

FINAL DRIVE

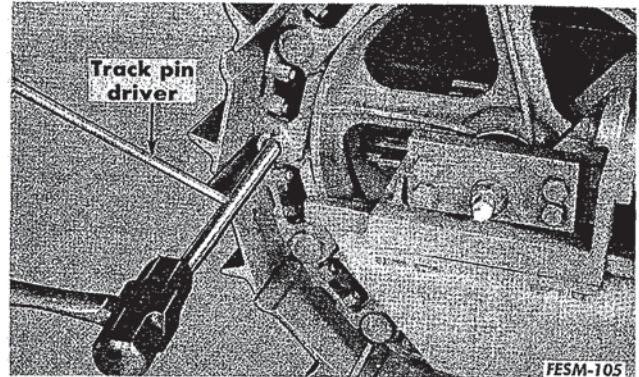
Servicing

Removal

1. Jack up rear of tractor on side to be removed.
2. Drive the tractor forward on level ground until the master link pin (identified by a roll pin) is in front of the front idler.
3. Loosen the track chain tension.
4. Remove the roll pin from the master link pin and using a heavy track pin-driver and sledge, drive out the master link pin. See Illust. 143.

NOTE: A track pin driver is made from a length of steel rod slightly smaller in diameter than the track pin. Another rod or pipe is welded to this to form a tee and serve as a handle. See Illust. 143.

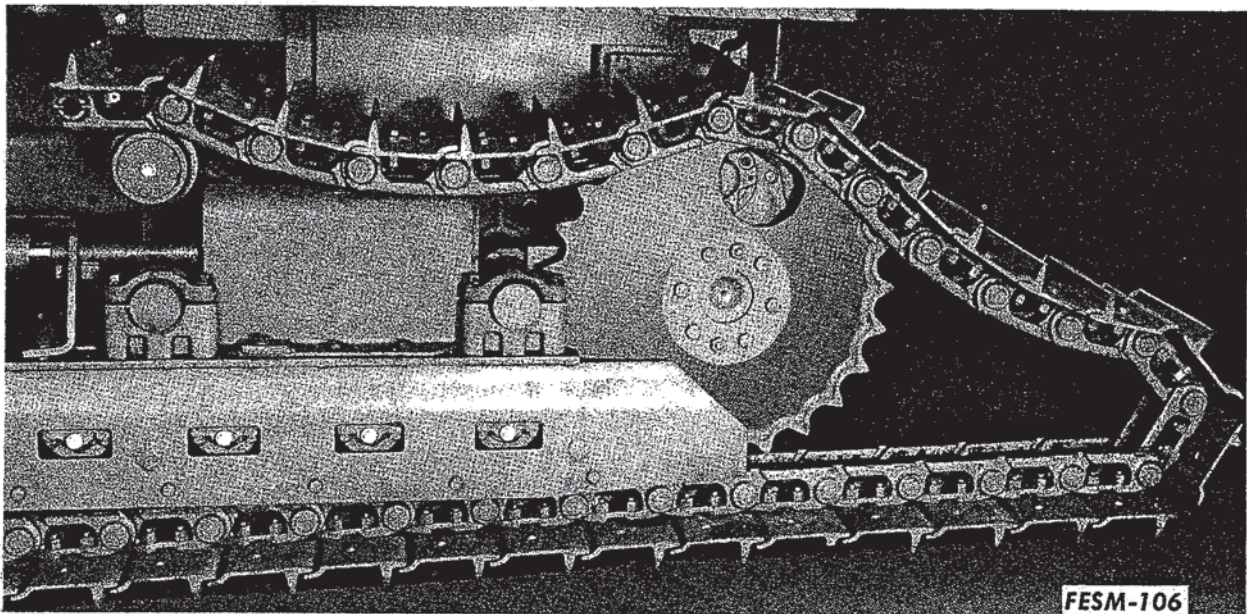
NOTE: A pin that does not move immediately should have a heavy bar used to back up the assembly.



