

Lathe Cutter Height Gage, version 1

By R. G. Sparber

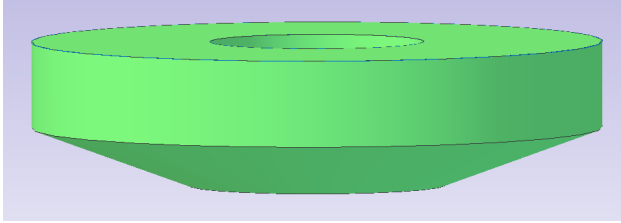
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One common procedure on a lathe is setting the cutter at the same height as the center of rotation. There are many ways to do this that work just fine. Well, here is another one.

This height gage has two subtle features. First, it beeps when the cutter contacts the underside of the puck. That is certainly nothing all that new.

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The other feature is that the underside of the puck is not flat. It has a taper. This taper lets me quickly detect if the cutter has been set right. What you see here is an exaggerated taper. The real one rises only a few thou from center to perimeter.



To use the height gage, I first move the tip of the cutter about half way between the post and the perimeter of the puck. Then I raise or lower the cutter until the beeping just starts to cut out. I then slide the gage away from the cutter. Since this underside is tapered, the distance from cutter tip to the tapered surface increases. If the tool has been set correctly, a small movement of the gage

stops the beeping. If it was set too high, the beeping will not stop until the cutter clears the puck.

This is a prototype so I made the puck out of aluminum. A better choice for a final design would be to use at least mild steel. Ideally, the puck would be hardened so the cutter would not dig into it.



The puck slides on a $\frac{3}{4}$ " aluminum rod. A flat has been cut in the side of the rod so burrs generated by the set screw do not jam the movement.



The beeper is contained in an old Altoids® box.



Inside the box is a 9 volt battery and a piezoelectric beeper from Radio Shack[®].

