



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. 47**

February, 1965

**Item 229 SUBJECT: BROCKHOUSE TRAILER FOR LAND-ROVER (Policy item)**  
**REMARKS:** With effect from January 1st, 1965 all replacement parts for the Land-Rover Brockhouse Trailer must be obtained direct from the manufacturers:  
 Messrs. J. Brockhouse & Co. Ltd.,  
 Victoria Works,  
 Hill Top,  
 West Bromwich.  
 Telephone No. Wednesbury 0234.  
 Telegrams Brockhouse West Bromwich.  
 Telex 33631.

This applies to the current Land-Rover Brockhouse trailer and earlier models. It follows that all queries appertaining to the Land-Rover Brockhouse trailer for both Service and Sales, Home and Export should be directed to the manufacturers as above.

**Item 230 SUBJECT: ENGINE SERIAL NUMBERS (Policy item)**  
**MODELS:** Land-Rover Series IIA, Regular and Long.  
**REMARKS:** The 25100001 range of engine serial numbers on Land-Rover 88 regular and 109 long models have now been completely used up. Engines for the above models are therefore being numbered in the 25200001 range.  
 This new range of numbers will carry the suffix letter 'F' which indicates the revised cylinder block to suit the one-piece oil level rod tube.

**Item 231 SUBJECT: SCRAPER RING FOR PISTON**  
**MODELS:** Land-Rover 109 Forward Control, 2.6 Litre.  
**MODIFICATIONS:** Introduction of Duaflex scraper rings in place of the Maxilite type previously used, to improve oil consumption.

<b>PART NUMBERS:</b>	Piston assembly, grade Z	.....	.....	.....	.....	.....	.....	6	536267
	Piston assembly, grade A	.....	.....	.....	.....	.....	.....	6	536268
	Piston assembly, grade B	.....	.....	.....	.....	.....	.....	6	536269
	Piston assembly, grade C	.....	.....	.....	.....	.....	.....	6	536270
	Piston assembly, grade D	.....	.....	.....	.....	.....	.....	6	536271
	Piston assembly, .010 in. oversize	.....	.....	.....	.....	.....	.....	6	536272
	Piston assembly, .020 in. oversize	.....	.....	.....	.....	.....	.....	6	536273
	Piston assembly, .030 in. oversize	.....	.....	.....	.....	.....	.....	6	536274
	Piston assembly, .040 in. oversize	.....	.....	.....	.....	.....	.....	6	536275
	Scraper ring for piston, Duaflex type, standard	.....	.....	.....	.....	.....	.....	6	546100
	Scraper ring for piston, Duaflex type, .010 in. oversize	.....	.....	.....	.....	.....	.....	6	547776
	Scraper ring for piston, Duaflex type, .020 in. oversize	.....	.....	.....	.....	.....	.....	6	547777
	Scraper ring for piston, Duaflex type, .030 in. oversize	.....	.....	.....	.....	.....	.....	6	547778
	Scraper ring for piston, Duaflex type, .040 in. oversize	.....	.....	.....	.....	.....	.....	6	547779



COMMENCING  
NUMBER:

From engine numbered 30000674 onwards.

## REMARKS:

The above piston rings can be used as replacements on all earlier 6 cylinder 109 Forward Control models. The rings are fitted as follows:

1. Thoroughly clean piston ring grooves and oil drainage holes.
2. Insert both tangs of expander into the same oil drainage hole. Ensure that they do not cross over.
3. Fit sidespring into position in groove over expander.
4. Spiral rails into position in groove, one each side of sidespring, taking care to arrange the gaps all round the piston.
5. Do not attempt to rotate the complete ring assembly after fitting, but check that it is free in the groove and that back clearance is adequate, by pushing the assembly into the groove at various points.

## Item 232 SUBJECT:

**FRONT AND REAR AXLES**

## MODELS:

Land-Rover Forward Control.

## MODIFICATION:

Introduction of strengthened ENV type front and rear axles.

COMMENCING  
NUMBERS:

Axles numbered:

RHD front axles from 30000001A onwards.

LHD front axles from 30300001A onwards.

Rear axles from 30000001A onwards.

