



# DISCOVERY

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

# SECTION 1

## Introduction

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### OWNER HANDBOOK

*This handbook covers all current versions of Land Rover Discovery petrol and diesel models and, together with the Owner Information & Service Record book, 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 the vehicle. These are listed on the title 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.*

*The specification of each vehicle will vary according to territorial requirements and also from model to model within the vehicle range. Some of the information published in this handbook, therefore, may not apply to your particular Discovery.*

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*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 or the dealer, except in respect of personal injury caused by the negligence of the manufacturer or the dealer.*

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# Introduction

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## OWNER INFORMATION & SERVICE RECORD

The Owner Information & Service Record book 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 and information about your AA membership.

Most important of all, however, is the section on maintenance. This outlines the servicing requirements for your Discovery and also includes the 1500 km Free Service Voucher, 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.*

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## 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

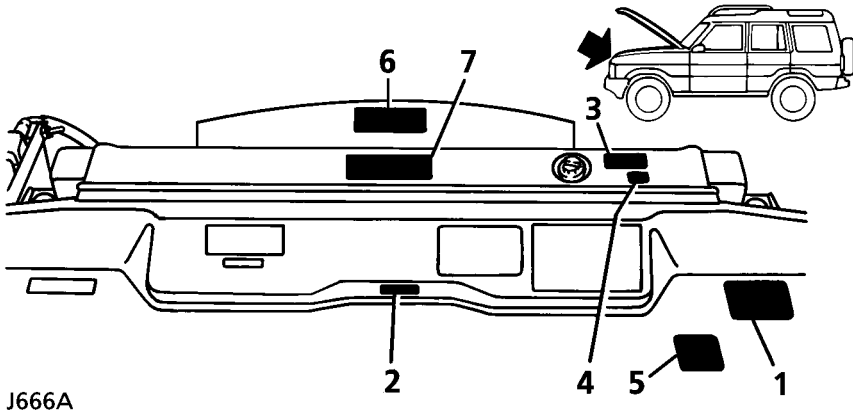
*Your vehicle has a higher ground clearance and, hence, a higher centre of gravity than ordinary passenger cars. This will result in different handling characteristics. Inexperienced drivers should take additional care, particularly in off-road driving situations and when performing abrupt manoeuvres on unstable surfaces.*

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# Introduction

## INFORMATION LABELS FIXED TO THE VEHICLE

Various labels are fixed to the vehicle to draw your attention to specific safety information. The following are of particular importance:

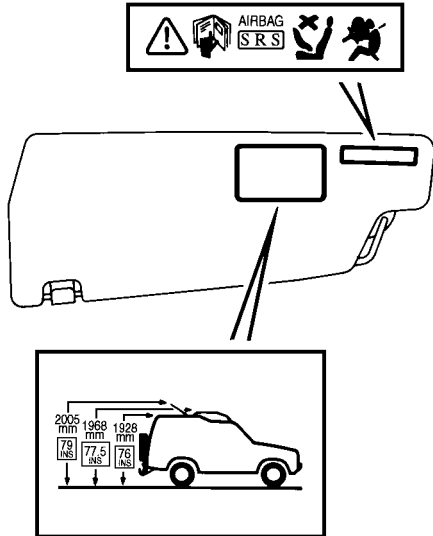


### *Location of labels* (Tdi illustrated)

1. BEFORE JACKING VEHICLE
2. HEADLAMP LEVELLING (if fitted)
3. THIS PLUG MUST NOT BE REMOVED WHEN ENGINE IS HOT
4. ANTI FREEZE - DO NOT DRAIN
5. REWAX AFTER STEAM CLEANING
6. KEEP CLEAR OF ROTATING PARTS
7. AIR CONDITIONING (if fitted)

Information concerning operation of the transfer gearbox with either manual or automatic gearbox is printed on the centre console. This is important information and must be understood fully before using the transfer gearbox.

# Introduction



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On vehicles fitted with airbag SRS, remember to take careful note of warning information and labels that may be attached to the sun visor (illustrated above) or other parts of the vehicle.

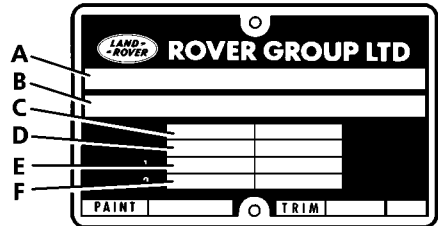
Details of the vehicle height, both with and without an open sunroof are printed on the underside of the drivers sun visor.

## 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).

The VIN (and recommended maximum vehicle weights) is stamped on a plate riveted to the top of the radiator grille panel (this should also match the VIN recorded in the Owner Information & Service Record book).

In addition, as a deterrent to car thieves and to assist the police, the VIN is also stamped on a plate which is visible through the left side of the windscreen.



J335

- A. Type approval
- B. Vehicle Identification Number (VIN)
- C. Gross vehicle weight (where required)
- D. Gross train weight (where required)
- E. Maximum front axle load (where required)
- F. Maximum rear axle load (where required)

# Introduction

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## ANTI-THEFT PRECAUTIONS

While it may be difficult 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 slightly 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, preferably into a lay-by. If a breakdown occurs on a motorway, pull well over to the inside of the hard shoulder.
- Switch on hazard lights.
- If possible, position a warning triangle or a flashing amber light at an appropriate distance from the vehicle to warn other traffic of the breakdown, (note the legal requirements of some countries).
- Consider evacuating passengers through nearside doors onto the verge as a precaution should your Discovery be struck by another vehicle.

# **SECTION 2**

## ***Controls & instruments***

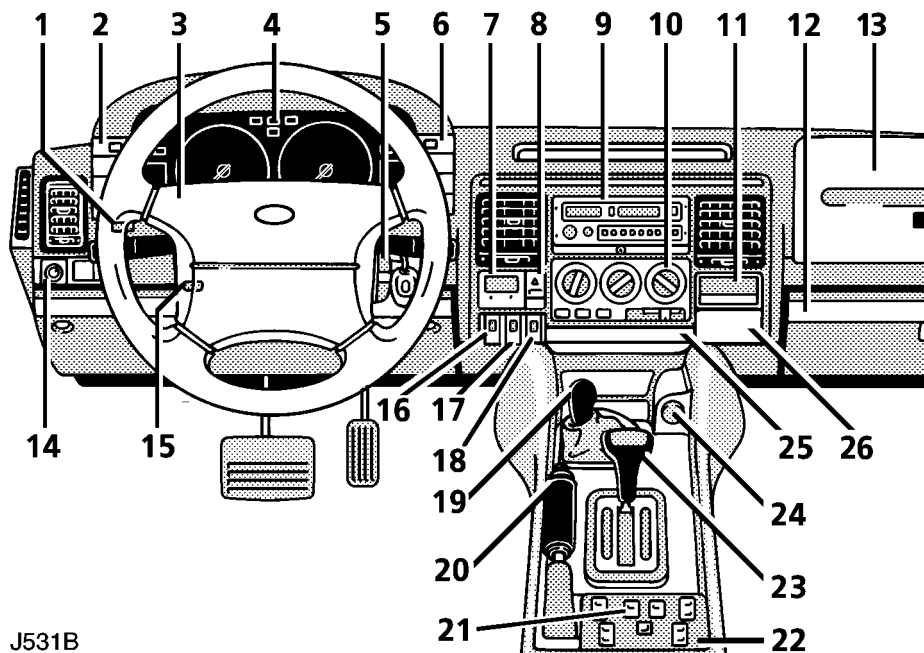
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*In this section of the handbook you will find descriptions of the controls and instruments on your Discovery.*

*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.*

<b>Section Contents</b>	<b>Page</b>
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# Controls



J531B

1. Instrument panel illumination control (if fitted)
2. LH switch panel
3. Driver's airbag (SRS) (if fitted)
4. Instrument and warning light pack
5. Cruise control switches (if fitted)
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 airbag (SRS) (if fitted)
14. Electric mirror adjustment control
15. Steering column height adjuster
16. Heated front screen switch (if fitted)
17. Fog light switch (if fitted)
18. Cruise control master switch (if fitted)
19. Transfer gear lever
20. Handbrake
21. Heated front seat switches (if fitted)
22. Electric window switches
23. Main gear lever
24. Cigar lighter
25. Cup holder
26. Ashtray

**NOTE:** The precise specification and location of controls may vary according to territorial requirements and from model to model within the vehicle range.



# Locks & Alarm

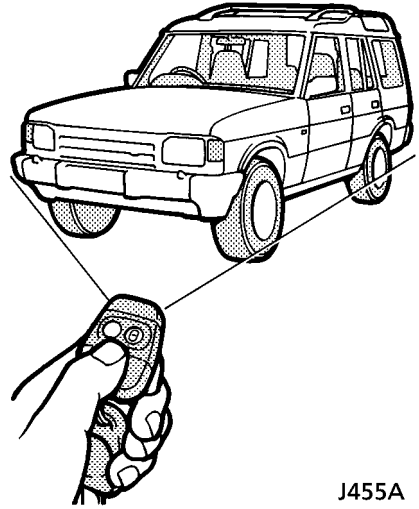
## ALARM SYSTEM (if fitted)

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

### IMPORTANT INFORMATION

**FOR MAXIMUM SECURITY ALWAYS USE  
THE HANDSET TO LOCK AND UNLOCK  
THE VEHICLE**

(except when the vehicle is to be locked with passengers or animals inside, or with a window or sunroof open - see 'Locking using the key').



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### LOCKING THE VEHICLE AND ARMING THE ALARM

Before locking the vehicle and arming the alarm, ensure all doors, windows, sunroof and bonnet 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 system indicator (located in the instrument panel) 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:

# Locks & Alarm

- the central door locking system (all the door locks are activated).
- the perimetric alarm (protects the doors and bonnet).
- ultrasonic space protection (protects the space inside the passenger compartment).
- engine immobilisation.

Once armed, the alarm will sound if any door is opened, or if (after a checking period of 15 seconds) any movement is detected inside the passenger compartment (see 'Ultrasonic space protection').

If the hazard warning lights fail to flash and the horn sounds twice when the handset is used to lock the vehicle, this indicates that either the bonnet or a door is not fully closed. In this case the alarm will still be armed and the engine immobilised, but ultrasonic space protection will not have been activated.

Once the open door or aperture is closed, the hazard warning lights will flash three times and the alarm system will arm itself as described previously.

## Unlocking with the handset

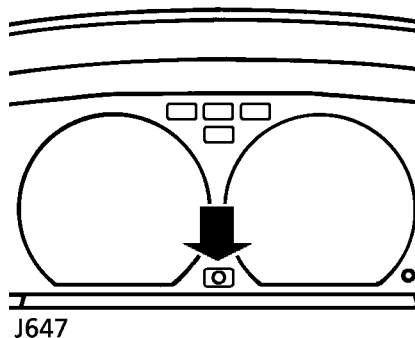
Within range of the vehicle briefly press the PLAIN button on the handset; the hazard warning lights flash once, the alarm is disarmed immediately and the engine is re-mobilised.

**NOTE:** *Dependent upon the territory, the hazard lights will flash once and the interior light illuminates when the alarm system is disarmed.*

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

## If the alarm sounds

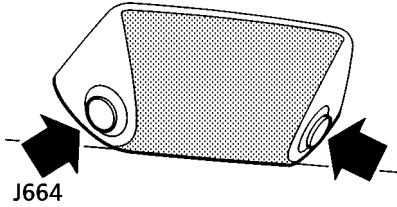
To silence the alarm, press either handset button, or operate the door locks using the key. If the alarm is not silenced it will sound for approximately 30 seconds before switching itself off, and can be triggered up to three times in total before needing to be reset.



## 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 such a time as the alarm is disarmed.



## Ultrasonic space protection

Ultrasonic space protection is only activated when the alarm is armed using the handset. Twin sensors monitor the interior space and activate the alarm if an intrusion into the passenger compartment is detected (entry gained through a window or sunroof, for example).

## ENGINE IMMOBILISATION

Engine immobilisation is an important aspect of the security system, and includes a feature known as 'passive immobilisation'. This is designed to safeguard the vehicle from theft should the driver forget to lock the doors and ensures that the engine is immobilised automatically whenever any of the following conditions occur:

- when the vehicle is locked using the handset or key.
- thirty seconds after the starter switch has been turned off AND the driver's door opened.
- five minutes after the starter switch is turned off, or the alarm system is disarmed.

The engine will be re-mobilised automatically whenever the key is inserted into the starter switch, provided the handset is kept on the key ring in close proximity to the starter switch.

## WARNING

*To ensure that the engine is automatically re-mobilised when the key is inserted into the starter switch, always keep the handset on the same keyring as the key.*

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# Locks & Alarm

## ENGINE IMMOBILISATION OVERRIDE

### (Entering the emergency key access code)

If the handset is lost or fails to operate, the engine can be re-mobilised by using the key to enter a unique four digit emergency key access code. The code is recorded on the Security Information card and is entered as follows:



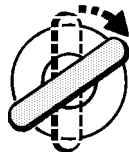
**1. Using the key**, turn the driver's door lock to the LOCK position and hold in this position for at least 5 seconds. Then return the key

to the centre position (as shown). It is now possible to use the key to enter the separate numerical values of the four digits that make up the emergency key access code.

### IMPORTANT INFORMATION

When entering a code:

- ENSURE each key movement is carried out with care and precision and turned through the full extent of its travel.
- After turning the key to either the lock or unlock positions, make sure it is FULLY returned to the centre (vertical) position.
- If a digit is entered incorrectly, the WHOLE code can be cancelled by returning to operation '1' and starting again.



**2. Enter the FIRST digit of the code.** If the first digit is 4, turn the key to the UNLOCK position 4 times. Ensure the key is FULLY returned to the centre position after each turn of the key.



**3. Enter the SECOND digit of the code.** If the second digit is 3, turn the key to the LOCK position 3 times. Remember; the key must be FULLY returned to the centre position after each turn of the key.



**4. Enter the THIRD digit of the code.** If the third digit is 2, turn the key to the UNLOCK position twice, ensuring that the key is FULLY returned to the centre position after each turn of the key.



**5. Enter the FOURTH digit of the code.** If the fourth digit is 1, turn the key to the LOCK position once. Ensure the key is FULLY returned to the centre position after the key has been turned.



**6. FINALLY**, turn the key to the UNLOCK position once more to disarm the alarm and re-mobilise the engine. If the code has been entered successfully, the anti-theft alarm indicator light on the instrument panel will extinguish and the engine can be started.

# Locks & Alarm

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***If an incorrect code has been entered:***

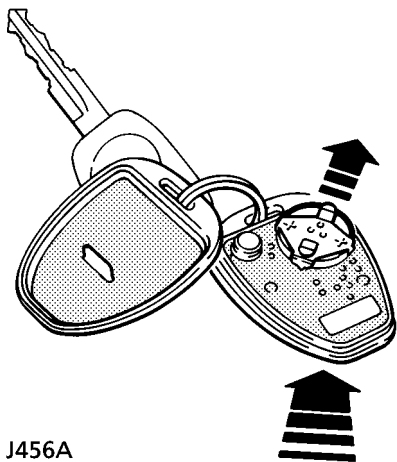
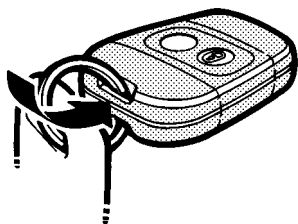
If the code has been entered incorrectly, the sounder will bleep twice and the anti-theft alarm indicator light will continue to flash. In this case, return to '1' and re-enter the code.

After three failed entry attempts, the security system invokes a delay period of thirty minutes during which the system will not accept any further attempts to enter a code.

***NOTE:*** *Once the engine immobiliser has been deactivated by entering the emergency key access code, it will remain inactive until a handset is next used to lock the vehicle.*

## **WARNING**

- ***NEVER leave the Security Information card in the vehicle.***
  - ***Memorise the emergency key access code or keep the Security Information card on your person in case of emergencies (a damaged handset for example).***
-



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## 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 disarm.

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

- 1) Carefully prise the handset apart, 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.

## WARNING

*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.*

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# Locks & Alarm

## IMPORTANT INFORMATION

### Battery disconnection

Your vehicle is equipped with a battery backed-up sounder, which powers the alarm siren should the vehicle battery be disconnected.

In some markets, vehicles may be equipped with a battery backed-up sounder, which powers the alarm siren should the vehicle battery be disconnected.

Before disconnecting the vehicle battery, it is ESSENTIAL to refer to '*Battery removal and replacement*' in Section 4, in order to prevent the alarm from sounding.

If the vehicle battery is disconnected for any reason, the status of the security system prior to disconnection will be memorised and automatically reset when the battery is reconnected.

## ALARM OR HANDSET DIFFICULTIES

Alarm goes off unexpectedly.	(a) Ensure all windows and sunroof are closed. (b) Disable ultrasonic alarm (refer to ' <i>Locking using the key</i> ').
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Alarm goes off when door opened.	Unlock vehicle with handset, NOT the door key. If the handset has failed, enter the emergency key access code (refer to ' <i>Engine immobilisation override</i> ').
----------------------------------	---

Vehicle will not start.	Press unlock button on handset. If it still will not start, consult your Land Rover dealer.
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Hazard lights don't flash and horn sounds twice when alarm is armed.	Ensure all doors and bonnet are closed.
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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.
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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.
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# Locks & Alarm

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## 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 taildoor 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 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!***

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## Spare wheel locking nut key

In some markets, vehicles fitted with alloy wheels are equipped with a locking cap which fits over one of the wheel nuts securing the spare wheel to the taildoor. In this case, two additional (smaller) keys will have been supplied to lock and unlock the cap (see 'Wheel Changing'). Keep a record of the key number in a safe place.

## Locking using the key

Locking the vehicle with the key instead of the handset restricts security protection to the perimeter alarm and engine immobilisation only. Ultrasonic space protection will not be activated!

### WARNING

***The handset MUST be used to unlock the vehicle. Unlocking the vehicle using the key does not disarm the alarm or re-mobilise the vehicle.***

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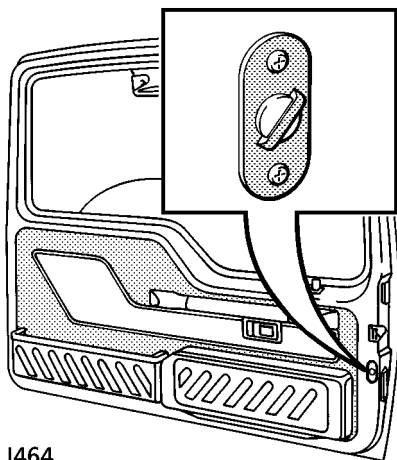
## Door sill locking buttons

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

***NOTE: When the driver's door locking button is operated, the central locking system operates all door locks simultaneously.***



# Locks & Alarm



J464

## Child-proof locks

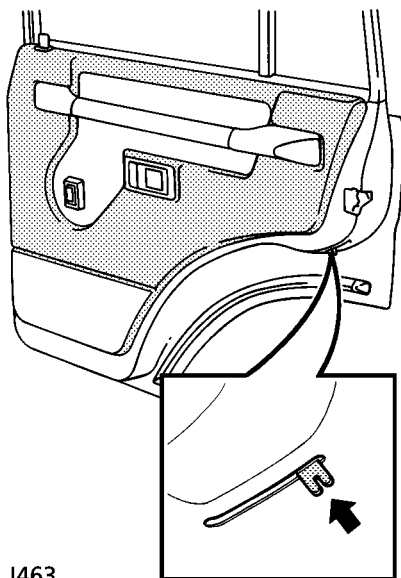
Move the locking levers to the 'ON' position (as illustrations) to engage.

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

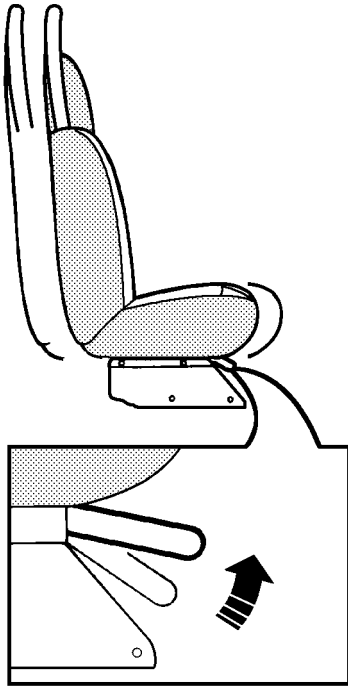
## Door locking cut-off switch

An inertia switch, operational only with the starter switch in position 'II', prevents the doors 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 hazard warning lamps flash (if market permits). 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.



J463



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## FRONT SEAT ADJUSTMENT

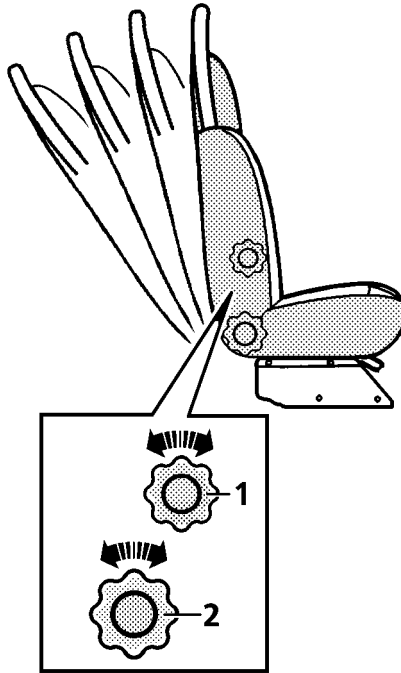
### Forward/backward movement

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. DO NOT adjust the driver's seat while the vehicle is in motion.*

*DO NOT allow front seat 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 25 degrees from the upright (vertical) position.*



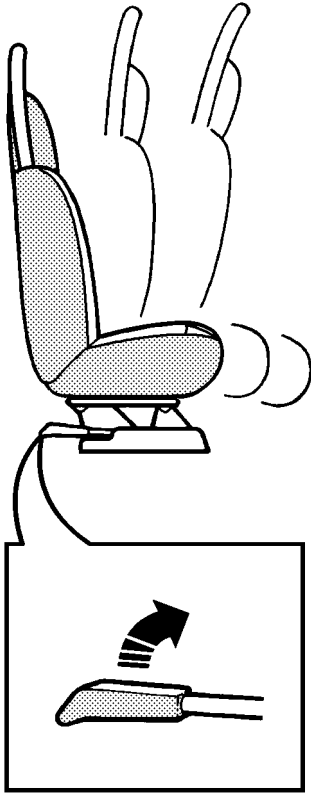
J591A

### 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 achieve the desired backrest angle.

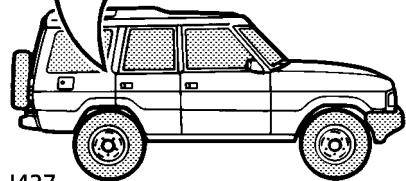
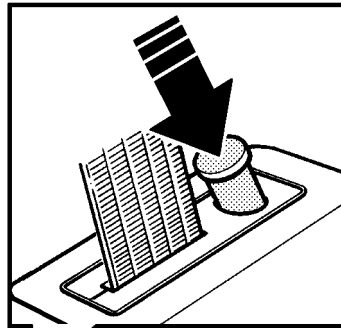


J425

### Tilt movement - (3 door models only)

Lift the lever to release, then tilt the seat forward. Push the seat back and ensure the seat is locked in position before driving.

