SERVICE MANUAL

HAYBINE® MOWER-CONDITIONER 495

40049511

SPERRY NEW HOLLAND

Reprinted

INTRODUCTION

This service manual provides the technical information needed to properly service the Model 495 Haybine® mower-conditioner. This manual, in addition to the operator's manual supplied with the unit, will help to correctly service and maintain the mower-conditioner.

Whenever working on Sperry New Holland equipment, left and right sides of the machine are determined by standing behind the machine, looking in the direction of travel.

This manual details the procedures of removal, disassembly, reassembly, etc., found to be the easiest and least time-consuming. There may be several other ways of completing the same job, but it has been established that the methods in this manual are best. Modifications to these procedures are your own decision.

CONTENTS

CAUTION: THIS SYMBOL IS USED THROUGHOUT THIS BOOK WHENEVER YOUR OWN PERSONAL SAFETY IS INVOLVED. TAKE TIME TO BE CAREFUL!

WOBBLE DRIVE

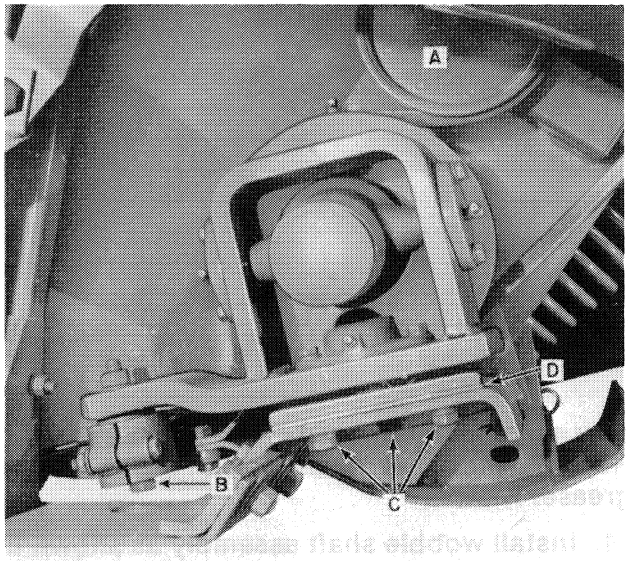

FIGURE 1

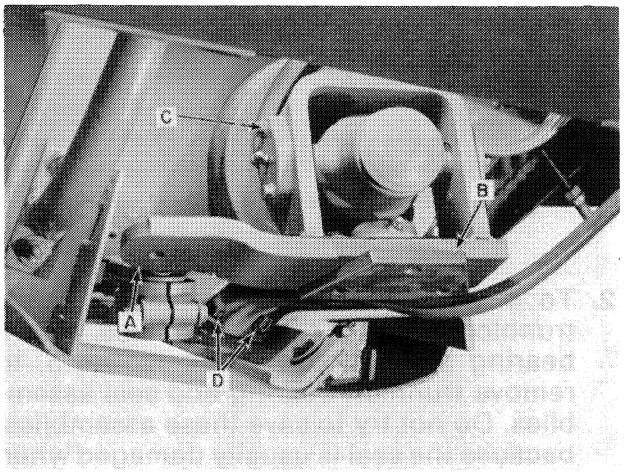

FIGURE 3

REMOVAL

1. Loosen the sickle drive belt idler at A, Figure 1.
2. Remove belt from drive sheave, A, Figure 2, and wobble sheave.
3. Remove the knife head bolt, B, Figure 1.
4. Remove bolts, C, and spacer, D, Figure 1.
5. Rotate the wobble sheave until wobble yoke, A, Figure 3, is in the highest position. Rotate steady rest support as shown and remove belt.
6. Remove bolts, C, and bolts, D, Figure 3. Then remove the complete wobble assembly from the mower-conditioner.

DISASSEMBLY

1. Remove the cap, cotter pin, and hex nut from the wobble hub, A, Figure 4. Install a bearing puller and remove complete wobble hub assembly from wobble shaft as a unit.

   NOTE: If bearing puller being used will not fit inside yoke, B, Figure 4, puller can be placed on trunnion bearing caps at C, after grease fittings are removed.

