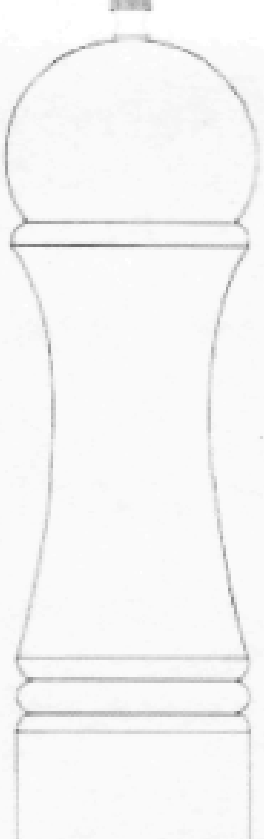
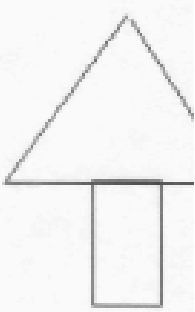


Salt and Pepper Shakers

- ✓ a 4Jaw chuck
- ✓ a live centre with removable point or
- ✓ a live centre with a 45degree taper that has a diameter greater than 23mm
- ✓ Jacobs chuck
- ✓ 6mm Drill
- ✓ 37mm Forstner Bit
- ✓ 23mm Forstner Bit

With a removable point - Create a cone with outside diameter of greater the 35mm the spigot should be the diameter of you removable point

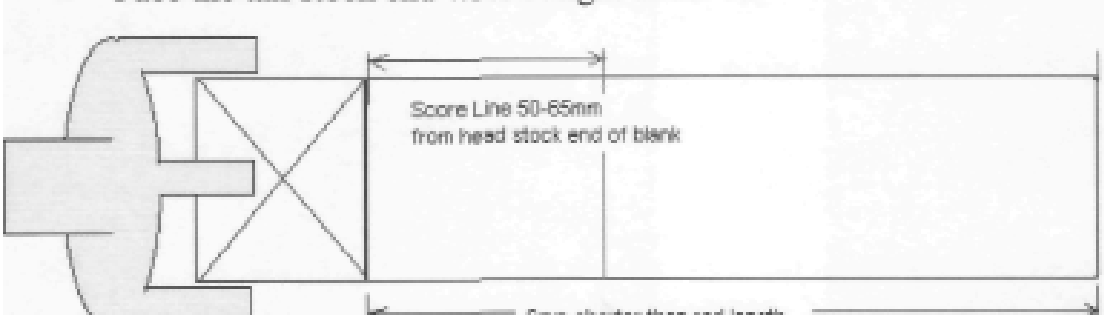


The length of the blank will need to 35mm longer than the rod of your choosing this is for gripping in the 4-Jaw and parting off.

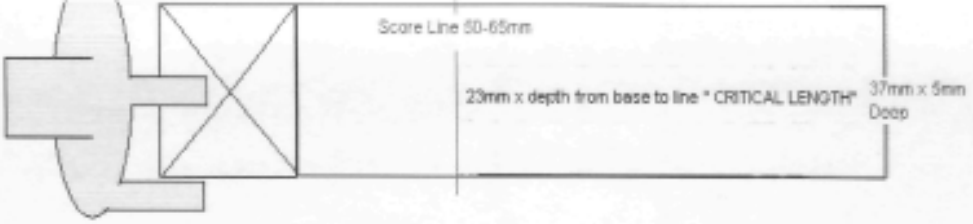
Rod length – To shorten the rod, measure from the thread to the required length and cut *[Discard the length that has no thread]*

On the opposite end to the thread squash the last 3mm with a flat punch [create the same shape as the original length]

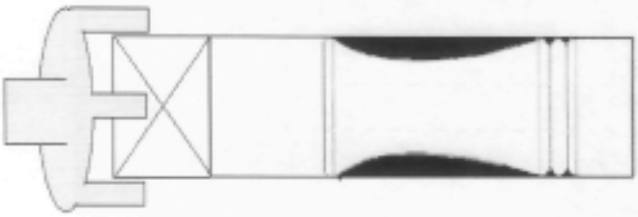
- Grip approx 20mm of the blank in the 4-jaw
- Using the live centre Turn the blank to the required diameter,
- Face the tail stock end with a slight under cut



- Using a pencil mark the length of the blank from the tail stock end towards the headstock – The length required is 6mm shorter than the length of the rod you have decide upon,

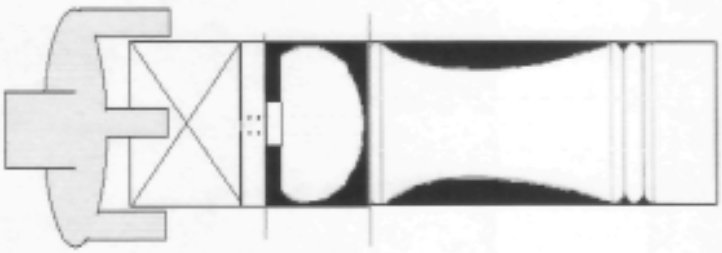


- Using a skew chisel score a line 50 to 65mm to the right of the pencil line – This section, from the pencil line to the score line will form the head of the shaker.
- Remove the live centre and insert the Jacobs chuck with 37mm Forstner bit
- Bore a hole approx 5mm deep
- Change the Forstner bit to a 23mm - bore a hole to the same depth as the score line – you may need to use an Extension to get full depth **BE accurate here it will save you work later**
- Remove you Jacobs Chuck and insert your live centre with the 35mm cone
- Secure your tailstock into the blank



- Turn the outside diameter of the body and sand to required finish

- Using a parting tool part the body from the head along the scribed line – A Slight under cut is again best option.