**NOTE:** On some models the drivers seat is fixed.



J427

### FOLDING THE REAR SEATS

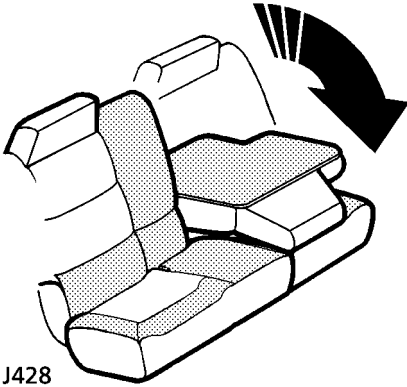
#### WARNING

**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.**

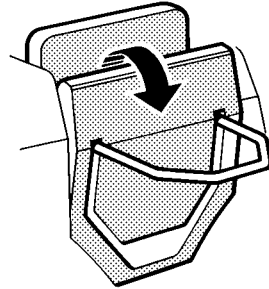
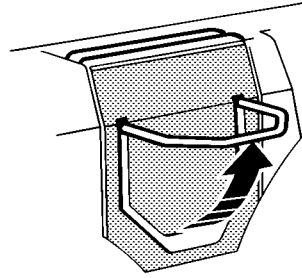
Before folding the rear seats, pass the seat belt locks through the junction of the backrest and the cushion and into the loadspace.

1. Push the release buttons (arrowed in illustration).



J428

2. Fold the backrest forward.

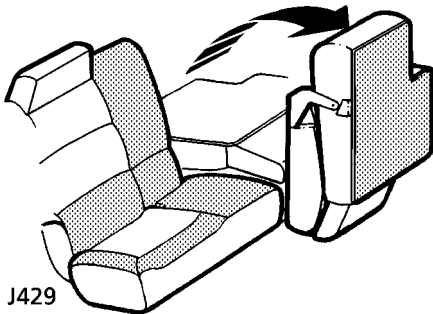


J431

## INWARD FACING SEATS

(if fitted)

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



J429

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.

### WARNING

*When the seat is erected, the latching mechanism should be visually checked and physically tested to ensure that the latch is secure before driving.*

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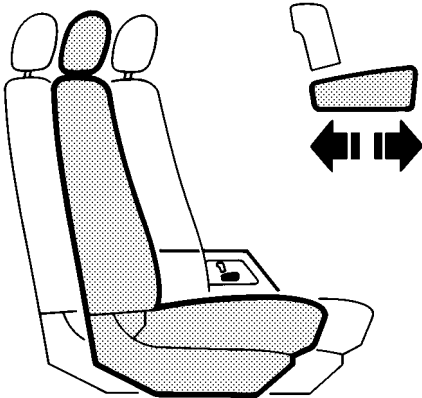
## POWER OPERATED FRONT SEATS

(if fitted)

The seat adjustment controls are situated on the side of the centre console.

Seat 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 at position '0'.

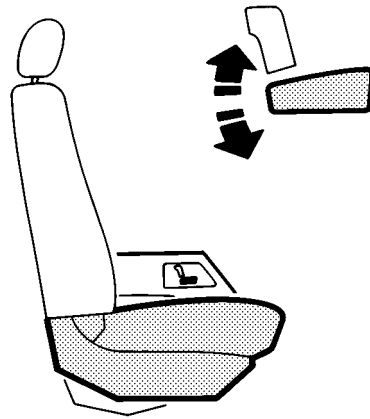
The following functions are available:



J649

### Forward/backward movement

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



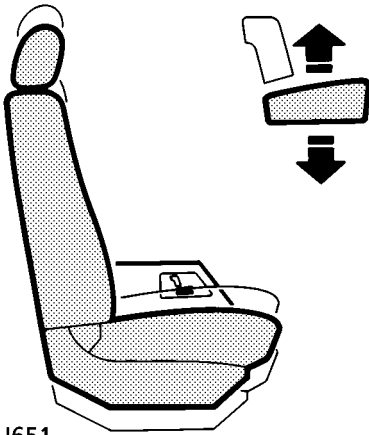
J650

### Seat cushion angle

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

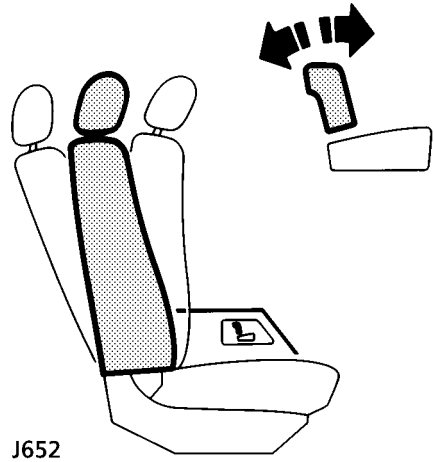
## WARNING

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



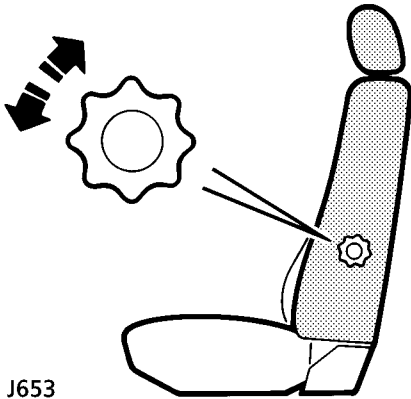
### SEAT CUSHION HEIGHT

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



### Seat back adjustment

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



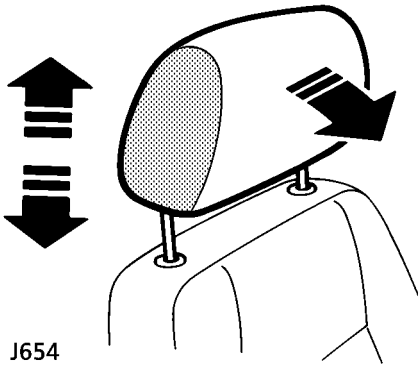
### Lumbar support adjustment

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

### WARNING

*DO NOT allow front seat 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 25 degrees from the upright (vertical) position.*

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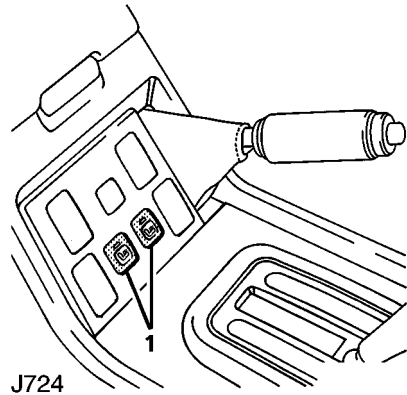
### Head restraint adjustment

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

#### **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.*

---



### Heated front seats

With the starter switch turned to position 'II', press one of the switches (No 1 in illustration) 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 26° 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.*

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# Seat belts

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## SEAT BELT SAFETY

### Seat belts are life saving equipment.

In a collision unrestrained passengers can be thrown around inside the vehicle, or possibly thrown out of the vehicle, resulting in injury to themselves and to other occupants. DO NOT take chances with safety!

- DO make sure ALL passengers are securely strapped in at all times - even for the shortest journeys.
- ALWAYS adjust seat belts 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.
- 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.
- DO have seat belts checked if the vehicle is involved in an accident.
- 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.
- DO use the seat belts to secure large items of luggage that are to be carried on the seats - in the event of an accident, insecure items become flying missiles capable of causing serious injury.

- DO NOT fit more than one person into a belt, or use a seat belt that is twisted or obstructed in any way that could impede its smooth operation.
- DO NOT allow front seat 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 25 degrees from the upright (vertical) position.
- DO NOT allow foreign matter (particularly sugary food and drink particles) to enter the seat belt locks - such substances can render the locks inoperative.
- Pregnant women should ask a doctor for advice about the safest way to wear seat belts.

### WARNING

*The airbag supplementary restraint system (SRS) is designed to add to the overall effectiveness of the seat belts. It DOES NOT replace them. SEAT BELTS MUST ALWAYS BE WORN!*

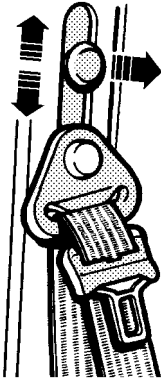
*Ensure that all seat belts are worn correctly - an improperly worn seat belt increases the risk of death or serious injury in the event of a collision.*

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# Seat belts

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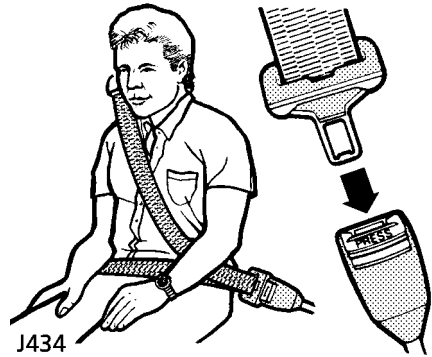


J433

## Upper anchorage adjustment (front seats) (5 door models)

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 the anchorage has 'clicked' into one of the locked positions before driving.



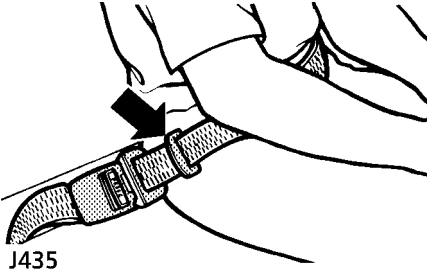
J434

## Fastening the inertia reel belts

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

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 - DO NOT allow the front passenger to travel with the seat steeply reclined.

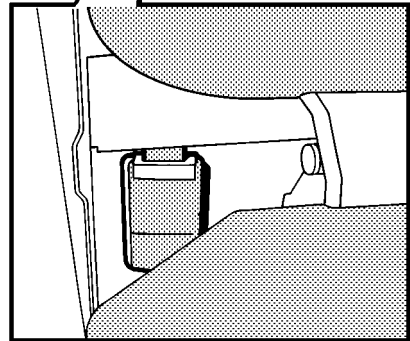
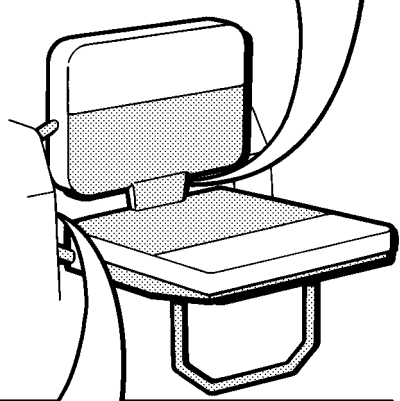
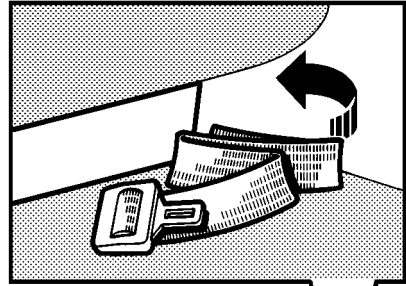
# Seat belts



J435

## 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.



J430

## Inward facing seat belt stowage:

Fold the seat belt as shown and tuck into the pocket at the base of the backrest.

Push the seat belt lock onto the clip where shown.

# Seat belts

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## Child seats

The seat belts fitted to your vehicle are designed for adults and larger children. For safety, it is very important that infants and young children are restrained in a suitable child seat. For further information on child seats available for your vehicle, please contact your Land Rover dealer.

Only fit a child seat that has been approved for use in your vehicle, and ensure the manufacturer's fitting instructions are followed exactly.

### ***Vehicles fitted with a passenger airbag:***

It is not recommended that a child safety seat is fitted to the front passenger seat if the vehicle is equipped with a passenger airbag system. If it is essential for a child to travel in the front (i.e. in an emergency), set the seat fully rearward and use **ONLY** an approved **FORWARD FACING** child restraint.



The above symbol affixed to the fascia panel of your vehicle, warns against the use of a rear facing child seat in the front passenger seat, when a passenger airbag is fitted. This type of child seat could cause serious injury to your child in the event of an airbag deployment.

## WARNING

***DO NOT install a rear facing child seat in the front passenger seat if a passenger airbag is fitted.***

***NEVER leave a child unattended in the vehicle.***

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# Seat belts

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## Caring for seat belts

Regularly inspect the belt webbing for signs of fraying, cuts and wear; also pay particular attention to the condition of the fixing points and adjusters.

DO NOT bleach or dye the webbing. Clean using ONLY warm water and non-detergent soap - allow to dry naturally and do not retract or use the belts until they are completely dry.

## Testing inertia reel belts

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 seat belt unfastened, unreel the webbing to the limit of its travel. Check that unreeling is free from snatches and snags.
3. 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.

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

### **WARNING**

***Always replace a seat belt that shows signs of webbing damage or has withstood the strain of a severe vehicle impact.***

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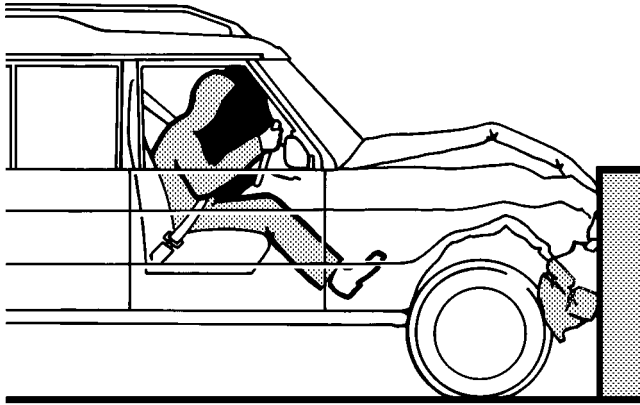
# Airbag SRS

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

Always remember; the airbag is a supplementary restraint system that provides ADDITIONAL protection in a frontal impact only - it does NOT replace the need to wear a seat belt. For maximum safety protection in all crash situations, a seat belt must be worn.



J519A

# Airbag SRS



## How the airbag SRS works

The airbag supplementary restraint system (SRS) includes either: a single airbag module (mounted in the steering wheel centre pad) for the driver, or twin airbag modules (where shown in illustration) to protect both the driver and the front seat passenger.

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

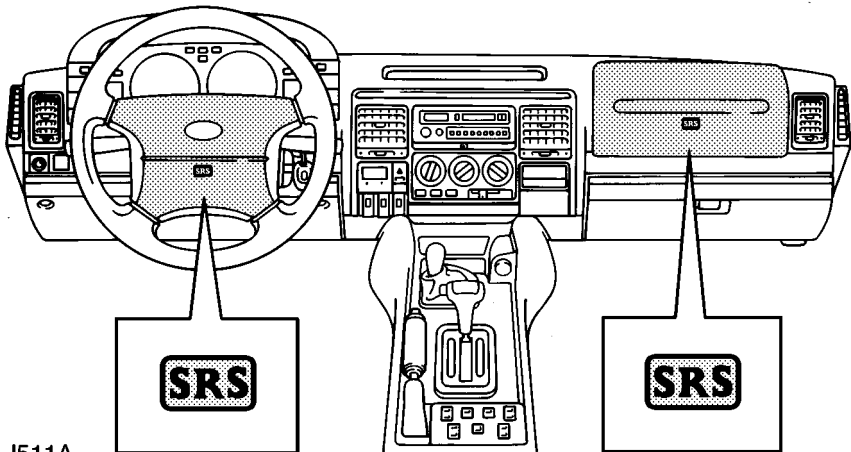
If the impact is sufficiently severe, the system causes each airbag to inflate. Inflation is instantaneous and accompanied by a loud noise. Also evident may be traces of smoke and powder, neither of which are injurious or indicative of a malfunction of the airbag.

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

**NOTE:** An airbag will not inflate as a result of heavy braking, minor bumps or potholes.

## WARNING

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



J511A

# Airbag SRS

## IMPORTANT INFORMATION

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

- An airbag will only provide additional protection in severe 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 very quickly and will not provide protection against the effects of secondary impacts that can occur during multiple vehicle collisions.
- CHILD SEATS: If a passenger airbag is fitted, DO NOT use a rear facing child seat in the front passenger seat. The inflating airbag could impact with the seat causing injury to the child. If it is necessary for a child to travel in the front, set the seat fully rearwards and use ONLY an approved FORWARD FACING child seat.

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

- 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 in close proximity to, an airbag module while the vehicle is in motion.

### Airbag SRS warning light

A warning light mounted on the instrument panel will alert you to any malfunction, which might prevent the airbag SRS from operating correctly in the event of a frontal impact. The airbag SRS should always be checked by a dealer if any of the following symptoms occur:

- 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.

## Service information

After a period of ten years some airbag components will need to be changed (note the 'airbag SRS service date' shown on page 2 of the Owner Information & Service Record book). To ensure absolute safety, this work must ONLY be carried out by a Land Rover dealer, who should stamp and sign the appropriate page of the Owner Information & Service Record book once the work has been completed.

In addition, 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 airbag module cover (the steering wheel centre pad or fascia panel) shows signs of cracking or damage.

## WARNING

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

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## IMPORTANT INFORMATION

The components that make up the airbag SRS 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 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 in-car entertainment system.
- Modification to the front of the vehicle, including the bumper and chassis.
- Attachment of accessories to the front of the vehicle.

In addition:

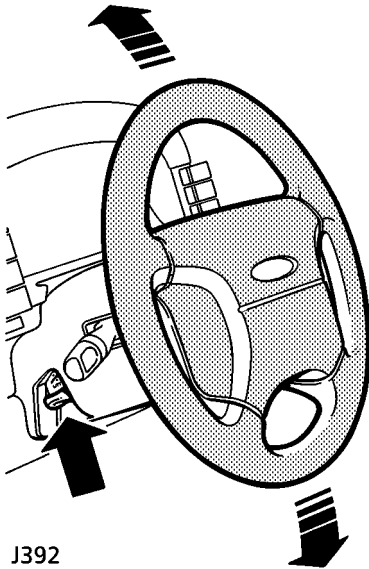
If you sell your Discovery, be sure to inform the new owner that the vehicle has an airbag supplementary restraint system. In addition, make sure the new owner is aware of the airbag SRS service date shown on page 2 of the Owner Information & Service Record book.

If your 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.



# Steering column

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J392

## STEERING COLUMN ADJUSTMENT

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

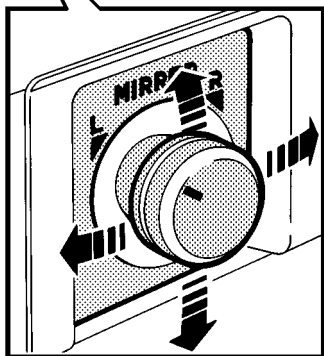
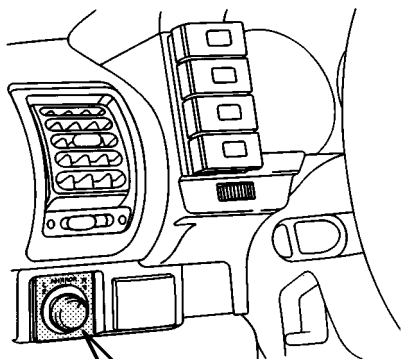
1. Push the locking lever up (and hold in position).
2. Move the steering wheel up or down into the desired position.
3. Release the locking lever.

### WARNING

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

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# Door mirrors



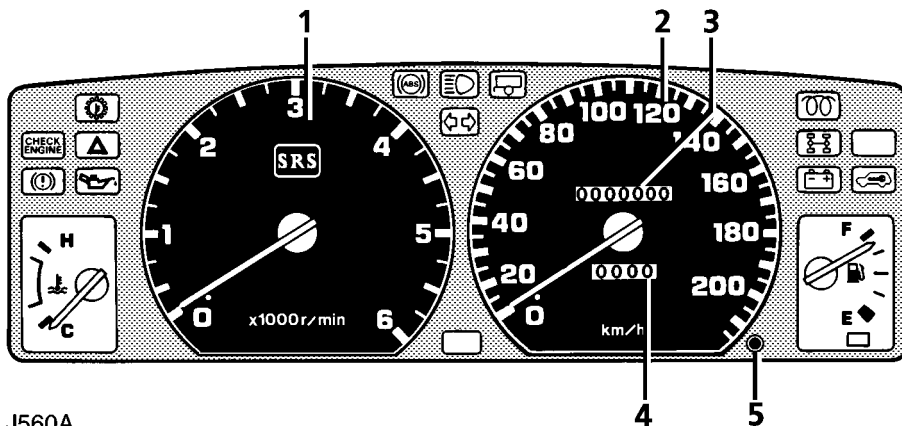
J512

## ELECTRIC MIRRORS (if fitted)

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 tilt the mirror glass to the required position.
3. When adjustment is complete, return the control to a position midway between 'L' or 'R'.

**NOTE:** Heating elements inside each mirror operate in conjunction with the heated rear window to disperse ice, mist or rain drops from the glass.

# Instruments



J560A

## 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.

Vehicles equipped with a catalytic converter are fitted with a system which automatically restricts the number of engine revolutions per minute once the engine's maximum 'governed' speed has been reached.

On some models, the tachometer has a red 'danger' zone. NEVER allow engine speeds to increase so that the needle enters the RED zone!

## 2. Speedometer

Indicates road speed in miles and/or kilometres per hour. [pl]Indicates road speed in kilometres per hour.

## 3. Total distance recorder

Indicates total distance travelled by the vehicle.

