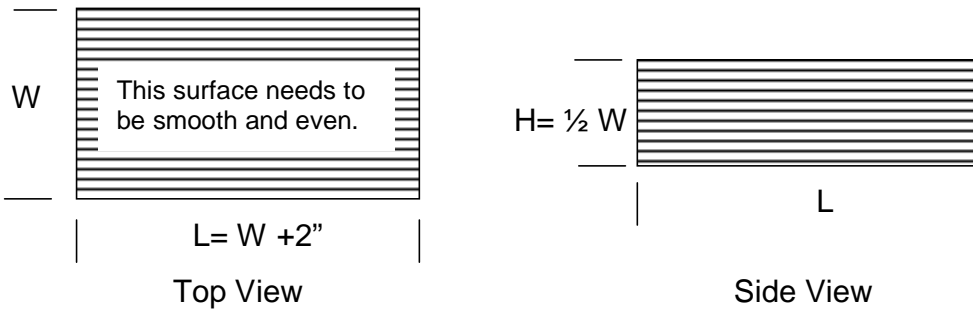


## “Turning an Odd Wobbler” By: Don Geiger

### Stock Size Calculations and Reference Table:

Turning an Odd Wobbler requires two pieces of dry wood that are about 2 inches longer than the width. The thickness of each piece needs to be  $\frac{1}{2}$  the width. The grain needs to run lengthwise. The mating sides need to be planed to a smooth even surface.

Example:



Note: The length needs to be 2" longer than the width. This is reflected in the table below.

Sizing Table (Make 2):

Odd Wobbler ~Diameter	Length	Width	Height
2" (minimum size)	4"	2"	1"
2-1/4"	4-1/4"	2-1/4"	1-1/8"
2-1/2"	4-1/2"	2-1/2"	1-1/4"
2-3/4"	4-3/4"	2-3/4"	1-3/8"
3"	5"	3"	1-1/2"
3-1/4"	5-1/4"	3-1/4"	1-5/8"
3-1/2"	5-1/2"	3-1/2"	1-3/4"
3-3/4"	5-3/4"	3-3/4"	1-7/8"
4"	6"	4"	2"

**Safety Note: An Odd Wobbler smaller than 2" poses a choking hazard.**



Plane the lumber on one side.



Measure the thickness of two pieces.



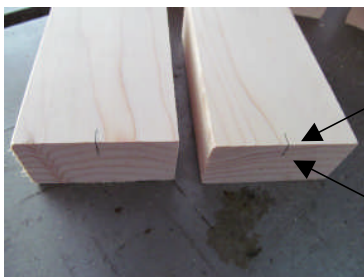
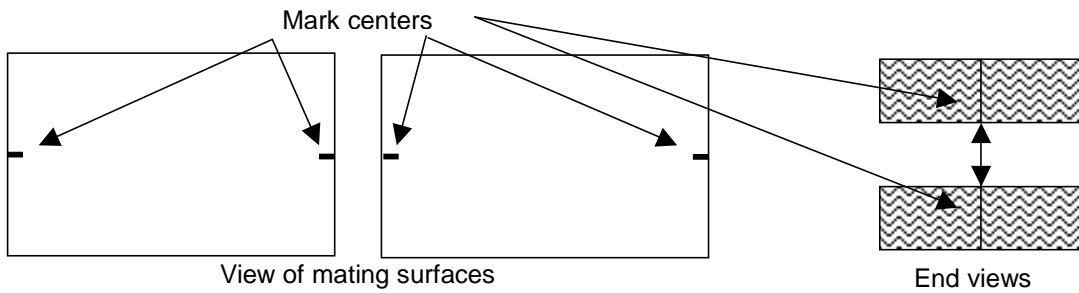
Rip width to equal two thicknesses of the planed stock.



Cross-cut the length to equal: Width + 2"

**Mark the centers:**

Once you cut the wood to the proper dimensions, mark the centers perpendicular to the width and on each edge.