- Clean the inside diameter of the body to remove any remaining waste.

- Replace the live centre with a Jacobs chuck and 6mm drill

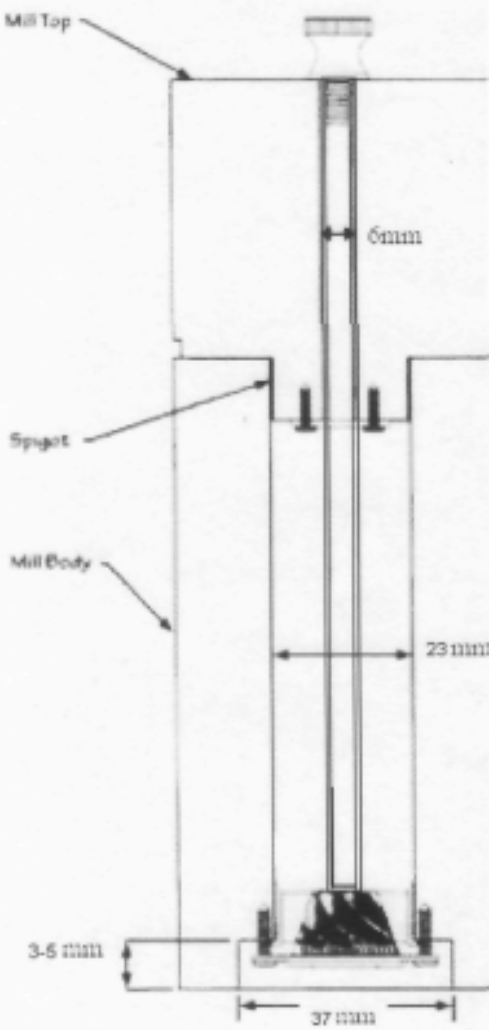
- Drill a 6mm hole approx 75mm into the remaining timber

- **NOTE** – The head is now turning in reverse to the body. **The top of the head now faces the tail stock.** Turn the outside diameter of the head and sand to required finish

- Using a parting tool, create a 3-5mm step with a 22mm Diameter

- Part the head from the 4-Jaw chuck, again slight under cut is better

- Assemble As per diagram



Salt & Pepper Grinder Specifications
(Danish Mechanisms)

Insert	External Base Diameter *	Total Length - Timber	Body Length *	Head Length* (before parting)	Head – Tail Length (after parting)	Head – Top Length*	Head - Tail Diameter	Head - Top Diamete
7" (175 mm)	50 mm	190 mm	130 mm	60 mm	10+ mm	45 mm	25 mm	50 mm
10" (249 mm)	60 mm	270 mm	210 mm	60 mm	10+ mm	45 mm	25 mm	50 mm
12" (305 mm)	65 mm	320 mm	250 mm	70 mm	10+ mm	45 mm	25 mm	50 mm
17" (432 mm)	80 mm	447 mm	335 – 352 mm	112 – 95 mm	10+ mm	65 mm	25 mm	70 mm

Drilling – Body - Base

Insert	38 mm or 1½"	23 mm (Salt)	25 mm (Pepper)	20 mm * #
7" (175 mm)	7 mm	18 – 20 mm	18 – 20 mm	115 mm
10" (249 mm)	7 mm	18 – 20 mm	18 – 20 mm	195 mm
12" (305 mm)	7 mm	18 – 20 mm	18 – 20 mm	235 mm
17" (432 mm)	7 mm	18 – 20 mm	18 – 20 mm	325 – 340 mm

Drilling – Body – Top

Insert	25 mm Drill - Depth
All	15+ mm

Drilling – Head – Top

Insert	6 mm Drill – Depth *
7" (175 mm)	65 mm
10" (249 mm)	75 mm
12" (305 mm)	95 mm
17" (432 mm)	95 – 110 mm

N.B.

* The above dimensions depend upon the design of the grinder.

The measurements are taken from the bottom of the body.

SALT & PEPPER MILL TURNING INSTRUCTIONS

Danish Mechanisms

1. Select the length and diameter of timber appropriate to the size of the mill to be made.

2. Mark the centre of each end of the blank.

3. Secure one end of the timber in the chuck with standard jaws and the tail end held by a large cone centre.

4. Turn the blank to the required diameter; keep the blank in the jaws.

5. True the tail end of the cylinder.

6. Remove the tail-stock cone centre and replace with a drill chuck holding a 38mm or a 1 1/2" forstner bit.

40

7. Reduce the speed of the lathe to a minimum and then drill to a depth of 7mm.

8. Remove the bit and replace it with a 23mm forstner bit for a salt mill, or a 25mm forstner bit for a pepper mill.

9. Drill to a depth of approximately 20mm.

22

10. Remove the bit and replace it with a 20mm auger bit.

11. Drill to the depth appropriate to the size of the mill.

12. Change the jaws on the chuck to pin jaws and reverse the timber by holding the timber at the headstock end with the jaws being inside of the blank in expansion mode.