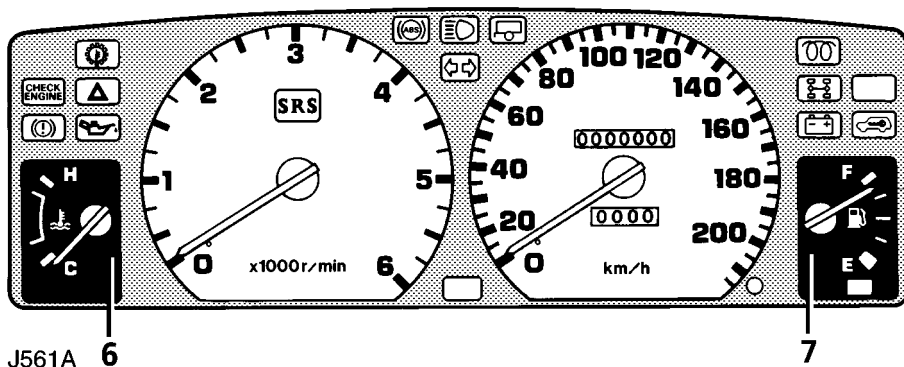
## 4. Trip recorder

Records individual journey distances.

## 5. Trip recorder reset button

Press to return trip recorder to zero.

# 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

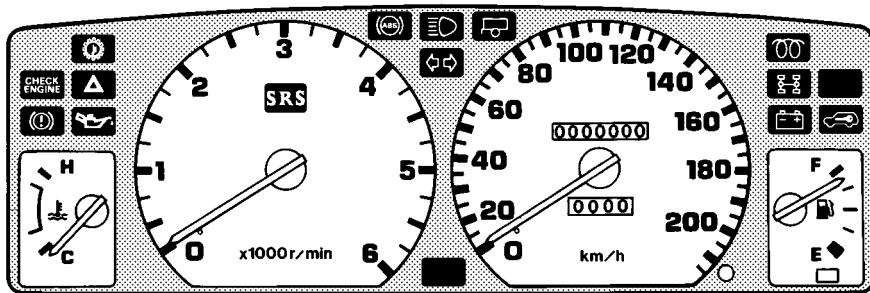
The pointer indicates the fuel level even when the starter switch is turned off. After refuelling, the gauge slowly changes to the new level when the starter switch is turned to position 'II'.

When the fuel remaining in the tank is a minimum of 9 litres, the AMBER low fuel warning light will illuminate. If the light illuminates, refuel at the first opportunity.

### WARNING

**NEVER allow petrol engined models to run out of fuel (the resultant misfire may destroy the catalytic converter).**

# Warning lights



J562A

The location and specification of the warning lights will vary according to model and market requirements.

The warning lights are colour coded as follows:

**RED** lights are warnings.

**AMBER** lights are cautions.

**GREEN & BLUE** lights indicate that a unit is operating.

## WARNING

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



**Check engine - AMBER** (if fitted)

Illumination at any time indicates an engine fault - if the light illuminates avoid high speeds and seek qualified assistance urgently.



**Engine immobilisation - RED**  
(if fitted)

In some markets, this light indicates the engine is immobilised. The engine can **ONLY** be re-mobilised by pressing the 'unlock' button on the handset. (See 'Locks & Alarm, Engine immobilisation').



**Handbrake, brake fluid, & brake pad wear - RED**

The light illuminates momentarily as a bulb check when the starter switch is turned on and also illuminates when the handbrake is applied and the starter switch is in position 'II'.

The light should extinguish when the handbrake 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**

# Warning lights

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## Transmission oil temperature

- RED (if fitted)

Illuminates when 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 handbrake has been 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.

**NOTE:** In some markets the light will also temporarily illuminate as a bulb check when the starter switch is turned to position 'II'.



## 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 as soon as safety permits and seek qualified assistance before driving. Always check oil levels when this light illuminates.



## Airbag SRS - RED (if fitted)

The light illuminates when the starter switch is turned to position 'II' and extinguishes after about 5 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' and then extinguishes for half a second before coming on again and remaining illuminated until the vehicle is driven above approximately 7 km/h. If this does not occur, then a fault has occurred and you should consult your Land Rover dealer at the earliest opportunity. If the light remains illuminated or subsequently illuminates whilst driving, there is a fault with the system: on completion of your journey, seek assistance from your dealer before further vehicle use.



## Headlight main beam - BLUE

Illuminates when the headlights are on main 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 on the trailer, 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.

# Warning lights



## **Catalyst - RED (if fitted)**

Illuminates when the catalytic converter has overheated. If this occurs, stop as soon as safety permits and seek qualified assistance before continuing.

In some markets, brief illumination occurs as a bulb check when the starter switch is turned to position 'II'.



## **Glow plug - AMBER (diesel only)**

Illuminates when the starter switch is turned to position 'II' if the engine is cold. WAIT for the light to extinguish before starting the engine.



## **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.



## **Battery charging - RED**

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



## **Seat belt - RED (if fitted)**

In some markets, if the driver's seat is occupied the light illuminates when the starter switch is turned to position 'II'. The light extinguishes as soon as the driver's seat belt is fastened. ALWAYS fasten your seat belt BEFORE driving!

## **IMPORTANT INFORMATION**

### **AUDIBLE WARNINGS**

In some markets the vehicle specification will include one or more of the following audible warnings:

#### **Driver's seat belt reminder**

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

#### **Excess speed warning**

A buzzer will sound whenever the vehicle speed exceeds 120 km/h approx.

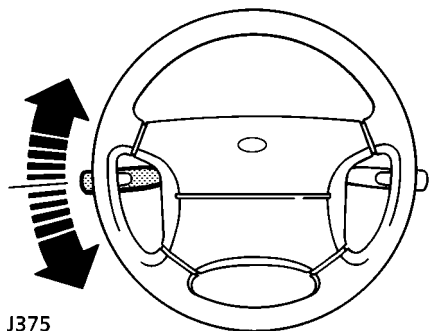
#### **Lights on warning**

(See next page).

#### **Transfer box warning**

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

# Lights & indicators

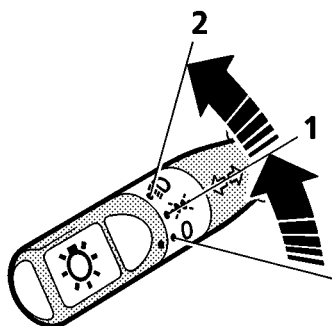


J375

## Direction indicators

Move the lever **DOWN** to indicate a **LEFT** turn, and **UP** to indicate a **RIGHT** turn (the appropriate **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.



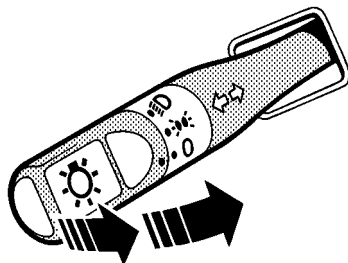
J377

## Side, tail and instrument panel lights

Turn lighting switch to position 1.

## Headlights

With the starter switch in position 'I' or 'II', turn lighting switch to position 2.



J378

## Headlight main and dipped beams

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

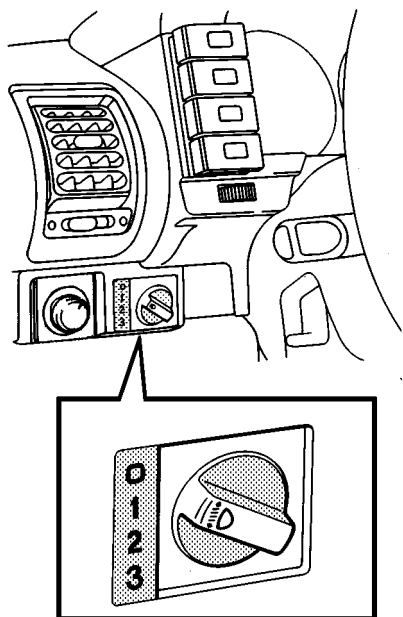
To flash the headlights, pull the lever part way towards the steering wheel and release.

## 'Lights on' warning buzzer

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



# Lights & indicators



J727

## Headlight levelling (if fitted)

The height of the headlight beams is affected by the distribution of weight inside the vehicle. Always ensure your headlights are adjusted so that the point at which they meet the road surface ahead of the vehicle provides adequate illumination without dazzling other road users.

The following load conditions should be used as a guide.

**Position '0'**: Driver only, or driver and front seat passenger (loadspace empty).

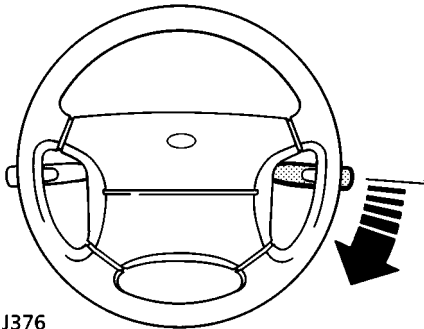
**Position '1'**: Driver, front passenger and three rear seat passengers (loadspace empty).

**Position '2'**: All seats occupied by adults (including inward facing seats - if fitted) and loadspace loaded to gross vehicle weight.

**Position '3'**: Driver only with loadspace loaded to maximum rear axle weight.

**NOTE:** *The gross vehicle weight and maximum rear axle weights can be found in 'General data'.*

# Wipers & washers



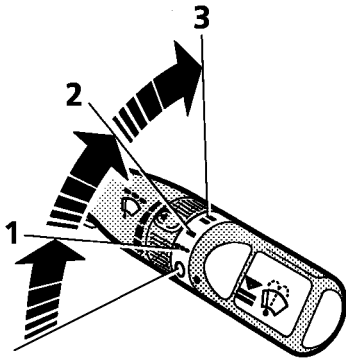
## WINDSCREEN WIPERS

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**

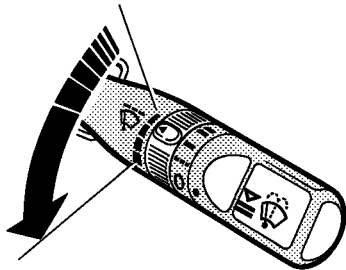
Turn switch to first position.

- **Normal speed wipe**

Turn switch to second position.

- **Fast speed wipe**

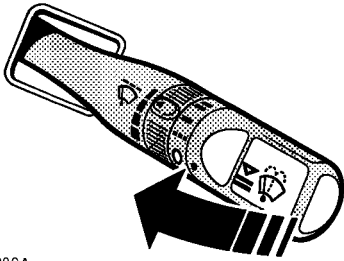
Turn switch to third position.



- **Variable delay (intermittent wipe)**

Rotate the switch to vary the delay between wipes.

# Wipers & washers



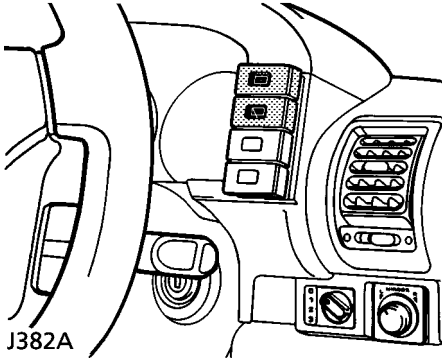
J380A

## WINDSCREEN WASHER

Pull the lever towards the steering wheel. The windscreen wipers will operate in conjunction with the washers 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 (if fitted)

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



J382A



### 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.

## REAR WINDOW WIPERS

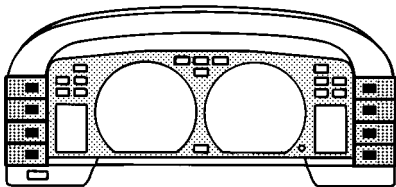
### IMPORTANT INFORMATION

- 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 wiper blades have stuck to the glass, a thermal cut-out may temporarily prevent the wiper motor from operating. If this is the case, switch the wipers off, free them from the obstruction and then switch on again.

# Switches

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J398



## Heated rear window

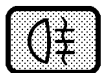
Press to operate; press a second time to switch off. The indicator

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.*



## Rear fog guard lights

Press to operate, press a second time to switch off. The rear fog

guard lights operate ONLY when the headlights (or front fog lights) are switched on, together with the starter switch turned to position 'II'. 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 fog guard lights off as soon as visibility permits; in clear conditions fog guard lights can dazzle other road users!

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

## RADIO REMOTE CONTROLS (if fitted)

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 'In-car entertainment'.



## Volume up

Press to increase the volume.



## Volume down

Press to reduce the volume.



## Seek/search

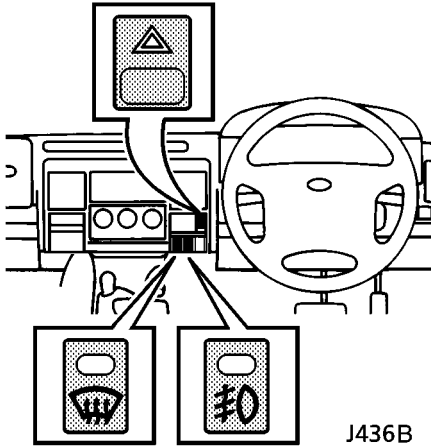
Press to search for the next radio station on the selected waveband. If the vehicle is equipped with a CD autochanger, this control can also be used to select the next track on a compact disc.



## Waveband

Press to change waveband. If the vehicle is equipped with a CD autochanger, this control can also be used to select the next compact disc in the magazine.

# Switches



## Front fog lights (if fitted)

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

The fog lights can be operated **ONLY** when the side or headlights are also switched on, and extinguish automatically when the side lights are switched off.

**NOTE:** If the vehicle is parked with the side lights illuminated, then the fog lights could inadvertently also be illuminated even after the starter switch is turned off. **ALWAYS** switch the fog lights off when they are not needed.



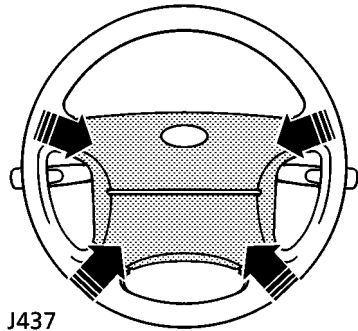
## Hazard warning lights

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.



## Heated front screen (if fitted)

Press to operate (the indicator light on the switch illuminates); press a second time to switch off (the indicator light extinguishes). The heated screen operates only with the engine running. After 5 minutes continuous operation, the heater switches off automatically.



J437

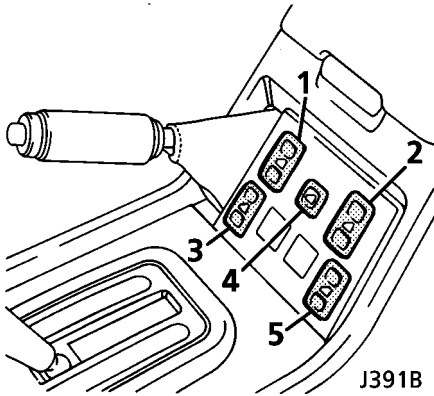
## Horn

On models fitted with Airbag SRS (steering wheel illustrated above), press the horn symbol edges of the steering wheel pad to operate.

If Airbag SRS is not fitted, press the centre of the steering wheel to operate.

# Electric windows

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## ELECTRIC WINDOWS (if fitted)

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. Isolating 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 the 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 to position '0' (provided the driver's 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. 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 an electrically operated window on fingers, hands or any vulnerable part of the body, can result in serious injury.*

*Always observe the following precautions:*

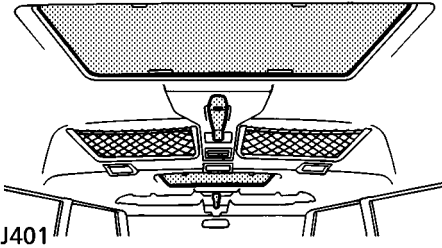
- *ISOLATE the rear window switches when carrying children.*
- *ENSURE children are kept clear whilst raising or lowering windows.*
- *DO NOT leave children alone in the vehicle.*
- *ENSURE that all adult passengers are familiar with the controls and the potential dangers of electrically operated windows.*

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## Isolation switch

Press once to isolate the rear window controls; press again to restore independent control.

# Sunroof



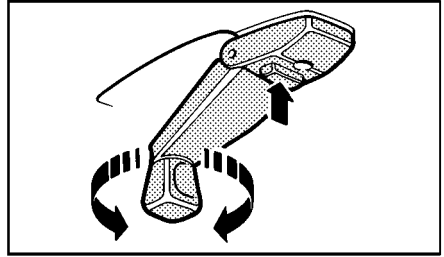
## MANUAL SUNROOF

Pull the operating handle from its recess until it locks in position. The roof can be opened and closed in two separate phases as follows:

**To TILT the roof:** depress the locking button (arrowed in illustration) and rotate the handle clockwise ONE COMPLETE TURN.

**To fully OPEN the roof:** depress the button again and continue turning clockwise.

**To CLOSE the roof:** rotate the handle anti-clockwise.

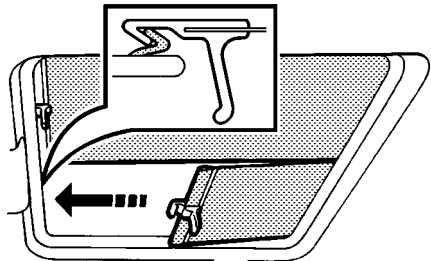


## WARNING

**ENSURE** the sunroof is not obstructed when opening or closing.

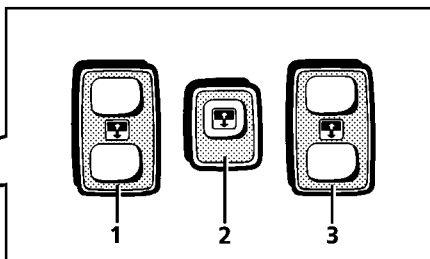
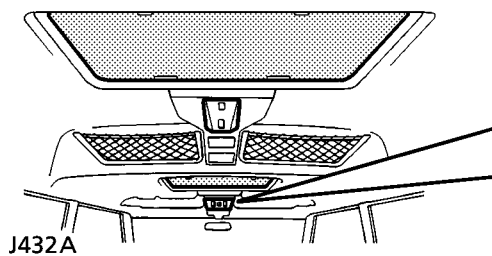
**DO NOT** allow passengers to extend any part of their bodies through the sunroof while the vehicle is moving.

**ALWAYS** close the roof when the vehicle is unattended.



Sunroof roller blind

# Sunroof



## ELECTRIC SUNROOF (if fitted)

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

The roof opens and closes in two separate phases as follows:

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

**To OPEN the roof:** press the upper part 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 part of the switch until the roof has moved to the required position.

When closing, the roof will pause momentarily when it reaches the tilt position.

**NOTE:** If the roof is obstructed for more than 7 seconds whilst opening or closing, an automatic cut-out will prevent the sunroof motor from operating. After a period, operation of the motor will be restored.

1. Rear sunroof operating switch
2. Rear sunroof disable switch.  
Always disable the rear sunroof when driving with children in the rear of the vehicle.
3. Front sunroof operating switch.

## WARNING

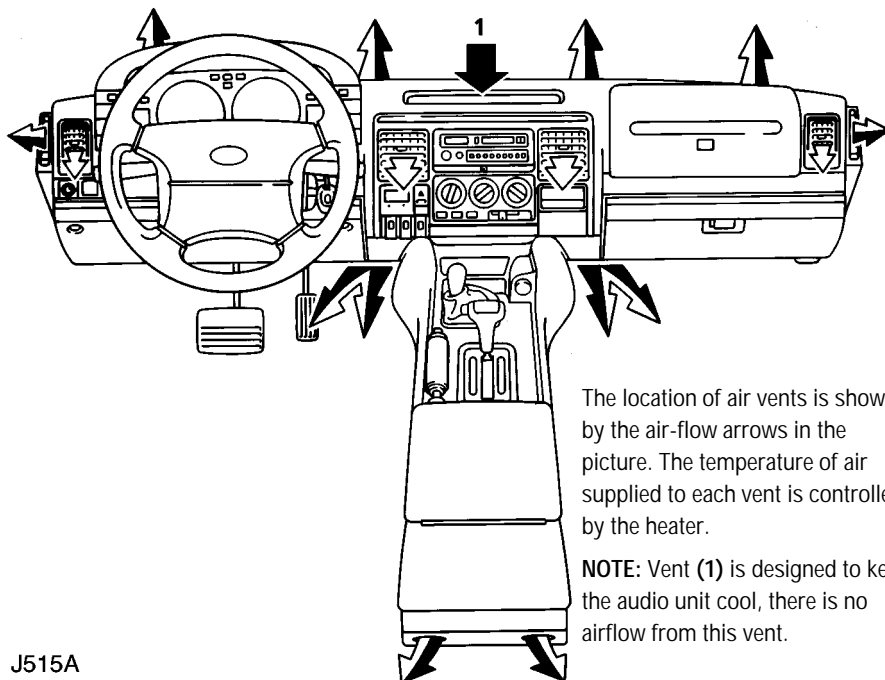
**Accidental closure of the electrically operated sunroof on fingers, hands or on any other vulnerable part of the body can result in very serious injury.**

**Always observe the following precautions:**

- **ENSURE passengers are kept clear while closing the roof.**
- **DO NOT 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 car is moving.**



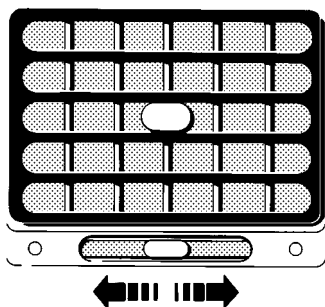
# Heating & ventilation



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 airflow from this vent.

J515A

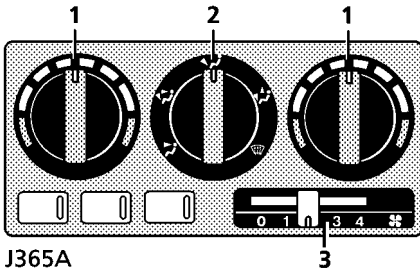


## Face level vents

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 louvres.

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

# Heating & ventilation



## 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 anti-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 fully open)



Air to face vents and foot outlets

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



Air to foot outlets



Air to foot outlets and windscreen

(recommended for clearing mild windscreen misting)



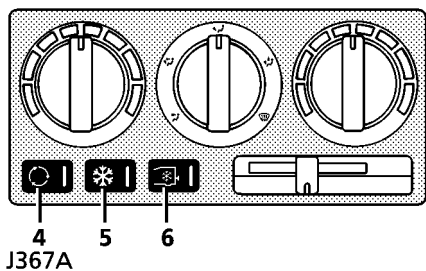
All air to windscreen

(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.

