

Issue 1

Date 6.1.50

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MODELS AFFECTED
1948-50 LAND-ROVER

UNIT AFFECTED
ENGINE

DUST-PROOFING

Modifications have been introduced to seal the engine unit against the entry of dust; if necessary such modifications can be incorporated on earlier vehicles by following these instructions.

The materials required and procedure for dust-proofing are as follows:—

A. OIL LEVEL DIPSTICK (Engines numbered 860001 to 865713).

Part No.	Parts required		Quantity
	Description		
231845	Dipstick		1
231848	Sealing washer		1
231844	Bracket for locking spring		1
231842	Locking spring		1
231854	Stiffening plate for spring		1
215000	Bolt	} Fixing locking spring to bracket	2
2678	Plain washer		2
3073	Spring washer		2
2247	Nut		2

1. Remove and discard the original dipstick.
2. Remove one nut and spring washer securing the sump directly beneath the dipstick hole.
3. Clamp the locking spring (231842) between the bracket (231844) and stiffening plate (231854) and secure it with two bolts (215000), plain washers (2678), spring washers (3073) and nuts (2247).
4. Secure the bracket to the sump stud by means of the nut and spring washer.
5. Slide the sealing washer (231848) over the dipstick (231845) to abut the flange and insert the dipstick in the crankcase.
6. Adjust the spring in the elongated holes in the bracket as necessary, so that it holds the dipstick securely in the crankcase and re-tighten the securing bolts.

NOTE. If dipstick Part No. 231845 is not available, the original part may be modified as follows:—

- (a) Reduce the flange washer to .390 in. (9,9 mm.) diameter, i.e., flush with the spigot diameter.
- (b) Extend the upper end of the spigot diameter by fitting a plain washer $\frac{1}{16}$ in. (1,6 mm.) thick x $\frac{5}{16}$ in. (7,9 mm.) x .390 in. (9,9 mm.).
- (c) Braze a new flange washer $\frac{1}{8}$ in. (3,2 mm.) thick x $\frac{5}{16}$ in. (7,9 mm.) x $1\frac{1}{8}$ in. (28,6 mm.) at the upper end of the spigot diameter.

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UNIT AFFECTED
ENGINE

DUST-PROOFING

B. INLET MANIFOLD. (Engines numbered 860001 to 862599).

Part No.	Part required. Description	Quantity
3289	Taper plug for manifold	1

1. Remove the petrol drain pipe and union from the underside of the inlet manifold.
2. Remove the drain pipe steady bracket from the sump flange.
3. Fit taper plug (3289) in the hole in the manifold.

C. SUMP. (Engines numbered 860001 to 865549).

Part No.	Parts required. Description	Quantity
57126	Stud	3
231480	Rubber seal	1
231479	Packing	1
231478	Distance piece	3
215647	Set screw	2

1. Drain off the engine oil and remove the sump.
2. Withdraw the three sump studs from the rear flange of the crankcase and fit the three new studs (57126).
3. Modify the sump by trimming the lip of the rear joint flange flush with the reinforcing strip on the underside of the flange. (This means cutting approximately $\frac{1}{8}$ in. (3.2 mm.) from the flange).
4. Fit a new sump joint washer and replace the modified sump.
5. Fit the rubber seal (231480), with the three distance pieces (231478) inserted in the holes, over the three studs at the rear of the crankcase with its flange upwards, followed by the packing piece (231479); secure with three nuts and spring washers.
6. Blank off the two drain holes at the bottom of the flywheel pit (at the joint face between the flywheel and bell housings) by means of two set screws (215647— $\frac{3}{16}$ in. Whit.).

MODELS AFFECTED
1948-50 LAND-ROVER

UNIT AFFECTED
GEARBOX

DUST-PROOFING BELL HOUSING

Modifications have been introduced to seal the gearbox unit against the entry of dust; if necessary, such modifications can be incorporated on earlier vehicles by following these instructions.

Gearboxes numbered 860001 to 06102415.

A dust seal can be fitted to the aperture in the top of the bell housing with the gearbox in position in the vehicle. Proceed as follows:—

Part No.	Parts required. Description	Quantity
232606	Rubber washer	1
06846	Cover plate for bell housing	1

1. Remove the gearbox cover.
2. Remove the gear change lever complete with mounting plate.
3. Place the rubber washer (232606) over the studs at the bell housing aperture, followed by the cover plate (06846).
4. Replace the gear change lever complete. It may be necessary to slot the two front fixing holes in the mounting plate, to ensure that the gear lever engages correctly in the selector shafts.

The method of sealing the clutch withdrawal cross-shaft apertures in the sides of the bell housing differs between R.H.D. and L.H.D. models:—

A. R.H.D. models. (Gearboxes numbered R860001 to R06102415).

Two types of sealing grommet are available; the more efficient pattern can only be fitted when the engine or gearbox is removed from the vehicle. It should be incorporated as necessary, at the first opportunity, in the following manner:—

Part No.	Parts Required. Description	Quantity
232628 or } 233380	Rubber grommet R.H.	1
232647	Centre for grommet	1
232898	Spring for grommet	1
232930	Bolt	1
2226	Plain washer	1
71082	Shakeproof washer	1
2247	Nut	1
3359	Split pin	1
232604	Rubber grommet L.H.	1

1. With the gearbox removed from the vehicle, drill a $\frac{7}{32}$ in. (5,6 mm.) hole in the R.H. side of the bell housing on the centre-line of the withdrawal cross-shaft, $3\frac{3}{8}$ in. (85,7 mm.) forward from the rear joint face.

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UNIT AFFECTED

GEARBOX

DUST-PROOFING BELL HOUSING

2. Fit the grommet centre (232647) over the R.H. boss of the clutch withdrawal housing ; it will be necessary to clean up the outer diameter of the boss to make the centre a snug fit.
3. Offer up the rubber grommet (232628 or 233380) over the grommet centre and into position on the inside of the bell housing round the cross-shaft aperture. Punch a hole in the grommet to correspond with that drilled in the bell housing. Apply a suitable adhesive to the bell housing and press the grommet into position.
4. Fit the spring (232898) on the inside of the grommet, with its flat portion pressing the grommet against the rear face of the bell housing. Manipulate the spring to retain the grommet as tightly as possible and secure it, with the grommet, to the housing by means of a bolt (232930), plain washer (2226), shakeproof washer (71082), nut (2247) and split pin (3359).
5. Fit the rubber grommet (232604) in the L.H. aperture in the bell housing.

The alternative method of sealing can be fitted with the gearbox in position in the vehicle, but should be replaced by the pattern described above when the unit is removed for repair or overhaul. Proceed as follows :—

Parts required.		
Part No.	Description	Quantity
233576	Rubber grommet R.H.	1
233575	Retaining plate for grommet	1
70886	Drive screw fixing retainer	4
217521	Bush for grommet	1
232604	Rubber grommet L.H.	1

1. Remove the pin securing the clutch cross-shaft connecting tube to the cross-shaft and lever assembly (i.e., the external cross-shaft) and pull the shaft clear of the tube.
2. Fit the bush (217521) in the smaller end of the rubber grommet (233576) ; push the bush over the end of the cross-shaft, with the open end of the grommet towards the bell housing.
3. Hold the open end of the grommet clear and replace the pin to secure the cross-shaft to the connecting tube.
4. Offer the grommet into position round the outside of the bell housing aperture, apply a suitable adhesive to the housing and press the grommet snugly into position.
5. Secure the grommet to the bell housing by means of the retaining plate (233575) and four drive screws (70886).
6. Fit the rubber grommet (232604) in the L.H. aperture in the bell housing.

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UNIT AFFECTED
GEARBOX

DUST-PROOFING BELL HOUSING

B. L.H.D. models. (Gearboxes numbered L860001 to L06104469).

The L.H.D. sealing grommet can only be fitted with the gearbox removed from the vehicle :—

Parts required.

Part No.	Description	Quantity
233380	Rubber grommet L.H.	1
232627	Centre for grommet	1
233379	Spring for grommet	1
232930	Bolt	1
2226	Plain washer	} Fixing spring to bell housing
71082	Shakeproof washer	
2247	Nut	
3359	Split pin	
232604	Rubber grommet R.H.	1

1. With the gearbox removed from the vehicle, drill a $\frac{7}{32}$ in. (5,6 mm.) hole in the L.H. side of the bell housing on the centre line of the withdrawal cross-shaft, $3\frac{3}{8}$ in. (85,7 mm.) forward from the rear joint face.
2. Remove the operating lever from the cross-shaft and fit the grommet centre (232627) to the L.H. boss of the withdrawal housing by means of the two set bolts already securing the oil seal housing.
3. Offer up the rubber grommet (233380) over the grommet centre and into position on the inside of the bell housing round the cross-shaft aperture. Punch a hole in the grommet to correspond with that drilled in the bell housing. Apply a suitable adhesive to the bell housing and press the grommet into position.
4. Fit the spring (233379) on the inside of the grommet, with its flat portion pressing the grommet against the rear face of the bell housing. Manipulate the spring to retain the grommet as tightly as possible and secure it, with the grommet, to the housing by means of a bolt (232930), plain washer (2226), shakeproof washer (71082), nut (2247), and split pin (3359).
5. Fit the rubber grommet (232604) in the R.H. aperture in the bell housing.

MODELS AFFECTED

1948-49 "60" and "75"
1950 "75"
1948-50 LAND-ROVER

UNIT AFFECTED

ENGINE

REPLACEMENT OF EXHAUST VALVE SEAT INSERTS

The exhaust valve seat inserts in the cylinder block (Part No. 09065) are manufactured from "Brimochrome". This material is very brittle and cannot be cut in the usual way ; it can be ground using vibro-centric grinding equipment.

