



2017 Master Catalog

WIDIA  TM



Thread Mills



Our solid thread mills are designed to be the highest quality thread milling solution.

- Cut up to 63 HRC.
- Improved overall thread quality.

Optimized flute design
Better chip evacuation.

Carbide substrate
Higher heat resistance,
higher speed.

Various multilayer coatings
Extremely high wear resistance,
longer tool life.

Cylindrical h6 shank
Low runout, higher
quality threads.



Unmatched Capabilities

- Capable of easily cutting most difficult materials.
- Carbide grades make threading easier and reduce machining times.
- High-quality internal and external threading on 3-axis CNC machines.
- Thread mills make interrupted cuts and short chips.
- Design offers a range of benefits to improve overall thread quality.
- Short, easily evacuated chips generate less heat and friction, so there is a lower risk of damage to threading.

Choose WIDIA-GTD™ Thread Mills

- Greater versatility than competitive products.
- Optimum surface quality for an excellent end product.
- Designed to eliminate chipping issues.
- No need to reverse the spindle.
- Fewer machining problems means more production safety.



Victory™ GTM Series HP Solid Carbide Thread Mills • Metric

★ Good
★★ Better
★★★ Best

GTM Series Solid Thread Milling • Metric	series	size range (inch and metric)	hole	operation	coolant	grade	shank
		size min-max					
	GTM11	M3–M20				WU13PV	6535 HA
	GTM21	M5–M16				WU12PV	6535 HA
	GTM31	M4–M16				WU12PV	6535 HA
	GTM41	M6–M24				WU16PV	6535 HA
	GTM41LH	M6–M12				WU16PV	6535 HA

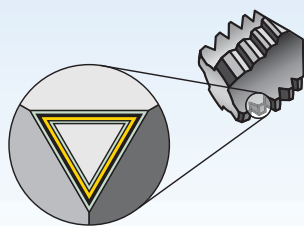
Victory GTM Series HP Solid Carbide Thread Mills • Inch

★ Good
★★ Better
★★★ Best

GTM Series Solid Thread Milling • Inch	series	size range (inch and metric)	hole	operation	coolant	grade	shank
		size min-max					
	GTM21	#10–5/8"				WU12PV	6535 HA
	GTM31	1/4–5/8"				WU12PV	6535 HA
	GTM41	1/4–3/4"				WU16PV	6535 HA

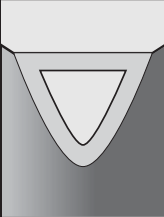
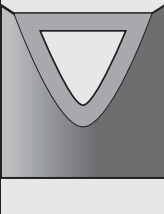
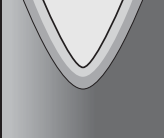
	P				M	K		N			S				H		page(s)	recommended cutting parameters
	1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
	Steel <35 HRC	Steel 36-48 HRC	PH and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★	★	★	★			W199	W208
	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★			W201	W208
						★★★★	★★★★	★★★★	★★★★	★★★★							W203	W209
	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★					★★★★	★★★★	W205	W210
											★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	W206	W210

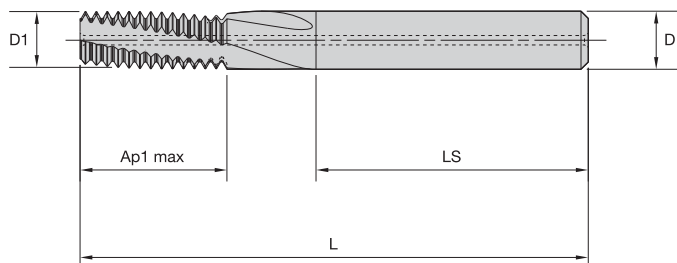
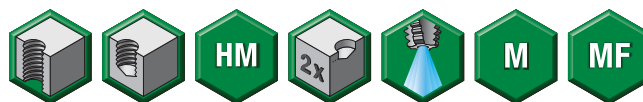
	P				M	K		N			S				H		page(s)	recommended cutting parameters
	1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
	Steel <35 HRC	Steel 36-48 HRC	PH and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★			W200	W207
						★★★★	★★★★	★★★★	★★★★	★★★★							W202	W208
	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★					★★★★	★★★★	W204	W209



Coatings are designed for optimized tapping performance in specific materials.

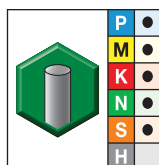
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

		wear resistance ← → toughness													
Coating		Grade Description													
Grade		Coated carbide. PVD fine-grain carbide substrate with high-hardness TiCN coating. Universal grade for thread milling most materials.	P												
			M												
			K												
			N												
			S												
		Coated carbide. PVD carbide substrate with heat-resistant TiAlN coating. Universal grade for thread milling most materials.	P												
			M												
			K												
			N												
			S												
		Coated carbide. PVD two-layer coating with heat-resistant TiAlN base layer and low-friction MoS ₂ top layer over carbide substrate. Use for thread milling most materials, including high-hardness materials.	P												
			M												
			K												
			N												
			S												
			H												



Shank Tolerance

D mm	tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-18	+0, -0,011
20-30	+0, -0,013


■ GTM11 • Through Coolant • Metric and Metric Fine

 grade WU13PV
 TiAlN

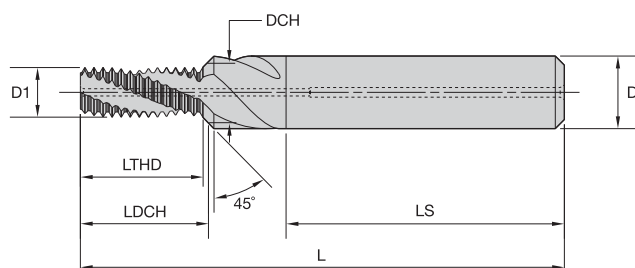
- first choice
- alternate choice

order #	catalog #	metric dimensions						cutting edges
		D1 size	D1	Ap1 max	L	LS	D	
4138391	GTM115001	M3X0.5	2,4	6	42	28	4,0	3
4138502	GTM115012	M4X0.5	3,4	8	55	36	6,0	3
4138392	GTM115002	M4X0.7	3,2	9	55	36	6,0	3
4138503	GTM115013	M5X0.5	4,3	10	55	36	6,0	3
4138493	GTM115003	M5X0.8	4,0	11	55	36	6,0	3
4138504	GTM115014	M6X0.75	5,0	12	55	36	6,0	3
4138494	GTM115004	M6X1	4,8	12	55	36	6,0	3
4138505	GTM115015	M8X0.75	5,9	17	63	36	6,0	3
4138506	GTM115016	M8X1	5,9	16	63	36	6,0	3
4138495	GTM115005	M8X1.25	5,9	17	63	36	6,0	3
4138507	GTM115017	M10X1	7,9	20	70	36	8,0	3
4138496	GTM115006	M10X1.5	7,9	20	70	36	8,0	3
4138508	GTM115018	M12X1	9,9	24	80	40	10,0	4
4138509	GTM115019	M12X1.5	9,9	25	80	40	10,0	4
4138497	GTM115007	M12X1.75	9,9	25	80	40	10,0	4
4138510	GTM115020	M14X1.5	9,9	29	80	40	10,0	4
4138498	GTM115008	M14X2	11,6	29	90	45	12,0	4
4138511	GTM115021	M16X1.5	11,9	32	90	45	12,0	4
4138499	GTM115009	M16X2	11,9	33	90	45	12,0	4
4138512	GTM115022	M18X1.5	13,9	37	90	45	14,0	4
4138500	GTM115010	M18X2.5	13,9	39	90	45	14,0	4
4138513	GTM115023	M20X1.5	13,9	41	90	45	14,0	4
4138501	GTM115011	M20X2.5	13,9	41	90	45	14,0	4

