Land-Rover
Owner's Instruction Manual

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Land-Rover Owner's Instruction Manual

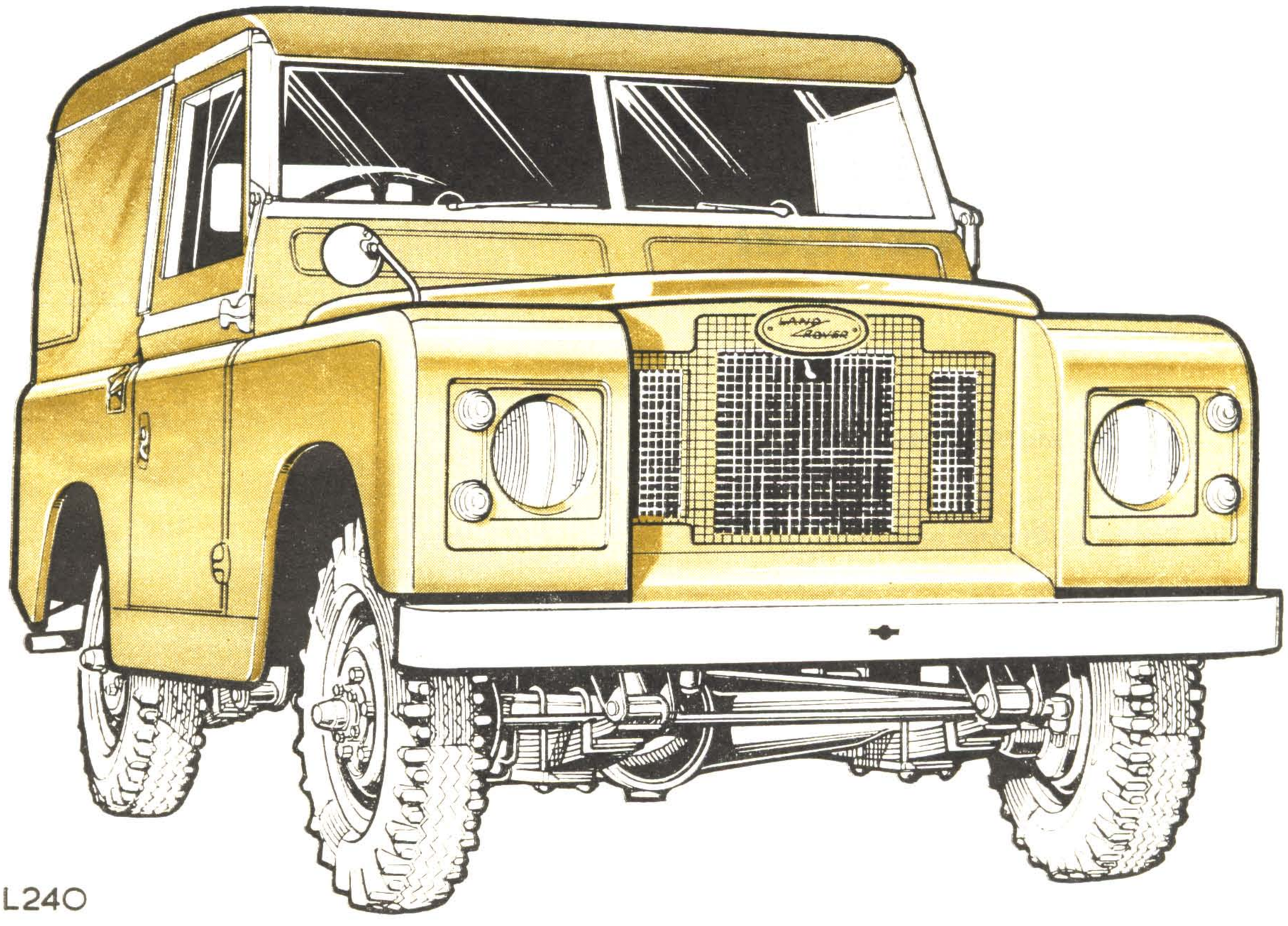
Incorporating Service Guide and Warranty

Covering Series IIA Bonneted Control and 1 ton

Petrol and Diesel Models

The Rover Company Limited
Solihull, Warwickshire, England

Part No. 606156 U.K. Edition



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A Message to the Owner . . .

Whether you are a novice or veteran, whether you are technically minded or the reverse, the Rover Company, who have built your new Land-Rover, ask you to read the following pages of this Owner's Instruction Manual, including Section Four on page 41 of this book.

On any correspondence with the Rover Company pertaining to this vehicle the chassis number must be quoted. See Page 31.

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By Appointment to Her Majesty Queen Elizabeth II

Manufacturers of Motor Cars and Land-Rovers

By Appointment to Her Majesty Queen Elizabeth the Queen Mother

Suppliers of Motor Cars and Land-Rovers

BRITISH LEYLAND — LAND-ROVER

THE ROVER COMPANY LIMITED

SOLIHULL
WARWICKSHIRE
ENGLAND

CONTENTS

The Owner's Maintenance Manual, incorporating Free Service and Maintenance Schedules, which accompanies this book, is for the use of those owners who take a personal interest in the maintenance of their Land-Rover and for other reference purposes.

DRIVING CONTROLS AND INSTRUMENTS

Section 1

IN THE DRIVING SEAT

Front seat adjustment, Long models

The fore-and-aft movement is adjusted by pushing to the left the lever at the left-hand side of the seat base and moving the seat into the required position. There is no seat adjustment on 'Regular' models.

Main gear change lever—black knob ◀①

The gears are selected by means of the centrally-placed gear lever. Gear positions are marked on the knob. To engage reverse, press lever to the left against spring pressure.
Synchro-mesh gears are provided for changing from second to third and third to top, and in these cases single de-clutching may be used; for other changes it is advisable to use the double de-clutch method.

Transfer gear lever—red knob ◀②

The transfer gear lever has three positions:

1. 'High' range position, fully forward. In this position the main gear lever will select the gear ratios giving normal road speeds.
2. 'Neutral' mid-way position. Used when driving power take-off equipment.
3. 'Low' range position, fully rearwards. When in this position the low range of gears will be selected by the main gear lever.

Four-wheel drive control—yellow knob ◀③

When in 'High' transfer ratio, the vehicle may be operated in two-wheel or four-wheel drive as required.
The four-wheel drive control has two positions:

1. Disengaged. Control fully up.
2. Engaged. Control pushed down.

Gear changing procedures, together with illustrations of gear lever positions under various driving conditions will be found on the following pages.

Hand brake ◀④

To release, pull the lever slightly back, depress the release button and push the lever down. The brakes are applied by pulling the lever back.

Steering ◀⑤

The steering requires only $3\frac{1}{2}$ turns of the wheel from lock to lock.

Pedals ◀⑥

Brake, clutch and accelerator pedals are the pendant type and function in the normal way. The brake and clutch operate hydraulically, with servo assistance for the brakes on 'Long' 6-cylinder and 1 ton models. The accelerator pedal has a mechanical linkage.

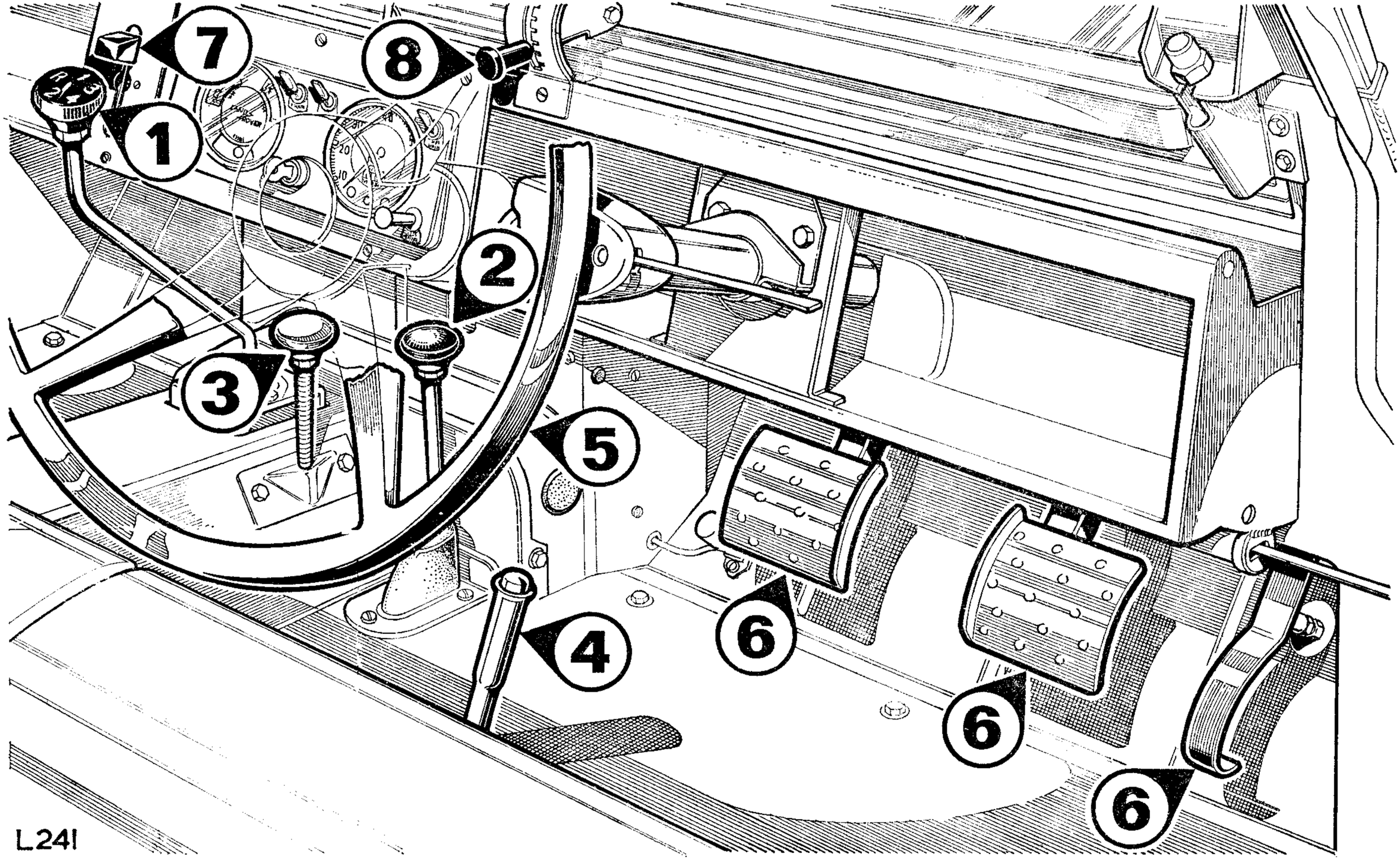
Engine speed control ◀⑦

Standard on Diesel, optional on Petrol models.
The quadrant of the hand control has a number of notches for the operating lever.

