WORKSHOP MANUA

'REGULAR', 'LONG' AN
FORWARD CONTROL

88 and 109

PART No. 4611

Supplement

covering

Land-Rover Series IIA

109 Forward Control, 2¼ Litre

The new features of the 109 Forward Control Land-Rover are detailed in the Summary and Data section which follows.

Details other than those mentioned may be assumed to correspond to the 109 'Long' Series IIA, 2¼ litre petrol engine Land-Rover.

(*a*) **Engine.** The standard 2¼ litre petrol engine is fitted, with modifications to the fan assembly, the front side cover and oil filler, exhaust and inlet manifolds. accelerator linkage, starter motor switch, cold start control, exhaust and fuel systems, and the cooling system. Two engine tie rods are fitted.

All engine data is as given for the 2¼ litre petrol engine in both the Land-Rover Owner's Manual and Workshop Manual.

(*b*) **Clutch.** Vehicles with the engine suffix letter 'A': Single dry plate, 9 in. (230 mm) diameter. Hydrostatic operation. No adjustment is necessary during the life of the clutch centre plate. Pressure plate springs, identification colour black.

For details of the clutch installation on vehicles with the engine suffix letter 'B', see News Letter No. 32, Item 156.

(*c*) **Main gearbox.** Single helical constant mesh with synchro-mesh on third and top speeds

Modifications include a longer mainshaft, with a different rear bearing, and a modified main gear change lever with remote control rods.

Transfer gearbox. 'Easy change' type, giving two speed reductions on the main gearbox output. Incorporates a two/four wheel drive control.

Gear ratios. Vehicles with gearbox suffix letter 'A'.

Main gearbox. The main gearbox ratios are as the basic 'Regular' and 'Long' models

Transfer gearbox. High transfer .. 1.3 : 1
Low transfer .. 3.27 : 1

Overall ratios.	In High Transfer	In Low Transfer
Top	6.11 : 1	15.36 : 1
Third	8.414 : 1	21.164 : 1
Second	12.483 : 1	31.398 : 1
First	18.264 : 1	43.941 : 1
Reverse	15.56 : 1	39.147 : 1

For details of the gear ratios on vehicles with gearbox suffix letter 'B', see News Letter No. 32, Item 157.

(*d*) **Steering.** Vehicles with chassis suffix letter 'A', as detailed in the current Owner's Manual and Workshop Manual, except for modifications to the longitudinal tube, steering relay upper lever and the steering column.

For details of the steering unit fitted to vehicles with chassis suffix letter 'B', see News Letter No. 32, Item 159

(e) **Front and rear axles.** Axle casings are reinforced, and the differential assemblies, stub axle assemblies and half-shafts and joints have undergone material changes to give increased strength.

(*f*) **Road springs and shock absorbers.** Heavy duty road springs, involving new 'U' bolts and shackles, are fitted at the front and rear. Bushes are common with the current basic 109 vehicles.

Heavy duty type shock absorbers are fitted to both front and rear axles.

(*g*) **Brakes.** (Foot). Hydraulic operation, 11 in. (279.4 mm) diameter brake drums, vacuum servo assisted from engine. Width of front brake shoes increased to 3 in. (76 mm) to give a greater effective braking area.

(Hand). Mechanical on transfer box output shaft.

Modified brake control rods, and hydraulic pipes, hoses, junctions and stop light switch.

(*h*) **Chassis.** The chassis frame assembly is specially constructed and is suitable for Forward Control models only.

(*j*) **Wheels.** New type wheels are fitted to accommodate larger tyres. The shape of these wheels gives a 2 in. (50,8 mm) wider track dimension. Tyres are 9.00 x 16 in., Dunlop or Avon. Step fitted to front wheels and retained by three wheel nuts.

(*k*) **Electrical.** A new cable harness, battery cables, and starter solenoid and switch are incorporated. Flashing direction indicators are standard equipment.

(*l*) **Miscellaneous.** A new speedometer head is fitted to allow for the larger tyres. The speedometer drive cable is longer than is fitted to any previous models.

Capacities	Imperial unit	U.S. unit	Litres
Fuel tank	16 gallons	19 gallons	73
Cooling system	18 pints	21½ pints	10.25

All capacities, other than those given, are the same as previous Land-Rover models.

Dimensions and weights

Overall length	193 in. (4,9 m)
Overall width	75½ in. (1,92 m)
Overall unladen height	88¼ in. (2,24 m)
Wheelbase	109 in. (2,77 m)
Track	53½ in. (1,36 m)
Turning circle	49 ft. (14,9 m)
Unladen ground clearance	10 in. (254 mm)
Running weight with water, oil, 5 gallons fuel	4,300 lb. (1.950 kg)
Maximum approved pay load, normal roads	2 persons and 3,380 lb. (1.532 kg)
Maximum approved pay load, cross-country	2 persons and 2,800 lb. (1.270 kg)
Maximum drawbar pull, dependent upon surface conditions ..	3,920 lb. (1.775 kg)
Loading area of body	123½ in. x 63½ in. (3,14 m x 1,60 m)

Workshop information

Details are given here for carrying out certain workshop operations which require special instructions.

Operations other than those mentioned, follow previous Land-Rover procedure and will present no difficulty.

Engine and gearbox assembly. To remove from vehicle

When the engine is to be removed, the engine and gearbox must be lifted from the vehicle together as a single unit. A special lifting sling which gives the best point of balance is detailed below, and will be found very useful for this operation. See under the appropriate heading for details of how to remove the gearbox separately.

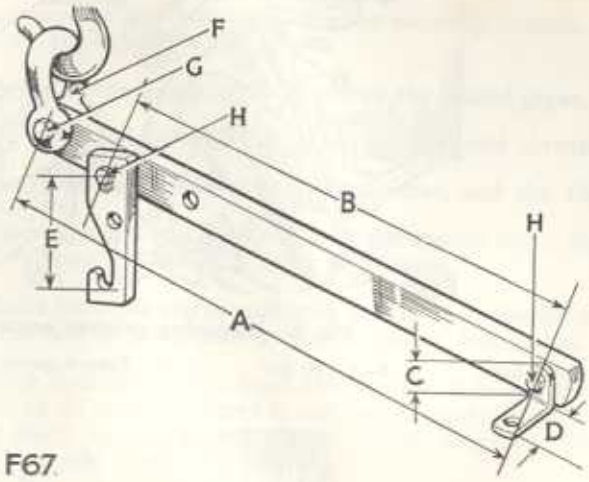

Fig. 1. Lifting sling details

A—22 in. (558,8 mm)
B—20 in. (508 mm)
C—1 in. (25,4 mm)
D—1½ in. (38 mm)
E—4 in. (101,6 mm)
F—Standard shackle of sufficient rating
G—½ in. H.T. bolt and nut
H—⅜ in. H.T. bolts and nuts

Material required. Main beam and lifting hook, 1½ in. x ⅜ in. (38 mm x 9,5 mm) flat mild steel.
End bracket, 1 in. x $\frac{3}{16}$ in. (25,4 mm x 4,8 mm) flat mild steel.
Lifting shackle, standard type.

1. Position the vehicle, preferably over a pit, and disconnect the battery leads.
2. Remove the three engine cover panels and the front seat cushion.

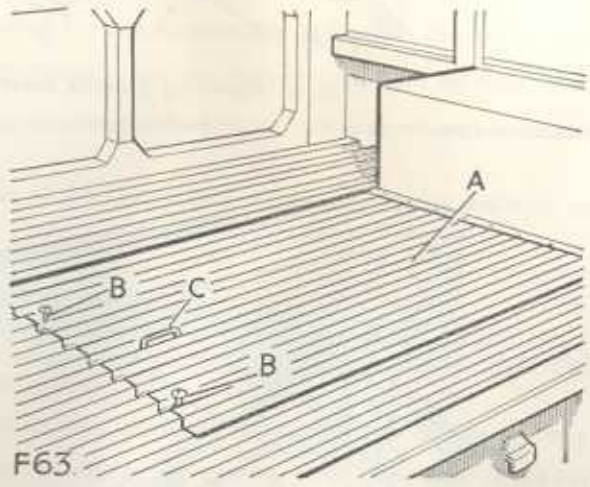

Fig. 2. Rear engine cover removal

A—Floor panel
B—Retaining screws
C—Pull-out lifting handle

3. Drain the coolant from the engine radiator drain tap or plug and the cylinder block tap.
4. Drain the engine oil, and gearbox and transfer box oils, if these units are to be dismantled after removal.
5. Disconnect the air intake pipe at the carburetter, remove the air cleaner and the air cleaner mounting bracket, secured with four bolts and nuts.

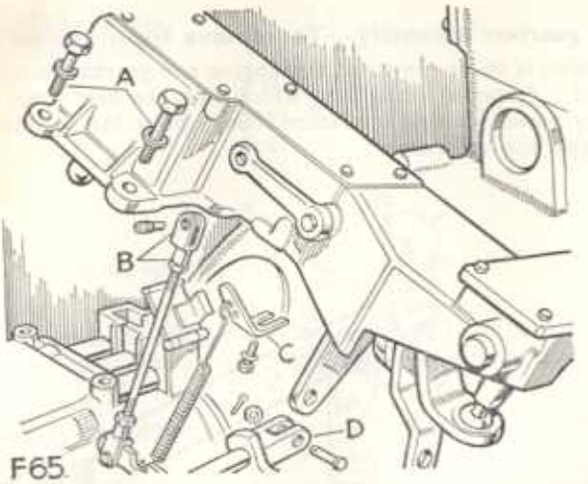

Fig. 3. Removing gearbox controls

A—Four retaining bolts B—Clevis pin C—Return spring retaining bracket D—Clevis pin

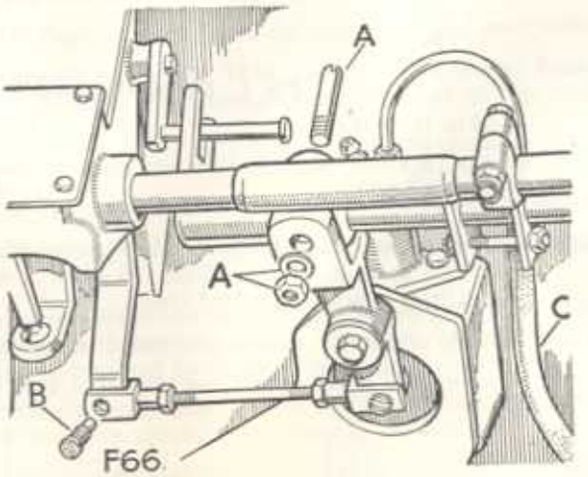

Fig. 4. Removing gearbox controls

A—Special bolt, nut and washer assembly B—Clevis pin C—Clutch slave cylinder connecting hose