High-Performance Thread Mills

Victory™ Solid Carbide Thread Mills • Blind and Through Holes

WIDIA
GTD™

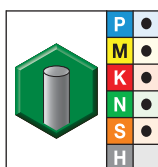


Shank Tolerance

D mm	tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-18	+0, -0,011
20-30	+0, -0,013

WIDIA
VICTORY

■ GTM21 • Through Coolant • Inch UNC and UNF



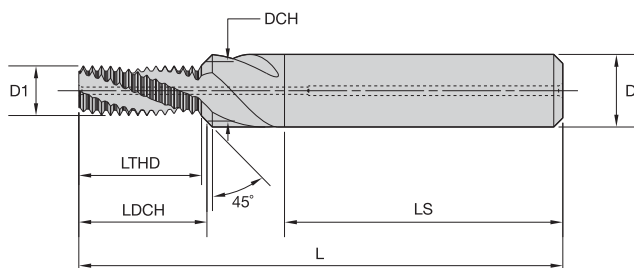
● first choice
○ alternate choice

grade WU12PV
TiCN

metric dimensions

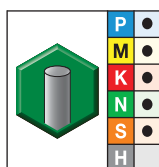
order #	catalog #	D1 TPI	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
4138537	GTM215024	#10-32	3,8	5,13	9,95	10,53	55	36	6,0	3
4138530	GTM215017	1/4-20	4,7	6,65	13,36	14,23	62	36	8,0	3
4138538	GTM215025	1/4-28	5,2	6,65	13,19	13,84	62	36	8,0	3
4138531	GTM215018	5/16-18	6,2	8,25	16,26	17,19	74	40	10,0	3
4138539	GTM215026	5/16-24	6,6	8,25	16,44	17,15	74	40	10,0	3
4138532	GTM215019	3/8-16	7,7	9,83	19,89	20,85	80	45	12,0	3
4138540	GTM215027	3/8-24	8,2	9,83	19,62	20,31	80	45	12,0	3
4138533	GTM215020	7/16-14	9,0	11,43	22,72	23,79	80	45	12,0	3
4138541	GTM215028	7/16-20	9,6	11,43	22,28	23,08	80	45	12,0	3
4138534	GTM215021	1/2-13	10,4	13,00	26,43	27,60	90	45	14,0	4
4138542	GTM215029	1/2-20	11,1	13,00	26,10	26,89	90	45	14,0	4
4138535	GTM215022	9/16-12	11,8	14,61	30,75	31,99	100	48	16,0	4
4138543	GTM215030	9/16-18	12,5	14,61	28,99	29,88	100	48	16,0	4
4138536	GTM215023	5/8-11	13,1	16,18	33,54	34,89	102	48	18,0	4
4138544	GTM215031	5/8-18	14,1	16,18	33,24	34,09	102	48	18,0	4

High-Performance Thread Mills



Shank Tolerance

D mm	tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-18	+0, -0,011
20-30	+0, -0,013


GTM21 • Through Coolant • Metric and Metric Fine

 grade WU12PV
 TiCN

● first choice

○ alternate choice

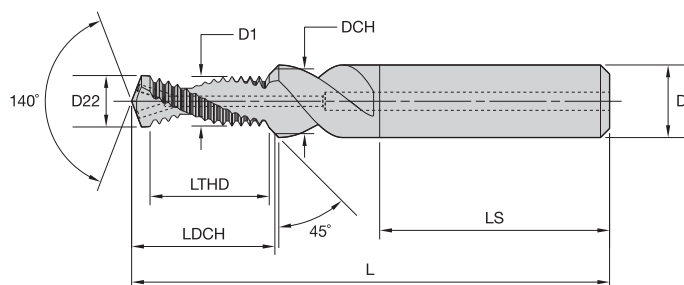
		metric dimensions								cutting edges
order #	catalog #	D1 size	D1	DCH	LTHD	LDCH	L	LS	D	
4138514	GTM215001	M5X0.8	4,0	5,30	10,82	11,40	55	36	6,0	3
4138521	GTM215008	M6X0.75	5,0	6,30	12,40	12,97	62	36	8,0	3
4138515	GTM215002	M6X1	4,8	6,30	12,52	13,19	62	36	8,0	3
4138522	GTM215009	M8X1	6,7	8,30	16,53	17,23	74	40	10,0	3
4138516	GTM215003	M8X1.25	6,5	8,30	16,91	17,71	74	40	10,0	3
4138523	GTM215010	M10X1	8,7	10,30	20,55	21,23	80	45	12,0	3
4138524	GTM215011	M10X1.25	8,4	10,30	20,67	21,50	80	45	12,0	3
4138517	GTM215004	M10X1.5	8,2	10,30	20,29	21,22	80	45	12,0	3
4138525	GTM215012	M12X1	10,6	12,30	24,56	25,27	90	45	14,0	4
4138526	GTM215013	M12X1.25	10,4	12,30	24,43	25,24	90	45	14,0	4
4138527	GTM215014	M12X1.5	10,1	12,30	24,80	25,76	90	45	14,0	4
4138518	GTM215005	M12X1.75	9,9	12,30	25,42	26,48	90	45	14,0	4
4138528	GTM215015	M14X1.5	12,1	14,30	29,31	30,25	100	48	16,0	4
4138519	GTM215006	M14X2	11,6	14,30	29,05	30,24	100	48	16,0	4
4138529	GTM215016	M16X1.5	14,0	16,30	32,31	33,30	102	48	18,0	4
4138520	GTM215007	M16X2	13,6	16,30	33,05	34,24	102	48	18,0	4

High-Performance Thread Mills

High-Performance Thread Mills

Victory™ Solid Carbide Thread Mills • Blind and Through Holes

WIDIA
GTD™

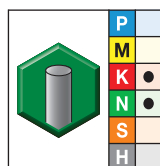


Shank Tolerance

D mm	tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-18	+0, -0,011
20-30	+0, -0,013

