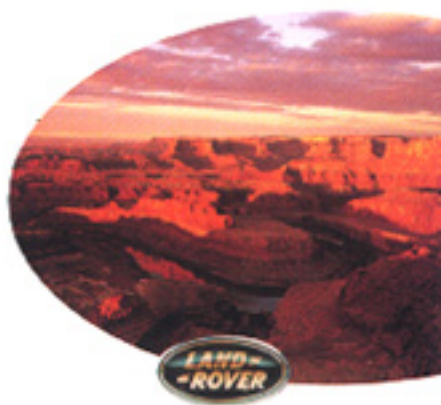


DISCOVERY

OWNER'S MANUAL





DISCOVERY

CONTENTS

<i>SECTION 1</i>	<i>Introduction</i>	<i>1</i>
<i>SECTION 2</i>	<i>Controls & instruments</i>	<i>9</i>
<i>SECTION 3</i>	<i>Driving & operating</i>	<i>59</i>
<i>SECTION 4</i>	<i>Owner maintenance</i>	<i>97</i>
<i>SECTION 5</i>	<i>General data</i>	<i>139</i>
<i>SECTION 6</i>	<i>Parts & accessories</i>	<i>149</i>
<i>SECTION 7</i>	<i>Off-road driving</i>	<i>155</i>
	<i>Index</i>	<i>167</i>



As part of Land Rover environmental policy, this publication is printed on paper made from elemental chlorine free pulp.

Publication No. LRL 0156NAS
© 1997 Rover Group Limited

SECTION 1

Introduction

OWNER'S HANDBOOK

This handbook covers the current version of the Land Rover Discovery and, together with the Passport to Service, provides all the information you need to derive maximum pleasure from owning and driving your new vehicle.

For your convenience, the handbook is divided into sections, each dealing with a different aspect of driving or caring for the vehicle. The sections are listed on the contents page and you will find it worthwhile to take a little time to read each one, and get to know your Discovery as soon as you possibly can. The more you understand before you drive, the greater the satisfaction once you are seated behind the steering wheel.

Land Rover operates a policy of constant product improvement and therefore reserves the right to change specifications without notice at any time. Whilst every effort is made to ensure complete accuracy of the information in this handbook, no liabilities for inaccuracies or the consequences thereof can be accepted by the manufacturer, Land Rover North America Inc.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form, electronic, mechanical, photocopying, recording, or other means without prior written permission from Land Rover.

Section Contents	Page
Reporting safety defects	1
Safety warnings	3
Passport to Service.....	3
Information labels	4
Vehicle identification number	6
Anti-theft precautions	7
Breakdown safety code	7

Reporting safety defects

If you believe that your vehicle has a defect which could cause a crash, or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Land Rover North America Inc.

If NHTSA receives similar complaints, it may open an investigation and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign.

However, NHTSA cannot become involved in individual problems between you, your Dealer or Land Rover North America.

To contact NHTSA, you may call the Auto Safety hotline toll free at 1-800-424-9393 (or 202-366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, DC 20590. You can also obtain other information about motor vehicle safety from the hotline.

Introduction

PASSPORT TO SERVICE

The Passport to Service included in your literature pack, contains important vehicle identification information, details of your entitlement under the terms of the Land Rover warranty, as well as useful consumer advice.

Most important of all, however, is the section on maintenance. This outlines the servicing requirements for your Discovery, as well as incorporating the service record slips, which the Dealer should sign and stamp to certify that the routine services have been carried out at the recommended intervals.

WARNING

Safety warnings are included in this handbook. These indicate either a procedure which must be followed precisely, or information that should be considered with great care in order to avoid the possibility of personal injury or serious damage to the vehicle.

WARNING LABELS ATTACHED TO THE VEHICLE



Warning labels attached to your vehicle bearing this symbol mean: **DO NOT touch or adjust components until you have read the relevant instructions in the handbook.**



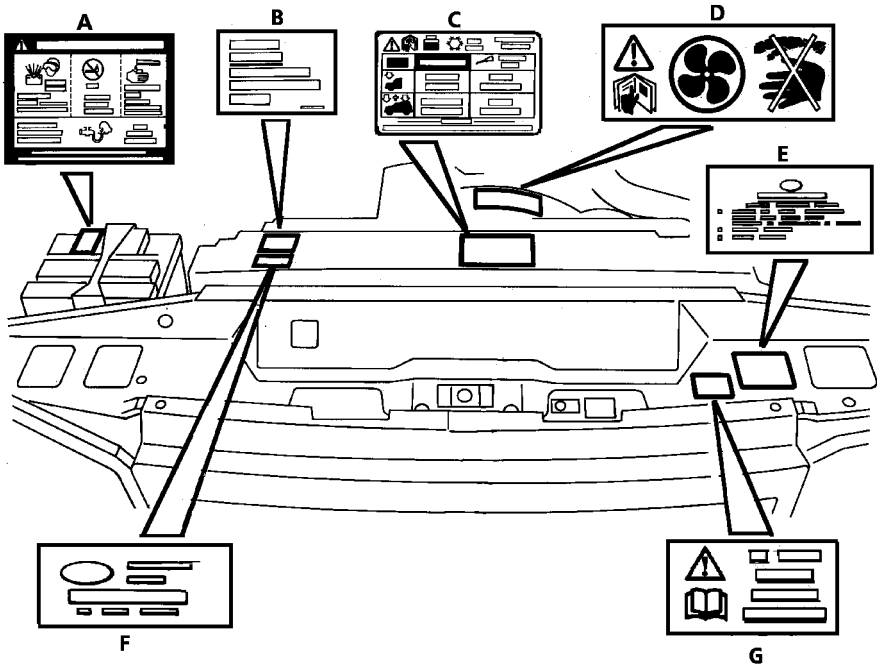
Warning labels showing this symbol indicate that the ignition system utilises very high voltages. **DO NOT touch any ignition components while the starter switch is turned on!**

WARNING

The Discovery has a higher ground clearance and hence a higher centre of gravity than ordinary passenger cars to enable the vehicle to perform in a wide variety of off-road applications. An advantage of the higher ground clearance is a better view of the road, allowing you to anticipate problems. Discovery is not designed for cornering at the same speed as conventional passenger cars any more than a low slung sports car is designed to perform satisfactorily under off-road conditions. As with other vehicles of this type, failure to operate the Discovery correctly, may result in loss of control, or vehicle rollover.

Introduction

INFORMATION LABELS FIXED TO THE VEHICLE

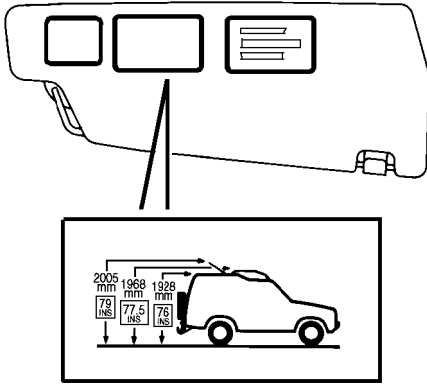


J708A

- A. BATTERY WARNING LABEL
- B. THIS PLUG MUST NOT BE REMOVED WHEN ENGINE IS HOT
- C. AIR CONDITIONING LABEL
- D. KEEP CLEAR OF ROTATING PARTS
- E. JACKING INFORMATION LABEL
- F. ANTIFREEZE - DO NOT DRAIN
- G. REWAX AFTER STEAM CLEANING

NOTE: Various labels are fixed to the vehicle to draw your attention to specific safety and emission information. This illustration is for general guidance only as the position of components and the extent of labels and other visual warnings on the vehicle could vary from model to model.

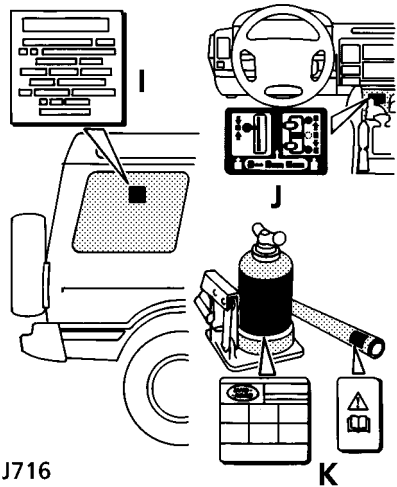
Introduction



J709A

Details of the vehicle height, both with and without an open sunroof and information on the vehicle's handling characteristics are printed on the underside of the drivers sun visor.

On vehicles fitted with Airbag Supplementary Restraint Systems (SRS), remember to take careful note of warning labels and other information attached to both sun visors, or to other parts of the vehicle.



J716

I. WARNING!

Manufactured with
1.1.1.- TRICHLORETHANE substance which harms public health and environment by destroying ozone in the upper atmosphere.

J. Transfer gearbox

Important - transfer gearbox information.
To change transfer box ratio, reduce speed to below 5 mph (8 km/hour), select auto 'N', move high/low lever rapidly to required position, select auto gear. Alternatively, stop vehicle and make selection as above.
For maximum engine braking, select auto '1', keep engine running.

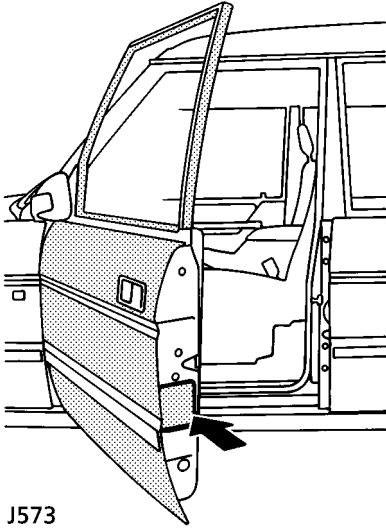
K. Jacking labels

DO NOT get under a vehicle supported only by the jack: use vehicle support stands.

Introduction

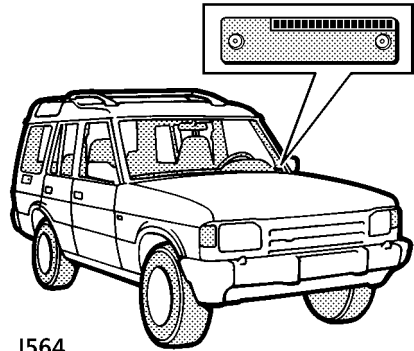
VEHICLE IDENTIFICATION NUMBER (VIN)

If you need to communicate with a Land Rover dealer, you may be asked to quote the Vehicle Identification Number (VIN).



J573

The VIN and other information concerning the vehicle can be found on the certification label affixed to the lock face of the front left-hand door, where shown (this VIN should match the VIN recorded in the Passport to Service book).



J564

In addition, the Federal VIN plate is mounted to the vehicle body in such a position that it is visible from the outside, through the bottom right corner of the windshield.

WARNING

DO NOT exceed gross weight or axle loads described on the vehicle certification/identification label.

Introduction

ANTI-THEFT PRECAUTIONS

While it may be impossible to deter the 'professional' car thief, the majority of thefts are carried out by unskilled opportunists. Therefore, take vehicle security very seriously and ALWAYS adopt this simple 'five point' drill whenever you leave your vehicle - even for just a few minutes:

- Fully close all the windows (and the sunroof).
- Remove your valuable belongings (or hide them out of sight).
- Remove the starter key.
- Engage the steering lock (by turning the wheel until it locks).
- Lock all the doors and turn on the alarm.

Thieves are attracted to 'vulnerable' vehicles. Even if you have followed the 'five point' drill, there is still much you can do to make your vehicle a less inviting target.

BE SAFE NOT SORRY!

- Park where your vehicle can easily be seen by householders and passers-by.
- At night, park in well lit areas and avoid deserted or dimly lit side streets.
- At home, if you have a garage, use it - and NEVER leave the keys in the vehicle.
- Do not keep important vehicle documents (or spare keys) in the vehicle - these are a real bonus for the thief.

IMPORTANT INFORMATION

Remember the breakdown safety code

If a breakdown occurs while travelling:-

- Wherever possible, consistent with road safety and traffic conditions, the vehicle should be moved off the main thoroughfare onto the shoulder as far as possible. If breakdown occurs on a freeway, pull well over to the inside of the hard shoulder.
- Switch on hazard lights.
- If possible, position a warning triangle or flashing amber light, at an appropriate distance from the vehicle to warn other traffic of the breakdown (note the legal requirements of some areas).
- Consider evacuating passengers through the right hand doors away from the road as a precaution in case your Discovery is struck by another vehicle.

SECTION 2

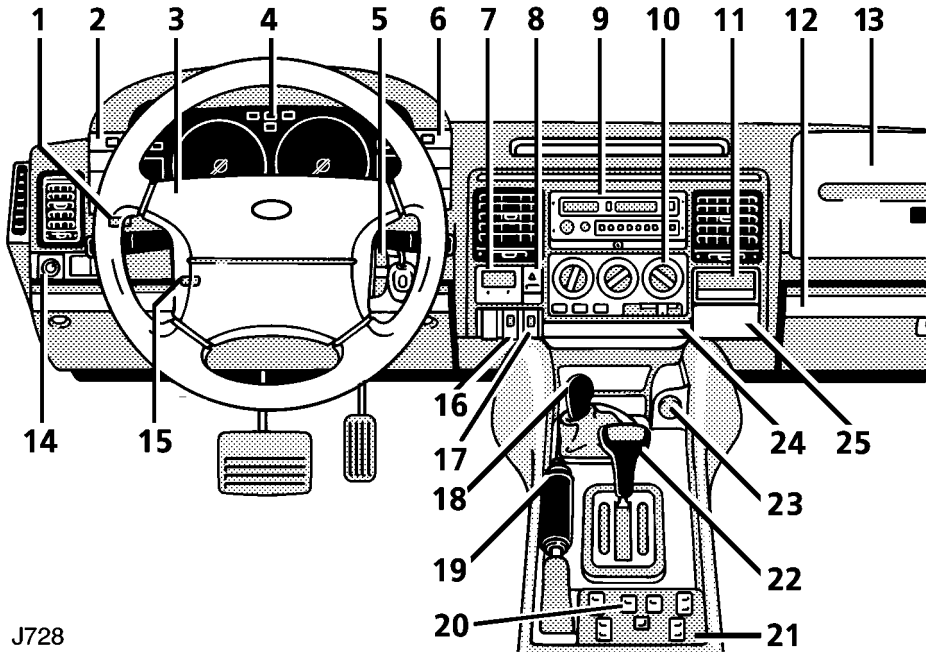
Controls & instruments

In this section of the handbook you will find descriptions of the controls and instruments on your Discovery.

For your own safety, it is most important to read this section fully and to gain a thorough understanding of all the controls before driving.

Section Contents	Page
Controls	11
Locks & alarm	12
Seats	18
Seat belts	24
SRS/Airbag	29
Steering column	33
Exterior mirrors	34
Instruments	35
Warning lights	37
Lights & indicators	40
Wipers & washers	40
Switches	43
Windows	45
Sunroof	46
Heating & ventilation	47
Air conditioning	51
Interior equipment	53
Loadspace cover	57
Rear step	58

Controls



J728

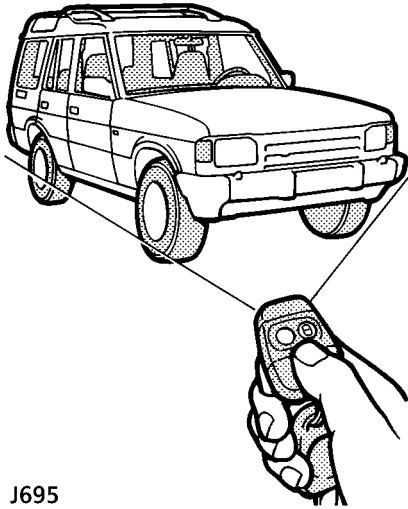
1. Instrument panel illumination control
2. LH switch panel
3. Driver's SRS/airbag
4. Instrument and warning light pack
5. Cruise control switches
6. RH switch panel
7. Clock
8. Hazard warning light switch
9. Radio/cassette player
10. Heater and air conditioning controls
11. Coin tray
12. Glovebox
13. Passenger's SRS/airbag
14. Electric mirror adjustment control
15. Steering column height adjuster
16. Front fog light switch
17. Cruise control master switch
18. Transfer gear lever
19. Parking brake
20. Heated front seat switches
21. Electric window switches
22. Main gearbox lever or selector
23. Cigar lighter
24. Cup holder
25. Ashtray

NOTE: The precise specification and location of controls may vary from model to model within the vehicle range (automatic transmission illustrated above).

Locks & alarm

ALARM SYSTEM

Your vehicle is fitted with a sophisticated electronic anti-theft alarm system. In order to ensure maximum security, you are strongly advised to gain a full understanding of the alarm system by thoroughly reading this section of the handbook.



J695

LOCKING THE VEHICLE AND ARMING THE ALARM

Before locking the vehicle and arming the alarm, ensure all doors, windows, sunroof and hood are securely closed.

Locking with the handset

Within range of the vehicle briefly press the lock button (PADLOCK SYMBOL) on the handset. If the doors lock correctly, the hazard warning lights will flash three times and the alarm indicator (located in the instrument pack) will start to flash.

Each time the vehicle is locked using the handset, a coded signal is transmitted to a receiver inside the vehicle, which activates the following security features.

- The central door locking system (all the door locks are activated).
- The alarm (protects the doors and hood).

Once armed, the alarm will sound if the hood, or any door is opened.

Locks & alarm

Unlocking with the handset

Within range of the vehicle, briefly press the PLAIN button on the handset; the hazard warning lights flash once, the alarm is disarmed immediately and the doors unlock.

NOTE: The interior lights illuminate when the alarm system is disarmed.

If the handset fails to unlock the vehicle, use the key and re-synchronise the handset (see item 6 under 'Handset battery').

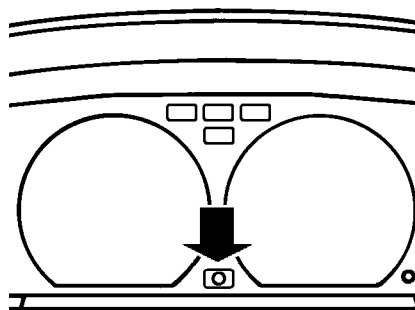
If the alarm sounds

To silence the alarm, press either handset button, or operate the door locks using the key. If the alarm is not silenced, it will sound for approximately 30 seconds before switching itself off and can be triggered up to three times in total before needing to be reset.

Anti-theft alarm indicator light

After locking, the RED indicator light on the instrument panel will flash rapidly while the alarm system is arming itself.

After 10 seconds, the indicator light adjusts to a slower frequency and continues flashing as an anti-theft deterrent, until the alarm is disarmed.



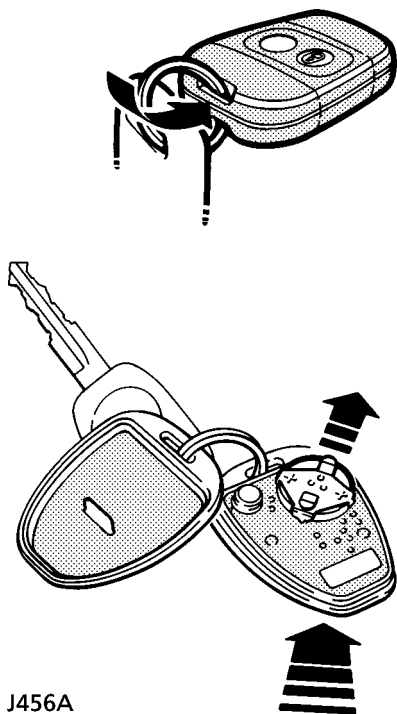
J647

NOTE: The handset complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation. This applies to both alarm receivers and handset transmitter.

CAUTION: Any changes or modifications to the transmitter not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Locks & alarm



J456A

HANDSET BATTERY

The handset battery should last for approximately three years, dependent upon use. When the battery needs replacing, it will be apparent from the following symptoms:

- The handset will only work every other operation.
- The hazard warning lights will not flash on when the alarm is disarmed.

Always fit a Panasonic CR2032 replacement battery (available from a Land Rover dealer) and adopt the following replacement procedure:

1. Carefully open the handset. Start from the keyring end using a coin or small screwdriver. Avoid damaging the seal between the two halves of the case and DO NOT allow dirt or moisture to get inside the handset.
2. Slide the battery out of its clip, taking care to avoid touching the circuit board or the contact surfaces of the clip.
3. Press and hold one of the buttons for at least five seconds (this will drain any residual power from the handset).
4. Fit the new battery, ensuring that correct polarity is maintained (positive '+' side facing up). Finger marks will adversely affect battery life; if possible, avoid touching the flat surfaces of the battery and wipe them clean before fitting.
5. Reassemble the two halves of the handset.
6. Unlock the vehicle using the key, then operate the lock button of the handset at least four times.

The handset is now ready for use.

NOTE: *The handset contains delicate electronic circuits and must be protected from impact and water damage, high temperatures and humidity, direct sunlight and the effects of solvents, waxes and abrasive cleaners.*

Locks & alarm

ALARM OR HANDSET DIFFICULTIES	
Alarm goes off unexpectedly.	Ensure all windows, doors, hood and sunroof are closed.
Vehicle will not start.	Press unlock button on handset. If it still will not start, consult your Land Rover dealer.
Hazard lights don't flash when alarm is armed.	Ensure all windows, doors, hood and sunroof are closed.
Doors unlock and hazard lights start to flash when vehicle is in motion.	The inertia switch has been triggered. Stop the vehicle and turn the starter switch off and on again. Central door locking will be inhibited for 5 minutes. If fault continues, consult your Land Rover dealer.
Within range of the vehicle, the handset appears to malfunction.	The handset may have lost synchronisation. Press the lock button on the handset four times whilst within range of the vehicle.

Locks & alarm

KEY AND HANDSET NUMBERS

You have been supplied with two identical remote control handsets and a pair of identical keys which operate all locks, including the rear door and petrol flap.

The key number is stamped on a tag attached to the key ring. Check that the key number has been entered in the space provided on your Security Information card.

If the key or handset is lost, contact a Land Rover dealer, who can supply a replacement or additional keys and handsets.

WARNING

Keep the Security Information card, key tag, spare key and handset in a safe place - NOT IN THE VEHICLE!

LOCKING USING THE KEY

Front doors

Turn the key towards the front of the vehicle to lock and towards the rear to unlock.

NOTE: *Turning the key also arms and disarms the anti-theft alarm.*

Rear door

Turn the key towards the right side of the vehicle to lock and to the left to unlock.

Locking the doors without activating the alarm

By turning the key to the lock position and then holding it in that position for at least five seconds, the doors will be locked but the alarm will remain inactive.

Central locking

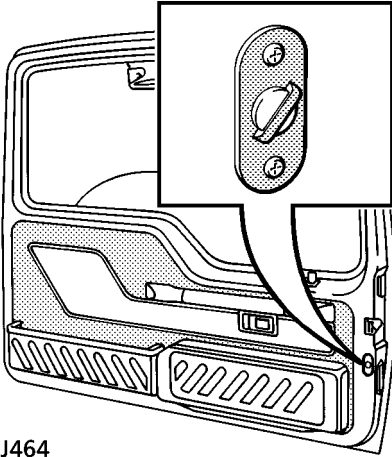
By turning the key in the driver's door, or operating the locking button on the driver's door (from inside the vehicle), all the door locks can be operated simultaneously.

Door sill locking buttons

From inside the vehicle, each door can be individually locked by depressing the appropriate button.

NOTE: *As a precaution against accidentally locking your keys inside, it is not possible to use the locking buttons to lock the front doors when you are leaving the vehicle - THE KEY OR HANDSET MUST BE USED!*

Locks & alarm



J464

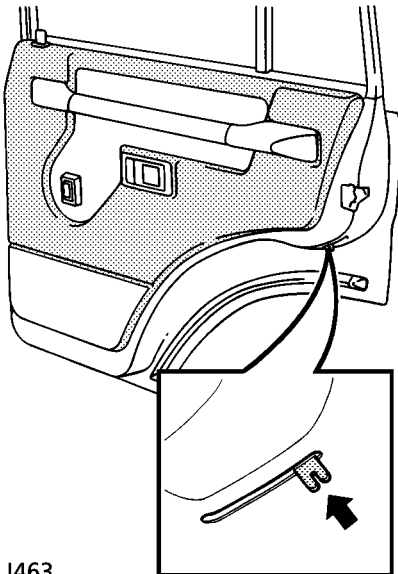
Child locks

Move the locking levers to the 'ON' position (as illustrations) to engage.

With the child locks engaged, neither the rear doors nor the tailgate can be opened from inside the vehicle, thereby avoiding the risk of a door being opened accidentally while the vehicle is moving.

WARNING

***NEVER** leave unsupervised children in your vehicle.*



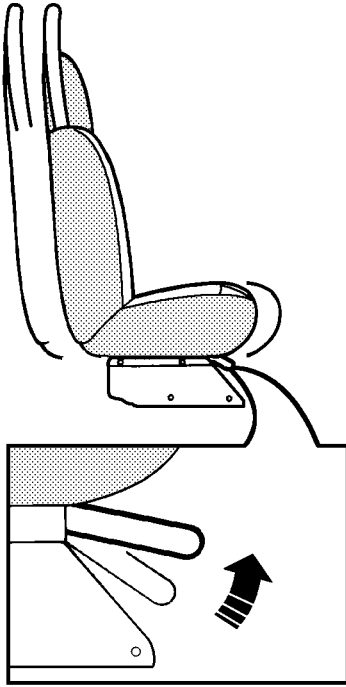
J463

Door locking cut-off switch

An inertia switch, operational only with the starter switch in position 'II', prevents the doors from centrally locking (or if the doors are locked, will unlock them) in the event of an accident or sudden impact.

When the inertia switch operates, the central door locking is inhibited and hazards flash for a minimum of 30 seconds or until the system is reset by turning the starter switch on and off, twice.

Seats



J423A

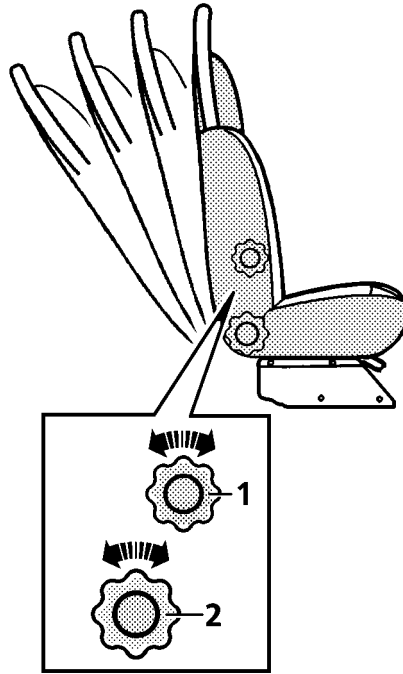
MANUALLY OPERATED FRONT SEATS

Forward/backward movement

Lift the bar to slide the seat forward or back. Ensure the seat is locked in position before driving.

WARNING

To avoid the risk of loss of control and personal injury, DO NOT adjust the driver's seat while the vehicle is in motion.



J591A

Lumbar support (1)

Rotate the handwheel to increase or decrease support to the lumbar region of the back.

Backrest movement (2)

Rotate the handwheel to adjust the backrest to the required angle.

WARNING

DO NOT allow occupants to travel with the seat backs reclined steeply rearwards. Optimum benefit is obtained from the seat belt, with the seat back angle set to 15 degrees from the upright (vertical) position.

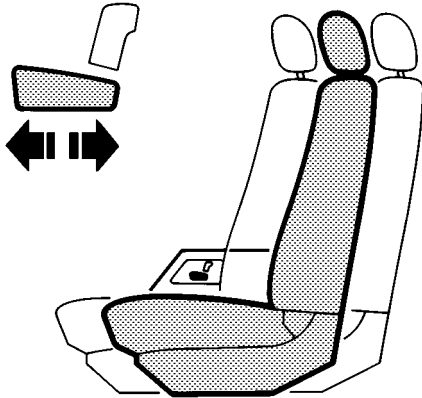
Seats

POWER OPERATED FRONT SEATS

(if fitted)

The seat adjustment controls are situated on the centre console adjacent to the seat bolsters. Adjustment is only possible when the starter switch is turned to positions 'I' or 'II', or with a front door open when the starter switch is in position '0'.

The following functions are available:



J696

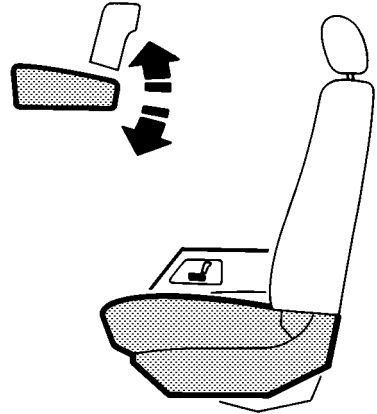
Seat forward/rearward

Push and hold the switch forwards or backwards, to move the seat to the desired position.

WARNING

To avoid the risk of loss of control, never adjust the driver's seat or seatback while the vehicle is in motion.

DO NOT allow occupants to travel with the seat backs reclined steeply rearwards. Optimum benefit is obtained from the seat belt, with the seat back angle set to 15 degrees from the upright (vertical) position.

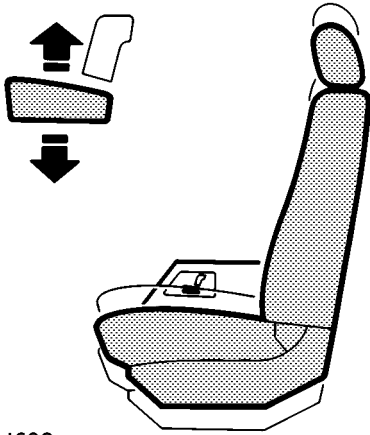


J697

Seat cushion angle

Twist the switch forward or back, to tilt the front or rear of the seat cushion to the desired position.

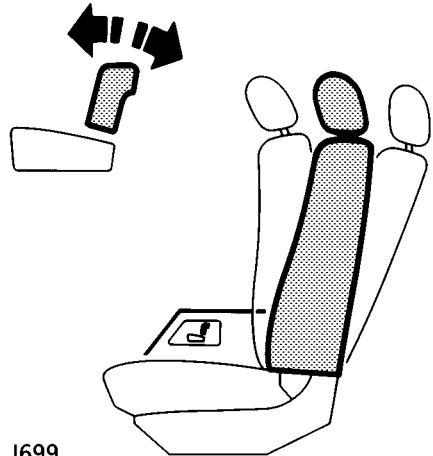
Seats



J698

Seat cushion height

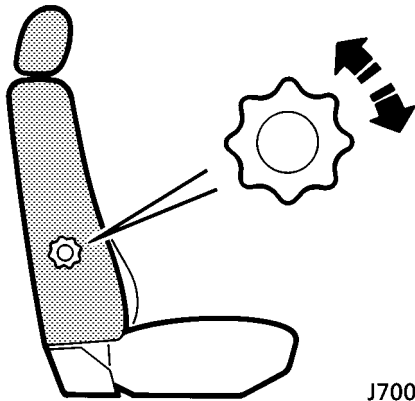
Push the switch up or down, to raise or lower the cushion.



J699

Seat back adjustment

Twist the switch forward or backward until the desired seat back angle is achieved.

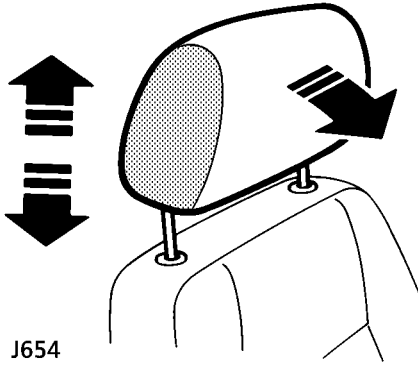


J700

Lumbar support adjustment

Rotate the handwheel to increase or decrease support to the lumbar region of the back.

Seats



Head restraint adjustment
(power operated seats only)

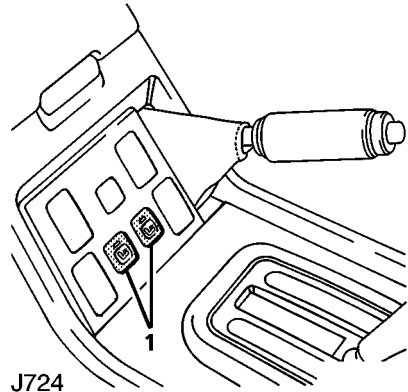
WARNING

Head restraints are designed to support the back of the head (NOT THE NECK), and to restrain rearward movement of the head in the event of a collision. The restraint must be positioned level with the head to be effective.

DO NOT drive, or carry passengers, with the head restraints removed.

Raise or lower the head restraint until it is level with the back of the head.

Tilt the angle of the restraint to ensure it is as close to the back of the head as possible.



Heated front seats

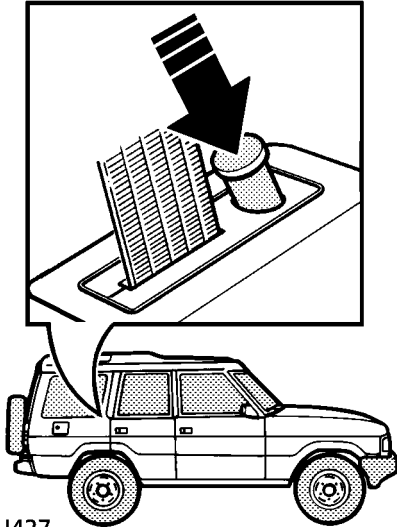
With the starter switch turned to position 'II', press one of the switches (1) to operate the heating elements in either the driver's or front passenger seat (the indicator light in the switch will illuminate). Press the switch a second time to switch off.

