vargus
NEUMO Ehrenberg Group

VARDEX
Advanced Threading Solutions

MAIN CATALOG **SUPPLEMENT**

2021 | INCH

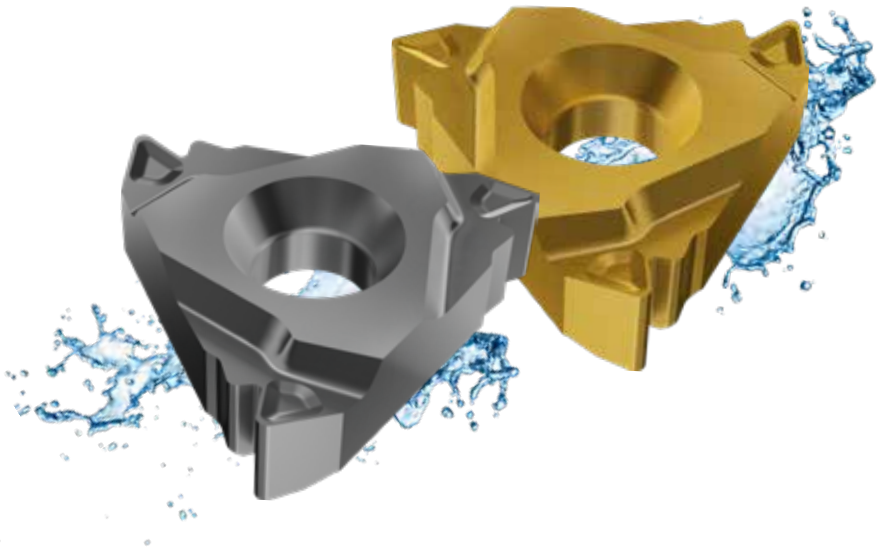
VARDEX
Advanced Threading Solutions

MAIN CATALOG **SUPPLEMENT** 2021

Thread Turning

Thread Milling

FS LINE NEW



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:

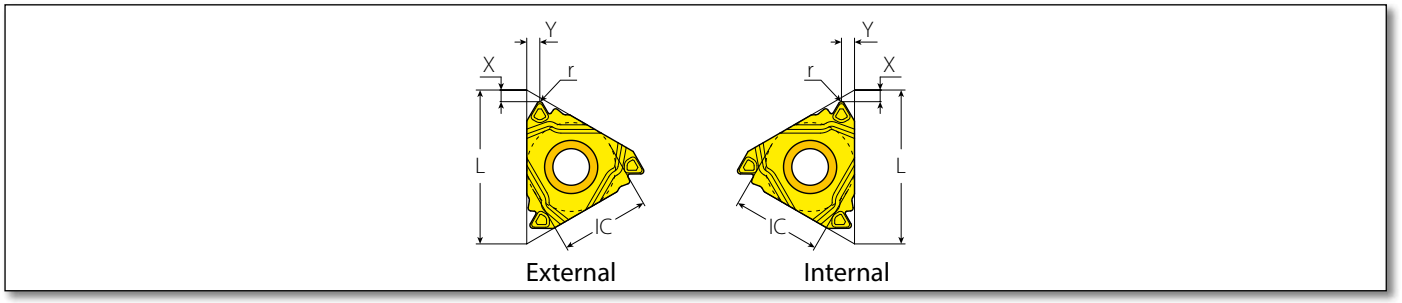
- Insert designation on the bottom of the insert

Packaging:

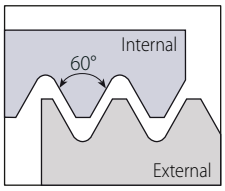
- **NEW** 10-piece packaging

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

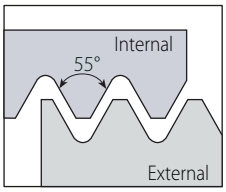


Partial Profile 60°



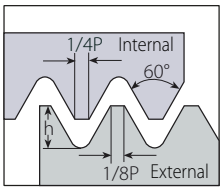
	Insert Size		Pitch		Ordering Code	Market Description	EDP		Dimensions mm			Anvil	
	IC	L mm	mm	TPI	RH		FSK	FST	r	X	Y	RH	Toolholder
External	3/8"	16	0.5-1.5	48-16	3FSERA60...*	*16FSERA60...*	52042	52041	.002	.03	.04	YE3	AL...-3
			1.75-3.0	14-8	3FSERG60...	*16FSERG60...*	51979	51860	.011	.05	.07		
			0.5-3.0	48-8	3FSERAG60...	*16FSERAG60...*	51951	51824	.003	.05	.07		
	1/2"	22	3.5-5.0	7-5	4FSERN60...*	*22FSERN60...*	51980	51979	.02	.07	.10	YE4	AL...-4
Internal	1/4"	11	0.5-1.5	48-16	2FSIRA60...	*11FSIRA60...*	51939	51802	.002	.03	.04	-	NVR...-2
	3/8"	16	0.5-1.5	48-16	3FSIRA60...*	*16FSIRA60...*	52020	52018	.002	.03	.04	YI3	A/NVR...-3
			1.75-3.0	14-8	3FSIRG60...	*16FSIRG60...*	51980	51862	.006	.04	.06		
			0.5-3.0	48-8	3FSIRAG60...	*16FSIRAG60...*	51940	51808	.002	.04	.06		
	1/2"	22	3.5-5.0	7-5	4FSIRN60...*	*22FSIRN60...*	51994	51991	.01	.07	.10	YI4	A/NVR...-4

Partial Profile 55°



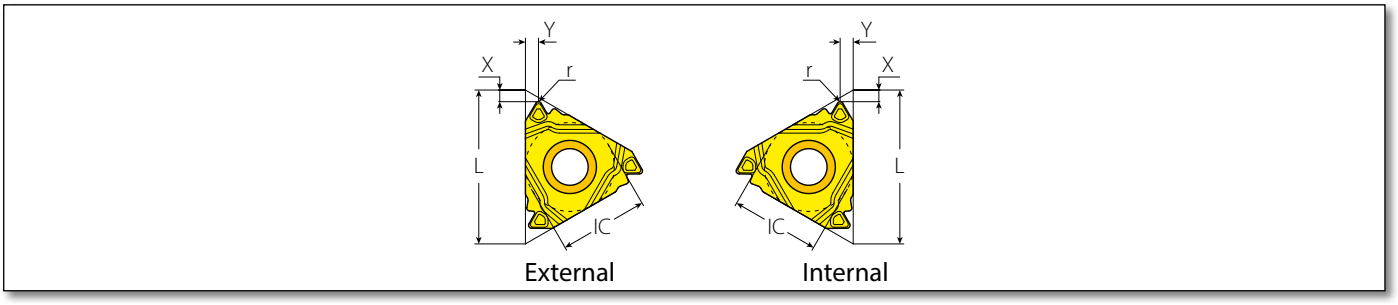
	Insert Size		Pitch		Ordering Code	Market Description	EDP		Dimensions mm			Anvil	
	IC	L mm	mm	TPI	RH		FSK	FST	r	X	Y	RH	Toolholder
External	3/8"	16	1.75-3.0	14-8	3FSERG55...*	*16FSERG55...*	52032	52031	.009	.05	.07	YE3	AL...-3
			0.5-3.0	48-8	3FSERAG55...	*16FSERAG55...*	51892	51891	.003	.04	.07		
Internal	3/8"	16	1.75-3.0	14-8	3FSIRG55...*	*16FSIRG55...*	52023	52022	.009	.04	.07	YI3	A/NVR..-3
			0.5-3.0	48-8	3FSIRAG55...	*16FSIRAG55...*	51894	51894	.003	.04	.06		

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

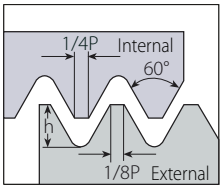


	Insert Size		Pitch	Ordering Code	Market Description	EDP		Dimensions mm			Anvil	
	IC	L mm	mm	RH		FSK	FST	h min	X	Y	RH	Toolholder
External	3/8"	16	1.0	3FSER1.0ISO...	*16FSER1.0ISO...*	51953	51830	.024	.06	.03	YE3	AL...-3
			1.25	3FSER1.25ISO...	*16FSER1.25ISO...*	51955	51954	.030	.06	.03		
			1.5	3FSER1.5ISO...	*16FSER1.5ISO...*	51938	51800	.036	.05	.04		
			1.75	3FSER1.75ISO...	*16FSER1.75ISO...*	51898	51895	.042	.04	.04		
			2.0	3FSER2.0ISO...	*16FSER2.0ISO...*	51958	51834	.048	.05	.05		
			2.5	3FSER2.5ISO...	*16FSER2.5ISO...*	51960	51959	.060	.06	.06		
			3.0	3FSER3.0ISO...	*16FSER3.0ISO...*	51946	51941	.072	.06	.06		
Internal	1/4"	11	1.0	2FSIR1.0ISO...	*11FSIR1.0ISO...*	51950	51818	.023	.04	.02	-	NVR...-2
			1.5	2FSIR1.5ISO...	*11FSIR1.5ISO...*	52016	52015	.034	.04	.03		
			2.0	2FSIR2.0ISO...	*11FSIR2.0ISO...*	51914	51913	.045	.03	.04		
	3/8"	16	1.0	3FSIR1.0ISO...	*16FSIR1.0ISO...*	51990	51988	.023	.06	.03	YI3	A/NVR...-3
			1.25	3FSIR1.25ISO	*16FSIR1.25ISO*	51917	51916	.028	.05	.03		
			1.5	3FSIR1.5ISO...	*16FSIR1.5ISO...*	51991	51867	.034	.05	.04		
			1.75	3FSIR1.75ISO...*	*16FSIR1.75ISO...*	51959	51918	.040	.04	.04		
			2.0	3FSIR2.0ISO...	*16FSIR2.0ISO...*	51998	51871	.045	.05	.05		
			2.5	3FSIR2.5ISO...	*16FSIR2.5ISO...*	51920	51918	.057	.05	.05		
			3.0	3FSIR3.0ISO...	*16FSIR3.0ISO...*	51997	51994	.068	.05	.06		

* Available Q1 2021

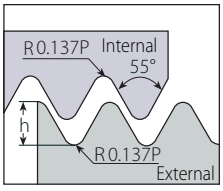


American UN | Defined by: ANSI B1.1:74 | Tolerance class: 2A/2B



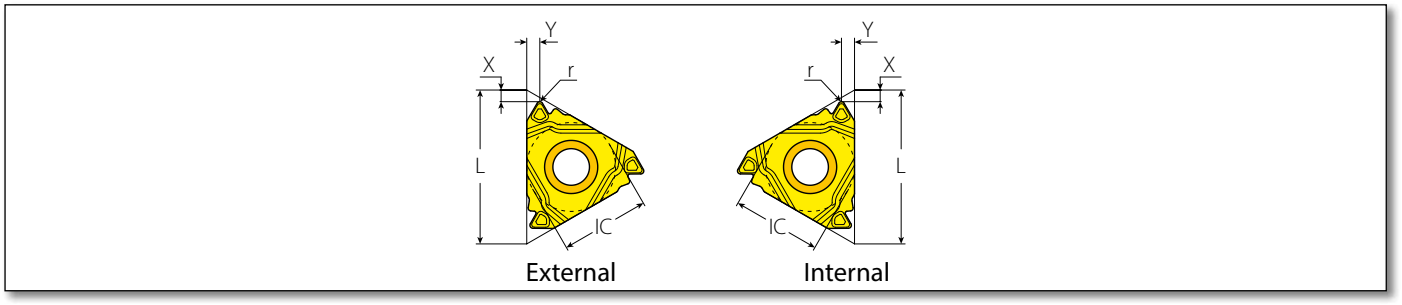
	Insert Size		Pitch	Ordering Code	Market Description	EDP		Dimensions mm			Anvil	
	IC	L mm	TPI	RH		FSK	FST	h min	X	Y	RH	Toolholder
External	3/8"	16	24	3FSER24UN...*	*16FSER24UN...*	52046	52043	.026	.06	.03	YE3	AL…-3
			20	3FSER20UN...	*16FSER20UN...*	51961	51842	.031	.05	.03		
			18	3FSER18UN...	*16FSER18UN...*	51926	51925	.034	.05	.04		
			16	3FSER16UN...	*16FSER16UN...*	51963	51845	.038	.05	.04		
			14	3FSER14UN...	*16FSER14UN...*	51928	51927	.044	.04	.05		
			12	3FSER12UN...	*16FSER12UN...*	51964	51847	.051	.05	.06		
			8	3FSER8UN...*	*16FSER8UN...*	52015	52014	.077	.05	.06		
Internal	3/8"	16	20	3FSIR20UN...	*16FSIR20UN...*	51932	51931	.029	.05	.03	YI3	A/NVR...-3
			18	3FSIR18UN...*	*16FSIR18UN...*	52030	52029	.032	.05	.04		
			16	3FSIR16UN...	*16FSIR16UN...*	51934	51933	.036	.04	.04		
			14	3FSIR14UN...*	*16FSIR14UN...*	52017	52016	.04	.04	.04		
			12	3FSIR12UN...	*16FSIR12UN...*	51999	51876	.048	.06	.06		
			8	3FSIR8UN...*	*16FSIR8UN...*	51998	51997	.072	.05	.10		

Whitworth for BSW, BSP | Defined by: B.S.84:1956, DIN 259, ISO228/1:1982 | Tolerance class: Medium class A

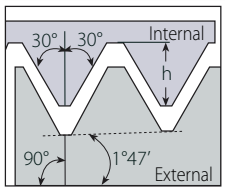


	Insert Size		Pitch	Ordering Code	Market Description	EDP		Dimensions mm			Anvil	
	IC	L mm	TPI	RH		FSK	FST	h min	X	Y	RH	Toolholder
External	3/8"	16	19	3FSER19W...*	*16FSER19W...*	52049	52047	.034	.05	.04	YE3	AL…-3
			14	3FSER14W...	*16FSER14W...*	51949	51948	.046	.04	.05		
			11	3FSER11W...	*16FSER11W...*	51970	51967	.058	.05	.06		
Internal	1/4"	11	19	2FSIR19W...*	*11FSER19W...*	52053	52051	.034	.05	.07	-	NVR...-2
			14	2FSIR14W...*	*11FSER14W...*	52055	52054	.046	.04	.04		
	3/8"	16	14	3FSIR14W...	*16FSIR14W...*	52001	52000	.046	.05	.05	YI3	A/NVR...-3
			11	3FSIR11W...	*16FSIR11W...*	52006	52005	.058	.05	.06		

* Available Q1 2021

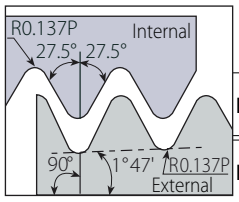


NPT | Defined by: USAS B2.1:1968 | Tolerance class: Standard NPT



	Insert Size		Pitch	Ordering Code	Market Description	EDP		Dimensions mm			Anvil	
	IC	L mm	TPI	RH		FSK	FST	h min	X	Y	RH	Toolholder
External	3/8"	16	18	3FSER18NPT...*	*16FSER18NPT...*	52013	52006	.041	.04	.04	YE3	AL...-3
			14	3FSER14NPT...	*16FSER14NPT...*	51971	51853	.052	.04	.05		
			11.5	3FSER11.5NPT...	*16FSER11.5NPT...*	51975	51858	.065	.04	.06		
			8	3FSER8NPT...*	*16FSER8NPT...*	52040	52035	.010	.04	.07		
Internal	3/8"	16	14	3FSIR14NPT...	*16FSIR14NPT...*	52013	51883	.052	.04	.05	YI3	A/NVR...-3
			11.5	3FSIR11.5NPT...	*16FSIR11.5NPT...*	52014	51885	.065	.05	.06		
			8	3FSIR8NPT...*	*16FSIR8NPT...*	52063	52057	.010	.05	.07		

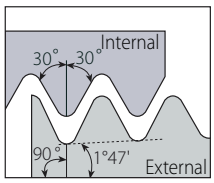
BSPT



	Insert Size			Ordering Code	Market Description	EDP		Dimensions mm			Anvil	
	IC	L mm	TPI	RH		FSK	FST	h min	X	Y	RH	Toolholder
External	3/8"	16	14	3FSER14BSPT*	*16FSER14BSPT...*	52005	52001	.046	.04	.04	YE3	AL...-3
			11	3FSER11BSPT*	*16FSER11BSPT...*	51990	51988	.058	.04	.05		
Internal	3/8"	16	14	3FSIR14BSPT*	*16FSIR14BSPT...*	52000	51999	.046	.04	.05	YI3	A/NVR..-3
			11	3FSIR11BSPT*	*16FSIR11BSPT...*	51975	51971	.058	.05	.06		

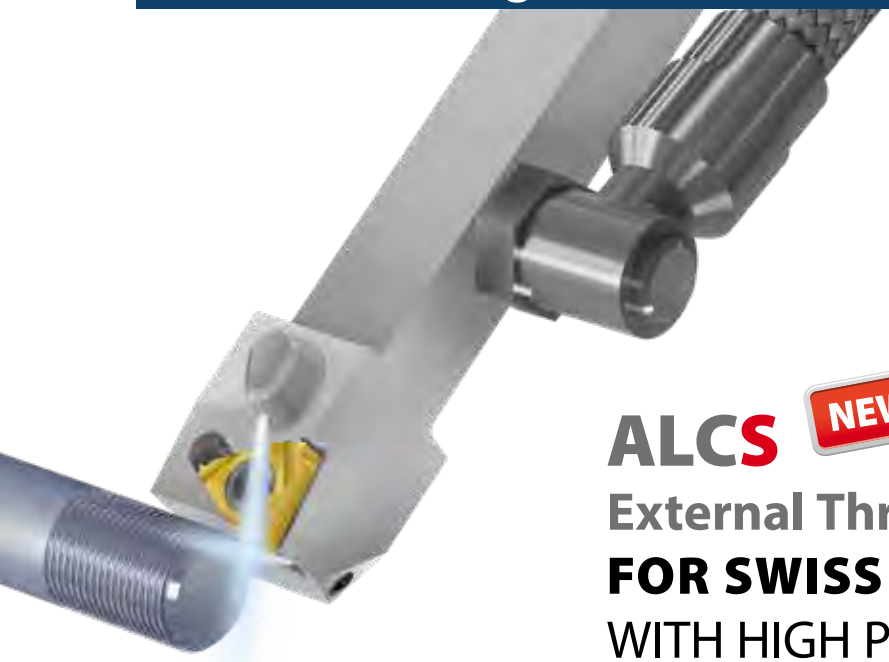
Defined by: B.S. 21:1985
Tolerance class: Standard BSPT

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



	Insert Size		Pitch	Ordering Code	Market Description	EDP		Dimensions mm			Anvil	
	IC	L mm	TPI	RH		FSK	FST	h min	X	Y	RH	Toolholder
Internal	3/8"	16	10	3FSIR10APIRD...	*16FSIR10APIRD...*	51937	51935	.056	.05	.06	YEI3-APIRD or YI3	AVRC... 3APIRD or AVRC...-3

* Available Q1 2021



PRECISION PRODUCTIVITY PROFITABILITY
HPC High Pressure Coolant for SWISS TYPE MACHINES

ALCS NEW

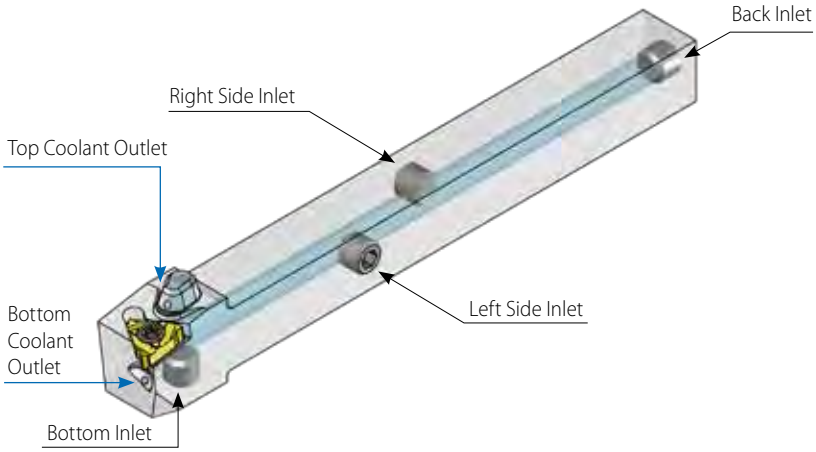
External Thread Turning Toolholders

FOR SWISS TYPE MACHINES

WITH HIGH PRESSURE COOLANT (HPC)

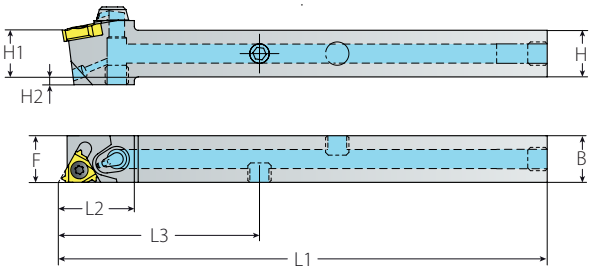
Features and Benefits:

- 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 1015 PSI (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

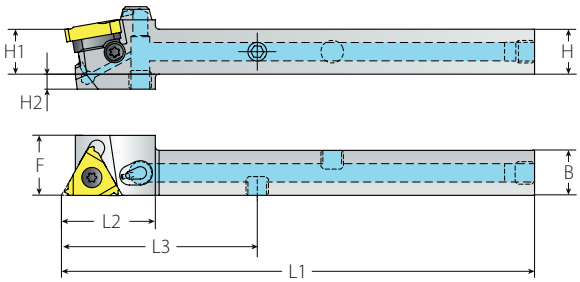


External Toolholders

NLCS Type
(without Anvil)

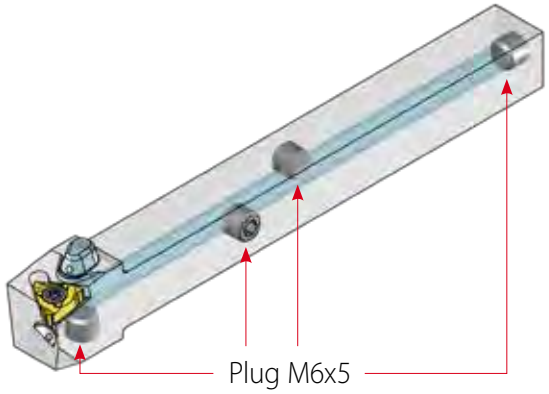


ALCS Type
(with Anvil)
& NLCS Type
(without Anvil)



