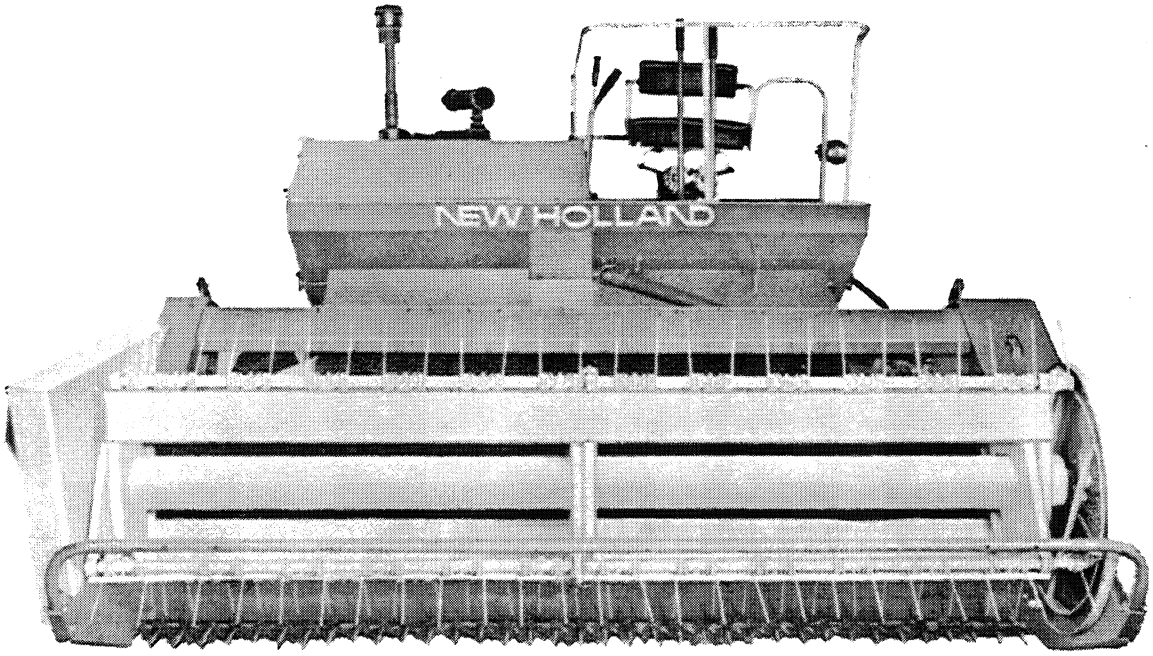
SERVICE MANUAL

HAYBINE® MOWER-CONDITIONER 1469

40146910

SPERRY NEW HOLLAND



Reprinted

FOREWORD

The purpose of this manual is to provide in condensed form service and maintenance information which will serve as a guide to a serviceman when repairing or rebuilding New Holland equipment in the shop and be of help to him in diagnosing and correcting service difficulties in the field.

It is intended that the operator's manuals and assembly instructions issued with each machine be used in conjunction with this manual, since much of the information contained herein is condensed or supplementary in nature.

CONTENTS

GENERAL INFORMATION

In the following instructions "left" and "right" are determined from a position facing the direction of travel. Unless otherwise specified, installation of any bolt includes the nut and the lock washer.

Use flat washers on all bolts installed in slotted holes.

SAFETY PRECAUTIONS

Most farm implement accidents can be avoided by the observance of a few simple safety precautions:

1. Don't clean, lubricate, or make any adjustments on the Haybine while it is in motion.
2. Don't start the Haybine until you know that everyone is clear of the machine and have made sure that no tools are lying on the machine.
3. Don't work around the unit in loose clothing that might catch in any of the moving parts.
4. Don't attempt to pull material from any part of the Haybine while it is in operation.
5. Don't leave the tractor seat while the Haybine is in operation.

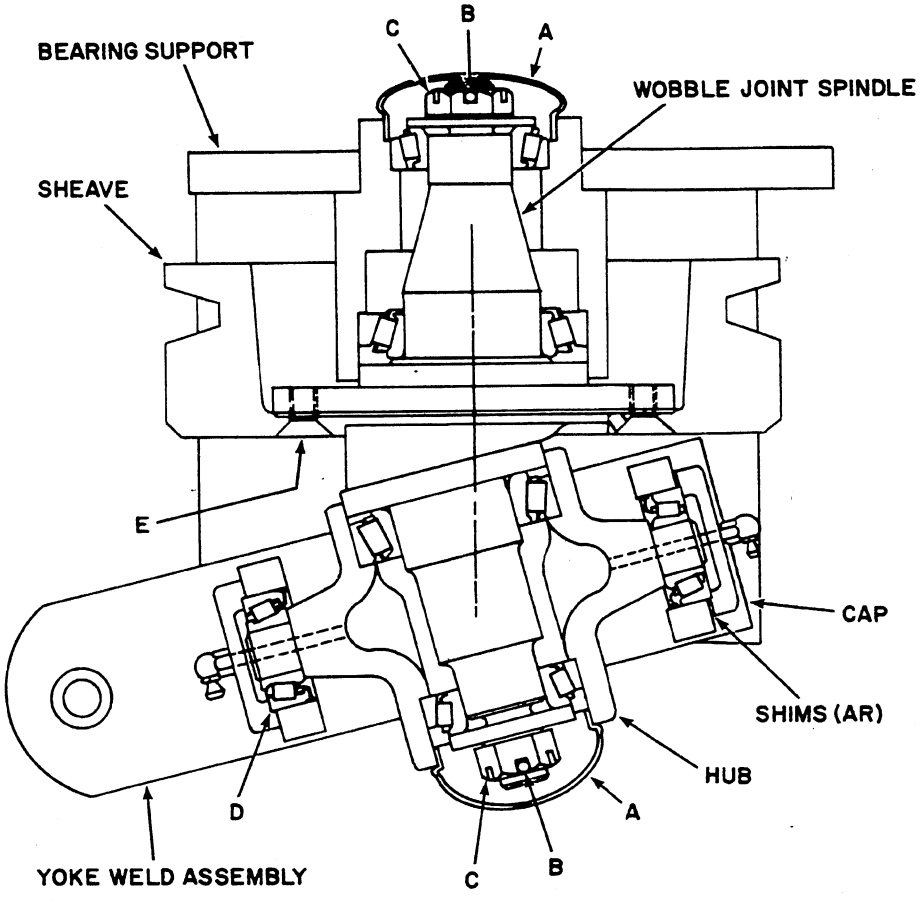


FIGURE 1

ADJUSTMENT

1. The wobble joint spindle tapered roller bearings are adjusted by means of the slotted nuts at each end of the spindle. Adjust the bearings so that it requires 6 to 12 inch pounds of force to rotate the sheave. Make sure there is no end play in either the spindle, bearing support and spindle, hub area. This can be assured by drawing the slotted nuts as tight as

