



# REBUILD INSTRUCTIONS

**INDIRECT DRIVE SPINDLE**

• CHAIN COUPLE STYLE • DOC#15-2018 •

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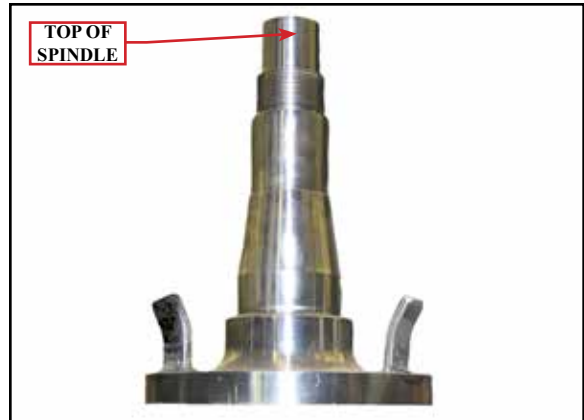
**DEMAND BRILLIANCE.**



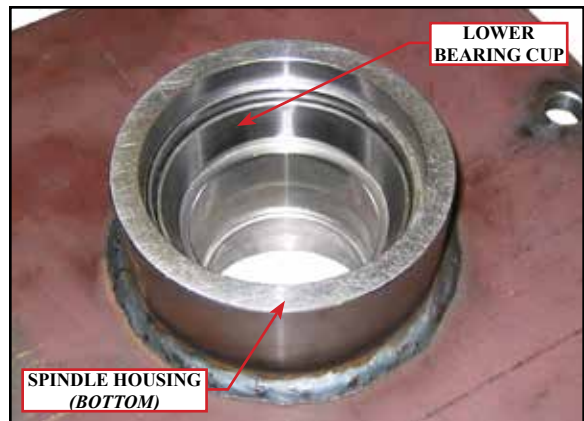
**Note:** Reference the parts book for parts lists and exploded views. The following instructions are for assembling an indirect drive spindle. Reverse these instructions for disassembly, with the exception of pressing on the shaft for disassembly (as opposed to pressing on the bearings for assembly.) Usually, a press is not needed to disassemble an indirect drive type spindle.



**Note:** Specialized tooling is needed for several spindle assembly applications; see the Spindle Maintenance Tools section for specialized tooling.



[figure 1]

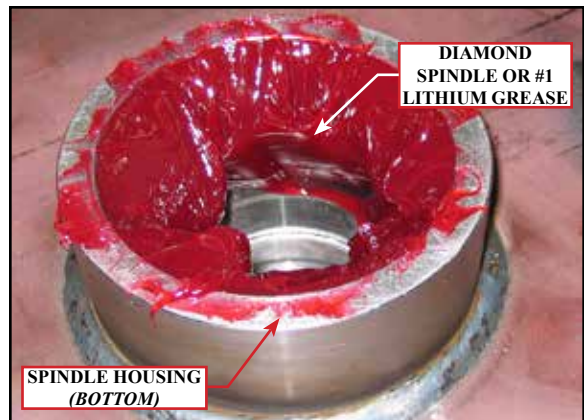


[figure 2]

### Spindle Assembly:

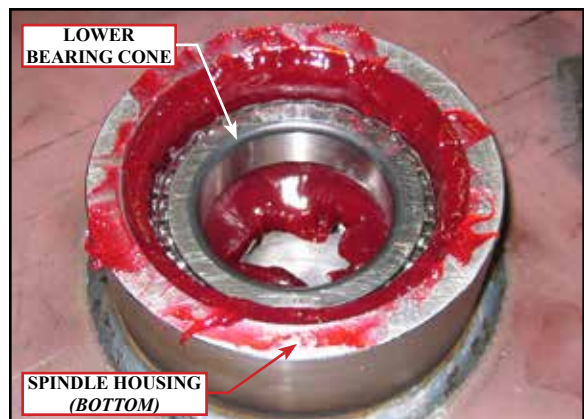
**1.** Position the spindle as illustrated [see Figure 1.] Position the spindle housing upside down so the bottom of the spindle housing is exposed, and insert the lower bearing cup [see Figure 2.]

**2.** Using **Diamond** spindle grease (part# 23-0001) or #1 lithium based grease, pack the inside of the spindle housing for the lower bearing as illustrated. Use approximately  $\frac{1}{2}$  of a standard grease tube for quantity [see Figure 3.]



