

Turning an Oil Wand Kaleidoscope

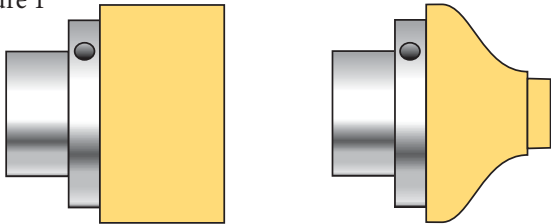
Supplies Needed

- Faceplate
- Revolving Center
- 3 1/2" x 3 1/2" x 2" Waste Block
- Flexible Adhesive
- Drilled Blank
- Sandpaper/Finish
- Eye and Ear Protection

Turning the Kaleidoscope

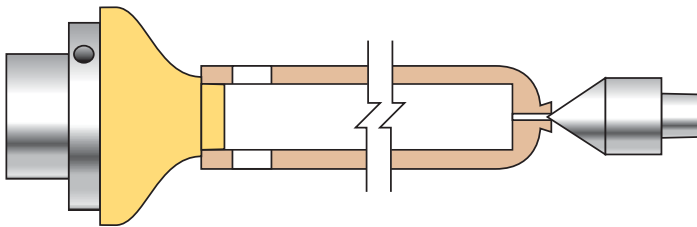
1. Mount a 3 1/2" x 3 1/2" x 2" hardwood waste block to the faceplate with 1" screws.
2. Taper the tenon diameter to fit snugly into the 1 1/16" drilled hole in the kaleidoscope blank. This will center the blank and provide a drive center to turn the blank. Cut a 1/8" shoulder, this will stop the barrel from sliding up the tenon (Fig. 1). If too much pressure is applied or the tenon is too large, the kaleidoscope blank may split.

Figure 1



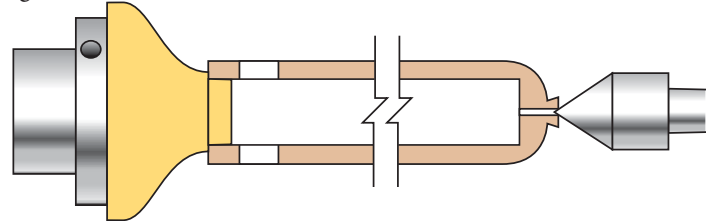
3. Mount the kaleidoscope blank between the waste block drive tenon and the revolving cone center (Fig. 2). Turn the kaleidoscope blank by removing the corners and flat spots of the blank. Note that the blank will often have a larger diameter at one end, this is caused by the drill bit wandering when drilling deep holes.

Figure 2



4. Use calipers to determine the wall thickness of the kaleidoscope blank. You must remember that this is a hollow tube with a 1 1/16" hole drilled through the center which makes maintaining wall thickness critical. Finish turning the blank to your own design remembering not to turn the walls thinner than 3/16". Finish the blank ends by turning close to the waste block and the cone center (Fig. 3).

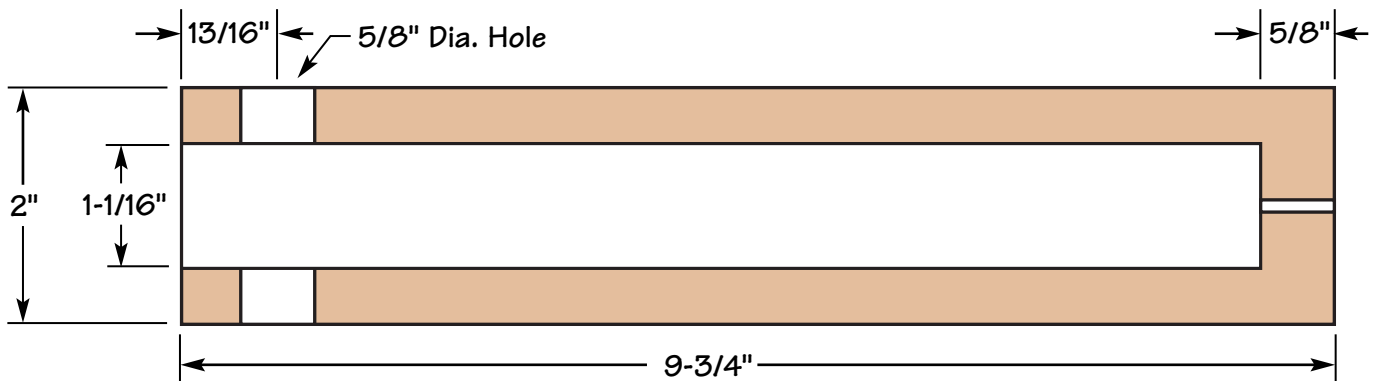
Figure 3



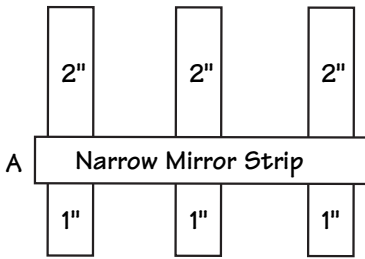
5. Sand and finish the kaleidoscope barrel to your own specification.
6. Remove the finished blank from the lathe. Enlarge the viewing hole with a 1/4" twist bit. This can easily and accurately be done on a drill press. Hand sand the new 1/4" view hole and the 1 1/16" hole to remove any burrs or scratches.

