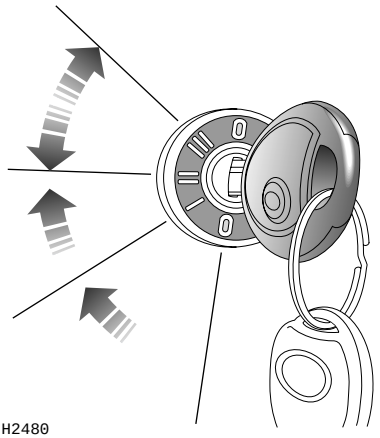
SECTION 3
Driving & operating

Section Contents	Page
Starter switch & steering lock	87
Starting & driving	88
Catalytic converter	92
Fuel filling	94
Manual transmission	98
Automatic transmission	99
Transfer gearbox	102
Cruise control	104
Brakes	106
Traction control	110
Hill descent control	111
Active cornerning enhancement	1113
Self-levelling suspension	115
Towing	118
Load carrying	121
Vehicle recovery	123
Emergency starting	125

Starter switch & steering lock



STEERING COLUMN LOCK

To unlock the steering column

Insert the key FULLY and turn the starter switch to position 'I'. A small movement of the steering wheel may be necessary to disengage the steering lock while turning the switch.

To lock the steering column

Turn the key to position **'0'** and withdraw it from the starter switch. Turn the steering wheel slightly 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 and hazard warning lights.

Position 'I'

- Steering unlocked.
- Clock, radio/cassette player and cigar lighter can now 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 gear selector position 'P' or 'N' must be selected before the engine will start.*

STARTING - PETROL ENGINE

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 may 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. Turn the starter switch to position 'II' and then on to position 'III' to operate the starter motor. DO NOT press the accelerator pedal while starting, and RELEASE THE KEY as soon as the engine is running.

STARTING - DIESEL 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: *The waiting time will vary according to the engine coolant temperature (when the engine is hot, the glow plug warning light will extinguish almost immediately).*

4. Turn the key to position 'III' to operate the starter motor. DO NOT press the accelerator pedal while starting. RELEASE THE KEY as soon as the engine is running.

If the engine stalls or fails to start, 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'.

WARNING

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

Similarly, ALWAYS allow the engine to idle for 10 seconds before switching off.

STARTING - GENERAL INFORMATION

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 discharge the battery and may cause the starter motor to overheat.

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. This will reduce the load on the battery.

Cold climates

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

Block heaters

Only approved block heaters restricted to a maximum of 400 W should be used. Block heaters that exceed this output may damage the emission control components.

Automatic gearbox vehicles

After starting, ensure that the handbrake and 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 taildoor open.***
- ***DO NOT modify the exhaust system from the original design.***
- ***ALWAYS repair exhaust system leaks immediately.***
- ***If you think exhaust fumes are entering the vehicle have the cause determined and corrected immediately.***

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. In such cases the vehicle owner and the repairer may both be liable for legal penalties.

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

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.

DRIVING

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 indicating that a fault exists. If a red light illuminates, always stop the vehicle and seek qualified assistance before continuing.*

IMPORTANT INFORMATION

Vehicle stability

Your vehicle has a higher ground clearance and, hence, a higher centre of gravity than ordinary passenger cars to enable the vehicle to perform in a wide variety of different off-road applications. An advantage of the higher ground clearance is a better view of the road, allowing the driver to more easily anticipate problems. Inexperienced drivers should take additional care, remembering that the Discovery is not designed for cornering at the same speeds as conventional passenger cars, any more than a low slung sports car is designed to perform satisfactorily in off-road conditions. As with other vehicles of this type, failure to operate the Discovery correctly may result in loss of control or even vehicle rollover.

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.

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. During the first 500 miles (800 km), it is essential to drive with consideration for the running-in process and heed the following advice:

- LIMIT maximum road speed to 70 mph (110 km/h) or 3,000 rev/min. 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.

FUEL ECONOMY

Fuel consumption is influenced by two major factors:

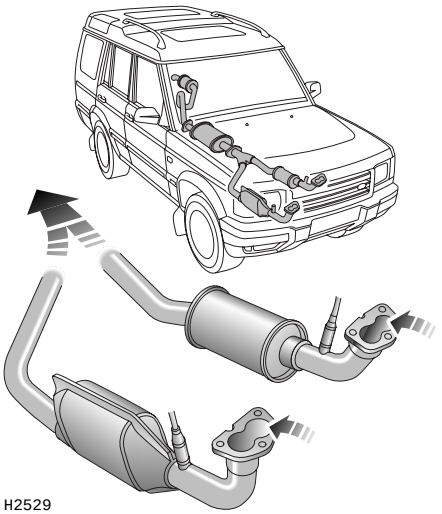
- How your vehicle is maintained.
- How you drive your vehicle.

To obtain optimum fuel economy, it is essential that your vehicle is maintained in accordance with the manufacturer's service schedule.

Items such as the condition of the air cleaner element, tyre pressures and wheel alignment will 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 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 for longer than necessary.
- Decelerate gently and avoid sudden and heavy braking.
- Anticipate obstructions and adjust your speed accordingly well in advance.
- When stationary in traffic, select neutral to improve fuel economy and air conditioning performance.

Catalytic converter


H2529

CATALYTIC CONVERTER
(petrol engine vehicles only)

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

WARNING

Catalytic converters 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:

Fuel

- Use ONLY fuel recommended for your vehicle.

Starting the engine

- DO NOT continue to operate the starter after a few failed attempts (unburnt fuel may be drawn into the exhaust system, thereby poisoning the catalyst), and do not attempt to clear a misfire by pressing the accelerator pedal - seek qualified assistance.
- When starting a COLD engine, DO NOT drive if a misfire is suspected and do not attempt to clear a misfire by pressing the accelerator - seek qualified assistance.
- Do not attempt to push or tow-start the vehicle.