WIDIA
VICTORY

■ GTM31 • Through Coolant • Inch UNC and UNF

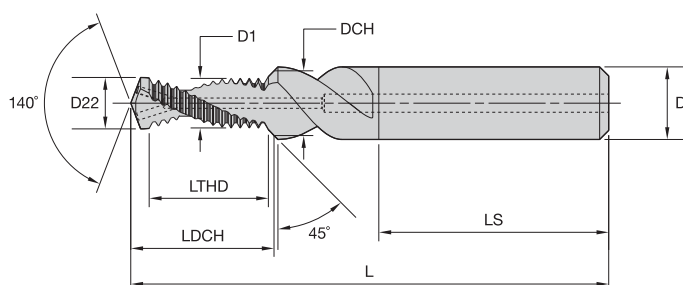


grade WU12PV
TiCN

- first choice
- alternate choice

order #	catalog #	metric dimensions									cutting edges
		D1 TPI	D1	D22	DCH	LTHD	LDCH	L	LS	D	
4138561	GTM315021	1/4-20	4,9	5,2	6,65	12,80	15,87	62	36	8,0	2
4138568	GTM315028	1/4-28	5,3	5,5	6,65	12,79	15,35	62	36	8,0	2
4138562	GTM315023	5/16-18	6,3	6,6	8,25	15,63	19,19	74	40	10,0	2
4138569	GTM315030	5/16-24	6,6	6,9	8,25	15,98	19,07	74	40	10,0	2
4138563	GTM315017	3/8-16	7,7	8,0	9,83	19,16	23,25	79	45	12,0	2
4138570	GTM315024	3/8-24	8,2	8,5	9,83	19,16	22,54	79	45	12,0	2
4138564	GTM315018	7/16-14	9,0	9,4	11,43	21,89	26,58	79	45	12,0	2
4138571	GTM315025	7/16-20	9,6	9,9	11,43	21,72	25,69	79	45	12,0	2
4138565	GTM315019	1/2-13	10,4	10,8	13,00	25,52	30,71	89	45	14,0	2
4138572	GTM315026	1/2-20	11,1	11,5	13,00	25,55	29,82	89	45	14,0	2
4138566	GTM315020	9/16-12	11,8	12,3	14,61	27,66	33,37	102	48	16,0	2
4138573	GTM315027	9/16-18	12,5	12,9	14,61	28,37	33,15	102	48	16,0	2
4138567	GTM315022	5/8-11	13,1	13,5	16,18	30,14	36,40	102	48	18,0	2
4138574	GTM315029	5/8-18	14,1	14,5	16,18	31,21	36,25	102	48	18,0	2

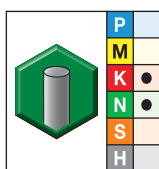
High-Performance Thread Mills



D mm	tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-18	+0, -0,011
20-30	+0, -0,013



■ GTM31 • Through Coolant • Metric and Metric Fine



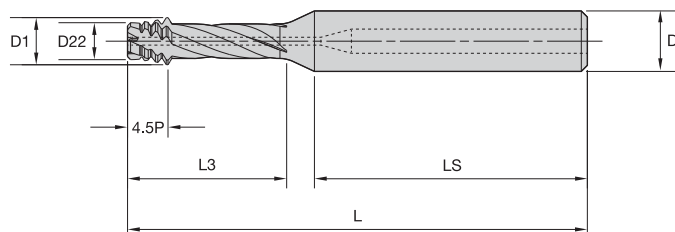
- first choice
- alternate choice

grade WU12PV TiCN		metric dimensions									cutting edges
order #	catalog #	D1 size	D1	D22	DCH	LTHD	LDCH	L	LS	D	
4138545	GTM315001	M4X0.7	3,2	3,3	4,30	7,74	9,59	49	36	6,0	2
4138546	GTM315002	M5X0.8	4,0	4,2	5,30	9,65	11,82	55	36	6,0	2
4138553	GTM315009	M6X0.75	5,1	5,3	6,30	12,07	14,37	62	36	8,0	2
4138547	GTM315003	M6X1	4,8	5,0	6,30	12,06	14,69	62	36	8,0	2
4138554	GTM315010	M8X1	6,8	7,0	8,30	16,09	19,10	74	40	10,0	2
4138548	GTM315004	M8X1.25	6,5	6,8	8,30	15,08	18,42	74	40	10,0	2
4138555	GTM315011	M10X1	8,7	9,0	10,30	20,11	23,52	79	45	12,0	2
4138556	GTM315012	M10X1.25	8,4	8,8	10,30	20,11	23,87	79	45	12,0	2
4138549	GTM315005	M10X1.5	8,2	8,5	10,30	19,59	23,65	79	45	12,0	2
4138557	GTM315013	M12X1.25	10,4	10,8	12,30	23,88	28,00	89	45	14,0	2
4138558	GTM315014	M12X1.5	10,2	10,5	12,30	24,12	28,57	89	45	14,0	2
4138550	GTM315006	M12X1.75	9,9	10,3	12,30	22,86	27,63	89	45	14,0	2
4138559	GTM315015	M14X1.5	12,1	12,5	14,30	27,14	31,98	102	48	16,0	2
4138551	GTM315007	M14X2	11,6	12,0	14,30	28,12	33,62	102	48	16,0	2
4138560	GTM315016	M16X1.5	14,1	14,5	16,30	31,65	36,87	102	48	18,0	2
4138552	GTM315008	M16X2	13,6	14,0	16,30	32,13	38,00	102	48	18,0	2

High-Performance Thread Mills

Victory™ Solid Carbide Thread Mills • Blind and Through Holes

WIDIA
GTD™

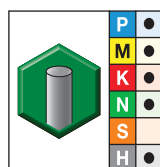


Shank Tolerance

D mm	tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-18	+0, -0,011
20-30	+0, -0,013

WIDIA
VICTORY

■ GTM41 • Through Coolant • Right Hand • Inch UNC and UNF



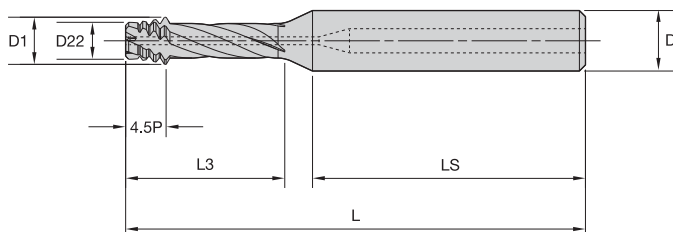
- first choice
- alternate choice

grade WU16PV
TiAlN+MoS₂

metric dimensions

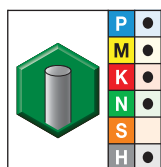
order #	catalog #	D1 TPI	D1	D22	L3	L	LS	D	cutting edges
4138610	GTM415025	1/4-20	4,64	3,34	17,00	60	36	8,0	3
4138617	GTM415033	1/4-28	4,66	3,62	17,00	60	36	8,0	3
4138611	GTM415026	5/16-18	5,64	4,12	21,90	76	40	10,0	4
4138618	GTM415034	5/16-24	5,64	4,48	21,90	76	40	10,0	4
4138612	GTM415027	3/8-16	7,16	5,42	26,30	76	40	10,0	4
4138619	GTM415035	3/8-24	7,14	6,00	26,30	76	40	10,0	4
4138613	GTM415028	7/16-14	8,47	6,49	31,00	86	45	12,0	4
4138620	GTM415036	7/16-20	8,45	7,06	33,00	86	45	12,0	4
4138606	GTM415029	1/2-13	10,08	7,95	33,40	86	45	12,0	4
4138615	GTM415037	1/2-20	8,45	7,06	33,00	86	45	12,0	4
4138614	GTM415030	9/16-12	11,28	8,98	41,00	98	48	16,0	4
4138621	GTM415038	9/16-18	11,27	9,72	41,00	98	48	16,0	4
4138607	GTM415031	5/8-11	12,89	10,40	42,00	98	48	16,0	4
4138616	GTM415039	5/8-18	12,38	10,83	42,00	98	48	16,0	4
4138608	GTM415032	3/4-10	15,50	12,77	51,30	111	50	20,0	5
4138609	GTM415040	3/4-16	15,38	13,65	51,30	111	50	20,0	5

High-Performance Thread Mills



Shank Tolerance

D mm	tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-18	+0, -0,011
20-30	+0, -0,013


