/

TURNING TOOL HANDLES

Fred Messer
Cell 228-219-2515, messerf@cableone.net

Bayou Woodturners
June 2011 Meeting

Turning Tool Handles

Fred C. Messer

Why make tool handles with a removable bit? The main reason I do is because of the ability to adjust the tool in and out as needed and the ease of sharpening which a removable bit allows. I have several Oneway bowl gouges for each handle size (3/8, 1/2, 5/8) which will allow me to turn for a long time even on big blanks before having to stop and sharpen. You can buy several brands of tools unhandled; Sorby, Oneway, and P&N. You can also buy square and round HSS Metal Lathe bits up to 8 inches long. My favorites are the round HSS 1/4 X 8" and the square 1/4 X 8" from MSC or Enco . I have been using these heavily for years and I don't think I have worn over an inch off any of them.

Tool handles may be made of wood with metal inserts or entirely of metal. Either may be made on a wood lathe.

List of Materials and Tools Required

1. Handle blank – 2 X 2 X 18 inch or 1 1/2 X 1 1/2 X 12 inch Hardwood or 1 inch aluminum round stock
2. Inserts – tool insert of proper size and end center insert
3. Set screws 1/4 -20 X 1/4 long with 1/8 inch Allen wrench
4. Glue - JB Weld Epoxy for inserts and Gorilla glue for tubing
5. Special square sided tool rest
6. Flat piece of wood or Micarta with proper sized hole drilled in it (center rest)
7. C-clamp to clamp center rest to special flat toolrest
8. Drill Bit - Morse Taper drill or regular drill with chuck of proper size
9. Measuring – Tape and 1/4 inch dowel to measure depths of holes
10. Turning tools - Roughing gouge, square/angled double ended 1/8 inch bit, and bowl gouge.

Wooden Handles With Metal inserts on both ends

Inserts

Inserts are made of aluminum, brass, bronze or stainless steel using standard stock sizes of 1/2, 5/8 , 3/4 , 7/8, 1, or 1-1/8 inch X 6 feet available from ENCO (1-800-873-3626) or MSC (1-800-645-7270). Prices vary from about $10.00 for 1/2 inch aluminum to over $140.00 for 1 inch brass. I have used all of the above and the only difference is in hardness (threads will probably wear out or strip with use, even though I have never stripped even an aluminum one with use).

Figure 1

The length of the external part of the tool insert can be as short as ½ inch, with the internal shank length as short as 2 inches for the smaller sizes and 3 inches for the larger sizes. The round stock should be turned down and groves cut every half inch to help the JB Weld to hold better. I have found that if the shank is cut down by 1/8 inch this gives enough shoulder to keep from splitting the wooden part of the handle. The external part of the insert should be drilled and tapped for a 1/4 -20 set screw after the insert is drilled for the tool size to be used. NOTE: there is some variation in the size of "standard" gouges.

The rear insert is not required but allows you to return or refinish the tool between centers. This insert is made of 3/4 inch round stock which has the internal part turned down to 3/8 inch and the external part left full sized (3/4 ") and finished as you desire. It should be center drilled to allow turning between centers.

The cut to make the internal part smaller than the external part of both pieces should be done on a metal lathe. If this step is omitted and the depth of the holes drilled in both ends of the handle allow for a shoulder for the inserts to stop on all of the above steps can be done on a wood lathe.

Wooden Handles

Handles may be made of any suitable wood and sized to suit for their intended use. I have made them from 6 inches (1/8 inch sq) to 24 inches for deep hollowing on my VB36. I like 19 inches for most of my tools for 3/8 inch round up to 1/2 sq. Sorby handles come in 4 sizes and range up to 13 inches for a 5/8 gouge.

Figure 2

Wood blanks should be 2 X 2 inches square for larger size tools and 1.5 X 1.5 inches square for the smaller tools. Mark the center of the blank on both ends and center drill to fit the drive center. Place the blank with the tool end to the drive spur and the other end to the live center.

If you are using my method of a square tool rest and a hole drilled in a flat piece of wood turn the blank round, but not less than your chuck will grab.

