384 Tractor Chassis

Service Manual

GSS-1489

Reprinted

CASE IH

(d) CLEVISES AND PINS

Check with mating part for wear.

(e) SEALERS

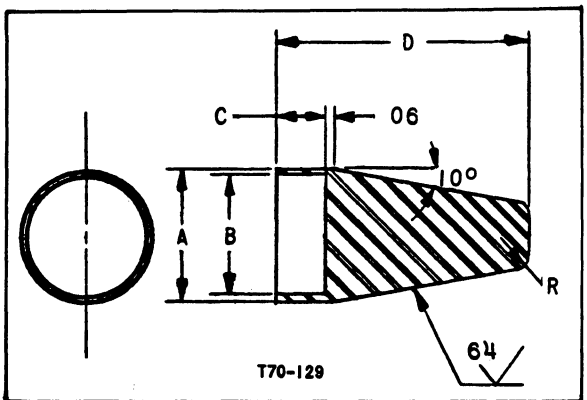
ALWAYS use new gaskets and oil seals during assembly and installation taking care not to damage them.

Pack lip type seals with grease and use sleeves or tape whenever a seal has to be passed over splines or threads. Felt dust seals must be soaked in oil before assembly.

The crankcase oil filler tube and/or dipstick tube and all studs and bolts which are assembled entering oil chambers are to be coated with thread sealing compound unless otherwise stated.

(f) 'O' RINGS

When installing 'O' rings over the threads of standard pipe fittings a tool made to the dimensions in the diagram MUST be used.



T70-129

PIPE SIZE	THREAD SIZE & T.P.I.	A ±.005	B ±.005	C ±.010	D ±.030
1/4	7/16-20	.523	.443	.280	1.000
5/16	1/2-20	.585	.506	.280	1.000
3/8	9/16-18	.648	.568	.300	1.500
1/2	3/4-16	.835	.756	.330	1.500
5/8	7/8-14	.960	.881	.380	1.500
3/4	1-1/16-12	1.147	1.068	.465	2.500
7/8	1-3/16-12	1.273	1.193	.465	2.500
1	1-5/16-12	1.397	1.318	.465	2.500
1-1/4	1-5/8-12	1.711	1.631	.465	2.500

Where special fittings are encountered the dimensions should be varied to suit.

'O' rings should be lubricated with the type of oil specified for the particular system.

If a backing ring is employed this must be installed on the low pressure side of the 'O' ring.

Use sleeves or tape when installing 'O' rings over splines or serrations. Ensure that the 'O' ring is not left in a twisted condition. A mould mark is usually visible and will indicate if the ring is twisted.

Tighten plugs and swivel nuts sealed by an 'O' ring to the following torque:

JIC 37° SEAT				
THREAD SIZE	MIN. kgm	MIN. lbft	MAX. kgm	MAX. lbft
7/16 - 20	0.83	6	1.38	10
1/2 - 20	1.38	10	2.07	15
9/16 - 18	2.07	15	2.76	20
3/4 - 16	3.46	25	4.14	30
7/8 - 14	4.84	35	5.53	40
1-1/16 - 12	8.30	60	9.67	70
1-3/16 - 12	9.67	70	11.06	80
1-5/16 - 12	11.06	80	12.44	90
1-5/8 - 12	13.14	95	15.89	115
1-7/8 - 12	16.59	120	19.35	140
2-1/2 - 12	34.56	250	41.47	300

T70-132

(g) GEARS AND SPLINES

Check splines with their mating parts for wear. Check gears and splines for pitting, burrs, broken or missing teeth. Burrs can be removed with a fine carborundum stone but care must be taken to remove only the burr and that the gear or spline profile is not altered.

GROUP 2

CAB

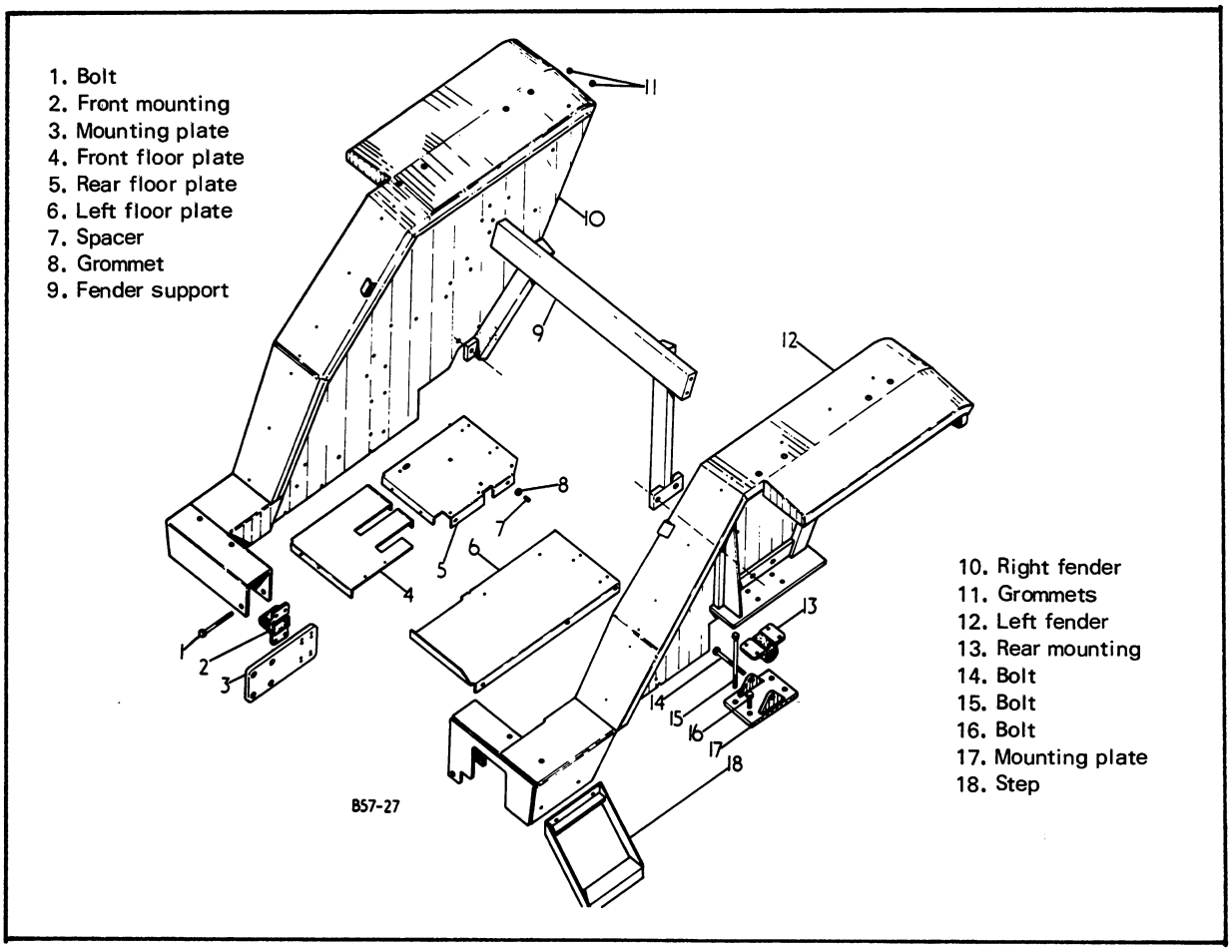


Fig. 22

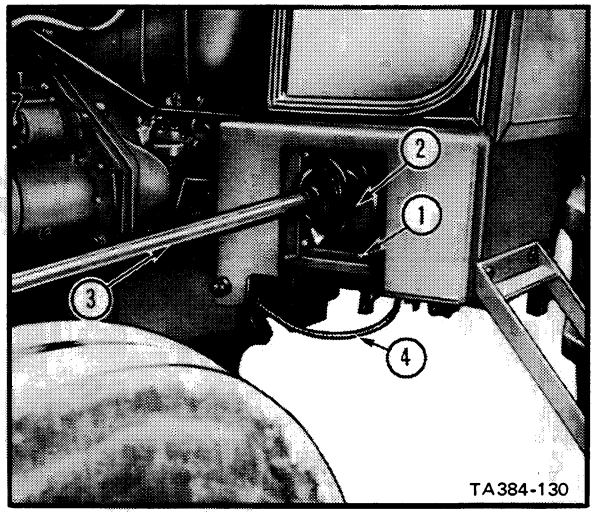


Fig. 23

10b. DISMANTLING

(a) Remove the screws to remove the retainer strips (16 & 19-21) and corner reinforcement plates.

(b) Unclip the cladding retaining studs and remove the insulation from the fender.

(c) Remove the bolts which secure the step (18-22).

10c. ASSEMBLY

(a) Install and secure the step.

