CUDE 22459

SERVICE MANUAL

INTERNATIONAL

125 & 100 LOADER

'B' SERIES II

SM - 45

INTERNATIONAL HARVESTER COMPANY
OF GREAT BRITAIN LIMITED

GROUP INDEX

GROUP 11
STEERING CLUTCHES & BRAKES

CONTENTS

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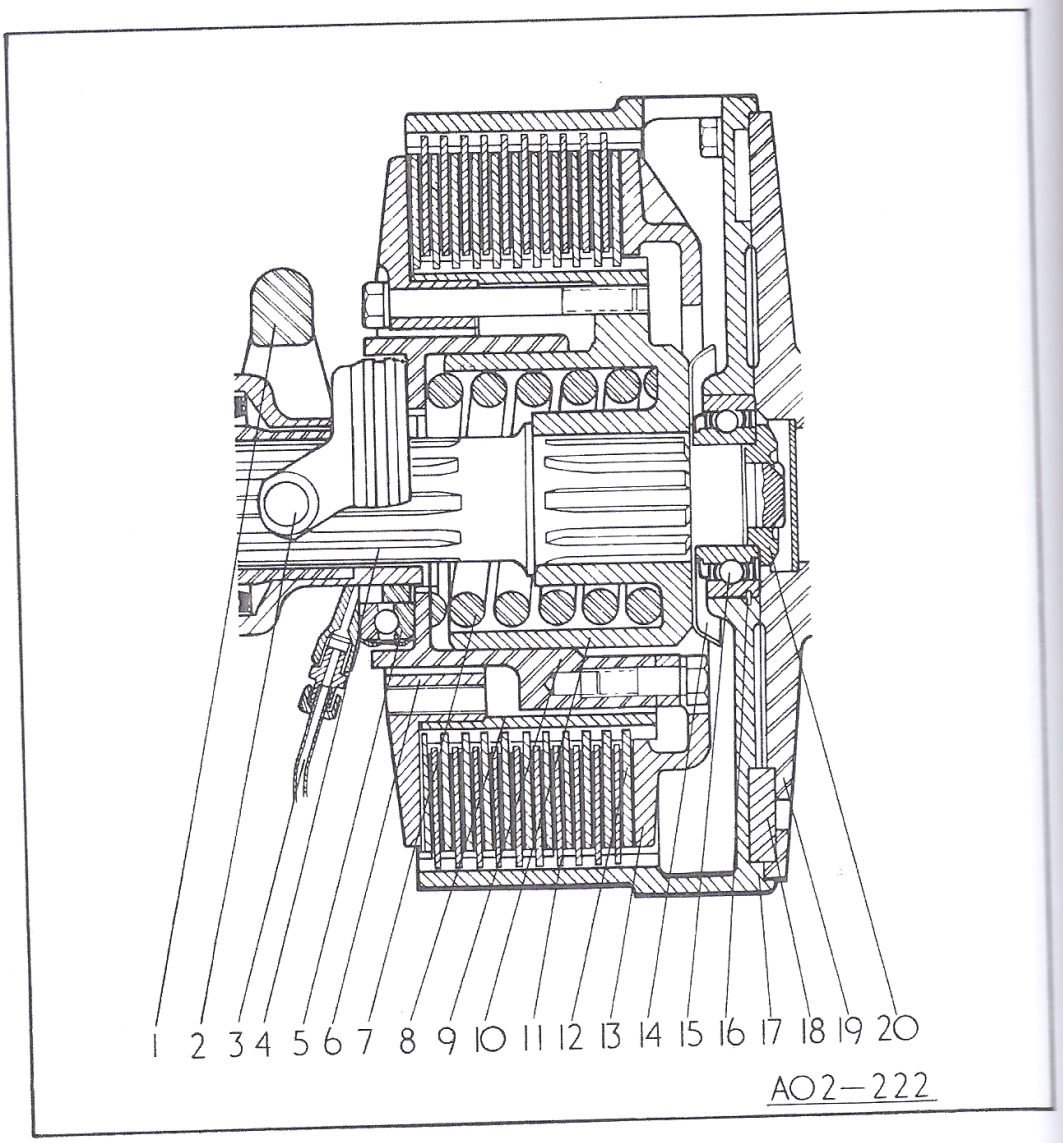
STEERING CLUTCHES & BRAKES
GROUP 11
PAGE 1



1. Release fork
2. Release bearing pivot
3. Lubrication pipe
4. Clutch shaft
5. Release bearing
6. Hub plate
7. Pressure spring
8. Hub splines
9. Spring retainer
10. Hub
11. Driving disc
12. Driven disc
13. Pressure plate
14. Oil slinger
15. Pilot bearing
16. Circlip
17. Clutch drum
18. Dowel
19. Bull pinion drive shaft
20. Staked nut

Fig. 1

1 DESCRIPTIO

The steeri
compartments
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Fig. 1 sh
clutch unit.

2 STEERING C

2a. REMOVAL

(a) Remove th
(2-2) and slide

1 DESCRIPTION

The steering clutches are located in individual compartments between the bevel gear and the final drives. Disengagement is achieved by hydraulic cylinders operating through a lever which is splined onto the release fork shaft. The clutches are dry, multiple disc spring loaded units. Lip type seals in the bevel gear adjusters ensure that the compartments remain dry.

Braking is by bands which contract onto the clutch drums, and is controlled by left and right pedals. A ratchet arrangement on the right pedal allows this brake to be locked in the 'ON' position for parking purposes.

Fig. 1 shows a cross section of the steering clutch unit.

2 STEERING CYLINDERS

2a. REMOVAL

(a) Remove the split pin (1-2). Depress the lever (2-2) and slide the operator's seat from its runners.