The seat heaters are thermostatically controlled and operate intermittently to achieve and then maintain a predetermined temperature between 79° F and 97° F (26° C and 36° C).

WARNING

The seat heaters consume considerable power from the battery. For this reason, they should only be operated when the engine is running.

Seats



FOLDING THE REAR SEATS

Before folding the rear seats, pass the seat belt locks through the junction of the backrest and the cushion and into the loadspace.

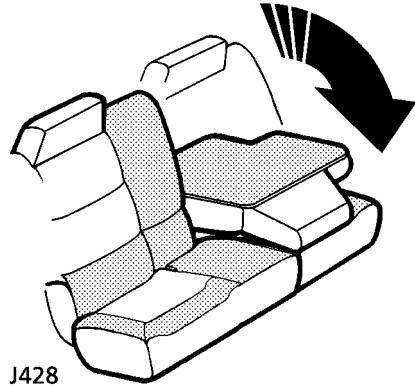
WARNING

DO NOT adjust the seats while the vehicle is in motion.

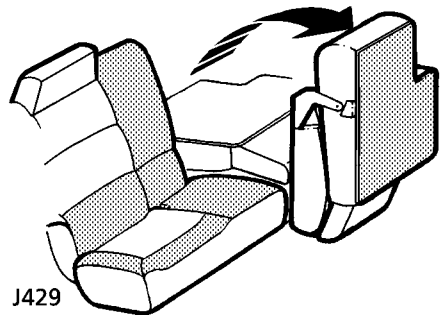
Ensure your fingers are clear of the seat latches when folding the rear seats.

When returning the seat to its upright position, the latching mechanism should be visually checked and physically tested to ensure that the latch is secure.

1. Push the release buttons located behind the seat backrest (arrowed in illustration).

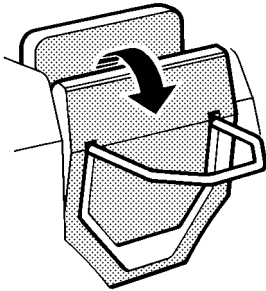
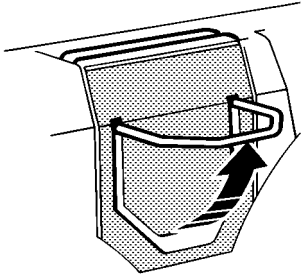


2. Fold the backrest forward.



3. Lift and fold the base of the seat forwards. When returning the backrest to the upright position, ensure it is securely latched in place before driving.

Seats



J431

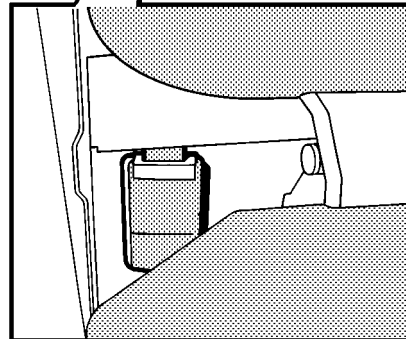
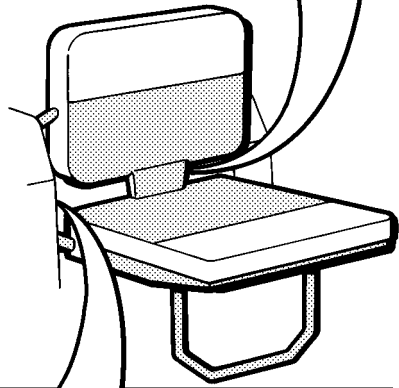
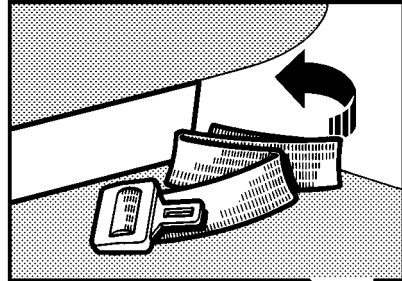
INWARD FACING SEATS (if fitted)

With the loadspace cover (if fitted) retracted and stowed, pull out the seat stand, and fold down the seatbase.

Please refer to **Infant and child restraint** section for correct placement of the child seat.

WARNING

DO NOT attempt to fit an infant or child restraint system to the inward facing seats. Ensure that occupants of the inward facing seats are able to comfortably rest their feet on the load space floor when seated, and are also able to sit comfortably within the overall width of the seat cushion.



J430

Inward facing seat belt stowage:

Fold the seat belt as shown and tuck into the pocket behind the backrest.

Push the seat belt lock onto the clip where shown.

Seat belts

SEAT BELT SAFETY

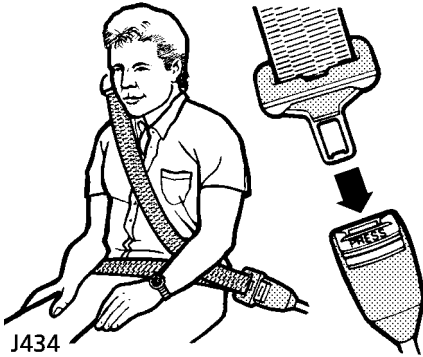
WARNING

Seat belts are life saving equipment. In a collision, occupants not wearing a seat belt will be thrown around inside, or possibly thrown out of the vehicle. This is likely to result in more serious injuries than would have been the case had a seat belt been worn. It may even result in loss of life! Don't take chances with safety!

- *DO make sure ALL occupants are securely strapped in at all times - even for the shortest journeys.*
 - *The airbag supplementary restraint system (SRS) (where fitted) is designed to add to the overall effectiveness of the seat belts, it DOES NOT replace them. SEAT BELTS MUST ALWAYS BE WORN.*
 - *Ensure that all seat belts are worn correctly - an improperly worn seat belt increases the risk of death or serious injury in the event of a collision.*
 - *DO use the seat belts to secure items of luggage that are to be carried on the seats - in the event of an accident, loose items become flying missiles capable of causing serious injury, or even death.*
-

Seat belts

WEARING SEAT BELTS CORRECTLY



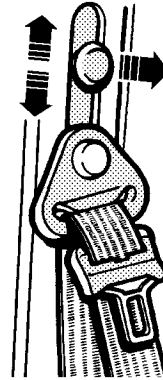
J434

Fastening the inertia reel belts

Draw the belt over the shoulder and across the chest, and then insert the metal tongue plate into the lock nearest the wearer - a 'CLICK' indicates that the belt is securely locked.

In some circumstances, perhaps due to the vehicle being parked on a slope, the inertia mechanism may engage, preventing the initial extension of a belt. This is not a fault - ease the belt free and use it.

Adjust the seat belt to eliminate any slack in the webbing. DO NOT slacken the webbing by holding the belt away from the body - to be fully effective, the seat belt must remain in full contact with the body at all times. Also, ensure that the lap belt fits as low on the hips as possible and that the shoulder belt passes across the shoulder without slipping off or pressing on the neck.



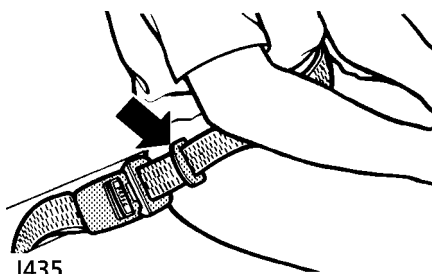
J433

Upper anchorage adjustment (front seats only)

The height of the seat belt upper anchorage can be adjusted for comfort AND safety. Pull the button out to raise or lower. For safety, the seat belt should always be worn with the webbing crossing the shoulder midway between the neck and the edge of the shoulder.

Ensure that the anchorage is correctly located in one of the height positions before driving.

Seat belts



Lap belts

The rear central and inward facing seating positions are fitted with lap belts only. To adjust, pull the slider along the belt and feed the webbing through the buckle until the belt is comfortably tight. Fit the belt as low as possible on the hips (never on the abdomen).

WARNING

Seat belts are designed to bear upon the bony structure of the body (pelvis, chest and shoulders), and can only be worn safely with the seats in a normal, upright, position.

- *ALWAYS fit the lap strap as low on the hips as possible (never across the abdomen) and ensure that the diagonal belt passes across the shoulder without slipping off or pressing on the neck.*
- *ALWAYS ensure that any adjustable seat back is never reclined more than 15 degrees from the upright position, when the vehicle is in motion. Seat belts are only effective when they are properly positioned on the body - a reclined seat could allow a passenger to slip under either the shoulder or the lap belt.*

WARNING

- *DO NOT fit more than one person into a belt; this could result in the occupants striking each other and causing injury in the event of a crash.*
- *DO NOT use, or attempt to fit, a seat belt that is twisted or obstructed in any way that could impede its smooth operation. If a belt is twisted, it must be straightened before use. Using a twisted or obstructed seat belt could increase the risk of injury in a crash.*
- *ALWAYS use the seat belt lock (buckle) nearest the wearer. If the belt is locked in the wrong place, the seat belt will not fit correctly and may ride up over the abdomen, causing serious internal injury in a crash.*
- *DO NOT wear the shoulder belt under your arm. In an accident this could increase your chances of being injured.*

Wearing seat belts during pregnancy

The seat belts have been designed for all adults, including pregnant women. In a crash situation any occupant is less likely to be injured while correctly restrained by a seat belt. However, pregnant women should wear the lap belt as low on the hips as possible to avoid pressure on the abdomen.

Women should consult their doctor to establish the best use of seat belts during pregnancy.

Seat belts

CHILD RESTRAINTS FOR SMALL CHILDREN AND BABIES

Infants and children too small for adult seat belts should be restrained in a child safety seat or restraint system appropriate to their age and/or size, and which is approved for use in your vehicle. Always ensure that the manufacturer's fitting instructions are followed exactly.

Seat belt locking mechanism

The seat belts fitted to the two outer rear seats, have a special locking mechanism, which aids the securing of child restraint systems. The mechanism is used to secure a child restraint as follows:

1. Attach the seat belt to the child restraint in accordance with the manufacturer's instructions.
2. Insert the metal tongue of the seat belt into the lock ensuring that it engages with a 'click'.
3. Pull on the shoulder section of the belt until it is fully extended.
4. Allow the belt to retract. A 'clicking' sound will confirm that the mechanism has engaged.
5. Remove all slack from the mechanism, by pulling upwards on the shoulder belt, immediately above the child restraint.
6. Ensure that the child restraint is held securely in place; if not, unlatch the belt and repeat steps 1 to 6.

The centre rear seating position is fitted with a lap belt which can be manually tightened to secure the infant or child restraint system. Older children should use the lap/shoulder belt fitted to the outer seating positions.

NOTE: Some child seat manufacturers recommend the installation of a top tether strap that is mounted to the vehicle body. Some may also provide 'generic' hardware to install the tether to the vehicle body. **INSTALLATION OF THIS HARDWARE WILL DAMAGE THE HEADLINER OF THE VEHICLE.** Such damage will not be covered under warranty. For cost and installation of Land Rover approved mounts, please contact your Land Rover Centre or retailer.

WARNING

- **DO NOT allow a baby or infant to be carried on the lap. The force of a crash can increase effective body weight by as much as 30 times, making it impossible to hold on to the child.**
- **UNDER NO CIRCUMSTANCES SHOULD A REARWARD FACING CHILD SEAT BE INSTALLED IN ANY FRONT PASSENGER SEAT POSITION.**
- **Young adults and children typically require the use of a booster seat appropriate to their age and size, thereby enabling the seat belts to be properly fitted, reducing the risk of injury in a crash.**
- **DO NOT use a child seat that hooks over the seat back. This type of seat cannot be satisfactorily secured, and is unlikely to be safe for your child.**
- **Never leave a child unattended in your vehicle.**

Seat belts

Care & maintenance of seat belts

WARNING

- **DO NOT allow foreign matter (particularly sugary food and drink particles) to enter the seat belt locks - such substances can render the locks inoperative.**
 - **Regularly inspect the belt webbing for signs of fraying, cuts and wear, also paying particular attention to the condition of the fixing points and adjusters.**
 - **DO NOT bleach or dye the webbing. Clean the webbing using warm water and non-detergent soap only - allow to dry naturally and DO NOT retract or use the belts until they are completely dry.**
 - **Always replace a seat belt that has withstood the strain of an impact or shows signs of fraying.**
-

Testing inertia reel belts

From time to time, carry out the following tests:

1. With the seat belt fastened, give the webbing near the buckle a quick upward pull. The buckle must remain securely locked.
2. With the webbing half unreeled, hold the tongue plate and give it a quick forward pull. The mechanism must lock automatically and prevent any further unreeling of the belt.
3. With the seat belt unfastened, unreel the webbing to the limit of its travel. Check that unreeling is free from snatches and snags.

If a seat belt should fail any of these tests, contact your dealer immediately.

SRS/Airbag



The airbag supplementary restraint system (SRS) provides additional protection for the driver and front seat passenger, in the event of a collision or severe frontal impact on the vehicle.

Always remember; the SRS/airbags are a supplementary restraint system providing **ADDITIONAL** protection in certain types of frontal impact collisions only - they **DO NOT** replace the need to wear a seat belt. For maximum safety protection in all crash situations, seat belts must be worn!

How the SRS/airbag works

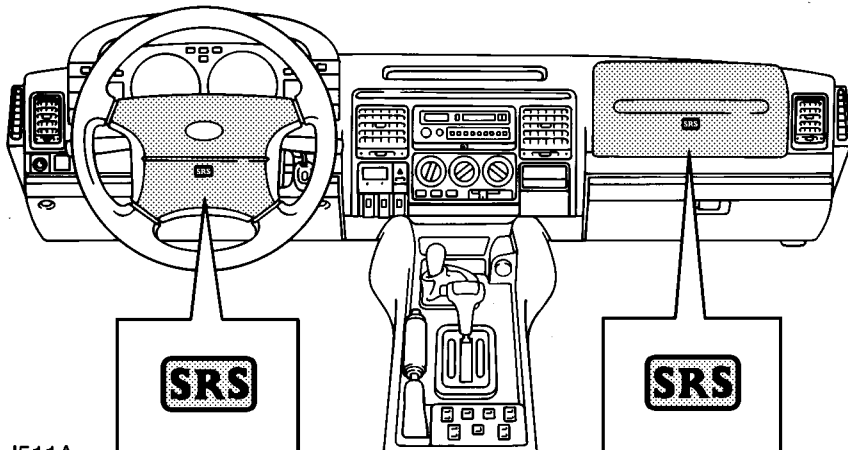
The airbag supplementary restraint system (labelled SRS), includes twin airbag modules (shown in illustration) for the driver and the front seat passenger.

In the event of a collision involving a frontal impact, the airbag diagnostic control unit, monitors the speed of deceleration caused by the impact, to determine whether the SRS/airbag should be activated.

If there is sufficient deceleration, the system causes both airbags to inflate. Inflation is instantaneous and accompanied by a loud noise. Also evident are traces of smoke and powder, which do not indicate a malfunction of the airbag or the presence of fire.

After inflation, the airbag will immediately deflate thereby ensuring that visibility is not impaired.

NOTE: The SRS/airbag is not designed to activate in all frontal impacts; most minor frontal impacts, heavy braking and driving over pot holes will not result in sufficient deceleration to cause the airbags to inflate. This does not indicate that there is a fault with the system. However, if, as a result of an impact, you believe the airbags should have deployed and they failed to do so, please call 1(800)637-6837 for advice, or to arrange for a Land Rover representative to inspect the vehicle to determine whether the system operated correctly.



J511A

SRS/Airbag

WARNING

Following inflation, some SRS/airbag components are hot - DO NOT touch until they have cooled.

Even with SRS/airbag equipment fitted, seat belts must ALWAYS be worn because:

- An airbag will only provide additional protection in certain types of frontal collisions. NO protection is afforded against the effects of side or rear impacts, roll over accidents, or minor frontal impacts.*
- Inflation and deflation take place instantaneously and will not provide protection against the effects of secondary impacts that can occur during multiple vehicle collisions.*

CHILD SEATS

WARNING

DO NOT USE A REAR FACING CHILD SEAT IN ANY FRONT PASSENGER SEAT LOCATION. If the passenger airbag inflates, a child in a rear facing child restraint could be seriously injured.

Children could be endangered in a crash if their child restraints are not properly secured in the vehicle. Be sure to install child restraints according to the manufacturer's instructions.

Under no circumstances should a rear facing child seat be installed facing forward in any seating position.

WARNING

The airbag module inflates with considerable speed and force. For your safety:

An inflating airbag can cause facial abrasions and other injuries. The injurious effects of airbag inflation can be minimised, by ensuring driver and passenger are seated correctly, with the seat moved back as far as is practical, and the seat belts worn correctly.

NEVER attach accessory items to an airbag module cover, or place items of hand luggage or any objects on the top of a module cover; these could interfere with the inflation of the airbag, or if the airbag inflates, be propelled inside the vehicle causing injury to the occupants.

DO NOT allow occupants to obstruct the operation of the airbag modules by placing their feet, knees or any part of their person in contact with, or close to, an airbag module while the vehicle is moving.

Activation of an airbag creates dust, causing possible breathing difficulties for asthma sufferers or other people with respiratory problems. If an airbag is activated, any occupant who suffers from breathing difficulties should; either leave the vehicle as quickly as possible, or obtain fresh air by fully opening the windows or doors.

Both front seating positions are equipped with knee bolsters to provide knee protection in the event of an impact. DO NOT modify the bolsters, or mount after market equipment on or behind them.

SRS/Airbag

SRS/airbag warning light

Whenever the starter switch is turned to position 'II', the diagnostic control unit monitors the readiness of the system's electrical circuits. The elements of the system being monitored include:

- SRS warning light
- Rotary coupler
- Airbag modules
- Airbag diagnostic control unit
- Airbag wiring harness

A warning light mounted on the instrument panel will alert you to any malfunction of the SRS/airbag. The system should always be checked by a dealer if any of the following symptoms occur. These indicate a fault, which may result in the SRS/airbag not operating as required in the event of a frontal impact.

- The warning light fails to illuminate when the starter switch is turned to position 'II'.
- The warning light fails to extinguish within approximately five seconds after the starter switch is turned to position 'II'.
- The warning light illuminates while the vehicle is being driven.

WARNING

DO NOT attempt to service, repair, replace, or modify any part of the SRS/airbag; tampering could cause inadvertent activation of the system, resulting in personal injury.

Service information

Certain components of the SRS/airbag must be replaced by a Land Rover dealer after 10 years from the date of manufacture (shown on the certification plate on the rear face of the left hand front door).

ALWAYS contact your dealer if:

- an airbag inflates.
- the front of the vehicle is damaged, even if the airbag has not inflated.
- any part of an SRS/airbag module cover (the steering wheel centre pad or the passenger side fascia panel) shows signs of cracking or damage.

In addition:

If you sell your vehicle, be sure to inform the new owner that the vehicle has an SRS/airbag system, and make the new owner aware of the airbag module replacement date shown in the Passport to Service.

If the vehicle is to be scrapped; uninflated airbags are potentially very dangerous and must be safely deployed in a controlled environment before a vehicle is scrapped.

See your Land Rover Dealer or Centre for advice on safe deployment of SRS/airbags.

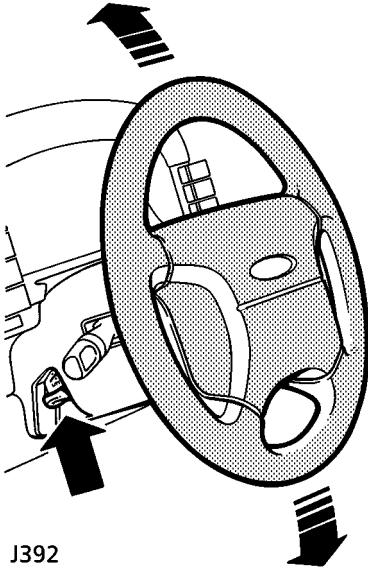
SRS/Airbag

WARNING

The components that make up the SRS/airbag are sensitive to electrical or physical interference, either of which could easily damage the system and cause inadvertent operation or a malfunction of the airbag module. ALWAYS seek the assistance of a Land Rover dealer to carry out any of the following:

- *Removal or repair of any wiring or component in the vicinity of any of the SRS/airbag components (yellow wiring harness), including; the steering wheel, steering column, instrument and fascia panels.*
 - *Installation of electronic equipment such as a mobile telephone, two-way radio or audio system.*
 - *Modification to the front of the vehicle, including the bumper and chassis.*
 - *Attachment of accessories to the front of the vehicle, such as a winch or brush bar.*
-

Steering column



STEERING COLUMN ADJUSTMENT

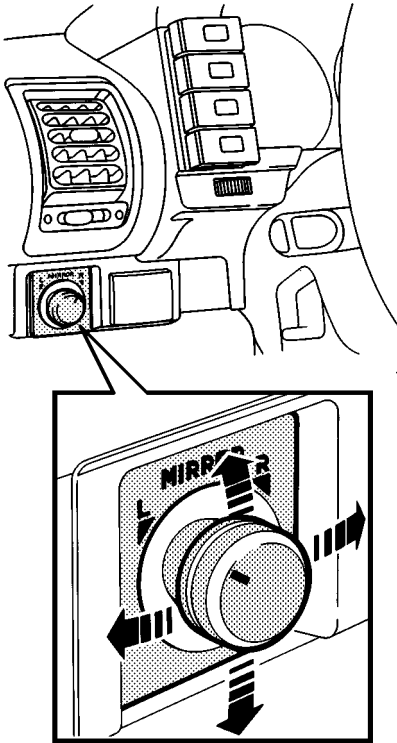
Adjust the height of the steering column to suit your driving position, as follows:

1. Push the locking lever up (and hold in position).
2. Move the steering wheel up or down into the desired position.
3. Release the locking lever.

WARNING

DO NOT adjust the height of the steering wheel while the vehicle is in motion. This is extremely dangerous.

Exterior mirrors



J512

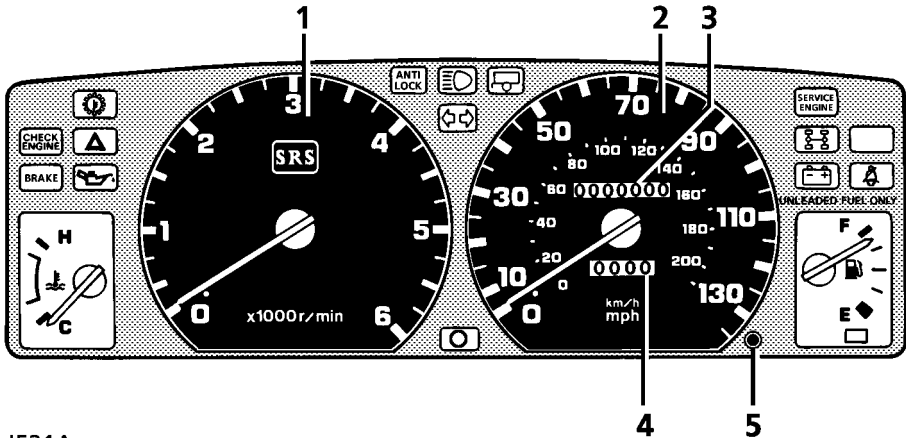
ELECTRIC MIRRORS

1. Turn the control fully to 'L' or 'R' to select either the left or right hand mirror.
2. With the starter switch turned to position 'II', press the top/bottom/left or right of the control to move the mirror glass to the required position.
3. When adjustment is complete, return the control to the position midway between 'L' or 'R'.

The mirror body is designed to fold rearwards or forwards on impact, and can be returned manually to its normal position.

NOTE: Heating elements inside each mirror operate in conjunction with the heated rear window to disperse ice, mist, or raindrops from the glass. The right-hand exterior driving mirror is convex and objects in this mirror are closer than they appear.

Instruments



J521A

1. Tachometer

Indicates engine speed in revolutions per minute. In normal driving conditions the engine is most fuel efficient between 2000 and 3000 rev/min.

The vehicle is fitted with a system which automatically restricts the number of engine revolutions per minute once the engine's maximum 'governed' speed has been reached.

2. Speedometer

Indicates road speed in miles and kilometres per hour.

3. Total distance recorder

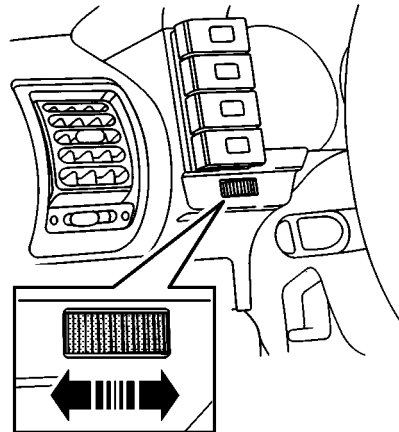
Indicates total distance travelled by the vehicle.

4. Trip recorder

Records individual journey distances.

5. Trip recorder reset button

Press to return trip recorder to zero.

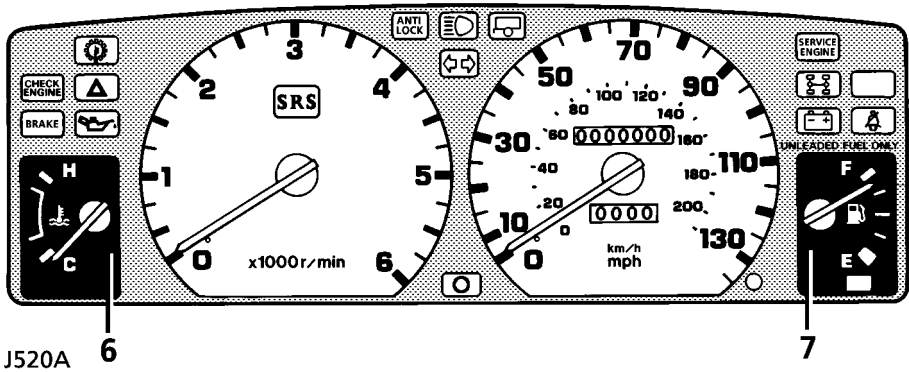


J572

Instrument illumination

Rotate the control to increase or reduce the intensity of instrument panel illumination.

Instruments



6. Temperature gauge

Once the engine coolant has reached its normal operating temperature, the pointer should remain between the 'C' (cold) and 'H' (hot) segments. If the pointer enters the HOT segment, stop the vehicle as soon as safety permits and seek qualified assistance before continuing.

7. Fuel gauge

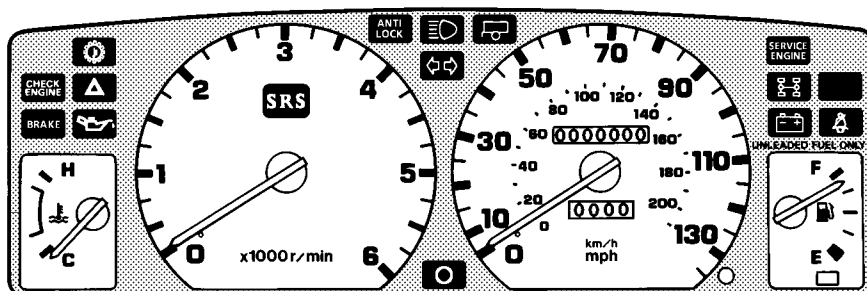
The pointer indicates the fuel level even when the starter switch is turned off. After refuelling, the gauge slowly changes to the new level when the starter switch is turned to position 'II'.

The AMBER low fuel warning light will indicate when the remaining fuel is approximately 2.4 US gallons (9 litres). If the light illuminates, refuel at the first opportunity.

WARNING

NEVER allow the vehicle to run out of fuel (the resultant misfire may destroy the catalytic converter).

Warning lights



J522A

The warning lights are colour coded as follows:

WARNING

DO NOT drive if a RED warning light remains on or illuminates whilst the engine is running.

RED lights are warnings.

AMBER lights are cautions.

GREEN & BLUE lights indicate that a unit is operating.



Seat belt - RED

If the driver's seat is occupied the light illuminates when the starter switch is turned to position 'II'. The light extinguishes after approximately 5 seconds, or as soon as the driver's seat belt is fastened. ALWAYS fasten your seat belt BEFORE driving!



Parking brake & brake fluid - RED

The light illuminates as a bulb check when the starter switch is turned to position 'II'. It will also illuminate when the parking brake is applied and the starter switch is in position 'II'.

The light should extinguish when the parking brake is fully released or shortly after the electrical circuits are switched on. If the light illuminates whilst driving, a fault with the braking system is indicated. Stop the vehicle as soon as safety permits and seek qualified assistance before continuing.

WARNING

Do not drive the vehicle while the brake warning light is illuminated.



Transmission oil temperature - RED

Illumination indicates that gearbox oil temperature is high (most likely to occur in very hot weather during continuous high speed driving, or whilst towing heavy loads on steep inclines, or if the parking brake been accidentally applied while driving).

If the light illuminates, reduce speed. If the light remains on, stop the vehicle and do not drive until it has extinguished.

Warning lights



Hazard warning lights - RED

Illuminates when the hazard warning lights are flashing.



Low oil pressure - RED

The light should extinguish when the engine is started. If the light remains on or illuminates whilst driving, STOP THE VEHICLE IMMEDIATELY and seek qualified assistance. Always check oil levels when this light illuminates.

WARNING

Do not drive the vehicle while the low oil pressure warning light is illuminated.



SRS/airbag - RED

The light illuminates when the starter switch is turned to position 'II' and extinguishes after about 8 seconds. If the light illuminates at any other time, the system is faulty - seek qualified assistance urgently.



Anti-lock braking system - AMBER

The light illuminates when the starter switch is turned to position 'II' indicating that the ABS system is performing a self check. If no faults are found, the light extinguishes briefly, before illuminating again and remaining on until the vehicle exceeds 7 km/h (5 mph). If the light remains on or illuminates whilst driving, there is a fault with the system: this means that one or more wheels are not under ABS control and may lock under heavy braking or in slippery conditions. On completion of your journey, seek assistance from your dealer before further vehicle use.

WARNING

Extreme caution should be exercised when driving with the warning light illuminated, ABS may not be working!



Headlight high beam - BLUE

Illuminates when the headlights are on high beam.



Direction indicators - GREEN

Illuminates when the direction indicators are flashing. If the light does not illuminate, this may indicate a bulb failure in one of the direction indicator lights.



Trailer direction indicators - GREEN

Illuminates in conjunction with the vehicle direction indicator lights to show that all trailer indicator lights are functioning correctly. In the event of a bulb failure, the warning light flashes once and then remains off.

NOTE: *When a trailer is not fitted, the warning light will flash once each time the direction indicator switch is operated.*



Differential lock - AMBER

Illuminates whenever the differential lock is engaged.

If the light remains on after the differential lock lever is moved to the disengaged position, transmission 'wind up' may be present. Reversing for a short distance and then going forward will usually 'unwind' the transmission. If the light remains on, contact your dealer as soon as possible.

Warning lights



Battery charging - RED

The light illuminates as a bulb check when the starter switch is turned to position 'II' and extinguishes when the engine is running. If it remains on, or illuminates whilst driving, a fault is indicated. Seek qualified assistance urgently.



Check engine - AMBER

The engine management system on your Land Rover is controlled by a sophisticated engine control module which maintains optimum control of engine running and emission levels and monitors the operation of the sub systems and components.

The 'Check engine' indicator illuminates as a system check when the starter switch is turned to position II and should extinguish when the engine is started.

If an engine operation or emissions problem is registered by the engine control module while the vehicle is being operated, the 'Check engine' indicator will illuminate.

NOTE: An incorrectly fitted fuel filler cap may cause the Check Engine light to illuminate.

The 'Check engine' indicator is illuminated, and the vehicle drives normally:

Contact your Land Rover dealer to schedule a service appointment at your earliest convenience - YOU MAY STILL DRIVE THE VEHICLE.

The 'Check engine' indicator is flashing and/or the vehicle does not drive normally:

Avoid high speeds and seek immediate assistance from your Land Rover dealer.



Emission maintenance reminder- AMBER

Illuminates when the vehicle reaches approximately 50,000 miles (80,000 kilometres). When this occurs take the vehicle to your Land Rover dealer for a special emission related service to be carried out.

Brief illumination (3 seconds) will also occur as a bulb check when the starter switch is turned to position 'II'.

IMPORTANT INFORMATION

AUDIBLE WARNINGS

Driver's seat belt reminder

A chime will sound for up to 6 seconds if the starter switch is turned to position 'II' when the driver's seat belt is unfastened.

Starter key warning

A chime will sound if the key is left in the starter switch when the driver's door is opened.

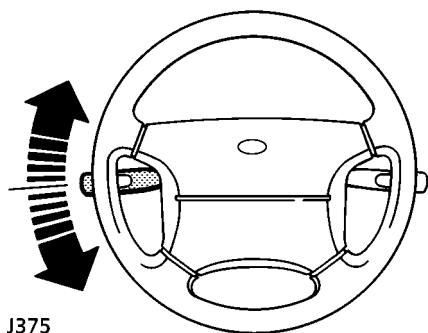
Lights on warning

A chime will sound if the lights are left on after the starter switch is turned off.