Standard with Coolant

Insert Size	Ordering Code		EDP No.		Dimensions mm		Dimensions inch				Market Description		Spare Parts					
IC	RH	LH	RH	LH	H=H1=B	F	L1	L2	L3	H2	RH	LH	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH	Plug*x4
1/4"	NLCS10-2	NLCS10-2LH	66713	66714	10	12	4.33	.74	1.41	.16	*NLCS10-11*	*NLCS10-11LH*	SN2T	-	K2T	-	-	Plug M6x5
	NLCS12-2	NLCS12-2LH	66715	66716	12	12	4.92	.74	2.01	.08	*NLCS12-11*	*NLCS12-11LH*						
3/8"	ALCS12-3	ALCS12-3LH	66719	66720	12	16	4.92	.94	2.01	.16	*ALCS12-16*	*ALCS12-16LH*	SA3T	SY3T	K3T	YE3	YI3	



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

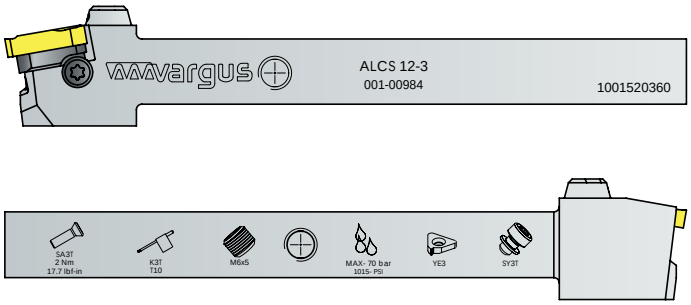
The NEW **External Toolholders with HPC** are included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

ALCS

Laser markings include spare parts and maximum torque details

NEW

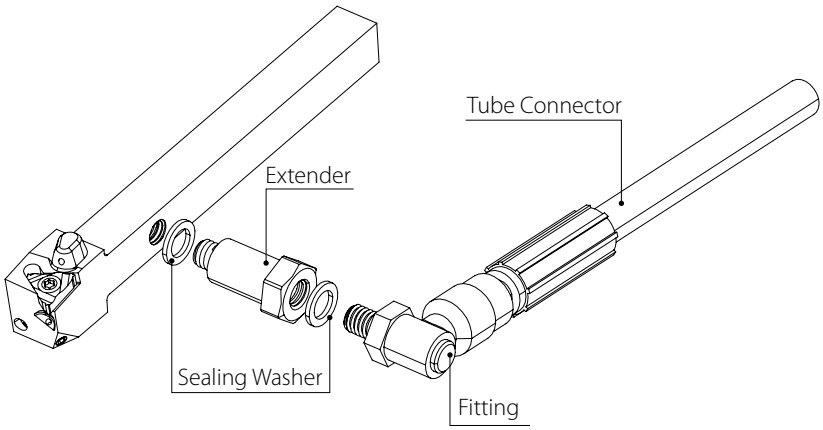


The following HPC accessories (not included) can be ordered separately:

Image	Ordering Code	Item Number	EDP No.	QTY
	Tube Connector 25-6	013-00941	70200	1
	Angled Fitting M6x6	013-01011	70201	1
	Straight Fitting M6x6	013-01012	70202	1
	Extender M6x5*	013-01096	70203	1
	Sealing Washer M6	013-01097	70204	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



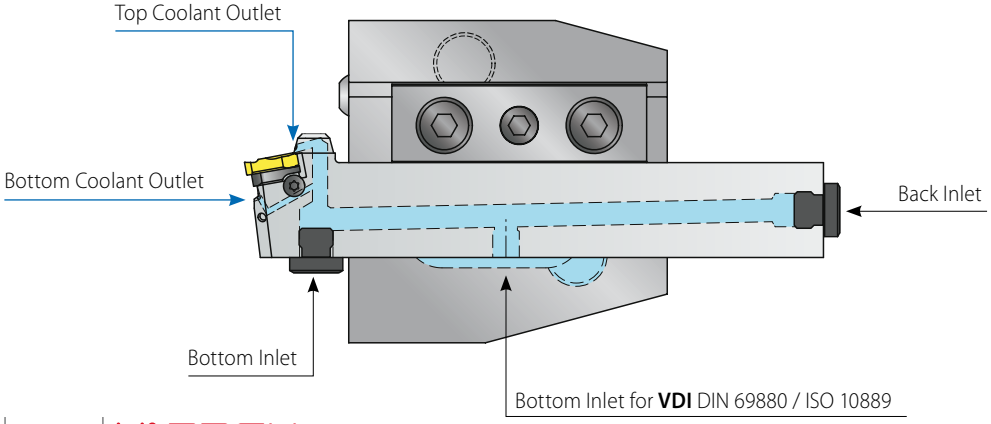
ALCN

External Thread Turning Toolholders WITH TWO HIGH PRESSURE COOLANT OUTLETS

NEW & EXPANDED

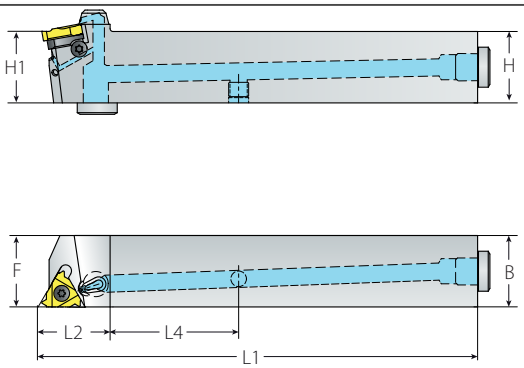
Features and Benefits:

- Two precise high pressure coolant outlets, designed to cool down the top and bottom of the insert for longer tool life NEW
- Up to 1015 PSI (70 bar)
- Three different coolant inlets available:
  - Bottom inlet, specially designed for **VDI** DIN 69880 / ISO 10889 NEW
  - 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) NEW
- Left Hand holders are available as standard



VARGUS GENius™ Tool Selector and CNC Program Generator

External Toolholders

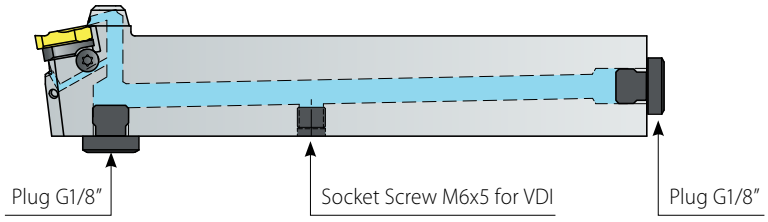


Standard with Coolant - Inch

Insert Size	Ordering Code				Dimensions Inch				
IC	RH	EDP	LH	EDP (LH)	H=H1=B	F	L1	L2	L4
3/8"	ALCN0625-3	66700	-	-	.625	.625	5	.99	0.98
	ALCN075-3	66701	ALCN075-3LH	66710	.75	.75	5		1.18
	ALCN100-3	66703	ALCN100-3LH	66711	1.00	1.00	6		1.38
	ALCN125-3	66704	-	-	1.25	1.25	7		1.57
1/2"	ALCN100-4	66705	ALCN100-4LH	66712	1.00	1.00	6	1.19	1.38
	ALCN125-4	66706	-	-	1.25	1.25	7		1.57
5/8"	ALCN100-5	66707	-	-	1.00	1.00	6	1.38	1.38
	ALCN125-5	66708	-	-	1.25	1.25	7		1.57

Spare Parts

Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH	Plug Screw	Socket Screw
SA3T	SY3T	K3T	YE3	-	Plug G1/8"	Socket Screw M6x5
				YI3		
				-		
SA4T	SY4T	K4T	YE4	YI4		
				-		
SA5T	SY5T	K5T	YE5	-		



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

Image	Ordering Code	Item Number	QTY
	Tube Connector 25-6P	013-00941	1
	Angled Fitting G1_8x6P	013-00947	2
	Straight Fitting G1_8x6P	013-00942	

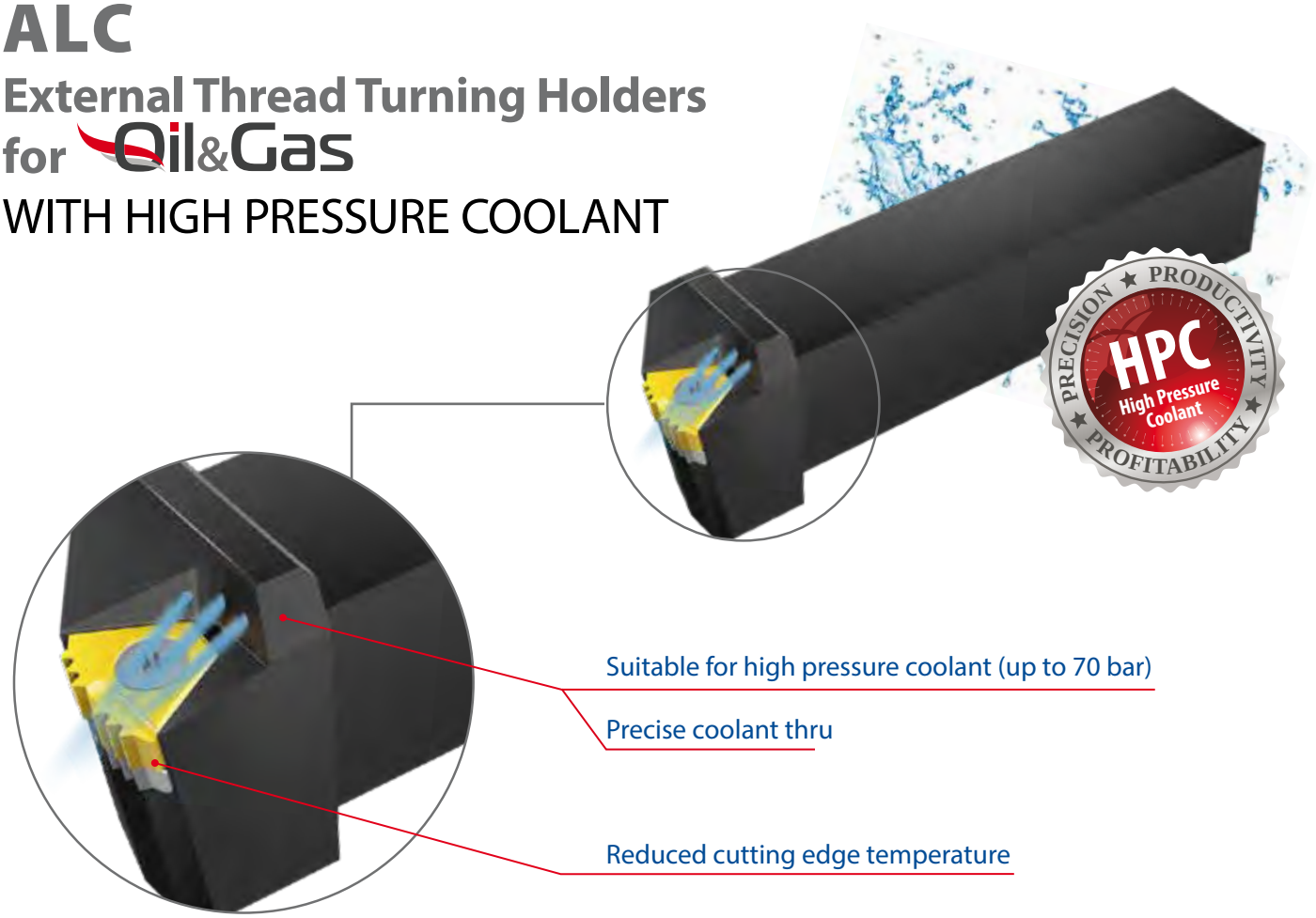
The NEW External Thread Turning Toolholders with HPC are fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting industry

VARGUS GENius™ Tool Selector and CNC Program Generator

ALC

External Thread Turning Holders for Oil&Gas

WITH HIGH PRESSURE COOLANT

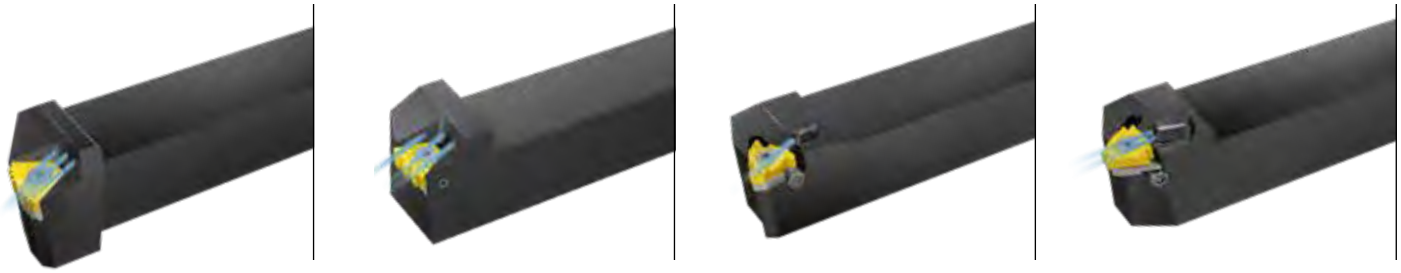


Features and Benefits

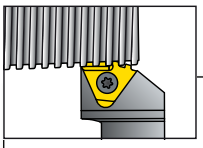
- Precise coolant thru, designed to efficiently cool down the cutting edge
- Suitable for high pressure coolant up to 1015 PSI (70 bar)
- Reduced cutting edge temperature for better tool life
- Better chip evacuation and improved chip control and flow

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

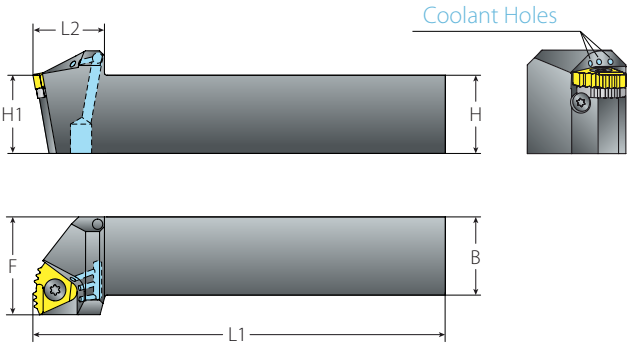


14D Standard with coolant | T+ Style with coolant | API with coolant | Z+ Style with coolant



External Toolholders

Oil&Gas



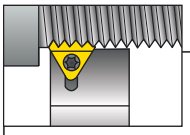
14D Standard with Coolant

Insert Size	Ordering Code		Dimensions Inch			
IC	RH	EDP No.	H=H1=B	F	L1	L2
14D	ALC125-14D	66713	1.25	1.25	6.7	1.18
	ALC150-14D	66714	1.5	1.5	7.9	1.15

Spare Parts

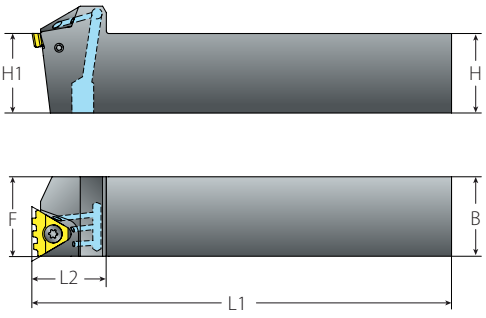
Insert Screw	Anvil Screw	Torx Key	Anvil Key	Anvils
SA5T	M4X6(14D)	KT15	K5T	Y14DER-10APIRD; Y14DER-8APIRD; Y14DER-5BUT; Y14DER-10APIRD-3+; Y14DER-5BUT-0.4N

Left Hand tools are available upon request.



External Toolholders

Oil&Gas



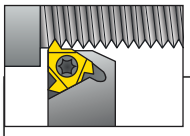
T+ Style with HPC

Insert Size	Ordering Code		Dimensions Inch			
IC	RH	EDP No.	H=H1=B	F	L1	L2
1/2"T	ALC125-4T	66715	1.25	1.25	6.7	1.18
	ALC150-4T	66716	1.5	1.5	7.9	1.18

Spare Parts

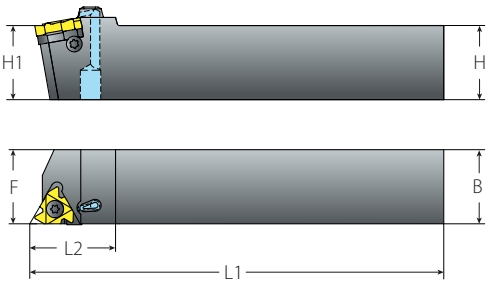
Insert Screw	Anvil Screw	Torx Key	Anvil Key	Anvil RH
SA4T	SY4K2	K4T	K2	Y4T

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



External Toolholders

Oil&Gas

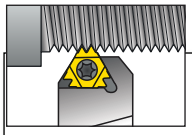


API with HPC

Spare Parts

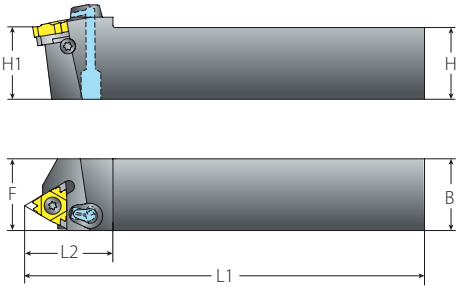
Insert Size	Ordering Code		Dimensions Inch				Spare Parts			
IC	RH	EDP No.	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2"	ALC125-4 5BUT/API	66719	1.25	1.25	7	1.53	SA4T	SY4T	K4T	YEI4-API-1P YEI4-5BUT
	ALC150-4 5BUT/API	66720	1.5	1.5	8	1.51				

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



External Toolholders

Oil&Gas



Z+ Style with Coolant - Inch

Spare Parts

Insert Size	Ordering Code		Dimensions Inch				Spare Parts			
IC	RH	EDP No.	H=H1=B	F	L1	L2	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2"Z	ALC125-4Z	66722	1.25	1.25	7	1.46	SA4T	SY4T	K4T	YE4Z
	ALC150-4Z	66723	1.5	1.5	8	1.48				

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
- Compliance with standard ISO 26623
- Works with wide range of machine types
- For all industrial sectors
- High Pressure Coolant up to 1015 PSI (70 bar) for better chip evacuation and increased tool life

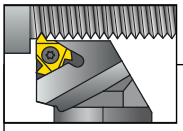
V-CAP Toolholder Range:

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

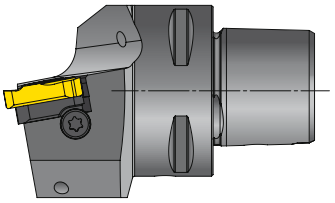
- C4
- C5
- C6
- C8

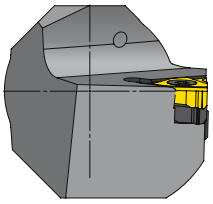
Special sizes are available upon request

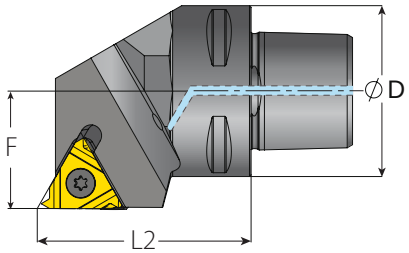
The NEW **V-CAP Toolholders** are included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.



