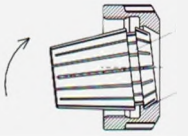
Setup instruction for Flowdrill

1. Assembling: tool holder and Flowdrill

Place cooling disc tool holder into the spindle. Be sure it is fixed properly.



indent on top section of the collet

concentric ring inside the collet

Press and turn the collet into the nut. Be sure it snaps into the concentric ring and does not fall off.
Place it together into the tool holder.

Push Flowdrill shaft inside the collet all the way up.

Tighten the Flowdrill in place using the spanners. This should be checked and repeated after the first 4 to 5 drillings.

Dismounting:

1. When untighten the nut make sure that the Flowdrill does not just fall out, e.g. use a flannel underneath.
2. ATTENTION: do **not touch** the hot drill with your hands!

2. Preparation: clamping, stop end position, drilling parameters

Tighten the material into the vice making sure there are no vibrations.
Attach the vice to the top of the drilling table so that there is no movement.

Hole with collar:
Make sure there is a gap between 0.8 and 3.5 mm free above the material itself, depending on the material thickness and Flowdrill diameter.

"Flat" hole, no collar:
Make sure that the cutting blade of the Flowdrill will come in contact with the work piece surface to allow a full removal of the collar.

Always set and adjust a defined step end position!

Adjust the required rpm, page 2.

Automatic feed data for a CNC programming are available on request.

Apply FDKS paste very thinly up and down the Flowdrill while it is rotating. The tool colour should still show through. Do this regularly before each drilling.

Please be aware of the recommended parameters on spindle power and rpm as well as the cycling times!
This information is on page 2, no.5 of this instruction.

3. Drilling process

Bring the Flowdrill down into contact with the material then apply steady pressure.

Carry on building up pressure but keep it at a constant rate.

Continue on with an increasing feed rate speed as you go through.

a) Form a collar by reducing the final feed.
b) Remove the collar (flat) with maximum feed.

After you have Flowdrilled take the drill upwards out immediately.
Apply FDKS and you are ready to start again.

Setup instruction for Flowdrill

4. Equipment for cold form tapping with FLOWTAP:

Tap holder with axial compensation, tap collet and Flowtap tool

Tap holder with axial and radial compensation and Flowtap tool

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		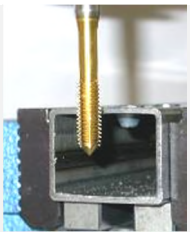		
				
Attach the tap holder inside the spindle and connect on the correct collet size.	Attach in the Flowtap and set the table height to approx. double length of the threading tool section.	Set the depth of the thread former so that it will reverse after passing through the hole. Then line up with the hole itself.	Make sure the machine is set for tapping and NOT drilling. Set the required parameters. Remember to apply FTMZ before every hole which is tapped.	Start with a light pressure. The Flowtap will form the thread itself. Just make sure that you follow its way down through the hole and on the return journey.

5. Parameters table for FLOWDRILL and FLOWTAP

Thread size	Flowdrill						Flowtap		
	Ø [mm]	RPM [min^{-1}]			Power [kW]	Cycle time [s]*	RPM [min^{-1}]	Power [kW]	Torque [Nm]
		min.	*opt.*	*max.*					
M4	3.7	*2200*	***2600***	*5500*	0,7	2	1000	0,2	4
M5	4.5	*2000*	***2500***	*4800*	0,8	2	800	0,3	5
M6	5.4	*1800*	***2400***	*3300*	1,0	2	650	0,6	9
M8	7.3	*1500*	***2200***	*3200*	1,3	2	500	1,1	19
M10	9.2	*1200*	***2000***	*2800*	1,5	3	400	1,5	31
M12	10.9	*1000*	***1800***	*2200*	1,7	3	330	1,9	47

Note:

- The above table information is recommended standard data. The standard requirements may change with different thread sizes and thread length according to different material thicknesses and specific material properties.
- Stainless steel: 15% less rpm for the Flowdrill process based on the optimal rpm and +0.1mm tool diameter for sizes larger M6
- Aluminum and non-ferrous materials: 50% higher rpm for the Flowdrill process based on the optimal RPM.
- All data is based on 2mm material thickness and optimal rpm-power setting. Each additional Millimeter in material thickness requires approx. +1s for the processing time.