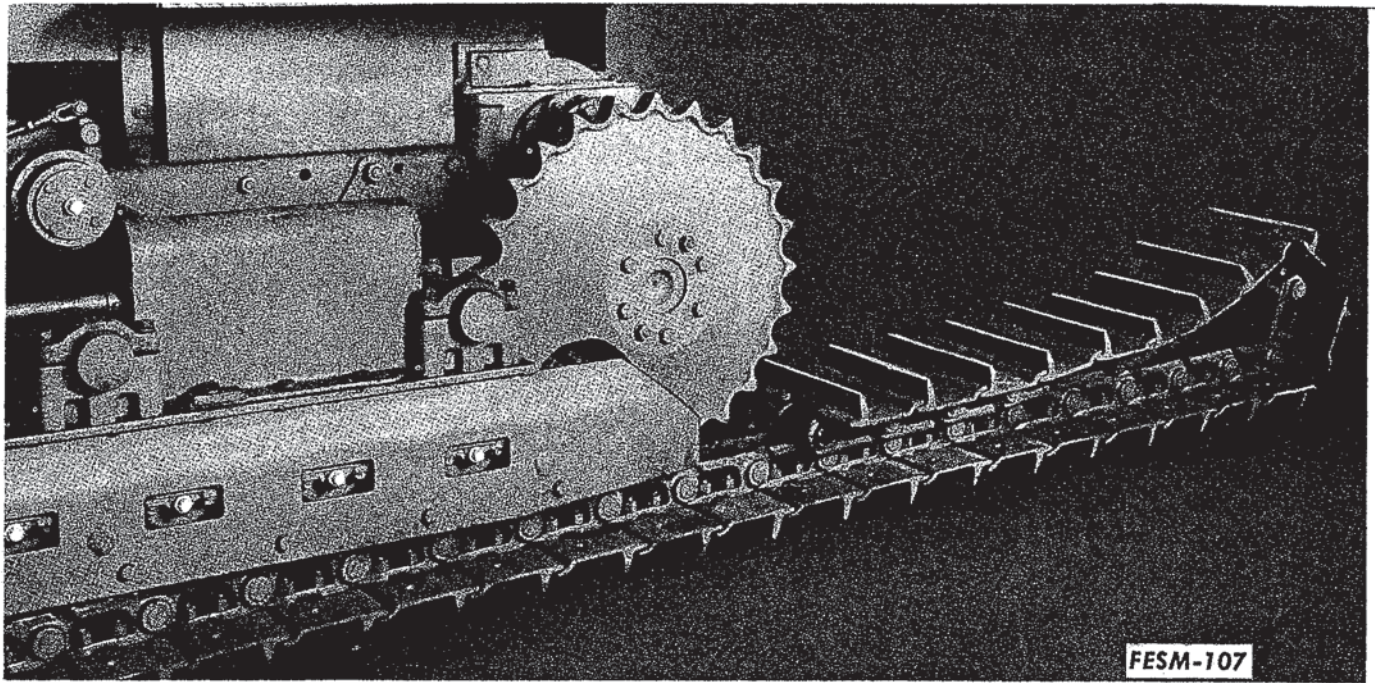
Illust. 143. Removing master pin.

5. Jack the tractor up until the rollers are clear of the chain. Place the tractor in reverse. Holding steering clutch back to brake position on the chain not being removed, slowly ease the clutch out, feeding the chain off of the sprocket as shown in Illusts. 144 and 145. Drag the track out from under the track frame.

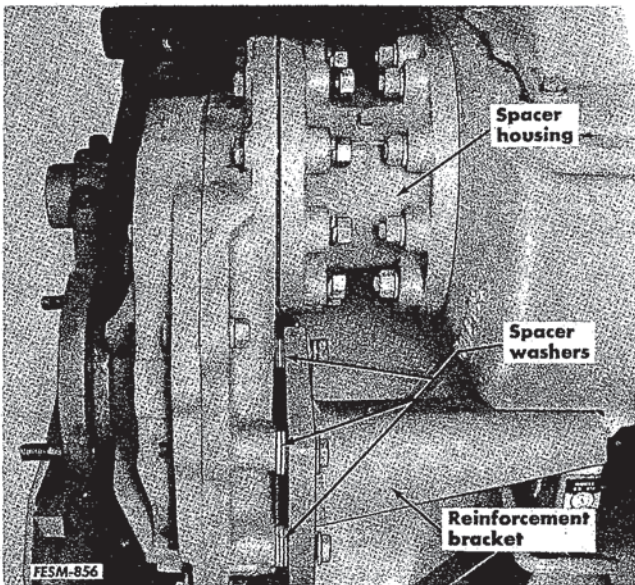
6. Remove sprocket.



Illust. 144. Removing track chain assembly.



Illust. 145. Removing track chain assembly.

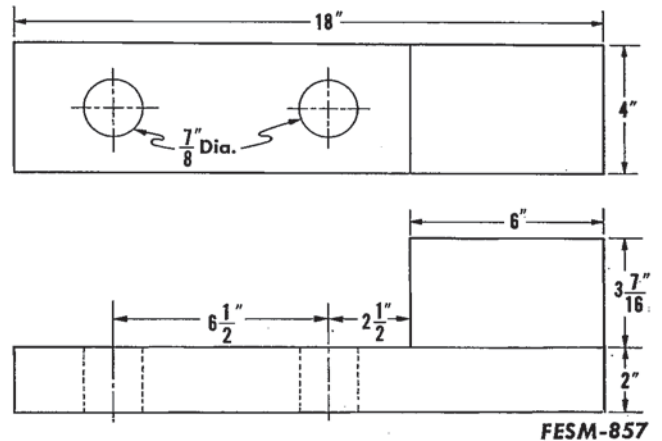


Illust. 146. Removing reinforcement bracket.

7. Remove final drive pinion bearing retainer, final drive pinion and thrust washer. See Illusts: 137 and 138.

8. Drain the grease from the final drive housing.

9. Remove final drive stops.



FESM-857

Illust. 147. Dimensions for final drive support jig.

