

Peppermill Project For A Through The Top Drive Shaft Type Peppermill

Read Complete Instruction Sheet Before Beginning Project

Determine the overall length of your kit to determine the length of your blank. A 10" peppermill kit needs a blank approx 11 1/8 inch long (11 7/8 inch long for Alternate #2). All lathe speeds are to be appropriate per accepted standards or as the manufacturer recommends for the tasks being performed and within the comfort zone of the turner.

Mark the center on each end of the blank and turn the blank round between the lathe centers.

Clean up any tear out on the tailstock end of the blank which will become the mill main body bottom and, on the other end of the blank, turn a 7/16 inch wide tenon of suitable diameter for your chuck, which will be the top of the mill.

Remove the blank from between the centers and mount the blank using the tenon you just cut into your chuck, using a live center in your tailstock to maintain the center on the tailstock end.

With blank securely mounted in your chuck, move the tailstock away from the blank and drill the end with a 1 5/8 inch diameter forstner bit 1/2 inch deep.

Now drill a 1 1/16 inch diameter hole into the blank go as far as you can with the bit.

Make an initial shallow parting cut mark where you plan to part off the top section of the mill, just deep enough that it will remain visible after peppermill shaping cuts are complete. Bring up the tail stock with a cone attachment in it (or use a regular live center that will go deep enough to center the blank or you could make your own cone shape adapter).

Turn the desired shape of the main body of the mill and the top section of the mill up to the shoulder of the chucked tenon. Don't remove the shoulder as it is necessary when re-chucking. Also, have a vision of what you want the junction of the top and bottom sections to look like when finished (beveled, flat and close, rounded). NOTE: Mark the chuck jaw numbers and jaw edge locations on the top section of your blank's tenon to for remounting later.

Now select from Alternate #1 or Alternate #2

Alternative #1, use when grain alignment matters or you have limited length of stock.

Part off the mill main body from the top section of the mill and then clean up what will be the bottom surface of the top of the mill taking into consideration your overall design while it is still chucked.

With mill top still mounted in chuck, drill a $1 \frac{1}{16}$ inch diameter hole on center into the mill top to a depth of about 1 inch.

Drill a $\frac{17}{64}$ inch diameter hole (or whatever your mill drive shaft required for clearance) into the top approximately half way through the mill top. Remove the chucked mill top section from the lathe.

Now turn your own $1 \frac{1}{16}$ inch diameter plug / tenon approximately $1 \frac{3}{4}$ inch long making sure the ends are perfectly 90 degrees from the horizontal body with a $\frac{17}{64}$ inch diameter hole drilled down through the center of it and centered on both ends of it. Use a skew or small gouge to mark exact center for drill bit to start in. Finish turn the diameter of the plug / tenon piece to $1 \frac{1}{16}$ inch diameter to fit snugly into the mill top. On the other half of the tenon, reduce the diameter slightly below the $1 \frac{1}{16}$ inch diameter to allow the mill top tenon to turn freely inside the mating $1 \frac{1}{16}$ inch diameter hole in the mill bottom section.

Glue the mill top section plug / tenon piece (plug end) into the hole in the mill top section bottom making sure the plug bottoms out in the hole so it will maintain true alignment of the top section for turning later when it is mounted using this new tenon. Clamp to hold while glue dries. You may need to run the $\frac{17}{64}$ inch diameter drill bit through the hole to remove any dried glue in its path.

When the glue is completely dry, re-mount the mill top section using the original tenon in your chuck making sure to observe the jaw marks and jaw numbers are correctly aligned to re-establish center. Into the end of the tenon, drill a relief the diameter of your mill driver disk to a depth of about $\frac{1}{16}$ of an inch in the end of the new tenon to form a holding / centering recess. Remove the mill top section from the chuck.

Alternative #2, use when grain alignment does not matter and you have sufficient length of stock.

When using this alternate make sure to allow an extra 3/4 inch length for the overall blank to accommodate the integral to section tenon. Turn a slightly less than 1 1/16 inch diameter tenon as part of the top section, sized to allow the tenon to turn freely inside the mill main body. Then part off at the junction between the bottom of the tenon and the top of the mill bottom section.

Clean up what will be the bottom surface of the top of the mill taking into consideration your overall design while it is still chucked.

Drill a relief the diameter of your mill driver disk to a depth of about 1/16 of an inch in the tenon end to form a holding / centering recess. Drill a 17/64 inch diameter hole into the top approximately half way through the mill top. Remove the mill top section from the chuck.

Continue from here whichever alternate you are using.

Reverse the mill top section and chuck it by the new tenon using the tail center to maintain proper center alignment. Finish drilling the 17/64 inch diameter hole all the way through the mill top section; it should align with the same diameter hole from the other end in the top section.

Finish turning the top of the mill and sand through the grits. The mill top is now done.

Re-mount the mill main body into the chuck using either of the main mill body bottom holes (1 5/8 or 1 1/16) and holding by expanding the chuck jaws. Keep the mill finished bottom section firmly against the chuck jaw shoulders and the tailstock center cone against the mill end to assure that the tailstock end of the mill bottom piece will run as true as possible. Drill from the tail stock end with the 1 1/16 inch diameter bit. You may need to use an extension at this point to connect with the hole from the other end. If your 1 1/16 inch diameter center drifted off on you while drilling from either end (normally they align closely), it is ok as long as most of the hole lines up and mill unground product can pass through the opening.

Finish off the top of the main body (at the tailstock end) keeping in mind your overall mill design. You may want to use a cone center in the 1 1/16 inch diameter hole to help maintain centered alignment while turning, because this is

so far from the chucked end at the headstock. Now sand the entire body through the grits. The main body is now done.

Dry assemble the mill main body, mill top, drive shaft, and grinding mechanism together to see if enough of the shaft protrudes thru the top. If the drive shaft does not stick out enough to thread on the screw cap the main body can be re-chucked and the 1 5/8" diameter hole can be drilled deeper which will allow the mechanism to be recessed further and more threads will be available at the top. If the drive shaft sticks out too much and the screw cap will not tighten down properly, the shaft can be shortened as required by using a hack saw to cut off the peened end of the shaft at a point to shorten the drive shaft sufficiently and then re-peening the bottom of the drive shaft. The metal is soft and peens easily when held in a vise with non marking jaws.

Congratulations, the mill is ready for the finish of your choice.

These instructions are based on using the following:

One Way Manufacturing Talon Chuck or equivalent

No. 2 Jaws for above chuck

Spigot jaws for above chuck

Live tail center with revolving point cone and bull nose cone

Mill kit with center shaft and top adjustment knob

Suitable wood blank

Woodturning can be very dangerous, always exercise proper safety and operating standards, and **ALWAYS** proceed with great care and attention to safety. **NEVER** proceed with a project that may be beyond your current abilities or your equipment's abilities.

These instructions were created by and remain the intellectual property of Mike Kross. Use of these instructions is granted to any wood turner with sufficient experience to attempt the creation of a Mill type project. While every attempt has been made to make these instructions complete and safe, the author assumes no liability for the use of these instructions, **use at your own risk.**