

STEERING SYSTEM

STEERING PLANETARY

9. STEERING PLANETARY BRAKE AND PIVOT BRAKE ADJUSTMENTS (Ref. Nos. Refer to Illust. 26) - Continued

Planetary Brake and Pivot Brake Major Adjustment - Continued

6. Remove the 1-1/2 inch square socket pipe plug from the right hand side of the main frame to gain access to the brake shoe adjusting screw (21). Access to the plug is provided in the front frame below the fender (Illust. 25).

7. Insert a 1/2 inch drive extension in the end of the adjusting screw (21) and turn the screw until the pointer (5) on the bellcrank (7) is aligned with the pin on the rear frame cover (refer to Insert A, Illust. 26). Be sure release rod (19) is free to move and not binding at the front end as this adjustment is being performed. Install the 1-1/2 inch pipe plug.

8. Pull the booster piston (23) out until it is fully extended. Measure the distance from the center of the booster mounting pin (26) to the center of the mounting pin opening in the clevis (25). This distance must be 13-1/2 inches. If adjustment is necessary, loosen the clevis lock screw (24) and turn the clevis (25) until this distance is obtained with the piston fully extended. Tighten the lock screw (24). Secure the booster to the bellcrank (7) with the end pin (6) and cotter.

9. Position the front of the release rod (19) so it will not bind and reconnect the spring (10) to the upper end of the bellcrank (7). The pointer (5) will now move up from the pin on the rear frame cover (refer to Insert A, Illust. 26).

10. Loosen the lock nuts (18) and turn the turnbuckle (17) until the pin (11) enters the rod and hand lever hub freely. Secure the pin (11) with the cotter. Continue adjusting the turnbuckle until 1-1/2 inches of free travel is measured at the top of the hand lever as shown in Illust. 30. Tighten the lock nuts (18).

11. Check to be sure that the alignment mark on the lever (1) is aligned with the alignment mark on the booster housing (refer to Insert B, Illust. 26). If the marks are not aligned, disconnect the clevis (22) at the lever. Move the lever (1) until the alignment marks coincide and hold the lever in this position. Loosen the lock nut on the clevis (22) and turn the clevis as required to line up the mounting holes in the lever and clevis. Secure with the end pin (2) and cotter. Tighten the lock nut (3).

12. Loosen the lock nut (8) and turn the adjusting screw (9) until the hand lever can be

pulled 2-1/4 inches (measured from the top edge of the front seat support) without bowing the lever. Tighten the lock nut (8).

13. Repeat Step 4 through 12 for adjustment on the left side of unit.

14. Secure the battery bottom bracket to the seat support bar. Secure the rear of the bracket to the seat side sheets.

15. Install the batteries in their original location using the markings made in removal. Install and secure the battery support top bracket. Connect the battery cables.

16. Secure the seat frame to the seat side sheets with the four cap screws and lock washers. Install the seat bottom cushion.

17. Start and run the engine at low idle. Pull back on the steering levers. The adjusted lever travel of 2-1/4 inches should reduce to 1-3/4 to 2 inches. If necessary adjust screw (9) until the 1-3/4 to 2 inch dimension is obtained with the engine running. Tighten lock nut (8). Stop the engine.

18. With the foot pedal back against its stop, check that the bellcrank (C) is against the stop (D) (machined surface on main frame cover) or can be pushed against the stop. If the bellcrank will not rest against the stop, proceed as follows:

- Remove the cotter and rod end pin (12). Push the bellcrank against the stop (D).
- Loosen the lock nut (14) and turn the clevis (13) as required to reconnect it to the foot pedal without disturbing the position of the pedal or bellcrank (C).
- Secure the clevis to the pedal with the end pin and cotter.

19. Depress the foot pedal and check for free travel (8-3/4 to 9-1/4 inches). If the proper free travel is not obtained, it may be due to binding of linkage or the adjustment procedure was not performed correctly and should be rechecked.