1. Lever down, control inoperative.
2. Move lever up to increase engine speed.

Windscreen ventilators ◀⑧

The two ventilators in the windscreen frame may be opened independently by pushing the lever upwards until each ventilator is open to the desired position. Use of the ventilators will be found advantageous when traversing dusty roads, as they greatly reduce the amount of dust blown into the vehicle from the rear.



GEAR-CHANGING PROCEDURE

The Land-Rover gearbox may be regarded as having 10 gear ratios, that is eight forward speeds and two reverse.
For convenience in use these gears are evenly divided into two groups, termed 'Low' range and 'High' range.
'Low' range consists of four low forward gears, plus a low reverse gear.
'High' range consists of four normal gear ratios, plus a normal reverse gear.
The two ranges may be used progressively when changing up, if conditions demand.
The charts on the following pages showing various work conditions alongside the recommended gearbox setting will be found useful until the operator has become conversant with the gearbox.

Gear levers

Three gear levers are provided to control the gearbox, these being:

1. The main gear lever, fitted with a black knob. This is used in the normal way, and will engage the five gears within the range selected by the transfer lever.
2. The transfer gear lever is fitted with a red knob and is used to select the high or low range of gears; it also has a neutral (mid-way) position.
3. The four-wheel drive control lever, fitted with a yellow knob and used to select two or four wheel drive. The use of this control is explained later.

Use of gear ranges

When selecting the low range of gears with the transfer gear lever, the gearbox will automatically engage four-wheel drive at the same time.
Therefore, when using the low gear range, the vehicle automatically provides maximum traction with maximum torque.
When using the high range of gears under normal conditions, the drive is to the rear wheels only.
Should the operator encounter conditions calling for four-wheel drive in the high gear range (for example, ice or mud on the road) then this may be obtained immediately, by operating the four-wheel drive control.
As an example of how the full progressive range of the gearbox may be used, consider a vehicle which is heavily laden or towing a heavy trailer, and which is required to pull away from a standing start, up a steep gradient.
With the transfer gear lever in the low range position, the vehicle will pull away in first gear, and the gear changes for the first four gears can be made in the normal way, with the main gear lever.
When road conditions are suitable for the high gear range, they may be brought into operation without stopping the vehicle as follows:
Depress the clutch pedal, select the high range with the transfer gear lever and move the main gear lever into the second or third gear position, depending on road conditions.
Release the clutch pedal and continue to change up in the normal way.
This operation can be carried out smoothly and quickly after a little practice.
By making use of the full range of the gearbox in this manner, the clutch life will not be shortened by having to compensate for the selection of an unsuitable gear ratio.

Transfer gear changing

Changing from high (lever fully forward) to low (lever fully back) transfer ratio should only be attempted when the vehicle is stationary. The engine may be left running, but the main gear lever must be in the neutral position. Depress the clutch pedal and pull the transfer lever right back; release the clutch. Should there be any hesitation in the gear engaging, do not force the lever. With the engine running, engage a gear with the main gear lever and let in the clutch momentarily; then return the main gear lever to neutral and try the transfer control again.

Some models are fitted with an easy-change transfer gearbox; this allows the change from high to low transfer to be carried out while the vehicle is moving slowly.

Changing from 'Low' to 'High' transfer ratio may be accomplished at any time, regardless of vehicle speed. Release the accelerator pedal, depress the clutch pedal and push the transfer box lever right forward, pausing slightly in the neutral position; let in the clutch.

Operation of the four-wheel drive control

Push lever down to engage four-wheel drive when in high transfer.

Front wheel drive in high transfer can be engaged at any time, irrespective of road speed.

However, in order to prevent excessive tyre wear, it is strongly recommended that 30 mph (50 kph) should not be exceeded when using four-wheel drive in high transfer, and also that a return to two-wheel drive be made as soon as road conditions permit.

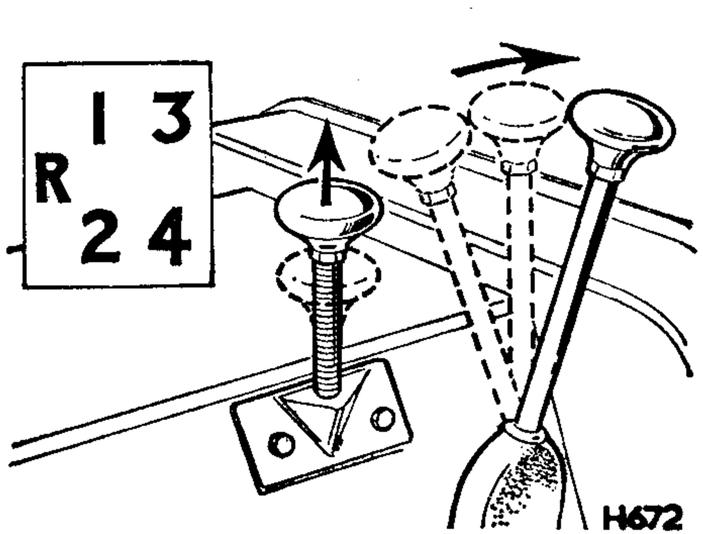
In order to regain two-wheel drive, stop the vehicle, move the transfer lever to the 'Low' position then back to the 'High' position. Front wheel drive will be automatically disengaged, and the yellow control lever will return to the disengaged position.

General

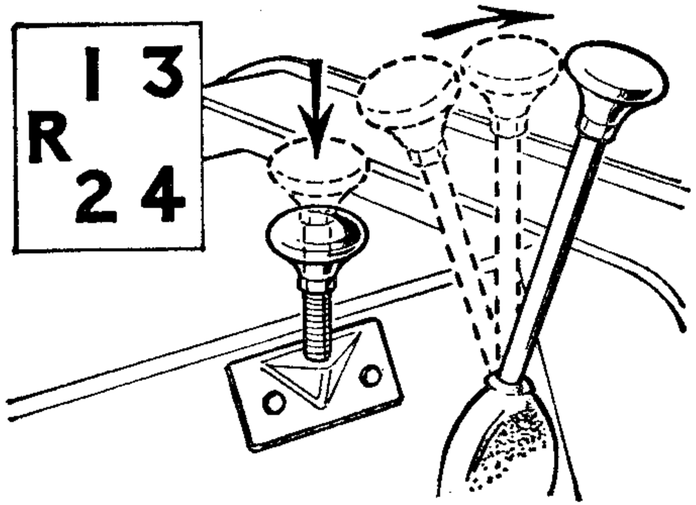
Before moving off in the vehicle after it has been parked for some time, it is a wise precaution to check that front wheel drive has not been engaged.

Work Conditions	CONTROL LEVER POSITION			Drive condition on vehicle	To obtain recommended drive setting	To regain normal drive setting	Remarks
	Main Gear Lever—Black	Transfer box Lever—Red	Four Wheel Drive Control—Yellow				
A—Normal road work	Select gear required	'High' position—fully forward	Disengaged	Driving rear wheels only, through the high range of gears	Check by moving transfer lever—(red) into 'Low position —fully back, and return to the 'High' position—fully forward		Check that four wheel drive is not engaged while vehicle is stationary, engine idling, and the clutch pedal depressed
B—Hard pulling on road. Ice or mud on road and grassland	Select gear required	'High' position—fully forward	Engaged	Drive on four wheels, in the high range of gears	Operate four wheel drive control (yellow) when vehicle is in motion or stationary	Stop the vehicle Select 'Low' transfer (red), then return to 'High' position	Do not exceed 30 mph (50 kph) in four-wheel drive, or excessive tyre wear will take place. Return to normal drive as soon as conditions permit
C—Very heavy load pulling Heavy ground work Ascending or descending steep gradients	Select gear required	'Low' position —Fully back	Four wheel drive is automatically engaged by selection of low transfer. Yellow control knob remains in the disengaged position	Drive on four wheels through the low range of gears	Stop vehicle, depress clutch, move transfer lever (red) to the 'Low' position —fully back	Release throttle pedal, depress clutch pedal, push transfer lever (red) forward firmly and slowly, to the 'High' position	Changing to the high gear range may be accomplished with the vehicle on the move, as soon as conditions permit

