SERVICE MANUAL

SPEEDROWER®
910, 912, 1112, 1114

CONDITIONER GEARBOX OVERHAUL INSTRUCTIONS

SPERRY NEW HOLLAND

40841200
Reprinted

IDENTIFYING THE GEARBOX
TYPE 1 OR TYPE 2

IMPORTANT: TWO TYPES OF HAY CONDITIONER GEARBOXES HAVE BEEN USED ON THESE MACHINES.

Type 1 Gearboxes used as original equipment on Models 910, 912, and 1112 have the sheave retained by a slotted nut and cotter pin in the input shaft. See A, Figure 1.

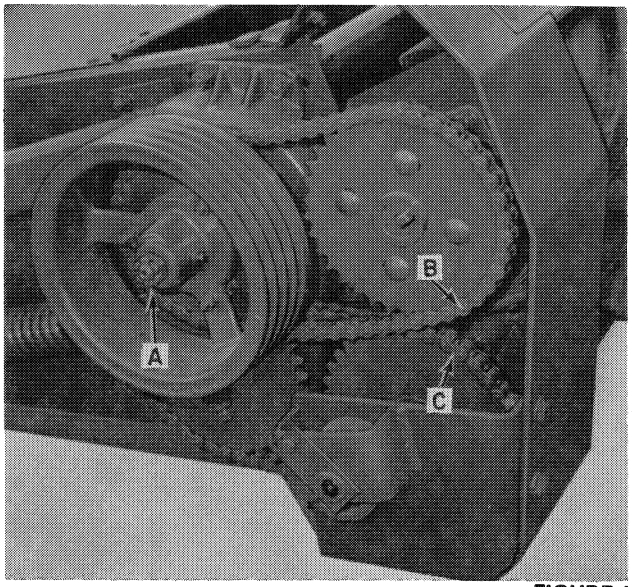

FIGURE 1

Type 2 Gearboxes used as original equipment on the Model 1114 and, as the latest Service Parts replacement gearbox, have a gib key to retain the sheave at A, Figure 2.

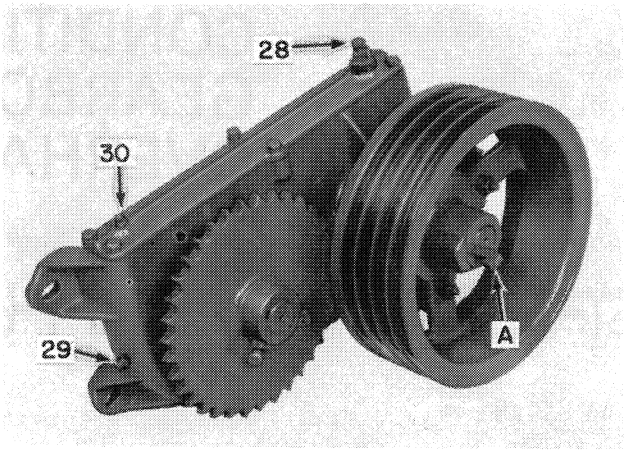

FIGURE 2

REMOVING THE GEARBOX
(TYPE 1 OR TYPE 2)

1. Lower the header to the ground. Shut off the engine and set the parking brake.
2. Remove drain plug (29), Figure 2, to drain oil from the gearbox.
3. Remove all tension from the conditioner drive belt. Remove the belt from the spring-loaded idler sheave and the gearbox sheave.
4. Remove both roll drive chains, B and C, Figure 1.

CAUTION! THE GEARBOX IS HEAVY.

5. Remove the four bolts holding the gearbox to the conditioner side sheet. Slide the gearbox out to the rear.

SERVICING THE GEARBOX

(TYPE 2)