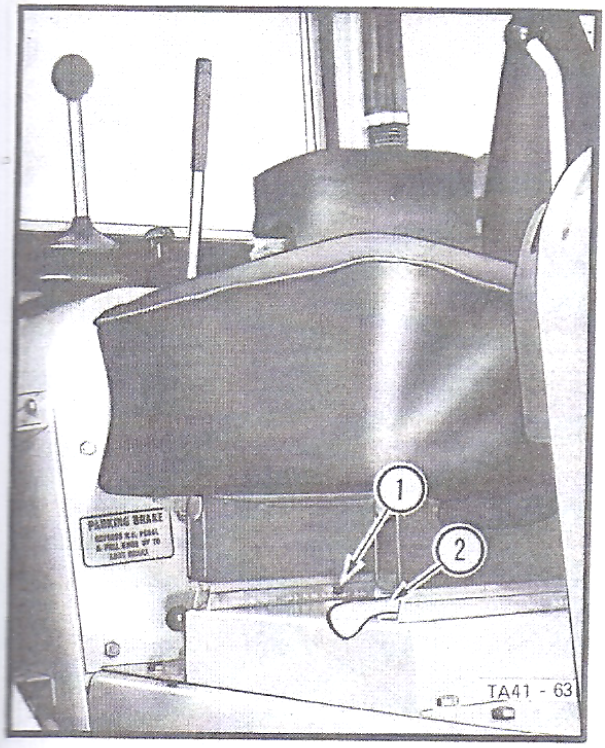


Fig. 2

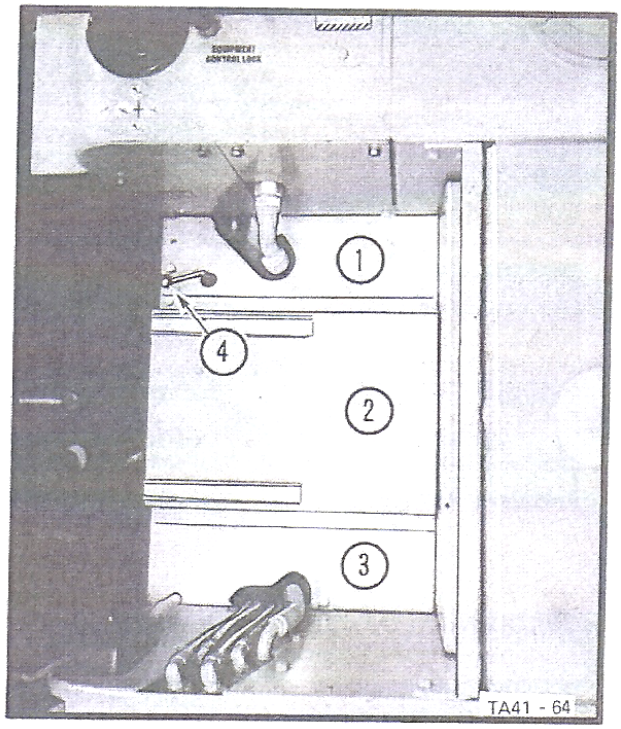


Fig. 3

(b) Screw off the brake locking lever knob (4-3).

(c) Remove the bolts which secure the deck plates (1 & 3-3) and the seat support (2-3). Lift out the plates. Position the seat support so that it is clear of the clutch cylinders etc. and ensure that the gauge pipe (7-4) is not damaged.

(d) Disconnect the pipes (1 & 3-4). Mark the pipes so that they are returned to their correct locations on installation.

(e) Scribe a line across the lever and splined shaft (5-4) to aid assembly.

(f) Remove the split pin (2-4).

(g) Remove the nut (4-4), spring washer and bolt (6-4).

(h) Simultaneously, lift the cylinder and operating lever from the rear pivot and splined shaft.

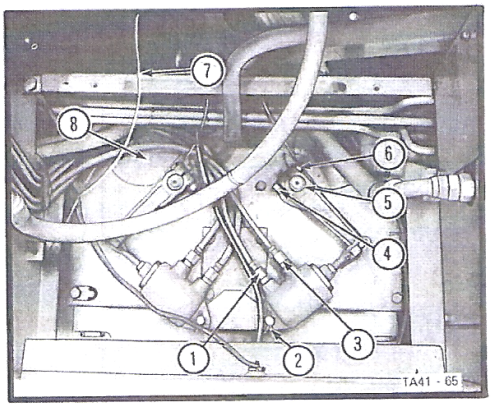


Fig. 4

2b. DISMANTLI NG

(a) Disconnect the lever return spring (4-5) then remove the split pin and flat washer which retain the pin (3-5).

(b) Remove the pin and separate the lever (1-5) from the cylinder (5-4).

(c) If inspection proves it necessary press the bush (2-5) from the lever.

(d) Grip the cylinder in a vice so that the slot is in an accessible position.

(e) Turn the piston rod bearing (5-6) until the end of the retaining wire (9-6) appears in the slot. A hole is provided in the piston rod bearing to facilitate rotation.

(f) Insert a thin screwdriver under the end of the retaining wire then rotate the piston rod bearing to wind out the wire.

(g) Withdraw the piston rod assembly from the cylinder.

(h) Slacken the locknut (2-6) and screw the adjusting fork (1-6) from the piston rod (7-6).

(i) Pull the piston rod (7-6) from the bearing assembly.

(j) Remove the wiper seal (3-6) and 'O' ring (4-6) from the bearing bore.