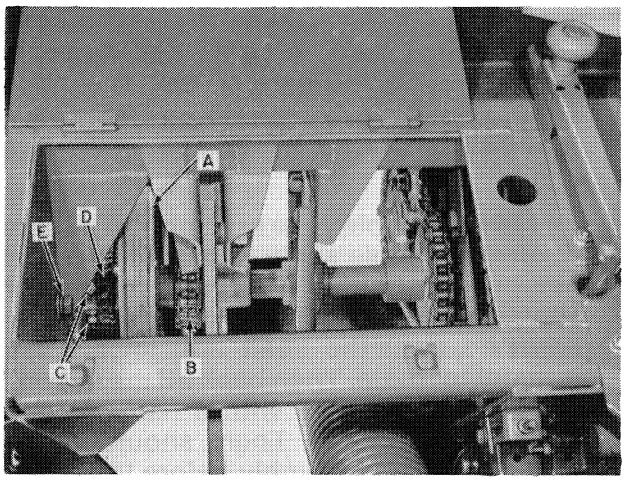

FIGURE 2

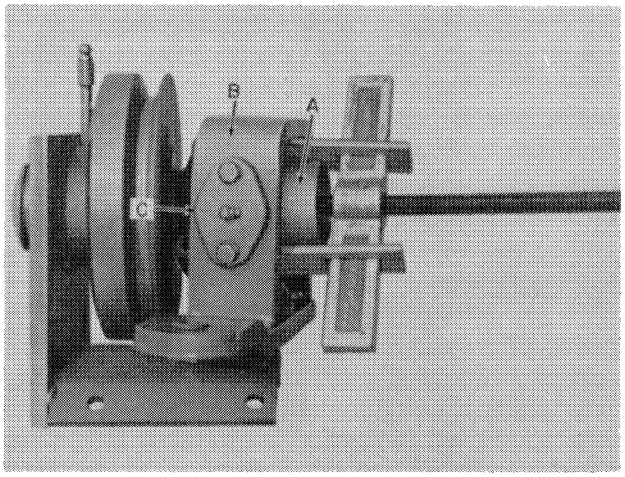

FIGURE 4

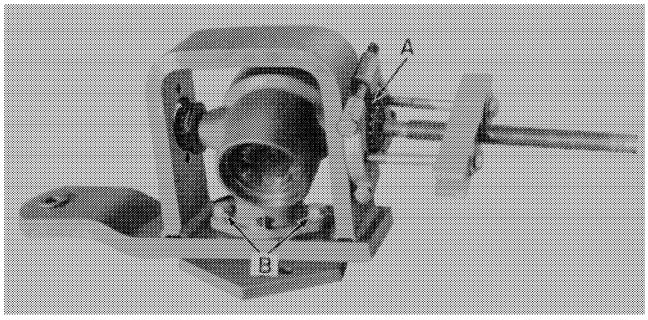

FIGURE 5

2. To disassemble yoke assembly, remove trunnion bearing caps and shims. Use a bearing puller shown at A, Figure 5, to remove trunnion bearing and seal assemblies. Do not try to save these assemblies, because the seal is usually damaged when removed.
3. Remove bolts, B, Figure 5, from steady rest bearing cap and gasket. Install two ½" cap screws at A, Figure 6, and turn bolts in against yoke to remove steady rest bearing and locking collar, B, Figure 6, as one assembly.
4. Remove the cap, cotter pin and hex nut from the wobble shaft at A, Figure 7. Use a bearing puller and push the wobble shaft and sheave assembly out of the support. Remove bearings, B, C, and D, Figure 7, from wobble shaft with a bearing puller. **NOTE: Do not remove sheave from wobble shaft. The sheave is pressed on the wobble shaft and has a woodruff key installed.**

ASSEMBLY

Inspect all parts and bearings carefully and replace if any wear is evident. Use adequate sleeves or spacers to install bearing cones, cups, and seals. If bearings are reused, be sure they are properly cleaned with a suitable solvent. Repack used or new bearings with wheel bearing grease.

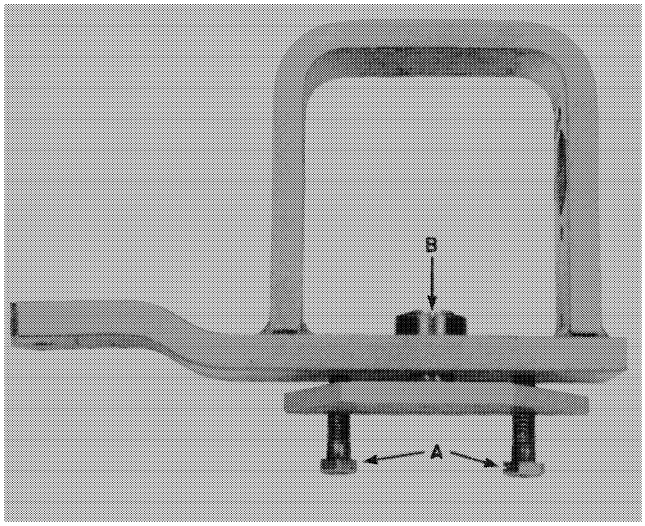

FIGURE 6

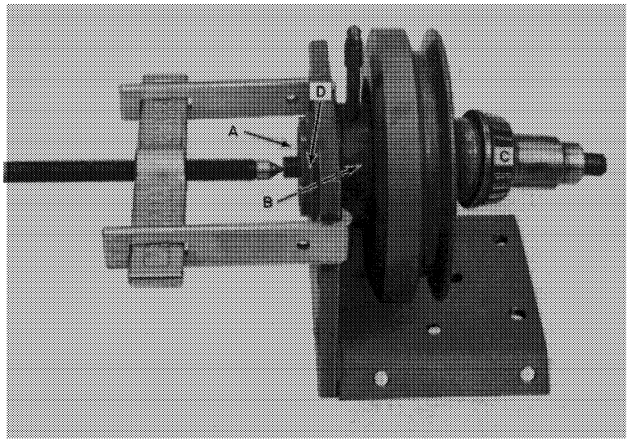

FIGURE 7

1. Install wobble shaft assembly as shown in Figure 7. Install washer and hex nut and tighten until bearings have a running fit of 6-10 in. lbs. (.68 to 1.13 N·m). These bearings have an interference fit and must be properly seated before the nut is tightened. Install cotter pin and cap.
2. Install steady rest support, Figure 6. If steady rest bearing was replaced do not install locking collar, B, at this time.
3. Install the wobble hub, Figure 5, in the wobble yoke. **NOTE: Make sure large part of hub is to the rear as shown.**

   Install trunnion bearing and seal assemblies. Install an equal amount of shims under both bearing caps. Make sure the bearing caps have the grease fittings pointed out as shown at A, Figure 8.

