

Tip #30 Lathe Duplicator

Although lathe turning is often considered one of the most creative and rewarding types of woodworking, it can also be one of the most frustrating—especially for the new or inexperienced woodworker. That's because many projects require several matching pieces—such as two lamps, four table legs or a set of salad bowls—and it usually takes quite a bit of practice to develop the necessary skills to turn these matching pieces by conventional methods.

The lathe duplicator eliminates this problem and makes it possible for anyone to turn as many duplicate pieces as they need after only one or two short practice sessions. In addition, the duplicator allows you to enjoy the lathe and create freehand turnings without having to learn how to hold, use or sharpen ordinary lathe chisels.

These capabilities are possible because of the lathe duplicator's unique design. Instead of using ordinary chisels, the duplicator has cutters which are mounted securely to a separate tool rest assembly. A follower with the same profile is installed directly above the cutter. By guiding the follower along a template or pattern mounted above the stock, the cutter will duplicate the profile in the workpiece below.

LATHE DUPLICATOR- SETUP AND FEATURES

The lathe duplicator mounts on the Mark V Models 500 and 510 (Figure 13-1). To set up the lathe duplicator follow the instructions in the Owners Manual that came with the duplicator.

Some of the important features and capacities of your lathe duplicator are:

- Maximum spindle length
 - 34" with cup center
 - 33-1/2" with live center and no spacer
 - 32" with live center and 1-1/2" spacer
- Minimum spindle length
 - 6-1/4" with cup center
 - 5-3/4" with live center and no spacer
 - 4-1/4" with live center and one spacer
 - 2-3/4" with live center and two spacers
- Maximum spindle diameter
 - 8" for freehand turning or with flat template
 - 4" with an original turning as a template
- Maximum bowl diameter
 - 8" for freehand turning or with flat template

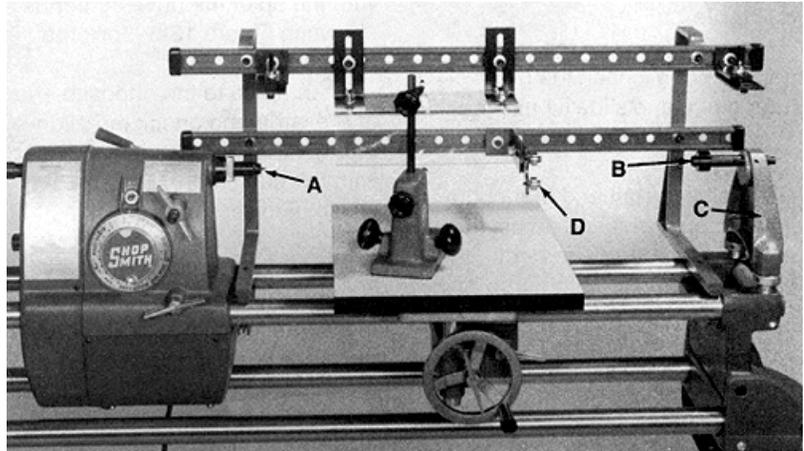


Figure 13-1. Lathe Duplicator mounts on the MARK V. The MARK V accessories that are used for spindle duplicating are: (A) drive center, (B) cup center, (C) tailstock and (D) optional steady rest. For faceplate duplicating a faceplate is mounted on the main spindle.

- Maximum depth of cut
 - 2-1/4" for duplication (up to 3-1/4" for light freehand cuts inside bowls)
- Template specifications
 - 36" maximum length
 - 3/8" maximum thickness
 - 1/4" minimum thickness (smaller templates only)

CRITICAL LATHE DUPLICATOR ALIGNMENTS

Proper alignment is important for all power tools, but accuracy is especially important with the lathe duplicator. Even a small error in alignment will cause a variation in the duplicated pieces.

Complete alignment instructions are provided in the Owners Manual that came with your duplicator. The four most critical alignment procedures are summarized below. These alignments should be checked whenever the lathe duplicator is set up or if problems occur when making duplicates.

Cutter Support Alignment

In order to cut properly, the cutter support must be aligned so that the top of the cutter tip is held parallel to the surface of the worktable.

Begin by removing the follower support. Then loosen the nylon cutter guide and slide it back to expose the flat side of the cutter support rod.

Loosen the front and rear cutter support setscrews and adjust the center setscrew so it is lightly seated in the positioning groove of the cutter support rod. This assures proper protrusion of the cutter tip relative to the follower tip during duplication.