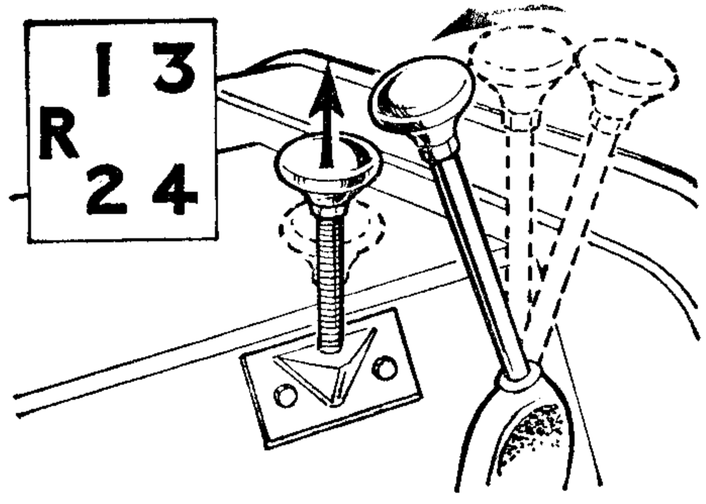
GEAR LEVER POSITIONS



A—Normal road work



B—Hard pulling, ice, mud, grassland

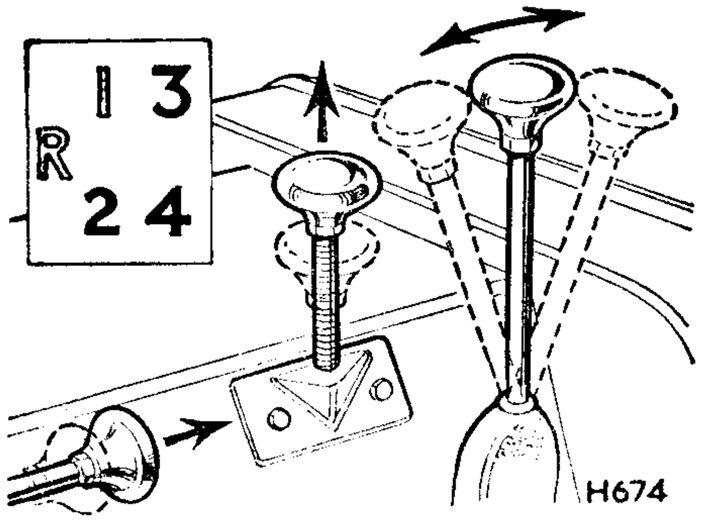


C—Heavy load pulling

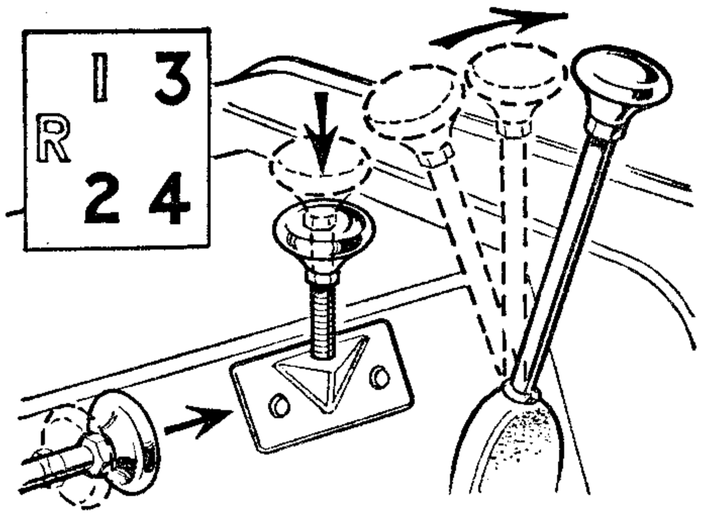
Work Conditions		CONTROL LEVER POSITION			Drive condition on vehicle	To obtain recommended drive setting	To regain normal drive setting	Remarks
		Main gear lever—Black	Transfer box lever—Red	Four Wheel Drive Control —Yellow				
D—Driving rear and centre power take-off equip-ment	Vehicle stationary; (including hydraulic winching)	Third gear selected, or as conditions demand	Neutral—Mid-way position	Disengaged	No drive to any road wheels. Drive to the equipment is through the main gearbox, after engage-ment of the PTO selector lever	Select neutral—Mid-way position, with the transfer lever (red) and the gear required with the main gear lever. Engage the PTO selector when required	Disengage PTO selector lever, move main gear lever to neutral, and transfer lever to 'High'—fully forward	*When hydraulic winching, leave the PTO selector in the engaged position and control the winch with the 'Pay-out'—'Pay-in' control lever.
E—Driving rear and centre power take-off equip-ment	Vehicle on the move	Select gear required	Select 'Low' or 'High' dependent upon the RPM required by the equipment in use Illustration shows lever in four wheel drive, high transfer position	Engage if required when in 'High' transfer	Two or four-wheel drive, as dictated by the nature of the work	Engage PTO selector lever and use gearbox and transfer control as conditions demand	Disengage PTO selector lever, move transfer lever into 'Low' position and back to 'High' while stationary	The use of a high gear will reduce the engine speed, and so result in an economical fuel consumption
F—Parking with heavy load on steep gradient, hand brake applied		First or reverse gear engaged	'Low' position —fully back	Four wheel drive is automatically engaged by selection of low transfer. Yellow control knob re-mains in the dis-engaged position	Stationary engine coupled to all wheels	Depress clutch and select 'Low' transfer ratio; select first or reverse, stop engine and release clutch	Depress the clutch pedal and move transfer lever into the 'High' position	Hand brake is effective on both axles in this condition

*These remarks do not apply to the operation of the front capstan winch, which carries its own control lever and is driven direct from the front of the engine

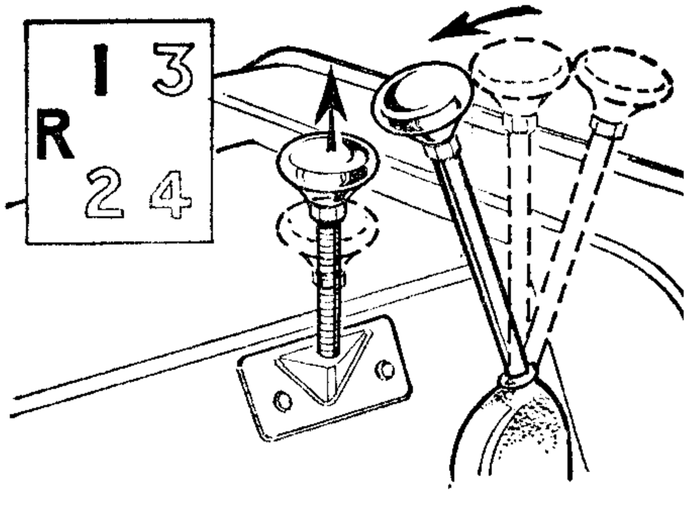
GEAR LEVER POSITIONS



D—Driving PTO, vehicle stationary



E—Driving PTO, vehicle on the move



F—Parking with heavy load

SECONDARY DRIVING CONTROLS

Ignition and starter switch, Petrol models ◄①

The ignition switch has four positions.

1. Key upright; switch off.
2. First position to right; ignition 'on'.
3. Continuing to turn to the right, against spring pressure, operates the starter.
4. Turned to left from upright position permits the use of radio if fitted, without the ignition being switched on.

Heater plug and starter switch, Diesel models ◄②

(*inset on illustration*)

The heater plug and starter switch has four positions.

1. Key upright, switch off.
2. First position to right, electrical services 'on'.
3. Continue to turn to the right against stop, heater plugs 'on'.
4. Further movement to the right against spring pressure operates the starter.

When key is removed (only possible in upright position) the switch cannot be operated.

The use of ether in capsules or in any other form must not be used to start the engine, as very high cylinder pressures are developed under these conditions, which can lead to serious and expensive mechanical failure.

The Land-Rover Diesel engine will start satisfactorily, with the proper use of the heater plugs down to temperatures of –4°F (–20°C) even with batteries only 70 per cent charged, provided the correct grade of oil is used.

Use heater plug position when starting from cold. For example, with a cold engine and an air temperature of 32°F (0°C) the key should be held in the heater plug position for 10 seconds.

The time required for any set of circumstances will be found with experience.

Cold start control, Petrol models ◄③

When the cold start control is pulled out the mixture is progressively enriched for cold starting and the engine speed is also increased to fast idling.

After use the control must be pushed fully in as soon as possible consistent with even-running.

On six-cylinder models the first $\frac{3}{8}$ in. (9,5 mm) movement gives a fast idle position without enrichment of mixture.

The carburetter, used on 6-cylinder models, is fitted with a cold start adjustment screw. See Owner's Maintenance Manual for setting details.

Engine stop control, Diesel models ◄④

(*inset on illustration*)

To stop the diesel engine, pull the engine stop control right out. This control cuts off the fuel supply to the engine. On 'Forward Control' models the control is on the heel board.

Main light switch ◄⑤

The switch has three positions:

1. Switch in upper position: all lamps off.
2. Switch in centre position: side and rear lamps on.
3. Switch in down position: side, head and rear lamps on.

Headlamp dipper switch ◀6

The foot-operated dipper switch, situated adjacent to the clutch pedal, replaces the primary filaments in both headlamps by secondary filaments directed downwards.

Windscreen wiper switch ◀7

The switch has two positions and is only operative with the ignition or electrical services switch on.

1. Switch in upper position: wipers off.
2. Switch in down position: wipers on.

Direction indicator switch ◀8

The switch has three positions and also incorporates the flasher warning light.

1. Central: switch off.
2. Up: to indicate a left-hand turn } Reversed for
3. Down: to indicate a right-hand turn } LHD models

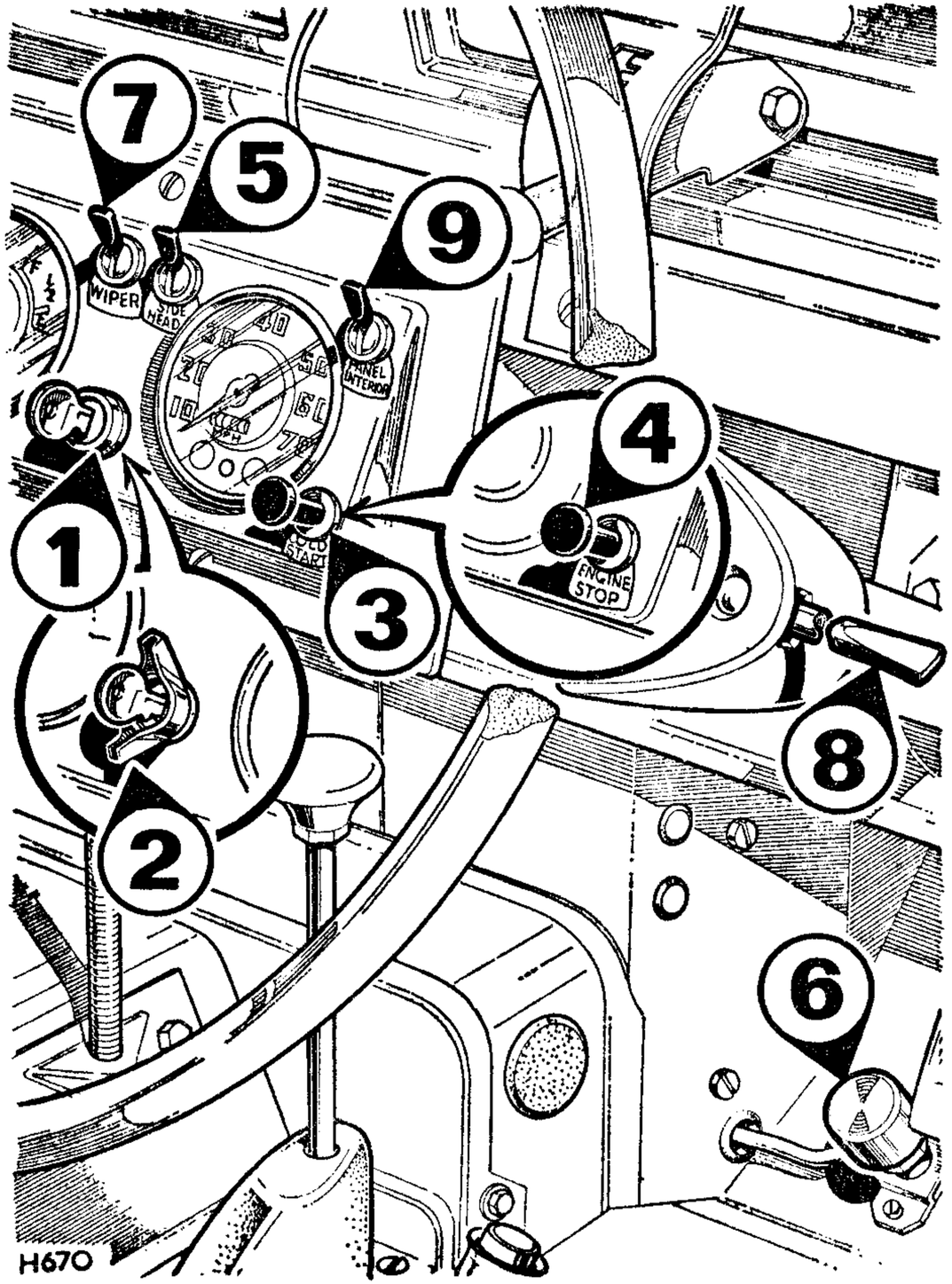
Rapid flashing of the warning light indicates a blown bulb in one of the flasher lamps.

Panel and interior light switch ◀9

The switch has three positions:

1. Switch in upper position: lights off.
2. Switch in centre position: panel lights on.
3. Switch in down position: interior lights on (where applicable).

The panel light is operative only with the main light switch at 'side' or 'head' position.



WARNING LIGHTS

Charging warning light ◄①

The red warning light, marked 'charge' in the gauge panel, should glow when the ignition, or electrical services on Diesel models, is switched on.