## REMARKS:

The ENV axle can easily be identified by the very much shorter pinion housing used, see Figs. 1 and 2.

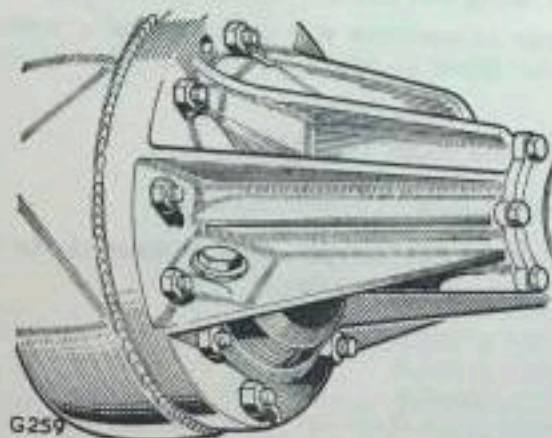


Fig. 1 Rover type pinion housing

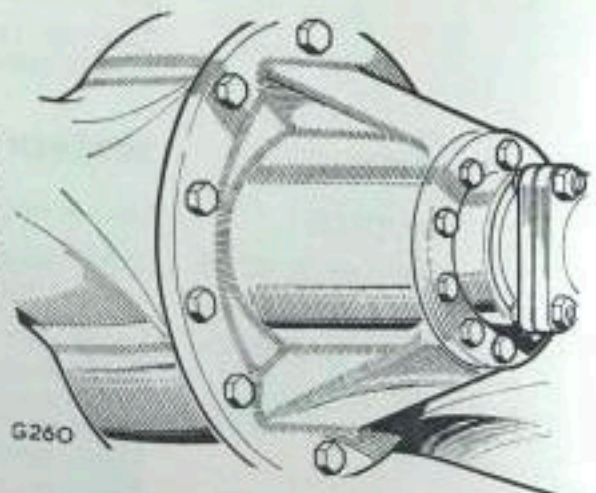


Fig. 2 ENV type pinion housing

Earlier Land-Rover Forward Control models can be modified to the ENV type if required. Conversion kits are available as detailed below. Each kit is complete with detailed fitting instructions.

Front axle conversion kit	....	1	600642	Land-Rover 109 Forward Control RHD 2½ litre only
Front axle conversion kit	....	1	600643	Land-Rover 109 Forward Control LHD 2½ litre only



Rear axle conversion kit ... 1 600644 Land-Rover 109 Forward Control  
2½ and 2.6 litre

If the demand justifies it, conversion kits for front axle on the 2.6 litre models will be made available later.

A Workshop Procedure Leaflet, English only, Part No. 4710 covering the ENV axle is available on application to:

The Rover Company Ltd.,  
Technical Service Department,  
Solihull,  
Warwickshire,  
England.

The leaflet contains full details of the component parts of the various axles.

**Item 233 SUBJECT: BRAKES**

**MODELS:** Land-Rover 88 and 109.

**REMARKS:** Our attention has been drawn to a few cases where a loss of brake fluid has occurred, which has been caused by the steering drag link rubbing a hole in the front brake pipe on the driver's side.

In order to prevent this, Distributors and Dealers are requested to check on all vehicles passing through their workshops, to ensure that the clearance between brake pipe and drag link is sufficient.

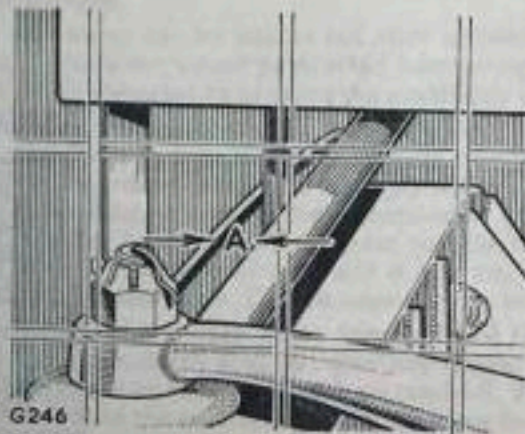
Proceed as follows:

**All models**

1. Put steering in straight ahead position.

**RHD vehicles**

1. Check the clearance of the brake pipe through the radiator grille, directly below the off-side headlamp.
2. Ensure that the clearance between the pipe and link is at least 1 in. (25 mm) along its entire length.
3. Where the clearance is insufficient, bend the pipe away from the drag link, by inserting fingers into the gap between chassis frame and lower edge of wing panel.



