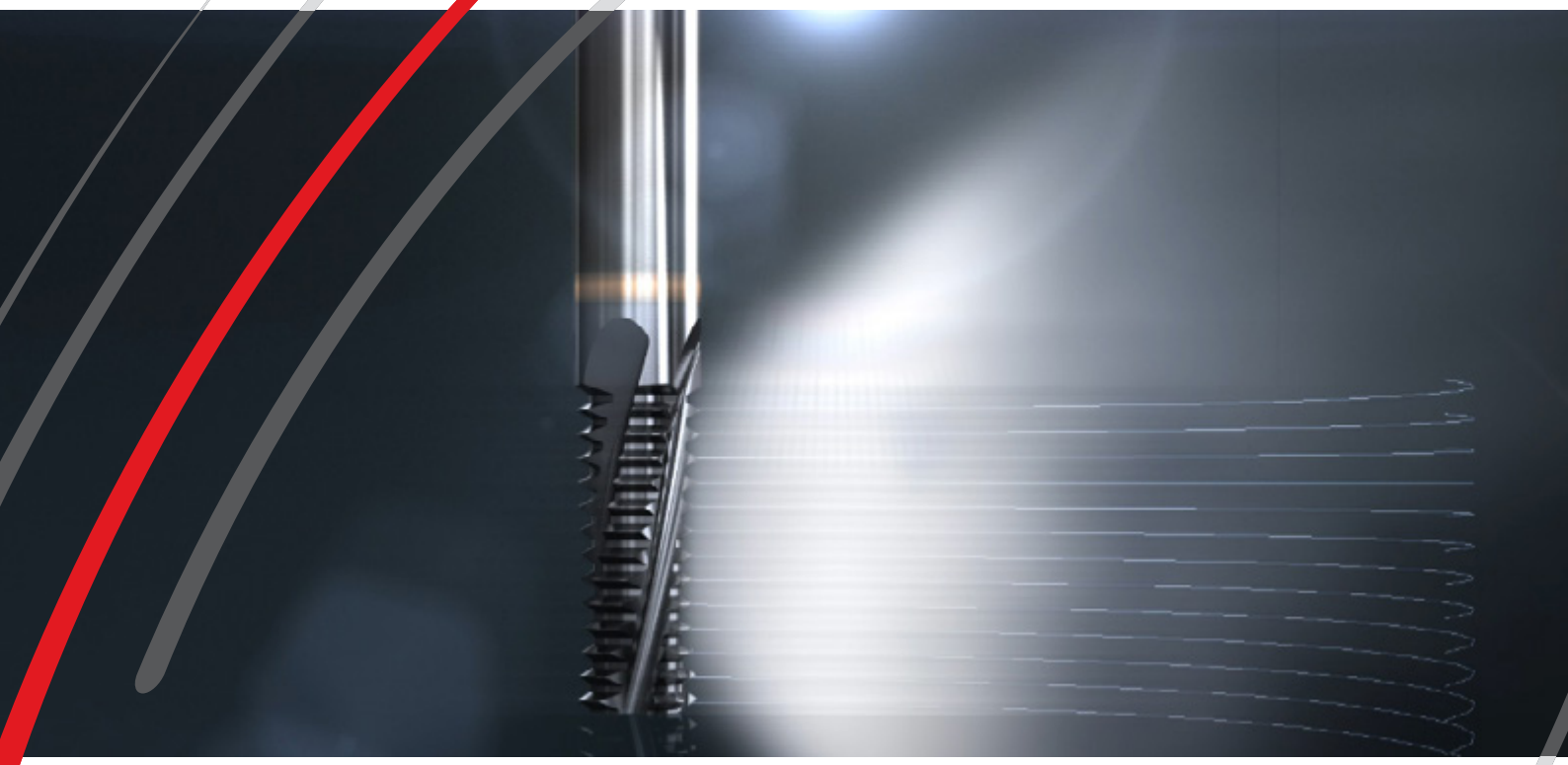
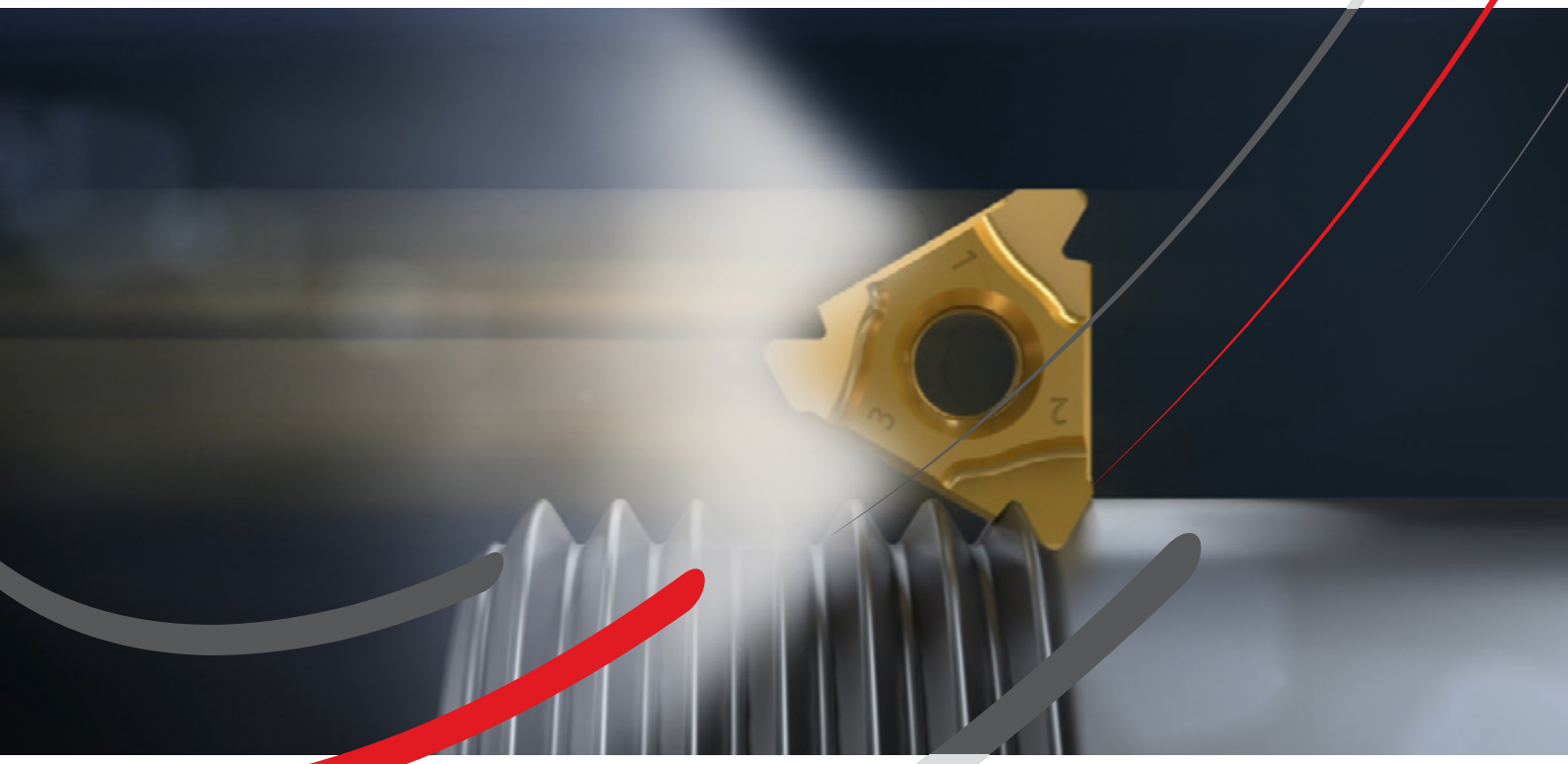
vargus
NEUMO Ehrenberg Group