Brake warning light. As applicable

The main and important purpose of the amber warning light marked 'brake' is to warn you that the fluid level in the brake reservoir is too low or that there is insufficient vacuum in the servo unit to give braking assistance.

Oil pressure warning light ◄②

The green warning light marked 'oil press.' must glow when the ignition is switched on.
The charge and oil pressure lights may flicker when the engine is running at idling speed; but providing they fade out as the engine speed increases, the charging rate and oil pressure are satisfactory.
Brake, charging and oil warning lights should be checked when starting the vehicle from cold. They should light up immediately the ignition, or electrical services on Diesel models, is switched on. If any of the above lights come on during normal running, the Land-Rover should be stopped and contact made with the nearest Service Station. This is of special importance In the case of the brake warning light.

Cold start warning light ◄③

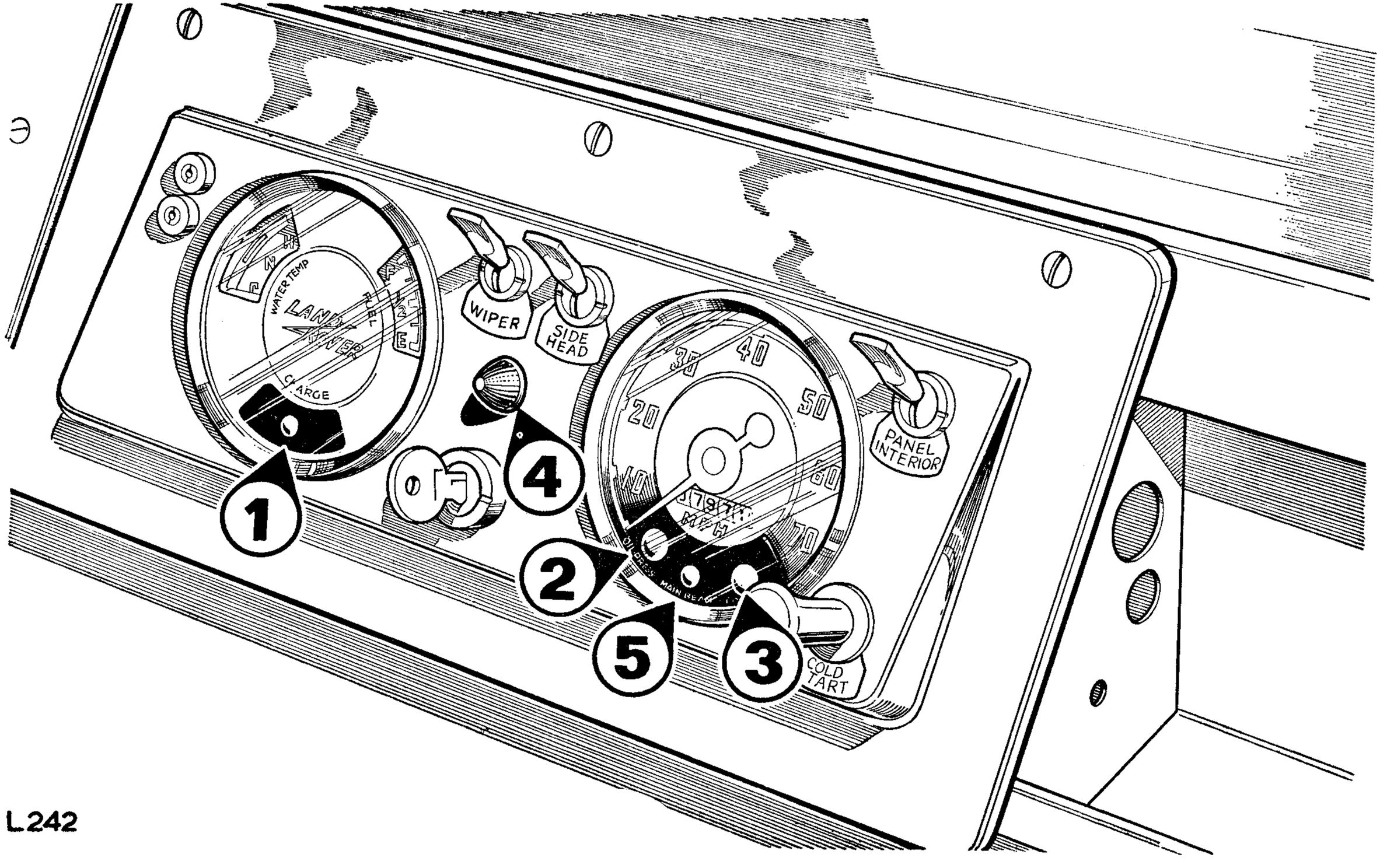
The appearance of the amber warning light marked 'cold start' on Petrol models will remind you that the choke control is still out and should be pushed in at once. On Diesel models it will glow after a delay of two or three seconds when the heater plug and starter switch is operated; this indicates that current is being passed through the heater plugs. If the warning light glows more brightly at any time, a short circuit in the system is indicated. No light will indicate an open circuit.

Fuel tank level warning light, Diesel models ◄④

The blue warning light, fitted in the centre of dash on Diesel models, is operated by the fuel level gauge, and lights up when the fuel level drops below 1½ gallons (7 litres), and remains on until the fuel supply is replenished. On early models a red warning light is fitted.
Intermittent flashing may occur when cornering, before the fuel level drops below 1½ gallons.
This warning light is fitted to reduce the possibility of the driver inadvertently allowing the vehicle to run out of fuel. Should the fuel supply become completely exhausted at any time, the system must be primed.

Main beam warning light ◄⑤

The small blue light positioned at the bottom of the speedometer marked 'main beam' glows when the primary headlamp beams are in use. Its purpose is to remind you to dip the headlamps when entering a brightly lit area, or when approaching other traffic.



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INSTRUMENTS

Fuel level indicator ◀①

The fuel indicator shows the contents of the tank.
Total capacity is:
4-cylinder models:
10 Imperial gallons; 12 US gallons; 45 litres.
6-cylinder except Station Wagon:
11 Imperial gallons; 13 US gallons; 50 litres.
6-cylinder Station Wagon:
16 Imperial gallons; 19 US gallons; 73 litres.

Water temperature indicator ◀②

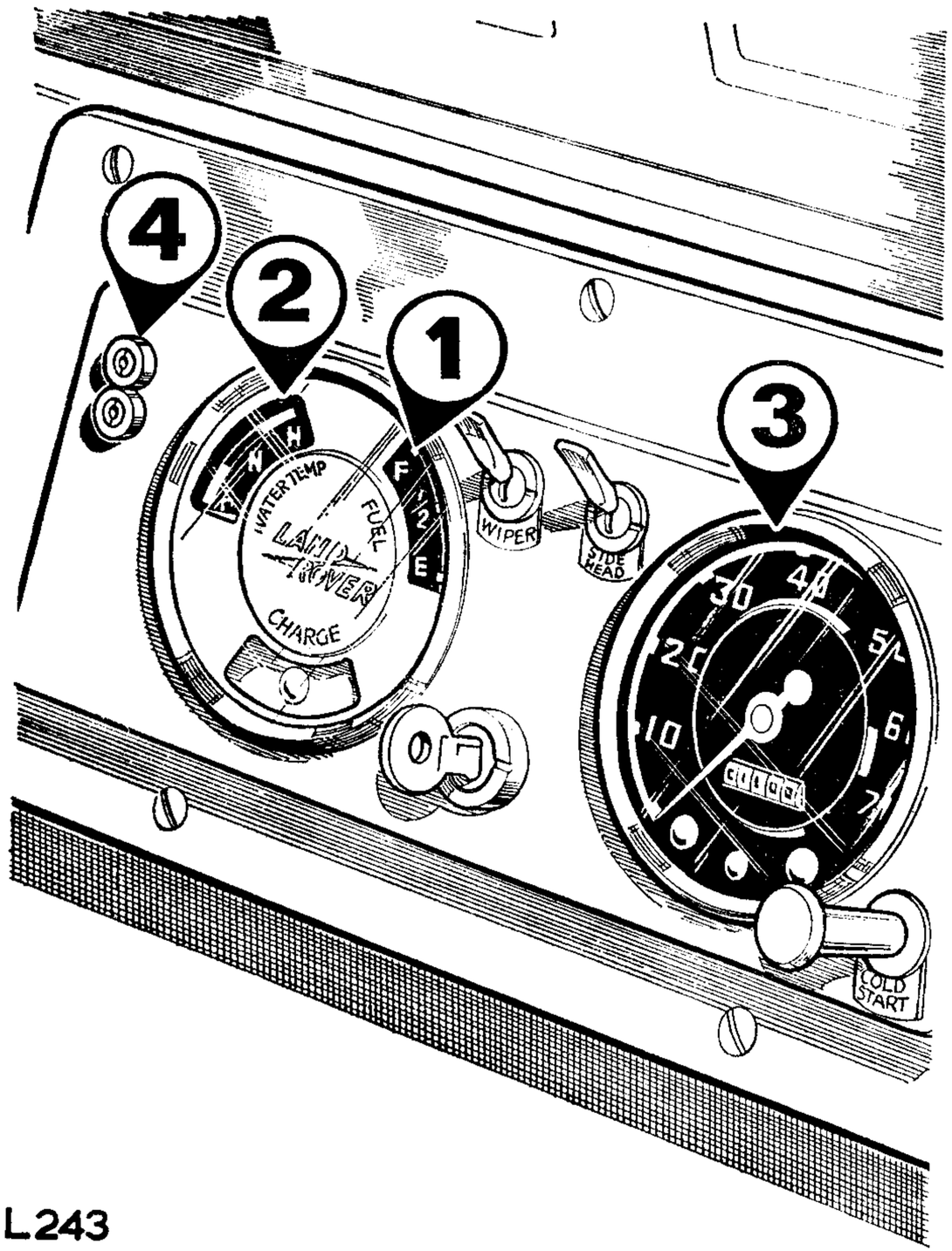
Under normal running conditions the needle should register in the band marked 'N'.
The design of the fuel level and water temperature indicators ensures that the needle does not fluctuate, but there is a time lag of a few seconds before they register after the ignition, or electrical services, is switched on.

Speedometer ◀③

The speedometer incorporates a total mileage indicator. Speedometers with trip mileage indicators are available as optional equipment and have the trip reset button fitted to the instrument panel adjacent to the speedometer.

Inspection lamp sockets ◀④

The sockets can be used either for a lead lamp or a trickle battery charger. The black socket is earthed.



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OTHER EQUIPMENT

Many items of optional equipment are available for the Land-Rover. Full details are given in a separate book obtainable from The Rover Company Limited, Technical Service Department, Solihull, Warwickshire, England.
Some of the optional equipment which may be fitted to the Land-Rover requires maintenance at regular intervals or may need some explanation concerning its use.
Details of items in this category are also included in the Owner's Maintenance Manual.

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SAFETY HARNESS

Section 2

SAFETY HARNESS

Safety harness must be fitted to the anchorage points provided at both the driver's and passenger's position to comply with United Kingdom legal requirements.

Use only Rover approved safety harness which is specially designed for the Land-Rover.

