

Maintenance

ROUTINE MAINTENANCE

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

Maintenance is the owner's responsibility and you must ensure that owner maintenance operations, oil services, inspections and brake fluid and coolant changes are carried out when required and according to the manufacturer's recommendations.

The routine maintenance requirements for your vehicle are shown in the Service Portfolio book. Most of this necessary workshop maintenance requires specialised knowledge and equipment, and should preferably be entrusted to a Land Rover Dealer/Authorised Repairer.

Service Portfolio

The Service Portfolio book includes a Service Record section, which enables a record to be kept of all the oil services and inspections that are carried out on the vehicle. This section of the book also provides a facility for the Land Rover Dealer/Authorised Repairer to record brake fluid changes.

Ensure your Land Rover Dealer/Authorised Repairer signs and stamps the book after each oil service and inspection.

OWNER MAINTENANCE

In addition to the routine services and inspections referred to previously, a number of simple checks must be carried out more frequently. You can carry out these checks yourself and advice is given on the pages that follow.

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

Daily checks

- Operation of lamps, horn, direction indicators, wipers, washers and warning indicators.
- Operation of seat belts and brakes.
- Look for fluid deposits underneath the vehicle that might indicate a leak.
Condensation dripping from the Air Conditioning is normal.

Weekly checks

- Engine oil level.
Note: The engine oil level should be checked more frequently if the vehicle is driven for prolonged periods at high speeds.
- Brake fluid level.
- Power steering fluid level.
- Screen washer fluid level.
- Tyre pressures and condition.
- Operate air conditioning.

All fluid specifications and capacities are shown in **LUBRICANTS AND FLUIDS, 264**.

WARNING

If the brake pedal is unusually long or if there is any significant loss of brake fluid, contact your Land Rover Dealer/Authorised Repairer immediately. Driving under such conditions could result in extended stopping distances or complete brake failure.

Maintenance

SAFETY IN THE GARAGE

WARNING

Under no circumstances should any part of the fuel system be dismantled or replaced by anyone other than a suitably qualified vehicle technician. Failure to comply with this instruction, may result in fuel spillage with a consequent risk of fire.

- **DO NOT** work beneath the vehicle with the wheel changing jack as the only means of support.
 - Ensure sparks and naked lights are kept away from the engine compartment.
 - Wear protective clothing, including where practicable, gloves made from an impervious material.
 - Remove metal wrist bands and jewellery before working in the engine compartment.
 - **DO NOT** allow tools or metal parts of the vehicle to make contact with the battery leads or terminals.
 - **NEVER** leave the engine running in an unventilated area - exhaust gases are poisonous and extremely dangerous.
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WARNING

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

- Keep your hands and clothing away from drive belts and pulleys.
 - If the vehicle has been driven recently, **DO NOT** touch exhaust and cooling system components until the engine has cooled.
 - **DO NOT** touch electrical leads or components while the engine is running or with the starter switch turned on.
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Poisonous fluids

Fluids used in motor vehicles are poisonous and should not be consumed or brought into contact with open wounds. These include; battery acid, antifreeze, brake and power steering fluid, petrol, diesel, engine oil and windscreen washer additives.

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

Used engine oil

Prolonged contact with engine oil may cause serious skin disorders, including dermatitis and cancer of the skin. **ALWAYS** wash thoroughly after contact.



It is illegal to pollute drains, water courses or soil. Use authorised waste disposal sites to dispose of used oil and toxic chemicals.

Maintenance

EMISSION CONTROL

Your vehicle is fitted with various items of emission and evaporative control equipment designed to meet specific territorial requirements. You should be aware that unauthorised replacement, modification or tampering with this equipment by an owner or repair shop may be unlawful and subject to legal penalties.

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

ROAD TESTING DYNAMOMETERS (rolling roads)

Because your vehicle is equipped with anti-lock brakes and permanent four-wheel drive, it is essential that any dynamometer testing is carried out **ONLY** by a qualified person familiar with the dynamometer testing and safety procedures (**ONLY** on a four-wheel drive dynamometer) practised by Land Rover Dealers/Authorised Repairers. Contact your Land Rover Dealer/Authorised Repairer for further information.

DRIVING IN ARDUOUS CONDITIONS

When a vehicle is operated in extremely arduous conditions, more frequent attention must be paid to servicing requirements.

