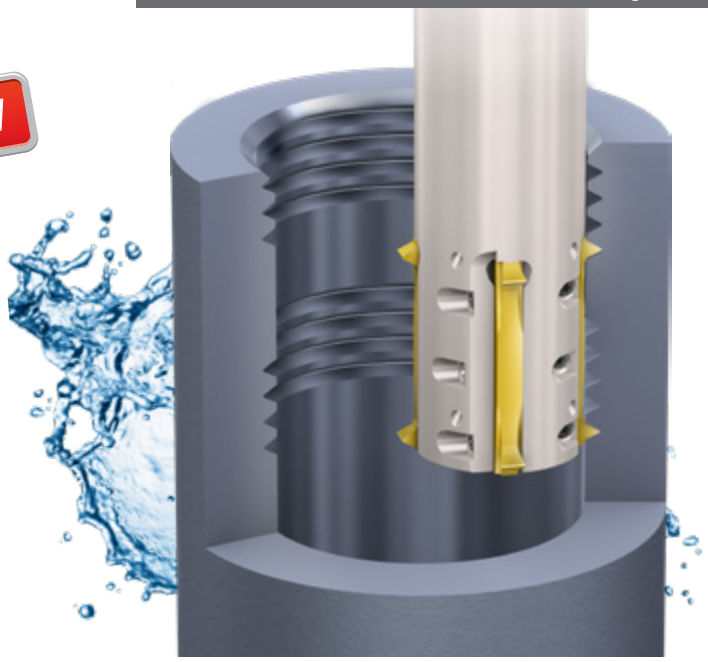
MiTM Offset

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

Ami Yacar
Vardex Product Manager

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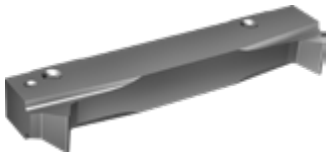
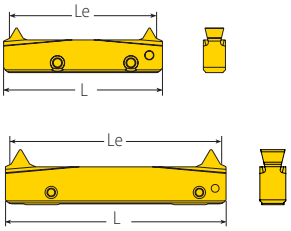
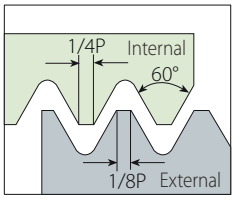
MiTM Offset Inserts

MiTM





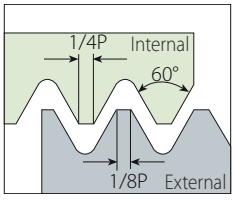
ISO Metric



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

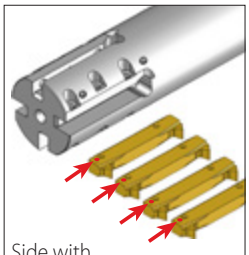


Defined by: ANSI B1.1:74
Tolerance class: 2A/2B

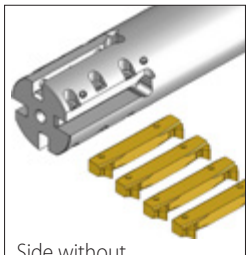
Insert Style	Pitch	Ordering Code	EDP No.		Cutting Edge		Teeth	Toolholder
L	TPI	Internal	VBX	VTX		Le	Zt	
25	8	R25I8UNTM-2…	81073	81074	2	.88	2	RTMOC...S; RTMC-D...S
41	7	R41I7UNTM-2…	81075	81076	2	1.57	2	RTMOC...B; RTMC-D...B
	6	R41I6UNTM-2…	81077	81078	2	1.50	2	
	5	R41I5UNTM-2…	81079	81080	2	1.40	2	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

Placing MiTM Offset Inserts Correctly

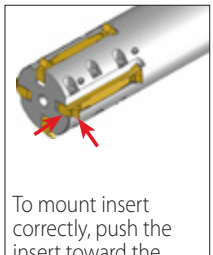
Always mount all inserts with the identification mark on the same side.
Process is applicable for steel cylindrical shanks and shell mill holders.