(b) Position the insulation on the fender and push the retaining studs into the first notch only. Position the corner reinforcing plate and the retainer strips (16 & 19-21) and secure with the retaining screws.

5b. INSTALLATION

(a) Install the switch in the bracket and secure with the retaining nut (2-4).

(b) Connect the cables (1-4).

(c) If necessary adjust the switch referring to para. 5c.

5c. ADJUSTMENT

(a) Remove the clutch housing bottom cover plate (6-2 GROUP 7) and slacken the bracket retaining bolts (1-5).

(b) With the clutch pedal fully depressed move the bracket until the switch plunger is depressed 0.76 mm (0.03 in) minimum to 2.54 mm (0.10 in) maximum. With the switch bracket parallel to the depressed clutch pedal tighten the bracket retaining bolts.

(c) Ensure that the nuts, inside the clutch housing, securing the clutch pedal return spring bracket to the bolts (1-5) are tight.

(d) Install the bottom cover plate.

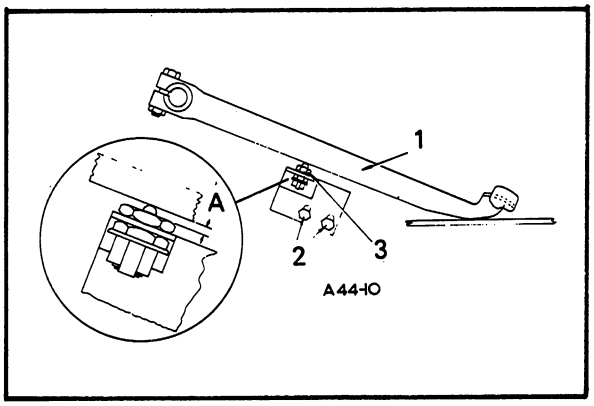


Fig. 5

6. BRAKE LIGHT SWITCH
6a. REMOVAL

(a) Apply the brake pedal locking lever.

(b) Remove the leads from the brake switch (1-6) under the right footplate.

(c) Remove the switch retaining nut (2-6) and remove the switch from the bracket.

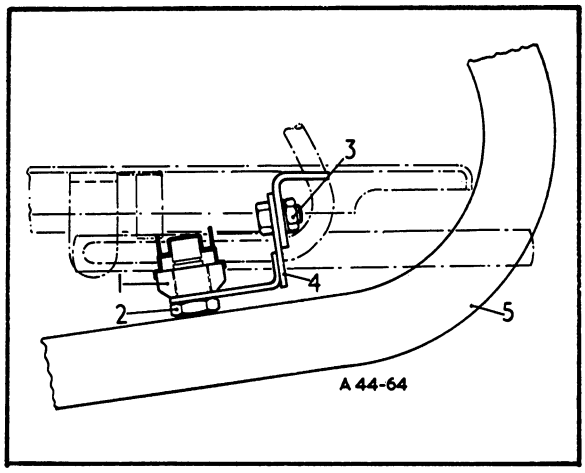


Fig. 6

6b. INSTALLATION

(a) Position the switch on the bracket and secure with the retaining nut (2-6).

(b) Connect the leads at the switch (1-6).

(c) If necessary adjust the switch referring to para. 6c.

6c. ADJUSTMENT

(a) Block the tractor wheels and release the brake pedal locking lever.

(b) Slacken the nuts (3-6) and slide the bracket (4-6) as required so that the switch plunger is depressed a minimum of 1.27 mm (0.05 in) against a fully released brake pedal.

(c) With the brake switch central and square to the brake pedal tighten the nuts (3-6).

7. HEADLIGHTS
7a. REMOVAL

(a) Remove the grille from the grille housing and disconnect the headlights.

(b) Remove the retaining screws (1-7) taking care not to lose the springs (2-7) and nylon inserts (3-7) then withdraw the rubber housing complete with sealed beam unit.

(c) From the rear push the sealed beam unit out of the rubber housing.

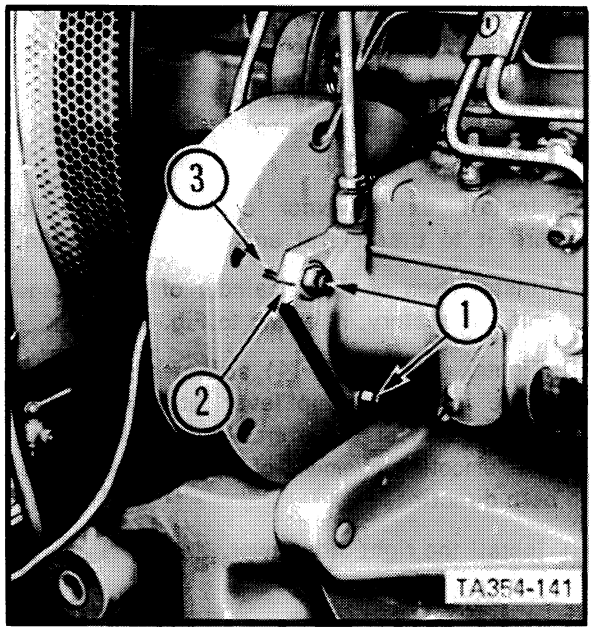


Fig. 8

6. INJECTORS

6a. REMOVAL

(a) Remove the hoodsheet.

(b) Disconnect the spill pipe at the banjo bolts (1-9).

(c) Disconnect the injector pipes at the pump unions and at the injector unions (2-9).

(d) Remove the injector retaining nuts (3-9) and washers then withdraw the injectors from the engine.

6b. INSTALLATION

Reverse the removal procedure.

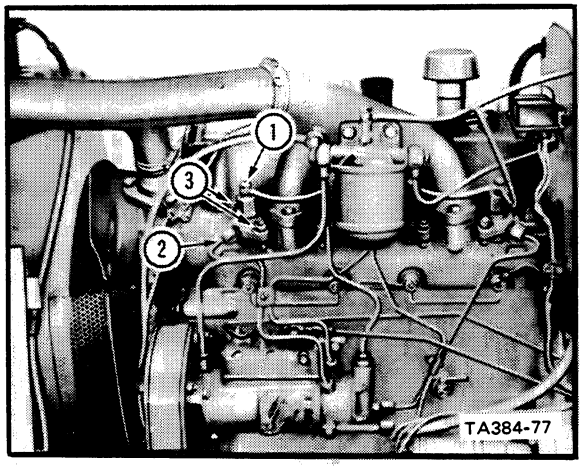


Fig. 9

7. GOVERNOR CONTROL LINKAGE

7a. REMOVAL

(a) Remove the right side cover.

(b) Drive out the roll pin (1-10) securing the governor control handle (14-11) to the control arm. If it is found to be difficult removing the roll pin through the side cover remove the fuel tank, referring to para. 2.

(c) Slacken the self locking nut (18-11) on the control arm (12-11) then remove the self locking nut, steel washer (17-11), two disc spring washers (10-11), steel washer (17-11) and friction washer (11-11).

(d) Remove the governor control handle (14-11) and the upper friction washer (11-11).

(e) Disconnect the control rod (5-11) at the governor lever (9-11).

(f) Drive out the roll pin securing the governor lever (9-11) to the arm (20-11) then remove the lever, arm and spacer (21-11).

(g) Remove the retaining ring and washer to free the control fork (19-11) from the arm (20-11).

(h) Dismantling the remainder of the linkage referring to Fig. 11 is self explanatory.