   Tighten bolts, B and C, Figure 8, evenly on both sides. Make sure the caps do not set up a binding load on the radius of the yoke. Add or subtract shims under the bearing cups until it takes 6-10 in. lbs. (.68-1.13 N·m) force to rotate the hub. The hub should not have any binding or end-play. Shim sizes are .003", .005", .007", and .020".
4. Install the wobble yoke assembly, A, Figure 4, on the wobble shaft. Install washer and hex nut and tighten nut while rotating the shaft and sheave. The hex nut should be adjusted until the shaft and sheave are difficult to rotate. Then back off the nut one flat. Tap the sheave with a hammer and check for end-play. There should be no end-play in the assembly before the cotter pin and cap are installed.

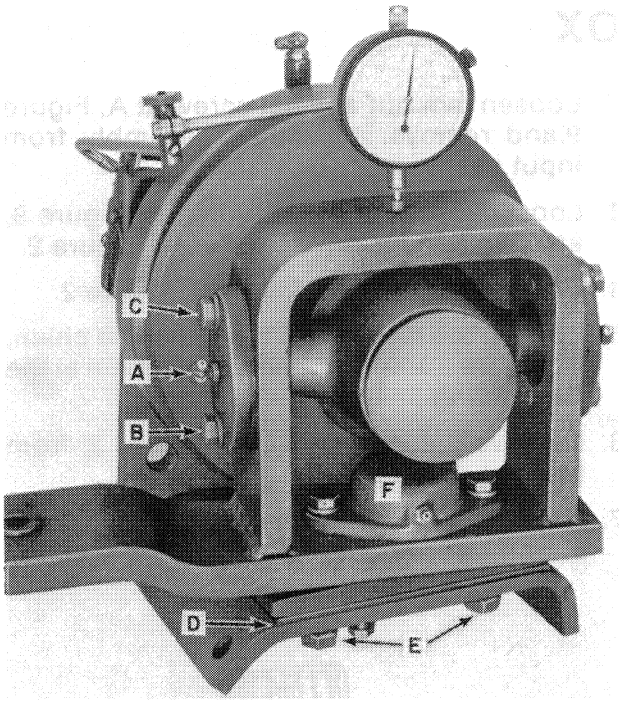

FIGURE 8

5. Install spacer, D, and two bolts, E, Figure 8, and tighten bolts. If steady rest bearing was replaced, locking collar, B, Figure 6, can now be installed and tightened. This procedure will insure that the bearing is not moved out of its original position. Install gasket and bearing cap, F, Figure 8.
6. Loosen bolts, E, Figure 8, two full turns. The wobble yoke assembly should not have any more than .006" (.15 mm) vertical movement while turning the wobble sheave through one full revolution. A dial indicator, shown in Figure 8, should be used to check movement. If there is more than .006" (.15 mm) movement, recheck bearings for proper seating and pre-load. *IMPORTANT: Excessive movement will cause repeated steady rest bearing and knife head bushing failures. Bolts, E, Figure 8, can now be removed.*

INSTALLATION

Install the wobble assembly using bolts at C and D, Figure 3. Tighten hardware installed up to this point.

Work sickle belt under steady rest support. Install bolts, C, Figure 1, and tighten these bolts. Be sure spacer, D, is installed.

Turn the drive sheave and position the knife so the knife head bolt, A, Figure 8A, can be installed (with the bolt head at the bottom) through the hole in guard, B. In this position, the knife sections should be midway between the guard points. Keep the knife in this position and tighten the lock nut on the knife head bolt to 85 ft. lbs. (115 N·m). Loosen clamp bolt, C. Adjust the knife head up or down on the bushing so the knife sections rest lightly on the ledger surface of the guards at D. Tighten the clamp bolt, C, with the knife sections mid-way between the guard points.

