LAND-ROVER

Service Department:

THE ROVER COMPANY LIMITED

By Appointment to Her Majesty Queen Elizabeth II

Manufacturers of Motor Cars and Land-Rovers

SOLIHULL
WARWICKSHIRE
ENGLAND

LAND-ROVER SERVICE NEWS LETTER No. 43

April 1964

Item 208 SUBJECT: **STARTER MOTOR**

MODELS: Land-Rover.

REMARKS: Investigations into service failures of starter motors suggest that a considerable proportion of such failures result from misuse, particularly the practice of prolonged cranking of an engine which will not start due to some other fault.

Distributors and Dealers are therefore requested to bring the following information to the notice of Land-Rover owners.

Correct starting procedure

The electric starter motor is designed to develop considerable power for short periods, but is not intended for continuous running.

When starting the vehicle:

(i) See that all controls are set correctly. See Owner's Handbook.

(ii) Operate the starter switch firmly.

(iii) Release the switch as soon as the engine fires.

If the engine fails to start reasonably quickly, release the switch and allow the engine to come to rest before making another attempt at starting. Prolonged cranking will discharge the battery and may cause damage to the starting motor: if the engine does not start after two or three attempts, the reason should be investigated.

The starting motor must never be used to manoeuvre the vehicle.

Freeing a jammed pinion

In the unlikely event of the pinion failing to be thrown out of engagement with the flywheel gear ring after the engine has started, a high-pitched whine will be emitted by the motor, due to it being driven at excessive speed. The engine should be stopped immediately, otherwise the starting motor may be damaged.

A jammed pinion can usually be freed by engaging an intermediate gear and rocking the vehicle to and fro. Alternatively there is a squared extension on the armature shaft, protected by a push-on metal cap. The pinion can usually be freed by turning this squared extension with the aid of a spanner.

Item 209 SUBJECT: **FLYWHEEL RECONDITIONING**

MODELS: Land-Rover Series II and IIA Petrol and Diesel models.

REMARKS:

The chart below details flywheel machining dimensions for fitting ring gear part number 510489 to Series II and IIA Diesel models.

When machining the spigot diameter ensure machining is started from crankshaft flange face of flywheel as shown in the chart.

Details of flywheels fitted to Petrol models in the Series II and IIA range, which have a detachable ring gear fitted as original equipment, are also given.

It is important that when refacing is carried out, all bolts and dowels are removed and the whole of the pressure face is machined.

See Land-Rover News Letter No. 15, Item 78 for Land-Rover Series I flywheel reconditioning.

PETROL MODELS

Models	Flywheel Part Number	Ring Gear Part No.	Dimension 'A' Depth of Spigot	Dimension 'B' Spigot Diameter	Dimension 'C' Minimum thickness after refacing	Dimension 'D' Undercut	Flywheel Part Number when re-conditioned	Remarks
Series II 88 2 litre Petrol models	272661	506799	—	—	1.204 in. (30,5 mm)	—	530513	Cast-iron flywheel. Detachable ring gear fitted as original equipment. No machining necessary other than for refacing.
Series II and IIA 2¼ litre Petrol models up to engine suffix 'E'. Forward Control 2¼ litre Petrol models up to engine suffix 'A' (Two dowel hole type)	247991 (Can be replaced by 600243)	506799	—	—	1.373 in. (35,0 mm)	—	530514 (Can be replaced by 600540)	Cast-iron flywheel. Detachable ring gear fitted as original equipment. No machining necessary other than for refacing.
Forward Control 2¼ litre Petrol models. Engine suffix 'B' onwards (Three dowel hole type)	536882 (Can be replaced by 600243)	506799	—	—	1.373 in. (35,0 mm)	—	600244 (Can be replaced by 600540)	Cast-iron flywheel. Detachable ring gear fitted as original equipment. No machining necessary other than for refacing.
Series IIA 2¼ litre Petrol models. Engine suffix 'F' onwards. Forward Control 2¼ litre Petrol models. Engine suffix 'B' onwards (Four dowel hole type)	600243 (Will replace 247991 and 536882)	506799	—	—	1.373 in. (35,0 mm)	—	600540 (Will replace 530514 and 600244)	Cast-iron flywheel. Detachable ring gear fitted as original equipment. No machining necessary other than for refacing. Dowels are not fitted, but are supplied loose so that they may be assembled to suit the type of clutch fitted. See Land-Rover News Letter No. 39, Item 193.
Forward Control 2.6 litre Petrol models	541760	506799	—	—	1.204 in. (30,5 mm)	—	600537	Cast-iron flywheel. Detachable ring gear fitted as original equipment. No machining necessary other than for refacing.

