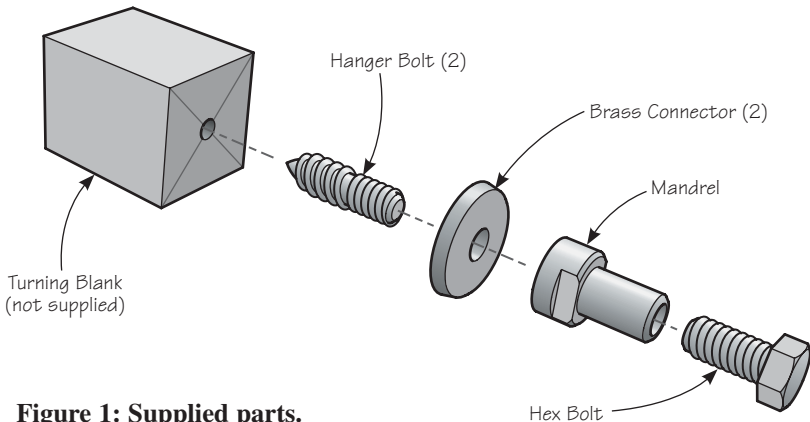


## Introduction

With this kit, you can make a set of replacement handles for the Veritas® Router Plane. The following instructions describe how to make one handle and assume the matching handle will be made concurrently following the same process. These instructions describe the turning process, but you are not limited to turning alone in developing the final design of your handles. Lathe work may be combined with other woodworking techniques, such as strip laminating and carving to create the desired shape, texture and appearance.

A basic level of woodturning skill is assumed.



**Figure 1: Supplied parts.**

## Hardware supplied with this kit (see Figure 1):

Item	Qty.
1/4-20 Hanger Bolts	2
Brass Connectors	2
Mandrel	1
1/4-20 Hex Bolt	1

## Tools and materials

**Required** (in addition to the hardware supplied with this kit):

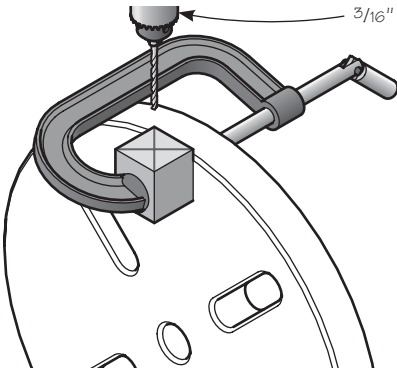
- Two handle blanks of tough, close-grained hardwood such as hard maple, birch, beech, rosewood or cocobolo, free of grain run-out, splits, checks, knots, etc. The blank must be square in cross section (at least  $\frac{1}{4}$ " larger in each dimension than the desired final diameter) and as long as required to accomplish the desired height.
- Woodturning lathe equipped with a face plate or, preferably, some kind of chuck that will grip the workpiece around the outside (e.g., collet, 3-jaw, 4-jaw, or  $\frac{3}{8}$ " drill chuck). Different mounting procedures, depending on the method of work holding, will be outlined as required.
- Drill press – or an electric hand drill may be used if it can be firmly held or clamped in position so the drill bit is parallel to a bench or table top.
- $\frac{3}{16}$ " diameter twist drill.
- Methyl hydrate (methanol or methylated spirits).
- Epoxy adhesive – a high-strength, slow-curing type is desired. Other, faster-setting epoxies may be used, but the handle will be correspondingly weakened.
- Turning tools and abrasives as desired.
- $\frac{7}{16}$ " or adjustable wrench, two required.

