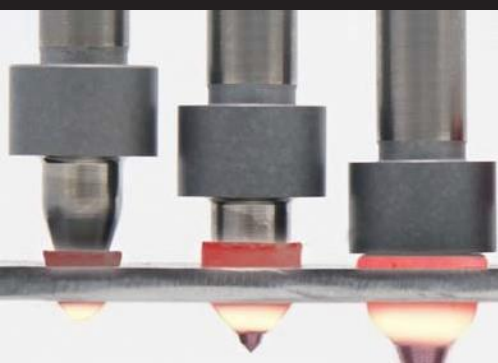


FORM YOUR  
**OWN**  
INSERTS

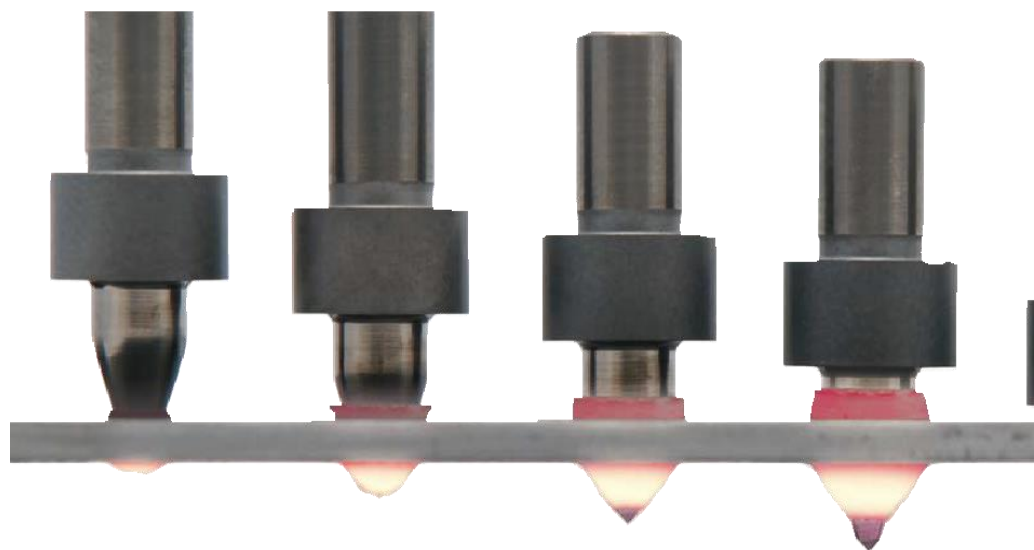
# FORM YOUR OWN INSERTS

FORMDRILLS WILL HELP YOU  
PRODUCE YOUR OWN INSERTS OUT  
OF THE SAME PART'S MATERIAL.

THESE BUILT-IN INSERTS ARE  
THE SAME-DIAMETER WELDED  
IN STEEL, STAINLESS STEEL, CO  
UP TO 1/2" THICKNESSES.



STANDARD UNC, UNF,  
NPT AND METRIC SIZES  
ARE AVAILABLE UP TO  
1.5" IN DIAMETER.



## ADVANTAGES & BENEFITS

- You will save money since you will not need to buy nuts or threaded inserts.
- You will save time because you will not need to weld or install fasteners.
- No more problems from chips left in the parts or weld slag in the threads.
- Your built-inserts will not turn after several uses or fall off from vibration.

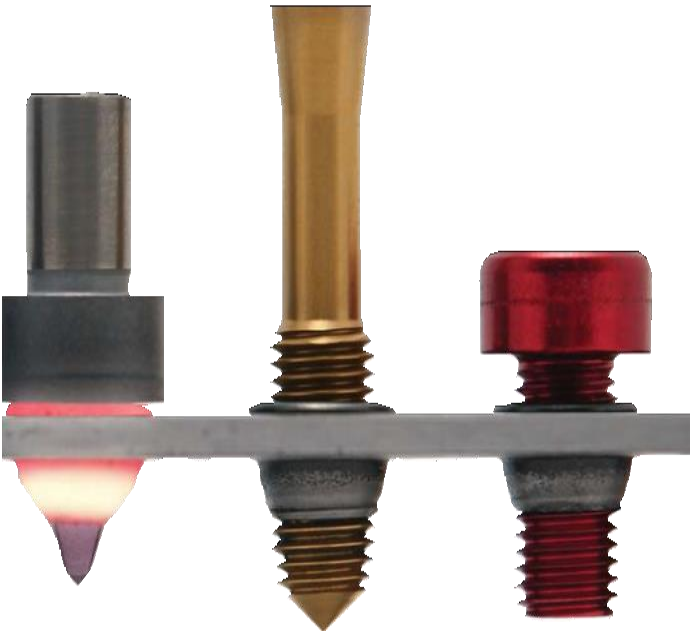
## HOW DOES IT WORK?

Formdrills use the speed of rotation and the axial force to produce friction. This friction heats up the material and softens it enough to form the hole and displace the material to form the insert.

