

# HOW TO REPLACE TILLER SHAFT OIL SEALS on TROY-BILT® HORSE and PONY® MODEL TILLERS

**You  
can do it!  
No special  
skills needed.**

## TOOLS NEEDED:

$\frac{3}{8}$ " Socket Wrench or  $\frac{3}{8}$ " Hex Wrench  
Soft Mallet  
Hammer  
Fine Metal File or #400 Grit Paper or Cloth  
4- $\frac{1}{2}$ " x 4- $\frac{1}{2}$ " Sheet of Thin, Flexible Plastic Film  
1- $\frac{1}{2}$ " Schedule 40 PVC Plastic Pipe (approx. 1- $\frac{5}{8}$ " ID x 1- $\frac{7}{8}$ " OD) cut to 6" long, with ends cut square. (Available at most hardware stores.)  
Oil Drain Pan  
Non-hardening Gasket Sealant (Permatex or Plasgon.)

### NOTE

The tiller housing cover (shown below) must be removed to replace the left or right side oil seals.

## STEP 1:

### Remove Housing Cover and Left Side Oil Seal

A. Remove the five socket-head screws or hex-head bolts from the cover. See Photo 1. Also see note on back page regarding plastic washers.

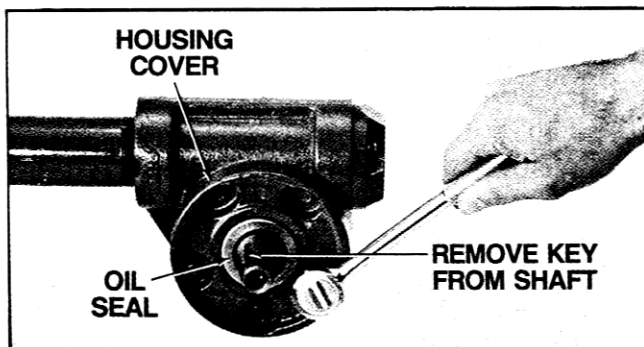


Photo 1

Remove cover. If tight, tap off lightly with a hammer, being careful not to tear gaskets. Wipe all surfaces clean. Have an oil drain pan available to catch any dripping oil, and replace this oil in the transmission after seals are installed. If the left seal is not being replaced, the cover must be removed very carefully to avoid cutting the oil seal. On Horse models, remove the key from the keyway and file smooth any sharp edges around the keyway before removing the cover. On the Pony models, smooth any sharp edges around the tine holder mounting holes.

B. If the left seal is being removed, place the cover upside down between two blocks of wood. Carefully tap seal out of the cover from the inside using the plastic pipe as a driver. See Photo 2.



Photo 2

Do not scratch the internal side of the cover or race. Inspect the race for scratches or gouges.

### NOTE

Do not install new left seal, or replace the cover with the old left seal until you remove the right seal if that is also going to be replaced. Otherwise, install a new left seal using the instructions in Step 5.

## STEP 2:

### Remove Right Side Oil Seal

A. Using a soft mallet, tap the right side of the shaft inward to drive the shaft, bronze gear, and bearings toward the large hole on the left. See Photo 3. Mark left side of shaft with tape before removing.

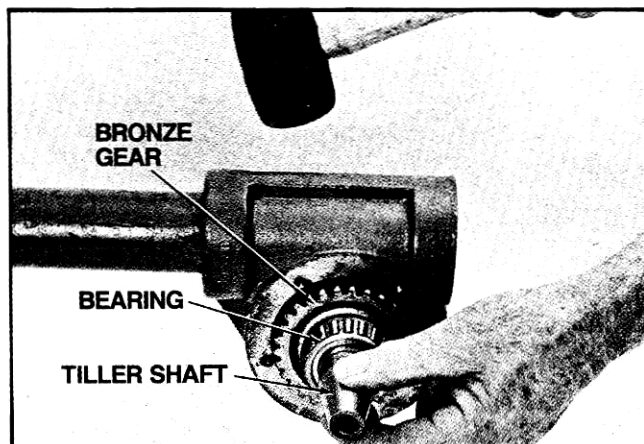


Photo 3

**B.** Lift out the gear assembly and put it aside on a clean surface. It may be necessary to deform the seal to free-up and remove the shaft/gear assembly. To deform the seal, strike down on the right side of the shaft with a mallet until the seal bends.

