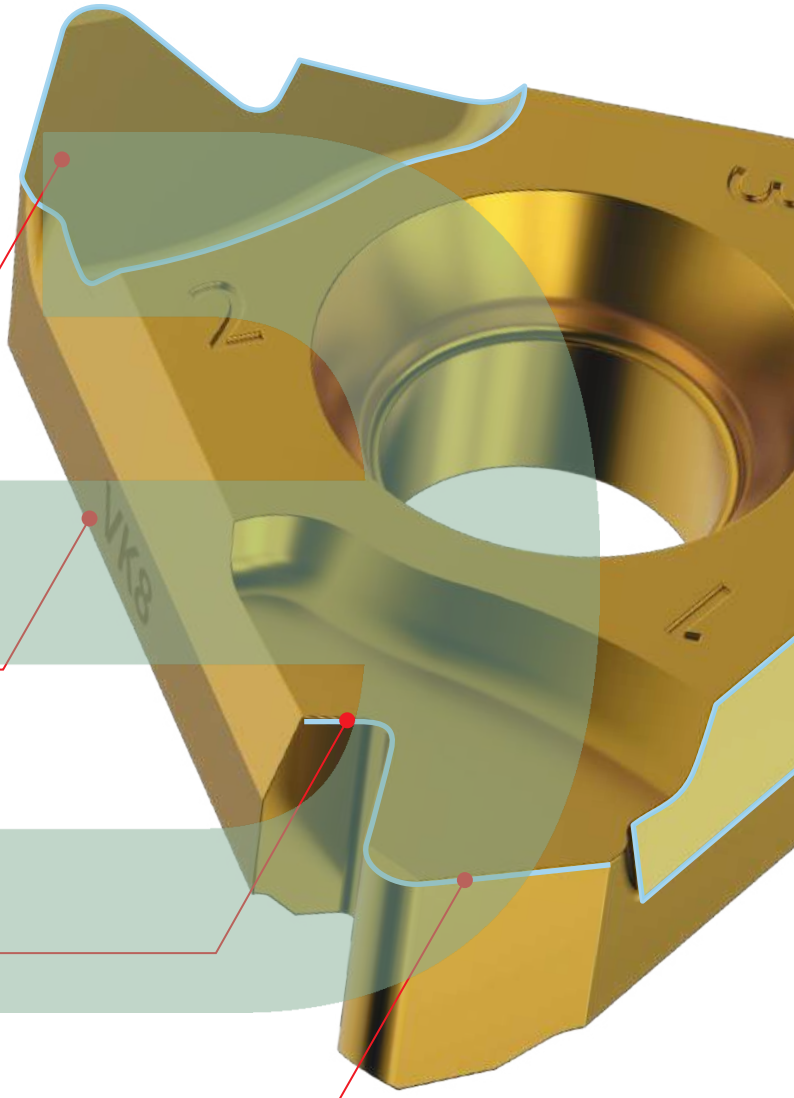
25% more tool life

HIGH feed mm/flute MACH TM

MACH TT Supersonic Thread Turning

Now available in:
External - IC 3/8" & IC 1/2" | Internal - IC 3/8"

Features and Innovations



Improved Rake & Reinforced Geometry

For high resistance with a reduced number of passes

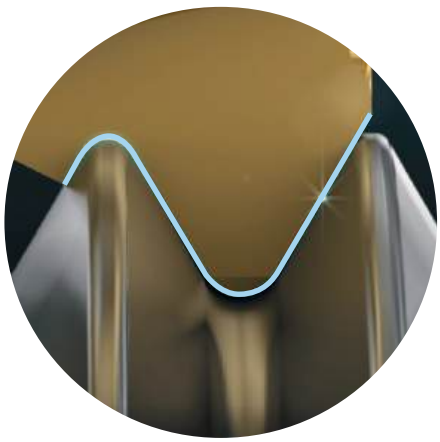
VK8 Grade

High wear resistance for general purpose applications

AlTiN + TiN PVD coating

Improved Profile Design

Superior threading surface finish



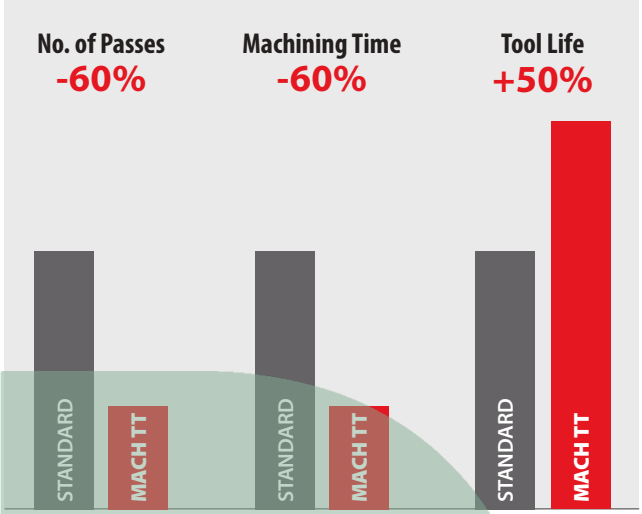
Advanced Surface Treatment

Reinforced cutting edge and smooth surface finish

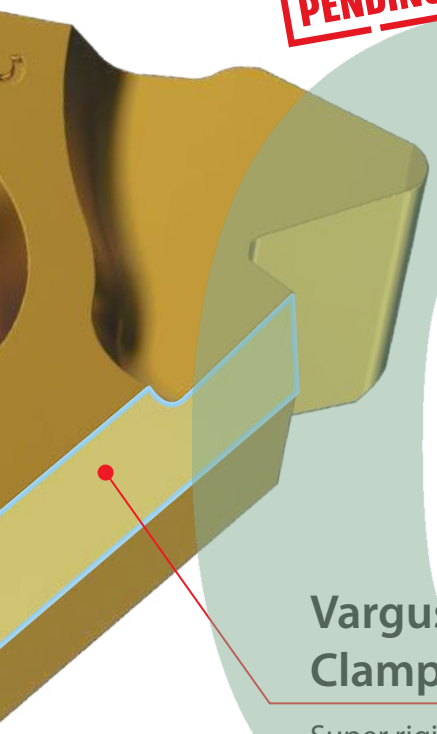
FEWER PASSES FOR MACHINING

MACH TT

UNMATCHED PRODUCTIVITY



PATENT PENDING



Advantages

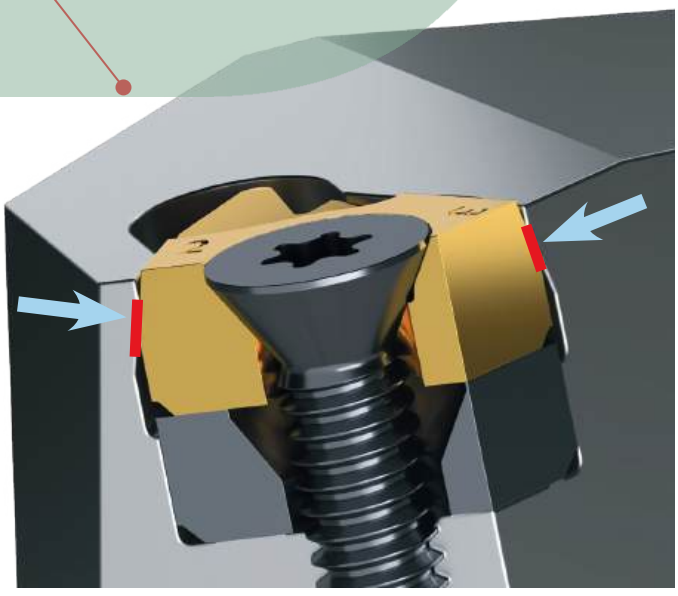
- Significantly reduces the number of passes
- Dramatically decreases machining time
- Extended tool life
- Excellent surface finish
- Eccentric tool overhang design for deeper threads and improved stability (internal)

Vargus Dovetail Clamping System

Super rigid - designed for high loads

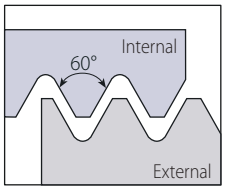
SUPER RIGID

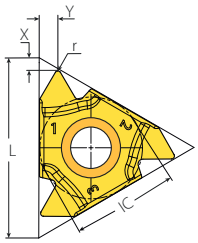
MACH TT



Partial Profile 60°

External / Internal





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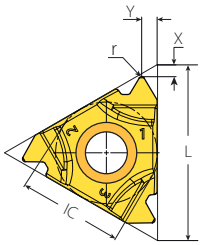
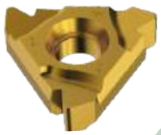


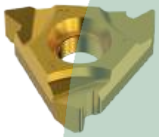
Internal

External



Insert Size		Pitch		Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	TPI	RH		r	X	Y	RH	Toolholder
3/8"	16	0.5-1.5	48-16	3DTERA60...	*16DTERA60...*	0.05	1.2	1.2	YE3	AL..-3DT
		1.75-3.0	14-8	3DTERG60...	*16DTERG60...*	0.27	1.1	1.7		
		0.5-3.0	48-8	3DTERAG60...	*16DTERAG60...*	0.08	1.1	1.7		
1/2"	22	3.5-5.0	7-5	4DTERN60...	*22DTERN60...*	0.53	1.8	2.5	YE4	AL..-4DT

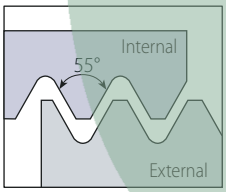
Internal

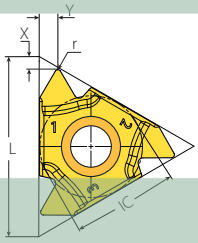


Insert Size		Pitch		Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	TPI	RH		r	X	Y	RH	Toolholder
3/8"	16	0.5-1.5	48-16	3DTIRA60...	*16DTIRA60...*	0.05	1.3	1.3	YI3	.VRC..-3DT
		1.75-3.0	14-8	3DTIRG60...	*16DTIRG60...*	0.16	1.2	1.5		
		0.5-3.0	48-8	3DTIRAG60...	*16DTIRAG60...*	0.05	1.2	1.5		

Partial Profile 55°

External / Internal





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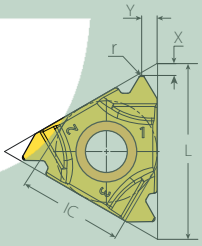
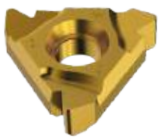


Internal

External



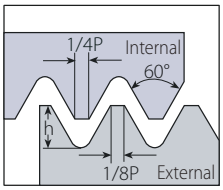
Insert Size		Pitch		Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	TPI	RH		r	X	Y	RH	Toolholder
3/8"	16	0.5-1.5	48-16	3DTERA55...	*16DTERA55...*	0.05	1.2	1.2	YE3	AL..-3DT
		1.75-3.0	14-8	3DTERG55...	*16DTERG55...*	0.21	1.1	1.7		
		0.5-3.0	48-8	3DTERAG55...	*16DTERAG55...*	0.07	1.1	1.7		
1/2"	22	3.5-5.0	7-5	4DTERN55...	*22DTERN55...*	0.43	1.8	2.2	YE4	AL..-4DT

Internal

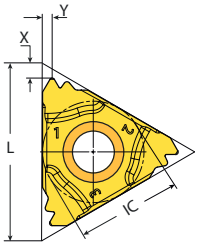
Insert Size		Pitch		Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	TPI	RH		r	X	Y	RH	Toolholder
3/8"	16	0.5-1.5	48-16	3DTIRA55...	*16DTIRA55...*	0.05	1.3	1.3	YI3	.VRC..-3DT
		1.75-3.0	14-8	3DTIRG55...	*16DTIRG55...*	0.21	1.1	1.6		
		0.5-3.0	48-8	3DTIRAG55...	*16DTIRAG55...*	0.07	1.1	1.7		

ISO Metric

External / Internal



Defined by: DIN 13
Tolerance class: 6g/6H



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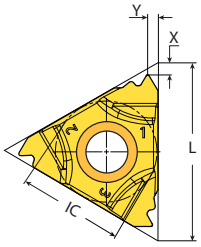
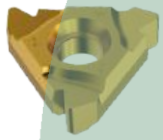


Internal

External



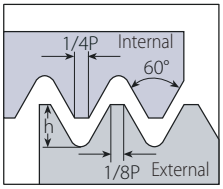
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
3/8"	16	0.7	3DTER0.7ISO...	*16DTER0.7ISO...*	0.43	1.6	0.5	YE3	AL..-3DT
		0.75	3DTER0.75ISO...	*16DTER0.75ISO...*	0.46	1.6	0.5		
		0.8	3DTER0.8ISO...	*16DTER0.8ISO...*	0.49	1.6	0.6		
		1.0	3DTER1.0ISO...	*16DTER1.0ISO...*	0.61	1.5	0.6		
		1.25	3DTER1.25ISO...	*16DTER1.25ISO...*	0.77	1.5	0.8		
		1.5	3DTER1.5ISO...	*16DTER1.5ISO...*	0.92	1.4	0.9		
		1.75	3DTER1.75ISO...	*16DTER1.75ISO...*	1.07	1.4	1.2		
		2.0	3DTER2.0ISO...	*16DTER2.0ISO...*	1.23	1.4	1.3		
		2.5	3DTER2.5ISO...	*16DTER2.5ISO...*	1.53	1.4	1.4		
		3.0	3DTER3.0ISO...	*16DTER3.0ISO...*	1.84	1.3	1.5		
		3.5	3DTER3.5ISO...	*16DTER3.5ISO...*	2.15	1.1	1.7		
1/2"	22	3.5	4DTER3.5ISO...	*22DTER3.5ISO...*	2.15	1.8	2.2	YE4	AL..-4DT
		4.0	4DTER4.0ISO...	*22DTER4.0ISO...*	2.45	1.8	2.1		
		4.5	4DTER4.5ISO...	*22DTER4.5ISO...*	2.76	1.7	2.2		
		5.0	4DTER5.0ISO...	*22DTER5.0ISO...*	3.07	1.7	2.3		
		5.5	4DTER5.5ISO...	*22DTER5.5ISO...*	3.37	1.9	2.6		
		6.0	4DTER6.0ISO...	*22DTER6.0ISO...*	3.68	1.8	2.7		

Internal

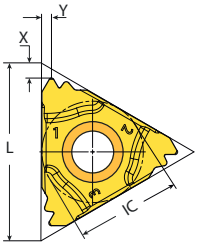
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
3/8"	16	0.5	3DTIR0.5ISO...	*16DTIR0.5ISO...*	0.29	1.5	0.4	YI3	.VRC..-3DT
		0.7	3DTIR0.7ISO...	*16DTIR0.7ISO...*	0.40	1.4	0.5		
		0.75	3DTIR0.75ISO...	*16DTIR0.75ISO...*	0.43	1.5	0.5		
		0.8	3DTIR0.8ISO...	*16DTIR0.8ISO...*	0.46	1.5	0.5		
		1.0	3DTIR1.0ISO...	*16DTIR1.0ISO...*	0.58	1.3	0.6		
		1.25	3DTIR1.25ISO...	*16DTIR1.25ISO...*	0.72	1.2	0.7		
		1.5	3DTIR1.5ISO...	*16DTIR1.5ISO...*	0.87	1.2	0.8		
		1.75	3DTIR1.75ISO...	*16DTIR1.75ISO...*	1.01	1.2	1.0		
		2.0	3DTIR2.0ISO...	*16DTIR2.0ISO...*	1.15	1.1	1.3		
		2.5	3DTIR2.5ISO...	*16DTIR2.5ISO...*	1.44	1.1	1.3		
		3.0	3DTIR3.0ISO...	*16DTIR3.0ISO...*	1.73	1.1	1.4		
		3.5	3DTIR3.5ISO...	*16DTIR3.5ISO...*	2.02	1.1	1.5		

American UN

External / Internal



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



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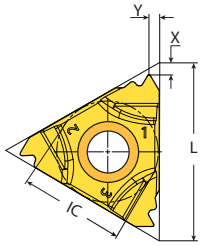
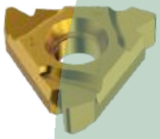


Internal

External



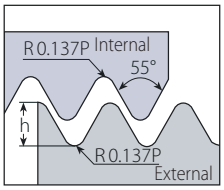
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	32	3DTER32UN...	*16DTER32UN...*	0.49	1.6	0.6	YE3	AL..-3DT
		28	3DTER28UN...	*16DTER28UN...*	0.56	1.6	0.6		
		27	3DTER27UN...	*16DTER27UN...*	0.58	1.6	0.6		
		24	3DTER24UN...	*16DTER24UN...*	0.65	1.5	0.7		
		20	3DTER20UN...	*16DTER20UN...*	0.78	1.5	0.8		
		18	3DTER18UN...	*16DTER18UN...*	0.87	1.4	0.8		
		16	3DTER16UN...	*16DTER16UN...*	0.97	1.4	1.0		
		14	3DTER14UN...	*16DTER14UN...*	1.11	1.4	1.3		
		13	3DTER13UN...	*16DTER13UN...*	1.20	1.4	1.3		
		12	3DTER12UN...	*16DTER12UN...*	1.30	1.4	1.4		
		11.5	3DTER11.5UN...	*16DTER11.5UN...*	1.35	1.4	1.4		
		11	3DTER11UN...	*16DTER11UN...*	1.42	1.4	1.4		
		10	3DTER10UN...	*16DTER10UN...*	1.56	1.4	1.7		
		9	3DTER9UN...	*16DTER9UN...*	1.73	1.4	1.6		
		8	3DTER8UN...	*16DTER8UN...*	1.95	1.3	1.6		
1/2"	22	7	4DTER7UN...	*22DTER7UN...*	2.22	1.80	2.2	YE4	AL..-4DT
		6	4DTER6UN...	*22DTER6UN...*	2.60	1.78	2.1		
		5	4DTER5UN...	*22DTER5UN...*	3.12	1.87	2.5		

Internal

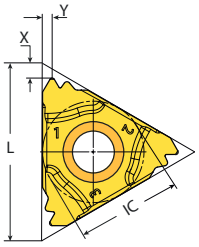
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	32	3DTIR32UN...	*16DTIR32UN...*	0.51	1.4	0.5	YI3	.VRC..-3DT
		28	3DTIR28UN...	*16DTIR28UN...*	0.52	1.5	0.5		
		24	3DTIR24UN...	*16DTIR24UN...*	0.61	1.4	0.6		
		20	3DTIR20UN...	*16DTIR20UN...*	0.73	1.2	0.7		
		18	3DTIR18UN...	*16DTIR18UN...*	0.81	1.2	0.7		
		16	3DTIR16UN...	*16DTIR16UN...*	0.92	1.2	0.9		
		14	3DTIR14UN...	*16DTIR14UN...*	1.05	1.2	1.0		
		13	3DTIR13UN...	*16DTIR13UN...*	1.13	1.2	0.9		
		12	3DTIR12UN...	*16DTIR12UN...*	1.22	1.1	1.2		
		11.5	3DTIR11.5UN...	*16DTIR11.5UN...*	1.28	1.2	1.2		
		11	3DTIR11UN...	*16DTIR11UN...*	1.33	1.2	1.2		
		10	3DTIR10UN...	*16DTIR10UN...*	1.47	1.1	1.2		
		9	3DTIR9UN...	*16DTIR9UN...*	1.63	1.1	1.3		
		8	3DTIR8UN...	*16DTIR8UN...*	1.83	1.1	1.4		

Whitworth for BSW, BSP

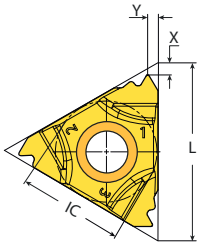
External / Internal



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

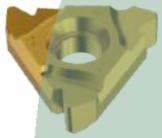


External



Internal

External



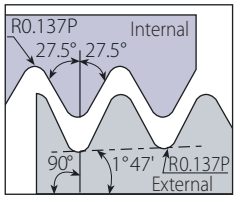
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	28	3DTER28W...	*16DTER28W...*	0.58	1.6	0.6	YE3	AL..-3DT
		26	3DTER26W...	*16DTER26W...*	0.63	1.6	0.6		
		20	3DTER20W...	*16DTER20W...*	0.81	1.5	0.7		
		19	3DTER19W...	*16DTER19W...*	0.86	1.5	0.8		
		18	3DTER18W...	*16DTER18W...*	0.90	1.4	1.0		
		16	3DTER16W...	*16DTER16W...*	1.02	1.4	1.2		
		14	3DTER14W...	*16DTER14W...*	1.16	1.4	1.2		
		12	3DTER12W...	*16DTER12W...*	1.36	1.4	1.3		
		11	3DTER11W...	*16DTER11W...*	1.48	1.4	1.3		
		10	3DTER10W...	*16DTER10W...*	1.63	1.4	1.3		
		9	3DTER9W...	*16DTER9W...*	1.81	1.4	1.7		
		8	3DTER8W...	*16DTER8W...*	2.03	1.1	1.5		
1/2"	22	7	4DTER7W...	*22DTER7W...*	2.41	1.8	2.2	YE4	AL..-4DT
		6	4DTER6W...	*22DTER6W...*	2.71	1.8	2.0		
		5	4DTER5W...	*22DTER5W...*	3.25	1.7	2.3		

Internal

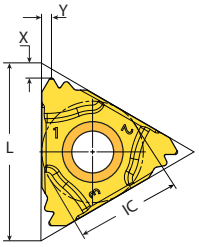
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	28	3DTIR28W...	*16DTIR28W...*	0.58	1.4	0.6	YI3	.VRC..-3DT
		26	3DTIR26W...	*16DTIR26W...*	0.63	1.3	0.6		
		24	3DTIR24W...	*16DTIR24W...*	0.68	1.2	0.6		
		20	3DTIR20W...	*16DTIR20W...*	0.81	1.1	0.7		
		19	3DTIR19W...	*16DTIR19W...*	0.86	1.1	0.8		
		18	3DTIR18W...	*16DTIR18W...*	0.90	1.1	0.8		
		16	3DTIR16W...	*16DTIR16W...*	1.02	1.1	0.9		
		14	3DTIR14W...	*16DTIR14W...*	1.16	1.1	0.9		
		12	3DTIR12W...	*16DTIR12W...*	1.36	1.1	1.3		
		11	3DTR11W...	*16DTIR11W...*	1.48	1.1	1.2		
		10	3DTIR10W...	*16DTIR10W...*	1.63	1.0	1.3		
		9	3DTIR9W...	*16DTIR9W...*	1.81	1.0	1.4		
		8	3DTIR8W...	*16DTIR8W...*	2.03	1.0	1.5		

BSPT

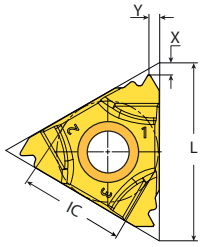
External / Internal



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

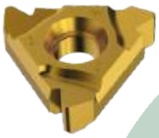


External



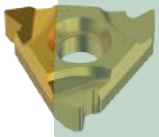
Internal

External



Insert Size			Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	28	3DTER28BSPT...	*16DTER28BSPT...*	0.58	1.6	0.6	YE3	AL..-3DT
		19	3DTER19BSPT...	*16DTER19BSPT...*	0.86	1.2	0.8		
		14	3DTER14BSPT...	*16DTER14BSPT...*	1.16	1.4	1.3		
		11	3DTER11BSPT...	*16DTER11BSPT...*	1.48	1.4	1.5		

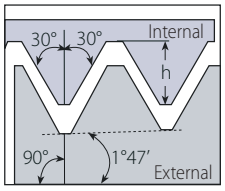
Internal



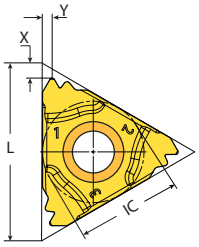
Insert Size			Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	28	3DTIR28BSPT...	*16DTIR28BSPT...*	0.58	1.3	0.6	YI3	.VRC..-3DT
		19	3DTIR19BSPT...	*16DTIR19BSPT...*	0.86	1.2	0.8		
		14	3DTIR14BSPT...	*16DTIR14BSPT...*	1.16	1.1	1.2		
		11	3DTIR11BSPT...	*16DTIR11BSPT...*	1.48	1.1	1.2		

NPT

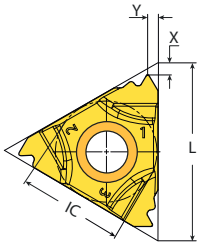
External / Internal



Defined by: ANSI B1.20.1-1983
Tolerance class: Standard NPT

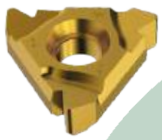


External



Internal

External



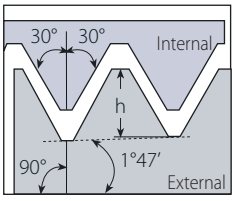
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	27	3DTER27NPT...	*16DTER27NPT...*	0.66	1.6	0.8	YE3	AL..-3DT
		18	3DTER18NPT...	*16DTER18NPT...*	1.01	1.2	0.9		
		14	3DTER14NPT...	*16DTER14NPT...*	1.33	1.2	1.2		
		11.5	3DTER11.5NPT...	*16DTER11.5NPT...*	1.64	1.2	1.4		
		8	3DTER8NPT...	*16DTER8NPT...*	2.42	1.2	1.8		

Internal

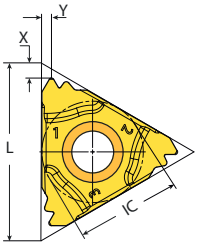
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	27	3DTIR27NPT...	*16DTIR27NPT...*	0.66	1.3	0.6	YI3	.VRC..-3DT
		18	3DTIR18NPT...	*16DTIR18NPT...*	1.01	1.1	1.0		
		14	3DTIR14NPT...	*16DTIR14NPT...*	1.33	1.2	1.2		
		11.5	3DTIR11.5NPT...	*16DTIR11.5NPT...*	1.64	1.2	1.3		
		8	3DTIR8NPT...	*16DTIR8NPT...*	2.42	1.2	1.7		

NPTF

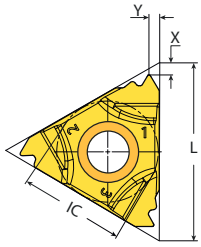
External / Internal



Defined by: ANSI B1.20.3-1976
Tolerance class: Standard NPTF

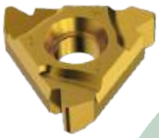


External



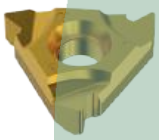
Internal

External



Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	27	3DTER27NPTF...	*16DTER27NPTF...*	0.64	1.6	0.8	YE3	AL..-3DT
		18	3DTER18NPTF...	*16DTER18NPTF...*	1.00	1.5	1.4		
		14	3DTER14NPTF...	*16DTER14NPTF...*	1.35	1.2	1.2		
		11.5	3DTER11.5NPTF...	*16DTER11.5NPTF...*	1.63	1.2	1.3		
		8	3DTER8NPTF...	*16DTER8NPTF...*	2.38	1.2	1.7		

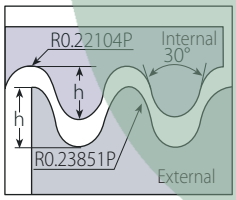
Internal



Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	27	3DTIR27NPTF...	*16DTIR27NPTF...*	0.64	1.3	0.6	YI3	.VRC..-3DT
		18	3DTIR18NPTF...	*16DTIR18NPTF...*	1.00	1.2	1.0		
		14	3DTIR14NPTF...	*16DTIR14NPTF...*	1.35	1.2	1.0		
		11.5	3DTIR11.5NPTF...	*16DTIR11.5NPTF...*	1.63	1.2	1.3		
		8	3DTIR8NPTF...	*16DTIR8NPTF...*	2.38	1.2	1.7		

Round (DIN 405)

External



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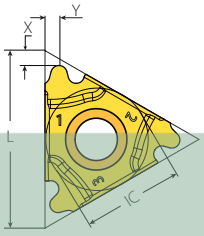
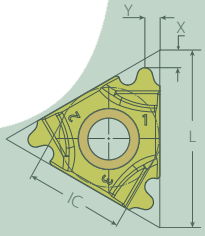


External



Internal

External

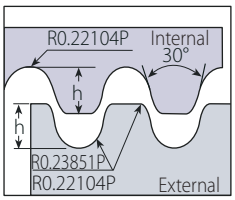
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	8	3DTER8RD...	*16DTER8RD...*	1.59	1.5	1.3	YE3	AL..-3DT
		6	3DTER6RD...	*16DTER6RD...*	2.12	1.3	1.5		
1/2"	22	6	4DTER6RD...	*22DTER6RD...*	2.12	2.2	2.0	YE4	AL..-4DT
		4	4DTER4RD...	*22DTER4RD...*	3.18	2.2	1.9		

Internal

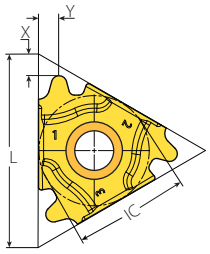
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	8	3DTIR8RD...	*16DTIR8RD...*	1.59	1.6	1.4	YI3	.VRC..-3DT

Round (DIN 20400)

External



Defined by: DIN 20400
Tolerance class: Standard



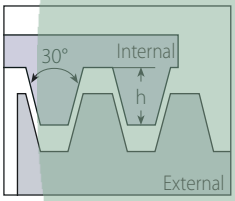
External

External

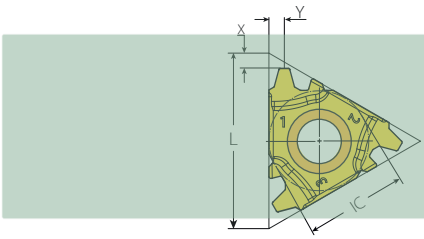
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
1/2"	22	3	4DTER3.0RD20400...	*22DTER3.0RD20400...*	1.65	2.1	2.1	YE4	AL..-4DT
		4	4DTER4.0RD20400...	*22DTER4.0RD20400...*	2.20	2.4	2.4		
		5	4DTER5.0RD20400...	*22DTER5.0RD20400...*	2.75	2.2	2.1		
		6	4DTER6.0RD20400...	*22DTER6.0RD20400...*	3.30	2.2	2.1		

Trapez

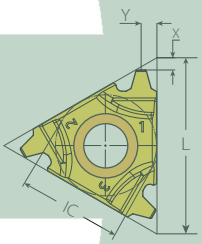
External / Internal



Defined by: DIN 103
Tolerance class: 7e

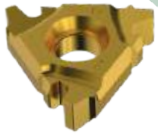


External



Internal

External



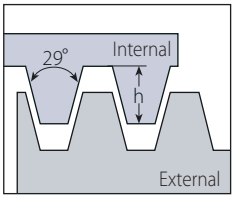
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
3/8"	16	1.5	3DTER1.5TR...	*16DTER1.5TR...*	0.90	1.2	1.1	YE3	AL..-3DT
		2.0	3DTER2.0TR...	*16DTER2.0TR...*	1.25	1.2	1.3		
		3.0	3DTER3.0TR...	*16DTER3.0TR...*	1.75	1.2	1.5		
1/2"	22	4.0	4DTER4.0TR...	*22DTER4.0TR...*	2.25	1.9	2.2	YE4	AL..-4DT
		5.0	4DTER5.0TR...	*22DTER5.0TR...*	2.75	1.9	2.2		
		6.0	4DTER6.0TR...	*22DTER6.0TR...*	3.50	1.8	2.0		

Internal

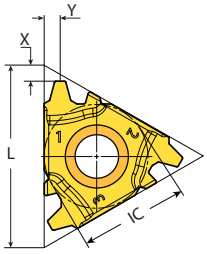
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
3/8"	16	1.5	3DTIR1.5TR...	*16DTIR1.5TR...*	0.90	1.2	1.1	YI3	.VRC..-3DT
		2.0	3DTIR2.0TR...	*16DTIR2.0TR...*	1.25	1.1	1.2		
		3.0	3DTIR3.0TR...	*16DTIR3.0TR...*	1.75	1.1	1.5		

American ACME

External

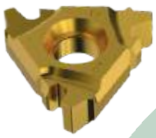


Defined by: ANSI B1.5:1988
Tolerance class: 3G



External

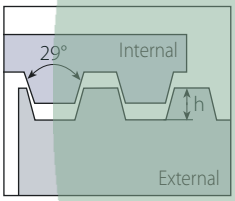
External



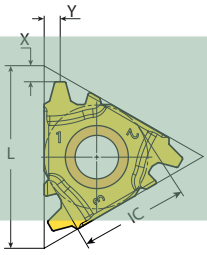
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
1/2"	22	7	4DTER7ACME...	*22DTER7ACME...*	2.08	2.1	2.2	YE4	AL..-4DT
		6	4DTER6ACME...	*22DTER6ACME...*	2.37	1.9	2.1		
		5	4DTER5ACME...	*22DTER5ACME...*	2.79	1.9	2.2		

Stub ACME

External

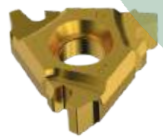


Defined by: ANSI B1.8:1988
Tolerance class: 2G



External

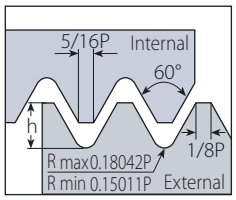
External



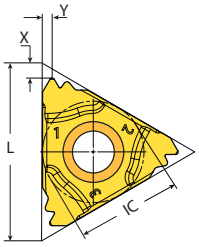
Insert Size			Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
1/2"	22	6	4DTER6STACME...	*22DTER6STACME...*	1.52	2.1	1.8	YE4	AL..-4DT
		5	4DTER5STACME...	*22DTER5STACME...*	1.78	2.1	2.0		
		4	4DTER4STACME...	*22DTER4STACME...*	2.16	2.1	2.1		

UNJ

External / Internal



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



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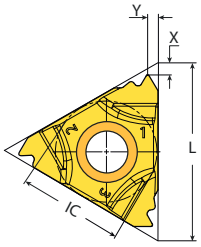
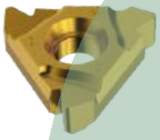


Internal

External



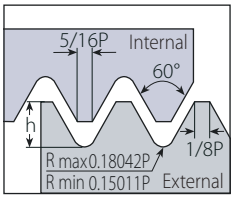
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	32	3DTER32UNJ...	*16DTER32UNJ ...*	0.46	1.6	0.6	YE3	AL..3DT
		28	3DTER28UNJ...	*16DTER28UNJ...*	0.52	1.5	0.6		
		24	3DTER24UNJ...	*16DTER24UNJ...*	0.61	1.5	0.7		
		20	3DTER20UNJ...	*16DTER20UNJ...*	0.73	1.5	0.8		
		18	3DTER18UNJ...	*16DTER18UNJ...*	0.81	1.4	0.8		
		16	3DTER16UNJ...	*16DTER16UNJ...*	0.92	1.4	0.9		
		14	3DTER14UNJ...	*16DTER14UNJ...*	1.05	1.4	1.2		
		13	3DTER13UNJ...	*16DTER13UNJ...*	1.13	1.4	1.2		
		12	3DTER12UNJ...	*16DTER12UNJ...*	1.22	1.4	1.2		
		10	3DTER10UNJ...	*16DTER10UNJ...*	1.47	1.4	1.2		
1/2"	22	7	4DTER7UNJ...	*22DTER7UNJ...*	2.09	1.9	2.1	YE4	AL..-4DT
		6	4DTER6UNJ...	*22DTER6UNJ...*	2.44	1.9	2.1		
		5	4DTER5UNJ...	*22DTER5UNJ...*	2.93	1.8	2.4		

Internal

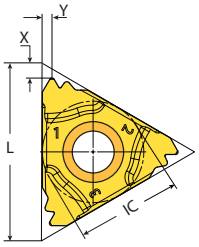
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	32	3DTIR32UNJ...	*16DTIR32UNJ...*	0.42	1.4	0.5	YI3	.VRC..-3DT
		28	3DTIR28UNJ...	*16DTIR28UNJ...*	0.47	1.4	0.5		
		24	3DTIR24UNJ...	*16DTIR24UNJ...*	0.55	1.3	0.5		
		20	3DTIR20UNJ...	*16DTIR20UNJ...*	0.66	1.3	0.6		
		18	3DTIR18UNJ...	*16DTIR18UNJ...*	0.74	1.3	0.7		
		16	3DTIR16UNJ...	*16DTIR16UNJ...*	0.83	1.3	1.0		
		14	3DTIR14UNJ...	*16DTIR14UNJ...*	0.95	1.3	1.0		
		12	3DTIR12UNJ...	*16DTIR12UNJ...*	1.11	1.2	1.2		

MJ

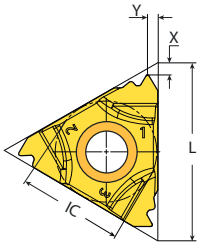
External / Internal



Defined by: ISO 5855
Tolerance class: 4h/6h-4H/5H

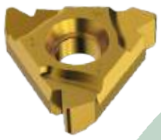


External



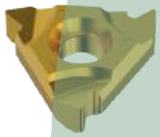
Internal

External



Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
3/8"	16	1.0	3DTER1.0MJ...	*16DTER1.0MJ...*	0.58	1.5	0.6	YE3	AL..-3DT
		1.5	3DTER1.5MJ...	*16DTER1.5MJ...*	0.87	1.4	0.9		
		2.0	3DTER2.0MJ...	*16DTER2.0MJ...*	1.15	1.39	1.20		
		3.0	3DTER3.0MJ...	*16DTER3.0MJ...*	1.73	1.32	1.50		

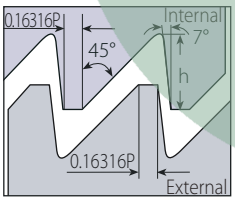
Internal



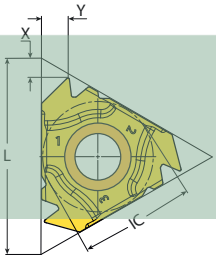
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
3/8"	16	1.0	3DTIR1.0MJ...	*16DTIR1.0MJ...*	0.49	1.4	0.5	YI3	.VRC..-3DT
		1.5	3DTIR1.5MJ...	*16DTIR1.5MJ...*	0.73	1.3	1.0		
		2.0	3DTIR2.0MJ...	*16DTIR2.0MJ...*	0.97	1.3	1.0		
		3.0	3DTIR3.0MJ...	*16DTIR3.0MJ...*	1.46	1.15	1.15		

American Buttress

External

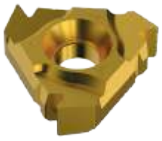


Defined by: ANSI B1.9.1973
Tolerance class: Class 2



External

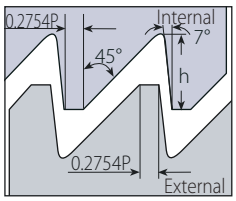
External



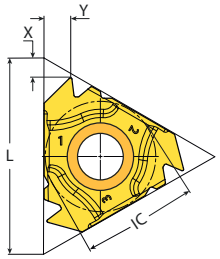
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
1/2"	22	8	4DTER8ABUT...	*22DTER8ABUT...*	2.10	2.1	3.1	YE4	AL..-4DT
		6	4DTER6ABUT...	*22DTER6ABUT...*	2.80	2.1	3.4		

British Buttress

External



Defined by: B.S. 1657: 1950
Tolerance class: Medium Class



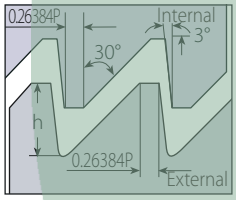
External

External

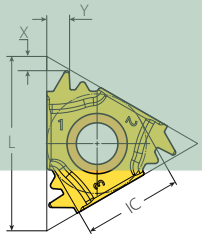
Insert Size			Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
1/2"	22	8	4DTER8BUT..	*22DTER8BUT.....*	1.61	1.84	2.60	YE4	AL..-4DT

Metric Buttress (Sägengewinde)

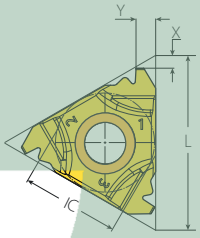
External / Internal



Defined by: DIN 513
Tolerance class: Medium Class

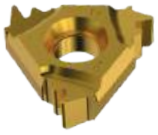


External



Internal

External



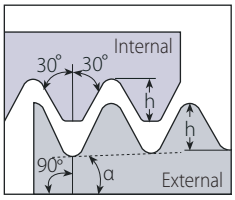
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
3/8"	16	2.0	3DTER2.0SAGE...	*16DTER2.0SAGE...*	1.74	1.3	2.1	YE3	AL..-3DT
1/2"	22	2.0	4DTER2.0SAGE...	*22DTER2.0SAGE...*	1.74	1.9	2.9	YE4	AL..-4DT
		3.0	4DTER3.0SAGE...	*22DTER3.0SAGE...*	2.60	1.8	3.2		
		4.0	4DTER4.0SAGE...	*22DTER4.0SAGE...*	3.55	1.7	3.1		

Internal

Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
3/8"	16	2.0	3DTIR2.0SAGE...	*16DTIR2.0SAGE...*	1.50	1.2	1.8	YI3	.VRC..-3DT

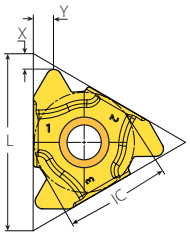
API

External



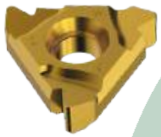
α = arctg (IPF/24)

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



External

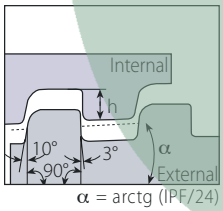
External



Insert Size IC	L mm	Pitch TPI	Thread	Taper IPF	Ordering Code RH	Market Description	Size	Dimensions mm h min	X	Y	Anvil RH	Tool-holder
1/2"	22	4	V-0.038R	2	4DTER4API382...	*22DTER4API382...*	NC23-NC50, 2 3/8", 6 5/8" IF	3.09	1.8	2.6	YEI 4-API-1P or YE4	AL..-4DT
		4	V-0.038R	3	4DTER4API383...	*22DTER4API383...*	NC56-NC77	3.08	1.9	2.6		
		5	V-0.040	3	4DTER5API403...	*22DTER5API403...*	2 3/8"-4 1/2" REG	2.99	1.8	2.4		
		4	V-0.050	2	4DTER4API502...	*22DTER4API502...*	6 5/8" REG, 5 1/2"FH, 6 5/8" FH	3.75	1.7	2.7		
		4	V-0.050	3	4DTER4API503...	*22DTER4API503...*	5 1/2", 7 5/8", 8 5/8" REG	3.74	1.7	2.7		
		6	V-0.055	1.5	4DTER6API551...	*22DTER6API551...*	NC10-NC16	1.41	1.8	2.6		

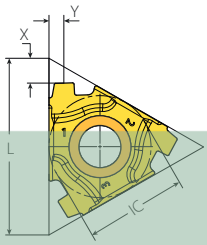
API Buttress Casing

External



α = arctg (IPF/24)

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



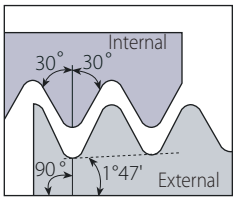
External

External

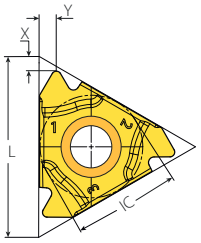
Insert Size IC	L mm	Pitch TPI	Taper IPF	Ordering Code RH	Market Description	Size	Dimensions mm h min	X	Y	Anvil RH	Toolholder
1/2"	22	5	0.75	4DTER5BUT75...	*22DTER5BUT75...*	4 1/2"-13 3/8"	1.55	3.1	1.9	YEI 4-BUT or YE4	AL..-4DT
		5	1	4DTER5BUT1...	*22DTER5BUT1...*	16"-20"	1.55	3.1	1.9		

API Round Casing & Tubing

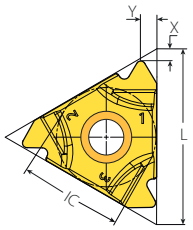
External / Internal



Defined by: API SPEC. 5B
Tolerance class: Standard API RD

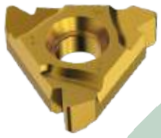


External



Internal

External



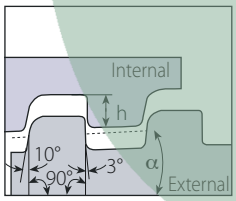
Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	10	3DTER10APIRD...	*16DTER10APIRD...*	1.41	1.4	1.5	YE3	AL..-3DT
		8	3DTER8APIRD...	*16DTER8APIRD...*	1.81	1.4	1.6		

Internal

Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
3/8"	16	10	3DTIR10APIRD...	*16DTIR10APIRD...*	1.41	1.1	1.3	YI3	.VRC..-3DT
		8	3DTIR8APIRD...	*16DTIR8APIRD...*	1.81	1.1	1.5		

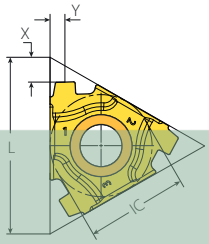
VAM

External



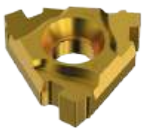
α = arctg (IPF/24)

Defined by: VAM
Tolerance class: Standard VAM



External

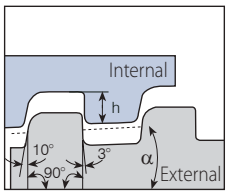
External



Insert Size		Pitch	Taper	Ordering Code	Market Description	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH			h min	X	Y	RH	Toolholder
1/2"	22	6	0.75	4DTER6VAM...	*22DTER6VAM...*	3 1/2"	0.97	2.1	1.9	YE4	AL..-4DT
	22	5	0.75	4DTER5VAM...	*22DTER5VAM...*	5"-9 5/8"	1.55	3.1	1.9		

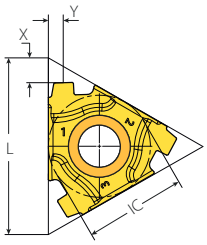
New VAM

External



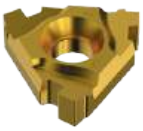
α= arctg (IPF/24)

Defined by: VAM
Tolerance class: Standard VAM



External

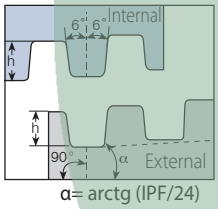
External



Insert Size		Pitch	Taper	Ordering Code	Market Description	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH			h min	X	Y	RH	Toolholder
1/2"	22	6	0.75	4DTER6NVAM...	*22DTER6NVAM...*	3 1/2"	0.97	2.1	1.9	YE4	AL..-4DT
		5	0.75	4DTER5NVAM...	*22DTER5NVAM...*	5"-9 5/8"	1.55	3.1	2.0		

EL-Extreme Line

External



α= arctg (IPF/24)

Defined by: API STD,5B:1979
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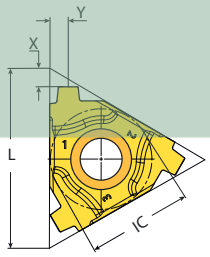
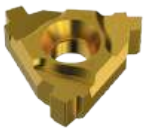


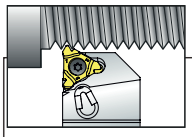
External

External

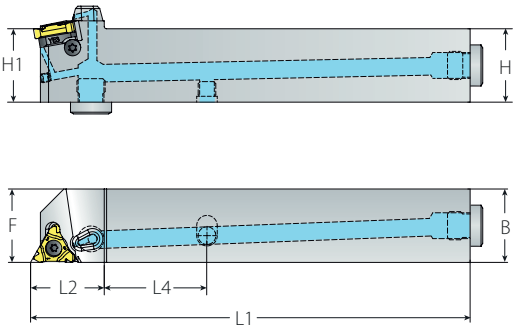


Insert Size		Pitch	Taper	Ordering Code	Market Description	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH			h min	X	Y	RH	Toolholder
1/2"	22	6	1.5	4DTER6EL15...	*22DTER6EL15...*	5"-7 5/8"	1.21	2.1	1.9	YE4	AL..-4DT
		5	1.25	4DTER5EL125...	*22DTER5EL125...*	8 5/8"-10 3/4"	1.71	2.1	2.3		

External Toolholders

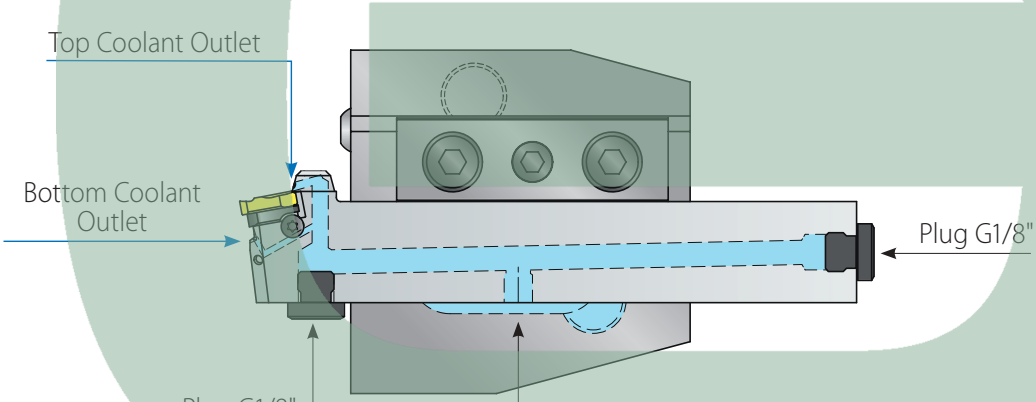


Max. 70 bar



MACH TT with Coolant (HPC) - 3 Inlets

Insert Size	Ordering Code	Market Description	Dimensions mm					Spare Parts					
IC	RH		H=H1=B	F	L1	L2	L4	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Plug Screw x 2	Socket Screw
3/8"	ALCN16-3DT	*ALCN16-16DT*	16	16	100	25.4	25	SA3T (2.0 Nm)	SY3T	K3T	YE3	Plug G1/8"	Socket Screw M6x5
	ALCN20-3DT	*ALCN20-16DT*	20	20	125		30						
	ALCN25-3DT	*ALCN25-16DT*	25	25	150		35						
	ALCN32-3DT	*ALCN32-16DT*	32	32	170		35						



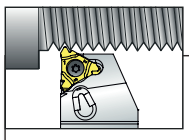
Bottom Inlet for **VDI** DIN 69880 / ISO 10889
Socket Screw M6x5

When reassembling the M6X5 plug, it is necessary to use LOCTITE 542.

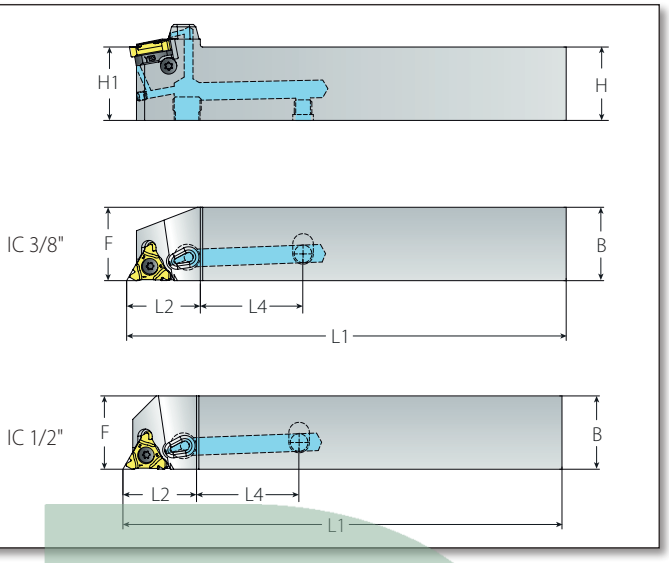
The following HPC accessories (not included) can be ordered separately:

Image	Ordering Code	Item Number
	Tube Connector 25-6	013-00941
	Angled Fitting G1_8x6	013-00947
	Straight Fitting G1_8x6	013-00942

External Toolholders

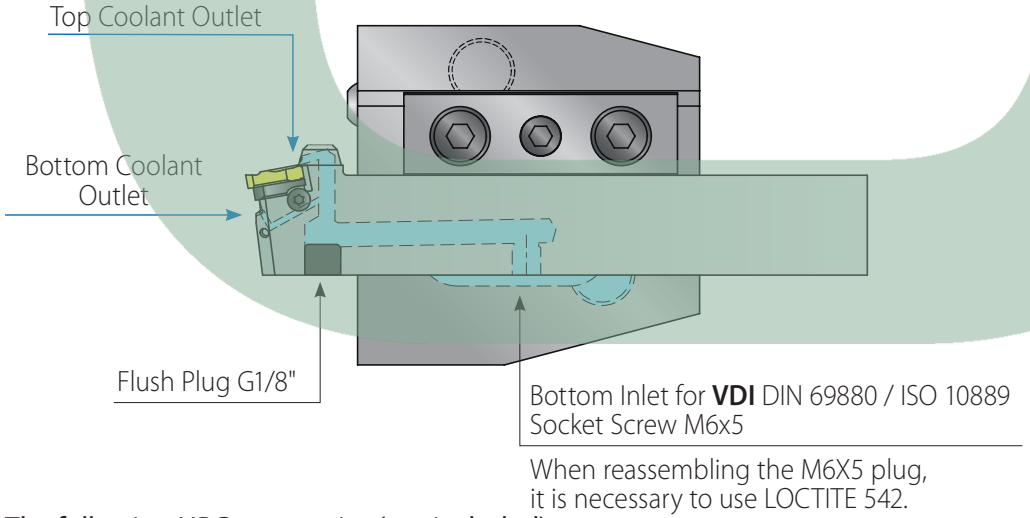


Max. 70 bar



MACH TT with Coolant (HPC) - 2 Inlets

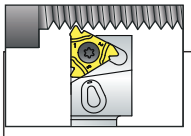
Insert Size	Ordering Code	Market Description	Dimensions mm					Spare Parts					
IC	RH		H=H1=B	F	L1	L2	L4	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Plug Screw	Socket Screw
3/8"	ALC16-3DT	*ALC16-16DT*	16	16	100	25.4	24.0	SA3T (2.0Nm)	SY3T	K3T	YE3	Flush Plug G1/8"	Socket Screw M6x5
	ALC20-3DT	*ALC20-16DT*	20	20	125		21.0						
	ALC25-3DT	*ALC25-16DT*	25	25	150		32.5						
	ALC32-3DT	*ALC32-16DT*	32	32	170		30.0						
1/2"	ALC25-4DT	*ALC25-22DT*	25	25	150	27.5	32.5	SA4T (3.0 Nm)	SY4T	K4T	YE4	Flush Plug G1/8"	Socket Screw M6x5
	ALC32-4DT	*ALC32-22DT*	32	32	170		30.0						
	ALC40-4DT	*ALC40-22DT*	40	40	206		35.0						

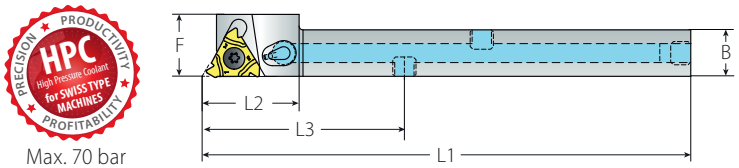


The following HPC accessories (not included) can be ordered separately:

Image	Ordering Code	Item Number
	Tube Connector 25-6	013-00941
	Angled Fitting G1_8x6	013-00947
	Straight Fitting G1_8x6	013-00942

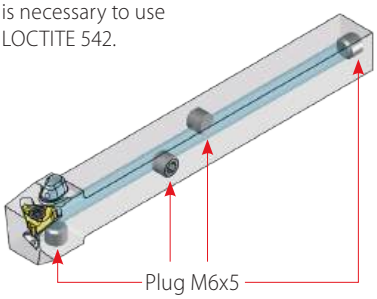
External Toolholders





Max. 70 bar

When reassembling the M6X5 plug, it is necessary to use LOCTITE 542.

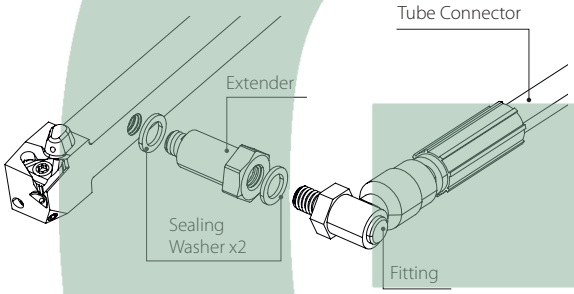


MACH TT with Coolant for Swiss Type Machines (HPC)

Spare Parts

Insert Size	Ordering Code	Market Description	Dimensions mm						Spare Parts				
IC	RH		H=H1=B	F	L1	L2	L3	H2	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Plug x 4
3/8"	ALCS12-3DT	*ALCS12-16DT*	12	16	126.5	25.4	52.5	4	SA3T (2.0 Nm)	SY3T	K3T	YE3	Plug M6x5

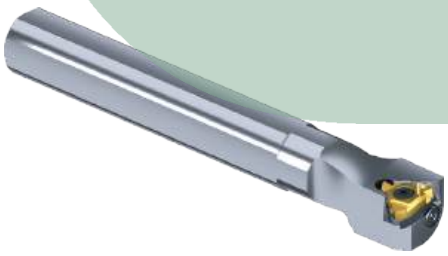
When working with Shank 12x12 the extender is necessary to connect the fitting.

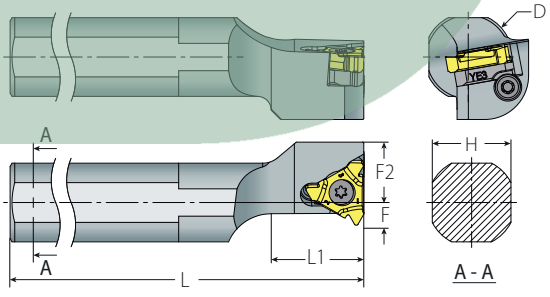


HPC accessories (not included) can be ordered separately:

Image	Ordering Code	Item Number
	Tube Connector 25-6	013-00941
	Angled Fitting M6x6	013-01011
	Straight Fitting M6x6	013-01012
	Extender M6x5	013-01096
	Sealing Washer M6	013-01097

External Toolholders with Round Shanks



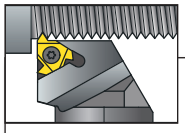


MACH TT Toolholders for Swiss Type Machines

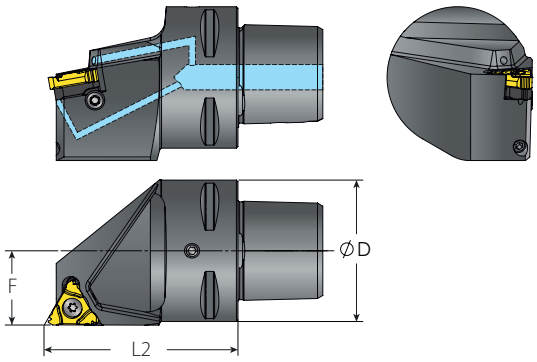
Spare Parts

Insert Size	Ordering Code	Market Description	Dimensions mm						Spare Parts			
IC	RH		H	L	L1	D	F	F2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
3/8"	ALVR075-3DT-LH	*ALVR075-16DT-LH*	17	140	20	.75 (inch)	6	13.5	SA3T	SY3T	K3T	YE3
	ALVR100-3DT-LH	*ALVR100-16DT-LH*	23			1.0 (inch)	10	16.0				
	ALVR20-3DT-LH	*ALVR20-16DT-LH*	18			20 (mm)	6	13.5				
	ALVR22-3DT-LH	*ALVR22-16DT-LH*	20			22 (mm)	6	13.5				
	ALVR25-3DT-LH	*ALVR25-16DT-LH*	23			25 (mm)	10	16.0				

External Toolholders

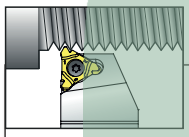


Max. 70 bar

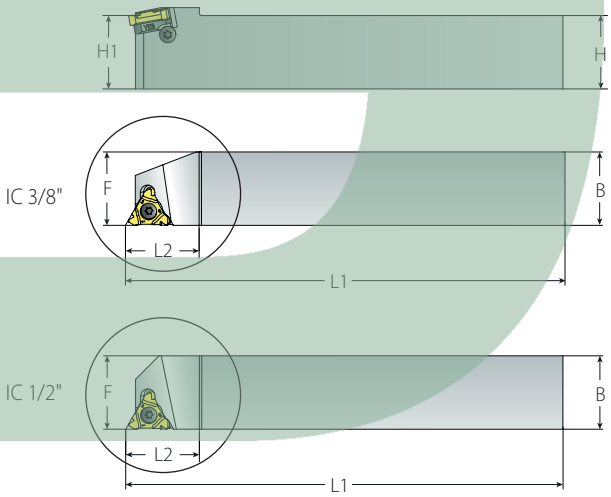


MACH TT V-CAP with Coolant (HPC)

Insert Size	Ordering Code	Market Description	Dimensions mm			Spare Parts			
IC	RH		D	F	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
3/8"	VCAP32-SER17047-3DT	*VCAP32-SER17047-16DT*	32	17	47	SA3T (2.0 Nm)	SY3T	K3T	YE3
	VCAP40-SER21055-3DT	*VCAP40-SER21055-16DT*	40	21	55				
	VCAP50-SER26065-3DT	*VCAP50-SER26065-16DT*	50	26	65				
	VCAP63-SER33075-3DT	*VCAP63-SER33075-16DT*	63	33	75				
1/2"	VCAP40-SER21055-4DT	*VCAP40-SER21055-22DT*	40	21	55	SA4T (3.0Nm)	SY4T	K4T	YE4
	VCAP50-SER26065-4DT	*VCAP50-SER26065-22DT*	50	26	65				
	VCAP63-SER33075-4DT	*VCAP63-SER33075-22DT*	63	33	75				
	VCAP80-SER42080-4DT	*VCAP80-SER42080-22DT*	80	42	80				



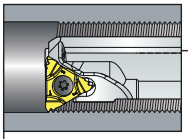
External Toolholders

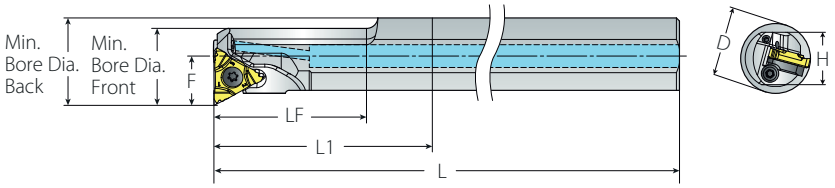


MACH TT

Insert Size	Ordering Code	Market Description	Dimensions mm				Spare Parts			
IC	RH		H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
3/8"	AL12-3DT	*AL12-16DT*	12	16	85	20.7	SA3T (2.0 Nm)	SY3T	K3T	YE3
	AL16-3DT	*AL16-16DT*	16	16	100	22.0				
	AL20-3DT	*AL20-16DT*	20	20	127	24.5				
	AL25-3DT	*AL25-16DT*	25	25	150	25.8				
	AL32-3DT	*AL32-16DT*	32	32	170	29.5				
1/2"	AL25-4DT	*AL25-22DT*	25	25	150	27.5	SA4T (3.0Nm)	SY4T	K4T	YE4
	AL32-4DT	*AL32-22DT*	32	32	168	27.5				
	AL40-4DT	*AL40-22DT*	40	40	198	27.5				

Internal Toolholders





MACH TT with Coolant (HPC)

Insert Size	Ordering Code	Market Description	Dimensions mm								Spare Parts			
IC	RH		H	L	LF	L1	D	F	Minimum Bore Ø Front	Minimum Bore Ø Back	Insert Screw*	Anvil Screw	Insert Key	Anvil
3/8"	NVRC-1617-3DT	*NVRC-1617-16DT*	15	150	27	48	16	11.7	17	20.0	SN3T	-	K3T	-
	NVRC-2020-3DT	*NVRC-2020-16DT*	18	180	40	60	20	13.7	20	24.1		-		-
	AVRC-2022-3DT	*AVRC-2022-16DT*	18	180	40	60	20	13.7	22	24.0	SA3T	SY3T		YI3
	NVRC-2022-3DT	*NVRC-2022-16DT*	18	180	40	60	20	13.7	22	24.0	SN3T	-		-
	AVRC-2526-3DT	*AVRC-2526-16DT*	23	200	40	75	25	16.1	26	29.0	SA3T	SY3T		YI3
	AVRC-3229-3DT	*AVRC-3229-16DT*	29	250	40	96	32	19.7	29	36.5				
	AVRC-3236-3DT	*AVRC-3236-16DT*	29	250	40	96	32	19.7	36	36.0				
	AVRC-4037-3DT	*AVRC-4037-16DT*	36	300	40	120	40	23.6	37	44.0				

* All insert screws max. torque 2.0 Nm

New Ordering Code System for MACH TT Internal Holders

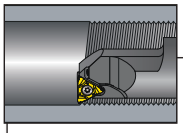
The numbers in the ordering code represent the shank diameter (D) and Minimum Bore Ø Front.

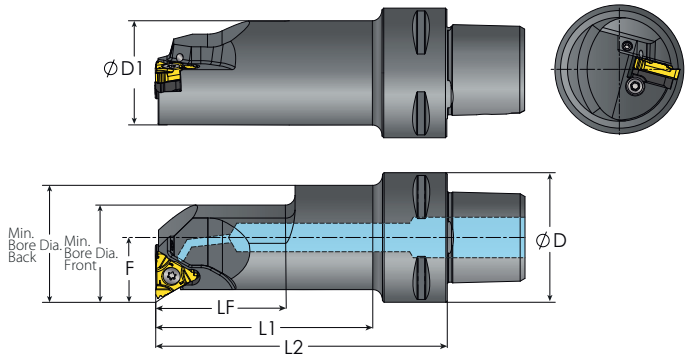
Minimum Bore Ø Front = 22 mm

For example: **AVRC – 20 22 -3DT**

D = 20 mm

Internal Toolholders



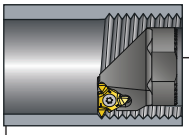


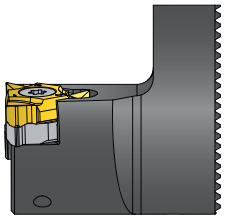
MACH TT V-CAP with Coolant (HPC)

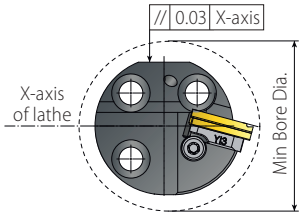
Insert Size	Ordering Code	Market Description	Dimensions mm								Spare Parts			
IC	RH		D	D1	F	L2	LF	L1	Minimum Bore Ø Front	Minimum Bore Ø Back	Insert Screw*	Anvil Screw	Insert Key	Anvil
3/8"	VCAP32-SIR12055-3DT	*VCAP32-SIR12055-16DT*	32	16.2	12	55	27	37	18.5	20.5	SN3T	-	K3T	-
	VCAP40-SIR10060-3DT	*VCAP40-SIR10060-16DT*	40	12.9	10.3	60	27	37	-	17.0	SN3TM	-		-
	VCAP40-SIR12060-3DT	*VCAP40-SIR12060-16DT*		16.2	12	60	27	37	18.5	20.5	SN3T	-		-
	VCAP40-SIR14060-3DT	*VCAP40-SIR14060-16DT*		20.6	14	60	27	37	23	25.0	SA3T	SY3T		YI3
	VCAP40-SIR17070-3DT	*VCAP40-SIR17070-16DT*		26.2	17	70	32	47	27.5	31.0				
	VCAP40-SIR20090-3DT	*VCAP40-SIR20090-16DT*		32.2	20	90	40	67	33	36.5				
	VCAP40-SIR24080-3DT	*VCAP40-SIR24080-16DT*		40.2	24	80	45	60	40	44.5				
	VCAP50-SIR12060-3DT	*VCAP50-SIR12060-16DT*	50	16.2	12	60	27	37	18.5	20.5	SN3T	-		-
	VCAP50-SIR14060-3DT	*VCAP50-SIR14060-16DT*		20.6	14	60	27	37	23	25.0	SA3T	SY3T		YI3
	VCAP50-SIR17070-3DT	*VCAP50-SIR17070-16DT*		26.2	17	70	32	47	27.5	30.5				
	VCAP50-SIR20090-3DT	*VCAP50-SIR20090-16DT*		32.2	20	90	40	67	33	36.5				
	VCAP50-SIR24105-3DT	*VCAP50-SIR24105-16DT*		40.2	24	105	45	82	40	44.5				
	VCAP63-SIR14070-3DT	*VCAP63-SIR14070-16DT*	63	20.5	14	70	27	45	23	25.0				
	VCAP63-SIR17075-3DT	*VCAP63-SIR17075-16DT*		26.2	17	75	32	50	27.5	31.0				
	VCAP63-SIR20090-3DT	*VCAP63-SIR20090-16DT*		32.2	20	90	40	65	33	36.5				
	VCAP63-SIR24105-3DT	*VCAP63-SIR24105-16DT*		40.2	24	105	45	80	40	44.5				

* All insert screws max. torque 2.0 Nm

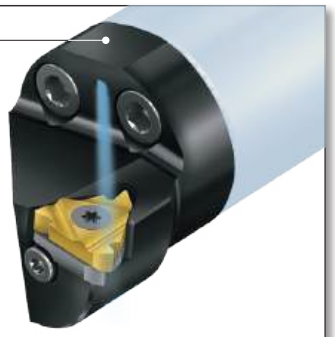
Internal Toolholders

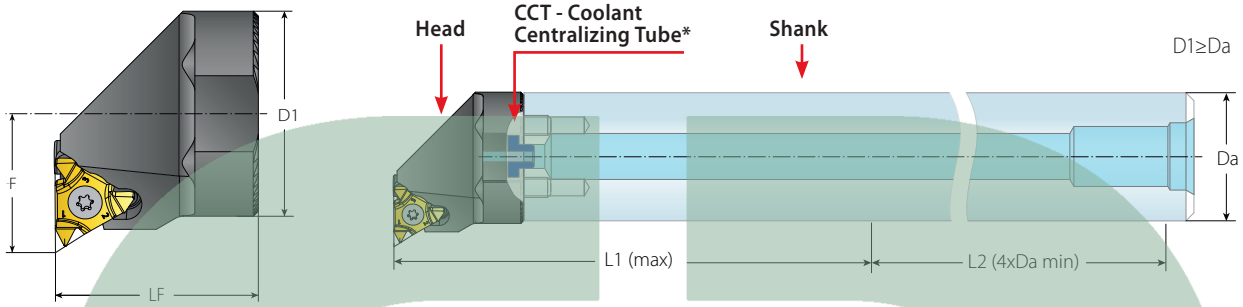






Flat surface to adjust the orientation of the shank





Shank not included

MACH TT Smooth Cut System

Insert Size	Ordering Code	Market Description	Dimensions mm							Spare Parts				
IC	RH		D1	Da mm	Da inch	F	L1 max	LF	Min. Bore Dia.	Insert Screw	Anvil Screw	Insert Key	Anvil	CCT - Coolant Centralizing Tube*
3/8"	VAS32-IR3222-3DT	*VAS32-IR3222-16DT*	32.3	32	1.25"	22	160	32.25	40	SA3T (2.0 Nm)	SY3T	K3T	YI3	CCT12
	VAS40-IR3227-3DT	*VAS40-IR3227-16DT*	40	40	1.50"	27	200	32.25	50					

* When assembling the CCT, it is recommended to use LOCTITE 648

Recommended Cutting Speeds Vc [m/min] for MACH TT

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] VK8
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	115-175
	2		Medium Carbon (C=0.25-0.55%)	150	100-165
	3		High Carbon (C=0.55-0.85%)	170	90-155
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	100-165
	5		Hardened	275	75-130
	6		Hardened	350	70-125
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	80-110
	8		Hardened	325	50-95
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	70-120
	10		High Alloy (alloying elements >5%)	225	60-110
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	70-120
	12		Hardened	330	60-105
	13	Stainless Steel Austenitic	Austenitic	180	90-130
	14		Super Austenitic	200	40-100
	15	Stainless Steel Cast Ferritic	Non Hardened	200	90-110
	16		Hardened	330	65-100
	17	Stainless Steel Cast Austenitic	Austenitic	200	85-100
	18		Hardened	330	60-100
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-70
	29		Pearlitic (long chips)	230	60-135
	30	Grey Cast Iron	Low Tensile Strength	180	70-120
	31		High Tensile Strength	260	60-105
	32	Nodular Sg Iron	Ferritic	160	125-145
	33		Pearlitic	260	90-110
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	100-325
	35		Aged	100	80-205
	36	Aluminum Alloys	Cast	75	200-370
	37		Cast & Aged	90	200-260
	38	Aluminum Alloys	Cast Si 13-22%	130	60-165
	39	Copper and Copper Alloys	Brass	90	80-210
	40		Bronze And Non Leaded Copper	100	80-235
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	45-60
	20		Aged (iron based)	280	30-50
	21		Annealed (nickel or cobalt based)	250	20-30
	22		Aged (nickel or cobalt based)	350	15-25
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	140-160
	24		α+β Alloys	1050Rm	50-70
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	45-60
	26			51-55HRc	40-50

Grade	Application	Sample
VK8	High wear resistance for general purpose applications. AlTiN+TiN PVD Coating	

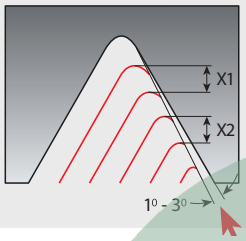
Number of Passes for MACH TT

Pitch	mm	0.70	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
	TPI	36	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4
No. of passes - MACH TT *		**2-4**	**2-4**	**2-4**	**3-4**	**3-4**	**4-6**	**4-6**	**5-7**	**5-7**	**6-8**	**6-8**	**7-9**	**8-10**	**9-12**	**11-14**
In comparison (for your reference): No. of passes for Standard tools		*(4-7)*	*(4-7)*	*(4-8)*	*(5-9)*	*(6-10)*	*(7-12)*	*(7-12)*	*(8-14)*	*(9-16)*	*(10-18)*	*(11-18)*	*(11-19)*	*(12-20)*	*(12-20)*	*(12-20)*

* For **internal** threading an additional pass is required.

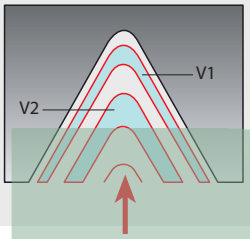
Infeed Methods and Type of Passes

MACH TT **3/8"** EX & IN Tools - **Flank Infeed method**



1. Use the flank infeed method (modified) with 1º - 3º.
2. Use the constant depth type of passes. X1 = X2

MACH TT **1/2"** EX Tools - **Radial Infeed method**

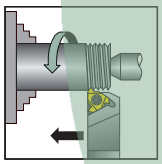


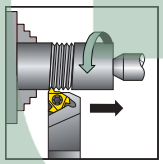
1. Use the Radial Infeed method.
2. Use the constant volume type of passes. V1 = V2

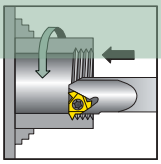
Thread Turning Methods for Symmetrical Inserts

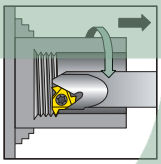
Thread	Inserts & Toolholder	Rotation	Feed Direction	Helix Method	Drawing
Right Hand External	EX RH	Counterclockwise	Towards chuck	Regular	1
Left Hand External	EX RH	Counterclockwise	From chuck	Reversed	6
Right Hand Internal	IN RH	Counterclockwise	Towards chuck	Regular	3
Left Hand Internal	IN RH	Clockwise	From chuck	Reversed	8

MACH TT tools are designed for Right Hand applications, but can also be used for Left Hand threads.


External RH (1)


External LH (6)


Internal RH (3)


Internal LH (8)

Anvils

	Resultant Helix Angle			2.5°	1.5°	0.5°
	Insert Size		Holder	Ordering Code		
	IC	L mm				
	3/8"	16	ER	YE3-1P	YE3	YE3-1N
	1/2"	22	ER	YE4-1P	YE4	YE4-1N
	3/8"	16	IR	YI3-1P	YI3	YI3-1N

Insert & Toolholder Combinations

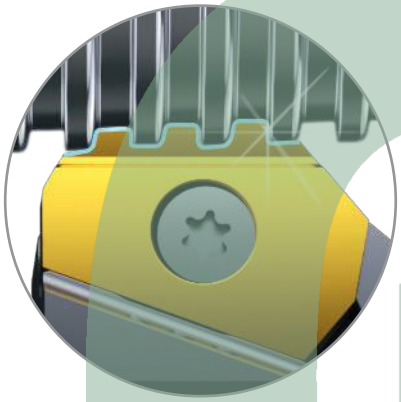
| MACH TT Insert is suitable with MACH inserts only
| Standard toolholders can be used with MACH inserts **but is less recommended**

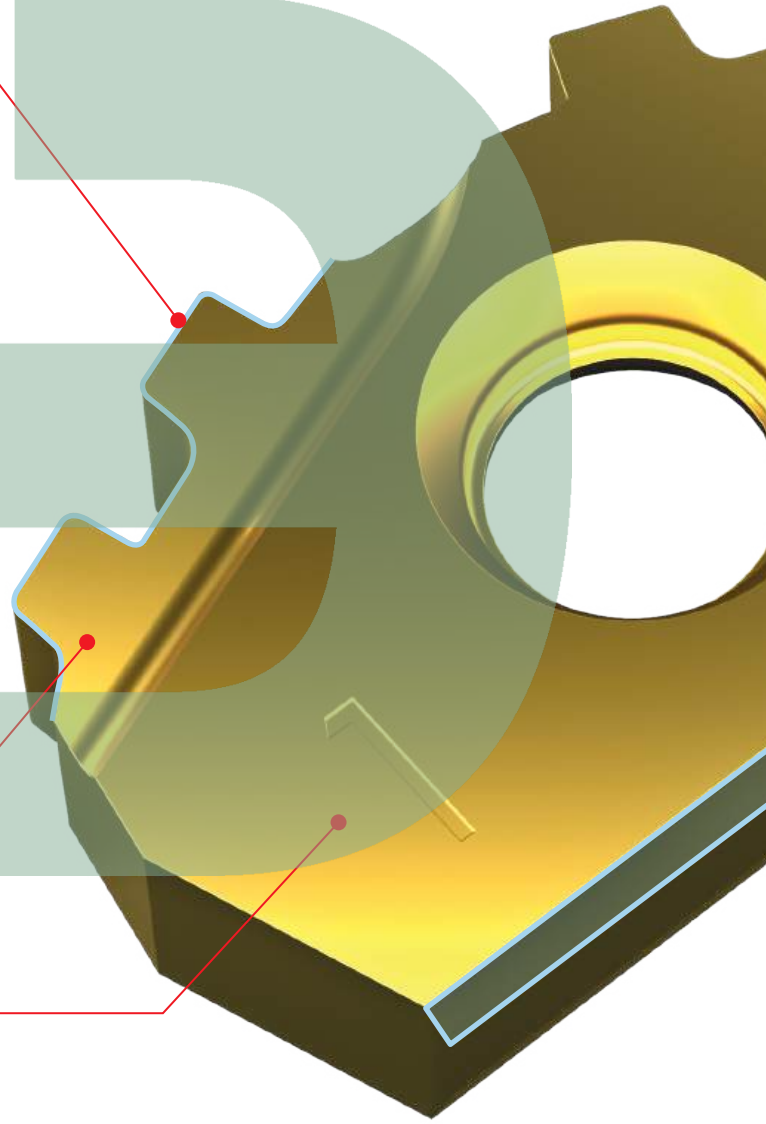
	MACH TT Insert	Standard Insert
MACH TT Holder	✔✔✔	✖
Standard Holder	✔✔	✔

Features and Innovations

Improved Profile Design

Superior threading surface finish





Improved Rake & Reinforced Geometry

For high resistance with a reduced number of passes

Versatile System

One holder can use either single-sided or double-sided inserts

25D
(double-sided)

25S
(single-sided)

UNMATCHED PRODUCTIVITY

Advanced Surface Treatment

Reinforced cutting edge and smooth surface finish

Advantages

- Decreased Number of Passes
- Reduced Machining Time
- Longer Tool Life

VK8 Grade

High wear resistance for general purpose applications

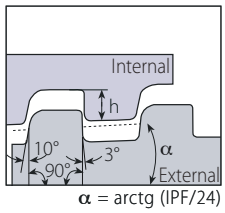
AlTiN + TiN PVD coating

Vargus Dovetail Clamping System

Super rigid - designed for high loads

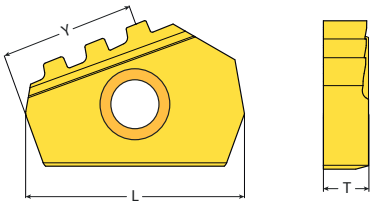
API Buttress Casing

External

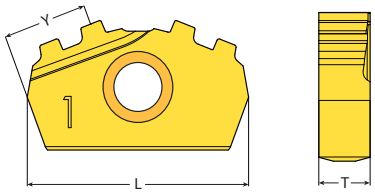


α = arctg (IPF/24)

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



25S



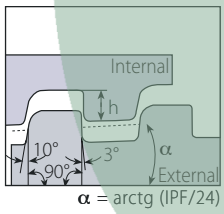
25D

External

Insert Style	Insert Size	Pitch		Teeth	Ordering Code	Size	Dimensions mm			Anvil	
	L mm	TPI	IPF		RH		h min	Y	T	RH	Toolholder
25S	25	5	0.75	3	25SER5BUT75-3TH...	4 1/2"- 13 3/8"	1.55	15.2	5	YE25M	ALC..-25DT
		5	1	3	25SER5BUT1-3TH...	16" - 20"	1.55	15.2			
25D		5	0.75	2	25DER5BUT75-2TH...	4 1/2"- 13 3/8"	1.55	9.5			
		5	1	2	25DER5BUT1-2TH...	16" - 20"	1.55	9.7			

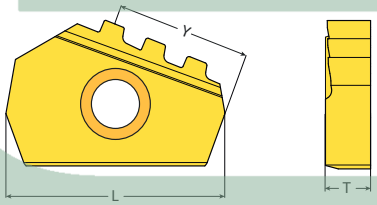
API Buttress Casing

Internal

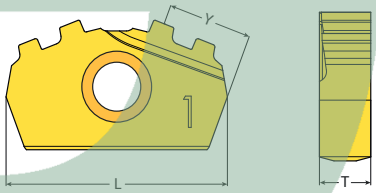


α = arctg (IPF/24)

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



25S



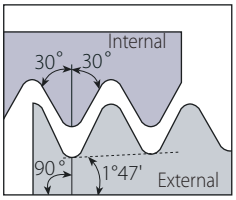
25D

Internal

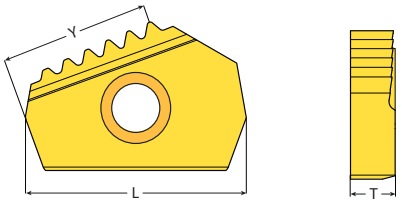
Insert Style	Insert Size	Pitch		Teeth	Ordering Code	Size	Dimensions mm			Anvil	
	L mm	TPI	IPF		RH		h min	Y	T	RH	Toolholder
25S	25	5	0.75	3	25SIR5BUT75-3TH...	4 1/2"- 13 3/8"	1.55	15.2	5	YI25M	AVRC..-25DT
		5	1	3	25SIR5BUT1-3TH...	16" - 20"	1.55	15.8			
25D		5	0.75	2	25DIR5BUT75-2TH...	4 1/2"- 13 3/8"	1.55	9.9			
		5	1	2	25DIR5BUT1-2TH...	16" - 20"	1.55	9.7			

API Round Casing & Tubing

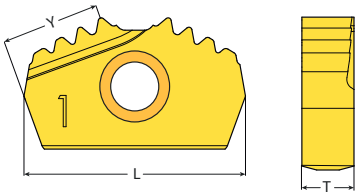
External



Defined by: API SPEC. 5B
Tolerance class: Standard API RD



25S



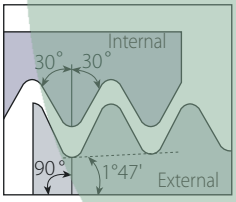
25D

External

Insert Style	Insert Size L mm	Pitch TPI	Teeth	Ordering Code RH	Dimensions mm h min	Y	T	Anvil RH	Toolholder
25S	25	10	4	25SER10APIRD-4TH...	1.41	11	5	YE25M	ALC..-25DT
		10	6	25SER10APIRD-6TH...	1.41	16.7			
		8	5	25SER8APIRD-5TH...	1.81	16.8			
25D		10	3	25DER10APIRD-3TH...	1.41	8.5			
		10	4	25DER10APIRD-4TH...	1.41	11.0			
		8	3	25DER8APIRD-3TH...	1.81	10.0			

API Round Casing & Tubing

Internal



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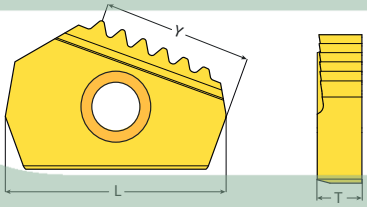
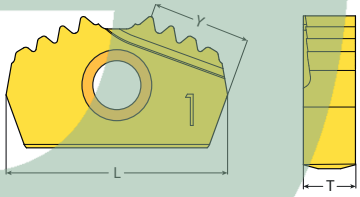


25S



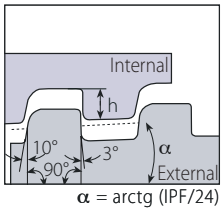
25D

Internal

Insert Style	Insert Size L mm	Pitch TPI	Teeth	Ordering Code RH	Dimensions mm h min	Y	T	Anvil RH	Toolholder
25S	25	10	6	25SIR10APIRD-6TH...	1.41	16.5	5	YI25M	AVRC..-25DT
		10	4	25SIR10APIRD-4TH...	1.41	11.0			
		8	5	25SIR8APIRD-5TH...	1.81	16.2			
		8	4	25SIR8APIRD-4TH...	1.81	13.5			
25D		10	4	25DIR10APIRD-4TH...	1.41	11.0			
		10	3	25DIR10APIRD-3TH...	1.41	8.5			
		8	3	25DIR8APIRD-3TH...	1.81	8.5			

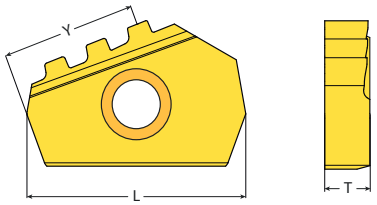
GOST (OTTM / OTTG)

External



α = arctg (IPF/24)

Defined by: Standard
Tolerance class: 632-80



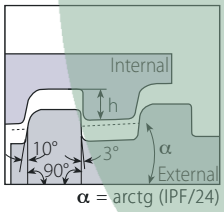
25S

External

Insert Style	Insert Size	Pitch	Teeth		Ordering Code	Dimensions mm			Anvil	
	L mm	TPI		IPF	RH	h min	Y	T	RH	Toolholder
25S	25	5	3	0.75	25SER5OTTM-3TH...	1.6	15.7	5	YE25M	ALC..-25DT

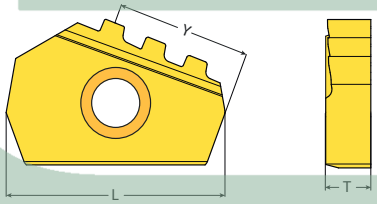
GOST (OTTM / OTTG)

Internal

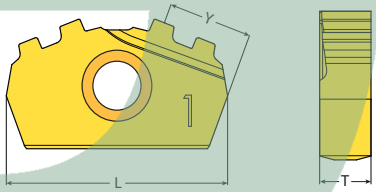


α = arctg (IPF/24)

Defined by: Standard
Tolerance class: 632-80



25S

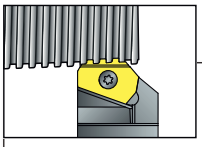


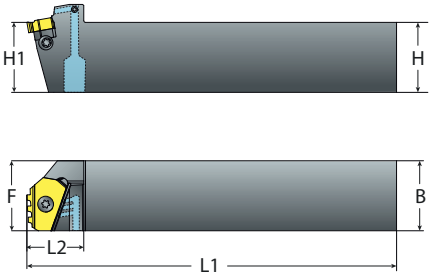
25D

Internal

Insert Style	Insert Size	Pitch		Teeth	Ordering Code	Dimensions mm			Anvil	
	L mm	TPI	IPF		RH	h min	Y	T	RH	Toolholder
25S	25	5	0.75	3	25SIR5OTTM-3TH...	1.6	14.3	5	YI25M	ALC..-25DT
25D				2	25DIR5OTTM-2TH...	1.6	9.5			

External Toolholders



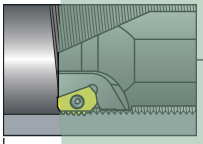


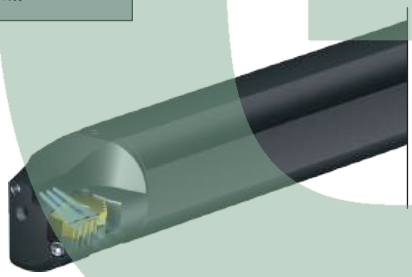
MACH 25* with Coolant

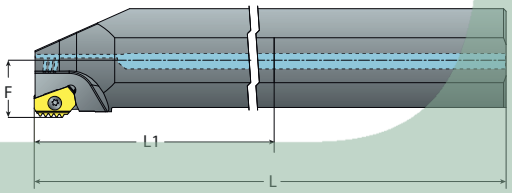
Insert Size	Ordering Code	Dimensions mm				Spare Parts			
	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
25	ALC25-25DT	25	30	150	26	SA4T	SY25TW	K6T	YE25M
	ALC32-25DT	32	32	170					
	ALC40-25DT	40	40	200					

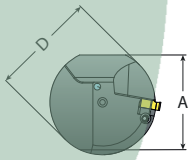
* All MACH 25 style toolholders have a 0° helix angle

Internal Toolholders









MACH 25* with Coolant

Insert Size	Ordering Code	Dimensions mm						Spare Parts			
	RH	A	L	L1 max	D	F	Minimum Bore Ø	Insert Screw	Anvil Screw	Torx Key	Anvil
25	AVRC40-25DT	36	300	160	40	23.3	60	SA4T	SY25TW	K6T	YI25M
	AVRC50-25DT	45	350	200	50	28.3	70				
	AVRC60-25DT	54	400	240	60	33.3	80				

* All MACH 25 style toolholders have a 0° helix angle

Recommended Cutting Speeds Vc [m/min] for MACH 25

VARGUS GENius™ Tool Selector and CNC Program Generator

MACH 25

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] VK8
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	115-175
	2		Medium Carbon (C=0.25-0.55%)	150	100-165
	3		High Carbon (C=0.55-0.85%)	170	90-155
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	100-165
	5		Hardened	275	75-130
	6		Hardened	350	70-125
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	80-110
	8		Hardened	325	50-95
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	70-120
	10		High Alloy (alloying elements >5%)	225	60-110
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	70-120
	12		Hardened	330	60-105
	13	Stainless Steel Austenitic	Austenitic	180	90-130
	14		Super Austenitic	200	40-100
	15	Stainless Steel Cast Ferritic	Non Hardened	200	90-110
	16		Hardened	330	65-100
	17	Stainless Steel Cast Austenitic	Austenitic	200	85-100
	18		Hardened	330	60-100
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-70
	29		Pearlitic (long chips)	230	60-135
	30	Grey Cast Iron	Low Tensile Strength	180	70-120
	31		High Tensile Strength	260	60-105
	32	Nodular Sg Iron	Ferritic	160	125-145
	33		Pearlitic	260	90-110
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	100-325
	35		Aged	100	80-205
	36	Aluminum Alloys	Cast	75	200-370
	37		Cast & Aged	90	200-260
	38	Aluminum Alloys	Cast Si 13-22%	130	60-165
	39	Copper and Copper Alloys	Brass	90	80-210
	40		Bronze And Non Leaded Copper	100	80-235
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	45-60
	20		Aged (iron based)	280	30-50
	21		Annealed (nickel or cobalt based)	250	20-30
	22		Aged (nickel or cobalt based)	350	15-25
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	140-160
	24		α+β Alloys	1050Rm	50-70
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	45-60
	26			51-55HRc	40-50

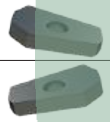
Grade	Application	Sample
VK8	High wear resistance for general purpose applications. AlTiN+TiN PVD Coating	

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	0.60	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

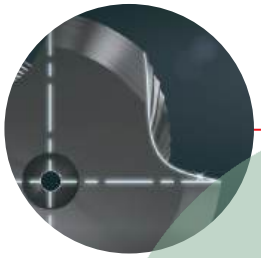
Anvils



Resultant Helix Angle			0°
Insert Size		Holder	Ordering Code
IC	L mm		
25S/25D	25	ER	YE25M
25S/25D	25	IR	YI25M

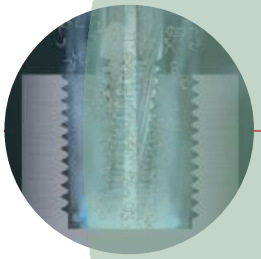
MACH TM Supersonic Thread Milling

Features and Innovations



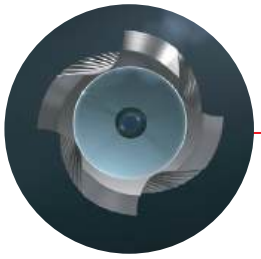
Improved Cutting Edge & Reinforced Geometry

For high loads



Coolant Thru

For better chip flow and surface finish



Large Core Diameter

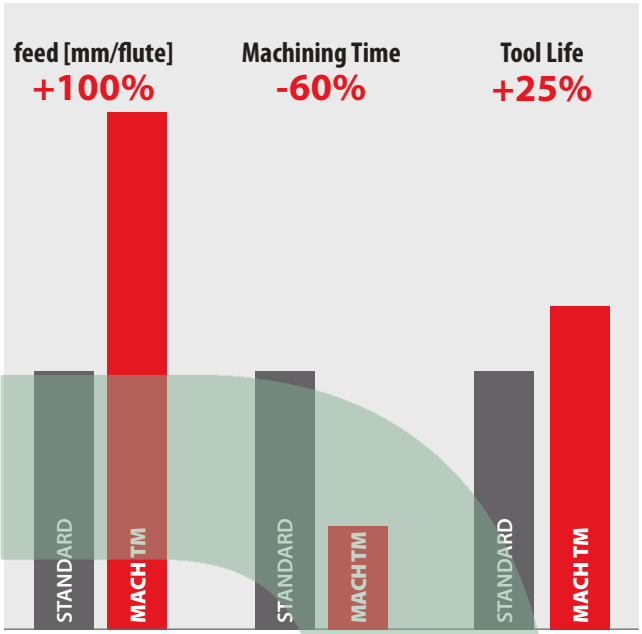
For increased stability

Additional Flutes

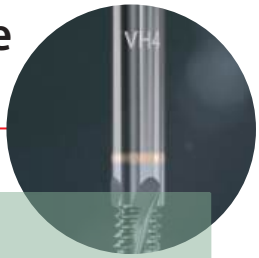
For higher feed rate

HIGH feed mm/flute MACH TM

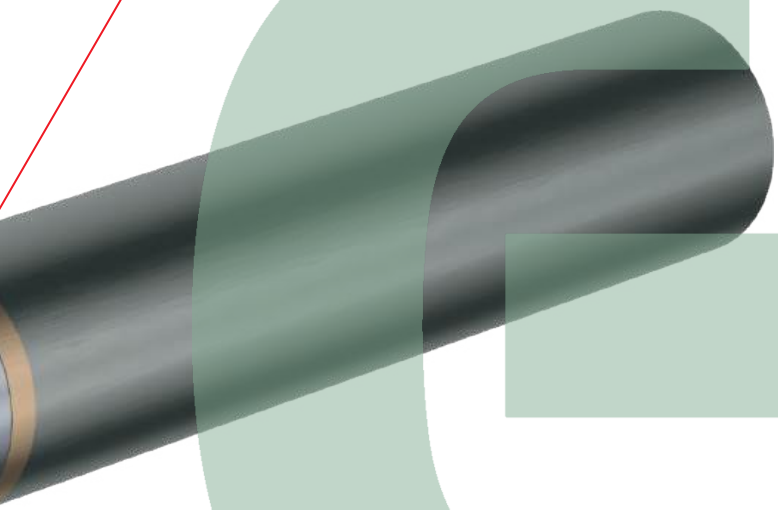
UNMATCHED PRODUCTIVITY



New Innovative VH4 Grade



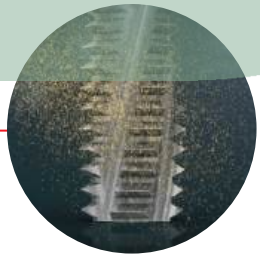
High wear resistance for general purpose applications - TiCN PVD Coating



Advantages

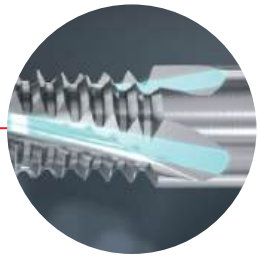
- High feed mm/flute
- Dramatically decreases machining time
- Extended tool life
- Excellent surface finish

Advanced Surface Treatment



Reinforced cutting edge and improved surface finish

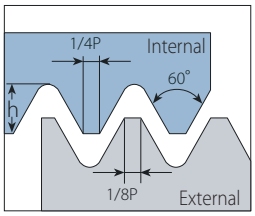
Optimal Flute Length



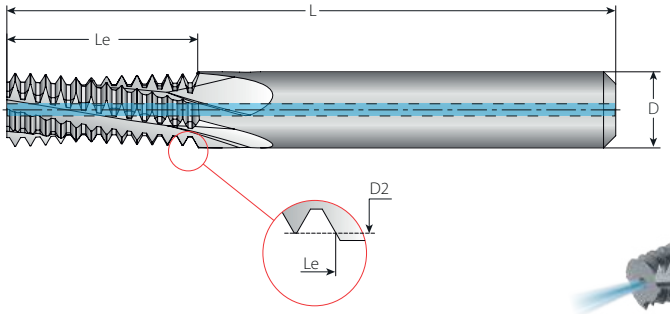
For higher rigidity and efficient chip evacuation

ISO Metric

Internal



Defined by: DIN 13
Tolerance class: 6H



Helical Flutes with Thru-Hole Coolant

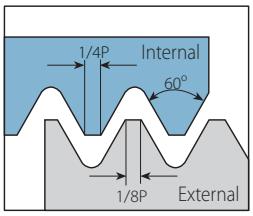
2 x Do (Le ≤ 2 x Thread Diameter)

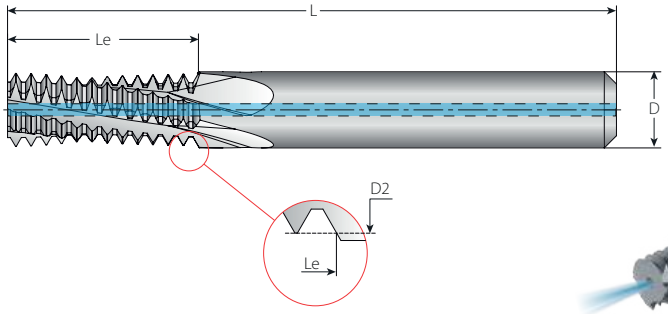
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.**
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HCF03024L06-I0.50ISOTM4	3	2.4	28.0	6.2	4	12	2.5
	M4x0.5	0.5	HCF03029L08-I0.50ISOTM4...	3	2.9	28.0	8.2	4	16	3.5
M4x0.7		0.7	HCF03029L08-I0.70ISOTM4...	3	2.9	30.0	8.7	4	12	3.3
	M6x0.75	0.75	HCF05049L12-I0.75ISOTM4...	5	4.9	40.0	12.4	4	16	5.3
M5x0.8		0.8	HCF04039L10-I0.80ISOTM4...	4	3.9	35.0	10.8	4	13	4.2
M6x1.0	M8-M40x1.0	1.0	HCF05048L12-I1.00ISOTM4...	5	4.8	41.0	12.5	4	12	5.0
M8x1.25		1.25	HCF06059L16-I1.25ISOTM4...	6	5.9	61.0	16.9	4	13	6.8
M10x1.5	M12-M48x1.5	1.5	HCF08079L20-I1.50ISOTM4...	8	7.9	64.0	20.2	4	13	8.5
M12x1.75		1.75	HCF10099L25-I1.75ISOTM5...	10	9.9	73.0	25.4	5	14	10.2
M14x2.0	M17-M80x2.0	2.0	HCF12116L29-I2.00ISOTM5...	12	11.6	80.0	29.0	5	14	12.0
M16x2.0	M17-M80x2.0	2.0	HCF12119L33-I2.00ISOTM5...	12	11.9	92.0	33.0	5	16	14.0
M20x2.5		2.5	HCF16159L41-I2.50ISOTM5...	16	15.9	102.0	41.2	5	16	17.5

** Bore diameter applies to smallest thread dia.

American UN

Internal





Defined by: ANSI B1.1
Tolerance class: 2B

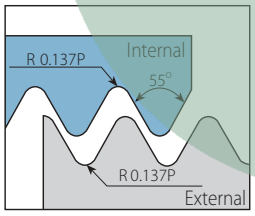
Helical Flutes with Thru-Hole Coolant

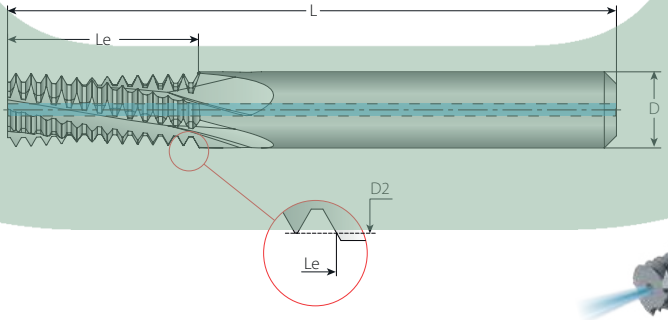
2 x Do (Le ≤ 2 x Thread Diameter)

Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.**
UNC	UNF	UNEF	TPI	Internal	D	D2	L	Le	Z	Zt	mm
	1/4"x28	7/16"-1/2"x28	28	HCF05049L13-I28UNTM4...	5	4.90	40	13.1	4	14	5.5
	5/16"; 3/8"x24	9/16"-11/16"x24	24	HCF06059L16-I24UNTM4...	6	5.90	59	16.4	4	15	6.8
	3/8"x24	9/16"-11/16"x24	24	HCF08079L19-I24UNTM4...	8	7.90	62	19.6	4	18	8.5
1/4"-20	7/16"; 1/2"x20	3/4"-1"x20	20	HCF05049L13-I20UNTM4...	5	4.90	41	13.3	4	10	5.2
	7/16",1/2"x20	3/4"-1"x20	20	HCF10096L22-I20UNTM4...	10	9.60	72	22.2	4	17	9.8
5/16"x18	9/16"; 5/8"x18	11/16"-1 11/16"x18	18	HCF06059L16-I18UNTM4...	6	5.90	59	16.2	4	11	6.5
3/8"x16	3/4"x16		16	HCF08076L19-I16UNTM4...	8	7.60	64	19.8	4	12	8.0
7/16"x14	7/8"x14		14	HCF08078L22-I14UNTM4...	8	7.80	67	22.7	4	12	9.3
1/2"x13			13	HCF10099L26-I13UNTM5...	10	9.90	75	26.4	5	13	10.8
9/16"x12	1"-1 1/2"x12		12	HCF12118L28-I12UNTM5...	12	11.80	83	28.6	5	13	12.3
5/8"x11			11	HCF14131L33-I11UNTM5...	14	13.10	90	33.5	5	14	13.5
3/4"x10			10	HCF16159L39-I10UNTM5...	16	15.90	98	39.4	5	15	16.5
1x8"			8	HCF20199L52-I8UNTM5...	20	19.90	107	52.4	5	16	22.0

BSP

External / Internal





Defined by: ISO228/1:1982
Tolerance class: Medium class

Helical Flutes with Thru-Hole Coolant

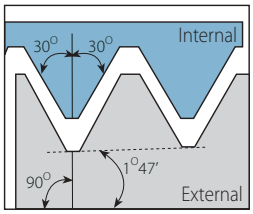
2 x Do (Le ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/8"x28	28	HCF08079L19-EI28BSPTM4...	8	7.90	62	19.5	4	21	8.7
1/4"x19, 3/8"x19	19	HCF10099L27-EI19BSPTM5...	10	9.90	75	27.4	5	20	11.8, 15.2
1/2"x14, 3/4"x14	14	HCF16159L42-EI14BSPTM5...	16	15.90	99	42.6	5	23	19.0, 24.4

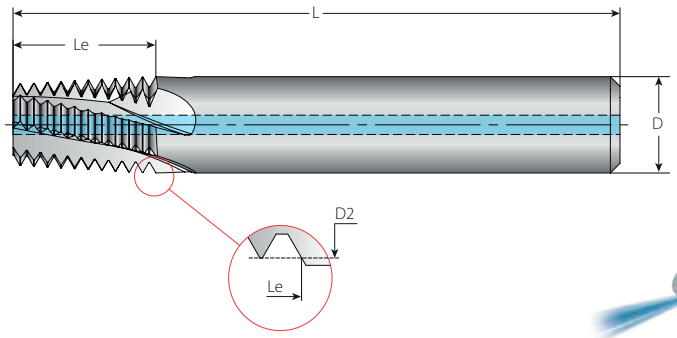
** Bore diameter applies to smallest thread dia.

NPT

External / Internal



Defined by: ANSI B.120.1-1983
Tolerance class: Standard NPT



Helical Flutes with Thru-Hole Coolant

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	HCF06059L09-EI27NPT-TM4...	6	5.90	53	9.9	4	10	6.3
1/8"x27	27	HCF08076L09-EI27NPT-TM4...	8	7.65	53	9.9	4	10	8.5
1/4"x18, 3/8"x18	18	HCF10099L14-EI18NPT-TM4...	10	9.90	63	14.8	4	10	11.1, 14.5
1/2"; 3/4"x14	14	HCF14139L19-EI14NPT-TM5...	14	13.90	75	19.0	5	10	17.7, 23.0
1", 1 1/4", 1 1/2", 2", x11.5	11.5	HCF18179L23-EI11.5NPT-TM5...	18	17.90	80	23.2	5	10	29.0, 37.7, 44.0, 56.0

Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth] for MACH TM

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]	Feed f [mm/tooth]		
					VH4	D2≤4 mm	D2≤8 mm	D2>8 mm
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	80-250	0.04-0.08	0.09-0.13	0.06-0.20
	2		Medium Carbon (C=0.25-0.55%)	150	80-230	0.04-0.08	0.09-0.13	0.06-0.20
	3		High Carbon (C=0.55-0.85%)	170	80-200	0.04-0.08	0.09-0.13	0.06-0.20
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	60-180	0.04-0.08	0.09-0.13	0.06-0.20
	5		Hardened	275	60-170	0.04-0.08	0.09-0.13	0.06-0.20
	6		Hardened	350	60-160	0.03-0.06	0.05-0.10	0.06-0.12
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	40-100	0.04-0.08	0.09-0.13	0.06-0.20
	8		Hardened	325	30-80	0.03-0.06	0.05-0.10	0.06-0.12
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	80-250	0.04-0.08	0.09-0.13	0.06-0.20
	10		High Alloy (alloying elements >5%)	225	60-170	0.04-0.08	0.09-0.13	0.06-0.20
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	60-150	0.03-0.06	0.05-0.10	0.06-0.12
	12		Hardened	330	60-120	0.015-0.03	0.03-0.05	0.02-0.06
	13	Stainless Steel Austenitic	Austenitic	180	60-140	0.04-0.08	0.09-0.13	0.06-0.20
	14		Super Austenitic	200	60-130	0.03-0.06	0.05-0.10	0.06-0.12
	15	Stainless Steel Cast Ferritic	Non Hardened	200	60-160	0.03-0.06	0.05-0.10	0.06-0.12
	16		Hardened	330	60-110	0.03-0.06	0.05-0.10	0.06-0.12
	17	Stainless Steel Cast Austenitic	Austenitic	200	60-150	0.03-0.05	0.05-0.10	0.05-0.11
	18		Hardened	330	60-100	0.015-0.03	0.03-0.05	0.02-0.06
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-70	0.04-0.08	0.09-0.13	0.06-0.20
	29		Pearlitic (long chips)	230	60-150	0.04-0.08	0.09-0.13	0.06-0.20
	30	Grey Cast Iron	Low Tensile Strength	180	70-160	0.04-0.08	0.09-0.13	0.06-0.20
	31		High Tensile Strength	260	40-120	0.03-0.06	0.05-0.10	0.06-0.12
	32	Nodular Sg Iron	Ferritic	160	40-110	0.04-0.08	0.09-0.13	0.06-0.20
	33		Pearlitic	260	40-100	0.03-0.06	0.05-0.10	0.06-0.12
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	200-300	0.06-0.11	0.10-0.17	0.09-0.20
	35		Aged	100	150-250	0.03-0.09	0.05-0.12	0.05-0.14
	36	Aluminum Alloys	Cast	75	100-200	0.06-0.11	0.10-0.17	0.09-0.20
	37		Cast & Aged	90	120-220	0.03-0.09	0.05-0.12	0.05-0.14
	38	Aluminum Alloys	Cast Si 13-22%	130	200-300	0.06-0.11	0.10-0.17	0.09-0.20
	39	Copper and Copper Alloys	Brass	90	200-300	0.06-0.11	0.10-0.17	0.09-0.20
	40		Bronze And Non Leaded Copper	100	150-250	0.03-0.09	0.05-0.12	0.05-0.14
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	30-60	0.03-0.06	0.05-0.10	0.06-0.12
	20		Aged (iron based)	280	20-50	0.015-0.03	0.03-0.05	0.02-0.06
	21		Annealed (nickel or cobalt based)	250	15-35	0.015-0.03	0.03-0.05	0.02-0.06
	22		Aged (nickel or cobalt based)	350	15-30	0.015-0.03	0.03-0.05	0.02-0.06
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	40-80	0.015-0.03	0.03-0.05	0.02-0.06
	24		α+β Alloys	1050Rm	20-50	0.015-0.03	0.03-0.05	0.02-0.06

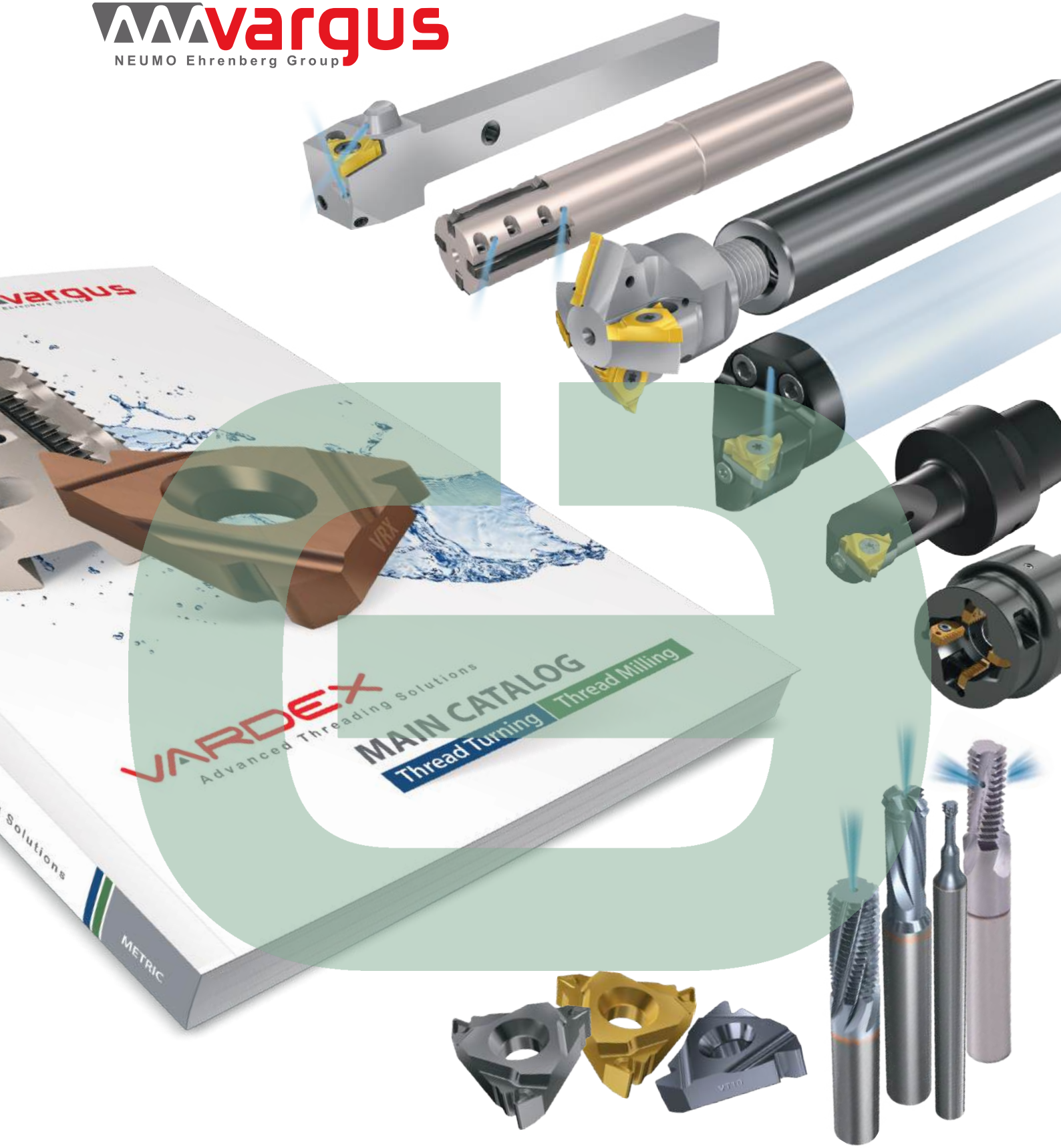
Pitch		No. of Passes
mm	TPI	
≤1.75	≥14	1
≥1.75-2.0	≤14-12	2
≥2.0	≤12	Multi-passes

VARGUS GENius™ Tool Selector and CNC Program Generator

Grade	Application	Sample
VH4	High wear resistance for general purpose applications. TiCN PVD Coating	

When using the higher feed of the range [mm/tooth], we recommend increasing the depth of the pre-drilled hole by 2-3 pitches.

vargus
NEUMO Ehrenberg Group



VARDEX

Advanced Threading Solutions

MAIN CATALOG **SUPPLEMENT**

METRIC

VARDEX
Advanced Threading Solutions

MAIN CATALOG **SUPPLEMENT**

THREAD TURNING

VT-10 Grade
Multipurpose Grade for a Wide Range of Materials S-3

FS-LINE
Fully Sintered Inserts S-5

ALCS
External Toolholders for Swiss Type Machines with High Pressure Coolant S-9

ALCN
External Toolholders with High Pressure Coolant S-12

ALC
External Thread Turning Holders for Oil & Gas with High Pressure Coolant S-14

V-CAP
Internal & External Toolholders for IC1/2" (22) S-17

SMOOTH CUT
Modular Toolholder Heads for Anti-Vibration Shanks S-20

THREAD MILLING

BELL SHAPE Holder
High Productivity System for External Thread Milling Applications S-22

TM Solid MilliPro for Extra-long Threads
4xDo & 5xDo S-24

TM Solid MilliPro and Helical Expansions
MilliPro: ISO, UN, BSP (G) | Helical: ISO S-27

TMSD Modular
Modular Toolholder Heads for the TMSD Line S-30

MiTM Offset
Fast Machining for Large Pitches in Deep Holes S-34

TM Solid MultiFlute
Increased Number of Flutes for Faster Machining S-40

VARGUS GENius™
Thread Milling CNC Program Generator with Multiple Passes S-43

TM Solid TMDR
Drilling, Thread Milling & Chamfering - Expansion: ISO, BSP (G), NPT, BSPT S-44

TM Solid HCR
Helical Flutes with Radial Coolant - Expansion: ISO, UN, BSP (G), NPT, BSPT, UNJ S-49

TM Solid MilliPro Dental
Reinforced Miniature Thread Mills for Dental Implants S-54

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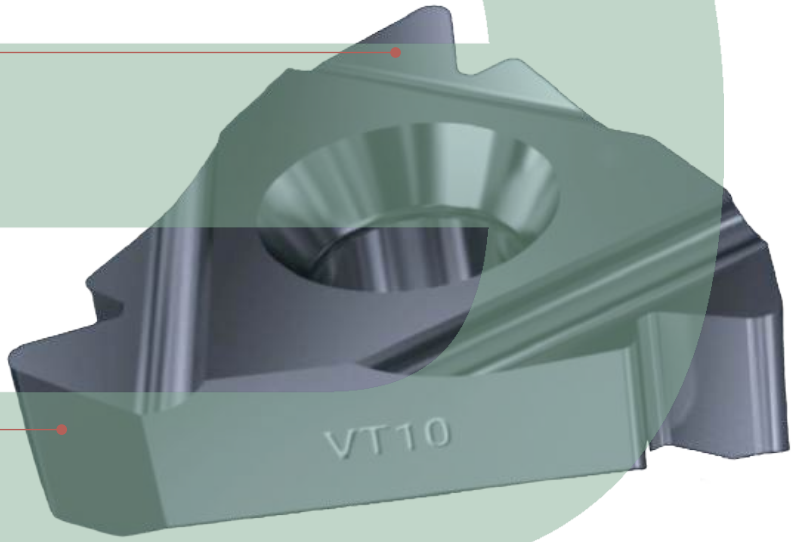
Thread Turning

New Innovative Surface Treatment



New Grade

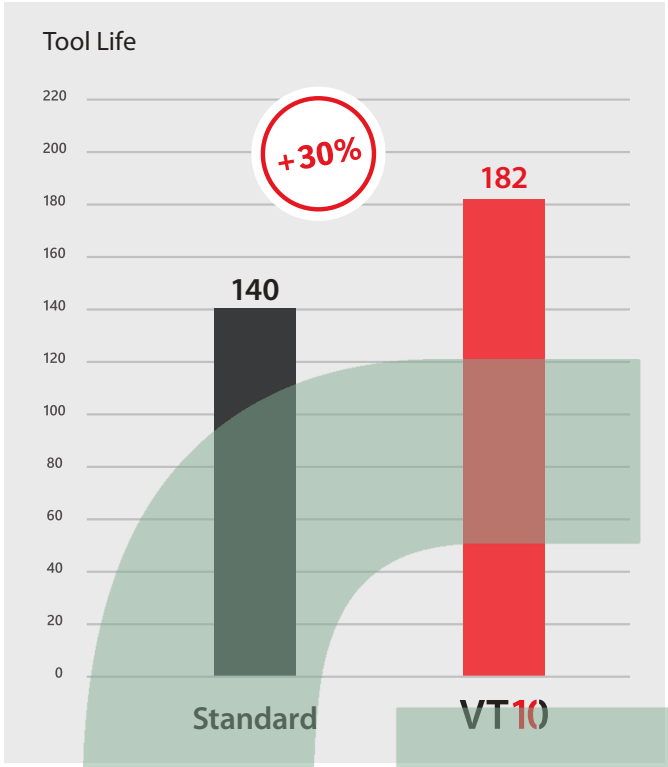
Features and Benefits:

- **Multipurpose grade** for a wide range of materials
- High consistency
- Especially effective in unstable cutting conditions
- Available for all standard laydown inserts (EX & IN) in size IC 3/8" (16)*
- Any standard laydown IC3/8" insert, which is available in the Vardex Main Catalog can be ordered.

* MACH TT, FS-Line, and SCB inserts are not available in VT10 grade.

Case Study Results

1 VT10 Performance Report with Steel



Material: SAE 4140 P Steel
Application: M30x1.5x40

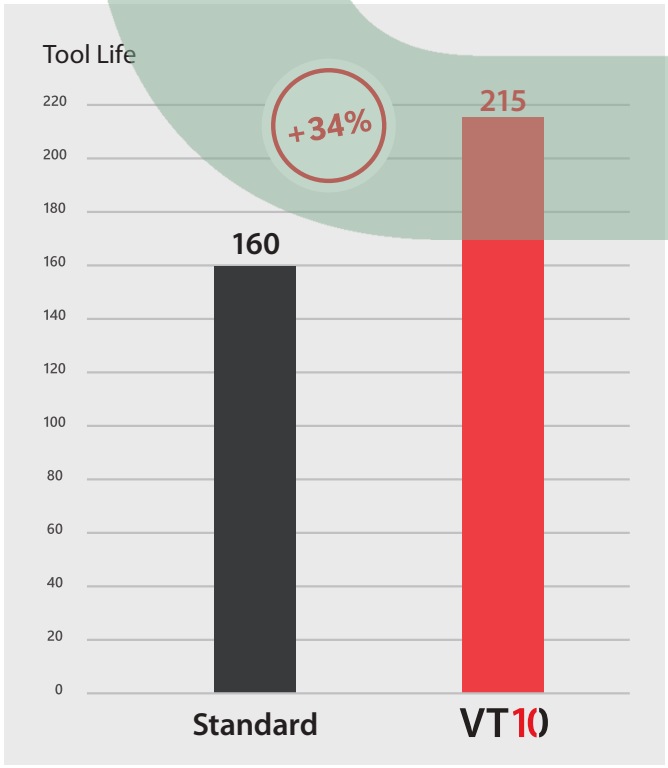
Cutting Data

Vc [m/min]: 130
No. of Passes: 8
Infeed Method: Modified Flank
Type of Pass: Constant Depth

Tool Life (threads per corner):

VT10: 182
Standard: 140

2 VT10 Performance Report with Stainless Steel



Material: 316L M Stainless Steel
Application: M30x1.5x40

Cutting Data

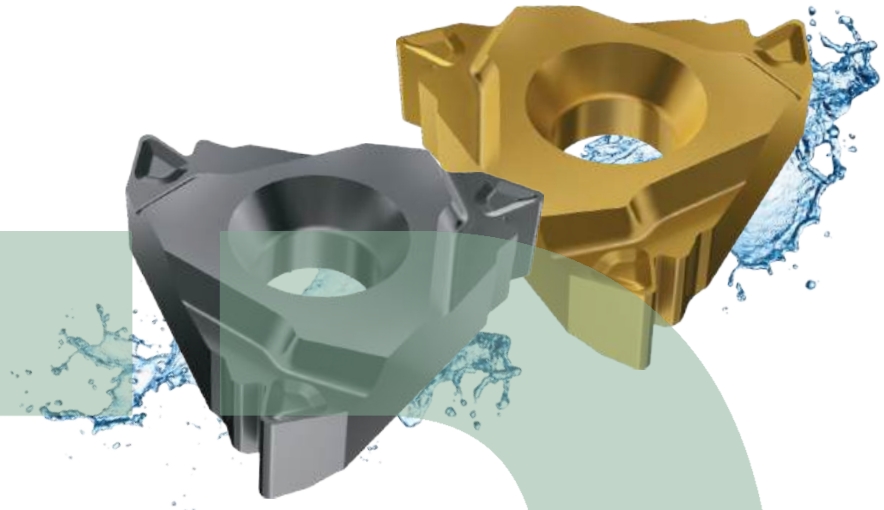
Vc [m/min]: 120
No. of Passes: 7
Infeed Method: Modified Flank
Type of Pass: Constant Volume

Tool Life (threads per corner):

VT10: 215
Standard: 160

FS LINE

Fully Sintered Inserts



Features and Benefits:

- Economical solution for all industries
- The program offers 62 of the most popular profiles for external and internal inserts
- IC range: 1/4" (11), 3/8" (16), 1/2" (22)
- Threading standards: Partial Profile 60°, Partial Profile 55°, ISO Metric, American UN, Whitworth, NPT & API Round
- FS Line inserts are suitable with all standard Thread Turning Holders

Grades:

- **FSK Grade** - TiN coated, recommended for steel and general use
- **FST Grade** - TiAlN coated, for stainless steel and general use

Ordering Code:

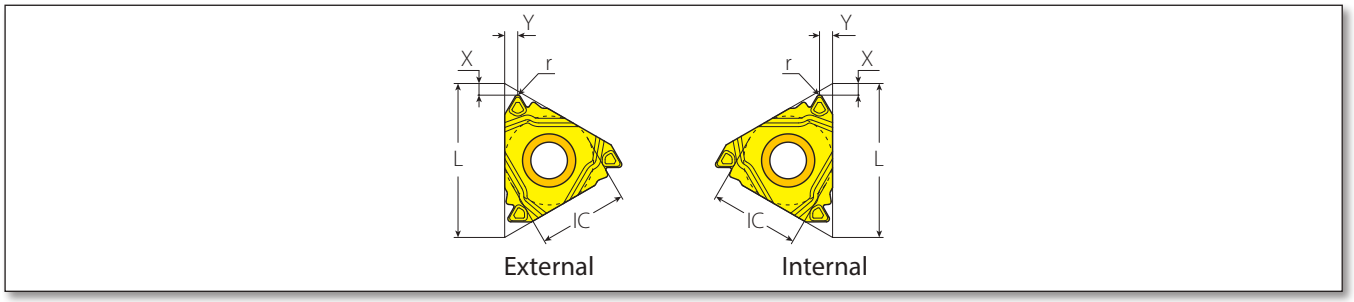
- New FS Line insert designation is marked as "FS". For example: 3**FS**ER3.0ISOFSK

Insert Marking:

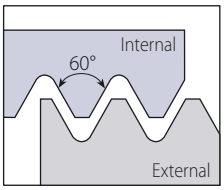
- Insert designation on the bottom of the insert

The NEW **FS LINE** is now included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

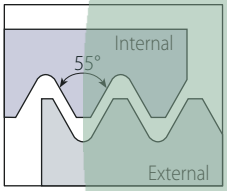


Partial Profile 60°



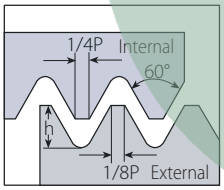
	Insert Size		Pitch		Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	mm	TPI	RH		r	X	Y	RH	Toolholder
External	3/8"	16	0.5-1.5	48-16	3FSERA60...	*16FSERA60...*	0.06	0.8	0.9	YE3	AL...-3
			1.75-3.0	14-8	3FSERG60...	*16FSERG60...*	0.27	1.3	1.7		
			0.5-3.0	48-8	3FSERAG60...	*16FSERAG60...*	0.08	1.2	1.7		
	1/2"	22	3.5-5.0	7-5	4FSERN60...	*22FSERN60...*	0.54	1.7	2.5	YE4	AL...-4
Internal	1/4"	11	0.5-1.5	48-16	2FSIRA60...	*11FSIRA60...*	0.05	0.8	0.9	-	NVR...-2
	3/8"	16	0.5-1.5	48-16	3FSIRA60...	*16FSIRA60...*	0.05	0.8	1.0	YI3	A/NVR...-3
			1.75-3.0	14-8	3FSIRG60...	*16FSIRG60...*	0.16	1.1	1.5		
			0.5-3.0	48-8	3FSIRAG60...	*16FSIRAG60...*	0.05	1.1	1.6		
	1/2"	22	3.5-5.0	7-5	4FSIRN60...	*22FSIRN60...*	0.32	1.7	2.5	YI4	A/NVR...-4

Partial Profile 55°



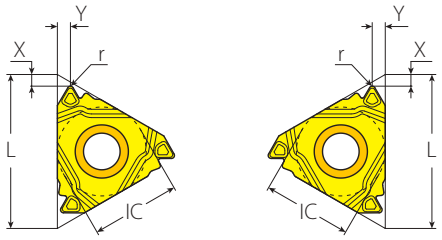
	Insert Size		Pitch		Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	mm	TPI	RH		r	X	Y	RH	Toolholder
External	3/8"	16	1.75-3.0	14-8	3FSERG55...	*16FSERG55...*	0.22	1.2	1.7	YE3	AL...-3
			0.5-3.0	48-8	3FSERAG55...	*16FSERAG55...*	0.07	1.1	1.7		
Internal	3/8"	16	1.75-3.0	14-8	3FSIRG55...	*16FSIRG55...*	0.22	1.1	1.7	YI3	A/NVR..-3
			0.5-3.0	48-8	3FSIRAG55...	*16FSIRAG55...*	0.07	1.1	1.7		

ISO Metric

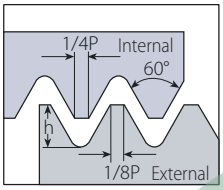


Defined by: R262 (DIN 13)
Tolerance class: 6g/6H

	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	1.0	3FSER1.0ISO...	*16FSER1.0ISO...*	0.61	1.5	0.7	YE3	AL...-3
			1.25	3FSER1.25ISO...	*16FSER1.25ISO...*	0.77	1.4	0.8		
			1.5	3FSER1.5ISO...	*16FSER1.5ISO...*	0.92	1.3	0.9		
			1.75	3FSER1.75ISO...	*16FSER1.75ISO...*	1.07	1.0	1.1		
			2.0	3FSER2.0ISO...	*16FSER2.0ISO...*	1.23	1.4	1.3		
			2.5	3FSER2.5ISO...	*16FSER2.5ISO...*	1.53	1.6	1.5		
			3.0	3FSER3.0ISO...	*16FSER3.0ISO...*	1.84	1.6	1.6		
Internal	1/4"	11	1.0	2FSIR1.0ISO...	*11FSIR1.0ISO...*	0.58	1.0	0.6	-	NVR...-2
			1.5	2FSIR1.5ISO...	*11FSIR1.5ISO...*	0.87	0.9	0.8		
			2.0	2FSIR2.0ISO...	*11FSIR2.0ISO...*	1.15	0.9	1.0		
	3/8"	16	1.0	3FSIR1.0ISO...	*16FSIR1.0ISO...*	0.58	1.4	0.7	YI3	A/NVR...-3
			1.25	3FSIR1.25ISO	*16FSIR1.25ISO*	0.72	1.3	0.8		
			1.5	3FSIR1.5ISO...	*16FSIR1.5ISO...*	0.87	1.2	0.9		
			1.75	3FSIR1.75ISO...	*16FSIR1.75ISO...*	1.01	1.0	1.1		
			2.0	3FSIR2.0ISO...	*16FSIR2.0ISO...*	1.15	1.3	1.3		
			2.5	3FSIR2.5ISO...	*16FSIR2.5ISO...*	1.44	1.3	1.4		
			3.0	3FSIR3.0ISO...	*16FSIR3.0ISO...*	1.73	1.2	1.5		



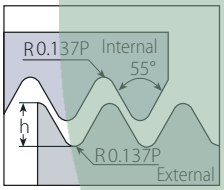
American UN



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

	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	24	3FSER24UN...	*16FSER24UN...*	0.65	1.4	0.8	YE3	AL...-3
			20	3FSER20UN...	*16FSER20UN...*	0.78	1.4	0.8		
			18	3FSER18UN...	*16FSER18UN...*	0.87	1.2	0.9		
			16	3FSER16UN...	*16FSER16UN...*	0.97	1.2	1.1		
			14	3FSER14UN...	*16FSER14UN...*	1.11	0.9	1.2		
			12	3FSER12UN...	*16FSER12UN...*	1.30	1.3	1.4		
			8	3FSER8UN...	*16FSER8UN...*	1.95	1.3	1.6		
Internal	3/8"	16	20	3FSIR20UN...	*16FSIR20UN...*	0.73	1.3	0.8	YI3	A/NVR...-3
			18	3FSIR18UN...	*16FSIR18UN...*	0.81	1.2	0.9		
			16	3FSIR16UN...	*16FSIR16UN...*	0.92	1.1	0.9		
			14	3FSIR14UN...	*16FSIR14UN...*	1.05	1.1	1.1		
			12	3FSIR12UN...	*16FSIR12UN...*	1.22	1.4	1.4		
			8	3FSIR8UN...	*16FSIR8UN...*	1.83	1.2	2.5		

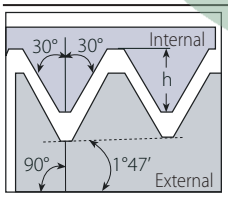
Whitworth for BSW, BSP



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

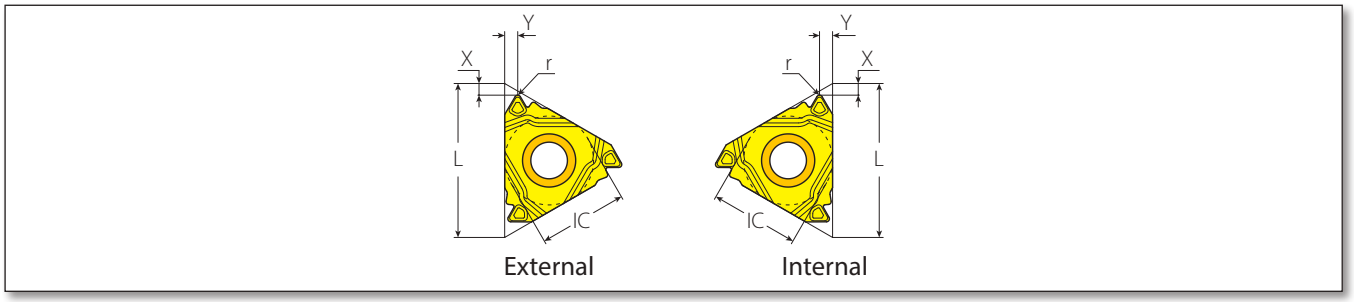
	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	19	3FSER19W...	*16FSER19W...*	0.86	1.2	0.9	YE3	AL...-3
			14	3FSER14W...	*16FSER14W...*	1.16	1.0	1.2		
			11	3FSER11W...	*16FSER11W...*	1.48	1.4	1.5		
Internal	1/4"	11	19	2FSIR19W...	*11FSIR19W...*	0.86	1.2	1.9	-	NVR...-2
			14	2FSIR14W...	*11FSIR14W...*	1.16	1.0	1.0		
	3/8"	16	14	3FSIR14W...	*16FSIR14W...*	1.16	1.2	1.2	YI3	A/NVR...-3
			11	3FSIR11W...	*16FSIR11W...*	1.48	1.3	1.4		

NPT

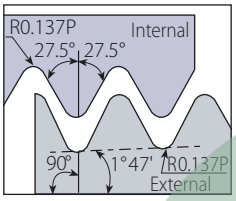


Defined by: USAS B2.1:1968
Tolerance class:
Standard NPT

	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	18	3FSER18NPT...	*16FSER18NPT...*	1.01	1.0	0.9	YE3	AL...-3
			14	3FSER14NPT...	*16FSER14NPT...*	1.33	0.9	1.2		
			11.5	3FSER11.5NPT...	*16FSER11.5NPT...*	1.64	1.1	1.5		
			8	3FSER8NPT...	*16FSER8NPT...*	2.42	1.1	1.7		
Internal	3/8"	16	14	3FSIR14NPT...	*16FSIR14NPT...*	1.33	1.1	1.2	YI3	A/NVR...-3
			11.5	3FSIR11.5NPT...	*16FSIR11.5NPT...*	1.64	1.2	1.4		
			8	3FSIR8NPT...	*16FSIR8NPT...*	2.42	1.2	1.8		



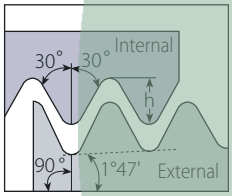
BSPT



	Insert Size			Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	14	3FSER14BSPT	*16FSER14BSPT...*	1.16	0.9	1.0	YE3	AL…-3
			11	3FSER11BSPT	*16FSER11BSPT...*	1.48	1.1	1.3		
Internal	3/8"	16	14	3FSIR14BSPT	*16FSIR14BSPT...*	1.16	1.1	1.2	YI3	A/NVR..-3
			11	3FSIR11BSPT	*16FSIR11BSPT...*	1.48	1.2	1.4		

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

API Round Casing & Tubing



	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
Internal	3/8"	16	10	3FSIR10APIRD...	*16FSIR10APIRD...*	1.41	1.2	1.5	YEI3-APIRD or YI3	AVRC… 3APIRD or AVRC…-3

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

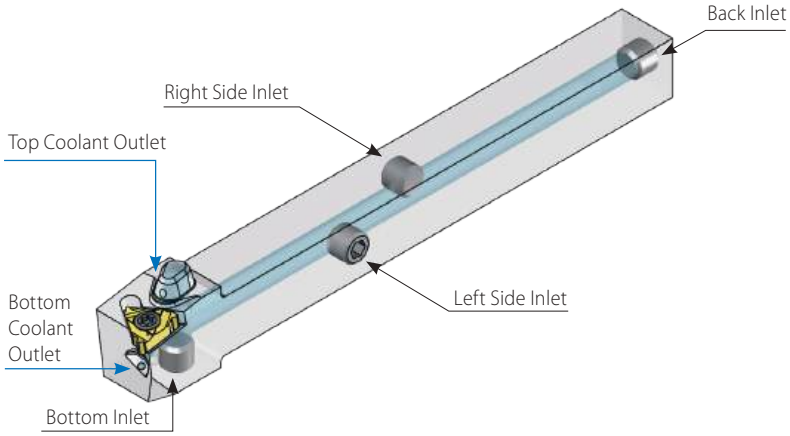
PRECISION ★ PRODUCTIVITY ★ PROFITABILITY ★
HPC
High Pressure Coolant
for SWISS TYPE MACHINES

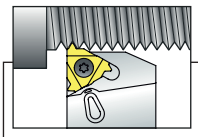
ALCS

External Thread Turning Toolholders FOR SWISS TYPE MACHINES WITH HIGH PRESSURE COOLANT (HPC)

Features and Benefits:

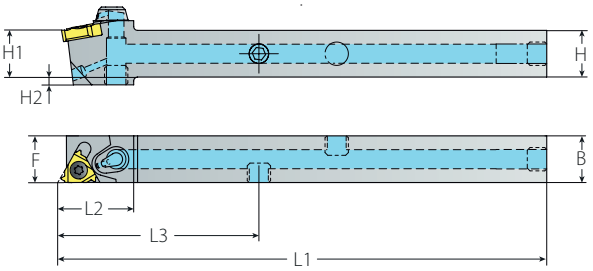
- Two dedicated inlets for Swiss type machines, accessible from both sides of the holder
- Back and bottom coolant inlets also available for conventional machines
- Two precise high pressure coolant outlets, designed to cool down the top and bottom of the insert for longer tool life and better chip evacuation
- High Pressure Coolant up to 70 bar
- Nickel coating for better wear resistance and anti-corrosion protection
- Available for standard insert sizes: IC1/4" (11), 3/8" (16)
- Shank sizes: 10mm and 12mm
- Left Hand holders are available as standard
- **New!** Now including innovative laser markings of spare parts and maximum torque details



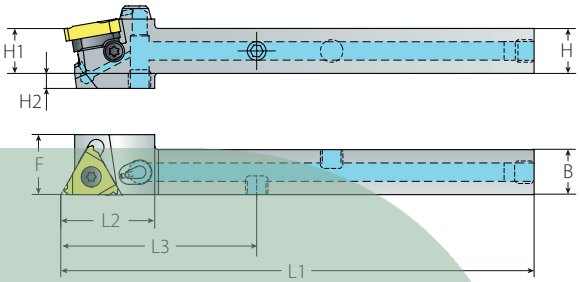


External Toolholders

NLCS Type
(without Anvil)

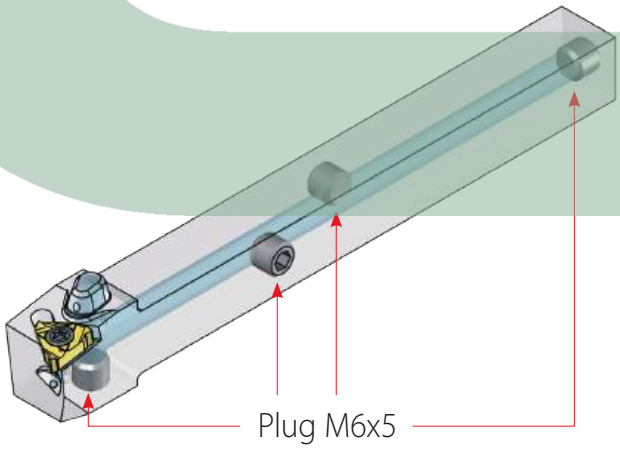


ALCS Type
(with Anvil)



Standard with Coolant

Insert Size	Ordering Code		Dimensions mm						Market Description		Spare Parts					
IC	RH	LH	H=H1=B	F	L1	L2	L3	H2	RH	LH	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH	Plug* x 4
1/4"	NLCS10-2	NLCS10-2LH	10	12	110.7	18.8	36.7	4	*NLCS10-11*	*NLCS10-11LH*	SN2T	-	K2T	-	-	Plug M6x5
	NLCS12-2	NLCS12-2LH	12	12	125.7	18.8	51.7	2	*NLCS12-11*	*NLCS12-11LH*						
3/8"	ALCS12-3	ALCS12-3LH	12	16	125.7	23.8	51.7	4	*ALCS12-16*	*ALCS12-16LH*	SA3T	SY3T	K3T	YE3	YI3	

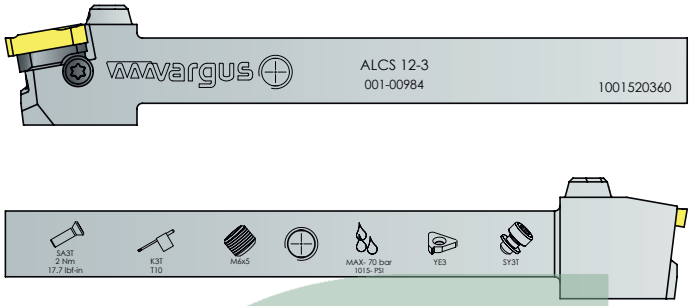


* When reassembling the M6X5 plug, it is necessary to use LOCTITE 542.

The NEW **External Toolholders with HPC** are included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

Laser markings include spare parts and maximum torque details

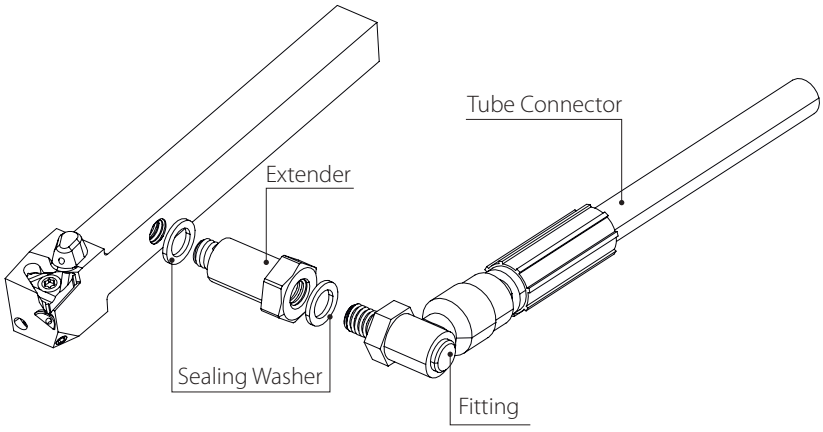


The following HPC accessories (not included) can be ordered separately:

Image	Ordering Code	Item Number	QTY
	Tube Connector 25-6	013-00941	1
	Angled Fitting M6x6	013-01011	1
	Straight Fitting M6x6	013-01012	1
	Extender M6x5*	013-01096	1
	Sealing Washer M6	013-01097	2

* When working with Shanks 10x10 & 12x12 the extender is necessary to connect the fitting.

How to Assemble the Accessories for All Coolant Inlets on Shanks 10x10 and 12x12



ALCN

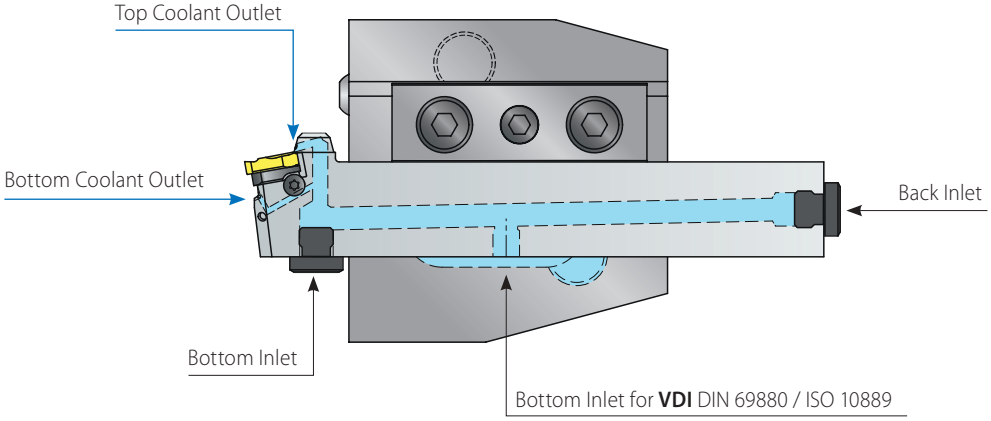
External Thread Turning Toolholders WITH TWO HIGH PRESSURE COOLANT OUTLETS

PRECISION ★ PRODUCTIVITY ★ PROFITABILITY ★
HPC High Pressure Coolant

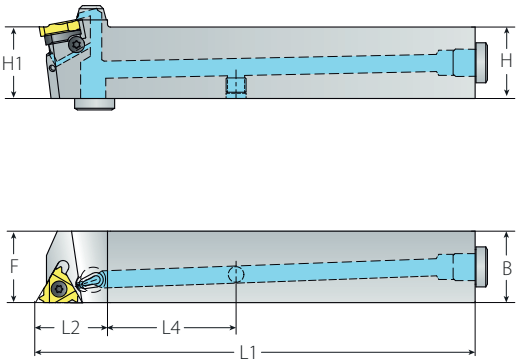
NEW & EXPANDED

Features and Benefits:

- Two precise high pressure coolant outlets, designed to cool down the top and bottom of the insert for longer tool life and improved chip evacuation
- Up to 70 bar
- Three different coolant inlets available:
  - Bottom inlet, specially designed for **VDI** DIN 69880 / ISO 10889
  - Back inlet
  - Bottom inlet
- Nickel coating for better wear resistance and anti-corrosion protection
- Greater range of holders for standard insert sizes: IC3/8" (16), 1/2" (22), & 5/8" (27)
- Left Hand holders are available as standard

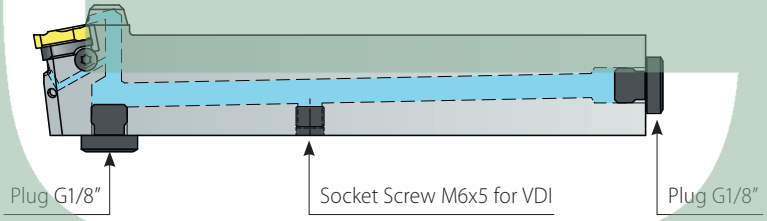


External Toolholders



Standard with HPC

Insert Size	Ordering Code		Dimensions mm					Spare Parts						
IC	RH	LH	H=H1=B	F	L1	L2	L4	Insert Screw (Max. Torque)	Anvil Screw	Torx Key	Anvil RH	Anvil LH	Plug Screw x2	Socket Screw
3/8"	ALCN16-3	ALCN16-3LH	16	16	100.0	25.1	25	SA3T (3.0 Nm)	SY3T	K3T	YE3	YI3	Plug G1/8"	Socket Screw M6x5
	ALCN20-3	ALCN20-3LH	20	20	127.0		30							
	ALCN25-3	ALCN25-3LH	25	25	155.0		35							
	ALCN32-3	ALCN32-3LH	32	32	175.0		40							
1/2"	ALCN25-4	ALCN25-4LH	25	25	155.0	30.2	35	SA4T (5.0 Nm)	SY4T	K4T	YE4	YI4		
	ALCN32-4	ALCN32-4LH	32	32	175.0		40							
5/8"	ALCN25-5	ALCN25-5LH	25	25	155.0	35.1	35	SA5T (10.0 Nm)	SY5T	K5T	YE5	YI5		
	ALCN32-5	ALCN32-5LH	32	32	175.0		40							



The following HPC accessories (not included) can be ordered separately:

Image	Ordering Code	Item Number	QTY
	Tube Connector 25-6	013-00941	1
	Angled Fitting G1_8x6	013-00947	2
	Straight Fitting G1_8x6	013-00942	

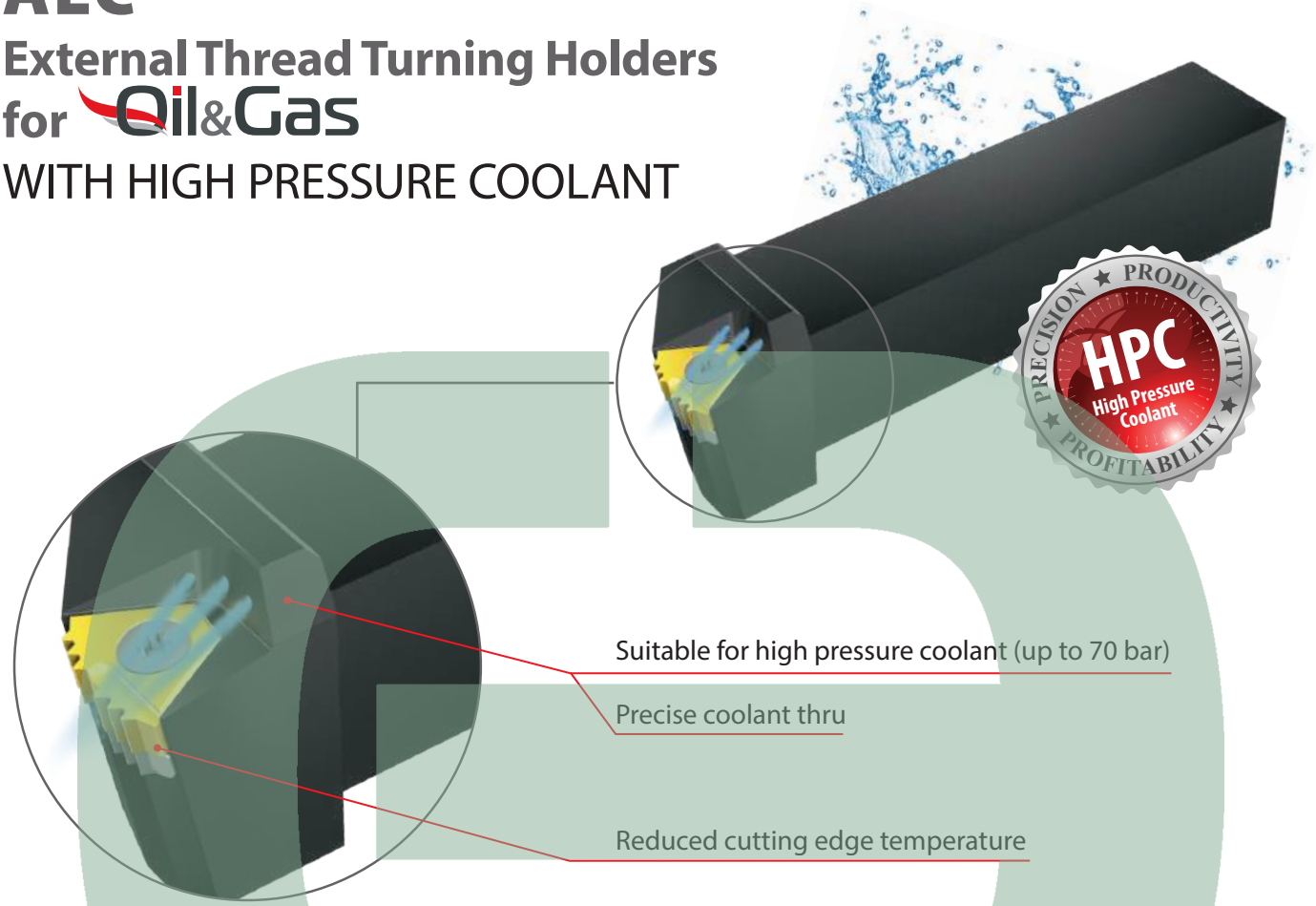
The NEW External Thread Turning Toolholders with HPC are fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting industry

VARGUS GENius™ Tool Selector and CNC Program Generator

ALC

External Thread Turning Holders for Oil&Gas

WITH HIGH PRESSURE COOLANT

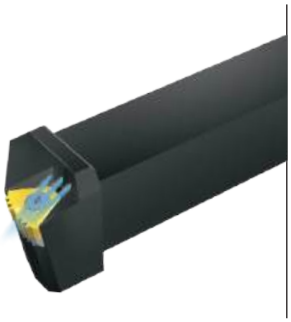


Features and Benefits:

- Precise coolant thru, designed to efficiently cool down the cutting edge
- Suitable for high pressure coolant up to 70 bar
- Reduced cutting edge temperature for better tool life
- Better chip evacuation and improved chip control and flow

External holders with coolant are fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting industry

VARGUS GENius™ Tool Selector and CNC Program Generator



14D Standard with HPC

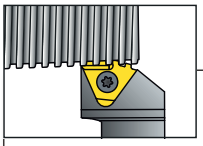
T+ Style with HPC

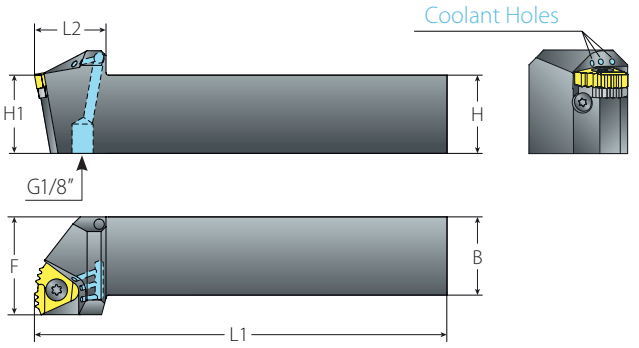
API with HPC

Z+ Style with HPC

External Toolholders

Oil&Gas





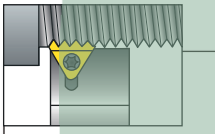
14D Standard with HPC

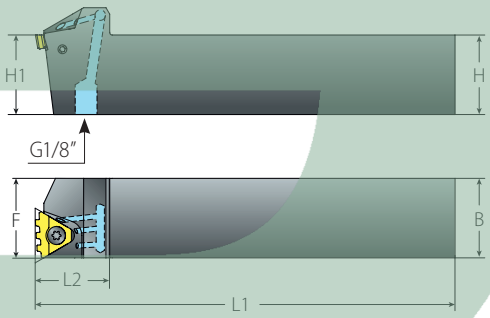
Insert Size	Ordering Code	Dimensions mm				Spare Parts			
IC	RH	H=H1=B	F	L1	L2	Insert Screw (Max. Torque)	Anvil Screw	Torx Key	Anvil Key
14D	ALC32-14D	32	32	170	30	SA5T (10.0 Nm)	M4X6(14D)	K5T	KT15
	ALC40-14D	40	40	200	30				

14D holders are supplied without anvils. For specific applications, refer to the Vardex Main Catalog.
Left Hand tools are available upon request.

External Toolholders

Oil&Gas





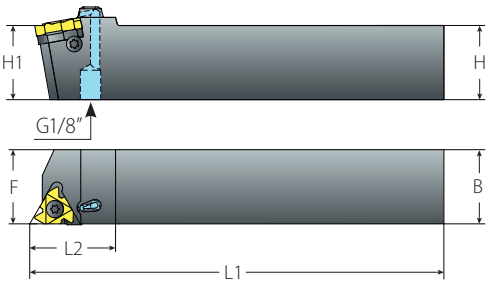
T+ Style with HPC

Insert Size	Ordering Code	Dimensions mm				Spare Parts				
IC	RH	H=H1=B	F	L1	L2	Insert Screw (Max. Torque)	Anvil Screw	Torx Key	Anvil Key	Anvil RH
1/2"T	ALC32-4T	32	32	170	30	SA4T (5.0 Nm)	SY4K2	K4T	K2	Y4T
	ALC40-4T	40	40	200	30					

All T Style toolholders have a 0° helix angle.
Left Hand tools are available upon request.

External Toolholders

Oil&Gas



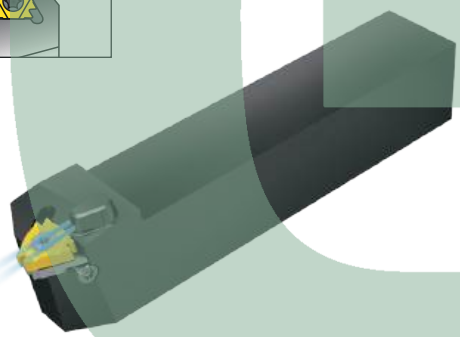
API with HPC

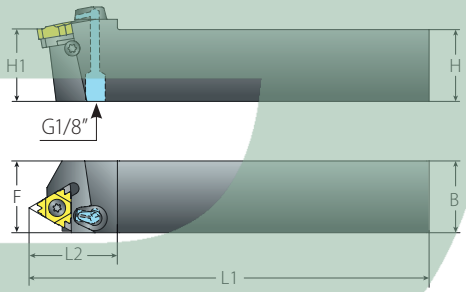
Insert Size	Ordering Code	Dimensions mm				Spare Parts			
IC	RH	H=H1=B	F	L1	L2	Insert Screw (Max. Torque)	Anvil Screw	Torx Key	Anvil RH
1/2"	ALC32-4-5BUT/API	32	32	177	37	SA4T (5.0 Nm)	SY4T	K4T	YEI4-API-1P; YEI4-5BUT
	ALC40-4-5BUT/API	40	40	205	37				

All API holders have a 0° helix angle.
Left Hand tools are available upon request

External Toolholders

Oil&Gas





Z+ Style with HPC

Insert Size	Ordering Code	Dimensions mm				Spare Parts			
IC	RH	H=H1=B	F	L1	L2	Insert Screw (Max. Torque)	Anvil Screw	Torx Key	Anvil RH
1/2"Z	ALC32-4Z	32	32	178	37	SA4T (5.0 Nm)	SY4T	K4T	YE4Z
	ALC40-4Z	40	40	208	37				

All Z Style toolholders have a 1.5° helix angle.
Left Hand tools are available upon request.

V-CAP
Internal & External Toolholders for IC1/2" (22)

Features and Benefits:

- Suitable for IC1/2" (22) insert size
- Polygon shaped shank, complies with standard ISO 26623
- Works with wide range of machine types
- For all industrial sectors
- High Pressure Coolant up to 70 bar for better chip evacuation and increased tool life

V-CAP Toolholder Range:

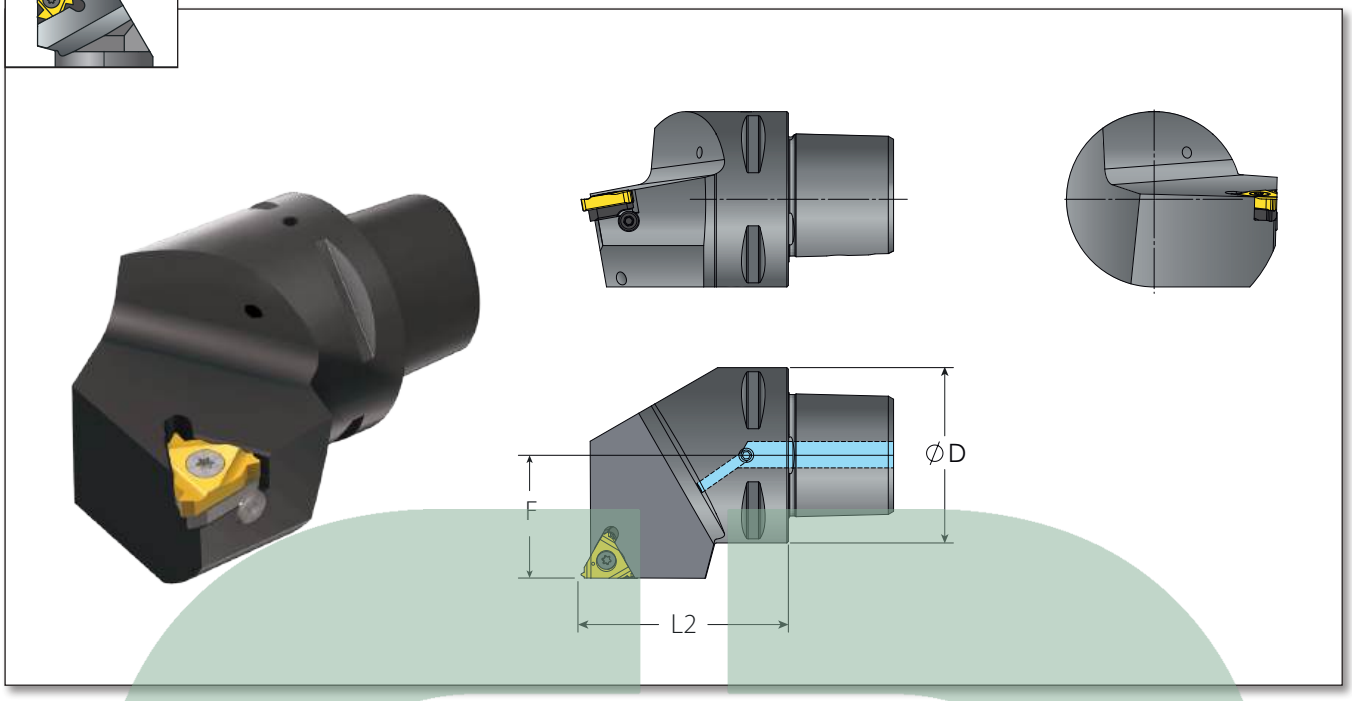
Internal and external V-CAP toolholders are available with IC1/2" (22) inserts in the following shank diameters:

- C4
- C5
- C6
- C8

Special sizes are available upon request

The NEW **V-CAP Toolholders** are included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

V-CAP External Toolholders

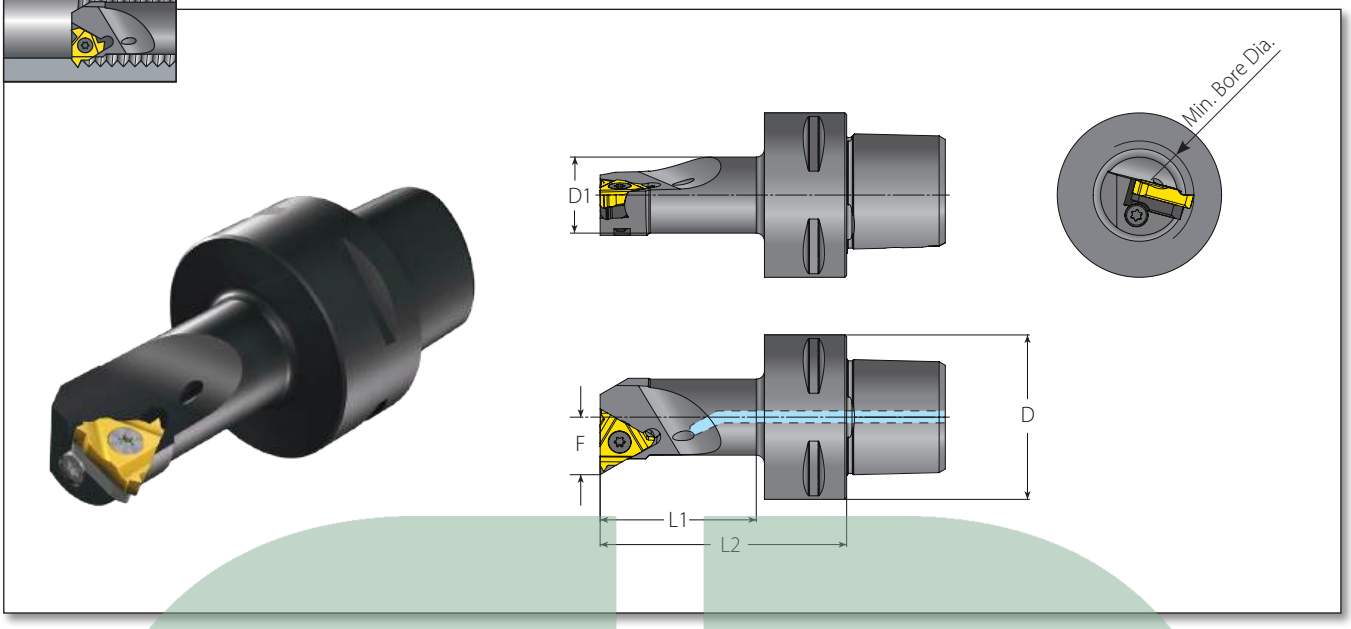


V-CAP

Insert Size	Ordering Code	Dimensions mm			Market Description	Spare Parts			
IC	RH/LH	D	F	L2	RH/LH	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2"	VCAP40-SER27050-4	40	27	50	*VCAP40-SER27050-22*	SA4T	SY4T	K4T	YE4
	VCAP50-SER35060-4	50	35	60	*VCAP50-SER35060-22*				
	VCAP63-SER45065-4	63	45	65	*VCAP63-SER45065-22*				
	VCAP80-SER55080-4	80	55	81.7	*VCAP80-SER55080-22*				

The above toolholders are for RH inserts. For LH inserts, change R to L in the toolholder's ordering code (Example VCAP80-SE**L**55080-4).

V-CAP Internal Toolholders



V-CAP

Insert Size	Ordering Code	Dimensions mm					Min. Bore Dia.	Market Description	Spare Parts			
IC	RH/LH	D1	D	F	L2	L1 (max)	mm	RH/LH	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2"	VCAP40-SIR15065-4	20	40	15.6	65	42	25	*VCAP40-SIR15065-22*	SN4T	-	K4T	-
	VCAP40-SIR19070-4	25		19	70	48	32	*VCAP40-SIR19070-22*	SA4T	SY4T	K4T	YI4
	VCAP40-SIR22090-4	32		22	90	69	40	*VCAP40-SIR22090-22*				
	VCAP40-SIR27080-4	39.5		26	80	60	50	*VCAP40-SIR27080-22*				
	VCAP50-SIR15065-4	20	50	15.6	65	42	25	*VCAP50-SIR15065-22*	SN4T	-	K4T	-
	VCAP50-SIR19070-4	25		19	70	47	32	*VCAP50-SIR19070-22*	SA4T	SY4T	K4T	YI4
	VCAP50-SIR22090-4	32		22	90	68	40	*VCAP50-SIR22090-22*				
	VCAP50-SIR27105-4	39.5		26	105	84	50	*VCAP50-SIR27105-22*				
	VCAP63-SIR19075-4	25	63	19	75	48	32	*VCAP63-SIR19075-22*				
	VCAP63-SIR22090-4	32		22	90	64	40	*VCAP63-SIR22090-22*				
	VCAP63-SIR27105-4	39.5		26	105	80	50	*VCAP63-SIR27105-22*				

The above toolholders are for RH inserts. For LH inserts, change R to L in the toolholder's ordering code (Example VCAP80-SE**L**55080-4).

SMOOTH CUT SYSTEM

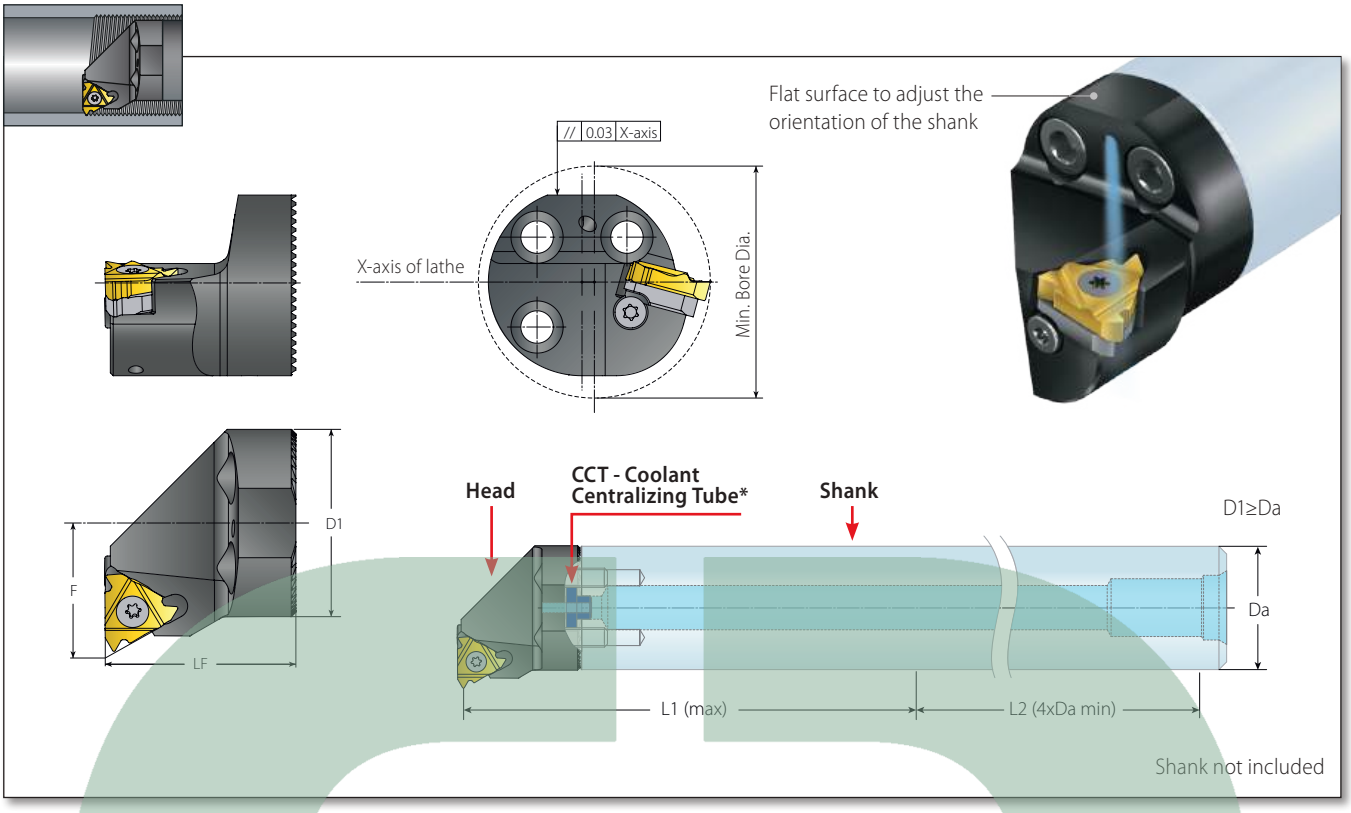
Modular Toolholder Heads for Anti-Vibration Shanks

Features and Benefits:

- Modular head for anti-vibration system
- Same head can be used with wide range of shanks of different lengths
- Maximum overhang 5xDa (Da - shank diameter)
- Compatible with the most common anti-vibration shanks in the market
- Available for standard insert sizes: IC3/8" (16), 1/2" (22), 5/8" (27)
- Toolholder includes High Pressure Coolant up to 70 bar for better chip evacuation and increased tool life

The NEW **Smooth Cut System Toolholder Heads** are included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator



Smooth Cut Toolholder Heads

Insert Size	Ordering Code	Dimensions mm						Min. Bore dia.	Market Description	Spare Parts					
IC	RH	D1	Da mm	Da inch	F	L1 max	LF	mm	RH	Insert Screw	Anvil Screw	Torx Key	Anvil RH	CCT - Coolant Centralizing Tube*	
3/8"	VAS25-IR2517-3	25.3	25	1.00"	17.0	125.0	25.0	32	*VAS25-IR2517-16*	SA3T	SY3T	K3T	YI3	CCT6	-
	VAS32-IR3222-3	32.3	32	1.25"	22.0	160.0	32.0	40	*VAS32-IR3222-16*					-	CCT12
	VAS40-IR3227-3	40.0	40	1.50"	27.0	200.0	32.0	50	*VAS40-IR3227-16*						
1/2"	VAS32-IR3222-4	32.3	32	1.25"	22.7	160.0	32.0	40	*VAS32-IR3222-22*	SA4T	SY4T	K4T	YI4		
	VAS40-IR3227-4	40.0	40	1.50"	27.0	200.0	32.0	50	*VAS40-IR3227-22*						
5/8"	VAS40-IR3627-5	40.0	40	1.50"	27.3	200.0	36.0	50	*VAS40-IR3627-27*	SA5T	SY5T	K5T	YI5		

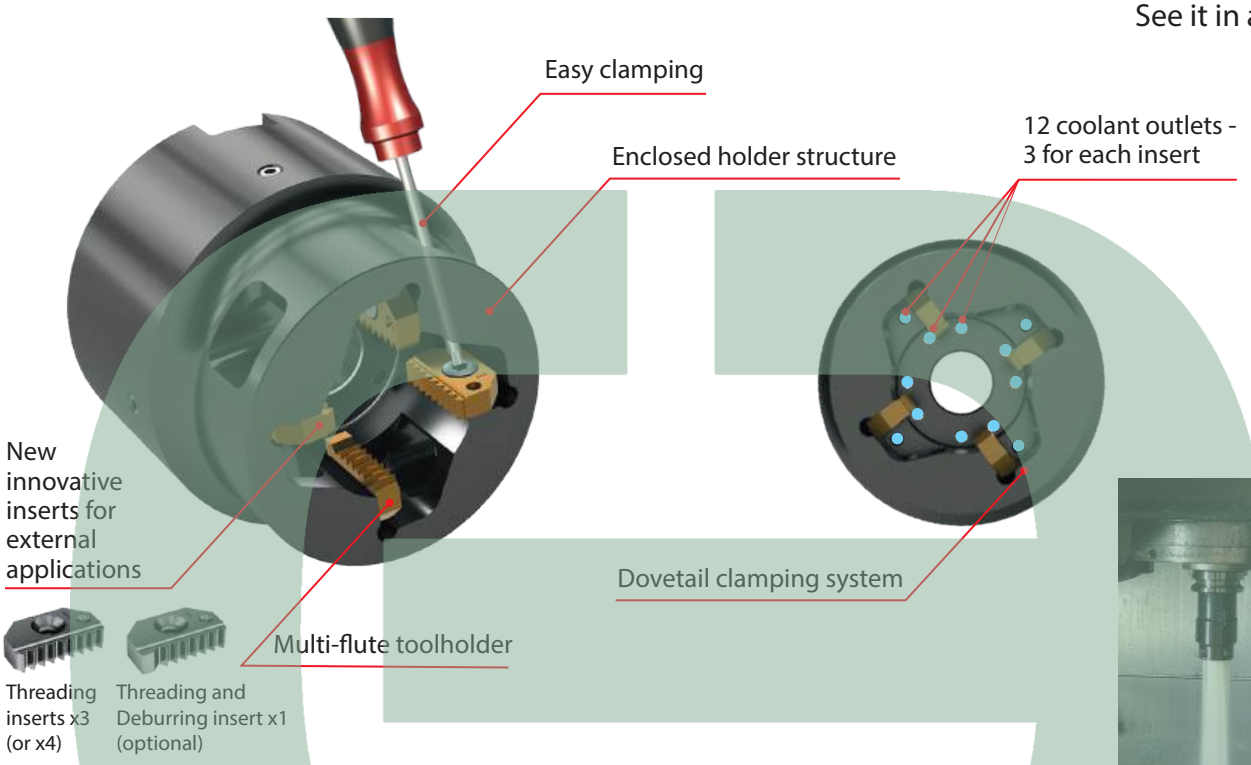
* When assembling the CCT, it is recommended to use LOCTITE 648

BELL SHAPE HOLDER

NEW

High Productivity System for External Thread Milling Applications

See it in action



Features and Benefits:

- Short toolholder movements – for shorter cycle time and higher productivity
- Multi-flute toolholder – for fast feed
- New innovative inserts – specially designed for external applications
- Easy clamping – convenient insert assembly from the bottom of the toolholder, easily accessible to the screwdriver
- Dovetail clamping system – for better rigidity
- Enclosed holder structure – for high threading accuracy
- Includes 4 inserts – 3 standard inserts for threading +1 insert for threading and deburring
- Massive coolant thru with 12 outlets – 3 coolant outlets for each insert for effective chip evacuation and increased tool life
- Inserts with 2 cutting edges (not including the insert with deburring option)
- Excellent quality surface finish

Applications:

- Toolholder and inserts are designed for Common Rail applications M14x1.5x11.5 and M16x1.5x11.5
- Additional applications (toolholder and inserts) can be offered by request

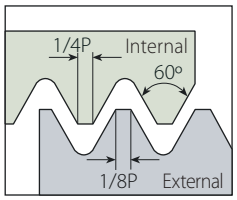
Note: The holder requires 4 inserts. The deburring insert is optional.

The NEW **BELL SHAPE Holder** is included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

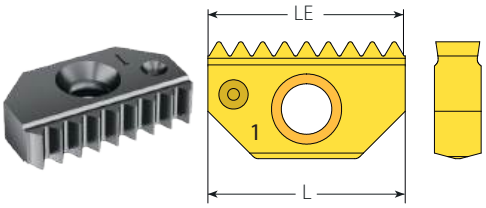
ISO Metric

External

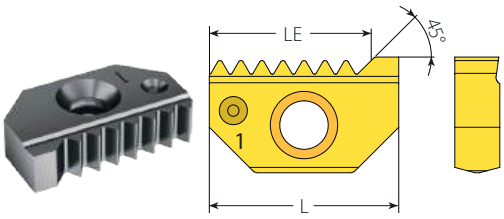


Defined by: R262 (DIN 13)
Tolerance class: 6g/6H

Threading insert
13E1.5ISO-B-TM...

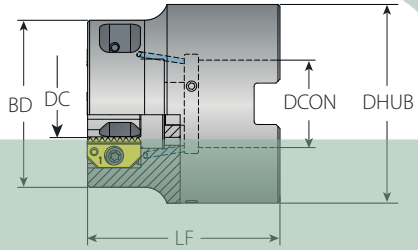


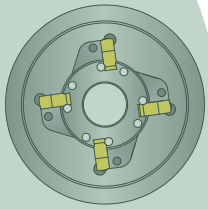
Threading and Deburring insert
13ER1.5ISO-BC-TM...



Bell Shape Inserts

Insert Style	Pitch	Ordering Code	Cutting Edge	Dimensions mm		Teeth	Toolholder
	mm	External		LE	L	Zt	
13	1.5	13E1.5ISO-B-TM...	2	13.5	13.5	9	TM4BC...13
		13E1.5ISO-BC-TM...	1	11.5	13.5	7	



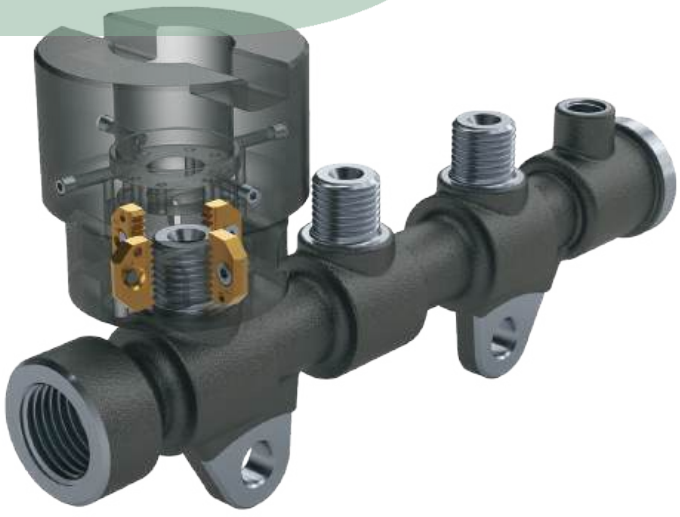


Bell Shape Holder

Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts		
		DC	BD	DHUB	DCON	LF	NOF	Insert Screw	Torx Key	Holder Screw*
13	TM4BC-D17-22-13	17	42	50	22	48.4	4	SN2T	HK2T	M10x1.5x25

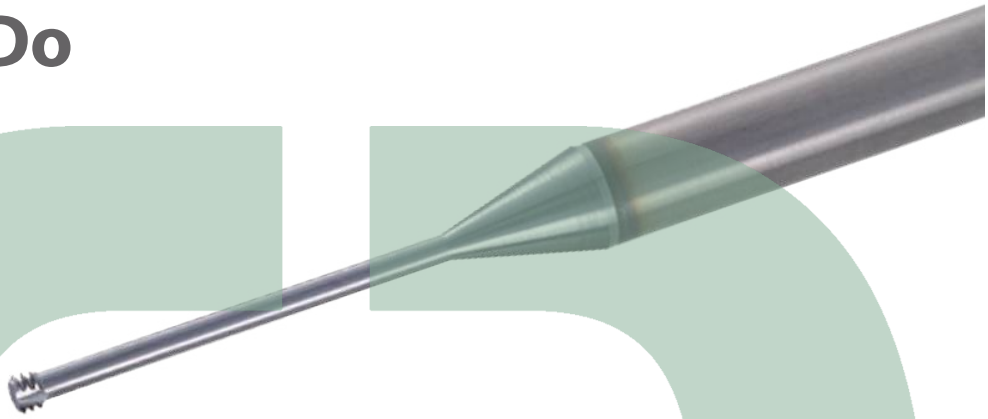
* Round screw head

ISO 13399 Dimension	Description
BD	Body Diameter
DCON	Connection Diameter
DC	Cutting Diameter
DHUB	Hub Diameter
LE	Effective Length
LF	Functional Length
L	Cutting Edge Length
NOF	Flute Count



TM Solid MilliPro for Extra-long Threads 4xDo & 5xDo

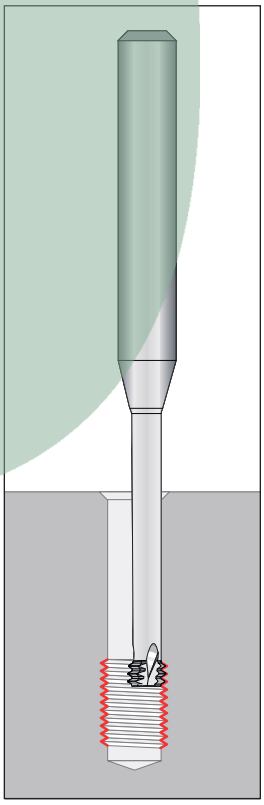
NEW



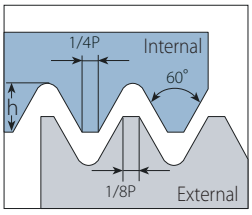
Features and Benefits:

- Small solid carbide tools, designed for extra deep threads
- Available as standard catalog items
- Range:
  - 4xDo:
    - ISO Metric (M2x0.4 – M16x2.0)
    - American UN (No. 2-56 – 1/4"-20)
  - 5xDo:
    - ISO Metric (M3x0.5 – M6x1.0)
    - American UN (No. 2-56 – 1/4"-20)
- VTH Grade
- Cutting conditions – use the lower cutting conditions of MilliPro 3xDo as offered in the VARGUS GENius™.

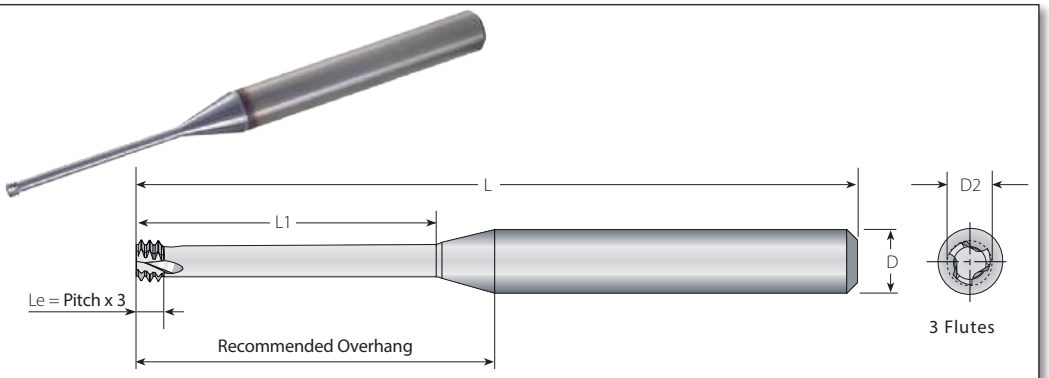
VARGUS GENius™ Tool Selector and CNC Program Generator



Internal



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



MilliPro Miniature Thread Mills

4 x Do (L1 ≤ 4 x Thread Diameter)

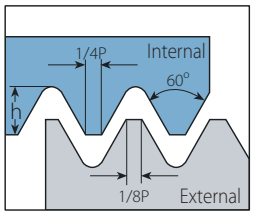
Thread		Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	DCON	DC	OAL	LUX	NOF	NT	PHD
				D	D2	L	L1	Z	Zt	mm
M2x0.4		0.4	D3T06015L082-I0.4ISOTM…	6	1.55	57	8.2	3	3	1.6
M2.5x0.45		0.45	D3T06019L102-I0.45ISOTM…	6	1.95	57	10.2	3	3	2.05
M3x0.5	M3.5-M16x0.5	0.5	D3T06024L122-I0.50ISITM…	3	2.4	57	12.2	3	3	2.5
M4x0.7		0.7	D3T06031L163-I0.7ISOTM…	6	3.15	57	16.4	3	3	3.3
M5x0.8		0.8	D3T06040L205-I0.8ISOTM…	6	4.05	57	20.5	3	3	4.2
M6x1.0	M8-M40x1.0	1	D3T06048L246-I1.0ISOTM…	6	4.8	61	24.6	3	3	5.0
M8x1.25		1.25	D3T08065L326-I1.25ISOTM…	8	6.5	70	32.6	3	3	6.8
M10x1.5	M12-M48x1.5	1.5	D3T10082L408-I1.50ISOTM…	10	8.2	83	40.8	3	3	8.5
M12x1.75		1.75	D3T10099L490-I1.75ISOTM…	10	9.9	91	49	3	3	10.3
M16x2.0	M17-M80x2.0	2.0	D3T12119L650-I2.0ISOTM…	12	11.9	113	65	3	3	12.0

5 x Do (L1 ≤ 5 x Thread Diameter)

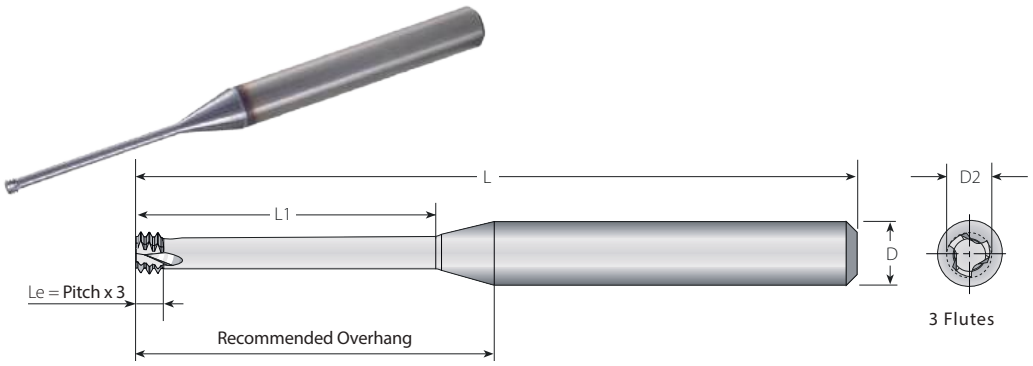
M3x0.5	M3.5-M16x0.5	0.5	D3T06024L153-I0.50ISITM…	3	2.4	57	15.35	3	3	2.5
M4x0.7		0.7	D3T06031L205-I0.7ISOTM…	6	3.15	57	20.5	3	3	3.3
M5x0.8		0.8	D3T06040L256-I0.8ISOTM…	6	4.05	63	25.6	3	3	4.2
M6x1.0	M8-M40x1.0	1.0	D3T06048L307-I1.0ISOTM…	6	4.8	68	30.7	3	3	5.0

* Bore diameter applies to smallest thread dia.