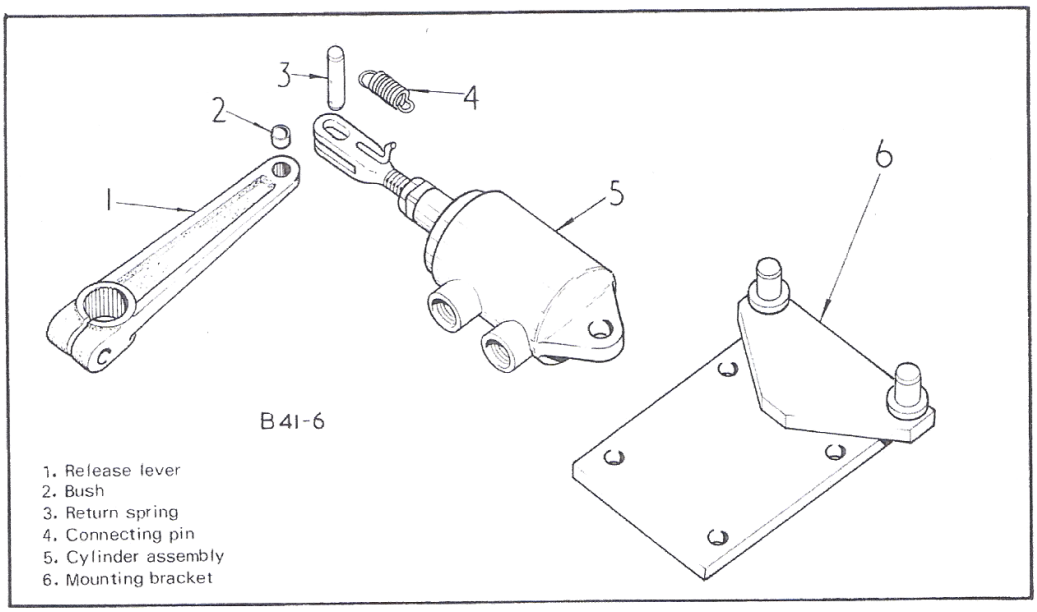


Fig. 5

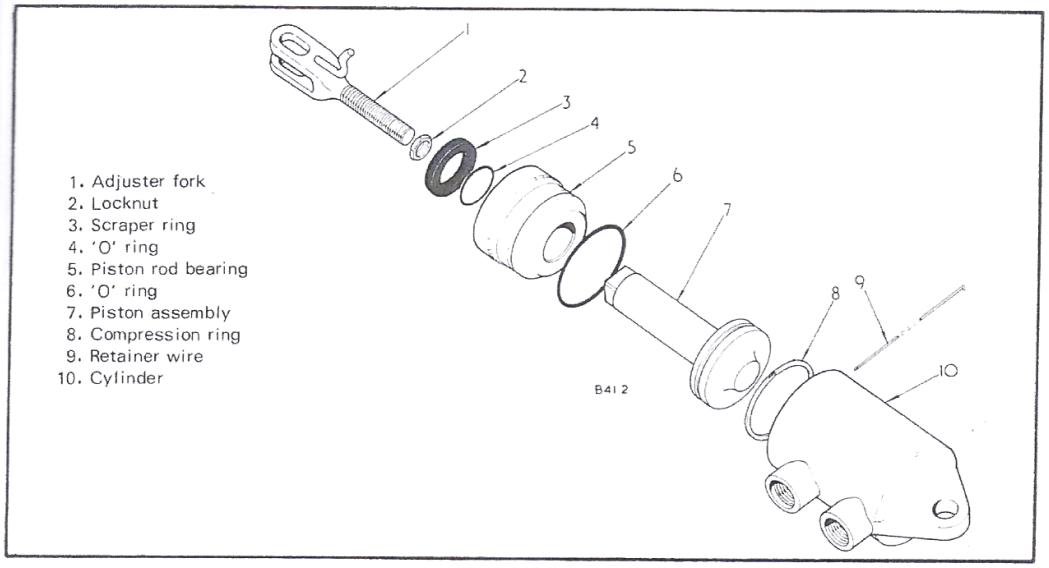


Fig. 6

(k) Remove the 'O' ring (6-6).

(l) Remove the compression ring (8-6) from the piston.

2c. INSPECTION AND REPAIR

(a) Discard all 'O' rings and seals. Fit new ones on assembly.

(b) Inspect the piston rod for wear and damage.

(c) Inspect the cylinder bore for wear and damage.

(d) Inspect the port threads for damage.

(e) Inspect welds for cracks.

2d. ASSEMBLY

(a) Fit a new 'O' ring (4-6) to the bearing bore.

(b) Fit a new scraper seal (3-6). The seal lips must face outward, and the larger diameter of the seal must be correctly located under the rim of the bore in the piston rod bearing.

(c) Fit a new 'O' ring (6-6) to the bearing O.D.

(d) Lubricate the piston rod (7-6) and insert this into the bearing assembly.

(e) Fit a new compression ring (8-6) to the piston.

(f) Lubricate the piston compression ring and the O.D. of the piston rod bearing then insert these into the cylinder. A small hole in the retaining ring groove in the bearing must be aligned with the slot on the outside of the cylinder.

(g) Grip the cylinder in a vice then insert the hooked end of the retaining wire (9-6) into the hole in the groove. Rotate the piston rod bearing to wind in the wire.

(h) Screw the locknut onto the adjusting fork then screw the adjusting fork into the piston rod.

(i) Fit the bush (2-5) to the lever.

(j) Position the lever (1-5) to the fork and install the pin and its lower washer. Install the upper washer and split pin.

(k) Fit the lever return spring.

2e. INSTALLATION

(a) Position the cylinder and lever to the rear pivot and splined shaft. Ensure that the marks made on removal are aligned.

(b) Adjust lever free play as detailed in para. 2f.

(c) Install the bolt (6-4) spring washer and nut (4-4). Fit the split pin (2-4).

(d) Connect the pipes (1 & 3-4).

(e) Start the engine, and operate the steering clutch levers several times to purge air from the system and check for leaks.

(f) Install the seat support and deck plates. Screw on the brake locking lever knob.

(g) Slide the operators seat into its runners, and install the split pin (1-2).

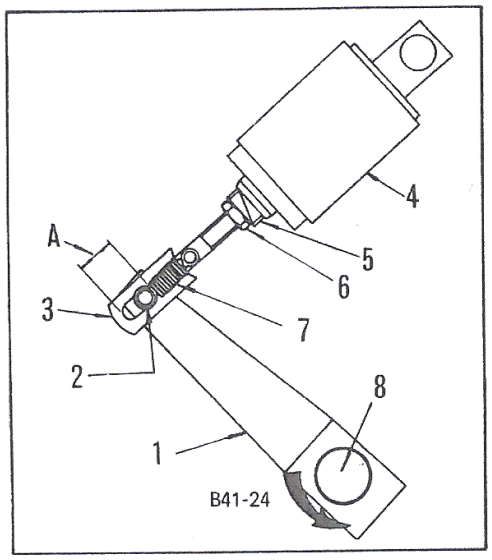


Fig. 7

2f. ADJUSTMENTS

(a) Disconnect the lever return spring (7-7). Free play should be the distance (A-7) that the connecting pin (2-7) can move in the slot in the adjusting fork (3-7).