Mark here  
and here.



Preparing several blanks at once saves time and encourages practice.

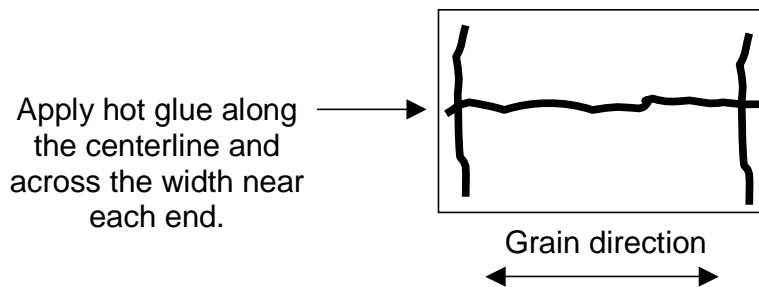


If your drive center and live center don't have spring-loaded retractable center points, use a triangular file, score each end of both pieces to create a void where the center points of a drive spur and live center will register.



### **Glue together:**

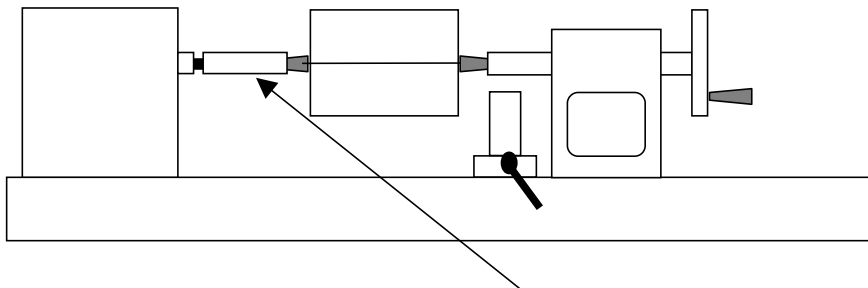
Use a small amount of hot glue to adhere the two pieces to each other. Quickly mate the two pieces matching the score marks. Wood glue/paper joints or CA glue should be avoided.



Press together for about 1 minute or longer.

### **Mounting on the lathe:**

Mount the assembled pieces onto the lathe between centers. Although a standard drive spur and live center can be used, a Sorby Steb drive spur and a Steb live center, each with a spring-loaded center pin and a ring of tiny teeth, will minimize the chance that the two pieces will be separated from each other while turning.



Adding a Morse taper extender (#2 male M.T. to #2 female M.T.) in the spindle of the lathe provides additional room to maneuver the gouge when making the cuts on the left hand side of center.



On some lathes, the head stock can interfere with the movement of tool handles. This can be avoided by inserting a #2 to #2 Morse taper extension in the headstock spindle. The drive spur is then placed in the female end of the extension. This moves the blank several inches to the right thus avoiding the interference that would otherwise occur.

### **Safety:**

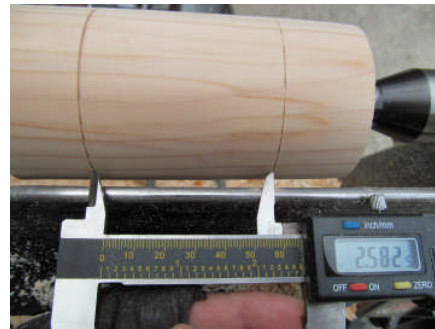
There is always a chance the two pieces could come apart from each other on the lathe. It is of paramount importance that the turner wears safety glasses and a face shield. Also, occasionally stop to ensure the two pieces are still adhered securely to each other.

**Initial turning:**

Using a skew, a roughing gouge or a side-ground bowl gouge, turn the wood into a smooth cylinder.



Using a Vernier, dial or digital caliper, measure the diameter of the cylinder.



With the lathe running, use the points of the inside measuring tangs to score two marks on the cylinder. This distance apart should be equal to the diameter.