Internal



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



MilliPro Miniature Thread Mills

4 x Do (L1 ≤ 4 x Thread Diameter)

Thread		Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	TPI	Internal	DCON	DC	OAL	LUX	NOF	NT	PHD
				D	D2	L	L1	Z	Zt	mm
No.2-56	No.3-56	56	D3T06016L093-I56UNTM…	6	1.65	57	9.3	3	3	1.8
No.4, No.5-40	No.6-40	40	D3T06021L120-I40UNTM…	6	2.1	57	12	3	3	2.3
No.8-32		32	D3T06032L173-I32UNTM…	6	3.2	57	17.3	3	3	3.5
No.6-32, No.8-32	No.10-32	32	D3T06025L146-I32UNTM…	6	2.55	57	14.6	3	3	2.8
	1/4"x28	28	D3T06052L261-I28UNTM…	6	5.25	63	26.1	3	3	5.5
1/4"-20	7/16"-20	20	D3T06048L264-I20UNTM…	6	4.88	64	26.4	3	3	5.2

5 x Do (L1 ≤ 5 x Thread Diameter)

No.2-56	No.3-56	56	D3T06016L116-I56UNTM…	6	1.65	57	11.6	3	3	1.8
No.4,No.5-40	No.6-40	40	D3T06021L150-I40UNTM…	6	2.1	57	15	3	3	2.3
No.8-32		32	D3T06032L216-I32UNTM…	6	3.2	57	21.6	3	3	3.5
No.6-32, No.8-32	No.10-32	32	D3T06025L182-I32UNTM…	6	2.55	57	18.2	3	3	2.8
	1/4"x28	28	D3T06052L326-I28UNTM…	6	5.25	70	32.6	3	3	5.5
1/4"-20	7/16"-20	20	D3T06048L330-I20UNTM…	6	4.88	70	33	3	3	5.2

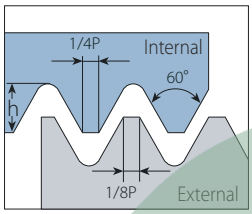
* Bore diameter applies to smallest thread dia.

TM Solid
MilliPro and Helical Expansions

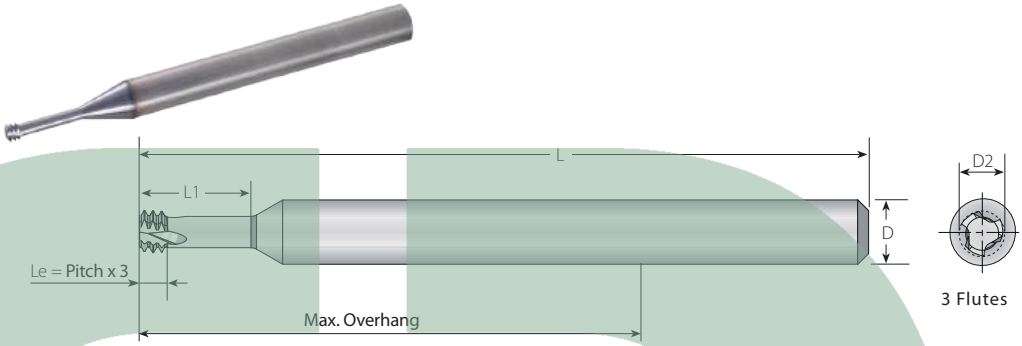
ISO Metric

MilliPro EXPANSION

Internal



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



MilliPro Miniature Thread Mills

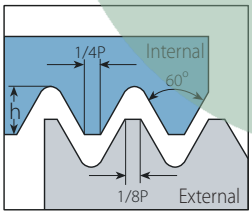
3 x Do (L1 ≤ 3 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	DCON	DC	OAL	LUX	NOF	NT	PHD
				D	D2	L	L1	Z	Zt	mm
M10x1.5	M12-M48x1.5	1.5	D3T10082L312-I1.5ISOTM…	10	8.2	73	31.2	3	3	8.5
M12x1.75		1.75	D3T10099L375-I1.75ISOTM…	10	9.9	78	37.5	3	3	10.3

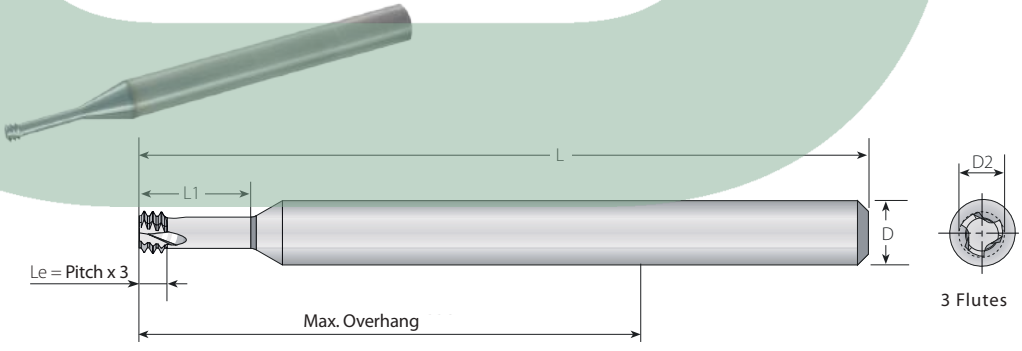
American UN

MilliPro EXPANSION

Internal



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



MilliPro Miniature Thread Mills

3 x Do (L1 ≤ 3 x Thread Diameter)

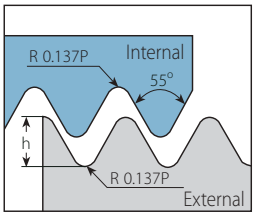
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	TPI	Internal	DCON	DC	OAL	LUX	NOF	NT	PHD
				D	D2	L	L1	Z	Zt	mm
1/2"x13		13	D3T12104L385-I13UNTM…	12	10.4	83	38.5	3	3	10.8

* Bore diameter applies to smallest thread dia.

BSP (G)

MilliPro EXPANSION

External / Internal



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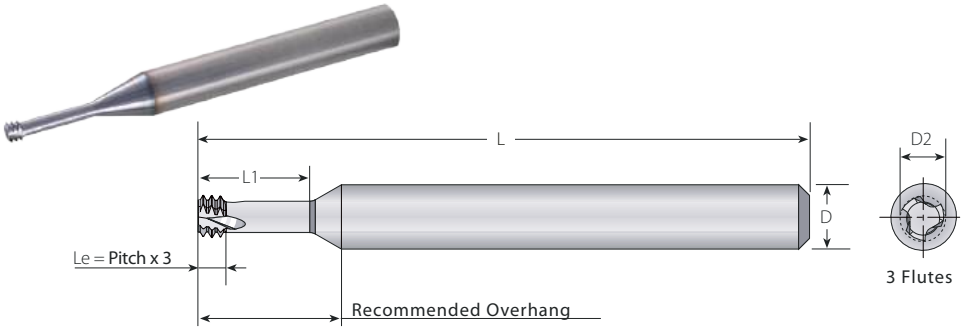


MilliPro Miniature Thread Mills

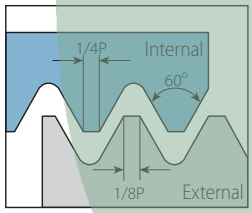
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth
Min. Dia.	TPI	External / Internal	D	D2	L	Le	Z	Zt
1/8"x28	28	D3T08078L019-EI28BSPTM…	8	7.8	63	19.5	3	3
1/4", 3/8"x19	19	D3T10099L027-EI19BSPTM…	10	9.9	73	27.5	4	
1/2"-7/8"x14	14	D3T12119L042-EI14BSPTM…	12	11.9	95	42	4	
1"-4"x11	11	D3T16159L044-EI11BSPTM…	16	15.9	105	44	4	

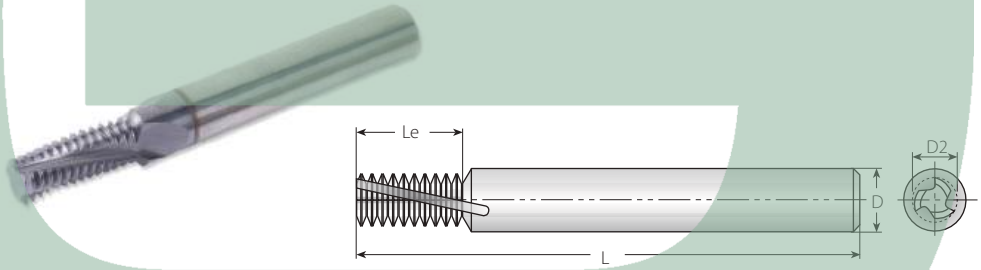
ISO Metric

Helical EXPANSION

External



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



Helical Flutes - External

2 x Do (L1 ≤ 2 x Thread Diameter)

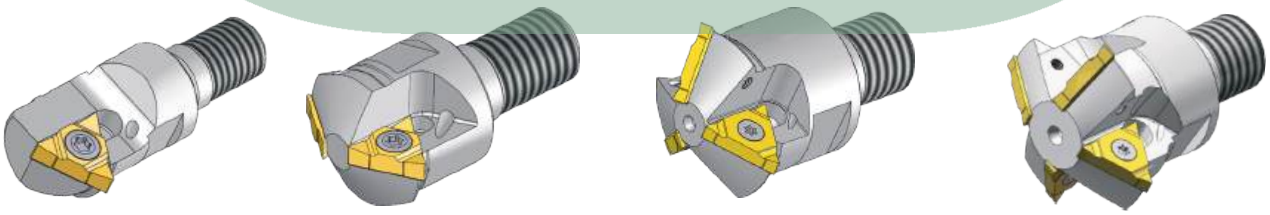
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth
M Coarse	mm	Internal	DCON	DC	OAL	LUX	NOF	NT
			D	D2	L	L1	Z	Zt
M4x0.7	0.7	H04030L08-E0.7ISOTM…	4	3	45	8.4	3	12
M5x0.8	0.8	H06040L10-E0.8ISOTM…	6	4	57	10.4	3	12

TMSD

Modular Toolholder Heads

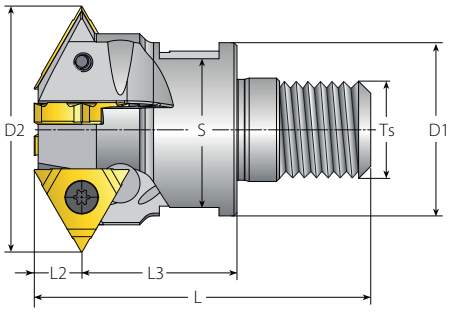
Features and Benefits:

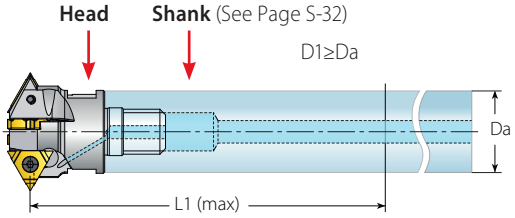
- One modular toolholder head fits an assortment of shank lengths
- Compatible with the most common steel and carbide shanks in the market
- Tools include high pressure coolant thru for extended tool life
- Multi-flute tools for fast machining
- Suitable for TMSD U Style inserts
- Specially suited for deep holes
- Reduced load on cutting edges due to single point insert design



The NEW **TMSD Modular Toolholder Heads** are included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

TMSD Modular Toolholder Heads





Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

TMSD Modular Toolholder Heads for U Style Inserts

Spare Parts

Insert Size	Ordering Code	Dimensions mm									No. of Flutes	Spare Parts	
IC		D1	D2*	L	L1 (max) for Steel Shank)	L1 (max) for Carbide Shank)	L2	L3	Ts	S	Z	Insert Screw	Torx Key
1/4"U	TM1SC-D15-M06-2U	10.6	14.75	33	48	57.5	5.4	15.0	M06	9.0	1	SN2T	HK2T
	TM1SC-D17-M08-2U	13.0	16.75	37	60	72		17.0	M08	11.0	1		
	TM2SC-D21-M08-2U	14.1	20.65	34	72	86		14.0	M08	12.0	2		
	TM2SC-D23-M10-2U	18.0	22.65	38	86	103		14.0	M10	16.0	2		
	TM3SC-D26-M12-2U	21.0	26.60	48	105	125		20.0	M12	18.0	3		
	TM4SC-D31-M12-2U	25.0	31.0	51	115	138		23.0	M12	22.0	4		
3/8"U	TM3SC-D36-M16-3U	29.0	36.5	55	125	150	8.0	25.0	M16	25.0	3	SA3T	HK3T
	TM4SC-D42-M16-3U	29.0	42.0	55	144	172		26.0	M16	25.0	4		

TMSD Modular Head (U Style) Applications

Thread Applications for Partial Profile Inserts

Toolholder	Min. Thread Dia.							
	D2*	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)	Partial 55°	Trapez
TM1SC-D15-M06-2U	14.75	M18x2.5; M24x3.0	M16x0.5; M16x0.75; M16x1.0; M17x1.25; M17x1.5; M17x2.0	¾-10; ⅞-9; 1-8	⅝-32UN; ⅝-28UN; ⅝-27UNS; 11/16-24UN; 11/16-20UN; 11/16-16UN; ¾-14UNS; ¾-12UN	⅜-19; ½-14; 1-11	11/16-14; ¾-12; ⅞-11; ¾-10; ⅞-9; 1-8; 1⅛-7	TR22x3; TR24x3
TM1SC-D17-M08-2U	16.75	M20x2.5	M18x0.5; M18x0.75; M18x1.0; M19x1.25; M19x1.5; M19x2.0	-	¾-32UN; ¾-28UN; ⅞-27UN; ¾-24UN; ¾-20UN; ¾-16UNF; ¾-14UNS; 13/16-12UN; ⅞-10UN	½-14; 1-11	13/16-12; ⅞-11; 1-10; ⅞-9	-
TM2SC-D21-M08-2U	20.65	M24x3.0; M30x3.5; M36x4.0	M22x0.5; M22x0.75; M22x1.0; M23x1.25; M23x1.5; M23x2.0	1-8; 1⅛-7; 1⅜-6	⅞-32UN; ⅞-28UN; ⅞-27UNS; ⅞-24UNS; ⅞-20UNEF; 1-18UNS; 15/16-16UN; 1-14UNS; 15/16-12UN; 1-10UNS	¾-14; 1-11	1-26; 1-20; 1-16; 1-12; 1-10; 1⅛-9; 1-8; 1⅛-7	(TR26-TR60)x3; TR28x4; (TR60-TR110)x4; TR28x5
TM2SC-D23-M10-2U	22.65	M27x3.0; M30x3.5; M36x4.0	M24x0.5; M24x0.75; M25x1.0; M25x1.25; M26x1.5; M26x2.0; M27x2.5	1⅛-7	1-32UN; 1-28UN; 1-27UNS; 1-24UNS; 1-20UNEF; 1-18UNS; 1-16UN; 1-14UNS; 1-12UNF; 1⅛-10UNS; 1⅛-8UN	¾-14; 1-11	1-26; 1-20; 1-16; 1 1/16-12; 1⅛ -9; 1⅛-7	-
TM3SC-D26-M12-2U	26.60	M33x3.5; M36x4.0	M28x0.5; M28x0.75; M28x1.0; M28x1.25; M29x1.5; M29x2.0; M30x2.5; M33x3.0	1¼-7; 1⅜-6	1⅛-28UN; 1⅛-24UNS; 1⅛-20UN; 1⅛-18UNEF; 1⅛-16UN; 1¼-14UNS; 13/16-12UN; 1¼-10UNS; 13/16-8UN	⅞-14; 1-11	1⅛-26; 1⅛-20; 1⅜-16; 1⅜-12; 1⅜-8; 1¼-7	-
TM4SC-D31-M12-2U	31.0	M36X4.0	M32x0.5; M32x0.75; M33x1.0; M33x1.25; M33x1.5; M34x2.0; M34x2.5; M35x3.0; M36x3.5	1½-6	15/16-28UN; 1 3/8-24UNS; 15/16-20UN; 15/16-18UNEF; 15/16-16UN; 1⅜-14UNS; 1⅜-12UNF; 1⅜-10UNS; 1⅜-8UN	1⅛-11	1⅜-26; 1⅜8-20; 1⅜ -16; 1⅜ -12; 1 7/16-8	-
TM3SC-D36-M16-3U	36.5	M42x4.5; M48x5.0; M56x5.5	M39x1.5; M39x2.0; M40x2.5; M41x3.0; M42x3.5; M42x4.0	1¾-5; 2-4.5	19/16-16UN; 1⅝-14UNS; 19/16-12UN; 1⅝-10UNS; 1 5/8-8UN; 1⅝-6UN	1¼-11	1⅝-16; 1⅝-12; 1⅝-8; 1⅞-6	-
TM4SC-D42-M16-3U	42.0	M48x5.0; M56x5.5; M64x6.0	M45x1.5; M45x2.0; M46x2.5; M48x3.0; M48x3.5; M48x4.0	2-4.5; 2½-4	1¾-16UN; 1¾-14UNS; 13/16-12UN; 15/16-8UN; 15/16-6UN	1½-11	1⅞-16; 1⅞-12; 1⅞-8; 2¼-6; 2-4.5	-

For related inserts, see Vardex Main catalog.

* D2 refers to partial profile inserts. D2 for full profile inserts, see page S-31.

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TMSD Modular Head (U Style) Applications

Thread Application for Full Profile Inserts (ISO, UN, NPT & API Round)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch		Min. Thread Dia.		Cylindrical or Conical Pre-Drilled hole	Cylindrical Pre-Drilled hole	API Round, Cylindrical or Conical Pre-Drilled Hole (for cylindrical 2 radial passes 50%/50%; for conical one radial pass	API Round, Conical Pre-Drilled Hole only (one pass)
	* Adjusted D2	mm	TPI	ISO Coarse	UN/UNF/ UNEF/UNS	NPT Threading by 1 Radial Pass	** NPT Threading by 2 Radial Passes (50%/50%)	Thread Dia.	
TM1SC-D15-M06-2U	13.80	1.5		M16x1.5	-	-	-	-	-
	13.60	2.0		M16x2.0	-	-	-	-	-
	13.70	-	14	-	5/8-14UNS	-	-	-	-
	13.60	-	12	-	11/16-12UN	-	-	-	-
	14.59	-	14	-		1/2-14NPT; 3/4-14NPT	-	-	-
TM1SC-D17-M08-2U	15.79	1.5		M18x1.5	-	-	-	-	-
	15.60	2.0		M18x2.0	-	-	-	-	-
	15.69	-	14	-	3/4-14UNS	-	-	-	-
	15.60	-	12	-	3/4-12UN	-	-	-	-
	15.60	-	14	-	-	3/4-14NPT	-	-	-
TM2SC-D21-M08-2U	19.69	1.5		M22x1.5	-	-	-	-	-
	19.50	2.0		M22x2.0	-	-	-	-	-
	19.60	-	14	-	7/8-14UNF	-	-	-	-
	19.50	-	12	-	7/8-12UN	-	-	-	-
	20.50	-	14	-	-	3/4-14NPT	-	-	-
	20.28	-	11.5	-	-	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11NPT	-	-	-
TM2SC-D23-M10-2U	21.65	1.5		M24x1.5		-	-	-	-
	21.50	2.0		M24x2.0		-	-	-	-
	21.49	-	14	-	1-14UNS	-	-	-	-
	21.50	-	12	-	1-12UNF	-			
	22.63	-	11.5	-		1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11NPT	-	-	-
	21.44	-	10	-	-	-	-	1.05x10APIRD (for UP TBG; UP TBG Long); 1.315...2.375x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-
TM3SC-D26-M12-2U	25.64	1.5		M28x1.5	-	-	-	-	-
	25.45	2.0		M30x2.0	-	-	-	-	-
	25.54		14		1 1/8-14UNS	-	-	-	-
	25.45		12		1 1/8-12UNF	-	-	-	-
	26.23	-	11.5	-	-	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11NPT	-	-	-
	24.94	-	10	-	-	-	-	1.315...2.375x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-
TM4SC-D31-M12-2U	30.00	1.5		M33x1.5	-	-	-	-	-
	29.85	2.0		M34x2.0	-	-	-	-	-
	29.94		14		1 3/8-14UNS	-	-	-	-
	29.85		12		1 5/16-12UN	-	-	-	-
	30.63		11.5	-	-	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11NPT	-	-	-
	29.44		10	-	-	-	-	1.66...3.5x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.
** When the pre-drilled hole for 8NPT is conical, the thread can be machined in one pass.

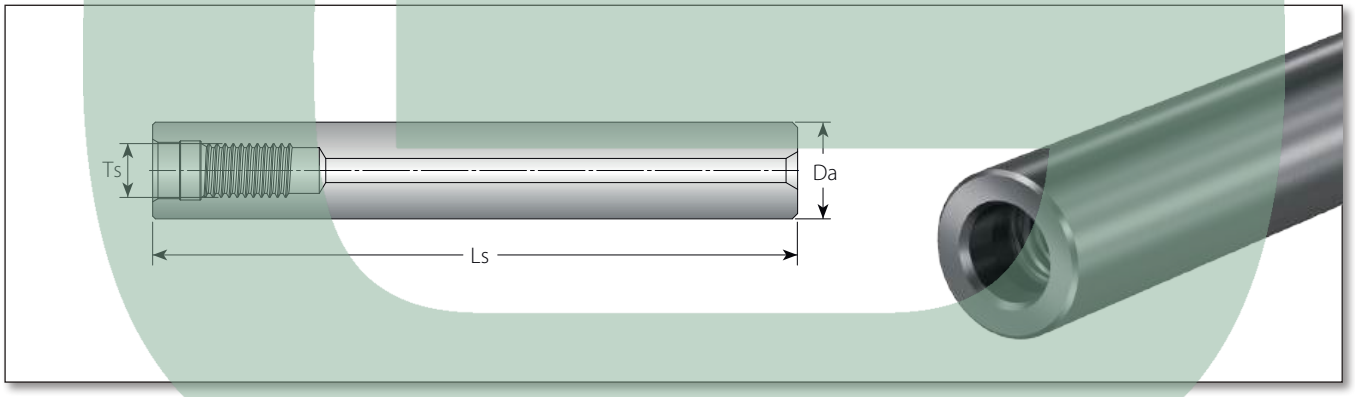
TMSD Modular Toolholder Heads

Thread Application for Full Profile Inserts (ISO, UN, NPT & API Round) - con't

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch		Min. Thread Dia.		Cylindrical or Conical Pre-Drilled hole	Cylindrical Pre-Drilled hole	API Round, Cylindrical or Conical Pre-Drilled Hole (for cylidrical 2 radial passes 50%/50%; for conical one radial pass	API Round, Conical Pre-Drilled Hole only (one pass)
	* Adjusted D2	mm	TPI	ISO Coarse	UN/UNF/ UNEF/UNS	NPT Threading by 1 Radial Pass	** NPT Threading by 2 Radial Passes (50%/50%)	Thread Dia.	
TM3SC-D36-M16-3U	35.65	-	11.5	-	-	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-	-	-
	35.65	-	8	-	-	-	2 1/2..10-8NPT	-	-
	34.70	-	8	-	-	-	-	2.375...13.375x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...5.5x8APIRD (for LCSG)	8.625...20x8APIRD (for LCSG)
TM4SC-D42-M16-3U	41.15	-	11.5	-	-	1 1/2-11.5NPT; 2-11.5NPT	-	-	-
	41.15	-	8	-	-		2 1/2..10-8NPT	-	-
	40.20	-	8	-	-	-	-	2.875...20x8APIRD (for CSG; TGB; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	8.625x8APIRD (for LCSG)

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.
** When the pre-drilled hole for 8NPT is conical, the thread can be machined in one pass.

Steel Shank for TMSD Modular Toolholder Heads



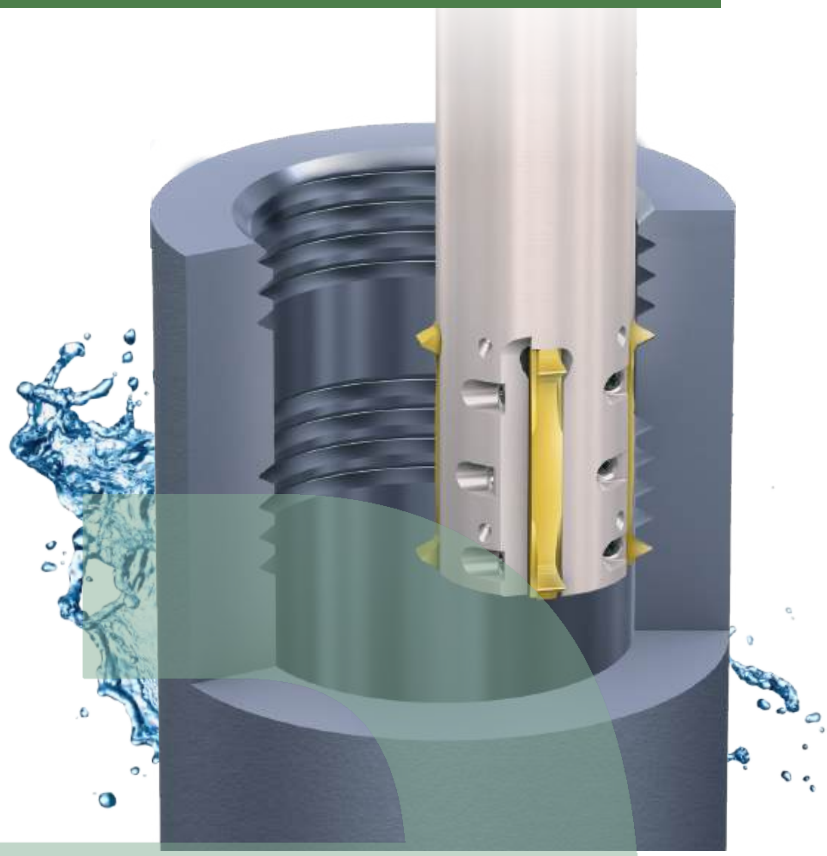
Ordering Code	Da	Ls	Ts	Shank
STMC-C10.6L075M06	10.6	75	M06	C
STMC-C13.0L085M08	13	85	M08	
STMC-C14.1L105M08	14.1	105	M08	
STMC-C18.0L120M10	18	120	M10	
STMC-C21.0L135M12	21	135	M12	
STMC-C25.0L140M12	25	140	M12	
STMC-C29.0L180M16	29	180	M16	

TMSD Modular Toolholder Heads can be used with most common steel and carbide shanks available in the market.

MiTM Offset

Fast Machining for Large Pitches in Deep Holes

PATENT PENDING



Features and Benefits:

- Reduced machining times: Two cutting rows, with each row machining half the thread simultaneously

Inserts:

- Two sizes: MiTM 25 and MiTM 41
- Double-toothed inserts
- Two cutting edges per insert
- MiTM Offset inserts can also be used with standard MiTM holders in order to reduce cutting forces
- Thread standards: ISO Metric and American UN
- Grades:
  - **VTX:** TiAlN coated carbide grade. Ideal for stainless steel
  - **VBX:** TiCN coated carbide grade. Excellent grade for steel and general use

Holders:

- Cylindrical steel holders and shell mills are available
- Up to 2.5xDo (thread diameter)
- Up to 8 flutes for faster machining
- All holders are available with coolant thru for increased tool life and better chip evacuation

Recommended Machining Method:

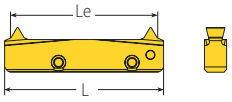
- For best results the MiTM Offset program requires working in conventional milling with multiple passes

MiTM Offset tools are fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting industry

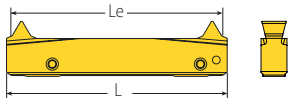
VARGUS GENius™ Tool Selector and CNC Program Generator

MiTM Offset Inserts

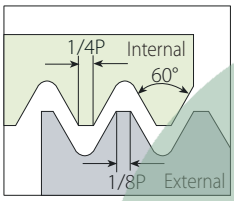
MiTM 25



MiTM 41



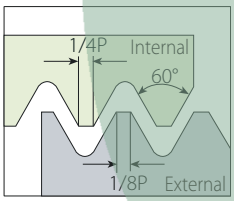
ISO Metric



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

Insert Style	Pitch	Ordering Code	Cutting Edge		Teeth	Toolholder
L	mm	Internal		Le	Zt	
25	3	R25I3.00ISOTM-2...	2	24.0	2	RTMOC....S
41	3.5	R41I3.50ISOTM-2...	2	38.5	2	RTMOC....B; RTMC-D...B
	4	R41I4.00ISOTM-2...	2	40.0	2	
	4.5	R41I4.50ISOTM-2...	2	40.5	2	
	5	R41I5.00ISOTM-2...	2	40.0	2	
	5.5	R41I5.50ISOTM-2...	2	38.5	2	
	6	R41I6.00ISOTM-2...	2	36.0	2	

American UN

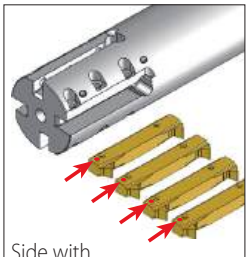


Defined by: ANSI B1.1:74
Tolerance class: 2A/2B

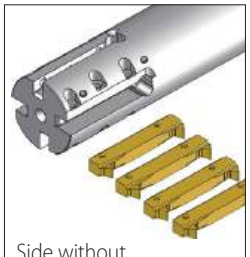
Insert Style	Pitch	Ordering Code	Cutting Edge		Teeth	Toolholder
L	TPI	Internal		Le	Zt	
25	8	R25I8UNTM-2…	2	22.23	2	RTMOC....S
41	7	R41I7UNTM-2…	2	39.92	2	RTMOC....B; RTMC-D...B
	6	R41I6UNTM-2…	2	38.10	2	
	5	R41I5UNTM-2…	2	35.56	2	
	4.5	R41I4.5UNTM-2…	2	39.51	2	

Placing MiTM Offset Inserts Correctly

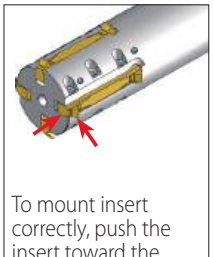
Always mount all inserts with the identification mark on the same side.
Process is applicable for steel cylindrical shanks and shell mill holders.



Side with identification marks

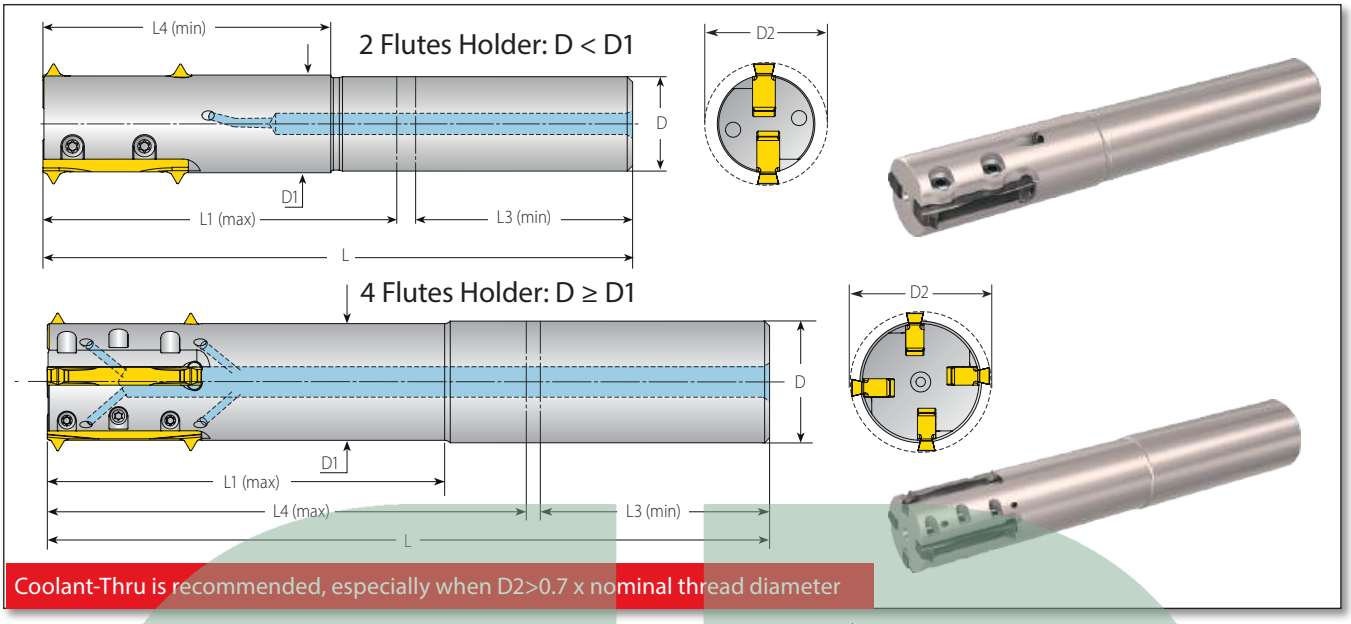


Side without identification marks



To mount insert correctly, push the insert toward the pocket walls.

Steel Cylindrical Shanks for MiTM Offset



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

MiTM Offset RTMOC

Insert Style	Ordering Code	Dimensions mm								No. of Flutes	Spare Parts		
		L	L1 (max)	L3 (min)	L4 (min)	L4 (max)	D	D1	D2	Z	Location Screw x2 (Max. Torque)	Clamping Screw (Max. Torque)	Torx+ Screwdriver
25	RTMOC16C20-60S2	106	60	44	43	-	16	16.6	20.5	2	SLD4IP8 (M4x0.7) 2.0 Nm	-	KIP8
41	RTMOC20C26-75B2	125	75	46	61	-	20	20.7	26.0	2	SLD4IP8A (M4x0.7) 2.0 Nm	SCD4IP8 2.0 Nm	
	RTMOC25C30-90B4	145	90	51	-	-	25	25.0	30.5	4			
	RTMOC32C37-105B4	177	105	69	-	105	32	30.3	37.0	4			
	RTMOC32C39-120B4	194	120	69	-	-	32	32.0	39.5	4			

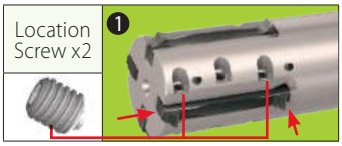
Thread Application for MiTM Offset Inserts with RTMOC Toolholders

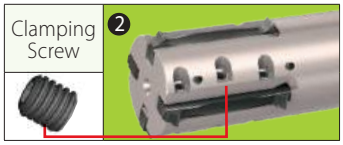
Insert Style	Toolholder		Min. Thread Dia.			
	MiTM Offset	D2 (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS
25	RTMOC16C20-60S2	20.5	M24x3	M30x3	1-8UNC	1 1/16-8UN
41	RTMOC20C26-75B2	26.0	M30x3.5; M36x4	M42x4	1 1/4-7UNC; 1 3/8-6UNC	1 7/16-6UN
	RTMOC25C30-90B4	30.5	M36x4	M36x3.5; M42x4	-	1 7/16-7UN; 1 7/16-6UN
	RTMOC32C37-105B4	37.0	M42x4.5; M48x5	M42x3.5; M45x4	1 3/4-5UNC	1 11/16-7UN; 1 11/16-6UN
	RTMOC32C39-120B4	39.5	M48x5; M56x5.5	M48x4	2-4.5UNC	1 7/8-7UN; 1 7/8-6UN

Thread Application for MiTM Offset Inserts with Standard RTMC Toolholders

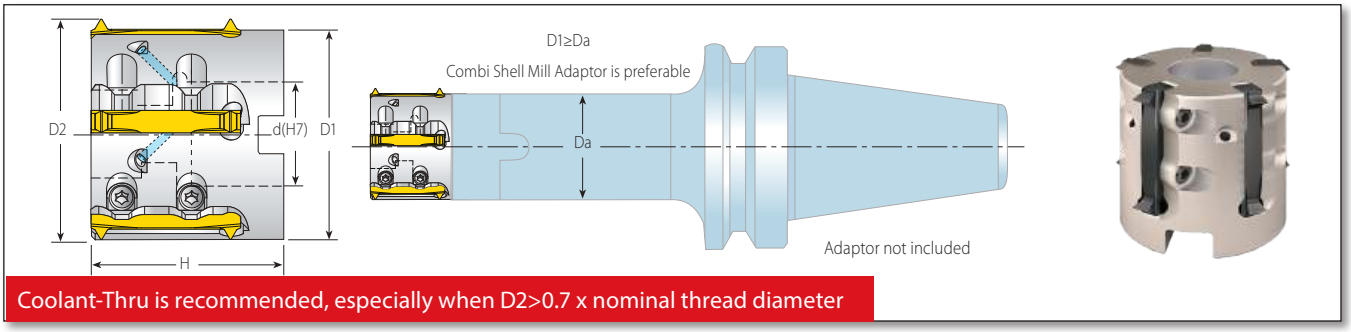
Insert Style	Toolholder		Min. Thread Dia.			
	MiTM Standard	D2 (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS
25	RTMC2519-44S2	19.0	M24x3	M30x3	1-8UNC	1 1/16-8UN
	RTMC2520-37S3	20.5	M24x3	M30x3	1-8UNC	1 1/16-8UN
	RTMC2520-44S3					
	RTMC2522-43S3	22.0	M27x3	M30x3	-	1 1/16-8UN
	RTMC2522-55S3					
	RTMC2530-55S5	30.0	-	M34x3	-	1 3/8-8UN
	RTMC2530-80S4					
41	RTMC3230-65B3	30.0	M36x4; M42x4.5	M36x3.5; M42x4	-	1 7/16-7UN; 1 7/16-6UN
	RTMC3236-65B4	35.9	M42x4.5; M48x5; M56x5.5; M64x6	M40x3.5; M42x4	1 3/4-5UNC; 2-4.5UNC	1 11/16-7UN; 1 5/8-6UN

2 Step Clamping System for MiTM 41 Cylindrical Shanks





Shell Mill MiTM 25



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

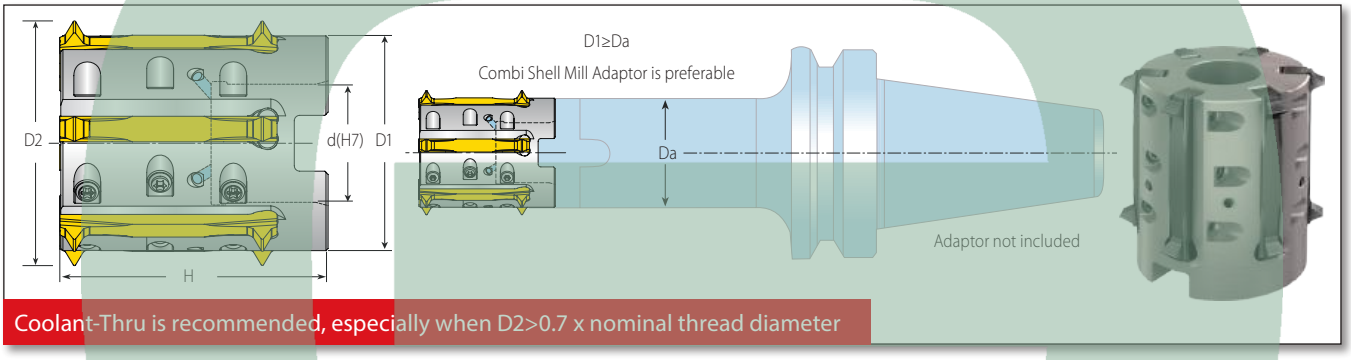
Standard Shell Mill

Insert Style	Ordering Code	Dimensions mm				No. of Flutes
		D1	D2	d(H7)	H	Z
25	RTMC-D36-16-25S5	32	36	16	33.5	5
	RTMC-D44-22-25S6	40	44	22	38.0	6
	RTMC-D52-27-25S8	48	52	27	40.0	8

Spare Parts

Location Screw x2 (Max. Torque)	Torx+ Screwdriver	Holder Screw
SLD4IP8 (M4x0.7) 2.0 Nm	KIP8	M8x1.25x35
		M10x1.50x35
		M12x1.75x30

Shell Mill MiTM 41



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Standard Shell Mill

Insert Style	Ordering Code	Dimensions mm				No. of Flutes
		D1	D2	d(H7)	H	Z
41	RTMC-D48-22-41B5	40	48.0	22	50	5
	RTMC-D48-22-41B6*	40	48.0	22	50	6
	RTMC-D58-27-41B6	50	57.9	27	50	6

Spare Parts

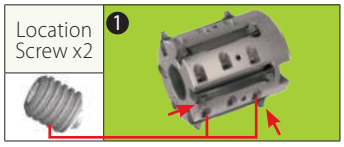
Location Screw x2 (Max. Torque)	Clamping Screw (Max. Torque)	Torx+ Screwdriver	Holder Screw
SLD4IP8A (M4x0.7) 2.0 Nm	SCD4IP8 (M4x0.7) 2.0 Nm	KIP8	M10x1.50x40
			M12x1.75x40

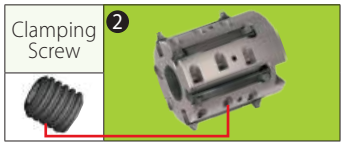
* New Shell Mill holder, also suitable with standard MiTM 41 inserts

Thread Application for MiTM Offset Inserts with Shell Mill

Insert Style	Toolholder		Min. Thread Dia.			
		D2 (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS
25	RTMC-D36-16-25S5	36	-	M40x3	-	1⅝-8UN
	RTMC-D44-22-25S6	44		M48x3		1⁵⁄₁₆-8UN
	RTMC-D52-27-25S8	52		M56x3		2¼-8UN
41	RTMC-D48-22-41B5	48	M56x5.5; M64x6	M56x4; M70x6	2¼-4.5UNC	2⅛-7UN; 2⅛-6UN
	RTMC-D48-22-41B6					
	RTMC-D58-27-41B6	58	M68x6	M64x4; M70x6	-	2½-7UN; 2½-6UN

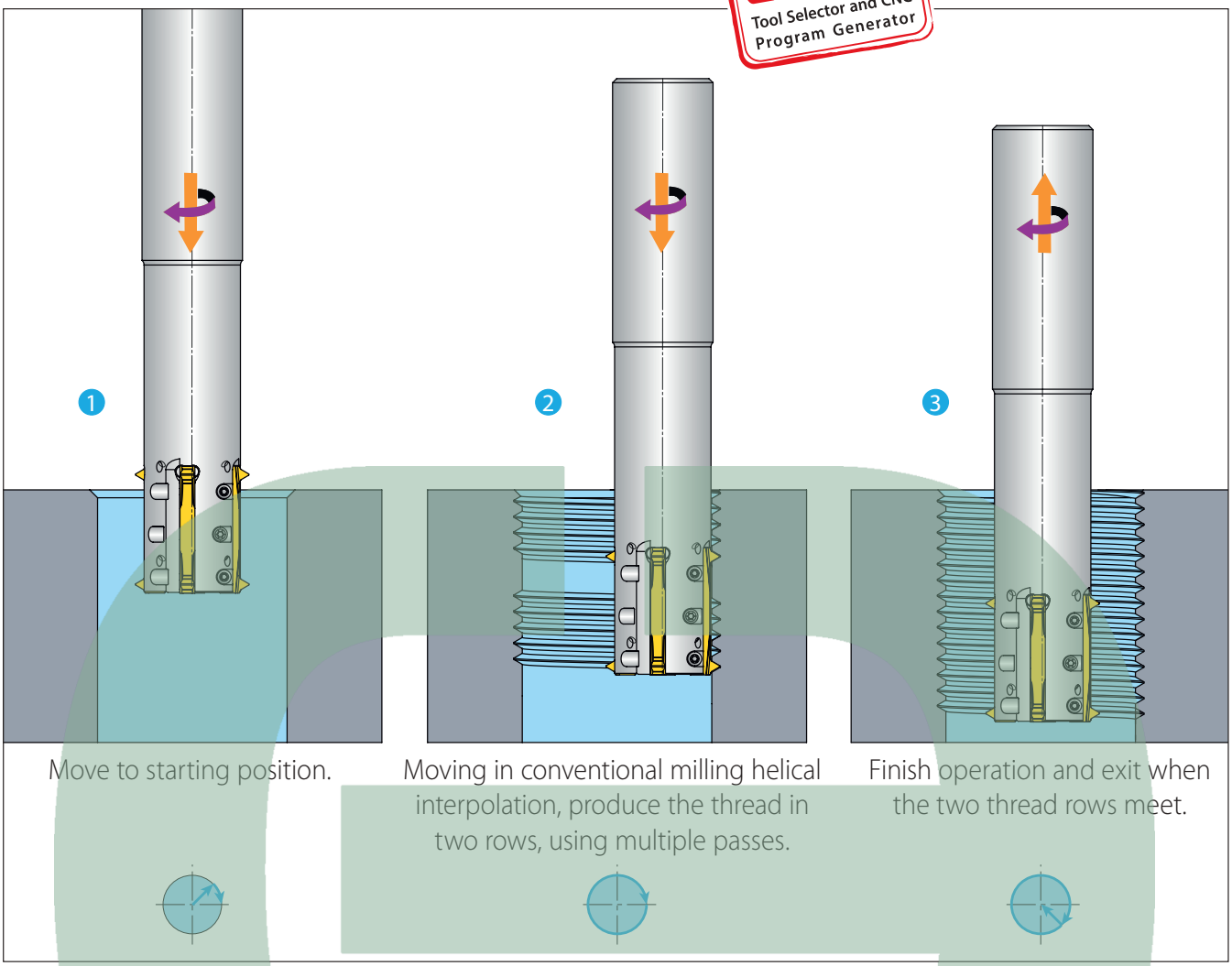
2 Step Clamping System for MiTM 41 Shell Mill Holders





MiTM Offset - Operating Cycle

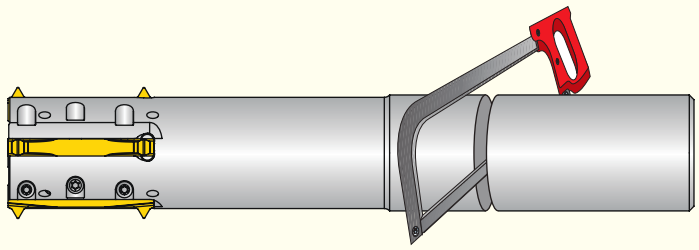
VARGUS GENius™ Tool Selector and CNC Program Generator



1. Move to starting position.
2. Moving in conventional milling helical interpolation, produce the thread in two rows, using multiple passes.
3. Finish operation and exit when the two thread rows meet.

Grades

Grade	Application	Sample
VBX	TiCN coated carbide grade. Excellent grade for **steels and general use**.	
VTX	TiAlN coated carbide grade. Ideal for **Stainless Steels**.	

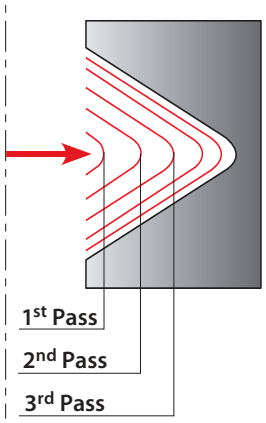


The length of all cylindrical shank toolholders can be modified to reduce chatter (vibration).
Note: The length of the shank inside the clamping device should be L3 at minimum.

MiTM Offset - Recommended No. of Passes According to Pitch

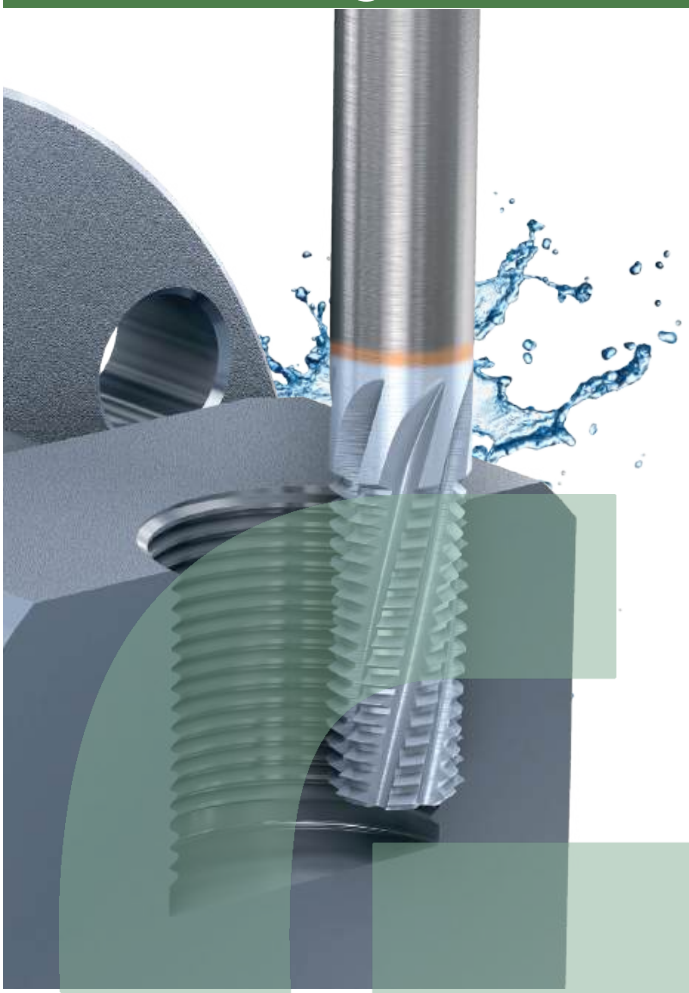
Pitch TPI	8	7	6	5	4.5
Pitch mm	3	3.5	4.0-4.5	5.0	5.5-6.0
No. of Passes	5-8	5-8	6-10	8-11	9-12

Conventional milling with multiple passes is required.
For machining recommendations, use the Vargus GENius.



Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	MiTM Offset Holders Vc [m/min] VBX	MiTM Offset Holders Vc [m/min] VTX	MiTM Offset Holders Feed f [mm/tooth]	MiTM Standard Holders Vc [m/min] VBX	MiTM Standard Holders Vc [m/min] VTX	MiTM Standard Holders Feed f [mm/tooth] Standard	MiTM Standard Holders Feed f [mm/tooth] Shell Mill
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	100-210	90-180	0.25-0.50	100-210	90-180	0.30-0.50	0.30-0.75
	2		Medium Carbon (C=0.25-0.55%)	150	100-180	90-170	0.25-0.55	100-180	90-170	0.30-0.50	0.30-0.75
	3		High Carbon (C=0.55-0.85%)	170	90-150	90-160	0.25-0.50	100-170	90-160	0.25-0.35	0.25-0.52
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	80-130	80-130	0.25-0.55	60-90	90-155	0.28-0.45	0.28-0.67
	5		Hardened	275	80-130	80-130	0.25-0.50	80-150	80-160	0.25-0.45	0.25-0.67
	6		Hardened	350	70-120	70-130	0.25-0.45	70-140	70-150	0.25-0.40	0.25-0.60
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	60-110	65-115	0.25-0.50	60-130	70-115	0.20-0.30	0.20-0.45
	8		Hardened	325	70-115	70-115	0.25-0.35	70-110	60-100	0.18-0.30	0.18-0.45
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	90-150	90-160	0.25-0.45	100-170	100-170	0.20-0.30	0.20-0.45
	10		High Alloy (alloying elements >5%)	225	65-115	70-120	0.25-0.35	70-120	70-130	0.17-0.30	0.17-0.45
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	90-150	90-160	0.25-0.45	100-170	120-180	0.22-0.34	0.22-0.50
	12		Hardened	330	90-150	90-160	0.25-0.35	100-170	120-180	0.21-0.32	0.21-0.48
	13	Stainless Steel Austenitic	Austenitic	180	70-120	70-130	0.25-0.45	70-140	100-140	0.25-0.40	0.25-0.60
	14		Super Austenitic	200	70-120	70-130	0.25-0.35	70-140	100-140	0.17-0.26	0.17-0.39
	15	Stainless Steel Cast Ferritic	Non Hardened	200	70-120	70-130	0.25-0.45	70-140	100-140	0.25-0.37	0.25-0.55
	16		Hardened	330	70-120	70-130	0.25-0.35	70-140	100-140	0.17-0.26	0.17-0.39
	17	Stainless Steel Cast Austenitic	Austenitic	200	65-115	70-120	0.25-0.45	70-120	100-120	0.20-0.30	0.20-0.45
	18		Hardened	330	65-115	70-120	0.25-0.35	70-120	100-120	0.17-0.26	0.17-0.39
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-110	65-115	0.16-0.30	60-130	100-120	0.25-0.37	0.25-0.55
	29		Pearlitic (long chips)	230	60-110	65-115	0.15-0.25	60-120	80-100	0.20-0.30	0.20-0.45
	30	Grey Cast Iron	Low Tensile Strength	180	60-110	65-115	0.25-0.45	60-130	80-100	0.22-0.34	0.22-0.50
	31		High Tensile Strength	260	60-100	70-100	0.25-0.35	60-100	80-100	0.20-0.30	0.20-0.45
	32	Nodular Sg Iron	Ferritic	160	60-110	65-115	0.25-0.45	60-125	80-100	0.15-0.25	0.15-0.37
	33		Pearlitic	260	50-90	60-90	0.25-0.35	50-90	60-90	0.20-0.30	0.20-0.45
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	100-200	-	0.30-0.70	100-250	-	0.60-1.00	0.60-1.50
	35		Aged	100	100-180	-	0.30-0.65	100-180	-	0.50-0.90	0.50-1.20
	36	Aluminum Alloys	Cast	75	100-200	-	0.30-0.65	150-400	-	0.50-0.90	0.50-1.20
	37		Cast & Aged	90	100-200	-	0.25-0.55	150-280	-	0.40-0.60	0.40-0.90
	38	Aluminum Alloys	Cast Si 13-22%	130	80-130	80-130	0.30-0.65	80-150	-	0.50-0.90	0.50-1.20
	39	Copper and Copper Alloys	Brass	90	100-180	100-200	0.30-0.65	120-210	100-200	0.60-1.00	0.60-1.50
	40		Bronze And Non Leaded Copper	100	100-200	100-200	0.25-0.55	120-210	100-200	0.50-0.90	0.50-1.20
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	20-45	20-40	0.25-0.35	20-45	20-40	0.12-0.22	0.12-0.33
	20		Aged (iron based)	280	20-30	20-30	0.15-0.25	20-30	20-30	0.10-0.20	0.10-0.30
	21		Annealed (nickel or cobalt based)	250	15-20	15-20	0.15-0.25	15-20	15-20	0.08-0.20	0.08-0.30
	22		Aged (nickel or cobalt based)	350	10-15	10-15	0.15-0.25	10-15	10-15	0.08-0.20	0.08-0.30
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	70-120	70-130	0.15-0.25	70-140	70-120	0.10-0.20	0.10-0.30
	24		α+β Alloys	1050Rm	20-50	20-50	0.15-0.25	20-50	20-50	0.10-0.20	0.10-0.30
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50 HRC	15-45	15-45	0.17-0.27	15-45	15-45	0.05-0.18	0.05-0.27
	26			51-55 HRC	15-40	15-40	0.15-0.20	15-40	15-40	0.05-0.18	0.05-0.27



TM Solid MultiFlute

Helicool Tools

Increased Number of Flutes for Faster Machining

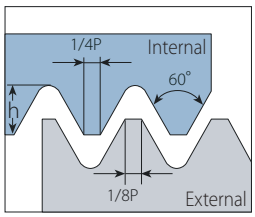
Features and Benefits:

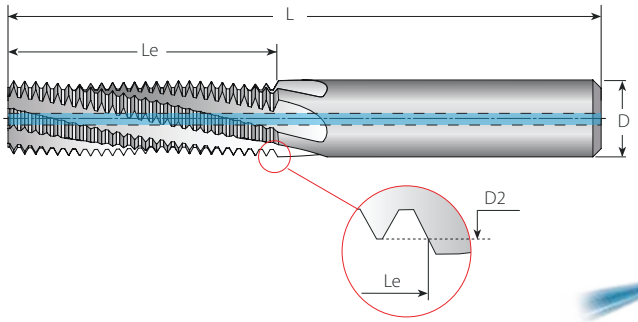
- Reduced machining times: Up to 40%!
- Large number of flutes (max 7)
- Available in 2xDo and 3xDo (thread diameter)
- Thread Standards:
  ISO Metric (mm shank): M3x0.5 to M16x2.0
- VTH Grade:
  General-purpose, heavy duty thread milling grade, TiCN coated for high resistance to wear
- For better chip evacuation in high feeds, radial multi-pass machining is required

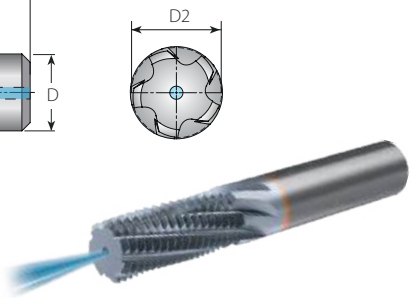
Helicool MultiFlute Tools are fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

Internal







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

Helical Flutes with Coolant Thru

2 x Do (Le ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HC04024L06-I0.50ISOTM5…	4	2.40	45	6.2	5	12	2.5
	M4x0.5	0.5	HC04032L08-I0.50ISOTM6…	4	3.20	45	8.2	6	16	3.5
M4x0.7		0.7	HC04031L08-I0.70ISOTM5…	4	3.15	45	8.7	5	12	3.3
	M6x0.75	0.75	HC06050L12-I0.75ISOTM6…	6	5.00	57	12.4	6	16	5.3
M5x0.8		0.8	HC04039L10-I0.80ISOTM6…	4	3.90	45	10.8	6	13	4.2
M6x1.0	M8-M40x1.0	1.0	HC06048L12-I1.00ISOTM6…	6	4.80	57	12.5	6	12	5.0
M8x1.25		1.25	HC08065L16-I1.25ISOTM6…	8	6.50	61	16.9	6	13	6.8
M10x1.5	M12-M48x1.5	1.5	HC10082L20-I1.50ISOTM7…	10	8.20	73	20.2	7	13	8.5
M12x1.75		1.75	HC10099L25-I1.75ISOTM7…	10	9.90	73	25.4	7	14	10.2
M14x2.0	M17-M80x2.0	2.0	HC12116L29-I2.00ISOTM6…	12	11.60	80	29.0	6	14	12.0
M16x2.0	M17-M80x2.0	2.0	HC14136L33-I2.00ISOTM7…	14	13.60	92	33.0	7	16	14.0

Helical Flutes with Coolant Thru

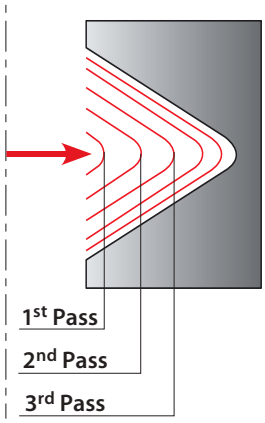
3x Do (Le ≤ 3 x Thread Diameter)

Thread		Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HC04024L09-I0.50ISOTM4…	4	2.40	45	9.3	4	18	2.5
	M4x0.5	0.5	HC04032L12-I0.50ISOTM5…	4	3.20	45	12.2	5	24	3.5
M4x0.7		0.7	HC04031L12-I0.70ISOTM4…	4	3.15	47	13.0	4	18	3.3
	M6x0.75	0.75	HC06050L18-I0.75ISOTM5…	6	5.00	60	18.4	5	24	5.3
M5x0.8		0.8	HC04039L15-I0.80ISOTM5…	4	3.90	50	15.6	5	19	4.2
M6x1.0	M8-M40x1.0	1.0	HC06048L18-I1.00ISOTM5…	6	4.80	60	18.5	5	18	5.0
M8x1.25		1.25	HC08065L25-I1.25ISOTM5…	8	6.50	66	25.7	5	20	6.8
M10x1.5	M12-M48x1.5	1.5	HC10082L30-I1.50ISOTM5…	10	8.20	75	30.8	5	20	8.5
M12x1.75		1.75	HC10099L36-I1.75ISOTM5…	10	9.90	86	37.7	5	21	10.2
M14x2.0	M17-M80x2.0	2.0	HC12116L42-I2.00ISOTM5…	12	11.60	102	43.0	5	21	12.0
M16x2.0	M17-M80x2.0	2.0	HC14136L48-I2.00ISOTM5…	14	13.60	108	49.0	5	24	14.0

* Bore diameter applies to smallest thread dia.

Efficient Multi-passes Machining Method

Due to the high volume of chips, thinner chips are required. This is achieved by radial multi-pass machining, which reduces the accumulation of chips, and thereby enables higher speeds and feed rates.



Recommended No. of Passes According to Pitch

Pitch TPI	48	32	24	20	16	14	12	10	8
Pitch mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
No. of Passes	2-3	2-3	3-4	4-5	5-6	5-6	6-7	7-8	7-9

Climb milling with multiple passes is required.
For machining recommendations, use the Vargus GENius.

Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	2xDo Tools				3xDo Tools			
					Vc [m/min]	Feed f [mm/tooth] by Cutter Dia. = D2			Vc [m/min]	Feed f [mm/tooth] by Cutter Dia. = D2		
					VTH	2.4-4.0	4.0-9.0	>9.0	VTH	2.4-4.0	4.0-9.0	>9.0
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	145-185	0.05-0.08	0.09-0.14	0.11-0.17	70-110	0.03-0.05	0.07-0.10	0.08-0.13
	2		Medium Carbon (C=0.25-0.55%)	150	135-175	0.05-0.08	0.09-0.14	0.11-0.17	70-110	0.03-0.05	0.07-0.10	0.08-0.13
	3		High Carbon (C=0.55-0.85%)	170	120-160	0.05-0.08	0.09-0.14	0.11-0.17	65-105	0.03-0.05	0.07-0.10	0.08-0.13
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	100-140	0.05-0.08	0.09-0.14	0.11-0.17	65-105	0.03-0.05	0.07-0.10	0.08-0.13
	5		Hardened	275	95-135	0.05-0.08	0.09-0.14	0.11-0.17	65-105	0.03-0.05	0.07-0.10	0.08-0.13
	6		Hardened	350	90-130	0.04-0.06	0.06-0.10	0.08-0.11	60-100	0.03-0.05	0.05-0.08	0.07-0.10
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	50-90	0.05-0.08	0.09-0.14	0.11-0.17	50-90	0.03-0.05	0.07-0.10	0.08-0.13
	8		Hardened	325	40-80	0.04-0.06	0.06-0.10	0.08-0.11	40-80	0.03-0.05	0.05-0.08	0.07-0.10
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	145-185	0.05-0.08	0.09-0.14	0.11-0.17	70-110	0.03-0.05	0.07-0.10	0.08-0.13
	10		High Alloy (alloying elements >5%)	225	95-135	0.04-0.06	0.06-0.10	0.08-0.11	65-105	0.03-0.05	0.05-0.08	0.07-0.10
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	85-125	0.04-0.06	0.06-0.10	0.08-0.11	60-100	0.03-0.05	0.05-0.08	0.07-0.10
	12		Hardened	330	70-110	0.04-0.06	0.06-0.10	0.08-0.11	60-100	0.03-0.05	0.05-0.08	0.07-0.10
	13	Stainless Steel Austenitic	Austenitic	180	80-120	0.05-0.08	0.09-0.14	0.11-0.17	60-100	0.03-0.05	0.07-0.10	0.08-0.13
	14		Super Austenitic	200	75-115	0.05-0.08	0.09-0.14	0.11-0.17	60-100	0.03-0.05	0.07-0.10	0.08-0.13
	15	Stainless Steel Cast Ferritic	Non Hardened	200	90-130	0.05-0.08	0.09-0.14	0.11-0.17	60-100	0.03-0.05	0.07-0.10	0.08-0.13
	16		Hardened	330	65-105	0.04-0.06	0.06-0.10	0.08-0.11	60-100	0.03-0.05	0.05-0.08	0.07-0.10
	17	Stainless Steel Cast Austenitic	Austenitic	200	85-125	0.05-0.08	0.09-0.14	0.11-0.17	60-100	0.03-0.05	0.07-0.10	0.08-0.13
	18		Hardened	330	60-100	0.04-0.06	0.06-0.10	0.08-0.11	60-100	0.03-0.05	0.05-0.08	0.07-0.10
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-70	0.05-0.08	0.09-0.14	0.11-0.17	60-100	0.03-0.05	0.07-0.10	0.08-0.13
	29		Pearlitic (long chips)	230	85-125	0.05-0.08	0.09-0.14	0.11-0.17	60-100	0.03-0.05	0.07-0.10	0.08-0.13
	30	Grey Cast Iron	Low Tensile Strength	180	95-135	0.05-0.08	0.09-0.14	0.11-0.17	65-105	0.03-0.05	0.07-0.10	0.08-0.13
	31		High Tensile Strength	260	60-100	0.04-0.06	0.06-0.10	0.08-0.11	70-110	0.03-0.05	0.05-0.08	0.07-0.10
	32	Nodular Sg Iron	Ferritic	160	55-95	0.05-0.08	0.09-0.14	0.11-0.17	40-80	0.03-0.05	0.07-0.10	0.08-0.13
	33		Pearlitic	260	50-90	0.04-0.06	0.06-0.10	0.08-0.11	40-80	0.03-0.05	0.05-0.08	0.07-0.10
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	200-300	0.06-0.10	0.11-0.17	0.16-0.19	70-110	0.06-0.09	0.11-0.16	0.13-0.20
	35		Aged	100	150-250	0.06-0.10	0.11-0.17	0.16-0.19	70-110	0.06-0.09	0.11-0.16	0.13-0.20
	36	Aluminum Alloys	Cast	75	100-200	0.06-0.10	0.11-0.17	0.16-0.19	70-110	0.06-0.09	0.11-0.16	0.13-0.20
	37		Cast & Aged	90	120-220	0.06-0.10	0.11-0.17	0.16-0.19	70-110	0.06-0.09	0.11-0.16	0.13-0.20
	38	Aluminum Alloys	Cast Si 13-22%	130	200-300	0.06-0.10	0.11-0.17	0.16-0.19	70-110	0.06-0.09	0.11-0.16	0.13-0.20
	39	Copper and Copper Alloys	Brass	90	200-300	0.06-0.10	0.11-0.17	0.16-0.19	70-110	0.06-0.09	0.11-0.16	0.13-0.20
	40		Bronze And Non Leaded Copper	100	150-250	0.06-0.10	0.11-0.17	0.16-0.19	70-110	0.06-0.09	0.11-0.16	0.13-0.20

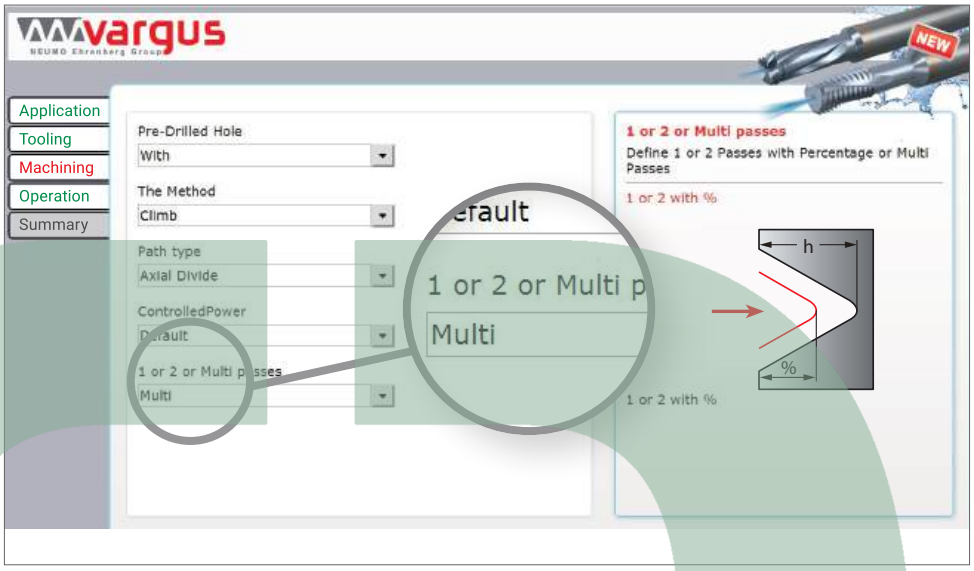
VARGUS GENius™

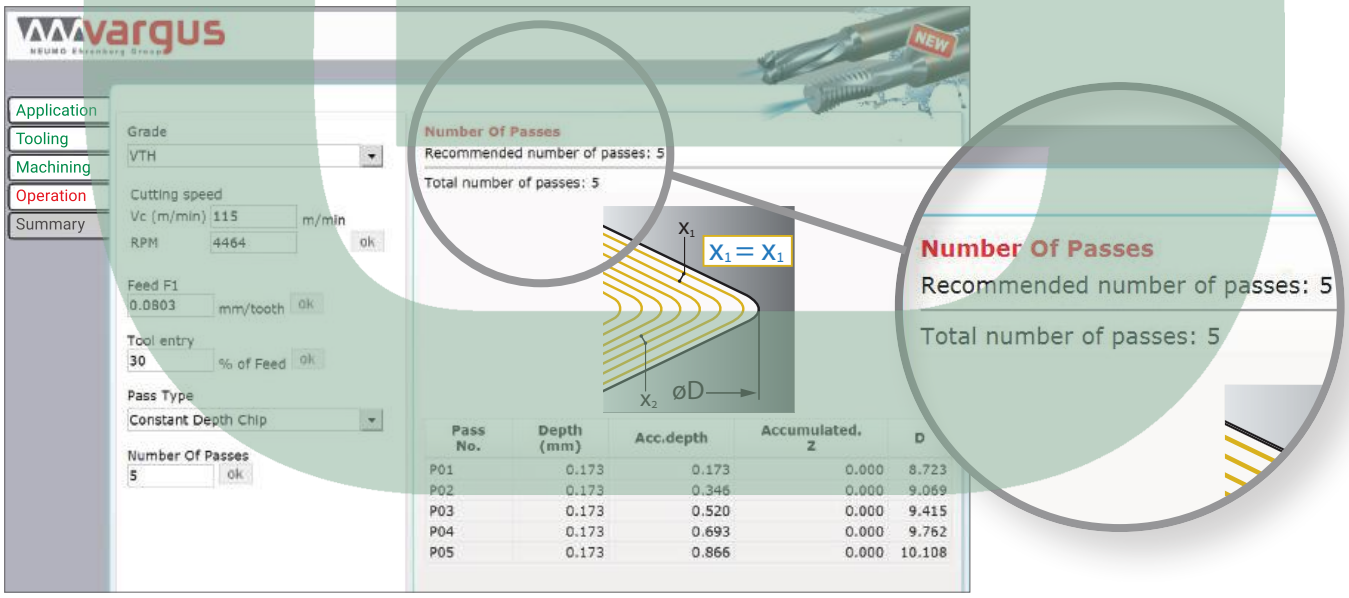
Tool Selector and CNC Program Generator

Thread Milling CNC Program Generator with Multiple Passes

PATENT PENDING

The VARGUS GENius™ automatically generates the recommended number of passes for the application!



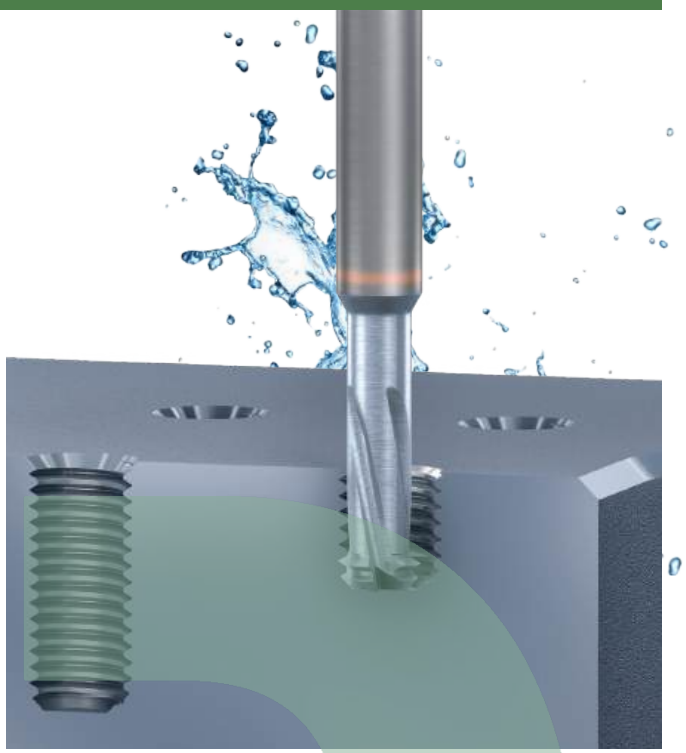


Features and Benefits:

- The VARGUS GENius™ now offers unlimited multiple radial passes for thread milling applications
- The software automatically generates the recommended number of passes required based on the machining data that is entered
- The new update allows for complete control of the number of passes, as the well as depth of the last pass
- Highly recommended for applications such as long threads, difficult to machine applications, and hard materials

TM Solid TMDR

Drilling, Thread Milling & Chamfering

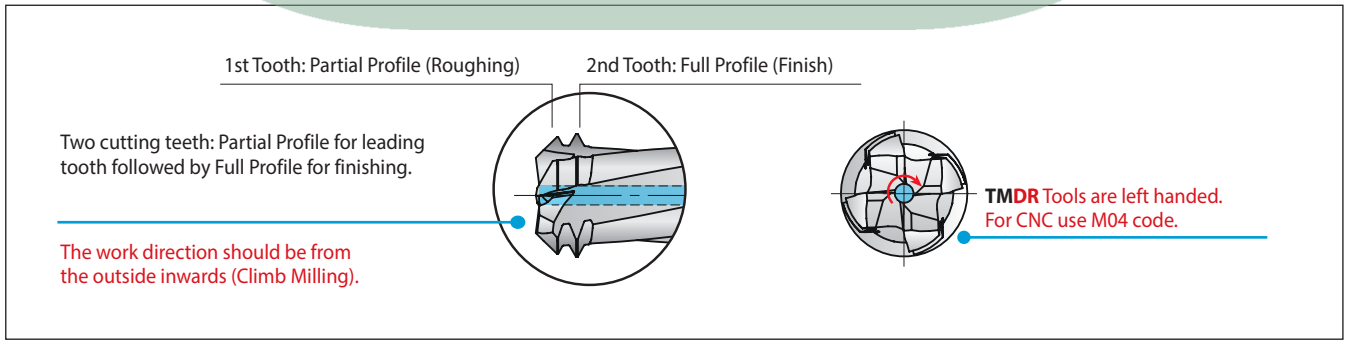


EXPANDED LINE

Now Available in Full Profiles ISO, BSP, NPT & BSPT

Features and Benefits:

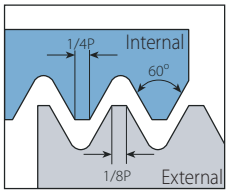
- TMDR tools drill, thread and chamfer all in one tooling operation
- Pre-drilled holes are no longer required!
- Drilling and thread milling is done simultaneously, while chamfering is produced at the end of the operation
- All tools are left handed, and are suitable for right and left hand threads
- All expansion tools are available with coolant thru
- Expansion Includes:
  - ISO Metric: M10, M12, M16 & M24 tools for 2.5xDo
  - BSP: 28, 19 & 14 TPI
  - NPT: 27, 18 & 14 TPI
  - BSPT: 28, 19, & 14 TPI
- VTS Grade:
  A general-purpose, heavy duty thread milling grade. TiAlN coated for high resistance to wear



The **TMDR** is fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

Internal



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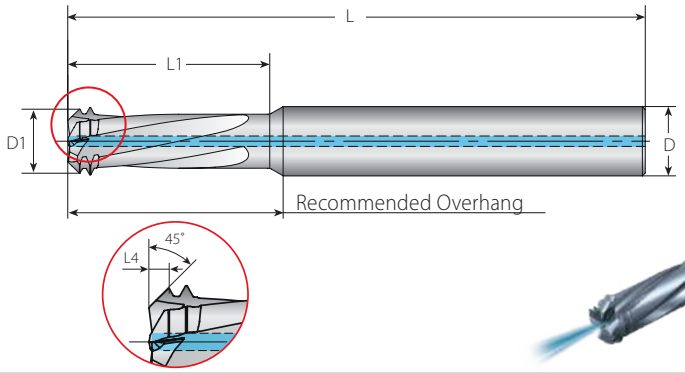
Tolerance class: 6H



Left Hand Tool

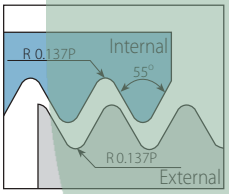
TMDR - Drilling, Thread Milling & Chamfering

2.5 x Do (L1 ≤ 2.5 x Thread Diameter)

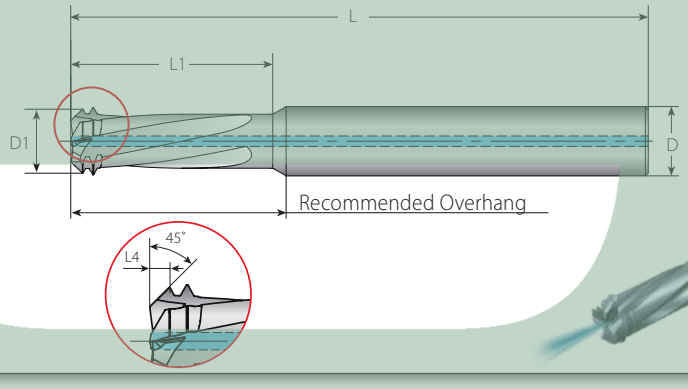
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth		
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	L4*	D1
With Coolant											
M10x1.5	M11-M14x1.5	1.50	TDC2L08078L280-I1.50ISO...	8	7.8	64	28.0	4	2	1.12	7.24
M12x1.75		1.75	TDC2L10090L320-I1.75ISO...	10	9.0	80	32.0	4	2	1.20	8.35
M16x2.0	M17-M23x2.0	2.00	TDC2L12118L430-I2.00ISO...	12	11.8	100	43.0	4	2	2.00	11.13
M24x3.0		3.00	TDC2L18178L650-I3.0ISO...	18	17.8	135	65.0	4	2	2.50	16.90

BSP (G)

Internal



Defined by: B.S.2779:1956
Tolerance class: Medium class



Left Hand Tool

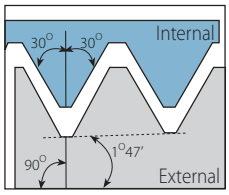
TMDR - Drilling, Thread Milling & Chamfering

2 x Do (L1 ≤ 2 x Thread Diameter)

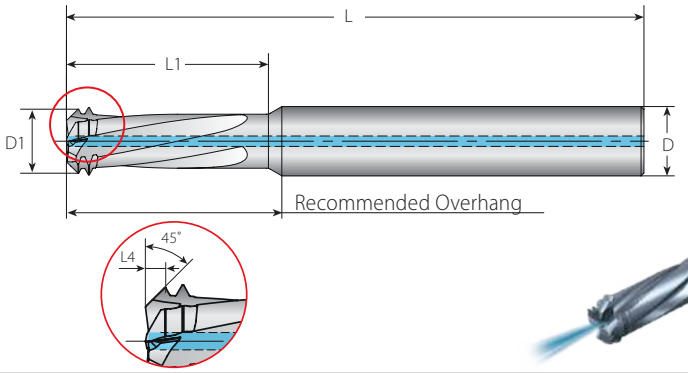
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth		
Standard	TPI	Internal	D	D2	L	L1	Z	Zt	L4*	D1
With Coolant										
1/16"x28	28	TDC2L08059L175-I28BSP...	8	5.9	64	17.5	4	2	0.60	5.50
1/8"x28	28	TDC2L08078L230-I28BSP...	8	7.8	64	23.0	4	2	0.60	7.28
1/4"x19	19	TDC2L12105L320-I19BSP...	12	10.5	80	32.0	4	2	0.80	10.00
3/8"x19	19	TDC2L14126L380-I19BSP...	14	12.6	100	38.0	4	2	0.80	12.04
1/2"x14	14	TDC2L16158L456-I14BSP...	16	15.8	135	45.6	4	2	1.27	15.16

* Please use the VARGUS GENius™ for Chamfer recommendations

Internal



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



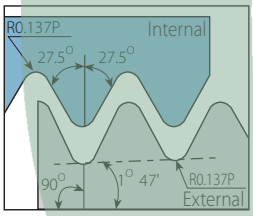
Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering

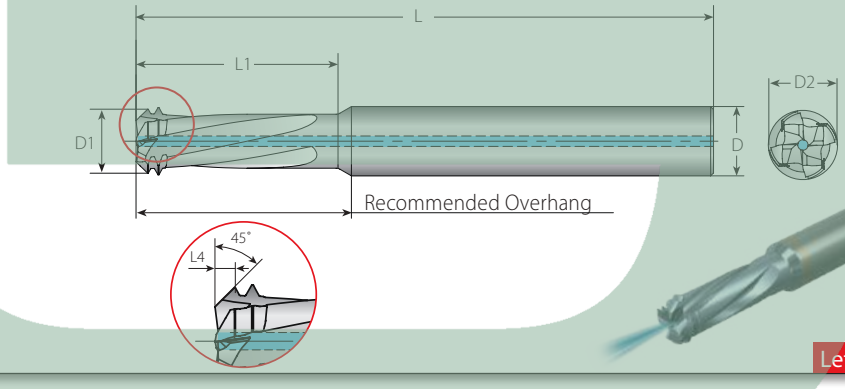
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth		
Standard	TPI	Internal	D	D2	L	L1	Z	Zt	L4*	D1
With Coolant										
1/16"x27	27	TDC2L08056L112-I27NPT...	8	5.6	64	11.2	4	2	0.60	5.07
1/8"x27	27	TDC2L08075L112-I27NPT...	8	7.5	64	11.2	4	2	0.60	6.97
1/4"x18	18	TDC2L10094L164-I18NPT...	10	9.4	80	16.4	4	2	1.00	8.67
3/8"x18	18	TDC2L12119L164-I18NPT...	12	11.9	100	16.4	4	2	1.00	11.19
1/2"x14	14	TDC2L16153L286-I14NPT...	16	15.3	100	28.6	6	2	1.50	14.41

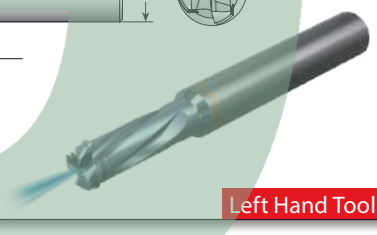
BSPT

External / Internal



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





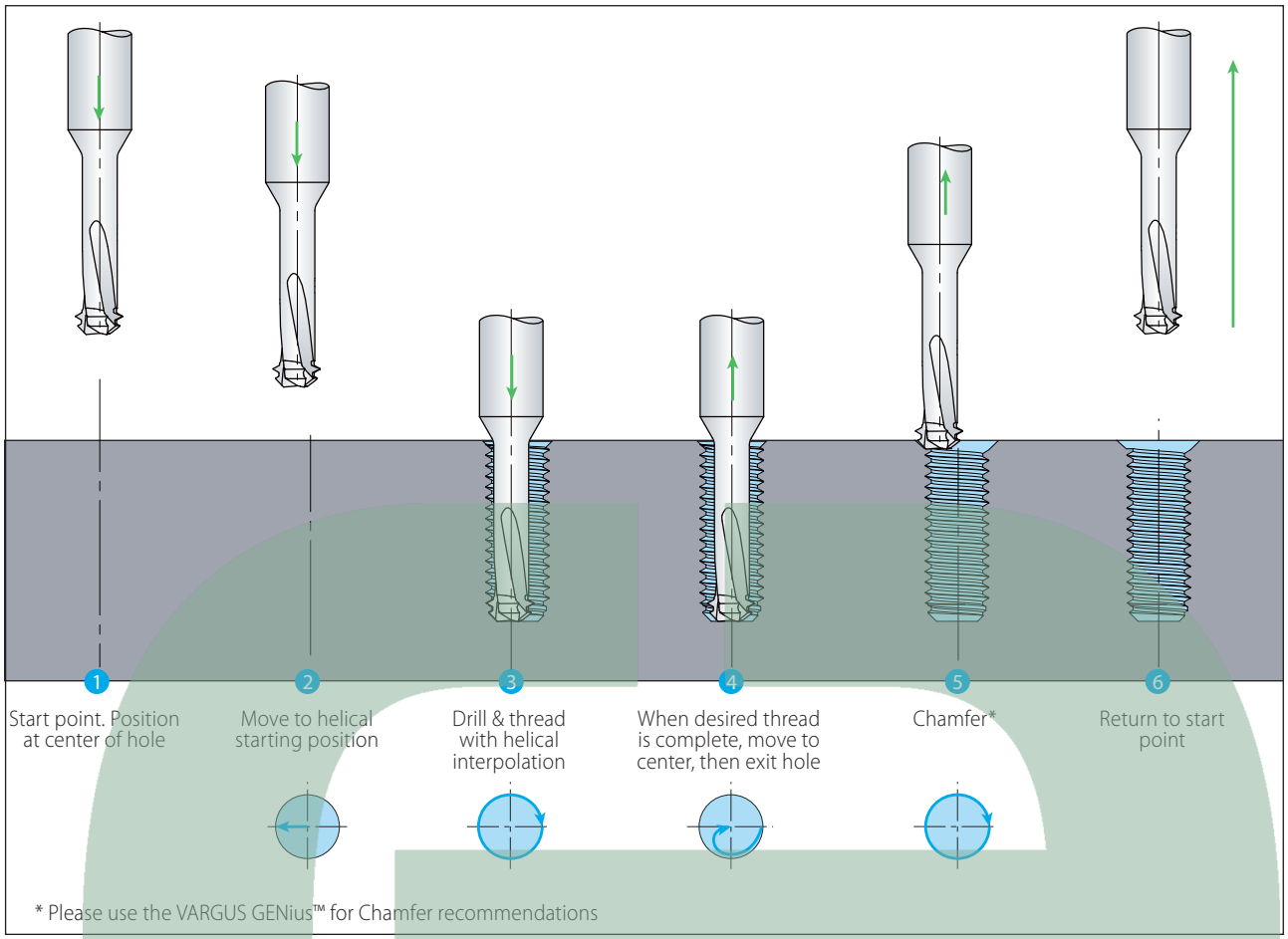
Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth		
Standard	TPI	Internal	D	D2	L	L1	Z	Zt	L4*	D1
With Coolant										
1/16"x28	28	TDC2L06054L170-I28BSPT...	6	5.36	58	17.0	3	2	0.70	3.99
1/8"x28	28	TDC2L08068L210-I28BSPT...	8	6.76	64	21.0	4	2	0.70	5.39
1/4"x19	19	TDC2L10091L285-I19BSPT...	10	9.14	100	28.5	4	2	1.00	7.23
3/8"x19	19	TDC2L12116L355-I19BSPT...	12	11.59	100	35.5	4	2	1.00	9.68
1/2"x14	14	TDC2L16146L450-I14BSPT...	16	14.57	135	45.0	6	2	1.35	12.05

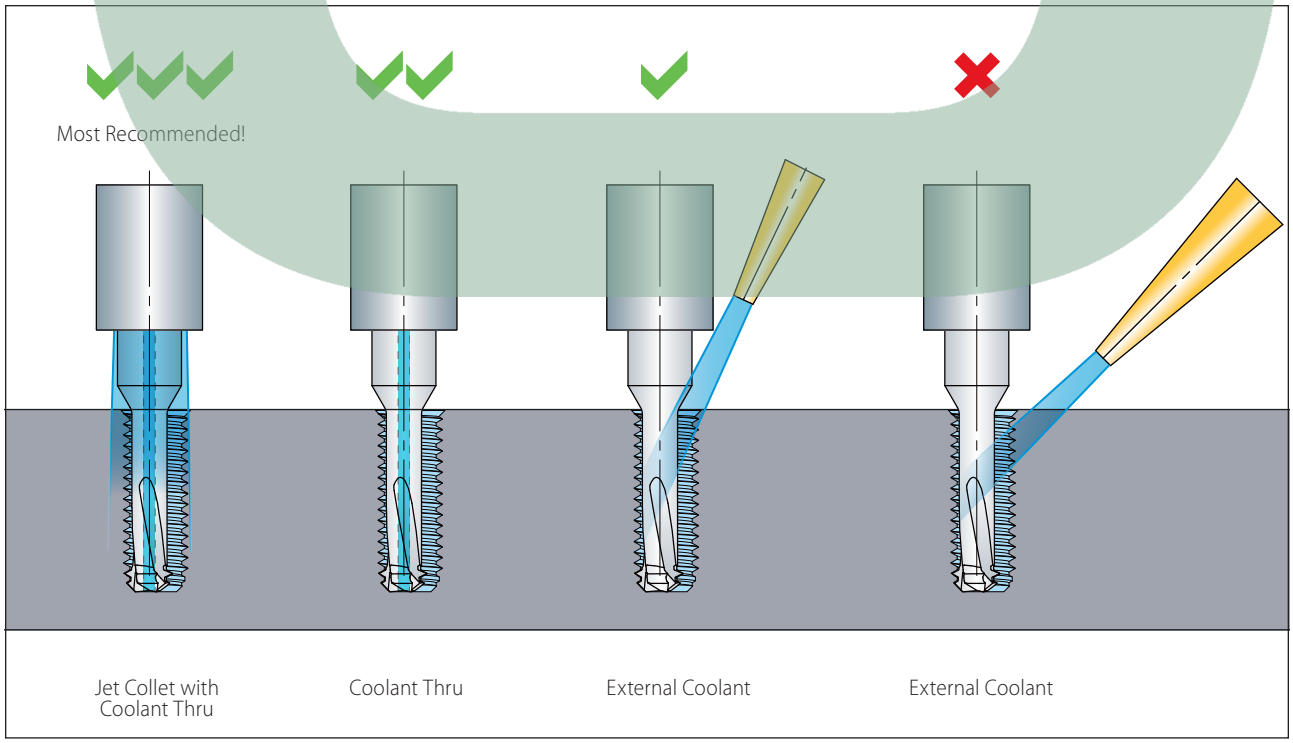
* Please use the VARGUS GENius™ for Chamfer recommendations

TMDR - Operating Cycle



* Please use the VARGUS GENius™ for Chamfer recommendations

TMDR - Coolant Use for Best Chip Evacuation



Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] VTS	Feed f [mm/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	60-120	0.02-0.12
	2		Medium Carbon (C=0.25-0.55%)	150	60-120	0.02-0.12
	3		High Carbon (C=0.55-0.85%)	170	60-90	0.02-0.12
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	60-90	0.02-0.12
	5		Hardened	275	50-80	0.02-0.05
	6		Hardened	350	50-80	0.02-0.03
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	50-80	0.02-0.07
	8		Hardened	325	50-80	0.02-0.03
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	70-90	0.02-0.12
	10		High Alloy (alloying elements >5%)	225	60-80	0.02-0.03
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	60-90	0.02-0.12
	12		Hardened	330	50-80	0.02-0.03
	13	Stainless Steel Austenitic	Austenitic	180	60-90	0.02-0.12
	14		Super Austenitic	200	50-80	0.02-0.12
	15	Stainless Steel Cast Ferritic	Non Hardened	200	60-90	0.02-0.12
	16		Hardened	330	50-80	0.02-0.03
	17	Stainless Steel Cast Austenitic	Austenitic	200	60-90	0.02-0.12
	18		Hardened	330	50-80	0.02-0.03
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	50-80	0.02-0.03
	29		Pearlitic (long chips)	230	60-90	0.02-0.09
	30	Grey Cast Iron	Low Tensile Strength	180	70-100	0.02-0.12
	31		High Tensile Strength	260	60-90	0.02-0.09
	32	Nodular Sg Iron	Ferritic	160	70-100	0.02-0.12
	33		Pearlitic	260	60-90	0.02-0.09
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	60-250	0.03-0.11
	35		Aged	100	60-150	0.03-0.12
	36	Aluminum Alloys	Cast	75	60-250	0.03-0.12
	37		Cast & Aged	90	60-150	0.02-0.12
	38	Aluminum Alloys	Cast Si 13-22%	130	250	0.03-0.11
	39	Copper and Copper Alloys	Brass	90	60-250	0.03-0.12
	40		Bronze And Non Leaded Copper	100	60-150	0.03-0.11
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	60	0.02-0.12
	20		Aged (iron based)	280	50	0.02-0.03
	21		Annealed (nickel or cobalt based)	250	35	0.02-0.03
	22		Aged (nickel or cobalt based)	350	30	0.02-0.03
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	30-50	0.02-0.05
	24		α+β Alloys	1050Rm	25-35	0.02-0.05
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	-	-
	26			51-55HRc	-	-

TM Solid Helicool-R (HCR)

Helical Thread Mill Flutes with Radial Coolant Thru

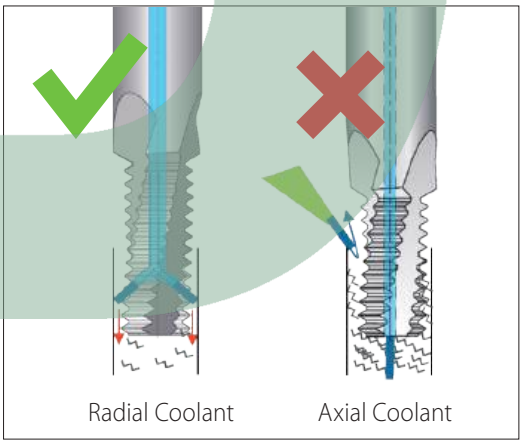
EXPANDED LINE

Now Available in Additional Threading Standards: ISO, UN, BSP (G), NPT, BSPT & UNJ

Features and Benefits:

- Effective coolant in thru holes
- Delivering coolant directly to the cutting area
- Good solution when external cooling is not available or ineffective

Chip Evacuation in Thru Holes using Axial & Radial Coolant



Expansion Includes:

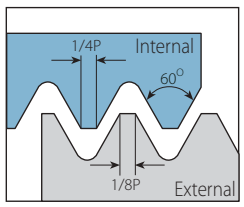
Metric Shanks:

- ISO Metric
- American UN
- BSP (G)
- NPT
- BSPT
- UNJ

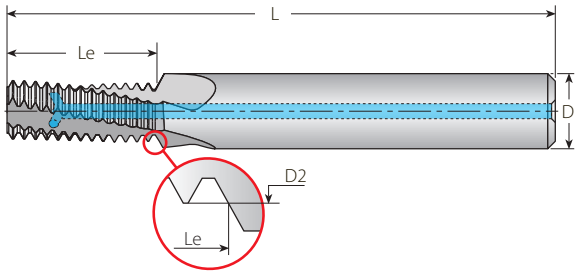
The new **HCR tools** are fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry

VARGUS GENius™ Tool Selector and CNC Program Generator

ISO Metric



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

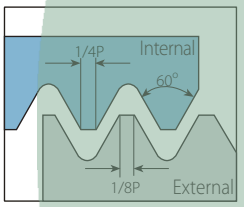


Helicool-R (HCR)

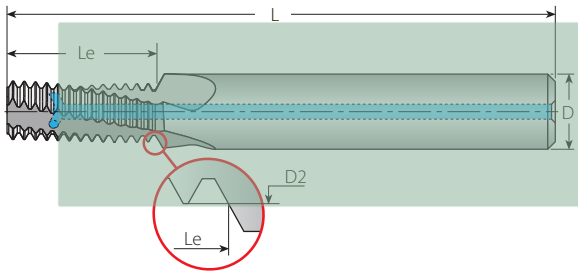
2 x Do (Le≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
M14x2.0	M17-M80x2.0	2.0	HCR12116L29-I2.00ISOTM…	12	11.6	80	29.0	4	14	12.0
M16x2.0	M17-M80x2.0	2.0	HCR14136L33-I2.00ISOTM...	14	13.6	92	33.0	4	16	14.0
M20x2.5		2.5	HCR18171L41-I2.50ISOTM...	18	17.1	102	41.2	4	16	17.5

American UN



Defined by: ANSI B1.1.74
Tolerance class: 2B



Helicool-R (HCR)

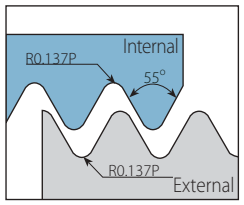
2 x Do (Le≤ 2 x Thread Diameter)

Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	TPI	Internal	D	D2	L	Le	Z	Zt	mm
	1/4"x28	7/16", 1/2"x28	28	HCR06052L13-I28UNFTM...	6	5.15	57	13.1	3	14	5.5
	5/16", 3/8"x24	9/16"-11/16"x24	24	HCR08066L16-I24UNFTM...	8	6.68	61	16.4	3	15	6.8
	3/8"x24	9/16"-11/16"x24	24	HCR10082L19-I24UNFTM...	10	8.20	73	19.6	3	18	8.5
1/4"x20	7/16", 1/2"x20	3/4"-1"x20	20	HCR06048L13-I20UNCTM...	6	4.88	57	13.3	3	10	5.2
	7/16", 1/2"x20	3/4"-1"x20	20	HCR10096L22-I20UNFTM...	10	9.60	73	22.2	3	17	9.8
5/16"x18	9/16", 5/8"x18	11/16"-1 11/16"x18	18	HCR08061L16-I18UNCTM...	8	6.15	61	16.2	3	11	6.5
3/8"x16	3/4"x16		16	HCR08076L19-I16UNCTM...	8	7.65	61	19.8	3	12	8.0
7/16"x14	7/8"x14		14	HCR10090L22-I14UNCTM...	10	9.00	73	22.7	3	12	9.3
1/2"x13			13	HCR12104L26-I13UNCTM...	12	10.35	80	26.4	4	13	10.8
9/16"x12	1"-1 1/2"x12		12	HCR12118L28-I12UNCTM...	12	11.80	80	28.6	4	13	12.3
5/8"x11			11	HCR14131L33-I11UNCTM...	14	13.10	92	33.5	4	14	13.5
3/4"x10			10	HCR16159L39-I10UNCTM...	16	15.90	92	39.4	4	15	16.5
1"x8			8	HCR20199L52-I8UNCTM...	20	19.90	102	52.4	4	16	22.0

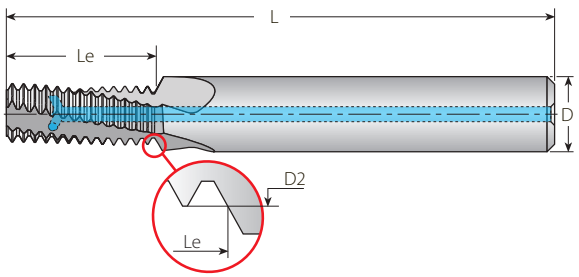
* Bore diameter applies to smallest thread dia.

BSP (G)

Helicool-R (HCR)



Defined by: B.S.2779:1956
Tolerance class: Medium class

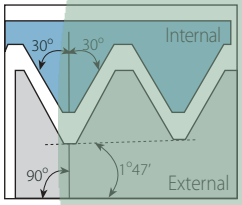


Helicool-R (HCR)

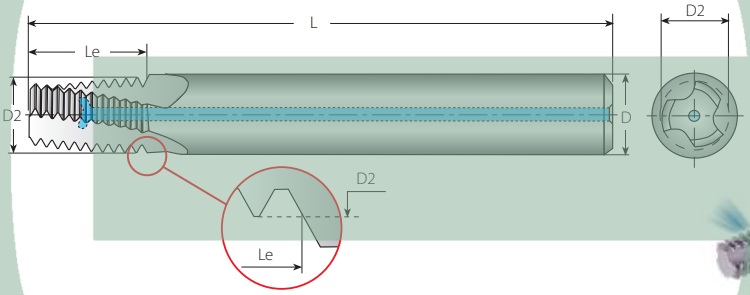
2 x Do (Le≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	Internal	D	D2	L	Le	Z	Zt	mm
1/8"x28	28	HCR10082L19-EI28BSPTM...	10	8.20	73	19.5	3	21	8.7
1/4", 3/8"x19	19	HCR12110L27-EI19BSPTM...	12	11.00	80	27.4	4	20	11.8
1/2"-7/8"x14	14	HCR18179L42-EI14BSPTM...	18	17.90	102	42.6	4	23	19.0

NPT



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



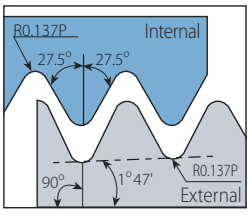
Helicool-R (HCR)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	HCR06059L09-EI27NPT-TM...	6	5.90	57	9.9	3	10	6.3
1/8"x27	27	HCR08076L09-EI27NPT-TM...	8	7.65	61	9.9	3	10	8.5
1/4"x18	18	HCR10099L14-EI18NPT-TM...	10	9.90	73	14.8	3	10	11.1
3/8"x18	18	HCR12111L14-EI18NPT-TM...	12	11.15	73	14.8	4	10	14.5
1/2", 3/4"x14	14	HCR16142L19-EI14NPT-TM...	16	14.25	92	19.0	4	10	17.7, 23.0
1", 1 1/4", 1 1/2", 2"x11.5	11.5	HCR20196L23-EI11.5NPT-TM...	20	19.60	102	23.2	4	10	29.0, 37.7, 44.0, 56.0

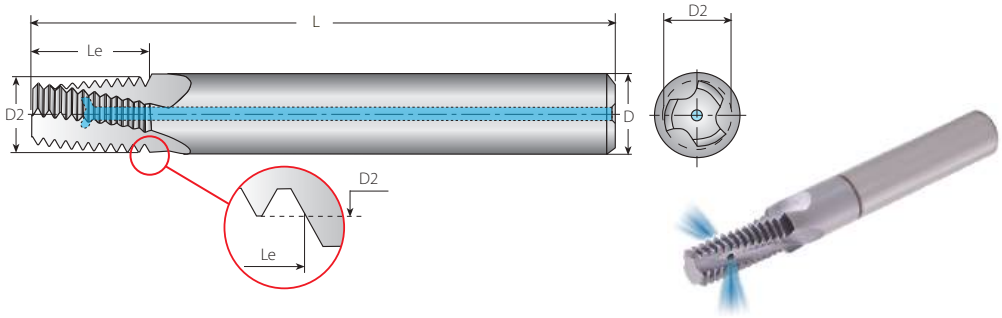
* Bore diameter applies to smallest thread dia.

BSPT

Helicool-R (HCR)



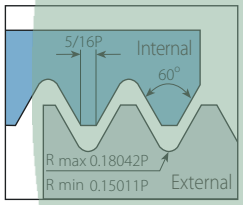
Defined by: B.S.21:1985
Tolerance class: Standard BSPT



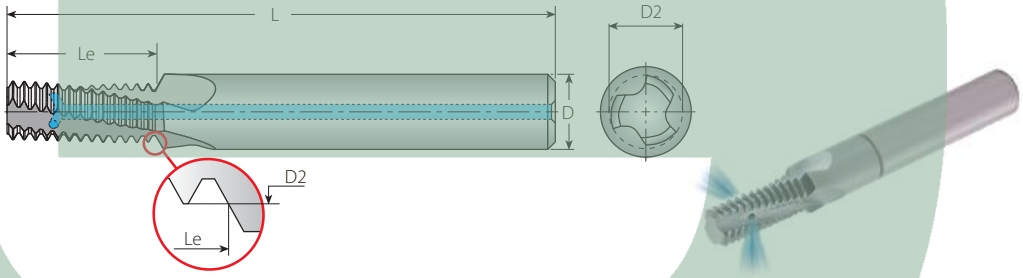
Helicool-R (HCR)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	Internal	D	D2	L	Le	Z	Zt	mm
1/8"x28	28	HCR08076L10-EI28BSPT-TM...	8	7.65	61	10.2	3	11	8.7
1/4"x19	19	HCR10099L15-EI19BSPT-TM...	10	9.90	73	15.4	3	11	11.8
3/8"x19	19	HCR12111L15-EI19BSPT-TM...	12	11.15	73	15.4	4	11	14.0
1/2", 3/4"x14	14	HCR16142L22-EI14BSPT-TM...	16	14.25	92	22.7	4	12	19.0

UNJ



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



Helicool-R (HCR)

2 x Do (Le≤ 2 x Thread Diameter)

Thread				Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNJC	UNJF	UNJEF	UNJ	TPI	Internal	D	D2	L	Le	Z	Zt	mm
-	0.250"(1/4")	0.4375"(7/16")	0.5625"(9/16")	28	HCR06054L13-I28UNJTM...	6	5.40	57	13.1	3	14	5.6
-	0.3125"(5/16")	0.5625"(9/16")	-	24	HCR08067L15-I24UNJTM...	8	6.70	61	16.4	3	15	7.0
-	0.4375"(7/16")	0.750"(3/4")	0.5625"(9/16")	20	HCR10096L21-I20UNJTM...	10	9.60	73	22.2	4	17	10.0
0.3125"(5/16")	0.5625"(9/16")	1.0625"(1 1/16")	-	18	HCR08064L15-I18UNJTM...	8	6.40	61	16.2	3	11	6.75
0.375"(3/8")	0.750"(3/4")	-	0.4375"(7/16")	16	HCR08077L19-I16UNJTM...	8	7.70	61	19.8	3	12	8.1

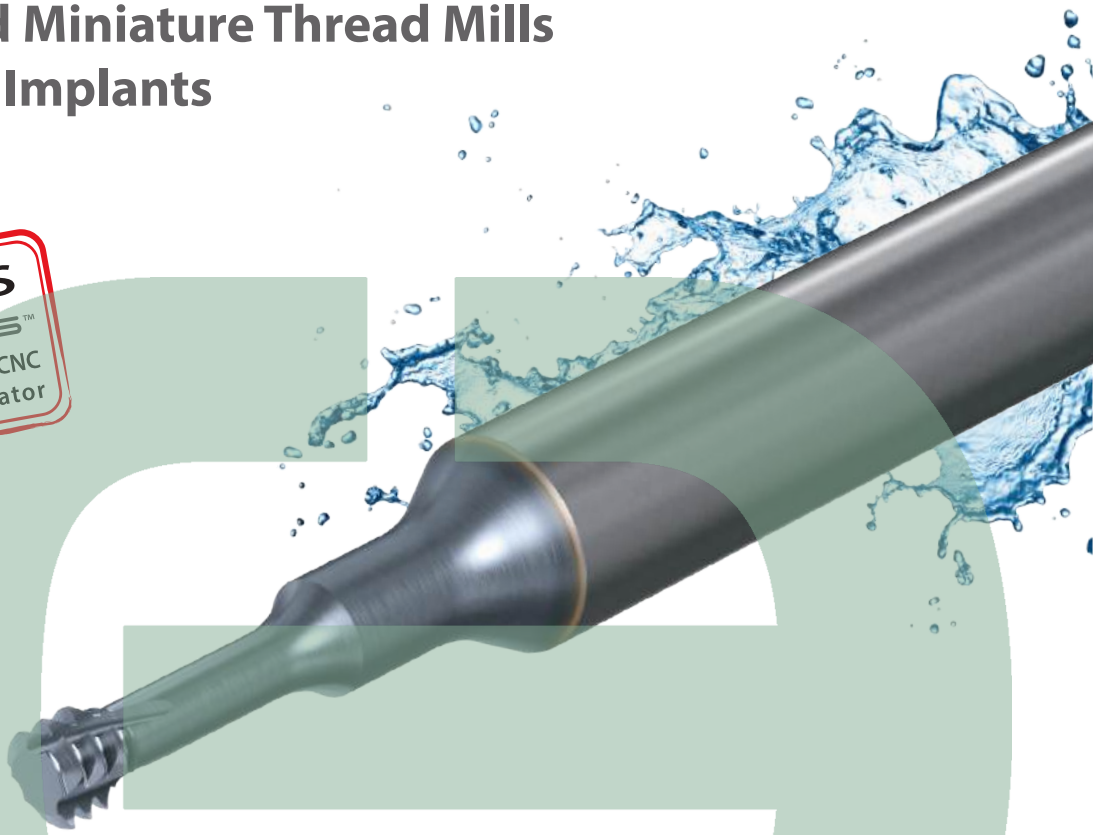
* Bore diameter applies to smallest thread dia.

Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] VTH	Feed f [mm/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	80-250	0.03-0.08
	2		Medium Carbon (C=0.25-0.55%)	150	80-230	0.03-0.08
	3		High Carbon (C=0.55-0.85%)	170	80-200	0.03-0.08
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	60-180	0.03-0.08
	5		Hardened	275	60-170	0.03-0.07
	6		Hardened	350	60-160	0.02-0.06
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	40-100	0.03-0.07
	8		Hardened	325	30-80	0.03-0.06
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	80-250	0.03-0.07
	10		High Alloy (alloying elements >5%)	225	60-170	0.03-0.07
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	60-150	0.03-0.08
	12		Hardened	330	60-120	0.03-0.06
	13	Stainless Steel Austenitic	Austenitic	180	60-140	0.03-0.08
	14		Super Austenitic	200	60-130	0.03-0.06
	15	Stainless Steel Cast Ferritic	Non Hardened	200	60-160	0.03-0.06
	16		Hardened	330	60-110	0.02--0.05
	17	Stainless Steel Cast Austenitic	Austenitic	200	60-150	0.02-0.05
	18		Hardened	330	60-100	0.02-0.04
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-70	0.03-0.08
	29		Pearlitic (long chips)	230	60-150	0.03-0.07
	30	Grey Cast Iron	Low Tensile Strength	180	70-160	0.03-0.07
	31		High Tensile Strength	260	40-120	0.03-0.07
	32	Nodular Sg Iron	Ferritic	160	40-110	0.03-0.08
	33		Pearlitic	260	40-100	0.03-0.07
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	200-300	0.04-0.1
	35		Aged	100	150-250	0.03-0.1
	36	Aluminum Alloys	Cast	75	100-200	0.03-0.1
	37		Cast & Aged	90	120-220	0.06-0.12
	38	Aluminum Alloys	Cast Si 13-22%	130	200-300	0.05-0.12
	39	Copper and Copper Alloys	Brass	90	200-300	0.05-0.12
	40		Bronze And Non Leaded Copper	100	150-250	0.05-0.12
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	30-60	0.03-0.7
	20		Aged (iron based)	280	20-50	0.03-0.06
	21		Annealed (nickel or cobalt based)	250	15-35	0.03-0.06
	22		Aged (nickel or cobalt based)	350	15-30	0.02-0.05
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	40-80	0.02-0.05
	24		α+β Alloys	1050Rm	20-50	0.02-0.04
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	15-45	0.02-0.03
	26			51-55HRc	15-40	0.02-0.03

TM Solid MilliPro Dental

Reinforced Miniature Thread Mills for Dental Implants

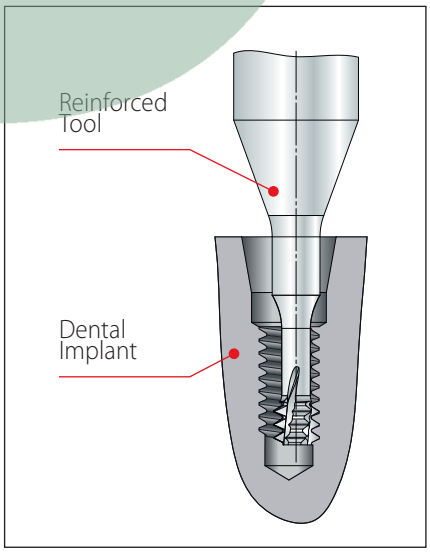


VARGUS GENius™ Tool Selector and CNC Program Generator

Features and Benefits:

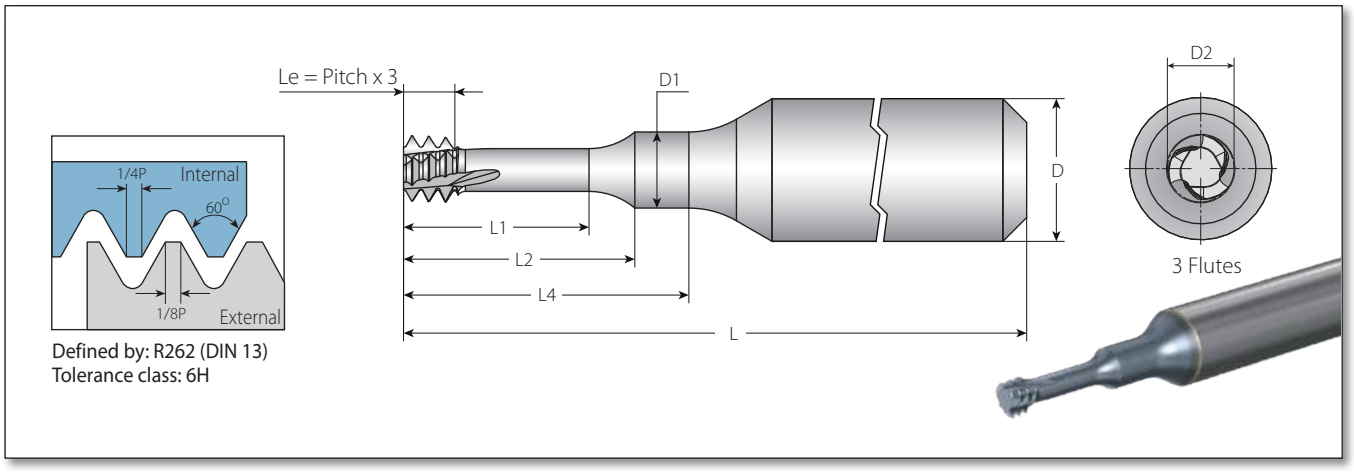
- Reinforced overhang for better stability
- Specifically designed for the dental implant industry
- Increased tool life
- Now with 3 flutes and 3 teeth
- Available in ISO Metric and American UN
- VTH Grade

Reinforced Overhang



The new **MilliPro Dental** is fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry

VARGUS GENius™ Tool Selector and CNC Program Generator



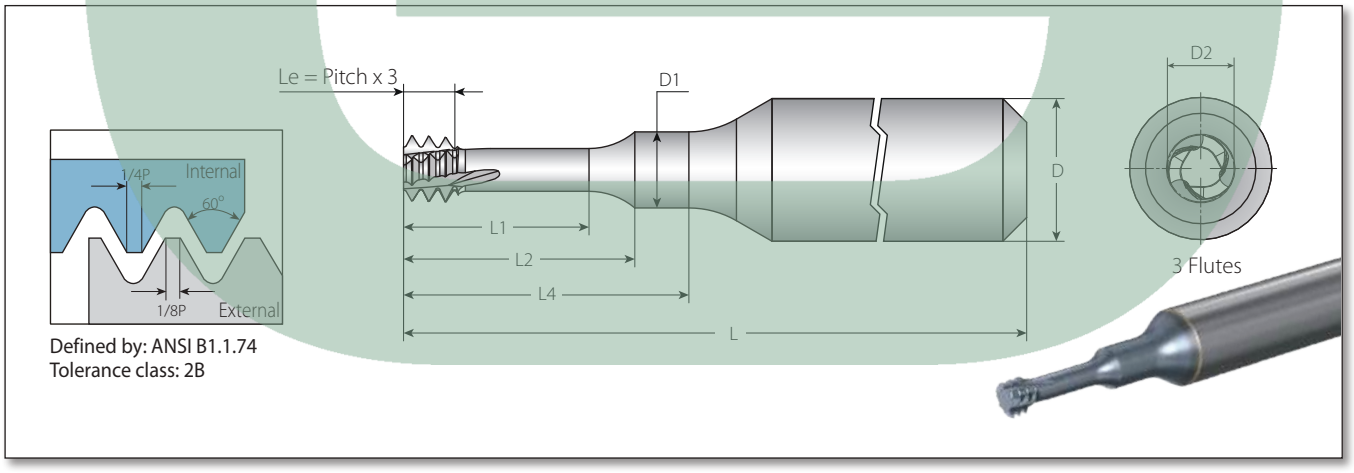
Defined by: R262 (DIN 13)
Tolerance class: 6H

Miniature Thread Mills for Dental Implants

3 x Do (L4≥3 x Thread Diameter)

Thread		Pitch	Ordering Code		Dimensions mm						No. of Flutes	Teeth	Bore Dia.
M Coarse	M Fine	mm	Internal	D	D2	L	L1	L2	L4	D1	Z	Zt	mm
M1.2x0.25	M1.4x0.25	0.25	DD3T03009L043-I0.25ISOTM...	3	0.90	39	2.5	3.3	4.3	0.95	3	3	0.97
M1.4x0.30		0.3	DD3T03011L050-I0.30ISOTM...		1.05		2.8	3.5	5.0	1.05			1.12
M1.6x0.35	M1.8x0.35	0.35	DD3T03012L058-I0.35ISOTM...		1.20		3.3	4.2	5.9	1.25			1.27
M1.8x0.35	M2.0x0.35	0.35	DD3T03014L065-I0.35ISOTM...		1.40		3.8	4.7	6.6	1.45			1.47
M2.0x0.4		0.4	DD3T03015L067-I0.40ISOTM...		1.54		3.9	4.9	6.7	1.70			1.63
M2.5x0.45		0.45	DD3T03019L082-I0.45ISOTM...		1.96		4.8	5.8	8.2	2.00			2.08

American UN



Defined by: ANSI B1.1.74
Tolerance class: 2B

Miniature Thread Mills for Dental Implants

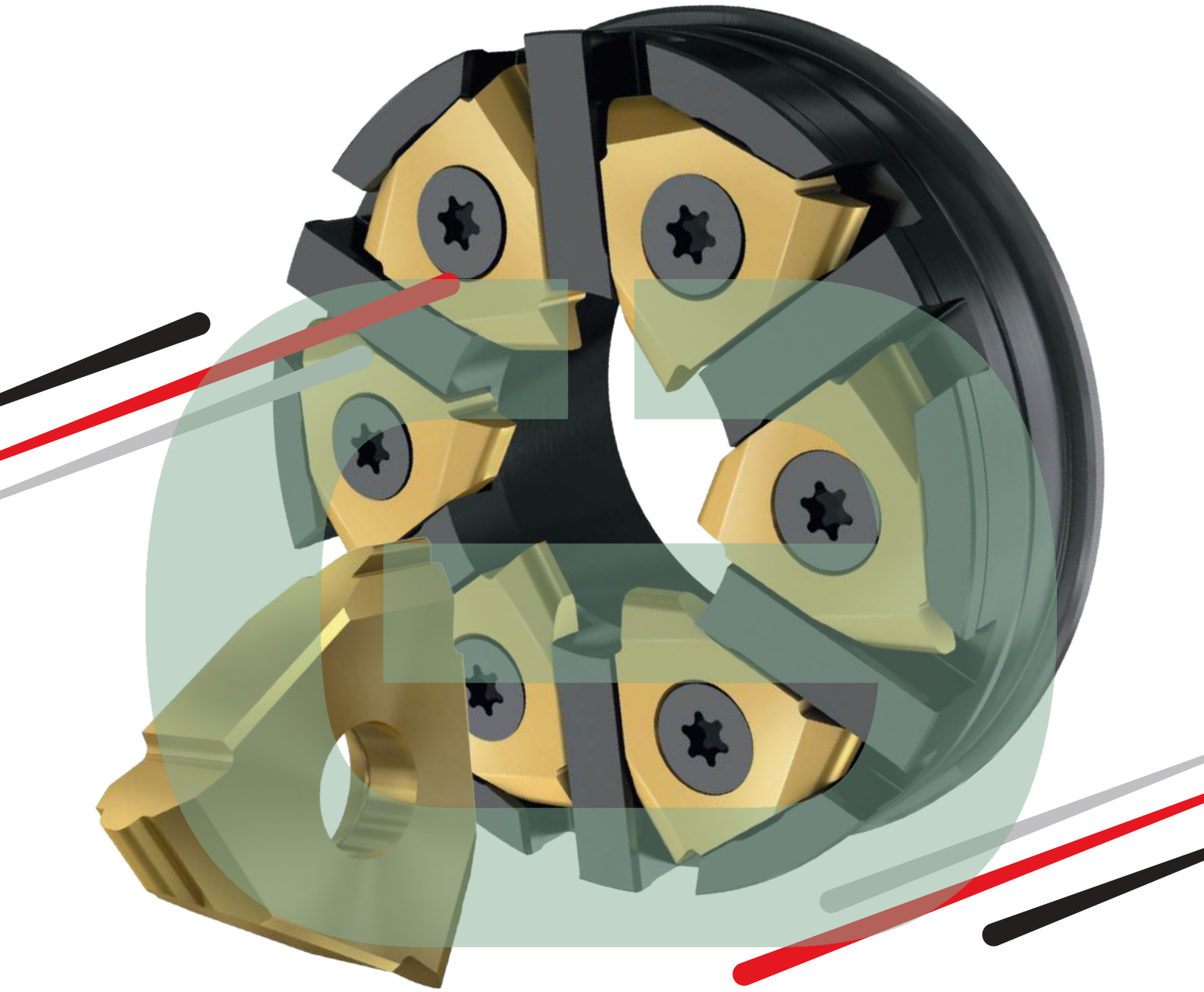
3xDo (L4≥3 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm							No. of Flutes	Teeth	Bore Dia.
UNF	TPI	Internal	D	D2	L	L1	L2	L4	D1	Z	Zt	mm
0-80UN	80	DD3T03011L052-I80UNTM...	3	1.16	39	2.8	3.6	5.0	1.15	3	3	1.27
1-72UN	72	DD3T03014L065-I72UNTM...		1.44		3.9	4.9	6.5	1.60			1.56

Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] VTS	Feed f [mm/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	60-120	0.02-0.16
	2		Medium Carbon (C=0.25-0.55%)	150	60-120	0.02-0.16
	3		High Carbon (C=0.55-0.85%)	170	60-90	0.02-0.16
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	60-90	0.02-0.16
	5		Hardened	275	50-80	0.02-0.07
	6		Hardened	350	50-80	0.02-0.03
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	50-80	0.02-0.09
	8		Hardened	325	50-80	0.02-0.03
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	70-90	0.02-0.16
	10		High Alloy (alloying elements >5%)	225	60-80	0.02-0.03
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	60-90	0.02-0.16
	12		Hardened	330	50-80	0.02-0.03
	13	Stainless Steel Austenitic	Austenitic	180	60-90	0.02-0.16
	14		Super Austenitic	200	50-80	0.02-0.16
	15	Stainless Steel Cast Ferritic	Non Hardened	200	60-90	0.02-0.16
	16		Hardened	330	50-80	0.02-0.03
	17	Stainless Steel Cast Austenitic	Austenitic	200	60-90	0.02-0.16
	18		Hardened	330	50-80	0.02-0.03
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	50-80	0.02-0.03
	29		Pearlitic (long chips)	230	60-90	0.02-0.12
	30	Grey Cast Iron	Low Tensile Strength	180	70-100	0.02-0.16
	31		High Tensile Strength	260	60-90	0.02-0.12
	32	Nodular Sg Iron	Ferritic	160	70-100	0.02-0.16
	33		Pearlitic	260	60-90	0.02-0.12
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	60-250	0.03-0.15
	35		Aged	100	60-150	0.03-0.16
	36	Aluminum Alloys	Cast	75	60-250	0.03-0.16
	37		Cast & Aged	90	60-150	0.02-0.16
	38	Aluminum Alloys	Cast Si 13-22%	130	250	0.03-0.15
	39	Copper and Copper Alloys	Brass	90	60-250	0.03-0.16
	40		Bronze And Non Leaded Copper	100	60-150	0.03-0.15
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	60	0.02-0.16
	20		Aged (iron based)	280	50	0.02-0.03
	21		Annealed (nickel or cobalt based)	250	35	0.02-0.03
	22		Aged (nickel or cobalt based)	350	30	0.02-0.03
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	30-50	0.02-0.07
	24		α+β Alloys	1050Rm	25-35	0.02-0.07
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	-	-
	26			51-55HRc	-	-

vargus
NEUMO Ehrenberg Group



V-WHIRLING

High Precision Whirling System for Medical and Micromachining Applications

METRIC

VARDEX
Advanced Threading Solutions

V-WHIRLING

Ordering Code W-2

Features and Benefits W-3

ISO 13399 Cutting Tool Dimensions W-4

Holder Selection Guide W-5

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Inserts W-7

Accessories W-12

Technical Data W-13

Ordering Code

Holders

VWM	-	D12	-	37	46	-	163	-	Z6	-	3V
1		2		3	4		5		6		7

1- Product Line	2 - DC - Cutting Dia. [mm]	3 - DCON - Connection Dia. [mm]	4 - DHUB – Hub Dia. [mm]
VWM - Vargus Whirling Monoblock	6 12	20-54	35-56

5 - OAL - Overall Length [mm]	6 - NOF - Flute count	7 - Insert Style
13.8-24.3	5 6	2V 3V

Inserts

3V	W	5.0	HA	VTX
1	2	3	4	5

1- Insert Style	2 - Application	3 - Major Diameter [mm]	4 - Standard	5 - Carbide Grade
2V 3V	W - Whirling	1.5-6.5 **OR** **3 - Pitch TP/TPI** TP - 0.075 - 3.0 TPI - 508 - 8 **OR** **3 - Cutting Width [mm]** 3.2	HA HB HC HD Partial Profile 60° Partial Profile 55° ISO Metric American UN	VTX

Customized specials available upon request

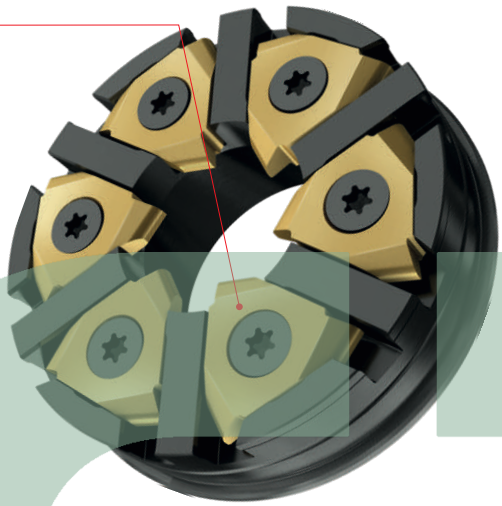
V-WHIRLING

High Precision Whirling System for Medical and Micromachining Applications

Features and Benefits

VTX Grade

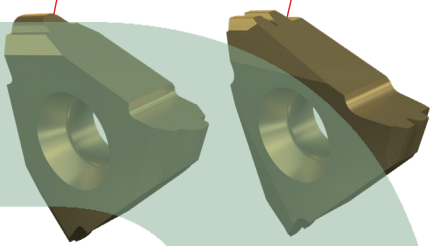
Multipurpose grade for exotic materials



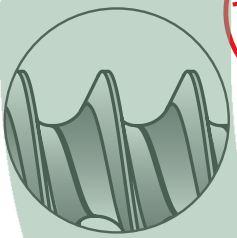
Indexable inserts with 3 cutting edges and various threading profiles:

Single-tooth solution

Double-tooth solution for two starts threading

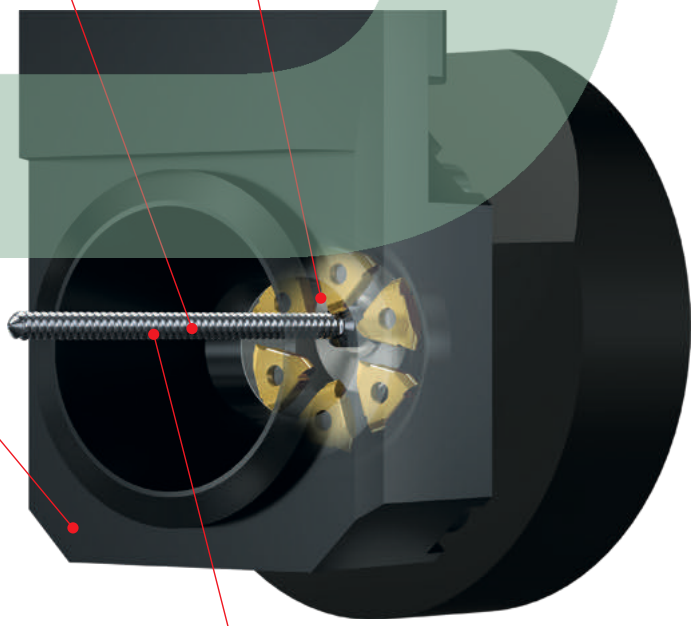


VARGUS THREADING QUALITY



Close to Spindle Machining

- No Bending
- No Vibration
- No Chatter
- Excellent Surface Finish
- Fast Machining



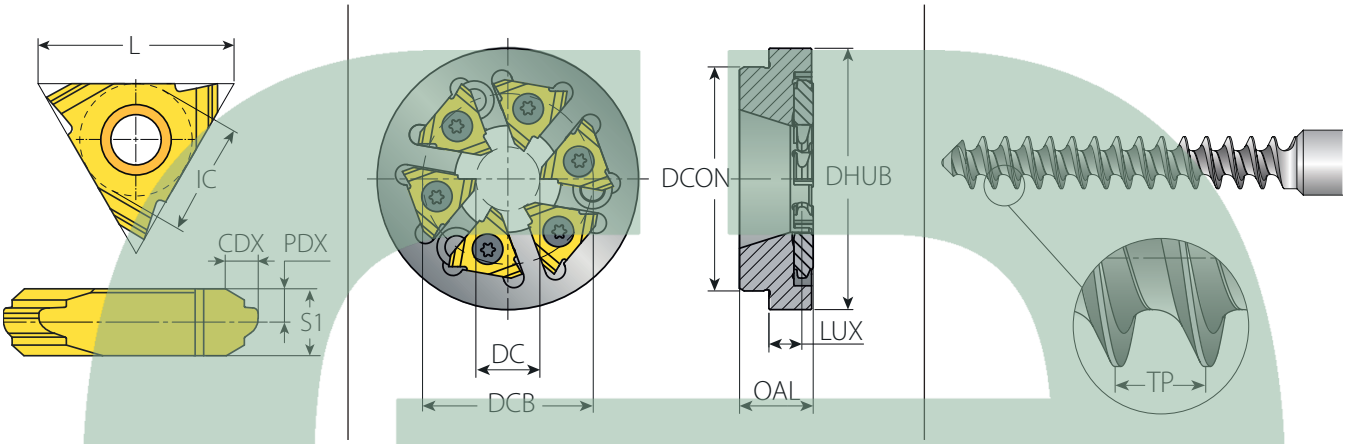
Fits popular driven toolholders on Swiss-type machines

Ideal solution for long threads on small diameter components

ISO 13399 Cutting Tool Dimensions

Vargus defines the **new V-Whirling Line according to the ISO 13399 standard**.
See the list below of the dimensions used in this catalog.

ISO 13399 is an international technical standard for the computer-interpretable representation and exchange of cutting tools and toolholders. The objective of this standard is to provide a system that allows for a neutral file exchange, and a basis for implementing and sharing product databases and archiving.



	ISO 13399 Dimension	Description
Insert	L	Cutting Edge Length
	IC	Insert Size
	CDX	Cutting Depth Maximum
	PDX	Profile Distance EX
	S1	Insert Thickness Total
	RE	Corner Radius
	CW	Cutting Width
Holder	DC	Cutting Diameter
	DCB	Connection Bore (screws) Diameter
	DCON	Connection Diameter
	OAL	Overall Length
	DHUB	Hub Diameter
	LUX	Usable Length Maximum
	NOF	Flute Count (No. of inserts)
	Connection Type	Connection Type
Thread	TP	Thread Pitch
	TPI	Thread Pitch TPI

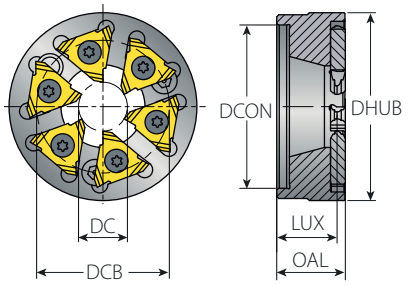
Holder Selection Guide

Optional Machines		Driven Tool		Whirling Holder
Brand	Models	Brand	Models	Ordering Code
CITIZEN	L12-1M7	PCM	LSW-515	VWM-D06-2035-151-Z5-2V
	L20/ M20 / M32	Jarvis	LTR0131/162/169/170/187	VWM-D12-3746-163-Z6-3V
	L20/ M20 / M32	Jarvis	LTR0128/132/139/168/183	VWM-D12-4046-168-Z6-3V
	L20	WTO	42BJ	VWM-D12-4244-243-Z6-3V
	A20	Madaula	P.535.00007	VWM-D12-3345-237-Z6-3V
	A20 | A20-3F7N | A232-VII | A32-VII | K16E-VII | L12-1M7 | L12-2M10 | L20E-2M10 | L20E-2M12 | L20E-2M8 | L20E-IX | L20-V | L20-VII | L20-VIII | L20-X | L32-1M10 | L32-1M12 | L32-1M8 | M16-4M5 | M16-4M8 | M212-C | M212-V | M216-C | M216-V | M220-III | M220-V | M232-III | M232-V | M312-C | M312-III | M312-V | M316-III | M316-V | M320-III | M320-V | M32-3M3 | M32-3M5 | M32-4M5 | M32-4M8 | M332-III | M332-V	W&F	MPU…M*8… (d1=55 mm)	VWM-D12-3855-380-Z6-3V
DMG MORI	SPEED20/11linear | SPEED20/8 | SPEED20/8linear | SPRINT20/5 | SPRINT20/8 | SPRINT20/8linear	W&F	MPU…M*8… (d1=55 mm)	VWM-D12-3855-380-Z6-3V
DOOSAN	ST20G/GS | ST32G/GS | ST35G/GS	WTO	42BJ	VWM-D12-4244-243-Z6-3V
	ST20G/GS | ST32G/GS | ST35G/GS	WTO	54BJ	VWM-D12-5456-138-Z6-3V
GILDEMEISTER	Speed 12-7 / 20-11	PCM	SPW-1220-000	VWM-D12-4046-163-Z6-3V
GOODWAY	SW32/SW42	WTO	42BJ	VWM-D12-4244-243-Z6-3V
Hanwha	XD12II | XD20H | XD26H | XD20II | XD26II | XDI20 | XD32H | XD35H/II | XD38H/II | STL32H | STL35H | STL38H	WTO	42BJ	VWM-D12-4244-243-Z6-3V
	XD20H | XD26H | XD20II | XD26II | XDI20 | XD32H | XD35H/II | XD38H/II	WTO	54BJ	VWM-D12-5456-138-Z6-3V
	STL32H(Y3) | STL35H(Y3) | STL38H | STL38H(Y3) | STL42H | STL42NH | XD12 | XD12II | XD12IIIH | XD12IIIJ | XD16H | XD16II | XD16IIIH | XD16IIIJ | XD16V | XD20 | XD20IIH | XD20IIM | XD20IIN | XD20IINH | XD20M | XD20V | XD26H | XD26II | XD26IIH | XD26IIM | XD26IIN | XD26IINH | XE12J | XE16J | XE20H | XE20J | XE20Ne | XE20NH | XE26H | XE26J | XE26Ne | XE26NH | XE35H | XE35J | XE35Ne | XE35NH	W&F	MPU…M*8… (d1=55 mm)	VWM-D12-3855-380-Z6-3V
MAIER MACHINES & ROBOTICS	ML 20 D	PCM	MK-20-W1-15	VWM-D12-4046-163-Z6-3V
	MLF2 | MLF4 | ML26 Revolver	W&F	MPU…M*8… (d1=55 mm)	VWM-D12-3855-380-Z6-3V
NEXTURN SWISS TURN LEADER	SA20/SA26/SA32/SA20XII	WTO	42BJ	VWM-D12-4244-243-Z6-3V
	SA20/SA26/SA32/SA20XII	WTO	54BJ	VWM-D12-5456-138-Z6-3V
	SA20/32	PCM	NESA-32-000	VWM-D12-4046-163-Z6-3V
NOMURADS	NN20	PCM	NN20-W15	VWM-D12-4046-163-Z6-3V
	NN20J3	W&F	MPU…M*8… (d1=55 mm)	VWM-D12-3855-380-Z6-3V
star CNC Machine Tool Corp.	ECAS-12/20 | ECAS-32T | SR20RII | SV12/20/32	Star	0M171-00 | 101-72-00 | 421-73-00 | 431-72-00 | 541-78-00 | 581-71 | 591-72-00 | 661-72-00 | 681-72-00 | 7.074.191 | 7.076.225	VWM-D12-4049-158-Z6-3V
	SR20RIV	Star	7.172.380	VWM-D12-4253-445-Z6-3V
	SR20R | SR32J | Goodway SW20 | SV20 | SV32JII | ECAS20T |SV32 | ECAS32T	WTO	42BJ	VWM-D12-4244-243-Z6-3V
	SR20R | SR32J | Goodway SW20 | SV32 | SV32 | ECAS32T	WTO	54BJ	VWM-D12-5456-138-Z6-3V
	ECAS-12/20 | SB-12R | SB-20R | SR-20JI | SR-20JII | SR-20RI | SR-20RII | SR-20RIII | SR-20RIV | SR-32J | SR-32JII-A | SR-32JII-B | SR-32JN | SW-20	W&F	MPU…M*8… (d1=55 mm)	VWM-D12-3855-380-Z6-3V
TORNOS	Gamma 20/6	Tornos	Tornos	VWM-D12-4249-138-Z6-3V
	DECO10 | DECO13 | DECO20 | DECO26 | EvoDECO10/10 | EvoDECO10/8 | EvoDECO16/10 | EvoDECO16/8 | EvoDECO20 | EvoDECO32 | Gamma20/5 | Gamma20/6 | SwissDT26 | SwissGT13 | SwissGT26 | SwissGT32 | SwissST26	W&F	MPU…M*8… (d1=55 mm)	VWM-D12-3855-380-Z6-3V
TSUGAMI	B0265-326 / SS20-32 / S205/206	WTO	42BJ	VWM-D12-4244-243-Z6-3V
	B0265-326 / SS20-32 / S205/206	WTO	54BJ	VWM-D12-5456-138-Z6-3V
	S205E | S206E | SS207	W&F	MPU…M*8… (d1=55 mm)	VWM-D12-3855-380-Z6-3V

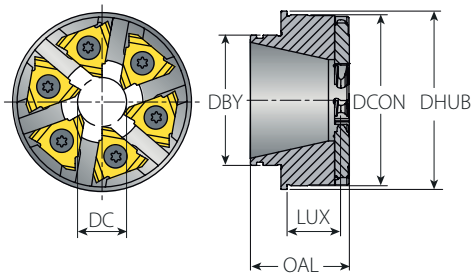
The above machine list is optional. The leading criterion for selection is the driven tool brand and model.

Whirling Holders

Internal

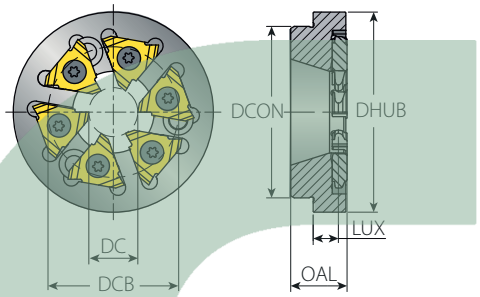


Bayonet



External

Type A



Type B

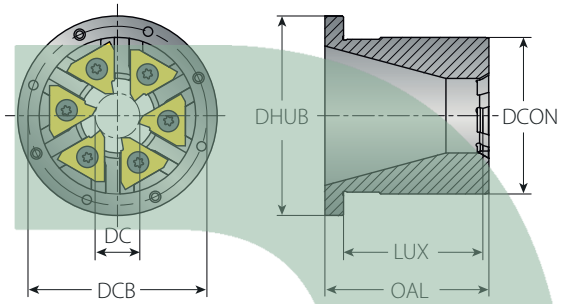


Illustration only. Exact model may differ in size and shape.

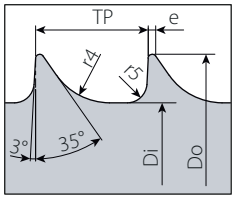
Insert Style	Ordering Code	Connection Type	No. of Inserts	Dimensions mm							Spare Parts		
				Cutting Dia.	Connection Dia.	Hub Dia.	Overall Length	Clamping Surface to Profile	Connection Bore Dia. (Screws)	Connection Bayonet Dia.			
IC			NOF	DC	DCON	DHUB	OAL	LUX	DCB	DBY	Insert Screw	Torx Key	Holder Screw
2V	VWM-D06-2035-151-Z5-2V*	Int	5	6	20	35	15.1	13.5	26	-	SN2TM	K2T	M4.0x13
3V	VWM-D12-3345-237-Z6-3V	Ext A	6	12	33	45	23.7	15.5	40	-	SN3TM	K3T	M3.0x8
	VWM-D12-3746-163-Z6-3V	Int			37	46	16.3	14.5	30.5	-			M3.0x15
	VWM-D12-3855-380-Z6-3V	Ext A			38.5	55	38.0	15.5	-	-			
	VWM-D12-4046-163-Z6-3V	Int			40	46	16.3	14.5	32.5	-			M4.0x13
	VWM-D12-4046-168-Z6-3V	Int			40	46	16.8	15	32.5	-			M4.0x13
	VWM-D12-4049-158-Z6-3V	Ext A			40	49	15.8	7.5	33	-			M4.0x13
	VWM-D12-4244-243-Z6-3V	Byo			42	44	24.3	13.5	-	32	SN3T		-
	VWM-D12-4249-138-Z6-3V	Ext A			42	49	13.8	6.5	32	-	SN3TM		M4.0x13
	VWM-D12-4253-445-Z6-3V	Ext B			42	53	44.5	37.8	48	-			M3.0x15
	VWM-D12-5456-138-Z6-3V	Byo			54	56	13.8	10.5	-	43.8	SN3T		-

* Only special inserts are suitable for this holder

Whirling Inserts

HA

External



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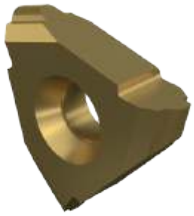
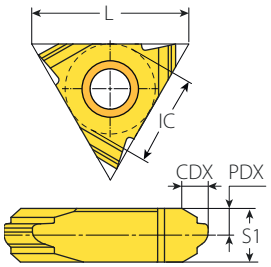


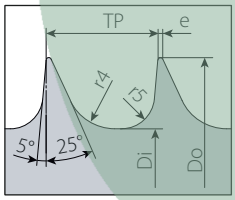


HA Shallow Thread

Insert Style		Thread Pitch	Thread	Ordering Code	Dimension mm									Helix Angle °	Grade	Toolholder
					Cutting Dia.	Screw Maj. Dia.	Screw Min. Dia.				Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX			
IC	L mm	TP mm			DC	Do	Di	r4	r5	e	CDX	S1	PDX	β °	VTX	
3V	16	0.5	HA1.5	3VW1.5HA...	12	1.5	1.1	0.3	0.1	0.1	2.75	3.6	1.8	7.3	•	VW...-3V
		0.6	HA2.0	3VW2.0HA...		2.0	1.3	0.4	0.1					6.9	•	
		1.0	HA2.7	3VW2.7HA...		2.7	1.9	0.6	0.2					8.1	•	
		1.25	HA3.5	3VW3.5HA...		3.5	2.4	0.8	0.2					7.9	•	
		1.5	HA4.0	3VW4.0HA...		4.0	2.9	0.8	0.2					8.1	•	
		1.75	HA4.5	3VW4.5HA...		4.5	3.0	1.0	0.3					8.6	•	
		1.75	HA5.0	3VW5.0HA...		5.0	3.5	1.0	0.3					7.6	•	

HB

External



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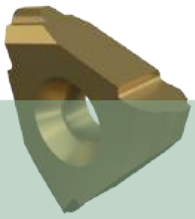
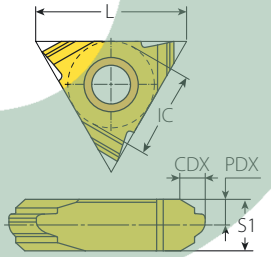




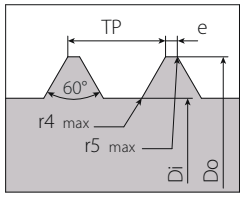
HB Deep Thread

Insert Style		Thread Pitch	Thread	Ordering Code	Dimension mm									Helix Angle °	Grade	Toolholder
					Cutting Dia.	Screw Maj. Dia.	Screw Min. Dia.				Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX			
IC	L mm	TP mm			DC	Do	Di	r4	r5	e	CDX	S1	PDX	β °	VTX	
3V	16	1.75	HB4	3VW4.0HB	12	4.0	1.9	0.8	0.3	0.1	2.75	3.6	1.8	11.0	•	VW...-3V
		2.75	HB6.5	3VW6.5HB		6.5	3.0	1.2	0.8	0.2				10.6	•	

Whirling Inserts

HC

External



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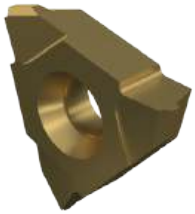
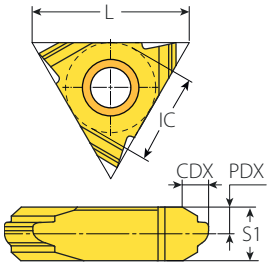
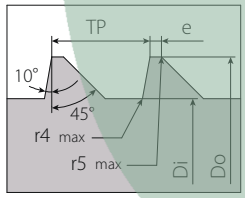




Insert Style		Thread Pitch	Thread	Ordering Code	Dimension mm									Helix Angle °	Grade	Toolholder
					Cutting Dia.	Screw Maj. Dia.	Screw Min. Dia.				Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX			
IC	L mm	TP mm			DC	Do	Di	r4	r5	e	CDX	S1	PDX	β °	VTX	
3V	16	1.06	HC2.9	3VW2.9HC...	12	2.85	2.1	0.05	0.05	0.1	2.75	3.6	1.0	6.64	•	VW...-3V
		1.27	HC3.5	3VW3.5HC...		3.48	2.6						1.1	6.72	•	
		1.27	HC3.9	3VW3.9HC...		3.85	2.8							5.9	•	
		1.27	HC4.2	3VW4.2HC...		4.1	3.1							5.64	•	

HD

External



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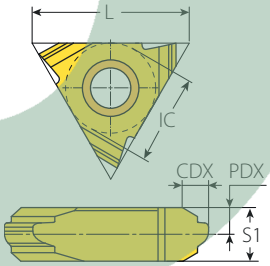
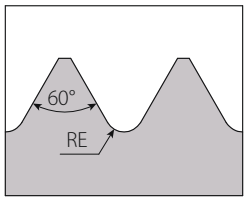


Insert Style		Thread Pitch	Thread	Ordering Code	Dimension mm									Helix Angle °	Grade	Toolholder
					Cutting Dia.	Screw Maj. Dia.	Screw Min. Dia.				Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX			
IC	L mm	TP mm			DC	Do	Di	r4	r5	e	CDX	S1	PDX	β °	VTX	
3V	16	1.59	HD4.0	3VW4.0HD...	12	4.0	2.92	0.05	0.05	0.1	2.75	3.6	1.3	7.15	•	VW...-3V
		2.18	HD4.5	3VW4.5HD...		4.5							1.55	8.71	•	

Whirling Inserts

Partial Profile 60°

External



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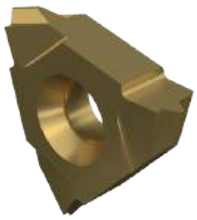
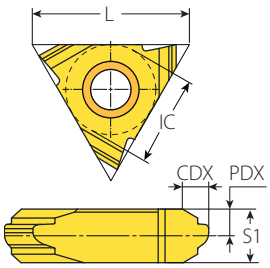
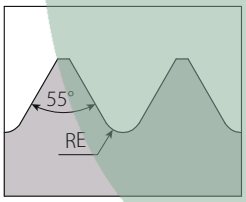




Insert Style		Thread Pitch		Ordering Code	Dimension mm					Grade	Toolholder
					Cutting Dia.		Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX		
IC	L mm	TP	TPI		DC	RE	CDX	S1	PDX	VTX	
3V	16	0.075-0.25	508-100	3VWAA60...	12	0	2.75	3.6	0.6	•	VW...-3V
		0.25-0.5	80-46	3VWAB60...		0.02			0.7	•	
		0.5-1.5	48-16	3VWA60...		0.05			1.0	•	
		0.5-3.0	48-8	3VWAG60...		0.08			1.2	•	
		0.8-3.0	32-8	3VWBG60...		0.13			1.2	•	
		1.75-3.0	14-8	3VWG60...		0.27			1.8	•	

Partial Profile 55°

External



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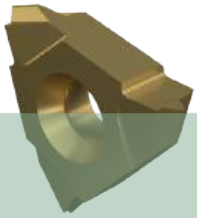
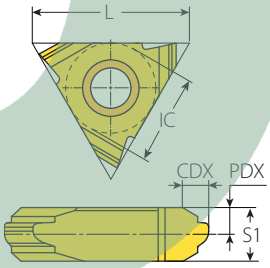


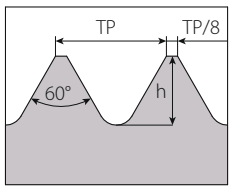


Insert Style		Thread Pitch		Ordering Code	Dimension mm					Grade	Toolholder
					Cutting Dia.		Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX		
IC	L mm	TP	TPI		DC	RE	CDX	S1	PDX	VTX	
3V	16	0.5-1.5	46-16	3VWA55...	12	0	2.75	3.6	1.0	•	VW...-3V
		1.75-3.0	14-8	3VWG55...		0.02			1.8	•	

Whirling Inserts

ISO Metric

External



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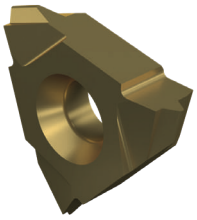
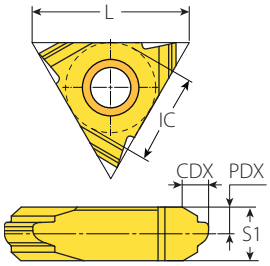
Tolerance class: 6g/6H



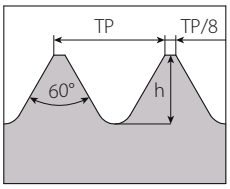


Insert Style		Thread Pitch	Ordering Code	Dimension mm					Grade	Toolholder
				Cutting Dia.		Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX		
IC	L mm	TP		DC	h	CDX	S1	PDX	VTX	
3V	16	0.25	3VW0.25ISO...	12	0.14	2.75	3.6	0.4	•	VW...-3V
		0.3	3VW0.3ISO...		0.17			0.45	•	
		0.35	3VW0.35ISO...		0.21			0.5	•	
		0.4	3VW0.4ISO...		0.25			0.55	•	
		0.45	3VW0.45ISO...		0.28			0.6	•	
		0.5	3VW0.5ISO...		0.31			0.65	•	
		0.6	3VW0.6ISO...		0.37			0.7	•	
		0.7	3VW0.7ISO...		0.43			0.8	•	
		0.75	3VW0.75ISO...		0.46			0.85	•	
		0.8	3VW0.8ISO...		0.49			0.9	•	
		1	3VW1.0ISO...		0.61			1.1	•	
		1.25	3VW1.25ISO...		0.77			1.25	•	
		1.5	3VW1.5ISO...		0.92			1.35	•	

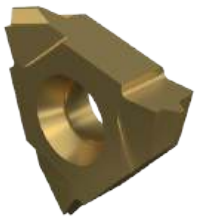
Whirling Inserts

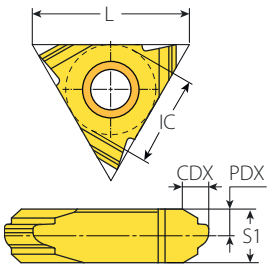
American UN

External



Defined by: ISO5864 (ANSI B1.1)
Tolerance class: 2A/2B

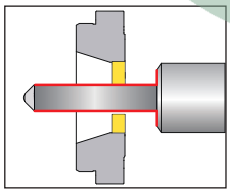


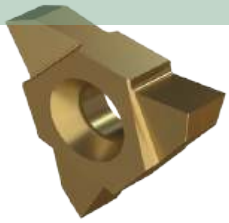


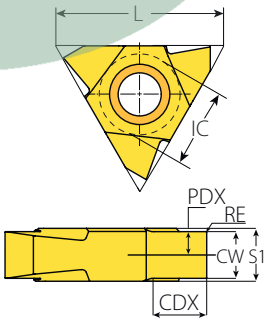
Insert Style		Thread Pitch	Ordering Code	Dimension mm					Grade	Toolholder
				Cutting Dia.		Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX		
IC	L mm	TPI		DC	h	CDX	S1	PDX	VTX	
3V	16	80	3VW80UN...	12	0.18	2.75	3.6	0.45	•	VW...-3V
		72	3VW72UN...		0.22			0.5	•	
		64	3VW64UN...		0.24			0.55	•	
		56	3VW56UN...		0.28			0.6	•	
		48	3VW48UN...		0.32			0.7	•	
		44	3VW44UN...		0.35			0.8	•	
		40	3VW40UN...		0.39			0.85	•	
		36	3VW36UN...		0.43			0.9	•	
		32	3VW32UN...		0.49			0.95	•	
		28	3VW28UN...		0.56			1.0	•	
		24	3VW24UN...		0.65			1.1	•	
		20	3VW20UN...		0.78			1.2	•	
		18	3VW18UN...		0.87			1.3	•	
		16	3VW16UN...		0.97			1.4	•	

Cylindrical Whirling

External



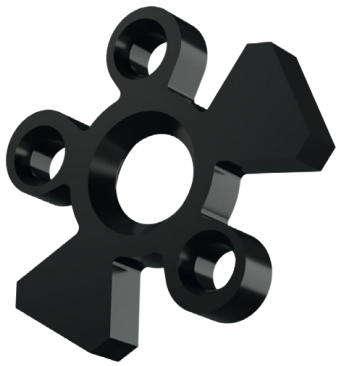




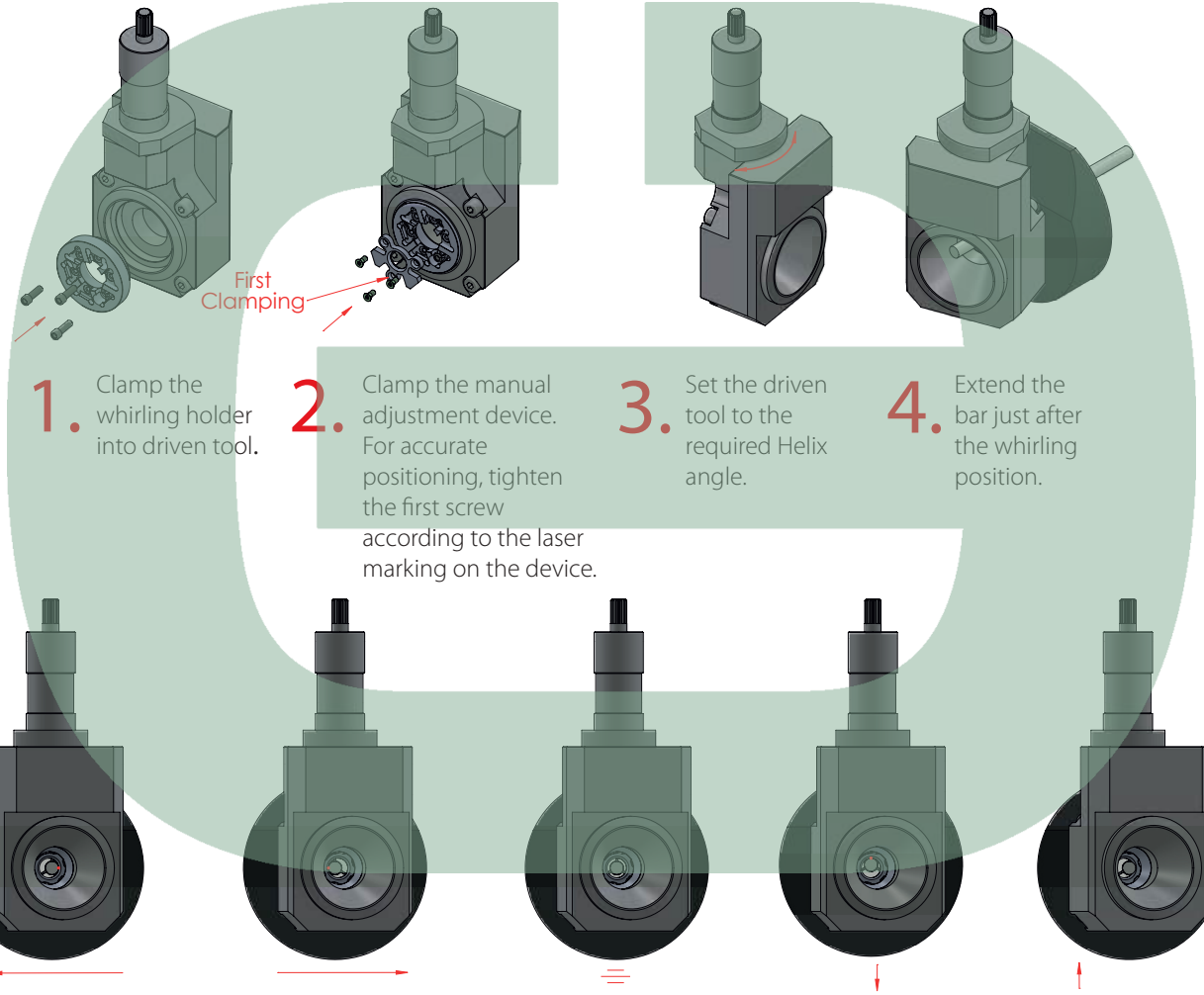
Insert Style		Ordering Code	Dimension mm						Grade	Toolholder
			Cutting Dia.			Cutting Depth Maximum	Insert Thickness Total	Profile Distance EX		
IC	L mm		DC	CW	RE	CDX	S1	PDX	VTX	
3V	16	3VW3.2R005...	12	3.2	0.05	2.75	3.6	1.8	•	VW...-3V

Manual Centering Adjustment Device

Item No.	Ordering Code	Dimensions mm		Number of Inserts	For Holder Type
		Cutting Dia.	Profile Distance EX		
IC		DC	PDX	NOF	
078-00086	MAD-D06-1.60-Z5-2V	6	1.6	5	VW...-2V
078-00085	MAD-D12-1.80-Z6-3V	12	1.8	6	VW...-3V



Centering Procedure*



1. Clamp the whirling holder into driven tool.
2. Clamp the manual adjustment device. For accurate positioning, tighten the first screw according to the laser marking on the device.
3. Set the driven tool to the required Helix angle.
4. Extend the bar just after the whirling position.
5. Move the whirling tool to the left until bar contact.
6. Move the whirling tool to the right until bar contact.
7. Calculate mid-horizontal point and move the whirling tool to the designated position.
8. Move the whirling tool towards cutting point, until bar contact.
9. Set the whirling tool to the X position as bar diameter.

***** If the holder can be inserted to the **driven tool from the back**, the order of steps is as follows:

1. Clamp whirling holder into driven tool.
2. Clamp the manual adjustment device. For accurate positioning, tighten the first screw according to the laser marking on the device.
3. Set Driven tool in the required Helix angle in the machine.

Whirling Accessories

Torque Limiters for Secure Clamping

Selecting the Correct Tools:

Insert Style	Nm Max	Handle	Adapter	Bit
2V	1.2	VTRF	TSD-12-1.2Nm	BIT25-TX8
3V	2.0	VTRF	TSD-12-2.0Nm	BIT25-TX10

Torque Limiting Handles:

	Ordering Code	Item Number	Range
	VTRF	013-01038	0.6 Nm to 3.0 Nm

Torque Limiting Adapters:

	Ordering Code	Item Number	Torque Max (Nm)
	TSD-12-1.2Nm	013-01170	1.2
	TSD-12-2.0Nm	013-01083	2.0

Torque Limiting Bits:

	Ordering Code	Item Number	Bit Type
	BIT25-TX8	013-01085	Torx
	BIT25-TX10	013-01094	

Recommended Grades and Cutting Speeds Vc [m/min]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] VTX	Feed f [mm/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	70-190	0.005-0.14
	2		Medium Carbon (C=0.25-0.55%)	150	70-190	0.005-0.14
	3		High Carbon (C=0.55-0.85%)	170	70-190	0.005-0.14
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	40-170	0.005-0.14
	5		Hardened	275	40-170	0.005-0.14
	6		Hardened	350	40-170	0.005-0.14
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	40-150	0.005-0.14
	8		Hardened	325	40-150	0.005-0.14
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	40-110	0.005-0.1
	12		Hardened	330	40-110	0.005-0.1
	13	Stainless Steel Austenitic	Austenitic	180	70-150	0.005-0.1
	14		Super Austenitic	200	70-150	0.005-0.1
N Non-Ferrous Metals	39	Copper and Copper Alloys	Brass	90	40-140	0.005-0.14
	40		Bronze And Non Leaded Copper	100	40-140	0.005-0.14
S Heat Resistant Material	23	Titanium Alloys	Pure 99.5 Ti	400Rm	70-130	0.005-0.08
	24		α+β Alloys	1050Rm	20-50	0.005-0.08
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	15-45	0.005-0.08
	26			51-55HRc	15-40	0.005-0.08

VTX

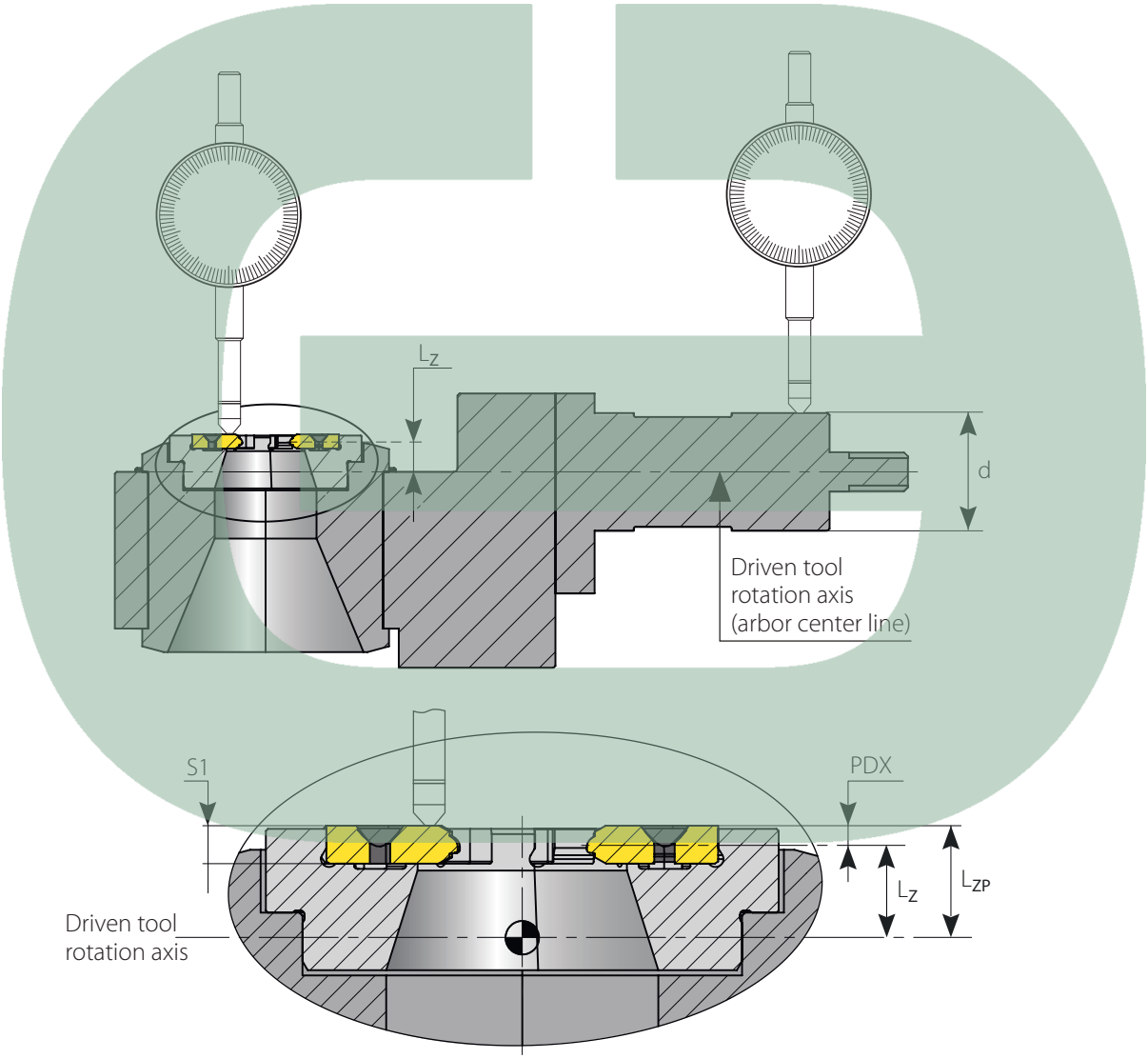
General purpose grade with tough submicron substrate.
Provides good fracture toughness in non-rigid cutting conditions. TiAlN coated.

Measuring the Profile Center to Rotation Axis (Lz)

Use the following method to measure Lz:

- Measure the diameter of the whirling driven tool arbor - d.
- The driven tool rotation axis is at the arbor centerline.
- Then measure the distance from the driven tool's rotation axis to the upper surface of the inserts L_{ZP}.
- Dimension PDX shows the center of the profile (see value in inserts tables, page 7).

$$L_Z = L_{ZP} - PDX$$



Use the Vargus GENius to calculate the Application Parameters
www.vargus.com/genius

VARGUS GENius™ Tool Selector and CNC Program Generator

Download on the App Store | GET IT ON Google Play

Application Parameters

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

$$N_t = \frac{1000 \times V_c}{\pi \times DC}$$

$$f_R = f_Z \times NOF$$

$$L_Y = L_Z \times \sin(\beta)$$

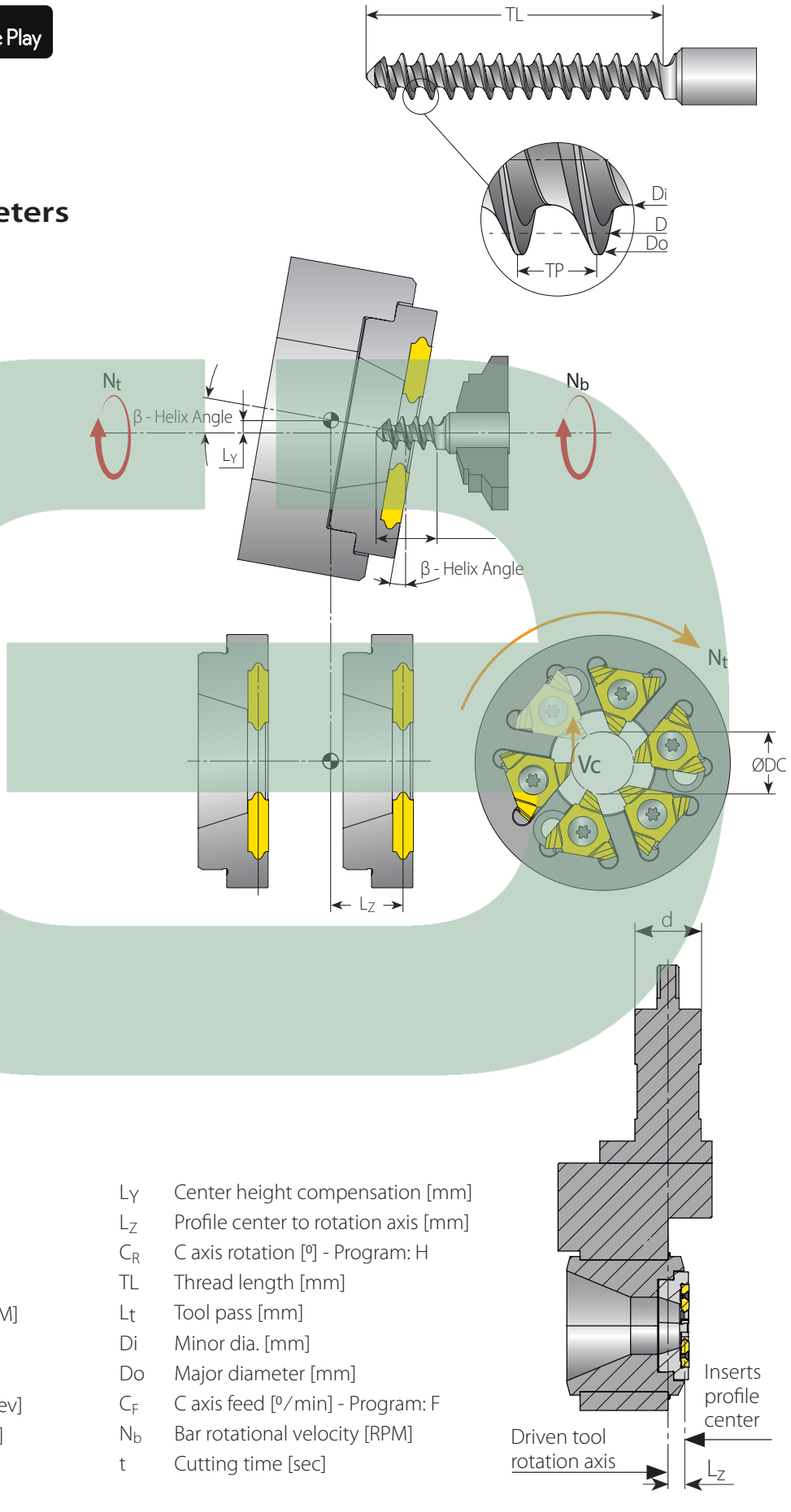
$$C_R = \frac{TL}{TP} \times 360^{\circ}$$

$$L_t = \frac{TL}{TP} \times \pi \times Di$$

$$C_F = \frac{f_R \times N_t \times C_R}{L_t}$$

$$N_b = \frac{C_F \times TL}{C_R \times TP}$$

$$t = \frac{TL}{TP \times N_b}$$



Explanation

β	Helix angle [º]	L_Y	Center height compensation [mm]
TP	Thread pitch [mm]	L_Z	Profile center to rotation axis [mm]
N	Number of starts	C_R	C axis rotation [º] - Program: H
D	Pitch diameter [mm]	TL	Thread length [mm]
N_t	Tool rotational velocity [RPM]	L_t	Tool pass [mm]
Vc	Cutting speed [m/min]	Di	Minor dia. [mm]
DC	Cutting diameter [mm]	Do	Major diameter [mm]
f_R	Feed per revolution [mm/rev]	C_F	C axis feed [º/min] - Program: F
f_Z	Feed per tooth [mm/tooth]	N_b	Bar rotational velocity [RPM]
NOF	Flute count (No. of inserts)	t	Cutting time [sec]

vargus
NEUMO Ehrenberg Group

V-TAPS

Advanced Tapping Solutions

METRIC

VARDEX
Advanced Threading Solutions

CORDEFER
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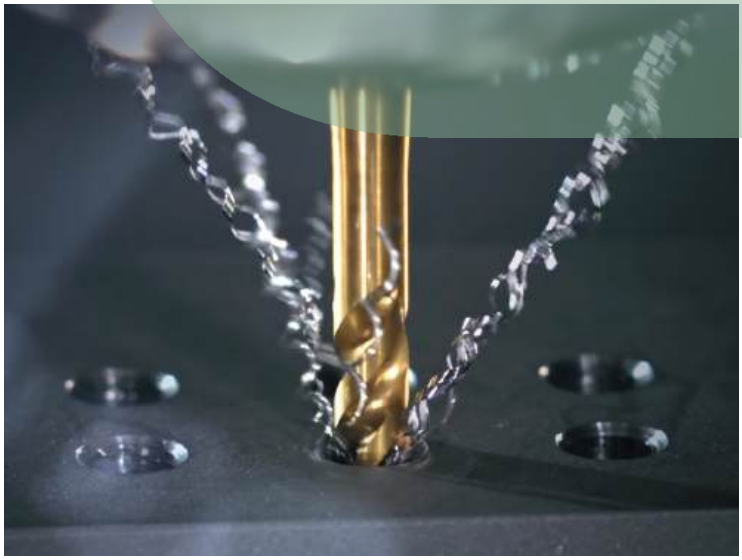
V-TAPS

Advanced Tapping Solutions

Vargus Ltd. introduces **V-Taps**, the new line of advanced tapping solutions.

Features and Benefits:

- Covers the most popular threading application standards:
  - ISO Metric
  - American UN
  - **BSP (G)** NEW
  - **NPT** NEW
- Includes different geometries in an assortment of types:
  - Straight Flute with Spiral Point
  - Spiral Flute
  - Straight Flute
  - Cold Forming
- Suitable for blind holes and thru hole operations
- Tools are designed to work on a wide range of materials
- 3 different grades:
  - **VHB** - Black oxide coating
  - **VHN** - TiN coated
  - **VHC** - TiCN coated
- Available in JIS (Japanese Industrial Standards)



V-TAPS

Vardex Ordering Code System T-3
Cutting Tool Dimensions According to ISO 13399 ..... T-4
Icons Legend T-5

Straight Flutes with Spiral Point Taps

ISO Metric (M) T-6
ISO Metric (MF) T-7
American UN (UNC) T-8
American UN (UNF) T-9
BSP (G) NEW T-10

Spiral Flute Taps

ISO Metric (M) T-11
ISO Metric (MF) T-12
American UN (UNC) T-13
American UN (UNF) T-14
BSP (G) NEW T-15

Straight Flute Taps

ISO Metric (M) T-16
NPT NEW T-17

Cold Forming Taps

ISO Metric (M) T-18

JIS Taps (Japanese Industrial Standards)

Straight Flute with Spiral Point - ISO Metric (M) T-19
Spiral Flute - ISO Metric (M) T-20
Recommended Grades and Cutting Speeds Vc [m/min] T-21
Thread Diameters T-23

V-Taps Ordering Code System

VT	M	10x1.5	-	SP	-	6H	-	DIN371	-	VHB
1	2	3		4		5		6		7

1- Tool Type
VT - Vargus Tap

2 - Thread Specifications
M - ISO Metric Coarse Thread DIN13
MF - ISO Metric Fine Thread DIN13
UNC - Unified Coarse Thread ASME B1.1
UNF - Unified Fine Thread ASME B1.1
BSP (G) - British Standard Pipe DIN ISO 228-1
NPT - National Pipe Thread ASA B 2.1

3 - Thread Size
Nominal Dia. x Pitch

4 - Geometry
SP - Spiral point (gun)
SF - Spiral flute
ST - Straight flute
FM - Forming

5 - Precision Class
6H/ISO2 - ISO Pitch Diameter Tolerance Zone (high basic pitch diameter)
6HX - Pitch Diameter Tolerance Zone (with increased pitch diameter)
2B - Internal Inch UN Thread Medium Class of Fit

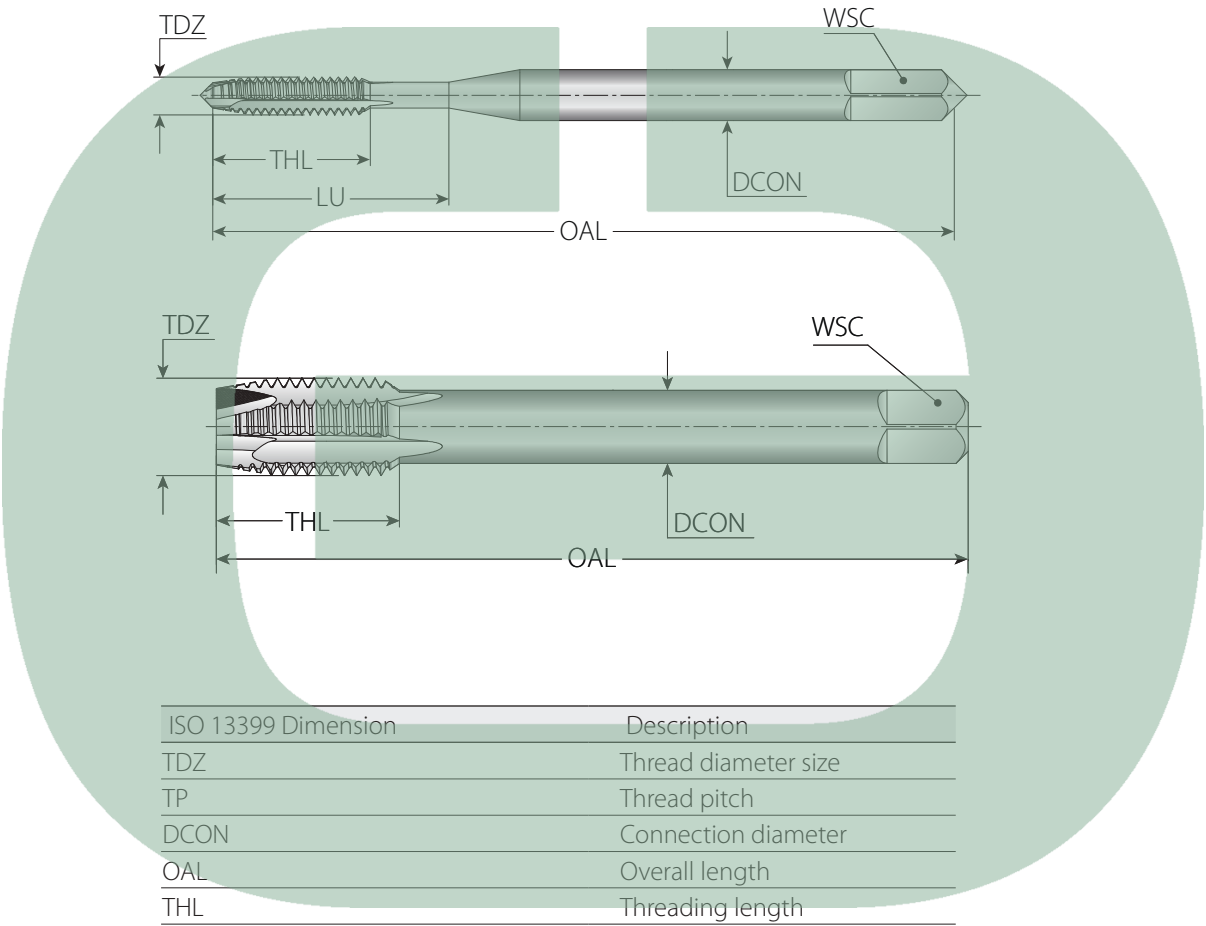
6 - Shank
DIN 371
DIN 374
DIN 376
DIN 2174
DIN 5156
JIS B-4430

7 - Grade
VHB - HSS-E grade with Black oxide coated
VHC - HSS-E grade, TiCN coated
VHN - HSS-E grade, TiN coated
(HSS-E PM available for cold forming taps)

Cutting Tool Dimensions According to ISO 13399

Vargus defines the **new V-Taps Line according to the ISO 13399 standard**.
The following is a list of dimensions which are used in this catalog.

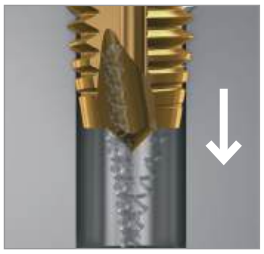
ISO 13399 is an international technical standard for the computer-interpretable representation and exchange of cutting tools and toolholders. The objective is to provide a system that allows for a neutral file exchange, and a basis for implementing and sharing product databases and archiving.



ISO 13399 Dimension	Description
TDZ	Thread diameter size
TP	Thread pitch
DCON	Connection diameter
OAL	Overall length
THL	Threading length
LU	Usable length
WSC	Clamping width
SG	Standards
PHD	Pre-machined hole diameter
NOF	Flute count
TCS	Chamfer lead type

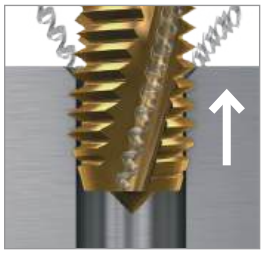
Tool Geometry

Straight Flutes with Spiral Point (SP)



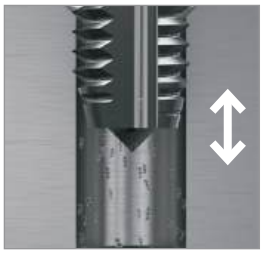
P M K N

Spiral Flute (SF)



P M K N

Straight Flute (ST)



K

Cold Forming (FM)

P M N

Thread Form Type

M	Metric Coarse	UNC	Unified Coarse	BSP (G)	British Standard Pipe
MF	Metric Fine	UNF	Unified Fine	NPT	National Pipe Thread

Threading Application

Thru Hole

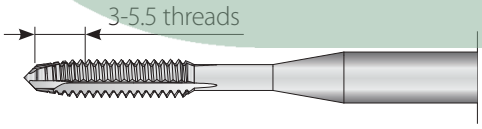
Blind Hole

Basic Standard Group

DIN 371/374	DIN Thread Standard (based on size range) DIN 371 if Ø ≤ 10mm / DIN 374 if Ø ≥ 12mm	DIN 376	DIN 376 – M Thread Standard	DIN 5156	Machine Taps for Pipe Threads
DIN 371/376	DIN Thread Standard (based on size range) DIN 371 if Ø ≤ 10mm / DIN 376 if Ø ≥ 12mm	DIN 2174	DIN 2174 – Forming Tap Standard	JIS B-4430	JIS – Japnese Industrial Standards
DIN 374	DIN 374 – MF Thread Standard				

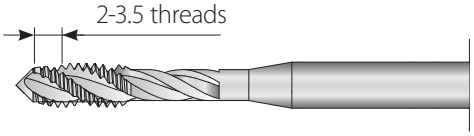
Chamfer Lead Types

B 3.5-5.5



Form B
Medium, 3.5-5 threads, with spiral point, for all thru holes and deep tapping holes.

C 2-3.5



Form C
Long, 2-3.5 threads for blind holes and generally for aluminum, gray cast iron and brass.

