TURNING A TIPPE TOP

Giving tippe tops to kids of all ages is FUN!

A tippe top has the curious property that when it is given a good spin, it will, on its own, flip upside down and spin on its stem. Tippe tops became somewhat popular in the 1950's and 1960's, but now most people have never heard of them. It is not difficult to make a top that looks like a tippe top, but to make it work properly takes some care. Here we reveal the secrets we discovered, mostly by trial and error, that make a tippe top work.

In order for a tippe top to work, the center of mass should be low in the top, as shown in the diagram below where the center of mass is marked with a dot.

Keeping the center of mass low can be accomplished in a variety of ways. First, the top can be hollowed fairly deeply to get rid of a lot of the mass that is high in the top. Second, one could place a weight (we use a ¼ inch ball bearing) low inside the top. Third, the blank could be made by gluing a dense wood on the bottom and a light wood on top.

Another issue is that the top requires a good spin to have enough energy to flip. If the top is too large, then it is too difficult to spin fast enough. The ideal diameter seems to be between ¾ inch and 1 ½ inch.

Here is an outline of how to turn a tippe top. We are assuming that the blank will be mounted for a spindle turn, that is, the grain runs parallel to the axis of the lathe. You can also turn it cross-grained by making the appropriate modifications. Most importantly, DON’T use a spindle roughing gouge or a skew for cross-grain turning! Photo 2 shows the outcome of the steps below. We refer to the various stages below by counting from the left.

1. Start with a blank that is ¾ to 1 ½ inches square and at least 2 inches long. Maple is a great choice if you plan to decorate the top, but any wood works. Mount between centers and make a tenon as the first turning
in photo 2. Then mount the blank on a chuck and turn it round (typically with a spindle roughing gouge or a bowl gouge) as in the second turning of photo 2.

Photo 2

2. Next start turning the body of the top and hollow it as in the third and fourth turnings in photo 2. You can use a spindle gouge, detail gouge, gouge, or even a bowl gouge. Be sure to leave enough support material that the body can be hollowed. Hollowing can be accomplished by pushing a gouge into the center of the body about 1/8 of an inch with the bevel at approximately 45 degrees and then pulling the gouge toward you. If you intend to insert a weight, do not hollow very deeply. If you do not plan to insert a weight, then hollow to at least the widest part of the body. (That is, if it were a whole sphere, hollow to at least the center.) Drill a ¼ inch-diameter hole for the stem as in photo 3 and the fifth turning in photo 2. Make the hole ¼ inch deep if you are not adding a weight and ½ inch deep if you are.

Photo 3

3. Now is the time to sand and finish the inside of the top. Finish by rubbing a small stick of carnauba wax on the surface and then polishing with a paper towel or rag while the lathe is turning fast. Repeat this process two or three times. If you wish, you can texture with your favorite texturing tool and add color with a paint marker before waxing.

Photo 4

4. Turn the outside of the top to be approximately round and part it off with a parting tool.
5. There are several methods of mounting the body of the top. For example, use a \( \frac{1}{4} \) inch collet or a drill chuck that allows you to mount a \( \frac{1}{4} \) inch steel rod approximately 1 ½ inches long or steel dowel pin. Another method is to make a jam chuck. Photo 4 shows all three options. Use the drilled \( \frac{1}{4} \) inch hole to mount the top as in photo 5. One advantage of the jam chuck, photo 6, is that its size is adjustable.

6. Finish turning the outside of the top, making sure that the shape is approximately round as in photo 6. The top seems to work better if it is a little shorter than a perfect sphere.

7. Sand and finish with carnauba wax as before. Again, you can use a texturing tool and paint pens to decorate the top before finishing.

8. If you planned to use a weight to lower the center of mass, insert a ball bearing into the \( \frac{1}{4} \) inch diameter hole and push it to the bottom. A drop of CA glue will secure the ball bearing, if it fits loosely.

9. Plan to have the stem extend approximately ½ inch above the body and measure the length needed for the stem.
10. Use a blank approximately ½ inch square by at least 1.5 inches long for the stem. Mount in a chuck as in photo 7 and turn the stem. Make the stem ¼ inch in diameter or less. Give the stem a nice shape. Make the tenon 1/4 inch diameter to fit snugly in the hole drilled earlier. A sharpened ¼ inch wrench can be used to size the tenon, assuming the hole is not oversized. See photo 8. Be careful about the shape of the top of the stem. It can be flat, concave or slightly convex. The stem in photo 2 has a flat top. If it is too convex, when the top flips up, it will not catch, but just fall.

11. Now is the time to wax and polish the stem. You can texture and paint the stem, if desired.

12. Insert the stem into the top and test it. If it works well, glue it, and you have finished, but if not, the top may still be salvageable by reshaping the body, or if it almost works, by using a longer or shorter stem.

With some practice you can make a very attractive and working tippe top in less than 30 minutes. Have fun making, playing with, and giving kids (of all ages) tippe tops!

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