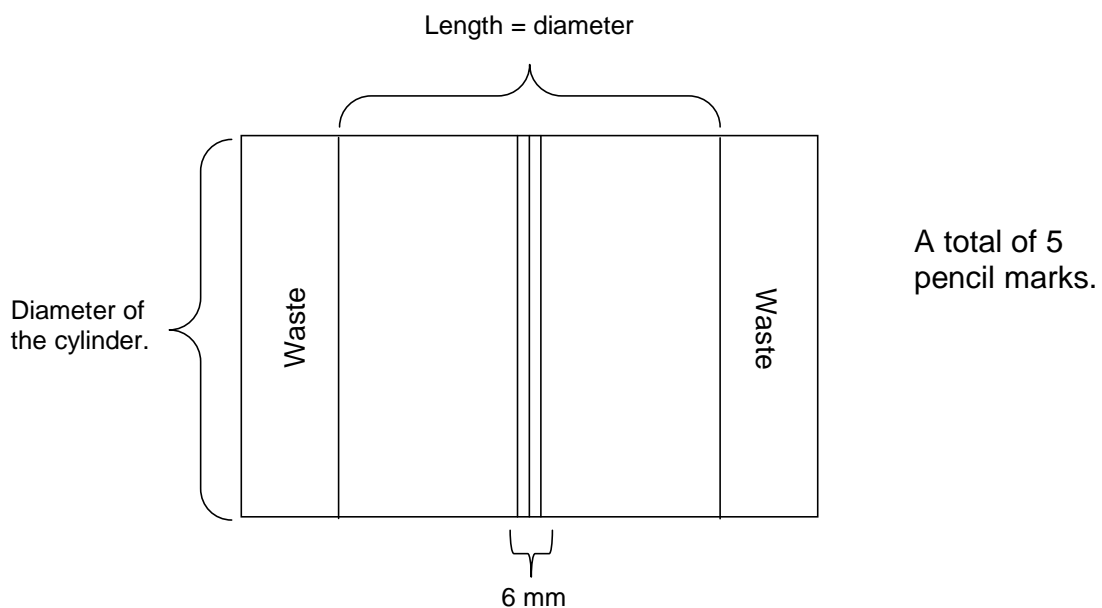
**Measuring and marking:**

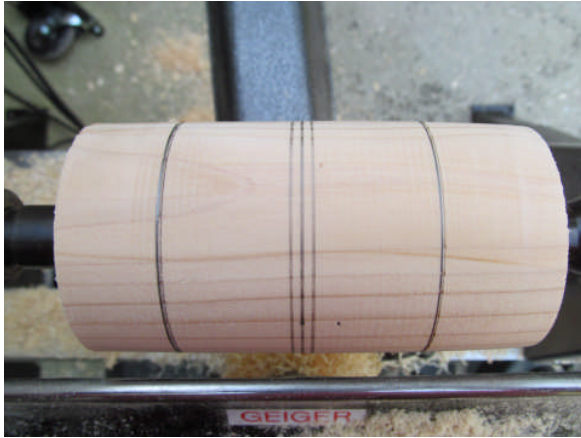
Using a Vernier caliper, measure the diameter of the cylinder (above left).

The length of the turning needs to be equal to the diameter. Mark two lines around the cylinder separated by a distance equal to the diameter (above right).

Mark a line around the perimeter exactly on center between the two length marks.

Mark two lines around the perimeter of the cylinder on either side of the centerline equal to the width you want the edge of the Odd Wobbler to be. For an Odd Wobbler in the 2 to 4" range, I suggest using a 6 mm edge, so the lines will be 3 mm on either side of the centerline.