Side with identification marks



Side without identification marks

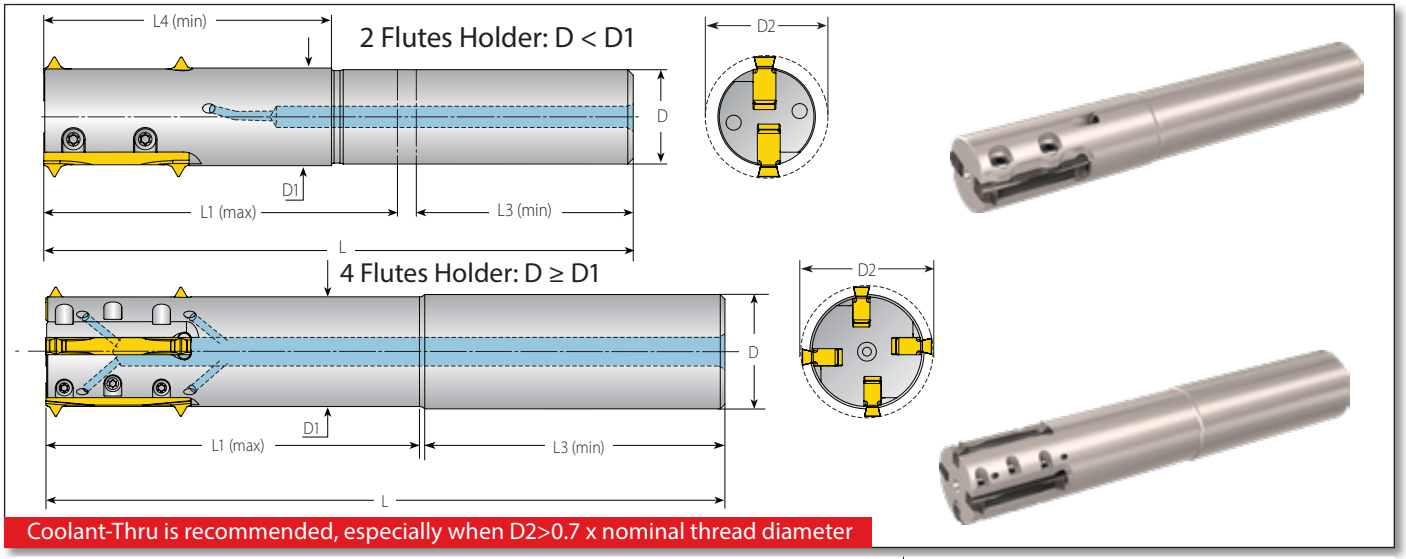


To mount insert correctly, push the insert toward the pocket walls.

Scroll down for complete details

Steel Cylindrical Shanks for MiTM Offset

MiTM



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

MiTM Offset RTMOC

Insert Style	Ordering Code	EDP No.	Dimensions Inch							No. of Flutes
	MiTM Offset		L	L1 (max)	L3 (min)	L4 (min)	D	D1	D2	Z
25	RTMOC0625C081-250S2	80610	4.31	2.50	1.73	1.81	.625	.65	.81	2
41	RTMOC075C102-295B2	80611	4.92	2.95	1.81	2.40	.750	.81	1.02	2
	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

Spare Parts

Location Screw x2 Max. Torque	Clamping Screw Max. Torque	Torx+ Screwdriver
SLD4IP8 (M4x0.7) 2.0 Nm (80533)	-	KIP8 (70231)
SLD4IP8A (M4x0.7) 2.0 Nm (80153)	SCD4IP8 (M4x0.7) 2.0 Nm (80622)	

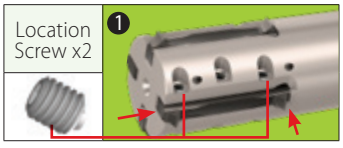
Thread Application for MiTM Offset Inserts with RTMOC Toolholders

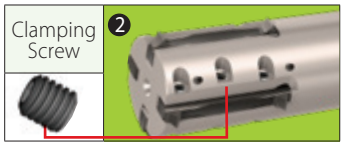
Insert Style	Toolholder		Min. Thread Dia.			
	MiTM Offset	D2 (Inch)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS
25	RTMOC0625C081-250S2	.81	M24x3	M30x3	1-8UNC	1 1/16-8UN
41	RTMOC075C102-295B2	1.02	M30x3.5; M36x4	M42x4	1 1/4-7UNC; 1 3/8-6UNC	1 7/16-6UN
	RTMOC100C121-369B4	1.21	M36x4	M36x3.5; M42x4	-	1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