The illustrations on the next page show the initial adjustment required to suit the individual driver or passenger and also the sequence to be followed when fastening the seat belts after the initial adjustment has been carried out.

Proceed as follows:

The layout of the safety harness is shown at Fig. 1. Driver's side illustrated.

(A) Shoulder strap. (B) Housing strap with quick-release buckle. (C) Main adjustment buckle. (D) Tongue on shoulder strap. (E) Quick-release buckle.

Before carrying out the main adjustment on the shoulder strap, seat position must be adjusted, where applicable, to suit the occupant.

Main adjustment

1. With shoulder strap over the outboard shoulder make visual assessment of adjustment required, tongue on strap should be about 6 inches (152 mm) from seat back rest at the hip position. Then adjust the strap of the adjustment buckle fitted to the sill bracket, by relieving the retaining bar 'A' and pulling strap in direction of arrow 'B' to shorten and in the direction of arrow 'C' to lengthen. See Fig. 2.

Day-to-day use of safety harness

To obtain the maximum designed protection from the safety harness, it is essential that it be properly fitted and adjusted.

1. With the occupant in the front seat the shoulder harness must be over the outboard shoulder. See Fig. 1.
2. Hold tongue of the shoulder strap at the hip position.
3. Hold quick-release buckle 'A', Fig. 3, at right-angles to strap then pull up until buckle (A) and tongue (B) can be engaged together. See Fig. 4.
4. Then adjust by pulling end of strap 'B', Fig. 3, in direction of arrow.

   Straps should be comfortably tight, just enough to allow the hand to be passed between the upper shoulder strap and body. It is important to ensure that the lap belt is worn low so that it rests on the bony part of the hip.
5. To undo the buckle and leave the seat simply lift the end of buckle 'A', Fig. 6. The two sections of the harness will instantly fall apart.

   Fig. 5 shows the safety harness correctly fitted.

Safety harness which has been used in an accident or has been frayed or cut must be replaced. To avoid soiling and twisting the safety harness when it is not in use the tongue or hooks of the shoulder strap should be stowed on the door pillar stowage.

Harness cleaning

The safety harness may be washed in hand-hot water with soap or household detergent. Do not use any other cleaning fluid.

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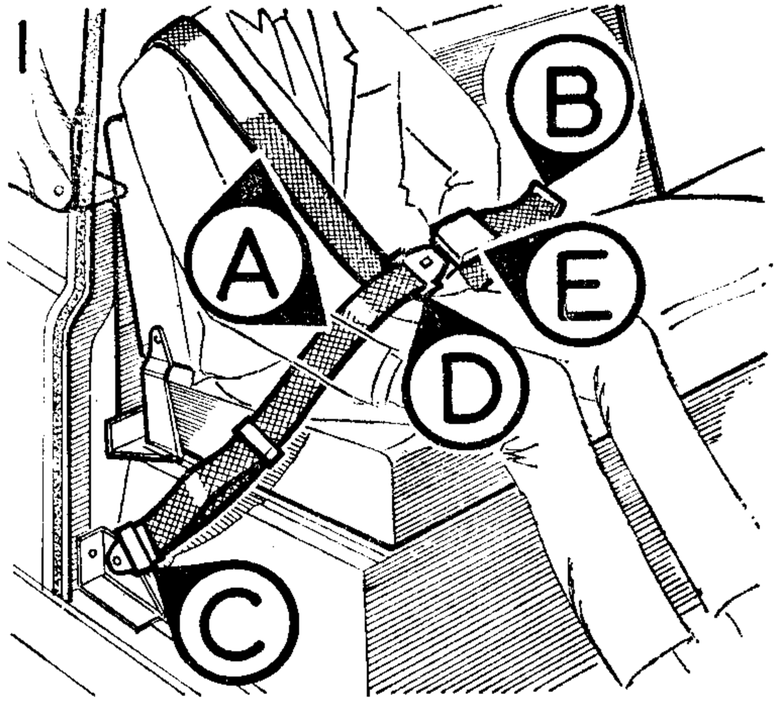

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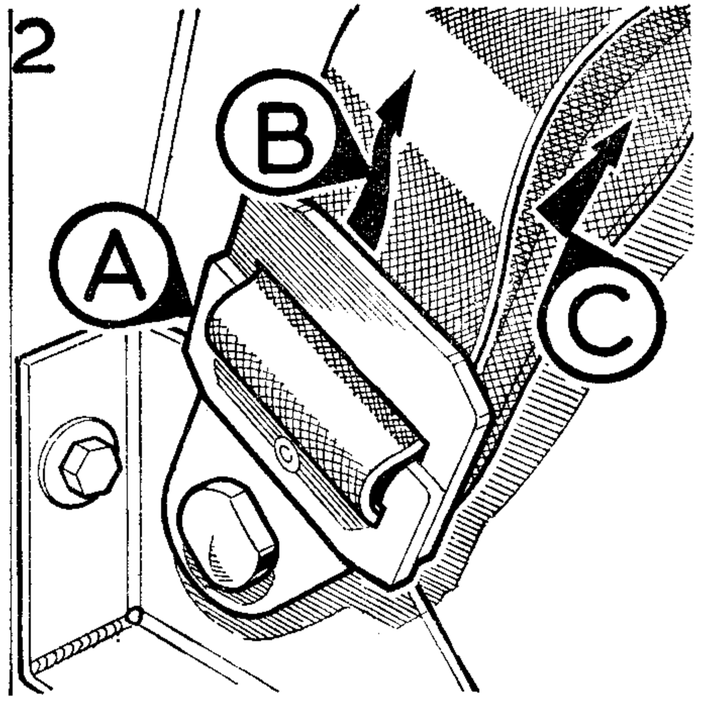

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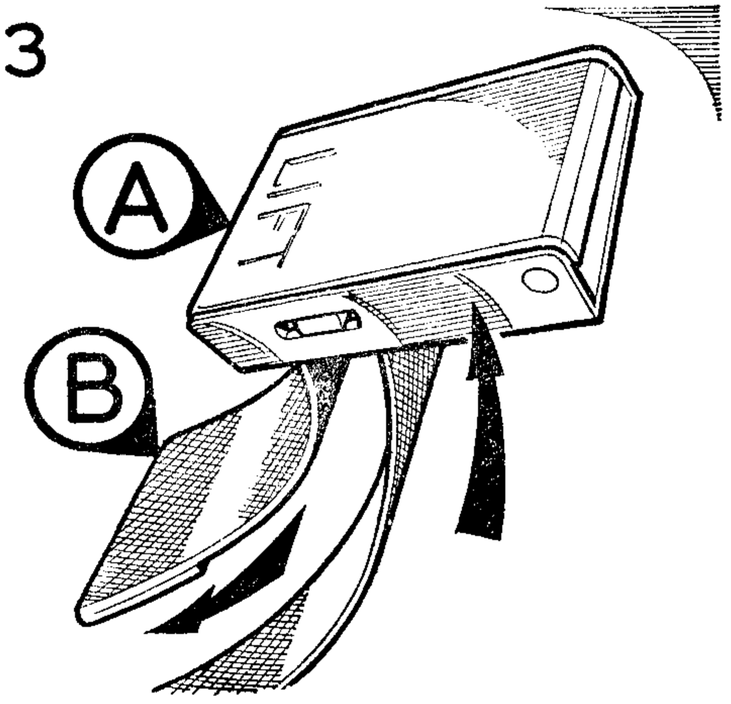

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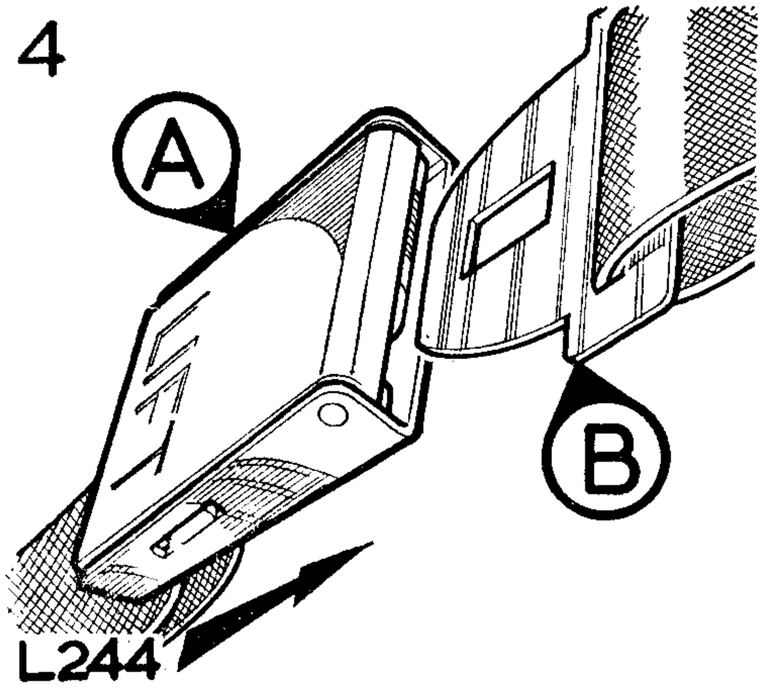

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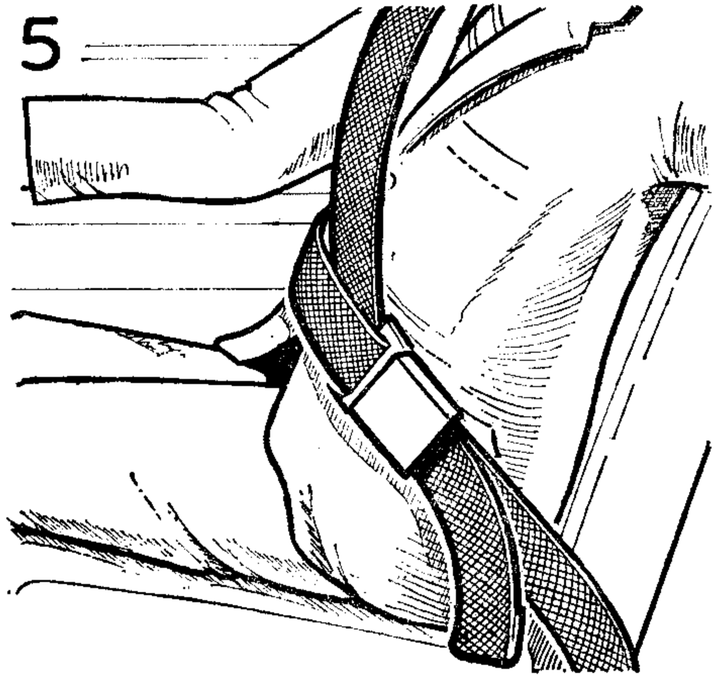