V-CAP External Toolholders



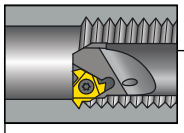




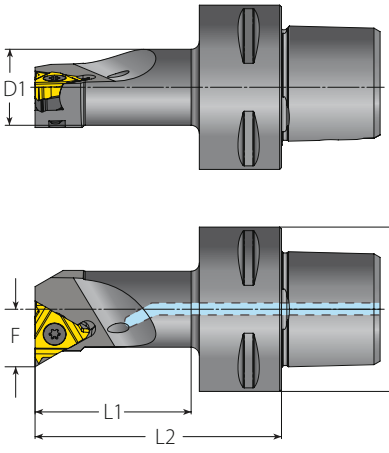
V-CAP

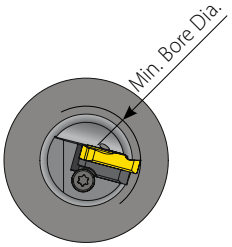
Insert Size	Ordering Code	EDP No.	Dimensions inch			Market Description	Spare Parts			
IC	RH/LH		D (mm)	F	L2	RH/LH	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2"	VCAP40-SER27050-4	66190	40	1.06	1.97	*VCAP40-SER27050-22*	SA4T	SY4T	K4T	YE4
	VCAP50-SER35060-4	66191	50	1.37	2.36	*VCAP50-SER35060-22*				
	VCAP63-SER45065-4	66192	63	1.77	2.56	*VCAP63-SER45065-22*				
	VCAP80-SER55080-4	66187	80	2.17	3.22	*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	EDP No.	Dimensions inch						Min. Bore Dia.	Market Description	Spare Parts			
IC	RH/LH		D1	D (mm)	F	L2	L1 (max)	inch		RH/LH	Insert Screw	Anvil Screw	Torx Key	Anvil RH
1/2"	VCAP40-SIR15065-4	66179	.79	40	.61	2.56	1.65	.98		*VCAP40-SIR15065-22*	SN4T	-	K4T	-
	VCAP40-SIR19070-4	66203	.98		.75	2.76	1.89	1.26		*VCAP40-SIR19070-22*	SA4T	SY4T	K4T	YI4
	VCAP40-SIR22090-4	66206	1.26		.87	3.54	2.72	1.58		*VCAP40-SIR22090-22*				
	VCAP40-SIR27080-4	66179	1.56		1.02	3.15	2.36	1.97		*VCAP40-SIR27080-22*				
	VCAP50-SIR15065-4	66208	.79	50	.61	2.56	1.65	.98		*VCAP50-SIR15065-22*	SN4T	-	K4T	-
	VCAP50-SIR19070-4	66209	.98		.75	2.76	1.85	1.26		*VCAP50-SIR19070-22*	SA4T	SY4T	K4T	YI4
	VCAP50-SIR22090-4	66212	1.26		.87	3.54	2.68	1.58		*VCAP50-SIR22090-22*				
	VCAP50-SIR27105-4	66185	1.56		1.02	4.13	3.31	1.97		*VCAP50-SIR27105-22*				
	VCAP63-SIR19075-4	66224	.98	63	.75	2.95	1.89	1.26		*VCAP63-SIR19075-22*				
	VCAP63-SIR22090-4	66227	1.26		.87	3.54	2.52	1.58		*VCAP63-SIR22090-22*				
	VCAP63-SIR27105-4	66186	1.56		1.02	4.13	3.15	1.97		*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

NEW

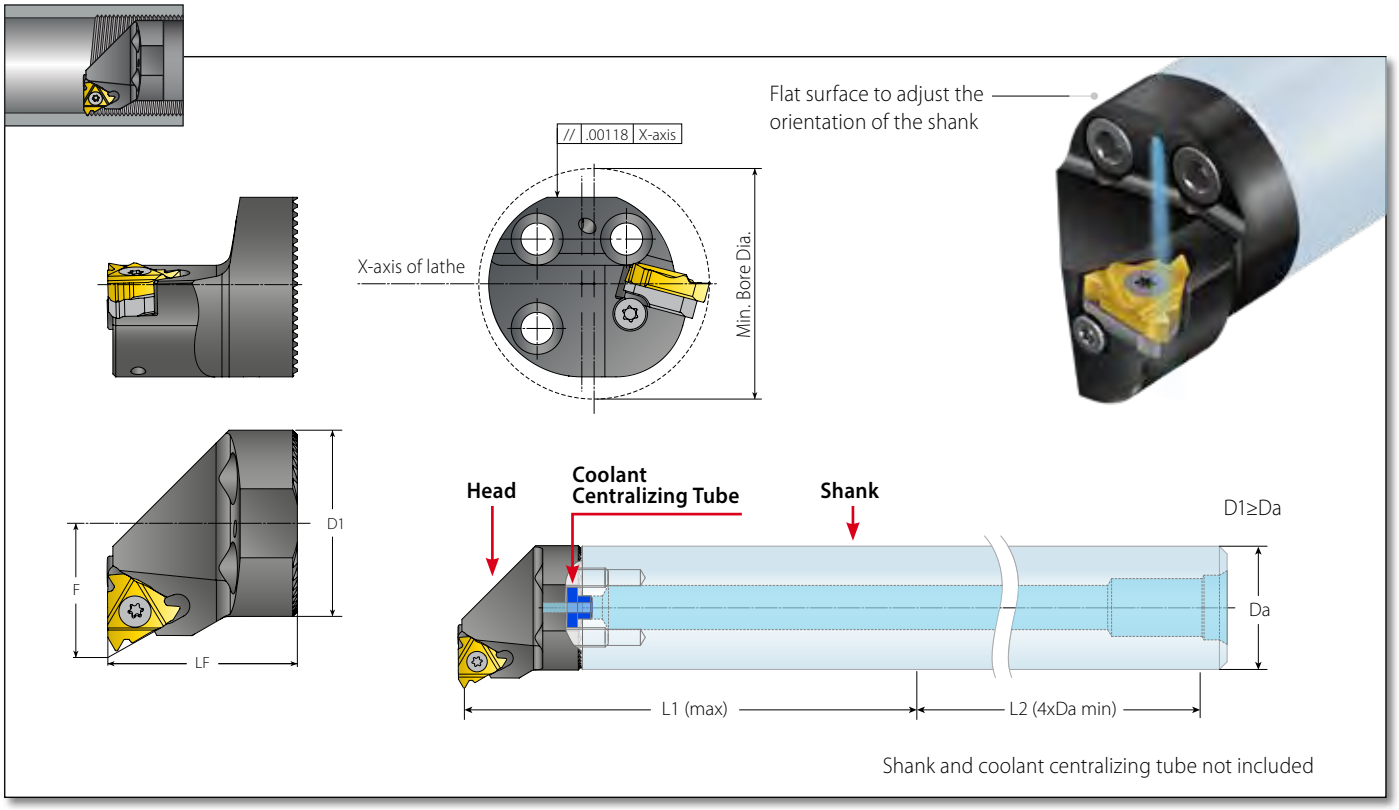
Modular Toolholder Heads for Anti-Vibration Shanks

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 1015 PSI (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

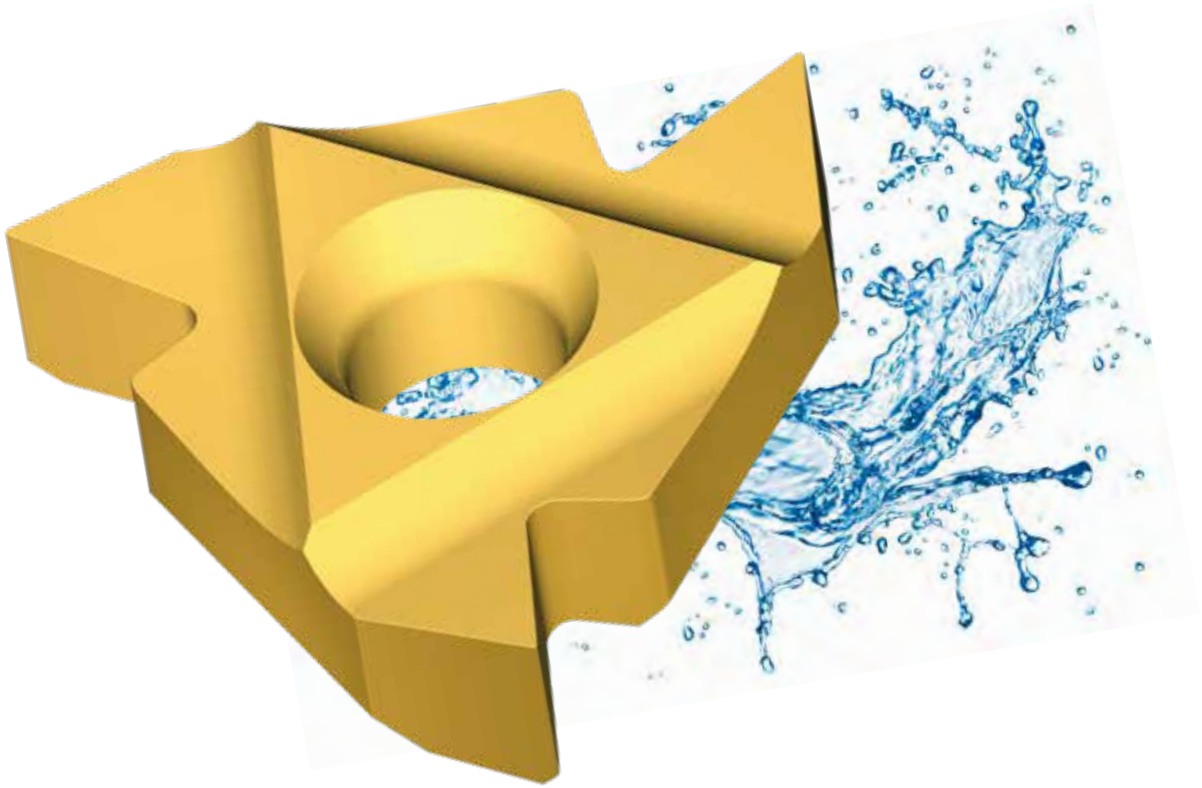
Insert Size	Ordering Code	EDP No.	Dimensions inch						Min. Bore dia.	Market Description	Spare Parts			
IC	RH		D1	Da mm	Da inch	F	L1 max	LF	inch	RH	Insert Screw	Anvil Screw	Torx Key	Anvil RH
3/8"	VAS25-IR2517-3	66179	.996	25	1.00	.67	4.92	.98	1.26	*VAS25-IR2517-16*	SA3T	SY3T	K3T	YI3
	VAS32-IR3222-3	66185	1.27	32	1.25	.87	6.30	1.26	1.56	*VAS32-IR3222-16*				
	VAS40-IR3227-3	66186	1.58	40	1.50	1.06	7.87	1.26	1.97	*VAS40-IR3227-16*				
1/2"	VAS32-IR3222-4	66187	1.27	32	1.25	.89	6.30	1.26	1.58	*VAS32-IR3222-22*	SA4T	SY4T	K4T	YI4
	VAS40-IR3227-4	66190	1.58	40	1.50	1.06	7.87	1.26	1.97	*VAS40-IR3227-22*				
5/8"	VAS40-IR3627-5	66191	1.58	40	1.50	1.08	7.87	1.42	1.97	*VAS40-IR3627-27*	SA5T	SY5T	K5T	YI5

D-Line

Deep Rake Internal Inserts

NEW

VARGUS GENius™ Tool Selector and CNC Program Generator

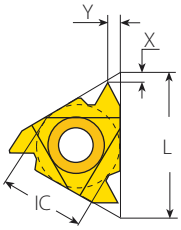


Features and Benefits:

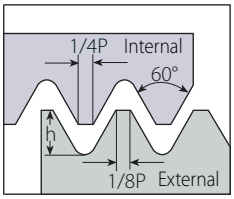
- Specialized solutions for the fittings industry
- Designed for internal threading for better chip flow
- Lower cutting forces for improved tool life
- Specially designed for mass production
- Suitable with Standard VARDEX thread turning internal holders
- The D-Line is available in VKX grade

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

Internal



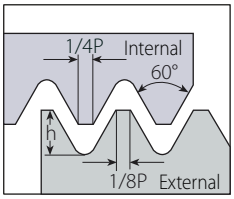
ISO Metric



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

Insert Size		Pitch	Ordering Code	EDP No.	Dimensions Inch			Market Description	Anvil	
IC	L Inch	mm	RH	VKX	h min	X	Y		RH	Toolholder
1/4"	.43	1.0	2DIR1.0ISO...	30071	.023	.02	.03	*11DIR1.0ISO...*	-	NVR..-2
		1.25	2DIR1.25ISO...	30072	.028	.03	.04	*11DIR1.25ISO...*		
		1.5	2DIR1.5ISO...	30073	.034	.04	.04	*11DIR1.5ISO...*		
		2.0	2DIR2.0ISO...	30074	.045	.04	.04	*11DIR2.0ISO...*		
3/8"	.63	1.0	3DIR1.0ISO...	30075	.023	.02	.03	*16DIR1.0ISO...*	YI3	AVR..-3
		1.5	3DIR1.5ISO...	30076	.034	.03	.04	*16DIR1.5ISO...*		
		1.75	3DIR1.75ISO...	30077	.040	.04	.05	*16DIR1.75ISO...*		
		2.0	3DIR2.0ISO...	30078	.045	.04	.05	*16DIR2.0ISO...*		
		2.5	3DIR2.5ISO...	30079	.057	.04	.06	*16DIR2.5ISO...*		
		3.0	3DIR3.0ISO...	30080	.068	.04	.06	*16DIR3.0ISO...*		
1/2"	.87	3.5	4DIR3.5ISO...	30081	.080	.06	.09	*22DIR3.5ISO...*	YI4	AVR..-4
		4.0	4DIR4.0ISO...	30082	.091	.06	.09	*22DIR4.0ISO...*		

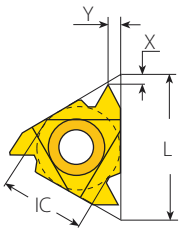
American UN



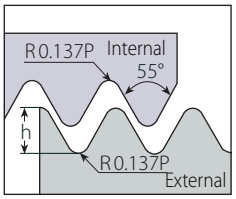
Defined by: ANSI B1.1:74
Tolerance class: 2B

Insert Size		Pitch	Ordering Code	EDP No.	Dimensions Inch			Market Description	Anvil	
IC	L Inch	TPI	RH	VKX	h min	X	Y		RH	Toolholder
1/4"	.43	24	2DIR24UN...	30083	.024	.03	.03	*11DIR24UN...*	-	NVR..-2
		20	2DIR20UN...	30084	.029	.03	.04	*11DIR20UN...*		
		18	2DIR18UN...	30085	.032	.03	.04	*11DIR18UN...*		
3/8"	.63	20	3DIR20UN...	30086	.029	.03	.04	*16DIR20UN...*	YI3	AVR..-3
		16	3DIR16UN...	30087	.036	.04	.04	*16DIR16UN...*		
		14	3DIR14UN...	30094	.041	.04	.05	*16DIR14UN...*		
		12	3DIR12UN...	30095	.048	.04	.06	*16DIR12UN...*		
		8	3DIR8UN...	30096	.072	.04	.06	*16DIR8UN...*		

Internal



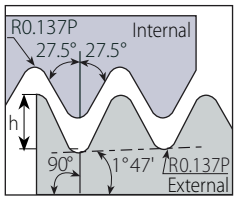
Whitworth



Insert Size		Pitch	Ordering Code	EDP No.	Dimensions Inch			Market Description	Anvil	
IC	L Inch	TPI	RH	VKX	h min	X	Y		RH	Toolholder
1/4"	.43	19	2DIR19W...	30097	.034	.03	.04	*11DIR19W...*	-	NVR..-2
3/8"	.63	19	3DIR19W...	30098	.034	.03	.04	*16DIR19W...*	YI3	AVR..-3
		14	3DIR14W...	30099	.046	.04	.05	*16DIR14W...*		
		11	3DIR11W...	30169	.058	.04	.06	*16DIR11W...*		

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

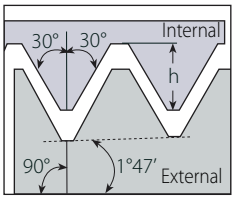
BSPT



Insert Size		Pitch	Ordering Code	EDP No.	Dimensions Inch			Market Description	Anvil	
IC	L Inch	TPI	RH	VKX	h min	X	Y		RH	Toolholder
1/4"	.43	19	2DIR19BSPT...	30170	.034	.03	.04	*11DIR19BSPT...*	-	NVR..-2
		14	2DIR14BSPT...	30181	.046	.04	.04	*11DIR14BSPT...*		
3/8"	.63	19	3DIR19BSPT...	30182	.034	.03	.04	*16DIR19BSPT...*	YI3	AVR..-3
		14	3DIR14BSPT...	30183	.046	.04	.05	*16DIR14BSPT...*		
		11	3DIR11BSPT...	30184	.058	.04	.06	*16DIR11BSPT...*		

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

NPT



Insert Size		Pitch	Ordering Code	EDP No.	Dimensions Inch			Market Description	Anvil	
IC	L Inch	TPI	RH	VKX	h min	X	Y			Toolholder
1/4"	.43	18	2DIR18NPT...	30185	.040	.03	.03	*11DIR18NPT...*	-	NVR..-2
		14	2DIR14NPT...	30186	.052	.03	.04	*11DIR14NPT...*		
3/8"	.63	18	3DIR18NPT...	30187	.040	.03	.04	*16DIR18NPT...*	YI3	AVR..-3
		14	3DIR14NPT...	30188	.052	.04	.05	*16DIR14NPT...*		
		11.5	3DIR11.5NPT...	30189	.065	.04	.06	*16DIR11.5NPT...*		

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

D-Line

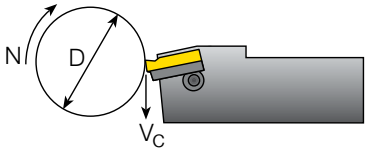
Recommended Cutting Speeds Vc [ft/min]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [ft/min] VKX
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	377-623
	2		Medium Carbon (C=0.25-0.55%)	150	328-574
	3		High Carbon (C=0.55-0.85%)	170	295-541
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	328-591
	5		Hardened	275	246-459
	6		Hardened	350	230-443
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	262-394
	8		Hardened	325	164-328
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	230-427
	10		High Alloy (alloying elements >5%)	225	197-394
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	230-427
	12		Hardened	330	197-377
	13	Stainless Steel Austenitic	Austenitic	180	295-459
	14		Super Austenitic	200	131-361
	15	Stainless Steel Cast Ferritic	Non Hardened	200	295-394
	16		Hardened	330	213-361
	17	Stainless Steel Cast Austenitic	Austenitic	200	279-361
	18		Hardened	330	197-328
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	197-230
	29		Pearlitic (long chips)	230	197-476
	30	Grey Cast Iron	Low Tensile Strength	180	230-427
	31		High Tensile Strength	260	197-377
	32	Nodular Sg Iron	Ferritic	160	410-525
	33		Pearlitic	260	295-394
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	328-1198
	35		Aged	100	262-722
	36	Aluminium Alloys	Cast	75	656-1312
	37		Cast & Aged	90	656-919
	38	Aluminium Alloys	Cast Si 13-22%	130	197-591
	39	Copper and Copper Alloys	Brass	90	262-738
	40		Bronze And Non Leaded Copper	100	262-837
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	148-197
	20		Aged (iron based)	280	98-164
	21		Annealed (nickel or cobalt based)	250	66-98
	22		Aged (nickel or cobalt based)	350	49-82
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	459-558
	24		α+β Alloys	1050Rm	164-230
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	148-197
	26			51-55HRc	131-164

Calculation of N [RPM]

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

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



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

TMSD

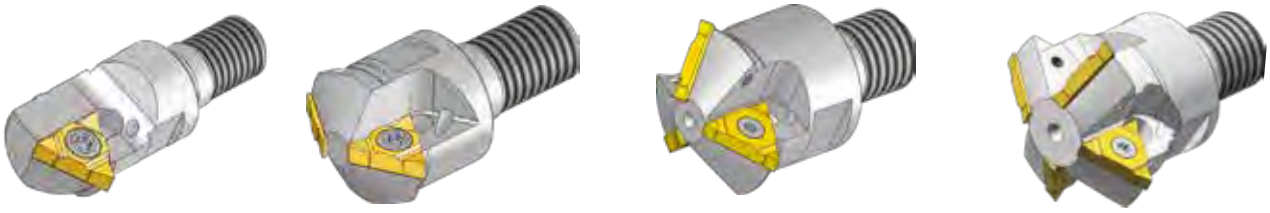
Modular Toolholder Heads

NEW

PRECISION ★ PRODUCTIVITY ★ PROFITABILITY ★
HPC
High Pressure Coolant

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

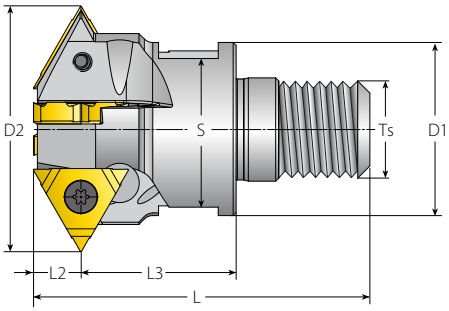


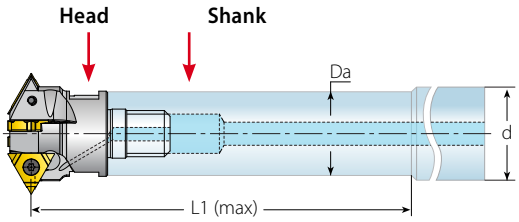
The NEW **TMSD Modular Toolholder Heads** are included in the **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

TMSD Modular Toolholder Heads

NEW





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

TMSD Modular Toolholder Heads for U Style Inserts

Insert Size	Ordering Code	EDP	Dimensions inch									No. of Flutes	Spare Parts	
IC			D1 (mm)	D2	L	L1 (max) for Steel Shank)	L1 (max) for Carbide Shank)	L2	L3	Ts	S (mm)	Z	Insert Screw	Torx Key
1/4"U	TM1SC-D15-M06-2U	67139	10.6	.58	1.30	1.89	2.26	.21	.59	M06	9.0	1	SN2T	HK2T
	TM1SC-D17-M08-2U	67149	13.0	.66	1.46	2.36	2.84		.67	M08	11.0	1		
	TM2SC-D21-M08-2U	67150	14.1	.81	1.34	2.84	3.39		.55	M08	12.0	2		
	TM2SC-D23-M10-2U	67151	18.0	.89	1.50	3.39	4.06		.55	M10	16.0	2		
	TM3SC-D26-M12-2U	67152	21.0	1.05	1.89	4.13	4.92		.79	M12	18.0	3		
	TM4SC-D31-M12-2U	67153	25.0	1.22	2.01	4.53	5.43		.91	M12	22.0	4		
3/8"U	TM3SC-D36-M16-3U	67154	29.0	1.44	2.17	4.92	5.91	.32	.98	M16	25.0	3	SA3T	HK3T
	TM4SC-D42-M16-3U	67155	29.0	1.65	2.17	5.67	6.77		1.02	M16	25.0	4		

TMSD Modular Head (U Style) Applications

Thread Applications for Partial Profile Inserts

Toolholder			Min. Thread Dia.						
	D2 (Inch)	Da/d (mm)	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP (G)	Partial 55°	Trapez
TM1SC-D15-M06-2U	.58	10.0/10.0	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; ⅜-27UNS; 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	.66	15.5/16	-	M18x0.5; M18x0.75; M18x1.0	-	¾-32UN; ¾-28UN; ⅞-27UN;	-	-	-
TM2SC-D21-M08-2U	.81	15.5/16	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;
TM2SC-D23-M10-2U	.89	19.5/20.0	-	M24x0.5; M24x0.75; M25x1.0; M25x1.25; M26x1.5; M26x2.0; M27x2.5	-	1-32UN; 1-28UN; 1-27UNS; 1-24UNS; 1-20UNEF; 1-18UNS; 1-16UN; 1-14UNS; 1-12UNF; 1⅛-10UNS;	¾-14; 1-11	1-26; 1-20; 1-16; 1 1/16-12	-
TM3SC-D26-M12-2U	1.05	24.0/25.0	-	M28x0.5; M28x0.75; M28x1.0; M28x1.25; M29x1.5; M29x2.0	-	1⅛-28UN; 1⅛-24UNS; 1⅛-20UN; 1⅛-18UNEF; 1⅛-16UN; 1¼-14UNS; 1 3/16-12UN;	⅞-14	1⅛-26; 1⅛-20; 1⅜-16	-
TM4SC-D31-M12-2U	1.22	24.0/25.0	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; 1 3/8-24UNS; 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	-
TM3SC-D36-M16-3U	1.44	29.0/32.0	M42x4.5; M48x5.0; M56x5.5	M39x1.5; M39x2.0; M40x2.5; M41x3.0; M42x3.5; M42x4.0	1¾-5; 2-4.5	1 9/16-16UN; 1 5/8-14UNS; 1 9/16-12UN; 1 5/8-10UNS; 1 5/8-8UN; 1 5/8-6UN	1¼-11	1 5/8-16; 1 5/8-12; 1 5/8-8; 1⅞-6	-
TM4SC-D42-M16-3U	1.65	29.0/32.0	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 related inserts, see Vardex Main catalog.

