

SHERLINE
PRODUCTS
INCORPORATED 1974

Sherline Drill Chucks

P/N 1010/1015 (5/32"), 1072/3072 (1/4") and 1069/3073 (3/8")

Chuck and Drill Sizes

The size of the chuck indicates the largest size drill shank it will hold. Larger chucks will hold larger drills, but they are also longer and eat up more of the space you have between centers on your lathe. Not only is a larger chuck longer, but the drill bits also get longer as they get larger. On the mill or on the Model 4400/4410 long bed lathe this is usually not a problem, but on the Model 4000/4100 lathe, unless you need to hold a large diameter drill, you will probably want to use the 1/4" or 5/32" drill chucks because of their shorter overall length.

The 5/32" 0JT* chuck is offered in two versions. P/N 1010 is fitted with a #1 Morse arbor to be used in the headstock for drilling on the mill or lathe. Included with this chuck is a drawbolt and washer. P/N 1015 is fitted with a #0 Morse arbor for use in the tailstock. The 1/4" (P/N 1072) and 3/8" (P/N 1069) chucks come with both a #0 and #1 Morse arbor which can be interchanged so the chucks can be used in either the headstock or tailstock. The 1/4" and 3/8" chucks will hold drills as small as 3/32". For using smaller drills down to 1/32" or even smaller the 5/32" chuck is recommended.

* The designation "0JT" stands for "Zero Jacobs Taper". The chucks come with a zero Jacobs tapered hole in the back. Sherline installs an arbor to fit either the #1 Morse or #0 Morse tapers in the headstock and tailstock. These arbors are pressed into the zero Jacobs taper which is why they are not as easily interchangeable as are the arbors for the 1/4" and 3/8" chucks which thread onto the back of the chucks.

Purpose of the Tailstock Chuck

The tailstock chuck is one of the most important accessories you will need for your lathe. It will enable you to accurately drill, ream or tap any part mounted in the lathe. The part to be machined is chuck or collet mounted in the headstock. The tool is held in the tailstock chuck and fed into the part using the tailstock ram feed. Parts that are going to be mounted between centers can be center drilled this way. Other parts requiring a hole accurately drilled on center such as a shaft, pulley sheave or gear blank will also be done this way.

These chucks can also be mounted in the headstock of the lathe. The Sherline 1/4" tailstock chuck (P/N 1072) is a

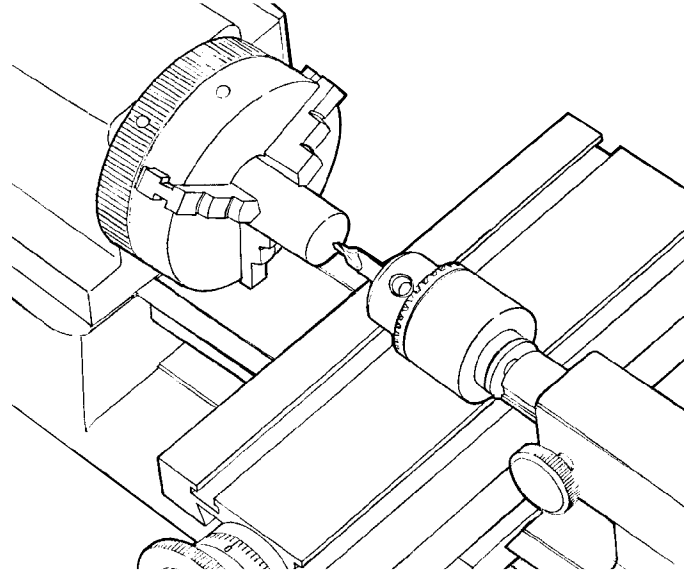


FIGURE 1—Center drilling with a tailstock chuck. The work turns while the drill is stationary.

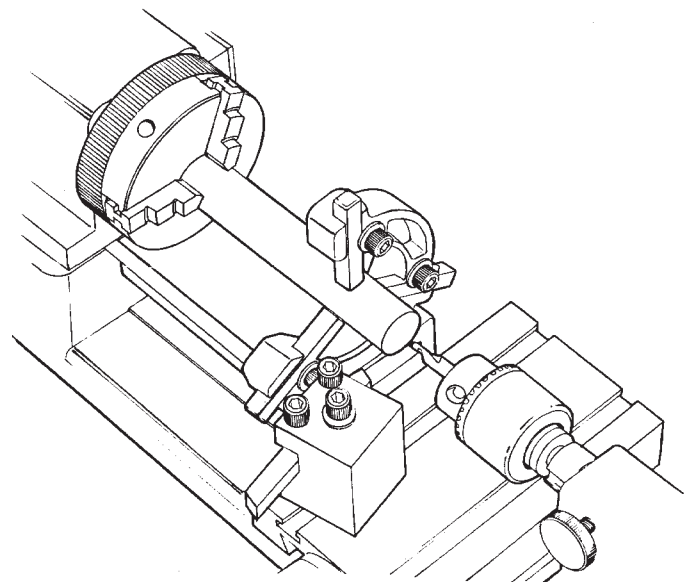


FIGURE 2—Center drilling a long workpiece held in a steady rest.

precision 3/32" (2.4 mm) to 1/4" (6.4 mm) 3-jaw chuck complete with key and two arbors. P/N 1069 is a 3/32" to 3/8" (9.5 mm) chuck with key and two arbors. A #0 Morse arbor fits the tailstock and a #1 Morse arbor fits the head-

stock. The #1 Morse arbor for the headstock is drilled and tapped for a drawbolt to pull it tightly into the headstock. The drawbolt is also included.

