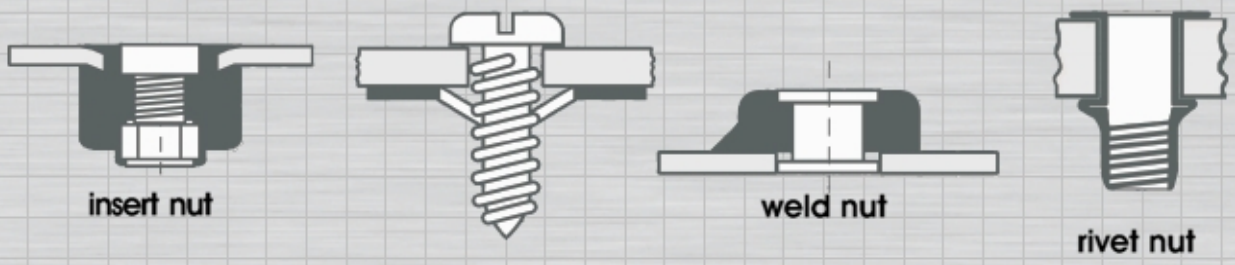
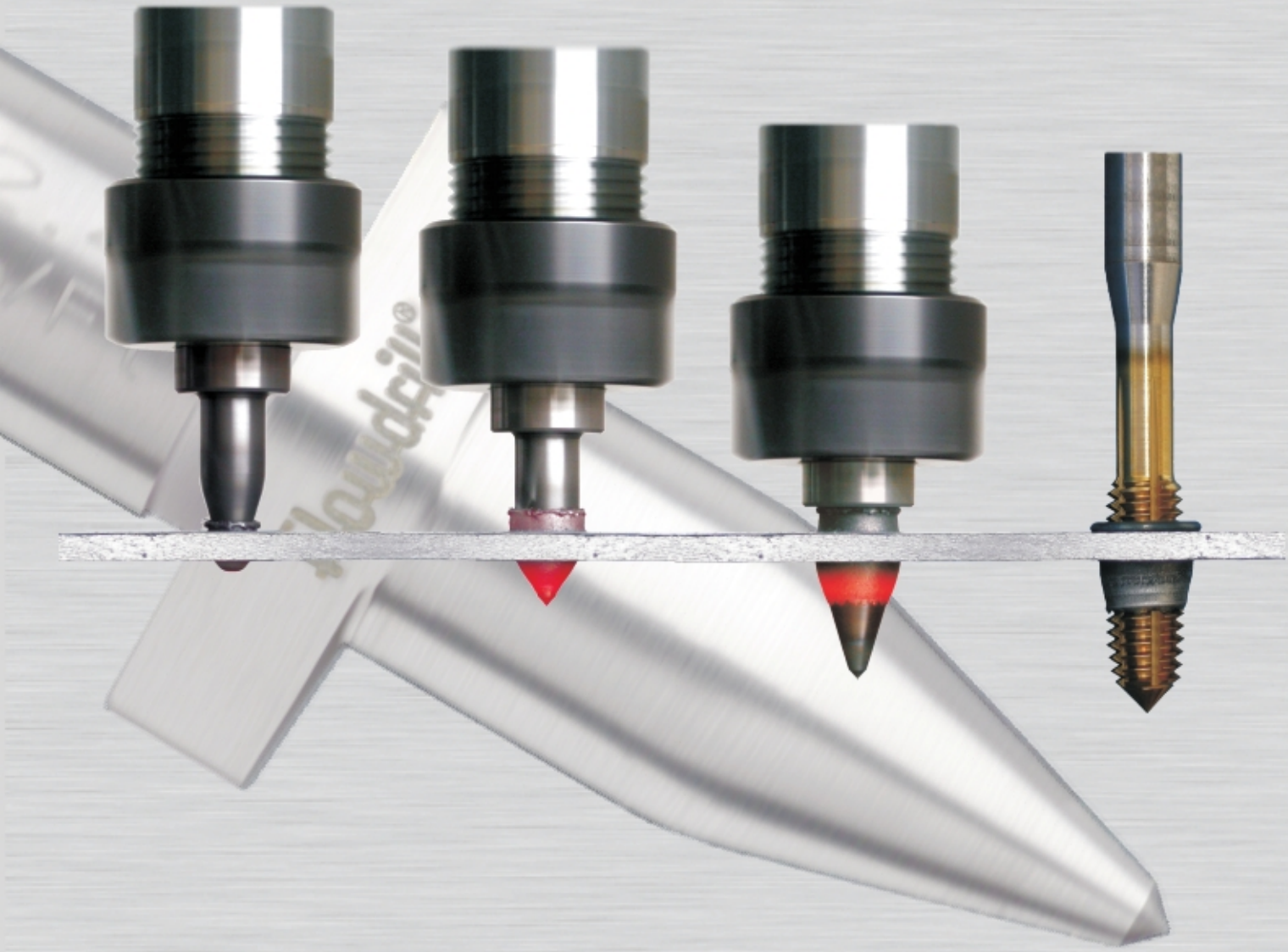
Efficient and Chipless Joining