Place an accurate square on the tool rest base and adjust the cutter support, so that the side flat is against the square as shown in Figure 13-2. Then tighten the setscrews, reposition the cutter guide and replace the follower support.

Cutter Alignment

In order to cut properly, the top edge of the cutter tip must be aligned with the drive and cup centers.

Begin by placing the tool rest assembly on the table with the cutter tip facing the drive center. Adjust the table height until the top edge of the cutter is aligned with the tip of the drive center as shown in Figure 13-3. Lock the table height.

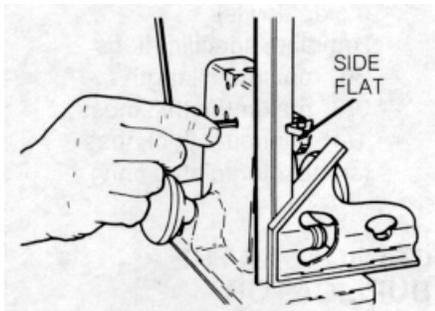


Figure 13-2. Align the cutter support.

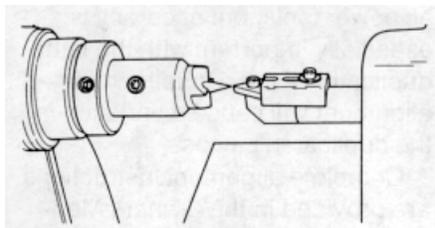


Figure 13-3. Align the tip edge of the cutter with the tip of the lathe drive center.

Then move to the opposite end of the lathe and check the alignment of the top edge of the cutter with the cup center (Figure 13-4). Raise or lower the tailstock as needed and lock it in place.

Note: Although raising or lowering the tailstock will alter the normal center-to-center alignment of the lathe, overall performance of the duplicator will not be affected. Correct cutter height is extremely important when using the lathe duplicator. If you plan to switch back and forth to conventional lathe turning, you may want to put a pencil mark on the tailstock mounting tubes, so you can easily return to the normal alignment position.

Template Center Alignment

For accurate duplication, the template centers must be aligned with the drive and cup centers.

First, loosen the left hand template bracket mounting screw and slide the template bracket in the channel until the tip of the template center is even with the tip of the drive center, then tighten the template bracket mounting screw (Figure 13-5).

Next loosen the two cap screws, so that the template center can be positioned directly over the drive center. Check this alignment with a square placed both in front of and behind the centers. When the alignment is correct, tighten the two cap screws (Figure 13-6).

Repeat this procedure to align the cup center with the other template center.

Follower to Cutter Alignment

For accurate duplication, the follower tip must be directly above the cutter tip.

Begin by adjusting the height of the follower tip until it is even with the template center. Wiggle the follower support rod as you tighten the knob to be sure the screw is seated on the flat of the upright support rod.

Then loosen the setscrew for the follower upright. Align the cutter tip with the cup center and the follower tip with the template center. Tighten the setscrew on the upright (Figure 13-7).

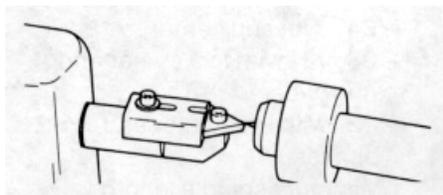


Figure 13-4. Align the top edge of the cutter with the tip of the lathe cup center.

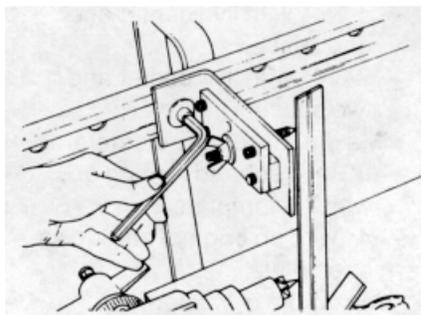


Figure 13-5. Align the template center, Step 1.

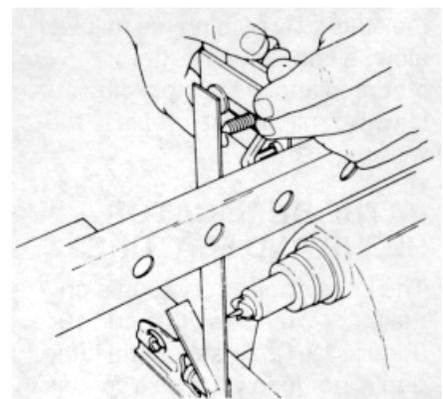


Figure 13-6. Align the template center, Step 2.