■ GTM41 • Through Coolant • Right Hand • Metric and Metric Fine


● first choice

○ alternate choice

 grade WU16PV
 TiAlN+MoS₂

metric dimensions

 cutting
edges

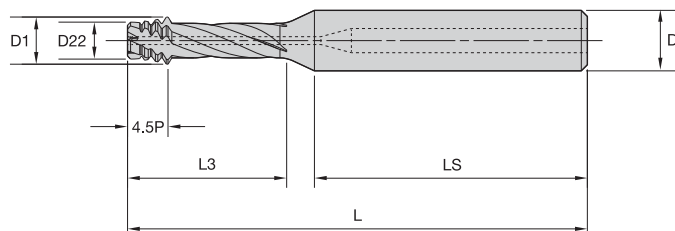
order #	catalog #	D1 size	D1	D22	L3	L	LS	D	cutting edges
4138576	GTM415001	M6X1	4,51	3,41	16,5	60	36	8,0	3
4138578	GTM415002	M7X1	4,51	3,41	16,5	60	36	8,0	3
4138592	GTM415014	M8X1	6,23	5,13	21,9	71	40	10,0	4
4138580	GTM415003	M8X1.25	6,23	4,91	21,9	71	40	10,0	4
4138593	GTM415015	M9X1	6,23	5,13	21,9	71	40	10,0	4
4138582	GTM415004	M9X1.25	6,23	4,91	21,9	71	40	10,0	4
4138594	GTM415016	M10X1	6,23	5,13	21,9	71	40	10,0	4
4138595	GTM415013	M10X1.25	6,23	4,91	21,9	71	40	10,0	4
4138584	GTM415005	M10X1.5	7,75	6,11	26,3	76	40	10,0	4
4138586	GTM415006	M11X1.5	7,75	6,11	26,3	76	40	10,0	4
4138596	GTM415017	M12X1	9,15	8,06	30,0	86	45	12,0	4
4138598	GTM415007	M12X1.5	7,75	6,11	26,3	76	40	10,0	4
4138587	GTM415008	M12X1.75	9,16	7,21	32,4	86	45	12,0	4
4138599	GTM415018	M14X1	9,15	8,06	30,0	86	45	12,0	4
4138600	GTM415019	M14X1.5	10,83	9,15	37,4	98	48	16,0	4
4138588	GTM415009	M14X2	11,08	8,91	41,0	98	48	16,0	4
4138601	GTM415020	M16X1.5	10,83	9,15	37,4	98	48	16,0	4
4138589	GTM415010	M16X2	11,08	8,91	41,0	98	48	16,0	4
4138602	GTM415021	M18X1.5	14,83	13,15	47,0	98	48	16,0	4
4138590	GTM415011	M18X2.5	14,38	11,71	51,3	111	50	20,0	5
4138603	GTM415022	M20X1.5	14,83	13,15	47,0	98	48	16,0	4
4138591	GTM415012	M20X2.5	14,38	11,71	51,3	111	50	20,0	5
4138604	GTM415023	M22X1.5	18,23	16,55	56,0	111	50	20,0	5
4138605	GTM415024	M24X1.5	18,23	16,55	56,0	111	50	20,0	5

High-Performance Thread Mills

High-Performance Thread Mills

Victory™ Solid Carbide Thread Mills • Blind and Through Holes

WIDIA
GTD™

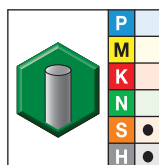


Shank Tolerance

D mm	tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-18	+0, -0,011
20-30	+0, -0,013

WIDIA
VICTORY

■ GTM41 • Through Coolant • Left Hand • Metric and Metric Fine



- first choice
- alternate choice

grade WU16PV
TiAlN+MoS₂

metric dimensions

order #	catalog #	D1 size	D1	D22	L3	L	LS	D	cutting edges
4138575	GTM415041	M6X1	4,51	3,41	16,5	60	36	8,0	3
4138577	GTM415042	M7X1	4,51	3,41	16,5	60	36	8,0	3
4138579	GTM415043	M8X1.25	6,23	4,91	21,9	71	40	10,0	4
4138581	GTM415044	M9X1.25	6,23	4,91	21,9	71	40	10,0	4
4138583	GTM415045	M10X1.5	7,75	6,11	26,3	76	40	10,0	4
4138585	GTM415046	M11X1.5	7,75	6,11	26,3	76	40	10,0	4
4138597	GTM415047	M12X1.5	9,17	7,21	32,4	86	45	12,0	4

High-Performance Thread Mills

■ GTM11 and GTM21 • Inch

Material Group		 Thread Mill GTM11						 Thread Mill • Chamfer GTM21					
		Cutting Speed – vc Range – SFM			Feed/Tooth by Diameter			Cutting Speed – vc Range – SFM			Feed/Tooth by Diameter		
		min	Starting Value	max		<.375	>.375	min	Starting Value	max		<.375	>.375
P	1	300	380	490	inch	.002	.003	460	610	790	inch	.002	.004
	2	300	380	490	inch	.002	.003	460	610	790	inch	.002	.004
	3	130	160	230	inch	.001	.001	230	300	390	inch	.001	.001
	4	–	–	–	–	–	–	230	300	390	inch	.001	.001
	5	200	260	330	inch	.002	.002	230	300	390	inch	.002	.003
	6	–	–	–	–	–	–	–	–	–	–	–	–
M	1	200	260	330	inch	.002	.002	230	300	390	inch	.002	.003
	2	200	260	330	inch	.002	.002	230	300	390	inch	.002	.003
	3	–	–	–	–	–	–	–	–	–	–	–	–
K	1	390	490	660	inch	.002	.004	430	560	720	inch	.002	.004
	2	390	490	660	inch	.002	.004	430	560	720	inch	.002	.004
	3	300	380	490	inch	.002	.003	360	460	590	inch	.002	.003
N	1	660	740	820	inch	.002	.002	890	980	1080	inch	.003	.006
	2	560	620	690	inch	.002	.002	520	570	620	inch	.003	.006
	3	820	900	980	inch	.003	.004	890	980	1080	inch	.003	.006
	4	820	900	980	inch	.003	.004	890	980	1080	inch	.003	.006
	5	890	980	1080	inch	.005	.005	820	900	980	inch	.004	.008
	6	560	620	690	inch	.002	.002	300	330	360	inch	.004	.008
S	1	200	260	330	inch	.002	.002	230	300	390	inch	.002	.003
	2	160	210	260	inch	.001	.002	160	200	260	inch	.001	.002
	3	160	210	260	inch	.001	.002	160	200	260	inch	.001	.002
	4	160	210	260	inch	.001	.002	160	200	260	inch	.001	.002

