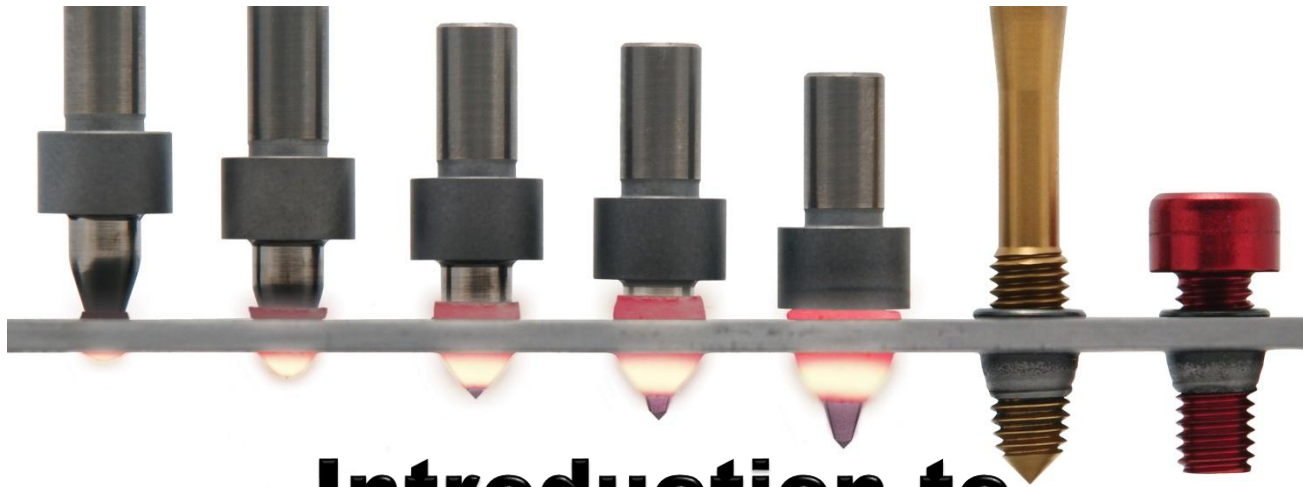


GRAINGER[®]

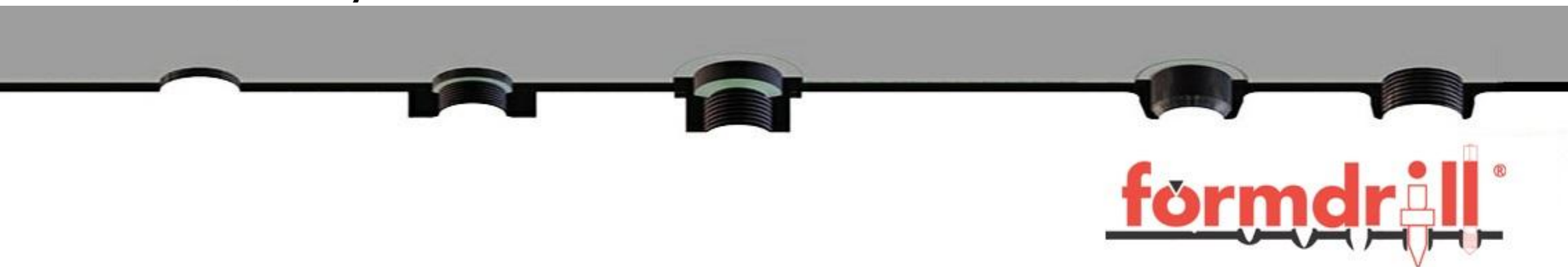


Introduction to

formdrill[®]

Problem

- ▶ Thin wall material that needs to be threaded for joining to another material
- ▶ Weld nuts and threaded inserts are a common solution:
 - Removing material from thin wall
 - More production steps
 - Added external material
 - Added costs
 - Quality control issues

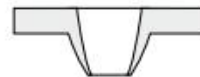


Solution

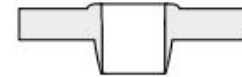
- ▶ Formdrill produces a bushing formed from the parent material:
 - Maintains material strength
 - Fewer production steps
 - No added external materials
 - Lower costs
 - Quality maintained



