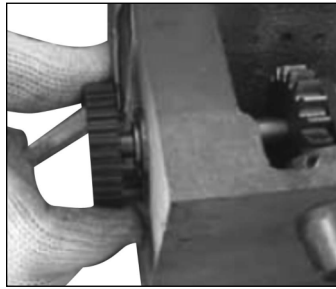
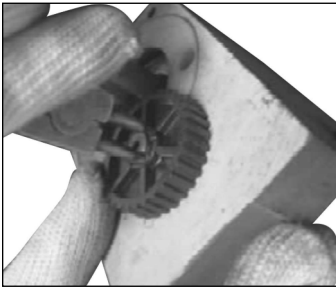


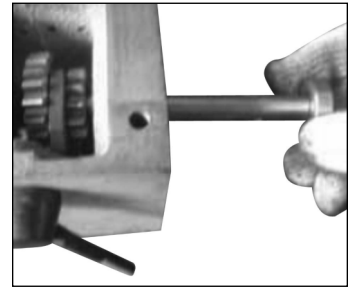
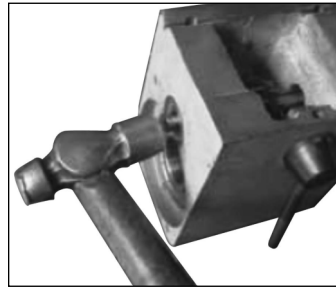
## #83452 GEAR CHANGE KIT INSTRUCTIONS

Basic instructions for both the milling machine and lathe are supplied with this kit. It is assumed that the user will have general machinery knowledge and shop tools. Some tools you will need are: wrenches, Allen wrenches, locking pliers, hammer, retaining clip plier, screwdrivers and a spanner wrench (preferred). Take notes and/or pictures during disassembly as an aid in re-assembly. Also, refer to the parts drawing provided for your machine. Note: some of the parts included in this kit may not be needed for your machine.



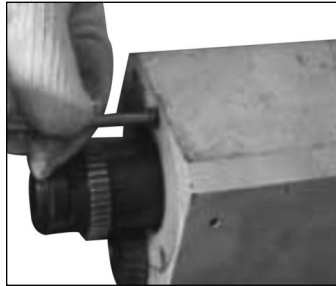
**STEP 1**

Remove all non-related spindle box components from your machine.



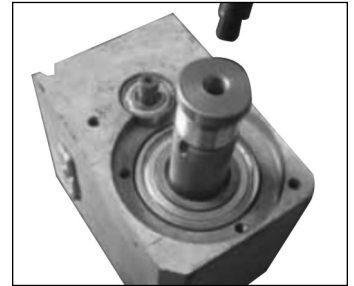
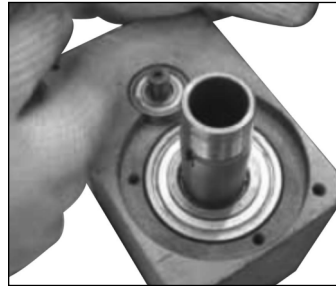
**STEP 4**

Remove the H/L shaft, bearings (as required), gear (note its orientation within the gear train) and shifting fork.



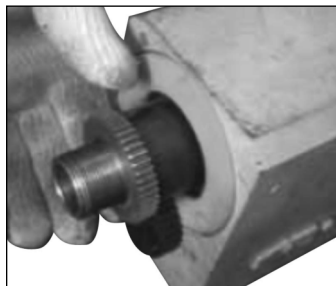
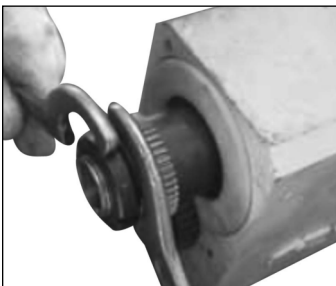
**STEP 2**

Remove bearing covers (both). Note: On lathe, the cover by the flange will remain on the spindle, but hardware must be removed.



**STEP 5**

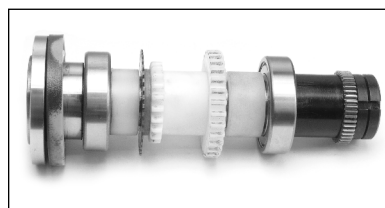
Attach tooling as shown using a pusher washer on the spindle. Use smaller threaded rod. (On the mill, you must pop out the spacer washer from inside the spindle first.) As you push out the spindle towards the MT-3 side, observe your progress through the access hole. Once free, pull out the parts left inside the headstock. Re-assembly of the parts with the new metal gear parts takes place in the same order. The lathe spindle order is shown below.