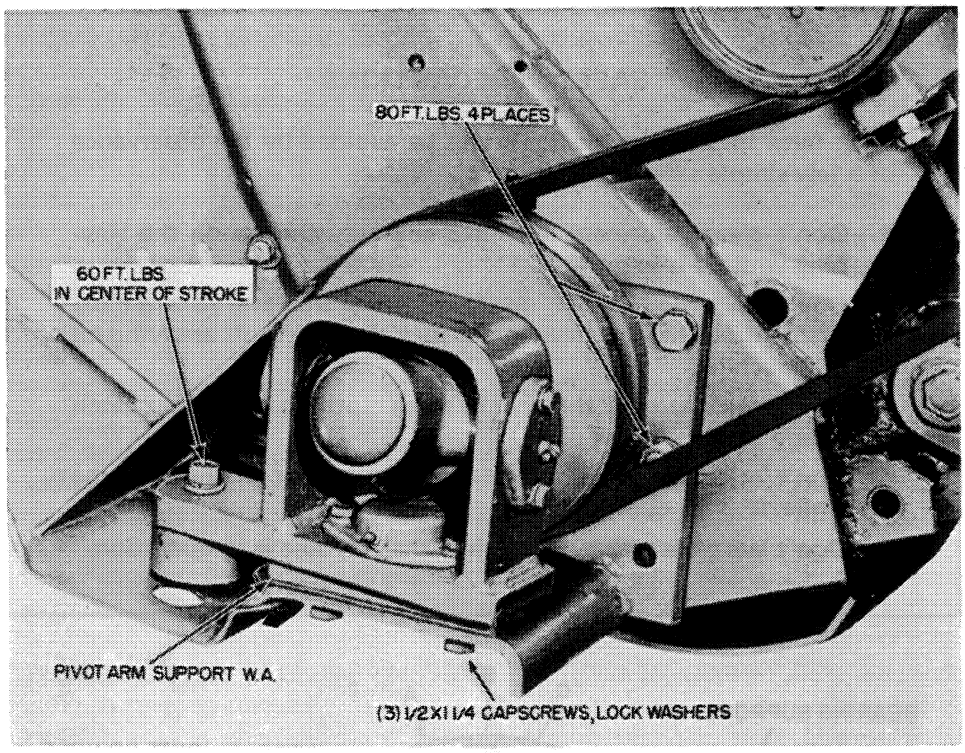


FIGURE 2

possible and then backing them off to the desired setting. When backing the nuts off it will be necessary to sharply rap the hub and/or the sheave.

2. The yoke weld assembly tapered roller bearings are adjusted by means of shims under the caps. If play develops in these bearings, remove shims as required to remove play.

   NOTE: It is normal for the sickle drive assembly to run quite warm when correctly adjusted. As long as the paint does not blister or dis-color after 1/2 hour operation the adjustment should be O.K.

   The assembly should be repacked with a good grade of gun grease once each season.

DIS-ASSEMBLY

The sickle drive assembly can be serviced on the Haybine or it can be removed by removing the knife head bolt and the six mounting bolts.

For complete dis-assembly, do the following:

1. Remove the hub caps, A, Figure 1, and the cotter pins B.
2. Loosen the slotted nuts, C, but leave them threaded on the ends of the spindle to prevent the gear puller from slipping off.
3. Remove the three ½ x 1¼ cap screws, Fig. 2, securing the pivot arm support W.A.
4. Use a gear puller to remove the yoke weld assembly and hub assembly. It will most likely be necessary to rap the puller to break the bearings loose.
5. The yoke weld assembly can be disassembled from the hub by removing both caps and shims. Then use a bearing puller to remove one of the cone and seals, D. Normally this part will be damaged when it is removed. The yoke weld assembly can be removed from the hub after removing the one cone and seal.
6. The sheave can be dismounted from the wobble joint spindle by removing the six flat allen head cap screws, E. These can be removed either by an allen wrench or hammer and sharp center punch.
7. To disassemble the wobble joint spindle from the bearing support, use a gear puller or press if available.
8. The pivot arm support W.A. can be removed from the yoke weld assembly by removing the bearing cap, loosening the locking collar, and then pulling out the pivot arm support W.A.

ASSEMBLY

Use the drawing as a guide for correct assembly. Adjust the bearings as recommended in the adjustment area. Be sure the six flat allen head cap screws, E are securely tightened. When reinstalling the complete drive assembly on the Haybine the four 5/8 Grade 5 fine thread cap screws should be tightened to 80 foot pounds of torque.

When installing the knife head bolt, be sure it is tightened to 60 foot pounds of torque when the yoke weld assembly is in the center of its stroke.

PROCEDURE FOR REMOVING ROLL BEARINGS

It will normally be necessary to cut the bearings from the shafts as they will seize after being used for a period of time. If necessary, carefully cut the bearing off with a torch so as to not damage the shafts.

Paint remover and emery cloth are very helpful during this disassembly.

A rod 1/2" O.D. or larger and approximately 20" long with one end ground to a cone point is very helpful in order to loosen the bearing collars and to drive sprockets inward as explained below.

RIGHT SIDE (UPPER)

1. Remove the reel drive shield.
2. Remove the reel drive chain.
3. Remove the reel drive sprocket, Figure 3. With a hammer, drive the sprocket inward which will loosen the tapered key. Remove the key and clean the shaft with emery cloth.
4. Remove bearing collar. File off set screw indentation from shaft.
5. Remove 4 cap screws holding flangettes and shroud, remove same and bearing. If the machine has been used for a period of time it may be necessary to cut the bearing from the shaft. This can be accomplished by carefully cutting with a torch so as to not damage the shaft.
6. NOTE: Before installing any new bearings, fill the void between the shroud and the flangette with one of these lubricants. Esso Multipurpose grease H, Shell Retinax A, Texaco Multifak 2, Esso Nebula 2, Cities Service Trojan P2. The line drawing shows the bearing assembly correctly installed and located.