20. Check the movement of the steering levers as described under "Steering Lever Linkage Adjustment."

21. Secure the rear cover (2, Illust. 1) to the rear frame and fuel tank support with the cap screws, lock washers and nuts. If equipped with a scarifier, secure the hydraulic oil tube clamp (5, Illust. 1).

22. Install the rear platform and the right hand platform.

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10. REMOVAL

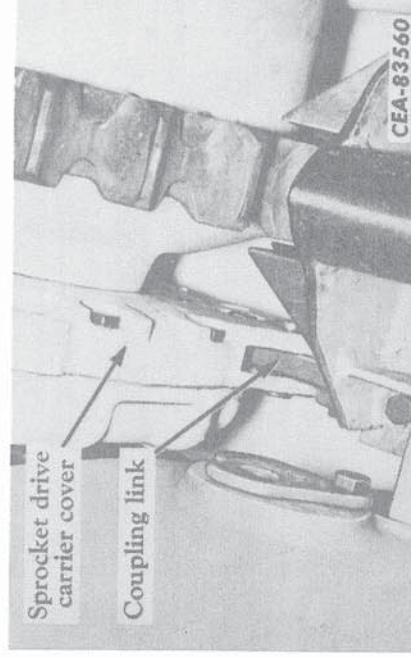
NOTE: Remove all dirt accumulation from the rear main frame cover. Excessive dirt pack-up could cause binding of external brake linkage and result in premature brake failure.

The pivot brake assemblies on each side of the tractor are the same; therefore, all parts are interchangeable. The removal, disassembly, inspection, repair, reassembly and installation procedures are also the same for each side.

1. Remove the sprocket rock shield (if equipped). Disconnect the track chain and clear it from the sprocket. It is not necessary to remove the track chain from under the track frame.
2. Drain the rear main frame by removing the plug in the underside of the frame.
3. To facilitate removal and installation of the pivot brake actuating cable (7, Illustr. 3), the seat frame, batteries and battery support must be removed.

4. Remove the inspection cover located behind the pivot brake actuating cable. It will be necessary to work through this opening to free the actuating lever assembly from the pivot brake.

5. Remove the mounting bolts securing the actuating lever support (1, Illustr. 32) to the pivot brake. Swing the lever support, with spring (16) and lever (2) attached, out of the way.

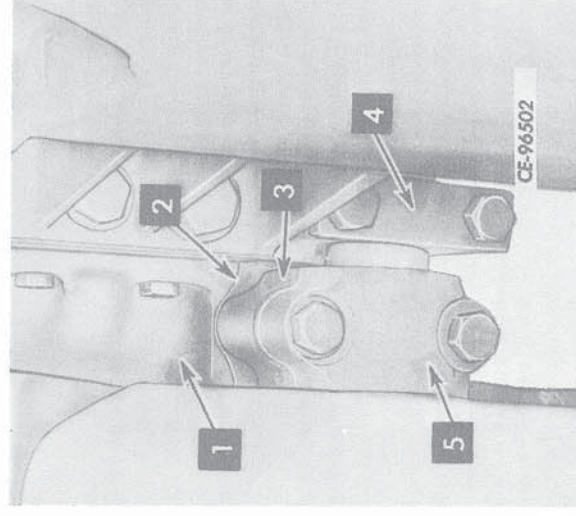


Illustr. 27
Track Frame Coupling Link
(Model 250 Loaders Only).

6. **LOADERS ONLY:** Remove the track frame coupling link. Remove the cap screws, washers and link pin locks securing the link pins to the coupling at the track frame and at the bottom of the sprocket drive carrier cover. Tap out the link pins to remove the coupling link (Illustr. 27).

TD-20 (SERIES C) ONLY: Remove the outer cap securing the track frame pivot shaft to the sprocket drive carrier. Loosen the mounting bolts on the inner cap on each side of the tractor. Pry forward slightly on the pivot shaft to remove the shims between the spacer and sprocket drive carrier (Illustr. 28). The spacer should be worked free of the carrier when the sprocket drive assembly is removed from the unit. Keep the shims together with the spacer and outer cap to facilitate reassembly.