Transfer box warning (automatics only)

A warning chime will sound whenever the transfer box gear lever is in the neutral position.

Lights & indicators



Direction indicators

Move the lever down to indicate a LEFT turn, and up to indicate a RIGHT turn (the GREEN warning light on the instrument panel will flash in time with the direction indicators).

Hold the lever part-way up or down against spring pressure to indicate a lane change.

Side, tail and instrument panel lights

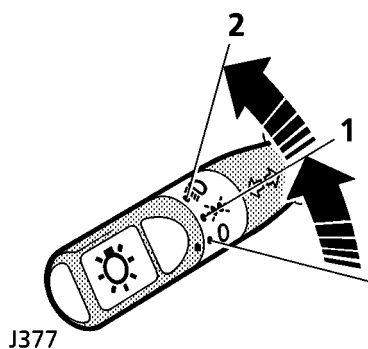
Turn lighting switch to position 1.

Headlights

Turn lighting switch to position 2.

Daylight running lights (Canada only)

With the lighting switch off, the daylight running light system illuminates the headlight low beams as soon as the starter switch is turned to position 'II'. The instrument panel illumination remains off.



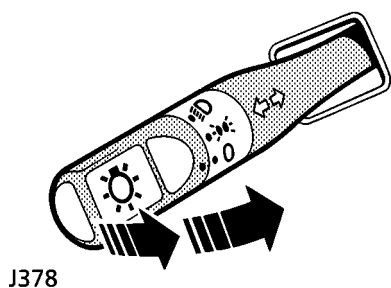
Headlight high and low beams

Pull the lever fully towards the steering wheel to change headlight beams (BLUE warning light glows when the headlights are on high beam).

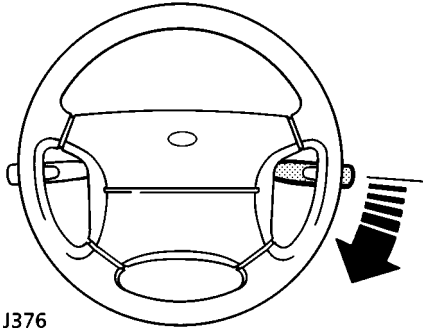
To flash the headlights, pull the lever part way towards the steering wheel and release.

'Lights on' warning chime

If the lights are left on after the starter switch is turned off, a warning chime will sound when the driver's door is opened. The chime will cease as soon as the lights are switched off or when the driver's door is closed.



Wipers & washers

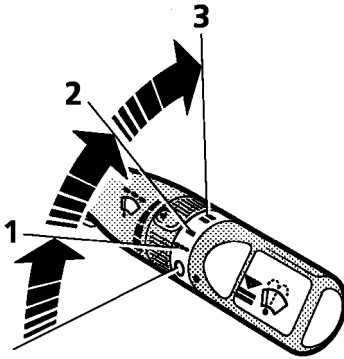


WINDSCREEN WIPERS

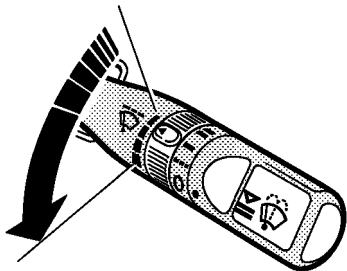
The wipers and washers will only operate when the starter switch is turned to position 'II'.

- **Single wipe**
Pull the lever down and release immediately.

NOTE: With the lever held down, the wipers will continue operating at high speed until it is released.

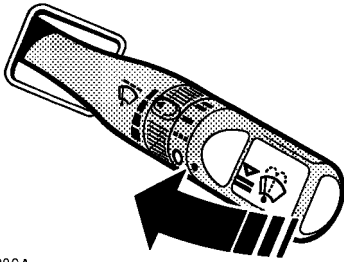


- **Intermittent wipe**
Turn switch to first position.
- **Normal speed wipe**
Turn switch to second position.
- **Fast speed wipe**
Turn switch to third position.

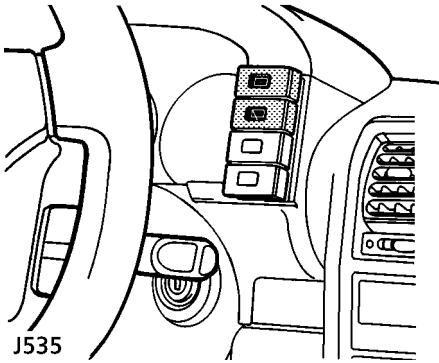


- **Variable delay (intermittent wipe)**
Rotate the switch to vary the delay between wipes.

Wipers & washers



J380A

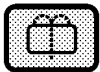


J535



Rear window wiper

Press to operate: after continuously wiping 3 or 4 times, the wiper operates intermittently (approx once every 6 seconds) until switched off.



Rear window wash/wipe

Press and hold switch for the required duration of window washing. The wiper operates automatically during washing and continues for a further 3 wipes after the switch is released.

WINDSCREEN WASHER

Pull the lever towards the steering wheel. The windscreen wipers will operate half a second after the washers, and then for as long as the lever is held in this position; the wipers continuing for a further 4 seconds after the lever is released.

HEADLIGHT WASHERS

The headlight washers operate automatically whenever the windscreen washers are operated, provided the headlights are illuminated on low beam.

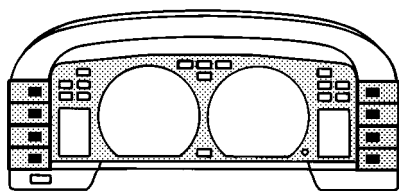
NOTE: Ensure an approved screen washer solvent is used in the windscreen washer reservoir to prevent freezing.

IMPORTANT INFORMATION

- DO NOT operate the wipers on a dry screen.
- In freezing or very hot conditions, ensure that the blades are not frozen or stuck to the glass.
- In winter, remove any snow or ice from around the arms and blades, including the wiped area of the windscreen and the heater air intakes.

NOTE: If the rear wiper blade sticks to the glass, a thermal cut-out may temporarily prevent the wiper motor from operating. If this is the case, switch the wiper off, free it from the obstruction and wait for a few seconds before switching on again.

Switches



J565



Heated rear window

Press to operate; press a second time to switch off. The indicator

light in the switch illuminates while the heating elements are switched on and extinguishes when they are turned off. Note that the heated rear window operates only with the engine running.

After 15 minutes continuous operation, the heater switches off automatically.

WARNING

DO NOT stick labels over the heating elements, and DO NOT scrape or use abrasive materials to clean the inside of the rear window.

NOTE: The functions of the rear window wiper and rear window wash/wipe switches are described under 'Wipers & washers'.



Rear fog lights

Press to operate, press a second time to switch off. The rear fog guard lights will ONLY operate when the headlights (or front fog lights) are switched on, together with the starter switch turned to position 'II' and extinguish when the headlights are switched off. Switching off the headlights (or front fog lights) or turning the starter switch to position '0', will automatically extinguish the rear fog guard lights. ALWAYS remember to switch the rear fog lights off as soon as visibility is clear.

REMEMBER; use only when visibility is severely restricted - in clear conditions, fog lights can dazzle other road users.

RADIO REMOTE CONTROLS

These switches are of the pressure type; push in to operate, and release to stop.

Depending upon the radio/cassette player fitted to your vehicle, the switches described below MAY have additional functions when used in conjunction with the radio controls. For additional information, see the **Radio Operations** section of this handbook.



Radio - volume up

Press to increase the volume.



Radio - volume down

Press to reduce the volume.



Seek

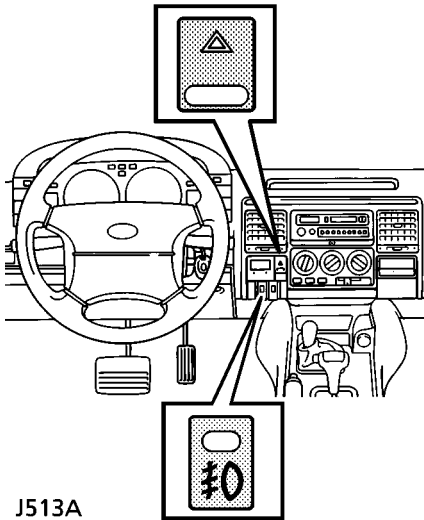
Press to seek for the NEXT radio station on the selected waveband. If the vehicle is equipped with a CD autochanger, this control can also be used to select the NEXT track on a compact disc.



Waveband

Press to change waveband.

Switches



J513A



Hazard warning lights

Press to operate; all the direction indicator lights (including those fitted to a trailer) will flash in conjunction with each other. Use **ONLY** in an emergency to warn other road users when your stationary vehicle is causing an obstruction, or is in a hazardous situation. Remember to switch off before moving away.

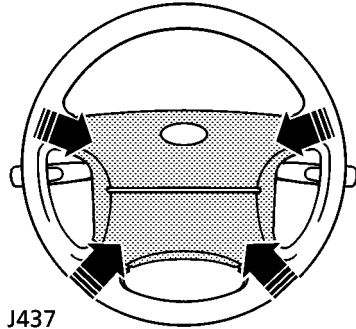


Front fog lights (if fitted)

Press to operate, press a second time to switch off (the switch indicator light illuminates when the fog lights are switched on).

The fog lights can be operated **ONLY** when the headlights are also switched on (low beam only). They are extinguished automatically when the headlights are switched off, or are changed to high beam.

ALWAYS switch the fog lights off when not in use.



J437

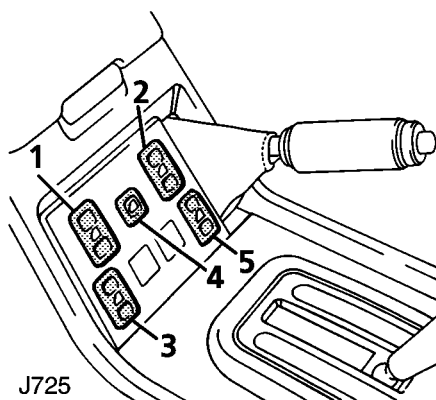
Horn

To operate, press the the horn symbol edges of the steering wheel pad.

Cruise control master switch

The function of the cruise control master switch is described under 'Cruise control'.

Windows



ELECTRIC WINDOWS

The switches on the centre console operate as follows:

1. Right hand front window.
2. Left hand front window.
3. Right hand rear window.
4. Isolation switch for rear door window switches.
5. Left hand rear window.

NOTE: Rear windows can also be operated by individual window switches mounted on each rear door, provided the isolation switch is not activated.

Operating electric windows

The electric windows can be operated when the starter switch is at position 'II' and for up to 45 seconds after the starter switch is turned off (provided a door is not opened in the meantime).

Press and HOLD the bottom of a switch to lower and the top of a switch to raise a window. The window will stop moving as soon as the switch is released.

'One touch' down (front windows only)

By firmly pressing (and then releasing) the bottom of a switch, a front window will open fully at a single touch. Window movement can be stopped at any time by BRIEFLY pressing the top of the switch.

WARNING

Accidental closing of a window on fingers, hands or any vulnerable part of the body, can result in serious personal injury.

Always observe the following precautions:

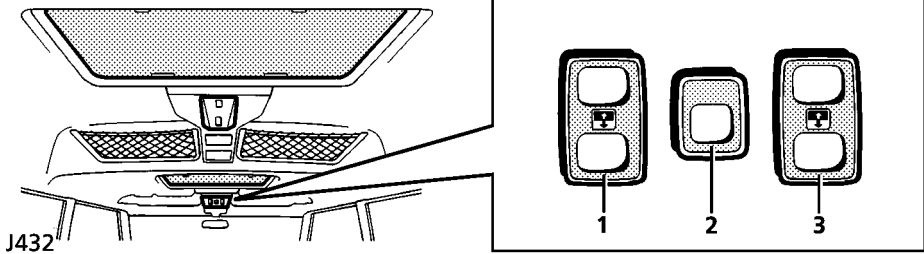
- **ISOLATE** the rear window switches when carrying children.
- **ENSURE** children are kept clear whilst raising or lowering windows.
- **NEVER** leave children alone in the vehicle.
- **ENSURE** that all adult passengers are familiar with the controls and the potential dangers of electrically operated windows.

Isolation switch

Press once to isolate the rear window controls; press again (switch stays in) to restore independent control.

Always isolate the rear window switches when carrying children.

Sunroof



J432

ELECTRIC SUNROOFS (if fitted)

An electric sunroof can be operated when the starter switch is at position 'II', and for up to 45 seconds after the starter switch is turned off (provided no door is opened in the meantime).

The roofs open and close in two separate phases as follows:

To TILT the roof: BRIEFLY press the upper portion of the switch once - the roof will automatically move to the tilted position.

To OPEN the roof: press the upper portion of the switch BRIEFLY a second time - the roof will continue sliding until it is fully open.

To CLOSE the roof: press and hold the lower portion of the switch until the roof has moved to the required position.

NOTE: If the roof is obstructed for more than 7 seconds whilst opening or closing, an automatic cut-out will temporarily prevent the sunroof motor from operating.

The rear sunroof can also be operated from a separate switch mounted in the rear roof lining, provided the isolation switch is not activated.

1. Front sunroof operating switch

2. Rear sunroof isolation switch.
Always isolate the rear sunroof when driving with children in the rear of the vehicle.
3. Rear sunroof operating switch.

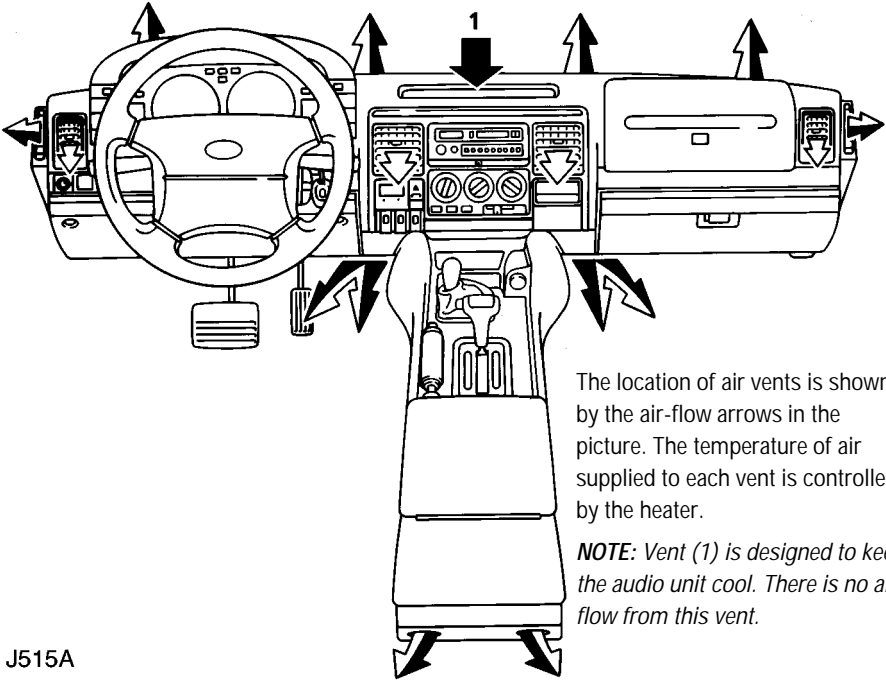
WARNING

Accidental closure of the electrically operated sunroof on fingers, hands or on any other vulnerable part of the body can result in very serious injury.

Always observe the following precautions:

- **ENSURE** passengers are kept clear while closing the roof, particularly when closing the rear sunroof using the front switch.
- **NEVER** leave children alone in the vehicle.
- **ENSURE** that all adult passengers are familiar with the controls and the potential dangers of operating the electric sunroof.
- **DO NOT** allow passengers to extend any part of their bodies through the sunroof while the vehicle is moving.
- **DO NOT** operate the sunroof in freezing conditions or when the roof panel is covered with ice or snow.

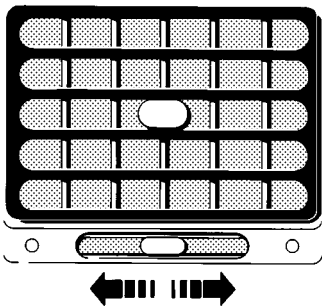
Heating & ventilation



The location of air vents is shown by the air-flow arrows in the picture. The temperature of air supplied to each vent is controlled by the heater.

NOTE: Vent (1) is designed to keep the audio unit cool. There is no air flow from this vent.

J515A

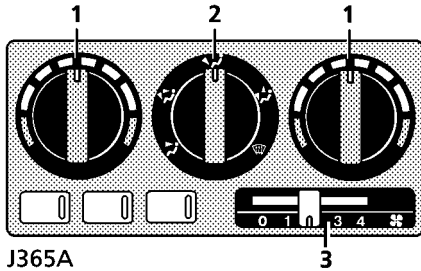


Face level vents

Each vent can be opened or closed by rotating the thumbwheel: left to open, right to close. Direct the flow of air by moving the control in the centre of the louvers.

To ensure best ventilation and minimum noise, the vents should be fully open whenever the air distribution control is set to face level.

Heating & ventilation



J365A

HEATER CONTROLS

1. Temperature controls

The left hand control varies air temperature from the vents on the left side of the vehicle. The right hand control adjusts air temperature from the vents on the right side.

Rotate each control clockwise (towards the RED segment) to increase the air temperature, or counter-clockwise to reduce the temperature.

2. Air distribution control

Rotate to select the required distribution of air:



Air to face vents
(to ensure best performance, the face level vents must be open).



Air to face vents and foot outlets
(to ensure best performance, the face level vents must be open).



Air to foot outlets



Air to foot outlets and windscreen
(recommended for clearing mild windscreen misting)



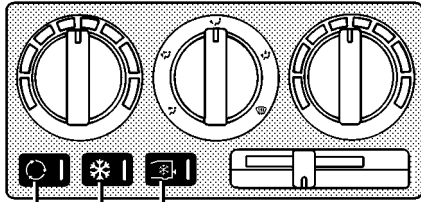
All air to windscreen
(recommended for clearing heavy windscreen misting)

3. Air blower switch

Move the control to the right to progressively increase the fan speed. With the control at '0' the fan is stationary and the volume of air entering the passenger compartment is solely dependent upon the ram effect of the vehicle moving through the air.

NOTE: To prevent the ingress of air from outside the vehicle, press the air recirculation control (described on the following page).

Heating & ventilation



J367A

4. Air recirculation control

Press to recirculate air inside the vehicle (indicator light illuminates).

The air recirculation mode prevents the heating system from taking in fresh air from outside the vehicle. Instead, the air already inside the vehicle is recirculated, thus preventing the entry of traffic fumes. In cold weather air recirculation also enables warmer air to be used to defrost the windscreen when the engine is still cold.

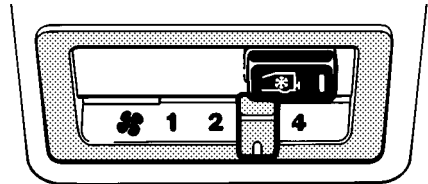
WARNING

The air recirculation mode can cause the windscreen to mist. If this happens, switch off air recirculation immediately.

NOTE: *The air blower switch and air recirculation control will only operate with the starter switch at position 'II'.*

5. Air conditioning switch

The air conditioning system supplies cooled, dried, air through the selected vents when the air blower is operating. With the engine running, press the switch to operate (the indicator light in the switch illuminates when the air conditioning is switched on).



J482B

6. Rear air conditioning switch (if fitted)

The rear air conditioning system is controlled by two-way switches situated in the front control panel (6) and in the rear roof lining illustrated above. Either switch will operate the system provided the front air conditioning system is already in operation.

The system supplies cooled, dried air to the rear passenger compartment through air vents also set into the rear roof lining.

In addition, the fan speed can also be adjusted independently by rear seat passengers; a slider control mounted below the rear air conditioning switch in the rear roof lining, controls the flow of air from the rear vents.

During cold weather when the air conditioning system is not in use, the rear blower and air vents can be used as a ventilation system to supply recirculated air to the rear passenger compartment.

Heating & ventilation

USING YOUR HEATER

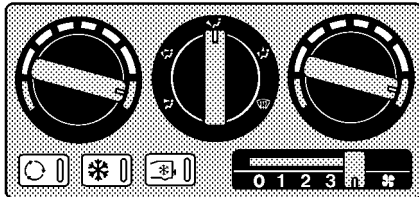
Fresh air enters the heater unit through the grille in front of the windscreen and stale air is drawn out through vents in the rear of the vehicle. Ensure the grille is kept clear of obstructions (especially snow and ice). Ducts along the transmission tunnel provide heating for rear seat passengers - these must not be obstructed.

WARNING

To reduce the risk of accidents caused by poor visibility always scrape frost and snow from all exterior glass surfaces and clean snow from hood and roof panel before moving (see 'Cleaning & vehicle care').

The following examples of basic heater settings are intended as a general guide; the air distribution, temperature and blower controls can then be further adjusted to suit your comfort requirements.

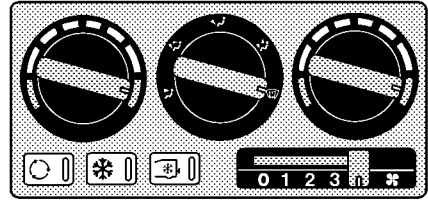
Always remember that full heating is not available until the engine has reached its normal operating temperature.



J368A

Maximum heating

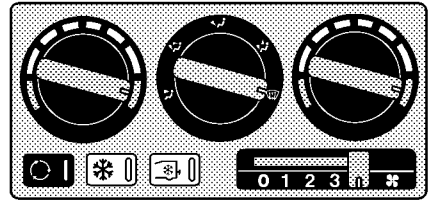
Set the controls as shown, with the blower at the slowest speed (position 1) until the temperature gauge indicates that the engine is warming up - the blower speed can then be increased.



J369A

Demisting

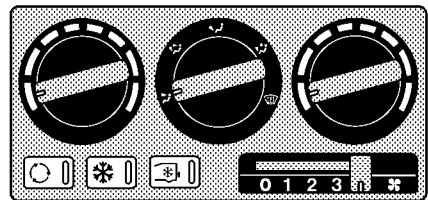
Set the controls as shown to obtain the maximum flow of heated air from the windscreen and side window vents. Opening a window may improve ventilation.



J370A

Defrosting

Set the controls as shown and switch on air recirculation to prevent cold air from being drawn into the vehicle. Turn air recirculation off as soon as the windscreen is clear to prevent any possibility of the windscreen misting.



J371A

Maximum ventilation

Set the controls as shown with the face level vents open. Adjust the blower speed as required.

Air conditioning

AIR CONDITIONING

The air conditioning system provides additional cooling to the vehicle interior, and also reduces the moisture content of the air.

Using the air conditioning

The air conditioning system will only operate when the air blower is switched on, and should only be used when the engine is running. It is also important to keep the windows (and sunroof) closed during operation.

Operation of the air conditioning system places an additional load on the engine which, in very hot conditions and if the engine is required to work unusually hard, could result in high engine temperatures. If the temperature gauge pointer reaches the RED zone, the air conditioning is designed to cut out and resume operation when engine temperature returns to normal.

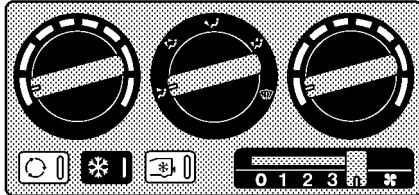
NOTE: *The air-conditioning system uses an ozone-friendly refrigerant, R134a. DO NOT use R12 in this system. It is recommended that the R134a is recycled when your air-conditioner is serviced.*

Points to remember:

- If the temperature inside the vehicle is higher than that outside when you start the engine, it will take time for the air conditioning to become fully effective. It is best to ventilate the vehicle by opening the windows and operating the air blower for a brief period before switching on the air conditioning. Remember to close the windows and sunroof whenever the air conditioning is operating.
- Operating the air conditioning takes power from the engine and consequently increases fuel consumption.
- All air conditioning systems need to be operated for a short while every week (even in winter) to maintain them in peak condition.
- The purpose of an air conditioning system is to dehumidify air. The surplus water produced by this process is expelled from the system via drain tubes beneath the vehicle. This may result in a small pool of water forming on the road when the vehicle is stationary and is not a cause for concern.
- Do not obstruct the air intake for the rear air conditioning system. This is positioned to the front of the left hand side facing seat.
- In high humidity conditions, slight screen misting may be experienced when the air conditioning is turned on. This is a natural occurrence for most automotive air conditioning systems; it is not a fault with the system and will clear after a few seconds once the air conditioning is operating.

Air conditioning

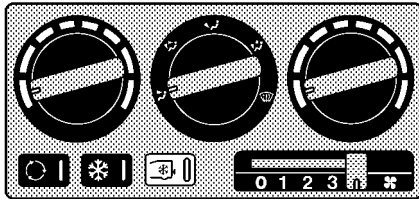
The following examples are included for your guidance:



J372A

Normal cooling

After starting the engine, switch on the air conditioning and set the heating and ventilation controls as shown. The blower speed can be varied to suit your comfort requirements.

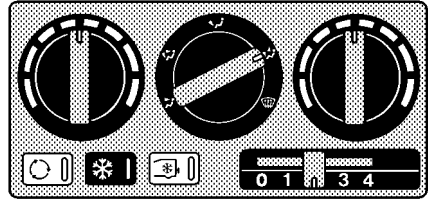


J373A

Maximum cooling

Start the engine and switch on the air conditioning. Set the blower to maximum speed and press the air recirculation control to prevent warm air from being drawn into the vehicle from outside.

Once the interior is cool, switch off the air recirculation control (to allow fresh air to enter the passenger compartment) and reset the blower speed to suit your requirements.



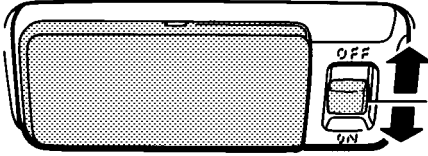
J374A

Reducing humidity

Because air conditioning reduces moisture in the air it can be used to demist windows quickly in damp weather. Used in conjunction with the heater it also makes the interior of the vehicle warm and dry.

After switching on the air conditioning, position the controls as shown; this setting will prove ideal for most driving conditions. Later, adjust the temperature control and blower speed as required.

Interior equipment



J387

FRONT INTERIOR LIGHT

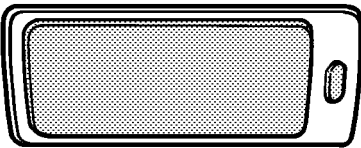
With the switch midway between the 'ON' and 'OFF' positions, the light will illuminate automatically whenever a door is opened.

Automatic operation

The front and rear interior lights illuminate automatically whenever a door is opened, and remain illuminated for approximately 15 seconds after ALL the doors are closed, or until the starter switch is turned on.

After driving, the interior lights will fade and then extinguish as soon as the last door is closed.

NOTE: If a door remains open for eight minutes, a 'time-out' function will extinguish the lights to avoid discharging the battery.



J388

REAR INTERIOR LIGHT

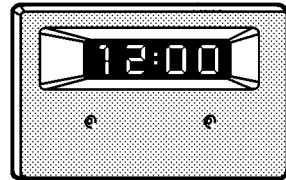
Press switch to manually illuminate (or extinguish) light.

LOADSPACE LIGHT

Illuminates automatically whenever the rear door is opened and extinguishes when the door is closed.

GLOVEBOX LIGHT

Illuminates automatically whenever the glovebox is opened, provided the sidelights are switched on, and extinguishes when the glovebox is closed.



J403A

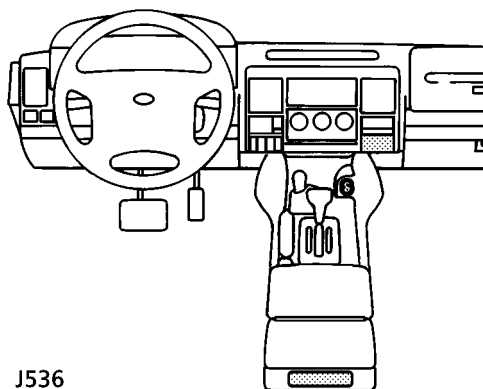
CLOCK

The digital clock display illuminates when the starter switch is turned on and dims automatically for night time viewing, when the sidelights are illuminated.

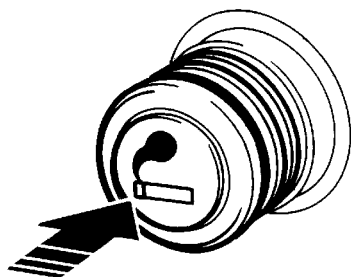
To adjust the time, use a ball-point pen or similar probe to press the hour (left-hand) and minute (right-hand) time controls, until the correct time is displayed.

NOTE: The clock will need to be reset if the battery is disconnected.

Interior equipment



J536

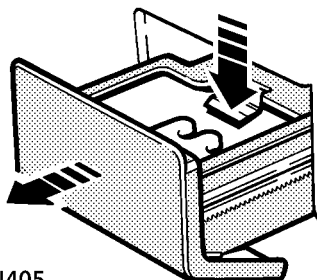


J404

CIGAR LIGHTER

With the starter switch turned on, press the centre of the lighter in to heat up. When it has reached the correct temperature it will partially eject and can then be withdrawn for use.

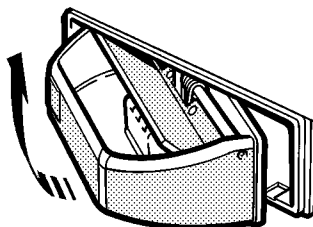
- ONLY hold the cigar lighter by the handle.



J405

FRONT ASHTRAY

Push the front of the ashtray to open. To remove the interior compartment, open the ashtray fully and then press down on the release plate (arrowed in illustration).



J406

REAR ASHTRAY

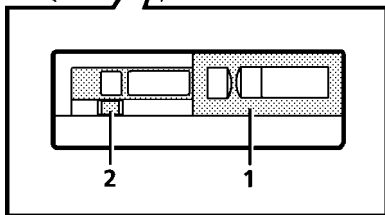
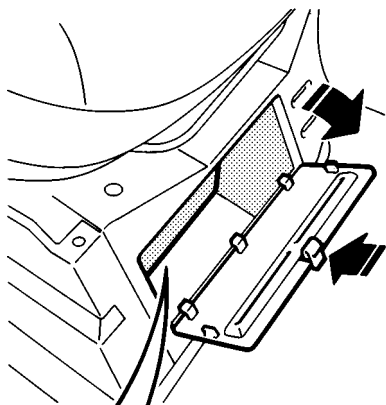
To remove, disengage the lower pivot by pushing the outer edge of the ashtray upwards at an angle.

Refit by locating the upper pivot and then easing the ashtray into a position whereby the lower pivot can also be engaged.

WARNING

DO NOT use the ashtray for disposing of waste paper or other combustible items.

Interior equipment



J655

CD AUTOCHANGER (if fitted)

The CD autochanger is located under the left, front seat, behind a removable panel.

To gain access to the autochanger, depress the catch (arrowed in illustration) and remove the panel.

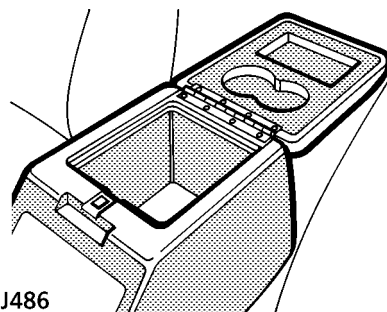
To remove the magazine

Slide the autochanger cover (1) FULLY open and press button (2) to eject the magazine. Keep the sliding cover closed, to prevent dust and dirt from entering the autochanger.

Information about loading and unloading the magazine can be found in 'In-car entertainment'.

WARNING

DO NOT insert or eject the magazine while driving.

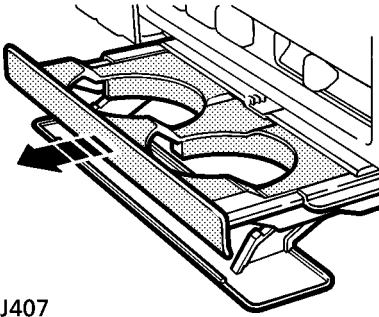


J486

CUBBY BOX

NOTE: The recesses in the underside of the lid are for cups or drink cans.

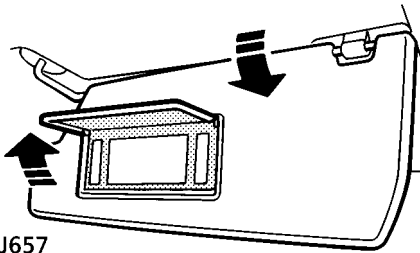
Interior equipment



J407

CUP HOLDER

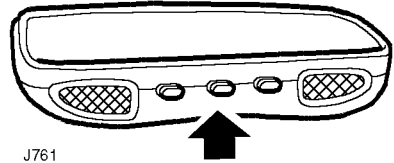
Push leading edge of tray to open.



J657

ILLUMINATED VANITY MIRRORS

With the starter switch in position 'I' or 'II', open the mirror cover to illuminate. Close the cover to extinguish the lights.



J761

INTERIOR REAR-VIEW MIRROR

The interior mirror is equipped with an automatic dimming function, which operates when the centre button (arrowed in illustration) on the base of the mirror is pushed and the starter switch is in position 'I' or 'II'. An indicator light confirms that the dimming function is operating.

