TURNING SPHERES

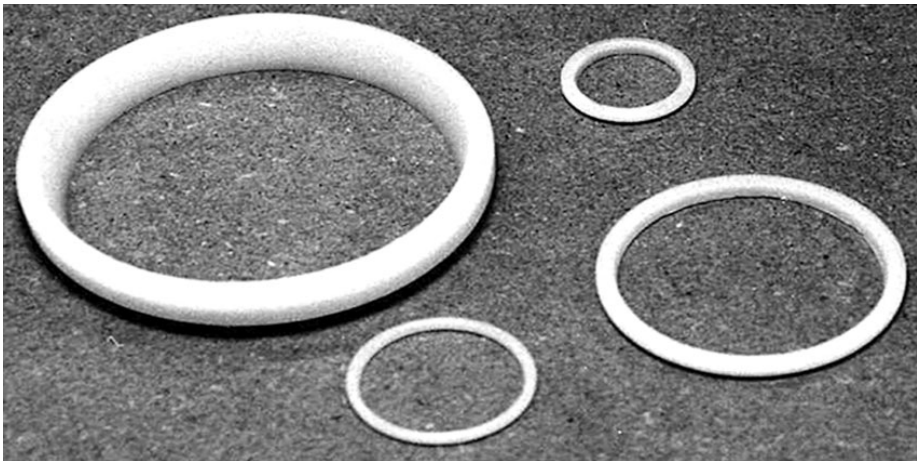
A Simple Method with Ring Gauges

BRIAN SIMMONS

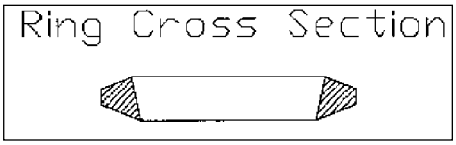
About two years ago I began turning spheres following the instruction of New Zealand turner Soren Berger. With a simple technique based on easily turned rings and lots of practice I am currently able to turn spheres of all sizes quicker, easier, and more accurately than many would believe possible.

The ability to create spheres is an extremely useful skill for turners. A sphere is a shape that looks great by itself and in conjunction with others. It is very popular among decorators today and can be incorporated into many other functional items.

The spherical shape is very pleasing to the eye and many feel that the shape enhances the natural beauty of the wood. Besides, they're a lot of fun to turn.



The author's turned plastic rings act as gauges to guide him as he shapes a wooden sphere. His favorite ring shape is shown at right.



Making the Ring

There is no specific rule to the size or thickness of the ring I use to help shape the sphere. However, I find that a good ring-to-sphere ratio is between 1:2 and 1:4. Thinner rings are more difficult to keep up with, but I prefer them because they allow me close access to the tenons on the ends that hold the blank on the lathe. I turn my own rings and use plastic, as it is very stable. Although any type of ring will work, I've found that using a shape with crisp corners and slightly tapered insides, as shown above right, works best. This form makes it easy to detect gaps, which would detract from a perfect sphere. Rather than buying commercial washers or the like, I turn the rings to ensure accuracy and also to get the desired shape. Wood can be used for the rings, however, it will occasionally move or crack.

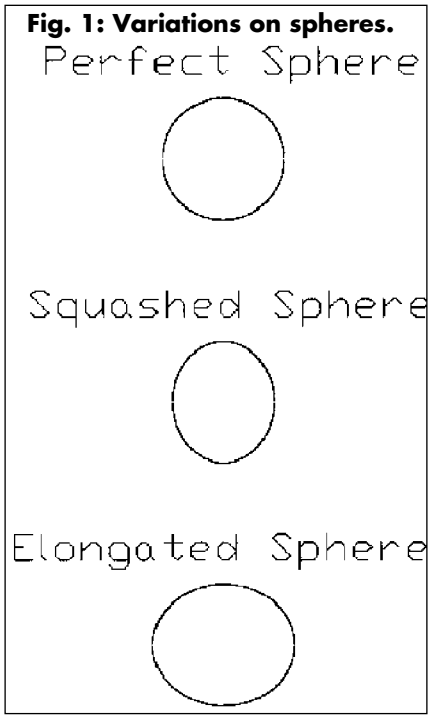
Sphere Turning Steps:

1.Turn blank into cylinder approximately 1-to-2 in. longer than its diameter.
2. Mark the center of the cylinder.
3. Measure the diameter of the cylinder and mark the radius to both sides of the centerline.
4. Make parting cuts down the outside lines to approximately $^1/_5$ the diameter of the blank.
5.Rough out the general shape.
6.Place the ring in the center and begin making light smooth cuts until the ring fits perfectly onto the sphere without any gaps.
7. Move the ring down one side removing material until the ring fits perfectly.
8. Repeat on the other side.
9. Part the tenons off leaving excess material.
10. Vacuum chuck the blank in its same orientation and remove the tenons until the ring continues to fit perfectly all the way down the side
11. Repeat the process for the other side.

Using the Ring:

Using a ring to determine the accuracy of a sphere seems like a simple task. But, in order to use it effectively, you must understand a few ground rules and then practice. Anyone can place a ring on a sphere and see if there are any gaps between the two. The goal is for there to be no gaps. What should you do if there is a gap? It is crucial that the ring fit perfectly in the center before moving on. So, starting in the middle, you must determine where the gaps are in relation to the ring. If there are gaps at points A and C on the ring, as shown in the sketch at right, it is squashed (Fig.1) and you must reduce the diameter of the sphere and start over. If there is a gap at point 3, the sphere is elongated and more material must be removed from the

Fig. 1: Variations on spheres.



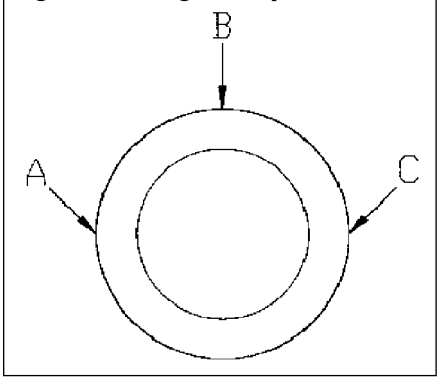
Simmons' goal is to shape a perfect sphere, shown above, rather than elongated or squashed shapes.

sides. Once the ring fits perfectly in the middle of the sphere. Continue the process down one side at a time, applying the same rules to the ring as before. It is important to make light cuts. Remember that it is easier to make an elongated sphere perfect than to convert one that is squashed.

Turning the sphere

When turning the sphere, I find that a bowl gouge tends to work best, but in a nontraditional way. I prefer a side-ground gouge, somewhere between a square grind and a fingernail. I start by laying the gouge on its side, the flute open to the right, if I'm turning the right side and vise versa if I'm turning the left. I lay the back of the bevel against the wood and raise the handle, much like using a skew. As soon as I begin to see a shaving, I stop raising the handle and then rotate the tool. When I finish the cut near the tenon, the flute should be completely inverted.

Fig. 2: Turning checkpoints



After turning the blank to a cylinder and marking its centerline, the author gauges roundness with a plastic ring (top photo). The visible gap shows the sphere is slightly elongated, requiring removal of more material (bottom photo). Photos by Hal Simmons

By riding the bevel of the gouge in this manner, I can remove a lot of material or take extremely light cuts and leave the wood super smooth, equivalent to the surface that can be produced by a skew. By achieving the smoothest surface possible, very little sanding is needed. And because you're not actually using a skew, there isn't that dreaded toe to catch.

Though numerous methods exist for turning a sphere, I've found this to be the simplest and easiest. With good tool control and practice, you too can produce spheres.

Brian Simmons, 19, is a student and woodturner in Atlanta, GA. He was a demonstrator at this year's AAW Symposium in St. Paul, MN.