TMSD Modular Head (U Style) Applications

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

Toolholder	Toolholder Cutting Diameter D2 (Inch)		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	Da/d (mm)	mm	TPI	ISO Fine	UN/UNF/ UNEF/UNS	NPT Threading by 1 Radial Pass	** NPT Threading by 2 Radial Passes (50%/50%)	Thread Dia.	
TM1SC-D15-M06-2U	.54	10.0/10.0	1.5	-	M16x1.5	-	-	-	-	-
	.54		2.0	-	M16x2.0	-	-	-	-	-
	.54		-	14	-	5/8-14UNS	-	-	-	-
	.54		-	12	-	11/16-12UN	-	-	-	-
	.57		-	14	-		1/2-14NPT; 3/4-14NPT	-	-	-
TM2SC-D21-M08-2U	.78	15.5/16	1.5	-	M22x1.5	-	-	-	-	-
	.77		2.0	-	M22x2.0	-	-	-	-	-
	.77		-	14	-	7/8-14UNF	-	-	-	-
	.77		-	12	-	7/8-12UN	-	-	-	-
	.81		-	14	-	-	3/4-14NPT	-	-	-
	.80		-	11.5	-	-	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-	-	-
TM2SC-D23-M10-2U	.85	19.5/20.0	1.5		M24x1.5	-	-	-	-	-
TM4SC-D31-M12-2U	1.18	24.0/25.0	1.5		M33x1.5	-	-	-	-	-
	1.18		2.0		M34x2.0	-	-	-	-	-
	1.18		-	14		1 3/8-14UNS	-	-	-	-
	1.18		-	12		1 5/16-12UN	-	-	-	-
	1.21		-	11.5	-	-	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-	-	-
	1.16		-	10	-	-	-	-	1.66...3.5x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-
TM3SC-D36-M16-3U	1.40	29.0/32.0	-	11.5	-	-	1 1/4-11.5NPT; 1 1/2 -11.5NPT; 2-11.5NPT	-	-	-
	1.40		-	8	-	-	-	2 1/2..10-8NPT	-	-
	1.37		-	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	1.62	29.0/32.0	-	11.5	-	-	1 1/2-11.5NPT; 2-11.5NPT	-	-	-
	1.62		-	8	-	-		2 1/2..10-8NPT	-	-
	1.58		-	8	-	-	-	-	2.875...20x8APIRD (for CSG; TGB; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	8.625x8APIRD (for LCSG)

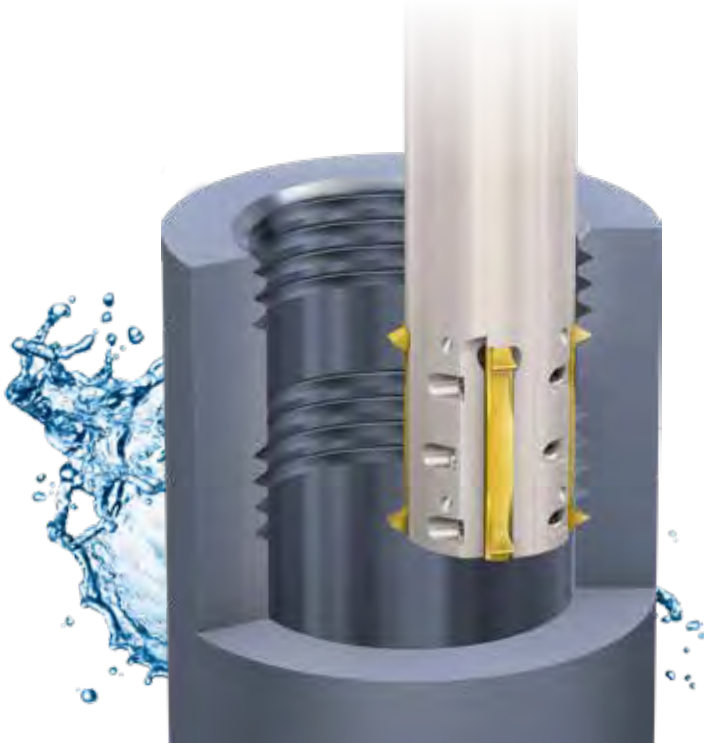
* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.
** When the pre-drilled hole for 8NPT is conical, the thread can be machined in one pass.

MiTM Offset

NEW

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

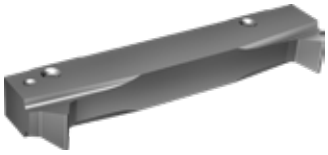
Recommended Machining Method:

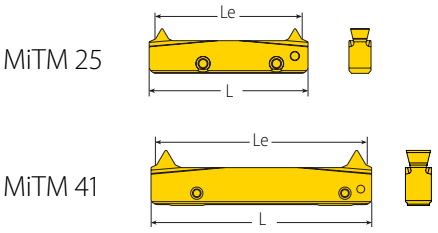
- For best results the MiTM Offset program requires working in conventional milling with multiple passes

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

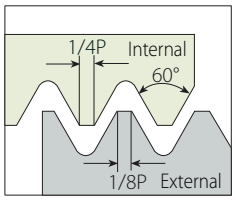
VARGUS GENius™ Tool Selector and CNC Program Generator

MiTM Offset Inserts





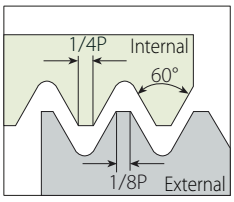
ISO Metric



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

Insert Style	Pitch	Ordering Code	EDP No.		Cutting Edge		Teeth	Toolholder
L	mm	Internal	VBX	VTX		Le	Zt	
25	3	R25I3.00ISOTM-2...	80996	80997	2	.94	2	RTMOC...S; RTMC-D...S
41	3.5	R41I3.50ISOTM-2...	80998	80999	2	1.52	2	RTMOC....B; RTMC-D...B
	4	R41I4.00ISOTM-2...	81063	81064	2	1.57	2	
	4.5	R41I4.50ISOTM-2...	81065	81066	2	1.59	2	
	5	R41I5.00ISOTM-2...	81067	81068	2	1.57	2	
	5.5	R41I5.50ISOTM-2...	81069	81070	2	1.52	2	
	6	R41I6.00ISOTM-2...	81071	81072	2	1.42	2	

American UN



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

Insert Style	Pitch	Ordering Code	EDP No.		Cutting Edge		Teeth	Toolholder
L	TPI	Internal	VBX	VTX		Le	Zt	
25	8	R25I8UNTM-2…	81073	81074	2	.88	2	RTMOC...S; RTMC-D...S
41	7	R41I7UNTM-2…	81075	81076	2	1.57	2	RTMOC...B; RTMC-D...B
	6	R41I6UNTM-2…	81077	81078	2	1.50	2	
	5	R41I5UNTM-2…	81079	81080	2	1.40	2	
	4.5	R41I4.5UNTM-2…	81081	81082	2	1.56	2	

Placing MiTM Offset Inserts Correctly

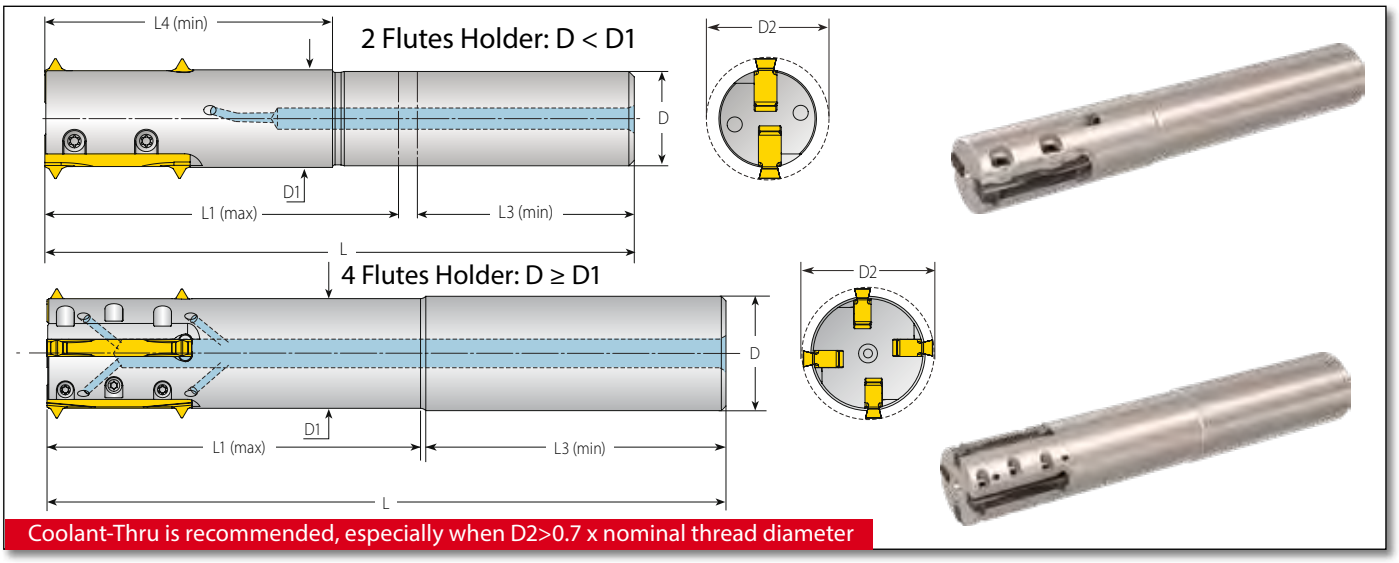
Always mount all inserts with the identification mark on the same side.
Process is applicable for steel cylindrical shanks and shell mill holders.

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

Spare Parts

Insert Style	Ordering Code	EDP No.	Dimensions Inch							No. of Flutes			
	MiTM Offset		L	L1 (max)	L3 (min)	L4 (min)	D	D1	D2	Z	Location Screw x2 Max. Torque	Clamping Screw Max. Torque	Torx+ Screwdriver
25	RTMOC0625C081-250S2	80610	4.31	2.50	1.73	1.81	.625	.65	.81	2	SLD4IP8 (M4x0.7) 2.0 Nm (80533)	-	KIP8 (70231)
41	RTMOC075C102-295B2	80611	4.92	2.95	1.81	2.40	.750	.81	1.02	2	SLD4IP8A (M4x0.7) 2.0 Nm (80153)	SCD4IP8 (M4x0.7) 2.0 Nm (80622)	
	RTMOC100C121-369B4	80612	5.71	3.69	2.01	-	1.000	1.00	1.21	4			
	RTMOC125C146-422B4	80613	6.98	4.22	2.72	-	1.250	1.19	1.46	4			
	RTMOC125C153-472B4	80614	7.64	4.72	2.72	-	1.250	1.25	1.53	4			

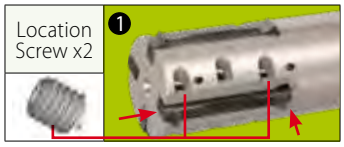
Thread Application for MiTM Offset Inserts with RTMOC Toolholders

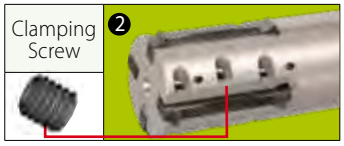
Insert Style	Toolholder		Min. Thread Dia.			
	MiTM Offset	D2 (Inch)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS
25	RTMOC0625C081-250S2	.81	M24x3	M30x3	1-8UNC	1 1/16-8UN
41	RTMOC075C102-295B2	1.02	M30x3.5; M36x4	M42x4	1 1/4-7UNC; 1 3/8-6UNC	1 7/16-6UN
	RTMOC100C121-369B4	1.21	M36x4	M36x3.5; M42x4	-	1 7/16-7UN; 1 7/16-6UN
	RTMOC125C146-422B4	1.46	M42x4.5; M48x5	M42x3.5; M45x4	1 3/4-5UNC	1 11/16-7UN; 1 11/16-6UN
	RTMOC125C153-472B4	1.53	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

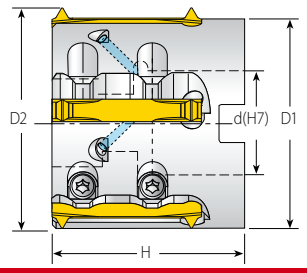
Insert Style	Toolholder		Min. Thread Dia.			
	MiTM Standard	D2 (Inch)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS
25	RTMC100075-175S2	.75	M24x3	M30x3	1-8UNC	1 1/16-8UN
	RTMC100081-150S3	.81	M24x3	M30x3	1-8UNC	1 1/16-8UN
	RTMC100081-175S3					
	RTMC100087-170S3	.87	M27x3	M30x3	-	1 1/16-8UN
	RTMC100087-220S3					
	RTMC100118-220S5	1.18	-	M34x3	-	1 3/8-8UN
	BRTMC100118-315S4					
41	RTMC125118-256B3	1.18	M36x4; M42x4.5	M36x3.5; M42x4	-	1 7/16-7UN; 1 7/16-6UN
	RTMC125141-256B4	1.42	M42x4.5; M48x5; M56x5.5; M64x6	M40x3.5; M42x4	1 3/4-5UNC; 2-4.5UNC	1 11/16-7UN; 1 5/8-6UN

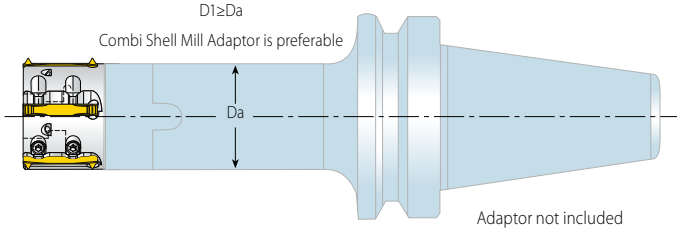
2 Step Clamping System for MiTM 41 Cylindrical Shanks





Shell Mill MiTM 25



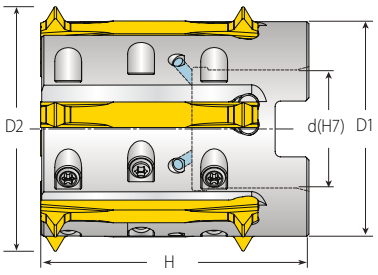


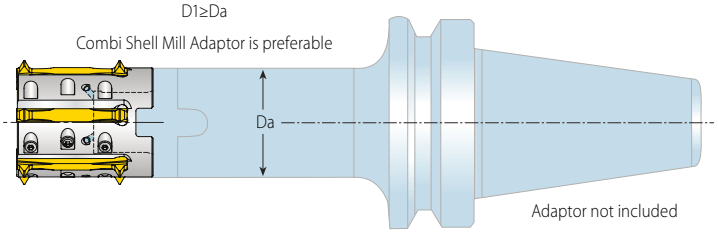
Coolant-Thru is recommended, especially when D2>0.7 x nominal thread diameter

Standard Shell Mill

Insert Style	Ordering Code	EDP No.	Dimensions Inch				No. of Flutes	Spare Parts		
			D1	D2	d(H7)	H	Z	Location Screw x2 Max. Torque	Torx+ Screwdriver	Holder Screw
25	RTMC-D150-050-25S5	80569	1.38	1.54	.50	1.26	5	SLD4IP8 (M4x0.7) 2.0 Nm (80533)	KIP8 (70231)	1/4"-28x1.25 (70263)
	RTMC-D190-075-25S7	80570	1.77	1.93	.75	1.38	7			3/8"-24x1.25 (70223)
	RTMC-D230-100-25S9	80571	2.17	2.32	1.00	1.58	9			1/2"-20x1.50 (70262)

Shell Mill MiTM 41





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

Standard Shell Mill

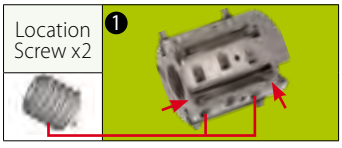
Insert Style	Ordering Code	EDP No.	Dimensions Inch				No. of Flutes	Spare Parts			
			D1	D2	d(H7)	H	Z	Location Screw x2 Max. Torque	Clamping Screw Max. Torque	Torx + Screwdriver	Holder Screw
41	RTMC-D209-075-41B5	80869	1.77	2.08	.175	2	5	SLD4IP8A (M4x0.7) 2.0 Nm (80153)	SCD4IP8 (M4x0.7) 2.0 Nm (80622)	KIP8 (70231)	3/8"-24x1.5 (70264)
	RTMC-D209-075-41B6*	80615	1.77	2.08	.175	2	6				
	RTMC-D248-100-41B6	80870	2.17	2.48	1.000	2	6				1/2"-20x1.5 (70224)

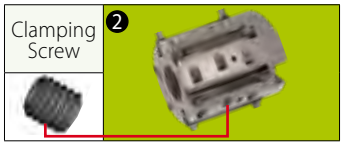
* New Shell Mill holder, also suitable with standard MiTM 41 inserts

Thread Application for MiTM Offset Inserts with Shell Mill

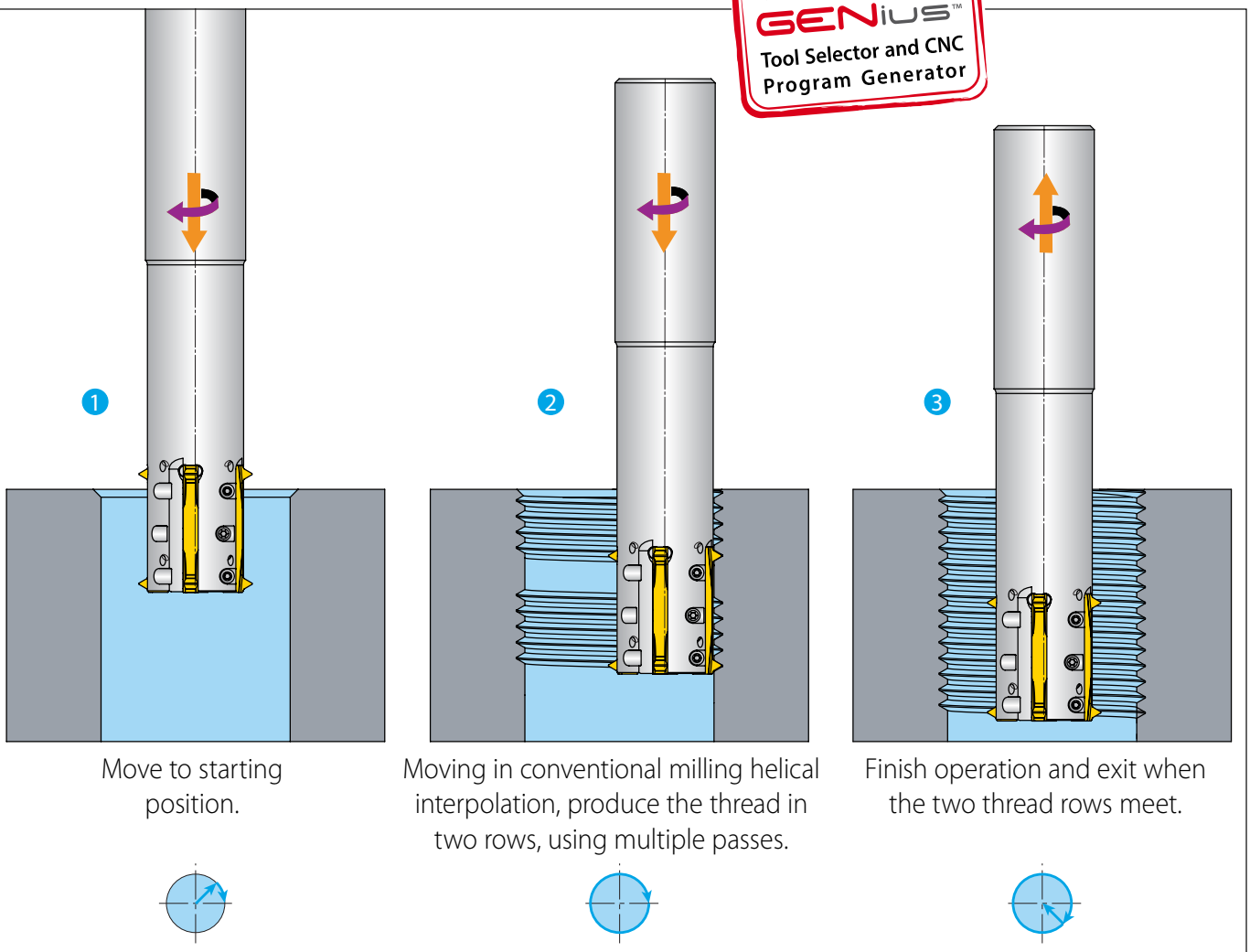
Insert Style	Toolholder	Min. Thread Dia.				
		D2 (Inch)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS
25	RTMC-D150-050-25S5	1.54	-	M45x3	-	1¾-8UN
	RTMC-D190-075-25S7	1.93	-	M55x3		2⅛-8UN
	RTMC-D230-100-25S9	2.32	-	M65x3		2½-8UN
41	RTMC-D209-075-41B5	2.08	M64x6	M58x4; M70x6	-	2⅜-6UN; 2½-4.5UN
	RTMC-D209-075-41B6					
	RTMC-D248-100-41B6	2.48	-	M68x4; M70x6		2¾-6UN; 3-4.5UN