MACH
Supersonic Threading

UNMATCHED PRODUCTIVITY

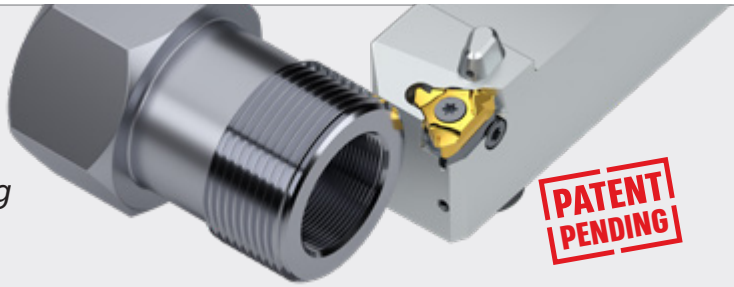


METRIC

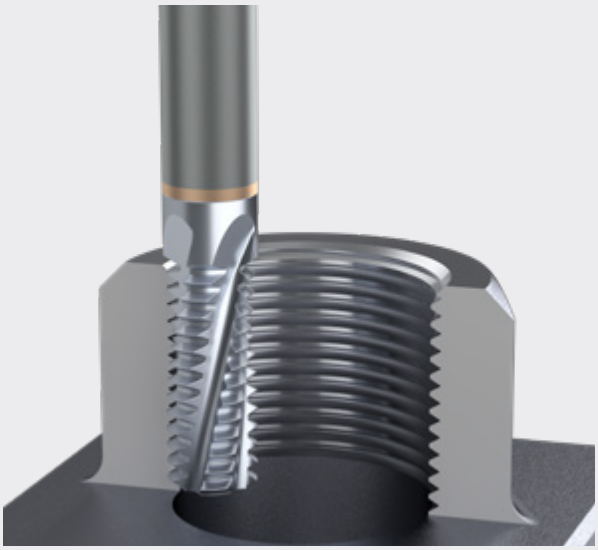
VARDEX
Advanced Threading Solutions

UNMATCHED PRODUCTIVITY

MACH TT
Supersonic Thread Turning



MACH TM
Supersonic Thread Milling



MORE THAN 2 TIMES FASTER

MACH Supersonic Threading

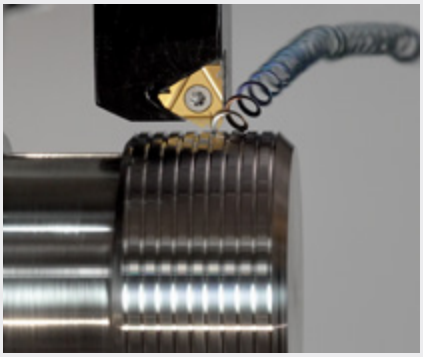
Application:
M64x3.0x33

Material:
SAE 4140

Cutting Speed:
Vc = 100 m/min

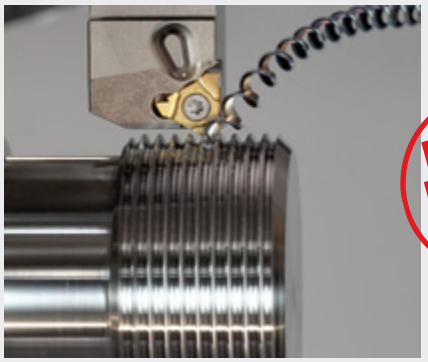
Standard

15 Passes | 40 sec.



MACH TT

6 Passes | 15 sec.



FEWER PASSES FOR MACHINING MACH TT

60% less passes
60% less machining time
25% more tool life

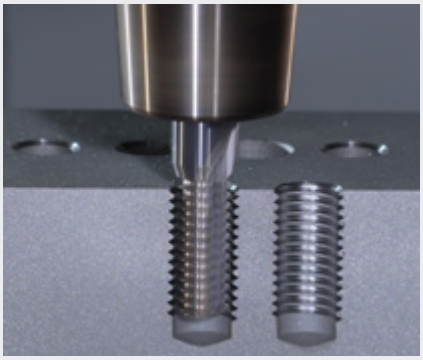
Application:
M10x1.5x20

Material:
SAE 4140

Cutting Speed:
Vc = 90 m/min

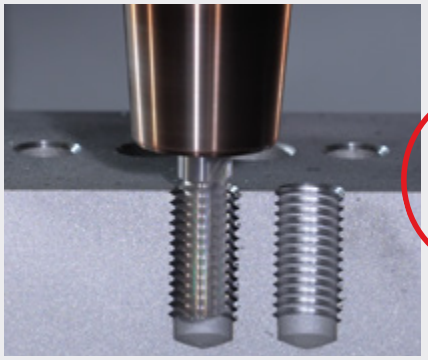
Standard (3 Flutes)

feed 0.15 mm/rev | 7 sec.



MACH TM (4 Flutes)

feed 0.4 mm/rev | 3 sec.



HIGH feed mm/flute MACH TM

100% higher feed (mm/flute)
60% less machining time
25% more tool life

MACH TT Features and Innovations

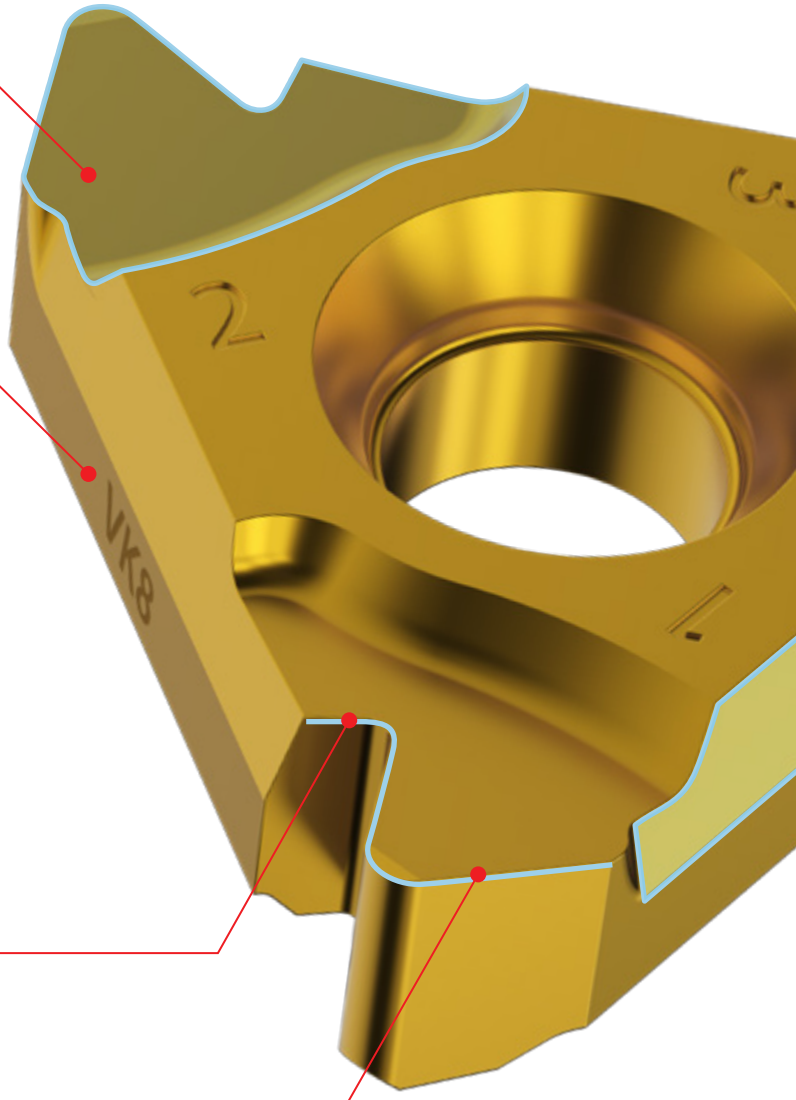
Improved Rake & Reinforced Geometry

For high resistance with a reduced number of passes

VK8 Grade

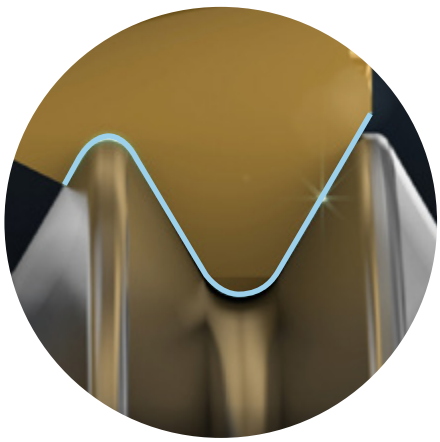
High wear resistance for general purpose applications