10. Remove final drive reinforcement. Note number and location of washers between reinforcement and final drive housing. These must be installed in exact position removed. See Illust. 146.

11. Remove nuts holding gauge spacer housing to final drive housing. See Illust. 146.

12. Remove final drive using suitable sling or other device.

Disassembly

NOTE: Before starting disassembly of the final drive unit, it will facilitate reassembly if a jig is made to support the final drive assembly. Refer to Illust. 147 for dimensions of the jig. It will also be necessary to have a FES 2-31 shaft aligning tool for proper assembly.

(All Reference numbers refer to Illust. 148)

1. Place the final drive assembly on a work bench and remove the bull gear cap (20). Drive out the pin (19) and remove the nut (18).

2. Install three 3/8" NC jack screws in the outer edge of the housing. Remove the bolts from around the edge of the housing. Drive out the dowels from the jack screw side.

3. Separate the two housings by tightening the jack screws evenly until the bull gear shaft (9) is free of the bull gear inner bearing (21).

NOTE: Do not allow the inner bearing to drop on the floor when the bull gear shaft is pulled from it.

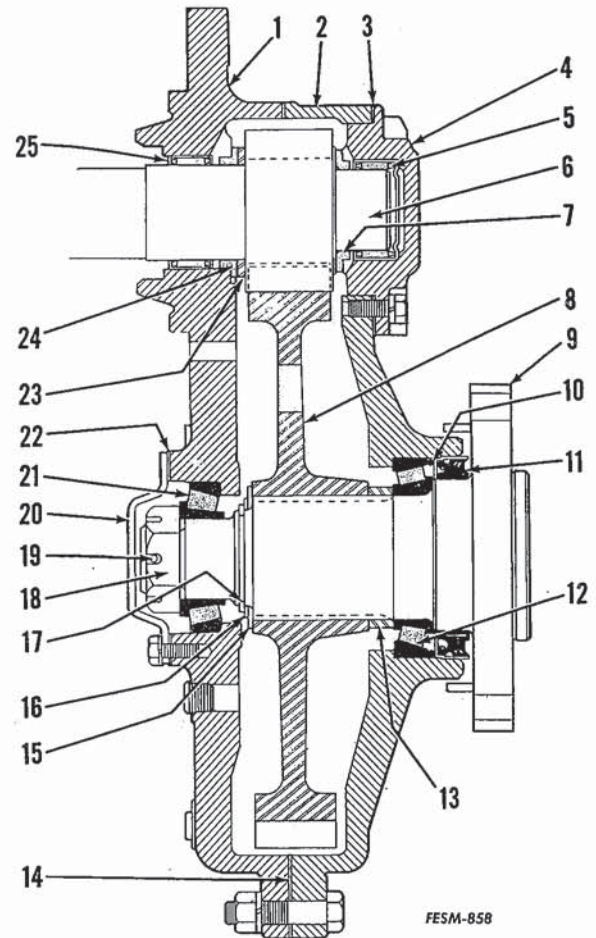
4. Remove the snap ring (17), shims (16) and inner spacer (15).

5. Drive the bull gear shaft (9) from the bull gear (8) and housing using a brass hammer or drift. Lift out the bull gear (8) and outer spacer (13).

6. Press the outer bearing cup from the housing. This will bring with it the outer bearing cone, spacer ring (10) and oil seal cover.

7. Remove the seal assembly (11) from the bull gear shaft (9).

NOTE: Take care not to damage the bull gear shaft when removing the seal assembly (11).



Illust. 148. Final drive assembly.

- | | |
|-------------------------------|-----------------------------|
| 1. Inner housing | 13. Outer spacer |
| 2. Outer housing | 14. Gasket |
| 3. Gasket | 15. Inner spacer |
| 4. Pinion bearing retainer | 16. Shims |
| 5. Pinion shaft outer bearing | 17. Snap ring |
| 6. Pinion shaft | 18. Nut |
| 7. Outer thrust bearing | 19. Pin |
| 8. Bull gear | 20. Cap |
| 9. Bull gear shaft | 21. Bull gear inner bearing |
| 10. Spacer ring | 22. Gasket |
| 11. Oil seal | 23. Thrust washer |
| 12. Bull gear outer bearing | 24. Inner thrust bearing |
| | 25. Inner bearing |

Cleaning, Inspection and Repair

1. Thoroughly clean all parts with solvent and blow dry with clean, compressed air.

2. Inspect the pinion shaft for damaged or worn teeth, splines or damaged bearing surfaces.

3. Inspect the bull gear for wear, damaged teeth or splines.

4. Inspect all bearings and replace if necessary.

5. If the bull gear shaft is to be reused, check for damaged splines. Check for damaged threads by installing the nut. If the threads are damaged, clean up with a thread chaser if possible. Damaged threads will result in false torque readings on reassembly.