2 Step Clamping System for MiTM 41 Shell Mill Holders





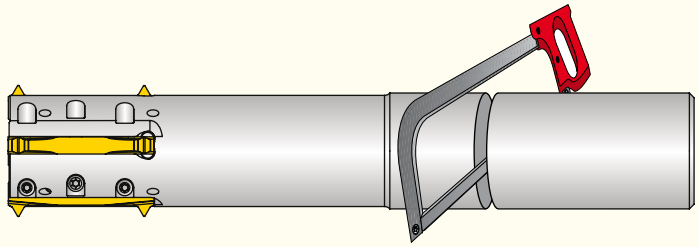
MiTM Offset - Operating Cycle



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

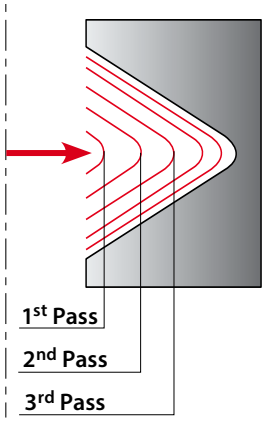
Grade	Application	Sample
VBX	TiCN coated carbide grade. Excellent grade for **steels and general use**.	
VTX	TiAlN coated carbide grade. Ideal for **Stainless Steels.**	



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 Grades, Cutting Speeds Vc [ft/min] and Feed f [inch/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	MiTM Offset Holders			MiTM Standard Holders			
					Vc [ft/min]		Feed f [inch/tooth]	Vc [ft/min]		Feed f [inch/tooth]	
					VBX	VTX		VBX	VTX	Standard	Shell Mill
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	328-689	295-591	.0098-.0197	328-689	295-591	.0118-.0197	.0118-.0295
	2		Medium Carbon (C=0.25-0.55%)	150	328-591	295-558	.0098-.0217	328-591	295-558	.0118-.0197	.0118-.0295
	3		High Carbon (C=0.55-0.85%)	170	295-492	295-525	.0098-.0197	328-558	295-525	.0098-.0138	.0098-.0205
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	262-427	262-427	.0098-.0217	197-295	295-509	.0110-.0177	.0110-.0264
	5		Hardened	275	262-427	262-427	.0098-.0197	262-492	262-525	.0098-.0177	.0098-.0264
	6		Hardened	350	230-394	230-427	.0098-.0177	230-459	230-492	.0098-.0157	.0098-.0236
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	197-361	213-377	.0098-.0197	197-427	230-377	.0079-.0118	.0079-.0177
	8		Hardened	325	230-377	230-377	.0098-.0138	230-361	197-328	.0071-.0118	.0071-.0177
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	295-492	295-525	.0098-.0177	328-558	328-558	.0079-.0118	.0079-.0177
	10		High Alloy (alloying elements >5%)	225	213-377	230-394	.0098-.0138	230-394	230-427	.0067-.0118	.0067-.0177
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	295-492	295-525	.0098-.0177	328-558	394-591	.0087-.0134	.0087-.0197
	12		Hardened	330	295-492	295-525	.0098-.0138	328-558	394-591	.0083-.0126	.0083-.0189
	13	Stainless Steel Austenitic	Austenitic	180	230-394	230-427	.0098-.0177	230-459	328-459	.0098-.0157	.0098-.0236
	14		Super Austenitic	200	230-394	230-427	.0098-.0138	230-459	328-459	.0067-.0102	.0067-.0154
	15	Stainless Steel Cast Ferritic	Non Hardened	200	230-394	230-427	.0098-.0177	230-459	328-459	.0098-.0146	.0098-.0217
	16		Hardened	330	230-394	230-427	.0098-.0138	230-459	328-459	.0067-.0102	.0067-.0154
	17	Stainless Steel Cast Austenitic	Austenitic	200	213-377	230-394	.0098-.0177	230-394	328-394	.0079-.0118	.0079-.0177
	18		Hardened	330	213-377	230-394	.0098-.0138	230-394	328-394	.0067-.0102	.0067-.0154
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	197-361	213-377	.0063-.0118	197-427	328-394	.0098-.0146	.0098-.0217
	29		Pearlitic (long chips)	230	197-361	213-377	.0059-.0098	197-394	262-328	.0079-.0118	.0079-.0177
	30	Grey Cast Iron	Low Tensile Strength	180	197-361	213-377	.0098-.0177	197-427	262-328	.0087-.0134	.0087-.0197
	31		High Tensile Strength	260	197-328	230-328	.0098-.0138	197-328	262-328	.0079-.0118	.0079-.0177
	32	Nodular Sg Iron	Ferritic	160	197-361	213-377	.0098-.0177	197-410	262-328	.0059-.0098	.0059-.0146
	33		Pearlitic	260	164-295	197-295	.0098-.0138	164-295	197-295	.0079-.0118	.0079-.0177
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	328-656	-	.0118-.0276	328-820	-	.0236-.0394	.0236-.0591
	35		Aged	100	328-591	-	.0118-.0256	328-591	-	.0197-.0354	.0197-.0472
	36	Aluminum Alloys	Cast	75	328-656	-	.0118-.0256	492-1312	-	.0197-.0354	.0197-.0472
	37		Cast & Aged	90	328-656	-	.0098-.0217	492-919	-	.0157-.0236	.0157-.0354
	38	Aluminum Alloys	Cast Si 13-22%	130	262-427	262-427	.0118-.0256	262-492	-	.0197-.0354	.0197-.0472
	39	Copper and Copper Alloys	Brass	90	328-591	328-656	.0118-.0256	394-689	328-656	.0236-.0394	.0236-.0591
	40		Bronze And Non Leaded Copper	100	328-656	328-656	.0098-.0217	394-689	328-656	.0197-.0354	.0197-.0472
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	66-148	66-131	.0098-.0138	66-148	66-131	.0047-.0087	.0047-.0130
	20		Aged (iron based)	280	66-98	66-98	.0059-.0098	66-98	66-98	.0039-.0079	.0039-.0118
	21		Annealed (nickel or cobalt based)	250	49-66	49-66	.0059-.0098	49-66	49-66	.0031-.0079	.0031-.0118
	22		Aged (nickel or cobalt based)	350	33-49	33-49	.0059-.0098	33-49	33-49	.0031-.0079	.0031-.0118
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	230-394	230-427	.0059-.0098	230-459	230-394	.0039-.0079	.0039-.0118
	24		α+β Alloys	1050Rm	66-164	66-164	.0059-.0098	66-164	66-164	.0039-.0079	.0039-.0118
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50 HRC	49-148	49-148	.0067-.0106	49-148	49-148	.0020-.0071	.0020-.0106
	26			51-55 HRC	49-131	49-131	.0059-.0079	49-131	49-131	.0020-.0071	.0020-.0106

TM Solid MultiFlute

Helicool Tools

Increased Number of Flutes for Faster Machining

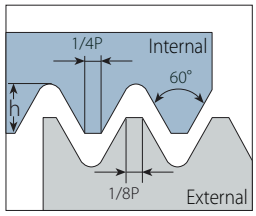
Features and Benefits:

- Reduced machining times: Up to 40%!
- Large number of flutes (max 7)
- Available in 2xDo and 3xDo (thread diameter)
- Thread Standards:
  American UN: No. 10-32 to 1"x8
- 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

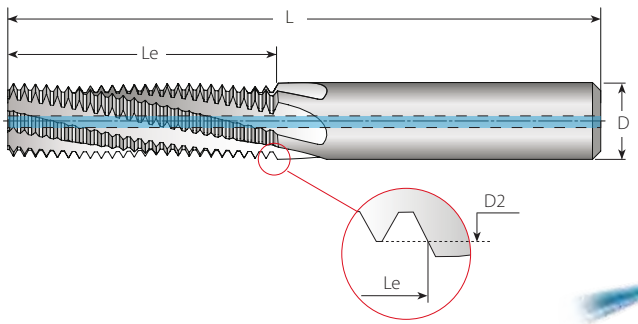
Helicool MultiFlute Tools are fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

Internal



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



Helical Flutes with Thru-Hole Coolant

2 x Do (Le ≤ 2 x Thread Diameter)

Thread			Pitch	Ordering Code	EDP	Dimensions inch				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	TPI	Internal	VTH	D	D2	L	Le	Z	Zt	Inch
	No.10-32	No.12-3/8"x32	32	HC19150L03-I32UNFTM6…	80042	3/16	.150	1.772	.391	6	12	.157
	1/4"x28	7/16"-1/2"x28	28	HC25203L05-I28UNFTM6…	80052	1/4	.203	2.244	.518	6	14	.216
No.10-24	5/16"; 3/8"x24	9/16"-11/16"x24	24	HC19141L04-I24UNCTM4…	80093	3/16	.141	1.772	.396	4	9	.150
1/4"-20	7/16"; 1/2"x20	3/4"-1"x20	20	HC25192L05-I20UNCTM5…	80095	1/4	.192	2.244	.525	5	10	.201
5/16"x18	9/16"; 5/8"x18	11/16"-1 11/16"x18	18	HC31242L06-I18UNCTM6…	80096	5/16	.242	2.402	.639	6	11	.260
3/8"x16	3/4"x16		16	HC31301L07-I16UNCTM6…	80097	5/16	.301	2.402	.781	6	12	.315
7/16"x14	7/8"x14		14	HC37354L08-I14UNCTM6…	80098	3/8	.354	2.874	.893	6	12	.370
1/2"x13			13	HC50407L10-I13UNCTM6…	80099	1/2	.407	3.150	1.039	6	13	.429
9/16"x12	1"-1 1/2"x12		12	HC50465L11-I12UNCTM6…	80100	1/2	.465	3.150	1.125	6	13	.484
5/8"x11			11	HC63516L13-I11UNCTM6…	80101	5/8	.516	3.622	1.318	6	14	.539
3/4"x10			10	HC63622L15-I10UNCTM7…	80104	5/8	.622	3.622	1.550	7	15	.657
7/8"x9			9	HC75746L18-I9UNCTM7…	80125	3/4	.746	4.016	1.833	7	16	.768
1"x8			8	HC75746L20-I8UNCTM7…	80126	3/4	.746	4.016	2.063	7	16	.866

Helical Flutes with Thru-Hole Coolant

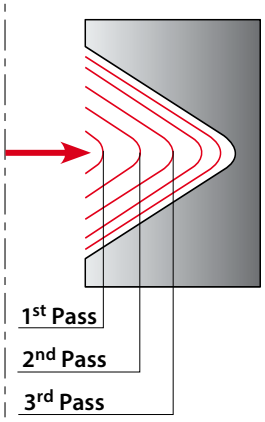
3 x Do (Le ≤ 3 x Thread Diameter)

Thread			Pitch	Ordering Code	EDP	Dimensions inch				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	TPI	Internal	VTH	D	D2	L	Le	Z	Zt	Inch
	No.10-32	No.12-3/8"x32	32	HC19150L05-I32UNFTM5…	80128	3/16	.150	1.969	.579	5	18	.157
	1/4"x28	7/16"-1/2"x28	28	HC25203L07-I28UNFTM5…	80129	1/4	.203	2.441	.768	5	21	.216
No.10-24	5/16"; 3/8"x24	9/16"-11/16"x24	24	HC19141L05-I24UNCTM3…	80130	3/16	.141	1.969	.605	3	14	.150
1/4"-20	7/16"; 1/2"x20	3/4"-1"x20	20	HC25192L07-I20UNCTM4…	80131	1/4	.192	2.441	.776	4	15	.201
5/16"x18	9/16"; 5/8"x18	11/16"-1 11/16"x18	18	HC31242L09-I18UNCTM5…	80132	5/16	.242	2.756	.975	5	17	.260
3/8"x16	3/4"x16		16	HC31301L11-I16UNCTM5…	80133	5/16	.301	2.756	1.157	5	18	.315
7/16"x14	7/8"x14		14	HC37354L13-I14UNCTM5…	80134	3/8	.354	3.150	1.319	5	18	.370
1/2"x13			13	HC50407L15-I13UNCTM5…	80135	1/2	.407	3.622	1.577	5	20	.429
9/16"x12	1"-1 1/2"x12		12	HC50465L17-I12UNCTM5…	80136	1/2	.465	3.622	1.709	5	20	.484
5/8"x11			11	HC63516L18-I11UNCTM5…	80137	5/8	.516	4.252	1.954	5	21	.539
3/4"x10			10	HC63622L22-I10UNCTM5…	80138	5/8	.622	4.252	2.350	5	23	.657
7/8"x9			9	HC75746L26-I9UNCTM5…	80139	3/4	.746	4.921	2.722	5	24	.768
1"x8			8	HC75746L30-I8UNCTM5…	80140	3/4	.746	5.315	3.060	5	24	.866

* 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	Vc [ft/min]	2xDo Tools Feed f [inch/tooth] by Cutter Dia. = D2			3xDo Tools Feed f [inch/tooth] by Cutter Dia. = D2		
					VTH	.094-.157	.157-.354	>.354	.094-.157	.157-.354	>.354
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	229-360	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	2		Medium Carbon (C=0.25-0.55%)	150	229-360	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	3		High Carbon (C=0.55-0.85%)	170	213-345	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	213-345	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	5		Hardened	275	213-345	.0027-.0047	.0054-.0086	.0078-.0106	.0010-.0019	.0039-.0055	.0071-.0106
	6		Hardened	350	196-328	.0019-.0035	.0051-.0070	.0059-.0079	.0007-.0013	.0029-.0043	.0055-.0078
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	164-295	.0027-.0047	.0054-.0086	.0078-.0106	.0010-.0019	.0039-.0055	.0071-.0106
	8		Hardened	325	131-262	.0027-.0031	.0051-.0069	.0059-.0074	.0007-.0013	.0029-.0043	.0055-.0078
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	229-360	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	10		High Alloy (alloying elements >5%)	225	213-345	.0019-.0035	.0051-.0070	.0059-.0079	.0007-.0013	.0029-.0043	.0055-.0078
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	196-328	.0019-.0035	.0051-.0070	.0059-.0079	.0007-.0013	.0029-.0043	.0055-.0078
	12		Hardened	330	196-328	.0019-.0039	.0051-.0074	.0059-.0083	.0007-.0015	.0029-.0051	.0055-.0086
	13	Stainless Steel Austenitic	Austenitic	180	196-328	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	14		Super Austenitic	200	196-328	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	15	Stainless Steel Cast Ferritic	Non Hardened	200	196-328	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	16		Hardened	330	196-328	.0019-.0035	.0051-.0070	.0059-.0079	.0007-.0013	.0029-.0043	.0055-.0078
	17	Stainless Steel Cast Austenitic	Austenitic	200	196-328	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	18		Hardened	330	196-328	.0019-.0035	.0051-.0070	.0059-.0079	.0007-.0013	.0029-.0043	.0055-.0078
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	196-328	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	29		Pearlitic (long chips)	230	196-328	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	30	Grey Cast Iron	Low Tensile Strength	180	213-345	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	31		High Tensile Strength	260	229-360	.0019-.0035	.0051-.0070	.0059-.0079	.0007-.0013	.0029-.0043	.0055-.0078
	32	Nodular Sg Iron	Ferritic	160	131-262	.0027-.0051	.0054-.0091	.0078-.0110	.0010-.0024	.0039-.0059	.0071-.0110
	33		Pearlitic	260	131-262	.0019-.0035	.0051-.0070	.0059-.0079	.0007-.0013	.0029-.0043	.0055-.0078
N Non-Ferrous Metals	34	Aluminium Alloys Wrought	Non Aging	60	229-360	.0035-.0070	.0086-.0118	.0070-.0137	.0016-.0032	.0059-.0091	.0098-.0137
	35		Aged	100	229-360	.0035-.0070	.0086-.0118	.0070-.0137	.0016-.0032	.0059-.0091	.0098-.0137
	36	Aluminium Alloys	Cast	75	229-360	.0035-.0070	.0086-.0118	.0070-.0137	.0016-.0032	.0059-.0091	.0098-.0137
	37		Cast & Aged	90	229-360	.0035-.0070	.0086-.0118	.0070-.0137	.0016-.0032	.0059-.0091	.0098-.0137
	38	Aluminium Alloys	Cast Si 13-22%	130	229-360	.0035-.0070	.0086-.0118	.0070-.0137	.0016-.0032	.0059-.0091	.0098-.0137
	39	Copper and Copper Alloys	Brass	90	229-360	.0035-.0079	.0086-.0126	.0070-.0146	.0016-.0039	.0059-.0102	.0098-.0149
	40		Bronze And Non Leaded Copper	100	229-360	.0035-.0070	.0086-.0118	.0070-.0137	.0016-.0032	.0059-.0091	.0098-.0137

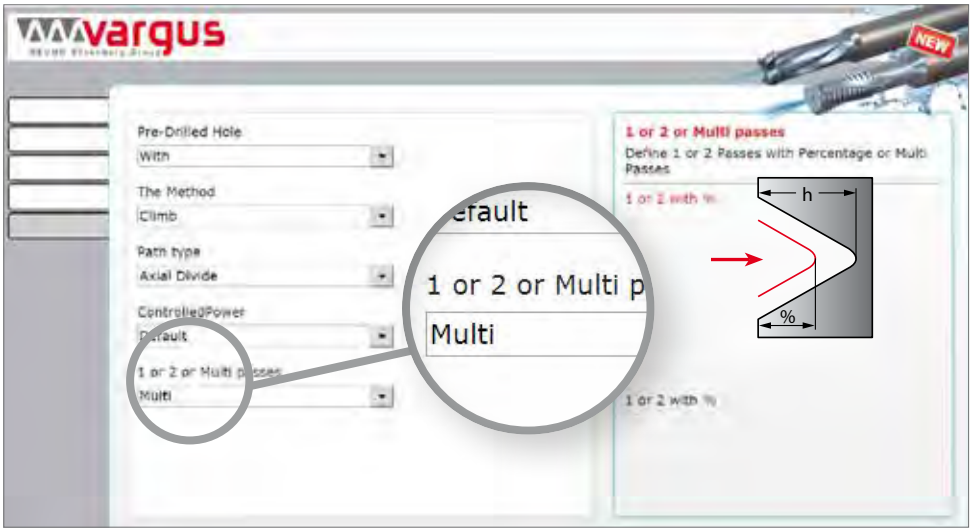
VARGUS GENius™

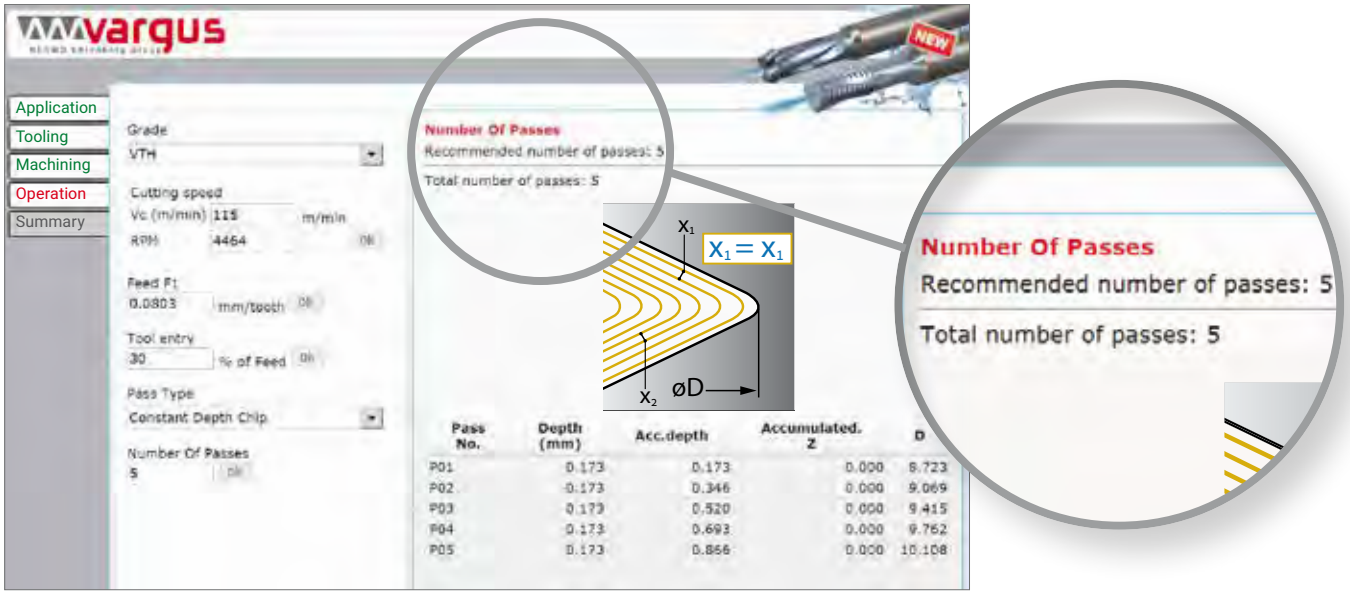
Tool Selector and CNC Program Generator

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
- Specially designed for TM Solid MultiFlute
- Highly recommended for applications such as long threads, difficult to machine applications, and hard materials

TM Solid TMDR

Drilling, Thread Milling & Chamfering

EXPANDED LINE

Expansion of the TMDR Line

- **Inch Shank : ISO Metric, American UN & NPT**
- **Metric Shank: American UN, ISO Metric & BSPT**

Features and Benefits:

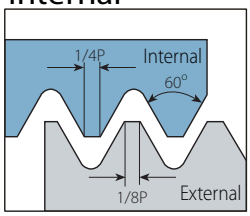
- TMDR tools drill, thread and chamfer all in one tooling operation
- Pre-drilled holes are no longer required!
- Drilling and thread milling is done simultaneously, while chamfering is produced at the end of the operation
- All tools are left handed, and are suitable for right and left hand threads
- All expansion tools are available with coolant thru
- Expansion Includes:
  Inch Shank:
  - ISO Metric
  - American UN
  - NPT

  Metric Shank:
  - American UN
  - ISO Metric
  - BSPT
- VTS Grade:
  A general-purpose, heavy duty thread milling grade. TiAlN coated for high resistance to wear

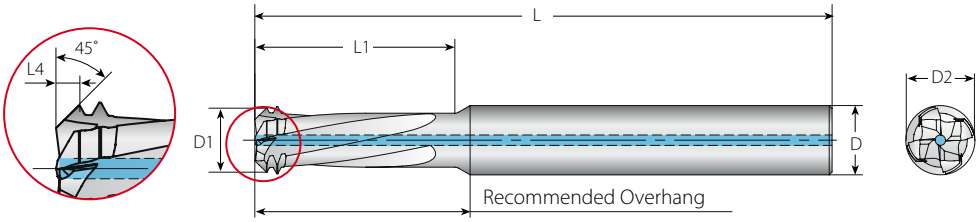
The **TMDR** is fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry.

