

## Brass Cap Machining Job Sheet

Step	Process
1	NOTE: <i>you do not use the cut-off saw to cut the brass.</i> You will build your cap on a longer piece of brass (necessary to be able to work on your piece). The cap is then cut off the longer piece in step 8 below.
2	Place the 1" diameter brass rod in the lathe and <i>face</i> (machine) <i>one end</i> of the rod with the right-handed tool.
3	Drill a 0.281" diameter hole in the piece to an <b><i>edge depth</i></b> of 0.625"
4	<p>Drill to a <b><i>tip depth</i></b> of 0.5" with successively larger drills (typically 1/2" and 3/4" - <i>do not exceed 3/4"</i>).</p> <p>Because the drill is large and the hole shallow it is <i>not</i> necessary to back out the drill to remove chips. A slow, continuous feed usually works best with the large drills on brass.</p>
5	<p>Finish machining the inner surface of the hole to tolerance with the boring bar (<b>Note the tight tolerance of this surface</b>). Be sure to check the drawing for the depth of the finished hole.</p> <p>To set the proper height of the boring bar, move the boring bar to the back side of the brass rod so the cutting point will contact the side of the brass. To zero the display in the <i>x</i> direction it is easiest to move the bar so the cutting surface is just inside the 3/4" hole and, with the lathe running, slowly move it out until the tool just starts to cut the brass and set zero at that point. <i>Nominally</i> you will be adding 0.050" to the diameter of the hole from this point - but be sure to measure frequently.</p>
6	Machine the outer surface of the rod down ten mils (0.010") to produce a clean surface. Do not remove more than necessary to get a clean surface. Do this over about 0.6" of the part.
7	Round edges with emery cloth or fine sandpaper, <b>using a slower speed.</b>
8	Cut the part a little longer than the final length (add ~ 0.020" to the 0.5" part length) using the parting tool. Be sure you are getting <i>at least 0.5"</i> of material before you start cutting.
9	Place the part back in the lathe to face the parted surface of the piece. Wrap the piece in brass shim stock (a thin brass sheet) to protect the outside finish when clamping in the lathe. Be careful not to clamp the part too hard or you will deform the open end of the cap.
10	Use emery cloth or fine sandpaper to round the edges on the top edge of the cap by hand. Also use a deburring tool to clean up the inside of the small hole in the cap.

[Modified: January 16, 2019]