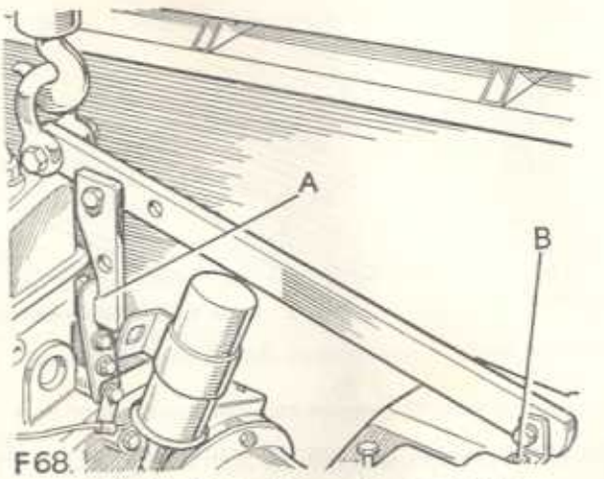

Fig. 5. Engine lifting sling in position

A—Rear engine lifting bracket B—Bolt in remote gear housing

6. Disconnect the manifold to brake servo unit connecting pipe, at the flexible hose connection.
7. Disconnect the top water hose at the engine and the bottom water hose at the water pump.
8. Remove the four fan drive shaft bolts at the water pump flange.
9. Disconnect the exhaust pipe from the exhaust manifold.
10. Disconnect the exhaust pipe at the first joint and the securing bracket, and remove the front exhaust pipe section from the vehicle.
11. Disconnect the petrol pipe at the pump inlet. Remove the heater pipes, if fitted, at the engine.
12. Disconnect the throttle pedal linkage at a ball joint, and the hand throttle linkage, when fitted.
13. Disconnect the cold start control cable at the carburetter, and the clamps.
14. Disconnect dynamo cables, ignition coil leads, oil pressure switch cable, thermostat switch cable If alternator is fitted, remove the machine from the engine.
15. Remove the securing bolts from the starter solenoid and lay the solenoid across the engine. Disconnect the engine earth lead at the chassis or starter motor connection.
16. When fitted, remove the hydraulic pump from the transfer box and tie back. Disconnect the P.T.O. control rods. If an oil cooler is fitted it will be necessary to remove the engine external oil filter, two securing bolts, complete with the oil cooler adaptor. Note direction of assembly. Disconnect the oil cooler pipes, if fitted.
17. Disconnect the speedometer cable.
18. Remove the four bolts from the rear remote housing of the gearbox controls, the three clevis pins and the special bolt, nut assembly, as shown in the illustrations. Remove the return spring at the retaining bracket. Tie the assembly back clear of the engine.
19. After sealing the hydraulic fluid reservoir to prevent leakage, disconnect the clutch slave cylinder hydraulic pipe at the chassis.
20. Remove the front propeller shaft at the transfer box and the rear propeller shaft complete.
21. Disconnect the hand brake control linkage at the clevis pin nearest to the brake unit.
22. Disconnect the engine tie rods at the bell housing and swing the rods downwards to clear.
23. Remove the coil mounting bracket as necessary and attach the engine sling as shown.
24. Remove the engine oil dipstick, and the rocker cover and oil filler breather filters.
25. Remove the engine unit mountings, retaining any shims which may be located under the mountings for refitment.
26. Lift the engine unit out of the chassis in a slightly nose-down position, and bring back over the floor of the body.

Gearbox assembly, to dismantle

1. After removal of the engine/gearbox unit from the chassis, detach the gearbox assembly from the engine flywheel housing. Pull gearbox assembly rearwards to withdraw the primary shaft from the clutch centre plate.
2. Mount the gearbox assembly on a suitable stand and drain off the gearbox and transfer box oils.
3. Remove the clutch slave cylinder at the two set pins in the rear of the support bracket, and the clevis pin in the clutch withdrawal shaft.
4. Remove the transfer box output shaft driving flange, complete with brake drum.
5. Remove the transmission brake back plate and brake assembly complete, from the speedometer drive housing.
6. Remove the transfer box bottom cover and joint washer.
7. Remove the securing nut and spring washer, and the intermediate shaft retaining plate, from the transfer casing. Remove the stud

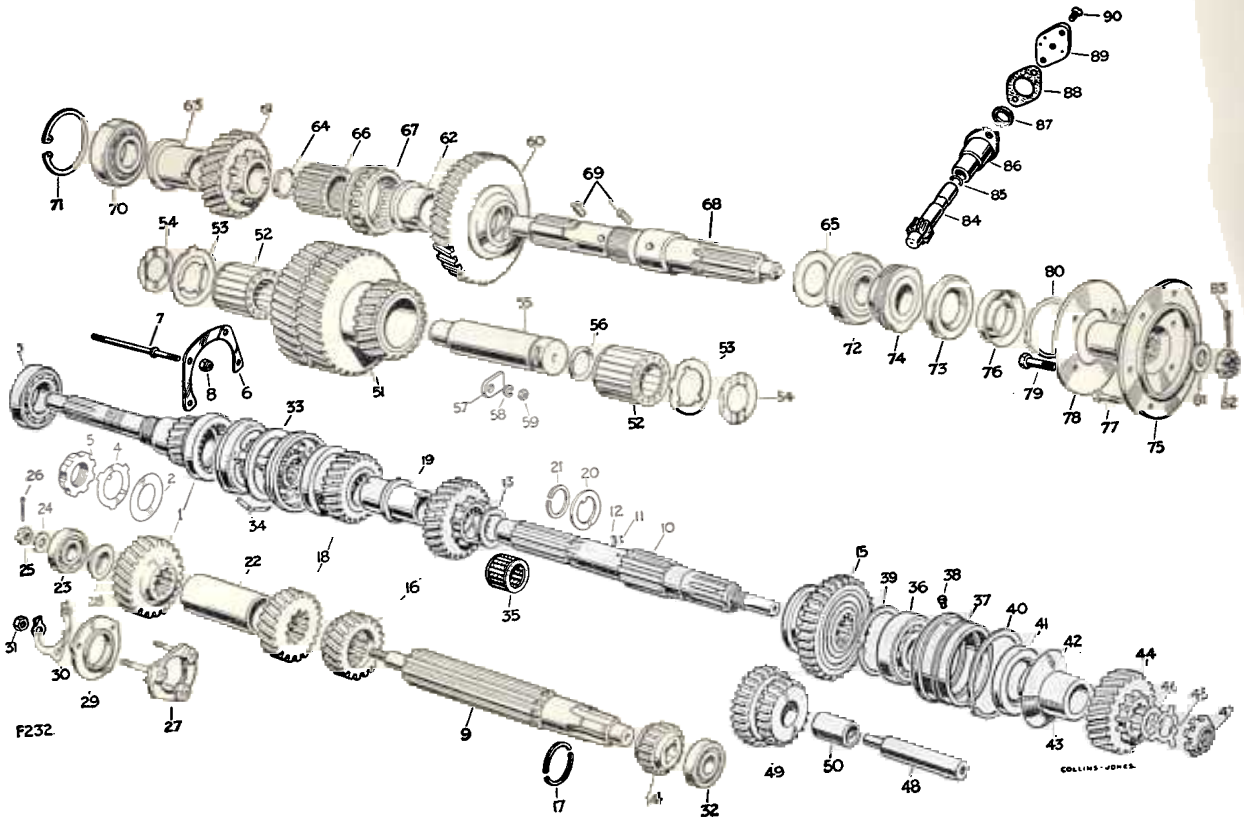

Fig. 6. Main and transfer gear assemblies

1 Primary pinion and constant gear
2 Shield for primary pinion
3 Ball bearing for primary pinion
4 Lockwasher
5 Locknut
6 Retaining plate
7 Extension stud
8 Self-locking nut
9 Layshaft
10 Mainshaft
11 Peg for 2nd gear thrust washer
12 Peg for mainshaft distance sleeve
13 Thrust washer
14 1st speed layshaft gear
15 1st speed mainshaft gear
16 2nd speed layshaft and mainshaft gear
17 Split ring for 2nd speed layshaft gear
18 3rd speed layshaft and mainshaft gear
19 Distance sleeve for mainshaft
20 Thrust washer
21 Spring ring fixing 2nd and 3rd mainshaft gears
22 Sleeve for layshaft
23 Bearing for layshaft, front
24 Plain washer
25 Slotted nut
26 Split pin
27 Bearing plate for layshaft
28 Distance piece
29 Retaining plate for layshaft front bearing
30 Lockwasher
31 Nut
32 Bearing for layshaft, rear
33 Synchronising clutch
34 Detent spring for clutch
35 Roller bearing for mainshaft
36 Ball bearing for mainshaft
37 Housing for mainshaft bearing, rear
38 Peg, housing to casing
39 Circlip, bearing to housing
40 Circlip, housing to casing
41 Oil seal for rear of mainshaft
42 Oil thrower for mainshaft
43 Distance piece, rear of mainshaft
44 Mainshaft gear for transfer box
45 Lockwasher
46 Shim washer
47 Special nut
48 Shaft for reverse gear
49 Reverse wheel assembly
50 Bush for reverse wheel
51 Gear, intermediate
52 Roller bearing for intermediate gear
53 Thrust washer for intermediate gear
54 Shim for intermediate gear
55 Shaft for intermediate gear
56 Sealing ring for intermediate shaft
57 Retaining plate for shaft
58 Spring washer
59 Nut
60 Low gear wheel
61 High gear wheel
62 Bush for low gear wheel
63 Bush for high gear wheel
64 Thrust washer, inner member to bush for high gear
65 Thrust washer for low gear wheel
66 Inner member for transfer change speed
67 Outer member for transfer change speed
68 Output shaft, rear drive
69 Peg for output shaft
70 Bearing for output shaft, front
71 Circlip fixing bearing to case
72 Bearing for output shaft, rear
73 Oil seal for output shaft
74 Speedometer worm complete
75 Flange for output shaft, rear drive
76 Mudshield for flange
77 Fitting bolt for brake drum
78 Retaining flange for brake drum bolts
79 Fitting bolts for propeller shaft
80 Circlip retaining bolts and flange
81 Plain washer
82 Slotted nut
83 Split pin
84 Speedometer pinion
85 Sealing ring for sleeve
86 Sleeve for pinion
87 Oil seal for pinion
88 Joint washer for sleeve
89 Retaining plate for pinion
90 Screw fixing plate to housing