Flowdrill®

We replace:





www.flowdrill.com

Efficient and Chipless Joining

The Technology

Thermal friction drilling and thread forming

Flowdrilling

A Flowdrill® uses rotational speed and axial force for a local creation of frictional heat. It plastifies metal materials and forms accurate bushings in between seconds:

- with multiple length of the original material thickness
- chipless, no waste
- in steel, stainless steel, aluminum, brass, copper...
- for all typical material thicknesses > 0.5 mm
- for high loaded threads from M2 to M20 and up to G1"
- thus replaces welding nuts, rivet nuts and pressed nuts

Flowtapping

Flowtapping is also a chipless operation. The thread shape is formed through the whole bush length. Therefore a thread length of minimum 1 x D can normally be achieved.
The load of a cold formed thread beats a standard cut thread and effects a positive operating lifetime benefit as well.

5 typical use cases

1. Flowdrill & Flowtap or thread forming screw

2. Bearing sleeve / hinges

3. Brazing or welding joints

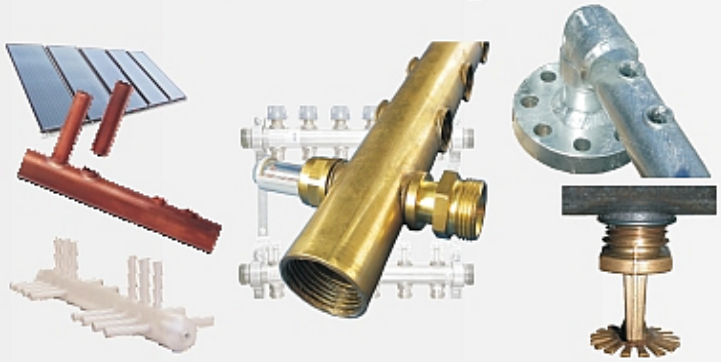
4. Connecting different materials

5. Sealing surface, e.g. chamfer for O-rings

Typical Application Areas

Automotive and agriculture

Construction, solar and heating industry



Stairs, handrails and fronts

Steel furniture and rehab accessories

Flowdrill

Our Products - For Your Success

Flowdrill - thermal friction drill

"standard" - with collar

"flat" - plane surface

Flowtap - cold forming tap

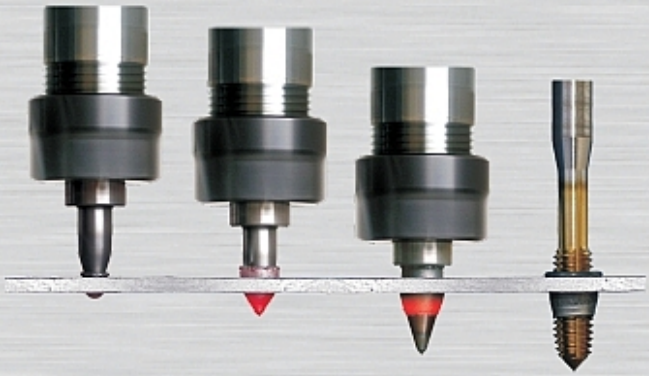
Starterset MC 2 - the basic equipment

Collets and tool holders with cooler disc

Special lubricants for best performance

Flow2go - flexible on site and in the workshop

Your Advantages



Increase of productivity

- ✓ chipless drilling and tapping
- ✓ no waste and removal costs
- ✓ no additional investment or storage costs
- ✓ reduction of operation steps
- ✓ no extraneous materials needed
- ✓ high process reliability
- ✓ solid carbide tools provide extra long lifetime