13. To ensure the blank is central between centres, exchange the drill chuck for the cone centre and secure the blank between centres.

14. Exchange the cone centre for the drill chuck.

15. Change the bit for a 6mm high speed bit and drill the appropriate depth.

16. Replace the drill chuck with the cone centre and secure the blank.

17. Turn the remaining end of the blank to the required diameter.

18. True the tail-end of the cylinder.

19. Measuring from the headstock, mark on the timber the length of the required top of the mill, **excluding the spigot.**

20. Measuring from the tail, mark the required length of the bottom portion of the mill. (The space left between these two marks will be the length of the spigot)

21. Turn the mill to the required shape. Do not reduce the narrowest part of the bottom to less than 30mm. Otherwise the walls of the base will be less than 5mm thick.

22. Sand and apply the finish.

23. Start to part off the top of the mill, including the spigot, until it is held by about 10 – 12mm of timber. Stop the lathe. Cut through the remaining timber with saw.

24. Replace the cone centre with the drill chuck and insert a 25mm forstner bit.

25. Drill the top of the base portion to a depth of 15mm.

26. Check that the spigot will fit all the way into the hole. If not, carefully widen the hole until it fits.

27. Sand and apply the finish to the top of the base.

28. Remove the base from the lathe.

29. Hold the centre rod of the mechanism in a vice with about 80mm of the screw end protruding above the vice jaws. With the spigot uppermost place the top portion of the mill over the rod followed by the shorter plate. Screw the shorter plate to the spigot.

30. Remove the top portion of the mill and the centre rod from the vice.

31. Place together the base of the mill and the remainder of the mechanism, excluding the long plate.

32. Turn the base over and place the protruding rod into, and hold in, the vice jaws

33. Screw the long plate over the recesses in the milling mechanism, undo the vice, and remove the base.

34. With the base in an upright position, place the spigot over the protruding rod and fasten the end of it with the fastening nut.

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SALT and PEPPER MILL

USING LONG SERIES 20mm "EYE" LOCK SPINDLE CHUCK

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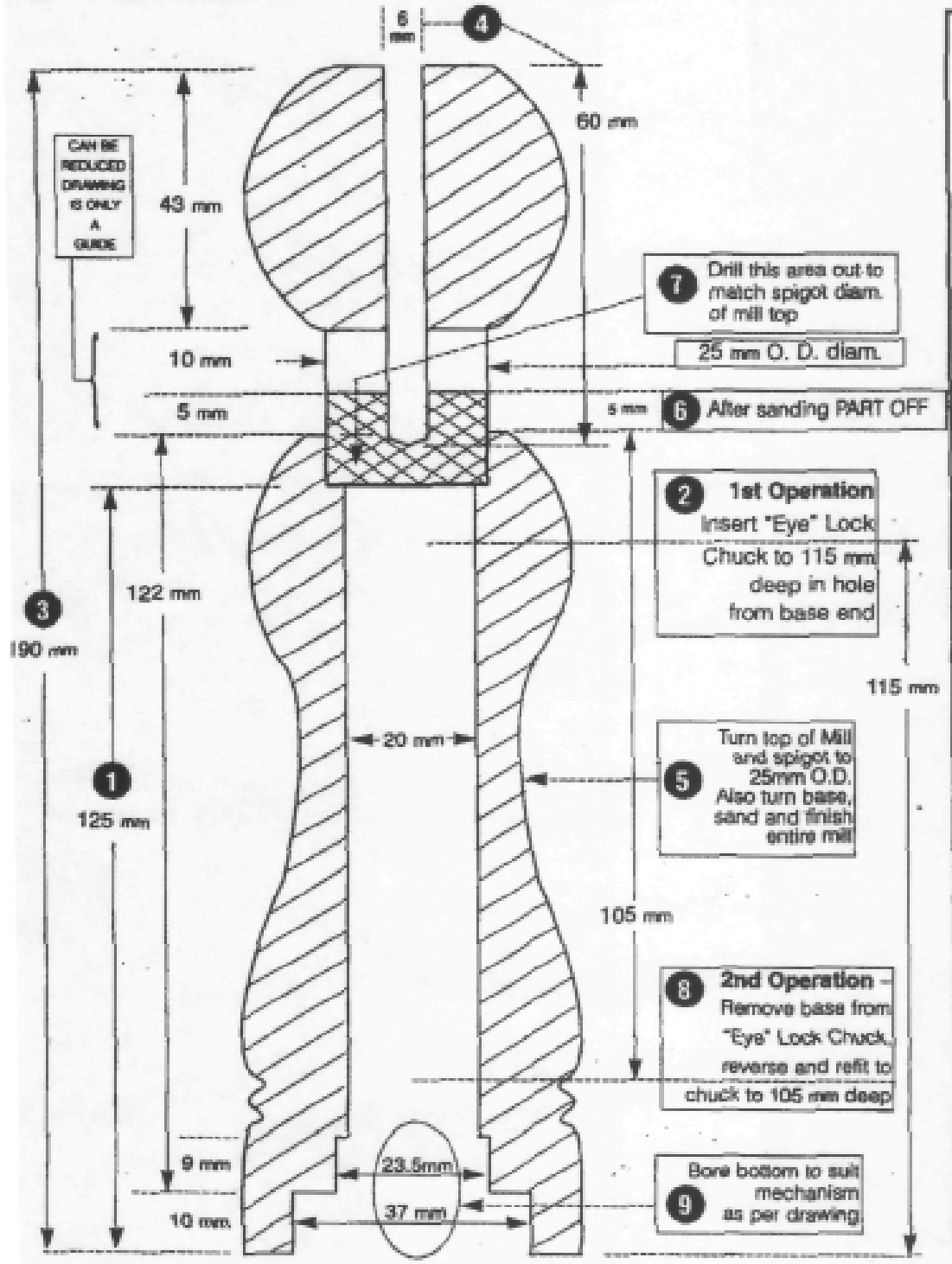
By Mike Irvine & John Crawford



