Parameters for metric thread tools

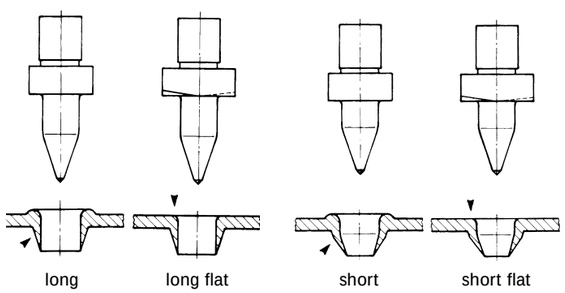
Thread size	Flowdrill Diameter mm	Flowdrill RPM	Motor capacity kW.	Production time sec.	Flowtap RPM
M 2	1.8	3200	0.5	2	1600
M 3	2.7	3000	0.6	2	1350
M 4	3.7	2600	0.7	2	1000
M 5	4.5	2500	0.8	2	800
M 6	5.3/5.4	2400	1.0	2	650
M 8	7.3	2200	1.3	2	500
M 10	9.2	2000	1.5	3	400
M 12	10.9	1800	1.7	3	330
M 16	14.8	1400	2.2	4	250
M 20	18.7	1200	2.7	5	200

Thread size BSP

Thread size	Flowdrill Diameter mm	Flowdrill RPM	Motor capacity kW.	Production time sec.	Flowtap RPM
1/8”	9.2	2000	1.5	3	400
1/4”	12.4	1600	2.0	3	360
3/8”	15.9	1400	2.3	4	300
1/2”	19.9	1200	3.0	5	270
3/4”	25.4	1000	3.5	6	200

Notes:
- The above table indicates the production time for 2 mm thick mild steel.
- For thicker material add 1 second production time/mm.
- Stainless steel requires a 0.1 mm larger diameter Flowdrill. Speed needs to be reduced by 15%.
- For Aluminium and other non-ferrous materials the speed needs to be increased by about 15–20 %.
- Parameters for CNC-machine centres are available on request.

Standard FLOWDRILL® types:



We will be pleased to send you detailed information and to discuss your particular application requirements.

Flowdrill
Fließformwerkzeuge GmbH
Germany
Tel.: 0049 6201 29091 0
Fax: 0049 6201 29091 15
www.flowdrill-gmbh.de

Flowdrill (UK) Ltd.
United Kingdom
Tel.: 0044 1634 309422
Fax: 0044 1634 303306

Flowdrill B.V.
Netherlands
Tel.: 0031 30 241 6606
Fax: 0031 30 241 3860
www.flowdrill.nl

Flowdrill Inc.
USA
Tel.: 001 314 968 1134
Fax: 001 314 968 1510
www.flowdrill.com

Flowdrill®

THERMAL FRICTION DRILLING

… AN EASY DECISION WITH THE FLOWDRILL®-SYSTEM

FLOWDRILL®

Thermal Friction Drilling

For Professionals that look for the highest quality in their products, the Flowdrill® system provides a cost saving and problem solving production method for the formation of bushes in malleable metals.

The Flowdrill® Thermal Friction Drill produces perfectly formed bushes using a combination of speed of rotation and pressure to locally heat the material, forming a bush in various thickness of metal.

Advantages of the Flowdrill® system:
- Consistently accurate hole sizes.
- Bush length approximately 3 times the original thickness.
- Short cycle time, of between 2 and 6 seconds, depending on the diameter and thickness of material.

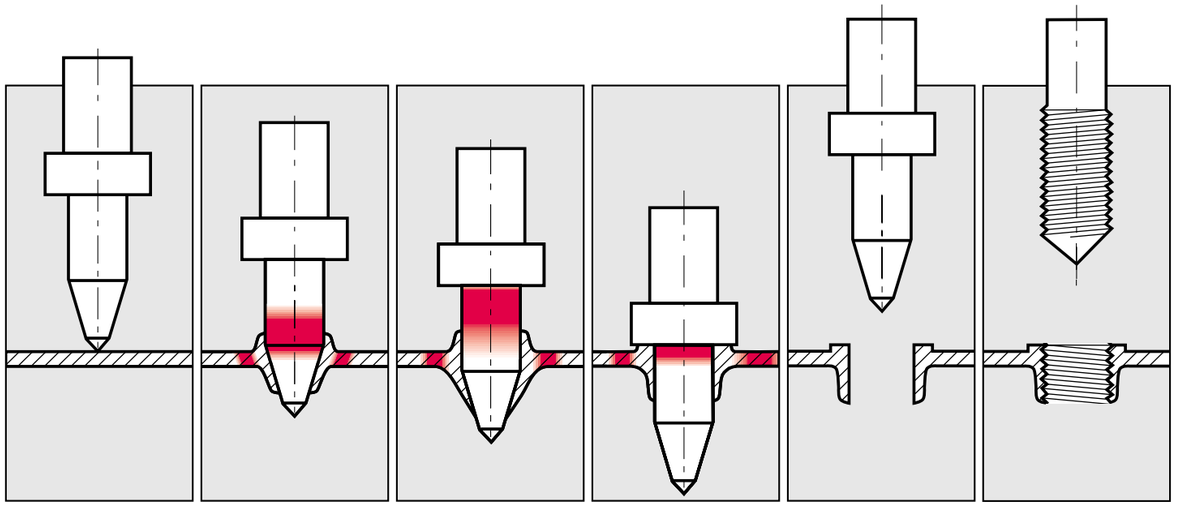
The formed bushes are suitable for:
- Tapping to give deep threads with high pullout strength and torque loading.
- As a sleeve bearing.
- As a location for a brazed connection.

