

NOTES ON LIDDED BOXES



Design Considerations

Before beginning your box, decide whether you are going to turn a basic cylinder box with a flat top and bottom or a variation of this simple design. Egg shaped boxes are popular but are somewhat difficult to turn as the egg shape is tricky. You may want to experiment with using a detail tool or a chatter tool to decorate the top of the box. The inside of the box does not have to follow the shape of the outside of the box. For instance, if you turn a flat top cylinder box, the inside of the top could be domed. The ratio of the bottom to the top should be one of the following as they are the most pleasing to the human eye: 2/5 to 3/5, 1/3 to 2/3 or 1/4 to 3/4.

MATERIALS

Dry hardwood 2" to 3.5" inches in diameter and 5" to 6" inches long

TOOLS

Roughing gouge
3/8" Spindle gouge
3/4" Round nose scraper
1/2" Square nose scraper
3/8" Beading and parting tool
1/16" Thin parting tool

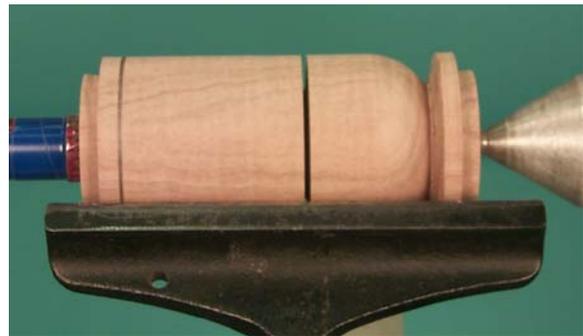
Four jaw chuck
Spur drive or steb center

Making the Box

1. Mount a block between centers.
2. Turn the block to a cylinder.
3. Use a 3/8" beading and parting tool to put a 1/4" tenon on both ends with a shoulder for the chucking. The front of the jaws should rest against the shoulder.



4. Measure the length of box, making sure to leave room at the ends for the 1/4" tenon and allowing clearance for the tool when shaping top and bottom in the chuck.
5. Rough shape the box, then mark the lid separation point and part off with thin parting tool. Visually the best ratios for boxes are the following 1/3 to 2/3, 1/4 to 3/4, 2/5 to 3/5.



6. Mount the top in chuck



7. Face off the top with a 3/8" spindle gouge or skew chisel.

8. Use a beading and parting tool to cut a recess in the top for the bottom tenon to fit into. The recess should be 1/8" wide and 3/16" deep .



9. Begin hollowing using a spindle gouge or hollowing tool.

10. I use the following technique to hollow with a spindle gouge.

11. Set the tool rest height so that when the gouge handle is horizontal to the bed of the lathe the center of the cutting tip is at the center of the piece to be hollowed. Push the gouge straight in to make the initial hole with the flute fully open. Push it in approximately 1/2" and then pull it out rotating the flute toward you and slightly lowering the handle. This gives you a nice slicing cut.



12. Remember to check your depth often so that you do not risk going through the bottom when you later reverse turn the bottom. You also need to check the wall thickness to insure that it is even.

13. Finish hollowing with a round nose scraper, if the lid is to be round on the inside use a round nose scraper or use a square end scraper if inside of the top is to be flat. Please note that it is best to modify the round nose scraper by grinding the side of the scraper so that it can scrape the side of the box with the tool almost parallel to the side of the box. Once again the hand rest is set so that when the handle is level and parallel to the lathe bed the cutting edge is at the center of the piece to be hollowed. I hold the scraper with my forearm over the handle and my index finger pointing down the top of the scraper. With this method two things happen, when I move my finger the tool edge automatically goes in the direction that I point and two if I get a nasty catch my forearm prevents the tool from hitting my face.

14. Be careful as the scraper may grab when cutting the end grain at the bottom of the box.

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15. Sand the inside of the top and apply finish being careful not to sand the recess or round it over.

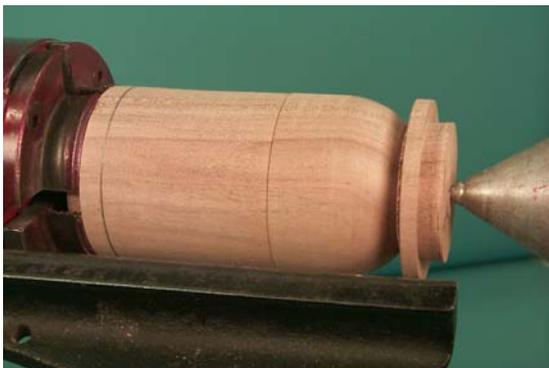
16. Remove the top from chuck.

17. Place the bottom in chuck.

18. Face off the top of the bottom. Remove as little wood as possible so as to minimize the grain mismatch when top and bottom are connected.

19. Use a parting tool to cut a tenon for top to fit onto, Cut a slight taper on the tenon so as to gradually sneak up on a tight fit. **THE TOP MUST FIT TIGHTLY BECAUSE YOU WILL ATTACH THE TOP TO THE BOTTOM TO FINISH SHAPING THE TOP OF THE TOP.** Test for fit frequently and try to avoid the erge to make one more cut as it usually causes a loose fit. I make the tenon just long enough to test for fit so that I can start over again if fit is too loose, without creating more of a grain mismatch than I have too.

20. Attach the top and finish shaping the outside of the top and the bottom of the box. **BE SURE TO LINE UP THE GRAIN ON LID WITH THE GRAIN ON THE BOTTOM TO INSURE A SMOOTH FINISH IN CASE THE WOOD MOVES A BIT.** Turn a decorative groove or feature to disguise or highlight the separation point of the lid and bottom. Use gentle cuts when cutting top as it will pop off if you get too aggressive. After all it is only held on by friction.



21. Finish sand and then remove top.

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22. Hollow the bottom using the same method used for hollowing the top. Remember to check depth and thickness frequently. Leave enough wood on the bottom to reverse turn the box and to insure that you do not turn through the bottom when finishing it in the jam chuck. Most importantly do not forget to make the tenon $3/16$ " or slightly less so that the top seats properly.



23. Sand and finish the inside.

24. Remove from chuck.

25. Make a jam chuck to reverse turn the bottom of the box. It is best to use a compression fit in a jam chuck. Where the box is placed inside a recess, cut in the jam chuck. Once again this needs to be a tight fit. Start out with a shallow groove and sneak up on the fit, testing often. Note that if you get a tight fit but the box slips a bit when the tool is cutting you can take the box out and apply moisture to the jam chuck causing the wood to swell and thereby making for a tighter fit. Sometimes you can use a bit of toilet paper or paper towel to improve the holding power of the jam chuck.



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REMEMBER TO TAKE LIGHT CUTS AS THE BOX WILL POP OUT AND POSSIBLY BE DAMAGED IF YOU ARE TOO AGGRESSIVE.

26. Finish off the bottom making it slightly concave so that it will sit flat. Sand and finish the bottom.

27. Add top

28. Admire your box and take pride in your finished piece.