AlTiN + TiN PVD coating



Improved Profile Design

Superior threading surface finish



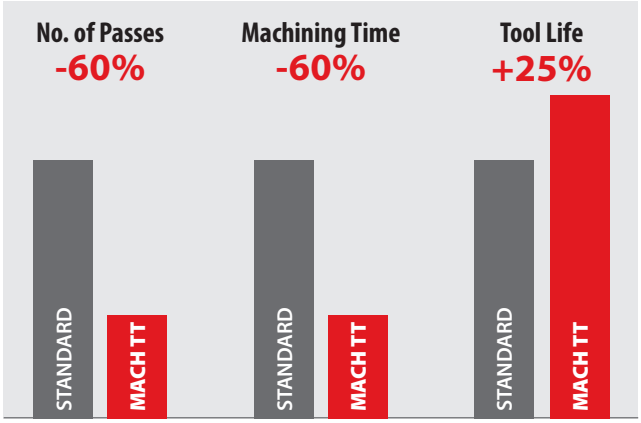
Advanced Surface Treatment

Reinforced cutting edge and smooth surface finish

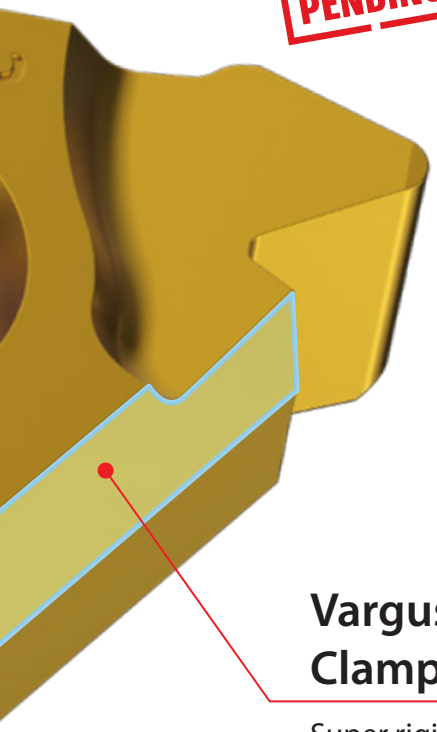
FEWER PASSES FOR MACHINING

MACH TT

UNMATCHED PRODUCTIVITY



PATENT PENDING



ADVANTAGES

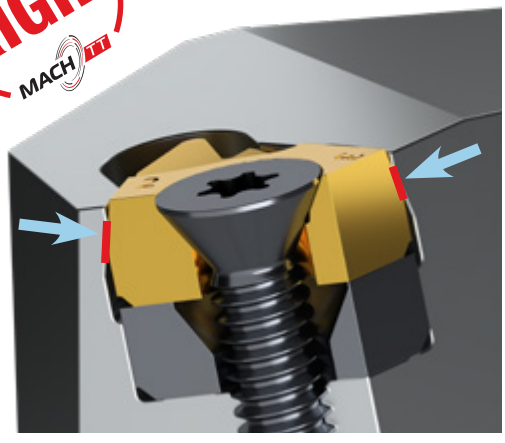
- Significantly reduces the number of passes
- Dramatically decreases machining time
- Extended tool life
- Excellent surface finish

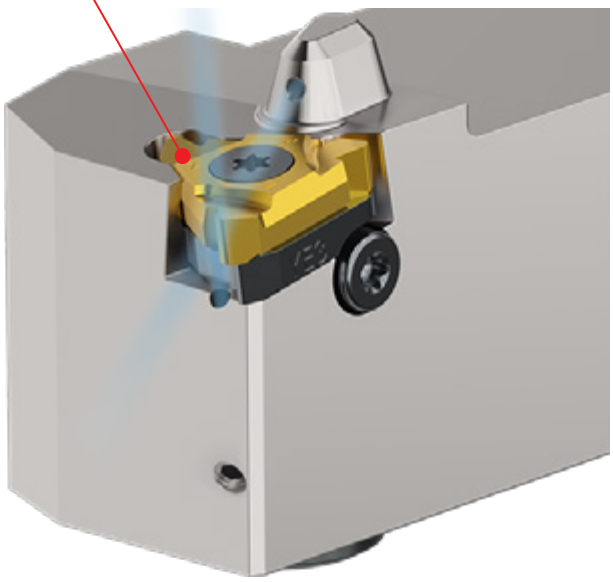
Vargus Dovetail Clamping System

Super rigid - designed for high loads

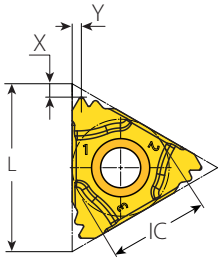
SUPER RIGID

MACH TT

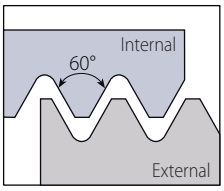




External

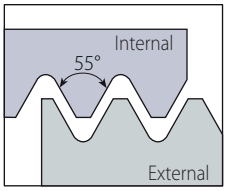


Partial Profile 60°



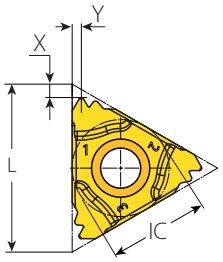
	Insert Size		Pitch		Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	mm	TPI	RH		r	X	Y	RH	Toolholder
External	3/8"	16	0.5-1.5	48-16	3DTERA60...	*16DTERA60...*	0.05	1.5	1.4	YE3	AL....-3DT
			1.75-3.0	14-8	3DTERG60... *	*16DTERG60...* *	0.27	1.4	1.7		
			0.5-3.0	48-8	3DTERAG60... *	*16DTERAG60...* *	0.08	1.1	1.7		

Partial Profile 55°

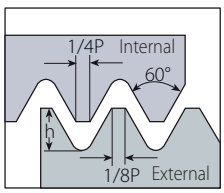


	Insert Size		Pitch		Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	mm	TPI	RH		r	X	Y	RH	Toolholder
External	3/8"	16	0.5-1.5	48-16	3DTERA55... *	*16DTERA55...* *	0.05	1.5	1.5	YE3	AL....-3DT
			0.5-3.0	48-8	3DTERAG55... *	*16DTERAG55...* *	0.07	1.1	1.7		
			1.75-3.0	14-8	3DTERG55... *	*16DTERG55...* *	0.21	1.1	1.6		