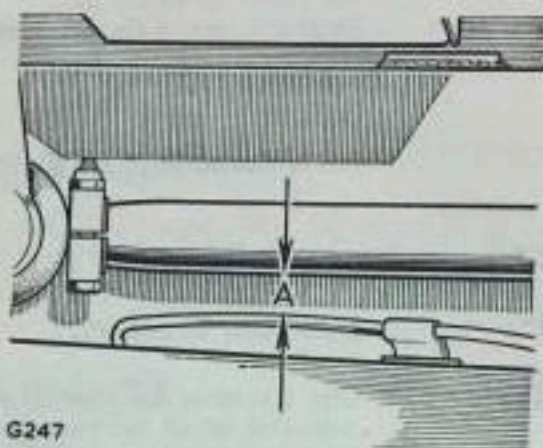
**Fig. 3. Clearance of brake pipe, RHD models**

A—Ensure there is at least 1 in. (25 mm) clearance at this point



**LHD vehicles**

1. Check the clearance of the brake pipe from beneath the bonnet.
2. Ensure that the clearance between pipe and drag link is at least  $\frac{1}{2}$  in. (12 mm).
3. If necessary, bend the pipe away from the link to give the required clearance.



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Fig. 4. Clearance of brake pipe, LHD models

A—Ensure there is at least  $\frac{1}{2}$  in. (12 mm) clearance at this point**Item 234 SUBJECT:****BONNET****MODELS:**

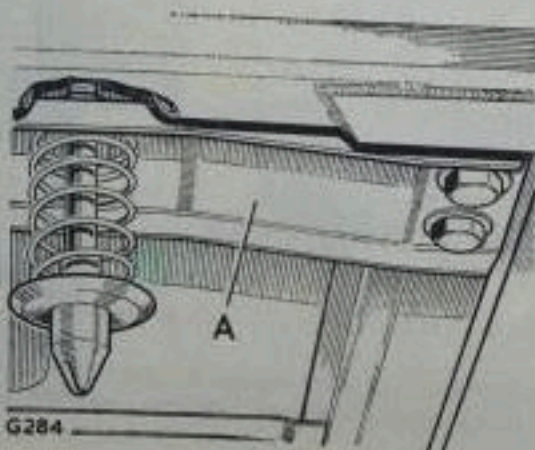
Land-Rover, Series IIA, Petrol and Diesel.

**MODIFICATION:**

Introduction of redesigned bonnet, incorporating a welded-in bracket for bonnet striker in place of the bolted-up bracket previously used.

**PART NUMBERS:**

Bonnet top panel	....	1	337963	Series IIA 88 Standard models
Bonnet top panel	....	1	337951	De-luxe bonnet, Standard and on all 109 models and 88 Station Wagon
Bonnet top panel	....	1	337957	De-luxe bonnet recessed for spare wheel carrier. Optional on 109
Bonnet striker assembly		1	337969	



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Fig. 5. Bracket for bonnet striker pin, early type

A—Bracket bolted to bonnet



## REMARKS:

Figs. 5 and 6 clearly show the identification between early and late type bonnets. The latest type bonnets can be used for all Service requirements, providing the latest striker pin is also supplied.

The striker pin for bonnet is not interchangeable and both early and late type should be stocked.

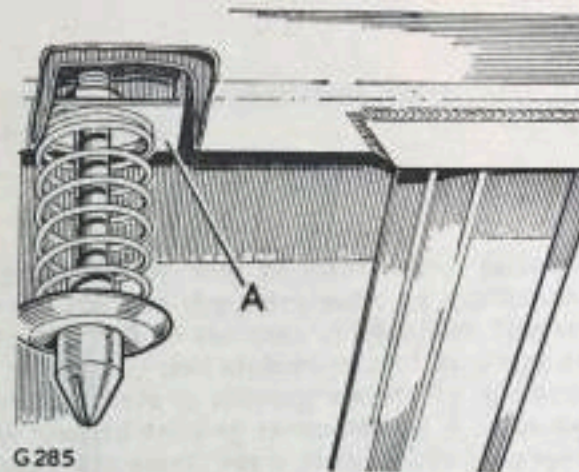


Fig. 6 Bracket for bonnet striker pin, late type

A—Bracket welded to bonnet

## Item 235 SUBJECT:

**LAND-ROVER BODY REPAIRS**

## MODEL:

Land-Rover.