MATERIAL REQUIRED

60 mm SQUARE
BY 200 mm LONG

Mechanism made in Denmark 7"

STEPS

1ST OPERATION

1. Drill 20 mm hole 125 mm deep
2. Insert "Eye" Lock chuck in hole 115 mm from base end
3. Square off top and bottom to 190 mm long
4. Drill 6 mm hole **60** mm deep
5. Turn top of mill, and spiggot to 25 mm O.D. Also turn base, Sand and finish the entire outside of mill
6. After sanding and finishing Part off mill top (5 mm allowance)
7. Drill out base top with 20mm drill (to break into 20 mm hole in base) Then further turn out top of base to suit spigot dia. of mill top

2nd OPERATION

8. Remove base from the "Eye" Lock Chuck - then Reverse and refit to chuck to **105** mm deep
9. Bore bottom to suit the mechanism as per drawing
10. Fit Mill parts to base. - Fit plate to top of mill & assemble top to bottom

"Eye" Lock Spindle Chuck Allows completion of mill with only one reversal of the base. Capstan and outside of base are finished in the **First Operation** after drilling a 20 mm hole and a 6 mm hole

Note: Dimensions of **122** mm and **43** mm are critical for correct operation of mills

Salt and Pepper Mills

For those of you who wish to have a 'good grind' without any extras and with the minimum of equipment, here is a simple description of one method to use. It only requires a simple screw chuck and an auger to produce.

Always stetch out the proportions of the project before starting. This way you will be sure to use just the right amount of wood. This one is based on a 7" mechanism.

Mark out the centre of both ends of the 2 1/4" stock, using the diagonals. Mount the stock between centres and turn the cylinder. Face up both ends leaving a spigot of less than 7/8" diameter at one end.

Mount an auger (suggest 7/8" in a drill chuck at the headstock end). Engage the lathe at about 500rpm or bottom speed if you can't get this low. Now mount the cylinder between the auger and the tailstock end. (end A against the auger). Hold the wood and switch on the machine. Now hold the wood in your left hand and wind the talistock quickly to force the wood into the auger - retract quickly every 1" of so to remove the excess cuttings. When you have bored over halfway and at least 3" in depth, you can reverse the stock into a spigot made from scrap wood mounted on a screw chuck. If a spigot is used a good fit is required.

Drill the hole for the spindle. If you require to recess the driving plate in the capstan, turn a spigot at both ends of the capstan the same size as the main bore. Part the capstan off leaving the spigot at both ends.

Complete the main bore using the auger for the tailstock end. Reverse the capstan and put the spigot into the bore to form a recess in the base of the capstan for the driving plate.

Remove the body from the pin chuck to see how deep you need to sink the mechanism in the base. Reverse the body into the spigot and complete the counter bore at the base. Use a small scraper to sink the female grinder part to the required depth, you will also need to tickle the main bore with a scraper to fit the female grinder part more snugly.