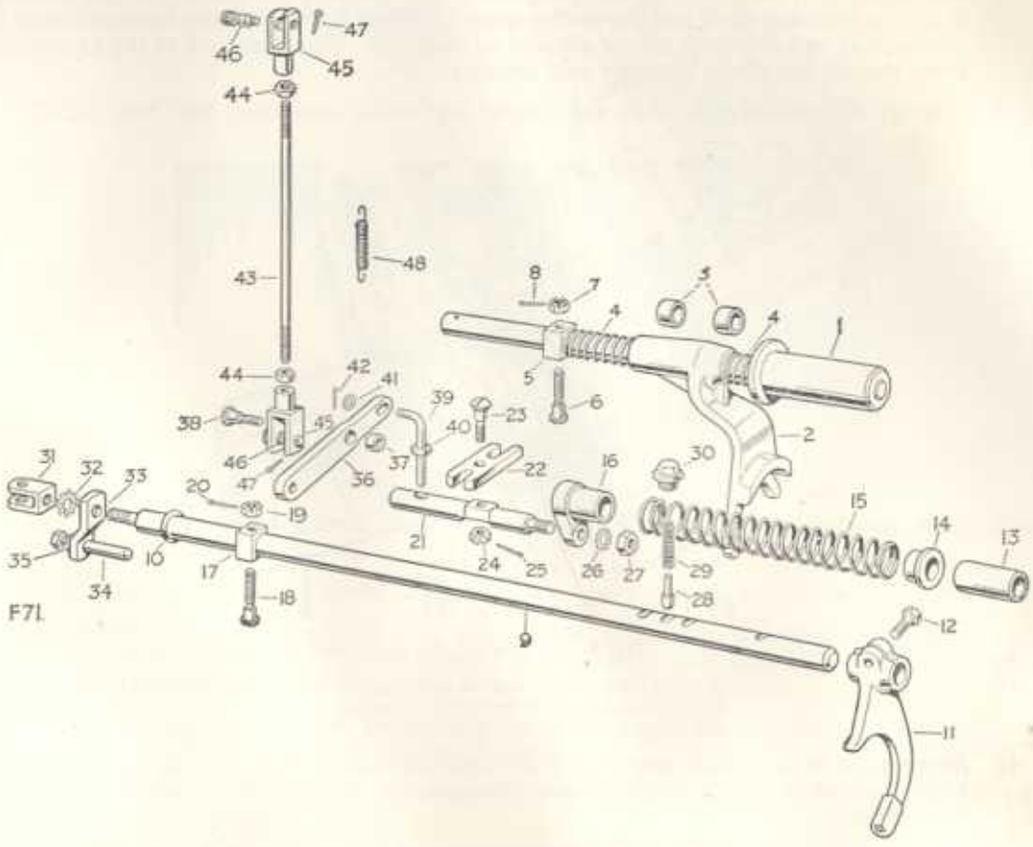

Fig. 7. Front wheel drive and transfer selector assemblies

1 Selector shaft, four-wheel drive
2 Selector fork complete
3 Bush for selector fork
4 Spring for selector fork
5 Block for selector shaft
6 Special screw
7 Castle nut
8 Split pin
9 Selector shaft, transfer gear change
10 Sealing ring
11 Selector fork, transfer gear change
12 Set bolt
13 Distance tube for transfer selector shaft
14 Locating bush, selector shaft spring
15 Spring for gear change selector shaft
16 Connector, gear change to pivot shaft
17 Block for selector shaft
18 Special screw
19 Castle nut
20 Split pin
21 Pivot shaft for selector shafts
22 Coupling, selector shafts to pivot
23 Special screw
24 Castle nut
25 Split pin
26 Shakeproof washer
27 Nut
28 Plunger
29 Spring for plunger
30 Plug retaining plunger
31 Fork link for selector shaft
32 Shakeproof washer
33 Link and adjuster plate
34 Adjusting screw
35 Locknut
36 Lever assembly, four-wheel drive
37 Bush for lever
38 Special bolt, lever to housing
39 Locking pin four-wheel drive lever
40 Sealing ring
41 Plain washer
42 Split pin
43 Selector rod, four-wheel drive
44 Locknut
45 Clevis fork end
46 Clevis pin and spring
47 Split pin for clevis
48 Spring for selector rod

8. Remove the mainshaft rear support bearing housing, or the power take-off unit if fitted. Dismantle this assembly if necessary, by removing the circlip securing the bearing in the housing. Withdraw the retaining plate and the needle roller bearing. Removal of the hardened steel bush from the housing will allow the second plate to be removed. (See Section T of the Land-Rover Workshop Manual for power take-off unit details.)

9. Extract the intermediate shaft and rubber seal, using extractor, Part No. 262772.

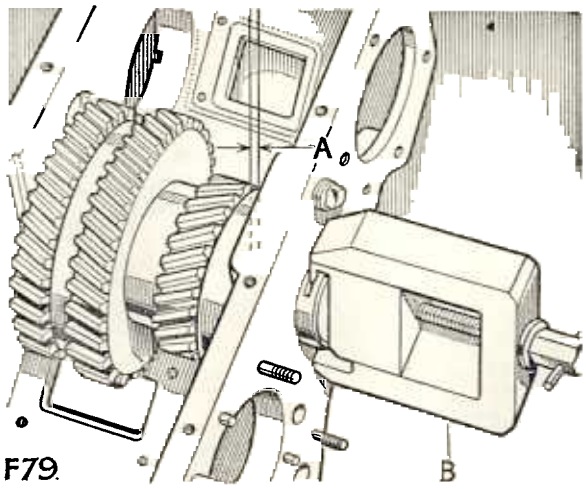

Fig. 8. Removing the intermediate shaft

A—End-float of intermediate gear cluster, .004 to .008 in. (0,10 to 0,20 mm)
B—Intermediate shaft extractor in position.

10. Remove the intermediate gear cluster through the base of the casing, complete with the needle roller bearing at each end of its bore. Remove also the two thrust washers and if fitted, the shim washer.

11. If fitted, remove the power take-off selector fork with the top plate, and note the assembly direction of the selector dog. Detach the transfer casing from the main gearbox, noting that three self-locking nuts are located inside the transfer casing. Dismantle the main gearbox as detailed in Section C, Operation C/8, in the Land-Rover Workshop Manual.

Transfer box, to dismantle

1. Remove the speedometer drive pinion assembly from the housing. To strip this assembly withdraw the pinion from the sleeve and remove the oil seal. Remove the rubber 'O' ring from the pinion.

2. Remove the speedometer drive housing complete with shims, which should be preserved. If necessary, remove the oil seal from this housing.

3. Withdraw the speedometer drive worm from the transfer box output shaft, this is a sliding fit.

4. Remove the control rod connecting link and travel stop from the transfer selector shaft.

5. Remove the front output shaft housing from the transfer box, complete with the output shaft, front wheel drive dog clutch, dog clutch selector shaft and fork, and the joint washer.

6. Remove the top cover from the transfer box and the selector shaft locating plug, spring and plunger.

7. Remove the transfer gear selector fork and shaft, noting direction of assembly.

8. Support the gear wheels assembly in a forward position by placing two $\frac{5}{8}$ in. (15,9 mm) distance pieces between the low gear wheel and the casing.

9. Take precautions to protect the end of the output shaft against damage, and drive the shaft rearwards until it can be withdrawn by hand, bringing the rear support bearing with it. Remove the bearing and steel thrust washer from the shaft, if necessary.

10. The high and low speed gear assembly may now be lifted from the box. Note the order of assembly. Remove the distance pieces.

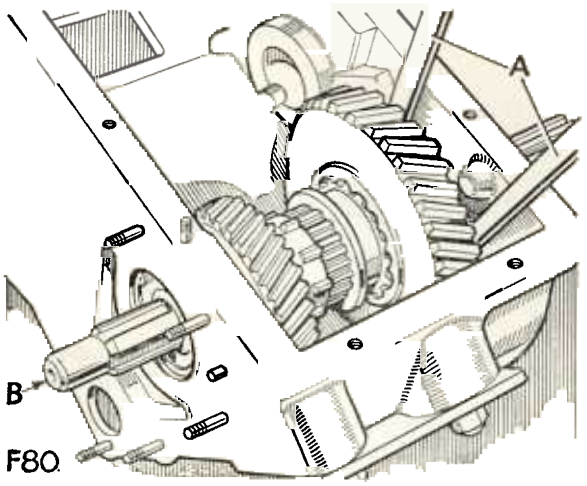

Fig. 9. Removing transfer box output shaft

A—$\frac{1}{2}$ in. (15,9 mm) distance pieces B—Drift out shaft in direction of arrow

11. Remove the retaining circlip and the front support bearing, if necessary.
12. Examine all components for wear and damage, particularly the steel thrust collar from the high speed gear wheel, and the two locating pegs in the output shaft. These locating pegs are $\frac{5}{32}$ in. (3,96 mm) diameter x .656 in. (16,6 mm) long, Part No. 09561.
13. If necessary, remove from the transfer casing the engine support brackets, the selector shaft bush and the reverse gear stop bolt and locknut.
14. If necessary, remove from the output driving flange, the brake drum, dust shield, circlip, bolts and retaining plate.

Checking the tolerances of the transfer box output shaft assembly

1. Fit the steel thrust washer and the bearing inner member to the rear of the output shaft.
2. Fit the low gear wheel complete with bush, to the shaft, and push fully home against the steel thrust washer.
3. While holding the bush in contact with the steel thrust washer, ensure that the end-float of the gear wheel is in accordance with the details given.