Mirror Handling Tips

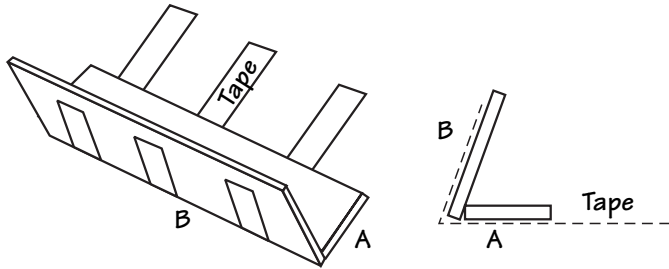
1. Don't remove the protective lamination until you are ready to use the mirror. After the lamination is removed, always hold the mirror by the edges, and put it down with the aluminized side up.
2. After removing the plastic lamination, you may forget which side of the mirror is the aluminized front surface. Place the point of a pencil lightly on the surface of the mirror. If there appears to be a space between the pencil point and its reflection, this is the back of the mirror. However, if the pencil point seems to touch its reflection, this is the aluminized front surface.
3. If the aluminized side of the mirror gets dirty, marked, or fingerprinted, wipe it with acetone on a cotton ball. To avoid streaking, wipe with slow even strokes, allowing the acetone to dry as you wipe.
4. Don't worry, small scratches, pin holes, or even small chips in the ends of the mirrors won't hurt the image in your kaleidoscope. However, dirt will!!



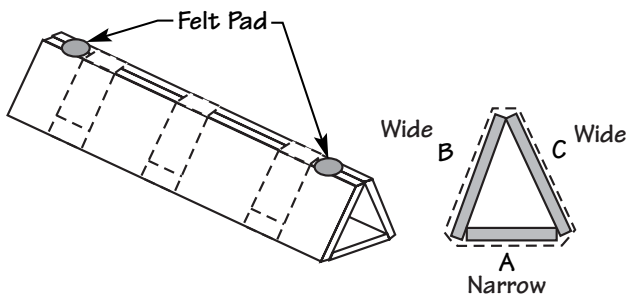
Mirror Assembly



1. Stick three pieces of scotch tape approximately 3 1/2" long across the back (unlaminated) side of the narrow piece of mirror. Slightly less than 1" of tape should extend to one side of the mirror, and approximately 2" should extend to the other side. Remove the plastic lamination from the mirror and lay it on the table with the tape "sticky side" up.



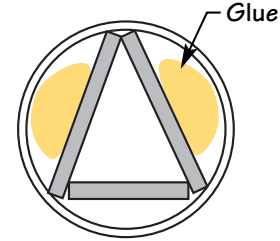
2. Remove the lamination from one of the wider pieces of mirror. Stand it on its long edge on top of the 1" lengths of tape so that it is butting tightly against the edge of the narrow piece of mirror. Make sure that the aluminized surface of the second mirror is facing inward toward the narrow mirror. Lean this mirror in so that its top edge is directly over the center of the narrow piece of mirror. Be sure that the seam where the two mirrors butt together is tight with no gap. Now stick the tape up the side of the second piece of mirror to hold it firmly in place.



3. Remove the lamination from the third piece of mirror. Stand it on its long edge on top of the 2" lengths of tape so that it is butting tightly against the remaining edge of the narrow piece of mirror. Make sure that the aluminized side of the mirror is facing inward. Lean the third mirror so that it meets the second mirror edge to edge (not overlapping) over the center of the narrow mirror. Now stick the tape up the side of the third mirror, and continue to wrap the tape until it is all used. Take care to maintain the proper alignment of the mirror triangle as shown in Fig. 7. Note that the narrow piece of mirror is held in between the two wider pieces (Fig. 7).
4. To further tighten the seams, add two more bands of tape between the original three bands. Rotate the mirror prism as

you tape, pinching the seams together.

5. When the mirrors are securely taped together, put a felt pad on each point on the top of the triangle. Use extra layers of tape if necessary to make the mirrors fit tightly in the tube (Fig. 7).
6. Dust covers may be applied if desired. Center the mirror assembly on the 1" plastic disk. Apply a small amount of flexible adhesive or silicone caulk to two sides of the mirror assembly.



7. Slide the assembled mirrors into the 1 1/16" hole and check for a snug fit. Slide the oil wand through the 5/8" hole. This hole may need to be enlarged with a file or sandpaper to allow the wand to slide in freely. Slide the rubber o-rings over each end of the wand to prevent the wand from falling out.