RIGHT SIDE (LOWER)

This bearing can be removed without interference of other parts. Follow steps 4, 5, and 6 as on upper bearing.

LEFT SIDE (UPPER)

1. Remove upper roll drive chain.
2. Remove upper roll sprocket. With a hammer, drive the sprocket inward to loosen the tapered key. Remove the key and clean the shaft with emery cloth.
3. Follow steps 4, 5, and 6 as on upper right bearing.

LEFT SIDE (LOWER)

1. Remove lower roll drive chain.
2. Remove lower roll sprocket. With a hammer, drive the sprocket inward to loosen the tapered key. Remove the key and clean the shaft with emery cloth.
3. Follow steps 4, 5, and 6 as on upper right bearing.

ROLL REPLACEMENT (UPPER)

1. Remove the roll bearings. Follow PROCEDURE FOR REMOVING ROLL BEARINGS.
2. Disconnect the left roll pressure crank linkage and pivot the left roll arm up.

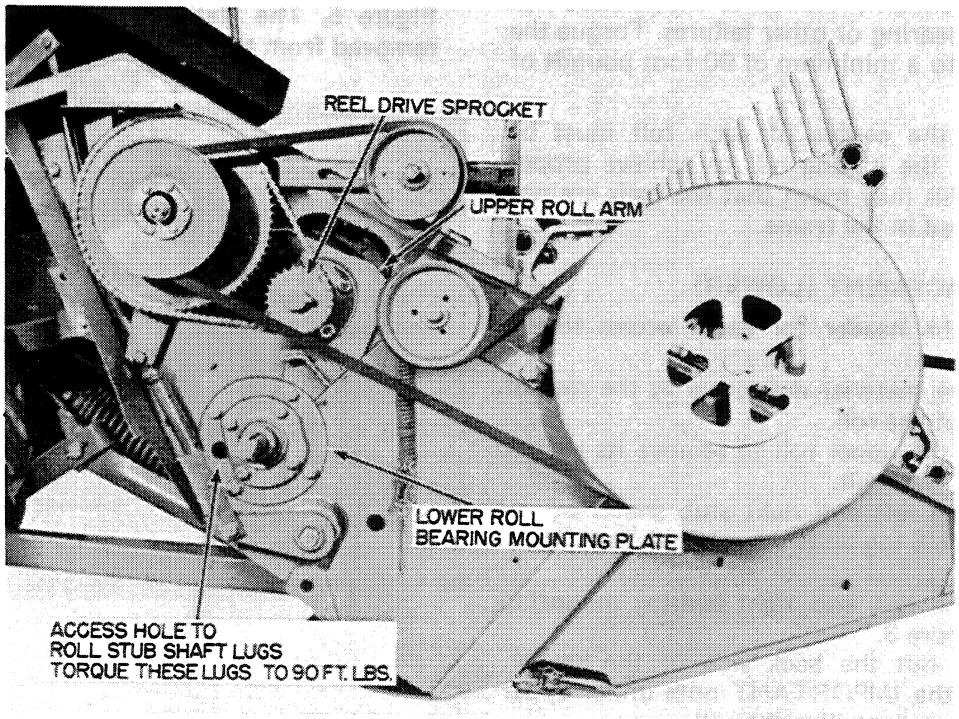
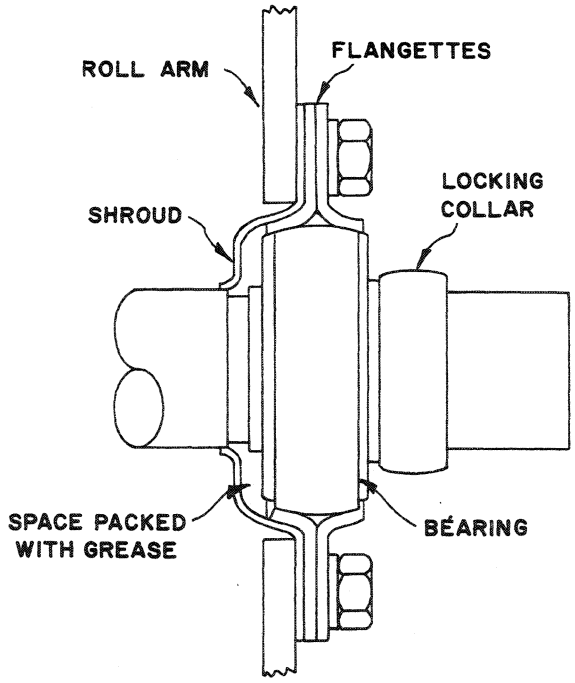


FIGURE 3



3. Remove the left stub shaft by removing the (5) lug bolts.
4. Lift left end of the roll to clear frame, slide the roll to the left so that right shaft clears frame and lift out of machine.

IMPORTANT: When re-installing or replacing a roll, all dirt, rust and paint must be cleaned from the bolting surfaces on the roll stub shaft and the roll disc plate. Any foreign material will cause the shaft to be cocked in relation to the roll and will result in roll bearing or other failures. Torque the roll lug bolts to a minimum of 90 foot pounds of torque.

The "V" at the center of each roll must be centered with the mating roll to achieve proper roll timing. This may mean that the rolls are not exactly centered in the frame.

ROLL REPLACEMENT (LOWER)

1. Remove the header for easier access to the roll.
2. Unbolt the material deflectors at the rear of each end of the roll.
3. Block up the upper roll to remove its weight from the lower roll.
4. Unbolt the left and right stub shafts by removing the 5 lug bolts at each end. See Figure 3.
5. Unbolt the left and right bearing mounting plates, Figure 3.
6. Slide roll out the back side of the header. Refer to the IMPORTANT note under upper roll before re-installing the roll.

REPAIR OF FRONT VARIABLE DRIVE SHEAVE ASSEMBLY

Remove the front variable drive sheave assembly as described in the section on variable drive belt replacement in the Operators Manual. The assembly, Figure 4, can be taken to a bench and taken apart. Remove the flexible coupling halves A, and the bearing and mounting plate B.