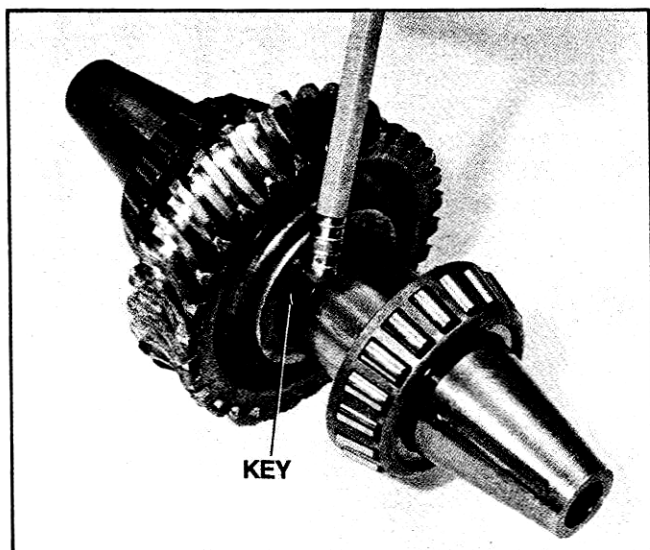
**C.** Remove the oil seal by placing the Seal Driver inside the housing against the seal. Tap out the seal. See Photo 4.



*Photo 4*

Do not scratch the bearing cup. Inspect the inside of the bearing cup for scratches or gouges. (Call us if any are present.)

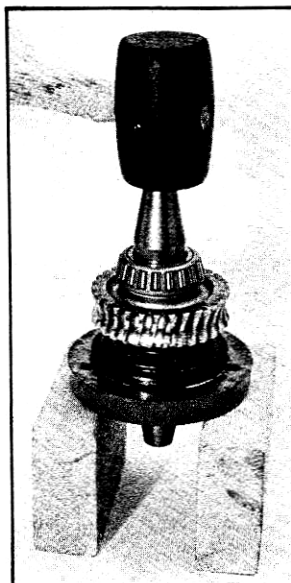
**D.** Inspect the bronze gear and key in the keyway. See Photo 5.



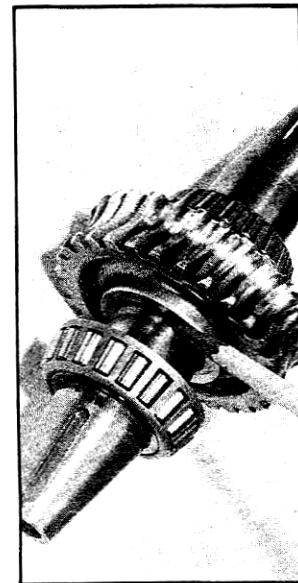
*Photo 5*

If the key is exposed more on one side of the bronze gear, center the gear over the key.

**E.** Place the cover upside down on two blocks of wood. See Photo 6. Place shaft in cover (seal should not be in cover), and tap shaft down until it stops. Turn the shaft over and repeat. Gear will now be correctly aligned on the tiller shaft, and the key will not protrude out of the gear unequally. See Photo 7.



*Photo 6*

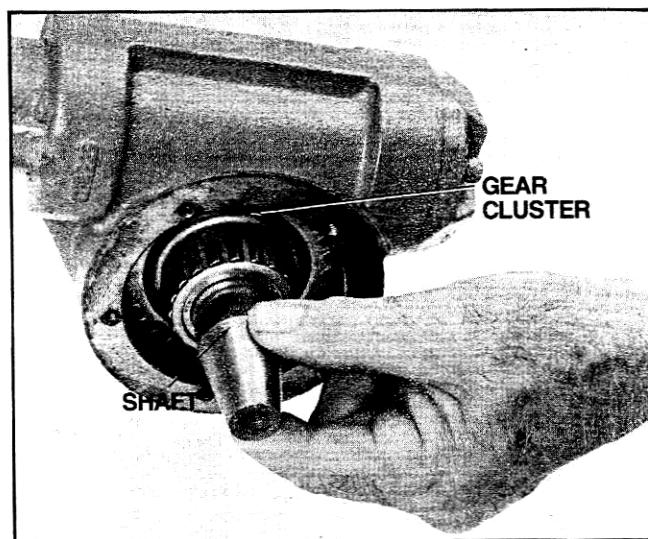


*Photo 7*

#### **NOTE**

If the seal is in the cover, and is not to be replaced, center gear and bearing on blocks of wood without using the cover.

**F.** Replace the tiller shaft in the housing. Take the end of the shaft and gear cluster which was removed first, and replace it in the opposite end from which it was removed. This will equalize wear on the bronze gear. See Photo 8.



