

MAKING CUP CENTERS FOR TURNING SPHERES

©Marty Kaminsky 2014
martykaminsky@gmail.com

Two cup centers are needed for making spheres; one goes on the headstock and the other on a live center on the tail stock. The size of the cup depends upon the size of the sphere that will be turned. The cup centers aren't intended to be an exact fit for a particular size sphere - a set of centers will work for a range of similar sized spheres. Make the drive cup about half the diameter of the sphere that you are going to make. I make the tailstock center a little smaller.

Headstock Cup Center

Turn a cylinder between centers. The diameter needs to be large enough to fit in a four-jaw chuck. True the end and turn the appropriate tenon on the end suitable for your chuck (dovetail or straight). Remove the cylinder, install your four-jaw chuck on the lathe, and put the cylinder in the chuck.

Turn the diameter down to the size needed for the sphere you are going to make.

Turn a straight sided shallow cone shaped recess in the end of the cylinder. It's important to get the slope of the cone right. The sphere you are going to make should rest inside the cone, not with the edges of the cone pressing into the sphere. Round the edge a bit and sand through the grits down to 220 grit.



Tailstock Cup Center (threaded tailstock live center)

The tailstock cup center is fitted to your live center. It can be designed to fit on a smooth sided live center, but I think it's better if fitted to a threaded live center such as those the Oneway 2064, Powermatic 6295902, Jet 709933, Woodtek 159164, or other similar live

centers with a threaded end. All of the afore listed centers are clones of one another and have a 3/4"-10 tpi thread. If you have something different, the procedure here is correct but measurements and the tap size may be different.



Turn a cylinder between centers and put an appropriate tennon on one end (dovetail or straight) to fit your four-jaw chuck.

Mount your four-jaw chuck and put the cylinder in it.

True the outer end and put a dovetail or straight cut in the end.

Bore a 5/8 inch hole 1-7/16 inch deep.



Coat the inside of the hole with thin CA glue. Spray with accelerator and allow the CA to fully cure.

Tap the hole with a 3/4-10 tap.

Coat the threads with CA, spray with accelerator and allow the CA to fully cure.

Run the tap up the threads again.

Reverse the cylinder in the chuck (hole facing the headstock).

Turn a cone into the face.

Take the tailstock cup center out of the chuck. Install the headstock cup center in the chuck.

Install the tailstock cup center on the tailstock live center and fit into the tailstock.

Bring the tailstock up to the headstock so that the headstock cup center is pressed against the tailstock cup center and will drive it when the lathe is turned on.



Shape the sides of the tailstock cup center.

Tailstock Cup Center (smooth tailstock live center)

If you are using a smooth-sided tailstock, make the tailstock cup center in a fashion similar the threaded version above, but without threading the hole. The fit of the hole on the live center should be close, but not so tight that you can't get it off. Glue a washer in the bottom of the hole to keep the live center point from advancing into the cup center.