6. Inspect the housing for cracks, damaged bores, or pulled threads.

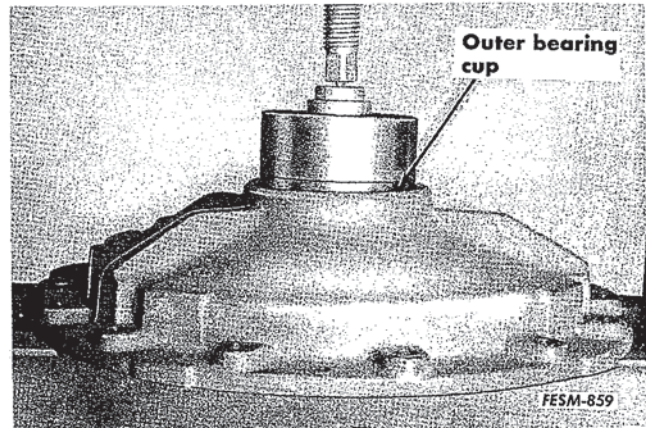
7. Repair or replace all damaged parts as necessary.

NOTE: If evidence of water entering the final drives is present, the operator should be cautioned to establish a preventative maintenance program to change the sprocket seal as necessary and to flush the lube compartment frequently. Use kerosene or diesel fuel. Operate in low gear around the yard - no load for 5 minutes. Drain and refill. See Operator's Manual.

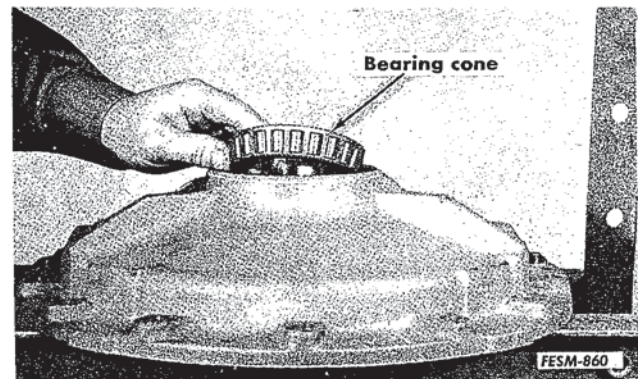
Reassembly

1. Coat the outer bearing cup and bore with type "0 or 00" Lithium base grease or equivalent.

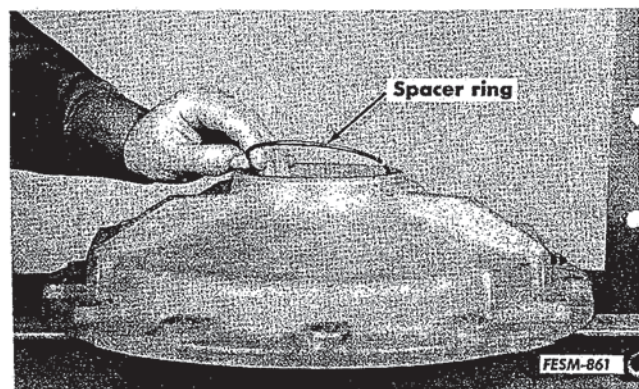
2. Press the outer bearing cup into the outer housing. See Illust. 149.



Illust. 149. Installing outer bearing cup.



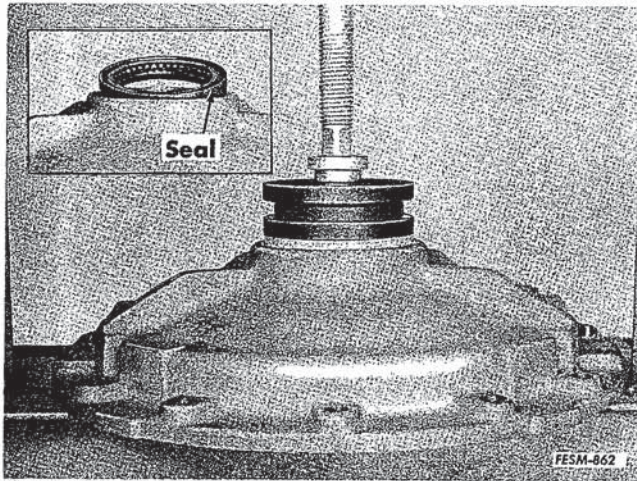
Illust. 150. Installing bearing cone in cup.



Illust. 151. Installing the spacer ring.

3. Install the bearing cone in the bearing cup after lubricating the bearing with a light coat of type "0 or 00" Lithium base grease. See Illust. 150.

4. Install the spacer ring into the bore on top of the bearing cone. See Illust. 151.



Illust. 152. Installing oil seal assembly.