VARGUS GENius™ Tool Selector and CNC Program Generator

Internal



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



Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering

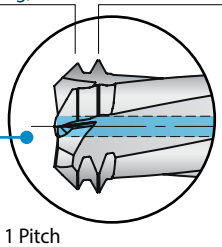
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread			Pitch	Ordering Code	EDP No.	Dimensions Inch				No. of Flutes	Teeth		
UNC	UNF	UN	TPI	Internal	VTS	D	D2	L	L1	Z	Zt	L4*	D1
Without coolant													
No.4-40, No.5-40	No.6-40		40	TD-2L25083L283-I40UNC…	80130	1/4	.083	2.283	.283	3	2	.015	.069
No.6-32, No.8-32			32	TD-2L25102L339-I32UNC…	81132	1/4	.102	2.283	.339	3	2	.018	.087
No.8-32	No.10-32		32	TD-2L25118L394-I32UNC…	81134	1/4	.118	2.283	.394	3	2	.024	.103
	1/4"x28	5/16"x28	28	TD-2L25197L567-I28UNF…	81139	1/4	.197	2.283	.567	3	2	.027	.180
No.10-24, No.12-24			24	TD-2L25138L449-I24UNC…	81136	1/4	.138	2.283	.449	3	2	.031	.125
1/4"x20		5/16"x20	20	TD-2L25189L571-I20UNC…	81137	1/4	.189	2.283	.571	3	2	.031	.169
With coolant													
	1/4"x28	5/16"x28	28	TDC2L31197L567-I28UNF…	81145	5/16	.197	2.520	.567	3	2	.027	.180
1/4"x20		5/16"x20	20	TDC2L31189L571-I20UNC…	81140	5/16	.189	2.520	.571	3	2	.031	.169
5/16"x18			18	TDC2L31236L705-I18 UNC…	81144	5/16	.236	2.520	.705	4	2	.040	.215
3/8"x16		7/16"x16	16	TDC2L31264L848-I16UNC…	81143	5/16	.264	2.520	.848	4	2	.043	.243
1/2"x13			13	TDC2L38362L112-I13UNC…	81181	3/8	.362	3.150	1.122	4	2	.050	.330
5/8"x11			11	TDC2L50449L139-I11UNC…	81183	1/2	.449	3.940	1.394	4	2	.059	.415
3/4"x10			10	TDC2L63583L167-I10UNC…	81185	5/8	.583	4.330	1.673	4	2	.070	.522

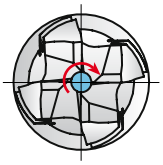
1st Tooth: Partial Profile (Roughing)
2nd Tooth: Full Profile (Finish)

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).



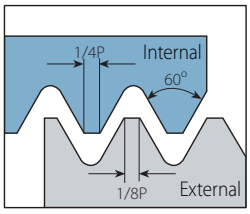
1 Pitch



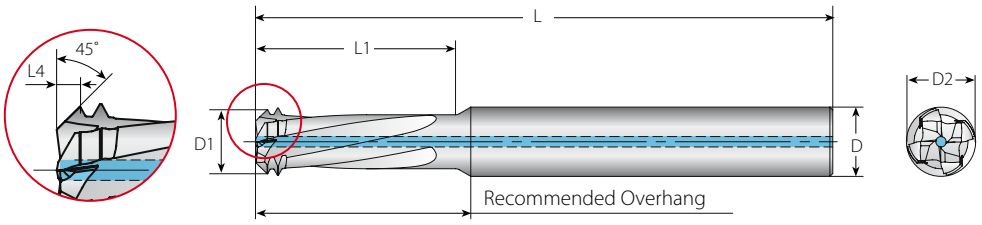
TMDR Tools are left handed. For CNC use M04 code.

* Please use the VARGUS GENius™ for Chamfer recommendations

Internal



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



Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering

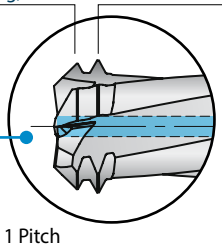
2.5 x Do (L1 ≤ 2.5 x Thread Diameter)

Thread			Pitch	Ordering Code	EDP No.	Dimensions Inch				No. of Flutes	Teeth		
UNC	UNF	UN	TPI	Internal	VTS	D	D2	L	L1	Z	Zt	L4*	D1
Without coolant													
	No.4-48		48	TD-2L25090L311-I48UNF...	81210	1/4	.090	2.283	.311	3	2	.016	.063
	No.5-44		44	TD-2L25100L347-I44UNF...	81203	1/4	.100	2.283	.347	3	2	.016	.071
No.4-40, No.5-40	No.6-40		40	TD-2L25083L346-I40UNC...	81131	1/4	.083	2.283	.346	3	2	.015	.069
	No.8-36	No.10-36	36	TD-2L25131L452-I36UNF...	81211	1/4	.131	2.283	.452	3	2	.020	.094
No.6-32, No.8-32			32	TD-2L25102L413-I32UNC...	81133	1/4	.102	2.283	.413	3	2	.018	.087
No.8-32	No.10-32		32	TD-2L25118L480-I32UNC...	81135	1/4	.118	2.283	.480	3	2	.024	.103
No.10-24UN			24	TD-2L25152L538-I24UNC...	81204	1/4	.152	2.283	.538	3	2	.032	.098
1/4"x20		5/16"x20	20	TD-2L25189L709-I20UNC...	81138	1/4	.189	2.283	.709	3	2	.031	.169
With coolant													
	1/4"x28	5/16"x28	28	TDC2L31197L701-I28UNF...	81067	5/16	.197	2.520	.701	3	2	.027	.180
	5/16"x24, 3/8"x24		24	TDC2L31250L844-I24UNF...	81212	5/16	.250	2.520	.844	4	2	.032	.193
	3/8"x24	7/16"x24, 1/2"x24	24	TDC2L31300L100-I24UNF...	81205	5/16	.300	2.520	1.000	4	2	.032	.208
1/4"x20		5/16"x20	20	TDC2L31189L709-I20UNC...	81146	5/16	.189	2.520	.709	3	2	.031	.169
	7/16"x20, 1/2"x20	9/16"x20	20	TDC2L38350L117-I20UNF...	81206	3/8	.350	3.150	1.169	4	2	.032	.283
	1/2"x20	9/16"-11/16"x20	20	TDC2L50400L133-I20UNF...	81207	1/2	.400	3.937	1.325	4	2	.032	.335
5/16"x18			18	TDC2L31236L872-I18UNC...	81180	5/16	.236	2.520	.872	4	2	.040	.215
	9/16"x18, 5/8"x18	3/4"x18	18	TDC2L50450L149-I18UNF...	81208	1/2	.450	3.937	1.490	4	2	.040	.374
	5/8"x18	3/4"x18, 7/8"x18	18	TDC2L63500L165-I18UNC...	81209	5/8	.500	5.315	1.646	6	2	.040	.429
	3/4"x16	13/16" - 1 1/16"x16	16	TDC2L63600L197-I16UNF...	81215	5/8	.600	5.315	1.969	6	2	.044	.520
3/8"x16		7/16"x16	16	TDC2L31264L102-I16UNC...	81068	5/16	.264	2.520	1.024	4	2	.043	.243
7/16"x14		1/2"x14	14	TDC2L38350L120-I14UNC...	81213	3/8	.350	3.150	1.201	4	2	.048	.264
1/2"x13			13	TDC2L38362L137-I13UNC...	81182	3/8	.362	3.150	1.372	4	2	.050	.330
9/16"x12		5/8" - 3/4"x12	12	TDC2L50450L153-I12UNC...	81214	1/2	.450	3.937	1.531	4	2	.056	.350
5/8"x11			11	TDC2L50449L170-I11UNC...	81184	1/2	.449	3.940	1.707	4	2	.059	.415
3/4"x10			10	TDC2L63583L204-I10UNC...	81186	5/8	.583	4.330	2.048	4	2	.070	.522

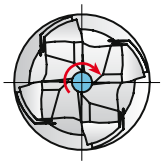
1st Tooth: Partial Profile (Roughing)
2nd Tooth: Full Profile (Finish)

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).



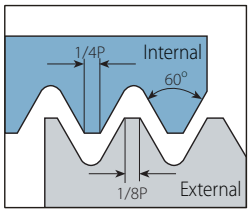
1 Pitch



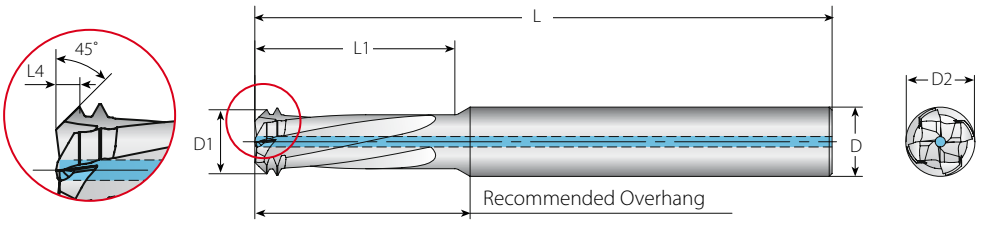
TMDR Tools are left handed. For CNC use M04 code.

* Please use the VARGUS GENius™ for Chamfer recommendations

Internal



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



Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering (D-mm shank)

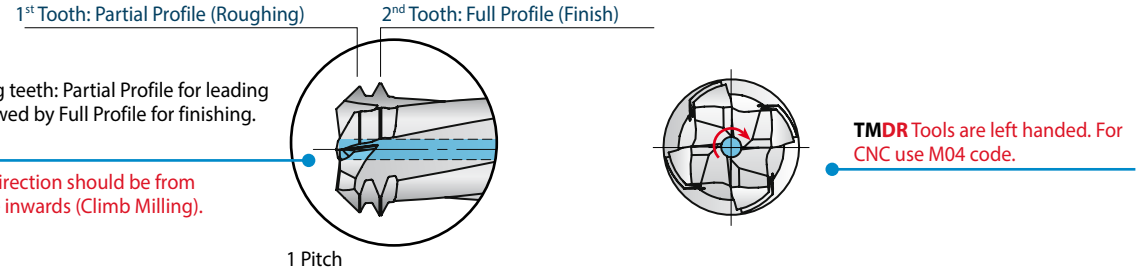
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread			Pitch	Ordering Code	EDP No.		Dimensions Inch			No. of Flutes	Teeth		
UNC	UNF	UN	TPI	Internal	VTS	D (mm)	D2	L	L1	Z	Zt	L4*	D1
Without coolant													
No.4-40, No.5-40	No.6-40		40	TD-2L06021L072-I40UNC...	81147	6	.083	2.284	.284	3	2	.015	.069
No.6-32, No.8-32			32	TD-2L06026L086-I32UNC...	81148	6	.102	2.284	.339	3	2	.018	.087
No.8-32	No.10-32		32	TD-2L06030L100-I32UNC...	81149	6	.118	2.284	.394	3	2	.024	.103
	1/4"x28	5/16"x28	28	TD-2L06050L144-I28UNF...	81150	6	.197	2.284	.567	3	2	.027	.180
No.10-24, No.12-24			24	TD-2L06035L114-I24UNC...	81151	6	.138	2.284	.449	3	2	.032	.125
1/4"x20		5/16"x20	20	TD-2L06048L145-I20UNC...	81152	6	.189	2.284	.571	3	2	.032	.169
With coolant													
	1/4"x28	5/16"x28	28	TDC2L08050L144-I28UNF...	81153	8	.197	2.520	.567	3	2	.027	.180
	5/16"x24, 3/8"x24		24	TDC2L08065L176-I24UNF...	81154	8	.256	2.520	.693	3	2	.034	.237
1/4"x20		5/16"x20	20	TDC2L08048L145-I20UNC...	81155	8	.189	2.520	.571	3	2	.032	.169

TMDR - Drilling, Thread Milling & Chamfering (D-mm shank)

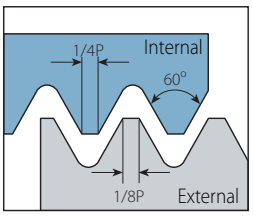
2.5 x Do (L1 ≤ 2.5 x Thread Diameter)

Thread			Pitch	Ordering Code	EDP No.		Dimensions Inch			No. of Flutes	Teeth		
UNC	UNF	UN	TPI	Internal	VTS	D (mm)	D2	L	L1	Z	Zt	L4*	D1
Without coolant													
No.4-40, No.5-40	No.6-40		40	TD-2L06021L088-I40UNC...	81156	6	.083	2.284	.347	3	2	.015	.069
No.6-32, No.8-32			32	TD-2L06026L105-I32UNC...	81157	6	.102	2.284	.413	3	2	.018	.087
No.8-32	No.10-32		32	TD-2L06030L122-I32UNC...	81158	6	.118	2.284	.480	3	2	.024	.103
	1/4"x28	5/16"x28	28	TD-2L06050L178-I28UNF...	81159	6	.197	2.284	.701	3	2	.027	.180
1/4"x20		5/16"x28	20	TD-2L06048L180-I20UNC...	81160	6	.189	2.284	.709	3	2	.032	.169
With coolant													
	1/4"x28	5/16"x28	28	TDC2L08050L178-I28UNF...	81161	8	.197	2.520	.701	3	2	.027	.180
	5/16"x24, 3/8"x24		24	TDC2L08065L218-I24UNF...	81162	8	.256	2.520	.858	3	2	.034	.237
1/4"x20		5/16"x20	20	TDC2L08048L180-I20UNC...	81163	8	.189	2.520	.709	3	2	.032	.169
3/8"x16		7/16"x16	16	TDC2L08067L260-I16UNC...	81164	8	.264	2.520	1.02	4	2	.043	.243



* Please use the VARGUS GENius™ for Chamfer recommendations

Internal



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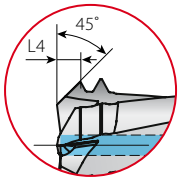
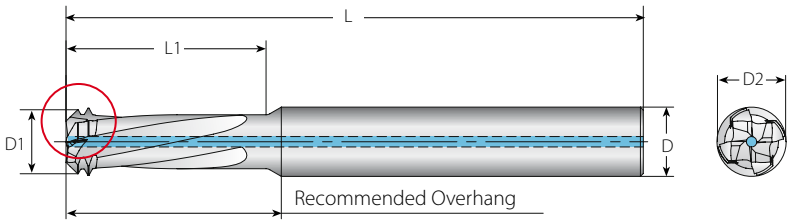
Tolerance class: 6H



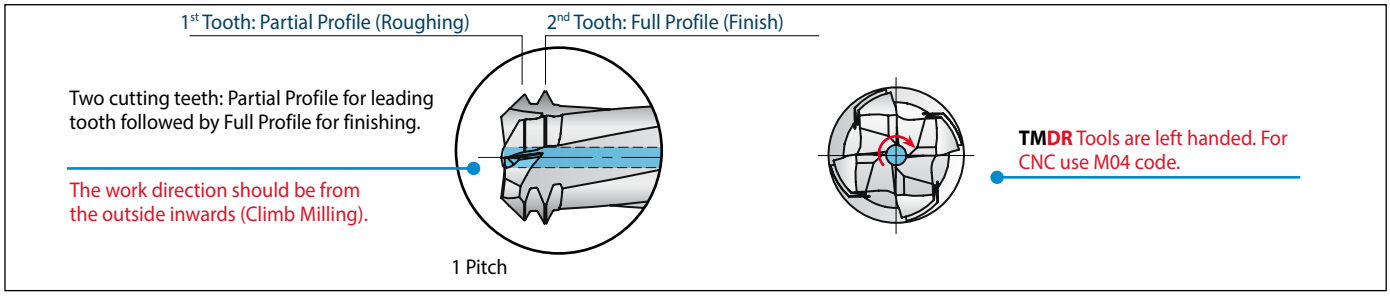


Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering

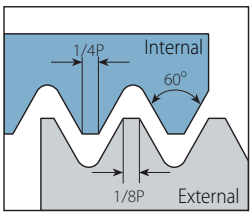
2.5 x Do (L1 ≤ 2.5 x Thread Diameter)

Thread		Pitch	Ordering Code	EDP. No	Dimensions inch				No. of Flutes Teeth			
M Coarse	M Fine	mm	Internal		D	D2	L	L1	Z	Zt	L4*	D1
Without Coolant												
M4x0.7		0.7	TD-2L25126L441-I0.70ISO...	81079	1/4	.126	2.283	.441	3	2	.022	.087
M5x0.8		0.8	TD-2L25154L567-I0.80ISO...	81083	1/4	.154	2.283	.567	3	2	.028	.110
With Coolant												
M6-M7x1.0	M8-M9x1.0	1	TDC2L31185L671-I1.00ISO...	81084	5/16	.185	2.520	.671	3	2	.031	.130
	M8 -M9x1.0	1	TDC2L31252L866-I1.00ISO...	81085	5/16	.252	2.520	.866	4	2	.031	.201
M8x1.25	M9-M12x1.25	1.25	TDC2L31252L866-I1.25ISO...	81086	5/16	.252	2.520	.866	4	2	.035	.177
	M10-M12x1.25	1.25	TDC2L38315L110-I1.25ISO...	81087	3/8	.315	3.150	1.102	4	2	.035	.240
	M12x1.25	1.25	TDC2L50378L129-I1.25ISO...	81088	1/2	.378	3.937	1.299	4	2	.035	.303
M10x1.5	M11-M15x1.5	1.5	TDC2L38315L110-I1.50ISO...	81089	3/8	.315	3.150	1.102	4	2	.048	.236
	M14 -M18x1.5	1.5	TDC2L50441L145-I1.50ISO...	81090	1/2	.441	3.937	1.457	4	2	.048	.362
	M16-M22x1.5	1.5	TDC2L63504L169-I1.50ISO...	81091	5/8	.504	5.315	1.693	4	2	.048	.425
	M18-M22x 1.5	1.5	TDC2L63567L189-I1.50ISO...	81092	5/8	.567	5.315	1.890	6	2	.048	.488
	M20-M22x1.5	1.5	TDC2L75630L208-I1.50ISO...	81093	3/4	.630	5.315	2.087	6	2	.048	.555
	M22x1.5	1.5	TDC2L75693L228-I1.50ISO...	81094	3/4	.693	5.315	2.283	6	2	.048	.614
M12x1.75		1.75	TDC2L50378L129-I1.75ISO...	81095	1/2	.378	3.937	1.299	4	2	.055	.287
M14x2.0	M16-M20x2.0	2	TDC2L50441L145-I2.00ISO...	81096	1/2	.441	3.937	1.457	4	2	.065	.339
M16x2.0	M17-M22x2.0	2	TDC2L63504L169-I2.00ISO...	81097	5/8	.504	5.315	1.693	4	2	.065	.402
M18-M22x2.5		2.5	TDC2L63567L189-I2.50ISO...	81098	5/8	.567	5.315	1.890	6	2	.084	.445
M20-M22x2.5		2.5	TDC2L75630L208-I2.50ISO...	81099	3/4	.630	5.315	2.087	6	2	.084	.508
M22x2.5		2.5	TDC2L75693L228-I2.50ISO...	81201	3/4	.693	5.315	2.283	6	2	.084	.571



* Please use the VARGUS GENius™ for Chamfer recommendations

Internal



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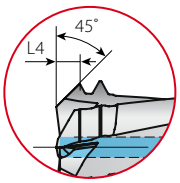
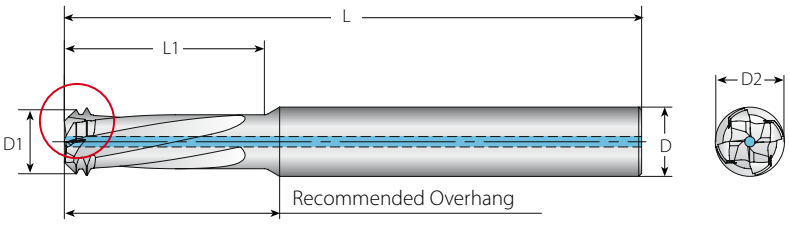




Left Hand Tool

TMDR - Drilling, Thread Milling & Chamfering (D-mm shank)

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	EDP No.		Dimensions Inch			No. of Flutes	Teeth		
M Coarse	M Fine	mm	Internal	VTS	D(mm)	D2	L	L1	Z	Zt	L4*	D1
Without coolant												
M3x0.5	M4x0.5	0.50	TD-2L06024L070-I0.50ISO...	81117	6	.094	2.283	.276	3	2	.016	.082
M4x0.7		0.70	TD-2L06032L092-I0.70ISO...	81119	6	.126	2.283	.362	3	2	.022	.113
M5x0.8		0.80	TD-2L06039L115-I0.80ISO...	81120	6	.154	2.283	.453	3	2	.028	.138
M6-M7x1.0	M8-M9x1.0	1.00	TD-2L06047L140-I1.00ISO...	81122	6	.185	2.283	.551	3	2	.031	.164
With coolant												
M6-M7x1.0	M8-M9x1.0	1.00	TDC2L08047L140-I1.00ISO...	81124	8	.185	2.520	.551	3	2	.031	.164
M8x1.25	M9-M11x1.25	1.25	TDC2L08061L180-I1.25ISO...	81126	8	.240	2.520	.709	4	2	.035	.219
M10x1.5	M11-M14x1.5	1.50	TDC2L08078L230-I1.50ISO...	81116	8	.307	2.520	.906	4	2	.044	.285
M12x1.75		1.75	TDC2L10090L260-I1.75ISO...	81128	10	.354	3.150	1.024	4	2	.047	.329
M16x2.0	M17-M23x2.0	2.00	TDC2L12118L350-I2.00ISO...	81129	12	.465	3.937	1.378	4	2	.079	.438
M18-M22x2.5		2.50	TDC2L16150L446-I2.5ISO...	81178	16	.591	5.315	1.756	4	2	.089	.554

TMDR - Drilling, Thread Milling & Chamfering (D-mm shank)

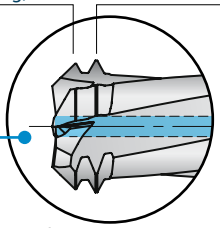
2.5 x Do (L1 ≤ 2.5 x Thread Diameter)

Thread		Pitch	Ordering Code	EDP No.		Dimensions Inch			No. of Flutes	Teeth		
M Coarse	M Fine	mm	Internal	VTS	D(mm)	D2	L	L1	Z	Zt	L4*	D1
Without coolant												
M3x0.5	M4x0.5	0.50	TD-2L06024L085-I0.50ISO...	81118	6	.094	2.283	.335	3	2	.016	.082
M4x0.7		0.70	TD-2L06032L112-I0.70ISO...	81115	6	.126	2.283	.441	3	2	.022	.113
M5x0.8		0.80	TD-2L06039L144-I0.80ISO...	81121	6	.154	2.283	.567	3	2	.028	.138
M6-M7x1.0	M8-M9x1.0	1.00	TD-2L06047L170-I1.00ISO...	81123	6	.185	2.283	.669	3	2	.031	.164
With coolant												
M6-M7x1.0	M8-M9x1.0	1.00	TDC2L08047L170-I1.00ISO...	81125	8	.185	2.520	.669	3	2	.031	.164
M8x1.25	M9-M11x1.25	1.25	TDC2L08061L220-I1.25ISO...	81127	8	.240	2.520	.866	4	2	.035	.219
M10x1.5	M11-M14x1.5	1.50	TDC2L08078L280-I1.50ISO...	81063	8	.307	2.520	1.102	4	2	.044	.285
M12x1.75		1.75	TDC2L10090L320-I1.75ISO...	81064	10	.354	3.150	1.260	4	2	.047	.329
M16x2.0	M17-M23x2.0	2.00	TDC2L12118L430-I2.00ISO...	81065	12	.465	3.937	1.693	4	2	.079	.438
M18-M22x2.5		2.50	TDC2L16150L546-I2.5ISO...	81179	16	.591	5.315	2.150	4	2	.089	.554
M24x3.0		3.00	TDC2L18178L650-I3.0ISO...	81066	18	.701	5.315	2.559	4	2	.098	.665

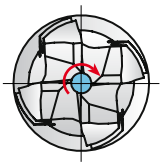
1st Tooth: Partial Profile (Roughing)
2nd Tooth: Full Profile (Finish)

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).