(b) Ensure that the cylinder is fully contracted.

(c) Push the lever (1-7) away from the cylinder.

(d) Slacken the locknut (6-7).

(e) Turn the piston rod (5-7) to retract the adjusting fork, until the outer end of the fork slot contacts the pin (2-7).

(f) Tighten the locknut (6-7) and install the spring (7-7).

(g) If free play cannot be obtained in the above manner, lift the cylinder and lever from their locations, and adjust the fork length so that the lever can be installed ONE SPLINE FORWARD of the original scribed line, and repeat operations (b) to (f).

3 BRAKES

3a. REMOVAL

(a) Remove the operators seat and support, and deck plates.

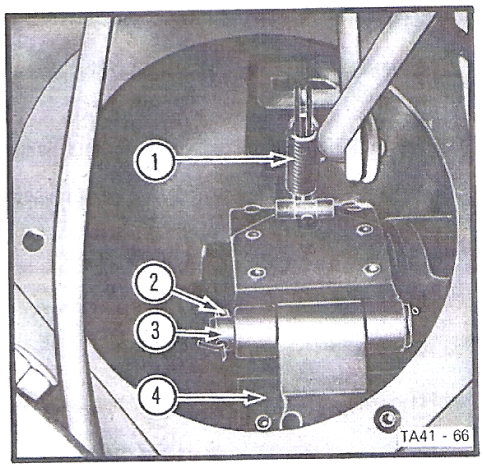


Fig. 8

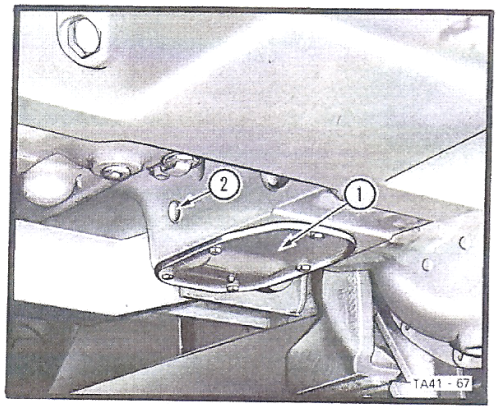


Fig. 9

(b) Remove the bolts which secure the inspection covers (8-4). Lift out the covers complete with the brake band set screw and locknut.

(c) Remove the spring assembly (1-8).

(d) Remove the split pin (2-8) and brake band joint pin (3-8).

(e) Remove the inspection cover (1-9) under the relevant side.

(f) Slacken the locknut (2-10) then screw the bolt (1-10) from the rear brake band section. Remove the nut (2-10) spring (18-11) and washer (19-11). Withdraw the bolt (25-11) and washer (24-11).

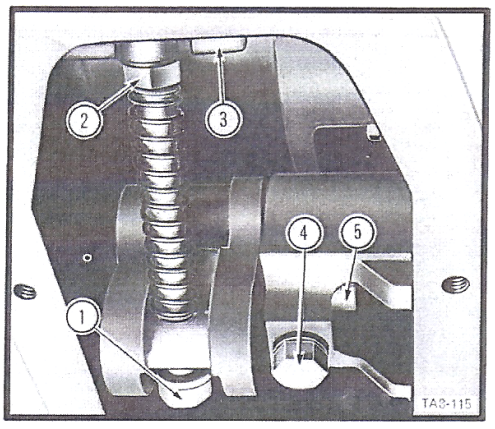


Fig. 10

(g) Slide the upper and rear brake band sections (14 & 16-11) around the clutch drum, until the joint pin (15-11) is visible in the top inspection aperture. Remove the split pin and joint pin (15-11) then remove both sections through the upper aperture.

(h) Remove the bolt (4-10) then lever out the shaft (5-10). Plugs (2-9) in the mainframe at each end of the shaft provide access.

(i) Pull downward on the brake lever (20-11) to expose the front brake band pivot joint pin (34-11) then push out the pin.

(j) Remove the front brake band section (13-11) through the top inspection aperture.

3b. DISMANTLING

Drill out the rivets which secure the brake linings to the bands.

3c. ASSEMBLY

Position the brake linings on the bands. Locate each lining with at least two rivets, and ensure that the rivet heads are correctly seated before setting the outer ends of the rivets.

3d. INSTALLATION

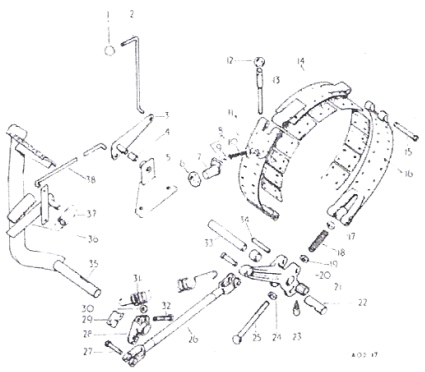
(a) Insert the front brake band section (13-11) through the upper aperture. Pull the lever (20-11) downward, engage the brake band to the lever and insert the pin (34-11).

(b) Ensure that the adjuster pin (22-11) is still located in the lever, then position the lever (20-11) to the mainframe, and insert the pivot shaft (33-11). A drilling in the shaft must locate with the threaded hole in the mainframe.

(c) Install and tighten the bolt (4-10). Install the plugs (2-9) to the mainframe at each end of the shaft.

(d) Insert the rear and centre sections of the brake band (14 & 16-11) through the top aperture then connect these with the joint pin (15-11) and split pin.