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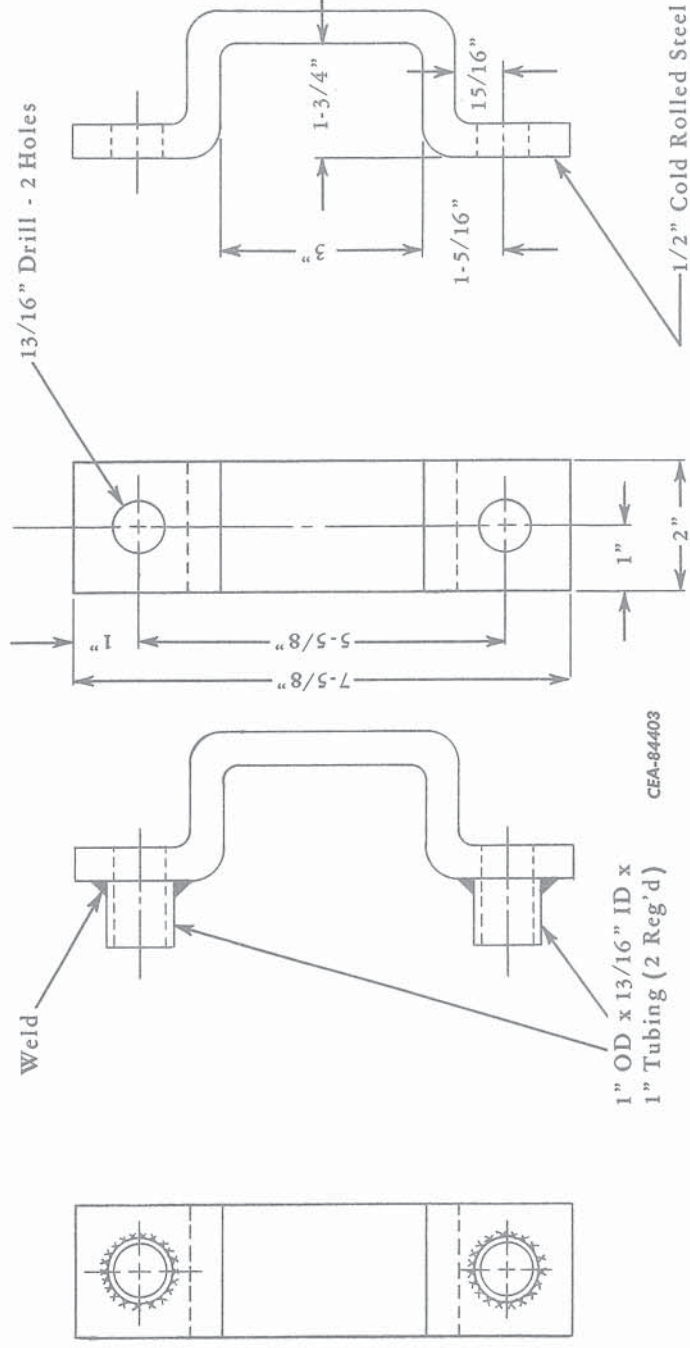
Illustr. 28
Pivot Shaft Mounting Caps
(TD-20 SERIES C Only).

1. Sprocket drive carrier.
2. Outer cap shims.
3. Spacer.
4. Inner cap.
5. Outer cap.

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PIVOT BRAKES

10. REMOVAL - Continued



Illust. 29

Detailed Parts for Sprocket Drive Lifting Hook Adapter Shown in Illust. 31.

7. Jack up the rear of the unit until the sprocket clears the track chairs.
8. To remove the sprocket drive assembly as a unit, a lifting hook and adapter should be made as shown in Illust. 29 and 30.
9. Remove the cap screws and nuts securing the sprocket drive carrier to the rear main frame. Remove two of the sprocket drive carrier cover mounting bolts and use two bolts (three inches in length) to secure the adapter (Illust. 29) to the cover. Secure the lifting hook (Illust. 30) and hoist to the adapter (Illust. 31).