**STEP 3**

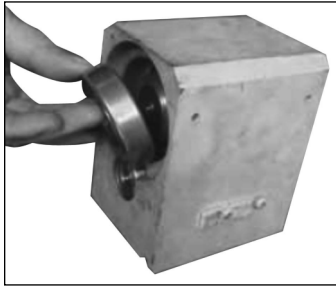
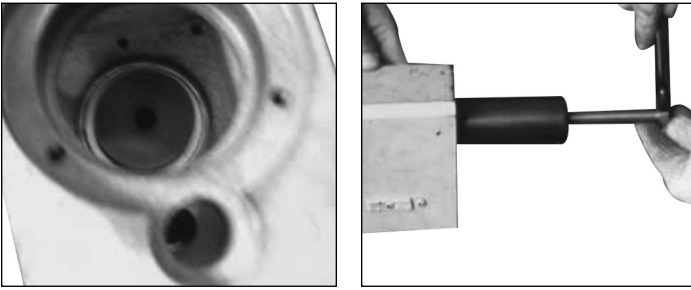
Remove spindle nuts with spanner wrench. If spanner wrench is not available, then either wedge or hold spindle in place and, with a couple of light taps with a hammer and screwdriver, remove the ring nuts. Note: the mill has only one ring nut and you must first remove the set screw from it prior to unthreading. Also, the threading on this part is left-handed (right-handed for the lathe). Remove all components down to the bearings.

Several different pushing and drawing washers are included in your kit. Pushers have the small center hole that fit onto the shoulder of the threaded rod. The drawing type has the larger hole which allows this rod to pass through to another point. Also, use the washer that has the appropriate flange to push or draw.

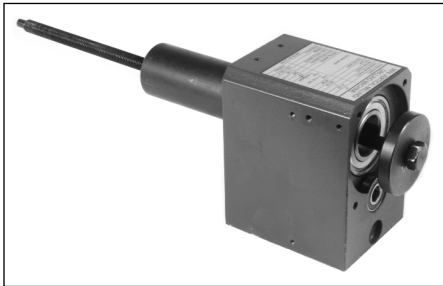


Note: 1 replacement bearing is included in this kit. In most cases, removal and replacement of either one of these is not required. However, should one require replacement, see the following pictures.

### Removal of bearing on gear/motor side

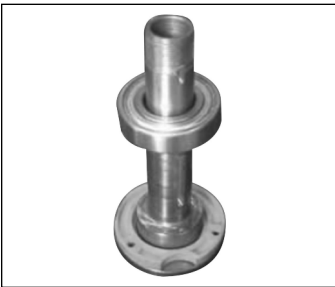


### Installation set-up



Draw bearing fully into casing.

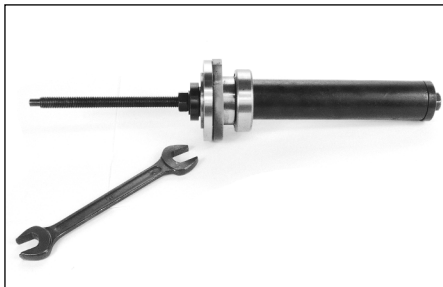
### Removal of bearing from spindle shaft



Remove old bearing (no tooling supplied).

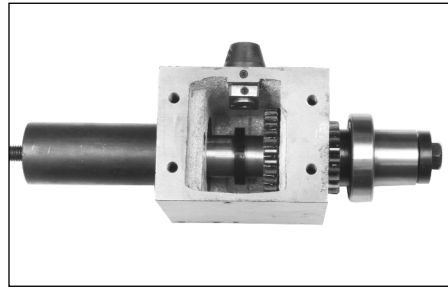


Gently tap bearing onto spindle with long sleeve and washer.



Finish pushing bearing into place. Lock R/S head of rod in a vise and tighten L/S nut.

### Re-assembly of spindle



Both spindles are drawn into place as shown here (mill shown).

### Important!

Some components of the spindle will need to be installed from inside the head casing during the drawing process. On the mill, this is the new large metal gear and plastic spacer. On the lathe, it is everything back from and including the speed pick-up disk. It is a good idea to mark the location of the key slots on the gears and spacers prior to assembly. Use a black marker or liquid white-out, because it becomes difficult to see as you engage the new key on the spindle. Test fit all pieces prior to installation. If the metal gears fit too tightly, you can remove some of the material of the inner ring area with a file. They need not be a tight fit. On either machine, the long tail of the new key goes under the large gear.

### LAST STEP

Re-assemble all other components of your machine.

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