Parts List: Type 2 Gearbox

See Figure 3

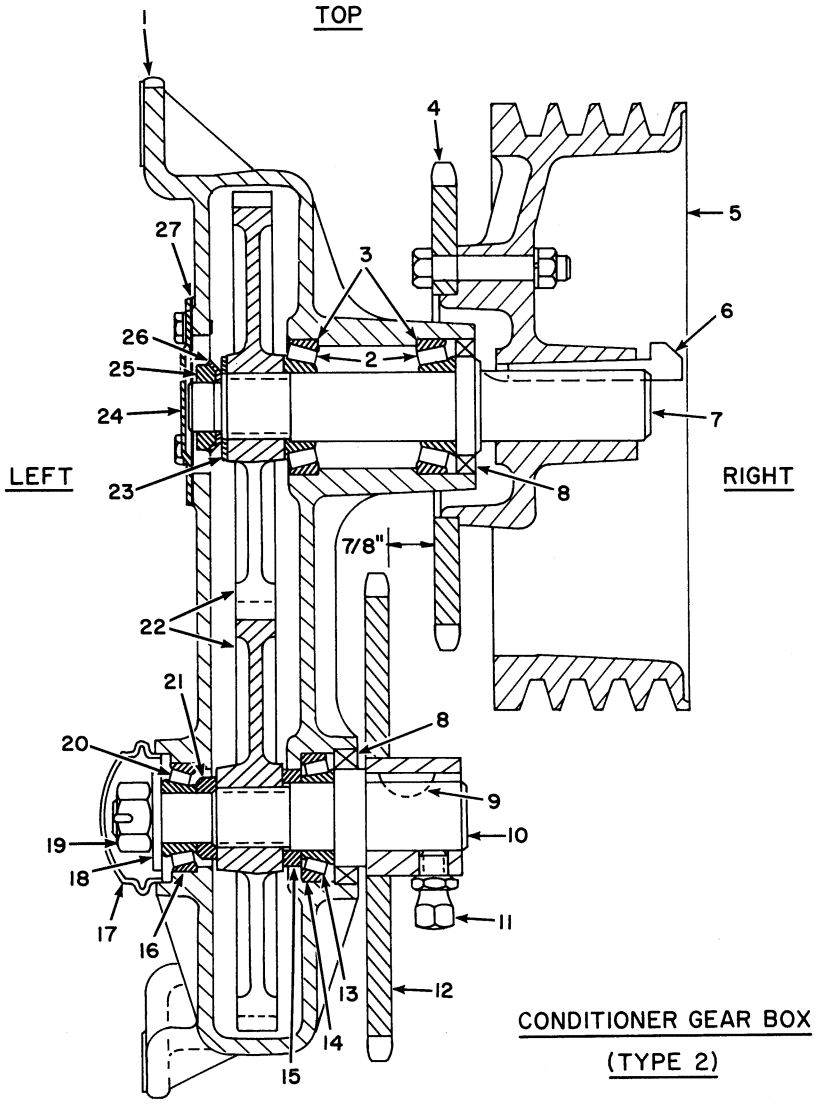

FIGURE 3

1. Gearbox cast housing
2. Input bearing cone (2)
3. Input bearing cup (2)
4. Sprocket, upper roll drive
5. Input sheave
6. Gib key
7. Input shaft
8. Oil seal (2)
9. Woodruff key
10. Output shaft
11. Set screws and jam nuts (2)
12. Sprocket, lower roll drive
13. Right output bearing cone
14. Right output bearing cup
15. Spacer (straight)
16. Left output bearing cup
17. Hub cap
18. Heavy flat washer
19. Slotted nut and cotter pin
20. Left output bearing cone
21. Spacer (beveled)
22. Gear (2)
23. Keyed washer
24. Side cover
25. Lock nut
26. Lock washer
27. Side cover gasket
28. Fill plug and breather (Figure 2)
29. Drain plug (Figure 2)
30. Check plug (Figure 2)

TYPE 2 GEARBOX

DISASSEMBLY

NOTE: The input shaft can be removed without removing the sheave, but the sheave will have to be removed to pull the lower roll drive sprocket or output shaft.

1. Remove the side cover (24) from the left side of the gearbox. Do **not** remove the gearbox cover at this time. See Figure 4.