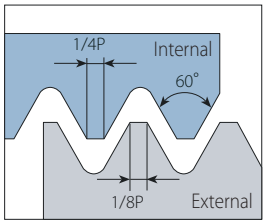
Substrate

HSS	High speed steel tool material	HSS-E PM	High speed cobalt powder metal tool material
HSS-E	High speed cobalt steel tool material		

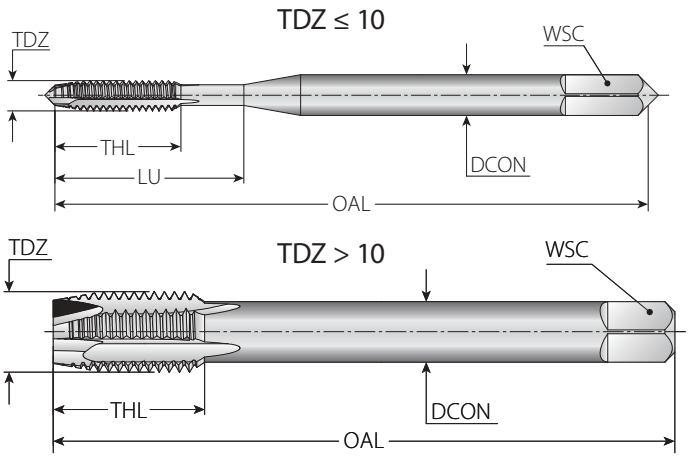
Usable Length Thread Diameter Ratio

2.5xTDZ	2.5×TDZ Useable tool depth to thread diameter ratio

Internal



Defined by: DIN 13
Tolerance class: 6H



M | DIN 371/376 | B 3.5-5.5 | 2.5xTDZ | HSS-E

P M K N

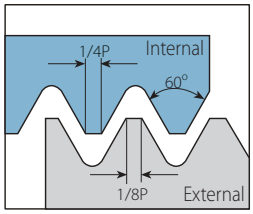
Straight Flutes with Spiral Point Taps

M Coarse	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade		
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC	VHN
M2	0.40	VT-M2x0.4-SP-6H-DIN371-...	2.80	45	8	9	2.10	371	1.60	2	B	•	•	•
M2.5	0.45	VT-M2.5x0.45-SP-6H-DIN371-...	2.80	50	9	10	2.10		2.05	2	B	•	•	•
M3	0.50	VT-M3x0.5-SP-6H-DIN371-...	3.50	56	11	18	2.70		2.50	3	B	•	•	•
M4	0.70	VT-M4x0.7-SP-6H-DIN371-...	4.50	63	13	19	3.40		3.30	3	B	•	•	•
M5	0.80	VT-M5x0.8-SP-6H-DIN371-...	6.00	70	16	25	4.90		4.20	3	B	•	•	•
M6	1.00	VT-M6x1-SP-6H-DIN371-...	6.00	80	19	30	4.90		5.00	3	B	•	•	•
M8	1.25	VT-M8x1.25-SP-6H-DIN371-...	8.00	90	22	34	6.20		6.80	3	B	•	•	•
M10	1.50	VT-M10x1.5-SP-6H-DIN371-...	10.00	100	24	40	8.00		8.50	3	B	•	•	•
M12	1.75	VT-M12x1.75-SP-6H-DIN376-...	9.00	110	28	-	7.00	376	10.20	3	B	•	•	•
M14	2.00	VT-M14x2-SP-6H-DIN376-...	11.00	110	30	-	9.00		12.00	3	B	•	•	•
M16	2.00	VT-M16x2-SP-6H-DIN376-...	12.00	110	32	-	9.00		14.00	3	B	•	•	•
M18	2.50	VT-M18x2.5-SP-6H-DIN376-...	14.00	125	36	-	11.00		15.50	4	B	•	•	•
M20	2.50	VT-M20x2.5-SP-6H-DIN376-...	16.00	140	36	-	12.00		17.50	4	B	•	•	•

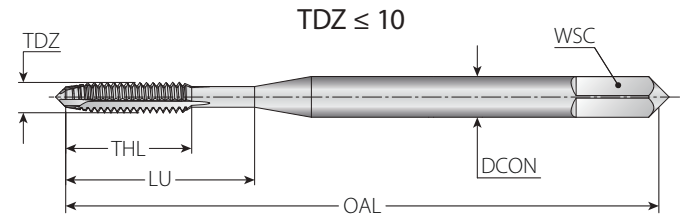
• Available in these grades

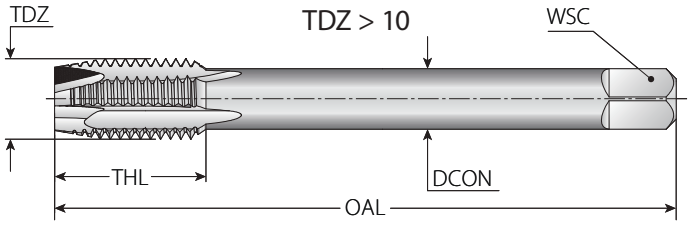
ISO Metric (MF)

Internal



Defined by: DIN 13
Tolerance class: 6H





MF | DIN 371/374 | B 3.5-5.5 | 2.5xTDZ | HSS-E

P M K N

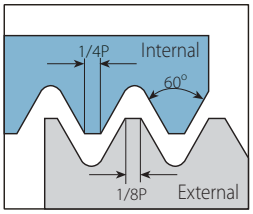
Straight Flutes with Spiral Point Taps

M Fine	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade		
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC	VHN
MF4	0.50	VT-MF4x0.5-SP-6H-DIN371-...	4.50	63	12	19	3.40		3.50	3	B	•	•	•
MF5	0.50	VT-MF5x0.5-SP-6H-DIN371-...	6.00	70	12	25	4.90		4.50	3	B	•	•	•
MF6	0.50	VT-MF6x0.5-SP-6H-DIN371-...	6.00	80	15	30	4.90		5.50	3	B	•	•	•
MF6	0.75	VT-MF6x0.75-SP-6H-DIN371-...	6.00	80	15	30	4.90	371	6.20	3	B	•	•	•
MF8	1.00	VT-MF8x1-SP-6H-DIN371-...	8.00	90	22	34	6.20		7.00	3	B	•	•	•
MF10	1.00	VT-MF10x1-SP-6H-DIN371-...	10.00	90	20	36	8.00		9.00	3	B	•	•	•
MF10	1.25	VT-MF10x1.25-SP-6H-DIN371-...	10.00	100	24	40	8.00		8.80	3	B	•	•	•
MF12	1.00	VT-MF12x1-SP-6H-DIN374-...	9.00	100	22	-	7.00		11.00	3	B	•	•	•
MF12	1.25	VT-MF12x1.25-SP-6H-DIN374-...	9.00	100	22	-	7.00		10.80	3	B	•	•	•
MF14	1.25	VT-MF14x1.25-SP-6H-DIN374-...	11.00	100	22	-	9.00		12.80	3	B	•	•	•
MF16	1.50	VT-MF16x1.5-SP-6H-DIN374-...	12.00	100	22	-	9.00	374	14.50	3	B	•	•	•
MF18	1.50	VT-MF18x1.5-SP-6H-DIN374-...	14.00	110	26	-	11.00		16.50	4	B	•	•	•
MF20	1.50	VT-MF20x1.5-SP-6H-DIN374-...	16.00	125	26	-	12.00		18.50	4	B	•	•	•

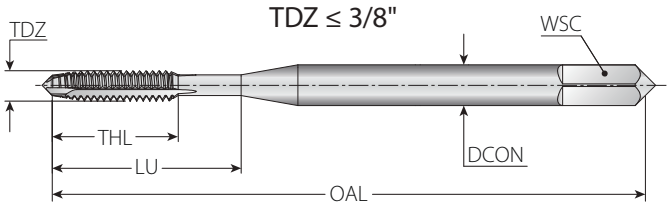
• Available in these grades

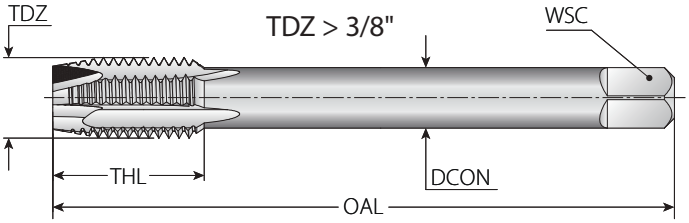
American UN (UNC)

Internal



Defined by: ANSI B1.1
Tolerance class: 2B





UNC | DIN 371/376 | B 3.5-5.5 | 2.5xTDZ | HSS-E

P M K N

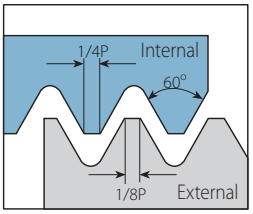
Straight Flutes with Spiral Point Taps

UNC	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade		
TDZ	TPI	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC	VHN
No.4	40	VT-UNC4x40-SP-2B-DIN371-...	3.50	56	11	17	2.70		2.30	2	B	•	•	•
No.5	40	VT-UNC5x40-SP-2B-DIN371-...	3.50	56	11	18	2.70		2.60	3	B	•	•	•
No.6	32	VT-UNC6x32-SP-2B-DIN371-...	4.00	56	12	18	3.00		2.85	3	B	•	•	•
No.8	32	VT-UNC8x32-SP-2B-DIN371-...	4.50	63	13	21	3.40		3.50	3	B	•	•	•
No.10	24	VT-UNC10x24-SP-2B-DIN371-...	6.00	70	16	25	4.90	371	3.90	3	B	•	•	•
No.12	24	VT-UNC12x24-SP-2B-DIN371-...	6.00	80	19	30	4.90		4.50	3	B	•	•	•
1/4"	20	VT-UNC1/4x20-SP-2B-DIN371-...	7.00	80	19	31	5.50		5.20	3	B	•	•	•
5/16"	18	VT-UNC5/16x18-SP-2B-DIN371-...	8.00	90	22	34	6.20		6.60	3	B	•	•	•
3/8"	16	VT-UNC3/8x16-SP-2B-DIN371-...	9.00	90	22	39	7.00		8.00	3	B	•	•	•
7/16"	14	VT-UNC7/16x14-SP-2B-DIN376-...	8.00	100	25	-	6.20		9.40	3	B	•	•	•
1/2"	13	VT-UNC1/2x13-SP-2B-DIN376-...	9.00	110	28	-	7.00		10.75	3	B	•	•	•
9/16"	12	VT-UNC9/16x12-SP-2B-DIN376-...	11.00	110	30	-	9.00		12.25	3	B	•	•	•
5/8"	11	VT-UNC5/8x11-SP-2B-DIN376-...	12.00	110	33	-	9.00	376	13.50	3	B	•	•	•
3/4"	10	VT-UNC3/4x10-SP-2B-DIN376-...	14.00	125	38	-	11.00		16.50	4	B	•	•	•
7/8"	9	VT-UNC7/8x9-SP-2B-DIN376-...	18.00	140	41	-	14.50		19.50	4	B	•	•	•
1"	8	VT-UNC1x8-SP-2B-DIN376-...	18.00	160	47	-	14.50		22.25	4	B	•	•	•

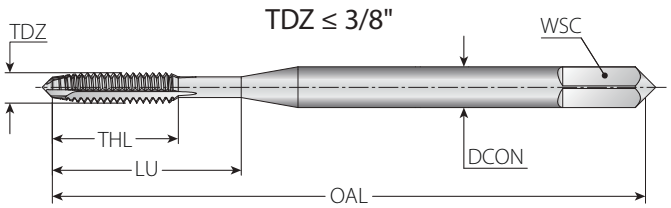
• Available in these grades

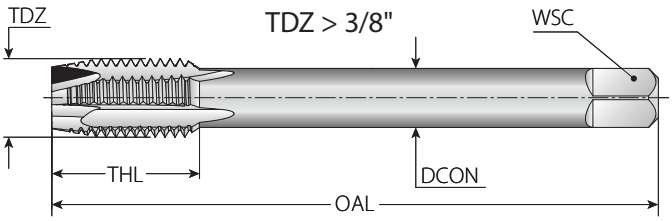
American UN (UNF)

Internal



Defined by: ANSI B1.1
Tolerance class: 2B





UNF | DIN 371/374 | B 3.5-5.5 | 2.5xTDZ | HSS-E

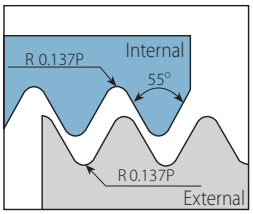
P M K N

Straight Flutes with Spiral Point Taps

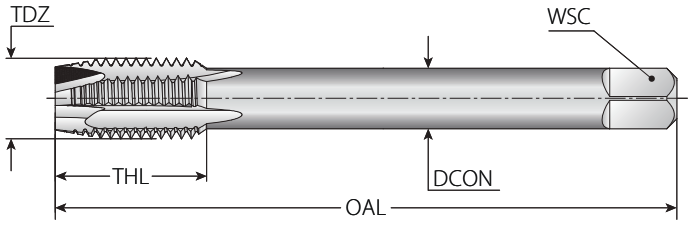
UNF	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade		
TDZ	TPI	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC	VHN
No.4	48	VT-UNF4x48-SP-2B-DIN371-...	3.50	56	11	17	2.70		2.40	2	B	•	•	•
No.5	44	VT-UNF5x44-SP-2B-DIN371-...	3.50	56	11	18	2.70		2.70	3	B	•	•	•
No.6	40	VT-UNF6x40-SP-2B-DIN371-...	4.00	56	12	18	3.00		3.00	3	B	•	•	•
No.8	36	VT-UNF8x36-SP-2B-DIN371-...	4.50	63	13	21	3.40		3.50	3	B	•	•	•
No.10	32	VT-UNF10x32-SP-2B-DIN371-...	6.00	70	16	25	4.90	371	4.10	3	B	•	•	•
No.12	28	VT-UNF12x28-SP-2B-DIN371-...	6.00	80	19	30	4.90		4.70	3	B	•	•	•
1/4"	28	VT-UNF1/4x28-SP-2B-DIN371-...	7.00	80	19	31	5.50		5.50	3	B	•	•	•
5/16"	24	VT-UNF5/16x24-SP-2B-DIN371-...	8.00	90	22	34	6.20		6.90	3	B	•	•	•
3/8"	24	VT-UNF3/8x24-SP-2B-DIN371-...	9.00	90	22	39	7.00		8.50	3	B	•	•	•
7/16"	20	VT-UNF7/16x20-SP-2B-DIN374-...	8.00	100	21	-	6.20		9.90	3	B	•	•	•
1/2"	20	VT-UNF1/2x20-SP-2B-DIN374-...	9.00	100	22	-	7.00		11.50	3	B	•	•	•
9/16"	18	VT-UNF9/16x18-SP-2B-DIN374-...	11.00	100	22	-	9.00		12.90	3	B	•	•	•
5/8"	18	VT-UNF5/8x18-SP-2B-DIN374-...	12.00	110	32	-	9.00	374	14.50	4	B	•	•	•
3/4"	16	VT-UNF3/4x16-SP-2B-DIN374-...	14.00	125	37	-	11.00		17.50	4	B	•	•	•
7/8"	14	VT-UNF7/8x14-SP-2B-DIN374-...	18.00	125	38	-	14.50		20.40	4	B	•	•	•
1"	12	VT-UNF1x12-SP-2B-DIN374-...	20.00	140	38	-	16.00		23.25	4	B	•	•	•

• Available in these grades

Internal



Defined by: DIN ISO 228-1
Tolerance class: Medium class



BSP (G) | | DIN 5156 | B 3.5-5.5 | HSS-E

P M K N

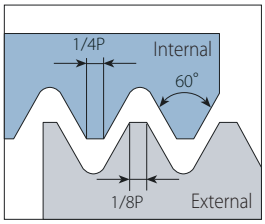
Straight Flutes with Spiral Point Taps

BSP(G)	Pitch	Ordering Code	Dimensions mm				DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade	
TDZ	TPI	Internal	DCON	OAL	THL (max)	WSC	SG	PHD	NOF	TCS	VHB	VHC
1/8"	28	VT-G1/8x28-SP-DIN5156-...	7	90	20	5.5		8.8	3	B	•	•
1/4"	19	VT-G1/4x19-SP-DIN5156-...	11	100	22	9.0		11.8	3	B	•	•
3/8"	19	VT-G3/8x19-SP-DIN5156-...	12	100	22	9.0		15.3	4	B	•	•
1/2"	14	VT-G1/2x14-SP-DIN5156-...	16	125	25	12.0	DIN5156	19.1	4	B	•	•
5/8"	14	VT-G5/8x14-SP-DIN5156-...	18	125	25	14.5		21.0	4	B	•	•
3/4"	14	VT-G3/4x14-SP-DIN5156-...	20	140	28	16.0		24.6	4	B	•	•
1"	11	VT-G1x11-SP-DIN5156-...	25	160	36	20.0		31.0	5	B	•	•

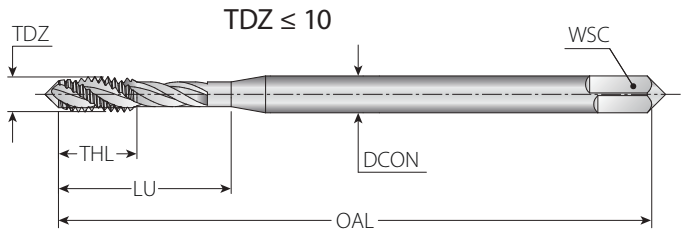
• Available in these grades

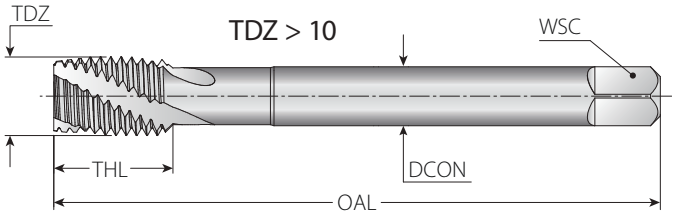
ISO Metric (M)

Internal



Defined by: DIN 13
Tolerance class: 6H





M | DIN 371/376 | C 2-3.5 | 2.5xTDZ | HSS-E

P M K N

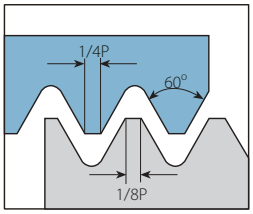
Spiral Flute Taps

M Coarse	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade		
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC	VHN
M2	0.40	VT-M2x0.4-SF-6H-DIN371-...	2.80	45	8	9	2.10		1.60	3	C	•	•	•
M2.5	0.45	VT-M2.5x0.45-SF-6H-DIN371-...	2.80	50	9	10	2.10		2.05	3	C	•	•	•
M3	0.50	VT-M3x0.5-SF-6H-DIN371-...	3.50	56	11	18	2.70		2.50	3	C	•	•	•
M4	0.70	VT-M4x0.7-SF-6H-DIN371-...	4.50	63	13	19	3.40	371	3.30	3	C	•	•	•
M5	0.80	VT-M5x0.8-SF-6H-DIN371-...	6.00	70	16	25	4.90		4.20	3	C	•	•	•
M6	1.00	VT-M6x1-SF-6H-DIN371-...	6.00	80	19	30	4.90		5.00	3	C	•	•	•
M8	1.25	VT-M8x1.25-SF-6H-DIN371-...	8.00	90	22	36	6.20		6.80	3	C	•	•	•
M10	1.50	VT-M10x1.5-SF-6H-DIN371-...	10.00	100	24	40	8.00		8.50	3	C	•	•	•
M12	1.75	VT-M12x1.75-SF-6H-DIN376-...	9.00	110	28	-	7.00		10.20	3	C	•	•	•
M14	2.00	VT-M14x2-SF-6H-DIN376-...	11.00	110	30	-	9.00		12.00	3	C	•	•	•
M16	2.00	VT-M16x2-SF-6H-DIN376-...	12.00	110	32	-	9.00	376	14.00	4	C	•	•	•
M18	2.50	VT-M18x2.5-SF-6H-DIN376-...	14.00	125	34	-	11.00		15.50	4	C	•	•	•
M20	2.50	VT-M20x2.5-SF-6H-DIN376-...	16.00	140	34	-	12.00		17.50	4	C	•	•	•

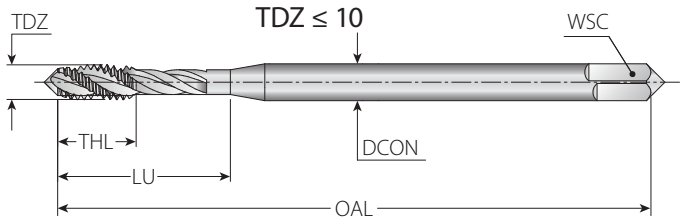
• Available in these grades

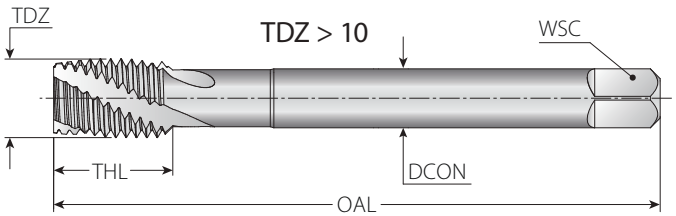
ISO Metric (MF)

Internal



Defined by: DIN 13
Tolerance class: 6H





MF | DIN 371/374 | C 2-3.5 | 2.5xTDZ | HSS -E

P M K N

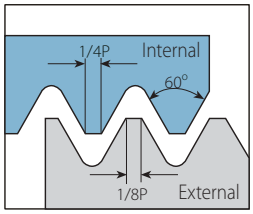
Spiral Flute Taps

M Fine	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade		
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC	VHN
MF4	0.50	VT-MF4x0.5-SF-6H-DIN371-...	4.50	63	10	19	3.40		3.50	3	C	•	•	•
MF5	0.50	VT-MF5x0.5-SF-6H-DIN371-...	6.00	70	12	25	4.90		4.50	3	C	•	•	•
MF6	0.50	VT-MF6x0.5-SF-6H-DIN371-...	6.00	80	14	30	4.90		5.50	3	C	•	•	•
MF6	0.75	VT-MF6x0.75-SF-6H-DIN371-...	6.00	80	14	30	4.90	371	5.20	3	C	•	•	•
MF8	1.00	VT-MF8x1-SF-6H-DIN371-...	8.00	90	22	36	6.20		7.00	3	C	•	•	•
MF10	1.00	VT-MF10x1-SF-6H-DIN371-...	10.00	90	20	39	8.00		9.00	3	C	•	•	•
MF10	1.25	VT-MF10x1.25-SF-6H-DIN371-...	10.00	100	24	40	8.00		8.80	3	C	•	•	•
MF12	1.00	VT-MF12x1-SF-6H-DIN374-...	9.00	100	22	-	7.00		11.00	4	C	•	•	•
MF12	1.25	VT-MF12x1.25-SF-6H-DIN374-...	9.00	100	22	-	7.00		10.80	4	C	•	•	•
MF14	1.25	VT-MF14x1.25-SF-6H-DIN374-...	11.00	100	22	-	9.00		12.80	4	C	•	•	•
MF16	1.50	VT-MF16x1.5-SF-6H-DIN374-...	12.00	100	22	-	9.00	374	14.50	4	C	•	•	•
MF18	1.50	VT-MF18x1.5-SF-6H-DIN374-...	14.00	110	25	-	11.00		16.50	4	C	•	•	•
MF20	1.50	VT-MF20x1.5-SF-6H-DIN374-...	16.00	125	25	-	12.00		18.50	4	C	•	•	•

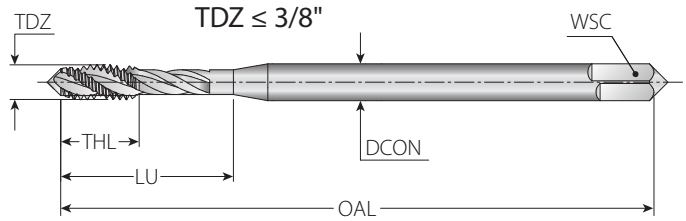
• Available in these grades

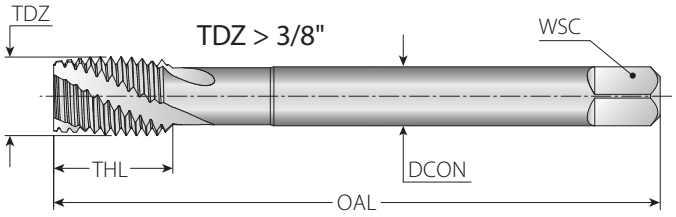
American UN (UNC)

Internal



Defined by: ANSI B1.1
Tolerance class: 2B





UNC | DIN 371/376 | C 2-3.5 | 2.5xTDZ | HSS-E

P M K N

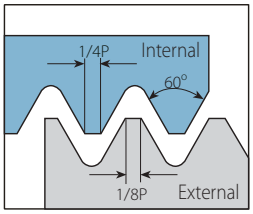
Spiral Flute Taps

UNC	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade		
TDZ	TPI	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC	VHN
No.4	40	VT-UNC4x40-SF-2B-DIN371-...	3.50	56	11	17	2.70		2.30	3	C	•	•	•
No.5	40	VT-UNC5x40-SF-2B-DIN371-...	3.50	56	11	18	2.70		2.60	3	C	•	•	•
No.6	32	VT-UNC6x32-SF-2B-DIN371-...	4.00	56	12	18	3.00		2.85	3	C	•	•	•
No.8	32	VT-UNC8x32-SF-2B-DIN371-...	4.50	63	13	21	3.40		3.50	3	C	•	•	•
No.10	24	VT-UNC10x24-SF-2B-DIN371-...	6.00	70	16	25	4.90	371	3.90	3	C	•	•	•
No.12	24	VT-UNC12x24-SF-2B-DIN371-...	6.00	80	19	30	4.90		4.50	3	C	•	•	•
1/4"	20	VT-UNC1/4x20-SF-2B-DIN371-...	7.00	80	19	31	5.50		5.20	3	C	•	•	•
5/16"	18	VT-UNC5/16x18-SF-2B-DIN371-...	8.00	90	22	36	6.20		6.60	3	C	•	•	•
3/8"	16	VT-UNC3/8x16-SF-2B-DIN371-...	9.00	90	22	42	7.00		8.00	3	C	•	•	•
7/16"	14	VT-UNC7/16x14-SF-2B-DIN376-...	8.00	100	24	-	6.20		9.40	3	C	•	•	•
1/2"	13	VT-UNC1/2x13-SF-2B-DIN376-...	9.00	110	28	-	7.00		10.75	3	C	•	•	•
9/16"	12	VT-UNC9/16x12-SF-2B-DIN376-...	11.00	110	30	-	9.00		12.25	3	C	•	•	•
5/8"	11	VT-UNC5/8x11-SF-2B-DIN376-...	12.00	110	32	-	9.00	376	13.50	4	C	•	•	•
3/4"	10	VT-UNC3/4x10-SF-2B-DIN376-...	14.00	125	34	-	11.00		16.50	4	C	•	•	•
7/8"	9	VT-UNC7/8x9-SF-2B-DIN376-...	18.00	140	34	-	14.50		19.50	4	C	•	•	•
1"	8	VT-UNC1x8-SF-2B-DIN376-...	19.00	160	38	-	14.50		22.25	4	C	•	•	•

• Available in these grades

American UN (UNF)

Internal



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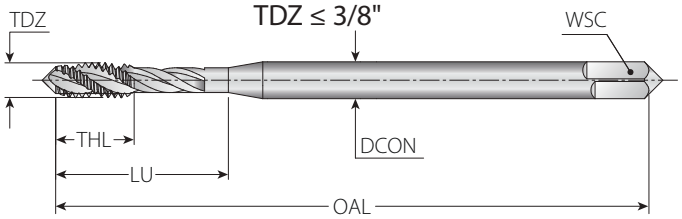
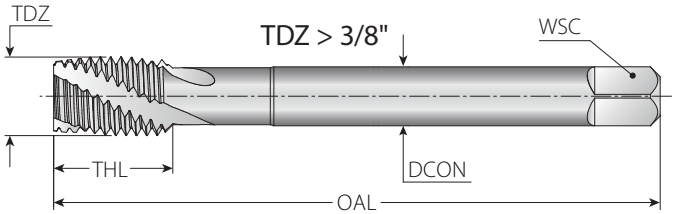




UNF | DIN 371/374 | C 2-3.5 | 2.5xTDZ | HSS-E

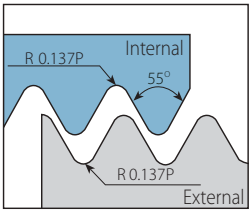
P M K N

Spiral Flute Taps

UNF	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade		
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC	VHN
No.4	48	VT-UNF4x48-SF-2B-DIN371-...	3.50	56	11	17	2.70		2.40	3	C	•	•	•
No.5	44	VT-UNF5x44-SF-2B-DIN371-...	3.50	56	11	18	2.70		2.70	3	C	•	•	•
No.6	40	VT-UNF6x40-SF-2B-DIN371-...	4.00	56	12	18	3.00		3.00	3	C	•	•	•
No.8	36	VT-UNF8x36-SF-2B-DIN371-...	4.50	63	13	21	3.40		3.50	3	C	•	•	•
No.10	32	VT-UNF10x32-SF-2B-DIN371-...	6.00	70	16	25	4.90	371	4.10	3	C	•	•	•
No.12	28	VT-UNF12x28-SF-2B-DIN371-...	6.00	80	19	30	4.90		4.70	3	C	•	•	•
1/4"	28	VT-UNF1/4x28-SF-2B-DIN371-...	7.00	80	19	31	5.50		5.50	3	C	•	•	•
5/16"	24	VT-UNF5/16x24-SF-2B-DIN371-...	8.00	90	22	36	6.20		6.90	3	C	•	•	•
3/8"	24	VT-UNF3/8x24-SF-2B-DIN371-...	9.00	90	22	42	7.00		8.50	3	C	•	•	•
7/16"	20	VT-UNF7/16x20-SF-2B-DIN374-...	8.00	100	20	-	6.20		9.90	4	C	•	•	•
1/2"	20	VT-UNF1/2x20-SF-2B-DIN374-...	9.00	100	22	-	7.00		11.50	4	C	•	•	•
9/16"	18	VT-UNF9/16x18-SF-2B-DIN374-...	11.00	100	22	-	9.00		12.90	4	C	•	•	•
5/8"	18	VT-UNF5/8x18-SF-2B-DIN374-...	12.00	110	32	-	9.00	374	14.50	4	C	•	•	•
3/4"	16	VT-UNF3/4x16-SF-2B-DIN374-...	14.00	125	34	-	11.00		17.50	4	C	•	•	•
7/8"	14	VT-UNF7/8x14-SF-2B-DIN374-...	18.00	125	38	-	14.50		20.40	4	C	•	•	•
1"	12	VT-UNF1x12-SF-2B-DIN374-...	18.00	140	28	-	14.50		23.25	4	C	•	•	•

• Available in these grades

Internal



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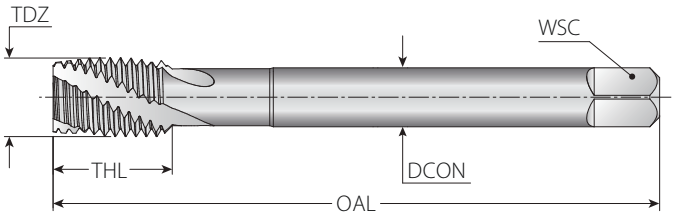
Tolerance class: Medium class



BSP (G) | DIN 5156 | C 2-3.5 | HSS-E

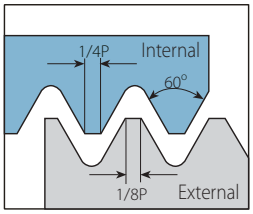
P M K N

Spiral Flute Taps

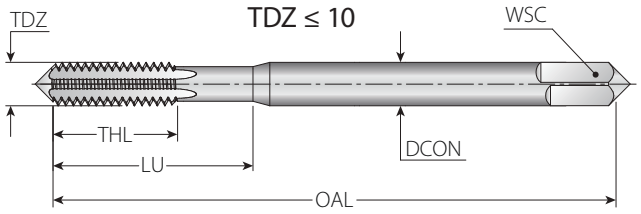
BSP(G)	Pitch	Ordering Code	Dimensions mm				DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade	
TDZ	TPI	Internal	DCON	OAL	THL (max)	WSC	SG	PHD	NOF	TCS	VHB	VHC
1/8"	28	VT-G1/8x28-SF-DIN5156-...	7	90	20	5.5		8.8	3	C	•	•
1/4"	19	VT-G1/4x19-SF-DIN5156-...	11	100	22	9.0		11.8	4	C	•	•
3/8"	19	VT-G3/8x19-SF-DIN5156-...	12	100	22	9.0		15.3	4	C	•	•
1/2"	14	VT-G1/2x14-SF-DIN5156-...	16	125	25	12.0	DIN5156	19.1	4	C	•	•
5/8"	14	VT-G5/8x14-SF-DIN5156-...	18	125	25	14.5		21.0	4	C	•	•
3/4"	14	VT-G3/4x14-SF-DIN5156-...	20	140	28	16.0		24.6	4	C	•	•
1"	11	VT-G1x11-SF-DIN5156-...	25	160	36	20.0		31.0	5	C	•	•

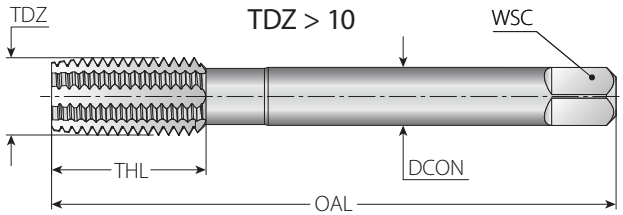
• Available in these grades

Internal



Defined by: DIN 13
Tolerance class: 6HX





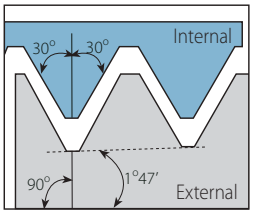
K

Straight Flute Taps

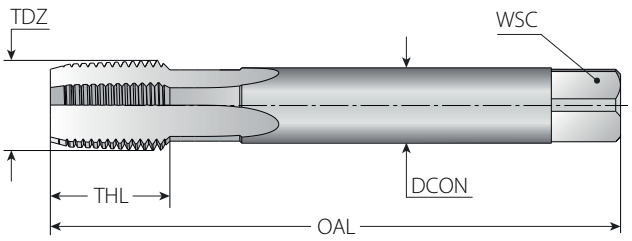
M Coarse	Pitch	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHC
M3	0.50	VT-M3x0.5-ST-6HX-DIN371-...	3.50	56	11	18	2.70	371	2.50	3	C	•
M4	0.70	VT-M4x0.7-ST-6HX-DIN371-...	4.50	63	13	19	3.40		3.30	3	C	•
M5	0.80	VT-M5x0.8-ST-6HX-DIN371-...	6.00	70	16	25	4.90		4.20	3	C	•
M6	1.00	VT-M6x1-ST-6HX-DIN371-...	6.00	80	19	30	4.90		5.00	4	C	•
M8	1.25	VT-M8x1.25-ST-6HX-DIN371-...	8.00	90	22	34	6.20		6.80	4	C	•
M10	1.50	VT-M10x1.5-ST-6HX-DIN371-...	10.00	100	24	40	8.00		8.50	4	C	•
M12	1.75	VT-M12x1.75-ST-6HX-DIN376-...	9.00	110	28	-	7.00	376	10.20	4	C	•
M14	2.00	VT-M14x2-ST-6HX-DIN376-...	11.00	110	30	-	9.00		12.00	4	C	•
M16	2.00	VT-M16x2-ST-6HX-DIN376-...	12.00	110	32	-	9.00		14.00	4	C	•
M18	2.50	VT-M18x2.5-ST-6HX-DIN376-...	14.00	125	34	-	11.00		15.50	4	C	•
M20	2.50	VT-M20x2.5-ST-6HX-DIN376-...	16.00	140	34	-	12.00		17.50	4	C	•

• Available in these grades

Internal



Defined by: ASA B 2.1
Tolerance class: Standard NPT



NPT | C 2-3.5 | HSS

P M

Straight Flute Taps

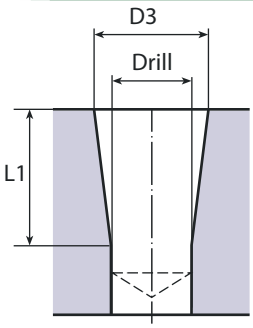
NPT	Pitch	Ordering Code	Dimensions mm				Drill Hole	No. of Flutes	Chamfer Lead	Grade
TDZ	TPI	Internal	DCON	OAL	THL (max)	WSC	PHD	NOF	TCS	VHB
1/16"	27	VT-NPT1/16x27-ST-...	6	90	17	4.9	See Drill hole Dia. table below	3	C	•
1/8"	27	VT-NPT1/8x27-ST-...	8	90	17	6.2		3	C	•
1/4"	18	VT-NPT1/4x18-ST-...	11	100	23	9		4	C	•
3/8"	18	VT-NPT3/8x18-ST-...	14	110	23	11		4	C	•
1/2"	14	VT-NPT1/2x14-ST-...	18	140	30	14.5		4	C	•
3/4"	14	VT-NPT3/4x14-ST-...	22	140	30	18		5	C	•
1"	11.5	VT-NPT1x11.5-ST-...	25	160	35	20		5	C	•

• Available in these grades

NPT Pre-Hole Diameter Table

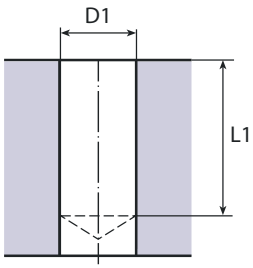
Conical

Thread	Drill Ø	D3	L1
1/16 - 27	6.0	6.41	12.0
1/8 - 27	8.3	8.76	12.0
1/4 - 18	10.7	11.40	17.5
3/8 - 18	14.2	14.84	17.6
1/2 - 14	17.4	18.33	22.8
3/4 - 14	22.8	23.68	23.0
1 - 11.5	28.6	29.72	27.4



Parallel

Thread	Drill Ø	D1	L1 min
1/16 - 27	6.0	6.2	12.0
1/8 - 27	8.3	8.5	12.0
1/4 - 18	10.7	11.0	17.5
3/8 - 18	14.2	14.5	17.6
1/2 - 14	17.4	17.8	22.8
3/4 - 14	22.8	23.0	23.0
1 - 11.5	28.6	29.0	27.4



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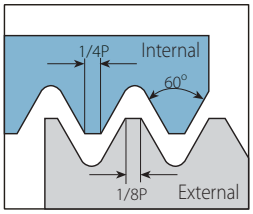

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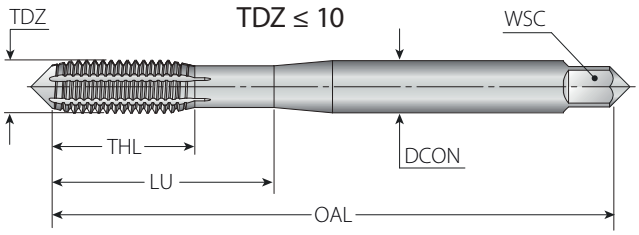
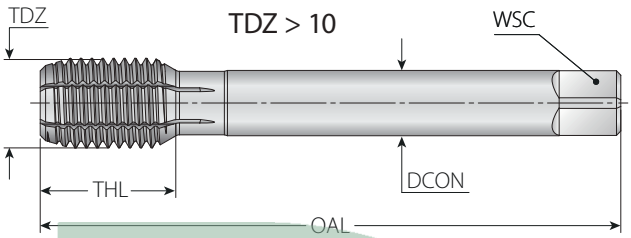




M | DIN 2174 | C 2-3.5 | 2.5xTDZ | HSS-E PM

P M N

Cold Forming Taps*

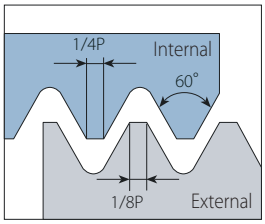
M Coarse	Pitch mm	Ordering Code	Dimensions mm					DIN	Drill Hole	No. of Flutes	Chamfer Lead	Grade
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHN
M2.5	0.45	VT-M2.5x0.45-FM-6HX-DIN2174...	2.8	50	9	18	2.10		2.30	3	C	•
M3	0.50	VT-M3x0.5-FM-6HX-DIN2174-...	3.5	56	11	19	2.70		2.80	4	C	•
M4	0.70	VT-M4x0.7-FM-6HX-DIN2174-...	4.5	63	13	25	3.40		3.70	5	C	•
M5	0.80	VT-M5x0.8-FM-6HX-DIN2174-...	6	70	16	28	4.90		4.65	5	C	•
M6	1.00	VT-M6x1-FM-6HX-DIN2174-...	6	80	19	34	4.90		5.55	5	C	•
M8	1.25	VT-M8x1.25-FM-6HX-DIN2174-...	8	90	22	40	6.20	2174	7.40	5	C	•
M10	1.50	VT-M10x1.5-FM-6HX-DIN2174-...	10	100	24	-	8.00		9.30	5	C	•
M12	1.75	VT-M12x1.75-FM-6HX-DIN2174-...	9	110	28	-	7.00		11.20	5	C	•
M14	2.00	VT-M14x2-FM-6HX-DIN2174-...	11	110	30	-	9.00		13.10	6	C	•
M16	2.00	VT-M16x2-FM-6HX-DIN2174-...	12	110	32	-	9.00		15.10	6	C	•
M18	2.50	VT-M18x2.5-FM-6HX-DIN2174-...	14	125	34	-	11.00		16.90	7	C	•
M20	2.50	VT-M20x2.5-FM-6HX-DIN2174-...	16	140	34	-	12.00		18.90	7	C	•

• Available in these grades

* For materials with a minimum elongation coefficient of 10-12%.

ISO Metric (M) - JIS

Internal



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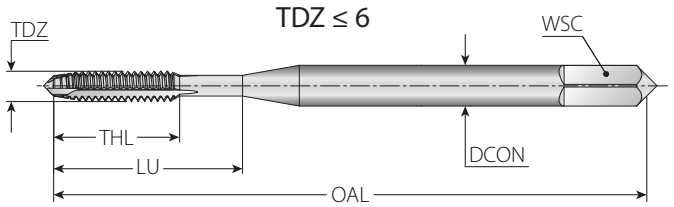
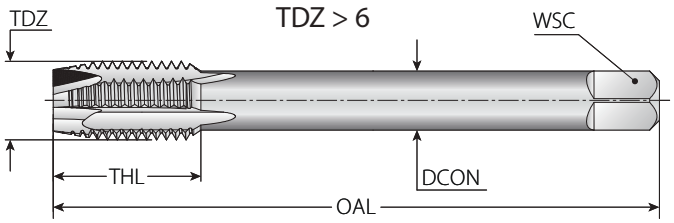




M | JIS B-4430 | B 3.5-5.5 | 2.5xTDZ | HSS-E

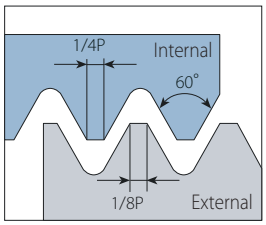
P | M | K | N

Straight Flutes with Spiral Point Taps

M Coarse	Pitch	Ordering Code	Dimensions mm					JIS	Drill Hole	No. of Flutes	Chamfer Lead	Grade	
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC
M3	0.50	VT-M3x0.5-SP-6H-JIS-...	4.00	46	18	18	3.20		2.50	3	B	•	•
M4	0.70	VT-M4x0.7-SP-6H-JIS-...	5.00	52	20	20	4.00		3.30	3	B	•	•
M5	0.80	VT-M5x0.8-SP-6H-JIS-...	5.50	60	22	25	4.50		4.20	3	B	•	•
M6	1.00	VT-M6x1-SP-6H-JIS-...	6.00	62	24	30	4.50		5.00	3	B	•	•
M8	1.25	VT-M8x1.25-SP-6H-JIS-...	6.20	70	30	-	5.00	B-4430	6.80	3	B	•	•
M10	1.50	VT-M10x1.5-SP-6H-JIS-...	7.00	75	32	-	5.50		8.50	3	B	•	•
M12	1.75	VT-M12x1.75-SP-6H-JIS-...	8.50	82	38	-	6.50		10.20	3	B	•	•
M14	2.00	VT-M14x2-SP-6H-JIS-...	10.50	88	42	-	8.00		12.00	3	B	•	•
M16	2.00	VT-M16x2-SP-6H-JIS-...	12.50	95	45	-	10.00		14.00	3	B	•	•

• Available in these grades

Internal



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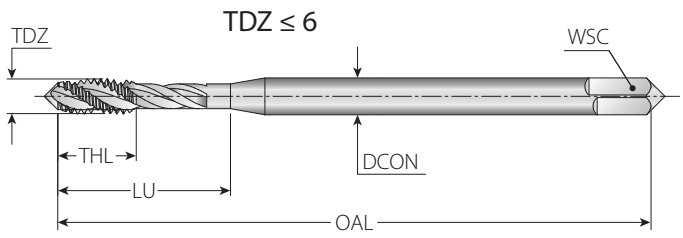
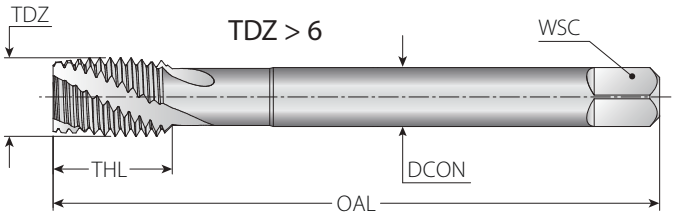
Tolerance class: 6H





M | JIS B-4430 | C 2-3.5 | 2.5xTDZ | HSS -E

P M K N

Spiral Flute Taps

M Coarse	Pitch	Ordering Code	Dimensions mm					JIS	Drill Hole	No. of Flutes	Chamfer Lead	Grade	
TDZ	TP	Internal	DCON	OAL	THL	LU	WSC	SG	PHD	NOF	TCS	VHB	VHC
M3	0.50	VT-M3x0.5-SF-6H-JIS-...	4.00	46	18	18	3.20		2.50	3	B	•	•
M4	0.70	VT-M4x0.7-SF-6H-JIS-...	5.00	52	20	20	4.00		3.30	3	B	•	•
M5	0.80	VT-M5x0.8-SF-6H-JIS-...	5.50	60	22	25	4.50		4.20	3	B	•	•
M6	1.00	VT-M6x1-SF-6H-JIS-...	6.00	62	24	30	4.50	B-4430	5.00	3	B	•	•
M8	1.25	VT-M8x1.25-SF-6H-JIS-...	6.20	70	30	-	5.00		6.80	3	B	•	•
M10	1.50	VT-M10x1.5-SF-6H-JIS-...	7.00	75	32	-	5.50		8.50	3	B	•	•
M12	1.75	VT-M12x1.75-SF-6H-JIS-...	8.50	82	38	-	6.50		10.20	3	B	•	•
M14	2.00	VT-M14x2-SF-6H-JIS-...	10.50	88	42	-	8.00		12.00	3	B	•	•
M16	2.00	VT-M16x2-SF-6H-JIS-...	12.50	95	45	-	10.00		14.00	3	B	•	•

• Available in these grades

VARGUS GENius™ Tool Selector and CNC Program Generator

Now Available for TAPPING Solutions!

Recommended Grades and Cutting Speeds Vc [m/min] for ISO Metric and American UN Standards

Material Group	Vardex No.	Material		Hardness Brinell HB	Vc [m/min]							
					Spiral Point			Spiral Flute			Straight Flute	Cold Forming
					VHB	VHC	VHN	VHB	VHC	VHN	VHC	VHN
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	15-20	20-30		10-15	15-20			20-40
	2		Medium Carbon (C=0.25-0.55%)	150	15-20	20-30	20-30	10-15	15-20	15-20		20-40
	3		High Carbon (C=0.55-0.85%)	170	15-20	20-30	20-30	10-15	15-20	15-20		20-40
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	15-20	20-30	20-30	10-15	15-20	15-20		20-40
	5		Hardened	275	10-15	15-20	15-20	8-10	10-15	10-15		15-25
	6		Hardened	350		12-18	12-18		8-12	8-12		15-25
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	10-15	15-20	15-20	8-10	10-15	10-15		15-25
	8		Hardened	325		15-20	15-20		10-15	10-15		
	9	Cast Steel	Low Alloy (alloying elements <5%)	200		15-20	15-20		10-15	10-15		
	10		High Alloy (alloying elements >5%)	225		15-20	15-20		10-15	10-15		
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	6-12	9-18		4-8	6-12			12-25
	12		Hardened	330			6-12			4-8		10-20
	13	Stainless Steel Austenitic	Austenitic	180	6-12	9-18		4-8	6-12			12-25
	14		Super Austenitic	200			6-12			4-8		6-15
	15	Stainless Steel Cast Ferritic	Non Hardened	200	6-12	9-18		4-8	6-12			12-25
	16		Hardened	330			6-12			4-8		
	17	Stainless Steel Cast Austenitic	Austenitic	200	6-12	9-18		4-8	6-12			12-25
	18		Hardened	330			6-12			4-8		
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130							20-30	
	29		Pearlitic (long chips)	230	15-20	20-30		10-15	15-20			
	30	Grey Cast Iron	Low Tensile Strength	180							20-30	
	31		High Tensile Strength	260							15-25	
	32	Nodular Sg Iron	Ferritic	160	15-20	20-30		10-15	15-20		20-30	
	33		Pearlitic	260								
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60		20-30	20-30		15-20	15-20		25-40
	35		Aged	100		15-25	15-25		10-15	10-15		20-40
	36	Aluminum Alloys	Cast	75		20-30	20-30		15-20	15-20		25-40
	37		Cast & Aged	90		20-30	20-30		15-20	15-20		25-40
	38	Aluminum Alloys	Cast Si 13-22%	130							20-30	
	39	Copper and Copper Alloys	Brass	90								
	40		Bronze And Non Leaded Copper	100								

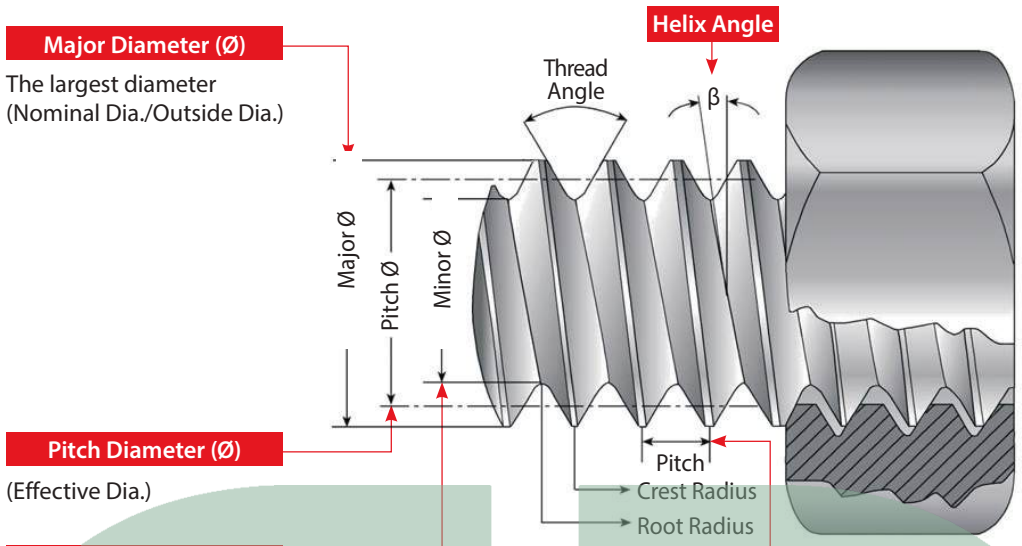
Grade	Application	Sample
VHB	HSS-E **Black Oxide Coated** Economical solution grade for general use	
VHC	HSS-E **TiCN Coated** Excellent grade for stainless , cast steels and general use	
VHN	HSS-E **TiN Coated** Excellent grade for steels and general use (HSS-E PM TiN coated available for cold forming geometry)	

Recommended Grades and Cutting Speeds Vc [m/min] for BSP (G) and NPT Standards

NEW

Material Group	Vardex No.	Material		Hardness Brinell HB	Vc [m/min]				
					BSP (G)				NPT
					VHB Spiral Point	VHC Spiral Point	VHB Spiral Flute	VHC Spiral Flute	VHB Straight Flute
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	15-20	20-30	10-15	15-20	2-8
	2		Medium Carbon (C=0.25-0.55%)	150	15-20	20-30	10-15	15-20	2-8
	3		High Carbon (C=0.55-0.85%)	170	15-20	20-30	10-15	15-20	2-8
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	15-20	20-30	10-15	15-20	2-8
	5		Hardened	275	10-15	15-20	8-10	10-15	1-6
	6		Hardened	350		12-18		8-12	
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	10-15	15-20	8-10	10-15	1-6
	8		Hardened	325		15-20		10-15	
	9	Cast Steel	Low Alloy (alloying elements <5%)	200		15-20		10-15	
	10		High Alloy (alloying elements >5%)	225		15-20		10-15	
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	6-12	9-18	4-8	6-12	1-6
	12		Hardened	330					
	13	Stainless Steel Austenitic	Austenitic	180	6-12	9-18	4-8	6-12	1-6
	14		Super Austenitic	200					1-6
	15	Stainless Steel Cast Ferritic	Non Hardened	200	6-12	9-18	4-8	6-12	1-6
	16		Hardened	330					
	17	Stainless Steel Cast Austenitic	Austenitic	200	6-12	9-18	4-8	6-12	1-5
	18		Hardened	330					
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130					
	29		Pearlitic (long chips)	230	15-20	20-30	10-15	15-20	
	30	Grey Cast Iron	Low Tensile Strength	180					
	31		High Tensile Strength	260					
	32	Nodular Sg Iron	Ferritic	160	15-20	20-30	10-15	15-20	
	33		Pearlitic	260					
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60		20-30		15-20	
	35		Aged	100		15-25		10-15	
	36	Aluminum Alloys	Cast	75		20-30		15-20	
	37		Cast & Aged	90		20-30		15-20	
	38	Aluminum Alloys	Cast Si 13-22%	130					
	39	Copper and Copper Alloys	Brass	90					
	40		Bronze And Non Leaded Copper	100					

Thread Diameters



ISO Metric

M Coarse

Thread	Minor Ø min	Minor Ø max	Drill Ø*
2x0.4	1.567	1.679	1.6
2.2x0.45	1.713	1.838	1.75
2.5x0.45	2.013	2.138	2.05
3x0.5	2.459	2.599	2.5
3.5x0.6	2.850	3.010	2.9
4x0.7	3.242	3.422	3.3
4.5x0.75	3.688	3.878	3.7
5x0.8	4.134	4.334	4.2
6x1	4.917	5.153	5
7x1	5.917	6.153	6
8x1.25	6.647	6.912	6.8
10x1.5	8.376	8.676	8.5
12x1.75	10.106	10.441	10.2
14x2	11.835	12.210	12
16x2	13.835	14.210	14
18x2.5	15.294	15.744	15.5
20x2.5	17.294	17.744	17.5

M Fine

Thread	Minor Ø min	Minor Ø max	Drill Ø*
4x0.35	3.621	3.721	3.65
4x0.5	3.459	3.599	3.5
4.5x0.5	3.959	4.099	4
5x0.5	4.459	4.599	4.5
6x0.5	5.459	5.599	5.5
6x0.75	5.188	5.378	5.2
7x0.75	6.188	6.378	6.2
8x0.5	7.459	7.599	7.5
8x0.75	7.188	7.378	7.2
8x1	6.917	7.153	7
9x1	7.917	8.153	8
10x0.75	9.188	9.378	9.2
10x1	8.917	9.153	9
10x1.25	8.647	8.912	8.8
11x1	9.917	10.153	10
12x1	10.917	11.153	11
12x1.25	10.647	10.912	10.8
12x1.5	10.376	10.676	10.5
14x1	12.917	13.153	13
14x1.25	12.647	12.912	12.8
14x1.5	12.376	12.676	12.5
15x1	13.917	14.153	14
15x1.5	13.376	13.676	13.5
16x1	14.917	15.153	15
16x1.5	14.376	14.676	14.5
18x1	16.917	17.153	17
18x1.5	16.376	16.676	16.5
18x2	15.835	16.210	16
20x1	18.917	19.153	19
20x1.5	18.376	18.676	18.5
20x2	17.835	18.210	18

American UN

UNC

Thread	Minor Ø min	Minor Ø max	Drill Ø*
No.4 -40	2.156	2.385	2.3
No.5 -40	2.487	2.697	2.6
No.6 -32	2.642	2.896	2.85
No.8 -32	3.302	3.531	3.5
No.10 -24	3.683	3.962	3.9
No.12 -24	4.343	4.597	4.5
¼-20	4.978	5.258	5.2
5⁄16-18	6.401	6.731	6.6
⅜-16	7.798	8.153	8
7⁄16-14	9.144	9.550	9.4
½-13	10.592	11.024	10.75
9⁄16-12	11.989	12.446	12.25
⅝-11	13.386	13.868	13.5
¾-10	16.307	16.840	16.6
⅞-9	19.177	19.761	19.5
1-8	21.971	22.606	22.25

UNF

Thread	Minor Ø min	Minor Ø max	Drill Ø*
No.4-48	2.271	2.459	2.4
No.5-44	2.550	2.741	2.7
No.6-40	2.819	3.023	3.0
No.8-36	3.404	3.607	3.5
No.10-32	3.962	4.166	4.1
No.12-28	4.496	4.724	4.7
¼-28	5.359	5.588	5.5
5⁄16-24	6.782	7.036	6.9
⅜-24	8.382	8.636	8.5
7⁄16-20	9.728	10.033	9.9
½-20	11.328	11.608	11.5
9⁄16-18	12.751	13.081	12.9
⅝-18	14.351	14.681	14.5
¾-16	17.323	17.678	17.5
⅞-14	20.269	20.676	20.4
1-12	23.114	23.571	23.25

BSP (G) NEW

Thread	Minor Ø min	Minor Ø max	Drill Ø
G1/16-28	6.561	6.843	6.7
G1/8-28	8.566	8.848	8.7
G1/4-19	11.445	11.890	11.7
G3/8-19	14.950	15.395	15.2
G1/2-14	18.631	19.172	19.0
G5/8-14	20.587	21.128	21.0
G3/4-14	24.117	24.658	24.5
G7/8-14	27.877	28.418	28.3
G1-11	30.291	30.931	30.8

*Drill Ø for Forming Taps see Vargus Genius

vargus
NEUMO Ehrenberg Group

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Advanced Threading Solutions

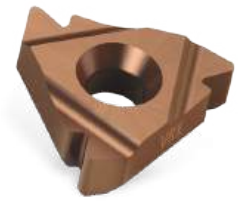
MAIN CATALOG

Thread Turning | Thread Milling

METRIC

F-LINE
Fixed Clamping System

VRX
Multipurpose Premium Grade

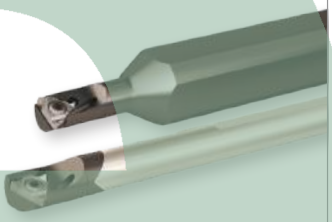


MEGA-LINE
For Extra Large Pitches

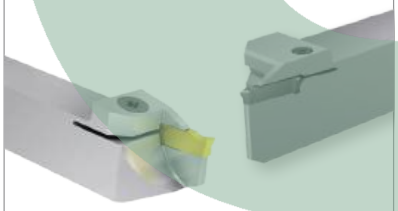
V-CAP Toolholders
Polygon Shaped Shanks

Oil&Gas
Professional Threading Solutions

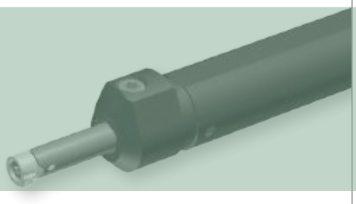
Mini-3 IC 5.0
Tools for Small Applications



VG-Cut
Machining Between Shoulders



Mini-V
Miniature Vertical Tools



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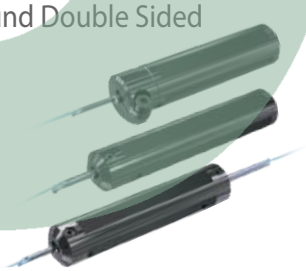
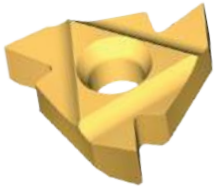
Toolholders: Shrink, Round Without Shoulder, Round Double Sided



TMSD Vertical
Multi-Flute Vertical Tools

TMDR, HCN
TMDR-Drilling, Thread Milling & Chamfering
HCN-For Long Threads 3xDo

D-Line
Deep Rake Internal Inserts



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Vargus GENius™

VARGUS' industry-leading Thread Turning, Thread Milling, Whirling and Tapping solutions are seamlessly complimented by the VARGUS GENius™ software – the most powerful tool selector, cutting data and CNC program generating software.

Thread Turning: The Vargus GENius™ guides the user to the right tool and the best cutting conditions for the application.

Thread Milling: In a few simple steps, the Vargus GENius™ provides the user with the best tool and optimal machining data, as well as the G-Code for all popular CNC machines.

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VARGUS GENius™ DESKTOP

- Stand-alone software application
- MS Windows OS-based program
- Automatic updates

VARGUS GENius™ SETUP

- USB memory devices
- MS Windows operating system-based program
- To install, open ZIP and click Setup

APP VARGUS GENius™

- Available for iOS and Android devices
- New responsive design!
- Use on any device, anywhere in the world!

Custom Made Solutions

Whether you require a non-standard size, a complex shape or a special design, the Vargus Custom Made Solutions team has the experience and know-how for essentially any tooling solution.

Working closely with the customer, VARGUS engineers provide the best solution for your operation, as well as guide and advise in the implementation of the customized machining process.

The Custom Made Solutions team has all of the know-how to design the right cutting tool, using the latest techniques and top-of-the-line technology.

Contact your VARGUS Sales Representative for more details.

Quality | Innovation | Service

GEAR MILLING

Advanced Technologies for Gear, Spline and Rack Manufacturing

Revolutionary and cost-effective solutions for Gear, Spline & Rack applications, tailor-made to order or available as standard.

The complete Gear Milling Product Catalog is available at **www.vargus.com**

Gear Milling Tool Range

End Mill

Shell Mill

Disc Mill

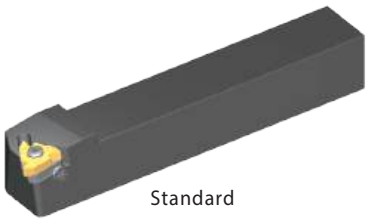
Solid Carbide

THREAD TURNING

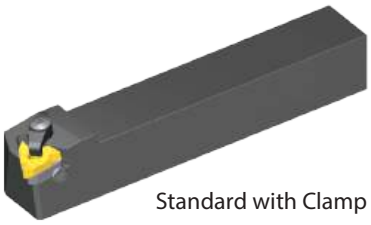
- Inserts 17
- Toolholders 153
- Technical Data 197

Thread Turning System - EXTERNAL

Standard



Standard

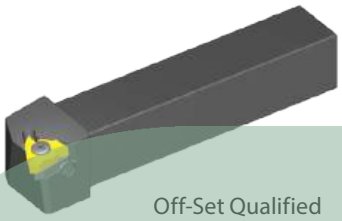


Standard with Clamp

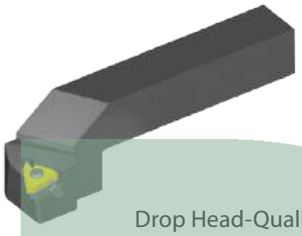
V-Cap

V6

SCB



Off-Set Qualified

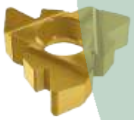


Drop Head-Qualified

Miniature Square Shank

Miniature Round Shank

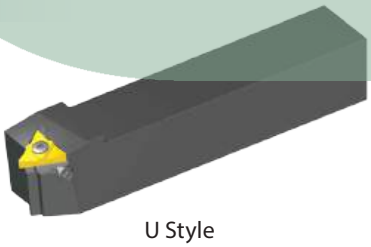
F-LINE



IC 1/2"F

F Style

U Style



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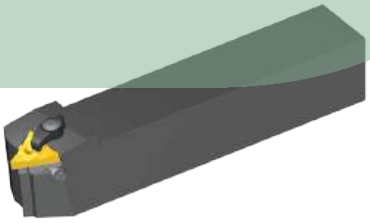
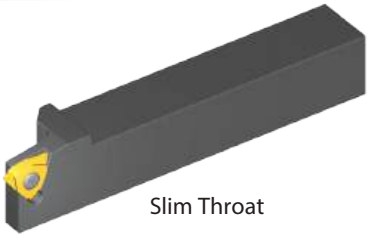


U Style with Clamp

V Style

1/4"V, 3/8" V, 1/2"V



Slim Throat

VG-Cut

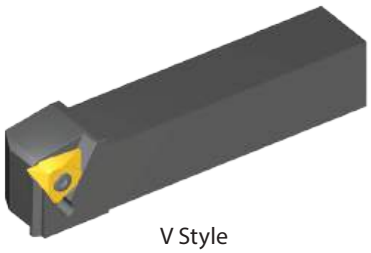
Reinforced Monoblock

Monoblock

Thread Turning System - EXTERNAL

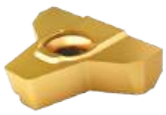
V Style

5/8"V



V Style

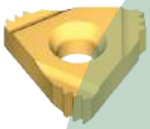
MEGALINE

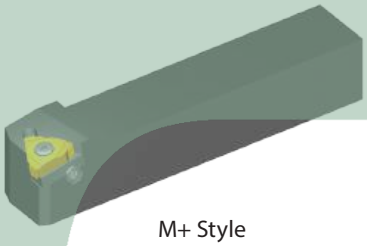


5/8"MG

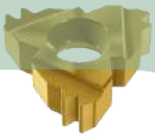
MG Style

Multiplus

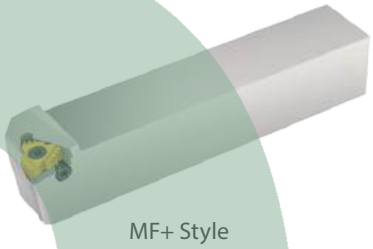




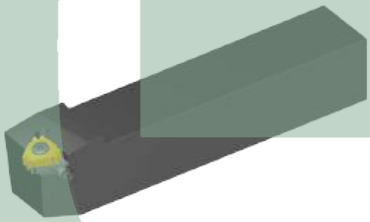
M+ Style



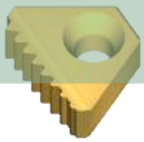
F-LINE

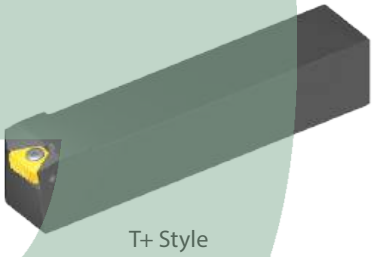


MF+ Style



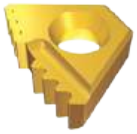
Z+ Style



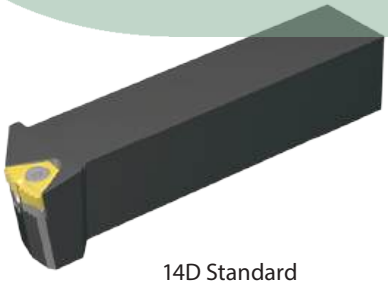


T+ Style

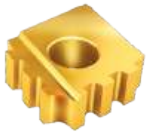
Oil&Gas



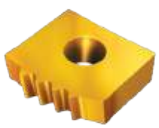
14D



14D Standard



CNGA



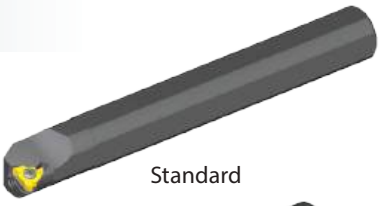
Chaser

T+ Style

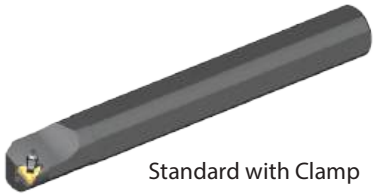
On Edge

Thread Turning System - INTERNAL

Standard



Standard



Standard with Clamp

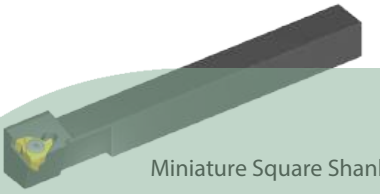
V-Cap

V6

Oil & Gas

Carbide Shank

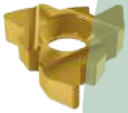
SCB



Miniature Square Shank

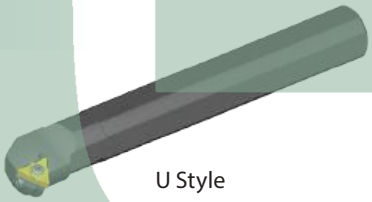
Miniature Round Shank

F-LINE

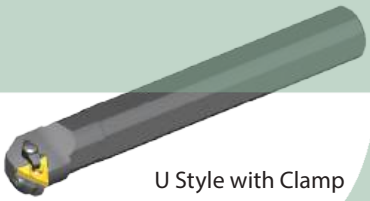


F Style

U Style



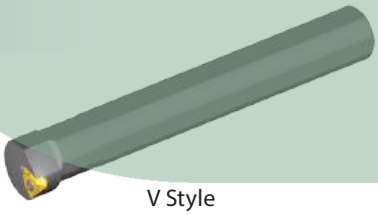
U Style



U Style with Clamp

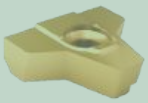
V Style

5/8"V



V Style

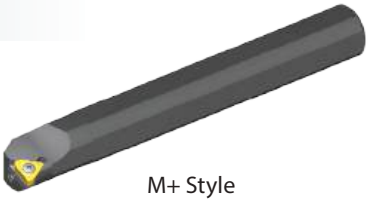
MEGA-LINE



5/8"MG

MG Style

Multi plus

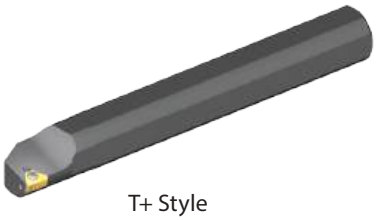


M+ Style

F-LINE

MF+ Style

Z+ Style



T+ Style

Thread Turning System - INTERNAL

Mini-V

Steel Shank

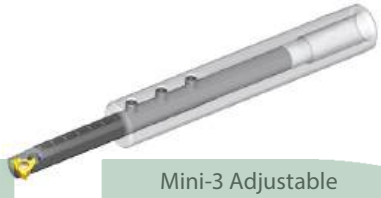
Carbide Shank

Sleeve Clamping Shank

MINIPRO

Mini-3
IC 4.0, IC 5.0, IC 6.0

Steel Shank /
Carbide Implanted Shank

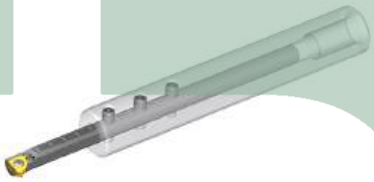


Mini-3 Adjustable

Carbide Shank

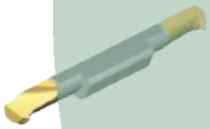
Mini-5L

Steel Shank /
Carbide Implanted Shank

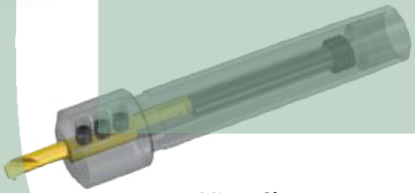


Mini-L Adjustable

MINIPRO

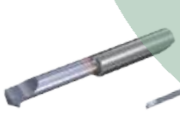


Micro Double-Ended

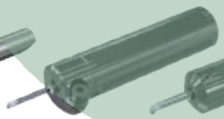


Micro Sleeve

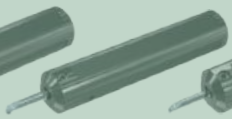
microscope



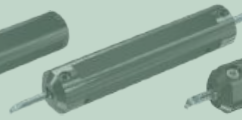
Micro Single-Ended



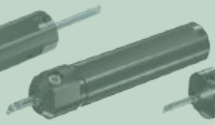
Shrink



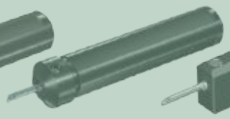
Round Without Shoulder



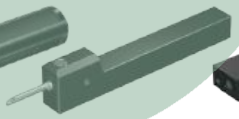
Round Double Sided



2 Flats Round Shank



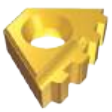
4 Flats Round Shank



Square Shank

Drop Head

Oil&Gas

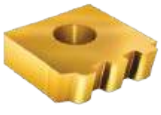


14D

14D

14D with Clamping

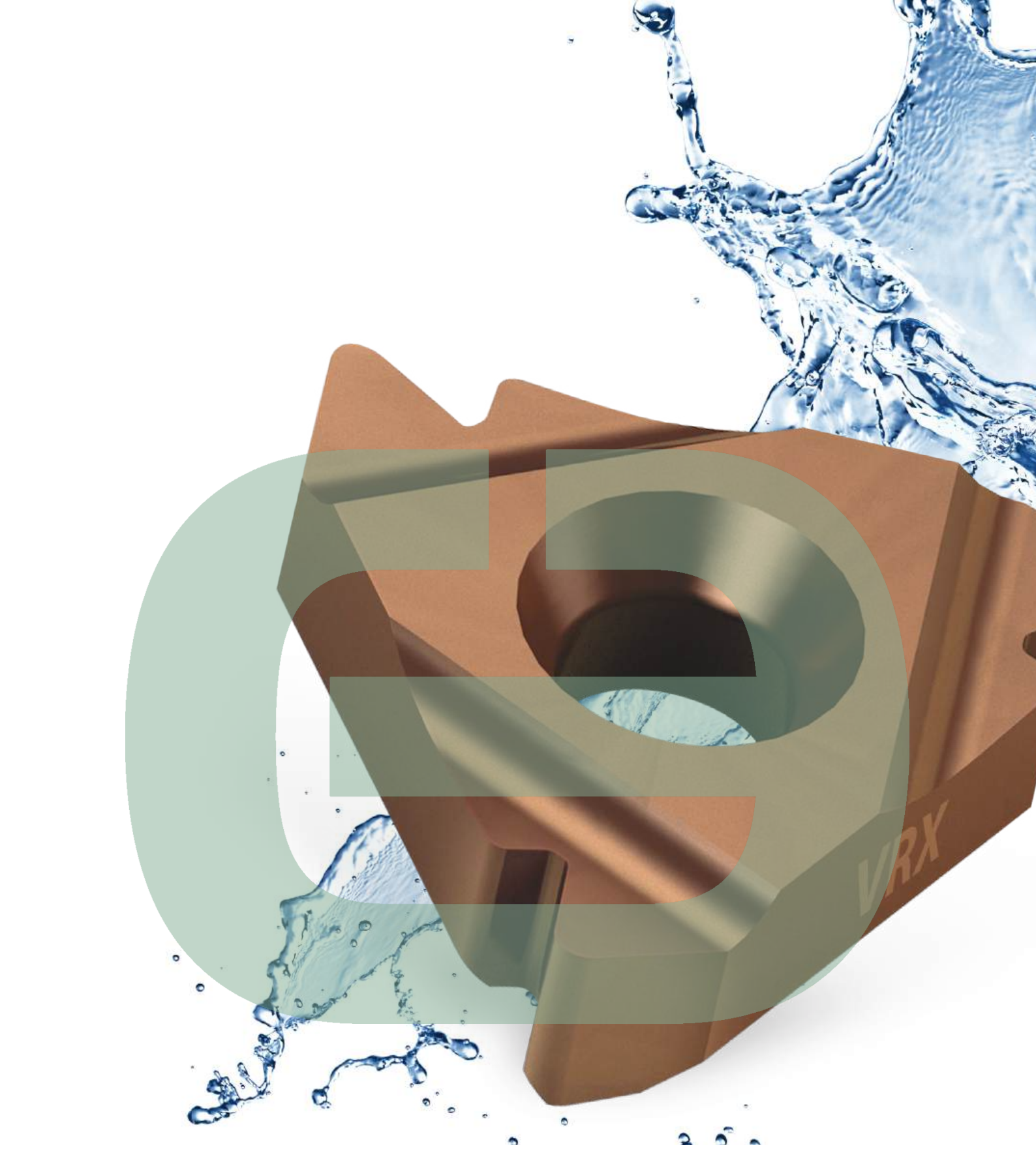
CNGA



Chaser

T+ Style

On Edge



Thread Turning Inserts

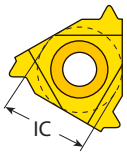
Vardex Ordering Code System

Threading Inserts

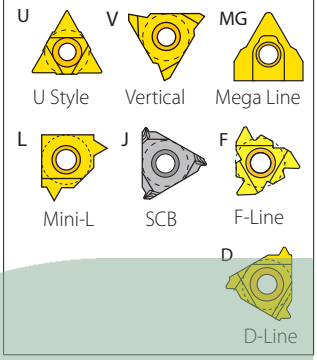
3		E	R	1.5	ISO					VTX	
1	2	3	4	5	6	7	8	9	10	11	12

1 - Insert Size

5LK - IC5.0L mm
4.0K - IC4.0 mm
5.0K - IC5.0 mm
6.0K - IC6.0 mm
2 - IC1/4"
3 - IC 3/8"
4 - IC 1/2"
5 - IC5/8"
14D - 14D
1616 - Chaser size 16x16



2 - Insert Style



3 - Type of Insert

E - External
I - Internal
EI - External +Internal

4 - RH/LH Insert

R - Right Hand Insert
L - Left Hand Insert
None - Right + Left Insert

5 - Pitch

Full Profile - Pitch Range

mm	TPI
0.35-25.0	72-1

Partial Profile - Pitch Range

	mm	TPI
A	0.5 - 1.5	48 - 16
B	1.75 - 2.0	14 - 11
AG	0.5 - 3.0	48 - 8
G	1.75 - 3.0	14 - 8
N	3.5 - 5.0	7 - 5
U	5.5 - 8.0	4.5 - 3.25
Q	5.5 - 6.0	4.5 - 4
U	6.5 - 9.0	4 - 2.75
V	6.0 - 10.0	4 - 2.5
S	0.5 - 2.0	48 - 13

6 - Standard

60 - Partial Profile 60°
55 - Partial Profile 55°
ISO - ISO Metric
UN - American UN
W - Whitworth for BSW, BSP
BSPT - British Standard Pipe Thread
NPT - NPT
ANPT - ANPT
NPTF - NPTF
NPS - NPS
RD - Round DIN 405
RD20400 - Round DIN 20400
TR - Trapez DIN 103
ACME - ACME
STACME - Stub ACME
UNJ - UNJ
MJ - ISO 5855
ABUT - American Buttress
BBUT - British Buttress
SAGE - Metric Buttress DIN 513
API - API
BUT - API Buttress Casing
APIRD - API Round Casing & Tubing
VAM - VAM
NVAM - New Vam
EL - Extreme Line Casing
H90 - H90
PG - Pg DIN 40430

7 - No. of Cutting Corners

6C - V6 Cutting Corners

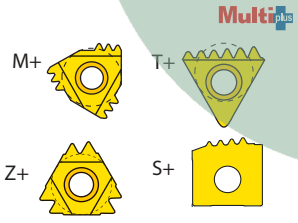
8 - API Form

382
383
403
502
503
652

9 - No. of Teeth

(for Multitooth Style)
2, 3, 5, 6, 8

10 - Multitooth Style



11 - Coarse Pitch Inserts

158/...

12 - Carbide Grade

VKX, VTX, VCB, VM7, VK2, VK2P, VBX, VRX, VTXP, VKXP, VRXP

Micro Threading Inserts - Double Ended

3	S	I	R	0.5	ISO	VMX
1	2	3	4	5	6	7

1 - Insert Dia.

3.0 - 3.0 mm
4.0 - 4.0 mm
6.0 - 6.0 mm
8.0 - 8.0 mm
10.0 -10.0 mm

2 - Insert Style

S - Micro Insert

3 - Type of Insert

I - Internal

4 - RH/LH Insert

R - Right Hand Insert
L - Left Hand Insert

5 - Pitch

Full Profile - Pitch Range	
mm	TPI
0.30-1.5	40-16

Partial Profile - Pitch Range			
mm		TPI	
A	0.5 - 1.5	A	48 - 16
F	0.5 - 3.0	F	48 - 24

6 - Standard

60 - Partial Profile 60°
55 - Partial Profile 55°
ISO - ISO Metric
MJ - ISO 5855
NPT - NPT
NPTF - NPTF
UN - American UN
W - Whitworth for BSW, BSP

7 - Carbide Grades

VMX

microscope

Micro Threading Inserts - Single Ended

M	5	42	TH	0.5	ISO	L16	R	VBX
1	2	3	4	5	6	7	8	9

1 - Product Line

M, MS - Microscope

2 - Insert Size

4, 5, 6, 7

3 - Min. Bore Dia.

3.2, 4.2,...

4 - Type of Application

TH - Threading

5 - Pitch (for Threading)

Full Profile - Pitch Range	
mm	TPI
0.5-1.5	32-16

Partial Profile - Pitch Range			
mm		TPI	
A	0.5 - 1.5	A	48 -16
F	0.5 - 1.0	F	48 - 24

6 - Threading Standard

60 - Partial Profile 60°
55 - Partial Profile 55°
ISO - ISO Metric
UN - American UN
W - Whitworth for BSW, BSP
NPT - NPT
TR - Trapez DIN 103

7 - Overhang

L16

8 - LH or RH

R - RH Helix
L - LH Helix

9 - Carbide Grades

VBX, VTX

Oil&Gas

CNGA and On Edge Inserts for Oil & Gas

C	N	G	A	6	4	I	R	5	BUT75	VKX
1	2	3	4	5	6	7	8	9	10	11

T	N	E	C	4	3	E	R	4	APIRD	VKX
1	2	3	4	5	6	7	8	9	10	11

1 - Insert Shape

T C 80°

2 - Clearance Angle on Major Cutting Edge

N 0

3 - Tolerances

IC		S	m
	Theoretical diameter of inscribed circle	Insert thickness	m
E	±0.025	±0.025	±0.025
G	±0.025	±0.13	±0.025

4 - Clamp Type

C A

5 - Theoretical diameter of inscribed circle

4 - 1/2" (12.7 mm)
5 - 5/8" (15.875 mm)
6 - 6/8" (19.05 mm)

6 - Thickness

3 - 3/16" (4.76 mm)
4 - 4/16" (6.35 mm)
5 - 5/16" (7.94 mm)
6 - 6/16" (9.525 mm)

7 - Type of Insert

E - External
I - Internal
EI - External + Internal

8 - RH/LH Insert

R - Right Hand Insert
L - Left Hand Insert

9 - Pitch

10-5 TPI

10 - Standard

ACME - ACME
STACME - Stub ACME
API - API
BUT - API Buttress Casing
APIRD - API Round Casing & Tubing
VAM - VAM
NVAM - New Vam
EL - Extreme Line Casing
H90 - H90

11 - No. of Teeth

(For Multitooth Style)
T3-T5

12 - Carbide Grades

VKX, VKXP, VTX, VTXP

VG-Cut Inserts

VG	D	3.0	ISO	1.50	RH	-	RS	VPG
1	2	3	4	5	6		7	8

1 - Line Name

VG - Deep Grooving, Threading & Parting Off

2 - Number of Cutting Corners

D - Double

3 - Inserts Width

3.0 mm

4 - Standard

60 - Partial Profile 60°
55 - Partial Profile 55°
ISO - ISO Metric
UN - American UN
W - Whitworth for BSW, BSP
NPT - NPT

5 - Pitch

Full Profile - Pitch Range	
mm	TPI
0.5-2.0	32-11.5
Partial Profile - Pitch Range	
mm	TPI
A 0.5 - 1.5	48 -16

6 - RH/LH Inserts

RH Helix
LH Helix

7 - Top Rake Geometry

RS - Close to right shoulder
LS - Close to left shoulder

8 - Carbide Grade

VPG

Mini-V Inserts

V	08	TH	1.5	ISO	R	VBX
1	2	3	4	5	6	7

1 - Product Line

V- Mini-V

2 - Insert Style

08 , 11, 14, 16

3 - Type of Application

TH - Threading

4 - Pitch (for Threading)

Full Profile - Pitch Range	
mm	TPI
0.5-2.0	32-12
Partial Profile - Pitch Range	

	mm	TPI
H	0.5-.75	48-32
I	1.0-1.25	24-20
J	1.5-1.75	16-14
A	0.5-1.5	48-16
G	1.75-3.0	14-8
AG	0.5-3.0	48-8

5 - Threading Standard

60 - Partial Profile 60°
55 - Partial Profile 55°
ISO - ISO Metric
UN - American UN
W - Whitworth for BSW, BSP
BSPT - British Standard Pipe Thread
NPT - NPT National Pipe Thread
NPTF - NPTF National Seal Pipe Thread
TR - Trapez Din 103

6 - RH

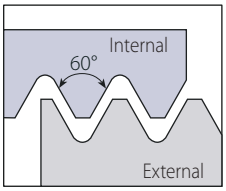
R - RH Helix

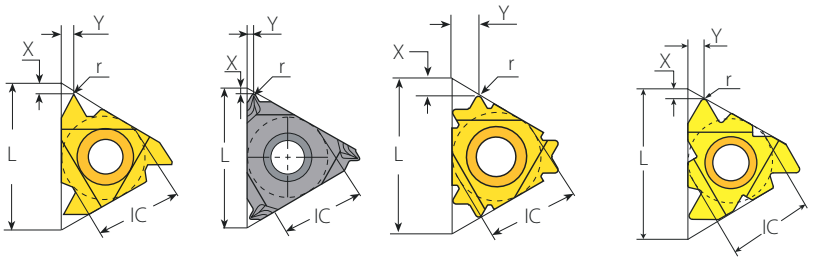
7 - Carbide Grade

VBX

Partial Profile 60°

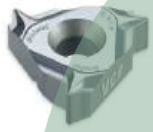
External



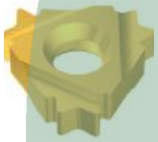


Standard | SCB Sintered Chipbreaker | V6 | F-Line

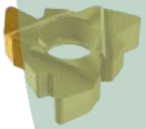
Standard



SCB



V6

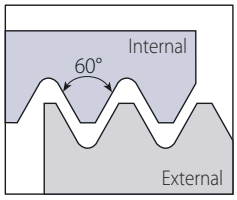


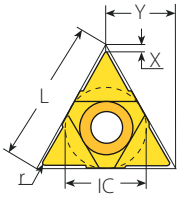
F-LINE

Insert Size		Pitch		Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	TPI	RH	LH	r	X	Y	RH	LH	Toolholder
1/4"	11	0.5-1.5	48-16	2ERA60...	2ELA60...	0.05	0.8	0.9	-	-	NL..-2 (LH)
3/8"	16	0.5-1.5	48-16	3ERA60...	3ELA60...	0.05	0.8	0.9	YE3	YI3	AL..-3 (LH)
		1.75-3.0	14-8	3ERG60...	3ELG60...	0.27	1.2	1.7			
		0.5-3.0	48-8	3ERAG60...	3ELAG60...	0.08	1.2	1.7			
3/8" SCB	16	0.5-1.5	48-16	3JERA60...		0.05	0.6	0.8	YE3	-	AL..-3
		1.75-3.0	14-8	3JERG60...		0.27	1.1	1.5			
		0.5-3.0	48-8	3JERAG60...		0.08	0.9	1.5			
3/8" V6	16	0.5-2.0	48-13	3ERS60-6C...		0.06	1.9	3.0	YE3-6C	-	AL..-3
1/2"	22	3.5-5.0	7-5	4ERN60...	4ELN60...	0.53	1.7	2.5	YE4	YI4	AL..-4 (LH)
1/2"F	23	3.5-5.0	7-5	4FERN60...		0.53	1.7	2.5	YE4F	-	AL..-4F
5/8"	27	5.5-6.0	4.5-4	5ERQ60...	5ELQ60...	0.64	2.1	3.1	YE5	YI5	AL..-5 (LH)

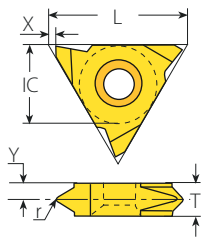
Partial Profile 60° (con't)

External





U Style



V Style / Slim Throat

U Style

Insert Size		Pitch		Ordering Code	Dimensions mm			Anvil		
IC	L mm	mm	TPI	RH+LH	r	X	Y	RH	LH	Toolholder
1/2"U	22	5.5-8.0	4.5-3.25	4UEIU60...	0.30	0.6	11.0	YE4U	YI4U	AL..-4U (LH)
5/8"U	27	6.5-9.0	4-2.75	5UEIU60...	0.37	1.0	13.7	YE5U	YI5U	AL..-5U (LH)

Slim Throat

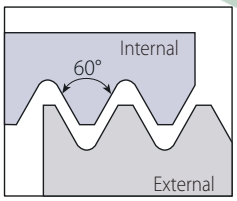
Insert Size		Pitch		Ordering Code		Dimensions mm				
IC	L mm	mm	TPI	RH	LH	r	X	Y	T	Toolholder
1/4"V	11	0.5-1.5	48-16	2VERA60...	2VELA60...	0.05	0.69	2.3	3.2	NL..-2V (LH)
3/8"V	16	0.5-1.5	48-16	3VERA60...	3VELA60...	0.05	1.10	2.7	3.6	NL..-3V (LH)
		1.75-3.0	14-8	3VERG60...	3VELG60...	0.27	1.10	1.9	3.6	
		0.5-3.0	48-8	3VERAG60...	3VELAG60...	0.08	1.10	1.9	3.6	
1/2"V	22	3.5-5.0	7-5	4VERN60...	4VELN60...	0.53	1.10	2.3	4.8	NL..-4V (LH)

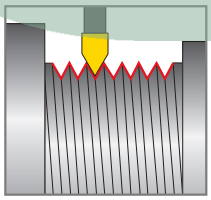
V Style

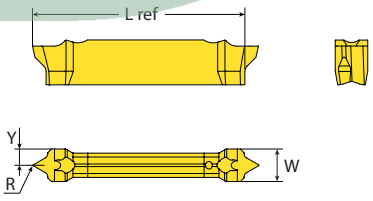
Insert Size		Pitch		Ordering Code		Dimensions mm				
IC	L mm	mm	TPI	RH	LH	r	X	Y	T	Toolholder
5/8"V	27	6.0-10.0	4-2.5	5VERV60...	5VELV60...	0.75	0.6	5.2	10	NL..-5V-10 (LH)

Partial Profile 60°

External







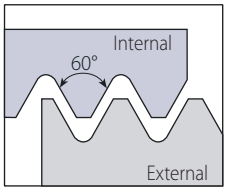
VG-Cut

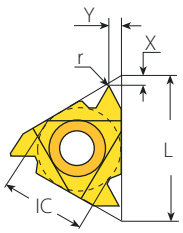
VG-Cut

Pocket Size	Ordering Code	Dimensions mm					No. of Passes	Helix	Min. Thread Diameter	Toolholder
	RH	W ref	Pitch mm	R	Y	L ref		Deg		Monoblock
3	VGD3.0A60RH...	3.00	0.5-1.5	0.05	1.68	21.9	5 - 8	1.5°	Partial Profile A60	VGE...-3T...

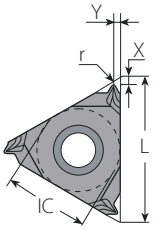
Partial Profile 60° (con't)

Internal

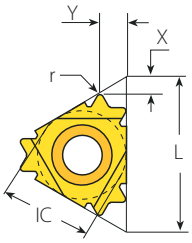




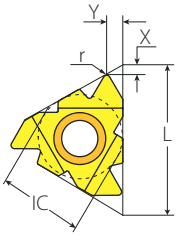
Standard



SCB Sintered Chipbreaker



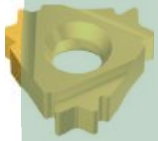
V6



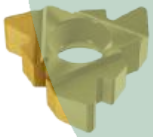
F-Line

Standard

SCB



V6

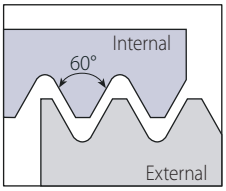


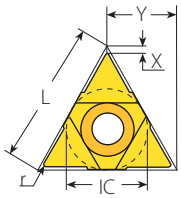
F-LINE

Insert Size		Pitch		Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	TPI	RH	LH	r	X	Y	RH	LH	Toolholder
1/4"	11	0.5-1.5	48-16	2IRA60...	2ILA60...	0.05	0.8	0.9	-	-	NVR..-2 (LH)
1/4" SCB	11	0.5-1.5	48-16	2JIRA60...		0.05	0.6	0.8	-	-	NVR..-2
3/8"	16	0.5-1.5	48-16	3IRA60...	3ILA60...	0.05	0.8	0.9	YI3	YE3	AVR..-3 (LH)
		1.75-3.0	14-8	3IRG60...	3ILG60...	0.16	1.2	1.7			
		0.5-3.0	48-8	3IRAG60...	3ILAG60...	0.05	1.2	1.7			
3/8" SCB	16	0.5-1.5	48-16	3JIRA60...		0.05	0.6	0.8	YI3	-	AVR..-3
		1.75-3.0	14-8	3JIRG60...		0.16	1.0	1.5			
		0.5-3.0	48-8	3JIRAG60...		0.05	0.9	1.5			
3/8" V6	16	0.5-2.0	48-14	3IRS60-6C...		0.03	1.6	2.6	YI3-6C	-	AVR..-3 NVRC..-3 206/...
1/2"	22	3.5-5.0	7-5	4IRN60...	4ILN60...	0.30	1.7	2.5	YI4	YE4	AVR..-4 (LH)
1/2"F	23	3.5-5.0	7-5	4FIRN60...		0.3	1.7	2.5	YI4F	-	AVRC...-4F
5/8"	27	5.5-6.0	4.5-4	5IRQ60...	5ILQ60...	0.30	1.8	2.7	YI5	YE5	AVR..-5 (LH)

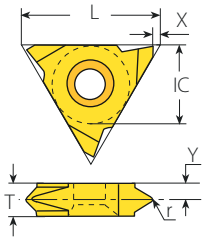
Partial Profile 60° (con't)

Internal





U Style



V Style

U Style

Insert Size		Pitch		Ordering Code	Dimensions mm			Anvil		
IC	L mm	mm	TPI	RH+LH	r	X	Y	RH	LH	Toolholder
1/2"U	22	5.5-8.0	4.5-3.25	4UEIU60...	0.30	0.6	11.0	YI4U	YE4U	AVR..-4U (LH)
5/8"U	27	6.5-9.0	4-2.75	5UEIU60...	0.37	1.0	13.7	YI5U	YE5U	AVR..-5U (LH)

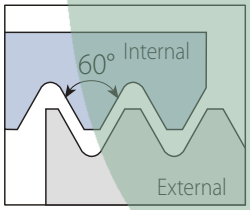
V Style

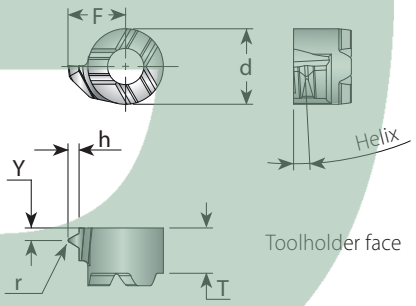
Insert Size		Pitch		Ordering Code		Dimensions mm				
IC	L mm	mm	TPI	RH	LH	r	X	Y	T	Toolholder
5/8"V	27	6.0-10.0	4-2.5	5VIRV60...	5VILV60...	0.35	1.0	4.3	8	NVR..-5V (LH)

Partial Profile 60° (con't)

Mini-V

Internal



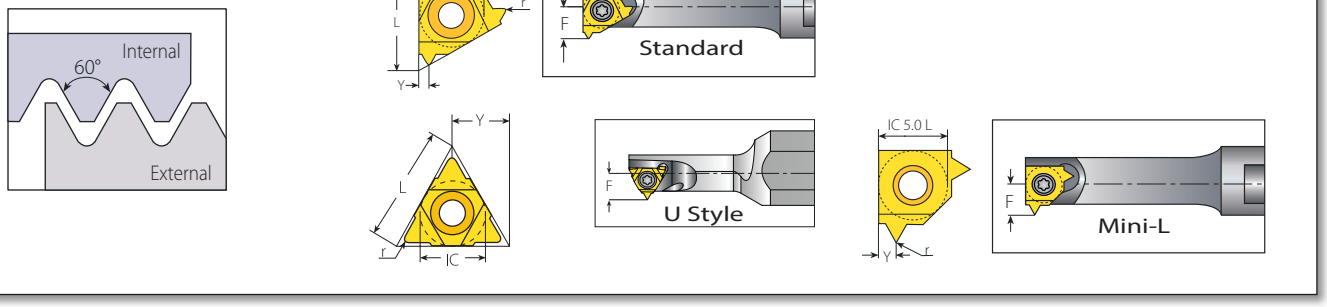


Mini-V

Insert Style	Pitch		Ordering Code	Dimensions mm					Helix	Toolholder
	TPI	mm	RH	d	T	F	Y	r	Deg.	
V08	48-32	0.5-0.75	V08THH60R...	6	3.8	4.20	0.5	0.03	1.5	.V08-...
	24-20	1.0-1.25	V08THI60R...			4.46	0.8	0.10	2.5	
	16-14	1.5-1.75	V08THJ60R...			4.76	0.9	0.14	3	
V11	48-32	0.5-0.75	V11THH60R...	8	4.2	5.80	0.5	0.30	1.5	.V11-...
	24-20	1.0-1.25	V11THI60R...			6.06	0.8	0.10	1.5	
	16-14	1.5-1.75	V11THJ60R...			5.61	0.9	0.14	3	
V14	48-16	0.5-1.5	V14THA60R...	9	5.7	9	0.9	0.05	1.5	.V14-...
	14-8	1.75-3.0	V14THG60R...				1.7	0.16		
	48-8	0.5-3.0	V14THAG60R...				1.7	0.05		
V16	48-16	0.5-1.5	V16THA60R...	11	5.7	10.2	0.9	0.05	1.5	.V16-...
	14-8	1.75-3.0	V16THG60R...				1.7	0.16		
	48-8	0.5-3.0	V16THAG60R...				1.7	0.05		

Partial Profile 60° (con't)

Internal



Mini-3 Standard

Insert Size		Pitch		Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	mm	TPI	RH	LH	r	Y	F	mm	Toolholder
4.0	6	0.5-1.25	48-20	4.0KIRA60...	4.0KILA60...	0.05	0.6	3.7	6.35	.NVR.5-4.0K (LH)
5.0	8	0.5-1.5	48-16	5.0KIRA60...	5.0KILA60...	0.05	0.7	4.7	7.80	.NVRC7-5.0K (LH)
6.0	10	0.5-1.5	48-16	6.0KIRA60...	6.0KILA60...	0.05	0.9	5.3	10.00	.NVRC1..-6.0K (LH)

Mini-3 U Style

Insert Size		Pitch		Ordering Code	Dimensions mm			Min. Bore Dia.	
IC mm	L mm	mm	TPI	RH+LH	r	Y	F	mm	Toolholder
5.0U	8	1.75-2.0	14-11	5.0KUIB60...	0.16	4.0	5.8	9.0	.NVRC8-5.0KU (LH)

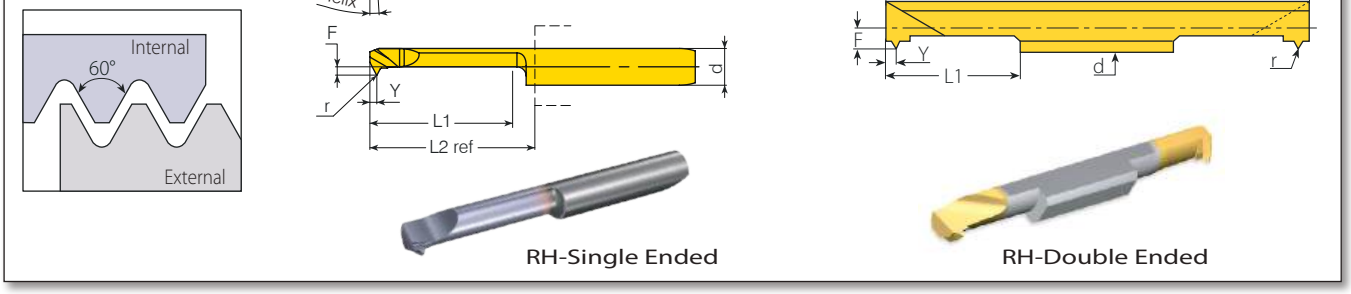
Mini-L

Insert Size	Pitch		Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	mm	TPI	RH	LH	r	Y	F	mm	Toolholder
5.0L	0.5-1.5	48-16	5LKIRA60...	5LKILA60...	0.05	0.9	4.65	8.0	.NVRC10.-5LK (LH)

Partial Profile 60° (con't)

MINIPRO

Internal



Micro - Double Ended

Insert Dia.	Pitch		Ordering Code		Dimensions mm				Min. Bore Dia.	
d mm	mm	TPI	RH	r	L1	L	F	Y	mm	Toolholder
3.0	0.5-1.0	48-24	3.0SIRF60...	0.05	16	50	1.46	0.9	3.3	SMC..-3.0
4.0	0.5-1.0	48-24	4.0SIRF60...	0.05	16	50	1.96	0.9	4.3	SMC..-4.0
6.0	0.5-1.5	48-16	6.0SIRA60...	0.05	16	50	2.50	0.9	6.0	SMC..-6.0

Left handed tool supplied by request (Example: 6.0SI**L**A60...).

Micro - Single Ended

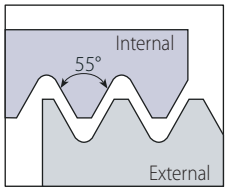
microscope

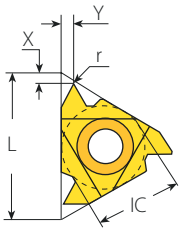
	Insert Dia.	Pitch		Ordering Code	Dimensions mm								Min. Bore Dia.	
Thread	d mm	mm	TPI	RH/LH	Helix °	r	L1	F	Y	h min	L2 ref*	L ref	D mm	Toolholder
M1-M2x0.25	4.0	0.25		M407TH0.25P60L02R...	4.9		2.5	1.95	0.14	0.29	13.0	29.8	0.73	MH...-4.0
M1.6-M3x0.35		0.35		M412TH0.35P60L04R...	3.8		4		0.18	0.29			1.22	
M2x0.4		0.4		M416TH0.40P60L05R...	4.2		5		0.20	0.41			1.57	
M2.2-M2.5x0.45		0.45		M417TH0.45P60L06R...	4.0		6		0.22	0.46			1.71	
-	4.0	0.5-1.0	48-24	MS429THF60L16R/L...	3.5	0.03	16	0.90	0.90		18.4	35.4	3.2	MH...-4.0
		0.5-1.0	48-24	MS439THF60L16R/L...		0.03		1.90					4.2	
	6.0	0.5-1.5	48-16	M659THA60L16R/L...		0.05		2.90			18.5	42.2	6.2	MH...-6.0

* L2 Ref: Repeatability within +/-0.02.

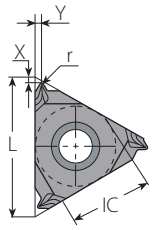
Partial Profile 55°

External

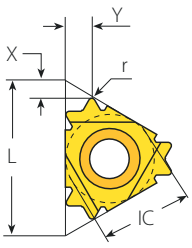




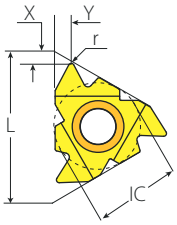
Standard



SCB Sintered Chipbreaker



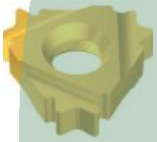
V6



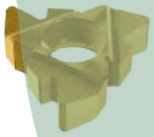
F-Line

Standard

SCB



V6

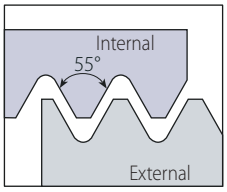


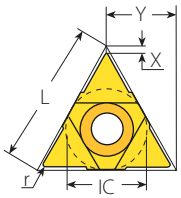
F-LINE

Insert Size		Pitch		Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	TPI	RH	LH	r	X	Y	RH	LH	Toolholder
1/4"	11	0.5-1.5	48-16	2ERA55...	2ELA55...	0.05	0.8	0.9	-	-	NL..-2 (LH)
3/8"	16	0.5-1.5	48-16	3ERA55...	3ELA55...	0.05	0.8	0.9	YE3	YI3	AL..-3 (LH)
		1.75-3.0	14-8	3ERG55...	3ELG55...	0.21	1.2	1.7			
		0.5-3.0	48-8	3ERAG55...	3ELAG55...	0.07	1.2	1.7			
3/8" SCB	16	0.5-1.5	48-16	3JERA55...		0.05	0.6	0.8	YE3	-	AL..-3
		1.75-3.0	14-8	3JERG55...		0.21	1.1	1.5			
		0.5-3.0	48-8	3JERAG55...		0.07	0.9	1.5			
3/8"V6	16	0.5-1.75	48-14	3ERS55-6C...		0.05	1.8	2.8	YE3-6C	-	AL..-3
1/2"	22	3.5-5.0	7-5	4ERN55...	4ELN55...	0.43	1.7	2.5	YE4	YI4	AL..-4 (LH)
1/2"F	23	3.5-5.0	7-5	4FERN55...		0.43	1.7	2.5	YE4F	-	AL...-4F
5/8"	27	5.5-6.0	4.5-4	5ERQ55...	5ELQ55...	0.60	2.0	2.9	YE5	YI5	AL..-5 (LH)

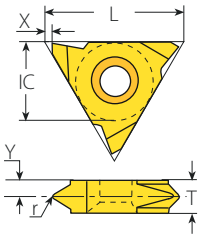
Partial Profile 55° (con't)

External





U Style



V Style / Slim Throat

U Style

Insert Size		Pitch		Ordering Code	Dimensions mm			Anvil		
IC	L mm	mm	TPI	RH+LH	r	X	Y	RH	LH	Toolholder
1/2"U	22	5.5-8.0	4.5-3.25	4UEIU55...	0.60	0.9	11.0	YE4U	YI4U	AL..-4U (LH)
5/8"U	27	6.5-9.0	4-2.75	5UEIU55...	0.80	1.2	13.7	YE5U	YI5U	AL..-5U (LH)

Slim Throat

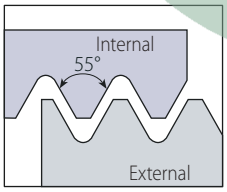
Insert Size		Pitch		Ordering Code		Dimensions mm				
IC	L mm	mm	TPI	RH	LH	r	X	Y	T	Toolholder
1/4"V	11	0.5-1.5	48-16	2VERA55...	2VELA55...	0.05	0.8	2.7	3.2	NL..-2V (LH)
3/8"V	16	0.5-1.5	48-16	3VERA55...	3VELA55...	0.05	1.1	2.7	3.6	NL..-3V (LH)
		1.75-3.0	14-8	3VERG55...	3VELG55...	0.21	1.1	1.9	3.6	
		0.5-3.0	48-8	3VERAG55...	3VELAG55...	0.07	1.1	1.9	3.6	
1/2"V	22	3.5-5.0	7-5	4VERN55...	4VELN55...	0.43	1.1	2.3	4.8	NL..-4V (LH)

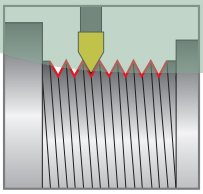
V Style

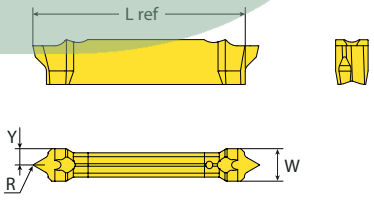
Insert Size		Pitch		Ordering Code		Dimensions mm				
IC	L mm	mm	TPI	RH	LH	r	X	Y	T	Toolholder
5/8"V	27	6.0-9.0	4-2.75	5VERV55...	5VELV55...	0.70	1.0	4.3	8	NL..-5V-8 (LH)

Partial Profile 55°

External







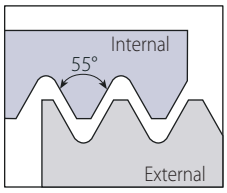
VG-Cut

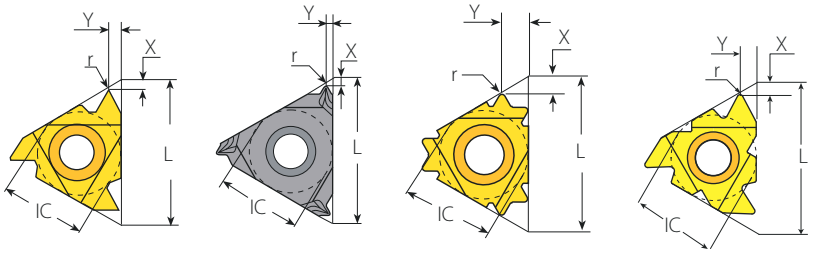
VG-Cut

Pocket Size	Ordering Code	Dimensions mm					No. of Passes	Helix	Min. Thread Diameter	Toolholder
	RH	W ref	Pitch TPI	R	Y	L ref		Deg		Monoblock
3	VGD3.0A55RH...	3.00	48-16	0.05	1.68	21.9	5 - 8	1.5°	Partial Profile A55	VGE...-3T...

Partial Profile 55° (con't)

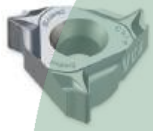
Internal



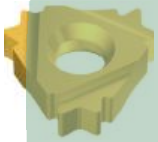


Standard | SCB Sintered Chipbreaker | V6 | F-Line

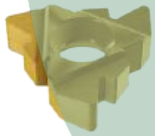
Standard



SCB



V6

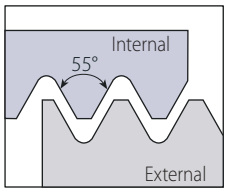


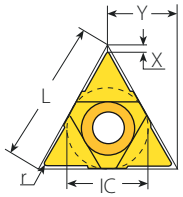
F-LINE

Insert Size		Pitch		Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	TPI	RH	LH	r	X	Y	RH	LH	Toolholder
1/4"	11	0.5-1.5	48-16	2IRA55...	2ILA55...	0.05	0.8	0.9	-	-	NVR..-2 (LH)
1/4" SCB	11	0.5-1.5	48-16	2JIRA55...		0.05	0.6	0.8	-	-	NVR..-2
3/8"	16	0.5-1.5	48-16	3IRA55...	3ILA55...	0.05	0.8	0.9	YI3	YE3	AVR..-3 (LH)
		1.75-3.0	14-8	3IRG55...	3ILG55...	0.21	1.2	1.7			
		0.5-3.0	48-8	3IRAG55...	3ILAG55...	0.07	1.2	1.7			
3/8" SCB	16	0.5-1.5	48-16	3JIRA55...		0.05	0.6	0.8	YI3	-	AVR..-3
		1.75-3.0	14-8	3JIRG55...		0.21	1.1	1.5			
		0.5-3.0	48-8	3JIRAG55...		0.07	0.9	1.5			
3/8" V6	16	0.5-1.5	48-16	3IRS55-6C...		0.05	1.6	2.6	YI3-6C	-	AVR..-3 NVRC..-3 206/...
1/2"	22	3.5-5.0	7-5	4IRN55...	4ILN55...	0.43	1.7	2.5	YI4	YE4	AVR..-4 (LH)
1/2"F	23	3.5-5.0	7-5	4FIRN55...		0.43	1.7	2.5	YI4F	-	AVRC...-4F
5/8"	27	5.5-6.0	4.5-4	5IRQ55...	5ILQ55...	0.60	2.0	2.9	YI5	YE5	AVR..-5 (LH)

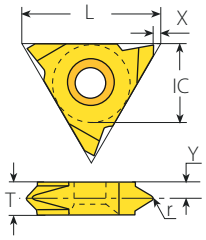
Partial Profile 55° (con't)

Internal





U Style



V Style

U Style

Insert Size		Pitch		Ordering Code	Dimensions mm			Anvil		
IC	L mm	mm	TPI	RH+LH	r	X	Y	RH	LH	Toolholder
1/2"U	22	5.5-8.0	4.5-3.25	4UEIU55...	0.60	0.9	11.0	YI4U	YE4U	AVR..-4U (LH)
5/8"U	27	6.5-9.0	4-2.75	5UEIU55...	0.80	1.2	13.7	YI5U	YE5U	AVR..-5U (LH)

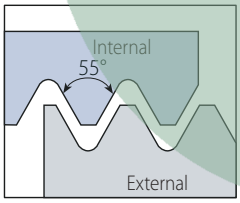
V Style

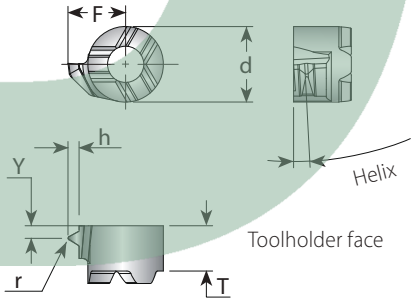
Insert Size		Pitch		Ordering Code		Dimensions mm				
IC	L mm	mm	TPI	RH	LH	r	X	Y	T	Toolholder
5/8"V	27	6.0-9.0	4-2.75	5VIRV55...	5VILV55...	0.70	1.0	4.3	8	NVR..-5V (LH)

Partial Profile 55° (con't)

Mini-V

Internal





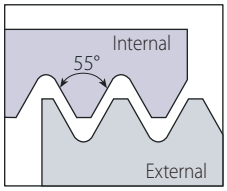
Mini-V

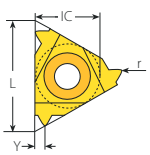
Insert Style	Pitch		Ordering Code	Dimensions mm					Helix	Toolholder
	TPI	mm	RH	d	T	F	Y	r	Deg.	
V14	48-16	0.5-1.5	V14THA55R...	9	5.7	9	0.9	0.05	1.5	.V14-...
	14-8	1.75-3.0	V14THG55R...				1.7	0.21		
	48-8	0.5-3.0	V14THAG55R...				1.7	0.07		
V16	48-16	0.5-1.5	V16THA55R...	11	5.7	10.2	0.9	0.07	1.5	.V16-...
	14-8	1.75-3.0	V16THG55R...				1.7	0.25		
	48-8	0.5-3.0	V16THAG55R...				1.7	0.07		

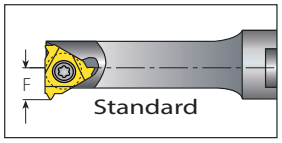
Partial Profile 55° (con't)

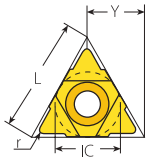
MINIPRO

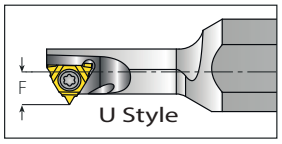
Internal

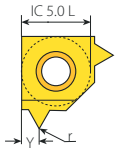


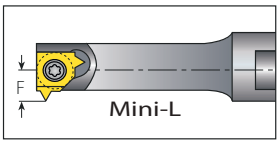












Mini-3 Standard

Insert Size		Pitch		Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	mm	TPI	RH	LH	r	Y	F	mm	Toolholder
4.0	6	0.5-1.25	48-20	4.0KIRA55...	4.0KILA55...	0.05	0.6	3.8	6.45	.NVR.5-4.0K (LH)
5.0	8	0.5-1.5	48-16	5.0KIRA55...	5.0KILA55...	0.05	0.7	4.7	7.80	.NVRC7-5.0K (LH)
6.0	10	0.5-1.50	48-16	6.0KIRA55...	6.0KILA55...	0.05	0.9	5.3	10.00	.NVRC1..-6.0K (LH)

Mini-3 U Style

Insert Size		Pitch		Ordering Code	Dimensions mm			Min. Bore Dia.	
IC mm	L mm	mm	TPI	RH+LH	r	Y	F	mm	Toolholder
5.0U	8	1.75-2.0	14-11	5.0KUIB55...	0.21	4.0	5.7	9.0	.NVRC8-5.0KU (LH)

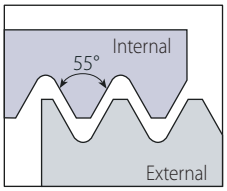
Mini-L

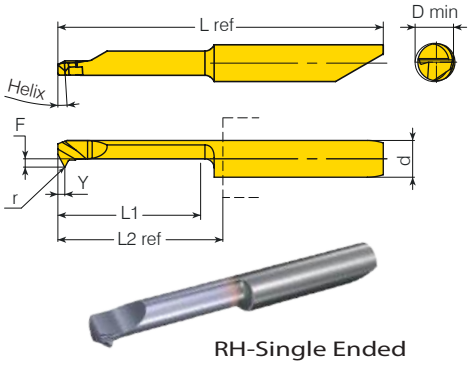
Insert Size	Pitch		Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	mm	TPI	RH	LH	r	Y	F	mm	Toolholder
5.0L	0.5-1.5	48-16	5LKIRA55...	5LKILA55...	0.05	0.9	4.65	8.0	.NVRC10.-5LK (LH)

Partial Profile 55° (con't)

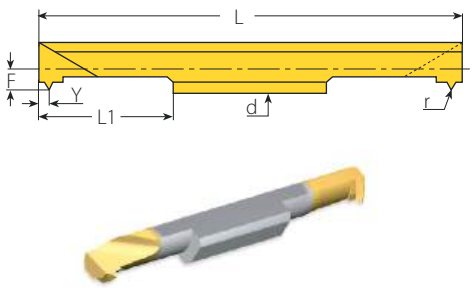
MINIPRO

Internal





RH-Single Ended



RH-Double Ended

Micro - Double Ended

Insert Dia.	Pitch		Ordering Code	Dimensions mm					Min. Bore Dia.	
d mm	mm	TPI	RH	r	L1	L	F	Y	mm	Toolholder
3.0	0.5-1.0	48-24	3.0SIRF55...	0.05	16	50	1.46	0.9	3.3	SMC..-3.0
4.0	0.5-1.0	48-24	4.0SIRF55...	0.05	16	50	1.96	0.9	4.3	SMC..-4.0
6.0	0.5-1.5	48-16	6.0SIRA55...	0.05	16	50	2.50	0.9	6.0	SMC..-6.0

Left handed tool supplied by request (Example: 6.0SI**L**A55...).

Micro - Single Ended

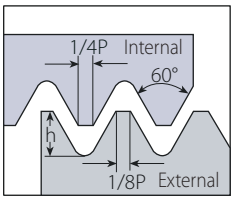
microscope

Insert Dia.	Pitch		Ordering Code	Dimensions mm							Min. Bore Dia.	
d mm	mm	TPI	RH/LH	Helix °	r	L1	F	Y	L2 ref*	L ref	D mm	Toolholder
4.0	0.5-1.0	48-24	MS429THF55L16R/L...	3.5	0.05	16	0.9	0.75	18.4	35.4	3.2	MH...-4.0
	0.5-1.0	48-24	MS439THF55L16R/L...		0.05		1.9				4.2	
6.0	0.5-1.5	48-16	M659THA55L16R/L...		0.06		2.9	0.9	18.5	42.2	6.2	MH...-6.0

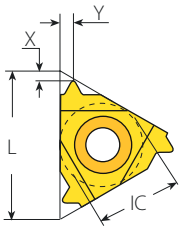
* L2 Ref: Repeatability within +/-0.02.

ISO Metric

External

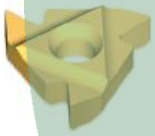


Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



Standard

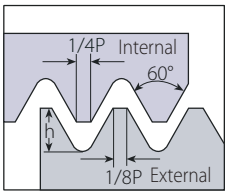
Standard



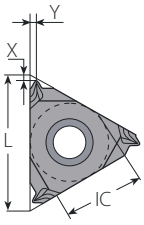
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	0.25	2ER0.25ISO...	2EL0.25ISO...	0.14	0.4	0.2	-	-	NL..-2 (LH)
		0.3	2ER0.3ISO...	2EL0.3ISO...	0.19	0.7	0.3			
		0.35	2ER0.35ISO...	2EL0.35ISO...	0.21	0.8	0.4			
		0.4	2ER0.4ISO...	2EL0.4ISO...	0.25	0.7	0.4			
		0.45	2ER0.45ISO...	2EL0.45ISO...	0.28	0.7	0.4			
		0.5	2ER0.5ISO...	2EL0.5ISO...	0.31	0.6	0.4			
		0.6	2ER0.6ISO...	2EL0.6ISO...	0.37	0.6	0.6			
		0.7	2ER0.7ISO...	2EL0.7ISO...	0.43	0.6	0.6			
		0.75	2ER0.75ISO...	2EL0.75ISO...	0.46	0.6	0.6			
		0.8	2ER0.8ISO...	2EL0.8ISO...	0.49	0.6	0.6			
		1.0	2ER1.0ISO...	2EL1.0ISO...	0.61	0.7	0.7			
		1.25	2ER1.25ISO...	2EL1.25ISO...	0.77	0.8	0.9			
		1.5	2ER1.5ISO...	2EL1.5ISO...	0.92	0.8	1.0			
		1.75	2ER1.75ISO...	2EL1.75ISO...	1.07	0.8	1.1			
3/8"	16	0.25	3ER0.25ISO...	3EL0.25ISO...	0.14	0.4	0.2	YE3	YI3	AL..-3 (LH)
		0.3	3ER0.3ISO...	3EL0.3ISO...	0.17	0.73	0.29			
		0.35	3ER0.35ISO...	3EL0.35ISO...	0.21	0.8	0.4			
		0.4	3ER0.4ISO...	3EL0.4ISO...	0.25	0.7	0.4			
		0.45	3ER0.45ISO...	3EL0.45ISO...	0.28	0.7	0.4			
		0.5	3ER0.5ISO...	3EL0.5ISO...	0.31	0.6	0.4			
		0.6	3ER0.6ISO...	3EL0.6ISO...	0.37	0.6	0.6			
		0.7	3ER0.7ISO...	3EL0.7ISO...	0.43	0.6	0.6			
		0.75	3ER0.75ISO...	3EL0.75ISO...	0.46	0.6	0.6			
		0.8	3ER0.8ISO...	3EL0.8ISO...	0.49	0.6	0.6			
		1.0	3ER1.0ISO...	3EL1.0ISO...	0.61	0.7	0.7			
		1.25	3ER1.25ISO...	3EL1.25ISO...	0.77	0.8	0.9			
		1.5	3ER1.5ISO...	3EL1.5ISO...	0.92	0.8	1.0			
		1.75	3ER1.75ISO...	3EL1.75ISO...	1.07	0.9	1.2			
		2.0	3ER2.0ISO...	3EL2.0ISO...	1.23	1.0	1.3			
		2.5	3ER2.5ISO...	3EL2.5ISO...	1.53	1.1	1.5			
		3.0	3ER3.0ISO...	3EL3.0ISO...	1.84	1.2	1.6			
		3.5	3ER3.5ISO...	3EL3.5ISO...	2.15	1.6	1.9			

ISO Metric (con't)

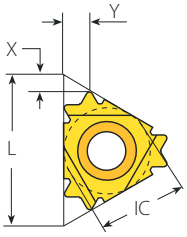
External



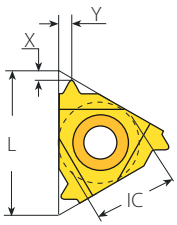
Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



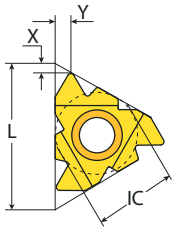
SCB
Sintered
Chipbreaker



V6



Standard



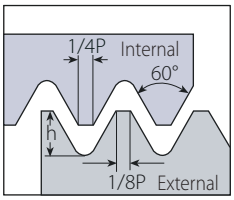
F-Line

Standard

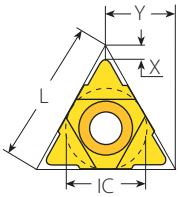
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8" SCB	16	0.5	3JER0.5ISO...		0.31	1.2	0.5	YE3	-	AL..-3
		0.75	3JER0.75ISO...		0.46	1.2	0.5			
		0.8	3JER0.8ISO...		0.49	1.2	0.5			
		1.0	3JER1.0ISO...		0.61	0.7	0.8			
		1.25	3JER1.25ISO...		0.77	0.7	0.8			
		1.5	3JER1.5ISO...		0.92	0.7	0.8			
		1.75	3JER1.75ISO...		1.07	1.2	1.5			
		2.0	3JER2.0ISO...		1.23	1.2	1.5			
		2.5	3JER2.5ISO...		1.53	1.2	1.5			
		3.0	3JER3.0ISO...		1.84	1.3	1.5			
		3.5	3JER3.5ISO...		2.15	1.2	1.5			
3/8" V6	16	0.5	3ER0.5ISO-6C...		0.31	2.2	1.8	YE3-6C	-	AL..-3
		0.75	3ER0.75ISO-6C...		0.46	2.0	1.8			
		0.8	3ER0.8ISO-6C...		0.49	2.0	1.9			
		1.0	3ER1.0ISO-6C...		0.61	1.9	2.0			
		1.25	3ER1.25ISO-6C...		0.77	1.8	2.1			
		1.5	3ER1.5ISO-6C...		0.92	1.9	2.4			
		1.75	3ER1.75ISO-6C...		1.07	1.8	2.6			
		2.0	3ER2.0ISO-6C...		1.23	1.9	2.8			
1/2"	22	3.5	4ER3.5ISO...	4EL3.5ISO...	2.15	1.6	2.3	YE4	YI4	AL..-4 (LH)
		4.0	4ER4.0ISO...	4EL4.0ISO...	2.45	1.6	2.3			
		4.5	4ER4.5ISO...	4EL4.5ISO...	2.76	1.7	2.4			
		5.0	4ER5.0ISO...	4EL5.0ISO...	3.07	1.7	2.5			
		5.5	4ER5.5ISO...	4EL5.5ISO...	3.37	1.9	2.7			
		6.0	4ER6.0ISO...	4EL6.0ISO...	3.68	1.8	2.7			
1/2"F	23	3.5	4FER3.5ISO...		2.15	1.6	2.3	YE4F	-	AL...-4F
		4.0	4FER4.0ISO...		2.45	1.6	2.3			
		4.5	4FER4.5ISO...		2.76	1.7	2.4			
		5.0	4FER5.0ISO...		3.07	1.7	2.5			
		5.5	4FER5.5ISO...		3.37	1.9	2.7			
		6.0	4FER6.0ISO...		3.68	1.8	2.7			
5/8"	27	5.5	5ER5.5ISO...	5EL5.5ISO...	3.37	1.9	2.7	YE5	YI5	AL..-5 (LH)
		6.0	5ER6.0ISO...	5EL6.0ISO...	3.68	2.0	2.9			

ISO Metric (con't)

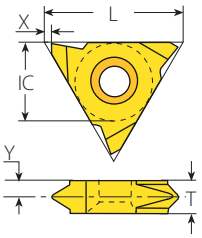
External



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



U Style



V Style / Slim Throat

U Style

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH+LH		h min	X	Y	RH	LH	Toolholder
1/2"U	22	5.0	4UE5.0ISO...		3.07	2.2	11.0	YE4U	YI4U	AL..-4U (LH)
		5.5	4UE5.5ISO...		3.37	2.3	11.0			
		6.0	4UE6.0ISO...		3.68	2.6	11.0			
5/8"U	27	8.0	5UE8.0ISO...		4.91	2.4	13.7	YE5U	YI5U	AL..-5U (LH)

Slim Throat

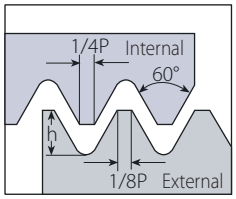
Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	mm	RH	LH	h min	X	Y	T	Toolholder
1/4"V	11	0.75	2VER0.75ISO...	2VEL0.75ISO...	0.46	0.7	2.6	3.2	NL..-2V (LH)
		1.0	2VER1.0ISO...	2VEL1.0ISO...	0.61	0.7	2.5	3.2	
		1.5	2VER1.5ISO...	2VEL1.5ISO...	0.92	0.7	2.2.	3.2	
		1.75	2VER1.75ISO...	2VEL1.75ISO...	1.07	0.7	2.1	3.2	
		2.0	2VER2.0ISO...	2VEL2.0ISO...	1.23	0.7	1.9	3.2	
3/8"V	16	0.35	3VER0.35ISO...	3VEL0.35ISO...	0.20	1.1	3.25	3.6	NL..-3V (LH)
		0.4	3VER0.4ISO...	3VEL0.4ISO...	0.25	1.1	3.20	3.6	
		0.5	3VER0.5ISO...	3VEL0.5ISO...	0.31	1.1	3.0	3.6	
		0.75	3VER0.75ISO...	3VEL0.75ISO...	0.46	1.1	3.0	3.6	
		0.8	3VER0.8ISO...	3VEL0.8ISO...	0.49	1.1	3.0	3.6	
		1.0	3VER1.0ISO...	3VEL1.0ISO...	0.61	1.1	2.9	3.6	
		1.25	3VER1.25ISO...	3VEL1.25ISO...	0.77	1.1	2.7	3.6	
		1.5	3VER1.5ISO...	3VEL1.5ISO...	0.92	1.1	2.6	3.6	
		1.75	3VER1.75ISO...	3VEL1.75ISO...	1.07	1.1	2.45	3.6	
		2.0	3VER2.0ISO...	3VEL2.0ISO...	1.23	1.1	2.3	3.6	
		2.5	3VER2.5ISO...	3VEL2.5ISO...	1.53	1.1	2.1	3.6	
		3.0	3VER3.0ISO...	3VEL3.0ISO...	1.84	1.1	2.0	3.6	

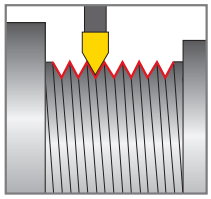
V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	mm	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	5.5	5VER5.5ISO...	5VEL5.5ISO...	3.37	1.0	3.3	6	NL..-5V-6 (LH)
		6.0	5VER6.0ISO...	5VEL6.0ISO...	3.68	1.0	3.3	6	
		8.0	5VER8.0ISO...	5VEL8.0ISO...	4.91	1.0	4.3	8	NL..-5V-8 (LH)
		10.0	5VER10.0ISO...	5VEL10.0ISO...	6.13	1.0	5.2	10	NL..-5V-10 (LH)

ISO Metric (con't)

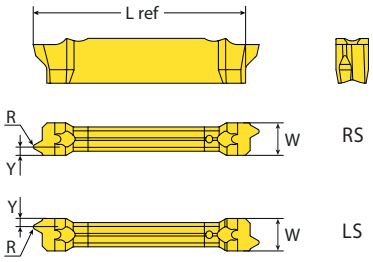
External





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

RS/LS Varied range of threading standards for machining between shoulders and close to spindle.



VG-Cut

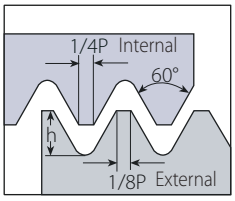
Pocket Size	Ordering Code RH	W ref	Dimensions mm Pitch mm	h min	Y	L ref	No. of Passes	Helix Deg	Min. Thread Diameter	Toolholder Monoblock
3	VGD3.0ISO0.50RH-RS/LS...	3.00	0.50	0.31	0.53	21.9	5 - 7	2.5°	M3x0.5	VGE...-3T...
	VGD3.0ISO0.75RH-RS/LS...		0.75	0.46	0.64		5 - 8		M5x0.75	
	VGD3.0ISO1.00RH-RS/LS...		1.00	0.61	0.74		5 - 9		M6x1	
	VGD3.0ISO1.25RH-RS/LS...		1.25	0.77	0.85		6 - 10		M8x1.25	
	VGD3.0ISO1.50RH-RS/LS...		1.50	0.92	1.10		7 - 12		M10x1.5 Coarse	
	VGD3.0ISO1.75RH-RS/LS...		1.75	1.07	1.20		8 - 14		M12x1.75 Coarse	
	VGD3.0ISO2.00RH-RS/LS...		2.00	1.23	1.30		9 - 14		M16x2.0 Coarse	
	VGD3.0ISO2.50RH-RS/LS		2.50	1.53	1.55		8 - 14		M18x2.5 Coarse	

LH Helix threads available upon request.

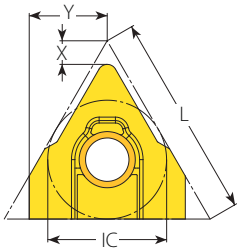
ISO Metric (con't)

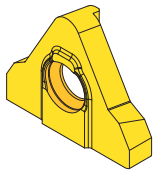
MEGALINE

External



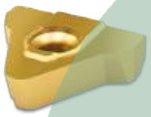
Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



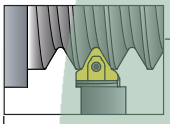


Mega Line

External

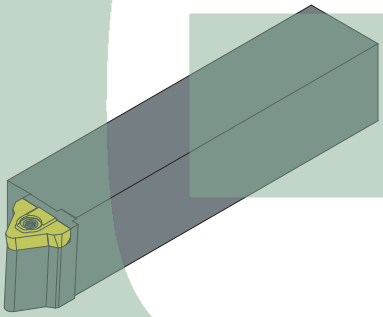


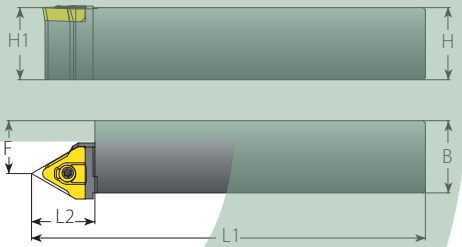
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	mm	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	12.0	5MGER12.0ISO...	7.36	4.08	11.3	105	49
		16.0	5MGER16.0ISO...	9.82	4.66		140	66
		18.0	5MGER18.0ISO...	11.04	4.95		158	74
		20.0	5MGER20.0ISO...	12.27	5.24		175	82
		25.0	5MGER25.0ISO...	15.34	4.46		219	102



External Toolholders for ISO Metric

MEGALINE





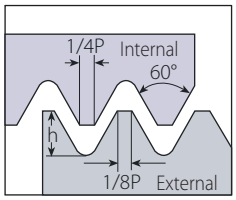
External

Insert	Ordering Code	Dimensions mm				Thread Diameter Range (Min.)	Spare Parts	
	RH	H=B=H1	F	L1	L2		Insert Screw	Torx Key
5MGER12.0ISO...	NL25-5MG12ISO	25	16.5	155	22	M43x12	S5MG	K6T
	NL32-5MG12ISO	32	23.5	175				
	NL40-5MG12ISO	40	31.5	205				
5MGER16.0ISO...	NL25-5MG16ISO	25	16.5	155	22	M57x16		
	NL32-5MG16ISO	32	23.5	175				
	NL40-5MG16ISO	40	31.5	205				
5MGER18.0ISO...	NL25-5MG18ISO	25	16.5	155	22	M65x18		
	NL32-5MG18ISO	32	23.5	175				
	NL40-5MG18ISO	40	31.5	205				
5MGER20.0ISO...	NL25-5MG20ISO	25	16.5	155	22	M72x20		
	NL32-5MG20ISO	32	23.5	175				
	NL40-5MG20ISO	40	31.5	205				
5MGER25.0ISO...	NL25-5MG25ISO	25	16.5	155	22	M90x25		
	NL32-5MG25ISO	32	23.5	175				
	NL40-5MG25ISO	40	31.5	205				

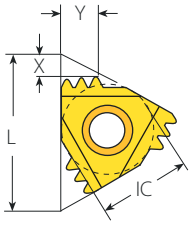
Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

ISO Metric (con't)

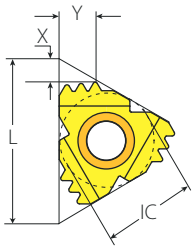
External



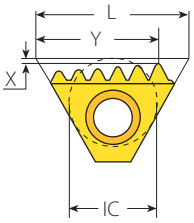
Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



M+ Style



F-Line M+



T+ Style

M+ Style

Multi plus

Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	mm		RH	h min	X	Y	RH	Toolholder
3/8"	16	1.0	3	3ER1.0ISO3M+...	0.61	1.8	2.6	YE3M	AL..-3
		1.5	2	3ER1.5ISO2M+...	0.92	1.6	2.4		
		2.0	2	3ER2.0ISO2M+...	1.23	2.1	3.1		
1/2"	22	1.5	3	4ER1.5ISO3M+...	0.92	2.5	3.8	YE4M	AL..-4
		2.0	2	4ER2.0ISO2M+...	1.23	2.1	3.1		
		2.0	3	4ER2.0ISO3M+...	1.23	3.2	5.1		
		2.5	2	4ER2.5ISO2M+...	1.53	2.5	3.9		
1/2"F	23	2.0	2	4FER2.0ISO2M+...	1.23	2.1	3.1	YE4M2F	AL...-4MF
		2.0	3	4FER2.0ISO3M+...	1.23	3.2	5.1	YE4M3F	
5/8"	27	3.0	2	5ER3.0ISO2M+...	1.84	3.0	4.7	YE5M	AL..-5M

F-LINE

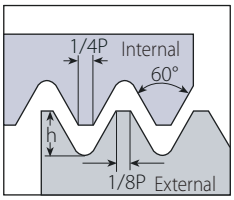
T+ Style

Multi plus

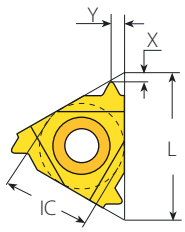
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	mm		RH	h min	X	Y	RH	Toolholder
1/2"T	22	1.5	8	4ER1.5ISO8T+...	0.92	0.2	12.4	Y4T	AL..-4T
		2.0	8	4ER2.0ISO8T+...	1.23	0.2	17.5		

ISO Metric (con't)

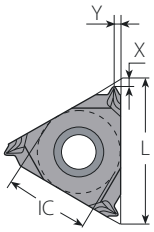
Internal



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



Standard



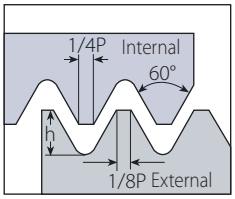
SCB
Sintered
Chipbreaker

Standard

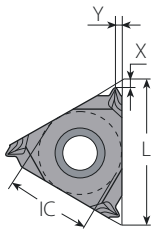
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	0.35	2IR0.35ISO...	2IL0.35ISO...	0.20	0.8	0.3	-	-	NVR..-2 (LH)
		0.4	2IR0.4ISO...	2IL0.4ISO...	0.23	0.8	0.4			
		0.45	2IR0.45ISO...	2IL0.45ISO...	0.26	0.8	0.4			
		0.5	2IR0.5ISO...	2IL0.5ISO...	0.29	0.6	0.4			
		0.6	2IR0.6ISO...	2IL0.6ISO...	0.35	0.6	0.6			
		0.7	2IR0.7ISO...	2IL0.7ISO...	0.40	0.6	0.6			
		0.75	2IR0.75ISO...	2IL0.75ISO...	0.43	0.6	0.6			
		0.8	2IR0.8ISO...	2IL0.8ISO...	0.46	0.6	0.6			
		1.0	2IR1.0ISO...	2IL1.0ISO...	0.58	0.6	0.7			
		1.25	2IR1.25ISO...	2IL1.25ISO...	0.72	0.8	0.9			
		1.5	2IR1.5ISO...	2IL1.5ISO...	0.87	0.8	1.0			
		1.75	2IR1.75ISO...	2IL1.75ISO...	1.01	0.9	1.1			
		2.0	2IR2.0ISO...	2IL2.0ISO...	1.15	0.9	1.1			
		2.5	2IR2.5ISO...	2IL2.5ISO...	1.44	0.8	1.1			
1/4" SCB	11	0.5	2JIR0.5ISO...		0.29	1.2	0.5	-	-	NVR..-2
		0.75	2JIR0.75ISO...		0.43	1.2	0.5			
		0.8	2JIR0.8ISO...		0.46	1.2	0.5			
		1.0	2JIR1.0ISO...		0.58	0.7	0.8			
		1.25	2JIR1.25ISO...		0.72	0.7	0.8			
		1.5	2JIR1.5ISO...		0.87	0.7	0.8			
3/8"	16	0.35	3IR0.35ISO...	3IL0.35ISO...	0.20	0.8	0.3	YI3	YE3	AVR..-3 (LH)
		0.4	3IR0.4ISO...	3IL0.4ISO...	0.23	0.8	0.4			
		0.45	3IR0.45ISO...	3IL0.45ISO...	0.26	0.8	0.4			
		0.5	3IR0.5ISO...	3IL0.5ISO...	0.29	0.6	0.4			
		0.6	3IR0.6ISO...	3IL0.6ISO...	0.35	0.6	0.6			
		0.7	3IR0.7ISO...	3IL0.7ISO...	0.40	0.6	0.6			
		0.75	3IR0.75ISO...	3IL0.75ISO...	0.43	0.6	0.6			
		0.8	3IR0.8ISO...	3IL0.8ISO...	0.46	0.6	0.6			
		1.0	3IR1.0ISO...	3IL1.0ISO...	0.58	0.6	0.7			
		1.25	3IR1.25ISO...	3IL1.25ISO...	0.72	0.8	0.9			
		1.5	3IR1.5ISO...	3IL1.5ISO...	0.87	0.8	1.0			
		1.75	3IR1.75ISO...	3IL1.75ISO...	1.01	0.9	1.2			
		2.0	3IR2.0ISO...	3IL2.0ISO...	1.15	1.0	1.3			
		2.5	3IR2.5ISO...	3IL2.5ISO...	1.44	1.1	1.5			
		3.0	3IR3.0ISO...	3IL3.0ISO...	1.73	1.1	1.5			
		3.5	3IR3.5ISO...	3IL3.5ISO...	2.02	1.2	1.5			

ISO Metric (con't)

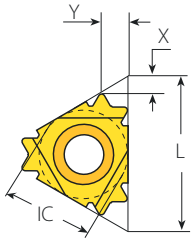
Internal



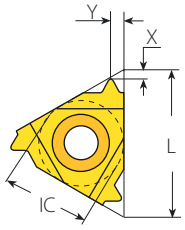
Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



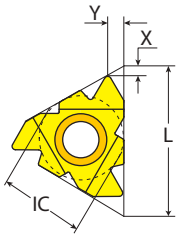
SCB Sintered Chipbreaker



V6



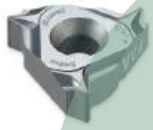
Standard



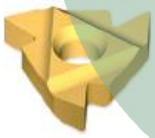
F-Line

Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8" SCB	16	1.0	3JIR1.0ISO...		0.58	0.7	0.8	YI3	-	AVR..-3
		1.25	3JIR1.25ISO...		0.72	0.7	0.8			
		1.5	3JIR1.5ISO...		0.87	0.7	0.8			
		1.75	3JIR1.75ISO...		1.01	1.1	1.5			
		2.0	3JIR2.0ISO...		1.15	1.1	1.5			
		2.5	3JIR2.5ISO...		1.44	1.1	1.5			
		3.0	3JIR3.0ISO...		1.73	1.1	1.5			
		3.5	3JIR3.5ISO...		2.02	1.2	1.5			
3/8" V6	16	0.5	3IR0.5ISO-6C...		0.29	2.1	1.7	YI3-6C	-	AVR..-3 NVRC..-3 206/
		0.75	3IR0.75ISO-6C...		0.43	2.0	1.8			
		0.8	3IR0.8ISO-6C...		0.46	1.9	1.8			
		1.0	3IR1.0ISO-6C...		0.58	2.0	2.0			
		1.25	3IR1.25ISO-6C...		0.72	1.8	2.2			
		1.5	3IR1.5ISO-6C...		0.87	1.6	2.3			
		1.75	3IR1.75ISO-6C...		1.01	1.6	2.4			
		2.0	3IR2.0ISO-6C...		1.15	1.7	2.6			
1/2"	22	3.5	4IR3.5ISO...	4IL3.5ISO...	2.02	1.6	2.3	YI4	YE4	AVR..-4 (LH)
		4.0	4IR4.0ISO...	4IL4.0ISO...	2.31	1.6	2.3			
		4.5	4IR4.5ISO...	4IL4.5ISO...	2.60	1.6	2.4			
		5.0	4IR5.0ISO...	4IL5.0ISO...	2.89	1.6	2.3			
		5.5	4IR5.5ISO...	4IL5.5ISO...	3.17	1.6	2.3			
		6.0	4IR6.0ISO...	4IL6.0ISO...	3.46	1.8	2.5			
1/2"F	23	3.5	4FIR3.5ISO...		2.02	1.6	2.3	YI4F		AVRC...-4F
		4	4FIR4.0ISO...		2.31	1.6	2.3			
		4.5	4FIR4.5ISO...		2.60	1.6	2.4			
		5	4FIR5.0ISO...		2.89	1.6	2.3			
		5.5	4FIR5.5ISO...		3.18	1.6	2.3			
		6	4FIR6.0ISO...		3.46	1.8	2.5			
5/8"	27	4.5	5IR4.5ISO...	5IL4.5ISO...	2.60	1.6	2.4	YI5	YE5	AVR..-5 (LH)
		5.0	5IR5.0ISO...	5IL5.0ISO...	2.89	1.6	2.3			
		5.5	5IR5.5ISO...	5IL5.5ISO...	3.17	1.6	2.3			
		6.0	5IR6.0ISO...	5IL6.0ISO...	3.46	1.8	2.5			


SCB

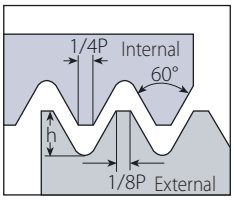
V6



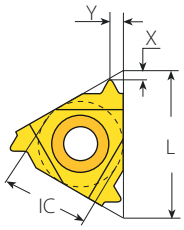
F-LINE

ISO Metric (con't)

Internal



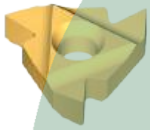
Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



D-Line

D-Line Deep Rack

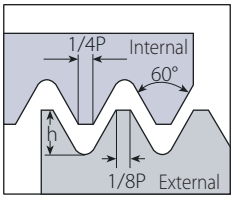
D-Line



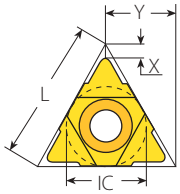
Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil	
IC	L mm	mm	RH	h min	X	Y	RH	Toolholder
1/4"	11	1.0	2DIR1.0ISO...	0.58	0.6	0.7	-	NVR..-2
		1.25	2DIR1.25ISO...	0.72	0.8	0.9		
		1.5	2DIR1.5ISO...	0.87	0.9	1.0		
		2.0	2DIR2.0ISO...	1.15	1.1	0.9		
3/8"	16	1.0	3DIR1.0ISO...	0.58	0.6	0.7	YI3	AVR..-3
		1.5	3DIR1.5ISO...	0.87	0.8	1.0		
		1.75	3DIR1.75ISO...	1.01	0.9	1.2		
		2.0	3DIR2.0ISO...	1.15	1.0	1.3		
		2.5	3DIR2.5ISO...	1.44	1.1	1.5		
		3.0	3DIR3.0ISO...	1.73	1.1	1.5		
1/2"	22	3.5	4DIR3.5ISO...	2.02	1.6	2.3	YI4	AVR..-4
		4.0	4DIR4.0ISO...	2.31	1.6	2.3		

ISO Metric (con't)

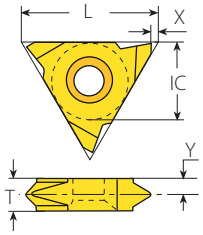
Internal



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



U Style



V Style

U Style

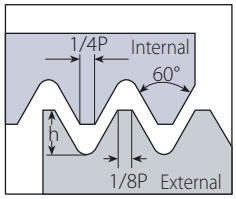
Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	mm	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	5.5	4UI5.5ISO...	3.17	2.4	11.0	YI4U	YE4U	AVR..-4U (LH)
		6.0	4UI6.0ISO...	3.46	2.1	11.0			
5/8"U	27	8.0	5UI8.0ISO...	4.62	2.4	13.7	YI5U	YE5U	AVR..-5U (LH)

V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	mm	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	6.0	5VIR6.0ISO...	5VIL6.0ISO...	3.46	1.0	3.3	6	NVR..-5V (LH)
		8.0	5VIR8.0ISO...	5VIL8.0ISO...	4.62	1.0	4.3	8	
		10.0	5VIR10.0ISO...	5VIL10.0ISO...	5.77	1.0	5.2	10	

ISO Metric (con't)

Internal



Defined by: R262 (DIN 13)
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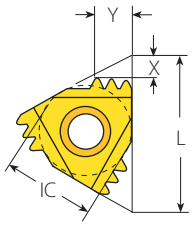
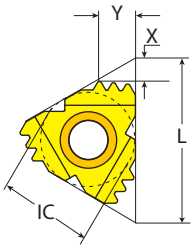
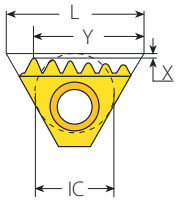


M+ Style



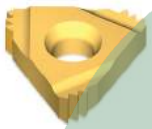
F-Line M+

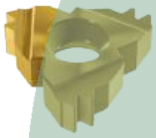


T+ Style

M+ Style

Multiplus



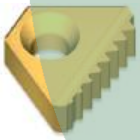


F-LINE

Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	mm		RH	h min	X	Y	RH	Toolholder
3/8"	16	1.0	3	3IR1.0ISO3M+...	0.58	1.7	2.6	YI3M	AVR..-3
		1.5	2	3IR1.5ISO2M+...	0.87	1.6	2.4		
		2.0	2	3IR2.0ISO2M+...	1.15	2.0	3.1		
1/2"	22	1.5	3	4IR1.5ISO3M+...	0.87	2.5	3.8	YI4M	AVR..-4
		2.0	2	4IR2.0ISO2M+...	1.15	2.0	3.1		
		2.0	3	4IR2.0ISO3M+...	1.15	3.2	5.1		
1/2"F	23	2.0	2	4FIR2.0ISO2M+...	1.15	2	3.1	YI4M2F	AVRC...-4MF
5/8"	27	3.0	2	5IR3.0ISO2M+...	1.73	3.0	4.7	YI5M	AVR..-5M

T+ Style

Multiplus

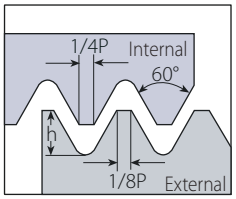


Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	mm		RH	h min	X	Y	RH	Toolholder
1/2"	22	1.5	8	4IR1.5ISO8T+...	0.87	0.2	12.4	Y4T	AVR..-4T
		2.0	8	4IR2.0ISO8T+...	1.15	0.2	17.5		

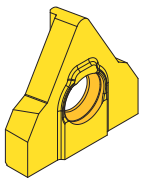
ISO Metric (con't)

MEGALINE

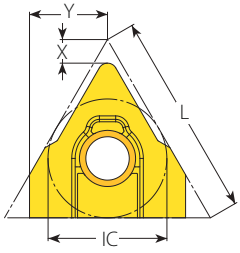
Internal



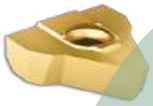
Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



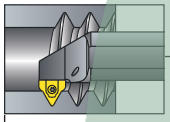
Mega Line



Internal

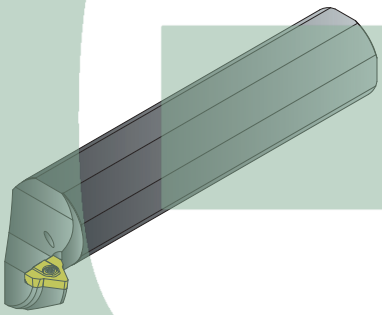


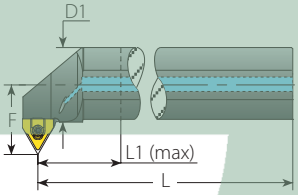
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	mm	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	12.0	5MGIR12.0ISO...	6.94	2.65	10.4	99	46
		16.0	5MGIR16.0ISO...	9.32	3.01		132	62
		18.0	5MGIR18.0ISO...	10.49	3.15		149	69
		20.0	5MGIR20.0ISO...	11.63	3.29		165	77
		25.0	5MGIR25.0ISO...	14.57	3.65		206	96

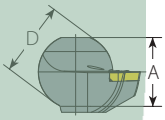


Internal Toolholders for ISO Metric

MEGALINE







Internal

Insert	Ordering Code	Dimensions mm						Min. Bore Dia.	Thread Diameter Range (Min.-Max.)		Spare Parts	
	RH	A	L	L1 (max)	D	D1	F	mm	Short Chip Material	Long Chip Material	Insert Screw	Torx Key
5MGIR12.0ISO...	NVRC40-5MG12ISO	36	232.5	100	40	39.7	41.5	60.0	(M73-90)x12	(M85-90)x12	S5MG	K6T
	NVRC50-5MG12ISO	46	257.5	125	50	49.7	46.5	70.0	(M83-90)x12	(M83-90)x12		
5MGIR16.0ISO...	NVRC40-5MG16ISO	36	232.5	100	40	39.7	41.5	59.7	(M77-190)x16	(M89-190)x16		
	NVRC50-5MG16ISO	46	257.5	125	50	49.7	46.5	69.7	(M87-190)x16	(M101-190)x16		
	NVRC60-5MG16ISO	57	282.5	150	60	59.7	51.5	79.7	(M97-190)x16	(M113-190)x16		
5MGIR18.0ISO...	NVRC40-5MG18ISO	36	232.5	100	40	39.7	41.5	65.5	(M85-230)x18	(M91-230)x18		
	NVRC50-5MG18ISO	46	257.5	125	50	49.7	46.5	69.5	(M89-230)x18	(M103-230)x18		
	NVRC60-5MG18ISO	57	282.5	150	60	59.7	51.5	79.5	(M99-230)x18	(M115-230)x18		
5MGIR20.0ISO...	NVRC40-5MG20ISO	36	232.5	100	40	39.7	41.5	70.4	(M92-290)x20	(M93-290)x20		
	NVRC50-5MG20ISO	46	257.5	125	50	49.7	46.5	70.4	(M92-290)x20	(M105-290)x20		
	NVRC60-5MG20ISO	57	282.5	150	60	59.7	51.5	79.4	(M101-290)x20	(M117-290)x20		
5MGIR25.0ISO...	NVRC40-5MG25ISO	36	232.5	100	40	39.7	41.5	82.0	(M109-405)x25	(M109-405)x25		
	NVRC50-5MG25ISO	46	257.5	125	50	49.7	46.5	82.0	(M109-405)x25	(M110-405)x25		
	NVRC60-5MG25ISO	57	282.5	150	60	59.7	51.5	82.0	(M109-405)x25	(M122-405)x25		

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

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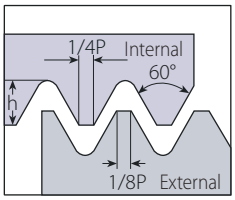
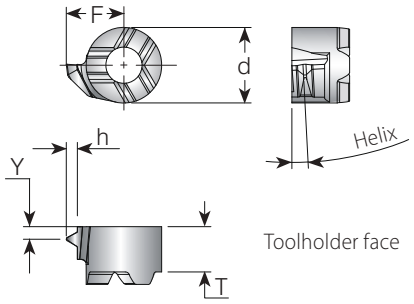
ISO Metric (con't)

Internal



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



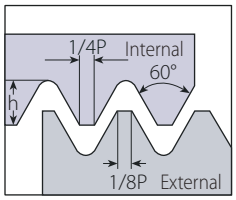
Mini-V

Min. Thread	Insert Style	Pitch	Ordering Code	Dimensions mm					Helix	Toolholder
		mm	RH	d	T	F	Y	h min	Deg.	
M8x0.5	V08	0.5	V08TH0.50ISOR...	6	3.8	3.86	0.35	0.29	1	.V08-...
M8.5x0.75		0.75	V08TH0.75ISOR...			4.19	0.5	0.43	1.5	
M9x1.0		1.0	V08TH1.0ISOR...			4.29	0.5	0.58	2	
M10x1.25		1.25	V08TH1.25ISOR...			4.44	0.8	0.72	2.5	
M10x1.5		1.5	V08TH1.5ISOR...			4.58	0.9	0.87	3	
M12x1.75		1.75	V08TH1.75ISOR...			4.80	0.9	1.01	3	
M14x2.0	V11	2.0	V11TH2.0ISOR...	8	4.2	6.47	1.1	1.15	2.5	.V11-...

ISO Metric (con't)

MINIPRO

Internal



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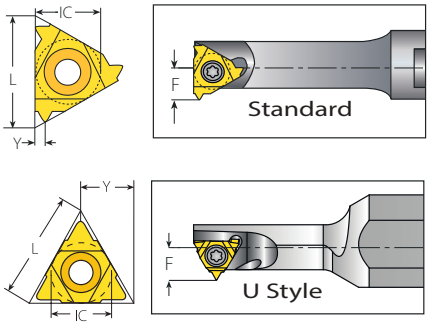


Mini-3 Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	mm	RH	LH	h min	Y	F	mm	Toolholder
4.0	6	0.25	4.0KIR0.25ISO...	4.0KIL0.25ISO...	0.15	0.25	3.3	5.95	.NVR.5-4.0K (LH)
		0.5	4.0KIR0.5ISO...	4.0KIL0.5ISO...	0.29	0.5	3.4	6.05	
		0.75	4.0KIR0.75ISO...	4.0KIL0.75ISO...	0.43	0.5	3.5	6.15	
		1.0	4.0KIR1.0ISO...	4.0KIL1.0ISO...	0.58	0.7	3.6	6.25	
		1.25	4.0KIR1.25ISO...	4.0KIL1.25ISO...	0.72	0.6	3.7	6.35	
5.0	8	0.5	5.0KIR0.5ISO...	5.0KIL0.5ISO...	0.29	0.5	4.7	7.8	.NVRC7-5.0K (LH)
		0.75	5.0KIR0.75ISO...	5.0KIL0.75ISO...	0.43	0.5			
		1.0	5.0KIR1.0ISO...	5.0KIL1.0ISO...	0.58	0.6			
		1.25	5.0KIR1.25ISO...	5.0KIL1.25ISO...	0.72	0.7			
		1.5	5.0KIR1.5ISO...	5.0KIL1.5ISO...	0.87	0.7			
		1.75	5.0KIR1.75ISO...	5.0KIL1.75ISO...	1.01	0.8			
6.0	10	0.5	6.0KIR0.5ISO...	6.0KIL0.5ISO...	0.29	0.6	4.4	9.3	.NVRC1..-6.0K (LH)
		0.75	6.0KIR0.75ISO...	6.0KIL0.75ISO...	0.43	0.6	4.6	9.5	
		1.0	6.0KIR1.0ISO...	6.0KIL1.0ISO...	0.58	0.7	4.7	9.6	
		1.25	6.0KIR1.25ISO...	6.0KIL1.25ISO...	0.72	0.9	4.9	9.8	
		1.5	6.0KIR1.5ISO...	6.0KIL1.5ISO...	0.87	1.0	5.0	9.9	
		1.75	6.0KIR1.75ISO...	6.0KIL1.75ISO...	1.01	1.05	5.2	10.0	
		2.0	6.0KIR2.0ISO...	6.0KIL2.0ISO...	1.15	1.05	5.3	10.0	

Mini-3 U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore Dia.	
IC mm	L mm	mm	RH+LH	h min	Y	F	mm	Toolholder
5.0U	8	2	5.0KUI2.0ISO...	1.23	4.0	5.7	9.0	.NVRC8-5.0KU (LH)

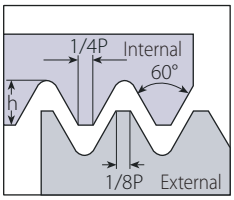
Mini-L

Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	mm	RH	LH	h min	Y	F	mm	Toolholder
5.0L	0.35	5LKIR0.35ISO...	5LKIL0.35ISO...	0.20	0.3	3.75	7.3	.NVRC10.-5LK (LH)
	0.5	5LKIR0.5ISO...	5LKIL0.5ISO...	0.29	0.4	3.75	7.3	
	0.75	5LKIR0.75ISO...	5LKIL0.75ISO...	0.43	0.6	3.91	7.5	
	1.0	5LKIR1.0ISO...	5LKIL1.0ISO...	0.58	0.7	4.06	7.7	
	1.25	5LKIR1.25ISO...	5LKIL1.25ISO...	0.72	0.9	4.21	7.8	
	1.5	5LKIR1.5ISO...	5LKIL1.5ISO...	0.87	1.0	4.35	7.9	
	1.75	5LKIR1.75ISO...	5LKIL1.75ISO...	1.01	1.05	4.51	8.0	
	2.0	5LKIR2.0ISO...	5LKIL2.0ISO...	1.15	1.05	4.65	8.0	

ISO Metric (con't)

MINIPRO

Internal



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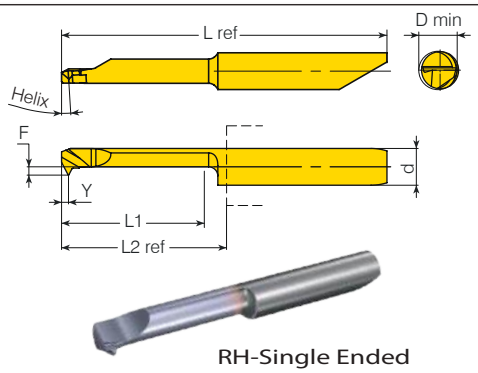
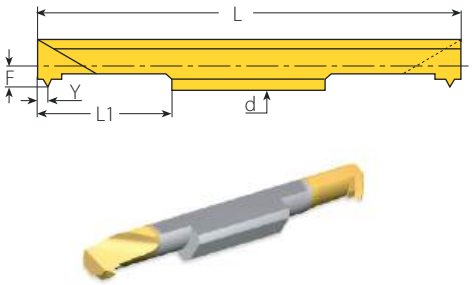
Tolerance class: 6g/6H



RH-Single Ended



RH-Double Ended

Micro - Double Ended

	Insert Dia.	Pitch	Ordering Code	Dimensions mm					Min. Bore Dia.	
Thread	d mm	mm	RH	L1	L	F	Y	h min	mm	Toolholder
M4x0.3	3.0	0.3	3.0SIR0.3ISO...	16	50	1.31	0.20	0.17	3.2	SMC..-3.0
M4x0.4		0.4	3.0SIR0.4ISO...	16	50	1.31	0.35	0.22	3.2	
M4x0.5		0.5	3.0SIR0.5ISO...	16	50	1.31	0.40	0.29	3.2	
M4x0.6		0.6	3.0SIR0.6ISO...	16	50	1.34	0.60	0.35	3.2	
M4.5x0.7		0.7	3.0SIR0.7ISO...	16	50	1.43	0.60	0.40	3.3	
M4.5x0.75		0.75	3.0SIR0.75ISO...	16	50	1.45	0.60	0.43	3.3	
M5x0.8		0.8	3.0SIR0.8ISO...	16	50	1.46	0.60	0.46	3.3	
M5x0.4	4.0	0.4	4.0SIR0.4ISO...	16	50	1.65	0.35	0.22	4.0	SMC..-4.0
M5x0.5		0.5	4.0SIR0.5ISO...	16	50	1.65	0.40	0.29	4.0	
M5x0.6		0.6	4.0SIR0.6ISO...	16	50	1.68	0.60	0.35	4.0	
M5x0.7		0.7	4.0SIR0.7ISO...	16	50	1.77	0.60	0.40	4.1	
M5.5x0.75		0.75	4.0SIR0.75ISO...	16	50	1.81	0.60	0.43	4.2	
M5.5x0.8		0.8	4.0SIR0.8ISO...	16	50	1.80	0.60	0.46	4.2	
M6x1		1.0	4.0SIR1.0ISO...	16	50	1.96	0.90	0.58	4.3	
M6x0.5	6.0	0.5	6.0SIR0.5ISO...	16	50	1.90	0.60	0.29	5.4	SMC..-6.0
M6.5x0.75		0.75	6.0SIR0.75ISO...	16	50	2.06	0.60	0.43	5.6	
M7x1		1.0	6.0SIR1.0ISO...	16	50	2.21	0.70	0.58	5.7	
M8x1.25		1.25	6.0SIR1.25ISO...	16	50	2.36	0.90	0.72	5.9	
M10.5x1.5		1.5	6.0SIR1.5ISO...	16	50	2.50	1.00	0.87	6.0	

Left handed tool supplied by request (Example: 3.0SI**L**0.3ISO...)

Micro - Single Ended

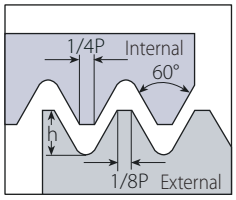
microscope

	Insert Dia.	Pitch	Ordering Code		Dimensions mm						Min. Bore Dia.	
Thread	d mm	mm	RH/LH	Helix °	L1	F	Y	h min	L2 ref*	L ref	D mm	Toolholder
M3-M5x0.5	4.0	0.5	M425TH0.50ISOL08R...	3	7.6	1.95	0.4	0.58	13.0	29.8	2.46	MH...-4.0
M4x0.7		0.7	M432TH0.70ISOL10R...	3.6	10.2	1.95	0.6	0.29			3.24	
M4x0.5		0.5	MS429TH0.50ISOL16R/L...	3.5	16	0.9	0.4	0.29	18.4	35.4	3.4	
M5x0.5		0.5	MS439TH0.50ISOL16R/L...			1.9	0.4	0.29			4.4	
M4x0.7		0.7	MS429TH0.70ISOL16R/L...			0.9	0.6	0.41			3.2	
M4.5-M6x0.75		0.75	M429TH0.75ISOL16R...			1.9	0.6	0.44			3.1	
M5x0.8		0.8	MS429TH0.80ISOL16R/L...			0.9	0.6	0.46			4.0	
M6x1.0		1.0	MS439TH1.00ISOL16R/L...			1.9	0.7	0.58			4.8	
M5.5x0.5	5.0	0.5	M542TH0.50ISOL16R/L...			1.7	0.4	0.29	18.35	41.2	4.9	MH...-5.0
M5.5x0.75		0.75	M542TH0.75ISOL16R/L...			1.7	0.6	0.43			4.6	
M7x1.0		1.0	M549TH1.00ISOL16R/L...			2.4	0.7	0.58			5.8	
M6x0.5	6.0	0.5	M649TH0.50ISOL16R/L...			1.9	0.4	0.29	18.5	42.2	5.4	MH...-6.0
M6.5x0.75		0.75	M649TH0.75ISOL16R/L...			1.9	0.6	0.43			5.6	
M7.5x1.0		1.0	M659TH1.00ISOL16R/L...			2.9	0.7	0.58			6.3	
M8x1.25		1.25	M659TH1.25ISOL16R/L...			2.9	0.9	0.72			6.5	
M10x1.5		1.5	M659TH1.50ISOL16R/L...	3		2.9	1.0	0.87			8.3	

* L2 Ref: Repeatability within +/-0.02.

American UN - UNC, UNF, UNEF, UNS

External



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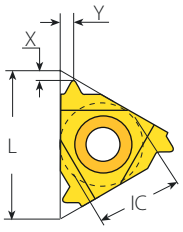
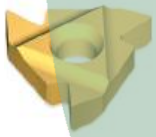


Standard

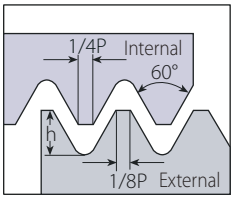
Standard



Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	72	2ER72UN...	2EL72UN...	0.22	0.8	0.4	-	-	NL ..-2 (LH)
		64	2ER64UN...	2EL64UN...	0.24	0.8	0.4			
		56	2ER56UN...	2EL56UN...	0.28	0.7	0.4			
		48	2ER48UN...	2EL48UN...	0.32	0.6	0.6			
		44	2ER44UN...	2EL44UN...	0.35	0.6	0.6			
		40	2ER40UN...	2EL40UN...	0.39	0.6	0.6			
		36	2ER36UN...	2EL36UN...	0.43	0.6	0.6			
		32	2ER32UN...	2EL32UN...	0.49	0.6	0.6			
		28	2ER28UN...	2EL28UN...	0.56	0.6	0.7			
		27	2ER27UN...	2EL27UN...	0.58	0.7	0.8			
		24	2ER24UN...	2EL24UN...	0.65	0.7	0.8			
		20	2ER20UN...	2EL20UN...	0.78	0.8	0.9			
		18	2ER18UN...	2EL18UN...	0.87	0.8	1.0			
		16	2ER16UN...	2EL16UN...	0.97	0.9	1.1			
		14	2ER14UN...	2EL14UN...	1.11	0.9	1.1			
3/8"	16	80	3ER80UN...	3EL80UN...	0.18	0.8	0.3	YE3	YI3	AL..-3 (LH)
		72	3ER72UN...	3EL72UN...	0.22	0.8	0.4			
		64	3ER64UN...	3EL64UN...	0.24	0.8	0.4			
		56	3ER56UN...	3EL56UN...	0.28	0.7	0.4			
		48	3ER48UN...	3EL48UN...	0.32	0.6	0.6			
		44	3ER44UN...	3EL44UN...	0.35	0.6	0.6			
		40	3ER40UN...	3EL40UN...	0.39	0.6	0.6			
		36	3ER36UN...	3EL36UN...	0.43	0.6	0.6			
		32	3ER32UN...	3EL32UN...	0.49	0.6	0.6			
		28	3ER28UN...	3EL28UN...	0.56	0.6	0.7			
		27	3ER27UN...	3EL27UN...	0.58	0.7	0.8			
		26	3ER26UN...	3EL26UN...	0.59	0.7	0.8			
		24	3ER24UN...	3EL24UN...	0.65	0.7	0.8			
		20	3ER20UN...	3EL20UN...	0.78	0.8	0.9			
		18	3ER18UN...	3EL18UN...	0.87	0.8	1.0			
		16	3ER16UN...	3EL16UN...	0.97	0.9	1.1			
		14	3ER14UN...	3EL14UN...	1.11	1.0	1.2			
		13	3ER13UN...	3EL13UN...	1.20	1.0	1.3			
		12	3ER12UN...	3EL12UN...	1.30	1.1	1.4			
		11.5	3ER11.5UN...	3EL11.5UN...	1.35	1.1	1.5			
		11	3ER11UN...	3EL11UN...	1.42	1.1	1.5			
		10	3ER10UN...	3EL10UN...	1.56	1.1	1.5			
		9	3ER9UN...	3EL9UN...	1.73	1.2	1.7			
		8	3ER8UN...	3EL8UN...	1.95	1.2	1.6			

American UN - UNC, UNF, UNEF, UNS (con't)

External



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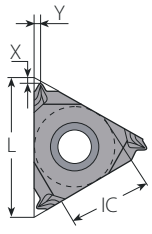
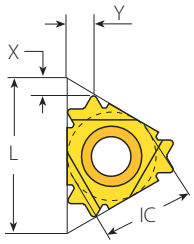
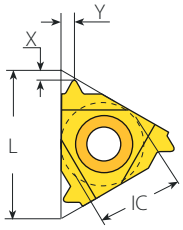


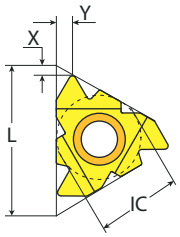
SCB Sintered Chipbreaker



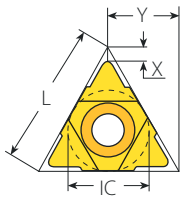
V6



Standard



F-Line



U Style

Standard

SCB

V6

F-LINE

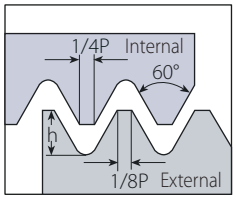
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8" SCB	16	36	3JER36UN...		0.43	1.2	0.5	YE3	-	AL..-3
		32	3JER32UN...		0.49	1.2	0.5			
		28	3JER28UN...		0.56	0.7	0.8			
		24	3JER24UN...		0.65	0.7	0.8			
		20	3JER20UN...		0.78	0.7	0.8			
		18	3JER18UN...		0.87	0.7	0.8			
		16	3JER16UN...		0.97	0.8	0.8			
		14	3JER14UN...		1.11	1.2	1.5			
		13	3JER13UN...		1.20	1.2	1.5			
		12	3JER12UN...		1.30	1.3	1.5			
		10	3JER10UN...		1.56	1.2	1.5			
		9	3JER9UN...		1.73	1.2	1.5			
		8	3JER8UN...		1.95	1.3	1.5			
3/8" V6	16	32	3ER32UN-6C...		0.49	2.0	1.9	YE3-6C	-	AL..-3
		28	3ER28UN-6C...		0.56	2.0	2.0			
		24	3ER24UN-6C...		0.65	1.9	2.0			
		20	3ER20UN-6C...		0.78	1.8	2.1			
		18	3ER18UN-6C...		0.87	1.9	2.3			
		16	3ER16UN-6C...		0.97	1.8	2.4			
		14	3ER14UN-6C...		1.11	1.8	2.7			
		13	3ER13UN-6C...		1.20	1.9	2.9			
		12	3ER12UN-6C...		1.30	1.9	2.3			
1/2"	22	7	4ER7UN...	4EL7UN...	2.22	1.6	2.3	YE4	YI4	AL..-4 (LH)
		6	4ER6UN...	4EL6UN...	2.60	1.6	2.3			
		5	4ER5UN...	4EL5UN...	3.12	1.7	2.5			
1/2"F	23	7	4FER7UN...		2.22	1.6	2.3	YE4F		AL...-4F
		6	4FER6UN...		2.60	1.6	2.3			
		5	4FER5UN...		3.12	1.7	2.5			
5/8"	27	4.5	5ER4.5UN...	5EL4.5UN...	3.46	1.9	2.7	YE5	YI5	AL..-5 (LH)
		4	5ER4UN...	5EL4UN...	3.89	2.1	3.0			

U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4.5	4UE4.5UN...	3.46	2.0	11.0	YE4U	YI4U	AL..-4U (LH)
		4	4UE4UN...	3.89	2.0	11.0			
5/8"U	27	3	5UE3UN...	5.19	2.5	13.7	YE5U	YI5U	AL..-5U (LH)

American UN - UNC, UNF, UNEF, UNS (con't)

External



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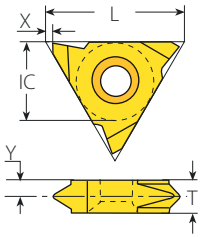


V Style / Slim Throat

Slim Throat

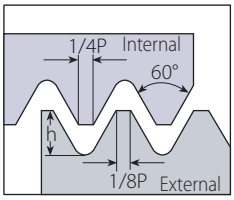
Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
1/4"V	11	20	2VER20UN...	2VEL20UN...	0.78	0.69	2.3	3.2	NL..-2V (LH)
		18	2VER18UN...	2VEL18UN...	0.87	0.69	2.2	3.2	
		16	2VER16UN...	2VEL16UN...	0.97	0.69	2.2	3.2	
		14	2VER14UN...	2VEL14UN...	1.11	0.69	2.0	3.2	
		12	2VER12UN...	2VEL12UN...	1.30	0.69	1.8	3.2	
3/8"V	16	32	3VER32UN...	3VEL32UN...	0.48	1.1	3.0	3.6	NL..-3V (LH)
		28	3VER28UN...	3VEL28UN...	0.56	1.1	3.0	3.6	
		24	3VER24UN...	3VEL24UN...	0.65	1.1	2.9	3.6	
		20	3VER20UN...	3VEL20UN...	0.78	1.1	2.7	3.6	
		18	3VER18UN...	3VEL18UN...	0.87	1.1	2.6	3.6	
		16	3VER16UN...	3VEL16UN...	0.97	1.1	2.55	3.6	
		14	3VER14UN...	3VEL14UN...	1.11	1.1	2.4	3.6	
		12	3VER12UN...	3VEL12UN...	1.30	1.1	2.2	3.6	
		10	3VER10UN...	3VEL10UN...	1.56	1.1	2.1	3.6	
		8	3VER8UN...	3VEL8UN...	1.95	1.1	2.0	3.6	
1/2"V	22	7	4VER7UN...	4VEL7UN...	2.22	1.1	2.5	4.8	NL..-4V (LH)

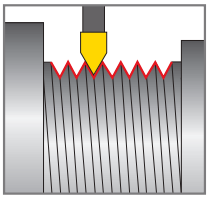
V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	4	5VER4UN...	5VEL4UN...	3.89	1.0	3.3	6	NL..-5V-6 (LH)
		3	5VER3UN...	5VEL3UN...	5.19	1.0	4.3	8	NL..-5V-8 (LH)

American UN - UNC, UNF, UNEF, UNS (con't)

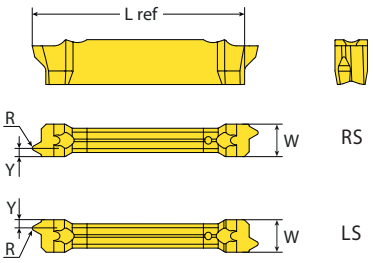
External





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

RS/LS Varied range of threading standards for machining between shoulders and close to spindle.



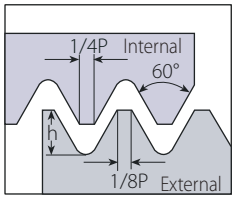
VG-Cut

Pocket Size	Ordering Code RH	W ref	Pitch TPI	h min	Y	L ref	No. of Passes	Helix Deg	Min. Thread Diameter	Toolholder Monoblock
3	VGD3.0UN32RH-RS/LS...	3.00	32	0.49	0.66	21.9	5 - 8	2.5°	5/32"-32 UNC	VGE...-3T...
	VGD3.0UN28RH-RS/LS...		28	0.56	0.71		5 - 9		3/16"-28 UNC	
	VGD3.0UN24RH-RS/LS...		24	0.65	0.77		5 - 9		7/32"-24 UNC	
	VGD3.0UN20RH-RS/LS...		20	0.78	0.86		6 - 10		1/4"-20 UNC	
	VGD3.0UN18RH-RS/LS...		18	0.87	0.93		7 - 12		5/16"-18 UNC	
	VGD3.0UN16RH-RS/LS...		16	0.97	1.10		7 - 12		3/8"-16 UNC	
	VGD3.0UN14RH-RS/LS...		14	1.11	1.09		8 - 14		7/16"-14 UNC	
	VGD3.0UN12RH-RS/LS...		12	1.30	1.30		8 - 14		9/16"-14 UNC	

LH Helix threads available upon request.

American UN - UNC, UNF, UNEF, UNS (con't)

External



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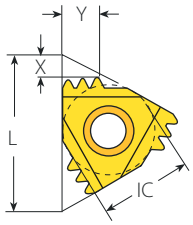
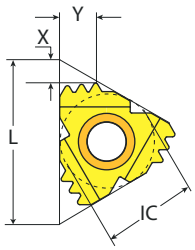


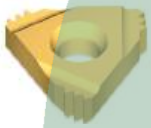
M+ Style



F-Line M+

M+ Style

Multi plus

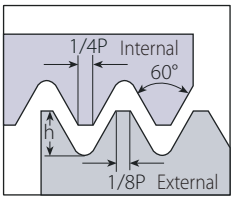


F-LINE

Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
3/8"	16	20	3	3ER20UN3M+...	0.78	2.2	3.3	YE3M	AL..-3
		18	2	3ER18UN2M+...	0.87	1.5	2.2		
		18	3	3ER18UN3M+...	0.87	2.3	3.6		
		16	2	3ER16UN2M+...	0.97	1.7	2.5		
		14	2	3ER14UN2M+...	1.11	1.9	2.8		
		12	2	3ER12UN2M+...	1.30	2.2	3.3		
1/2"	22	16	3	4ER16UN3M+...	0.97	2.6	4.1	YE4M	AL..-4
		14	2	4ER14UN2M+...	1.11	1.9	2.8		
		12	2	4ER12UN2M+...	1.30	2.2	3.3		
		12	3	4ER12UN3M+...	1.30	3.4	5.4		
		11	2	4ER11UN2M+...	1.42	2.3	3.6		
		10	2	4ER10UN2M+...	1.56	2.5	3.9		
1/2"F	23	16	3	4FER16UN3M+...	0.97	2.6	4.1	YE4M3F	AL...-4MF
		12	3	4FER12UN3M+...	1.30	3.4	5.4		
		12	2	4FER12UN2M+...	1.30	2.2	3.3	YE4M2F	
		10	2	4FER10UN2M+...	1.56	2.5	3.9		
5/8"	27	8	2	5ER8UN2M+...	1.95	3.1	4.9	YE5M	AL...-5M

American UN - UNC, UNF, UNEF, UNS (con't)

Internal



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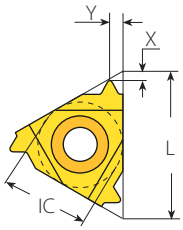
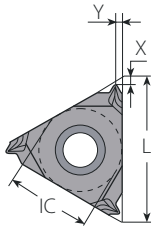


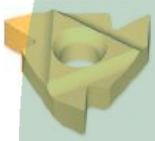
Standard



SCB
Sintered
Chipbreaker

Standard

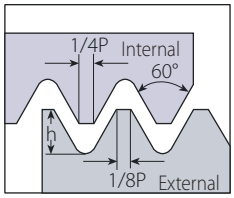
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	72	2IR72UN...	2IL72UN...	0.20	0.8	0.3	-	-	NVR..-2 (LH)
		64	2IR64UN...	2IL64UN...	0.23	0.8	0.4			
		56	2IR56UN...	2IL56UN...	0.26	0.7	0.4			
		48	2IR48UN...	2IL48UN...	0.31	0.6	0.6			
		44	2IR44UN...	2IL44UN...	0.33	0.6	0.6			
		40	2IR40UN...	2IL40UN...	0.37	0.6	0.6			
		36	2IR36UN...	2IL36UN...	0.41	0.6	0.6			
		32	2IR32UN...	2IL32UN...	0.46	0.6	0.6			
		28	2IR28UN...	2IL28UN...	0.52	0.6	0.7			
		27	2IR27UN...	2IL27UN...	0.54	0.7	0.8			
		24	2IR24UN...	2IL24UN...	0.61	0.7	0.8			
		20	2IR20UN...	2IL20UN...	0.73	0.8	0.9			
		18	2IR18UN...	2IL18UN...	0.81	0.8	1.0			
		16	2IR16UN...	2IL16UN...	0.92	0.9	1.1			
		14	2IR14UN...	2IL14UN...	1.05	0.9	1.1			
		12	2IR12UN...	2IL12UN...	1.22	0.8	1.1			
		11	2IR11UN...	2IL11UN...	1.33	0.8	1.1			
1/4" SCB	11	36	2JIR36UN...		0.41	1.1	0.5	-	-	NVR..-2
		32	2JIR32UN...		0.46	1.2	0.5			
		28	2JIR28UN...		0.52	0.6	0.8			
		24	2JIR24UN...		0.61	0.7	0.8			
		20	2JIR20UN...		0.73	0.6	0.8			
		18	2JIR18UN...		0.81	0.6	0.8			
		16	2JIR16UN...		0.97	0.7	0.8			
3/8"	16	72	3IR72UN...	3IL72UN...	0.20	0.8	0.3	YI3	YE3	AVR..-3 (LH)
		64	3IR64UN...	3IL64UN...	0.23	0.8	0.4			
		56	3IR56UN...	3IL56UN...	0.26	0.7	0.4			
		48	3IR48UN...	3IL48UN...	0.31	0.6	0.6			
		44	3IR44UN...	3IL44UN...	0.33	0.6	0.6			
		40	3IR40UN...	3IL40UN...	0.37	0.6	0.6			
		36	3IR36UN...	3IL36UN...	0.41	0.6	0.6			
		32	3IR32UN...	3IL32UN...	0.51	0.6	0.6			
		28	3IR28UN...	3IL28UN...	0.52	0.6	0.7			
		27	3IR27UN...	3IL27UN...	0.54	0.7	0.8			
		26	3IR26UN...	3IL26UN...	0.56	0.7	0.75			



SCB

American UN - UNC, UNF, UNEF, UNS (con't)

Internal



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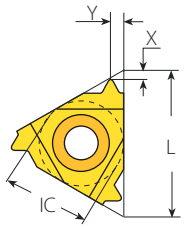
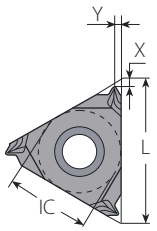


Standard



SCB
Sintered
Chipbreaker

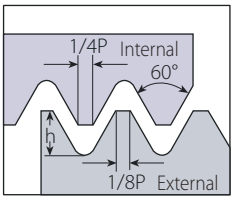
Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	24	3IR24UN...	3IL24UN...	0.61	0.7	0.8	YI3	YE3	AVR..-3 (LH)
		20	3IR20UN...	3IL20UN...	0.73	0.8	0.9			
		18	3IR18UN...	3IL18UN...	0.81	0.8	1.0			
		16	3IR16UN...	3IL16UN...	0.92	0.9	1.1			
		14	3IR14UN...	3IL14UN...	1.05	0.9	1.2			
		13	3IR13UN...	3IL13UN...	1.13	1.0	1.3			
		12	3IR12UN...	3IL12UN...	1.22	1.1	1.4			
		11.5	3IR11.5UN...	3IL11.5UN...	1.28	1.1	1.5			
		11	3IR11UN...	3IL11UN...	1.33	1.1	1.5			
		10	3IR10UN...	3IL10UN...	1.47	1.1	1.5			
		9	3IR9UN...	3IL9UN...	1.63	1.2	1.7			
		8	3IR8UN...	3IL8UN...	1.83	1.1	1.5			
3/8" SCB	16	28	3JIR28UN...		0.52	0.6	0.8	YI3	-	AVR..-3
		24	3JIR24UN...		0.61	0.7	0.8			
		20	3JIR20UN...		0.73	0.6	0.8			
		18	3JIR18UN...		0.81	0.6	0.8			
		16	3JIR16UN...		0.92	0.7	0.8			
		14	3JIR14UN...		1.05	1.1	1.5			
		13	3JIR13UN...		1.13	1.1	1.5			
		12	3JIR12UN...		1.22	1.1	1.5			
		10	3JIR10UN...		1.47	1.1	1.5			
		9	3JIR9UN...		1.63	1.0	1.5			
		8	3JIR8UN...		1.83	1.1	1.5			

SCB

American UN - UNC, UNF, UNEF, UNS (con't)

Internal



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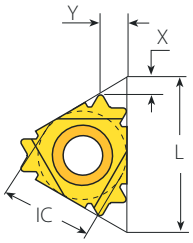
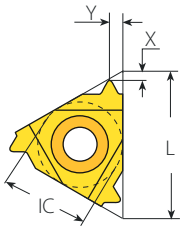
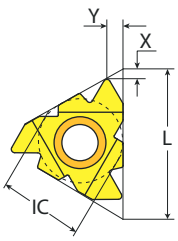


V6



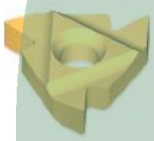
Standard & D-Line

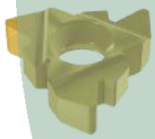


F-Line

Standard

V6





F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8" V6	16	32	3IR32UN-6C...		0.51	2.0	1.8	YI3-6C	-	AVR..-3 NVRC..-3 206/...
		28	3IR28UN-6C...		0.52	1.9	1.9			
		24	3IR24UN-6C...		0.61	1.9	1.9			
		20	3IR20UN-6C...		0.73	1.8	2.1			
		18	3IR18UN-6C...		0.81	1.7	2.1			
		16	3IR16UN-6C...		0.92	1.6	2.2			
		14	3IR14UN-6C...		1.05	1.7	2.5			
		13	3IR13UN-6C...		1.13	1.8	2.7			
		12	3IR12UN-6C...		1.22	1.6	2.5			
1/2"	22	7	4IR7UN...	4IL7UN...	2.09	1.6	2.3	YI4	YE4	AVR..-4 (LH)
		6	4IR6UN...	4IL6UN...	2.44	1.6	2.3			
		5	4IR5UN...	4IL5UN...	2.93	1.6	2.3			
1/2"F	23	7	4FIR7UN...		2.09	1.6	2.3	YI4F		AVRC...-4F
		6	4FIR6UN...		2.44	1.6	2.3			
		5	4FIR5UN...		2.93	1.6	2.3			
5/8"	27	4.5	5IR4.5UN...	5IL4.5UN...	3.26	1.7	2.4	YI5	YE5	AVR..-5 (LH)
		4	5IR4UN...	5IL4UN...	3.67	1.8	2.7			

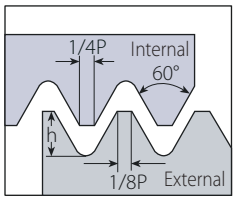
D-Line Deep Rake

D-Line

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI	RH	h min	X	Y	RH	Toolholder
1/4"	11	24	2DIR24UN...	0.61	0.7	0.8	-	NVR..-2
		20	2DIR20UN...	0.73	0.8	0.9		
		18	2DIR18UN...	0.81	0.8	1.0		
3/8"	16	20	3DIR20UN...	0.73	0.8	0.9	YI3	AVR..-3
		16	3DIR16UN...	0.92	0.9	1.1		
		14	3DIR14UN...	1.05	0.9	1.2		
		12	3DIR12UN...	1.22	1.1	1.4		
		8	3DIR8UN...	1.83	1.1	1.5		

American UNC (con't)

Internal



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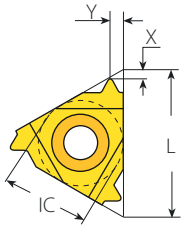
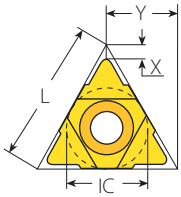


Coarse Pitch

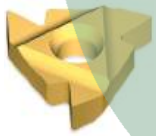


U Style Coarse Pitch

Coarse Pitch RH

Thread	Insert Size		Ordering Code	Dimensions mm				Min Bore Dia.
	IC	L mm	RH	h min	X	Y	Toolholder RH	mm
1/2"x13UN	6.0	10	6.0KIR13UN158/001...	1.13	0.8	0.9	BNVRC10S-6.0K	10.6
9/16"x12UN	1/4"	11	2IR12UN158/002...	1.22	0.9	1.0	NVRC10-2-156/001	12.0
5/8"x11UN	1/4"U		2UIR11UN158/003...	1.33	1.2	5.5	NVRC11-2U-156/002	13.4
3/4"x10UN	3/8"	16	3IR10UN...	1.47	1.1	1.5	NVRC13-3-156/016	16.3
7/8"x9UN			3IR9UN...	1.63	1.2	1.7	NVRC13-3-156/016	19.2
1"x8UN			3IR8UN...	1.83	1.1	1.5	NVRC16-3	22.0
1 1/8"x7UN	1/2"	22	4IR7UN...	2.09	1.6	2.3	NVRC20-4	24.6
1 1/4"x7UN			4IR7UN...	2.09	1.6	2.3	NVRC20-4	27.8
1 3/8"x6UN			4IR6UN...	2.44	1.6	2.3	NVRC20-4	30.3

Coarse Pitch LH

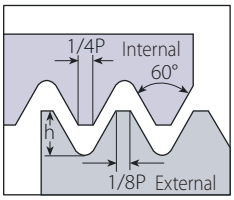


Thread	Insert Size		Ordering Code	Dimensions mm				Min Bore Dia.
	IC	L mm	LH	h min	X	Y	Toolholder LH	mm
1/2"x13UN	6.0	10	6.0KIL13UN158/016...	1.13	0.8	0.9	BNVRC10S-6.0KLH	10.6
9/16"x12UN	1/4"	11	2IL12UN158/017...	1.22	0.9	1.0	NVRC10-2LH-156/036	12.0
5/8"x11UN	1/4"U		2UIR11UN158/003...	1.33	1.2	5.5	NVRC11-2ULH-156/035	13.4
3/4"x10UN	3/8"	16	3IL10UN...	1.47	1.1	1.5	NVRC13-3LH-156/026	16.3
7/8"x9UN			3IL9UN...	1.63	1.2	1.7	NVRC13-3LH-156/026	19.2
1"x8UN			3IL8UN...	1.83	1.1	1.5	NVRC16-3LH	22.0
1 1/8"x7UN	1/2"	22	4IL7UN...	2.09	1.6	2.3	NVRC20-4LH	24.6
1 1/4"x7UN			4IL7UN...	2.09	1.6	2.3	NVRC20-4LH	27.8
1 3/8"x6UN			4IL6UN...	2.44	1.6	2.3	NVRC20-4LH	30.3

U Type RH inserts can be used for both LH and RH applications.

American UN - UNC, UNF, UNEF, UNS (con't)

Internal



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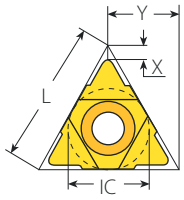
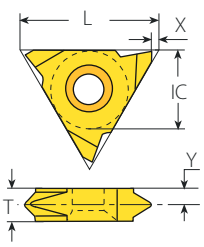
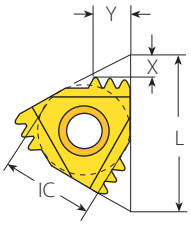


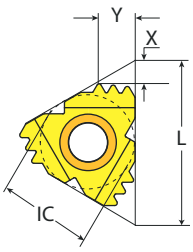
U Style



V Style



M+ Style

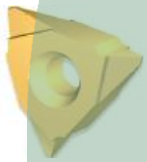


F-Line M+

U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4.5	4UI4.5UN...	3.26	2.4	11.0	YI4U	YE4U	AVR..-4U (LH)
		4	4UI4UN...	3.67	2.4	11.0			
5/8"U	27	3	5UI3UN...	4.89	2.7	13.7	YI5U	YE5U	AVR..-5U (LH)

V Style



Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	4	5VIR4UN...	5VIL4UN...	3.67	1.0	3.3	6	NVR..-5V (LH)
		3	5VIR3UN...	5VIL3UN...	4.89	1.0	4.3	8	

M+ Style

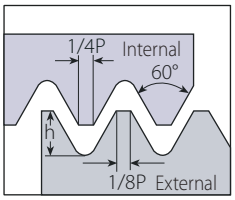
F-LINE

Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
3/8"	16	12	2	3IR12UN2M+...	1.22	2.2	3.3	YI3M	AVR..-3
		14	2	3IR14UN2M+...	1.05	1.9	2.8		
		16	2	3IR16UN2M+...	0.92	1.7	2.5		
1/2"	22	16	3	4IR16UN3M+...	0.92	2.6	4.1	YI4M	AVR..-4
		14	2	4IR14UN2M+...	1.05	1.9	2.8		
		12	2	4IR12UN2M+...	1.22	2.2	3.3		
		12	3	4IR12UN3M+...	1.22	3.4	5.4		
1/2"F	23	12	2	4FIR12UN2M+...	1.22	2.2	3.3	YI4M2F	AVRC...-4MF
5/8"	27	8	2	5IR8UN2M+...	1.83	3.1	4.9	YI5M	AVR..-5M

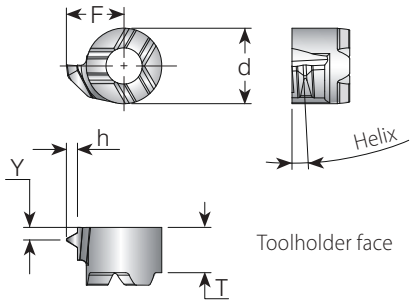
American UN - UNC, UNF, UNEF, UNS (con't)

Mini-V

Internal



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



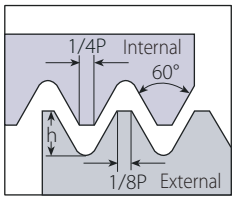
Mini-V

Min. Thread	Insert Style	Pitch	Ordering Code	Dimensions mm					Helix	Toolholder
		TPI	RH	d	T	F	Y	h min	Deg.	
3/8"-32UNEF		32	V08TH32UNR...			4.21	0.5	0.46	1.5	
3/8"-28UN		28	V08TH28UNR...			4.28	0.5	0.52	2	
3/8"-24UNF		24	V08TH24UNR...			4.32	0.65	0.61	2	
3/8"-20UN	V08	20	V08TH20UNR...	6	3.8	4.45	0.8	0.73	2.5	.V08-...
3/8"-18UNS		18	V08TH18UNR...			4.53	0.85	0.81	2.5	
3/8"-16UNC		16	V08TH16UNR...			4.33	0.95	0.92	2.5	
7/16"-14UNC		14	V08TH14UNR...			4.78	1.1	1.05	3	
9/16"-12UNC	V11	12	V11TH12UNR...	8	4.2	6.44	1.24	1.22	2.5	.V11-...