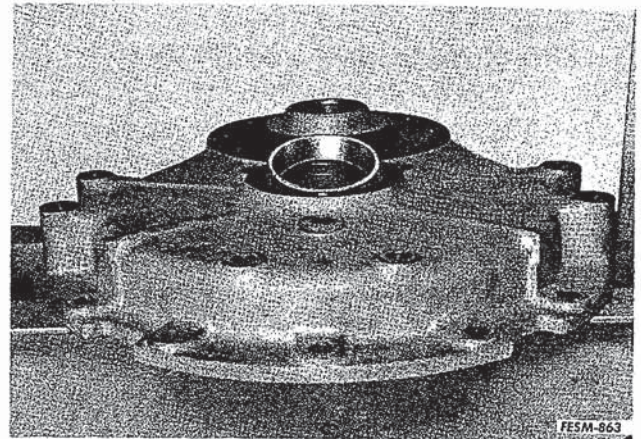
5. Install the oil seal assembly in the housing as a unit making sure the seal is started squarely. See Illust. 152. The seal cover is marked "oil side" which should be toward the inside.

NOTE: The seal should never be disassembled. Do Not remove any lubricant from the new seal.

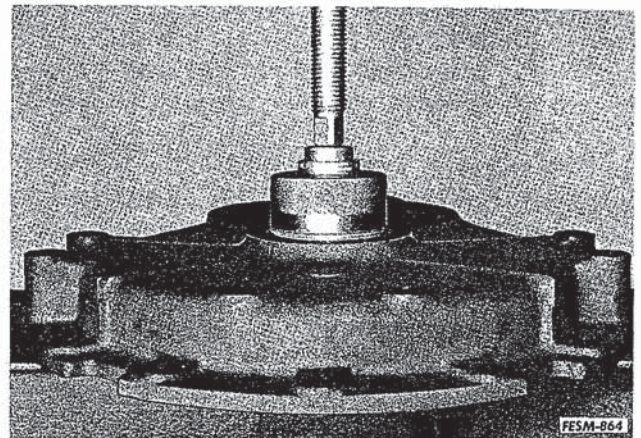
6. Press the oil seal into place, seating it against the spacer ring. See Illust. 152. The seal must be installed squarely. As it will not be possible to check this installation when the unit is completely assembled, it is imperative that the installation be done with extreme caution and accuracy.

7. Coat the bull gear inner bearing cup and housing bore with type "0 or 00" Lithium base grease or equivalent.

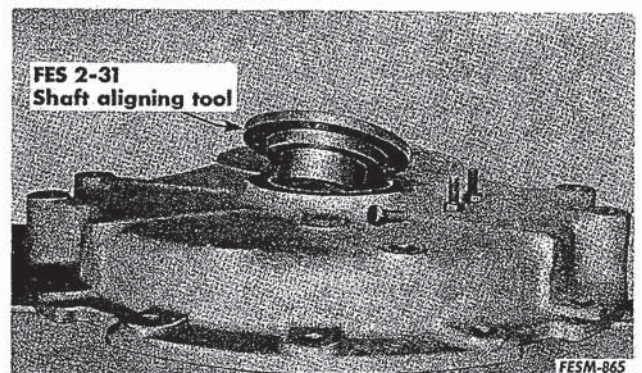
8. Install the bearing cup into the housing. See Illust. 153.



Illust. 153. Installing inner bearing cup.



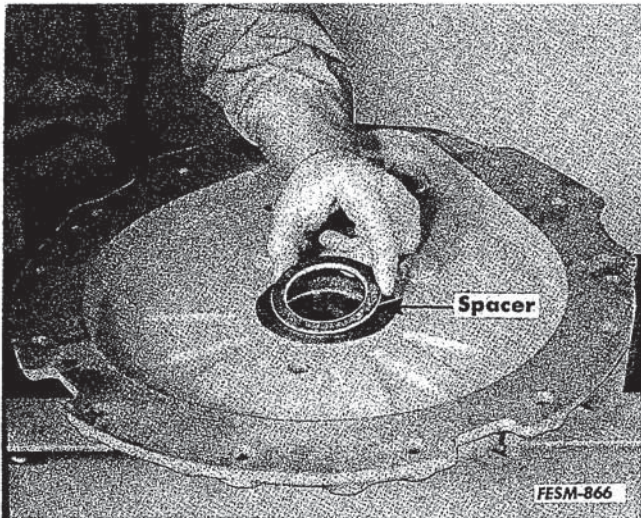
Illust. 154. Pressing in inner bearing cup.



Illust. 155. Installing shaft aligning tool.

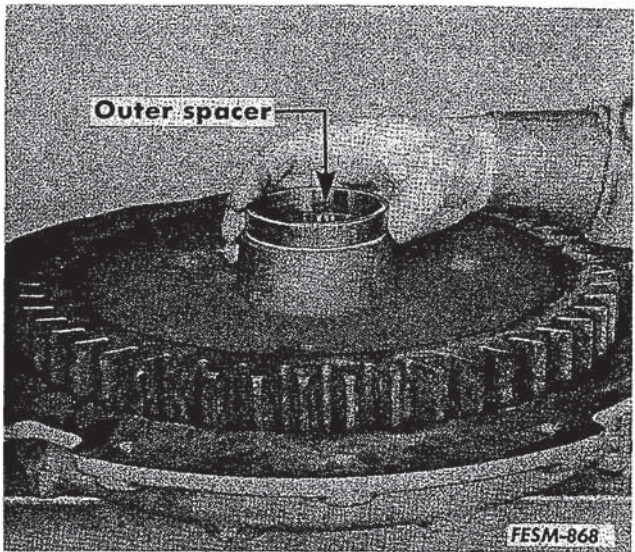
9. Press the inner bearing cup into the housing. See Illust. 154.

