

Drill Thread Mill GTM31

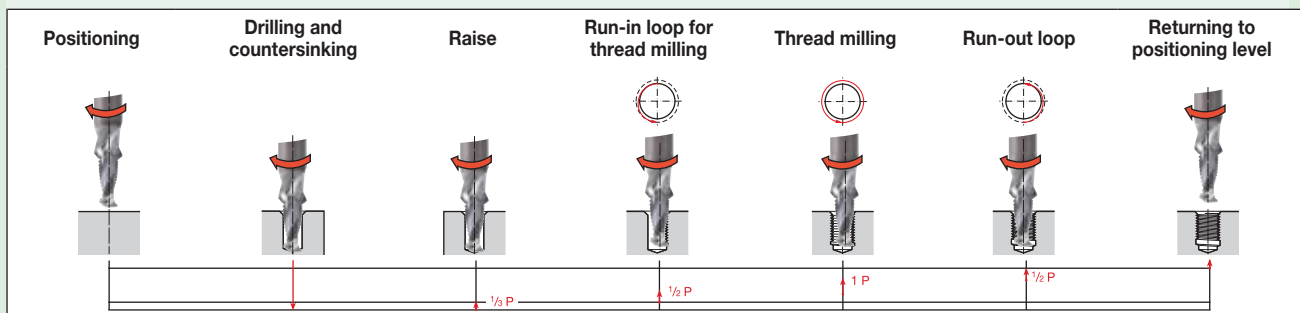
Preparation

Drilling of thread hole

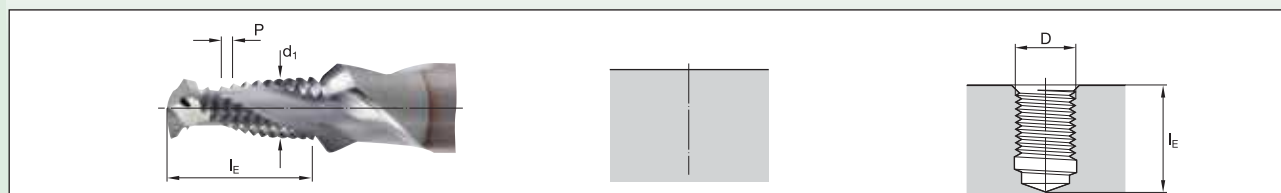
Process Principle

Drilling, countersinking, thread milling (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H

Thread diameter D 10mm
 Pitch 1,5mm
 Core hole diameter d_1 8,5mm

Material — Grey cast iron

Grade — WU12PV

Tool — GTM31

Catalogue number GTM315005
 Number of teeth Z 2
 Tool diameter d_1 8,2mm*
 Tool radius compensation k^1 0,1mm**
 Tool radius to be programmed² 4mm***
 Countersink depth l_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)

***($1/2 d_1 - k$)

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

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

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

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

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 centre 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 (centre 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 centre point feed themselves.