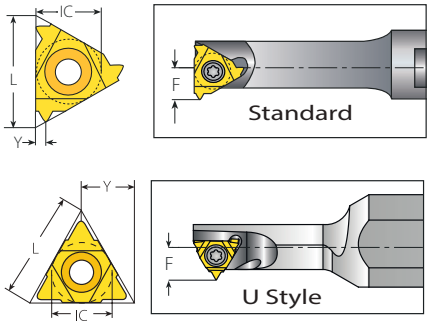
American UN - UNC, UNF, UNEF, UNS (con't)

MINIPRO

Internal



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



Mini-3 Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
4.0	6	32	4.0KIR32UN...	4.0KIL32UN...	0.46	0.5	3.50	6.15	.NVRC.5-4.0K (LH)
		28	4.0KIR28UN...	4.0KIL28UN...	0.52	0.6	3.50	6.15	
		24	4.0KIR24UN...	4.0KIL24UN...	0.61	0.6	3.60	6.25	
		20	4.0KIR20UN...	4.0KIL20UN...	0.73	0.6	3.70	6.35	
		18	4.0KIR18UN...	4.0KIL18UN...	0.81	0.7	3.70	6.35	
5.0	8	32	5.0KIR32UN...	5.0KIL32UN...	0.46	0.5	4.7	7.8	.NVRC7-5.0K (LH)
		28	5.0KIR28UN...	5.0KIL28UN...	0.52	0.6			
		24	5.0KIR24UN...	5.0KIL24UN...	0.61	0.6			
		20	5.0KIR20UN...	5.0KIL20UN...	0.73	0.7			
		18	5.0KIR18UN...	5.0KIL18UN...	0.81	0.7			
		16	5.0KIR16UN...	5.0KIL16UN...	0.92	0.7			
		14	5.0KIR14UN...	5.0KIL14UN...	1.05	0.8			
6.0	10	40	6.0KIR40UN...	6.0KIL40UN...	0.37	0.6	4.50	9.5	.NVRC1..-6.0K (LH)
		32	6.0KIR32UN...	6.0KIL32UN...	0.46	0.6	4.60	9.5	
		28	6.0KIR28UN...	6.0KIL28UN...	0.52	0.65	4.70	9.6	
		24	6.0KIR24UN...	6.0KIL24UN...	0.61	0.75	4.80	9.7	
		20	6.0KIR20UN...	6.0KIL20UN...	0.73	0.9	4.90	9.8	
		18	6.0KIR18UN...	6.0KIL18UN...	0.81	1.0	5.00	9.9	
		16	6.0KIR16UN...	6.0KIL16UN...	0.92	1.05	5.10	10.0	
		14	6.0KIR14UN...	6.0KIL14UN...	1.05	1.05	5.20	10.0	

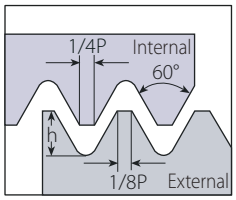
Mini-3 U Style

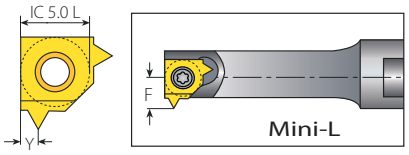
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH+LH	h min	Y	F	mm	Toolholder
5.0U	8	13	5.0KUI13UN...	1.20	4.0	5.6	9.0	.NVRC8-5.0KU (LH)
		12	5.0KUI12UN...	1.30		5.7		
		11	5.0KUI11UN...	1.42		5.7		

American UN - UNC, UNF, UNEF, UNS (con't)

MINIPRO

Internal





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

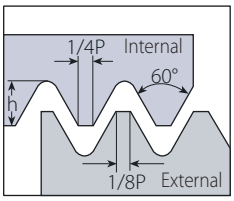
Mini-L

Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0L	40	5LKIR40UN...	5LKIL40UN...	0.37	0.6	3.80	7.6	.NVRC10.-5LK (LH)
	32	5LKIR32UN...	5LKIL32UN...	0.46	0.6	3.92	7.6	
	28	5LKIR28UN...	5LKIL28UN...	0.52	0.65	3.99	7.6	
	24	5LKIR24UN...	5LKIL24UN...	0.61	0.75	4.09	7.6	
	20	5LKIR20UN...	5LKIL20UN...	0.73	0.9	4.21	7.7	
	18	5LKIR18UN...	5LKIL18UN...	0.81	1.0	4.30	7.8	
	16	5LKIR16UN...	5LKIL16UN...	0.92	1.05	4.41	7.8	
	14	5LKIR14UN...	5LKIL14UN...	1.05	1.05	4.54	7.9	

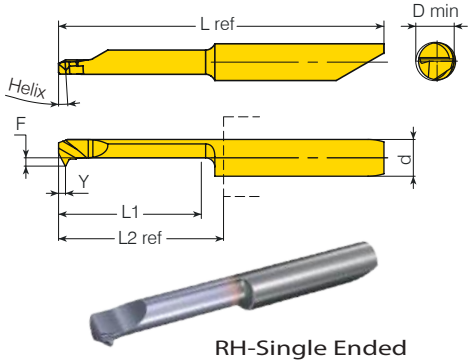
American UN - UNC, UNF, UNEF, UNS (con't)

MINIPRO

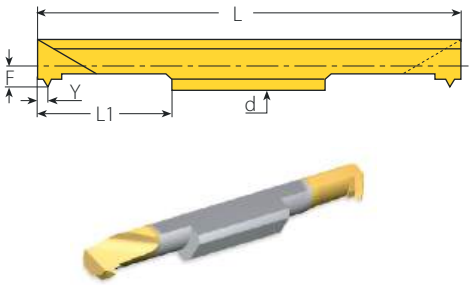
Internal



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



RH-Single Ended



RH-Double Ended

Micro - Double Ended

	Insert Dia.	Pitch	Ordering Code		Dimensions mm				Min. Bore Dia.	
Thread	d mm	mm	RH	L1	L	F	Y	h min	mm	Toolholder
10-40UNS	3.0	40	3.0SIR40UN...	16	50	1.35	0.60	0.37	3.2	SMC..-3.0
8-36UNF		36	3.0SIR36UN...	16	50	1.46	0.60	0.41	3.2	
8-32UNF		32	3.0SIR32UN...	16	50	1.40	0.60	0.46	3.3	
10-40UNS	4.0	40	4.0SIR40UN...	16	50	1.65	0.60	0.37	4.0	SMC..-4.0
10-36UNS		36	4.0SIR36UN...	16	50	1.70	0.60	0.41	4.1	
12-32UNEF		32	4.0SIR32UN...	16	50	1.76	0.60	0.46	4.1	
12-28UNF		28	4.0SIR28UN...	16	50	1.83	0.65	0.52	4.2	
1/4"-27UNS		27	4.0SIR27UN...	16	50	1.85	0.75	0.54	4.2	
12-24UNC		24	4.0SIR24UN...	16	50	1.93	0.75	0.61	4.3	
1/4"-20UNC		20	4.0SIR20UN...	16	50	2.03	0.76	0.73	4.3	
1/4"-32UNEF	6.0	32	6.0SIR32UN...	16	50	2.01	0.60	0.46	5.5	SMC..-6.0
5/16"-28UN		28	6.0SIR28UN...	16	50	2.08	0.65	0.52	5.6	
5/16"-27UNS		27	6.0SIR27UN...	16	50	2.10	0.75	0.54	5.6	
5/16"-24UNF		24	6.0SIR24UN...	16	50	2.18	0.75	0.61	5.7	
5/16"-20UN		20	6.0SIR20UN...	16	50	2.30	0.90	0.73	5.8	
5/16"-18UNC		18	6.0SIR18UN...	16	50	2.39	1.00	0.81	5.9	
3/8"-16UNC		16	6.0SIR16UN...	16	50	2.50	1.05	0.92	6.0	

Left handed tool supplied by request (Example: 6.0SI**L**16UN...).

Micro - Single Ended

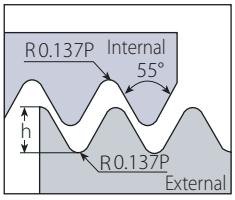
micrOscope

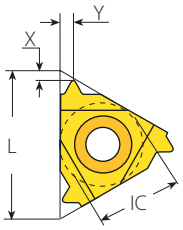
	Insert Dia.	Pitch	Ordering Code			Dimensions mm					Min. Bore Dia.	
Thread	d mm	TPI	RH/LH	Helix °	L1	F	Y	h min	L2 ref*	L ref	D mm	Toolholder
No.8-32UNC	4.0	32	MS429TH32UNL16R/L...	3.5	16	0.92	0.60	0.46	18.4	35.4	3.3	MH...-4.0
No.10-28UNS		28	MS429TH28UNL16R/L...			0.92	0.65	0.52			3.6	
1/4"-27UNS	5.0	27	M549TH27UNL16R/L...			2.4	0.75	0.54	18.35	41.2	5.3	MH...-5.0
1/4"-24UNS		24	M542TH24UNL16R/L...			1.7	0.75	0.61			5.1	
1/4"-20UNC		20	M542TH20UNL16R/L...			1.7	0.90	0.73			4.6	
5/16"-18UNC	6.0	18	M659TH18UNL16R/L...			2.9	1.05	0.81	18.5	42.2	6.3	MH...-6.0
3/8"-16UNC		16	M659TH16UNL16R/L...			2.9	1.00	0.92			7.7	

* L2 Ref: Repeatability within +/-0.02.

Whitworth - BSW, BSP, BSF, BSB

External

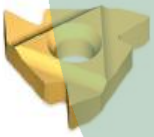




Standard

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

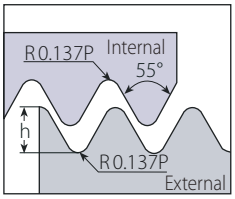
Standard



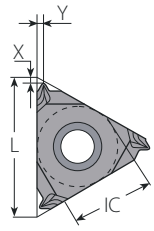
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	72	2ER72W...	2EL72W...	0.23	0.7	0.4	-	-	NL ..-2 (LH)
		60	2ER60W...	2EL60W...	0.27	0.7	0.4			
		56	2ER56W...	2EL56W...	0.29	0.7	0.4			
		48	2ER48W...	2EL48W...	0.34	0.6	0.6			
		40	2ER40W...	2EL40W...	0.41	0.6	0.6			
		36	2ER36W...	2EL36W...	0.45	0.6	0.6			
		32	2ER32W...	2EL32W...	0.51	0.6	0.6			
		28	2ER28W...	2EL28W...	0.58	0.6	0.7			
		26	2ER26W...	2EL26W...	0.63	0.7	0.8			
		24	2ER24W...	2EL24W...	0.68	0.7	0.8			
		22	2ER22W...	2EL22W...	0.74	0.8	0.9			
		20	2ER20W...	2EL20W...	0.81	0.8	0.9			
		19	2ER19W...	2EL19W...	0.86	0.8	1.0			
		18	2ER18W...	2EL18W...	0.90	0.8	1.0			
		16	2ER16W...	2EL16W...	1.02	0.9	1.1			
		14	2ER14W...	2EL14W...	1.16	1.0	1.2			
3/8"	16	72	3ER72W...	3EL72W...	0.23	0.7	0.4	YE3	YI3	AL..-3 (LH)
		60	3ER60W...	3EL60W...	0.27	0.7	0.4			
		56	3ER56W...	3EL56W...	0.29	0.7	0.4			
		48	3ER48W...	3EL48W...	0.34	0.6	0.6			
		40	3ER40W...	3EL40W...	0.41	0.6	0.6			
		36	3ER36W...	3EL36W...	0.45	0.6	0.6			
		32	3ER32W...	3EL32W...	0.51	0.6	0.6			
		30	3ER30W...	3EL30W...	0.55	0.6	0.7			
		28	3ER28W...	3EL28W...	0.58	0.6	0.7			
		26	3ER26W...	3EL26W...	0.63	0.7	0.8			
		24	3ER24W...	3EL24W...	0.68	0.7	0.8			
		22	3ER22W...	3EL22W...	0.74	0.8	0.9			
		20	3ER20W...	3EL20W...	0.81	0.8	0.9			
		19	3ER19W...	3EL19W...	0.86	0.8	1.0			
		18	3ER18W...	3EL18W...	0.90	0.8	1.0			
		16	3ER16W...	3EL16W...	1.02	0.9	1.1			
		14	3ER14W...	3EL14W...	1.16	1.0	1.2			
		12	3ER12W...	3EL12W...	1.36	1.1	1.4			
		11	3ER11W...	3EL11W...	1.48	1.1	1.5			
		10	3ER10W...	3EL10W...	1.63	1.1	1.5			
		9	3ER9W...	3EL9W...	1.81	1.2	1.7			
		8	3ER8W...	3EL8W...	2.03	1.2	1.5			

Whitworth - BSW, BSP, BSF, BSB (con't)

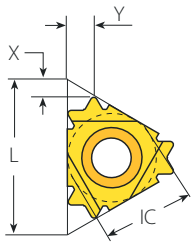
External



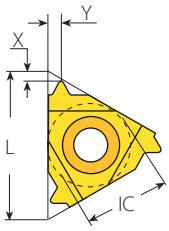
Defined by: B.S.84:1956,
DIN 259, ISO228/1:1982
Tolerance class: Medium class A



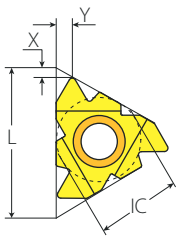
SCB Sintered Chipbreaker



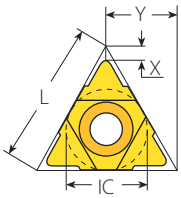
V6



Standard

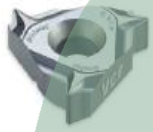


F-Line

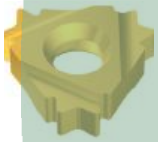


U Style

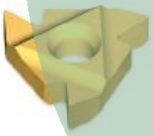
Standard

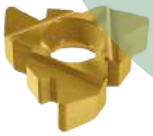


SCB



V6





F-LINE

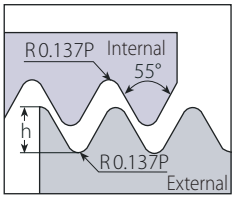
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8" SCB	16	36	3JER36W...		0.45	1.2	0.5	YE3	-	AL..-3
		32	3JER32W...		0.51	1.2	0.5			
		28	3JER28W...		0.58	0.7	0.8			
		24	3JER24W...		0.68	0.7	0.8			
		20	3JER20W...		0.81	0.7	0.8			
		19	3JER19W...		0.86	0.7	0.8			
		18	3JER18W...		0.90	0.8	0.8			
		16	3JER16W...		1.02	0.8	0.8			
		14	3JER14W...		1.16	1.3	1.5			
		12	3JER12W...		1.36	1.3	1.5			
		11	3JER11W...		1.48	1.3	1.5			
		10	3JER10W...		1.63	1.3	1.5			
		8	3JER8W...		2.03	1.3	1.5			
3/8" V6	16	19	3ER19W-6C...		0.86	1.8	2.2	YE3-6C	-	AL..-3
		16	3ER16W-6C...		1.02	1.6	2.4			
		14	3ER14W-6C...		1.16	1.8	2.7			
		12	3ER12W-6C...		1.36	1.9	3.0			
1/2"	22	7	4ER7W...	4EL7W...	2.41	1.6	2.3	YE4	YI4	AL..-4 (LH)
		6	4ER6W...	4EL6W...	2.71	1.6	2.3			
		5	4ER5W...	4EL5W...	3.25	1.7	2.4			
1/2"F	23	7	4FER7W...		2.41	1.6	2.6	YE4F		AL...-4F
		6	4FER6W...		2.71	1.6	2.3			
		5	4FER5W...		3.25	1.7	2.4			
5/8"	27	4.5	5ER4.5W...	5EL4.5W...	3.61	1.8	2.6	YE5	YI5	AL..-5 (LH)
		4	5ER4W...	5EL4W...	4.07	2.0	2.9			

U Style

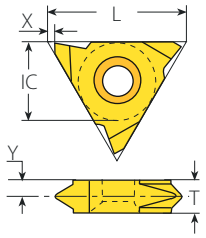
Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4.5	4UEI4.5W...	3.61	2.3	11.0	YE4U	YI4U	AL..-4U (LH)
		4	4UEI4W...	4.07	1.8	11.0			
		3.5	4UEI3.5W...	4.65	2.1	11.0			
		3.25	4UEI3.25W...	5.00	2.0	11.0			
5/8"U	27	3.5	5UEI3.5W...	4.65	2.1	13.7	YE5U	YI5U	AL..-5U (LH)
		3.25	5UEI3.25W...	5.00	2.0	13.7			
		3	5UEI3W...	5.42	2.3	13.7			
		2.75	5UEI2.75W...	5.91	2.4	13.7			

Whitworth - BSW, BSP, BSF, BSB (con't)

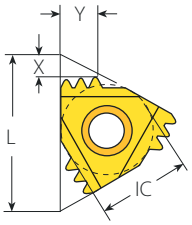
External



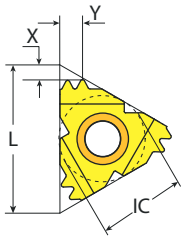
Defined by: B.S.84:1956, DIN 259, ISO228/1:1982
Tolerance class: Medium class A



V Style / Slim Throat



M+ Style



F-Line M+

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	19	2VER19W...	2VEL19W...	0.86	0.69	2.3	3.2	NL..-2V (LH)
		14	2VER14W...	2VEL14W...	1.16	0.69	2.0	3.2	
		11	2VER11W...	2VEL11W...	1.48	0.69	1.7	3.2	
3/8"V	16	19	3VER19W...	3VEL19W...	0.86	1.1	2.7	3.6	NL..-3V (LH)
		18	3VER18W...	3VEL18W...	0.90	1.1	2.6	3.6	
		16	3VER16W...	3VEL16W...	1.02	1.1	2.6	3.6	
		14	3VER14W...	3VEL14W...	1.16	1.1	2.4	3.6	
		12	3VER12W...	3VEL12W...	1.36	1.1	2.2	3.6	
		11	3VER11W...	3VEL11W...	1.48	1.1	2.1	3.6	

V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	4	5VER4W...	5VEL4W...	4.07	1.0	3.3	6	NL..-5V-6 (LH)
		3	5VER3W...	5VEL3W...	5.42	1.0	4.3	8	NL..-5V-8 (LH)
		2.5	5VER2.5W...	5VEL2.5W...	6.51	1.0	5.2	10	NL..-5V-10 (LH)

M+ Style

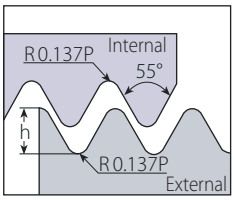
Multi plus

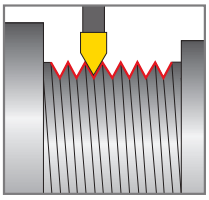
F-LINE

Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
3/8"	16	28	2	3ER28W2M+...	0.58	1.2	1.6	YE3M	AL..-3
		19	2	3ER19W2M+...	0.86	1.6	2.3		
		19	3	3ER19W3M+...	0.86	2.2	3.4		
		14	2	3ER14W2M+...	1.16	2.0	3.0		
1/2"	22	14	3	4ER14W3M+...	1.16	2.9	4.6	YE4M	AL..-4
		11	2	4ER11W2M+...	1.48	2.3	3.5		
1/2"F	23	11	2	4FER11W2M+...	1.48	2.3	3.5	YE4M2F	AL...-4MF

Whitworth - BSW, BSP, BSF, BSB (con't)

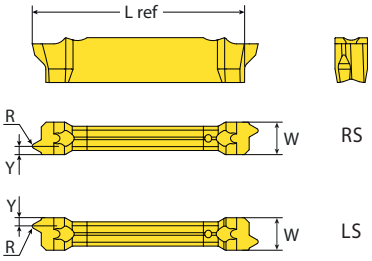
External





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

RS/LS Varied range of threading standards for machining between shoulders and close to spindle.



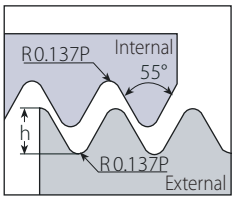
VG-Cut

Pocket Size	Ordering Code RH	W ref	Pitch TPI	h min	Y	L ref	No. of Passes	Helix Deg	Min. Thread Diameter	Toolholder Monoblock
3	VGD3.0W19RH-RS/LS...	3.00	19	0.86	0.95	21.9	7 - 12	2.5°	1/2"-19BSW	VGE...-3T...
	VGD3.0W14RH-RS/LS...		14	1.16	1.15		8 - 14		1/2"-14BSW	
	VGD3.0W11RH/LH...		11	1.48	1.68		8 - 14		5/8"-11BSW	

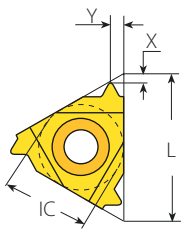
LH Helix threads available upon request.

Whitworth - BSW, BSP, BSF, BSB (con't)

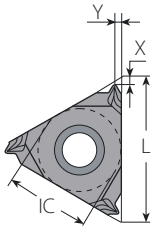
Internal



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



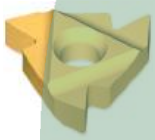
Standard



SCB
Sintered
Chipbreaker

Standard

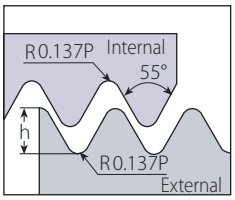
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	72	2IR72W...	2IL72W...	0.23	0.7	0.4	-	-	NVR..-2 (LH)
		60	2IR60W...	2IL60W...	0.27	0.7	0.4			
		56	2IR56W...	2IL56W...	0.29	0.7	0.4			
		48	2IR48W...	2IL48W...	0.34	0.6	0.6			
		40	2IR40W...	2IL40W...	0.41	0.6	0.6			
		36	2IR36W...	2IL36W...	0.45	0.6	0.6			
		32	2IR32W...	2IL32W...	0.51	0.6	0.6			
		28	2IR28W...	2IL28W...	0.58	0.6	0.7			
		26	2IR26W...	2IL26W...	0.63	0.7	0.8			
		24	2IR24W...	2IL24W...	0.68	0.7	0.8			
		22	2IR22W...	2IL22W...	0.74	0.8	0.9			
		20	2IR20W...	2IL20W...	0.81	0.8	0.9			
		19	2IR19W...	2IL19W...	0.86	0.8	1.0			
		18	2IR18W...	2IL18W...	0.90	0.8	1.0			
		16	2IR16W...	2IL16W...	1.02	0.9	1.1			
		14	2IR14W...	2IL14W...	1.16	0.9	1.1			
		12	2IR12W...	2IL12W...	1.32	0.9	1.2			
1/4" SCB	11	36	2JIR36W...		0.45	1.2	0.5	-	-	NVR..-2
		32	2JIR32W...		0.51	1.2	0.5			
		28	2JIR28W...		0.58	0.7	0.8			
		24	2JIR24W...		0.68	0.7	0.8			
		20	2JIR20W...		0.81	0.7	0.8			
		19	2JIR19W...		0.86	0.6	0.8			
		18	2JIR18W...		0.90	0.8	0.8			
		16	2JIR16W...		1.02	0.8	0.8			
		14	2JIR14W...		1.16	0.7	0.9			
3/8"	16	72	3IR72W...	3IL72W...	0.23	0.7	0.4	YI3	YE3	AVR..-3 (LH)
		60	3IR60W...	3IL60W...	0.27	0.7	0.4			
		56	3IR56W...	3IL56W...	0.29	0.7	0.4			
		48	3IR48W...	3IL48W...	0.34	0.6	0.6			
		40	3IR40W...	3IL40W...	0.41	0.6	0.6			
		36	3IR36W...	3IL36W...	0.45	0.6	0.6			
		32	3IR32W...	3IL32W...	0.51	0.6	0.6			
		30	3IR30W...	3IL30W...	0.55	0.6	0.7			



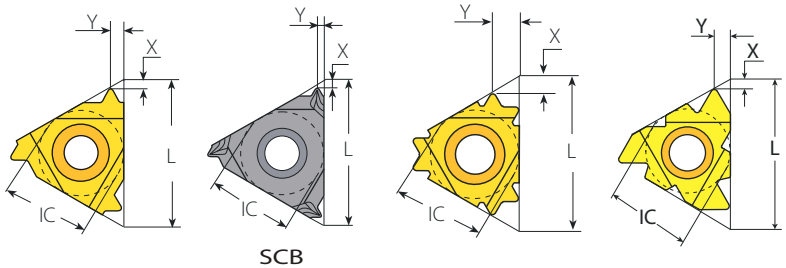
SCB

Whitworth - BSW, BSP, BSF, BSB (con't)

Internal



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



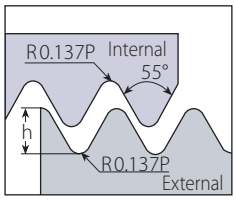
Standard | SCB Sintered Chipbreaker | V6 | F-Line

Standard

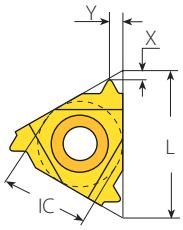
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	28	3IR28W...	3IL28W...	0.58	0.6	0.7	YI3	YE3	AVR..-3 (LH)
		26	3IR26W...	3IL26W...	0.63	0.7	0.8			
		24	3IR24W...	3IL24W...	0.68	0.7	0.8			
		22	3IR22W...	3IL22W...	0.74	0.8	0.9			
		20	3IR20W...	3IL20W...	0.81	0.8	0.9			
		19	3IR19W...	3IL19W...	0.86	0.8	1.0			
		18	3IR18W...	3IL18W...	0.90	0.8	1.0			
		16	3IR16W...	3IL16W...	1.02	0.9	1.1			
		14	3IR14W...	3IL14W...	1.16	1.0	1.2			
		12	3IR12W...	3IL12W...	1.36	1.1	1.4			
		11	3IR11W...	3IL11W...	1.48	1.1	1.5			
		10	3IR10W...	3IL10W...	1.63	1.1	1.5			
		9	3IR9W...	3IL9W...	1.81	1.2	1.7			
		8	3IR8W...	3IL8W...	2.03	1.2	1.5			
3/8" SCB	16	28	3JIR28W...		0.58	0.7	0.8	YI3	-	AVR...-3
		24	3JIR24W...		0.68	0.7	0.8			
		20	3JIR20W...		0.81	0.7	0.8			
		19	3JIR19W...		0.86	0.6	0.5			
		18	3JIR18W...		0.90	0.8	0.8			
		16	3JIR16W...		1.02	0.8	0.8			
		14	3JIR14W...		1.16	1.3	1.5			
		12	3JIR12W...		1.36	1.3	1.5			
		11	3JIR11W...		1.48	1.3	1.5			
		10	3JIR10W...		1.63	1.3	1.5			
		8	3JIR8W...		2.03	1.3	1.5			
3/8" V6	16	19	3IR19W-6C...		0.86	1.7	2.2	YI3-6C	-	AVR..-3 NVRC..-3 206/...
		16	3IR16W-6C...		1.02	1.6	2.6			
		14	3IR14W-6C...		1.16	1.8	2.7			
		12	3IR12W-6C...		1.36	1.7	2.6			
1/2"	22	7	4IR7W...	4IL7W...	2.41	1.6	2.3	YI4	YE4	AVR..-4 (LH)
		6	4IR6W...	4IL6W...	2.71	1.6	2.3			
		5	4IR5W...	4IL5W...	3.25	1.7	2.4			
1/2"F	23	7	4FIR7W...		2.41	1.6	2.3	YI4F		AVRC...-4F
		6	4FIR6W...		2.71	1.6	2.3			
		5	4FIR5W...		3.25	1.7	2.4			
5/8"	27	4.5	5IR4.5W...	5IL4.5W...	3.61	1.8	2.6	YI5	YE5	AVR..-5 (LH)
		4	5IR4W...	5IL4W...	4.07	2.0	2.9			

Whitworth - BSW, BSP, BSF, BSB (con't)

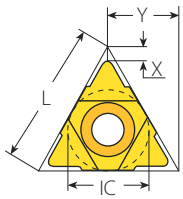
Internal



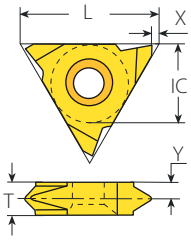
Defined by: B.S.84:1956,
DIN 259, ISO228/1:1982
Tolerance class: Medium class A



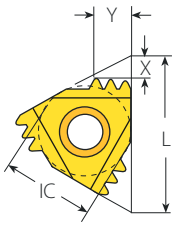
D-Line



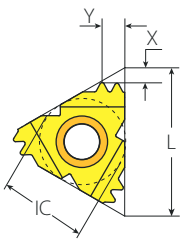
U Style



V Style



M+ Style



F-Line M+

D-Line Deep Rake

D-Line

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI	RH	h min	X	Y	RH	Toolholder
1/4"	11	19	2DIR19W...	0.86	0.8	1.0	-	NVR..-2
3/8"	16	19	3DIR19W...	0.86	0.8	1.0	YI3	AVR..-3
		14	3DIR14W...	1.16	1.0	1.2		
		11	3DIR11W...	1.48	1.1	1.5		

U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4.5	4UEI4.5W...	3.61	2.3	11.0	YI4U	YE4U	AVR..-4U (LH)
		4	4UEI4W...	4.07	1.8	11.0			
		3.5	4UEI3.5W...	4.65	2.1	11.0			
		3.25	4UEI3.25W...	5.00	2.0	11.0			
5/8"U	27	3.5	5UEI3.5W...	4.65	2.1	13.7	YI5U	YE5U	AVR..-5U (LH)
		3.25	5UEI3.25W...	5.00	2.0	13.7			
		3	5UEI3W...	5.42	2.3	13.7			
		2.75	5UEI2.75W...	5.91	2.4	13.7			

V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	4	5VIR4W...	5VIL4W...	4.07	1.0	3.3	6	NVR..-5V (LH)
		3	5VIR3W...	5VIL3W...	5.42	1.0	4.3	8	
		2.5	5VIR2.5W...	5VIL2.5W...	6.51	1.0	5.2	10	

M+ Style

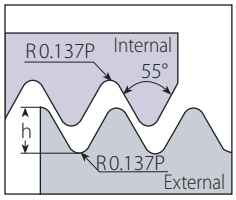
Multi plus

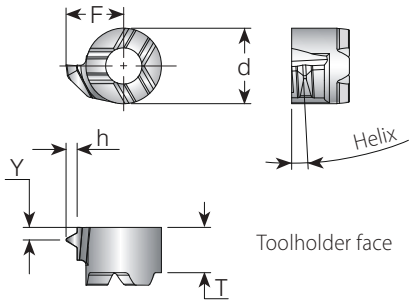
F-LINE

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	3IR14W2M+...	1.16	2.0	3.0	YI3M	AVR..-3
1/2"	22	11	2	4IR11W2M+...	1.48	2.3	3.5	YI4M	AVR..-4
1/2"F	23	11	2	4FIR11W2M+...	1.48	2.3	3.5	YI4M2F	AVRC... -4MF

Whitworth - BSW, BSP, BSF, BSB (con't)

Internal





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

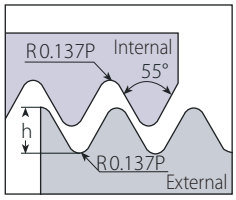
Mini-V

Min. Thread	Insert Style	Pitch	Ordering Code	Dimensions mm					Helix	Toolholder
		TPI	RH	d	T	F	Y	h min	Deg.	
1/2"x19W	V11	19	V11TH19WR...	8	4.2	6.18	0.8	0.86	2	.V11-...

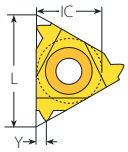
Whitworth - BSW, BSP, BSF, BSB (con't)

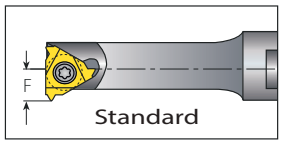
MINIPRO

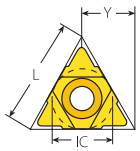
Internal

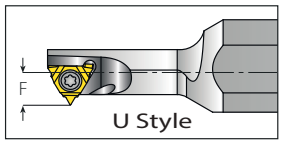


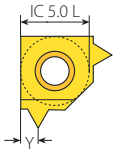
Defined by: B.S.84:1956, DIN 259, ISO228/1:1982
Tolerance class: Medium class A

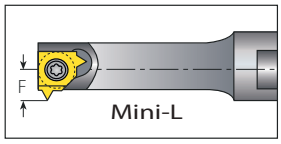












Mini-3 Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
4.0	6	26	4.0KIR26W...	4.0KIL26W...	0.63	0.6	3.6	6.25	.NVR.5-4.0K (LH)
		22	4.0KIR22W...	4.0KIL22W...	0.74	0.6	3.7	6.35	
		20	4.0KIR20W...	4.0KIL20W...	0.81	0.7	3.7	6.35	
		19	4.0KIR19W...	4.0KIL19W...	0.86	0.7	3.7	6.35	
		18	4.0KIR18W...	4.0KIL18W...	0.90	0.7	3.7	6.35	
5.0	8	28	5.0KIR28W...	5.0KIL28W...	0.58	0.6	4.7	7.8	.NVRC7-5.0K (LH)
		24	5.0KIR24W...	5.0KIL24W...	0.68	0.6			
		20	5.0KIR20W...	5.0KIL20W...	0.81	0.7			
		19	5.0KIR19W...	5.0KIL19W...	0.86	0.7			
		18	5.0KIR18W...	5.0KIL18W...	0.90	0.7			
		16	5.0KIR16W...	5.0KIL16W...	1.02	0.7			
6.0	10	28	6.0KIR28W...	6.0KIL28W...	0.58	0.7	4.7	9.6	.NVRC1..-6.0K (LH)
		19	6.0KIR19W...	6.0KIL19W...	0.86	1.0	5.0	9.9	
		14	6.0KIR14W...	6.0KIL14W...	1.16	1.1	5.3	10.0	

Mini-3 U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH+LH	h min	Y	F	mm	Toolholder
5.0U	8	14	5.0KUI14W...	1.16	4.0	5.6	9.0	.NVRC8-5.0KU (LH)
		12	5.0KUI12W...	1.36		5.7		
		11	5.0KUI11W...	1.48		5.7		

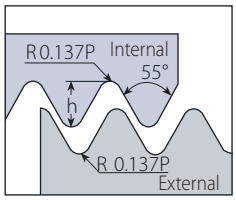
Mini-L

Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0L	28	5LKIR28W...	5LKIL28W...	0.58	0.7	4.05	7.6	.NVRC10. -5LK (LH)
	19	5LKIR19W...	5LKIL19W...	0.86	1.0	4.35	7.9	
	14	5LKIR14W...	5LKIL14W...	1.16	1.1	4.68	8.0	

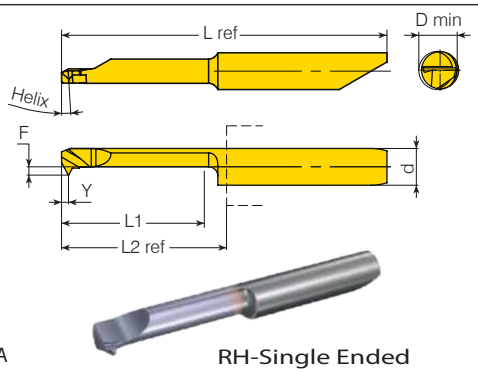
Whitworth - BSW, BSP, BSF, BSB (con't)

MINIPRO

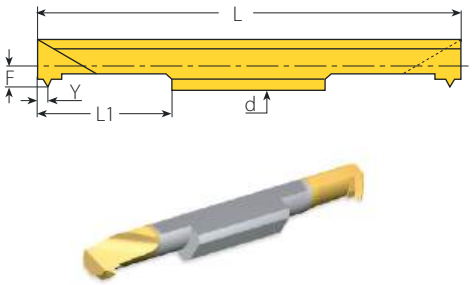
Internal



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



RH-Single Ended



RH-Double Ended

Micro - Double Ended

	Insert Dia.	Pitch	Ordering Code		Dimensions mm				Min. Bore Dia.	
Thread	d mm	TPI	RH	L1	L	F	Y	h min	mm	Toolholder
1/16"-28BSP	4.0	28	4.0SIR28W...	16	50	1.86	0.65	0.58	4.2	SMC..-4.0
1/4"-26BSF		26	4.0SIR26W...	16	50	1.93	0.75	0.63	4.2	
1/4"-24BSW		24	4.0SIR24W...	16	50	1.96	0.75	0.68	4.3	
1/16"-28BSP	6.0	28	6.0SIR28W...	16	50	2.50	0.65	0.58	6.0	SMC..-6.0
5/16"-28BSW		26	6.0SIR26W...	16	50	2.50	0.75	0.63	6.0	
5/16"-24BSW		24	6.0SIR24W...	16	50	2.50	0.75	0.68	6.0	
5/16"-22BSW		22	6.0SIR22W...	16	50	2.50	0.90	0.74	6.0	
3/8"-20BSF		20	6.0SIR20W...	16	50	2.50	0.90	0.81	6.0	
1/4"-19BSP		19	6.0SIR19W...	16	50	2.50	0.95	0.86	6.0	

Left handed tool supplied by request (Example: 6.0SI**L**19W...).

Micro - Single Ended

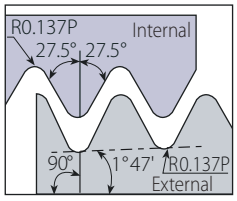
microscope

	Insert Dia.	Pitch	Ordering Code		Dimensions mm						Min. Bore Dia.	
Thread	d mm	TPI	RH/LH	Helix °	L1	F	Y	h min	L2 ref*	L ref	D mm	Toolholder
1/16"-28BSP	6.0	28	M659TH28WL16R/L...	3.5	16	2.9	0.65	0.58	18.5	42.2	6.5	MH...-6.0
1/4"-19BSP		19	M659TH19WL16R/L...				0.95	0.86			11.4	

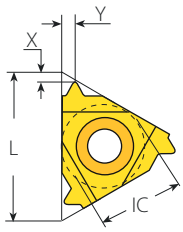
* L2 Ref: Repeatability within +/-0.02.

BSPT

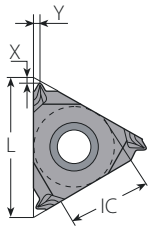
External



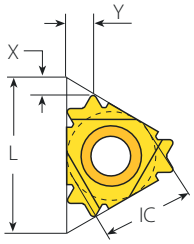
Defined by: B.S. 21:1985
Tolerance class: Standard BSPT



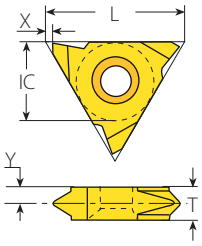
Standard



SCB
Sintered
Chipbreaker



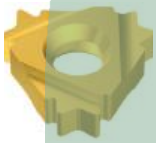
V6



Slim Throat

Standard

SCB



V6

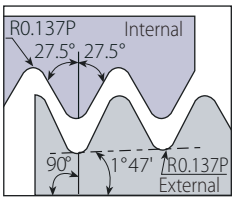
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	28	2ER28BSPT...	2EL28BSPT...	0.58	0.6	0.6	-	-	NL ..-2 (LH)
		19	2ER19BSPT...	2EL19BSPT...	0.86	0.8	0.9			
		14	2ER14BSPT...	2EL14BSPT...	1.16	0.9	1.0			
3/8"	16	28	3ER28BSPT...	3EL28BSPT...	0.58	0.6	0.6	YE3	YI3	AL..-3 (LH)
		19	3ER19BSPT...	3EL19BSPT...	0.86	0.8	0.9			
		14	3ER14BSPT...	3EL14BSPT...	1.16	1.0	1.2			
		11	3ER11BSPT...	3EL11BSPT...	1.48	1.1	1.5			
3/8" SCB	16	28	3JER28BSPT...		0.58	0.7	0.8	YE3	-	AL..-3
		19	3JER19BSPT...		0.86	0.7	0.8			
		14	3JER14BSPT...		1.16	1.3	1.5			
		11	3JER11BSPT...		1.48	1.3	1.5			
3/8" V6	16	19	3ER19BSPT-6C...		0.86	1.7	2.2	YE3-6C	-	AL..-3
		14	3ER14BSPT-6C...		1.16	1.9	2.8			

Slim Throat

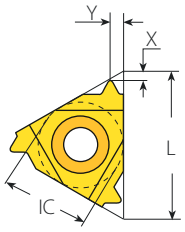
Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
3/8"V	16	28	3VER28BSPT...	3VEL28BSPT...	0.58	1.1	3.0	3.6	NL..-3V (LH)
		19	3VER19BSPT...	3VEL19BSPT...	0.86	1.1	2.7	3.6	
		14	3VER14BSPT...	3VEL14BSPT...	1.16	1.1	2.4	3.6	
		11	3VER11BSPT...	3VEL11BSPT...	1.48	1.1	2.1	3.6	

BSPT (con't)

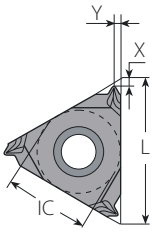
Internal



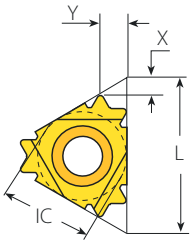
Defined by: B.S. 21:1985
Tolerance class: Standard BSPT



Standard & D-Line

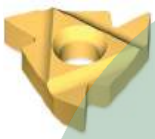


SCB Sintered Chipbreaker

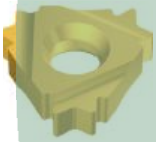


V6

Standard



SCB

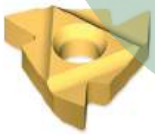


V6

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	28	2IR28BSPT...	2IL28BSPT...	0.58	0.6	0.6	-	-	NVR..-2 (LH)
		19	2IR19BSPT...	2IL19BSPT...	0.86	0.8	0.9			
		14	2IR14BSPT...	2IL14BSPT...	1.16	0.9	1.0			
1/4" SCB	11	28	2JIR28BSPT...		0.58	0.7	0.8	-	-	NVR..-2
		19	2JIR19BSPT...		0.86	0.7	0.8			
3/8"	16	28	3IR28BSPT...	3IL28BSPT...	0.58	0.6	0.6	YI3	YE3	AVR..-3 (LH)
		19	3IR19BSPT...	3IL19BSPT...	0.86	0.8	0.9			
		14	3IR14BSPT...	3IL14BSPT...	1.16	1.0	1.2			
		11	3IR11BSPT...	3IL11BSPT...	1.48	1.1	1.5			
3/8" SCB	16	28	3JIR28BSPT...		0.58	0.7	0.8	YI3	-	AVR..-3
		19	3JIR19BSPT...		0.86	0.7	0.8			
		14	3JIR14BSPT...		1.16	1.3	1.5			
		11	3JIR11BSPT...		1.48	1.3	1.5			
3/8" V6	16	19	3IR19BSPT-6C...		0.86	1.8	2.3	YI3-6C	-	AVR..-3 NVRC..-3 206/...
		14	3IR14BSPT-6C...		1.16	1.9	2.7			

D-Line Deep Rake

D-Line

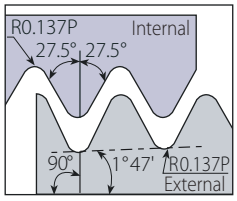


Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI	RH	h min	X	Y	RH	Toolholder
1/4"	11	19	2DIR19BSPT...	0.86	0.8	0.9	-	NVR..-2
		14	2DIR14BSPT...	1.16	0.9	1.0		
3/8"	16	19	3DIR19BSPT...	0.86	0.8	0.9	YI3	AVR..-3
		14	3DIR14BSPT...	1.16	1.0	1.2		
		11	3DIR11BSPT...	1.48	1.1	1.5		

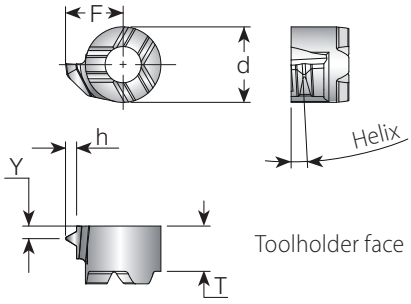
BSPT (con't)

Mini-V

Internal



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



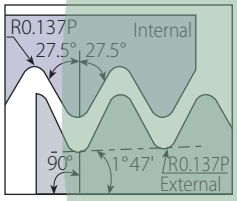
Mini-V

Min. Thread	Insert Style	Pitch	Ordering Code	Dimensions mm					Helix	Toolholder
		TPI	RH	d	T	F	Y	h min	Deg.	
1/4"-19BSPT	V11	19	V11TH19BSPTR...	8	4.2	6.13	0.9	0.86	2.5	.V11-...

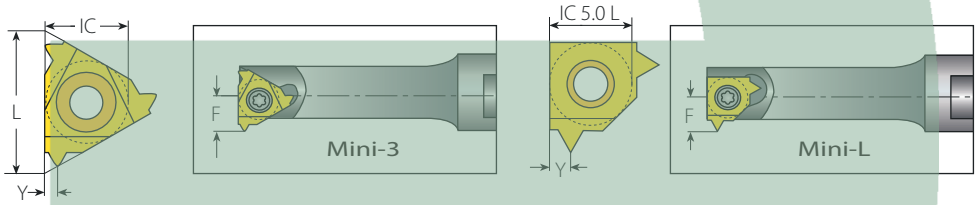
BSPT

MINIPRO

Internal



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



Mini-3 Standard

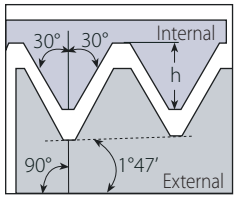
Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
4.0	6	28	4.0KIR28BSPT...	4.0KIL28BSPT...	0.58	0.6	3.6	6.25	.NVR.5-4.0K (LH)
5.0	8	28	5.0KIR28BSPT...	5.0KIL28BSPT...	0.58	0.6	4.7	7.8	.NVRC7-5.0K (LH)
		19	5.0KIR19BSPT...	5.0KIL19BSPT...	0.86	0.7			
6.0	10	28	6.0KIR28BSPT...	6.0KIL28BSPT...	0.58	0.6	4.7	9.6	.NVRC1..-6.0K (LH)
		19	6.0KIR19BSPT...	6.0KIL19BSPT...	0.86	0.9	5.0	9.9	
		14	6.0KIR14BSPT...	6.0KIL14BSPT...	1.16	1.2	5.3	10.0	

Mini-L

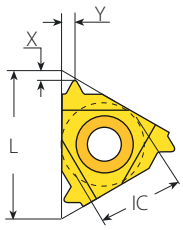
Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0L	28	5LKIR28BSPT...	5LKIL28BSPT...	0.58	0.6	4.05	7.6	.NVRC10. -5LK (LH)
	19	5LKIR19BSPT...	5LKIL19BSPT...	0.86	0.9	4.35	7.9	
	14	5LKIR14BSPT...	5LKIL14BSPT...	1.16	1.2	4.68	8.0	

NPT

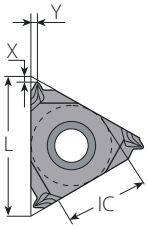
External



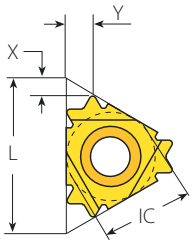
Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



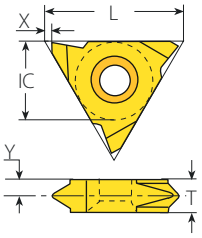
Standard



SCB Sintered Chipbreaker

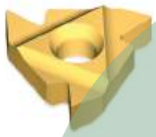


V6



Slim Throat

Standard



SCB

V6

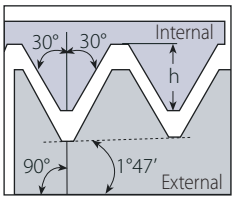
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	27	2ER27NPT...	2EL27NPT...	0.66	0.7	0.8	-	-	NL..-2 (LH)
		18	2ER18NPT...	2EL18NPT...	1.01	0.8	1.0			
		14	2ER14NPT...	2EL14NPT...	1.33	0.8	1.0			
3/8"	16	27	3ER27NPT...	3EL27NPT...	0.66	0.7	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			
3/8" V6	16	14	3ER14NPT-6C...		1.33	1.9	3.0	YE3-6C	-	AL..-3

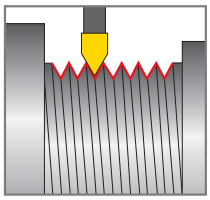
Slim Throat

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)

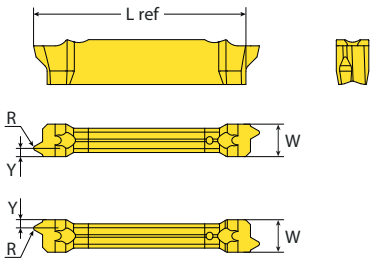
External





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

RS/LS Varied range of threading standards for machining between shoulders and close to spindle.



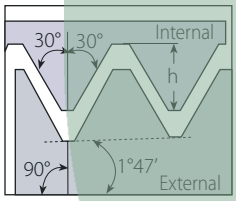
VG-Cut

Pocket Size	Ordering Code	Dimensions mm					No. of Passes	Helix	Min. Thread Diameter	Toolholder
	RH	W ref	Pitch TPI	h min	Y	L ref		Deg		Monoblock
3	VGD3.0NPT18RH-RS/LS...	3.00	18	1.01	1.20	21.9	7 - 12	1.5°	1/4"-18NPT	VGE...-3T...
3	VGD3.0NPT14RH-RS/LS...		14	1.33	1.40		8 - 14		1/2"-14NPT	
3	VGD3.0NPT11.5RH-RS/LS...		11.5	1.64	1.60		9 - 15		1"-11.5NPT	

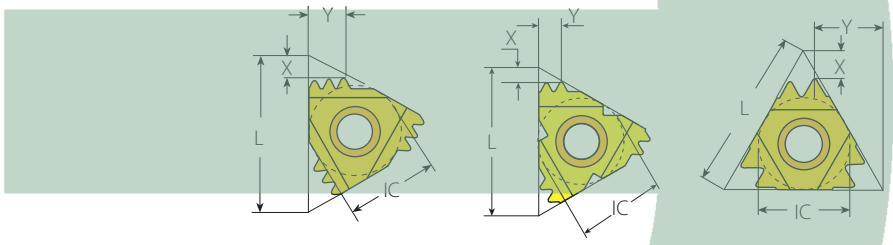
LH Helix threads available upon request.

NPT (con't)

External



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



M+ Style | F-Line M+ | Z+ Style

M+ Style

Multi plus

F-LINE

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
1/2"F	23	11.5	2	4FER11.5NPT2M+...	1.64	2.2	3.4	YE4M2F	AL...-4MF
5/8"	27	11.5	3	5ER11.5NPT3M+...	1.64	3.5	5.6	YE5M	AL..-5M
		8	2	5ER8NPT2M+...	2.42	3.1	4.9		

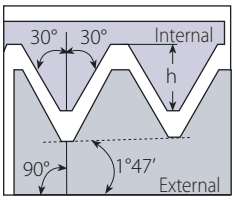
Z+ Style

Multi plus

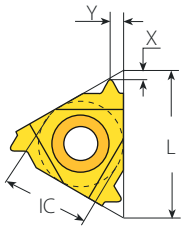
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	11.5	2	4ER11.5NPT2Z+...	1.64	2.7	10.0	YE4Z	AL..-4Z
		8	2	4ER8NPT2Z+...	2.42	3.4	9.6		

NPT (con't)

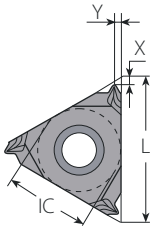
Internal



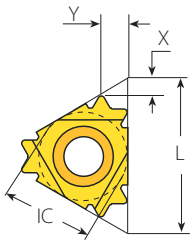
Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



Standard & D-Line

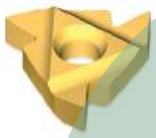


SCB Sintered Chipbreaker

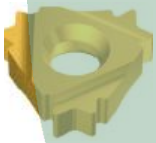


V6

Standard



SCB



V6

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			
3/8" V6	16	14	3IR14NPT-6C...		1.33	1.9	2.8	YI3-6C	-	AVR..-3 NVRC..-3 206/...

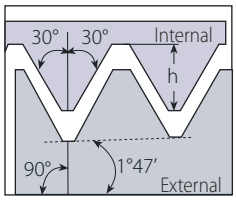
D-Line Deep Rake

D-Line

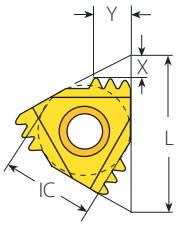
Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI	RH	h min	X	Y		Toolholder
1/4"	11	18	2DIR18NPT...	1.01	0.7	0.8	-	NVR..-2
		14	2DIR14NPT...	1.33	0.8	1.0		
3/8"	16	18	3DIR18NPT...	1.01	0.8	1.0	YI3	AVR..-3
		14	3DIR14NPT...	1.33	0.9	1.2		
		11.5	3DIR11.5NPT...	1.64	1.1	1.5		

NPT (con't)

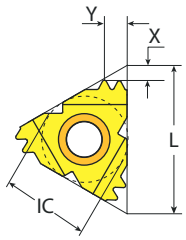
Internal



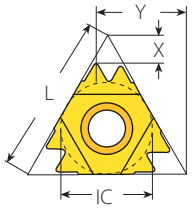
Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



M+ Style



F-Line M+



Z+ Style

M+ Style

Multiplus

F-LINE

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
1/2"F	23	11.5	2	4FIR11.5NPT2M+...	1.64	2.2	3.4	YI4M2F	AVRC...-4MF
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

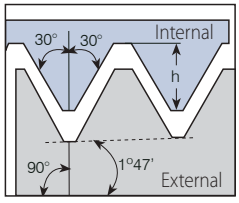
Multiplus

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		

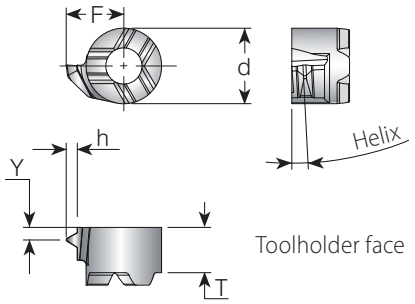
NPT (con't)

Mini-V

Internal



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



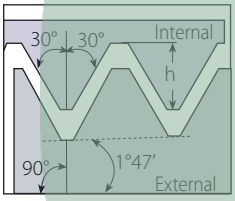
Mini-V

Min. Thread	Insert Style	Pitch	Ordering Code	Dimensions mm					Helix	Toolholder
		TPI	RH	d	T	F	Y	h min	Deg.	
1/8"-27NPT	V08	27	V08TH27NPTR...	6	3.8	4.35	0.6	0.64	2	.V08-...
1/4"-18NPT		18	V08TH18NPTR...			4.8	0.9	1.0	2	

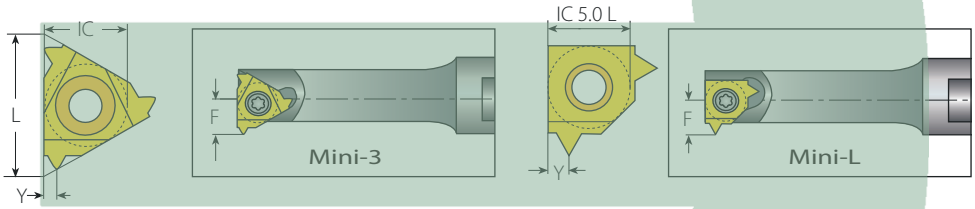
NPT

MINIPRO

Internal



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



Mini-3 Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
4.0	6.0	27	4.0KIR27NPT...	4.0KIL27NPT...	0.66	0.6	3.7	6.35	.NVR.5-4.0K (LH)
5.0	8	27	5.0KIR27NPT...	5.0KIL27NPT...	0.66	0.6	4.7	7.8	.NVRC7-5.0K (LH)
		18	5.0KIR18NPT...	5.0KIL18NPT...	1.01	0.8			
6.0	10	27	6.0KIR27NPT...	6.0KIL27NPT...	0.66	0.8	5.3	10.0	.NVRC1..-6.0K (LH)
		18	6.0KIR18NPT...	6.0KIL18NPT...	1.01	1.0	5.3		
		14	6.0KIR14NPT...	6.0KIL14NPT...	1.33	1.1	5.3		

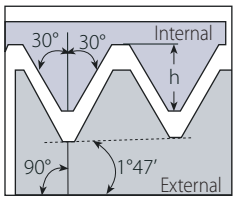
Mini-L

Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0L	27	5LKIR27NPT...	5LKIL27NPT...	0.66	0.8	4.65	8.0	.NVRC10.-5LK (LH)
	18	5LKIR18NPT...	5LKIL18NPT...	1.01	1.0	4.65		
	14	5LKIR14NPT...	5LKIL14NPT...	1.33	1.1	4.65		

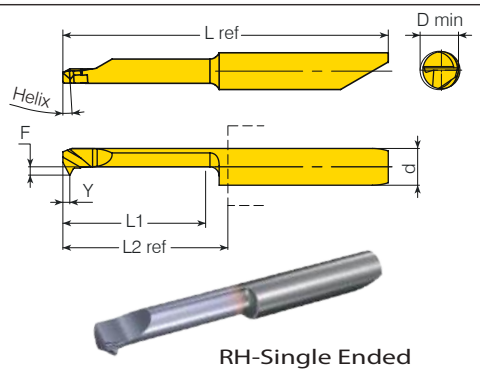
NPT (con't)

MINIPRO

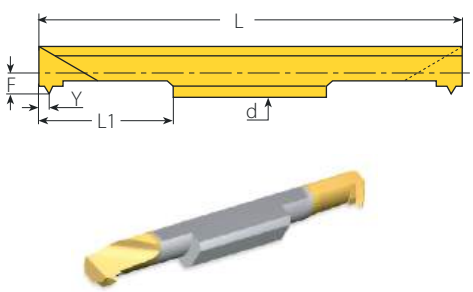
Internal



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



RH-Single Ended



RH-Double Ended

Micro - Double Ended

	Insert Dia.	Pitch	Ordering Code	Dimensions mm					Min. Bore Dia.	
Thread	d mm	TPI	RH	L1	L	F	Y	h min	mm	Toolholder
1/16"-27NPT	6.0	27	6.0SIR27NPT...	16	50	2.50	1.00	0.66	5.9	SMC..-6.0
1/4"-18NPT		18	6.0SIR18NPT...	16	50	2.50	0.80	1.01	6.0	

Left handed tool supplied by request (Example: 6.0SI**L**18NPT...).

Micro - Single Ended

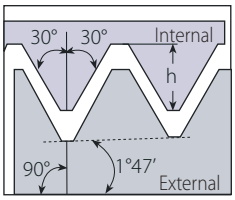
microscope

	Insert Dia.	Pitch	Ordering Code	Dimensions mm							Min. Bore Dia.	
Thread	d mm	TPI	RH/LH	Helix°	L1	F	Y	h min	L2 ref*	L ref	D mm	Toolholder
1/16"-27NPT	6.0	27	M659TH27NPTL16R/L...	3.5	16	2.9	0.75	0.66	18.5	42.2	6.1	MH...-6.0
1/4"-18NPT		18	M659TH18NPTL16R/L...				1.0	1.01			10.7	
1/2"-14NPT		14	M659TH14NPTL16R/L...				1.05	1.33			17.0	

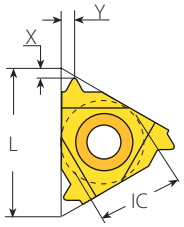
* L2 Ref: Repeatability within +/-0.02.

ANPT

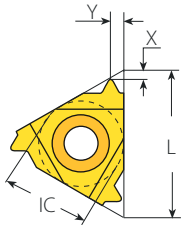
External / Internal



Defined by: MIL-P-7105B
Tolerance class: Standard ANPT



External
Standard

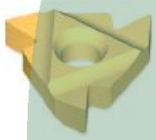


Internal
Standard

Standard - External

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	18	3ER18ANPT...	3EL18ANPT...	1.08	0.8	1.0	YE3	YI3	AL..-3 (LH)
		14	3ER14ANPT...	3EL14ANPT...	1.39	0.8	1.0			

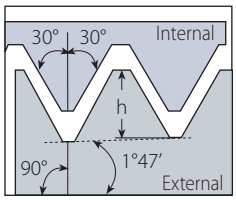
Standard - Internal



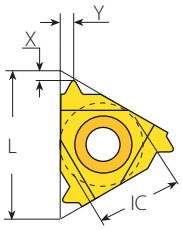
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	18	2IR18ANPT...	2IL18ANPT...	1.08	0.80	1.0	-	-	NVR..-2 (LH)
3/8"	16	14	3IR14ANPT...	3IL14ANPT...	1.39	0.80	1.0	YI3	YE3	AVR..-3 (LH)

NPTF

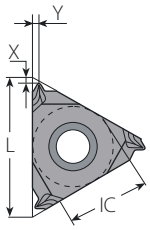
External



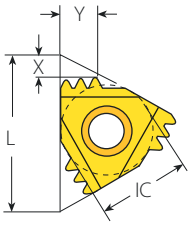
Defined by: ANSI B1.20.3-1976
Tolerance class: Standard NPTF



Standard



SCB
Sintered
Chipbreaker



M+ Style

Standard

SCB

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	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			

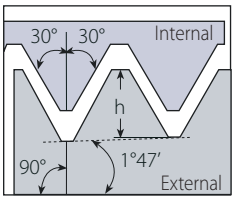
M+ Style

Multi plus

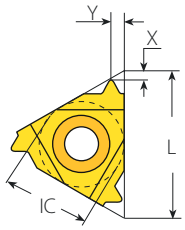
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
3/8"	16	14	2	3ER14NPTF2M+...	1.35	2.0	3.0	YE3M	AL...-3

NPTF (con't)

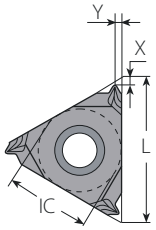
Internal



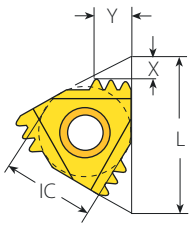
Defined by: ANSI B1.20.3-1976
Tolerance class: Standard NPTF



Standard



SCB Sintered Chipbreaker



M+ Style

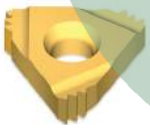
Standard

SCB

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	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

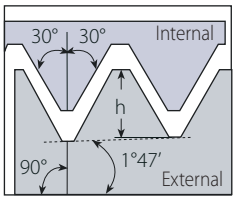
Multi plus



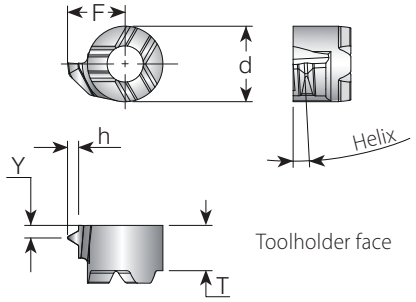
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
3/8"	16	14	2	3IR14NPTF2M+...	1.35	2.0	3.0	YI3M	AVR..-3

NPTF (con't)

Internal



Defined by: ANSI B1.20.3-1976
Tolerance class: Standard NPTF



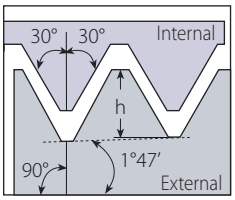
Mini-V

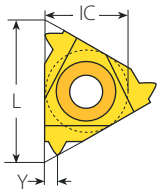
Min. Thread	Insert Style	Pitch	Ordering Code	Dimensions mm					Helix	Toolholder
		TPI	RH	d	T	F	Y	h min	Deg.	
1/4"-18NPTF	V08	18	V08TH18NPTFR...	6	3.8	4.64	0.9	1.0	2.0	.V08-...

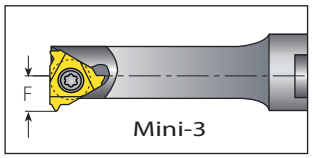
NPTF (con't)

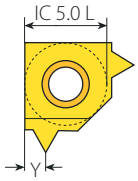
MINIPRO

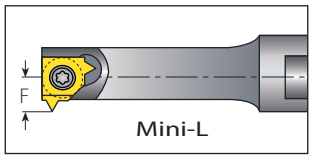
Internal











Defined by: ANSI B1.20.3-1976
Tolerance class: Standard NPTF

Mini-3 Standard

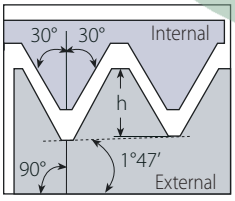
Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
4.0	6	27	4.0KIR27NPTF...	4.0KIL27NPTF...	0.64	0.6	3.6	6.25	.NVR.5-4.0K (LH)
5.0	8	27	5.0KIR27NPTF...	5.0KIL27NPTF...	0.64	0.6	4.7	7.8	.NVRC7-5.0K (LH)
		18	5.0KIR18NPTF...	5.0KIL18NPTF...	1.00	0.8			
6.0	10	27	6.0KIR27NPTF...	6.0KIL27NPTF...	0.64	0.8	5.3	10.0	.NVRC1..-6.0K (LH)
		18	6.0KIR18NPTF...	6.0KIL18NPTF...	1.00	1.0	5.3		
		14	6.0KIR14NPTF...	6.0KIL14NPTF...	1.35	1.1	5.3		

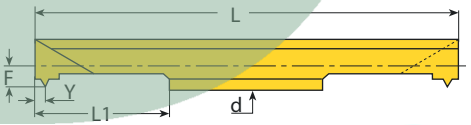
Mini-L

Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0L	27	5LKIR27NPTF...	5LKIL27NPTF...	0.64	0.8	4.65	8.0	.NVRC10..-5LK (LH)
	18	5LKIR18NPTF...	5LKIL18NPTF...	1.00	1.0	4.65		
	14	5LKIR14NPTF...	5LKIL14NPTF...	1.35	1.1	4.65		

NPTF

Internal





RH-Double Ended

Defined by: ANSI B1.20.3-1976
Tolerance class: Standard NPTF

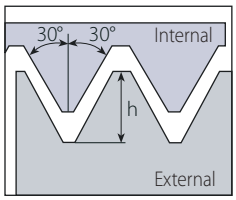
Micro - Double Ended

	Insert Dia.	Pitch	Ordering Code	Dimensions mm					Min. Bore Dia.	
Thread	d mm	TPI	RH	L1	L	F	Y	h min	mm	Toolholder
1/16"-27NPTF	6.0	27	6.0SIR27NPTF...	16	50	2.50	0.80	0.64	6.0	SMC..-6.0
1/4"-18NPTF		18	6.0SIR18NPTF...	16	50	2.50	1.00	1.00		

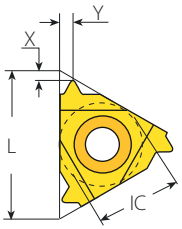
Left handed tool supplied by request (Example: 6.0SI**L**18NPTF...).

NPS

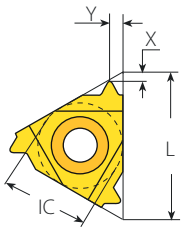
External / Internal



Defined by: USA NBS H28 (1957)
Tolerance class: Standard NPS



External Standard



Internal Standard

Standard - External

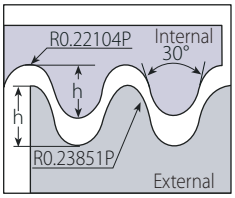
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	24	3ER24NPS...	3EL24NPS...	0.79	0.7	0.8	YE3	YI3	AL..-3 (LH)
		16	3ER16NPS...	3EL16NPS...	1.21	0.8	1.1			
		14	3ER14NPS...	3EL14NPS...	1.33	0.9	1.2			
		12	3ER12NPS...	3EL12NPS...	1.63	1.1	1.4			
		11.5	3ER11.5NPS...	3EL11.5NPS...	1.71	1.1	1.5			
		9	3ER9NPS...	3EL9NPS...	2.20	1.2	1.6			
1/2"	22	8	4ER8NPS...	4EL8NPS...	2.46	1.3	1.9	YE4	YI4	AL..-4 (LH)
		7	4ER7NPS...	4EL7NPS...	2.82	1.6	2.3			
		6	4ER6NPS...	4EL6NPS...	3.31	1.6	2.3			
5/8"	27	5	5ER5NPS...	5EL5NPS...	3.98	1.9	2.8	YE5	YI5	AL..-5 (LH)

Standard - Internal

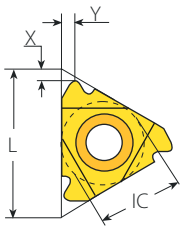
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	24	3IR24NPS...	3IL24NPS...	0.79	0.7	0.8	YI3	YE3	AVR..-3 (LH)
		14	3IR14NPS...	3IL14NPS...	1.33	0.9	1.2			
		12	3IR12NPS...	3IL12NPS...	1.63	1.1	1.4			
		11.5	3IR11.5NPS...	3IL11.5NPS...	1.71	1.1	1.5			
		9	3IR9NPS...	3IL9NPS...	2.20	1.2	1.6			
1/2"	22	8	4IR8NPS...	4IL8NPS...	2.46	1.3	1.9	YI4	YE4	AVR..-4 (LH)
		7	4IR7NPS...	4IL7NPS...	2.82	1.6	2.3			
		6	4IR6NPS...	4IL6NPS...	3.31	1.6	2.3			
5/8"	27	5	5IR5NPS...	5IL5NPS...	3.98	1.9	2.8	YI5	YE5	AVR..-5 (LH)

Round (DIN 405)

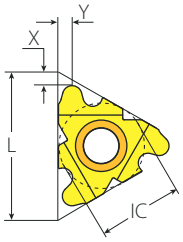
External



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

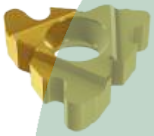


Standard



F-Line

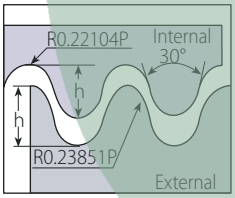
Standard



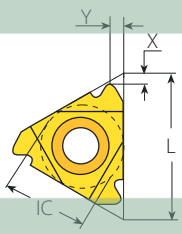
F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8″	16	10	3ER10RD...	3EL10RD...	1.27	1.1	1.2	YE3	YI3	AL..-3 (LH)
		8	3ER8RD...	3EL8RD...	1.59	1.4	1.3			
		6	3ER6RD...	3EL6RD...	2.12	1.5	1.7			
1/2″	22	6	4ER6RD...	4EL6RD...	2.12	1.5	1.7	YE4	YI4	AL..-4 (LH)
		4	4ER4RD...	4EL4RD...	3.18	2.2	2.3			
1/2″F	23	6	4FER6RD...		2.12	1.5	1.7	YE4F		AL...-4F
		4	4FER4RD...		3.18	2.2	2.3			
5/8″	27	4	5ER4RD...	5EL4RD...	3.18	2.2	2.3	YE5	YI5	AL..-5 (LH)

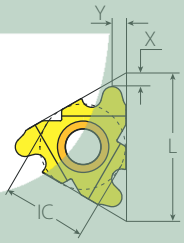
Internal



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



Standard



F-Line

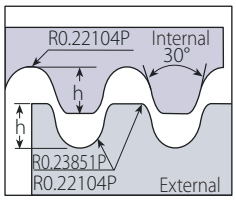
Standard

F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8″	16	10	3IR10RD...	3IL10RD...	1.27	1.1	1.2	YI3	YE3	AVR..-3 (LH)
		8	3IR8RD...	3IL8RD...	1.59	1.4	1.4			
		6	3IR6RD...	3IL6RD...	2.12	1.4	1.5			
1/2″	22	6	4IR6RD...	4IL6RD...	2.12	1.5	1.7	YI4	YE4	AVR..-4 (LH)
		4	4IR4RD...	4IL4RD...	3.18	2.2	2.3			
1/2″F	23	6	4FIR6RD...		2.12	1.5	1.7	YI4F		AVRC...-4F
		4	4FIR4RD...		3.18	2.2	2.3			
5/8″	27	4	5IR4RD...	5IL4RD...	3.18	2.2	2.3	YI5	YE5	AVR..-5 (LH)

Round (DIN 20400)

External



Defined by: DIN 20400
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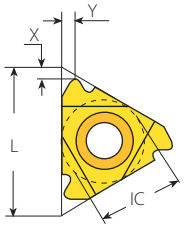
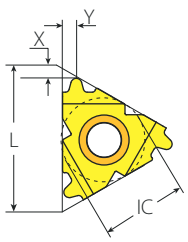
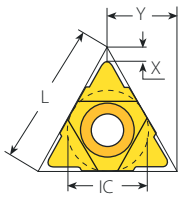


Standard

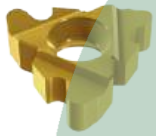


F-Line



U Style

Standard



F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/2″	22	3.0	4ER3.0RD20400...	4EL3.0RD20400...	1.65	1.3	1.7	YE4	YI4	AL..-4 (LH)
		4.0	4ER4.0RD20400...	4EL4.0RD20400...	2.20	1.6	2.2			
		5.0	4ER5.0RD20400...	4EL5.0RD20400...	2.75	1.4	1.7			
		6.0	4ER6.0RD20400...	4EL6.0RD20400...	3.30	1.7	2.1			
1/2″F	23	3.0	4FER3.0RD20400...		1.65	1.3	1.7	YE4F		AL...-4F
		4.0	4FER4.0RD20400...		2.2	1.6	2.2			
		5.0	4FER5.0RD20400...		2.75	1.4	1.7			
		6.0	4FER6.0RD20400...		3.3	1.7	2.1			

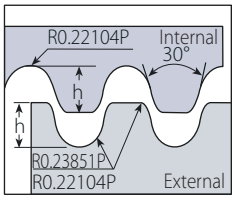
U Style

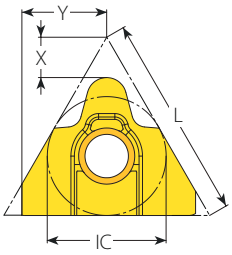
Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	mm	RH+LH	h min	X	Y	RH	LH	Toolholder
5/8″U	27	8.0	5UEI8.0RD20400...	4.4	2.9	13.5	YE5U	YI5U	AL..-5U (LH)

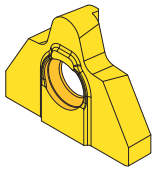
Round (DIN 20400) (con't)

MEGALINE

External



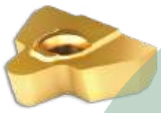




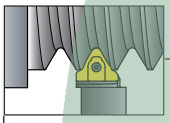
Mega Line

Defined by: DIN 20400
Tolerance class: Standard

External

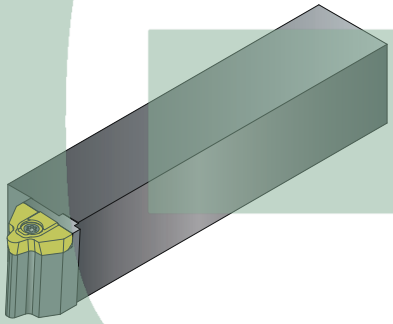


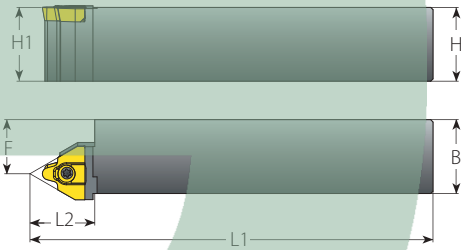
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	mm	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	10.0	5MGER10.0RD20400...	5.50	4.12	11.3	78	36
		12.0	5MGER12.0RD20400...	6.60	5.39		93	43
		16.0	5MGER16.0RD20400...	8.80	4.92		124	58



External Toolholders for Round (DIN 20400)

MEGALINE





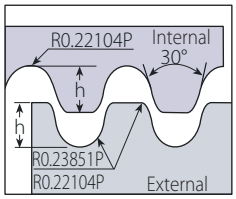
External

Insert	Ordering Code	Dimensions mm				Thread Diameter Range (Min.-Max.)	Spare Parts	
	RH	H=B=H1	F	L1	L2		Insert Screw	Torx Key
5MGER10.0RD20400...	NL25-5MG10RD	25	16.5	155	22	(RD132-170)x10	S5MG	K6T
	NL32-5MG10RD	32	23.5	175				
	NL40-5MG10RD	40	31.5	205				
5MGER12.0RD20400...	NL25-5MG12RD	25	16.5	155	22	(RD180-224)x12		
	NL32-5MG12RD	32	23.5	175				
	NL40-5MG12RD	40	31.5	205				
5MGER16.0RD20400...	NL25-5MG16RD	25	16.5	155	22	(RD236-300)x16		
	NL32-5MG16RD	32	23.5	175				
	NL40-5MG16RD	40	31.5	205				

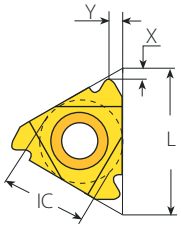
Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

Round (DIN 20400) (con't)

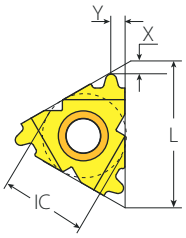
Internal



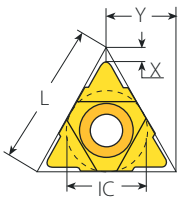
Defined by: DIN 20400
Tolerance class: Standard



Standard



F-Line



U Style

Standard

F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/2″	22	3.0	4IR3.0RD20400...	4IL3.0RD20400...	1.65	1.3	1.7	YI4	YE4	AVR..-4 (LH)
		4.0	4IR4.0RD20400...	4IL4.0RD20400...	2.20	1.6	2.2			
		5.0	4IR5.0RD20400...	4IL5.0RD20400...	2.75	1.4	1.7			
		6.0	4IR6.0RD20400...	4IL6.0RD20400...	3.30	1.7	2.1			
1/2″F	23	3.0	4FIR3.0RD20400...		1.65	1.3	1.7	YI4F		AVRC...-4F
		4.0	4FIR4.0RD20400...		2.20	1.6	2.2			
		5.0	4FIR5.0RD20400...		2.75	1.4	1.7			
		6.0	4FIR6.0RD20400...		3.30	1.7	2.1			

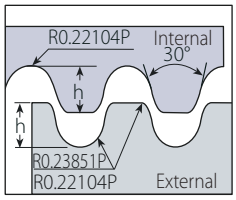
U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	mm	RH+LH	h min	X	Y	RH	LH	Toolholder
5/8″U	27	8.0	5UEI8.0RD20400...	4.40	2.9	13.5	YI5U	YE5U	AVR..-5U (LH)

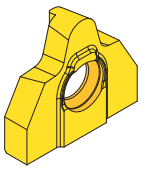
Round (DIN 20400) (con't)

MEGALINE

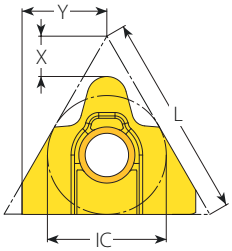
Internal



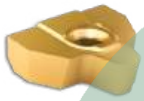
Defined by: DIN 20400
Tolerance class: Standard



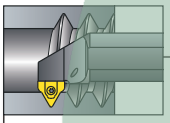
Mega Line



Internal

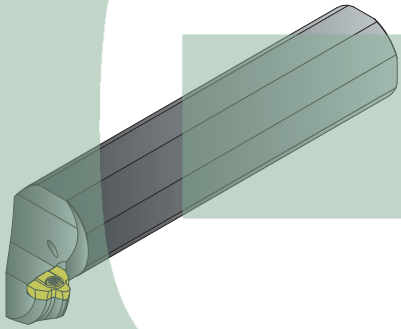


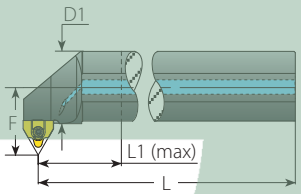
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	mm	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	10.0	5MGIR10.0RD20400...	5.50	4.12	10.4	78	36
		12.0	5MGIR12.0RD20400...	6.60	5.39		93	43
		16.0	5MGIR16.0RD20400...	8.80	4.92		124	58

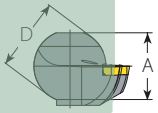


Internal Toolholders for Round (DIN 20400)

MEGALINE







Internal

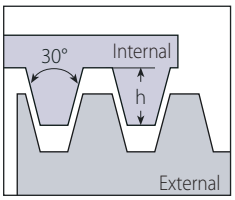
Spare Parts

Insert	Ordering Code	Dimensions mm						Min. Bore Dia.	Thread Diameter Range (Min.-Max.)		Spare Parts	
	RH	A	L	L1 (max)	D	D1	F	mm	Short Chip Material	Long Chip Material	Insert Screw	Torx Key
5MGIR10.0RD20400...	NVRC40-5MG10RD	36	232.5	100	40	39.7	41.5	122	(RD132-170)x10	(RD132-170)x10	S5MG	K6T
	NVRC50-5MG10RD	46	257.5	125	50	49.7	46.5					
	NVRC60-5MG10RD	57	282.5	150	60	59.7	51.5					
5MGIR12.0RD20400...	NVRC40-5MG12RD	36	232.5	100	40	39.7	41.5	168	(RD180-224)x12	(RD180-224)x12		
	NVRC50-5MG12RD	46	257.5	125	50	49.7	46.5					
	NVRC60-5MG12RD	57	282.5	150	60	59.7	51.5					
5MGIR16.0RD20400...	NVRC40-5MG16RD	36	232.5	100	40	39.7	41.5	220	(RD236-300)x16	(RD236-300)x16		
	NVRC50-5MG16RD	46	257.5	125	50	49.7	46.5					
	NVRC60-5MG16RD	57	282.5	150	60	59.7	51.5					

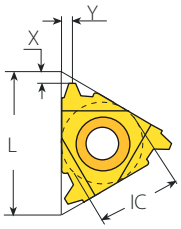
Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

Trapez

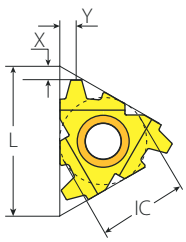
External



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

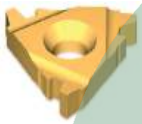


Standard



F-Line

Standard

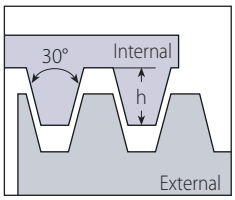


F-LINE

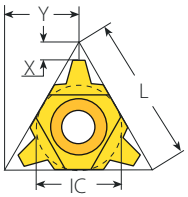
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	1.5	2ER1.5TR...	2EL1.5TR...	0.90	0.8	0.9	-	-	NL..-2 (LH)
3/8"	16	1.5	3ER1.5TR...	3EL1.5TR...	0.90	1.0	1.1	YE3	YI3	AL..-3 (LH)
		2.0	3ER2.0TR...	3EL2.0TR...	1.25	1.1	1.3			
		2.5	3ER2.5TR...	3EL2.5TR...	1.55	1.2	1.4			
		3.0	3ER3.0TR...	3EL3.0TR...	1.75	1.3	1.5			
1/2"	22	4.0	4ER4.0TR...	4EL4.0TR...	2.25	1.7	1.9	YE4	YI4	AL..-4 (LH)
		5.0	4ER5.0TR...	4EL5.0TR...	2.75	2.1	2.5			
		6.0	4ER6.0TR...	4EL6.0TR...	3.50	2.3	2.7			
1/2"F	23	4.0	4FER4.0TR...		2.25	1.7	1.9	YE4F		AL...-4F
		5.0	4FER5.0TR...		2.75	2.1	2.5			
		6.0	4FER6.0TR...		3.50	2.3	2.7			
5/8"	27	6.0	5ER6.0TR...	5EL6.0TR...	3.50	2.3	2.7	YE5	YI5	AL..-5 (LH)

Trapez

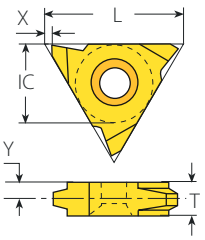
External



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



U Style



V Style

U Style

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH+LH		h min	X	Y	RH	LH	Toolholder
1/2"U	22	6.0	4UE6.0TR...		3.50	2.0	11.0	YE4U	YI4U	AL..-4U (LH)
		7.0	4UE7.0TR...		4.00	2.3	11.0			
		8.0	4UE8.0TR...		4.50	2.6	11.0			
5/8"U	27	8.0	5UE8.0TR...		4.50	2.6	13.7	YE5U	YI5U	AL..-5U (LH)
		9.0	5UE9.0TR...		5.00	3.0	13.7			

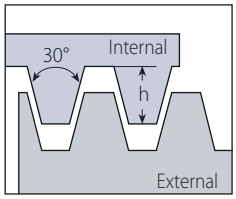
V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	mm	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	6.0	5VER6.0TR...	5VEL6.0TR...	3.50	1.0	3.3	6	NL..-5V-6 (LH)
		7.0	5VER7.0TR...	5VEL7.0TR...	4.00	1.0	3.3	6	
		8.0	5VER8.0TR...	5VEL8.0TR...	4.50	1.0	3.3	6	
		9.0	5VER9.0TR...	5VEL9.0TR...	5.00	1.0	4.3	8	NL..-5V-8 (LH)
		10.0	5VER10.0TR...	5VEL10.0TR...	5.50	1.0	4.3	8	
		12.0	5VER12.0TR...	5VEL12.0TR...	6.50	1.0	5.2	10	NL..-5V-10 (LH)

Trapez (con't)

MEGALINE

External



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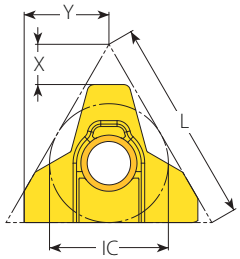
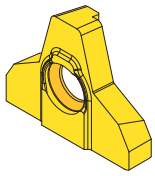
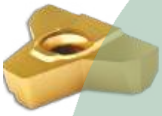
Tolerance class: 7e/7H





Mega Line

External

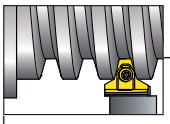


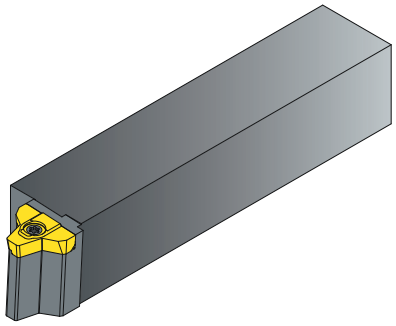
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	mm	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	12.0	5MGER12.0TR...	6.5	5.38	11.3	94	44
		14.0	5MGER14.0TR...	8.0	4.38		115	54
		16.0	5MGER16.0TR...	9.0	5.38		129	60
		18.0	5MGER18.0TR...	10.0	5.38		143	67
		20.0	5MGER20.0TR...	11.0	7.38		158	74
		24.0	5MGER24.0TR...	13.0	7.38		186	87

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

External Toolholders for Trapez

MEGALINE





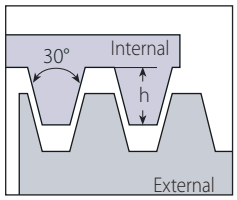
External

Insert	Ordering Code	Dimensions mm				Thread Diameter Range (Min.-Max.)	Spare Parts	
	RH	H=B=H1	F	L1	L2		Insert Screw	Torx Key
5MGER12.0TR...	NL25-5MG12TR	25	16.5	155	22	(TR44-300)x12	S5MG	K6T
	NL32-5MG12TR	32	23.5	175				
	NL40-5MG12TR	40	31.5	205				
5MGER14.0TR...	NL25-5MG14TR	25	16.5	155	22	(TR55-145)x14		
	NL32-5MG14TR	32	23.5	175				
	NL40-5MG14TR	40	31.5	205				
5MGER16.0TR...	NL25-5MG16TR	25	16.5	155	22	(TR65-175)x16		
	NL32-5MG16TR	32	23.5	175				
	NL40-5MG16TR	40	31.5	205				
5MGER18.0TR...	NL25-5MG18TR	25	16.5	155	22	(TR85-200)x18		
	NL32-5MG18TR	32	23.5	175				
	NL40-5MG18TR	40	31.5	205				
5MGER20.0TR...	NL25-5MG20TR	25	16.5	155	22	(TR100-230)x20		
	NL32-5MG20TR	32	23.5	175				
	NL40-5MG20TR	40	31.5	205				
5MGER24.0TR...	NL25-5MG24TR	25	16.5	155	22	(TR135-300)x24		
	NL32-5MG24TR	32	23.5	175				
	NL40-5MG24TR	40	31.5	205				

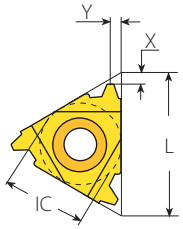
Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

Trapez (con't)

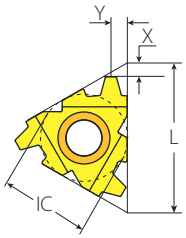
Internal



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

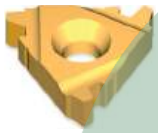


Standard



F-Line

Standard

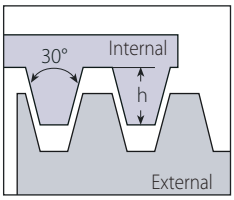


F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	1.5	2IR1.5TR...	2IL1.5TR...	0.90	0.8	0.9	-	-	NVR..-2 (LH)
3/8"	16	1.5	3IR1.5TR...	3IL1.5TR...	0.90	1.0	1.1	YI3	YE3	AVR..-3 (LH)
		2.0	3IR2.0TR...	3IL2.0TR...	1.25	1.1	1.3			
		2.5	3IR2.5TR...	3IL2.5TR...	1.53	1.2	1.4			
		3.0	3IR3.0TR...	3IL3.0TR...	1.75	1.3	1.5			
1/2"	22	4.0	4IR4.0TR...	4IL4.0TR...	2.25	1.7	1.9	YI4	YE4	AVR..-4 (LH)
		5.0	4IR5.0TR...	4IL5.0TR...	2.75	2.1	2.5			
		6.0	4IR6.0TR...	4IL6.0TR...	3.50	2.3	2.7			
1/2"F	23	4.0	4FIR4.0TR...		2.25	1.7	1.9	YI4F		AVRC...-4F
		5.0	4FIR5.0TR...		2.75	2.1	2.5			
		6.0	4FIR6.0TR...		3.50	2.3	2.7			
5/8"	27	6.0	5IR6.0TR...	5IL6.0TR...	3.50	2.3	2.7	YI5	YE5	AVR..-5 (LH)

Trapez (con't)

Internal



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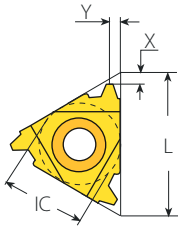
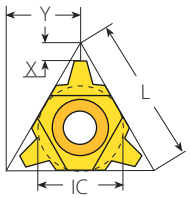
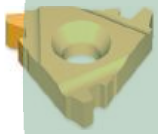


Coarse Pitch



U Style Coarse Pitch

Coarse Pitch RH



Thread	Insert Size		Ordering Code	Dimensions mm				Min Bore Dia.
	IC	L mm	RH	h min	X	Y	Toolholder RH	mm
TR18x4	3/8"U	16	3UIR4.0TR158/013...	2.25	2.10	8.0	NVRC11-3U-156/020	14.0
TR20x4	3/8"	16	3IR4.0TR158/012...	2.25	1.53	1.9	NVRC13-3-156/006	16.0
TR22x5			3UIR5.0TR158/011...	2.75	1.56	8.0	NVRC14-3U-156/018	17.0
TR24x5	3/8"U	16	3UIR5.0TR158/011...	2.75	1.56	8.0	NVRC15-3U-156/019	19.0
TR26x5			3UIR5.0TR158/011...	2.75	1.56	8.0	NVRC15-3U-156/019	21.0
TR28x5	1/2"	22	4IR5.0TR...	2.75	2.30	2.7	NVRC20-4-156/008	23.0
TR30x6	1/2"U	22	4UIR6.0TR158/007...	3.50	1.94	11.0	NVRC20-4U-156/011	24.0
TR36x6	5/8"	27	5IR6.0TR...	3.50	2.30	2.7	NVRC25-5-156/012	30.0
TR38x7			4UIR7.0TR158/008...	4.00	2.27	11.0	NVRC25-4U-156/013	31.0
TR40x7	1/2"U	22	4UIR7.0TR158/008...	4.00	2.27	11.0	NVRC25-4U-156/013	33.0
TR42x7			4UIR7.0TR158/008...	4.00	2.27	11.0	NVRC32-4U-156/014	35.0
TR44x7			4UIR7.0TR158/008...	4.00	2.27	11.0	NVRC32-4U-156/014	37.0
TR46x8			5UIR8.0TR158/010...	4.50	2.59	13.5	NVRC32-5U-156/015	38.0
TR48x8	5/8"U	27	5UIR8.0TR158/010...	4.50	2.59	13.5	NVRC32-5U-156/015	40.0
TR50x8			5UIR8.0TR158/010...	4.50	2.59	13.5	NVRC32-5U-156/015	42.0
TR52x8			5UIR8.0TR158/010...	4.50	2.59	13.5	NVRC32-5U-156/015	44.0

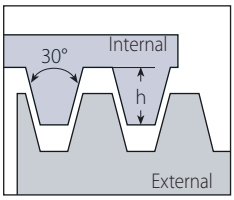
Coarse Pitch LH

Thread	Insert Size		Ordering Code	Dimensions mm				Min Bore Dia.
	IC	L mm	LH	h min	X	Y	Toolholder LH	mm
TR18x4	3/8"U	16	3UIR4.0TR158/013...	2.25	2.10	8.0	NVRC11-3ULH-156/029	14.0
TR20x4	3/8"	16	3IL4.0TR158/015...	2.25	1.53	1.9	NVRC13-3LH-156/028	16.0
TR22x5			3UIR5.0TR158/011...	2.75	1.56	8.0	NVRC14-3ULH-156/030	17.0
TR24x5	3/8"U	16	3UIR5.0TR158/011...	2.75	1.56	8.0	NVRC15-3ULH-156/031	19.0
TR26x5			3UIR5.0TR158/011...	2.75	1.56	8.0	NVRC15-3ULH-156/031	21.0
TR28x5	1/2"	22	4IL5.0TR...	2.75	2.30	2.7	NVRC20-4LH-156/024	23.0
TR30x6	1/2"U	22	4UIR6.0TR158/007...	3.50	1.94	11.0	NVRC20-4ULH-156/021	24.0
TR36x6	5/8"	27	5IL6.0TR...	3.50	2.30	2.7	NVRC25-5LH-156/017	30.0
TR38x7			4UIR7.0TR158/008...	4.00	2.27	11.0	NVRC25-4ULH-156/032	31.0
TR40x7	1/2"U	22	4UIR7.0TR158/008...	4.00	2.27	11.0	NVRC25-4ULH-156/032	33.0
TR42x7			4UIR7.0TR158/008...	4.00	2.27	11.0	NVRC32-4ULH-156/022	35.0
TR44x7			4UIR7.0TR158/008...	4.00	2.27	11.0	NVRC32-4ULH-156/022	37.0
TR46x8			5UIR8.0TR158/010...	4.50	2.59	13.5	NVRC32-5ULH-156/027	38.0
TR48x8	5/8"U	27	5UIR8.0TR158/010...	4.50	2.59	13.5	NVRC32-5ULH-156/027	40.0
TR50x8			5UIR8.0TR158/010...	4.50	2.59	13.5	NVRC32-5ULH-156/027	42.0
TR52x8			5UIR8.0TR158/010...	4.50	2.59	13.5	NVRC32-5ULH-156/027	44.0

U Type RH inserts can be used for both LH and RH applications.

Trapez (con't)

Internal



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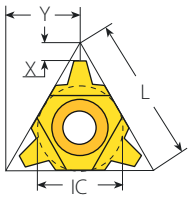
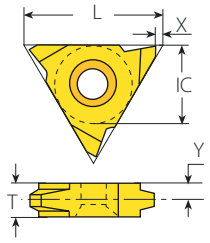


U Style



V Style

U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	mm	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	6.0	4UI6.0TR...	3.50	2.0	11.0	YI4U	YE4U	AVR..-4U (LH)
		7.0	4UI7.0TR...	4.00	2.3	11.0			
		8.0	4UI8.0TR...	4.50	2.6	11.0			
5/8"U	27	8.0	5UI8.0TR...	4.50	2.6	13.7	YI5U	YE5U	AVR..-5U (LH)
		9.0	5UI9.0TR...	5.00	3.0	13.7			

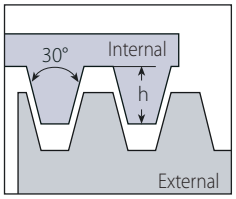
V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	mm	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	6.0	5VIR6.0TR...	5VIL6.0TR...	3.50	1.0	3.3	6	NVR..-5V (LH)
		7.0	5VIR7.0TR...	5VIL7.0TR...	4.00	1.0	3.3	6	
		8.0	5VIR8.0TR...	5VIL8.0TR...	4.50	1.0	3.3	6	
		9.0	5VIR9.0TR...	5VIL9.0TR...	5.00	1.0	4.3	8	
		10.0	5VIR10.0TR...	5VIL10.0TR...	5.50	1.0	4.3	8	
		12.0	5VIR12.0TR...	5VIL12.0TR...	6.50	1.0	5.2	10	

Trapez

MEGALINE

Internal



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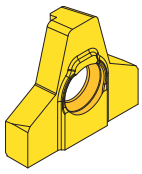
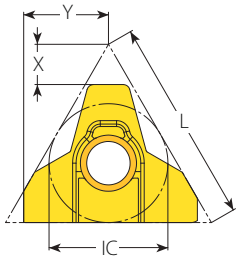
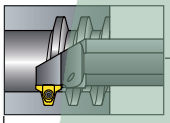


Mega Line



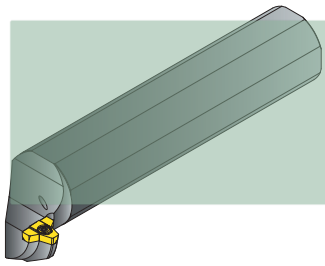
Internal

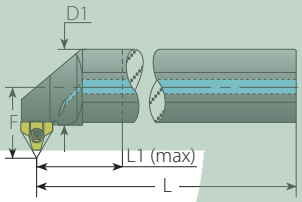
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	mm	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	12.0	5MGIR12.0TR...	6.5	5.38	10.4	96	45
		14.0	5MGIR14.0TR...	8.0	4.38		118	55
		16.0	5MGIR16.0TR...	9.0	5.38		131	61
		18.0	5MGIR18.0TR...	10.0	5.38		145	68
		20.0	5MGIR20.0TR...	11.0	7.38		160	75
		24.0	5MGIR24.0TR...	13.0	7.38		188	88

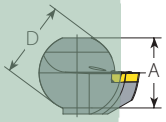


Internal Toolholders for Trapez

MEGALINE







Internal

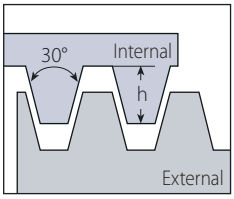
Insert	Ordering Code	Dimensions mm						Min. Bore Dia.	Thread Diameter Range (Min.-Max.)		Spare Parts	
	RH	A	L	L1 (max)	D	D1	F	mm	Short Chip Material	Long Chip Material	Insert Screw	Torx Key
5MGIR12.0TR...	NVRC40-5MG12TR	36	232.5	100	40	39.7	41.5	73	(TR85-300)x12	(TR85-300)x12	S5MG	K6T
	NVRC50-5MG12TR	46	257.5	125	50	49.7	46.5	73	(TR85-300)x12	(TR95-300)x12		
	NVRC60-5MG12TR	57	282.5	150	60	59.7	51.5	83	(TR95-300)x12	(TR105-300)x12		
5MGIR14.0TR...	NVRC40-5MG14TR	36	232.5	100	40	39.7	41.5	101	(TR115-145)x14	(TR115-145)x14		
	NVRC50-5MG14TR	46	257.5	125	50	49.7	46.5	101	(TR115-145)x14	(TR115-145)x14		
	NVRC60-5MG14TR	57	282.5	150	60	59.7	51.5	101	(TR115-145)x14	(TR115-145)x14		
5MGIR16.0TR...	NVRC40-5MG16TR	36	232.5	100	40	39.7	41.5	64	(TR80-175)x16	(TR150-175)x16		
	NVRC50-5MG16TR	46	257.5	125	50	49.7	46.5	134	(TR150-175)x16	(TR150-175)x16		
	NVRC60-5MG16TR	57	282.5	150	60	59.7	51.5	134	(TR150-175)x16	(TR150-175)x16		
5MGIR18.0TR...	NVRC40-5MG18TR	36	232.5	100	40	39.7	41.5	72	(TR85-200)x18	(TR90-200)x18		
	NVRC50-5MG18TR	46	257.5	125	50	49.7	46.5	72	(TR90-200)x18	(TR180-200)x18		
	NVRC60-5MG18TR	57	282.5	150	60	59.7	51.5	162	(TR180-200)x18	(TR180-200)x18		
5MGIR20.0TR...	NVRC40-5MG20TR	36	232.5	100	40	39.7	41.5	80	(TR100-230)x20	(TR100-230)x20		
	NVRC50-5MG20TR	46	257.5	125	50	49.7	46.5	80	(TR100-230)x20	(TR100-230)x20		
	NVRC60-5MG20TR	57	282.5	150	60	59.7	51.5	85	(TR105-230)x20	(TR210-230)x20		
5MGIR24.0TR...	NVRC40-5MG24TR	36	232.5	100	40	39.7	41.5	111	(TR135-300)x24	(TR135-300)x24		
	NVRC50-5MG24TR	46	257.5	125	50	49.7	46.5	111	(TR135-300)x24	(TR135-300)x24		
	NVRC60-5MG24TR	57	282.5	150	60	59.7	51.5	111	(TR135-300)x24	(TR135-300)x24		

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

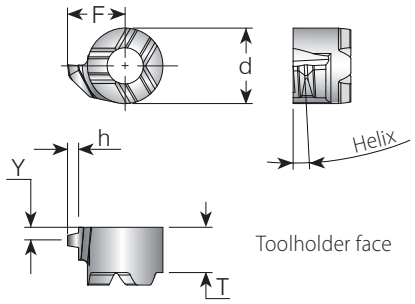
Trapez (con't)

Mini-V

Internal



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



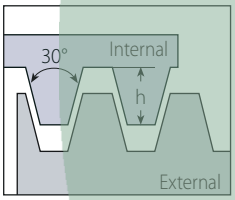
Mini-V

Min. Thread	Insert Style	Pitch	Ordering Code	Dimensions mm					Helix	Toolholder
		mm	RH	d	T	F	Y	h min	Deg.	
TR10x2.0	V08	2.0	V08TH2.0TRR...	6	3.8	4.79	0.90	1.25	3.5	.V08-...
TR11x3.0		3.0	V08TH3.0TRR...			4.95	1.18	1.75	5	
TR16x4.0	V11	4.0	V11TH4.0TRR...	8	4.2	6.53	1.55	2.25	4.5	.V11-...

Trapez

MINIPRO

Internal



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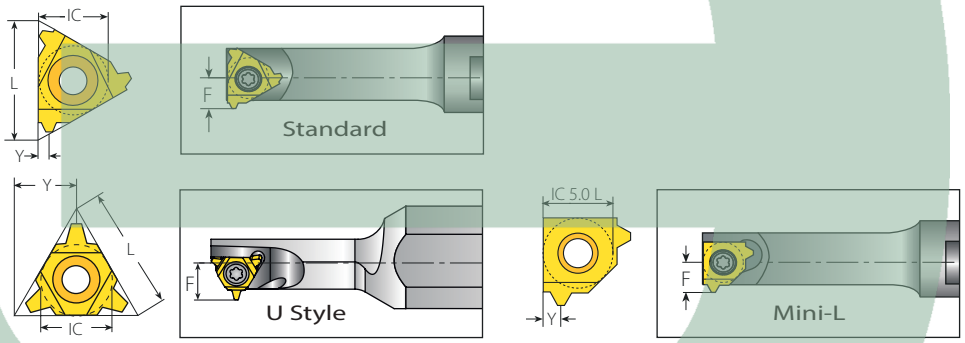


Mini-3 Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	mm	RH	LH	h min	Y	F	mm	Toolholder
5.0	8	1.5	5.0KIR1.5TR...	5.0KIL1.5TR...	0.85	0.70	4.7	7.8	.NVRC7-5.0K (LH)
6.0	10	1.5	6.0KIR1.5TR...	6.0KIL1.5TR...	0.85	0.85	5.3	10.0	.NVRC1..-6.0K (LH)
		2.0	6.0KIR2.0TR...	6.0KIL2.0TR...	1.25	1.30	5.3	10.0	

Mini-3 U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore Dia.	
IC mm	L mm	mm	RH+LH	h min	Y	F	mm	Toolholder
5.0U	8	2.0	5.0KUI2TR...	1.25	4.00	5.7	9.0	.NVRC8-5.0KU (LH)

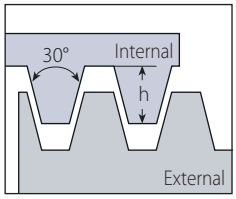
Mini-L

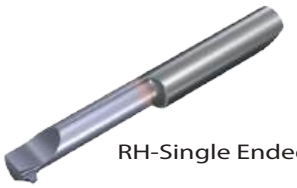
Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	mm	RH	LH	h min	Y	F	mm	Toolholder
5.0L	1.5	5LKIR1.5TR...	5LKIL1.5TR...	0.85	0.85	4.65	8.0	.NVRC10. -5LK (LH)
	2.0	5LKIR2.0TR...	5LKIL2.0TR...	1.25	1.30	4.80	9.0	

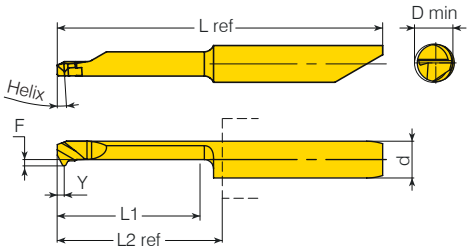
Trapez

MINIPRO

Internal







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

Micro - Single Ended

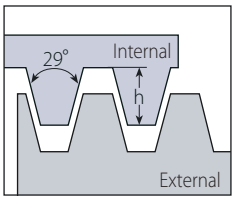
micrOscope

	Insert Dia.	Pitch	Ordering Code		Dimensions mm					Min. Bore Dia.	
Thread	d mm	mm	RH/LH	Helix °	L1	F	Y	h min	L2 ref*	L ref	D mm	Toolholder
TR8-TR10x1.5	6.0	1.5	M662TH1.5TRL20R...	3.3	20.3	2.95	1.1	0.9	23	46.7	6.2	MH...-4.0
TR9-TR12x2.0		2.0	M662TH2.0TRL20R...	4.0		2.95	1.3	1.25				
TR10-TR14x2.0	7.0	2.0	M772TH2.0TRL20R...	3.4		3.45					7.2	MH...-7.0
TR11-TR16x3.0		3.0	M772TH3.0TRL20R...	4.75		3.45	1.5	1.75				

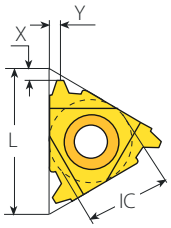
* L2 Ref: Repeatability within +/-0.02.

American ACME

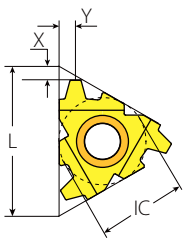
External



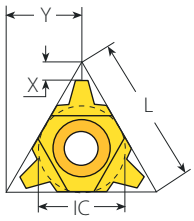
Defined by: ANSI B1.5:1988
Tolerance class: 3G



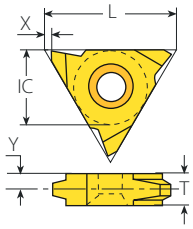
Standard



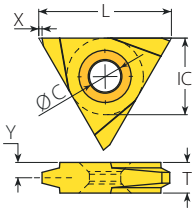
F-Line



U Style

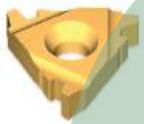


V Style



On Edge

Standard



F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	16	2ER16ACME...	2EL16ACME...	0.92	1.0	1.1	-	-	NL..-2 (LH)
3/8"	16	16	3ER16ACME...	3EL16ACME...	0.92	1.0	1.1	YE3	YI3	AL..-3 (LH)
		14	3ER14ACME...	3EL14ACME...	1.03	1.0	1.2			
		12	3ER12ACME...	3EL12ACME...	1.19	1.1	1.2			
		10	3ER10ACME...	3EL10ACME...	1.52	1.3	1.4			
		8	3ER8ACME...	3EL8ACME...	1.84	1.4	1.5			
		7	3ER7ACME...	3EL7ACME...	2.08	1.9	2.2			
1/2"	22	7	4ER7ACME...	4EL7ACME...	2.08	1.9	2.2	YE4	YI4	AL..-4 (LH)
		6	4ER6ACME...	4EL6ACME...	2.37	1.8	2.1			
		5	4ER5ACME...	4EL5ACME...	2.79	2.0	2.3			
1/2"F	23	6	4FER6ACME...		2.37	1.8	2.1	YE4F		AL...-4F
		5	4FER5ACME...		2.79	2.0	2.3			
5/8"	27	4	5ER4ACME...	5EL4ACME...	3.43	2.4	2.7	YE5	YI5	AL..-5 (LH)

U Style

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

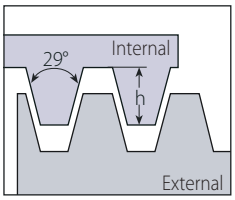
Insert Size		Pitch	Ordering Code	Dimensions mm				
IC	L mm	TPI	RH	h min	T	Ø C	X	Y
1/2"	22	12	TNEC43EI12ACME...	1.19	4.76	5.2	0.5	2.4
		10	TNEC43EI10ACME...	1.52				
		8	TNEC43EI8ACME...	1.83				
		6	TNEC43EI6ACME...	2.36				
		4	TNEC43EI4ACME...	3.43				
5/8"	27	4	TNEC54EI4ACME...	3.43	6.35	6.5		3.2
		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)

MEGALINE

External



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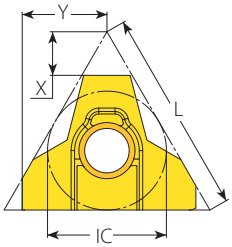
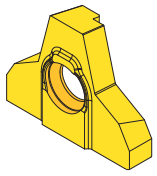
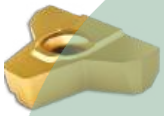


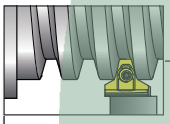


Mega Line

External

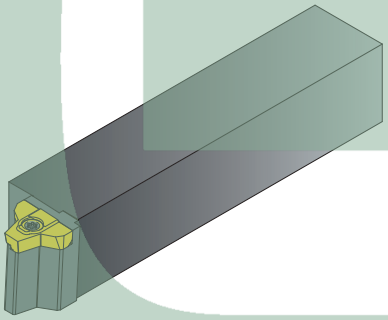


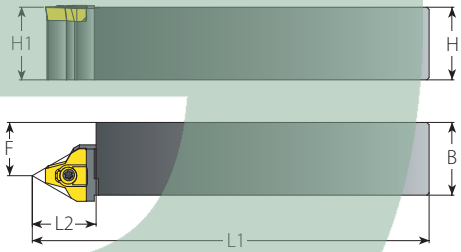
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	TPI	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	2	5MGER2ACME...	6.60	4.81	11.3	95	44
		1 1/2	5MGER1-1/2ACME...	8.72	5.81		125	58
		1 1/3	5MGER1-1/3ACME...	9.78	6.81		140	65
		1	5MGER1ACME...	12.95	8.31		186	87



External Toolholders for American ACME

MEGALINE





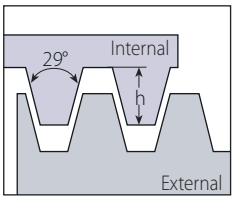
External

Insert	Ordering Code	Dimensions				Thread Diameter Range (Min.-Max.)	Spare Parts	
	RH	H=B=H1	F	L1	L2		Insert Screw	Torx Key
5MGER2ACME...	NL25-5MG2ACME	25	16.5	155	22	(3"-5")-2ACME	S5MG	K6T
	NL32-5MG2ACME	32	23.5	175				
	NL40-5MG2ACME	40	31.5	205				
5MGER1-1/2ACME...	NL25-5MG1-1/2ACME	25	16.5	155	22	(3"-5")-1 1/2ACME		
	NL32-5MG1-1/2ACME	32	23.5	175				
	NL40-5MG1-1/2ACME	40	31.5	205				
5MGER1-1/3ACME...	NL25-5MG1-1/3ACME	25	16.5	155	22	(3"-5")-1 1/3ACME		
	NL32-5MG1-1/3ACME	32	23.5	175				
	NL40-5MG1-1/3ACME	40	31.5	205				
5MGER1ACME...	NL25-5MG1ACME	25	16.5	155	22	(3.5"-5")-1ACME		
	NL32-5MG1ACME	32	23.5	175				
	NL40-5MG1ACME	40	31.5	205				

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

American ACME (con't)

Internal



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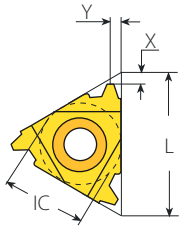
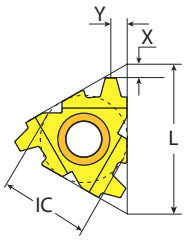
Tolerance class: 3G

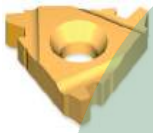


Standard



F-Line

Standard

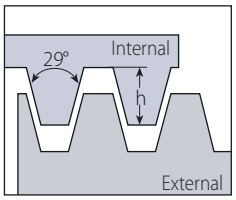


F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
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			
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			
1/2"F	23	6	4FIR6ACME...		2.37	1.8	2.1	YI4F		AVRC...-4F
		5	4FIR5ACME...		2.79	2.0	2.3			
5/8"	27	4	5IR4ACME...	5IL4ACME...	3.43	2.3	2.6	YI5	YE5	AVR..-5 (LH)

American ACME (con't)

Internal



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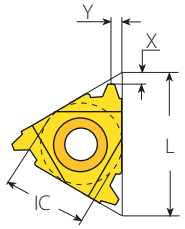
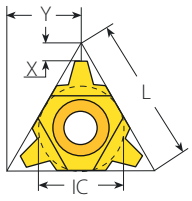


Standard



U Style

Coarse Pitch RH

Thread	Insert Size		Ordering Code	Dimensions mm			Anvil		Min Bore Dia.
TPI	IC	L mm	RH	h min	X	Y	RH	Toolholder RH	mm
1/2"x10	6.0U	10	6.0KUIR10ACME158/005...	1.52	1.0	5.2	-	NVRC8-6.0KU-156/003	10.16
5/8"x8	1/4"U	11	2UIR8ACME158/006...	1.84	1.0	5.5	-	NVRC10-2U-156/004	12.70
3/4"x6	3/8"	16	3IR6ACME...	2.37	1.7	1.8	-	NVRC11-3-156/005	14.82
7/8"x6			3IR6ACME...	2.37	1.7	1.8	-	NVRC13-3-156/006	18.42
1"x5	1/2"	22	4IR5ACME158/018...	2.79	2.0	2.3	-	NVRC17-4-156/039	20.32
1 1/8"x5			4IR5ACME...	2.79	2.0	2.3	-	NVRC20-4-156/008	24.00
1 1/4"x5			4IR5ACME...	2.79	2.0	2.3	-	NVRC20-4-156/009	27.18
1 1/2"x4	5/8"	27	5IR4ACME...	3.43	2.3	2.6	-	NVRC28-5-156/010	32.38
1 3/4"x4			5IR4ACME...	3.43	2.3	2.6	YI5-1P	AVRC32-5	38.74

Coarse Pitch LH

Thread	Insert Size		Ordering Code	Dimensions mm			Anvil		Min Bore Dia.
TPI	IC	L mm	LH	h min	X	Y	LH	Toolholder LH	mm
1/2"x10	6.0U	10	6.0KUIR10ACME158/005...	1.52	1.0	5.2	-	NVRC8-6.0KULH-156/037	10.16
5/8"x8	1/4"U	11	2UIR8ACME158/006...	1.84	1.0	5.5	-	NVRC10-2ULH-156/038	12.70
3/4"x6	3/8"	16	3IL6ACME...	2.37	1.7	1.8	-	NVRC11-3LH-156/025	14.82
7/8"x6			3IL6ACME...	2.37	1.7	1.8	-	NVRC13-3LH-156/028	18.42
1"x5	1/2"	22	4IL5ACME158/019...	2.79	2.0	2.3	-	NVRC17-4LH-156/040	20.32
1 1/8"x5			4IL5ACME...	2.79	2.0	2.3	-	NVRC20-4LH-156/024	24.00
1 1/4"x5			4IL5ACME...	2.79	2.0	2.3	-	NVRC20-4LH-156/033	27.18
1 1/2"x4	5/8"	27	5IL4ACME...	3.43	2.3	2.6	-	NVRC28-5LH-156/034	32.38
1 3/4"x4			5IL4ACME...	3.43	2.3	2.6	YE5-1P	AVRC32-5LH	38.74

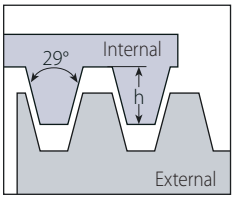
U Type RH Inserts Can Be Used for Both LH and RH Applications.

U Style

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

American ACME (con't)

Internal



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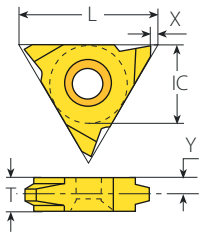
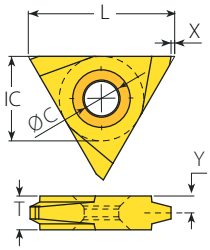


V Style

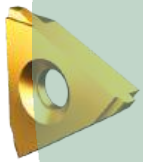


On Edge

V Style

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



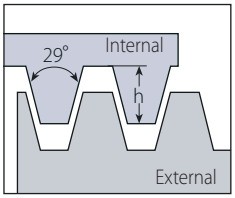
Insert Size		Pitch	Ordering Code	Dimensions mm				
IC	L mm	TPI	RH	h min	T	Ø C	X	Y
1/2"	22	12	TNEC43EI12ACME...	1.19	4.76	5.2	0.5	2.4
		10	TNEC43EI10ACME...	1.52				
		8	TNEC43EI8ACME...	1.83				
		6	TNEC43EI6ACME...	2.36				
		4	TNEC43EI4ACME...	3.43				
5/8"	27	4	TNEC54EI4ACME...	3.43	6.35	6.5		3.2
		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)

MEGALINE

Internal



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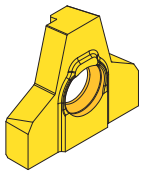
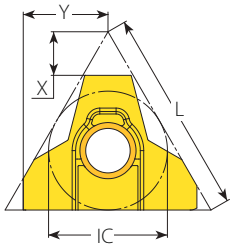
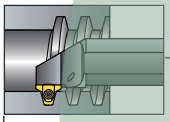


Mega Line



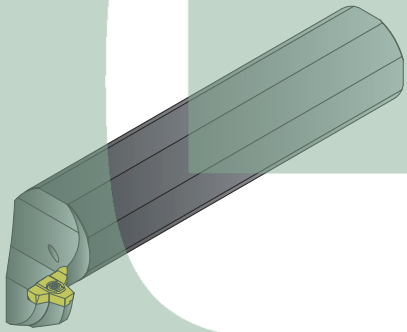
Internal

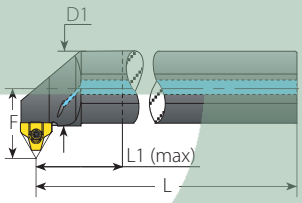
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	TPI	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	2	5MGIR2ACME...	6.54	4.81	10.4	94	44
		1 1/2	5MGIR1-1/2ACME...	8.55	5.81		124	58
		1 1/3	5MGIR1-1/3ACME...	9.56	6.81		139	65
		1	5MGIR1ACME...	12.57	8.31		184	86

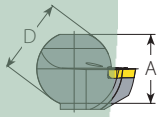


Internal Toolholders for American ACME

MEGALINE







Internal

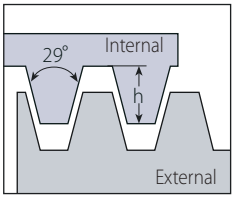
Insert	Ordering Code	Dimensions mm						Min. Bore Dia.	Thread Diameter Range (Min.-Max.)		Spare Parts	
	RH	A	L	L1 (max)	D	D1	F	mm	Short Chip Material	Long Chip Material	Insert Screw	Torx Key
5MGIR2ACME...	NVRC40-5MG2ACME	36	232.5	100	40	39.7	41.5	63.5	(3"-5")-2ACME	(3.5"-5")-2ACME	S5MG	K6T
	NVRC50-5MG2ACME	46	257.5	125	50	49.7	46.5	76.2	(3.5"-5")-2ACME	(4"-5")-2ACME		
	NVRC60-5MG2ACME	57	282.5	150	60	59.7	51.5	88.9	(4"-5")-2ACME	(4.5"-5")-2ACME		
5MGIR1-1/2ACME...	NVRC40-5MG1-1/2ACME	36	232.5	100	40	39.7	41.5	59.3	(3''-5")-1 1/2ACME	(3.5''-5")-1 1/2ACME		
	NVRC50-5MG1-1/2ACME	46	257.5	125	50	49.7	46.5	72.0	(3.5''-5")-1 1/2ACME	(4''-5")-1 1/2ACME		
	NVRC60-5MG1-1/2ACME	57	282.5	150	60	59.7	51.5	84.7	(4''-5")-1 1/2ACME	(4.5''-5")-1 1/2ACME		
5MGIR1-1/3ACME...	NVRC40-5MG1-1/3ACME	36	232.5	100	40	39.7	41.5	57.2	(3''-5")-1 1/3ACME	(3.5''-5")-1 1/3ACME		
	NVRC50-5MG1-1/3ACME	46	257.5	125	50	49.7	46.5	69.9	(3.5''-5")-1 1/3ACME	(4.0''-5")-1 1/3ACME		
	NVRC60-5MG1-1/3ACME	57	282.5	150	60	59.7	51.5	82.6	(4.0''-5")-1 1/3ACME	(4.5''-5")-1 1/3ACME		
5MGIR1ACME...	NVRC40-5MG1ACME	36	232.5	100	40	39.7	41.5	63.5	(3.5''-5")-1ACME	(4''-5")-1ACME		
	NVRC50-5MG1ACME	46	257.5	125	50	49.7	46.5	76.2	(4''-5")-1ACME	(4.5''-5")-1ACME		
	NVRC60-5MG1ACME	57	282.5	150	60	59.7	51.5	76.2	(4''-5")-1ACME	(4.5''-5")-1ACME		

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

American ACME (con't)

MINIPRO

Internal



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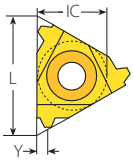
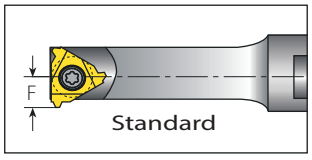
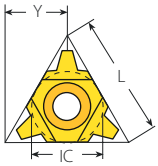
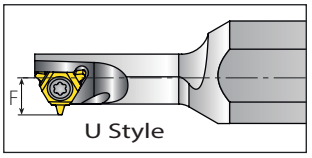
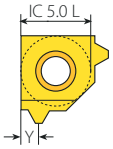
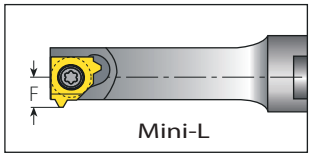












Mini-3 Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0	8	16	5.0KIR16ACME...	5.0KIL16ACME...	0.92	0.7	4.7	7.8	.NVRC7-5.0K (LH)
6.0	10	12	6.0KIR12ACME...	6.0KIL12ACME...	1.19	1.1	5.1	10.0	.NVRC1..-6.0K (LH)

Mini-3 U Style

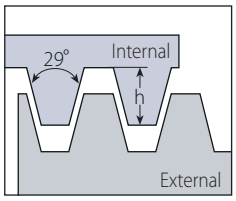
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH+LH	h min	Y	F	mm	Toolholder
5.0U	8	14	5.0KUI14ACME...	1.03	4.0	5.8	9.0	.NVRC8-5.0KU (LH)
		12	5.0KUI12ACME...	1.19				
		10	5.0KUI10ACME...	1.52				

Mini-L

Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0L	12	5LKIR12ACME...	5LKIL12ACME...	1.19	1.1	4.42	8.0	.NVRC10. -5LK (LH)

American ACME (2G)

External



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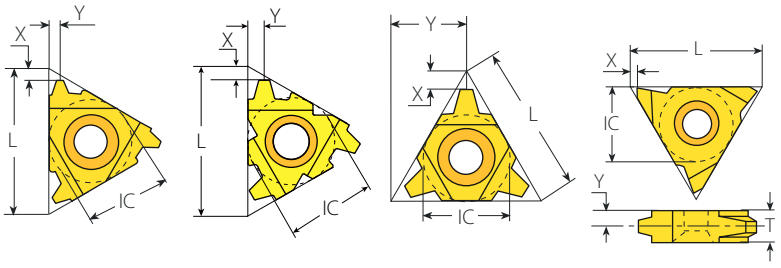


Standard | F-Line | U Style | V Style

Standard

F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	10	3ER10ACME-2G...	3EL10ACME-2G...	1.52	1.3	1.4	YE3	YI3	AL..-3 (LH)
		8	3ER8ACME-2G...	3EL8ACME-2G...	1.84	1.4	1.5			
1/2"	22	5	4ER5ACME-2G...	4EL5ACME-2G...	2.79	2.0	2.3	YE4	YI4	AL..-4 (LH)
1/2"F	23	5	4FER5ACME-2G...		2.79	2.0	2.3	YE4F		AL...-4F

U Style

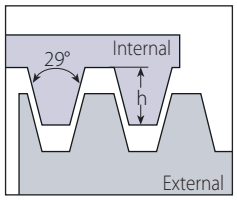
Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4	4UE4ACME-2G...	3.43	2.3	11.0	YE4U	YI4U	AL..-4U (LH)
		3.5	4UE3.5ACME-2G...	3.85	2.6	11.0			
		3	4UE3ACME-2G...	4.49	3.0	11.0			

V Style

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

American ACME (2G) (con't)

Internal



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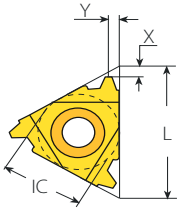
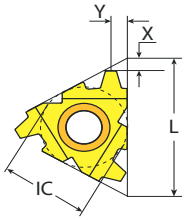
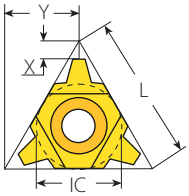


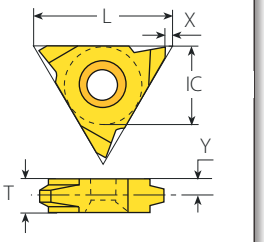
Standard



F-Line



U Style



V Style

Standard

F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	10	3IR10ACME-2G...	3IL10ACME-2G...	1.52	1.2	1.3	YI3	YE3	AVR..-3 (LH)
		8	3IR8ACME-2G...	3IL8ACME-2G...	1.84	1.4	1.5			
1/2"	22	5	4IR5ACME-2G...	4IL5ACME-2G...	2.79	2.0	2.3	YI4	YE4	AVR..-4 (LH)
1/2"F	23	5	4FIR5ACME-2G...		2.79	2.0	2.3	YI4F		AVRC...-4F

U Style

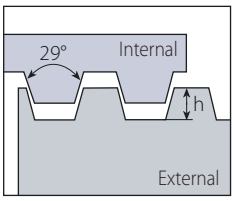
Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4	4UI4ACME-2G...	3.43	2.3	11.0	YI4U	YE4U	AVR..-4U (LH)
		3.5	4UI3.5ACME-2G...	3.85	2.6	11.0			
		3	4UI3ACME-2G...	4.49	2.9	11.0			

V Style

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

Stub ACME

External



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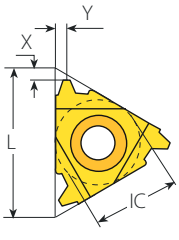
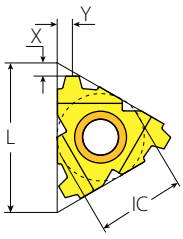
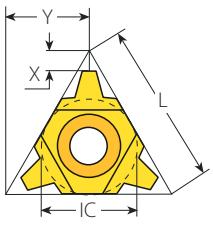
Tolerance class: 2G



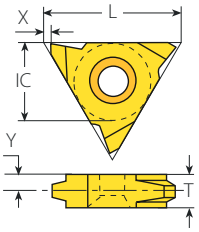
Standard



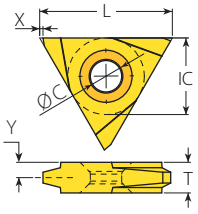
F-Line



U Style

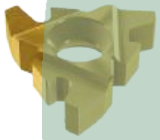


V Style



On Edge

Standard



F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	16	2ER16STACME...	2EL16STACME...	0.60	1.0	1.0	-	-	NL..-2 (LH)
3/8"	16	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			
		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			
		4	4ER4STACME...	4EL4STACME...	2.16	2.3	2.3			
1/2"F	23	6	4FER6STACME...		1.52	1.7	1.8	YE4F		AL...-4F
		5	4FER5STACME...		1.78	2.1	2.3			
		4	4FER4STACME...		2.16	2.3	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			

U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
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				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
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	8	NL..-5V-8 (LH)

On Edge

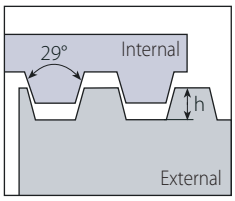
Insert Size		Pitch	Ordering Code	Dimensions mm				
IC	L mm	TPI	RH	h min	T	Ø C	X	Y
3/8"	16	12	TNEC32EI12STACME...	0.76	3.18	3.8	1.0	1.6
		10	TNEC32EI10STACME...	1.02				
		8	TNEC32EI8STACME...	1.22				
1/2"	22	12	TNEC43EI12STACME...	0.76	4.76	5.2	0.5	2.4
		10	TNEC43EI10STACME...	1.02				
		8	TNEC43EI8STACME...	1.22				
		6	TNEC43EI6STACME...	1.52				
		4	TNEC43EI4STACME...	2.16				
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)

MEGALINE

External



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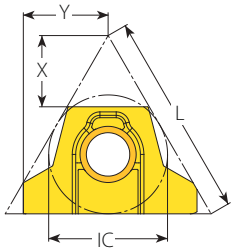
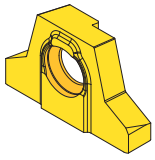
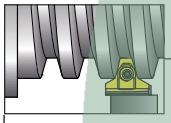




Mega Line

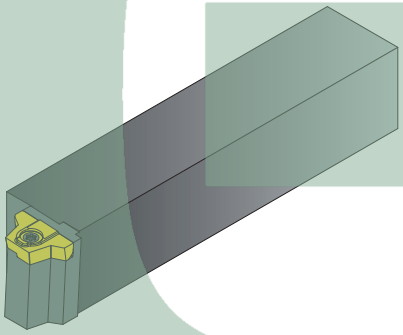
External

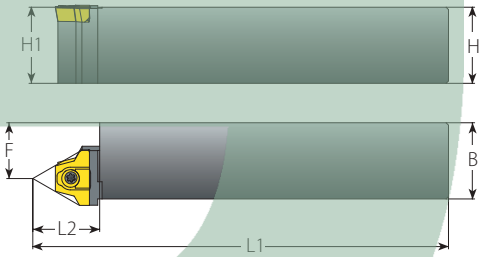
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	TPI	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	1	5MGER1STACME...	7.87	9.51	11.3	113	53



External Toolholders for Stub ACME

MEGALINE





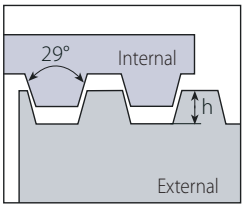
External

Insert	Ordering Code	Dimensions mm				Thread Diameter Range (Min.-Max.)	Spare Parts	
	RH	H=B=H1	F	L1	L2		Insert Screw	Torx Key
5MGER1STACME...	NL25-5MG1STACME	25	16.5	155	22	(3.5"-5")-1STACME	S5MG	K6T
	NL32-5MG1STACME	32	23.5	175				
	NL40-5MG1STACME	40	31.5	205				

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

Stub ACME (con't)

Internal



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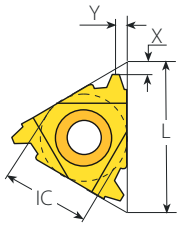
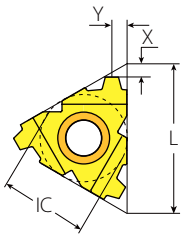
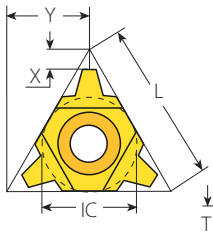


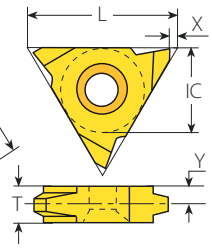
Standard



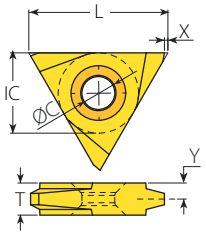
F-Line



U Style

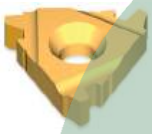


V Style



On Edge

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	16	2IR16STACME...	2IL16STACME...	0.60	1.0	1.0	-	-	NVR..-2 (LH)
3/8"	16	16	3IR16STACME...	3IL16STACME...	0.60	1.0	1.0	YI3	YE3	AVR..-3 (LH)
		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			
		6	3IR6STACME...	3IL6STACME...	1.52	1.7	1.8			
1/2"	22	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			
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			
5/8"	27	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		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
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				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
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

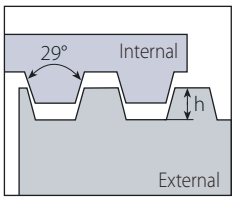
Insert Size		Pitch	Ordering Code	Dimensions mm				
IC	L mm	TPI	RH	h min	T	Ø C	X	Y
3/8"	16	12	TNEC32EI12STACME...	0.76	3.175	3.8	1	1.6
		10	TNEC32EI10STACME...	1.02				
		8	TNEC32EI8STACME...	1.22				
1/2"	22	12	TNEC43EI12STACME...	0.76	4.76	5.2	0.5	2.4
		10	TNEC43EI10STACME...	1.02				
		8	TNEC43EI8STACME...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

MEGALINE

Internal



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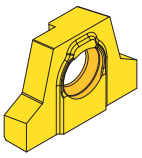
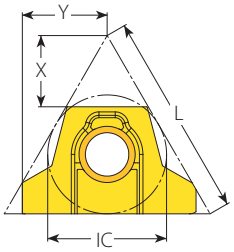
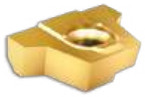


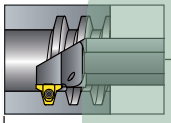
Mega Line



Internal

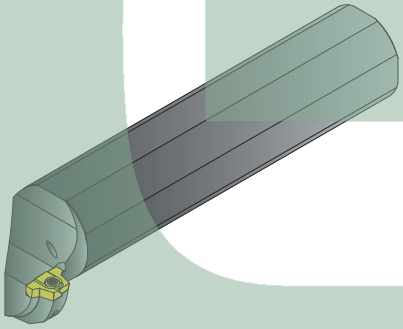


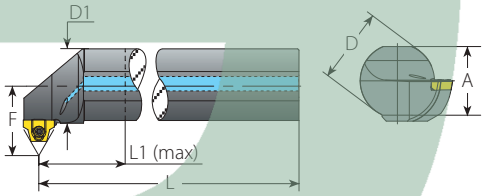
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	TPI	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	1	5MGIR1STACME...	7.82	9.51	10.4	113	53



Internal Toolholders for Stub ACME

MEGALINE





Internal

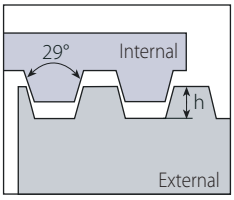
Insert	Ordering Code	Dimensions						Min. Bore Dia.	Thread Diameter Range (Min.-Max.)		Spare Parts	
	RH	A	L	L1 (max)	D	D1	F	mm	Short Chip Material	Long Chip Material	Insert Screw	Torx Key
5MGIR 1STACME...	NVRC40-5MG1STACME	36	232.5	100	40	39.7	41.5	73.7	(3.5"-5")-1STACME	(3.5"-5")-1STACME	S5MG	K6T
	NVRC50-5MG1STACME	46	257.5	125	50	49.7	46.5	73.7	(3.5"-5")-1STACME	(4.0"-5")-1STACME		
	NVRC60-5MG1STACME	57	282.5	150	60	59.7	51.5	86.4	(4.0"-5")-1STACME	(4.5"-5")-1STACME		

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

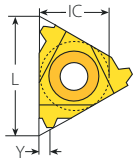
Stub ACME (con't)

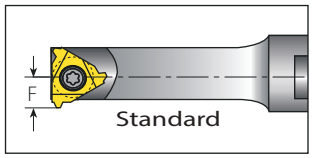
MINIPRO

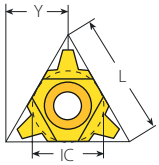
Internal

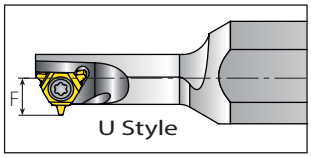


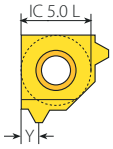
Defined by: ANSI B1.8:1988
Tolerance class: 2G

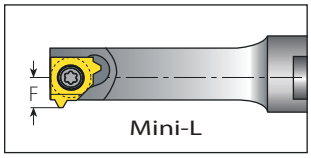












Mini-3 Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0	8	16	5.0KIR16STACME...	5.0KIL16STACME...	0.60	0.7	4.7	7.8	.NVRC7-5.0K (LH)
6.0	10	12	6.0KIR12STACME...	6.0KIL12STACME...	0.76	1.2	5.1	10.0	.NVRC1..-6.0K (LH)

Mini-3 U Style

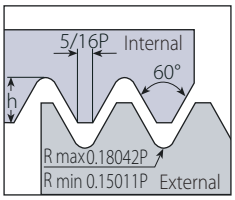
Insert Size		Pitch	Ordering Code	Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH+LH	h min	Y	F	mm	Toolholder
5.0U	8	14	5.0KUI14STACME...	0.67	4.0	5.8	9.0	.NVRC8-5.0KU (LH)
		12	5.0KUI12STACME...	0.76		5.7		
		10	5.0KUI10STACME...	1.02		5.6		

Mini-L

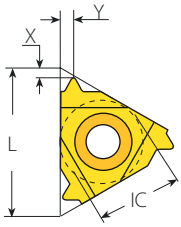
Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm		TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0L		12	5LKIR12STACME...	5LKIL12STACME...	0.76	1.2	4.42	8.0	.NVRC10. -5LK (LH)

UNJ - UNJC, UNJF, UNJEF, UNJS

External

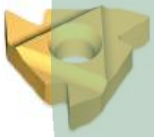


Defined by: MIL-S-8879C
Tolerance class: 3A/3B



Standard

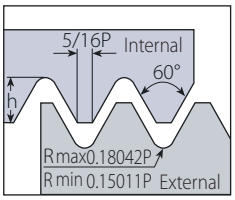
Standard



Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	48	2ER48UNJ...	2EL48UNJ...	0.31	0.6	0.5	-	-	NL..-2 (LH)
		44	2ER44UNJ...	2EL44UNJ...	0.33	0.6	0.6			
		40	2ER40UNJ...	2EL40UNJ...	0.37	0.6	0.6			
		36	2ER36UNJ...	2EL36UNJ...	0.41	0.6	0.6			
		32	2ER32UNJ...	2EL32UNJ...	0.46	0.6	0.7			
		28	2ER28UNJ...	2EL28UNJ...	0.52	0.7	0.7			
		24	2ER24UNJ...	2EL24UNJ...	0.61	0.7	0.8			
		20	2ER20UNJ...	2EL20UNJ...	0.73	0.8	0.9			
		18	2ER18UNJ...	2EL18UNJ...	0.81	0.8	1.0			
		16	2ER16UNJ...	2EL16UNJ...	0.92	0.9	1.1			
		14	2ER14UNJ...	2EL14UNJ...	1.05	1.0	1.2			
3/8"	16	48	3ER48UNJ...	3EL48UNJ...	0.31	0.6	0.5	YE3	YI3	AL..-3 (LH)
		44	3ER44UNJ...	3EL44UNJ...	0.33	0.6	0.6			
		40	3ER40UNJ...	3EL40UNJ...	0.37	0.6	0.6			
		36	3ER36UNJ...	3EL36UNJ...	0.41	0.6	0.6			
		32	3ER32UNJ...	3EL32UNJ...	0.46	0.6	0.7			
		28	3ER28UNJ...	3EL28UNJ...	0.52	0.7	0.7			
		24	3ER24UNJ...	3EL24UNJ...	0.61	0.7	0.8			
		20	3ER20UNJ...	3EL20UNJ...	0.73	0.8	0.9			
		18	3ER18UNJ...	3EL18UNJ...	0.81	0.8	1.0			
		16	3ER16UNJ...	3EL16UNJ...	0.92	0.9	1.1			
		14	3ER14UNJ...	3EL14UNJ...	1.05	1.0	1.2			
		13	3ER13UNJ...	3EL13UNJ...	1.13	1.0	1.3			
		12	3ER12UNJ...	3EL12UNJ...	1.22	1.1	1.3			
		11	3ER11UNJ...	3EL11UNJ...	1.33	1.2	1.5			
		10	3ER10UNJ...	3EL10UNJ...	1.47	1.2	1.5			
		9	3ER9UNJ...	3EL9UNJ...	1.63	1.3	1.7			
		8	3ER8UNJ...	3EL8UNJ...	1.83	1.2	1.6			

UNJ - UNJC, UNJF, UNJEF, UNJS (con't)

External



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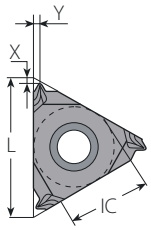
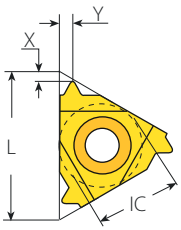
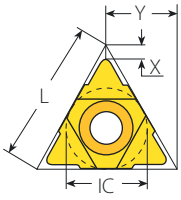
Tolerance class: 3A/3B



SCB Sintered Chipbreaker



Standard



U Style

Standard

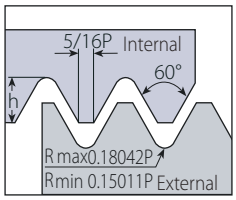
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8" SCB	16	36	3JER36UNJ...		0.41	1.3	0.5	YE3	-	AL..-3
		32	3JER32UNJ...		0.46	1.2	0.5			
		28	3JER28UNJ...		0.52	0.7	0.8			
		24	3JER24UNJ...		0.61	0.7	0.8			
		20	3JER20UNJ...		0.73	0.7	0.8			
		18	3JER18UNJ...		0.81	0.7	0.8			
		16	3JER16UNJ...		0.92	0.8	0.8			
		14	3JER14UNJ...		1.05	1.3	1.5			
		12	3JER12UNJ...		1.22	1.3	1.5			
		10	3JER10UNJ...		1.47	1.3	1.5			
		8	3JER8UNJ...		1.83	1.4	1.5			
1/2"	22	7	4ER7UNJ...	4EL7UNJ...	2.09	1.7	2.3	YE4	YI4	AL..-4 (LH)
		6	4ER6UNJ...	4EL6UNJ...	2.44	1.7	2.3			
		5	4ER5UNJ...	4EL5UNJ...	2.93	1.8	2.5			
5/8"	27	4.5	5ER4.5UNJ...	5EL4.5UNJ...	3.26	2.0	2.7	YE5	YI5	AL..-5 (LH)
		4	5ER4UNJ...	5EL4UNJ...	3.67	2.2	3.1			

U Style

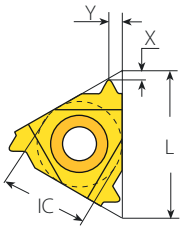
Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4.5	4UE4.5UNJ...	3.26	2.1	11.0	YE4U	YI4U	AL..-4U (LH)
		4	4UE4UNJ...	3.67	2.2	11.0			

UNJ - UNJC, UNJF, UNJEF, UNJS (con't)

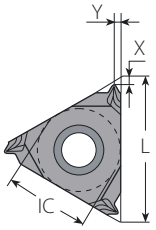
Internal



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



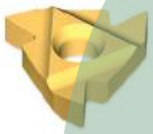
Standard

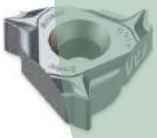


SCB
Sintered
Chipbreaker

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	48	2IR48UNJ...	2IL48UNJ...	0.28	0.6	0.5	-	-	NVR..-2 (LH)
		44	2IR44UNJ...	2IL44UNJ...	0.30	0.6	0.6			
		40	2IR40UNJ...	2IL40UNJ...	0.33	0.6	0.6			
		36	2IR36UNJ...	2IL36UNJ...	0.37	0.6	0.6			
		32	2IR32UNJ...	2IL32UNJ...	0.42	0.6	0.7			
		28	2IR28UNJ...	2IL28UNJ...	0.47	0.7	0.7			
		24	2IR24UNJ...	2IL24UNJ...	0.55	0.7	0.8			
		20	2IR20UNJ...	2IL20UNJ...	0.66	0.8	0.9			
		18	2IR18UNJ...	2IL18UNJ...	0.74	0.8	1.0			
		16	2IR16UNJ...	2IL16UNJ...	0.83	0.9	1.1			
		14	2IR14UNJ...	2IL14UNJ...	0.95	1.0	1.2			
1/4" SCB	11	36	2JIR36UNJ...		0.37	1.1	0.5	-	-	NVR..-2
		32	2JIR32UNJ...		0.42	1.2	0.5			
		28	2JIR28UNJ...		0.47	0.6	0.8			
		24	2JIR24UNJ...		0.55	0.6	0.8			
		20	2JIR20UNJ...		0.66	0.6	0.8			
		18	2JIR18UNJ...		0.74	0.6	0.8			
		16	2JIR16UNJ...		0.83	0.6	0.8			
		14	2JIR14UNJ...		0.95	0.6	0.8			

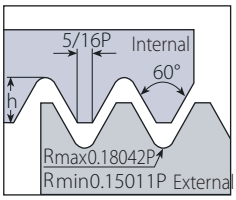




SCB

UNJ - UNJC, UNJF, UNJEF, UNJS (con't)

Internal



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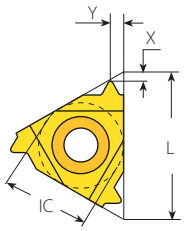
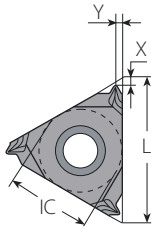


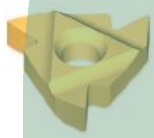
Standard



SCB Sintered Chipbreaker

Standard

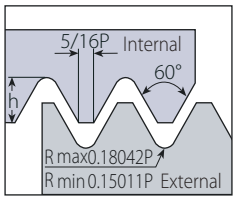
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	48	3IR48UNJ...	3IL48UNJ...	0.28	0.6	0.5	YI3	YE3	AVR..-3 (LH)
		44	3IR44UNJ...	3IL44UNJ...	0.30	0.6	0.6			
		40	3IR40UNJ...	3IL40UNJ...	0.33	0.6	0.6			
		36	3IR36UNJ...	3IL36UNJ...	0.37	0.6	0.6			
		32	3IR32UNJ...	3IL32UNJ...	0.42	0.6	0.7			
		28	3IR28UNJ...	3IL28UNJ...	0.47	0.7	0.7			
		24	3IR24UNJ...	3IL24UNJ...	0.55	0.7	0.8			
		20	3IR20UNJ...	3IL20UNJ...	0.66	0.8	0.9			
		18	3IR18UNJ...	3IL18UNJ...	0.74	0.8	1.0			
		16	3IR16UNJ...	3IL16UNJ...	0.83	0.9	1.1			
		14	3IR14UNJ...	3IL14UNJ...	0.95	1.0	1.2			
		13	3IR13UNJ...	3IL13UNJ...	1.02	1.0	1.3			
		12	3IR12UNJ...	3IL12UNJ...	1.11	1.1	1.3			
		11	3IR11UNJ...	3IL11UNJ...	1.21	1.2	1.5			
		10	3IR10UNJ...	3IL10UNJ...	1.33	1.2	1.5			
		9	3IR9UNJ...	3IL9UNJ...	1.48	1.3	1.7			
		8	3IR8UNJ...	3IL8UNJ...	1.66	1.2	1.6			
3/8" SCB	16	28	3JIR28UNJ...		0.47	0.6	0.8	YI3	-	AVR..-3
		24	3JIR24UNJ...		0.55	0.6	0.8			
		20	3JIR20UNJ...		0.66	0.6	0.8			
		18	3JIR18UNJ...		0.74	0.6	0.8			
		16	3JIR16UNJ...		0.83	0.6	0.8			
		14	3JIR14UNJ...		0.95	1.1	1.5			
		12	3JIR12UNJ...		1.11	1.1	1.5			
		10	3JIR10UNJ...		1.33	1.1	1.5			
		8	3JIR8UNJ...		1.66	1.0	1.5			
1/2"	22	7	4IR7UNJ...	4IL7UNJ...	1.90	1.7	2.3	YI4	YE4	AVR..-4 (LH)
		6	4IR6UNJ...	4IL6UNJ...	2.21	1.7	2.3			
		5	4IR5UNJ...	4IL5UNJ...	2.66	1.8	2.5			
5/8"	27	4.5	5IR4.5UNJ...	5IL4.5UNJ...	2.95	2.0	2.7	YI5	YE5	AVR..-5 (LH)
		4	5IR4UNJ...	5IL4UNJ...	3.32	2.2	2.4			



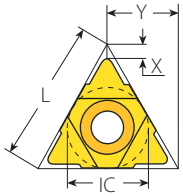
SCB

UNJ - UNJC, UNJF, UNJEF, UNJS (con't)

Internal



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



U Style

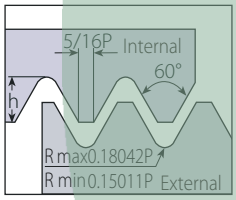
U Style

Insert Size		Pitch	Ordering Code	Dimensions mm			Anvil		
IC	L mm	TPI	RH+LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4.5	4UI4.5UNJ...	2.95	2.1	11.0	YI4U	YE4U	AVR..-4U (LH)
		4	4UI4UNJ...	3.32	2.2	11.0			

UNJ - UNJC, UNJF, UNJEF, UNJS

MINIPRO

Internal



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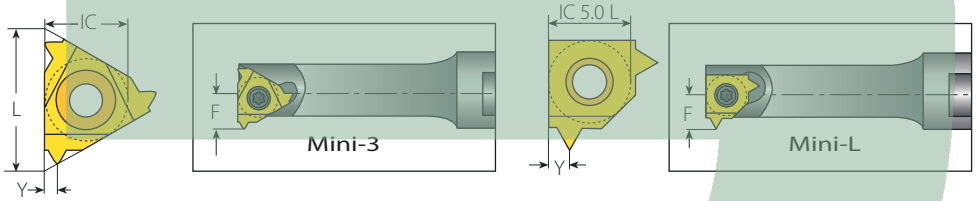
Tolerance class: 3A/3B



Mini-3 Standard

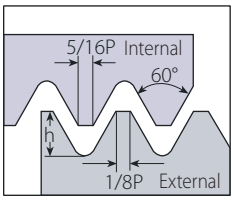
Insert Size		Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
6.0	10	20	6.0KIR20UNJ...	6.0KIL20UNJ...	0.66	0.9	4.90	9.8	.NVRC1..-6.0K (LH)

Mini-L

Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	TPI	RH	LH	h min	Y	F	mm	Toolholder
5.0L	32	5LKIR32UNJ...	5LKIL32UNJ...	0.42	0.6	3.92	7.6	.NVRC10. -5LK (LH)
	28	5LKIR28UNJ...	5LKIL28UNJ...	0.47	0.6	3.99	7.6	
	24	5LKIR24UNJ...	5LKIL24UNJ...	0.55	0.8	4.20	7.6	
	20	5LKIR20UNJ...	5LKIL20UNJ...	0.66	0.9	4.21	7.7	
	18	5LKIR18UNJ...	5LKIL18UNJ...	0.74	1.0	4.30	7.8	
	16	5LKIR16UNJ...	5LKIL16UNJ...	0.83	1.0	4.41	7.8	
	14	5LKIR14UNJ...	5LKIL14UNJ...	0.95	1.0	4.54	7.9	

MJ

External



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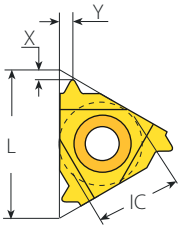
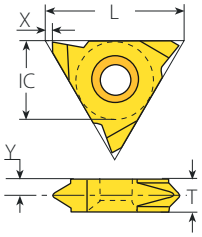


Standard



Slim Throat

Standard

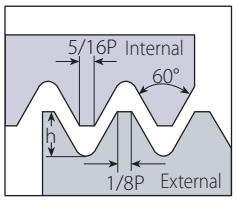
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	1.0	2ER1.0MJ...	2EL1.0MJ...	0.58	0.7	0.7	-	-	NL..-2 (LH)
		1.25	2ER1.25MJ...	2EL1.25MJ...	0.72	0.8	0.9			
		1.5	2ER1.5MJ...	2EL1.5MJ...	0.87	0.8	1.0			
3/8"	16	0.7	3ER0.7MJ...	3EL0.7MJ...	0.40	0.6	0.6	YE3	YI3	AL..-3 (LH)
		0.8	3ER0.8MJ...	3EL0.8MJ...	0.45	0.7	0.7			
		1.0	3ER1.0MJ...	3EL1.0MJ...	0.58	0.7	0.7			
		1.25	3ER1.25MJ...	3EL1.25MJ...	0.72	0.8	0.9			
		1.5	3ER1.5MJ...	3EL1.5MJ...	0.87	0.8	1.0			
		2.0	3ER2.0MJ...	3EL2.0MJ...	1.15	1.0	1.3			
		2.5	3ER2.5MJ...	3EL2.5MJ...	1.49	1.1	1.5			
		3.0	3ER3.0MJ...	3EL3.0MJ...	1.73	1.2	1.6			

Slim Throat

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	mm	RH	LH	h min	X	Y	T	Toolholder
1/4"V	11	0.7	2VER0.7MJ...	2VEL0.7MJ...	0.40	0.7	2.5	3.2	NL..-2V (LH)
		0.8	2VER0.8MJ...	2VEL0.8MJ...	0.44	0.7	2.5	3.2	
		0.9	2VER0.9MJ...	2VEL0.9MJ...	0.53	0.7	2.6	3.2	
		1.0	2VER1.0MJ...	2VEL1.0MJ...	0.58	0.7	2.5	3.2	
		1.25	2VER1.25MJ...	2VEL1.25MJ...	0.72	0.7	2.3	3.2	
		1.5	2VER1.5MJ...	2VEL1.5MJ...	0.87	0.7	2.2	3.2	

MJ (con't)

Internal



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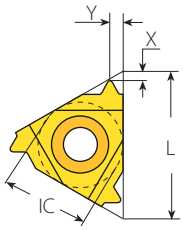
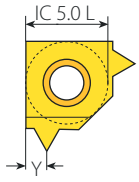
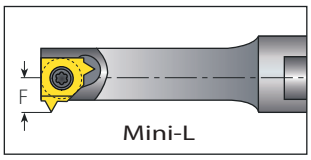


Standard





Standard

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC mm	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	1.0	2IR1.0MJ...	2IL1.0MJ...	0.49	0.6	0.7	-	-	NVR..-2 (LH)
		1.25	2IR1.25MJ...	2IL1.25MJ...	0.61	0.8	0.9			
		1.5	2IR1.5MJ...	2IL1.5MJ...	0.73	0.8	1.0			
		2.0	2IR2.0MJ...	2IL2.0MJ...	0.97	0.8	1.0			
3/8"	16	0.75	3IR0.75MJ...	3IL0.75MJ...	0.37	0.6	0.6	YI3	YE3	AVR..-3 (LH)
		0.8	3IR0.8MJ...	3IL0.8MJ...	0.44	0.7	0.7			
		1.0	3IR1.0MJ...	3IL1.0MJ...	0.49	0.6	0.7			
		1.25	3IR1.25MJ...	3IL1.25MJ...	0.61	0.8	0.9			
		1.5	3IR1.5MJ...	3IL1.5MJ...	0.73	0.8	1.0			
		2.0	3IR2.0MJ...	3IL2.0MJ...	0.97	0.8	1.3			
		2.5	3IR2.5MJ...	3IL2.5MJ...	1.23	1.1	1.5			
		3.0	3IR3.0MJ...	3IL3.0MJ...	1.46	1.2	1.6			

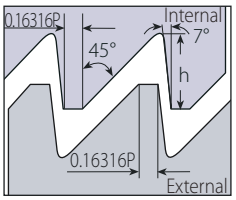
MINIPRO

Mini - L

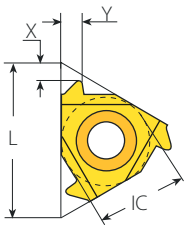
Insert Size	Pitch	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	mm	RH	LH	h min	Y	F	mm	Toolholder
5.0L	1.0	5LKIR1.0MJ...	5LKIL1.0MJ...	0.49	0.7	4.06	7.6	.NVRC10.-5LK (LH)
	1.25	5LKIR1.25MJ...	5LKIL1.25MJ...	0.61	0.9	4.21	7.6	
	1.5	5LKIR1.50MJ...	5LKIL1.50MJ...	0.73	1.0	4.35	7.7	

American Buttress

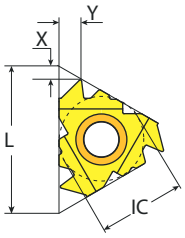
External



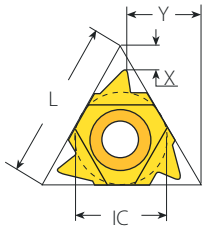
Defined by: ANSI B1.9.1973
Tolerance class: Class 2



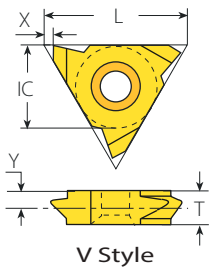
Standard



F-Line

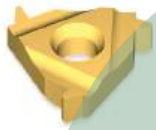


U Style



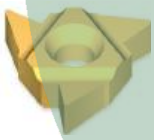
V Style

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	20	2ER20ABUT...	2EL20ABUT...	0.84	1.0	1.4	-	-	NL..-2 (LH)
		16	2ER16ABUT...	2EL16ABUT...	1.05	1.3	1.9			
3/8"	16	20	3ER20ABUT...	3EL20ABUT...	0.84	1.0	1.4	YE3	YI3	AL..-3 (LH)
		16	3ER16ABUT...	3EL16ABUT...	1.05	1.3	1.9			
		12	3ER12ABUT...	3EL12ABUT...	1.40	1.4	2.0			
		10	3ER10ABUT...	3EL10ABUT...	1.68	1.5	2.3			
1/2"	22	8	4ER8ABUT...	4EL8ABUT...	2.10	2.0	3.2	YE4	YI4	AL..-4 (LH)
		6	4ER6ABUT...	4EL6ABUT...	2.80	2.2	3.5			
1/2"F	23	8	4FER8ABUT...		2.10	2.0	3.2	YE4F		AL...-4F
		6	4FER6ABUT...		2.80	2.2	3.5			

U Style



Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4	4UER4ABUT...	4UEL4ABUT...	4.21	2.4	9.8	YE4U-BUT4	YI4U-BUT4	AL..-4U (LH)
5/8"U	27	3	5UER3ABUT...	5UEL3ABUT...	5.61	3.1	12.1	YE5U-BUT3	YI5U-BUT3	AL..-5U (LH)

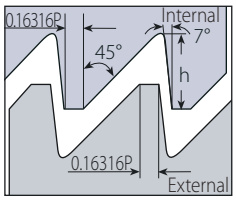
V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	4	5VER4ABUT...	5VEL4ABUT...	4.21	0.6	1.8	6	NL..-5V-6 (LH)
		3	5VER3ABUT...	5VEL3ABUT...	5.61	0.6	2.2	8	NL..-5V-8 (LH)
		2.5	5VER2.5ABUT...	5VEL2.5ABUT...	6.73	0.6	2.7	10	NL..-5V-10ABUT (LH)

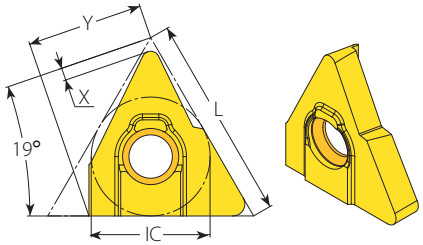
American Buttress (con't)

MEGALINE

External



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

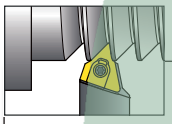


Mega Line

External

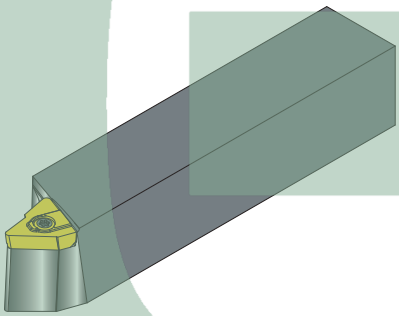
ER

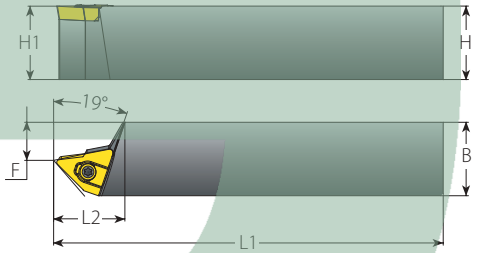
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	TPI	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	2	5MGER2ABUT...	8.42	1.58	15.55	120	56
		1.5	5MGER1.5ABUT...	11.22	1.64		160	75



External Toolholders for American Buttress

MEGALINE





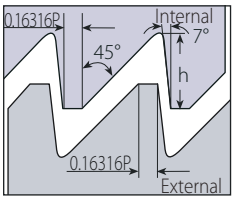
External

Insert	Ordering Code	Dimensions mm				Thread Diameter Range (Min.-Max.)	Spare Parts	
	RH	H=B=H1	F	L1	L2		Insert Screw	Torx Key
5MGER2ABUT...	NL25-5MG2ABUT	25	9.5	150	31	(7"-24")-2ABUT	S5MG	K6T
	NL32-5MG2ABUT	32	16.5	170				
	NL40-5MG2ABUT	40	24.5	200				
5MGER1.5ABUT...	NL25-5MG1.5ABUT	25	9.5	150	31	(11"-24")-1.5ABUT		
	NL32-5MG1.5ABUT	32	16.5	170				
	NL40-5MG1.5ABUT	40	24.5	200				

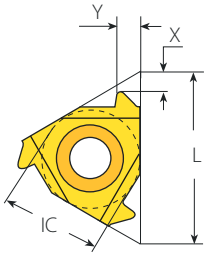
Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

American Buttress (con't)

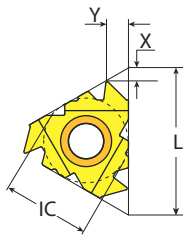
Internal



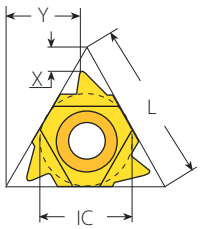
Defined by: ANSI B1.9.1973
Tolerance class: Class 2



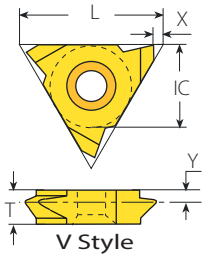
Standard



F-Line

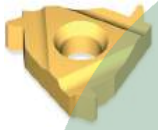


U Style



V Style

Standard



F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	20	2IR20ABUT...	2IL20ABUT...	0.84	1.0	1.4	-	-	NVR..-2 (LH)
		16	2IR16ABUT...	2IL16ABUT...	1.05	1.3	1.9			
3/8"	16	20	3IR20ABUT...	3IL20ABUT...	0.84	1.0	1.4	YI3	YE3	AVR..-3 (LH)
		16	3IR16ABUT...	3IL16ABUT...	1.05	1.3	1.9			
		12	3IR12ABUT...	3IL12ABUT...	1.40	1.4	2.0			
		10	3IR10ABUT...	3IL10ABUT...	1.68	1.5	2.3			
1/2"	22	8	4IR8ABUT...	4IL8ABUT...	2.10	2.0	3.2	YI4	YE4	AVR..-4 (LH)
		6	4IR6ABUT...	4IL6ABUT...	2.80	2.2	3.5			
1/2"F	23	8	4FIR8ABUT...		2.10	2.0	3.2	YI4F		AVRC...-4F
		6	4FIR6ABUT...		2.80	2.2	3.5			

U Style

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	4	4UIR4ABUT...	4UIL4ABUT...	4.21	2.4	9.8	YI4U-4B	YE4U-4B	AVR..-4U (LH)
5/8"U	27	3	5UIR3ABUT...	5UIL3ABUT...	5.61	3.1	12.1	YI5U-3B	YE5U-3B	AVR..-5U (LH)

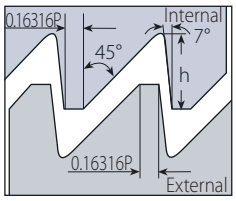
V Style

Insert Size		Pitch	Ordering Code		Dimensions mm				
IC	L mm	TPI	RH	LH	h min	X	Y	T	Toolholder
5/8"V	27	4	5VIR4ABUT...	5VIL4ABUT...	4.21	0.6	1.8	6	NVR..-5V (LH)
		3	5VIR3ABUT...	5VIL3ABUT...	5.61	0.6	2.2	8	
		2.5	5VIR2.5ABUT...	5VIL2.5ABUT...	6.73	0.6	2.7	10	

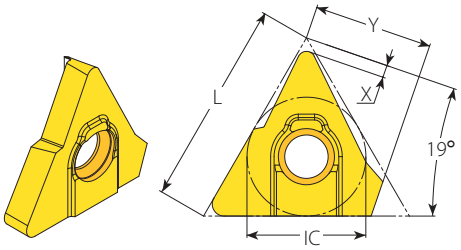
American Buttress (con't)

MEGALINE

Internal



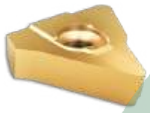
Defined by: ANSI B1.9.1973
Tolerance class: Class 2



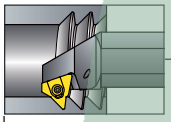
Mega Line

Internal

IR

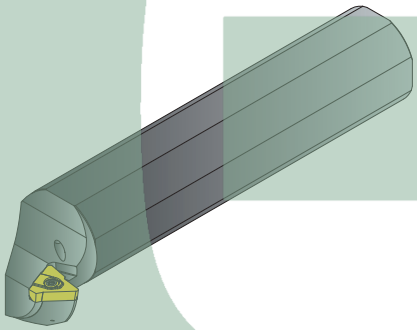


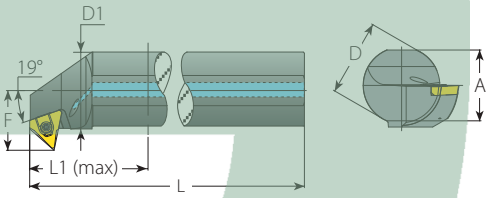
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	TPI	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	2	5MGIR2ABUT...	8.94	1.58	15.9	128	60
		1.5	5MGIR1.5ABUT...	11.92	1.64		170	79



Internal Toolholders for American Buttress

MEGALINE





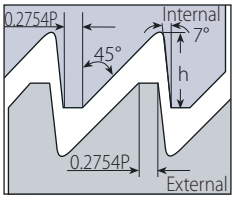
Internal

Insert	Ordering Code	Dimensions mm						Min. Bore Dia.	Thread Diameter Range (Min.-Max.)		Spare Parts	
	RH	A	L	L1 (max)	D	D1	F	mm	Short Chip Material	Long Chip Material	Insert Screw	Torx Key
5MGIR2ABUT...	NVRC40-5MG2ABUT	36	230.5	100	40	39.7	35.0	162.6	(7"-16")-2ABUT	(7"-16")-2ABUT	S5MG	K6T
	NVRC50-5MG2ABUT	46	255.5	125	50	49.7	39.5					
	NVRC60-5MG2ABUT	57	280.5	150	60	59.7	44.0					
5MGIR1.5ABUT...	NVRC40-5MG1.5ABUT	36	230.5	100	40	39.7	35.0	259.1	(11"-22")-1.5ABUT	(11"-22")-1.5ABUT		
	NVRC50-5MG1.5ABUT	46	255.5	125	50	49.7	39.5					
	NVRC60-5MG1.5ABUT	57	280.5	150	60	59.7	44.0					

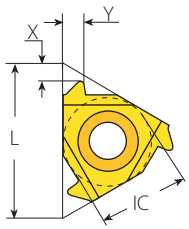
Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

British Buttress

External



Defined by: B.S. 1657: 1950
Tolerance class: Medium Class



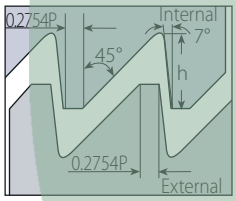
Standard

Standard

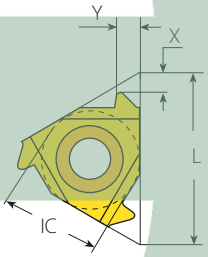
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8″	16	16	3ER16BBUT...	3EL16BBUT...	0.80	1.1	1.6	YE3	YI3	AL..-3 (LH)
		12	3ER12BBUT...	3EL12BBUT...	1.07	1.4	2.1			
		10	3ER10BBUT...	3EL10BBUT...	1.28	1.4	2.2			
		8	3ER8BBUT...	3EL8BBUT...	1.61	1.6	2.5			
1/2″	22	8	4ER8BBUT...	4EL8BBUT...	1.61	1.6	2.5	YE4	YI4	AL..-4 (LH)

British Buttress

Internal



Defined by: B.S. 1657: 1950
Tolerance class: Medium Class



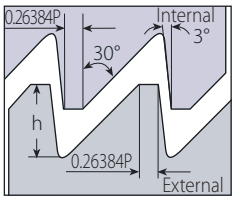
Standard

Standard

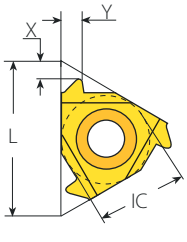
Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8″	16	16	3IR16BBUT...	3IL16BBUT...	0.80	1.1	1.6	YI3	YE3	AVR..-3 (LH)
		12	3IR12BBUT...	3IL12BBUT...	1.07	1.4	2.1			
		10	3IR10BBUT...	3IL10BBUT...	1.28	1.4	2.2			
		8	3IR8BBUT...	3IL8BBUT...	1.61	1.6	2.5			
1/2″	22	8	4IR8BBUT...	4IL8BBUT...	1.61	1.6	2.5	YI4	YE4	AVR..-4 (LH)

Metric Buttress (Sägengewinde)

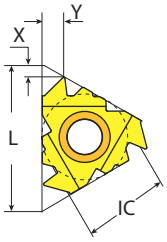
External



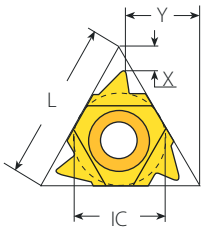
Defined by: DIN 513
Tolerance class: Medium Class



Standard



F-Line



U Style

Standard - External

F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	2.0	3ER2.0SAGE...	3EL2.0SAGE...	1.74	1.5	2.1	YE3	YI3	AL..-3 (LH)
1/2"	22	2.0	4ER2.0SAGE...	4EL2.0SAGE...	1.74	1.5	2.1	YE4	YI4	AL..-4 (LH)
		3.0	4ER3.0SAGE...	4EL3.0SAGE...	2.60	1.8	2.6			
		4.0	4ER4.0SAGE...	4EL4.0SAGE...	3.55	1.75	3.1			
1/2"F	23	3.0	4FER3.0SAGE...		2.60	1.8	2.6	YE4F		AL...-4F
		4.0	4FER4.0SAGE...		3.55	1.75	3.1			
5/8"	27	4.0	5ER4.0SAGE...	5EL4.0SAGE...	3.55	1.9	3.2	YE5 082/038	YI5 082/039	AL..-5 (LH)

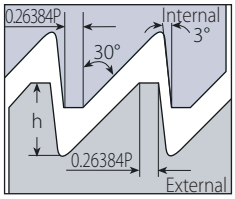
U Style - External

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	5.0	4UER5.0SAGE...	4UEL5.0SAGE...	4.41	1.27	10.35	YE4U-SAGE5	YI4U-SAGE5	AL..-4U (LH)
		6.0	4UER6.0SAGE...	4UEL6.0SAGE...	5.29	1.25	10.28	YE4U-SAGE6	YI4U-SAGE6	

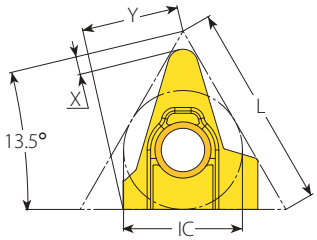
Metric Buttress (Sägengewinde) (con't)

MEGALINE

External



Defined by: DIN 513
Tolerance class: Medium Class

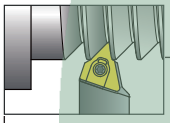


Mega Line

External

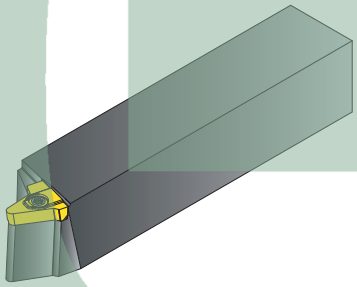
ER

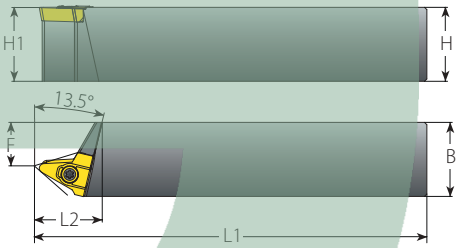
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	mm	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	10.0	5MGER10.0SAGE...	8.68	1.57	13.3	124	58
		12.0	5MGER12.0SAGE...	10.41	1.81		149	69
		14.0	5MGER14.0SAGE...	12.15	2.05		174	81
		16.0	5MGER16.0SAGE...	13.88	3.27		198	93
		20.0	5MGER20.0SAGE...	17.36	2.56		248	116



External Toolholders for Metric Buttress (Sägengewinde)

MEGALINE





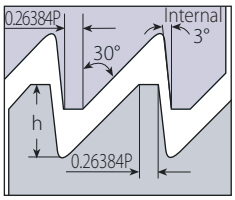
External

Insert	Ordering Code	Dimensions mm				Thread Diameter Range (Min.-Max.)	Spare Parts	
	RH	H=B=H1	F	L1	L2		Insert Screw	Torx Key
5MGER10.0SAGE...	NL25-5MG10SAGE	25	11.8	150	30	(S65-80)x10	S5MG	K6T
	NL32-5MG10SAGE	32	18.8	170				
	NL40-5MG10SAGE	40	26.8	200				
5MGER12.0SAGE...	NL25-5MG12SAGE	25	11.8	150	30	(S85-146)x12		
	NL32-5MG12SAGE	32	18.8	170				
	NL40-5MG12SAGE	40	26.8	200				
5MGER14.0SAGE...	NL25-5MG14SAGE	25	11.8	150	30	(S115-145)x14		
	NL32-5MG14SAGE	32	18.8	170				
	NL40-5MG14SAGE	40	26.8	200				
5MGER16.0SAGE...	NL25-5MG16SAGE	25	11.8	150	30	(S150-175)x16		
	NL32-5MG16SAGE	32	18.8	170				
	NL40-5MG16SAGE	40	26.8	200				
5MGER20.0SAGE...	NL25-5MG20SAGE	25	11.8	150	30	(S210-230)x20		
	NL32-5MG20SAGE	32	18.8	170				
	NL40-5MG20SAGE	40	26.8	200				

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

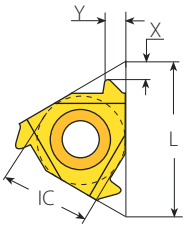
Metric Buttress (Sägengewinde) (con't)

Internal

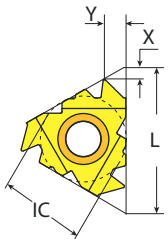


External

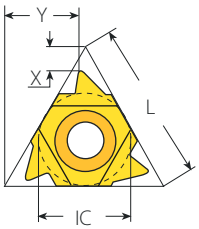
Defined by: DIN 513
Tolerance class: Medium Class



Standard



F-line



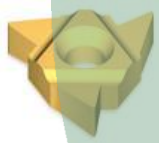
U Style

Standard - Internal

F-LINE

Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
3/8"	16	2.0	3IR2.0SAGE...	3IL2.0SAGE...	1.50	1.5	2.2	YI3	YE3	AVR..-3 (LH)
1/2"	22	3.0	4IR3.0SAGE...	4IL3.0SAGE...	2.25	1.7	2.9	YI4	YE4	AVR..-4 (LH)
		4.0	4IR4.0SAGE...	4IL4.0SAGE...	3.09	2.03	3.25			
1/2"F	23	3.0	4FIR3.0SAGE...		2.25	1.7	2.9	YI4F		AVRC...-4F
		4.0	4FIR4.0SAGE...		3.09	2.03	3.25			
5/8"	27	4.0	5IR4.0SAGE...	5IL4.0SAGE...	3.09	2.1	3.2	YI5 082/039	YE5 082/038	AVR..-5 (LH)

U Style - Internal

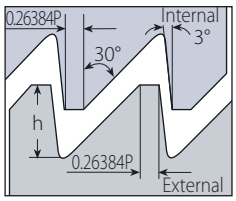


Insert Size		Pitch	Ordering Code		Dimensions mm			Anvil		
IC	L mm	mm	RH	LH	h min	X	Y	RH	LH	Toolholder
1/2"U	22	5.0	4UIR5.0SAGE...	4UIL5.0SAGE...	3.76	1.8	10.3	YI4U-5S	YE4U-5S	AVR..-4U (LH)
		6.0	4UIR6.0SAGE...	4UIL6.0SAGE...	4.54	1.9	10.15	YI4U-6S	YE4U-6S	

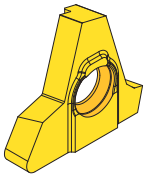
Metric Buttress (Sägengewinde) (con't)

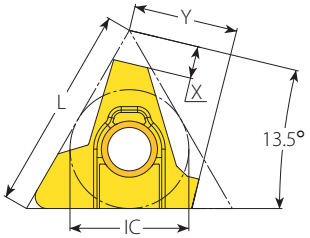
MEGALINE

Internal



Defined by: DIN 513
Tolerance class: Medium Class



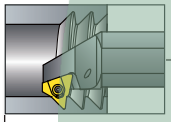


Mega Line

Internal

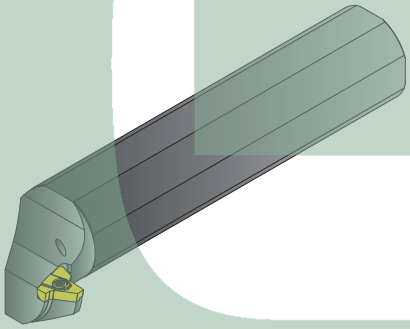
IR

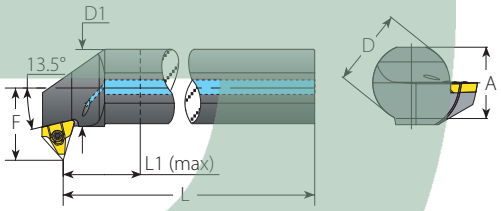
Insert Size		Pitch	Ordering Code	Dimensions mm			Number of Passes	
IC	L mm	mm	RH	h min	X	Y	0.07mm-Min. Depth of Cut (On radius)	0.15mm-Max. Depth of Cut (On radius)
5/8" MG	27	10.0	5MGIR10.0SAGE...	7.21	2.86	13.7	103	48
		12.0	5MGIR12.0SAGE...	8.67	3.34		124	58
		14.0	5MGIR14.0SAGE...	10.12	3.83		145	67
		16.0	5MGIR16.0SAGE...	11.58	4.30		165	77
		20.0	5MGIR20.0SAGE...	14.50	5.16		207	97



Internal Toolholders for Metric Buttress (Sägengewinde)

MEGALINE





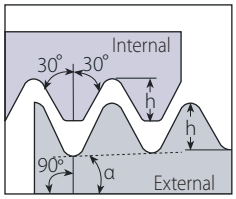
Internal

Insert	Ordering Code	Dimensions mm						Min. Bore Dia.	Thread Diameter Range (Min.-Max.)		Spare Parts	
	RH	A	L	L1 (max)	D	D1	F	mm	Short Chip Material	Long Chip Material	Insert Screw	Torx Key
5MGIR10.0SAGE...	NVRC40-5MG10SAGE	36	230.5	100	40	39.7	29.0	50	(S65-80)x10	(S75-80)x10	S5MG	K6T
5MGIR12.0SAGE...	NVRC40-5MG12SAGE	36	230.5	100	40	39.7	41.5	67	(S85-400)x12	(S90-400)x12		
	NVRC50-5MG12SAGE	46	255.5	125	50	49.7	46.5	72	(S90-400)x12	(S105-400)x12		
	NVRC60-5MG12SAGE	57	280.5	150	60	59.7	51.5	82	(S100-400)x12	(S250-400)x12		
5MGIR14.0SAGE...	NVRC40-5MG14SAGE	36	230.5	100	40	39.7	41.5	94	(S115-145)x14	(S115-145)x14		
	NVRC50-5MG14SAGE	46	255.5	125	50	49.7	46.5	94	(S115-145)x14	(S115-145)x14		
	NVRC60-5MG14SAGE	57	280.5	150	60	59.7	51.5	94	(S115-145)x14	(S120-145)x14		
5MGIR16.0SAGE...	NVRC40-5MG16SAGE	36	230.5	100	40	39.7	41.5	126	(S150-175)x16	(S150-175)x16		
	NVRC50-5MG16SAGE	46	255.5	125	50	49.7	46.5	126	(S150-175)x16	(S150-175)x16		
	NVRC60-5MG16SAGE	57	280.5	150	60	59.7	51.5	126	(S150-175)x16	(S150-175)x16		
5MGIR20.0SAGE...	NVRC40-5MG20SAGE	36	230.5	100	40	39.7	41.5	75	(S105-230)x20	(S105-230)x20		
	NVRC50-5MG20SAGE	46	255.5	125	50	49.7	46.5	75	(S105-230)x20	(S210-230)x20		
	NVRC60-5MG20SAGE	57	280.5	150	60	59.7	51.5	80	(S110-230)x20	(S210-230)x20		

Recommended thread infeed method for Mega Line: Flank or Modified Flank 1°.

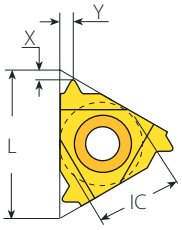
API

External

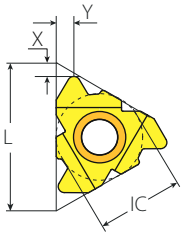


α = arctg (IPF/24)

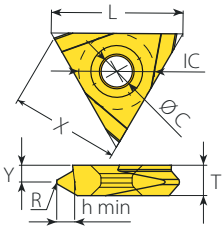
Defined by: API SPEC. 7:1990
Tolerance class: Standard API



Standard

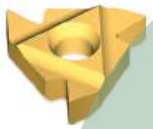


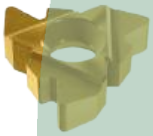
F-Line



On Edge

Standard





F-LINE

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-0.038R	2	4ER4API382...	NC23-NC50	3.09	2.1	2.8	YEI 4-API-1P or YE4	AL..-4 5BUT/API or AL...-4
		4	V-0.038R	3	4ER4API383...	NC56-NC77	3.08	2.1	2.8		
		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		
		5	V-0.040	3	4ER5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6		
		6	V-0.055	1.5	4ER6API551...	NC10-NC16	1.41	2.6	2.0		
1/2"F	23	4	V-0.038R	2	4FER4API382...	NC23-NC50	3.09	2.1	2.8	YE4F	AL...-4F
		4	V-0.038R	3	4FER4API383...	NC56-NC77	3.08	2.1	2.8		
		4	V-0.050	2	4FER4API502...	6 5/8" REG, 5 1/2"FH, 6 5/8"FH	3.75	2.0	2.9		
		4	V-0.050	3	4FER4API503...	5 1/2", 7 5/8", 8 5/8" REG	3.74	2.0	2.9		
		5	V-0.040	3	4FER5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6		
		6	V-0.055	1.5	4FER6API551...	NC10-NC16	1.41	2.6	2.0		
5/8"	27	4	V-0.038R	2	5ER4API382...	NC23-NC50	3.09	2.1	2.8	YE5OIL	AL..-5 OIL
		4	V-0.038R	3	5ER4API383...	NC56-NC77	3.08	2.1	2.8		
		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		
		5	V-0.040	3	5ER5API403...	2 3/8"-4 1/2" REG	2.99	1.9	2.7		
		4	V-0.065	2	5ER4API652...	2 3/8"IF- 5 1/2IF	2.81	2.3	2.8		

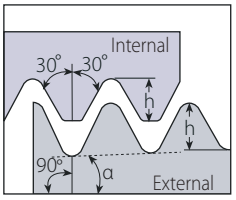
On Edge

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-0.040	3	TNEC54ER5API403...	2 3/8"-4 1/2" REG	0.51	3.00	6.35	6.50	23.4	3.9
		4	V-0.050	2	TNEC55ER4API502...	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
		4	V-0.038	2	TNEC55ER4API382...	NC23-NC50, 2 3/8 - 6 5/8 IF	0.97	3.10	7.94			5.0
		4	V-0.038	3	TNEC55ER4API383...	NC56-NC77	0.97	3.10	7.94			5.0

On Edge inserts are compatible with most commonly used toolholders in the market.

