

Tap and Die 101 Project

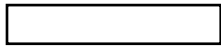
Tools:

¼ Nc 20 Tap and Die
Metal Lathe
Drill Press
Layout tools (digital caliper, ruler, scribe, square)
Hacksaw and Bandsaw
Letter Punches

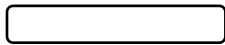


Rectangle Metal Piece

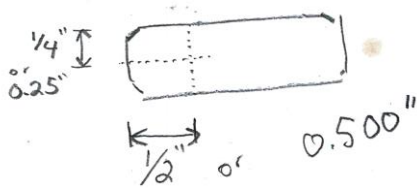
1) Cut a piece of ½ x ½" Solid Square stock 2" long. Use Bandsaw or Hacksaw.



2) Chamfer both ends with a file or bench grinder to get rid of the sharp edges. Use a digital caliper to measure to EXACTLY 2.000" long.



3) Layout a center punch ½" (0.500") from one end using the digital caliper in the center of the piece



4) Drill hole with a 7/32" Drill bit using the drill press. Make sure your piece is flat in the drill press vice to prevent a crooked hole.

5) Tap with a ½" NC 20 tap. Use lubricant/cutting fluid. Start slow to ensure a straight thread.



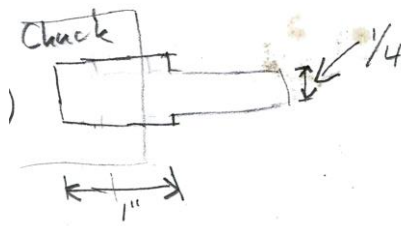
6) Use the letter punches to put your initials on the side of the piece to prove it is yours.

Round Metal Piece/Bolt

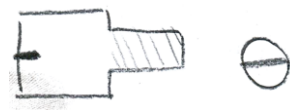
- 1) Cut a piece of $\frac{3}{8}$ " solid round stock slightly longer than 2" long
- 2) Face both ends on the metal lathe until EXACTLY 2.000" long. Use the digital calipers to check.



- 3) Mark the middle of the piece at 1" long and hold in the lathe with enough sticking out as shown in demo. Install the turning bit for the next step.
- 4) Turn to $\frac{1}{4}$ " (0.250") diameter. Do not accidentally go smaller than 0.240" diameter as we will be using a die on it to add threads. Use the digital caliper to measure and check often so you do not go smaller. I turn the cross-slide handle no more than 5-10 lines at a time. Once you get to 0.260" go extremely slow with your final passes. You can also use a lathe file to file down to exact size. Be careful not to press too hard or the thin piece will bend or fall out of the lathe.



- 5) Use $\frac{1}{4}$ NC 20 die to add threads. Use lubricant/cutting fluid
- 6) Use Hacksaw to cut groove for a flat head screwdriver and use Letter Punches to add your initials to your newly made bolt.



- 7) Clean threads and test fit the pieces you have created.