1. Parking lever knob
2. Parking brake operating rod
3. Parking brake lever
4. Bush
5. Mounting bracket
6. Locknut
7. Brake
8. Spring assembly
9. Spring hook
10. Anchor spring
11. Front brake band
12. Locknut
13. Brake band set screw
14. Centre brake band
15. Brake band joint pin
16. Rear brake band
17. Locknut
18. Brake band release spring
19. Release spring washer



20. Steering brake pivot lever
21. Bush
22. Adjuster pin
23. Pivot shaft stud
24. Adjuster bolt spacer
25. Adjuster bolt
26. Brake rod
27. Brake rod pin
28. Steering brake lever
29. Return spring anchor
30. Steering brake lever key
31. Return spring
32. Bolt
33. Pivot shaft
34. Pivot joint pin
35. Brake pedal
36. Parking brake pawl
37. Pawl return spring
38. Parking brake rod

Fig. 11

(e) Fit the spacer (24-11) to the bolt (25-11) then insert the bolt through the hole in the adjuster pin (22-11). Thread on the washer (19-11) and spring (18-11) then screw on the nut (17-11).

(f) Screw the bolt (1-10) into the rear brake band section.

(g) Install the joint pin (3-8) and split pin (2-8) which connects the front and centre brake band sections. Connect the spring assembly (1-8).

(h) Slacken the locknut (12-11) and screw the brake band setscrew (13-11) from the inspection cover.

(i) Fit a new gasket to, and install the inspection cover (8-4).

(j) Adjust the brakes as detailed in para. 3c.

(k) Install the covers (1-9).

(l) Install the seat support, deck plates and seat.

3e. ADJUSTMENT

(a) Tighten the adjusting bolt (13-12) until the brake bands are tight against the drum.

(b) Screw in the brake band setscrew (D-12) until it contacts the brake band, then slacken the screw by one half turn. Tighten the locknut (C-12).

(c) Slacken the bolt (B-12) until free travel (E-12) at the brake pedal measures 63.5 mm (2½ in).

(d) Tighten the locknut (A-12).

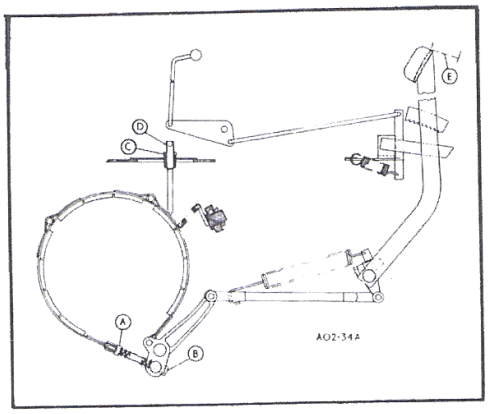


Fig. 12

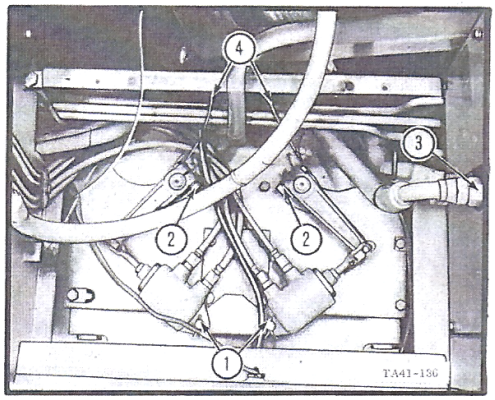


Fig. 13

4 STEERING CLUTCHES

4a. REMOVAL

(a) Remove the cab. (Refer to GROUP 2).

(b) Remove the fuel tank (Refer to GROUP 6).

(c) Remove the deck plates and seat support.

(d) If the right steering clutch is to be removed, drain the hydraulic reservoir, and raise the right rear platform. Disconnect and unclip the equipment pump suction pipe (3-13) and move it clear of the mainframe.

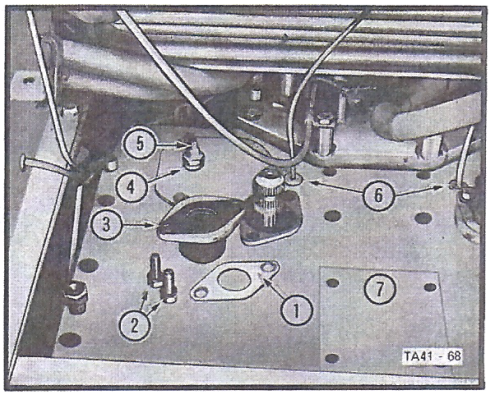


Fig. 14

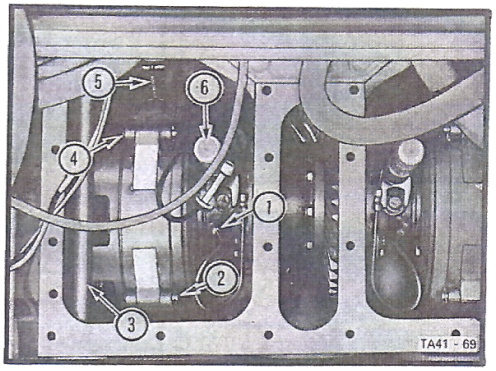


Fig. 15

(e) Disconnect the lubrication pipes (4-13).

(f) Remove the split pin (1-13) and the nut and bolt (2-13). Scribe alignment marks across the the splined shaft and operating lever then lift the lever and cylinder from their mounting points, and lay the units clear of the mainframe.

(g) Remove the bolts which secure the mainframe cover. Extract the dowels. Remove the steering cylinder mounting bracket.

(h) Remove the bolts (2-14) and lift off the upper release shaft bearing (3-14) and gasket (1-14).

(i) Slacken the locknut (4-14) and screw out the brake band setscrew (5-14).

(j) Lift out the mainframe cover (7-14). At the same time thread the lubrication pipes (6-14) from the cover.

(k) Disconnect the lower end of the lubrication pipes (1-15).

(l) Remove the brake band joint pins (2 & 4-15), and lift off the top brake band section. Disconnect the spring assembly (5-15).

(m) Remove the counterweight mounting stud (3-15).

(n) On the underside of the Loader, remove the bolt (1-16) lockplates (2 & 3-16) and nut (4-16). Screw out the clutch release shaft lower pivot (5-16) then remove the release shaft (6-16) and bushings (7-16) from the release bearing.

