BEVEL GEAR BOX 770 HARVESTER

SECTION 3 – FORAGE HARVESTER SERVICE MANUAL

40630800

Reprinted

CONTENTS

ABOUT IMPROVEMENTS

New Holland is continually striving to improve its products, and therefore, reserves the right to make improvements or changes, when it becomes practical and possible to do so, without incurring any obligations to make changes, or additions, to the equipment sold previously.

GENERAL INFORMATION

To correctly adjust the bevel gear box, you should be familiar with the following terms:

1. Backlash — clearance or movement between gears that are in mesh.
2. End play — end-to-end movement on a shaft caused by bearings having clearance.
3. Preload — removing the end-to-end movement on a shaft by placing a load on the bearings.
4. Inch pound — to determine correct inch pounds on a gear box shaft, if 5 in.-lbs. are required to rotate the shaft, measure 5" from the center of the shaft. At this point, it should require one pound to rotate the shaft. The 770 Harvester bevel gear box has the input shaft drilled and threaded for a grease zerk. Install the grease zerk and place a box wrench on the zerk to be used as a lever. Measure 5" from the center of the shaft and apply one pound on the box wrench shaft.

SERVICE INSTRUCTIONS

770 HARVESTER (1000 rpm and 540 rpm) BEVEL GEAR BOX

GEAR BOX REMOVAL

Remove the gear box by loosening and sliding the PTO drive line forward. Break the blower fan loose from the tapered spline shaft on the gear box. Remove the four gear box mounting bolts and slide the gear box forward. The drive line to the cutterhead will slip off the shaft when pulling the gear box forward. Steam clean or wash the dirt from the box and drain the oil. Place the gear box on a clean work bench.

DISASSEMBLY OF THE 1000 RPM GEAR BOX

1. Remove the six cap screws from the cover plate, item 1, Figure 1.
2. Both the cover plate, item 1, and the output shaft, item 2, can be removed from the gear box.
3. Remove the end cap housing, item 3.
4. Use a punch and remove the stake nut and flat washer, item 4.
5. Remove the oil seal, item 5, Figure 1, as shown.
6. Remove retaining ring and whatever shims are behind the retaining ring, item 6, Figure 1.