Figure 3

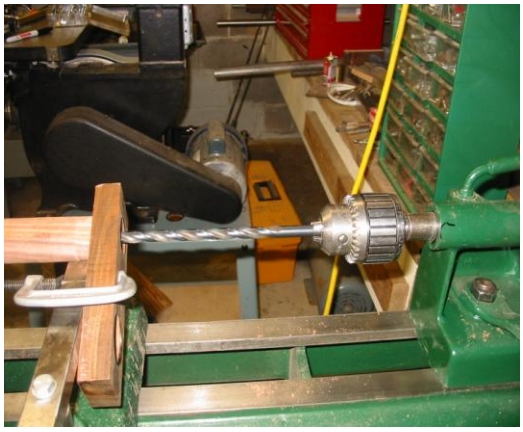
Then taper or cut a tenon on the ends. The taper should allow the taper to fit into the flat piece of wood clamped to the tool rest to center up into the hole.. To taper the end next to the drive spur, you will have to loosen up on the tailstock, remove the drive spur, screw the chuck on and flip the blank and chuck to taper the end which was originally turned next to the drive spur.

Figure 4

With the blank held in the chuck, back off the tailstock and place the flat piece of wood over the tailstock end of the blank. Realign the live center thru the hole in the flat piece of wood and tighten the tailstock. Remove the normal tool rest and install the square tool rest. Position the flat tool rest at 90 degrees to the blank and tighten the tool rest so that the hole in the piece of wood will push against the taper or tenon and hold the blank for drilling. The sequence is to tighten the banjo first the tool post clamp next and then the "C" clamp last.

Figure 5

When all is secure, back off the tailstock and remove the live center. Using either a morse taper drill or a regular drill in a Jacobs chuck, drill both ends of the blank while holding with the chuck and the steady. Drill the tool end to fit the insert, but only as deep as the insert requires. If the tool needs to slide up into the handle drill a hole 1/64 inch larger than the tool and as long as needed. Flip the blank and drill the back end about 5/8" deep to fit the back insert.



JB Weld both inserts into the blank, taking care to keep the epoxy clear of the backend of the tool insert if the tool needs to slide down into the handle. Allow to dry.

Figure 6

What you now have is a rough blank with a tool insert in one end and a center in the back end. Place a dead center in the headstock end and a live center in the tailstock. Place the back end towards the headstock and the tool insert towards the tail stock. You are now friction turning the blank between centers.

Mark the tool insert end back 2 inches from the insert. Using a parting tool mark the 2 inch line by cutting down to your major diameter (2

inches or less). Measure the distance from this cut to the back end of the blank and divide this distance in half. Mark this point and part down to the minor diameter (~1 inch). Part the back end of the blank down to major diameter less a quarter of an inch. Using these three lines carefully turn the tool to shape, burn groves and sand. I wet sand using Minwax 209 sealer/stain to keep down the dust. Finish as you wish. I usually just leave the 209 sealer on and as the tool gets banged up, I place it between centers, return/resand/209 and use it until it gets banged up again.

Figure 7

To the right is a cutaway of a typical handle showing the internal layout. Care must be taken when sizing the minimum diameter vs the size and depth of the hole for the tool to slide into the handle.

All Metal Handles

The metal handles are usually made of 1 inch aluminum or 3/4 inch steel. The procedure is almost the same as drilling the wood blank except that a piece of micarta with a hole the exact size of the rod stock is used instead of the flat piece of wood (The metal gets a lot hotter from the drill than the wood).

Figure 8

Clamp the rod stock in the chuck on the headstock end and leave the tailstock end free. Remove the angled toolrest and replace it with the square one. Run the tailstock with a live center in it up close to the free end. Place the flat piece of micarta over the end of the blank and slide it back towards the headstock about 2 inches. Adjust the banjo and rest until the stock is aligned with the tip of the live center. Turn the lathe by hand and verify that the stock is rotating about center. Remove the live center and install a Jacobs chuck or a morse taper drill of the proper size (1/64 inch

Figure 9

oversize). Drill one end for one size bit and drill the other end for a different size (3/8 / 1/2 inch). Drill ends for 1/4 -20 set screw and glue a proper size piece of flex tubing over the handle. Leave just enough clearance to get to the set screw. Allow the glue to dry and turn the ends of the tubing smooth with a round shear scraper. See Figure 9.