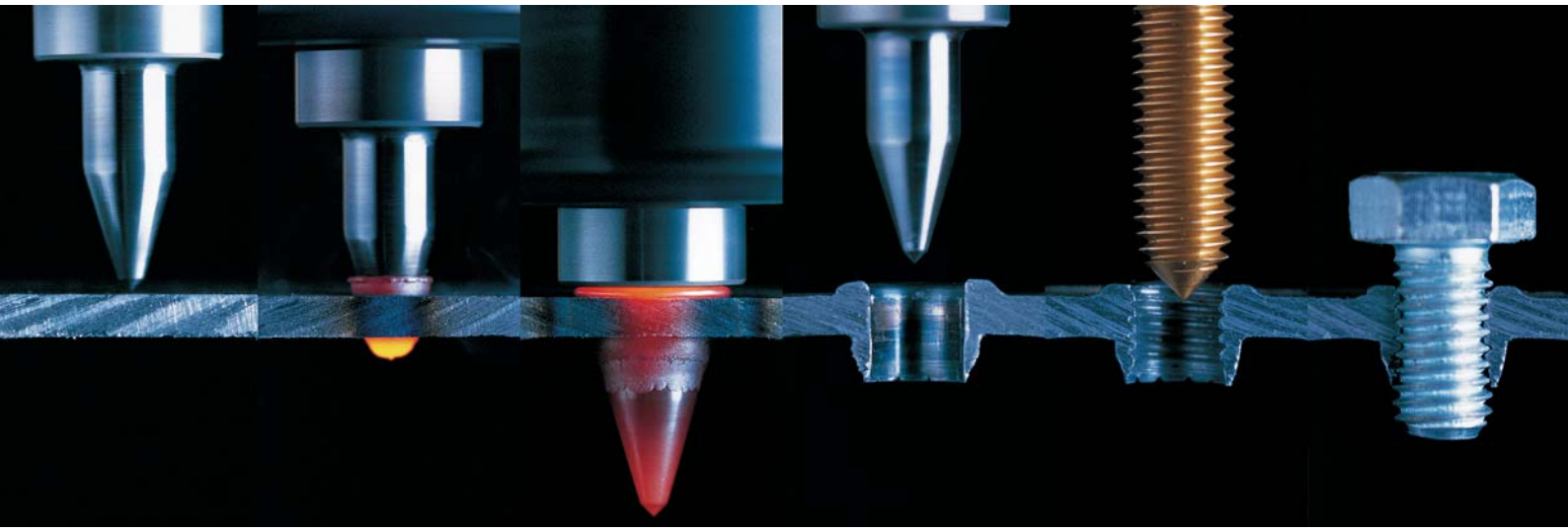
centerdrill®
MADE IN GERMANY

The centerdrill Flow Punch Forming Process

With flow punch forming bushings or eyelets can be produced in thin-walled metals without cutting up to a wall thickness of 12 mm. Bushings or eyelets can be obtained with up to 4 times the original thickness of the material in diameters of 1.8 mm to 32 mm.

Flow punch forming is based on a combination of axial force and relatively high speed, which results in heat from friction. The frictional heat and high contact pressure plastify the material and enable the **centerdrill** to go through the material in a matter of seconds.



The Advantages of Flow Punch Forming

- Time saving
- Less material and lower weight due to the use of thin profiles
- Increase in the drawing forces of threads (thread forming)
- Tightness of the clearance holes
- Detatchable connections - The basic material remains unalloyed
- No reinforcing welding, riveting down, or welding screw nuts necessary
- Increase in hardness - for example less wear with multiple connections
- Only one basic material, thus avoidance of electrochemical corrosion
- High load capacity of bearing bushes

Which materials can be processed with centerdrill?

Flow punch forming can be used with virtually all thin-walled metals (excluding tin or zinc); for example all welding steels, stainless steels, aluminum, copper, brass, bronze, magnetic materials and special alloys.

Some application examples:

Requirements for Flow Punch Forming

Any column drilling machine with sufficient power or NC/CNC machining center, etc., with the required speed and kilowatt output is basically suitable for flow punch forming.

For secure clamping of the **centerdrill**, a special collet chuck with cooling ring was developed with which the heat can be dissipated ideally. For optimal concentricity a special collet is used for locating the **centerdrill**.

Special collet chuck and collet

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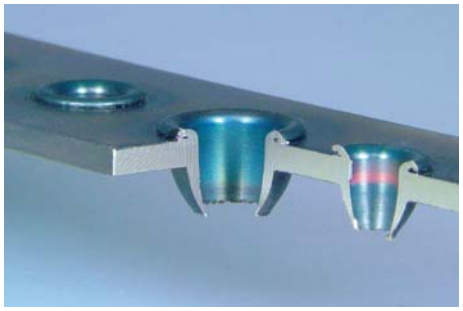
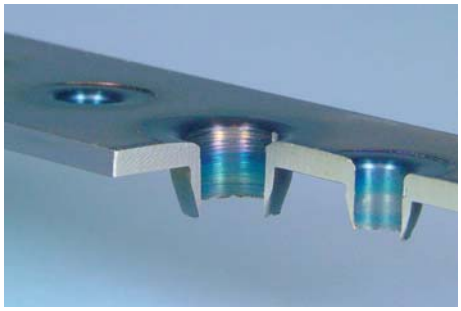
Which **centerdrill** for which application?

The standard versions include the short and long models of the **centerdrill**. They differ only in the length of the cylindrical part; the angle of the conical part is identical. When using these versions the material displaced against the direction of feed remains on the surface of the workpart and forms a collar. Both models are also available in the flat version, with cutters ground into the belt that remove the collar in the same operation, resulting in a smooth surface.



Process Data

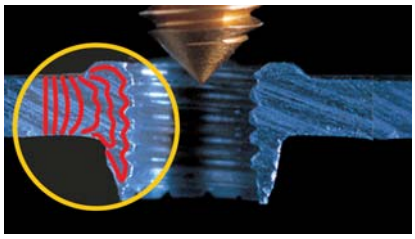
Reference values for material S235JR (St37/2) with 2 mm wall thickness. Depending on the application and mechanical equipment, the process speeds can also be increased significantly. Our engineering specialists will be happy to advise you.

Standard thread	**centerdrill** core hole	**centerdrill** rpm	machine output KW	**centertap** rpm
Metrical ISO thread per DIN 13				
M3	2,7	3000	0,7	1500
M4	3,7	2600	0,8	1100
M5	4,5	2500	0,9	900
M6	5,4	2400	1,1	800
M8	7,3	2100	1,5	600
M10	9,2	1800	1,7	380
M12	10,9	1500	1,9	300
M16	14,8	1400	2,4	200
M20	18,7	1200	3,0	160
Whitworth pipe thread				
G1/8"	9,2	1800	1,7	380
G1/4"	12,4	1600	2,1	280
G3/8"	15,9	1400	2,6	200
G1/2"	19,9	1200	3,2	140
G3/4"	25,4	1000	3,8	100
G1"	32,0	800	4,6	70

Thread Forming with **centertap**

Thread forming with **centertap** offers the exact same advantages as flow punch forming. It is a chipless process in which the material is rendered flowable and displaced from the thread root into the crests. It is similar in principle to the rolling of external threads. Because the material on the thread flanks is compressed during the process, the drawing forces of the formed threads are greater than for cut threads!





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