**May be required** (in addition to items listed above, depending on mounting technique; see *step 9*):

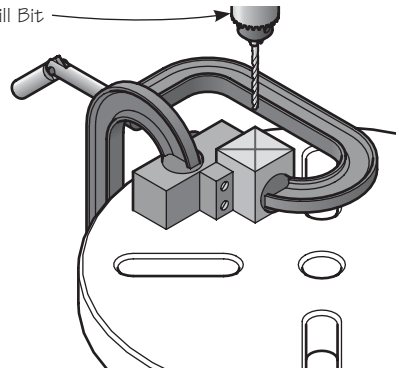
- Drill chuck with Morse taper shank for use in the tailstock and/or headstock.
- Threaded rod matched to the drill chuck shank and lathe headstock, plus nut and washers as required to match threaded rod.
- $\frac{1}{4}$ " twist drill.
- $\frac{3}{8}$ " twist drill.

## Prepare the blank

1. At least one end of the turning blank must be flat and accurately cut square to the length of the piece.
2. Drill a  $\frac{3}{16}$ " diameter,  $\frac{5}{8}$ " deep, pilot hole lengthwise into the flat, square end of the blank. This is best accomplished on a drill press. You may either rotate the table to the vertical position so the blank may be firmly held in place with a C-clamp, as shown in **Figure 2a**, or make a jig as shown in **Figure 2b**. Set the depth stop of the drill press as close to  $\frac{5}{8}$ " deep as possible. Alternatively, you can use a strip of masking tape on the drill bit to mark the depth.

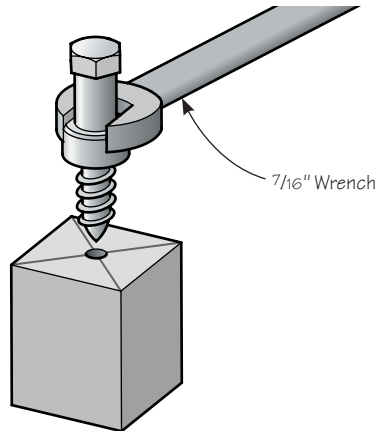


**Figure 2a: Preparing the blank vertically mounted.**



**Figure 2b: Preparing the blank using a jig.**

3. Clean the supplied hanger bolts with methyl hydrate and a clean rag to thoroughly wipe all traces of oil, dirt and dust from each bolt.
4. Screw the supplied  $\frac{1}{4}$ -20 hex bolt into the mandrel, as shown in **Figure 3**. Use one wrench on the mandrel and another on the bolt to make sure that the hex head is firmly bottomed out against the end of the mandrel. Screw the machine threads of the hanger bolt into the other end of the mandrel, only finger tight. The hanger bolt should come into contact with the end of the hex bolt inside the mandrel.



**Figure 3: Install the hanger bolt.**

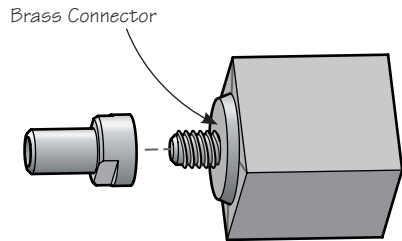
5. Mix a small batch of epoxy following the product instructions. Apply liberally to the woodscrew threads of the hanger bolt and inside the  $\frac{3}{16}$ " hole in the end of the blank.
6. Use a wrench (as shown in **Figure 3**) to screw the hanger bolt into the blank. When you remove the mandrel, there should be between  $\frac{7}{16}$ " and  $\frac{1}{2}$ " of machine screw thread projecting from the blank. Immediately wipe away all excess adhesive from the hanger bolt, turning blank and mandrel.
7. Allow adhesive to cure following all instructions for the epoxy product you are using.