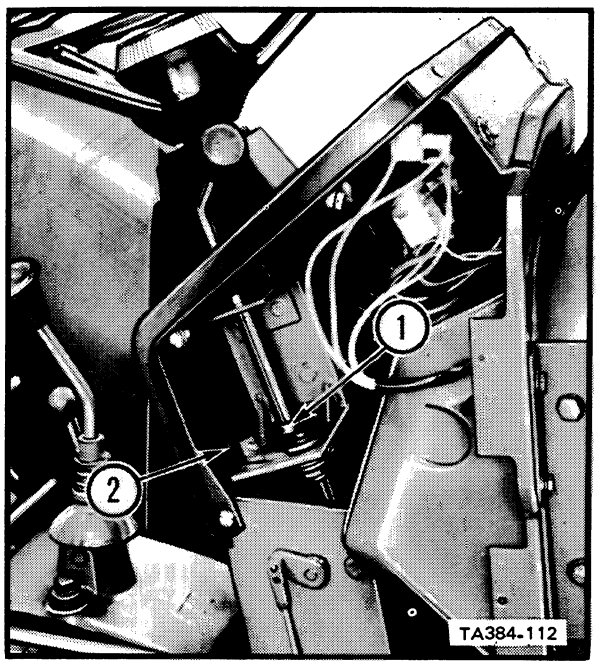


Fig. 10

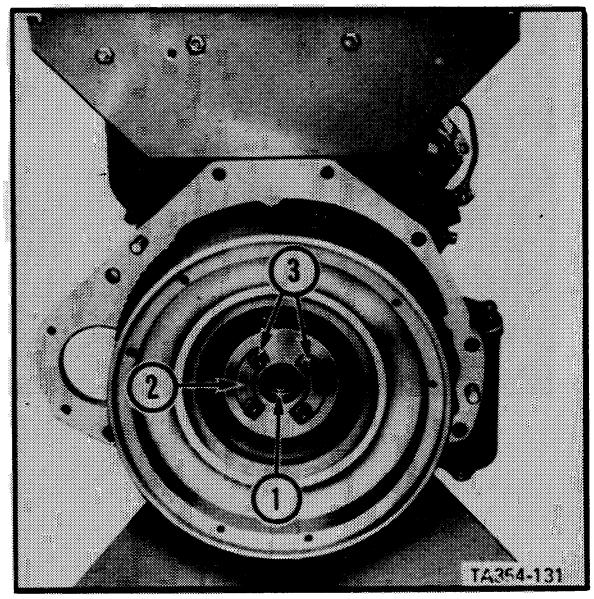


Fig. 6

(m) Mark the clutch cover and flywheel to aid assembly then slacken the clutch cover bolts (1-5) a turn at a time by diagonal selection until the pressure on the clutch is relieved. Lift the clutch assembly (2-5) off the flywheel (3-5) and remove the clutch disc.

(n) If inspection requires the removal of the pilot bearing (1-6), mark the flywheel and crankshaft to aid assembly, bend back the lock tabs (2-6) and remove the bolts (3-6). Remove the flywheel.

(o) Remove the pilot bearing from the crankshaft.

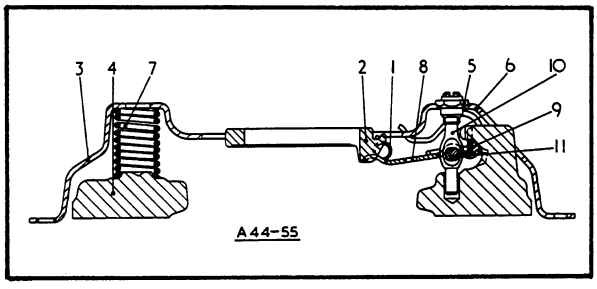


Fig. 7

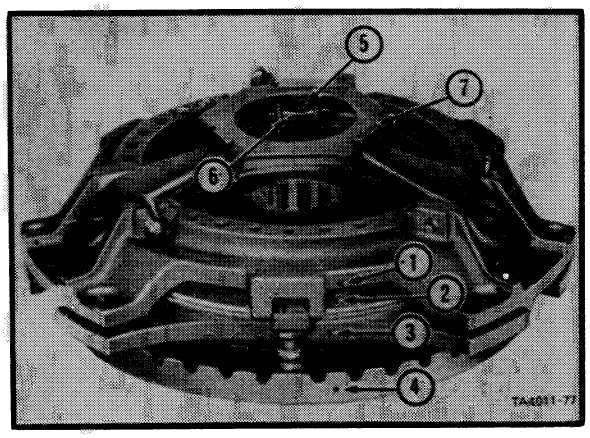


Fig. 8

2b. DISMANTLING

1. SINGLE PLATE CLUTCH (STANDARD AND HEAVY DUTY)

(a) Disengage the retainers (1-7) then remove the lever plate (2-7).

(b) Mark the cover plate (3-7) and pressure plate (4-7) to aid assembly.

(c) Place the assembly on the servicing fixture 99A or on the bed of a press with blocks under the pressure plate in such a manner that the cover (3-7) is free to move downward when pressure is applied.

(d) Having compressed the clutch, remove and discard the staked adjusting nuts (5-7) then slowly release the pressure.

(e) Lift off the cover and remove the anti-rattle springs (6-7).

(f) Mark the thrust springs (7-7) and pressure plate to aid assembly then remove the thrust springs.

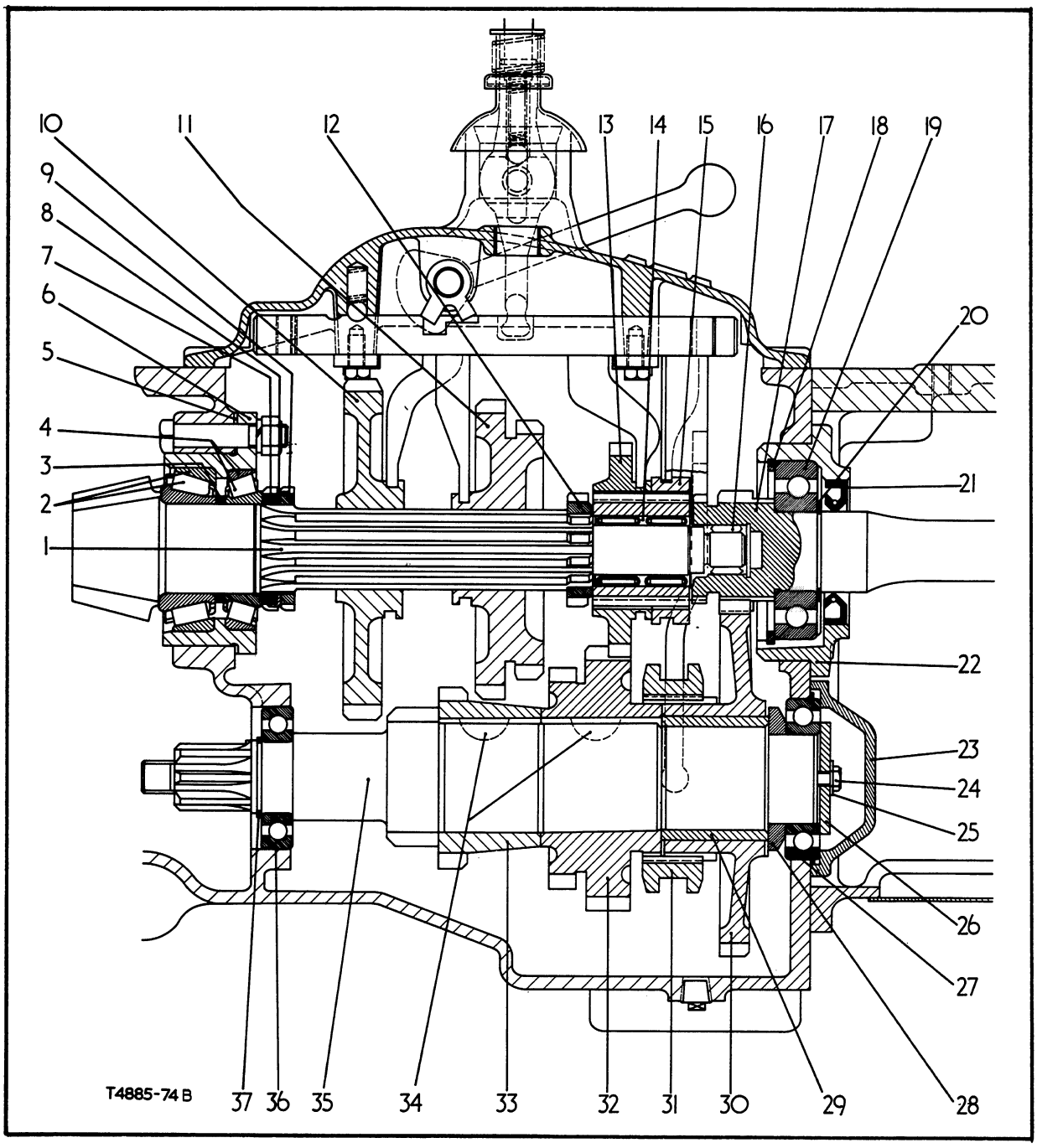
(g) Mark the release levers (8-7) and pressure plate, lift the tips of the release levers then slide out the struts (9-7).

(h) Remove the release levers, eye bolts (10-7) and pins (11-7).

2. DUAL CLUTCH

(a) Mark the clutch cover (1-8), power take-off pressure plate (2-8), flywheel plate (3-8) and main drive plate (4-8) to aid assembly.

(b) Lift the ends of each spring (5-8) which



1. Pinion shaft
2. Pinion shaft rear bearing
3. Spacer
4. Pinion shaft front bearing
5. Shims
6. Bearing cage
7. Locknut
8. Lockwasher
9. Locknut
10. 1st and reverse sliding gear
11. 2nd and 3rd sliding gear
12. 4th and direct coupling gear
13. 4th and direct sliding gear
14. Quill gear
15. Sliding gear coupling
16. Bearing
17. Transmission driving shaft
18. Circlip
19. Driving shaft bearing
20. Circlip
21. Oil seal
22. Bearing cage
23. Bearing retainer
24. Securing bolt
25. Lockplate
26. Retaining washer
27. Countershaft front bearing
28. Spacer
29. Bush
30. Constant mesh gear
31. Sliding gear coupling
32. 3rd and 4th driving gear
33. 2nd driving gear
34. Keys
35. Countershaft and 1st gear
36. Countershaft rear bearing
37. Circlip

Fig. 13 CROSS SECTION OF THE EIGHT SPEED BASIC TRANSMISSION

6. F/R GEARBOX

6a. REMOVAL

(a) Split the tractor referring to para. 3 and remove the gearbox top cover referring to para. 2.

