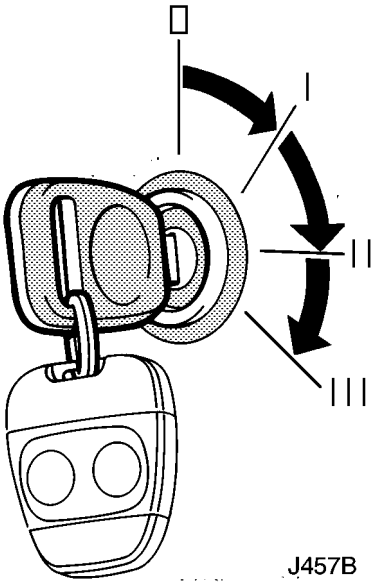
SECTION 3
Driving & operating

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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 - 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 (23° F), 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.

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.

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.***

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 (500 miles), 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 (50-60 mph). 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.

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.

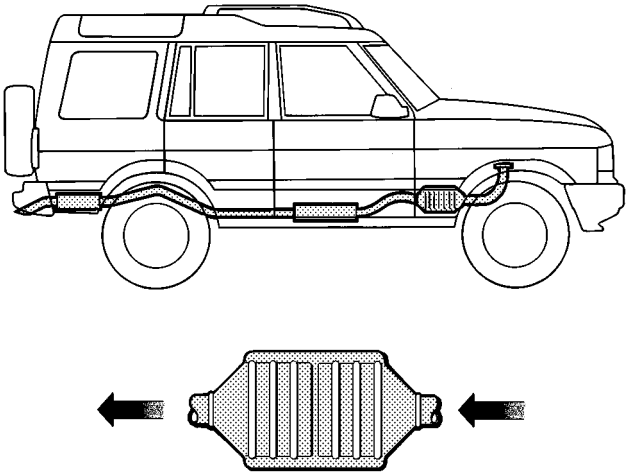
Power assisted steering

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.

Catalytic converter



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

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

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

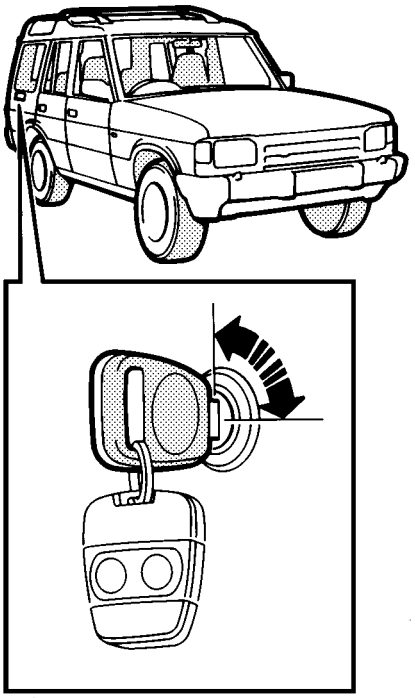
On petrol engine vehicles fitted with a catalytic converter, serious damage to the catalyst will occur if LEADED fuel is used!

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!

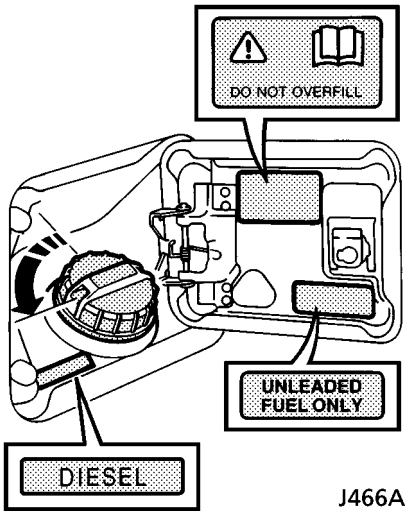


J465A

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

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.

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.

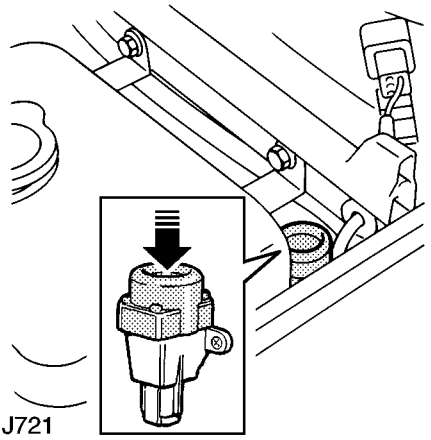
Empty fuel tank

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:

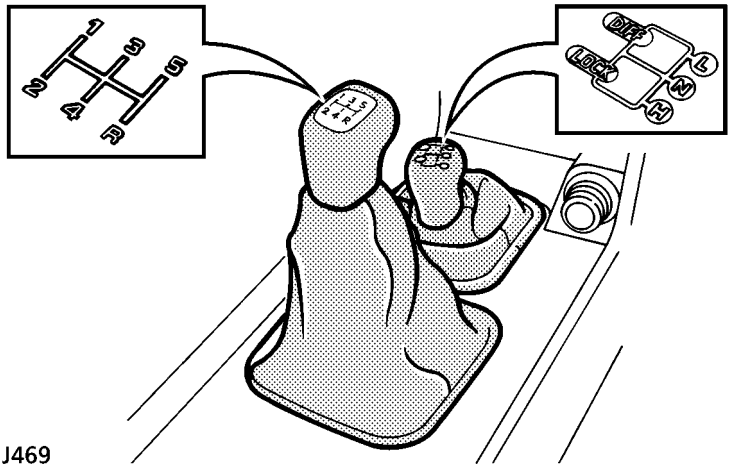
- Switch off the engine.
- Do not smoke or use a naked flame or light.
- Take care not to spill fuel.
- Do not overfill the tank.



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!



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.

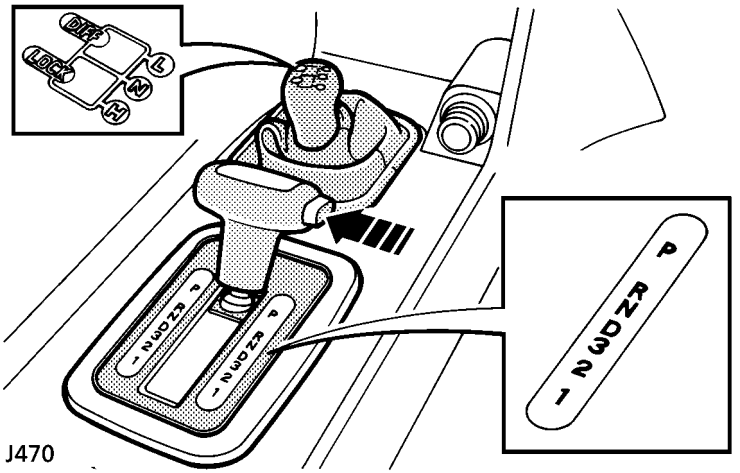
Clutch

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.



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.

'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.

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.

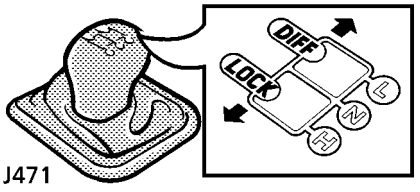
On long inclines the gearbox will sometimes change back and forth between gears. This occurs because the transmission does not include a ratio that is precisely right for the particular incline and vehicle loading circumstances. However, excessive gear changing results in a loss of momentum and is wasteful 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.



J471

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.

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 (3 mph), 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).

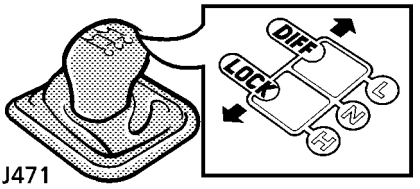
NOTE: *Use positive and confident moves, but do not rush the gear change.*

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 (5 mph) 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.



THE DIFFERENTIAL LOCK

Unlike many 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 road AND off-road use.

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.

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.

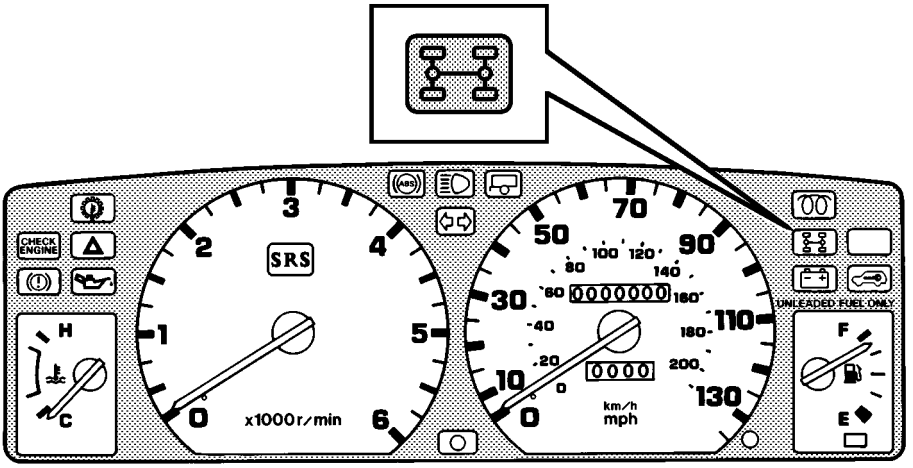
When to use the diff lock

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.