Special attention is needed when it becomes necessary to replace an insert, as it is impossible to remove it without breaking ; the procedure outlined below must be strictly followed :—

1. The mouth of the port above and the opening below the insert must both be covered with a heavy pad of rag, to prevent possible injury to the operator through flying fragments when the insert is broken.
2. The insert may either be chiselled out or broken by inserting a suitable steel bar about 18 in. (460 mm.) long and canting sharply, so causing the insert to snap. The bar should be slightly smaller in diameter than the bore of the insert, i.e. approximately 1.133 in. (28,8 mm.) and to avoid damage to the cylinder block must not be inserted below the bottom of the insert.
3. Remove the valve guide by means of a piloted drift ; if this operation is carried out carefully, the guide will be suitable for replacement, provided it is not unduly worn.
4. Clean the insert recess in the cylinder block.
5. The new insert has an interference fit in the cylinder block of .005 in. to .007 in. (0,13 to 0,18 mm.) and must be pulled into position, using the tool illustrated at Fig. 1. It is not necessary to heat the block or freeze the insert to assist in fitting.

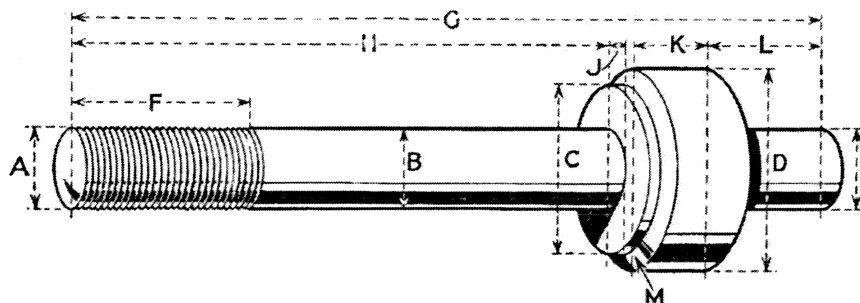


Fig. 1. Tool for drawing in exhaust valve seat insert.

A— $\frac{1}{8}$ in. B.S.F.	E— $\frac{3}{8}$ in. (14,3 mm.)	J— $\frac{1}{8}$ in. (3,2 mm.)
B— $\frac{3}{8}$ in. (14,3 mm.)	F— $1\frac{1}{4}$ in. (31,75 mm.)	K— $\frac{1}{2}$ in. (12,7 mm.)
C—1.137 in. (28,87 mm.)	G— $5\frac{3}{8}$ in. (131,8 mm.)	L— $\frac{3}{4}$ in. (19 mm.)
D—1.370 in. (34,8 mm.)	H— $3\frac{3}{4}$ in. (95,2 mm.)	M— 30° to suit seat.

MODELS AFFECTED

1948-49 "60" and "75"
1950 "75"
1948-50 LAND-ROVER

UNIT AFFECTED

ENGINE

REPLACEMENT OF EXHAUST VALVE SEAT INSERTS

Place the new insert on the shank of the tool, so that its 30° seating mates with the seat on the tool. Push the tool shank into the valve guide bore and thread on to it from below, a steel washer which will fit comfortably into the valve spring recess machined in the top of the valve chamber, followed by a $\frac{9}{16}$ in. B.S.F. nut. This washer must not be too close a fit in the recess, or there will not be enough movement of the tool shank to ensure that the insert enters squarely. Screw up the nut carefully and so draw the insert home. It may be necessary to tap the top of the tool occasionally to ensure that the insert moves; only a light blow must be given, to avoid cracking the insert.

- Replace the valve guide; for this operation it is definitely advisable to use a suitable tool such as that illustrated at Fig. 2 to prevent the possibility of damage.

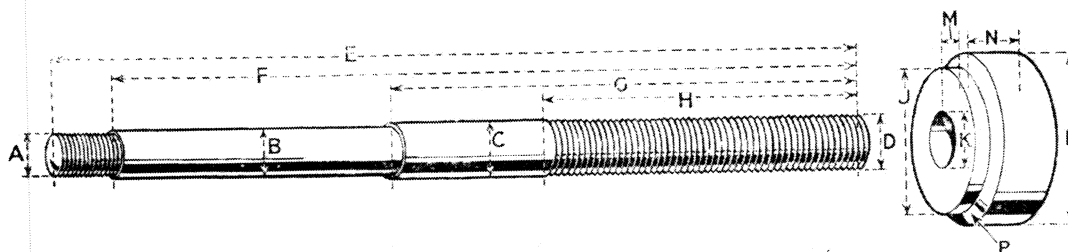


Fig. 2. Tool for drawing in exhaust valve guide.

A— $\frac{9}{16}$ in. B.S.F.	F—6 in. (152,4 mm.)	L—1.370 in. (34,8 mm.)
B— $\frac{3}{4}$ in. (8,4 mm.)	G—3 $\frac{1}{4}$ in. (95,2 mm.)	M— $\frac{1}{8}$ in. (3,2 mm.)
C— $\frac{7}{16}$ in. (11,1 mm.)	H—2 $\frac{1}{2}$ in. (50,8 mm.)	N— $\frac{3}{8}$ in. (9,5 mm.)
D— $\frac{9}{16}$ in. B.S.F.	J—1.137 in. (28,87 mm.)	P—30° to suit valve seat
E—6 $\frac{1}{2}$ in. (165 mm.)	K— $\frac{3}{8}$ in. drill	

Offer the guide to the bore in the cylinder block, push the thinner end of the tool through the guide and secure with a suitable washer and $\frac{5}{16}$ in. B.S.F. nut.

Place the plug over the other end of the tool, with the 30° face corresponding with the insert and secure by means of a $\frac{7}{16}$ in. B.S.F. nut. Tighten this nut until the guide is pulled home. Remove the $\frac{5}{16}$ in. nut and withdraw the tool.

- Grind the insert seat to 45°, using vibro-centric equipment as described in Service Bulletin 5025.
- Face the exhaust valve to 45° and lap into the seat in the usual way.

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MODELS AFFECTED
1948-50 LAND-ROVER

UNIT AFFECTED
FUEL SYSTEM

DUST-PROOFING AIR CLEANER AND CONNECTIONS

Modifications have been introduced to seal the air cleaner and connecting tubes against the entry of dust ; if necessary, such modifications can be incorporated on earlier vehicles by following these instructions.

Parts required.

Part No.	Description	Quantity	Required for vehicles numbered
231494	Air cleaner elbow	1	} 860001 to 06100279
231594	Air seal for elbow	1	
232451	Clip fixing elbow to rubber connection	1	
232992	Clip fixing elbow to carburetter	2	
232454	Crankcase breather pipe	1	} 860001 to 8666573
232635	Restrictor for elbow	1	
231531	Connecting tube assembly for air cleaner	1	
232651	Rubber connection, tube to rocker cover	1	860001 to 06100165
			860001 to 06103414

1. Remove and discard the following parts :—
Air cleaner elbow, rubber air seal for elbow, clips securing the elbow to the carburetter and rubber connection ; crankcase breather pipe ; air cleaner connecting tube ; rubber connecting tube between the rocker cover and connecting tube.
2. Fit the breather pipe (232454) to the cylinder block.
3. Fit the air cleaner elbow (231494) to the carburetter and secure by means of air seal (231594) and two clips (232992) fitted side by side.
4. Secure the rubber connection to the elbow, using clip (232451).
5. Fit the restrictor (232635) into the side tube on the elbow and attach the crankcase breather pipe with the original connection and clips.
6. Fit the connecting tube assembly (231531) to the air cleaner and secure the rubber connection, using the original clip.
7. Fit the rubber connection (232651) to the rocker cover and connecting tube, using the original clips.

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MODELS AFFECTED
1948-50 LAND-ROVER

UNIT AFFECTED
MODIFICATIONS

DUST-PROOFING

At intervals during the production of the Land-Rover, modifications have been introduced to seal various portions of the vehicle against the entry of dust. The parts principally affected in this way are the engine, gearbox, fuel system, doors, tailboard, dash panel and hood.

Service Bulletins A2, C2 and M1 detail the alterations made to the engine, gearbox and fuel system respectively. These alterations may be incorporated on vehicles not so modified, at the first convenient opportunity, e.g., when the engine or gearbox is removed for general overhaul or any other reason. If done in this way, the cost to the owner will be negligible.

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MODELS AFFECTED

1948-49 LAND-ROVER
(numbered prior to 8667575)

UNIT AFFECTED

BRAKES

BRAKE MODIFICATION

Improved pattern wheel brake units, incorporating one-piece linings, pull-off springs and snail cam adjusters on the leading shoes, have been introduced as from Land-Rover serial number 8667575.

To enable owners of vehicles numbered prior to 8667575 to receive the benefit of the improved design, a complete conversion kit Part No. 234188 is available from our Spares Department at a cost of £1 8s. 2d. The kit comprises all parts necessary to modify one vehicle ; full fitting instructions are included.

After modification, leading brake shoes used as subsequent replacement must be of the later type, *i.e.* Part Nos 232071/2.

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MODELS AFFECTED
1948-50 LAND-ROVER

UNIT AFFECTED
FRONT AXLE

SWIVEL PIN DAMPING

As from Land-Rover serial number 06112001, the front axle design has been altered to incorporate cone damping bearings at the upper swivel pins, in place of the original taper roller bearings.

If considered necessary, this alteration can be incorporated in earlier vehicles as described below; a convenient time would be at routine front axle overhaul.

PARTS REQUIRED

Part No.	Description	Quantity
233262	Steering lever L.H.	1 R.H.D. models only.
233263	Steering lever R.H.	1 R.H.D. models only.
233355	Steering lever L.H.	1 L.H.D. models only.
233356	Steering lever R.H.	1 L.H.D. models only.
230858	Cone seat	2
230904	Cone bearing	2
230896	Spring	2

Proceed as follows :—

1. Jack up the front of the vehicle.
2. Remove the road wheels.
3. Disconnect the front brake pipes.
4. Disconnect the track and steering rods.
5. Remove the complete half shaft and swivel housing assemblies from the axle casing (six bolts, nuts and spring washers on each side). Strip each assembly as follows :
6. Drain off the oil from the tracta joint housing.
7. Remove the swivel pin housing oil seal (five set bolts and spring washers and one adjustable lock stop bolt).
8. Remove the swivel pin and steering lever complete with shims (four nuts and spring washers).
9. Remove the bottom swivel pin bracket complete with shims, which should be preserved (four nuts and spring washers).
10. Remove the half shaft and tracta joint complete from the housing.
11. Remove the upper roller bearing and discard.
12. Press the bronze cone seat (230858) into the swivel pin bearing housing.
13. Smear the steel cone bearing (230904) with oil and insert in the cone seat.



