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AWA
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“A Simple Box”

These notes are intended to act as an aide memoire for those who have attended a course with me or who have seen me demonstrate.

Tools Needed:

- Roughening gouge
- ¼" bowl gouge
- ¼" spindle gouge
- ⅜" beading tool
- Narrow/thin section parting tool
- ¾" round nose scraper
- ½" oval skew chisel
- Depth gauge
- Vernier / calliper
- Dividers
- Chuck & jaws
- Small handsaw
- Abrasive 150 – 400grit
- Cellulose or spirit sealer
- Polishing mops

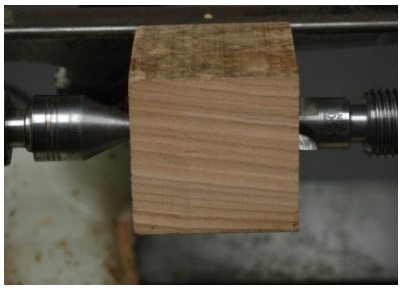
Personal Protective Equipment

- Goggles
- Dust extraction at lathe
- Dust Mask or respirator
- Gloves for polishing if required

Material:

The wood needs to be clean without any cracks or defects and with the grain parallel to the lathe bed. Maximum size 4" diameter. **MUST BE DRY**.
Scrap wood for reversing should again be parallel grained and of similar diameter to the box.

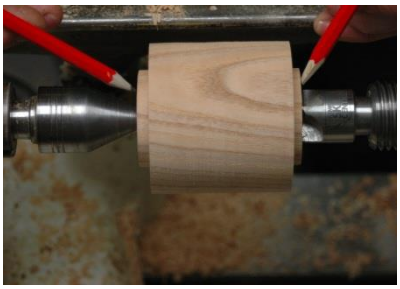
1. Select materials, cut to length and mount on lathe using drive centre and revolving tail stock centre.
   When positioning tool rest and banjo, use central section of tool rest (over centre stem) for strength. Set the height of the tool rest about ¼" below centre height and about ¼" away from the work. Turn work over by hand to ensure work piece clears the tool rest.

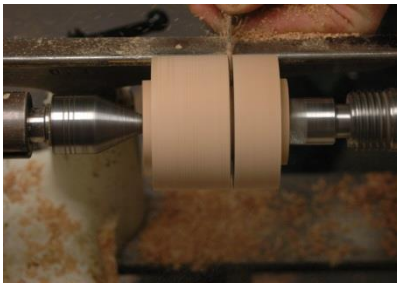


2. If variable speed is available reduce speed before switching lathe on. Start lathe and gently increase speed to between 1,500 and 2,00rpm. If you are using a belt change lathe, select pulleys for this speed range.

3. Turn to cylinder with roughening gouge. Starting in the middle of the work, with the handle low present the tool to the revolving work. Gently raise the handle until the cut is found, move the tool back and forth along the rest to form a straight cylinder

4. Stop the lathe and check that your cylinder is clean. Move the tool rest in to be 1/4” away from the work again (reducing overhang).
   Set callipers to conform to chuck jaws, then cut spigot on both ends using beading or parting tool to this diameter, (handle low, gently raise and feed forward).
   Define lid and base sections with a pencil, cut through with narrow parting tool to last 1/2”.





5. Remove work from lathe, swap drive centres for the chuck. Mount the work into the chuck with the lid end mounted into the jaws.
   Using handsaw separate the two sections.

6. **To Hollow Lid Section**
   Set up depth gauge to depth that lid will be hollowed to.
   Using ½" oval skew cut small v-section in the centre of the lid.
   With either small spindle gouge, or drill bit mounted in tail stock chuck, drill to this depth (check with depth gauge).

7. Remove bulk of lid interior with ¼" bowl gouge with flute at an angle of 9.30 or 10 o'clock (indicated by blue tape). Left hand finger and thumb on tool rest as pivot point, right hand holding the handle to move it away from the body.
IT IS IMPORTANT TO BUILD THE REQUIRED PROFILE AT THIS STAGE. Using this back cut removes the bulk quickly but will result in a poor surface finish.

8. To clean up, use ¼" bowl gouge with the flute at an angle of 1or 2 o'clock.
Use left hand fingers and thumb on the tool rest to support the cutting tip of the tool.
To find the cut, rest the bevel of the gouge just inside the rim of the part hollowed lid, left thumb remains static supporting the back of the gouge whilst the handle slowly moves away from the body until shavings are produced.
Maintaining this angle drop the gouge back out of the rim, push the tip of the gouge forward with the thumb of your left hand and swing the handle back towards the body.
Allow the gouge to slide forward though your fingers to maintain bevel contact with the arc of the lids interior.
Don't force the cut as this will cause "bouncing". Aim to pass from the rim to the centre in one cut.