Catalytic converter

Driving

- If a misfire is suspected, or the vehicle lacks power while driving, provided the engine has reached its normal operating temperature, it may be driven SLOWLY (at risk of catalyst damage) to a Land Rover dealer for assistance.
- NEVER allow the vehicle to run out of fuel (the resultant misfire could damage the catalyst).
- Consult your dealer if your vehicle is burning excessive oil (blue smoke from the exhaust), as this 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.
- DO NOT switch off the engine when the vehicle is in motion with a drive gear selected.

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.

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.

TYPE OF FUEL

WARNING

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

PETROL ENGINES

Engines with a catalytic converter:
High compression engines: 95 RON UNLEADED to EN228
Low compression engines: 91 RON UNLEADED to EN228

Engines without a catalytic converter:
Use 91 RON UNLEADED petrol wherever possible.

In territories where only LEADED fuel is available, USE 95 RON LEADED.

The RON values quoted above are MINIMUM requirements and can be safely exceeded. Using 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.*

Petrol quality

The RON value (octane rating) and type of petroleum (unleaded or leaded), available at garage forecourts will vary in different parts of the world. For example, in most European countries 95 RON unleaded fuel is readily available, but in some parts of the world fuel supplies may be limited to leaded or lower octane fuels only.

During manufacture, engines are tuned to suit the fuel supplies commonly available in the country for which the vehicle is destined. However, if a vehicle is later exported to a different country, or is used to travel between different territories, the owner should be aware that the available fuel supplies may not be compatible with the engine specification. If in doubt, seek advice from the territory concerned.

DIESEL ENGINES

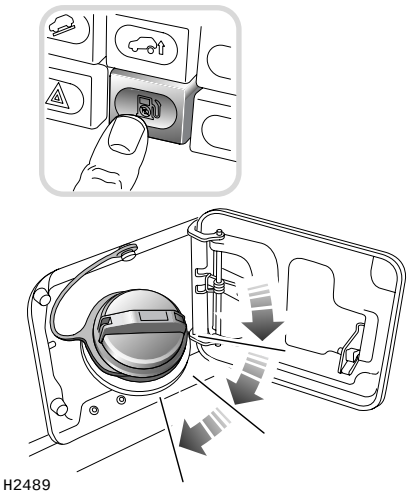
Use diesel or automotive gas oil (AGO) to EN 590.

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 0.3%; in Europe all supplies should be within this limit, but in other parts of the world, you should check with your supplier.

In markets where the sulphur content exceeds 0.3%, more frequent engine oil and filter changes will be required.

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!



SAFETY ON THE FORECOURT

WARNING

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

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

FUEL FILLER

WARNING

DO NOT fully remove the filler cap until any captive tank pressure has been released (wait until the hissing stops).

The fuel filler is located in the rear right-hand wing. With the starter switch turned to position '0' or 'I', press the fascia mounted switch (shown in illustration) to release the filler flap.

The filler cap is designed to allow the fuel tank to vent during the first half turn. Carefully loosen the cap one half turn until resistance is felt, and allow fuel tank pressure to be released. Once the pressure is released (hissing has stopped), it is safe to fully remove the filler cap.

When replacing, tighten the cap clockwise until you hear the fuel cap ratchet click at least three times (see illustration).

FUEL FILLING

WARNING

DO NOT attempt to fill the tank to its maximum capacity. If the vehicle is to be parked on a slope, in direct sunlight, or high ambient temperature, expansion of the fuel could cause spillage.

Filling station pumps are equipped with automatic cut-off sensing to avoid fuel spillage. Fill the tank SLOWLY until the filler nozzle automatically cuts-off the supply. DO NOT attempt to fill the tank beyond this point or spillage could result due to expansion of the fuel.

Petrol engine vehicles

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

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

Diesel engines

The diesel pumps on garage forecourts fill at a maximum of 45 litres (10 gallons) per minute. Use of commercial vehicle diesel pumps with a higher fill rate, may result in premature pump cut-off and fuel spillage.

EMPTY FUEL TANK

Petrol engine vehicles

In the case of petrol engine vehicles equipped with a catalytic converter, running the fuel tank dry could create an engine misfire capable of damaging the catalytic converter. DO NOT RUN THE FUEL TANK DRY!

Diesel engine vehicles

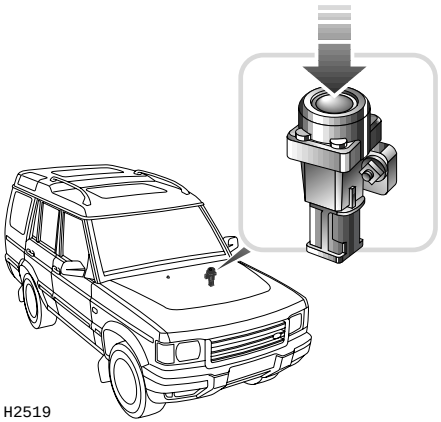
After running the fuel tank dry, refuel the tank with at least 1 gallon (4.5 litres) of diesel fuel, then carry out the following procedure:

1. Turn off the starter switch and wait for 15 seconds.
2. Turn the starter key to position 'II' and wait for 30 seconds.
3. Repeat steps 1 and 2 six times.
4. After the final 30 second period, fully depress the accelerator pedal.
5. Keeping the pedal depressed, start cranking the engine.
6. Continue cranking the engine and as soon as the engine is firing smoothly, ease the accelerator pedal back to approximately halfway through its travel, and release the starter key. The engine should now be running.
7. If the engine fails to start, repeat the process.

