

BRACKETS

WELD FITTINGS

ELBOWS

FLANGES

SPHERES CAPS

SLIP-ON FITTINGS

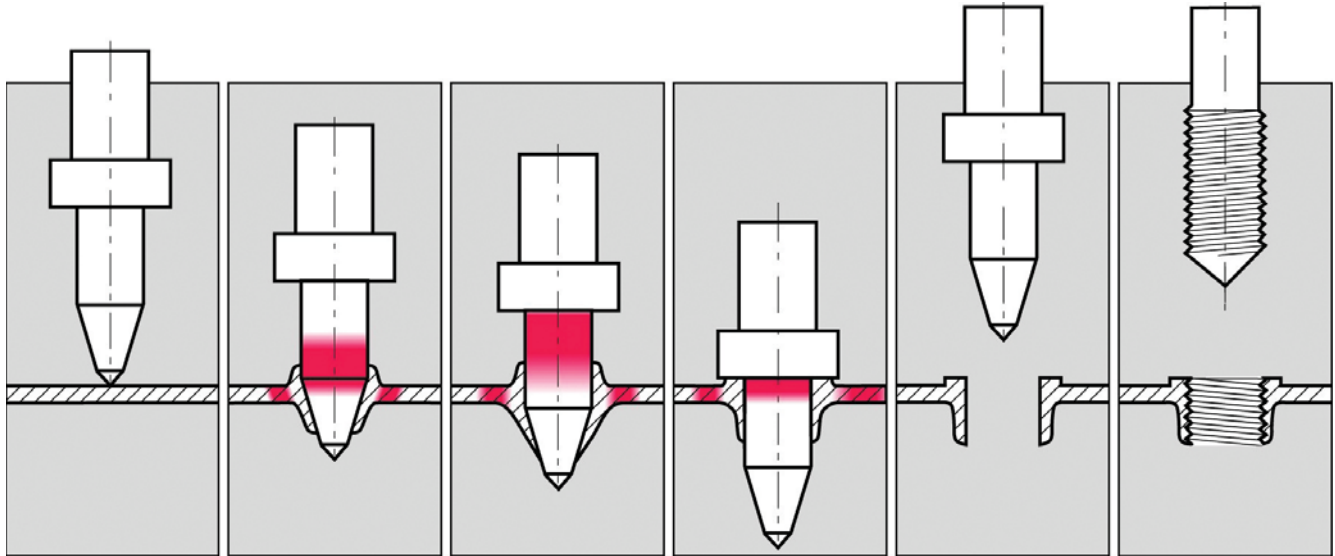
Create Threaded Holes in Thin Wall Material

The **Flowdrill®** process can be used in any application where the material thickness does not provide support for a threaded hole. When you need a welded or riveted nut or a special insert – think **Flowdrill®**. You will improve quality and save time and money.

Flowdrill® tools may be used on standard drilling machines, NC or CNC systems with motor capacities from 1.5 to 3.5 kW. Revolution speeds required range from 1000 to 3500 RPM.

The **Flowdrill®** comes into contact with the material using relatively high axial pressure and rotational speed. The generated heat makes the material soft and malleable enough to be formed and perforated. As the **Flowdrill®** pushes into the material, some of the displaced material forms a collar around the upper surface of the workpiece. The rest of the material forms a bushing in the lower surface of the workpiece. All this happens in a matter of seconds. The resulting collar and bushing can be up to three times the original material thickness. The diameter of the bushing is accurately determined by the cylindrical part of the **Flowdrill®** tool.

The process does not disturb the material's internal structure. As a result, the formed bush is remarkably strong and can be used for bearing sleeves or, when threaded in a separate process, can provide high torque threaded surfaces with very high pull-out strength specifications.



1. Initial Contact

Relatively high axial pressure combined with high rotational speed is needed to generate heat between **Flowdrill®** and workpiece. The **Flowdrill®** temperature rises rapidly to about 1200° to 1400°F and the workpiece to 1100°F

2. Material Flow

Displaced material initially flows up towards the **Flowdrill®**. When the point penetrates, material flows in the direction of the drill feed. As the material softens, axial force is reduced and feed rate increased.

Final size and shape of the **Flowdrilled®** hole and bushing are determined by the diameter and cone shape of the **Flowdrill®**.

3. Flowtapping

The most common use of the **Flowdrill®** is to provide a high-strength, threaded fastener in thin sheet metal, pipe or tube. A Flowdrilled hole may be tapped with conventional cutting taps or, preferably, with cold form Flowtaps.

Flowtapping resembles **Flowdrill®** except that the operating temperatures are much lower. Instead of cutting, Flowtaps cold-form the thread – no swarf. The diameter of the **Flowdrill®** determines the final thread form, depth and strength.

FLOWDRILL®

Create structural threaded holes in thin wall material.

When you need a welded or riveted nut or a special insert – think Flowdrill®.



Toolholder

Collet

Flowdrill®

TOOLHOLDER

The FDMC2 Toolholder insures the optimum clamping of the **Flowdrill®** and prevents rotational slippage while the tool is turning at high speeds. Multiple prongs in the Collet securely hold the **Flowdrill®** in a 360° clamping system. The Toolholder uses a built-in aluminum cooling disc designed specifically to diffuse heat that travels up the spindle. The Toolholder uses a standard tapered shaft that will fit most standard drilling machines. A straight shaft is also available for CNC machines.

Flow Drill Diameter	Part Number
2mm to 16.4mm	FDMC2
Straight Shaft	FDMC2S

COLLET

Collets with multiple prongs totally encompass and clamp the **Flowdrill®** tool. This optimum clamping system insures that the **Flowdrill®** will not slip while rotating at the high speeds required in the process.

Collet for FDMC2	FD430E8
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FLOWDRILL®

Flowdrill® tools are molded and shaped from very high strength tungsten carbide. The forming part of the tool has a polygonal shape with four facets. These facets produce the friction while turning at high speeds to heat and form the material. **Flowdrills®** are designed with an almost flat, conical tip that transitions into a sharper conical shape that leads into a cylindrical shape. The conical and cylindrical portions of the tool are polygon shaped. The cylindrical part of the tool determines the diameter of the hole.

For Threaded Hole	Part Number
5/16" - 18 Thread	FD072L

FLOWTAP

Flowtapping is the perfect compliment to the **Flowdrill®** process. Flowtapped threads produced by the **Flowdrilling** methods produce superior strength threads as compared to conventional methods. Formed threads avoid cutting the natural grain of the material. The compressed structure provides higher pull-out strength and torque specifications.

5/16" - 18 Thread	FT312518
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LUBRICANT

To optimize the quality of the hole, lubrication needs to be applied prior to each perforation. The specially designed **Lubricant Paste** increases the lifetime of the **Flowdrill®** tools; improves the surface quality of the formed bushing; and provides clean and well defined edges.

FLOWDRILL® LUBRICANT	FLOWTAP LUBRICANT
2.2 pound FDKSO	1 Liter FTMZ



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