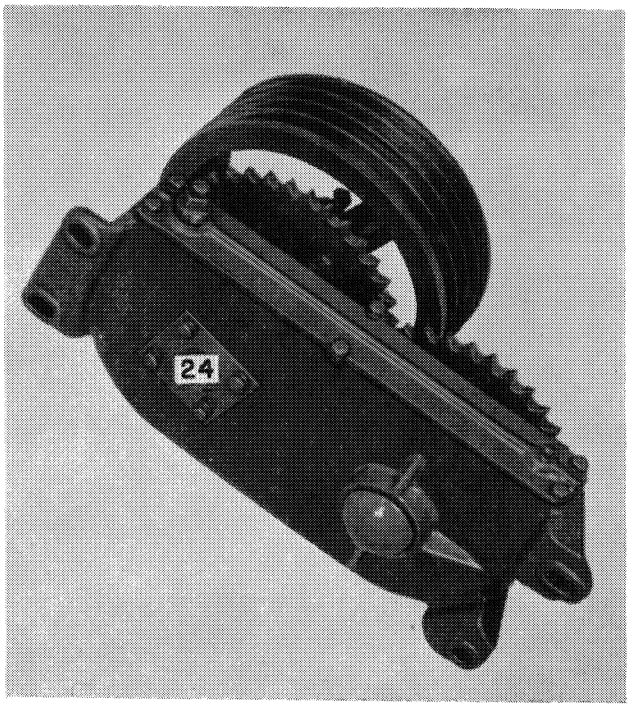

FIGURE 4

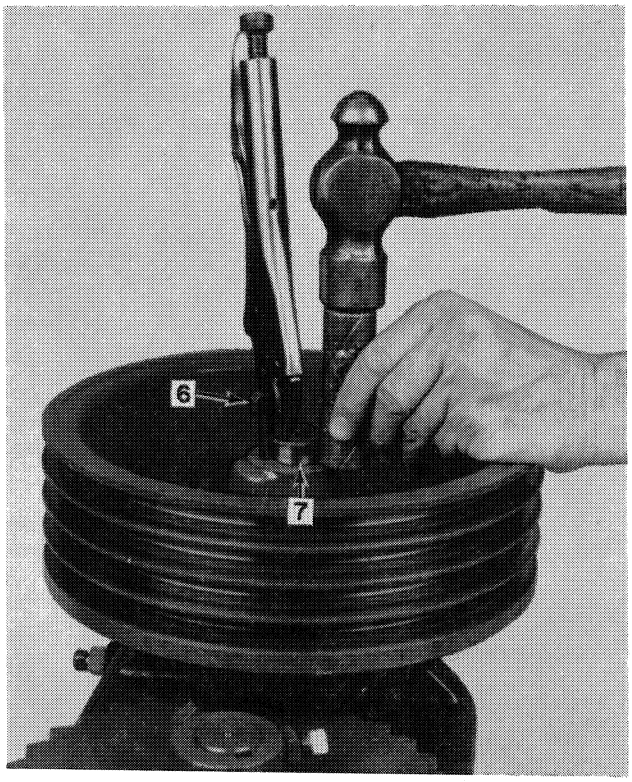

FIGURE 5

2. Support the **threaded end** of the input shaft on a wood block. Clamp the jaws of a good set of locking pliers over the gib key (6). The ends of the jaws must be tight aginst the end of the input shaft (7). See Figure 5. Drive the input sheave onto the shaft, until the hub is against the gear box housing or collar on the input shaft.
3. Use good quality paint remover to remove paint from the end of the input shaft, Figure 6. Remove rust or high spots from the end of the shaft with a file or emery paper.

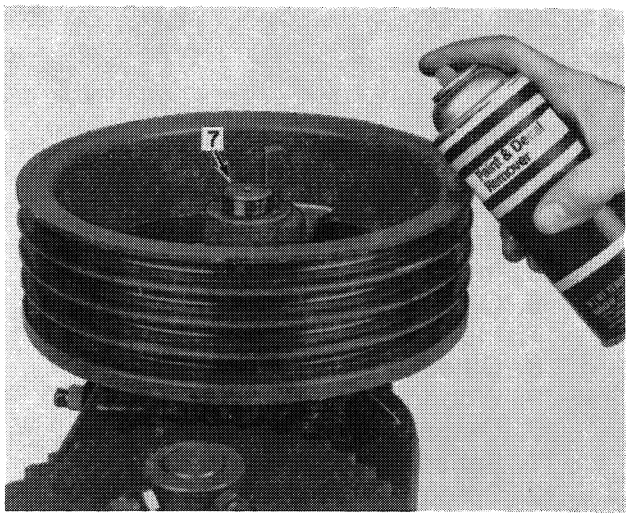

FIGURE 6

4. Use a scrap nut, A, to fill the space between the head of the gib key (6) and the sheave hub. See Figure 7. Use a suitable puller to pull the gib key and sheave as one assembly.