## REMARKS:

At the request of many Distributors we are repeating information dealing with Land-Rover body repairs.

Land-Rover bodies are made from a special light magnesium-aluminium alloy known as 'Birmabright'. This was developed for aircraft use, and it is much stronger and tougher than pure aluminium.

It melts at a slightly lower temperature than pure aluminium and will not rust nor corrode under any normal circumstances.

It is work-hardening, and so becomes hard and brittle when hammered, but it is easily annealed.

Exposed to the atmosphere, a hard oxide skin forms on the surface of it.

**Panel beating 'Birmabright'**

'Birmabright' panels and wings can be beaten out after accidental damage in the same way as sheet steel. However, under protracted hammering the material will harden, and then it must be annealed to prevent the possibility of cracking.

This is quite easily done by the application of heat, followed by slow air-cooling, but as the melting point is low, heat must be applied slowly and carefully. A rough but very useful temperature control is to apply oil to the cleaned surface to be annealed. Play the welding torch on the underside of the cleaned surface, and watch for the oil to clear, which it will do quite quickly, leaving the surface clean and unmarked. Then allow to cool naturally in the air, when the area so treated will again be soft and workable. Do not quench with oil or water.

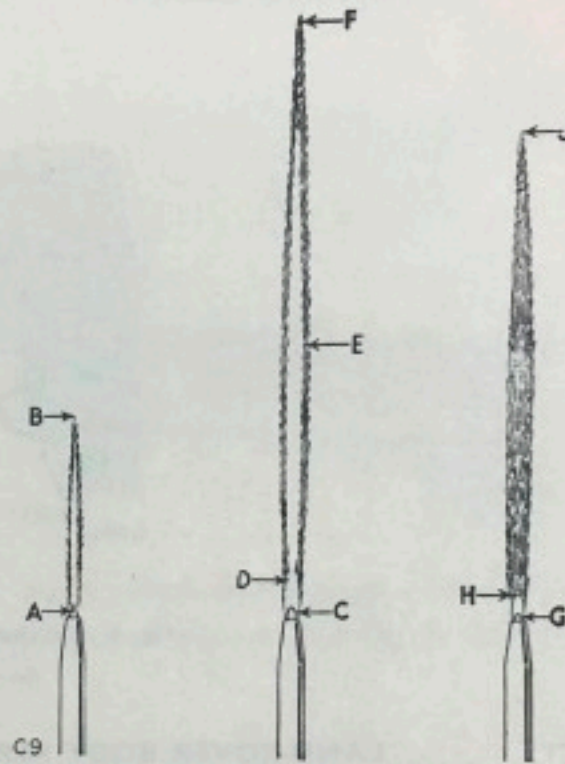
Another method is to clean the surface to be annealed and then rub it with a piece of soap. Apply heat beneath the area, as described above, and watch for the soap stain to clear. Then allow to cool, as for the oil method. When applying the heat for annealing, always hold the torch some little distance from the metal, and move it about, so as to avoid any risk of melting it locally.

**Gas welding 'Birmabright'**

A small jet must be used, one or two sizes smaller than would be used for welding sheet steel of comparable thickness. For instance, use a No. 2 nozzle for welding



18 swg (.048 in.) sheet, and a No. 3 for 16 swg (.064 in.) sheet. The flame should be smooth, quiet and neutral, though a slightly reducing flame may be used—that is, there may be a slight excess of acetylene. See Fig. 7.