*Photo 8*

### STEP 3:

#### Inspect Keyway or Tine Mounting Holes

A. Before replacing tiller shaft oil seals, inspect the keyway or tine mounting holes for burrs or sharp edges which could cut a new seal. File rough spots, if necessary, and clean the shaft thoroughly. See Figure 1.

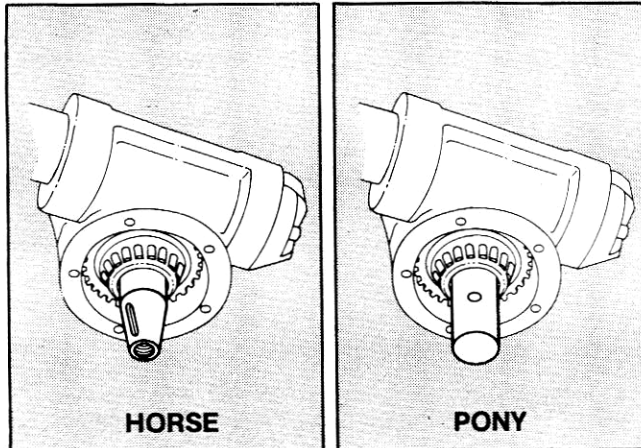


Figure 1

### STEP 4:

#### Replace Tiller Housing Cover

A. Replace the housing cover and gasket(s) by tapping the cover back into place. The housing cover should fit snugly with the tiller housing. Install three mounting screws in holes, tighten screws, tap cover, and re-tighten screws. See Photo 10.



Photo 10

#### NOTE

If the original left side oil seal is in the cover, avoid cutting the seal when sliding the seal and cover over the shaft. Do so by carefully smoothing off sharp edges around the keyway or tine mounting holes, and by cleaning the shaft thoroughly. Use plastic film to protect the seal during installation of the cover.

B. Test play in the shaft by pushing in and pulling out the shaft. There should be virtually no movement. Then, grab each end of the shaft and turn it forward and backward. See Photo 11.

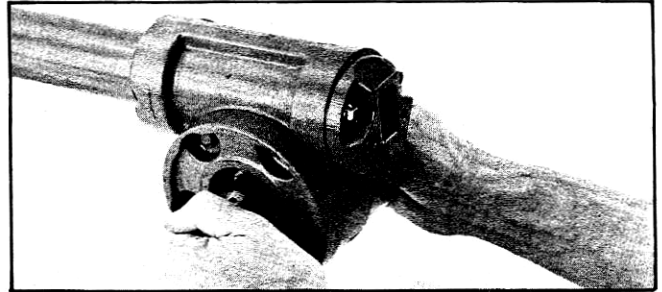


Photo 11

If there is no movement at all, or if there is excessive movement, call us. You may need new gaskets. Gaskets control the fit of the shaft by increasing or decreasing pressure on bearings.

C. Put non-hardening gasket sealant on the threads of the two remaining mounting screws, and tighten them securely. See Photo 12.

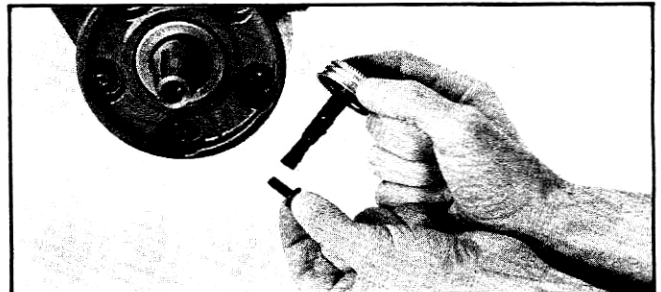


Photo 12

Then, remove the first three screws, add sealant, and tighten these down also. Tap the cover with the mallet and re-tighten the screws. Install the new oil seal per Step 5 of these instructions if the old seal was removed earlier.

### STEP 5:

#### Install Left Side Oil Seal (If old seal was not installed with the cover in Step 4.)

A. Replace the housing cover as explained in Step 4. To protect the new oil seal, roll a sheet of thin plastic to form a tube and insert it through the seal. Then, slide both over the shaft until the seal is up to the housing bore. The open side of the seal must enter the bore opening first. See Photo 13.