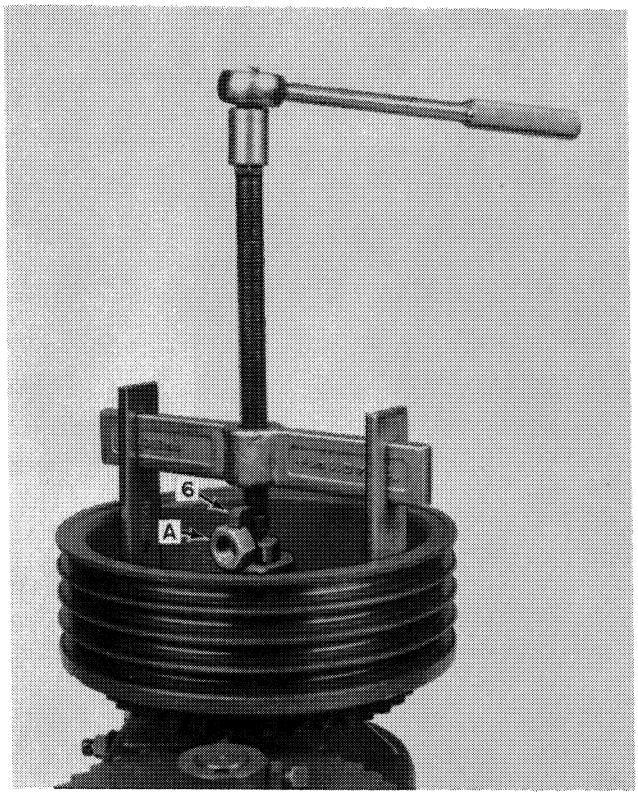

FIGURE 7

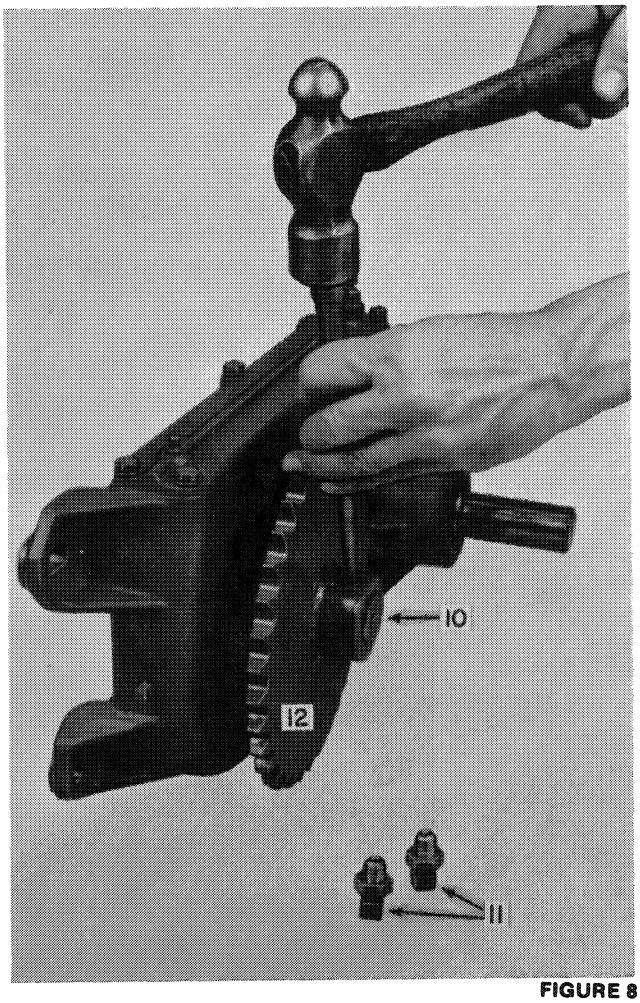

FIGURE 8

5. **NOTE: The lower roll drive sprocket (12) does not have to be removed in order to remove the output shaft (10). The sprocket should be removed and reinstalled if the output seal is replaced.**

   The lower roll sprocket can be pressed off the shaft after the shaft and sprocket are removed as an assembly.

   If the sprocket is to be pulled, peen down the shaft to remove marks left by the set screws (11). See Figure 8. The sprocket can be pulled with a heavy-duty gear puller, Figure 9.