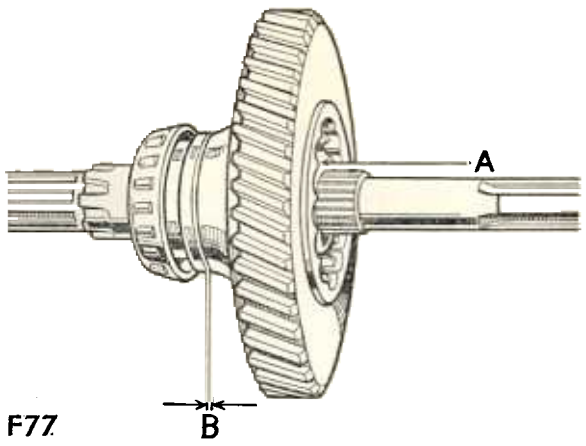

Fig. 10. Checking end-float of the 'low' transfer gear wheel

A—Maintain pressure against bush in direction of arrow
B—Clearance between gear wheel and thrust washer to be .002 in. to .009 in. (0,05 to 0,23 mm)

4. Remove the low gear wheel from the shaft, and replace the centre bush. Fit the inner member of the sliding dog, the distance collar and the high gear wheel complete with bush.

5. Maintain a pressure against the bush, keeping the assembly in contact with the steel thrust washer, and check that the end-float of the high gear wheel is within the limits shown.

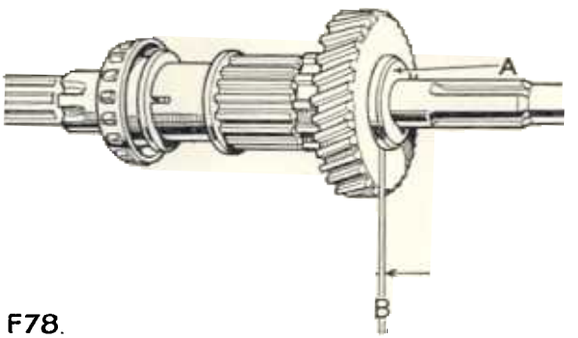

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Fig. 11. Checking end-float of the 'high' transfer gear wheel

A—Maintain pressure against bush in direction of arrow
B—Clearance between gear wheel and bush thrust to be .005 in. to .022 in. (0,12 to 0,57 mm)

6. Excessive end-float on either gear wheel may be rectified by carefully rubbing down the end of the respective bush, using fine emery cloth and a face plate.
7. Remove all the components from the shaft except the steel thrust washer and rear bearing inner member, ready to proceed with final assembly of the transfer box.

Transfer box, to assemble

1. If necessary renew the oilite bush in the transfer casing, which carries the transfer selector shaft. This bush is an interference fit in the casing, and must be reamed to 1.148 in. (29,17 mm) after fitting.
2. The steel thrust washer, and the inner member of the rear roller bearing, should be in position on the output shaft. Ensure that the two steel location pegs are fitted to the shaft.
3. It will be advantageous if the two bushes and distance collar are marked to show the position of the inner key-way.
4. Fit the bush to the low speed gear wheel, in the correct direction.
5. Place the inner and outer splined members of the sliding dog against the thrust side of the bush. The recessed side of the inner member should be towards the bush, and the teeth on the outer member should be in mesh with the internal teeth of the gear wheel.
6. Place the high speed gear wheel, minus its centre bush, in position on the assembly.
7. Lower the complete assembly into position in the transfer box, with the low speed gear wheel to the rear.
8. Carefully push the output shaft through the assembly and into position, from the rear, ensuring that the low speed gear wheel bush locates on the pegs in the shaft.
9. Slide the distance collar over the front of the shaft and through the centre of the high speed gear wheel, taking care to locate it on the peg. Ensure that the inner splines of the sliding dog are located on the shaft splines.
10. Fit the bush to the high speed gear wheel, and locate it on the peg.
11. While holding the gear assembly towards the rear of the housing, against the steel thrust washer, pull the shaft forwards as far as possible. This condition must be maintained while the roller bearings are being fitted, otherwise the bushes may become dislodged from the pegs on the shaft.
12. Fit the outer member of the rear roller bearing to the housing.
13. Temporarily fit the speedometer drive housing and retain with two securing nuts, in order to hold the rear bearing while the front bearing is being fitted.
14. While supporting the rear end of the shaft, drift or press the front roller bearing fully home against the thrust side of the high speed gear wheel bush. Fit the circlip in the transfer box housing.
15. Remove the speedometer drive housing.

16. Place the protection cap (Part No. 243241) over the threads at the rear of the output shaft, see Fig C.17 in the Land-Rover Workshop Manual, and drive the shaft forwards until the front bearing is hard against the circlip. Lightly tap the rear bearing outer race until all end-float on the output shaft has been eliminated.

17. If necessary, renew the output shaft oil seal in the speedometer drive housing; fit with the knife edge towards the transfer box housing. Smear the outer diameter of the seal with jointing compound, and warm the housing before assembly.

18. If necessary, renew the speedometer drive pinion oil seal, fitted in the pinion sleeve, and the rubber 'O' ring. Fit the speedometer drive pinion to the pinion sleeve, and fit the assembly to the speedometer drive housing. Ensure that the 'flat' on the sleeve is fitted towards the output shaft. The pinion should be a sliding fit in the sleeve and a check made that the drive functions correctly.

19. Fit the speedometer drive worm, conical end first, to the output shaft, and fit the dowel located speedometer drive housing to the transfer casing, complete with suitable shims for adjustment of the output shaft bearing end-float. These shims, which are available .003 in. (0,08 mm), .005 in. (0,13 mm), .010 in. (0.25 mm) and .015 in. (0,38 mm) thick, should be selected so that the face of the rear bearing lies .002 in. (0,05 mm) below the face of the outer shim. Tighten the securing nuts of the drive housing. Drive the output shaft towards the rear and ensure that it turns freely, but that no end-float is present.

20. Engage the transfer gear selector fork in the sliding dog, with the threaded side of the pinch bolt hole towards the intermediate gear position, that is, head of pinch bolt away from intermediate gear.

21. Slide the selector shaft through the transfer casing and the selector fork, and secure the pinch bolt in the correct location.

22. Fit the selector shaft locating plunger, spring and retaining plug to the transfer housing.

23. Check the end-float of the intermediate gear cluster before further assembly, as follows. Place the two intermediate shaft thrust washers in the transfer casing and retain them with a film of grease. The washers should be fitted with their bronze faces inwards and the tabs located in the casing.

24. Fit the two needle roller bearings in the intermediate gear cluster and offer the gear into position, that is, with the larger gear wheels to the front.

25. Fit the stepped intermediate shaft into position from the rear, and lightly tap it home. The shaft must be a light tap fit in the casing.

26. Ensure that the gear cluster has .004 in. to .008 in. (0,10 to 0,20 mm) end-float in the casing; if incorrect, the float can be adjusted by grinding the thrust washers or fitting a shim (.010 in. (0,25 mm) thick) behind one washer. When the end-float is satisfactory withdraw the shaft and remove the gear cluster, needle rollers and thrust washers, from the casing.

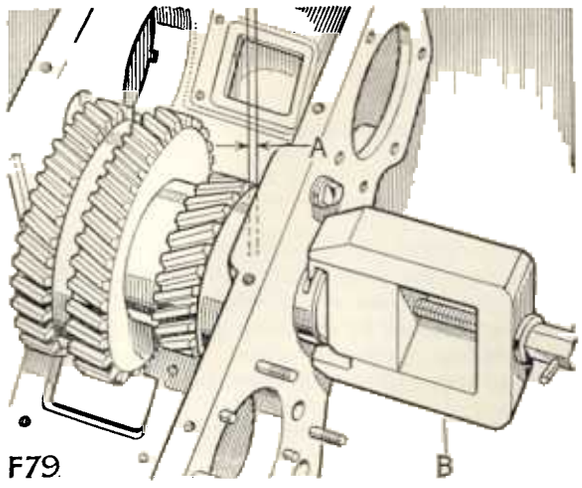


Fig. 12. Checking end-float of intermediate gears

A—End-float of intermediate gear cluster, .004 in. to .008 in. (0,10 to 0,20 mm)
B—Intermediate shaft extractor in position.

27. Continue assembly of the transfer box as follows. Replace the front output shaft housing assembly. See Operation C/24 in the Land-Rover Workshop Manual, for overhaul and assembly details of this unit.
28. If removed, fit the first retaining plate, hardened steel bush, needle roller bearing, second retaining plate and circlip, to the main shaft end support bearing housing. If a power take-off unit is fitted see Section T of the Land-Rover Workshop Manual for details of this assembly
29. Fit the complete end bearing assembly, or power take-off unit, to the transfer casing, together with a joint washer.
30. Fit the top cover plate, or power take-off selector assembly to the transfer casing, using a joint washer.
31. If removed, fit the gearbox unit support brackets to the transfer casing.
32. Fit the control connecting link and travel stop, to the transfer selector shaft, and retain with the nut and star washer.

To assemble the transfer box to the main gearbox

1. Attach the transfer box and joint washer to the main gearbox, locating it on the dowels. Fit the securing nuts including the three self-locking nuts inside the transfer casing.
2. If removed, replace the intermediate shaft retaining plate stud in the transfer casing.
3. Place the two intermediate shaft thrust washers in the transfer casing and retain them with a film of grease. The washers should be fitted with their bronze faces inwards, and the tabs located in the casing.
4. Fit the two needle roller bearings in the ends of the intermediate gear cluster and place into position, ensuring that the gears mesh with the mainshaft and output shaft gears.
5. If necessary, renew the rubber sealing ring which is fitted to the stepped intermediate shaft, then fit the shaft to the casing from the rear and lightly tap into position. Fit the retaining plate and secure.
6. Fit the transmission back plate and brake assembly, and centre shield, to the speedometer drive housing, with the expander rod to the right-hand side.
7. Examine the oil seal contacting surface on the output drive flange, for damage which could cause failure of the oil seal. Rectify or renew the flange as necessary.
8. If removed, refit the six brake drum securing bolts to the outer holes of the flange and fit the retaining plate. Fit the propeller shaft securing bolts in the inner holes and secure them with the circlip.
9. Fit the dust excluder to the flange, with the open side towards the propeller shaft.
10. Fit the propeller shaft drive flange assembly to the output shaft and retain with the plain washer and castellated nut. Ensure that the flange abuts the speedometer drive worm and tighten the nut to 85 lb/ft. (11,76 mkg)
11. Fit the brake drum and adjust the brake, see Section H of the Land-Rover Workshop Manual.
12. Adjust the transfer shaft travel stop as follows. Slacken the stop bolt locknut and turn back the stop bolt two or three threads.
13. Engage low transfer ratio and observe the sliding dog through the bottom of the box. Adjust the stop bolt against the pivot shaft until the sliding dog is just prevented from contacting the recessed face of the low gear wheel, while still retaining full meshing of the driving teeth. This condition may be achieved by screwing in the stop bolt slowly, while holding the dog in contact with the recessed face of the gear wheel. From the point where the bolt just contacts the pivot shaft, continue to screw in one full turn, then secure with the locknut.
14. Fit the transfer casing bottom cover, together with a joint washer and the drain plug.
15. Adjust the 2nd gear selector stop as follows:—Remove the two securing screws and the gearbox selector cover plate.

