

## Turning a Ball Bearing Yo-Yo

### Supplies Needed

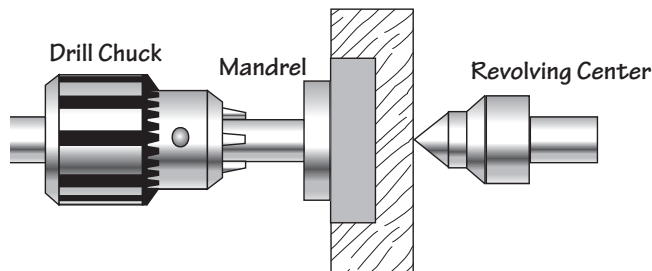
- 1 3/8" Forstner Drill Bit or 35mm Drill Bit
- Wood Blank
- Yo-Yo Mandrel
- Revolving Center
- Glue (Thick CA or Epoxy)
- Sandpaper/Finish
- Drill or Drill Press
- Disc Sander
- Clamp/Bench Vise
- Eye and Ear Protection

### Wood Preparation

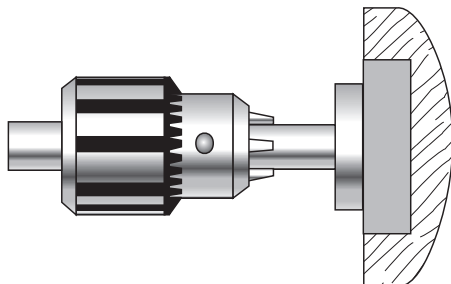
1. For best yo-yo performance select a dry, hard, dense wood such as maple or cocobolo. The piece should be free of sap wood and any defects that may cause the yo-yo to spin out of balance. The diameter and thickness of the blanks will vary according to the desired shape and style. We recommend starting with two blanks that are 2 1/2" square by 3/4" thick.

### Steps

1. Mark the center of the blank and drill a 1 3/8" hole or 35mm hole 3/8" deep with a forstner bit. Both drill bits are approximately the same size, use the bit most available to you.
2. Press the hubs into the drilled hole with a bench vise. Hubs may need to be glued in with epoxy.
3. Mount the mandrel into a drill chuck and thread the hub and blank onto the mandrel post.
4. Advance the tailstock with revolving center up against the blank and gently turn the corners off and rough turn the blank to the desired shape.
5. Slide the tailstock away, then sand and finish the blank.



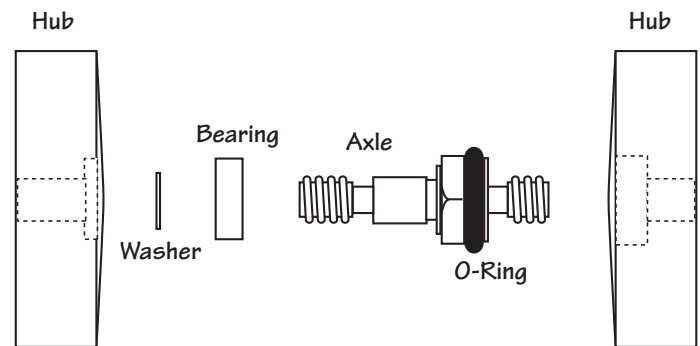
6. Repeat steps 1-5 for the second blank. It should be turned identical to the first blank in order for the yo-yo to spin true.



### Assembly

Layout the parts according to the drawing below. This helps familiarize yourself with the parts and how they will go together.

1. Slide the roller bearing over the thread of the axle, onto the smooth portion of the axle.
2. Place the thin washer onto the axle until it come to rest against the inner bearing face. This spacer allows the bearing to rotate freely while spinning.
3. Screw the axle, bearing and washer assembly into the shallow recessed hub.
4. Open the loop of the yo-yo string and slip it over the roller bearing.
5. Screw the deeply recessed hub onto the other end of the axle. Make sure not to pinch the string between the axle and the hubs. This will complete your Yo-yo.



### Adjusting the Ball Bearing Yo-Yo

Threading the hubs in and out adjusts how the yo-yo behaves. The tighter the gap, the more responsive it is. The wider the gap, the better the yo-yo will "sleep" for performing certain tricks. This feature allows the user to micro-adjust the yo-yo to their specific liking.