1 Pitch



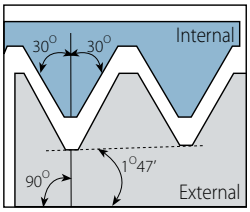
TMDR Tools are left handed. For CNC use M04 code.

* Please use the VARGUS GENius™ for Chamfer recommendations

NPT

TMDR

Internal



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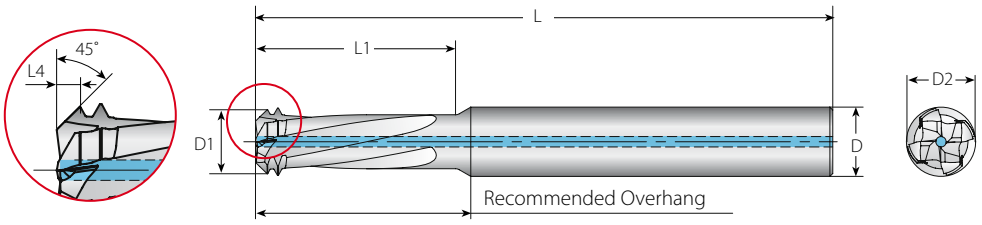
Tolerance class: Standard NPT



Left Hand Tool

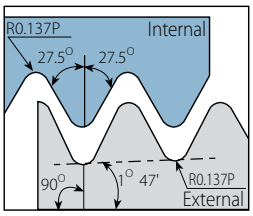
TMDR - Drilling, Thread Milling & Chamfering

Thread	Pitch	Ordering Code	EDP	Dimensions Inch				No. of Flutes	Teeth		
Standard	TPI	Internal	VTS	D	D2	L	L1	Z	Zt	L4*	D1
With coolant											
1/16"x27	27	TDC2L31220L441-I27NPT...	80141	5/16	.220	2.520	.441	4	2	.024	.200
1/8"x27	27	TDC2L31295L441-I27NPT...	80142	5/16	.295	2.520	.441	4	2	.024	.274
1/4"x18	18	TDC2L38370L646-I18NPT...	80145	3/8	.370	3.150	.646	4	2	.039	.341
3/8"x18	18	TDC2L50469L646-I18NPT...	80146	1/2	.469	3.937	.646	4	2	.039	.441
1/2"x14	14	TDC2L63602L112-I14NPT...	80147	5/8	.602	3.937	1.126	6	2	.059	.567

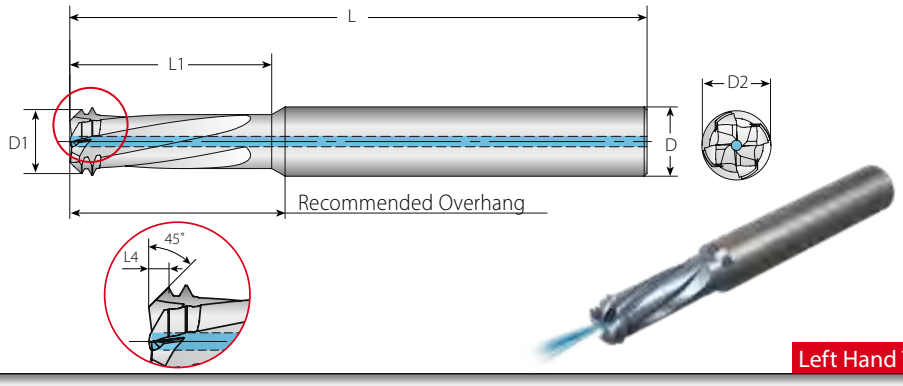
BSPT

TMDR

External / Internal



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



Left Hand Tool

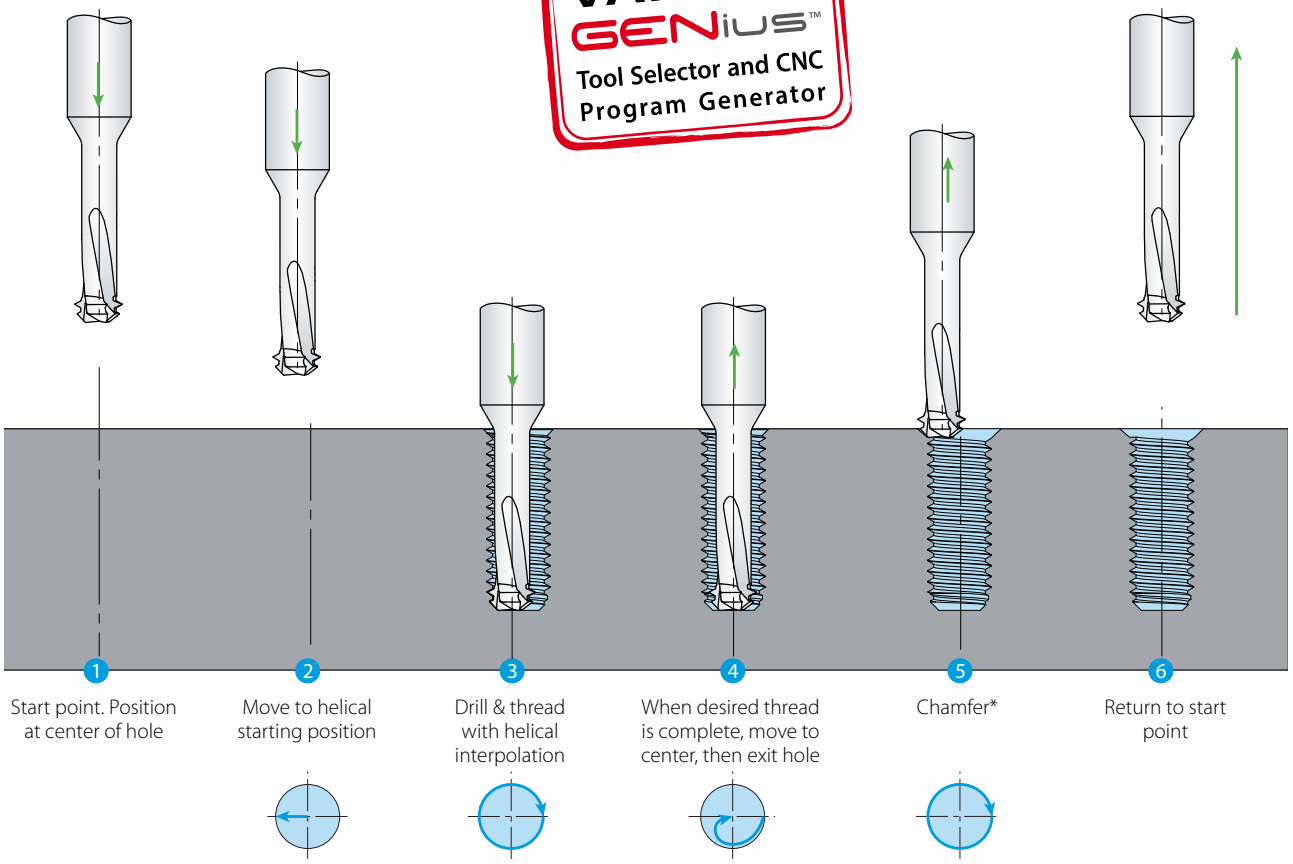
TMDR - Drilling, Thread Milling & Chamfering (D-mm shank)

Thread	Pitch	Ordering Code	EDP. No.	Dimensions inch				No. of Flutes	Teeth		
Standard	TPI	Internal		D (mm)	D2	L	L1	Z	Zt	L4*	D1
With Coolant											
1/16"x28 BSPT	28	TDC2L06054L170-I28BSPTVTS	81216	6	.211	2.283	.669	3	2	.028	.157
1/8"x28 BSPT	28	TDC2L08068L210-I28BSPTVTS	81217	8	.266	2.520	.825	4	2	.028	.213
1/4"x19 BSPT	19	TDC2L10091L285-I19BSPTVTS	81218	10	.360	3.937	1.122	4	2	.039	.284
3/8"x19 BSPT	19	TDC2L12116L355-I19BSPTVTS	81219	12	.456	3.937	1.399	4	2	.039	.381
1/2"x14 BSPT	14	TDC2L16146L450-I14BSPTVTS	81220	16	.574	5.315	1.772	6	2	.053	.474

* Please use the VARGUS GENius™ for Chamfer recommendations

TMDR - Operating Cycle

VARGUS GENius™ Tool Selector and CNC Program Generator



1. Start point. Position at center of hole
2. Move to helical starting position
3. Drill & thread with helical interpolation
4. When desired thread is complete, move to center, then exit hole
5. Chamfer*
6. Return to start point

* Please use the VARGUS GENius™ for Chamfer recommendations.

Recommended Cutting Speeds Vc [ft/min] and Feed f [Inch/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc(ft/min) TMDR / VTS	Feed [inch/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	197-394	.0008-.0047
	2		Medium Carbon (C=0.25-0.55%)	150	197-394	.0008-.0047
	3		High Carbon (C=0.55-0.85%)	170	197-295	.0008-.0047
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	197-295	.0008-.0047
	5		Hardened	275	164-263	.0008-.0020
	6		Hardened	350	164-263	.0008-.0012
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	263-263	.0008-.0028
	8		Hardened	325	164-263	.0008-.0012
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	230-295	.0008-.0047
	10		High Alloy (alloying elements >5%)	225	197-263	.0008-.0012
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	197-295	.0008-.0047
	12		Hardened	330	164-263	.0008-.0012
	13	Stainless Steel Austenitic	Austenitic	180	197-295	.0008-.0047
	14		Super Austenitic	200	164-263	.0008-.0047
	15	Stainless Steel Cast Ferritic	Non Hardened	200	197-295	.0008-.0047
	16		Hardened	330	164-263	.0008-.0012
	17	Stainless Steel Cast Austenitic	Austenitic	200	197-295	.0008-.0047
	18		Hardened	330	164-263	.0008-.0012
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	164-263	.0008-.0012
	29		Pearlitic (long chips)	230	197-295	.0008-.0035
	30	Grey Cast Iron	Low Tensile Strength	180	230-328	.0008-.0047
	31		High Tensile Strength	260	197-295	.0008-.0035
	32	Nodular Sg Iron	Ferritic	160	230-328	.0008-.0047
	33		Pearlitic	260	197-295	.0008-.0035
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	197-820	.0012-.0043
	35		Aged	100	197-492	.0012-.0047
	36	Aluminum Alloys	Cast	75	197-820	.0012-.0047
	37		Cast & Aged	90	197-492	.0008-.0047
	38	Aluminum Alloys	Cast Si 13-22%	130	820	.0012-.0043
	39	Copper and Copper Alloys	Brass	90	197-820	.0012-.0047
	40		Bronze And Non Leaded Copper	100	197-492	.0012-.0043
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	197	.0008-.0047
	20		Aged (iron based)	280	164	.0008-.0012
	21		Annealed (nickel or cobalt based)	250	115	.0008-.0012
	22		Aged (nickel or cobalt based)	350	98	.0008-.0012
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	98-164	.0008-.0020
	24		α+β Alloys	1050Rm	82-115	.0008-.0020
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	-	-
	26			51-55HRc	-	-

TM Solid HCN For Long Threads

Up to 3xDo (Thread Diameter)

Helical flutes with coolant thru for extra deep threading applications

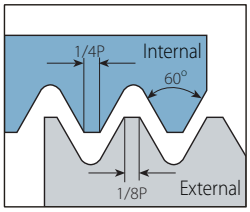
Features and Benefits:

Maximum thread length: 3xDo (Thread Diameter)

- Relief neck for reduced cutting forces
- Multi-tooth geometry
- Reduced machining times for long threads
- **VTH Grade:**
  A general-purpose, heavy duty thread milling grade
  TiCN coated for high resistance to wear

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

Internal



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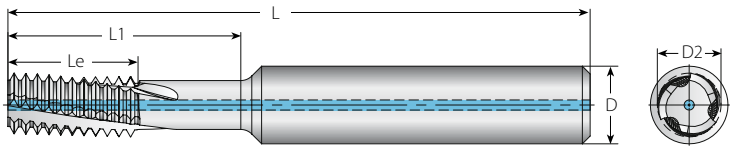


Helical Flutes with Relief Neck and Thru-Hole Coolant

3 x Do (L1 ≤ 3 x Thread Diameter)

Thread			Pitch	Ordering Code	EDP No.	Dimensions Inch					No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	TPI	Internal	VTH	D	D2	L	Le	L1	Z	Zt	Inch
	No.10-32	No.12-3/8"x32	32	HCN19150L05-I32UNFTM…	81165	3/16	.150	2.008	.314	.570	3	10	.157
	1/4"x28	7/16", 1/2"x28	28	HCN25203L07-I28UNFTM…	81166	1/4	.203	2.480	.394	.750	3	11	.216
No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	24	HCN19141L05-I24UNCTM…	81167	3/16	.141	2.008	.333	.570	3	8	.150
No.12-24	5/16", 3/8"x24	9/16"-11/16"x24	24	HCN19163L06-I24UNCTM…	81168	3/16	.163	2.008	.378	.648	3	9	.177
	5/16", 3/8"x24	9/16"-11/16"x24	24	HCN31263L09-I24UNFTM…	81169	5/16	.263	2.598	.501	.938	3	12	.272
	3/8"x24	9/16"-11/16"x24	24	HCN37323L11-I24UNFTM…	81170	3/8	.323	3.071	.585	1.125	3	14	.335
1/4"x20	7/16", 1/2"x20	3/4"-1"x20	20	HCN25192L07-I20UNCTM…	81171	1/4	.192	3.504	.402	.750	3	8	.201
	1/2"x20	3/4"-1"x20	20	HCN50437L15-I20UNFTM…	81172	1/2	.437	3.622	.802	1.500	4	16	.453
5/16"x18	9/16", 5/8"x18	11/16"-1 11/16"x18	18	HCN31242L09-I18UNCTM…	81173	5/16	.242	2.598	.500	.938	3	9	.260
3/8"x16	3/4"x16		16	HCN31301L11-I16UNCTM…	81174	5/16	.301	2.756	.626	1.125	3	10	.315
7/16"x14	7/8"x14		14	HCN37354L13-I14UNCTM…	81175	3/8	.354	3.031	.715	1.314	3	10	.370
1/2"x13			13	HCN50407L15-I13UNCTM…	81176	1/2	.407	3.622	.771	1.500	4	10	.429
9/16"x12	1"-1 1/2"x12		12	HCN50465L16-I12UNCTM…	81177	1/2	.465	3.622	.917	1.686	4	11	.484

* Bore diameter applies to smallest thread diameter

HCN

Recommended Cutting Speeds Vc [ft/min] and Feed f [Inch/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc(ft/min) HCN VTH	Feed [Inch/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	164-591	.0012-.0031
	2		Medium Carbon (C=0.25-0.55%)	150	164-459	.0012-.0031
	3		High Carbon (C=0.55-0.85%)	170	164-394	.0012-.0024
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	197-558	.0012-.0028
	5		Hardened	275	197-525	.0012-.0028
	6		Hardened	350	197-492	.0008-.0016
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	131-295	.0012-.0028
	8		Hardened	325	98-230	.0008-.0020
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	230-656	.0012-.0024
	10		High Alloy (alloying elements >5%)	225	197-492	.0012-.0024
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	164-459	.0008-.0020
	12		Hardened	330	164-361	.0004-.0012
	13	Stainless Steel Austenitic	Austenitic	180	197-427	.0008-.0020
	14		Super Austenitic	200	164-394	.0008-.0020
	15	Stainless Steel Cast Ferritic	Non Hardened	200	164-492	.0008-.0020
	16		Hardened	330	164-328	.0008-.0012
	17	Stainless Steel Cast Austenitic	Austenitic	200	164-459	.0008-.0024
	18		Hardened	330	164-295	.0004-.0012
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	197-492	.0012-.0031
	29		Pearlitic (long chips)	230	262-328	.0012-.0024
	30	Grey Cast Iron	Low Tensile Strength	180	164-459	.0012-.0024
	31		High Tensile Strength	260	131-361	.0008-.0020
	32	Nodular Sg Iron	Ferritic	160	131-328	.0012-.0028
	33		Pearlitic	260	131-295	.0008-.0020
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	492-820	.0020-.0059
	35		Aged	100	328-722	.0012-.0039
	36	Aluminum Alloys	Cast	75	262-492	.0020-.0059
	37		Cast & Aged	90	295-525	.0012-.0039
	38	Aluminum Alloys	Cast Si 13-22%	130	492-820	.0020-.0059
	39	Copper and Copper Alloys	Brass	90	492-820	.0020-.0059
	40		Bronze And Non Leaded Copper	100	328-722	.0012-.0039
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	98-164	.0008-.0016
	20		Aged (iron based)	280	66-131	.0004-.0012
	21		Annealed (nickel or cobalt based)	250	49-98	.0004-.0012
	22		Aged (nickel or cobalt based)	350	49-82	.0004-.0012
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	98-230	.0004-.0012
	24		α+β Alloys	1050Rm	66-148	.0004-.0008
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	-	-
	26			51-55HRc	-	-

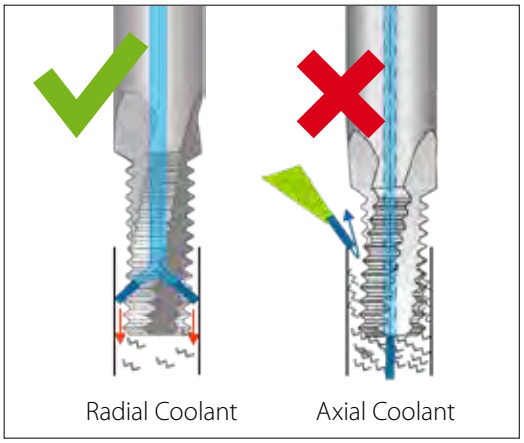
TM Solid Helicool-R (HCR)

Helical Thread Mill Flutes with Radial Coolant Thru

EXPANDED LINE

Now Available in Additional Threading Standards ISO Metric & NPTF

Chip Evacuation in Thru Holes using Axial & Radial Coolant



Features and Benefits:

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

HCR New Expanded Range:

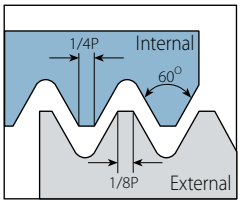
Inch Shanks:

- ISO Metric
- NPTF

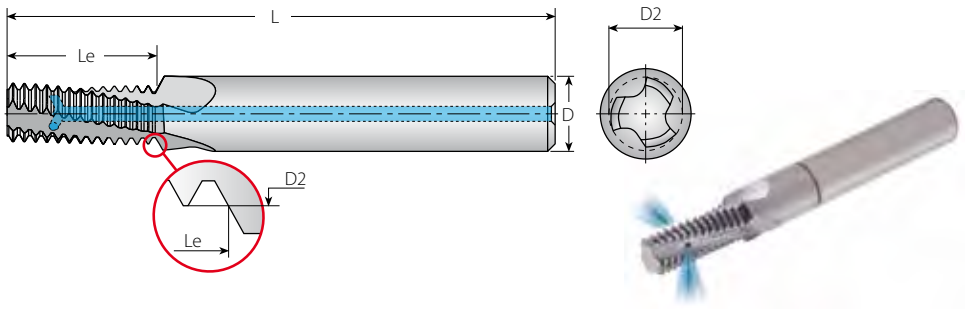
The new **HCR tools** are fully supported by **VARGUS GENius™**, the most advanced Tool Selector and CNC Program Generator in the metal cutting tools industry

VARGUS GENius™ Tool Selector and CNC Program Generator

ISO Metric



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

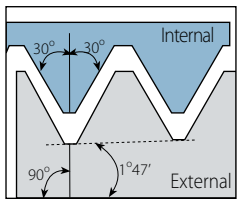


Helicool-R (HCR)

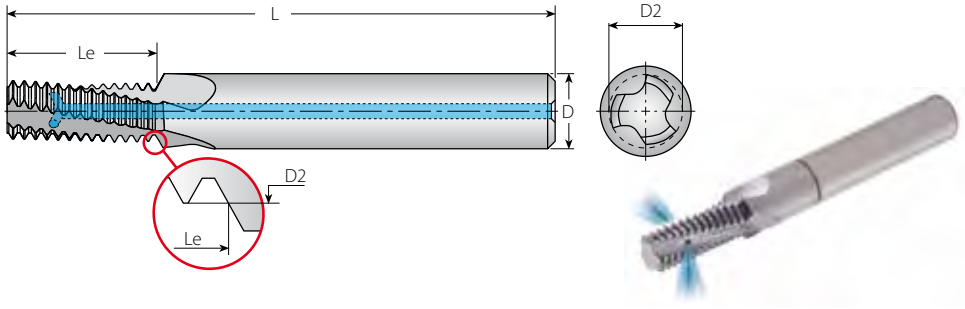
2xDo (Le≤2 x Thread Diameter)

Thread		Pitch	Ordering Code	EDP No.	Dimensions Inch				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	mm	Internal	VTH	D	D2	L	Le	Z	Zt	Inch
M6x1.0	M8-M40x1.0	1.00	HCR25189L04-I1.00ISOTM...	81188	1/4	.189	2.244	.492	3	12	.197
	M10x1.0	1.00	HCR37343L08-I1.00ISOTM...	81191	3/8	.343	2.874	.807	3	20	.354
M8x1.25		1.25	HCR31256L06-I1.25ISOTM...	81189	5/16	.256	2.402	.664	3	13	.268
M10x1.5	M12-M48x1.5	1.50	HCR37323L07-I1.50ISOTM...	81190	3/8	.323	2.874	.797	3	13	.335
M12x1.75		1.75	HCR37370L09-I1.75ISOTM...	81192	3/8	.370	2.874	.999	3	14	.405
M14x2.0	M17-M80x2.0	2.00	HCR50457L11-I2.00ISOTM...	81193	1/2	.457	3.150	1.142	4	14	.472
M16x2.0	M17-M80x2.0	2.00	HCR63535L12-I2.00ISOTM...	81194	5/8	.535	3.622	1.299	4	16	.551
M20x2.5		2.50	HCR75673L16-I2.50ISOTM...	81195	3/4	.673	4.016	1.624	4	16	.687
M24x3.0		3.00	HCR75746L19-I3.00ISOTM...	81196	3/4	.746	4.016	1.949	4	16	.827

NPTF



Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF



Helicool-R (HCR)

Thread	Pitch	Ordering Code	EDP No.	Dimensions Inch				No. of Flutes	Teeth	Bore Dia.*
Standard	TPI	Internal	VTH	D	D2	L	Le	Z	Zt	Inch
1/8"x27	27	HCR31301L03-EI27NPTFTM...	81197	5/16	.301	2.402	.389	3	10	.330
1/4"x18	18	HCR37370L05-EI18NPTFTM...	81198	3/8	.370	2.874	.583	3	10	.437
3/8"x18	18	HCR50439L05-EI18NPTFTM...	81199	1/2	.439	2.874	.583	4	10	.562
1/2", 3/4"x14	14	HCR63561L07-EI14NPTFTM...	81200	5/8	.561	3.150	.750	4	10	.704, .905

* Bore diameter applies to smallest thread dia.