    Select 2nd gear and adjust the stop bolt so that there is .002 in. (0,05 mm) clearance between the bolt head and the stop on the selector shaft; tighten the locknut.

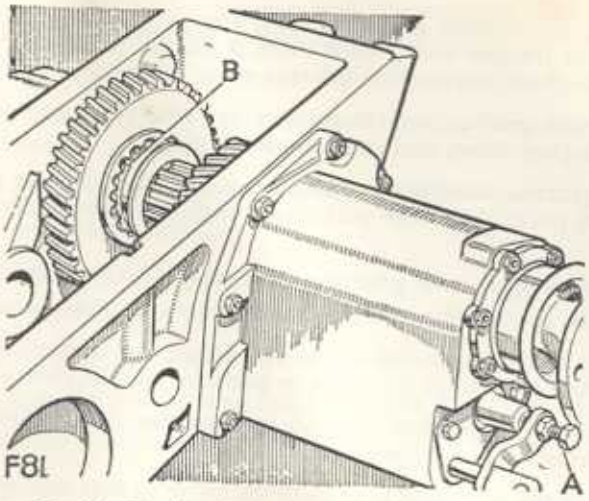


Fig. 13. Setting the transfer selector travel stop.

A—Adjusting bolt B—Clearance at sliding dog

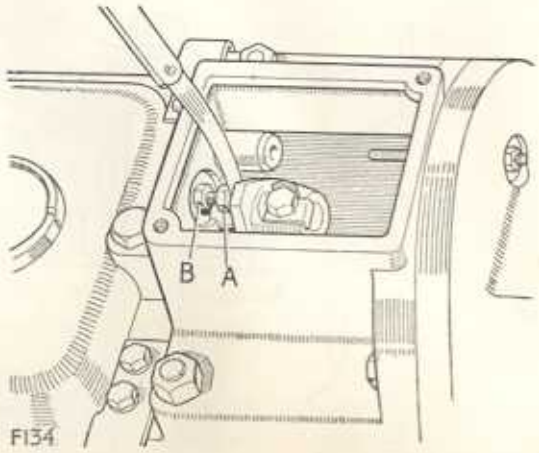


Fig. 14. Adjusting 2nd gear stop bolt

A—Stop bolt B—Locknut

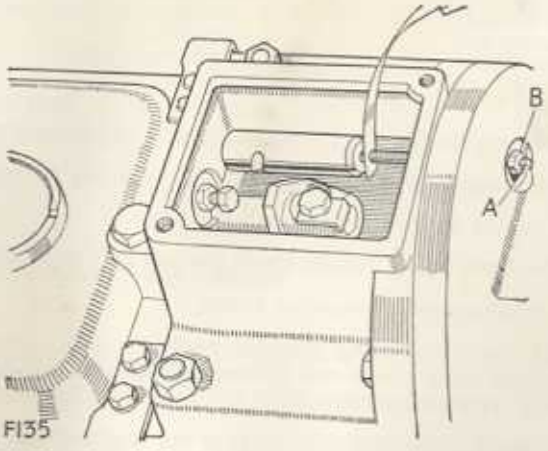


Fig. 15. Adjusting reverse gear stop bolt

A—Stop bolt B—Locknut

16. To adjust the reverse gear stop bolt, engage reverse gear in the main gearbox and adjust the bolt in the transfer casing until there is .002 in. (0,05 mm) clearance between the selector shaft and bolt. Refit the gearbox selector cover plate.
17. Fill the main gearbox and the transfer box with the recommended grade of oil, to the bottom of the level plug holes, and refit the level plugs.
18. Fit the gearbox assembly to the engine, by reversing the removal procedure. When refitting the clevis pin in the clutch withdrawal shaft, the head of the pin must be fitted at the top.

Refitting the engine and gearbox assembly to the vehicle

1. Attach the special lifting sling to the assembly, as shown under engine removal details.
2. Ensure that all components on the vehicle are tied back clear as detailed in the removal operation. The rubber mountings should be in position, and the centre tubes fitted in the rear mountings.
3. Hoist the engine/gearbox assembly into position and fit plain and spring washers and a nut to each of the front engine mountings.
4. At each of the rear mountings push the securing bolt through the centre tube from the underside. Fit the stepped top rubber, ensuring that it enters the top plate on the engine foot. If necessary slacken the two nuts securing this plate and relocate it as required. Retighten the nuts. Fit eight shims to each mounting, the flat rubber washer with the canvas face downwards, the plain washer and castellated nut. Pull nuts down tightly and fit split pins.

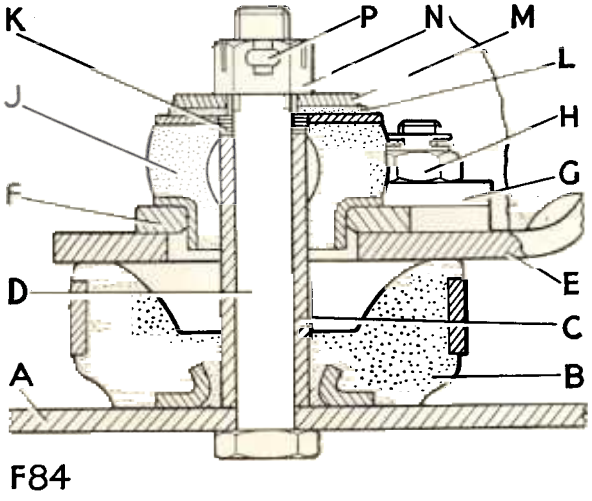


Fig. 16. Rear engine mounting details

A—Chassis bracket
B—Bottom rubber
C—Centre tube
D—Securing bolt
E—Engine foot
F—Adjustable top plate
G—Plain washer } 2 off
H—Securing nut }
J—Top rubber
K—Eight shim washers
L—Canvas-faced rubber washer
M—Top steel washer
N—Nut
P—Split pin

5. Remove the engine sling and replace the coil mounting bracket.
6. Replace the engine oil dipstick and the oil filler and rocker cover filters.
7. Refit the engine tie rods to the bell housing.
8. Replace the hand brake linkage clevis pin and fit a new split pin.
9. Refit the front and rear propeller shafts.
10. Reconnect the clutch slave cylinder hydraulic hose, remove the seal from the hydraulic fluid reservoir and bleed the clutch system. Details of this operation are given in Section B of the Land-Rover Workshop Manual.
11. Refit the gearbox remote control rear housing and the three clevis pins. Also special bolt/nut assembly. If the original settings have been disturbed reset this linkage as detailed under the appropriate heading.
12. Fit the speedometer cable.

13. When fitted, replace the oil cooler adaptor with the external oil filter, using new gaskets. If applicable, replace the power take-off control rods and the hydraulic pump.
14. Reconnect the engine earth lead at the starter motor and refit the starter solenoid to the chassis.
15. If removed, refit the alternator. Reconnect the following electrical connections: thermostat switch on cylinder head, oil pressure switch, ignition coil, generator leads.
16. Reconnect the cold start control cable and replace the cable clamps.
17. Replace the disconnected throttle linkage.
18. If applicable, refit the heater pipes.
19. Fit the petrol pipe at the pump inlet.
20. Replace the front section of the exhaust pipe, and refit the securing bracket.
21. Fit the fan drive shaft to the water pump flange with the four securing bolts.
22. Refit the top and bottom water hoses.
23. Reconnect the brake servo unit flexible hose.
24. Fit the air cleaner mounting bracket, the air cleaner and the air intake pipe to the carburetter.
25. If drained, refill the gearbox, transfer box and engine with the recommended grade of oil.
26. Reconnect the battery.
27. Run the engine and check for oil or water leaks, also test the gear levers for correct operation.
28. Replace the three engine covers and the seat cushions.

Gearbox assembly, to remove from vehicle

1. Position vehicle under a hoist and disconnect the battery.
2. Remove the engine rear access panel from the floor of the body.
3. Carry out items 18 to 22 as detailed for engine removal.
4. Remove the hand brake relay from the chassis.
5. Disconnect the speedometer cable from the gearbox.
6. Remove the spare wheel from the chassis.
7. Using a block of wood for protection, place a jack under the rear of the engine and load slightly.
8. Remove the rear mounting, complete with gearbox bracket, from the L.H. side.
9. Remove the centre bolt, washers, rubbers, shims and centre tube, from the R.H. side rear mounting.
10. Take weight of engine on the jack, and weight of gearbox on hoist.
11. Remove all securing bolts from the clutch bell housing.
12. Draw gearbox rearwards to clear splines, then hoist and bring rearwards over the floor of the body.

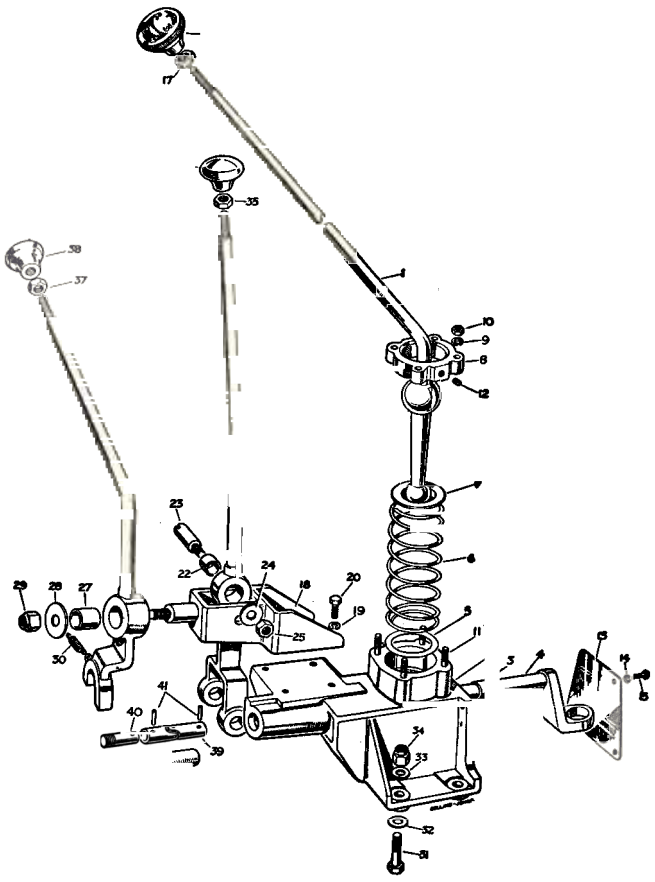
Gearbox assembly, to refit

Refitment of the gearbox assembly is a reversal of the removal procedure.

