

HOW TO REPLACE A WHEEL SHAFT OIL SEAL

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

Normally, your tiller's wheel shaft oil seals will provide long and trouble-free service. However, like the oil seals on any piece of equipment, they may eventually wear out or become damaged and have to be replaced.

A little oily wetness or seepage around the seal is nothing to be alarmed about. However, if the seal actually drips oil, then it should be replaced right away. Doing so will prevent a major loss of oil that could lead to ruined gears or bearings in the transmission.

FIRST, be sure that you are using #90 weight or #140 Gear Oil in your transmission. A lighter weight oil will leak badly, even though the seals are in good condition.

NEXT, be sure that the leak is not coming from some other place on your tiller or engine. Wipe off any oil, run the tiller for a bit, and then look and feel exactly where the oil is coming from.

If you determine that a seal does need replacing, then please use the simple, step-by-step instructions that follow. Of course, please don't hesitate to contact our Customer Service Department if you have any problems or questions that aren't covered here. We'll be glad to help...anytime!

TOOLS YOU'LL NEED

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| <ul style="list-style-type: none">1 Wheel shaft oil seal (Part No. 9601 or No. 9609)2 Medium size screwdrivers1 Hammer1 3/8" wrench or adjustable wrench1 16-penny (16d) nail with end blunted, OR a 3/16" tapered or 1/4" untapered drift pin, OR a 1/4" diameter steel rod.1 Penetrating oil1 Fine metal file or 400 grit paper or cloth1 4 1/2" x 4 1/2" sheet of thin, flexible plastic similar to photo album page protector sheet | <ul style="list-style-type: none">1 Axle grease or lubricant1 6" length of 1" (inner diameter) Standard black pipe. Available at hardware or plumbing stores.1 Non-hardening gasket sealant (such as Permatex or Plasgon). If not available locally, order our special Seal & Gasket Parts Kit (Part No. 1309).1 Large, flat 1" washer with 1 1/16" inner diameter. If not available locally, order our special Washer Parts Kit (Part No. 1344).1 Shallow pan to catch oil drips |
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REMOVAL STEPS

STEP 1

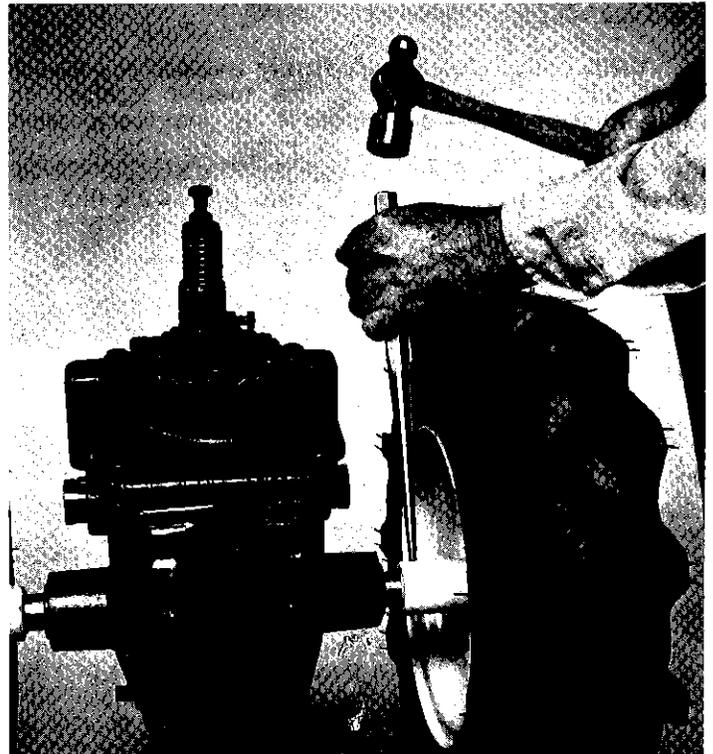
Shift the Wheel Speed Select Lever into HIGH speed position. Then, prop up your transmission with boards (three 2' x 4's will work) until the wheel next to the worn seal is off the ground. (Photos show the engine and other tiller parts removed for clarity, but it's not necessary that you do so.)

IMPORTANT: At this time, check the wheel shaft by trying to "wiggle" it up and down, and then from side to side. If the *shaft* moves more than 1/4" when you do this, please contact our Customer Service Department before going further.

STEP 2

Using a blunted nail, drift pin or steel rod, remove the roll pin from the wheel hub by driving it down and out—see Photo 1. (Wear safety goggles to protect eyes.) Then, squirt some penetrating oil between the hub and wheel shaft and remove the wheel.