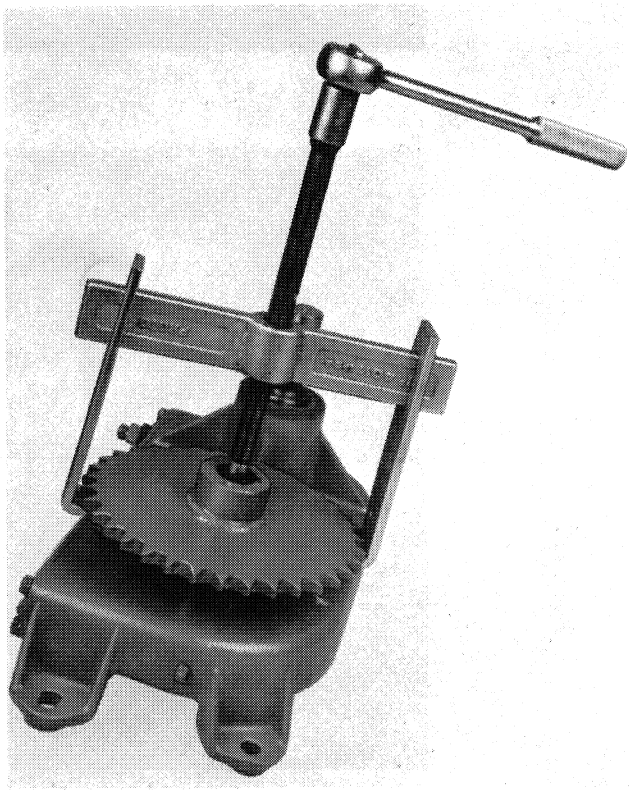

FIGURE 9

6. To remove the output shaft, remove slotted nut and cotter pin (19) and heavy washer (18). See Figure 10. Straighten the bent tab on lock washer (26) and use a punch to remove lock nut (25) before removing the input shaft. To protect the shaft threads, use a plastic mallet to drive out the shafts. The bearings should be a tight fit on the shafts.