IMPORTANT INFORMATION

The engine must NOT be cranked for more than 20 seconds in any one period.

If the above procedure is carried out on a vehicle that has NOT run out of fuel, it will result in the engine flooding with fuel and failing to start.



H2519

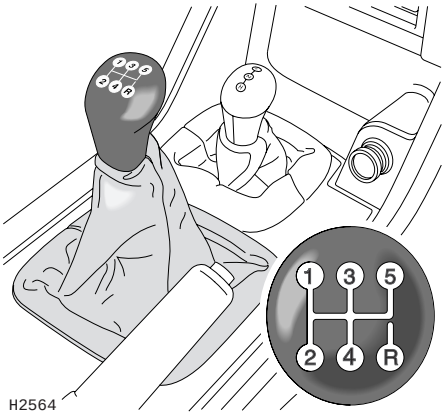
FUEL CUT-OFF SWITCH

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

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

WARNING

ALWAYS check for fuel leaks before resetting the switch!



MANUAL TRANSMISSION

Manual transmission vehicles feature a five speed main gearbox and a two-speed (LOW & HIGH) transfer box. 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 lie naturally between third and fourth gear positions.

Clutch

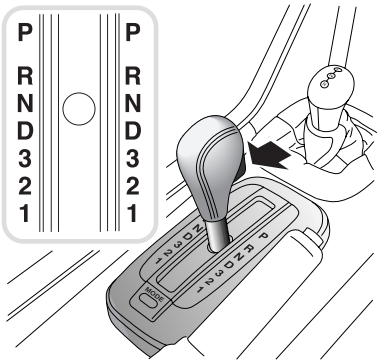
DO NOT use the clutch pedal as a foot rest. To prevent unnecessary wear, always keep the left foot well clear of the clutch pedal except when changing gear.

DO NOT hold the vehicle stationary on a hill by slipping the clutch. This will wear out the clutch. Always use the handbrake.

WARNING

Do not select reverse gear unless the vehicle is stationary.

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



H2565

AUTOMATIC TRANSMISSION

The Automatic transmission features a four speed main gearbox with a torque converter and a two speed transfer box. 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 trigger mounted in the handle of the selector lever (arrowed in illustration) to release the catch whilst moving the lever to the required position.

NOTE: *Gear selection between 'D' and '3' in high and low range may be made without operating the trigger.*

Selector lever positions

'P' Park

In this position the transmission is locked to prevent the vehicle from rolling away. Select ONLY when the vehicle is stationary and with the handbrake applied.

'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 short period (eg. at traffic lights).

'D' Drive

In high range, select 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.

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

Automatic gear changing is limited to first, second and third gears only. In high range, use this position in congested traffic conditions and for town driving.

'2' (1st and 2nd gears)

Automatic gear changing is limited to first and second ratios only. In high range, 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) without throttle application, as soon as the brakes are released.
- 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.

Gear change speeds

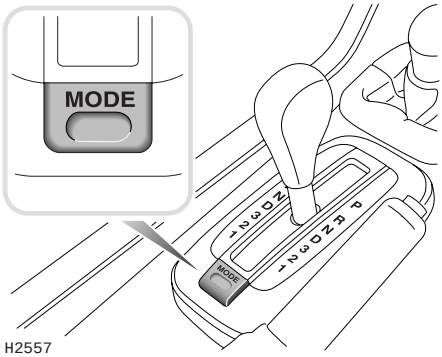
With 'D' selected, the road speeds at which gear changes take place will vary according to the position of the accelerator: minimum acceleration will result in gear changes at low road speed, while larger throttle openings will cause the gearbox to delay gear changes until faster road speeds have been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



MODE SWITCH

In High range press the mode switch to select 'Sport' mode (the 'S' information light on the instrument panel will illuminate).

In Low range press the mode switch to select 'Manual' mode (the 'M' manual information light will illuminate).

Press the switch a second time to return the gearbox to normal operation.

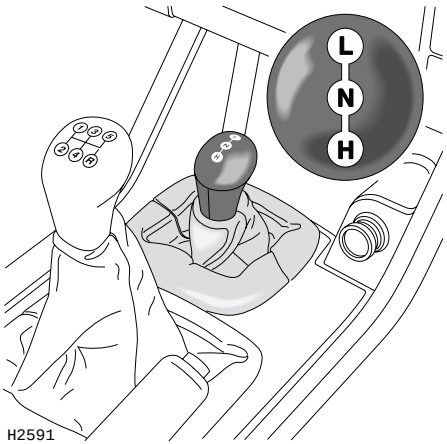
'Sport' mode

With 'Sport' mode selected, the gearbox is more responsive to accelerator pedal movement - downshifts occur earlier and upshifts are delayed to make optimum use of the engine's power while accelerating. Select 'Sport' when increased acceleration is required, or when negotiating long inclines or twisting roads. Note that driving in 'Sport' mode will increase fuel consumption.

'Manual' mode

In Low range, with 'Manual' mode selected, the automatic transmission functions as a manual gearbox requiring the driver to move the selector lever manually to change gear ('D' = 4th gear). Manual mode will provide maximum vehicle control and engine braking - ideal for use in severe off-road conditions. Note that 'kick-down' is disabled and that automatic downshifts will only occur to prevent the engine from stalling.

NOTE: *Switching off the engine or using the transfer gearbox will automatically cancel 'Sport' or 'Manual' mode.*



TRANSFER GEARBOX

The second gearbox (known as the transfer box) is used to select either the high or low range of gears.

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 ONLY in situations where low speed manoeuvring is necessary, such as reversing a trailer or negotiating a boulder strewn river bed; also use low range for more extreme off-road conditions where progress in high range cannot be maintained. DO NOT attempt to use LOW range gears for normal road driving.

