



SHERLINE
PRODUCTS
INCORPORATED 1974

Adjustable Tailstock OJT Chuck Holder

P/N 1204

Use of the Adjustable Tailstock OJT Chuck Holder

Much like the Adjustable Live Center, holding a tailstock chuck in perfect alignment without some method of adjusting it can be difficult or impossible. The adjustment screws and split design allow perfect centering for the chuck. With the tiny drills that can be held in a 5/32" chuck this is even more critical than with the 1/4" or 3/8" chucks. The 5/32" Jacobs drill chuck is pressed onto a tapered protrusion on the front plate of the holder. The rear plate of the holder has the #0 Morse taper that goes in the tailstock. Two slightly oversized holes in the rear plate allow adjustment screws to be loosened, the center located and then locked down where you want it. In this manner, highly accurate centering can be achieved. If the ultimate in accuracy is your goal, the Adjustable Tailstock Chuck Holder will help you achieve it.

Mounting a Jacobs Chuck to the P/N 1204 Holder*

If you purchased P/N 1016, the 5/32" Jacobs chuck is already installed on the front plate. If you purchased only the P/N 1204 holder and already have a 5/32" Jacobs chuck that has a Sherline #1 or #0 Morse arbor pressed onto it, you will first need to remove the arbor from the chuck. To remove the existing arbor, open up the chuck jaws. Insert a drift, a hex key or other appropriate tool down through the chuck jaws and steady it against the end of the tapered arbor that is pressed into the chuck. Give the drift a sharp tap with a mallet to unseat the taper and the arbor should drop out. After making sure that both male and female surfaces of the tapers are clean and free of lubrication, place the chuck over the taper on the front plate of the holder. Close the jaws. Put a block of wood on the front of the jaws and give the block a light tap with a mallet to seat the chuck on the taper. You can also hold the assembly in your hand, turn it over and tap the closed jaws on a block of wood to use its own inertia to seat it. It is not necessary to drive in on with a lot of force. The twisting force exerted by small drills on a chuck this size is minimal compared to the surface area of the taper, so don't use any more force than necessary. This is especially important if you expect to periodically remove the chuck from the holder so the #1 MT arbor can be installed to use it in the headstock again.

* **NOTE:** A chuck is not included with the P/N 1204 tool holder. Use your existing 5/32" Jacobs chuck or purchase P/N 1016 to get both the chuck and tool holder together.

Adjusting the Chuck to Be on Center with the Headstock

First, assure your headstock is square with the lathe by turning a test bar and checking for taper.

METHOD 1 (If you have another tailstock chuck): Once you are sure the headstock is square, place a piece of 1/2" to 3/4" diameter round scrap material in a 3-jaw chuck so that it sticks out about 3/4". Face off the end and then use a center drill in your regular tailstock drill chuck to drill a hole on center. Even if the chuck is a little off center, the center drill will find the center of the spinning part and drill a 60° hole on center. Now, mount the OJT adjustable center and 5/32" drill chuck in the tailstock with the witness mark pointing straight up. Chuck up the center drill in the 5/32" chuck. With the screws loose in the plate holes, bring the tailstock up to the part so the center drill locates in the hole. When you feel it is centered on the hole, tighten up the two screws. Bring the point of the drill back into the hole to check your alignment and repeat the adjustment if necessary. The next time it is used after removal from the tailstock, assure that the witness mark is again pointing straight up. If this is done, it should not be necessary to readjust the alignment of the two plates each time.

METHOD 2 (If you don't have another tailstock chuck):

If you do not have a second tailstock chuck, you can offset your headstock or use a compound slide to turn a sharp point on a short piece of stock 5/32" in diameter or smaller. Transfer that piece from the 3-jaw chuck to the 5/32" chuck in the tailstock holder. Remove the 3-jaw chuck from the headstock and install the dead center in the spindle. Bring the tailstock chuck holding the pointed stock up to the headstock dead center until the points of the two parts are opposite each other. Using a magnifying glass, adjust the front plate up/down and left/right as needed until the points are perfectly aligned.

This should be close enough alignment for a drill chuck, because they can only be guaranteed to be accurate to

within .003" anyway. Accurate drill chucks that run out within .002" cost approximately four times as much. Some may claim .001" runout, but this is unlikely unless every part of the system is brand new. These are not really a good investment for the home shop machinist. In any case, because the tailstock chuck does not spin, runout should not be a problem once you get it perfectly aligned with the headstock. You should now be able to hold very tiny drills and not have to worry about them breaking due to not drilling on center.

How to Chuck a Drill Bit Accurately

Run-out of your drill bit in your drill chuck is critical. In order to get the truest run-out it is important to insert and secure the drill bit properly in the chuck. This is especially true with very small drill bits

1. Insert the drill shank into the chuck.
2. Slowly tighten the drill chuck.
3. As you are slowly tightening the chuck jaws onto the drill shank, slowly spin the drill bit between your thumb and pointer finger. This will remove any chips or other objects that may be on the drill shank or up inside the chuck jaws. This will cause a wiping action between the jaw face and the drill shank as the jaws close.
4. Once your jaws are snug on the drill shank index the chuck key to the next chuck key hole in the chuck body and tighten a little bit more. Repeat this increased chucking pressure as you go from one chuck key hole to the next.
5. This method should ensure the most accurate run-out of your drill bit.
6. For drills which have spun in the chuck you will need to remove the burrs with a fine file.

Thank you,
Sherline Products Inc.