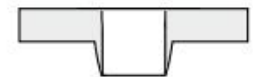
Short



Short-Flat



Long



Long-Flat



Company Information

- We manufacture thermal drills, Formdrills
- Established in 1980 in Belgium
- Focused on manufacturing thermal drills and the advancement of the process
- Manufacturing process totally automated- this means better quality at lower prices
- Offices in Germany, France, China, India and the United States
- Distributors in 45 countries



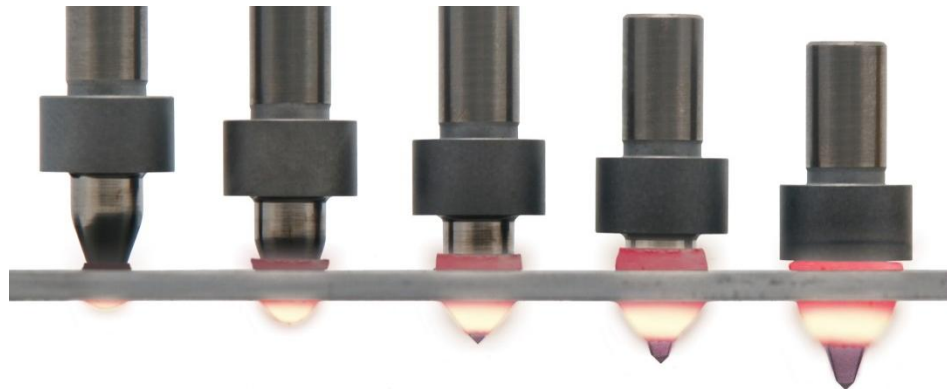
Formdrills – what they do...

- Form holes in thin materials without cutting
- The material that is normally cut forms a bushing triple the length of the original material thickness
- This formed bushing provides more wall to allow for more threads and eliminate the use of welded nuts or threaded inserts
- This bushing can also be used to support a pivoting shaft or as a brazing Surface
- To eliminate the tapping process self-tappers can be used in assembly



How does it work?

- The drill is made of tungsten carbide and has a conical shape with several facets
- These facets create friction as they turn (spindle speeds depend on diameter - 1,000 to 4,000 RPM) and the tool is pushed into the material
- The resulting heat from the friction heats up the material and pushes it into a plastic state to displace it and form the bushing



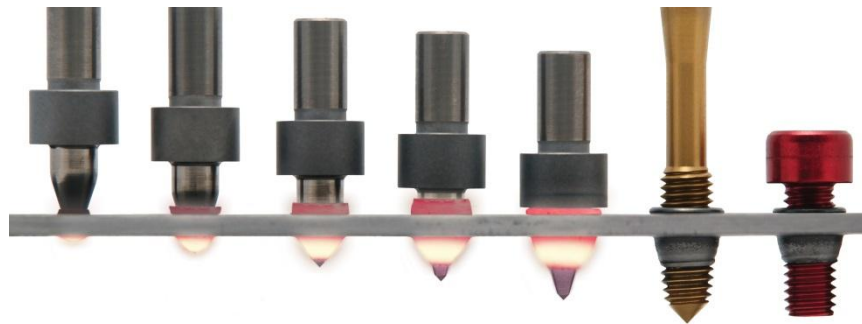
Works in most malleable materials:

- Mild steel
- Stainless steel
- Aluminum
- Copper & brass
- High strength alloys



Advantages & benefits

- Cost reductions in labor & materials
- Formdrills & Formtaps can do 8,000 -10,000 holes in mild steel
- Production cycles reduced significantly
- Formed bushing is produced from the same part
- Process does not produce chips
- Ideal for automated production lines



Formdrill Options

- 2 lengths (Short and Long) to suit the material thickness
- 2 options for the entry to the hole; With a “collar” or a flush surface

Short



Short Flat



Long



Long/Flat



We can easily manufacture whatever is needed for your special application
Extra Shorts or Longs, several diameters in one tool, etc.



What do you need from us?

- Tools: Formdrills & Formtaps



What else?