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.

Advanced method

(Manual gearbox vehicles)

Changing from high to low on the move:

With the vehicle slowing to a stop and travelling NO FASTER THAN 5 mph (8 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.

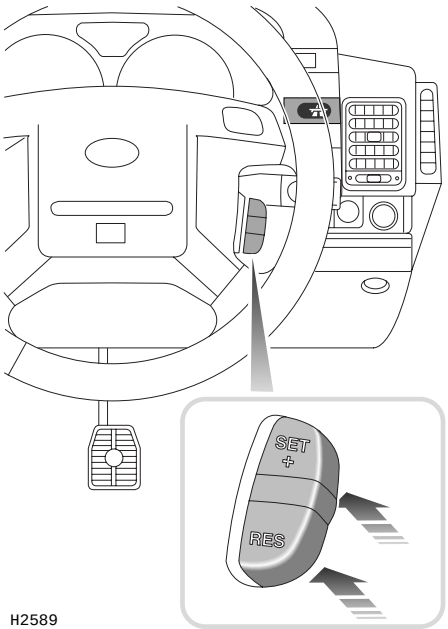
NOTE: *After a little practice, this operation can be carried out smoothly and quickly by using firm, positive moves.*

On automatic models, reduce (or increase) the speed of the vehicle to 5 mph (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.

Cruise control

IMPORTANT INFORMATION

- DO NOT use cruise control when using low range 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.
- Use of 'sport' mode on automatic gearbox vehicles is not recommended when cruise control is selected.
- On petrol engine vehicles, 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.



H2589

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 right hand side of the instrument panel and two control switches marked 'SET +' and 'RES' mounted on the steering wheel.

Cruise control

To operate

1. Press the master switch (the switch indicator light illuminates 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 28 mph (45 km/h).
3. Press the 'SET +' switch to set the vehicle speed in the system's memory. Cruise control will now maintain that road speed without the need for operation of the accelerator pedal.

With cruise control operating, speed can be increased for periods of up to 30 seconds, by normal use of the accelerator e.g. for overtaking. When the accelerator is released, road speed will return to the selected cruising speed.

NOTE: *If the 30 second period is exceeded, cruise control will automatically disengage. Press the 'RES' switch to re-engage.*

To reduce the cruising speed:

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

To increase the 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. Each press of the switch will increase the speed by 1 mph (1.5 km/h approx).

Disengaging cruise control

On manual gearbox vehicles, the cruise control will automatically disengage if the brake or clutch pedals are pressed. On automatic gearbox vehicles, cruise control will disengage when the gear selector is moved into neutral, or when the brake pedal is pressed. Cruise control can also be disengaged by pressing the 'RES' switch.

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.*

FOOT BRAKE

For your safety, the hydraulic braking system operates through dual circuits. If one circuit should fail, the other will continue to function, but increased brake pedal travel, greater pedal pressure, 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.

Electronic brake force distribution

In addition, your vehicle is equipped with Electronic Brake Force Distribution (EBD), which balances the distribution of braking forces between front and rear axles, in order to maintain maximum braking efficiency under all load conditions.

For example; under light loads EBD applies less effort to the rear brakes to maintain vehicle stability, conversely reducing front braking effort when the vehicle is towing or is heavily laden.

Brake pads

Brake pads require a period of bedding in. For the first 500 miles (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 without the engine running because braking assistance will not be available. The pedal brakes will still function, but more pressure will be required to operate them.

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 - the braking system may lose any remaining servo 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.

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, pull the lever up fully.

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.

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

The purpose of the anti-lock braking system (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 sufficient road surface friction exists to reliably bring the vehicle to a halt without the wheels locking), ABS will not be activated. However, should the braking force exceed the available adhesion between the tyres and the road surface, then ABS 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 each, according to the amount of traction available, thereby ensuring that the wheels do not lock.

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

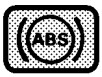
- DO NOT pump the brake pedal at any time; this will interrupt operation of the system and may increase braking distance.
- NEVER place additional floor matting or any other obstruction under the brake pedal. This restricts pedal travel and therefore braking efficiency is impaired.

WARNING

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

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

The driver should always take account of the surface to be travelled over and the fact that brake pedal reactions will be different to those experienced on a non-ABS vehicle.



Warning light

The anti-lock braking system incorporates a monitoring system, which checks that all the electrical components are in working order, as soon as the starter switch is turned on and also at frequent intervals during your journey.

The warning light on the instrument panel is an important part of this system. The light should illuminate for approximately 3 seconds when the starter switch is turned to position 'II' and then extinguish.

If the light illuminates while driving, or remains illuminated for more than 3 seconds after the starter switch is turned on, a fault has been detected by the self monitoring system and full ABS control may not be available - consult your dealer at the earliest opportunity.

The normal braking system remains fully operational and is not affected by partial or full loss of the ABS. However, braking distances may increase.

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 vehicle 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 ABS. To counteract this, briefly release the brakes to permit some wheel movement, then re-apply the brakes to allow ABS to gain control.
- Before driving off-road read and thoroughly understand the *'Off-road driving'* section of this handbook.

ELECTRONIC TRACTION CONTROL

The purpose of electronic traction control is to aid traction when one or more wheels are spinning while others have good grip, eg. if one wheel is on ice and others are on tarmac. The system works by applying the brake to a spinning wheel in order to transfer torque to the remaining wheels.