7. Remove bearing cups and cones as required.

8. Figure 11 shows the parts of the gearbox except the housing, cover, and bolts.

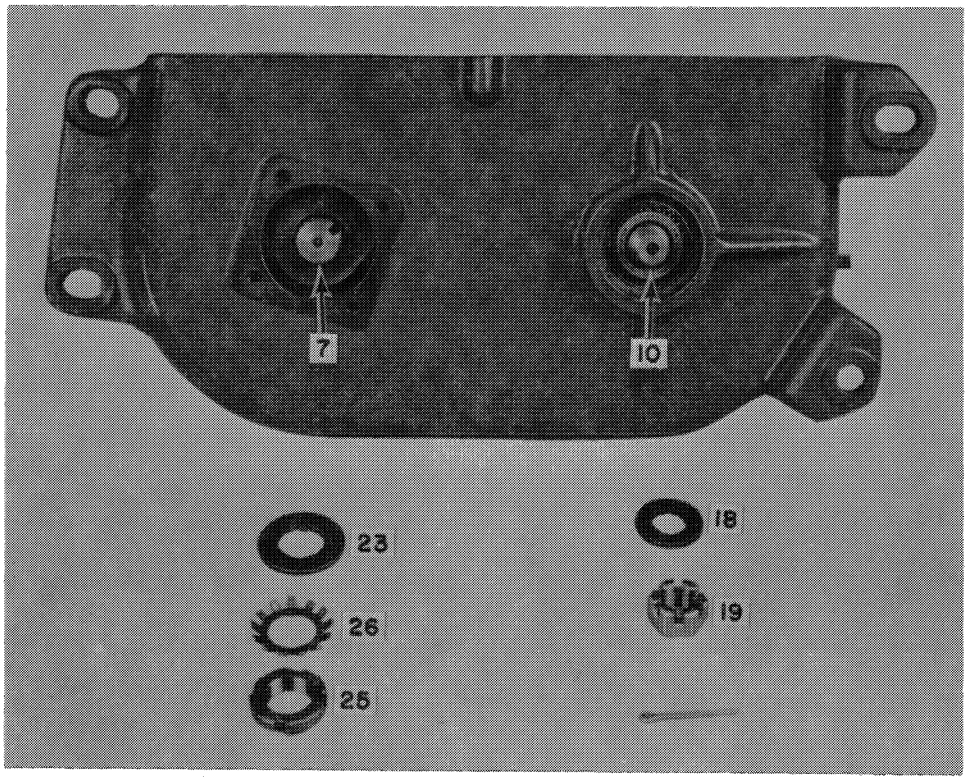

FIGURE 10

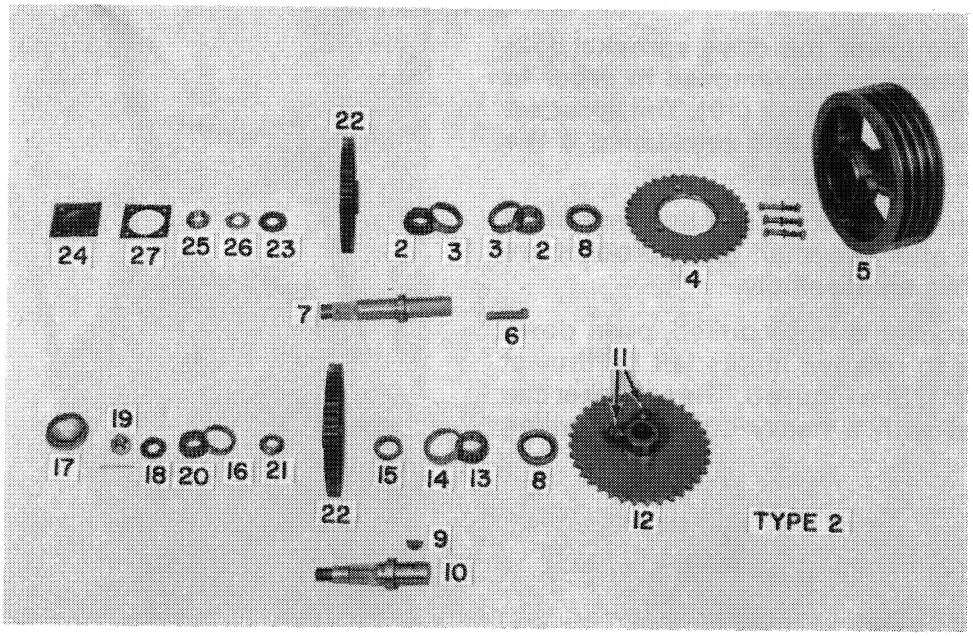

FIGURE 11

INSPECTION

NOTE: Sizes and dimensions listed are for new parts.

1. Clean all parts thoroughly.
2. **Input sheave** (5): If the gib key worked loose in use, check the hub bore for wear. The bore diameter of a new sheave should not exceed 1.252". The sheave will be a loose, sliding fit on the input shaft before the gib key is installed. Check belt grooves for wear.
3. **Sprockets:** Check for worn or hooked teeth. Bore of the lower roll drive sprocket should not be more than 1.254". The sprocket will be slightly loose on a new shaft.
4. **Input shaft** (7): A new shaft will be 1.2515"/1.2525" diameter where the bearing cones seat. Cones will be an interference fit on the shaft. A new shaft will be 1.249"/1.250" diameter where the pulley seats. The outer diameter of the oil seal collar must be free of burrs or nicks.
5. **Output shaft** (10); The oil seal collar outer surface must not be nicked or burred. The sprocket seat is 1.2510"/1.2515" diameter. Left bearing seat will be .9393"/.9400" O.D. Right bearing seat is 1.2518"/1.2525" O.D.
6. **Gears** (22): Check for excessive tooth wear. New gears will be slightly loose on new shaft splines.
7. **Gearbox housing** (1): Check for fine cracks if gears or bearings failed. Bearing cups will be a light to medium interference fit in a new housing.
8. If any bearing requires replacement, install **both** the cup and the cone. If bearings are to be reused, be sure to match original cup with its original cone.

ASSEMBLING THE GEARBOX

NOTE: Bearing cone drivers can be made from clean, black pipe. Cut the ends square and chamfer the ends, both inside and outside. Use 1¼" pipe for the two top cones and the right cone. Use 1" pipe for the left cone.

1. Pack bearing cones with multi-purpose grease to protect bearing rollers during start-up or storage.

WARNING: USE SAFETY GLASSES OR SUITABLE EYE PROTECTION WHILE INSTALLING THE BEARINGS.