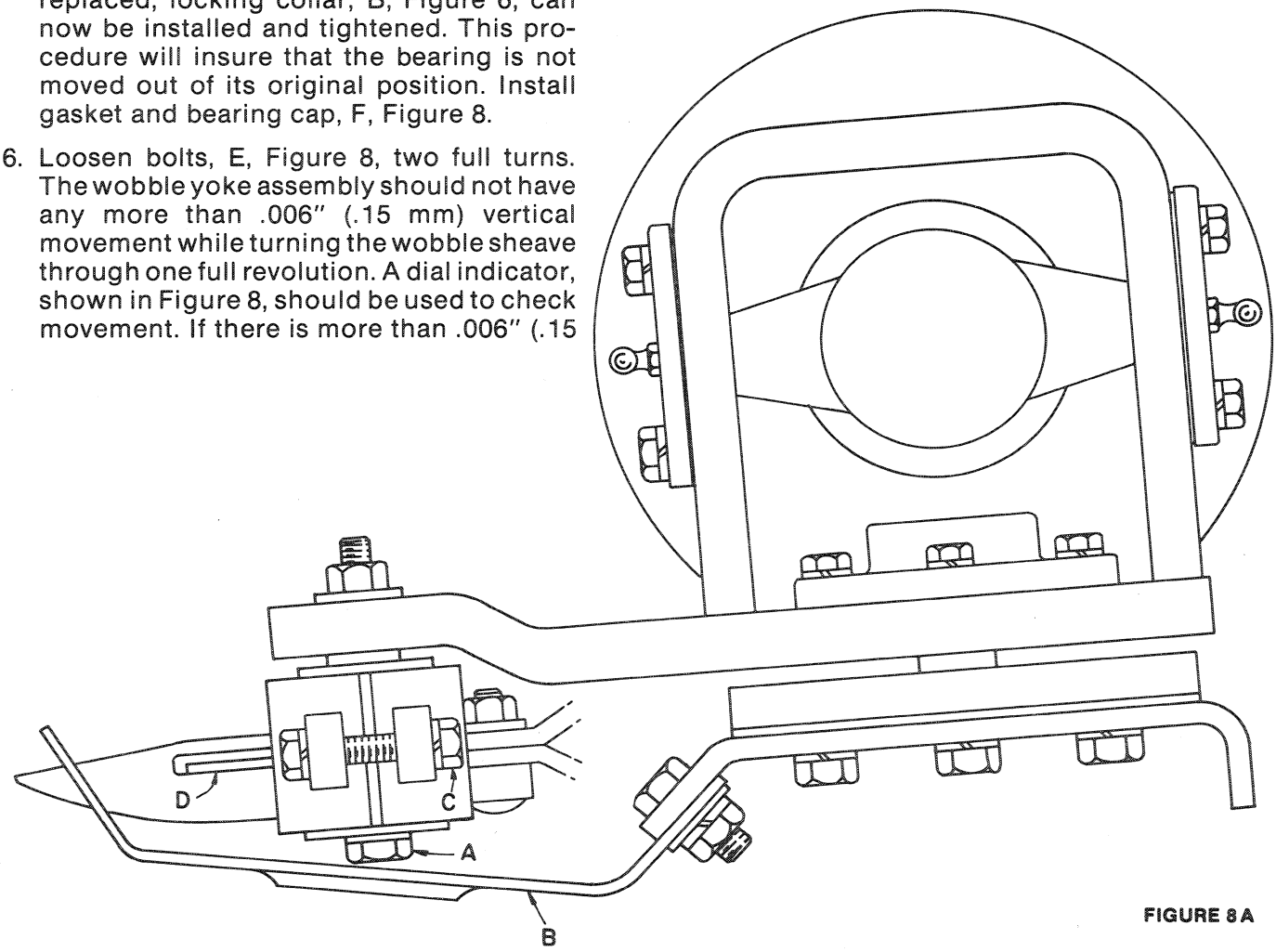

FIGURE 8A

GEARBOX

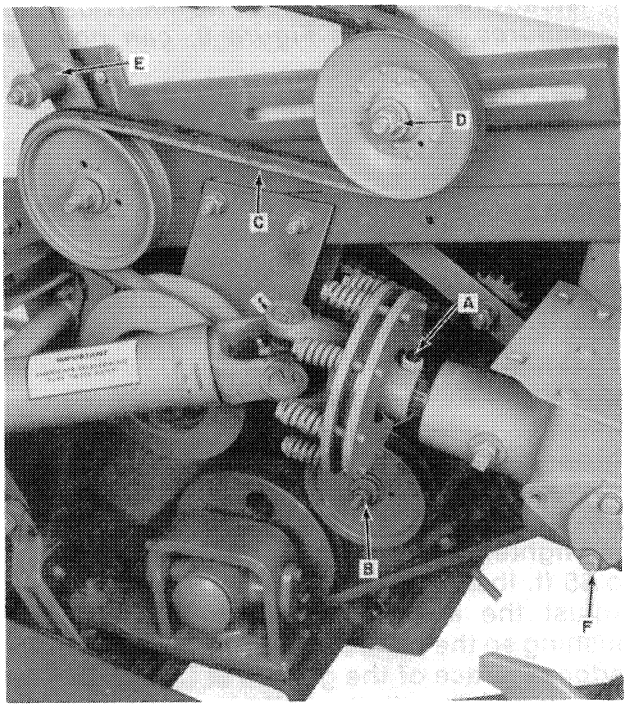

FIGURE 9

REMOVAL

1. Remove the PTO cover as shown in Figure 9.
2. Loosen jam nut and set screw at A, Figure 9,and remove slip clutch assembly from input shaft.
3. Loosen sickle drive belt idler, B, Figure 9, and slip belt off drive sheave, A, Figure 2.
4. Remove the coupler chain, B, Figure 2.
5. Loosen the tension on the reel drive chain, D, Figure 2, and disconnect the chain at the connecting link.
6. Remove the set screws, C, Figure 2, from the reel drive sprocket.
7. Remove the four gearbox mounting bolts, E, and remove gearbox.