NOTE: *Traction control can operate up to speeds of 62 mph (100 km/h).*

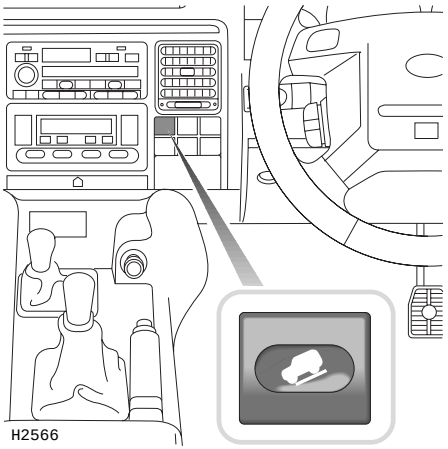
Warning light

The instrument panel has a traction control warning (TC) which illuminates for a minimum of 2 seconds whenever the system is active and also illuminates as a bulb check (for approximately 3 seconds) when the starter switch is turned to position 'II'.

If there is a fault with the system, the warning light will illuminate continuously and remain illuminated when the vehicle is stopped, in which case you should contact your dealer at the earliest opportunity.

NOTE: *Faults with the ETC system will invariably cause the Hill Descent Control warning light to illuminate too. In most cases the ABS and brake system lights will also illuminate.*

Hill Descent Control



HILL DESCENT CONTROL

Hill Descent Control (HDC) operates in conjunction with the anti-lock braking system to provide greater control in off-road situations particularly when descending severe gradients.

To select HDC

HDC can be selected with the vehicle in any gear, but will only operate when low range gears are engaged with the vehicle travelling at less than 31 mph (50 km/h), and the clutch is engaged (manual gearbox vehicles).

Press the switch (illustrated above) to select HDC.

If low range gears are engaged, the HDC information light (GREEN) on the instrument panel will illuminate (if low range gears have NOT been selected, the light will flash).

To deselect HDC, press the switch a second time (the information light will extinguish and a single warning sound will chime).

Hill descent control in action

During a descent, if engine braking is insufficient to control the vehicle speed, HDC (if selected) automatically operates the brakes to slow the vehicle and maintain a speed relative to the selected gear and the accelerator pedal position.

When driving off-road, HDC can be permanently selected, to ensure that control is maintained whenever low range gears are engaged. ABS and traction control are still fully operational and will assist if the need arises.

NOTE: *With HDC selected, gear changes can be carried out in the normal way.*

If the brake pedal is depressed when HDC is active, HDC is overridden and the brakes will perform as normal (a pulsation might be felt through the brake pedal). If the brake pedal is then released, HDC will recommence operating if necessary.

If the clutch is depressed for longer than 3 seconds while HDC is operating, the HDC information light will flash. If, after 60 seconds the clutch is still depressed, the information light extinguishes and the HDC 'failure' warning light flashes as the system gradually fades out (see *'HDC fade-out')*.

In extreme circumstances, the HDC system may cause brake temperatures to exceed their pre-set limits. If this occurs, the HDC 'failure' warning light (AMBER) will start to flash and the warning chime will sound continuously. During this time HDC will function as normal.

To avoid further cause for brake temperatures to rise, engage an appropriate low gear for steep descents and avoid descending hills at higher than the minimum descent speed. If the 'failure' warning light continues to flash, the HDC system will gradually fade out (see *'HDC fade-out').*

HDC fade-out

HDC fade-out gradually decreases the HDC brake intervention with the effect that the rate of hill descent will increase. If this occurs the HDC information light will flash and the warning chime will sound for the period that HDC takes to fade. HDC will be disabled completely once the descent is complete.

If required (eg. the angle of the descent levels out significantly), fade-out may be achieved deliberately by either:

- deselecting HDC while the system is operating.
- depressing the clutch for longer than 60 seconds.

If a fault with the HDC system is detected, or if the braking system reaches a pre-set temperature due to extreme conditions, HDC will automatically fade out.

Warning lights



HDC information light - GREEN: The light illuminates briefly as a bulb and system check when the starter switch is turned to position 'II' and also when HDC is selected.

If HDC is selected when the operating gears (LOW range) are engaged, the light will illuminate continuously.

If HDC has been selected but the system's operating criteria are not met (i.e. clutch pedal depressed, gearbox still in high range or vehicle speed too high), the information light will flash and the warning chime will sound continuously.

If the light flashes while HDC is active, normal functionality may cease and HDC 'fade out' may be induced.

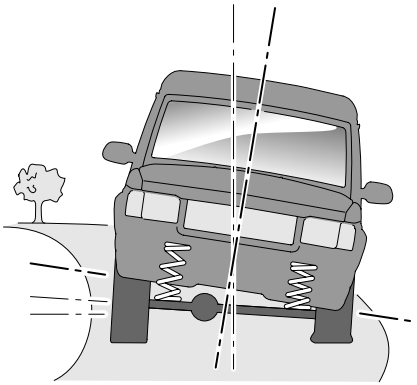


HDC 'failure' light - AMBER: The light illuminates briefly as a bulb and system check when the starter switch is turned to position 'II'.

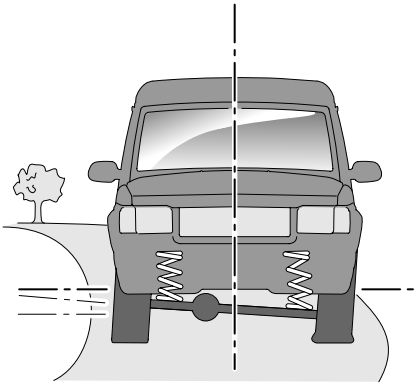
If the light illuminates at any other time, either a fault has occurred which affects the functionality of the system, or over-use of the system has been detected, in which case HDC may 'fade out'.

NOTE: *System faults which cause the 'failure' light to illuminate after the initial system checks, or whilst driving, will be accompanied by the warning chime sounding 3 times.*

Active cornering enhancement



H2605



WARNING

If the warning light illuminates RED a system fault has occurred that may result in serious damage to vehicle components. Stop the vehicle and switch off the engine as soon as safety permits.