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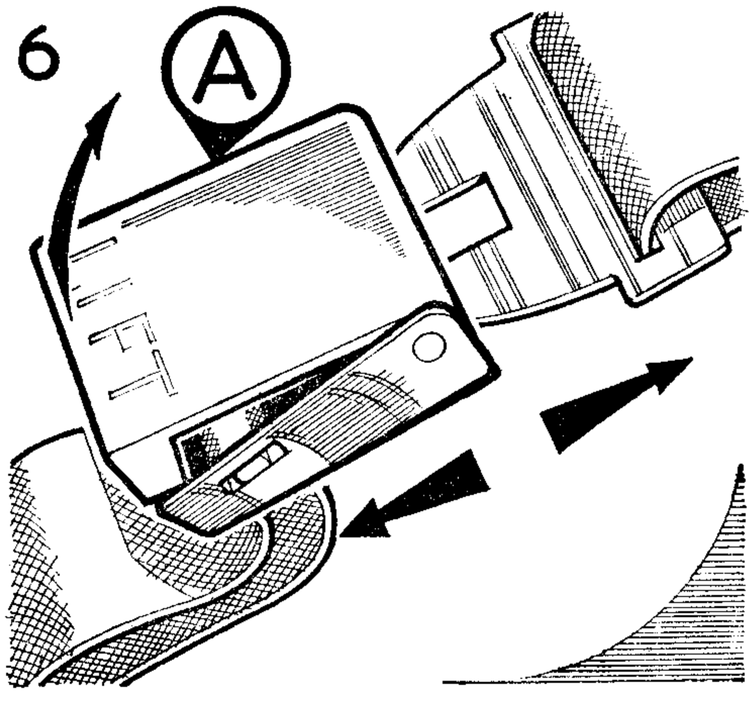

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Section 3

RUNNING REQUIREMENTS

GENERAL CARE

Fully-illustrated details of all the maintenance required will be found in the Owner's Maintenance Manual, but you should note the following:

Running-in period

Progressive running-in of your new Land-Rover is important and has a direct bearing on durability and smooth running throughout its life.
The most important point is not to hold the vehicle on large throttle openings for any sustained period.
To start with the maximum speed should be limited to 35 to 40 mph (55 to 65 kph) on a light throttle and this may be progressively increased over the first 1,500 miles (2.500 km).

Water

A semi-sealed cooling system is used, it comprises an overflow bottle attached to the left-hand side of the radiator.
The water level in the cooling system is checked at the radiator only and topping-up is also carried out in the normal manner through the radiator filler. The pipe in the overflow bottle should always be submerged in water.
The radiator water level should be checked daily or weekly depending on operating conditions.
The cooling system is pressurised and care must be taken when removing the radiator filler cap when the engine is hot; first turn it anti-clockwise to the stop and allow all pressure to escape, before turning farther in the same direction to lift it off.
When replacing the filler cap, it is important that it is tightened down fully, not just to the first stop. Failure to tighten the filler cap properly may result in water loss, with possible damage to the engine through overheating.
Always check with a cold engine, the correct water level should then be $\frac{1}{2}$ to $\frac{3}{4}$ in. (12 to 19 mm) below the bottom of the filler neck.
When engine is cold there should be about 2 in. (50 mm) of water in the bottle.

Frost precautions

As a thermostat is fitted to the cooling system it is possible for the radiator block to freeze in cold weather even though the engine temperature is quite high, for this reason the use of a good quality glycol-base anti-freeze solution must be used during cold weather.
For full details see Owner's Maintenance Manual or consult a Rover Distributor or Dealer.

Oil recommendations

Use only the recommended grades of oil as set out overleaf.
Multigrade oils produced by the makers of the lubricants listed overleaf are also approved for the range of SAE grades they cover.
The oil level dipstick will be found on the left-hand side of the engine and the oil filler cap is at the front of the engine.
Oil consumption is likely to improve during the first 5,000 miles (8.000 km) of the Land-Rover's life as the piston rings, etc, bed in.

These recommendations apply to temperate climates where operation temperatures are above 14°F (—10°C).
Information on recommended lubricants for use under extreme winter conditions can be obtained from The Rover Company Limited, Technical Service Department, or a Rover Distributor or Dealer.

Lubricants marked with an asterisk (*) are multi-grade oils suitable for all temperature ranges

COMPONENTS	SAE	BP	CASTROL	DUCKHAM'S	ESSO	MOBIL	REGENT TEXACO/CALTEX	SHELL
Petrol models ENGINE, AIR CLEANER AND GOVERNOR	20W	*BP Super Visco-Static 10W-40	*Castrol GTX	Duckham's Q20-50 Motor Oil	Uniflo or Esso Motor Oil 20W/30	Mobiloil Super or Mobiloil Arctic	Havoline 20/20W	*Shell Super Oil 100
Diesel models ENGINE AND AIR CLEANER	20W	BP Energol Diesel D20W	Castrol CRI.20	Fleetol HDX 20	Essolube HDX 20W/20	Delvac or Mobiloil Arctic	RPM Delo Special 20-20W	Rotella S or T 20/20W
GEARBOX AND TRANSFER BOX DIFFERENTIALS AND SWIVEL PIN HOUSINGS STEERING BOX STEERING RELAY UNIT REAR POWER TAKE-OFF, PULLEY UNIT AND CAPSTAN WINCH HYDRAULIC WINCH, GEARBOX	90EP	BP Gear Oil SAE 90 EP	Castrol Hypoy	Duckham's Hypoid 90	Esso Gear Oil GP 90/140	Mobilube GX 90	Multigear Lubricant 90	Spirax 90 EP
HYDRAULIC WINCH SUPPLY TANK	—	*BP Super Visco-Static 10W-40	*Castrol GTX	Duckham's Q20-50 Motor Oil	Esso Motor Oil 20W/30	Mobiloil Special or Delvex Special	Havoline 20/20W	*Shell Super Oil or Shell Tellus Oil 27
LUBRICATION NIPPLES	—	BP Energrease L2	Castrol LM Grease	Duckham's LB10 Grease	Esso Multi-purpose Grease H	Mobilgrease MP or Mobilgrease Special	Marfak All-purpose	Retinax A or Darina AX
BRAKE AND CLUTCH FLUID	Castrol Girling Brake and Clutch Fluid 'Crimson'. Specification SAE 70 R3.							
ANTI-FREEZE SOLUTION	Any anti-freeze solution conforming to British Standard BS 3151 or 3152							

Fuel recommendations

The 4-cylinder and 6-cylinder petrol engines are designed to run on 90 octane two-star grade fuel. No advantage will be gained by the use of higher octane fuels.
Clean, good quality fuel should be used in Diesel models.
The fuel filler cap is located:
'Regular' and 'Long' models: at the front right-hand side of the body.
'Long Station Wagon': at the rear right-hand side of the body.

Battery acid level

Make sure that the battery acid level is above the top of the separators in each cell. Do not over-fill.

Tyre pressures

These should be checked every month; it is important to keep to the recommended pressures. See Data section in this book. When tyres are changed, road wheels should be carefully inspected for possible damage.

Brakes, vehicles with servo assistance

Never coast downhill with the engine switched off as the brake servo will not be operative. The brakes will, however, function through the hydraulic system when the brake pedal is depressed, but more foot pressure will be required.

Spare wheel

The spare wheel stowage position varies on different models, as follows:
'Regular'; fitted at the front of the rear body.
'Long'; can be mounted in a well in front of either right or left wheelarch panel.
It can also be fitted to the bonnet top panel on all models

Tools

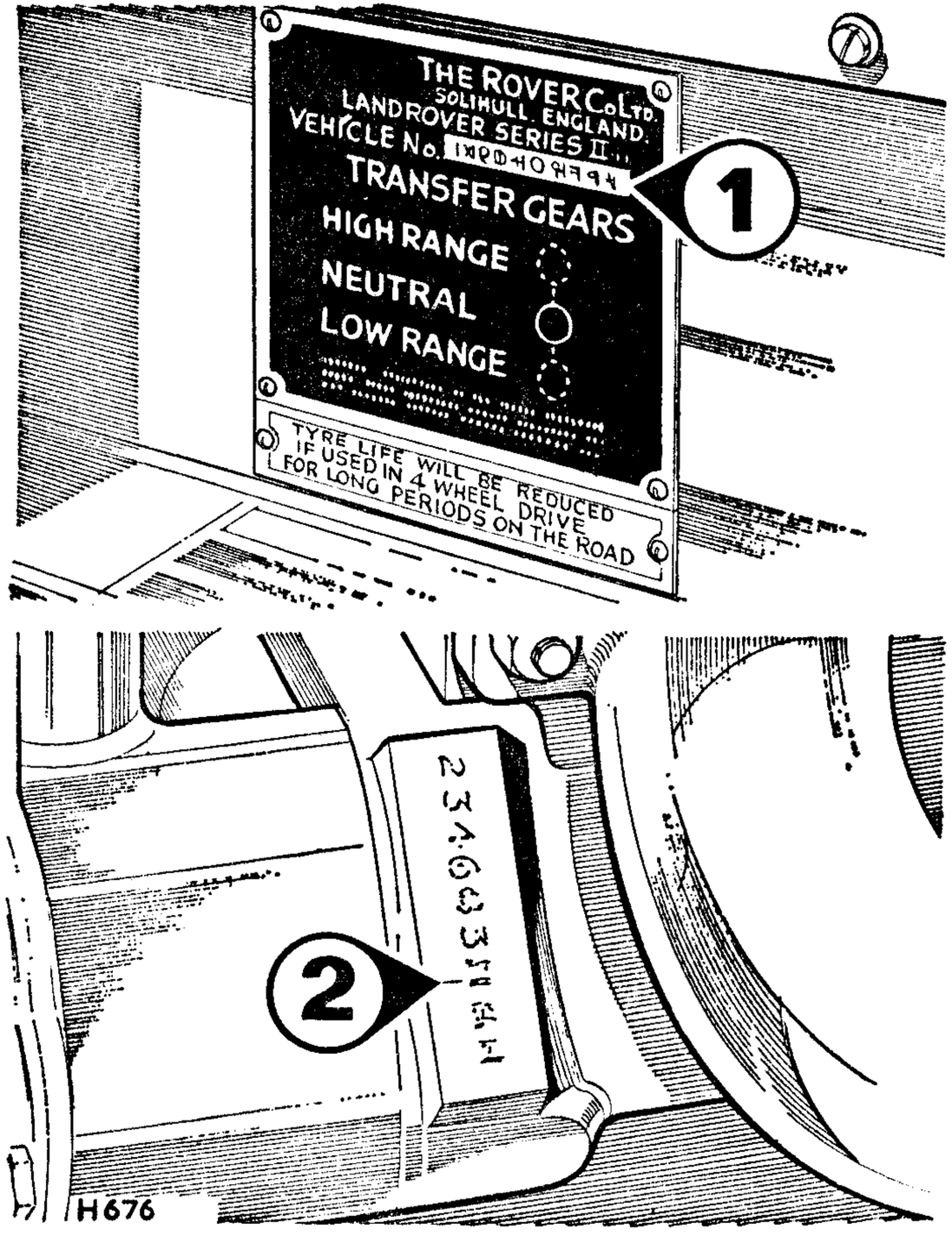
On 'Regular' and 'Long' models small tools are carried in the left-hand locker, under the seat cushion.
Except on some special vehicles, the starting handle and lifting jack handle extension are secured in clips on the seat backrest panel and are accessible with the seat backs lowered.