Oxydising Neutral Reducing

Fig. 7. Welding jet

- |   |                           |
|---|---------------------------|
| A—Short pointed inner cone bluish white         | E—Blue to orange envelope |
| B—Bluish envelope                               | F—Nearly colourless       |
| C—Brilliant inner core well defined rounded end | G—Brilliant inner core    |
| D—Hottest point of flame                        | H—Feathery white plume    |
|   | J—Blue to orange envelope |

Use only 5% magnesium/aluminium welding rod (5 Mg/A). Sifalumin No. 27 (MG.5 Alloy) (use Sifbronze Special flux with this rod) or a thin strip cut off parent metal—that is to say, a strip cut from an old and otherwise useless 'Birma-bright' panel or sheet. Do not use too wide or thick a strip, or trouble may be experienced in making it melt before the material which is being welded.

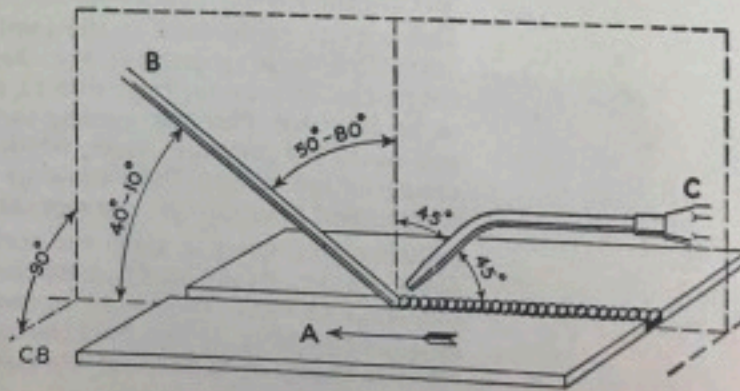


Fig. 8. Method of welding

- |                        |              |         |
|------------------------|--------------|---------|
| A—Direction of welding | B—Filler rod | C—Torch |
|------------------------|--------------|---------|



Clean off all grease and paint, dry thoroughly and then clean the edges to be welded, and an area at least half an inch on either side of the weld, with a stiff wire scratch-brush or wire wool. Cleanliness is essential. Also clean the welding rod or strip with wire wool.

A special acid flux must be used, and we recommend 'Hari-Kari', which is obtainable from:

The Midland Welding Supply Co. Ltd.,  
105 Lakey Lane,  
Birmingham 28,  
England.

or Sifbronze Special Flux, which is obtainable from:

Suffolk Iron Foundry (1920) Ltd.,  
Sifbronze Works,  
Stowmarket,  
England.

A small quantity of 'Hari-Kari' may be made into a paste with water, following the directions on the tin, and the paste must be applied to both surfaces to be welded, and also to the rod. In the case of Sifbronze Special Flux use in powder form as directed. Remember that aluminium and its alloys do not show 'red-hot' before melting, and so there is nothing about the appearance of the metal to indicate that it has reached welding temperature. A little experience will enable the operator to gauge this point, but a useful guide is to sprinkle a little sawdust over the work; this will sparkle and char when the right temperature is approached; a piece of dry wood rubbed over the hot metal will sparkle at the point of contact.

As the flux used is highly acid, it is essential to wash it off thoroughly immediately after a weld is completed. The hottest possible water should be used, with wire wool or a scratch-brush. Very hot soapy water is good, because of the alkaline nature of the soap, which will tend to 'kill' the acid.

It is strongly recommended that a few welds are made on scrap metal before the actual repair is undertaken if the operator is not already experienced in welding aluminium and its alloys.

The heat of welding will have softened the metal in the area of the repair, and it may be hardened again by peening with a light hammer. Many light blows are preferable to fewer heavy ones. Use a 'dolly' or anvil behind the work to avoid denting and deformation, and to make the hammering more effective. Filing off surplus metal from the weld will also help to harden the work again.

#### **Welding tears and patching**

If a tear extends to the edge of a panel, start the weld from the end away from the edge and also at this point drill a small hole to prevent the crack spreading, then work towards the edge.

When welding a long tear, or making a long welded joint, tack the edges to be welded at intervals of from 2 in. to 4 in. (50 to 100 mm) with spots. This is done by melting the metal at the starting end and fusing into it a small amount of the filler rod, repeating the process at the suggested intervals. After this, weld continuously along the joint from right to left, increasing the speed of the weld as the material heats up.

After the work has cooled, wash off all traces of flux as described above, and file off any excess of build-up metal.