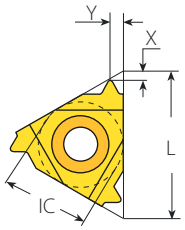
API (con't)

Internal

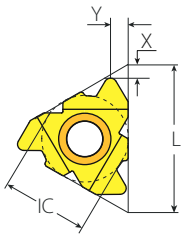


α = arctg (IPF/24)

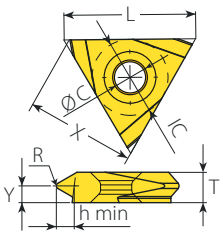
Defined by: API SPEC. 7:1990
Tolerance class: Standard API



Standard

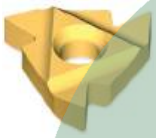


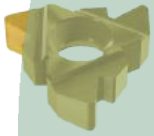
F-Line



On Edge

Standard





F-LINE

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-0.038R	2	4IR4API382...	NC23-NC50	3.09	2.1	2.8	YEI 4-API-1P or YI4	AVRC...-4 5BUT/API or AVR...-4
		4	V-0.038R	3	4IR4API383...	NC56-NC77	3.08	2.1	2.8		
		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		
		5	V-0.040	3	4IR5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6		
		6	V-0.055	1.5	4IR6API551...	NC10-NC16	1.41	2.6	2.0		
1/2"F	23	4	V-0.038R	2	4FIR4API382...	NC23-NC50	3.09	2.1	2.8	YI4F	AVRC...-4F
		4	V-0.038R	3	4FIR4API383...	NC56-NC77	3.08	2.1	2.8		
		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	2.0	2.9		
		5	V-0.040	3	4FIR5API403...	2 3/8"-4 1/2" REG	2.99	1.8	2.6		
		6	V-0.055	1.5	4FIR6API551...	NC10-NC16	1.41	2.6	2.0		
5/8"	27	4	V-0.038R	2	5IR4API382...	NC23-NC50	3.09	2.1	2.8	YI5OIL	AVR..-5 OIL
		4	V-0.038R	3	5IR4API383...	NC56-NC77	3.08	2.1	2.8		
		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		
		5	V-0.040	3	5IR5API403...	2 3/8"-4 1/2" REG	2.99	1.9	2.7		
		4	V-0.065	2	5IR4API652...	2 3/8"IF- 5 1/2"IF	2.81	2.3	2.8		

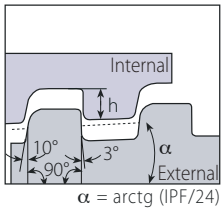
On Edge

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-0.040	3	TNEC54IR5API403...	2 3/8"-4 1/2" REG	0.51	3.00	6.35	6.50	23.4	3.9
		4	V-0.050	2	TNEC55IR4API502...	6 5/8" REG, 5 1/2 FH, 6 5/8 FH	0.64	3.76	7.94			5.0
		4	V-0.050	3	TNEC55IR4API503...	5 1/2", 7 5/8", 8 5/8" REG	0.64	3.76	7.94			5.0
		4	V-0.038	2	TNEC55IR4API382...	NC23-NC50, 2 3/8 - 6 5/8 IF	0.97	3.10	7.94			5.0
		4	V-0.038	3	TNEC55IR4API383...	NC56-NC77	0.97	3.10	7.94			5.0

On Edge inserts are compatible with most commonly used toolholders in the market.

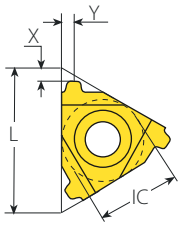
API Buttress Casing

External

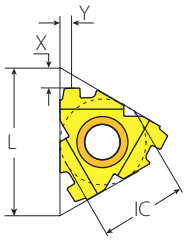


α = arctg (IPF/24)

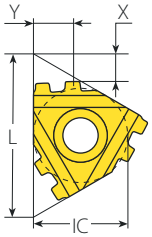
Defined by: STD.5B.1979
Tolerance class: Standard API



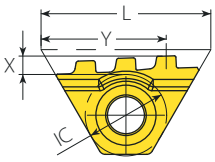
Standard



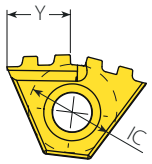
F-Line



M+ Style

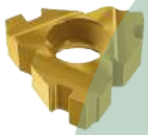


T+ Style



14D
2 Cutting Edges

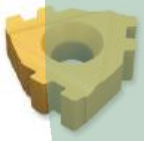
Standard



F-LINE

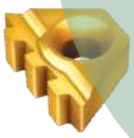
Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF	RH		h min	X	Y	RH	Toolholder
1/2″	22	5	0.75	4ER5BUT75...	4 1/2″-13 3/8″	1.55	3.1	1.9	YEI 4-BUT or YE4	AL..-4 5BUT/API or AL...-4
		5	1	4ER5BUT1...	16″-20″	1.55	3.1	1.9		
1/2″F	23	5	0.75	4FER5BUT75...	4 1/2″-13 3/8″	1.55	3.1	1.9	YE4F	AL...-4F
		5	1	4FER5BUT1...	16″-20″	1.55	3.1	1.9		

M+ Style



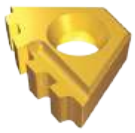
Insert Size		Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Anvil	
IC	L mm	TPI	IPF		RH		h min	X	Y	RH	Toolholder
5/8″	27	5	0.75	2	5ER5BUT752M+...	4 1/2″-13 3/8″	1.55	4.8	6.8	YE5M	AL..-5M

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	4ER5BUT753T+...	4 1/2″-13 3/8″	1.55	2.5	16.1	Y4T	AL..-4T
			1		4ER5BUT13T+...	16″-20″					

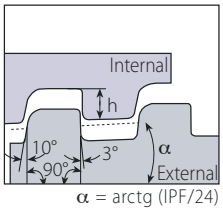
14D



Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm		Anvil	
IC	TPI	IPF		RH		h min	Y	RH	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-0.4N	
	5	1	2	14DER5BUT12T+...	16″-20″			Y14DER-5BUT-0.4N	AL...-14D

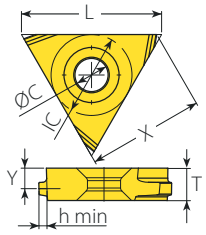
API Buttress Casing (con't)

External

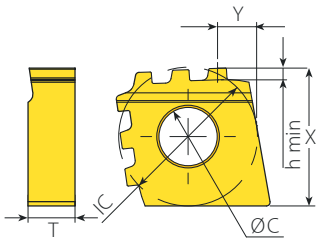


α = arctg (IPF/24)

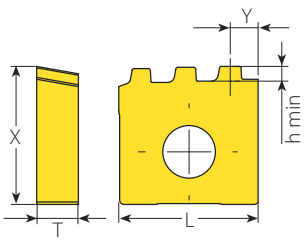
Defined by: STD.5B.1979
Tolerance class: Standard API



On Edge

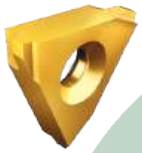


CNGA



Chaser

On Edge

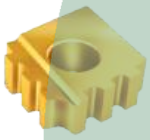


Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8″	27	5	0.75	TNEC54ER5BUT75...	4 1/2″-13 3/8″	1.55	6.35	6.5	23.4	4.0
		5	1	TNEC54ER5BUT1...	16″-20″					

On Edge inserts are compatible with most commonly used toolholders in the market.

CNGA

Multi plus

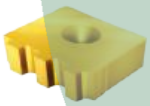


Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
IC	TPI	IPF		RH		h min	T	Ø C	X	Y
3/4″	5	0.75	3	CNGA64ER5BUT75T3...	4 1/2″-13 3/8″	1.55	6.35	8.0	18.9	5.6
	5	1	3	CNGA64ER5BUT1T3...	16″-20″					5.5

CNGA inserts are compatible with most commonly used toolholders in the market.

Chaser

Multi plus

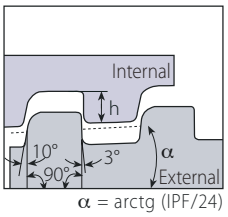


Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position
L	TPI	IPF		RH		h min	T	X	Y
16	5	0.75	3	1616ER5BUT753S+...	4 1/2″-13 3/8″	1.55	4.76	15.7	3.2
	5	1	3	1616ER5BUT13S+...	16″-20″				

Chaser inserts are compatible with most commonly used toolholders in the market.

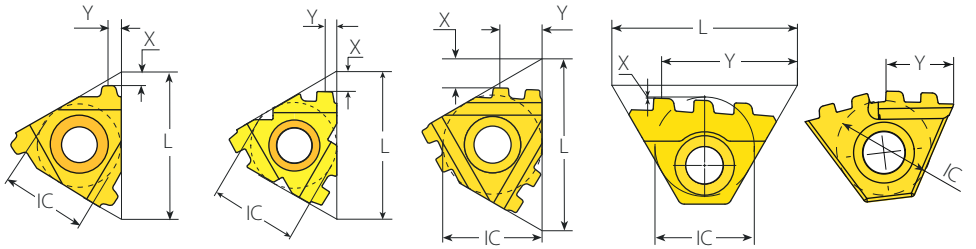
API Buttress Casing (con't)

Internal



α = arctg (IPF/24)

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



Standard | F-Line M+ | M+ Style | T+ Style | 14D 2 Cutting Edges

Standard

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"	22	5	0.75	4IR5BUT75...	4 1/2"-13 3/8"	1.55	2.8	1.9	YEI 4-BUT or YI4	AVRC..-4 5BUT/API or AVR...-4
		5	1	4IR5BUT1...	16"-20"	1.55	2.8	1.9		
1/2"F	23	5	0.75	4FIR5BUT75...	4 1/2"-13 3/8"	1.55	2.8	1.9	YI4F	AVRC...-4F
		5	1	4FIR5BUT1...	16"-20"	1.55	2.8	1.9		

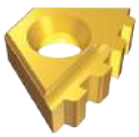
M+ Style

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	5IR5BUT752M+...	4 1/2"-13 3/8"	1.55	4.8	6.7	YI5M	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"					

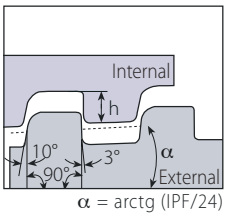
14D



Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm		Anvil	
IC	TPI	IPF		RH		h min	Y	RH	Toolholder
14D	5	0.75	2	14DIR5BUT752T+...	4 1/2"-9 5/8"	1.55	10.0	Y14DIR-5 BUT	AVRC...-14D
					10 3/4"-13 3/8"			Y14DIR-5BUT-0.4N	
	5	1	2	14DIR5BUT12T+...	16"-20"	1.55	10.0	Y14DIR-5BUT-0.4N	AVRC...-14D

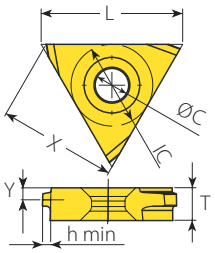
API Buttress Casing (con't)

Internal

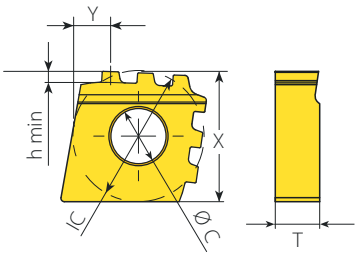


α = arctg (IPF/24)

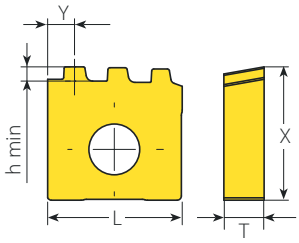
Defined by: STD.5B:1979
Tolerance class: Standard API



On Edge



CNGA



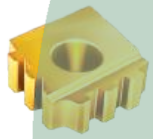
Chaser

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″					

On Edge inserts are compatible with most commonly used toolholders in the market.

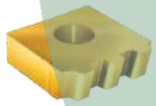
CNGA



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

CNGA inserts are compatible with most commonly used toolholders in the market.

Chaser

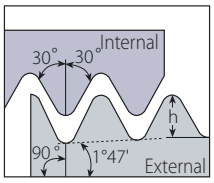


Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm		Position	
L	TPI	IPF		RH		h min	T	X	Y
16	5	0.75	3	1616IR5BUT753S+...	4 1/2″-13 3/8″	1.55	4.76	15.7	3.2
	5	1	3	1616IR5BUT13S+...	16″-20″				

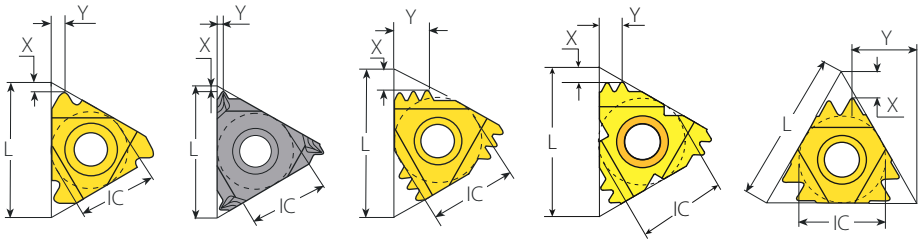
Chaser inserts are compatible with most commonly used toolholders in the market.

API Round Casing & Tubing

External

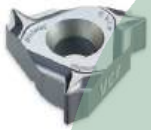


Defined by: API STD. 5B:1979
Tolerance class: Standard API RD



Standard | SCB Sintered Chipbreaker | M+ Style | F-Line M+ | Z+ Style

Standard

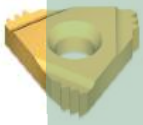


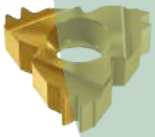
SCB

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 or YE3	AL...-3 APIRD or 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

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"	22	10	2	4ER10APIRD2M+...	1.41	2.3	3.8	YE4M	AL..-4
1/2"F	23	10	2	4FER10APIRD2M+...	1.41	2.3	3.8	YE4M2F	AL...-4MF
5/8"	27	10	3	5ER10APIRD3M+...	1.41	3.9	6.3	YE5M	AL..-5M
		8	2	5ER8APIRD2M+...	1.81	2.9	4.5		

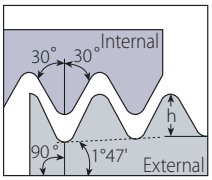
Z+ Style

Multiplus

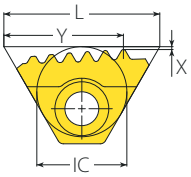
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	2	4ER10APIRD2Z+...	1.41	3.0	9.9	YE4Z	AL..-4Z
		8	2	4ER8APIRD2Z+...	1.81	3.7	9.6		

API Round Casing & Tubing (con't)

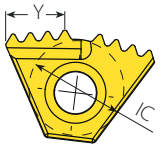
External



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



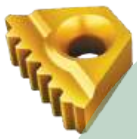
T+ Style



14D -
2 Cutting Edges

T+ Style

Multi plus



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		

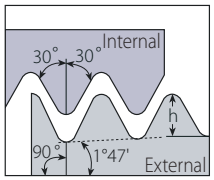
14D

Multi plus

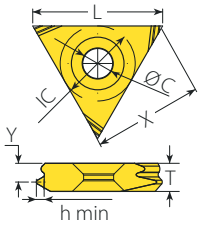
Insert Size	Pitch	Teeth	Ordering Code	Size	Dimensions mm		Anvil	
IC	TPI		RH		h min	Y	RH	Toolholder
14D	10	4	14DER10APIRD4T+...	2 3/8" and up	1.41	8.7	Y14DER-10 APIRD	AL...-14D
	10	3	14DER10APIRD3T+...	2 3/8" and up		8.8	Y14DER-10 APIRD-3+	
	8	3	14DER8APIRD3T+...	2 3/8" and up	1.81	8.1	Y14DER-8 APIRD	

API Round Casing & Tubing (con't)

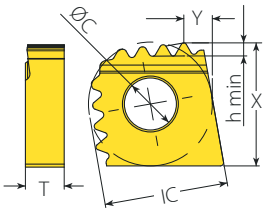
External



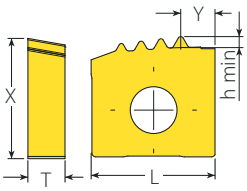
Defined by: API STD. 5B:1979
Tolerance class: Standard API RD



On Edge



CNGA



Chaser

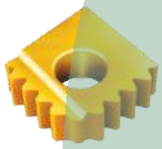
On Edge

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

On Edge inserts are compatible with most commonly used toolholders in the market.

CNGA

Multiplus

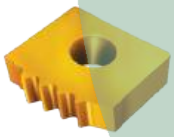


Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm			Position	
IC	TPI		RH	h min	T	Ø C	X	Y
3/4"	10	5	CNGA64ER10APIRDT5...	1.41	6.35	8.0	18.9	4.5
	8	4	CNGA64ER8APIRDT4...	1.81				

CNGA inserts are compatible with most commonly used toolholders in the market.

Chaser

Multiplus

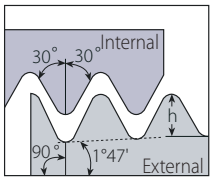


Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm		Position	
L	TPI		RH	h min	T	X	Y
16	10	4	1616ER10APIRD4S+...	1.41	4.76	15.4	4.4
	8	3	1616ER8APIRD3S+...	1.81		15.9	

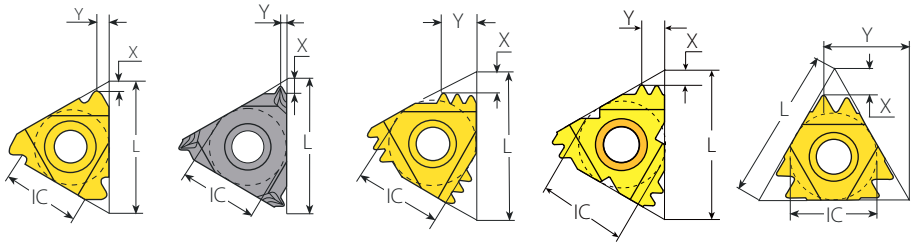
Chaser inserts are compatible with most commonly used toolholders in the market.

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 M+ | Z+ Style

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	3IR10APIRD...	1.41	1.2	1.4	YEI3-APIRD or YI3	AVRC... 3APIRD or 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

Multi plus

F-LINE

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	4IR10APIRD2M+...	1.41	2.4	3.7	YI4M	AVR..-4
		8	2	4IR8APIRD2M+...	1.81	2.9	4.5		
1/2"F	23	10	2	4FIR10APIRD2M+...	1.41	2.4	3.7	YI4M2F	AVRC...-4MF
5/8"	27	10	3	5IR10APIRD3M+...	1.41	3.9	6.3	YI5M	AVR..-5M
		8	2	5IR8APIRD2M+...	1.81	2.9	4.5		

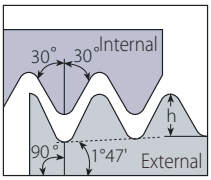
Z+ Style

Multi plus

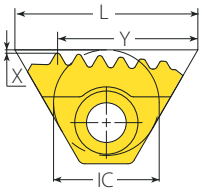
Insert Size		Pitch	Teeth	Ordering Code	Dimensions mm			Anvil	
IC	L mm	TPI		RH	h min	X	Y	RH	Toolholder
1/2"	22	10	2	4IR10APIRD2Z+...	1.41	3.0	9.9	YI4Z	AVR..-4Z
		8	2	4IR8APIRD2Z+...	1.81	3.7	9.6		

API Round Casing & Tubing (con't)

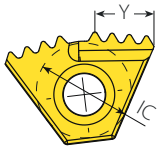
Internal



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



Z+ Style



14D -
2 Cutting Edges

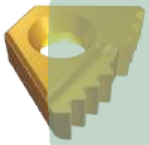
T+ Style

Multiplus

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	4IR10APIRD6T+...	1.41	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

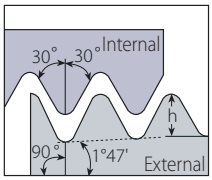
Multiplus



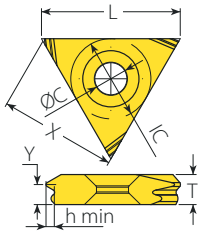
Insert Size	Pitch	Teeth	Ordering Code	Size	Dimensions mm			Anvil
IC	TPI				h min	Y		Toolholder
14D	10	4	14DIR10APIRD4T+...	2 3/8" and up	1.41	8.71	Y14DIR-10 APIRD	AVRC...-14D
	10	3	14DIR10APIRD3T+...	2 3/8" and up		8.79	Y14DIR-10 APIRD-3+	
	8	3	14DIR8APIRD3T+...	2 3/8" and up	1.81	8.10	Y14DIR-8 APIRD	

API Round Casing & Tubing (con't)

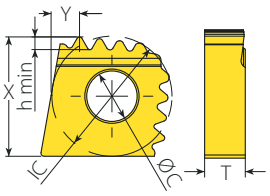
Internal



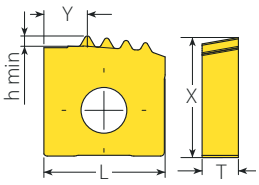
Defined by: STD. 5B:1979
Tolerance class: Standard API RD



On Edge



CNGA



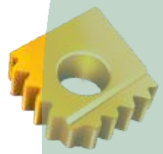
Chaser

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				

On Edge inserts are compatible with most commonly used toolholders in the market.

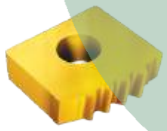
CNGA



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				

CNGA inserts are compatible with most commonly used toolholders in the market.

Chaser

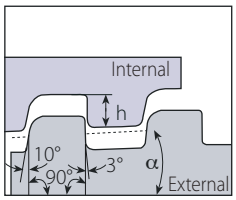


Insert Size	Pitch	Teeth	Ordering Code	Dimensions mm		Position	
L	TPI		RH	h min	T	Ø C	Y
16	10	4	1616IR10APIRD4S+...	1.41	4.76	15.4	5.7
	8	3	1616IR8APIRD3S+...	1.81		15.9	4.4

Chaser inserts are compatible with most commonly used toolholders in the market.

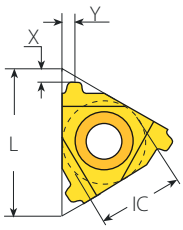
VAM

External

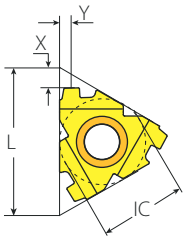


α = arctg (IPF/24)

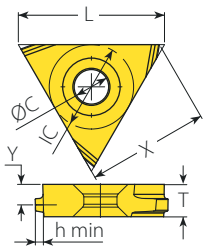
Defined by: VAM
Tolerance class: Standard VAM



Standard

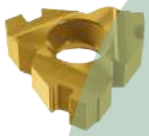


F-Line



On Edge

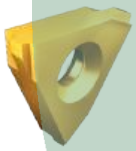
Standard



F-LINE

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	1.80	YE3	AL..-3
1/2"	22	6		4ER6VAM...	3 1/2"	0.97	2.4	2.40	YE4	AL..-4
		5		4ER5VAM...	5"-9 5/8"	1.55	2.4	2.70		
1/2"F	23	6		4FER6VAM...	3 1/2"	0.97	2.4	2.40	YE4F	AL...-4F
		5		4FER5VAM...	5"-9 5/8"	1.55	2.4	2.70		

On Edge

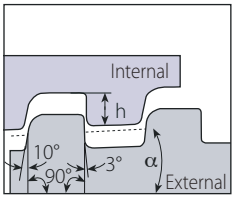


Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
1/2"	22	8	0.75	TNEC43ER8VAM...	2 3/8", 2 7/8"	0.97	4.76	5.2	18.6	3.30
		6		TNEC43ER6VAM...	3 1/2"	0.97	4.76			2.90
5/8"	27	5		TNEC54ER5VAM...	5"- 9 5/8"	1.55	6.35	6.5	23.4	4.00

On Edge inserts are compatible with most commonly used toolholders in the market.

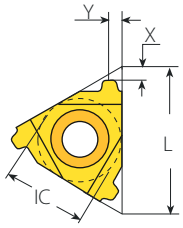
VAM (con't)

Internal

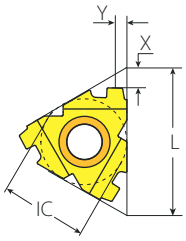


α = arctg (IPF/24)

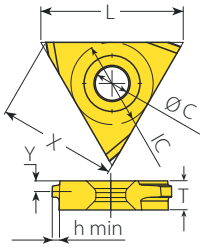
Defined by: VAM
Tolerance class: Standard VAM



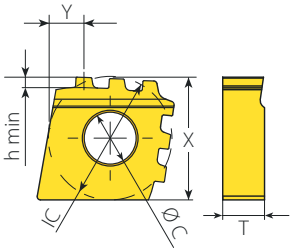
Standard



F-Line



On Edge



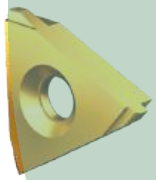
CNGA

Standard

F-LINE

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	YI3	AVR..-3
1/2"	22	6		4IR6VAM...	3 1/2"	1.02	2.5	2.5	YI4	AVR..-4
		5		4IR5VAM...	5"-9 5/8"	1.55	2.4	2.5		
1/2"F	23	6		4FIR6VAM...	3 1/2"	1.02	2.5	2.5	YI4F	AVRC...-4F
		5		4FIR5VAM...	5"-9 5/8"	1.55	2.4	2.5		

On Edge

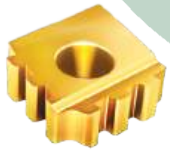


Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
1/2"	22	8	0.75	TNEC43IR8VAM...	2 3/8", 2 7/8"	1.02	4.78	5.2	18.6	3.2
		6		TNEC43IR6VAM...	3 1/2"	1.02	4.78			3.1
5/8"	27	5		TNEC54IR5VAM...	5"- 9 5/8"	1.55	6.35	6.5	23.4	4.2

On Edge inserts are compatible with most commonly used toolholders in the market.

CNGA

Multi plus

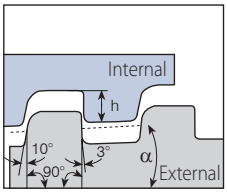


Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
IC	TPI	IPF		RH		h min	T	Ø C	X	Y
3/4"	5	3/4	2	CNGA64IR5VAM75T2...	5"- 9 5/8"	1.55	6.35	8.0	18.9	9.3

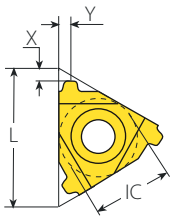
CNGA inserts are compatible with most commonly used toolholders in the market.

New VAM

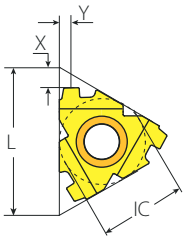
External



α= arctg (IPF/24)



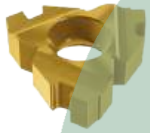
Standard



F-Line

Defined by: VAM
Tolerance class: Standard VAM

Standard

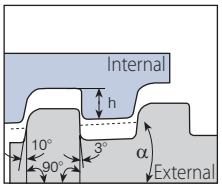


F-LINE

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	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		
1/2"F	23	6		4FER6NVAM...	3 1/2"	0.97	2.2	2.1	YE4F	AL...-4F
		5		4FER5NVAM...	5"-9 5/8"	1.55	2.5	2.3		

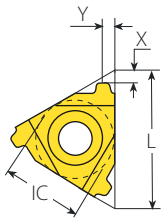
New VAM (con't)

Internal

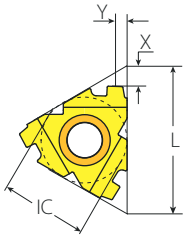


α= arctg (IPF/24)

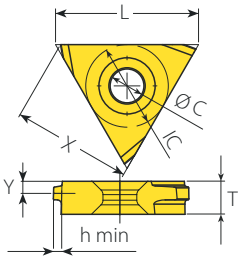
Defined by: VAM
Tolerance class: Standard VAM



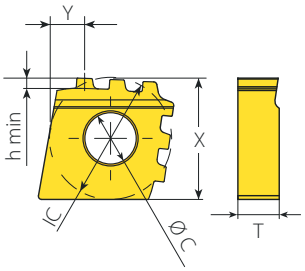
Standard



F-Line



On Edge



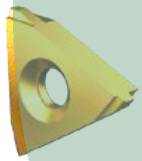
CNGA

Standard

F-LINE

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	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		
1/2"F	23	6		4FIR6NVAM...	3 1/2"	1.23	2.0	1.8	YI4F	AVRC...-4F
		5		4FIR5NVAM...	5"-9 5/8"	1.77	2.1	2.1		

On Edge

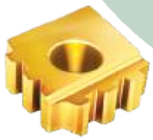


Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm				
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
1/2"	22	8	0.75	TNEC43IR8NVAM...	2 3/8" -2 7/8"	1.23	4.76	5.2	18.6	3.2
		6		TNEC43IR6NVAM...	3 1/2"- 4 1/2"	1.23	4.76	5.2	23.4	3.1
5/8"	27	5		TNEC54IR5NVAM...	5"-16"	1.77	6.35	6.5		4.2

On Edge inserts are compatible with most commonly used toolholders in the market.

CNGA

Multi plus

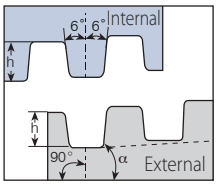


Insert Size	Pitch	Taper	Teeth	Ordering Code	Size	Dimensions mm			Position	
IC	TPI	IPF		RH		h min	T	Ø C	X	Y
3/4"	6	0.75	2	CNGA64IR6NVAM75T2...	3 1/2"- 4 1/2"	1.23	6.35	8	18.9	9.3
	5			CNGA64IR5NVAM75T2...	5"-16"	1.77	6.35			

CNGA inserts are compatible with most commonly used toolholders in the market.

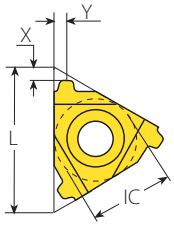
EL-Extreme Line

External / Internal

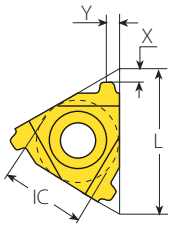


α= arctg (IPF/24)

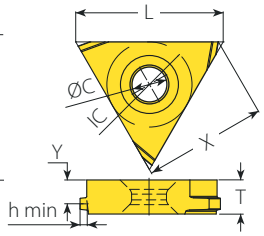
Defined by: API STD,5B:1979
Tolerance class: Standard



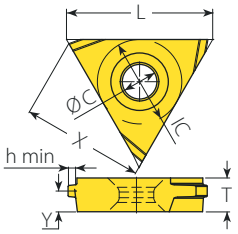
Standard External



Standard Internal

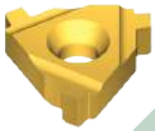


On Edge External



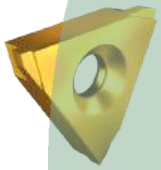
On Edge Internal

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
		5	1.25	4ER5EL125...	8 5/8"-10 3/4"	1.71	2.3	2.4		

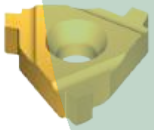
On Edge - External



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	TNEC54ER6EL15...	5 "-7 5/8"	1.21	6.35	6.5	23.4	4.8
		5	1.25	TNEC54ER5EL125...	8 5/8"-10 3/4"	1.71	6.35			4.3

On Edge inserts are compatible with most commonly used toolholders in the market.

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
		5	1.25	4IR5EL125...	8 5/8"-10 3/4"	1.91	2.2	2.4		

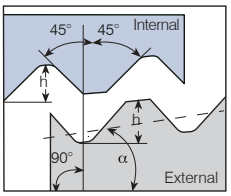
On Edge - Internal

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 compatible with most commonly used toolholders in the market.

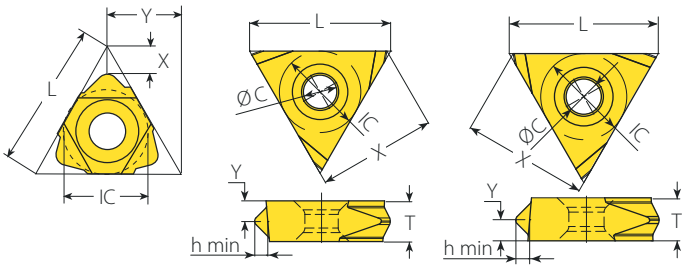
Hughes H-90

External / Internal



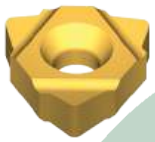
α= arctg (IPF/24)

Defined by: API specification 7-2/ISO 10242-2



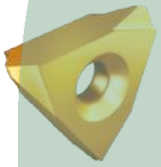
U Style | On Edge External | On Edge Internal

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
5/8" U	27	3.5	3	4UER3.5H903...	7"-8 5/8"	2.50	4.2	11	YE5U-H90	AL..-5UH90
		3	1.25*	5UER3H90SL...	2 3/8"-3 1/2"	2.24	5.5	13.7		

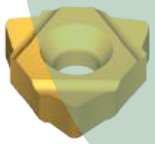
On Edge - External



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	3.5	2	TNEC55ER3.5H902...	3 1/2 "- 6 5/8"	2.50	7.93	6.5	23.4	4.3
		3.5	3	TNEC55ER3.5H903...	7 "- 8 5/8"	2.50	7.93			4.3
		3	1.25*	TNEC56ER3H90SL...	2 3/8 "- 3 1/2"	2.24	9.53			5.7

On Edge inserts are compatible with most commonly used toolholders in the market.

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
5/8" U	27	3.5	3	4UIR3.5H903...	7"-8 5/8"	2.50	4.2	11	YI5U-H90	AVR..-5UH90
		3	1.25*	5UIR3H90SL...	2 3/8"-3 1/2"	2.24	5.5	13.7		

On Edge - Internal

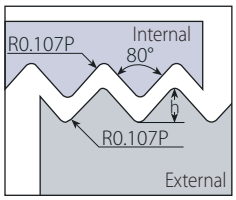
Insert Size		Pitch	Taper	Ordering Code	Size	Dimensions mm			Position	
IC	L mm	TPI	IPF	RH		h min	T	Ø C	X	Y
5/8"	27	3.5	2	TNEC55IR3.5H902...	3 1/2 "- 6 5/8"	2.49	7.93	6.5	23.4	4.3
		3.5	3	TNEC55IR3.5H903...	7 "- 8 5/8"	2.49	7.93			4.3
		3	1.25*	TNEC56IR3H90SL...	2 3/8 "- 3 1/2"	2.24	9.53			5.7

On Edge inserts are compatible with most commonly used toolholders in the market.

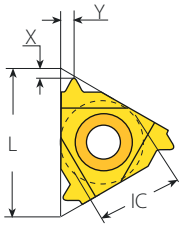
* H-90 Slimline.

Pg

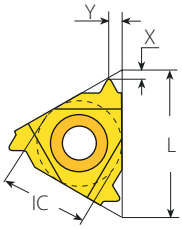
External / Internal



Defined by: DIN 40430
Tolerance class: Standard



Standard External

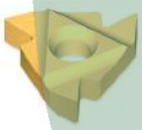


Standard Internal

Standard - External

Insert Size		Pitch	Thread	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI		RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	20	Pg7	2ER20PG...	2EL20PG...	0.61	0.8	0.9	-	-	NL..-2 (LH)
		18	Pg9/11/13.5/16	2ER18PG...	2EL18PG...	0.67	0.8	1.0			
		16	Pg21/29/36/42/48	2ER16PG...	2EL16PG...	0.76	0.9	1.1			
3/8"	16	20	Pg7	3ER20PG...	3EL20PG...	0.61	0.8	0.9	YE3	YI3	AL..-3 (LH)
		18	Pg9/11/13.5/16	3ER18PG...	3EL18PG...	0.67	0.8	1.0			
		16	Pg21/29/36/42/48	3ER16PG...	3EL16PG...	0.76	0.9	1.1			

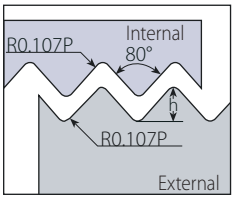
Standard - Internal

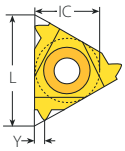


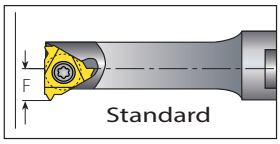
Insert Size		Pitch	Thread	Ordering Code		Dimensions mm			Anvil		
IC	L mm	TPI		RH	LH	h min	X	Y	RH	LH	Toolholder
1/4"	11	20	Pg7	2IR20PG...	2IL20PG...	0.64	0.8	0.9	-	-	NVR..-2 (LH)
		18	Pg9/11/13.5/16	2IR18PG...	2IL18PG...	0.67	0.8	1.0			
		16	Pg21/29/36/42/48	2IR16PG...	2IL16PG...	0.76	0.9	1.1			
3/8"	16	20	Pg7	3IR20PG...	3IL20PG...	0.64	0.8	0.9	YI3	YE3	AVR..-3 (LH)
		18	Pg11/13.5/16	3IR18PG...	3IL18PG...	0.67	0.8	1.0			
		16	Pg21/29/36/42/48	3IR16PG...	3IL16PG...	0.76	0.8	1.1			

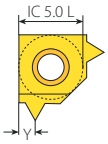
Pg (con't)

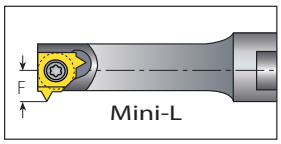
Internal











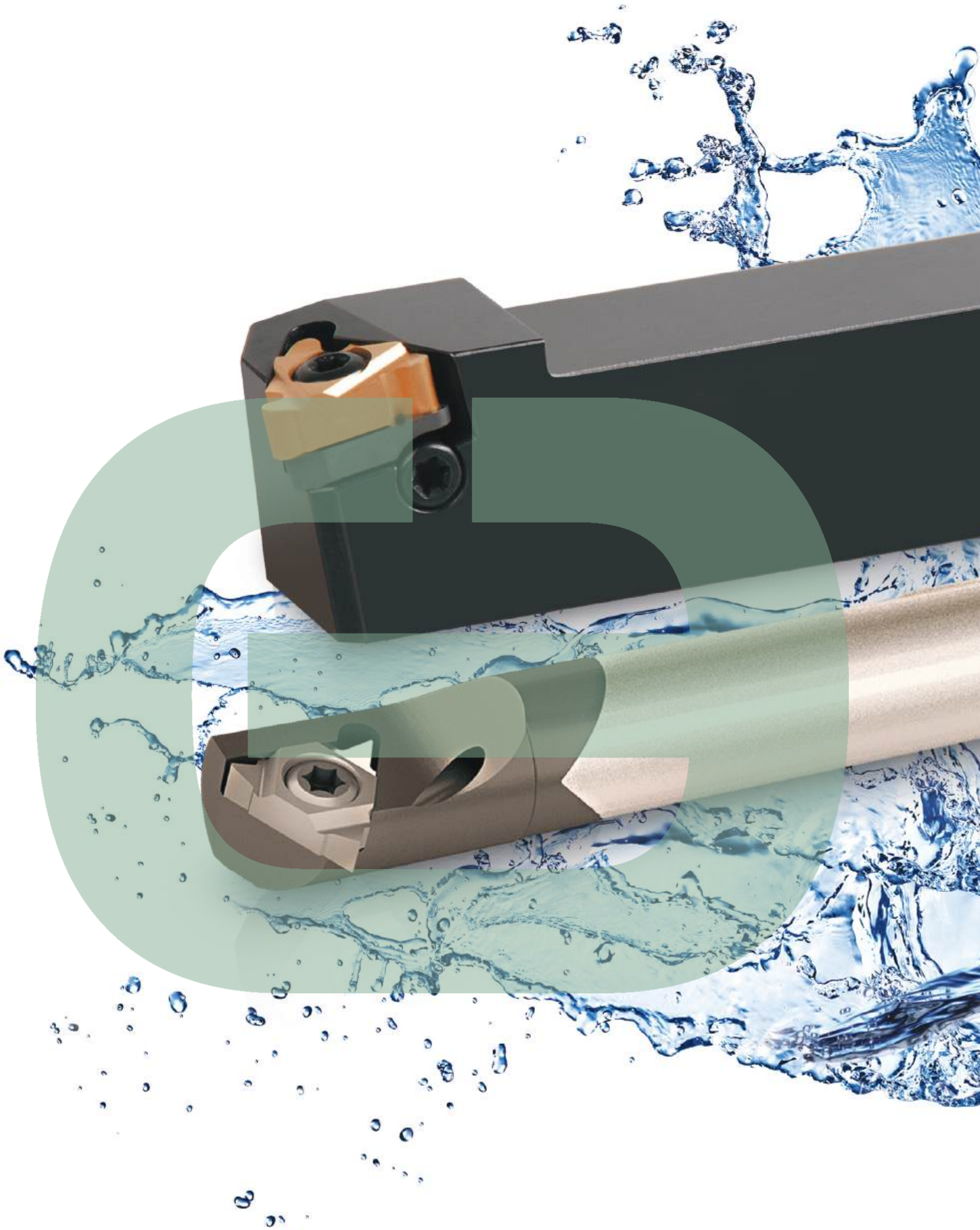
Defined by: DIN 40430
Tolerance class: Standard

Mini-3 Standard

Insert Size		Pitch	Thread	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	L mm	TPI		RH	LH	h min	Y	F	mm	Toolholder
5.0	8	20	Pg7	5.0KIR20PG...	5.0KIL20PG...	0.61	0.7	4.7	7.8	(C)NVRC7-5.0K (LH)
6.0	10	20	Pg7	6.0KIR20PG...	6.0KIL20PG...	0.61	0.8	5.3	10.0	.NVRC1..-6.0K (LH)
		18	Pg9/11/13.5/16	6.0KIR18PG...	6.0KIL18PG...	0.67	0.9	5.3		

Mini-L

Insert Size	Pitch	Thread	Ordering Code		Dimensions mm			Min. Bore Dia.	
IC mm	TPI		RH	L H	h min	Y	F	mm	Toolholder
5.0L	20	Pg7	5LKIR20PG...	5LKIL20PG...	0.61	0.8	4.65	8.0	.NVRC10..-5LK (LH)
	18	Pg9/11/13.5/16	5LKIR18PG...	5LKIL18PG...	0.67	0.9	4.65		



Thread Turning Toolholders

Vardex Ordering Code System

External Toolholders

A	L	32	-	4	U	C			
1	2	3		4	5	6	7	8	9

1 - Anvil	2 - Holder Style	3 - Shank Square [mm]	4 - Insert Size
A - Anvil Required N - No Anvil Required O - Miniature Holder	L - External V - Miniature Square Shank VR - Miniature Round Shank	8, 10, 12, 16, 20, 25, 32, 40, 50, 60	2 - IC1/4" 3 - IC3/8" 4 - IC1/2" 5 - IC5/8"

5 - Insert Style	6 - Clamping	7 - Insert Width
U - U style V - Vertical F - F Line M - Multi+ M MF - Multi+ F Line Z - Multi+ Z T - Multi+ T 14D - Multi+ 14D MG - Mega Line	C - With Clamping	(for IC5/8"V) 6, 8, 10

8 - Tool Type	9 - RH/LH Holder
CQ - Drop Head FQ - Off-Set OIL - For API Inserts	None - Right Hand LH - Left Hand

Internal Toolholders

C	A	VR	C	20		-	3					
1	2	3	4	5	6		7	8	9	10	11	12

1 - Shank Type	2 - Anvil	3 - Tool Type	5 - Shank Front Dia.	6 - Holder Length
B - Anti Vibration System C - Carbide Shank S - Mini Holders	A - Anvil Required N - No Anvil Required O - Miniature Holder	VR - Internal Round Shank	10, 10D, 12, 13, 16 16D, 20, 25, 25D, 32, 40, 50 6.2 (Mini Adjust) 8.0 (Mini Adjust)	(Mini Holders) U - Ultra Short S - Short M - Medium L - Long T - Adjustable

4 - Cooling
C - With Coolant Channel

7- Insert Size	8 - Insert Style	9 - Clamping	12 - Serial No.
5LK - IC5.0L mm 4.0K - IC4.0 mm 5.0K - IC5.0 mm 6.0K - IC6.0 mm 2 - IC1/4" 3 - IC3/8" 4 - IC1/2" 5 - IC5/8"	U - U style V - Vertical F - F Line M - Multi+ M MF - Multi+ F Line Z - Multi+ Z T - Multi+ T 14D - Multi+ 14D MG - Mega Line	C - Wth Clamp	156/... (Coarse Pitch Holder) 206/... (V6 Holder)

10 -Oil Field	11 - RH/LH Holder
OIL - For API Inserts	None - Right Hand LH - Left Hand

Micro, Microscope & Adjustable Toolholders (Sleeves)

M	H	C	R	22	-	4	-	5	-	4F
1	2	3	4	5		6		7		8

1 - Holder Shape	2 - Holder Type	3 - Coolant	4 - Round Tools
S - Sleeve (Double Ended) M - Microscope (Single Ended)	V - Adjustable Holders for Mini M - Micro (Double Ended) H - Microscope Round Holder HS - Microscope with Square Shank HD - Microscope with Drop Head	C or D - Coolant Thru	R - Microscope Round Bore S - Microscope Shrink by Screw

5 - Shank Size [mm]	6 - Holder Bore Size	7 - Holder Bore Size for Double Sided	8 - No. of Flats
10-28	Micro Size 3, 4, 5, 6, 7, 8, 10 Adjustable Holders (for Mini) 6.2, 8	Microscope Size 4, 5, 6,	4F - 4 Flats None - 2 Flats

V-CAP Toolholders

VCAP	40	-	S	E	R	27	050	-	3
1	2		3	4	5	6	7		8

1 - Holder Style	2 - D (Polygon Size)	3 - Insert Style	4 - External / Internal	5 - RH / LH
VCAP - Vargus Polygon Shank	32, 40, 50, 63	S - Threading	E - External I - Internal	R - Right Hand L - Left Hand

6 - Cutting Radius	7 - Tool Overhang	8 - Insert Size
12-45	40-105	3 - IC3/8"

VG-Cut Toolholders for Threading

VG	E	R	2525	-	3	T12	PH
1	2	3	4		5	6	7

1 - Line Name	2 - Application Approach	3 - RH / LH	4 - Shank Size
VG - Deep Grooving & Parting Off	E - External	R - Right Hand L - Left Hand	Width-Height

5 - Pocket Size	6 - Depth of Cut	7 - PH
3	T8, T12 - Limit Depth of Cut 8, 12 mm	PH - Reinforced blade structure

Mini-V Holders

C	V	08	-	12	21	-
1	2	3		4	5	6

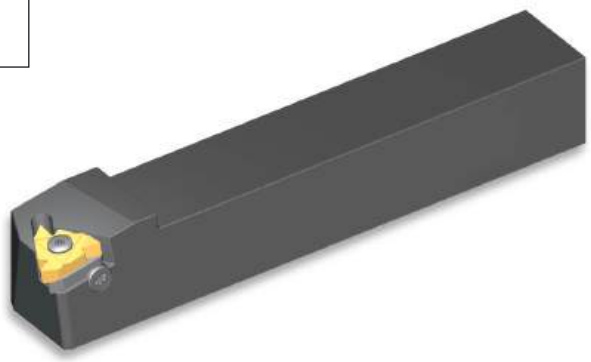
1 - Holder Type	2 - Product Line	3 - Insert Size	4 - Shank Diameter	5 - Tool Overhang	6 - RH or LH
C - Carbide Shank None - Steel Shank	V - Mini-V	08, 11, 14, 16	6, 8, 12, 16	12, 21, 29, 30, 42, 50, 56, 64, 80	None - RH L - LH

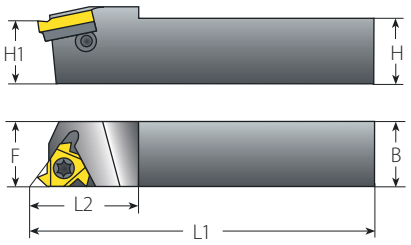
Mini-V Sleeves

MH	C	16	-	6
1	2	3		4

1 - Holder Type	2 - Coolant	3 - Shank Dia.	4 - Sleeve Bore Dia.
MH - Microscope Holder	C - Coolant Channels	12 , 16 , 20	6, 8

External Toolholders





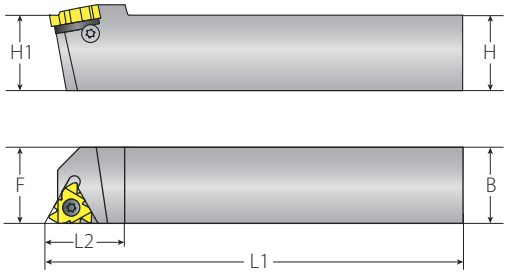
Standard

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
1/4″	NL8-2	8	11	136.4	17.5	SN2T	-	K2T	-	-
	NL10-2	10	11	125.0	17.5					
	NL12-2	12	12	125.0	17.5					
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					
	AL32-3	32	32	173.6	30					
1/2″	AL25-4	25	25	155.7	36	SA4T	SY4T	K4T	YE4	YI4
	AL32-4	32	32	175.7	36					
	AL40-4	40	40	205.7	36					
5/8″	AL25-5	25	32	151.6	35	SA5T	SY5T	K5T	YE5	YI5
	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 203.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example AL20-3**LH**).

External Toolholders

F-LINE



Standard F-Line

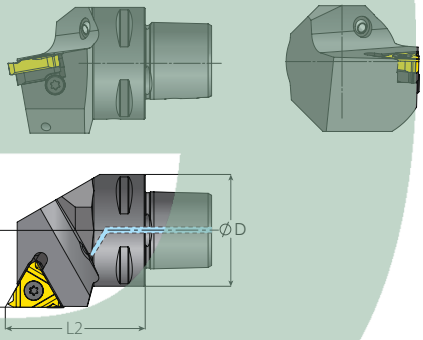
Insert Size	Ordering Code	Dimensions mm			
IC	RH	H=H1=B	F	L1	L2
1/2"F	AL25-4F	25	25	155	33
	AL32-4F	32	32	175	33
	AL40-4F	40	40	205	33

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil RH
SA4T	SY4T	K6T	YE4F

External Toolholders

Max. coolant pressure 10bar



V-CAP

Insert Size	Ordering Code	Dimensions mm		
IC	RH/LH	D	F	L2
3/8"	VCAP32-SER22040-3	32	22	40
	VCAP40-SER27050-3	40	27	50
	VCAP50-SER35060-3	50	35	60
	VCAP63-SER45065-3	63	45	65

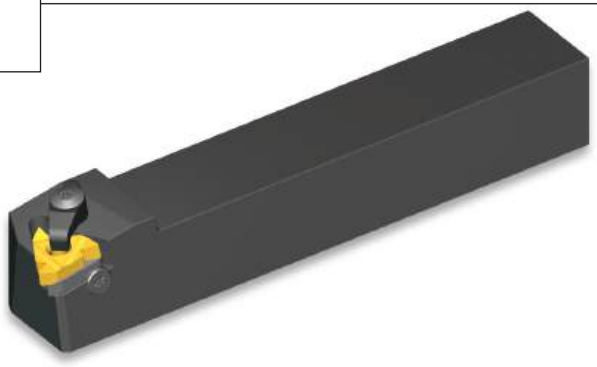
Spare Parts

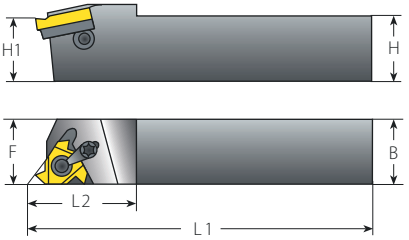
Insert Screw	Anvil Screw	Torx Key	Coolant Jet	Anvil RH	Anvil LH
SA3T	SY3T	K3T	OD6 OD8	YE3	YI3

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example VCAP32-SE**L**22040-3).

The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.

External Toolholders





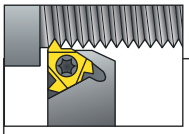
Standard with Clamp
(Dual System, Screw or Clamp)

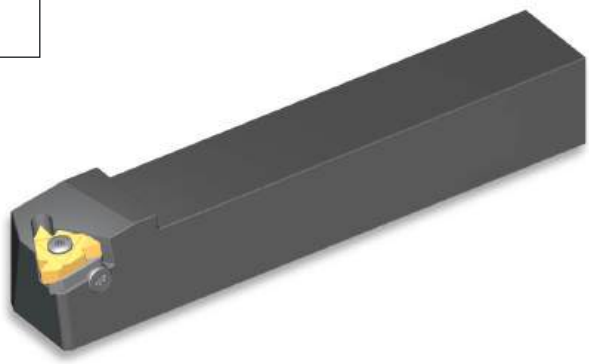
Insert Size	Ordering Code	Dimensions mm				Spare Parts					
IC	RH/LH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Clamp	Torx Key	Anvil RH	Anvil LH
3/8"	AL16-3C	16	16	100.0	20.5	SA3T	SY3T	C3	K3CT	YE3	YI3
	AL20-3C	20	20	128.6	30						
	AL25-3C	25	25	153.6	30						
	AL32-3C	32	32	173.6	30						
1/2"	AL25-4C	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						

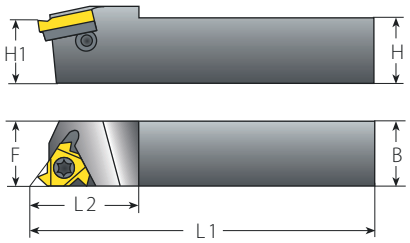
The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example AL16-3C**LH**).

External Toolholders

Oil&Gas



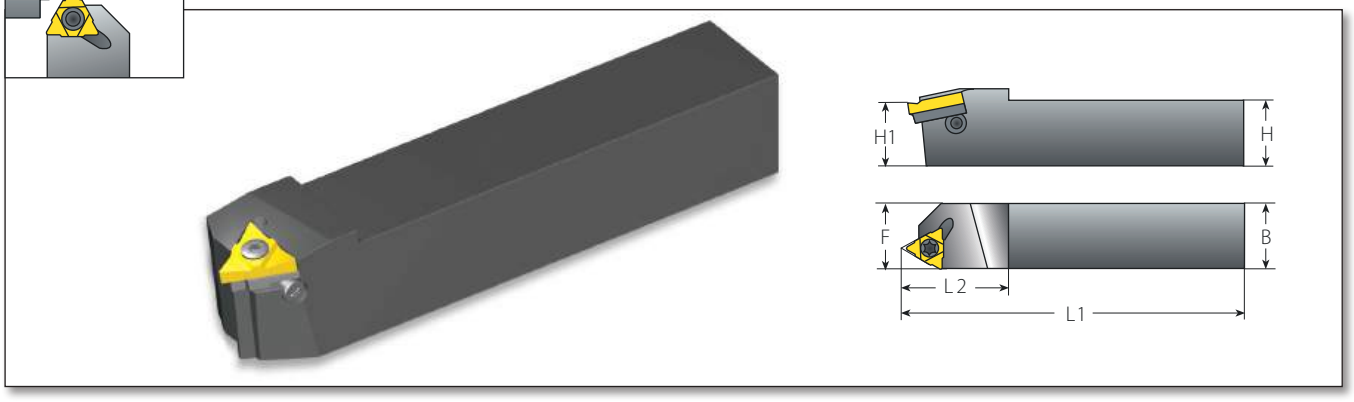




Oil & Gas

Insert Size	Ordering Code	Thread Form	Connection No. or Size	Dimensions mm			Helix Angle	Spare Parts			
IC	RH			H=H1=B=F	L1	L2		Insert Screw	Anvil Screw	Torx Key	Anvil RH
3/8"	AL32-3-APIRD	APIRD 8 APIRD 10	2.375"-20" 1.05"-3.5"	32	173.0	28.8	1	SA3T	SY3T	K3T	YEI3 APIRD
	AL40-3-APIRD			40	205.0	37.4	1				
1/2"	AL32-4-5BUT/API	5BUT, V0.038R, V0.050, V0.040, V0.055	4 1/2"-20"	32	177.0	36.6	0	SA4T	SY4T	K4T	YEI4-API-1P YEI4-5BUT
	AL40-4-5BUT/API		NC10-NC77 all sizes	40	204.0	34.5	0				
5/8"	AL32-5OIL	V0.038R, V0.050	NC23-NC77 all sizes	32	175.9	40.0	1.5	SA5T	SY5T	K5T	YE5OIL
	AL40-5OIL	V0.038R, V0.050	NC23-NC77 all sizes	40	205.9	40.0	1.5				

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					

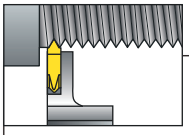
External Toolholders

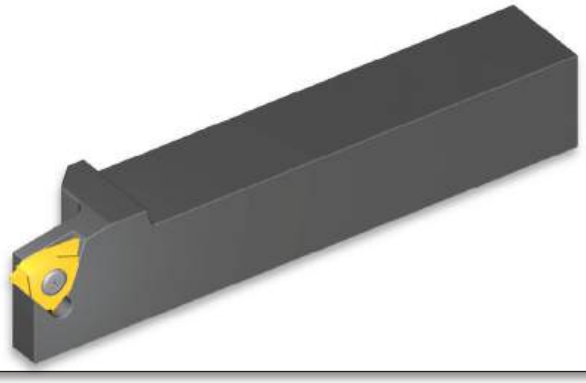
U Style with Clamp
(Dual System, Screw or Clamp)

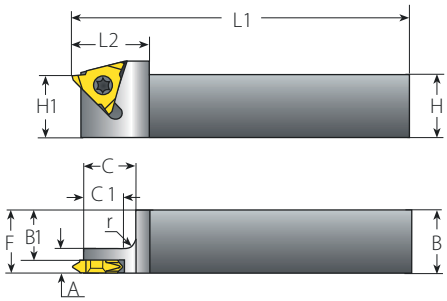
Insert Size	Ordering Code	Dimensions mm				Spare Parts					
IC	RH/LH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Clamp	Torx Key	Anvil RH	Anvil LH
1/2"U	AL32-4UC	32	32	178.4	38	SA4T	SY4T	C4	K4T	YE4U	YI4U
	AL40-4UC	40	40	208.4	38						
5/8"U	AL32-5UC	32	32	179.1	40	SA5T	SY5T	C5	K5T	YE5U	YI5U
	AL40-5UC	40	40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

All U Style Toolholders have a 1.5° helix angle. For other helix angles see page 203.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example AL25-4U**LH**).

External Toolholders





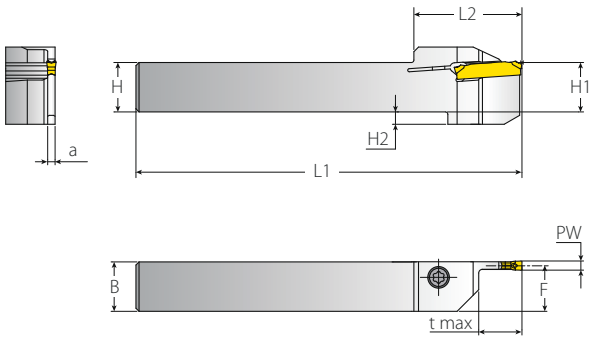


Slim Throat

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		
	NL40-3V	40	40	7	36.4	16.5	11.5	200	30.0	5		
1/2"V	NL25-4V	25	25	12	20.2	16.5	11.5	150	30.0	5	SN4T	K4T
	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 see page 203.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example NL8-2V**LH**).

External Toolholders



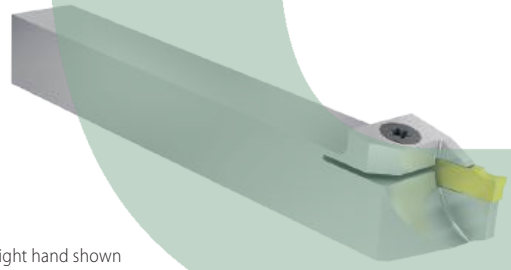
Right hand shown

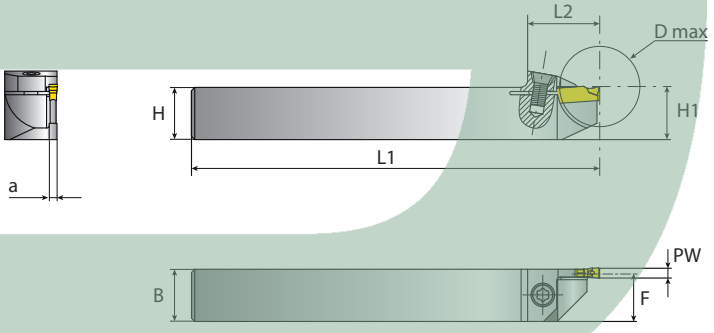
Monoblock

Spare Parts VG-Cut

Ordering Code		Dimensions mm								Spare Parts	
PW	RH/LH	t max	HxB	H1	F	L1	L2	a	H2	Cylindrical Holder Screw	Torx Key
3	VGER/L1212-3T12	12	12x12	12	10.8	125	35	2.4	4.0	SM3.5x14-T15	KT-15
	VGER/L1616-3T12	12	16x16	16	14.8				4.0	SM4.0x18-T20	K6T
	VGER/L2020-3T08	8	20x20	20	18.8				-		
	VGER/L2020-3T12	12	20x20	20	18.8				-		
	VGER/L2525-3T08	8	25x25	25	23.8				-		
	VGER/L2525-3T12	12	25x25	25	23.8				-		

External Toolholders





Right hand shown

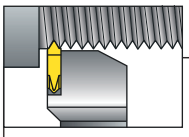
Reinforced Monoblock

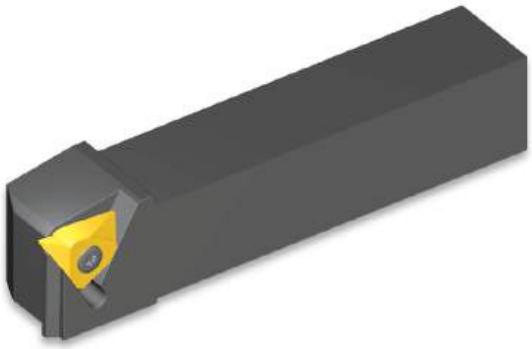
Spare Parts VG-Cut

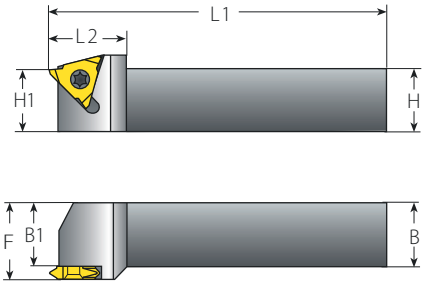
Ordering Code		Dimensions mm							Spare Parts	
PW	RH/LH	D max	HxB	H1	F	L1	L2	a	Cylindrical Holder Screw	Torx Key
3	VGER/L1616-3T12PH	26	16x16	16	14.8	125	22	2.4	SCM4x14	KT-15
	VGER/L2020-3T12PH	26	20x20	20	18.8		22			
	VGER/L2020-3T21PH	42	20x20	20	18.8		30			
	VGER/L2525-3T12PH	26	25x25	25	18.8		22			
	VGER/L2525-3T21PH	42	25x25	25	23.8		30			

All VG-Cut tooling have 1.5° helix angle.

External Toolholders







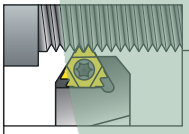
V Style

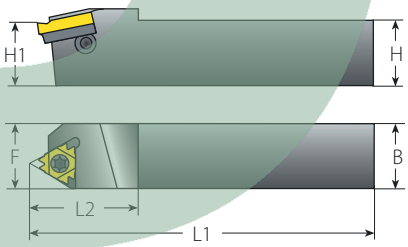
Spare Parts

Insert Size	Ordering Code	Dimensions mm					Spare Parts	
IC	RH/LH	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





Z+ Style

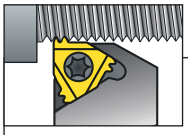
Multiplus

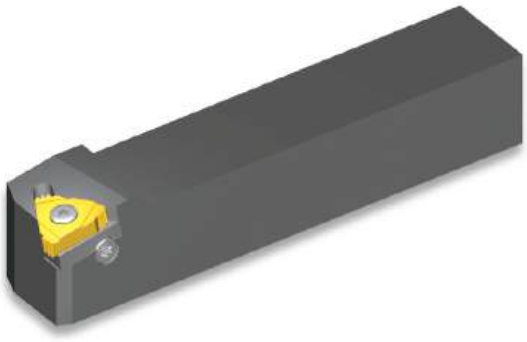
Spare Parts

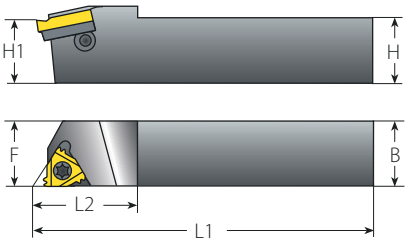
Insert Size	Ordering Code	Dimensions mm				Spare Parts				
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
1/2"Z	AL32-4Z	32	32	178.4	38	SA4T	SY4T	K4T	YE4Z	YI4Z
	AL40-4Z	40	40	208.4	38					

All Z Style toolholders have a 1.5° helix angle.

External Toolholders







M+ Style

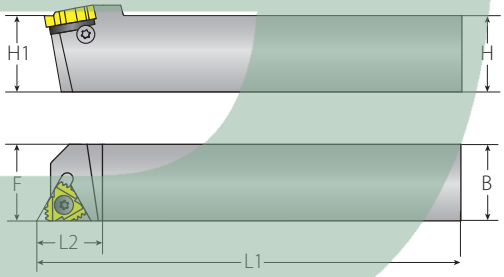
Spare Parts

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	Anvil LH
5/8"M	AL32-5M	32	32	176.6	40	SA5T	SY5T	K5T	YE5M	YI5M
	AL40-5M	40	40	206.6	40					
	AL50-5M	50	50	256.6	40					

External Toolholders

F-LINE



F-Line M+ Style

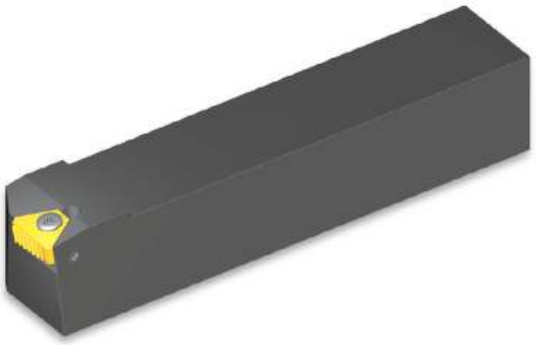
Spare Parts

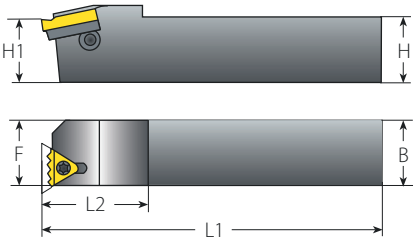
Multiplus

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	AL25-4MF	25	25	155	33	SA4T	SY4T	K6T	YE4M2F
	AL32-4MF	32	32	175	33				
	AL40-4MF	40	40	205	33				

The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.

External Toolholders





T+ Style

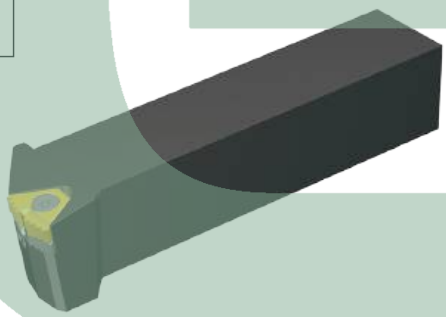
Multiplus

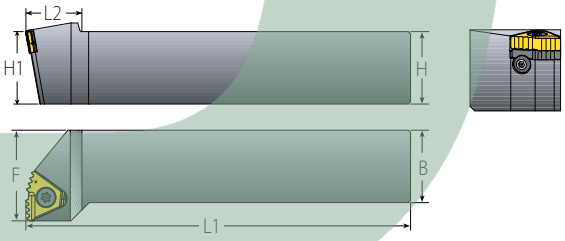
Insert Size	Ordering Code	Dimensions mm				Spare Parts				
IC	RH	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Insert Torx Key	Anvil Torx Key	Anvil RH/LH
1/2"T	AL25-4T	25	27	150	30	SA4T	SY4K2	K4T	K2	Y4T
	AL32-4T	32	34	170	30					
	AL40-4T	40	42	200	30					

All T Style toolholders have a 0° helix angle.

External Toolholders

Oil&Gas





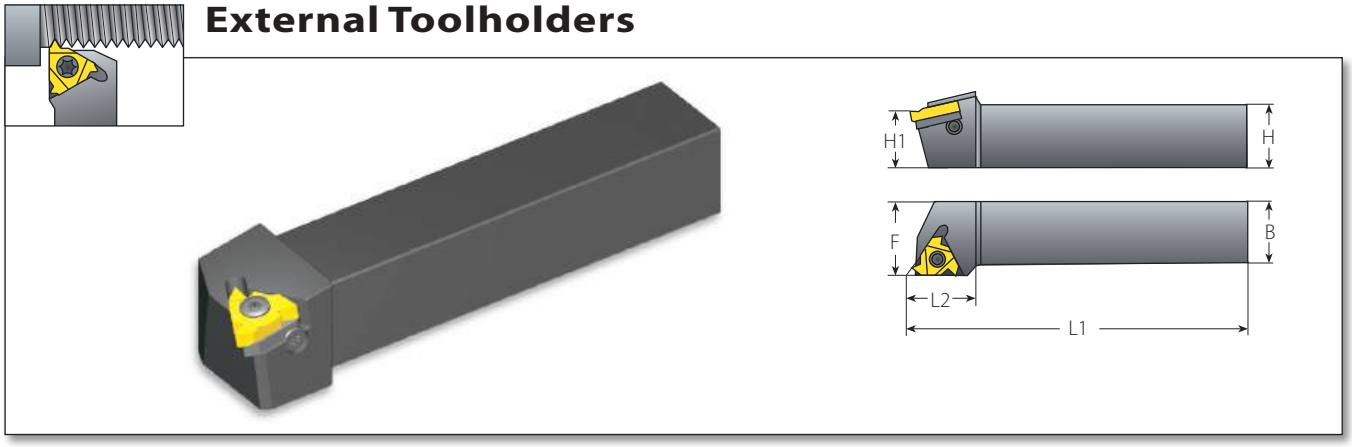
14D Standard

Multiplus

Insert Size	Ordering Code	Dimensions mm				Spare Parts			
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 204.

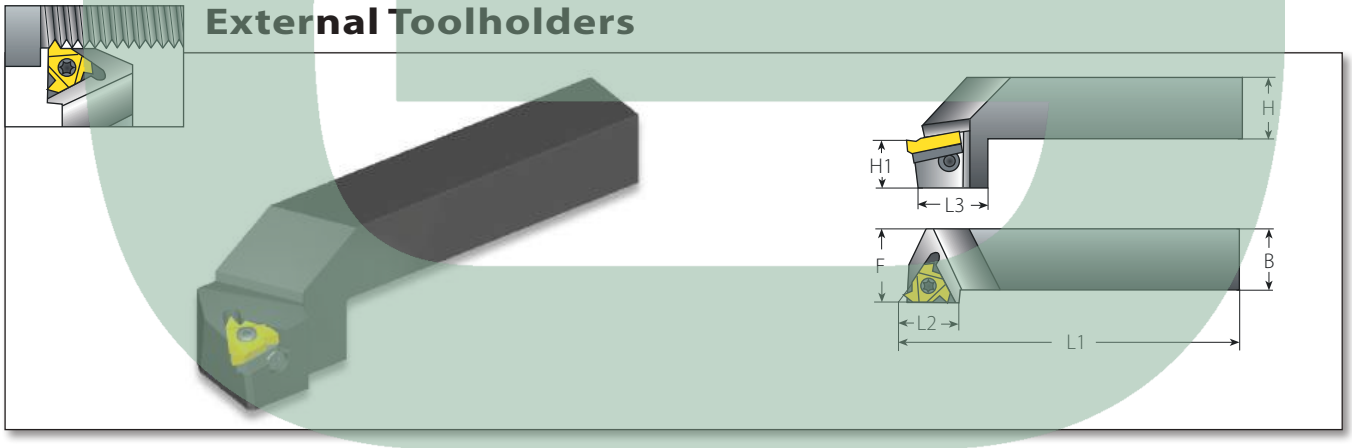
External Toolholders



Off-Set Qualified (FQ)

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
3/8"	AL20-3FQ	20	25	125	25	SA3T	SY3T	K3T	YE3	YI3
	AL25-3FQ	25	32	150	25					
	AL32-3FQ	32	40	170	32					
1/2"	AL25-4FQ	25	32	150	30	SA4T	SY4T	K4T	YE4	YI4
	AL32-4FQ	32	40	170	30					
5/8"	AL32-5FQ	32	40	170	35	SA5T	SY5T	K5T	YE5	YI5

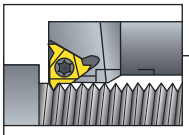
External Toolholders



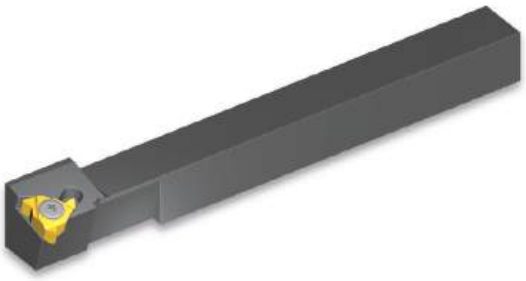
Drop Head-Qualified (CQ)

Insert Size	Ordering Code	Dimensions mm						Spare Parts				
IC	RH/LH	H=B	F	L1	L2	L3	H1	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
3/8"	AL20-3CQ	20	25	125	24	38	17.5	SA3T	SY3T	K3T	YE3	YI3
	AL25-3CQ	25	32	150	24	38	22.2					
	AL32-3CQ	32	40	170	24	38	22.2					
1/2"	AL25-4CQ	25	32	150	30	38	22.2	SA4T	SY4T	K4T	YE4	YI4
	AL32-4CQ	32	40	170	30	38	22.2					
5/8"	AL32-5CQ	32	40	170	33	43	25.4	SA5T	SY5T	K5T	YE5	YI5

The above toolholders have a 1.5° helix angle. For other helix angles see page 203.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example AL20-3FQ**LH**).

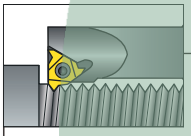


External + Internal Toolholders

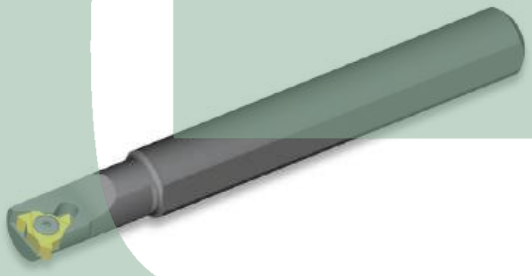


Miniature Square Shank*

Insert Size	Ordering Code	Dimensions mm					Min. Bore Dia.	Spare Parts	
IC	RH/LH	A	L	L1 (max)	F	mm		Insert Screw	Torx Key
1/4"	OV8-2	8	100	25	12	29.2		SN2T	K2T
	OV10-2	10	100	25	14	36.1			



External + Internal Toolholders



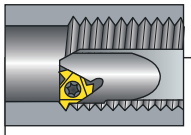
Miniature Round Shank*

Insert Size	Ordering Code	Dimensions mm							Min. Bore Dia.	Spare Parts	
IC	RH/LH	A	L	L1 (max)	D	D1	F	mm		Insert Screw	Torx Key
1/4"	OVR12-2	11.4	100	25	12	10	7.4	13		SN2T	K2T
	OVR15-2	14.3	100	32	15	13	8.9	16			
	OVR16D-2	15.3	100	32	16	13	8.9	16			

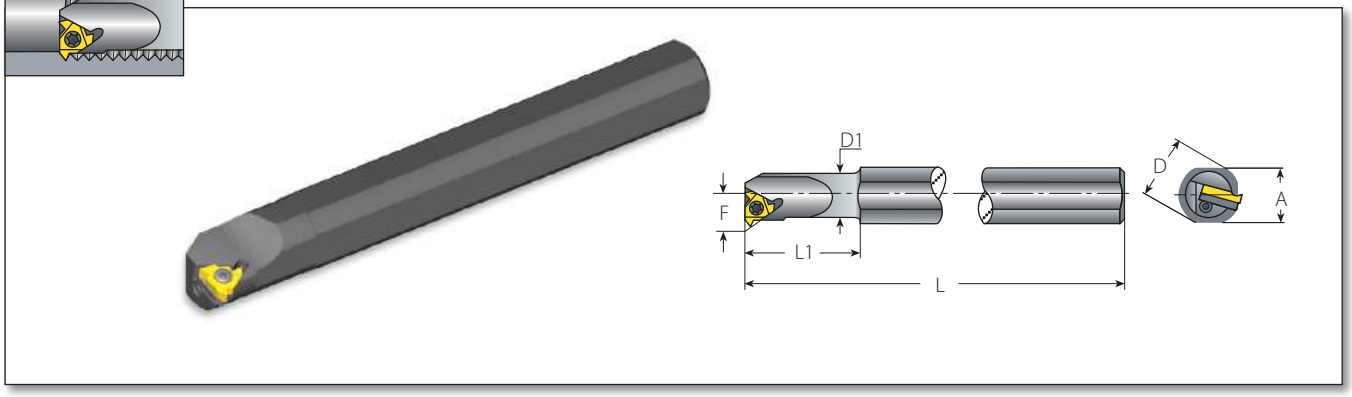
* Miniature square and round toolholders are designed for use on automatic lathes for the optical and other precision industries. They can be used for both external and internal threading, as follows:

Thread	ER	EL	IR	IL
Insert	ER	EL	IR	IL
Holder	LH	RH	RH	LH

Miniature toolholders have a 0.5° helix angle.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example OV8-2**LH**).



Internal Toolholders



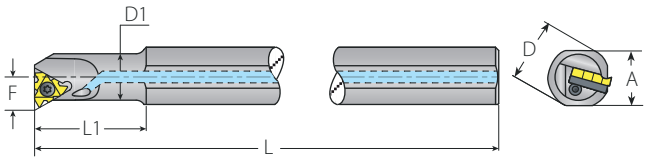
Standard

Insert Size	Ordering Code	Dimensions mm						Min. Bore Dia.	Spare Parts				
IC	RH/LH	A	L	L1 (max)	D	D1	F	mm	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
1/4"	NVR10D-2	9.5	100	40	10	10.0	7.3	13	SN2T	-	K2T	-	-
	NVR10-2	18.0	180	25	20	10.0	7.3	13					
	NVR13-2	18.0	180	32	20	13.0	8.9	16					
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					
	AVR40-3	36.0	300	160	40	40.0	23.8	44					
1/2"	NVR20-4	18.0	180	80	20	20.0	15.6	27	SN4T	-	K4T	-	-
	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					
	AVR50-4	45.0	350	200	50	50.0	30.8	57					
5/8"	AVR32-5	29.0	250	128	32	32.0	22.4	40	SN5T	SY5T	K5T	YI5	YE5
	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 203.
- Toolholders with prefix "N" cannot be used with an anvil.
- Holders with coolant channel are available as standard (Example NVR**C**10D-2) .
- The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example NVR10D-2**LH**).

Internal Toolholders

F-LINE



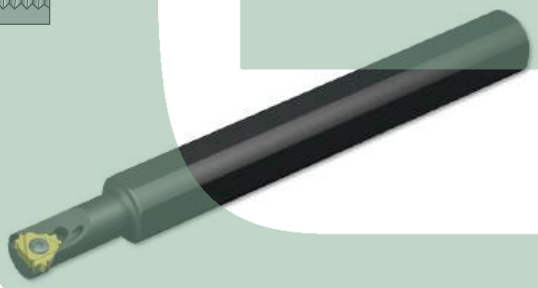
Standard F-Line

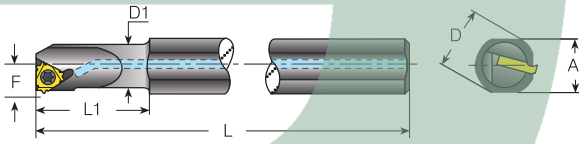
Spare Parts

Insert Size	Ordering Code	Dimensions mm						Min. Bore Dia.				
IC	RH	A	L	L1 (max)	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	K6T	YI4F
	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				

The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.

Internal Toolholders for V6 (without anvil)*





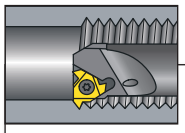
Specially designed for V6 inserts

V6 Style

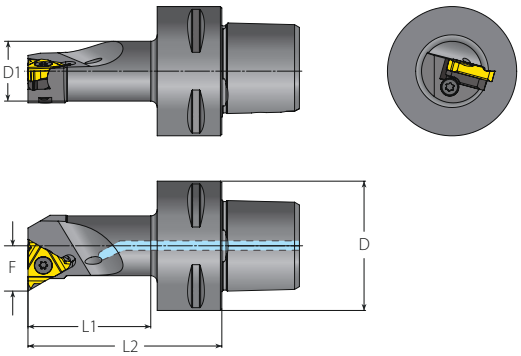
Spare Parts

Insert Size	Ordering Code	Dimensions mm						Min. Bore Dia.		
IC	RH	A	L	L1 (max)	D	D1	F	mm	Insert Screw	Torx Key
3/8" V6	NVRC13-3-206/001	18	180	32	20	12.7	10.3	17	SN3TM	K3T
	NVRC16-3-206/002	18	180	40	20	16	11.5	20	SN3T	
	NVRC16D-3-206/003	15.2	150	64	16	16	11.3	20		

* V6 inserts cannot be used on standard internal toolholders without anvil. For this purpose you must use one of these special V6 toolholders.
The above toolholders have a 1.5° helix angle.



Internal Toolholders

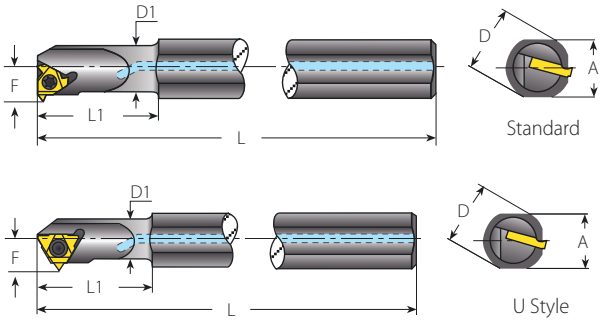


V-CAP

Insert Size	Ordering Code	Dimensions mm					Min. Bore Dia.	Spare Parts				
IC	RH/LH	D1	D	F	L2	L1 (max)	mm	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
3/8"	VCAP40-SIR12060-3	15.5	40	12	60	37	20	SN3T	-	K3T	-	-
	VCAP40-SIR14060-3	18.5		14	60	38	25	SA3T	SY3T	K3T	YI3	YE3
	VCAP40-SIR17070-3	24.5		17	70	48	32					
	VCAP40-SIR22090-3	32.0		22	90	69	40					
	VCAP40-SIR27080-3	39.5		27	80	60	50					
	VCAP50-SIR12060-3	15.5	50	12	60	35	20	SN3T	-	K3T	-	-
	VCAP50-SIR14060-3	18.5		14	60	36	25	SA3T	SY3T	K3T	YI3	YE3
	VCAP50-SIR17070-3	24.5		17	70	47	32					
	VCAP50-SIR22090-3	32.0		22	90	68	40					
	VCAP50-SIR27105-3	40.0		27	105	84	50					
	VCAP63-SIR14070-3	18.5	63	14	70	42	25	SA3T	SY3T	K3T	YI3	YE3
	VCAP63-SIR17075-3	24.5		17	75	48	32					
	VCAP63-SIR22090-3	32.0		22	90	64	40					
	VCAP63-SIR27105-3	40.0		27	105	80	50					

The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example VCAP40-SI**L**12060-3).

Internal Toolholders

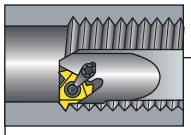


Standard for Coarse Pitch

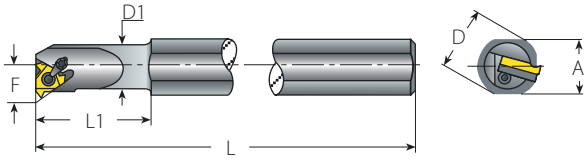
Insert Size	Ordering Code		Dimensions mm					F to Insert	Holder Helix	Spare Parts	
IC	RH	LH	A	L	L1 (max)	D	D1	mm	Deg.	Insert Screw	Torx Key
1/4"	NVRC10-2-156/001	NVRC10-2LH-156/036	18.0	180	25.0	20	10.1	6.53	3.0	SN2T	K2T
3/8"	NVRC11-3-156/005	NVRC11-3LH-156/025	18.0	180	25.4	20	11.2	8.30	4.5	SN3TM	K3T
	NVRC13-3-156/006	NVRC13-3LH-156/028	18.0	180	32.0	20	13.0	9.05	4.0	SN3T	K3T
	NVRC13-3-156/016	NVRC13-3LH-156/026	18.0	180	34.0	20	13.8	8.90	2.5		
1/2"	NVRC17-4-156/007	NVRC17-4LH-156/023	18.0	180	40.0	20	16.7	11.45	4.0	SN4TM	K4T
	NVRC17-4-156/039	NVRC17-4LH-156/040	18.0	180	40.0	20	16.5	13.40	4.0		
	NVRC20-4-156/008	NVRC20-4LH-156/024	18.0	180	50.0	20	19.6	12.55	3.5	SN4T	K4T
	NVRC20-4-156/009	NVRC20-4LH-156/033	18.0	180	50.0	20	19.6	12.55	3.0		
5/8"	NVRC25-5-156/012	NVRC25-5LH-156/017	29.0	250	60.0	32	25.0	16.78	3.3	SN5TM	K5T
	NVRC28-5-156/010	NVRC28-5LH-156/034	29.0	250	50.0	32	28.0	17.80	3.5		

U Style for Coarse Pitch

Insert Size	Ordering Code		Dimensions mm					F to Insert	Holder Helix	Spare Parts	
IC	RH	LH	A	L	L1 (max)	D	D1	mm	Deg.	Insert Screw	Torx Key
6.0U	NVRC8-6.0KU-156/003	NVRC8-6.0KULH-156/037	18.0	180	24.0	20	8.0	5.86	4.0	SN6MTN	KIP6
1/4"U	NVRC10-2U-156/004	NVRC10-2ULH-156/038	18.0	180	32.0	20	10.0	7.40	4.0	SM2T8	K2T
	NVRC11-2U-156/002	NVRC11-2ULH-156/035	18.0	180	32.0	20	11.2	7.30	3.0		
3/8"U	NVRC11-3U-156/020	NVRC11-3ULH-156/029	18.0	180	32.0	20	11.0	8.23	4.5	SN3TM	K3T
	NVRC14-3U-156/018	NVRC14-3ULH-156/030	18.0	180	38.0	20	13.4	9.99	4.5		
	NVRC15-3U-156/019	NVRC15-3ULH-156/031	18.0	180	38.0	20	15.4	10.99	4.0		
1/2"U	NVRC20-4U-156/011	NVRC20-4ULH-156/021	18.0	180	40.0	20	19.2	13.68	4.0	SN4T	K4T
	NVRC25-4U-156/013	NVRC25-4ULH-156/032	29.0	250	60.0	32	25.0	17.63	3.5		
	NVRC32-4U-156/014	NVRC32-4ULH-156/022	29.0	250	60.0	32	28.0	18.76	3.3	SA4T	K4T
5/8"U	NVRC32-5U-156/015	NVRC32-5ULH-156/027	29.0	250	60.0	32	31.6	20.96	3.2	SN5T	K5T



Internal Toolholders

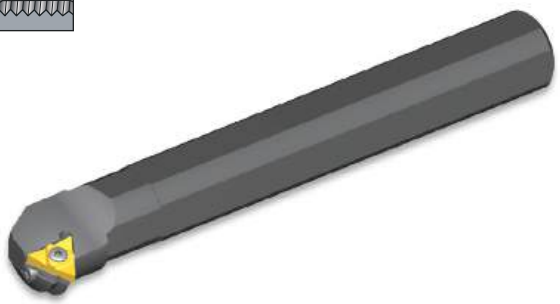


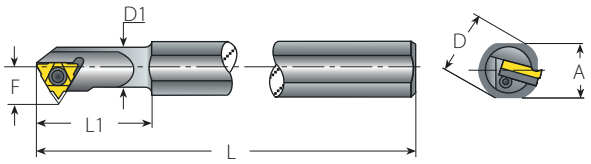
Standard with Clamp
(Dual System, Screw or Clamp)

Insert Size	Ordering Code	Dimensions mm						Min. Bore Dia.	Spare Parts					
IC	RH/LH	A	L	L1 (max)	D	D1	F	mm	Insert Screw	Anvil Screw	Clamp	Torx Key	Anvil RH	Anvil LH
3/8″	AVR20-3C	18.0	180	80	20	20.0	13.4	24	SA3T	SY3T	C3	K3CT	YI3	YE3
	AVR25-3C	28.0	250	60	32	25.0	16.3	29						
	AVR25D-3C	22.6	200	100	25	24.6	16.1	29						
	AVR32-3C	29.0	250	128	32	32.0	19.6	36						
	AVR40-3C	36.0	300	160	40	40.0	23.8	44						
1/2″	AVR25-4C	29.0	250	60	32	25.0	17.4	32	SA4T	SY4T	C4	K4T	YI4	YE4
	AVR25D-4C	22.6	200	100	25	24.6	17.2	32						
	AVR32-4C	29.0	250	128	32	32.0	21.5	39						
	AVR40-4C	36.0	300	160	40	40.0	25.8	47						
5/8″	AVR32-5C	29.0	250	128	32	32.0	22.4	40	SN5T	SY5T	C5	K5T	YI5	YE5
	AVR40-5C	36.0	300	160	40	40.0	26.4	48	SA5T	SY5T	C5	K5T	YI5	YE5
	AVR50-5C	45.0	350	200	50	50.0	31.4	58						
	AVR60-5C	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 203.
- Holders with coolant channel available as standard (Example AVR**C**20-3C).
- The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example AVR20-3C**LH**).

Internal Toolholders





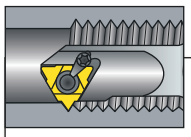
U Style

Insert Size	Ordering Code	Dimensions mm						Min. Bore Dia.
IC	RH/LH	A	L	L1 (max)	D	D1	F	mm
1/2"U	AVR32-4U	29	250	128	32	32	25.5	42
	AVR40-4U	36	300	160	40	40	29.5	51
5/8"U	NVR32-5U	29	250	128	32	32	24.7	42
	AVR40-5U	36	300	160	40	40	29.4	51
	AVR50-5U	45	350	200	50	50	34.3	63
	AVR60-5U	54	400	240	60	60	39.3	74

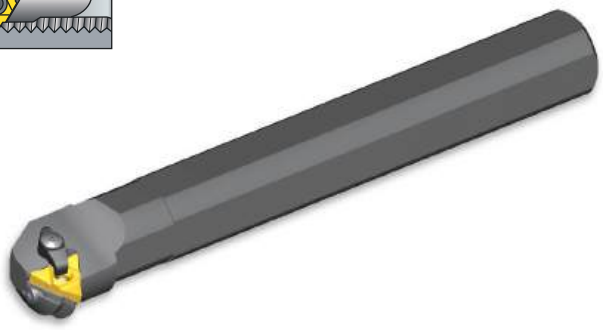
Spare Parts

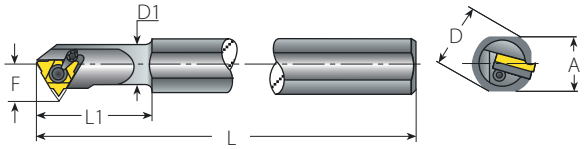
Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
SA4T	SY4T	K4T	YI4U	YE4U
SN5T	-	K5T	-	-
SA5T	SY5T	K5T	YI5U	YE5U

- The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.
- Holders with coolant channel available as standard (Example AVR**C**32-4U).
- The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example AVR32-4U**LH**).



Internal Toolholders





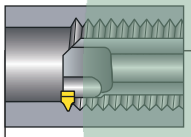
U style with Clamp
(Dual System, Screw or Clamp)

Insert Size	Ordering Code	Dimensions mm						Min. Bore Dia.
IC	RH/LH	A	L	L1 (max)	D	D1	F	mm
1/2"U	AVR32-4UC	29.0	250	128	32	32.0	25.5	42
	AVR40-4UC	36.0	300	160	40	40.0	29.5	51
5/8"U	AVR40-5UC	36.0	300	160	40	40.0	29.4	53
	AVR50-5UC	45.0	350	200	50	50.0	34.4	63
	AVR60-5UC	54.0	400	240	60	60.0	39.3	74

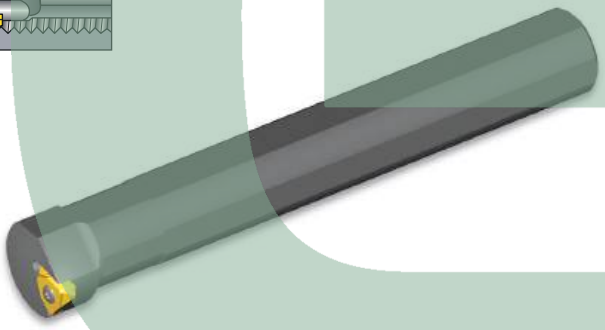
Spare Parts

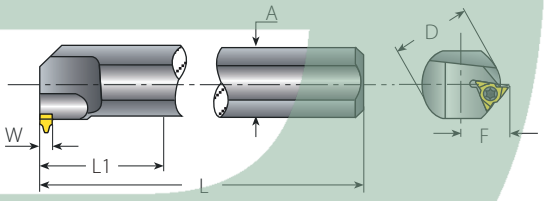
Insert Screw	Anvil Screw	Clamp	Torx Key	Anvil RH	Anvil LH
SA4T	SY4T	C4	K4T	YI4U	YE4U
SA5T	SY5T	C5	K5T	YI5U	YE5U

The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.



Internal Toolholders





V Style

Insert Size	Ordering Code	Dimensions mm					
IC	RH/LH	A	L	L1 (max)	D	F	W
5/8"V	NVR40-5V	36	300	160	40	28.4	6.5
	NVR50-5V	45	350	200	50	33.4	6.5
	NVR60-5V	54	400	240	60	38.0	6.5

Spare Parts

Insert Screw	Torx Key
SN6T	K6T

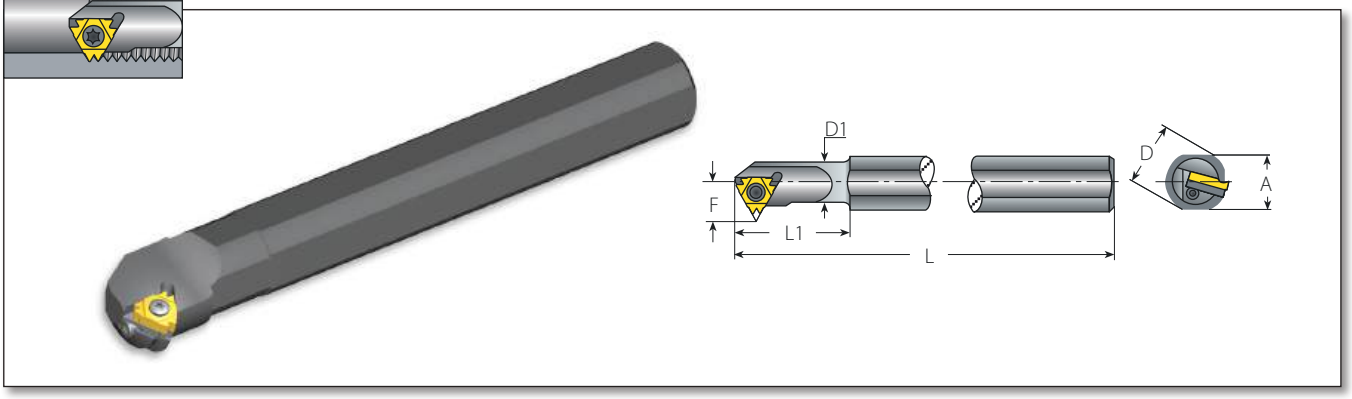
The above toolholders have a 1.0° helix angle.

Minimum Bore Diameter

	Pitch mm	6.0 ISO	8.0 ISO	10.0 ISO	
Holder	Pitch TPI	4 UN	3 UN		2.5 W
NVR40-5V		48	54	62	68
NVR50-5V		58	58	62	68
NVR60-5V		68	68	68	68

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example AVR32-4UC**LH**).
Holders with coolant channel available as standard (Example AVR**C**32-4UC).

Internal Toolholders

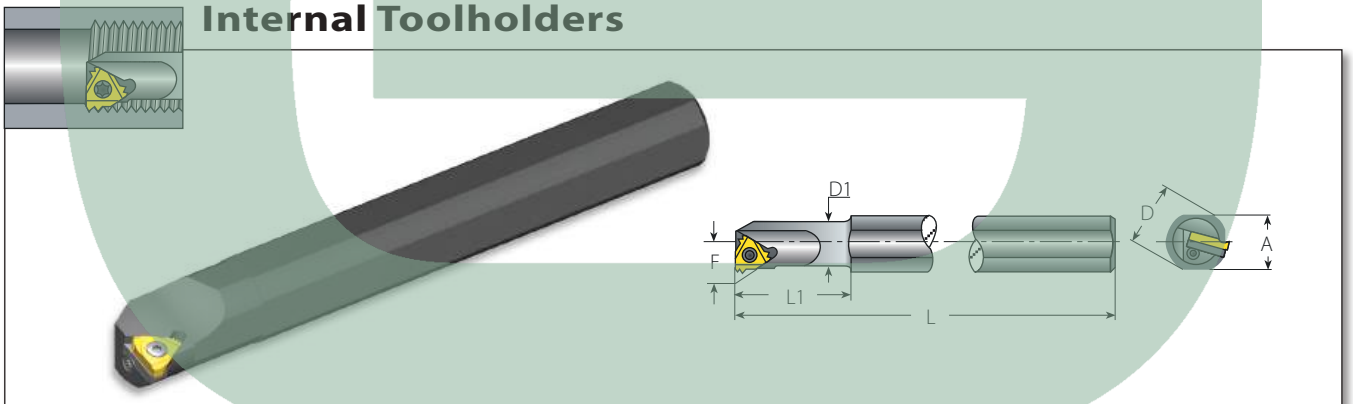


Z+ Style

Multiplus

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	Anvil RH	Anvil LH
1/2"Z	AVR32-4Z	29	250	128	32	32	25.5	42	SA4T	SY4T	K4T	YI4Z	YE4Z
	AVR40-4Z	36	300	160	40	40	29.5	51					

Internal Toolholders

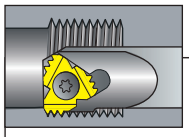


M+ Style

Multiplus

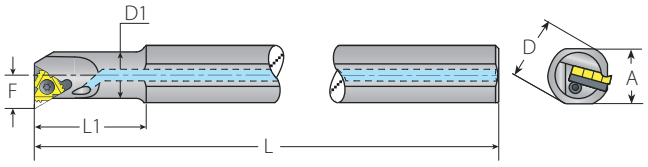
Insert Size	Ordering Code	Dimensions mm						Min. Bore Dia.	Spare Parts				
IC	RH	A	L	L1 (max)	D	D1	F	mm	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
5/8"M	AVR32-5M	29	250	128	32	32	22.4	40	SN5T	SY5T	K5T	YI5M	YE5M
	AVR40-5M	36	300	160	40	40	26.4	48	SA5T	SY5T	K5T	YI5M	YE5M
	AVR50-5M	45	350	200	50	50	31.4	58					
	AVR60-5M	54	400	240	60	60	36.4	69					

The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.
Holders with coolant channel available as standard (Example AVR**C**32-4Z).



Internal Toolholders

F-LINE



F-Line M+ Style

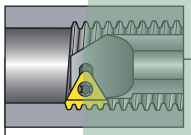
Spare Parts

Multi plus

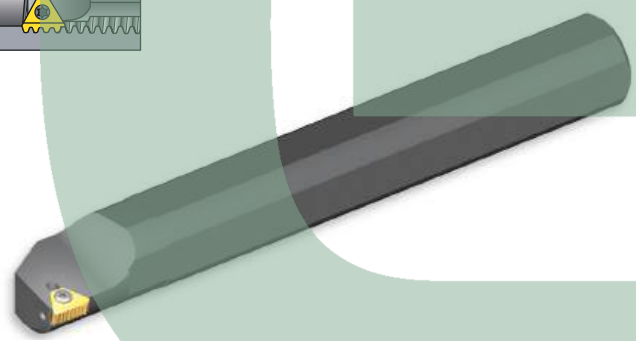
Insert Size	Ordering Code	Dimensions mm						Min. Bore Dia.
IC	RH	A	L	L1 (max)	D	D1	F	mm
1/2"F	AVRC25-4MF	29	250	60	32	25.0	17.9	32
	AVRC25D-4MF	22.6	200	100	25	24.6	17.9	32
	AVRC32-4MF	29	250	128	32	32.0	21.4	39
	AVRC40-4MF	36	300	160	40	40.0	25.6	47
	AVRC50-4MF	45	350	200	50	50.0	30.6	57

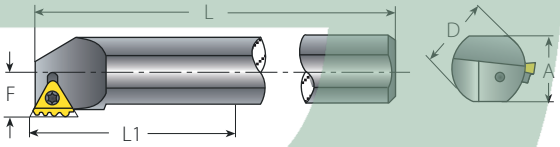
Insert Screw	Anvil Screw	Torx Key	Anvil RH
SA4T	SY4T	K6T	YI4M2F

The above toolholders have a 1.5° helix angle. For other helix angles, see page 203.



Internal Toolholders





T+ Style

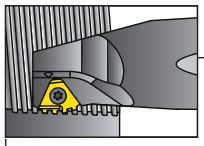
Spare Parts

Multi plus

Insert Size	Ordering Code	Dimensions mm					Min. Bore Dia.
IC	RH	A	L	L1 (max)	D	F	mm
1/2"T	AVR40-4T	36	300	160	40	23.3	60
	AVR50-4T	45	350	200	50	28.3	70
	AVR60-4T	54	400	240	60	33.3	80

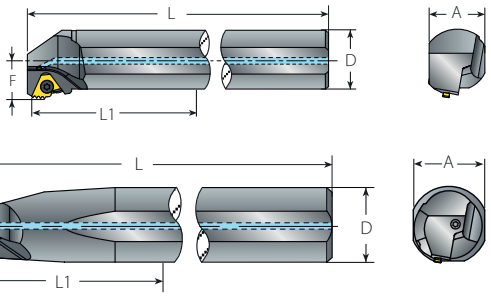
Insert Screw	Anvil Screw	Torx Key	Anvil Torx Key	Anvil RH/LH
SA4T	SY4K2	K4T	K2	Y4T

All toolholders have a 0° helix angle.
Holders with coolant channel available as standard (Example: AVR**C**40-4T).



Internal Toolholders

Oil&Gas



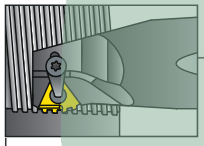
14D Standard

Multiplus

Insert Size	Ordering Code	Dimensions mm					Min. Bore Dia.
IC	RH	A	L	L1 (max)	D	F	mm
14D	AVRC40-14D	37	300	160	40	26	54.5
	AVRC50-14D	46	300	160	50	25	54.5

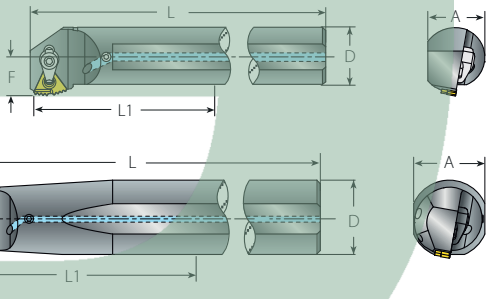
Spare Parts

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



Internal Toolholders

Oil&Gas



14D Standard with Clamp

Multiplus

Insert Size	Ordering Code	Dimensions mm					Min. Bore Dia.
IC	RH	A	L	L1 (max)	D	F	mm
14D	AVRC40-14DC	37	300	160	40	26	54.5
	AVRC50-14DC	46	300	160	50	25	54.5

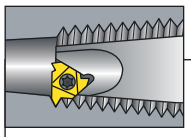
Spare Parts

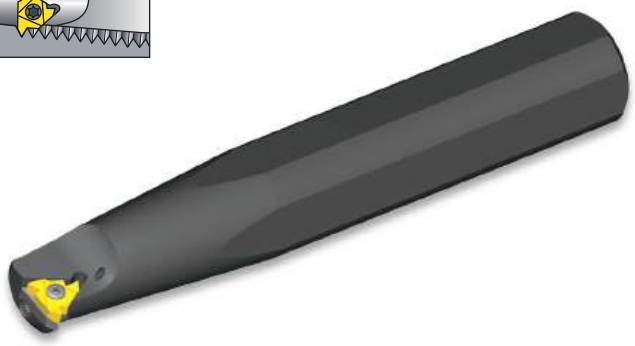
Insert Screw	Anvil Screw & Washer	Clamp	Torx Key	Anvil Key
SA5T	M4x6(14D)	C5	K5T	KT15

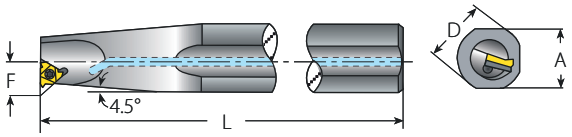
14D holders are supplied without anvils. For specific applications, please use the anvils indicated in the table on page 204.

Internal Toolholders

Oil&Gas



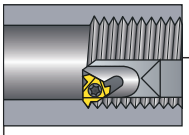




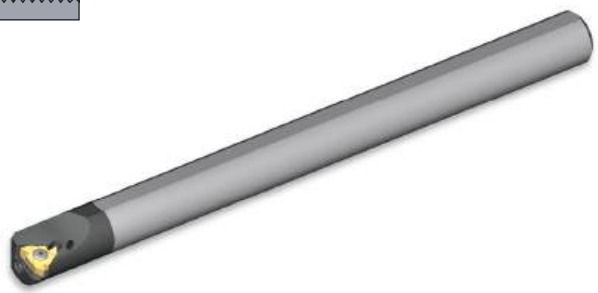
Oil & Gas

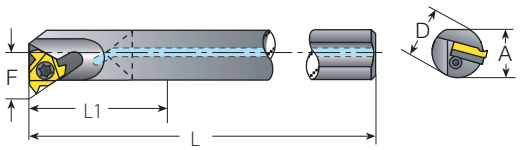
Insert Size	Ordering Code	Thread Form	Connection No. or Size	Dimensions mm				Helix Angle Deg.	Spare Parts			
IC	RH			A	L	D	F		Insert Screw	Anvil Screw	Torx Key	Anvil RH
3/8"	AVRC25-3-APIRD	APIRD 8 APIRD 10	2.375"-20" 1.315"-3.5"	29	250	25	14.5	1	SA3T	SY3T	K3T	YEI3-APIRD
	AVRC32-3-APIRD	APIRD 8 APIRD 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	22.0	1				
1/2"	AVRC40-4-BUT/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
	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.



Internal Toolholders

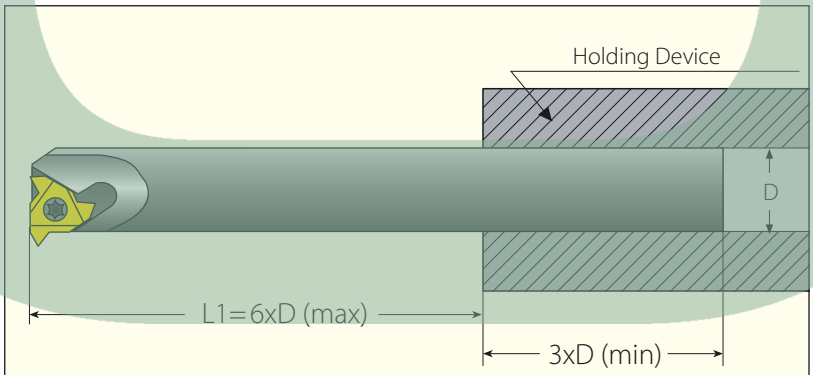




Standard with Carbide Shank

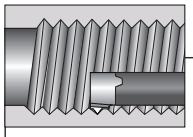
Insert Size	Ordering Code	Dimensions mm					Min. Bore Dia.	Spare Parts				
IC	RH/LH	D	A	F	L	L1 (max)	mm	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
1/4"	CNVRC10-2	10	9.5	7.3	150	60	13	SN2T	-	K2T	-	-
	CNVRC12-2	12	11.7	8.3	180	72	15					
3/8"	CNVRC16-3	16	15.6	11.5	200	96	20	SN3T	-	K3T	-	-
	CAVRC20-3	20	19.5	13.4	250	120	24	SA3T	SY3T	K3T	YI3	YE3
1/2"	CNVRC20-4	20	19.5	15.5	250	120	25	SN4T	-	K4T	-	-

Toolholders with prefix "CN" cannot be used with an anvil. The above toolholders have coolant channel as standard.



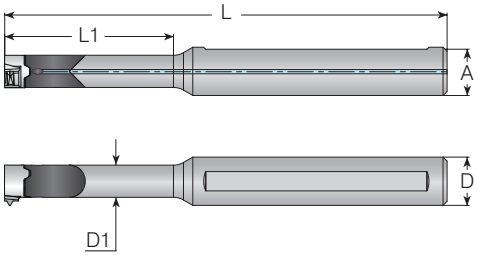
The overhang to bar diameter ratio should be as small as possible to eliminate the chance of chatter (vibration). The minimum length inside a holding device should be 3 times the diameter of the bar shank.

The above toolholders have 1.5° helix angle. For other helix angles see page 203.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example CNVRC10-2**LH**).



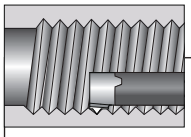
Internal Toolholders

Mini-V



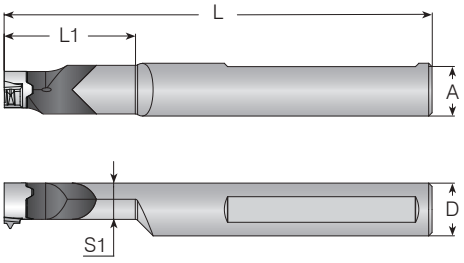
Carbide Shank with Alloy Steel Head

Insert Style	Ordering Code	Dimensions mm					Spare Parts		
	RH	A	L	L1	D	D1	Screw	Size	Torx Key
V08	CV08-1221	11.5	80.5	21	12	6	SNV08	M2.6x0.45x8	K2T
	CV08-1230		90.5	30					
V11	CV11-1229	11.5	95.0	29	12	8	SNV11	M3.5x0.6x10	K3T
	CV11-1242		110.0	42					
V16	CV16-1240	11.0	130.0	40	12	11	SNV16	M5x0.8x12	K4T
	CV16-1256		130.0	56					
	CV16-1280		150.0	80					



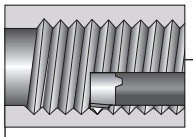
Internal Toolholders

Mini-V



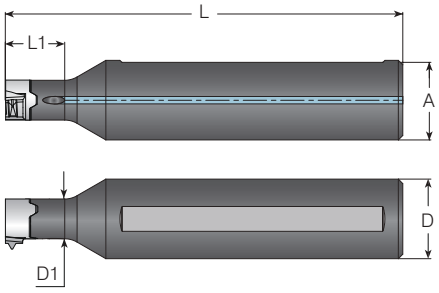
Reinforced Carbide Shank

Insert Style	Ordering Code	Dimensions mm						Spare Parts		
	RH	A	L	L1	D	S1	S2	Screw	Size	Key
V14	CV14-1234	11	100.0	34.0	12	9.3	11.9	SNV14	M4x0.7x12	KT15
	CV14-1634	15	100.0	34.0	16	9.3	12.45			
V16	CV16-1640	15	129.7	39.7	16	11	14.75	SNV16	M5x0.8x12	K4T



Internal Toolholders

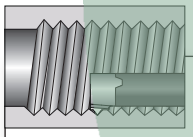
Mini-V



Alloy Steel Shank

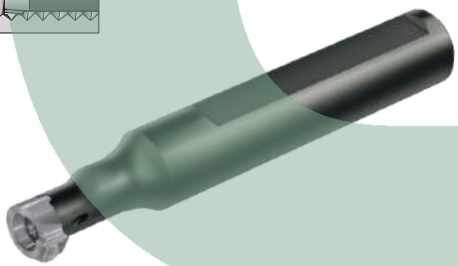
Spare Parts

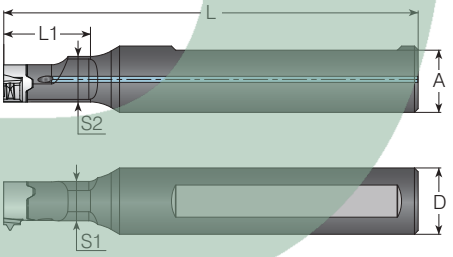
Insert Style	Ordering Code	Dimensions mm					Spare Parts		
	RH	A	L	L1	D	D1	Screw	Size	Torx Key
V08	V08-1612	15.6	80	12	16	6	SNV08	M2.6x0.45x8	K2T
V11	V11-1612	15.6	80	12	16	8	SNV11	M3.5x0.6x10	K3T
V16	V16-1622	15.0	100	22	16	11	SNV16	M5.0x0.8x12	K4T



Internal Toolholders

Mini-V

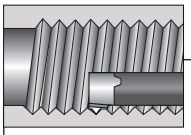




Alloy Steel Shank

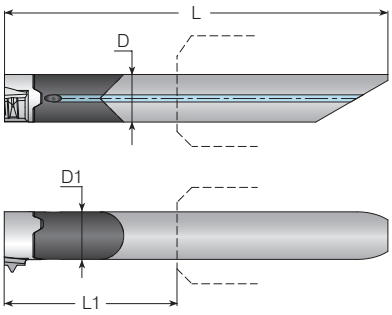
Spare Parts

Insert Style	Ordering Code	Dimensions mm						Spare Parts		
	RH	A	L	L1	D	S1	S2	Screw	Size	Torx Key
V14	V14-1620	15.0	100	20	16	9.5	11	SNV14	M4x0.7x12	KT15



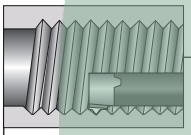
Internal Toolholders

Mini-V



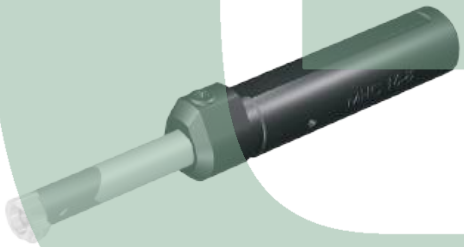
Holder for Sleeve Clamping

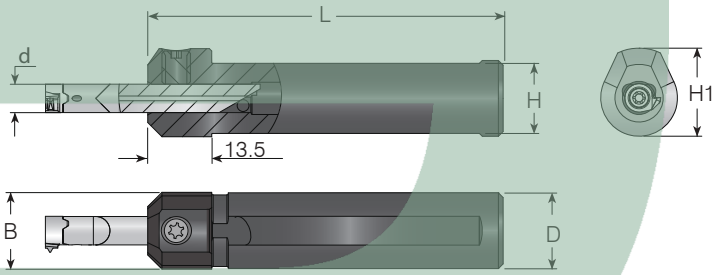
Insert Style	Ordering Code	Dimensions mm					Ordering Code	Spare Parts		
	RH	A	L	L1 (max)	D	D1	Sleeve	Screw	Size	Torx Key
V08	CV08-0621	-	45	21	6	6	MHC...-6	SNV08	M2.6x0.45x8	K2T
V11	CV11-0829	-	64.5	29	8	8	MHC...-8	SNV11	M3.5x0.6x10	K3T



Internal Toolholders

Mini-V



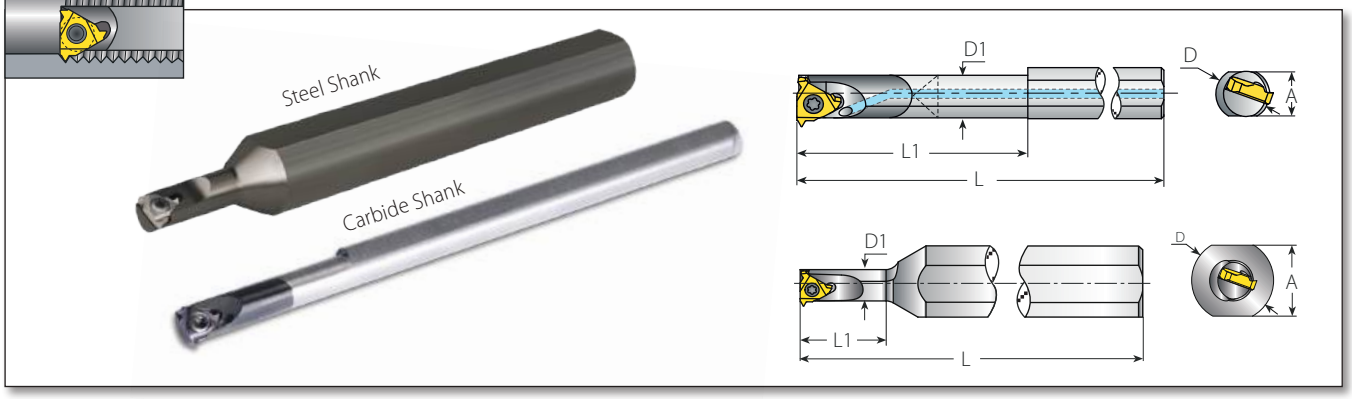


Sleeves

Ordering Code		Dimensions mm				Spare Parts	
d	Sleeve	D=B	H1	H	L	Screw	Torx Key
6	MHC12-6	12	16.0	10.8	70.0	SL7DT15	KT15
	MHC16-6	16	18.6	14.8	75.0		
	MHC20-6	20	22.0	18.8	84.0		
8	MHC16-8	16	18.6	14.8	100.0		
	MHC20-8	20	22.0	18.8	103.5		

Internal Toolholders Standard

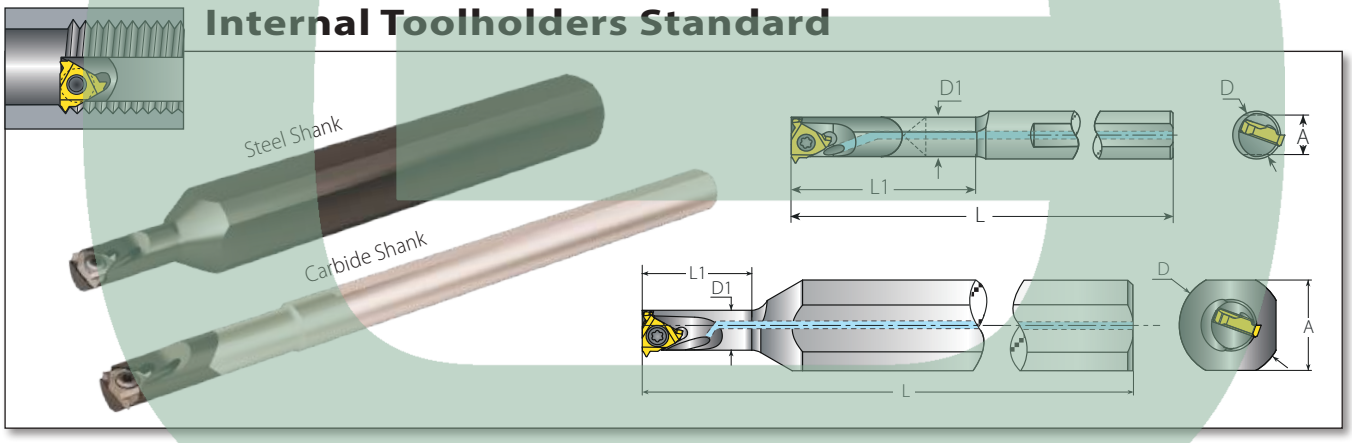
MINIPRO



Mini-3 Standard

Insert Size	Ordering Code	Dimensions mm					Anti-Vibration System	Spare Parts	
IC	RH/LH	A	L	L1	D	D1		Insert Screw	Torx Key
4.0	SNVR5-4.0K	11.0	100	12	12	5.1	No	SN4MT	K6MT
	CNVRC5-4.0K	5.2	100	26	6	5.1	Carbide Shank		

Internal Toolholders Standard



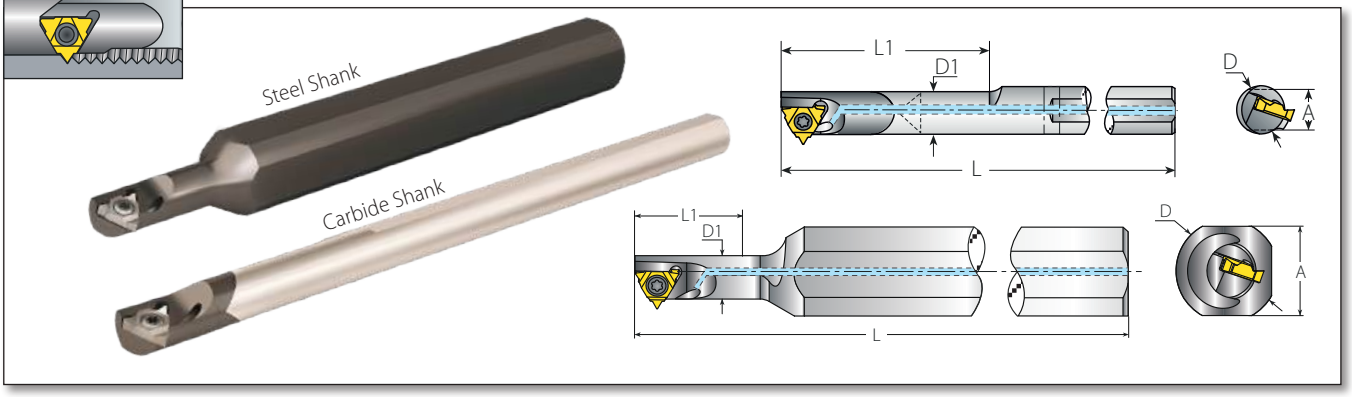
Mini-3 Standard

Insert Size	Ordering Code	Dimensions mm					Anti-Vibration System	Spare Parts	
IC	RH/LH	A	L	L1	D	D1		Insert Screw	Torx Key
5.0	NVRC7-5.0K	15	125	18	16	6.6	No	SN5MT	K6MT
	CNVRC7-5.0K	7	125	31	8	6.6	Carbide Shank		

The above toolholders have 2.5° helix angle.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example: CNVRC5-4.0K**LH**).

Internal Toolholders U Style

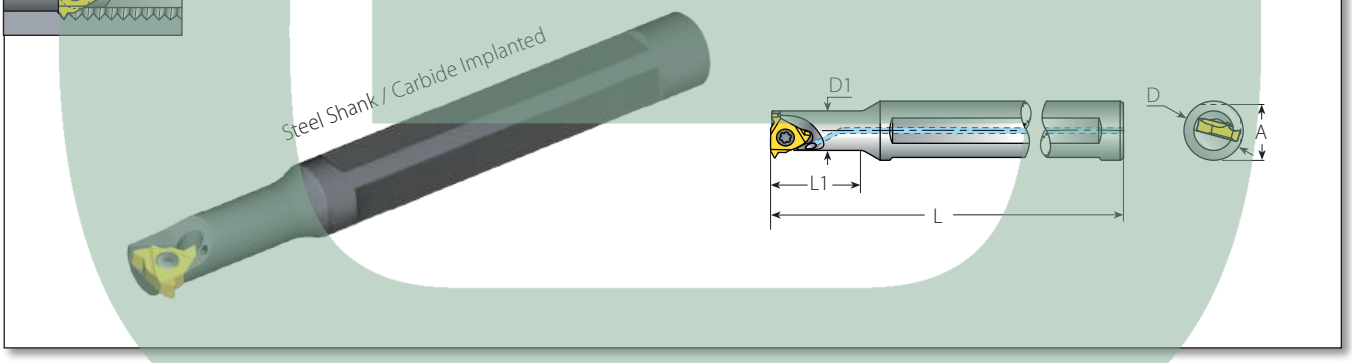
MINIPRO



Mini-3 U Style

Insert Size	Ordering Code	Dimensions mm					Anti-Vibration System	Spare Parts	
IC mm	RH/LH	A	L	L1	D	D1		Insert Screw	Torx Key
5.0U	NVRC8-5.0KU	15	125	21	16	7.3	No	SN5MT	K6MT
	CNVRC8-5.0KU	7	125	35	8	7.3	Carbide Shank		

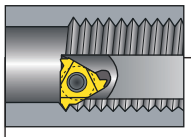
Internal Toolholders



Mini-3 Standard

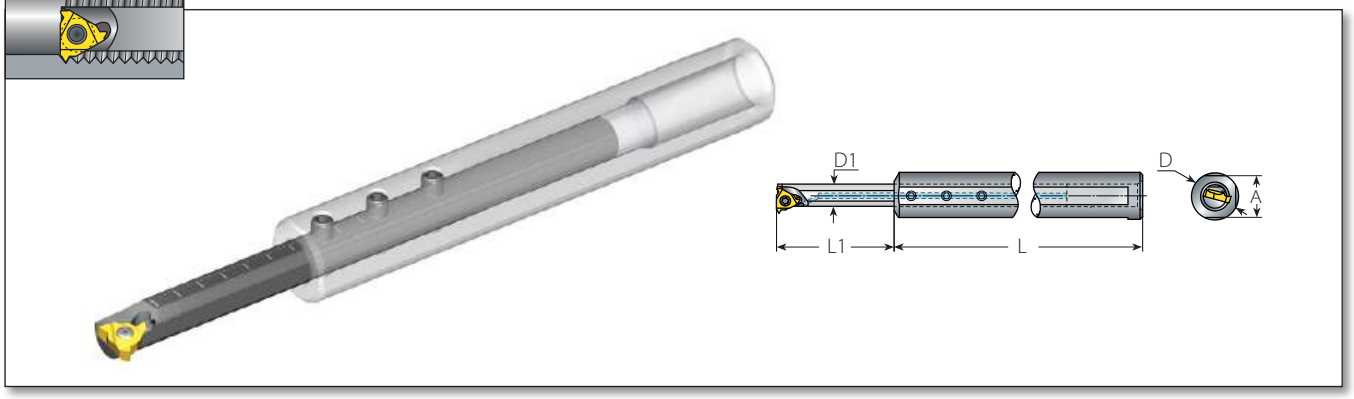
Insert Size	Ordering Code	Dimensions mm					Anti-Vibration System	Spare Parts	
IC	RH/LH	A	L	L1	D	D1		Insert Screw	Torx Key
6.0	SNVRC12U-6.0K	11.4	82	16	12	8	No	SN6MTN	KIP6
	BNVRC10S-6.0K	9.4	89	22	10	8	Carbide Implanted		
	BNVRC10M-6.0K	9.4	98	31	10	8	Carbide Implanted		
	BNVRC10L-6.0K	9.4	110	43	10	8	Carbide Implanted		

The above toolholders have 2.5° helix angle.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example: NVRC8-5.0KU**LH**).



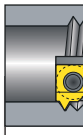
Internal Toolholders

MINIPRO

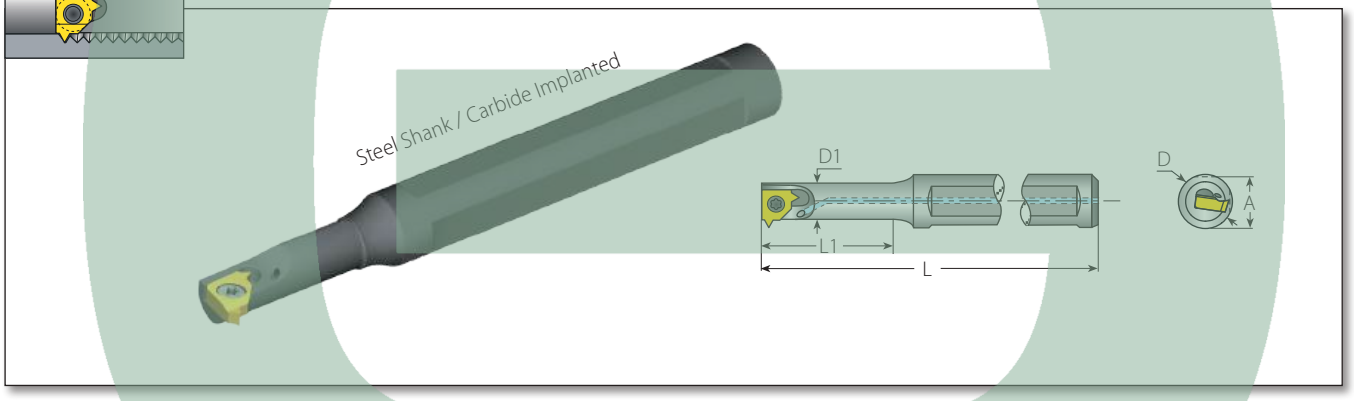


Mini-3 Adjustable

Insert Size		Ordering Code	Dimensions mm					Spare Parts			
IC	Sleeve	Holder RH/LH	A	L	L1	D	D1	Insert Screw	Torx Key for Insert Screw	Holder Screw x3	Key for Holder Screw
6.0	SVC16-8.0	BNVRC8.0T-6.0K	15.6	100	8-56	16	8	SN6MTN	KIP6	S4.0	K2.0



Internal Toolholders

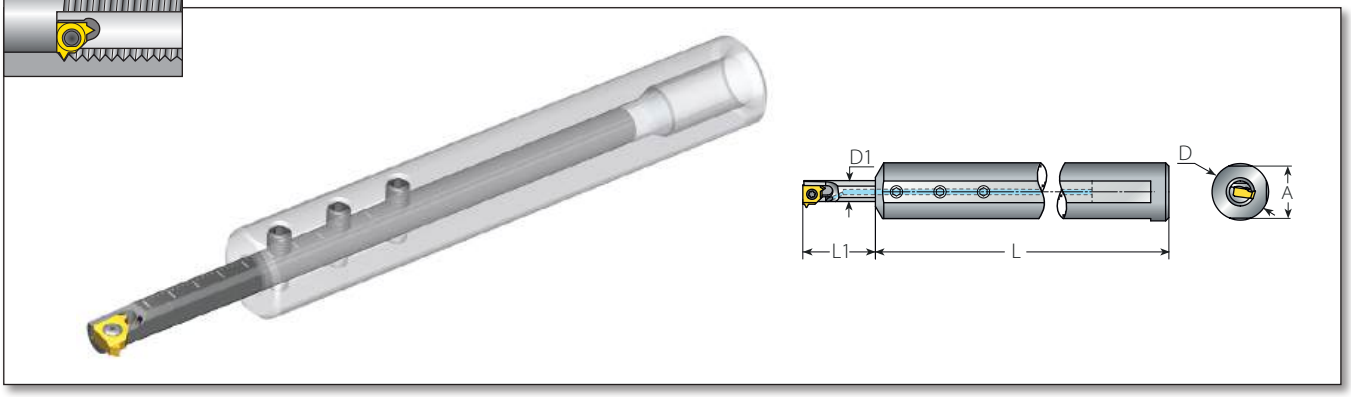


Mini-L

Insert Size	Ordering Code	Dimensions mm					Anti-Vibration System	Spare Parts	
IC	RH/LH	A	L	L1	D	D1		Insert Screw	Torx Key
5.0L	SNVRC10U-5LK	9.4	81	16	10	6.2	No	SN5LSTR	K7MT
	BNVRC10S-5LK	9.4	87	22	10	6.2	Carbide Implanted		
	BNVRC10M-5LK	9.4	97	31	10	6.2	Carbide Implanted		
	BNVRC10L-5LK	9.4	109	43	10	6.2	Carbide Implanted		

The above toolholders have 2.5° helix angle.
The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example: SNVRC10U-5LK**LH**).

Internal Toolholders

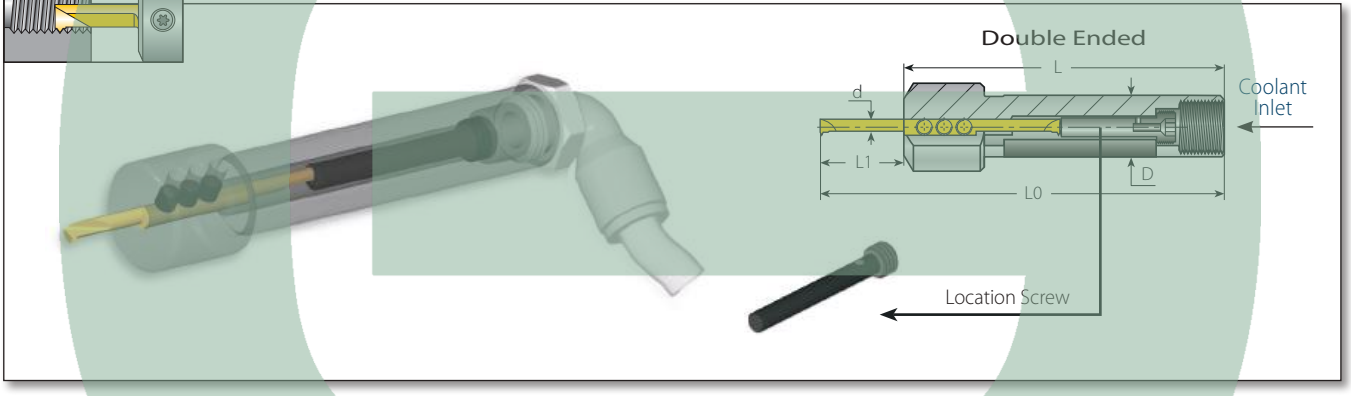


Mini-L Adjustable

Insert Size		Ordering Code	Dimensions mm					Spare Parts			
IC	Sleeve	Holder RH/LH	A	L	L1	D	D1	Insert Screw	Torx Key for Insert Screw	Holder Screw x 3	Key for Holder Screw
5.0L	SVC16-6.2	BNVRC6.2T-5LK	15.6	100	8-44	16	6.2	SN5LSTR	K7MT	S4.0	K2.0

The above toolholders are for RH inserts. For LH inserts, add LH to the toolholder's ordering code (Example: BNVRC6.2T-5LK**LH**).

Internal Toolholders



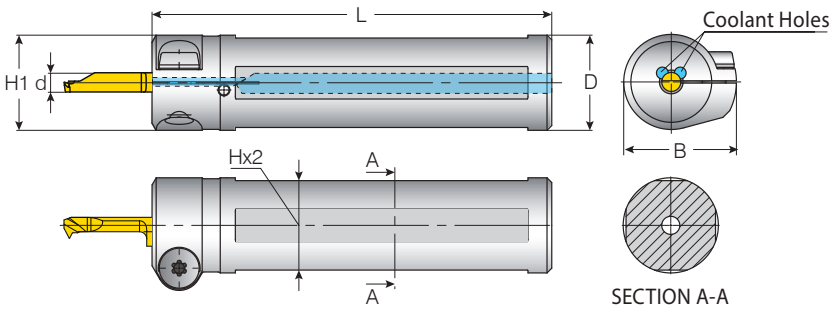
Micro - Double Ended

Micro Insert Dia.	Shank Dia.	Ordering Code	Dimensions mm			Location Screw (Every toolholder package contains the full range of location screws needed)		Clamping Screw x 3		
d mm	D		L	L1	L0	Screw	M	Key	Screw	Key
3	10	SMC10-3.0	80	9 - Short	89	AGISM8X28	28	K4.0	M4X0.7X4.0	K2.0
	12	SMC12-3.0		16 - Medium	96	AGISM8X21	21			
	16	SMC16-3.0	95	9 - Short	104	AGISM8X49	49			
	20	SMC20-3.0		16 - Medium	111	AGISM8X42	42			
4	10	SMC10-4.0	80	9 - Short	89	AGISM8X28	28			
				16 - Medium	96	AGISM8X21	21			
	12	SMC12-4.0		21 - Long	101	AGISM8X16	16			
	16	SMC16-4.0	95	9 - Short	104	AGISM8X49	49			
				16 - Medium	111	AGISM8X42	42			
	20	SMC20-4.0		21 - Long	116	AGISM8X37	37			
6	12	SMC12-6.0	80	9 - Short	89	AGISM8X28	28			
				16 - Medium	96	AGISM8X21	21			
				21 - Long	101	AGISM8X16	16			
	16	SMC16-6.0	95	9 - Short	104	AGISM8X49	49			
				16 - Medium	111	AGISM8X42	42			
	20	SMC20-6.0		21 - Long	116	AGISM8X37	37			

Internal Toolholders

microscope

Micro - Single Ended



Shrink

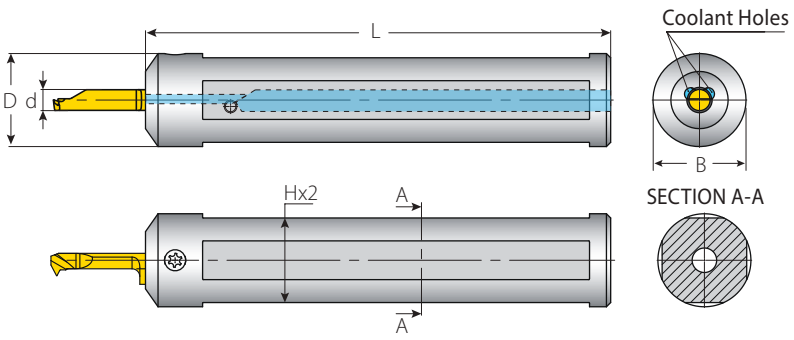
Micro Insert Dia.	Ordering Code	Dimensions mm					Spare Parts	
d (mm)		D	B	H1	H	L	Shrink Screw	Key
4.0	MHCS10-4-4F	10.0	19.7	13.3	8.8	65.0	SM5x10-15IPx2*	F15IP*
	MHCS12-4-4F	12.0	19.7	13.8	10.8	70.0		
	MHCS16-4-4F	16.0	21.7	16.0	14.8	75.0		
	MHCS20-4-4F	20.0	23.7	20.0	18.8	84.0		
	MHCS22-4-4F	22.0	24.7	22.0	20.0	110.0		
5.0	MHCS16-5-4F	16.0	21.7	16.0	14.8	75.0		
	MHCS20-5-4F	20.0	23.7	20.0	18.8	84.0		
6.0	MHCS12-6-4F	12.0	19.7	13.8	10.8	70.0		
	MHCS16-6-4F	16.0	21.7	16.0	14.8	75.0		
	MHCS20-6-4F	20.0	23.7	20.0	18.8	84.0		
	MHCS22-6-4F	22.0	24.7	22.0	20.0	110.0		
7.0	MHCS16-7-4F	16.0	21.7	16.0	14.8	75.0		
	MHCS20-7-4F	20.0	23.7	20.0	18.8	84.0		

SM5x10-15IPx2 is a special screw which can be used from both its sides.
For an alternative screw, please use MS5x10 (key: S4).

Internal Toolholder

micrOscope

Micro - Single Ended

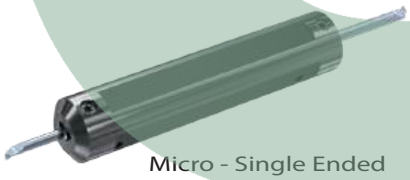


Round without Shoulder

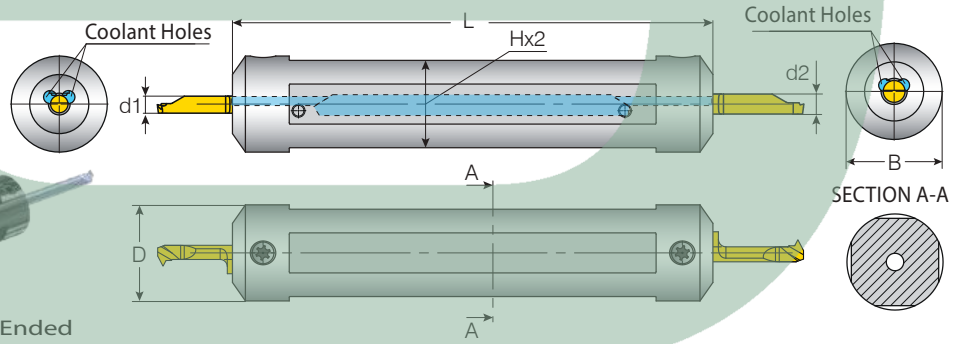
Micro Insert Dia.	Ordering Code	Dimensions mm			Spare Parts	
d (mm)		B=D	H	L	Clamping Screw	Key
4.0	MHCR20-4-4F	20	18.8	83.5	SLDBT15IP	F15IP
	MHCR22-4-4F	22	20.0	110.0		
5.0	MHCR20-5-4F	20	18.8	83.5		
	MHCR22-5-4F	22	20.0	110.0		
6.0	MHCR20-6-4F	20	18.8	83.5		
	MHCR22-6-4F	22	20.0	110.0		
7.0	MHCR25-7-4F	25	20.0	110.0		

Internal Toolholder

micrOscope



Micro - Single Ended



Round Double Sided

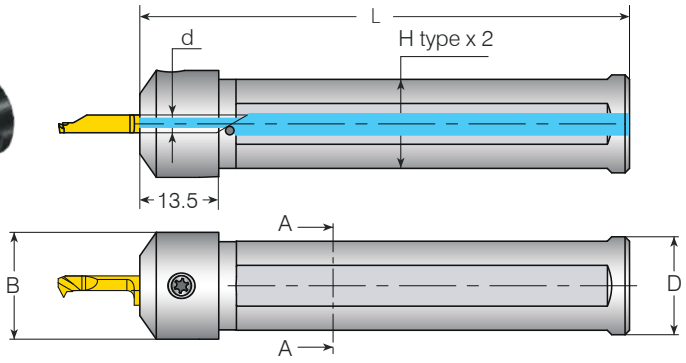
Micro Insert Dia.	Ordering Code	Dimensions mm			Spare Parts	
d1 - d2 (mm)		B=D	H	L	Clamping Screw	Key
4.0 - 5.0	MHCR075-4-5-4F*	19.05	17.8	83.5	SLDBT15IP	F15IP
	MHCR20-4-5-4F*	20	18.8	83.5		
	MHCR22-4-5-4F	22	20.0	110.0		
	MHCR25-4-5-4F	25	23.0	110.0		
6.0 - 7.0	MHCR20-6-7-4F*	20	18.8	83.5		
	MHCR25-6-7-4F	25	23.0	110.0		

* Front screw must be removed in order to mount the toolholder on the machine. Once mounted, set the screw back in place and secure the insert.

Internal Toolholders

microscope

Micro - Single Ended



Round Shank - 4 Flats

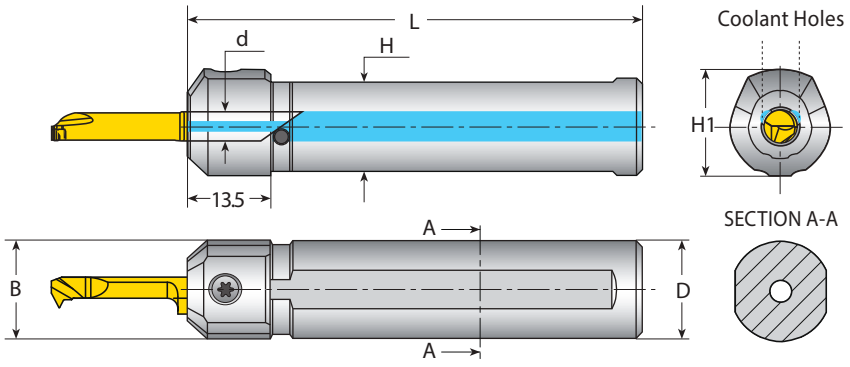
Micro Insert Dia.	Ordering Code	Dimensions mm				Spare Parts	
d mm		D	B	H	L	Clamping Screw	Torx Key
4.0	MHC20-4-4F	20.0	22.0	18.8	83.5	SL7DT15 or SL7DBT15IP*	KT15 or F15IP*
	MHC22-4-4F	22.0	24.0	20.0	110		
	MHC23-4-4F	23.0	25.0	21.0			
	MHC25-4-4F	25.0	27.0	23.0			
	MHC28-4-4F	28.0	30.0	26.0			
5.0	MHC20-5-4F	20.0	22.0	18.8	83.5		
	MHC22-5-4F	22.0	24.0	20.0	110		
	MHC23-5-4F	23.0	25.0	21.0			
	MHC25-5-4F	25.0	27.0	23.0			
	MHC28-5-4F	28.0	30.0	26.0			
6.0	MHC20-6-4F	20.0	22.0	18.8	83.5		
	MHC22-6-4F	22.0	24.0	20.0			
	MHC23-6-4F	23.0	25.0	21.0			
	MHC25-6-4F	25.0	27.0	23.0	110		
	MHC28-6-4F	28.0	30.0	26.0			
7.0	MHC22-7-4F	22.0	24.0	20.0			
	MHC23-7-4F	23.0	25.0	21.0			
	MHC25-7-4F	25.0	27.0	23.0			
	MHC28-7-4F	28.0	30.0	26.0			

* Torx+ screw and key are now available for improved clamping.

Internal Toolholders

microscope

Micro - Single Ended



Round Shank - 2 Flats

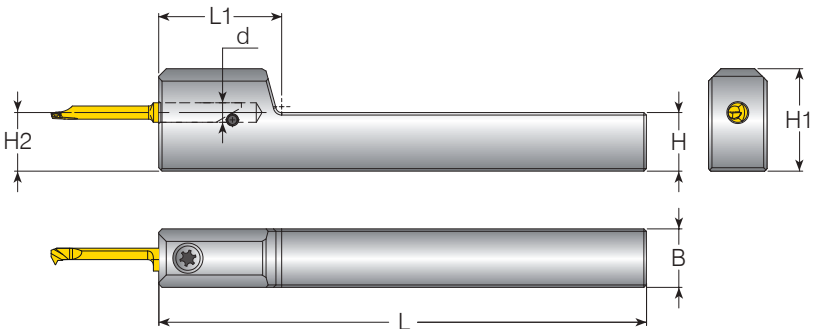
Micro Insert Dia.	Ordering Code	Dimensions mm				Spare Parts	
d mm		D=B	H1	H	L	Clamping Screw	Torx Key
4.0	MHC10-4	10	14	8.8	65	SL7DT15 or SL7DBT15IP*	KT15 or F15IP*
	MHC12-4	12	16	10.8	70		
	MHC16-4	16	17.6	14.8	75		
	MHC20-4	20	22	18.8	84		
5.0	MHC10-5	10	14	8.8	65		
	MHC12-5	12	16	10.8	70		
	MHC16-5	16	18.6	14.8	75		
	MHC20-5	20	22	18.8	84		
6.0	MHC12-6	12	16	10.8	70		
	MHC16-6	16	18.6	14.8	75		
	MHC20-6	20	22	18.8	84		
7.0	MHC16-7	16	18.6	14.8	75		
	MHC20-7	20	22	18.8	84		

* Torx+ screw and key are now available for improved clamping.

Internal Toolholders

microscope

Micro - Single Ended

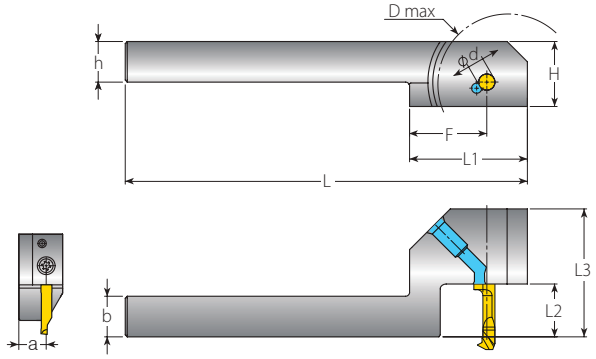


Microscope Holder with Square Shank

Micro Insert Dia.	Ordering Code	Dimensions mm				Spare Parts	
d mm		H=H2=B	H1	L	L1	Clamping Screw	Torx Key
4.0	MHS1010-4	10.0	19.0	100.0	25.0	SL7DT15 or SL7DBT15IP*	KT15 or F15IP*
5.0	MHS1010-5	10.0	19.5	100.0	25.0		
4.0	MHS1212-4	12.0	21.0	100.0	25.0		
5.0	MHS1212-5	12.0	21.5	100.0	27.0		
6.0	MHS1212-6	12.0	22.0	100.0	27.0		

* Torx+ screw and key are now available for improved clamping.

Micro - Single Ended



Microscope Holder with Drop Head

Micro Insert Dia.	Ordering Code	Dimensions mm								Spare Parts	
d mm		a=b=h	L3	H	L	L1	F	D max	L2	Clamping Screw	Torx Key
4.0	MHD1010-4L0500	10.0	31.5	16.0	99.0	29.0	19.0	26.0	13.0	SL7DT15 or SL7DBT15IP*	KT15 or F15IP*
5.0	MHD1010-5L0800		48.0						23.0		
6.0	MHD1010-6L1000		53.0						28.0		
4.0	MHD1212-4L0700	12.0	36.5	18.0					18.0		
5.0	MHD1212-5L0800		48.0						23.0		
6.0	MHD1212-6L1000		53.0						28.0		

* Torx+ screw and key are now available for improved clamping.

Thread Turning Kits

TT External + Internal Kit

TT External Kit

TT Internal Kit

TT External + Internal Kit

Ordering Code	Contents			
	Holder External + Internal	10 x External Inserts	10 x Internal Inserts	Torx Key
KHTT3EI-...	AL20-3 AVRC20-3	3ERA60... 3ERG60... 3ER11W... 3ER14W... 3ER1.0ISO... 3ER1.25ISO... 3ER1.5ISO... 3ER2.0ISO... 3ER2.5ISO... 3ER3.0ISO...	3IRA60... 3IRG60... 3IR11W... 3IR14W... 3IR1.0ISO... 3IR1.25ISO... 3IR1.5ISO... 3IR2.0ISO... 3IR2.5ISO... 3IR3.0ISO...	K3T

TT External Kit

Ordering Code	Contents		
	Holder External	10 x External Inserts	Torx Key
KHTT3E-...	AL20-3	3ERA60... 3ERG60... 3ER11W... 3ER14W... 3ER1.0ISO... 3ER1.25ISO... 3ER1.5ISO... 3ER2.0ISO... 3ER2.5ISO... 3ER3.0ISO...	K3T

TT Internal Kit

Ordering Code	Contents		
	Holder Internal	10 x Internal Inserts	Torx Key
KHTT3I-...	AVRC 20-3	3IRA60... 3IRG60... 3IR11W... 3IR14W... 3IR1.0ISO... 3IR1.25ISO... 3IR1.5ISO... 3IR2.0ISO... 3IR2.5ISO... 3IR3.0ISO...	K3T

Ordering Code Example: KHTT3I-VKX.
Additional kits are available by request.

Thread Turning Inserts Kits

TT Inserts Kit

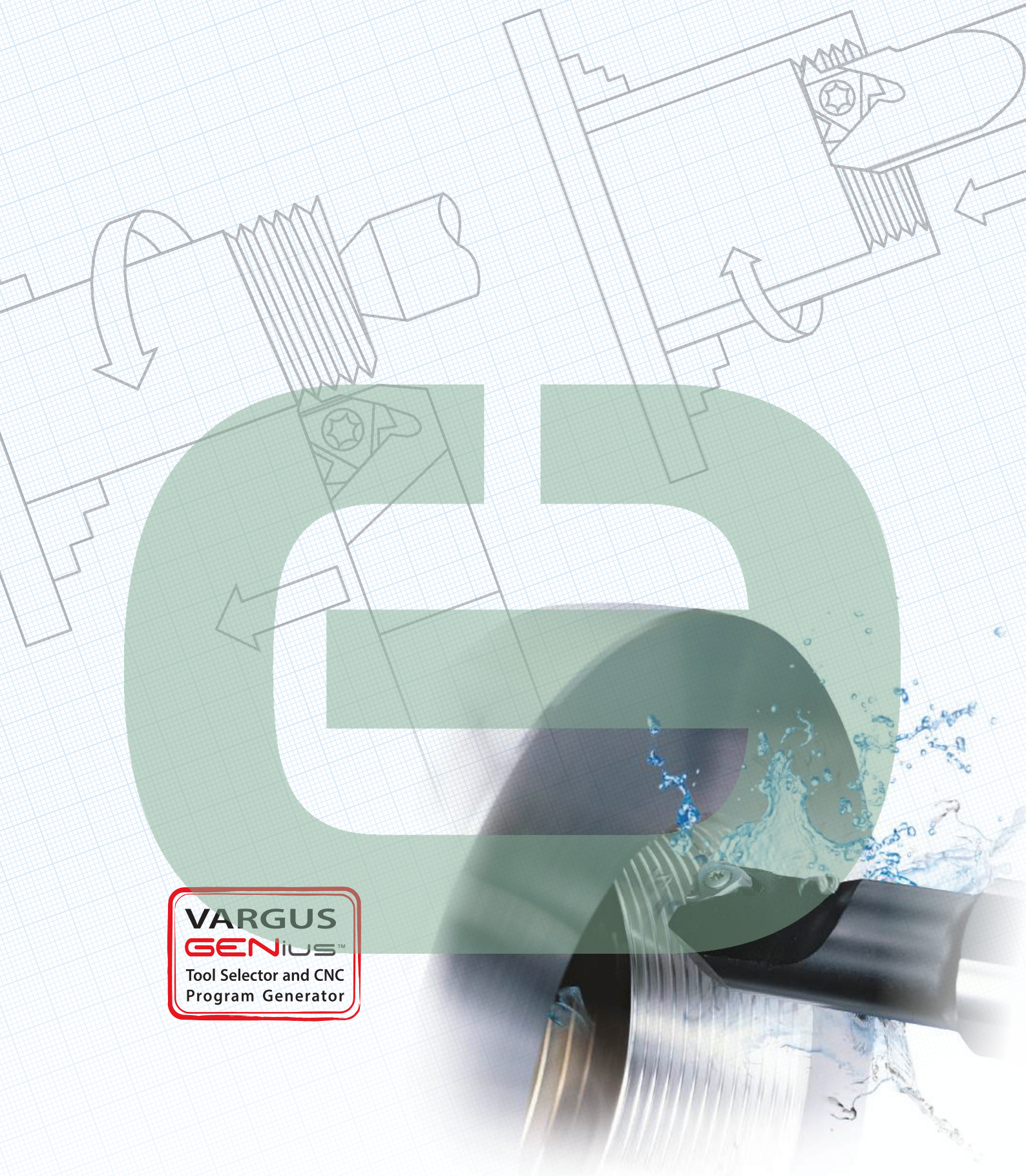
TT External Insert Kit

Ordering Code	Contents		
	10 x External Inserts	Torx Key	Insert Screw
KITT3E-...	3ERA60...	K3T	SA3T
	3ERG60...		
	3ER11W...		
	3ER14W...		
	3ER1.0ISO...		
	3ER1.25ISO...		
	3ER1.5ISO...		
	3ER2.0ISO...		
	3ER2.5ISO...		
	3ER3.0ISO...		

TT Internal Insert Kit

Ordering Code	Contents		
	10 x Internal Inserts	Torx Key	Insert Screw
KITT3I-...	3IRA60...	K3T	SA3T
	3IRG60...		
	3IR11W...		
	3IR14W...		
	3IR1.0ISO...		
	3IR1.25ISO...		
	3IR1.5ISO...		
	3IR2.0ISO...		
	3IR2.5ISO...		
	3IR3.0ISO...		

Ordering Code Example: KITT3E-VKX.
Additional kits are available by request.



VARGUS GENius™
Tool Selector and CNC Program Generator

Thread Turning Technical Data

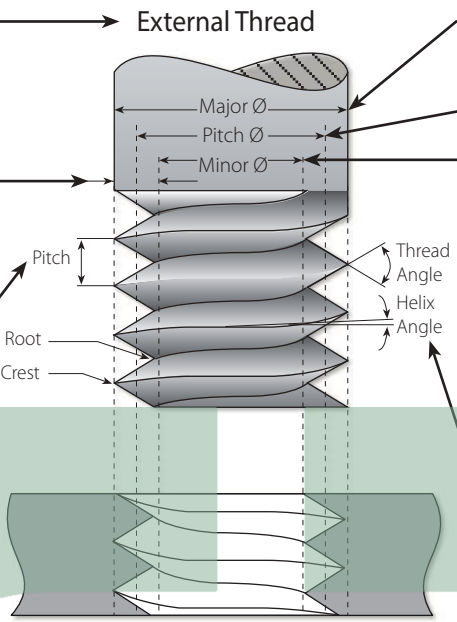
Thread Terminology

External Thread
A thread on the external surface of a cylinder screw or cone.

Depth of Thread
The distance between crest and root measured normal to the axis.

Pitch
The distance between two corresponding points on adjacent thread forms is measured parallel to the axis. This distance can be defined in either millimeters or by TPI (threads per inch).

Nominal Diameter
The diameter from which the diameter limits are derived by the application of deviation allowances and tolerances.



Internal Thread
A thread on the internal surface of a cylinder or cone.

Major Diameter
The largest diameter of a screw thread.

Pitch Diameter
On a straight thread, the diameter of an imaginary cylinder, the surface of which cuts the thread forms where the width of the thread and groove are equal.

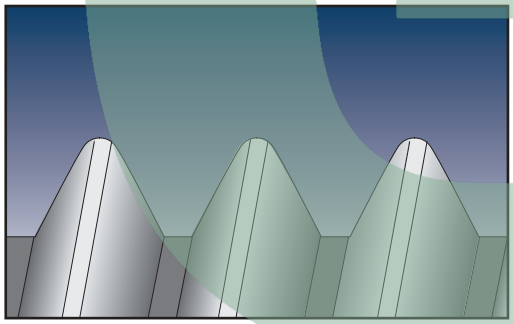
Minor Diameter
The smallest diameter of a screw thread.

Helix Angle
For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite the lead.

Straight Thread
A thread formed on a cylinder.

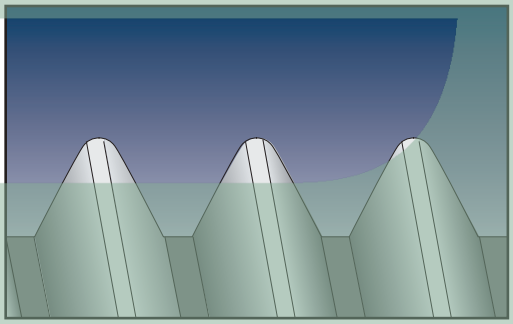
Taper Thread
A thread formed on a cone.

Left-hand thread



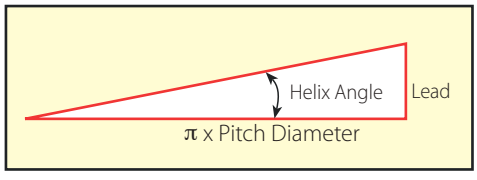
A thread which, when viewed axially, winds in a counterclockwise and receding direction. All left-hand threads are designated LH.

Right-hand thread



A thread which, when viewed axially, winds in a clockwise and receding direction. Threads are always right-hand unless otherwise specified.

The Helix Angle β



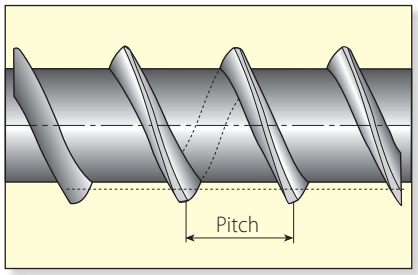
Lead

The distance a threaded part moves axially, with respect to a fixed mating part, in one complete revolution. The lead is equal to the pitch multiplied by the number of thread starts.

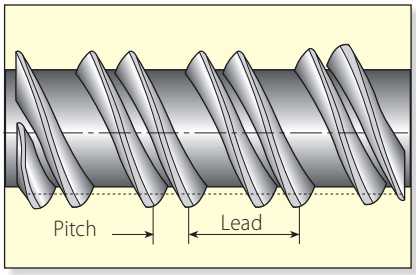
Machining a Multi-Start Thread

A thread in which the lead is an integral multiple, greater than one, of the pitch.
A multi-start thread permits a more rapid advance without a coarser (larger) thread form.

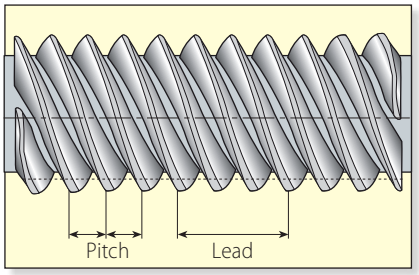
First Start Machined



Second Start Machined



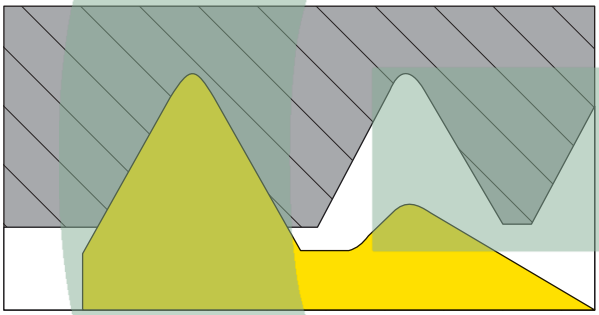
Third Start Machined
(Final, 3 Starts Thread)



Lead = 3 x Pitch

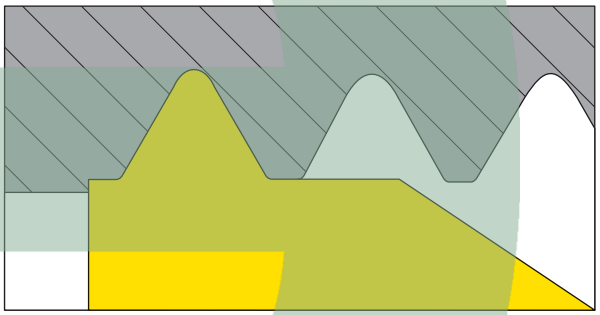
Insert Profile Styles

Partial Profile



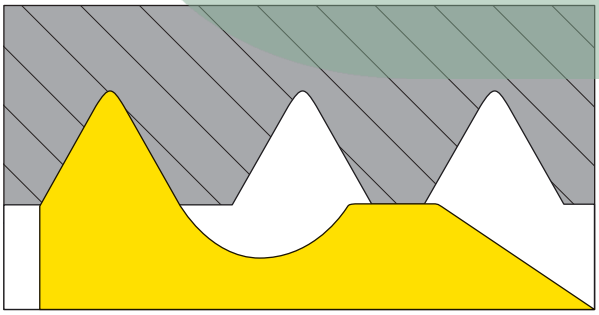
The V partial profile insert cuts without topping the outer diameter of the thread. The same insert can be used for a range of different thread pitches which have a common thread angle.

Full Profile



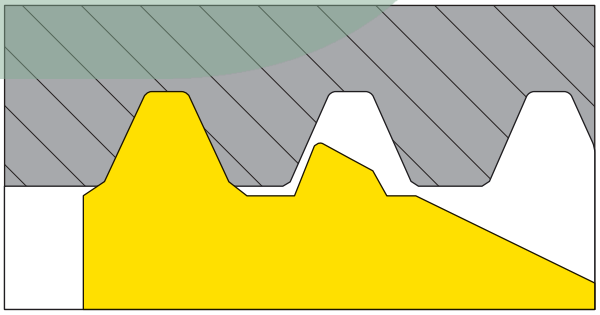
The full profile insert will form a complete thread profile including the crest. For every thread pitch and standard, a separate insert is required.

Full Profile for Fine Pitches



The full profile for Fine Pitches will form a complete thread.
The topping of the outer diameter is generated by the second tooth.

Semi Full

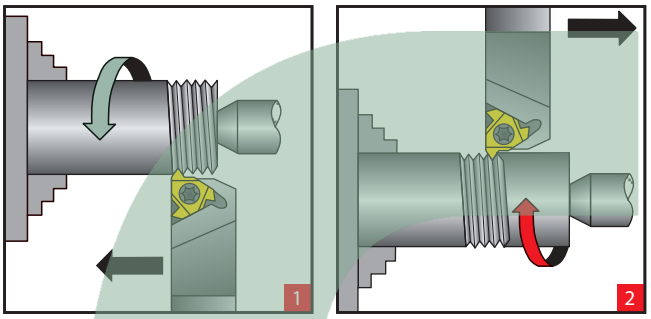


The Semi full profile insert will form a complete thread including crest radius but without topping the outer diameter.
Mainly used for trapezoidal profiles.

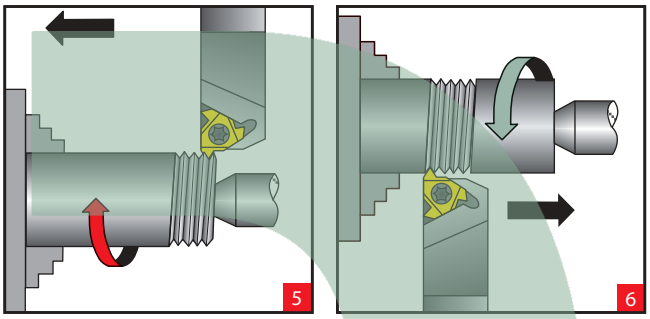
Thread Turning Methods for Symmetrical Inserts

Thread	Inserts & Toolholder	Rotation	Feed Direction	Helix Method	Drawing No.
Right Hand External	EX RH	Counterclockwise	Towards chuck	Regular	1
	EX LH	Clockwise	From chuck	Reversed	2
Right Hand Internal	IN RH	Counterclockwise	Towards chuck	Regular	3
	IN LH	Clockwise	From chuck	Reversed	4
Left Hand External	EX LH	Clockwise	Towards chuck	Regular	5
	EX RH	Counterclockwise	From chuck	Reversed	6
Left Hand Internal	IN LH	Clockwise	Towards chuck	Regular	7
	IN RH	Counterclockwise	From chuck	Reversed	8

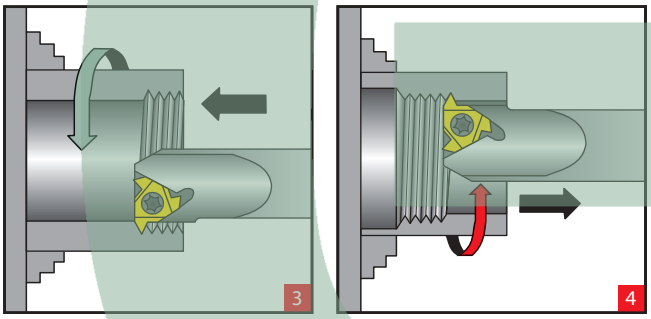
External RH Thread



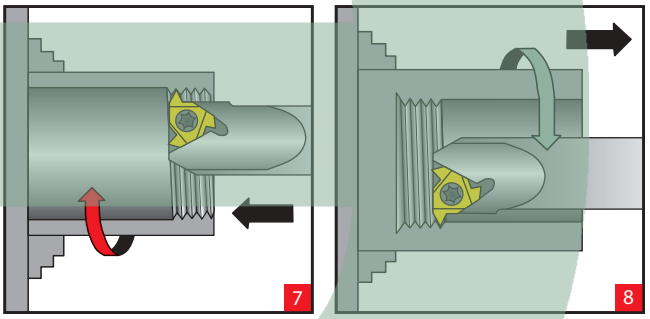
External LH Thread



Internal RH Thread

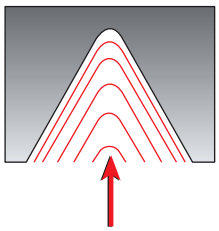


Internal LH Thread



Thread Infeed Methods

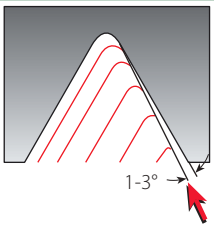
Radial Infeed



Radial infeed is the simplest and quickest method.
The feed is perpendicular to the turning axis, and both flanks of the insert perform the cutting operation.
Radial infeed is recommended in 3 cases:

- When the pitch is smaller than 16 TPI
- For material with short chips
- For work with hardened material

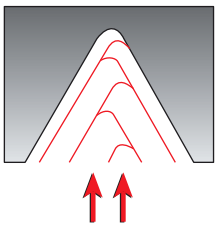
Flank Infeed (modified)



Flank infeed is recommended in the following cases:

- When the thread pitch is greater than 16 TPI, using the radial method, the effective cutting edge length is too large, resulting in chatter.
- For TRAPEZ and ACME. The radial method result in three cutting edges, making chip flow very difficult.

Alternate Flank Infeed

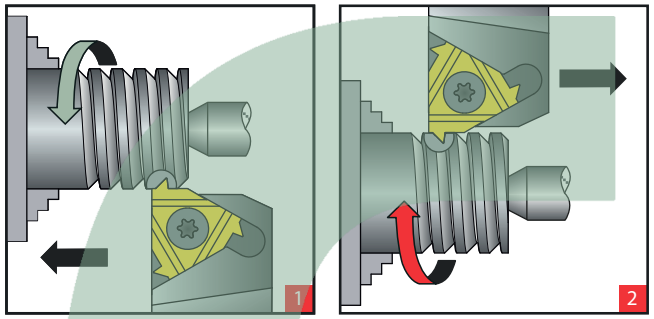


Use of the alternate flank method is recommended especially in large pitches and for materials with long chips.
This method divides the load equally on both flanks, resulting in equal wear along the cutting edges. Alternate flank infeed requires more complicated programming, and is not available on all lathes.

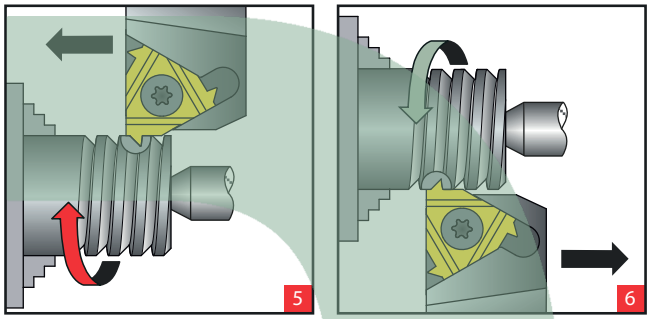
Thread Turning Methods for Asymmetrical Inserts (ABUT, BBUT, SAGE)

Thread	Inserts & Toolholder	Rotation	Feed Direction	Helix Method	Drawing No.
Right Hand External	EX RH	Counterclockwise	Towards chuck	Regular	1
	EX LH	Clockwise	From chuck	Reversed	2
Right Hand Internal	IN RH	Counterclockwise	Towards chuck	Regular	3
	IN LH	Clockwise	From chuck	Reversed	4
Left Hand External	EX LH	Clockwise	Towards chuck	Regular	5
	EX RH	Counterclockwise	From chuck	Reversed	6
Left Hand Internal	IN LH	Clockwise	Towards chuck	Regular	7
	IN RH	Counterclockwise	From chuck	Reversed	8

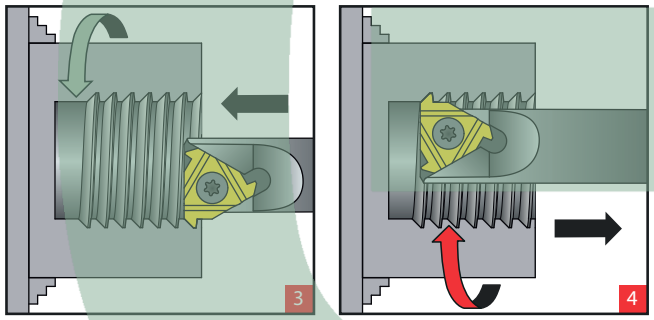
External RH Thread



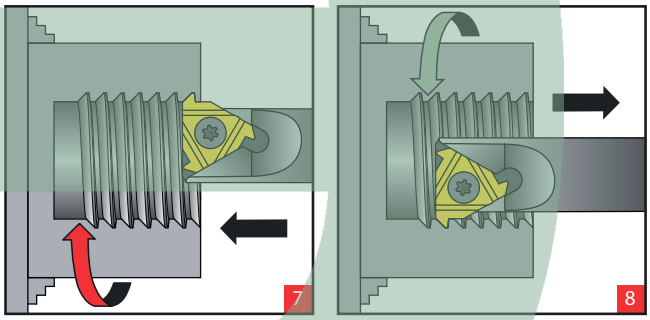
External LH Thread



Internal RH Thread

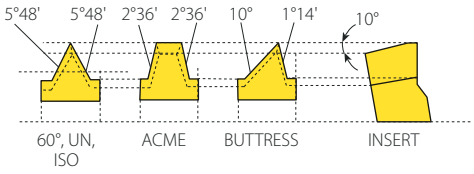


Internal LH Thread

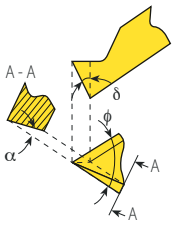


Calculating the Helix Angle and Choosing The Right Anvil

Flank Clearance Angle α (For External Inserts)



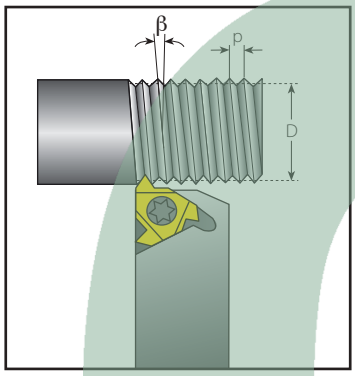
Vardex toolholders are designed to tilt the insert when seated in the toolholder (10° for external, 15° for internal tooling). This results in the differing flank clearance angles, based on the geometry of the insert. To ensure that the side of the insert cutting edge will not rub on the workpiece, it 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.



$\alpha = \arctan(\tan \varnothing/2 \times \tan\delta)$

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

Calculating the Helix Angle β



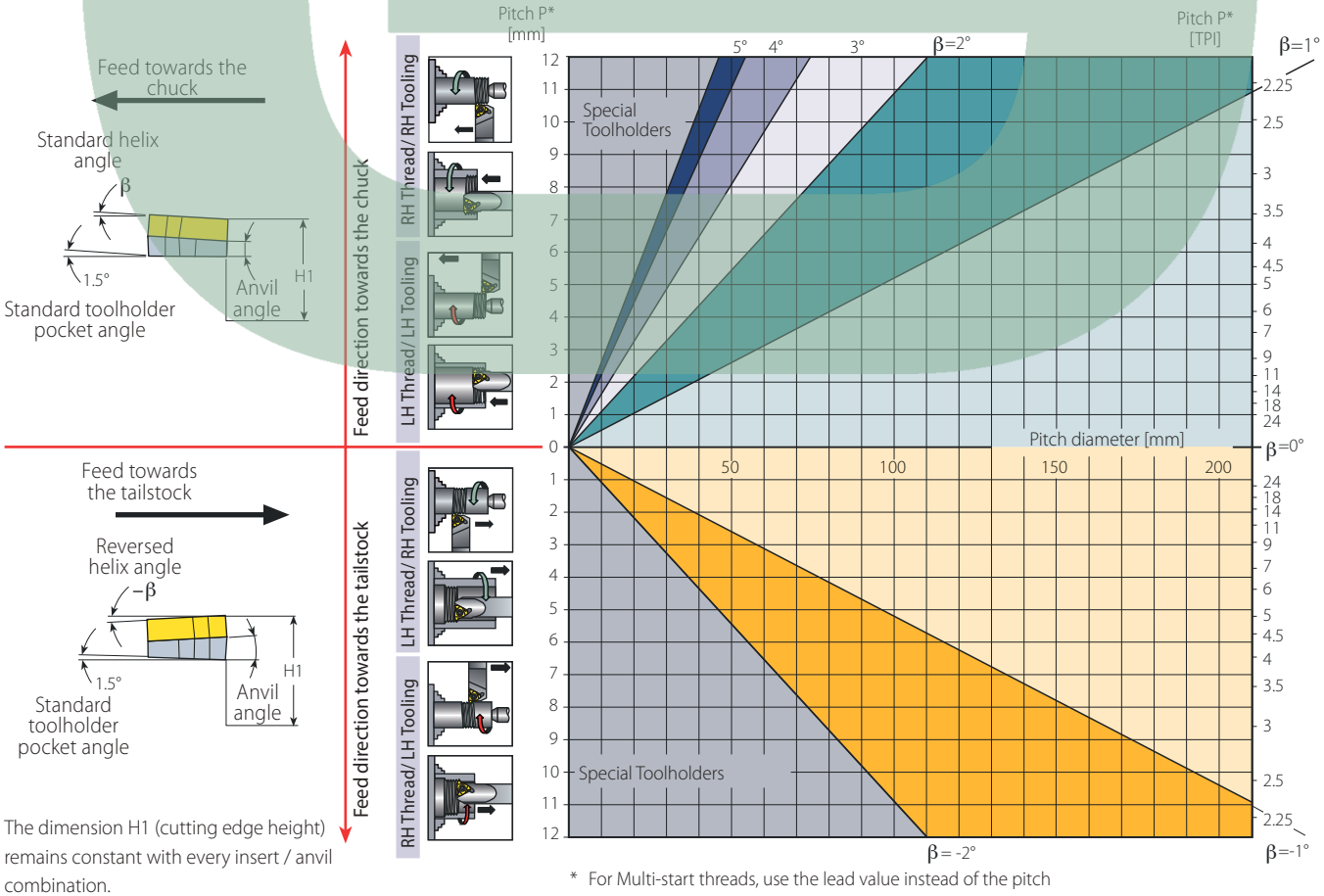
The helix angle is calculated by the following formula:

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

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



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

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

Anvils

Resultant Helix Angle			4.5°	3.5°	2.5°	1.5°	0.5°	0°	-0.5°	-1.5°
Insert Size		Holder	Ordering Code							
IC	L mm									
3/8″	16	ER / IL	YE3-3P	YE3-2P	YE3-1P	YE3	YE3-1N	YE3-1.5N	YE3-2N	YE3-3N
		EL / IR	YI3-3P	YI3-2P	YI3-1P	YI3	YI3-1N	YI3-1.5N	YI3-2N	YI3-3N
3/8″ V6	16	ER	YE3-6C-3P	YE3-6C-2P	YE3-6C-1P	YE3-6C	YE3-6C-1N	YE3-6C-1.5N	YE3-6C-2N	YE3-6C-3N
		IR	YI3-6C-3P	YI3-6C-2P	YI3-6C-1P	YI3-6C	YI3-6C-1N	YI3-6C-1.5N	YI3-6C-2N	YI3-6C-3N
1/2″	22	ER / IL	YE4-3P	YE4-2P	YE4-1P	YE4	YE4-1N	YE4-1.5N	YE4-2N	YE4-3N
		EL / IR	YI4-3P	YI4-2P	YI4-1P	YI4	YI4-1N	YI4-1.5N	YI4-2N	YI4-3N
1/2″F	23	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″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		
1/2″F 2M+	23	ER			YE4M2F-1P	YE4M2F	YE4M2F-1N	YE4M2F-1.5N		
1/2″F 3M+	23	ER			YE4M3F-1P	YE4M3F	YE4M3F-1N	YE4M3F-1.5N		
1/2″F 2M+	23	IR			YI4M2F-1P	YI4M2F	YI4M2F-1N	YI4M2F-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 EL / IR						Y4T		

Standard Anvil		V6 Anvil		U Style Anvil		M+ Style Anvil		Z+ Style Anvil		T+ Style Anvil	
ER/IL	EL/IR	ER	IR	ER/IL	EL/IR	ER/IL	EL/IR	ER/IL	EL/IR	ER/IL	EL/IR
		V6 is indicated on the backside									Same anvil turned over

F-LINE Anvil		M+ Style Anvil	
ER	IR	ER	IR

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

Oil&Gas - 14D 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-0.4N	Y14DIR-5BUT-0.4N

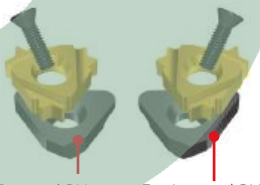
Anvil Kits

Anvil Size		Ordering Code	Included Anvils:
IC	L mm		
3/8"	16	ABY3	YE3-2P, 1P, 1N, 2N, 3N
			YI3-2P, 1P, 1N, 2N, 3N
3/8" V6	16	ABY3-6C	YE3-6C-2P, 1P, 1N, 2N, 3N
			YI3-6C-2P, 1P, 1N, 2N, 3N
1/2"	22	ABY4	YE4-2P, 1P, 1N, 2N, 3N
			YI4-2P, 1P, 1N, 2N, 3N
1/2"U	22	ABY4U	YE4U-2P, 1P, 1N, 2N, 3N
			YI4U-2P, 1P, 1N, 2N, 3N
5/8"	27	ABYE5	YE5-2P, 1P, 1N, 2N, 3N
		ABYI5	YI5-2P, 1P, 1N, 2N, 3N
5/8"U	27	ABYE5U	YE5U-2P, 1P, 1N, 2N, 3N
		ABYI5U	YI5U-2P, 1P, 1N, 2N, 3N

To ensure that you always have on hand an assortment of anvils for any job, we recommend that anvil kits be readily available.

Important!

Use a V6 anvil when using a V6 insert.

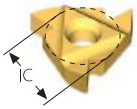


For External RH use YE3-6C anvil.

For Internal RH use YI3-6C anvil.

Spare Parts

External and Internal Toolholders (not including Micro and Microscope)



Insert Size

Insert Screw / Clamp Screw

Anvil Screw & Washer

Anvil

Toolholder	IC	Designation	Thread	Designation	Thread	Key	Torx size	EX RH/IN LH	IN RH/EX LH
Standard & D-Line	1/4"	SN2T	M2.6x0.45x6.5	-	-	K2T	T8	-	-
	3/8", 3/8"V6	SA3T	5-40UNCx11.3	SY3T	UNC5x7.3	K3T	T10	YE3/YE3-6C	YI3/YI3-6C
	3/8"	SN3T	5-40UNCx8.8	-	-	K3T	T10	-	-
	1/2"	SA4T	8-32UNCx14.0	SY4T	UNC8x9.3	K4T	T20	YE4	YI4
	1/2"	SN4T	8-32UNCx11.0	-	-	K4T	T20	-	-
	1/2F"	SA4T	8-32UNCx14.0	SY4T	UNC8x9.3	K6T	T20	YE4F	YI4F
	5/8"	SA5T	M5x0.8x22.0	SY5T	M5x0.8x9.5	K5T	T25	YE5	YI5
	5/8"	SN5T	M5x0.8x13.9	-	-	K5T	T25	-	-
Standard Coarse	3/8"	SN3TM	5-40UNCx7.3	-	-	K3T	T10	-	-
	1/2"	SN4TM	8-32UNCx9.8	-	-	K4T	T20	-	-
	5/8"	SN5TM	M5x0.8x13.9	-	-	K5T	T25	-	-
Standard with Clamp	3/8"	SA3T/C3	UNC5x12.0/M5x0.8x22.0	SY3T	UNC5x7.3	K3CT	T15/T10	YE3	YI3
	1/2"	SA4T/C4	UNC8x15.2/M6x1.0x29.5	SY4T	UNC8x9.3	K4T	T20	YE4	YI4
	5/8"	SA5T/C5	M5x0.8x22.0/M8x1.25x28.0	SY5T	M5x0.8x9.5	K5T	T25	YE5	YI5
U Style	1/2"U	SA4T	UNC8x15.2	SY4T	UNC8x9.3	K4T	T20	YE4U	YI4U
	5/8"U	SA5T	M5x0.8x22.0	SY5T	M5x0.8x9.5	K5T	T25	YE5U	YI5U
U Style with Clamp	1/2"U	SA4T/C4	UNC8x15.2/M6x1.0x29.5	SY4T	UNC8x9.3	K4T	T20	YE4U	YI4U
	5/8"U	SA5T/C5	M5x0.8x22.0/M8x1.25x28.0	SY5T	M5x0.8x9.5	K5T	T25	YE5U	YI5U
V Style	1/4"V	SN2T	M2.6x0.45x6.5	-	-	K2T	T8	-	-
	3/8"V	SN3TV	5-40UNCx6.7	-	-	K3T	T10	-	-
	1/2"V	SN4T	8-32UNCx11.0	-	-	K4T	T20	-	-
	5/8"V	SN6T	M6x1.0x29.0	-	-	K6T	T20	-	-
Mega Line	5/8"MG	S5MG	M5x0.8x16.0	-	-	K6T	T20	-	-
Z+ Style	1/2"Z	SA4T	UNC8x15.2	SY4T	UNC8x9.3	K4T	T20	YE4Z	YI4Z
M+ Style	3/8"M	SA3T	UNC5x12.0	SY3T	UNC5x7.3	K3T	T10	YE3M	YI3M
	1/2"M	SA4T	UNC8x15.2	SY4T	UNC8x9.3	K4T	T20	YE4M	YI4M
	5/8"M	SA5T	M5x0.8x22.0	SY5T	M5x0.8x9.5	K5T	T25	YE5M	YI5M
T+ Style	1/2"T	SA4T	UNC8x15.2	SY4K2	UNC8x7.3	K4T/K2	T20/T8	Y4T	Y4T
API	5/8"	SA5T/C5	M5x0.8x22.0/M8x1.25x28.0	SY5T	M5x0.8x9.5	K5T	T25	YE5OIL	YI5OIL
API 14D	14D	SA5T	M5x0.8x22.0	M4x0.7x6.0 (14D)		K5T/KT15	T25/T15	Y14DER-...	Y14DIR-...
Mini-V	V08	SNV08	M2.6x0.45x8	-	-	K2T	T8	-	-
	V11	SNV11	M3.5x0.6x10	-	-	K3T	T10	-	-
	V14	SNV14	M4x0.7x12	-	-	KT15	T15	-	-
	V16	SNV16	M5x0.8x12	-	-	K4T	T20	-	-
Mini-L	5.0L	SN5LSTR	M2.2x0.45x4.5	-	-	K7MT	T7	-	-
Mini-3	4.0mm	SN4MT	M2x0.4x4.0	-	-	K6MT	T6	-	-
	5.0mm	SN5MT	M2x0.4x5.3	-	-	K6MT	T6	-	-
	6.0mm	SN6MTN	M2.0x0.4x4.7	-	-	KIP6	T+6	-	-
Mini Adjustable Holder	-	S4.0	M4x0.7x4.0	-	-	K2.0	-	-	-

For Micro and Microscope Toolholders see pages 188-193

Grades and Their Applications

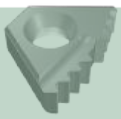
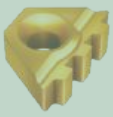
General Use

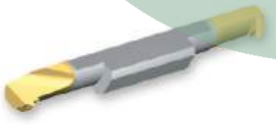
VRX	VTX	VKX
Premium multipurpose submicron grade for stronger wear resistance and improved productivity. AlTiN alloyed PVD coated.	General purpose grade with tough submicron substrate. Provides good fracture toughness in non-rigid cutting conditions. TiAlN coated.	General purpose grade, excellent in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

General Use	Stainless Steel	Non Ferrous, High Temperature Alloys and Titanium	
VCB	VM7	VK2	VK2P
Sintered chipbreaker with ground profile for machining materials with long chips. TiAlN coated.	Specialty grade for threading stainless steel. Multi-layer PVD coated.	Uncoated grade for non-ferrous, aluminum, high temperature and titanium alloys.	Highly-polished version of the VK2 uncoated grade for high quality surface finish in aluminum.

VG-Cut

Oil&Gas General Use for Oil & Gas Materials

VPG	VRXP	VTXP	VKXP
			
Sub-micron substrate for a wide range of applications. Excellent anti-fracture resistance. Highly recommended for medium to high cutting speeds. TiAlN coated.	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.