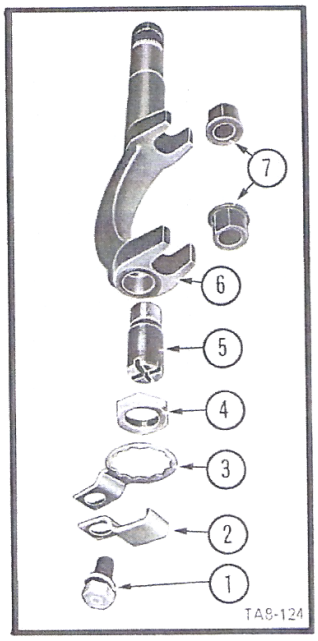


Fig. 16

(o) Install and tighten three compression bolts (2-17) part number 704221 R1 into the clutch, then remove the bolts and Dowty washers which secure the bevel gear adjuster ring (3-17). DO NOT remove the bolts (5-17) which lock the adjuster to the ring.

(p) Lever the adjuster ring (3-17) toward the clutch to expose the clutch coupling (4-17), then lever the coupling into the clutch.

(q) Remove the bolts (1-17). Unless the track is clear of the ground, or disconnected, turning the drum (6-17) for access to the bolts (1-17) will move the Loader.

(r) Securely sling the clutch assembly and lift it clear of the machine.

4b. DISMANTLING

(a) Remove the coupling (1-18), adjusting ring assembly (2-18) and release bearing (3-18). Remove the thrust ring from behind the coupling. Remove the 'O' ring, gasket and seal from the adjuster assembly.

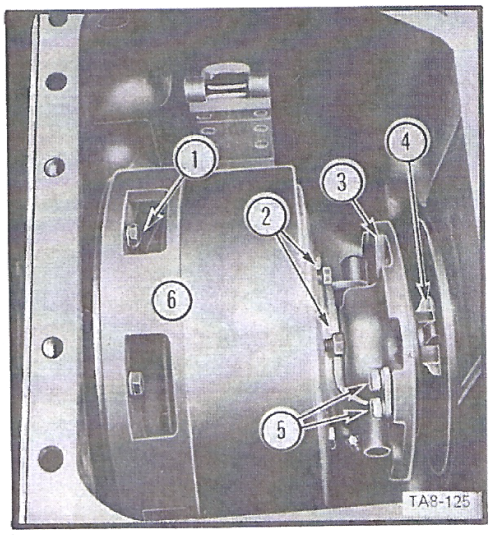


Fig. 17

(b) Knock the indentations (2-19) outward, then remove the nut (1-19). Lift off the clutch drum (3-19) and the oil slinger beneath the drum. Press the pilot bearing from the drum.

(c) Withdraw the shaft from the other end of the assembly.

(d) Remove the compression bolts (4-18) from the hub plate, and screw them into the tapped holes in the pressure plate as shown in Fig. 20.

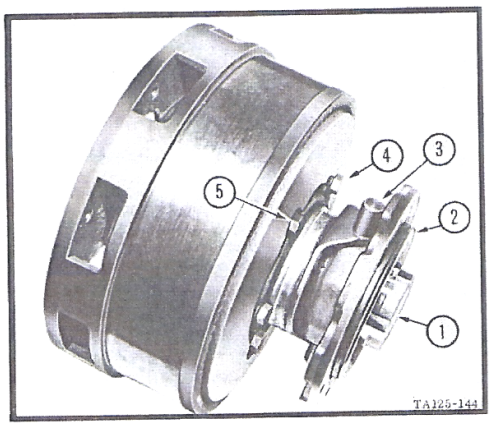


Fig. 18

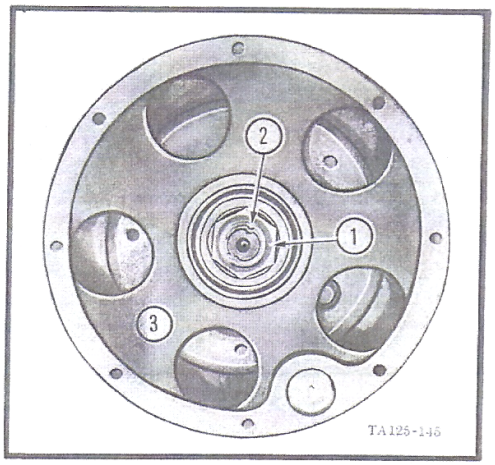


Fig. 19

CAUTION. DO NOT ATTEMPT TO REMOVE THE HUB PLATE UNLESS THE COMPRESSION BOLTS (1-20) ARE INSTALLED AND TIGHTENED INTO THE PRESSURE PLATE.

(e) Remove the bolts (5-18). Lift off the hub plate and clutch discs.

(f) Place the hub and pressure plate on a press and apply a load to the hub (Refer to Fig. 22).

(g) Remove the compression bolts (1-20) and dowel bolts (2-20).

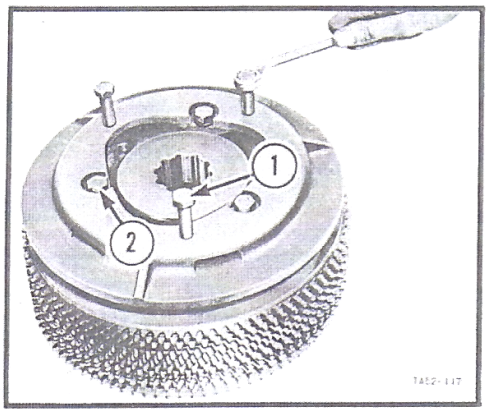


Fig. 20

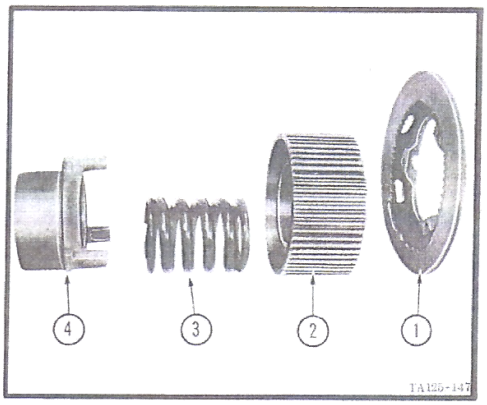


Fig. 21

(h) Slowly release the press load. Lift off the pressure plate (1-21) and hub (2-21). Remove the spring (3-21) from the retainer (4-21).