Turn in the three hexagon-socket set screws provided in the sprocket drive carrier until pry bars can be inserted to pry the assembly from the studs and dowel. Pull the assembly straight away from the frame until the pinion shaft clears the frame. On the TD-20 (SERIES C), the pivot shaft spacer (Illust. 28) should be worked free of the carrier as the assembly is being removed.

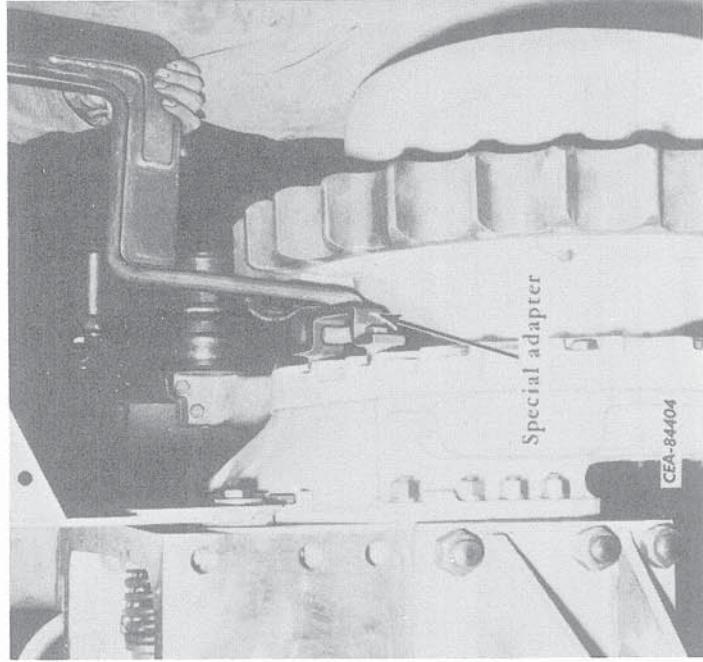
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Illust. 30
Detailed Parts for Lifting Hook Shown in Illust. 31.

STEERING SYSTEM

PIVOT BRAKES

10. REMOVAL - Continued



11. DISASSEMBLY (Ref. Nos. Refer to Illust. 32)

1. Support the sprocket drive assembly in a vertical position.
2. Remove the cap screws securing the pressure plate (13) to the sprocket drive carrier. Remove the pressure plate and actuator assembly from the sprocket drive pinion shaft.
- To separate this assembly, pry the three return springs (15) from the ear lugs of the actuator (12) using a screwdriver. Remove the actuator and the five steel balls (14) from the pressure plate.
3. Remove the cap screws securing the retainer (4) to the sprocket drive carrier and remove the retainer. Slide the separator plates (5) and friction plates (6) from the brake hub (7).
4. Remove the outer retaining ring (8) from the sprocket drive pinion shaft. Slide the brake hub (7) from the shaft.