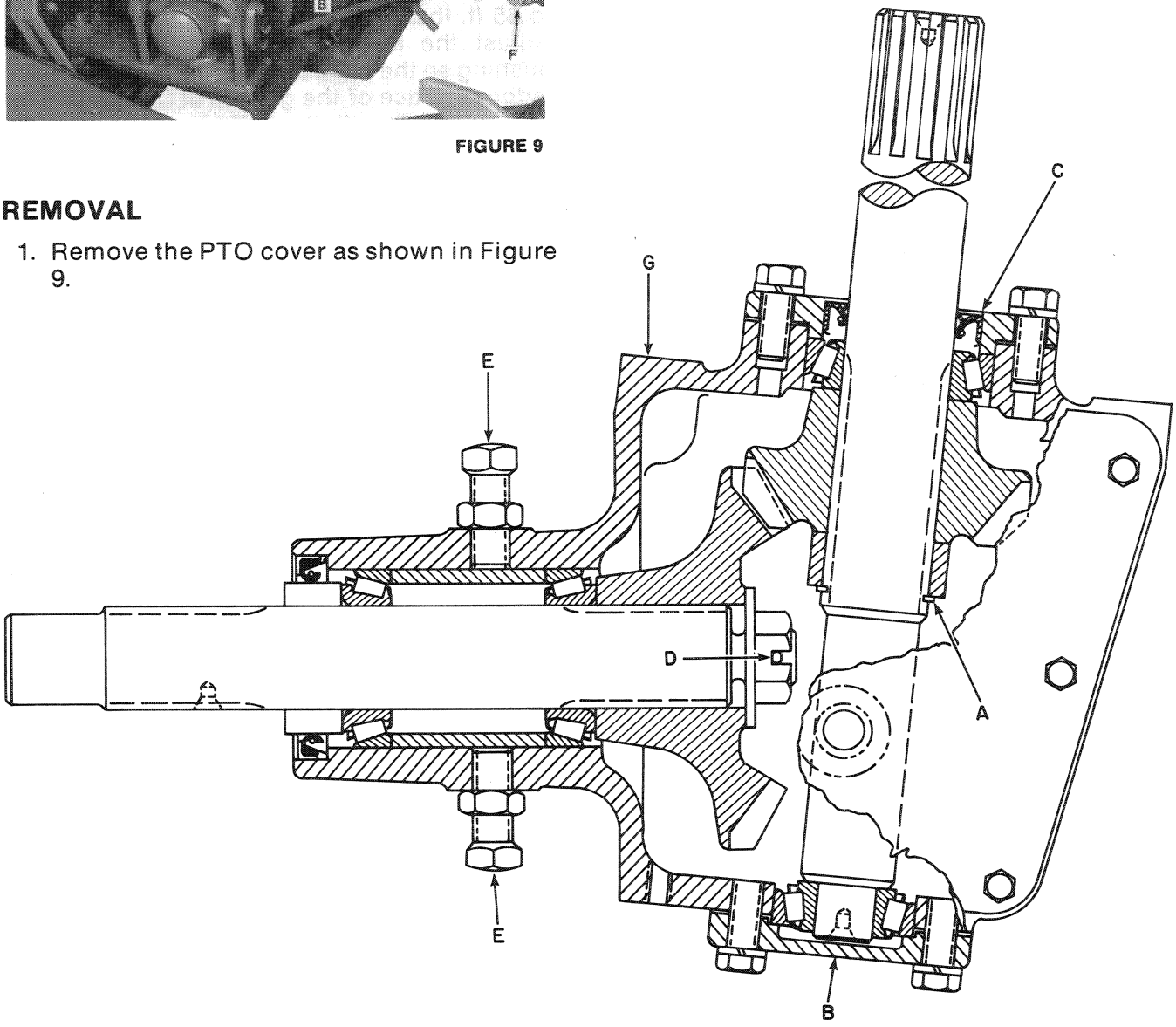

FIGURE 10

DISASSEMBLY

1. Remove the gearbox cover and drain all the oil. **NOTE: 1000 RPM gearboxes have a metal tag attached to cover.**
2. Remove snap ring, A, Figure 10, from output shaft. Remove bearing caps, B and C, Figure 10.
3. Slide shaft out of gearbox and remove spacer and pinion gear. Bearing cups and cones can now be removed.
4. Remove cotter pin, D, Figure 10, nut and flat washer from input shaft.
5. Loosen set screws, E, Figure 10, and remove shaft assembly. Remove bearings and spacer. **NOTE: Clean all parts and carefully inspect all parts for wear or pitting. Replace as required.**

ASSEMBLY

NOTE: Pack all bearings with general purpose grease.

1. Install bearings and spacer on input shaft. Install shaft in gearbox and install bevel gear, flat washer, and nut. Tighten nut to obtain 5-10 in. lbs. (.56-1.13 N·m) torque on bearings and shaft assembly. Install cotter pin, D, Figure 10, and oil seal. DO NOT TIGHTEN SET SCREWS.
2. Install output shaft, bearing cup and cone and bearing cap, C, Figure 10. Use same number of shims used previously if original bearing is used. If a new bearing is being used, the number of shims required must be determined.