10. Install the shaft aligning tool, FES 2-31 on the inner housing. See Illust. 155.



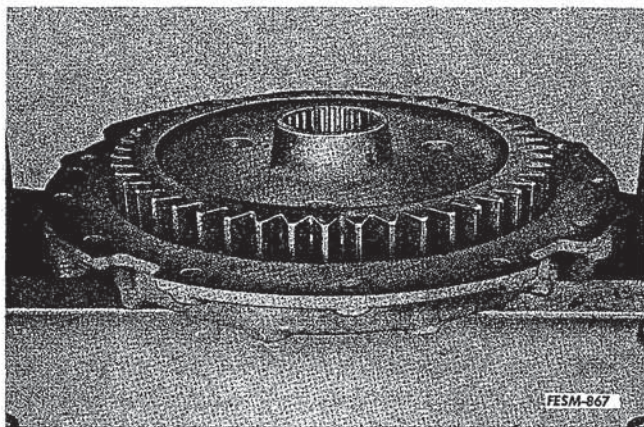
Illust. 156. Installing inner spacer.

11. Turn the inner housing over and place the inner spacer on the bull gear shaft bore with the chamfer up. See Illust. 156.



Illust. 158. Installing outer spacer.

13. Place the outer spacer on the hub of the bull gear. Align these parts as closely as possible to simplify installation of the shaft. See Illust. 158.



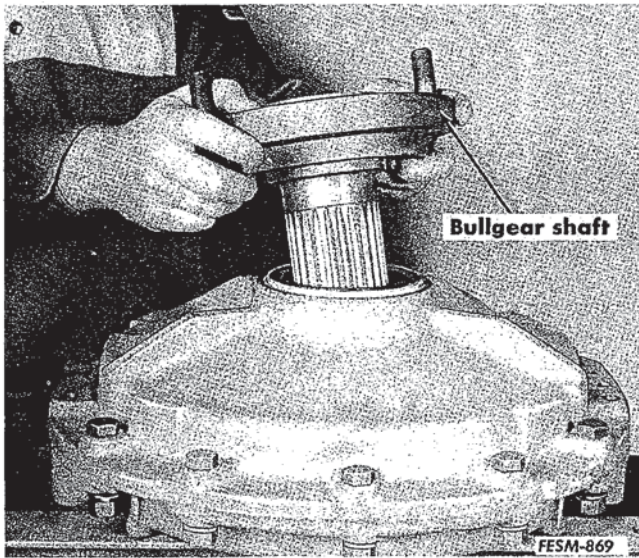
Illust. 157. Installing bull gear in housing.

12. Place the bull gear in the housing on the spacer. The longer end of the hub goes up. See Illust. 157.

14. Apply I.H. gasket maker to the machined surfaces of the inner and outer housing. Position the gasket on the inner housing, aligning the holes.

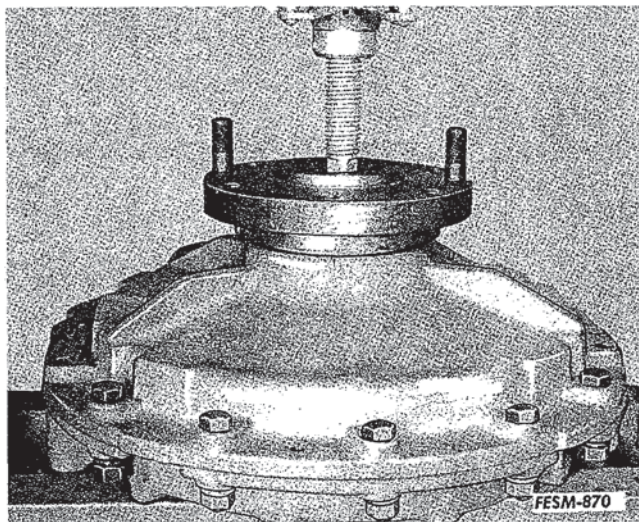
15. Install two 3/8 inch capscrews in the tapped holes in the outer housing provided for splitting the housing. This facilitates the alignment of the two halves of the housing. Lower the outer half of the housing onto the inner housing aligning the holes. Remove the two capscrews.

16. Install the bolts and capscrews around the outer portion of the housing. Prior to tightening the bolts, drive the dowel pins in to provide positive alignment. Tighten the bolts alternately and evenly until the two halves of the housing are together. Torque the bolts. Refer to specifications.