Chassis serial number ①

The chassis number will be found on a plate affixed to the dash panel. Always quote this number when writing to The Rover Company or your Distributor and Dealer on any matter concerning your Land-Rover.

Engine serial number ②

The engine number is at the left front of the engine. Do not quote this number unless requested.



Important points to remember

All models:

1. Read Section Three of this book, which contains important information for the owner.
2. Use only the recommended lubricants and fuel of the correct octane rating. Two-star grade for all Land-Rover models.
3. Maintain correct tyre pressures.
4. If sparking plug or injector replacements are required, use only the correct type, as specified in the Data Section of this book.
5. Let a Rover Distributor or Dealer service your Land-Rover and use only genuine Rover parts.

Diesel models

DO

Fill the tank with *clean* fuel.
Make sure the engine stop control is right in, run position, when starting.
Depress the throttle pedal fully when starting.
Use correct grade of engine oil for prevailing climatic conditions.
Change CAV filter element regularly; also clean sediment bowl.
Always prime fuel system if any part of the fuel lines or filters are disconnected.
Eliminate air from the fuel system and make sure all connections are tight.
If the engine stops without apparent reason, make sure that fuel is reaching the distributor pump.
Use a recommended grade of fuel, e.g. Class A, DERV or similar.
With engine cold use heater plugs to conserve batteries.

DON'T

Allow fuel to get low in tank. Replenish when blue warning light flashes.
Allow the batteries to get in a discharged condition.
Misuse the starter switch. Wait until the engine comes to rest before each application.
Use dirty fuel. Ensure that fuel storage tanks are kept in a very clean condition and exclude dust and water.
Attempt to start the engine unless the pump is primed with fuel.
Attempt to rectify the distributor pump. Send it to the nearest CAV Agent and fit a service unit.
Allow hands and eyes to come in contact with spray from an injector nozzle, when testing.
Run engine without ensuring that the water is to the correct level in the radiator, otherwise overheating may occur with risk of nozzle sticking and other troubles.
Overtighten bolts, nuts and fuel connections.

GENERAL DATA

Engine, 4-cylinder Petrol models

Bore		3.562 in. (90,49 mm)
Stroke		3.500 in. (88,9 mm)
Cylinder capacity		139.5 cu in. (2,286 cc)
Compression ratio		8.0:1. 7.0:1 certain export territories
BHP	BHP and Maximum torque figures are derived from bench tests and do not allow for installation losses in the vehicle	81 at 4,250 rpm
Maximum torque		127 lb ft (17,5 mkg) at 2,500 rpm
Firing order		1, 3, 4, 2
Sparking plug type		8.0:1 compression ratio: Champion UN12Y 7.0:1 compression ratio: Champion N8
Sparking plug point gap		.029 to .032 in. (0,75 to 0,80 mm)
Distributor contact breaker gap		.014 to .016 in. (0,35 to 0,40 mm)

Engine, 6-cylinder Petrol models

Bore		3.063 in. (77,8 mm)
Stroke		3.625 in. (92,075 mm)
Cylinder capacity		160.3 cu in. (2,625 cc)
Compression ratio		7.8:1. 7.0:1 certain export territories
BHP	BHP and Maximum torque figures are derived from bench tests and no not allow for installation losses in the vehicle	95 at 4,500 rpm
Maximum torque		134 lb ft (18,5 mkg) at 1,750 rpm
Firing order		1, 5, 3, 6, 2, 4
Sparking plugs: 7.0:1 and 7.8:1 compression ratio		Champion N5
Sparking plug point gap		.029 to .032 in. (0,75 to 0,80 mm)
Distributor contact breaker gap		.014 to .016 in. (0,35 to 0,40 mm)

Engine, 4-cylinder Diesel models

Bore	3.562 in. (90,49 mm)
Stroke	3.500 in. (88,9 mm)
Compression ratio	23:1
Cylinder capacity	139.5 cu in. (2,286 cc)
BHP (BHP and Maximum torque figures are derived from bench tests and do not allow for installation losses in the vehicle)	67 at 4,000 rpm
Maximum torque (BHP and Maximum torque figures are derived from bench tests and do not allow for installation losses in the vehicle)	105 lb ft (14,5 mkg) at 1,800 rpm
Firing order	1, 3, 4, 2
Injector, type	CAV Pintaux, nozzle size BDNO/SP6209

Replacement bulbs and units

Headlamps with bulbs:	
LHStg Italy	Lucas 410, 12 v, 45/40 w, Duplo clear
LHStg France	Lucas 411, 12 v, 45/40 w, Duplo yellow
Headlamps with sealed-beam units:	
RHStg all models	Lucas 54521872, 60/45 w
LHStg Europe except France and Italy	Lucas 54523079, 60/50 w
LHStg Except Europe	Lucas 54522231, 50/40 w
Sidelamps	Lucas 207, 12 v, 6 w
Stop, tail lamps	Lucas 380, 12 v, 21/6 w
Flasher lamps	Lucas 382, 12 v, 21 w
Rear number plate lamp	Lucas 989, 12 v, 6w
Instrument panel lights	Lucas 987, 12 v, 2.2 w MES
Warning lights	Lucas 987, 12 v, 2.2 w MES
Warning light, brakes, where applicable	Lucas 281, 12 v, 2 w
Warning light, heater plugs, Diesel models	Lucas 982, 6 v, 1.8 w, MES
Warning light, fuel level, Diesel models	Rover Part No. 560756, Mini-lamp, 12/14 v, .04a
Warning light, flashers	Magnatex GBP, 12 v, 2.2 w
Interior light	Lucas 382, 12 v, 21 w

Tyre pressures—Every month and at every maintenance attention.

Maximum tyre life and performance will only be obtained if the tyres are maintained at the correct pressures.

Model		Normal				Emergency soft			
		Load under 550 lb. (250 kg)		Load over 550 lb. (250 kg)		Load under 550 lb. (250 kg)		Load over 550 lb. (250 kg)	
88 Bonneted Control models		Front	Rear	Front	Rear	Front	Rear	Front	Rear
6.00, 6.50, 7.00 x 16.00 and 7.10 x 16.00	lb/sq in.	25	25	25	30	15	15	15	20
	kg/cm²	1,8	1,8	1,8	2,1	1,1	1,1	1,1	1,4
7.50 x 16.00	lb/sq in.	25	25	25	30	12	12	12	20
	kg/cm²	1,8	1,8	1,8	2,1	0,8	0,8	0,8	1,4
109 Bonneted Control and 1 ton models									
7.50 x 16.00	lb/ sq in.	25	25	25	36	15	15	15	26
	kg/cm²	1,8	1,8	1,8	2,5	1,1	1,1	1,1	1,8
Michelin XY 7.50 x 16.00	lb/sq in.	25	25	25	42	15	15	15	35
	kg/cm²	1,8	1,8	1,8	3,0	1,1	1,1	1,1	2,5
9.00 x 16.00	lb/sq in.	20	20	20	30	10	10	10	20
	kg/cm²	1,4	1,4	1,4	2,1	0,7	0,7	0,7	1,4

Capacities

Component	Imperial unit	US unit	Litres
Engine sump oil, 4-cylinder	11 pints	13 pints	6,0
Engine sump oil, 6-cylinder	12 pints	14 pints	6,8
Extra when refilling after fitting new filter, 4-cylinder	1½ pints	1.8 pints	0,85
Extra when refilling after fitting new filter, 6-cylinder	1 pint	1.2 pints	0,5
Air cleaner oil, 4-cylinder	1½ pints	1.8 pints	0,85
Air cleaner oil, 6-cylinder	1 pint	1.2 pints	0,5
Main gearbox oil	2½ pints	3 pints	1,5
Transfer box oil	4½ pints	5½ pints	2,5
Rear differential } standard	3 pints	3½ pints	1,75
Front differential } type	3 pints	3½ pints	1,75
Rear differential } ENV	2½ pints	3 pints	1,4
Front differential } type	2½ pints	3 pints	1,4
Swivel pin housing oil (each)	1 pint	1.2 pints	0,5
Fuel tank, 4-cylinder	10 gallons	12 gallons	45
Fuel tank, 6-cylinder except Station Wagon	11 gallons	13 gallons	50
Fuel tank, 6-cylinder Station Wagon	16 gallons	19 gallons	73
Cooling system, 4-cylinder Petrol models	18 pints	21½ pints	10,25
Cooling system, 6-cylinder Petrol models	20 pints	24 pints	11,2
Cooling system, Diesel models	17½ pints	21 pints	10,0
Hydraulic front winch, supply tank	4½ gallons	7½ gallons	20,0
Hydraulic front winch, gearbox	2 pints	2.4 pints	1,0

Dimensions and Weights	88 Basic		88 Station Wagon		109 Basic		109 Station Wagon		1 ton	
	British	Metric	British	Metric	British	Metric	British	Metric	British	Metric
Overall length	143 9/16 in.	3,62 m	142⅞ in.	3,62 m	175 in.	4,44 m	175 in.	4,44 m	175 in.	4,44 m
Overall width	66 in.	1,68 m	66 in.	1,68 m	66 in.	1,68 m	66 in.	1,68 m	66 in.	1,68 m
Overall unladen height, hood up	77½ in.	1,97 m	—	—	—	—	—	—	—	—
Overall unladen height, hood down, screen up	68 in.	1,73 m	—	—	—	—	—	—	—	—
Overall unladen height, hood down, screen down	57½ in.	1,46 m	—	—	—	—	—	—	—	—
Overall unladen height, with cab or hard top	76⅞ in.	1,95 m	77⅞ in.	1,98 m	81 in.	2,06 m	81⅝ in.	2,07 m	83 in.	2,10 m
Wheelbase	88 in.	2,23 m	88 in.	2,23 m	109 in.	2,77 m	109 in.	2,77 m	109 in.	2,77 m
Track	51½ in.	1,31 m	51½ in.	1,31 m	51½ in.	1,31 m	51½ in.	1,31 m	51½ in.	1,31 m
Turning circle	38 ft	11,6 m	38 ft	11,6 m	47 ft	14,3 m	47 ft	14,3 m	47 ft	14,3 m
Unladen ground clearance under differentials, 6.00 x 16 tyres	8 in.	203 mm	8 in.	203 mm	—	—	—	—	—	—
Unladen ground clearance under differentials, 7.00 x 16 tyres	8¾ in.	222 mm	8¾ in.	222 mm	—	—	—	—	—	—
Unladen ground clearance under differentials, 7.50 x 16 tyres	—	—	—	—	9¼ in.	248 mm	9¼ in.	248 mm	—	—
Unladen ground clearance under differentials, 9.00 x 16 tyres	—	—	—	—	—	—	—	—	11¾ in.	298 mm
Weight running, with water, oil, 5 gallons fuel: Petrol models	2,953 lb	1.339 kg	3,281 lb	1.488 kg	3.301 lb	1.497 kg	3,752 lb	1.702 kg	3,886 lb 3,728 lb	2.060 kg* 1.691 kg**
Diesel models	3,097 lb	1.405 kg	3,435 lb	1.557 kg	3,471 lb	1.574 kg	3,922 lb	1.778 kg	—	—