[figure 3]

**3.** Seat the lower bearing cone into the greased bearing cup in the spindle housing, placing the narrower, tapered end in first [see Figure 3.]



[figure 4]





**4.** Smooth the grease on the inside of the spindle housing, and clean the excess grease off of the exterior surfaces of the spindle housing. Heavily grease the interior of the lower bearing cone as illustrated [see Figure 5.]



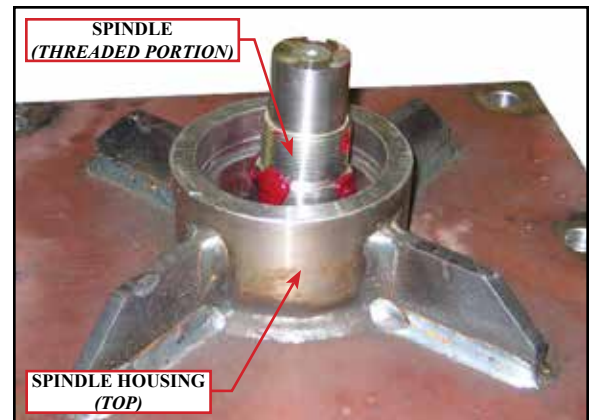
(figure 5)

**5.** Gently tap the lower seal into place in the spindle housing. The lettering on the lower seal should be facing towards the lower bearing cone [not readable after insertion] [see Figure 6.]



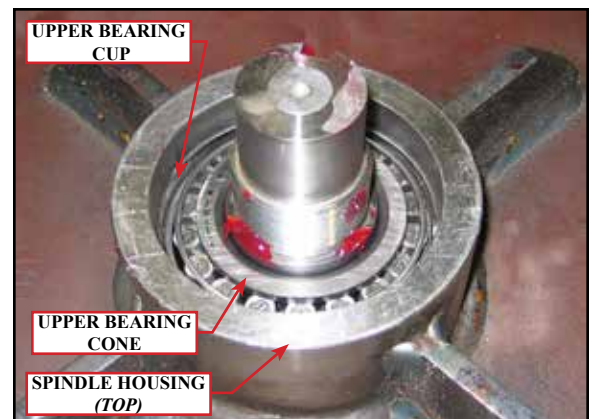
(figure 6)

**6.** Turn the spindle housing over so the topside is up, and place it onto the spindle. Gently tap the spindle housing [all the way around evenly] to seat the spindle housing down onto the spindle. The threaded portion of the spindle should be higher than the top of the spindle housing [see Figure 7.]



(figure 7)

**7.** Set the upper bearing cup and upper bearing cone around the spindle and into the spindle housing. Gently and evenly tap it all the way around to verify it is fully seated [see Figure 8.]

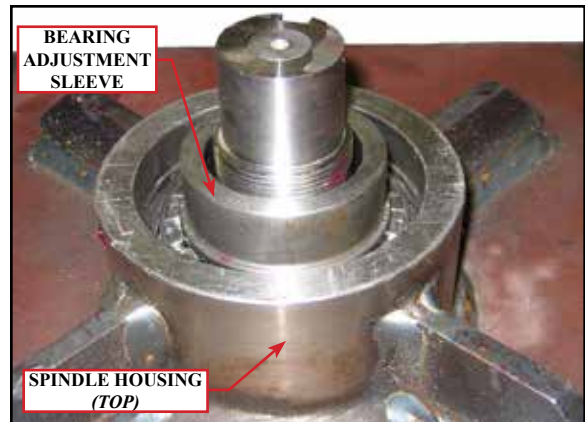


(figure 8)