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MODELS AFFECTED

1948-50 LAND-ROVER

UNIT AFFECTED

FRONT AXLE

SWIVEL PIN DAMPING

14. Re-assemble the half shaft, taking care to mesh the tracta joint correctly.
 15. Re-assemble the bottom swivel pin bracket with the original shims.
 16. Insert the coil spring (230896) in the top bearing.
 17. Fit the new steering lever and swivel pin assembly and pull down evenly, without shims. After every few turns of the four securing nuts, check the resistance by moving the assembly from lock to lock. A sudden increase in resistance will indicate that the spring has become coilbound. At this stage, the nuts should be slackened and re-tightened gradually, to find the exact point at which the spring becomes coilbound. Measure the gap between the flange on the steering lever and the swivel pin housing with feeler gauges. Suitable shims .005 in. (0,13 mm.) in excess of this figure should be inserted and the steering lever pulled down tightly. Re-check the resistance (this should be approximately 7-8 lb. (3-3,5 Kg.) at the steering lever boss).
- NOTE.** To ensure that the spring is fully compressed when ascertaining the coilbound position, it may be necessary to use a suitable packing washer under the spring.
18. Re-assemble by reversing operations 1—7; bleed the brake system and re-fill the tracta joint housings with the correct grade of oil.

Time required : 7 hours.

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MODELS AFFECTED

1948-49 "60" and "75"
1950 "75"
1948-50 LAND-ROVER

UNIT AFFECTED

ENGINE

COMPLAINT

EXCESSIVE OIL CONSUMPTION

Upon receipt of a complaint of excessive oil consumption, the following procedure should be adopted:—

A. EXTERNAL OIL LEAKS

Check carefully for external oil leaks, especially at the rocker cover joints, front cover, sump joint and oil pressure gauge or switch connection; rectify as necessary.

In the case of engines fitted with an AC external oil filter, particular attention should be paid to possible leaks at the pipe connections.

B. CARRY OUT AN ACCURATE CONSUMPTION CHECK AS FOLLOWS:—

1. Allow the vehicle to stand overnight on level ground and top up the oil level to the "H" mark on the dipstick.
2. 1948-49 "75" only. Fit a small metal container over the crankcase breather pipe; this container must be so arranged that, while it will collect any oil expelled from the breather, it must not prevent the crankcase from breathing normally.
3. Carry out a test run of approximately 200 miles (300 Km.) of which at least 50 miles (80 Km.) must be made at a speed of over 60 m.p.h. (95 k.p.h.)
The test run may be done by the owner.
4. Allow the vehicle to stand again overnight and measure the amount of oil required to bring the oil level back to the "H" mark.

Compute the oil consumption in terms of miles per gallon (or litres per 1000 Km.); if it unduly exceeds the figure set out below, proceed in accordance with Sections C and D.

"60", "75" and Land-Rover (road work in high transfer ratio):

1 gallon per 1,500 miles: 1,88 litres per 1000 Km.

Land-Rover (low transfer ratio or stationary running):

3 pints (0,17 litre) per hour at 4,000 r.p.m.

5. 1948-49 "75" only. Remove the tin from the breather pipe; should it be found to contain an appreciable quantity of oil, check the holes in the exhaust valve chest which allow oil to drain back into the sump.

There should not be less than eleven of these holes, of which at least one must be in the centre compartment and they must all be a full $\frac{1}{4}$ in. (7 mm.) in diameter. If necessary, they can be rectified or increased in number by removing the sump and drilling out with a $\frac{1}{4}$ in. (7 mm.) drill brazed on to an extension piece to give an overall length of 21 in. (530 mm.). The drill must be smeared with grease to trap all swarf and frequently dipped in cold water to prevent the grease melting.

C. INLET VALVE GUIDE OIL SEALS

Damage to the inlet valve guide seals would allow oil to leak from the cylinder head into the combustion chambers under certain working conditions. It is always necessary to check these seals, and renew as necessary, when the head is removed for decarbonising.

MODELS AFFECTED

1948-49 "60" and "75"
1950 "75"
1948-50 LAND-ROVER

UNIT AFFECTED

ENGINE

EXCESSIVE OIL CONSUMPTION

The oil seals are fitted in the valve spring cap on all 1948-49 "60" and "75" engines, Land-Rover engines numbered 860001 to 06106719 and 1950 "75" engines numbered 04300001 to 04300445. A modification has been introduced on all later engines, whereby the oil seals are repositioned at the top of the inlet valve guides, to provide more efficient sealing. This modification can be incorporated on the earlier engines by fitting new inlet valves, valve guides and sealing rings; part numbers of the parts required are:—

Parts required	1948-49 "60" and Land-Rover	1948-49 "75"	1950 "75"
Inlet valves	233427	210516 (with 15° chamfers added at top of stem and leading edge of cotter groove).	233426
Inlet valve guides	233643	233643	233644
Sealing rings	233419	233419	233419

The grooved spring caps should be replaced without the original sealing rings.

It will be necessary to re-cut the inlet valve seats concentric with the new guides.

If the oil consumption is still excessive, attention should be transferred to the pistons:—

D. PISTONS

Remove the pistons and modify them by reducing the bottom land and top of the skirt as shown at Fig. 1.

Replace the pistons with new piston rings.

The piston clearance across the thrust faces at the bottom of the skirt should be checked as described below; if the clearance does not greatly exceed .0025 in. (0,065 mm.) the original pistons may be replaced with new rings. Otherwise, new modified piston assemblies should be fitted to achieve this clearance.

- (a) 1948-49 "60" and "75": check the piston clearance as described in Service Bulletin 5035.
- (b) 1950 "75" and Land-Rover: Check the piston clearance by passing the piston, crown downwards and without rings, through the chromium plated portion of the bore; if the fit is correct, the piston should not fall under its own weight, but be a light thumb press fit through the plated bore.

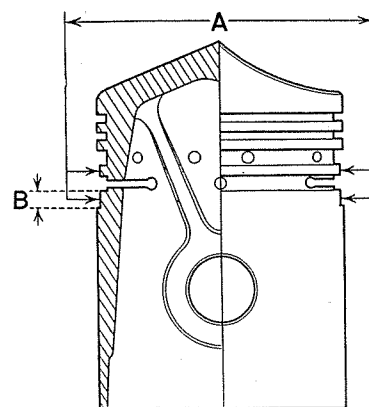


Fig. 1. Piston modification

A—Reduce diameter to 2.676 in.—.004 (68 mm.—0,10) for "60" and Land-Rover or 2.506 in.—.004(63, 6mm.—0,10) for "75".

B— $\frac{3}{16}$ in. (4,8 mm.)

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MODELS AFFECTED

1948-49 "60" and "75"
1950 "75"
1948-50 LAND-ROVER

UNIT AFFECTED

ENGINE

EXCESSIVE OIL CONSUMPTION

It is essential that the new piston rings be correctly gapped as follows:—

Models	Compression rings	Scrapper rings
1948-49 "60"; LAND-ROVER	.014 in. to .018 in. (0,35 mm. to 0,45 mm.)	.011 in. to .015 in. (0,275 mm. to 0,375 mm.)
1948-49 "75"	.008 in. to .012 in. (0,2 mm. to 0,3 mm.)	.008 in. to .012 in. (0,2 mm. to 0,3 mm.)
1950 "75"	.014 in. to .018 in. (0,35 mm. to 0,45 mm.)	.011 in. to .015 in. (0,275 mm. to 0,375 mm.)

Any or all of these modifications may be incorporated as circumstances dictate.

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MODELS AFFECTED

1950 "75"
1948-50 Land-Rover

UNIT AFFECTED

BODY

REPAIR OF LIGHT ALLOY BODY PANELS BY BRAZING AND SOLDERING

Information in this Bulletin should assist in carrying out minor repairs to the light alloy panels used in the construction of 1950 "75" and Land-Rover bodies.

Material

The material used for all Land-Rover panels is known as Birmabright 2 and that for 1950 "75" door, bonnet and boot lid panels as Birmabright 3.

Soldering technique is identical for both alloys.

Temperature characteristics of Birmabright are:—

Annealing	....	....	Starts at 230°C.
Softening	....	....	360° to 380°C.
Melting point	....	....	670°C. approx.

Precautions to be observed

1. Absolute cleanliness is essential.
2. Ensure that the solder has solidified before subjecting the joint or patch to any pressure.
3. After soldering, protect the joint against moisture attack or corrosion due to being in contact with other metals, with a coat of paint or film of grease.
4. Aluminium soldered joints will not anodise.

Soldering methods available

1. Brazing or Hard Soldering

Brazing is second only to welding from the corrosion resistance point of view; it gives a sound joint and is more readily carried out than welding due to the lower temperature required.

2. Soft Soldering

Soft soldering requires an even lower temperature than brazing, thereby reducing the annealing and loss of strength of the parent material due to the applied heat. It does not, however, give as sound or as strong a joint as brazing and should be avoided where corrosion resistance is an important consideration.

3. Reaction Soldering

Reaction soldering involves temperatures similar to soft soldering, but its use is somewhat limited by the special method of application.

4. Mullard Ultrasonic Soldering Iron

By this method of soldering, the oxide film is temporarily destroyed by ultrasonic stimulation, thus providing a clean surface.

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Sheet 2 of 3 Sheets

MODELS AFFECTED

1950 "75"
1948-50 Land-Rover

UNIT AFFECTED

BODY

The four methods are dealt with in detail below:—

A. BRAZING

This process is distinguished from welding in that the parts to be joined are not themselves melted. The filler metal has a melting range of 575°C. to 590°C., enabling a town gas-compressed air flame to be used as an alternative to an oxy-acetylene flame; the latter is preferred, however, as it is better controlled and a more localised heat is applied, thereby minimising the danger of edge melting or local collapse. The joint will have good corrosion resistance and its strength will be of the same order as a welded joint.