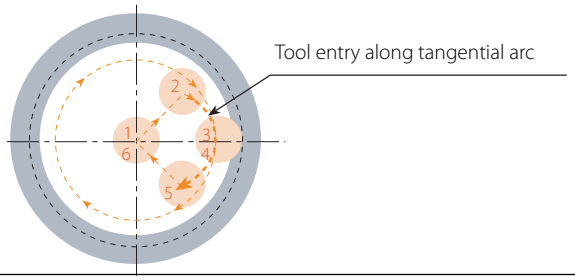
Helicool-R (HCR)

Recommended Cutting Speeds Vc [ft/min] and Feed f [inch/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [ft/min] VTH	Feed f [inch/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	262-820	.0012-.0031
	2		Medium Carbon (C=0.25-0.55%)	150	262-754	.0012-.0031
	3		High Carbon (C=0.55-0.85%)	170	262-656	.0012-.0031
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	197-590	.0012-.0031
	5		Hardened	275	197-557	.0012-.0028
	6		Hardened	350	197-525	.0008-.0024
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	131-328	.0012-.0028
	8		Hardened	325	98-262	.0012-.0024
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	262-820	.0012-.0028
	10		High Alloy (alloying elements >5%)	225	197-557	.0012-.0028
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	197-492	.0012-.0031
	12		Hardened	330	197-393	.0012-.0024
	13	Stainless Steel Austenitic	Austenitic	180	197-459	.0012-.0031
	14		Super Austenitic	200	197-426	.0012-.0024
	15	Stainless Steel Cast Ferritic	Non Hardened	200	197-525	.0012-.0024
	16		Hardened	330	197-361	.0008--.002
	17	Stainless Steel Cast Austenitic	Austenitic	200	197-492	.0008-.002
	18		Hardened	330	197-328	.0008-.0016
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	197-230	.0012-.0031
	29		Pearlitic (long chips)	230	197-492	.0012-.0028
	30	Grey Cast Iron	Low Tensile Strength	180	230-525	.0012-.0028
	31		High Tensile Strength	260	131-393	.0012-.0028
	32	Nodular Sg Iron	Ferritic	160	131-361	.0012-.0031
	33		Pearlitic	260	131-328	.0012-.0028
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	656-984	.0016-.0039
	35		Aged	100	492-820	.0012-.0039
	36	Aluminum Alloys	Cast	75	328-656	.0012-.0039
	37		Cast & Aged	90	393-721	.0024-.0047
	38	Aluminum Alloys	Cast Si 13-22%	130	656-984	.002-.0047
	39	Copper and Copper Alloys	Brass	90	656-984	.002-.0047
	40		Bronze And Non Leaded Copper	100	492-820	.002-.0047
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	98-197	.0012-.0276
	20		Aged (iron based)	280	66-164	.0012-.0024
	21		Annealed (nickel or cobalt based)	250	49-115	.0012-.0024
	22		Aged (nickel or cobalt based)	350	49-98	.0008-.002
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	131-262	.0008-.002
	24		α+β Alloys	1050Rm	66-164	.0008-.0016
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	49-148	.0008-.0012
	26			51-55HRc	49-131	.0008-.0012

Recommendation:
At tool entry, set the Feed f [inch/tooth] to 70% lower than the threading Feed.

Example:
Threading Feed: .012[inch/tooth]
Tool entry Feed: .0035[inch/tooth]

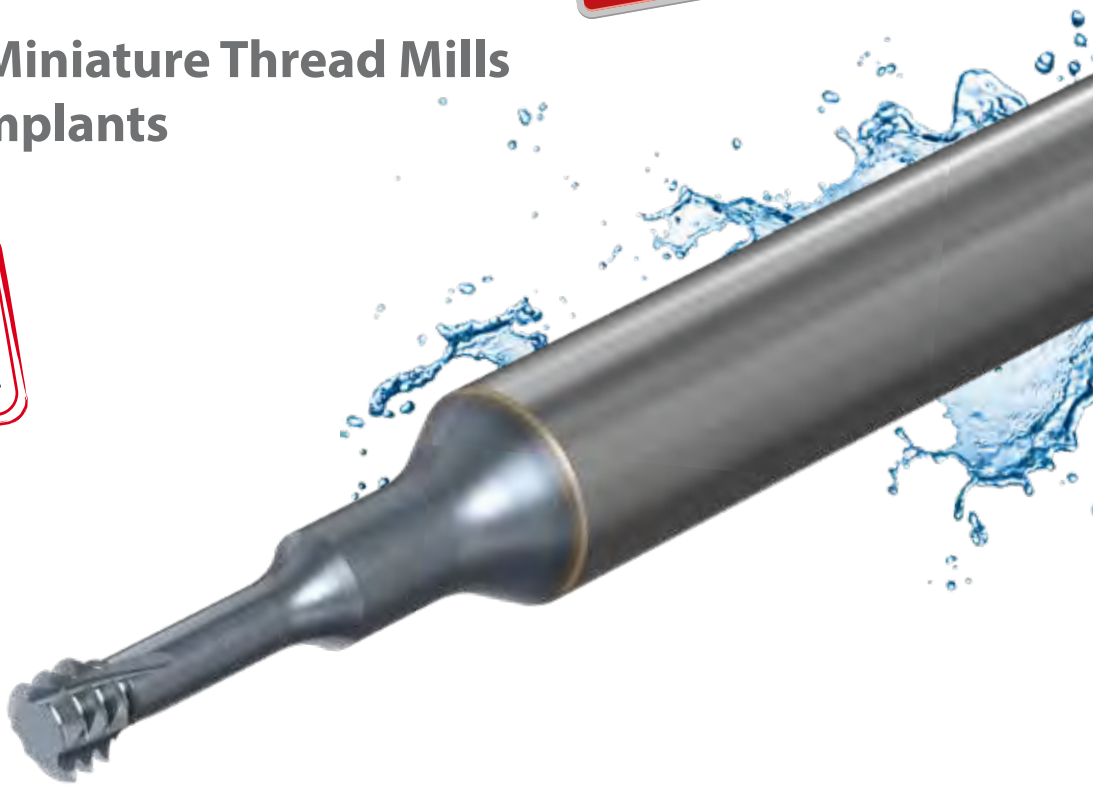


TM Solid MilliPro Dental

NEW

Reinforced Miniature Thread Mills for Dental Implants

VARGUS GENius™ Tool Selector and CNC Program Generator

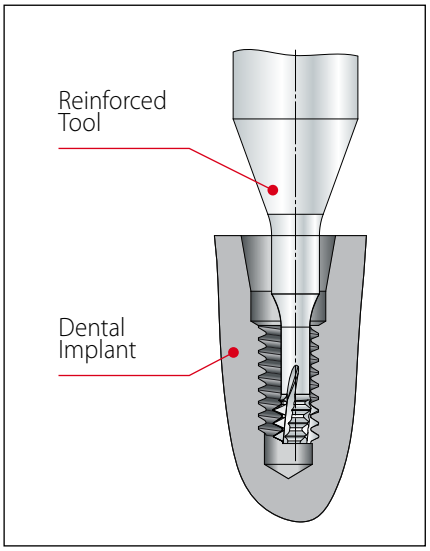


Features and Benefits:

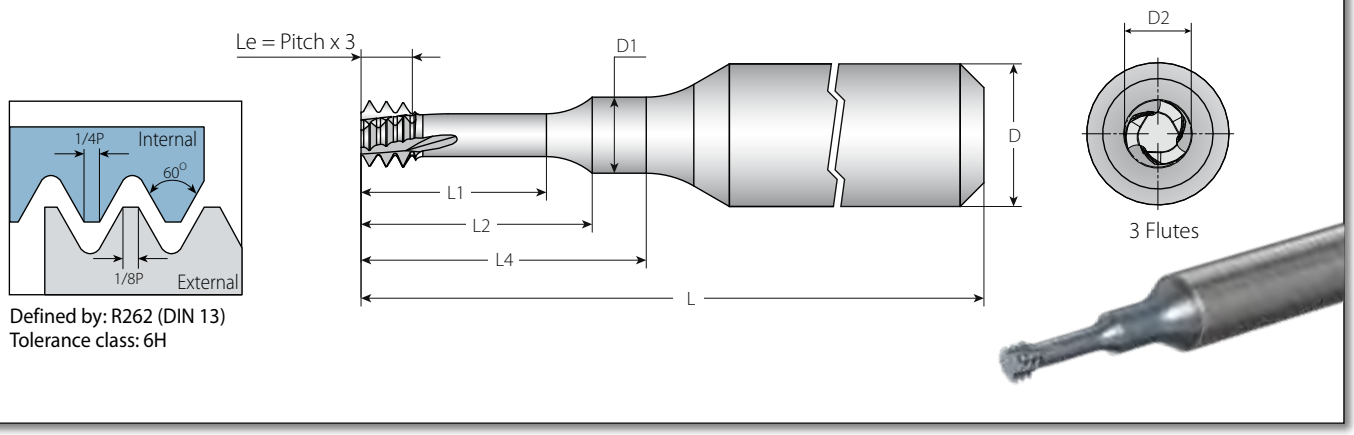
- Reinforced overhang for better stability
- Specifically designed for the dental implant industry
- Increased tool life
- Now with 3 flutes and 3 teeth
- Available in ISO Metric and American UN
- VTH Grade

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

Reinforced Overhang



ISO Metric



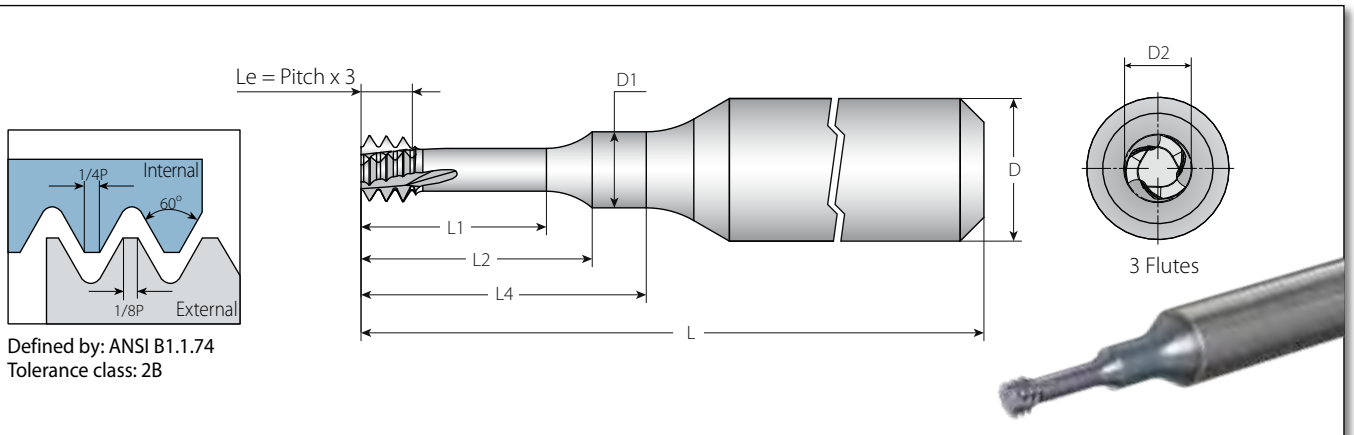
Defined by: R262 (DIN 13)
Tolerance class: 6H

Miniature Thread Mills for Dental Implants

3 x Do (L4≥3 x Thread Diameter)

Thread		Pitch	Ordering Code	EDP No.			Dimensions Inch					No. of Flutes	Teeth	Bore Dia.
M Coarse	M Fine	mm	Internal	VTH	D mm	D2	L	L1	L2	L4	D1	Z	Zt	Inch
M1.2x0.25	M1.4x0.25	0.25	DD3T03009L043-I0.25ISOTM...	80200		.035		.098	.130	.169	.037			.038
M1.4x0.30		0.3	DD3T03011L050-I0.30ISOTM...	80201		.041		.110	.138	.197	.041			.044
M1.6x0.35	M1.8x0.35	0.35	DD3T03012L058-I0.35ISOTM...	80203		.047		.130	.165	.232	.049			.050
M1.8x0.35	M2.0x0.35	0.35	DD3T03014L065-I0.35ISOTM...	80204	3	.055	1.535	.150	.185	.260	.057	3	3	.058
M2.0x0.4		0.4	DD3T03015L067-I0.40ISOTM...	80206		.061		.154	.193	.264	.067			.064
M2.5x0.45		0.45	DD3T03019L082-I0.45ISOTM...	80207		.077		.189	.228	.323	.079			.082

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	EDP No.			Dimensions Inch					No. of Flutes	Teeth	Bore Dia.
UNF	TPI	Internal	VTH	D mm	D2	L	L1	L2	L4	D1	Z	Zt	Inch
0-80UN	80	DD3T03011L052-I80UNTM...	80202		.046		.110	.142	.197	.045			.050
1-72UN	72	DD3T03014L065-I72UNTM...	80205	3	.057	1.535	.154	.193	.256	.063	3	3	.061

MilliPro Dental

Recommended Cutting Speeds Vc [ft/min] and Feed f [inch/tooth]

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [ft/min] VTH	Feed f [inch/tooth]
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	197-393	.0008-.0063
	2		Medium Carbon (C=0.25-0.55%)	150	197-393	.0008-.0063
	3		High Carbon (C=0.55-0.85%)	170	197-295	.0008-.0063
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	197-295	.0008-.0063
	5		Hardened	275	164-262	.0008-.0028
	6		Hardened	350	164-262	.0008-.0012
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	164-262	.0008-.0035
	8		Hardened	325	164-262	.0008-.0012
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	230-295	.0008-.0063
	10		High Alloy (alloying elements >5%)	225	197-262	.0008-.0012
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	197-295	.0008-.0063
	12		Hardened	330	164-262	.0008-.0012
	13	Stainless Steel Austenitic	Austenitic	180	197-295	.0008-.0063
	14		Super Austenitic	200	164-262	.0008-.0063
	15	Stainless Steel Cast Ferritic	Non Hardened	200	197-295	.0008-.0063
	16		Hardened	330	164-262	.0008-.0012
	17	Stainless Steel Cast Austenitic	Austenitic	200	197-295	.0008-.0063
	18		Hardened	330	164-262	.0008-.0012
K Cast Iron	28	Malleable Cast Iron	Ferritic (short chips)	130	164-262	.0008-.0012
	29		Pearlitic (long chips)	230	197-295	.0008-.0047
	30	Grey Cast Iron	Low Tensile Strength	180	230-328	.0008-.0063
	31		High Tensile Strength	260	197-295	.0008-.0047
	32	Nodular Sg Iron	Ferritic	160	230-328	.0008-.0063
	33		Pearlitic	260	197-295	.0008-.0047
N Non-Ferrous Metals	34	Aluminum Alloys Wrought	Non Aging	60	197-820	.0012-.0059
	35		Aged	100	197-492	.0012-.0063
	36	Aluminum Alloys	Cast	75	197-820	.0012-.0063
	37		Cast & Aged	90	197-492	.0008-.0063
	38	Aluminum Alloys	Cast Si 13-22%	130	820	.0012-.0059
	39	Copper and Copper Alloys	Brass	90	197-820	.0012-.0063
	40		Bronze And Non Leaded Copper	100	197-492	.0012-.0059
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	197	.0008-.0063
	20		Aged (iron based)	280	164	.0008-.0012
	21		Annealed (nickel or cobalt based)	250	115	.0008-.0012
	22		Aged (nickel or cobalt based)	350	98	.0008-.0012
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	98-164	.0008-.0028
	24		α+β Alloys	1050Rm	82-115	.0008-.0028
H Hardened Material	25	Extra Hard Steel	Hardened & Tempered	45-50HRc	148	-
	26			51-55HRc	98	-

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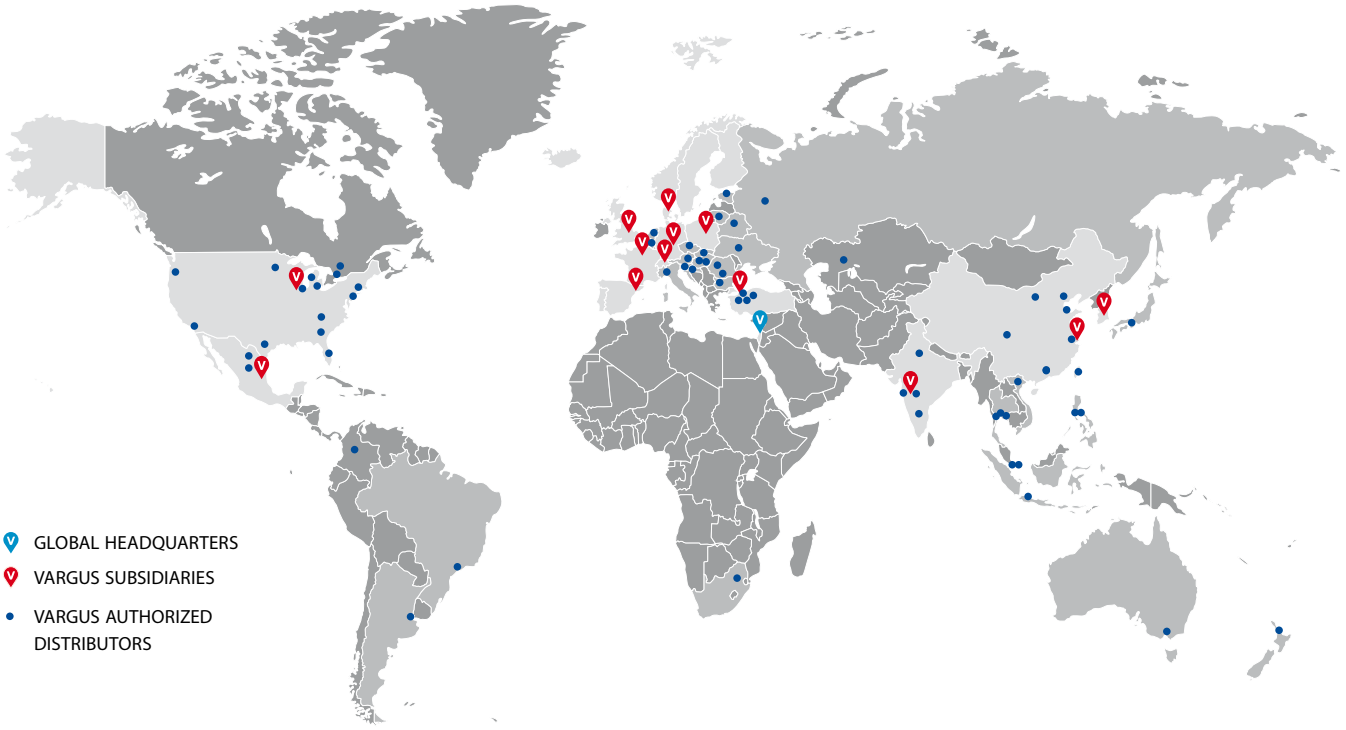

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