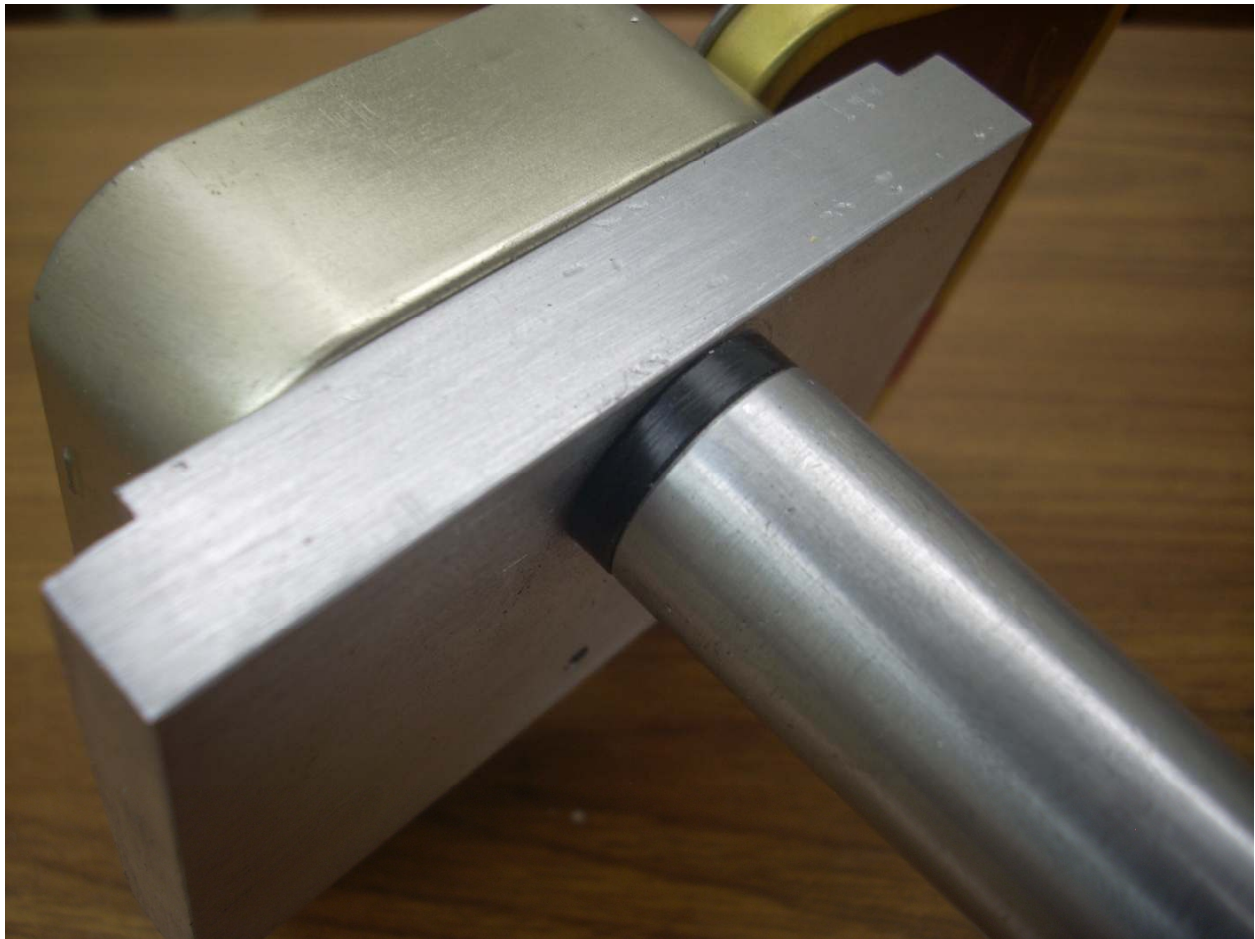


The black wire from the beeper connects to the metal of the base. The red wire goes to the positive terminal of the battery. The negative terminal of the battery connects to the insulated bolt that anchors the post.

Note the insulating washer under the 1/4-20 bolt.



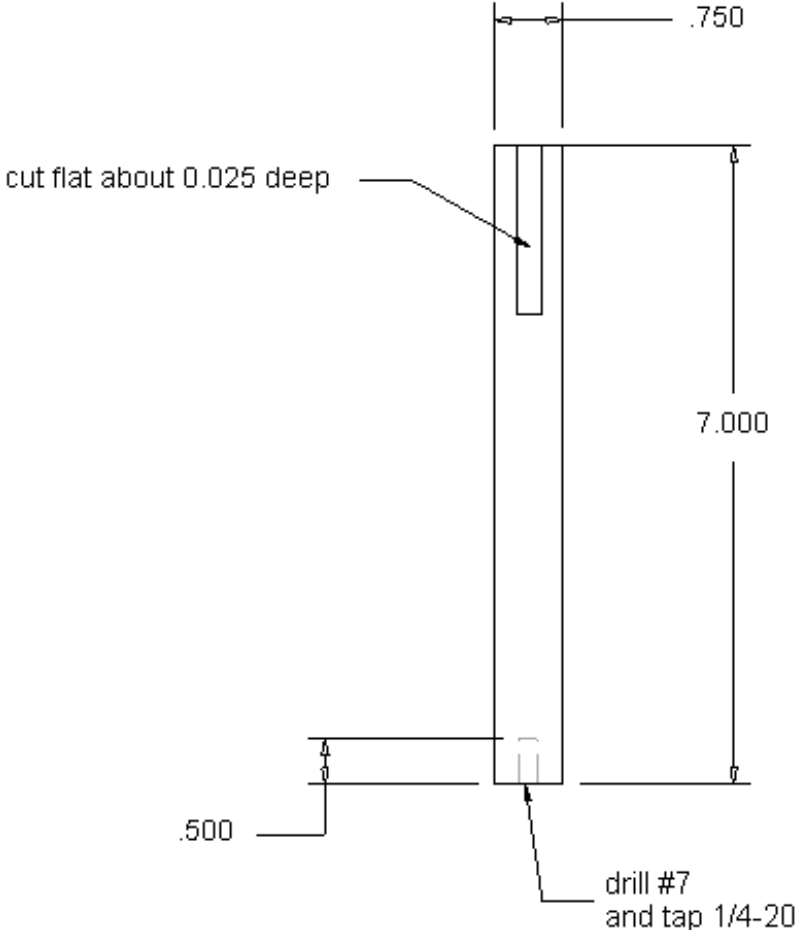
There is no need for a power switch. The beeper only sounds when a circuit is completed between the puck and the cutter by way of the tool post, lathe apron, and lathe ways.