(b) Remove the PTO rear shaft referring to GROUP 13.

(c) Remove the setscrews securing the oil flinger (4-34) to the PTO front shaft and remove the oil flinger.

(d) Remove the PTO sliding clutch from the PTO front shaft then withdraw the front shaft rearward.

(e) Remove the bolts securing the bearing retainer (1-34) and remove the retainer downward.

(f) Remove the nuts (6-34) and the bolt in the lower right corner easing the gearbox outward as necessary until the nuts clear the studs.

(g) Turn up the locktab (2-34) then remove the countershaft front bearing retaining nut (3-34) and lockwashers.

(h) Remove the countershaft front bearing.

(i) Lever down on the countershaft and at the same time withdraw the F/R gearbox and transmission driving shaft assembly from the transmission case.

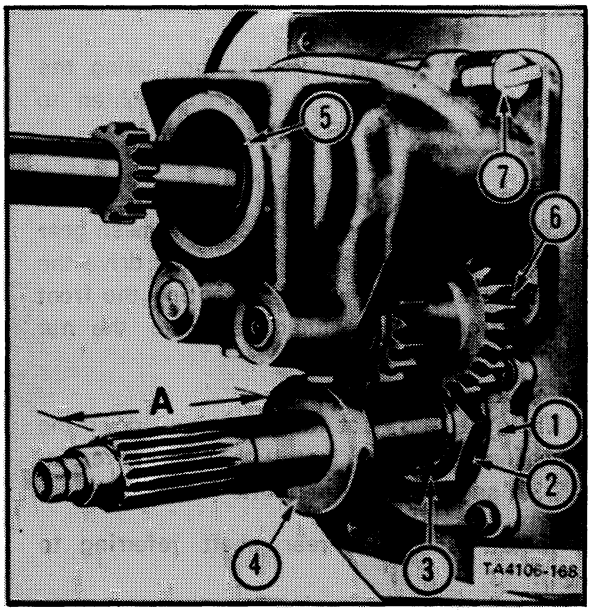


Fig. 34

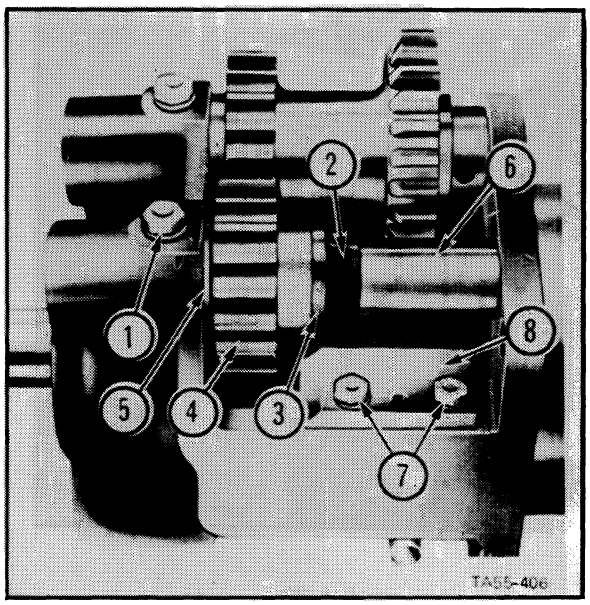


Fig. 35

6b. DISMANTLING

(a) Remove the idler shaft locating bolts (1-35) and remove the pin (2-35) securing the spacer (3-35) to the shaft.

(b) Drive out the idler shaft removing the thrust washer (5-35), idler gear assembly (4-35), spacer (3-35) and spacer tube (6-35) as they become free to do so.

(c) Press the needle bearings and bearing sleeve from the gear (4-35).

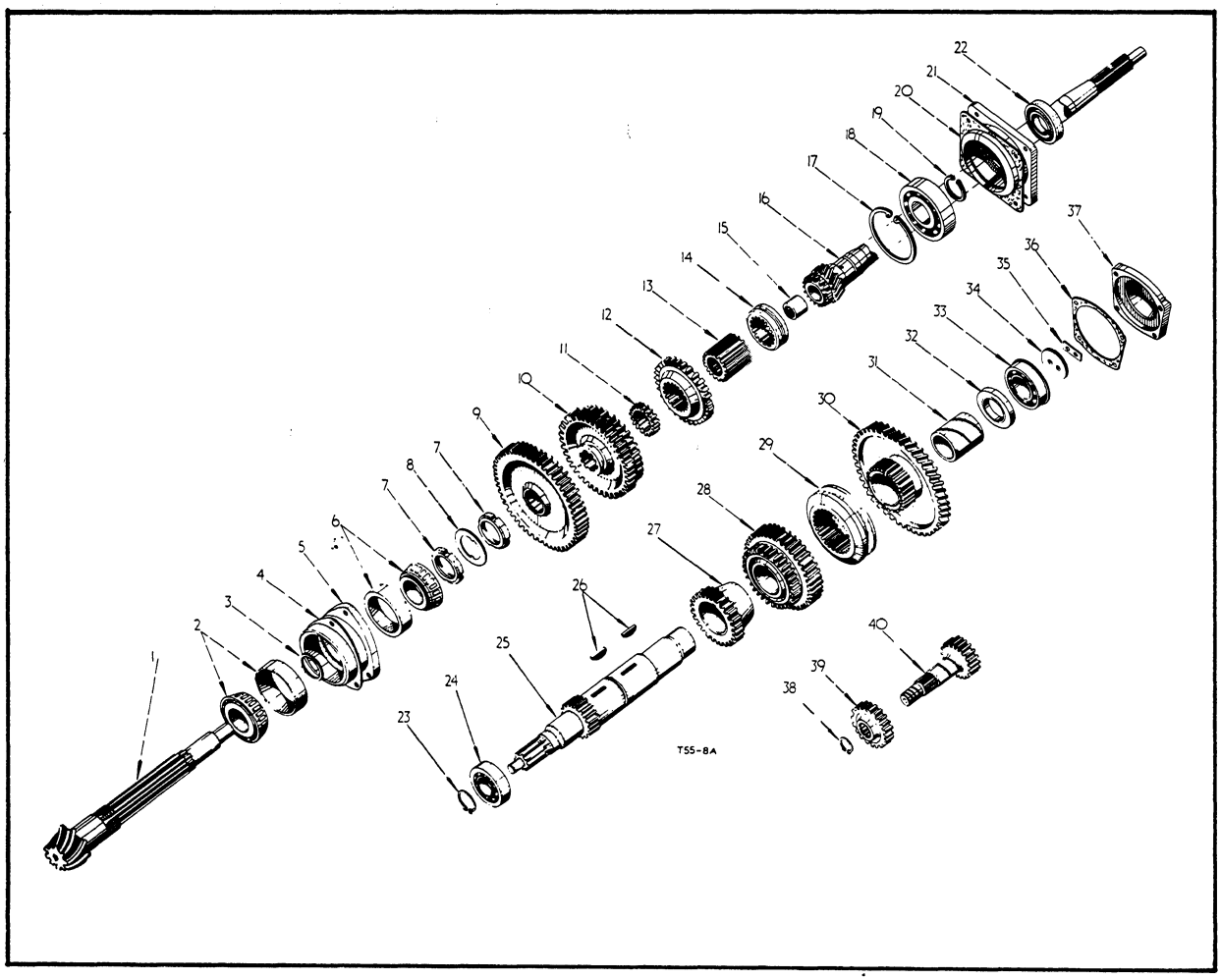
(d) Remove the bolts (7-35) and lift off the shifter rail (8-35) then remove the poppet ball (1-36) and spring (10-38) from the shifter fork (9-38).

(e) Remove the countershaft locating bolt (3-36) and drive out the pin (2-36) securing the spacer (4-36) to the shaft.

(f) Drive out the shaft removing the spacer (4-36), cluster gear (5-36) and thrust washer (6-36) as they become free to do so.

(g) Press the needle roller bearings from the cluster gear.

(h) Remove the circlip (1-37) then draw the transmission driving shaft (2-37), complete with bearing, from the gearbox and from the output gear (3-37).