2. Install bearing cups in the housing.
3. Install bearing cones next to the input and output shaft oil seal collars.
4. PLACE THE LEFT INPUT BEARING CONE IN THE CUP. INSTALL THE TOP GEAR IN THE BOX, WITH THE WIDER HUB TO THE RIGHT. SEE FIGURES 3 AND 12. INSTALL THE OUTPUT (BOTTOM) GEAR WITH LONG HUB TO THE LEFT.

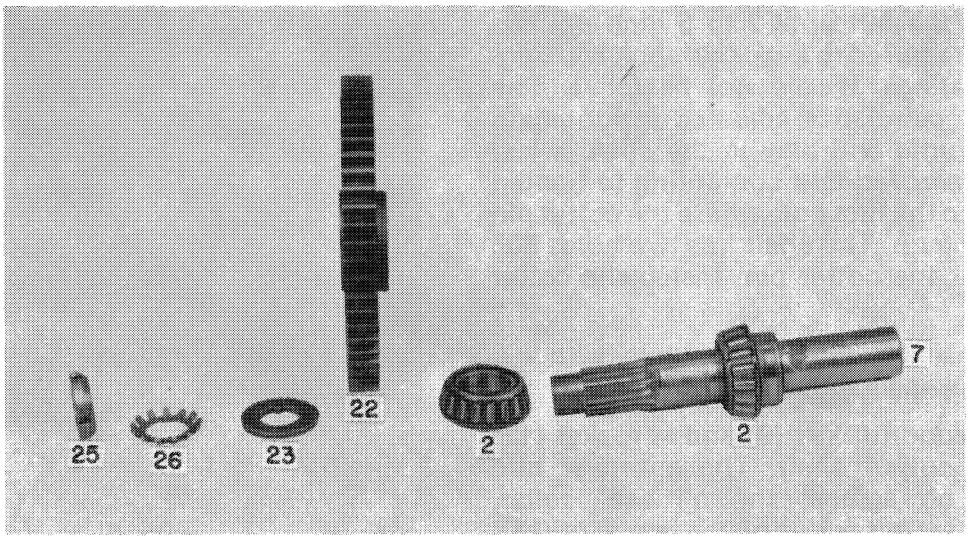

FIGURE 12

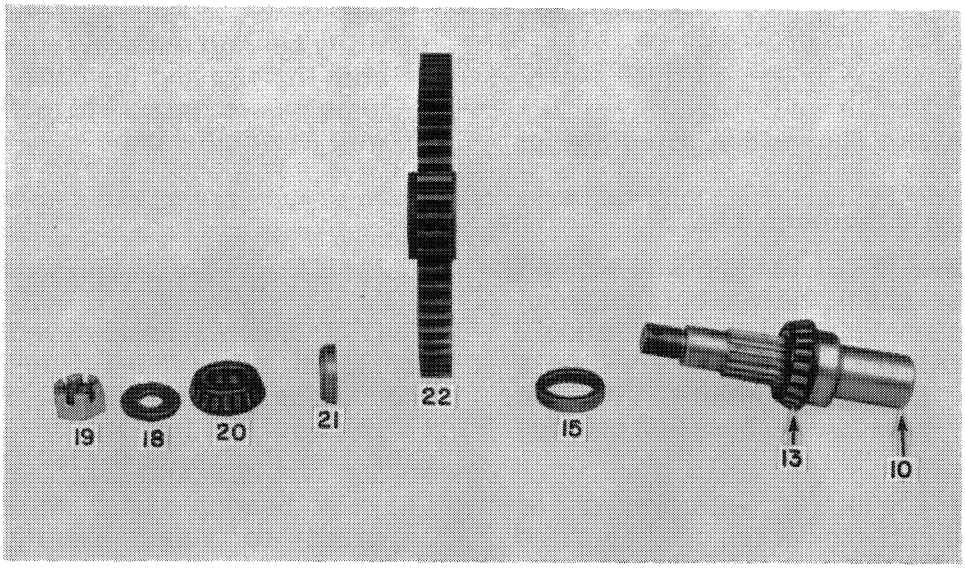

FIGURE 13

5. Install the input shaft.
6. Install keyed washer (23), lock washer (26), and lock nut (25). Tighten the lock nut until a force of 2 to 6 inch-pounds is required to keep the shaft rotating at a constant speed. A small torque wrench on the right end of the input shaft can be used to measure this torque. Use a small chisel or screwdriver to bend a tab on lock washer (26) to engage a notch in lock nut (25). Bend the tab into the notch.
7. INSTALL THE OUTPUT (BOTTOM) GEAR IN THE BOX, WITH THE LONGER HUB TO THE LEFT. SEE FIGURES 3 AND 13.
8. Install straight spacer (15) next to the R.H. output bearing cone (13). Install the shaft in the R.H. cup, spacer, and gear. Install spacer (21) **with bevel out.** See Figure 13. Install L.H. cone (20), heavy flat washer (18), and slotted nut (19).