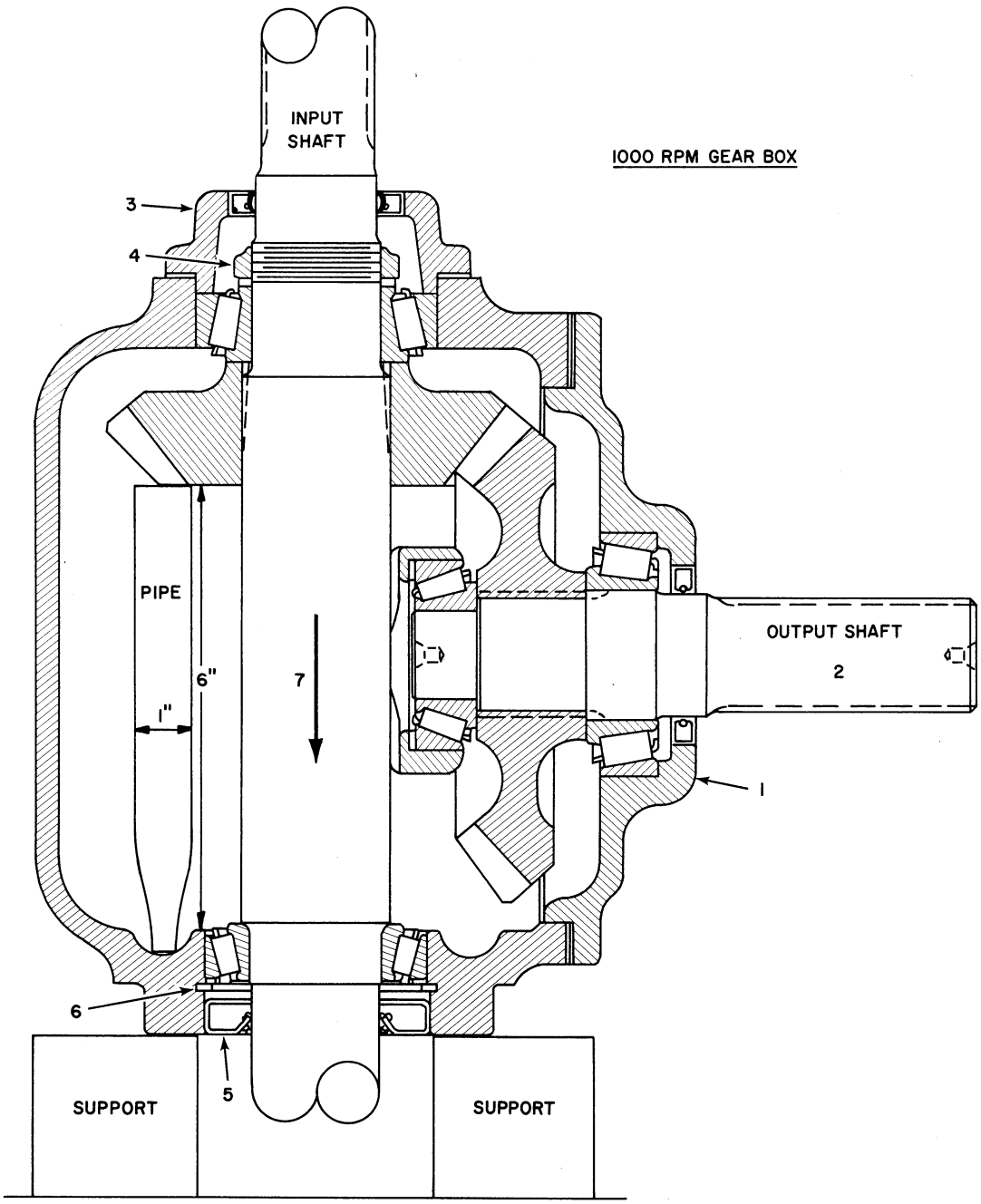

FIGURE 1

7. Remove the input shaft from the gear box, Figure 1. The bevel gear on this input shaft was pressed on with approximately 5000 pounds of pressure which means that care must be used to prevent breakage of parts when removing the input shaft from this gear. Make two supports from 1" pipe, 6" long, and use a vise to crimp the one end of the pipe so the pipe will sit squarely on the bottom of the gear box housing as shown. Then position the gear box on top of two supports as shown in Figure 1. A hydraulic press is recommended to remove the shaft in the direction indicated by the arrow in Figure 1.

To complete disassembly, remove the bearing cups and cones and the oil seals. Inspect the parts to determine what needs to be replaced and which parts can be re-used.