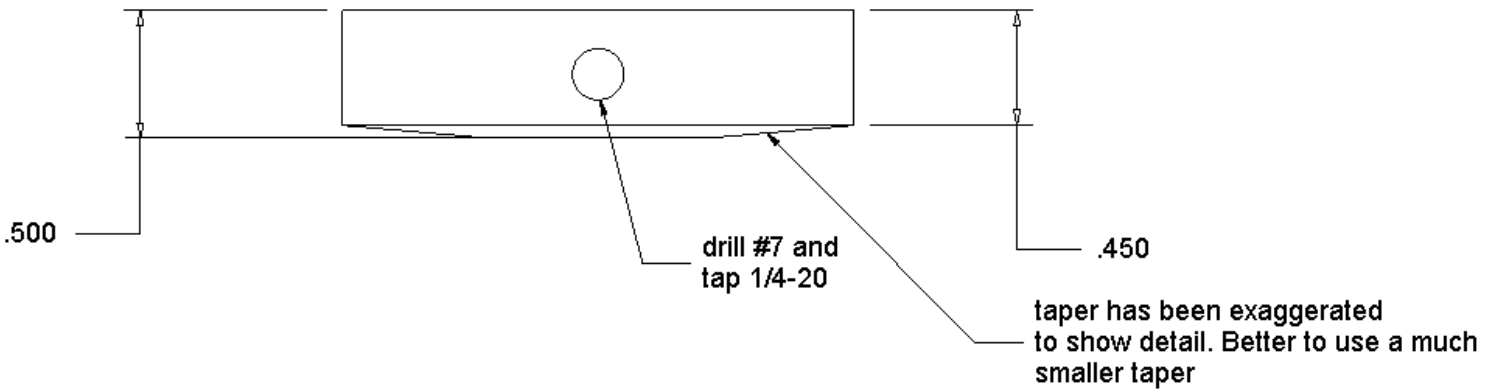
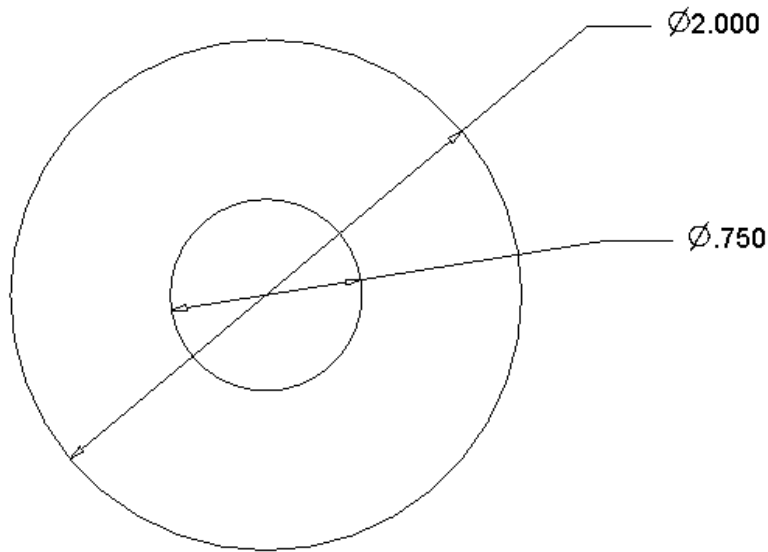
Here you see the other insulating washers. They isolate the puck and post from the base.