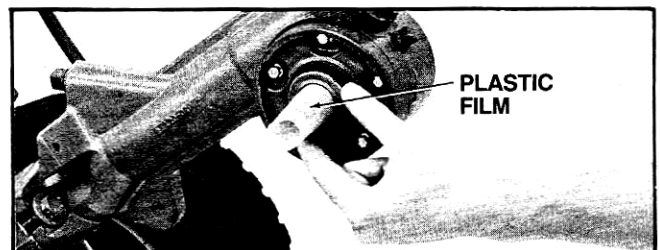


Photo 13

**B.** Apply a coating of non-hardening gasket sealant around the outer edge of the seal. See Photo 14.

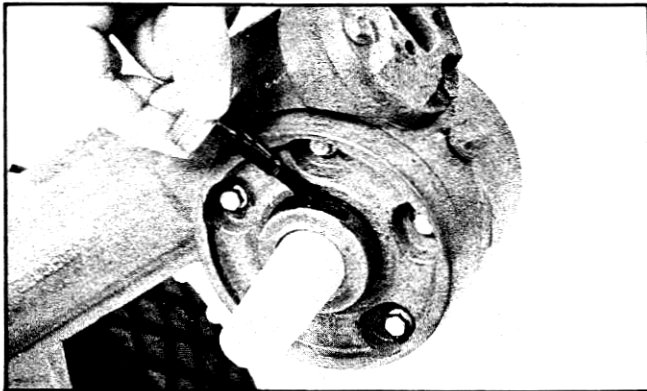


Photo 14

Remove the protective wrapping. When installing the oil seal, avoid bending the seal, driving it in at an angle, or caving-in the raised lip.

**NOTE**

Make sure that the end of the Seal Driver is perfectly flat.

**C.** Using a 1-1/2" plastic Seal Driver and a mallet, tap the seal into the bore until it is nearly flush with the casing. See Photo 15.

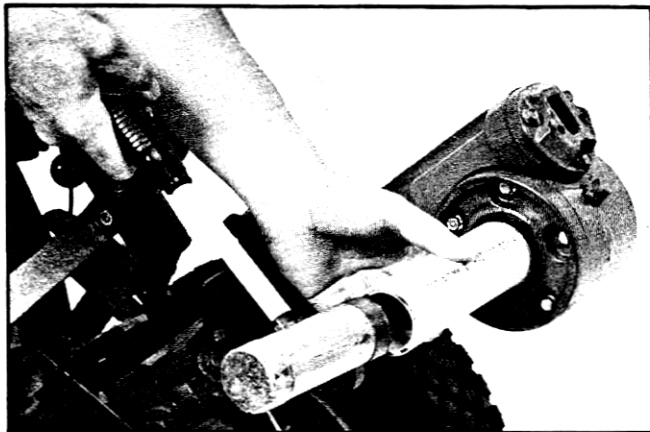


Photo 15

When replacing seals on the Pony Model, slide a smaller diameter piece of plastic pipe on the shaft to serve as a guide for the larger section of plastic pipe. See Photo 16.



Photo 16

**STEP 6:**  
**Install Right Side Oil Seal**

**A.** Before replacing the right seal, the seal and housing cover should be installed on the left side. To install the right seal, follow the procedure described in Step 5. See Photo 17.

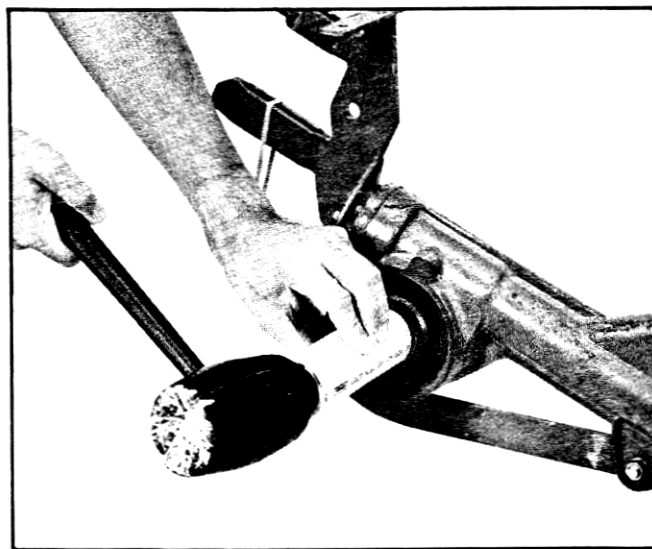


Photo 17

**PLASTIC WASHERS**

Newer model tillers may have disposable plastic washers on the housing cover mounting screws. If your machine is equipped with these washers, discard them when removing the housing cover.

When replacing the housing cover, coat the cover screws with non-hardening gasket sealant as shown in Photo 12 of these instructions.