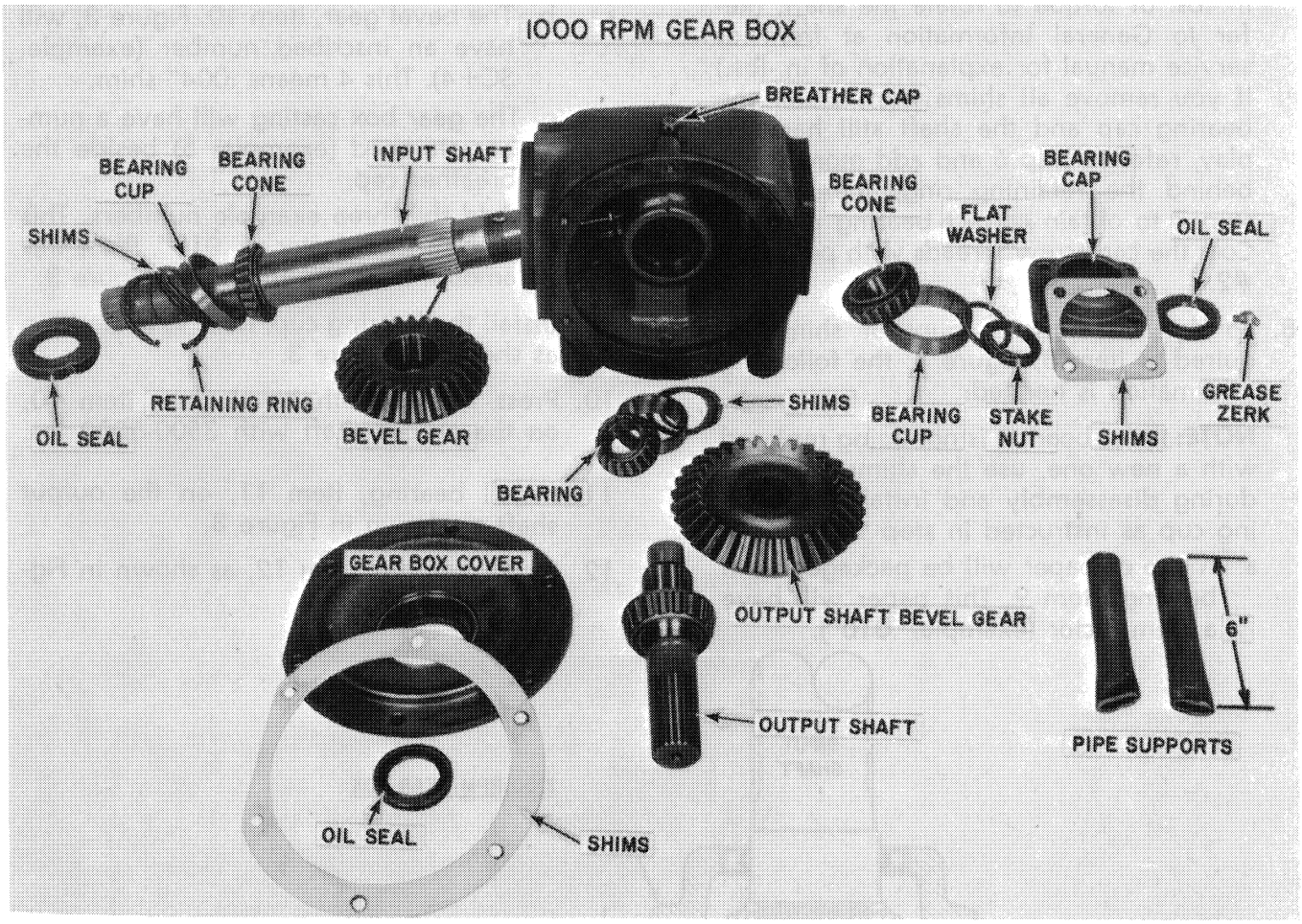

FIGURE 2

ASSEMBLY OF THE 1000 RPM GEAR BOX

Flush the gear box and parts thoroughly to remove dirt and foreign material before assembly. If any of the parts are new and have paint on them, be sure all paint is removed from areas where the bearing cups and shafts are positioned and all machined areas where shims are used.

1. Before the input shaft is positioned in the gear box, press the bearing, item 1, shown in Figure 3, on the shaft.
2. Place the bevel gear, item 2, Figure 3, in the position shown and slide the input shaft through the gear box in the direction indicated in Figure 3. This bevel gear must be pressed on the shaft with 3500 to 5000 pounds. Use a pipe with an inside diameter of 1¾" to slide over the shaft to press the gear while supporting the bottom of the input shaft.
3. Position bearing, item 3, on the shaft and press it down tight against the bevel gear.
4. Install the washer, item 4, and turn the stake nut, item 4, down against the washer; tighten ¼ turn more and lock by using a punch and deforming the edge of the nut down into the slot in the shaft.
5. Place the bearing cup, item 5, as shown in Figure 3. Press it in past the retaining ring groove by approximately ⅜" so sufficient room is available to install shims.
6. The exact amount of shims needed can not be determined until the bearing cup and bearing cap are installed on the other end of the shaft. It is recommended that, if you have not replaced the shaft and bevel gear with new parts, the shims removed during disassembly will be very close to the correct amount. Be sure the heaviest shims are against the retaining ring to prevent the thin ones from becoming deformed. If the shaft and bevel gear are new parts, it is suggested that two #163233 .030" shims, three #163234 .010" shims and three #163236 .005" shims be installed. Be sure the heaviest shims are against the retaining ring. Install the retaining ring, item 6.
7. Install the bearing cap, item 7, using four ⅜" x 1" cap screws with lock washers as shown in Figure 3. Add or remove shims under this bearing cap until the end play is removed from the input shaft. Preload the bearings so it requires 5 to 10

in lbs. of torque to rotate the shaft. (Refer to General Information at front of service manual for explanation of in.-lbs.)

If you remove all shims from under the bearing cap and the shaft still has end play, refer to step 6 and add more shims behind the retaining ring; then repeat step 7 to obtain correct bearing preload. Coat the cap screw threads with permatex #2.

8. To determine the amount of shims required at item 8, Figure 3, the following information is needed:

   NOTE: If the bearing is not being replaced with a new one, use the shims removed during disassembly and install the bearing cup as instructed in step 9.

   a. A slip of paper will be packaged with bearing, item 9. This paper will have a shim factor (example: .010").

   b. The bevel gear, item 10, Figure 3, will have an inscribed number (example: SC+4). This 4 means .004" shim.

   c. The gear box casting will have a number stamped (example: 5) beside the breather cap.