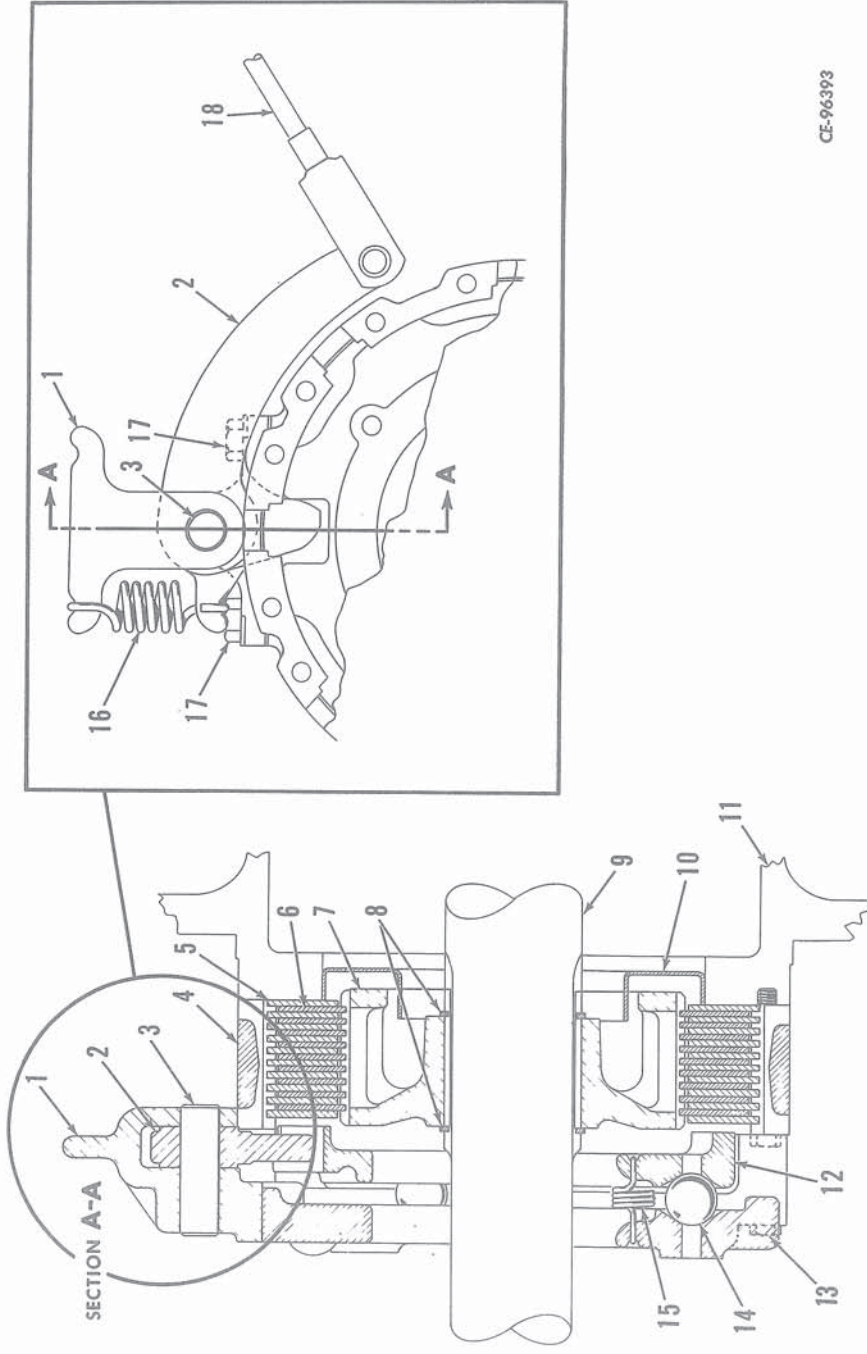
Illust. 31 Installing Sprocket Drive Special Lifting Hook and Adapter. (TD-20 SERIES C Shown, Loaders Similar).

1. Actuating lever support.
2. Actuating lever.
3. Actuating lever pivot shaft.
4. Separator plate retainer.
5. Separator plates.
6. Friction plates.
7. Pivot brake hub.
8. Hub retaining rings.
9. Sprocket drive pinion shaft.

Legend for Illust. 32

10. Oil dam.
11. Sprocket drive carrier.
12. Pivot brake actuator.
13. Actuator pressure plate.
14. Steel ball.
15. Actuator return spring.
16. Actuating lever return spring.
17. Lever support mounting bolts.
18. Pivot brake actuating cable.

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Illust. 32
Pivot Brake Assembly Cross Section.

12. INSPECTION AND REPAIR

1. Inspect the separator and friction plates for distortion and excessive wear at the braking surface. Refer to Par. 2, "SPECIFICATIONS" for dimension of new parts.

The braking surface on both sides of the friction plates are grooved to allow oil to squeeze out when the brakes are applied. All these groovings should be cleaned thoroughly.