# Heating & ventilation



## 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.

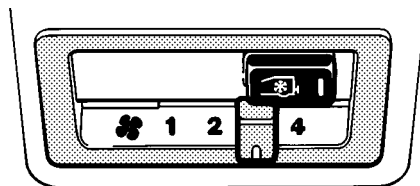
### WARNING

*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 (if fitted)

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).



## 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, 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.

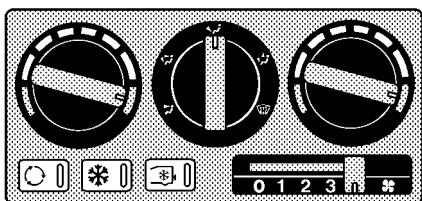
# Heating & ventilation

## 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.

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.

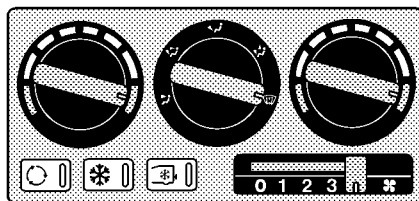
Always remember that full heating is not available until the engine has reached its normal operating temperature.



J368A

### Maximum heating

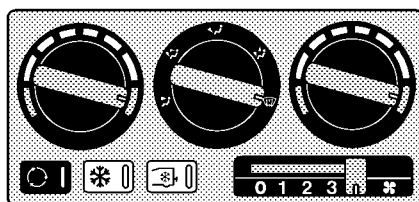
Set the controls as shown, with the blower at the slowest speed (position 1) until the temperature gauge indicates that the engine is warming up - the blower speed can then be increased.



J369A

### Demisting

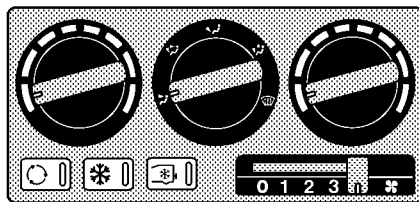
Set the controls as shown to obtain the maximum flow of heated air from the windscreen and side window vents. Opening a window may improve ventilation.



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*

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## **AIR CONDITIONING** (if fitted)

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.

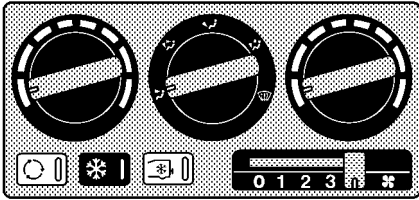
Operation of the air conditioning system places an additional load on the engine which, in very hot conditions and if the engine is required to work unusually hard, could result in high engine temperatures. If the temperature gauge pointer reaches the RED zone, the air conditioning is designed to cut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

## **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 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 conditions of high humidity, slight screen misting may be experienced when the air conditioning system is turned on. This is a natural occurrence on most automotive air conditioning systems. It is not a fault; misting will clear after a few seconds once the air conditioning system is operating.

# Air conditioning

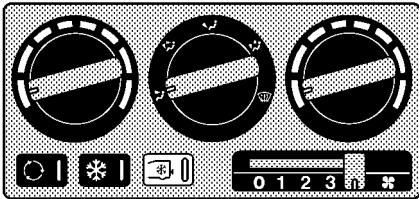
The following examples are included for your guidance:



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.

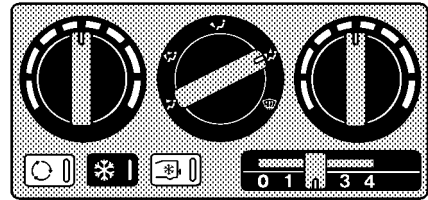


J373A

## 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.



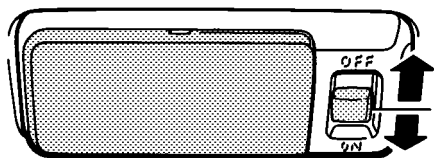
J374A

## 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.

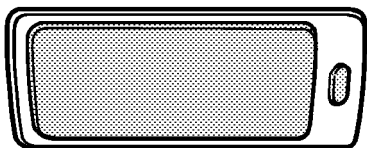
### Automatic operation

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:** Any subsequent opening and shutting of doors prior to the starter switch being turned on again, will cause the 15 second delay feature to operate.

**NOTE:** After 8 minutes a 'time-out' function extinguishes the lights to prevent the battery from discharging.



J388

## REAR INTERIOR LIGHT

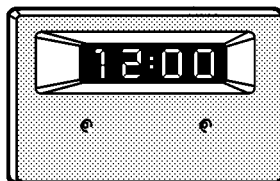
Press switch to manually illuminate (or extinguish) light.

## LOAD SPACE 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

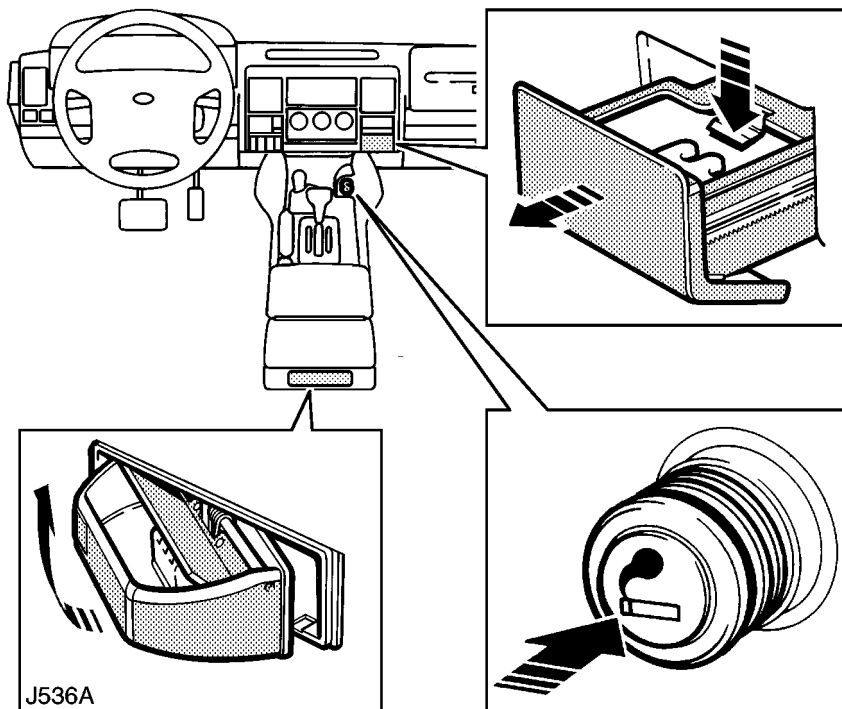
## CLOCK

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

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

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

# Interior equipment



## CIGAR LIGHTER

With the starter switch turned on, press 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.
- DO NOT plug accessories into the cigar lighter socket unless they are approved by Land Rover.

## ASHTRAYS

**Front:** 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).

**Rear:** To remove, open the ashtray and disengage the lower pivot by pushing the front 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.

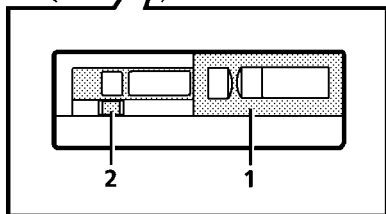
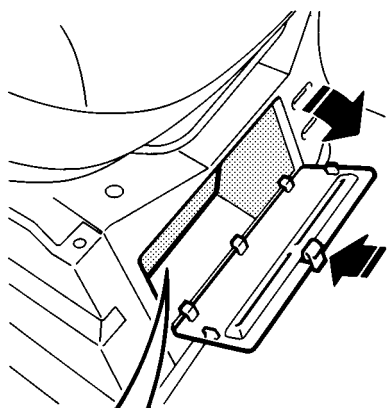
## WARNING

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



# Interior equipment

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J655

## **CD AUTOCHANGER** (if fitted)

The CD autochanger is located under the right, 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 the button (2) to eject the magazine. Keep the sliding cover closed at all other times to prevent dust and dirt from entering the autochanger.

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

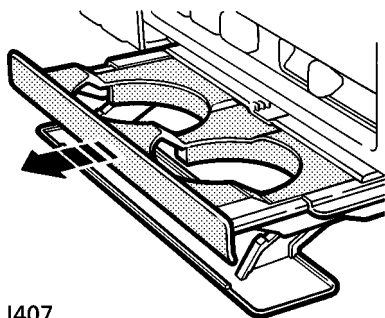
## **WARNING**

***DO NOT** insert or eject the magazine while driving.*

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# Interior equipment

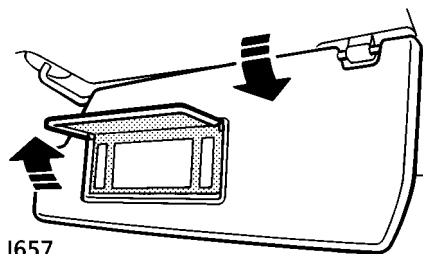
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J407

**CUP HOLDER** (if fitted)

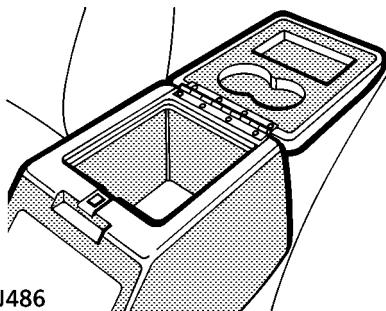
Push leading edge of tray to open.



J657

**ILLUMINATED VANITY MIRRORS**

(if fitted)



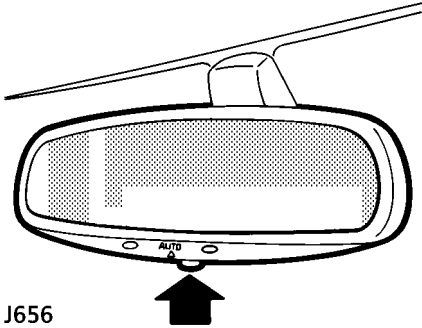
J486

**CUBBY BOX**

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

# Interior equipment

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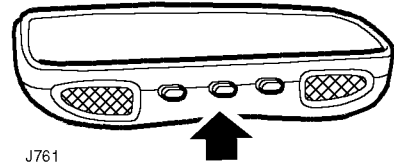


## INTERIOR REAR-VIEW MIRROR

### Automatic mirror (if fitted)

The interior mirror is equipped with an automatic dimming function which operates when the 'auto' button on the base of the mirror is pushed and the starter switch is turned on. A green indicator to the right of the button confirms the mirror is powered.

When powered, the mirror will reduce glare from following vehicles at night. Press the 'auto' button again and the mirror assumes its normal reflective state.



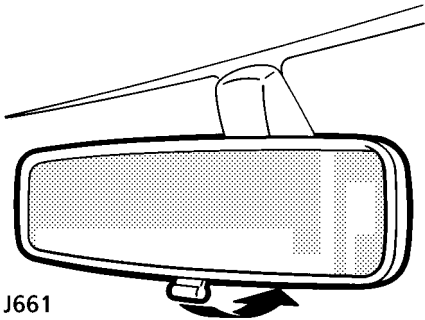
### Automatic mirror with map reading lights (if fitted)

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 turned on. 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

Twin 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.



## Manual mirror (if fitted)

The manual rear view mirror can be dipped to reduce glare from following vehicles. At night, move the lever at the base of the mirror forward to 'dip' the mirror. Normal visibility is restored by pulling the lever back again.

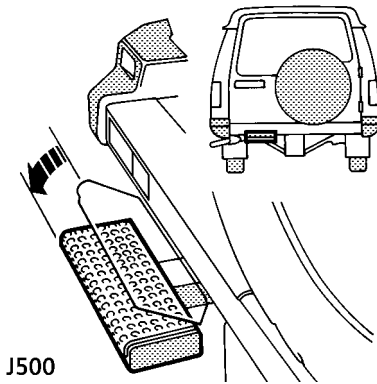
### **WARNING**

*In some circumstances the view reflected in a 'dipped' manual mirror can confuse the driver as to the precise location of following vehicles. Remember to take additional care!*

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## *Rear step*

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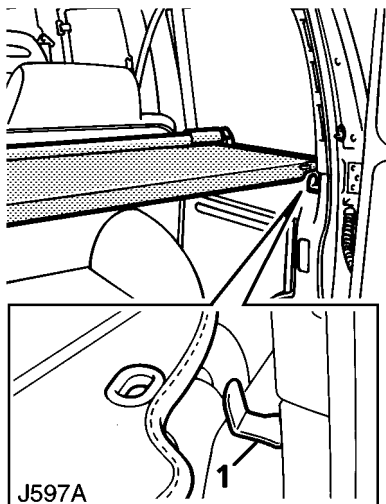
### **REAR STEP** (if fitted)

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

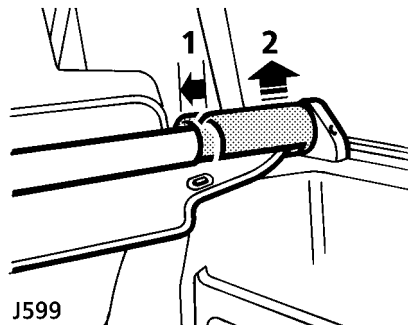
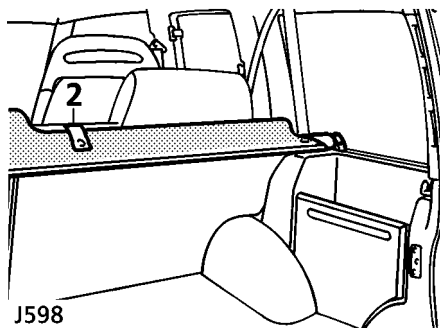
# Loadspace cover

## LOADSPACE COVER (if fitted)

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



Detach the cover from the hooks (1) on both sides at the rear and allow it to retract. Secure in this position by fastening the retaining strap (2), attached to the rear seat back, to the press stud on the loadspace cover.



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

**DO NOT** carry loose items of luggage on top of the loadspace cover - 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.

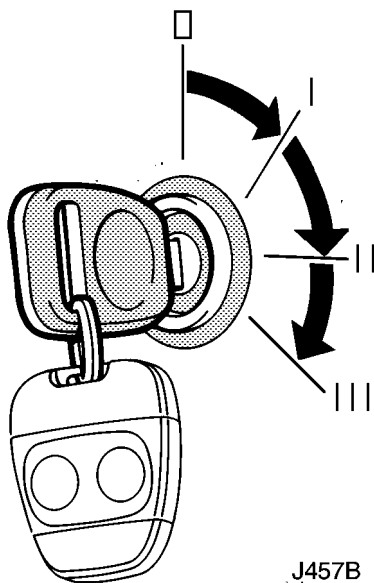
# ***SECTION 3***

## ***Driving & operating***

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# Starter switch & steering lock



## To unlock the steering column

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 column

Turn the key to position '0' and withdraw it from the starter switch. 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 guard lights.

### Position 'I'

- Steering unlocked.
- Clock, radio/cassette 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 the engine starts (the key will automatically return to position 'II').  
Note that operation of position 'I' electrical functions will be interrupted during engine cranking.

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



# Starting & driving

---

## STARTING - 300Tdi ENGINE

1. Check that the handbrake is applied and that the gear lever is in neutral ('P' or 'N' for automatic transmission).
2. Switch off all unnecessary electrical equipment.
3. Insert the starter key and turn the switch to position 'II'. Wait until the glow plug warning light extinguishes.

**NOTE:** *When restarting a warm engine, it will not be necessary to wait for the glow plug warning light to extinguish.*

4. Turn the key to position 'III' to operate the starter motor. In temperate climates, DO NOT press the accelerator pedal during starting. Always RELEASE THE KEY as soon as the engine is running.

If the engine stalls, you MUST return the starter switch to position 'I' before attempting to restart; the engine will not start by turning the starter switch from position 'II'.

**NOTE:** *The battery charging and oil pressure warning lights should extinguish as soon as the engine is running.*

In cold weather, or when the battery is in a low state of charge, on manual gearbox vehicles depress the clutch pedal while starting and hold it down until 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. Please note that continued use of the starter will not only discharge the battery but may also damage the starter motor.

## WARNING

***The engine must not be run above fast idle speed until the oil pressure warning light extinguishes to ensure that the engine and turbo-charger bearings are properly lubricated before being run at speed.***

---

### Cold weather starting

In cold climates or in conditions where the ambient temperature has dropped below -5° C, fully depress the accelerator pedal while operating the starter. This will aid starting. Release the accelerator pedal immediately the engine starts.

### Automatic gearbox models

After starting, ensure that the handbrake or foot brake are firmly applied and the accelerator pedal is not depressed while moving the gear selector lever from 'N' or 'P'; otherwise, the vehicle may move immediately the selector lever is moved to one 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.

### Switching off

To avoid the possibility of damaging the turbo-charger bearings through inadequate lubrication, ALWAYS allow the engine to idle for 10 seconds before switching off.

# Starting & driving

---

## 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 - Mpi & V8i ENGINES

### WARNING

**FOR VEHICLES EQUIPPED WITH A CATALYTIC CONVERTER**

*Catalytic converters are easily damaged through improper use, particularly if the wrong fuel is used, or if an engine misfire occurs.*

---

Before starting the engine and driving, ENSURE 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.

### Starting

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

# Starting & driving

---

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. Please note that continued use of the starter will not only discharge the battery but may also damage the starter motor.

**NOTE:** *The battery charging and oil pressure warning lights should extinguish as soon as the engine is running.*

In cold weather, or when the battery is in a low state of charge, on manual gearbox vehicles depress the clutch pedal while starting and hold it down until the engine is running.

## **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 -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 equipment is switched off.

## **Automatic gearbox models**

After starting, ensure that the handbrake or foot brake are firmly applied and the accelerator pedal is not depressed while moving the gear selector lever from 'N' or 'P', otherwise, the vehicle may move immediately the selector lever is moved to one 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.

## **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*

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## **DRIVING - PETROL AND DIESEL MODELS**

### **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.

### **RUNNING-IN**

Proper running-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 800 km, it is essential to drive with consideration for the running-in process and heed the following advice:

- **LIMIT** maximum road speed to 80-95 km/h. Initially, drive the vehicle on a light throttle and only increase engine speeds gradually once the running-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 running-in distance has been completed engine speeds may be gradually increased.

## **EMISSION CONTROL SYSTEM**

Land Rover vehicles are fitted with emission and evaporative control equipment necessary to meet a number of territorial requirements.

In many countries it is against the law for vehicle owners to modify or tamper with emission control equipment, or to sanction the unauthorised replacement or modification of this equipment by a repair shop. In such cases the vehicle owner and the repairer may both be liable for legal penalties.

It is important to remember that only Land Rover dealers are properly equipped to perform repairs and to maintain the emission control system on your Discovery.

# Starting & driving

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## 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 vehicle is maintained in accordance with the manufacturer's 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!

## IMPORTANT DRIVING INFORMATION

### Instruments and warning lights

Before driving it is important to fully understand the function of the instruments and warning lights described in 'section 2'.

**NOTE:** *Red warning lights are of particular importance, illumination indicates that a fault exists. If a red light illuminates, always stop the vehicle and seek qualified assistance before continuing.*

### Vehicle stability

- 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.

### Vehicle height

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

## 300Tdi engines

If a radiator blind is fitted, it must not obscure the intercooler section otherwise engine performance would be adversely affected. If in doubt, contact a Land Rover dealer.

## Power assisted steering

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

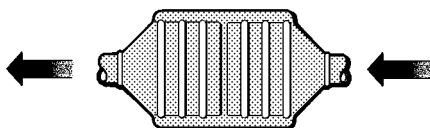
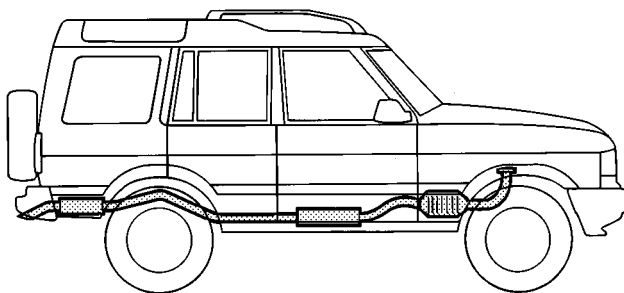
## **WARNING**

*DO NOT use auxiliary equipment, such as roller generators, that are driven by one wheel of the vehicle, as they could cause failure of the gearbox differential. If the gearbox differential lock is engaged in an attempt to avoid damage, the vehicle will drive itself forward.*

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# Catalytic converter

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J438

## CATALYTIC CONVERTER

The exhaust system on most petrol engine vehicles and some diesel vehicles incorporates a catalytic converter, which converts poisonous exhaust emissions from the engine into environmentally less harmful gases.

### **WARNING**

*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 which follow:*

---

## Filling up with fuel

- For petrol engine vehicles ONLY use unleaded petrol (leaded fuel will destroy the catalyst and seriously damage the emission control system).

## 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 poisoning the catalyst) - seek qualified assistance.
- When starting a COLD engine, DO NOT drive if a misfire is suspected - seek qualified assistance.

# Catalytic converter

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## 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).
- 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.
- DO NOT overload or excessively rev the engine.

## 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 gear is selected.

## Vehicle maintenance

- Any engine misfire, 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 by a Land Rover dealer.
- DO NOT run the engine with a spark plug or HT lead removed, or use any device that requires an insert into a spark plug.



# Fuel filling

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## PETROL ENGINES:

### All engines fitted with a catalytic converter:

Use ONLY - 95 RON UNLEADED fuel.

### Engines without a catalytic converter:

Use 95 RON UNLEADED petrol wherever possible.

**In territories where only LEADED fuel is available, the following specifications apply:**

V8i high compression engines (9.35:1) - use 97 RON fuel.

V8i low compression engines (8.13:1) - use 90 RON fuel.

**NOTE:** *Leaded fuel is NOT suitable for MPI engines*

The RON value (octane rating) of petroleum commonly available at garage forecourts will vary in different countries. The RON value quoted is the MINIMUM requirement and while this can be safely exceeded, no advantage in performance or fuel economy will be gained by using a higher octane fuel.

Using unleaded petrol with a lower octane rating, however, can cause persistent, heavy 'engine knock' (a metallic rapping noise). If severe, this can lead to engine damage.

If heavy engine knock is detected when using the recommended octane rated fuel, or if steady engine knocking is present while maintaining a steady speed on level roads, contact your dealer for advice.