4c. INSPECTION AND REPAIR

(a) Inspect the brake lining contact area of the clutch drum for scoring and cracks. If necessary skim the drum, but do not reduce the drum diameter to less than 305.56 mm (12.030 in). If this diameter is reached, before the surface is clean, the drum must be rejected.

(b) Inspect the drum and hub splines for wear. Clean off light burrs with a fine carborundum stone.

(c) Inspect the pilot and release bearings for wear.

(d) Inspect the clutch driving discs for distortion. If a 0.38 mm (0.015 in) feeler gauge can be inserted between the disc and a surface plate, the disc must be changed.

(e) Change all friction discs that have broken teeth or glazed surfaces.

(f) Check the spring (Refer to Specifications, GROUP 1).

(g) Check the thickness of the clutch coupling thrust washer.

(h) Discard all used gaskets, oil seals and 'O' rings.

4d. ASSEMBLY

(a) Position the spring (3-21) to the retainer then place the hub (2-21) and pressure plate (1-21) on the spring. Holes in the hub and pressure plate must be aligned with holes in the hub and retainer legs.

(b) Apply a load to the hub centre to compress the spring, then install and tighten the dowel bolts (1-22) and their lockwashers. Release the load.

(c) Insert the shaft to the hub, and position the oil slinger to the shaft.

(d) Fit the pilot bearing to the clutch drum and install the drum to the shaft.

(e) Fit a new nut (2-19) and apply a torque load of 34.55 to 41.5 kgm (250 to 300 lbft). Securely stake the nut to the indentations in the shaft.

(f) Install a friction disc to the drum then alternately install the remaining discs.

(g) Place the assembly on a press and position the hub plate to the hub. Compress the clutch assembly then tighten the bolts (5-18). Release the load.

(h) Install and tighten the compression bolts (4-18).

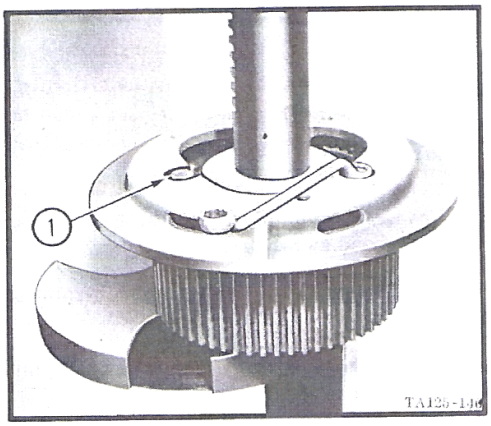


Fig. 22

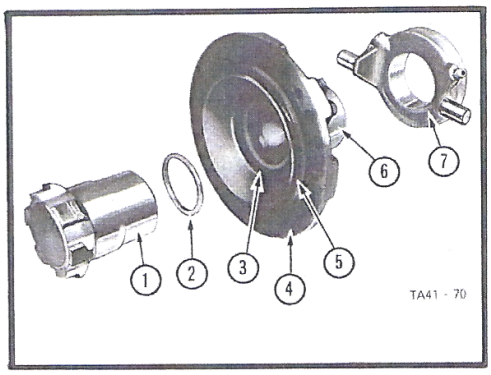


Fig. 23

(i) Press a new oil seal (3-23) into the adjuster assembly (6-23). The seal lips must face the bevel gear.

(j) Fit the thrust washer (2-23). The chamfer on the washer must face the clutch assembly.

(k) Carefully insert the clutch coupling (1-23) through the seal. Ensure that the coupling is pushed down onto the thrust washer.

(l) Fit the release bearing (7-23) to the bevel gear adjuster.

(m) Fit a new gasket (4-23) and 'O' ring (5-23).

(n) Fit the bevel gear adjuster ring assembly to the clutch assembly. Turn the coupling as required to align the splines. Ensure that the coupling is pushed fully home.

4c. INSTALLATION

(a) Ensure that the large dowel is correctly located in the bull pinion drive shaft plate.

(b) Securely sling the clutch, and lower it into the compartment. Align the dowel with its location in the clutch drum, then install and tighten the bolts (1-17). Rotate the drum for access to the bolts.

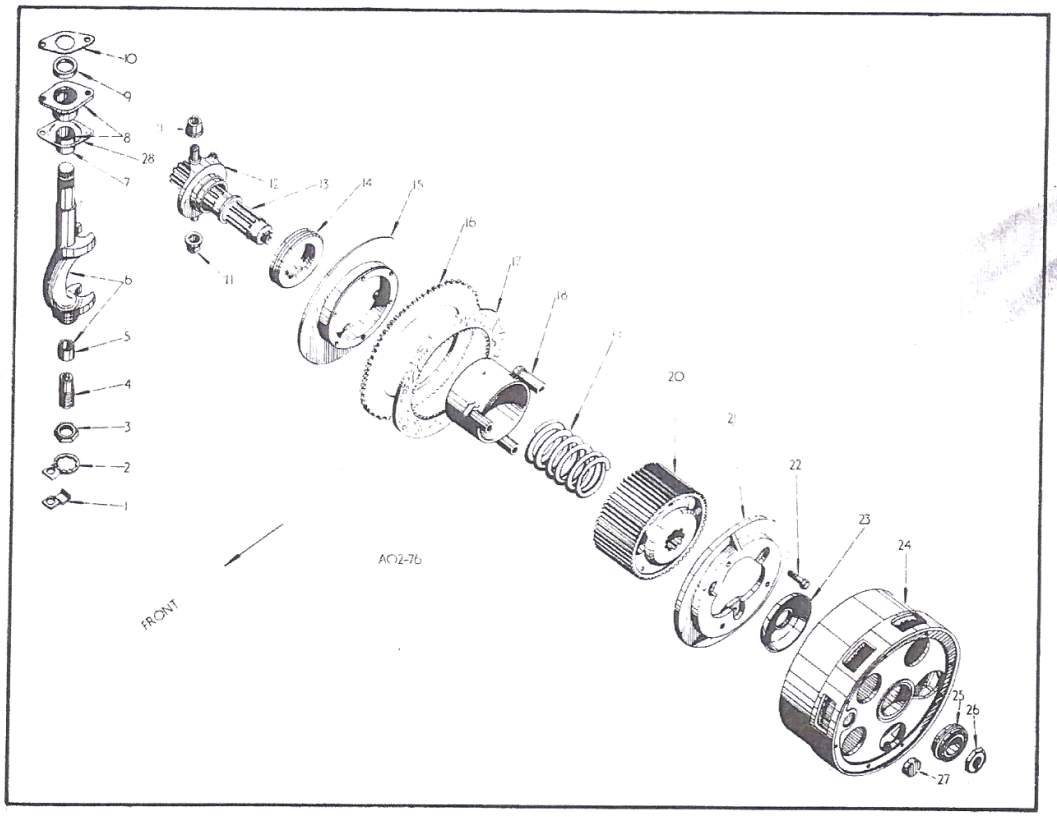
(c) Lever the coupling (4-17) into the mating splines in the bevel gear hub.