External



ISO Metric

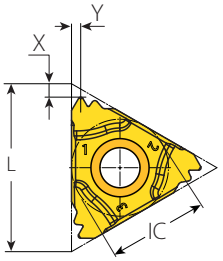


Defined by: DIN 13
Tolerance class: 6g

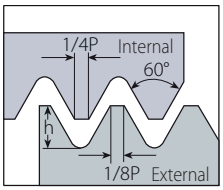
	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	0.7	3DTER0.7ISO... *	*16DTER0.7ISO...* *	0.43	1.6	0.5	YE3	AL....-3DT
			0.75	3DTER0.75ISO... *	*16DTER0.75ISO...* *	0.46	1.6	0.5		
			0.8	3DTER0.8ISO... *	*16DTER0.8ISO...* *	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	1.3	1.8		

* Available in Q2 2022

External



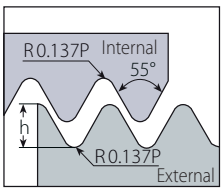
American UN



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

	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	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	0.9		
			16	3DTER16UN...	*16DTER16UN...*	0.97	1.4	1.0		
			14	3DTER14UN...	*16DTER14UN...*	1.11	1.4	1.2		
			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		

Whitworth for BSW, BSP

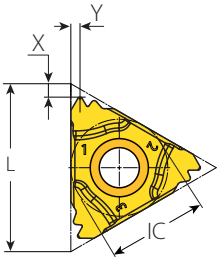


Defined by:
B.S.84:1956, DIN 259,
ISO228/1:1982
Tolerance class:
Medium class A

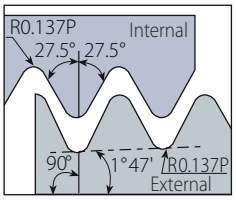
	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	28	3DTER28W... *	*16DTER28W...* *	0.58	1.6	0.6	YE3	AL....-3DT
			26	3DTER26W... *	*16DTER26W...* *	0.63	1.6	0.6		
			20	3DTER20W... *	*16DTER20W...* *	0.81	1.5	0.7		
			19	3DTER19W...	*16DTER19W...*	0.86	1.5	0.8		
			18	3DTER18W... *	*16DTER18W...* *	0.90	1.4	1.3		
			16	3DTER16W... *	*16DTER16W...* *	1.02	1.4	1.4		
			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		

* Available in Q2 2022

External



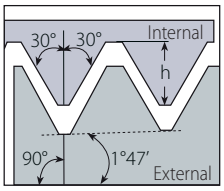
BSPT



Defined by: B.S. 21:1985
Tolerance class:
Standard 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	28	3DTER28BSPT... *	*16DTER28BSPT...* *	0.58	1.6	0.6	YE3	AL...-3DT
			19	3DTER19BSPT... *	*16DTER19BSPT...* *	0.86	1.5	0.8		
			14	3DTER14BSPT...	*16DTER14BSPT...*	1.16	1.4	1.4		
			11	3DTER11BSPT...	*16DTER11BSPT...*	1.48	1.4	1.5		

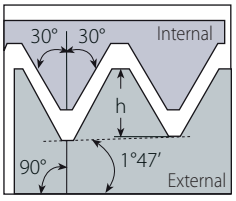
NPT



Defined by:
ANSI B1.20.1-1983
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	27	3DTER27NPT... *	*16DTER27NPT...* *	0.66	1.6	0.8	YE3	AL...-3DT
			18	3DTER18NPT...	*16DTER18NPT...*	1.01	1.5	0.9		
			14	3DTER14NPT...	*16DTER14NPT...*	1.33	1.5	1.4		
			11.5	3DTER11.5NPT...	*16DTER11.5NPT...*	1.64	1.5	1.4		
			8	3DTER8NPT... *	*16DTER8NPT...* *	2.42	1.2	1.8		

NPTF

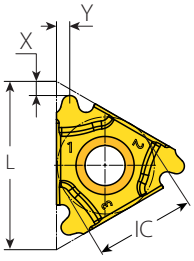


Defined by:
ANSI B1.20.3-1976
Tolerance class:
Standard NPTF

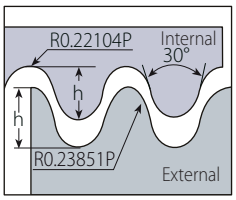
	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	27	3DTER27NPFT... *	*16DTER27NPFT...* *	0.64	1.6	0.8	YE3	AL...-3DT
			18	3DTER18NPTF... *	*16DTER18NPFT...* *	1.00	1.5	1.4		
			14	3DTER14NPTF... *	*16DTER14NPTF...* *	1.35	1.5	1.4		
			11.5	3DTER11.5NPTF... *	*16DTER11.5NPTF...* *	1.63	1.5	1.4		
			8	3DTER8NPTF... *	*16DTER8NPTF...* *	2.38	1.2	1.7		

* Available in Q2 2022

External



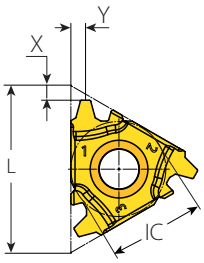
Round (405)



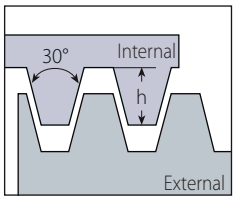
	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	TPI	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	8	3DTER8RD... *	*16DTER8RD... *	1.59	1.4	1.3	YE3	AL....-3DT
			6	3DTER6RD... *	*16DTER6RD... *	2.12	1.4	1.7		

Defined by: DIN 405
Tolerance class: 7h

External



Trapez

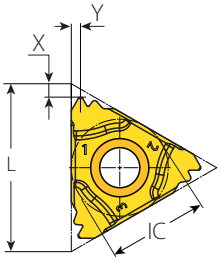


	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	1.5	3DTER1.5TR... *	*16DTER1.5TR... *	0.90	1.5	1.4	YE3	AL....-3DT
			2.0	3DTER2.0TR... *	*16DTER2.0TR... *	1.25	1.5	1.4		
			3.0	3DTER3.0TR... *	*16DTER3.0TR... *	1.75	1.4	1.5		

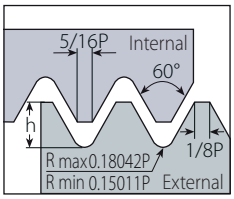
Defined by: DIN 103
Tolerance class: 7e

* Available in Q2 2022

External



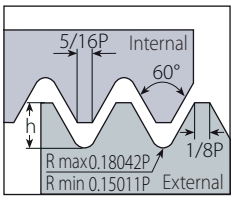
UNJ



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

	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	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		
			12	3DTER12UNJ... *	*16DTER12UNJ...* *	1.22	1.4	1.2		

MJ

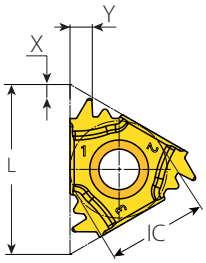


Defined by: ISO 5855
Tolerance class: 4h-6h

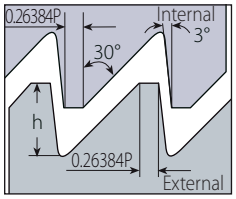
	Insert Size		Pitch	Ordering Code	Market Description	Dimensions mm			Anvil	
	IC	L mm	mm	RH		h min	X	Y	RH	Toolholder
External	3/8"	16	1.0	3DTER1.0MJ... *	*16DTER1.0MJ...* *	0.58	1.5	0.7	YE3	AL….-3DT
			1.5	3DTER1.5MJ... *	*16DTER1.5MJ...* *	0.87	1.4	0.9		

* Available in Q2 2022

External



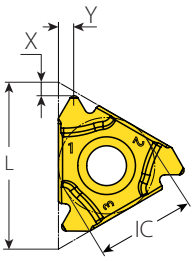
Metric Buttress



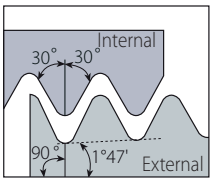
Defined by: DIN 513
Tolerance class: Medium Class