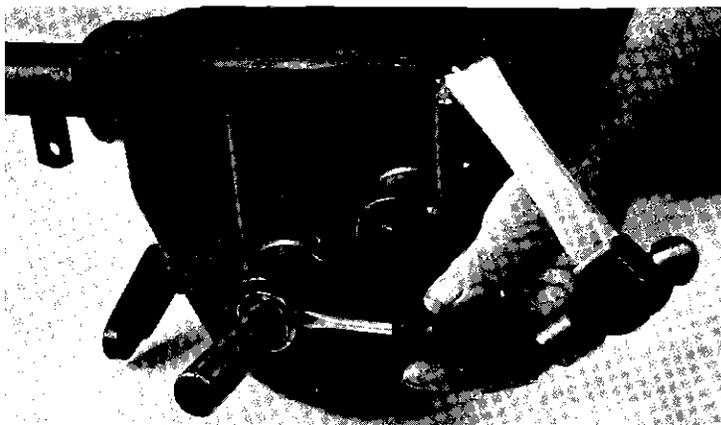
NOTE: If you have 7", red cast-iron spoke wheels, you must first remove the top cotter pin. Then, carefully drive the roll pin *between* the wheel bolts.



[Photo 1.] Drive out roll pin and remove wheel.

STEP 3

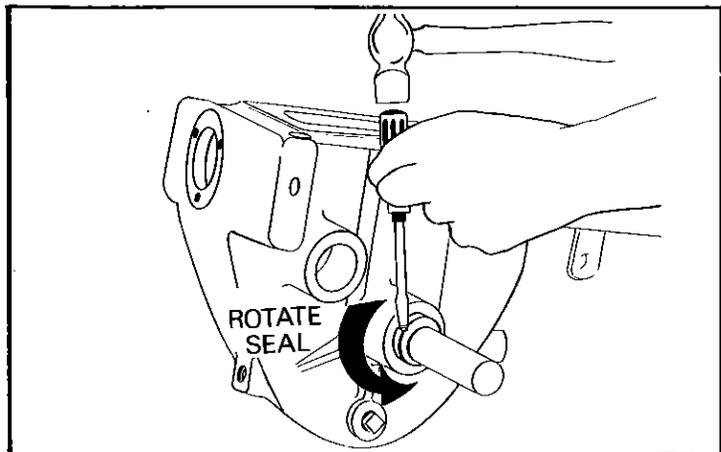
Place a pan beneath the seal to catch any oil drips when the seal is removed. Now, drive the tip of a screwdriver into the seal at a *slight angle*, as shown in Photo 2. After puncturing the seal on one side, drive a *second* screwdriver into the opposite side. Be very careful not to hit the shaft or the inside of the transmission case bore as you puncture the seal.



[Photo 2]. Puncture one side of seal, then the other.

STEP 4

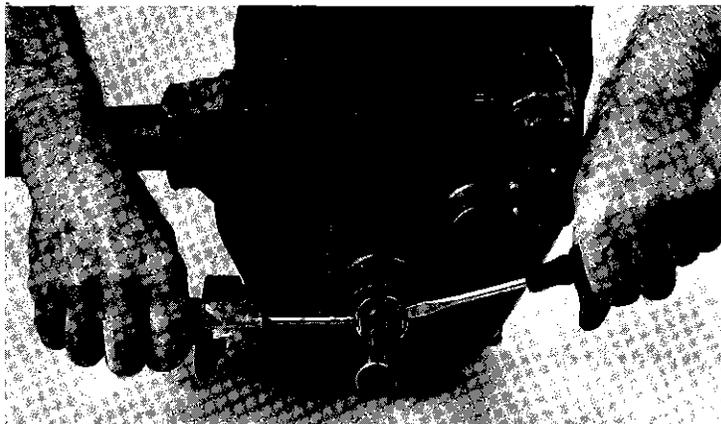
Tap down on one screwdriver and force the seal to rotate, as shown in Sketch 3. This will help break any grip the gasket sealant has formed between the seal and the transmission bore, making seal removal easier.



[Sketch 3]. Rotate seal to loosen it.

STEP 5

With both screwdrivers firmly embedded, pry the seal outward by pressing the blades against the transmission case—see Photo 4. If necessary, pierce the seal in other places in order to obtain better leverage. **NOTE:** Before discarding the seal, check that there aren't any wheel shaft shims (they look like thin, metal washers) stuck to the back of it. If you find any, replace them inside the transmission bore.



[Photo 4]. Pry oil seal out of casting bore.

STEP 6

With the seal removed, use a clean cloth to *thoroughly* clean the surfaces of the wheel shaft and the transmission bore. (Remember, the cleaner the shaft and bore are, the better the seal will fit.)

Now closely examine the end of the shaft and the areas around the roll pin holes for any rough or sharp edges that could cut the new seal when it is installed — see Photo 5. If necessary, use a fine file or 400 grit paper or cloth to *lightly* smooth off any rough spots. Be sure to clean off any metal particles when finished.