**NOTE:** *An occasional, light, engine knock while accelerating or climbing hills is acceptable.*

## WARNING

***On petrol engine vehicles fitted with a catalytic converter, serious damage to the catalyst will occur if LEADED fuel is used!***

---

## DIESEL (300Tdi engines):

The quality of diesel fuel (Derv) can vary in different countries and only clean, good quality fuel should be used. It is important that the sulphur content of diesel fuel does not exceed 1%; in Europe all supplies should be within this limit, but in other parts of the world, you should check with your supplier. Ensure the fuel filter element is changed at the recommended service intervals and clean the sediment bowl regularly.

**NOTE:** *The use of paraffin (kerosene) as a diesel fuel additive is illegal in the UK.*

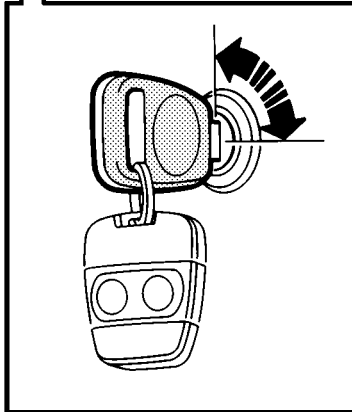
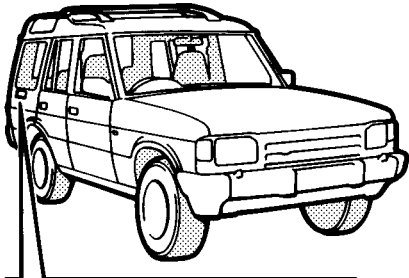
## WARNING

***On diesel engine vehicles, if the fuel tank is accidentally filled with petrol it is ESSENTIAL that you contact your dealer BEFORE attempting to start the engine!***

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# Fuel filling

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J465A

Locking and unlocking the fuel filler flap

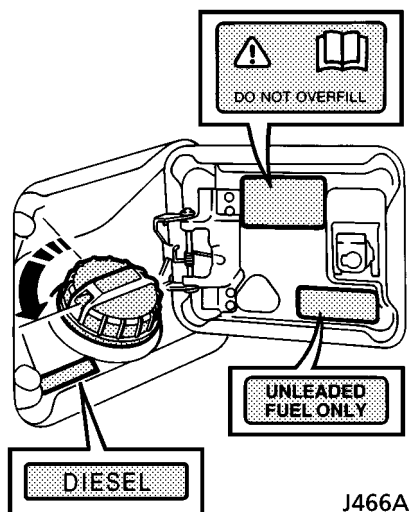
## WARNING

*To avoid any sudden discharge of fuel while removing the cap, rotate the cap one half turn to allow the fuel tank to vent. DO NOT fully remove the cap until any hissing has stopped.*

---

# Fuel filling

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## WARNING

*DO NOT fill the tank completely if the vehicle is to be parked on a slope in direct sunlight or high ambient temperature - expansion of the fuel could cause spillage.*

---

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

#### **Petrol engine vehicles:**

On petrol engine vehicles which are designed to operate **ONLY** on unleaded fuel, the fuel tank filler neck will **ONLY** accept a narrow filler nozzle of the type found on pumps that deliver unleaded fuel.

On petrol engine vehicles which are designed to operate on leaded fuel, the fuel tank filler neck will accept the wider filler nozzles found on pumps that deliver **LEADED** fuel.

# Fuel filling

## Empty fuel tank

### DO NOT RUN THE FUEL TANK DRY!

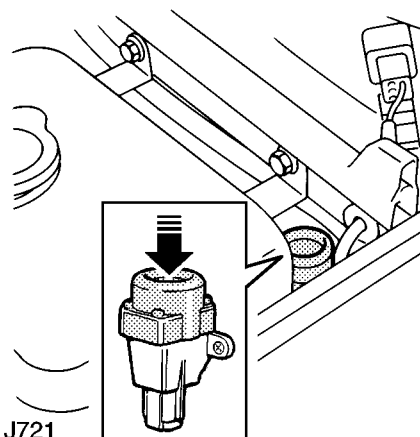
In the case of vehicles equipped with a catalytic converter, running the fuel tank dry could create an engine misfire capable of damaging the catalytic converter.

In the case of diesel engine vehicles, qualified assistance will be required to prime the fuel system before the engine can be restarted.

### SAFETY ON THE FORECOURT

Petroleum gases are highly inflammable and in confined spaces are also 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 CUT-OFF SWITCH

*(Petrol engine vehicles only)*

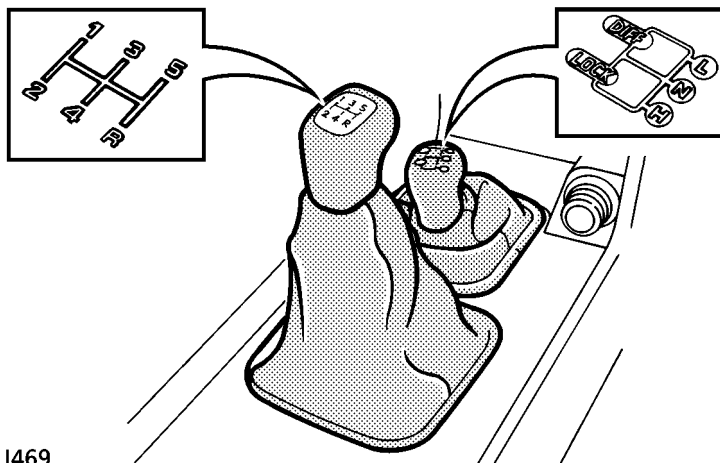
The fuel cut-off switch is a safety device which, in the event of a collision or sudden impact, automatically cuts off the fuel supply to the engine.

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

**ALWAYS check for fuel leaks before resetting the switch!**

# Gearbox & transmission

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J469

## MANUAL TRANSMISSION

Manual transmission vehicles feature a five speed main gearbox and a two-speed transfer box. In addition, a central 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 gears, 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 gearbox is in neutral, the gear lever is spring-loaded to automatically align between third and fourth gear positions.

## Clutch

DO NOT use the clutch pedal as a foot rest. To prevent unnecessary wear, always keep the left foot well clear of the clutch pedal except when changing gear.

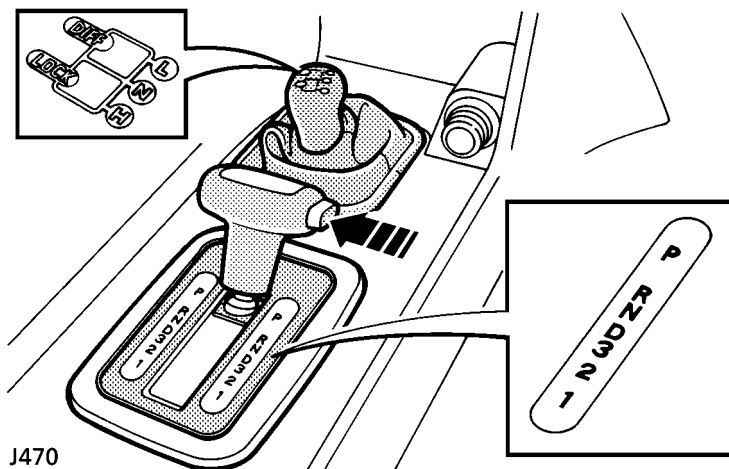
### WARNING

*Do not select reverse gear unless the vehicle is stationary.*

*DO NOT attempt to start the engine with the vehicle in gear and the clutch pedal depressed. The engine must ONLY be started with the main gear lever in neutral and the handbrake applied.*

---

# Gearbox & transmission



## AUTOMATIC TRANSMISSION

The Automatic transmission features a four speed main gearbox with a torque converter and a two speed transfer box. A central 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 gearbox selector lever

A spring loaded catch 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.

## 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 handbrake 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 four forward gears according to vehicle speed and accelerator position.

# *Gearbox & transmission*

---

## **'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.

## **'1' 1st gear only**

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

### **WARNING**

***Always leave the vehicle with the gear selector in 'P' (Park) position when parked.***

---

## **Starting and driving**

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

- Before starting the engine, ensure that both foot brake and handbrake 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 the accelerator pedal is pressed.

# ***Gearbox & transmission***

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## **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 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 road speeds depending on accelerator pedal pressure.

On long inclines the 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. However, excessive gear changing results in a loss of momentum and is wasteful of fuel. 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, push 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).

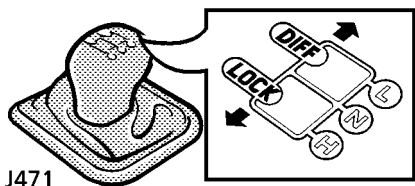
## **Cruise control**

On diesel engine vehicles fitted with cruise control, some fluctuation of road speed may be experienced when cruise control is operating at engine speeds below 1600 rev/min. In these circumstances, move the selector lever to position '3'; this will limit gear changing to the first, second and third ratios only, thereby reducing fluctuation of engine speed.



# Gearbox & transmission

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## TRANSFER GEARBOX

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

### High range ('H')

The high range of gears should be used for all normal road driving and also for off-road driving across dry, level terrain.

### Low range ('L')

Use low range gears in any situation where low speed manoeuvring is necessary, such as reversing a trailer or negotiating a boulder strewn river bed; also 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.**

---

### 'Diff lock' central 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!

### 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 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 handbrake 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.

# Gearbox & transmission

## Advanced method

### **Changing from high to low on the move:**

With the vehicle slowing to a stop and travelling NO FASTER THAN 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 lever fully forward into 'L' (low).

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

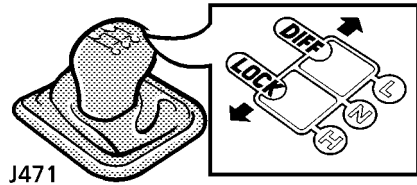
### **Changing from low to high on the move:**

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.
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.

On automatic models, reduce (or increase) the speed of the vehicle to 8 km/h and release the accelerator. select 'N' 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.



J471

## THE DIFFERENTIAL LOCK

Unlike other four wheel drive vehicles, all Land Rover products 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 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 normal AND off-road use.

# Gearbox & transmission

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## Selecting diff lock

The diff lock can be engaged or disengaged either with the vehicle stationary, or when driving at any road speed. 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.***

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#### ***To lock the differential:***

Move the transfer gear lever to the left - from either 'H' (high) or 'L' (low) gearbox (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) gearbox 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 off-road 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.

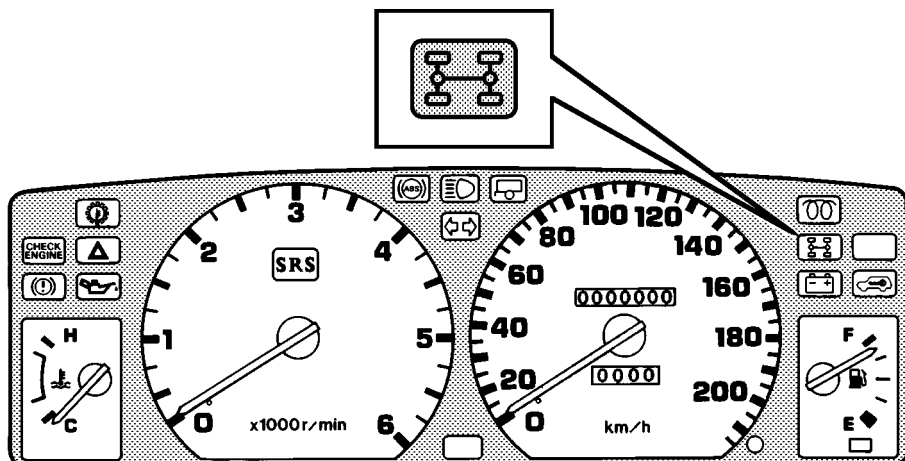
***NOTE:*** *A valuable introduction to off-road driving, which includes many useful references to the transfer gearbox and 'diff lock', is included in section 7 of the handbook.*

### 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' putting excessive strain on the transmission.***

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# Gearbox & transmission



J563A

## 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.

# Brakes

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## FOOT BRAKE

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

### Servo assistance

The braking system is servo 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 freewheel 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. For the first 800 km, you should avoid situations where heavy braking is required.

Remember! 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 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.**

**If the brake warning light should illuminate while the vehicle is in motion, bring the vehicle to a halt 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.**

---

### Wet conditions

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.

# Brakes

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## HANDBRAKE

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

To engage the handbrake, 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 handbrake fully whenever you park.**

When parking on a slope, do not rely on the handbrake 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 gearbox has fully engaged by carefully releasing the foot brake and allowing the vehicle to 'rock' into 'P' (park).

### WARNING

***DO NOT apply the handbrake while the vehicle is in motion as this could result in loss of vehicle control and damage to the transmission.***

***DO NOT rely on the handbrake to operate effectively if the vehicle has been subjected to immersion in mud and water (see 'Off-road driving' section).***

---

## ANTI-LOCK BRAKES (if fitted)

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.

Under normal braking conditions, where traction is good, the anti-lock braking system will not be activated. However, if the braking force should exceed the available adhesion between the tyres and the road surface, then one or more wheels will lock and 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 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.

### WARNING

***The anti-lock braking system will NOT compensate for poor road surfaces, or driving errors. It will not overcome the physical limitations of stopping in too short a distance, cornering at high speed, or the danger of aquaplaning.***

***Drivers still have a duty to drive carefully and within normal safety margins, having due consideration for the prevailing weather and traffic conditions.***

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## Warning light

The anti-lock braking system warning light illuminates when the starter switch is turned to position 'II' and then extinguishes for half a second before coming on again, it then remains illuminated until the engine has started and the vehicle reaches speeds in excess of approximately 7 km/h. If this does not occur, there is a fault on the system and you should consult your Land Rover dealer at the earliest opportunity.

If either this light, or the brake fluid warning light, remains on or illuminates at any other time whilst driving, there is a fault on the system; in which case, on completion of your journey seek advice from your dealer before further vehicle use.

- DO NOT pump the brake pedal at any time; this will interrupt operation of the system and may increase braking distance.
- NEVER place additional floor matting or any other obstruction under the brake pedal. This restricts pedal travel and therefore braking efficiency is impaired.

## Off-road driving

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. It cannot reliably compensate for driver error or inexperience on difficult off-road surfaces.

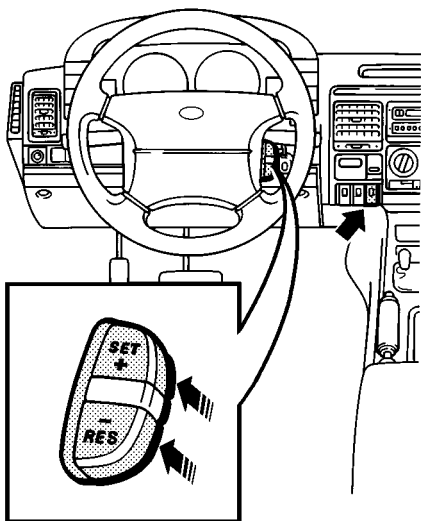
Note the following:

- On soft or deep surfaces such as powdery snow, sand or gravel, and on extremely rough ground, the braking distance required by the anti-lock braking system may be greater than for normal braking, 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 which assists the wheel to stop.
- 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.

# Cruise control

## IMPORTANT INFORMATION

- 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 (if fitted)

Cruise control enables the driver to maintain a constant road speed without using the accelerator pedal. This is particularly useful for motorway 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 or wheel.

### To operate

1. Press the master switch on the fascia panel (arrowed in illustration) the switch symbol glows whenever the switch is pressed to the 'on' position.
2. Accelerate until the desired cruising speed is reached. This must be above the system's operational minimum speed of 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 operation of the accelerator pedal.

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.

### To reduce the cruising speed:

Press the 'RES -' switch, or use the brakes 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 45 km/h).



# Cruise control

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## ***To increase the set 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 8 km/h.

## **Disengaging cruise control**

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

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

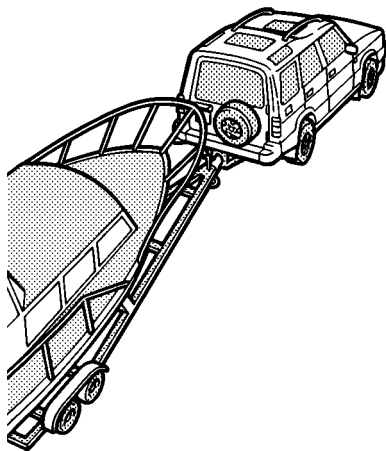
***NOTE:*** *The speed held in the cruise control memory will be cancelled when either the cruise control master switch or the starter switch is turned off.*

## **Diesel engine vehicles**

On diesel engine vehicles fitted with automatic transmission, some fluctuation of road speed may be experienced when cruise control is in operation at engine speeds below 1600 rev/min. In these circumstances, move the gear selector lever to position '3' to limit automatic gear changing to the first, second and third ratios.

# Towing & load carrying

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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. A smooth start will be achieved with trailers over 2000 kg by moving off in low range then changing to high range while on the move.

The suspension is designed to cope with a heavy trailer load without upsetting the balance or feel of the vehicle. Details of gross maximum trailer weights are listed on the following page.

## 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.*

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 secured and unable to shift position during transit. Also, position loads so that most of the weight is placed close to the floor and, where possible, immediately above or close to the trailer axle(s).
- After loading the trailer check that the weight on the hitch point (this is called the draw-bar loading weight, or nose weight), is in accordance with the manufacturer's recommendations.
- When calculating the laden weight of the trailer, remember to include the weight of the trailer PLUS THE LOAD.

# *Towing & load carrying*

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- Where the load weight can be divided between trailer and tow vehicle, loading more weight into the vehicle will generally improve the stability of the combination.
- The recommended trailer nose weight limit is 150 kg. The nose weight plus the combined weight of the vehicle's load carrying area and rear seat passengers must never exceed the maximum rear axle load.

**NOTE:** *Towing regulations vary from country to country. It is very important to ensure that national regulations governing towing weights and speed limits are observed (refer to the relevant national motoring organisation for information). The following maximum permissible towed weights refer to the vehicle's design limitations and NOT to any specific territorial restriction.*

<b>Maximum permissible towed weights V8i &amp; Tdi</b>	<b>On-road</b>	<b>Off-road</b>
Unbraked trailers .....	750 kg	500 kg
Trailers with overrun brakes .....	3500 kg	1000 kg
4 wheel trailers with coupled brakes * .....	4000 kg	1000 kg

<b>Maximum permissible towed weights Mpi</b>	<b>On-road kg</b>	<b>Off-road kg</b>
Unbraked trailers .....	750 kg	500 kg
Trailers with overrun brakes .....	2750 kg	1000 kg

# Towing & load carrying

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## Coupled braking systems

In order to tow a trailer with a weight in excess of 3,500 kg, the vehicle must be adapted to operate a coupled brake system. If this adaptation is carried out, the vehicle identification number plate (VIN) must be changed to show the increased train weight.

Revised VIN plates may be obtained from Land Rover; these will be issued subject to satisfactory proof that the vehicle has been fitted with an approved conversion.

## Automatic gearbox models

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

**NOTE:** *Above 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. Using 7/16 inch UNF bolts, secure proprietary or locally made anchor brackets and straps to the floor to assist in safely securing large items or luggage.

### WARNING

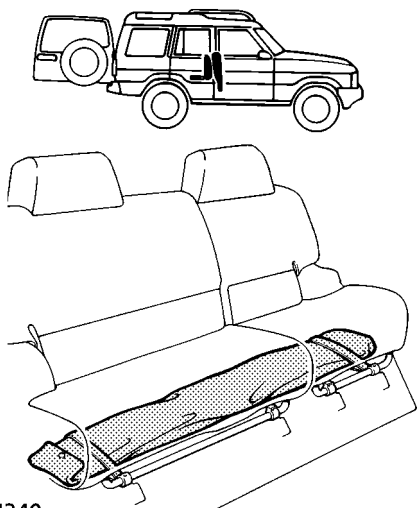
***DO NOT carry unsecured equipment, tools or luggage which could move and cause personal injury in the event of an accident or emergency manoeuvre either on or off road.***

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## Trailer socket

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

# Towing & load carrying



## ROOF RACK (if fitted)

A front roof rack is available as a factory fitted option on some models.

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.

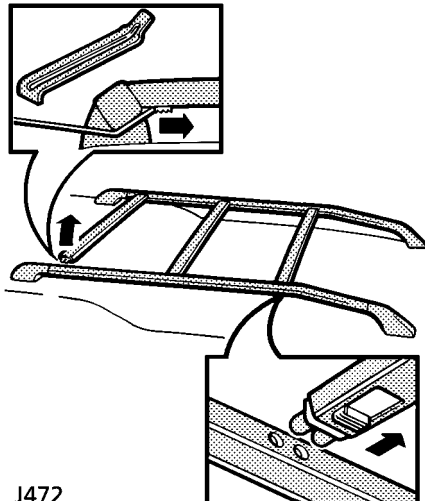
Each cross rail has a pair of locating pins at each end.

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 50 kg for normal road use and 30 kg off road.
- 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.



J472

# Vehicle recovery

## TOWING FOR RECOVERY

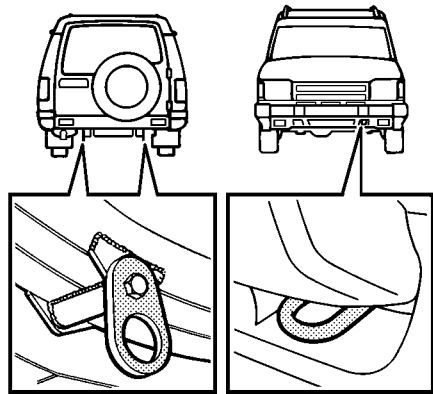
If your vehicle is to be recovered by towing, most qualified recovery specialists will use wheel lift equipment to suspend the front wheels, while the rear wheels remain on the ground. However, if it is necessary for the vehicle to be towed with all four wheels on the ground, always adhere to the following procedure:

1. With the handbrake applied, set both the main gearbox and transfer box in neutral.
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.
4. Secure the towing attachment to the front towing eye of the distressed vehicle.
5. Release the handbrake.