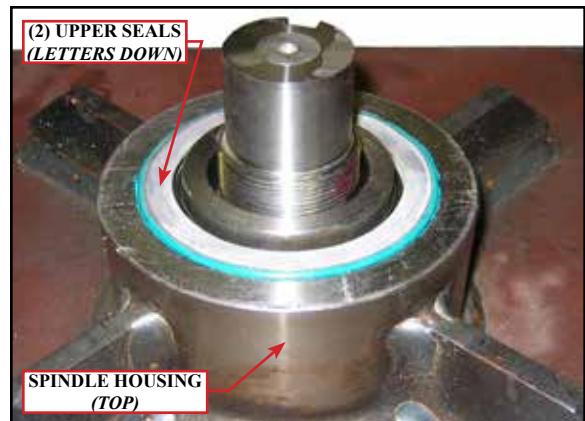


**8.** Place the bearing adjustment sleeve on top of the bearing cone and around the spindle (see Figure 9.)



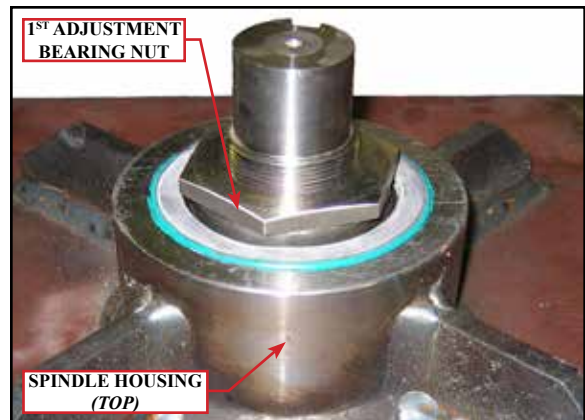
(figure 9)

**9.** Place the first upper seal around the bearing adjustment sleeve (letters facing down) and evenly tap it down into the spindle housing, slightly below the top surface of the spindle housing (to allow room to start the second upper seal.) Place the second upper seal around the bearing adjustment sleeve (letters facing down) and evenly tap it down into the spindle housing until flush (see Figure 10.)



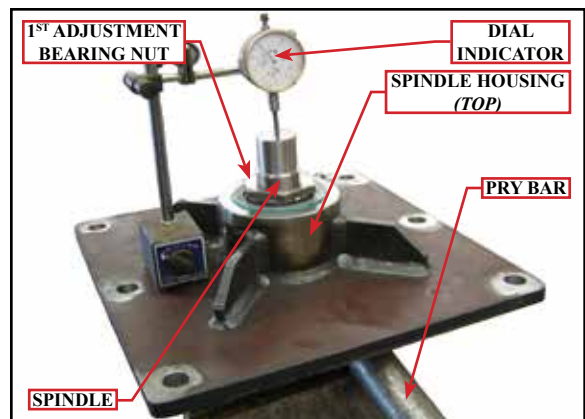
(figure 10)

**10.** Thread the first adjustment-bearing nut onto the spindle threads. Tighten the nut down onto the bearing adjustment sleeve (see Figure 11.)



(figure 11)

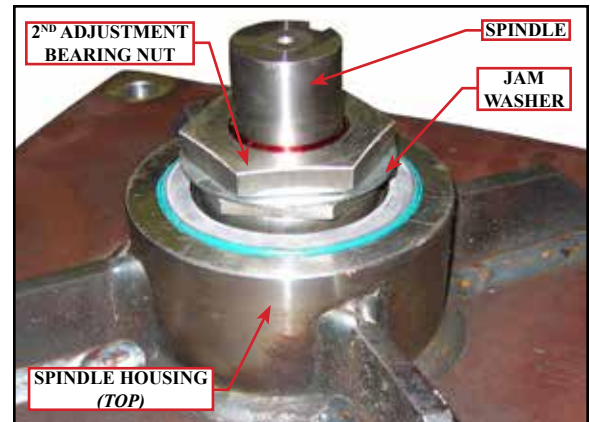
**11.** Clamp the end of the spindle (not the spindle housing) in a vise so that the spindle housing can turn freely. Position a dial indicator on the flat mounting plate of the spindle housing, and set the needle end of the dial indicator on the flat end of the spindle. Using a pry-bar, pry the spindle housing upwards away from the vise jaws to check the endplay. The endplay should be between .010 -.012". Tighten or loosen the adjustment-bearing nut as needed (see Figure 12.)



(figure 12)

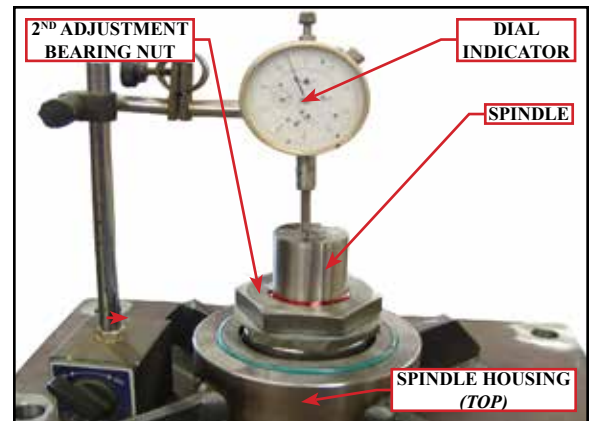


**12.** Place the jam washer on top of the first adjustment-bearing nut, then thread the second adjustment-bearing nut down onto the spindle shaft on top of the jam washer. Make sure to use loctite on the threads of the second nut. Tighten the second nut *(see Figure 13.)*