DIESEL MODELS

Models	Flywheel Part Number	Ring Gear Part No.	Dimension 'A' Depth of Spigot	Dimension 'B' Spigot Diameter	Dimension 'C' Minimum thickness after refacing	Dimension 'D' Undercut	Flywheel Part Number when re-conditioned	Remarks
Series II 2 litre Diesel models	247167	510489	.625 in. (15,9 mm)	9.562 in. (242,9 mm)	1.330 in. (33,5 mm)	.062 in. x .031 in. (1,60 x 0,80 mm) deep	512392	Steel flywheel. Machine from crankshaft flange side
Series IIA 2½ litre Diesel models (Two dowel hole type)	516082 (Can be replaced by 546519)	510489	.750 in. (19,0 mm)	9.562 in. (242,9 mm)	1.454 in. (36,9 mm)	.062 in. x .031 in. (1,60 x 0,80 mm) deep	524638 (Can be replaced by 549544)	Steel flywheel. Machine from crankshaft flange side
Series IIA 2½ litre Diesel models (Four dowel hole type)	546519 (Will replace 516082)	510489	.750 in. (19,0 mm)	9.562 in. (242,9 mm)	1.454 in. (36,9 mm)	.062 in. x .031 in. (1,60 x 0,80 mm) deep	549544 (Will replace 524638)	Steel flywheel. Machine from crankshaft flange side. When fitting this flywheel with a diaphragmspringtype clutch it is necessary to remove one dowel and fit two dowels in the same way as detailed for Petrol models in Land-Rover News Letter No. 39, Item 193

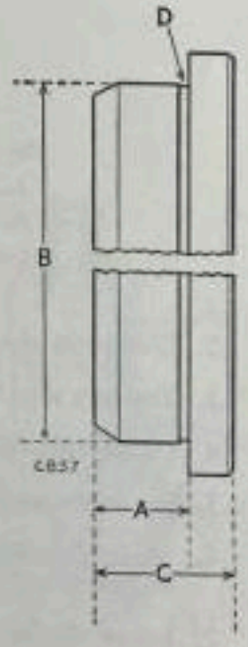

Fig. 1. Flywheel reconditioning

A—Depth of spigot
B—Spigot diameter
C—Minimum thickness after refacing.
D—Undercut

Item 210 SUBJECT: **STEERING RELAY**

MODELS: Land-Rover 88 Regular, 109 Long, 88 and 109 Station Wagon, 109 Forward Control four and six cylinder.

MODIFICATION: Introduction of steering relay shaft with the oilway and filler plug hole deleted.

PART NUMBERS:

Steering relay assembly	1	543878
Housing for steering relay	1	543972
Shaft for steering relay	1	543877

REMARKS: The new relay can be identified by the absence of the filler plug in the top of the steering relay lever shaft. The following maintenance and assembly instructions apply to this new unit.

Add this News Letter number to the appropriate section of your Land-Rover Series II and IIA Workshop Manual for reference purposes.

1. Fill unit with oil through any of the top oil seal housing fixing bolt holes, and bleed through the bottom oil seal housing fixing bolt hole in line with the boss on the relay housing. The bottom bolt to be sealed under the head with a suitable sealing compound. See Fig. 2.

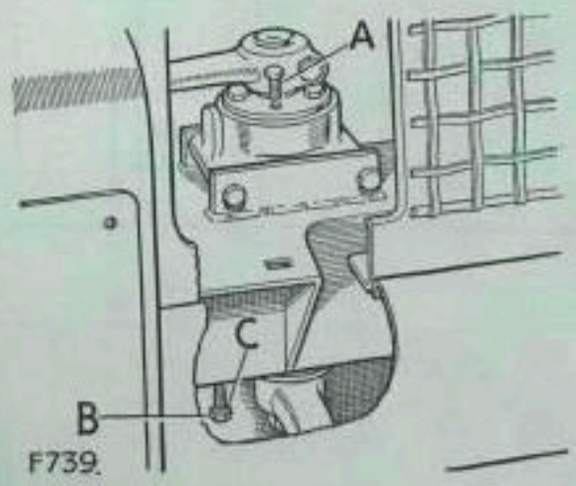

Fig. 2. Oil fill and bleed points for steering relay housing

A—Fill at this point
B—Bleed at this point
C—Seal under head of bolt with suitable sealing compound

2. Dismantle the unit as detailed in the Land-Rover Workshop Manual.
3. The unit should be assembled as listed below:
4. Locate two halves of the split bush on the top cone of the shaft.
5. Insert the assembly of shaft and bushes into the housing from the bottom.
6. Secure housing and shaft in vice with a $\frac{3}{4}$ in. (19 mm) block under bottom end of shaft. See Fig. 4.
7. Insert washer for spring into housing and fit two of end cover fixing bolts into the housing diametrically opposite each other.
8. Place spring in position over shaft and into housing.
9. Locate washer for spring on top of spring.