Active Cornering Enhancement
(if fitted)

Active Cornering Enhancement (ACE) is a patented feature unique to Land Rover. The system is designed to eliminate vehicle body roll at low cornering speeds and reduce body roll at higher cornering speeds, while maintaining a soft, car-like, suspension for straight line travelling. On uneven surfaces and rough tracks, the ACE system will adjust the suspension according to the vehicle speed and roughness of the surface to provide improved passenger comfort.

At very low speeds the roll bars are effectively decoupled giving significant benefits in off-road axle articulation and improved traction.

The system is entirely automatic in operation and cannot be influenced by the driver in any way. However, the functionality of the ACE warning light in the instrument panel is very important and drivers should be aware of the following:

Warning light

The warning light illuminates RED when the starter switch is turned on (to position 'II'). After two seconds, the RED illumination changes to AMBER and, after a further two seconds, the light extinguishes. This process is a system check that takes place every time the vehicle is used. Provided the ACE system is operating correctly, illumination will not occur at any other time.

If illumination occurs while driving, a fault with the system is indicated, as follows:

If the light shows RED *(a flashing red light, which changes to constant illumination after two minutes, and is accompanied by a warning chime):*

This indicates a system fault that may result in serious damage to vehicle components and reduced ACE performance. You must stop the vehicle as soon as safety permits and switch off the engine. DO NOT CONTINUE DRIVING! Seek qualified assistance immediately.

If the light shows AMBER *(constant illumination):*

This indicates a system fault that will result in reduced ACE performance, but will not leave the vehicle in a dangerous condition. You may continue driving, but reduce speed, take additional care, and consult a Land Rover dealer at the earliest opportunity.

Self-levelling suspension

SELF-LEVELLING SUSPENSION

(if fitted)

When the engine is running, the self-levelling suspension system (SLS) operates automatically on the rear of the vehicle to maintain a level or efficient vehicle height regardless of vehicle load.

AUTOMATIC OPERATION

If the height of the vehicle is reduced by additional loading (passengers occupying the occasional rear seats or the attachment of a trailer, for example), the SLS system automatically increases air pressure to the springs to compensate for the additional weight or changed attitude of the vehicle. Similarly, if loads are removed and the vehicle height increases in consequence, the system will reduce air pressure to bring the vehicle back to a level attitude.

Extended mode

Off-road, if the vehicle becomes grounded and traction control is induced, the SLS system automatically pumps more air to the rear springs to raise the body clear of the obstruction, thereby enabling the vehicle to be freed. This is known as 'Extended mode' and will cause the off-road warning light to flash. Once forward motion is regained, the suspension height will automatically return to its previous setting and the warning light will extinguish.

MANUAL OPERATION

The SLS system can also be manually controlled to either:

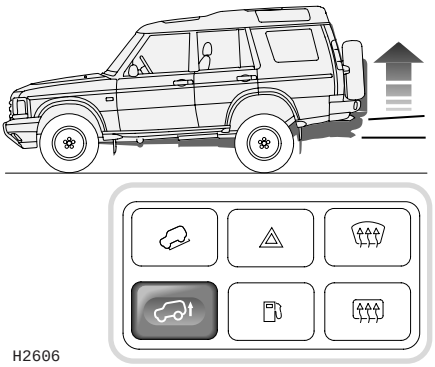
- Raise the rear of the vehicle by 40 mm (approx.) to increase ground clearance and improve the departure angle for off-road driving. Note that this function operates ONLY below a speed of 18 mph (30 km/h) - above this speed, the vehicle will automatically return to its standard ride height.
- Lower the vehicle in order to ease loading, or to enable various heights of trailer hitch to be connected more easily. The SLS system will assume automatic control - adjusting the height of the vehicle 10 seconds after a road speed of 3 mph (5 km/h) is reached, or immediately once a road speed of 7 mph (12 km/h) has been achieved.

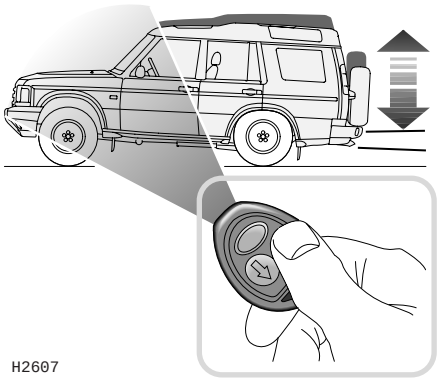
WARNING

DO NOT operate the off-road switch while driving on the road, or when the suspension has been manually lowered below standard ride height - any sudden or unexpected change to the vehicle's height or attitude could cause an inexperienced driver to lose control, or disturb the load/weight distribution within the vehicle.

DO NOT select off-road height while towing.

Self-levelling suspension


H2606


H2607

To manually raise the suspension:

With the engine running and all doors fully closed, press the fascia-mounted off-road mode switch (see illustration). A single warning chime will sound, the off-road warning light on the instrument panel will commence flashing and the rear of the vehicle will start to rise. Once the pre-set off-road height has been reached, the warning light will stop flashing and illuminate constantly instead. Constant illumination will remain while the vehicle is operating at off-road height.

To return the vehicle to standard ride height, press the off-road mode switch a second time. Note that a single chime will sound and the warning light will flash while the rear suspension is lowered.

NOTE: *If axle displacement is excessive, selection of the off-road height setting may be prohibited. In this case three warning chimes will sound.*

NOTE: *If changes to or from off-road height are prohibited (e.g. door open) the chime will sound three times.*

To manually lower the suspension:

To lower the suspension you will need a remote suspension control (handset) - see illustration.