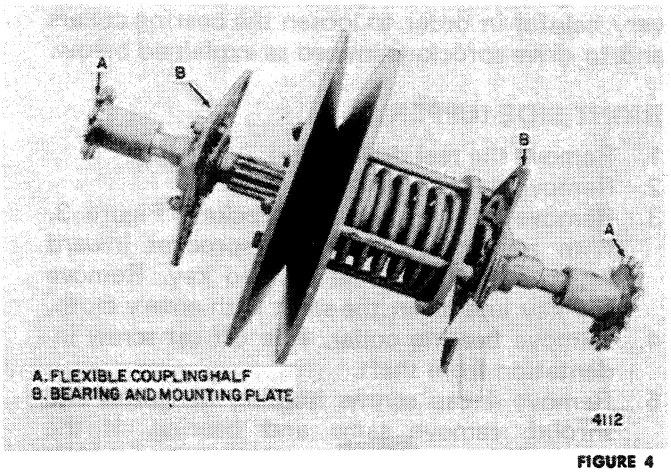


FIGURE 4

SPRING RETAINER AND BOLT

Clamp the assembly in a press or wire the coils of the spring together before removing the spring retaining bolts to avoid injury from the spring and retainer. Remove the spring retainer and spring, Figure 5. The stationary sheave half cannot be removed from the shaft as it is a press fit.

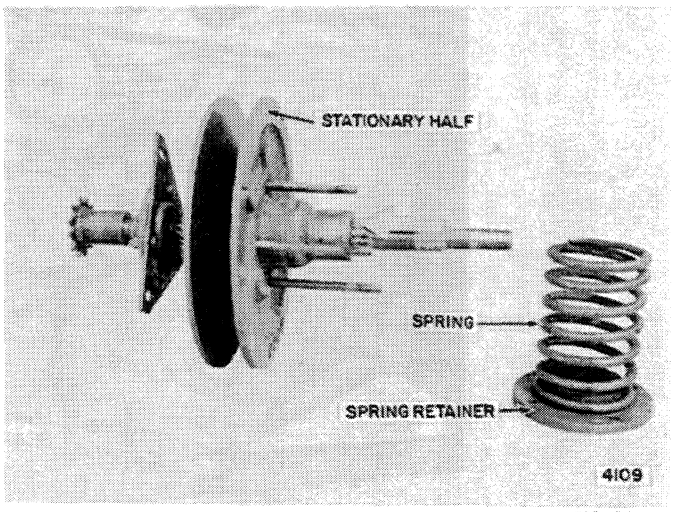


FIGURE 5

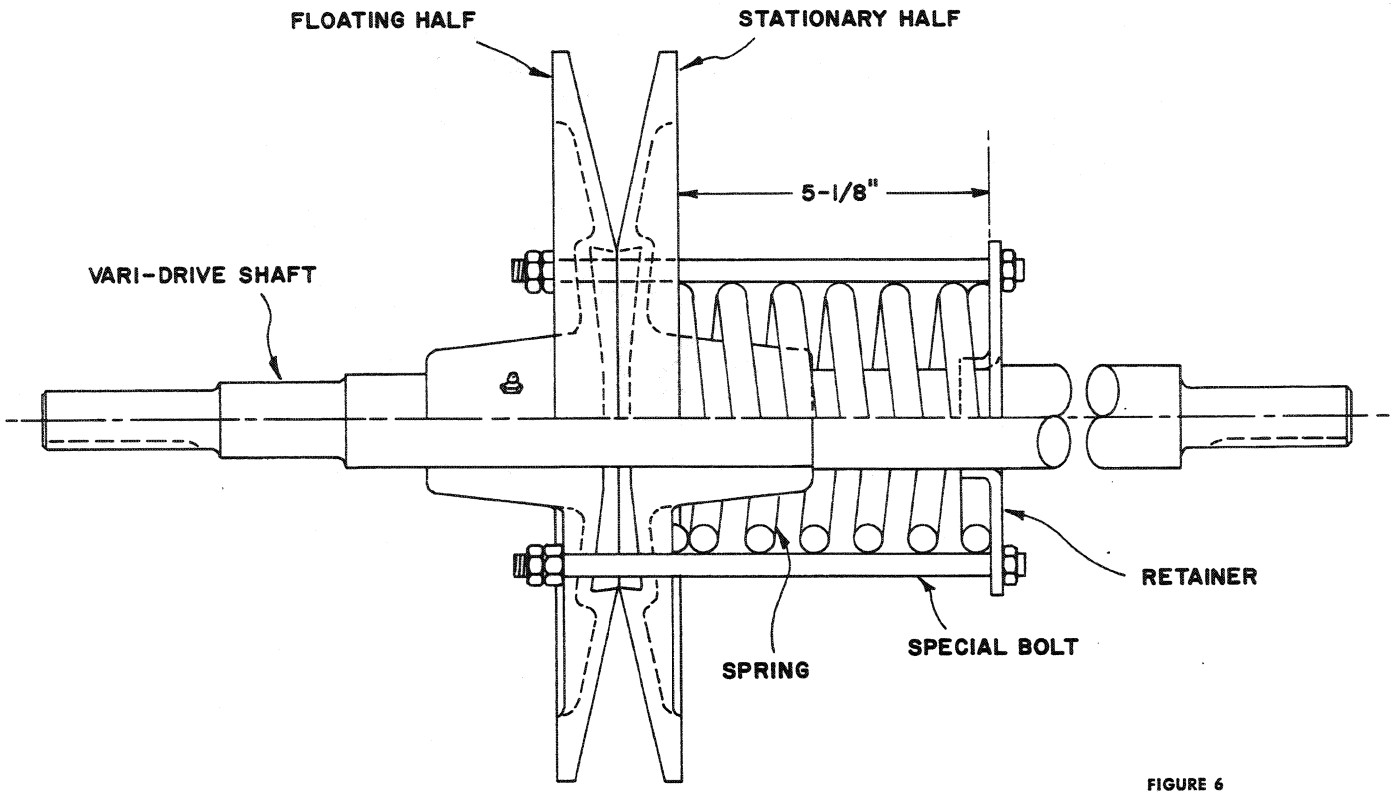


FIGURE 6

ASSEMBLY OF THE FRONT VARIABLE DRIVE SHEAVE

Assemble the parts in the reverse of the disassembly procedure. Use a press or two long bolts with at least five inches of thread to pull the spring and retainer in place so that the correct bolts can be installed, Figure 7. Compress the spring as shown in Figure 6 until the total length of the compressed spring is 5-1/8" long.

Replace the variable drive sheave assembly as described in the Operators Manual.