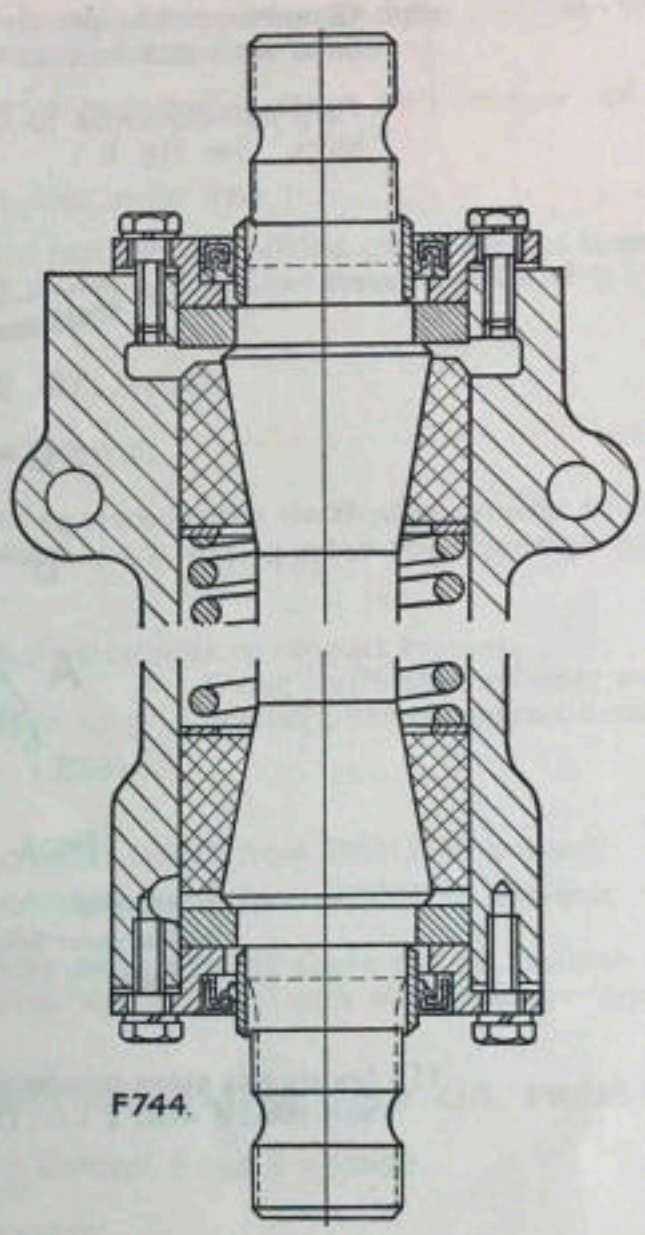

Fig. 3. Cross-section of steering relay

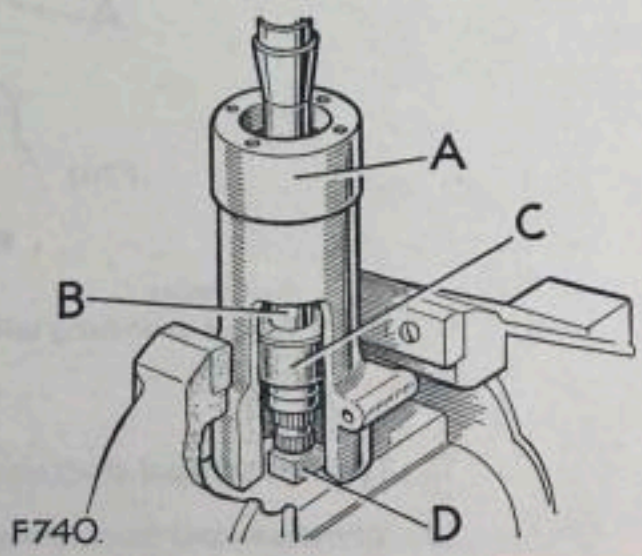

Fig. 4. Housing, shaft and block in position

A—Housing B—Shaft C—Split bush halves D—Block ¾ in. (19 mm) high

10. Compress with special tool Part No. 600536. This operation should be done with care to ensure that the spring does not fly out.

    Turn anti-clockwise to lock in position, with keyhole slots under heads of bolts. See Fig. 6.