When powered, the mirror will reduce glare from following vehicles at night. Pressing the button a second time returns the mirror to its normal reflective state.

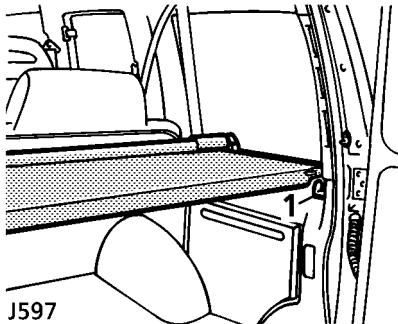
Map reading lights

Two map reading lights are mounted on the underside of the mirror. These are individually controlled by the push buttons on either side of the auto-dim mirror switch.

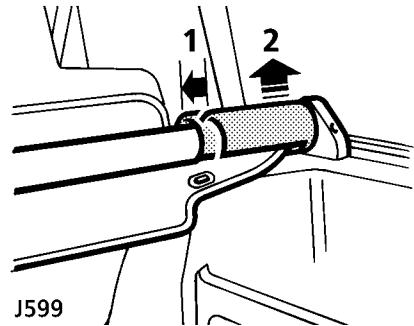
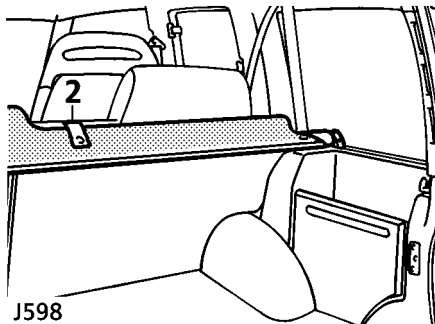
Loadspace cover

LOADSPACE COVER

The rear loadspace cover is a spring loaded roller blind, which can be retracted when not in use.



Lift the cover over the hooks (1) and allow it to retract. Secure the cover in its retracted position with the retaining strap (2), attached to the rear seat back.



To remove the loadspace cover:

1. Slide the plastic sleeve away from the retaining mount.
2. Lift the cover to disengage the side spigot.

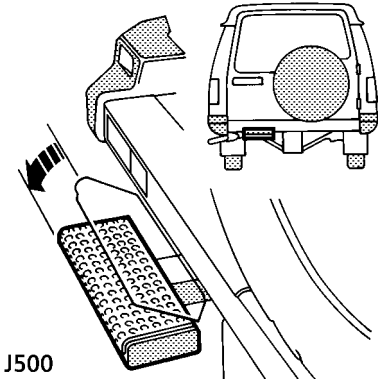
WARNING

The loadspace cover is not designed to carry luggage or loose items - these may obscure vision and could become dangerous projectiles in the event of a sudden stop or collision.

All equipment, luggage or tools carried in the loadspace should be secured to minimise the risk of injury to the driver and passengers in the event of an accident or emergency manoeuvre.

DO NOT store the loadspace cover loose in the vehicle.

Rear step



REAR STEP (if fitted)

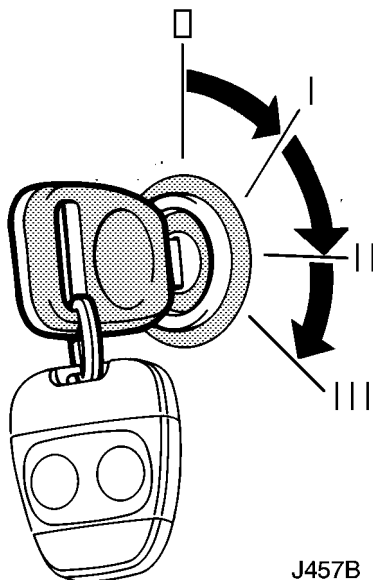
Press down to lower the step. The step will automatically return to its stowed position when not in use.

SECTION 3

Driving & operating

Section Contents	Page
Starter switch & steering lock	61
Starting & driving	63
Catalytic converter	66
Fuel	68
Manual transmission	72
Automatic transmission	73
Transfer gearbox	76
Braking systems	81
Cruise control	86
Towing & load carrying	88
Emergency starting	92
Vehicle recovery	94
Long distance towing	94

Starter switch & steering lock



STEERING LOCK

To unlock the steering

Insert the key FULLY and turn the starter switch to position 'I' while turning the steering wheel slightly. The turning movement is necessary to disengage the lock.

To lock the steering

Turn the key to position '0' and withdraw it from the starter switch. Then turn the steering wheel towards the straight ahead position until the lock engages.

WARNING

Once the steering lock is engaged, it is impossible to steer the vehicle. DO NOT remove the key or turn the starter switch to position '0' while the vehicle is in motion.

STARTER SWITCH

The starter switch is located to the right of the steering column, and uses the following sequence of key positions to operate the steering lock, electrical circuits and starter motor:

Position '0'

- Steering locked (if key is removed).
- Most lighting circuits are operational, including: sidelights, headlights, hazard warning lights and rear fog lights.

Position 'I'

- Steering unlocked.
- Clock, radio/cassette/CD player and cigar lighter can be operated.

Position 'II'

- All instruments, warning lights and electrical circuits are operational.

Position 'III'

- Starter motor operates.
Release the key immediately after the engine starts (the key will automatically return to position 'II').

NOTE: On automatic models, 'P' or 'N' must be selected before the engine will start.

NOTE: On automatic models, 'P' must be selected before the starter key can be removed.

Starter switch & steering lock

WARNING

To prevent the steering column lock engaging it is most important that before the vehicle is moved in any way, the key be inserted in the lock and turned to position '1'. If, due to an accident or electrical fault, it is not considered safe to turn the key, disconnect the negative lead of the battery and then turn the key.

WARNING

Your vehicle has a higher ground clearance and, hence, a higher centre of gravity than ordinary passenger cars, to enable the vehicle to perform in a wide range of off-road applications. An advantage of the higher ground clearance is a better view of the road, allowing you to anticipate problems. The Discovery is not designed for cornering at the same speed as conventional passenger cars, any more than a low slung sports car is designed to perform satisfactorily under off-road conditions. As with other vehicles of this type, failure to operate the Discovery correctly, may result in loss of control or vehicle rollover.

Starting & driving

STARTING

WARNING

The catalytic converter is easily damaged by improper use, particularly if the wrong fuel is used, or if an engine misfire occurs.

Before starting the engine and driving, ENSURE that you are familiar with the precautions shown under 'Catalytic Converter' later in this section.

In particular, you should be aware that if the engine fails to start, continued use of the starter will result in unburnt fuel damaging the catalytic converter.

Starter operation

1. Check that the parking brake is applied and that the gear lever is in neutral ('P' or 'N' for automatic transmission).
2. Switch off all unnecessary electrical equipment.
3. Turn the starter switch to position 'II' and then on to position 'III' to operate the starter motor. DO NOT press the accelerator pedal while starting. RELEASE THE KEY as soon as the engine is running.

In temperate climates, DO NOT operate the starter for longer than 10 seconds. If the engine fails to start, switch off and wait 10 seconds before re-using the starter. Note that continued use of the starter will discharge the battery and may also damage the starter motor. In temperate climates the battery charging and oil pressure warning lights should extinguish as soon as the engine is running.

In very cold climates, if the engine fails to start after three attempts, fully depress the accelerator and operate the starter continually for up to 30 seconds, or until the engine runs.

Cold climates

In very cold climates, the battery charging and oil pressure warning lights may take several seconds to extinguish. Similarly, engine cranking times will also increase; at -22° F (-30° C) the starter motor may need to be operated continuously for as long as 30 seconds before the engine will start. For this reason, ensure that all non-essential electrical equipment is switched off.

Additionally, in very cold temperatures, use of a 110V AC block heater will improve the engine's starting characteristics. Your Land Rover dealer can advise you about the supply and use of a block heater.

WARNING

Exhaust fumes contain poisonous substances which can cause unconsciousness and may even be fatal.

- *DO NOT inhale exhaust gases.*
 - *DO NOT start or leave the engine running in an enclosed unventilated area, or drive with the rear door open.*
 - *DO NOT modify the exhaust system from the original design.*
 - *DO repair exhaust system or body leaks immediately.*
 - *If you think exhaust fumes are entering the vehicle have the cause determined and corrected immediately.*
-

Starting & driving

Automatic gearbox models

WARNING

When the engine has started, BEFORE moving the gear selector lever out of 'P' or 'N' it is important that the parking brake or foot brake is firmly applied and the accelerator pedal is not depressed - otherwise, the vehicle may move immediately if the gear selector lever is moved to any of the drive positions (1, 2, 3, D or R). This is particularly important when the engine is cold, because the engine will be idling at a faster speed than normal. Use the foot brake to control the vehicle until the engine is warm and running at normal speed.

NOTE: *The foot brake MUST be applied before the selector can be moved from 'P'.*

IMPORTANT INFORMATION

Before driving:

Learn the layout and function of all the instruments, warning lights and controls.

Adjust the seat to a comfortable driving position from which you can ensure full control of the vehicle.

Always start the vehicle and operate the controls from the driving position.

Warming-up

DO NOT warm-up the engine by allowing it to idle at a slow speed.

In the interests of fuel economy, it is advisable to drive the vehicle straight away, remembering that harsh acceleration and

labouring the engine before the normal operating temperature has been reached can damage the engine.

Power assisted steering

The hydraulic power-assisted steering is progressively geared; when steering straight ahead gearing is relatively low, but becomes progressively higher as the steering wheel is turned.

NOTE: *Power assistance is dependent on the engine running. If the engine is not running, greater effort will be required to steer the vehicle.*

WARNING

Under no circumstances must the steering wheel be held on full lock for more than thirty seconds in any one minute, otherwise the steering assembly may be damaged.

Auxiliary equipment

WARNING

Do NOT use auxiliary equipment, such as a roller generator, which is driven by one wheel of the vehicle, as this could cause failure of the gearbox differential. In some cases the vehicle may attempt to drive itself forward.

Some local jurisdictions require emission testing using a two wheel roller dynamometer. Your vehicle is equipped with permanent 4-wheel drive and cannot be safely operated on these machines. For more information regarding safe emission testing of your vehicle consult your local Land Rover dealer or Centre.

Starting & driving

VEHICLE HEIGHT

WARNING

The overall height of your vehicle exceeds that of ordinary passenger cars (the height is shown on the underside of the sun visor). Always be aware of the height of your vehicle and check the available clearance before driving through low entrances. This is particularly important if the vehicle is fitted with a roof rack or if a sunroof is open.

BREAKING-IN

Proper breaking-in will have a direct bearing on the reliability and smooth running of your vehicle throughout its life.

In particular, the engine, gearbox, brakes and tyres need time to 'bed-in' and adjust to the demands of everyday motoring and that is why, during the first 500 miles (800 km), it is essential to drive with consideration for the breaking-in process and heed the following advice:

- LIMIT maximum speed to 50 to 60 mph (80-95 km/h). Initially, drive the vehicle on a light throttle and only increase engine speeds gradually once the breaking-in distance has been completed.
- DO NOT operate at full throttle or allow the engine to labour in any gear.
- AVOID fast acceleration and heavy braking except in emergencies.

Initially, the vehicle should be driven on a light throttle. Once the breaking-in distance has been completed engine speeds may be gradually increased.

FUEL ECONOMY

Fuel consumption is influenced by two major factors:

- How your vehicle is maintained.
- How you drive your vehicle.

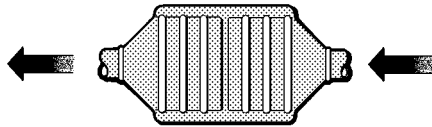
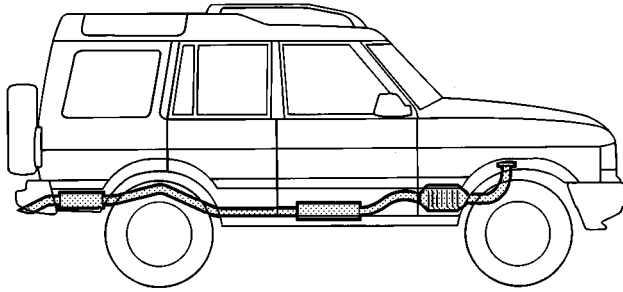
To obtain optimum fuel economy, it is essential that your engine is correctly tuned and that the vehicle is maintained in accordance with the service schedule.

Items such as ignition timing, the condition of the air cleaner element, tyre pressures and wheel alignment can have a significant effect on fuel consumption. But above all, the way in which you drive is most important. The following hints may help you to obtain even better value from your motoring:

- Avoid unnecessary, short, start-stop journeys.
- Avoid fast starts by accelerating gently and smoothly from rest.
- Do not drive in the lower gears longer than necessary.
- Decelerate gently and avoid sudden and heavy braking.
- Anticipate obstructions and adjust your speed accordingly, well in advance.

DRIVE GENTLY - SAVE FUEL!

Catalytic converter



J438

CATALYTIC CONVERTER

The exhaust system incorporates a catalytic converter, which reduces emissions from the engine into environmentally less harmful gases.

The catalytic converter can be easily damaged through improper use, particularly if the wrong fuel is used, or if an engine misfire occurs. For this reason it is **VERY IMPORTANT** that you heed the precautions that follow.

Filling up with fuel

- **ONLY** use fuel recommended for your vehicle.

Starting the engine

- **DO NOT** continue operating the starter if the engine fails to start after a few attempts (unburnt fuel may be drawn into the exhaust system, thereby damaging the catalyst) - seek qualified assistance.
- When starting a **COLD** engine, **DO NOT** drive if a misfire is suspected - seek qualified assistance.

Catalytic converter

Driving

- Provided the engine has reached its normal operating temperature, if a misfire is suspected or the vehicle lacks power while driving, it may be driven SLOWLY (at risk of damaging the catalyst) to a Land Rover dealer for assistance.
- NEVER allow the vehicle to run out of fuel (the resultant misfire could destroy the catalyst).
- DO NOT induce excessive engine revolutions or overload the engine.
- Engines burning excessive oil (blue smoke from the exhaust) will progressively reduce catalyst efficiency.
- On rough terrain, DO NOT allow the underside of the vehicle to be subjected to heavy impacts which could damage the catalytic converter.

WARNING

Exhaust system temperatures can be extremely high - DO NOT park on ground where combustible materials such as dry grass or leaves could come into contact with the exhaust system (in dry weather a fire could result).

Switching off

- DO NOT switch off the engine while a forward or reverse drive gear is selected.

Vehicle maintenance

- Any engine misfire which causes the Check Engine warning light to flash (see 'Warning lights'), loss of engine performance or engine run-on, could seriously damage the catalytic converter. For this reason, it is vital that unqualified persons do not tamper with the engine, and that regular systematic maintenance is carried out only by a Land Rover dealer.
- DO NOT run the engine with a spark plug lead removed, or use any device that requires an insert into a spark plug.

Fuel

USE ONLY UNLEADED FUEL

Octane requirements

Always use PREMIUM UNLEADED GASOLINE with a CLC or AKI octane rating of 90 or 92 (95 or 96 RON).

NOTE: Federal law requires that gasoline octane ratings be posted on the pumps. The Cost of Living Council (CLC) octane rating or Anti Knock Index (AKI) octane rating shown is an average of Research Octane Number (RON) and Motor Octane Number (MON).

Using unleaded fuel with an octane rating lower than that recommended, can cause persistent, heavy 'engine knock' (a metallic rapping sound). If severe, this can lead to engine damage.

If heavy engine knock is detected when using recommended octane rated fuel, or if steady engine knocking is present while maintaining a steady speed on level roads, contact your dealer for advice as soon as possible. Failure to take measures to eliminate either condition constitutes misuse of the vehicle!

NOTE: An occasional, light, engine knock experienced ONLY for short periods while accelerating or climbing hills is acceptable.

WARNING

DO NOT use leaded fuel! Your engine is designed to use unleaded fuel ONLY.

Unleaded fuel is essential for proper operation of the emission control system.

Even a very small quantity of leaded fuel will damage your vehicle's emission control system and could invalidate the emissions warranty. In addition, leaded fuel will damage the oxygen sensors in the fuel injection system and also seriously damage the catalyst in the catalytic converter.

Reformulated gasolines and gasolines that contain detergents, anti-corrosion and stability additives are recommended - they will help your vehicle maintain the correct level of emissions and engine performance.

Fuel system cleaning agents should be avoided, as many of these products can be harmful to gaskets and other materials used in fuel system components.

Driveability

If you encounter driveability, starting and stalling problems, especially in high ambient temperatures or at high altitude when the engine is cold, it may be caused by poor quality fuel. Try an alternative brand, and if the problem persists, seek advice from your dealer.

Fuel

Gasoline/oxygenated fuel blends

To avoid invalidating the vehicle warranty, use ONLY fuels blended within the following limits.

1. Up to 15% of Methyl Tertiary Butyl Ether (MTBE) and unleaded fuel mix.
2. Up to 15% of Ethyl Tertiary Butyl Ether (ETBE) and unleaded fuel mix.
3. Up to 10% of Ethanol (Ethyl or grain alcohol) and unleaded fuel mix.

Methanol/unleaded fuel blends

In some areas, it is possible to buy unleaded fuel that is blended with up to 5% Methanol (Methyl or wood alcohol) and cosolvents and corrosion preventatives. Using these blends can cause driveability problems and damage to the fuel system components. Their use may also invalidate the vehicle warranty. WHEREVER POSSIBLE, AVOID USING FUEL CONTAINING METHANOL!

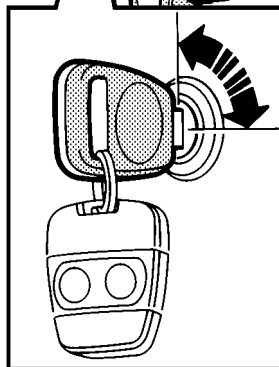
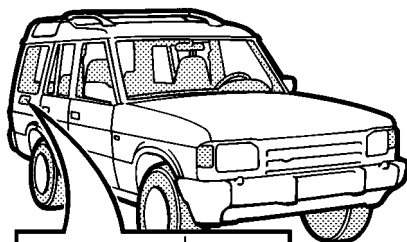
Octane enhancers

The use of octane enhancers is not recommended, and may invalidate the vehicle warranty.

WARNING

Automotive fuels can cause serious injury, and even death if misused.

Methanol/unleaded fuel blends, even in small amounts, can cause blindness and possible death if swallowed. Additionally, take precautions to prevent methanol from coming into contact with the skin.



1702

Locking and unlocking the fuel filler flap

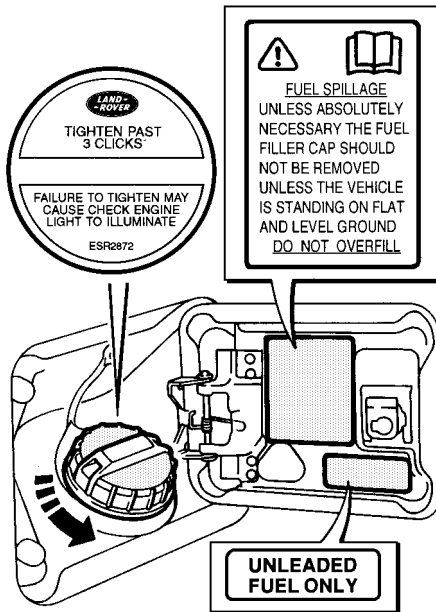
WARNING

To avoid any sudden discharge of fuel caused by excessive air pressure, the cap is designed to allow the fuel tank to vent during the first half turn. DO NOT fully remove the cap until any pressure has been released.

Take careful note of warning labels located around the filler flap.

DO NOT fully fill the tank, if the vehicle is to be parked in direct sunlight or high ambient temperature - expansion of the fuel could cause spillage.

Fuel



J731

Fuel filling

Filling station pumps are equipped with automatic cut-off sensing to avoid fuel spillage - only fill the tank until the filler nozzle automatically cuts off the supply.

DO NOT attempt to fill the tank beyond this point or spillage could result due to expansion of the fuel.

The reduced diameter filler neck, accepts ONLY a narrow filler nozzle of the type found on pumps that supply UNLEADED fuel.

WARNING

Ensure the filler cap is fitted correctly after refueling, otherwise the Check Engine warning light may illuminate.

Empty fuel tank

DO NOT RUN THE FUEL TANK DRY!

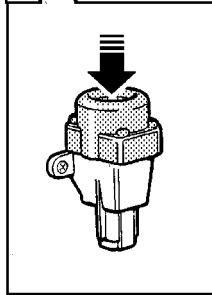
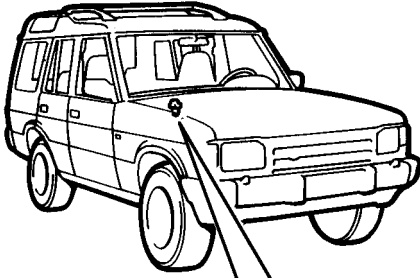
Running the fuel tank dry could create an engine misfire capable of damaging the catalytic converter. It will also cause the Check Engine warning light to illuminate.

GAS STATION SAFETY

Petroleum gases are highly inflammable and, in confined spaces, are also extremely explosive. Always take sensible precautions when refuelling:

- Switch off the engine.
- DO NOT smoke or use a naked flame or light.
- Take care not to spill fuel.
- DO NOT overfill the tank.

Fuel



J707

FUEL CUT-OFF SWITCH

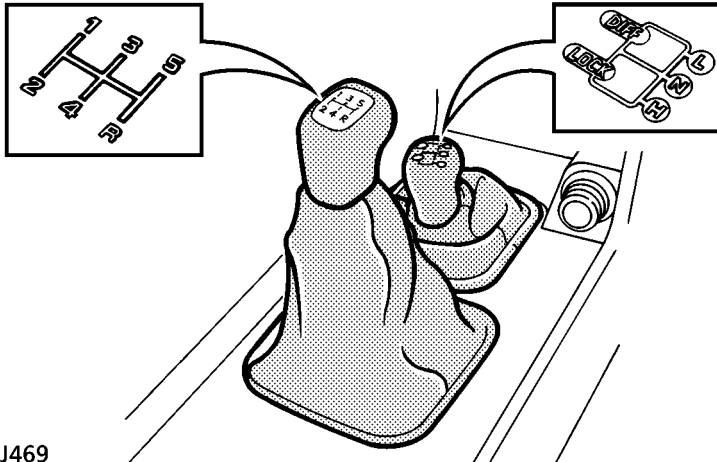
The fuel cut-off switch is a safety device which, in the event of a collision or sudden impact, automatically cuts off the fuel supply to the engine.

The switch is located in the engine compartment on the bulkhead. After an impact, the switch must be reset by pressing the rubber top (arrowed in illustration) before the engine can be restarted.

WARNING

ALWAYS check for fuel leaks before resetting the switch!

Manual transmission



J469

MANUAL TRANSMISSION

Manual transmission vehicles feature a five speed main gearbox and a two speed transfer box. In addition, a centre differential in the transfer box distributes the drive to the front and rear axles, providing permanent four wheel drive. By using the main gearbox in conjunction with the transfer gearing ten forward and two reverse speeds are available.

The gear positions for the main gearbox are shown on the gear lever knob. Note that when the main gearbox is in neutral, the gear lever is spring-loaded to automatically align between third and fourth gear positions.

Clutch

Take care NOT to use the clutch pedal as a foot rest. To prevent unnecessary wear, always keep the left foot away from the clutch pedal except when changing gear.

Starting and driving

Drivers unfamiliar with the performance characteristics of a manual transmission gearbox should thoroughly familiarise themselves with the following instructions before driving.

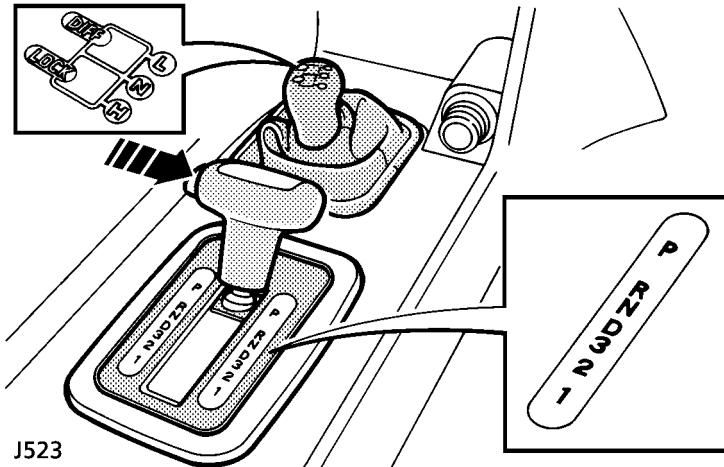
- Before starting the engine, ensure that the parking brake is applied and the main gearbox lever is in neutral.
- Always start the vehicle from the driver's position.
- Always depress the clutch whilst changing gear, releasing it gently afterwards.

WARNING

DO NOT select reverse gear unless the vehicle is stationary.

DO NOT attempt to start the engine with the clutch engaged and the vehicle in gear. ONLY start the vehicle from the driver's position with the transmission in neutral and the parking brake applied.

Automatic transmission



AUTOMATIC TRANSMISSION

The automatic transmission features a four speed main gearbox with a torque converter and a two speed transfer box. A centre differential in the transfer box distributes power to both front and rear axles, providing permanent four wheel drive. Using the main gearbox in conjunction with the transfer gearing produces eight forward and two reverse speeds.

Main selector lever

A spring loaded catch, built into the handle of the gear selector lever, restricts movement of the lever, thereby preventing inadvertent gear selection. Press and hold the button (arrowed in illustration) to release the catch whilst moving the lever to the required position.

NOTE: Gear selection between 'D' and '3' may be made without holding in the button.

Automatic transmission

Automatic selector lever positions

'P' (Park)

In this position the transmission is locked to prevent the vehicle from rolling away. Select ONLY with the vehicle stationary and the parking brake on.

'R' (Reverse)

Select ONLY when the vehicle is stationary.

'N' (Neutral)

Use this position when the vehicle is stationary and the engine is to idle for a prolonged period (eg. at traffic lights).

'D' (Drive)

Select 'Drive' for all normal driving on good road surfaces; fully automatic gear changing occurs on all forward gears according to vehicle speed and accelerator position.

'3' (1st, 2nd and 3rd gears)

Automatic gear changing is limited to first, second and third gears only. Use in congested traffic conditions and for town driving.

'2' (1st and 2nd gears)

Automatic gear changing is limited to first and second ratios only. Use when driving up steep gradients and for negotiating very narrow twisting roads. This position also provides moderate engine braking for descending slopes.

NOTE: *If either '2' or '1' is selected from 'D' or '3' while the vehicle is travelling at high speed, third gear will immediately engage. Progressive deceleration will then cause downshifts into second then first gear at the appropriate road speeds.*

'1' (1st gear only)

Use on very severe gradients, particularly when towing, and when maximum engine braking is required.

WARNING

When parked, always leave the vehicle with the gear selector in 'P' (Park) and the parking brake applied.

NOTE: *The starter key cannot be removed unless the gear selector is in 'P' (Park).*

Starting and driving

Drivers unfamiliar with the performance characteristics of automatic transmission should thoroughly familiarise themselves with the following instructions before driving.

- Before starting the engine, ensure that both foot brake and parking brake are applied.
- After starting the engine, KEEP BOTH BRAKES APPLIED before and whilst moving the selector lever to the required drive position.
- Keep the brakes applied until you are ready to move - remember, once a drive position is selected, an 'automatic' will tend to creep forward (or backward).
- Never 'rev' the engine while selecting a forward or reverse drive gear, or while the vehicle is stationary with a drive gear selected - remember, an 'automatic' will move immediately when the accelerator pedal is pressed.

Automatic transmission

Gear change speeds

With 'D' selected, the road speed at which gear changes take place will vary according to the position of the accelerator: minimum acceleration will result in low road speed gear changes, while larger throttle openings will cause the main gearbox to delay gear changes until faster road speeds have been reached (thereby increasing acceleration).

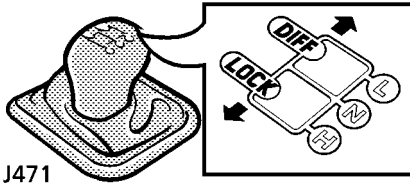
With practice, gear changes can be made to occur at a wide range of different road speeds, depending on accelerator pedal pressure.

On long inclines, an automatic gearbox will sometimes change back and forth between gears. This occurs because the transmission does not include a ratio that is precisely right for the particular incline and vehicle loading circumstances. Excessive gear changing is wasteful of fuel and results in a loss of momentum. It can be prevented by selecting the '3' or '2' positions which limit the gearbox to lower ratios.

'Kick-down'

To provide rapid acceleration for overtaking, 'kick' the accelerator pedal to the full extent of its travel in a single, quick movement (known as 'kick-down'). Up to a certain speed, this will cause an immediate downshift into the lowest appropriate gear, followed by rapid acceleration. Once the pedal is relaxed, normal gear change speeds will resume (dependent upon road speed and accelerator pedal position).

Transfer gearbox



J471

TRANSFER GEARBOX

The two speed transfer gearbox, is used to select either the high or low range of gears and, in addition, also controls the centre differential (known as the 'DIFF LOCK').

A shift interlock safety feature is fitted which prevents any transfer box gear selection being made unless the ignition is switched on and the automatic gearbox selector is in the 'N' (Neutral) position.

High range ('H')

Use high range for all normal road driving and also for off-road driving across dry, level terrain.

Low range ('L')

Use low range gears when moving off from rest when towing a heavy load, or in any situation where low speed manoeuvring is necessary, such as reversing a trailer or negotiating a boulder strewn river bed; also use low range for more extreme off-road conditions where progress in high range cannot be maintained.

WARNING

DO NOT attempt to change to LOW range gears for normal road driving.

Neutral ('N')

Transfer box in neutral. In this position, drive cannot be transmitted to the road wheels regardless of the main gear selector position. If, for any reason, the vehicle has to be towed on four wheels, this neutral position **MUST** be used (see 'Vehicle recovery').

Audible warning (automatic only)

A constant, high pitched, audible warning chime will sound whenever the vehicle starter switch is turned on when the transfer gearbox lever is in the 'neutral' position. The warning is intended to remind the driver that the appropriate 'High' or 'Low' range gearing should be engaged.

'Diff-lock' centre differential

Use the 'unlocked' position, for all normal driving, and use the 'DIFF-LOCK' position to improve traction in extreme conditions, where wheel grip could be lost, such as: wet grass, mud, sand, ice or snow. Return to the 'unlocked' position as soon as dry, firm ground is reached.

DO NOT use the 'diff-lock' unnecessarily!

Transfer gearbox

USING THE TRANSFER GEARBOX

There are two ways of operating the transfer gearbox lever; the 'normal' method - recommended for inexperienced drivers - and the 'advanced' method for experienced drivers.

Normal method

Manual models:

With the vehicle stationary and the engine running, depress the clutch and then move the transfer gearbox lever fully forward (or backwards) in TWO distinct but positive moves - 'high to neutral'.... 'neutral to low' (or vice versa).

If there is resistance to the gear engaging, do not force the lever. Instead, with the main lever in gear, release the clutch momentarily and then try again.

Automatic models:

With the vehicle stationary and the engine running, apply both foot brake and parking brake and then move the automatic gearbox selector to the 'N' (neutral) position before moving the transfer lever fully forward or backwards to the required position.

If there is resistance to the gear engaging, do not force the lever. Instead, with the engine running, apply the foot brake and parking brake, momentarily engage 'D' on the main gearbox then return it to the 'N' position and then try again.

Advanced method

Manual models:

Changing from high to low on the move:

With the vehicle slowing to a stop and travelling NO FASTER THAN 3 mph (5 km/h), depress the clutch and push the transfer lever into neutral. Just before the road wheels stop turning (and with the clutch still depressed) push the transfer lever fully forward into 'L' (low).

NOTE: Use positive and confident moves, but do not rush the gear change.

Changing from low to high on the move:

Changing from 'L' (low) to 'H' (high) can be achieved without stopping the vehicle, as follows:

1. Apply slight backward pressure to the transfer gear lever in preparation for changing.
2. Then, in three simultaneous moves, depress the clutch, release the accelerator and pull the transfer lever into neutral.
3. Release the clutch pedal for approximately 3 seconds before depressing it again and moving the transfer lever firmly into the high position. With the new range selected, push firmly on the transfer shift lever to ensure the gear is fully engaged.
4. Finally, select a suitable main gear, release the clutch and continue driving in the normal way.

NOTE: After a little practice, this operation can be carried out smoothly and quickly by using firm, positive moves - but do not rush the gear change.

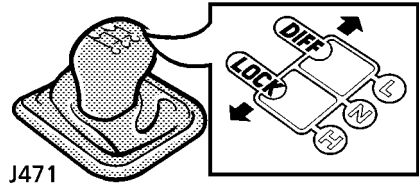
Transfer gearbox

Automatic models:

Changing from 'H' (high) to 'L' (low) or vice versa without stopping the vehicle can be achieved as follows:

Reduce (or increase) the speed of the vehicle to 5 mph (8 km/h) and release the accelerator. Select 'N' with the main gear selector and move the transfer lever quickly to the required 'H' or 'L' position. Finally, reselect 'D' with the main gear selector and continue driving as normal.

NOTE: This operation applies to 'H' to 'L' and 'L' to 'H' equally.