9. To shape the underside of the rim, use ¼"bowl gouge working from the edge towards the centre, cutting with the tip. Use your left thumb move the tip of the gouge along the tool rest.

10. To refine the interior shape use a sharp round nose scraper working from the centre towards the rim. Keep the tool flat on the tool rest taking light cuts (tickling tool). Remember to keep the handle level.
    The main problem is cutting the centre. To overcome this slightly raise or lower the handle which in turn with lower or raise the cutting tip.
    Stop and check progress – fingers are better than eyes!
    The same applies to cleaning the underside of the rim.

11. When you are happy with the profile of the interior of your lid, remove the tool rest, reduce the lathe speed to about 700rpm and start sanding with the coarsest grade of abrasive. Checking progress between each grade work your way up through the different abrasives.

12. Reset the tool rest, just above centre height. Using the ½" oval skew cut the lid recess. This needs to be about ¼" deep and parallel.

13. Using the long point, gently roll the chisel on the oval body of the tool to engage the flat edge onto the work. This helps keep the cut parallel.

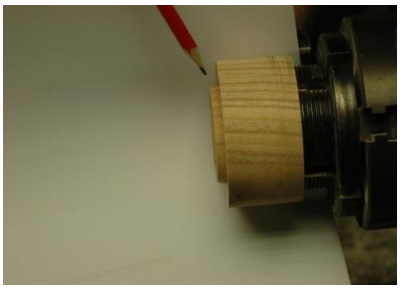
14. **Seal and polish**
    Brush on a coat of sealer with the lathe stationary. Wipe off the excess with paper towel or safety cloth.
    Apply wax with Webrax or 0000 - steel wool with the lathe spinning.
    Buff the wax with clean paper towel.
    I use cellulose sealer and a neutral black bison wax.

15. Remove from chuck and replace with base section

16. Measure the internal diameter of the lid recess with a Vernier (caliper).
    Halve the measurement and set the dividers to the halved size.

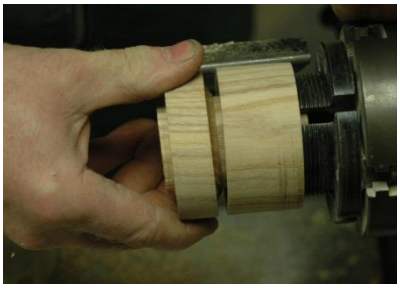
17. With the long point of an oval skew cut a small vee in the centre of the base. Push the right hand leg of the dividers into the vee. Sit the left hand leg on the tool rest pointing downwards. Push forward to transfer lid recess diameter.

18. Position tool rest parallel with lathe bed. Cut the base spigot using 3/8” beading tool, using the divider line as a guide. This should taper slightly towards the tail stock end of the lathe.
Test fit the lid.

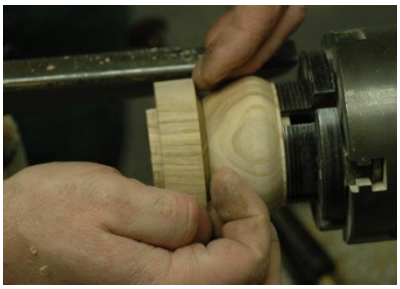


19. Remove a small amount of material using 3/8” beading tool, when the lid starts to fit onto the spigot rotate the lathe by hand whilst holding the lid in your right hand. This will polish the joining surfaces and indicate the diameter required.
    Carefully level this section, check fit and also check length of spigot and adjust stock as needed.

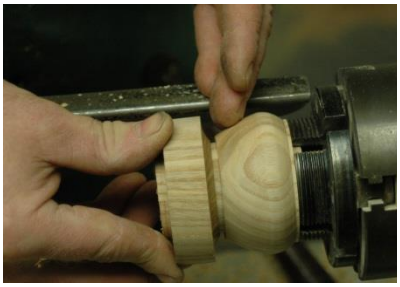
20. It is important that the lid is a tight fit. If not, remove spigot and recut a new spigot to obtain tight fitting lid. Problems can occur if the lid is pushed fully home at this stage as the base material under the lid makes it tricky to separate the two parts.



21. This removal of material allows easier and firmer fingertip access to remove the lid section. To solve the problem start shaping the outside of the base.

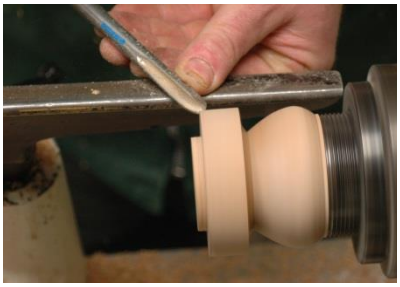


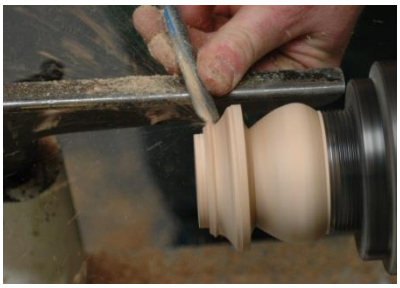
22. Once this material has been removed, push on the lid section, ensure that this runs true. If not, look for problem areas, such as; over length or end of spigot not being cut level, check for shavings trapped in lid recess.