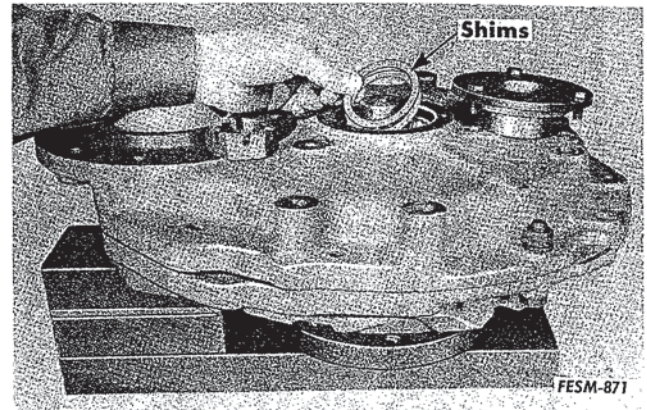
Illust. 159. Installing bull gear shaft.

17. Apply type "0 or 00" Lithium base grease to the areas of the bull gear shaft passing through the seal and bearing. Install the bull gear shaft, carefully, aligning the components and the splines. See Illust. 159.

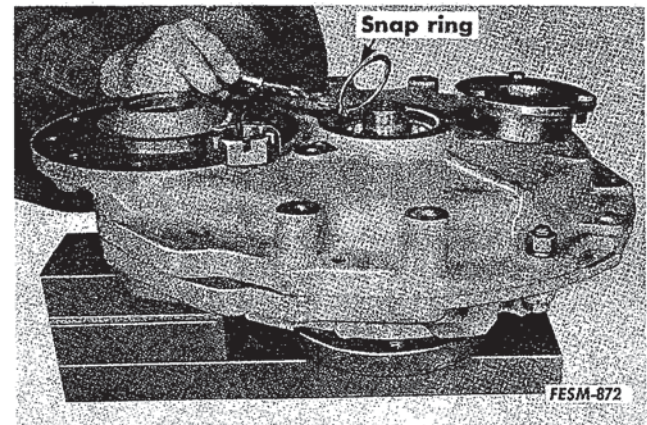


Illust. 160. Pressing in bull gear shaft.

18. Press the bull gear shaft into place. Be certain that the inner spacer does not catch on the shoulder of the shaft. See Illust. 160.



Illust. 161. Installing shims on bull gear.

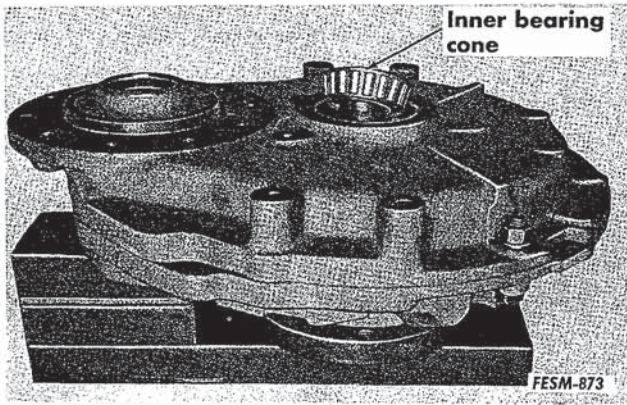


Illust. 162. Installing snap ring.

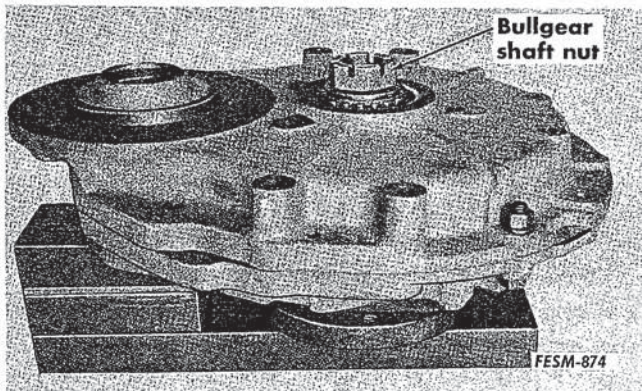
19. Place the assembly in the jig mentioned in the note at the beginning of this section.

20. Remove the shaft aligning tool. It will be necessary to install shims to prevent end movement of the bull gear on the bull gear shaft. See Illust. 161. In most cases, two shims will be required, however final determination of this cannot be determined until the snap ring is installed. See Illust. 162. If end movement of the bull gear can be felt with the snap ring installed, remove the snap ring and install another shim.

NOTE: Be certain that the edge of the shims did not drop into the snap ring groove.



Illust. 163. Installing inner bearing cone.



Illust. 164. Installing bull gear shaft nut.

21. Lubricate the inner bearing cone with a light coat of type "0 or 00" Lithium base grease or equivalent. Place the bearing cone on the bull gear shaft, see Illust. 163, and press the bearing on far enough so that the shaft nut can be started on the threads. See Illust. 164.

22. Install and tighten the bull gear shaft nut, forcing the bearing cone onto the shaft. See Illust. 164. Torque the nut to 200 ft. lbs. Back the nut off and retorque the nut to 170 ft. lbs. Continue to torque the nut until the roll pin can be installed. DO NOT exceed 200 ft. lbs.