THE DIFFERENTIAL LOCK

Unlike many four wheel drive vehicles, all Land Rover vehicles have permanent four wheel drive. This is achieved by the inclusion of a lockable differential between the front and rear drive shafts. With the differential locked, the drive shafts to front and rear axles are (in effect) joined together causing both axles to rotate at the same speed. This is a normal feature with all four wheel drive vehicles and enhances traction on difficult off-road surfaces. However, with the differential unlocked, the different running requirements of the two axles can be accommodated, thereby enabling Land Rover vehicles to operate permanently in four wheel drive for both road AND off-road use.

Transfer gearbox

Selecting diff lock

The diff lock can be engaged or disengaged either with the vehicle stationary, or when driving at any road speed, and without depressing the clutch. However, with the vehicle in motion it is ESSENTIAL to be travelling on firm ground, in a straight line, and without wheel slip.

WARNING

DO NOT engage the diff lock if one or more wheels are slipping - this could damage the transmission. If wheels are slipping, ease off the accelerator before engaging the diff lock.

To lock the differential:

Move the transfer gear lever to the left - from either 'H' (high) or 'L' (low) position (the warning light on the instrument panel will illuminate).

To unlock the differential:

Move the transfer gear lever to the right - to either 'H' (high) or 'L' (low) position as required; when the diff lock disengages the warning light will extinguish.

When to use the diff lock

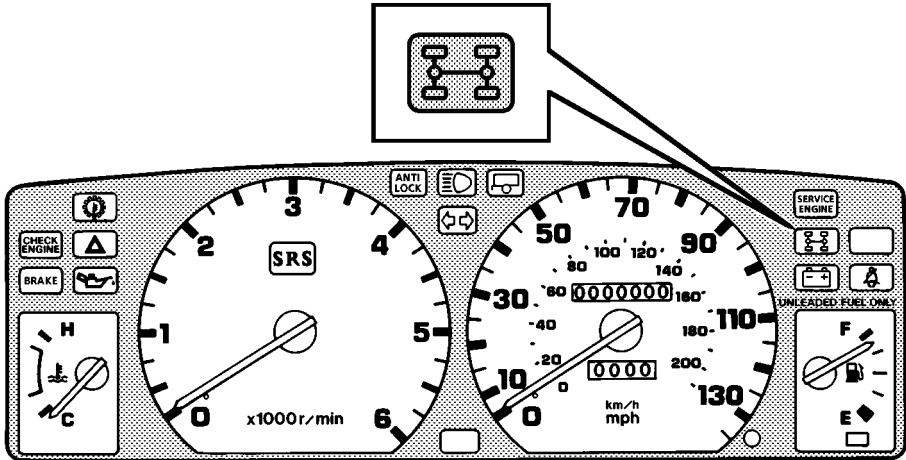
As a general rule, the differential should only be locked in order to drive on loose and slippery surfaces. ALWAYS unlock the differential for normal road driving or as soon as a hard grippy surface is reached whether high or low gears are selected.

NOTE: *A valuable introduction to off-road driving, which includes many useful references to the transfer gearbox and 'diff lock', is included in the 'Off-road driving' section.*

WARNING

If the vehicle is driven on normal road surfaces with the differential locked, the steering will feel stiff, excessive tyre wear will occur and the transmission will be 'wound up'. This places excessive strain on the transmission.

Transfer gearbox



J524A

Diff lock warning light

The amber warning light on the instrument panel illuminates when the diff lock is actually engaged - rather than when it has been selected. Similarly it will only extinguish when the diff lock is actually disengaged. This accounts for a slight delay between diff lock deselection and the warning light extinguishing, which is quite normal.

IMPORTANT INFORMATION

Transmission 'wind up'

If the warning light is obviously reluctant to extinguish after the diff lock has been deselected, some transmission 'wind up' may be present.

Reversing the vehicle for a short distance and then going forward will usually 'unwind' the transmission and extinguish the light and the vehicle can then be driven as normal. However, if after two or three attempts to 'unwind' the transmission the light remains on, consult your dealer AS SOON AS POSSIBLE.

Braking systems

FOOT BRAKE

As a safety precaution, the hydraulic braking system operates through dual circuits. If one circuit fails, the other will continue to function, but increased brake pedal travel, greater pedal effort and longer stopping distances will be experienced.

Power assistance

The braking system is power assisted, but **ONLY** when the engine is running. Without this assistance greater braking effort is necessary to safely control the vehicle, resulting in longer stopping distances. Always observe the following precautions:

- NEVER allow the vehicle to coast with the engine turned off.
- ALWAYS take particular care when being towed with the engine turned off.
- If the engine should stop for any reason while the vehicle is in motion, bring the vehicle to a halt as quickly as traffic conditions safely allow, and **DO NOT** pump the brake pedal as the braking system may lose any remaining assistance available.

Brake pads

Brake pads require a period of bedding in. You should avoid heavy braking, except in emergencies, for at least the first 500 miles (800 km).

Remember that regular servicing is vital to ensure that the brake pads are examined for wear and changed periodically to ensure long term safety and optimum performance.

WARNING

DO NOT rest your foot on the brake pedal while travelling as this may overheat the brakes, reduce their efficiency and cause excessive wear.

NEVER place additional floor matting or any other obstruction under the brake pedal. This restricts pedal travel and braking efficiency.

NEVER move a vehicle with the starter switch turned off, because braking assistance will not be available. The pedal brakes will still function, but more pressure will be required.

ALWAYS take particular care when being towed with the engine turned off.

WARNING

If the brake warning light comes on when driving, and the parking brake is fully released, a fault with the braking system is indicated. Be prepared for increased brake pedal travel and then stop the vehicle as quickly as traffic conditions and safety permit and seek qualified assistance before continuing.

DO NOT pump the brake pedal. If the brake pedal is pumped, the braking system may lose any remaining assistance available.

Braking systems

Wet conditions

WARNING

Driving through water or even very heavy rain may adversely affect braking efficiency. Always dry the braking surfaces by intermittent light application of the brakes, first ensuring that you are at a safe distance from other road users.

Parking brake

Unlike most other vehicles, the parking brake on your Land Rover operates on the rear propeller shaft, and NOT on the road wheels. This may result in slight movement of the vehicle after the parking brake is applied.

To engage the parking brake, depress the button and pull the lever up.

To release, pull the lever up slightly, depress the button and lower the lever.

Always apply the parking brake fully whenever you park.

When parking on a slope, do not rely on the parking brake alone to hold the vehicle. On manual gearbox models, the vehicle should be parked in a low forward gear when facing uphill and in reverse gear when facing downhill. For extra security on steep slopes, move the transfer lever into low range and engage the diff lock.

On automatic gearbox models, particularly when low range is selected, ensure the parking pawl of the main gearbox has fully engaged by carefully releasing the foot brake and allowing the vehicle to 'rock' into 'P' (park).

WARNING

Always apply the parking brake fully whenever you park.

DO NOT apply the parking brake while the vehicle is in motion (except in an emergency), as this could result in loss of vehicle control and damage to the transmission.

DO NOT rely on the parking brake to operate effectively, if the brake linings have been subjected to immersion in mud and water (see 'Off-road driving' section).

ALWAYS use wheel chocks when jacking the vehicle. Even with the parking brake applied, vehicle movement is likely due to tolerances in the transmission.

Braking systems

ANTI-LOCK BRAKES

WARNING

ABS cannot overcome the physical limitations of stopping in too short a distance, cornering at high speed, or the danger of aquaplaning i.e. where a layer of water prevents adequate contact between the tyres and road surface.

DO NOT pump the brake pedal at any time; this will interrupt operation of the system and may increase braking distance.

The fact that a vehicle is fitted with ABS, must never tempt the driver into taking risks that could affect his/her safety, or that of other road users. In all cases, it remains the driver's responsibility to drive within normal safety margins, having due consideration for the prevailing weather and traffic conditions.

NEVER place additional floor matting, or any other obstructions, under the brake pedal; this restricts pedal travel so that braking efficiency is impaired.

The purpose of anti-lock braking (ABS) is to allow efficient braking without wheel locking - thereby allowing the driver to retain steering control of the vehicle.

ABS in action!

Under normal braking conditions, where traction is good, the anti-lock braking system will not be activated. However, should the braking force exceed the available adhesion between the tyres and the road surface, then the system will automatically come into operation. This will be recognisable by a rapid pulsation felt through the brake pedal.

In normal road use, in an emergency situation full braking effort should always be applied, even when the road surface is slippery. The (4-channel) anti-lock braking system constantly monitors the speed of each wheel and varies braking pressure to ensure that none of the wheels lock.

No matter how hard you brake, you should be able to continue steering the vehicle as NORMAL.

Braking systems

Additional operating information

While anti-lock braking is designed to operate equally effectively in 'off-road' driving conditions, on certain surfaces total reliance on the system may be unwise - remember, in normal circumstances, anti-lock braking operates only AFTER the driver has already lost control. Anti-lock braking cannot reliably compensate for driver error or inexperience on difficult off-road surfaces.

Note the following:

- Under ABS control, heavy braking on a dry road may produce tyre noise and slight marking of the road surface. Neither need cause concern.
 - On soft or deep surfaces such as powdery snow, sand or gravel, and on extremely rough ground, braking distances with ABS may be greater than those achievable with a non-ABS system, even though improved steering would be experienced. This is because the natural action of locked wheels on soft surfaces is to build up a wedge of surface material in front of the wheels, which assists in stopping.
 - The driver should always take account of the surface to be travelled over and the fact that brake pedal reactions will be different from those experienced on a non-ABS vehicle.
 - When maximum braking is required on loose or bumpy surfaces, full braking effort should be applied.
- If the vehicle is stopped on a very steep slope where little traction is available, it may slide with the wheels locked because there is no wheel rotation to signal movement to the system. To counteract this, briefly release the brakes to permit some wheel movement, then re-apply the brakes to allow the system to gain control at a suitable speed.
 - Before driving off-road, read and thoroughly understand the 'Off-road driving' section of this handbook.

WARNING

The ABS is designed to operate only with the tyres specified in 'General data' and genuine Land Rover parts. The manufacturers cannot accept any responsibility for inefficient operation of the system caused by modifications to the vehicle, or the fitting of non-approved components. Always consult your Land Rover dealer for advice.

Braking systems



Warning light

The anti-lock braking system warning light illuminates when the starter switch is turned to position 'II', and performs an ABS system check. If no faults are found, the light briefly extinguishes before illuminating again and remaining on until the engine has started and the vehicle reaches speeds in excess of 5 mph (8 km/h). If this does not occur, there is a fault in the system and you should consult your Land Rover dealer at the earliest opportunity.

WARNING

Do not drive away until the warning light has completed the sequence described above.

After the vehicle has reached a speed above 5 mph (8 km/h) check that the light has again extinguished. If the light stays on or illuminates while the vehicle is in motion, stop and have the system checked by your dealer.

The light indicates either a malfunction in the power assistance part of the system or a low fluid level in the reservoir. In either case, illumination of the warning light indicates that ABS control may not be available. Braking should still be possible but will require greater effort.

Cruise control

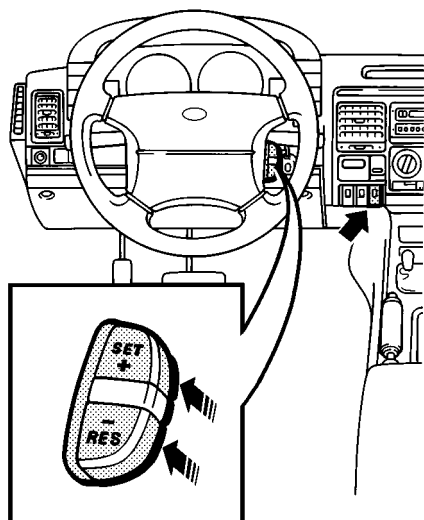
WARNING

DO NOT use cruise control when using low range transfer gears or reverse gears.

DO NOT use cruise control on winding or slippery road surfaces, or in traffic conditions where a constant speed cannot easily be maintained.

DO NOT rest your foot under the accelerator pedal while cruise control is engaged - your foot could be trapped.

ALWAYS switch off the master switch when you no longer intend to use cruise control.



J525A

CRUISE CONTROL

Cruise control enables the driver to maintain a constant road speed without using the accelerator pedal. This is particularly useful for freeway cruising, or for any journey where a constant speed can be maintained for a lengthy period.

The cruise control system has three switches; a master switch on the fascia panel and two control switches marked 'SET +' and 'RES -' mounted on the steering column.

To operate

1. Press the master switch on the fascia panel (arrowed in illustration) - the indicator light in the switch illuminates whenever the switch is pressed to the 'on' position.
2. Accelerate until the desired speed is reached. This must be above the system's minimum operational speed of 28 mph (45 km/h).
3. Press the 'SET +' switch to set the vehicle speed in the system's memory. Cruise control will now maintain that road speed without the need for manual operation of the accelerator.

With cruise control operating, speed can be increased temporarily, e.g. for overtaking, by normal use of the accelerator. When the accelerator is released, road speed will return to the selected cruising speed.

Cruise control

To reduce the cruising speed

Press the 'RES -' switch or use the brake pedal to slow the vehicle until the required speed has been reached, then press the 'SET +' switch to establish the new cruising speed (remember that cruise control will not operate at speeds below 28 mph (45 km/h)).

To increase the cruising speed

Press and hold the 'SET +' switch - the vehicle will accelerate automatically. Release the switch as soon as the desired speed has been reached.

Alternatively, the set speed can be increased incrementally by 'tapping' the 'SET +' switch. For each five taps the speed will increase by 5 mph (8 km/h).

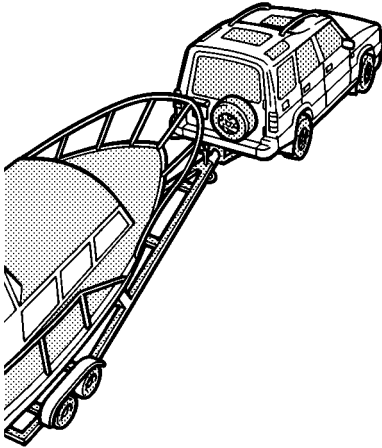
Disengaging cruise control

Cruise control will automatically disengage if the brake or clutch pedals are pressed, or when the gear selector lever is moved into neutral (position 'N' for automatic gearbox).

To re-engage cruise control at the previously set speed, press the 'RES -' switch.

NOTE: *The speed held in the cruise control memory will be cancelled when either the cruise control master switch or the starter switch is turned off.*

Towing & load carrying



J478

TOWING

The torque ranges of Land Rover engines allow maximum weight loads to be pulled smoothly from standstill, and reduce gear changing on hills or rough terrain.

The suspension is designed to cope with a heavy trailer load without upsetting the balance or feel of the vehicle.

Towing weights are listed in 'General data'.

Trailer hitch

Your vehicle is equipped with a Class III trailer hitch receiver as standard equipment. When selecting a drawbar for the receiver, do not exceed a drop in height of 3 in (70 mm) or a hitch length of 9 in (229 mm) - both as measured from the connecting pin of the receiver.

An equalising or other form of weight distributing hitch should NOT be used with your vehicle.

WARNING

Only fit towing accessories that have been designed and approved by Land Rover.

Ensure that the gross vehicle weight and maximum rear axle weight are not exceeded.

Towing & load carrying

When preparing your vehicle for towing, pay careful attention to the trailer manufacturer's recommendations and also follow the guidelines below:

- Ensure that the towing vehicle tyre pressures are correct and that the trailer tyre pressures are as recommended by the trailer manufacturer.
- With the trailer and vehicle unladen, balance the combination so that the trailer draw-bar and the hitch point on the vehicle are at the same height. Adjust the height of the hitch point if necessary.
- Check the operation of trailer brakes and lights.
- For maximum stability, ensure that loads are properly positioned and secured to eliminate shifting during transit. Trailer loads should be positioned so that most of the weight is placed as low as possible and close to/over the trailer axle(s).
- After loading the trailer, check that the tongue weight is in accordance with the manufacturer's recommendations.
Trailers should never be towed when the tongue/draw bar rises up on its own when disconnected from the tow vehicle.
- When calculating the laden weight of the trailer, remember to include the weight of the trailer PLUS the load.
- Where the load can be divided between trailer and tow vehicle, loading more weight into the vehicle than in the trailer, will generally improve the stability of the combination.

TONGUE WEIGHT

The recommended trailer tongue weight limit is 330 lb (150 kg).

WARNING

The tongue weight, plus the combined weight of the vehicle's load carrying area and rear seat passengers must NOT exceed the maximum rear axle load (as shown in 'General data').

***NOTE:** It is the driver's responsibility to ensure that all regulations with regard to towing are complied with according to the state in which the vehicle is being operated. All relevant information should be obtained from an appropriate motoring organisation or towing equipment retailer.*

Towing & load carrying

Automatic gearbox models

To avoid overheating the main gearbox, it is not advisable to tow heavy trailer loads at speeds of less than 20 mph (32 km/h) using the main gearbox in high range. Use the transfer gearbox to select LOW range instead.

NOTE: Above 1,000 feet (300 metres) the effects of altitude can adversely affect engine performance and also cause overheating.

Vehicle weights

When loading a vehicle to its maximum (gross vehicle weight), consideration must be taken of the unladen vehicle weight and the distribution of the load to ensure that axle loadings do not exceed the permitted maximum values.

It is your responsibility to limit the vehicle load in such a way that neither the maximum axle loads nor the gross vehicle weight are exceeded (see 'General data').

LUGGAGE ANCHOR POINTS

Four fixing points are provided in the rear luggage compartment floor. Secure proprietary or locally made anchor brackets and straps to the floor to assist in safely securing large items of luggage.

WARNING

DO NOT carry unsecured equipment, tools or luggage which could move and cause personal injury in the event of an accident or emergency manoeuvre either on or off road.

Trailer socket

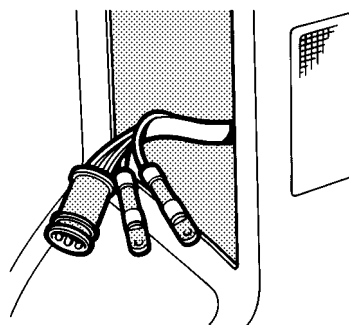
Incorporated in the vehicle's electrical harness is the facility to fit a multi-pin trailer lighting socket.

The wiring connection point is located low down behind the right tail light cluster and consists of a sealed multi-pin connector and two single leads. The single leads are colour coded green/brown for the reversing light circuit and purple for the permanent battery feed.

The multi-pin connector is used for the 'normal' trailer socket and the two single leads are used with the 'aux' socket. To gain access to the connectors, remove the side storage panel by 'springing' the securing tabs free from their retaining slots and then removing the light unit cover (see illustration).

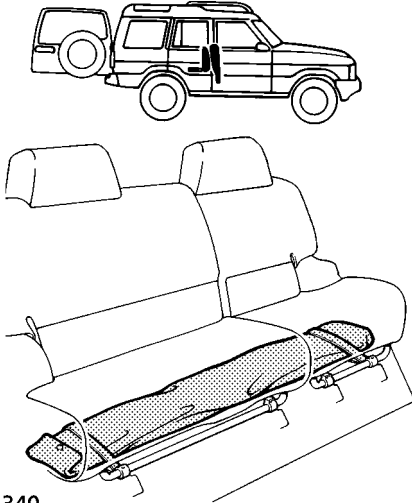
NOTE: On vehicles fitted with inward facing rear seats, the seat on the right hand side must be removed to gain easy access to the multi-pin connector. In this case owners are advised to seek the assistance of a Land Rover dealer to fit the trailer socket.

When the engine is running, power output from trailer socket must NOT exceed 5 amps.



J576

Towing & load carrying



J340

ROOF RACK

The roof rack has two side rails permanently fixed to the roof of the vehicle and three removable cross rails which are stowed in the tool bag beneath the rear seat.

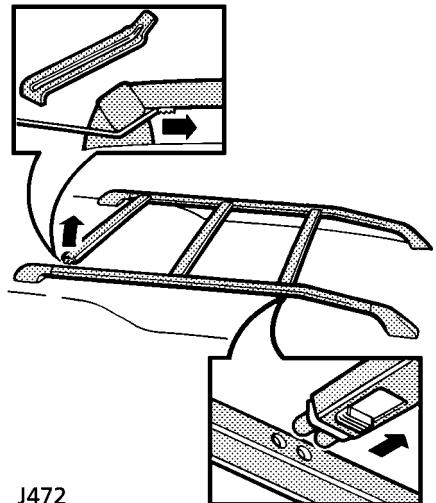
Each cross rail has a pair of locating pins at each end.

With the grooved side upwards, fit the cross rails to one side rail by inserting the fixed pins into the locating sockets. Then, using the release button, locate the spring loaded pins into the sockets on the opposite rail. Ensure the cross rails are secure before loading the rack.

NOTE: A tool is supplied in the vehicle tool kit to operate the spring release button if any difficulty is encountered.

IMPORTANT INFORMATION

- The **MAXIMUM** roof rack load is 110 lb (50 kg) for normal road use.
- A loaded roof rack can reduce the stability of the vehicle, particularly when cornering and encountering cross winds.
- All loads should be evenly distributed, and secured within the periphery of the rack.
- Always secure the load to the side rails, not just to the cross rails.
- Only fit roof racks that have been designed for your vehicle. If in doubt, consult your dealer.
- Driving off-road with a loaded roof rack is not recommended. If it is necessary to stow luggage on the roof rack while driving off-road, all loads **MUST** be removed before traversing side slopes.



J472

Emergency starting

Starting an engine with a discharged battery

The ONLY recommended methods of restarting a vehicle with a discharged battery are:

- The use of a substitute battery fitted to the disabled vehicle.
- The use of booster cables, to connect the battery from a donor vehicle to the discharged battery.

WARNING

A vehicle with automatic transmission, cannot be restarted by pushing or towing.

USING BOOSTER CABLES

WARNING

Batteries emit explosive hydrogen gas - keep sparks, flames and other sources of ignition (i.e. cigarettes) away from the engine compartment.

DO NOT attempt to jump start the vehicle if the electrolyte in the battery is suspected of being frozen.

DO NOT disconnect the discharged battery.

Make sure BOTH batteries are of the same voltage (12 volts), and that the booster cables are approved for use with 12 volt batteries.

DO NOT connect positive (+) terminals to negative (-) terminals, and ensure booster cables are kept away from any moving parts in the engine compartment.

Take care when working near rotating parts of the engine.

Emergency starting

Always adopt the following procedure when using booster cables:

1. If a donor vehicle is to be used, both vehicles should be parked with their battery locations adjacent to each other. Ensure that the two vehicles do not touch.
2. Apply the parking brakes and ensure that the transmission of both vehicles is set in neutral ('P' or Park for vehicles with automatic transmission).
3. Turn off the starter switch and ALL electrical equipment of BOTH vehicles.
4. Connect the RED booster cable from the positive (+) terminal of the donor battery to the positive (+) terminal of the discharged battery.
5. Connect the BLACK booster cable from the negative (-) terminal of the donor battery to a good earth point (eg. an engine mounting or other unpainted surface), at least 20 in (0.5 m) from the battery and well away from fuel and brake lines on the disabled vehicle (engine lifting ring shown in illustration).

WARNING

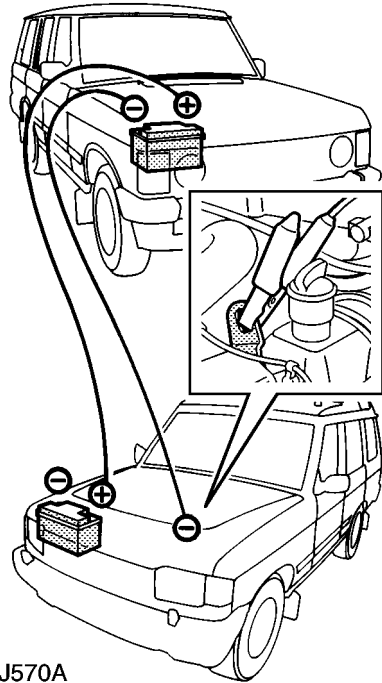
For safety reasons DO NOT connect this cable to the negative terminal of the discharged battery - if in doubt, seek qualified assistance.

6. Check that the booster cables are clear of any moving parts in either engine, then start the engine of the donor vehicle and allow it to idle for a few minutes.
7. Now start the vehicle with the discharged battery (DO NOT crank the engine for more than 15 seconds at a time).

8. Once both engines are running normally, allow them to idle for two minutes before switching off the engine of the donor vehicle and disconnecting the booster cables.

DO NOT switch on any electrical circuits on the previously disabled vehicle until AFTER the booster cables have been removed.

9. Disconnecting the booster cables must be an EXACT reversal of the procedure used to connect them. ie: **disconnect the BLACK cable clip from the earth point on the disabled vehicle FIRST.**



Vehicle recovery

TOWING FOR RECOVERY

If your vehicle is to be recovered by towing, the best method is via a flatbed tow truck. However, if it is necessary for the vehicle to be towed with all four wheels on the ground, always adhere to the following procedure:

1. With the parking brake applied, set the main gearbox and transfer box in neutral. Select 'P'- Park for automatic gearbox vehicles.
2. Ensure the differential lock is in the unlocked position.
3. Turn the starter switch to the first position to unlock the steering, and then to position 'II' if it will be necessary to operate the brake lights and direction indicators, and leave in this position while the vehicle is being towed.
4. Secure the towing attachment to the front towing eye of the distressed vehicle.
5. Release the parking brake.

NOTE: *If, due to an accident or electrical fault, it is not considered safe to turn the starter switch, the battery should first be disconnected. If the vehicle has a discharged battery, the shift interlock will be disabled. The use of a substitute battery will enable the shift lever to be moved into neutral.*

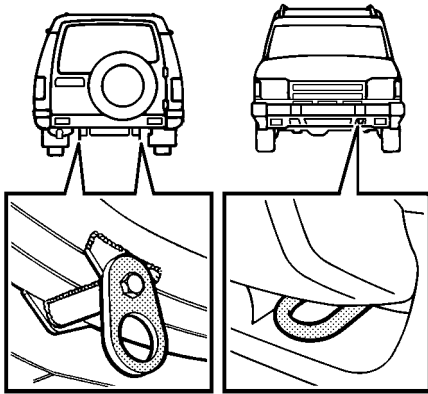
WARNING

DO NOT remove the key or turn the starter switch to position '0' while the vehicle is in motion; the starter switch must be at position 'I' to unlock the steering. *Without the engine running, the brake servo and power steering pump cannot provide assistance; greater effort will therefore be required to operate the brake pedal and turn the steering wheel. Longer stopping distances will also be experienced.*

Long distance towing

Your vehicle can be towed behind a motorhome or other recreational vehicle. Follow the procedure for towing the vehicle on four wheels.

Vehicle recovery



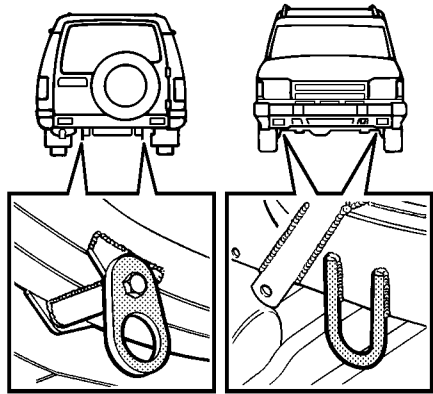
J719

Towing eyes

The towing eyes at the front and rear of the vehicle are designed for vehicle recovery purposes only and must NOT be used to tow a trailer or caravan.

FRONT: A single towing eye, protruding through the spoiler (see illustration), is provided at the front of the vehicle. DO NOT use the front lashing rings for towing purposes.

REAR: A pair of towing eyes are provided at the rear of the vehicle. These can also be used as lashing rings.



J341A

Transporter or trailer lashing

Pairs of lashing rings are provided at the front and rear (see illustration). DO NOT secure lashing hooks or trailer fixings to any other part of the vehicle.

NOTE: The front rings are for lashing only and must NOT be used for towing. The rear lashing rings are designed for both towing and lashing.

SECTION 4

Owner maintenance

The long-term safety, reliability and performance of your vehicle will depend very largely on how well it is maintained.

Maintenance is the owner's responsibility, and it is ESSENTIAL that all routine services are carried out by a Land Rover dealer at the specified intervals. These are shown in the Passport to Service book included in the literature pack.

The Passport to Service also provides spaces for your dealer to record the completion of each service as and when it is carried out, thus creating a valuable and comprehensive record of the maintenance history of your vehicle.

This section of the handbook includes information to assist the owner carry out those daily, weekly and monthly checks that are also necessary to ensure safe, reliable motoring.

Section Contents	Page
Owner maintenance	99
Safety in the garage	101
Hood opening	102
Engine compartment	103
Tyres	110
Washer jets & wiper blades	112
Battery	113
Wheel changing	115
Fuses	120
Bulb replacement	123
Cleaning & vehicle care	131
Air cleaner	134
Spark plugs	135
Engine oil & filter	136
Lubricants	138

Owner maintenance

OWNER MAINTENANCE

In addition to the routine services, which should be carried out by your Land Rover dealer at the intervals shown in the Passport to Service, a number of simple checks and adjustments (listed below) must be carried out by the owner or driver on a regular basis.

These are fully described on the pages that follow.

Daily checks

- Operation of lights, horn, direction indicators, wipers, washers and warning lights.
- Operation of seat belts and brakes.
- Look for deposits on the garage floor which may indicate a fluid leak.

Weekly checks

These should be carried out at least every 250 miles (400 km).

- Engine oil level.
- Cooling system level.
- Screen washers reservoir level.
- Condition and pressure of tyres.

Monthly checks

- Brake fluid reservoir level.
- Power steering reservoir level.
- Clutch fluid reservoir level.
- Automatic gearbox fluid level.

The fluid level on manual gearboxes should only be checked by a Land Rover dealer at the time of a routine service.

All fluid specifications and capacities are shown in 'General data'.

WARNING

If brake pedal travel is unusually long or if there is any evident loss of brake fluid, contact your dealer immediately.

Any significant or sudden drop in fluid levels, or uneven tyre wear should be reported to a Land Rover dealer without delay.

IMPORTANT INFORMATION

Special operating conditions

When the vehicle is operated in extremely arduous conditions or on dusty, wet or muddy terrain, more frequent attention must be paid to all servicing requirements.

For example; if your vehicle experiences deep wading conditions, even DAILY servicing could be necessary to ensure the continued safe and reliable operation of the vehicle.

Contact a Land Rover dealer for advice.

Owner maintenance

Planned maintenance

Regular systematic maintenance is the key to ensuring the continued reliability and efficiency of your Discovery.

The routine maintenance requirements for your vehicle are shown in the Passport to Service. Most of the necessary workshop maintenance requires specialised knowledge and equipment and should preferably be entrusted to your Land Rover dealer.

Emission control

Your vehicle is fitted with various items of emission and evaporative control equipment designed to meet specific territorial requirements.

You should be aware that unauthorised replacement, modification or tampering with this equipment by an owner or repair shop may be unlawful and subject to legal penalties.

In addition, engine settings must not be tampered with. These have been established to ensure that your vehicle complies with stringent exhaust emission regulations. Incorrect engine settings may adversely affect exhaust emissions, engine performance and fuel consumption, as well as causing high temperatures, which will result in damage to the catalytic converter and the vehicle.

While Land Rover North America Inc. maintains that an authorised Land Rover dealer is best equipped to carry out repairs and maintenance on the emission control system, such work may be carried out by any competent automotive repair shop or individual using certified parts.

Road testing on dynamometers (‘rolling roads’)

WARNING

Because your vehicle is equipped with anti-lock brakes and permanent four-wheel drive, it is essential that any dynamometer testing is carried out ONLY by a qualified person familiar with the dynamometer testing and safety procedures practised by Land Rover dealers. Contact your Land Rover dealer for further information.

Owner maintenance

SAFETY IN THE GARAGE

Whenever you carry out maintenance on your vehicle, the following safety precautions should be followed at all times.

- ALWAYS keep hands, hair, tools and items of clothing clear of all drive belts and pulleys.
- DO NOT touch exhaust or cooling system components until they are cool.
- DO NOT touch electrical leads or components with the starter switch turned on.
- NEVER leave the engine running in an unventilated area - exhaust gases are poisonous and contain carbon monoxide, which can cause unconsciousness and may even be fatal.
- DO NOT work beneath the vehicle with the wheel change lifting jack as the only means of support.
- ENSURE sparks and naked lights are kept away from the engine compartment.

WARNING

Cooling fans may continue to operate after the engine is switched off.

When the engine is hot, the cooling fans may also COMMENCE operating AFTER the engine is switched off and continue operating for up to 10 minutes. Keep clear of all fans while working in the engine compartment.

Poisonous liquids

Most liquids and lubricants used in motor vehicles are poisonous and should not be consumed or brought into contact with open wounds. These include: battery acid, anti-freeze, brake, clutch and power steering fluids, as well as gasoline, engine oil and windscreen washer additives.

For your own safety, ALWAYS read and obey all instructions printed on labels and containers.

Used engine oil

Prolonged contact with engine oil can cause serious skin disorders, including dermatitis and skin cancer. ALWAYS wash thoroughly after contact.