■ GTM11 and GTM21 • Metric

		 Thread Mill GTM11						 Thread Mill • Chamfer GTM21					
		Cutting Speed — vc Range — m/min			Feed/Tooth by Diameter			Cutting Speed — vc Range — m/min			Feed/Tooth by Diameter		
Material Group		min	Starting Value	max		<10mm	>10mm	min	Starting Value	max		<10mm	>10mm
P	1	90	115	150	mm	0,05	0,08	140	185	240	mm	0,06	0,10
	2	90	115	150	mm	0,05	0,08	140	185	240	mm	0,06	0,10
	3	40	50	70	mm	0,02	0,03	70	90	120	mm	0,03	0,04
	4	—	—	—	—	—	—	70	90	120	mm	0,03	0,04
	5	60	80	100	mm	0,04	0,06	70	90	120	mm	0,05	0,08
	6	—	—	—	—	—	—	—	—	—	—	—	—
M	1	60	80	100	mm	0,04	0,06	70	90	120	mm	0,05	0,08
	2	60	80	100	mm	0,04	0,06	70	90	120	mm	0,05	0,08
	3	—	—	—	—	—	—	—	—	—	—	—	—
K	1	120	150	200	mm	0,06	0,10	130	170	220	mm	0,06	0,11
	2	120	150	200	mm	0,06	0,10	130	170	220	mm	0,06	0,11
	3	90	115	150	mm	0,05	0,07	110	140	180	mm	0,05	0,07
N	1	200	225	250	mm	0,05	0,06	270	300	330	mm	0,08	0,16
	2	170	190	210	mm	0,04	0,05	160	175	190	mm	0,08	0,16
	3	250	275	300	mm	0,07	0,09	270	300	330	mm	0,08	0,16
	4	250	275	300	mm	0,07	0,09	270	300	330	mm	0,08	0,16
	5	270	300	330	mm	0,12	0,13	250	275	300	mm	0,11	0,20
	6	170	190	210	mm	0,05	0,06	90	100	110	mm	0,11	0,20
S	1	60	80	100	mm	0,04	0,06	70	90	120	mm	0,05	0,08
	2	50	65	80	mm	0,03	0,04	50	60	80	mm	0,03	0,05
	3	50	65	80	mm	0,03	0,04	50	60	80	mm	0,03	0,05
	4	50	65	80	mm	0,03	0,04	50	60	80	mm	0,03	0,05

■ GTM31 • Inch

		 Drill • Chamfer • Thread Mill GTM31										
		Cutting Speed — vc Range — SFM			Drilling Recommended Feed by Diameter			Milling Feed/Tooth by Diameter				
Material Group		min	Starting Value	max		<.250	.250-.375	.375-.625		<.250	.250-.375	.375-.625
K	1	430	570	750	IPR	.004	.006	.012	inch	.002	.003	.004
N	1	890	980	1080	IPR	.006	.010	.013	inch	.002	.003	.005
	2	460	490	560	IPR	.006	.010	.013	inch	.002	.003	.005
	4	890	980	1080	IPR	.006	.010	.013	inch	.002	.003	.005
	5	360	390	430	IPR	.005	.008	.013	inch	.002	.003	.005

■ GTM31 • Metric

Material Group		 Drill • Chamfer • Thread Mill GTM31										
		Cutting Speed – vc Range – m/min			Drilling			Milling				
					Recommended Feed by Diameter			Feed/Tooth by Diameter				
		min	Starting Value	max		<6mm	6–10mm	10–16mm		<6mm	6–10mm	10–16mm
K	1	130	175	230	mm/r	0,10	0,16	0,30	mm	0,05	0,07	0,10
	1	270	300	330	mm/r	0,15	0,25	0,34	mm	0,06	0,08	0,12
	2	140	150	170	mm/r	0,15	0,25	0,34	mm	0,06	0,08	0,12
	4	270	300	330	mm/r	0,15	0,25	0,34	mm	0,06	0,08	0,12
	5	110	120	130	mm/r	0,12	0,20	0,32	mm	0,06	0,08	0,12

NOTE: For thread depths over 2 x D up to 3 x D, reduce speed and feed by 25%.

■ Universal Thread Mills • GTM41 • Inch

Material Group		 Mill • Chamfer • Thread Mill GTM41							
		TM Style		Cutting Speed – vc Range – SFM			Feed/Tooth by Diameter		
				min	Starting Value	max		< .375	> .375
			Grade						
P	1	GTM41 R	KCU36	560	740	950	inch	.002	.003
	2	GTM41 R	KCU36	560	740	950	inch	.002	.003
	3	GTM41 R	KCU36	390	490	660	inch	.001	.002
	4	GTM41 R	KCU36	330	410	520	inch	.001	.002
	5	GTM41 R	KCU36	390	490	660	inch	.001	.002
	6	GTM41 R	KCU36	200	260	330	inch	.001	.002
M	1	GTM41 R	KCU36	390	490	660	inch	.001	.002
	2	GTM41 R	KCU36	390	490	660	inch	.001	.002
	3	GTM41 R	KCU36	390	490	660	inch	.001	.002
K	1	GTM41 R	KCU36	620	820	1080	inch	.002	.004
	2	GTM41 R	KCU36	620	820	1080	inch	.002	.004
	3	GTM41 R	KCU36	460	610	790	inch	.002	.003
N	1	–	–	–	–	–	–	–	–
	2	GTM41 R	KCU36	590	750	980	inch	.002	.003
	3	–	–	–	–	–	–	–	–
	4	GTM41 R	KCU36	690	900	1180	inch	.002	.003
	5	–	–	–	–	–	–	–	–
	6	GTM41 R	KCU36	690	900	1180	inch	.002	.003
S	1	GTM41 L	KCU36	390	490	660	inch	.001	.002
	2	GTM41 L	KCU36	160	200	260	inch	.001	.001
	3	GTM41 L	KCU36	160	200	260	inch	.001	.001
	4	GTM41 L	KCU36	230	300	390	inch	.001	.001
H	1	GTM41	KCU36	260	330	430	inch	.001	.002
	2	GTM41	KCU36	260	330	430	inch	.001	.002
	3	GTM41	KCU36	160	210	260	inch	.001	.001
	4	GTM41	KCU36	160	210	260	inch	.001	.001

NOTE: For thread depths over 2 x D up to 3 x D, reduce speed and feed by 25%.

■ Universal Thread Mills • GTM41 • Metric

Material Group		 Mill • Chamfer • Thread Mill GTM41							
		TM Style		Cutting Speed — vc Range — m/min			Feed/Tooth by Diameter		
				min	Starting Value	max		< 10mm	>10mm
P	1	GTM41 R	WU16PV	170	225	290	mm	0,05	0,08
	2	GTM41 R	WU16PV	170	225	290	mm	0,05	0,08
	3	GTM41 R	WU16PV	120	150	200	mm	0,03	0,05
	4	GTM41 R	WU16PV	100	125	160	mm	0,03	0,05
	5	GTM41 R	WU16PV	120	150	200	mm	0,03	0,04
	6	GTM41 R	WU16PV	60	80	100	mm	0,03	0,04
M	1	GTM41 R	WU16PV	120	150	200	mm	0,03	0,04
	2	GTM41 R	WU16PV	120	150	200	mm	0,03	0,04
	3	GTM41 R	WU16PV	120	150	200	mm	0,03	0,04
K	1	GTM41 R	WU16PV	190	250	330	mm	0,06	0,10
	2	GTM41 R	WU16PV	190	250	330	mm	0,06	0,10
	3	GTM41 R	WU16PV	140	185	240	mm	0,04	0,07
N	1	—	—	—	—	—	—	—	—
	2	GTM41 R	WU16PV	180	230	300	mm	0,06	0,07
	3	—	—	—	—	—	—	—	—
	4	GTM41 R	WU16PV	210	275	360	mm	0,06	0,07
	5	—	—	—	—	—	—	—	—
	6	GTM41 R	WU16PV	210	275	360	mm	0,06	0,07
S	1	GTM41 L	WU16PV	120	150	200	mm	0,025	0,045
	2	GTM41 L	WU16PV	50	60	80	mm	0,015	0,025
	3	GTM41 L	WU16PV	50	60	80	mm	0,015	0,025
	4	GTM41 L	WU16PV	70	90	120	mm	0,025	0,035
H	1	GTM41	WU16PV	80	100	130	mm	0,030	0,050
	2	GTM41	WU16PV	80	100	130	mm	0,030	0,050
	3	GTM41	WU16PV	50	65	80	mm	0,020	0,030
	4	GTM41	WU16PV	50	65	80	mm	0,020	0,030

NOTE: For thread depths over 2 x D up to 3 x D, reduce speed and feed by 25%.

