Hand Drill Instructions

Check the contents of your package. You should have a drill chuck, a chuck key, a 2-1/4” 3/8 X 24 nipple , (2) 3/8 X 24 nuts, and a 3/4” copper ferrule about 9/16” long. Along with this instruction sheet that you’re holding.

The following steps represent only one of many possible ways to make this project. It just happens to be the one that I would use, allowing for the tools that I happen to have, and the time constraints that I’d be working under.
Select a wood suitable for the handle. It should be 1-1/2” by 6” long. (Larger will of course work, but there will be a lot more of the wood ending up as shavings!) Since this is going to be a tool that you are going to be using for life, I’d recommend using a good quality hardwood, one that’s not only to hold up structurally, but is going to be attractive in the years to come. Something like one of the rosewoods, or perhaps a figured maple. Of course, the remnants of a construction grade 2 X 4 will work, but come on, are you going to be able to proudly show that thing off to your kids and grandchildren someday? Only if you don’t mind them thinking that they are descended from some pretty cheap people.

1 - Clean up one of the inside edges of the ferrule. Using a small round file, remove the burr from the edge. This can also be done by first wrapping the ferrule in several wraps of tape, holding it in the scroll chuck, and after centering it with the help of the tail stock center, using a round nose scraper to remove the burr. This will let you slip the ferrule onto the tenon and have good contact all along the tenon.

2 - Mount the stock between centers and turn a tenon to fit your scroll chuck. Remount the wood in the chuck, and using a drill mounted in the tail stock, drill a hole about 1-3/4” deep. Use either a U or a 23/64” bit.

3 - Now we’re going to tap the hole. You can do this one of two ways, either by using the 2 nuts as a jam fit, or by using one nut

and the drill chuck. Using the 2-nut method, thread them both onto one end of the nipple, and then tighten them into each other using two 9/16” wrenches. Now just start the other end (the one away from the nuts) into the hole in the wood. You are going to need to use a wrench to finish the threading. Run the nipple into the wood at least 1-3/4 inches. Remember, you are not cutting the wood, you’re compressing it, so you don’t need to do the occasional back-out thing. Just keep turning the wrench.

4 - For the next step, you’re going to need some sort of live center for the tail stock, one that can hold a tapered fitting that is larger than the drilled hole.
With the piece secured in the chuck, bring the tailstock up, and use the tapered fitting to center the right end of the stock. Tighten it some, but not too much, You don’t want to destroy too many of the threads you’ve just cut.
First, turn a tenon on the right end to hold the ferrule. The tenon needs to be just over a half inch long and about 13/16” in diameter to start. Then, by using the ferrule as a guide, slowly turn the tenon down to a diameter that will just let the ferrule slide on with some slight resistance. (Be sure to slide the end of the ferrule you cleaned up in step 1 first.) This can be accomplished by trial and fit; just slide the tailstock back, and see if the copper ferrule will slip on. If not, take just a smidgeon off the tenon, and try again. Keep this up until the ferrule just slips on. Now, with the long point of a skew, turn a small ‘V’ groove at the junction of the tenon and what will be the body of the handle. Add a couple more VERY SMALL grooves along the tenon. (These grooves provide a place for excess epoxy to collect when the ferrule is glued on during the next step.)

5 - Once you have got the tenon turned to fit, remove the stock from the lathe and, (using a wooden hammer or regular hammer with a wooden block, if necessary), seat the ferrule over the tenon after applying a thin coat of epoxy to the inside of the ferrule. If everything is going as it should, when you're done with this step, you should have a nicely fitted ferrule that protrudes just about to the end of the tenon. (SEE NOTE 1)

6 - Now turn the remainder of the stock to a pleasing shape that fits both your hand and your eye. In other words, make it comfortable to hold and pretty to look at. At the left end, turn the start of the butt end about a half an inch from the chuck. At the right end (where the ferrule goes), try to finish the curve of the tool where the wood intersects the outside of the ferrule to the proper diameter. As a final check, remove the work piece from the lathe, and hold it. See how it feels. If it's too fat, return it to the lathe and remove some more stock until it feels right for you. (You might want to work your way to this step in small degrees, since if it doesn't feel right because it's too small... Well, you start with another piece of wood and go back to Step 1.) Remember, this is YOUR tool, so make it fit YOUR hand, not some universal standard. Sand as required, to 400 grit at least. If you're using a wipe on oil finish, you can apply the first couple of coats now as well. Be sure to protect the copper from the oil with a couple of wraps of blue masking tape. (SEE NOTE 1)

7 - You can now begin the parting off of the blank from the scroll chuck. Using a skew, (or a shallow gouge with a long fingernail grind), form the curve that will be the bottom of the handle, cutting as thin as you can. (Or dare.) Remove the handle from the

chuck. First, wrap the copper ferrule (or the bare tenon) with several wraps of tape. Then put the ferrule in the scroll chuck, and using the hole left by the spur center for alignment, tighten the chuck only enough to provide enough torque to turn the stock. Start turning the butt end, using either a skew or a shallow gouge. When you get close to a total part off, slow the lathe, and support the stock with your left hand, and turn only with your right hand. You should be able to completely part off the handle, leaving a minimum area to be sanded. Again, by loosely holding the stock in your left hand, sand with the right.

8 - The final step of construction will be to protect the copper from oxidation. Either mask off the body with tape or slip a piece of paper with a 7/8" hole over the ferrule to act as a mask. Spray the exposed copper with several coats of lacquer. (SEE NOTE 1)

9 - Screw the nipple into the chuck tightly. Again, you can double nut and use that as a means to apply torque to the nipple while holding the chuck in a wood faced vise. Remove the nuts, and trial fit the chuck/nipple with the handle by screwing the nipple into the handle until the chuck bottoms out against the copper ferrule.

10 - Unscrew the chuck/nipple, drop a couple small globs of epoxy down the hole and screw the chuck/nipple assembly back into the handle. Let the epoxy dry, and you're done. And can then call your progeny into the room and show them the treasure that they'll be inheriting some day. (You don't actually have to epoxy the nipple into the handle. Since both the chuck, the nipple, as well as any bits you will be using are all right hand thread, you can omit the permanent epoxy bit. Just tighten the nipple into the handle, and use it. This way, should you ever decide to replace the handle, all you have to do unscrew the old handle, and screw its replacement on.)

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To use as a center drill on the lathe, you'll need to first make a small dimple in the area to be drilled. Bring the tool rest to the

center of the work, and using the skew on its side, just touch the center of the stock with the long point of the skew and make a small indentation. Now the drill bit will self-center and drill without wobble.

NOTE 1 - You may attach the ferrule after you've completed the turning and finishing of the driver. This lets you polish the ferrule and use a different protective finish on it than you used on the wood. Same procedure, just be careful to keep the epoxy off the wood. Use the epoxy sparingly.

Tom Weber