1. Pinion shaft
2. Pinion shaft rear bearing
3. Spacer
4. Shims
5. Bearing cage
6. Pinion shaft front bearing
7. Locknuts
8. Lockwasher
9. 1st and reverse sliding gear
10. 2nd and 3rd sliding gear
11. 4th and direct coupling gear
12. 4th and direct speed sliding gear
13. Quill gear
14. Sliding gear coupling
15. Pilot bearing
16. Transmission driving shaft
17. Circlip
18. Driving shaft bearing
19. Circlip
20. Gasket
21. Bearing cage
22. Oil seal
23. Circlip
24. Countershaft rear bearing
25. Countershaft and 1st gear
26. Keys
27. 2nd speed driving gear
28. 3rd and 4th driving gear
29. Sliding gear coupling
30. Constant mesh gear
31. Grey iron bush
32. Spacer
33. Countershaft front bearing
34. Retaining washer
35. Lockplate
36. Gasket
37. Bearing retainer
38. Circlip
39. Reverse idler
40. Reverse idler shaft and gear

EXPLODED VIEW OF BASIC TRANSMISSION WITH STANDARD P.T.O.

Fig. 51

GROUP 10

BRAKES

2. FRONT HUBS

2a. REMOVAL

(a) Slacken the front wheel nuts.

(b) Chock the rear wheels.

(c) Lift the front of the tractor and support under the clutch housing.

(d) Remove the front wheel.

(e) Remove the hub cap (1-2), gasket (2-2), cotter pin (3-2), nut (4-2), outer bearing retainer (5-2) and outer bearing cone (6-2).

(f) Remove the hub (7-2) from the axle and remove the inner bearing (8-2).

(g) If inspection proves it necessary remove the oil seal (1-3), felt washer (2-3), dust shield (8-3) and spacer (9-3) from the stub axle.

2b. DISMANTLING

Remove the felt washer retainer (3-3), inner and outer bearing cups (4 & 5-3) and grease retainer (6 & 7-3) from the hub.

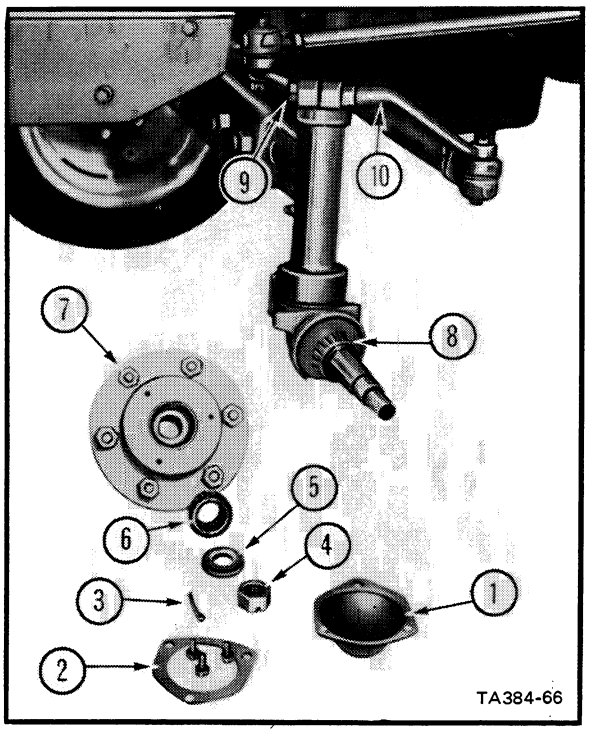


Fig. 2

2c. ASSEMBLY

(a) Install the outer grease retainer (6-3) and outer bearing cup (5-3) in the hub.

(b) Install the inner grease retainer (7-3) and inner bearing cup (4-3) in the hub.

(c) Install the felt washer retainer (3-3) in the hub.

2d. INSTALLATION

(a) If these were removed install the spacer (9-3), dust shield (8-3), felt washer (2-3) and oil seal (1-3) on the stub axle. The lip of the oil seal must face toward the dust shield (8-3).

(b) Pack the bearing cones with grease and install the inner bearing cone (8-2) on the stub axle.

(c) Install the hub (7-2), outer bearing cone (6-2), bearing retainer (5-2) and nut (4-2).

(d) Torque the nut to 7 kgm (50 lbft) while the hub is being rotated. Slacken the nut a quarter turn from this position and install the cotter pin, if necessary further backing off the nut to align the hole.

(e) Install the wheel then check that the wheel spins freely and that a slight bearing clearance is perceptible when checked at the wheel rim.

(f) Install the hub cap (1-2).

(g) Lower the tractor then tighten the wheel nuts to 7.6 to 8.3 kgm (55 to 60 lbft).

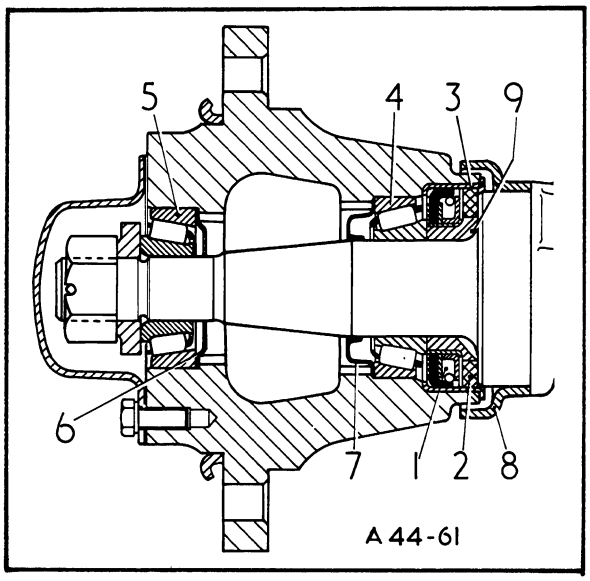


Fig. 3

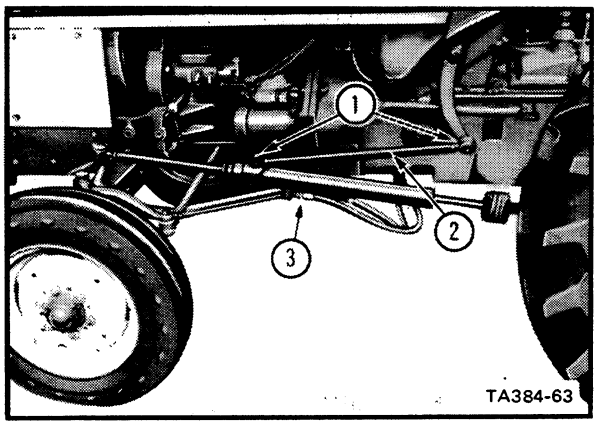


Fig. 18

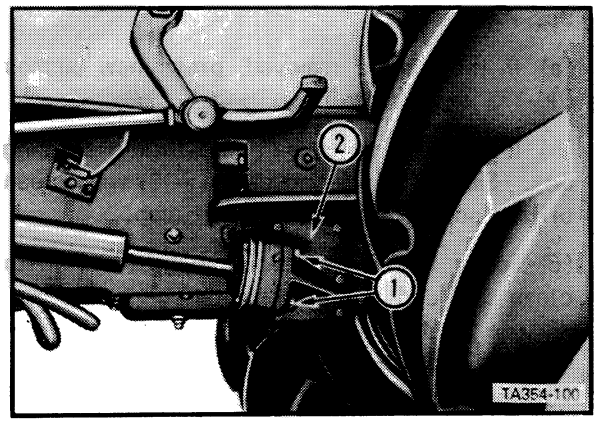


Fig. 19

10. STEERING CYLINDER

10a. REMOVAL

(a) Disconnect the hydraulic hoses (3-18) at the steering cylinder. If the hoses are removed with reasonable speed and the ends plugged it is not necessary to drain the hydraulic system. However, the engine must NOT be run while in this condition.

(b) Disconnect the drag link (2-18) at the drop arm and the connecting ball joint (4-18) at the steering arm.

(c) Remove the nuts and bolts (1-19) to free the piston rod from the reaction bracket (2-19).

(d) Lift the steering cylinder from the tractor.

(e) Slacken the locknut and remove the connecting link (5-20) from the cylinder.