2. Inspect the friction plate and the pivot brake hub splines for excessive wear and damage. Replace parts as necessary.

3. Check the pressure plate and actuator ramps for wear that may prevent the ball from rolling smoothly up the ramp. If any corrosion is found, polish the ramp with emery cloth. Inspect the steel balls and, if they are out-of-round or too rough to be polished with emery cloth, replace them with new balls.

4. Inspect the extension springs for excessive wear at the attaching loops or loss of tension needed to hold the actuator firmly against the balls. Refer to Par. 2, "SPECIFICATIONS."
5. Check the actuating lever return spring (16, Illust. 32) for damage and tension (refer to Par. 2, "SPECIFICATIONS").
6. Check the brake pedal action. New bushings are required if excessive looseness causes pedal wobble. If a binding movement exists, it may be possible to eliminate it by lubricating at the grease fitting in the pedal hub.

Remove the brake pedal to install the new bushings as follows:

- a. Remove the center and right front floor plates.

(Continued on next page)

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PIVOT BRAKES

12. INSPECTION AND REPAIR - Continued

- b. Disconnect the brake rod yoke from the bottom of the pedal and unhook the pedal return spring. Check spring tension. Refer to Par. 2, "SPECIFICATIONS."
- c. Drive out the pedal shaft retaining pin installed through the side of pedal bracket arm and remove the shaft.
- d. Press out both bushings installed in the pedal bore.
- e. Press in new bushings until each is flush with the outer edges to allow space between the bushings for lubrication.
- f. Reinstall the brake pedal, linkage and floor plates.

13. REASSEMBLY (Ref. Nos. Refer to Illust. 32)

1. Position the pivot brake hub (7) on the sprocket drive pinion shaft splines until it bottoms on the inner retaining ring (8). Secure with the outer ring (8).
2. Install and secure the retainer (4) to the sprocket drive carrier.
3. Alternately install ten separator plates (5) and nine friction plates (6) between the brake hub and plate retainer. These plates are installed correctly when the first and last plates to be installed are the externally tanged separator plates (5).
4. If the actuator assembly was disassembled, reassemble as follows. Place the five steel balls (14) in the ramp of the pressure plate (13). Position the actuator (12) over the pressure plate aligning the actuator ramp with the steel balls and secure the assembly with the three return springs (15).

5. Position the actuator assembly over the sprocket drive pinion shaft and secure the pressure plate (13) to the sprocket drive carrier.

14. INSTALLATION

NOTE: Be sure the three hexagon-socket set screws in the sprocket drive carrier have been turned back into place.

1. Apply Permatex No. 3 on the sprocket drive vent and the pivot brake cooling port sealing rings and install the sealing rings in the rear of the carrier.

2. Sling the assembly with the special lifting hook and adapter as was done in removal and move the assembly toward the rear main frame until two long guide bolts can be started in the frame. Install the guide bolts into the bolt openings at the top of the carrier. Use a pry bar between the track chain and sprocket planet carrier to align the assembly with the studs. Tighten the guide bolts until the carrier is on the studs and then pry the carrier against the frame. If the spline on the inner end of the pinion shaft does not enter the sun gear in the steering planetary, turn the sprocket while prying the assembly into position.

NOTE: TD-20 (SERIES C): As the sprocket drive assembly is positioned against the frame, the pivot shaft spacer (Illust. 28) must be positioned between the pivot shaft and sprocket carrier.

3. Install the nuts on the studs. Remove the two guide bolts and install the regular bolts. Torque the nuts and bolts to the amount specified in Par. 2, "SPECIFICATIONS."
4. Remove the jack from under the tractor.
5. LOADERS ONLY: Install the track frame coupling link (Illust. 27). Place the link in position and secure to the track frame coupling and sprocket drive carrier cover with the link pins. Install the link pin locks and secure with cap screws and washers.

TD-20 (SERIES C) ONLY: Install the same amount of shims that were removed between the sprocket carrier and spacer. To provide clearance for installing shims, the bolts securing the pivot shaft inner cap on each side of the tractor must be loosened (Illust. 28). Pry the pivot shaft spacer forward until the gap between the carrier and spacer is great enough to install the original shim pack. Install the outer pivot shaft cap and bolts. Tighten the bolts of the outer cap and two inner caps. (Refer to Par. 2, "SPECIFICATIONS" for the proper torque.)