   Tighten the nut until 2 to 6 inch-pounds force is required to keep this shaft rotating. The bearings should not be loose. The bearings can also be adjusted by tightening the nut until end play in the shaft is just barely removed and continuing to tighten the nut to the first hole where the cotter pin holes line up. The shaft has two holes 90° apart for the cotter pin. Install the cotter pin.
9. Coat seal lips and seal collars with oil. Install oil seals in the housing.
10. Install woodruff key (9) and sprocket (12) on the output shaft. The sprocket hub should be against the oil seal collar. Tighten set screws and lock jam nuts (11).
11. Attach the upper roll sprocket (4) to the sheave with 3 bolts.
12. Slide sheave (5) on output shaft (7). Turn the gearbox on its side so the input shaft is on a wood block, Figure 14. Use a block or scrap hardware to space sprockets ⅞" apart. See Figures 3 and 14. Set the gib key with a large hammer.

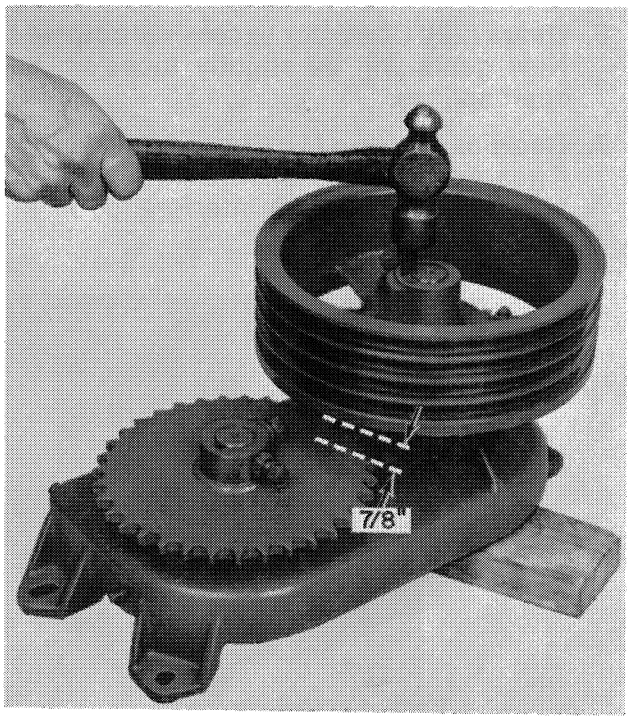

FIGURE 14

13. Use Permatex #2 or a similar sealer to seal cover bolt-threads and gaskets.
14. Install side cover (24) and top cover. The fill plug and breather goes to the top.
15. Fill the box with 1½ pints of SAE #90 gear lube. (Or wire a tag to the box cautioning that the box has not been filled).
16. Touch up the paint as required.

SERVICING THE GEARBOX

(TYPE 1)

PARTS LIST — SEE FIGURES 15 AND 19

1. Side Cover
2. Gasket, Side Cover
3. Small Snap Ring
4. Woodruff Key (3)
5. Gear (2)
6. Input Bearing Cone (2)
7. Input Bearing Cup (2)
8. Large Snap Ring (2)
9. Input Shaft
10. Oil Seal (2)
11. "O" Ring
12. "O" Ring Collar
13. Square Key
14. Sheave w/Sprocket
15. Heavy Flat Washer (2)
16. Slotted Nut and Cotter Pin
17. Set Screws and Jam Nuts (2)
18. Sprocket, Lower Roll Drive
19. Output Shaft
20. Set Screws and Jam Nuts (2)
21. Output Bearing Cone (2)
22. Output Bearing Cup (2)
23. Spacer (2)
24. Hub Cap
25. Gearbox Housing
26. Gasket, Cover
27. Cover
28. Check Plug
29. Fill Plug and Breather