

Cooling Rod Machining Job Sheet

Step	Process
1	Cut the 3/8" diameter copper rod to 3.50" length in the cut-off saw (leaves 1/8" extra material on each end).
2	Place the 3/8" copper rod in the lathe and <i>face</i> (machine) <i>one end</i> of the rod with the right-handed tool. Don't allow the rod to extend very far from the chuck when facing it - it WILL bend. To get a good finish on copper you need to take no more than 0.010" on your last cut. If the surface is still rough you may need to put a little oil on the rod before finishing it (and possibly take 0.002" or less).
3	Round edges with a file, using a slower speed.
4	Turn the copper rod end-for-end and place it back in the chuck. Face the other end of the rod. You also will make it the correct length in this step.
5	Round edges with a file, using a slower speed.
6	Extend the copper rod from the chuck a little more than the length of the threads.
7	<p>Using a 3/8-24 NF die, thread the end of the rod with the power off. Ask for a die, handle, and a can of TapMagic. It is necessary to apply pressure on the die to get it to cut into the copper. However, too much or too little pressure will result in you just chewing up the end of the rod.</p> <p>You will need to find a way to get the threads the correct length. One possibly useful bit of information is that the "-24" in the die specification indicates the number of threads per inch. 24 full turns of the die handle will advance the die exactly 1".</p>
8	If you want to take about ten mils (0.010") off the surface of the rod to make it look nice you may. HOWEVER , you will bend the rod if you don't use a live center to support the "free" end of the rod. This step is optional.

[Modified: January 16, 2019]