Micro Line		For all Mini Inserts
VMX		VTX
	MINIPRO	
General purpose carbide grade for Micro double-ended inserts. TiN coated.		Sub-micron grade for general machining in low and medium cutting speeds. Highly recommended for stainless steel. TiAlN coated

micrOscope	Mini 5L & Mini IC 6.0	Mini IC4.0, IC5.0 & Mini-V
VBX, VTX	VKX	VBX
General purpose carbide grade for micrOscope threading inserts. TiCN coated.	General purpose carbide grade for the Mini 5L and Mini 6.0 inserts. TiN coated.	Sub-micron grade for general machining in low and medium cutting speeds for Mini 4.0K, 5.0K and Mini-V lines. Highly recommended for steel. TiCN coated

Thread Turning Grades According to Product Lines

General

Insert Style	VRX	VTX	VKX	VCB	VM7	VK2	VK2P	VPG
TT inserts general	✓	✓	✓		✓	✓	✓	
SCB (Sintered Chipbreaker)			✓	✓				
V6			✓					
Mega Line			✓					
F line	✓	✓						
D-Line			✓					
VG Cut								✓

Oil & Gas

Insert Style	VRX	VTX	VKX	VRXP	VTXP	VKXP
T+		✓	✓		✓	✓
14D	✓	✓	✓	✓	✓	✓
CNGA		✓			✓	
On Edge		✓			✓	
Chaser		✓			✓	✓

MiniPro

Insert Style	VKX	VTX	VBX	VMX
Mini 4.0K, 5.0K		✓	✓	
Mini 5LK, 6.0K RH	✓	✓		
Mini 5LK, 6.0K LH	✓			
Mini-V		✓	✓	
Micro (Double Ended)				✓
Microscope (Single Ended)		✓	✓	

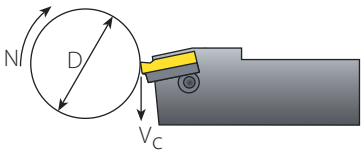
Recommended Grades and Cutting Speeds Vc [m/min]
Not Including MiniPro Line

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]				
					Coated				Uncoated
					VKX(P)	VCB	VM7	VTX(P), VRX(P)	VK2(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 Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	100-365	100-250		100-365	100-250
	35		Aged	100	80-220	80-180		80-220	80-160
	36	Aluminium Alloys	Cast	75	200-400	200-400		200-400	80-120
	37		Cast & Aged	90	200-280	200-280		200-280	70-100
	38	Aluminium Alloys	Cast Si 13-22%	130	60-180	60-150		60-180	50-120
	39	Copper and Copper Alloys	Brass	90	80-225	80-210		80-225	70-170
	40		Bronze And Non Leaded Copper	100	80-255	80-210		80-255	70-170
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	45-60	45-60		45-60	30-50
	20		Aged (iron based)	280	30-50	30-50		30-50	25-40
	21		Annealed (nickel or cobalt based)	250	20-30	20-30		20-30	20-30
	22		Aged (nickel or cobalt based)	350	15-25	15-25		15-25	15-25
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	140-170	140-170		140-170	60-100
	24		α+β Alloys	1050Rm	50-70	50-70		50-70	40-60
H 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	

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

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

Calculation of N [RPM]



N - Revolution Per Minute [RPM]
V_c - Cutting Speed [m/min]
D - Workpiece Diameter [mm]

Recommended Grades and Cutting Speeds Vc [m/min]
Mini, Micro and Microscope

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] Coated VMX (Micro)	Vc [m/min] Coated VBX/VTX (Microscope)	Vc [m/min] Coated VKX/VBX VTX (Mini)
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	50-120	140-200	40-80
	2		Medium Carbon (C=0.25-0.55%)	150	40-100	120-180	40-80
	3		High Carbon (C=0.55-0.85%)	170	30-80	110-180	40-80
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	50-70	100-155	40-80
	5		Hardened	275	40-60	90-145	40-80
	6		Hardened	350	30-50	80-135	40-80
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	30-50	65-115	40-60
	8		Hardened	325	25-40	50-100	40-60
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	30-50	30-50	40-60
	10		High Alloy (alloying elements >5%)	225	25-40	25-40	40-60
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	60-100	80-120	40-60
	12		Hardened	330	40-60	55-95	40-60
	13	Stainless Steel Austenitic	Austenitic	180	50-90	60-100	40-60
	14		Super Austenitic	200	40-60	50-90	40-60
	15	Stainless Steel Cast Ferritic	Non Hardened	200	40-60	60-80	40-60
	16		Hardened	330	30-50	45-65	40-60
	17	Stainless Steel Cast Austenitic	Austenitic	200	40-60	50-70	40-60
	18		Hardened	330	30-50	40-60	40-60
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	50-70	60-80	40-80
	29		Pearlitic (long chips)	230	50-70	60-80	40-80
	30	Grey Cast Iron	Low Tensile Strength	180	50-70	60-80	40-80
	31		High Tensile Strength	260	40-60	40-70	40-80
	32	Nodular Sg Iron	Ferritic	160	50-70	60-80	40-80
	33		Pearlitic	260	60-80	70-90	40-80
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	100-300	80-240	40-120
	35		Aged	100	100-150	100-170	40-120
	36	Aluminium Alloys	Cast	75	100-150	100-150	40-120
	37		Cast & Aged	90	60-100	60-100	40-120
	38	Aluminium Alloys	Cast Si 13-22%	130	100-150	100-150	40-120
	39	Copper and Copper Alloys	Brass	90	60-100	80-200	40-120
	40		Bronze And Non Leaded Copper	100	60-100	80-200	40-120
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	25-45	25-45	30-45
	20		Aged (iron based)	280	20-30	20-30	20-30
	21		Annealed (nickel or cobalt based)	250	15-20	15-20	15-20
	22		Aged (nickel or cobalt based)	350	10-15	10-15	15-20
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	60-100	60-100	70-100
	24		α+β Alloys	1050Rm	40-50	40-50	40-50
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	20-40	20-40	20-40
	26			51-55HRc	20-40	20-40	20-40

Recommended Grades and Cutting Speeds Vc [m/min]
VG-Cut

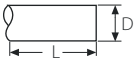
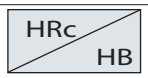
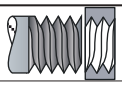
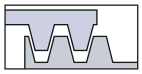
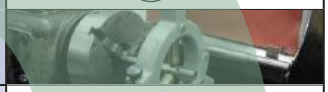
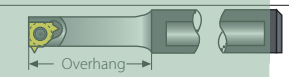
Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] VPG
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	120-260
	2		Medium Carbon (C=0.25-0.55%)	150	90-220
	3		High Carbon (C=0.55-0.85%)	170	90-220
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	90-220
	5		Hardened	275	60-160
	6		Hardened	350	50-100
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	90-220
	8		Hardened	325	50-100
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	90-220
	10		High Alloy (alloying elements >5%)	225	60-160
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	60-160
	12		Hardened	330	50-140
	13	Stainless Steel Austenitic	Austenitic	180	60-160
	14		Super Austenitic	200	60-160
	15	Stainless Steel Cast Ferritic	Non Hardened	200	60-160
	16		Hardened	330	50-140
	17	Stainless Steel Cast Austenitic	Austenitic	200	60-160
	18		Hardened	330	50-140
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	160-240
	29		Pearlitic (long chips)	230	140-220
	30	Grey Cast Iron	Low Tensile Strength	180	160-240
	31		High Tensile Strength	260	100-200
	32	Nodular Sg Iron	Ferritic	160	100-200
	33		Pearlitic	260	100-200
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	200-450
	35		Aged	100	200-350
	36	Aluminium Alloys	Cast	75	200-450
	37		Cast & Aged	90	200-450
	38	Aluminium Alloys	Cast Si 13-22%	130	200-350
	39	Copper and Copper Alloys	Brass	90	200-450
	40		Bronze And Non Leaded Copper	100	200-450
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	30-50
	20		Aged (iron based)	280	20-50
	21		Annealed (nickel or cobalt based)	250	20-50
	22		Aged (nickel or cobalt based)	350	20-50
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	30-50
	24		α+β Alloys	1050Rm	30-70
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	20-40
	26			51-55HRc	15-30

Recommended Grades, Cutting Speeds Vc [m/min]
Mini-V

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min] VBX/VTX*
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	40-80
	2		Medium Carbon (C=0.25-0.55%)	150	40-80
	3		High Carbon (C=0.55-0.85%)	170	40-80
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	40-80
	5		Hardened	275	40-80
	6		Hardened	350	40-80
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	40-60
	8		Hardened	325	40-60
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	40-60
	10		High Alloy (alloying elements >5%)	225	40-60
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	40-60
	12		Hardened	330	40-60
	13	Stainless Steel Austenitic	Austenitic	180	40-60
	14		Super Austenitic	200	40-60
	15	Stainless Steel Cast Ferritic	Non Hardened	200	40-60
	16		Hardened	330	40-60
	17	Stainless Steel Cast Austenitic	Austenitic	200	40-60
	18		Hardened	330	40-60
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	40-80
	29		Pearlitic (long chips)	230	40-80
	30	Grey Cast Iron	Low Tensile Strength	180	40-80
	31		High Tensile Strength	260	40-80
	32	Nodular Sg Iron	Ferritic	160	40-80
	33		Pearlitic	260	40-80
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	40-120
	35		Aged	100	40-120
	36	Aluminium Alloys	Cast	75	40-120
	37		Cast & Aged	90	40-120
	38	Aluminium Alloys	Cast Si 13-22%	130	40-120
	39	Copper and Copper Alloys	Brass	90	40-120
	40		Bronze And Non Leaded Copper	100	40-120
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	20-30
	20		Aged (iron based)	280	20-30
	21		Annealed (nickel or cobalt based)	250	15-20
	22		Aged (nickel or cobalt based)	350	10-15
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	40-60
	24		α+β Alloys	1050Rm	20-30
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	15-20
	26			51-55HRc	15-20

* Available for sizes V08 and V11. Sizes V14 and V16 are available upon request.

Cutting Conditions Parameters

Workpiece	Material Type	
	Material Dimension: Diameter and Length	
	Chipflow Character	
	Material Hardness	
Thread Application	External or Internal	
	Profile Shape	
	Surface Finish	
Machine	Machine Stability	
	Max. RPM	
	Clamping System Stability	
Coolant	Coolant Type	
Holders	Holder Cross Section Area	
	Holder Overhang	
	Through Coolant Option	
	Shank Type: Carbide, Alloy, Carbide Implant	
Insert	Grade	
	Profile Shape: Pitch and Depth	
	Nose Radius	
	Chipbreaker Style	

Number of Passes

Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
	TPI	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
No. of passes		4-6	4-7	4-8	5-9	6-10	7-12	7-12	8-14	9-16	10-18	11-18	11-19	12-20	12-20	12-20	15-24
No. of passes (SCB)		3-4	3-4	3-5	4-6	5-6	6-8	6-8	8-10	9-12	10-14						
No. of passes (Micro / Microscope & Mini)		6-9	6-11	6-12	8-14	9-15	11-18	11-18									

Depths of Cut and Number of Passes for Mini-V

1. High pressure coolant is recommended
2. Infeed method - modified flank infeed 1°

Option of modified volume chip — Mini-V

	Pitch mm	0.5	0.75		1	1.25			1.5	1.75	2	2.5	3	3.5	4
	Pitch TPI	48	32	27	24	20	19	18	16	14	12	10	8	7	6
Insert Style	Standard						Passes (modified volume)								
V08	ISO														
	UN	13	19		25	16			19	22					
	W														
	NPT			28				43							
	NPTF														
V11	ISO														
	UN	13	19		25	16			19	22	24				
	W														
	BSPT						19								
V14	ISO														
	UN	7	10		13	16			19	22	24	32	38		
	W														
V16	ISO														
	UN	7	10		13	16			19	22	24	32	38		
	W														

Option of constant depth chip — Mini-V

	Pitch mm	0.5	0.75		1	1.25			1.5	1.75	2	2.5	3	3.5	4
	Pitch TPI	48	32	27	24	20	19	18	16	14	12	10	8	7	6
Insert Style	Standard							Passes (same)							
V08	ISO														
	UN	11-24	17-35		23-48	18-28			21-34	25-40					
	W														
	NPT			25-53				40-83							
	NPTF														
	TR										50-104		70-145		
V11	ISO														
	UN	11-24	17-35		23-48	14-28			17-34	20-40	23-46				
	W														
	BSPT						21-34								
	TR														90-187
V14	ISO														
	UN	11-24	17-35		23-48	14-28			9-15	11-18	11-18	12-21	18-24		
	W														
V16	ISO														
	UN	11-24	17-35		23-48	14-28			9-15	11-18	11-18	12-21	18-24		
	W														

Number of Passes and Depth of Cut per Pass for Multi+ Inserts

Multi plus

Standard	Insert Type	Insert Size		Pitch		Teeth	Ordering Code	Passes	Depth of cut per pass			
		IC	L mm				RH		1	2	3	4
ISO External	M+	3/8″	16	1.0	mm	3	3ER1.0ISO3M+...	2	0.32	0.30		
				1.5	mm	2	3ER1.5ISO2M+...	3	0.34	0.30	0.29	
				2.0	mm	2	3ER2.0ISO2M+...	3	0.45	0.40	0.38	
		1/2″	22	1.5	mm	3	4ER1.5ISO3M+...	2	0.48	0.45		
				2.0	mm	2	4ER2.0ISO2M+...	3	0.45	0.40	0.38	
				2.0	mm	3	4ER2.0ISO3M+...	2	0.64	0.59		
				2.5	mm	2	4ER2.5ISO2M+...	4	0.46	0.42	0.38	0.36
		5/8″	27	3.0	mm	2	5ER3.0ISO2M+...	4	0.53	0.47	0.45	0.39
	T+	1/2″T	22	1.5	mm	8	4ER1.5ISO8T+...	1	0.93			
				2.0	mm	8	4ER2.0ISO8T+...	1	1.23			
ISO Internal	M+	3/8″	16	1.0	mm	3	3IR1.0ISO3M+...	2	0.30	0.28		
				1.5	mm	2	3IR1.5ISO2M+...	3	0.31	0.28	0.27	
				2.0	mm	2	3IR2.0ISO2M+...	3	0.42	0.37	0.36	
		1/2″	22	1.5	mm	3	4IR1.5ISO3M+...	2	0.45	0.41		
				2.0	mm	2	4IR2.0ISO2M+...	3	0.42	0.37	0.36	
				2.0	mm	3	4IR2.0ISO3M+...	2	0.59	0.56		
		5/8″	27	3.0	mm	2	5IR3.0ISO2M+...	4	0.49	0.45	0.42	0.37
	T+	1/2″	22	1.5	mm	8	4IR1.5ISO8T+...	1	0.86			
				2.0	mm	8	4IR2.0ISO8T+...	1	1.15			
UN External	M+	3/8″	16	20	TPI	3	3ER20UN3M+...	2	0.41	0.38		
				18	TPI	2	3ER18UN2M+...	3	0.32	0.28	0.27	
				18	TPI	3	3ER18UN3M+...	2	0.45	0.42		
				16	TPI	2	3ER16UN2M+...	3	0.36	0.32	0.30	
				14	TPI	2	3ER14UN2M+...	3	0.43	0.38	0.37	
				12	TPI	2	3ER12UN2M+...	3	0.47	0.43	0.40	
		1/2″	22	16	TPI	3	4ER16UN3M+...	2	0.51	0.47		
				14	TPI	2	4ER14UN2M+...	3	0.43	0.38	0.37	
				12	TPI	2	4ER12UN2M+...	3	0.47	0.43	0.40	
				12	TPI	3	4ER12UN3M+...	2	0.67	0.63		
				11	TPI	2	4ER11UN2M+...	4	0.43	0.38	0.36	0.32
				10	TPI	2	4ER10UN2M+...	4	0.46	0.42	0.40	0.36
		5/8″	27	8	TPI	2	5ER8UN2M+...	4	0.56	0.50	0.48	0.41
UN Internal	M+	3/8″	16	12	TPI	2	3IR12UN2M+...	3	0.45	0.39	0.38	
				14	TPI	2	3IR14UN2M+...	3	0.41	0.36	0.34	
				16	TPI	2	3IR16UN2M+...	3	0.33	0.30	0.28	
		1/2″	22	16	TPI	3	4IR16UN3M+...	2	0.47	0.44		
				14	TPI	2	4IR14UN2M+...	3	0.41	0.36	0.34	
				12	TPI	2	4IR12UN2M+...	3	0.45	0.39	0.38	
				12	TPI	3	4IR12UN3M+...	2	0.63	0.59		
		5/8″	27	8	TPI	2	5IR8UN2M+...	4	0.52	0.47	0.44	0.38
BSW External	M+	3/8″	16	28	TPI	2	3ER28W2M+...	3	0.23	0.20	0.20	
				19	TPI	2	3ER19W2M+...	3	0.33	0.28	0.27	
				19	TPI	3	3ER19W3M+...	2	0.45	0.41		
				14	TPI	2	3ER14W2M+...	3	0.43	0.38	0.35	
		1/2″	22	14	TPI	3	4ER14W3M+...	2	0.60	0.56		
				11	TPI	2	4ER11W2M+...	4	0.44	0.38	0.36	0.30

Number of Passes and Depth of Cut per Pass for Multi+ Inserts

Multi plus

Standard	Insert Type	Insert Size IC	Insert Size L mm	Pitch		Teeth	Ordering Code RH	Passes	Depth of cut per pass 1	2	3	4
BSW Internal	M+	3/8"	16	14	TPI	2	3IR14W2M+...	3	0.43	0.38	0.35	
		1/2"	22	11	TPI	2	4IR11W2M+...	4	0.44	0.38	0.36	0.30
NPT External	M+	3/8"	16	14	TPI	2	3ER14NPT2M+...	3	0.52	0.45	0.43	
		1/2"	22	11.5	TPI	2	4ER11.5NPT2M+...	4	0.46	0.43	0.42	0.40
		5/8"	27	11.5	TPI	3	5ER11.5NPT3M+...	4	0.48	0.43	0.42	0.38
				8	TPI	2	5ER8NPT2M+...	4	0.72	0.64	0.60	0.53
	Z+	1/2"	22	11.5	TPI	2	4ER11.5NPT2Z+...	4	0.46	0.43	0.42	0.40
				8	TPI	2	4ER8NPT2Z+...	4	0.72	0.64	0.60	0.53
NPT Internal	M+	3/8"	16	14	TPI	2	3IR14NPT2M+...	3	0.52	0.45	0.43	
		1/2"	22	11.5	TPI	2	4IR11.5NPT2M+...	4	0.46	0.43	0.42	0.40
		5/8"	27	11.5	TPI	2	5IR11.5NPT3M+...	4	0.48	0.43	0.42	0.38
				8	TPI	2	5IR8NPT2M+...	4	0.72	0.64	0.60	0.53
	Z+	1/2"	22	11.5	TPI	3	4IR11.5NPT2Z+...	4	0.46	0.43	0.42	0.40
				8	TPI	2	4IR8NPT2Z+...	4	0.72	0.64	0.60	0.53
NPTF External	M+	3/8"	16	14	TPI	2	3ER14NPTF2M+...	3	0.51	0.44	0.42	
NPTF Internal	M+	3/8"	16	14	TPI	2	3IR14NPTF2M+...	3	0.51	0.44	0.42	

API RD, API BUT, OTTM, OTTG

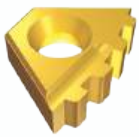
The following table provides the optimal cutting pass division options, depending on the material, machine stability and clamping conditions:

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

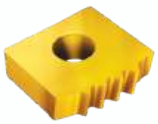
M+ Style

Z+ Style

T+ Style


14D Style

CNGA Style


Chaser Style

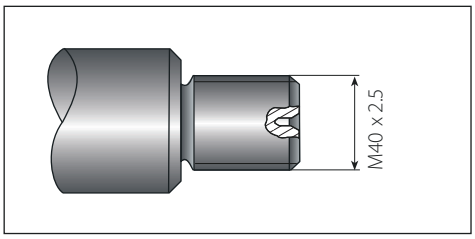
Oil&Gas

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

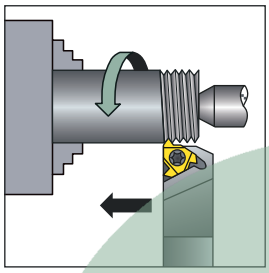
Step by Step Thread Turning - Example 1

VARGUS
GENius™
Tool Selector and CNC
Program Generator



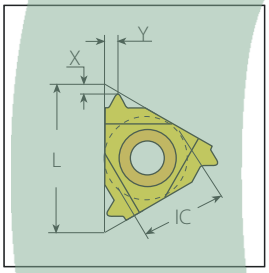
Application:
Thread: External Right Hand
ISO Metric M40x2.5
Material: 4140 (25 HRc)

1 Choose the Thread Turning Method



Feed **direction towards the chuck** was chosen.
Therefore, an external right hand insert and an external right hand holder will be used.

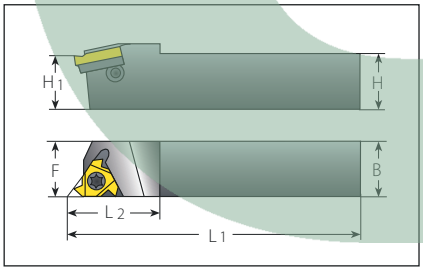
2 Choose the Insert Size



Chosen insert: **3ER2.5ISO**

Insert Size		Pitch	Ordering Code	Anvil	Toolholder
IC	L mm	mm	RH	RH	
3/8"	16	2.5	3ER2.5ISO...	YE3	AL..-3(LH)

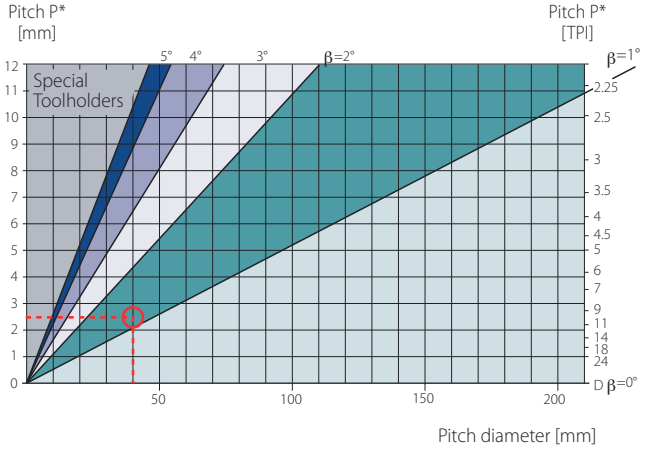
3 Choose the Toolholder



Chosen toolholder: **AL 25-3**

Insert Size	Ordering Code	Dimensions mm			
IC	RH	H=H1=B	F	L1	L2
3/8"	AL25-3	25	25	153.6	30

4



From the table, using a pitch of 2.5 mm (10 TPI) and a workpiece diameter of 40 mm (1.57"), we find the helix angle to be **1.5°**.

5 Choose the Correct Anvil

Anvil chosen: **YE3**

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

6 Choose the Carbide Grade and Cutting Speed

Carbide Grade chosen: **VTX**
Cutting Speed: **140 m/min**

Material:			Hardness Brinell HB	**VTX**	VCB
P	Low alloy steel (alloying elements≤5%)	Non hardened	180	**85-145**	100-180
		Hardened	275	75-140	75-140
		Hardened	350	70-135	70-135

7 Determine the Number of Passes

Number of passes: 14

ISO External

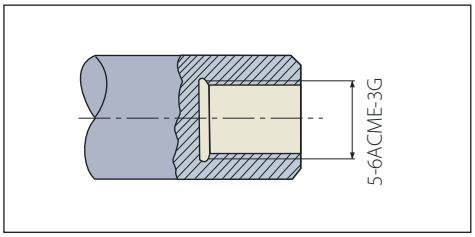
Pitch	mm	1.50	1.75	2.00	**2.50**	3.00	3.50	4.00
	TPI	16	14	12	10	8	7	6
No. of Passes		6-10	7-12	7-12	**8-14**	9-16	10-18	11-18

Summary

	Thread Type	**ISO M40x2.5 External Right Hand**
1	**Feed Direction:**	**Towards the chuck**
2	**Insert and Grade:**	**3ER2.5ISOVTX**
3	**Toolholder:**	**AL25-3**
4	**Helix Angle:**	**1.5°**
5	**Anvil:**	**YE3**
6	**Cutting Speed:**	**140 m/min**
7	**Number of Passes:**	**14**

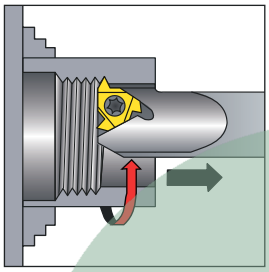
Step by Step Thread Turning - Example 2

VARGUS GENius™ Tool Selector and CNC Program Generator



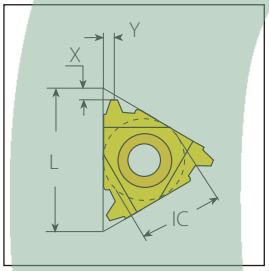
Application:
Thread: Internal Right Hand ACME
Pitch: 6 TPI
Bore dia: 5"
Material: Stainless Steel Austemitic

1 Choose the Thread Turning Method



To facilitate the removal of chips from the machined area, we chose a feed direction away from the chuck. Therefore, an internal left hand insert and an internal left hand toolholder are to be used.

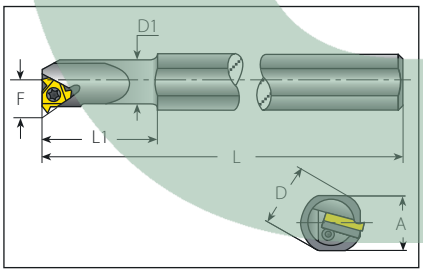
2 Choose the Insert Size



Chosen insert: **4IL6ACME**

Insert Size		Pitch	Ordering Code	Anvil	Toolholder
IC	L mm	TPI	RH	LH	
1/2"	22	6	4IL6ACME...	YE4	AVR..-4(LH)

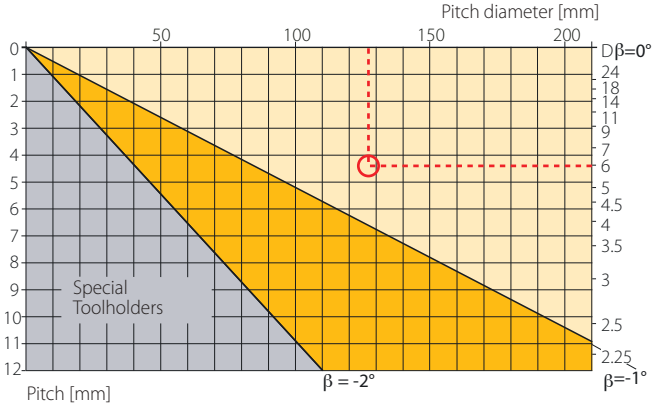
3 Choose the Toolholder



Chosen toolholder: **AVR 40-4LH**

Insert Size	Ordering Code	Dimensions mm						Min Bore
IC	RH	A	L	L1	D	D1	F	mm
1/2"	AVR 40-4	36.0	300	160	40	40.0	25.8	47

4 Determine the Helix Angle



In this case, a right hand thread is being turned with a left hand toolholder. The reverse helix method is used. From the lower part of the table, using a pitch of 6 TPI and a bore diameter of 127mm, we obtain a helix angle of **-0.65°**.

5 Choose the Correct Anvil

Anvil chosen: **YE4-2N**

Resultant Helix Angle			1.5	0.5	0	-0.5	-1.5
Insert Size		Ordering Code					
IC	L mm						
1/2"	22	ER/IL	YE4	YE4-1N	YE4-1.5N	**YE4-2N**	YE4-3N

6 Choose the Carbide Grade and Cutting Speed

Carbide grade chosen: **VTX**
Cutting speed: **140 m/min**

	Material:		Hardness Brinell HB	VTX	VCB
M	Stainless Steel Austenitic	Austenitic	180	**90-140**	80-120
		Super Austenitic	200	40-110	30-100

7 Determine the Number of Passess

Number of passes: **18**

ACME External & Internal

Pitch	mm	3.00	3.50	4.00	4.50	5.00	5.50	6.00
	TPI	8	7	**6**	5.5	5	4.5	4
No. of Passes		9-16	10-18	**11-18**	11-19	12-20	12-20	12-20

Summary

	Thread Type	**5"x6 ACME Internal Right Hand**
1	**Feed Direction:**	**Away from the chuck**
2	**Insert and Grade:**	**4IL6ACMEVTX**
3	**Toolholder:**	**AVR40-4LH**
4	**Helix Angle:**	**-0.65°**
5	**Anvil:**	**YE4-2N**
6	**Cutting Speed:**	**140 m/min**
7	**Number of Passes:**	**18**

Material Comparison Table

Material Group	Vargus No.	USA AISI/SAE	Germany W.-Nr.	Germany DIN	Great Britain BS	France AFNOR	Italy UNI
P Steel	1	1015	1.0037	St37-2	Fe360B	E24-2	Fe360 B FU
	1	1020	1.0044	St44-2	Fe430B FN	E28-2	Fe430B FN
	2	ASTM A570Gr.50	1.0050	St50-2	Fe490-2 FN	A50-2	Fe490
	2	-	1.0070	St70-2	Fe690-2 FN	A70-2	Fe690
	1	1015	1.0401	C15	080M15	CC12	C15C16
	1	1020	1.0402	C22	050A20	CC20	C20C21
	2	1035	1.0501	C35	060A35	CC35	C35
	2	1045	1.0503	C45	080M46	CC45	C45
	2	1055	1.0535	C55	070M55	-	C55
	2	1060	1.0601	C60	080A62	CC55	C60
	1	1213	1.0715	9SMn28	230M07	S250	CF9SMn28
	1	12L13	1.0718	9SMnPb28	-	S250Pb	CF9SMnPb28
	1	-	1.0722	10SPb20	-	10PbF2	CF10SPb20
	2	1140	1.0726	35S20	212M36	35MF4	-
	2	1215	1.0736	9SMn36	240M07	S300	CF9SMn36
	2	12L14	1.0737	9SMnPb36	-	S300Pb	CF9SMnPb36
	2	9255	1.0904	55Si7	250A53	55S7	55Si8
	2	9262	1.0961	60SiCr7	-	60SC7	60SiCr8
	1	1015	1.1141	Ck15	080M15	XC1 2	C16
	2	1039	1.1157	40Mn4	150M36	35M5	-
	2	1025	1.1158	Ck25	-	-	-
	2	1335	1.1167	36Mn5	-	40M5	-
	2	1330	1.1170	28Mn6	150M28	20M5	C28Mn
	2	1035	1.1183	Cf35	060A35	XC38TS	C36
	2	1045	1.1191	Ck45	080M46	XC42	C45
	2	1055	1.1203	Ck55	070M55	XC55	C50
	3	1050	1.1213	Cf53	060A52	XC48TS	C53
	3	1060	1.1221	Ck60	080A62	XC60	C60
	8	1095	1.1274	Ck101	060A96	-	-
	9	-	1.3401	X120Mn12	Z120M12	Z120M12	XG120Mn12
	8	52100	1.3505	100Cr6	534A99	100C6	100Cr6
	8	ASTM A20Gr.A	1.5415	15Mo3	1501-240	15D3	16Mo3KW
	8	4520	1.5423	16Mo5	1503-245-420	-	16Mo5
	4	ASTMA350LF5	1.5622	14Ni6	-	16N6	14Ni6
	8	ASTM A353	1.5662	X8Ni9	1501-509; 510	-	X10Ni9
	8	2515	1.5680	12Ni19	-	Z18N5	-
	5	3135	1.5710	36NiCr6	640A35	35NC6	-
	5	3415	1.5732	14NiCr10	-	14NC11	16NiCr11
	5	3415; 3310	1.5752	14NiCr14	655M13; 655M12	12NC15	-
	5	9840	1.6511	36CrNiMo4	816M40	40NCD3	38NiCrMo4(KB)
	5	8620	1.6523	21NiCrMo2	805M20	20NCD2	20NiCrMo2
	5	8740	1.6546	40NiCrMo22	311-Type7	-	40NiCrMo2(KB)
	5	4340	1.6582	34CrNiMo6	817M40	35NCD6	35NiCrMo6(KB)
	5	-	1.6587	17CrNiMo6	820A16	18NCD6	-
	5	-	1.6657	14NiCrMo134	832M13	-	15NiCrMo13
	2	5015	1.7015	15Cr3	523M15	12C3	-
	5	5132	1.7033	34Cr4	530A32	32C4	34Cr4(KB)
	5	5140	1.7035	41Cr4	530M40	42C4	41Cr4
	5	5140	1.7045	42Cr4	-	-	-
	5	5115	1.7131	16MnCr5	(527M20)	16MC5	16MnCr5
	5	5155	1.7176	55Cr3	527A60	55C3	-
	5	4130	1.7218	25CrMo4	1717CDS110	25CD4	25CrMo4(KB)
	5	4137; 4135	1.7220	34CrMo4	708A37	35CD4	35CrMo4
	5	4140; 4142	1.7223	41CrMo4	708M40	42CD4TS	41CrMo4
	5	4140	1.7225	42CrMo4	708M40	42CD4	42CrMo4
	5	-	1.7262	15CrMo5	-	12CD4	-
	5	ASTM A182; F11; F12	1.7335	13CrMo4 4	1501-620Gr.27	15CD3.5; 15CD4.5	14CrMo4 5
	5	-	1.7361	32CrMo12	722M24	30CD12	32CrMo12
	5	ASTM A182; F22	1.7380	10CrMo9 10	1501-622; Gr.31; 45	12CD9; 10	12CrMo9, 10
	5	-	1.7715	14MoV6 3	1503-660-440	-	-
	5	6150	1.8159	50CrV4	735A50	50CV4	50CrV4
	8	-	1.8509	41CrAlMo7	905M39	40CAD6, 12	41CrAlMo7
	8	-	1.8523	39CrMoV13 9	897M39	-	36CrMoV12
	5	W.110	1.1545	C105W1	-	Y1105	C98KU; C100KU
	5	W.112	1.1663	C125W	-	Y2120	C120KU
	8	L3	1.2067	100Cr6	BL3	Y100C6	-
	10	D3	1.2080	X210Cr12	BD3	Z200Cr12	X210Cr13KU
	10	-	-	-	-	-	X250Cr12KU
	10	-	1.2311	40CrMnMo7	-	-	35CrMo8KU
	10	-	1.2312	40CrMnMoS8-6	-	-	-
	10	H11	1.2343	X38CrMoV5-1	BH11	Z38CDV5	X37CrMoV51 1KU
	10	H13	1.2344	X40CrMoV5-1	BH13	Z40CDV5	X35CrMoV05KU
	10	-	-	-	-	-	X40CrMoV511KU
	10	A2	1.2363	X100CrMoV5-1	BA2	Z1 00CDV5	X100CrMoV51KU
	10	-	1.2367	X38CrMoV5-3	-	Z38CDV5-3	-
	10	D2	1.2379	X155CrVMo 12-1	BD2	Z160CDV12	X155CrVMo12 1 KU
	10	-	1.2419	105WCr6	-	105WC13	10WCr6; 107WCr5KU
	10	-	1.2436	X210CrW12	-	-	X215CrW121KU
	10	S1	1.2542	45WCrV17	BS1	-	45WCrV8KU
	10	H21	1.2581	X30WCrV9 3	BH21	Z30WCV9	X30WCrV9 3KU
	10	-	1.2601	X165CrMoV12	-	-	X165CrMoW12KU
	10	L6	1.2713	55NiCrMoV6	-	55NCDV7	-
	10	-	1.2738	40CrMnNiMo8-6-4	-	-	-
	10	W210	1.2833	100V1	BW2	Y1105V; 100V2	-
	10	-	1.3243	S 6-5-2-5	-	Z85WDKCV-06-05-05-04-02	HS 6-5-2-5
	10	T4	1.3255	S 18-1-2-5	BT4	Z80WKCV-18-05-04-01	X78WCo1805KU
	10	M2	1.3343	S 6-5-2	BM2	Z85WDCV-06-05-04-02	X82WMo0605KU
	10	M7	1.3348	S 2-9-2	-	Z100WCWV-09-04-02-02	HS 2-9-2
	10	T1	1.3355	S 18-0-1	BT1	Z80WCV-18-04-01	X75W18KU

Sweden SS	Japan JIS	Russia GOST	Spain UNE	Vardex No.	
1311	STKM 12A;C	-	Fe360B	1	
1412	SM400A;B;C	St4ps;sp	Fe430B FN	1	
1550	SS490	St5ps;sp	A490-2	2	
-	-	-	A690-2	2	
1350	-	-	F.111	1	
1450	-	20	1 C 22 ; F.112	1	
1550	-	30	F. 113	2	
1650	-	45	F.114	2	
1655	-	55	F.115	2	
-	-	60(G)	-	2	
1912	SUM22	-	F.2111-11SMn28	1	
1914	SUM22L	-	F.2112-11SMnPb28	1	
-	-	-	F.2122-10SPb20	1	
1957	-	-	F.210.G	2	
-	-	-	F.2113-12SMn35	2	
1926	-	-	F.2114-12SMnPb35	2	
2085	-	55S2	F.1440-56Si7	2	
-	-	-	F.1442-60SiCr8	2	
1370	S15C	15	F.1110-C15k ; F.1511-C16k	1	
-	-	40G	-	2	
-	S25C	25	F.1120-C25k	2	
2120	SMn438(H)	35G2 ; 35GL	F.1203-36Mn6 ; F.8212-36Mn5	2	
-	SCM1	30G	28Mn6	2	
1572	S35C	35	-	2	
1672	S45C	45	F.1140-C45k ; F.1142-C48k	2	
-	S55C	55	F.1150-C55k	2	
1674	S50C	50	-	3	
1678	S58C	60 ;60G ;60GA	-	3	
1870	SUP4	-	-	8	
-	SCMnH/1	110G13L	F.8251-AM-X120Mn12	9	
2258	SUJ2	SchCh15	F.1310-100Cr6	8	
2912	-	-	F.2601-16Mo3	8	
-	-	-	F.2602-16Mo5	8	
-	-	-	F.2641-15Ni6	4	
-	-	-	F.2645-X8Ni09	8	
-	-	-	-	8	
-	SNC236	-	-	5	
-	SNC415(H)	-	F.1540-15NiCr11	5	
-	SNC81 5(H)	-	-	5	
-	-	40ChN2MA ; 40ChGNM	F.1280-35NiCrMo4	5	
2506	SNCM220(H)	20ChGNM	F.1552-20NiCrMo2 ; F.1534-20NiMo31	5	
-	SNCM240	38ChGNM	F.1204-40NiCrMo2 ; F.1205-40NiCrMo2DF	5	
2541	-	38Ch2N2MA	F.1272-40NiCrMo7 ;34CrNiMo6	5	
-	-	-	F.1560-14NiCrMo13	5	
-	-	-	F.1560-14NiCrMo13 ;F.1569-14NiCrMo131	5	
-	SCr415(H)	15Ch	-	2	
-	SCr430(H)	35Ch	F.8221-35Cr4	5	
-	SCr440(H)	40Ch	F.1211-41Cr4DF ; F.1202-42Cr4	5	
2245	SCr440	40Ch	F.1202-42Cr4	5	
2511	-	18ChG	F.1516-16MnCr5 ; F.1517-16MnCr5	5	
-	SUP9(A)	50ChGA	F.1431-55Cr3	5	
2225	SCM420	20ChM ; 30ChM	F.8372-AM26CrMo4;F.8330-AM25CrMo4;F.1256-30CrMo4-1	5	
2234	SCM432; SCCRM3	AS38ChGM;35ChM;35ChML	F.8331-AM34CrMo4;F.823134CrMo4;F.1250-35CrMo4;F.1254-35CrMo4DF	5	
2244	SCM440	40ChFA	F.8332-AM42CrMo4;F.8232-42CrMo4;F.1252-40CrMo4	5	
2244	SCM440(H)	-	F.8332-AM42CrMo4;F.8232-42CrMo4;F.1252-40CrMo4	5	
2216	SCM415(H)	-	F.1551-12CrMo4	5	
-	-	12ChM ; 15ChM	F.2631-14CrMo45	5	
2240	-	-	F.124.A	5	
2218	-	12Ch8	TU.H	5	
-	-	-	F.2621-13MoCrV6	5	
2230	SUP10	50ChGFA ; 50CHFA	F.1430-51CrV4	5	
2940	-	38ChMJuA	F.1740-41CrAlMo7	8	
-	-	-	-	8	
1880	-	U10A-1;2	F.516	5	
-	SK2	U13	F.5123 ; C120	5	
-	-	Ch	F.5230 ; 100Cr6	8	
-	SKD1	Ch12	F.5212 ; X210 Cr12	10	
-	-	-	-	10	
-	-	-	-	10	
-	-	-	-	10	
-	SKD6	4ChMFS	F.5317 ; X37 CrMoV5	10	
2242	SKD61	4ChMF1S	F.5318 ; X40CrMoC5	10	
-	-	-	-	10	
2260	SKD12	-	F.5227 ; X100CrMoV5	10	
-	-	-	-	10	
2310	SKD11	-	F.520A	10	
2140	SKS31;SKS2,SKS3	ChWG	F.5233 ; 105WCr5	10	
2312	SKD2	-	F.5213 ; X210CrW12	10	
2710	-	5ChW2SF	F.5241 ; 45WCrSi8	10	
-	SKD5	3Ch2W8F	F.5323 ; X30WCrV9	10	
2310	-	-	F.5211 ; X160CrMoV12	10	
-	SKT4	5ChNM	F.520S	10	
-	-	-	-	10	
-	SKS43	-	-	10	
2723	SKH55	2723	R6M5K5	10	
-	SKH3	-	F.5530 ; 18-1-1-5	10	
2722	SKH9	(R6AM5); R6M5	F.5603 ; 6-5-2	10	
2782	-	-	F.5607 ; 18-0-1	10	
-	SKH2	R18	F.5520 ; 18-0-1	10	

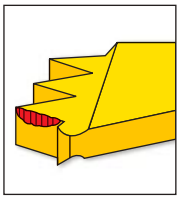
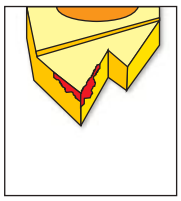
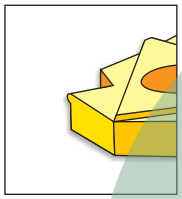
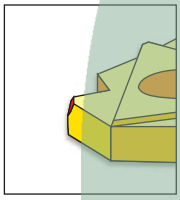
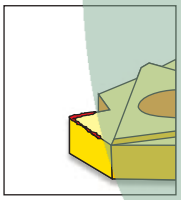
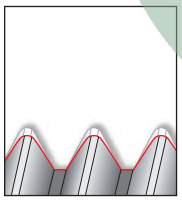
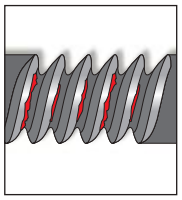
P

Material Comparison Table (con't)

Material Group	Vargus No.	USA AISI/SAE	Germany W.-Nr.	Germany DIN	Great Britain BS	France AFNOR	Italy UNI
M Stainless Steel	12	403	1.4000	X6Cr13	403S17	Z6C13	X6Cr13
	12	-	1.4001	X7Cr14	-	-	-
	12	410	1.4006	X10Cr13	410S21	Z10C14	X12Cr13
	12	430	1.4016	X6Cr17	430S15	Z8C17	X8Cr17
	12	-	1.4027	G-X20Cr14	420C29	Z20C13M	-
	12	-	1.4034	X46Cr13	420S45	Z40CM;Z38C13M	X40Cr14
	12	431	1.4057	X20CrNi172	431S29	Z15CNi6.02	X16CrNi16
	12	430	1.4104	X12CrMoS17	-	Z10CF17	X10CrS17
	12	434	1.4113	X6CrMo171	434S17	Z8CD17.01	X8CrMo17
	12	-	1.4313	X5CrNi134	425C11	Z4CND13.4M	-
	12	-	1.4408	G-X6CrNiMo18 10	316C16	-	-
	12	HW3	1.4718	X45CrSi93	401S45	Z45CS 9	X45CrSi8
	12	405	1.4724	X10CrAl13	403S17	Z10C13	X101CrA112
	11	-	1.4742	X10CrAl18	430S15	Z12CAS18	X8Cr17
	12	HNV6	1.4747	X80CrNiSi20	443S65	Z80CSN20.02	X80CrSiNi20
	11	446	1.4762	X10CrAl24	-	Z10CAS24	X16Cr26
	13	304	1.4301	X5CrNi18 10	304S15	Z6CN18.09	X5CrNi1810
	13	303	1.4305	X10CrNiS18 9	303S21	Z10CNF 18.09	X10CrNiS 18.09
	13	304L	1.4306	X2CrNi19 11	304S12;304C12	Z2CN18.10;Z3CN 19.10	X2CrNi18.11
	13	CF8	1.4308	G-X6CrNi18 9	304C15	Z6CN18.10M	-
	13	301	1.4310	X12CrNi177	301S21	Z12CN 17.07	X1 2CrNi1 707
	13	304LN	1.4311	X2CrNiN18 10	304S62	Z2CN18.10	-
	13	316	1.4401	X5CrNiMo17122	316S16	Z6CND17.11	X5CrNiMo17 12
	13	316LN	1.4429	X2CrNiMoN17133	-	Z2CND17.13	-
	13	316L	1.4435	X2CrNiMo18143	316S12	Z2CND17.13	X2CrNiMo17 13
	13	317L	1.4438	X2CrNiMo17133	317S12	Z2CND19.15	X2CrNiMo18 16
	13	329	1.4460	X8CrNiMo275	-	-	-
	12	321	1.4541	X6CrNiTi18 10	2337	Z6CNT18.10	X6CrNiTi18 11
	12	347	1.4550	X6CrNiNb18 10	347S17	Z6CNNb18.10	X6CrNiNb18 11
	12	316Ti	1.4571	X6CrNiMoTi17122	320S17	Z6NDT1 7.12	X6CrNiMoTi17 12
	12	-	1.4581	G-X5CrNiMoNb18 10	318C17	Z4CNDNb18 12M	XG8CrNiMo18 11
	12	318	1.4583	X10CrNiMoNb18 12	-	Z6CNDNb17 13B	X6CrNiMoNb17 13
	13	309	1.4828	X15CrNiSi20 12	309S24	Z15CNS20.12	-
	13	310S	1.4845	X12CrNi25 21	310S24	Z12CN25 20	X6CrNi25 20
	13	330	1.4864	X12NiCr36 16	-	Z12NCS35.16	-
	13	-	1.4865	G-X40NiCrSi38 18	330C11	-	XG50NiCr39 19
	13	EV8	1.4871	X53CrMnNiN2 19	349S54;321S12	Z52CMN21.09	X53CrMnNiN219
	13	321	1.4878	X12CrNiTi18 9	321S320	Z6CNT18.12B	X6CrNiTi1811
K Cast Iron	30	No 20 B	0.6010	GG10	-	Ft 10 D	-
	30	No 25 B	0.6015	GG15	Grade 150	Ft 15 D	-
	30	No 30 B	0.6020	GG20	Grade 220	Ft 20 D	-
	29	No 35 B; No 40 B	0.6025	GG25	Grade 260	Ft 25 D	-
	29	No 45 B	0.6030	GG30	Grade 300	R 30 D	-
	29	No 50 B	0.6035	GG35	Grade 350	Ft 35 D	-
	29	No 55 B	0.6040	GG40	Grade 400	Ft 40 D	-
	29	ASTM	-	DIN4694	3468: 1974	-	-
	29	A436-72	-	GGL-		A32-301	
	29	Type 2	-	NiCr20 2	L-NiCr 20 2	L-NC 20 2	-
	30	60-40-18	0.7040	GGG 40	SNG 420/12	FCS 400-12	GS 370-17
	30	-	0.7043	GGG 40.3	SNG 370/17	FGS 370-17	-
	30	-	0.7033	GGG 35.3	-	-	-
	31	80-55-06	0.7050	GGG 50	SNG 500/7	FGS 500-7	GS 500
	31	-	0.7060	GGG 60	SNG 600/3	FGS 600-3	-
	31	100-70-03	0.7070	GGG70	SNG 700/2	FGS 700-2	GS 700-2
	31	-	-	DIN 1694	-	L-NM 13 7	-
	31	Type 2	-	GGG NiMn 13 7	L-NiMn 13 7	L-NC 20 2	-
	31	-	-	GGG NiCr 20 2	L-NC 20 2	-	-
	28	32510	0.8135	GTS-35	B 340/12	MN 35-10	-
	29	40010	0.8145	GTS-45	P 440/7	-	-
	29	50005	0.8155	GTS-55	P 510/4	MP 50-5	-
	29	70003	0.8165	GTS-65	P 570/3	MP 60-3	-
	29	80002	0.8170	GTS-70	P690/2	MP 70-2	-
N Non-Ferrous Metals	36	-	-	G-AlSi12	LM20	-	-
	36	-	-	GD-AlSi12	-	-	-
	36	-	-	GD-AlSi8Cu3	LM24	-	-
	36	-	-	G-AlSi10Mg	LM9	-	-
	36	-	-	G-AlSi12	LM6	-	-
S Heat Resistant Material	19	330	1.4864	X12NiCrSi	-	Z12NCS35.16	-
	19	-	1.4865	G-X40NiCrSi	330C11	-	XG50NiCr
	19	5390 A	2.4603	-	-	NC22FeD	-
	19	-	2.4630	NiCr20Ti	HR5, 203-4	NC20T	-
	19	5666	2.4856	NiCr22Mo9N	-	NC22FeDNB	-
	19	5537 C	LW2.496	CoCr20W15	-	KC20WN	-
	19	4676	2.4375	NiCu30Al	3072-76	-	-
	19	-	2.4631	NiCr20TiAk	Hr40,601	NC20TA	-
	19	AMS 5399	2.4973	NiCr19Co11	-	NC19KDT	-
	21	5391	LW2.467	S-NiCr13A16	3146-3	NC12AD	-
	21	5660	LW2.466	NiCr19Fe19	HR8	NC19FeNb	-
	21	5383	LW2.466	NiCr19Fe19	-	NC20K14	-
	21	-	-	CoCr22W14	-	KC22WN	-
	21	-	LW2.467	NiCo15Cr10	-	-	-
	23	-	-	TiAl14Mo4Sn4Si0.5	-	-	-
	23	-	-	TiAl5Sn2.5	TA14/17	T-A5E	-
	23	-	-	TiAl6V4	TA10-13/TA2	T-A6V	-
	23	-	-	TiAl6V4ELI	TA11	-	-

Sweden SS	Japan JIS	Russia GOST	Spain UNE	Vardex No.	
2301	SUS403	08Ch13	F.3110-X6Cr13 ; F.8401-AM-X12Cr13	12	
-	-	08Ch13	F.3110-X6Cr13 ; F.8401-AM-X12Cr13	12	
2302	SUS410	12Ch13 ; 15Ch13L	F.3401-X10Cr13	12	
2320	SUS430	12Ch17	F.3113-X6Cr17	12	
-	SCS2	20Ch13L	-	12	
2304	SUS420J2	40Ch13	F.3405-X45Cr13	12	
2321	SUS431	20Ch17N2	F.3427-X19CrNi172	12	
2383	SUS430F	-	F.3117-X10CrS17 ; F.3413-X14CrMoS17	12	
2325	SUS434	-	F.3116-X6CrMo171	12	
-	SCS5	-	-	12	
-	SCS14	07Ch18N10G2S2M2L	F.8414-AM-X7CrNiMo2010	12	
-	SUH1	40Ch9S2	F.3220-X45CrSi09-03	12	
-	SUS405	10Ch13SJu	F.3152-X10CrAl13	12	
-	SUH21	15Ch18SJu	F.3153-X10CrAl18	11	
-	SUH4	-	F.3222-X80CrSiNi20-02	12	
2322	SUH446	-	F.3154-X10CrAl24	11	
2332	SUS304	08Ch18N10	F.3551-X5CrNi1811;F.3541-X5CrNi1810 ; F.3504-X6CrNi1910	13	
2346	SUS303	-	F.3508-X10CrNiS18-09	13	
2352	SCS19; SUS304L	03Ch18N11	F.3503-X2CrNi1810	13	
2333	SCS13	07Ch18N9L	-	13	**M**
2331	SUS301	-	F.3517-X12CrNi177	13	
2371	SUS304LN	-	F.3541-X2CrNiN1810	13	
2347	SUS316	-	F.3534-X5CrNiMo17122	13	
2375	SUS316LN	-	F.3543-X2CrNiMoN17133	13	
2353	SCS16	03Ch17N14M3	F.3533-X2CrNiMo17132	13	
2367	SUS317L	-	F.3539-X2CrNiMo18164	13	
2324	SUS329L;	-	F.3309-X8CrNiMo27-05; F.3552-X8CrNiMo266	13	
58B	SUS321	06Ch18N10T; 08Ch18N10T; 09Ch18N10T; 12Ch18N10T	F.3523-X6CrNiTi1810	12	
2338	SUS347	08Ch18N12B	F.3524-X6CrNiNb1810	12	
2350	-	10Ch17N13M2T	F.3535-X6CrNiMoTi17122	12	
-	SCS22	-	-	12	
-	-	-	-	12	
-	SUH309	20Ch20N14S2	F.3312-X15CrNiSi20-12	13	
2361	SUH310	20Ch23N18	-	13	
-	SUH330	-	F.3313-X12CrNiSi36-16	13	
-	SCH15	-	-	13	
-	SUH35,SUH36;SU321	55Ch20G9AN4	F.3217-X53CrMnNiN21-09	13	
-	-	-	-	13	
01 10	-	C410	FG10	30	
01 15	-	C415	FG15	30	
01 20	-	C420	FG20	30	
01 25	-	C425	FG25	29	
01 30	-	C430	FG30	29	
01 35	-	C435	FG35	29	
01 40	-	C440	-	29	
MB	-	-	-	29	
ISO-215		-	-	29	
523	-	-	-	29	
07 17-02	-	VC42-12	-	30	
07 17-12	-	VC42-12	-	30	**K**
07 17-15	-	-	-	30	
07 27-02	-	VC50-2	-	31	
07 32-03	-	VC60-2	-	31	
07 37-01	-	VC70-2	-	31	
07 72	-	-	-	31	
07 76	-	-	-	31	
-	-	-	-	31	
08 15	-	-	-	28	
08 52	-	-	-	29	
08 54	-	-	-	29	
08 58	-	-	-	29	
08 62	-	-	-	29	
4260	-	-	-	36	
4247	-	-	-	36	**N**
4250	-	-	-	36	
4253	-	-	-	36	
4261	-	-	-	36	
-	SUH 330	-	F.3313-X12CrNiSi36-16	19	
-	SCH 15	-	-	19	
-	-	-	-	19	
-	-	-	-	19	
-	-	-	-	19	
-	-	-	-	19	
-	-	-	-	19	
-	-	-	-	19	
-	-	-	-	19	
-	-	-	-	21	**S**
-	-	-	-	21	
-	-	-	-	21	
-	-	-	-	21	
-	-	-	-	21	
-	-	-	-	23	
-	-	-	-	23	
-	-	-	-	23	
-	-	-	-	23	

Troubleshooting

	Problem	Possible Cause	Solution
	Increased flank wear	Cutting speed too high Depth of cut too low/ too many passes Unsuitable carbide grade Insufficient cooling	Reduce cutting speed / use coated insert Increase the depth of cut per pass Use a coated carbide grade Increase coolant flow rate
	Uneven cutting edge wear	\x{2063} helix angle Wrong infeed method	Choose the correct anvil Use the alternating flank infeed method
	Extreme plastic deformation	Depth of cut too large Insufficient cooling Cutting speed too high Unsuitable carbide grade Nose radius too small	Decrease depth of cut/ increase number of passes Increase coolant flow rate Reduce cutting speed Use a tougher carbide Use an insert with a larger radius, if possible
	Cutting edge breakage	Depth of cut too large Extreme plastic deformation Insufficient cooling Unsuitable carbide grade Instability	Decrease depth of cut/ increase number of passes Use a tougher carbide Increase flow rate and/ or correct flow direction Use a tougher carbide Check stability of the system
	Built-up edge	Incorrect cutting speed Unsuitable carbide grade	Change the cutting speed Use a coated carbide
	Thread profile is too shallow	The tool is not at the workpiece axis height Insert is not machining the thread crest Worn insert	Change tool height Measure the workpiece diameter Change the cutting edge sooner
	Poor surface quality	Cutting speed too low Wrong anvil Flank infeed method is not appropriate	Increase cutting speed Choose correct anvil Use the alternate flank or radial infeed method

VRX

Multipurpose Premium Grade

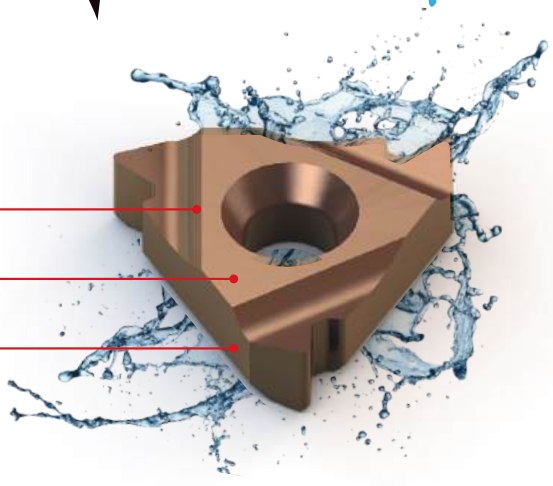
Multipurpose Thread Turning Grade for Stronger Wear Resistance and Improved Productivity

Redefining the Threading Benchmark

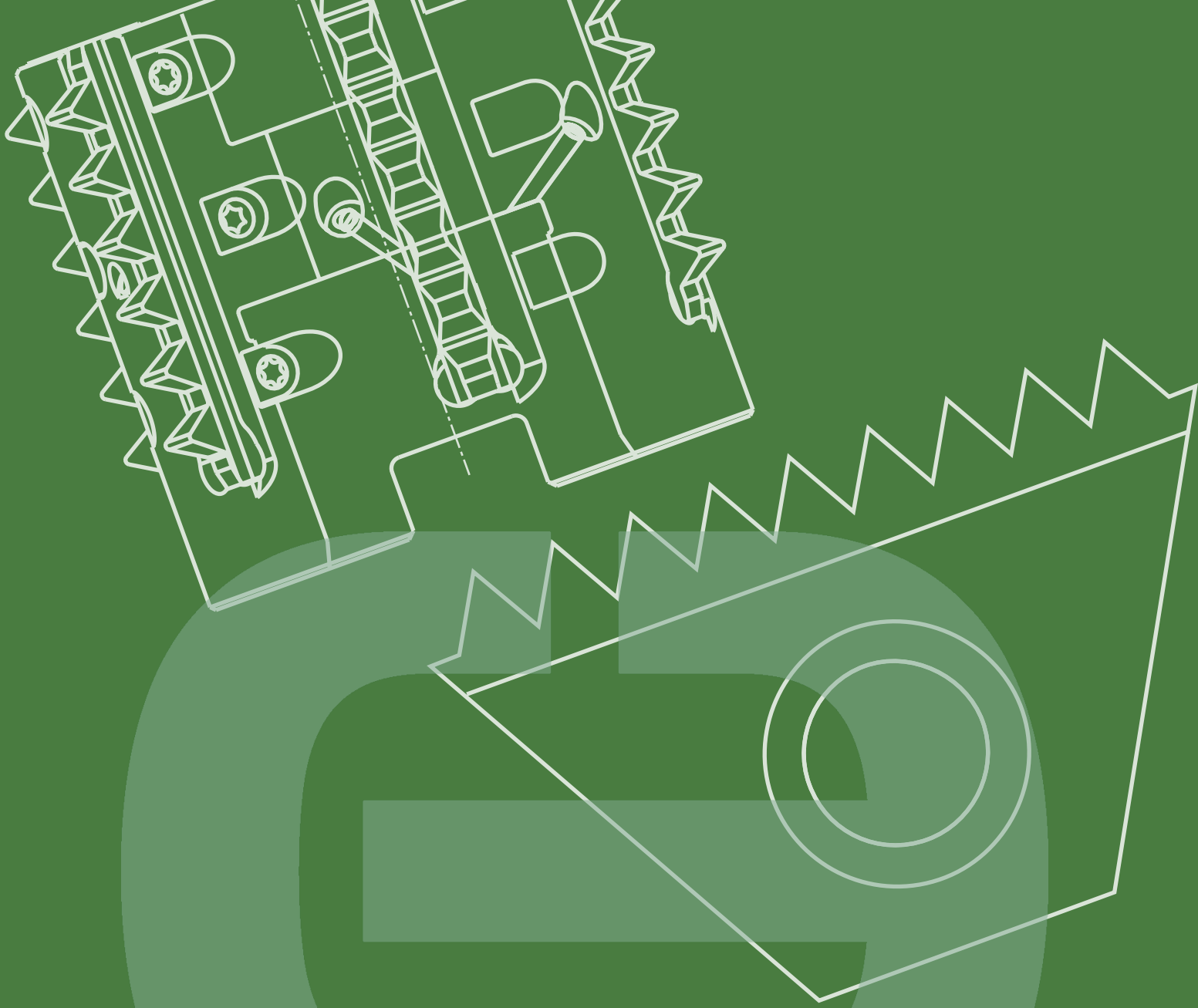
AlTiN Alloyed PVD Coating

High Oxidation Temperature

Submicron Substrate



See page 206 for more information.



THREAD MILLING

- MiTM 233
- TM Standard 255
- TMSD 297
- TM Solid 333
- Technical Data 377

Thread Milling Systems

MiTM Multi-Flute Indexable Thread Mill Inserts

MiTM19 (A) For Small Bores

Standard

Conical

MiTM24 (M) For Medium Bores

Standard

Conical

MiTM25 (S) For Standard Applications

Standard

Conical

Shell Mill

Shell Mill Conical

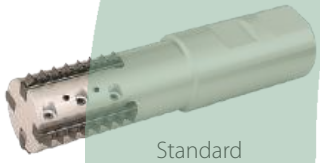
MiTM40 (L) For Long Threads

Standard

Shell Mill

Shell Mill Conical

MiTM41 (B) For Large Pitches

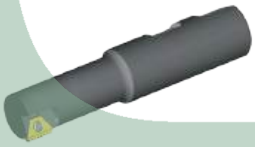

Standard

Shell Mill

Standard

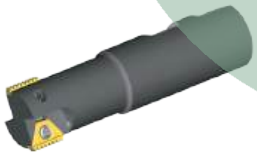
Standard / TMF

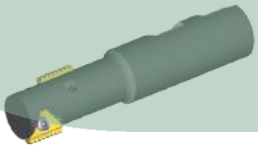
Mini TMMC


Standard TMC

Coarse 124/...

TMLC


TM2C


TMOC

TM Shell Mill

Coarse Pitch

Coarse 124/...
(Standard TMC Style)

Coarse 124/...
(Mini TMMC Style)

Conical

TMNC

TMSC - Single Point

TMSC

TMVC - Single Point Vertical

TMVC

Thread Milling Systems

TMSD Thread Milling for Deep Holes

U Style For Large Pitches

Weldon Shank

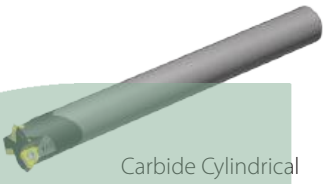
Carbide Cylindrical Shank

Steel Cylindrical Shank

Shell Mill

L Style (Mini L) For Small Bores and Short L2

Weldon Shank

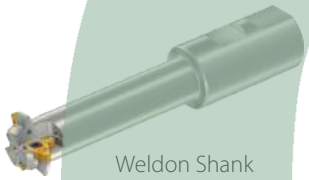

Carbide Cylindrical Shank

Vertical Style (7V, 9V, 11V)

Weldon Shank

Carbide Cylindrical Shank

L Style (3/8" L) For Large Trapezoid Profiles and ABUT


Weldon Shank

Carbide Cylindrical Shank

Shell Mill

A Style For Shorter L2

Steel Cylindrical Shank

TM Solid Solid Carbide Thread Milling Tools

Helical Flutes with Coolant

Helicool (HC) | Helicool (HCN) | Helicool-R (HCR) | Helicool-C (HCC) | HTC (Thriller)

Helical Flutes

Helical (H) | Taper

Miniature Tools

MilliPro | MilliPro HD | MilliPro Dental | TMDR

Straight Flutes

Straight | Taper

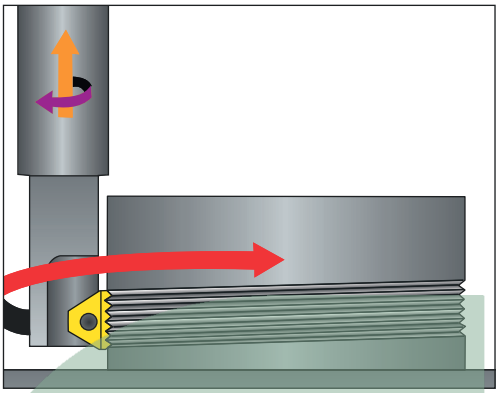
Long Tools

Deep Threading Full Profile | Deep Threading Partial Profile

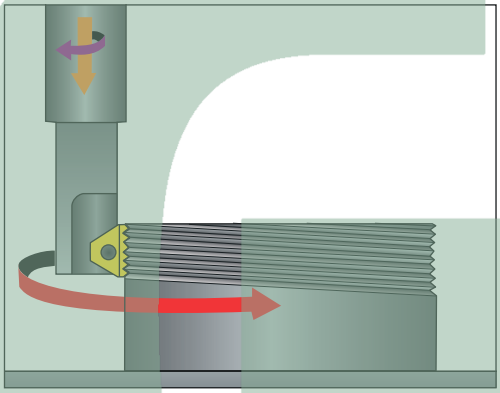
Thread Milling Methods

(for RH Tools only)

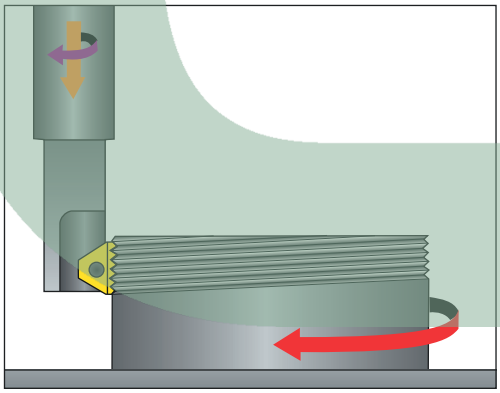
External



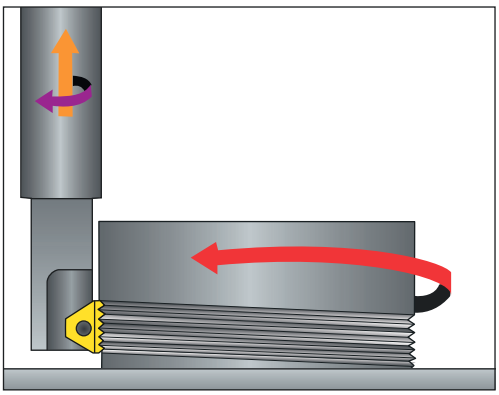
Right Hand Thread - Conventional Milling



Left Hand Thread - Conventional Milling

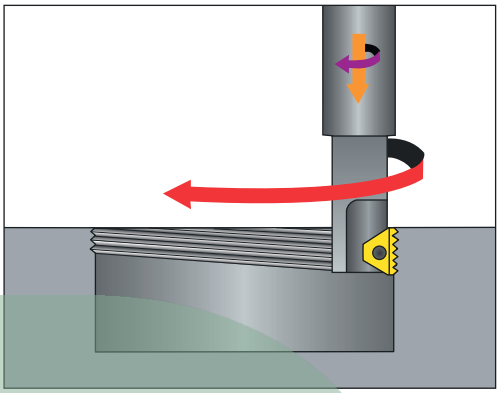


Right Hand Thread - Climb Milling

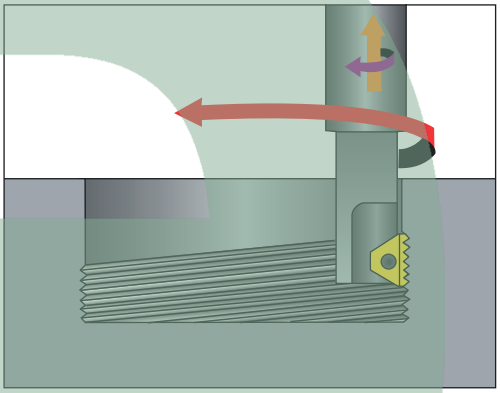


Left Hand Thread - Climb Milling

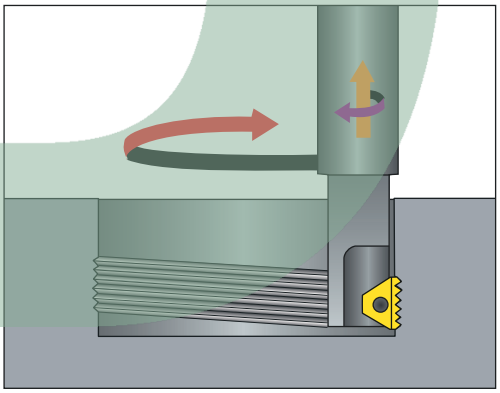
Internal



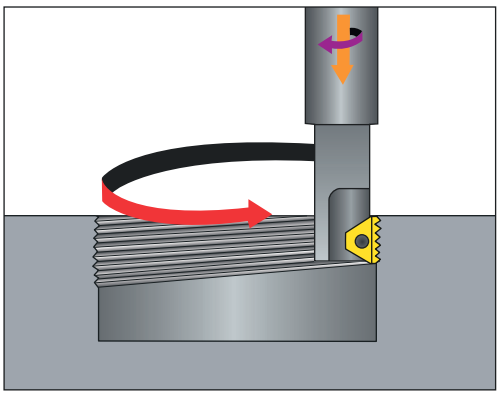
Right Hand Thread - Conventional Milling



Left Hand Thread - Conventional Milling



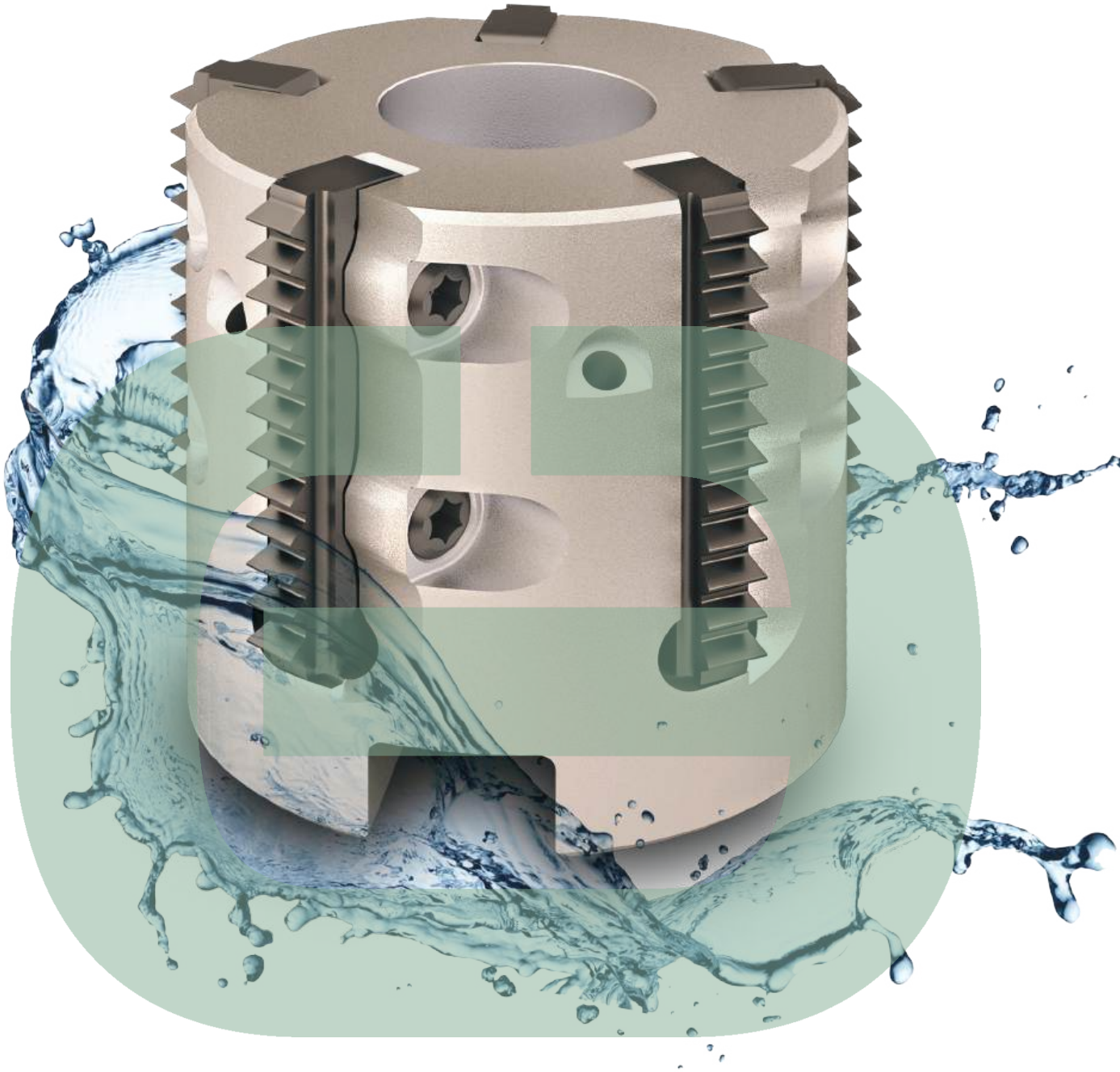
Right Hand Thread - Climb Milling



Left Hand Thread - Climb Milling

The Thread Milling Advantages

- Enables machining of large work pieces which cannot be easily mounted on a lathe
- Easily machine non-rotatable and asymmetrical parts
- Complete operation in one clamping
- Threading of large diameters requires less power than threading using taps
- No upper limits to bore diameter
- Chips are short
- Blind holes without a thread relief groove can be machined
- Thread relief grooves are unnecessary
- One holder can be used for both internal and external threads
- One tool can be used for both right hand and left hand thread
- Inventory can be reduced to a minimum as small range of tooling covers a wide range of thread diameters
- Interchangeable inserts
- Suitable for machining of hard materials
- Threads have a high surface finish
- Allows for correction of tool diameter and length
- Interrupted cuts are easily machined
- One tool for a wide range of materials
- A better thread quality in soft materials where taps normally tear the material
- Short machining time due to high cutting speed and rapid feed rates
- Small cutting forces allow machining of parts with thin walls



MiTM

Super Fast Thread Milling System

Inserts | Toolholders

Vardex Ordering Code System

MiTM Inserts

R	25	I	1.00	ISO	TM	VBX
1	2	3	4	5	6	7

1 - Product Line	2 - Insert Style	3 - Type of Insert	4 - Pitch	5 - Standard	6 - System	7 - Carbide Grade
R - MiTM line	19, 24, 25, 40, 41	I - Internal E - External EI - External+Internal NC - Plug	0.5-6.0 mm 32-4 TPI	ISO - ISO Metric UN -American UN W - BSW, BSP NPT - NPT NPTF - NPTF BSPT - BSPT	TM	VBX VTX

MiTM Holders

R	TM	C	25	17	-	26	S	2
1	2	3	4	5		6	7	8

1 - Product Line	2 - Holder Type	3 - Cooling	4 - Shank Dia. [mm]	5 - Cutting Dia. [mm]
R - MiTM line BR - MiTM with Anti-vibration System	TM - Standard Holder TMN - Conical Holder	C- Coolant Channel	12, 20, 25, 32	10 - 36

6 - Tool Overhang [mm]	7 - Insert Style	8 - No. of Flutes
19 - 80	A - 19 M - 24 S - 25 L - 40 B - 41	1 - 5

MiTM Shell Mill

R	TM	C	-	D36	-	16	-	25S	5
1	2	3		4		5		6	7

1 - Product Line	2 - Holder Type	3 - Cooling	4 - Cutting Dia. [mm]	5 - Drive Hole Dia. [mm]
R - MiTM line	TM - Standard Holder TMN - Conical Holder	C- Coolant Channel	36 - 58	16, 22, 27

6 - Insert Style	7 - No. of Flutes
25S 40L 41B	5 - 8

MiTM

The VARDEX Multi-flute Indexable Thread Milling (MiTM) system for fast machining, reduces cycle times when machining threads with long inserts. Nickel coating for all MiTM toolholders provides better anti-rust protection.

MiTM 19 (A)

For Small Bores

Standard

No. of Flutes (Z) 1
Cutting Dia. (D2) 10.0-11.75
Tool Overhang (L1) 20.0-25.2

Conical

No. of Flutes (Z) 1
Cutting Dia. (D2) 10.2
Tool Overhang (L1) 19.0

VARGUS GENius™ Tool Selector and CNC Program Generator

MiTM 24 (M)

For Medium Bores

Standard

No. of Flutes (Z) 1-2
Cutting Dia. (D2) 13.6-16
Tool Overhang (L1) 26-36

Conical

No. of Flutes (Z) 1
Cutting Dia. (D2) 13.9
Tool Overhang (L1) 26

MiTM 25 (S)

For Standard Applications

Standard

No. of Flutes (Z) 2-5
Cutting Dia. (D2) 17-30
Tool Overhang (L1) 26-80

Conical

No. of Flutes (Z) 2-4
Cutting Dia. (D2) 17-28
Tool Overhang (L1) 26-43

Shell Mill

No. of Flutes (Z) 5-8
Cutting Dia. (D2) 36-52
Tool Overhang (L1) max.200

Shell Mill Conical

No. of Flutes (Z) 5
Cutting Dia. (D2) 36
Tool Overhang (L1) max.200

MiTM 40 (L)

For Long Threads

Standard

No. of Flutes (Z) 3-4
Cutting Dia. (D2) 22-30
Tool Overhang (L1) 43-80

Shell Mill

No. of Flutes (Z) 6-8
Cutting Dia. (D2) 44-52
Tool Overhang (L1) max.200

Shell Mill Conical

No. of Flutes (Z) 6
Cutting Dia. (D2) 45
Tool Overhang (L1) max.200

MiTM 41 (B)

For Large Pitches

Standard

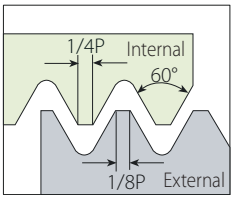
No. of Flutes (Z) 1-5
Cutting Dia. (D2) 24.5-36
Tool Overhang (L1) 43-65

Shell Mill

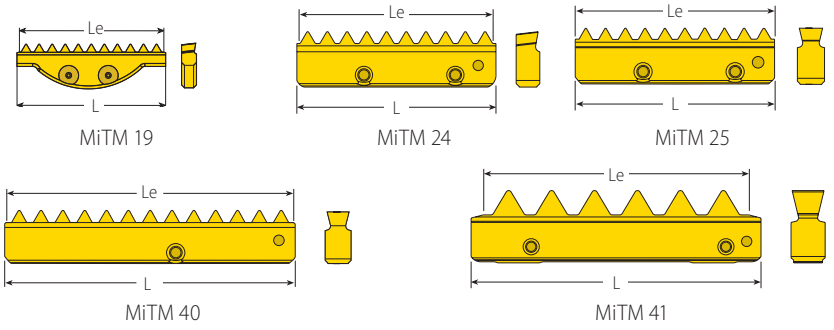
No. of Flutes (Z) 5-6
Cutting Dia. (D2) 48-58
Tool Overhang (L1) max.200

ISO Metric

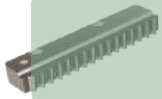
External / Internal



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



Standard MiTM



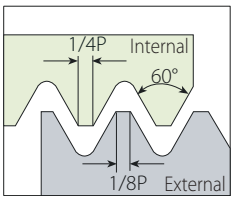
Insert Style	Pitch	Ordering Code		Cutting Edge		Teeth	Toolholder
L	mm	External	Internal		Le	Zt	
19	0.5		R19I0.50ISOTM...	1	20.0	40	RTMC....A
	0.75		R19I0.75ISOTM...	1	20.0	27	
	1.0		R19I1.00ISOTM...	1	20.0	20	
	1.25		R19I1.25ISOTM...	1	20.0	16	
	1.5		R19I1.50ISOTM...	1	19.5	13	
	1.75		R19I1.75ISOTM...	1	19.25	11	
	2.0		R19I2.0ISOTM...	1	20.0	10	
24	0.5		R24I0.50ISOTM...	1	24.5	49	RTMC....M
	0.75		R24I0.75ISOTM...	1	24.75	33	
	1.0		R24I1.00ISOTM...	1	24.0	24	
	1.25		R24I1.25ISOTM...	1	25.0	20	
	1.5		R24I1.50ISOTM...	1	24.0	16	
	1.75		R24I1.75ISOTM...	1	24.5	14	
	2.0		R24I2.00ISOTM...	1	24.0	12	
	2.5		R24I2.50ISOTM...	1	25.0	10	
25	1.0	R25E1.00ISOTM...	R25I1.00ISOTM...	2	24.0	24	(B)RTMC....S
	1.25	R25E1.25ISOTM...	R25I1.25ISOTM...	2	23.75	19	
	1.5	R25E1.50ISOTM...	R25I1.50ISOTM...	2	24.0	16	
	2.0	R25E2.00ISOTM...	R25I2.00ISOTM...	2	24.0	12	
	2.5	R25E2.50ISOTM...	R25I2.50ISOTM...	2	25.0	10	
	3.0	*R25E3.00ISOTM...	*R25I3.00ISOTM...	2	24.0	8	
40	1.0		R40I1.00ISOTM...	2	39.0	39	(B)RTMC....L
	1.5		R40I1.50ISOTM...	2	39.0	26	
	2.0		R40I2.00ISOTM...	2	38.0	19	
	2.5		R40I2.50ISOTM...	2	37.5	15	
	3.0		R40I3.00ISOTM...	2	39.0	13	
41	3.0	R41E3.00ISOTM...	R41I3.00ISOTM...	2	39.0	13	RTMC....B
	3.5	R41E3.50ISOTM...	R41I3.50ISOTM...	2	38.5	11	
	4.0	R41E4.00ISOTM...	R41I4.00ISOTM...	2	40.0	10	
	4.5	R41E4.50ISOTM...	R41I4.50ISOTM...	2	40.5	9	
	5.0	R41E5.00ISOTM...	R41I5.00ISOTM...	2	40.0	8	
	5.5	R41E5.50ISOTM...	R41I5.50ISOTM...	2	38.5	7	
	6.0	R41E6.00ISOTM...	R41I6.00ISOTM...	2	36.0	6	

* 3.0 ISO inserts do not fit into toolholder RTMC2517....
For external insert 3.0 ISO use for CNC program (D2 + 0.5mm).

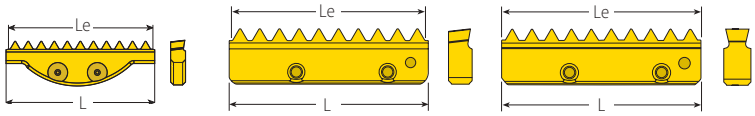
MiTM inserts 25, 40 and 41 are offered with 2 cutting edges. In case of chip flow difficulty, inserts with a single cutting edge can be ordered by request. Example: R25I2.00ISOTM(S)...

American UN - UNC, UNF, UNEF, UNS

External / Internal

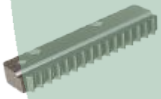


Defined by: ANSI B1.1:74
Tolerance class: 2A/2B



MiTM 19 MiTM 24 MiTM 25

Standard MiTM



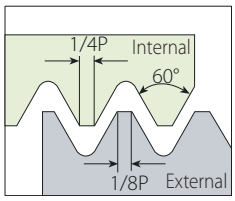
Insert Style	Pitch	Ordering Code		Cutting Edge		Teeth	Toolholder
L	TPI	External	Internal		Le	Zt	
19	32		R19I32UNTM...	1	19.84	25	RTMC....A
	28		R19I28UNTM...	1	19.96	22	
	27		R19I27UNTM...	1	19.76	21	
	24		R19I24UNTM...	1	20.11	19	
	20		R19I20UNTM...	1	19.05	15	
	18		R19I18UNTM...	1	19.76	14	
	16		R19I16UNTM...	1	19.05	12	
	14		R19I14UNTM...	1	19.96	11	
	13		R19I13UNTM...	1	19.54	10	
	12		R19I12UNTM...	1	19.05	9	
24	32		R24I32UNTM...	1	24.61	31	RTMC....M
	28		R24I28UNTM...	1	24.49	27	
	24		R24I24UNTM...	1	24.34	23	
	20		R24I20UNTM...	1	24.13	19	
	18		R24I18UNTM...	1	23.99	17	
	16		R24I16UNTM...	1	23.81	15	
	14		R24I14UNTM...	1	23.59	13	
	12		R24I12UNTM...	1	23.28	11	
	10		R24I10UNTM...	1	22.86	9	
25	20	R25E20UNTM...	R25I20UNTM...	2	24.13	19	(B)RTMC....S
	18	R25E18UNTM...	R25I18UNTM...	2	23.99	17	
	16	R25E16UNTM...	R25I16UNTM...	2	23.81	15	
	14	R25E14UNTM...	R25I14UNTM...	2	23.58	13	
	12	R25E12UNTM...	R25I12UNTM...	2	23.28	11	
	10	R25E10UNTM...	R25I10UNTM...	2	22.86	9	
	9	*R25E9UNTM...	*R25I9UNTM...	2	22.58	8	
	8	*R25E8UNTM...	*R25I8UNTM...	2	22.22	7	

* 8 UN & 9 UN inserts do not fit into toolholder RTMC2517....
For external insert 8 UN use for CNC program (D2 + 0.5mm).

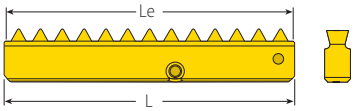
MiTM inserts 25, 40 and 41 are offered with 2 cutting edges. In case of chip flow difficulty, inserts with a single cutting edge can be ordered by request. Example: R25I20UNTM(S)...

American UN - UNC, UNF, UNEF, UNS (con't)

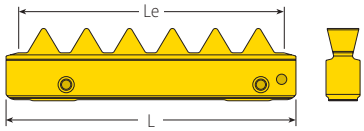
External / Internal



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

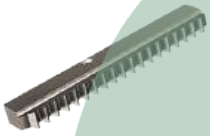


MiTM 40



MiTM 41

Standard MiTM

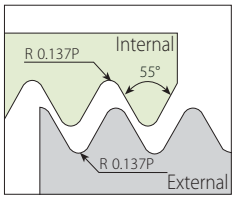


Insert Style	Pitch	Ordering Code		Cutting Edge		Teeth	Toolholder
L	TPI	External	Internal		Le	Zt	
40	20		R40I20UNTM...	2	39.37	31	(B)RTMC....L
	18		R40I18UNTM...	2	39.51	28	
	16		R40I16UNTM...	2	39.69	25	
	14		R40I14UNTM...	2	39.91	22	
	12		R40I12UNTM...	2	38.10	18	
	10		R40I10UNTM...	2	38.10	15	
	9		R40I9UNTM...	2	39.51	14	
	8		R40I8UNTM...	2	38.10	12	
41	8	R41E8UNTM...	R41I8UNTM...	2	38.10	12	RTMC....B
	7	R41E7UNTM...	R41I7UNTM...	2	39.91	11	
	6	R41E6UNTM...	R41I6UNTM...	2	38.10	9	
	5	R41E5UNTM...	R41I5UNTM...	2	35.56	7	
	4.5	R41E4.5UNTM...	R41I4.5UNTM...	2	39.51	7	
	4	R41E4UNTM...	R41I4UNTM...	2	38.10	6	

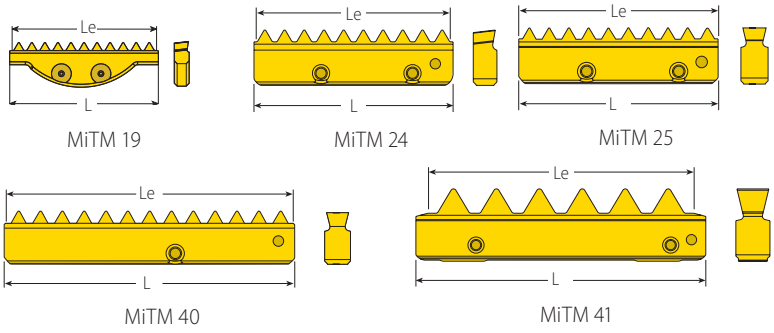
MiTM inserts 25, 40 and 41 are offered with 2 cutting edges. In case of chip flow difficulty, inserts with a single cutting edge can be ordered by request. Example: R25I20UNTM(S)...

Whitworth for BSF, BSP (G)

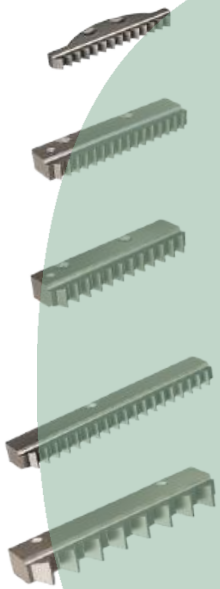
External / Internal



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



Standard MiTM

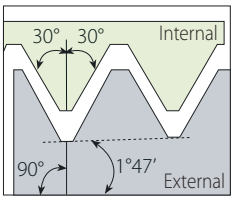


Insert Style	Pitch	Ordering Code		Cutting Edge		Teeth	Toolholder
L	TPI	External+ Internal	Internal		Le	Zt	
19	19	R19EI19WTM...		1	20.05	15	RTMC....A
	16	R19EI16WTM...		1	19.05	12	
	14	R19EI14WTM...		1	19.96	11	
24	19	R24EI19WTM...		1	24.06	18	RTMC....M
	14	R24EI14WTM...		1	23.59	13	
	12	R24EI12WTM...		1	23.28	11	
25	16	R25EI16WTM...		2	23.81	15	(B)RTMC....S
	14	R25EI14WTM...		2	23.58	13	
	12	R25EI12WTM...		2	23.28	11	
	11	R25EI11WTM...		2	23.09	10	
40	16	R40EI16WTM...		2	39.69	25	(B)RTMC....L
	14	R40EI14WTM...		2	39.91	22	
	12	R40EI12WTM...		2	38.10	18	
	11	R40EI11WTM...		2	39.25	17	
41	8		R41I8WTM...	2	38.10	12	RTMC....B
	7		R41I7WTM...	2	39.91	11	
	6		R41I6WTM...	2	38.10	9	

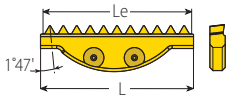
MiTM inserts 25, 40 and 41 are offered with 2 cutting edges. In case of chip flow difficulty, inserts with a single cutting edge can be ordered by request. Example: R25EI16WTM(S)...

NPT

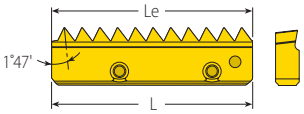
External / Internal



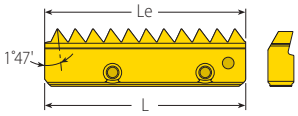
Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



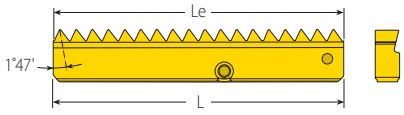
MiTM 19



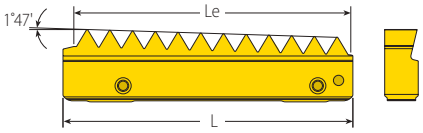
MiTM 24



MiTM 25

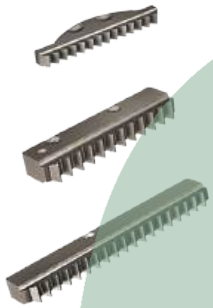


MiTM 40



MiTM 41

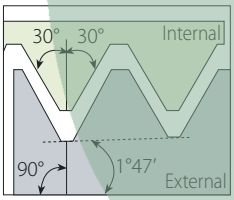
Standard MiTM



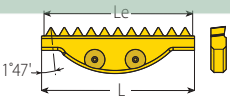
Insert Style	Pitch	Ordering Code	Cutting Edge		Teeth	Toolholder
L	TPI	External+ Internal		Le	Zt	
19	18	R19EI18NPT-TM...	1	19.76	14	RTMNC....A
24	18	R24EI18NPT-TM...	1	23.99	17	RTMNC....M
25	14	R25EI14NPT-TM...	1	23.58	13	RTMNC....S
	11.5	R25EI11.5NPT-TM...	1	24.30	11	
	8	R25EI8NPT-TM...	1	22.22	7	RTMNC-D36-16-25S5
40	11.5	R40EI11.5NPT-TM...	1	37.55	17	RTMNC-D45-22-40L6
	8	R40EI8NPT-TM...	1	38.10	12	
41	8	R41EI8NPT-TM...	1	38.10	12	RTMC....B

NPTF

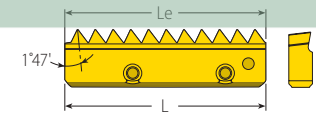
External / Internal



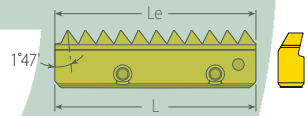
Defined by: ANSI B1.20.3-1976
Tolerance class: Standard NPTF



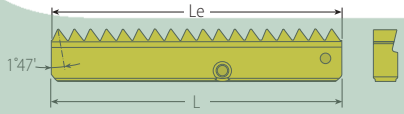
MiTM 19



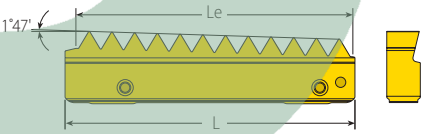
MiTM 24



MiTM 25



MiTM 40



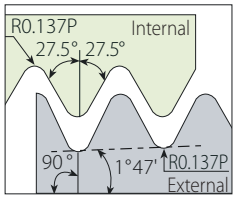
MiTM 41

Standard MiTM

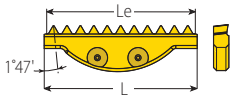
Insert Style	Pitch	Ordering Code	Cutting Edge		Teeth	Toolholder
L	TPI	External+ Internal		Le	Zt	
19	18	R19EI18NPTFTM...	1	19.76	14	RTMNC....A
24	18	R24EI18NPTFTM...	1	23.99	17	RTMNC....M
25	14	R25EI14NPTFTM...	1	23.58	13	RTMNC....S
	11.5	R25EI11.5NPTFTM...	1	24.30	11	
	8	R25EI8NPTFTM...	1	22.22	7	RTMNC-D36-16-25S5
40	11.5	R40EI11.5NPTFTM...	1	37.55	17	RTMNC-D45-22-40L6
	8	R40EI8NPTFTM...	1	38.10	12	
41	8	R41EI8NPTFTM...	1	38.10	12	RTMC....B

BSPT

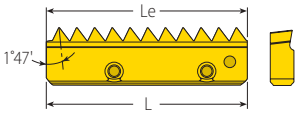
External / Internal



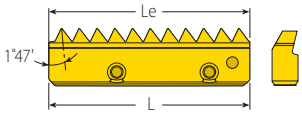
Defined by: B.S. 21:1985
Tolerance class: Standard BSPT



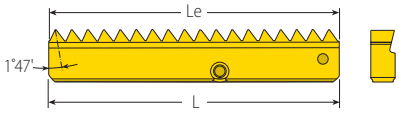
MiTM 19



MiTM 24

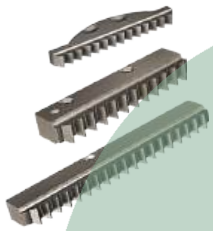


MiTM 25



MiTM 40

Standard MiTM



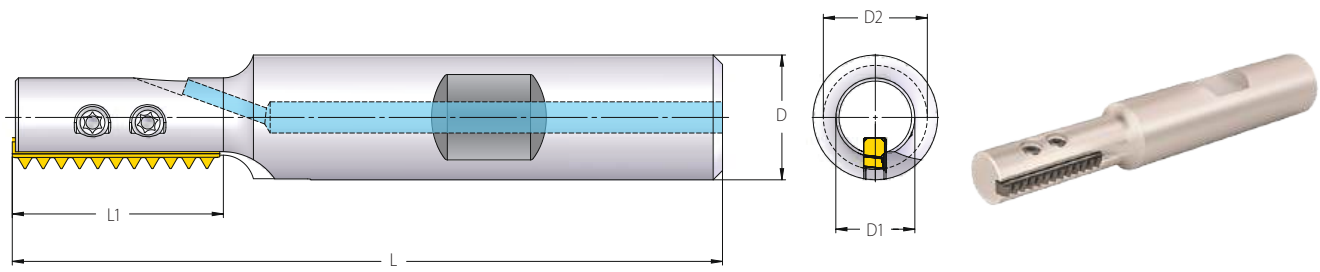
Insert Style	Pitch	Ordering Code	Cutting Edge		Teeth	Toolholder
L	TPI	External+ Internal		Le	Zt	
19	19	R19EI19BSPT-TM...	1	20.05	15	RTMNC...A
24	19	R24EI19BSPT-TM...	1	24.06	18	RTMNC 2014-26M1
25	14	R25EI14BSPT-TM...	1	23.58	13	RTMNC....S
	11	R25EI11BSPT-TM...	1	23.09	10	
40	11	R40EI11BSPT-TM...	1	39.25	17	RTMNC-D45-22-40L6

Plug Insert

Insert Style	Ordering Code	Teeth	Toolholder	
L	External+ Internal	Zt		
24	R24NC	No Teeth	RTMC....M	All Types
25	R25NC		(B)RTMC....S RTMNC....S	
40	R40NC		(B)RTMC....L RTMNC....L	
41	R41NC		RTMC....B	

Fill unused toolholder pockets with plug inserts (R..NC).
This assures balance and prevents instability and chips from packing into empty pockets.

Standard Toolholders (MiTM 19)



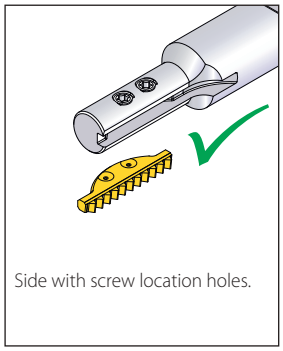
Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

RTMC - for Standard Threads

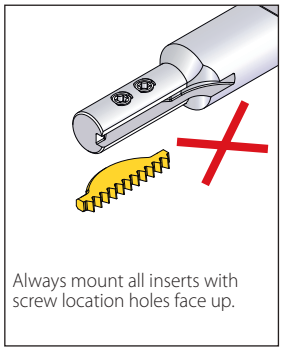
Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts	
		L	L1	D	D1	D2	Z	Location Screw x2	Torx+ Screwdriver
19	RTMC1210-20A1	68	20	12	7.5	10	1	SLD3IP6 (M3x0.5)	KIP6 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM
	RTMC1212-25A1	73.5	25.2	12	8.7	11.75	1		

Standard Thread Application by Toolholder

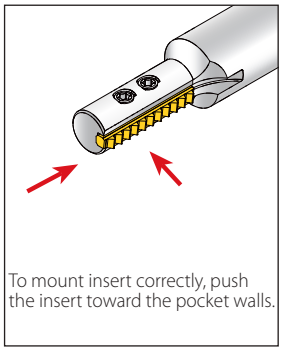
Toolholder	Min. Thread Dia.						
	D2 (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
RTMC1210-20A1	10	M12x1.75	M11x0.5; M11x0.75; M11.5x1; M12x1.25; M12x1.5	½-13	7/16-32UN; 7/16-28UNEF; 7/16-27UNS; ½-24UNS; ½-20UNF; ½-18UNS; ½-16UN; ½-14UNS	½-16	¼-19
RTMC1212-25A1	11.75	M14x2.0; M16x2.0	M12.5x0.5; M13x0.75; M13x1; M13.5x1.25; M14x1.5; M14x1.75	9/16-12	½-32UN; 9/16-28UNS; 9/16-27UNS; 9/16-24UNEF; 9/16-20UN; 9/16-18UNF; 9/16-16UN; 9/16-14UNS;	5/8-14	¼-14



Side with screw location holes.

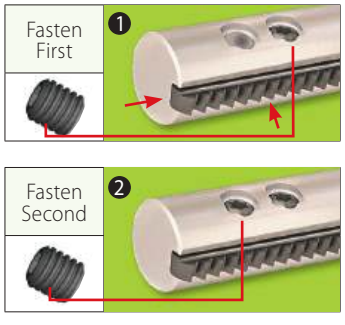


Always mount all inserts with screw location holes face up.

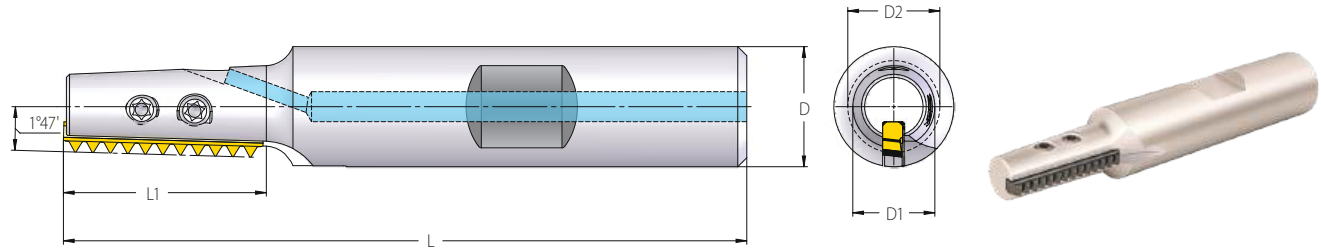


To mount insert correctly, push the insert toward the pocket walls.

2 Step Clamping System



Conical Toolholders (MiTM 19)



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

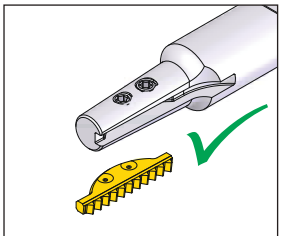
RTMNC - for Conical Threads

Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts	
		L	L1	D	D1	D2	Z	Location Screw x2	Torx+ Screwdriver
19	RTMNC1210-19A1	66.5	19	12	8	10.6	1	SLD3IP6 (M3x0.5)	KIP6 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM

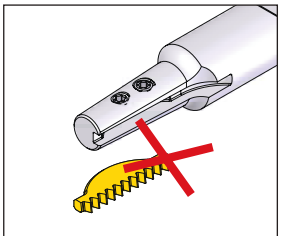
Conical Thread Application by Toolholder

Toolholder				
	D2 (mm)	NPT	NPTF	BSPT
RTMNC1210-19A1	10.6	¼-18* ⅜-18	¼-18* ⅜-18	¼-19* ⅜-19

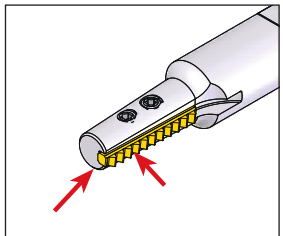
* Using MiTM 19 tools the maximum thread length is 10.5mm.



Side with screw location holes.

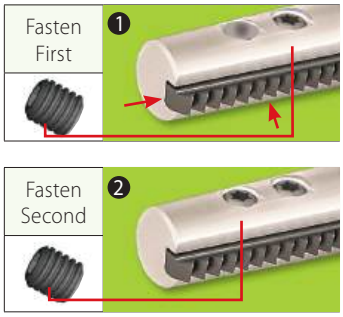


Always mount all inserts with screw location holes face up.

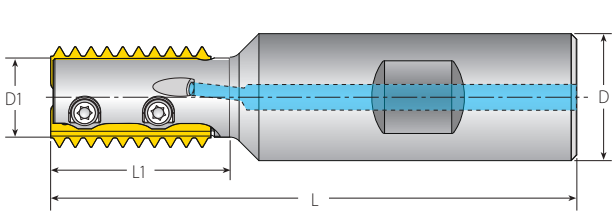


To mount insert correctly, push the insert toward the pocket walls.

2 Step Clamping System



Standard Toolholders (MiTM 24)



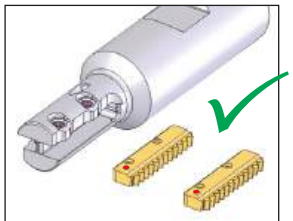
Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

RTMC - for Standard Threads

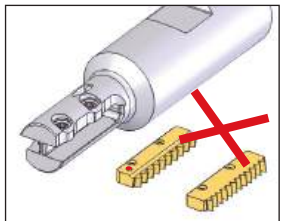
Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts	
		L	L1	D	D1	D2	Z	Location Screw x2	Torx+ Screwdriver
24	RTMC2013-26M1	82	26	20	10.7	13.6	1	SLD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM
	RTMC2015-30M1	85	30	20	11.9	15.1	1		
	RTMC2016-28M2	83	28	20	12.6	16	2		
	RTMC2016-36M1	91	36	20	12.6	16	1		

Standard Thread Application by Toolholder

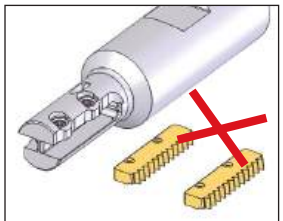
Toolholder	Min. Thread Dia.						
	D2 (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
RTMC2013-26M1	13.6	M16x2	M14.5x0.5; M15x0.75; M15x1; M15x1.25; M16x1.5; M16x1.75	-	11/16-12UN; 5/8-14UNS; 5/8-16UN; 5/8-18UNF; 5/8-20UN; 5/8-24UNEF; 5/8-28UN; 5/8-32UN	11/16-14; 3/4-12	3/8-19; 1/2-14
RTMC2015-30M1	15.1	M18x2.5	M16x0.5; M17x0.75; M17x1; M17x1.25; M17x1.5; M18x1.75; M18x2	3/4-10	3/4-12UN; 3/4-14UNS; 11/16-16UN; 11/16-20UN; 11/16-24UNEF; 11/16-28UN; 11/16-32UN	3/4-12	1/2-14
RTMC2016-28M2	16	M20x2.5	M17x0.5; M17x0.75; M18x1; M18x1.25; M18x1.5; M18x1.75; M19x2	3/4-10	3/4-12UN; 3/4-14UNS; 3/4-16UN; 3/4-18UNS; 3/4-20UNEF; 11/16-24UNEF; 11/16-28UN; 11/16-32UN	3/4-12	1/2-14
RTMC2016-36M1	16	M20x2.5	M17x0.5; M17x0.75; M18x1; M18x1.25; M18x1.5; M18x1.75; M19x2	3/4-10	3/4-12UN; 3/4-14UNS; 3/4-16UN; 3/4-18UNS; 3/4-20UNEF; 11/16-24UNEF; 11/16-28UN; 11/16-32UN	3/4-12	1/2-14



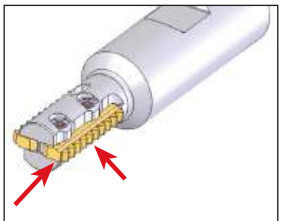
Side with identification marks.



Always mount all inserts with identification marks face up.

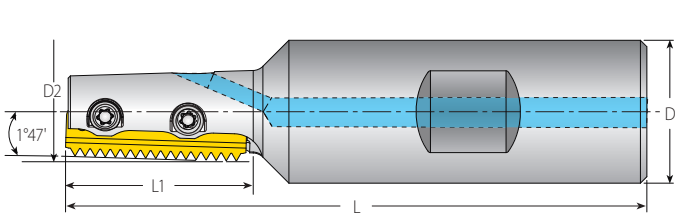


Side without identification marks.



To mount insert correctly, push the insert toward the pocket walls.

Conical Toolholders (MiTM 24)



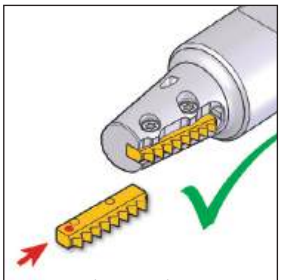
Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

RTMC - for Conical Threads

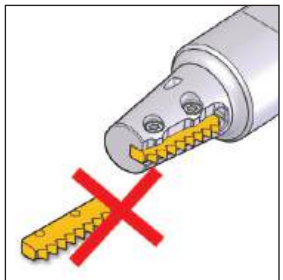
Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts	
		L	L1	D	D1	D2	Z	Location Screw x2	Torx+ Screwdriver
24	RTMNC2014-26M1	81	26	20	11.5	13.9	1	SLD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM

Conical Thread Application by Toolholder

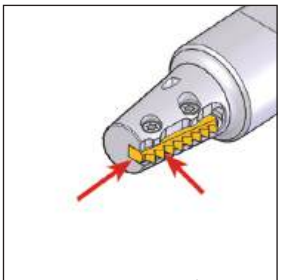
Toolholder		Thread Dia.		
	D2 (mm)	NPT	NPTF	BSPT
RTMNC2014-26M1	13.9	⅜-18	⅜-18	⅜-19



On Conical inserts, the identification mark must face up.

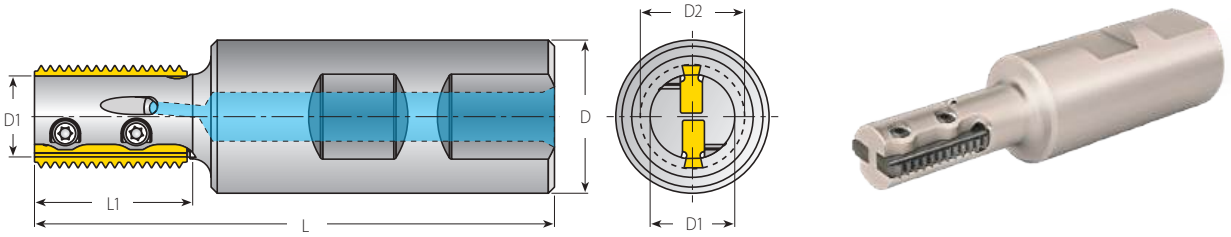


Side without identification marks.



To mount insert correctly, push the insert toward the pocket walls.

Standard Toolholders (MiTM 25)



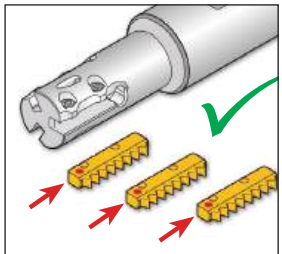
Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

RTMC - for Standard Threads

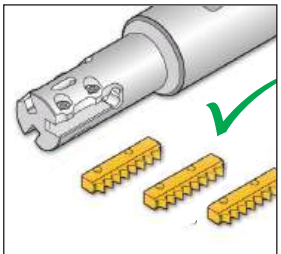
Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts	
		L	L1	D	D1	D2	Z	Location Screw x2	Torx+ Screwdriver
25	RTMC2517-26S2	85	26	25	14	17	2	SLD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM
	RTMC2517-36S2	95	36		14	17	2		
	RTMC2519-32S2	92	32		15	19	2		
	RTMC2519-44S2	104	44		15	19	2		
	RTMC2520-37S3	96	37		16.5	20.5	3		
	RTMC2520-44S3	103	44		16.5	20.5	3		
	RTMC2522-43S3	102	43		18	22	3		
	RTMC2522-55S3	114	55		18	22	3		
	RTMC2530-55S5	115	55		26	30	5		
	BRTMC2530-80S4	140	80		26	30	4		

Standard Thread Application by Toolholder

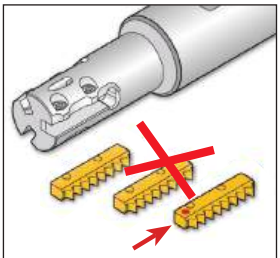
Toolholder	Min.Thread Dia.						
	D2 (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
RTMC2517-26S2 RTMC2517-36S2	17	M20x2.5	M19x1; M19x1.5; M20x2	-	⅞-10UNS; 13⁄16-12UN; ⅞-14UNF; ¾-16UNF; ¾-18UNS; ¾-20UNEF	⅞-11; ⅞-12; ⅞-14; ⅞-16	½-14
RTMC2519-32S2 RTMC2519-44S2	19	M22x2.5 M24x3	M21x1; M21x1.5; M22x2	⅞-9; 1-8	⅞-20UNEF; ⅞-18UNS; ⅞-16UN; ⅞-14UNF; ⅞-12UN; ⅞-10UNS	⅞-16; ⅞-14; 15⁄16-12; 15⁄16-11	⅝-14
RTMC2520-37S3 RTMC2520-44S3	20.5	M24x3	M22x1; M23x1.5; M23x2; M23.5x2.5	1-8	15⁄16-9UN; 1-10UNS; 15⁄16-12UN; 1-14UNS; 15⁄16-16UN; ⅞-18UNS; ⅞-20UNEF	1-11; 1-12; 1-14; 1-16	⅝-14
RTMC2522-43S3 RTMC2522-55S3	22	M27x3	M24x1; M24x1.5; M25x2; M25x2.5	-	1 1⁄16-8UN; 1-9UN; 1-10UNS; 1-12UNF; 1-14UNS; 1-16UN; 1-18UN; 15⁄16-20UNEF	1-11; 1-12; 1-14; 1-16	¾-14
RTMC2530-55S5 BRTMC2530-80S4	30	-	M32x1; M32x1.5; M33x2; M33x2.5; M34x3	-	1⅜-8UN; 1⅜-9UN; 1⅜-10UN; 1 5⁄16-12UN; 1⅜-14UNS; 1 5⁄16-16UN; 1 5⁄16-18UNEF; 1 5⁄16-20UN	1⅜-11; 1⅜-12; 1⅜-14; 1⅜-16	1-11



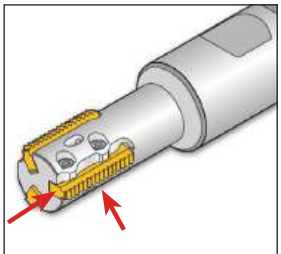
Side with identification marks



Side without identification marks.

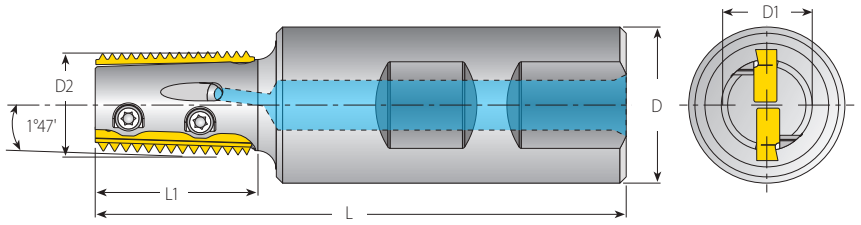


Always mount all inserts with identification marks on the same side.



To mount insert correctly, push the insert toward the pocket walls.

Conical Toolholders (MiTM 25)



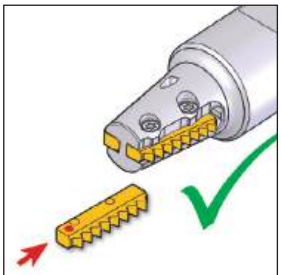
Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

RTMNC - for Conical Threads

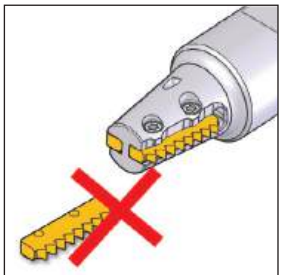
Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts	
		L	L1	D	D1	D2	Z	Location Screw x2	Torx+ Screwdriver
25	RTMNC2517-26S2	85	26	25	14	17.2	2	SLD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM
	RTMNC2522-43S3	102	43	25	18	22.2	3		
	RTMNC2528-43S4	103	43	25	25	28.4	4		

Conical Thread Application by Toolholder

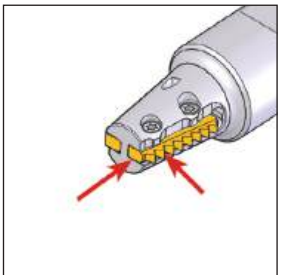
Toolholder		Thread Dia.		
	D2(mm)	NPT	NPTF	BSPT
RTMNC2517-26S2	17.2	½-14; ¾-14; 1-11.5; 1¼-11.5; 1½-11.5; 2-11.5	½ -14; ¾-14; 1-11.5; 1¼-11.5; 1½-11.5; 2-11.5	½ -14; ¾-14
RTMNC2522-43S3	22.2	¾-14; 1-11.5; 1¼-11.5; 1½-11.5; 2-11.5	¾-14; 1-11.5; 1¼-11.5; 1½-11.5; 2-11.5	¾-14; 1-11; 1¼-11; 1½-11; 2-11; 2½-11; 3-11; 4-11; 5-11; 6-11
RTMNC2528-43S4	28.4	1-11.5; 1¼-11.5; 1½-11.5; 2-11.5	1-11.5; 1¼-11.5; 1½-11.5; 2-11.5	1-11; 1¼-11; 1½-11; 2-11; 2½-11; 3-11; 4-11; 5-11; 6-11



On Conical inserts, the identification mark must face up.

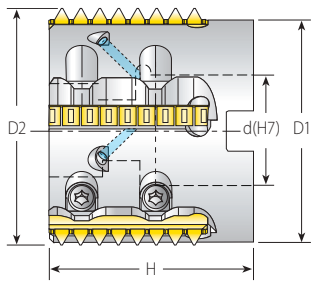


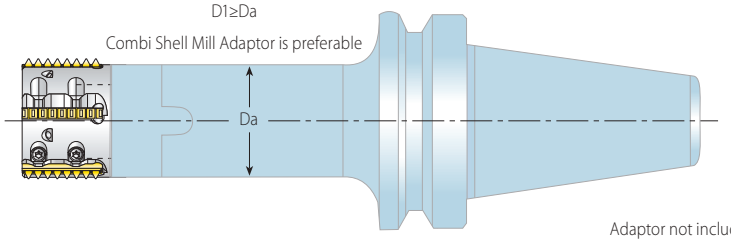
Side without identification marks.



To mount insert correctly, push the insert toward the pocket walls.

Shell Mill (MiTM 25)





Adaptor not included

Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Conical and Standard Shell Mills

	Insert Style	Ordering Code	Dimensions mm				No. of Flutes	Spare Parts		
			D1	D2	d(H7)	H	Z	Location Screw x2	Torx+ Screwdriver	Holder Screw
Standard	25	RTMC-D36-16-25S5	32	36	16	33.5	5	SLD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM	M8x1.25x35
		RTMC-D44-22-25S6	40	44	22	38.0	6			M10x1.50x35
		RTMC-D52-27-25S8	48	52	27	40.0	8			M12x1.75x30
Conical		RTMNC-D36-16-25S5	32	35.9*	16	33.5	5			M8x1.25x35

* For inserts 8NPT and 8NPTF use for CNC program 36.4mm.

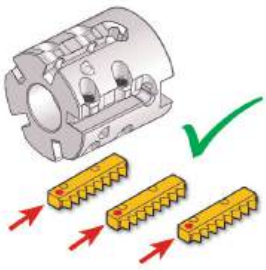
Standard Thread Applications by Toolholder

	Toolholder	Min. Thread Dia.				
		D2(mm)	ISO (fine)	UN/UNF/UNEF/UNS	BSW	BSP(G)
Standard	RTMC-D36-16-25S5	36	M38x1; M39x1.5; M39x2; M40x3	1 9/16-12UN; 1 5/8-14UNS; 1 9/16-16UN; 1 1/2-18UNEF; 1 1/2-20UN	1 3/4-16 1 3/4-12	1 1/4-11
	RTMC-D44-22-25S6	44	M48x1; M48x1.5; M48x2; M48x3	1 7/8-12UN; 1 13/16-16UN; 1 13/16-20UN; 1 15/16-8UN; 1 7/8-10UNS; 1 7/8-14UNS	2-16 2-12	1 1/2-11
	RTMC-D52-27-25S8	52	M55x1; M55x1.5; M55x2; M56x3	2 1/4-8UN; 2 1/4-10UN; 2 1/4-12UN; 2 1/4-14UN; 2 1/4-16UN; 2 1/4-18UN; 2 1/4-20UN	2 1/4-16 2 1/4-12	2-11

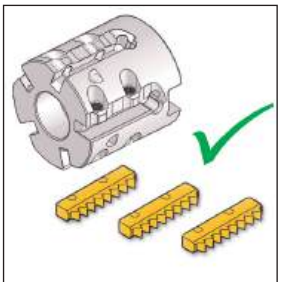
Conical Thread Applications by Toolholder

	Toolholder	Thread Dia.			
		D2 (mm)	NPT	NPTF	BSPT
Conical	RTMNC-D36-16-25S5	35.9*	1 1/4-11.5; 1 1/2-11.5; 2-11.5 2 1/2-8 (and up)	1 1/4-11.5; 1 1/2-11.5; 2-11.5 2 1/2-8; 3-8	1 1/2-6x11

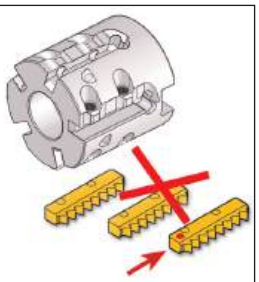
* For inserts 8NPT and 8NPTF use for CNC program 36.4mm.



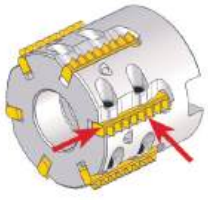
Side with identification marks.



Side without identification marks.

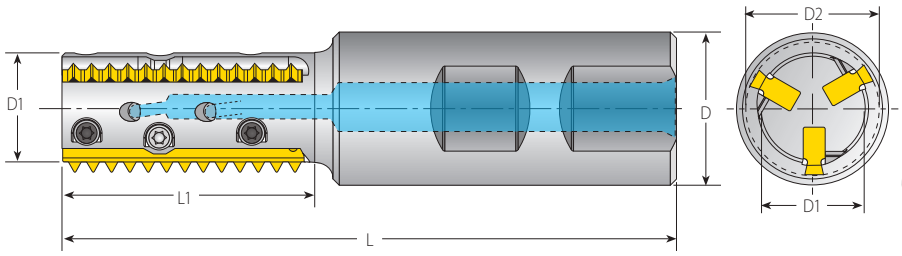


Always mount all inserts on the same side!



To mount insert correctly, push the insert toward the pocket walls.

Standard Toolholders (MiTM 40)



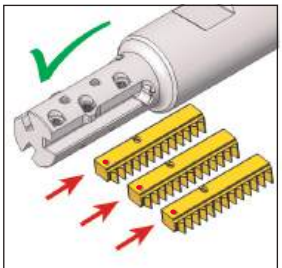
Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

RTMC - for Standard Threads

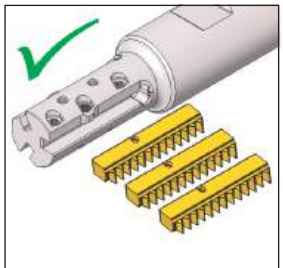
Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts		
		L	L1	D	D1	D2	Z	Location Screw	Clamping Screw x2	Torx+ Screwdriver
40	RTMC2522-43L3	102	43	25	18	22	3	SLD4IP8A (M4x0.7)	SCD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM
	RTMC2522-65L3	124	65	25	18	22	3			
	RTMC3230-55L4	117	55	32	26	30	4			
	BRTMC3230-80L3	142	80	32	26	30	3			

Standard Thread Application by Toolholder

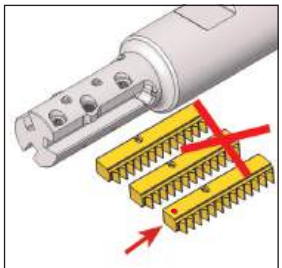
Toolholder	Min. Thread Dia.						
	D2 (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
RTMC2522-43L3	22	M27x3	M24x1; M24x1.5 M25x2; M25x2.5	-	1 1/16-8UN; 1-9UN; 1-10UNS; 1-12UNF; 1-14UNS; 1-16UN; 1-18UN; 15/16-20UNEF	1-11; 1-12; 1-14; 1-16;	3/4-14
RTMC2522-65L3	22	M27x3	M24x1; M24x1.5 M25x2; M25x2.5	-	1 1/16-8UN; 1-9UN; 1-10UNS; 1-12UNF 1-14UNS; 1-16UN; 1-18UN; 15/16-20UNEF	1-11; 1-12; 1-14; 1-16;	3/4-14
RTMC3230-55L4	30	-	M32x1; M32x1.5 M33x2; M33x2.5; M34x3	-	1 3/8-8UN; 1 3/8-9UN; 1 3/8-10UN; 1 5/16-12UN; 1 3/8-14UNS; 1 5/16-16UN; 1 5/16-18UNEF; 1 5/16-20UN	1 3/8-11; 1 3/8-12; 1 3/8-14; 1 3/8-16	1-11
BRTMC3230-80L3	30	-	M32x1; M32x1.5 M33x2; M33x2.5; M34x3	-	1 3/8-8UN; 1 3/8-9UN; 1 3/8-10UN; 1 5/16-12UN; 1 3/8-14UNS; 1 5/16-16UN; 1 5/16-18UNEF; 1 5/16-20UN	1 3/8-11; 1 3/8-12; 1 3/8-14; 1 3/8-16	1-11



Side with identification marks.

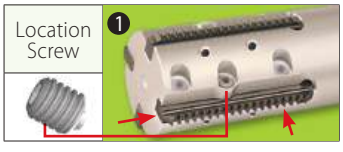


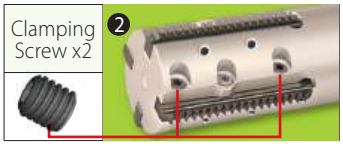
Side without identification marks.



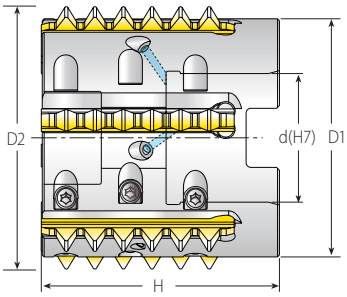
Always mount all inserts on the same side!

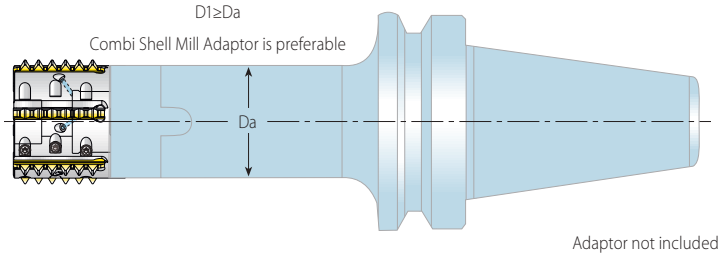
2 Step Clamping System





Shell Mill (MiTM 40)





Adaptor not included

Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Conical and Standard Shell Mills

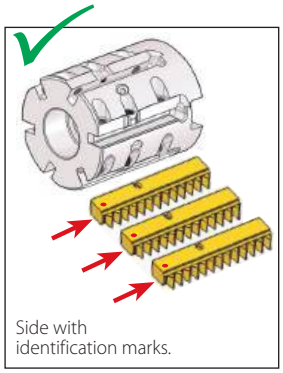
	Insert Style	Ordering Code	Dimensions mm				No. of Flutes	Spare Parts			
			D1	D2	d(H7)	H	Z	Location Screw	Clamping Screw x2	Torx+ Screwdriver	Holder Screw
Standard	40	RTMC-D44-22-40L6	40	44	22	48	6	SLD4IP8A (M4x0.7)	SCD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM	M10x1.5x40
Standard	40	RTMC-D52-27-40L8	48	52	27	50	8				M12x1.75x40
Conical	40	RTMNC-D45-22-40L6	40	45	22	48	6				M10x1.5x40

Standard Thread Application by Toolholder

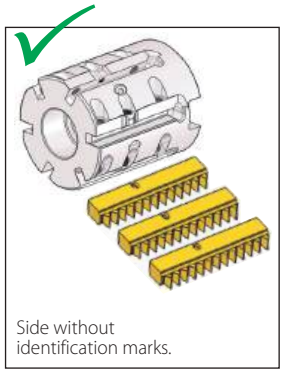
	Toolholder		Min. Thread Dia.			
		D2 (mm)	ISO (fine)	UN/UNF/UNEF/UNS	BSW	BSP(G)
Standard	RTMC-D44-22-40L6	44	M48x1; M48x1.5; M48x2; M48x3	1⅞-12UN; 1 13/16-16UN; 1 13/16-20UN; 1 15/16-8UN; 1⅞-10UNS; 1⅞-14UNS	2-16 2-12	1½-11
Standard	RTMC-D52-27-40L8	52	M55x1; M55x1.5; M55x2; M56x3	2¼-8UN; 2¼-10UN; 2¼-12UN; 2¼-14UN; 2¼-16UN; 2¼-18UN; 2¼-20UN	2¼-16 2¼-12	2-11

Conical Thread Application by Toolholder

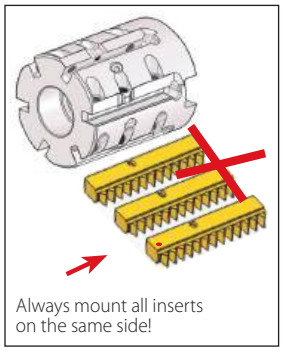
	Toolholder		Min. Thread Dia.		
		D2 (mm)	NPT	NPTF	BSPT
Conical	RTMNC-D45-22-40L6	45	2-11.5; 2½-8 (and up)	2-11.5; 2½-8; 3-8	2-6x11



Side with identification marks.

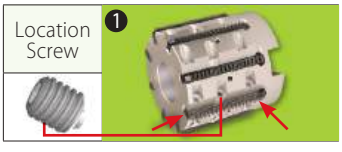


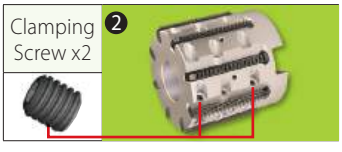
Side without identification marks.



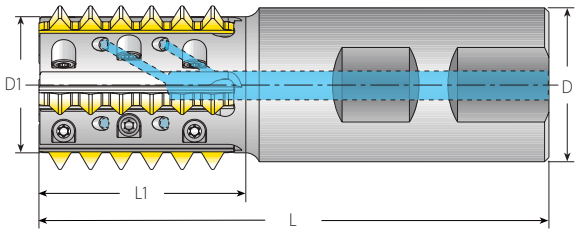
Always mount all inserts on the same side!

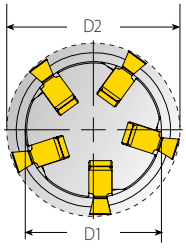
2 Step Clamping System





Standard Toolholders (MiTM 41)





Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

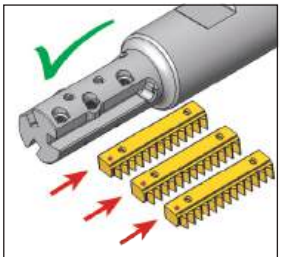
RTMC - for Standard Threads

Insert Style	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts		
		L	L1	D	D1	D2*	Z	Location Screw x2	Clamping Screw	Torx+ Screwdriver
41	RTMC2521-45B1	105	45	25	16.0	21.2	1	SLD4IP8A (M4x0.7)	SCD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM
	RTMC2524-43B2	104	43	25	19.2	24.5	2			
	RTMC3230-43B3	106.5	43	32	24.2	30.0	3			
	RTMC3230-65B3	128.5	65	32	24.2	30.0	3			
	RTMC3236-43B5	106	43	32	28.3	35.9	5			
	RTMC3236-65B4	128	65	32	28.3	35.9	4			

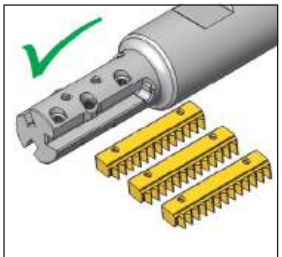
Standard Thread Application by Toolholder

Toolholder	D2* (mm)	Min. Thread Dia. ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSW/BSF	NPT	NPTF
RTMC2521-45B1	21.2	M27x3; M30x3.5; M33x3.5; M36x4; M39x4	M30x3; M42x4	1-8, 1⅛-7; 1¼-7; 1⅜-6; 1½-6	1 1/16-8UN; 1 7/16-6UN	1-8BSW; 1⅛-7BSW	-	-
RTMC2524-43B2	24.5	M30x3.5; M36x4	M28x3; M45x4	1⅛-7; 1⅜-6	1⅛-8UN; 1 7/16-6UN	1⅜-8BSF; 1¼-7BSW	-	-
RTMC3230-43B3	30.0	M36x4; M42x4.5	M34x3; M34x3.5; M45x4	1⅜-6	1⅜-8UN; 1 7/16-6UN	1⅜-8BSF; 1¾-7BSF; 1½-6BSW	-	-
RTMC3230-65B3	30.0	M36x4; M42x4.5	M34x3; M34x3.5; M45x4	1⅜-6	1⅜-8UN; 1 7/16-6UN	1⅜-8BSF; 1¾-7BSF; 1½-6BSW	-	-
RTMC3236-43B5	35.9	M42x4.5; M48x5; M56x5.5; M64x6	M40x3; M40x3.5; M42x4; M70x6	1¾-5; 2-4.5; 2½-4	1⅝-8UN; 1⅝-6UN	1⅝-8BSF; 1¾-7BSF; 1⅞-6BSF	2½-8	2½-8
RTMC3236-65B4	35.9	M42x4.5; M48x5; M56x5.5; M64x6	M40x3; M40x3.5; M42x4; M70x6	1¾-5; 2-4.5; 2½-4	1⅝-8UN; 1⅝-6UN	1⅝-8BSF; 1¾-7BSF; 1⅞-6BSF	2½-8	2½-8

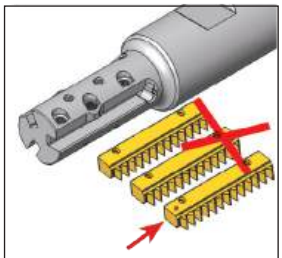
* For external applications, inserts R41E... use for CNC program (D2+0.6mm).



Side with identification marks.

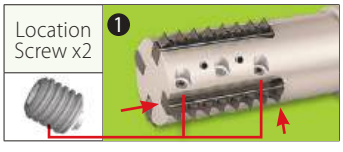


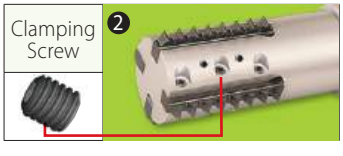
Side without identification marks.



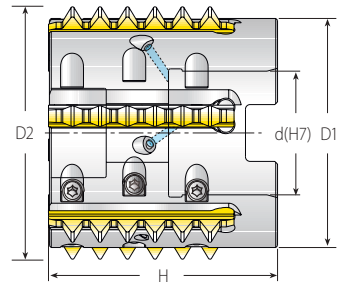
Always mount all inserts on the same side!

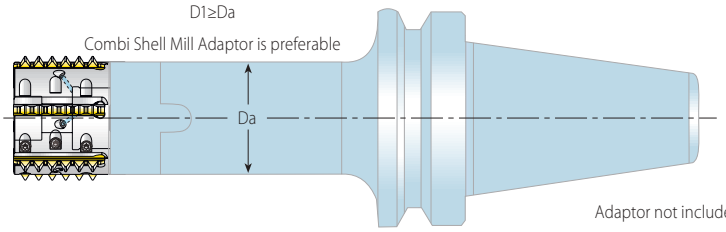
2 Step Clamping System





Shell Mill (MiTM 41)





Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

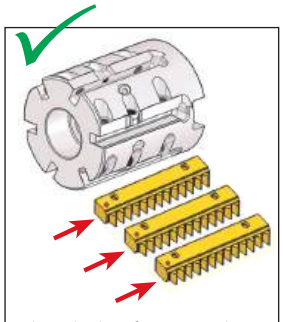
Standard Shell Mill

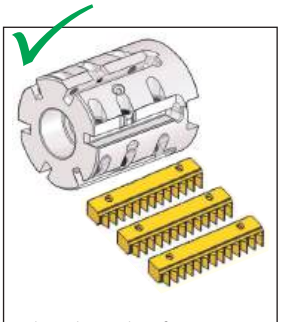
Insert Style	Ordering Code	Dimensions mm				No. of Flutes	Spare Parts			
		D1	D2*	d(H7)	H	Z	Location Screw x2	Clamping Screw	Torx+ Screwdriver	Holder Screw
41	RTMC-D48-22-41B5	40	47.9	22	50	5	SLD4IP8A (M4x0.7)	SCD4IP8 (M4x0.7)	KIP8 Use the included Vardex Torx+ screwdriver only. Recommended max. torque 1.2 NxM	M10x1.5x40
	RTMC-D58-27-41B6	50	57.9	27	50	6				M12x1.75x40

Standard Thread Application by Toolholder

Toolholder		Min. Thread Dia.						
	D2* (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	NPT	NPTF
RTMC-D48-22-41B5	47.9	M56x5.5; M64x6	M55x4; M70x6;	2¼-4.5; 2½-4	2⅛-8UN; 2⅛-6UN	2¼-8; 2¼-6	2½-8	2½-8
RTMC-D58-27-41B6	57.9	M68x6	M64x4; M70x6	2¾-4	2½-8UN; 2½-6UN	2½-8; 2¾-6	2½-8	2½-8

* For external applications, inserts R41E... use for CNC program (D2+0.6mm).


Side with identification marks.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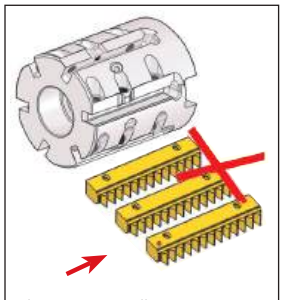
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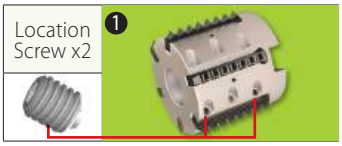
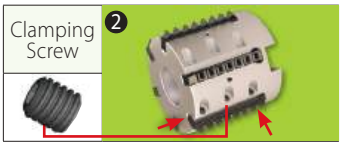
2 Step Clamping System





Recommended Grades, Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		Feed f [mm/tooth]	
					VBX	VTX	(Excluding MiTM 19)	(for MiTM 19)
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	100-210	90-180	0.1-0.35	0.06-0.2
	2		Medium Carbon (C=0.25-0.55%)	150	100-180	90-170	0.1-0.4	0.06-0.25
	3		High Carbon (C=0.55-0.85%)	170	100-170	90-160	0.1-0.35	0.06-0.2
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	80-140	90-155	0.1-0.4	0.06-0.25
	5		Hardened	275	80-150	80-160	0.1-0.35	0.06-0.2
	6		Hardened	350	70-140	70-150	0.1-0.3	0.06-0.2
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	60-130	70-115	0.1-0.35	0.06-0.2
	8		Hardened	325	70-110	60-100	0.1-0.2	0.06-0.1
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	100-170	100-170	0.1-0.3	0.06-0.2
	10		High Alloy (alloying elements >5%)	225	70-120	70-130	0.1-0.2	0.06-0.1
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	100-170	120-180	0.1-0.3	0.06-0.2
	12		Hardened	330	100-170	120-180	0.1-0.2	0.06-0.1
	13	Stainless Steel Austenitic	Austenitic	180	70-140	100-140	0.1-0.3	0.06-0.2
	14		Super Austenitic	200	70-140	100-140	0.1-0.2	0.06-0.1
	15	Stainless Steel Cast Ferritic	Non Hardened	200	70-140	100-140	0.1-0.3	0.06-0.2
	16		Hardened	330	70-140	100-140	0.1-0.2	0.06-0.1
	17	Stainless Steel Cast Austenitic	Austenitic	200	70-120	100-120	0.1-0.3	0.06-0.2
	18		Hardened	330	70-120	100-120	0.1-0.2	0.06-0.1
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-130	100-120	0.05-0.16	0.03-0.1
	29		Pearlitic (long chips)	230	60-120	80-100	0.04-0.1	0.02-0.06
	30	Grey Cast Iron	Low Tensile Strength	180	60-130	80-100	0.1-0.3	0.06-0.2
	31		High Tensile Strength	260	60-100	80-100	0.1-0.2	0.06-0.1
	32	Nodular Sg Iron	Ferritic	160	60-125	80-100	0.1-0.3	0.06-0.2
	33		Pearlitic	260	50-90	60-90	0.1-0.2	0.06-0.1
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	100-250	-	0.15-0.55	0.09-0.3
	35		Aged	100	100-180	-	0.15-0.5	0.09-0.3
	36	Aluminium Alloys	Cast	75	150-400	-	0.15-0.5	0.09-0.3
	37		Cast & Aged	90	150-280	-	0.1-0.4	0.06-0.25
	38	Aluminium Alloys	Cast Si 13-22%	130	80-150	-	0.15-0.5	0.09-0.3
	39	Copper and Copper Alloys	Brass	90	120-210	100-200	0.15-0.5	0.09-0.3
	40		Bronze And Non Leaded Copper	100	120-210	100-200	0.1-0.4	0.06-0.25
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	20-45	20-40	0.1-0.2	0.06-0.1
	20		Aged (iron based)	280	20-30	20-30	0.04-0.1	0.02-0.06
	21		Annealed (nickel or cobalt based)	250	15-20	15-20	0.04-0.1	0.02-0.06
	22		Aged (nickel or cobalt based)	350	10-15	10-15	0.04-0.1	0.02-0.06
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	70-140	70-120	0.04-0.1	0.02-0.06
	24		α+β Alloys	1050Rm	20-50	20-50	0.04-0.1	0.02-0.06
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	15-45	15-45	0.06-0.12	0.04-0.07
	26			51-55HRc	15-40	15-40	0.04-0.08	0.02-0.05

MiTM

Grades

Grade	Application	Sample
VBX	TiCN coated carbide grade. Excellent grade for **steels and general use**.	
VTX	TiAlN coated carbide grade. Ideal for **Stainless Steels.**	

STANDARD

Thread Milling

Inserts | Toolholders

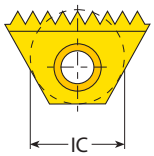
Vardex Ordering Code System

Thread Milling Inserts

3	B	I	1.5	ISO	TM2	F	028/...	VBX
1	2	3	4	5	6	7	8	9

1 - Insert Size

6.0 - 6.0 mm
2 - ¼"
3 - ⅜"
3B - ⅜"B
4 - ½"
5 - ⅝"
6B - ¾"B



2 - Cutting Edge Length

B - TMB

3 - Type of Insert

E - External
I - Internal
EI - External + Internal

4 - Pitch

0.35 - 6.0mm, 80-4 TPI

5 - Standard

ISO - ISO Metric
UN - American UN
UNJ - UNJ
W - Whitworth for BSW, BSP
NPT - NPT
NPTF - NPTF
NPS - NPS
BSPT - British Standard Pipe Thread
PG - Pg DIN 40430
ACME - ACME
TR - Trapez DIN 103

6 - System

TM2
TM

7 - Pitch Type

F - Fine Pitch

8 - Coarse Pitch Inserts

028/...

9 - Carbide Grade

VBX
VTX
VK2

Thread Milling Toolholders

B	TM	N	C	20	-	3	B		LH	-	
1	2	3	4	5		6	7	8	9		10

1 - Shank Type

B - Anti Vibration System

2 - System

TM - Thread Milling

3 - Holder Type

2 - Twin Flute
M - Mini
L - Long Tool
N - Tapered Holder
V - Vertical Holder
S - Single Point
O - Offset
W - Wide Cut. Dia.

4 - Cooling

C - Coolant Channel

5 - Shank Dia.

10, 12, 16, 20, 25, 32, 40

6 - Insert Size

6.0 - 6.0mm
2 - 1/4"
3 - 3/8"
3B - 3/8"B
4 - 1/2"
5 - 5/8"
6B - 3/4"B

7 - Cut. Edge Length

B - TMB

8 - Serial No.

(for TMO Holders)
1 - 16

9 - RH / LH Holder

None - Right Hand
LH - Left Hand

10 - Serial No.

(for Coarse Pitch Holders)
124/...

Thread Milling Shell Mill

TMSH	-	D63	-	22	-	3	B
1		2		3		4	5

1 - System

Thread Mill Shell Mill

2 - Cutting Dia.

38, 50, 63, 80, 100, 125

3 - Drive Hole Dia.

16, 22, 27, 32, 40

4 - Insert Size

2 - 1/4"
3 - 3/8"
3B - 3/8"B
5 - 5/8"
6B - 3/4"B

5 - Cut. Edge Length

B - TMB

Thread Milling Standard System

VARGUS GENius™ Tool Selector and CNC Program Generator

TMMC
Miniature Applications

No. of Flutes (Z) 1
Cutting Dia. (D2) 9.0
Tool Overhang (L1) 12.0-17.0

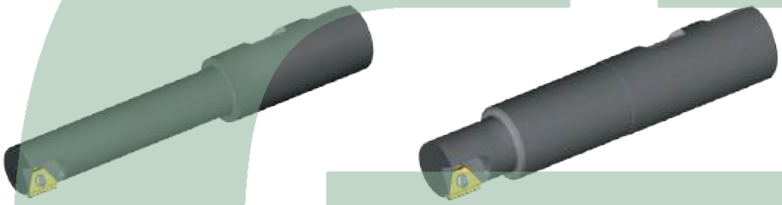
TMC
Standard Applications

No. of Flutes (Z) 1
Cutting Dia. (D2) 9.0-46.0
Tool Overhang (L1) 12.0-63.0

TMC 124/...
Coarse Pitch Thread

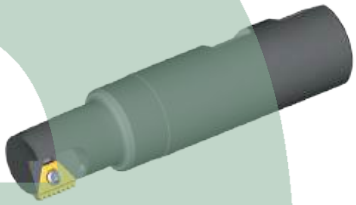
No. of Flutes (Z) 1
Cutting Dia. (D2) 9.0-22.0
Tool Overhang (L1) 15.0-40.0

TMLC
For Long Threads



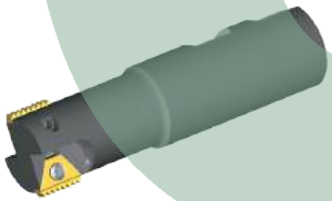
No. of Flutes (Z) 1
Cutting Dia. (D2) 11.5-46.0
Tool Overhang (L1) 17.0-93.0

TMNC
For Conical Applications



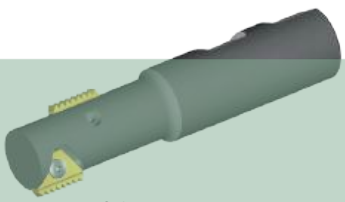
No. of Flutes (Z) 1
Cutting Dia. (D2) 15.5-37.0
Tool Overhang (L1) 22.0-58.0

TM2C
Fast Infeed



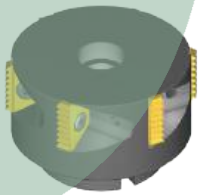
No. of Flutes (Z) 2
Cutting Dia. (D2) 17.0-52.0
Tool Overhang (L1) 20.0-65.0

TMOC
For Fewer Cycles



No. of Flutes (Z) 1
Cutting Dia. (D2) 14.5-30.0
Tool Overhang (L1) 25.0-52.0

TMSH
Fast Machining in Large Diameters and Deep Holes



No. of Flutes (Z) 6-9
Cutting Dia. (D2) 38.0-125.0
Tool Overhang (L1) Max. 200

TMSC
For Short Threads Economical Solutions

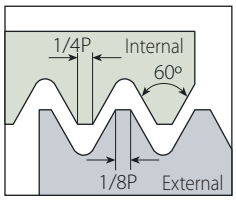
No. of Flutes (Z) 1
Cutting Dia. (D2) 12.5
Tool Overhang (L1) 25.0

TMVC
For Large Pitches

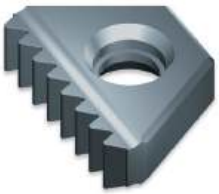
No. of Flutes (Z) 1
Cutting Dia. (D2) 46.0
Tool Overhang (L1) 60.0

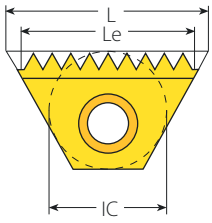
ISO Metric

External / Internal



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





Standard TM

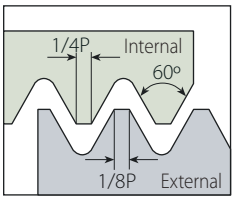
Standard TM

Insert Size		Pitch	Ordering Code		Le	Teeth	
IC	L mm	mm	External	Internal	mm		Toolholder
6.0mm	10.4	0.5		6.0I0.5ISOTM...	10.0	20	TMMC..-6.0
		0.75		6.0I0.75ISOTM...	9.75	13	
		1.0		6.0I1.0ISOTM...	9.0	9	
		1.25		6.0I1.25ISOTM...	8.75	7	
		1.5		6.0I1.5ISOTM...	9.0	6	
1/4"	11	0.5		2I0.5ISOTM2...	10.0	20	TMC..-2 TMSH..-2
		0.75	2E0.75ISOTM2...	2I0.75ISOTM2...	10.5	14	
		1.0	2E1.0ISOTM2...	2I1.0ISOTM2...	10.0	10	
		1.25	2E1.25ISOTM2...		10.0	8	
		1.25		2I1.25ISOTM2...	8.75	7	
		1.5	2E1.5ISOTM2...		9.0	6	
		1.5		2I1.5ISOTM2...	10.5	7	
3/8"	16	0.5		3I0.5ISOTM2...	15.0	30	TMC..-3 TMSH..-3
		0.75	3E0.75ISOTM2...	3I0.75ISOTM2...	15.0	20	
		0.8		3I0.8ISOTM2...	14.4	18	
		1.0	3E1.0ISOTM2...		14.0	14	
		1.0		3I1.0ISOTM2...	15.0	15	
		1.25	3E1.25ISOTM2...	3I1.25ISOTM2...	15.0	12	
		1.5	3E1.5ISOTM2...	3I1.5ISOTM2...	15.0	10	
		1.75	3E1.75ISOTM2...	3I1.75ISOTM2...	14.0	8	
		2.0	3E2.0ISOTM2...	3I2.0ISOTM2...	14.0	7	
3/8"B	22	1.0	3BE1.0ISOTM2...	3BI1.0ISOTM2...	22.0	22	BTMC..-3B TMSH..-3B
		1.25	3BE1.25ISOTM2...	3BI1.25ISOTM2...	21.25	17	
		1.5	3BE1.5ISOTM2...	3BI1.5ISOTM2...	21.0	14	
		1.75	3BE1.75ISOTM2...	3BI1.75ISOTM2...	21.0	12	
		2.0	3BE2.0ISOTM2...	3BI2.0ISOTM2...	22.0	11	
5/8"	27	1.0	5E1.0ISOTM2...	5I1.0ISOTM2...	26.0	26	TMC..-5 TMSH..-5
		1.25	5E1.25ISOTM2...	5I1.25ISOTM2...	25.0	20	
		1.5	5E1.5ISOTM2...	5I1.5ISOTM2...	25.5	17	
		1.75	5E1.75ISOTM2...	5I1.75ISOTM2...	24.5	14	
		2.0	5E2.0ISOTM2...	5I2.0ISOTM2...	24.0	12	
		2.5	5E2.5ISOTM2...	5I2.5ISOTM2...	25.0	10	
		3.0	5E3.0ISOTM2...	5I3.0ISOTM2...	24.0	8	
		3.5	5E3.5ISOTM2...	5I3.5ISOTM2...	24.5	7	
		4.0	5E4.0ISOTM2...	5I4.0ISOTM2...	24.0	6	
		4.5	5E4.5ISOTM2...	5I4.5ISOTM2...	22.5	5	

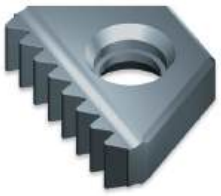
All inserts have 2 cutting edges, except **MiniTM (IC 6.0 mm)** which has one cutting edge.

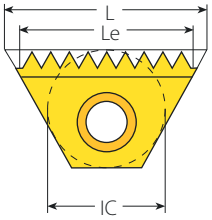
ISO Metric (con't)

External / Internal



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





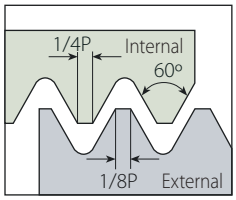
Standard TM

Standard TM

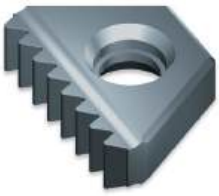
Insert Size		Pitch	Ordering Code		Le	Teeth	
IC	L mm	mm	External	Internal	mm		Toolholder
3/4"B	38.5	1.5	6BE1.5ISOTM2...	6BI1.5ISOTM2...	36.0	24	TMC..-6B TMSH..-6B
		2.0	6BE2.0ISOTM2...	6BI2.0ISOTM2...	36.0	18	
		2.5	6BE2.5ISOTM2...	6BI2.5ISOTM2...	35.0	14	
		3.0	6BE3.0ISOTM2...	6BI3.0ISOTM2...	36.0	12	
		4.0	6BE4.0ISOTM2...	6BI4.0ISOTM2...	32.0	8	
		4.5	6BE4.5ISOTM2...	6BI4.5ISOTM2...	31.5	7	
		5.0	6BE5.0ISOTM2...	6BI5.0ISOTM2...	30.0	6	
		5.5	6BE5.5ISOTM2...	6BI5.5ISOTM2...	33.0	6	
		6.0	6BE6.0ISOTM2...	6BI6.0ISOTM2...	30.0	5	

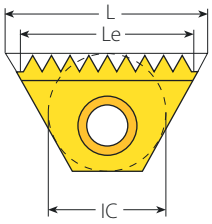
ISO Metric (con't)

Internal



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





Coarse Pitch TM

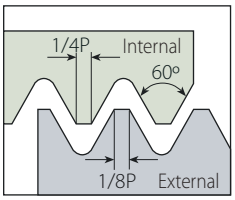
Coarse Pitch TM

Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth		Bore Dia. Range
	IC	L mm	Internal		mm		Toolholder	mm
M10x0.75	6.0 mm	10.4	6.0I0.75ISOTM028/001...	1	9.75	13	TMMC12-6.0	9.1-10
M10x0.75			6.0I0.75ISOTM028/001...	1	9.75	13	TMMC20-6.0	9.1-10
M12x1.25			6.0I1.25ISOTM028/002...	1	8.75	7	TMMC12-6.0	10.6-11.4
M12x1.25			6.0I1.25ISOTM028/002...	1	8.75	7	TMMC20-6.0	10.6-11.4
M12x1.75			6.0I1.75ISOTM028/003...	1	8.75	5	TMMC20-6.0-124/003	10.1-19
M14x2.0	1/4"	11	2I2.0ISOTM028/004...	2	10.0	5	TMC12-2	11.8-19.5
M14x2.0			2I2.0ISOTM028/004...	2	10.0	5	TMC20-2	11.8-19.5
M16x2.0			2I2.0ISOTM028/004...	2	10.0	5	TMC12-2	11.8-19.5
M16x2.0			2I2.0ISOTM028/004...	2	10.0	5	TMC20-2	11.8-19.5
M20x2.5	3/8"	16	3I2.5ISOTM028/005...	1	12.5	5	TMC16-3-124/001	17.2-19.2
M22x2.5	1/2"	22	4I2.5ISOTM028/006...	1	17.5	7	TMC25-4-124/002	19.2-31.6
M24x3.0			4I3.0ISOTM028/007...	1	18.0	6	TMC25-4-124/002	20.7-32.7
M27x3.0			4I3.0ISOTM028/007...	1	18.0	6	TMC25-4-124/002	20.7-32.7
M30x3.5	5/8"	27	5I3.5ISOTM028/008...	2	24.5	7	TMC25-5-124/004	26.2-35.9
M33x3.5			5I3.5ISOTM028/008...	2	24.5	7	TMC25-5-124/004	26.2-35.9
M36x3.0			5I3.0ISOTM028/009...	2	24.0	8	TMC25-5	32.7-39
M36x4.0			5I4.0ISOTM028/010...	2	24.0	6	TMC25-5	31.6-38.5
M39x3.0			5I3.0ISOTM028/009...	2	24.0	8	TMC25-5	32.7-39
M39x4.0			5I4.0ISOTM028/010...	2	24.0	6	TMC25-5	31.6-38.5
M42x4.5			5I4.5ISOTM028/011...	2	22.5	5	TMC25-5	37.1-48
M45x4.5			5I4.5ISOTM028/011...	2	22.5	5	TMC25-5	37.1-48
M48x5.0			5I5.0ISOTM028/075...	2	20.0	4	TMC25-5	38.9-∞
M52x5.0			5I5.0ISOTM028/075...	2	20.0	4	TMC25-5	38.9-∞

For Toolholder information, see page 286.

ISO Metric (con't)

External / Internal



Defined by: R262 (DIN 13)
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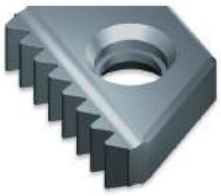
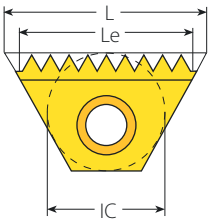
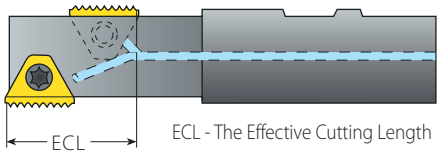




Standard TM

Standard TM Inserts for TMO Toolholders

Insert Size		Pitch	Ordering Code			ECL
IC	L mm	mm	External	Internal	Toolholder	mm
1/4"	11	0.5		2I0.5ISOTM2...	TMOC20-2-8	19.0
		0.75	2E0.75ISOTM2...	2I0.75ISOTM2...	TMOC20-2-9	19.5
		1.0	2E1.0ISOTM2...	2I1.0ISOTM2...	TMOC20-2-8	19.0
		1.25	2E1.25ISOTM2...		TMOC20-2-10	18.7
		1.25		2I1.25ISOTM2...	TMOC20-2-10	16.2
		1.5	2E1.5ISOTM2...		TMOC20-2-8	18.0
		1.5		2I1.5ISOTM2..	TMOC20-2-8	19.5
3/8"	16	0.5		3I0.5ISOTM2....	TMOC20-3-1	28.5
		0.5		3I0.5ISOTM2....	TMOC20-3-10	29.0
		0.75	3E0.75ISOTM2...	3I0.75ISOTM2...	TMOC20-3-11	28.5
		1.0	3E1.0ISOTM2...		TMOC20-3-10	28.0
		1.0		3I1.0ISOTM2...	TMOC20-3-10	29.0
		1.25	3E1.25ISOTM2...	3I1.25ISOTM2...	TMOC20-3-7	28.7
		1.5	3E1.5ISOTM2...	3I1.5ISOTM2...	TMOC20-3-1	28.5
		1.75	3E1.75ISOTM2...	3I1.75ISOTM2...	TMOC20-3-12	26.2
		2.0	3E2.0ISOTM2...	3I2.0ISOTM2...	TMOC20-3-10	28.0
5/8"	27	1.0	5E1.0ISOTM2...	5I1.0ISOTM2...	TMOC25-5-12	46.0
		1.0	5E1.0ISOTM2...	5I1.0ISOTM2...	TMOC25-5-16	47.0
		1.25	5E1.25ISOTM2...	5I1.25ISOTM2...	TMOC25-5-13	48.7
		1.5	5E1.5ISOTM2...	5I1.5ISOTM2...	TMOC25-5-14	48.0
		1.5	5E1.5ISOTM2...	5I1.5ISOTM2...	TMOC25-5-16	46.5
		1.75	5E1.75ISOTM2...	5I1.75ISOTM2...	TMOC25-5-15	47.2
		2.0	5E2.0ISOTM2...	5I2.0ISOTM2...	TMOC25-5-12	44.0
		2.5	5E2.5ISOTM2...	5I2.5ISOTM2...	TMOC25-5-12	45.0
		2.5	5E2.5ISOTM2...	5I2.5ISOTM2...	TMOC25-5-14	47.5
		3.0	5E3.0ISOTM2...	5I3.0ISOTM2...	TMOC25-5-16	45.0
		3.5	5E3.5ISOTM2...	5I3.5ISOTM2...	TMOC25-5-16	45.5
		4.0	5E4.0ISOTM2...	5I4.0ISOTM2...	TMOC25-5-12	44.0
		4.5	5E4.5ISOTM2...	5I4.5ISOTM2...	TMOC25-5-14	45.0
		5.0		5I5.0ISOTM...028/075	TMOC25-5-12	40.0

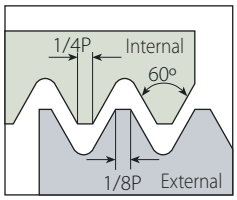


ECL - The Effective Cutting Length

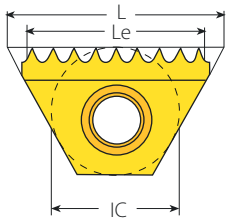
For Le and number of teeth of the above inserts, see the table for standard inserts on pages 258-259.
For Toolholder information, see page 291.

ISO Metric (con't)

External / Internal



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

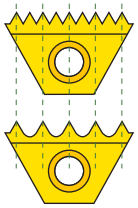


Fine Pitch TM

Fine Pitch TM

Insert Size		Pitch	Ordering Code		Le	Teeth	
IC	L mm	mm	External	Internal	mm		Toolholder
6.0mm	10.4	0.35	6.0E0.35ISOTMF...	6.0I0.35ISOTMF...	9.45	14	TMMC..-6.0
		0.4	6.0E0.4ISOTMF...	6.0I0.4ISOTMF...	9.2	12	
		0.45	6.0E0.45ISOTMF...	6.0I0.45ISOTMF...	9.45	11	
		0.5	6.0E0.5ISOTMF...		9.5	10	
		0.6	6.0E0.6ISOTMF...		9.0	8	
		0.7	6.0E0.7ISOTMF...		9.1	7	
		0.75	6.0E0.75ISOTMF...		8.25	6	
		0.8	6.0E0.8ISOTMF...		8.8	6	
		0.9	6.0E0.9ISOTMF...		8.1	5	
1/4"	11	0.35	2E0.35ISOTM2F...	2I0.35ISOTM2F...	10.15	15	TMC..-2 TMSH..-2
		0.4	2E0.4ISOTM2F...	2I0.4ISOTM2F...	10.0	13	
		0.45	2E0.45ISOTM2F...	2I0.45ISOTM2F...	9.45	11	
		0.5	2E0.5ISOTM2F...		9.5	10	
		0.6	2E0.6ISOTM2F...		10.2	9	
		0.7	2E0.7ISOTM2F...		9.1	7	
		0.8	2E0.8ISOTM2F...		8.8	6	
		0.9	2E0.9ISOTM2F...		9.9	6	
3/8"	16	0.35	3E0.35ISOTM2F...	3I0.35ISOTM2F...	14.35	21	TMC..-3 TMSH..-3
		0.4	3E0.4ISOTM2F...	3I0.4ISOTM2F...	14.8	19	
		0.45	3E0.45ISOTM2F...	3I0.45ISOTM2F...	14.85	17	
		0.5	3E0.5ISOTM2F...		13.5	14	
		0.6	3E0.6ISOTM2F...		13.8	12	
		0.7	3E0.7ISOTM2F...		14.7	11	
		0.8	3E0.8ISOTM2F...		13.6	9	
		0.9	3E0.9ISOTM2F...		13.5	8	

NOTE: Two orbits are required to complete the thread. Fine Pitch TM Inserts produce partial profile thread.
Sample order: **6.0E0.35ISOTMF VBX**
All inserts have 2 cutting edges, except MiniTM (IC 6.0 mm), which has one cutting edge.
For toolholder information, see page 282.



Fine Pitch Threads

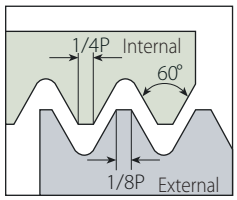
Fine pitch threads are threads with small pitches. It is difficult to produce multitooth inserts for small pitches because of the small radius between the teeth. Vargus developed inserts where every second tooth was dropped to enlarge the radius between the teeth.

Important!

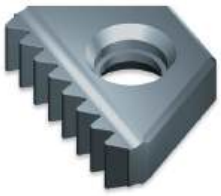
• All the fine pitch inserts are partial profile type (as a result of the enlarged radius).

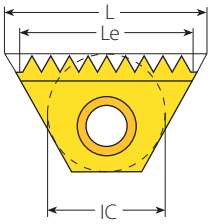
American UN

External / Internal



Defined by: ANSI B1.1.74
Tolerance class: Class 2A/2B





Standard TM

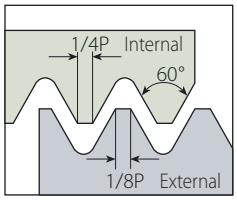
Standard TM

Insert Size		Pitch	Ordering Code		Le	Teeth	
IC	L mm	TPI	External	Internal	mm		Toolholder
6.0mm	10.4	32		6.0I32UNTM...	9.53	12	TMMC..-6.0
		28		6.0I28UNTM...	9.07	10	
		24		6.0I24UNTM...	9.53	9	
		20		6.0I20UNTM...	8.89	7	
		18		6.0I18UNTM...	8.47	6	
		16		6.0I16UNTM...	7.94	5	
1/4"	11	48		2I48UNTM2...	10.05	19	TMC..-2 TMSH..-2
		40		2I40UNTM2...	10.16	16	
		32		2I32UNTM2...	10.32	13	
		28	2E28UNTM2...	2I28UNTM2...	9.98	11	
		27	2E27UNTM2...	2I27UNTM2...	10.35	11	
		24	2E24UNTM2...	2I24UNTM2...	9.53	9	
		20	2E20UNTM2...	2I20UNTM2...	10.16	8	
		18	2E18UNTM2...	2I18UNTM2...	9.88	7	
		16	2E16UNTM2...	2I16UNTM2...	9.53	6	
		14	2E14UNTM2...	2I14UNTM2...	9.07	5	
3/8"	16	40		3I40UNTM2...	14.61	23	TMC..-3 TMSH..-3
		32		3I32UNTM2...	15.08	19	
		28	3E28UNTM2...	3I28UNTM2...	14.51	16	
		27	3E27UNTM2...	3I27UNTM2...	14.11	15	
		26	3E26UNTM2...	3I26UNTM2...	14.65	15	
		24	3E24UNTM2...	3I24UNTM2...	14.82	14	
		20	3E20UNTM2...	3I20UNTM2...	13.97	11	
		18	3E18UNTM2...	3I18UNTM2...	14.11	10	
		16	3E16UNTM2...	3I16UNTM2...	14.29	9	
		14	3E14UNTM2...	3I14UNTM2...	14.51	8	
		13	3E13UNTM2...	3I13UNTM2...	13.68	6	
		12	3E12UNTM2...	3I12UNTM2...	14.82	7	
		11.5	3E11.5UNTM2...	3I11.5UNTM2...	13.25	6	
3/8"B	22	24	3BE24UNTM2...	3BI24UNTM2...	21.16	20	BTMC..-3B TMSH..-3B
		20	3BE20UNTM2...	3BI20UNTM2...	21.59	17	
		18	3BE18UNTM2...	3BI18UNTM2...	21.17	15	
		16	3BE16UNTM2...	3BI16UNTM2...	20.64	13	
		14	3BE14UNTM2...	3BI14UNTM2...	21.77	12	
		13	3BE13UNTM2...	3BI13UNTM2...	21.49	11	
		12	3BE12UNTM2...	3BI12UNTM2...	21.17	10	

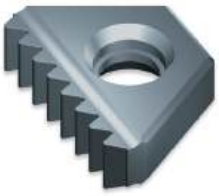
All inserts have 2 cutting edges, except Mini TM (IC 6.0 mm), which has one cutting edge.
For toolholder information, see page 282.

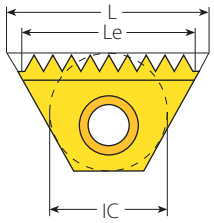
American UN (con't)

External / Internal



Defined by: ANSI B1.1.74
Tolerance class: Class 2A/2B





Standard TM

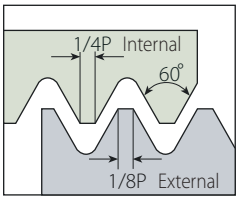
Standard TM

Insert Size		Pitch	Ordering Code		Le	Teeth	
IC	L mm	TPI	External	Internal	mm		Toolholder
5/8"	27	24	5E24UNTM2...	5I24UNTM2...	25.40	24	TMC..-5 TMSH..-5
		20	5E20UNTM2...	5I20UNTM2...	25.40	20	
		18	5E18UNTM2...	5I18UNTM2...	25.40	18	
		16	5E16UNTM2...	5I16UNTM2...	25.40	16	
		14	5E14UNTM2...	5I14UNTM2...	25.40	14	
		13	5E13UNTM2...	5I13UNTM2...	25.40	13	
		12	5E12UNTM2...	5I12UNTM2...	25.40	12	
		11.5	5E11.5UNTM2...	5I11.5UNTM2...	24.30	11	
		11	5E11UNTM2...	5I11UNTM2...	25.40	11	
		10	5E10UNTM2...		22.86	9	
		10		5I10UNTM2...	25.40	10	
		9	5E9UNTM2...	5I9UNTM2...	22.58	8	
		8	5E8UNTM2...	5I8UNTM2...	22.23	7	
		7	5E7UNTM2...		21.77	6	
		7		5I7UNTM2...	25.40	7	
		6	5E6UNTM2...		21.17	5	
		6		5I6UNTM2...	25.40	6	
3/4"B	38.5	6	6BE6UNTM2...	6BI6UNTM2...	33.87	8	TMC..-6B TMSH..-6B
		5	6BE5UNTM2...	6BI5UNTM2...	30.48	6	
		4.5	6BE4.5UNTM2...	6BI4.5UNTM2...	33.87	6	
		4	6BE4UNTM2...	6BI4UNTM2...	31.75	5	

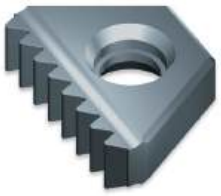
All inserts have 2 cutting edges, except MiniTM (IC 6.0 mm), which has one cutting edge.
For toolholder information, see page 282.

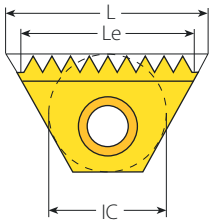
American UN (con't)

Internal



Defined by: ANSI B1.1.74
Tolerance class: Class 2A/2B





Coarse Pitch TM

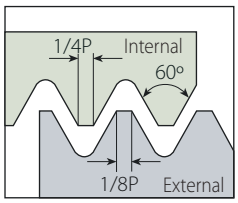
Coarse Pitch TM

Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth		Bore Dia. Range
	IC	L mm	Internal		mm		Toolholder	mm
7/16"-20UNF	6.0mm	10.4	6.0I20UNTM028/012...	1	8.89	7	TMMC12-6.0	9.7-11.4
7/16"-20UNF			6.0I20UNTM028/012...	1	8.89	7	TMMC20-6.0	9.7-11.4
7/16"-16UN			6.0I16UNTM028/014...	1	7.94	5	TMMC12-6.0	9.3-14.1
7/16"-16UN			6.0I16UNTM028/014...	1	7.94	5	TMMC20-6.0	9.3-14.1
7/16"-14UNC			6.0I14UNTM028/013...	1	9.07	5	TMMC20-6.0-124/003	9.1-9.9
1/2"-13UNC	1/4"	11	2I13UNTM028/015...	1	9.77	5	TMC20-2-124/005	10.5-19.5
1/2"-16UN	6.0mm	10.4	6.0I16UNTM028/014...	1	7.94	5	TMMC12-6.0	9.3-14.1
1/2"-16UN			6.0I16UNTM028/014...	1	7.94	5	TMMC20-6.0	9.3-14.1
9/16"-12UNC	1/4"	11	2I12UNTM028/016...	1	8.47	4	TMC20-2-124/005	11.9-15.6
9/16"-18UNF			2I18UNTM028/017...	2	9.88	7	TMC12-2	12.7-14.5
9/16"-18UNF			2I18UNTM028/017...	2	9.88	7	TMC20-2	12.7-14.5
9/16"-16UN	6.0mm	10.4	6.0I16UNTM028/014...	1	7.94	5	TMMC12-6.0	9.3-14.1
9/16"-16UN			6.0I16UNTM028/014...	1	7.94	5	TMMC20-6.0	9.3-14.1
5/8"-11UNC	1/4"	11	2I11UNTM028/018...	1	9.24	4	TMC20-2-124/006	13.3-18.5
5/8"-12UN			2I12UNTM028/016...	1	8.47	4	TMC20-2-124/005	11.9-15.6
5/8"-16UN	6.0mm	10.4	6.0I16UNTM028/014...	1	7.94	5	TMMC12-6.0	9.3-14.1
5/8"-16UN			6.0I16UNTM028/014...	1	7.94	5	TMMC20-6.0	9.3-14.1
11/16"-12UN	1/4"	11	2I12UNTM028/016...	1	8.47	4	TMC20-2-124/005	11.9-15.6
3/4"-10UNC	3/8"	16	3I10UNTM028/019...	1	12.70	5	TMC16-3-124/001	16.3-31.6
3/4"-12UN			3I12UNTM028/020...	2	14.82	7	TMNC16-3	16.7-18.3
13/16"-12UN			3I12UNTM028/020...	2	14.82	7	TMC16-3	18.3-19.5
7/8"-9UNC	1/2"	22	4I9UNTM028/021...	1	16.93	6	TMC25-4-124/002	19.1-32.5

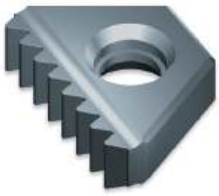
For toolholder information, see page 282.

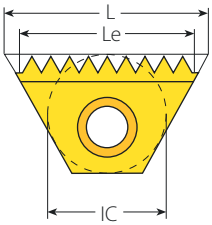
American UN (con't)

Internal



Defined by: ANSI B1.1.74
Tolerance class: Class 2A/2B





Coarse Pitch TM

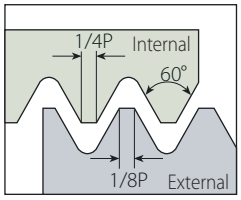
Coarse Pitch TM

Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth		Bore Dia. Range
	IC	L mm	Internal		mm		Toolholder	mm
1"-8UNC	1/2"	22	4I8UNTM028/022...	1	19.05	6	TMC25-4-124/007	21.9-28.3
1 1/16"-8UN			4I8UNTM028/022...	1	19.05	6	TMC25-4-124/007	21.9-28.3
1 1/8"-7UNC			4I7UNTM028/023...	1	18.14	5	TMC25-4-124/002	24.6-35.9
1 1/8"-8UN			4I8UNTM028/022...	1	19.05	6	TMC25-4-124/007	21.9-28.3
1 3/16"-8UN			4I8UNTM028/022...	1	19.05	6	TMC25-4-124/007	21.9-28.3
1 1/4"-7UNC			4I7UNTM028/023...	1	18.14	5	TMC25-4-124/002	24.6-35.9
1 1/4"-8UN	5/8"	27	5I8UNTM028/024...	2	22.23	7	TMC25-5-124/004	28.3-33.0
1 5/16"-8UN			5I8UNTM028/024...	2	22.23	7	TMC25-5-124/004	28.3-33.0
1 3/8"-6UNC			5I6UNTM028/025...	2	25.40	6	TMC25-5-124/004	30.3-36.7
1 3/8"-8UN			5I8UNTM028/024...	2	22.23	7	TMC25-5-124/004	28.3-33.0
1 7/16"-6UN			5I6UNTM028/025...	2	25.40	6	TMC25-5-124/004	30.3-36.7
1 7/16"-8UN			5I8UNTM028/024...	2	22.23	7	TMC25-5	33.0-39.0
1 1/2"-6UNC			5I6UNTM028/025...	2	25.40	6	TMC25-5-124/004	30.3-36.7
1 1/2"-8UN			5I8UNTM028/024...	2	22.23	7	TMC25-5	33.0-39.0
1 9/16" -6UN			5I6UNTM028/025...	2	25.40	6	TMC25-5-124/004	30.3-36.7
1 9/16"-8UN			5I8UNTM028/024...	2	22.23	7	TMC25-5	33.0-39.0
1 5/8"-6UN			5I6UNTM028/025...	2	25.40	6	TMC25-5	36.7-45.0
1 5/8"-8UN			5I8UNTM028/024...	2	22.23	7	TMC25-5	33.0-39.0
1 11/16"-6UN			5I6UNTM028/025...	2	25.40	6	TMC25-5	36.7-45.0
1 3/4"-5UNC			5I5UNTM028/077...	2	20.32	4	TMC25-5	38.9-∞
1 3/4"-6UN			5I6UNTM028/025...	2	25.40	6	TMC25-5	36.7-45.0
1 13/16"-6UN			5I6UNTM028/025...	2	25.40	6	TMC25-5	36.7-45.0
1 7/8"-6UN			5I6UNTM028/025...	2	25.40	6	TMC25-5	36.7-45.0
1 15/16"-6UN			5I6UNTM028/025...	2	25.40	6	TMC25-5	36.7-45.0

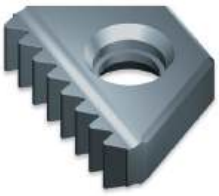
For toolholder information, see page 282.

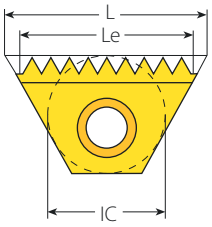
American UN (con't)

External / Internal



Defined by: ANSI B1.1.74
Tolerance class: Class 2A/2B

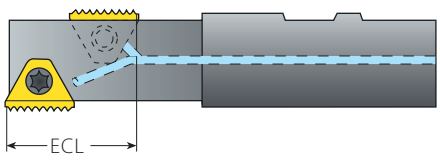




Standard TM

Standard TM Inserts for TMO Toolholders

Insert Size		Pitch	Ordering Code			ECL
IC	L mm	TPI	External	Internal	Toolholder	mm
1/4"	11	48		2I48UNTM2...	TMOC20-2-1	19.58
		48		2I48UNTM2...	TMOC20-2-2	18.52
		48		2I48UNTM2...	TMOC20-2-9	19.05
		32		2I32UNTM2...	TMOC20-2-1	19.85
		28	2E28UNTM2...	2I28UNTM2...	TMOC20-2-3	17.24
		24	2E24UNTM2...	2I24UNTM2...	TMOC20-2-2	17.99
		20	2E20UNTM2...	2I20UNTM2...	TMOC20-2-4	19.05
		18	2E18UNTM2...	2I18UNTM2...	TMOC20-2-2	18.34
		16	2E16UNTM2...	2I16UNTM2...	TMOC20-2-1	19.05
		14	2E14UNTM2...	2I14UNTM2...	TMOC20-2-3	16.33
3/8"	16	32		3I32UNTM2...	TMOC20-3-3	27.78
		32		3I32UNTM2...	TMOC20-3-11	28.58
		28	3E28UNTM2...	3I28UNTM2...	TMOC20-3-3	27.21
		27	3E27UNTM2...	3I27UNTM2...	TMOC20-3-4	27.28
		24	3E24UNTM2...	3I24UNTM2...	TMOC20-3-6	27.52
		20	3E20UNTM2...	3I20UNTM2...	TMOC20-3-6	26.67
		18	3E18UNTM2...	3I18UNTM2...	TMOC20-3-6	26.82
		16	3E16UNTM2...	3I16UNTM2...	TMOC20-3-6	26.99
		14	3E14UNTM2...	3I14UNTM2...	TMOC20-3-6	27.21
		13	3E13UNTM2...	3I13UNTM2...	TMOC20-3-2	25.4
		12	3E12UNTM2...	3I12UNTM2...	TMOC20-3-6	27.52
		11.5	3E11.5UNTM2...	3I11.5UNTM2...	TMOC20-3-5	24.3

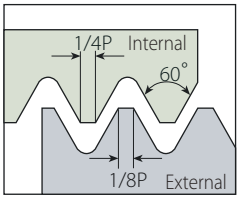


ECL - The Effective Cutting Length

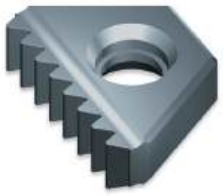
For Le and number of teeth of the above inserts, see the table for standard inserts on pages 263-264.
For toolholder information, see page 291.

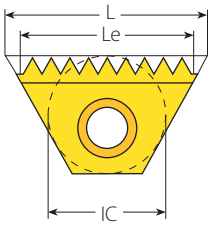
American UN (con't)

External / Internal



Defined by: ANSI B1.1.74
Tolerance class: Class 2A/2B

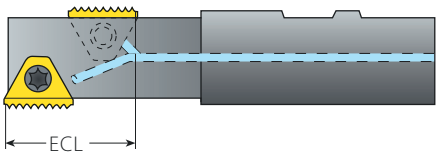




Standard TM

Standard TM Inserts for TMO Toolholders

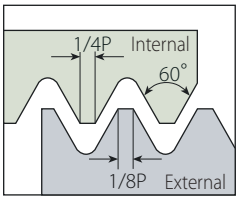
Insert Size		Pitch	Ordering Code			ECL
IC	L mm	TPI	External	Internal	Toolholder	mm
		24	5E24UNTM2..	5I24UNTM2..	TMOC25-5-1	50.80
		24	5E24UNTM2...	5I24UNTM2...	TMOC25-5-2	46.57
		20	5E20UNTM2...	5I20UNTM2...	TMOC25-5-1	50.80
		18	5E18UNTM2...	5I18UNTM2...	TMOC25-5-1	50.80
		18	5E18UNTM2...	5I18UNTM2...	TMOC25-5-2	46.57
		16	5E16UNTM2...	5I16UNTM2...	TMOC25-5-3	47.63
		14	5E14UNTM2...	5I14UNTM2...	TMOC25-5-1	50.80
		14	5E14UNTM2...	5I14UNTM2...	TMOC25-5-4	47.17
		13	5E13UNTM2...	5I13UNTM2...	TMOC25-5-1	50.80
		12	5E12UNTM2...	5I12UNTM2...	TMOC25-5-2	46.57
		12	5E12UNTM2...		TMOC25-5-1	50.80
5/8"	27	11.5	5E11.5UNTM2...	5I11.5UNTM2...	TMOC25-5-5	46.38
		11	5E11UNTM2...	5I11UNTM2...	TMOC25-5-6	48.49
		11		5I11UNTM2...	TMOC25-5-1	46.18
		10	5E10UNTM2...		TMOC25-5-7	43.18
		10		5I10UNTM2...	TMOC25-5-7	45.72
		9	5E9UNTM2...	5I9UNTM2...	TMOC25-5-8	45.16
		8	5E8UNTM2...	5I8UNTM2...	TMOC25-5-9	44.45
		7	5E7UNTM2...		TMOC25-5-10	43.54
		7		5I7UNTM2...	TMOC25-5-10	47.17
		6	5E6UNTM2...		TMOC25-5-2	42.33
		6		5I6UNTM2...	TMOC25-5-2	46.57
		5		5I5UNTM...028/077	TMOC25-5-7	40.64



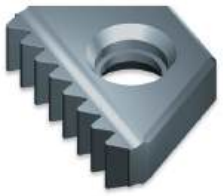
ECL - The Effective Cutting Length

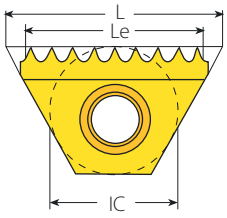
For Le and number of teeth of the above inserts, see the table for standard inserts on pages 263-264.
For toolholder information, see page 291.

External / Internal



Defined by: ANSI B1.1.74
Tolerance class: Class 2A/2B



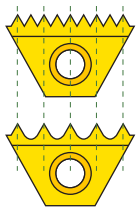


Fine Pitch TM

Fine Pitch TM

Insert Size		Pitch	Ordering Code		Le	Teeth	
IC	L mm	TPI	External	Internal	mm		Toolholder
6.0mm	10.4	80	6.0E80UNTMF...	6.0I80UNTMF...	9.84	16	TMMC..-6.0
		72	6.0E72UNTMF...	6.0I72UNTMF...	9.53	14	
		64	6.0E64UNTMF...	6.0I64UNTMF...	9.13	12	
		56	6.0E56UNTMF...	6.0I56UNTMF...	9.53	11	
		48	6.0E48UNTMF...		9.00	9	
		44	6.0E44UNTMF...		8.66	8	
		40	6.0E40UNTMF...		8.26	7	
		36	6.0E36UNTMF...		9.17	7	
		32	6.0E32UNTMF...		8.73	6	
1/4"	11	80	2E80UNTM2F...	2I80UNTM2F...	9.84	16	TMC..-2 TMSH..-2
		72	2E72UNTM2F...	2I72UNTM2F...	10.23	15	
		64	2E64UNTM2F...	2I64UNTM2F...	9.92	13	
		56	2E56UNTM2F...	2I56UNTM2F...	9.53	11	
		48	2E48UNTM2F...		10.05	10	
		44	2E44UNTM2F...		9.81	9	
		40	2E40UNTM2F...		9.53	8	
		36	2E36UNTM2F...		9.17	7	
		32	2E32UNTM2F...		8.73	6	
3/8"	16	80	3E80UNTM2F...	3I80UNTM2F...	14.29	23	TMC..-3 TMSH..-3
		72	3E72UNTM2F...	3I72UNTM2F...	14.46	21	
		64	3E64UNTM2F...	3I64UNTM2F...	14.68	19	
		56	3E56UNTM2F...	3I56UNTM2F...	14.06	16	
		48	3E48UNTM2F...		14.29	14	
		44	3E44UNTM2F...		14.43	13	
		40	3E40UNTM2F...		14.61	12	
		36	3E36UNTM2F...		14.82	11	
		32	3E32UNTM2F...		13.49	9	

NOTE: Two orbits are required to complete the thread. Fine Pitch TM Inserts produce partial profile thread.
Sample order: **6.0E80UNTMF VBX**
All inserts have 2 cutting edges, except MiniTM (IC 6.0 mm), which has one cutting edge.
For toolholder information, see page 282.



Fine Pitch Threads

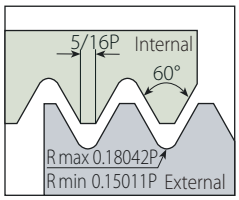
Fine pitch threads are threads with small pitches. It is difficult to produce multitooth inserts for small pitches because of the small radius between the teeth. Vargus developed inserts where every second tooth was dropped to enlarge the radius between the teeth.

Important!

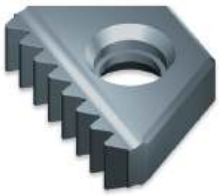
• All the fine pitch inserts are partial profile type (as a result of the enlarged radius).

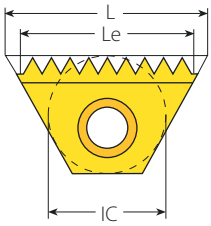
UNJ

External / Internal



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





Standard TM

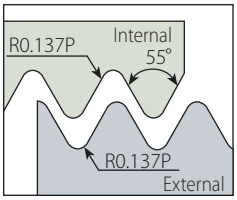
Standard TM

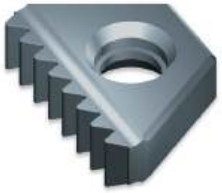
Insert Size		Pitch	Ordering Code		Le	Teeth	
IC	L mm	TPI	External	Internal	mm		Toolholder
6.0mm	10.4	24		6.0I24UNJTM...	9.53	9	TMMC..-6.0
		20		6.0I20UNJTM...	8.89	7	
		18		6.0I18UNJTM...	8.47	6	
		16		6.0I16UNJTM...	9.53	6	
1/4"	11	24	2E24UNJTM2...	2I24UNJTM2...	9.53	9	TMC..-2 TMSH..-2
		20	2E20UNJTM2...	2I20UNJTM2...	10.16	8	
		18		2I18UNJTM2...	9.88	7	
		16	2E16UNJTM2...	2I16UNJTM2...	9.53	6	
		14	2E14UNJTM2...	2I14UNJTM2...	9.07	5	
3/8"	16	24	3E24UNJTM2...	3I24UNJTM2...	14.82	14	TMC..-3 TMSH..-3
		20	3E20UNJTM2...	3I20UNJTM2...	13.97	11	
		18	3E18UNJTM2...	3I18UNJTM2...	14.11	10	
		16	3E16UNJTM2...	3I16UNJTM2...	14.29	9	
		14	3E14UNJTM2...	3I14UNJTM2...	14.51	8	
		13	3E13UNJTM2...		13.68	7	
		12	3E12UNJTM2...	3I12UNJTM2...	14.82	7	
5/8"	27	16	5E16UNJTM2...	5I16UNJTM2...	25.40	16	TMC..-5 TMSH..-5
		12	5E12UNJTM2...	5I12UNJTM2...	25.40	12	
		11	5E11UNJTM2...	5I11UNJTM2...	25.40	11	

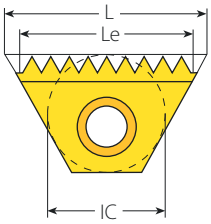
All inserts have 2 cutting edges, except MiniTM (IC 6.0 mm), which has one cutting edge.
For toolholder information, see page 282.