J475A

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.

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 (500 miles), 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.

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.

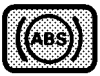
Under normal braking conditions, where traction is good, the anti-lock braking system will not be activated. However, if the braking force should exceed the available adhesion between the tyres and the road surface, then one or more wheels will lock and the system will automatically come into operation.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



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 (5 mph). 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.

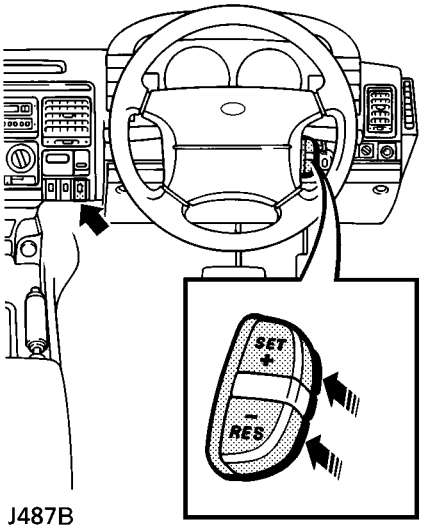
Note the following:

- 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.



J487B

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 (28 mph).
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 (28 mph).

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 (5 mph).

Disengaging cruise control

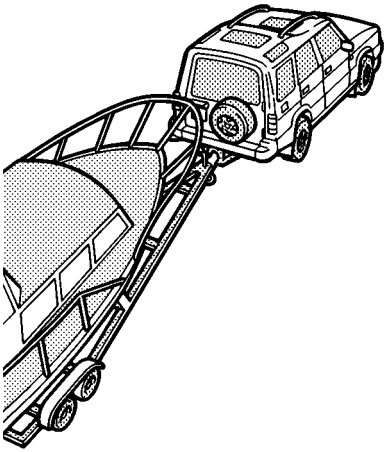
The cruise control will automatically disengage if the brake or clutch pedals are pressed, or when the gear lever is moved into neutral (selector position 'N' for automatic gearbox).

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.



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 (4400 lb) 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.

- 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 (330 lb). 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.*

Maximum permissible towed weights V8i & Tdi	**On-road**	**Off-road**
Unbraked trailers	750 kg (1653 lb)	500 kg (1102 lb)
Trailers with overrun brakes	3500 kg (7716 lb)	1000 kg (2204 lb)
4 wheel trailers with coupled brakes *	4000 kg (8818 lb)	1000 kg (2204 lb)

Maximum permissible towed weights Mpi	**On-road kg**	**Off-road kg**
Unbraked trailers	750 kg (1653 lb)	500 kg (1102 lb)
Trailers with overrun brakes	2750 kg (6062 lb)	1000 kg (2204 lb)

Coupled braking systems

In order to tow a trailer with a weight in excess of 3,500 kg (7716 lb), 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 (20 mph) using the main gearbox in high range. Use the transfer gearbox to select low range instead.

NOTE: *Above 300 metres (1,000 feet) 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

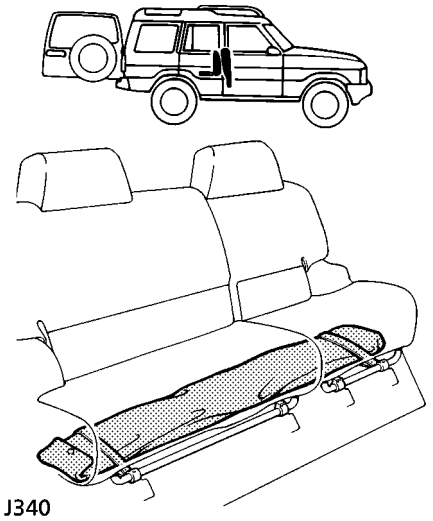
Four fixing points are provided in the rear luggage compartment floor. Using 7/16 inch UNF bolts, secure proprietary or locally made anchor brackets and straps to the floor to assist in safely securing large items or luggage.

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.

Trailer socket

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



J340

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.