With the vehicle stationary at standard ride height, and the starter switch turned to position 'II', press and hold the 'DOWN' button to lower the vehicle. Release the button when the desired height has been reached. The SLS warning light on the instrument panel will flash and a warning chime will sound continually while the vehicle is lowering.

To return the vehicle to its standard ride height, press and hold the 'UP' button on the handset. Again the warning light flashes (and chime sounds) while the vehicle is rising. All suspension movement and warning light activity ceases once the vehicle has returned to standard ride height.

NOTE: *The SLS system will not operate while a door is open.*

NOTE: *At high altitude the system will take significantly longer to raise the vehicle.*

Self-levelling suspension

NOTE: *If this feature is subjected to excessive use, the system will automatically disable to prevent components from overheating. The system has a cumulative total of three minutes operation at any one time. If this is exceeded the system will close down (partial operation will return after a few minutes).*

Remote SLS handset

The remote SLS handset is available as an accessory from a Land Rover dealer.

Battery replacement is similar to the equivalent process for the handset key. This is described under *'Locks & Alarm'* in the *'Controls & Instruments'* section of the handbook. Battery specification is identical.

IMPORTANT INFORMATION

Note that the handset will operate effectively from inside the vehicle. It is therefore important to keep it out of reach of children at all times, and especially while towing. When operating the handset from inside the passenger compartment for the purpose of lowering the vehicle to attach a trailer, ensure that the underside of the vehicle has been checked for obstructions before lowering, and that a responsible adult has been posted outside the vehicle to supervise the lowering process.

Warning lights

Off-road - AMBER
Illuminates briefly as a bulb and system check when the starter switch is turned to position 'II' and then extinguishes.

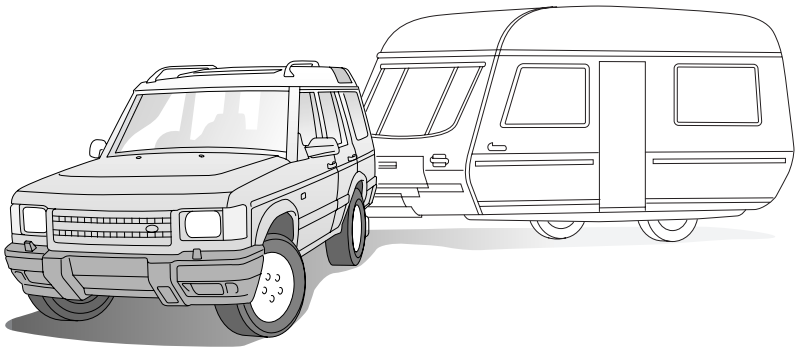
If the off-road switch is pressed:
The light flashes while the rear of the vehicle is either; rising to off-road height, or returning to standard ride height. The light then illuminates constantly while the suspension remains at off-road height.

In addition, the light will flash while Extended mode is induced.

Self-levelling suspension - AMBER
Illuminates briefly as a bulb and system check when the starter switch is turned to position 'II' and then extinguishes.

If the remote handset is operated:
The light flashes continually while the rear of the vehicle is being lowered, or raised.

If the light illuminates constantly this indicates a fault with the self-levelling suspension and you should seek qualified assistance.



H2568

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 4400 lb (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 towed 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 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.
- 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 plus the combined weight of the vehicle's load carrying area and rear seat passengers must never exceed the specified maximum rear axle load (see *'General data').*

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.*

Maximum permissible towed weights	**On-road**	**Off-road**
Unbraked trailers	1653 lb (750 kg)	1653 lb (750 kg)
Trailers with overrun brakes	7716 lb (3500 kg)	2204 lb (1000 kg)

NOTE: *The maximum speed when towing is 100 kph (62 mph).*

Nose weight

When the vehicle is loaded to GVW, trailer weight is limited to 2000 kg (2 tonnes) and the tow hitch vertical load (nose weight) is limited to 150 kg (330 lb).

The maximum trailer weight is 3500 kg, in this case the tow-hitch maximum vertical load (nose weight) of 250 kg (550 lb) should be used and the vehicle loading limited as follows:

1. Coil-spring rear suspension - driver plus two passengers (or their equivalent weight).
2. Self-levelling rear suspension - driver plus four passengers and luggage (or the equivalent weight) occupants to be located in the first and second row seats (equivalent weight should be stowed fully forward against the folded second row of seats).

Automatic gearbox models

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

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

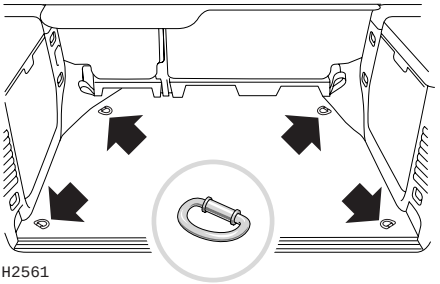
Vehicle weights

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

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

Trailer socket

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

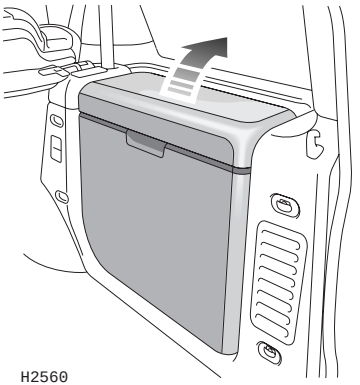

H2561

LUGGAGE ANCHOR POINTS

Four fixing points are provided in the rear luggage compartment floor to assist in safely securing large items of luggage.