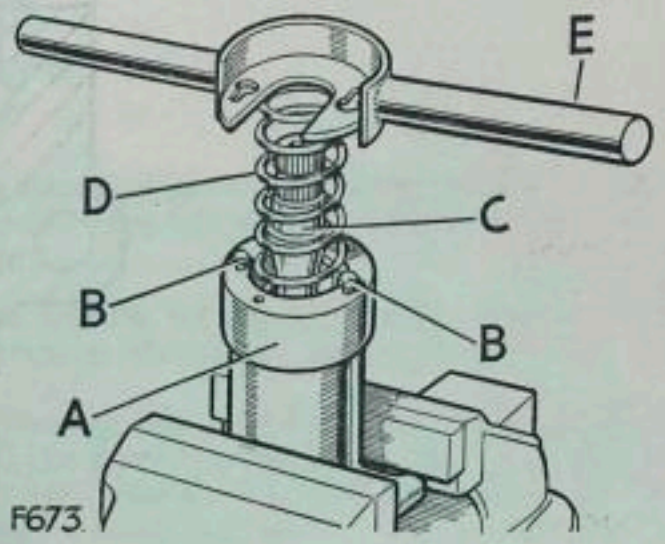

Fig. 5. Spring ready to be compressed

A—Housing
B—End cover fixing bolts
C—Shaft
D—Spring
E—Special tool Part No. 600536. Turn anti-clockwise to lock in position

11. Locate the other two halves of the split bush on the bottom cone of the shaft and secure with a 2 in. (50 mm) hose clip.

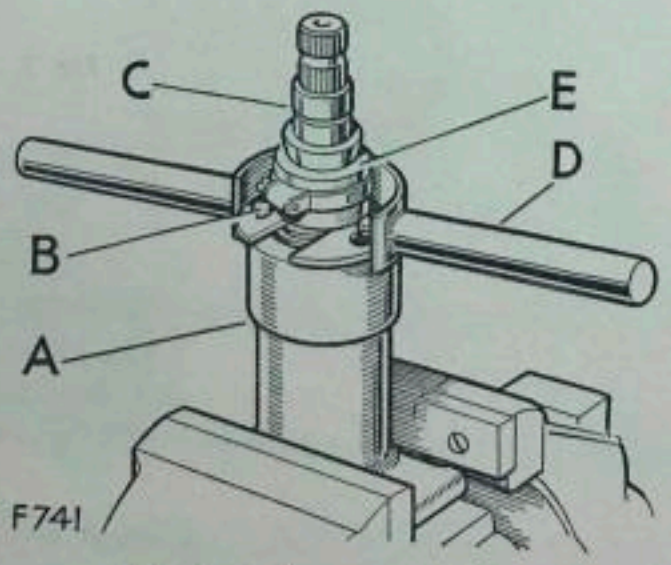

Fig. 6—Spring compressed

A—Housing
B—End cover fixing bolts
C—Shaft
D—Special tool
E—Bushes secured with 2 in. (50 mm) hose clip

12. Turn special tool clockwise and allow it to clear bolt heads.
13. Withdraw tool from between spring and split bushes.
14. Remove the two end cover bolts.
15. Remove assembly from vice, gently tap shaft into position until the split bush has entered the housing for at least half its length.

16. Then remove hose clip and continue to drive shaft into the housing until the bushes are correctly located in the housing.
17. Fit thrust washer at each end together with retainer, oil seal and sealing washer.
18. Fill with oil as detailed under item 1.

IMPORTANT: Special tool Part No. 600536 can be used to assemble the steering relay on all earlier Land-Rover models.

Item 211 SUBJECT: **CLUTCH SLAVE CYLINDER**

MODELS: Land-Rover Forward Control.

MODIFICATION: Introduction of a packing piece for the clutch slave cylinder to eliminate difficulty in obtaining the correct clutch setting when the diaphragm spring type clutch is fitted.

PART NUMBERS:

Packing piece, clutch slave cylinder to support bracket	1	544686
Plain washer } Fixing clutch slave cylinder and	2	4075
Bolt ($\frac{5}{16}$ in. UNF x $1\frac{1}{4}$ in. long) } packing piece to support bracket	2	255030

COMMENCING NUMBERS: Engines numbered:
Forward Control 4-cylinder models from 28601399B onwards
Forward Control 6-cylinder models from 30000379A onwards

REMARKS: If required the packing piece detailed above can be fitted to any earlier Land-Rover Forward Control models fitted with the diaphragm type clutch.

Item 212 SUBJECT: **WATER TEMPERATURE GAUGE AND OIL PRESSURE GAUGE**

MODELS: Land-Rover Forward Control 4 and 6 cylinder.

PART NUMBERS:

Water temperature gauge	1	600500
Oil pressure gauge	1	600502

REMARKS: Conversion kits, complete with detailed fitting instructions, covering both a water temperature gauge and an oil pressure gauge are now available from our Parts Department under the part numbers listed.