

# **Replacing Mini Lathe Spindle Bearings**

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**R**eplacing the spindle bearings of a mini/midi wood lathe is a relatively easy task, even for the mechanically challenged. Only the most basic of tools are required and it will probably take you less than an hour to complete the repair. You will need a 1/8" Allen wrench, a soft-faced hammer (brass or wood) or a steel-faced hammer and a small block of wood. Additionally, you will need two pieces of scrap wood, both about 6" long. One should be about 3/4" square and the other about 5/8" x 1-1/8".

The following instructions are specifically for the JET Mini 1014 non-VS lathe. Most of the mini/midi lathes I have seen are of a similar design to the JET Mini so these instructions should give you a good general idea of how to approach the repair of your particular lathe. Some of the details may vary a little; but the basic procedure should very similar. If you still know where your manual is, take a glance at the exploded drawing so you have a feel for what all of the parts look like and how they go together.

OK, let's get at it.

1. Using your 1/8" Allen wrench, loosen the two set screws that hold the handwheel on the spindle. Back the screws off until the heads of the screws are flush with the outer diameter of the wheel. No need to completely remove the screws and risk losing them.
2. Unscrew the handwheel from the spindle. It is reverse threaded.
3. Remove the wave washer from the spindle. **Be sure to watch for it when removing the handwheel as it may come off with the handwheel.**
4. Remove tension from the drive belt so it is completely loose.
5. Loosen the single set screw in the spindle pulley using the same 1/8" Allen wrench. As with the handwheel, do not completely remove the set screw.

6. Remove the spindle by pushing it toward the tailstock. It may slip right out; but it is more likely that you will need to give it some gentle encouragement with a hammer. Tap on the outboard end of the spindle and drive it toward the tailstock. If you do not have a soft-faced hammer, use a block of wood at the end of the spindle to protect the threads. When the spindle is free, withdraw it from the headstock. Grasp the spindle pulley with one hand so you don't lose it in the bottom of the headstock as the spindle is removed.

7. Now stick your finger thru the hole in the center of each bearing and see if they will slide out. If you are lucky, they will....if not, you will have to drive them out. The outboard bearing (small one #6004) will need to come out first. Take the 3/4" x 3/4" x 6" wood scrap and insert it thru the hole in the inboard bearing until it contacts the outboard bearing, Then gently drive it out with your hammer. Now take the 5/8" x 1-1/8" x 6" wood scrap and drive out the inboard bearing. (big one #6005). The bearings may go flying when you pop them out so be prepared. Since they are trash, it is no big deal; but if you don't want to have to hunt them down, make some provision. A third hand will work if you have one handy; but a piece of duck tape loosely covering the bearing should do the trick, too.

8. OK, the disassembly is complete. Now take a minute to clean up everything and give a light lube. Wipe off the spindle of dust and oil and clean out the hole in the spindle pulley. Use a paper towel or cloth to carefully wipe out the bearing seats. (Compressed air is great if you have it.) Apply a light coat of oil to the spindle and to the two bearing seats and you are ready to install the new bearings and reassemble.

9. Insert each bearing into its appropriate seat.....big bearing inboard and small bearing outboard. Hopefully, they will just slide right in; but you may need to use a little force. **If you do have to drive the bearings into their seats, be VERY CAREFUL.** The bearings must be driven in exactly straight and you could mess up the seat or the bearing if they are started crooked. Start the bearing with your fingers and then place a wood scrap against the bearing. Gently tap with your hammer. It may be necessary to alternate the

location of your hammer strikes on the block from one side of the bearing to the other, sort of wiggling it into its seat. You are not moving the bearing more than about 1/32" at a time. After you get the bearing started, it will align itself and you can drive it home. Again, much better to use a series of lighter strikes than trying to drive it home in one or two big hits. When I did it, the outboard bearing slipped right in; but the inboard bearing needed a little help. Just be **gentle** and take your time with this step.

10. Now that the new bearings are in, start the spindle into the large bearing. Insert it a couple of inches into the headstock and thru the drive belt. Then place the spindle pulley on the spindle (small end toward the tailstock) being sure to align the keyway in the pulley with the key on the spindle. Finish pushing the spindle thru the headstock and into the outboard bearing. It may be necessary to use the hammer to fully insert the spindle. If the hammer is required, don't forget to protect the threads. (I have a wooden headed hammer that I turned from some scrap wood for just such occasions.)

11. To properly align the upper and lower pulleys it is necessary for the spindle pulley to butt up to the small shoulder machined on the spindle. (Look for this shoulder while the spindle is out of the headstock so you will know where it is.) If the pulley will slide freely on the spindle, you can push the pulley into position by hand. If not, proceed as follows. After the spindle is fully inserted, back it out about 1/2". Then place some sort of spacer between the big end of the spindle pulley and the inside of the headstock. The spacer needs to be about 1/8" to 3/16" thick. I used the spanner for my Beall Collet Chuck; but a scrap of hardboard (Masonite) would also work just fine. Now gently tap the end of the spindle until it seats against the spindle pulley. Looking thru the access door, you will be able to see the spindle pulley seat against the shoulder on the spindle and you will be able to feel it as well. Remove the spacer and give the spindle another tap or two to fully insert it into place.

12. Tighten the set screw of the spindle pulley.

13. Place the wave washer on the spindle. And screw on the handwheel, again remembering that it has a reverse thread. **This is probably the trickiest part of the whole operation.** There is a very narrow shoulder on the spindle that protrudes from the headstock. The wave washer must "hang" on this shoulder to be properly positioned when the handwheel is installed. It is very easy for the wave washer to slip off of this shoulder and fall into the groove just outboard of the shoulder. I don't exactly know how to describe the process. Just play with it a little and you will get it right. A trick I sometimes use is to put a dab of thick grease on the washer and then install it in the proper position. The grease will hold the washer in place while the handwheel is screwed on.

14. Tighten each set screw until just snug and then go back a second time and give each one another little twist to make them tight.

15. Reposition your drive belt to the desired position and you are ready to go!!

## GOOD JOB!!

You just saved yourself about \$80 and you probably have a better set of bearings than what you would have gotten at a JET service center.

(Note: I plan to have some pictures to go along with the narrative; but that hasn't happened yet. As mentioned earlier, this is an easy repair and most folks will do just fine without any pictures.)