Whitworth for BSW, BSP

External / Internal







Standard TM

BSW Defined by: B.S.84:1956, DIN 259, ISO228/1:1982
BSP Defined by: B.S.2779:1956
Tolerance class: BSW-Medium class A, BSP-Medium class

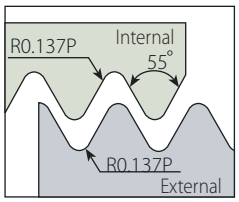
Standard TM

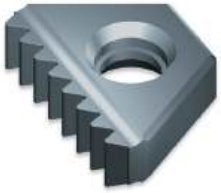
Insert Size		Pitch	Ordering Code	Le	Teeth	
IC	L mm	TPI	External + Internal	mm		Toolholder
6.0mm	10.4	28	6.0EI28WTM...	9.07	10	TMMC..-6.0
		26	6.0EI26WTM...	8.79	9	
		24	6.0EI24WTM...	9.53	9	
		20	6.0EI20WTM...	8.89	7	
		19	6.0EI19WTM...	9.36	7	
1/4"	11	28	2EI28WTM2...	9.98	11	TMC..-2 TMSH..-2
		26	2EI26WTM2...	9.77	10	
		24	2EI24WTM2...	9.53	9	
		20	2EI20WTM2...	10.16	8	
		19	2EI19WTM2...	9.36	7	
		14	2EI14WTM2...	9.07	5	
3/8"	16	26	3EI26WTM2...	14.65	15	TMC..-3 TMSH..-3
		24	3EI24WTM2...	14.82	14	
		20	3EI20WTM2...	13.97	11	
		19	3EI19WTM2...	14.71	11	
		18	3EI18WTM2...	14.11	10	
		16	3EI16WTM2...	14.29	9	
		14	3EI14WTM2...	14.51	8	
		12	3EI12WTM2...	14.82	7	
		11	3EI11WTM2...	13.85	6	
3/8"B	22	24	3BEI24WTM2...	21.17	20	TMC..-3B TMSH..-3B
		20	3BEI20WTM2...	21.59	17	
		19	3BEI19WTM2...	21.39	16	
		18	3BEI18WTM2...	21.17	15	
		16	3BEI16WTM2...	20.64	13	
		14	3BEI14WTM2...	21.77	12	
		12	3BEI12WTM2...	21.17	10	
		11	3BEI11WTM2...	20.78	9	
5/8"	27	16	5EI16WTM2...	25.40	16	TMC..-5 TMSH..-5
		14	5EI14WTM2...	25.40	14	
		12	5EI12WTM2...	23.28	11	
		11	5EI11WTM2...	23.09	10	
		10	5EI10WTM2...	25.40	10	
		9	5EI9WTM2...	22.58	8	
		8	5EI8WTM2...	22.23	7	
		7	5EI7WTM2...	21.77	6	
		6	5EI6WTM2...	21.17	5	
3/4"B	38.5	11	6BEI11WTM2...	34.64	15	TMC..-6B TMSH..-6B
		6	6BEI6WTM2...	33.87	8	
		5	6BEI5WTM2...	30.48	6	
		4.5	6BEI4.5WTM2...	33.87	6	

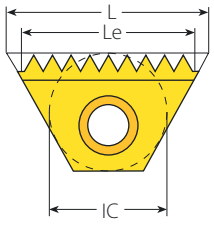
All inserts have 2 cutting edges, except MiniTM (IC 6.0 mm) which has one cutting edge.
For toolholder information, see page 282.

Whitworth for BSW only (con't)

Internal







Coarse Pitch TM

Defined by: B.S.84:1956, DIN259, ISO228/1:1982
Tolerance class: Medium class A

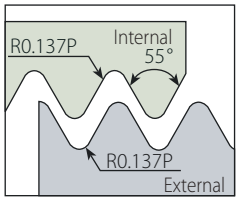
Coarse Pitch TM

Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth		Bore Dia. Range
Inch	IC	L mm	Internal		mm		Toolholder	mm
7/16"-18	6.0mm	10.4	6.0I18WTM028/035...	1	8.47	6	TMMC12-6.0	9.3-14.2
7/16"-18			6.0I18WTM028/035...	1	8.47	6	TMMC20-6.0	9.3-14.2
7/16"-26			6.0I26WTM028/036...	1	8.79	9	TMMC12-6.0	9.8-10.5
7/16"-26			6.0I26WTM028/036...	1	8.79	9	TMMC20-6.0	9.8-10.5
1/2"-16	1/4"	11	2I16WTM028/051...	1	9.53	6	TMC20-2-124/005	10.6-12.2
1/2"-20	6.0mm	10.4	6.0I20WTM028/037...	1	8.89	7	TMMC12-6.0	11.0-11.4
1/2"-20			6.0I20WTM028/037...	1	8.89	7	TMMC20-6.0	11.0-11.4
9/16"-16	1/4"	11	2I16WTM028/038...	2	9.53	6	TMC12-2	12.2-18.5
9/16"-16			2I16WTM028/038...	2	9.53	6	TMC20-2	12.2-18.5
5/8"-14			2I14WTM028/039...	1	9.07	5	TMC20-2-124/006	13.5-19.0
11/16"-14			2I14WTM028/039...	1	9.07	5	TMC20-2-124/006	13.5-19.0
11/16"-16			2I16WTM028/038...	2	9.53	6	TMC12-2	12.2-18.5
11/16"-16			2I16WTM028/038...	2	9.53	6	TMC20-2	12.2-18.5
3/4"-12	3/8"	16	3I12WTM028/040...	1	14.82	7	TMC16-3-124/001	16.3-17.9
3/4"-16	1/4"	11	2I16WTM028/038...	2	9.53	6	TMC12-2	12.2-18.5
3/4"-16			2I16WTM028/038...	2	9.53	6	TMC20-2	12.2-18.5
13/16"-12	3/8"	16	3I12WTM028/041...	2	14.82	7	TMC16-3	17.9-21.0
7/8"-9	1/2"	22	4I9WTM028/042...	1	16.93	6	TMC25-4-124/002	18.6-32.5
7/8"-11			4I11WTM028/043...	1	18.47	8	TMC25-4-124/002	19.2-22.0
15/16"-12	3/8"	16	3I12WTM028/041...	2	14.82	7	TMC20-3	21.0-30.6
1"-8	1/2"	22	4I8WTM028/044...	1	15.88	5	TMC25-4-124/002	21.3-26.0
1"-10			4I10WTM028/045...	1	17.78	7	TMC25-4-124/002	22.1-31.6
1"-12	3/8"	16	3I12WTM028/041...	2	14.82	7	TMC20-3	21.0-30.6
1 1/16"-12			3I12WTM028/041...	2	14.82	7	TMC20-3	21.0-30.6
1 1/8"-7	5/8"	27	5I7WTM028/046...	1	21.77	6	TMC25-5-124/008	23.9-27.1
1 1/8"-9	1/2"	22	4I9WTM028/042...	1	16.93	6	TMC25-4-124/002	18.6-32.5
1 1/8"-12	3/8"	16	3I12WTM028/041...	2	14.82	7	TMC20-3	21.0-30.6
1 3/16"-8	5/8"	27	5I8WTM028/047...	2	22.23	7	TMC25-5-124/004	26.0-32.4
1 3/16"-12	3/8"	16	3I12WTM028/041...	2	14.82	7	TMC20-3	21.0-30.6
1 1/4"-7	5/8"	27	5I7WTM028/048...	2	21.77	6	TMC25-5-124/004	21.7-35.9
1 1/4"-9	1/2"	22	4I9WTM028/042...	1	16.93	6	TMC25-4-124/002	18.6-32.5
1 1/4"-12	3/8"	16	3I12WTM028/041...	2	14.82	7	TMC20-3	21.0-30.6
1 5/16"-6	5/8"	27	5I6WTM028/049...	2	21.17	5	TMC25-5-124/004	27.9-32.6
1 5/16"-8			5I8WTM028/047...	2	22.23	7	TMC25-5-124/004	26.0-32.4

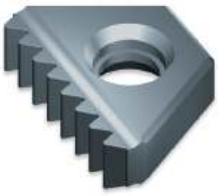
For toolholder information, see page 282.

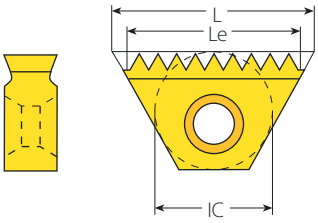
Whitworth for BSW only (con't)

Internal



Defined by: B.S.84:1956, DIN259, ISO228/1:1982
Tolerance class: Medium class A





Coarse Pitch TM Inserts

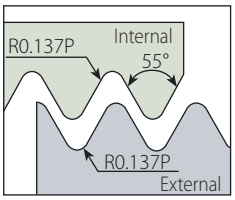
Coarse Pitch TM

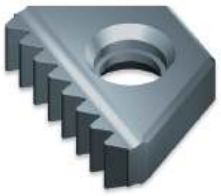
Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth		Bore Dia. Range
	IC	L mm	Internal		mm		Toolholder	mm
1 5/16"-12	3/8"	16	3I12WTM028/041...	2	14.82	7	TMC20-3	21.0-30.6
1 3/8"-8			5I8WTM028/047...	2	22.23	7	TMC25-5-124/004	26.0-32.4
1 3/8"-6			5I6WTM028/049...	2	21.17	5	TMC25-5-124/004	27.9-32.6
1 3/8"-12			5I12WTM028/050...	2	23.28	11	TMC25-5	32.2-34.6
1.4-6			5I6WTM028/049...	2	21.17	5	TMC25-5-124/004	27.9-32.6
1.4-8			5I8WTM028/047...	2	22.23	7	TMC25-5-124/004	26.0-32.4
1.4-12			5I12WTM028/050...	2	23.28	11	TMC25-5	32.2-34.6
1 7/16"-6			5I6WTM028/049...	2	21.17	5	TMC25-5-124/004	27.9-32.6
1 7/16"-8			5I8WTM028/047...	2	22.23	7	TMC25-5	32.4-39.0
1 7/16"-12	5/8"	27	5I12WTM028/050...	2	23.28	11	TMC25-5	32.2-34.6
1 1/2"-6			5I6WTM028/049...	2	21.17	5	TMC25-5-124/004	27.9-32.7
1 1/2" -8			5I8WTM028/047...	2	22.23	7	TMC25-5	32.4-39.0
1.6-6			5I6WTM028/049...	2	21.17	5	TMC25-5	32.6-38.5
1.6-8			5I8WTM028/047...	2	22.23	7	TMC25-5	32.4-39.0
1 5/8"-8			5I8WTM028/047...	2	22.23	7	TMC25-5	32.4-39.0
1 5/8"-6			5I6WTM028/049...	2	21.17	5	TMC25-5	32.6-38.5
1 3/4"-7			5I7WTM028/048...	2	21.77	6	TMC25-5	39.8-42.0
1 7/8"-6			5I6WTM028/049...	2	21.17	5	TMC32-5	42.2-45.0
1.9-6			5I6WTM028/049...	2	21.17	5	TMC32-5	42.2-45.0

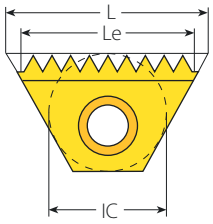
For toolholder information, see page 282.

Whitworth for BSW only (con't)

External / Internal





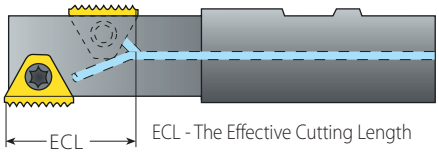


Standard TM

Defined by: B.S.84:1956, DIN259, ISO228/1:1982
Tolerance class: Medium class A

Standard TM Inserts for TMO Toolholders

Insert Size		Pitch	Ordering Code		ECL
IC	L mm	TPI	External + Internal	Toolholder	mm
1/4"	11	28	2EI28WTM2...	TMOC20-2-3	17.24
		26	2EI26WTM2...	TMOC20-2-5	18.56
		24	2EI24WTM2...	TMOC20-2-2	17.99
		20	2EI20WTM2...	TMOC20-2-6	19.05
		19	2EI19WTM2...	TMOC20-2-7	17.38
		14	2EI14WTM2...	TMOC20-2-3	16.33
3/8"	16	26	3EI26WTM2...	TMOC20-3-2	27.35
		26	3EI26WTM2...	TMOC20-3-6	26.38
		24	3EI24WTM2...	TMOC20-3-7	28.57
		20	3EI20WTM2...	TMOC20-3-6	26.67
		19	3EI19WTM2...	TMOC20-3-8	28.07
		18	3EI18WTM2...	TMOC20-3-6	26.81
		16	3EI16WTM2...	TMOC20-3-6	26.99
		14	3EI14WTM2...	TMOC20-3-6	27.21
		12	3EI12WTM2...	TMOC20-3-6	27.52
		11	3EI11WTM2...	TMOC20-3-9	27.71
5/8"	27	16	5EI16WTM2...	TMOC25-5-3	47.63
		14	5EI14WTM2...	TMOC25-5-1	50.80
		14	5EI14WTM2...	TMOC25-5-4	47.17
		12	5EI12WTM2...	TMOC25-5-2	44.45
		11	5EI11WTM2...	TMOC25-5-6	46.18
		10	5EI10WTM2...	TMOC25-5-7	45.72
		9	5EI9WTM2...	TMOC25-5-8	45.16
		8	5EI8WTM2...	TMOC25-5-9	44.45
		7	5EI7WTM2...	TMOC25-5-4	43.54
		6	5EI6WTM2...	TMOC25-5-11	42.33

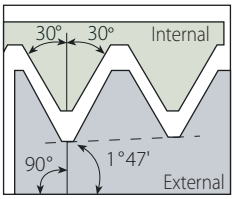


ECL - The Effective Cutting Length

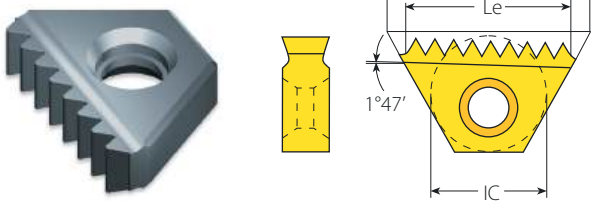
For Le and number of teeth of the above inserts, see the table for standard inserts on page 271.
For toolholder information see page 291.

NPT

External / Internal



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



Standard TM

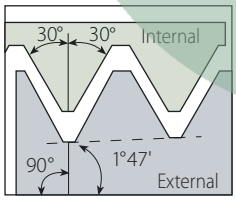
Standard TM

Insert Size		Pitch	Ordering Code	Le	Teeth	Toolholder	
IC	L mm	TPI	External + Internal	mm		RH	LH
3/8"	16	18	3E18NPT-TM2...*	14.11	10	TMNC..-3	TMNC..-3LH
		14	3EI14NPT-TM2...	14.51	8		
		11.5	3EI11.5NPT-TM2...	13.25	6		
3/8"B	22	14	3BEI14NPT-TM2...	21.77	12	BTMNC..-3B	BTMNC..-3BLH
		11.5	3BEI11.5NPT-TM2...**	19.88	9		
5/8"	27	11.5	5EI11.5NPT-TM2...	24.30	11	TM.C..-5	TM.C..-5LH
		8	5EI8NPT-TM2...	22.23	7	TMNC..-5	TMNC..-5LH
3/4"B	38.5	11.5	6BEI11.5NPT-TM2...	35.34	16	TMC..-6B	TMC..-6BLH
		8	6BEI8NPT-TM2...	31.75	10		

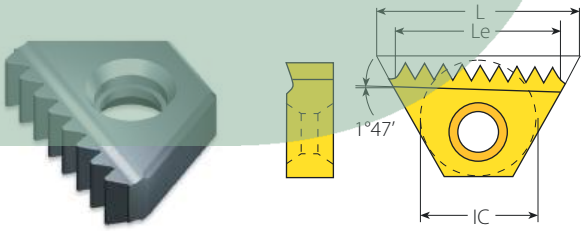
* For external thread only.
To thread with insert cutting edge marked "L", use LH toolholders.
For toolholder information, see page 286.
** Single sided insert - RH only.

NPT

Internal



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



Coarse Pitch TM

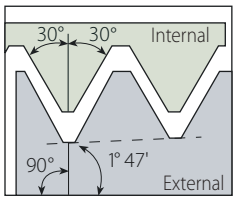
Coarse Pitch TM

Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth	
Inch	IC	L mm	Internal		mm		Toolholder
1/4"-18	1/4"	11	2I18NPT-TM028/074...	1	9.88	7	TMC20-2-124/009
3/8"-18			2I18NPT-TM028/074...	1	9.88	7	TMC20-2-124/009

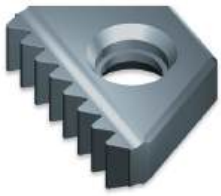
For toolholder information, see page 286.

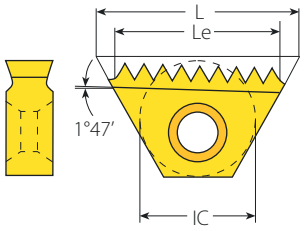
NPTF (Dry Seal)

External / Internal



Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF





Standard TM

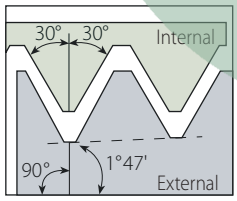
Standard TM

Insert Size		Pitch	Ordering Code	Le	Teeth	Toolholder	
IC	L mm	TPI	External + Internal	mm		RH	LH
3/8"	16	14	3EI14NPTFTM2...	14.51	8	TMNC..-3	TMNC..-3LH
		11.5	3EI11.5NPTFTM2...	13.25	6		
3/8"B	22	14	3BEI14NPTFTM2...	21.77	12	BTMNC..-3B	BTMNC..-3BLH
		11.5	3BEI11.5NPTFTM2...	19.88	9		
5/8"	27	11.5	5EI11.5NPTFTM2...	24.30	11	TM.C..-5	TM.C..-5LH
		8	5EI8NPTFTM2...	22.23	7	TMNC..-5	TMNC..-5LH
3/4"B	38.5	11.5	6BEI11.5NPTFTM2...	35.34	16	TMC..-6B	TMC..-6BLH
		8	6BEI8NPTFTM2...	31.75	10		

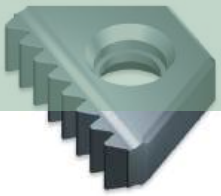
To thread with insert cutting edge marked "L", use LH toolholders.
For toolholder information, see page 286.

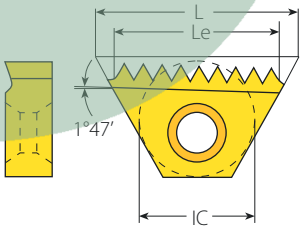
NPTF (Dry Seal)

Internal



Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF





Coarse Pitch TM

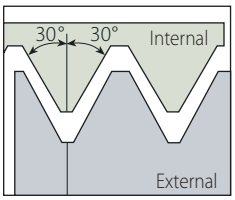
Coarse Pitch TM

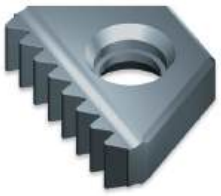
Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth	
Inch	IC	L mm	Internal		mm		Toolholder
1/4"-18	1/4"	11	2I18NPTFTM028/078...	1	9.88	7	TMC20-2-124/009
3/8"-18			2I18NPTFTM028/078...	1	9.88	7	TMC20-2-124/009

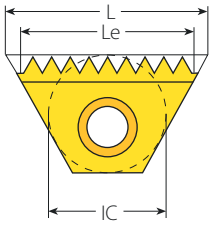
For toolholder information, see page 286.

NPS

External / Internal







Standard TM

Defined by: USA NBS H28 (1957)
Tolerance class: Standard NPS

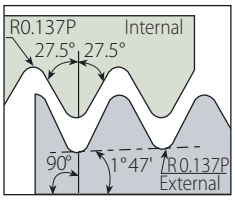
Standard TM

Insert Size		Pitch	Ordering Code	Le	Teeth	Nominal Thread Size	
IC	L mm	TPI	External + Internal	mm			Toolholder
3/8″	16	14	3EI14NPSTM2...	14.51	8	1/2″	TMNC16-3
		14	3EI14NPSTM2...	14.51	8	3/4″	TMNC20-3
		11.5	3EI11.5NPSTM2...	13.25	6	1″, 1 1/4″	TMNC20-3
3/8″B	22	11.5	3BEI11.5NPSTM2...*	19.88	9	1″, 1 1/4″	BTMNC20-3B
5/8″	27	11.5	5EI11.5NPSTM2...	24.30	11	1 1/2″, 2″	TMC25-5
		8	5EI8NPSTM2...	22.23	7	2 1/2″ & larger	TMC32-5

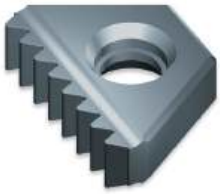
* One cutting edge.
All inserts have 2 cutting edges.
For toolholder information, see page 282.

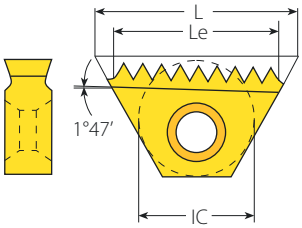
BSPT

External / Internal



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





Standard TM

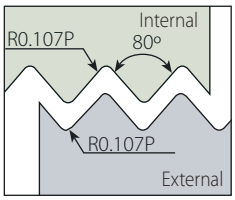
Standard TM

Insert Size		Pitch	Ordering Code	Le	Teeth	Toolholder	
IC	L mm	TPI	External + Internal	mm		RH	LH
1/4"	11	19	2EI19BSPT-TM2...	9.36	7	TMC..-2	TMC..-2LH
3/8"	16	14	3EI14BSPT-TM2...	14.51	8	TMNC..-3	TMNC..-3LH
		11	3EI11BSPT-TM2...	13.85	6		
5/8"	27	11	5EI11BSPT-TM2...	23.09	10	TMC..-5	TMC..-5LH

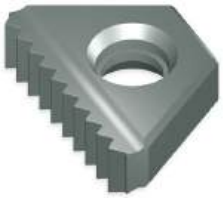
To thread with insert cutting edge marked "L", use a LH toolholder.
For toolholder information, see page 282.

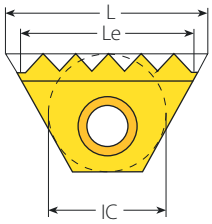
Pg

External / Internal



Defined by: DIN 40430
Tolerance class: Standard





Standard TM

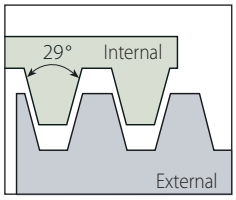
Standard TM

Insert Size		Pitch	Ordering Code	Le	Teeth	Nominal Thread Size	
IC	L mm	TPI	External + Internal	mm			Toolholder
6.0mm	10.4	20	6.0EI20PGTM...	8.99	7	Pg7	TMMC..-6.0
1/4"	11	20	2EI20PGTM2...	10.16	8	Pg7	TMC..-2 TMSH..-2
		18	2EI18PGTM2...	9.88	7	Pg9, Pg11, Pg13.5, Pg16	
		16	2EI16PGTM2...	9.53	6	Pg21, Pg29, Pg36, Pg42, Pg48	
3/8"	16	20	3EI20PGTM2...	13.97	11	Pg7	TMC..-3 TMSH..-3
		18	3EI18PGTM2...	14.11	10	Pg9, Pg11, Pg13.5, Pg16	
		16	3EI16PGTM2...	14.29	9	Pg21, Pg29, Pg36, Pg42, Pg48	
5/8"	27	16	5EI16PGTM2...	25.40	16	Pg21, Pg29, Pg36, Pg42, Pg48	TMC..-5, TMSH..-5

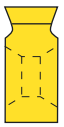
All inserts have 2 cutting edges, except MiniTM (IC 6.0 mm) which has one edge.
For toolholder information, see page 282.

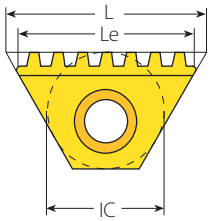
ACME

Internal



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





Coarse Pitch TM

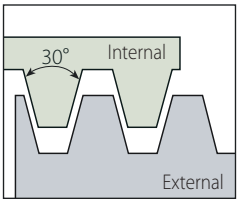
Coarse Pitch TM

Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth		Bore Dia. Range
Inch	IC	L mm	Internal		mm		Toolholder	mm
1/2"-16	6.0mm	10.4	6.0I16ACMETM028/052...	1	7.94	5	TMMC12-6.0	11.1
1/2"-16			6.0I16ACMETM028/052...	1	7.94	5	TMMC20-6.0	11.1
5/8"-16	1/4"	11	2I16ACMETM028/053...	2	9.53	6	TMC12-2	14.2
5/8"-16			2I16ACMETM028/053...	2	9.53	6	TMC20-2	14.2
5/8"-14			2I14ACMETM028/054...	1	9.07	5	TMC20-2-124/005	14.0
3/4"-16			2I16ACMETM028/055...	2	9.53	6	TMC12-2	17.4
3/4"-16			2I16ACMETM028/055...	2	9.53	6	TMC20-2	17.4
3/4"-14			2I14ACMETM028/083...	1	9.07	5	TMC20-2-124/006	17.2
3/4"-12			2I12ACMETM028/056...	1	8.47	4	TMC20-2-124/006	16.9
7/8"-14	3/8"	16	3I14ACMETM028/057...	2	14.51	8	TMNC16-3	20.4
7/8"-12	1/4"	11	2I12ACMETM028/058...	1	8.47	4	TMC20-2-124/006	20.1
1"-14	3/8"	16	3I14ACMETM028/059...	2	14.51	8	TMC16-3	23.5
1"-12			3I12ACMETM028/060...	2	14.82	7	TMNC16-3	23.2
1"-10	1/2"	22	4I10ACMETM028/061...	1	17.78	7	TMC25-4-124/002	22.8
1"-8			4I8ACMETM028/062...	1	19.05	6	TMC25-4-124/002	22.2
1 1/8"-12	3/8"	16	3I12ACMETM028/060...	2	14.82	7	TMC16-3	26.4
1 1/8"-10	1/2"	22	4I10ACMETM028/084...	1	17.78	7	TMC25-4-124/007	26.0
1 1/8"-8			4I8ACMETM028/063...	1	19.05	6	TMC25-4-124/002	25.4-28.5
1 1/4"-12	3/8"	16	3I12ACMETM028/060...	2	14.82	7	TMC20-3	29.6
1 1/4"-10	5/8"	27	5I10ACMETM.028/064...	2	22.86	9	TMC25-5-124/004	29.2
1 1/4"-8	1/2"	22	4I8ACMETM028/063...	1	19.05	6	TMC25-4-124/002	25.4-28.5
1 3/8"-10	5/8"	27	5I10ACMETM028/065...	2	22.86	9	TMC25-5-124/004	32.3
1 3/8"-8			5I8ACMETM028/066...	2	22.23	7	TMC25-5-124/004	31.7
1 3/8"-6			5I6ACMETM028/067...	1	21.17	5	TMC25-5-124/008	30.6
1 1/2"-10			5I10ACMETM028/068...	2	22.86	9	TMC25-5	35.5
1 1/2"-8			5I8ACMETM028/069...	2	22.23	7	TMC25-5-124/004	34.9
1 1/2"-6			5I6ACMETM028/070...	2	21.17	5	TMC25-5-124/004	33.8
1 3/4"-10			5I10ACMETM028/064...	2	22.86	9	TMC32-5	41.9
1 3/4"-8			5I8ACMETM028/069...	2	22.23	7	TMC25-5	41.2
1 3/4"-6			5I6ACMETM028/070...	2	21.17	5	TMC25-5	40.2
1 3/4"-5			5I5ACMETM028/071...	2	20.32	4	TMC25-5-124/004	39.3
2"-8			5I8ACMETM028/069...	2	22.23	7	TMC32-5	47.6
2"-6			5I6ACMETM028/072...	2	21.17	5	TMC25-5	46.5
2"-5			5I5ACMETM028/071...	2	20.32	4	TMC25-5	45.7
2 1/4"-6			5I6ACMETM028/072...	2	21.17	5	TMC32-5	52.9
2 1/4"-5			5I5ACMETM028/073...	2	20.32	4	TMC25-5	52.0
2 1/2"-5			5I5ACMETM028/073...	2	20.32	4	TMC32-5	58.4

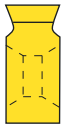
For toolholder information, see page 282.

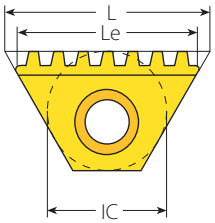
Trapez

Internal



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





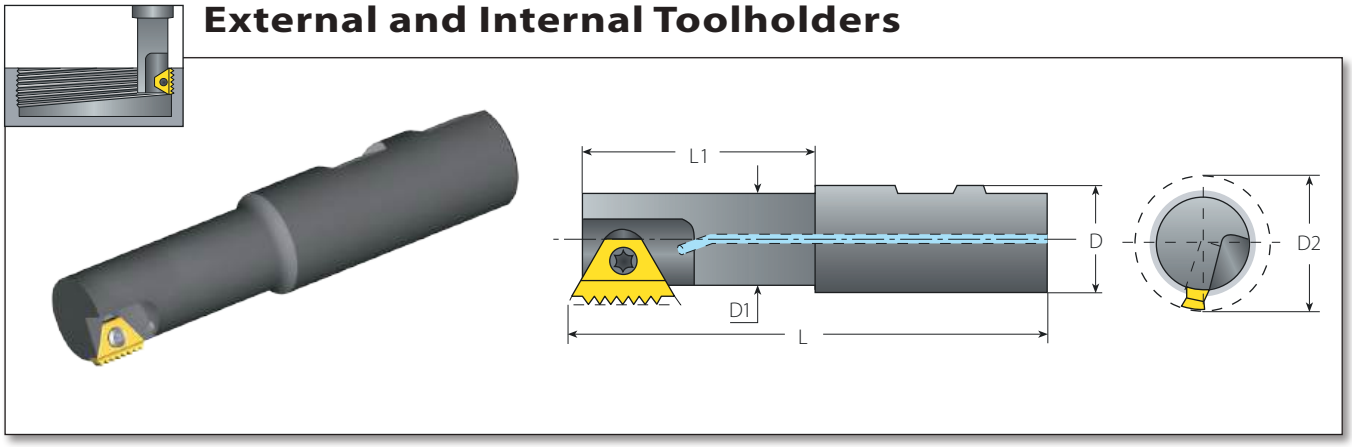
Coarse Pitch TM

Coarse Pitch TM

Thread	Insert Size		Ordering Code	Cutting Edge	Le	Teeth		Bore Dia. Range
mm	IC	L mm	Internal		mm		Toolholder	mm
TR16x2.0			2I2.0TRTM028/028...	1	10	5	TMC20-2-124/006	14.0
TR18x2.0	1/4"	11	2I2.0TRTM028/029...	1	10	5	TMC20-2-124/006	16.0-18.0
TR20x2.0			2I2.0TRTM028/029...	1	10	5	TMC20-2-124/006	16.0-18.0
TR24x3.0			4I3.0TRTM028/030...	1	18	6	TMC25-4-124/002	21.0
TR26x3.0			4I3.0TRTM028/031...	1	18	6	TMC25-4-124/002	23.0-27.0
TR28x3.0			4I3.0TRTM028/031...	1	18	6	TMC25-4-124/002	23.0-27.0
TR30x3.0	1/2"	22	4I3.0TRTM028/031...	1	18	6	TMC25-4-124/002	23.0-27.0
TR32x3.0			4I3.0TRTM028/032...	1	18	6	TMC25-4-124/007	29.0-33.0
TR34x3.0			4I3.0TRTM028/032...	1	18	6	TMC25-4-124/007	29.0-33.0
TR36x3.0			4I3.0TRTM028/032...	1	18	6	TMC25-4-124/007	29.0-33.0
TR38x3.0			5I3.0TRTM028/033...	2	24	8	TMC25-5-124/004	35.0-39.0
TR40x3.0			5I3.0TRTM028/033...	2	24	8	TMC25-5-124/004	35.0-39.0
TR42x3.0			5I3.0TRTM028/033...	2	24	8	TMC25-5-124/004	35.0-39.0
TR44x3.0			5I3.0TRTM028/033...	2	24	8	TMC25-5	41.0-45.0
TR46x3.0			5I3.0TRTM028/033...	2	24	8	TMC25-5	41.0-45.0
TR48x3.0			5I3.0TRTM028/033...	2	24	8	TMC25-5	41.0-45.0
TR50x3.0			5I3.0TRTM028/033...	2	24	8	TMC32-5	47.0-57.0
TR52x3.0			5I3.0TRTM028/033...	2	24	8	TMC32-5	47.0-57.0
TR55x3.0			5I3.0TRTM028/033...	2	24	8	TMC32-5	47.0-57.0
TR60x3.0			5I3.0TRTM028/033...	2	24	8	TMC32-5	47.0-57.0
TR65x4.0	5/8"	27	5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR70x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR75x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR80x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR85x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR90x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR95x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR100x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR105x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0
TR110x4.0			5I4.0TRTM028/034...	2	24	6	TMC32-5	61.0-106.0

For toolholder information, see page 282.

External and Internal Toolholders



TM Standard

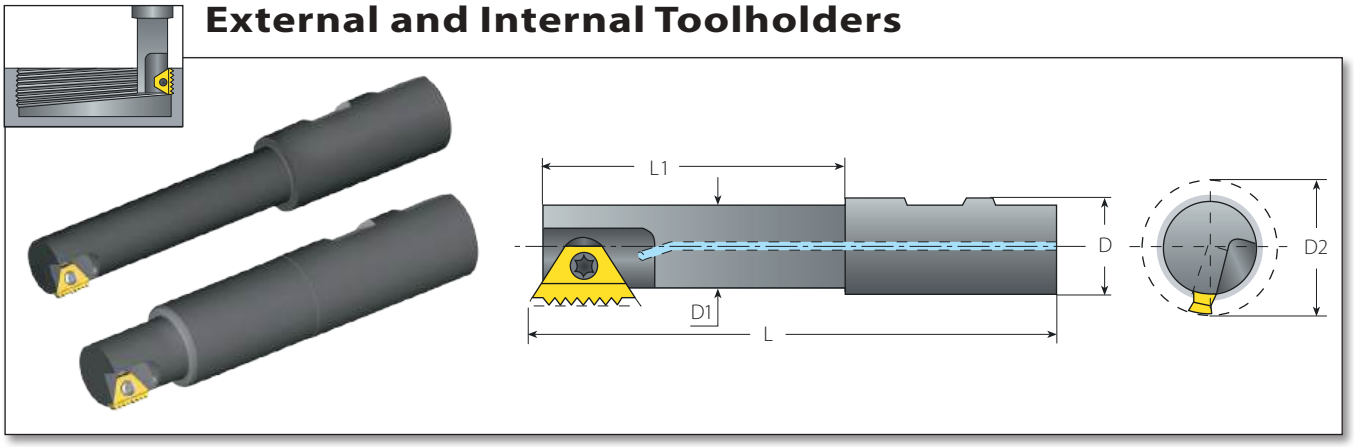
Insert Size	Ordering Code	Dimensions mm					Spare Parts	
IC		L	L1	D	D1	D2	Insert Screw	Torx Key
6.0mm	TMMC12-6.0	69.0	12.0	12	6.8	9.0	SN7T	K7T
	TMMC20-6.0	84.0	17.0	20	6.8	9.0		
1/4"	TMC12-2	70.0	12.0	12	8.9	11.5	SN2TM	K2T
	TMC20-2	85.0	20.0	20	8.9	11.5		
	TMC20-2LH	85.0	20.0	20	8.9	11.5		
3/8"	TMC16-3	90.0	22.0	16	13.6	17.0	SN3TM	K3T
	TMC20-3	95.0	43.0	20	16.6	20.0		
3/8"B	BTMC16-3B	79.5	29.0	16	13.5	17.0	SN3TM	K3T
	BTMC20-3B	81.5	29.0	20	15.5	19.0	SN3T	K3T
	BTMC25-3B	92.3	30.0	25	15.5	19.0		
	BTMWC25-3B	90.8	30.0	25	18.5	22.0		
5/8"	TMC25-5	110.0	52.0	25	24.0	30.0	SN5TM	K5T
	TMC25-5LH	110.0	52.0	25	24.0	30.0		
	TMC32-5	120.0	58.0	32	31.0	37.0		
3/4"B	TMC32-6B	115.0	53.0	32	27.0	35.0	SM7T	K30T
	TMC40-6B	135.0	63.0	40	38.0	46.0		

Internal Thread Application for Standard Toolholder

Toolholder		Min. Thread Dia.				
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	UNJ
TMMC12-6.0 TMMC20-6.0	9.0		M10x0.75; M12x1.0; M14x1.25; M14x1.5		7/16-32UN; 7/16-28UNEF; 1/2-24UNS; 7/16-20UNF; 9/16-18UNF; 9/16-16UNF	9/16-24UNJEF; 1/2-20UNJF; 9/16-18UNJF; 9/16-16UNJF
TMC12-2 TMC20-2 TMC20-2LH	11.5		M15x1.0; M16x1.5		9/16-32UN; 9/16-28UN; 9/16-24UNEF; 5/8-20UN; 9/16-18UNF; 9/16-16UNF; 7/8-14UNF	9/16-24UNJEF; 3/4-20UNJEF; 5/8-18UNJF; 5/8-16UNJF; 7/8-14UNJF
TMC16-3	17.0		M20x1.0; M22x1.5; M24x2.0		3/4-32UN; 13/16-28UN; 7/8-24UNS; 7/8-20UNEF; 7/8-18UNS 7/8-16UNS; 1-14UNS; 1 3/16-12UN	1 5/8-24UNJ; 7/8-20UNJEF; 1 1/16-18UNJEF; 7/8-16UNJ; 1 5/8-14UNJ; 1 5/16-12UNJ
TMC20-3	20.0		M24x1.0; M25x1.5; M27x2.0		7/8-32UN; 1 5/16-28UN; 1-24UNS; 1 5/16-20UNEF; 1-18UNS; 1-16 UNS; 1 1/8-14UNS; 1 1/16-12UN	1 5/8-24 UNJ; 1 5/16-20UNJEF; 1 1/16-18UNJEF; 1-16UNJ; 1 5/8-14UNJ; 1 1/16-12UNJ
BTMC16-3B	17.0		M20x1.0; M22x1.5; M24x2.0		7/8-24UNS; 7/8-20UNEF; 7/8-18UNS; 7/8-16UNS; 1-14UNS; 1 3/16-12UN	
BTMC20-3B BTMC25-3B	19.0		M22x1.0; M24x1.5; M25x2.0		7/8-24UNS; 1 5/16-20UNEF; 1-18UNS; 1-16UNS; 1-14UNS; 1-12UNF	
BTMWC25-3B	22.0	M27x1.5	M25x1.0; M30x2		1-24UNS; 1 1/16-20UN; 1 1/16-18UNEF; 1 1/16-16UNEF; 1 1/8-14UNS; 1 1/8-12UNF	
TMC25-5 TMC25-5LH	30.0		M35x1.5; M39x2.0; M36x3.0; M36x4.0; M42x4.5; M48x5.0	1 3/4-5	1 3/8-24UNS; 1 3/8-20UN; 1 7/16-18UNEF; 1 7/16-16UNEF; 1 1/2-14UNS; 1 1/2-12UNF; 1 5/8-10UNS; 1 7/16-8UN; 1 5/8-6UN	1 7/16-16UNJ; 1 1/2-12UNJF
TMC32-5	37.0		M45x1.5; M45x2.0; M50x3.0; M56x4.0		1 5/8-24UNS; 1 11/16-20UN; 1 11/16-18UNEF; 1 11/16-16UNEF; 1 3/4-14UNS; 1 3/4-12 UN; 1 7/8-10UNS; 2-8 UN; 2 1/4-6UN	1 11/16-16UNJ; 1 3/4-12UNJ
TMC32-6B	35.0	M64x6.0	M42x1.5; M42x2.0; M48x3.0; M55x4.0; M48x5.0; M56x5.5	2-4.5; 2 1/2-4	2 1/4-6UN	
TMC40-6B	46.0	M64x6.0	M52x1.5; M55x2.0; M60x3.0; M60x4.0; M60x5.5	2 1/2-4	2 3/8-6UN	

	D2	BSW/BSF	BSP	BSPT	NPT	NPTF	PG	NPS	Trapez	ACME
TMMC12-6.0 TMMC20-6.0	9.0	7/16-26BSF; 1/2-20BSW; 7/16-18BSF;	1/4-19				PG7			1/2-16
TMC12-2 TMC20-2 TMC20-2LH	11.5	5/8-26BSF; 5/8-20BSW; 9/16-16BSF; 11/16-14BSF	3/8-19; 1/2-14	3/8-19			PG9; PG21			5/8-16;
TMC16-3	17.0	13/16-26BSF; 7/8-20BSW; 7/8-16BSW; 13/16-12BSW	5/8-14; 1 1/4-11				PG13.5; PG21	1/2-14; 1-11.5		1-14; 1 1/8-12
TMC20-3	20.0	15/16-26BSF; 1-20BSW; 1 11/16-16BSW; 15/16-12BSW;	3/4-14; 1-11				PG16; PG21	3/4-14; 1-11.5		1 1/4-12
BTMC16-3B	17.0	7/8-20BSW; 7/8-16BSW; 13/16-12BSW	5/8-14; 1-11					1-11.5		
BTMC20-3B BTMC25-3B	19.0	15/16-20BSW; 1-16BSW; 1 1/16-12BSW	3/4-14; 1-11					1-11.5		
BTMWC25-3B	22.0	1 1/16-20BSW; 1 1/8-16BSW	7/8-14; 1-11					1-11.5		
TMC25-5 TMC25-5LH	30.0	1.4-16BSW; 1 3/8-12BSW; 1 7/16-8BSW; 1 3/4-7BSF; 1.6-6BSW	1 1/8-11	1 1/4-11	1 1/4-11.5	1 1/4-11.5	PG29	1 1/4-11.5; 2 1/2-8	TR44-3.0	1 1/2-10; 1 3/4-8; 1 3/4-6; 2-5
TMC32-5	37.0	1 3/4-16BSW; 1 7/8-12BSW; 2.1-8BSW; 1 7/8-6BSW;	1 1/2-11	1 1/2-11	1 1/2-11.5	1 1/2-11.5	PG36	1 1/2-11.5; 2 1/2-8	TR50-3.0; TR65-4.0	1 3/4-10; 2-8; 2 1/4-6; 2 1/2-5
TMC32-6B	35.0	2 1/4-6 BSF; 3-5BSF; 3 1/2-4.5BSF;	1 1/2-11		2 1/2-8	2 1/2-8				
TMC40-6B	46.0	2 5/8-6BSW; 3-5BSF; 3 1/2-4.5BSF	2-11		3-8	3-8				

External and Internal Toolholders



TML Long Tools

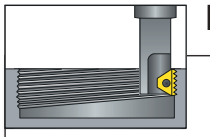
Insert Size	Ordering Code	Dimensions mm					Spare Parts	
IC		L	L1	D	D1	D2	Insert Screw	Torx Key
1/4"	TMLC25-2	125.0	17.0	25	8.9	11.5	SN2TM	K2T
3/8"	TMLC25-3	125.0	25.0	25	18.6	22.0	SN3T	K3T
	BTMLC25-3	125.0	63.5	25	18.6	22.0		
3/8"B	BTMLC20-3B	96.5	44.0	20	15.5	19.0	SN3T	K3T
	BTMLC25-3B	125.0	63.5	25	18.6	22.0		
5/8"	TMLC25-5	150.0	92.0	25	24.0	30.0	SN5TM	K5T
	TMLC32-5	160.0	98.0	32	31.0	37.0		
3/4"B	TMLC40-6B	165.0	93.0	40	38.0	46.0	SM7T	K30T

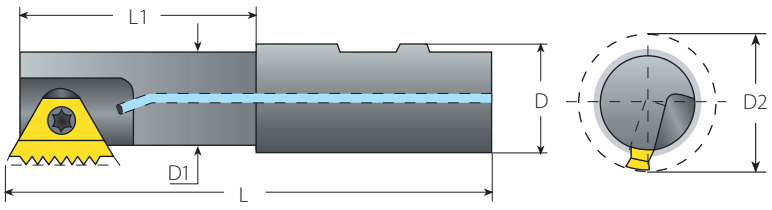
Internal Thread Application for TML Toolholder

Toolholder		Min. Thread Dia.				
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	UNJ
TMLC25-2	11.5		M15x1.0; M16x1.5		9/16-32UN; 9/16-28UN; 9/16-24UNEF; 5/8-20UN; 9/16-18UNF; 9/16-16UNF; 7/8-14UNF	9/16-24UNJEF; 3/4-20UNJEF; 5/8-18UNJF; 5/8-16UNJF; 7/8-14UNJF
TMLC25-3 BTMLC25-3	22.0	M27x1.5	M25x1.0; M30x2.0		1-32UN; 1-28UN; 1-24UNS; 1 1/16-20UN; 1 1/16-18UNEF; 1 1/16-16UNEF; 1 1/8-14UNS; 1 1/8-12	1 5/8-24 UNJ; 1 1/16-20UNJ; 1 1/16-18UNJEF; 1 1/16-16; 1 1/8-12UNJF
BTMLC20-3B	19.0		M22x1.0; M24x1.5; M25x2.0		7/8-24UNS; 15/16-20UNEF; 1-18UNS; 1-16UNS; 1-14UNS; 1-12UNF	
BTMLC25-3B	22.0	M27x1.5	M25x1.0; M30x2.0		1-24UNS; 1 1/16-20UN; 1 1/16-18UNEF; 1 1/16-16UNEF; 1 1/8-14UNS; 1 1/8-12UNF	
TMLC25-5	30.0		M35x1.5; M39x2.0; M36x3.0; M36x4.0; M42x4.5; M48x5.0	1 3/4-5	1 3/8-24UNS; 1 3/8-20UN; 1 7/16-18UNEF; 1 7/16-16UNEF; 1 1/2-14UNS; 1 1/2-12UNF; 1 5/8-10UNS; 1 7/16-8UN; 1 5/8-6UN	1 7/16-16UNJ; 1 1/2-12UNJF
TMLC32-5	37.0		M45x1.5; M45x2.0; M50x3.0; M56x4.0		1 5/8-24UNS; 1 11/16-20UN; 1 11/16-18UNEF; 1 11/16-16UNEF; 1 3/4-14UNS; 1 3/4-12UN; 1 7/8-10UNS; 2-8 UN; 2 1/4-6UN	1 11/16-16UNJ; 1 3/4-12UNJ
TMLC40-6B	46.0	M64x6.0	M52x1.5; M55x2.0; M60x3.0; M60x4.0; M60x5.5	2 1/2-4	2 3/8-6UN	

	D2	BSW/BSF	BSP	BSPT	NPT	NPTF	PG	NPS	Trapez	ACME
TMLC25-2	11.5	5/8-26BSF; 5/8-20BSW; 11/16-14BSF	3/8-19; 1/2-14	3/8-19			PG9; PG21			
TMLC25-3 BTMLC25-3	22.0	1 1/16-26BSF; 1 1/16-20BSW; 1 1/8-16BSW	7/8-14; 1-11				PG21	1-11.5		
BTMLC20-3B	19.0	15/16-20BSW; 1-16BSW; 1 1/16-12BSW	3/4-14; 1-11					1-11.5		
BTMLC25-3B	22.0	1 1/16-20BSW; 1 1/8-16BSW	7/8-14; 1-11				PG21	1-11.5		
TMLC25-5	30.0	1 3/4-7BSF; 1 7/8-6BSW	1 1/4-11	1 1/4-11	1 1/4-11.5	1 1/4-11.5	PG29	1 1/4-11.5; 2 1/2-8	TR44-3.0	1 1/2-10; 1 3/4-8; 1 3/4-6; 2-5
TMLC32-5	37.0	1 7/8-6BSW	1 1/2-11	1 1/2-11	1 1/2-11.5	1 1/2-11.5	PG36	1 1/2-11.5; 2 1/2-8	TR50-3.0; TR65-4.0	1 3/4-10; 2-8; 2 1/4-6; 2 1/2-5
TMLC40-6B	46.0	3-5BSF; 3 1/2-4.5BSF	2-11		2 1/2-8	2 1/2-8				

External and Internal Toolholders





124/... - For Coarse Pitch Threads

Spare Parts

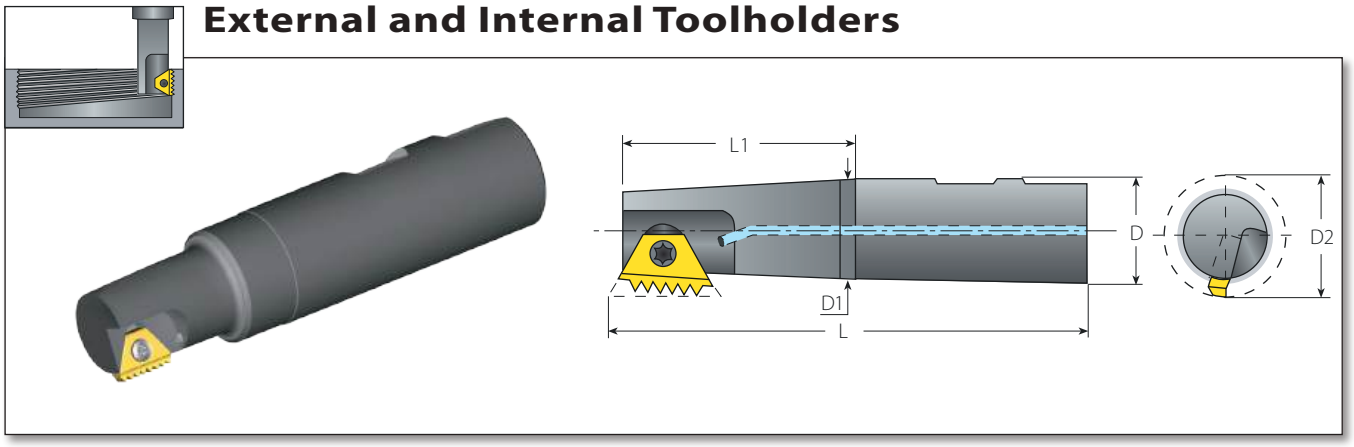
Insert Size	Ordering Code	Dimensions mm						
IC		L	L1	D	D1	D2	Insert Screw	Torx Key
6.0mm	TMMC20-6.0-124/003	85	15.0	20	6.7	9.0	SN7T	K7T
1/4"	TMC20-2-124/005	77	15.5	20	7.4	10.0	SN2TM	K2T
	TMC20-2-124/006	77	15.5	20	9.0	12.0		
	TMC20-2-124/009	77	15.5	20	7.4	10.0		
3/8"	TMC16-3-124/001	91	20.5	16	12.2	15.5	SN3TM	K3T
1/2"	TMC25-4-124/002	88	30.0	25	13.4	18.0	SN4TM	K4T
	TMC25-4-124/007	98	40.0	25	16.0	20.0	SA4TM	
5/8"	TMC25-5-124/004	98	40.0	25	19.0	25.0	SA5TM	K5T
	TMC25-5-124/008	98	40.0	25	16.4	22.0	SN5TM	

Internal Thread Application for 124/... Coarse Pitch Toolholder

Toolholder	Min. Thread Dia.					
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	UNJ
TMMC20-6.0-124/003	9.0	M12x1.75	M12x1.0; M22x1.5; M12x1.75	7/16-14	11/16-32UN; 1/2-24UNS; 9/16-18UNF; 9/16-16UNF	9/16-24UNJEF; 1/2-20UNJF; 9/16-18UNJF; 9/16-16UNJF
TMC20-2-124/005	10.0			1/2-13	5/8-12UN	
TMC20-2-124/006	12.0			5/8-11		
TMC20-2-124/009	10.0					
TMC16-3-124/001	15.5	M20x2.5	M20x1.0; M22x1.5; M22x2.0	3/4-10	11/16-32UN; 3/4-28UN; 3/4-24UNS; 13/16-20UNEF; 7/8-18UNS; 7/8-16UNS; 7/8-14UNF; 7/8-12UN	1 5/8-24UNJ; 13/16-20UNJEF; 1 1/16-18UNJEF; 13/16-16UNJ; 7/8-14UNJF; 7/8-12UNJ
TMC25-4-124/002	18.0	M22x2.5; M24x3.0		7/8-9; 1 1/8-7		
TMC25-4-124/007	20.0			1-8		
TMC25-5-124/004	25.0	M30x3.5	M30x1.5; M33x2.0; M39x3.0; M56x4.0	1 3/8-6	1 1/8-24UNS; 1 3/16-20UN; 1 3/16-18UNEF; 1 3/16-16UNEF; 1 1/4-14UNS; 1 1/4-12UNF; 1 1/2-10UNS; 1 1/4-8UN	1 3/16-16UNJ; 1 1/4-12UNJF
TMC25-5-124/008	22.0					

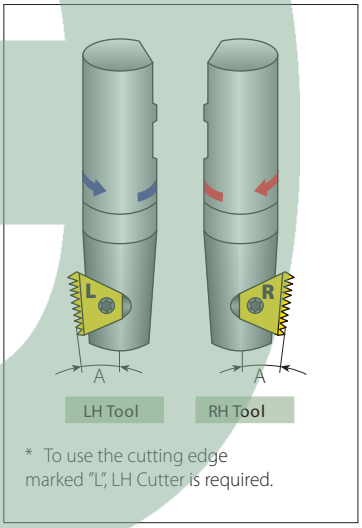
	D2	BSW/BSF	BSP	BSPT	NPT	NPTF	PG	NPS	Trapez	ACME
TMMC20-6.0-124/003	9.0	7/16-26BSF; 7/16-18BSF;	1/4-19				PG7	1/2-14; 1-11.5		
TMC20-2-124/005	10.0	1/2-16BSF								5/8-14
TMC20-2-124/006	12.0	5/8-14BSF							TR16-2	3/4-14; 3/4-12
TMC20-2-124/009	10.0				1/4-18	1/4-18				
TMC16-3-124/001	15.5	3/4-12BSF	1/2-14	3/4-14; 1-11	3/4-14; 1-11.5	3/4-14; 1-11.5	PG13.5; PG21	1-11.5		
TMC25-4-124/002	18.0	7/8-11BSF; 1-10BSF; 7/8-9BSW; 1-8BSW							TR24-3.0	1-10; 1-8
TMC25-4-124/007	20.0								TR32-3.0	1 1/8-10
TMC25-5-124/004	25.0	1 3/16-8BSW; 1 1/4-7BSW; 1 5/16-6BSW	1-11	1-11	1 1/4-11.5; 2 1/2-8	1 1/4-11.5; 2 1/2-8	PG21	1 1/4-11.5; 2 1/2-8	TR38-3.0	1 1/4-10; 1 3/8-8; 1 1/2-6; 1 3/4-5
TMC25-5-124/008	22.0	1 1/8-7BSW								1 3/8-6

External and Internal Toolholders



TMN - For Conical Threads (NPT, NPTF, BSPT)

Insert Size	Ordering Code		Dimensions mm					Spare Parts	
IC	RH	*LH	L	L1	D	D1	D2	Insert Screw	Torx Key
3/8"	TMNC16-3	TMNC16-3LH	90.0	22.0	16	12.5	15.5	SN3TM	K3T
	TMNC20-3	TMNC20-3LH	85.0	23.0	20	15.0	19.0		
3/8"B	BTMNC16-3B	BTMNC16-3BLH	79.5	29.0	16	13.5	17.0	SN3TM	K3T
	BTMNC20-3B	BTMNC20-3BLH	81.5	29.0	20	15.5	19.0		
5/8"	TMNC32-5	TMNC32-5LH	120.0	58.0	32	31.0	37.0	SN5TM	K5T



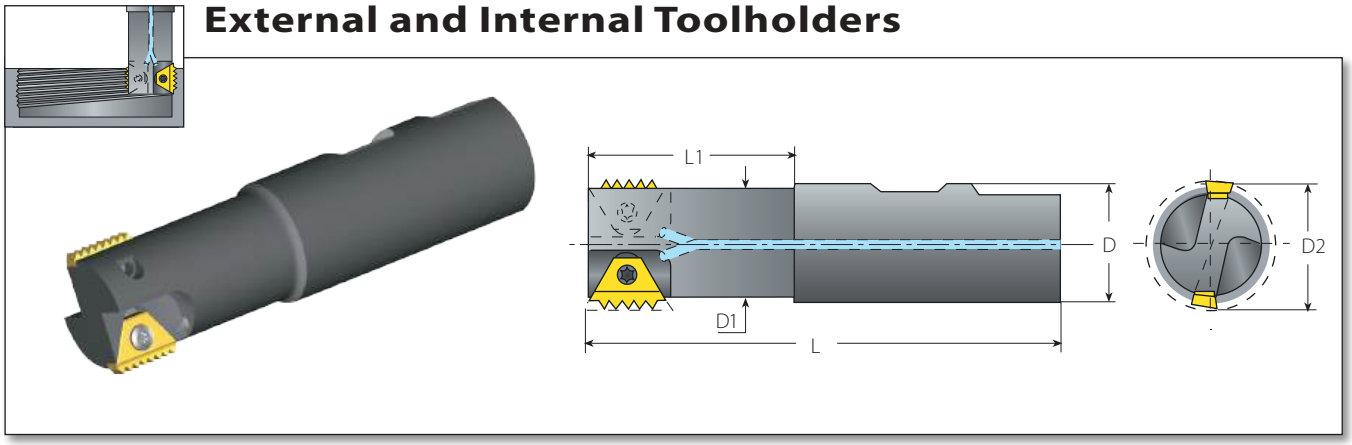
* To use the cutting edge marked "L", LH Cutter is required.

Internal Thread Application for TMN Toolholder

Toolholder		Min. Thread Dia.			
	D2	ISO Fine	UNC	UN/UNF/UNEF/UNS	UNJ
TMNC16-3 TMNC16-3LH	15.5	M20x1.0; M22x1.5; M22x2.0		11/16-32UN; 3/4-28UN; 3/4-24UNS; 13/16-20UNEF; 7/8-18UNS; 7/8-16UNS; 7/8-14UNF; 3/4-12UN	1 5/8-24UNJ; 13/16-20UNJEF; 1 1/16-18UNJEF; 13/16-16 UNJ; 7/8-14UNJF; 7/8-12UNJ
TMNC20-3 TMNC20-3LH	19.0	M22x1.0; M24x1.5; M25x2.0		7/8-32UN; 7/8-28UN; 7/8-24UNS; 15/16-20UNEF; 1-18UNS; 1-16UNS; 1-14UNS; 1-12UNF	1 5/8-24UNJ; 15/16-20UNJEF; 1 1/16-18UNJEF; 15/16-16UNJ; 1 5/8-14UNJ; 1-12UNJF
BTMNC16-3B BTMNC16-3BLH	17.0	M20x1.0; M22x1.5; M24x2.0		7/8-24UNS; 7/8-20UNEF; 7/8-18UNS; 7/8-16UNS; 1-14UNS; 13/16-12UN	
BTMNC20-3B BTMNC20-3BLH	19.0	M22x1.0; M24x1.5; M25x2.0		7/8-24UNS; 15/16-20UNEF; 1-18UNS; 1-16UNS; 1-14UNS; 1-12UNF	
TMNC32-5 TMNC32-5LH	37.0	M45x1.5; M45x2.0; M50x3.0; M56x4.0		1 5/8-24UNS; 1 11/16-20UN; 1 11/16-18UNEF; 1 11/16-16UNEF; 1 3/4-14UNS; 1 3/4-12UN; 1 7/8-10UNS; 2-8UN; 2 1/4-6UN	

	D2	BSW/BSF	BSP	BSPT	NPT	NPTF	PG	NPS	Trapez	ACME
TMNC16-3 TMNC16-3LH	15.5	13/16-16BSW	1/2-14	1/2-14; 1-11	1/2-14; 1-11.5	1/2-14; 1-11.5	PG11; PG21	1/2-14; 1-11.5		7/8-14; 1-12
TMNC20-3 TMNC20-3LH	19.0	15/16-26BSW; 15/16-20BSW; 1-16BSW; 1 1/16-12BSW	3/4-14; 1-11	3/4-14; 1-11	3/4-14; 1-11.5	3/4-14; 1-11.5	PG21	3/4-14; 1-11.5		
BTMNC16-3B BTMNC16-3BLH	17.0	7/8-20BSW; 7/8-16BSW; 1 3/16-12BSW	5/8-14; 1-11		3/4-14; 1-11.5	3/4-14; 1-11.5		1-11.5		
BTMNC20-3B BTMNC20-3BLH	19.0	15/16-20BSW; 1-16BSW; 1 1/16-12BSW	3/4-14; 1-11		3/4-14; 1-11.5	3/4-14; 1-11.5		1-11.5		
TMNC32-5 TMNC32-5LH	37.0	1 7/8-6BSW	1 1/2-11	1 1/2-11	1 1/2-11.5; 2 1/2-8	1 1/2-11.5; 2 1/2-8	PG36	1 1/2-11.5; 2 1/2-8		

External and Internal Toolholders



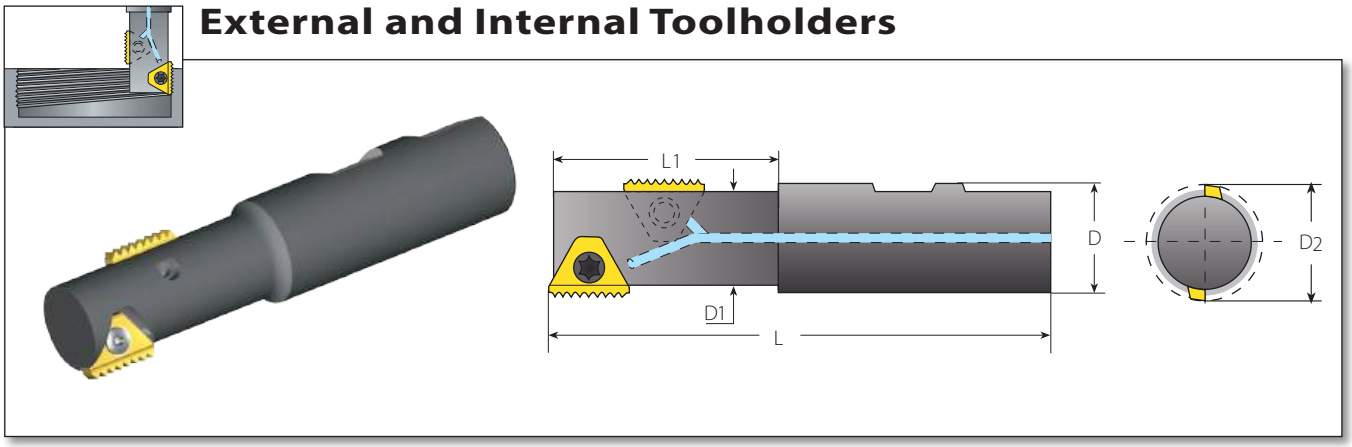
TM2 - Twin Flutes

Insert Size	Ordering Code	Dimensions mm					Spare Parts	
IC		L	L1	D	D1	D2	Insert Screw	Torx Key
1/4"	TM2C20-2	85	20.0	20	14.4	17.0	SN2TM	K2T
3/8"	TM2C25-3	100	43.0	25	22.5	26.0	SN3T	K3T
3/8"B	BTM2C25-3B	104.2	46.0	25	22.5	26.0		
5/8"	TM2C32-5	120	45.0	32	36.0	42.0	SN5TM	K5T
3/4"B	TM2C40-6B	137.2	65.0	40	44.0	52.0	SM7T	K30T

Internal Thread Application for TM2 Toolholder

Toolholder	Min. Thread Dia.											
	D2 (mm)	ISO Fine	UNC	UN/UNF/UNEF/UNS	UNJ	BSW/BSF	BSP	BSPT	NPT	NPTF	PG	NPS
TM2C20-2	17.0	M22x1.5		3/4-32UN; 13/16-28UN; 7/8-24UNS; 7/8-20UNEF; 7/8-18UNS; 7/8-16UNS; 1-14UNS	1 5/8-24UNJ; 7/8-20UNJEF; 1 1/16-18UNJEF; 7/8-16UNJ; 1 5/8-14UNJ		5/8-14				PG16; PG21	
TM2C25-3 BTM2C25-3B	26.0	M32x1.5; M33x2.0		1 1/4-24UNS; 1 3/16-20UN; 1 1/4-18UNEF; 1 1/4-16UNEF; 1 3/8-14UNS; 1 5/16-12UN	1 5/8-24UNJ; 1 3/16-20UNJ; 1 1/4-18UNJEF; 1 1/4-16UNJ; 1 5/16-12UNJ	1 3/16-26BSF; 1 1/4-20BSW; 1 5/16-16BSW	1 1/8-11				PG36	1 1/4-11.5
TM2C32-5	42.0	M48x1.5; M50x2.0; M55x3.0; M64x4.0		1 7/8-20UN; 2-18UNS; 2-16UNS; 2-14UNS; 2-12UN; 2 1/4-10UNS; 2 1/4-8UN; 2 1/2-6UN	1 15/16-16UNJ; 2-12UNJ	2-16BSW; 2-12BSW; 2 1/4-8BSW	2-11	2-11	2-11.5	2-11.5	PG36	2-11.5; 2 1/2-8
TM2C40-6B	52.0	M58x1.5; M68x4.0; M70x6.0	2 3/4-4	2 5/8-6UN		2 7/8-6BSW; 2 7/8-5BSW; 3 3/4-4.5BSF	2 1/4-11		2 1/2-8	2 1/2-8		

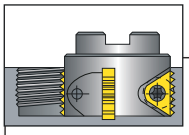
External and Internal Toolholders

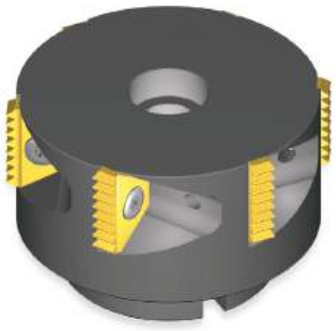


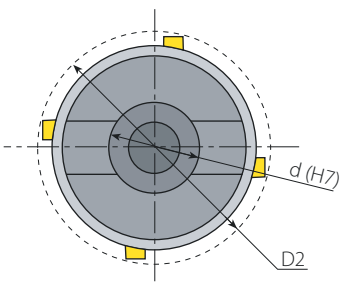
TMO - Twin Flute Offset

Insert Size	Ordering Code	Applicable Threads			Dimensions mm					Spare Parts	
IC		External	Internal	External & Internal	L	L1	D	D1	D2	Insert Screw	Torx Key
1/4"	TMOC20-2-1	16UN	48/32/16UN		90	25	20	11.9	14.5	SN2TM	K2T
	TMOC20-2-2	24/18UN	48/24/18UN	24W							
	TMOC20-2-3	28/14UN	28/14UN	28/14W							
	TMOC20-2-4	20UN	20UN								
	TMOC20-2-5			26W							
	TMOC20-2-6			20W							
	TMOC20-2-7			19W							
	TMOC20-2-8	1.0/1.5ISO	0.5/1.0/1.5ISO								
	TMOC20-2-9	0.75ISO	48UN, 0.75ISO								
	TMOC20-2-10	1.25ISO	1.25ISO								
3/8"	TMOC20-3-1	1.5ISO	0.5/1.5ISO		95	43	20	16.6	20.0	SN3T	K3T
	TMOC20-3-2	13UN	13UN	26W							
	TMOC20-3-3	28UN	32/28UN								
	TMOC20-3-4	27UN	27UN								
	TMOC20-3-5		11.5UN	11.5NPS							
	TMOC20-3-6	24/20/18/16/14/12UN	24/20/18/16/14/12UN	26/20/18/16/14/12W, 14NPS							
	TMOC20-3-7	1.25ISO	1.25ISO	24W							
	TMOC20-3-8			19W							
	TMOC20-3-9			11W							
	TMOC20-3-10	1.0/2.0ISO	0.5/1.0/2.0ISO								
	TMOC20-3-11	0.75ISO	32UN, 0.75ISO								
	TMOC20-3-12	1.75ISO	1.75ISO								
5/8"	TMOC25-5-1	24/20/18/14/13/12UN	24/20/18/14/13/11UN	14W	110	52	25	24	30.0	SN5TM	K5T
	TMOC25-5-2	24/18/12UN	24/18/12/6UN	12W							
	TMOC25-5-3	16UN	16UN	16W, 8NPS							
	TMOC25-5-4	14/7UN	14UN	14/7W							
	TMOC25-5-5		11.5UN	11.5NPS							
	TMOC25-5-6	11UN	11UN	11W							
	TMOC25-5-7	10UN	10/5UN	10W							
	TMOC25-5-8	9UN	9UN	9W							
	TMOC25-5-9	8UN	8UN	8W							
	TMOC25-5-10		7UN								
	TMOC25-5-11	6UN		6W							
	TMOC25-5-12	1.0/2.0/2.5/4.0ISO	1.0/2.0/2.5/4.0/5.0ISO								
	TMOC25-5-13	1.25ISO	1.25ISO								
	TMOC25-5-14	1.5/2.5/4.5ISO	1.5/2.5/4.5/ISO								
	TMOC25-5-15	1.75ISO	1.75ISO								
	TMOC25-5-16	1.0/1.5/3.0/3.5ISO	1.0/1.5/3.0/3.5ISO								

External and Internal Toolholders







Cutter Drive
ISO 240-1975 (mm)

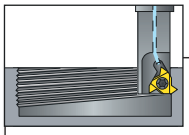
TM Shell Mill

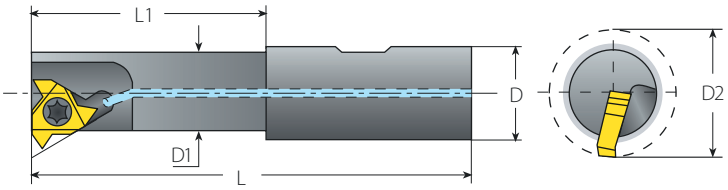
Insert Size	Ordering Code	No. of inserts	Dimensions mm			Spare Parts		
IC			D2	d(H7)	H	Insert Screw	Torx Key	Holder Screw
1/4"	TMSH-D38-16-2	6	38.0	16.0	40.0	SN2T	HK2T	M8x1.25x35
1/4"	TMSH-D50-22-2	8	50.0	22.0	40.0			M10x1.50x35
3/8"	TMSH-D50-22-3	6	50.0	22.0	40.0	SN3TM	HK3T	M10x1.50x35
3/8B"	TMSH-D63-22-3B	6	63.0	22.0	40.0			
5/8"	TMSH-D63-22-5	4	63.0	22.0	45.0	SN5TM	HK5T	M10x1.50x35
3/4B"	TMSH-D63-22-6B	4	63.0	22.0	50.0	SM7T	HK7T	M10x1.50x35
5/8"	TMSH-D80-27-5	6	80.0	27.0	50.0	SN5TM	HK5T	M12x1.75x40
3/4B"	TMSH-D80-27-6B	5	80.0	27.0	50.0	SM7T	HK7T	M12x1.75x40
5/8"	TMSH-D100-32-5	7	100.0	32.0	55.0	SN5TM	HK5T	M16x2.00x40
3/4B"	TMSH-D100-32-6B	6	100.0	32.0	55.0	SM7T	HK7T	M16x2.00x40
5/8"	TMSH-D125-40-5	9	125.0	40.0	63.0	SN5TM	HK5T	M20x2.50x50
3/4B"	TMSH-D125-40-6B	8	125.0	40.0	63.0	SM7T	HK7T	M20x2.50x50

Internal Thread Application for Shell Mill Toolholder

Toolholder		Min. Thread Dia.										
	D2 (mm)	ISO Fine	UNC	UN/UNF/UNEF/UNS	UNJ	BSW/BSF	BSP	BSPT	NPT	NPTF	PG	NPS
TMSH-D38-16-2	38.0	M45x1.5		1 11/16-20UN; 1 3/4-18UNS; 1 3/4-16UNS; 1 7/8-14UNS	1 5/8-24UNJ; 1 11/16-20UNJ; 1 3/4-16UNJ	1 3/4-26BSF; 1 3/4-20BSW					PG36	
TMSH-D50-22-2	50.0	M56x1.5		2 1/4-20UN; 2 1/4-18UNS; 2 1/4-16UNS; 2 1/4-14UNS	2 1/4-20UNJ; 2 1/4-16UNJ							
TMSH-D50-22-3	50.0	M56x1.5; M58x2.0		2 1/4-20UN; 3 1/4-18UNS; 3 1/4-16UNS; 3 1/4-14UNS; 2 3/8-12UN	2 1/4-20UNJ; 2 1/4-16UNJ; 2 3/8-12UNJ	2 1/4-20BSW; 2 3/8-16BSW; 2 3/8-12BSW	2 1/4-11				PG42	2-11.5
TMSH-D63-22-3B	63.0	M70x1.5; M70x2.0		2 3/4-20UN; 2 3/4-18UNS; 2 3/4-16UNS; 2 3/4-14UNS; 2 7/8-12UN			2 1/2-11					
TMSH-D63-22-5	63.0	M70x1.5; M70x2.0; M75x3.0; M80x4.0		2 3/4-20UN; 3 3/4-18UNS; 3 3/4-16UNS; 3 3/4-14UNS; 2 7/8-12UN; 3-10UNS; 3-8UN	2 3/4-16UNJ; 2 7/8-12UNJ	2 7/8-16BSW; 2 7/8-12BSW; 3 1/8-8BSW	2 1/2-11	3-11				3-8
TMSH-D63-22-6B	63.0	M70x2.0; M80x4.0; M85x6.0	3 1/4-4	3 1/4-6UN		3 3/8-6BSW; 3 1/2-4.5BSF	2 1/2-11		3-8	3-8		
TMSH-D80-27-5	80.0	M90x2.0; M95x3.0; M95x4.0		3 1/2-18UNS; 3 1/2-16UNS; 3 1/2-14UNS; 3 1/2-12UN; 3 3/4-10UNS; 3 3/4-8UN	3 3/8-16UNJ; 3 1/2-12UNJ	3 1/2-16BSW; 3 1/2-12BSW; 3 3/4-8BSW	3 1/4-11	4 -11				3 1/2-8
TMSH-D80-27-6B	80.0	M90x2.0; M95x4.0; M105x6.0		3 7/8-6UN		4-6BSW	3 1/4-11		3 1/2-8	3 1/2-8		
TMSH-D100-32-5	100.0	M110x2.0; M115x3.0; M115x4.0			4 1/4-16UNJ; 4 3/8-12UNJ	4 1/4-16BSW; 4 1/4-12BSW; 4 5/8-8BSW	4-11	4 -11				
TMSH-D100-32-6B	100.0	M110x2.0; M115x4.0; M125x6.0				4 7/8-6BSW	4-11		5-8	5-8		
TMSH-D125-40-5	125.0	M135x2.0; M140x3.0; M140x4.0			5 1/4-16UNJ; 5 3/8-12UNJ	5 1/4-16BSW; 5 1/4-12BSW; 5 5/8-8BSW	5-11	5-11				
TMSH-D125-40-6B	125.0	M135x2.0; M140x4.0; M150x6.0				5 7/8-6BSW	5-11		5-8	5-8		

External and Internal Toolholders





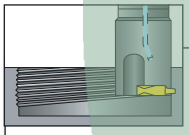
TMS - Single Point (Standard Inserts)

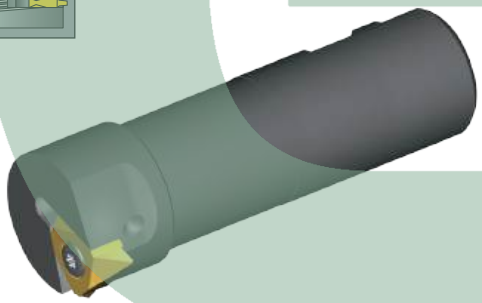
Spare Parts

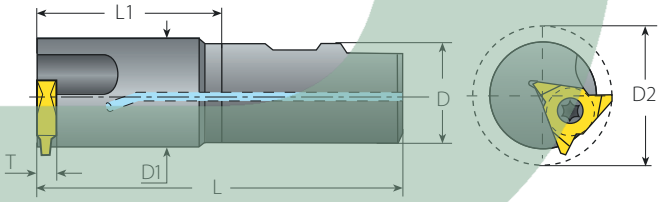
Insert Size	Ordering Code	Dimensions mm					Spare Parts	
IC		L	L1	D	D1	D2	Insert Screw	Torx Key
1/4"	TMSC10-2	65	25	10	9.3	12.5	SN2TK	K2T

Use Standard laydown thread turning inserts. See Thread Turning Inserts section - Page 17.
Use external LH inserts for external thread and internal RH inserts for internal thread.

External and Internal Toolholders







TMV - Single Point (Vertical Insert)

Spare Parts

Insert Size	Ordering Code	Dimensions mm					Spare Parts	
IC		L	L1	D	D1	D2	Insert Screw	Torx Key
5/8"V	TMVC32-5	120	60	32	35.6	46	SN6T	K6T

Requires IC 5/8"Vertical thread turning inserts (width T=6). Use external LH inserts for external threads and internal RH inserts for internal threads.
See Thread Turning Inserts section - Page 17.

Recommended Grades, Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]			Feed f[mm/tooth]
					Coated		Uncoated	
					VBX	VTX	VK2	
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	100-210	90-180		0.05-0.3
	2		Medium Carbon (C=0.25-0.55%)	150	100-180	90-170		0.05-0.25
	3		High Carbon (C=0.55-0.85%)	170	100-170	90-160		0.05-0.2
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	90-160	90-155		0.05-0.25
	5		Hardened	275	80-180	80-160		0.05-0.2
	6		Hardened	350	70-140	70-150		0.05-0.15
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	60-130	70-115		0.05-0.2
	8		Hardened	325	70-110	60-100		0.05-0.1
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	100-170	100-170	100-150	0.05-0.15
	10		High Alloy (alloying elements >5%)	225	70-120	70-130	60-130	0.05-0.1
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	100-170	120-180		0.05-0.15
	12		Hardened	330	100-170	120-180		0.05-0.1
	13	Stainless Steel Austenitic	Austenitic	180	70-140	100-140		0.05-0.15
	14		Super Austenitic	200	70-140	100-140		0.05-0.1
	15	Stainless Steel Cast Ferritic	Non Hardened	200	70-140	100-140		0.05-0.15
	16		Hardened	330	70-140	100-140		0.05-0.1
	17	Stainless Steel Cast Austenitic	Austenitic	200	70-120	100-120		0.05-0.15
	18		Hardened	330	70-120	100-120		0.05-0.1
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-130	100-120		0.02-0.8
	29		Pearlitic (long chips)	230	60-120	80-100		0.02-0.05
	30	Grey Cast Iron	Low Tensile Strength	180	60-130	80-100		0.05-0.15
	31		High Tensile Strength	260	60-100	80-100		0.05-0.1
	32	Nodular Sg Iron	Ferritic	160	60-125	80-100		0.05-0.15
	33		Pearlitic	260	50-90	60-90		0.05-0.1
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	100-250		200-300	0.1-0.4
	35		Aged	100	100-180		60-110	0.1-0.3
	36	Aluminium Alloys	Cast	75	150-400		60-120	0.1-0.3
	37		Cast & Aged	90	150-280		60-100	0.05-0.25
	38	Aluminium Alloys	Cast Si 13-22%	130	80-150		20-50	0.1-0.3
	39	Copper and Copper Alloys	Brass	90	120-210	100-200	50-70	0.1-0.3
	40		Bronze And Non Leaded Copper	100	120-210	100-200	50-70	0.05-0.25
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	20-45	20-40	20-30	0.05-0.1
	20		Aged (iron based)	280	20-30	20-30	15-25	0.02-0.05
	21		Annealed (nickel or cobalt based)	250	20-50	15-20	15-20	0.02-0.05
	22		Aged (nickel or cobalt based)	350	10-15	10-15	10-15	0.02-0.05
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	70-140	70-120	40-60	0.02--0.05
	24		α+β Alloys	1050Rm	20-50	20-50	20-40	0.02-0.05
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	20-45	20-45		0.01-0.03
	26			51-55HRc	20-45	20-45		0.01-0.02

Grades

Grade	Application	Sample
VBX	First choice for steel and cast iron A tough sub-micron substrate with TiCN coating	
VTX	First choice for stainless steel A tough sub-micron substrate with TiAlN coating	
VK2	Uncoated grade for machining cast iron & nonferrous metals	

TM Standard

TMSD

Thread Milling for Deep Holes

Inserts | Toolholders

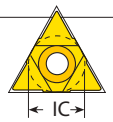
Vardex Ordering Code System

TMSD Inserts

2	U	I	DB	60	TM	VBX
1	2	3	4	5	6	7

1 - Insert Size

5 - IC5.0 mm
2 - IC1/4"
3 - IC3/8"
4 - IC1/2"
5 - IC5/8"
7 - IC6.8 mm
9 - IC8.5 mm
11 - IC10.7 mm



2 - Insert Style

U -

A -

L -

V - Vertical Style 7, 9, 11

V - V Style 5/8"

3 - Type of Insert

I - Internal
EI - External + Internal

4 - Pitch

Full Profile - Pitch Range

mm	TPI
1.0-8.0	18-2.5

Partial Profile - U, A, L Styles			Partial Profile - Vertical Style		
	mm	TPI		mm	TPI
DA	0.5-1.5	48-16	VA	0.5-1.0	28-27
DB	1.5-2.0	16-12	VB	-	11-9
DC	2.5-4.0	10-6	VC	-	16-10
DD	2.0-2.5	9-12	VD	1.0-2.0	24-12
DE	2.5-3.5	10-7	VE	2.0-3.0	12-8
DH	4.0-6.0	6-4	VF	1.0-1.5	24-16
DK	6.0-8.0	4-3	VG	1.5-2.0	16-12
DL	-	11-7	VH	-	16-14
DM	2.5	10	VK	2.0-2.5	12-10
DN	1.0-2.0	24-11	VJ	-	26-19
DP	1.5-3.0	16-8	VM	-	8-7
DR	-	26-14	VN	1.5-2.5	16-11
DT	2.0-4.0	12-6			

5 - Standard

60 - Partial Profile 60°
55 - Partial Profile 55°
ISO - ISO Metric
UN - American UN
NPT - NPT
TR - Trapez DIN 103
ACME - ACME
STACME - Stub ACME
ABUT - American Buttress
APIRD - API Round Casing & Tubing

6 - System

TM - TMSD (U, A, L Styles)
TM3 - TMSD Vertical

7 - Carbide Grade

VBX, VTX

TMSD Toolholders (U, A, L Styles)

C	TM	2	S	C	14	C	17	-	65	-	2	U
1	2	3	4	5	6	7	8		9		10	11

1 - Shank Style

None - Steel
C - Carbide Shank

2 - System

TM

3 - No. of Flutes

1 - 4

4 - Insert Type

S - Single Point

5 - Cooling

C - Coolant

6 - Shank Dia.

8 - 40

7 - Shank Type

W - Weldon
C - Cylindrical

8 - Cutting Dia.

13 - 42

9 - Max. Tool Overhang

144

10 - Insert Size

5 - IC5.0 mm
2 - IC1/4"
3 - IC3/8"
4 - IC1/2"

11 - Insert Style

U
A
L

12 - Tool Application

ABUT - For American Buttress

TMSD Toolholders (Vertical Style)

C	GM	C	9	C	13	-	45	-	7	-	3
1	2	3	4	5	6		7		8		9

1 - Holder Type

None - Steel Shank
C - Carbide Shank

2 - System

GM- Groove Milling and Thread Milling

3- Cooling

C - Coolant

4 - Shank Dia.

8, 9, 11.5, 12, 14, 15, 20, 25

5 - Shank Style

C - Cylindrical
W - Weldon

6 - Cutting Dia.

10.5-22.0

7 - Tool Overhang

25-65

8 - Insert Size

7 - IC6.8 mm
9 - IC8.5 mm
11 - IC10.7 mm

9 - Number of Flutes

3

TMSD Shell Mill (U, L, V Styles)

TM	4	S	C		D42	-	16	-	3	U	
1	2	3	4		5		6		7	8	9

1 - System

TM

2 - No. of Flutes

4-7

3 - Insert Type

S - Single Point

4 - Cooling

C - Coolant

5 - Cutting Dia.

42 - 98

6 - Drive Hole Dia.

16, 22, 27, 32

7 - Insert Size

3 - IC3/8"
4 - IC1/2"
5 - IC5/8"

8 - Insert Style

U, L, V

9 - Tool Application

ABUT - American Buttress

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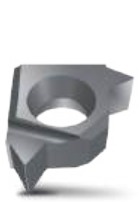
TMSD
Thread Milling for Deep Holes

A multi-flute, highly productive and economical solution for milling threads in deep holes

VARGUS GENius™ Tool Selector and CNC Program Generator

Full Profile Inserts



ISO, American UN, NPT, API RD

American Buttress

U Style For Large Pitches

Weldon Shank

Tool Overhang (L1) 40-145
Cutting Dia. (D2) 14.75-42
No. of Flutes (Z) 1-4

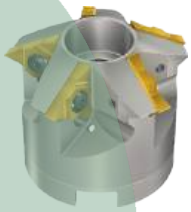
Carbide Cylindrical Shank

Tool Overhang (L1) max 135
Cutting Dia. (D2) 14.75-31.0
No. of Flutes (Z) 1-4

Steel Cylindrical Shank

Tool Overhang (L1) max 144
Cutting Dia. (D2) 23.3-36.5
No. of Flutes (Z) 2-4

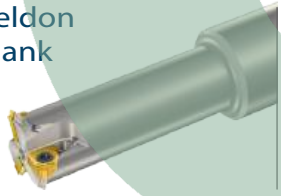
Shell Mill



Tool Overhang (L1) max 200
Cutting Dia. (D2) 42-98
No. of Flutes (Z) 4-7

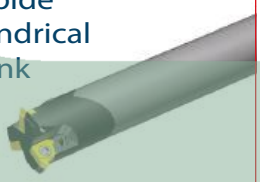
L Style (Mini L) For Small Bores

Weldon Shank



Tool Overhang (L1) 29-42
Cutting Dia. (D2) 13-17.7
No. of Flutes (Z) 1-3

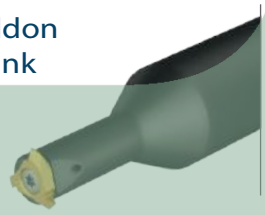
Carbide Cylindrical Shank



Tool Overhang (L1) max 65
Cutting Dia. (D2) 13-17.7
No. of Flutes (Z) 1-3

Vertical Style (7V, 9V, 11V)

Weldon Shank



Tool Overhang (L1) 25-45
Cutting Dia. (D2) 10.5-20.8
No. of Flutes (Z) 3

Carbide Cylindrical Shank

Tool Overhang (L1) max 65
Cutting Dia. (D2) 10.5-20.8
No. of Flutes (Z) 3

L Style (3/8" L) For Large Trapezoid Profiles and ABUT

Weldon Shank

Tool Overhang (L1) 50-105
Cutting Dia. (D2) 21.6-35.5
No. of Flutes (Z) 1-3

Carbide Cylindrical Shank

Tool Overhang (L1) max 120
Cutting Dia. (D2) 21.6-33.5
No. of Flutes (Z) 1-3

Shell Mill

Tool Overhang (L1) max 200
Cutting Dia. (D2) 48-80
No. of Flutes (Z) 5-7

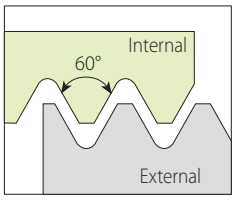
A Style For Shorter L2

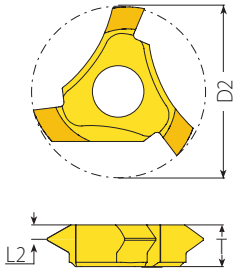
Steel Cylindrical Shank

Tool Overhang (L1) max 144
Cutting Dia. (D2) 26-35.3
No. of Flutes (Z) 3

Partial Profile 60°

Internal

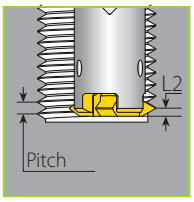




Vertical Style

Vertical Style

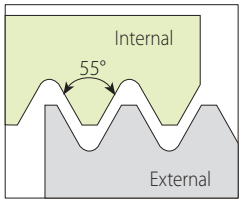
Insert Style	Pitch		Ordering Code	Dimensions mm			Application (Min. Thread Size)				
	mm	TPI	Internal	D2	T	L2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	Toolholder
7V	0.5-1.0	28-27	7VIVA60TM3...	10.5	2.9	0.6	-	M11.5x0.5; M11.5x0.75; M12x1.0	-	½-28UNEF; ½-27UNS	CGMC8C13-40-7-3 CGMC9C13-45-7-3 GMC20W13-25-7-3
	1.0-1.5	24-16	7VIVF60TM3...	11.1		0.8	-	M12.5x1; M13x1.5	-	½-24UNS; ½-20UNF; ⁹⁄₁₆-18UNF; ⁹⁄₁₆-16UN	
	1.5-2.0	16-12	7VIVG60TM3...	11.8		1.0	M14x2.0	M14x1.5	-	⁹⁄₁₆-16UN; ⁹⁄₁₆-14UNS; ⅝-12UN	
	1.5-2.5	16-11	7VIVN60TM3...	12.4		1.1	-	M15x1.5 M16x2 M18x2.5	⅝-11; ⅝-12	⅝-14UNS; ⁹⁄₁₆-16UN	
9V	0.5-1.0	28-27	9VIVA60TM3...	13.1	4.2	0.6	-	M14x0.5; M14x0.75; M15x1	-	⁹⁄₁₆-28UN; ⁹⁄₁₆-27UNS	CGMC11.5C17-50-9-3 CGMC12C17-50-9-3 GMC20W17-30-9-3
	1.0-1.5	24-16	9VIVF60TM3...	13.7		0.8	-	M15x1; M15.5x1.5	-	⅝-24UNEF; ⅝-20UN; ⅝-18UNF; ⅝-16UN	
	1.5-2.0	16-12	9VIVG60TM3...	14.4		1.0	-	M16.5x1.5; M17x2	-	¹¹⁄₁₆-16UN; ¾-14UNS; ¹¹⁄₁₆-12UN	
	2.0-2.5	12-10	9VIVK60TM3...	15.1		1.4	-	M17.5x2; M18x2.5	¾-10	¹¹⁄₁₆-12UN;	
11V	1.0-2.0	24-12	11VIVD60TM3...	17.9	5.5	1.0	-	M19x1, M19.5x1.25; M19.5x1.5; M20x1.75; M20x2	-	¾-24UNS; ¹³⁄₁₆-20UNEF; ⅞-18UNS; ¹³⁄₁₆-16UN; ⅞-14UNF; ¹³⁄₁₆-12UN	CGMC14C22-60-11-3 CGMC15C22-65-11-3 GMC25W22-45-11-3
	2.0-3.0	12-8	11VIVE60TM3...	19.5		1.5	M22x2.5 M24x3	M23x2	1-8	⅞-10UNS; ⅞-12UN	

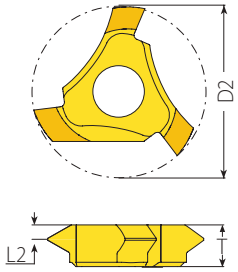


Vertical Style

Partial Profile 55°

Internal

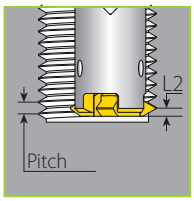




Vertical Style

Vertical Style

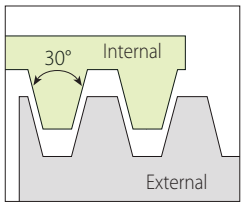
Insert Style	Pitch	Ordering Code	Dimensions mm				Application (Min. Thread Size)		
	TPI	Internal	D2	T	L2	r	BSP (G)	Partial 55°	Toolholder
7V	26-19	7VIVJ55TM3...	11.35	2.9	0.8	0.07	¼-19 ; ⅜-19	-	CGMC8C13-40-7-3 CCGMC9C13-45-7-3 GMC20W13-25-7-3
	16-14	7VIVH55TM3...	12.0		1.0	0.13	½-14 ; ⅝-14; ¾-14; ⅞-14;	9/16-16; ⅝-14	
9V	26-19	9VIVJ55TM3...	13.35	4.2	0.8	0.09	⅜-19	⅝-26 ; ⅜-16	CGMC11.5C17-50-9-3 CGMC12C17-50-9-3 GMC20W17-30-9-3
	16-10	9VIVC55TM3...	15.4		1.2	0.15	½-14	¾-16 ;11/16-14; ¾-12; ⅞-11; ¾-10	
11V	16-12	11VIVG55TM3...	17.8	5.5	0.9	0.16	½-14	13/16-16 ; 15/16-12	CGMC14C22-60-11-3 CGMC15C22-65-11-3 GMC25W22-45-11-3
	11-9	11VIVB55TM3...	19.1		1.3	0.21	1-11	⅞-11; 1-10; 1⅛-9	
	8-7	11VIVM55TM3...	19.6		1.5	0.36	-	1-8; 1 ⅛-7;	



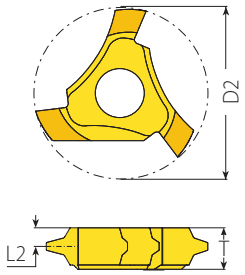
Vertical Style

Trapez

Internal



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



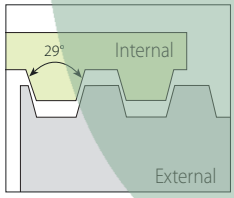
Vertical Style

Vertical Style

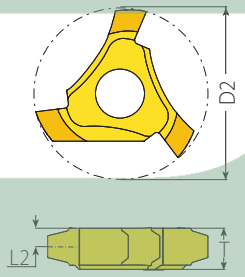
Insert Style	Pitch	Ordering Code	Dimensions mm			Application	
	mm	Internal	D2	T	L2	Trapez	Toolholder
7V	2.0	7VI2.0TR-1TM3...	12.3	2.9	1.3	TR16x2	CGMC8C13-40-7-3 CGMC9C13-45-7-3 GMC20W13-25-7-3
		7VI2.0TR-2TM3...				TR18x2	
		7VI2.0TR-3TM3...				TR20x2	
9V	3.0	9VI3.0TR-1TM3...	15.4	4.2	1.95	TR22x3	CGMC11.5C17-50-9-3 CGMC12C17-50-9-3 GMC20W17-30-9-3
		9VI3.0TR-2TM3...				TR24x3	

Stub ACME

Internal



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

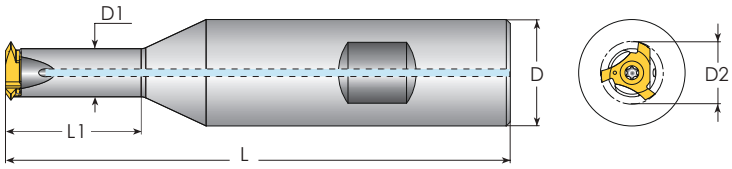


Vertical Style

Vertical Style

Insert Style	Pitch	Ordering Code	Dimensions mm			Application	
	TPI	Internal	D2	T	L2	Stub ACME	Toolholder
7V	8	7VI8STACMETM3...	12.3	2.9	1.3	⅝-8	CGMC8C13-40-7-3 CGMC9C13-45-7-3 GMC20W13-25-7-3
	6	7VI6STACME-1TM3...	12.7	2.9	1.3	¾-6	
		7VI6STACME-2TM3...				⅞-6	
9V	5	9VI5STACME-1TM3...	16.7	4.2	1.95	1-5	CGMC11.5C17-50-9-3 CGMC12C17-50-9-3 GMC20W17-30-9-3
		9VI5STACME-2TM3...				1⅛-5	
		9VI5STACME-3TM3...				1¼-5	
11V	4	11VI4STACME-1TM3...	20.8	5.5	2.6	1⅜-4	CGMC14C22-60-11-3 CGMC15C22-65-11-3 GMC25W22-45-11-3
		11VI4STACME-2TM3...				1½-4	
		11VI4STACME-3TM3...				1¾-4	
		11VI4STACME-4TM3...				2-4	

Vertical Toolholders - Weldon Shank



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

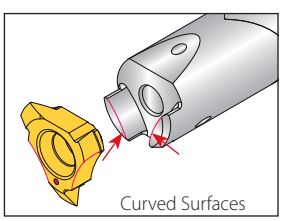
Insert Style	Ordering Code	Dimensions mm					Spare Parts			
	Toolholder	L	L1	D	D1	D2*	Insert Screw	Torx Key	Blade	Handle
7V	GMC20W13-25-7-3	95	25	20	9	10.5-12.7	SN2T8-M1 (M3.0x0.5x9)	K2T	-	-
9V	GMC20W17-30-9-3	105	30	20	11.5	13.1-16.7	SN3T15-M2 (M4x0.7x13.5)	-	Blade T15-¼	Smart Handle ¼x2
11V	GMC25W22-45-11-3	115	45	25	15	17.8-20.8	SN4T20-M3 (M5x0.8x15.5)	-	Blade T20-¼	Smart Handle ¼X2

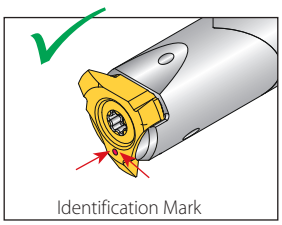
* The tool cutting diameter (D2) is defined by the insert (See pages 300-302).

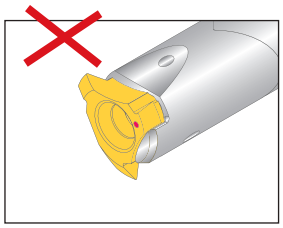
For Correct Clamping:

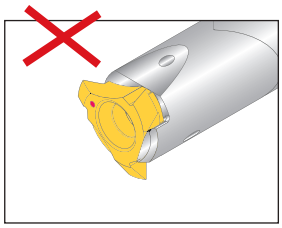
9V

11V



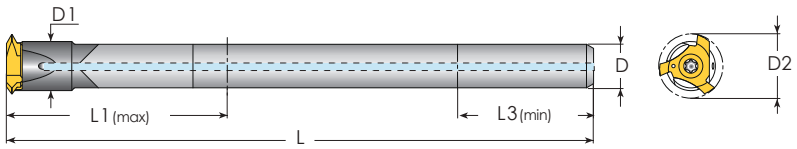




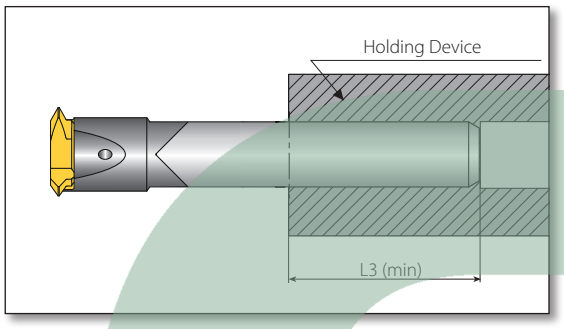


Always mount insert with the identification mark between the two curved surfaces on the toolholder.

Vertical Toolholders - Carbide Cylindrical Shank



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter



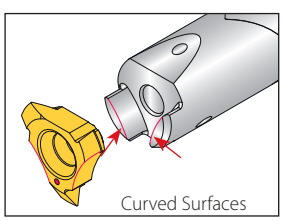
Insert Style	Ordering Code		Dimensions mm					Spare Parts			
	Toolholder	L	L1	L3 (min)	D	D1	D2*	Insert Screw	Torx Key	Blade	Handle
7V	CGMC8C13-40-7-3	115	40	18	8	9	10.5-12.7	SN2T8-M1 (M3.0x0.5x9)	K2T	-	-
	CGMC9C13-45-7-3		45	20	9						
9V	CGMC11.5C17-50-9-3	125	50	25	11.5	11.5	13.1-16.7	SN3T15-M2 (M4x0.7x13.5)	-	Blade T15-¼	Smart Handle ¼X2
	CGMC12C17-50-9-3		50	26	12						
11V	CGMC14C22-60-11-3	135	60	30	14	15	17.8-20.8	SN4T20-M3 (M5x0.8x15.5)	-	Blade T20-¼	Smart Handle ¼X2
	CGMC15C22-65-11-3		65	32	15						

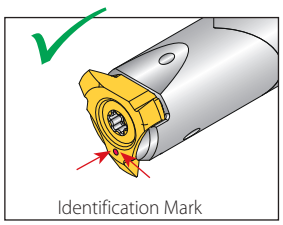
* The tool cutting diameter (D2) is defined by the insert (See pages 300-302).

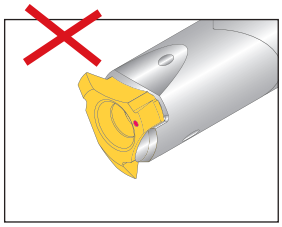
For Correct Clamping:

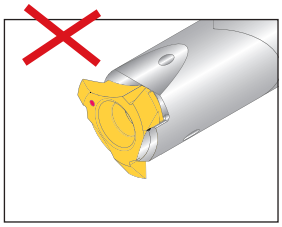
9V

11V





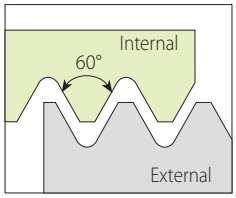


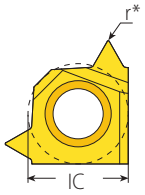


Always mount insert with the identification mark between the two curved surfaces on the toolholder.

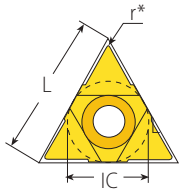
Partial Profile 60°

Internal

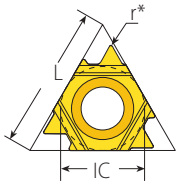




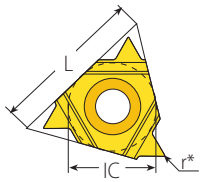
Mini L Style



U Style



U Style
2UIDM60 TM...
2UIDD60 TM...



A Style

L Style

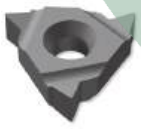
Insert Size		Pitch		Ordering Code	Dimensions mm	
IC	L mm	mm	TPI	Internal	r*	Toolholder
5.0L (Mini L)	-	0.5-1.5	48-16	5LIDA60TM...	0.04	TM.SC...5L CTM. SC...5L
		1.0-2.0	24-11	5LIDN60TM...	0.06	

U Style

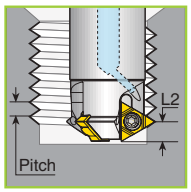
2UIDM60 TM...
2UIDD60 TM...

Insert Size		Pitch		Ordering Code	Dimensions mm	
IC	L mm	mm	TPI	Internal	r*	Toolholder
1/4"U	11	0.5-1.5	48-16	2UIDA60TM...	0.05	TM.SC...2U CTM. SC...2U
		1.5-2.0	16-12	2UIDB60TM...	0.06	
		2.0-2.5	9-12	2UIDD60TM...	0.11	CTM2SC 14C17-65-2U
		2.5	10	2UIDM60TM...	0.11	
		2.5-4.0	10-6	2UIDC60TM...	0.14	TM.SC...2U CTM. SC...2U
3/8"U	16	1.5-2.0	16-12	3UIDB60TM...	0.06	TM.SC...3U
		2.5-3.5	10-7	3UIDE60TM...	0.14	
		4.0-6.0	6-4	3UIDH60TM...	0.25	
1/2"U	22	6.0-8.0	4-3	4UIDK60TM...	0.30	TM.SC D...4U

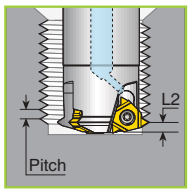
A Style



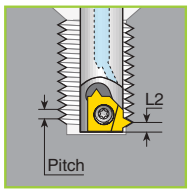
Insert Size		Pitch		Ordering Code	Dimensions mm	
IC	L mm	mm	TPI	Internal	r*	Toolholder
1/4"A	11	1.5-3.0	16-8	2AIDP60TM...	0.06	TM.SC...2A
3/8"A	16	2.0-4.0	12-6	3AIDT60TM...	0.08	TM.SC...3A



U Style
For Large Pitches



A Style
For Shorter L2

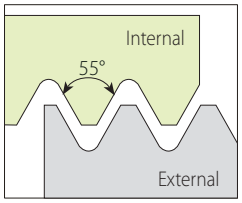


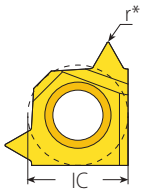
Mini-L Style
For Small Bores and Short L2

* The indicated radius (r) refers to the insert nose radius only.

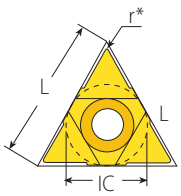
Partial Profile 55°

Internal





Mini L Style



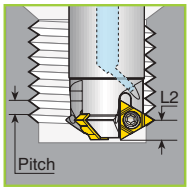
U Style

L Style

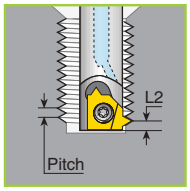
Insert Size		Pitch	Ordering Code	Dimensions mm	
IC		TPI	Internal	*r	Toolholder
5.0L (Mini L)		26-14	5LIDR55TM...	0.10	TM.SC...5L CTM. SC...5L

U Style

Insert Size		Pitch	Ordering Code	Dimensions mm	
IC	L mm	TPI	Internal	*r	Toolholder
1/4"U	11	48-16	2UIDA55TM...	0.11	TM.SC...2U CTM. SC...2U
		16-12	2UIDB55TM...	0.08	
		11-7	2UIDL55TM...	0.24	
3/8"U	16	16-12	3UIDB55TM...	0.08	TM.SC...3U
		11-7	3UIDL55TM...	0.24	
		6-4	3UIDH55TM...	0.27	
1/2"U	22	4-3	4UIDK55TM...	0.50	TM.SC D...4U



U Style
For Large Pitches

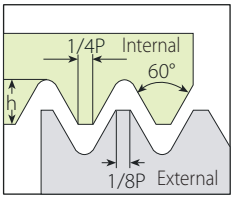


Mini-L Style
For Small Bores and Short L2

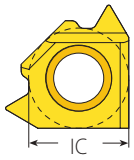
* The indicated radius (r) refers to the insert nose radius only.

ISO Metric

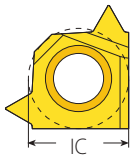
Internal



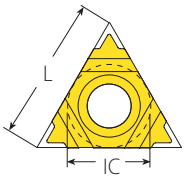
Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



Mini L Style
5LI2.0ISOTM...



Mini L Style



U Style

L Style

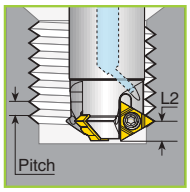
5LI2.0IS0 TM...

Insert Size	Pitch	Ordering Code		Toolholder Cutting Diameter D2 (mm)
IC	mm	Internal	Toolholder	Adjusted D2
5.0L (Mini L)	1.0	5LI1.0ISOTM...	TM.SC...5L CTM.SC...5L	-
	1.5	5LI1.5ISOTM...		
	2.0	5LI2.0ISOTM...		-

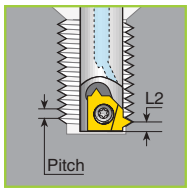
U Style

Insert Size		Pitch	Ordering Code		Toolholder Cutting Diameter D2 (mm)
IC	L mm	mm	Internal	Toolholder	* Adjusted D2
1/4"U	11	1.5	2UI1.5ISOTM...	TM2SC25W23-70-2U; TM3SC25W26-80-2U; TM4SC32W31-95-2U; TM2SC18C23-86-2U;	For 1.5ISO change D2 to D2-1.0
		2.0	2UI2.0ISOTM...	TM3SC20C26-105-2U; TM4SC25C31-115-2U; CTM3SC20C26-110-2U; CTM4SC25C31-135-2U	For 2.0ISO change D2 to D2-1.15

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.



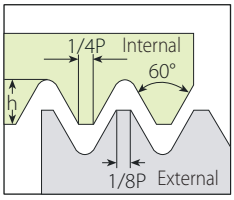
U Style
For Large Pitches



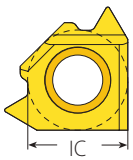
Mini-L Style
For Small Bores and Short L2

American UN - UNC; UNF; UNEF; UNS

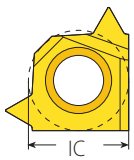
Internal



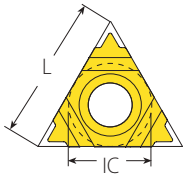
Defined by: ANSI B1.1:74
Tolerance class: 2A/2B



Mini L Style
5LI14UNTM...
5LI12UNTM...



Mini L Style



U Style

L Style

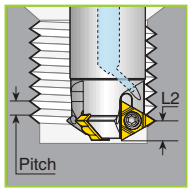
5LI14UNTM...
5LI12UNTM...

Insert Size	Pitch	Ordering Code		Toolholder Cutting Diameter D2 (mm)
IC	TPI	Internal	Toolholder	Adjusted D2
5.0L (Mini L)	18	5LI18UNTM...	TM.SC...5L CTM.SC...5L	-
	16	5LI16UNTM...		
	14	5LI14UNTM...		
	12	5LI12UNTM...		

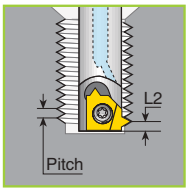
U Style

Insert Size		Pitch	Ordering Code		Toolholder Cutting Diameter D2 (mm)
IC	L mm	TPI	Internal	Toolholder	* Adjusted D2
1/4"U	11	14	2UI14UNTM...	TM2SC25W23-70-2U; TM3SC25W26-80-2U; TM4SC32W31-95-2U; TM2SC18C23-86-2U; TM3SC20C26-105-2U; TM4SC25C31-115-2U; CTM3SC20C26-110-2U; CTM4SC25C31-135-2U	For 14UN change D2 to D2-1.06
		12	2UI12UNTM...		For 12UN change D2 to D2-1.15

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.



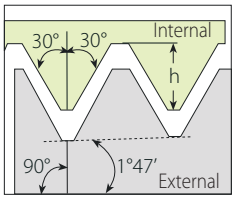
U Style
For Large Pitches



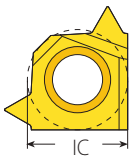
Mini-L Style
For Small Bores and Short L2

NPT

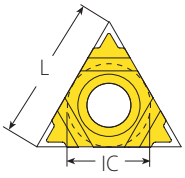
External / Internal



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



Mini L Style



U Style

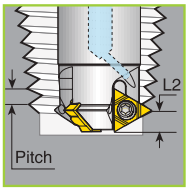
L Style

Insert Size	Pitch	Ordering Code		Toolholder Cutting Diameter D2 (mm)
IC	TPI	External/Internal	Toolholder	Adjusted D2
5.0L (Mini L)	18	5LEI18NPT-TM...	TM.SC...5L CTM.SC...5L	-

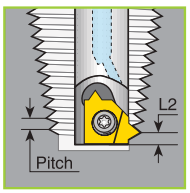
U Style

Insert Size		Pitch	Ordering Code		Toolholder Cutting Diameter D2 (mm)
IC	L mm	TPI	Internal/External	Toolholder	* Adjusted D2
1/4"U	11	14	2UEI14NPT-TM...	TM1SC16W15-40-2U; CTM1SC08C15-40-2U; CTM1SC11C15-60-2U	14.59
				TM2SC25W21-60-2U; CTM2SC14C21-65-2U; CTM2SC16C21-80-2U	20.49
		11.5	2UEI11.5NPT-TM...	TM2SC25W23-70-2U; TM2SC18C23-86-2U	22.63
				TM3SC25W26-80-2U; TM3SC20C26-105-2U; CTM3SC20C26-110-2U	25.63
				TM4SC32W31-95-2U; TM4SC25C31-115-2U; CTM4SC25C31-135-2U	30.63
3/8"U	16	11.5	3UEI11.5NPT-TM...	TM3SC32W36-95-3U; TM3SC32W36-145-3U; TM3SC25C36-125-3U; TM3SC28C36-144-3U	35.65
				TM4SC40W42-120-3U; TM4SCD42-16-3U	41.15
				TM5SCD48-22-3U	47.15
		8	3UEI8NPT-TM...	TM3SC32W36-95-3U; TM3SC32W36-145-3U; TM3SC25C36-125-3U; TM3SC28C36-144-3U	35.65
				TM4SC40W42-120-3U; TM4SCD42-16-3U	41.15
				TM5SC-D48-22-3U	47.15
				TM6SC-D56-22-3U	55.15
1/2"U	22	8	4UEI8NPT-TM...	TM6SC-D88-27-4U	88.06
				TM7SC-D98-32-4U	98.06

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.



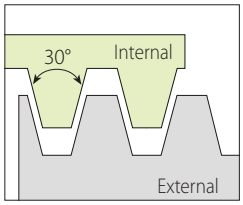
U Style
For Large Pitches



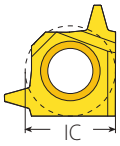
Mini-L Style
For Small Bores and Short L2

Trapez

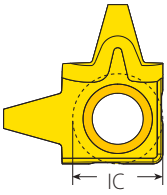
Internal



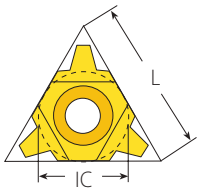
Defined by: DIN 103
Tolerance class: 7e/7H



Mini L Style



3/8" L



U Style

L Style

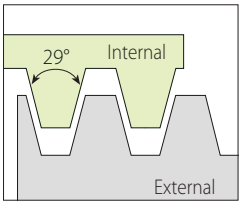
Insert Size		Pitch	Ordering Code	Application	
IC		mm	Internal	Internal	Toolholder
5.0L (Mini L)		2.0	5LI2.0TR-1TM...	TR16x2, TR20x2	TM.SC...5L CTM. SC...5L
		2.0	5LI2.0TR-2TM...	TR18x2	
3/8"L		6.0	3LI6.0TR-1TM...	(TR30-36)x6	TM1SC25W21-50-3L; CTM1SC½"C21-75-3L
		6.0	3LI6.0TR-2TM...	(TR115-130)x6	TM7SCD80-32-3L
		7.0	3LI7.0TRTM...	(TR38-44)x7	TM2SC25W28-70-3L; CTM2SC18C28-100-3L
		8.0	3LI8.0TR-1TM...	(TR46-52)x8	TM3SC32W33-90-3L; CTM3SC20C33-120-3L
		8.0	3LI8.0TR-2TM...	(TR175-240)x8	TM7SCD80-32-3L

U Style

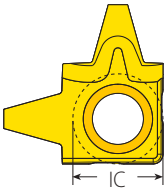
Insert Size			Pitch	Ordering Code	Application	
IC		L mm	mm	Internal	Internal	Toolholder
1/4"U		11	3.0	2UI3.0TR-1TM...	(TR22-TR30)x3	See pages 314-321
				2UI3.0TR-2TM...	(TR32-TR60)x3	
			4.0	2UI4.0TR-1TM...	(TR20-TR28)x4	
				2UI4.0TR-2TM...	(TR65-TR110)x4	
			5.0	2UI5.0TR-1TM...	TR22x5; TR28x5	
				2UI5.0TR-2TM...	TR24x5; TR26x5	

American ACME

Internal



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



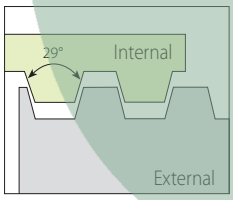
3/8" L

L Style

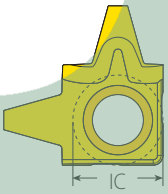
Insert Size	Pitch	Ordering Code	Application	
IC	TPI	Internal	Internal	Toolholder
3/8"L	5	3LI5ACMETM...	1¼-5ACME	TM1SC25W21-50-3L; CTM1SC ½"C21-75-3L
	4	3LI4ACME-1TM...	1⅜-4ACME	
		3LI4ACME-2TM...	1½-4ACME	
		3LI4ACME-3TM...	1¾-4ACME	TM2SC25W28-70-3L; CTM2SC18C28-100-3L
		3LI4ACME-4TM...	2-4ACME	
	3	3LI3ACME-1TM...	2¼-3ACME	TM3SC32W33-90-3L; CTM3SC20C33-120-3L
		3LI3ACME-2TM...	2½-3ACME	
		3LI3ACME-3TM...	2¾-3ACME	

Stub ACME

Internal



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



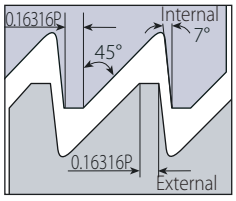
3/8" L

L Style

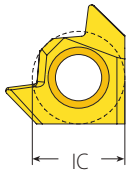
Insert Size	Pitch	Ordering Code	Application	
IC	TPI	Internal	Internal	Toolholder
3/8"L	5	3LI5STACMETM...	1¼-5STACME	TM1SC25W21-50-3L; CTM1SC ½"C21-75-3L
	4	3LI4STACME-1TM...	1⅜-4STACME	
		3LI4STACME-2TM...	1½-4STACME	
		3LI4STACME-3TM...	2-4STACME	TM3SC32W33-90-3L; CTM3SC20C33-120-3L
	3	3LI3STACME-1TM...	2¼-3STACME	
		3LI3STACME-2TM...	2½-3STACME	
		3LI3STACME-3TM...	2¾-3STACME	

American Buttress

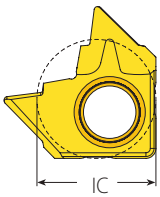
Internal



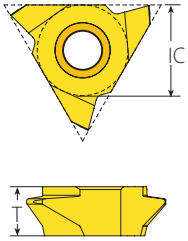
Defined by: ANSI B1.9.1973
Tolerance class: Class 2



Mini L Style

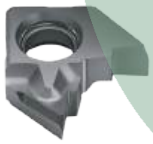


3/8" L



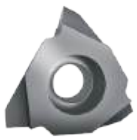
5/8 V

L Style



Insert Size		Pitch	Ordering Code	Application	
IC		TPI	Internal	Internal	Toolholder
5.0L (Mini L)		16	5LI16ABUT-TM...	0.875"-4.0" ABUT	TM2SC16W14-35-5L-ABUT CTM2SC10C14-50-5L-ABUT
				1.25"-4.0" ABUT	TM3SC20W18-45-5L-ABUT CTM3SC14C18-65-5L-ABUT
		12	5LI12ABUT-TM...	0.875"-6.0" ABUT	TM2SC16W14-35-5L-ABUT CTM2SC10C14-50-5L-ABUT
				1.25"-6.0" ABUT	TM3SC20W18-45-5L-ABUT CTM3SC14C18-65-5L-ABUT
		10	5LI10ABUT-TM...	0.875"-16.0" ABUT	TM2SC16W14-35-5L-ABUT CTM2SC10C14-50-5L-ABUT
				1.25"-16.0" ABUT	TM3SC20W18-45-5L-ABUT CTM3SC14C18-65-5L-ABUT
3/8"L		16	3LI16ABUT-TM...	1.75"-4.0" ABUT	TM2SC25W26-80-3L-ABUT CTM2SC20C26-105-3L-ABUT
				2.5"-4.0" ABUT	TM3SC32W35-105-3L-ABUT
		12	3LI12ABUT-TM...	1.75"-6.0" ABUT	TM2SC25W26-80-3L-ABUT CTM2SC20C26-105-3L-ABUT
				2.5"-6.0" ABUT	TM3SC32W35-105-3L-ABUT
				3.0"-6.0" ABUT	TM5SCD48-22-3L-ABUT
				4.0"-6.0" ABUT	TM6SCD58-27-3L-ABUT
		10	3LI10ABUT-TM...	1.75"-6.0" ABUT	TM2SC25W26-80-3L-ABUT CTM2SC20C26-105-3L-ABUT
				2.5"-6.0" ABUT	TM3SC32W35-105-3L-ABUT
				3.0"-6.0" ABUT	TM5SCD48-22-3L-ABUT
				4.0"-6.0" ABUT	TM6SCD58-27-3L-ABUT
		8	3LI8ABUT-TM...	1.75"-6.0" ABUT	TM2SC25W26-80-3L-ABUT CTM2SC20C26-105-3L-ABUT
				2.5"-6.0" ABUT	TM3SC32W35-105-3L-ABUT
				3.0"-6.0" ABUT	TM5SCD48-22-3L-ABUT
				4.0"-6.0" ABUT	TM6SCD58-27-3L-ABUT
		6	3LI6ABUT-TM...	1.75"-6.0" ABUT	TM2SC25W26-80-3L-ABUT CTM2SC20C26-105-3L-ABUT
				2.5"-6.0" ABUT	TM3SC32W35-105-3L-ABUT
				3.0"-6.0" ABUT	TM5SCD48-22-3L-ABUT
				4.0"-6.0" ABUT	TM6SCD58-27-3L-ABUT

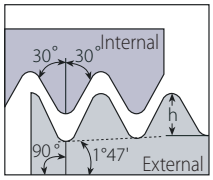
V Style

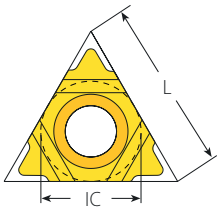


Insert Size		Pitch	Ordering Code		Application	
IC		TPI	Internal	T	Internal	Toolholder
5/8"V		4	5VI4ABUT-TM...	6	5.5"-24.0" ABUT	TM6SCD88-32-5V6-ABUT
		3	5VI3ABUT-TM...	8	6.0"-24.0" ABUT	TM6SCD88-32-5V8-ABUT
		2.5	5VI2.5ABUT-TM...	10	7.0"-24.0" ABUT	

API Round Casing & Tubing

Internal





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

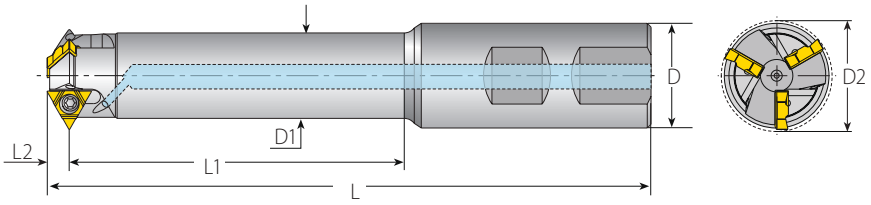
U Style

Insert Size		Pitch	Ordering Code		Toolholder Cutting Diameter D2 (mm)
IC	L mm	TPI	Internal	Toolholder	* Adjusted D2
1/4"U	11	10	2UI10APIRDTM...	TM2SC25W23-70-2U TM2SC18C23-86-2U	21.44 21.74
				TM3SC25W26-80-2U TM3SC20C26-105-2U	24.44
				TM4SC32W31-95-2U TM4SC25C31-115-2U	29.44
3/8"U	16	8	3UI8APIRDTM...	TM3SC32W36-95-3U TM3SC32W36-145-3U TM3SC25C36-125-3U TM3SC25C36-125-3U	34.7
				TM4SC40W42-120-3U TM4SCD42-16-3U	40.2
				TM5SCD48-22-3U	46.2
				TM6SCD56-22-3U	54.2

TMSD

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.

Standard Toolholders - Weldon Shank (U Style)



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Weldon Shank for U Style Inserts

Insert Size	Ordering Code	Dimensions mm						No. of Flutes	Spare Parts	
IC		L	L1	L2	D	D1	D2	Z	Insert Screw	Torx Key
1/4"U	TM1SC16W15-40-2U	95	40	5.4	16	11.0	14.75*	1	SN2T	HK2T
	TM2SC25W21-60-2U	123	60		25	16.0	20.65*	2		
	TM2SC25W23-70-2U	135	70		25	17.7	23.0	2		
	TM3SC25W26-80-2U	147	80		25	20.4	26.0	3		
	TM4SC32W31-95-2U	164	95		32	25.7	31.0	4		
3/8"U	TM3SC32W36-95-3U	166	95	8.0	32	29.0	36.5	3	SA3T	HK3T
	TM3SC32W36-145-3U	225	145		32	28.0	36.5	3		
	TM4SC40W42-120-3U	201	120		40	34.2	42.0	4	SN3T	

Weldon Shank (U Style) Applications

Thread Applications for Partial Profile Inserts

Toolholder		Min. Thread Dia.						
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)	Partial 55°	Trapez
TM1SC16W15-40-2U	14.75*	M18x2.5; M24x3.0	M16x0.5; M16x0.75; M16x1.0; M17x1.25; M17x1.5; M17x2.0	¾-10	⅝-32UN; ⅝-28UN; ⅝-27UNS; 11/16-24UN; 11/16-20UN; 11/16-16UN; ¾-14UNS; ¾-12UN	⅜-19; ½-14; 1-11	11/16-14; ¾-12; ⅞-11; ¾-10; ⅞-9; 1-8; 1⅛-7	TR22x3; TR24x3
TM2SC25W21-60-2U	20.65*	M24x3.0; M30x3.5	M22x0.5; M22x0.75; M22x1.0; M23x1.25; M23x1.5; M23x2.0	1-8; 1⅛-7; 1⅜-6	⅞-32UN; ⅞-28UN; ⅞-27UNS; ⅞-24UNS; ⅞-20UNEF; 1-18UNS; 15/16-16UN; 1-14UNS; 1 5/16-12UN; 1-10UNS	¾-14; 1-11	1-26; 1-20; 1-16; 1-12; 1-10; 1 ⅛-9; 1-8; 1 ⅛-7	(TR26-TR60)x3
TM2SC25W23-70-2U	23.0	M27x3.0; M30x3.5; M36x4.0	M24x0.5; M24x0.75; M25x1.0; M25x1.25; M26x1.5; M26x2.0; M27x2.5	1⅛-7	1-32UN; 1-28UN; 1-27UNS; 1-24UNS; 1-20UNEF; 1-18UNS; 1-16UN; 1-14UNS; 1-12UNF; 1⅛-10UNS; 1⅛-8UN	¾-14; 1-11	1-26; 1-20; 1-16; 1 1/16-12; 1⅛-9; 1⅛-7	-
TM3SC25W26-80-2U	26.0	M30x3.5; M36x4.0	M27x0.5; M27x0.75; M28x1.0; M28x1.25; M28x1.5; M29x2.0; M30x2.5; M30x3.0	1¼-7; 1⅜-6	1⅛-28UN; 1⅛-24UNS; 1⅛-20UN; 1⅛-18UNEF; 1⅛-16UN; 1⅛-14UNS; 1⅛-12UNF; 1¼-10UNS; 1 3/16-8UN	⅞-14; 1-11	1⅛-26; 1⅛-20; 1⅜-16; 1⅜-12; 1 3/16-8; 1¼-7	-
TM4SC32W31-95-2U	31.0	M36X4.0	M32x0.5; M32x0.75; M33x1.0; M33x1.25; M33x1.5; M34x2.0; M34x2.5; M35x3.0; M36x3.5	1½-6	1 5/16-28UN; 1⅜-24UNS; 1 5/16-20UN; 1 5/16-18UNEF; 1 5/16-16UN; 1⅜-14UNS; 1⅜-12UNF; 1⅜-10UNS; 1⅜-8UN	1⅛-11	1⅜-26; 1⅜-20; 1⅜-16; 1⅜-12; 1 7/16-8	-
TM3SC32W36-95-3U TM3SC32W36-145-3U	36.5	M42x4.5; M48x5.0; M56x5.5; M64x6.0	M39x1.5; M39x2.0; M40x2.5; M41x3.0; M42x3.5; M42x4.0	1¾-5; 2-4.5; 2½-4	1 9/16-16UN; 1⅝-14UNS; 1 9/16-12UN; 1⅝-10UNS; 1⅝-8UN; 1⅝-6UN	1¼-11	1⅝-16; 1⅝-12; 1⅝-8; 1⅞-6; 1¾-5	-
TM4SC40W42-120-3U	42.0	M48x5.0; M56x5.5; M64x6.0	M45x1.5; M45x2.0; M46x2.5; M48x3.0; M48x3.5; M48x4.0	2-4.5; 2½-4	1¾-16UN; 1¾-14UNS; 1 13/16-12UN; 1 13/16-8UN; 1 15/16-6UN	1½-11	1⅞-16; 1⅞-12; 1⅞-8; 2¼-6; 2-4.5	-

* For TR inserts use the CNC program (D2+0.25mm).

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Weldon Shank (U Style) Applications (con't)

Thread Applications for Full Profile Inserts (ISO & UN)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch		Min. Thread Dia.	
	* Adjusted D2	mm	TPI	ISO Fine	UN/UNF/UNEF/UNS
TM2SC25W23-70-2U	22.0	1.5	-	M26x1.5	-
	21.85	2.0	-	M26x2.0	-
	21.94	-	14	-	1-14UNS
	21.85	-	12	-	1-12UNF
TM3SC25W26-80-2U	25.0	1.5	-	M28x1.5	-
	24.85	2.0	-	M29x2.0	-
	24.94	-	14	-	1 1/8-14UNF
	24.85	-	12	-	1 1/8-12UNF
TM4SC32W31-95-2U	30.0	1.5	-	M33x1.5	-
	29.85	2.0	-	M34x2.0	-
	29.94	-	14	-	1 3/8-14UNS
	29.85	-	12	-	1 3/8-12UNF

Thread Applications for Full Profile Inserts (NPT)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch	Cylindrical or Conical Pre-Drilled Hole	Cylindrical Pre-Drilled Hole
	* Adjusted D2	TPI	NPT Threading by 1 Radial Pass	**NPT Threading by 2 Radial Passes (50% / 50%)
TM1SC16W15-40-2U	14.59	14	1/2-14NPT; 3/4-14NPT	-
TM2SC25W21-60-2U	20.49	14	3/4-14NPT	-
TM2SC25W23-70-2U	22.63	11.5	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
TM3SC25W26-80-2U	25.63	11.5	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
TM4SC32W31-95-2U	30.63	11.5	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
TM3SC32W36-95-3U	35.65	11.5	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
TM3SC32W36-145-3U				
TM3SC32W36-95-3U	35.65	8	-	2 1/2...10-8NPT
TM3SC32W36-145-3U				
TM4SC40W42-120-3U	41.15	11.5	1 1/2-11.5NPT; 2-11.5NPT	-
TM4SC40W42-120-3U	41.15	8	-	2 1/2...10-8NPT

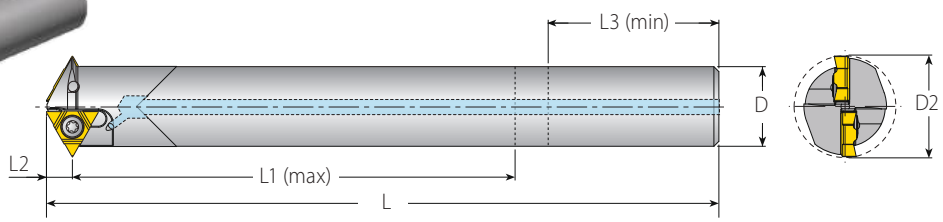
** When the pre-drilled hole for 8NPT is conical, the thread can be machined in one pass.

Thread Applications for Full Profile Inserts (API Round)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch	Cylindrical or Conical Pre-Drilled Hole (for cylindrical 2 radial passes 50%/50%; for conical one radial pass)	Conical Pre-Drilled Hole only (one pass)
	* Adjusted D2	TPI	Thread Dia.	
TM2SC 25W23-70-2U	21.44	10	1.05x10APIRD (for UP TBG; UP TBG Long); 1.315...2.375x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-
TM3SC 25W26-80-2U	24.44		1.66...2.875x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	
TM4SC 32W31-95-2U	29.44		1.66...3.5x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	
TM3SC 32W36-95-3U	34.7	8	2.375...13.375x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...5.5x8APIRD (for LCSG)	-
TM3SC 32W36-145-3U			2.375...20x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	8.625...20x8APIRD (for LCSG)
TM4SC 40W42-120-3U	40.2		2.875...20x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	8.625x8APIRD (for LCSG)

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.

Standard Toolholders - Carbide Cylindrical Shank (U Style)

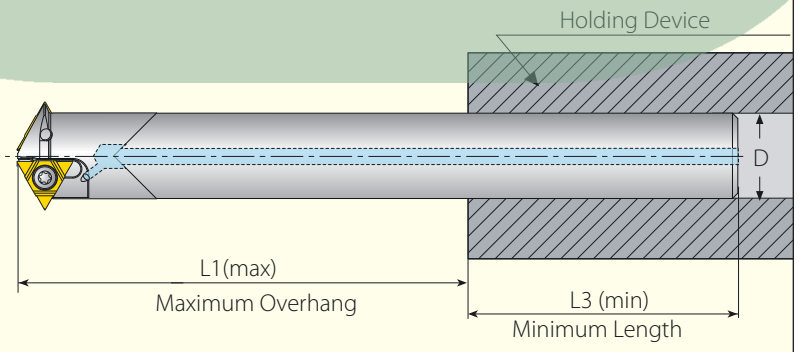


Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Carbide Cylindrical Shank for U Style Inserts

Insert Size	Ordering Code	Dimensions mm						No. of Flutes	Spare Parts	
IC		L	L1 (max)	L2	L3 (min)	D	D2	Z	Insert Screw	Torx Key
1/4"U	CTM1SC08C15-40-2U	109	40	5.4	18	8	14.75*	1	SN2T	HK2T
	CTM1SC11C15-60-2U	120	60		25	10.7	14.75*	1		
	CTM2SC14C17-65-2U**	132	65	3.4	30	14	17.9**	2		
	CTM2SC14C21-65-2U	136	65	5.4	30	14	20.65*	2		
	CTM2SC16C21-80-2U	135	80		34	16	20.65*	2		
	CTM3SC20C26-110-2U	165	110		40	20	26.0*	3		
	CTM4SC25C31-135-2U	186	135		46	25	31.0*	4		

* For TR inserts use the CNC program (D2+0.25mm).
** To be used only with inserts 2UIDD60TM... or 2UIDM60TM...
For insert 2UIDD60 TM... use the CNC program (D2+0.7mm).



The overhang-to-bar diameter ratio should be as small as possible to eliminate the chance of chatter (vibration).
The minimum length inside a holding device should be 2 times the diameter of the bar shank.

Carbide Cylindrical Shank (U Style) Applications

Thread Applications for Partial Profile Inserts

Toolholder	Min. Thread Dia.							
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)	Partial 55°	Trapez
CTM1SC08C15-40-2U	14.75*	M18x2.5; M24x3.0; M30x3.5; M36x4.0	M16x0.5; M16x0.75; M16x1.0; M17x1.25; M17x1.5; M17x2.0	¾-10; ⅞-9; 1-8; 1⅛-7; 1⅜-6	⅝-32UN; ⅝-28UN; ⅝-27UNS; 11/16-24UNEF; 11/16-20UN; 11/16-16UN; ¾-14UNS; 11/16-12UN	½-14; 1-11	11/16-26; 11/16-20; 11/16-16; 11/16-14; ¾-12; ⅞-11; ¾-10; ⅞-9; 1-8; 1⅛-7	TR22x3; TR24x3; TR20x4; TR22x5; TR24x5; TR26x5; TR28x5
CTM1SC11C15-60-2U	14.75*	M18x2.5; M24x3.0	M16x0.5; M16x0.75; M16x1.0; M17x1.25; M17x1.5; M17x2.0	¾-10; ⅞-9; 1-8	⅝-32UN; ⅝-28UN; ⅝-27UNS; 11/16-24UNEF; 11/16-20UN; 11/16-16UN; ¾-14UNS; 11/16-12UN	½-14; 1-11	11/16-26; 11/16-20; 11/16-16; 11/16-14; ¾-12; ⅞-11; ¾-10; ⅞-9	TR22x3; TR24x3
CTM2SC14C17-65-2U	17.2**	M20x2.5; M22x2.5	M21x2.0	⅞-9	⅞-10UNS; 13/16-12UN	-	-	-
CTM2SC14C21-65-2U	20.65*	M24x3.0; M30x3.5; M36x4.0	M22x0.5; M22x0.75; M22x1.0; M23x1.25; M23x1.5; M23x2.0	1-8; 1⅛-7; 1⅜-6	⅞-32UN; ⅞-28UN; ⅞-27UNS; ⅞-24UNS; ⅞-20UNEF; 1-18UNS; 15/16-16UN; 1-14UNS; 15/16-12UN; 1-10UNS	¾-14; 1-11	1-26; 1-20; 1-16; 1-12; 1-10; 1⅛-9; 1-8; 1⅛-7	(TR26-TR60)x3; TR28x4; (TR65-TR110)x4; TR28x5
CTM2SC16C21-80-2U	20.65*	M24x3.0; M30x3.5	M22x0.5; M22x0.75; M22x1.0; M23x1.25; M23x1.5; M23x2.0	1-8; 1⅛-7; 1⅜-6	⅞-32UN; ⅞-28UN; ⅞-27UNS; ⅞-24UNS; ⅞-20UNEF; 1-18UNS; 15/16-16UN; 1-14UNS; 15/16-12UN; 1-10UNS	¾-14; 1-11	1-26; 1-20; 1-16; 1-12; 1-10; 1⅛-9; 1-8; 1⅛-7	(TR26-TR60)x3
CTM3SC20C26-110-2U	26	M30x3.5; M36x4.0	M27x0.5; M27x0.75; M28x1.0; M28x1.25; M28x1.5; M29x2.0; M30x2.5; M30x3.0	1¼-7; 1⅜-6	1⅛-28UN; 1⅛-24UNS; 1⅛-20UN; 1⅛-18UNEF; 1⅛-16UN; 1⅛-14UNS; 1⅛-12UNF; 1⅜-10UNS; 1 7/16-8UN	⅞-14; 1-11	1⅛-26; 1⅛-20; 1 3/16-16; 1 3/16-12; 1 3/16-8; 1¼-7	(TR40-TR60)x3 (TR65-TR110)x4
CTM4SC25C31-135-2U	31	M36x4.0	M32x0.5; M32x0.75; M33x1.0; M33x1.25; M33x1.5;M34x2.0; M34x2.5; M35x3.0; M36x3.5	1½-6	1 5/16-28UN; 1½-24UNS; 1½-20UN; 1½-18UNEF; 1⅜-16UN; 1⅜-14UNS; 1⅜-12UNF; 1⅜-10UNS; 1 7/16-8UN	1⅛-11	1 5/16-26; 1 5/16-20; 1⅜-16; 1⅜-12; 1 7/16-8	(TR50-TR60)x3 (TR65-TR110)x4

* For TR inserts use the CNC program (D2+0.25mm).
** To be used only with inserts 2UIDD60TM... or 2UIDM60TM...
For insert 2UIDD60 TM... use the CNC program (D2+0.7mm).

Thread Applications for Full Profile Inserts (ISO & UN)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch		Min. Thread Dia.	
	* Adjusted D2	mm	TPI	ISO Fine	UN/UNF/UNEF/UNS
CTM3SC 20C26-110-2U	25.0	1.5	-	M28x1.5	-
	24.85	2.0	-	M29x2.0	-
	24.94	-	14	-	1 1/8-14UNS
	24.85	-	12	-	1 1/8-12UNF
CTM4SC 25C31-135-2U	30.0	1.5	-	M33x1.5	-
	29.85	2.0	-	M34x2.0	-
	29.94	-	14	-	1 3/8-14UNS
	29.85	-	12	-	1 3/8-12UNF

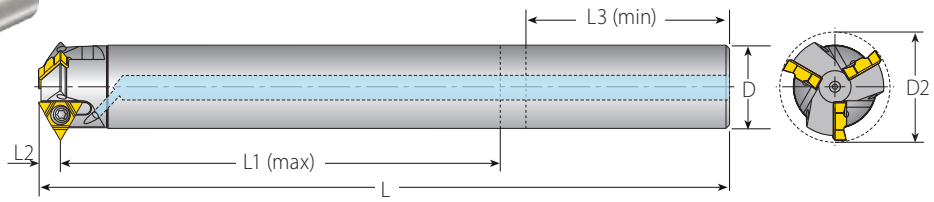
* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.

Thread Applications for Full Profile Inserts (NPT)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch	Cylindrical or Conical Pre-Drilled Hole	Cylindrical Pre-Drilled Hole
	* Adjusted D2	TPI	NPT Threading by 1 Radial Pass	NPT Threading by 2 Radial Passes (50% / 50%)
CTM1SC08C15-40-2U CTM1SC11C15-60-2U	14.59	14	1/2-14NPT; 3/4-14NPT	-
CTM2SC14C21-65-2U CTM2SC16C21-80-2U	20.49	14	3/4-14NPT	-
CTM3SC20C26-110-2U	25.63	11.5	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
CTM4SC25C31-135-2U	30.63	11.5	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.

Standard Toolholders - Steel Cylindrical Shank (U Style)



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

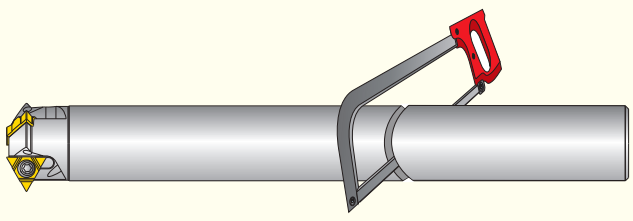
Steel Cylindrical Shank for U Style Inserts

Insert Size	Ordering Code	Dimensions mm						No. of Flutes	Spare Parts	
IC		L	L1 (max)	L2	L3 (min)	D	D2	Z	Insert Screw	Torx Key
1/4"U	TM2SC18C23-86-2U	166	86	5.4	40	18	23.3	2	SN2T	HK2T
	TM3SC20C26-105-2U	186	105		40	20	26	3		
	TM4SC25C31-115-2U	196	115		46	25	31	4		
3/8"U	TM3SC25C36-125-3U	193	125	8.0	46	25	36.5	3	SA3T	HK3T
	TM3SC28C36-144-3U	222	144		60	28	36.5	3		

Steel Cylindrical Shank (U Style) Applications

Thread Applications for Partial Profile Inserts

Toolholder		Min. Thread Dia.					
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)	Partial 55°
TM2SC18C23-86-2U	23.3	M27x3.0; M30x3.5; M36x4.0	M24x0.5; M25x0.75; M25x1.0; M25x1.25; M26x1.5; M26x2.0; M27x2.5	1⅛-7	1-32UN; 1-28UN; 1-27UN; 1-24UNS; 1-20UNEF; 1-18UNS; 1-16UN; 1-14UNS; 1 1/16-12UN; 1⅛-10UNS; 1⅛-8UN	¾-14; 1-11	1-26; 1-20; 1⅛-16; 1 1/8-12; 1⅛-9; 1⅛-7
TM3SC20C26-105-2U	26	M30x3.5; M36x4.0	M27x0.5; M27x0.75; M28x1.0; M28x1.25; M28x1.5; M29x2.0; M30x2.5; M30x3.0	1¼-7; 1⅜-6	1⅛-28UN; 1⅛-24UNS; 1⅛-20UN; 1⅛-18UNEF; 1⅛-16UN; 1⅛-14UNS; 1⅛-12UNF; 1⅜-10UNS; 1 7/16-8UN	⅞-14; 1-11	1⅛-26; 1⅛-20; 1 3/16-16; 1 3/16-12; 1 3/16-8; 1¼-7
TM4SC25C31-115-2U	31	M36x4.0	M32x0.5; M32x0.75; M33x1.0; M33x1.25; M33x1.5; M34x2.0; M34x2.5; M35x3.0; M36x3.5	1½-6	1 5/16-28UN; 1½-24UNS; 1½-20UN; 1½-18UNEF; 1⅜-16UN; 1⅜-14UNS; 1⅜-12UNF; 1⅜-10UNS; 1 7/16-8UN	1⅛-11	1 5/16-26; 1 5/16-20; 1⅜-16; 1⅜-12; 1 7/16-8
TM3SC25C36-125-3U TM3SC28C36-144-3U	36.5	M42.5x4.5; M48x5.0; M56x5.5; M64x6.0	M39x1.5; M40x2.5; M41x3.0; M42x3.5; M42x4.0	1¾-5; 2-4.5; 2½-4	1 9/16-16UN; 1⅝-14UNS; 1 9/16-12UN; 1⅝-10UNS; 1⅝-8UN; 1⅝-6UN	1¼-11	1⅝-16; 1⅝-12; 1⅝-8; 1 7/8-6; 1¾-5



The length of cylindrical shank toolholders can be modified to reduce chatter (vibration).
Note: The length of the shank inside the clamping device should be L3 at minimum.

Steel Cylindrical Shank (U Style) Applications (con't)

Thread Applications for Full Profile Inserts (ISO & UN)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch		Min. Thread Dia.	
	* Adjusted D2	mm	TPI	ISO Fine	UN/UNF/UNEF/UNS
TM2SC18C23-86-2U	22.00	1.5	-	M26x1.5	-
	21.85	2.0	-	M26x2.0	-
	21.94	-	14	-	1-14UNS
	21.85	-	12	-	1-12UNF
TM3SC20C26-105-2U	25.00	1.5	-	M28x1.5	-
	24.85	2.0	-	M29x2.0	-
	24.94	-	14	-	1 1/8-14UNS
	24.85	-	12	-	1 1/8-12UNF
TM4SC25C31-115-2U	30.00	1.5	-	M33x1.5	-
	29.85	2.0	-	M34x2.0	-
	29.94	-	14	-	1 3/8-14UNS
	29.85	-	12	-	1 3/8-12UNF

Thread Applications for Full Profile Inserts (NPT)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch	Cylindrical or Conical Pre-Drilled Hole	Cylindrical Pre-Drilled Hole
	* Adjusted D2	TPI	NPT Threading by 1 Radial Pass	**NPT Threading by 2 Radial Passes (50% / 50%)
TM2SC18C23-86-2U	22.63	11.5	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
TM3SC20C26-105-2U	25.63	11.5	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
TM4SC25C31-115-2U	30.63	11.5	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
TM3SC25C36-125-3U	35.65	11.5	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
TM3SC28C36-144-3U				
TM3SC25C36-125-3U	35.65	8	-	2 1/2...10-8NPT
TM3SC28C36-144-3U				

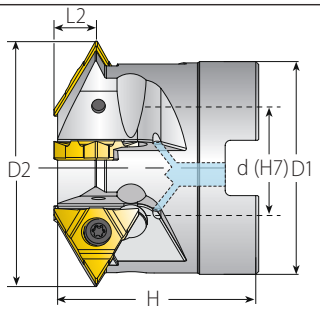
** When the pre-drilled hole for 8NPT is conical, the thread can be machined in one pass.

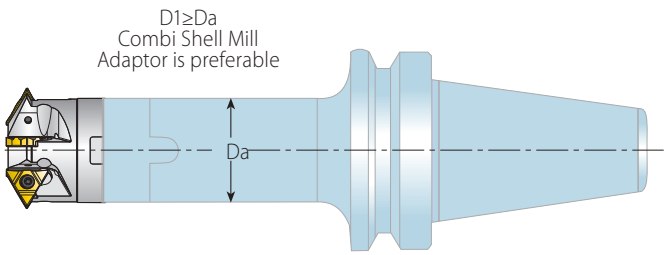
Thread Applications for Full Profile Inserts (API Round)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch	Cylindrical or Conical Pre-Drilled Hole (for cylindrical 2 radial passes 50%/50%; for conical one radial pass)	Conical Pre-Drilled Hole only (one pass)
	* Adjusted D2	TPI	Thread Dia.	
TM2SC 18C23-86-2U	21.74	10	1.05x10APIRD (for UP TBG; UP TBG Long); 1.315...2.375x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-
TM3SC 20C26-105-2U	24.44		1.66...2.875x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	
TM4SC 25C31-115-2U	29.44		1.66...3.5x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	
TM3SC 25C36-125-3U	34.7	8	2.375...20x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	8.625...9.625x8APIRD (for LCSG)
TM3SC 28C36-144-3U				8.625...20x8APIRD (for LCSG)

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.

Shell Mill (U Style)





Adaptor not included

Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Shell Mill for U Style Inserts

Insert Size	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts			
IC		D1	D2	d(H7)	H	L2	Z	Insert Screw	Torx Key	Holder Screw	Holder Screwdriver
3/8"U	TM4SC-D42-16-3U	34	42	16	40	8.0	4	SN3T	HK3T	SA5T-C5 (M8x1.25x28)	TK5T
	TM5SC-D48-22-3U	40	48	22	40	8.0	5			M10x1.50x35	-
	TM6SC-D56-22-3U	48	56	22	40	8.0	6				
1/2"U	TM6SC-D88-27-4U	76	88	27	50	10.8	6	SA4T	HK4T	M12x1.75x40	-
	TM7SC-D98-32-4U	85	98	32	55	10.8	7			M16x2.0x40	

Shell Mill (U Style) Applications

Thread Applications for Partial Profile Inserts

Toolholder		Min. Thread Dia.					
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)	Partial 55°
TM4SC-D42-16-3U	42	M48x5.0; M56x5.5; M64x6.0;	M45x1.5; M45x2.0; M46x2.5; M48x3.0; M48x3.5; M48x4.0	2-4.5; 2½ - 4	1¾-16UN; 1¾-14UNS; 1 13/16-12UN; 1 13/16-8UN; 1 15/16-6UN	1½ - 11	1⅞-16; 1⅞-12; 1⅞-8; 1⅞-6; 2-4.5
TM5SC-D48-22-3U	48	M56x5.5; M64x6.0	M52x1.5; M52x2.0; M52x2.5; M52x3.0; M55x4.0	2¼ - 4.5; 2½ - 4	2-16UN; 2-14UN; 2-12UN; 2¼-10UNS; 2⅛-8UN; 2⅛-6UN	1¾ - 11	2-16; 2¼-12; 2¼-8; 2¼-6; 3-5; 3½-4.5; 2¼-4
TM6SC-D56-22-3U	56	M64x6.0	M60x1.5; M60x2.0; M60x2.5; M60x3.0; M64x4.0	2½ - 4	2⅜-16UN; 2⅜-14UN; 2⅜-12UN; 2½-10UNS; 2⅜-8UN; 2½-6UN	2 - 11	2½-16; 2½-12; 2½-8; 2¾-6; 3-5; 3½-4.5; 4¼-4
TM6SC-D88-27-4U	88	-	M95x6.0; M125x8	4- 4	4¼-4UN	-	4-3; 4¼-4
TM7SC-D98-32-4U	98	-	M105x6.0; M125x8	-	4¼-4UN	-	4¼-4

Thread Applications for Full Profile Inserts (NPT)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch	Cylindrical or Conical Pre-Drilled Hole	Cylindrical Pre-Drilled Hole
	* Adjusted D2	TPI	NPT Threading by 1 Radial Pass	**NPT Threading by 2 Radial Passes (50% / 50%)
TM4SC-D42-16-3U	41.15	11.5	1 1/2-11.5NPT; 2-11.5NPT	-
TM4SC-D42-16-3U	41.15	8	-	2 1/2...10-8NPT
TM5SC-D48-22-3U	47.15	11.5	2-11.5NPT	-
TM5SC-D48-22-3U	47.15	8	-	2 1/2...10-8NPT
TM6SC-D56-22-3U	55.15	8	-	2 1/2...10-8NPT
TM6SC-D88-27-4U	88.06	8	3 1/2"...160D-8NPT	160D...240D-8NPT
TM7SC-D98-32-4U	98.06	8	4"...160D-8NPT	160D...240D-8NPT

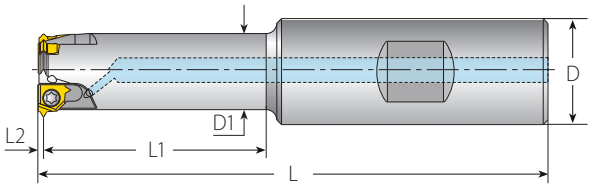
** When the pre-drilled hole for 8NPT is conical, the thread can be machined in one pass.

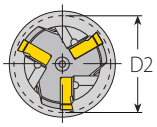
Thread Applications for Full Profile Inserts (API Round)

Toolholder	Toolholder Cutting Diameter D2 (mm)	Pitch	Cylindrical or Conical Pre-Drilled Hole (for cylindrical 2 radial passes 50%/50%; for conical one radial pass)	Conical Pre-Drilled Hole only (one pass)
	* Adjusted D2	TPI	Thread Dia.	
TM4SC-D42-16-3U	40.2	8	2.875...20x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	8.625...20x8APIRD (for LCSG)
TM5SC-D48-22-3U	46.2		3.5...20x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	
TM6SC-D56-22-3U	54.2		4...20x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	

* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.

Standard Toolholders - Weldon Shank (L Style - Mini L)





Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Weldon Shank for Mini-L Style Inserts

Insert Size	Ordering Code	Dimensions mm						No. of Flutes	Spare Parts	
IC		L	L1	L2	D	D1	D2	Z	Insert Screw	Torx Key
5.0L (Mini L)	TM1SC16W13-29-5L	81	29	1.1	16	9.8	13.0	1	SN5LTR	K7T
	TM2SC16W14-33-5L	85	33		16	10.3	13.5	2		
	TM3SC20W18-42-5L	96	42		20	14.3	17.7	3		
	TM2SC16W14-35-5L-ABUT	88	35	1.87	16	10.3	14.0	2		
	TM3SC20W18-45-5L-ABUT	100	45		20	14.3	18.2	3		

Weldon Shank (L Style - Mini L) Applications

Thread Applications for Partial Profile Inserts

Toolholder	Min. Thread Dia.							
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)	Partial 55°	Trapez
TM1SC16W13-29-5L	13	M16x2	M14x0.5; M14x0.75; M14.5x1.0; M15x1.5; M17x2.0	5/8-11	9/16-32UN; 9/16-28UN; 9/16-27UNS; 9/16-24UNEF; 5/8-20UN; 5/8-18UNF; 5/8-16UN; 5/8-14UNS; 5/8-12UN	3/8-19	5/8-14	TR16X2; TR18X2
TM2SC16W14-33-5L	13.5	M16x2	M15x0.5; M15x0.75; M15x1.0; M16x1.5; M17x2.0	-	5/8-32UN; 5/8-28UN; 5/8-27UNS; 5/8-24UNEF; 5/8-20UN; 5/8-18UNF; 5/8-16UN; 5/8-14UNS; 11/16-12UN	3/8-19	11/16-14	TR16X2; TR18X2
TM3SC20W18-42-5L	17.7	-	M19x0.5; M19x0.75; M19x1.0; M20x1.5; M20x2.0	-	3/4-32UN; 3/4-28UN; 7/8-27UNS; 3/4-24UNS; 13/16-20UNEF; 7/8-18UNS; 13/16-16UN; 7/8-14UNF; 13/16-12UN	1/2-14	-	TR20X2

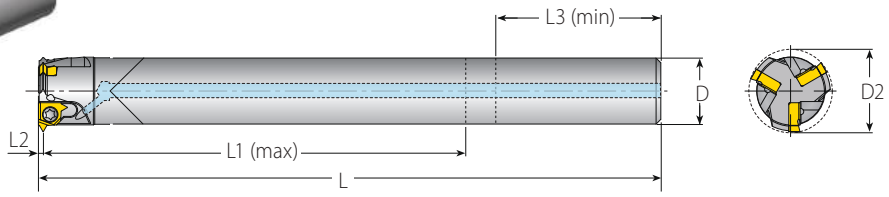
Thread Applications for Full Profile Inserts (ISO, UN, NPT)

Toolholder	Min. Thread Dia.			
	D2	ISO Fine	UN/UNF/UNEF/UNS	NPT
TM1SC16W13-29-5L	13	M14.5x1.0; M15x1.5; M17x2.0	5/8-18UNF; 5/8-16UN; 5/8-14UNS; 5/8-12UN	3/8-18NPT
TM2SC16W14-33-5L	13.5	M15x1.0; M16x1.5; M17x2.0	5/8-18UNF; 5/8-16UN; 5/8-14UNS; 11/16-12UN	3/8-18NPT
TM3SC20W18-42-5L	17.7	M19x1.0; M20x1.5; M20x2.0	7/8-18UNS; 13/16-16UN; 7/8-14UNF; 13/16-12UN	-

Thread Applications for Full Profile American Buttress Inserts

Toolholder	Thread Dia.
	D2	American Buttress
TM2SC16W14-35-5L-ABUT	14.0	(0.875"-4")-16; (0.875"-6")-12; (0.875"-16")-10
TM3SC20W18-45-5L-ABUT	18.2	(1.25"-4")-16; (1.25"-6")-12; (1.25"-16")-10

Standard Toolholders - Carbide Cylindrical Shank (L Style - Mini L)

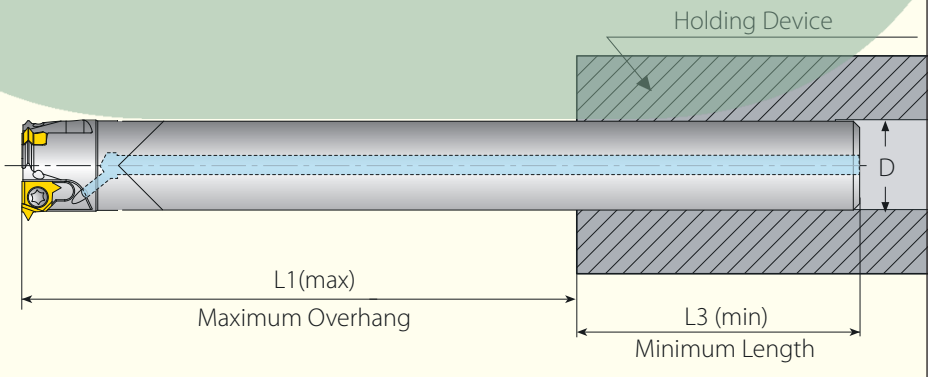


Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Carbide Cylindrical Shank for Mini-L Style Inserts

Spare Parts

Insert Size	Ordering Code	Dimensions mm						No. of Flutes		
IC		L	L1 (max)	L2	L3 (min)	D	D2	Z	Insert Screw	Torx Key
5.0L (Mini L)	CTM1SC09C13-43-5L	109	43	1.1	20	9.5	13.0	1	SN5LTR	K7T
	CTM2SC10C14-50-5L	116	50		22	10	13.5	2		
	CTM3SC14C18-65-5L	132	65		30	14	17.7	3		
	CTM2SC10C14-50-5L-ABUT	116	50	1.87	22	10	14.0	2		
	CTM3SC14C18-65-5L-ABUT	132	65		30	14	18.2	3		



The overhang-to-bar diameter ratio should be as small as possible to eliminate the chance of chatter (vibration).
The minimum length inside a holding device should be 2 times the diameter of the bar shank.

Carbide Cylindrical Shank (L Style - Mini L) Applications

Thread Applications for Partial Profile Inserts

Toolholder		Min. Thread Dia.						
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)	Partial 55°	Trapez
CTM1SC09C13-43-5L	13	M16x2	M14x0.5; M14x0.75; M14.5x1.0; M15x1.5; M17x2.0	5/8-11	9/16-32UN; 9/16-28UN; 9/16-27UNS; 9/16-24UNEF; 5/8-20UN; 5/8-18UNF; 5/8-16UN; 5/8-14UNS; 5/8-12UN	3/8-19	5/8-14	TR16X2; TR18X2
CTM2SC10C14-50-5L	13.5	M16x2	M15x0.5; M15x0.75; M15x1.0; M16x1.5; M17x2.0	-	5/8-32UN; 5/8-28UN; 5/8-27UNS; 5/8-24UNEF; 5/8-20UN; 5/8-18UNF; 5/8-16UN; 5/8-14UNS; 11/16-12UN	3/8-19	11/16-14	TR16X2; TR18X2
CTM3SC14C18-65-5L	17.7	-	M19x0.5; M19x0.75; M19x1.0; M20x1.5; M20x2.0	-	3/4-32UN; 3/4-28UN; 7/8-27UNS; 3/4-24UNS; 13/16-20UNEF; 7/8-18UNS; 13/16-16UN; 7/8-14UNF; 13/16-12UN	1/2-14	-	TR20X2

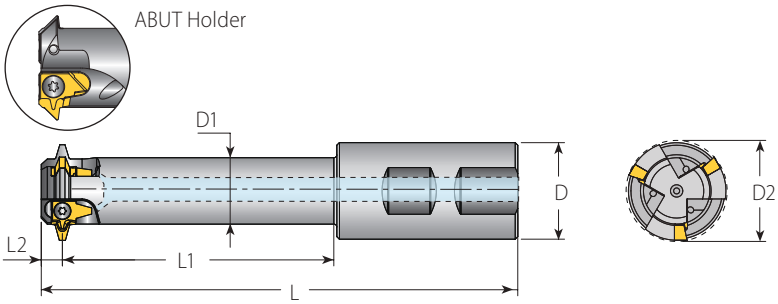
Thread Applications for Full Profile Inserts (ISO, UN, NPT)

Toolholder		Min. Thread Dia.		
	D2	ISO Fine	UN/UNF/UNEF/UNS	NPT
CTM1SC09C13-43-5L	13	M14.5x1.0; M15x1.5; M17x2.0	5/8-18UNF; 5/8-16UN; 5/8-14UNS; 5/8-12UN	3/8-18NPT
CTM2SC10C14-50-5L	13.5	M15x1.0; M16x1.5; M17x2.0	5/8-18UNF; 5/8-16UN; 5/8-14UNS; 11/16-12UN	3/8-18NPT
CTM3SC14C18-65-5L	17.7	M19x1.0; M20x1.5; M20x2.0	7/8-18UNS; 13/16-16UN; 7/8-14UNF; 13/16-12UN	-

Thread Applications for Full Profile American Buttress Inserts

Toolholder		Thread Dia.
	D2	American Buttress
CTM2SC10C14-50-5L-ABUT	14.0	(0.875"-4")-16; (0.875"-6")-12; (0.875"-16")-10
CTM3SC14C18-65-5L-ABUT	18.2	(1.25"-4")-16; (1.25"-6")-12; (1.25"-16")-10

Standard Toolholders - Weldon Shank (L Style - 3/8" L)



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Weldon Shank for 3/8" L Style Inserts

Spare Parts

Insert Size	Ordering Code	Dimensions mm						No. of Flutes		
IC	Toolholder	L	L1	L2	D	D1	D2	Z	Insert Screw	Torx Key
3/8"L	TM1SC25W21-50-3L	115	50	7.0	25	12.7	21.6	1	SN3T	HK3T
	TM2SC25W28-70-3L	135	70		25	18.1	28.5	2	SA3T	
	TM3SC32W33-90-3L	158	90		32	22.0	33.5	3	SN3T	
	TM2SC25W26-80-3L-ABUT	143	80	4.7	25	20.1	26.4	2	SA3T	
	TM3SC32W35-105-3L-ABUT	172	105		32	28.0	35.5	3		

TMSD

Weldon Shank (L Style - 3/8" L) Applications

Thread Applications for Partial Profile Inserts

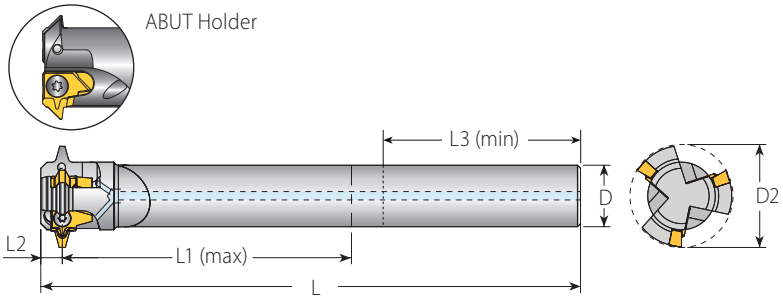
Toolholder	Min. Thread Dia.			
	D2	Trapez	American ACME	Stub ACME
TM1SC25W21-50-3L	21.6	(TR30-36)x6	1¼-5; 1⅜-4; 1½-4	1¼-5; 1⅜-4; 1½-4
TM2SC25W28-70-3L	28.5	(TR38-44)x7	1¾-4	-
TM3SC32W33-90-3L	33.5	(TR46-52)x8	2-4; 2¼-3; 2½-3; 2¾-3	2-4; 2¼-3; 2½-3; 2¾-3

Thread Applications for Full Profile American Buttress Inserts

Toolholder	Thread Dia.	
	D2	American Buttress
TM2SC25W26-80-3L-ABUT	26.4	(1.75"-4")-16; (1.75"-6")-12; (1.75"-6")-10; (1.75"-6")-8; (1.75"-6")-6
TM3SC32W35-105-3L-ABUT	35.5	(2.5"-4")-16; (2.5"-6")-12; (2.5"-6")-10; (2.5"-6")-8; (2.5"-6")-6

Standard Toolholders - Carbide Cylindrical Shank (L Style - 3/8" L)

ABUT Holder



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Carbide Cylindrical Shank for 3/8" L Style Inserts

Insert Size	Ordering Code	Dimensions mm						No. of Flutes	Spare Parts	
IC	Toolholder	L	L1(max)	L2	L3(min)	D	D2	Z	Insert Screw	Torx Key
3/8"L	CTM1SC½"C21-75-3L	115	75	7.0	40	12.7	21.6	1	SN3T	HK3T
	CTM2SC18C28-100-3L	155	100		46	18	28.5	2	SA3T	
	CTM3SC20C33-120-3L	176	120		46	20	33.5	3	SN3T	
	CTM2SC20C26-105-3L-ABUT	172.5	105	4.7	40	20	26.4	2	SA3T	

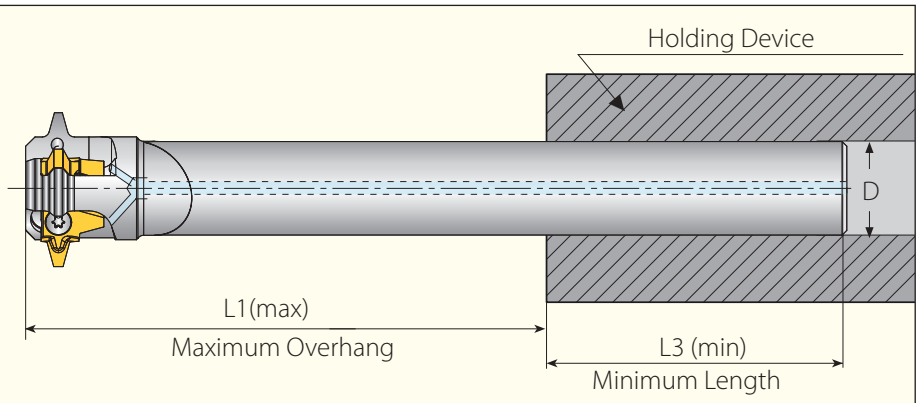
Carbide Cylindrical Shank (L Style - 3/8" L) Applications

Thread Applications for Partial Profile Inserts

Toolholder		Min. Thread Dia.		
	D2	Trapez	American ACME	Stub ACME
CTM1SC½"C21-75-3L	21.6	(TR30-36)x6	1¼-5; 1⅜-4; 1½-4	1¼-5; 1⅜-4; 1½-4
CTM2SC18C28-100-3L	28.5	(TR38-44)x7	1¾-4	-
CTM3SC20C33-120-3L	33.5	(TR46-52)x8	2-4; 2¼-3; 2½-3; 2¾-3	2-4; 2¼-3; 2½-3; 2¾-3

Thread Applications for Full Profile American Buttress Inserts

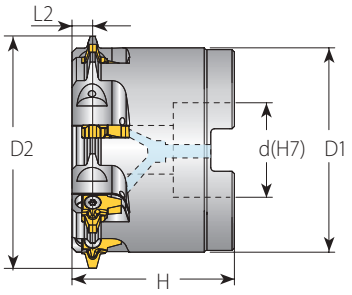
Toolholder		Thread Dia.
	D2	American Buttress
CTM2SC20C26-105-3L-ABUT	26.4	(1.75"-4")-16; (1.75"-6")-12; (1.75"-6")-10; (1.75"-6")-8; (1.75"-6")-6



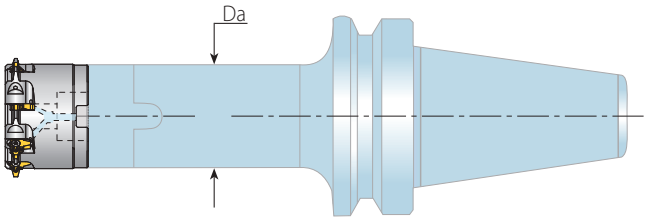
The overhang-to-bar diameter ratio should be as small as possible to eliminate the chance of chatter (vibration).
The minimum length inside a holding device should be 2 times the diameter of the bar shank.

TMSD

Shell Mill (L Style - 3/8" L)



D1≥Da - Combi Shell Mill Adaptor is preferable



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Shell Mill for 3/8" L Style Inserts

Insert Size	Ordering Code	Dimensions mm					No. of Flutes	Spare Parts		
IC	Toolholder	D1	D2	d(H7)	H	L2	Z	Insert Screw	Torx Key	Holder Screw
3/8"L	TM7SC-D80-32-3L	69.2	80	32	55	7.0	7	SA3T	HK3T	M16x2.0x40
	TM5SC-D48-22-3L-ABUT	41.0	48	22	40	4.7	5			M10x1.50x35
	TM6SC-D58-27-3L-ABUT	51.0	58	27			6			M12x1.75x40

Shell Mill (L Style - 3/8" L) Applications

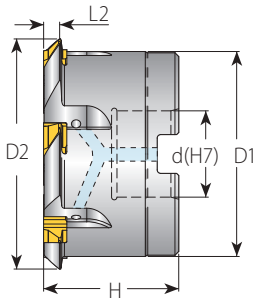
Thread Applications for Partial Profile Inserts

Toolholder		Min. Thread Dia.		
	D2	Trapez	American ACME	Stub ACME
TM7SC-D80-32-3L	80	(TR115-130)x6; (TR175-240)x8	-	-

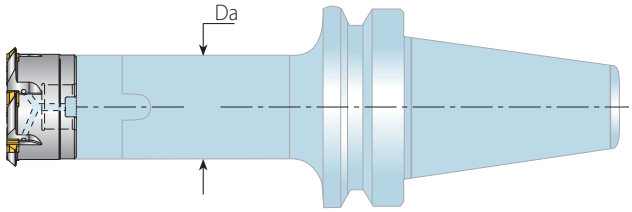
Thread Applications for Full Profile American Buttress Inserts

Toolholder		Thread Dia.
	D2	American Buttress
TM5SC-D48-22-3L-ABUT	48	(3.0"-6")-12; (3.0"-6")-10; (3.0"-6")-8; (3.0"-6")-6
TM6SC-D58-27-3L-ABUT	58	(4.0"-6")-12; (4.0"-6")-10; (4.0"-6")-8; (4.0"-6")-6

Shell Mill (5/8" V Style)



D1≥Da - Combi Shell Mill Adaptor is preferable



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Shell Mill for 5/8"V Style Inserts

Spare Parts

Insert Size	Ordering Code	Dimensions mm					No. of Flutes				
IC	Toolholder	D1	D2	d(H7)	H	L2	Z	Insert	Insert Screw	Torx Key	Holder Screw
5/8"V	TM6SC-D88-32-5V6-ABUT	72.5	88	32	47.9	5.35	6	5VI4ABUT-TM...	SA5T	HK5T	M16x2.0x40
	TM6SC-D88-32-5V8-ABUT	72.5	88	32	51.7	8.50		5VI2.5ABUT-TM...			
					50.0	7.10	6	5VI3ABUT-TM...			

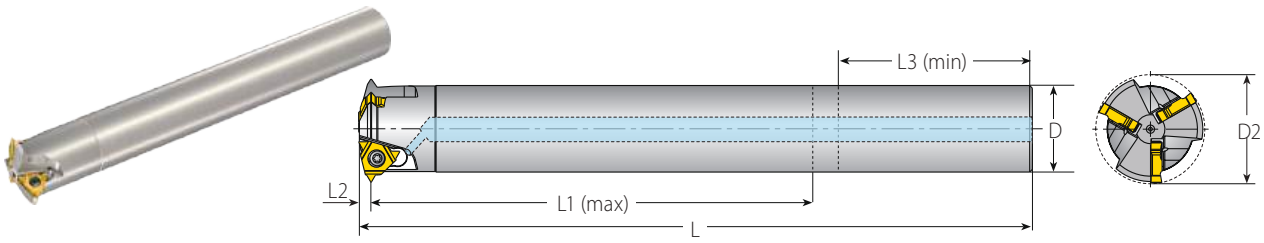
TMSD

Shell Mill (5/8" V Style) Applications

Thread Applications for Full Profile American Buttress Inserts

Toolholder		Thread Dia.
	D2	American Buttress
TM6SC-D88-32-5V6-ABUT	88	(5.0"-24")-4
TM6SC-D88-32-5V8-ABUT	88	(6.0"-24")-3; (7.0"-24")-2.5

Standard Toolholders - Steel Cylindrical Shank (A Style)



Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Steel Cylindrical Shank for A-Style Inserts

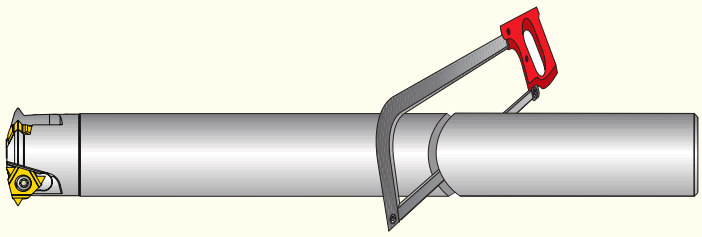
Insert Size	Ordering Code	Dimensions mm						No. of Flutes	Spare Parts	
IC		L	L1 (max)	L2	L3 (min)	D	D2	Z	Insert Screw	Torx Key
1/4"A	TM3SC20C26-105-2A	184	105	3.0	40	20	26.0	3	SN2T	HK2T
3/8"A	TM3SC28C35-144-3A	218	144	4.0	46	28	35.3	3	SA3T	HK3T

TMSD

Steel Cylindrical Shank (A Style) Applications

Thread Applications for Partial Profile Inserts

Toolholder	Min. Thread Dia.					
	D2	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)
TM3SC20C26-105-2A	26	-	M28x1.5; M29x2.0; M30x2.5; M30x3.0	-	1⅛-16UN; 1⅛-14UNS; 1 3/16-12UN; 1¼-10UNS; 1 3/16-8UN	-
TM3SC28C35-144-3A	35.3	-	M38x2.0; M39x2.5; M39x3.0; M40x4.0	-	1 5/16-12UN; 1⅜-10UNS; 1⅜-8UN; 1⅜-6UN	-



The length of cylindrical shank toolholders can be modified to reduce chatter (vibration).
Note: The length of the shank inside the clamping device should be L3 at minimum.

Recommended Grades, Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

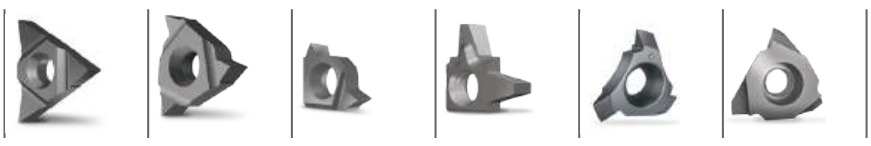
Material Group	Vardex No.	Material		Hardness Brinell HB	Vc [m/min]		Feed* f [mm/tooth] by Cutting Dia. (D2)		
					VBX	VTX	13-23	24-42	Shell Mill
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	100-210	90-180	0.20-0.32	0.30-0.50	0.30-0.75
	2		Medium Carbon (C=0.25-0.55%)	150	100-180	90-170	0.20-0.32	0.30-0.50	0.30-0.75
	3		High Carbon (C=0.55-0.85%)	170	100-170	90-160	0.15-0.23	0.25-0.35	0.25-0.52
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	60-90	90-155	0.17-0.28	0.28-0.45	0.28-0.67
	5		Hardened	275	80-150	80-160	0.15-0.28	0.25-0.45	0.25-0.67
	6		Hardened	350	70-140	70-150	0.15-0.25	0.25-0.40	0.25-0.60
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	60-130	70-115	0.15-0.22	0.20-0.30	0.20-0.45
	8		Hardened	325	70-110	60-100	0.13-0.21	0.18-0.30	0.18-0.45
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	100-170	100-170	0.15-0.22	0.20-0.30	0.20-0.45
	10		High Alloy (alloying elements >5%)	225	70-120	70-130	0.12-0.22	0.17-0.30	0.17-0.45
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	100-170	120-180	0.15-0.22	0.22-0.34	0.22-0.50
	12		Hardened	330	100-170	120-180	0.16-0.23	0.21-0.32	0.21-0.48
	13	Stainless Steel Austenitic	Austenitic	180	70-140	100-140	0.15-0.25	0.25-0.40	0.25-0.60
	14		Super Austenitic	200	70-140	100-140	0.12-0.20	0.17-0.26	0.17-0.39
	15	Stainless Steel Cast Ferritic	Non Hardened	200	70-140	100-140	0.16-0.24	0.25-0.37	0.25-0.55
	16		Hardened	330	70-140	100-140	0.12-0.20	0.17-0.26	0.17-0.39
	17	Stainless Steel Cast Austenitic	Austenitic	200	70-120	100-120	0.15-0.22	0.20-0.30	0.20-0.45
	18		Hardened	330	70-120	100-120	0.12-0.20	0.17-0.26	0.17-0.39
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-130	100-120	0.16-0.24	0.25-0.37	0.25-0.55
	29		Pearlitic (long chips)	230	60-120	80-100	0.15-0.22	0.20-0.30	0.20-0.45
	30	Grey Cast Iron	Low Tensile Strength	180	60-130	80-100	0.15-0.22	0.22-0.34	0.22-0.50
	31		High Tensile Strength	260	60-100	80-100	0.15-0.22	0.20-0.30	0.20-0.45
	32	Nodular Sg Iron	Ferritic	160	60-125	80-100	0.10-0.20	0.15-0.25	0.15-0.37
	33		Pearlitic	260	50-90	60-90	0.15-0.22	0.20-0.30	0.20-0.45
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	100-250		0.30-0.50	0.60-1.00	0.60-1.50
	35		Aged	100	100-180		0.28-0.50	0.50-0.90	0.50-1.20
	36	Aluminium Alloys	Cast	75	150-400		0.28-0.50	0.50-0.90	0.50-1.20
	37		Cast & Aged	90	150-280		0.25-0.40	0.40-0.60	0.40-0.90
	38	Aluminium Alloys	Cast Si 13-22%	130	80-150		0.28-0.50	0.50-0.90	0.50-1.20
	39	Copper and Copper Alloys	Brass	90	120-210	100-200	0.30-0.50	0.60-1.00	0.60-1.50
	40		Bronze and Non Leaded Copper	100	120-210	100-200	0.28-0.50	0.50-0.90	0.50-1.20
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	20-45	20-40	0.09-0.15	0.12-0.22	0.12-0.33
	20		Aged (iron based)	280	20-30	20-30	0.07-0.13	0.10-0.20	0.10-0.30
	21		Annealed (nickel or cobalt based)	250	15-20	15-20	0.08-0.15	0.08-0.20	0.08-0.30
	22		Aged (nickel or cobalt based)	350	10-15	10-15	0.08-0.15	0.08-0.20	0.08-0.30
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	70-140	70-120	0.07-0.13	0.10-0.20	0.10-0.30
	24		α+β alloys	1050Rm	20-50	20-50	0.07-0.13	0.10-0.20	0.10-0.30
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	15-45	15-45	0.05-0.12	0.05-0.18	0.05-0.27
	26			51-55HRc	15-40	15-40	0.05-0.12	0.05-0.18	0.05-0.27

* When using a Shell Mill toolholder, the feed can be increased by 50%.
* For 3/8"L it is recommended to machine in two passes and decrease the feed by 40%.

Grades

Grade	Application
VBX	TiCN coated carbide grade. Excellent grade for **Steels and General Use.**
VTX	TiAlN coated carbide grade. Ideal for **Stainless Steels.**

U Style | A Style | Mini-L Style | 3/8" L Style | Vertical Style | V Style



TMSD

TM Solid

Solid Carbide Thread Milling Tools

Vardex Ordering Code System

TM Solid Carbide

HC		10	082	L15	-	I	1.50	ISO	TM		VTH
1	2	3	4	5		6	7	8	9	10	11

1 - Line

HC - Helicool
HCN - Helicool with relief neck
HCR - Helicool R
HCC - Helicool C
H - Helical
S - Straight Flutes
D - Deep Threading or MilliPro
TDC - TMDR with coolant
TD - TMDR without coolant

2 - No. of Teeth

1T - 1 Tooth
3T - 3 Teeth (MilliPro)
2L - 2 Teeth LH (MilliPro HD)

3 - Shank Dia.

03 - 3.0 mm
04 - 4.0
06 - 6.0
08 - 8.0
10 - 10.0
12 - 12.0
14 - 14.0
16 - 16.0
18 - 18.0
20 - 20.0

4 - Cutting Dia.

0.7 - 19.9 mm

5 - Tool Cutting Length

Up to 3Do

6 - Type of Tool

E - External
I - Internal
EI - External + Internal

7 - Pitch

Full Profile - Pitch Range

mm	TPI
0.25-6.0	80 - 4.5

Partial Profile - Pitch Range

	mm	TPI
TA	0.5-0.8	32-56
TB	0.5-1.0	24-56
TC	1.0-1.50	16-24
TD	1.0-1.75	14-24
TF	0.5-1.25	20-48

8 - Standard

60 - Partial Profile 60°
ISO - ISO Metric
UN - American UN
UNC - UN Coarse
UNF - UN Fine
UNEF - UN Extra Fine
UNJ - UNJ
MJ - MJ
BSW - Whitworth Coarse
BSP - BSP
BSF - Whitworth Fine
BSPT - BSPT
NPT - NPT
ANPT - ANPT
NPTF - NPTF
NPS - NPS
PG - PG
TP60 - Taper 60^0
TP55 - Taper 55^0

9 - System

TM
TML - Extra Long

10 - No. of Flutes

3 - 3 Flutes
5 - 5 Flutes
* For straight flutes only.

11 - Carbide Grade

VTS
VTH

HTC Thriller

HTC	M6	1.0	2D	VTN
1	2	3	4	5

1 - Line

HTC - Thriller

2 - Thread Diameter

M6 - M12

3 - Pitch

1 - 1.75mm

4 - Thread Length

2D
2.5D

5 - Carbide Grade

VTN
VTS

TM Solid Carbide Program

VARGUS GENius™ Tool Selector and CNC Program Generator

Miniature Threads
MilliPro

MilliPro &
MilliPro EL
From M1.6x0.35 (1-72UNF)

MilliPro HD
Up to 62 HRc

MilliPro Dental
From M1.0x0.25 (0-80UNF)

TMDR
From M3x0.5 (4-40UNC)

Long Thread
Deep Threading

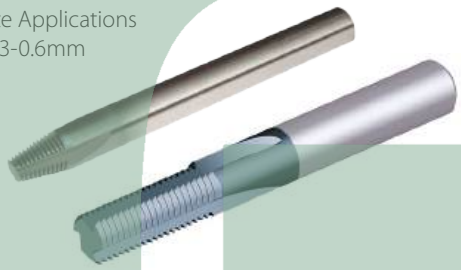
Full Profile

Partial Profile

Up to 3XDo

Normal Use
Straight Flutes

Taper
For Bone Plate Applications
From Pitch 0.3-0.6mm

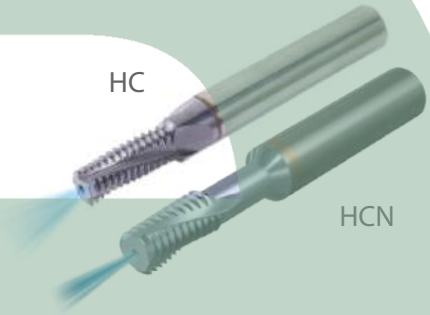


From M4.5x0.75 (No.8-36UNF)

Heavy Duty
Helicool

HC

HCN

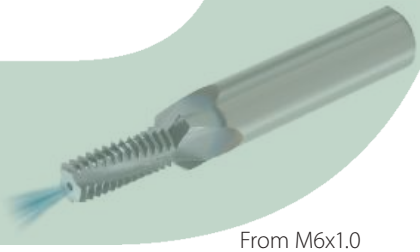


From M3x0.5 (No.10-32UNF)

Radial Coolant
Helicool-R (HCR)

From M6x1.0

Helicool and Chamfer
Helicool-C (HCC)



From M6x1.0

Economical Tool
Helical

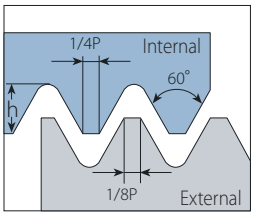
Taper
For Bone Plate Applications
From Pitch 0.3-0.6mm

From M3x0.5 (No.8-36UNF)

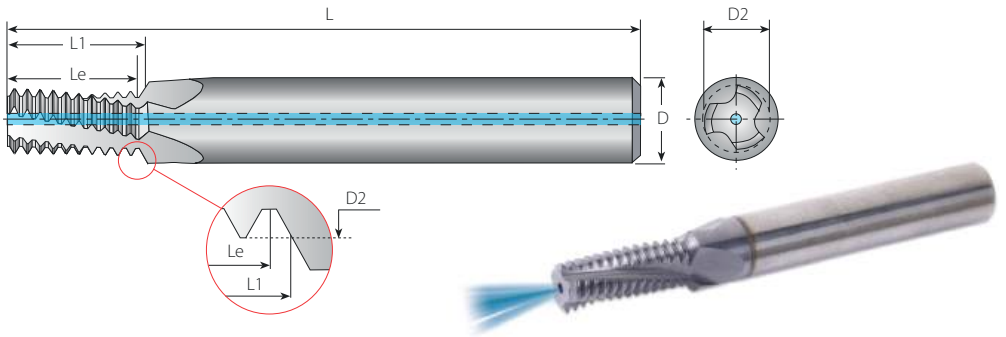
Drill, Thread and Chamfer
HTC

From M6x1.0

Internal



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



Helical Flutes with Thru-Hole Coolant

1.5 x Do (Le ≤ 1.5 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HC04024L04-I0.50ISOTM...	4	2.40	45	4.7	3	9	2.5
M4x0.7		0.7	HC04031L06-I0.70ISOTM...	4	3.15	45	6.6	3	9	3.3
M5x0.8		0.8	HC04039L07-I0.80ISOTM...	4	3.90	45	7.6	3	9	4.2
M6x1.0	M8-M40x1.0	1.0	HC06048L09-I1.00ISOTM...	6	4.80	57	9.5	3	9	5.0
M8x1.25		1.25	HC08065L13-I1.25ISOTM...	8	6.50	61	13.1	3	10	6.8
M10x1.5	M12-M48x1.5	1.5	HC10082L15-I1.50ISOTM...	10	8.20	73	15.7	3	10	8.5
M12x1.75		1.75	HC10099L18-I1.75ISOTM...	10	9.90	73	18.4	4	10	10.2
M14x2.0	M17-M80x2.0	2.0	HC12116L21-I2.00ISOTM...	12	11.60	73	21.0	4	10	12.0
M16x2.0	M17-M80x2.0	2.0	HC14136L25-I2.00ISOTM...	14	13.60	92	25.0	4	12	14.0

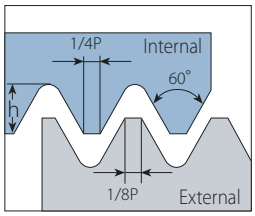
Helical Flutes with Thru-Hole Coolant

2 x Do (Le ≤ 2 x Thread Diameter)

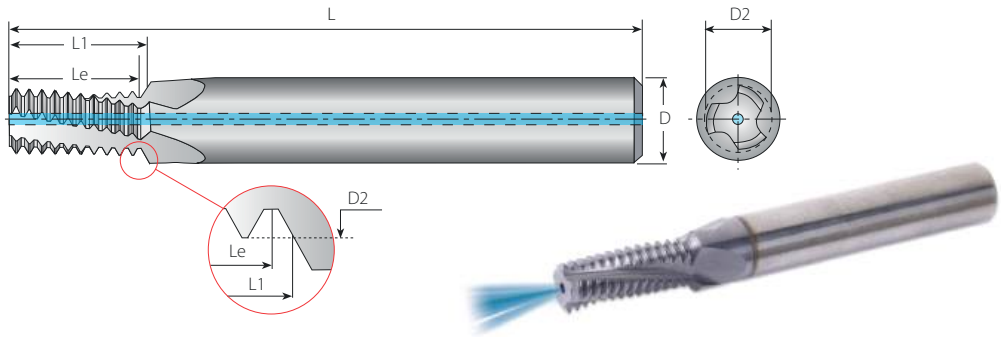
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HC04024L06-I0.50ISOTM...	4	2.40	45	6.2	3	12	2.5
	M4x0.5	0.5	HC04032L08-I0.50ISOTM...	4	3.20	45	8.2	3	16	3.5
	M5x0.5	0.5	HC06042L10-I0.50ISOTM...	6	4.20	57	10.2	3	20	4.5
M4x0.7		0.7	HC04031L08-I0.70ISOTM...	4	3.15	45	8.7	3	12	3.3
	M6x0.75	0.75	HC06050L12-I0.75ISOTM...	6	5.00	57	12.4	3	16	5.3
M5x0.8		0.8	HC04039L10-I0.80ISOTM...	4	3.90	45	10.8	3	13	4.2
M6x1.0	M8-M40x1.0	1.0	HC06048L12-I1.00ISOTM...	6	4.80	57	12.5	3	12	5.0
	M8x1.0	1.0	HC08067L16-I1.00ISOTM...	8	6.70	61	16.5	3	16	7.0
	M10x1.0	1.0	HC10087L20-I1.00ISOTM...	10	8.70	73	20.5	3	20	9.0
	M12x1.0	1.0	HC12107L24-I1.00ISOTM...	12	10.70	73	24.5	4	24	11.0
M8x1.25		1.25	HC08065L16-I1.25ISOTM...	8	6.50	61	16.9	3	13	6.8
	M10x1.25	1.25	HC10085L20-I1.25ISOTM...	10	8.50	73	20.6	3	16	8.8
M10x1.5	M12-M48x1.5	1.5	HC10082L20-I1.50ISOTM...	10	8.20	73	20.2	3	13	8.5
	M12x1.5	1.5	HC10099L24-I1.50ISOTM...	10	9.90	73	24.7	4	16	10.5
	M14x1.5	1.5	HC12119L29-I1.50ISOTM...	12	11.90	80	29.2	4	19	12.5
	M16x1.5	1.5	HC14139L32-I1.50ISOTM...	14	13.90	92	32.2	4	21	14.5
M12x1.75		1.75	HC10099L25-I1.75ISOTM...	10	9.90	73	25.4	4	14	10.2
M14x2.0	M17-M80x2.0	2.0	HC12116L29-I2.00ISOTM...	12	11.60	80	29.0	4	14	12.0
M16x2.0	M17-M80x2.0	2.0	HC14136L33-I2.00ISOTM...	14	13.60	92	33.0	4	16	14.0
M18x2.5		2.5	HC16148L36-I2.50ISOTM...	16	14.80	92	36.2	4	14	15.5
M20x2.5		2.5	HC18171L41-I2.50ISOTM...	18	17.10	102	41.2	4	16	17.5
M24x3.0		3.0	HC20199L49-I3.00ISOTM...	20	19.90	102	49.5	4	16	21.0

* Bore diameter applies to smallest thread dia.