The length of the formed insert is 2 to 3 times the original material thickness. The next step is to create threads using a forming tap, Formtap.

Self-tapping screws can also be used to save the tapping operation. This formed insert is also used as a through hole for welded, soldered or brazed connections in copper tubing, or for a load-bearing surface as in U Joints.





**TO FORM YOUR OWN INSERTS,  
YOU CAN USE YOUR OWN DRILL  
PRESS, MILLING MACHINE OR CNC  
SYSTEM AND THE FOLLOWING TOOLS  
AND ACCESSORIES:**

1. A **FORMDRILL** specified by diameter and style.

- **SHORT** styles are for thinner wall thickness.
- **LONG** styles are for thicker materials and for straight through holes.
- **SHORT/FLAT** or **LONG/FLAT** style to remove the upper portion of the bushing for a flush finish.

Short	Short/Flat	Long	Long/Flat

2. A **TOOLHOLDER** and **COLLET** is available with a #2 Morse Taper shank for sizes up to 9/16 or a #3 Morse Taper shank for sizes 3/8 and larger. A 20mm straight shank is also available for both sizes. The Toolholders have a special heat sink attached for dissipating excess heat generated by repetitive drilling. This is very important to prolong the life of the tool and protect your drilling equipment.



3. **THERMAL DRILLING LUBRICANT**. Is designed to prolong tool life by reducing material build up on the tool. Lubricants are available in both paste and liquid form. Lubrication units are available for use in CNC machines. Paste lubricants are also available for manual application.



4. **FORMTAP**. Is a roll forming style tap used to maximize thread strength and pull-out resistance.

5. **FORMTAP LUBRICANT**. Maximizes tool life while maintaining high quality threads.

**NO SPECIAL EQUIPMENT IS REQUIRED.**

Drill presses, Milling Machines or CNC units with the required Horse Power and Spindle speeds are well suited. Typical requirements for a 1/4"-20 UNC in steel are 1.6 HP and 2800 RPM.



**The process is proven; it has been in use for over 50 years.**

Users include multi-national groups in the automotive, heating and cooling, medical equipment, building structural frameworks, road lighting and signal fixtures and metal furniture manufactures.

**FORMED INSERTS ARE AS STRONG OR STRONGER AS THE SAME-DIAMETER WELDED NUTS:**

Thread type and Diameter	Wall Thickness	DIN Welded nuts (Pull-out force in Nm)	Formdrill (Pull-out force in Nm)	Torque (in Nm)	Class
M4x0.70	2.0 mm (.080")	8.750	8.280	9.0	8
M5x0.80	2.0 mm (.080")	14.200	14.940	13.0	10
M6x1.0	3.0 mm (.120")	24.000	+24.000	26.0	12
M10x1.25	4.0 mm (.160")	69.500	69.800	96.0	12
M12x1.75	5.0 mm (.200")	84.000	97.000	267.0	10
M20x2.5	5.0 mm (.200")	196.000	+200.000		8

These values apply to mild steel. Torque and pull-out resistance will vary with different materials.

**NPT Formed Inserts have been pressure tested by several of our customers: Generally, vessels being tested deform and sometimes burst at the seams before the Formdrill connections leak.**

Drill presses, milling machines or CNC systems will work. Examples of equipment requirements are as follows:

**UNC THREADS**

Thread Diameter	Formdrill Part No.	Horse Power	Spindle Speed (mild steel)	Spindle Speed (stainless steel)	Cycle Time (seconds)
1/4"-20	FD0570S	1.6	2800 RPM	2500 RPM	2.2
3/8"-16	FD0870S	2.0	2500 RPM	2100 RPM	3.4
1/2"-13	FD1170S	2.7	2000 RPM	1800 RPM	4.9
3/4"-10	FD1780S	4.0	1500 RPM	1000 RPM	10.0

**NPT THREADS**

Thread Diameter	Formdrill Part No.	Horse Power	Spindle Speed (mild steel)	Spindle Speed (stainless steel)	Cycle Time (seconds)
1/8"-27	FD0940S	2.4	2200 RPM	1900 RPM	3.6
1/4"-18	FD1240S	2.7	2000 RPM	1800 RPM	5.1
1/2"-14	FD1960S	4.0	1200 RPM	1100 RPM	12.7
3/4"-14	FD2500S	5.3	900 RPM	850 RPM	20.1

**METRIC THREADS**

Thread Diameter	Formdrill Part No.	Horse Power	Spindle Speed (mild steel)	Spindle Speed (stainless steel)	Cycle Time (seconds)
M3x0.5	FD0270S	1.3	3000 RPM	2600 RPM	1.8
M5x0.8	FD0450S	1.6	2800 RPM	2500 RPM	1.8
M8x1.25	FD0730S	2.0	2500 RPM	2100 RPM	3.9
M20x2.5	FD1870S	4.0	1300 RPM	1100 RPM	11.9

Parameters may vary according to material properties. Consult us for Aluminum and Copper.

**FORM YOUR OWN INSERTS**

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