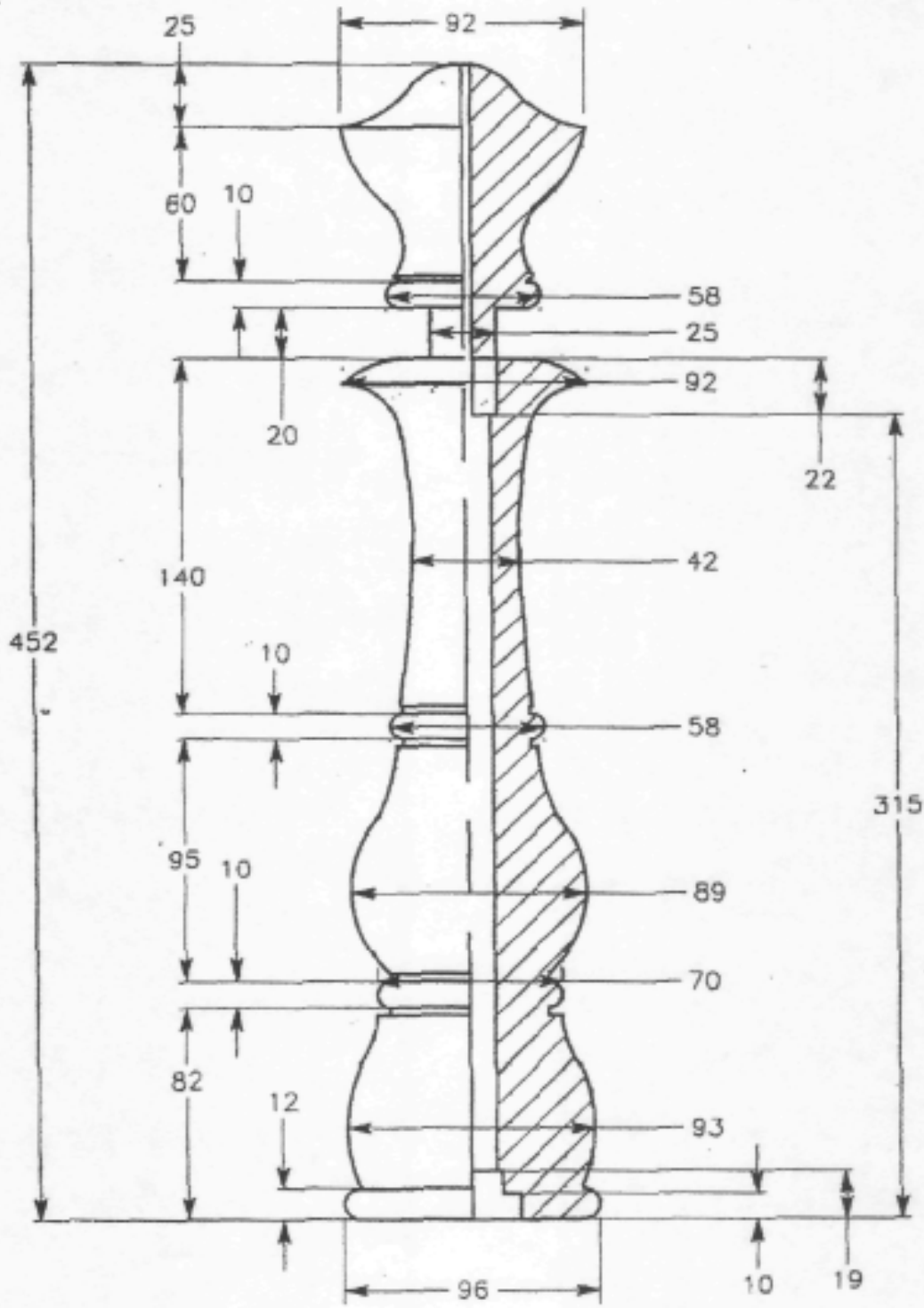
Remove and put the body back into the original position in, the spigot. Make sure the capstan spigot fits the bore smoothly. A touch with a scraper may be required to open out the bore. Fit the capstan and apply the tailstock support. Now finish the outside shape or the completed mill. Sand, seal and finish. Finally with the point of the skew remove the pip. It may be wise not to part through entirely, in order to prevent the capstan flying off and getting damaged. Ie cut off the last 1/16" with a small hacksaw blade and rub the end with a bit of sandpaper.

Salt And Pepper Grinder

ALL DIMENSIONS IN mm

DO NOT SCALE

17"



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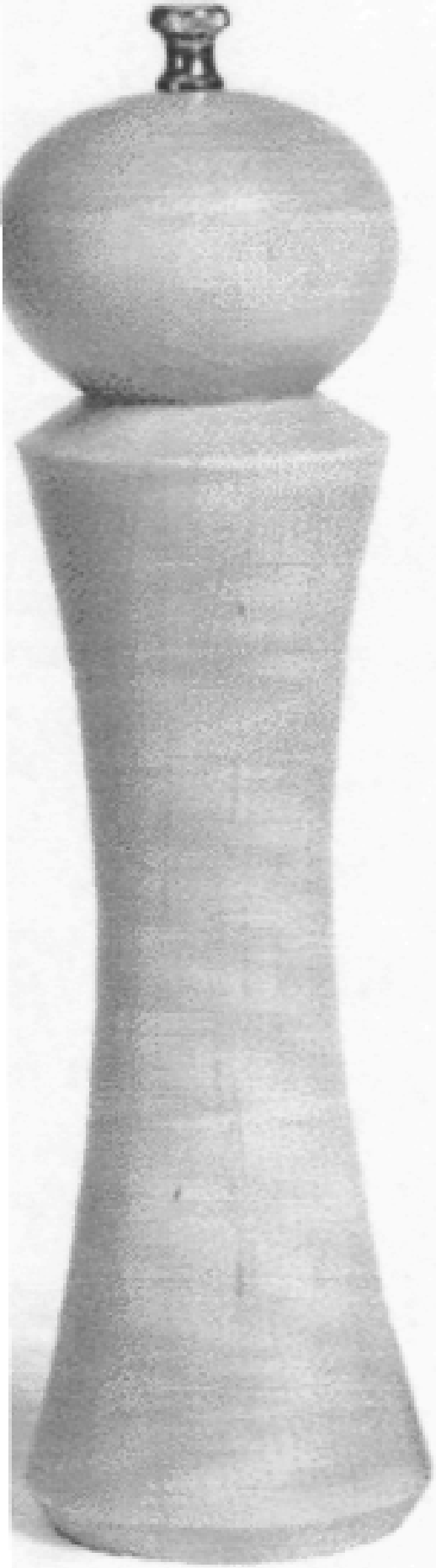