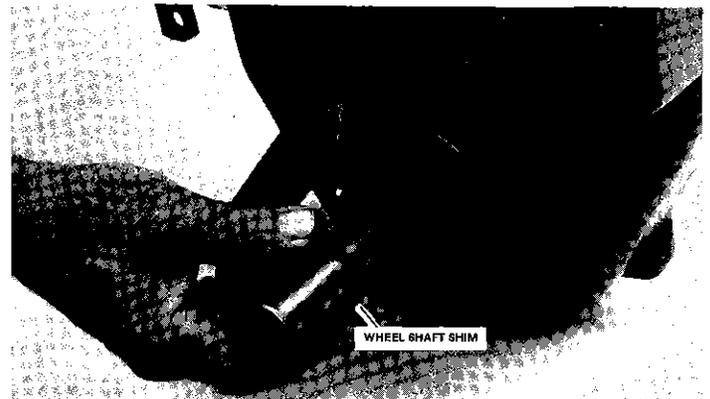


[Photo 5]. Smooth off any rough or sharp edges.

REPLACEMENT STEPS

STEP 1

Look into the transmission bore and make sure there is at least one wheel shaft shim located there. The shim (shown in Photo 6) protects the oil seal from being scraped by the snap ring inside the bore.



[Photo 6.] Shim protects oil seal from cuts.

STEP 2

Use the piece of thin, flexible plastic to protect the seal when you slide it over the shaft. If you can't find the plastic, use a sheet of letter paper stationery, or at least cover the end of the shaft and the roll pin hole with transparent tape.

As shown in Photo 7, roll the plastic or paper into a tube and insert it halfway through the seal. Then slide the tube and seal over the shaft and up to the bore opening.

IMPORTANT: Under the lip on one side of the seal you'll see a thin spring. *Always install the seal so that the side with the spring showing goes inside the bore first.*



[Photo 7.] Spring side of seal goes in first.

STEP 3

Coat the outer edge of the seal with *non-hardening* gasket sealant, as shown in Photo 8. This sealant helps to prevent oil leaks between the seal and the bore. After coating the seal, remove the protective wrapping (plastic, paper or tape) from the shaft.



[Photo 8.] Apply sealant to outer edge of seal.

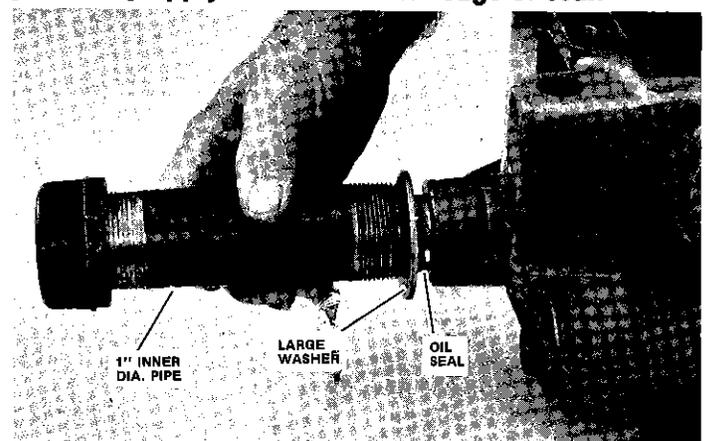
STEP 4

The best way to seat the seal in the bore is to use a thick, flat, 1" washer (with a 1 1/16" inner diameter), and a 6" length of 1" (inner diameter) Standard black pipe, as shown in Photo 9.

When you tap the pipe with a hammer, the washer will apply equal force around the face of the seal—preventing it from entering the bore at an angle or caving in at the center.

Use gentle taps against the pipe, driving in the seal until it is *almost but not quite* flush with the transmission bore. This little edge that you leave protruding will make it easier to remove the seal at a later date, if necessary.

Please be sure that the seal enters the bore straight and without bending. If it goes in crooked, it will most likely tear and leak badly.



[Photo 9.] Use pipe and washer to seat seal in bore.

SPECIAL NOTE: In an emergency, and if you're careful, you can also use the tiller wheel to seat the seal, as shown in Photo 10. Just grease the axle and slide the hub of the wheel up against the oil seal. Then, *gently* tap the seal into place—a handy method that a Troy-Bilt Owner showed us!

STEP 5

Apply some grease or oil to the shaft and replace the wheel. Tap in the roll pin until it is flush with the wheel hub (*wear safety goggles to protect eyes*). If you have the older, cast-iron spoke wheels, be sure to replace the cotter pin.