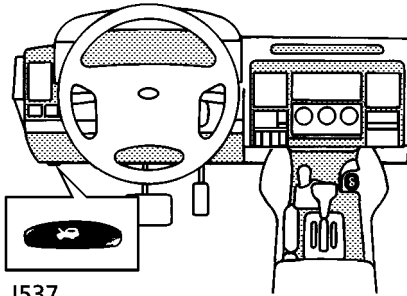
It is illegal to pollute drains, water courses or soil with toxic chemicals such as used engine oil. ALWAYS dispose of vehicle fluids and lubricants at authorised waste disposal sites or at garages which provide facilities for the receipt of used engine oil and toxic chemicals. If in doubt, contact your Local Authority for advice.

PROTECT THE ENVIRONMENT!

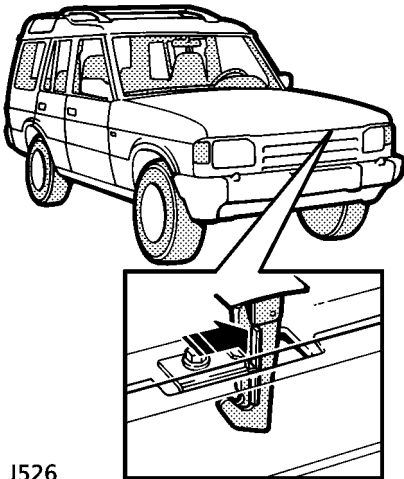
Hood opening

WARNING

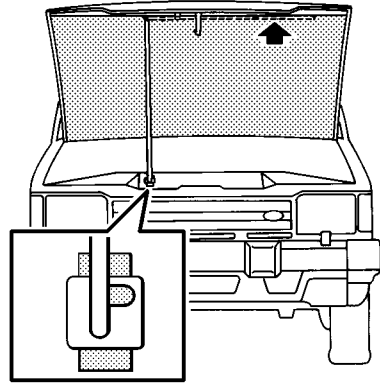
Ensure the wipers are switched off and have returned to the parked position before opening the hood.



Pull the hood release handle.



Push the safety catch to the right and raise the hood.

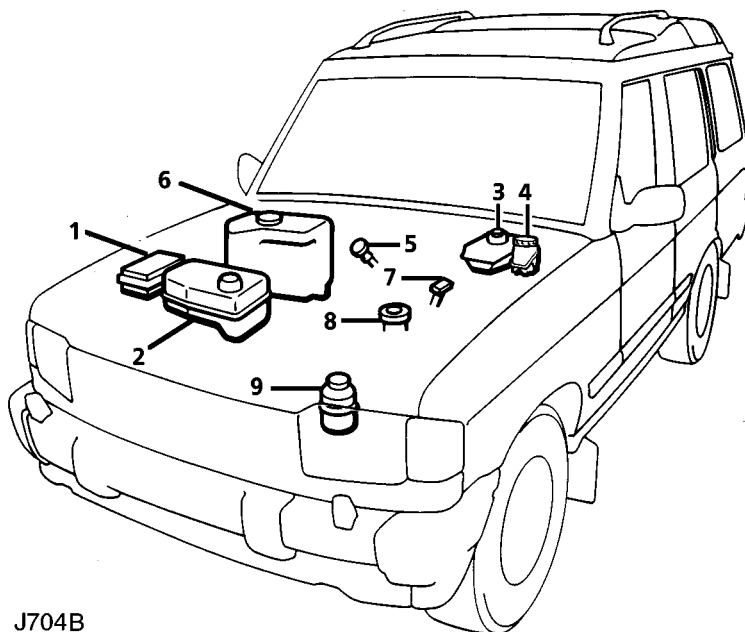


Release the support stay from the underside of the hood and fit the stay in the slotted hole in the locking platform.

Closing the hood

After closing the hood, check that the lock is fully engaged by attempting to lift the front edge of the hood. This should be free from all movement.

Engine compartment



J704B

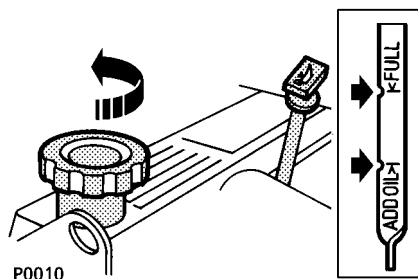
1. Fusebox - engine compartment.
2. Cooling system reservoir.
3. Brake fluid reservoir.
4. Clutch fluid reservoir.
5. Automatic gearbox fluid level dipstick (if fitted).
6. Washer reservoir.
7. Engine oil dipstick.
8. Engine oil filler cap.
9. Power steering reservoir.

Instructions on how and when Owner maintenance should be carried out are included on the following pages.

WARNING

Before carrying out maintenance checks or working in the engine compartment, ALWAYS observe the safety precautions listed under 'Safety in the garage', at the beginning of the Owner maintenance section of this handbook.

Engine compartment



ENGINE OIL LEVEL-CHECK & TOP-UP

Check the oil level every 250 miles (400 km), when the engine is HOT and with the vehicle resting on level ground.

Switch off the engine and let the vehicle stand for five minutes to allow the oil to drain back into the sump. Withdraw the dipstick and wipe the blade clean and then fully reinsert the dipstick and withdraw again to check the level, which should **NEVER** be allowed to fall below the lower mark on the dipstick.

To top-up, unscrew the oil filler cap and add oil to maintain the level between the UPPER and LOWER marks on the dipstick.

DO NOT OVERFILL!

As a general guide, if the level on the dipstick:

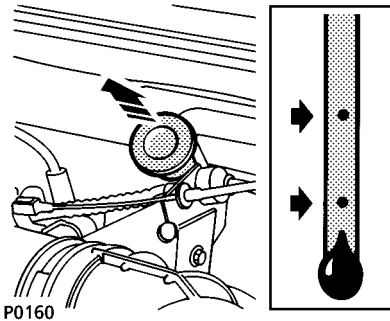
- is nearer to the upper mark than the lower, add no oil.
- is nearer to the lower mark than the upper, add 1/2 US quart (0.5 litre) of oil.
- is below the lower mark, add 1 US quart (1 litre) of oil and re-check the level after a further five minutes.

NOTE: If it is necessary to check the oil level when the engine is cold, **DO NOT** start the engine. Follow the procedure detailed above, but re-check the oil level as soon as the engine has reached its normal operating temperature.

Oil specifications

It is essential to use an oil suitable for the climatic conditions in which the vehicle is to be operated. Precise specifications are shown in 'General data'. If in doubt, contact your Land Rover dealer.

Engine compartment



AUTOMATIC GEARBOX FLUID LEVEL CHECK & TOP-UP

The automatic gearbox fluid must ONLY be checked when the engine and gearbox are COLD (see 'Note' below).

Ensure the vehicle is resting on level ground, then select 'P' (park) and start the engine.

With the engine running at idle speed and both foot brake and parking brake applied, move the selector lever to position '1' and then back to position 'P'.

With the engine running, withdraw the dipstick from the filler tube and wipe the blade clean. Reinsert the dipstick fully and withdraw again to check the level. Top-up to maintain the level between the UPPER and LOWER markings on the dipstick, with a fluid meeting the minimum specification defined in 'General data'.

NOTE: *In extreme ambient temperatures, the level of fluid showing on the dipstick will vary. To ensure an accurate reading, the level should be checked at an ambient temperature of 68° F (20° C).*

DO NOT OVERFILL!

Engine compartment

COOLING SYSTEM TOP-UP

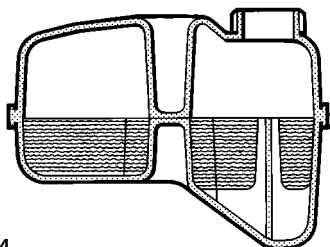
WARNING

NEVER remove the filler cap when the engine is hot - escaping steam or scalding water could cause serious personal injury.

The coolant level in the expansion tank should be checked at least weekly (more frequently in high mileage or arduous operating conditions). Always check the level **WHEN THE SYSTEM IS COLD**.

Unscrew the filler cap slowly, allowing the pressure to escape before removing completely.

NEVER run the engine without coolant.



J484

Top-up with a 50% mixture of anti-freeze and water so that the surface of the coolant is level with the top of the indicator inside the tank. Ensure the cap is tightened fully after top-up is completed.

If the level has fallen appreciably, suspect leakage or overheating and arrange for your dealer to examine the vehicle.

DO NOT OVERFILL!

This may result in damage to the radiator.

Anti-freeze

Anti-freeze contains important corrosion inhibitors. Ensure the 50% anti-freeze/water solution is maintained and topped up all year round (not just in cold conditions). Failure to do so may cause corrosion of the radiator and engine components.

Use an ethylene glycol based anti-freeze (containing no methanol) with non-phosphate corrosion inhibitors suitable for use in aluminum engines. The specific gravity of a 50% anti-freeze solution at 68° F (20° C) is 1.075 and protects against frost down to -33° F (-36° C).

WARNING

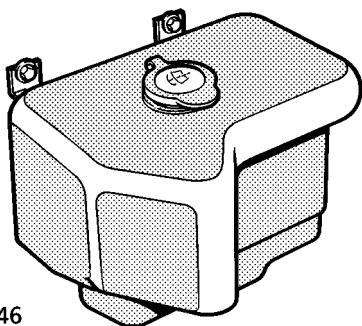
Prevent anti-freeze coming in contact with the skin or eyes. If this occurs, rinse immediately with plenty of water.

Anti-freeze is poisonous and can be fatal if swallowed. If consumption is suspected, seek medical attention immediately.

Anti-freeze will damage painted surfaces.

NEVER top-up with salt water. Even when travelling in territories where the water supply contains salt, always ensure you carry a supply of fresh (rain or distilled) water.

Engine compartment



J446

WINDSCREEN WASHER TOP-UP

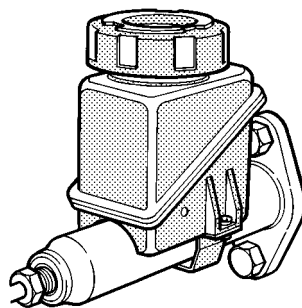
The windscreen washer reservoir also supplies the rear screen and headlight washer jets (where fitted).

Check the reservoir level and top-up with a mixture of water and an approved screen washer solvent to approximately 1 inch (25 mm) below the bottom of the filler neck. In cold weather, to prevent freezing, use a screen washer solvent.

Operate the washer switches to check that the nozzles are clear.

WARNING

DO NOT use an engine coolant anti-freeze solution in the washer reservoir. This will damage painted surfaces.



J477

CLUTCH FLUID TOP-UP

Manual transmission

Wipe the filler cap clean before removing to prevent dirt from entering the reservoir.

Check the fluid level and top up, if necessary, to the bottom of the filler neck, using *FMVSS 116 DOT 4* fluid.

Use only new fluid from a sealed container (old fluid from opened containers or fluid previously bled from the system, must NOT be used).

If significant topping up is required, a leak is indicated - consult your dealer immediately.

DO NOT OVERFILL!

WARNING

DO NOT drive the vehicle with the fluid below the 'MIN' mark.

Clutch fluid will damage painted surfaces - soak up any spillage with an absorbant cloth immediately and wash the area with a mixture of car shampoo and water.

If clutch fluid should come into contact with the skin or eyes, rinse immediately with plenty of water and then seek medical advice.

Engine compartment

BRAKE FLUID CHECK

WARNING

Contact your dealer immediately, if brake pedal travel is unusually long, or if there is any appreciable drop in brake fluid level.

DO NOT drive the vehicle with fluid level below the 'MIN' mark.

Brake fluid will damage painted surfaces, soak up any spillage with an absorbant cloth immediately and wash the area with a mixture of car shampoo and water.

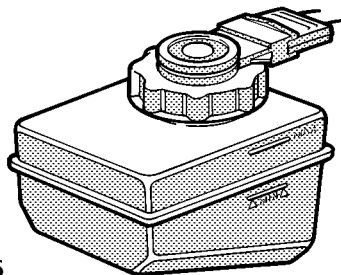
If the brake fluid should come into contact with the skin or eyes, rinse immediately with plenty of water and then seek medical advice.

The fluid level will fall slightly during use as a result of brake pad wear, but should not be allowed to fall below the 'MIN' mark. Any substantial drop in fluid indicates a leak in the system, in which case the vehicle must NOT be driven and you should contact your dealer.

Before checking the fluid level, turn the starter switch to position 'II' (brake pressure warning light illuminates). If the vehicle has been left standing, the hydraulic pump should be heard to operate; if it does not, press the brake pedal a few times to activate the pump.

Wait until the pump stops and the warning light extinguishes, before checking the fluid level, or topping up as follows.

With the vehicle on level ground, check the fluid level at least every month. Check the level visually through the side of the transparent container without removing the filler cap.



J476

Topping-up

Wipe the filler cap clean before removing to prevent dirt from entering the reservoir, and top up to the 'MAX' mark using FMVSS 116 DOT 4 fluid.

Use only new fluid from an airtight container (old fluid, or fluid from an open container absorbs moisture - adversely affecting braking performance).

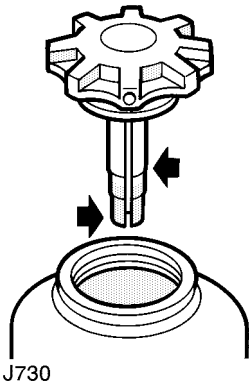
DO NOT OVERFILL!

WARNING

It is vital that the hydraulic brake fluid is completely renewed at 30,000 mile (50,000 km) intervals or every 24 months, whichever is sooner.

At 60,000 mile (100,000 km) intervals or every 4 years, whichever is sooner, all hydraulic brake fluid, seals and flexible hoses should be renewed. All working surfaces of the caliper cylinders should be examined and the components renewed where necessary. Under arduous operating conditions, these intervals must be reduced. Please consult your Land Rover dealer.

Engine compartment



POWER STEERING TOP-UP

ONLY check the fluid level when the engine is cold and switched off, and ensure that the steering wheel is not turned after stopping the engine.

Wipe the filler cap clean to prevent dirt from entering the reservoir.

Remove the filler cap and wipe the dipstick clean using a lint free cloth. Refit the cap fully and then remove it again to check the fluid level. If necessary, top up with a fluid meeting *Dexron II D* specification to maintain the fluid level between the upper mark and the bottom of the dipstick. Ensure that no dirt enters the reservoir.

DO NOT fill above the UPPER mark on the dipstick.

WARNING

The engine must NOT be started if the fluid level has dropped below the bottom of the dipstick - severe damage to the pump could result.

Tyres

WARNING

Never drive your vehicle if the tyres are badly worn, cut or damaged, or if the pressures are incorrect.

Incorrectly inflated tyres wear rapidly and seriously affect the vehicle's safety and road handling characteristics.

Caring for your tyres

Always drive with consideration for the condition of the tyres and frequently inspect the tread and side walls for signs of distortion or damage (in particular, look for lumps, cuts and bulges).

Tyre pressures

Tyre pressures should be checked at least once a week with normal road use, but should be checked DAILY if the vehicle is used off-road.

Check the pressures - including the spare - when the tyres are cold (air pressure naturally increases in warm tyres). The recommended pressures are shown in 'General data'.

WARNING

If the vehicle has been parked in strong sunlight or is used in high ambient temperatures, DO NOT reduce tyre pressures; instead, move the vehicle into shade and allow the tyres to cool before checking.

Tyre wear

Some tyres fitted as original equipment have wear indicators moulded into the tread pattern. When the tread has worn down to 1/16 inch (1.6 mm) the indicators start appearing at the surface of the tread pattern, producing the effect of a continuous band across the width of the tyre.

A tyre **MUST** be replaced as soon as an indicator band becomes visible, or when the tread depth reaches the minimum permitted by legislation.

Tread depth must be checked regularly (at every maintenance service, or more frequently). Always replace a tyre before the tread reaches a remaining depth of 1/16 inch (1.6 mm). **DO NOT** drive with tyres worn to this limit, or the safety of the vehicle and occupants will be adversely affected.

NOTE: *After off-road use, check to make sure there are no lumps or bulges in the tyres, or exposure of the ply or cord structure.*

Valve caps

Keep the valve caps screwed down firmly to prevent dirt from entering the valve.

Tyres

Replacement tyres

Wheel rims and tyres are matched to suit the handling characteristics of the vehicle. For safety, ALWAYS check that replacement tyres comply with the manufacturer's original specification and that the load rating shown on the side wall is the same as that of the original equipment. Contact your Land Rover dealer for further information or assistance.

WARNING

ALWAYS use the same make and type of radial-ply tyres front and back. DO NOT use cross-ply tyres and DO NOT interchange tyres from front to back.

If your vehicle is fitted with tubeless alloy road wheels, they will not accept inner tubes. DO NOT fit a tubed tyre.

DO NOT replace wheels with any type other than genuine Land Rover parts. Wheels and tyres are designed for both off-road and on-road usage and have a very important influence upon the correct operation of the suspension systems and vehicle handling. Alternative wheels which do not meet original equipment specifications should not be installed on your vehicle.

NOTE: Tyre sizes are shown in 'General data'.

Snow chains

Land Rover approved snow chains are designed for on-road use in extreme snow conditions only, and are not recommended for off-road use. ALWAYS observe the following recommendations:

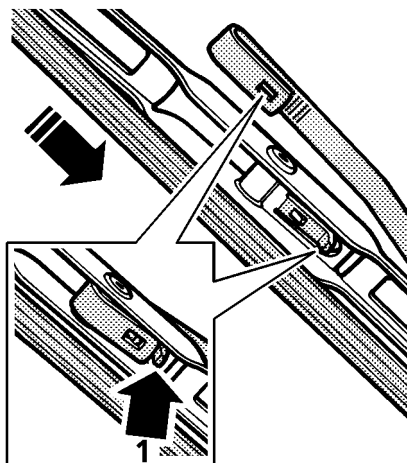
- ONLY Land Rover approved chains may be fitted to the front wheels, or fitted to all four wheels.
- Ensure the gearbox differential is locked.
- Always adhere to the snow chain fitting and retensioning instructions and the speed limitations, recommended for varying road conditions. NEVER exceed 30 mph (50 km/h).
- Avoid tyre damage by removing the chains as soon as the road is free from snow.

For further information about approved snow chains, consult your Land Rover dealer.

WARNING

DO NOT fit unapproved snow chains to the front wheels - this could damage brake components.

Washer jets & wiper blades



P0210

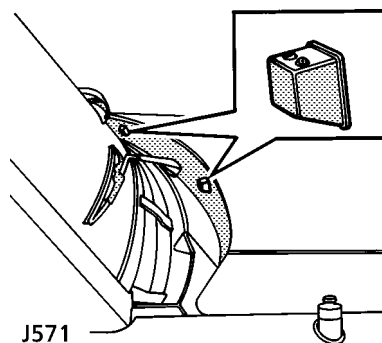
WIPER BLADE REPLACEMENT

To renew a front or rear wiper blade, lift the wiper arm away from the windscreen, press the retaining clip (1) and slide the wiper blade down the arm to remove.

Locate the new blade assembly on the arm and push into engagement until the blade is retained by the clip.

Always fit replacement wiper blades that are identical to the original specification.

NOTE: Before renewing the rear wiper blade, it is necessary to remove the spare wheel from its mounting position on the rear door.



WINDSCREEN WASHER JETS

Use a needle as a probe to clear a blocked washer jet.

To redirect a windscreen washer jet, insert a needle into the hole and lever gently into the desired position. For optimum efficiency, direct each pair of washer jets so that the inside spray is to the middle and the outside spray is to the top of the windscreen.

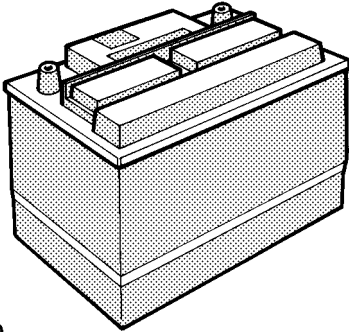
NOTE: The rear screen washer jet is located towards the top left-hand side of the rear door, just below the roof drip channel. The jet can be redirected in the same way as the windscreen washer jets.

HEADLIGHT WASHERS

The headlight washers operate automatically whenever the windscreen washers are operated, provided the headlights are illuminated. The spray jets are set during manufacture and should not need to be adjusted.

NOTE: Ensure an approved screen washer solvent is used in the windscreen washer reservoir to prevent freezing.

Battery



J480

WARNING

Batteries contain sulphuric acid. If the acid comes in contact with the eyes or skin, wash immediately with copious quantities of cold water and seek medical advice.

During normal operation batteries emit explosive hydrogen gas - ensure sparks, flames and other ignition sources (including cigars and cigarettes) are kept away from the engine compartment.

To reduce the risk of a short circuit, remove all metal wrist bands and jewellery before working in the engine compartment and NEVER allow the battery terminals or vehicle leads to make contact with tools or any metal part of the vehicle.

ALWAYS remove the starter key BEFORE disconnecting the battery. Failure to do this could cause a failure of the SRS/airbag.

The battery fitted to your vehicle requires minimal attention as follows:

- In temperate climates check the electrolyte level once every 3 years. In hot climates check the level annually.
- Occasionally wipe the battery casing to remove dirt and grease.
- Keep the battery terminals clean and free from corrosion by occasionally smearing them with petroleum jelly.

Checking the electrolyte level

Gently pry off the vent covers (or unscrew, if vent plugs are fitted) and inspect the electrolyte level of each cell. This should be no lower than 0.04 in (1 mm) above the top of the plates. If necessary, top up (with distilled water only) to a maximum of 0.12 in (3 mm) above the plates.

Battery removal and replacement

WARNING

ALWAYS Turn the starter switch to position '0', switch off all electrical equipment and remove the key before disconnecting the battery.

ALWAYS disconnect the negative ('-') terminal first (when replacing the battery, connect the positive ('+') terminal first).

To avoid damaging the vehicle's electrical system, ensure correct polarity when refitting the battery.

Battery

WARNING

ONLY fit a replacement battery of the same type and specification as the original. Other batteries may vary in size and have different terminal positions, capable of creating a potential fire hazard if the terminals or leads were to come into contact with the battery clamp assembly.

DO NOT let the engine run without the battery connected.

DO NOT use a high-speed battery charger as a starting aid.

When using a high-speed charger to charge the battery, the battery must be disconnected from the rest of the vehicle's electrical system.

NEVER allow the battery terminals or vehicle leads to make contact with tools or metal parts of the vehicle.

Battery charging

Batteries generate explosive gases, contain corrosive acid and supply levels of electric current high enough to cause serious burns. Before charging, ensure the battery is properly topped up and ALWAYS observe the following precautions while charging the battery.

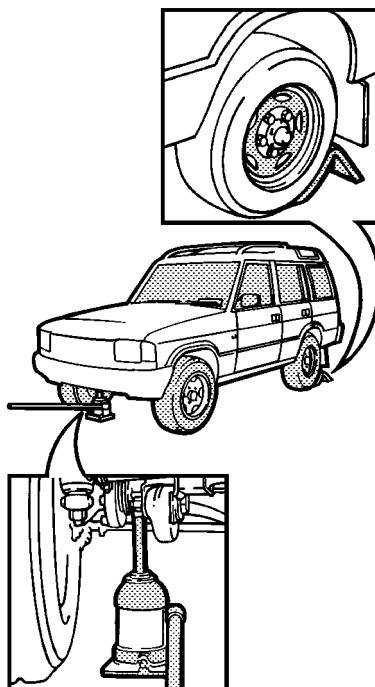
- Always remove the battery from the vehicle.
- Make sure the battery charger is disconnected from its power supply before connecting the leads to the battery terminals.
- Make sure the charging leads are securely clamped before switching on the charger and DO NOT move the clamps while the charger is switched on.
- Shield your eyes or avoid leaning over the battery.
- Keep the area around the top of the battery well ventilated.
- Keep sparks, flames and other sources of ignition (i.e. cigarettes) away from the battery (batteries emit inflammable hydrogen during and after charging).
- When charging is complete, switch off the charger before disconnecting the charging leads and then leave the battery for an hour BEFORE reconnection to the vehicle.

Wheel changing

IMPORTANT INFORMATION

Before jacking the vehicle always observe the following precautions!

- Park your vehicle away from the highway, and make your passengers wait in a safe area AWAY from the vehicle.
- Switch on the hazard warning lights to alert other road users.
- Ensure the jack is positioned on firm, level ground.
- Always engage the differential lock before jacking (warning light on fascia illuminates).
- Apply the parking brake and engage 1st gear in the main gear box (select 'P' for automatic transmission) and select 'L' in the transfer box. Turn off the starter switch and remove the key.
- NEVER jack the vehicle with passengers inside, or with a caravan or trailer connected!
- NEVER work beneath the vehicle with the jack as the only means of support. The jack is designed for wheel changing only!



J489

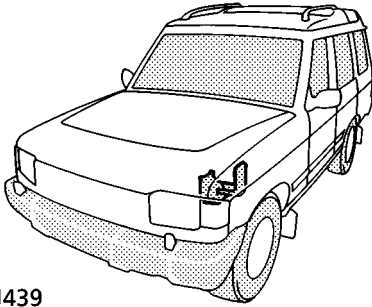
Using the Wheel Chock

WARNING

Before raising the vehicle, it is ESSENTIAL to chock one of the road wheels; the parking brake acts on the transmission, not on the rear wheels, and therefore may not hold the vehicle when raised.

Always chock the wheel diagonally opposite the one to be removed - chocking the front of a front wheel or the back of a rear wheel, using the chocks provided.

Wheel changing



J439

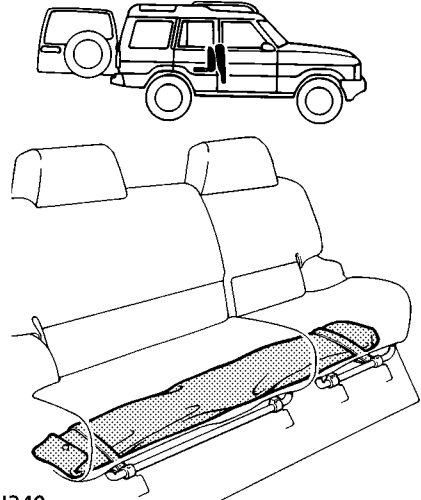
The jack and wheel chock are stowed in the front of the engine compartment. The jack handle and tools are stowed in a tool bag under the rear seat.

WARNING

Tools stowed in the engine compartment will be hot if the engine has been running.

DO NOT use the spare wheel securing nuts in place of the road wheel nuts.

The wheels are extremely heavy. Take care when lifting and particularly when removing the spare wheel from its mounting position on the rear door.

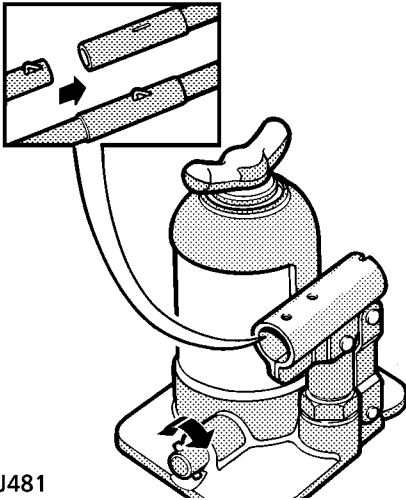


J340

Removing the spare wheel

- Remove the nuts securing the wheel cover using the wheel nut wrench supplied in the tool kit.
- Remove the nuts securing the spare wheel to the carrier and lift off the wheel.

Wheel changing



J481

Operating the jack

Slot the jack lever together, ensuring that the spring clip protrudes from the engagement slot where the two parts join (see inset). Close the jack release valve by turning it fully clockwise and then insert the lever into the socket where shown. Pump the lever up and down to raise the jack.

To lower the jack, withdraw the lever and slot the notched end over the pegs on the release valve. Slowly turn the release valve anti-clockwise allowing the weight of the vehicle to lower the jack.

WARNING

Ensure that the jack is positioned on firm, level ground.

DO NOT use the jack to raise the vehicle until you have carefully read and understood 'Positioning the jack', later in this section. If in doubt, consult your dealer.

Care must be taken to avoid accidental contact with any underbody parts, especially the hot exhaust system components, likely to cause personal injury during raising or lowering of the vehicle.

Ensure that the space under and around the vehicle is free from obstruction as it is lowered.

Wheel changing

Positioning the jack

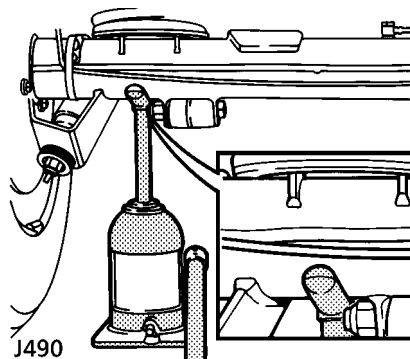
Always position the jack from the front or rear of the vehicle directly in line with the jacking points.

WARNING

NEVER use the jack from the side of the vehicle.

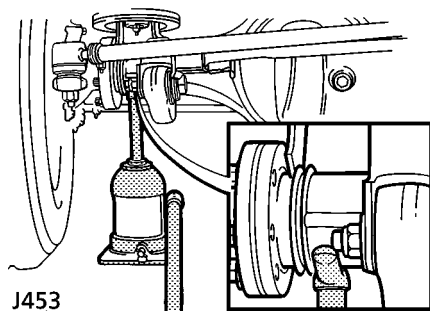
ALWAYS use the complete, two piece, jack lever throughout to minimise any chance of accidental contact with a hot exhaust system.

ONLY jack the vehicle using the jack location points described or damage to the vehicle could occur.



Rear jacking point:

Push the mud flap up over the tyre to allow clear access (return it to its correct position when the wheel change is complete). Position the jack so that, when raised, it engages with the rear axle casing immediately below the coil spring and as close as possible to the shock absorber mounting bracket.



Front jacking point:

Position the jack so that, when raised, it will engage with the front axle casing immediately below the coil spring. The jack cradle must engage between the flange at the end of the axle casing and the large bracket to which the front suspension members are mounted (see inset).

Wheel changing

Changing a wheel

Before raising the vehicle, ensure that all the precautions listed at the beginning of this section have been observed and, in particular, that the wheel chock is correctly positioned and that the differential lock is engaged.

- Use the wheel nut wrench to slacken the wheel nuts half a turn anti-clockwise.
- Raise the vehicle until the tyre is clear of the ground, and remove the wheel nuts and wheel (DO NOT damage the surface of wheels by placing them face down on the road).
- On alloy wheels, lightly oil or grease (using an approved anti-seize compound) the wheel mounting spigot, to minimise the tendency for adhesion between the wheel and the spigot. Ensure that no oil or compound comes into contact with the brake components. If, due to an emergency situation, this treatment is not practicable, refit the spare wheel for the time being, but remove and treat the wheel at the earliest opportunity.
- Fit the spare wheel and tighten the wheel nuts, ensuring they are firmly seated. DO NOT fully tighten whilst the tyre is clear of the ground.

WARNING

When fitting a wheel, ensure that the mating faces of the hub and wheel are clean and free from rust - an accumulation of dirt and rust could cause the wheel nuts to become loose and result in an accident.

- Lower the vehicle and remove the jack and wheel chock.
- Fully tighten the wheel nuts. DO NOT OVERTIGHTEN by using foot pressure or extension bars on the wheel nut wrench, as this could overstress the wheel studs.
- REMEMBER to disengage the differential lock and change to 'H' (high range) before driving.
- Finally, check the tyre pressure and wheel nut torque at the earliest opportunity (see 'General data').

WARNING

Always secure tools, jack and spare wheel in their proper storage positions after wheel changing.

Care of the jack

Examine the jack occasionally; clean and grease the moving parts, particularly the ram, to prevent corrosion.

To avoid contamination, the jack should always be returned to its fully closed position and must always be stowed upright.

Fuses

Fuses are simple devices which protect electrical equipment against the effects of excess current.

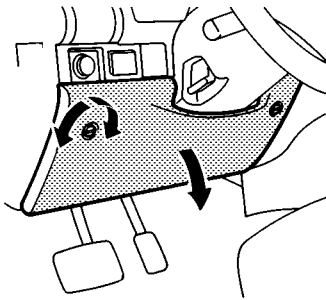
Renewing a fuse

Always turn the starter switch to position 'O' and switch off the affected electrical circuit before removing a fuse.

Press the fuse removal tweezers onto the head of a fuse and pull. Always replace a fuse with another of the same value. If the replacement fuse blows immediately, the circuit **MUST** be checked by a Land Rover dealer.

Fuses are colour coded to help identify their amperage, as follows:

VIOLET	3
TAN	5
BROWN	7.5
RED	10
BLUE	15
YELLOW	20
WHITE	25
GREEN	30



J527

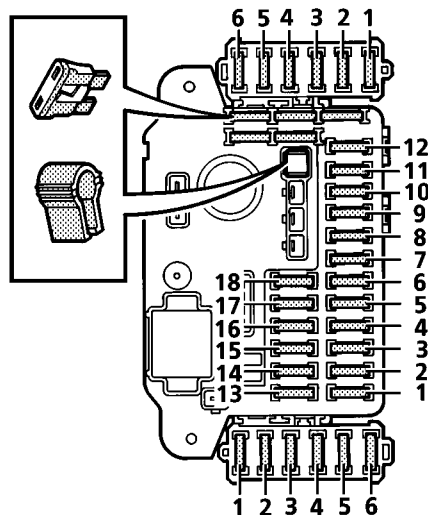
WARNING

Fit only replacement fuses of the same rating and type. Always rectify the cause of a failure, before replacing a fuse. Seek qualified assistance if necessary.