WARNING

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


H2560

STORAGE BINS

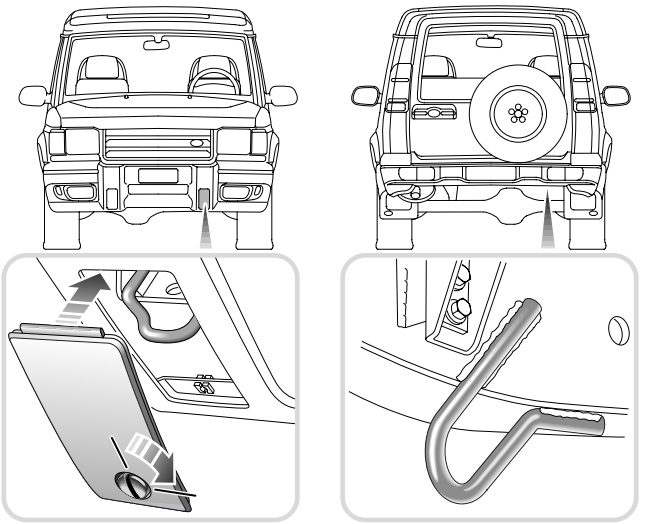
Some vehicles are equipped with storage bins on each side of the loadspace. Raise the lid to open.

ROOF RACKS

The roof rack system comprises two side rails permanently fixed to the roof of the vehicle and cross bars available as an accessory from a Land Rover dealer.

IMPORTANT INFORMATION

- The **MAXIMUM** load for approved roof rack systems is 110 lb (50 kg) for normal road use and 66 lb (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 roof rack system.
- Only fit roof racks that have been designed for your vehicle. If in doubt, consult your dealer.
- Driving off-road with a loaded roof rack is not recommended. If it is necessary to stow luggage on the roof rack while driving off-road, all loads must be removed before traversing side slopes.



H2487

TOWING FOR RECOVERY

Most vehicle recovery specialists will load Discovery onto a trailer. However, if it is necessary to recover the vehicle by towing with all four wheels on the ground, observe the following procedure:

1. With the handbrake applied, set both the main gearbox and transfer box in neutral ('P' Park for Automatic transmission).
2. 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.
3. Secure the towing attachment to the front towing eye of the distressed vehicle.
4. 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 attempt to tow the vehicle unless the starter switch is turned to position 'I'.

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.

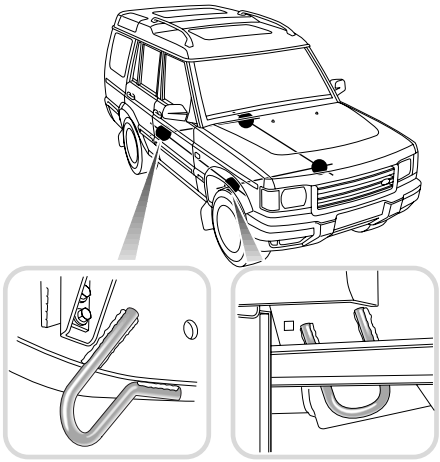
Towing eyes

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

FRONT: A single towing eye, set behind a removable panel in the front spoiler (see illustration on previous page), is provided at the front of the vehicle for on-road recovery. DO NOT use the front lashing rings for towing purposes.

Before driving off-road, remove the panel from the spoiler as a precaution against accidental loss.

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



H2486

Transporter or trailer lashing

Pairs of lashing rings are fixed to the underside of the vehicle - at the front (to the rear of the front wheels) and at the rear (backward of the rear wheels). 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.*

STARTING AN ENGINE WITH A DISCHARGED BATTERY

Using booster cables (jump leads) from a donor battery, or a battery fitted to a donor vehicle, is the only approved method of starting a vehicle with a discharged battery. Push or tow starting is NOT recommended!

WARNING

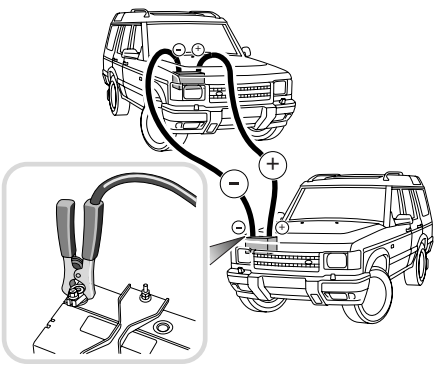
- ***During normal use, batteries emit explosive hydrogen gas sufficient to cause severe explosions capable of causing serious injury - keep sparks and naked lights away from the engine compartment.***
- ***DO NOT attempt to start the vehicle if the electrolyte in the battery is suspected of being frozen.***
- ***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.


H2570

CONNECTING THE BOOSTER CABLES

DIESEL ENGINES ONLY!

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:

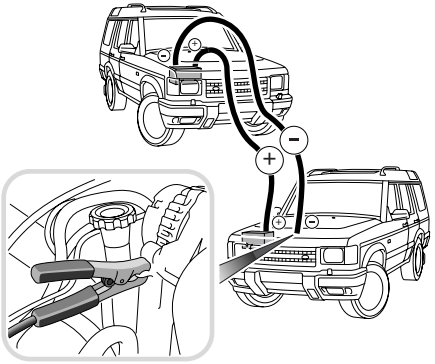
- ***ALWAYS connect the BLACK cable to the donor battery LAST.***
- ***ENSURE that each connection is securely made and that there is no risk of the clips accidentally slipping or being pulled from the battery terminals - this could cause sparking, which could lead to explosion or fire.***

Check that the cables are clear of any moving parts of both engines, 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.



H2569

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) away from the battery and away from fuel and brake lines on the disabled vehicle (lug on alternator casting 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.***
- ***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 - this could cause sparking, which could lead to fire or explosion.***

Check that the cables are clear of any moving parts of both engines, 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.