Pepper Mill

It's a new grind

By Nick Cook

I have never been much on projects that come in the form of kits—it just seems to be a little less creative than starting from scratch. But, the recent demand for custom pepper grinders has made the idea more intriguing.

Once you figure out the sequence of steps to make them efficiently, pepper mills are really not that difficult. I've found that the 10" mills are a nice size to work with and everyone seems to prefer it to larger or smaller ones. You can, of course, vary the shape widely from the basic mill I describe here.

Before you start turning, order your mechanism. I have tried many manufacturers, but Chef Specialties makes my favorite reliable stainless-steel mechanism. It also sells a polycarbonate salt mill, which prevents corrosion. (Packard Woodworks and Crafts Supplies sell these as "deluxe" mechanisms in the $12 range.)

The following directions apply to the 10" Chef Specialties mill. Refer to the information sheet that is supplied with your mechanisms for specific requirements.

Prepare your stock

To get at least two blanks from each strip, I make my slabs about 24" long. I also turn the mills from solid cherry and hard maple. I purchase 3" x 3" x 36" blanks from a local supplier. (You can find them on the Internet at www.hardwoodweb.com.) The blanks for 10" mills—either laminated or solid—are cut to 12" lengths. This allows plenty of room for tenons at both ends and a parting cut to separate the top from the bottom.

For laminated pepper mills, glue up large slabs of a variety of 3" stock milled to random thicknesses. After the glue dries, make the first cut at a slight angle. Make the remaining cuts using the fence of either the tablesaw or a bandsaw. This is a technique I learned from Rude Osolnik when I assisted him in laminating and cutting of rolling pin blanks.

Locate and mark the center of each end of the blanks, then use an automatic centerpunch to make a dimple. Rough-turn the blanks to round cylinders with a tenon at each end. Size your tenon

to fit the jaws of your scroll chuck. In addition to the tenon at each end, make a parting cut to separate the base portion from the cap of the mill (Photo A). For ease of drilling from both ends, add a tenon to the top of the base section; this eliminates the need for a drill-bit extension.

Make the base section 8" long plus a 3/8" tenon on each end; the cap will be approximately 2" long when completed.