Machines suitable for the Flowdrill® system, range from standard drillpresses to NC/CNC automated machine centres, with motor capacities between 1.5kW and 3.0kW and speeds from 1000 RPM to 3500 RPM.

Friction drilling is suitable for a wide range of materials including Mild Steel, Stainless Steel, Copper, Brass and Aluminium.

Flowdrill® tools are available in sizes from 1.5mm Ø up to 46mm Ø; special sizes are available on request.

The use of FDKS Flowdrill® paste or liquid lubricant will optimize tool life.

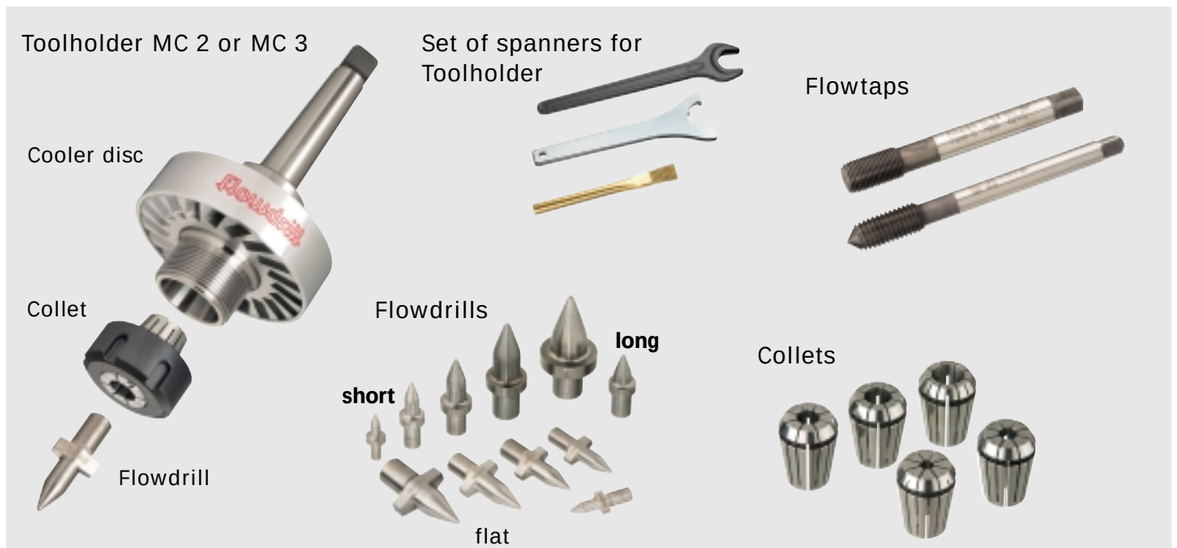


Thermal Drilling Technique

When the Flowdrill® comes into contact with the material, using relatively high axial pressure and RPM, frictional heat is created, allowing penetration and reforming of the displaced material in a few seconds. Initially, displaced material forms a collar on the upper side of the work piece. As the tool advances axial force decreases and feed rate increases allowing the remaining material to be reformed into a bush on the underside of the work piece. The diameter of the bush is determined by the cylindrical part of the Flowdrill® tool.

Where a flush finish, on the upper surface, is required, a Flat type Flowdrill® tool is used, this incorporates a cutting edge to remove the collar.

Flowtap cold-formed thread is a secondary operation, creating a [chip free] thread in the bush, comparable in strength to a weld nut.



FLOWTAP

Cold-form tapping system.

HSS-E Cold-form taps produce threads without chips.

Flowtap compliments the friction drilling process to increase the depth of threads formed in thin metal.

Advantages of cold-form tapping in conjunction with friction drilling, over thread cutting are:
- Increased pull out strength of the formed thread as the process reforms the material in the bush, without cutting into the natural grain structure of the metal.
- Precise formation of the thread within the bush.
- Increased productivity, through high speed and long tool life.
- Chip free process, therefore no waste to remove.
- Suitable for most tapping machines.
- Suitable for all materials that can be friction drilled.

A good lubricant decreases the process temperature, increases the tool life and helps to form a perfect thread. We recommend the FTMZ Flowdrill lubricant.

Cross section of a bush and thread formed by Flowdrill and Flowtap