NOTE: If the roll pin cannot be installed, back the nut off until the roll pin can be installed. It is permissible to accept a torque lower than 170 ft. lbs. when this occurs. Over torquing the nut will cause excessive bearing pre-load and result in premature bearing failure.

23. Remove the jig and attach the sling or chain for installing the final drive assembly on the tractor.

24. Install the bull gear cap with new gasket.

25. Fill the final drive housing with one quart SAE 90 oil.

Installation

1. Position the final drive housing onto the spacer using a new gasket. Install the bolts and nuts but do not tighten. Install the final drive stop.

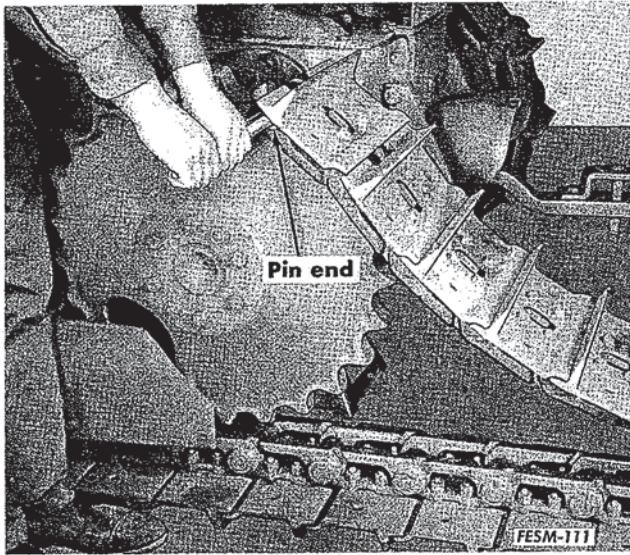
2. Install the reinforcement bracket using the same number of shims removed. Tighten all bolts and capscrews.

NOTE: Be certain the brake band anchor engages the brake band. If the reinforcement bracket does not go all the way in, it isn't properly seated. Do not pull into place with capscrews.

3. Install the final drive pinion with thrust washer. If any resistance is encountered on installing the pinion bearing retainer, refer to page 89 for procedure to check alignment of final drive housing.

NOTE: All bearings and thrust washers should be lubricated at time of assembly (including pinion bearings) with type "0 or 00" Lithium base grease or equivalent.

4. Install the sprocket and tighten the bolts to standard torque.



Illust. 165. Installing track chain.

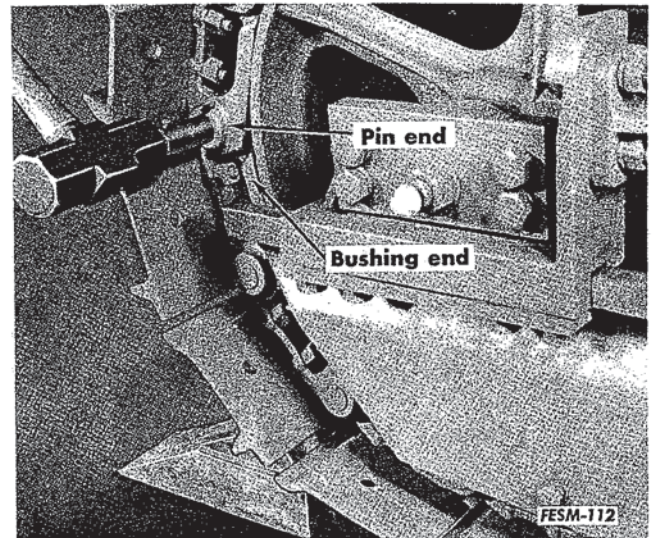
5. Slide track chain under the track frame. The pin end (without the bushing) should be in the same position as that shown in Illust. 165.

NOTE: If the track chain is installed reversed from the position shown, severe wear on the sprocket teeth and track link bushings will result.

6. Locate the tractor on the track until the sprocket is slightly ahead of the rear end of the track chain.

7. Place a bar through the master link pin hole. See Illust. 165. Pull the track chain up around the sprocket and forward over the track idler or idlers, and the front idler as the tractor is driven forward.

8. Position a block (8 to 10 inches high) under the grouser of the shoe on the second from last link of the tractor. This will hold the track chain against the front idler.



Illust. 166. Installing master pin.

9. Apply just enough power in the forward speed by slipping the clutch to take the slack out of the bottom part of the track chain. Install the master pin into place (see Illust. 166), and secure it with a roll pin. Be sure that the roll pin hole in the master pin has not collapsed due to difficult removal. Resize if necessary with a drill. If tractor has inside front mounted equipment, it may be necessary to turn the master pin to the rear sprocket, by moving the tractor forward, to install roll pin.

NOTE: The wide end of the link is the pin end and the narrow end of the link is the bushing end. The link must be installed as shown in Illust. 166. Reversing the links will accelerate bushing wear.

10. Adjust track chain tension.

NOTE: Continuous shearing of the roll pin lock at the master pin is a result of too loose a fit of the master pin in the links.