

# Peppermill Mechanism

Read all instructions and get a good understanding of the process before you start. This is an advanced level project.

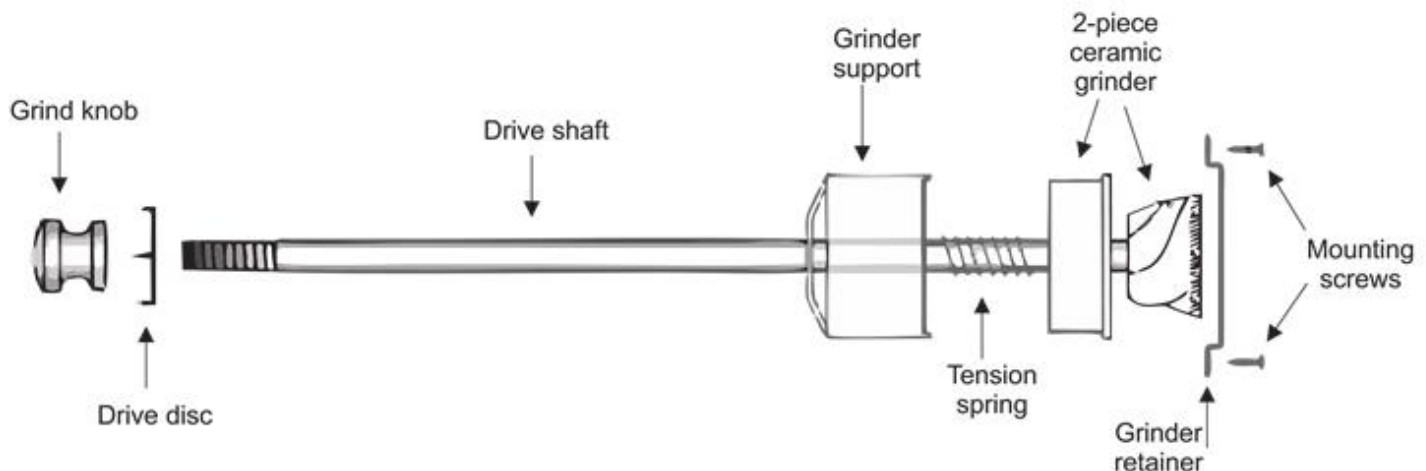
## Kit Features:

- Two Piece Ceramic Grinder.
- Solid Aluminum Grinding Shaft.
- Can Be Shortened With A Hacksaw and Ball Peen Hammer.
- Advanced Level Turning Project. Not hard, just a lot of steps.

## Required Accessories:

- One 13" Long By 2-1/2" Square Wood or Acrylic Turning Spindle Blank Or any combination of pieces to add up to 13".
- Chuck To Hold Blocks (NOVA or similar with 4 jaws large enough to handle a 2-1/2" square blank).
- 1-1/2" Jam Chuck (CJAM15)
- 1-1/2" and 1-1/16" Forstner Bits
- Live Tailstock Center
- 4" Forstner Bit Extension #FEX
- 60° Live Center
- Hefty #2MT Lathe. A small pen turning lathe will not work without burning it up on this project.
- Video link to turn a peppermill: <https://www.youtube.com/watch?v=3nqMLH6WD-Y> by Larry Randolph from the [Woodturners of Southwest Missouri](#).

DIAGRAM A / PARTS LAYOUT



## Preparing the Blanks:

- Cut the wood blank into two pieces so you have a grinding head blank 2 1/16" long and a base blank 10 1/2" long. This can be done with two different blanks or species of wood. You can make the mill shorter by cutting the bottom (non-threaded end) of the Drive Shaft off and then re-flange the end of the shaft with a ball peen hammer so it will not slip through the Ceramic Grinder.

## For The Grinding Head:

- Mark the center of the blank on either end. Using a 1/4" drill bit, drill a hole completely through the blank. This is the short blank which will become the grinding head.

## For The Base Blank:

- Mark the center of the blank on both ends. Using a 1-1/2" forstner bit, drill a 1/2" deep hole. This will be the grinding end of the mill and it will accommodate the Ceramic Grinding Mechanism.
- Once you have the 1-1/2 in hole completed, use the 1 1/16" forstner bit and drill a hole completely through the blank. To do this you will drill about half-way through the long blank and then turn it around and drill from the other end and meet the previous hole in the middle. It is ok if the two holes do not match up perfectly. This will be the void inside which the pepper corns/salt are/is stored, it does not need to be pretty. Use an extension for the forstner bit if necessary. Your final chosen length will determine the need.

## Turning

- Start with the short blank which will become the grinding head. Mount into a four-way chuck suitable to hold the blank firmly.
- Cut a tenon on the end of the blank which is just slightly under 1-1/16" in diameter and 1/2" long. This tenon will slip into the base, use the base as a gage to test fit the grinding head. Allow room for expansion and contraction of the wood with changes in temperature and humidity.
- Once you are satisfied with the fit of the grinding head in the 1-1/16" hole through the base, remove the block from the lathe.
- Mount the base with the grinding head inserted into it. Mount the base to the power head of the lathe. Use of a shop made friction chuck is recommended for turning between centers. Use your 60 degree live center to support the grinding head end.
- Turn your mill to your desired shape. To keep the two pieces from slipping on each other, place a couple small drops of thick CA glue between the two pieces to hold them while turning. Just a couple of drops or you will have a problem getting them apart.
- Once you have finished turning, sanding and finishing the mill, remove it from the lathe.
- Separate the two pieces and sand the interfaces between the parts for smooth operation.

## Assembly

- Layout parts according to diagram A
- Press the Drive Disc into the bottom of the grinding head. You can use the Drive Shaft to help keep the disc centered over the hole to ensure a nice fit.
- Insert the Grinder Base (Clear Plastic Piece) into the bottom end of the base. The is the end with the larger hole. It may be a tight fit, but it will go in.
- Next Slide the two-piece grinding mechanism over the top of the drive shaft with the inside of the mechanism first as in diagram A.
- Slide the tension spring onto the shaft so it rests on top of the small piece of the mechanism inside the larger piece.
- Insert the shaft assembly that you have assembled and push it up into the base and fit it snugly inside the Grinder Support. The Grinder Support has two small cutouts opposite of each other. Line the grinding mechanism up to these cutouts.
- Place the Grinder Retainer over the Grinding Mechanism and line up the holes with the gaps and holes in the other base parts.
- Secure in place with the two Mounting Screws to hold everything together. You may want to mark the holes with a pencil, remove the Grinding Shaft assemble and predrill your holes. It depends on how hard your wood is.
- Once the base is all secure, Place the head of the grinder on and into the base with the Grinding Shaft protruding through the head.
- Screw on the grinding knob and you are finished.
- To fill with pepper or salt, remove the Grind knob and pull off the head. Fill the base with pepper corns or coarse salt leaving room to get the tenon of the head back inside the base.
- To adjust the grind, tighten or loosen the Grind Knob to acquire the grind of your choice.
- Watch Larry's video to see a very good demonstration of turning and assembling a Peppermill Kit at the link below.  
<https://www.youtube.com/watch?v=3nqMLH6WD-Y>