Proceed as follows:—

Degrease or wipe with a trichlorethylene rag and scratch brush the parts to be joined. Clamp the parts as firmly as possible. Heat the joint with either a town gas-compressed air or oxy-acetylene blowpipe; apply a generous coating of flux to the filler rod.

The flux residue should be washed away thoroughly with hot water and a wire brush.

SUPPLIERS

Equipment

Oxy-Acetylene	.....	British Oxygen Co., Ltd., Grosvenor House, Park Lane, London, W.1., England.
Town gas-compressed air blowpipe	.....	Fletcher-Russell Co., Ltd., Warrington, Lancs., England.

Brazing Rod

Silotectic Melting Point 575-590°C.	.....	British Oxygen Co., Ltd., AS ABOVE.
or "Hari-Kari"	.....	Midland Welding Supply Co., Ltd., 620 Shirley Road, Hall Green, Birmingham 28, England.

B. SOFT SOLDERING

In this process, the solder melts at a lower temperature than in hard soldering; the solders available for use with aluminium have similar melting points to the tin-lead solders used for brass, steel or tin plate.

The greatest difficulty in soldering aluminium and its alloys is the removal of the oxide film, aluminium differing from other common metals, in that the skin of oxide formed is tough and refractory and is not removed by the ordinary fluxes.

The method generally employed requires a special solder. This is melted on the aluminium and the surface beneath is scraped with a sharp tool which can be attached to a soldering iron. Thus the oxide is removed mechanically while the solder is used as a cover to exclude air.

If the mechanical scratching is not desired, the following pre-treatment solution may be used:—

20 per cent. Phosphoric Acid.
10 per cent. Nitric Acid.
Trace of wetting agent, e.g., 0.1 per cent. "Teepol".
Balance—water.

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Date 14.6.50

Sheet 3 of 3 Sheets

MODELS AFFECTED

1950 "75"
1948-50 Land-Rover

UNIT AFFECTED
BODY

When the surface of the dent or joint has been scratch brushed and pre-treated by swabbing with the above solution and washed with water, the effect of the solution will be noted by a brightening of the surface of the metal treated. A blowpipe is then played on to it and a stick of 90 per cent. tin, 10 per cent. zinc solder is rubbed firmly over until it is covered with a molten layer of solder. The efficiency of the tinning can be checked at this stage by wiping off the surplus solder with a clean rag and observing whether or not there is a continuous tinned layer.

Plumbers wiping solder or the Abbey body filling solders can now be melted into the joint or dent and be wiped into position with a moleskin pad or wooden scalpel in the normal manner.

SUPPLIERS

Solders

Fryall Aluminium Solder (recommended)

Commences to melt 170°C.

Completely fluid 300°C.

"Teepol"

Grey & Martin, Ltd., City Lead Works,
Southwark Bridge, London, S.E.1,
England.

Frys Metal Foundries, Ltd., Merton Abbey,
London, S.W.19, England.

Shell Chemicals, Shell-Mex House, London.

C. REACTION SOLDERING

In this process the solder consists of a chemical mixture containing 90 per cent. of zinc chloride and 5 per cent. of ammonium chloride, which, on heating to approximately 400°C. in contact with aluminium, reacts with it, resulting in the deposition of metallic zinc on the joint. This solder tins readily without the necessity for scratching the metal surface during the soldering operation as with an ordinary aluminium solder. The fact that it is a powder and must be heated indirectly somewhat restricts its application, particularly with body panels in situ.

Proceed as follows:—

Clean the parts to be joined with a wire brush or emery cloth, place a layer of "Flinso" powder between the surfaces of the joint and build up more powder around the area of the joint or surface of the dent. Heat from underneath with a blowpipe to 300° to 400°C. until the reaction commences, after which it will proceed automatically. When the reaction is complete, the joint should be allowed to cool in air, washed and dried.

Alternatively the parts can be tinned with this powder and then the dent filled up in the same manner as described under soft soldering.

SUPPLIER

Flinso Aluminium Solder-Powder Form Grant and West, Ltd., 3 Furlong Road,
London, N.7, England.

D. MULLARD ULTRASONIC SOLDERING IRON

This equipment provides the most efficient method of soldering but entails an initial cost of approximately £70. Full details of the technique available from the supplier.

SUPPLIER

Mullard Electronic Products, Ltd.,
Electronic Equipment Division,
Aboyne Works, Aboyne Road,
London, S.W.17, England.

MODELS AFFECTED

1948-49 "60"
1948-50 "75"
1948-50 Land-Rover

UNIT AFFECTED

ENGINE

COMPLAINTS

1. ENGINE MISFIRING
2. SPARKING PLUGS FAULTY

CAUSE Condensation inside sparking plug cover.

Examination of alleged faulty sparking plugs returned to us, and investigation of complaints of misfiring and kindred troubles, have shown that only in rare instances are the sparking plugs actually defective. In almost all such cases, the fault lies in condensation inside the plastic plug cover; it should be remedied as described below. It must be emphasised that Lodge H.L.N.R. plugs are fitted as standard on these models and must be used for all subsequent replacements.

- REMEDY.
1. Remove the sparking plug covers and dry thoroughly.
 2. Drill four $\frac{3}{16}$ in. (4,8 mm.) holes in the cover as shown at Fig. 1. The lower holes

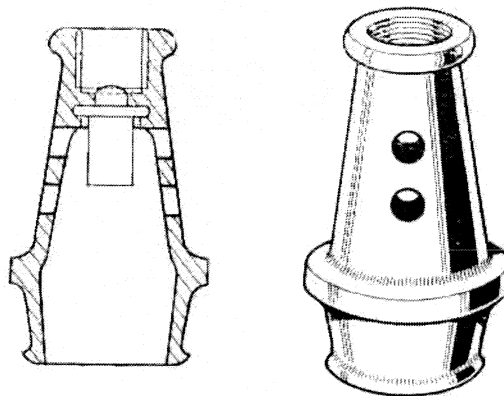


Fig. 1 Modification to sparking plug cover.

are drilled on the same centre line as the existing $\frac{1}{8}$ in. (1,6 mm.) ventilation hole; the upper holes should be positioned at $\frac{3}{8}$ in. (9,5 mm.) centres above the first holes.

3. Remove, clean and dry the sparking plugs; re-set the gaps as necessary and replace.
4. Replace the covers with the holes lying to front and rear, *i.e.*, with the holes parallel to the engine centre-line. In this way the air flow assists in evaporation of any condensation.

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Date 11.7.50

Sheet 1 of 2 Sheets

MODELS AFFECTED
1948-50 LAND-ROVER

UNIT AFFECTED
BODY (DOORS)

COMPLAINT. FRACTURE OF DOOR PANEL AT UPPER REAR CORNER

CAUSE Excessive strain on door capping due to vibration at rear edge of side screen.

REMEDY Afford positive support at the rear side screen mounting and strengthen the door by fitting gusset plate assembly (Part Nos. L.H. 302335 and R.H. 302334); these plates are available from our Spares Department.

Proceed as follows:—

1. Remove the side screen.
2. Remove the door from the vehicle.
3. Remove the upper buffer from the door.
4. Shear the two rearmost rivets securing the top capping.
5. Secure the free end of the clip to the gusset plate by means of the bolt and plate, spring and plain washers and nut provided.
6. Fit the gusset plate in position as shown at Fig. 1.

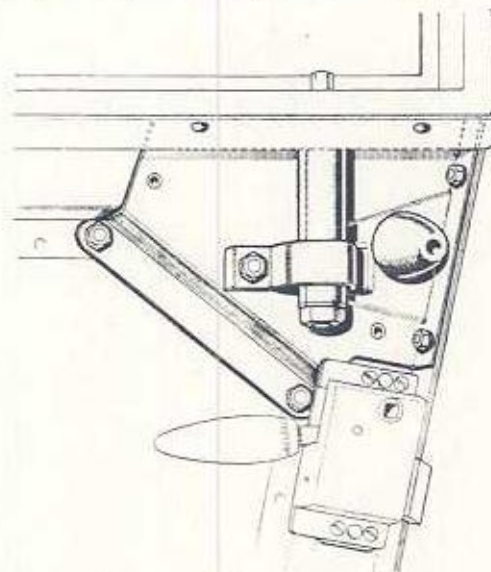


Fig. 1. Door gusset plate.

7. Drill two $\frac{1}{4}$ in. (6.5 mm.) clearance holes in the door panel and secure the plate by means of the two $\frac{1}{4}$ in. bolts, spring washers and nuts provided.
8. Drill the plate through the rivet holes in the top capping and secure the capping and plate, using two new rivets.

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Sheet 2 of 2 Sheets

MODELS AFFECTED
1948-50 LAND-ROVER

UNIT AFFECTED
BODY (DOORS)

9. Drill two holes in the door shut flange, using the gusset plate as a guide and secure with the two 2 B.A. screws, spring washers and nuts provided; the screw heads should be on the outside of the door.
10. Secure the plate to the door reinforcement by means of the two pop rivets provided.
11. Tighten the clip against the side screen fixing tube by means of the nut fitted at Operation 5.
12. Replace the rubber buffer.
13. Replace the door and sidescreen.
14. Repeat Operations 1—13 for the other door.

These gusset plates will be fitted on all future vehicles.

Issue 1

Date 12.7.50

Sheet 1 of 3 Sheets

MODELS AFFECTED

1948-50 LAND-ROVER
(Prior to vehicle number 06101747)

UNIT AFFECTED

BODY

DUST-PROOFING

Modifications have been introduced to seal the doors and tailboard against the entry of dust, on all vehicles numbered 06101747 onwards; if necessary, such modifications can be incorporated on earlier vehicles by following these instructions.

