

Drill Thread Mill GTM41 • Left Hand

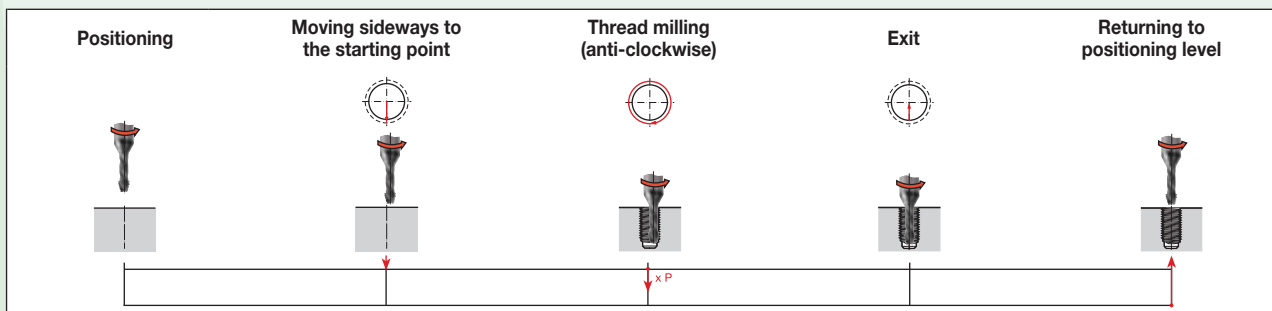
Preparation

None

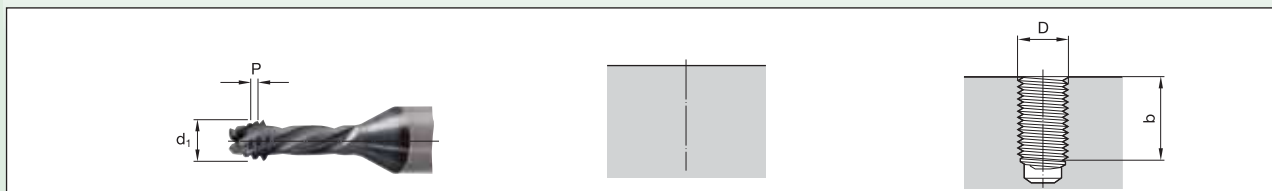
Process Principle

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 D₁ 8,5mm

Material — TiAl6V4 titanium

Grade — WU16PV

Tool — GTM41 Left Hand

Catalogue 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 0,03 mm/tooth
 Number of turns⁵ 17

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

$$v_f = f_z \cdot Z \cdot n \quad F = \frac{493}{(\text{contour})}$$

$$N = \frac{v_f \text{ contour} \cdot (D - d_1)}{D} \quad F = 111 \quad (\text{centre point})$$

*(measured on the cutting part)

**(0.01 x D)

***((1/2 d₁ - 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	(centre 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:

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 centre 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).