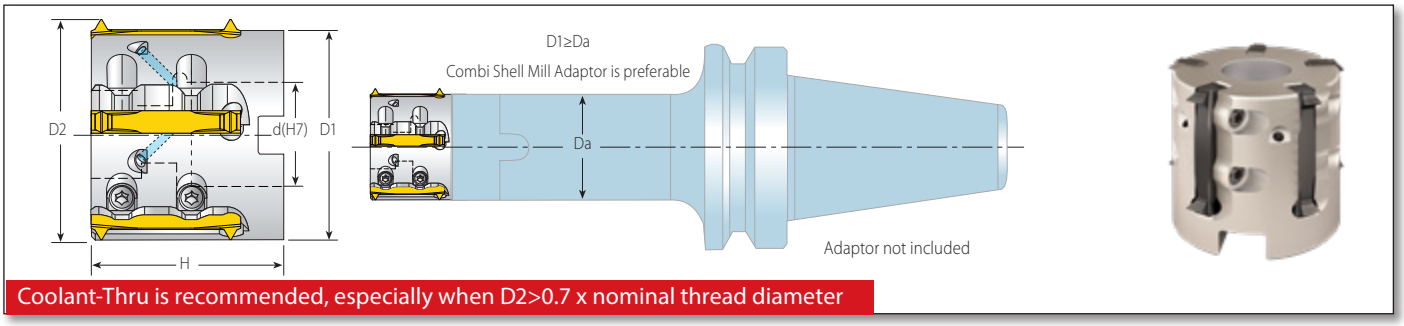




Scroll down for complete details

Shell Mill MiTM 25

MiTM



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

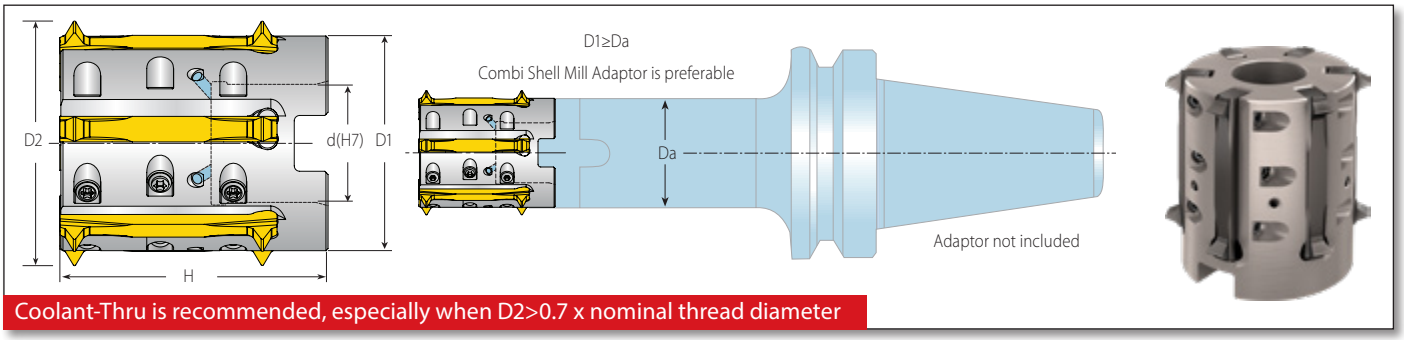
Standard Shell Mill

Insert Style	Ordering Code	EDP No.	Dimensions Inch				No. of Flutes
			D1	D2	d(H7)	H	Z
25	RTMC-D150-050-25S5	80569	1.38	1.54	.50	1.26	5
	RTMC-D190-075-25S7	80570	1.77	1.93	.75	1.38	7
	RTMC-D230-100-25S9	80571	2.17	2.32	1.00	1.58	9

Spare Parts

		
Location Screw x2 Max. Torque	Torx+ Screwdriver	Holder Screw
SLD4IP8 (M4x0.7) 2.0 Nm (80533)	KIP8 (70231)	1/4"-28x1.25 (70263) 3/8"-24x1.25 (70223) 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
			D1	D2	d(H7)	H	Z
41	RTMC-D209-075-41B5	80869	1.77	2.08	.175	2	5
	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

Spare Parts

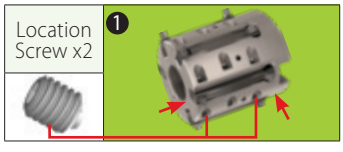
			
Location Screw x2 Max. Torque	Clamping Screw Max. Torque	Torx + Screwdriver	Holder Screw
SLD4IP8A (M4x0.7) 2.0 Nm (80153)	SCD4IP8 (M4x0.7) 2.0 Nm (80622)	KIP8 (70231)	3/8"-24x1.5 (70264) 1/2"-20x1.5 (70224)

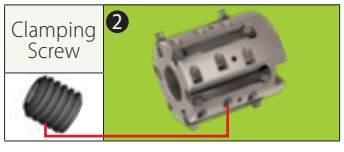
* New Shell Mill holder, also suitable with standard MiTM 41 inserts