DOORS

<u>Part No.</u>	<u>Parts required.</u> <u>Description</u>	<u>Quantity</u>
301407	Weather strip for door, front	2
301409	Retainer for strip	2
300789	Rivet fixing retainer	14
301411	Weather strip for door, rear	2
301413	Retainer R.H. } For rear	1
301414	Retainer L.H. } strip	1
300781	Pop rivet fixing retainer	12
301893	Weather strip for door, bottom	2
301415	Retainer for strip	2
300789	Rivet fixing retainer	18

1. Remove the door from the vehicle.
2. Fit retainer (301413 or 301414) into weather strip (301411).
3. Clamp the retainer and strip to the rear edge of the door with the rubber overhanging 1 in. (25 mm.) as shown at Fig. 1 A.
4. Using the retainer as a guide, drill the six 3/16 in. (4.8 mm.) holes through the rubber and door panel; secure the retainer with six pop rivets (300781).
5. Position weather strip (301893) along the inside bottom flange of the door with 1 in. (25 mm.) overhang.
6. Place retainer (301415) over the strip with its radiused edge overhanging the door edge (Fig. 1B).

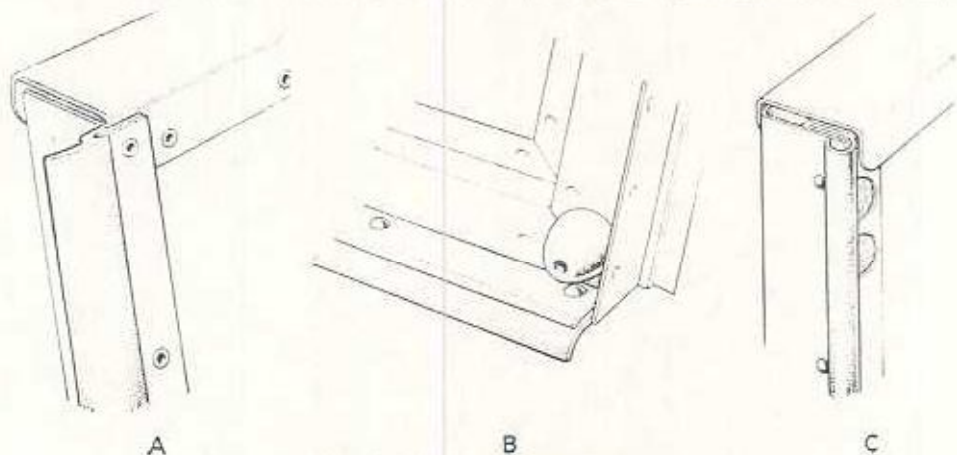


Fig. 1. Dust-proofing doors.

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Sheet 2 of 3 Sheets

MODELS AFFECTED

1948-50 LAND-ROVER
(Prior to vehicle number 06101747)

UNIT AFFECTED

BODY

7. Using the retainer as a guide, drill the nine 3/16 in. (4,8 mm.) holes through the rubber and door; secure the retainer with nine rivets (300789).
8. Position weather strip (301407) on the front edge of the door with its lip curled round the door edge (Fig. 1C).
9. Place retainer (301409) over the strip.
10. Using the retainer as a guide, drill the seven 3/16 in. (4,8 mm.) holes through the rubber and door; secure the retainer with seven rivets (300789).
11. Trim all rubber protruding from the ends of the retainers, except for a 1 in. (25 mm.) overhang from the rear end of the bottom strip retainer.
12. Replace the door.
13. Repeat for the other door.

TAILBOARD.

		<u>Parts required.</u>	
<u>Part No.</u>	<u>Description</u>		<u>Quantity</u>
301432	Weather strip, upper	} Tailboard side	2
301416	Weather strip, lower		2
301870	Retainer, upper R.H.	} For side weather strip	1
301418	Retainer, upper L.H.		1
301419	Retainer, lower R.H.		1
310420	Retainer, lower L.H.		1
300781	Pop rivet, short	} Fixing retainers	10
300782	Pop rivet, long		4
301421	Weather strip, tailboard bottom		1
301422	Retainer for strip		1
300789	Rivet fixing retainer		13

1. Remove the tailboard from the vehicle.
2. Remove the hinges from the tailboard.
3. Fit short, upper side retainer (301870 or 301418) into weather strip (301432). See Fig. 2A.

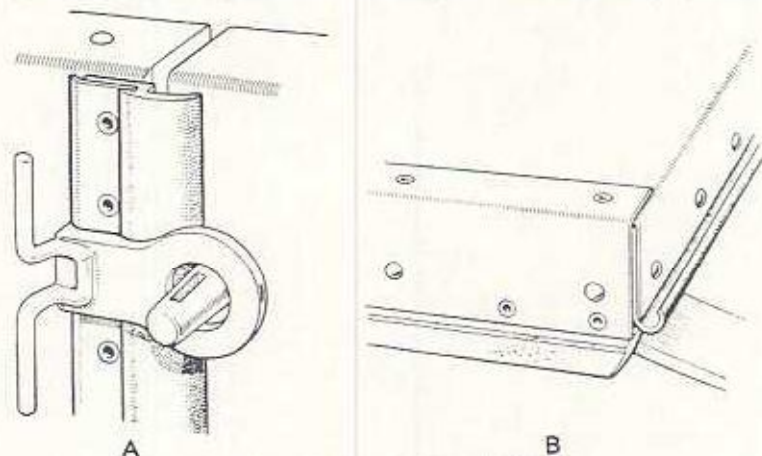


Fig. 2. Dust-proofing tailboard.

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MODELS AFFECTED

1948-50 LAND-ROVER
(Prior to vehicle number 06101747)

UNIT AFFECTED

BODY

4. Using the retainer as a guide, drill the two 3/16 in. (4,8 mm.) holes through the rubber and tailboard capping flange above the key eye ; secure the retainer with two pop rivets (300781).
5. Fit the long, lower side retainer (301419 or 301420) into weather strip (301416).
6. Using the retainer as a guide, drill the three upper 3/16 in. (4,8 mm.) holes through the rubber and capping flange below the key eye ; secure the retainer with three pop rivets (300781).
7. Bend the lower end of the retainer back inside the capping flange and drill two further 3/16 in. (4,8 mm.) fixing holes ; secure the retainer with two long pop rivets (300782).
8. Repeat Operations 3-7 for the other side of the tailboard.
9. Position weather strip (301421) along the inside face of the lower edge of the tailboard, with the lip overhanging $\frac{3}{8}$ in. (19 mm.). See Fig. 2B.
10. Place retainer (301422) over the strip with its radiused edge following the curl of the strip.
11. Using the retainer as a guide, drill the thirteen 3/16 in. (4,8 mm.) holes through the rubber and tailboard panel ; secure the retainer with thirteen rivets (300789).
12. Trim excess rubber.
13. Replace the hinges and refit the tailboard.

Issue 1

Date 13.7.50

Sheet 1 of 1 Sheet

MODELS AFFECTED
1951 LAND-ROVER

UNIT AFFECTED
SPECIFICATION

TECHNICAL SPECIFICATION

The specification of the 1951 Land-Rover is identical with that detailed for the 1950 model in Service Bulletin W2 dated 20.9.49, with the exception of :-

Transfer box oil capacity 4½ pints (2,5 litres)

Issue 2

Date 31/7/50

Sheet 1 of 4 Sheets

MODELS AFFECTED

1950-51 "75"
1950-51 LAND-ROVER

UNIT AFFECTED

ENGINE

ENGINE TIMING

Firing order.

LAND-ROVER 1, 3, 4, 2.
"75" 1, 5, 3, 6, 2, 4.

Tappet clearance.

The correct tappet clearances with the engine at normal running temperature are given in the table below :—

Model	Inlet valves	Exhaust valves
Land-Rover	.010 in. (0,25 mm.)	.012 in. (0,30 mm.)
"75"	.008 in. (0,20 mm.)	.012 in. (0,30 mm.)

Tappet clearance may be set cold to the same figures on Land-Rover engines only.

Adjustment for this clearance is provided by a set-screw and locknut on the rocker. (See Figs. 1, 2 and 3.). It is essential to ensure that the valve to be adjusted is really closed ; to do this, set the valve receiving attention fully open and then move the engine one complete turn, to bring the tappet on to the back of the cam. When adjustment is required, slacken the lock-nut and rotate the set-screw to give the correct clearance by means of a screwdriver. The lock-nut should be securely tightened after adjustment, great care being taken to ensure that this operation does not upset the clearance.

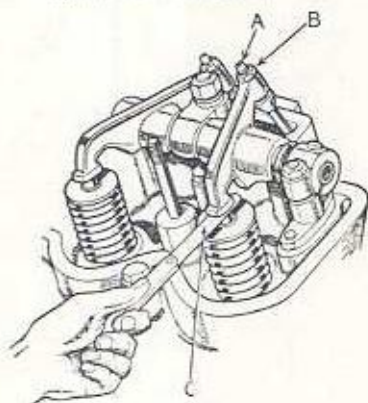


Fig. 1.
Inlet tappet adjustment (Land-Rover).

A—Tappet adjusting screw.

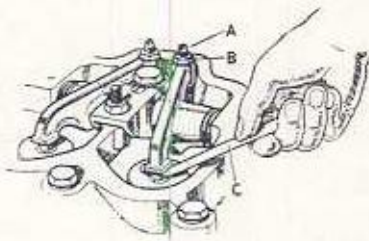


Fig. 2.
Inlet tappet adjustment ("75").

B—Locknut.

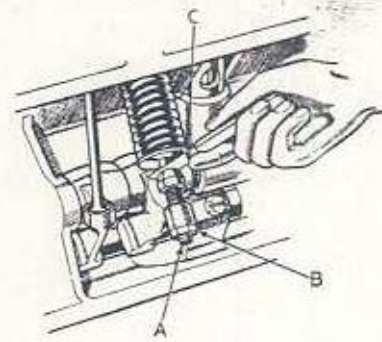


Fig. 3.
Exhaust tappet adjustment.
C—Feeler gauge.

It cannot be emphasized too strongly that the clearances must be correct. If anything less than the indicated clearance is used, a fall in power output will follow and any greater clearance will mean noisy tappets.

Reissued 31.7.50 to advise that "75" tappet clearances must only be set with the engine at normal running temperature.

This sheet replaces that already in your file dated 20.9.49, which should be removed and destroyed.

Issue 1

Date 20/9/49

Sheet 2 of 4 Sheets.

MODELS AFFECTED
1950 "75"
1950 LAND-ROVER

UNIT AFFECTED
ENGINE

ENGINE TIMING

Notation.