**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.

### 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.



J719

### Towing eyes

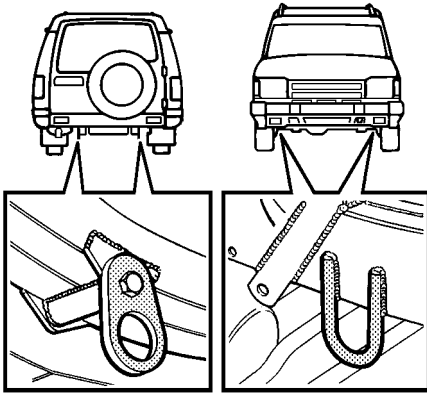
The towing eyes at the front and rear of the vehicle are designed for vehicle recovery purposes only and must NOT be used to tow a trailer or caravan.

**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.

# Vehicle recovery

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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.

# Emergency starting

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## STARTING AN ENGINE WITH A DISCHARGED BATTERY

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

- Using a substitute battery fitted to the disabled vehicle.
- Using booster cables (jump leads) to connect the battery from a donor vehicle to the discharged battery.

### WARNING

- *Batteries emit explosive hydrogen gas - keep sparks and naked lights away from the engine compartment.*
  - *DO NOT attempt to jump start the vehicle if the electrolyte in the battery is suspected of being frozen.*
  - *Make sure BOTH batteries are of the same voltage (12 volts), and that the booster cables have insulated clamps and are approved for use with 12 volt batteries.*
  - *DO NOT disconnect the discharged battery.*
  - *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.*
- 

## USING BOOSTER CABLES

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.

Apply the handbrakes and ensure that the transmission of both vehicles is set in neutral ('P' or Park for vehicles with automatic transmission).

Turn off the starter switch and ALL electrical equipment of BOTH vehicles, then follow the instructions specific to diesel or petrol engine models on the pages that follow.



# Emergency starting

## CONNECTING THE BOOSTER CABLES DIESEL ENGINES

Always adopt the following procedure, ensuring the cables are connected in the order shown below:

1. Connect one end of the RED booster cable to the positive (+) terminal of the donor battery.
2. Connect the other end of the RED booster cable to the positive (+) terminal of the discharged battery.
3. Connect one end of the BLACK booster cable to the negative (-) terminal of the DISCHARGED battery.
4. Connect the other end of the BLACK booster cable to the negative (-) terminal of the donor battery.

### WARNING

For safety reasons:

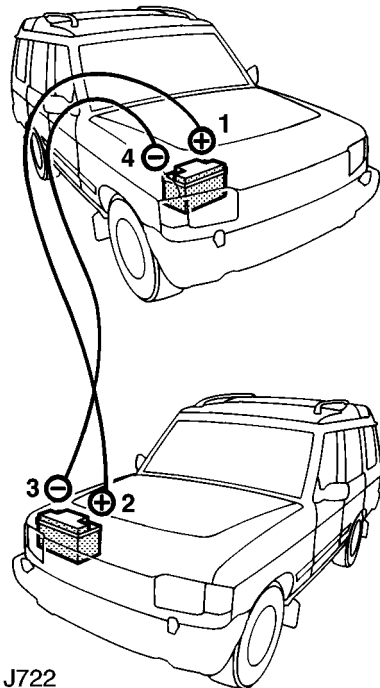
- **ALWAYS** connect the **BLACK** cable to the donor battery **LAST**.
- **ENSURE** that each connection is securely made and that there is no risk of the clips accidentally slipping or being pulled from the battery terminals.
- **BE AWARE** that loose connections between cable clips and battery terminals could cause sparking, which could lead to explosion or fire.

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.

Now start the vehicle with the discharged battery. Once both engines are running normally, allow them to idle for two minutes before switching off the the donor vehicle engine.

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

Disconnecting the booster cables must be an EXACT reversal of the procedure used to connect them, ie: disconnect the BLACK cable from the negative (-) terminal on the donor vehicle FIRST.



J722

# Emergency starting

## CONNECTING THE BOOSTER CABLES PETROL ENGINES

### Always adopt the following procedure:

Connect the RED booster cable between the positive (+) terminal of the donor battery and the positive (+) terminal of the discharged battery.

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 0.5 m from the battery and well away from fuel and brake lines on the disabled vehicle (engine lifting ring on V8 engine shown in illustration).

### WARNING

For safety reasons;

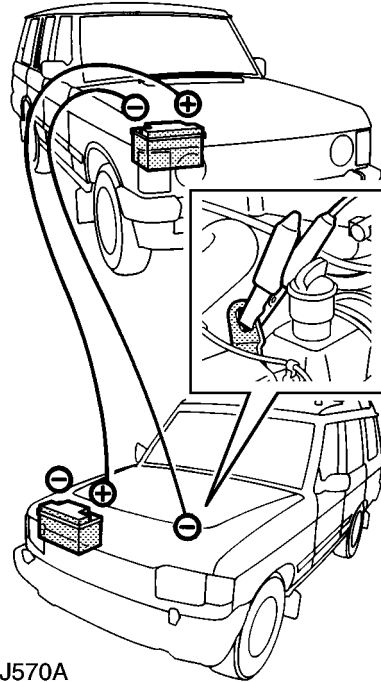
- **DO NOT connect the BLACK cable to the negative terminal of the discharged battery - if in doubt, seek qualified assistance.**

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.

Now start the vehicle with the discharged battery. Once both engines are running normally, allow them to idle for two minutes before switching off the engine of the donor vehicle.

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

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



# SECTION 4

## Owner maintenance

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*The long-term safety, reliability and performance of your vehicle will depend very largely on how 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 Owner Information & Service Record book included in the literature pack. The Owner Information & Service Record book also includes service record docketts, which must be correctly endorsed by your Land Rover dealer at the conclusion of each service.*

*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.*

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# Owner maintenance

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## OWNER MAINTENANCE

In addition to the routine services, which should be carried out by your Land Rover dealer at the intervals shown in the Owner Information & Service Record book, 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 400 km.

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

### Monthly checks

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

**NOTE:** Any significant or sudden drop in fluid levels, or uneven tyre wear should be reported to your dealer without delay.

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'.

## IMPORTANT INFORMATION

### Special operation conditions

When a vehicle is operated in extremely arduous conditions or a dusty, wet or muddy terrain, more frequent attention must be paid to 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

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## Planned maintenance

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

The routine maintenance requirements for your vehicle are shown in the Owner Information & Service Record book. Most of this 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.

## 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 practiced by Land Rover dealers. Contact your Land Rover dealer for further information.*

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# Owner maintenance

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## SAFETY IN THE GARAGE

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

- ALWAYS keep hands, tools and items of clothing clear of all drive belts and pulleys.
- DO NOT touch the 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 contain carbon monoxide, which can cause unconsciousness and may even be fatal.
- DO NOT work beneath the vehicle with the vehicle 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.*

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## 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 petrol, diesel, 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 may cause serious skin disorders, including dermatitis and cancer of the skin. ALWAYS wash thoroughly after contact.

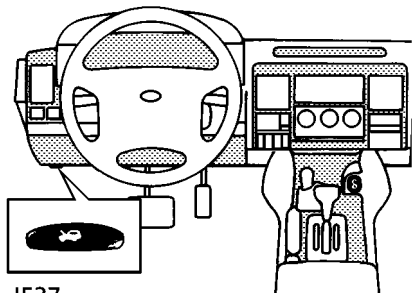
It is illegal to pollute drains, water courses or soil with toxic chemicals such as used engine oil. ALWAYS dispose of vehicle fluids and lubricants at authorised waste disposal sites or at garages which provide facilities for the receipt of used engine oil and toxic chemicals. If in doubt, contact your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

**PROTECT THE ENVIRONMENT!**

# Bonnet opening

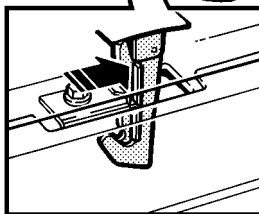
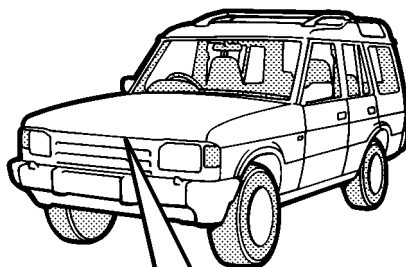
## WARNING

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



J537

Pull the bonnet release handle.



J483

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

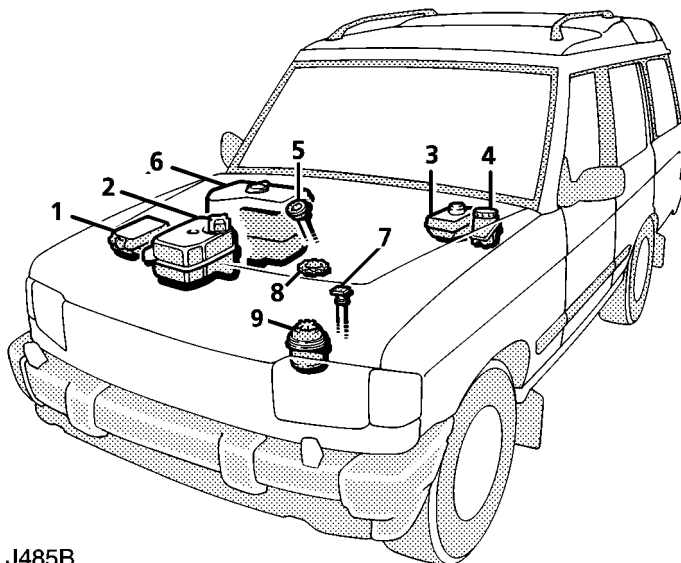
Release the bonnet support stay from the underside of the bonnet and fit the stay in the slotted hole in the bonnet locking platform.

### Closing the bonnet

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

# Engine compartment

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J485B

300Tdi models

1. Fuse box - engine compartment.
2. Cooling system reservoir.
3. Brake fluid reservoir.
4. Clutch fluid reservoir (if fitted).
5. Automatic gearbox fluid 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

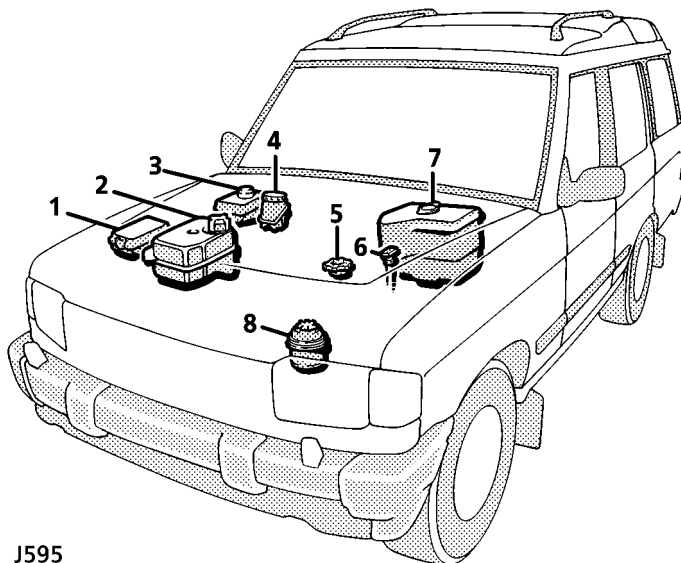
*Before carrying out maintenance checks or working in the engine compartment, ALWAYS observe the safety precautions listed under 'Safety in the garage', at the beginning of the Owner Maintenance section of this handbook.*

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# Engine compartment

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J595

## Mpi models

1. Fuse box - engine compartment.
2. Cooling system reservoir.
3. Brake fluid reservoir.
4. Clutch fluid reservoir.
5. Engine oil filler cap.
6. Engine oil dipstick.
7. Washer reservoir.
8. Power steering reservoir.

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

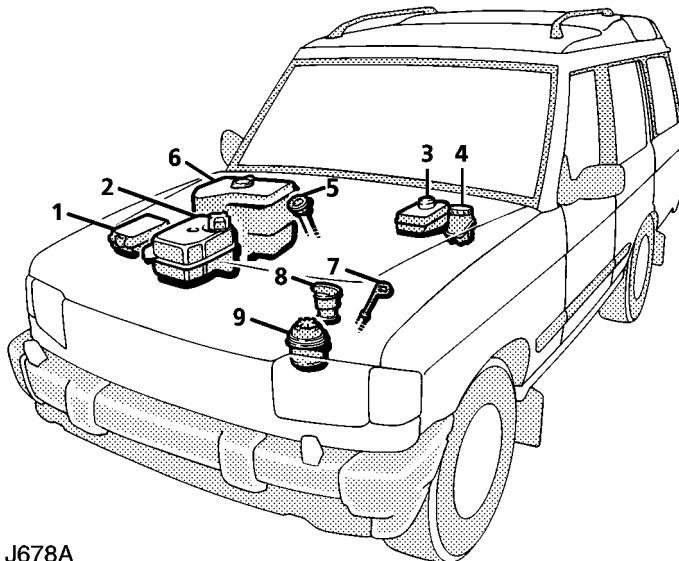
### WARNING

*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.*

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# Engine compartment

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J678A

## V8i models

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

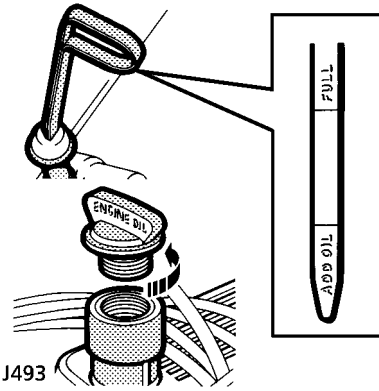
Instructions on how and when owner maintenance should be carried out are included on the following pages.

### **WARNING**

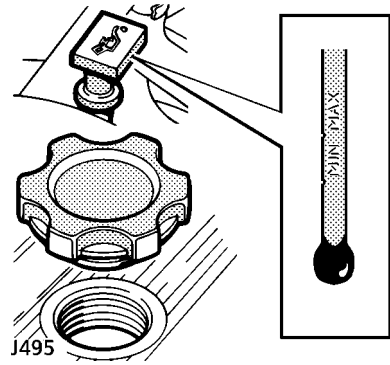
*Before carrying out maintenance checks or working in the engine compartment, ALWAYS observe the safety precautions listed under 'Safety in the garage', at the beginning of the Owner Maintenance section of this handbook.*

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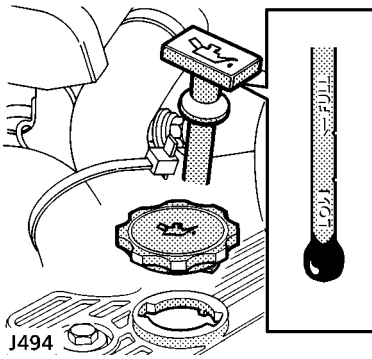
# Engine compartment



V8i Petrol engine



Mpi Petrol engine



300Tdi Diesel engine

## ENGINE OIL LEVEL-CHECK & TOP-UP

Check the oil level at least every 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.

# Engine compartment

## DO NOT OVERFILL!

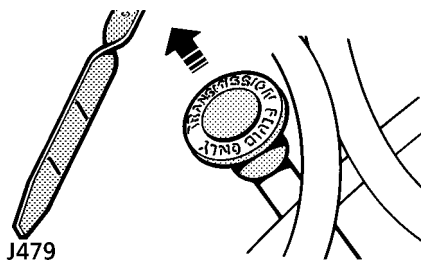
As a general guide, if the level on the dipstick:

- is nearer to the upper mark than the lower, add no oil.
- is nearer to the lower mark than the upper, add half a litre of oil.
- is below the lower mark, add one 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 specification

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.



### AUTOMATIC TRANSMISSION TOP-UP

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 the foot brake and handbrake applied, move the selector lever to position '1' and then back to position 'P'.

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 two markings on the dipstick with a fluid meeting ATF Dexron II D specification.

**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 20° C.*

## DO NOT OVERFILL!

**NOTE:** *Approximately 0.25 litre of fluid will be required to raise the level from the lower to the upper mark.*

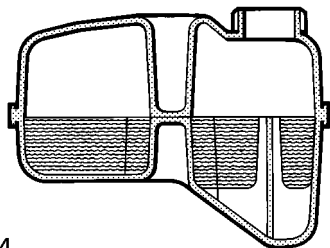
# Engine compartment

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## 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!**

## 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.

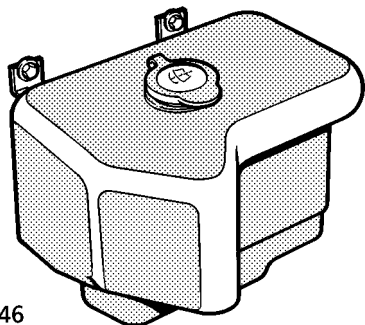
Use an ethylene glycol based anti-freeze (containing no methanol) with non-phosphate corrosion inhibitors suitable for use in aluminium engines. The specific gravity of a 50% anti-freeze solution at 20° C is 1.075 and protects against frost down to -36° C.

### WARNING

- **Anti-freeze is poisonous and can be fatal if swallowed. If accidental consumption of anti-freeze is suspected, seek appropriate medical attention immediately.**
  - **Prevent anti-freeze coming in contact with the skin or eyes. If this occurs, rinse immediately with plenty of water.**
  - **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

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J446

## WINDSCREEN WASHER TOP-UP

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

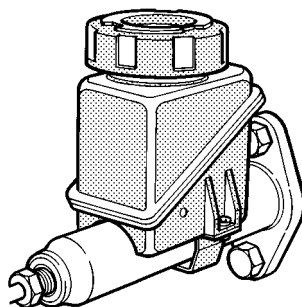
Check the reservoir level and top-up with a mixture of water and an approved screen washer solvent to approximately 25 mm below the bottom of the filler neck. In cold weather, to prevent freezing, use a screen washer solvent containing isopropanol.

Operate the washer switches to check that the nozzles are clear and properly directed.

### WARNING

*DO NOT use an anti-freeze solution in the washer reservoir. Anti-freeze will damage painted surfaces.*

---



J477

## CLUTCH FLUID TOP-UP

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).

### DO NOT OVERFILL!

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

### WARNING

*Clutch fluid will damage painted surfaces; soak up any spillage with an absorbent 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.*

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# Engine compartment

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## WARNING

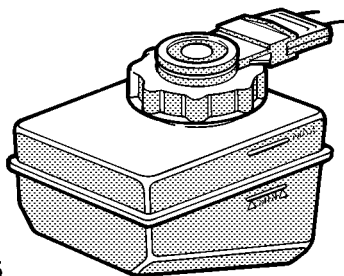
*Contact your dealer immediately if brake pedal travel is unusually long or if there is any appreciable drop in brake fluid level.*

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### BRAKE FLUID CHECK

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.

With the vehicle on level ground, check the fluid level at least every week (more frequently in high mileage or arduous operating conditions). 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 from opened containers or fluid previously bled from the system must NOT be used).

### DO NOT OVERFILL!

## WARNING

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

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

*If brake fluid should come into contact with the skin or eyes, rinse immediately with plenty of water.*

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# Engine compartment

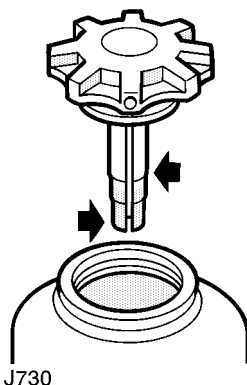
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## WARNING

*It is vital that the hydraulic brake fluid is completely renewed at 40,000 km intervals or every 24 months, whichever is the sooner.*

*At 80,000 km intervals or every 4 years, whichever is the 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 may need to be reduced. Please consult your Land Rover dealer.*

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## POWER STEERING TOP-UP

ONLY check the fluid level with the engine switched off and the system cold, 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, using a lint free cloth, wipe the dipstick clean. 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.

- 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.*

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## 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 the 'General data' section.

## 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 1.6 mm the indicators start appearing at the surface of the tread pattern, producing the effect of a continuous band of rubber across the width of the tyre.

A tyre **MUST** be replaced as soon as an indicator band becomes visible or 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 1.6 mm. **DO NOT** drive with tyres worn to this limit, 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.

## 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 rear. DO NOT use cross-ply tyres, or interchange tyres from front to rear.***

***Your vehicle is fitted with tubeless alloy road wheels that 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 use and have a very important influence on vehicle handling. Alternative wheels which do not meet original equipment specifications should not be fitted.***

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**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. Unapproved chains can be fitted to the rear wheels ONLY.
- 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 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.

**NOTE:** *If only unapproved snow chains are available, they must only be fitted to the rear wheels.*

### WARNING

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

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# Washer jets & wiper blades

## WASHER JETS

To adjust the front screen washer jets, insert a needle into the jet orifice and lever gently to position each jet so that the spray is directed towards the centre of the windscreen.

To adjust the rear screen washer jet, insert a long needle-like probe into the jet orifice and lever gently to position the jet so that the spray is directed towards the centre of the wipers travel.

Should any jet become obstructed, insert a needle or a strand of wire into the orifice to clear it.

## HEADLIGHT WASHERS (if fitted)

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.

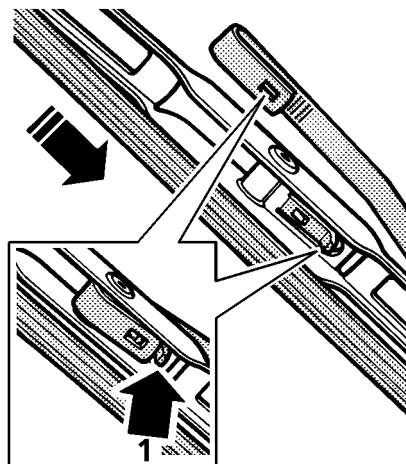
## WIPER BLADE REPLACEMENT

To renew a front or rear wiper blade, lift the wiper arm away from the screen, 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.

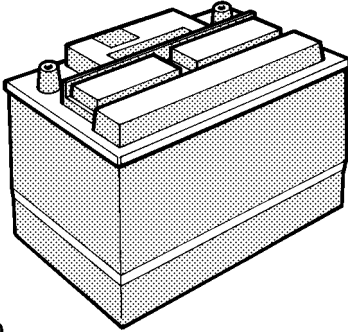
**NOTE:** Before renewing the rear wiper blade, it is necessary to remove the spare wheel from its mounting position on the rear door.