Shop Drawings

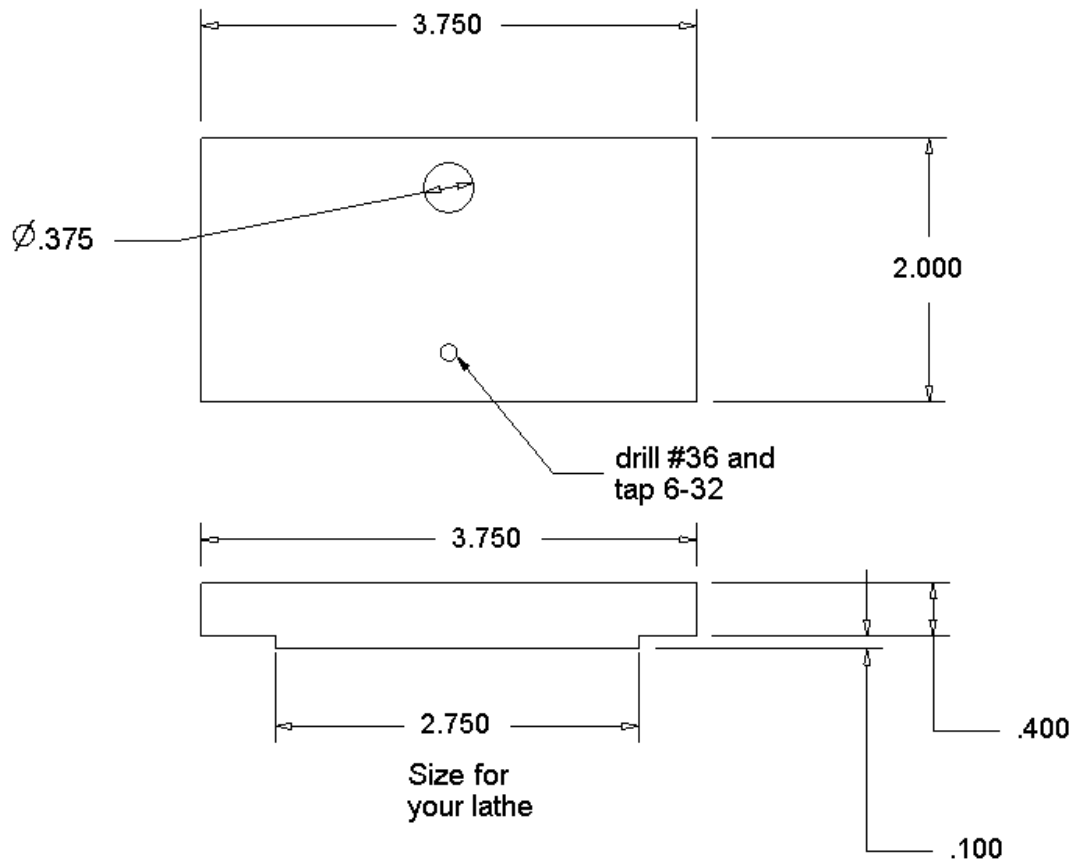
Post
material: aluminum



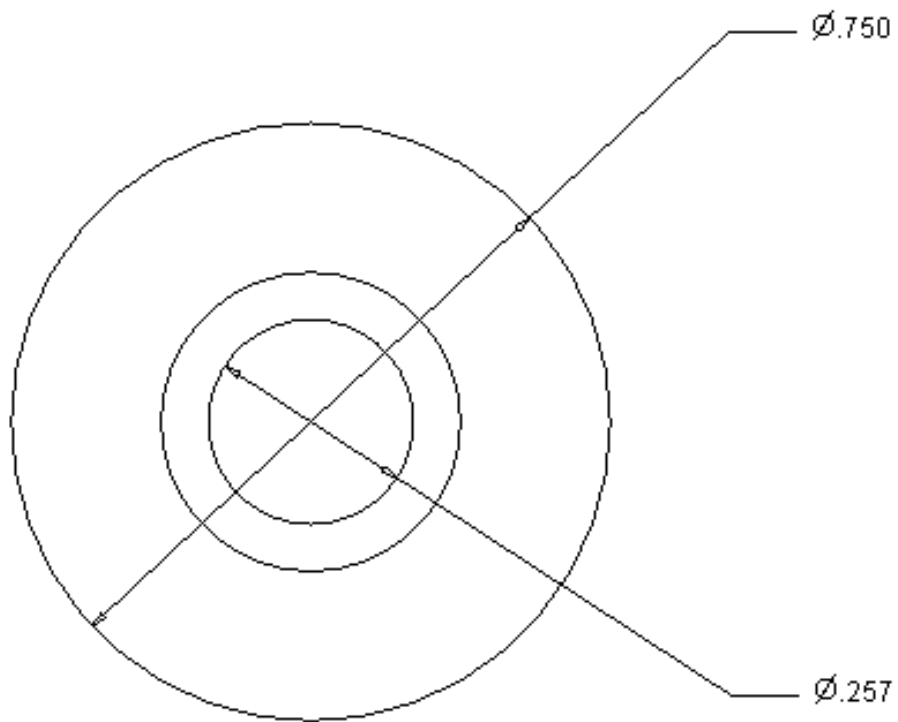
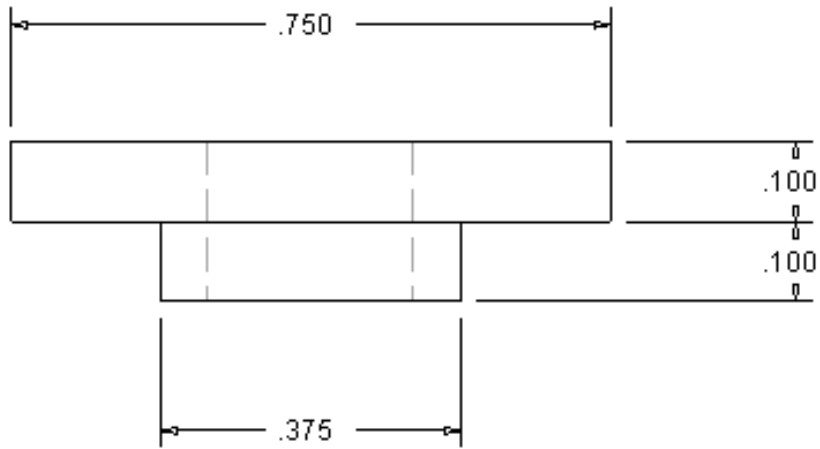
Tapered Collar
Material: drill rod



Base
material: aluminum



Insulating Washer
Material: plastic
quantity: 2



You will also need one 1/4-20 set screw, a 1/4-20 x 1" bolt, and a 6-32 x 1/4" screw.

I welcome your comments and questions.

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