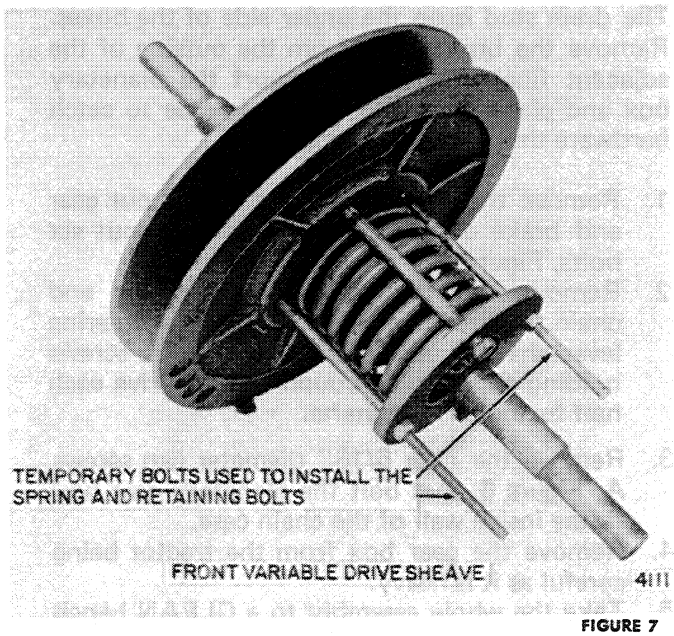


FIGURE 7

REPAIR OF THE PLANETARY GEAR BOXES

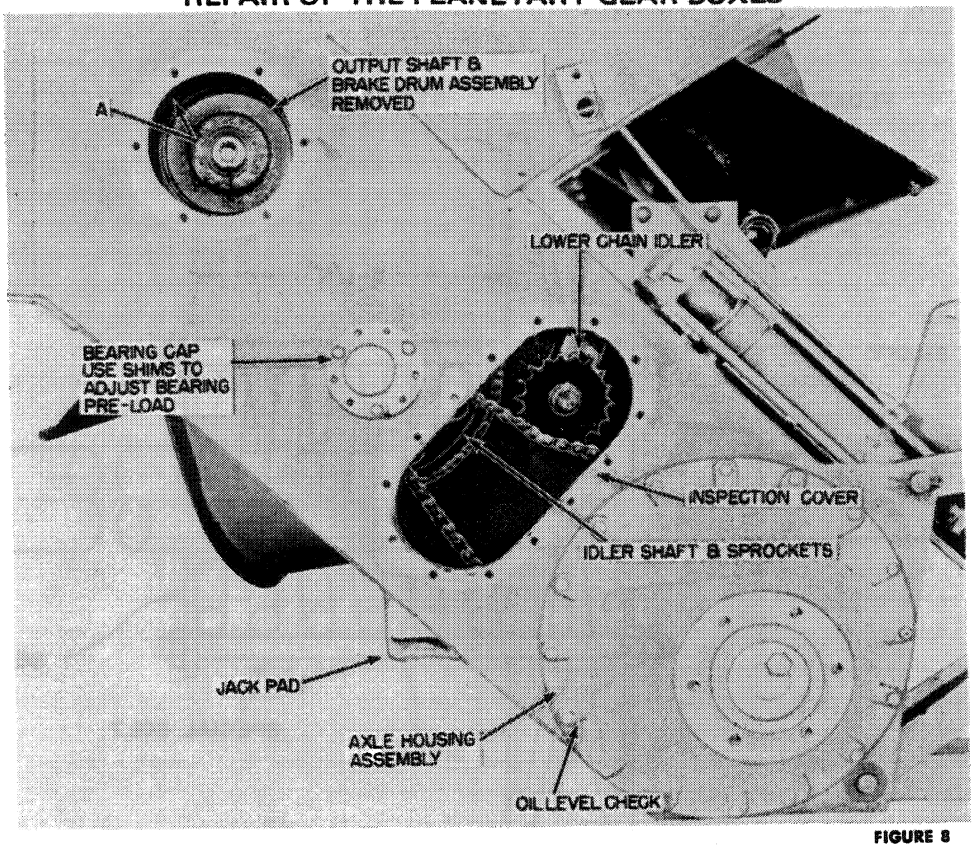


FIGURE 8

REMOVAL OF A PLANETARY GEAR BOX

Drain the planetary box that is to be removed (remove the reverse band support stud from the lower surface of the box, while taking care not to disturb the adjustment of the nuts on the stud). The drain stud is on the under side of the boxes. Remove the brake band from the outside of the adjacent final drive case. Support the planetary box and place rags under the chain case to catch hardware that might be dropped.

1. Remove the gear box output shaft, spur gear and brake drum assembly by taking out six bolts, Figure 8.
2. Remove the flexible coupling covers and chain, and remove the bolt from the steering lever shaft coupling. Loosen the set screws holding the flexible couplings and drive each half further on the shafts.
3. Remove the nine 5/16" diameter cap screws A, Figure 8, that bolt the planetary gear box to the inside wall of the chain case.
4. Remove the gear box from the tractor being careful as it is heavy.
5. Take the whole assembly to a CLEAN bench to dismantle it. NOTE: BE VERY CAREFUL WHEN REPAIRING THE PLANETARY GEAR BOXES AS ANY DIRT OR OTHER FOREIGN MATTER WILL CAUSE WEAR ON THE INTERNAL PARTS.

Disassembly of the Planetary Gear Box

1. Loosen the set screw B, Figure 9, clean the paint off the input shaft and remove the collar. Loosen the socket head set screw at A.
2. Tap the end of the input shaft, Figure 9, until the gear box cover moves out of the gear box. The entire planet carrier assembly can not be pulled out of the gear box, Figure 10. Check to see if there were any shim washers between the end of the spacer and the bearing in the gear box.