Internal



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



Helical Flutes with Thru-Hole Coolant

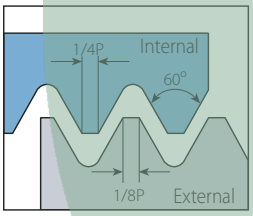
3 x Do (Le ≤ 3.0 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le**	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HC04024L09-I0.50ISOTM...	4	2.40	45	9.25	3	18	2.5
M4x0.7		0.7	HC04031L12-I0.70ISOTM...	4	3.15	47	12.95	3	18	3.3
M5x0.8		0.8	HC04039L15-I0.80ISOTM...	4	3.90	50	15.60	3	19	4.2
M6x1.0	M8-M40x1.0	1.0	HC06048L18-I1.00ISOTM...	6	4.80	60	18.50	3	18	5.0
M8x1.25		1.25	HC08065L25-I1.25ISOTM...	8	6.50	66	25.63	3	20	6.8
M10x1.5	M12-M48x1.5	1.5	HC10082L30-I1.50ISOTM...	10	8.20	75	30.75	3	20	8.5
M12x1.75		1.75	HC10099L36-I1.75ISOTM...	10	9.90	86	37.63	4	21	10.2
M16x2.0	M17-M80x2.0	2.0	HC14136L48-I2.00ISOTM...	14	13.60	108	49.00	4	24	14.0

** Above solid carbide tools (Le=3xDo) are suitable for light machining only. Reduce feed by 30%.

ISO Metric HCN

Internal



Defined by: R262 (DIN 13)
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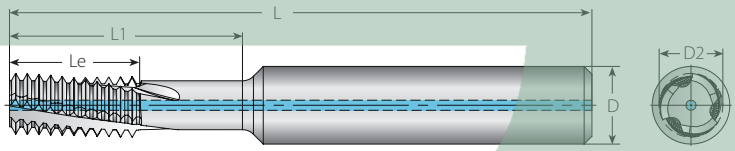


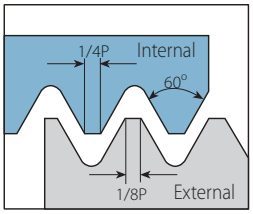
Helical Flutes with Relief Neck

3 x Do (L1 ≤ 3.0 x Thread Diameter)

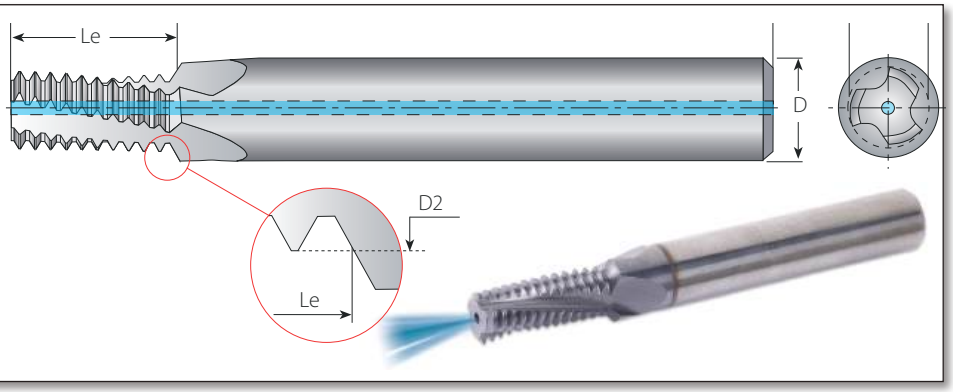
Thread		Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
Coarse	Fine	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HCN04024L09-I0.50ISOTM…	4	2.40	45	5.0	9	3	10	2.5
M4x0.7		0.7	HCN04031L12-I0.70ISOTM…	4	3.15	47	7.0	12	3	10	3.3
M5x0.8		0.8	HCN04039L15-I0.80ISOTM…	4	3.90	50	8.8	15	3	11	4.2
M6x1.0	M8-M40x1.0	1.0	HCN06048L18-I1.00ISOTM…	6	4.80	60	10.0	18	3	10	5.0
	M8-M40x1.0	1.0	HCN08067L24-I1.00ISOTM…	8	6.70	66	13.0	24	4	13	7.0
	M10-M40x1.0	1.0	HCN10087L30-I1.00ISOTM…	10	8.70	75	17.0	30	4	17	9.0
M8x1.25		1.25	HCN08065L24-I1.25ISOTM…	8	6.50	66	13.75	24	3	11	6.8
M10x1.5	M12-M48x1.5	1.5	HCN10082L30-I1.50ISOTM…	10	8.20	75	16.5	30	3	11	8.5
	M12-M48x1.5	1.5	HCN10099L36-I1.50ISOTM…	10	9.90	86	19.5	36	4	13	10.5
	M14-M48x1.5	1.5	HCN12119L42-I1.50ISOTM…	12	11.90	92	22.5	42	4	15	12.5
	M16-M48x1.5	1.5	HCN14139L48-I1.50ISOTM…	14	13.90	102	25.5	48	5	17	14.5
M12x1.75		1.75	HCN10099L36-I1.75ISOTM…	10	9.90	86	19.25	36	4	11	10.2
M14x2.0	M17-M80x2.0	2.0	HCN12116L42-I2.00ISOTM…	12	11.60	92	24.0	42	4	12	12.0
M16x2.0	M17-M80x2.0	2.0	HCN14136L48-I2.00ISOTM…	14	13.60	102	26.0	48	4	13	14.0

* Bore diameter applies to smallest thread dia.

Internal



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



Helical Flutes with Thru-Hole Coolant

1.5 x Do (Le ≤ 1.5 x Thread Diameter)

Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	TPI	Internal	D	D2	L	Le	Z	Zt	mm
No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	24	HC04035L07-I24UNCTM...	4	3.58	45	7.9	3	7	3.8
No.12-24	5/16", 3/8"x24	9/16"-11/16"x24	24	HC06041L08-I24UNCTM...	6	4.15	57	9.0	3	8	4.5
1/4"x20	7/16", 1/2"x20	3/4"-1"x20	20	HC06048L09-I20UNCTM...	6	4.88	57	9.5	3	7	5.2
5/16"x18	9/16", 5/8"x18	11/16"-1 11/16" x18	18	HC08061L11-I18UNCTM...	8	6.15	61	12.0	3	8	6.5
3/8"x16	3/4"x16		16	HC08076L15-I16UNCTM...	8	7.65	61	15.1	3	9	8.0
7/16"x14	7/8"x14		14	HC10090L17-I14UNCTM...	10	9.00	73	17.2	3	9	9.3
1/2"x13			13	HC12104L20-I13UNCTM...	12	10.35	73	20.5	4	10	10.8
9/16"x12	1"-1 1/2"x12		12	HC12118L22-I12UNCTM...	12	11.80	73	22.2	4	10	12.3

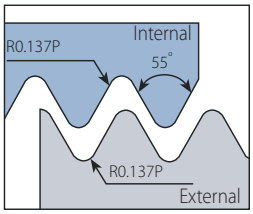
Helical Flutes with Thru-Hole Coolant

2 x Do (Le ≤ 2 x Thread Diameter)

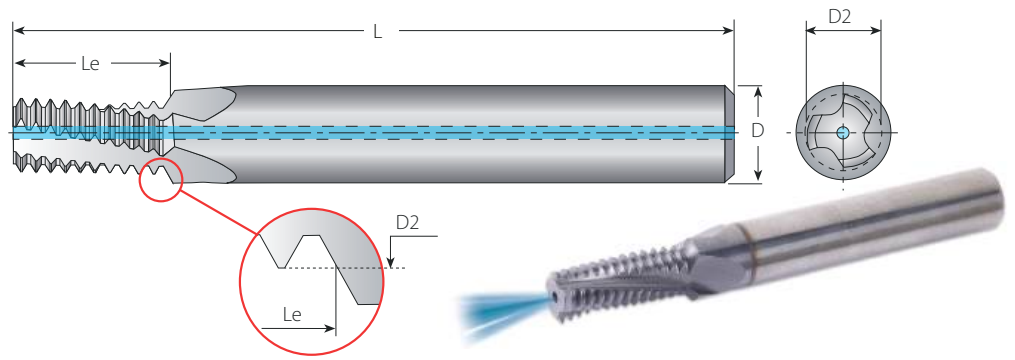
Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	TPI	Internal	D	D2	L	Le	Z	Zt	mm
	No.10-32	No.12-3/8"x32	32	HC04038L09-I32UNFTM...	4	3.80	45	9.9	3	12	4.0
		No.12-3/8"x32	32	HC06044L11-I32UNEFTM...	6	4.40	57	11.5	3	14	4.7
	No.12, 1/4"x28	7/16", 1/2"x28	28	HC06043L11-I28UNFTM...	6	4.30	57	11.3	3	12	4.6
	1/4"x28	7/16", 1/2"x28	28	HC06052L13-I28UNFTM...	6	5.15	57	13.1	3	14	5.5
		7/16", 1/2"x28	28	HC10099L22-I28UNEFTM...	10	9.90	73	22.2	3	24	10.2
No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	24	HC04035L10-I24UNCTM...	4	3.58	45	10.0	3	9	3.8
No.12-24	5/16", 3/8"x24	9/16"-11/16"x24	24	HC06041L11-I24UNCTM...	6	4.15	57	11.1	3	10	4.5
	5/16", 3/8"x24	9/16"-11/16"x24	24	HC08066L16-I24UNFTM...	8	6.68	61	16.4	3	15	6.8
	3/8"x24	9/16"-11/16"x24	24	HC10082L19-I24UNFTM...	10	8.20	73	19.6	3	18	8.5
		9/16"-11/16"x24	24	HC14129L29-I24UNEFTM...	14	12.90	92	29.1	4	27	13.2
1/4"x20	7/16", 1/2"x20	3/4"-1"x20	20	HC06048L13-I20UNCTM...	6	4.88	57	13.3	3	10	5.2
	7/16", 1/2"x20	3/4"-1"x20	20	HC10096L22-I20UNFTM...	10	9.60	73	22.2	3	17	9.8
	1/2"x20	3/4"-1"x20	20	HC12111L26-I20UNFTM...	12	11.10	80	26.0	4	20	11.5
		3/4"-1"x20	20	HC18174L38-I20UNEFTM...	18	17.40	102	38.7	4	30	17.8
5/16"x18	9/16", 5/8"x18	11/16"-1 11/16"x18	18	HC08061L16-I18UNCTM...	8	6.15	61	16.2	3	11	6.5
	9/16", 5/8"x18	11/16"-1 11/16"x18	18	HC14125L28-I18UNFTM...	14	12.50	92	28.9	4	20	12.8
	5/8"x18	11/16"-1 11/16"x18	18	HC16141L31-I18UNFTM...	16	14.10	92	31.7	4	22	14.5
3/8"x16	3/4"x16		16	HC08076L19-I16UNCTM...	8	7.65	61	19.8	3	12	8.0
	3/4"x16		16	HC18170L38-I16UNFTM...	18	17.00	102	38.8	4	24	17.5
7/16"x14	7/8"x14		14	HC10090L22-I14UNCTM...	10	9.00	73	22.7	3	12	9.3
	7/8"x14		14	HC20199L44-I14UNFTM...	20	19.90	102	44.4	4	24	20.5
1/2"x13			13	HC12104L26-I13UNCTM...	12	10.35	80	26.4	4	13	10.8
9/16"x12	1"-1 1/2"x12		12	HC12118L28-I12UNCTM...	12	11.80	80	28.6	4	13	12.3
	1"-1 1/2"x12		12	HC20199L51-I12UNFTM...	20	19.90	102	51.9	4	24	23.5
5/8"x11			11	HC14131L33-I11UNCTM...	14	13.10	92	33.5	4	14	13.5
3/4"x10			10	HC16159L39-I10UNCTM...	16	15.90	92	39.4	4	15	16.5
7/8"x9			9	HC20190L46-I9UNCTM...	20	19.00	102	46.6	4	16	19.5
1"x8			8	HC20199L52-I8UNCTM...	20	19.90	102	52.4	4	16	22.0

* Bore diameter applies to smallest thread dia.

External / Internal



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



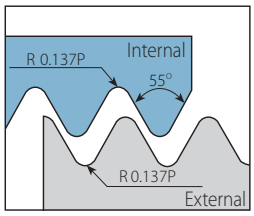
Helical Flutes with Thru-Hole Coolant

2 x Do (Le ≤ 2 x Thread Diameter)

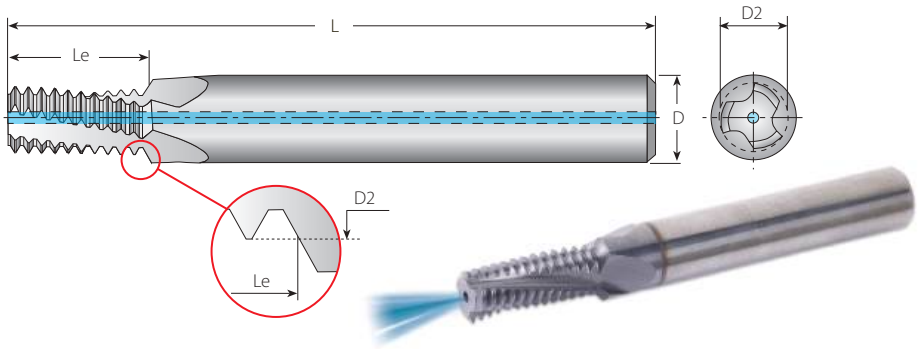
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
BSW	BSF	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
	1/4"x26	26	HC06050L13-EI26BSFTM...	6	5.00	57	13.2	3	13	5.3
	5/16"x22	22	HC08063L16-EI22BSFTM...	8	6.35	61	16.7	3	14	6.7
1/4"x20	3/8"x20	20	HC06044L13-EI20BSWTM...	6	4.45	57	13.3	3	10	5.0
	3/8"x20	20	HC08076L19-EI20BSFTM...	8	7.65	61	19.7	3	15	8.2
5/16"x18	7/16"x18	18	HC06058L16-EI18BSWTM...	6	5.85	57	16.2	3	11	6.5
	7/16"x18	18	HC10092L23-EI18BSFTM...	10	9.20	73	23.3	3	16	9.7
3/8"x16	1/2", 9/16"x16	16	HC08072L19-EI16BSWTM...	8	7.20	61	19.8	3	12	7.9
	1/2", 9/16"x16	16	HC12105L26-EI16BSFTM...	12	10.50	80	26.2	4	16	11.1
	9/16"x16	16	HC14122L29-EI16BSFTM...	14	12.15	92	29.4	4	18	12.6
7/16"x14	5/8", 11/16"x14	14	HC10085L22-EI14BSWTM...	10	8.50	73	22.7	3	12	9.2
	5/8", 11/16"x14	14	HC14134L31-EI14BSFTM...	14	13.40	92	31.7	4	17	14.0
	11/16"x14	14	HC16150L35-EI14BSFTM...	16	15.00	92	35.4	4	19	15.6
1/2"x12	3/4"x12	12	HC10096L26-EI12BSWTM...	10	9.65	73	26.5	3	12	10.5
9/16"x12	3/4"x12	12	HC12113L28-EI12BSWTM...	12	11.25	80	28.6	4	13	12.1
	3/4"x12	12	HC18162L39-EI12BSFTM...	18	16.20	102	39.2	4	18	16.8
5/8"x11	7/8"x11	11	HC14126L33-EI11BSWTM...	14	12.60	92	33.5	4	14	13.4
11/16"x11		11	HC16142L35-EI11BSWTM...	16	14.20	92	35.8	4	15	15.0

* Bore diameter applies to smallest thread dia.

External / Internal



Defined by: B.S.2779:1956
Tolerance class: Medium class



Helical Flutes with Thru-Hole Coolant

1.5 x Do (Le ≤ 1.5 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16", 1/8"x28	28	HC08064L12-EI28BSPTM...	8	6.40	61	12.2	3	13	6.7
1/8"x28	28	HC10082L15-EI28BSPTM...	10	8.20	73	15.0	3	16	8.7
1/4", 3/8"x19	19	HC12110L20-EI19BSPTM...	12	11.00	80	20.7	4	15	11.8
3/8"x19	19	HC16145L26-EI19BSPTM...	16	14.50	92	26.1	4	19	15.2
1"-4"x11	11	HC20199L42-EI11BSPTM...	20	19.90	102	42.7	4	18	30.7

Helical Flutes with Thru-Hole Coolant

2 x Do (Le ≤ 2 x Thread Diameter)

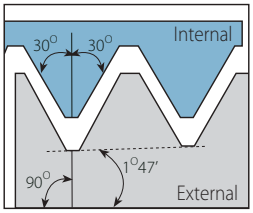
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16", 1/8"x28	28	HC08064L15-EI28BSPTM...	8	6.40	61	15.9	3	17	6.7
1/8"x28	28	HC10082L19-EI28BSPTM...	10	8.20	73	19.5	3	21	8.7
1/4", 3/8"x19	19	HC12110L27-EI19BSPTM...	12	11.00	80	27.4	4	20	11.8
3/8"x19	19	HC16145L34-EI19BSPTM...	16	14.50	92	34.1	4	25	15.2
1/2"-7/8"x14	14	HC18179L42-EI14BSPTM...	18	17.90	102	42.6	4	23	19.0

* Bore diameter applies to smallest thread dia.

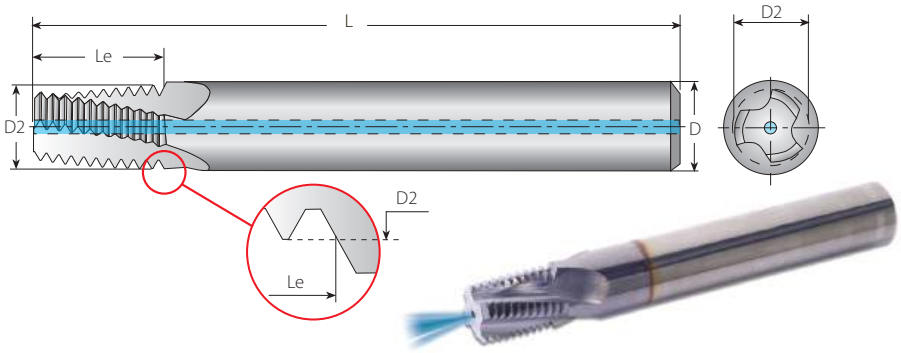
NPT

Helicool

External / Internal



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



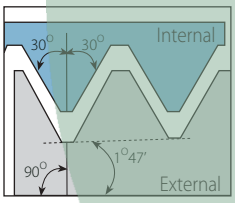
Helical Flutes with Thru-Hole Coolant

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	HC06059L09-EI27NPT-TM...	6	5.90	57	9.9	3	10	6.3
1/8"x27	27	HC08076L09-EI27NPT-TM...	8	7.65	61	9.9	3	10	8.5
1/4"x18	18	HC10099L14-EI18NPT-TM...	10	9.90	73	14.8	3	10	11.1
3/8"x18	18	HC12111L14-EI18NPT-TM...	12	11.15	73	14.8	4	10	14.5
1/2", 3/4"x14	14	HC16142L19-EI14NPT-TM...	16	14.25	92	19.0	4	10	17.7, 23.0
1", 1 1/4", 1 1/2", 2"x11.5	11.5	HC20196L23-EI11.5NPT-TM...	20	19.60	102	23.2	4	10	29.0, 37.7, 44.0, 56.0
2 1/2", 3"x8	8	HC20196L33-EI8NPT-TM...	20	19.60	102	33.3	4	10	66.5, 82.1

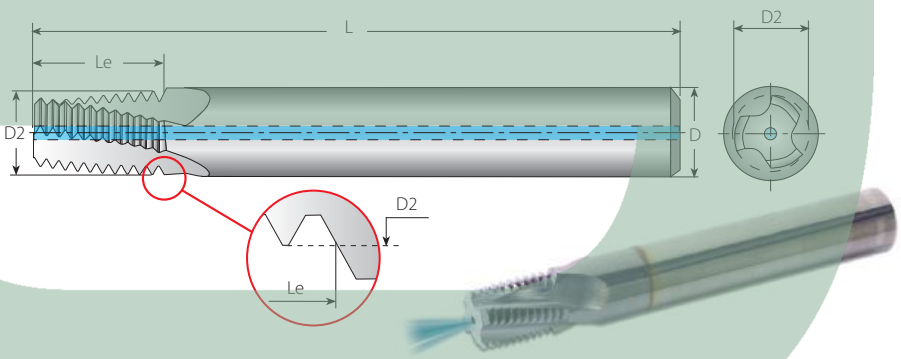
ANPT

Helicool

External / Internal



Defined by: MIL-P-7105B
Tolerance class: Standard ANPT



Helical Flutes with Thru-Hole Coolant

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/4", 3/8"x18	18	HC10099L14-EI18ANPT-TM...	10	9.90	73	14.8	3	10	11.1 / 14.5
1/2", 3/4"x14	14	HC14139L18-EI14ANPT-TM...	14	13.90	92	19.0	4	10	17.7 / 23.0

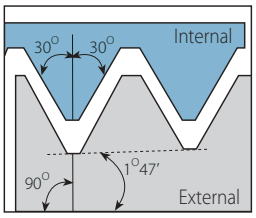
* Bore diameter applies to smallest thread dia.

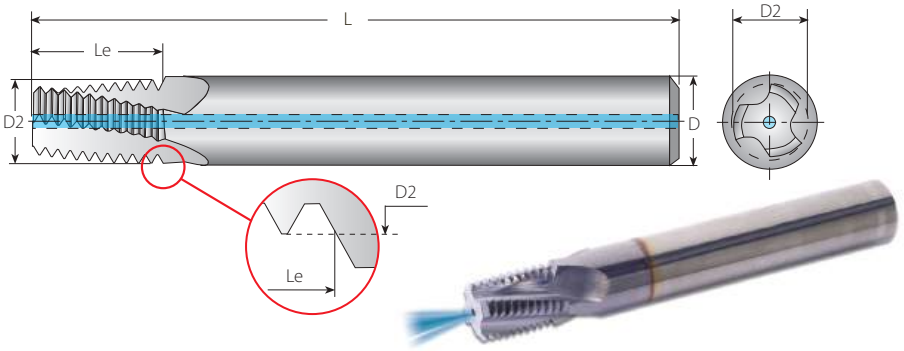
TM Solid

NPTF

Helicool

External / Internal





Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF

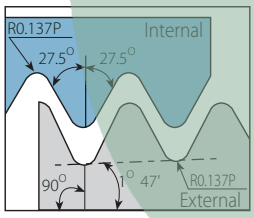
Helical Flutes with Thru-Hole Coolant

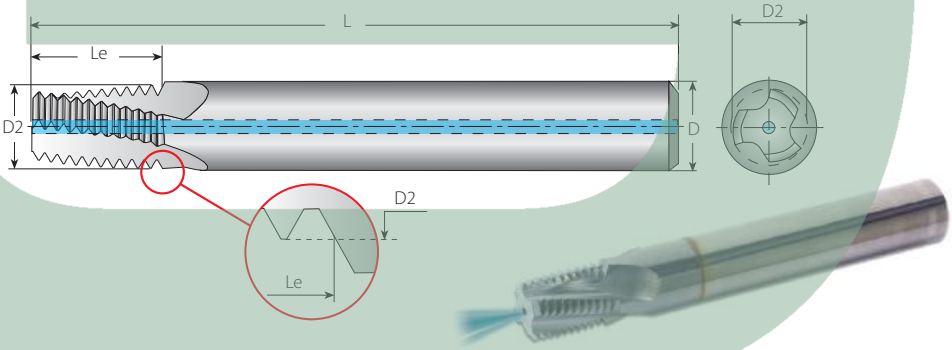
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	HC06059L09-EI27NPTFTM...	6	5.90	57	9.9	3	10	6.3
1/8"x27	27	HC08076L09-EI27NPTFTM...	8	7.65	61	9.9	3	10	8.4
1/4"x18	18	HC10099L14-EI18NPTFTM...	10	9.90	73	14.8	3	10	11.1
3/8"x18	18	HC12111L14-EI18NPTFTM...	12	11.15	73	14.8	4	10	14.7
1/2", 3/4"x14	14	HC16142L19-EI14NPTFTM...	16	14.25	92	19.0	4	10	17.9, 23.4
1", 1 1/4", 1 1/2", 2"x11.5	11.5	HC20196L23-EI11.5NPTFTM...	20	19.60	102	23.2	4	10	29.0, 37.7, 43.7, 55.6
2 1/2", 3"x8	8	HC20196L33-EI8NPTFTM...	20	19.60	102	33.3	4	10	66.3, 82.1

BSPT

Helicool

External / Internal





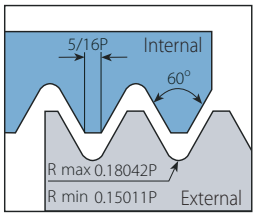
Defined by: B.S.21:1985
Tolerance class: Standard BSPT

Helical Flutes with Thru-Hole Coolant

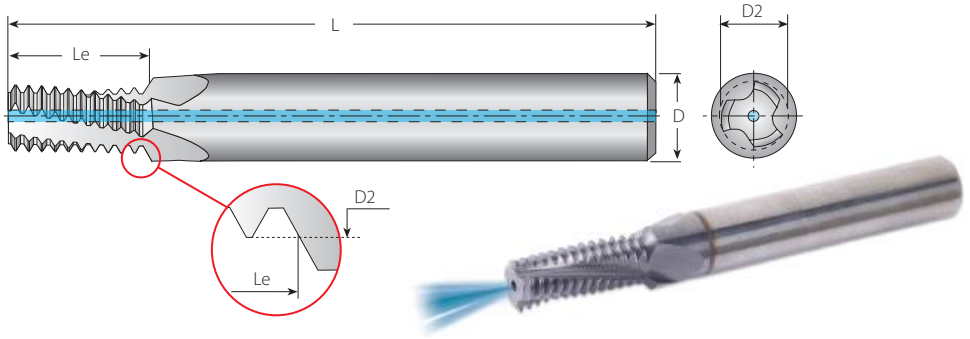
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x28	28	HC06059L10-EI28BSPT-TM...	6	5.90	57	10.2	3	11	6.7
1/8"x28	28	HC08076L10-EI28BSPT-TM...	8	7.65	61	10.2	3	11	8.7
1/4"x19	19	HC10099L15-EI19BSPT-TM...	10	9.90	73	15.4	3	11	11.8
3/8"x19	19	HC12111L15-EI19BSPT-TM...	12	11.15	73	15.4	4	11	15.2
1/2", 3/4"x14	14	HC16142L22-EI14BSPT-TM...	16	14.25	92	22.7	4	12	19.0
1", 1 1/2", 2", 2 1/2"x11	11	HC20196L28-EI11BSPT-TM...	20	19.60	102	28.9	4	12	30.7

* Bore diameter applies to smallest thread dia.

Internal



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



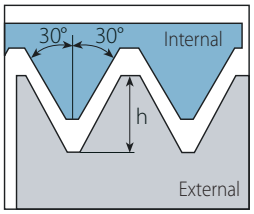
Helical Flutes with Thru-Hole Coolant

2 x Do (Le ≤ 2 x Thread Diameter)

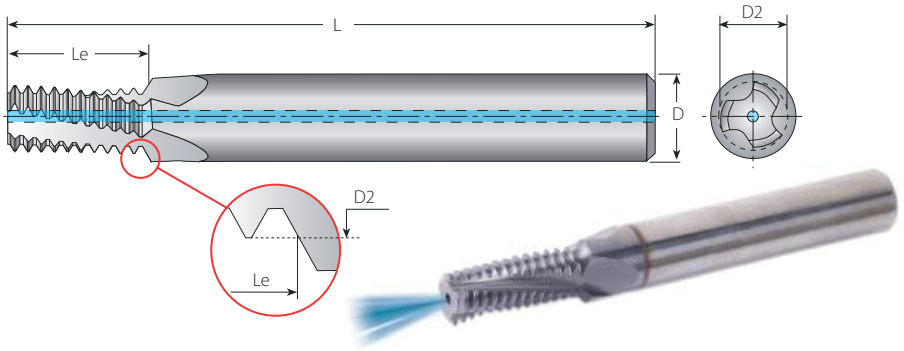
Thread				Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNJC	UNJF	UNJEF	UNJ	TPI	Internal	D	D2	L	Le	Z	Zt	mm
0.138"(#6)	0.190"(#10)	0.216"(#12)	0.4375(7/16")	32	HC04027L07-I32UNJTM...	4	2.70	45	7.5	3	9	2.8
-	0.250"(1/4")	0.4375"(7/16")	0.5625"(9/16")	28	HC06054L13-I28UNJTM...	6	5.40	57	13.1	3	14	5.6
0.190"(#10)	0.3125"(5/16")	0.5625"(9/16")	-	24	HC04037L09-I24UNJTM...	4	3.70	45	10.0	3	9	4.0
-	0.3125"(5/16")	0.5625"(9/16")	-	24	HC08067L15-I24UNJTM...	8	6.70	61	16.4	3	15	7.0
0.250"(1/4")	0.4375"(7/16")	0.750"(3/4")	0.3125"(5/16")	20	HC06050L12-I20UNJTM...	6	5.00	57	13.3	3	10	5.3
-	0.4375"(7/16")	0.750"(3/4")	0.5625"(9/16")	20	HC10096L21-I20UNJTM...	10	9.60	73	22.2	4	17	10.0
0.3125"(5/16")	0.5625"(9/16")	1.0625"(1 1/16")	-	18	HC08064L15-I18UNJTM...	8	6.40	61	16.2	3	11	6.75
0.375"(3/8")	0.750"(3/4")	-	0.4375"(7/16")	16	HC08077L19-I16UNJTM...	8	7.70	61	19.8	3	12	8.1
0.4375"(7/16")	0.875"(7/8")	-	-	14	HC10092L21-I14UNJTM...	10	9.20	73	22.7	4	12	9.5
0.500"(1/2")	-	-	-	13	HC10099L25-I13UNJTM...	10	9.90	73	26.4	4	13	11.0

* Bore diameter applies to smallest thread dia.

External / Internal



Defined by: USA NBS H28 (1957)
Tolerance class: Standard NPS

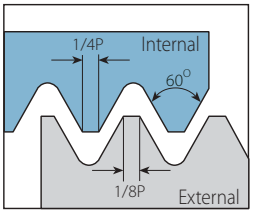


Helical Flutes with Thru-Hole Coolant

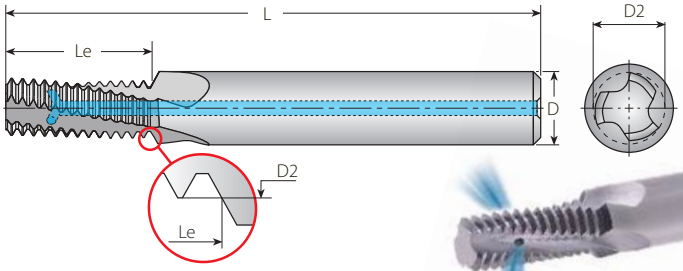
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/8"	27	HC08076L09-EI27NPSTM...	8	7.65	61	9.9	3	10	8.5
1/4"	18	HC10099L14-EI18NPSTM...	10	9.90	73	14.8	3	10	11.1
3/8"	18	HC12111L14-EI18NPSTM...	12	11.15	73	14.8	4	10	14.5
1/2", 3/4"	14	HC16142L18-EI14NPSTM...	16	14.25	92	19.0	4	10	17.7; 23.0
1", 2"	11.5	HC20196L22-EI11.5NPSTM...	20	19.60	102	23.2	4	10	29.0; 56.0

* Bore diameter applies to smallest thread dia.

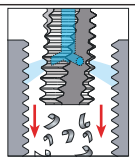
Internal



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



Improved Chip Evacuation for Thru-Holes

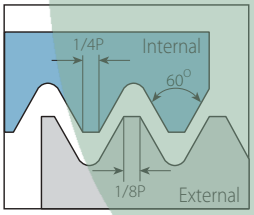


Helicool-R (HCR)
Helical Flutes with Radial Cooling

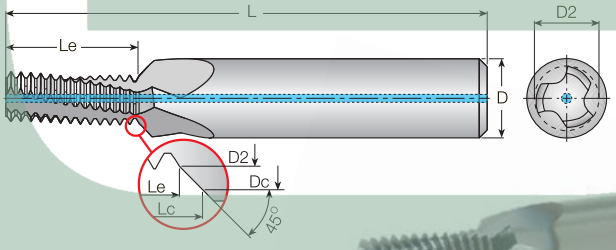
2 x Do (Le ≤ 2 x Thread Diameter)

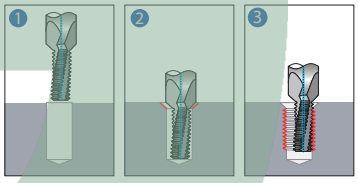
Thread		Pitch	Ordering Code	Dimensions mm				Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
M6x1.0	M8-M40x1.0	1.0	HCR06048L12-I1.00ISOTM...	6	4.8	57	12.5	3	12	5.0
	M10x1.0	1.0	HCR10087L20-I1.00ISOTM...	10	8.7	73	20.5	3	20	9.0
	M12x1.0	1.0	HCR12107L24-I1.00ISOTM...	12	10.7	73	24.5	4	24	11.0
M8x1.25		1.25	HCR08065L16-I1.25ISOTM...	8	6.5	64	16.9	3	13	6.8
M10x1.5	M12-M48x1.5	1.5	HCR10082L20-I1.50ISOTM...	10	8.2	73	20.3	3	13	8.5
	M12x1.5	1.5	HCR10099L24-I1.50ISOTM...	10	9.9	73	24.8	4	16	10.5
	M14x1.5	1.5	HCR12119L29-I1.50ISOTM...	12	11.9	84	29.3	4	19	12.5
	M16x1.5	1.5	HCR14139L32-I1.50ISOTM...	14	13.9	84	32.3	4	21	14.5
M12x1.75		1.75	HCR10099L25-I1.75ISOTM...	10	9.9	73	25.4	4	14	10.2

Internal



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





Dc = Minimum recommended chamfer diameter

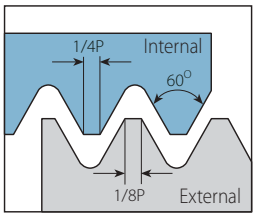
Helicool-C (HCC)
Helical Flutes with Axial Coolant - Thru & Chamfer

2 x Do (Le ≤ 2 x Thread Diameter)

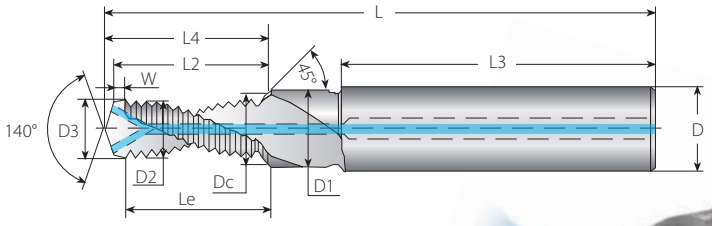
Thread		Pitch	Ordering Code	Dimensions mm						No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	Dc	L	Le	Lc	Z	Zt	mm
M6x1.0	M8-M40x1.0	1.0	HCC08048L12-I1.00ISOTM...	8	4.8	6.3	61	12.5	13.3	3	12	5.0
	M10x1.0	1.0	HCC12087L20-I1.00ISOTM...	12	8.7	10.3	73	20.5	21.3	3	20	9.0
	M12x1.0	1.0	HCC14107L24-I1.00ISOTM...	14	10.7	12.3	80	24.5	25.3	4	24	11.0
M8x1.25		1.25	HCC10065L16-I1.25ISOTM...	10	6.5	8.3	73	16.9	17.8	3	13	6.8
M10x1.5	M12-M48x1.5	1.5	HCC12082L20-I1.50ISOTM...	12	8.2	10.3	80	20.3	21.3	3	13	8.5
	M12x1.5	1.5	HCC14099L24-I1.50ISOTM...	14	9.9	12.3	80	24.8	26.0	4	16	10.5
	M14x1.5	1.5	HCC16119L29-I1.50ISOTM...	16	11.9	14.3	92	29.3	30.5	4	19	12.5
	M16x1.5	1.5	HCC18139L32-I1.50ISOTM...	18	13.9	16.3	92	32.3	33.5	4	21	14.5
M12x1.75		1.75	HCC14099L25-I1.75ISOTM...	14	9.9	12.3	80	25.4	26.6	4	14	10.2

* Bore diameter applies to smallest thread dia.

Internal



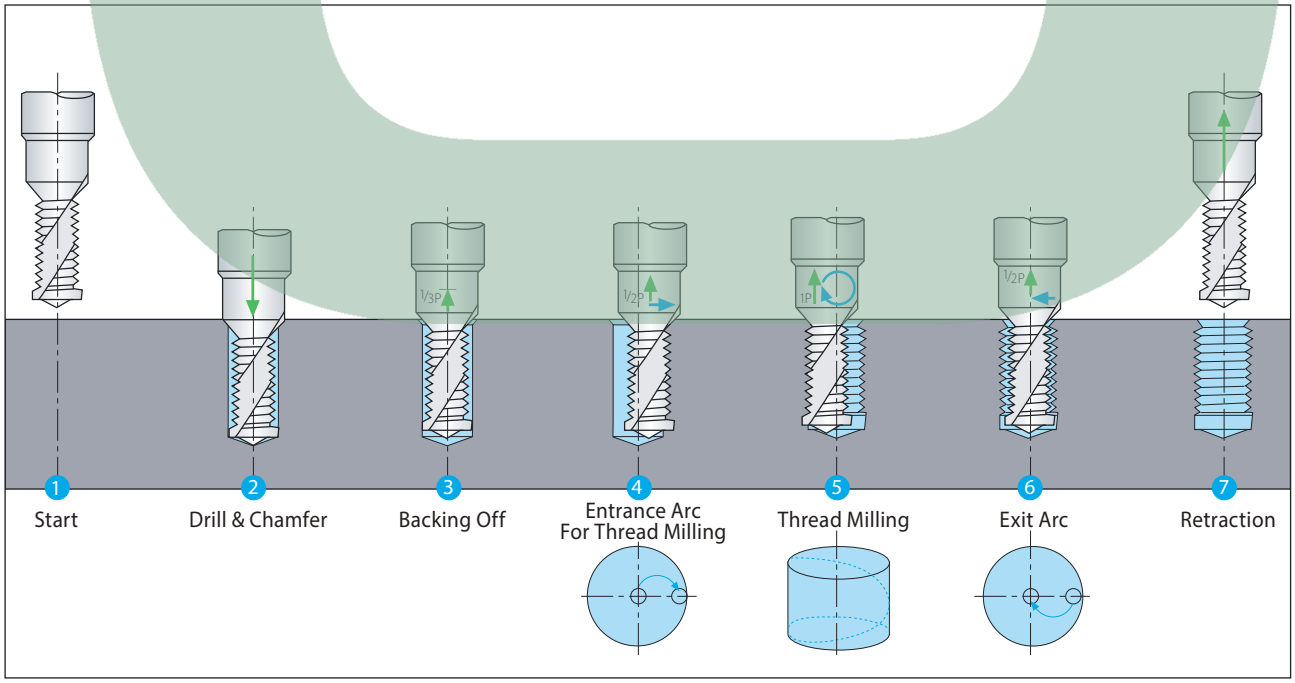
Defined by: R262 (DIN 13)
Tolerance class: 6H



HTC (Thriller)
Drill, Chamfer & Thread with Coolant-Thru

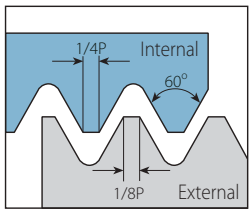
Thread	Ordering Code	Pitch	Dimensions mm											No. of Flutes	Teeth
ISO 2xDo Coarse	Internal	mm	L	L4	L2	L3	W	Le	D3	D	D1	Dc	D2	Z	Zt
M6x1.0	HTCM6x1.0x2D...	1.00	62.0	14.5	13.7	36	1.0	12.7	5.0	8	6.6	6.3	4.85	2	11
M8x1.25	HTCM8x1.25x2D...	1.25	74.0	18.2	17.1	40	1.3	15.8	6.8	10	9.0	8.3	6.45	2	11
M10x1.5	HTCM10x1.5x2D...	1.50	79.0	23.4	22.1	45	1.5	20.6	8.5	12	11.0	10.3	8.08	2	12
M12x1.75	HTCM12x1.75x2D...	1.75	89.0	27.1	25.5	45	1.5	24.0	10.3	14	13.5	12.3	9.74	2	12
ISO 2.5xDo Coarse															
M6x1.0	HTCM6x1.0x2.5D...	1.00	62.0	16.5	15.7	36	1.0	14.7	5.0	8	6.6	6.3	4.85	2	13
M8x1.25	HTCM8x1.25x2.5D...	1.25	74.0	23.2	22.1	40	1.3	20.8	6.8	10	9.0	8.3	6.45	2	15
M10x1.5	HTCM10x1.5x2.5D...	1.50	79.0	27.9	26.6	45	1.5	25.1	8.5	12	11.0	10.3	8.08	2	15

HTC - Thriller Operating Cycle



HTC line is suitable for Aluminium and Cast Iron machining only.

External / Internal



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

Helical Flutes - External

2 x Do (Le ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth
M Coarse	mm	External	D	D2	L	Le	Z	Zt
M3x0.5	0.5	H04039L06-E0.5ISOTM...	4	3.9	45	6.0	3	12
M4.5x0.75	0.75	H04039L09-E0.75ISOTM...	4	3.9	45	9.0	3	12
M6x1.0	1.0	H04039L12-E1.0ISOTM...	4	3.9	45	12.0	3	12
M8x1.25	1.25	H06059L16-E1.25ISOTM...	6	5.9	57	16.25	3	13
M10x1.5	1.5	H08079L21-E1.5ISOTM...	8	7.9	63	21.0	3	14
M14x2.0	2.0	H10099L28-E2.0ISOTM...	10	9.9	73	28.0	4	14

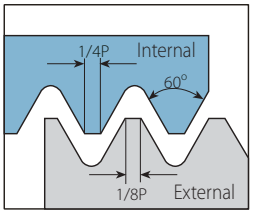
Helical Flutes - Internal

2 x Do (Le ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	H04022L06-I0.5ISOTM...	4	2.2	45	6.0	3	12	2.5
	M4x0.5	0.5	H04030L08-I0.5ISOTM...	4	3.0	45	8.0	3	16	3.5
	M5x0.5	0.5	H04039L10-I0.5ISOTM...	4	3.9	45	10.0	3	20	4.5
M4x0.7		0.7	H04028L08-I0.7ISOTM...	4	2.8	45	8.4	3	12	3.3
	M6x0.75	0.75	H04039L12-I0.75ISOTM...	4	3.9	45	12.0	3	16	5.3
M5x0.8		0.8	H04035L10-I0.8ISOTM...	4	3.5	45	10.4	3	13	4.2
M6x1.0	M8-M40x1.0	1.0	H04039L12-I1.0ISOTM...	4	3.9	45	12.0	3	12	5.0
	M8x1.0	1.0	H06059L16-I1.0ISOTM...	6	5.9	57	16.0	3	16	7.0
	M10x1.0	1.0	H08079L20-I1.0ISOTM...	8	7.9	63	20.0	3	20	9.0
	M12x1.0	1.0	H10099L24-I1.0ISOTM...	10	9.9	73	24.0	4	24	11.0
M8x1.25		1.25	H06058L16-I1.25ISOTM...	6	5.8	57	16.25	3	13	6.8
	M10x1.25	1.25	H08077L20-I1.25ISOTM...	8	7.7	63	20.0	3	16	8.8
M10x1.5	M12-M48x1.5	1.5	H08077L21-I1.5ISOTM...	8	7.7	63	21.0	3	14	8.5
	M12x1.5	1.5	H10094L24-I1.5ISOTM...	10	9.4	73	24.0	4	16	10.5
	M14x1.5	1.5	H12112L28-I1.5ISOTM...	12	11.2	83	28.5	4	19	12.5
	M16x1.5	1.5	H12119L33-I1.5ISOTM...	12	11.9	83	33.0	4	22	14.5
M12x1.75		1.75	H10087L24-I1.75ISOTM...	10	8.7	73	24.5	4	14	10.2
M14x2.0	M17-M80x2.0	2.0	H10099L28-I2.0ISOTM...	10	9.9	73	28.0	4	14	12.0
M16x2.0	M17-M80x2.0	2.0	H12119L32-I2.0ISOTM...	12	11.9	83	32.0	4	16	14.0
M18-M22x2.5		2.5	H16139L40-I2.5ISOTM...	16	13.9	92	40.0	5	16	15.5
M24x3.0		3.0	H16159L42-I3.0ISOTM...	16	15.9	92	42.0	4	14	21.0

* Bore diameter applies to smallest thread dia.

External / Internal



Defined by: ANSI B1.1.74
Tolerance class: 2A/2B

Helical Flutes - External

2 x Do (Le ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth
UNC	UNF	TPI	External	D	D2	L	Le	Z	Zt
No.8-32		32	H04039L09-E32UNCTM...	4	3.9	45	8.7	3	11
	No.12-28	28	H04039L12-E28UNFTM...	4	3.9	45	11.8	3	13
No.12-24		24	H04039L12-E24UNCTM...	4	3.9	45	11.6	3	11
1/4"x20		20	H04039L13-E20UNCTM...	4	3.9	45	12.7	3	10
5/16"x18		18	H06059L17-E18UNCTM...	6	5.9	57	16.9	3	12
3/8"x16		16	H08079L19-E16UNCTM...	8	7.9	63	19.1	3	12
9/16"x12		12	H12119L30-E12UNCTM...	12	11.9	83	29.6	4	14

Helical Flutes - Internal

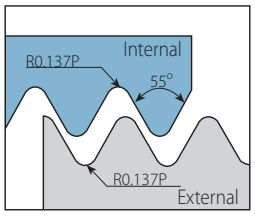
2 x Do (Le ≤ 2 x Thread Diameter)

Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	TPI	Internal	D	D2	L	Le	Z	Zt	mm
	No.8-36		36	H04030L09-I36UNFTM...	4	3.0	45	8.5	3	12	3.5
	No.10-32	No.12-3/8"x32	32	H04033L11-I32UNFTM...	4	3.3	45	11.1	3	14	4.0
	No.12-28,1/4"x28	7/16", 1/2"x28	28	H04038L12-I28UNFTM...	4	3.8	45	11.8	3	13	4.6
	1/4"x28	7/16", 1/2"x28	28	H06046L13-I28UNFTM...	6	4.6	57	12.7	3	14	5.5
		7/16", 1/2"x28	28	H10092L23-I28UNEFTM...	10	9.2	73	22.7	4	25	10.2
No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	24	H04029L11-I24UNCTM...	4	2.9	45	10.6	3	10	3.8
No.12-24	5/16", 3/8"x24	9/16"-11/16"x24	24	H04035L12-I24UNCTM...	4	3.5	45	11.6	3	11	4.5
	5/16", 3/8"x24	9/16"-11/16"x24	24	H06057L16-I24UNFTM...	6	5.7	57	15.9	3	15	6.8
	3/8"x24	9/16"-11/16"x24	24	H08074L19-I24UNFTM...	8	7.4	63	19.1	3	18	8.5
		9/16"-11/16"x24	24	H12119L29-I24UNEFTM...	12	11.9	83	28.6	4	27	13.2
1/4"x20	7/16", 1/2"x20	3/4"-1"x20	20	H04039L13-I20UNCTM...	4	3.9	45	12.7	3	10	5.2
	7/16", 1/2"x20	3/4"-1"x20	20	H10085L23-I20UNFTM...	10	8.5	73	22.9	4	18	9.8
	1/2"x20	3/4"-1"x20	20	H10099L26-I20UNFTM...	10	9.9	73	25.4	4	20	11.5
		3/4"-1"x20	20	H16159L38-I20UNEFTM...	16	15.9	92	38.1	5	30	17.8
5/16"x18	9/16", 5/8"x18	11/16"-1 11/16"x18	18	H06052L17-I18UNCTM...	6	5.2	57	16.9	3	12	6.5
	9/16", 5/8"x18	11/16"-1 11/16"x18	18	H12113L30-I18UNFTM...	12	11.3	83	29.6	4	21	12.8
	5/8"x18	11/16"-1 11/16"x18	18	H12119L33-I18UNFTM...	12	11.9	83	32.5	4	23	14.5
3/8"x16	3/4"x16		16	H08067L19-I16UNCTM...	8	6.7	63	19.1	3	12	8.0
	3/4"x16		16	H16159L38-I16UNFTM...	16	15.9	92	38.1	4	24	17.5
7/16"x14	7/8"x14		14	H08076L24-I14UNCTM...	8	7.6	63	23.6	4	13	9.3
	7/8"x14		14	H20187L44-I14UNFTM...	20	18.7	104	44.4	4	24	20.5
1/2"x13			13	H10089L26-I13UNCTM...	10	8.9	73	25.4	4	13	10.8
9/16"x12	1"-1 1/2"x12		12	H12103L30-I12UNCTM...	12	10.3	83	29.6	4	14	12.3
	1"-1 1/2"x12		12	H20199L51-I12UNFTM...	20	19.9	104	50.8	5	24	23.5
5/8"x11			11	H12110L32-I11UNCTM...	12	11.0	83	32.3	4	14	13.5
3/4"x10			10	H16135L38-I10UNCTM...	16	13.5	92	38.1	5	15	16.5
7/8"x9			9	H16152L45-I9UNCTM...	16	15.2	92	45.2	4	16	19.5
1"x8			8	H20170L51-I8UNCTM...	20	17.0	104	50.8	4	16	22.0

* Bore diameter applies to smallest thread dia.

BSP (G) — Helical

External / Internal



Defined by: B.S.2779:1956
Tolerance class: Medium class

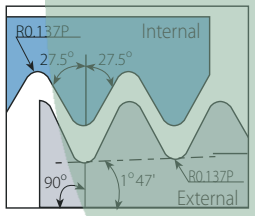
Helical Flutes

2 x Do (Le ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x28, 1/8"x28	28	H06058L16-EI28BSPTM...	6	5.8	57	16.3	3	18	6.7
1/8"x28	28	H08077L20-EI28BSPTM...	8	7.7	63	20.0	3	22	8.7
1/4"x19, 3/8"x19	19	H10099L27-EI19BSPTM...	10	9.9	73	26.7	4	20	11.8
3/8"x19	19	H16134L33-EI19BSPTM...	16	13.4	92	33.4	4	25	15.2
1/2", 3/4"x14	14	H16157L44-EI14BSPTM...	16	15.7	92	43.5	5	24	19.0
1", 1 1/2", 2", 2 1/2"x11	11	H20199L42-EI11BSPTM...	20	19.9	104	41.6	5	18	30.7

BSPT — Helical

External / Internal



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

Helical Flutes

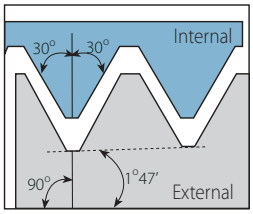
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x28	28	H06058L16-EI28BSPT-TM...	6	5.8	57	16.3	3	18	6.7
1/8"x28	28	H08077L20-EI28BSPT-TM...	8	7.7	63	20.0	3	22	8.7
1/4"x19	19	H10099L27-EI19BSPT-TM...	10	9.9	73	26.7	4	20	11.8
3/8"x19	19	H16134L33-EI19BSPT-TM...	16	13.4	92	33.4	4	25	15.2
1/2", 3/4"x14	14	H16157L44-EI14BSPT-TM...	16	15.7	92	43.5	5	24	19.0
1", 1 1/2", 2", 2 1/2"x11	11	H20199L42-EI11BSPT-TM...	20	19.9	104	41.6	5	18	30.7

* Bore diameter applies to smallest thread dia.

NPT

Helical

External / Internal



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

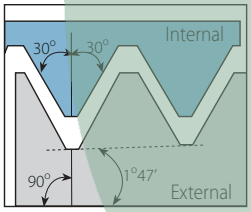
Helical Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	H06053L09-EI27NPT-TM...	6	5.3	57	9.4	3	10	6.3
1/8"x27	27	H08075L09-EI27NPT-TM...	8	7.5	63	9.4	4	10	8.5
1/4"x18	18	H10094L14-EI18NPT-TM...	10	9.4	73	14.1	4	10	11.1
3/8"x18	18	H12119L14-EI18NPT-TM...	12	11.9	83	14.1	4	10	14.5
1/2", 3/4"x14	14	H16155L25-EI14NPT-TM...	16	15.5	92	25.4	5	14	17.7, 23.0
1"-2"x11.5	11.5	H20199L33-EI11.5NPT-TM...	20	19.9	104	33.1	5	15	29.0-56.0
2 1/2", 3"x8	8	H20199L38-EI8NPT-TM...	20	19.9	104	38.1	4	12	66.5

NPTF

Helical

External / Internal



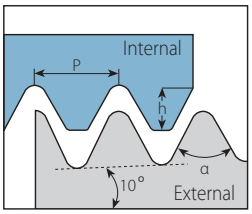
Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF

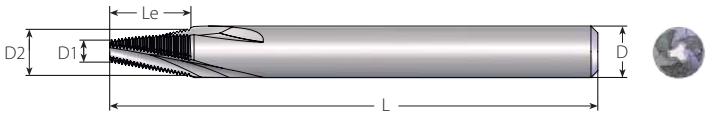
Helical Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	H06053L09-EI27NPTFTM...	6	5.3	57	9.4	3	10	6.3
1/8"x27	27	H08075L09-EI27NPTFTM...	8	7.5	63	9.4	4	10	8.4
1/4"x18	18	H10094L14-EI18NPTFTM...	10	9.4	73	14.1	4	10	11.1
3/8"x18	18	H12119L14-EI18NPTFTM...	12	11.9	83	14.1	4	10	14.7
1/2", 3/4"x14	14	H16155L25-EI14NPTFTM...	16	15.5	92	25.4	5	14	17.9, 23.4
1"-2"x11.5	11.5	H20199L33-EI11.5NPTFTM...	20	19.9	104	33.1	5	15	29.4-56.2
2 1/2", 3"x8	8	H20199L38-EI8NPTFTM...	20	19.9	104	38.1	4	12	67.0

* Bore diameter applies to smallest thread dia.

Internal





Helical Flutes - Taper 60°
TM Solid Helical Flutes for Bone Plate Applications

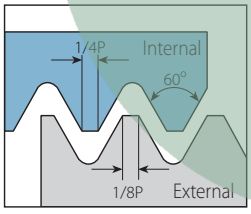
Pitch	Ordering Code	Taper	Thread Angle	Profile Height	Dimensions mm					No. of Flutes	Teeth
mm	Internal		α	h	D	D2	D1	L	Le	Z	Zt
0.4	H06059L080-I0.4TAP60TM...	20°	60°	0.20	6	5.9	3.2	57	8.0	3	20
0.5	H06059L090-I0.5TAP60TM...	20°	60°	0.25	6	5.9	2.9	57	9.0	3	18

Helical Flutes - Taper 55°
TM Solid Helical Flutes for Bone Plate Applications

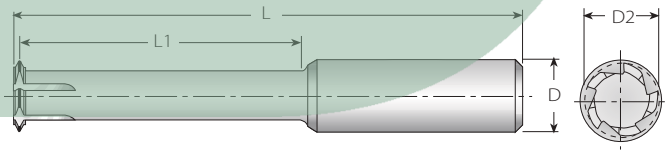
Pitch	Ordering Code	Taper	Thread Angle	Profile Height	Dimensions mm					No. of Flutes	Teeth
mm	Internal		α	h	D	D2	D1	L	Le	Z	Zt
0.3	H03028L039-I0.3TAP55TM...	20°	55°	0.18	3	2.8	1.5	38	3.9	3	13
0.35	H04039L063-I0.35TAP55TM...	20°	55°	0.20	4	3.9	1.8	45	6.3	3	18
0.4	H06059L100-I0.4TAP55TM...	20°	55°	0.29	6	5.9	2.5	57	10.0	3	25
0.5	H06059L090-I0.5TAP55TM...	20°	55°	0.33	6	5.9	2.9	57	9.0	3	18
0.6	H06059L066-I0.6TAP55TM...	20°	55°	0.47	6	5.9	3.8	57	6.6	3	11

ISO Metric Deep Threading

Internal



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

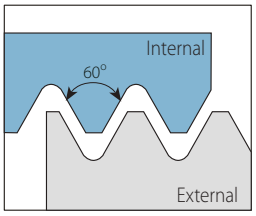


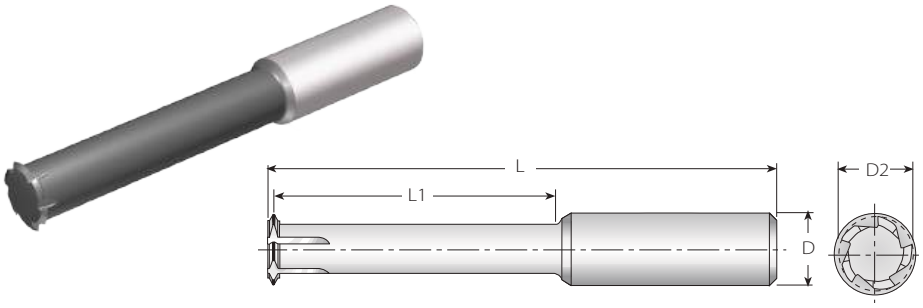
Deep Threading - Long Tools for Deep Holes

3 x Do (L1 ≤ 3 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
M Coarse	mm	Internal	D	D2	L	L1	Z	Zt	mm
M6x1	1.0	D1T08041-I1.0ISOTM...	8	4.1	63	19	3	1	5.0
M8x1.25	1.25	D1T10058-I1.25ISOTM...	10	5.8	73	26	3	1	6.8
M10x1.5	1.50	D1T10077-I1.50ISOTM...	10	7.7	73	32	3	1	8.5
M12x1.5	1.50	D1T12094-I1.50ISOTM...	12	9.4	83	38	4	1	10.5
M12x1.75	1.75	D1T12087-I1.75ISOTM...	12	8.7	83	38	4	1	10.2
M14x2	2.0	D1T16102-I2.0ISOTM...	16	10.2	92	44	4	1	12.0
M16x2	2.0	D1T16122-I2.0ISOTM...	16	12.2	100	50	4	1	14.0
M18x2.5	2.50	D1T16129-I2.5ISOTM...	16	12.9	108	57	5	1	15.5
M20x2.5	2.50	D1T16148-I2.5ISOTM...	16	14.8	114	63	5	1	17.5

Internal

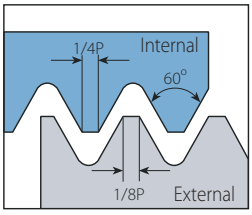




Deep Threading - Long Tools for Deep Holes

		Min. Thread	Pitch		Ordering Code	Dimensions mm					
M Coarse	M Fine	UN, UNS, UNF, UNEF	mm	TPI	Internal	D	D2	L	L1	Z	Zt
M5x0.8	M5x0.5, M5X0.75	No.10-56UNS, No.10-48UNS, No.10-40UNS, No.10-36UNS, No.10-32UNF	0.5-0.8	32-56	D1T04390L160-ITA60TM...	4	3.90	45	16	4	1
M6x1.0	M6x0.5, M6X0.75	No.12-56UNS, No.12-48UNS, ¼-40UNS, ¼-36UNS, ¼-32UNEF, ¼-28UNF, ¼-27UNS, ¼-24UNS	0.5-1.0	24-56	D1T06485L200-ITB60TM...	6	4.85	51	20	5	1
M8x1.25	M7x0.5, M7x0.75, M7.5x1.0	5/16-48UNS, 5/16-40UNS, 5/16-36UNS, 5/16-32UNEF, 5/16-28UN, 5/16-27UNS, 5/16-24UNS, 5/16-20UN	0.5-1.25	20-48	D1T06590L250-ITF60TM...	6	5.90	64	25	5	1
-	M10.5x0.5, M11x0.75, M11x1.0	7/16-32UN, 7/16-28UNEF, 7/16-27UNS, 7/16-24UNS	0.5-1.0	24-56	D1T10990L350-ITB60TM...	10	9.90	73	35	6	1
M10x1.5	M10x1.0, M10X1.25	3/8-24UNF, 3/8-20UN, 7/16-18UNS, 7/16-16UN	1.0-1.50	16-24	D1T08790L320-ITC60TM...	8	7.90	63	32	6	1
M12x1.75	M12x1.0, M12X1.25, M12x1.5	½-24UNS, ½-20UNS, ½-18UNS, ½-16UNS, ½-14UNS	1.0-1.75	14-24	D1T10990L380-ITD60TM...	10	9.90	73	38	6	1
-	M13.5x1.0, M14x1.25, M14x1.5	9/16-24UNEF	1.0-1.75	14-24	D1T12119L450-ITD60TM...	12	11.90	83	45	6	1

Internal



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

MilliPro
Miniature Thread Mills

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M1.6x0.35		0.35	D3T03012L034-I0.35ISOTM...	3	1.20	30	3.4	3	3	1.25
M2x0.4		0.4	D3T06015L042-I0.4ISOTM...	6	1.55	57	4.2	3	3	1.6
M2.2x0.45		0.45	D3T06016L046-I0.45ISOTM...	6	1.65	57	4.6	3	3	1.75
M2.5x0.45		0.45	D3T06019L052-I0.45ISOTM...	6	1.95	57	5.2	3	3	2.05
M3x0.5	M3.5-M16x0.5	0.5	D3T06024L062-I0.5ISOTM...	6	2.40	57	6.2	3	3	2.5
M3.5x0.6		0.6	D3T06027L073-I0.6ISOTM...	6	2.75	57	7.3	3	3	2.9
M4x0.7		0.7	D3T06031L083-I0.7ISOTM...	6	3.15	57	8.3	3	3	3.3
M5x0.8		0.8	D3T06040L104-I0.8ISOTM...	6	4.05	57	10.4	3	3	4.2
M6x1.0	M8-M40x1.0	1.0	D3T06048L125-I1.0ISOTM...	6	4.80	57	12.5	3	3	5.0
M8x1.25		1.25	D3T08065L166-I1.25ISOTM...	8	6.50	63	16.6	3	3	6.8
M10x1.5	M12-M48x1.50	1.50	D3T10082L208-I1.50ISOTM...	10	8.20	73	20.8	3	3	8.5
M12x1.75		1.75	D3T10099L250-I1.75ISOTM...	10	9.90	73	25.0	3	3	10.3
M16x2.0		2.0	D3T12119L330-I2.0ISOTM...	12	11.90	83	33.0	3	3	14.0
M20x2.5		2.50	D3T16159L413-I2.5ISOTM...	16	15.90	92	41.3	3	3	17.5

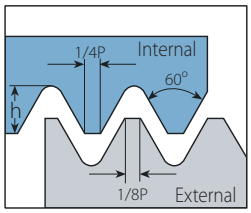
MilliPro
Miniature Thread Mills

3 x Do (L1 ≤ 3 x Thread Diameter)

Thread		Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M1.6X0.35		0.35	D3T03012L050-I0.35ISOTM...	3	1.20	30	5.0	3	3	1.25
M2x0.4		0.4	D3T03015L062-I0.4IS0TM...	3	1.55	30	6.2	3	3	1.6
M2X0.4		0.4	D3T06015L062-I0.4ISOTM...	6	1.55	57	6.2	3	3	1.6
M2.5x0.45		0.45	D3T03019L077-I0.45ISOTM...	3	1.95	30	7.7	3	3	2.05
M2.5x0.45		0.45	D3T06019L077-I0.45ISOTM...	6	1.95	57	7.7	3	3	2.05
M3X0.5	M3.5-M16x0.5	0.5	D3T03024L092-I0.5ISOTM...	3	2.40	30	9.2	3	3	2.5
M3x0.5	M3.5-M16x0.5	0.5	D3T06024L092-I0.5ISOTM...	6	2.40	57	9.2	3	3	2.5
M4x0.7		0.7	D3T06031L123-I0.7ISOTM...	6	3.15	57	12.3	3	3	3.3
M5x0.8		0.8	D3T06040L154-I0.8ISOTM...	6	4.05	57	15.4	3	3	4.2
M6x1.0	M8-M40x1.0	1.00	D3T06048L185-I1.0ISOTM...	6	4.80	57	18.5	3	3	5.0
M8x1.25		1.25	D3T08065L246-I1.25ISOTM...	8	6.50	63	24.6	3	3	6.8

* Bore diameter applies to smallest thread dia.

Internal



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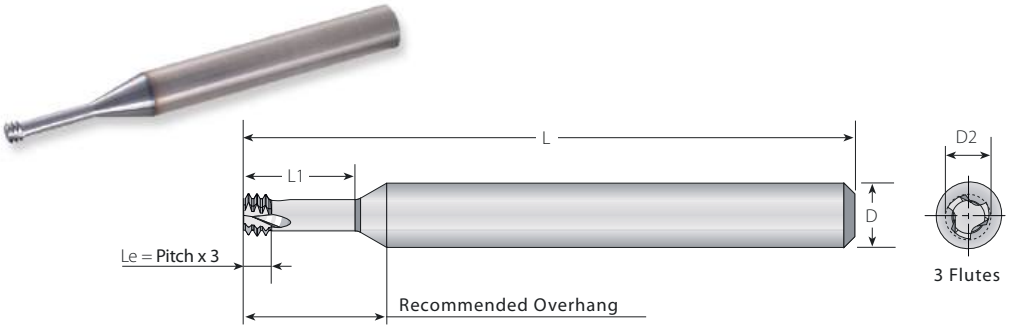
Tolerance class: 2B



MilliPro
Miniature Thread Mills

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	TPI	Internal	D	D2	L	L1	Z	Zt	mm
	No.1-72	72	D3T06014L039-I72UNTM...	6	1.45	57	3.9	3	3	1.6
No.1-64	No.2-64	64	D3T06014L042-I64UNTM...	6	1.40	57	4.2	3	3	1.5
No.2-56	No.3-56	56	D3T06016L050-I56UNTM...	6	1.65	57	5.0	3	3	1.8
No.3-48	No.4-48	48	D3T06019L060-I48UNTM...	6	1.90	57	6.0	3	3	2.1
No.4, No.5-40	No.6-40	40	D3T06021L060-I40UNTM...	6	2.10	57	6.0	3	3	2.3
No.5-40	No.6-40	40	D3T06024L072-I40UNTM...	6	2.45	57	7.2	3	3	2.6
	No.8-36	36	D3T06033L087-I36UNTM...	6	3.30	57	8.7	3	3	3.5
No.6, No.8-32	No.10-32	32	D3T06025L074-I32UNTM...	6	2.55	57	7.4	3	3	2.8
No.8-32	No.10-32	32	D3T06032L100-I32UNTM...	6	3.20	57	10.0	3	3	3.5
	No.10-32	32	D3T06038L103-I32UNTM...	6	3.80	57	10.3	3	3	4.0
	1/4"x28	28	D3T06052L132-I28UNTM...	6	5.25	57	13.2	3	3	5.5
No.10-24	5/16"x24	24	D3T06035L102-I24UNTM...	6	3.58	57	10.2	3	3	3.9
	5/16"x24	24	D3T08066L165-I24UNTM...	8	6.68	63	16.5	3	3	6.9
1/4"x20	7/16"x20	20	D3T06048L134-I20UNTM...	6	4.88	57	13.4	3	3	5.2
	7/16"x20	20	D3T10095L230-I20UNTM...	10	9.55	73	23.0	3	3	9.9
5/16"x18		18	D3T08061L169-I18UNTM...	8	6.15	63	16.9	3	3	6.6
3/8"x16		16	D3T08067L191-I16UNTM...	8	6.70	63	19.1	3	3	8.0
7/16"x14		14	D3T10090L233-I14UNTM...	10	9.00	73	23.3	3	3	9.4

MilliPro
Miniature Thread Mills

3 x Do (L1 ≤ 3 x Thread Diameter)

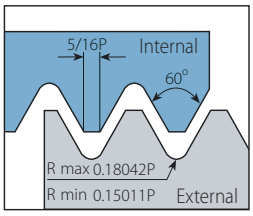
Thread		Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	TPI	Internal	D	D2	L	L1	Z	Zt	mm
	No.1-72	72	D3T03014L057-I72UNTM...	3	1.45	30	5.75	3	3	1.6
	No.1-72	72	D3T06014L057-I72UNTM...	6	1.45	57	5.75	3	3	1.6
No.2-56	No.3-56	56	D3T03016L070-I56UNTM...	3	1.65	30	7.0	3	3	1.8
No.4, No.5-40	No.6-40	40	D3T03021L090-I40UNTM...	3	2.10	30	9.0	3	3	2.3
No.4, No.5-40	No.6-40	40	D3T06021L090-I40UNTM...	6	2.10	57	9.0	3	3	2.3
No.5-40	No.6-40	40	D3T06024L100-I40UNTM...	6	2.45	57	10.0	3	3	2.6
No.6, No.8-32	No.10-32	32	D3T03025L110-I32UNTM...	3	2.55	30	11.0	3	3	2.8
No.6, No.8-32	No.10-32	32	D3T06025L110-I32UNTM...	6	2.55	57	11.0	3	3	2.8
No.8-32	No.10-32	32	D3T06032L130-I32UNTM...	6	3.20	57	13.0	3	3	3.4
	No.10-32	32	D3T06038L150-I32UNTM...	6	3.80	57	15.1	3	3	4.0
No.12-28	1/4"x28	28	D3T06044L170-I28UNTM...	6	4.40	57	17.0	3	3	4.7
	1/4"x28	28	D3T06052L196-I28UNTM...	6	5.25	57	19.6	3	3	5.5
	5/16"x24	24	D3T08066L245-I24UNTM...	8	6.68	63	24.5	3	3	6.9
1/4"x20	7/16"x20	20	D3T06048L198-I20UNTM...	6	4.88	57	19.8	3	3	5.1
5/16"x18		18	D3T08061L239-I18UNTM...	8	6.15	63	24.0	3	3	6.6

* Bore diameter applies to smallest thread dia.

UNJ

MilliPro

Internal



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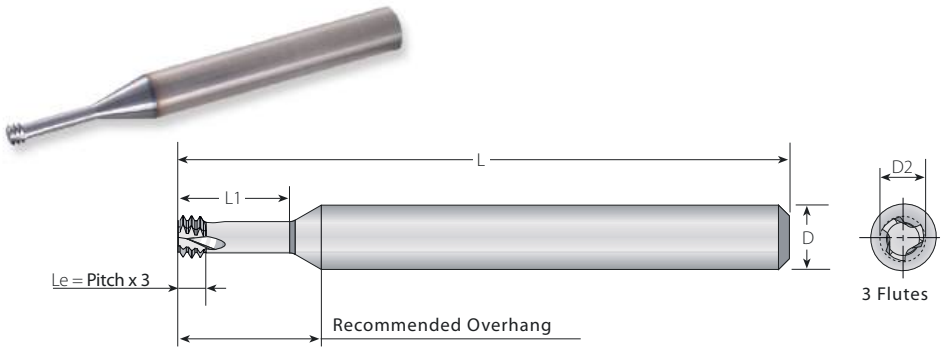
Tolerance class: 3B



MilliPro - Miniature Thread Mills

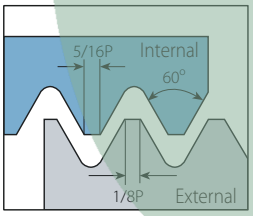
3 x Do (L1 ≤ 3 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNJC	UNJF	TPI	Internal	D	D2	L	L1	Z	Zt	mm
0.138"(#6)	0.190"(#10)	32	D3T06027L110-I32UNJTM...	6	2.70	57	11.0	3	3	2.8
	0.250"(1/4")	28	D3T06054L195-I28UNJTM...	6	5.40	57	19.5	3	3	5.6
0.190"(#10)		24	D3T06037L149-I24UNJTM...	6	3.70	57	14.9	3	3	4.0
	0.3125"(5/16")	24	D3T08067L241-I24UNJTM...	8	6.70	63	24.1	3	3	7.0
0.250"(1/4")		20	D3T06050L195-I20UNJTM...	6	5.00	57	19.5	3	3	5.3
	0.4375"(7/16")	20	D3T10096L335-I20UNJTM...	10	9.60	73	33.5	3	3	10.0
0.3125"(5/16")	0.5625"(9/16")	18	D3T08064L241-I18UNJTM...	8	6.40	63	24.1	3	3	6.75
0.375"(3/8")	0.750"(3/4")	16	D3T08077L290-I16UNJTM...	8	7.70	63	29.0	3	3	8.1
0.4375"(7/16")	0.875"(7/8")	14	D3T10092L335-I14UNJTM...	10	9.20	73	33.5	3	3	9.5
0.500"(1/2")		13	D3T10099L385-I13UNJTM...	10	9.90	73	38.5	3	3	11.0

MJ

MilliPro

Internal



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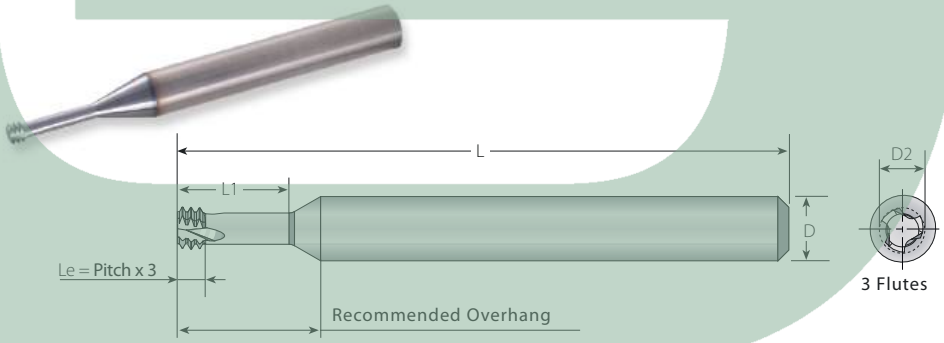
Tolerance class: 4h/6h-4H/5H



MilliPro - Miniature Thread Mills

3 x Do (L1 ≤ 3 x Thread Diameter)

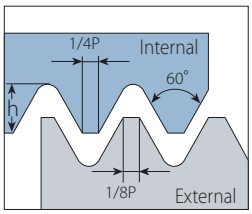
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
Standard	mm	Internal	D	D2	L	L1	Z	Zt	mm
MJ3x0.5	0.5	D3T06024L092-I0.5MJTM...	6	2.40	57	9.2	3	3	2.6
MJ3.5x0.6	0.6	D3T06028L110-I0.6MJTM...	6	2.85	57	11.0	3	3	3.0
MJ4x0.7	0.7	D3T06031L123-I0.7MJTM...	6	3.15	57	12.3	3	3	3.4
MJ5x0.8	0.8	D3T06040L154-I0.8MJTM...	6	4.05	57	15.4	3	3	4.3
MJ6x1.0	1.0	D3T06048L185-I1.0MJTM...	6	4.80	57	18.5	3	3	5.1
MJ8x1.25	1.25	D3T08065L246-I1.25MJTM...	8	6.50	63	24.6	3	3	6.9
MJ10x1.5	1.50	D3T10082L308-I1.50MJTM...	10	8.20	73	30.8	3	3	8.7
MJ12x1.75	1.75	D3T10099L370-I1.75MJTM...	10	9.90	73	37.0	3	3	10.4
MJ14x2	2.0	D3T12119L425-I2.0MJTM...	12	11.90	83	42.5	3	3	12.25

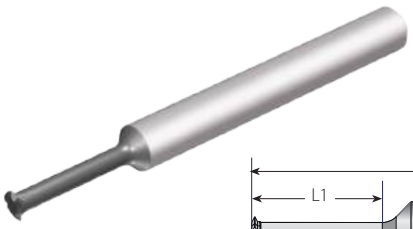
* Bore diameter applies to smallest thread dia.

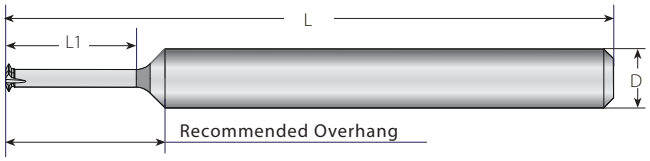
ISO Metric

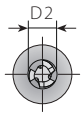
MilliPro Dental

Internal









3 Flutes

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

MilliPro Dental
Miniature Thread Mills for Dental Implants

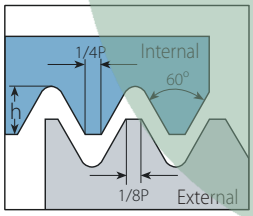
3xDo (L1≤3 x Thread Diameter)

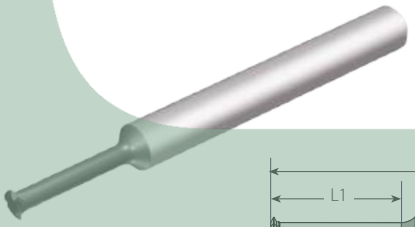
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M1.0x0.25	M1.4x0.25	0.25	D1T03007L031-I0.25ISOTM...	3	0.70	31	3.1	3	1	0.75
M1.2x0.25	M1.4x0.25	0.25	D1T03009L038-I0.25ISOTM...	3	0.90	31	3.8	3	1	0.95
M1.4x0.3	-	0.30	D1T03011L044-I0.30ISOTM...	3	1.05	31	4.4	3	1	1.15
M1.6x0.35	-	0.35	D1T03012L050-I0.35ISOTM...	3	1.20	31	5.0	3	1	1.30
M1.8x0.35	M2.0x0.35	0.35	D1T03014L056-I0.35ISOTM...	3	1.40	31	5.6	3	1	1.50
M2.0x0.4	-	0.40	D1T03015L062-I0.40ISOTM...	3	1.50	31	6.2	3	1	1.65
M2.5x0.45	-	0.45	D1T03019L077-I0.45ISOTM...	3	1.95	31	7.7	3	1	2.10

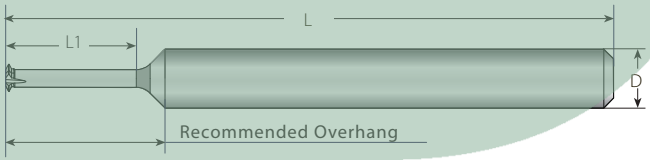
American UN

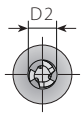
MilliPro Dental

Internal









3 Flutes

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

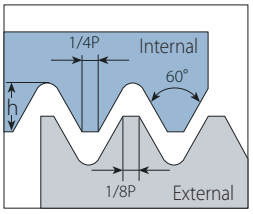
MilliPro Dental
Miniature Thread Mills for Dental Implants

3xDo (L1≤3 x Thread Diameter)

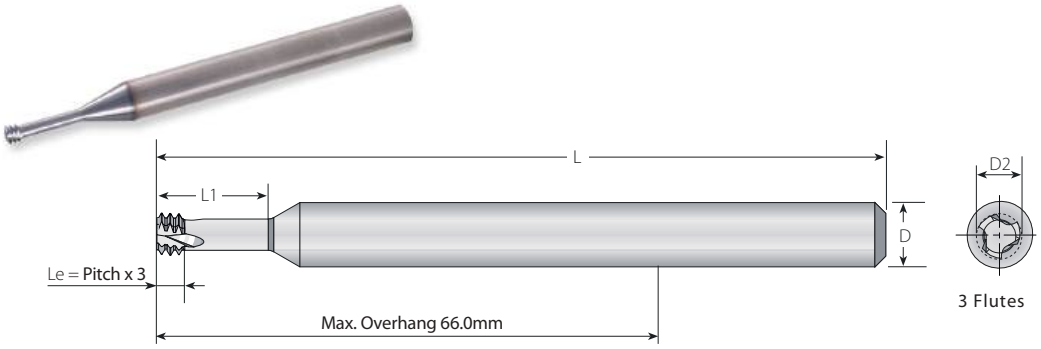
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
UNF	TPI	Internal	D	D2	L	L1	Z	Zt	mm
0-80	80	D1T03011L046-I80UNTM...	3	1.15	31	4.6	3	1	1.30
1-72	72	D1T03014L065-I72UNTM...	3	1.45	31	6.5	3	1	1.60

The MilliPro Dental line was specially designed for machining Titanium and Stainless Steel in high RPM.
MilliPro Dental D1T tools are also suitable for general use applications.

Internal



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

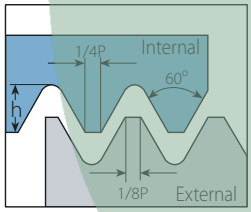


MilliPro EL
Miniature Thread Mills, Extra Long Tools

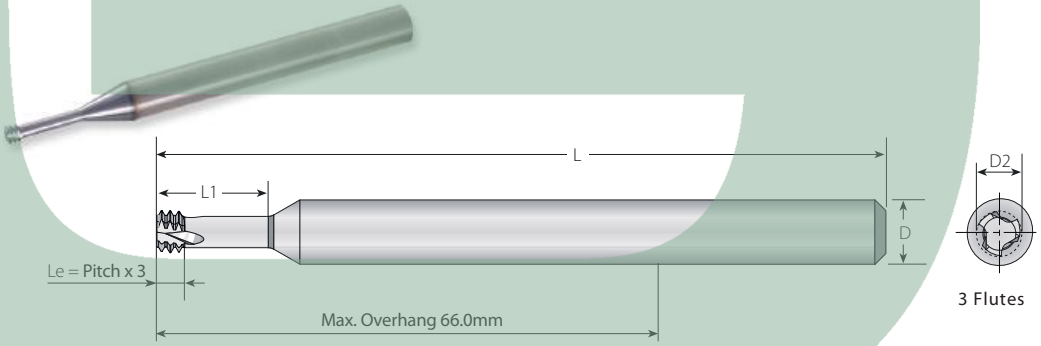
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M2x0.4		0.4	D3T06015L042-I0.4ISOTML...	6	1.55	100	4.2	3	3	1.6
M2.5x0.45		0.45	D3T06019L052-I0.45ISOTML...	6	1.95	100	5.2	3	3	2.05
M3x0.5	M3.5-M16x0.5	0.5	D3T06024L062-I0.5ISOTML...	6	2.40	100	6.2	3	3	2.5

Internal



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



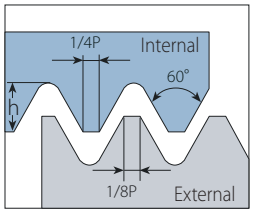
MilliPro EL
Miniature Thread Mills, Extra Long Tools

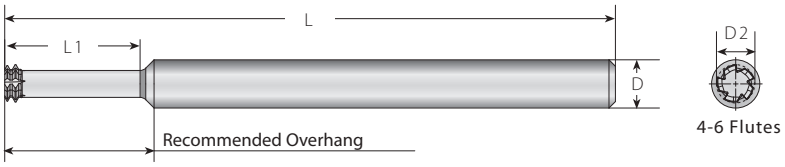
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	TPI	Internal	D	D2	L	L1	Z	Zt	mm
No.2-56	No.3-56	56	D3T06016L050-I56UNTML...	6	1.65	100	5.0	3	3	1.8
No.4, No.5-40	No.6-40	40	D3T06021L060-I40UNTML...	6	2.10	100	6.0	3	3	2.3
No.6, No.8-32	No.10-32	32	D3T06025L074-I32UNTML...	6	2.55	100	7.4	3	3	2.8
No.8-32	No.10-32	32	D3T06032L100-I32UNTML...	6	3.20	100	10.0	3	3	3.4

* Bore diameter applies to smallest thread dia.

Internal





4-6 Flutes

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

Left Hand Tool

MilliPro HD
Miniature Thread Mills for Hard Materials Up to 62HRc

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M2x0.4		0.4	S2L06015L042-I0.4ISOTM...	6	1.55	76	4.60	4	2	1.6
M2.2x0.45		0.45	S2L06016L046-I0.45ISOTM...	6	1.65	76	5.05	4	2	1.8
M2.5x0.45		0.45	S2L06019L052-I0.45ISOTM...	6	1.95	76	5.65	4	2	2.05
M3x0.5	M3.5-M16x0.5	0.5	S2L06024L062-I0.5ISOTM...	6	2.40	76	6.75	4	2	2.55
M3.5x0.6		0.6	S2L06027L073-I0.6ISOTM...	6	2.75	76	7.90	4	2	2.95
M4x0.7		0.7	S2L06031L083-I0.7ISOTM...	6	3.15	76	9.05	4	2	3.35
M5x0.8		0.8	S2L06040L104-I0.8ISOTM...	6	4.05	76	11.20	4	2	4.3
M6x1.0	M8-M40x1.0	1.0	S2L06048L125-I1.0ISOTM...	6	4.80	76	13.50	5	2	5.1
M8x1.25		1.25	S2L08065L166-I1.25ISOTM...	8	6.50	80	17.85	5	2	6.8
M10x1.5	M12-M48x1.50	1.50	S2L08079L208-I1.50ISOTM...	8	7.90	80	22.30	6	2	8.6
M12x1.75		1.75	S2L10099L250-I1.75ISOTM...	10	9.90	101	26.75	6	2	10.4

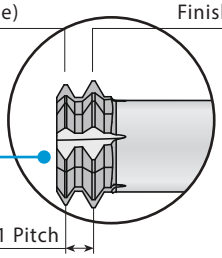
TM Solid

MilliPro HD
Miniature Thread Mills for Hard Materials Up to 62HRc

3 x Do (L1 ≤ 3 x Thread Diameter)

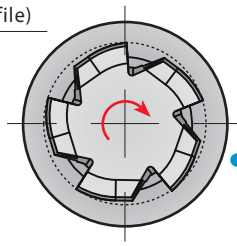
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M2x0.4		0.4	S2L06015L062-I0.4ISOTM...	6	1.55	76	6.60	4	2	1.6
M2.5x0.45		0.45	S2L06019L077-I0.45ISOTM...	6	1.95	76	8.15	4	2	2.05
M3x0.5	M3.5-M16x0.5	0.5	S2L06024L092-I0.5ISOTM...	6	2.40	76	9.75	4	2	2.55
M4x0.7		0.7	S2L06031L123-I0.7ISOTM...	6	3.15	76	13.05	4	2	3.35
M5x0.8		0.8	S2L06040L154-I0.8ISOTM...	6	4.05	76	16.20	4	2	4.3
M6x1.0	M8-M40x1.0	1.0	S2L06048L185-I1.0ISOTM...	6	4.80	76	19.50	5	2	5.1
M8x1.25		1.25	S2L08065L246-I1.25ISOTM...	8	6.50	80	25.85	5	2	6.8

Roughing (Partial Profile) Finish (Full Profile)



Two cutting teeth: Partial Profile for leading tooth followed by Full Profile for finishing.

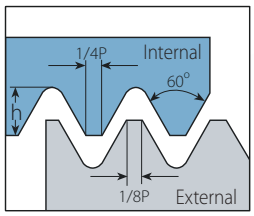
The work direction should be from the top to the bottom (Climb Milling).

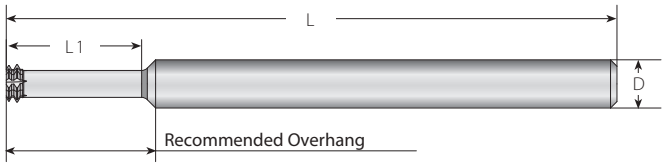


MilliPro HD Tools are left handed. For CNC use M04 code.

* Bore diameter applies to smallest thread dia.

Internal





4-6 Flutes

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

Left Hand Tool

MilliPro HD
Miniature Thread Mills for Hard Materials Up to 62HRc

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	TPI	Internal	D	D2	L	L1	Z	Zt	mm
No.2-56	No.3-56	56	S2L06016L050-I56UNTM...	6	1.65	76	5.45	4	2	1.80
No.3-48	No.4-48	48	S2L06019L060-I48UNTM...	6	1.90	76	6.53	4	2	2.10
No.4-40, No.5-40	No.6-40	40	S2L06021L060-I40UNTM...	6	2.10	76	6.64	4	2	2.35
No.5-40	No.6-40	40	S2L06024L072-I40UNTM...	6	2.45	76	7.84	4	2	2.65
	No.8-36	36	S2L06033L087-I36UNTM...	6	3.30	76	9.41	4	2	3.55
No.6-32, No.8-32	No.10-32	32	S2L06025L074-I32UNTM...	6	2.55	76	8.20	4	2	2.85
No.8-32	No.10-32	32	S2L06032L100-I32UNTM...	6	3.20	76	10.79	4	2	3.50
	No.10-32	32	S2L06037L100-I32UNTM...	6	3.70	76	10.80	4	2	4.17
	1/4"x28	28	S2L06052L132-I28UNTM...	6	5.25	76	14.11	5	2	5.55
No.10-24	5/16"x24	24	S2L06035L102-I24UNTM...	6	3.58	76	11.26	4	2	3.90
	5/16"x24	24	S2L08066L165-I24UNTM...	8	6.68	80	17.56	5	2	7.00
1/4"-20	7/16"x20	20	S2L06048L134-I20UNTM...	6	4.88	76	14.67	5	2	5.20
	7/16"x20	20	S2L10095L230-I20UNTM...	10	9.55	101	24.27	6	2	9.90
5/16"x18		18	S2L08061L160-I18UNTM...	8	6.15	80	18.17	4	2	6.50
3/8"x16		16	S2L08076L197-I16UNTM...	8	7.65	80	21.29	5	2	8.00
7/16"x14		14	S2L10090L233-I14UNTM...	10	9.00	101	25.11	6	2	9.50
1/2"x13		13	S2L10099L256-I13UNTM...	10	9.90	101	27.55	6	2	10.90

MilliPro HD
Miniature Thread Mills for Hard Materials Up to 62HRc

3 x Do (L1 ≤ 3 x Thread Diameter)

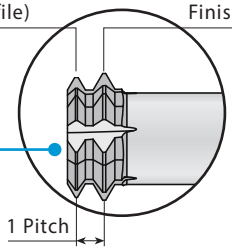
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	TPI	Internal	D	D2	L	L1	Z	Zt	mm
No.4-40, No.5-40	No.6-40	40	S2L06021L090-I40UNTM...	6	2.10	76	9.64	4	2	2.35
No.5-40	No.6-40	40	S2L06024L100-I40UNTM...	6	2.45	76	10.64	4	2	2.65
No.6-32, No.8-32	No.10-32	32	S2L06025L110-I32UNTM...	6	2.55	76	11.79	4	2	2.85
No.8-32	No.10-32	32	S2L06032L130-I32UNTM...	6	3.20	76	13.79	4	2	3.50
	1/4"x28	28	S2L06052L196-I28UNTM...	6	5.25	76	20.51	5	2	5.55
	5/16"x24	24	S2L08066L245-I24UNTM...	8	6.68	80	25.56	5	2	7.00
1/4"x20	7/16"x20	20	S2L06048L198-I20UNTM...	6	4.88	76	21.07	5	2	5.20
5/16"x18		18	S2L08061L240-I18UNTM...	8	6.15	80	26.17	4	2	6.50
7/16"x14		14	S2L10090L335-I14UNTM...	10	9.00	101	35.31	6	2	9.50

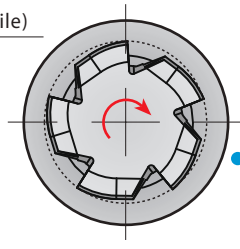
Roughing (Partial Profile)

Finish (Full Profile)

Two cutting teeth: Partial Profile for leading tooth followed by Full Profile for finishing.

The work direction should be from the top to the bottom (Climb Milling).

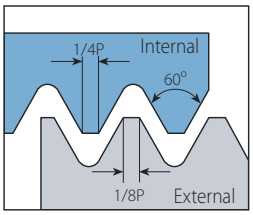




MilliPro HD Tools are left handed. For CNC use M04 code.

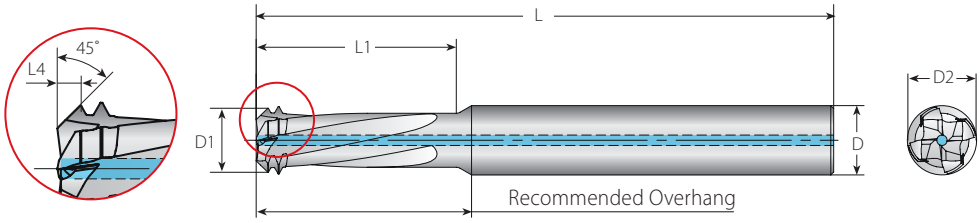
* Bore diameter applies to smallest thread dia.

Internal



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

Coolant available only when specified



Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth		
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	L4*	D1
Without coolant											
M3x0.5	M4x0.5	0.50	TD-2L06024L070-I0.50ISO...	6	2.40	58	7.0	3	2	0.40	2.08
M4x0.7		0.70	TD-2L06032L092-I0.70ISO...	6	3.20	58	9.2	3	2	0.57	2.88
M5x0.8		0.80	TD-2L06039L115-I0.80ISO...	6	3.90	58	11.5	3	2	0.70	3.51
M6-M7x1.0	M8-M9x1.0	1.00	TD-2L06047L140-I1.00ISO...	6	4.70	58	14.0	3	2	0.79	4.16
With coolant											
M6-M7x1.0	M8-M9x1.0	1.00	TDC2L08047L140-I1.00ISO...	8	4.70	64	14.0	3	2	0.79	4.16
M8x1.25	M9-M12x1.25	1.25	TDC2L08061L180-I1.25ISO...	8	6.10	64	18.0	4	2	0.90	5.57
M10x1.5	M11-M15x1.5	1.50	TDC2L08078L230-I1.50ISO...	8	7.80	64	23.0	4	2	1.12	7.24
M12x1.75		1.75	TDC2L10090L260-I1.75ISO...	10	9.00	80	26.0	4	2	1.20	8.35
M16x2.0	M17-M23x2.0	2.00	TDC2L12118L350-I2.00ISO...	12	11.80	100	35.0	4	2	2.00	11.13
M18-M22x2.50		2.50	TDC2L16150L446-I2.5ISO...	16	15.00	135	44.6	4	2	2.25	14.08

TMDR - Drilling, Thread Milling & Chamfering

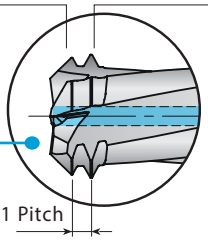
2.5 x Do (L1 ≤ 2.5 x Thread Diameter)

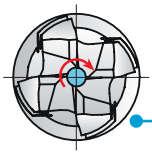
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth		
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	L4*	D1
Without coolant											
M3x0.5	M4x0.5	0.50	TD-2L06024L085-I0.50ISO...	6	2.40	58	8.5	3	2	0.40	2.08
M4x0.7		0.70	TD-2L06032L112-I0.70ISO...	6	3.20	58	11.2	3	2	0.57	2.88
M5x0.8		0.80	TD-2L06039L144-I0.80ISO...	6	3.90	58	14.4	3	2	0.70	3.51
M6-M7x1.0	M8-M9x1.0	1.00	TD-2L06047L170-I1.00ISO...	6	4.70	58	17.0	3	2	0.79	4.16
With coolant											
M6-M7x1.0	M8-M9x1.0	1.00	TDC2L08047L170-I1.00ISO...	8	4.70	64	17.0	3	2	0.79	4.16
M8x1.25	M9-M12x1.25	1.25	TDC2L08061L220-I1.25ISO...	8	6.10	64	22.0	4	2	0.90	5.57
M18-M22x2.50		2.50	TDC2L16150L546-I2.5ISO…	16	15.00	135	54.6	4	2	2.25	14.08

1st Tooth: Partial Profile (Roughing) 2nd Tooth: Full Profile (Finish)

Two cutting teeth: Partial Profile for leading tooth followed by Full Profile for finishing.

The work direction should be from the outside inwards (Climb Milling).

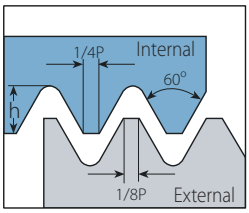


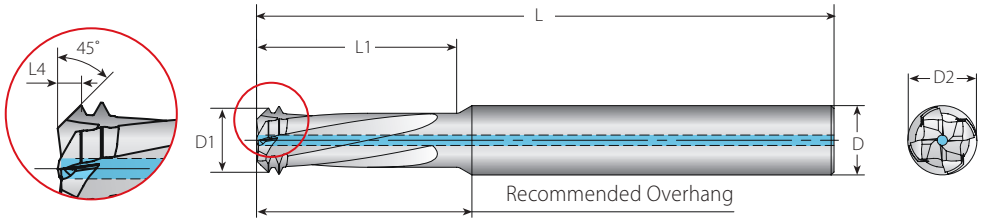


TMDR Tools are left handed. For CNC use M04 code.

* Please use the VARGUS GENius™ for Chamfer recommendations

Internal





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

Coolant available only when specified

Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth		
UNC	UNF	UN	TPI	Internal	D	D2	L	L1	Z	Zt	L4*	D1
Without coolant												
No.4-40, No.5-40	No.6-40		40	TD-2L06021L072-I40UNC...	6	2.10	58	7.2	3	2	0.38	1.76
No.6-32, No.8-32			32	TD-2L06026L086-I32UNC...	6	2.60	58	8.6	3	2	0.45	2.21
No.8-32	No.10-32		32	TD-2L06030L100-I32UNC...	6	3.00	58	10.0	3	2	0.60	2.62
	1/4"x28	5/16"x28	28	TD-2L06050L144-I28UNF...	6	5.00	58	14.4	3	2	0.69	4.58
No.10-24, No.12-24			24	TD-2L06035L114-I24UNC...	6	3.50	58	11.4	3	2	0.80	3.18
1/4"x20		5/16"x20	20	TD-2L06048L145-I20UNC...	6	4.80	58	14.5	3	2	0.80	4.29
With coolant												
	1/4"x28	5/16"x28	28	TDC2L08050L144-I28UNF...	8	5.00	64	14.4	3	2	0.69	4.58
	5/16"x24, 3/8"x24		24	TDC2L08065L176-I24UNF...	8	6.50	64	17.6	3	2	0.85	6.02
1/4"x20		5/16"x20	20	TDC2L08048L145-I20UNC...	8	4.80	64	14.5	3	2	0.80	4.29

TMDR - Drilling, Thread Milling & Chamfering

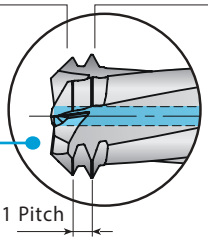
2.5 x Do (L1 ≤ 2.5 x Thread Diameter)

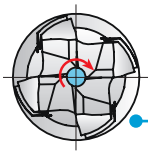
Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth		
UNC	UNF	UN	TPI	Internal	D	D2	L	L1	Z	Zt	L4*	D1
Without coolant												
No.4-40, No.5-40	No.6-40		40	TD-2L06021L088-I40UNC...	6	2.10	58	8.8	3	2	0.38	1.76
No.6-32, No.8-32			32	TD-2L06026L105-I32UNC...	6	2.60	58	10.5	3	2	0.45	2.21
No.8-32	No.10-32		32	TD-2L06030L122-I32UNC...	6	3.00	58	12.2	3	2	0.60	2.62
	1/4"x28	5/16"x28	28	TD-2L06050L178-I28UNF...	6	5.00	58	17.8	3	2	0.69	4.58
1/4"x20		5/16"x20	20	TD-2L06048L180-I20UNC...	6	4.80	58	18.0	3	2	0.80	4.29
With coolant												
	1/4"x28	5/16"x28	28	TDC2L08050L178-I28UNF...	8	5.00	64	17.8	3	2	0.69	4.58
	5/16"x24, 3/8"x24		24	TDC2L08065L218-I24UNF...	8	6.50	64	21.8	3	2	0.85	6.02
1/4"x20		5/16"x20	20	TDC2L08048L180-I20UNC...	8	4.80	64	18.0	3	2	0.80	4.29
3/8"x16		7/16"x16	16	TDC2L08067L260-I16UNC...	8	6.70	64	26.0	4	2	1.10	6.18

1st Tooth: Partial Profile (Roughing) 2nd Tooth: Full Profile (Finish)

Two cutting teeth: Partial Profile for leading tooth followed by Full Profile for finishing.

The work direction should be from the outside inwards (Climb Milling).

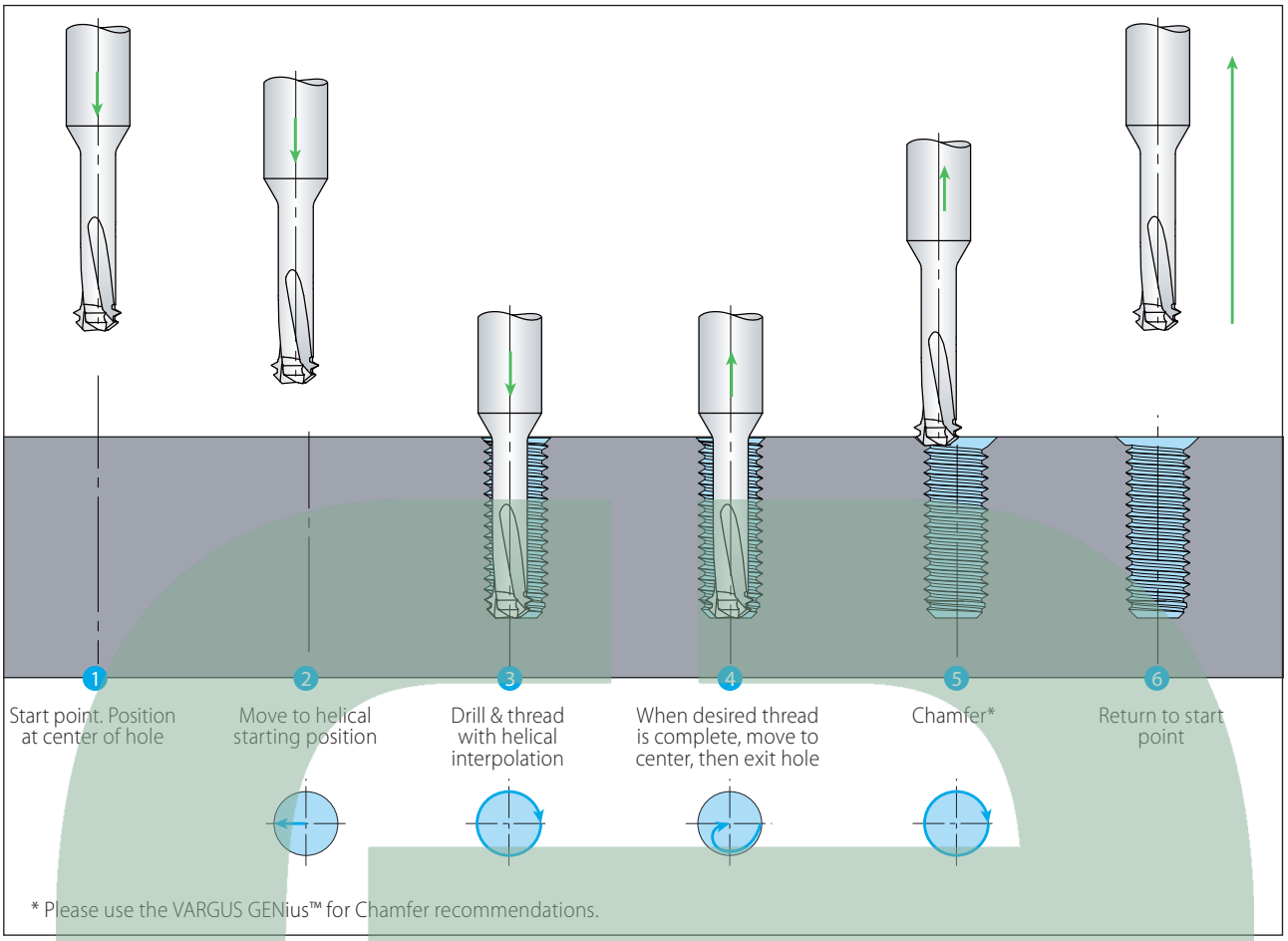




TMDR Tools are left handed.
For CNC use M04 code.

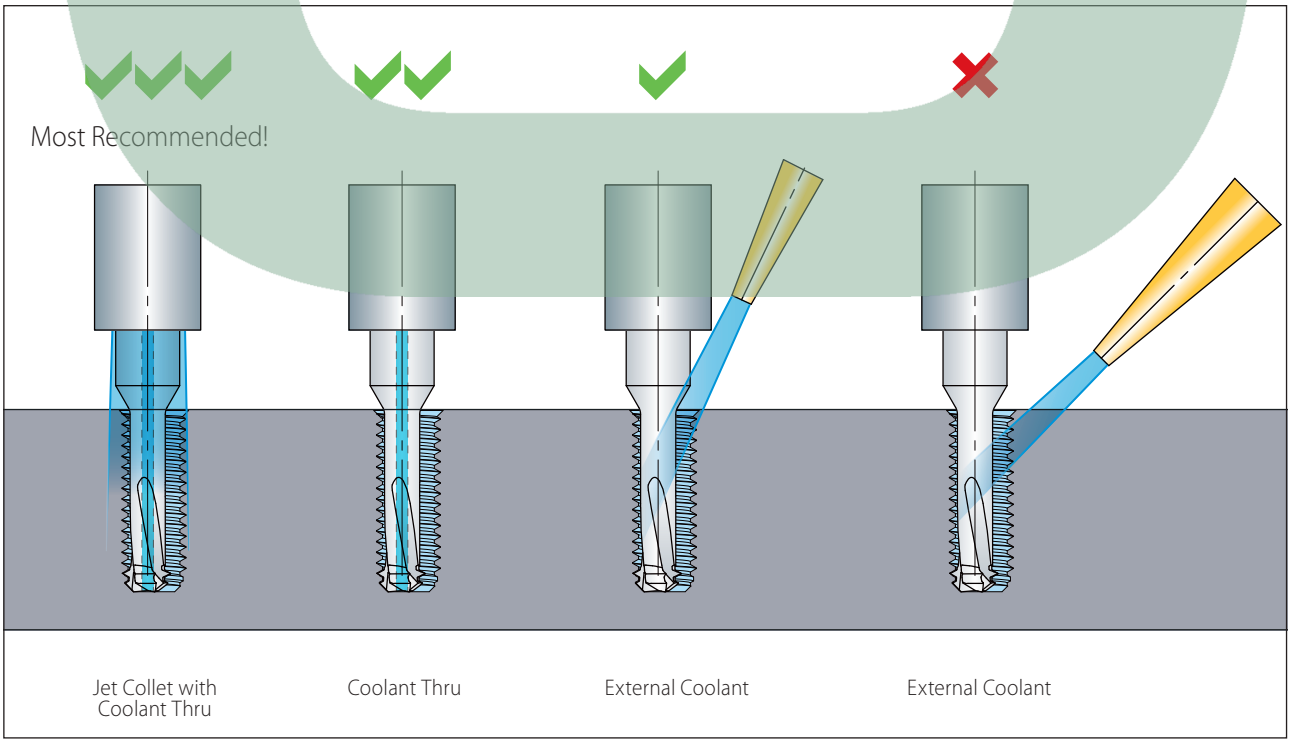
* Please use the VARGUS GENius™ for Chamfer recommendations

TMDR - Operating Cycle

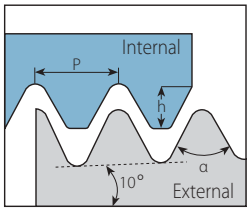


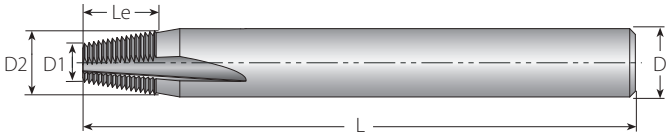
* Please use the VARGUS GENius™ for Chamfer recommendations.

TMDR - Coolant Use for Best Chip Evacuation



Internal





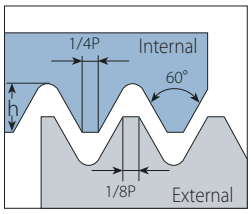
Straight Flutes - Taper 60°
TM Solid Straight Flutes for Bone Plate Applications

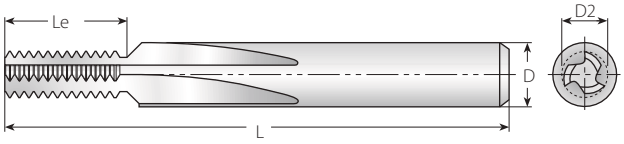
Pitch	Ordering Code	Taper	Thread Angle	Profile Height	Dimensions mm					No. of Flutes	Teeth
mm	Internal		α	h	D	D2	D1	L	Le	Z	Zt
0.4	S06059L080-I0.4TAP60TM...	20°	60°	0.20	6	5.9	3.2	57	8.0	3	20
0.5	S06059L090-I0.5TAP60TM...	20°	60°	0.25	6	5.9	2.9	57	9.0	3	18

Straight Flutes - Taper 55°
TM Solid Straight Flutes for Bone Plate Applications

Pitch	Ordering Code	Taper	Thread Angle	Profile Height	Dimensions mm					No. of Flutes	Teeth
mm	Internal		α	h	D	D2	D1	L	Le	Z	Zt
0.3	S03028L039-I0.3TAP55TM...	20°	55°	0.18	3	2.8	1.5	38	3.9	3	13
0.35	S04039L063-I0.35TAP55TM...	20°	55°	0.20	4	3.9	1.8	45	6.3	3	18
0.4	S06059L100-I0.4TAP55TM...	20°	55°	0.29	6	5.9	2.5	57	10.0	3	25
0.5	S06059L090-I0.5TAP55TM...	20°	55°	0.33	6	5.9	2.9	57	9.0	3	18
0.6	S06059L066-I0.6TAP55TM...	20°	55°	0.47	6	5.9	3.8	57	6.6	3	11

External / Internal





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

Straight Flutes - External

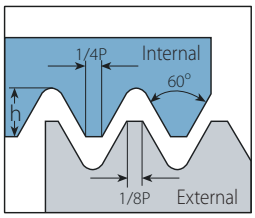
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	mm	External	D	D2	L	Le	Z	Zt	h mm
M3	0.50	S06059-E0.5ISOTM...	6	5.90	57	15.0	3	30	0.31
M4.5	0.75	S08079-E0.75ISOTM...	8	7.90	63	19.5	3, 5*	26	0.46
M6	1.00	S10099-E1.0ISOTM...	10	9.90	72	24.0	5	24	0.61
M10	1.50	S12119-E1.5ISOTM...	12	11.90	83	30.0	5	20	0.92
M14	2.00	S12119-E2.0ISOTM...	12	11.90	83	30.0	5	15	1.23
M24	3.00	S16159-E3.0ISOTM...	16	15.90	92	36.0	5	12	1.84
M36	4.00	S16159-E4.0ISOTM...	16	15.90	92	40.0	5	10	2.45
M64	6.00	S20199-E6.0ISOTM...	20	19.90	104	36.0	5	6	3.68

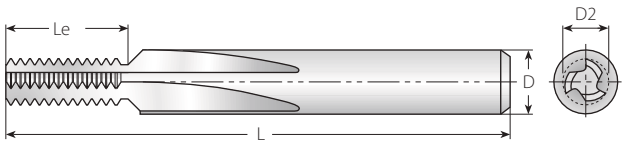
Straight Flutes - Internal

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	mm	Internal	D	D2	L	Le	Z	Zt	h mm
M4.5	0.75	S04030-I0.75ISOTM...	4	3.00	42	6.7	3	9	0.43
M8	0.75	S06059-I0.75ISOTM...	6	5.90	57	15.0	3	20	0.43
M5	0.80	S04036-I0.8ISOTM...	4	3.60	42	8.0	3	10	0.46
M6	1.00	S06040-I1.0ISOTM...	6	4.00	57	9.0	3	9	0.58
M12	1.00	S08079-I1.0ISOTM...	8	7.90	63	20.0	3, 5*	20	0.58
M8	1.25	S06050-I1.25ISOTM...	6	5.00	57	12.5	3	10	0.72
M10	1.50	S06059-I1.5ISOTM...	6	5.90	57	15.0	3	10	0.87
M14	1.50	S10099-I1.5ISOTM...	10	9.90	72	24.0	5	16	0.87
M18	1.50	S12119-I1.5ISOTM...	12	11.90	83	30.0	5	20	0.87
M12	1.75	S08079-I1.75ISOTM...	8	7.90	63	19.2	3, 5*	11	1.01
M16	2.00	S10099-I2.0ISOTM...	10	9.90	72	24.0	5	12	1.15
M18	2.00	S12119-I2.0ISOTM...	12	11.90	83	30.0	5	15	1.15
M20	2.50	S12119-I2.5ISOTM...	12	11.90	83	30.0	5	12	1.44
M24	3.00	S16159-I3.0ISOTM...	16	15.90	92	36.0	5	12	1.73
M30	3.50	S16159-I3.5ISOTM...	16	15.90	92	38.5	5	11	2.02
M36	4.00	S16159-I4.0ISOTM...	16	15.90	92	40.0	5	10	2.31
M48	5.00	S20199-I5.0ISOTM...	20	19.90	104	40.0	5	8	2.89
M64	6.00	S20199-I6.0ISOTM...	20	19.90	104	36.0	5	6	3.46

* Available in 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...).

External / Internal





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

Straight Flutes - External

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	TPI	External	D	D2	L	Le	Z	Zt	h mm
No.6	32	S06059-E32UNTM...	6	5.90	57	14.3	3	18	0.49
No.12	28	S08079-E28UNTM...	8	7.90	63	19.9	3, 5*	22	0.56
1/4"	20	S10099-E20UNTM...	10	9.90	72	22.9	5	18	0.78
5/16"	18	S10099-E18UNTM...	10	9.90	72	24.0	5	17	0.87
3/8"	16	S12119-E16UNTM...	12	11.90	83	28.6	5	18	0.97
9/16"	12	S12119-E12UNTM...	12	11.90	83	29.6	5	14	1.30
1"	8	S16159-E8UNTM...	16	15.90	92	38.1	5	12	1.95
1 3/8"	6	S20199-E6UNTM...	20	19.90	104	38.1	5	9	2.60

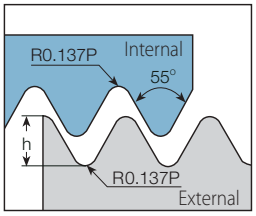
Straight Flutes - Internal

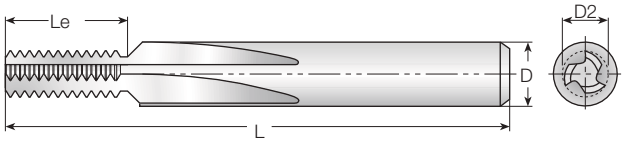
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	TPI	Internal	D	D2	L	Le	Z	Zt	h mm
No.8	36	S04030-I36UNTM...	4	3.00	42	6.3	3	9	0.41
No.8	32	S04030-I32UNTM...	4	3.00	42	6.3	3	8	0.46
5/16"	32	S06059-I32UNTM...	6	5.90	57	14.3	3	18	0.46
No.12	28	S04036-I28UNTM...	4	3.60	42	8.2	3	9	0.52
7/16"	28	S08079-I28UNTM...	8	7.90	63	19.9	3, 5*	22	0.52
No.12	24	S06040-I24UNTM...	6	4.00	57	8.5	3	8	0.61
1/4"	20	S06040-I20UNTM...	6	4.00	57	10.2	3	8	0.73
9/16"	20	S10099-I20UNTM...	10	9.90	72	22.9	5	18	0.73
5/16"	18	S06050-I18UNTM...	6	5.00	57	12.7	3	9	0.81
9/16"	18	S10099-I18UNTM...	10	9.90	72	24.0	5	17	0.81
3/8"	16	S06059-I16UNTM...	6	5.90	57	14.3	3	9	0.92
3/4"	16	S12119-I16UNTM...	12	11.90	83	28.6	5	18	0.92
7/16"	14	S08079-I14UNTM...	8	7.90	63	18.1	3, 5*	10	1.05
1/2"	13	S08079-I13UNTM...	8	7.90	63	19.5	3, 5*	10	1.13
9/16"	12	S10099-I12UNTM...	10	9.90	72	23.3	5	11	1.22
1"	12	S12119-I12UNTM...	12	11.90	83	29.6	5	14	1.22
5/8"	11	S10099-I11UNTM...	10	9.90	72	23.1	5	10	1.33
3/4"	10	S12119-I10UNTM...	12	11.90	83	27.9	5	11	1.47
7/8"	9	S16159-I9UNTM...	16	15.90	92	33.3	5	12	1.63
1"	8	S16159-I8UNTM...	16	15.90	92	38.1	5	12	1.83
1 1/8"	7	S16159-I7UNTM...	16	15.90	92	36.3	5	10	2.09
1 3/8"	6	S20199-I6UNTM...	20	19.90	104	38.1	5	9	2.44
1 3/4"	5	S20199-I5UNTM...	20	19.90	104	40.6	5	8	2.93
2"	4.5	S20199-I4.5UNTM...	20	19.90	104	39.5	5	7	3.26

* Available in 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...).

BSW — Straight

External / Internal





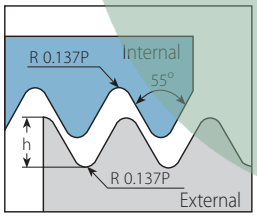
Defined by: B.S.84:1956, DIN 259, ISO228/1:1982
Tolerance class: Medium class A

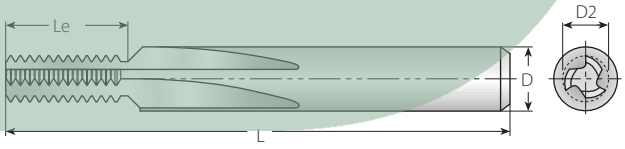
Straight Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	TPI	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/4"	20	S06040-EI20BSWTM...	6	4.00	57	10.16	3	8	0.81
5/16"	18	S06050-EI18BSWTM...	6	5.00	57	11.29	3	8	0.90
3/8"	16	S06059-EI16BSWTM...	6	5.90	57	14.29	3	9	1.02
7/16"	14	S08079-EI14BSWTM...	8	7.90	63	18.14	3, 5*	10	1.16
1/2"	12	S08079-EI12BSWTM...	8	7.90	63	19.05	3, 5*	9	1.36
5/8"	11	S10099-EI11BSWTM...	10	9.90	72	23.09	5	10	1.48
3/4"	10	S12119-EI10BSWTM...	12	11.90	83	27.94	5	11	1.63
7/8"	9	S12119-EI9BSWTM...	12	11.90	83	28.22	5	10	1.81
1"	8	S16159-EI8BSWTM...	16	15.90	92	38.10	5	12	2.03
1 1/8"	7	S16159-EI7BSWTM...	16	15.90	92	36.29	5	10	2.32
1 3/8"	6	S16159-EI6BSWTM...	16	15.90	92	38.10	5	9	2.71
1 5/8"	5	S20199-EI5BSWTM...	20	19.90	104	40.64	5	8	3.25
1 7/8"	4.5	S20199-EI4.5BSWTM...	20	19.90	104	39.51	5	7	3.61

BSP — Straight

External / Internal





Defined by: B.S.2779:1956
Tolerance class: Medium class

Straight Flutes

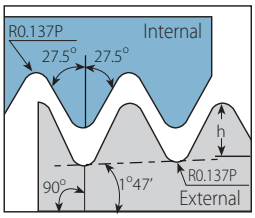
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	TPI	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/16"	28	S06059-EI28BSPTM...	6	5.90	57	14.51	3	16	0.58
1/4"	19	S08079-EI19BSPTM...	8	7.90	63	18.72	3, 5*	14	0.86
1/2"	14	S12119-EI14BSPTM...	12	11.90	83	29.03	5	16	1.16
1"	11	S16159-EI11BSPTM...	16	15.90	92	34.64	5	15	1.48

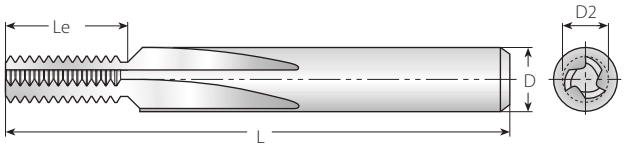
* Available in 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...).

BSPT

Straight

External / Internal





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

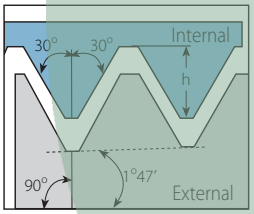
Straight Flutes

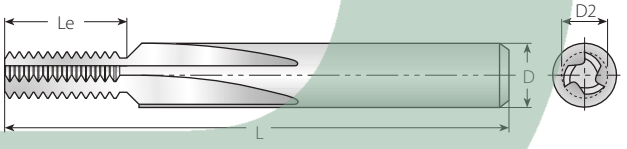
Thread	Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	
Min. Dia.	TPI	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/16"	28	S06059-EI28BSPT-TM...	6	5.90	57	9.98	3	11	0.58
1/4"	19	S08079-EI19BSPT-TM...	8	7.90	63	14.71	3, 5*	11	0.86
1/2"	14	S12119-EI14BSPT-TM...	12	11.90	83	19.96	5	11	1.16
1"	11	S16159-EI11BSPT-TM...	16	15.90	92	39.25	5	17	1.48

NPT

Straight

External / Internal





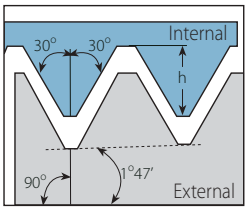
Defined by: USAS B2.1:1968
Tolerance class: Standard NPT

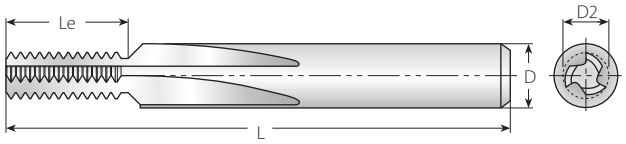
Straight Flutes

Thread	Pitch	Ordering Code		Dimensions mm			No. of Flutes	Teeth	
Min. Dia.	TPI	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/16"	27	S06059-EI27NPT-TM...	6	5.90	57	9.41	3	10	0.66
1/4"	18	S08079-EI18NPT-TM...	8	7.90	63	14.11	3, 5*	10	1.01
1/2"	14	S12119-EI14NPT-TM...	12	11.90	83	19.96	5	11	1.33
1"	11.5	S16159-EI11.5NPT-TM...	16	15.90	92	26.51	5	12	1.64
2 1/2"	8	S16159-EI8NPT-TM...	16	15.90	92	38.10	5	12	2.42

* Available in 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...).

External / Internal





Defined by: MIL-P-7105B
Tolerance class: Standard ANPT

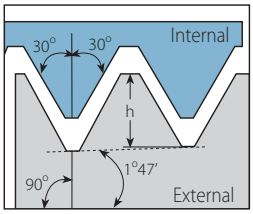
Straight Flutes

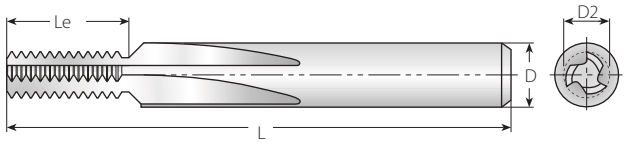
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	TPI	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/4"	18	S08079-EI18ANPT-TM...	8	7.90	63	14.11	5	10	1.10
1/2"	14	S12119-EI14ANPT-TM...	12	11.90	83	19.96	5	11	1.42

NPTF

Straight

External / Internal





Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF

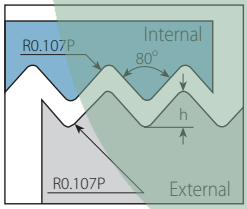
Straight Flutes

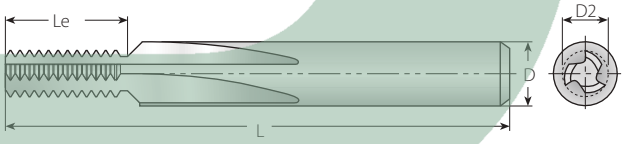
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	TPI	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/16"	27	S06059-EI27NPTFTM...	6	5.90	57	9.41	3	10	0.64
1/4"	18	S08079-EI18NPTFTM...	8	7.90	63	14.11	3, 5*	10	1.0
1/2"	14	S12119-EI14NPTFTM...	12	11.90	83	19.96	5	11	1.35
1"	11.5	S16159-EI11.5NPTFTM...	16	15.90	92	26.51	5	12	1.63
2 1/2"	8	S16159-EI8NPTFTM...	16	15.90	92	38.10	5	12	2.38

Pg

Straight

External / Internal





Defined by: DIN 40430
Tolerance class: Standard

Straight Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
	TPI	External / Internal	D	D2	L	Le	Z	Zt	h mm
Pg7	20	S08079-EI20PGTM...	8	7.90	63	19.05	3, 5*	15	0.61
Pg9, 11, 13.5, 16	18	S10099-EI18PGTM...	10	9.90	72	23.99	5	17	0.67
Pg21, 29, 36, 42, 48	16	S12119-EI16PGTM...	12	11.90	83	28.58	5	18	0.76

* Available in 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...).

Grades and Their Applications

VARGUS GENius™ Tool Selector and CNC Program Generator

VTH

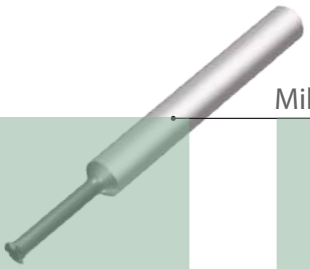
Helicool

HCN

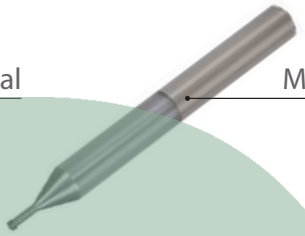
HCR

HCC

MilliPro



MilliPro Dental



MilliPro HD

MilliPro EL

Deep Threading

Helical

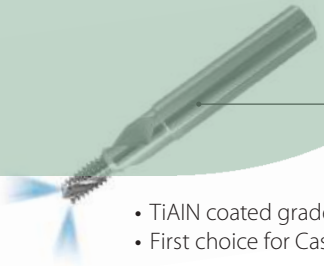
- A general-purpose, heavy duty thread milling grade
- TiCN coated for high resistance to wear

VTS

Straight

- A general-purpose grade, specially designed for TM Solid Straight Flute cutters
- TiAlN coated for high resistance to wear

VTS



HTC (Thriller)

- TiAlN coated grade
- First choice for Cast Iron and general use

VTN

HTC (Thriller)

- Uncoated grade
- First choice for Aluminium and general use

VTS

TMDR

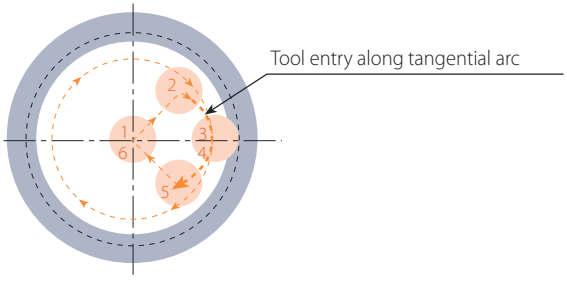
- A General - purpse grade
- TiAlN coated grade

TM Solid

Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]			Feed [mm/tooth]				
					Helicool, HCR, HCC, Helical, Sraight, Deep Threading		MilliPro	Helical	Straight	Deep Threading	Helicool HCC HCR	MilliPro
					VTH	VTS	VTH					
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	80-250	50-180	60-120	0.03-0.08	0.03-0.08	0.10-0.35	0.03-0.08	0.02-0.16
	2		Medium Carbon (C=0.25-0.55%)	150	80-230	50-140	60-120	0.03-0.08	0.03-0.08	0.08-0.30	0.03-0.08	0.02-0.16
	3		High Carbon (C=0.55-0.85%)	170	80-200	50-120	60-90	0.03-0.08	0.03-0.06	0.08-0.30	0.03-0.08	0.02-0.16
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	60-180	60-170	60-90	0.03-0.08	0.03-0.07	0.08-0.30	0.03-0.08	0.02-0.16
	5		Hardened	275	60-170	60-160	50-80	0.03-0.07	0.03-0.07	0.08-0.30	0.03-0.07	0.02-0.07
	6		Hardened	350	60-160	60-150	50-80	0.02-0.05	0.02-0.04	0.05-0.15	0.02-0.06	0.02-0.03
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	40-100	40-90	50-80	0.03-0.07	0.03-0.07	0.10-0.24	0.03-0.07	0.02-0.09
	8		Hardened	325	30-80	30-70	50-80	0.02-0.04	0.02-0.05	0.05-0.15	0.03-0.06	0.02-0.03
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	80-250	70-200	70-90	0.03-0.08	0.03-0.06	0.08-0.30	0.03-0.07	0.02-0.16
	10		High Alloy (alloying elements >5%)	225	60-170	60-150	60-80	0.03-0.05	0.03-0.06	0.05-0.15	0.03-0.07	0.02-0.03
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	60-150	50-140	60-90	0.04-0.07	0.02-0.05	0.11-0.35	0.03-0.08	0.02-0.16
	12		Hardened	330	60-120	50-110	50-80	0.02-0.06	0.01-0.03	0.05-0.24	0.03-0.06	0.02-0.03
	13	Stainless Steel Austenitic	Austenitic	180	60-140	60-130	60-90	0.03-0.08	0.02-0.05	0.11-0.35	0.03-0.08	0.02-0.16
	14		Super Austenitic	200	60-130	50-120	50-80	0.03-0.08	0.02-0.05	0.11-0.35	0.03-0.06	0.02-0.16
	15	Stainless Steel Cast Ferritic	Non Hardened	200	60-160	50-150	60-90	0.03-0.08	0.02-0.05	0.11-0.35	0.03-0.06	0.02-0.16
	16		Hardened	330	60-110	50-100	50-80	0.02-0.05	0.02-0.03	0.10-0.24	0.02--0.05	0.02-0.03
	17	Stainless Steel Cast Austenitic	Austenitic	200	60-150	50-140	60-90	0.03-0.08	0.02-0.06	0.11-0.35	0.02-0.05	0.02-0.16
	18		Hardened	330	60-100	50-90	50-80	0.02-0.05	0.01-0.03	0.10-0.24	0.02-0.04	0.02-0.03
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-70	60-150	50-80	0.03-0.08	0.03-0.08	0.05-0.15	0.03-0.08	0.02-0.03
	29		Pearlitic (long chips)	230	60-150	80-100	60-90	0.03-0.08	0.03-0.06	0.10-0.24	0.03-0.07	0.02-0.12
	30	Grey Cast Iron	Low Tensile Strength	180	70-160	50-140	70-100	0.03-0.08	0.03-0.06	0.09-0.25	0.03-0.07	0.02-0.16
	31		High Tensile Strength	260	40-120	40-110	60-90	0.02-0.06	0.02-0.05	0.10-0.24	0.03-0.07	0.02-0.12
	32	Nodular Sg Iron	Ferritic	160	40-110	40-100	70-100	0.03-0.08	0.03-0.07	0.09-0.25	0.03-0.08	0.02-0.16
	33		Pearlitic	260	40-100	40-90	60-90	0.02-0.06	0.02-0.05	0.10-0.24	0.03-0.07	0.02-0.12
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	200-300	150-250	60-250	0.05-0.12	0.05-0.15	0.12-0.40	0.04-0.1	0.03-0.15
	35		Aged	100	150-250	100-220	60-150	0.05-0.12	0.03-0.1	0.10-0.32	0.03-0.1	0.03-0.16
	36	Aluminium Alloys	Cast	75	100-200	80-150	60-250	0.05-0.12	0.05-0.15	0.10-0.32	0.03-0.1	0.03-0.16
	37		Cast & Aged	90	120-220	90-160	60-150	0.05-0.12	0.03-0.1	0.10-0.30	0.06-0.12	0.02-0.16
	38	Aluminium Alloys	Cast Si 13-22%	130	200-300	150-250	250	0.05-0.12	0.05-0.15	0.10-0.32	0.05-0.12	0.03-0.15
	39	Copper and Copper Alloys	Brass	90	200-300	150-250	60-250	0.06-0.13	0.05-0.15	0.12-0.40	0.05-0.12	0.03-0.16
	40		Bronze And Non Leaded Copper	100	150-250	100-220	60-150	0.05-0.12	0.03-0.1	0.10-0.32	0.05-0.12	0.03-0.15
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	30-60	30-50	60	0.03-0.07	0.02-0.04	0.11-0.35	0.03-0.7	0.02-0.16
	20		Aged (iron based)	280	20-50	20-40	50	0.02-0.04	0.01-0.03	0.05-0.15	0.03-0.06	0.02-0.03
	21		Annealed (nickel or cobalt based)	250	15-35	15-30	35	0.02-0.04	0.01-0.03	0.05-0.15	0.03-0.06	0.02-0.03
	22		Aged (nickel or cobalt based)	350	15-30	15-25	30	0.02-0.04	0.01-0.03	0.05-0.15	0.02-0.05	0.02-0.03
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	40-80	30-70	30-50	0.02-0.04	0.01-0.03	0.10-0.24	0.02-0.05	0.02-0.07
	24		α+β Alloys	1050Rm	20-50	20-45	25-35	0.02-0.04	0.01-0.02	0.10-0.24	0.02-0.04	0.02-0.07
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	15-45	15-35	45	0.02-0.03	0.02	0.03-0.06	0.02-0.03	-
	26			51-55HRc	15-40	15-30	30	0.02-0.03	0.01	0.03-0.06	0.02-0.03	-

Recommendation:
At tool entry, set the Feed f [mm/tooth] to 70% lower than the threading Feed.
Example:
Threading Feed: 0.3[mm/tooth]
Tool entry Feed: 0.09[mm/tooth]



TM Solid

Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

TMDR

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc(m/min) TMDR / VTS	Feed [mm/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	60-120	0.02-0.12
	2		Medium Carbon (C=0.25-0.55%)	150	60-120	0.02-0.12
	3		High Carbon (C=0.55-0.85%)	170	60-90	0.02-0.12
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	60-90	0.02-0.12
	5		Hardened	275	50-80	0.02-0.05
	6		Hardened	350	50-80	0.02-0.03
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	50-80	0.02-0.07
	8		Hardened	325	50-80	0.02-0.03
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	70-90	0.02-0.12
	10		High Alloy (alloying elements >5%)	225	60-80	0.02-0.03
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	60-90	0.02-0.12
	12		Hardened	330	50-80	0.02-0.03
	13	Stainless Steel Austenitic	Austenitic	180	60-90	0.02-0.12
	14		Super Austenitic	200	50-80	0.02-0.12
	15	Stainless Steel Cast Ferritic	Non Hardened	200	60-90	0.02-0.12
	16		Hardened	330	50-80	0.02-0.03
	17	Stainless Steel Cast Austenitic	Austenitic	200	60-90	0.02-0.12
	18		Hardened	330	50-80	0.02-0.03
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	50-80	0.02-0.03
	29		Pearlitic (long chips)	230	60-90	0.02-0.09
	30	Grey Cast Iron	Low Tensile Strength	180	70-100	0.02-0.12
	31		High Tensile Strength	260	60-90	0.02-0.09
	32	Nodular Sg Iron	Ferritic	160	70-100	0.02-0.12
	33		Pearlitic	260	60-90	0.02-0.09
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	60-250	0.03-0.11
	35		Aged	100	60-150	0.03-0.12
	36	Aluminum Alloys	Cast	75	60-250	0.03-0.12
	37		Cast & Aged	90	60-150	0.02-0.12
	38	Aluminum Alloys	Cast Si 13-22%	130	250	0.03-0.11
	39	Copper and Copper Alloys	Brass	90	60-250	0.03-0.12
	40		Bronze And Non Leaded Copper	100	60-150	0.03-0.11
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	60	0.02-0.12
	20		Aged (iron based)	280	50	0.02-0.03
	21		Annealed (nickel or cobalt based)	250	35	0.02-0.03
	22		Aged (nickel or cobalt based)	350	30	0.02-0.03
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	30-50	0.02-0.05
	24		α+β Alloys	1050Rm	25-35	0.02-0.05
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	-	-
	26			51-55HRc	-	-

Recommended Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

HCN

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc(m/min) HCN / VTH	Feed [mm/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	50-180	0.03-0.08
	2		Medium Carbon (C=0.25-0.55%)	150	50-140	0.03-0.08
	3		High Carbon (C=0.55-0.85%)	170	50-120	0.03-0.06
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	60-170	0.03-0.07
	5		Hardened	275	60-160	0.03-0.07
	6		Hardened	350	60-150	0.02-0.04
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	40-90	0.03-0.07
	8		Hardened	325	30-70	0.02-0.05
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	70-200	0.03-0.06
	10		High Alloy (alloying elements >5%)	225	60-150	0.03-0.06
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	50-140	0.02-0.05
	12		Hardened	330	50-110	0.01-0.03
	13	Stainless Steel Austenitic	Austenitic	180	60-130	0.02-0.05
	14		Super Austenitic	200	50-120	0.02-0.05
	15	Stainless Steel Cast Ferritic	Non Hardened	200	50-150	0.02-0.05
	16		Hardened	330	50-100	0.02-0.03
	17	Stainless Steel Cast Austenitic	Austenitic	200	50-140	0.02-0.06
	18		Hardened	330	50-90	0.01-0.03
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	60-150	0.03-0.08
	29		Pearlitic (long chips)	230	80-100	0.03-0.06
	30	Grey Cast Iron	Low Tensile Strength	180	50-140	0.03-0.06
	31		High Tensile Strength	260	40-110	0.02-0.05
	32	Nodular Sg Iron	Ferritic	160	40-100	0.03-0.07
	33		Pearlitic	260	40-90	0.02-0.05
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	150-250	0.05-0.15
	35		Aged	100	100-220	0.03-0.1
	36	Aluminum Alloys	Cast	75	80-150	0.05-0.15
	37		Cast & Aged	90	90-160	0.03-0.1
	38	Aluminum Alloys	Cast Si 13-22%	130	150-250	0.05-0.15
	39	Copper and Copper Alloys	Brass	90	150-250	0.05-0.15
	40		Bronze And Non Leaded Copper	100	100-220	0.03-0.1
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	30-50	0.02-0.04
	20		Aged (iron based)	280	20-40	0.01-0.03
	21		Annealed (nickel or cobalt based)	250	15-30	0.01-0.03
	22		Aged (nickel or cobalt based)	350	15-25	0.01-0.03
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	30-70	0.01-0.03
	24		α+β Alloys	1050Rm	20-45	0.01-0.02
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	-	-
	26			51-55HRc	-	-

TM Solid

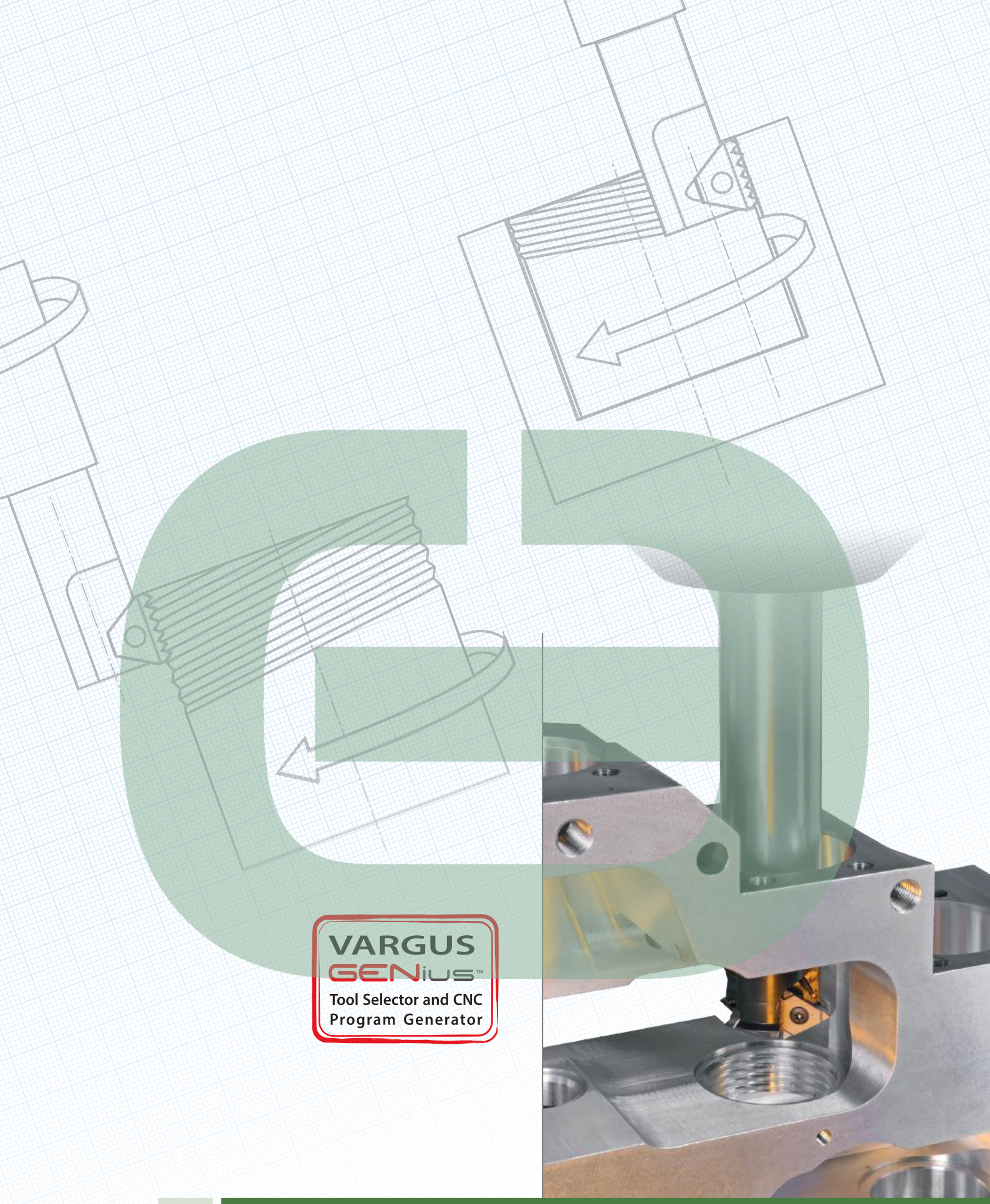
MilliPro HD
Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]	Feed f [mm/tooth] by Cutting Dia.=D2				
					VTH	1.5-2.5	2.5-5	5-7	7-9	9-11
P Steel	6	Low Alloy Steel (alloying elements≤5%)	Hardened	350	25-160	0.04	0.05	0.06	0.07	0.08
	8	High Alloy Steel (alloying elements>5%)	Hardened	325	25-180					
M Stainless Steel	12	Stainless Steel Ferritic	Hardened	330	25-120	0.04	0.05	0.06	0.07	0.08
	16	Stainless Steel Cast Ferritic	Hardened	330	25-110					
	18	Stainless Steel Cast Austenitic	Hardened	330	25-100					
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	25-160	0.05	0.06	0.07	0.08	0.1
	29		Pearlitic (long chips)	230	25-150	0.04	0.05	0.06	0.07	0.08
	30	Grey Cast Iron	Low Tensile Strength	180	25-130	0.05	0.06	0.07	0.08	0.1
	31		High Tensile Strength	260	25-100	0.04	0.05	0.06	0.07	0.08
	32	Nodular Sg Iron	Ferritic	160	25-125	0.04	0.05	0.06	0.07	0.09
	33		Pearlitic	260	25-90	0.03	0.04	0.05	0.06	0.07
S Heat Resistant Material	21	High Temperature Alloys	Annealed (nickel or cobalt based)	250	15-35	0.03	0.04	0.05	0.06	0.07
	22		Aged (nickel or cobalt based)	350	15-30					
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	25-70					
	24		α+β alloys	1050Rm	25-50					
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	25-70	0.04	0.05	0.06	0.07	0.08
	26			51-55HRc	25-60	0.03	0.04	0.05	0.06	0.07
	27			56-62HRc	25-50	0.02	0.03	0.04	0.05	0.06

HTC Recommended Grades, Cutting Speed and Feed

Material Group	Material		Hardness Brinell HB	Strength (N-mm2)	Vc [m/min]		fb[mm/rev]		fz[mm/tooth]	
					VTN	VTS	≤6mm	≤12mm	≤6mm	≤12mm
K Cast Iron	Cast Iron	Grey Cast Iron	≤150	≤500	50-80	80-120	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10
		Grey Cast Iron, Heat Treated	150-300	500-1000	50-80	80-120	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10
		Spher. Graph. Cast Iron	≤200	≤700	50-80	80-120	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10
	Copper	Short Chips, Brass, Bronze, Red Brass	≤200	≤700	100-300	—	0.06-0.10	0.10-0.30	0.03-0.06	0.06-0.10
N Non-Ferrous Metals	Aluminium/ Magnesium	Aluminium, Magnesium Non-Alloy	≤100	≤350	100-400	100-400	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Aluminium, Wrought Alloy, Breaking Strain (A5) < 14%	≤180	≤600	100-400	100-400	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Aluminium, Wrought Alloy, Breaking Strain (A5) ≥ 14%	≤180	≤600	100-400	100-400	0.03-0.06	0.06-0.12	0.03-0.06	0.06-0.10
		Aluminium, Cast Alloy, Si<10%	≤180	≤600	100-300	100-400	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Aluminium, Cast Alloy, Si≥10%	≤180	≤600	—	100-300	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
K	Plastic	Thermo Plastics	—	—	60-120	60-120	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Thermosetting Plastic	—	—	60-100	60-100	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Fibre Reinforced Plastic	—	—	40-60	60-80	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10

Vc - Cutting Speed [m/min]
fb (Drilling) - Feed per Revolution [mm/rev]
fz (Threading) - Feed per Tooth [mm/tooth]



VARGUS
GENius™
Tool Selector and CNC
Program Generator

Thread Milling Technical Data

About Thread Milling

To perform a thread milling operation, a milling machine with three-axis control capable of helical interpolation is required. Helical interpolation is a CNC function producing tool movement along a helical path. This helical motion combines circular movement in one plane with a simultaneous linear motion in a plane perpendicular to the first. For example, the path from point A to point B (Fig. A) on the envelope of the cylinder combines a circular movement in the xy plane with a linear displacement in the z direction.
On most CNC systems this function can be executed in two different ways:

GO2: Helical interpolation in a clockwise direction
GO3: Helical interpolation in a counter-clockwise direction

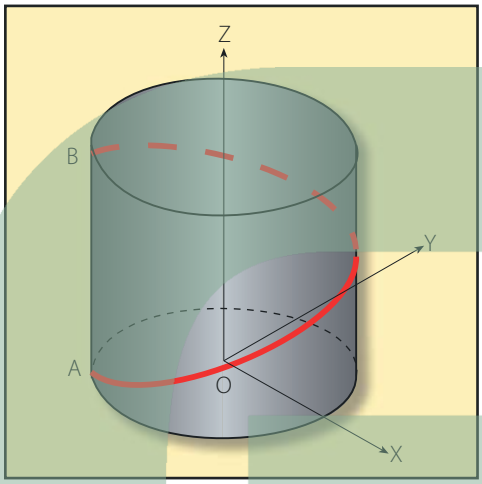
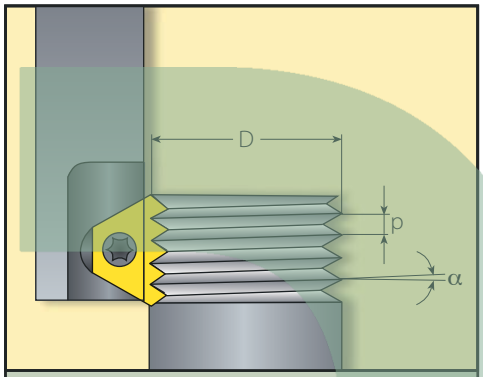


Fig. A



α: Helix angle
D: External diameter
p: Pitch

Fig. B

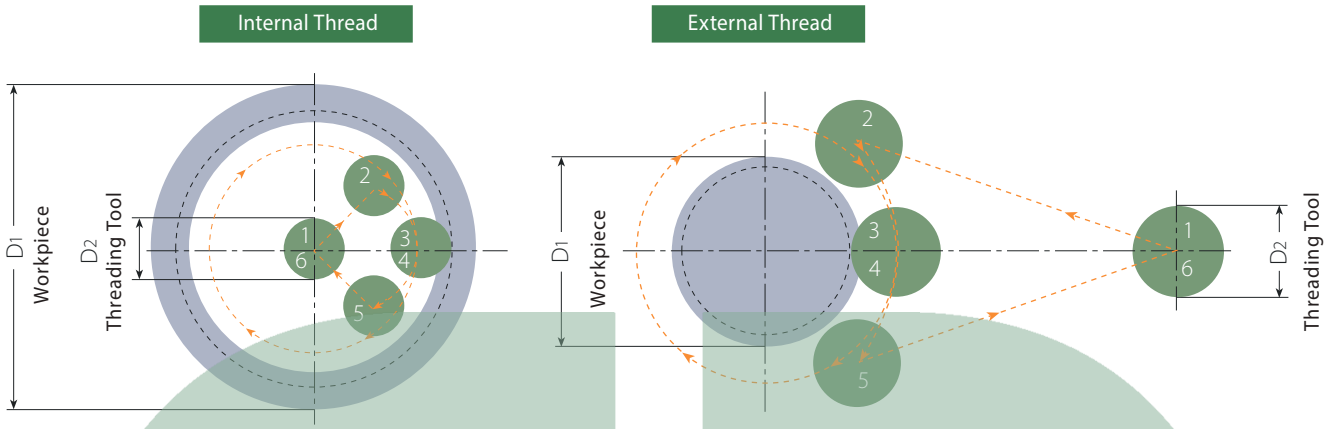
The thread milling operation (Fig. B) consists of circular rotation of the tool around its own axis together with an orbiting motion along the bore or workpiece circumference.
During one such orbit, the tool will shift vertically one pitch length. These movements combined with the insert geometry create the required thread form.
There are three acceptable ways of approaching the workpiece with the tool to initiate production of the thread:

1. Tangential Arc Approach
2. Radial Approach
3. Tangential Line Approach

1 Tangential Arc Approach

With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials.

Although it requires slightly more complex programming than the radial approach (see below), this is the method recommended for machining the highest quality threads.



1-2: Rapid approach
2-3: Tool entry along tangential arc, with simultaneous feed along z-axis
3-4: Helical movement during one full orbit (360°)
4-5: Tool exit along tangential arc, with continuing feed along z-axis
5-6: Rapid return

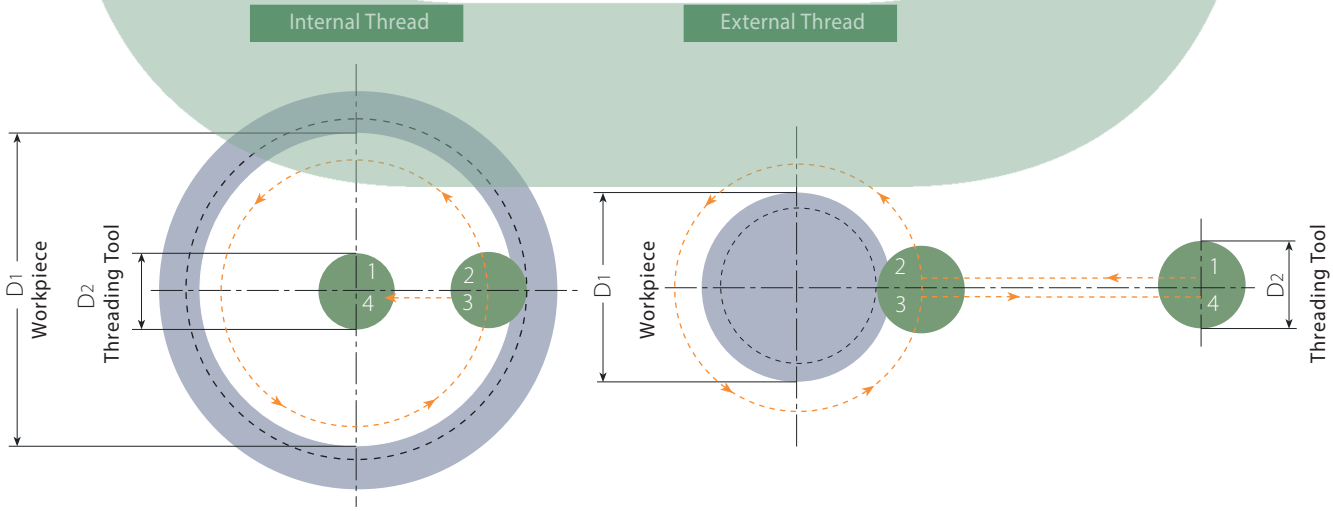
2 Radial Approach

This is the simplest method. There are two characteristics worth noting about the radial approach:

1. A small vertical mark may be left at the entry (and exit) point. This is of no significance to the thread itself.

2. When using this method with very hard materials, there may be a tendency of the tool to vibrate as it approaches the full cutting depth.

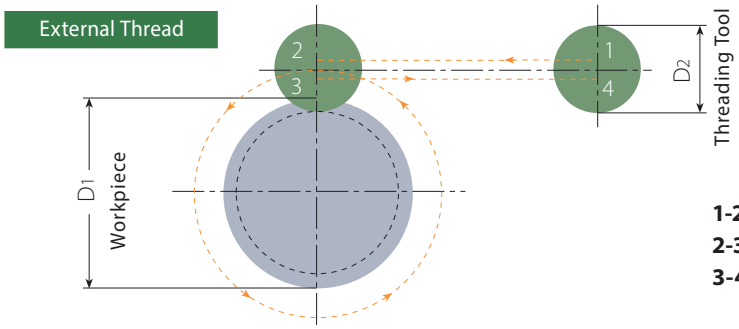
Note: Radial feed during entry to the full profile depth should only be 1/3 of the subsequent circular feed.



1-2: Radial entry
2-3: Helical movement during one full orbit (360°)
3-4: Radial exit

3 Tangential Line Approach

This method is very simple, and has all of the advantages of the tangential arc method. However, it is applicable only with external threads.



1-2: Radial entry with simultaneous feed along z axis
2-3: Helical movement during one full orbit (360°)
3-4: Radial exit

Preparing for the Thread Milling Operation

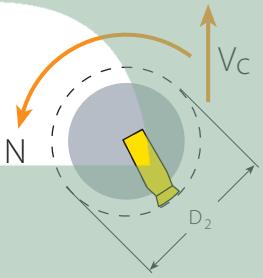
1 Calculation of Rotational Velocity and Feed at the Cutting Edge

$$N = \frac{1000 \times V}{\pi \times D_2}$$

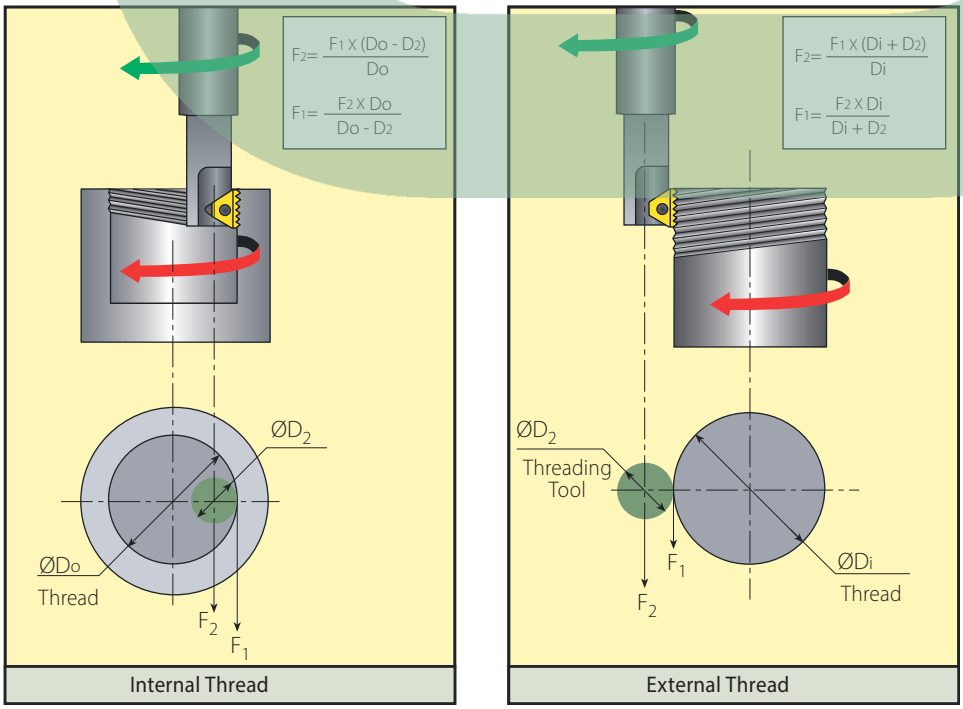
$$V = \frac{N \times \pi \times D_2}{1000}$$

$$F_1 = N \times z \times f$$

N - Rotational Velocity [R.P.M.]
V - Cutting Speed [m/min]
D_2 - Toolholder Cutting Dia. [mm]
F_1 - Tool Feed Rate at the Cutting Edge [mm/min]
z - No. of Cutting Edges
f - Feed per Tooth per Rotation [mm/tooth]



2 Calculation of Feed Rates at the Tool Center Line



The equations define the relationship between feed rates at the cutting edge and at the tool center line.
On most CNC machines the feed rate required for programming is that of the center-line of the tool. When dealing with linear tool movement the feed rate at the cutting edge and the center line are identical. This is not the case with circular tool movement.

List of "G" Codes (ISO) for CNC Program

Code	Description
%	Recognition code (ISO or EIA) + End of tape
G00	Fast feed linear positioning
G01	Linear interpolation
G02	Circular/Helical interpolation CW
G03	Circular/Helical interpolation CCW
G40	Cutter radius compensation cancel
G41	Cutter radius compensation left
G42	Cutter radius compensation right
G43	Tool length compensation +
G49	Tool length compensation cancel
G57	Work coordinate system selection
G90	Absolute command relative to work coordinate origin
G91	Incremental command relative to tool position
F	Feed mm/min
S	Spindle speed RPM

Code	Description
H	Tool length compensation number
D	Tool radius compensation number
X	X coordinate
Y	Y coordinate
Z	Z coordinate
R	Radius of travel
I	X coordinate to center of starting arc travel
J	Y coordinate to center of starting arc travel
M3	Spindle forward rotation
M5	Spindle stop
M30	Program end & rewind
O	Program number
N	Block number (can be avoided)
(	Start of comment
)	End of comment

CNC Program Sample (Thread: M60 x 1.5 x 20)

```
%
O0001 (TMINRH CLIMB CYCLES = 1)..... Program no.
(Fanuc 11M Controller.) ..... Remark
G90 G00 G57 X0 Y0..... Home (origin) set
G43 H10 Z0 M3 S946 ..... Tool length compensation-on and RPM set
G91 G00 X0 Y0 Z-20.272 ..... Go down in Z-axis
G41 D60 X9.459 Y-20.595 Z0 ..... Tool diameter compensation-on
G91 G03 X20.595 Y20.595 Z0.272 R20.595 F36 ..... Entrance by tangential arc
G91 G03 X0 Y0 Z1.500 I-30.054 J0..... Thread machining-HELICAL interpolation movement
G91 G03 X-20.595 Y20.595 Z0.272 R20.595 ..... Exit by tangential arc
G00 G40 X-9.459 Y-20.595 Z0..... Tool diameter compensation-off
G90 G49 G57 G00 Z200.000 M5 ..... Tool length compensation-off and RPM close
M30 ..... End of program
%
```

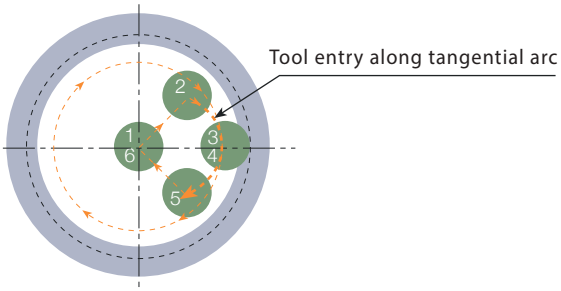
Recommendation:

At tool entry, set the Feed f [mm/tooth] to 70% lower than the threading Feed.

Example:

Threading Feed: 0.3[mm/tooth]

Tool entry Feed: 0.09[mm/tooth]



Minimum Bore Diameters for TM Standard line

Pitch mm		0.5	0.6	0.7	0.75 0.80	0.9	1.0	1.25	1.5	1.75	2.0		2.5	3.0	3.5	4.0	4.5	5.0	5.5		6.0	
Pitch TPI		48	44	36	32	28	26 24	20 19	18 16	14	13 12	11.5 11	10	9 8	7	6		5		4.5		4
Toolholder Ordering Code	D2	Minimum Bore Diameter Di mm																				
TMMC12-6.0	9.0	9.5	9.7	9.9	10.0	10.4	10.7	11.4	12.0													
TMMC20-6.0	9.0	9.5	9.7	9.9	10.0	10.4	10.7	11.4	12.0													
TMMC20-6.0-124/003	9.0	9.5	9.7	9.9	10.0	10.4	10.7	11.4	12.0													
TMC12-2	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1												
TMC20-2	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1												
TMLC25-2	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1												
TMSC10-2	12.5	13.0	12.6	13.6	13.5	13.9	14.2	14.9	15.5	16.1												
TMOC20-2	14.5	15.1	15.2	15.3	15.4	16.0	16.4	17.0	17.8	18.6												
TMNC16-3	15.5	16.0	16.2	16.4	16.5	16.9	17.2	17.9	18.5	19.0	19.5	20.0										
TMC16-3-124/001	15.5	16.0	16.2	16.4	16.5	16.9	17.2	17.9	18.5	19.0	19.5	20.0										
TMC16-3	17.0	17.6	17.8	18.0	18.2	18.7	19.0	19.6	20.0	20.5	21.0	21.5										
BTMC16-3B	17.0	17.6	17.8	18.0	18.2	18.7	19.0	19.6	20.0	20.5	21.0	21.5										
TM2C20-2	17.0	17.6	17.8	18.0	18.2	18.7	19.0	19.6	20.0	20.5												
BTMC20-3B	19.0	19.7	20.0	20.2	20.4	20.8	21.0	21.6	22.0	22.5	23.0	23.5										
TMNC20-3	19.0	19.7	20.0	20.2	20.4	20.8	21.0	21.6	22.0	22.5	23.0	23.5										
TMC20-3	20.0	20.7	21.0	21.2	21.4	21.8	22.0	22.6	23.0	23.5	24.0	24.5										
TMOC20-3	20.0	20.7	21.0	21.2	21.4	21.8	22.0	22.6	23.0	23.5	24.0	24.5										
BTMWC25-3B	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5										
BTMLC25-3B	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5										
TMLC25-3	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5										
TMC25-5-124/004	25.0	25.7	26.0	26.2	26.4	26.8	27.0	27.7	28.2	28.7	29.2	29.7	31.3	33.7	36.7	39.7	42.7					
TM2C25-3	26.0	26.7	27.0	27.2	27.4	27.8	28.0	28.7	29.3	29.8	30.3	30.8										
BTM2C25-3B	26.0	26.7	27.0	27.2	27.4	27.8	28.0	28.7	29.3	29.8	30.3	30.8										
TMC25-5	30.0	30.7	31.0	31.2	31.4	31.8	32.0	32.8	33.5	34.1	34.6	35.6	36.6	39.0	42.0	45.0	48.0					
TMLC25-5	30.0	30.7	31.0	31.2	31.4	31.8	32.0	32.8	33.5	34.1	34.6	35.6	36.6	39.0	42.0	45.0	48.0					
TMOC25-5	30.0	30.7	31.0	31.2	31.4	31.8	32.0	32.8	33.5	34.1	34.6	35.6	36.6	39.0	42.0	45.0	48.0					
TMC32-6B	35.0								38.5	39.1	39.6	40.6	42.0	44.0	47.0	50.0	53.4	42.5	50.0	44.6	57.5	56.6
TMC32-5	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.4	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5					
TMLC32-5	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.4	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5					
TMNC32-5	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.4	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5					
TMSH-D38-16-2	38.0	38.5	38.7	38.9	39.0	39.6	40.0	41.0	42.0	43.0												
TM2C32-5	42.0	43.2	43.4	43.6	43.8	44.5	45.0	46.0	46.5	47.0	47.4	48.2	49.0	52.0	54.5	57.5	61.0					
TMVC32-5	46.0																				62.5	
TMC40-6B	46.0								49.5	50.1	50.6	51.6	53.0	55.0	55.2	55.6	55.0	52.5	54.0	54.5	57.5	56.6
TMLC40-6B	46.0								49.5	50.1	50.6	51.6	53.0	55.0	55.2	55.6	55.0	52.5	54.0	54.5	57.5	56.6
TMSH-D50-22-2	50.0	50.5	50.7	50.9	51.0	51.6	52.0	53.0	54.0	54.5												
TMSH-D50-22-3	50.0	50.5	50.7	50.9	51.0	51.6	52.0	53.0	54.0	54.5	55.0	55.5										

Minimum Bore Diameters for TM Standard line (con't)

Pitch mm		0.5	0.6	0.7	0.75 0.80	0.9	1.0	1.25	1.5	1.75	2.0		2.5	3.0	3.5	4.0	4.5	5.0	5.5		6.0	
Pitch TPI		48	44	36	32	28	26 24	20 19	18 16	14	13 12	11.5 11	10	9 8	7	6		5		4.5		4
Toolholder Ordering Code	D2									Minimum Bore Diameter Di mm												
TM2C40-6B	52.0								56.0	56.2	56.5	57.0	59.0	61.5		63.0	64.0	66.0	67.0	67.6	69.0	70.0
TMSH-D63-22-3B	63.0	63.5	63.7	63.9	64.0	64.6	65.0	66.0	67.0	67.5	68.0	69.0										
TMSH-D63-22-5	63.0	63.5	63.7	63.9	64.0	64.6	65.0	66.0	67.0	67.5	68.0	69.0	70.0	72.0	73.0	74.0	75.0					
TMSH-D63-22-6B	63.0								67.0	67.5	68.0	69.0	70.0	72.0	73.0	74.0	75.0	77.0	78.0	78.6	80.0	81.0
TMSH-D80-27-5	80.0	80.5	80.7	80.9	81.0	81.6	82.0	83.0	84.0	84.5	85.0	86.0	87.0	89.0	90.0	91.0	92.0					
TMSH-D80-27-6B	80.0								84.0	84.5	85.0	86.0	87.0	89.0	90.0	91.0	92.0	94.0	95.0	95.6	97.0	98.0
TMSH-D100-32-5	100.0	100.5	100.7	100.9	101.0	101.6	102.0	103.0	104.0	104.5	105.0	106.0	107.0	109.0	110.0	111.0	112.0					
TMSH-D100-32-6B	100.0								104.0	104.5	105.0	106.0	107.0	109.0	110.0	111.0	112.0	114.0	115.0	115.6	117.0	118.0
TMSH-D125-40-5	125.0	125.5	125.7	125.9	126.0	126.6	127.0	128.0	129.0	129.5	130.0	131.0	132.0	134.0	135.0	136.0	137.0					
TMSH-D125-40-6B	125.0								129.0	129.5	130.0	131.0	132.0	134.0	135.0	136.0	137.0	139.0	140.0	140.6	142.0	143.0

Coarse Pitch Tooling:

This table is not applicable to the Coarse Pitch system, which can thread mill bores smaller than those listed above.

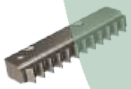
See the Coarse Pitch section of the various thread standards.

Spare Parts for TM Standard Line

Insert Screw

IC	Holder	Holder Screw	Designation	Thread	Torx Key	Torx Size
6.0mm	TMMC..-6.0		SN7T	M2.2x0.45x5.0	K7T	T7
1/4"	TM.C..-2		SN2TM	M2.6x0.45x5.9	K2T	T8
3/8"	TM.C..-3, TMC..-3-124/...		SN3T, SN3TM	5-40UNCx8.8, 7.3	K3T	T10
3/8"B	BTM.C..-3B		SN3T	5-40UNCx8.8	K3T	T10
1/2"	TMC..-4-124/...		SN4TM, SA4TM	8-32UNCx9.8, 10.7	K4T	T20
5/8"	TM.C..-5, TMC..-5-124/...		SN5TM, SA5TM	M5x0.8x15.0, 12.8	K5T	T25
3/4"B	TM.C..-6B		SM7T	M7x1.0x15.0	K30T	T30
1/4"	TMSH-D38-16-2	M8X1.25X35	SN2T	M2.6x0.45x6.5	HK2T	T8
1/4"	TMSH-D50-22-2	M10X1.50X35	SN2T	M2.6x0.45x6.5	HK2T	T8
3/8"	TMSH-D50-22-3	M10X1.50X35	SN3TM	5-40UNCx7.3	HK3T	T10
3/8"B	TMSH-D63-22-3B	M10X1.50X35	SN3TM	5-40UNCx7.3	HK3T	T10
5/8"	TMSH-D63-22-5	M10X1.50X35	SN5TM	M5x0.8x15.0	HK5T	T25
3/4"B	TMSH-D63-22-6B	M10X1.50X35	SM7T	M7x1.0x15.0	HK7T	T30
5/8"	TMSH-D80-27-5	M12X1.75X40	SN5TM	M5x0.8x15.0	HK5T	T25
3/4"B	TMSH-D80-27-6B	M12X1.75X40	SM7T	M7x1.0x15.0	HK7T	T30
5/8"	TMSH-D100-32-5	M16X2.00X40	SN5TM	M5x0.8x15.0	HK5T	T25
3/4"B	TMSH-D100-32-6B	M16X2.00X40	SM7T	M7x1.0x15.0	HK7T	T30
5/8"	TMSH-D125-40-5	M20X2.50X50	SN5TM	M5x0.8x15.0	HK5T	T25
3/4"B	TMSH-D125-40-6B	M20X2.50X50	SM7T	M7x1.0x15.0	HK7T	T30
1/4"	TMSC10-2		SN2TK	M2.6x0.45x5.9	K2T	T8
5/8"V	TMVC32-5		SN6T	M6x1.0x29.0	K6T	T20

Spare Parts for MiTM Line



Insert Screw

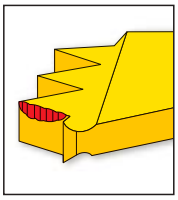
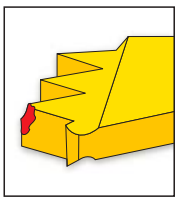
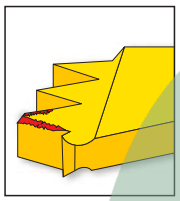
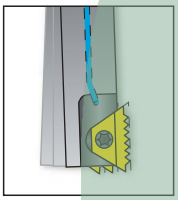
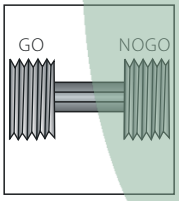
Insert Size	Holder	Holder Screw	Designation	Thread	Torx Key	Torx Size
19	RTMC...A		SLD3IP6	M3x0.5	KIP6	Torx+6
24	RTMC...M		SLD4IP8	M4x0.7	KIP8	Torx+8
25	RTMC...S RTMC-D...S		SLD4IP8	M4x0.7	KIP8	Torx+8
40	RTMC...L RTMC-D...L		SLD4IP8A SCD4IP8	M4x0.7	KIP8	Torx+8
41	RTMC...B RTMC-D...B		SLD4IP8A SCD4IP8	M4x0.7	KIP8	Torx+8
25	RTMC-D36-16-25S5	M8x1.25x35	SLD4IP8	M4x0.7	KIP8	Torx+8
	RTMC-D44-22-25S6	M10x1.50x35				
	RTMC-D52-27-25S8	M12x1.75x30				
	RTMNC-D36-16-25S5	M8x1.25x35				
40	RTMC-D44-22-40L6	M10x1.5x40	SLD4IP8A SCD4IP8	M4x0.7	KIP8	Torx+8
	RTMC-D52-27-40L8	M12x1.75x40				
	RTMNC-D45-22-40L6	M10x1.5x40				
41	RTMC-D48-22-41B5	M10x1.5x40	SLD4IP8A SCD4IP8	M4x0.7	KIP8	Torx+8
	RTMC-D58-27-41B6	M12x1.75x40				

Spare Parts for TMSD Line

Insert Screw

IC	Holder	Holder Screw	Designation	Thread	Torx Key	Blade	Handle	Torx Size
7V	GMC...-7-3 CGMC...-7-3		SN2T8-M1	M3.0x0.5x9	K2T			T8
9V	GMC...-9-3 CGMC...-9-3		SN2T15-M2	M4x0.7x13.5	-	Blade T15-1/4	Smart Handle 1/4x2	T15
11V	GMC...-11-3 CGMC...-11-3		SN4T20-M3	M55x0.8x15.5	-	Blade T20-1/4	Smart Handle 1/4x2	T20
1/4"U, 1/4"A	TM.C....-2U CTMC...-2U or 2A		SN2T	M2.6x0.45x6.5	HK2T			T8
3/8"U, 3/8"A	TM.C....-3U TM.C-D...-3U or 3A		SN3T	5-40UNCx8.8	HK3T			T10
1/2"U	TM.C....-4U TM.C-D...-4U		SA4T	8-32UNCX14.0	HK4T			T20
5.0L	TM.C....-5L CTMC...-5L		SN5LTR	M2.2X0.45X5.0	K7T			T7
3/8"L	TM.C....-3 CTMC...-3L		SN3T SA3T	5-40UNCx8.8 5-40UNCx11.3	HK3T			T10
5/8"V	TM.SC-D...-5V..		SA5T	M5x0.8x22.0	HK5T			T25
3/8"U	TM4SC-D42-16-3U	SA5T-C5 (M8x1.25x28) Holder Screwdriver TK5T	SN3T	5-40UNCx8.8	HK3T			T10
	TM5SC-D48-22-3U	M10x1.50x35						
	TM6SC-D56-22-3U	M10x1.50x35						
1/2"U	TM6SC-D88-27-4U	M12x1.75x40	SA4T	8-32UNCX14.0	HK4T			T20
	TM7SC-D98-32-4U	M16x2.0x40						
3/8"L	TM7SC-D80-32-3L	M16x2.0x40	SA3T	5-40UNCx11.3	HK3T			T10
	TM5SC-D48-22-3L-ABUT	M10x1.50x35						
	TM6SC-D58-27-3L-ABUT	M12x1.75x40						
5/8"V	TM6SC-D88-32-5V6-ABUT	M16x2.0x40	SA5T	M5x0.8x22.0	HK5T			T25
	TM6SC-D88-32-5V8-ABUT	M16x2.0x40						

Troubleshooting

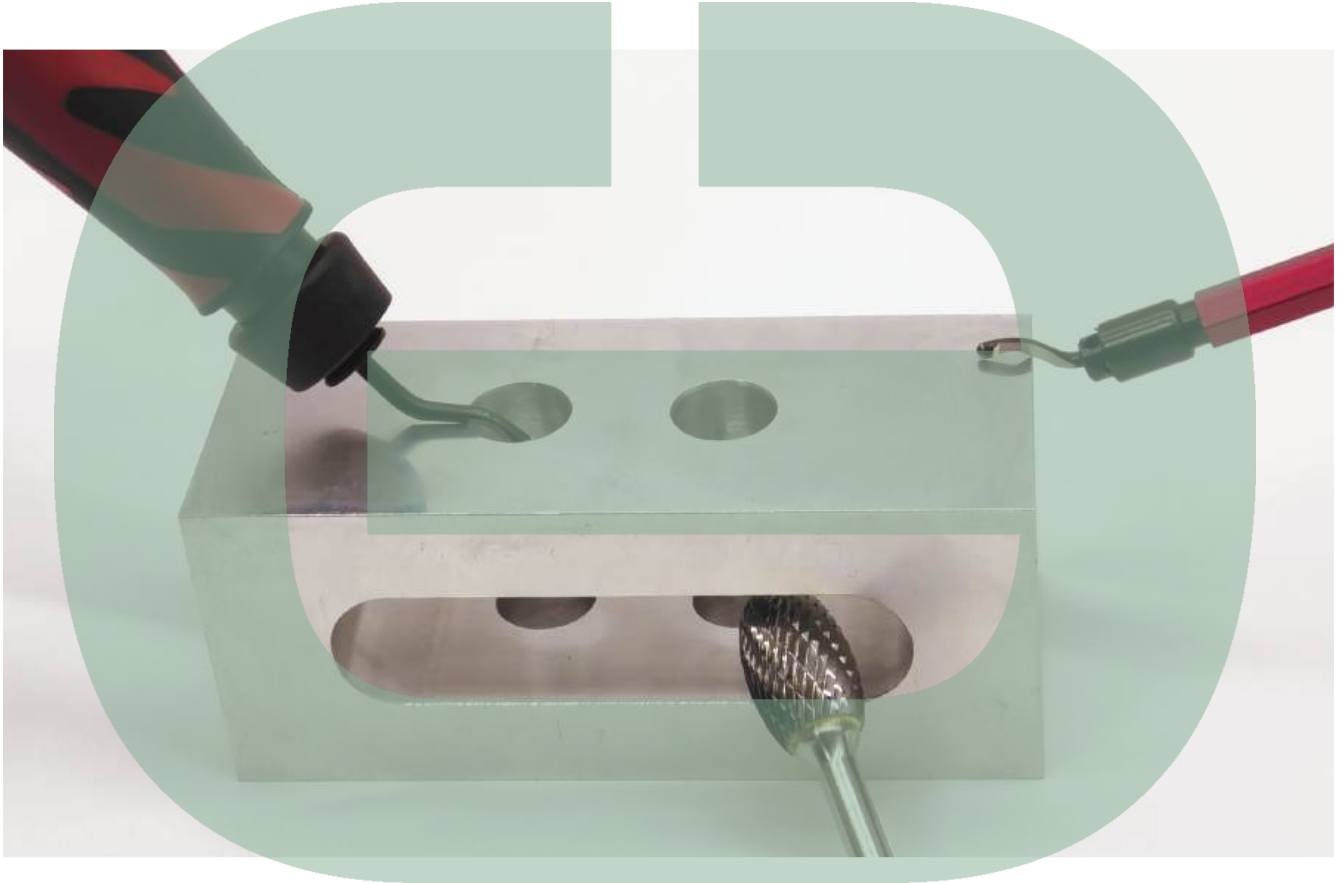
	Problem	Possible Cause	Solution
	Increased insert flank wear	Cutting speed too high ----------➤ Chip is too thin ----------➤ Insufficient coolant ----------➤	Reduce cutting speed/use coated insert Increase feed rate Increase coolant flow rate
	Chipping of cutting edge	Chip is too thick ----------➤ Vibration ----------➤	Reduce feed rate Use the tangential arc method Increase RPM Check stability
	Material build up on the cutting edge	Incorrect cutting speed ----------➤ Unsuitable carbide grade ----------➤	Change cutting speed Use a coated carbide grade
	Chatter / Vibration	Feed rate is too high ----------➤ Profile is too deep ----------➤ Thread length is too long ----------➤	Reduce the feed Execute two passes, each with increased cutting depth Execute two passes, each cutting only half the thread length Execute two passes, each cutting only half the thread length
	Insufficient thread accuracy	Tool deflection ----------➤	Reduce feed rate Execute a "zero" cut

SHAVIV
Leading Deburring Solutions

SHAVIV hand deburring tools offer a range of cost-effective and efficient solutions to companies across all industry sectors that need to remove burrs from different materials. The tools are renowned for providing "the finishing touch" in a host of applications, such as hole edges, straight edges, flat surfaces, keyways and corners.

SV-Burr
Premium Carbide Burrs

The SV Burr line features over a dozen distinct geometric designs to handle any deburring application. Options include cylindrical, radius, ball, oval, inverted cone, tree, flame, cone, and radius cone shapes among others.
Each geometry provides an optimized cutting shape for different materials and use cases.



SHAVIV hand deburring tools are widely used and extremely useful across various industrial sectors.

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They can be used on a wide range of materials including metals, plastics, and composites, allowing versatile solutions for industries and production.

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Cast iron | Plastics | Wood

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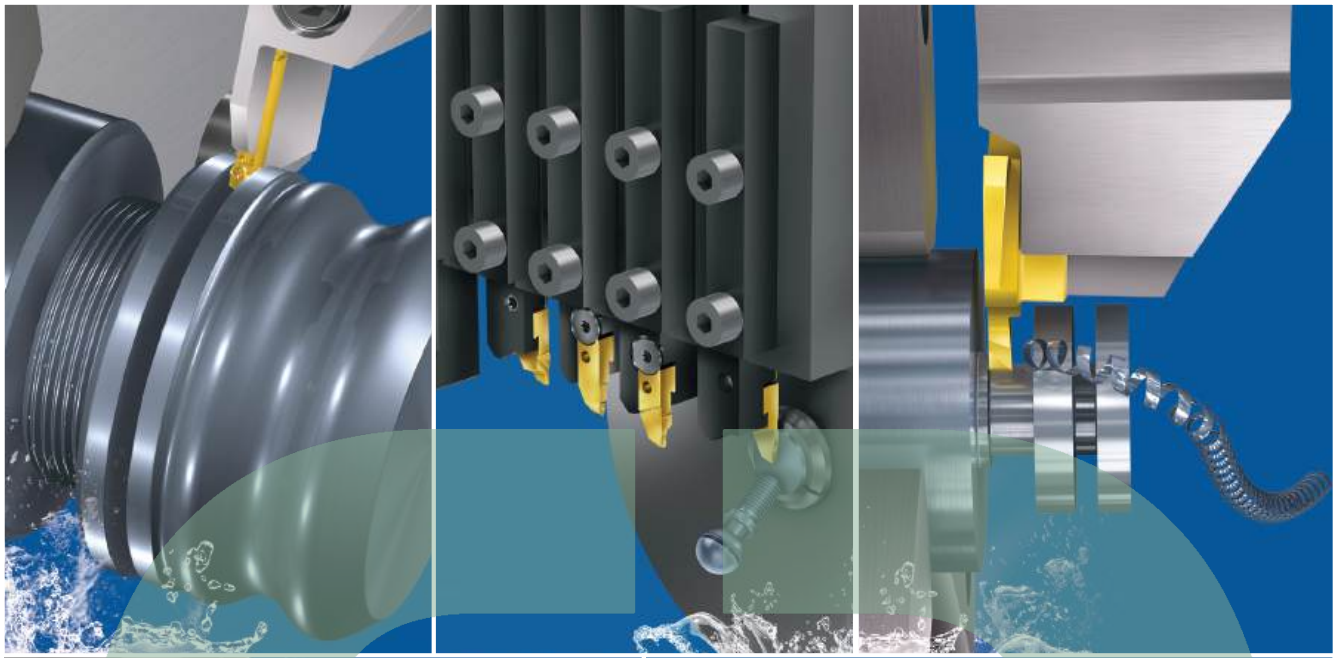

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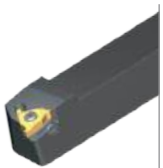

Laydown Grooving

Mini-V

microscope

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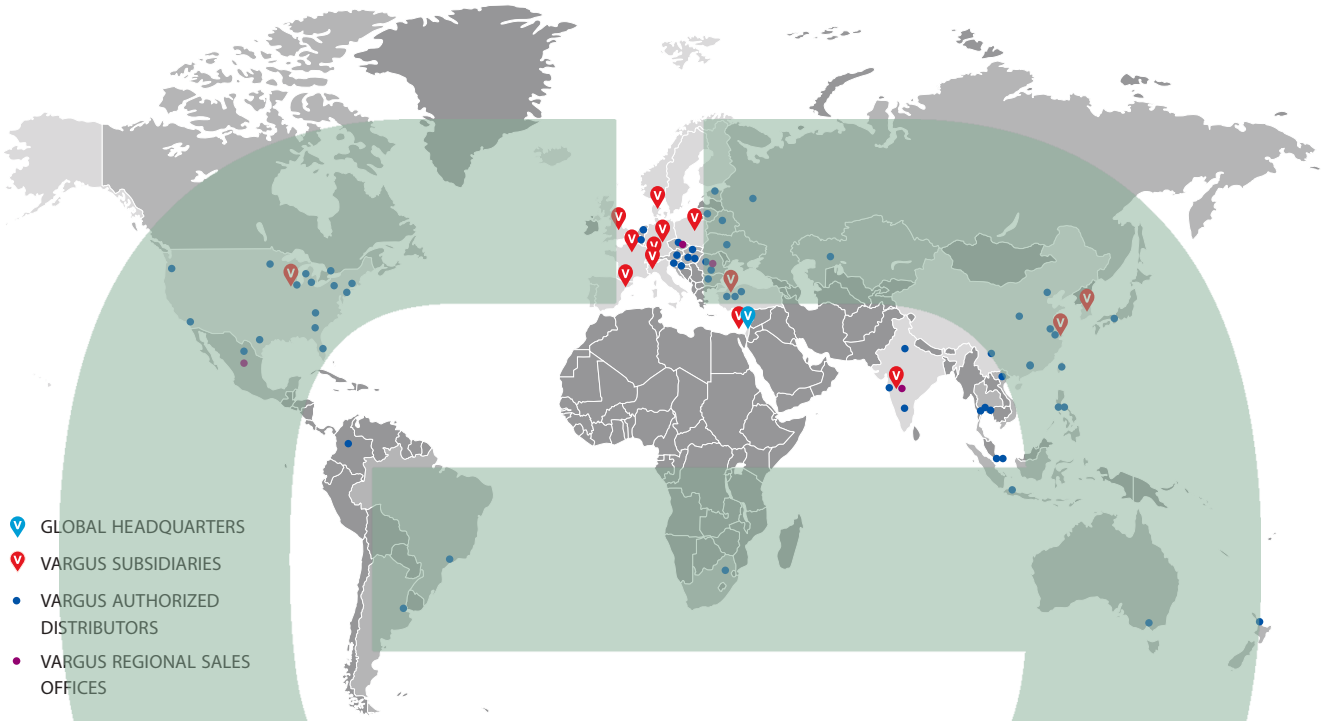

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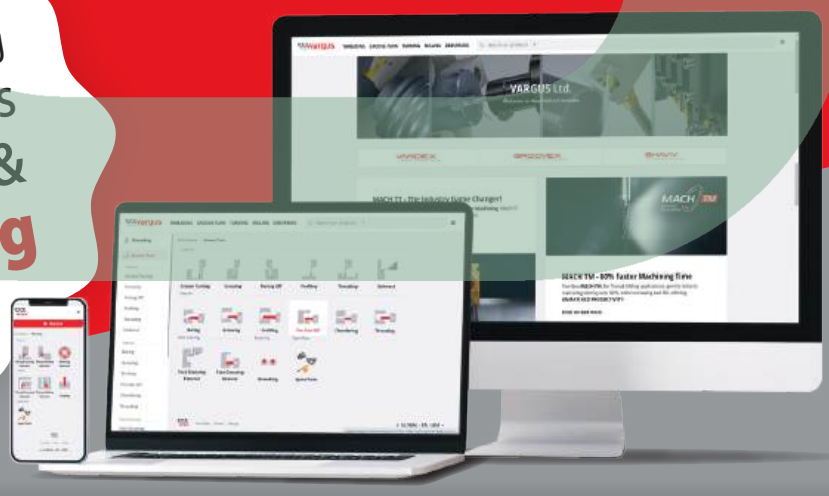

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