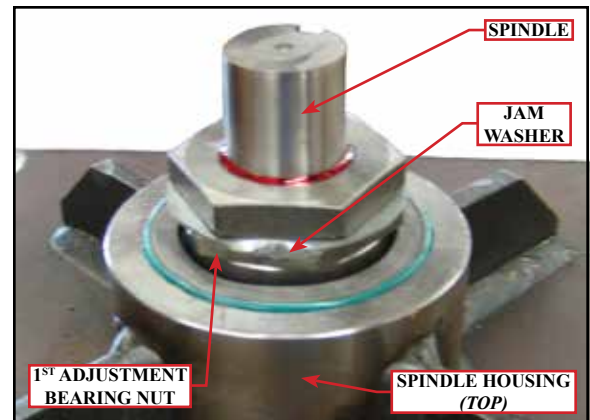
(figure 13)

**13.** Again, clamp the end of the spindle (*not the spindle housing*) in a vise so that the spindle housing can turn freely. Position a dial indicator on the flat mounting plate of the spindle housing, and set the needle end of the dial indicator on the flat end of the spindle. Using a pry-bar, pry the spindle housing upwards away from the vise jaws to check the endplay. The endplay should be between .004 -.005". Tighten or loosen the second adjustment-bearing nut as needed *(see Figure 14.)*



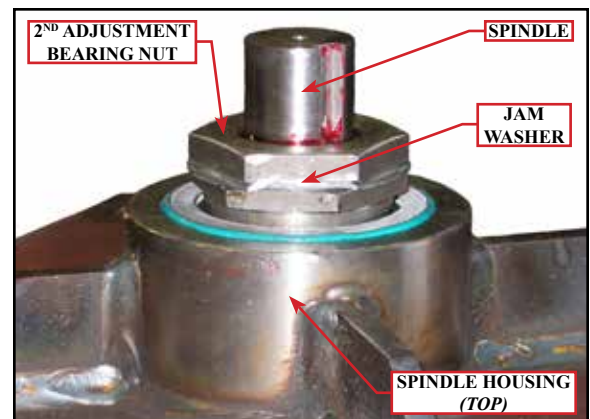
(figure 14)

**14.** Once the endplay is set to the correct amount, bend/hammer down one side of the jam washer tight against the lower (*first*) adjustment-bearing nut *(see Figure 15.)*



(figure 15)

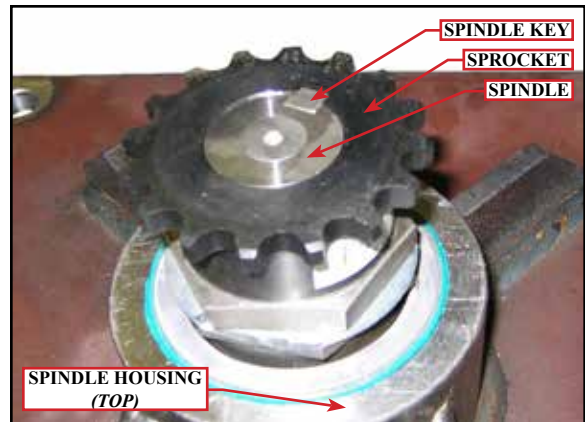
**15.** Bend/hammer the opposite side of the jam washer up tight against the upper (*second*) adjustment-bearing nut *(see Figure 16.)*



(figure 16)

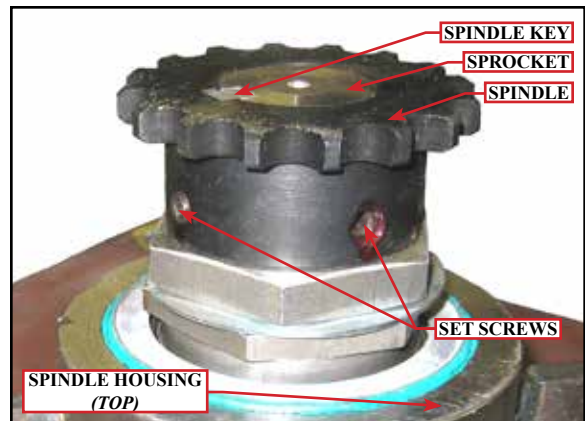


**16.** Place the sprocket onto the spindle and orientate it until the interior cut slot matches the slot on the spindle shaft. Place the spindle key into the slot, and tap it down until fully seated (see Figure 17.)