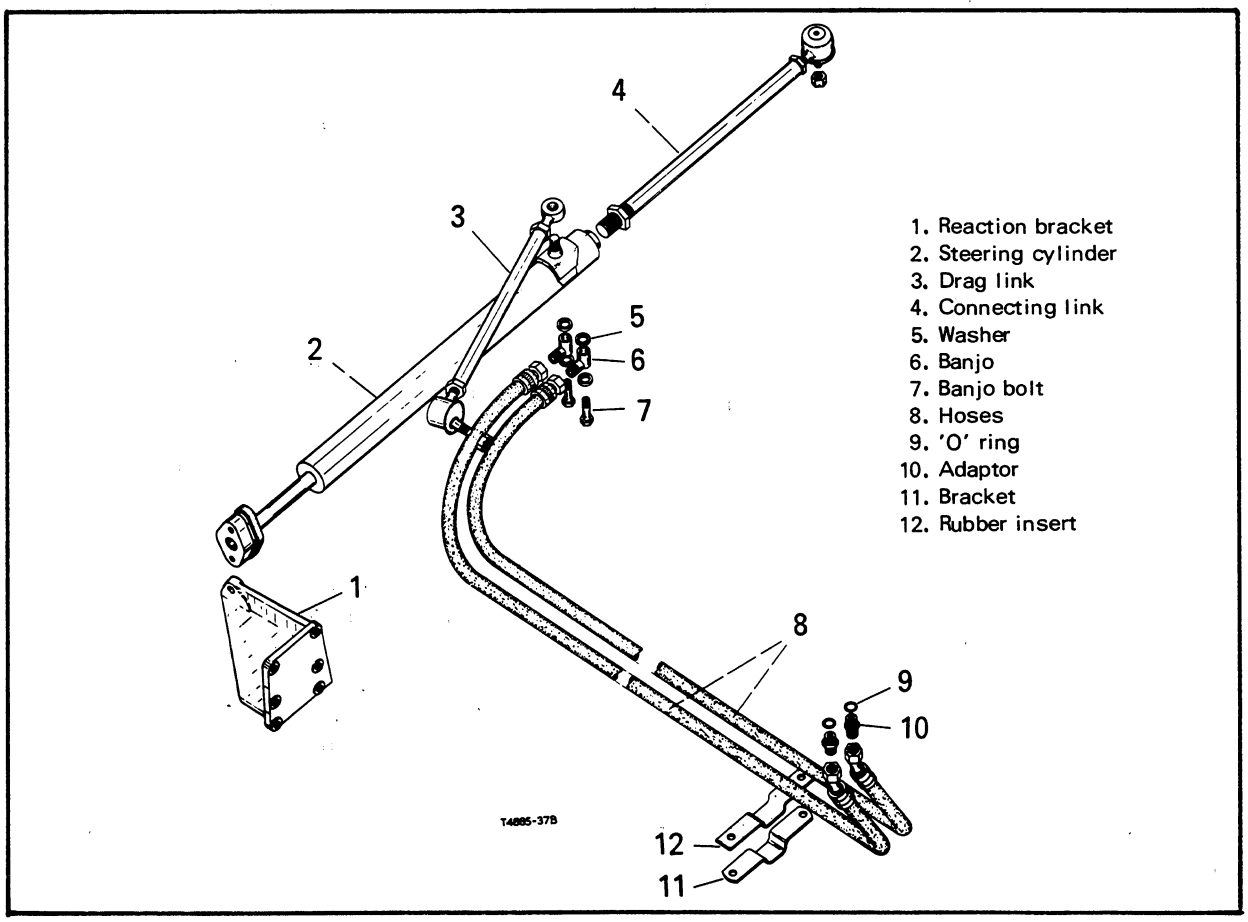


Fig. 20 STEERING CYLINDER AND ASSOCIATED PIPES

GROUP 12

HYDRAULIC SYSTEM

When the control valve spool is in 'Raise' the spool groove opens the drilling (8-10) and a land closes the outlet drilling (2-10). Thus oil enters the valve at the inlet (1-10), flows into the spool to force the non-return valve (9-10) off its seat then flows through the spool to the drilling (8-10) and into the cylinder port.

When the control valve spool is in 'Lower' the lower groove on the spool opens the oil return drilling (7-11), allowing oil to return from the cylinder under the weight of the implement and flow through the drilling (7-11), around the spool and along the drilling (6-11) to the reservoir port (5-11). Oil entering the valve inlet (1-11) flows around the spool, through the outlet (2-11) and is directed by the valve end cover through the drilling (3-11) to the vary-touch control valve.

Excess pressure created in the system during 'Raise' or 'Neutral' will force the relief valve ball (4-9) off its seat allowing oil to pass through the valve drilling to the reservoir port (5-11).

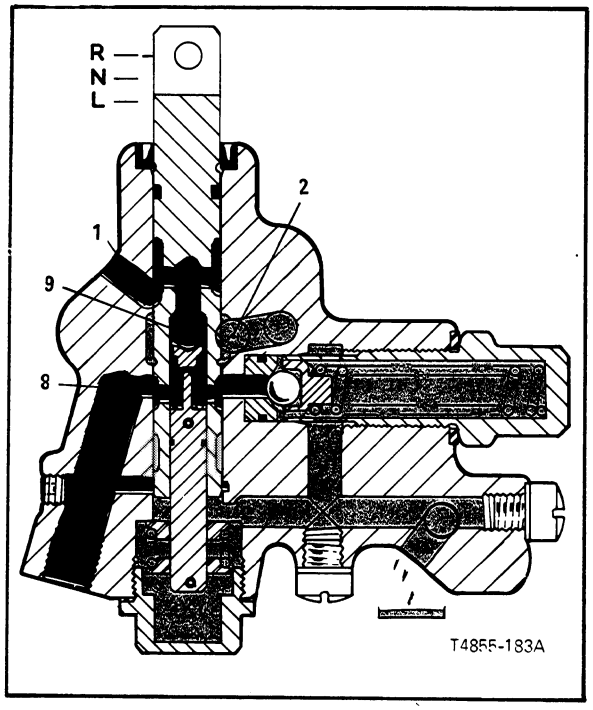


Fig. 10 RAISE

PUMP FLOW | OIL LOCKED IN | OPEN TO RESERVOIR

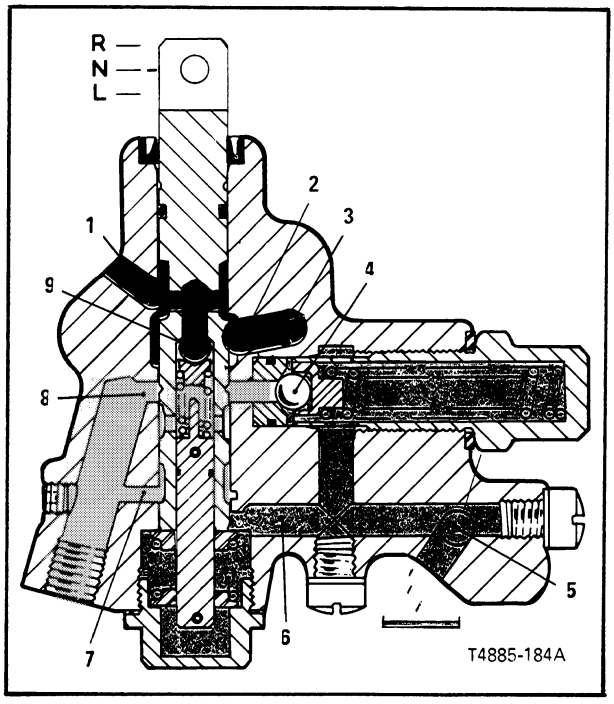


Fig. 9 NEUTRAL

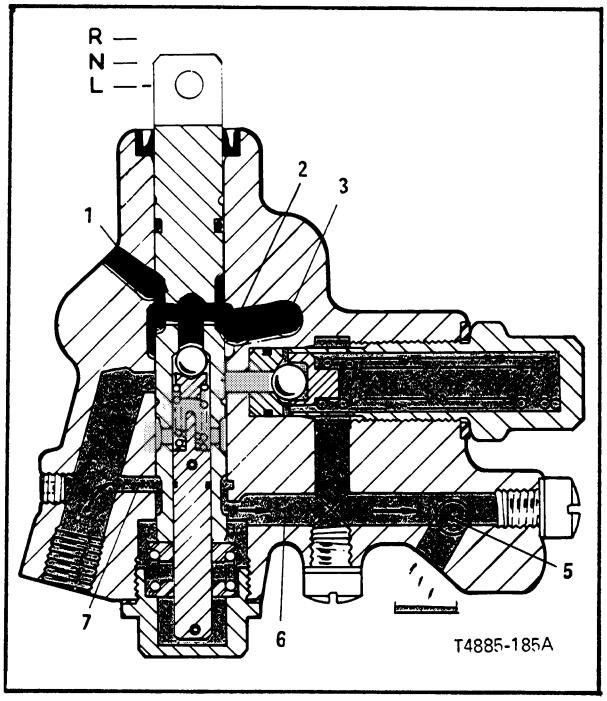


Fig. 11 LOWER

1. Inlet port
2. Outlet port
3. Control valve port
4. Relief valve ball
5. Reservoir port
6. Reservoir drilling
7. Cylinder return
8. Cylinder feed
9. Non-return valve ball

(b) Install the lower bearing (1-25) smooth face first with the recesses against the gear face and the relieved radius on the outside of the bearing on the outlet side of the pump.