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





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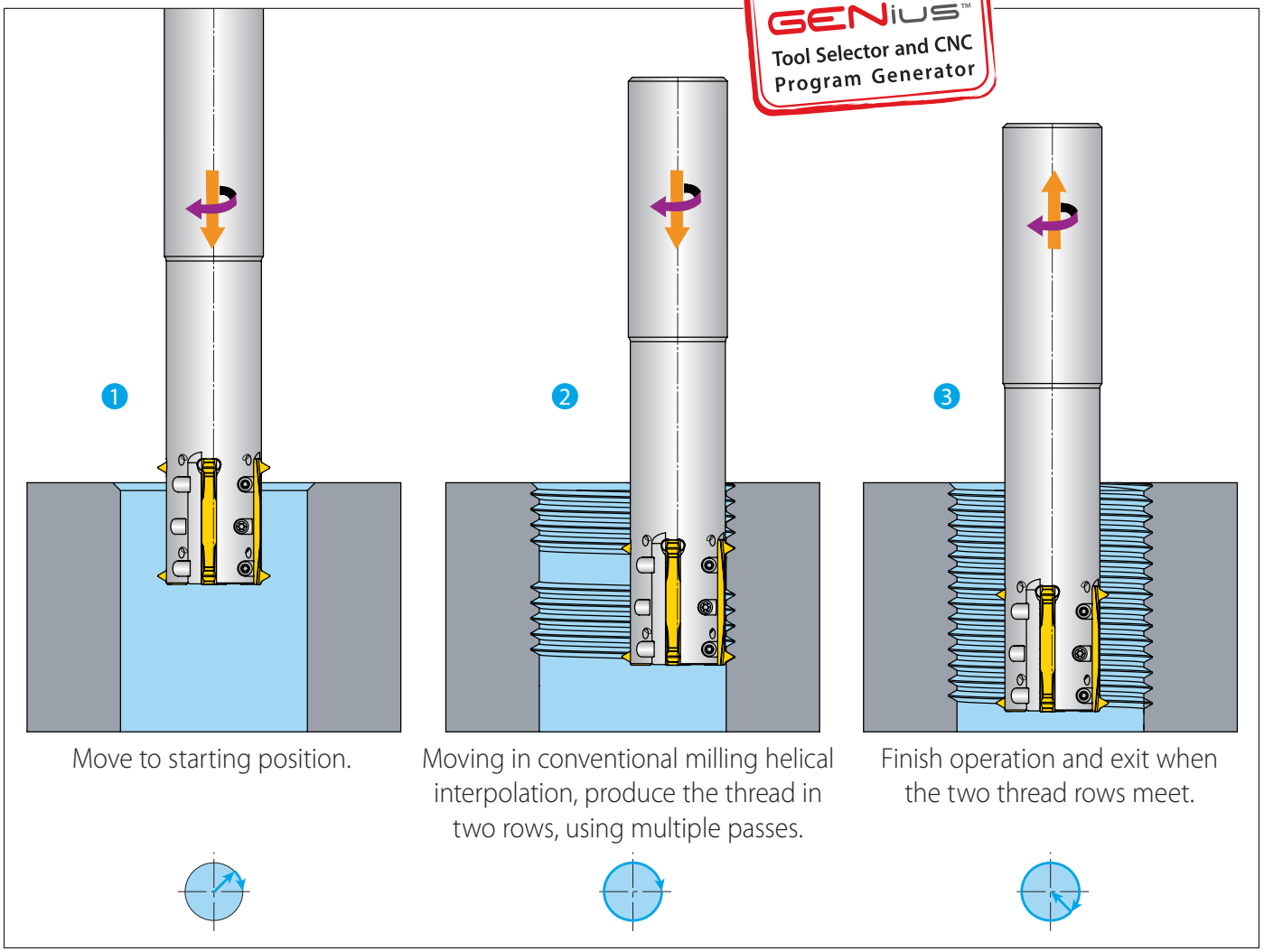
MiTM Offset - Operating Cycle

MiTM

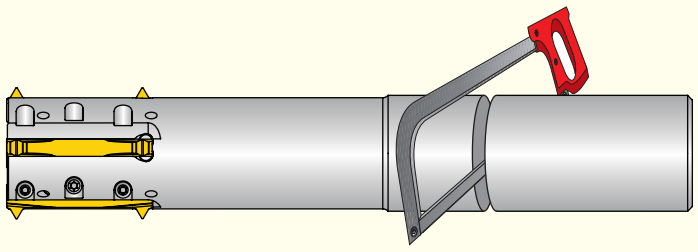
VARGUS GENius™ Tool Selector and CNC Program Generator



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

Grades

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

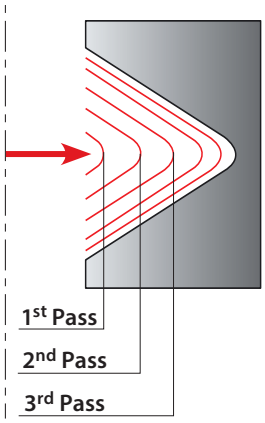


The length of all cylindrical shank toolholders can be modified to reduce chatter (vibration).
Note: The length of the shank inside the clamping device should be L3 at minimum.

Scroll down for complete details

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