Upon completion, bleed the clutch system as detailed in Section B of the Land-Rover Workshop Manual.

Gearbox controls, to remove from vehicle

1. Disconnect battery.
2. Remove the knobs and locknuts from the gear levers.
3. Remove the driver's seat cushion and the engine cover from the cab.
4. Remove the carpet and the floor panel securing screws, and lift out the R.H. floor panel.
5. Remove the four nuts which secure the main gear lever to the gear lever turret. Lift the main gear lever from the turret, complete with the retaining top plate and spring. Remove the shim washer from beneath the spring.



17—Gearbox controls, front assembly

1 Main gear change lever
2 Remote control housing assembly, front
3 Bush for shaft
4 Gear change shaft, front
5 Retaining plate for spring
6 Retaining spring for lever
7 Spherical seat for gear lever
8 Cap for remote control housing front
9 Spring washer
10 Nut
11 Stud
12 Locating pin for gear level ball
13 Front cover
14 Spring washer
15 Set bolt
16 Knob for lever
17 Locknut
18 Gear change extension bracket
19 Spring washer
20 Set bolt
21 Transfer gear selector lever
22 Bush
23 Pivot pin
24 Plain washer
25 Nut
26 Four-wheel drive selector lever
27 Bush
28 Plain washer
29 Self-locking nut
30 Return spring
31 Bolt
32 Fibre washer
33 Plain washer
34 Self-locking nut
35 Locknut
36 Knob for transfer lever (red)
37 Locknut
38 Knob for four-wheel drive lever (yellow)
39 Universal joint, rear
40 Adjusting screw, left-hand thread
41 Mills pins
42 Cover for universal joint

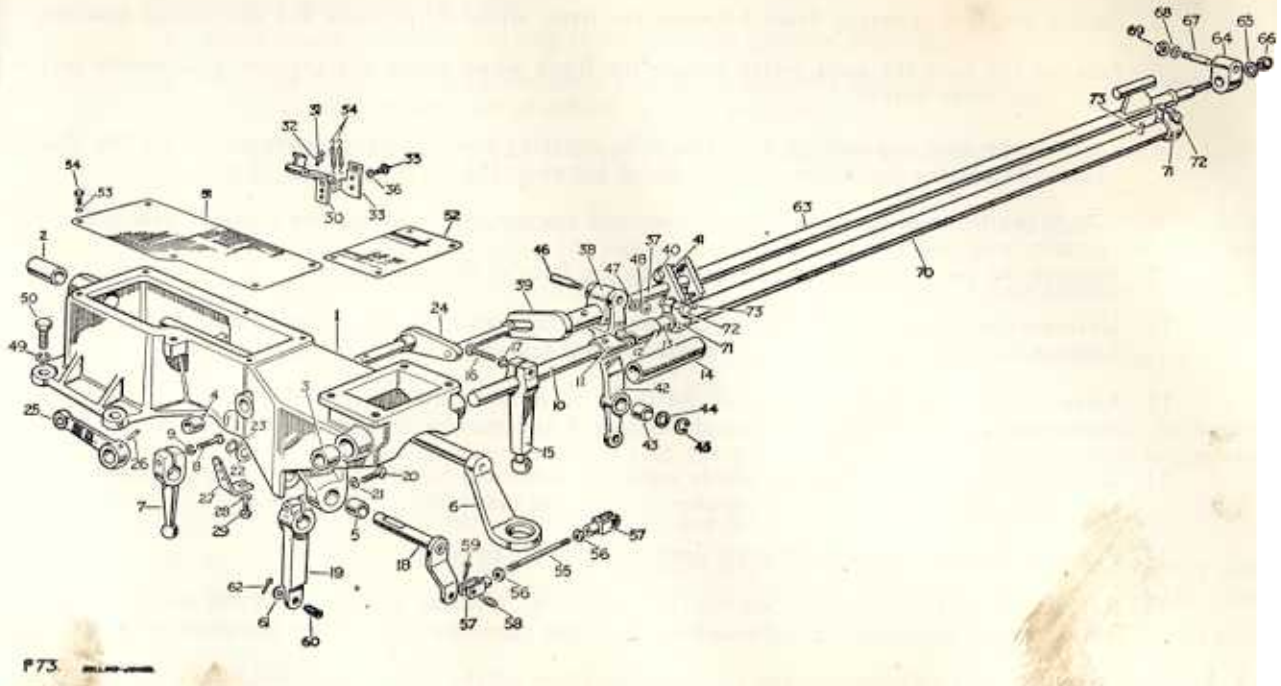


Fig. 18. Gearbox controls, rear assembly

1 Remote control housing, rear
2 Bearing for selector shaft
3 Bearing for control shaft
4 Bearing for cross-shaft
5 Bearing for transfer shaft
6 Transverse selector shaft, rear
7 Gear change selector lever
8 Set bolt
9 Spring washer
10 Gear change selector rod
11 Universal joint, rear
12 Mills pin
13 Adjusting screw
14 Cover for universal joint
15 Rear selector lever
16 Set bolt
17 Spring washer
18 Transfer cross-shaft
19 Transfer lever
20 Set bolt
21 Spring washer
22 Plain washer
23 Circlip
24 Cross-shaft
25 Lever for four-wheel drive shaft
26 Mills pin
27 Anchor plate
28 Spring washer
29 Set bolt
30 Reverse stop hinge complete
31 Adjusting screw
32 Locknut
33 Bracket for reverse stop spring
34 Spring for reverse stop
35 Set bolt
36 Locker
37 Pivot pin, transfer selector tube, rear
38 Pivot piece, transfer relay, rear
39 Rear lever, transfer selector tube
40 Bolt
41 Nut
42 Pivot lever for transfer relay
43 Bush for pivot lever
44 Plain washer
45 Circlip
46 Pin, transfer selector lever
47 Plain washer
48 Nut
49 Spring washer } Fixing rear remote
50 Set bolt } housing to gearbox
51 Cover plate, large
52 Cover plate, small
53 Spring washer
54 Set bolt
55 Transfer selection rod
56 Locknut
57 Clevis fork end
58 Clevis pin and spring
59 Split pin
60 Clevis pin
61 Plain washer
62 Split pin
63 Transfer selector tube
64 Pivot piece, transfer tube front
65 Plain washer
66 Self-locking nut
67 Pivot
68 Plain washer
69 Self-locking nut
70 Gear change connecting tube
71 Clips
72 Pinch bolts
73 Mills pins

6. Detach the return spring fitted between the front wheel drive lever and the chassis bracket.

7. Remove the four set bolts which secure the front wheel drive and transfer gear levers to the main gear lever turret.

8. Remove the four self-locking nuts and bolts securing the main gear lever turret to the chassis frame. Retain the four fibre washers fitted between the turret and the chassis.

9. Detach the front wheel drive control lever and bracket, by removing the transfer lever pivot pin

10. Remove the two engine access covers, from the floor of the rear body.

11. Unscrew the two securing bolts and the two securing nuts from the gearbox controls rear housing. Remove the petrol pipe securing clip from top of housing.

12. Refer to Figs. 3 and 4, and remove the three clevis pins, the special bolt, nut assembly, and the return spring as illustrated. Clevis pin 'B', Fig. 4, is accessible from beneath the vehicle.

13. Bring the transfer control rearwards until the lever can be lifted up through the front engine aperture. Draw the complete transfer control rod assembly out into the cab.

14. Pull back the rear housing assembly until it is possible to turn it upside down

15. Remove the pinch bolt from the rear selector lever, situated at the end of the longitudinal rod This must be removed from the underside of the rear housing. Note direction of assembly.

16. Draw the rear housing and the rear selector lever off the longitudinal rod.

17. Feed the remainder of the main gear lever assembly forwards and lift out through the front engine aperture, into the cab.

Gearbox controls, to dismantle and overhaul, after removal from vehicle

1. **Rear housing.** Remove the two covers.

2. Remove the transfer cross-shaft assembly, retained by a circlip and plain washer on end of shaft, and a pinch bolt through the operating lever. Note the direction of assembly.

3. Remove the pinch bolt retaining the gear change selector lever to the cross-shaft and drift out the cross-shaft. Withdraw from housing.

4. Remove the front wheel drive cross-shaft by filing the retaining tapered mills pin as necessary, and driving out in the correct direction, relative to the taper. Withdraw the shaft after noting direction of assembly.

5. Inspect and replace as necessary all components and bushes. New bushes should be reamed to the correct diameter, after fitting, if necessary.

6. **To reassemble.** Reverse the dismantling procedure, initially setting all adjustable levers in their mid position.

   Gear lever controls, front section. There is no special order of dismantling the front section of the gear lever assembly. Take note of transfer control joint assembly, for assistance when reassembling.

7. Inspect and replace as necessary all components and bushes, including the transfer pivot arm bush, which is attached to the clutch slave cylinder bracket on the vehicle. Ream new bushes to the correct size after fitting, if necessary. Check control tubes for damage or bowing.

8. To remove the universal joints from the main gear change control tube, first slide the protective plastic tubing clear. File the tapered mills pins as necessary, and drive out in the correct direction relative to the taper. The universal joints may now be removed. Fit new mills pins on reassembly.

9. This operation will only be necessary if a front or rear complete new assembly is being fitted. To lengthen or shorten the main gear control longitudinal tube for adjustment purposes, it is necessary to drive out the grooved mills pin at each end of the tube, and slacken the two clamp bolts. This is best done while the tube is removed. Retighten the clamps and redrill for new mills pins after adjustment on the vehicle, as detailed under the appropriate heading.