   Example: if the slip of paper with the new bearing has a 12 on it, the gearbox may have "18" stamped on the lower machined surface at G, Figure 10, and the bearing cap, C, Figure 10, may have a "5" stamped on it. This means all three numbers must be added, for a total of 35. This total indicates shims must be used giving a total of .035". Shims are available in sizes .003", .005", .007", and .020". This method will insure that the mounting distances between shafts and gears are correct. Use Permatex® on bearing cap bolts.
3. Install pinion gear, spacer, and snap ring, A, Figure 10. Install bearing cup, cone and cap, B. Use required amount of shims to obtain 5 to 10 in. lbs. (.56-1.13 N·m) torque on output shaft. These shims are also available in .003", .005", .007", and .020" thickness.
4. The backlash between gears must be .004" to .012" at the closest point. To adjust, move input shaft assembly as required and tighten set screws, E, Figure 10, to 50 ft. lbs. (68 N·m) torque. Tighten jam nuts.
5. Fill gearbox with API GL5 80W-90 multi-purpose gear lubricant to bottom hole of bearing cap, F, Figure 9. Install cover and clip (if 1000 RPM).

INSTALLATION

1. Attach the gearbox assembly to the mower-conditioner with the four bolts, E, Figure 2.
2. Align the sickle drive belt driver sheave, A, Figure 2, with the wobble sheave to within ⅛" (3 mm). Tighten set screws, C, to 48 ft. lbs. (65 N·m). Hammer seat the set screws and re-torque them again. Tighten jam nuts.
3. Install reel drive chain, D, and tighten adjustment nuts until spring has an overall length of 7" (248 mm).
4. Tighten sickle drive belt idler so 15 lbs. (66 N) force will deflect belt ¼" to ⅜" (6.3 to 9.4 mm) midway between sheaves.
5. Install coupler chain, B, Figure 2.
6. Install slip clutch assembly on input shaft. Tighten set screw, A, Figure 9, and jam nut.
7. Install PTO cover.

MAIN DRIVE SHAFT

REMOVAL

1. Remove the conditioner roll drive chains, F, Figure 10A.
2. Remove lock collar, G, and bolts, D.
3. Loosen set screw, H, in the roll drive sprocket.
4. Remove paint from shaft, E, and loosen set collar, I. This will allow the shaft to be removed from the right side of the machine.
5. Remove bolts, C, to remove bearing and flangettes.
6. Bearing brackets can now be removed if required.

INSTALLATION

NOTE: Coat splines of shaft with graphite grease prior to installing coupler sprocket.

1. Install shaft, sprocket, and bearings as shown in Figure 10A.
2. Install hardware on bearing brackets. Do not tighten at this time. If brackets were not removed, the hardware should be loosened.
3. Slide coupler, A, against coupler sprocket, B, on gearbox output shaft.
4. Position both sprockets so the root area is aligned and clamp sprockets together with a vise grip or "C" clamp.
5. Tighten hardware in both bearing brackets.
6. Tighten bolts, C, in left bearing flanges.
7. Tighten bolts, D, in outboard bearing flanges.
8. Remove vise grips or "C" clamps and install coupler chain. Rotate machine by hand and check coupler chain for any binding. Chain should always be free in sprockets.
9. Align roll drive sprocket with roll sprockets and tighten set screw, H.
10. Install roll drive chains and rotate machine by hand to find tightest spot in chains. With chains at the tightest spot, adjust the upper roll drive chain for 3/16" (4.8 mm) deflection and adjust lower roll drive chain for ½" (13 mm) deflection. *IMPORTANT: Check chain deflection midway between two sprockets.*