Throughout the text which follows, "No. 1" cylinder is that at the front of the engine.

Flywheel markings.

The flywheel markings and timing pointer are exposed when the inspection cover on the right-hand side of the flywheel housing is removed.

The markings and their meanings are as follows:—

(1) The line against which the letters T.D.C. are stamped, when brought dead opposite the pointer, means that No. 1 piston is on Top Dead Centre, i.e., at the top of its stroke.

(2) There are two ignition timing markings on the flywheel: F.A. 8° for car engines and F.A. 15° for Land-Rover engines. The 8° mark is 2 flywheel teeth and the 15° mark, 4 flywheel teeth before T.D.C.

The correct F.A. mark, when set opposite the pointer, indicates the firing-point of No. 1 cylinder when the octane selector on the distributor is set in the standard position, i.e., the point at which the distributor points should be just opening, with the rotor in the firing position, for No. 1 or No. 4 cylinder (Land-Rover) or No. 6 cylinder ("75").

(3) The line against which the letters E.P. are stamped, when set opposite the pointer, indicates the point at which No. 1 exhaust valve should be at the peak of its lift (fully open). It is 114° before T.D.C. (31 flywheel teeth).

Valve timing.

If the timing chain and hydraulic tensioner should have been removed, the procedure to re-time the engine is as follows (see Fig. 4).

(1) Set the exhaust tappets to the correct clearance (see Sheet 1 of this bulletin) and slacken the inlet tappet adjusting screws as far as possible.

(2) Rotate the camshaft in the running direction until No. 1 exhaust valve is fully open.

The use of a dial indicator is the only reliable method of determining this point. It should be mounted on a stud adjacent to No. 1 exhaust rocker and with its aid the possibility of an error in determining the exhaust peak is eliminated. It is possible to do the job correctly without a dial indicator, but much time is wasted and the possibilities of an error very much magnified.

(3) Rotate the engine in the running direction until the E.P. mark on the flywheel is in line with the pointer.

Issue 1

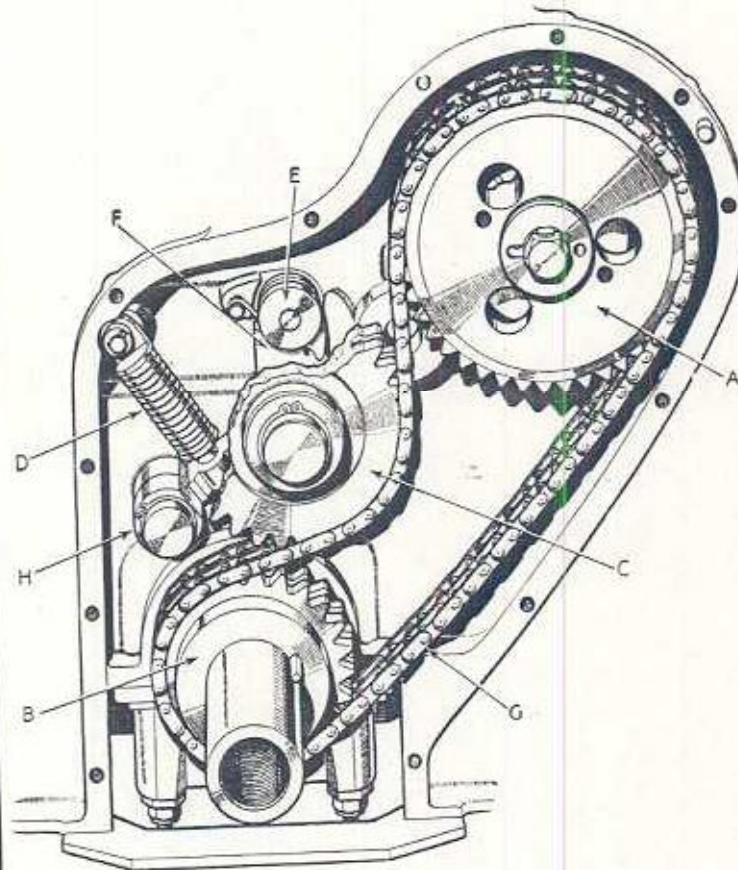
Date 20/9/49

Sheet 3 of 4 Sheets

MODELS AFFECTED
1950 "75"
1950 LAND-ROVER

UNIT AFFECTED
ENGINE

ENGINE TIMING



- A—Camshaft chainwheel.
- B—Crankshaft chainwheel.
- C—Jockey pulley.
- D—Hydraulic tensioner.
- E—Pawl.
- F—Ratchet.
- G—Timing chain (driving side).
- H—Jockey pulley arm.

Fig. 4.—Timing gears.

4. Fit the timing chain, ensuring that there is no slack on the driving side (G).
5. Hold the ratchet pawl (E) clear and replace the complete jockey pulley (C, F and H), meshing the pulley with the chain.
6. Check the timing and correct if necessary. The camshaft chainwheel (A) is made with three irregularly spaced keyways, so that if the timing will not come correct in the first position tried, alternatives are provided.
7. Replace the hydraulic tensioner (D) comprising cylinder, piston and spring; these items must be assembled dry to prevent the formation of an air lock. Retain at its upper end with a split pin. Fit the circlip at (H), retaining the jockey pulley assembly. Engage the ratchet (E, F).
8. Set the inlet tappets to the correct clearance (see Sheet 1 of this bulletin).

Issue 2

Date 12/3/51

Sheet 4 of 4 Sheets

MODELS AFFECTED
1950-51 "75"
1950-51 LAND-ROVER

UNIT AFFECTED
ENGINE

ENGINE TIMING

Ignition timing.

1. Check the distributor contact breaker clearance and adjust if necessary. The correct gap with the points fully open is .014 to .016 in. (0,35 to 0,40 mm.).
2. Rotate the engine in the running direction until the *correct* F.A. line on the flywheel is in line with the pointer, with both valves on No. 1 cylinder closed (see Sheet 2 of this bulletin).
3. The distributor rotor will now correspond with No. 1 cylinder high tension lead terminal.
4. Set the octane selector to the standard position on the sliding scale.
5. Set the distributor points just breaking by slackening the pinch-bolt at the base of the distributor head and rotating the distributor bodily in the required direction. Do not forget to re-tighten the pinch bolt.

Re-issued 12.3.51 to alter distributor contact breaker clearance.

This sheet replaces that already in your file dated 20.9.49, which should be removed and destroyed.

Issue 1

Date 31/7/50

Sheet 1 of 2 Sheets

MODELS AFFECTED
1951 LAND-ROVER

UNIT AFFECTED
NUMBERING

1951 LAND-ROVER AND UNIT NUMBERS

INFORMATION IN THIS BULLETIN SHOULD BE MADE AVAILABLE TO EVERYONE CONCERNED, SO THAT OUR SERVICE ORGANISATION MAY WORK TO THE GREATEST DEGREE OF EFFICIENCY.

The system of serial numbering 1951 Land-Rovers and units is different from that used in the past in that right and left-hand drive models are indicated by the fourth digit instead of by a letter prefix ; it is fully explained in the tables on Sheet 2 of this bulletin.

It is most essential that the full vehicle serial number be quoted in all correspondence and on spare parts orders for all models, as it is the only indication to our Service Department that the vehicle is to the right or left-hand specification, as the case may be.

THE VEHICLE NUMBER should be quoted in all correspondence. It will be found stamped on a PLATE ON THE ENGINE SIDE OF THE SCUTTLE ON THE LEFT-HAND SIDE, exposed when the bonnet panel is raised.

THE CHASSIS NUMBER is stamped on the top of the left-hand front engine bearer bracket. It is the same as the vehicle number.

THE ENGINE NUMBER is stamped at the top front of the cylinder block on the left-hand side, adjacent to the water pump.

THE GEARBOX NUMBER is stamped on the right-hand side of the gearbox casing.

THE REAR AXLE NUMBER is stamped on top of the axle casing on the left-hand side.

THE FRONT AXLE NUMBER is stamped on top of the axle casing on the left-hand side.

The purpose of the engine, gearbox and axle serial numbers is to enable our Service Department to determine at what point mid-season alterations have taken place, if any. They should not be quoted unless specially asked for, as we can identify them from Vehicle Records, providing the FULL VEHICLE NUMBER IS GIVEN.

EXTRA EQUIPMENT

Extra units supplied either with the vehicle or at a later date, such as rear power take-off, capstan winch, etc., will each be numbered in the series 860001 onwards as in previous seasons.

MODELS AFFECTED
1951 LAND-ROVER

UNIT AFFECTED
NUMBERING

EXPLANATION OF VEHICLE NUMBERING SYSTEM

E X A M P L E .

LAND-ROVER No.	1	6	1	6	1	0	2	5
	Season of manufacture (1951)	Land-Rover	Model (Basic vehicle)	R.H.D. Export	Serial No.			

It will be seen from the example that in the full vehicle number, the digits have the following meanings :

The first figure is constant (1) and indicates the season (1951).

The second figure is constant (6) and denotes "Land-Rover."

The third figure denotes the type of vehicle :—

Third figure (1) indicates basic vehicle

Third figure (2) indicates station wagon

Third figure (3) indicates welding outfit vehicle

Third figure (6) indicates a C.K.D. vehicle.

The fourth figure denotes either a home vehicle or a right-hand or left-hand drive export model :—

Fourth figure (0) indicates a home model

Fourth figure (3) indicates a L.H.D. export model

Fourth figure (6) indicates a R.H.D. export model.