10. To reassemble the front section of the gear lever controls, reverse the dismantling procedure.

Gear lever controls, to refit

1. Apply grease to all the working surfaces on the gearbox controls.
2. Feed the front section of the main gear lever assembly through the engine aperture inside cab, and push towards the rear of vehicle as far as possible.
3. Fit the rear housing and the rear selector lever to the longitudinal rod. Fit the pinch bolt from the underside of the housing; head of bolt towards centre of vehicle.
4. Engage the ball in the spherical seat on the cross-shaft. To do this will entail partially withdrawing the cross-shaft after unscrewing the pinch bolt on the gear change selector lever.
5. After engaging the ball in the seat, position both levers in their central position with the pinch bolts finger-tight.
6. Feed the transfer control through the front engine aperture towards the rear of vehicle, until it can be brought forwards again into its approximate position.
7. Refit the three clevis pins, the special bolt, nut assembly and the return spring. Refit the rear housing to top of gearbox, ensuring that the gear change selector lever engages in the selector gate.
8. Refit the front wheel drive control lever and bracket, to the transfer lever pivot pin.
9. Fit the main gear lever turret to the chassis frame and retain with the four self-locking nuts and bolts. Ensure that the four fibre washers are positioned between the turret and the chassis.
10. Fit the front wheel drive and transfer gear levers to the main gear lever turret. Secure with the four set bolts.
11. Refit the return spring between the front wheel drive lever and chassis bracket.
12. Fit the shim washer and spring to the turret, followed by the main gear lever with retaining plate. Ensure that the lever ball enters the seat at the end of longitudinal rod. Fit the keyed retaining plate to the set bolts and refit the securing nuts.
13. Adjust the controls as detailed, before refitting the floor panel, carpet, seat cushion, gear lever knobs, etc.

Gearbox controls, to adjust on vehicle

1. **Main gear control.** Slacken the pinch bolt retaining gear change selector lever to the cross-shaft, until it is clear of its threads. See 'B', Fig. 19.

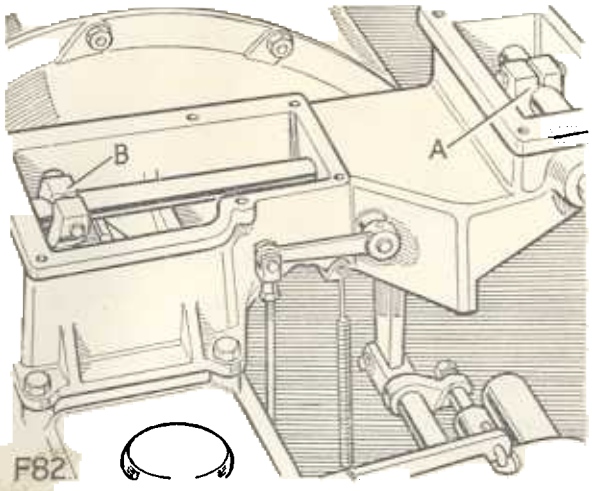


Fig. 19. Gearbox controls, rear housing

A—Rear selector lever B—Gear change selector lever

2. Retain the main gear lever in a central neutral position, and move the rear selector lever ('A', Fig. 19) to the centre of the housing aperture. Tighten the pinch bolt securely.
3. Move the gear lever backwards and forwards and ensure that the rear selector lever makes contact with the housing at both ends of its travel

4. If the above condition cannot be obtained the length of the longitudinal rod will need adjustment as detailed in items 5 to 7.

5. To adjust the longitudinal rod remove the grooved mills pins (one at each end) and slacken the two clamps.

6. Turn the tube until the correct length is obtained. The tube is threaded L.H. at one end and R.H. at the other.

   When the length is correct, in accordance with item 3, redrill and fit new mills pins and retighten the clamps. These pins are $\frac{1}{4}$ in. dia. x 1 in. long (6,35 mm x 25,4 mm). Ensure that the clamps are positioned so that they do not foul other components.

   Retain the rear selector lever in the centre of the housing aperture, and move the gear change selector lever to the centre of 1st/2nd gear selector gate. Tighten the pinch bolt securely in this position.

   Check all gears for correct operation, ensuring that the rear selector lever does not strike the housing aperture, at any time. Fine adjustment can be carried out at the pinch bolts, if required.

Reverse stop hinge plate, to adjust

1. If necessary, slacken the locknut and adjust the screw on the reverse stop hinge, so that:
   (*a*) The hinge rides easily up the gear lever when reverse gear is selected, and
   (*b*) Appreciable resistance is felt on moving the gear lever to the reverse position.
2. Retighten the locknut.

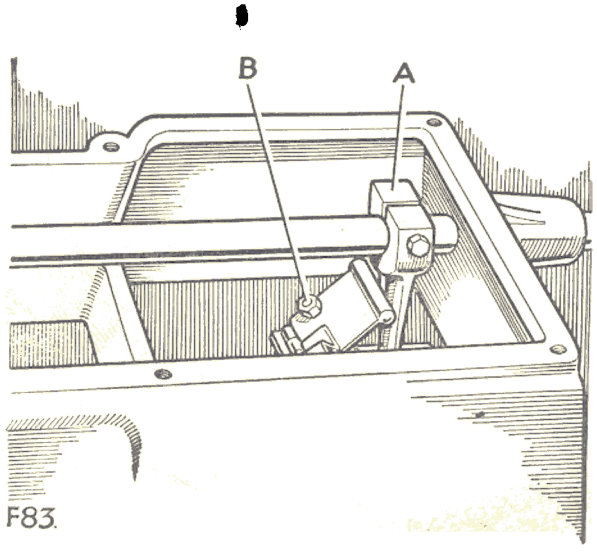


Fig. 20. Adjusting reverse stop hinge plate

ear change selector lever B—Adjusting screw and locknu

Transfer gear and front wheel drive controls, to adjust

1. These adjustments will not normally need to be disturbed, and since they are not extremely critical it is not anticipated that any trouble will be experienced in use.

   However, the two sketcl s showing the original setting dimensions, are included for convenience and use when required.

   It should be noted that the two drawings are interdependent; that is, the rear end of the controls should be adjusted to the dimensions given, while the control levers are held in the position shown.

2. When adjustment is satisfactory, refit the floor panel, carpet, seat cushion, gear lever knobs, etc., and reconnect the battery. Road-test vehicle in all gears.

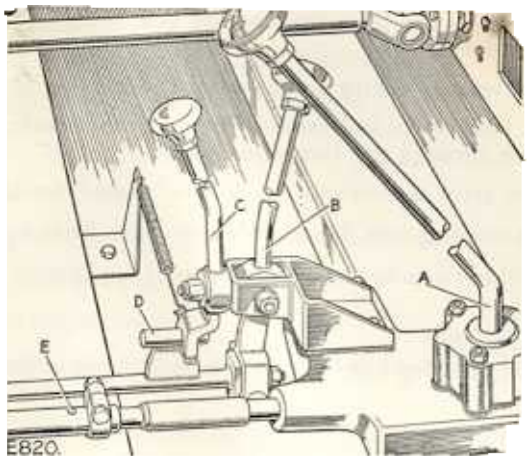


Fig. 21. Setting gearbox control levers

A—Main gear lever } Vertical
B—Transfer gear lever } at points
C—Front wheel drive control } shown
D—Guide bar, working surface to be central.
E—Front mills pin (Part No. 50471) retaining main longitudinal tube.

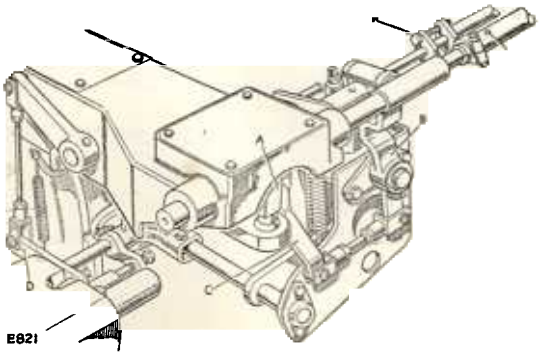


Fig. 22. Setting gearbox control linkage

A—Rear selector lever } To be vertical
B—Transfer pivot lever
C—Transfer cross-shaft arm
D—Front wheel drive pivot lever, to be horizontal
E—Rear mills pin (Part No. 50471) retaining main longitudinal tube.
F—Length adjustment point for transfer control rod.

Steering unit, to remove

1. Disconnect battery.
2. Remove the trafficator switch and disconnect the horn lead at the snap connector.
3. Remove the steering wheel after noting position to facilitate refitment.
4. Remove the two bolts which secure the steering column to the dash panel.
5. Remove the radiator front grille, and the steering box inspection panel.

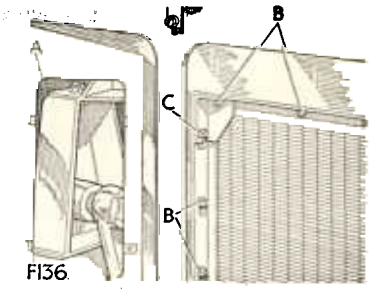


Fig. 23. Steering unit inspection panel

A—Steering unit inspection aperture
B—Radiator securing bolts
C—Top securing bolt

6. Remove the drop arm from the steering box, using extractor, Part No. 600000, after marking to facilitate refitment.
7. Remove the two self-locking nuts securing the steering box, which are located under the front wing
8. Release the lock plates and remove the two top securing bolts (one $\frac{5}{16}$ in. and one $\frac{3}{8}$ in.), which are accessible through the inspection panel.
9. Unscrew the drive screws and the column panel from the toe board.
10. Remove the steering unit downwards and under front bumper.

To dismantle and overhaul the steering unit, see Section G in the Land-Rover Workshop Manual.

Steering unit, to refit

1. Assemble the securing bolts to the new lock-plates as shown in the illustratio

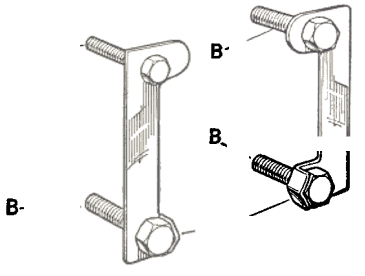


Fig. 24. Assembling securing bolts to lock-plate

B—$\frac{3}{8}$ in. bolt C—Lock heads of

Bend the lock-plates to lock the head of the bottom bolt, in both assemblies.