	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	2.0	3DTER2.0SAGE... *	*16DTER2.0SAGE... *	1.74	1.4	2.1	YE3	AL....-3DT

External



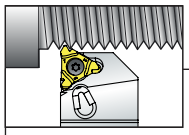
API Round



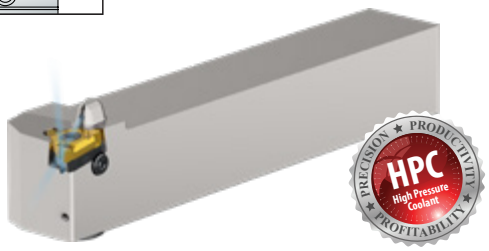
Defined by: API SPEC. 5B
Tolerance class: Standard API RD

	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	10	3DTER10APIRD... *	*16DTER10APIRD... *	1.41	1.4	1.3	YE3	AL....-3DT
			8	3DTER8APIRD... *	*16DTER8APIRD... *	1.81	1.3	1.6		

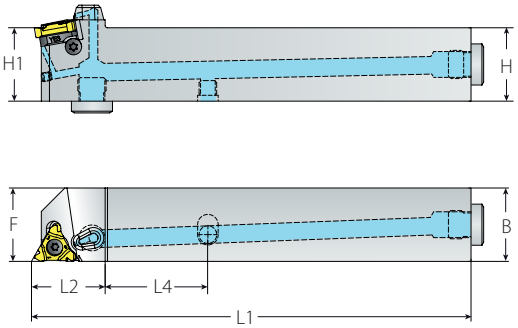
* Available in Q2 2022



External Toolholders

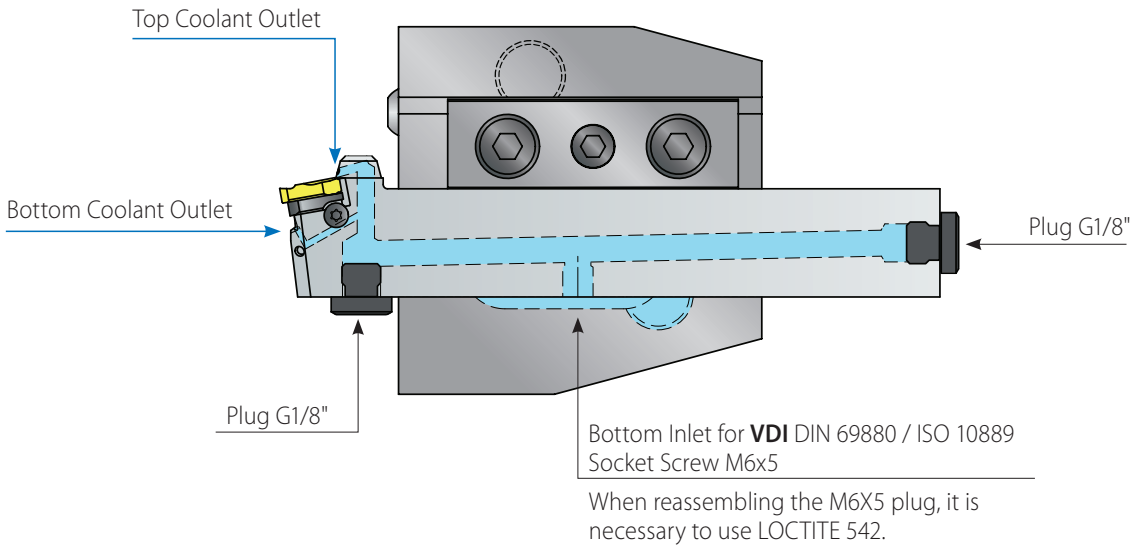


Max. 70 bar



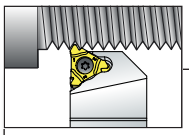
Standard with Coolant

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 (3.0 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						

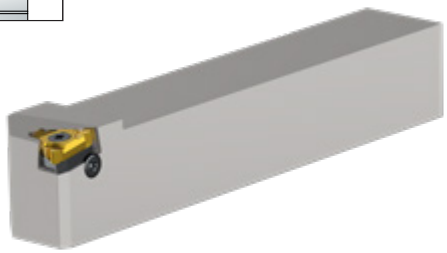


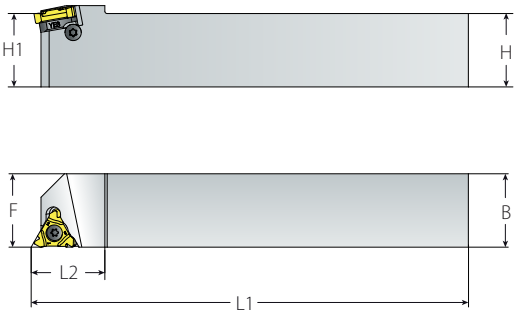
The following HPC accessories (not included) can be ordered separately:

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



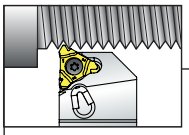
External Toolholders





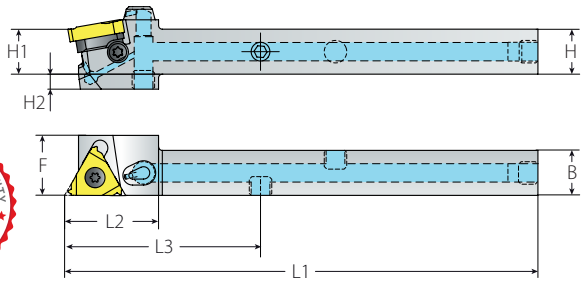
Standard

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	12	84.5	20.7	SA3T (3.0 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				

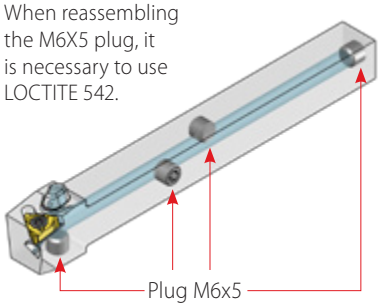


External Toolholders

Max. 70 bar



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



Standard with Coolant for Swiss Type Machines

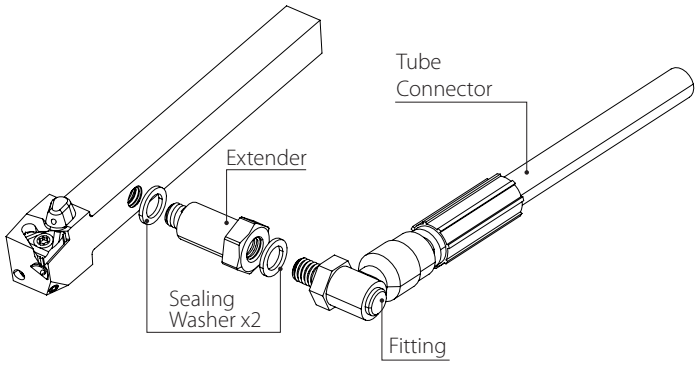
Insert Size	Ordering Code	Market Description	Dimensions mm						Spare Parts				
IC	RH		H=H1=B	F	L1	L2	L3	H2	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Plug x 4
3/8"	ALCS12-3DT	*ALCS12-16DT*	12	16	126.5	25.4	52.5	4	SA3T (3.0 Nm)	SY3T	K3T	YE3	Plug M6x5

The following 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

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

How to Assemble the Accessories for Coolant Inlets on Shank 12x12



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

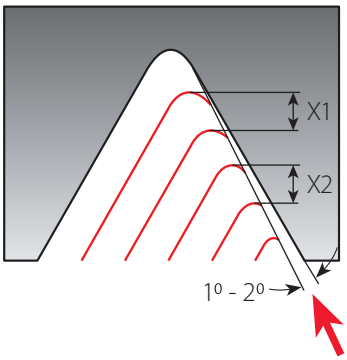
Grade	Application	Sample
VK8	High wear resistance for general purpose applications. AlTiN+TiN PVD Coating	