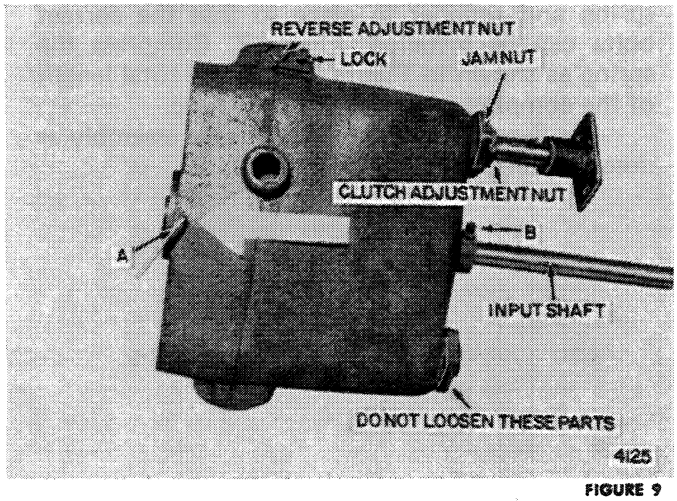


FIGURE 9

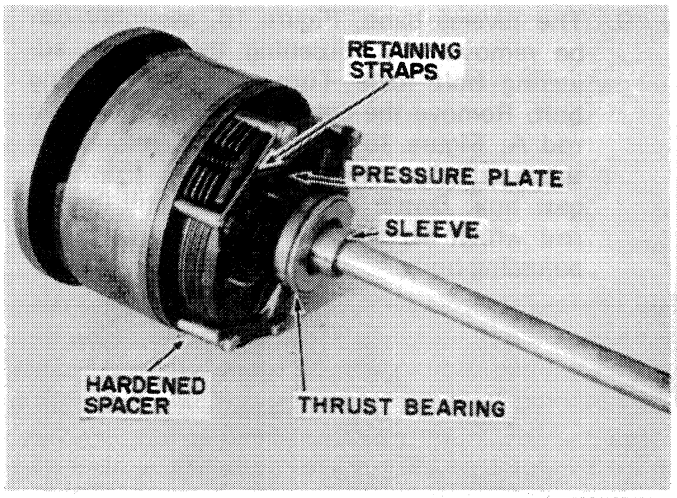


FIGURE 10

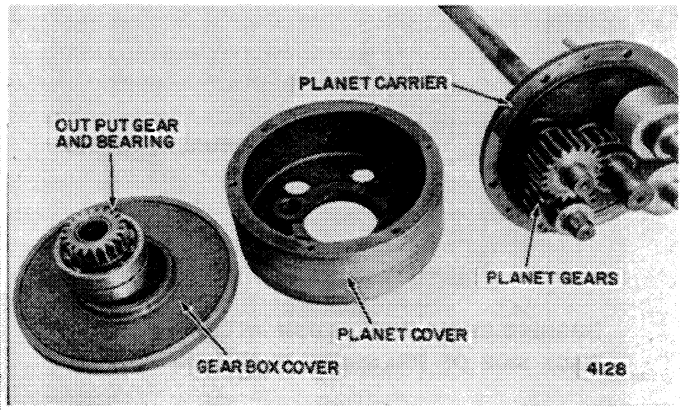


FIGURE 12

3. Remove the shim washers, if any, the phenolic spacer, the thrust bearing and the hardened spacer from the input shaft, Figure 10. Remove the pressure plate retaining straps and bolts and the pressure plate and bearing assembly clutch discs and clutch plates can all be removed. Note the location of the pressure plate return springs on the roll pins and the orientation of the pressure plate retaining straps.
4. The planet cover and carrier assembly can now be tapped apart and the output gear and carrier bearing assembly can be removed from the gear box cover and the planet carrier cover, Figure 12.
5. Inspect the carrier pins, input sprocket, the teeth and the bearing sleeves in the planet gears for wear, Figures 12 and 13, and replace the carrier assembly or the bearings in the gears if they show wear. Note how the planet gears are installed on the pins. Two diagonally opposite gears have the shoulder toward the planet carrier and the other two have the shoulder away from the carrier.

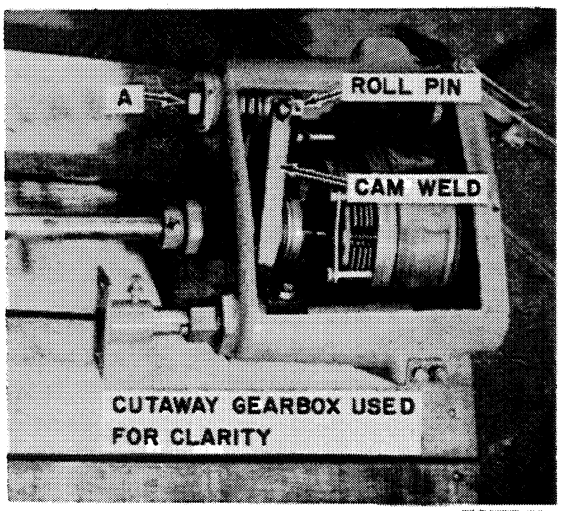


FIGURE 11

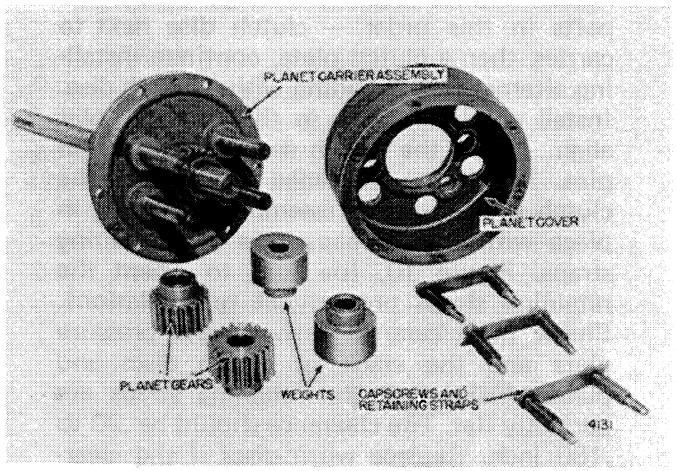


FIGURE 13

After making the necessary inspection and/or repair, reassemble the planet gears on the pins and install the cover.

ASSEMBLY

5A. Inspect the pressure plate and bearing assembly components, see Figure 15. If for part replacement, it should be necessary to disassemble these components, the following procedure should be followed: Remove the bearing assembly and then press out the bushing.