(c) Install the drive and driven gears (21 & 22-28) into the lower bearing. With the pump resting on the adaptor and facing the OUTLET port, install the drive gear in the right bore of the bearing block then install the driven gear aligning the teeth mating marks made during dismantling.

(d) Install the upper bearing cup with the recesses against the gear and the relieved radius on the outlet side of the pump.

(e) Install new inner and outer 'O' rings in the grooves in the adaptor (18-28).

(f) Install the splined coupling (20-28) on the drive gear then position the two pumps together ensuring the splined coupling engages both gears and align the scribe marks made during dismantling.

(g) Insert the four through bolts (5-28) and install the lockwashers and nuts then evenly tighten the nuts to 6.25 to 7 kgm (45 to 50 lbft).

3e. INSTALLATION

(a) Install the key (10-28) in the drive shaft.

(b) Position the pump drive gear on the shaft aligning the gear with the key then use the gear retaining nut to draw the gear onto the shaft.

(c) Remove the gear retaining nut and install the tab washer (2-28). Install and tighten the nut then bend over the tab washer.

(d) Position a new gasket on the pump and install the pump on the timing case, meshing the pump gear with the timing train, then secure with the bolts (6-21), lockwashers and nuts.

(e) Connect the pipes (1, 2 & 3-21) with new 'O' rings fitted to the pump.

(f) Install the fuel lift pump (4-21) referring to GROUP 5.

(g) Connect the fuel pipe (5-21) at the fuel filter and engine backplate.

(h) Check the oil level in the reservoir.

(i) Test the pump referring to para. 3f.

3f. TESTING

(a) Run the pump at zero pressure and approximately 1500 rev/min for three minutes.

(b) Check the pump is delivering the specified pressure.

(c) Check that pump delivery is satisfactory by operating the hydraulic lift and comparing the speed of operation, referring to para. 9.

(d) Run the pump for a further 10 minutes at zero pressure and approximately 1500 rev/min.

(e) Repeat the pressure and delivery checks as in ops. (b) and (c).

4. LIFT HOUSING

4a. REMOVAL

(a) Drain the hydraulic reservoir referring to the Operator's Manual. If the lift housing does not require dismantling the oil need not be drained but plugs must be quickly inserted when pipes are disconnected.

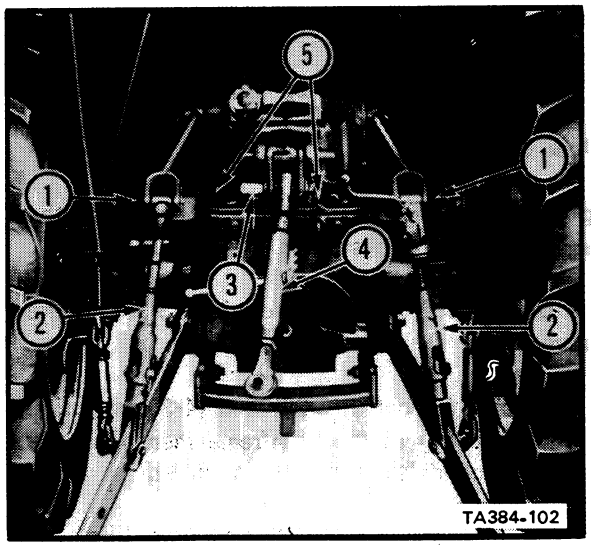


Fig. 29

8. ROCKSHAFT

8a. REMOVAL

(a) Remove the lift housing, referring to para. 4.

(b) Invert the lift housing on the stand.

(c) Remove the lift arm retaining bolts (1-50) and washers (2-50).

(d) Withdraw the lift arms (3-50) from the rockshaft.

(e) Remove the bolts and lockwashers securing the bottom cover plate (1-51), disconnect the spring (2-51) from the cover plate and lift the plate clear of the tractor.

(f) Remove the rockshaft oil seal (1-52), washer (2-52) and bush (3-52) from the right side of the lift housing.

(g) Remove the cotter pin (1-40) and withdraw the standard headed pin from the rockshaft arm (5-40) and connecting rod (4-40).

(h) Slacken the rockshaft arm retaining bolt (1-53) sufficient to allow the rockshaft (2-53) to be withdrawn from the right of the lift housing while sliding the rockshaft cam (4-53) and rockshaft cam (4-53) and rockshaft arm (3-53) from shaft. Remove the cam and arm from the lift housing.

(i) Remove the left side oil seal, washer and bush from the lift housing.

(j) If inspection proves it necessary remove the bush (5-53) from the rockshaft arm.

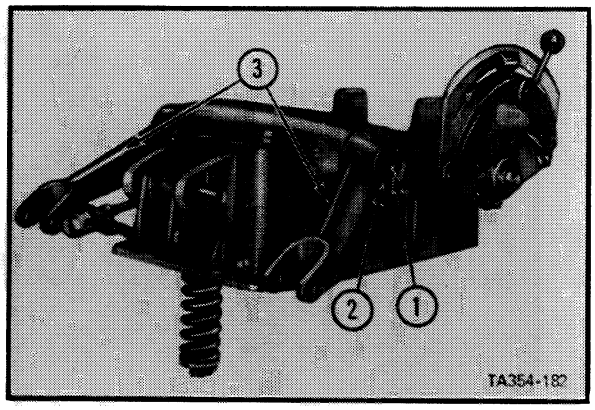


Fig. 50

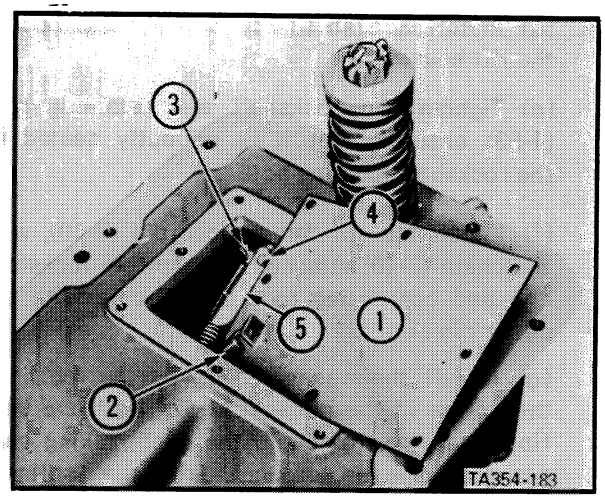


Fig. 51

8b. INSTALLATION

(a) If this was removed, install a new bush (5-53) in the rockshaft arm.

(b) Install a bush in the left side of the lift housing.

(c) Slide the rockshaft into the lift housing from the right side and at the same time thread on the rockshaft arm (3-53) and cam (4-53), with the shoulder of the cam against the arm. Engage the master spline of the rockshaft with the master spline of the arm and cam then slide the rockshaft into the left side bush.

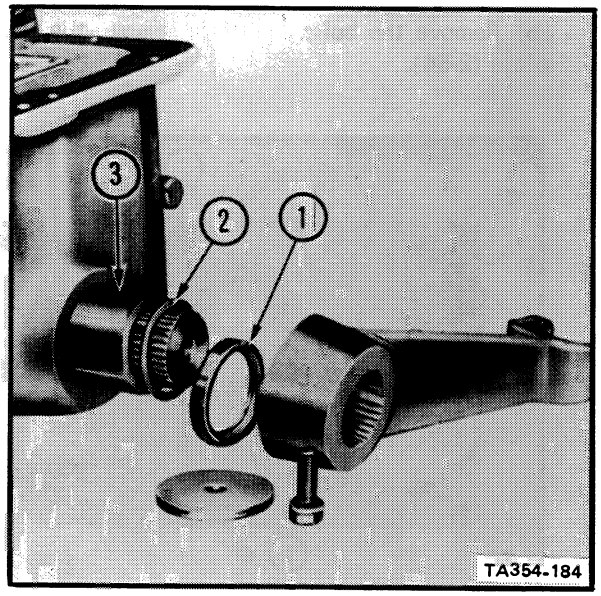


Fig. 52

GROUP 13
PTO AND BELT PULLEY

1. DESCRIPTION

1a. GENERAL

Power take-off provides the means to operate mounted, trailed or remote equipment with the power from the tractor engine.

The power take-off is engaged or disengaged by a lever, mounted on the left side of the transmission case, which operates a sliding coupling on the transmission countershaft.

A standard or constant running PTO may be fitted and the constant running versions can be either single or dual speed.

With the standard version, the PTO shaft will rotate when the PTO is engaged, the engine is running and the engine clutch is engaged, but will stop when the engine clutch is disengaged.

With the constant running version if the PTO is engaged, the rear shaft will rotate with the engine running whether or not the engine clutch is engaged but will stop when the clutch pedal is depressed through the second stage of travel as this will disengage the rear plate in the engine clutch.

1b. STANDARD PTO

The PTO shaft is carried at the rear by a ball bearing and at the front by a bronze bush located on a spigot on the rear end of the countershaft.