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
	TPI	36	32	24	20	16	14	12	10	8	7
No. of passes - MACH TT		**2-4**	**2-4**	**2-4**	**3-5**	**3-6**	**4-7**	**4-7**	**5-8**	**6-9**	**7-11**
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)*

FEWER PASSES FOR MACHINING MACH TT

Infeed Method and Type of Passes



For MACH TT tools, it is recommended:

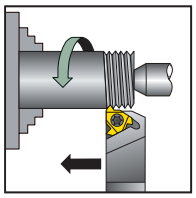
1. Use the flank infeed method (modified) with 1⁰ - 2⁰.
2. Use the constant depth type of passes. X1 = X2

Thread Turning Methods for Symmetrical Inserts

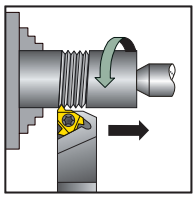
Thread	Inserts & Toolholder	Rotation	Feed Direction	Helix Method	Drawing
Right Hand External	EX RH	Counterclockwise	Towards chuck	Regular	A
Left Hand External	EX RH	Counterclockwise	From chuck	Reversed	B

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

External RH Thread (A)



External LH Thread (B)



Anvils

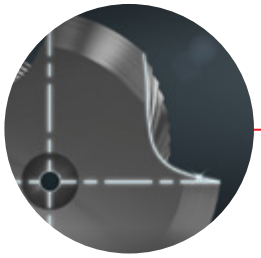
Resultant Helix Angle			2.5°	1.5°	0.5°
Insert Size		Holder	Ordering Code		
IC	L mm				
3/8"	16	ER	YE3-1P	YE3	YE3-1N

Insert & Toolholder Combinations:

- **MACH toolholders** are suitable with **MACH inserts only**
- **Standard toolholders** can be used with MACH inserts **but is less recommended**

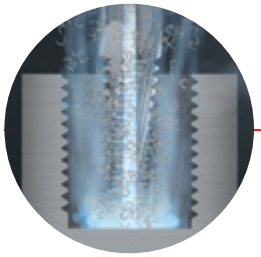
	MACH TT Insert	Standard Insert
MACH TT Toolholder 	✓✓✓ 	✗ 
Standard Toolholder 	✓✓ 	✓ 

MACH TM Features and Innovations



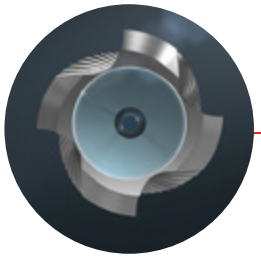
Improved Cutting Edge & Reinforced Geometry