Insert the steering unit upwards through the toe board to its approximate location.

Fit the column panel over the end of the steering unit, and allow to rest against toe board

Secure the box loosely to the chassis bracket with the securing bolts.

6. Refit rubber strip and fasten the steering column to the dash panel securely.

Tighten the bolts securing the steering box to the chassis, and lock with the locking tabs.

8. Refit the drop arm in its original position.
9. Refit the inspection panel and the radiator front grille.
10. Fit the column panel drive screws, and refit the steering wheel in its original position.
11. Replace the trafficator switch and reconnect the horn cable.

Reconnect the battery.

Steering linkage relay, to remove

1. Disconnect the battery.
2. Remove the mesh grille from the radiator panel.
3. Remove the steering unit inspection panel from the radiator aperture.
4. Mark to facilitate refitment and remove the drop arm, using extractor, Part No. 600000.
5. Disconnect the drop arm from the steering longitudinal rod.
6. Release the clamp at the rear end of the longitudinal rod and, noting the number of turns, unscrew and remove the rod from the vehicle.
7. Remove the front mills pin from the front universal joint, in the main gear control rod. Disconnect the rod and push clear.
8. Mark to facilitate refitment and remove the bottom arm from the relay.
9. Remove the two clamp bolts and lift the relay upwards to remove from vehicle.

To dismantle and overhaul the steering relay, see Section G of the Land-Rover Workshop Manual.

Steering linkage relay, to refit

Ensure that the relay has been filled with the correct grade of oil.

Refitment of the unit is a reversal of the removal procedure.

Radiator, to remove

1. Disconnect battery and drain coolant.
2. Remove the ten securing nuts and the bottom protection plate.
3. Remove the mesh grille from the radiator panel.
4. Remove the steering unit inspection panel.
5. Detach the throttle linkage ball joints from the cross-shaft, at the R.H. and L.H. side of radiator, and the throttle return spring.
6. Remove all the radiator securing bolts except the top bolt at each side; these should be slackened.

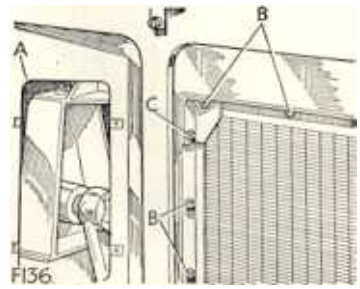


Fig. 25. Radiator securing bolts

A—Steering unit inspection aperture B—Radiator securing bolts C—Top securing bolt at side of radiator

7. Remove the horn complete with mounting bracket. Release the bottom hose and pull the bottom of the radiator forwards as far as possible.
8. Remove the fan blades and release the top hose clip and protection clamp.
9. Remove the two top securing bolts and draw the radiator downwards, taking care to avoid all obstructions.

To refit the radiator reverse the removal sequence of operations.

Front fan bearing, to remove

1. Carry out items 1 to 7 inclusive as detailed for radiator removal.
2. Remove the fan blades.
3. Disconnect the fan drive shaft from the front bearing flange.
4. Remove the securing bolts from the mounting bracket. Note the assembly order of the locknuts
5. Remove the retaining bracket and housing from the chassis, retain the rubbers.

To refit

When refitting the securing bracket to the front bearing, tighten the nuts until the rubbers are lightly compressed; do not over-tighten.

Complete reassembly by reversing the removal procedure.

Top hose, to replace

1. Carry out items 1 to 8 inclusive, as detailed for radiator removal.
2. Remove the front engine cover inside cab.
3. Release the top hose rear protection clamp, and the hose clip.
4. Remove the hose pipe.

When fitting a new top hose, transfer the protection clamps from the old hose to the new, and reverse the removal procedure.

Fan belt, to replace

The fan drive shaft must be removed when replacing a fan belt. Access is gained through the front engine cover.

Disconnect battery; remove the four set bolts at the water pump pulley, and slide the shaft forwards to obtain clearance.

Fan belt replacement is then straightforward.

Propeller shaft lubrication

"Push-on" nylon covers are fitted to the grease nipples on the propeller shafts.

These must be removed when applying the grease gun to the nipples.

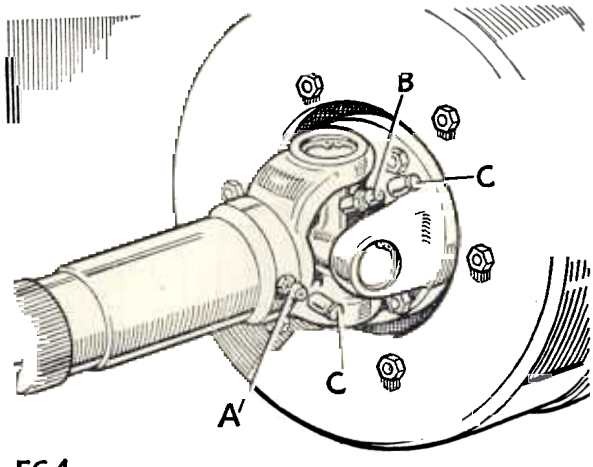


Fig. 26. Propeller shaft lubricatic

A—Sliding joint nipple B—Journal lubrication nipple Nylon covers

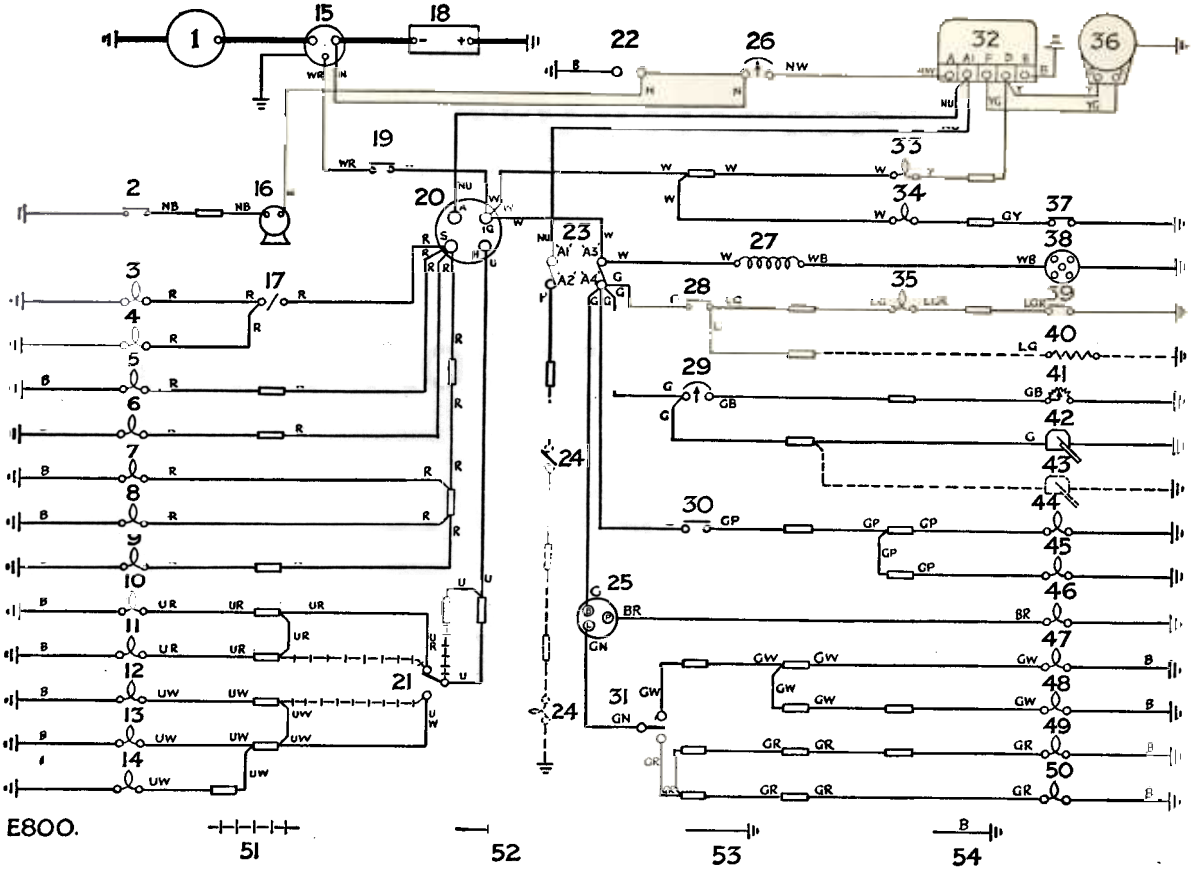


Fig. 27. Circuit diagram, 109 Forward Control 2¼ litre Petrol

1 Starter motor
2 Horn push button
3 } Panel
4 } illumination
5 L.H. side light
6 R.H. side light
7 R.H. tail light
8 Number plate illumination
9 L.H. tail light
10 R.H. head light, dip
11 L.H. head light, dip
12 L.H. head light, main beam
13 R.H. head light, main beam
14 Main beam warning light
15 Starter solenoid
16 Horn
17 Switch, panel light
18 Battery
19 Switch, starter
20 Switch, lighting and ignition
21 Switch, head lamp dip
22 Inspection socket
23 Fuse box
24 Interior light switch and bulb, when fitted
25 Flasher unit
26 Ammeter
27 Ignition coil
28 Switch, mixture
29 Fuel gauge
30 Switch, stop light
31 Switch, flashers
32 Voltage control box
33 Warning light, charging
34 Warning light, oil pressure
35 Warning light, choke
36 Dynamo
37 Switch, oil pressure
38 Distributor
39 Switch, mixture thermostat
40 Carburetter heater element, when fitted
41 Gauge unit, fuel tank
42 Screen wiper
43 Second screen wiper, when fitted
44 R.H. stop light
45 L.H. stop light
46 Warning light, flashers
47 R.H. front flasher
48 R.H. rear flasher
49 L.H. rear flasher
50 L.H. front flasher
51 Wiring L.H. drive models
52 Snap connector
53 Earth connections via fixing bolts
54 Earth connections via cables

Key to cable colours

B—Black
G—Green
L—Light
N—Brown
P—Purple
R—Red
U—Blue
W—White
Y—Yellow
RN—Red with Brown, and so on

When cables have two colour code letters the first denotes the main and the latter the tracer.