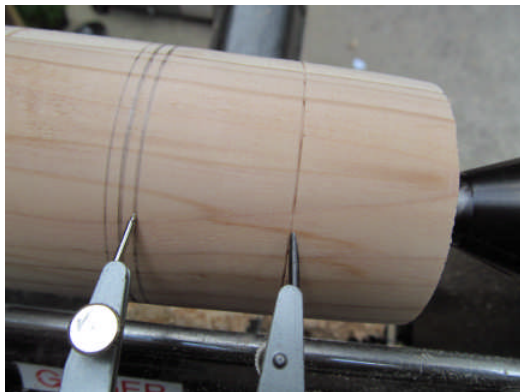
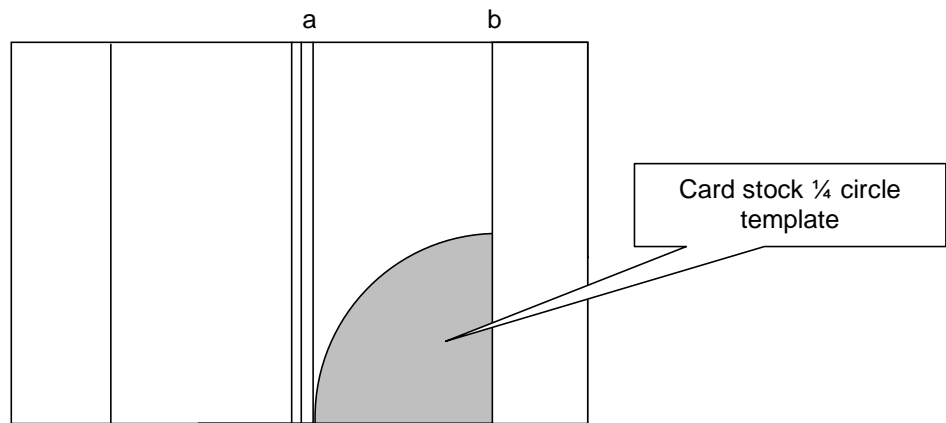




Here's a photo of a cylinder with the necessary marks.

**Make a template:**

Make a  $\frac{1}{4}$  circle template by: measuring the distance between lines "a" and "b". Using a compass, draw a circle onto card stock using this distance as the radius. Cut a  $\frac{1}{4}$  circle.

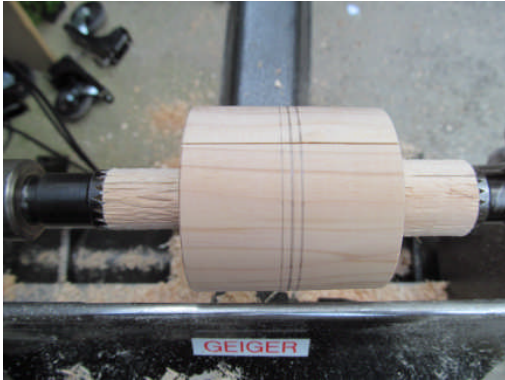


Set the pivot point and lead of a compass as shown.



Transfer the determined radius to card stock paper. Note that I pre-generated paper with cross hatch lines using a computer and printer that can be used for several templates.

Symmetry is important for a successful Odd Wobbler™.