Model	Vehicle No.	Engine No.	Gearbox No.	Rear Axle No.	Front Axle No.	
Basic Vehicle Home	1610001 onwards	1610001 onwards	1610001 onwards	1610001 onwards	1610001 onwards	
Basic Vehicle L.H.D. Export	1613001 onwards	1613001 onwards	1613001 onwards		1613001 onwards	
Basic Vehicle R.H.D. Export	1616001 onwards	1610001 onwards	1610001 onwards		1610001 onwards	
C.K.D. L.H.D. Export	1663001 onwards	1613001 onwards	1613001 onwards		1613001 onwards	
C.K.D. R.H.D. Export	1666001 onwards	1610001 onwards	1610001 onwards		1610001 onwards	
Station Wagon Home	1620001 onwards	1613001 onwards	1613001 onwards		1613001 onwards	
Station Wagon L.H.D. Export	1623001 onwards					1613001 onwards
Station Wagon R.H.D. Export	1626001 onwards					1610001 onwards
Welding Outfit Home	1630001 onwards	1610001 onwards	1610001 onwards		1610001 onwards	1610001 onwards
Welding Outfit L.H.D. Export	1633001 onwards					1613001 onwards
Welding Outfit R.H.D. Export	1636001 onwards			1610001 onwards		1610001 onwards

Issue 1

Date 28.9.50

Sheet 1 of 2 Sheets

MODELS AFFECTED
1948-51 LAND-ROVER

UNIT AFFECTED
BODY

TOUCHING-UP PROCESS FOR LAND-ROVER BODIES FINISHED IN STOVING SYNTHETIC MATERIAL

The materials covered by Part Numbers are obtainable from our Spares Department.

PREPARATORY WORK

Thoroughly clean the damaged portion; all traces of wax polish, etc., should be removed with a suitable solvent such as White Spirit.

The surrounding edges of the paint film must be correctly feather edged, using a wooden block and suitable paper.

COLOUR

(a) Small damaged areas.

Prepare the correct colour finish by thinning to 40 parts finish to 60 parts thinner by volume.

Apply a built-up coat by spray and allow to air dry for 4 to 6 hours.

(b) Large damaged areas (complete wings or panels).

Prepare the correct colour finish by thinning 50/50 with thinner.

Apply one or two full spray coats; allow 15 to 30 minutes between coats and 4 to 6 hours (or preferably overnight) after the final application.

Half-hour air drying colour finish and thinners are available under the following part numbers:-

Quantity	Colour		Thinners
	Light green	Bronze green	
1 pint tin (0,5 litre)	T1781	T2069	T1785
1 quart tin (1 litre)	T1782	T2070	T1786
½ gall. tin (2,25 litres)	T1783	T2071	T1787
1 gall. tin (4,5 litres)	T1784	T2072	T1788

POLISHING

After the recommended drying period, lightly polish with any good smooth polishing compound and finally clear, if necessary, with any good quality wax polish.

Issue 1

Date 28.9.50

Sheet 2 of 2 Sheets

MODELS AFFECTED
1948-51 LAND-ROVER

UNIT AFFECTED
BODY

NOTES

1. When spraying in small areas and in order to minimise dry spray, it is recommended that the air pressure for spraying be reduced to 30-40 lb./sq.in. (2,1-2,8 Kg./cm².)
2. When touching up stoved synthetic finishes, no advantage is to be gained by mist coating the patch. Instead, the edges of the patch should be faded out during application and any resultant dry spray removed during polishing with any good polishing compound.
3. It is not always easy to blend a patch or touch up; to do so successfully and lose the edge requires practice by a skilled operator. In cases where the damage is on a conspicuous part of the vehicle, it is recommended that the operator sprays out the entire damaged part, e.g., door panel, wing, etc.
4. In certain instances, the materials listed are available locally. We can furnish additional information in this respect on demand, providing the serial numbers of vehicles concerned are quoted.

Issue 1

Date 3.10.50

Sheet 1 of 1 Sheet

MODELS AFFECTED
1948-50 LAND-ROVER

UNIT AFFECTED
STEERING

COMPLAINT

WHEEL WOBBLE

REMEDY: On receipt of a complaint of "Wheel Wobble", the following points should be checked and corrected as necessary:—

1. Ensure that the front road spring camber is correct (see Service Bulletin 5046 or Land-Rover Workshop Manual).
2. Check the six steering ball joints for excessive play and renew the joints as necessary.
3. Check the steering relay unit and correct as necessary (see Land-Rover Workshop Manual.)
4. Check the end-float of both front hubs and correct as necessary (see Land-Rover Workshop Manual).
5. Ensure that the bolts securing the steering column to the dash panel are fully tight.
6. Check the balance of the front road wheels and correct as necessary (see Service Bulletin 5029 or Land-Rover Workshop Manual).
7. If the vehicle is operating under exceptionally bad road conditions and the foregoing instructions fail to effect a cure, swivel pin damping should be incorporated as described in Service Bulletin F1.

Issue 1

Date 5.10.50

Sheet 1 of 2 Sheets

MODELS AFFECTED
1951 LAND-ROVER

UNIT AFFECTED
CONTROLS

ALTERATION TO TRANSMISSION CONTROLS

At approximately the 4,001st vehicle produced to the 1951 specification, an important alteration to the transfer box and controls takes place. This alteration will allow two or four-wheel drive to be selected at will in HIGH transfer ratio, with four-wheel drive only in LOW transfer.

The change has been introduced because experience has shown that many vehicles are being used exclusively on hard road surfaces, where four-wheel drive is not necessary.

Operation of the new controls

Four-wheel drive

- (a) This is engaged automatically when LOW transfer ratio is selected.
- (b) It can also be obtained in HIGH transfer ratio, by pressing down the yellow knob on the gearbox cover.

Two-wheel drive

In HIGH transfer only.

To regain two-wheel drive in HIGH transfer ratio

- (a) Stop the vehicle.
- (b) Engage LOW transfer.
- (c) Return to HIGH transfer.

NOTE.—Two-wheel drive is automatically regained when moving from LOW to HIGH transfer.

Identification of vehicles with the new controls

Vehicles fitted with the new controls can only be recognised from the design of the transfer gear instruction plate on the driver's side of the dash, which has been altered to include the vehicle serial number:—

Issue

Date 5.10.50

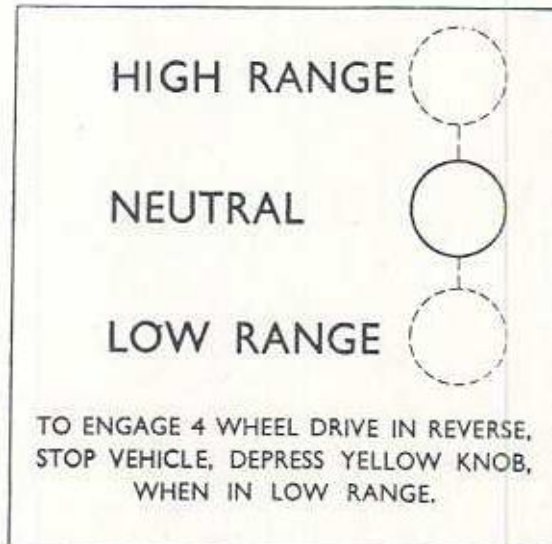
Sheet 2 of 2 Sheets

MODELS AFFECTED

1951 LAND-ROVER

UNIT AFFECTED

CONTROLS



Old plate



New plate

Action to be taken

Please draw the attention of all Sales & Service personnel to the change in specification.

Issue 1

Date 8.11.50

Sheet 1 of 1 Sheet

MODELS AFFECTED
1948-51 Land-Rover

UNIT AFFECTED
CONTROLS

MODIFICATION TO ALLOW TWO-WHEEL DRIVE IN HIGH TRANSFER RATIO

As explained in Service Bulletin Q.1, an alteration in design has been introduced on vehicles numbered 16100603, 16131573, 16160909, 16200001, 16230081, 16260021, 16300003, 16330002, 16360007, 16630025 and 16660787 onwards, to allow two or four wheel drive to be selected at will in high transfer ratio.

In the case of an earlier vehicle operated exclusively on hard surfaces, a modification to the freewheel unit may be incorporated, to enable rear-wheel drive only to be employed in high transfer ratio, while still allowing two or four wheel drive in low transfer ratio.

To effect such modification, proceed as follows:—

1. Remove the freewheel unit as detailed in the Land-Rover Workshop Manual.
2. Remove the locking dog from the freewheel.
3. Remove the spring ring and retaining plate.
4. Withdraw the nine rollers and three free cam roller shoes and springs.
5. Replace the retaining plate and spring ring.
6. Replace the locking dog.
7. Replace the freewheel unit as detailed in the Land-Rover Workshop Manual.

Operation of controls on modified vehicle

1. In HIGH transfer ratio, rear wheel drive only is permanently engaged.
2. In LOW transfer ratio only, four-wheel drive can be selected by operating the front wheel drive lock.
3. The drive to the front wheels is automatically disconnected on moving from LOW to HIGH transfer ratio.

Issue 1

Date 12/12/50

Sheet 2 of 3 Sheets

MODELS AFFECTED
1934-51 All

UNIT AFFECTED
ENGINE

When ordering a Replacement Reconditioned Engine, first consult the availability chart. If it is shown as available, contact the factory (Telephone SHEldon 2461; Extension 14), as to the supply position. This varies from day to day.

Use a separate order form; do not include any other parts on such orders and do not include engines in monthly stock orders.

If the chart shows the engine is not available, consider the Engine Reconditioning Scheme detailed on Page 3.

Special Condition under which Replacement Engines are supplied

Orders for replacement engines are accepted on the understanding that the original unit is returned to us Carriage Paid immediately the changeover has been made.

Charges. All engines despatched are charged out at full retail price plus packing charges and carriage paid. Upon receipt at these Works of the old engine, providing that it is found upon examination to be suitable for reconditioning for stock, full credit is passed against the original charge and your account is debited with the exchange price as detailed in the table on Page 1, with the following exception:—Original engines are examined by us for damage, particular attention being paid to the cylinder block and head. Should any cracks be revealed or if either of the parts have been repaired by welding, such parts are considered scrap and an additional appropriate adjustment to the standard charge will be made.

Return of original engines for credit

All engines returned for credit to be complete with all accessories normally supplied with the replacement, *i.e.*, clutch, dynamo, starter motor, distributor, water pump, and, where applicable, petrol pump. DO NOT send the carburetter. Failure to follow these instructions may result in delay in clearing the transaction.

An ADVICE NOTE must be attached to the engine stating:—"Returned for credit against replacement engine supplied on Invoice No....."

All engines despatched to us to be CARRIAGE PAID.