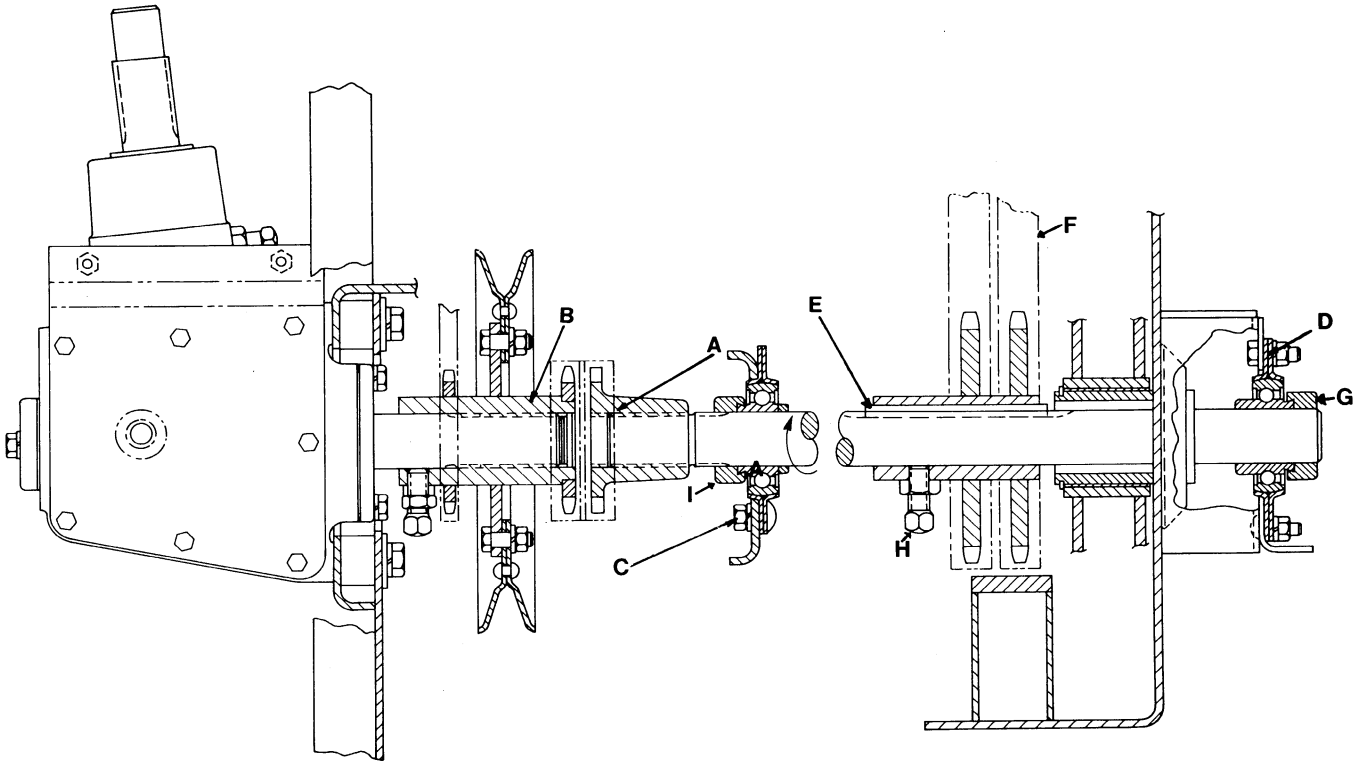

FIGURE 10A

REEL DRIVE JACKSHAFT

REMOVAL

1. Loosen the tension on the reel drive chain, D, Figure 2, and disconnect chain at attaching link.
2. Remove the reel drive belt, C, Figure 9.
3. Remove the cotter pin and nut, A, Figure 11.
4. Loosen the jam nut and set screw, B.
5. Remove the reel drive sprocket, C, and the woodruff key.
6. Remove the jackshaft assembly and variable sheave assembly as one unit from the jackshaft mounting bracket.

INSTALLATION

1. Install the tapered roller bearings as shown in Figure 11.
2. Install the washers previously removed and the woodruff key.
3. Install the reel drive sprocket and nut. Tighten nut until bearing preload is 5 to 10 in. lbs. (.56 to 1.13 N·m) torque.
4. Install cotter pin in nearest slot.
5. Install reel drive chain and tighten adjustment nuts until spring has an overall length of 7" (177 mm).
6. Install reel drive belt and move idler arm, E, Figure 9, forward as far as possible. Move stationary idler, D, rearward and tighten nut.
7. Tighten idler arm spring adjusting nuts until it takes a pulling force of 225 to 250 (1000 to 1112 N) lbs. to slip the belt, by pulling on one of the reel tine bars. Apply force in reverse rotation or backward from the operating direction.

   NOTE: Make sure all paint and rust are removed from sheaves.