NOTE: *Some additional spare fuses are included in the fuse box.*

The main fusebox is fitted below and to one side of the steering column; remove the cover by releasing the fixing screws using a coin or small screwdriver.

A label in the fuse box cover shows the circuits protected, the fuse values and their locations. They are also listed on the following page.



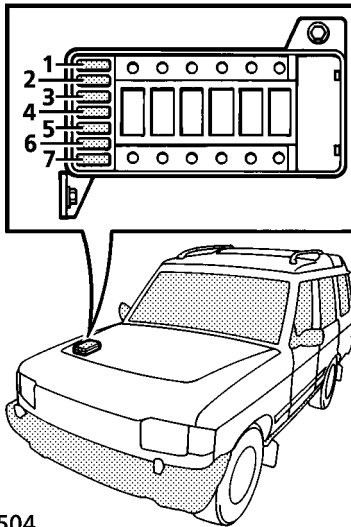
Fuses

Fuse No.	Rating (amps)	Electrical circuit
1	15	Stop lights, direction indicators
2	10	LH side lights
3	10	Radio/cassette/CD player
4	10	RH headlight main beam
5	10	LH headlight main beam
6	20	Cigar lighter, vanity mirror, heated seats
7	10	SRS/airbag
8	10	RH side lights
9	10	Rear fog guard lights
10	10	LH headlight dipped beam
11	10	RH headlight dipped beam
12	10	Multi-function unit
13	10	Ignition feed for multi-function unit
14	10	Instruments, clock, speed transducer, SRS (secondary)
15	10	Air conditioning, windows
16	20	Washers & wipers - front
17	10	Starter
18	10	Wash/wipe - rear, mirrors, cruise control
Satellite 1		
1	15	Anti-theft alarm
2	20	Headlight washers
3	10	Engine management
4	5	Anti-lock brakes
5	10	Anti-theft alarm
6	25	Rear air conditioning, heater
Satellite 2		
1	30	Electric windows - front
2	30	Electric windows - rear
3	10	Anti-lock braking
4	15	Central door locking
5	30	Electric sunroof
6	20	Trailer lights, auxiliary

NOTE: In the event of failure of any electrical system or component, always check fuses 12 and 13 in addition to the appropriate component fuse.

NOTE: The SRS warning light in the instrument pack, will illuminate if fuse 14 is damaged, or removed with the starter switch in position 'I' or 'II'.

Fuses



J504

ENGINE COMPARTMENT FUSE BOX

WARNING

Batteries emit explosive hydrogen gas; ensure that sparks, flames and other ignition sources (i.e. cigarettes) are kept away from the engine compartment.

A second fuse box is located on the right side of the engine compartment adjacent to the engine coolant reservoir.

The circuits protected and their locations are shown on a printed diagram on the inside of the fuse box cover and are also listed below.

WARNING

Fit only replacement fuses of the same rating and type. Always rectify the cause of a failure, before replacing a fuse. Seek qualified assistance if necessary.

Fuse No.	Rating (amps)	Electrical circuit
1	30	Heated rear window
2	20	Lights
3	30	Air conditioning
4	30	Hazard warning lights, horn
5	30	Anti-lock braking
6	5	Fuel pump
7	20	Fuel system

NOTE: Six main circuit fuses are also located in the engine compartment fuse box. If a fault is suspected in one of the main circuit fuses, contact your dealer for assistance.

Bulb replacement

REPLACEMENT BULBS	Watts
Headlight	60/55
Front side light	5
Direction indicator light	21
Front fog light	
Tail light	5
Stop light	21
Rear fog guard light	21
Reversing light	21
High mounted stop light	21
Side repeater light	5
Number plate light	5
Interior light (front)	10
Interior light (rear)	5
Loadspace light	10
Vanity mirror light	1.2
Glovebox light	5

NOTE: All bulbs must be rated at 12 volts.

NOTE: The front fog lights, which are sealed beam units, should only be replaced by an authorised Land Rover dealer.

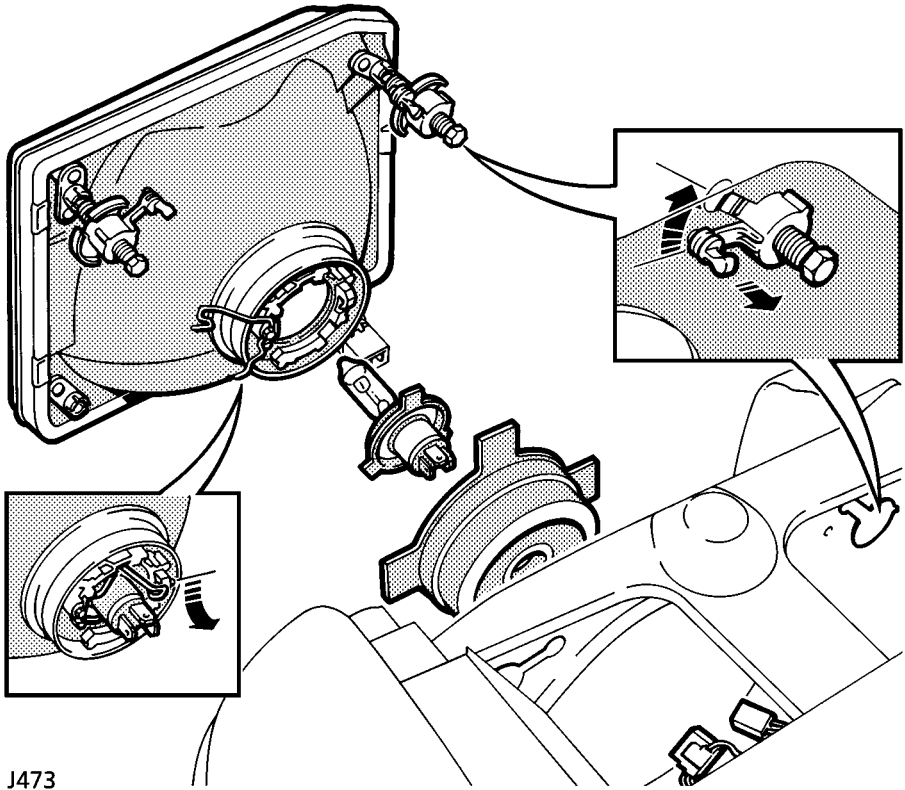
IMPORTANT INFORMATION

Before replacing a bulb, always switch off the starter switch and appropriate lighting switch, to prevent any possibility of causing a short circuit. Only use new bulbs of the same type and with the same specification.

Halogen bulbs

Halogen bulbs are used for the headlights and the front fog lights. Take care NOT to touch this type of bulb with your fingers; always use a cloth to handle them. If necessary, clean the bulb with methylated spirits to remove fingerprints.

Bulb replacement



J473

HEADLIGHT AND SIDELIGHT

Light unit removal

To replace either headlight or sidelight, remove the light unit as follows:

Disengage the three retaining clips and rotate them approximately 10 degrees (see inset) to align with the slots. The light unit can now be released forward.

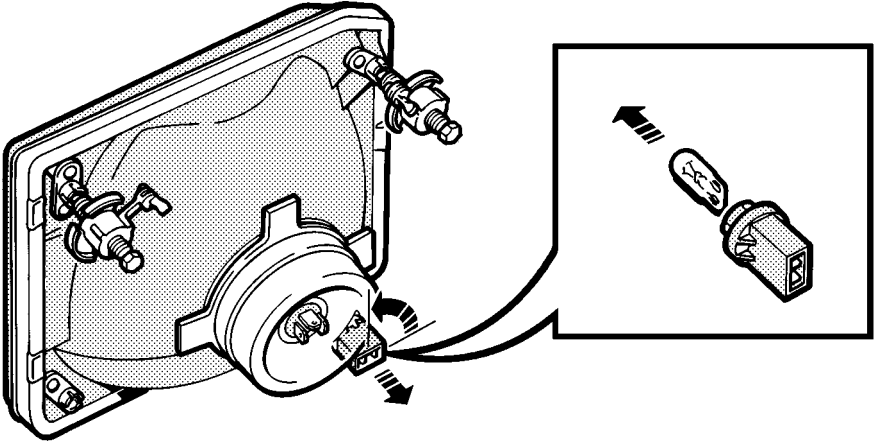
Headlight bulb

Disconnect the electrical multi-plug and remove the rubber cover. Release the spring clip and withdraw the bulb. Replace the bulb ensuring that the larger tab is pointing towards the top of the headlight.

Replace the rubber cover, ensuring the slit in the cover is at the top of the headlight, and pressing the centre firmly to seal around the electrical contacts of the bulb.

NOTE: Do not touch the bulb glass with your fingers, if necessary, clean the bulb with methylated spirits.

Bulb replacement



J474

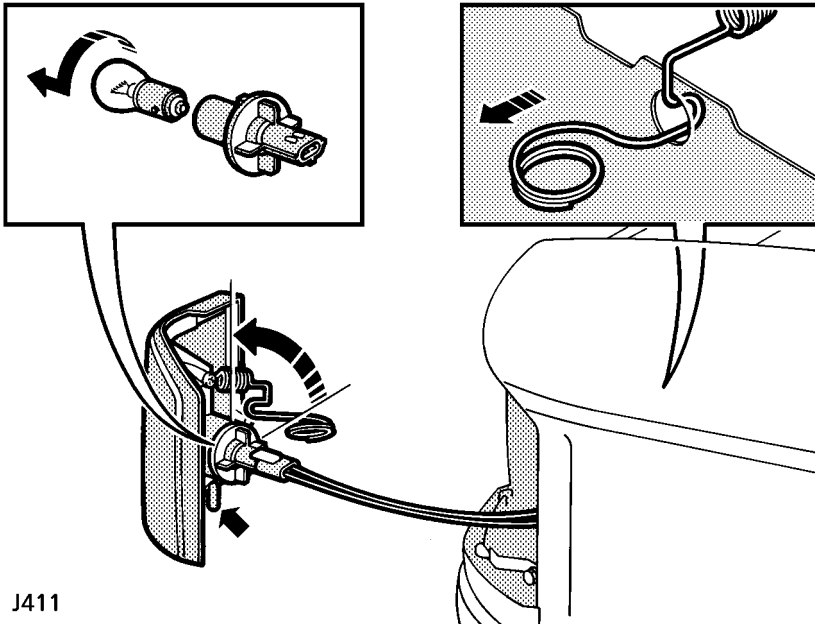
Replacing the headlight unit

Replacement is a reversal of the removal procedure.

Sidelight bulb:

With the light unit removed (see previous page), disconnect the electrical multi plug and disengage the bulb holder, by twisting a quarter turn anti-clockwise. Withdraw the bulb holder to replace the bulb.

Bulb replacement



J411

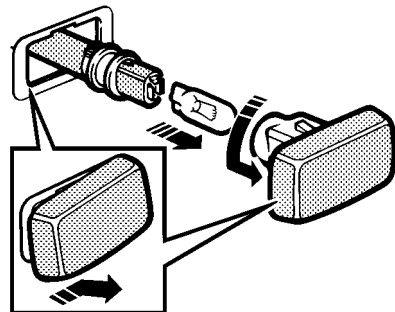
FRONT DIRECTION INDICATORS

Unclip the spring to release the light unit. Lift out the light unit and turn the bulb holder anti-clockwise to release. Push and twist the bulb to remove.

When replacing the light unit, locate the two lugs at the bottom of the unit before re-engaging the spring.

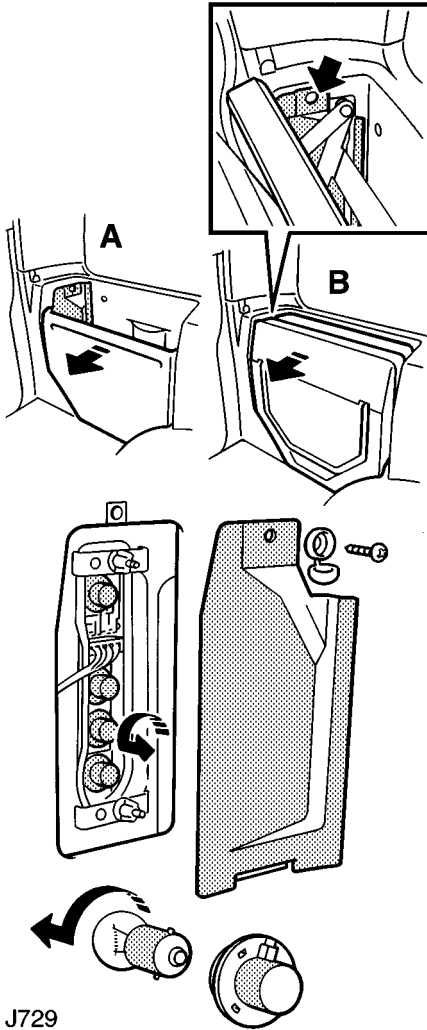
SIDE REPEATER LIGHT

Push the lens firmly to the right, lift the left edge and withdraw the light unit from the wing. Twist to release the bulb holder and pull the bulb to remove.



J445

Bulb replacement



J729

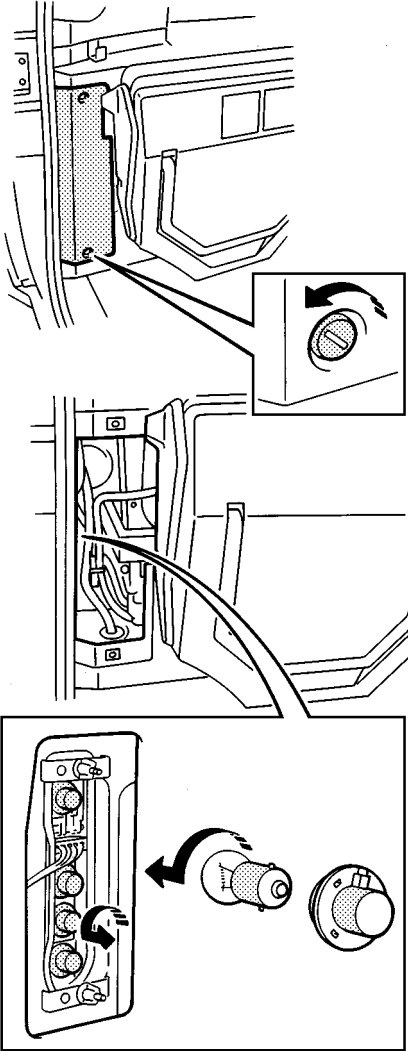
REAR LIGHT CLUSTER

(Stop/tail, reverse, direction indicator
& fog guard lights)

To gain access to the light cluster, either: remove the side pocket cover (picture 'A') or, half pull out the inward facing seat (picture 'B'), as applicable. Use a small screwdriver to lever the fastener cover free (the fastener is located by the arrow in the inset) and then unscrew the fastener to remove the access panel (as shown in the lower illustration).

Twist and remove the appropriate bulb holder, then push and twist to release the bulb.

Bulb replacement



J726

REAR LIGHT CLUSTER

(Stop/tail, reverse, direction indicator
& fog guard lights)

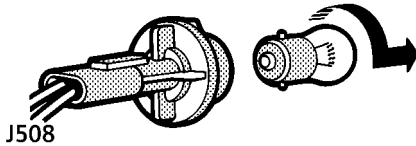
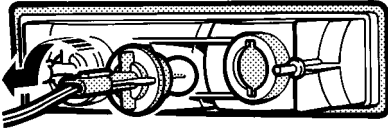
Vehicles fitted with rear air conditioning:

To gain access to the rear of the left hand light unit, remove the access panel by using a small coin to twist the two turn-buckles 90° anti-clockwise, then pull the panel away.

By feel, locate the damaged bulb in the rear of the light unit, then twist and remove the appropriate bulb holder and twist to release the bulb.

NOTE: To access the right hand rear light unit, see the previous page.

Bulb replacement

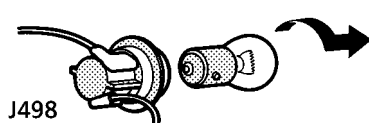
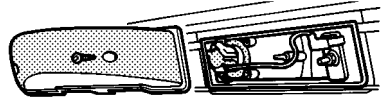


J508

BUMPER MOUNTED LIGHTS

(Tail lights & direction indicators)

Reach behind the bumper and twist to remove the relevant bulb holder, push and twist to release the bulb.



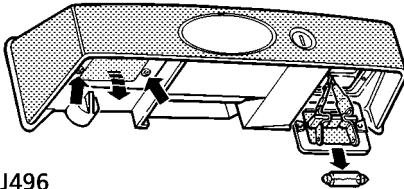
J498

HIGH MOUNTED STOP LIGHT

Remove the screws from the cover and twist to remove the bulb holder. Push and twist to release the bulb.

FRONT FOG LIGHTS

To change a front fog light bulb entails removing the light unit from the vehicle. To ensure correct refitting of the light unit, owners are advised to entrust bulb changing to a Land Rover dealer.

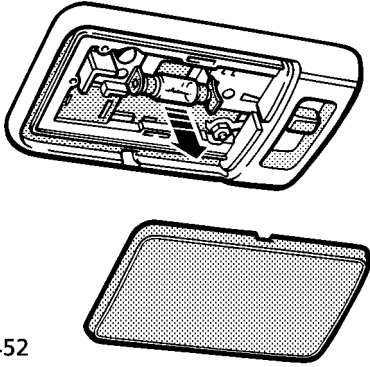


J496

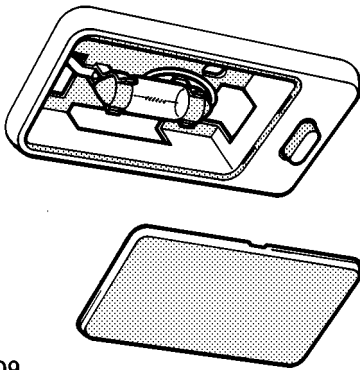
NUMBER PLATE LIGHTS

Remove the screws and withdraw the lens. Pull the bulb out.

Bulb replacement



J452



J509

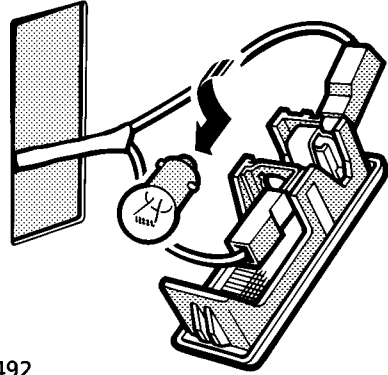
INTERIOR LIGHT

Pry the lens from the unit. Spread the bulb holders to release the bulb.

GLOVEBOX LIGHT

Slide the light unit to the left and insert a broad flat-headed screwdriver to release the retaining catch.

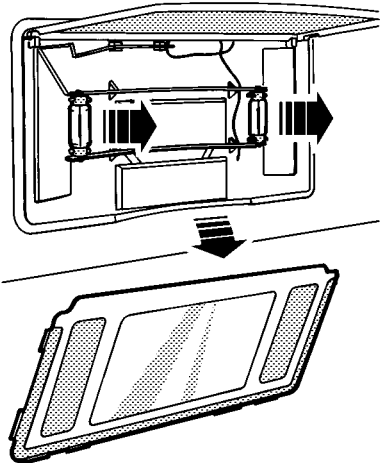
Withdraw the light unit from the glovebox and pull out bulb to replace.



J492

LOADSPACE LIGHT

Pry the light from its location. Push and twist the bulb to remove. Replace and reassemble.



P0191

VANITY MIRROR LIGHT

Using a small, flat bladed screwdriver (at extreme top, left and right corners - just below the hinge), prise the lens and mirror panel from the light unit. 'Spring' the bulbs free from their connectors to remove.

Replace the bulbs, then refit the lens and mirror panel to the sun visor.

Cleaning & vehicle care

WASHING YOUR VEHICLE

WARNING

Some high pressure cleaning systems, are sufficiently powerful to penetrate door and window seals and damage rubbing strips and locking mechanisms. Never aim the water jet directly at heater air intakes, body and sunroof seals, or at any components that might easily be damaged.

Wash your vehicle frequently using a sponge and generous quantities of cold or lukewarm water containing a car shampoo. Rinse and dry off with a chamois leather.

- Do not use hot water
- Do not use detergent soap products or washing-up liquid

During winter months when salt has been used on the roads, use a hose to wash the underside of the vehicle. Pay particular attention to wheelarches and panel seams, and to removing accumulations of mud.

Similarly, after off-road driving or wading in muddy or salt water conditions, use a hose to wash underbody components and other exposed parts of the vehicle.

When using a hose, do not direct the jet into the heater air intake ducts, or through the wheel trim apertures onto the brake components, or at the door, window or sunroof seals, where water pressure could penetrate the seals.

Drain holes

Drain holes in the bottom of the doors and the sills should be kept clear using stiff wire.

Underbody maintenance

Corrosive materials used for snow and ice removal and dust control can collect on underbody parts. If these materials are not removed, accelerated rusting can occur on underbody parts such as the frame, floor pan and the exhaust system. Regularly flush these materials from the underbody with plain water. Take care to thoroughly clean any areas where mud and other debris can collect.

Steam cleaning

Before steam cleaning the engine compartment, cover the power steering reservoir to prevent contamination of fluid. After steam cleaning within the engine compartment, always carefully re-wax the metallic components, especially the steering column, engine water pipes, hose clips and the ignition coil clamp to prevent corrosion.

Getting rid of tar spots

Use mineral spirits to remove tar spots and stubborn grease stains from paintwork. Then wash immediately with soapy water, to remove all traces of spirit.

Cleaning & vehicle care

Body protection

After washing, inspect the paintwork for damage. Any stone chips, fractures or deep scratches in the bodywork should be repaired promptly. Bare metal will corrode quickly and can develop into major repair expense. Some exterior panels of your vehicle are of aluminum which will not corrode in the same manner as sheet steel. However, any damage should still receive prompt attention. Minor chips and scratches can be repaired with touch-up materials available from your dealer. Larger areas of damage need to be corrected to professional standards immediately.

Occasionally, protect the paint surface with an application of car polish.

NOTE: *DO NOT apply car polish to the bumper mouldings - polish will become ingrained in the textured finish.*

Corrosion protection

If your vehicle is damaged and requires sheet metal repair or replacement, be sure the body repair shop restores corrosion protection, by applying anti-corrosion materials to the parts repaired or replaced.

Glass & mirrors

Clean the inside of the rear screen with a soft cloth to avoid damaging the heater elements. DO NOT scrape the glass or use an abrasive cleaning fluid.

Mirror glass is particularly susceptible to damage - DO NOT use abrasive cleaning compounds or metal scrapers.

Cast alloy road wheels

The cast alloy road wheels are covered with a protective coating. To prevent corrosion it is essential that this coating is not damaged. To clean the wheels use a warm soapy liquid, stubborn stains can be removed using a soft brush.

Sunroof

It is important that the sunroof aperture surround, channels, drain tubes and slides (accessible with the panel fully open), are kept clear, clean and lubricated for efficient operation. **This requirement is particularly important in dusty environments.**

If in doubt consult your dealer.

Cleaning & vehicle care

LOOKING AFTER THE INTERIOR

Clean plastic-faced, or cloth covered surfaces with diluted upholstery cleaner.

Leather seats, steering wheel and trim features should be cleaned with a damp cloth, moistened with undiluted leather upholstery cleaner. Leave for five minutes, and then repeat the operation using a clean cloth and water - but avoid flooding the area! Dry and polish the leather with a dry, lint-free cloth.

DO NOT use gasoline, detergents, furniture creams or polishes!

Sweep carpets with a brush or vacuum cleaner and clean with diluted nylon upholstery cleaner.

Instrument pack, clock and radio

Clean with a dry cloth only! DO NOT use cleaning fluids or sprays.

Seat belts

Extend belts, then use warm water and a non-detergent soap to clean. Allow to dry naturally, and do not retract until completely dry.

SRS/Airbag

To prevent SRS/airbag damage, the steering wheel centre pad and area of the fascia panel containing the passenger airbag, should ONLY be cleaned sparingly with a damp cloth and upholstery cleaner.

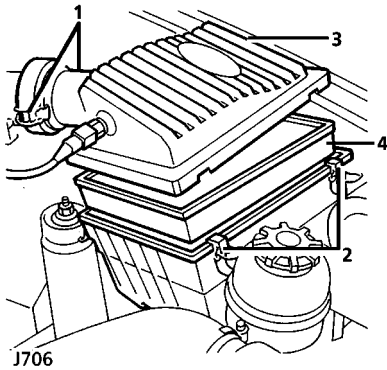
DO NOT allow the areas to be flooded with liquid, and DO NOT use gasoline, detergents, furniture cream or polishes.

Heated rear screens

The following precautions must be taken, to avoid irreparable damage being caused to the printed circuit which is 'baked' on to the interior of the screen.

- Do not remove labels or stickers from the screen, with the aid of sharp instruments or similar equipment likely to scratch the glass.
- Care should be taken, to avoid inadvertently scratching the glass with a ringed finger etc, when cleaning or wiping the screen.
- Do not clean the screen with harsh abrasives.

Air cleaner



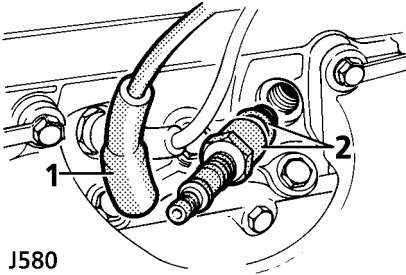
Air cleaner element renewal

Release the two clips (1) securing the hose to the rear of the air cleaner, then detach the hose. Release the four clips (2) securing the air cleaner top (3), then remove the top to gain access to the element (4).

Discard the element and replace with a new one before reassembling the unit. Always fit a NEW element; under no circumstances should a contaminated element be cleaned and used again.

Renewing the air cleaner element at the recommended service intervals (see your 'Passport to Service'), is extremely important. However, to maintain optimum engine performance under dusty operating conditions, more frequent renewal will be necessary. Consult your dealer for guidance.

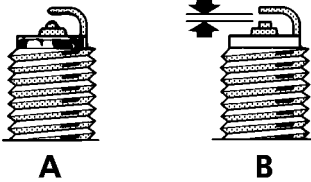
Spark plugs



Spark plug removal

Remove the plug leads (1), ensuring that you hold the rubber shroud and NOT the H.T. leads (this will ensure no damage occurring to the connectors during removal).

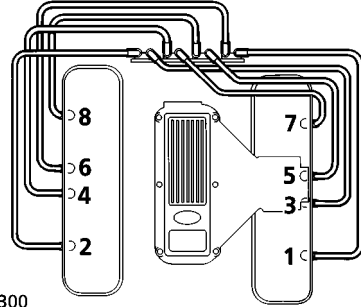
Ensure that the recesses around the plugs are free from debris (to avoid foreign matter accidentally entering the cylinder head) and use a suitable spark plug wrench to remove the plugs and washers (2).



J581

Cleaning and adjusting

Check, or replace the spark plugs as applicable. If the plugs are in good condition but require adjusting, use a wire-brush to clean the threads and the electrode sparking surfaces (A). Then, adjust the electrode gap to the recommended clearance (B), as shown in 'General data'.



Refitting the plugs

When refitting, take care not to cross-thread the spark plugs, otherwise costly damage to the cylinder head will result.

Only fit plugs of a type recommended by the vehicle manufacturer. These are specified in 'General data' and must be tightened to a torque of 14 to 16 lbf.ft (19 to 21,7 Nm). Please note that incorrect grades of plug, may lead to engine failure and serious damage.

Refitting the high tension leads

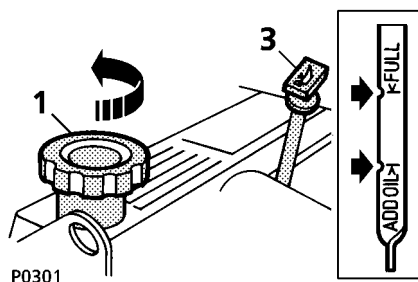
To ensure the correct firing order (1, 8, 4, 3, 5, 7, 2), the high tension leads must be replaced in the correct relationship to each other (as illustrated). Failure to maintain the correct plug lead connections, will result in a misfire and possible damage to the catalytic converter.

When pushing the leads onto the plugs, ensure that the shrouds are firmly seated on the plugs.

Engine oil & filter

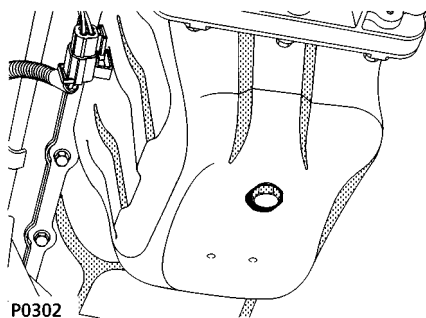
Ensure the engine oil is changed at the recommended service intervals (see your 'Passport to Service').

Under severe operating conditions (i.e. regular use in muddy terrain or dusty conditions), the engine oil must be changed frequently, even to the extent of a daily change. Consult your Land Rover dealer for guidance.



Engine oil drain and refill

With the engine warm (to assist oil drainage) and the vehicle parked on firm, level ground, remove the filler cap (1) and position a container of suitable size (at least 5.1 US quarts or 4.87 litres) under the drain plug, in the bottom of the sump.



Remove the drain plug and copper washer and allow the engine oil to drain into the container.

When the oil has thoroughly drained, clean the drain plug and its mating surface on the sump, before securely refitting the plug, complete with a new copper washer.

WARNING

Oil from the engine can be very hot - take care when removing the drain plug.

Prolonged contact with used engine oil can cause serious skin disorders, including dermatitis and cancer of the skin. Wear protective clothing if possible and ALWAYS wash thoroughly after contact.

DO NOT pollute drains, water courses or soil. ONLY dispose of used engine oil and other vehicle fluids, at an authorised waste disposal site.

Refill the engine with fresh oil, suitable for the climatic conditions in which the vehicle is to be operated (precise specifications are shown in 'General data').

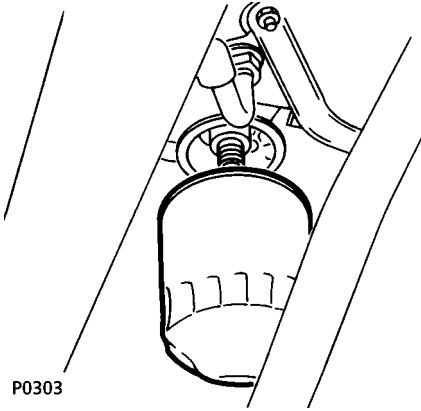
DO NOT overfill the engine! Remember that a little oil will always remain in the engine after draining and that, therefore, the quantity of oil required to refill the engine will be slightly less than the full capacity quoted in 'General data'.

After filling, allow a few minutes to elapse before checking the level on the dipstick (3) (this will allow all the oil to drain into the sump and enable a true reading to be obtained). Once the correct level of oil is shown on the dipstick, replace the filler cap.

Engine oil & filter

Engine oil filter renewal

To avoid draining the oil pump, it is essential that the engine is filled with oil to the correct level, before the filter is removed. It is therefore recommended that the engine oil is renewed before work on the filter commences.



1. Clean the area around the filter head and place a suitable container beneath the engine.
2. Using a strap spanner, or similar tool, unscrew the filter anti-clockwise and discard it.
3. Smear the seal of the new filter with clean engine oil, partially fill the filter with oil and then screw the filter on clockwise, until it is securely in position. Use hand force only, DO NOT overtighten.
4. Start and run the engine. Do not rev the engine until the oil pressure warning light extinguishes. Check for oil leaks around the filter and drain plug.
5. Stop the engine, wait a few minutes, then check the oil level and top up if necessary.

Lubricants

Lubricants

Using the correct grade and specification of lubricant is very important. Only use Land Rover recommended lubricants as shown in 'General data'.

NOTE: *Recommended oils are complete in themselves and additives should not be used.*

Transmission, transfer box, differentials & swivel pin housing

It is essential to change oil much more frequently than indicated, if the vehicle is operated under severe conditions, especially if deep wading is carried out.

Check for oil, fuel & fluid leaks

Open the hood and examine the engine for oil leaks. In addition, check for leaks underneath the engine.

Check the fuel pipes, hydraulic fluid pipes and hoses within the engine compartment for leaks.

If leaks are discovered, remedial action must be taken immediately.

SECTION 5

General data

Section Contents	Page
Lubricants & fluids	141
Capacities	143
Engine data	144
Steering	144
Electrical system	145
Replacement bulbs	145
Dimensions	146
Off-road performance	146
Towing weights	146
Vehicle weights	147
Fuel	147
Tyre size & pressures	148

General data

LUBRICANTS & FLUIDS

Recommendations for all climates and conditions.

