Multi-axis lidded boxes

By Louis Boucher

Valley Woodturners

1. Turn a 3 by 3 inches cylinder and face-off both ends
2. At both ends, make a 2¼ inches diameter tenon by ¼ inch long
3. Take off from lathe and mark the four axis using the template below it has a true center as well as 3 off-axis marks (numbered 1, 2 and 3) 120 degrees apart and 5|8 inch away from true center. Draw lines from the true center going through each of mark and toward the edge of the cylinder) this is done on the left end side of the cylinder.
4. Remount between centers and draw a line across the cylinder for each of the reference lines from the left end to the right end. Use the tool rest as a guide.
5. Take-off from lathe and draw 3 lines from the lines across the cylinder and the true center on the right face of the cylinder.
6. Mark the four axis with the template used in step 3. Make sure to properly mark each corresponding off-axis marks.
7. Remount using axis 1 on both ends. It is advisable to use a low friction spur drive like a STEB CENTER to avoid catches. Manually turn the piece to make sure you have enpugh clearance to the toolrest. The tool rest should not be moved until all face are done, this is your only reference for resting you tool.
8. Turn the first face of the cylinder. Since you are cutting only wood one third of a revolution...(wood, air, air, wood, air, air, wood ... !!) It is faster, more accurate and safer to use a roughing gouge to do this. Put as much pressure as you can on the tool rest to avoid digging in the cylinder as you go through the air gap. Under any circumstances, do not use a skew chisel for this part of the project. You will be done when the face meets the 2 ¼ inch tenon at both ends. Stop often to check your progress.
9. Repeat step 8 for the two other faces using the corresponding off-axis marks.
10. Remount on true centers and sand the faces. It is recommended to use a random orbit sander for this step.
11. Part off the base and top of the box. A thin parting tool will produce a cleaner cut on the corners. You can finish the cut on the bandsaw using a V block for safety.
12. Hollow, fit and finish the top and base as usual.

Multi-axis lidded boxes marking template

Box Outline

2¼" R

5/8"

#1

#2

#3