It should also be noted that engines CANNOT BE SENT BY PASSENGER TRAIN, because their weight exceeds the allowable limit; "GOODS" transport has, therefore, to be employed. Allowance for the considerable delay this involves must be made.

Where engines are collected or delivered by ROAD TRANSPORT, drivers should be instructed to proceed to No. 2 Gate at our Solihull Works, and ask for Service Department "Receiving Deck" or "Despatch Deck" as required.

Technical Details. All engines are despatched by us complete LESS carburetter. No given size REBORE can be guaranteed; where necessary LINERS are fitted without extra charge.

Issue 1

Date 12/12/50

Sheet 3 of 3 Sheets

MODELS AFFECTED
1934-51 All

UNIT AFFECTED
ENGINE

ENGINE RECONDITIONING SERVICE

In instances where the chart on Page 1 indicates that no replacement engine is available and enquiry at the works has indicated that a replacement is not readily available, advantage may be taken of the scheme whereby we are prepared to accept the customers own engine for reconditioning.

Subject to no unforeseen delay, such work can usually be carried out within 3/4 weeks and the charges are shown on Page 1.

When returning engines under this scheme, follow the procedure as laid down for the Replacement Scheme, but in addition add the following information to the Advice Note:—

e.g., "ENGINE No. 821652"

"TYPE 1938-12 h.p."

"For overhaul and return"

and you can then add any other information you wish.

Returning cars. In some instances where an engine overhaul is required it may be an advantage to return the car. This system has the advantages of reducing transport delays and eliminating carriage costs.

Do not send cars under this scheme other than by appointment. Charges will be as on Page 1 plus normal installation costs.

GUARANTEE

All engines reconditioned at the works are covered by our normal guarantee for a period of six (6) months from date of delivery.

MODELS AFFECTED

1934-51 All

UNIT AFFECTED

ENGINE

RECONDITIONED ENGINE PROCEDURE

The information which follows is given in order to clarify the position with regard to the availability of Factory Reconditioned Engines on an exchange basis and also gives details of an Engine Reconditioning Service.

Availability and Prices of Replacement Reconditioned Engines

Year	10 h.p.	12 h.p.	14 h.p.	16 h.p.	20 h.p.	"60"	P3 "75"	P4 "75"	Land-Rover
1934	NO	NO	NO						
1935	YES	NO	NO						
1936	YES	YES	YES						
1937	YES	YES	NO	YES	NO				
1938	YES	NO	NO	YES	NO				
1939	YES	YES	YES	YES	NO				
1940	YES	YES	YES	YES	NO				
1946	YES	YES	YES	YES					
1947	YES	YES	YES	YES					
1948						YES	YES		YES
1949						YES	YES		YES
1950								YES	YES
1951								YES	YES
RETAIL PRICE	£154	£154	£214	£220	£231	£175	£210	£180	£170
PRICE EXCH.	£60/ 7/6	£60/ 7/6	£70/13/6	£71/18/6	£73/ 3/6	£60/ 3/6	£72/ 1/6	£72/ 2/6	£60/ 3/6

PACKING CHARGE * £12/10.

Prices quoted are subject to alteration without notice

NOTE 1937-40 20 h.p. engines are interchangeable with 16 h.p. engines of the same year.

* Credit will be passed in full when case is returned in good condition. To ensure this, advise and quote Invoice Number.

Re-issued 12.3.51 to advise increase in exchange prices operative from that date.

This sheet replaces that already in your file dated 12/12/50, which should be removed and destroyed.

Issue 3

Date 5/3/52

Sheet 1 of 3 Sheets

MODELS AFFECTED
1934-51 All

UNIT AFFECTED
ENGINE

RECONDITIONED ENGINE PROCEDURE

The information which follows is given in order to clarify the position with regard to the availability of Factory Reconditioned Engines on an exchange basis and also gives details of an Engine Reconditioning Service.

Availability and Prices of Replacement Reconditioned Engines

Year	10 h.p.	12 h.p.	14 h.p.	16 h.p.	20 h.p.	"60"	P3 "75"	P4 "75"	Land-Rover
1934	NO	NO	NO						
1935	YES	NO	NO						
1936	YES	YES	YES						
1937	YES	YES	NO	YES	NO				
1938	YES	NO	NO	YES	NO				
1939	YES	YES	YES	YES	NO				
1940	YES	YES	YES	YES	NO				
1946	YES	YES	YES	YES					
1947	YES	YES	YES	YES					
1948						YES	YES		YES
1949						YES	YES		YES
1950								YES	YES
1951								YES	YES
RETAIL PRICE	£135	£135	£190	£190	£190	£155	£175	£160	£150
PRICE EXCH.	£60/7/6	£60/7/6	£70/13/6	£71/18/6	£73/3/6	£60/3/6	£72/1/6	£72/2/6	£60/3/6

PACKING CHARGE * £12/10/0

Prices quoted are subject to alteration without notice.

NOTE—1937-40 20 h.p. engines are interchangeable with 16 h.p. engines of the same year.

* Credit will be passed in full when case is returned in good condition. To ensure this, advise and quote Invoice Number.

Re-issued 5.3.52 to advise reduction in retail prices.

This sheet replaces that already in your file dated 12.3.51, which should be removed and destroyed.

Issue 1

Date 12/12/50

Sheet 1 of 1 Sheet

MODELS AFFECTED
1934-51 All

UNIT AFFECTED
BODY

STRIPPING AND RE-POLISHING WOODEN MOULDINGS

In cases where wooden mouldings or cappings have flaked or chipped and hence require re-surfacing, they should be stripped and re-polished in accordance with the following instructions.

A. PREPARATION.

1. Strip the moulding by immersion in cellulose thinners for approximately 5 to 6 hours, or until the original polish becomes soft.
2. Scour with wire wool to remove all traces of polish.
3. Leave to dry for 30 minutes.
4. Remove surface damage from the moulding by means of fine paper, applied along the grain of the wood.

B. STAINING.

Either :—

1. Rub Burnt Turkey Umber mixed with turpentine into the grain of the wood with rag.
2. Leave to dry for approximately 30 minutes, until the stain powders.
3. Clean off the powder with clean dry rag.

Or :—

4. Spray with cellulose walnut stain to desired colour and leave to dry for 1 hour.

C. SPRAYING WITH CLEAR LACQUER.

1. Thin the clear lacquer (not stronger than one part lacquer to two parts thinners).
2. Spray with five coats of thinned lacquer, allowing 30 minutes drying time between coats.
3. Thin further lacquer to 50% with thinners.
4. Spray 10 to 12 further coats, allowing 30 minutes drying time between coats.
5. Allow to dry for as long as possible before polishing (at least 48 hours is preferable).

D. FINISHING.

1. Flat to a smooth matt surface, using No. 320 wet and dry paper dipped in turpentine. Care must be taken not to rub through the lacquer on the edges of the moulding.
2. Polish with a fine rubbing compound, using a soft cloth dipped in the compound. Rub well in straight lines; do not use a rotary polishing action.
3. Finish with a good wax polish applied with a slightly damp cloth.

MODELS AFFECTED

1948-1951 LAND-ROVER
1951 "75"

UNIT AFFECTED

LUBRICATION

A. LAND-ROVER—FREQUENCY OF OIL CHANGING

This information is circulated to correct misunderstandings which have arisen over the need for more frequent oil changes when a vehicle is operated under extreme climatic conditions.

No definite instructions can be given regarding the intervals at which engine, gearbox, and axle oils should be changed; such intervals depend so much upon local climatic and operating conditions. Obviously, if the vehicle is used almost exclusively in low transfer ratio, mileage is of no use whatever in determining maintenance intervals; lubrication attention must then be based on operation hours.

The information which follows will serve as a basis for determining oil change intervals.

1. FIRST ENGINE OIL CHANGE.

When the vehicle leaves the factory, engine oil of a grade suitable for a temperate climate is in use.

If your climate is other than temperate, an immediate oil change must be made on receipt of the vehicle, to suit local conditions (see the list of recommended oils in the Operation Manual).

Thereafter, under GOOD ROAD OR CLEAN FIELD CONDITIONS, the first oil change should be made at 750 miles (1.000 km.) or 25 operation hours.

Under POOR ROAD OR FIELD CONDITIONS, as outlined below under "SUBSEQUENT OIL CHANGES," the first oil change should be made at a much earlier stage.

2. SUBSEQUENT ENGINE OIL CHANGES.

Under good road or clean field or industrial conditions, provided the external oil filter is renewed at every 6,000 miles (10.000 km.) or 200 operation hours, the engine oil need only be changed at intervals of 2,000 miles (3.000 km.) or 60 hours.

UNDER SEVERE CONDITIONS OF MUD OR DUST, engine oil must be changed **much more frequently** than the intervals given above, even to the extent of a **daily** change.

UNDER DEEP WADING CONDITIONS through water carrying mud and grit a **DAILY OIL CHANGE IS ESSENTIAL.**

Issue 1

Date 15/12/50

Sheet 2 of 2 Sheets

MODELS AFFECTED

1948-1951 LAND-ROVER
1951 "75"

UNIT AFFECTED

LUBRICATION

NOTE : This information supersedes that given in current editions of the Operation Manual and Workshop Manual, where 3,000 miles (5,000 km.) or 75 hours is used as a basic interval for engine oil changes.

All instructional literature will be brought into line with this Bulletin at the next reprint.

Until that time, it is the responsibility of distributors and dealers to call the attention of all owners to the need for more frequent oil changes under the conditions outlined above.

3. GEARBOX AND AXLE OIL CHANGES.

UNDER SEVERE CONDITIONS OF MUD OR DUST, oil in the gearbox, axles and tracta joints should be changed at more frequent intervals than usual.

B. "75" AND LAND-ROVER—UPPER CYLINDER LUBRICATION

As advised in recent Service News Letters, an improved ("slotted skirt") type piston has been fitted from engines numbered 14300148 ("75") and 16102462 and 16131765 (Land-Rover) onwards. In the case of vehicles fitted with such pistons, the use of an approved upper cylinder lubricant (see Instruction or Operation Manual for recommendations) is essential during the running-in period, owing to the design of both the piston and piston rings.

Owners should be advised accordingly when taking delivery of a new vehicle.