COMPONENTS Specification	SAE	AMBIENT TEMPERATURE ° F								
		-22	-4	14	32	50	68	86	104	122
Engine sump										
Oils must meet	5W/30									
API service levels	5W/40, 5W/50									
SG or SH	10W/30									
	10W/40,									
	10W/50									
	10W/60									
Main gearbox, manual										
ATF M2C33 (F or G) or										
Dexron III*										
Main gearbox, automatic										
ATF Dexron III*										
Transfer gearbox										
MIL-L-2105 or	90W EP									
MIL-L-2105B, C & D	80W EP									
Final drive units, swivel pin housings										
MIL-L-2105 or	90W EP									
MIL-L-2105B, C & D	80W EP									
Power steering										
ATF M2C 33 (F or G) or										
ATF Dexron III*										

* Manufacturer highly recommends the following brands:

- Exxon Superflo ATF Dexron III
- Texaco Havoline ATF-Mercon Dexron III

General data

Lubrication nipples (hubs, ball joints, prop. shafts, etc.)

NLGI-2 Multipurpose Lithium based grease.

Brake and clutch reservoirs

Universal brake fluids or any brake fluid having a minimum boiling point of 500° F (260° C) and complying with FMVSS 116 DOT4.

Windscreen washers

Screen washer fluid.

Engine cooling system

Ethylene glycol based anti-freeze (containing no methanol) with non-phosphate corrosion inhibitors suitable for use in aluminium engines. Use one part anti-freeze to one part water for protection down to -33° F (-36° C).

Coolant solution must not fall below proportions of one part anti-freeze to one part water, otherwise engine damage is liable to occur.

Air conditioning refrigerant

R134A.

Door locks (anti-burst) and inertia reels

DO NOT LUBRICATE. These components are lubricated for life during manufacture.

Battery terminals

Petroleum jelly. DO NOT use silicone grease.

General data

CAPACITIES

The following capacities are approximate and provided as a guide only. All oil levels must be set using the dipstick or level plugs as applicable.

	US units	Imperial	Metric WSM
Fuel tank - usable capacity	23.4 US gal	19.5 Imp gal	89,0 litre
Engine sump	6.3 US quarts	10.50 Imp pt	6,10 litre
Additional capacity after fitting			
new oil filter	0.65 US quarts	1.00 Imp pt	0,56 litre
Manual gearbox	2.8 US quarts	4.70 Imp pt	2,67 litre
Automatic gearbox	9.5 US quarts	15.70 Imp pt	9,10 litre
Transfer box	2.4 US quarts	4.00 Imp pt	2,30 litre
Front differential	1.8 US quarts	3.00 Imp pt	1,70 litre
Rear differential	1.8 US quarts	3.00 Imp pt	1,70 litre
Cooling system	12.0 US quarts	20.00 Imp pt	11,30 litre
Washer reservoir	7.0 US quarts	12.00 Imp pt	7,00 litre

General data

ENGINE

Bore	3.700 in (94,0 mm)
Stroke	2.800 in (71,12 mm)
Number of cylinders	8
Cylinder capacity	241 cu in (3950 cc)
Compression ratio	9.35:1
Firing order	1, 8, 4, 3, 6, 5, 7, 2
Sparking plug type	Champion RN11YCC
Sparking plug gap	0.033 to 0.038 in (0,84 to 0,96 mm)
Distributor	Electronic
Ignition timing, dynamic	5° BTDC ± 1°
Idle speed (in neutral with air conditioning OFF)	625 ± 28 rev/min
Idle speed (in neutral with air conditioning ON)	700 ± 28 rev/min
Maximum power	182 bhp at 4750 rev/min

NOTE: The maximum power data is derived from bench tests and does not allow for installation losses in the vehicle.

STEERING

Turns lock to lock	3.375 turns
Camber angle	Zero
Castor angle	3°
Swivel pin inclination	7°
Front wheel toe-out	0 to 0.080 in (0 to 2 mm)
Turning circle between curbs:	39 feet (11,9 m)

General data

ELECTRICAL SYSTEM

Type	Negative earth
Voltage	12
Battery	091/072
Charging circuit	AC Generator (Alternator)
Ignition system	EMS - Programmed

REPLACEMENT BULBS

Headlights	12 V 60/55 W (Halogen)
Front side lights	12 V 5 W
Side repeater lights	12 V 5 W
Stop lights	12 V 21 W
Tail lights	12 V 5 W
Direction indicator lights	12 V 21 W
Number plate lights	12 V 5 W
Reversing lights	12 V 21 W
Rear fog guard lights	12 V 21 W
Interior lights front	12 V 10 W
Interior lights rear	12 V 5 W
Load space light	12 V 10 W
Glovebox light	12 V 5 W
Vanity mirror light	12 V 1.2 W

WARNING

The fitting of headlights or bulbs with wattages in excess of those specified will result in damage to the wiring and switches.

NOTE: *The front fog lights, which are sealed beam units, should only be replaced by a Land Rover dealer.*

General data

DIMENSIONS

Overall length (including spare wheel)	177.9 in (4521 mm)
Overall width	70.6 in (1793 mm)
Overall height (open sunroof)	79.0 in (2005 mm) *
Wheelbase	100 in (2540 mm)
Track front/rear	58.5 in (1486 mm)
Width between wheel boxes	42.5 in (1080 mm)

NOTE: * Operating height of vehicle may vary - see information on the underside of drivers sun visor.

OFF-ROAD PERFORMANCE

Approach angle*	39°
Departure angle *	29°
Wading depth	20 in (500 mm)
Min. ground clearance (unladen)	8.4 in (214 mm)

NOTE: * Data measured with vehicle at curb weight (minimum unladen weight plus full fuel tank).

TOWING WEIGHTS

	On-road	Off-road
Unbraked trailers	1650 lb (750 kg)	1650 lb (750 kg)
Trailers with brakes - high range	5500 lb (2495 kg)	2200 lb (995 kg)
Trailers with brakes - low range	7700 lb (3490 kg)	-
Roof rack load	110 lb (50 kg) **	
Maximum permissible tongue weight	330 lb (150 kg)	

NOTE: All weight figures are subject to local restrictions. It is the owners responsibility to ensure that all regulations with regard to towing are complied with. This also applies when towing in other countries - contact an appropriate motoring organisation for relevant information.

** Driving off-road with a loaded roof rack is not recommended (see 'Roof rack' in the 'Towing & load carrying' section of the handbook).

General data

VEHICLE WEIGHTS

Curb weight (with no options)	4453 lb (2020 kg)
Max front axle weight	2668 lb (1210 kg)
Max rear axle weight	3572 lb (1620 kg)
Gross vehicle weight	6019 lb (2730 kg)

CURB WEIGHT: equals the minimum unladen vehicle weight plus a full fuel tank.

GROSS VEHICLE WEIGHT: equals the maximum weight with driver, passengers, payload equipment and towing attachment load (where applicable).

GROSS VEHICLE WEIGHT CONDITION: The maximum axle weights are individual axle loadings which allow for the fitting of optional equipment. Loading both axles to their respective maximums **MUST BE AVOIDED**, as the overall maximum vehicle weight would then be exceeded.

NOTE: *The individual maximum axle weights and gross vehicle weight must not be exceeded.*

FUEL

Gasoline (minimum requirement)

Catalyst vehicles

High compression engines Premium unleaded gasoline with a CLC or AKI octane rating of 90 or 92 (95 or 96 RON).

General data

TYRE SIZE & PRESSURES

	Front	Rear
205 R16 Radial		
Normal - all load conditions	28 psi (2.0 kgf/cm ²)	38 psi (2,6 kgf/cm ²)
235/70 R16 Radial		
Normal - all load conditions	26 psi (1,8 kgf/cm ²)	36 psi (2,5 kgf/cm ²)
Wheel nut torque	130 Nm (96 lbf/ft)	

WARNING

Tyre pressures must be checked with the tyres cold, as the pressure is about 3 psi (0.2 kg/cm²) higher at running temperature. If the vehicle has been parked in the sun or high ambient temperatures, DO NOT reduce the tyre pressures, move the vehicle into the shade and wait for the tyres to cool before checking the pressures.

WARNING

ALWAYS use the same make and type of radial-ply tyres front and back. DO NOT use cross-ply tyres, or interchange tyres from front to back.

NEVER drive your vehicle if the tyres are badly worn, cut or damaged, or if the pressures are incorrect.

Incorrectly inflated tyres wear rapidly and seriously affect the vehicle's safety and road handling characteristics.

Your vehicle is fitted with tubeless road wheels that will NOT accept inner tubes. DO NOT fit a tubed tyre.

SECTION 6

Parts & accessories

Section Contents	Page
Parts & accessories	151
Electrical equipment	152
Travelling abroad	152
Recommended parts	153

Parts & accessories

PARTS AND ACCESSORIES

Your Land Rover Discovery has been designed, manufactured and proven to cope with the most rigorous driving conditions. As such, fitting parts and accessories that have been developed and tested to the same stringent standards is essential to guarantee the continued reliability, safety and performance of the vehicle.

To augment the vehicle's already awesome ability, a comprehensive and versatile range of quality spare parts and accessories are available to fulfil a wide variety of roles, both enhancing and protecting the Discovery in the many tasks to which it can be applied.

Genuine Land Rover Parts are the ONLY parts built to original equipment specifications AND approved by Land Rover designers - this means that every single non-warranty replacement part and accessory has been rigorously tested by the same engineering team that designed and built the vehicle and, with the exception of maintenance items that are designed to be replaced sooner, is fully guaranteed for 12 months or 12,000 miles (20,000 km).

A full list and description of all accessories is available from your Land Rover dealer.

Always consult a dealer for advice regarding the approval, suitability, installation and use of any parts or accessories, before fitting.

WARNING

DO NOT fit unapproved accessories or conversions, as they could affect the safety of the vehicle.

Land Rover will not accept any liability for death, personal injury or damage to property which may occur as a direct result of fitment of non-approved accessories or the carrying out of non-approved conversions to Land Rover vehicles.

Land Rover North America Inc. strongly advises against making any modifications to the suspension or steering system. This could seriously affect the handling and stability of the vehicle leading to loss of control or rollover.

Parts & accessories

Electrical equipment

WARNING

It is extremely hazardous to fit, or replace, parts or accessories whose installation requires the dismantling of, or addition to, either the electrical, fuel or SRS/airbag systems.

Always consult your Land Rover dealer before fitting any electrical accessory.

Fitting inferior quality parts or accessories, may be dangerous and could invalidate the vehicle warranty.

Always consult your Dealer for advice regarding the approval, suitability, installation and use of any parts or accessories before fitting.

Travelling abroad

In certain countries, legislation prohibits the fitting of parts not built to the vehicle manufacturers' specification.

Owners purchasing accessories while travelling away from their own country, should ensure that the accessory, its location and method of fitment will conform to the legal requirements of their own country when they return home.

SRS/Airbag

WARNING

The components that make up the SRS/airbag are sensitive to electrical or physical interference, either of which could easily damage the system and cause inadvertent operation or a malfunction of the airbag module.

To prevent any SRS/airbag malfunction, ALWAYS consult a Land Rover dealer before fitting any of the following:

- *Electronic equipment such as a mobile phone, two-way radio or in-car entertainment system.*
 - *Accessories attached to the front of the vehicle.*
 - *Any modification to the front of the vehicle.*
 - *Any modification involving the removal or repair of any wiring or component in the vicinity of any of the SRS components (yellow wiring harness), including: the steering wheel, steering column, instrument and fascia panels.*
 - *Any modification to the fascia panels or steering wheel.*
-

Parts & accessories

Parts & accessories

SECTION 7

Off-road driving

This section of your handbook is devoted to the Discovery's superb off-road driving capabilities.

*Before venturing off-road however, it is **absolutely essential** that inexperienced drivers become fully familiar with the vehicle's controls, in particular the transfer gearbox, and also study the off-road driving techniques described on the following pages.*

Section Contents	Page
Basic off-road techniques	157
Driving on soft surfaces & dry sand	160
Driving on slippery surfaces	160
Driving on rough tracks	160
Climbing steep slopes	161
Descending steep slopes	162
Traversing a slope	163
Negotiating a 'V' shaped gully	163
Driving in existing vehicle tracks	163
Crossing a ridge	164
Crossing a ditch	164
Wading	164

Off-road driving

WARNING

Off-road driving can be hazardous!

DO NOT take unnecessary risks and be prepared for emergencies at all times.

Your Discovery has a higher ground clearance and hence a higher centre of gravity than an ordinary passenger car. An abrupt manoeuvre at an inappropriate speed or on an unstable surface could cause the vehicle to go out of control.

Familiarise yourself with the recommended driving techniques in order to minimise risks to yourself, your vehicle AND your passengers.

Always ensure that seat belts are worn for personal protection while either on-road, or off-road driving.

DO NOT drive if the fuel level is low - undulating ground and steep inclines could cause fuel starvation to the engine and consequent damage to the catalytic converter.

DO NOT drive off-road alone or without letting someone know where you are going and when you plan to return.

BASIC OFF-ROAD TECHNIQUES

These basic driving techniques are an introduction to the art of off-road driving and do not necessarily provide the information needed to successfully cope with every single off-road situation.

We strongly recommend that owners who intend to drive off-road frequently, should seek as much additional information and practical experience as possible.

Gear selection - manual gearbox

Correct gear selection is possibly the single most important factor for safe and successful off-road driving. While only experience will tell you which is the correct gear for any section of ground, the following basic rules apply:

- NEVER change gear or de-clutch while negotiating difficult terrain - the drag on the wheels may cause the vehicle to stop when the clutch is depressed and restarting may be difficult.
- Generally, and especially where slippery or soft ground conditions prevail, the higher the gear you select the better.
- When descending very steep slopes always select 1st gear, LOW range.

Inexperienced drivers are advised to stop the vehicle and carefully consider which gear will be most appropriate for each manoeuvre before continuing.

Slipping the clutch

Use of excessive clutch slip to prevent the engine stalling will result in premature clutch wear. Always select a gear low enough to enable the vehicle to proceed without needing to slip the clutch.

DO NOT drive with your foot resting on the clutch pedal; driving across uneven terrain could cause you to inadvertently depress the clutch, resulting in loss of control of the vehicle.

Off-road driving

Gear selection - automatic gearbox

With the main selector lever set at '3', the gearbox automatically provides the correct gear. Remember that position '1' will hold the gearbox in first gear to give maximum engine braking when required.

HIGH range gears should be used whenever possible - only change to LOW range when ground conditions become very difficult. The DIFF LOCK should be engaged whenever there is a risk of losing wheel grip, and disengaged as soon as firm, level, non-slippery ground is reached.

Braking

As far as possible, vehicle speed should be controlled through correct gear selection.

Application of the brake pedal should be kept to an absolute minimum. Harsh braking on wet, muddy, or loose surfaces, could prove dangerous.

NOTE: *If the correct gear has been selected, braking will be largely unnecessary.*

Use of engine for braking

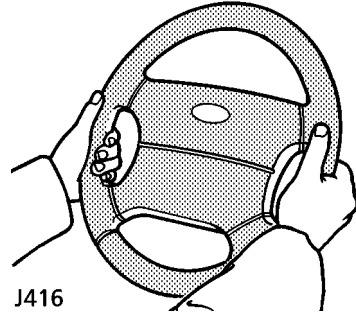
Before descending steep slopes, stop the vehicle at least its length before the descent, move the gearshift lever to 'N', engage LOW range and then select first or second gear ('1' or '2' for automatic transmission) depending on the severity of the incline.

While descending the slope it should be remembered that the engine will provide sufficient braking effort to control the rate of descent, and that the brakes should not be applied.

Accelerating

Use the accelerator with care - any sudden surge of power may induce wheel spin and result in loss of control of the vehicle.

Steering



WARNING

DO NOT hold the steering wheel with your thumbs inside the rim - a sudden 'kick' of the wheel as the vehicle negotiates a rut or boulder could seriously injure them. **ALWAYS** grip the wheel on the outside of the rim (as shown) when traversing uneven ground.

Survey the ground before driving

Before negotiating difficult terrain, it is wise to carry out a preliminary survey on foot. This will minimise the risk of your vehicle getting into difficulty through a previously unnoticed hazard.

Off-road driving

Ground clearance

Don't forget to allow for ground clearance beneath the chassis, axles, and under the front and rear bumpers. Note that the axle differentials are situated **BELOW** the chassis and are positioned slightly to the **RIGHT** of the centre of the vehicle. Note also that there are other parts of the vehicle which may come into contact with the ground; Where possible, attempt to avoid obstacles that may foul the chassis or differentials.

Ground clearance is particularly important at the bottom of a steep slope, or where wheel ruts are unusually deep and where sudden changes in the slope of the ground are experienced.

On soft ground the axle differentials will clear their own path in all but the most difficult conditions. However, on frozen, rocky or hard ground, firm contact between the differentials and the ground will generally result in the vehicle coming to a sudden stop.

ALWAYS attempt to avoid obstacles that may foul the chassis or axle differentials.

Loss of traction

If the vehicle is immobile due to loss of wheel grip, the following hints could be of value:

- Avoid prolonged wheel spin; this will only make matters worse.
- Remove obstacles rather than forcing the vehicle to cross them.
- Clear clogged tyre treads.
- Reverse as far as possible, then attempt an increased speed approach - additional momentum may overcome the obstacle.
- Brushwood, sacking or any similar material placed in front of the tyres may help to produce tyre grip.

IMPORTANT INFORMATION

After driving off-road

Before rejoining the public highway, or driving at speeds above 25 mph (40 km/h), consideration should be given to the following:

- Wheels and tyres must be cleaned of mud and inspected for damage - ensure there are no lumps or bulges in the tyres or exposure of the ply or cord structure.
- Brake discs and calipers should be examined and any stones or grit that may affect braking efficiency removed.

Servicing requirements

Vehicles operated in arduous conditions, particularly on dusty, muddy, or wet terrain and vehicles undergoing frequent, or deep wading conditions, will require more frequent servicing. See 'Owner maintenance' and contact a Land Rover dealer for advice.

In addition:

After wading in salt water or driving on sandy beaches, use a hose to thoroughly wash the underbody components and any exposed body panels with fresh water. This will help to protect the vehicle's cosmetic appearance.

Off-road driving

DRIVING ON SOFT SURFACES & DRY SAND

The ideal technique for driving on soft sand requires the vehicle to be kept moving at all times - soft ground and sand cause excessive drag on the wheels resulting in a rapid loss of motion once driving momentum is lost. For this reason, gear changing (particularly on manual gearbox vehicles) should be avoided.

- Engage the DIFF LOCK.
- Select the highest suitable gear and REMAIN in that gear until a firm surface is reached. It is generally advisable to use LOW range gears as they will enable you to accelerate through worsening conditions without the risk of being unable to restart.
- Disengage the DIFF LOCK as soon as firm ground is reached.

Stopping the vehicle on soft ground, in sand or on an incline

If you do stop the vehicle, remember:

Starting on an incline, soft ground, or sand may be difficult. Always park on a firm, level area, or with the vehicle facing downhill.

To avoid wheel spin, select second or third gear, ('3' for automatic gearbox), and use the MINIMUM throttle necessary to get the vehicle moving.

If forward motion is lost, avoid excessive use of the throttle - this will cause wheel spin and tend to dig the vehicle into the sand. Clear sand from around the tyres and ensure that the chassis and axles are not bearing on the sand before again attempting to move.

If the wheels have sunk, use an air bag lifting device or high lift jack to raise the vehicle, and then build up sand under the wheels so that the vehicle is again on level ground. If a restart is still not possible, place sand mats or ladders beneath the wheels.

DRIVING ON SLIPPERY SURFACES (ice, snow, mud, wet grass)

- With the DIFF LOCK engaged, select the highest gear possible.
- Drive away using the MINIMUM throttle possible.
- Drive slowly at all times, keeping braking to a minimum and avoiding violent movements of the steering wheel.
- Disengage the DIFF LOCK as soon as a non slippery surface is reached.

DRIVING ON ROUGH TRACKS

Although rough tracks can sometimes be negotiated in normal drive, it is advisable to lock the differential if excessive suspension movement is likely to induce wheel spin.

On very rough tracks, engage LOW range to enable a steady, slow, speed to be maintained without constant use of the brake and clutch pedals.

Always disengage the DIFF LOCK when smooth, firm ground is reached.

Off-road driving

CLIMBING STEEP SLOPES

Engage the DIFF LOCK and ALWAYS follow the fall line of the slope - travelling diagonally could encourage the vehicle to slide broadside down the slope.

Steep climbs will usually require the LOW gear range. If the surface is loose or slippery, use sufficient speed in the highest practical gear to take advantage of your vehicle's momentum. However, too high a speed over a bumpy surface may result in a wheel lifting, causing the vehicle to lose traction. In this case try a slower approach. Traction can also be improved by easing off the accelerator just before loss of forward motion.

If the vehicle is unable to complete a climb, do not attempt to turn it around while on the slope. It must be reversed downhill to the foot of the slope by adopting the following procedure:

- Hold the vehicle stationary using both foot and parking brakes.
- Restart the engine if necessary.
- Engage reverse gear LOW range ('R' for automatic transmission).
- Release the parking brake. Then release the foot brake and clutch (where applicable) simultaneously, and allow the vehicle to reverse down the slope using engine braking to control the rate of descent.

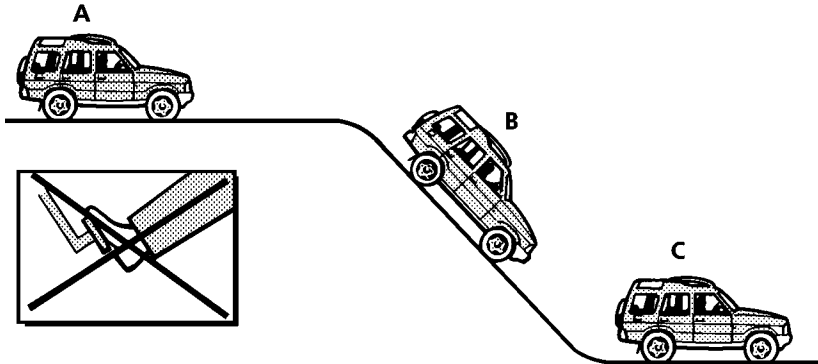
- Unless it is necessary to stop the vehicle in order to negotiate obstructions, DO NOT apply the brake or clutch pedal during the descent.
- If the vehicle begins to slide, accelerate slightly, to allow the tyres to regain grip.

When the vehicle is back on level ground or where traction can be regained, a faster approach will probably enable the hill to be climbed. However, DO NOT take unnecessary risks, if the hill is too difficult to climb, find an alternative route.

WARNING

The engine must be restarted before reversing down the slope to ensure that braking effort from the transmission is available.

Off-road driving



J420

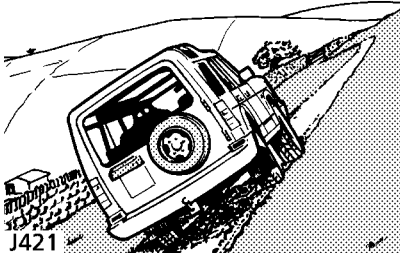
DESCENDING STEEP SLOPES

- A. Stop the vehicle at least a vehicle length before the slope and engage first gear (selector position '1' for automatic gearbox cars) in LOW range with the differential locked.
- B. Unless it is necessary to stop the vehicle in order to negotiate obstructions, **DO NOT** touch the brake or clutch pedals during the descent - the engine will limit the speed, keeping the vehicle under perfect control provided the front wheels are turning. If the vehicle begins to slide, accelerate gently to maintain directional stability - **DO NOT** use the brakes or attempt to change gear.
- C. Once level ground is reached, unlock the differential and select a suitable gear for the next stage of your journey.

WARNING

Failure to follow these instructions may cause the vehicle to roll over.

Off-road driving



TRAVERSING A SLOPE

Before crossing a slope ALWAYS observe the following precautions:

- Check that the ground is firm and not slippery.
- Check that the wheels on the downhill side of the vehicle are not likely to drop into any depressions in the ground and that the 'uphill' wheels will not run over rocks, tree roots, or similar obstacles that could suddenly increase the angle of tilt.
- Ensure that passenger weight is evenly distributed, that all roof rack luggage is removed and that all other luggage is properly secured and stowed as low as possible. Always remember; any sudden movement of the load could cause the vehicle to overturn.
- Rear seat passengers should sit on the uphill side of the vehicle or, in extreme conditions, vacate the vehicle until the sloping ground has been safely negotiated.

WARNING

Your vehicle has a higher ground clearance and, hence, a higher centre of gravity than ordinary passenger cars. This will result in different handling characteristics. Inexperienced drivers should take additional care, particularly in off-road driving situations and when performing abrupt manoeuvres at inappropriate speeds or on unstable surfaces.

NEGOTIATING A 'V' SHAPED GULLY

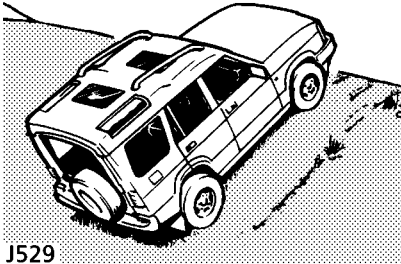
Observe extreme caution! Steering up either of the gully walls could cause the side of the vehicle to be trapped against the opposite gully wall.

DRIVING IN EXISTING VEHICLE TRACKS

As far as possible, allow the vehicle to steer itself along the bottom of the ruts. However, always keep a light hold of the steering wheel to prevent it from spinning free.

Particularly in wet conditions, if the steering wheel is allowed to spin free, the vehicle may appear to be driving straight ahead in the ruts, but in actual fact (due to the lack of traction caused by the wet ground) is unknowingly on full right or left lock. Then, when level ground is reached, or if a dry patch of ground is encountered, the wheels will find traction and cause the vehicle to suddenly veer to the left or right.

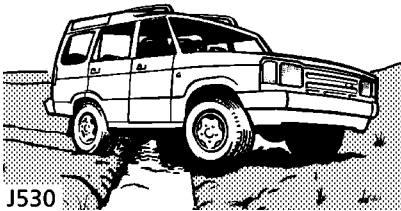
Off-road driving



J529

CROSSING A RIDGE

Approach at right angles so that both front wheels and then both rear wheels cross the ridge together - an angled approach could cause traction to be lost through diagonally opposite wheels lifting from the ground at the same time.



J530

CROSSING A DITCH

With the DIFF LOCK engaged, cross ditches at an angle so that three wheels always maintain contact with the ground (if approached head on, both front wheels will drop into the ditch together, possibly resulting in the chassis and front bumper being trapped on opposite sides of the ditch).

WADING

WARNING

The maximum advisable wading depth is 20 in (0,5 metre).

Severe electrical damage may occur if the vehicle remains stationary for any length of time, when the water level is above the door sills.

If you must proceed and water is likely to exceed 20 in (0,5 metre), the following precautions MUST be observed:

- Fix a plastic sheet in front of the radiator grille to prevent water from soaking the engine and mud from blocking the radiator.
- Remove the CD autochanger (if fitted).
- Ensure that the silt bed beneath the water is free of obstacles, and is firm enough to support the vehicle's weight and provide sufficient traction.
- Ensure that the engine air intake is clear of the water.
- With the DIFF LOCK engaged, select a low gear and maintain sufficient throttle to prevent the engine from stalling. This is particularly important if the exhaust pipe is under water.
- Drive slowly into the water and accelerate to a speed which causes a bow wave to form; then maintain that speed.

At all times, keep all the doors fully closed.

Off-road driving

After wading

- Drive the vehicle a short distance and apply the foot brake to check that the brakes are fully effective.
- DO NOT rely on the parking brake alone to hold the vehicle stationary until the transmission and brakes have thoroughly dried out; in the meantime, use the wheel chock, or leave the vehicle parked in gear.
- Remove any protective covering from in front of the radiator grille.
- If the water was particularly muddy, remove any blockages (mud and leaves) from the radiator to reduce the risk of overheating.
- If deep water is regularly negotiated, check all oils for signs of water contamination - contaminated oil can be identified through its 'milky' appearance. In addition, check the air filter element for water ingress and replace if wet.
- If salt water is frequently negotiated, thoroughly wash the underbody components and exposed body panels, with fresh water.

Vehicles required to undergo frequent, or deep wading conditions, will require more frequent servicing. See 'Owner maintenance' and contact a Land Rover dealer for advice.

Index

A

ABS	83
Accessories	151
Air cleaner renewal	134
Air conditioning	51
Air vents	47
Airbag SRS	29
Alarm	12
Anti-freeze	142
Anti-lock braking	83
Anti-theft alarm	12
Anti-theft alarm indicator light	13
Anti-theft precautions	7
Ashtray	54
Audible warnings	39
Automatic gearbox top-up	105
Automatic transmission	73
Axle loads	147

B

Battery	113
Battery boosting	92
Battery charging	114
Battery removal and replacement	113
Booster cables	92
Brake fluid check	108
Brake fluid specification	142
Braking systems	81
Breakdown recovery	94
Breakdown safety	7
Breaking-in	65
Bulb replacement	123
Bumper mounted lights	129

C

Capacities	143
Catalytic converter	66
CD autochanger	55
Central locking	16
Child locks	17
Child restraints	27
Cigar lighter	54
Cleaning	131
Climbing steep slopes	161

Clock	53
Clutch	72
Clutch fluid top-up	107
Cold climates	63
Controls	11
Cooling system top-up	106
Corrosion protection	132
Cruise control	86
Cubby box	55
Cup holder	56

D

Defrosting	50
Demisting	50
Descending steep slopes	160
Diff lock warning light	80
Diff-lock	78
Differential lock (diff lock)	76
Dimensions	146
Direction indicators	40
Door locking cut-off switch	17
Door locks	12
Driving	64
Driving in existing vehicle tracks	163
Driving on rough tracks	160
Driving on slippery surfaces	160
Driving on soft surfaces & dry sand	160
Dynamometer testing	100

E

Electric windows	45
Electrical equipment	152
Electrical system	145
Emergency starting	92
Emergency towing	94
Emission control	100
Empty fuel tank	71
Engine compartment	103
Engine data	144
Engine oil	104
Engine oil (used)	101
Engine oil renewal	136
Engine oil top-up	104

Index

F

Fan speed control	48
Fluid specifications	141
Fog guard lights	43
Fog lights (front)	44
Front fog lights	129
Fuel	68 & 147
Fuel cut-off switch	71
Fuel economy	65
Fuel filler	70
Fuel gauge	36
Fuses	120

G

Gear selection - automatic	73
Gear selection - manual	72
Gear selection - transfer	76
Glass & mirrors	132
Ground clearance	3 & 146

H

Halogen bulbs	123
Handset battery	14
Hazard warning lights	44
Head restraint adjustment	21
Headlight washers	42
Headlights	40
Heated front seats	21
Heated rear window	43
Heater	47
Height (of vehicle)	64
High mounted stop light	129
High range gears	76
Hood opening	102
Horn	44

I

Indicators	40
Inertia switch	17 & 71
Information labels	4
Instrument dimmer control	35
Instruments	35
Interior lights	53
Interior trim	133

J

Jack (wheel changing)	117
Jacking	115
Jump leads	92

L

Labels	3
Light switches	40
Lights	40
Load carrying	88
Loadspace cover	57
Loadspace light	53
Locks	12
Low range gears	76
Lubricant specifications	141
Lubricants	138
Luggage anchor points	90
Lumbar support adjustment	18

M

Maintenance	3 & 99
Manual transmission	72
Mirror (interior)	56
Mirror (vanity)	56
Mirrors (exterior)	34
Modifications	152

N

Nose weight	146
Number plate lights	129

O

Off-road driving	155
Off-road performance	146
Off-road techniques	155
Oil	101
Oil change	136
Oil filter renewal	137
Owner maintenance	99

P

Parking brake	82
Parts & accessories	151
Passport to Service	3 & 99
Poisonous liquids	101

Index

Power assisted steering	64	Temperature gauge	36
Power steering top-up	109	Tongue weight	89
R		Total distance recorder	35
Radio remote controls	43	Towing	88
Rear fog guard lights	43	Towing for recovery	94
Rear light cluster	127	Towing weights	89 & 146
Rear seats	22	Trailer socket	90
Rear step	58	Transfer gearbox	76
Rear window wash/wipe	42	Transmission	72
Rear-view mirror	56	Transporter or trailer lashing	95
Replacement bulbs	145	Traversing a slope	163
Reporting safety defects	1	Trip recorder	35
Road testing on dynamometers	100	Trip recorder reset button	35
Roof rack	91	Tyre size & pressures	148
S		Tyres	110
Safety in the garage	101	V	
Seat belt safety	24	Vanity mirror	56
Seat belts	24	Vehicle care	131
Seats	18	Vehicle height	64
Seats (heated)	21	Vehicle identification number	6
Seats (power operated)	19	Vehicle recovery	94
Sidelights	40	Vehicle stability	62
Snow chains	111	Vehicle weights	147
Spare wheel	115	Ventilation	47
Spare wheel (removing)	116	W	
Spark plugs	135	Wading	162
Speedometer	35	Warming-up	64
SRS/Airbag	29	Warning labels	3
Starter switch	61	Warning lights	37
Starting	63	Warranty information	3
Starting in an emergency	92	Washer	42
Steering	144	Washer jet adjustment	112
Steering column adjustment	33	Washer jets	42
Steering lock	61	Weights	147
Steering wheel switches	86	Wheel changing	115
Step	58	Wheel chock	115
Sunroof	46	Windows	45
Sunvisor vanity mirror	56	Windscreen washer	42
Switches	43	Windscreen washer top-up	107
T		Windscreen wipers	41
Tachometer	35	Wiper blade replacement	112
Temperature control	48	Wipers	41