STEP 6

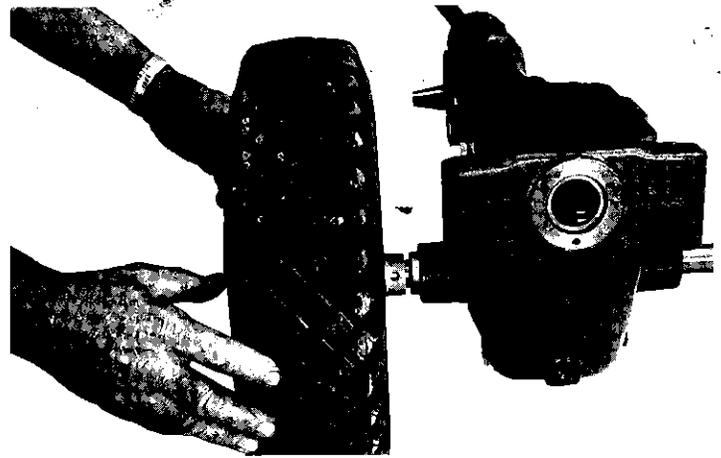
Lower the wheel to the ground and let the tiller sit for about 10 minutes. Then, check the level of the transmission gear oil (make sure the tiller is on level ground and that the tines are resting on the ground). Add gear oil if the level is below the oil level plug, which is three inches above the wheel shaft on the left side—see Photo 11. (Use SAE #140 or SAE #90 gear oil.)

To add oil, simply unscrew the T-bar on top of the transmission and gently place the handlebars aside on a clean surface (be careful not to bend or kink the throttle cable). Using a funnel, pour the oil through the threaded hole for the T-bar (Photo 12), stopping when the oil *just starts to flow* out of the oil level hole.

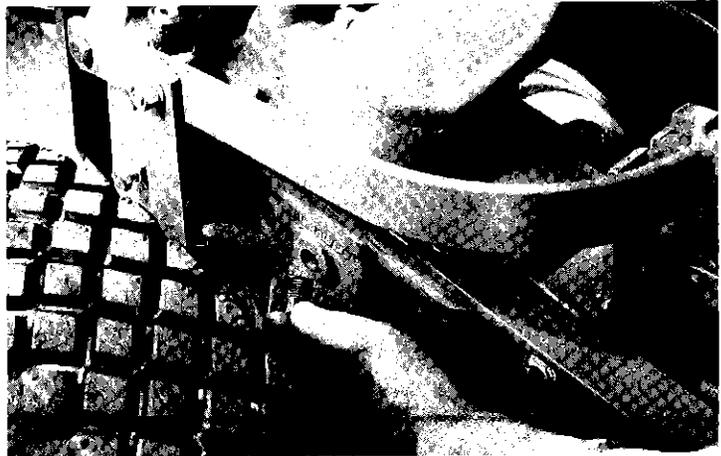
Finally, securely replace the oil level plug, the handlebars and the T-bar.

PLEASE NOTE:

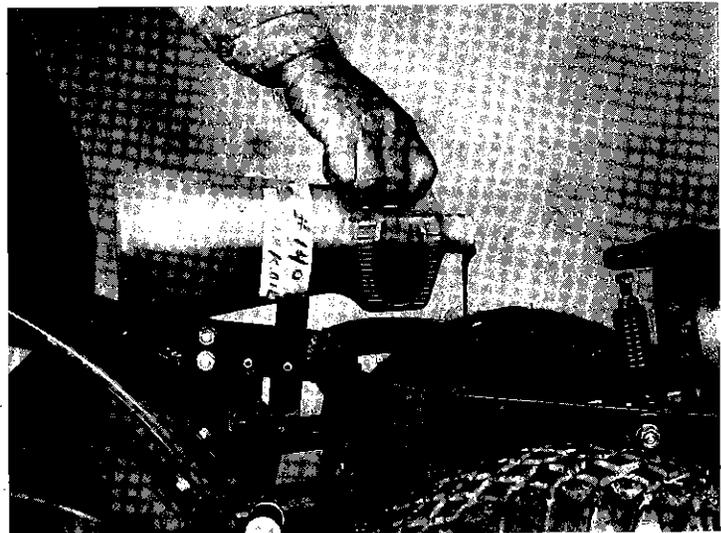
A properly installed oil seal should give you long and trouble-free service. Please don't be overly concerned if there is oil seepage from a newly installed seal. It may take several hours of tiller operation for the seal to become completely effective.



[Photo 10.] Use wheel hub to seat oil seal.



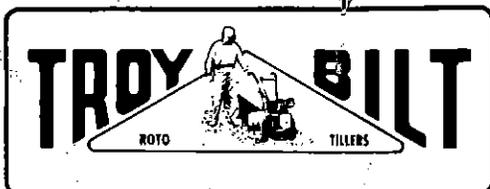
[Photo 11.] Remove oil level plug from left side.



[Photo 12.] Add gear oil through threaded hole.

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GARDEN WAY MANUFACTURING CO., INC.

102nd St., & 9th Ave., Troy, N. Y. 12180

Phone (518) 235-6010