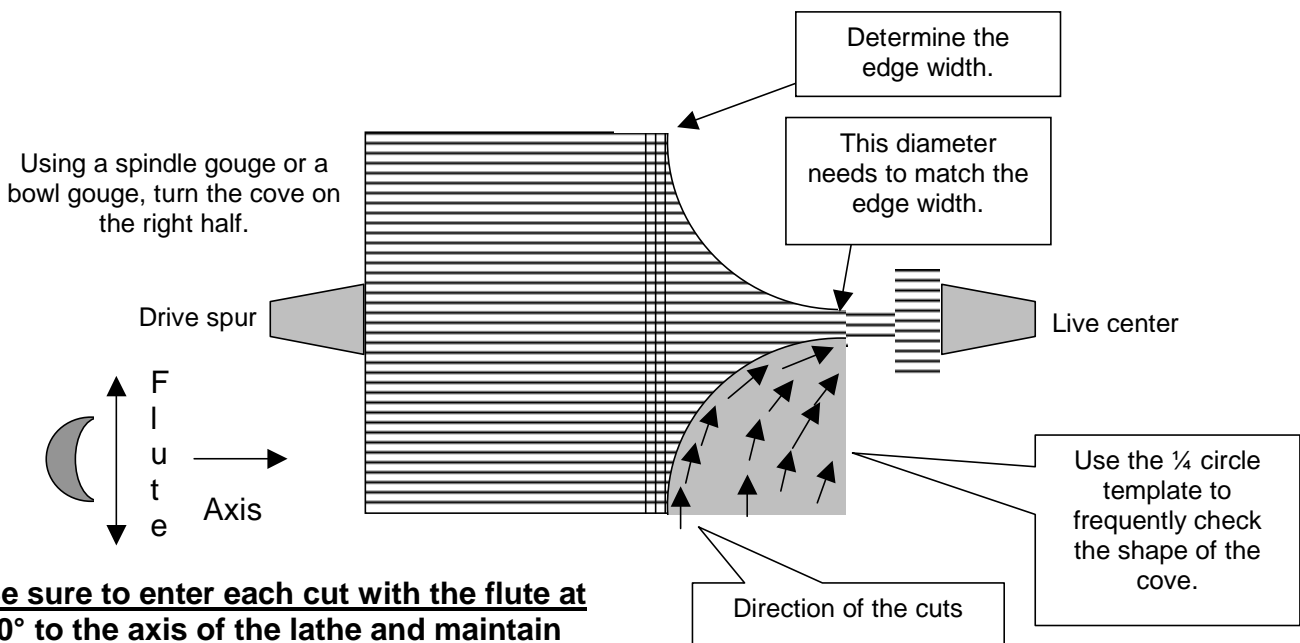


Use a skew, a roughing gouge or a side-ground bowl gouge to remove the waste stock down to the diameter of the drive center and live center.

As you progress on producing the coves you can slowly reduce the diameter of the waste stock using a parting tool. Caution: reduce the diameter in stages or the narrowest portion of the wood may twist and collapse. Also, don't over tighten the centers.

### **Turning the shape:**

Reduce the diameter of the waste stock on either end to about 1" diameter.

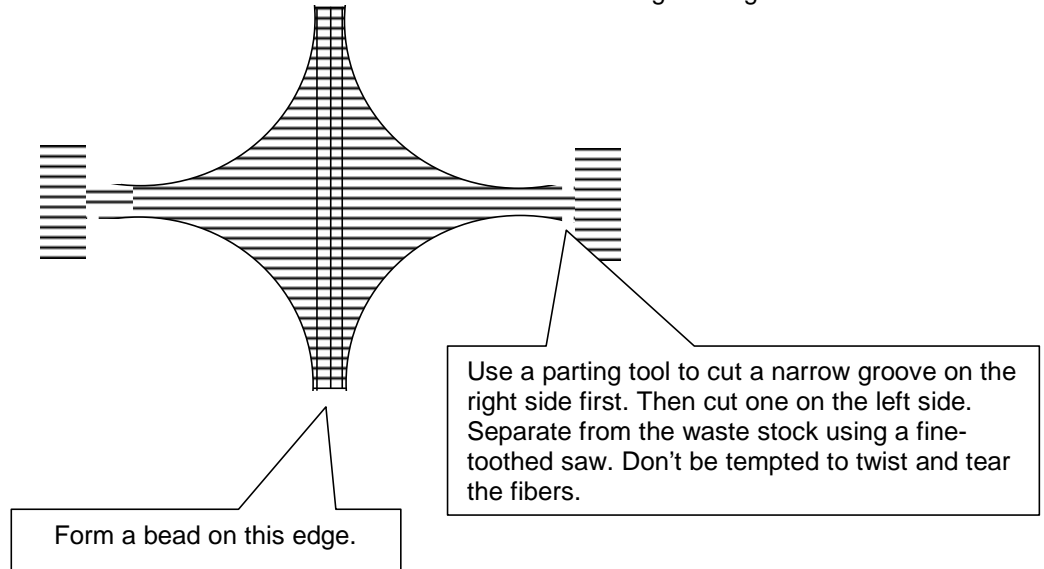


**Be sure to enter each cut with the flute at 90° to the axis of the lathe and maintain bevel contact throughout each cut.**

Turn a cove on the left side.