## Mount onto the lathe

8. Install the brass connector onto the screw threads projecting from the blank, as shown in **Figure 4**.

9. Mount the blank to your lathe. Listed below are the various options, in order of preference:

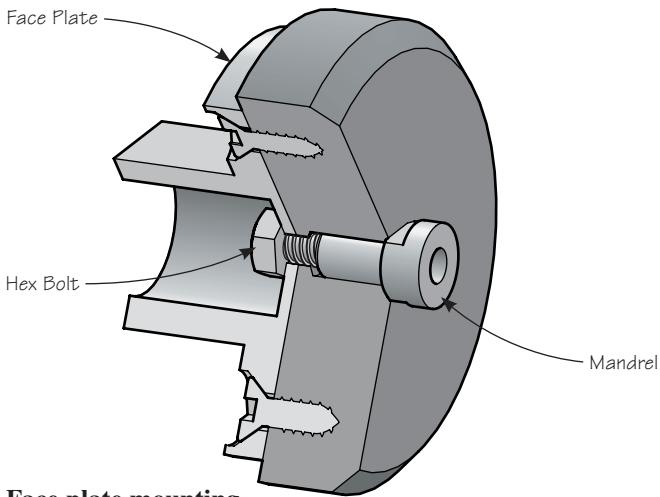
- 3- or 4-jaw chuck – install the mandrel onto the screw threads projecting from the blank, as shown in **Figure 4**. Firmly grip the shank of the mandrel in the lathe chuck.
- Collet chuck – install the mandrel as shown in **Figure 4**. Grip the shank of the mandrel, using a  $\frac{3}{8}$ " collet.
- Drill chuck– (This method may be used only if the small end of the Morse taper shank is made with a threaded hole – most commonly  $\frac{1}{4}$ -20 for a #2 MT.) Remove the spur center from the headstock. Screw a length of threaded rod into the shank of the chuck. (The threaded rod should be adequate length to pass all the way through the headstock of your lathe when screwed into the shank with the chuck in place. It should project  $\frac{1}{2}$ " to  $\frac{3}{4}$ " from the outboard end of the headstock.) Rotate the sleeve to withdraw the jaws inside the body of the chuck, then use a scrap piece of wood to tap the chuck body to seat into the headstock spindle. Using washers as required, install a nut on the threaded rod to secure the drill chuck. Insert the mandrel and use the key to tighten the chuck so it is held firmly in place.



**Figure 4: Install the brass connector (note orientation).**

- Face plate – install the mandrel onto the screw threads projecting from the blank, as shown in **Figure 4**. Securely mount a piece of hardwood with three #14 or #12 by  $\frac{3}{4}$ " long screws (preferably brass), or as otherwise dictated by the design of your face plate. With the lathe running, true the outside diameter of the wood for safety, then face the wood parallel to the face plate,  $\frac{3}{4}$ " thick. Be sure not to hit the mounting screws. With a drill chuck mounted in the tailstock, drill a  $\frac{3}{8}$ " diameter hole  $\frac{9}{16}$ " to  $\frac{5}{8}$ " deep in the center of the wooden block. Drill a  $\frac{1}{4}$ " diameter hole through the center of the  $\frac{3}{8}$ " hole in the block (and enlarge the center hole of the face plate if less than  $\frac{1}{4}$ "). Stop the lathe and remove the face plate. Insert the mandrel into the  $\frac{3}{8}$ " diameter hole in the wooden block and secure from the opposite side of the face plate with the hex bolt supplied (and washers if required), as shown in **Figure 5**.

In all cases, use a dead or live center in the tailstock to support the tail end of the blank during rough turning.



**Figure 5: Face plate mounting.**

## Turn the shape

10. Rough out the shape as desired. Carefully blend the wood with the brass, being careful not to go beyond the chamfer on the brass connector adjacent to the mandrel. (The diameter of the brass connector at this point covers the machined pad on the body.) A scraper with little or no burnished hook is well suited for blending the wood and brass.
11. Part off the waste at the tailstock end of the workpiece.
12. Back off tailstock support and smooth over the free end of the handle, taking care not to apply excessive pressure when the workpiece is no longer supported at the tail end.
13. Sand, finish, carve, shape and texture as desired. Be careful to sand from the wood onto the brass, but not the other way around. Small brass particles appear black and will embed themselves into, and quickly discolor, most types of wood.

## Assembly

14. Unscrew the as-supplied handles from the body of the router plane. They have been installed with threadlocker, so it will take considerable force to do so. (The threaded studs on both handles are standard right-hand thread.) Install your replacement handles.



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