(d) Position the adjuster ring assembly (3-17) so that the bolts (5-17) are in approximately the 1 o'clock position. Install the Dowty washers and bolts. Use special spanner I.H. 7444 to apply the correct torque to the bolts. Remove the compression bolts.

(e) Position the bushings (7-16) to the release bearing, and position the fork on the release shaft (6-16), to the bushings. Screw the lower pivot into the mainframe, and engage the end of the release shaft. Adjust the lower pivot so that the release shaft is equally spaced on the release bearing. Install the nut (4-16) lock plates (3 & 2-16) and bolt (1-16).

(f) Position the upper brake band section to the drum, then install the brake band joint pins (2 & 4-15) and split pins. Connect the spring assembly (5-15).

(g) Connect the lower end of the lubrication pipe (1-15). Install and tighten the counterweight mounting stud (3-15).



1. Release fork pivot lock
2. Release fork pivot nut lock
3. Release fork pivot nut
4. Release fork pivot
5. Bush
6. Release fork
7. Bush
8. Release fork shaft bearing
9. Felt
10. Felt washer retainer
11. Release pin bush
12. Release collar
13. Clutch shaft
14. Release bearing
15. Hub plate
16. Driving disc
17. Friction disc
18. Spring retainer
19. Spring
20. Clutch hub
21. Pressure plate
22. Dowel bolt
23. Oil slinger
24. Clutch drum
25. Pilot bearing
26. Retaining nut
27. Dowel
28. Release fork bearing gasket

Fig. 24

(h) Fit a new gasket to the mainframe. Ensure that the mounting surfaces of the mainframe cover are clean then position the cover to the frame. Thread the flexible pieces of the lubrication pipes through the holes in the plate and install the grommets.

(i) Position the steering cylinder mounting bracket to the mainframe cover then loosely install the securing bolts. Drive in the locating dowels then tighten all the bolts on the cover.

(j) Fit a new gasket (1-14) and install the release shaft upper bearing (3-14). Install and tighten the bolts (2-14).

(k) Connect the lubrication pipes (4-13).

(l) Fit the cylinder, and operating levers to their mounting points. Ensure that the alignment marks on the lever and shaft correspond. Adjust the clutch cylinder free play as detailed in para. 2f then install the nut and bolt (2-13) and split pin.

(m) Install and secure the equipment hydraulic suction pipe (3-13) and fill the hydraulic reservoir.

(n) Install the fuel tank (Refer to GROUP 6).

(o) Install the deck plates and seat support.

(p) Install the cab (Refer to GROUP 2).

5 BULL PINION DRIVE SHAFT

5a. REMOVAL

(a) Remove the steering clutch as detailed in para. 4a.

(b) Remove the bull pinion. (Refer to GROUP 12).

(c) Remove the bolts (1-25).

(d) Withdraw the shaft assembly (2-25) from the clutch compartment.

5b. DISMANTLING

(a) Remove the circlips (1 & 2-26).

(b) Withdraw the bearing (3-26) and cage (4-26) from the shaft.

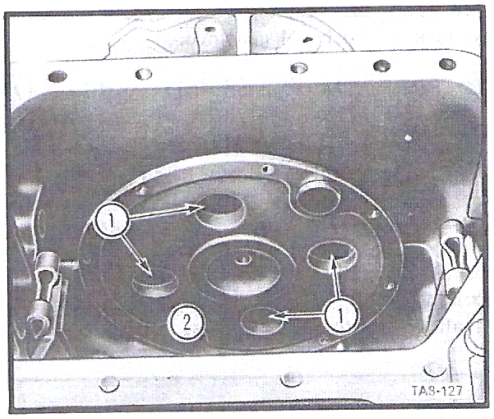


Fig. 25

(c) Remove the circlip which secures the bearing in the cage. Press the bearing from the cage.

5c. ASSEMBLY

Apply a film of Loctite bearing fit to the O.D. of the bearing, and reverse the dismantling procedure.

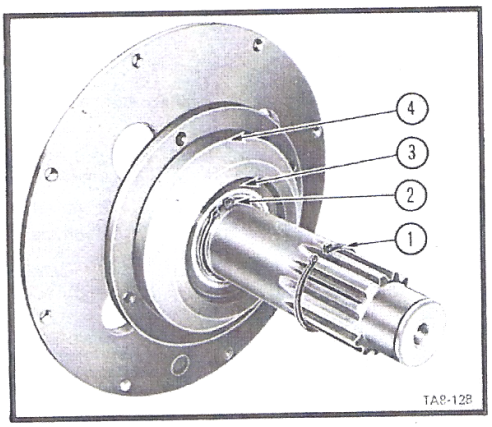


Fig. 26

5d. INSTALLATION

Fit a new gasket to the bearing cage, and reverse the removal procedure.