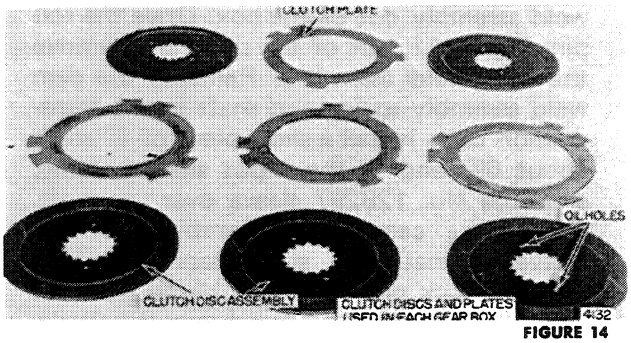


FIGURE 14

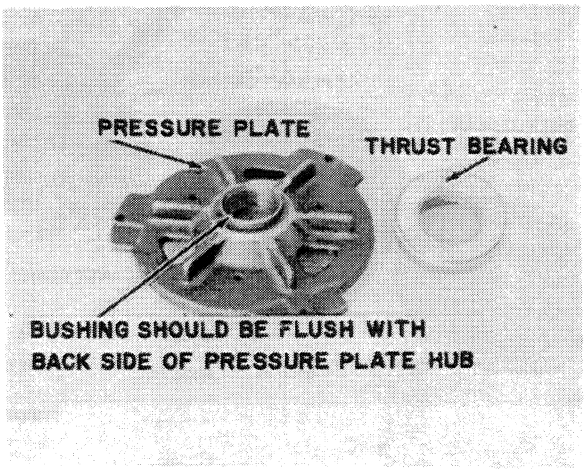


FIGURE 15

6. Inspect the clutch discs and clutch plates, Figure 14, for wear or damage. Install the parts in this order – clutch disc next to carrier, then a clutch plate, continue installing alternate parts ending with a clutch disc. Install all clutch discs so that the oil holes align. Install the return springs on the roll pins. Install the hardened spacer and the clutch pressure plate assembly bolting it in place with the six capscrews and retaining straps, Figure 10, (be sure to orient the retaining straps properly at reinstallation). Check the clearance between the pressure plate and the stack of clutch discs and plates. Make sure the retaining straps are perfectly flat. The clearance should be .90 to .180 inch. Replace worn discs if the clearance exceeds .200 inch. Install the thrust bearing with the wide side of the outer race toward the cam. Install the phenolic spacer and any shim washers that were between the phenolic spacer and bearing.
7. Inspect the carrier bearing, output gear and the needle bearings, replace the assembly in the gear box cover and install that assembly on the planet cover.
8. Check the cam weld assembly and if it is damaged in any way a new one should be used. The cam weld assembly can be removed from the gear box by removing nut A, Figure 11, and pulling the shaft and cam weld assembly out of the box. Drive the roll pin, Figure 11, out of the shaft and remove the cam weld assembly. Reinstall the cam weld assembly spring and shaft in the transmission case. Install a short piece of 1" shaft about 6" long in the input shaft bearing, slide the No. 128297 sleeve over the shaft. Center the cam weld assembly over the sleeve so that each side clears by 1/16". Securely lock nut A, Figure 11, to hold the cam weld assembly centered over the sleeve.
9. The reverse band, Figure 16, assembly can be removed by loosening the reverse adjusting bolt lock. Turn out the adjusting bolt. Remove the cotter pin from the drilled rod A, Figure 16. The reverse band can be squeezed together and removed from the gear box. Don't lose the drilled and tapped rod which serves as a nut for the reverse adjusting bolt.

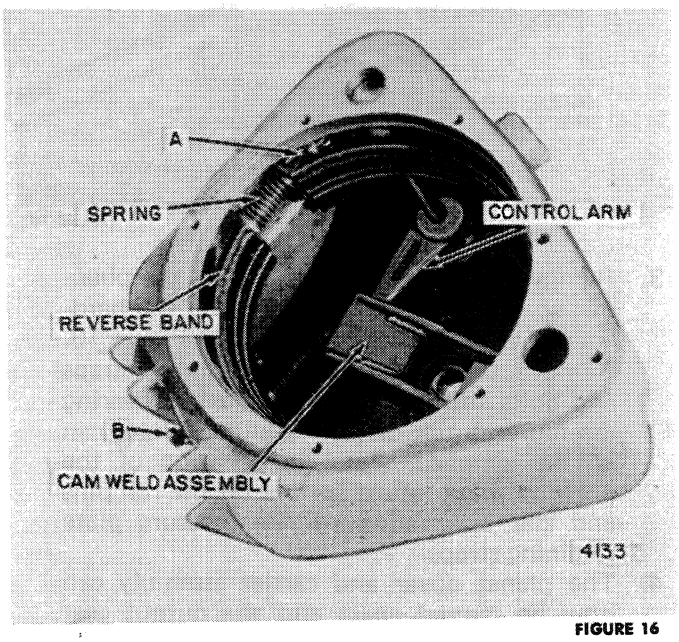


FIGURE 16

10. The clutch shaft, Figure 17, (shows all parts in place but removed from the gear box) can

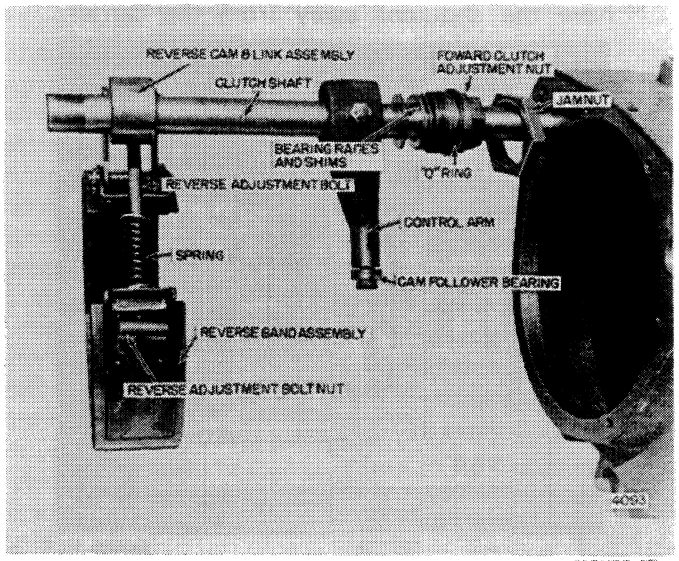


FIGURE 17

be removed by loosening the set screw in the control arm removing the jam nut and adjusting nut, sliding the shaft through the control arm until the pilot end drops out of its seat and then pulling the shaft assembly out of the box through the large opening.