- Accessories: Toolholders, Lubricants & Dispensers



Formdrill lubricants



Formtap Lubricants



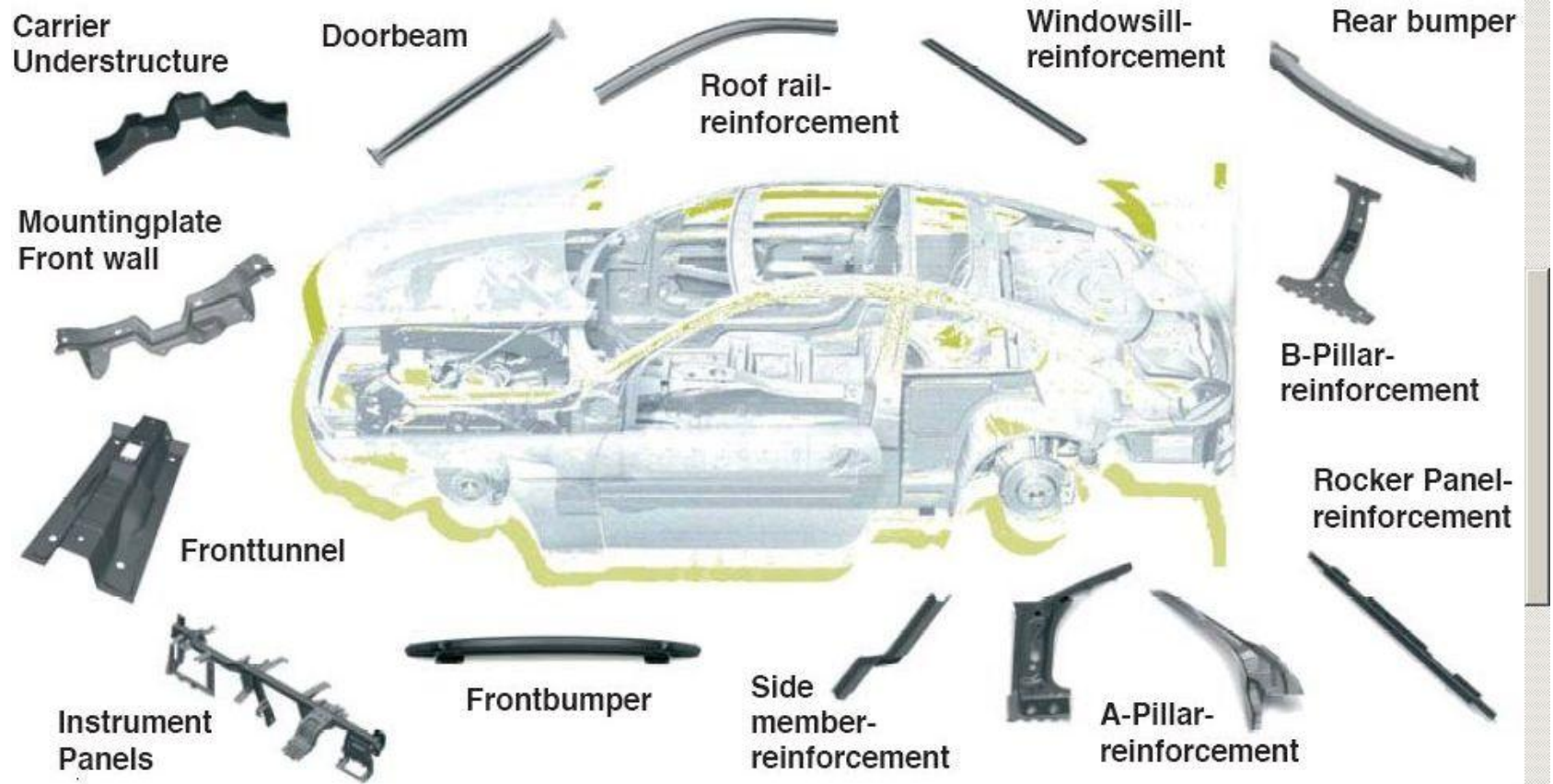
Minimal spray units

You use your own equipment

- Drill presses
- Milling machines
- Specific design machines
- CNC



Applications



Applications



Foot Pedal

Applications



Front Axle System

Applications



Steering Column

Applications



Seat Frames

Applications



Fuel Rails

Applications



Trunk Hinges

Applications



Oxygen Sensor



&

GRAINGER®
///

Partnership: Growing Solutions

Thank you!