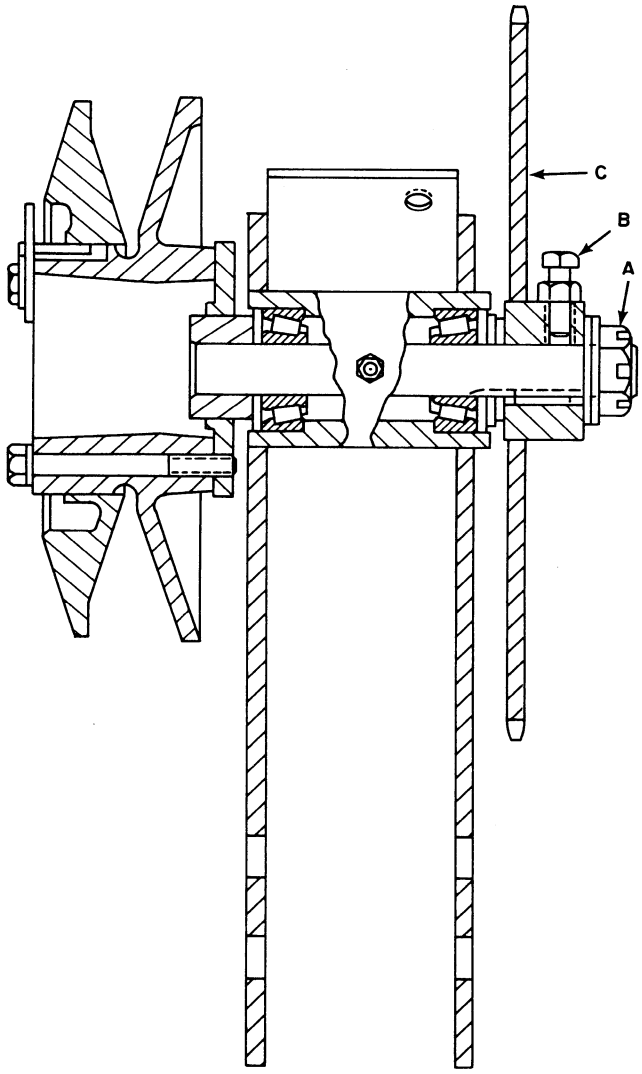

FIGURE 11

REEL TINE BAR BEARINGS

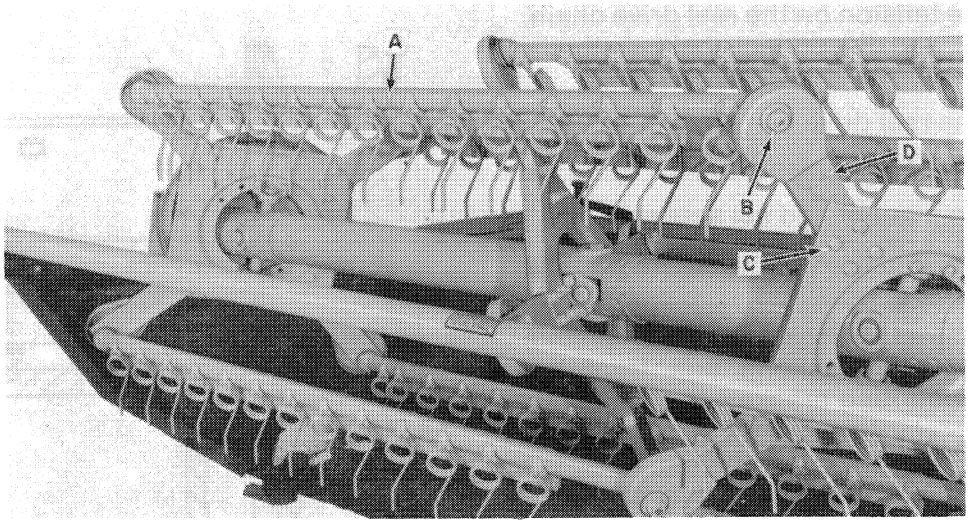

FIGURE 12

To replace a tine bar bearing, remove the complete tine bar assembly from the reel.

REMOVAL

1. Loosen the tine bar bearing nuts, B, Figure 12, at each end of the tine bar, A, about six turns. Use a 1⅛" box end wrench and a ⅜" allen wrench.
2. Remove four bolts, C, Figure 12, and pull the inner spider leg, D, out of the support.
3. Remove nuts, B, and remove tine bar assembly from machine and inner spider leg.

DISASSEMBLY

1. Remove the dust cap from the shoulder of the bearing.
2. Remove the snap ring, A, Figure 13.
3. A spacer shown at A, Figure 14, can be made to remove the bearing assembly from the tine bar. Use a spacer that measures 2" (5 mm) ID by 1⅝" (41 mm) long. Then install a flat washer over the spacer and install the tine bar bearing nut. Turn the nut to remove the bearing.
4. Clean all parts thoroughly. Dirt or grit will cause excessive bearing wear.

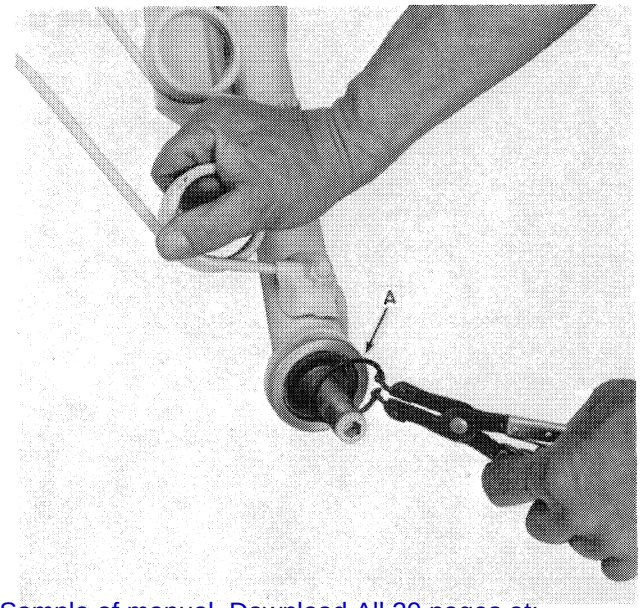

FIGURE 13

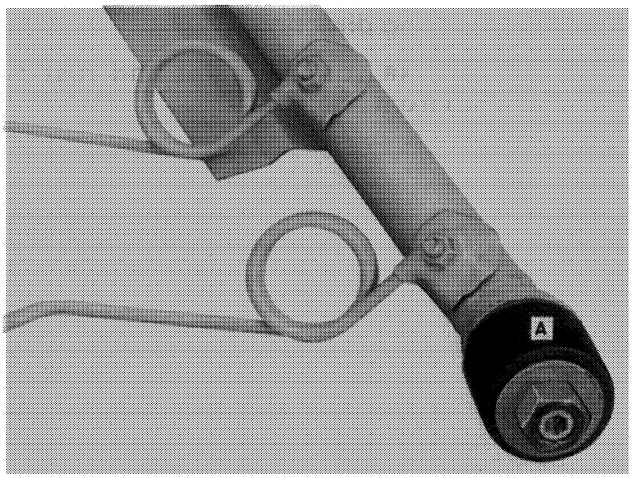

FIGURE 14