11. Figure 17 shows the relative position of all parts on the clutch shaft. If the shaft has been removed be sure all parts are replaced in the proper location (particularly note that the keys are in place under the control arm and the reverse activating collar) otherwise the reverse will not work. The control arm must be located between the cam weld assembly and the end of the gear box, Figure 16.
12. Slide the planet carrier assembly into the gear box making sure the input shaft goes through the center of the cam weld assembly. Turn the whole assembly up on end, Figure 18, and push the gear box down over the planet carrier so that the gear box cover goes into place.
13. Place the collar over the input shaft and pull up on the shaft; at the same time slide the collar in against the bearing and lock it. Lock the set screw in the gear box cover, Figure 9.
14. Replace all other parts that have been removed. Be sure there are sufficient shims under adjustment nut A, Figure 18 so that the O-ring, Figure 17 seats on the smooth finished surface and not on the threads of the nut.

FIGURE 18

15. Reinstall the gear box in the machine. Install new gasket or coat the old gasket with sealing compound. Make sure all hardware has been tightened. Coat the threads of the reverse band support stud with permatex. (This stud also acts as the planetary drain plug.) Refill with new TYPE A automatic transmission fluid to the oil level check plug.
16. If it should be necessary to adjust the reverse band support stud, B, Figure 16, the lock nuts should be loosened and the threads tightened until resistance is felt against the band. The stud should then be backed off one half turn and the nuts tightened.

CHAIN CASE REPAIR

The chain case can be readily disassembled by the following steps:

1. Remove the inspection cover, Figure 8 and take the lower drive chain apart.
2. Remove the brake band, output shaft and the brake drum assembly, Figure 9.
3. Jack the wheel off the ground. Use the jack pad, Figure 8. Remove the axle housing bolts and pull the housing from the chain case.

NOTE: When the axle housing bolts are loosened, the chain case oil will flow out.

4. The idler shaft with the large sprocket and the small sprocket can be removed by first taking off each bearing cap, Figure 8 (note the position of the shims under the housings). The shaft may then be pulled or driven out. DO NOT LET THE BEARING CONE OR THE WASHER AT EACH END OF THE SHAFT FALL DOWN IN THE CHAIN CASE.

After the shaft is out, the sprockets can be removed through the inspection opening.

5. When replacing the parts be sure the washers are installed so the bevel in the I.D. of the washer fits the tapered shoulder of the shaft.
6. Add or remove shims between the chain case and the bearing housings to secure a two to six inch lbs. preload on the bearings. Do this to remove all end-play from the shaft.
7. Figure 19 shows the axle housing assembly disassembled. Remove the castellated nut and special washer from the axle. Tap the axle out of the sprocket, then tap the axle out of the axle housing.

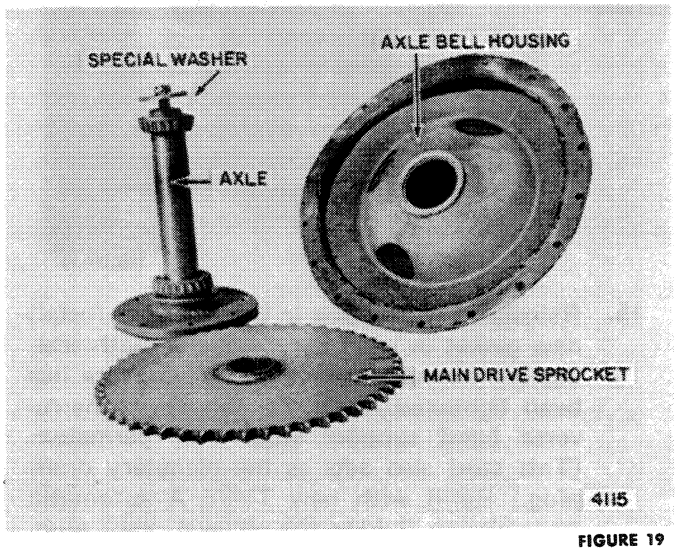


FIGURE 19

8. Reassemble the axle housing assembly by first packing the bearings with grease and installing a new grease seal. Tighten the nut to remove all end-play from the axle and bearings and install the cotter pin in the nut.
9. Install the axle housing assembly on the chain case first making sure the chain case is clean. Tighten the mounting bolts securely. Either install a new gasket or put sealer on the old gasket.
10. Check alignment of all sprockets. Install the chain by starting the end under the sprocket and then turn the axle to bring the chain around, (once the chain has been started on the sprocket it can't get off).
11. Connect the upper drive chain, place the chain on the drive sprocket and then carefully install the output shaft and brake drum assembly. Tighten these bolts securely. Check to make sure the chain is still in place on the sprockets. Install the brake band assembly. Adjust the upper chain as outlined in the Operator's Manual.
12. Connect the lower chain and move the idler down until the slack side of the chain can be deflected 1½". Tighten the idler bolt to 130 ft. lbs. torque.
13. Add SAE No. 90 oil to the chain case up to the oil level check plug, Figure 8. Install the cover.

CESSNA GEAR PUMP

DISASSEMBLY

1. Remove key from shaft.
2. Clean outside of pump thoroughly.
3. Clamp pump in vise, shaft down.
4. Use sharp tool to mark across front plate and rear housing. This will assure proper reassembly.
5. Remove cap screws (#1) 4 each.
6. Remove pump from vise — hold pump in hands and bump shaft against wooden block to separate front plate (#9) from rear housing (#2).
7. Remove diaphragm (#5) from front plate by prying with sharp tool.
8. Lift springs (#13) 2 each and steel balls (#14) 2 each, from front plate.
9. Lift back-up gasket (#6) from front plate.
10. Lift protector gasket (#7) from front plate.
11. Lift moulded "V" seal (#8) from front plate.
12. Remove shaft seal (#10) from front plate.

GENERAL

1. Clean and dry all parts.
2. Remove nicks and burrs from all parts with emery cloth.

GEAR ASSEMBLY

1. Inspect drive gear shaft (#4) for broken keyway.
2. Inspect both the drive gear and idler gear shafts at bearing points and seal areas for rough surfaces and excessive wear.
3. If shafts measure less than .4360 in bearing area, the gear assembly should be replaced. (One gear assembly may be replaced separately.) (Shafts and gears are available as assemblies only.)
4. Inspect gear face for scoring and excessive wear.
5. If gear width is below .566" the gear assembly should be replaced.
6. Snap rings (#11) on shaft should be in groove.
7. If edge of gear teeth is sharp — break edge with emery cloth.

INSPECT PARTS FOR WEAR