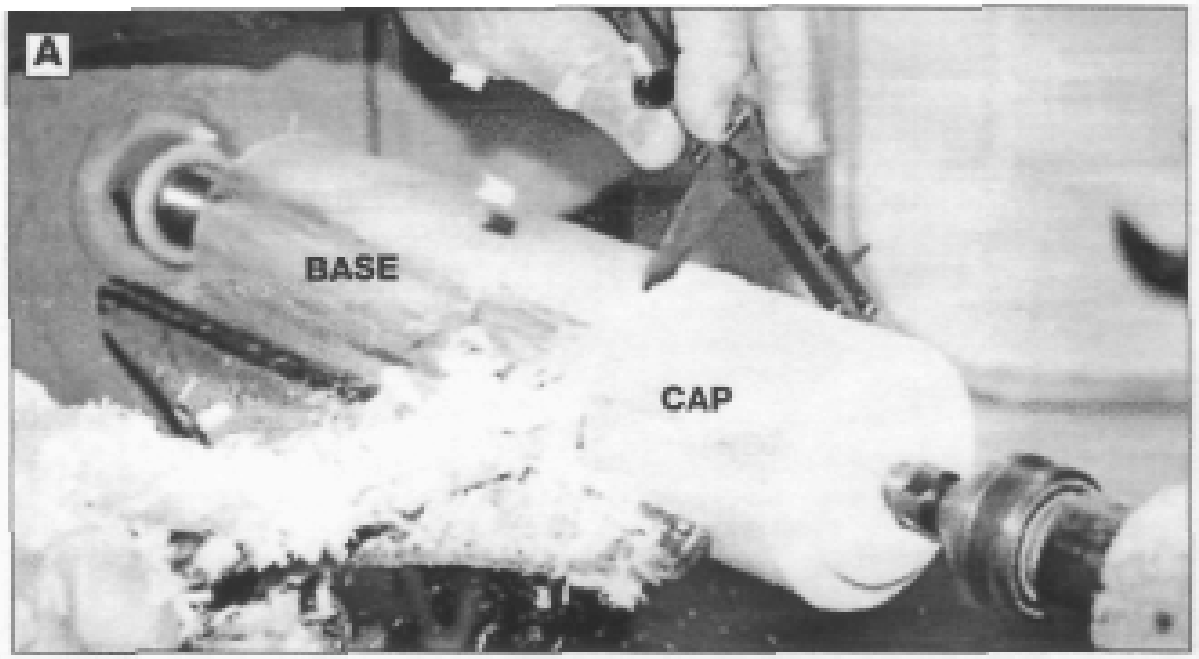
Drill routine

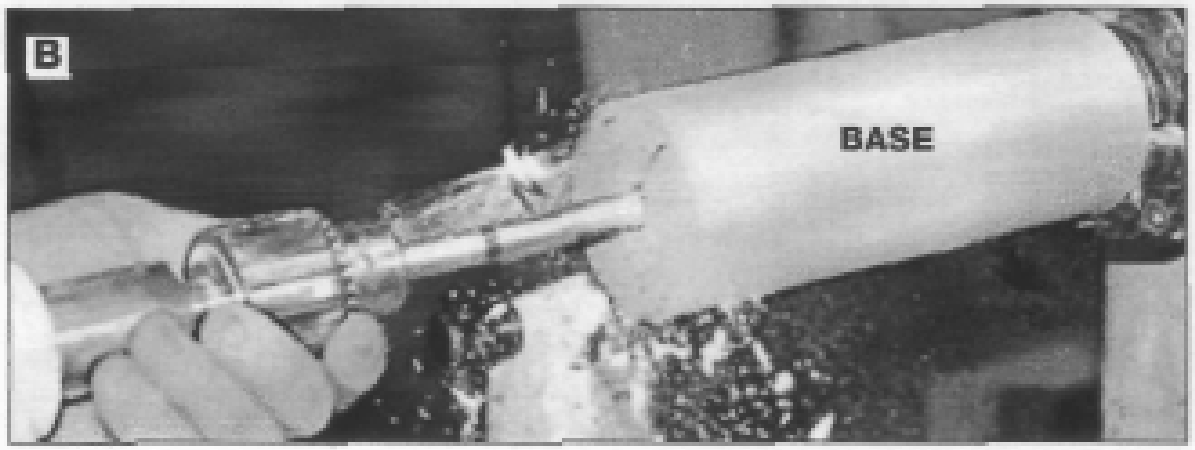
Once separated, mount the top of the base section in a scroll chuck with the bottom facing the tailstock. Drill the first recess in the bottom of the stock with a 1 5/8" Forstner bit in a Jacobs chuck. The recess should be approximately 3/8" deep beyond the tenon. With a 1 1/16" bit, drill a second hole 5/8" beyond the first recess.

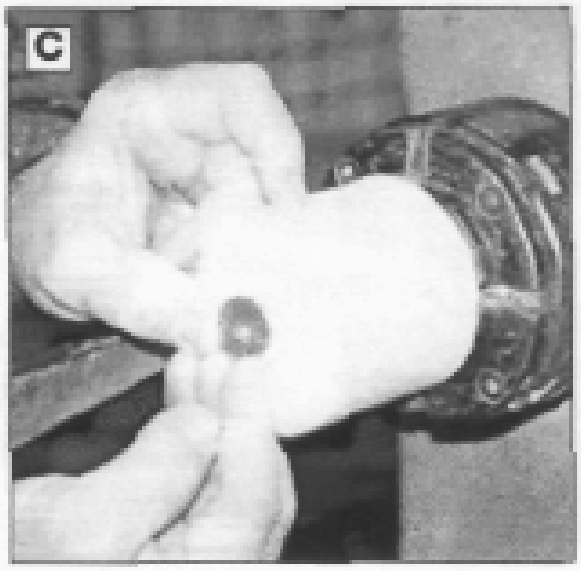
To drill the bottom of the base, tighten the base top in your scroll chuck. Mount an extra long 1" bit in the chuck and drill as deep as possible in the base of the mill. You must go slowly (lathe speed of 500 to 700 rpm) and back the bit out frequently to remove the shaving and prevent overheating.

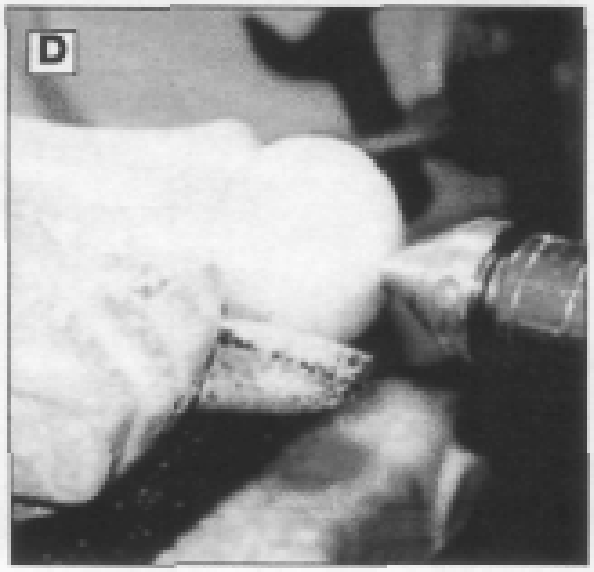
Remove the base section from the chuck and re-chuck it with the top facing the tailstock. Make sure the blank is centered and make a finishing cut across the top end of the base section. Complete the 1" hole through the base (Photo B). Remove the base from the chuck and set aside.