P0210

# Battery

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J480

## **WARNING**

- *Batteries contain sulphuric acid. If the acid comes in contact with the eyes or skin, wash immediately with cold water and seek medical advice.*
- *During normal operation batteries emit explosive hydrogen gas - ensure sparks and naked lights 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 metal parts of the vehicle.*
- *ALWAYS remove the starter key before disconnecting the battery. Failure to do this could cause a failure of the airbag SRS.*

## **BATTERY MAINTENANCE**

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

# Battery

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## Battery removal and replacement

Your vehicle may be fitted with a battery backed-up siren, which operates as an anti-theft siren if the main battery is disconnected. If it is necessary to remove the main vehicle battery, it is **ESSENTIAL** to adopt the following procedure before disconnecting the terminals in order to prevent the alarm from sounding:

1. Turn the starter switch 'on' and then 'off'. Then remove the key.
2. Disconnect the vehicle battery **WITHIN 15 SECONDS** (if the battery is not disconnected within 15 seconds, the back-up siren will sound immediately the battery terminals are removed).

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

If the siren sounds when the battery is reconnected, it **CANNOT** be turned off in the normal way (ie. by operating the handset buttons). To deactivate the siren, disarm the alarm system with the handset and then turn the starter switch to position 'II'.

## **WARNING**

- *To avoid damaging the vehicle's electrical system, ensure correct polarity when refitting the battery.*
  - *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 use a high speed battery charger as a starting aid.*
  - *DO NOT let the engine run without the battery connected.*
  - *NEVER allow the battery terminals or vehicle leads to make contact with tools or metal parts of the vehicle.*
-

## **Battery charging**

Before charging, always remove the battery from the vehicle and ensure the battery is topped up to the correct level.

Batteries generate explosive gases, contain corrosive acid and supply levels of electric current high enough to cause serious burns. While charging always heed the following precautions:

- 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 naked lights clear of 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

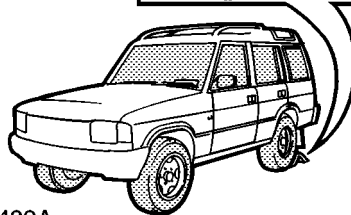
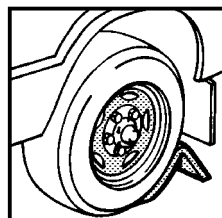
Before jacking the vehicle always observe the following precautions!

- Park your vehicle away from the thoroughfare, 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 handbrake 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.

### In addition:

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!



J489A

Using the wheel chock

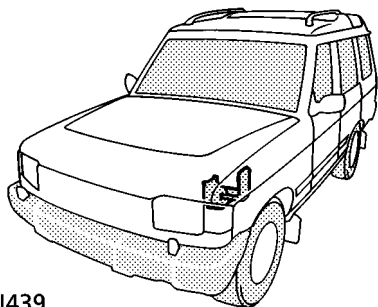
## WARNING

*Before raising the vehicle, it is ESSENTIAL to chock one of the road wheels; the handbrake 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 chock provided.

# Wheel changing

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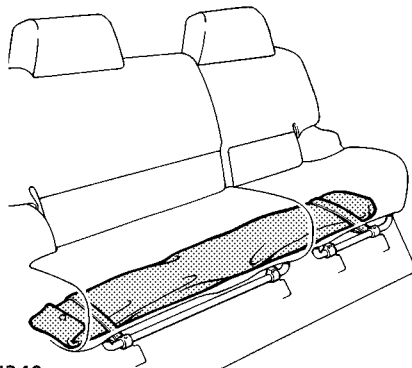


J439

**NOTE:** 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 tail door.



J340

## Removing the spare wheel

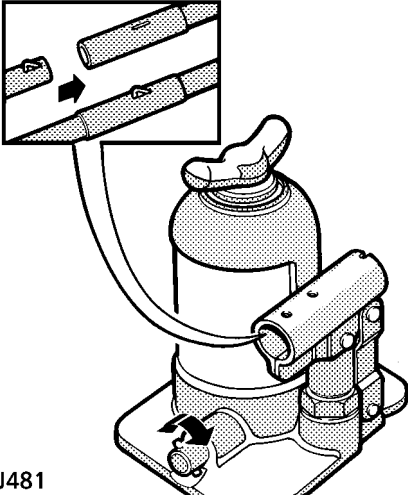
1. Remove the nuts securing the wheel cover using the wheel nut wrench supplied in the tool kit.
2. Remove the nuts securing the spare wheel to the carrier and lift off the wheel.

**NOTE:** In some markets, vehicles fitted with alloy wheels have a locking wheel nut fitted to each wheel, including the spare (see 'Locking wheel nuts' later in this section). In other markets, vehicles fitted with alloy wheels have a single locking cap which secures one of the wheel nuts securing the spare wheel to the tail door. To release the locking cap, insert the smaller of the keys supplied with the vehicle. Note that it is also necessary to insert the key in order to replace the cap.



# Wheel changing

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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 insert the lever into the socket as 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 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 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.*
-

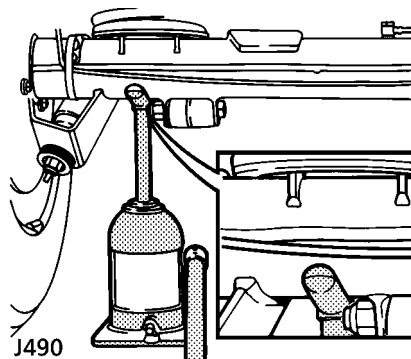
# Wheel changing

## 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.



J490

### Rear jacking point:

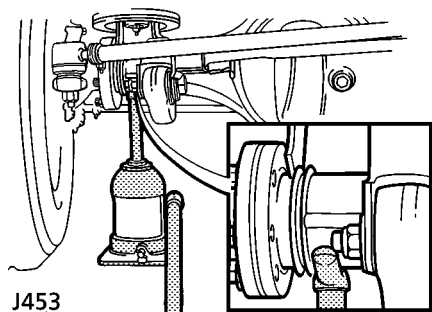
Push the mud flap up over the tyre to allow clear access (return it to its correct position when the wheel change is complete). Position the jack so that, when raised, it engages with the rear axle casing immediately below the coil spring and as close as possible to the shock absorber mounting bracket.

### Changing a wheel

Before raising the vehicle, ensure that all the precautions listed at the beginning of this section have been observed. Also, ensure that the wheel chock is correctly positioned (as described previously).

In some markets, vehicles fitted with alloy wheels have one locking wheel nut fitted to each wheel. Refer to 'Locking wheel nuts' later in this section before changing an alloy wheel.

- 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 nuts fitted to each wheel (DO NOT damage the surface of the wheel by placing them face down on the road).



J453

### Front jacking point:

Position the jack so that, when raised, it engages 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

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- 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 lightly tighten the wheel nuts, ensuring they are firmly seated. DO NOT fully tighten whilst the tyre is clear of the ground.
- 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

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

---

## 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.

## WARNING

*After wheel changing, always secure tools, chock, jack and spare wheel in their correct storage positions.*

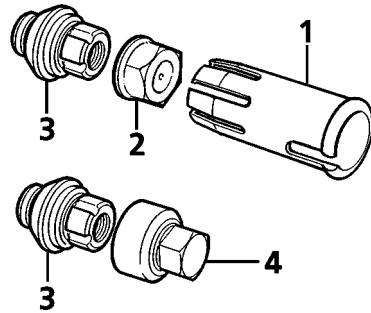
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# Wheel changing

## LOCKING WHEEL NUTS

In some markets, vehicles fitted with alloy wheels are equipped with a locking wheel nut on each wheel (including the spare). The locking wheel nut covers are visually very similar to standard wheel nuts but can be identified by a concave indent on the surface. The locking wheel nut and cover can only be removed using the special tools provided, as follows:

- Push the extractor tool (1) firmly over the stainless steel nut cover (2).
- Pull the extractor tool **squarely** away from the wheel to remove the nut cover and reveal the locking wheel nut (3).
- Fit the metal key socket (4) securely over the locking wheel nut (3).
- Fit the wheel nut wrench onto the key socket and unscrew the nut in the normal way.



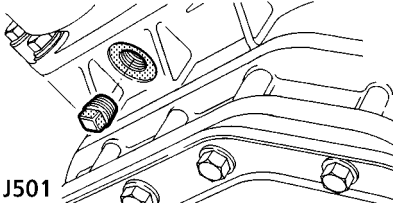
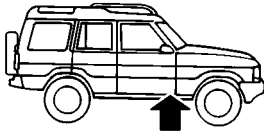
J723

A code letter is stamped on the face of the key socket. Ensure the code letter is entered in the space provided on your Security Information card - you will need to quote this number if replacement components are required. Keep the card in a safe place away from the vehicle.

For security reasons, do not keep the key socket and extractor tool in the glovebox; store them in a less conspicuous place in the vehicle.

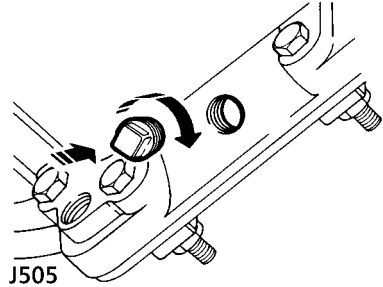
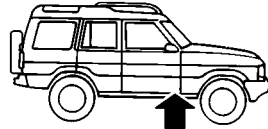
**NOTE:** *If the extractor tool has been inadvertently pushed onto a standard wheel nut, it can be removed ONLY by first undoing and removing the nut; slide the wheel nut wrench down the centre of the extractor and onto the wheel nut.*

# Wading plugs



J501

Engine front timing cover - 300Tdi



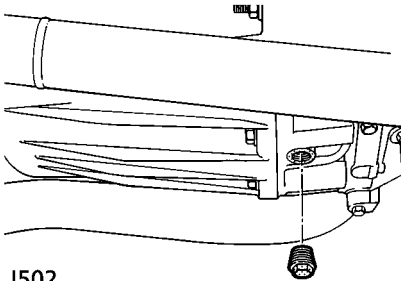
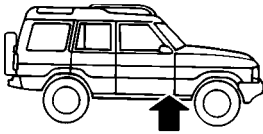
J505

Flywheel housing - V8i & Mpi

## Drain holes

Manual gearbox models are provided with drain holes at the lowest point of the flywheel housing (between engine and gearbox). In addition, 300 Tdi models also have a drain hole at the bottom of the engine timing cover. These drain holes enable excess oil to drain from the vehicle, thereby reducing the risk of inadvertent damage to the clutch or camshaft drive belt.

If the vehicle is to be used for wading, ensure that wading plugs are fitted where indicated to prevent the ingress of water or mud. Remove wading plugs immediately after wading or periodically to enable oil or water to drain from the housing. Wading plugs are available from a Land Rover dealer.



J502

Flywheel housing - 300Tdi

# *Wading plugs*

---

## Automatic models

**NOTE:** *The flywheel housing is completely sealed to exclude mud and water and there is no requirement to fit a wading plug.*

### **WARNING**

*For safety, DO NOT work underneath the vehicle unless it is safely parked with the wheels chocked, or is supported by heavy duty stands.*

---

# Fuse box

## FUSE BOX

Fuses are simple circuit breakers which protect electrical equipment by preventing the electrical circuits from being overloaded. A 'blown' fuse is indicated when the electrical equipment it protects becomes inoperative.

Check a suspect fuse by removing it from the fuse box and looking for a break in the wire inside the fuse (see inset).

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.

### Renewing a fuse

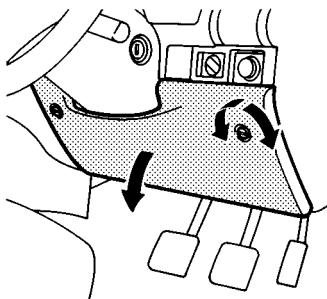
Always turn the starter switch to position 'O' and switch off the affected electrical circuit before removing a fuse.

Press the fuse removal tweezers onto the head of a fuse (as shown) and pull. Always replace a fuse with another of the same value, however, if the replacement fuse blows immediately the circuit MUST be checked by a Land Rover dealer.

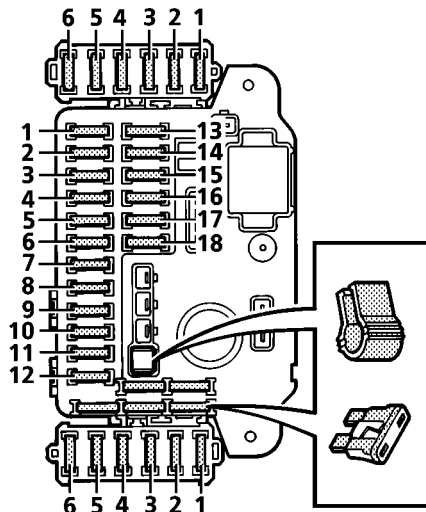
Fuses are colour coded to help identify their amperage, as follows:

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

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.



J593



# Fuse box

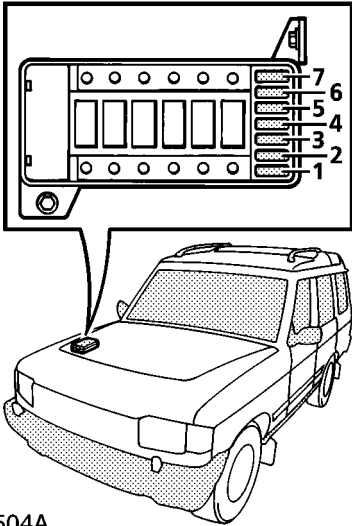
Fuse No.	Value (amps)	Electrical circuit
1	15	Stop lights, direction indicators
2	10	LH side lights
3	10	Radio/cassette/CD player
4	10	RH headlight main beam
5	10	LH headlight main beam
6	20	Cigar lighter, vanity mirror, heated seats
7	10	Airbag SRS
8	10	RH side lights
9	10	Rear fog guard lights
10	10	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
15	10	Air conditioning, windows
16	20	Washers & wipers - front
17	10	Starter, glow plug
18	10	Wash/wipe - rear, mirrors, cruise control
<b>Satellite 1</b>		
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
<b>Satellite 2</b>		
1	30	Electric windows - front
2	30	Electric windows - rear
3	10	Anti-lock braking
4	15	Central door locking
5	30	Electric sun roof
6	20	Radio, clock, alarm, indicator light, interior lights, loadspace lights, trailer lights

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

**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.



# Fuse box



J504A

## ENGINE COMPARTMENT FUSE BOX

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.

Fuse No.	Value (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	15	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

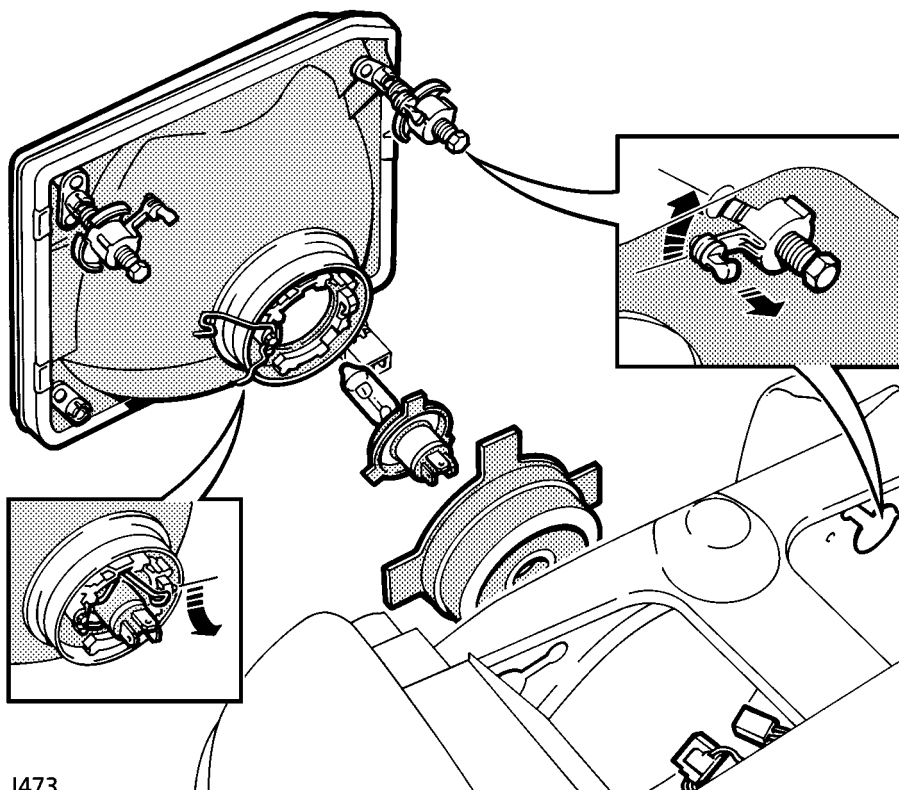
REPLACEMENT BULBS	Watts
Headlight unit	
Front side lights	5
Front direction indicators	21
Dip/main headlights	60/55
Front fog lights	55
Rear lights:	
direction indicators	21
tail lights	5
stop lights	21
rear fog guard lights	21
reversing lights	21
High mounted stop light	21
Side repeater lights	5
Puddle lights	3
Number plate lights	5
Loadspace light	10
Front courtesy light	10
Rear courtesy light	5
Vanity mirror lights	1.2
Glovebox light	5

## 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.

**NOTE:** All bulbs must be rated at 12 volts.

# Bulb replacement



J473

## HEADLIGHT AND SIDELIGHT

### Light unit removal

To replace either headlight or sidelight bulb, 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.

**NOTE:** Vehicles fitted with headlight levelling (as illustration, above) have two retaining clips only (the bottom of the light unit is mounted on the headlight height adjustment operating rod). Remove the lamp by gently pulling it off the ball socket of the operating rod.

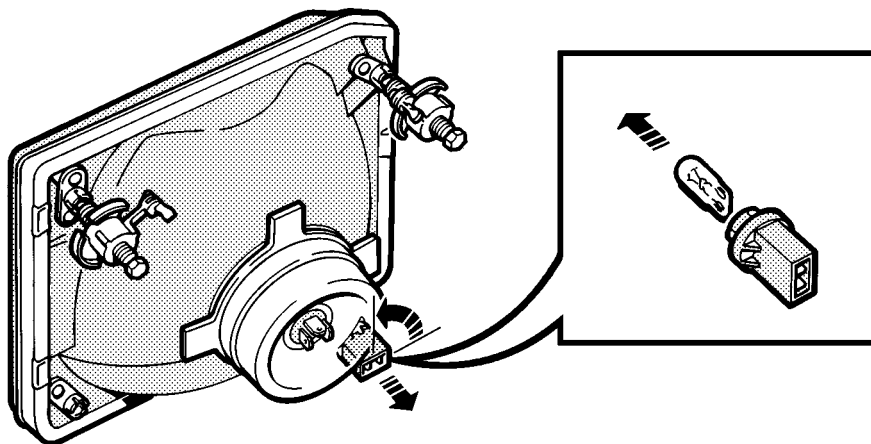
### Headlight bulb:

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 above procedure. However if headlight levelling is fitted, it is necessary to carefully align the lower fixing position to the height adjustment operating lever before fitting the retaining clips.

Once the retaining clips are secure, firmly push the bottom of the headlight unit towards the rear of the vehicle to fully engage the height adjustment operating lever, a firm 'clunk' will be felt when engagement is correct.

## Sidelight bulb:

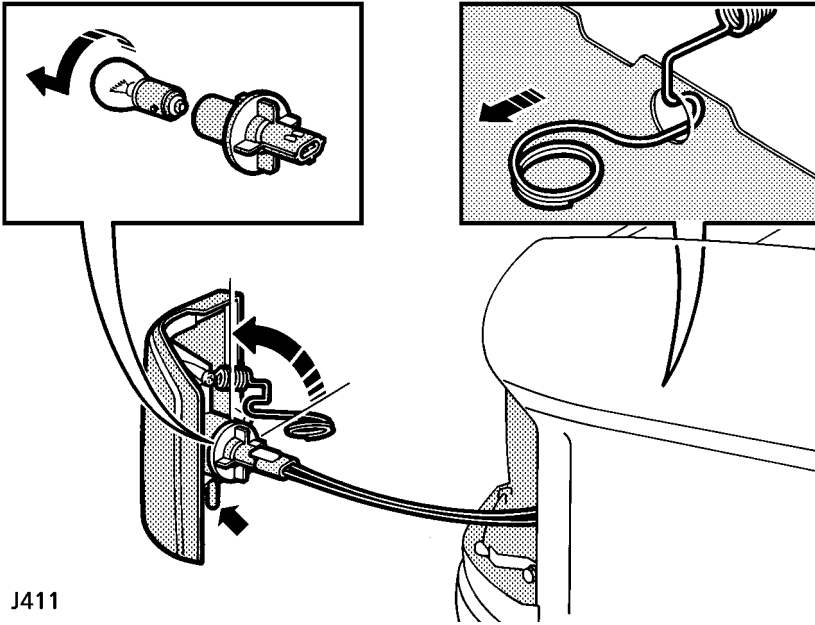
With the light unit removed (see previous page), disconnect the electrical multi plug and disengage the bulb holder by twisting a quarter turn anti-clockwise. Withdraw the bulb holder to replace the bulb.

### IMPORTANT INFORMATION

#### BULB REPLACEMENT

Before replacing a bulb, always switch off the lighting switch to prevent any possibility of a short circuit. Replace bulbs with the same type and specification.