Thread length with several times of material thickness

Perfect flexibility - applicable on

- ✓ standard pillar machines
- ✓ CNC - automated machines
- ✓ our special designed mobile drilling unit "Flow2go"

The Company

For more than 30 years we manufacture our special hard metal tools by in-house production only.

We are your qualified specialist for any kind of Flowdrill applications and as a system supplier with an aligned assortment your first choice for any Flowdrill projects.

We will be glad to attend your project from the initial trial to the final serial production - world wide!

With our almost three decades of experiences you will benefit first-hand from our knowhow as market leader.

We deliver our established products world wide through our offices and representatives.

Machine parameters for Flowdrill and Flowtap

Thread size	Flowdrill				Flowtap
	Flowdrill Ø [mm]	Spindle speed [min^{-1}]	Motor power [KW]	Process time [s]	Spindle speed [min^{-1}]
M2	1.8	3200	0.5	2	1600
M3	2.7	3000	0.6	2	1350
M4	3.7	2600	0.7	2	1000
M5	4.5	2500	0.8	2	800
M6	5.4	2400	1.0	2	650
M8	7.3	2200	1.3	2	500
M10	9.2	2000	1.5	3	400
M12	10.9	1800	1.7	3	330
M16	14.8	1400	2.2	4	250
M20	18.7	1200	2.7	5	200
BSP 1/8"	9.2	2000	1.5	3	400
BSP 1/4"	12.4	1600	2.0	3	360
BSP 3/8"	15.9	1400	2.3	4	300
BSP 1/2"	19.9	1200	3.0	5	270
BSP 3/4"	25.4	1100	3.5	6	200
BSP 1"	31.9	1000	5.0	9	180

Notes:
Parameters on this table apply to mild steel with 2 mm thickness. These data are only standard values and might change with different thread sizes, thread length variations and material properties.

Stainless steel requires 15% less RPM speed for Flowdrilling and a 0.1mm diameter increase for M6 threads and larger.
Aluminium and other non-ferrous materials require approx. 50% higher RPM speeds for Flowdrilling.

For thicker materials add 1 second process time / mm.
CNC-data are available on request.

Tool lifetime under optimal conditions:
e.g. Flowdrill for M8 in 2 mm thickenss
- mild steel: approx. 10 000 holes
- stainless steel: approx. 5 000 holes

Flowdrill:
All Flowdrill tools are available in diameter steps of 0.1 mm. We will also support you with any kind of customized Flowdrills according to your specific application.

Flowtap:
Our standard range contains cold forming taps from M2-M20 as well as BSP1/16" - BSP1". All standard Flowtaps are TIN-coated with lubrication flutes.
In addition we can also deliver Flowtaps for the following thread types on request:
- **MF / NPT / UNC / UNF / Rp / Rc / BSPP / BSPT / NC / API**

material thickness [mm]	determined pull out strenght on mild steel (S235) [kN]								
	M4	M5	M6	M8	M10	M12	M16	M20	**
1.0	6	10							s
1.5		13	16	24*					s
2.0	9	15	17	27	50*				s
3.0			24	42	53	72	97	142	s
				37	52	67	88		l
4.0				45	72	91	105	182	s
				45	68	86	115		l
5.0						101		>200	s
							141	106	L

Note: 1kN ≈ 100 kg
Stainless steel: approx. 20-40% higher values
* additional value on stainless steel
**s = Flowdrill type „short"
**l = Flowdrill type „long"

material thickness [mm]	determined overtorque on mild steel (S235) [Nm]						
	M4	M5	M6	M8	M10	M12	M16
1.0	5	8					
1.5		11	17				
2.0	9	13	20	28			
3.0			27	50	66	136	197
4.0				67	98	163	
5.0						269	

Your Flowdrill Partner:

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We distribute world wide !

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