Thread Milling Methods

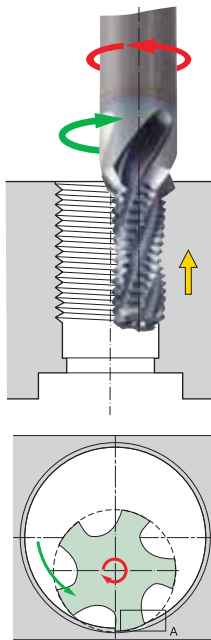
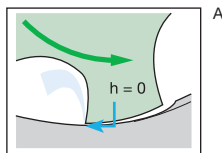
Climb Milling

Properties:

- Tool rotation direction clockwise
- Tool moves counterclockwise
- Pitch upwards

Right-hand thread

Climb milling is always when the cutting edge goes out of the material with a chip thickness $h = 0$



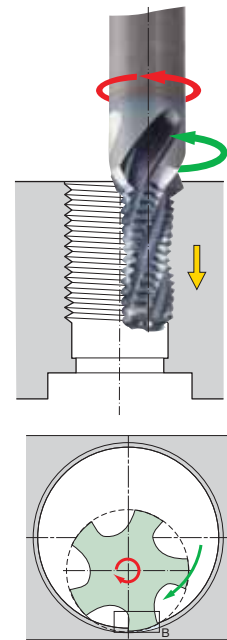
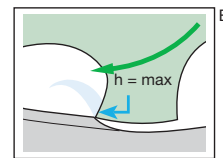
Conventional Milling

Properties:

- Tool rotation direction clockwise
- Tool moves clockwise
- Pitch downwards

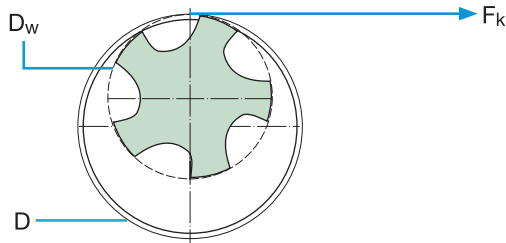
Right-hand thread

Conventional milling is always when the cutting edge goes out of the material with a chip thickness $h = \max$



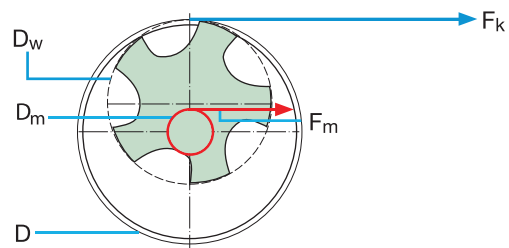
Counter Feed F_k

$$F_k = n \cdot f_z \cdot Z \text{ [mm/min]}$$

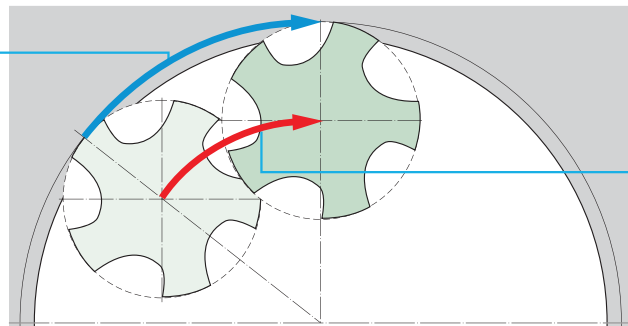


Center Point Feed F_m

$$F_m = \frac{F_k \cdot (D - D_w)}{D} \text{ [mm/min]}$$



Center Point Feed (F_m)



Counter Feed (F_k)

- D_w = Tool diameter [mm]
- n = RPM [min^{-1}]
- f_z = Feed per tooth [mm]
- Z = Number of teeth on tool (radial)
- D = Nominal diameter of thread = Diameter of external contour [mm]
- D_m = Diameter of the center point ($D - D_w$) [mm]

Thread Mill GTM21

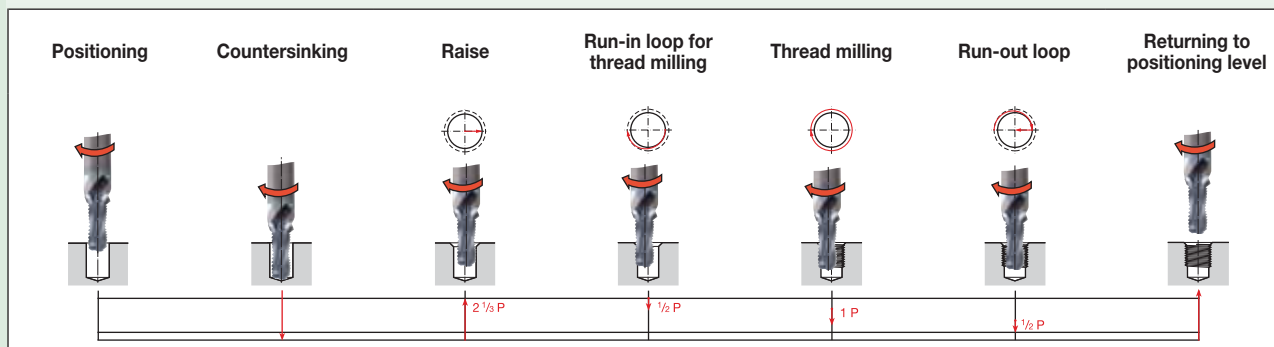
Preparation

Drilling of thread hole

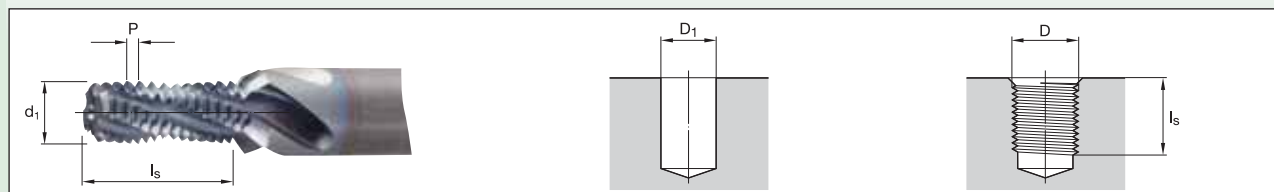
Process Principle

Countersinking, thread milling (conventional milling)

Cycle



Required Specification Values



Example

Size — M10-6H

Thread diameter D 10mm
Pitch 1,5mm
Core hole diameter D₁ 8,5mm

Material — Cast aluminum

Grade — WU12PV

Tool — GTM21

Catalog number GTM215004
Number of teeth Z 3
Tool diameter d₁ 8,2mm*
Tool radius compensation k¹ 0,1mm**
Tool radius to be programmed² 4mm***
Countersink depth l_s 21,2mm
Cutting speed v_c 250 m/min
Feed (countersinking) f_s 0,3 mm/U
Feed (milling) f_z 0,09 mm/tooth

*(measured on the cutting part)