Mount the cap section in the chuck using the tenon on the top









end. Turn a 1" tenon approximately 1/2" long on the bottom end of the cap, then make a finishing cut from the perimeter toward the tenon. The tenon will fit into the 1" through hole in the

base to align the two parts. It should fit without being too tight to turn freely. Next, drill a 1/8" recess in the end of the tenon with a 3/4" Forstner bit; this step makes it easier to center the turnplate.

Drill a 1/4" hole all the way through the cap of the mill.

The next step is to remove the cap from the chuck and mount a waste block (I prefer poplar) to turn a jam chuck. The jam chuck should be 1 5/8" diameter and about 1 1/2" long. Make a finishing cut across the end so the stock fits squarely against the recess in the bottom of the base of the mill.

Before mounting the mill on the jam chuck, test and size the mechanism. I press the spring bar into the recess, and then insert the two halves of the mechanism and the shaft through the base of the mill (Photo C). While holding the parts in place, place the cap on the top of the base and make a mark on the cap at the center of the threaded portion of the shaft. This marks the finished length. Now, remove the mechanism.

Shape the mill

Depending on the final shape, you may wish to turn the cap and base separately. However, I find it faster and easier to turn the whole mill at once. Separate pieces require more turning time, but allow you better access for finishing the top of the cap.

Either way, cut off the tenon on the bottom end of the base. I do that with the mill mounted in the jam chuck with the cone center in the tailstock.

To turn them together, mount the base on the jam chuck, insert the tenon of the cap into the through hole of the base, and use a cone-shaped live center to hold the assembly together (Photo D).

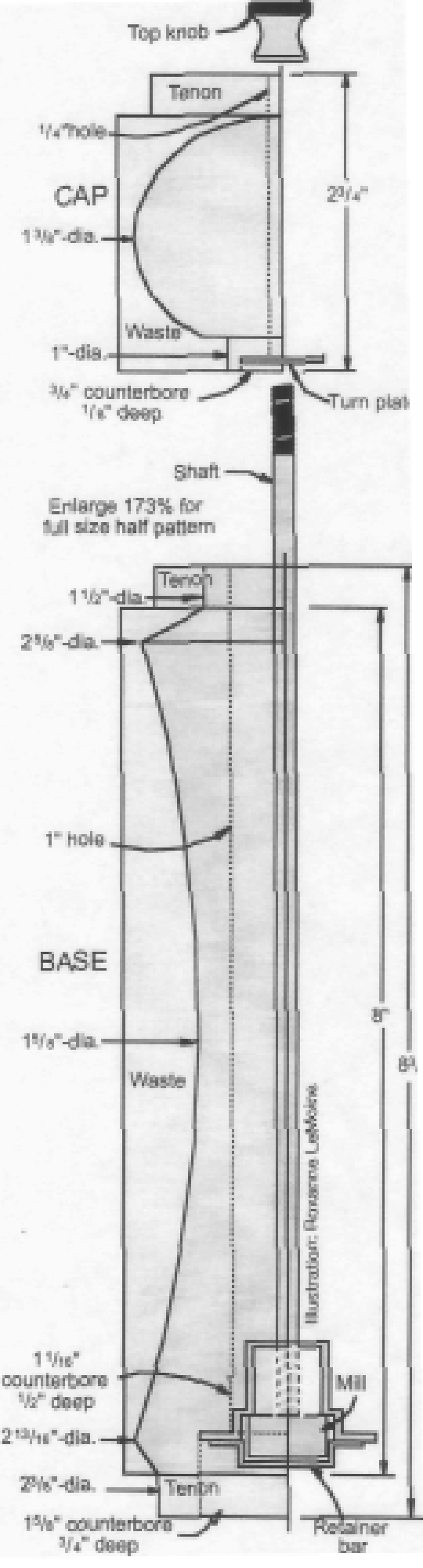
To turn them separately, make a second jam chuck. This time, turn the chuck with a recess to fit the tenon on the bottom of the cap. Then press it into the chuck and turn to the desired shape.

Final dashes

After shaping the mill, sand with 150-, 180- and then 220-grits. My favorite finish for most utilitarian items is urethane oil. You can apply it right on the lathe and build it up to a high-gloss finish. For a satin sheen (my preference), cut back the gloss with steel wool.

After the finish dries, assemble the mechanism. Attach the turnplate in the recess on the bottom of the cap. Press it in place, and drill 3/32" drill pilot holes to prevent the screws from splitting the wood. Screw the turnplate to the cap and set it aside.

Turn the base upside down and insert the spring bar in the recess in the bottom. Press the female portion of the grinder mechanism into the spring bar. Slide the male portion of the grinder onto the shaft and then the spring bar, and slide the shaft through the female mechanism and the spring bar.

Place the retainer bar over the assembled mechanism, line up the holes, drill pilot holes, and screw in place. Slide the cap over the top end of the shaft and screw on the top knob. Finally, tighten the knob to adjust the grind.

Nick Cook (nickcook@earthlink.net) is an honorary lifetime AAW member. He lives in Marietta, GA, and is a production turner and frequent turning demonstrator.