   Add the three example numbers. This gives a shim factor of .019". Place this amount of shims at point 8, Figure 3.

9. Install the bearing cup, item 9, in position as shown in Figure 3.

10. Press the 32-tooth bevel gear, item 10, on the output shaft with 3500-5000 lbs.

11. Install bearing, item 11, on the output shaft as shown in Figure 3.

12. Install bearing, item 12, as shown in Figure 3.

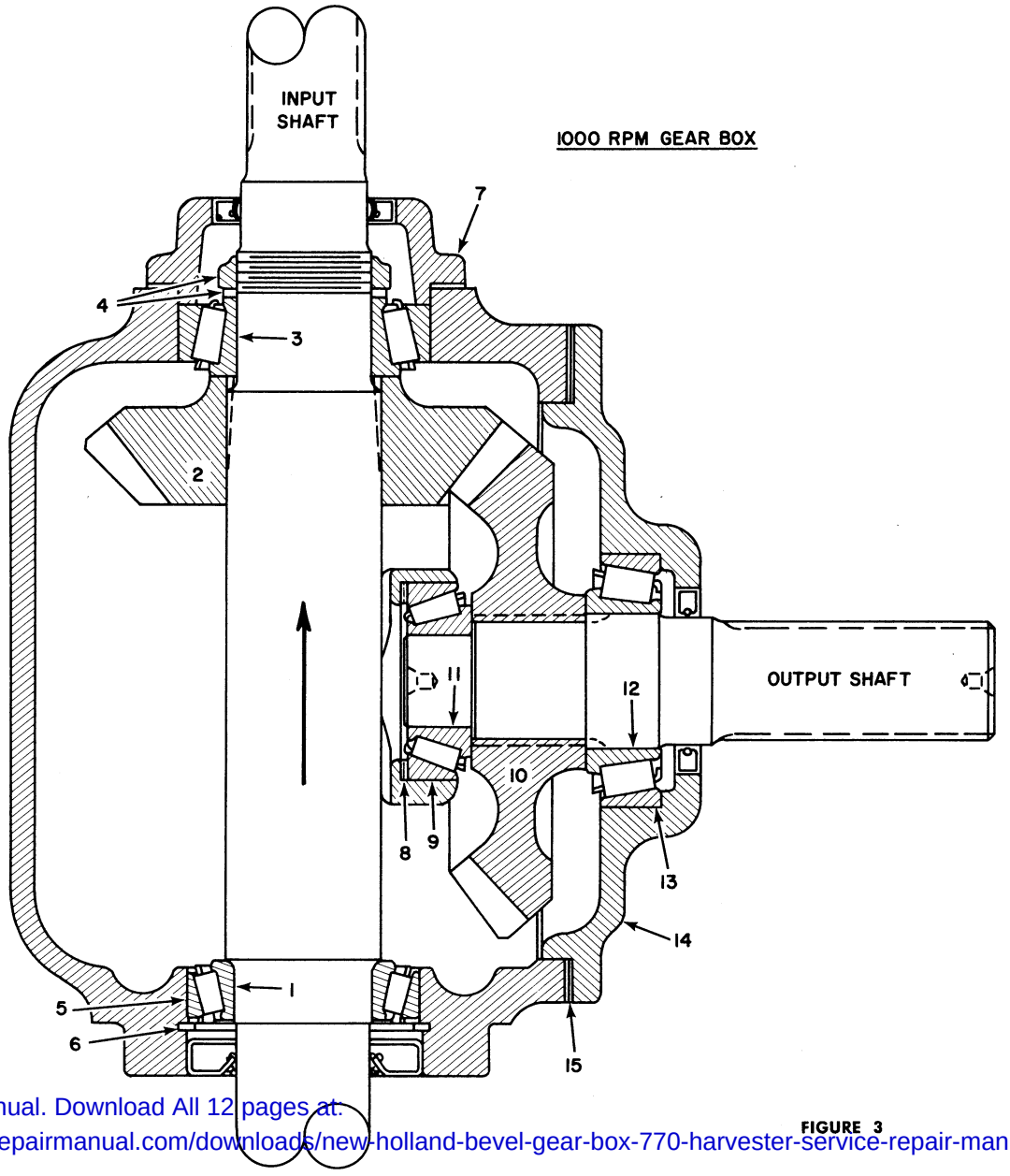

FIGURE 3