** (0.01 x D)

*** (1/2 d₁ - k)

$$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi} \quad S = 9709$$

$$v_s = f_s \cdot n \quad F = 2913 \text{ (countersinking)}$$

$$v_f = f_z \cdot Z \cdot n \quad F = 2622 \text{ (contour)}$$

$$v_f = \frac{v_f \text{ contour} \cdot (D - d_1)}{D} \quad F = 472 \text{ (center point)}$$

Program to DIN 66025 (conventional milling, on the contour, incremental)

Positioning the tool	N 10 G 54 G 90 G 00 X... Y... Z 2 S 9709 T01 ² M03
Advancing tool to full thread depth	N 20 G 91 Z-21.200
Countersinking	N 30 G 01 Z-2 F 2913 (countersink)
Raise	N 40 G 00 Z 3.450
Moving sideways to the starting point	N 50 G 42 G01 X 4.250 F 1311 (milling, 1/2 contour) [F 236] ³ (milling, 1/2 center point)
Run-in loop in arc	N 60 G 02 X-9.25 Y 0.000 Z-0.750 I-4.625 J 0
Thread milling	N 70 G 02 X 0 Y 0 Z-1.500 I 5 J 0.000 F2622 [F 472] ³ (center point)
Run-out loop in arc	N 80 G 02 X 9.25 Y 0.000 Z-0.750 I 4.625 J 0
Exit	N 90 G 40 G 01 X-4.25
Retracting tool to positioning level	N 100 G 90 G 00 Z 2

Cutting time t_h

1.4 seconds

NOTES:

¹ The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).

² The cutter radius to be programmed is normally included in the tool memory.

³ The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.

Drill Thread Mill GTM41 • Right Hand

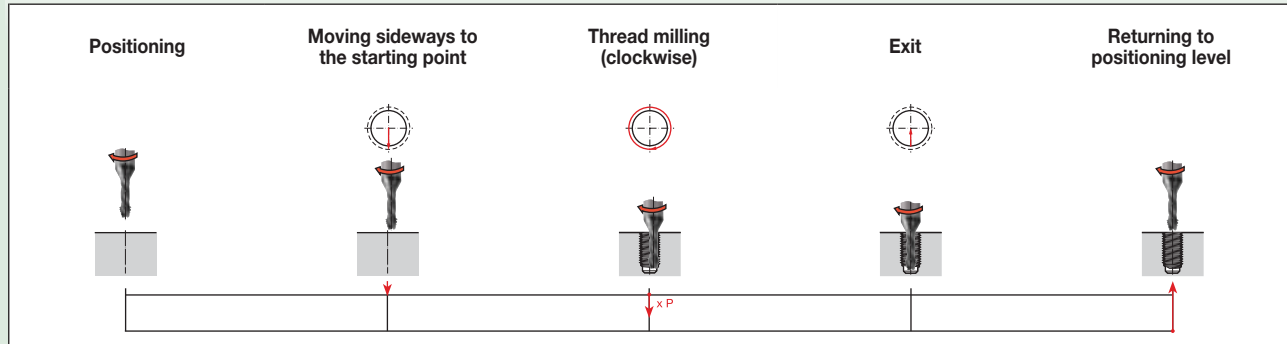
Preparation

None

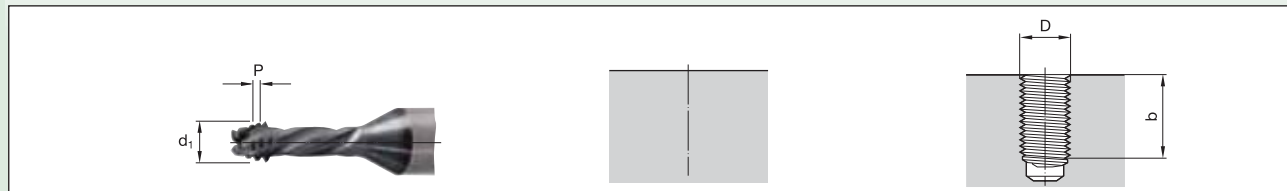
Process Principle

Milling thread and core hole, countersinking (conventional milling)

Cycle



Required Specification Values



Example

Size — M10-6H

Thread diameter D 10mm
Pitch 1,5mm
Core hole diameter D₁ 8,5mm

Material — Hard steel, 50 HRC

Grade — WU16PV

Tool — GTM41 Right Hand

Catalog number GTM415005
Number of teeth Z 4
Tool diameter d₁ 7,75mm*
Tool radius compensation k¹ 0,08mm**
Tool radius to be programmed² 3,795mm***
Thread depth b 20mm
Cutting speed v_c 100 m/min
Feed (milling) f_z 0,04 mm/tooth
Number of turns⁵ 17

$$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi} \quad S = 4109$$

$$v_f = f_z \cdot Z \cdot n \quad F = 657 \text{ (contour)}$$

$$N = \frac{v_f \text{ contour} \cdot (D - d_1)}{D} \quad F = 148 \text{ (center point)}$$

*(measured on the cutting part)

** (0.01 x D; adjust to application)

*** (1/2 d₁ - k)

Program to DIN 66025 (conventional milling, on the contour, incremental)

Positioning the tool	N 10 G 54 G 90 G 00 X... Y... Z 1.500 S 4109 T01 ² M03 ⁶
Incremental programming	N 20 G 91
Moving sideways to the starting point	N 30 G 42 G 01 X 0 Y-5 F 657 (contour) [F 148] ⁴ (center point)
Thread milling	N 40 G 02 X 0 Y 0 Z-1.500 I 0 J 5.000
Repeat thread milling	... ⁵
Exit	N 50 G 40 G 01 X 0 Y 5
Retracting tool to positioning level	N 70 G 90 G 00 Z 2

Cutting time t_h

51.6 seconds

NOTES:

¹ The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).

² The cutter radius to be programmed is normally included in the tool memory.

³ The thread depth b must be divisible by the thread pitch P.

⁴ The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.

⁵ Set N40 must be repeated with the number of threads. Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