Use of the Tailstock Chuck

When using the chuck to drill a part in a lathe, you must use center drills to start the hole. Because of the added rigidity of a center drill, it will find and hold the center while a more flexible twist drill will “walk” or follow the part around rather than center itself. Once a center is established with a center drill, a twist drill, even if not perfectly aligned, will center itself in the hole and continue to drill on that center. (Be sure to use a cutting lubricant when using the center drill and “clear” the tip often by backing it out of the part so that the tip doesn’t break off in the hole.)

One additional caution...Do not use the tailstock chuck and a twist drill to attempt to align the headstock and tailstock. It is almost impossible to visually find a center using a drill point. The flutes cut into the drill make the center look different depending on the angle from which you view it. For accuracy, use an arbor or “dead center” in the tailstock when aligning the machine. At very least, use a center drill in the chuck rather than a twist drill. Keep in mind also that the runout of this type of chuck can be as much as .003". The most accurate alignment is achieved using dead centers in both the headstock and tailstock.

Headstock Drilling

When using the drill in the lathe headstock, the work is mounted to the table and the drill turns. To allow the work to be moved up and down, it can be mounted to a vertical milling table P/N 1185 which is designed to be mounted to the lathe crossslide. The drill is more commonly used in the headstock when using it in the milling configuration either with a mill or on a lathe fitted with the vertical milling column attachment.

Installing a Chuck in a taper

Before installing the chuck in either the headstock or tailstock, make sure the male and female tapers are clean and free of chips. A drawbolt is used to pull the headstock

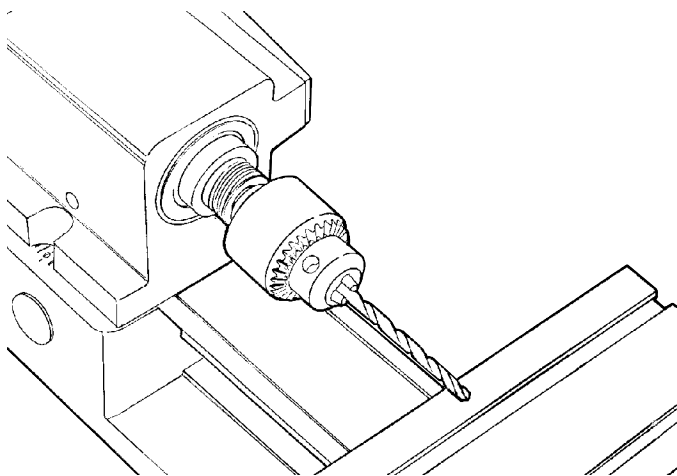


FIGURE 3—Headstock drilling—The drill turns while the work is held stationary.

chuck tightly into its #1 Morse taper. On the tailstock, insert the #0 Morse taper into the tailstock and push it until it seats, twisting it slightly back and forth to make sure you get good contact with the taper. If it won’t seat fully, it may be hitting the end of the tailstock leadscrew. Using the handwheel, extend the spindle ram sufficiently so the tapered arbor can seat. No drawbolt is used on the tailstock. The friction of the shallow Morse taper should be enough to keep the chuck from turning when it is properly seated.

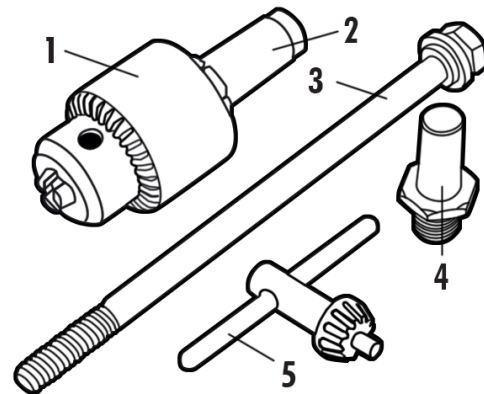
Removing a Drill Chuck from its taper

HEADSTOCK—Because the forces on the chuck are greater when it is used in the headstock, a drawbolt is included to draw it tightly into the #1 Morse taper to keep it from slipping. To remove it, back off the drawbolt a few turns and tap on the head of the bolt with a hammer to free up the chuck. Start lightly and tap a little harder each time until the chuck breaks loose.

TAILSTOCK—The tailstock chuck is pushed into the #0 Morse taper in the tailstock with a press fit and is easy to remove. Simply turn the tailstock handwheel counter-clockwise to bring tailstock ram in past the “zero” point. The end of the leadscrew inside will contact the back of the arbor to push the chuck out of the taper.

Thank you,
Sherline Products Inc.

Drill Chuck Parts List—All Models



REF. NO.	PART NO.	DESCRIPTION
1	10190	5/32" Drill chuck body
1	11900	1/4" Drill chuck body
1	11800	3/8" Drill chuck body
2	10170	5/32" chuck arbor, #0J taper to #1M taper
2	11880	Threaded #1M arbor for 1/4" or 3/8" drill chucks
3	30880	1/4-20 x 5" Drawbolt and centering washer
4	10160	5/32" chuck arbor, #0J taper to #0M taper
4	11890	Threaded #0M arbor for 1/4" or 3/8" drill chucks
5	10180	Chuck key, 3/32" drill chuck
5	11806	Chuck key, 1/4" drill chuck
5	11810	Chuck key, 3/8" drill chuck