* 6-cylinder petrol models

** 4-cylinder petrol models

Dimensions and Weights	88 Basic		88 Station Wagon		109 Basic		109 Station Wagon		1 ton	
	British	Metric	British	Metric	British	Metric	British	Metric	British	Metric
Maximum approved pay load, normal roads	*Driver, two passengers and: 1,000 lb	454 kg	*7 persons and: 100 lb	45 kg	Driver, two passengers and: 2,000 lb	908 kg	10 persons and: 400 lb	181 kg	Driver, two passengers and: 2,240 lb	1.015 kg
Maximum approved pay load, cross-country	Driver, two passengers and: 800 lb	363 kg	6 persons and: 50 lb	23 kg	Driver, two passengers and: 1,800 lb	816 kg	10 persons and: 200 lb	91 kg	Driver, two passengers and: 2,240 lb	1.015 kg
Maximum drawbar pull, dependent upon surface conditions:										
Petrol models	4,000 lb	1.800 kg	4,000 lb	1.800 kg	3,500 lb	1.600 kg	3,500 lb	1.600 kg	3,500 lb	1.600 kg
Diesel models	3,300 lb	1.497 kg	3,300 lb	1.497 kg	2,900 lb	1.315 kg	2,900 lb	1.315 kg	—	—
Internal body dimensions:										
Length (between cappings)	43 in.	1,09 m	—	—	72⅝ in.	1,85 m	—	—	72¾ in.	1,85 m
Width (between cappings)	56⅞ in.	1,44 m	—	—	56⅞ in.	1,44 m	—	—	56⅞ in.	1,44 m
Depth	19½ in.	495 mm	—	—	19 in.	483 mm	—	—	19 in.	483 mm
Height of wheel arch	8½ in.	216 mm	—	—	9 in.	229 mm	—	—	9 in.	229 mm
Width of wheel arch (to body side)	13½ in.	349 mm	—	—	13½ in.	349 mm	—	—	13¾ in.	349 mm
Width of floor (between wheel arches)	36¼ in.	921 mm	—	—	36¼ in.	921 mm	—	—	36¼ in.	921 mm
Height, floor to roof (maximum)	48½ in.	1,23 m	—	—	48 in.	1,22 m	—	—	48 in.	1,22 m

* Maximum loads for cross-country when heavy-duty springs are fitted

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ROVER SERVICE GUIDE AND WARRANTY

Section 4

The Rover Company sets high standards in the design, specification and production of its Land-Rovers and desires that these should give reliable and satisfactory performance.

It is therefore strongly recommended that owners and users of Land-Rovers should familiarize themselves with the following information, which is issued for the specific purpose of helping them and which is set out under the following headings:

The New Vehicle
Maintenance Attention
General Notes
Warranty

The new vehicle

With every new Land-Rover special literature is provided and it is of importance that this should be made full use of. This literature consists of the following:

(i) Owner's Instruction Manual. This book, giving general information about the vehicle. It also incorporates notes on Service and details of the Rover Warranty.

(ii) Owner's Maintenance Manual. Giving full information on how to carry out the necessary maintenance. It also incorporates the New Land-Rover Pre-delivery Inspection form, Free Service details and Maintenance Schedules.

(iii) Two pre-paid postcards, which should be returned to the Rover Company by the Distributor or Dealer who has carried out the work detailed, when:

  (a) The New Land-Rover Pre-delivery Inspection has been completed.

  (b) The Free Service Inspection has been carried out.

(iv) List of Rover Distributors and Dealers.

(v) Market Research Questionnaire Card.

Upon receiving the new Land-Rover the owner should immediately:

(i) Read the Warranty appearing in this book and the explanatory notes which accompany it. See pages 44 to 47.

(ii) Examine the Owner's Instruction Manual and Maintenance Manual for advice on new features and as an aid to getting the best out of the Land-Rover.

(iii) Arrange with a Rover Distributor or Dealer to carry out regular maintenance attention.

Maintenance attention

Efficient maintenance is one of the biggest factors in ensuring continuing reliability and efficiency. For this reason detailed schedules have been prepared so that at the appropriate mileages owners may know what is required.

(i) The Pre-delivery Inspection is a very important first step in the work of preventative maintenance. The Distributor or Dealer responsible for the sale of the Land-Rover will have completed the work involved. A tear-out portion in the Owner's Maintenance Manual gives details, leaving a 'stub' in the book for certification.

The pre-paid postcard appertaining to the Pre-delivery Inspection, contained in the carton, will have also been filled in and returned to the Rover Company.

(ii) The Free Service Inspection should be carried out by the Distributor or Dealer responsible for the sale of the Land-Rover to the owner, at or about 1,000 miles (1,600 km). A charge is made only for the lubricants, etc. used in carrying out the service.

Again a tear-out portion in the Owner's Maintenance Manual gives details of the work involved, with a certification 'stub' being left in the book.

The Free Service pre-paid postcard in the carton, should be completed by the Distributor or Dealer concerned and returned to the Rover Company.

Where for any reason it is not convenient for this free service to be carried out by the Distributor or Dealer responsible for the sale, it can, by prior arrangement with such Distributor or Dealer, be carried out by any other Rover Distributor or Dealer in the United Kingdom.

(iii) The remaining schedules in the Maintenance Manual are also in a form which simplifies the giving of the necessary instructions by providing a tear-out portion, leaving a 'stub' for certification that the work has been completed.

These services are based upon intervals of 4,000 miles (6.000 km). The second service, however, being done at 3,000 miles (5.000 km) after the free service.

These Maintenance Schedules are not priced but guidance is given to Rover Distributors and Dealers upon the actual time required to carry these out.

General notes

Distributor and Dealer service

The Company seeks, in conjunction with its Distributors and Dealers, to provide all necessary service facilities through such Distributors and Dealers and gives assistance to them on technical and other matters, both through its Service School at the factory

and special literature. By this means they are kept fully in touch with the latest developments on service procedures. The Company also employs Service Representatives and Engineers who visit Distributors and Dealers to assist further in these matters.

The Rover Company through its Service Division at its principal works at Solihull operates a Correspondence Section with which owners may communicate if they wish on any matters relating to their Land-Rover. **It is, however, essential when writing always to quote the chassis number appearing on the plate affixed to the dash.**

Ignition and door lock key numbers

For security reasons the key numbers are not stamped on the barrel locks. Owners are advised to record the ignition and door lock key numbers, so that in case of loss, replacements can be obtained without difficulty.

Spare parts

It is not always realized by owners how important it is that when spare parts are required for repair or maintenance that these should be Rover supplied parts only, or parts supplied through sources approved by the Company. Rover Distributors and Dealers are obligated to supply only such parts.

Through other sources parts are often sold as being 'suitable' for Rover vehicles, but frequently these are not made to the same standard or specification as the Company's parts and are therefore less likely to give the requisite performance.

Labour charges

The Company does not issue detailed schedules of repair charges, but guidance is given to Distributors and Dealers in the normal times required for the majority of repair and maintenance operations (not for accident damage to bodywork, etc).

Over the last few years Service labour costs have risen very considerably, and where a high standard of work is looked for the higher price of labour charges is inevitable.

Warranty

The Rover Company issues under the heading of Warranty an undertaking regarding its Service policy.

The following notes are given for guidance in the event of a claim being put forward:

1. The Land-Rover or the part in respect of which a claim is made must be taken immediately to a Rover Distributor or Dealer. This should, wherever possible, be the Distributor or Dealer responsible for the sale of the vehicle to the owner.

2. The Distributor or Dealer will examine the parts or Land-Rover and will without charge advise on the action to be taken in respect of the claim. It will be noted that the Company must reserve the right to examine any alleged defective parts or material should they think fit prior to the settlement of any claim.
3. It must be understood, as stated in the warranty, that the factors of wear and tear and any possible lack of maintenance, or un-approved alteration to the car, will be taken into consideration in respect of any claim submitted.
4. It will be noted that tyres and glass are expressly excluded from the warranty. The manufacturers of those tyres which the Company fits as standard to its vehicles will always be prepared to consider any genuine claim.
5. Where this has not already been done it is recommended that owners should arrange with their insurance company to provide separate cover for the glass at the small extra cost involved.

ROVER WARRANTY FOR UNITED KINGDOM

The Rover Company Limited gives the following Warranty to every Owner of its Goods as defined in paragraph C.

A. Warranty

If within a period of twelve months from the date of delivery of the goods to the first Owner or completion of 12,000 miles whichever occurs first any part of such Goods shall require repair or replacement as a result of defective material or workmanship in manufacture the Company will cause the part of such Goods either to be repaired or replaced as the Company may decide free of charge including labour charges. The owner shall forthwith after discovering any alleged defect deliver the Goods at his own expense to a Rover Distributor or Rover Dealer and give to the Rover Distributor or Rover Dealer particulars sufficient to enable the matter complained of to be identified.

B. Limitations

The Company reserves the right not to meet claims under this Warranty if:

(i) The Goods have been used for road or track racing events or speed tests or otherwise than for the reasonable pleasure or business use of the Owner.

(ii) The alleged defect has been caused by wear and tear, accident or over-loading or misuse, or by lack of proper maintenance or failure to maintain the Goods in accordance with the Company's published schedules of maintenance.

(iii) The Goods have been altered by the removal of the Company's identification numbers or marks or by the fitting of parts not sold or approved by the Company or in any other way except upon the Company's written instructions or with its written consent.

C. Definitions

For the purposes of this Warranty the following words have the meanings defined:

(i) 'Goods' means new unused Rover Vehicles or Rover Parts manufactured or supplied by and purchased from the Company directly or through Rover Distributors or Rover Dealers, with the exception of tyres and glass but including Rover Parts which have been reconditioned by the Company.

(ii) 'Rover Distributor or Rover Dealer' means a person, firm or company holding a Distributor's or Dealer's Agreement with The Rover Company Limited. No Rover Distributor, Rover Dealer or any other person dealing with the Company's Goods is an agent of the Company nor has he any authority either to extend or otherwise alter the terms and conditions of the Warranty or to accept on behalf of the Company any liability in respect of the quality or condition of the Company's Goods or their fitness for any particular purpose.

(iii) 'Owner' means, except where the Goods are let under a hire purchase agreement, the person, firm or company for the time being entitled to the legal ownership of the Goods. Where the Goods are let under a hire purchase agreement, 'Owner' means the hirer under that agreement.

D. Arbitration and applicable law

(i) Any dispute touching the construction or effect of this Warranty or the rights or liabilities under it or any matter arising out of the same or connected therewith shall be referred to a single Arbitrator to be nominated, in default of Agreement, by the President for the time being of the Law Society. Such arbitration shall be deemed a reference to arbitration under the provisions of the Arbitration Act 1950 or any statutory modification or re-enactment thereof for the time being in force. Any such arbitration shall be held in the United Kingdom.

(ii) This Warranty shall be construed according to and be governed by the Laws of England and subject to (i) hereof the Owner shall submit to the exclusive jurisdiction of the English courts.

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