Drill Thread Mill GTM41 • Left Hand

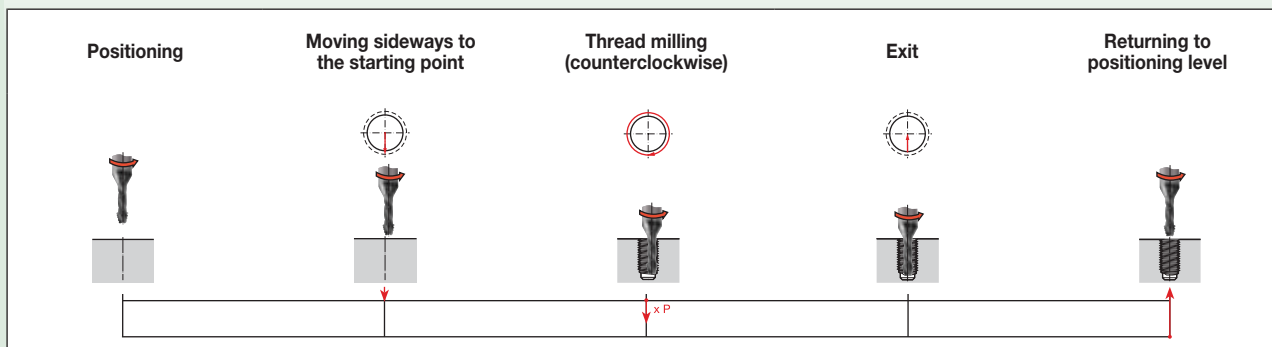
Preparation

None

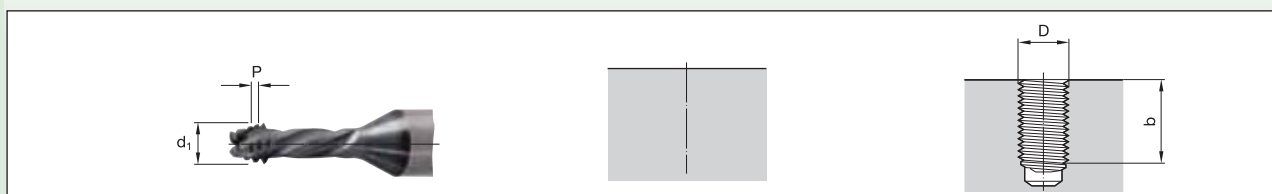
Process Principle

Milling thread and core hole, countersinking (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H Thread diameter D 10mm Pitch 1,5mm Core hole diameter D_1 8,5mm Material — TiAl6V4 titanium Grade — WU16PV	Tool — GTM41 Left Hand Catalog number GTM415005 Number of teeth Z 4 Tool diameter d_1 7,75mm* Tool radius compensation k_1^1 0,08mm** Tool radius to be programmed ² 3,795mm*** Thread depth b 20mm Cutting speed v_c 100 m/min Feed (milling) f_z 0,03 mm/tooth Number of turns ⁵ 17	$N = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \quad S = 4109$ $v_f = f_z \cdot Z \cdot n \quad F = 493 \text{ (contour)}$ $N = \frac{v_f \text{ contour} \cdot (D - d_1)}{D} \quad F = 111 \text{ (center point)}$
*(measured on the cutting part)	**(0.01 x D)	***($1/2 d_1 - k$)

Program to DIN 66025 (climb milling, on the contour, incremental)

Positioning the tool	N 10 G 54 G 90 G 00 X... Y... Z 1.500 S 4109 T01 ² M04
Incremental programming	N 20 G 91
Moving sideways to the starting point	N 30 G 42 G 01 X 0 Y-5 F 493 (contour) [F 111] ⁴ (center point)
Thread milling	N 40 G 02 X 0 Y 0 Z-1.500 I 0 J 5.000
Repeat thread milling	... ⁵
Exit	N 50 G 40 G 01 X 0 Y 5
Retracting tool to positioning level	N 70 G 90 G 00 Z 2

Cutting time t_h

68.8 seconds

NOTES:

- The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
- The cutter radius to be programmed is normally included in the tool memory.
- The thread depth b must be divisible by the thread pitch P .
- The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.
- Set N40 must be repeated with the number of threads. Repetitions N = thread depth b /pitch P (rounded up to the nearest integer).

Drill Thread Mill GTM31

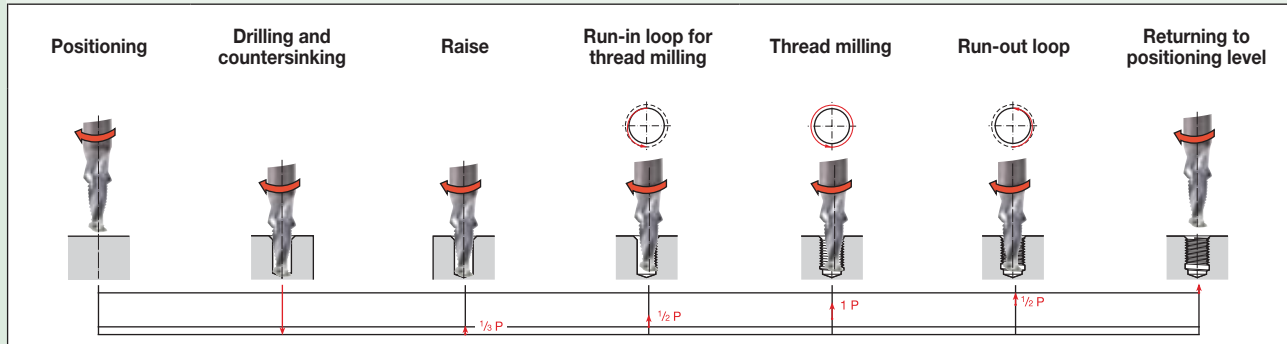
Preparation

Drilling of thread hole

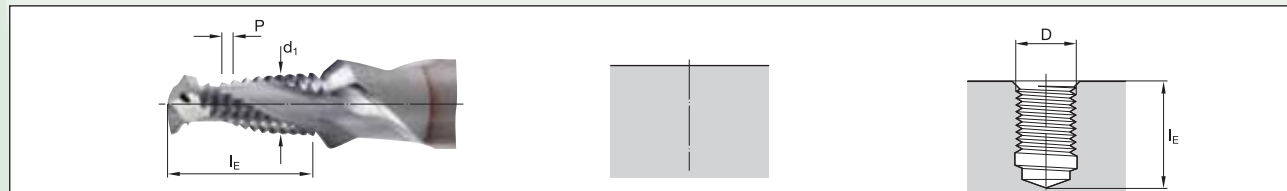
Process Principle

Drilling, countersinking, thread milling (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H	Tool — GTM31
Thread diameter D 10mm	Catalog number GTM315005
Pitch 1,5mm	Number of teeth Z 2
Core hole diameter D ₁ 8,5mm	Tool diameter d ₁ 8,2mm*
Material — Gray cast iron	Tool radius compensation k ¹ 0,1mm**
Grade — WU12PV	Tool radius to be programmed ² 4mm***
	Countersink depth I _S 19,11mm
	Cutting speed v _C 250 m/min
	Feed (countersinking) f _S 0,25 mm/U
	Feed (milling) f _Z 0,1 mm/tooth

*(measured on the cutting part)

** (0.01 x D)

*** (1/2 d₁ - k)

$$N = \frac{V_C \cdot 1000}{d_1 \cdot \pi} \quad S = 9709$$

$$v_S = f_S \cdot n \quad F = 2427 \text{ (drilling, countersinking)}$$

$$v_f = f_Z \cdot Z \cdot n \quad F = 1942 \text{ (contour)}$$

$$v_f = \frac{v_f \text{ contour} \cdot (D - d_1)}{D} \quad F = 350 \text{ (center point)}$$

Program to DIN 66025 (climb milling, on the contour, incremental)

Positioning the tool	N 10	G 54	G 90	G 00	X...	Y...	Z 2	S 9709	T01 ²	M03
Drilling and countersinking	N 20	G 91	G 01	Z-21.110	F 2427	(drill, countersink)				
Raise	N 30	G 01	Z 0.500							
Moving sideways to the starting point	N 40	G 41	Y-4.250	F 971	(milling, 1/2 contour)		[F 175] ³	(1/2 center point)		
Run-in loop in arc	N 50	G 03	X 0	Y 9.250	Z 0.750	I 0	J 4.625			
Thread milling	N 60	G 03	X 0	Y 0	Z 1.500	I 0	J -5.000			
Run-out loop in arc	N 70	G 03	X 0	Y-9.250	Z 0.750	I 0	J- 4.625	F1942	[F 350] ³	(center point)
Exit	N 80	G 00	G 40	X 0	Y 4.250					
Retracting tool to positioning level	N 90	G 90	Z 2							

Cutting time t_h

2.3 seconds

NOTES:

¹ The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).

² The cutter radius to be programmed is normally included in the tool memory.

³ The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.