NOTE: If a new sprocket drive carrier outer pivot shaft cap or pivot shaft spacer is installed, or if the number of shims (1, Illust. 33) previously used is unknown and must be determined, proceed as follows (refer to Illust. 33): Be sure the pivot shaft inner cap (2) on each side of the main frame is fully torqued. Install a dial indicator (5) with a magnetic base on the rear of the pivot shaft and place the indicator pointer against the planet gear carrier (6). Set the indicator at zero. Using a prybar (7) between the pivot shaft (4) and sprocket teeth, deflect the shaft until the indicator reads

PIVOT BRAKES

remove shims as needed to obtain this reading with the outer cap fully torqued. (Refer to Par. 2, "SPECIFICATIONS" for the proper torque.)

6. Working through the inspection cover opening in the rear main frame cover, position the actuating lever assembly on the pivot brake assembly so the finger of the lever (2, Illust. 32) engages the slot in the brake actuator (12). Secure the support (1) with the mounting bolts (17).

7. Install the inspection cover using a new gasket. Apply Permatex No. 3 to the inspection cover side of the cover gasket.

8. Install the batteries, battery support and the seat frame.

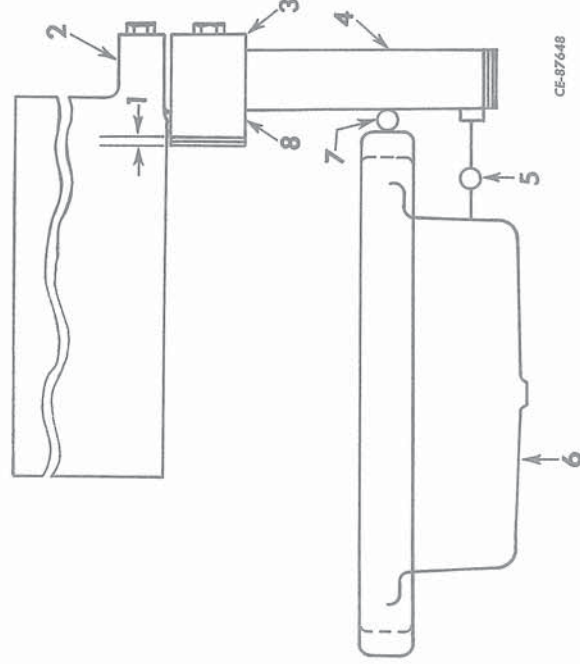
9. Be sure the drain plug in the underside of the rear main frame is installed and tight. Fill the rear main frame with the lubricant and to the level described in the operator's manual.

10. Install the track chain (refer to Section 10, "TRACKS AND TRACK FRAME").

11. Install the sprocket rock shield (if equipped).

12. Start the engine and check for leakage. Operate the unit and check brake operation. If the brakes do not function properly, they must be adjusted. (Refer to Par. 9, "STEERING PLANETARY BRAKE AND PIVOT BRAKE ADJUSTMENTS.")

13. After the engine is up to operating temperature, recheck the oil level in the rear main frame and add if necessary. Check the level in the sprocket drive as described in the operator's manual.



Illust. 33

Pivot Shaft Shimming Drawing.

1. Shim pack.
2. Inner cap.
3. Outer cap.
4. Pivot shaft.
5. Dial indicator.
6. Planet gear carrier.
7. Prybar.
8. Spacer.

approx. minus .015 inch (pointer rotation counterclockwise) at this time, measure the distance between the spacer (8) and the sprocket drive carrier with a feeler gauge (both at the top and bottom of spacer). This is the amount of shims (1) to be used. Install the shims and remove the prybar (do not disturb the dial indicator). Secure the outer cap (3) using full torque and note the indicator reading. Reading obtained must be zero to minus .006 inch. If necessary, remove the outer cap and add or