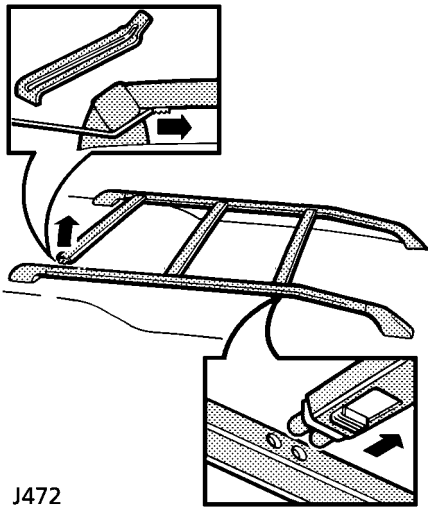
Each cross rail has a pair of locating pins at each end.

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 (110 lb) for normal road use and 30 kg (66 lb) 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

TOWING FOR RECOVERY

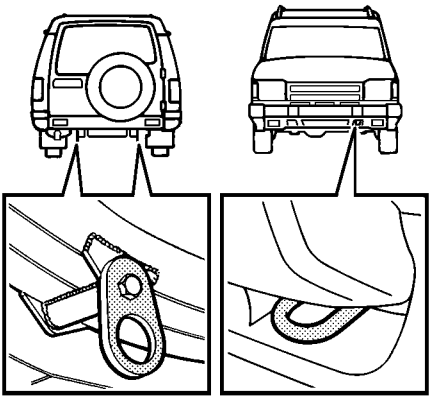
If your vehicle is to be recovered by towing, most qualified recovery specialists will use wheel lift equipment to suspend the front wheels, while the rear wheels remain on the ground. However, if it is necessary for the vehicle to be towed with all four wheels on the ground, always adhere to the following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



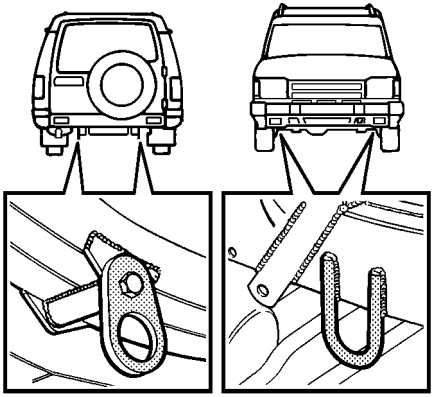
J719

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.



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.*

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.

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:

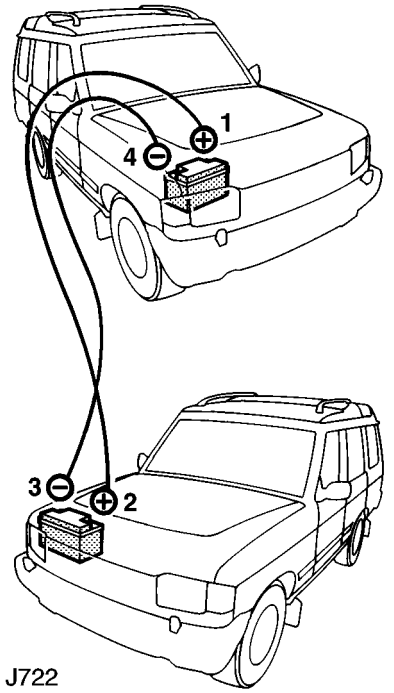
- ***ALWAYS connect the BLACK cable to the donor battery LAST.***
- ***ENSURE that each connection is securely made and that there is no risk of the clips accidentally slipping or being pulled from the battery terminals.***
- ***BE AWARE that loose connections between cable clips and battery terminals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

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;

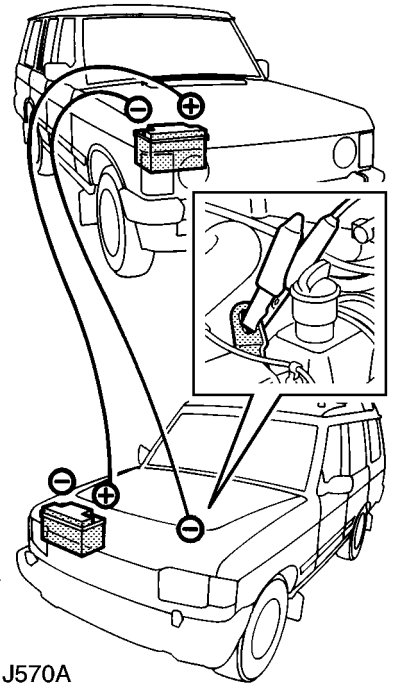
- ***DO NOT connect the BLACK cable to the negative terminal of the discharged battery - if in doubt, seek qualified assistance.***

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.



J570A