When patching, cut the patch to the correct shape for the hole to be filled, but of such a size as to leave a gap of  $\frac{1}{32}$  in. between it and the panel all round. Clean the patch and the panel, and then weld as described above. Never apply an 'overlay' patch.

#### **Electric welding**

At the Rover Factory the 'Argon-Arc' process is used, and this is very satisfactory, since all atmospheric oxygen is excluded from the weld by the Argon gas shield. For all body repair work normally undertaken by a Distributor's or Dealer's service department, the gas welding method is sufficient and quite satisfactory.

#### **Spot-welding**

Spot-welding is largely used in the manufacture of Land-Rover bodies, but this is a process which can only be carried out satisfactorily by the use of the proper



apparatus. Aluminium and its alloys are very good conductors of heat and electricity, and thus it is most important to maintain the right conditions for successful spot-welding. The correct current density must be maintained, and so must the 'dwell' of the electrodes. Special spot-welding machines have been developed, but they are expensive, and though the actual work can be carried out by comparatively unskilled labour, supervision and machine maintenance must be in the hands of properly qualified persons.

### Riveting

Where both sides of the metal are accessible and it is possible to use an anvil or 'dolly', solid aluminium rivets may be used, with a suitable punch or 'pop' to ensure clean rounded heads on the work. For riveting blind holes, 'pop-rivets' must be used. These are inserted and closed by special 'Lazy-Tong' 'pop-rivet' pliers.

### Painting

Owing to the hard oxide skin which forms on the surface of the alloy when exposed to the atmosphere, it is necessary to etch a repaired panel before re-painting. Degrease the area to be painted by wiping thoroughly with thinners, dry off, and then apply the acid etching medium. A suitable one is 'Deoxidine 125' which is made by ICI Paints Division. After application, wash off thoroughly with hot water, and again dry thoroughly. Slightly roughen the surface with emery paper of 100 grit. Apply a suitable primer, such as 'Glasco', as thinly as practicable (too thick a coat may crack or 'craze'), then use three coats of filler and finish with the appropriate colour. Unless the initial etcher is used, paint is liable to come away, as it cannot 'key' into the hard oxide of an untreated alloy surface.

Item 236 SUBJECT:

MODELS:

REMARKS:

## TECHNICAL LITERATURE

All Land-Rovers.

Listed below will be found details of all Land-Rover Technical literature currently available from our Parts Department unless otherwise stated.

### 1. Owner's Instruction Manuals

Owner's Instruction Manuals in English, French, German, Spanish and Portuguese are available from our Parts Department for most models from 1948 onwards.

### 2. Maintenance Schedule Books

Part No.	Applicability
4467	Land-Rover Free Service and Maintenance Schedule Book, English.
4468	Land-Rover Free Service and Maintenance Schedule Book, French.
4469	Land-Rover Free Service and Maintenance Schedule Book, German.

The above publications are available free of charge and should be obtained from our Technical Service Department at Solihull.

### 3. Parts Catalogues

Part No.	Applicability
4051	1948-53 Land-Rover Series I, English.
4107	1954-58 Land-Rover Series I, English.
4656	Land-Rover Series II and IIA, basic vehicles, English.
4705	Land-Rover Series II and IIA, optional equipment, English.

### 4. Workshop Manuals

Part No.	Applicability
4229	Land-Rover Series II, Portuguese.
4553	Land-Rover Series II and IIA, Spanish.
4611	Land-Rover Series II and IIA including Forward Control, English.
4644	Land-Rover Series II and IIA including Forward Control, French.
4660	Land-Rover Series II and IIA including Forward Control, German.



**5. Miscellaneous**

<i>Part No.</i>	<i>Applicability</i>
4178	Plastic cover, dark green, Price List.
4225	Plastic cover, green, Land-Rover Series II. Parts Catalogue.
4226	Plastic cover, green, Land-Rover Series II and IIA. Instruction Manual.
4315	Distributor and Dealer Book.
4358	Plastic cover, green, Land-Rover Service News Letter.
4375	Tool Booklet.
4538	Repair Times Schedule, Land-Rover Series II and IIA.
4643	Power take-off Booklet.