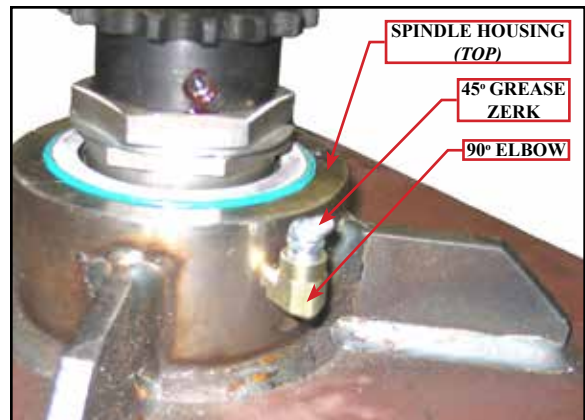
(figure 17)

**17.** Secure the sprocket to the spindle shaft with the (2) setscrews, using loctite on the threads to prevent them from backing out. Tighten the setscrews (see Figure 18.)



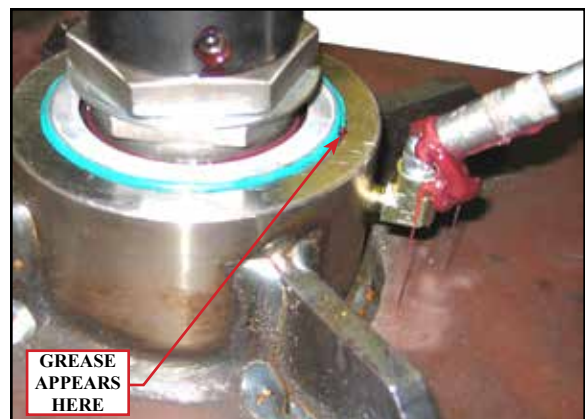
(figure 18)

**18.** Screw the 45° grease zerk into the 90° elbow. Screw the assembled grease zerk unit into the spindle housing until tight. Position the grease zerk so that it is up and facing out as illustrated (see Figure 19.)



(figure 19)

**19.** Grease the assembled spindle unit with **Diamond spindle grease** (part# 23-0001) or #1 lithium based grease. Apply enough grease until it begins to appear at the seams between the spindle housing and the upper seal (see Figure 20.)



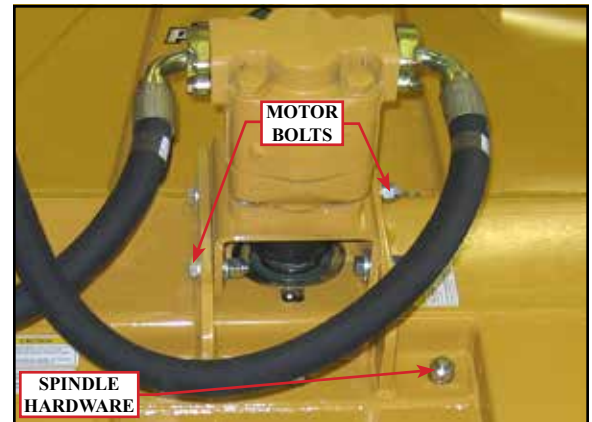
(figure 20)



**20.** Reassemble the spindle to the deck; apply Loctite 262 to the bolt threads before attaching the nuts. Thread the nuts down but leave them *LOOSE* (see Figure 21.)

**21.** Reassemble the motor to the spindle with its hardware *LOOSELY*. Align the spindle and motor shafts with their sprockets. Assemble the chain coupler to the sprockets on the spindle and motor shaft, and lock it in place with the motor and spindle shafts still aligned (see Figure 21.)

**22.** Torque the spindle hardware to 230ft/lbs (307Nm) in an alternating pattern. Torque the motor mounting hardware to 120ft/Lbs (160Nm) (see Figure 21.)



(figure 21)