23. Another problem is that if the spigot is too long the two sections will not come together. Check this with a Vernier.

24. Start to shape the outside of the lid, it is important to remember that the internal section is hollow. Use ¼" bowl gouge with flute at 2 o'clock. Working from larger to smaller diameter. As the shape progresses remove the lid and check thickness with fingertips.





25. It is important to remember to slow the pace of the gouge, if too forceful a cut is engaged when cutting the very centre of the lid it is possible to pull out a matchstick sized hole in the centre of the lid. Therefore slower, lighter cuts are important.

26. Refine the shape if needed with round nosed scraper and ½" oval skew.

27. When happy with thickness, remove and put aside. DO NOT SAND AT THIS STAGE.

28. Continue shaping as much of the outside of the base as possible.

29. **To Hollow the Base Section**
Set the depth gauge to required depth leaving a minimum of ¼" in the base.

30. Drill depth gauge pilot hole with either ¼" spindle gouge or drill chuck mounted in tail stock.

31. Check depth using pre-set depth gauge.
    Remembering that you can't put material back on!

32. Hollow internal section using ¼" bowl gouge, working from centre outwards, flute at 9.30 or 10 o'clock.
    Remember to leave more material thickness on the internal face of the lid jointing spigot, this adds strength to the box whilst it is being hollowed.
    Remove as much material as possible with the bowl gouge, then clean up using an oval skew and round nosed scraper.

33. When you are happy with the internal shape, it is possible to reduce the material on the internal face of the jointing spigot, using fine cuts with the long point of the oval skew.

34. At this stage remove tool rest and reduce the lathe speed to about 700rpm and start sanding with the coarsest grade of abrasive.

35. Start with the inside of the base, then the outside of the base section (DO NOT SAND SPIGOT).
Stop the lathe and refit the lid. Sand the outside of the lid.
Change the grade of abrasive and repeat working from outside of lid (stop lathe to remove) then outside and inside of base section. Repeat through all grades of abrasive.
NB. Sanding creates heat and sanding all components at the same point will cause everything to shrink evenly.

36. Seal inside and outside of base, and outside of the lid.
Wax internal section of base.
Remove from chuck and set aside.

37. Insert scrap block of material into chuck, this will be used for reverse chucking of the base (to clean up the underside). Clean up the face end to level.

38. Measure exterior of base to lid joining spigot.
Halve this measurement and set dividers to this halved measurement.

39. Cut small Vee section in centre of scrap block.

40. Use dividers to mark diameter.

41. Check this diameter with the Vernier

42. Remove material from centre outwards using ¼" bowl gouge, flute at 9.30 or 10 o'clock. Stop short of the divider line.

43. Using a ½" oval skew square up the edges so that they are parallel.

44. Test fit base section. Push in place. This needs to be a tight fit.

45. Continue shaping outside of base, removing chuck holding spigot, cutting larger to smaller with ¼" bowl gouge with flute at 2 o'clock. LIGHT CUTS.

46. Work around to the underside of the base ensuring that this is either level or undercut as the box will stand on this.

47. Remove tool rest and reduce lathe speed.
    Sand and seal.
    Remove base section from scrap block.
48. To polish the outside of the box, I use a polishing system of two stitched mops and one loose mop.
    For dark woods, use brown compound on a stitched mop (Tripomax). For light woods, use light compound on a stitched mop (Plastimax). For the final polish, use the loose mop and carnauba wax. It is important to remember with all of these that A LITTLE GOES A LONG WAY!! I use these products because they produce a hard wearing finish that withstands fingertip abuse, whilst maintaining a high gloss.

49. The selected mop is attached to the lathe with a pigtail arbour. With the lathe running at about 1,600 to 2,000rpm present the box to the mop in the bottom half of the spinning edge (6 to 9 o'clock when looking at the mop face). I use a cardboard box positioned directly under the spinning mop mounted on the lathe bed, this box containing bubble wrap, this safety net can save the box at this stage.

50. It is important to grip the work piece firmly whilst moving it around to ensure that all surfaces of it make contact with the mop.
    This first stage acts as a grain-filler and also cuts back the raised grain from the sealer.

51. Change over to the loose mop and with the lathe running at about 1,600 to 2,000rpm present the carnauba wax to the mop to apply a little of it.

52. Present the box to the mop in the bottom half of the spinning edge (6 to 9 o'clock when looking at the mop face). (It is important to grip the work piece firmly whilst moving it around to ensure that all surfaces of it make contact with the mop.)
For more delicate work reduce the lathe speed.

Tools and equipment used.