# Bulb replacement



J411

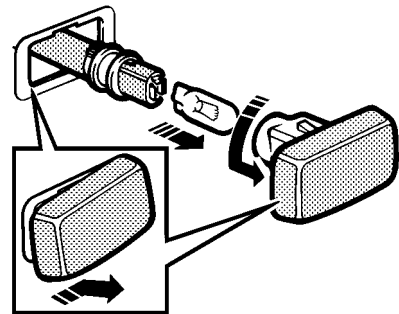
## FRONT DIRECTION INDICATORS

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

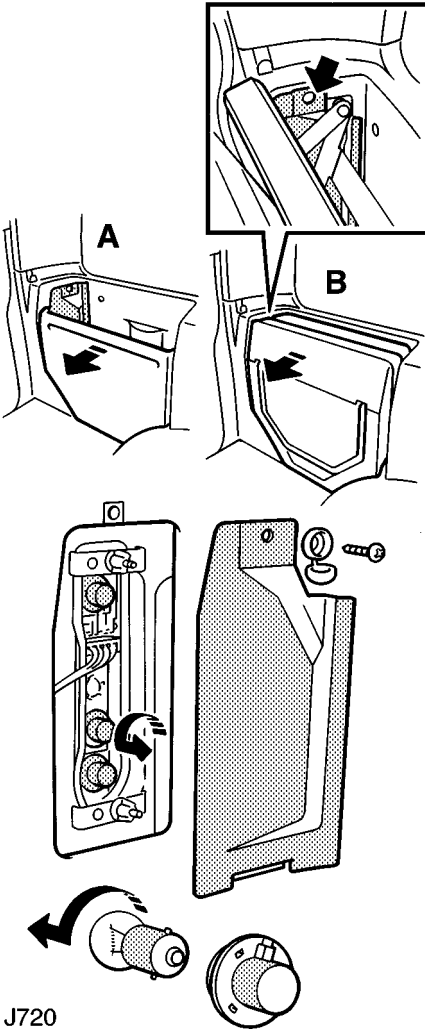
## REAR LIGHT CLUSTER

(Stop, reverse & fog guard lights)

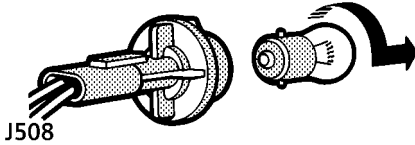
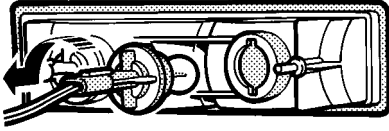
To gain access to the light cluster, either: remove the side pocket cover (picture 'A') or, half pull out the side facing seat (picture 'B'), as applicable. Use a small screwdriver to lever the fastener cover free (the fastener location is arrowed in the inset) and then unscrew the fastener to remove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

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

**NOTE:** In some markets, the stop lights are replaced by combined stop/tail lights and the rear light cluster also includes direction indicator lights.



# Bulb replacement

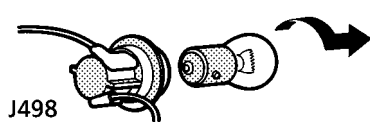
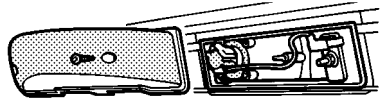


J508

## BUMPER MOUNTED LIGHTS

(Tail lights & direction indicators)

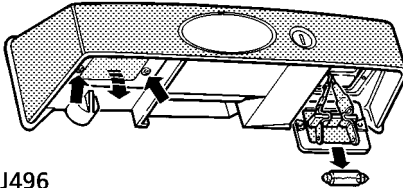
Reach behind the bumper and twist to remove the relevant bulb holder, push and twist to release the bulb.



J498

## HIGH MOUNTED STOP LIGHT

Remove the retaining screws and the cover from the rear of the light unit. Twist to remove the bulb holder. Push and twist to release the bulb.



J496

## NUMBER PLATE LIGHTS

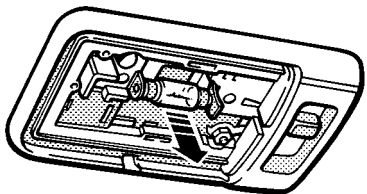
Remove the screws and withdraw the lens. Pull the bulb out.

## FRONT FOG LIGHTS

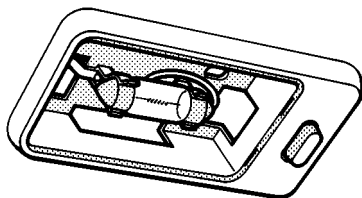
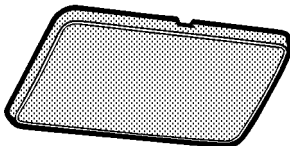
To change a front fog light bulb entails removing the light unit from the vehicle. To ensure correct refitting of the light unit, owners are advised to entrust bulb changing to a Land Rover dealer.

# Bulb replacement

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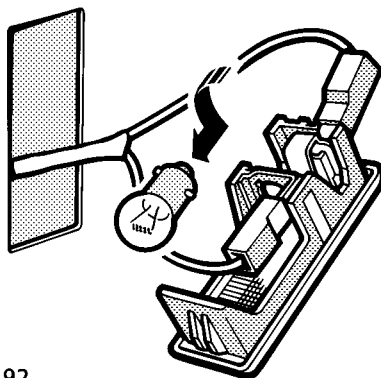
J452



J509

## INTERIOR LIGHT

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



J492

## LOADSPACE LIGHT

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

## 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.



# Cleaning & vehicle care

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## WASHING YOUR VEHICLE

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.

### 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.***

---

## Steam cleaning

Before steam cleaning the engine compartment, cover the power steering reservoir to prevent contamination of fluid. After steam cleaning 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 white spirit to remove tar spots and stubborn grease stains from paintwork. Then wash immediately with soapy water to remove all traces of spirit.

## Body protection

After washing, inspect the paintwork for damage. Treat paint chips and scratches with touch-up paint to prevent corrosion, and 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 finished.***

## Glass and mirrors

Clean the rear window with a soft cloth to avoid damaging the heating 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.

# *Cleaning & vehicle care*

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## **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 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 petrol, detergents, furniture creams or polishes!
- Sweep carpets with a brush or vacuum cleaner and clean with diluted nylon upholstery cleaner.

### **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.

## **Airbag**

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

DO NOT allow these areas to be flooded with liquid, and DO NOT use petrol, detergent, furniture cream or polishes.

# ***SECTION 5***

## ***General data***

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# General data

## LUBRICANTS AND FLUIDS

Recommendations for all climates and conditions.

COMPONENTS Specification	SAE	AMBIENT TEMPERATURE ° C								
		-30	-20	-10	0	10	20	30	40	50
Petrol engine sump										
Oil to meet either:	5W/30									
RES.22.OL.G4,	5W/40, 5W/50									
ACEA A2:96	10W/30									
API SG or SH	10W/40									
10W/50										
	10W/60									
Diesel engine sump	5W/30									
	5W/40, 5W/50									
Oil to meet either:										
RES 22.OL.PD2,	10W/30									
ACEA B2:96,	10W/40									
API CE	10W/50									
	15W/40									
Main gearbox, manual										
ATF Dexron IID										
Main gearbox, automatic										
ATF Dexron IID										
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 LATF										
Dexron II D										

# *General data*

---

## **Brake and clutch reservoirs**

Universal brake fluids or any brake fluid having a minimum boiling point of 260° C and complying with FMVSS 116 DOT4.

## **Windscreen washers**

Screen washer fluid.

## **Engine cooling system** (petrol & diesel models)

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 -36° C.

## **Air conditioning compressor**

Nippondenso ND-8 or Unipart ND-8.

## **Inertia reel seat belts**

**DO NOT LUBRICATE.** These components are lubricated for life during manufacture.

## **Battery terminals**

Petroleum jelly. DO NOT use silicone grease.

## **Door locks (anti-burst)**

**DO NOT LUBRICATE.** These components are lubricated for life during manufacture.

# General data

---

## CAPACITIES

The following capacities are approximate and provided as a guide only. All oil levels must be checked using the dipstick or level plugs as applicable.

Fuel tank .....	89 litre
Engine sump	
- 300Tdi models .....	5,8 litre
- V8i petrol models .....	6,10 litre
- Mpi petrol models .....	4,90 litre
Additional capacity after fitting new oil filter	
- 300Tdi models .....	0,85 litre
- V8i petrol models .....	0,56 litre
- Mpi petrol models .....	0,40 litre
Manual gearbox .....	2,67 litre
Automatic gearbox .....	9,80 litre
Transfer box .....	2,30 litre
Front differential .....	1,70 litre
Rear differential .....	1,70 litre
Washer reservoir .....	7,00 litre
Cooling system	
- 300Tdi manual gearbox models .....	11,50 litre
- 300Tdi automatic gearbox models .....	11,70 litre
- V8i petrol models .....	11,30 litre
- Mpi petrol models .....	10,00 litre

# General data

---

## Engine - 300Tdi

Bore .....	90,47 mm	
Stroke .....	97,0 mm	
Number of cylinders .....	4	
Compression ratio .....	19.5:1	
Cylinder capacity .....	2495 cm <sup>3</sup>	
Firing order .....	1, 3, 4, 2	
Tappet clearance, inlet .....	0,20 mm	} Engine hot or cold
Tappet clearance, exhaust .....	0,20 mm	

## Engine - Mpi

Capacity .....	1994 cm <sup>3</sup>
Firing order .....	1 - 3 - 4 - 2
Idle speed .....	875 ± 50 rev/min
Exhaust gas CO content at idle speed .....	0.5% max
Ignition system .....	Programmed ignition
Spark plug type .....	GSP 6662
Spark plug gap .....	0.85 mm

# General data

---

## Engine - V8i petrol (high compression)

Bore .....	94,0 mm
Stroke .....	71,12 mm
Number of cylinders .....	8
Cylinder capacity .....	3952 cm <sup>3</sup>
Compression ratio .....	9.35:1
Firing order .....	1, 8, 4, 3, 6, 5, 7, 2
Spark plug type .....	Champion RN9YC
Spark plug gap .....	0,84 to 0,96 mm
Distributor .....	Electronic
Ignition timing, dynamic; .....	4° BTDC ± 1° with vacuum pipe disconnected

## Engine - V8i petrol (low compression)

This engine is fitted to vehicles without catalytic converters

Bore .....	94,0 mm
Stroke .....	71,12 mm
Number of cylinders .....	8
Cylinder capacity .....	3952 cm <sup>3</sup>
Compression ratio .....	8.13:1
Firing order .....	1, 8, 4, 3, 6, 5, 7, 2
Spark plug type .....	Champion RN12YC
Spark plug gap .....	0,84 to 0,96 mm
Distributor .....	Electronic
Ignition timing, dynamic; .....	6° BTDC ± 1° with vacuum pipe disconnected

## STEERING

Turns lock to lock .....	3.375 turns
Camber angle .....	Zero
Castor angle .....	3°
Swivel pin inclination .....	7°
Front wheel toe-out .....	0 to 2 mm
Turning circle between kerbs (all models) .....	11,9 m



# *General data*

---

## **ELECTRICAL SYSTEM**

Type .....	Negative earth
Voltage .....	12
Battery	
- 300Tdi models .....	072
- petrol models .....	091/072
Charging circuit .....	Alternator A127/100
Ignition system	
- V8i petrol models .....	Coil & Multi-coil
- Mpi petrol models .....	Programmed

# General data

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## DIMENSIONS

Overall length (including spare wheel) .....	4521 mm
Overall length (including tow hitch) .....	4534 mm
Overall width .....	1793 mm
Overall height (no roof bars) .....	1928 mm
Overall height (open sunroof) .....	2005 mm
Wheelbase .....	2540 mm
Track front/rear .....	1486 mm
Width between wheel boxes .....	1080 mm

## OFF-ROAD PERFORMANCE

Max. gradient (EEC kerb weight) .....	45°
Approach angle (EEC kerb weight) .....	39°
Departure angle with tow hitch - (EEC kerb weight) .....	20°
Departure angle without tow hitch - (EEC kerb weight) .....	29°
Wading depth .....	500 mm
Min. ground clearance (unladen) .....	214 mm

## TOWING WEIGHTS

<b>V8 &amp; 300Tdi models</b>	<b>On-road</b>	<b>Off-road</b>
- Unbraked trailers .....	750 kg	500 kg
- Trailers with overrun brakes .....	3500 kg	1000 kg
- 4 wheel trailers with coupled brakes* .....	4000 kg	1000 kg

### Mpi models

- Unbraked trailers .....	750 kg	500 kg
- Trailers with overrun brakes .....	2750 kg	1000 kg
Roof rack load (all models) .....	50 kg	30 kg
Nose weight .....	150 kg	150 kg

**NOTE:** \* Only applies to vehicles modified to accept coupled brakes.

**NOTE:** See 'Section 3' for information on towing trailer weights in excess of 3500 kg.

**NOTE:** All weight figures are subject to local restrictions. It is the owner's responsibility to ensure that all territorial towing regulations are complied with.

# General data

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## VEHICLE WEIGHTS

### 300Tdi models

Max front axle weight .....	1200 kg
Max rear axle weight .....	1650 kg
Gross vehicle weight .....	2720 kg

EEC kerb weight and distribution	3 Door	5 Door basic	5 Door 'S'
- Front axle .....	1040 kg	1040 kg	1040 kg
- Rear axle .....	1015 kg	1040 kg	1060 kg
- Total .....	2055 kg	2080 kg	2100 kg

EEC kerb weight = Unladen weight + Full fuel tank + 75 kg driver.

### V8i models

Max front axle weight .....	1100 kg
Max rear axle weight .....	1650 kg
Gross vehicle weight .....	2720 kg

EEC kerb weight and distribution	3 Door	5 Door
- Front axle .....	970 kg	970 kg
- Rear axle .....	1010 kg	1055 kg
- Total .....	1980 kg	2025 kg

EEC kerb weight = Unladen weight + Full fuel tank + 75 kg driver.

# General data

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## Mpi models

Max front axle weight .....	1110 kg
Max rear axle weight .....	1650 kg
Gross vehicle weight .....	2720 kg

EEC kerb weight and distribution	3 Door	5 Door
- Front axle .....	930 kg	930 kg
- Rear axle .....	1010 kg	1055 kg
- Total .....	1940 kg	1985 kg

EEC kerb weight = Unladen weight + Full fuel tank + 75 kg driver.

**NOTE:** Axle weights are non additive. The individual maximum axle weights and gross vehicle weight must not be exceeded.

# *General data*

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## FUEL

**Diesel** ..... Diesel or Automotive Gas Oil (AGO) to EN 590

### **Petrol**

Catalyst vehicles ..... 95 RON unleaded

Non-catalyst vehicles

- Mpi engines ..... 95 RON unleaded

- V8i high compression engines ..... 97 RON leaded or 95 RON unleaded

- V8i low compression engines ..... 90 RON leaded or 95 RON unleaded

# General data

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## WHEELS AND TYRES

Road wheel nut torque ..... 130 Nm  
Wheel size ..... 7J x 16

	Front	Rear
<b>205 R16 radial</b>		
Normal - all load conditions .....	1,9 bar 2,0 kgf/cm <sup>2</sup>	2,6 bar 2,7 kgf/cm <sup>2</sup>
<b>235/70 R16 radial</b>		
Normal - all load conditions .....	1,8 bar 1,8 kgf/cm <sup>2</sup>	2,3 bar 2,4 kgf/cm <sup>2</sup>

### WARNING

*Tyre pressures must be checked with the tyres cold, as the pressure is about 0.2 bar, 0.2 kgf/cm<sup>2</sup> 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.*

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### 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.*

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# ***SECTION 6***

## ***Parts & accessories***

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Parts & accessories .....	161
Electrical equipment .....	161
After sales service .....	162
Travelling abroad .....	162

# Parts & accessories

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## PARTS AND ACCESSORIES

Your Land Rover Discovery has been designed, manufactured and proven to cope with the most rigorous driving conditions. As such, fitting spare 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 vehicles' 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 different 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 part and accessory has been rigorously tested by the same engineering team that designed and built the vehicle and can therefore be GUARANTEED for twelve months with UNLIMITED MILEAGE.

A full list and description of all available accessories is available from your Land Rover dealer.

Always consult a Land Rover dealer before fitting accessories, and before commencing any conversion or alteration to the vehicle's original specification.

## WARNING

*The fitting of parts and accessories of inferior quality, or the carrying out of non-approved alterations or conversions may be dangerous and could affect the safety of the vehicle and occupants, and also invalidate the terms and conditions of the vehicle warranty.*

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## 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 or fuel systems.*

*If an airbag SRS is fitted ALWAYS consult a Land Rover dealer before fitting any accessory.*

*Fitting inferior quality parts or accessories, may be dangerous and could invalidate the vehicle warranty.*

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Always consult your dealer for advice regarding the approval, suitability, installation and use of any parts or accessories before fitting.



# *Parts & accessories*

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## **After sales service**

With franchised representation in over 100 countries worldwide, Land Rover are able to support your vehicle wherever you go.

A full list of Land Rover dealers is included in the literature pack.

Only Land Rover dealers are able to provide the full range of recommended parts and accessories that meet our rigorous standards of safety, durability and performance.

## **Travelling abroad**

In certain countries, it is illegal to fit parts which have not been made to the vehicle manufacturers' specification.

Owners should ensure that any parts or accessories fitted to the vehicle while travelling abroad will also conform to the legal requirements of their own country when they return home.

# SECTION 7

## Off-road driving

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*This section of your handbook is devoted to the Discovery's superb off-road driving capabilities.*

*Before venturing off-road, 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 .....	165
Driving on slippery surfaces .....	170
Driving on rough tracks .....	170
Climbing steep slopes .....	171
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# Off-road driving

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## WARNING

*Off-road driving can be hazardous!*

- *DO NOT take unnecessary risks.*
- *Be prepared for emergencies at all times.*
- *Familiarise yourself with the recommended driving techniques in order to minimise risks to yourself, your vehicle AND your passengers.*
- *Remove the CD autochanger (if fitted) before arduous off-road driving or wading.*
- *Always wear a seat belt for personal protection in all off-road driving situations.*
- *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.*

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## 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 first 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.

## **Gear selection - automatic gearbox**

On automatic models, with the main selector lever set at 'D', the gearbox automatically provides the correct gear for the appropriate gear range selected (HIGH or LOW). 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. Unless ABS braking has been fitted, any braking on wet, muddy or loose surfaces is likely to cause one or more wheels to lock - the resultant slide 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.

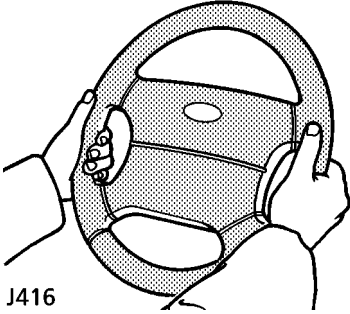
## **Accelerating**

Use the accelerator with care - any sudden surge of power may induce wheel spin and result in loss of control of the vehicle.

# Off-road driving

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## 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.*

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## 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.

## 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 - take care not to ground the vehicle.

Ground clearance is particularly important at the bottom of steep slopes, 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, hard 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 improve tyre grip.

## IMPORTANT INFORMATION

### After driving off-road

Before rejoining the public highway, or driving at speeds above 40 km/h, consideration should be given to the following:

- Wheels and tyres must be cleaned of mud and inspected for damage.
- 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 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*

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## **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 sand causes 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 or in 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, ('D' 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.

# *Off-road driving*

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## **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, low speed to be maintained without constant use of the brake and clutch pedals.

Always disengage the DIFF LOCK when smooth, firm ground is reached.



## 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. Instead, adopt the following procedure to reverse downhill to the foot of the slope.

1. Hold the vehicle stationary using both foot and hand brakes.
2. Restart the engine if necessary.
3. Engage reverse gear LOW range ('R' for automatic transmission).
4. Release the handbrake. 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.

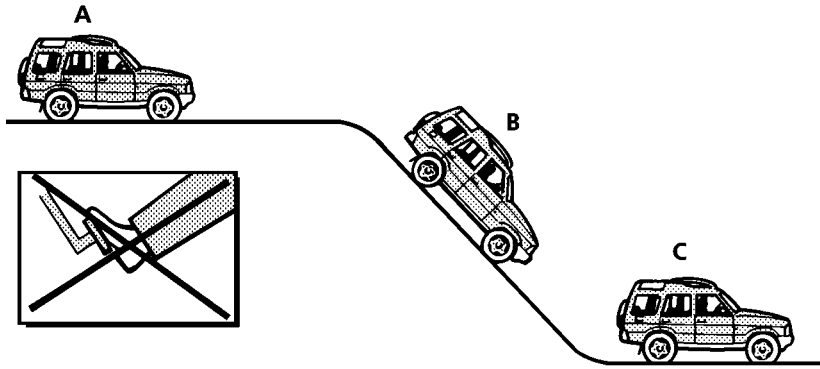
5. Unless it is necessary to stop the vehicle to negotiate obstructions, DO NOT apply the brake or clutch pedal during the descent - even a light application may cause the front wheels to lock, rendering the steering ineffective.
6. If the vehicle begins to slide, accelerate slightly to allow the tyres 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 as there will be no braking effect from the gearbox unless the engine is running.***

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J420

## DESCENDING STEEP SLOPES

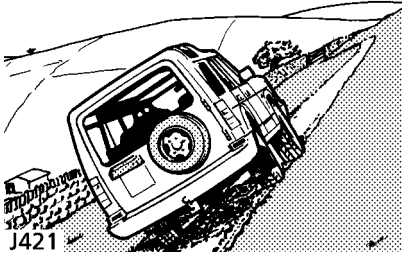
- A. Stop the vehicle at least a vehicle length before the slope and engage first gear ('1', for automatic transmission) LOW range with the differential locked.
- B. Unless it is necessary to stop the vehicle in order to negotiate obstructions, **DO NOT** touch the brake or clutch pedals during the descent - 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.*

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## 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 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, should vacate the vehicle until the sloping ground has been safely negotiated.

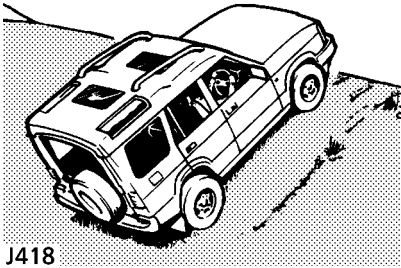
## NEGOTIATING A 'V' SHAPED GULLY

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 WHEEL 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.

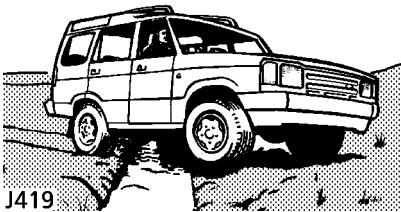
Particularly in wet conditions, if the steering wheel is allowed to spin free, the vehicle may appear to be driving straight ahead in the ruts, but in actual fact (due to the lack of traction caused by the wet ground) is unknowingly on full right or left lock. Then, when level ground is reached, or if a dry patch of ground is encountered, the wheels will find traction and cause the vehicle to suddenly veer to left or right.



J418

## CROSSING A RIDGE

Approach at right angles so that both front 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.



J419

## 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 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 the water is likely to exceed 0,5 metre, the following precautions should 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.
- Fit a drain plug to the diesel engine timing cover (see 'Owner maintenance').
- Remove the CD autochanger (if fitted).
- Ensure that the silt bed beneath the water is free of obstacles and firm enough to support the vehicle's weight and provide sufficient traction.
- Ensure that the engine air intake is clear of the water level.
- 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.

## **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 handbrake to hold the vehicle stationary until the transmission has thoroughly dried out; in the meantime, leave the vehicle parked in gear.
- Remove the timing cover drain plug (where fitted) and also 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 for 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.