For high loads



Coolant Thru

For better chip flow and surface finish

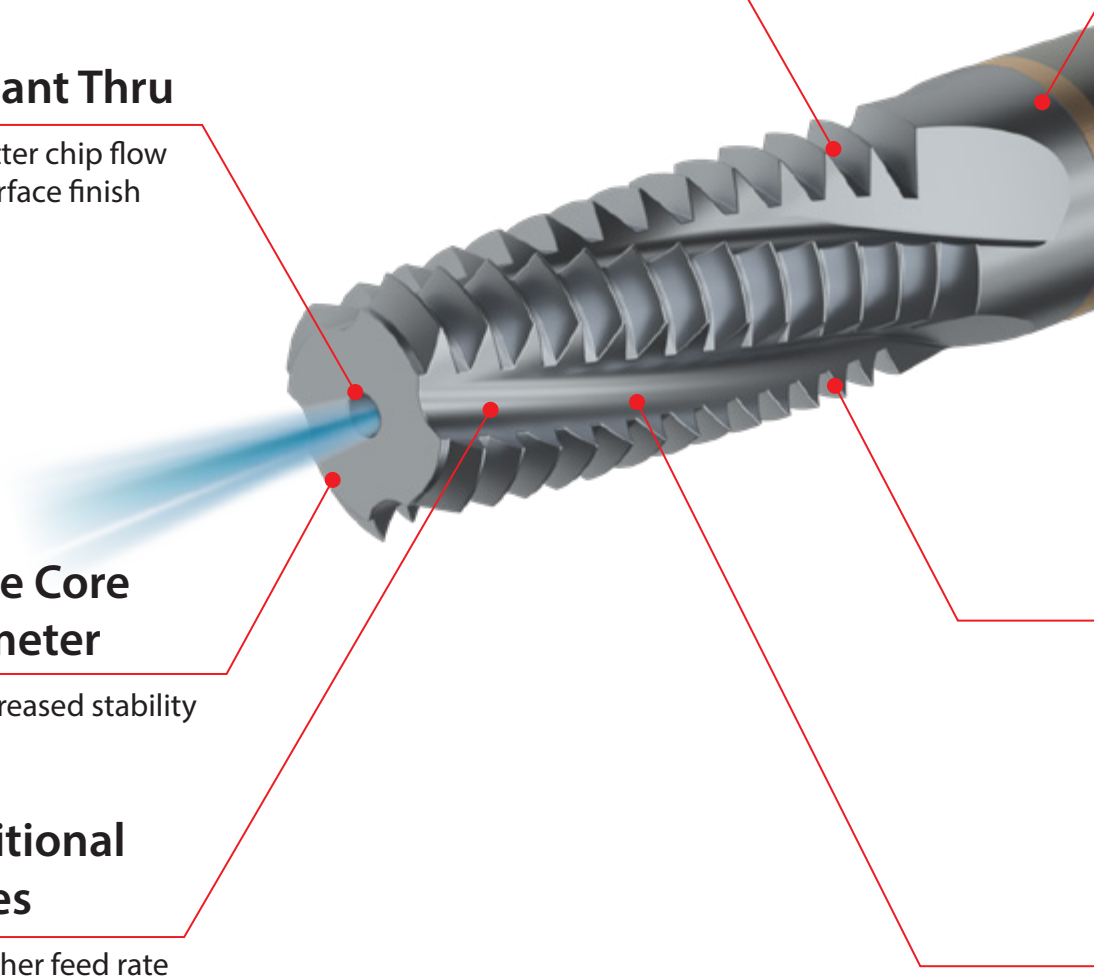


Large Core Diameter

For increased stability

Additional Flutes

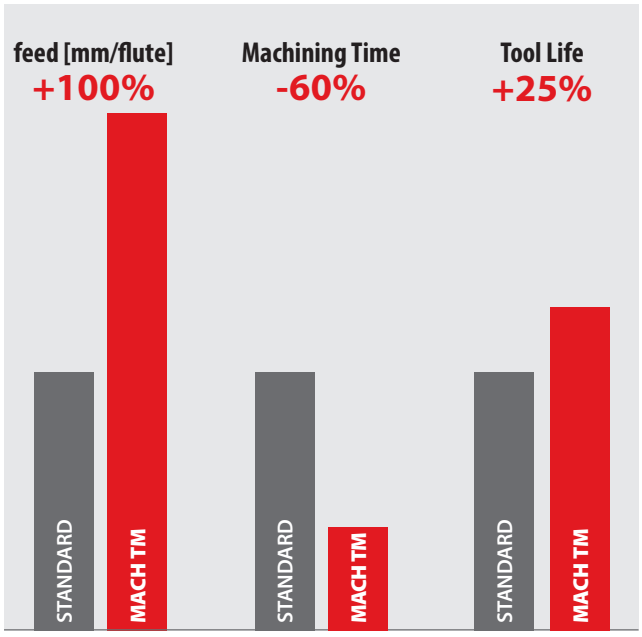
For higher feed rate



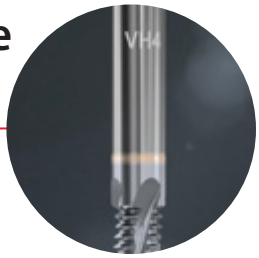
HIGH feed mm/flute

MACH TM

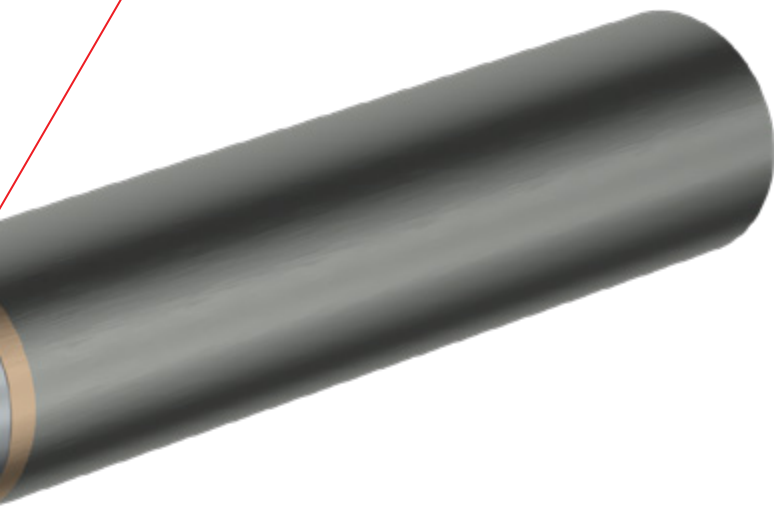
UNMATCHED PRODUCTIVITY



New Innovative VH4 Grade



High wear resistance for general purpose applications - TiCN PVD Coating

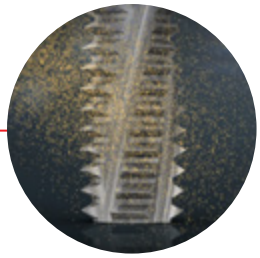


ADVANTAGES

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

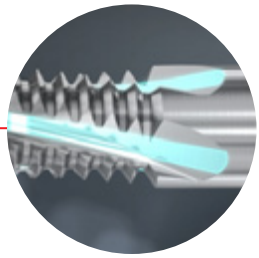
Advanced Surface Treatment

Reinforced cutting edge and improved surface finish



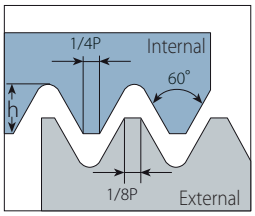
Optimal Flute Length

For higher rigidity and efficient chip evacuation

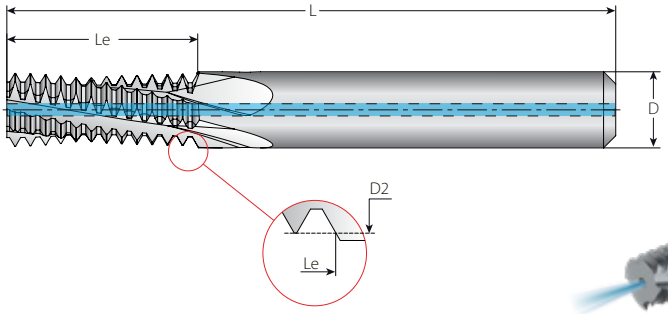


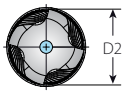
ISO Metric

Internal



Defined by: DIN 13
Tolerance class: 6H





Helical Flutes with Thru-Hole Coolant

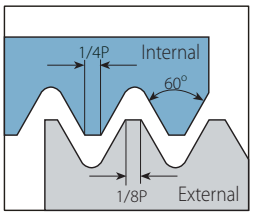
2 x Do (Le ≤ 2 x Thread Diameter)

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

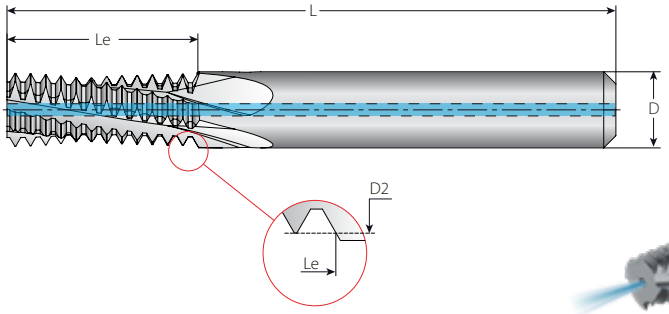
** Bore diameter applies to smallest thread dia.

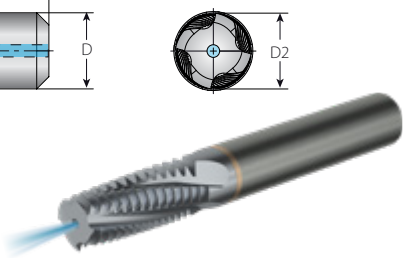
American UN

Internal



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





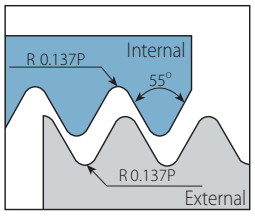
Helical Flutes with Thru-Hole Coolant

2 x Do (Le ≤ 2 x Thread Diameter)

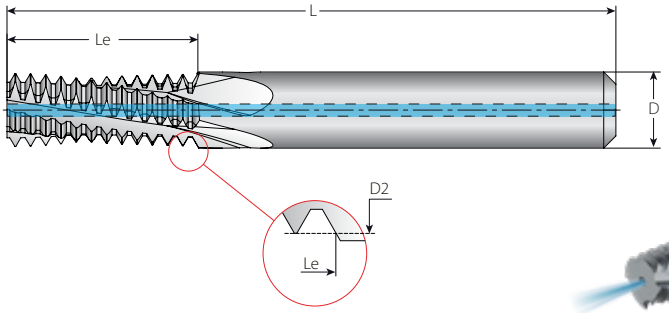
Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.**
UNC	UNF	UNEF	TPI	Internal	D	D2	L	Le	Z	Zt	mm
	1/4"x28	7/16"-1/2"x28	28	HCF05049L13-I28UNTM4... *	5	4.90	40	13.1	4	14	5.5
	5/16"; 3/8"x24	9/16"-11/16"x24	24	HCF06059L16-I24UNTM4... *	6	5.90	59	16.4	4	15	6.8
	3/8"x24	9/16"-11/16"x24	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

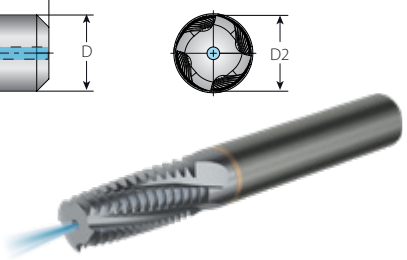
BSP

Internal



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





Helical Flutes with Thru-Hole Coolant

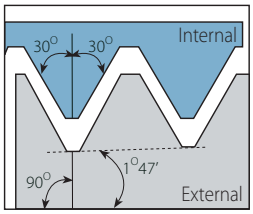
2 x Do (Le ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
Standard	TPI	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

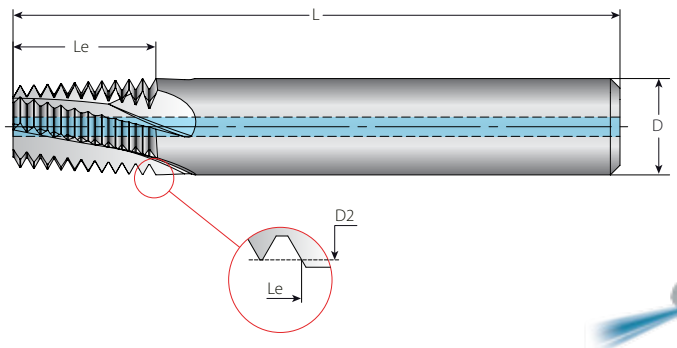
* Available in Q1 2022
** Bore diameter applies to smallest thread dia.