1c. SINGLE SPEED CONSTANT RUNNING PTO

The PTO driving shaft is hollow and the transmission driving shaft runs through it. The front of the PTO driving shaft is splined to the rear plate of the dual plate engine clutch and carries a gear which meshes with the front PTO shaft driven gear.

The front shaft runs through the hollow transmission countershaft and at the rear end is a spigot to support the rear PTO shaft and splines by which the PTO sliding coupling engages the two shafts.

1d. DUAL SPEED CONSTANT RUNNING PTO

This is similar to the single speed except that the hollow PTO driving shaft has two gears which are in constant mesh with two gears free-wheeling on the PTO countershaft which is splined to the PTO front shaft.

By means of a sliding coupling on the PTO countershaft, which is operated by a lever on the right side of the clutch housing, either of the free-wheeling gears may be locked to the PTO countershaft thus transmitting the drive from the PTO driving shaft, through the PTO front shaft to the PTO rear shaft.

As well as selecting the high or low speed the mechanism provides a neutral position.

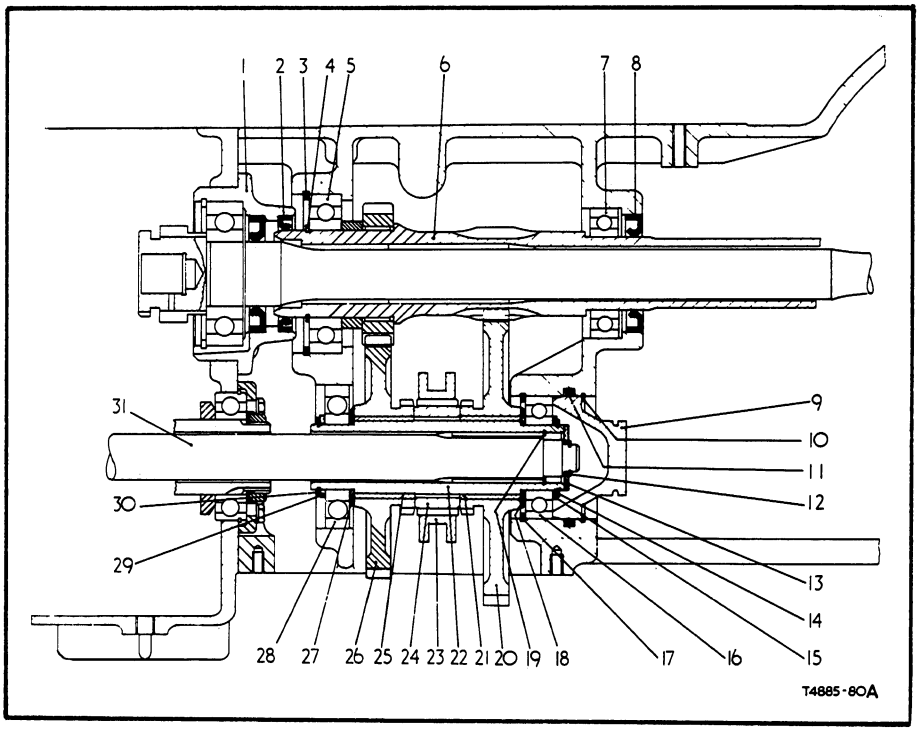


Fig. 2 CROSS SECTION OF THE DUAL SPEED C.R.P.T.O.

1. Driving shaft bearing cage
2. Oil seal
3. Circlip
4. Circlip
5. PTO driving shaft rear bearing
6. PTO driving shaft
7. PTO driving shaft front bearing
8. Oil seal
9. PTO front bearing cap
10. Circlip
11. 'O' ring
12. Circlip
13. Retaining washer
14. Circlip
15. Bearing retainer washer
16. Countershaft front bearing
17. Circlip
18. Spacer
19. Circlip
20. PTO driven gear
21. Bush
22. PTO countershaft
23. PTO coupling
24. PTO coupling body
25. Bush
26. PTO driven gear
27. Spacer
28. Countershaft rear bearing
29. Retainer washer
30. Circlip
31. PTO shaft

(d) Locate the operating lever (2-23) on the shifter fork shaft then with the forks upright and the knob in the centre hole on the clutch housing just nip-up the pinch bolt (1-23).

(e) Install the countershaft referring to sub-para. 2 then adjust the lever referring to para. 5c.

2. PTO COUNTERSHAFT AND DRIVING SHAFT

(a) Press a new oil seal (10-22), lip facing away from the engine clutch, into the clutch housing.

(b) Press the front bearing (9-22) onto the driving shaft (8-22) then install the driving gear (7-22), spacer (6-22) and rear bearing (5-22) onto the shaft.

(c) Install the driving shaft assembly into the clutch housing and secure with the circlip (3-22).

(d) Press the bush (23-22) onto the outside of the countershaft and install the circlip (22-22) inside the countershaft. If removed press a new bush (17-22) into the gear (26-22).

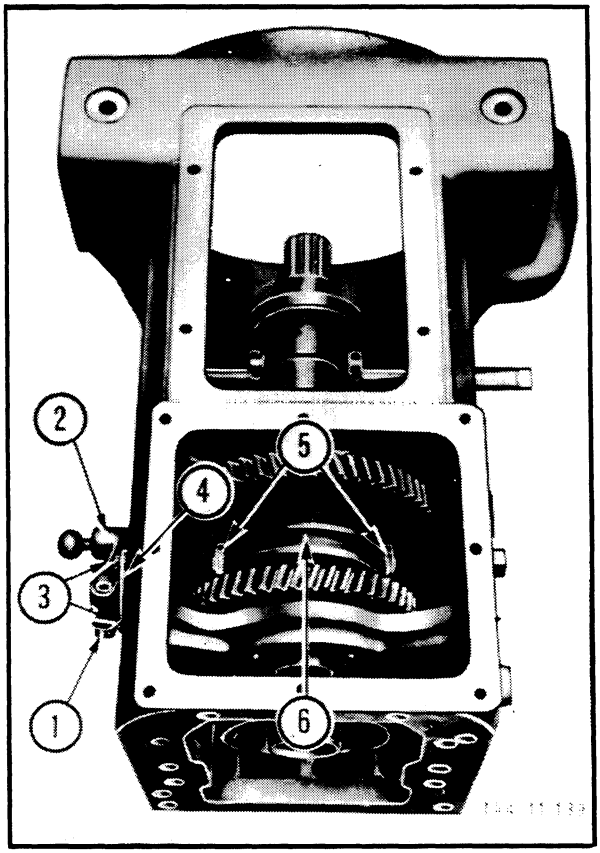
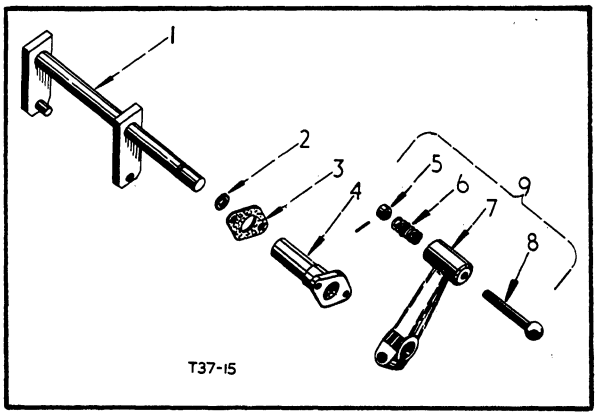


Fig. 23



1. Gear shifter fork
2. 'O' ring
3. Gasket
4. Bracket
5. Sleeve
6. Spring
7. Operating lever
8. Knob

Fig. 24 GEAR SHIFTER LINKAGE

(e) Install the front spacer (19-22), with the chamfer toward the bearing, then press on the front bearing (18-22) and secure with the retaining washer (29-22) and circlip (17-22).

(f) Install the circlip (17-2) in the clutch housing front bore.

(g) Insert the countershaft into the clutch housing from the front threading on the large gear (20-22), clutch body (25-22), clutch (24-22) and gear (26-22) as the shaft is pushed home.

(h) Ensure that the front bearing is against the circlip (17-2) then install the rear spacer (19-22), with the chamfer away from the gear. Drive the rear bearing (28-22) onto the shaft and into the bore then secure with the retaining washer (29-22) and circlip (17-22).

(i) Install a new 'O' ring (5-19).

(j) Install the clutch housing referring to para. 3.

5c. ADJUSTMENT

(a) Loosen the pinch bolt (1-23) then position the spring loaded knob in the centre locating hole in the clutch housing.

(b) Move the clutch (6-23) until it is central in the clutch body then tighten the pinch bolt.

(c) Check that the clutch is disengaged when the knob is in the centre hole and that it engages in the appropriate gear when moved to either of the other positions.