You can perform some sanding while the piece is on the lathe. Final sanding will be done off the lathe after it is glued together.

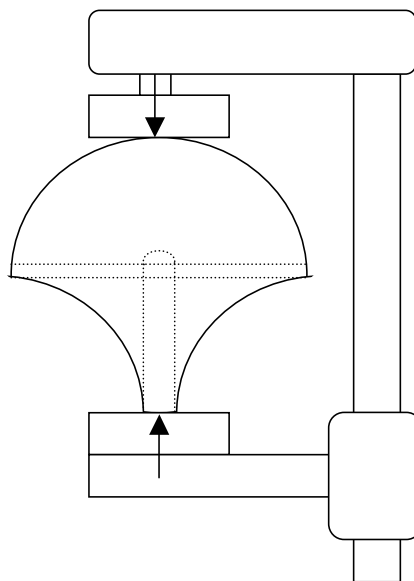
Note: As the diameter of the wood remaining on the left cove becomes smaller, the structure becomes weaker. Care must be taken to not exert much pressure on the wood or it may twist, thus breaking the piece. Twisting of the fibers can be caused by torque created by the lathe suddenly going from stand still to full RPM quickly. To avoid this, each time the lathe is re-started ramp the speed up from zero rpm to the speed you wish to turn at.



Once the turning has been removed from the lathe, the two halves need to be separated. Denatured alcohol can be used to de-bond the hot glue. Use a liberal amount of alcohol and let it rest a couple of minutes and it will be easier to separate the two halves. If you must use a knife to pry the two halves apart, be sure not to damage the wood.

**Gluing the two halves together:**

Rotate one of the halves 90° to the other and use glue to adhere the two together. I usually use Tite Bond II wood glue or medium density CA glue. Use a small bar clamp to hold them together until the glue sets up.



Clamp securely until the glue sets-up.



Use a bar clamp with padded jaws to hold together while the glue set up.

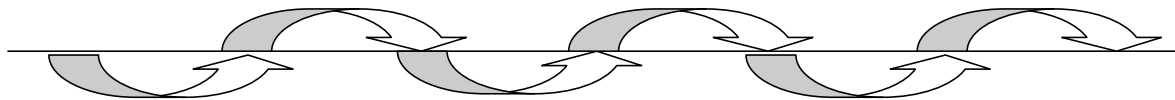


Notice how the ends extend beyond the rim. This is necessary, but needs to be trimmed before sanding.

### **Sanding and finishing:**

Once the glue is set up, use a fine-toothed saw to trim the ends that hang over. Then use a cylindrical sanding drum to sand the edges of each half until they match. I like to use foam-backed sanding pads to do the final sanding. Use a finish of your choice.

Place the Odd Wobbler on a hard flat surface and give it a nudge. It will roll easily and will wobble back and forth while staying on track. If you've done a good job and made each half symmetrical to the other then it will roll quite a ways before coming to a stop.



Rolling path of an Odd Wobbler

These make great gifts for adults and children. **CAUTION: don't make an Odd Wobbler smaller than 2" diameter or it will be a choking hazard!**

Enjoy!

Sincerely,  
Don Geiger  
[www.geigersolutions.com](http://www.geigersolutions.com)

### Credits:

I first discovered Femispheres (what I call an Odd Wobbler) in the instant gallery at the 2007 Southwest Area Turners (SWAT) symposium in Texas. The turner of these was Drew Shelton who also demonstrated how to turn them at the symposium. I wish to credit Drew for sparking my interest learning in turning them.