NPT

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	Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	HCF06059L09-EI27NPT-TM4... *	6.00	5.90	53	9.9	4	10	6.3
1/8"x27	27	HCF08076L09-EI27NPT-TM4... *	8.00	7.65	53	9.9	4	10	8.5
1/4"x18, 3/8"x18	18	HCF10099L14-EI18NPT-TM4... *	10.00	9.90	63	14.8	4	10	11.1, 14.5
1/2"; 3/4"x14	14	HCF14139L19-EI14NPT-TM5... *	14.00	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... *	18.00	17.90	80	23.2	5	10	29.0, 37.7, 44.0, 56.0

* Available in Q1 2022

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

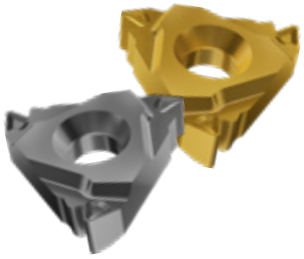
Pitch		No. of Passes
mm	TPI	
≤1.75	≤14	1
≥1.75-2.0	≥14-12	2
≥2.0	≥12	Multi-passes

VARGUS GENius™ Tool Selector and CNC Program Generator

To use higher feed from the range, the depth of the pre-drilled hole is recommended to be increased by 2-3 pitches of thread.

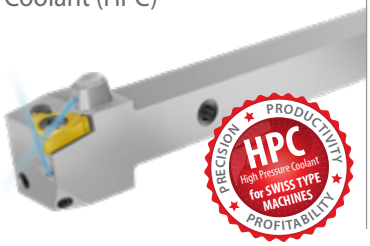
Grade	Application	Sample
VH4	High wear resistance for general purpose applications. TiCN PVD Coating	

FS LINE
Fully Sintered Inserts



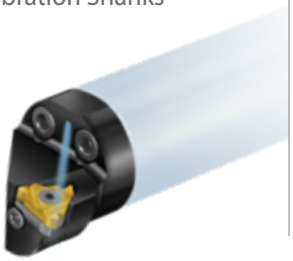
ALCN
External Thread Turning Toolholders with Two High Pressure Coolant Outlets

ALCS
External Thread Turning Toolholders for Swiss Type Machines with High Pressure Coolant (HPC)

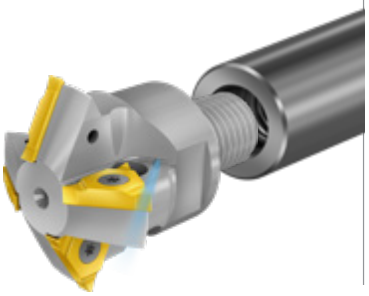


V-CAP
Internal & External Toolholders for IC1/2" (22)

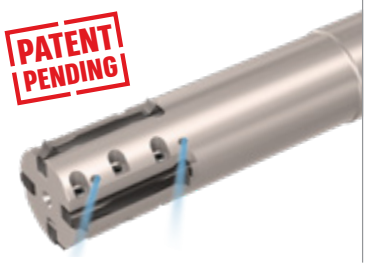
SMOOTH CUT SYSTEM
Modular Toolholder Heads for Anti-Vibration Shanks



TMSD
Modular Toolholder Heads

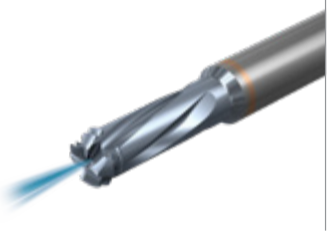


MiTM Offset
Fast Machining for Large Pitches in Deep Holes

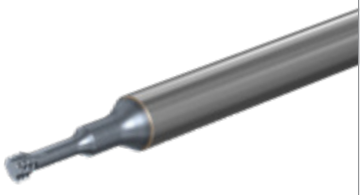


TM Solid MultiFlute
Helicool Tools
Increased Number of Flutes for Faster Machining

TM Solid TMDR
Drilling, Thread Milling & Chamfering



TM Solid Millipro Dental
Reinforced Miniature Thread Mills for Dental Implants



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Advanced Tapping Solutions

V-WHIRLING
High precision whirling system for medical and micromachining applications

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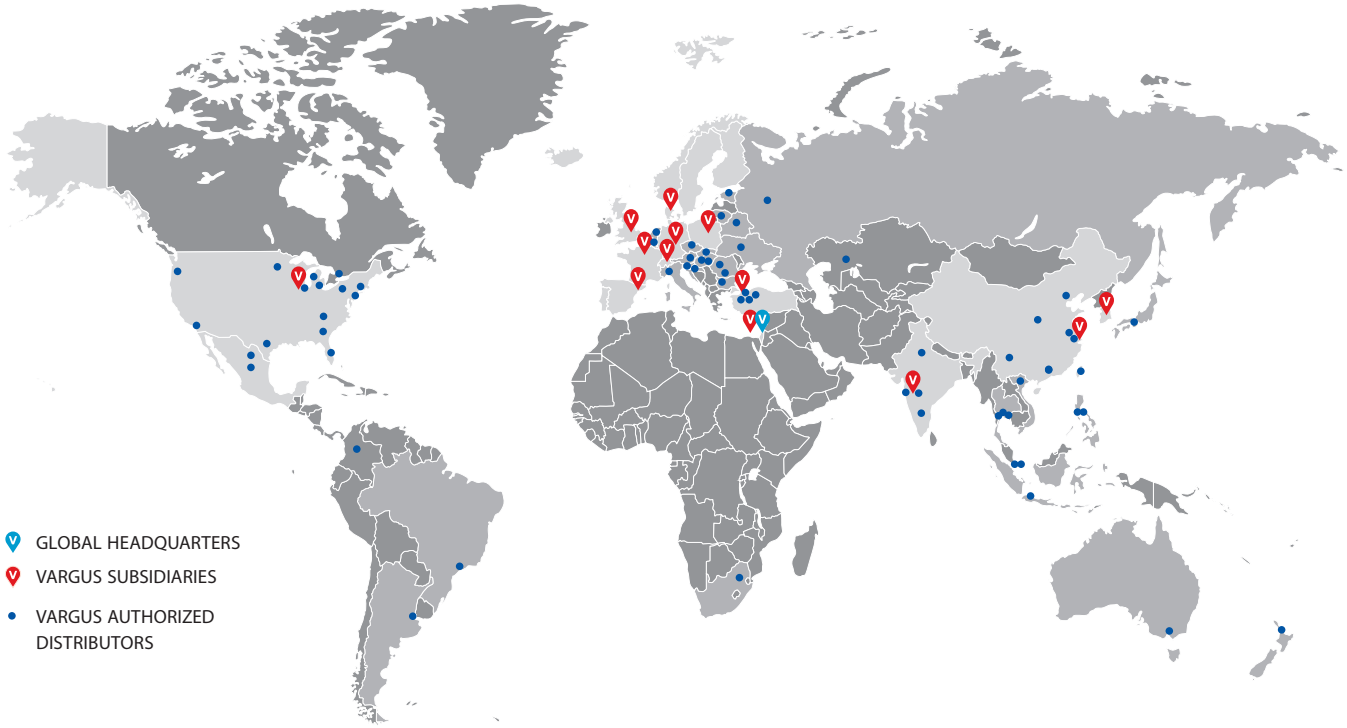

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