

Making and using a Dead Center Drive for pen finishing.

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Sometime back in early spring (2007) someone mentioned a dead drive to use as a "no mandrel" set up, but I forgot about it. Frank, aka Rifleman mentioned it in another post recently and that pushed me to try it. (Thanks Frank.) Being overseas from easy access to US tools and parts, I decided to make my own, and it was quite easy.

First, the reason for "no Mandrel" turning for me: I turn oily blanks such as ebony and cocobolo that make perfect CA adherence difficult at times. Often the CA will chip at the ends when the bushing is removed, even when done gently. The "no mandrel" set up eliminates the need for bushing during finishing. Perfect for CA and for other finishes that are done while turning. No more sticky bushings.

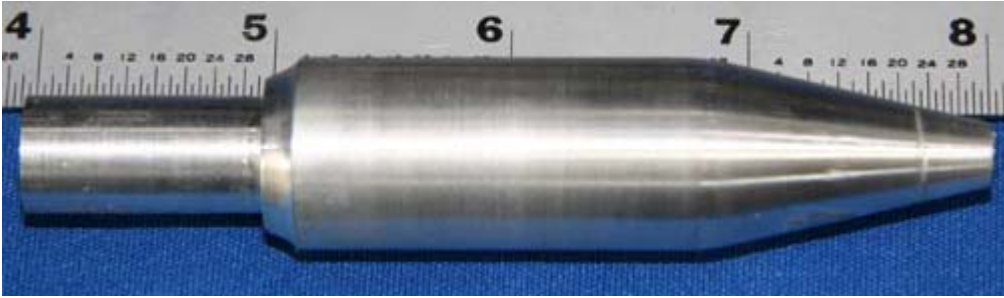
For those who have trouble with getting bushing dust on the blanks, this method can eliminate that too. Sizing can be done by calipers, which are more accurate than bushing anyway. By the way, you can still use the bushings without the mandrel in this setup.

CREATING the Dead Center: Use what you have on hand - and that is what I did. I started with a 20mm diameter aluminum bar that was 4 inches long.

1. On the ends, I marked the center of the bar by using a center finder and scoring it lightly with a razor knife. Below, the picture shows a brass bar although I used aluminum for the actual drive.



Then, using the 4 jaw chuck I mounted the bar stock and pinpointed the scored center of the round bar stock to the live center. Aluminum turns OK but it has a much different feel than wood. You will need shaarp tools to turn it.



I turned the rod end first, about 1 inch long a 1/2 in diameter. After smoothing this down with 400 grit sandpaper, I mounted it into the chuck shown in the second picture above. On the photo below, I turned the end of the dead drive enough to mount slimline tubes. The end taper needs to be smooth but not at any specific angle or even straight. You can see the "cone" is slightly rounded.



Caution and suggestion; Before tightening the dead drive in the key chuck drive viewed above, line the end up with the live center as shown. I have a small indentation in the end to match the dead drive with the live center, THEN I tighten the dead drive chuck with the key. This helps to make sure that the dead drive is already centered when the chuck is tightened.

USE: Mount the pen blank/tube as shown below.



Caution: Do NOT tighten the live center (tail stock end) too tight, or you will can flare the tube and possibly split the wood.

ADVANTAGES:

Finishing with CA is a breeze with this setup.

1. If excess CA or other finish is applied, it is not nearly as critical as applying with a bushing.
2. In sanding, there is a small amount of space at the end of the blank that allows sandpaper run over before touching either of the centers, and there is no hitting the bushings and getting bushing dust on the blanks.
3. While you can't do a two piece together as you can on a mandrel, this method allows for quick removal and quick mounting. To me, this one advantage outweighs the benefits of doing a two piece at the same time on a mandrel.
4. It is possible to use the bushings with this setup too. Just mount the bushings into the tubes and the bushing onto the centers.

MODIFICATIONS: Because I was just attempting to make a dead drive to see if it would work, I didn't even consider cutting it down first. The one above is a little too long, in my opinion, but it works so well that I probably will not change it for a while.

Purchasing a dead center: There are several companies that offer a 2MT dead center for purchase in the States and this might be advantageous for some. But those that live overseas might find it easier to make their own.