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

Arduous driving conditions include:

- Driving in dusty and/or sandy conditions.
- Driving on rough and/or muddy roads and/or wading.
- Driving in extremely hot conditions.
- Towing a trailer or driving in mountainous conditions.

Contact a Land Rover Dealer/Authorised Repairer for advice.

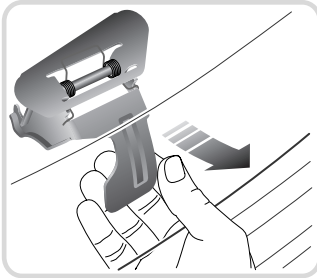
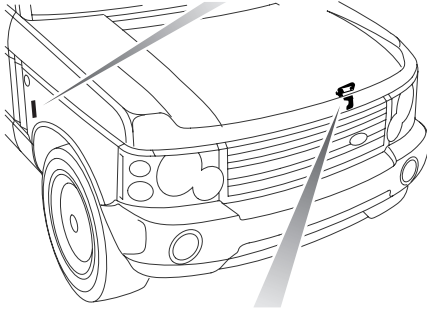
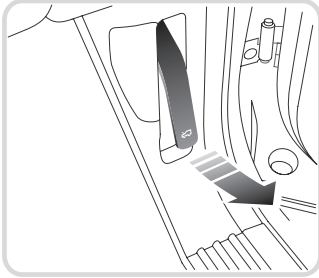
PREPARATION FOR WINTER

Before the onset of winter, to prevent the door seals from freezing closed, apply Land Rover silicone spray to the flocked seals across the tops of the doors.

This action will need to be repeated at the start of each winter to maintain protection.

Bonnet Opening

BONNET OPENING



H6686R

1. From inside the vehicle on the driver's side, pull the bonnet release handle (see upper inset).
2. Lift the bonnet safety catch lever (lower inset) and raise the bonnet.

Closing the bonnet

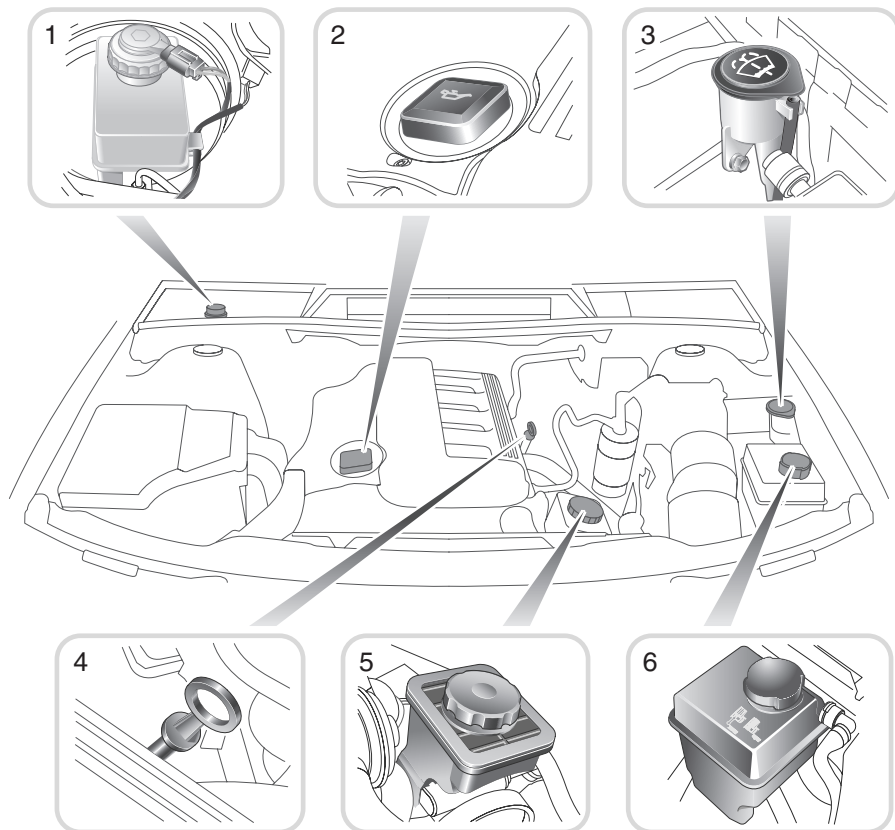
WARNING

DO NOT drive with the bonnet retained by the safety catch alone.

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

Engine Compartment

DIESEL ENGINE



H3965

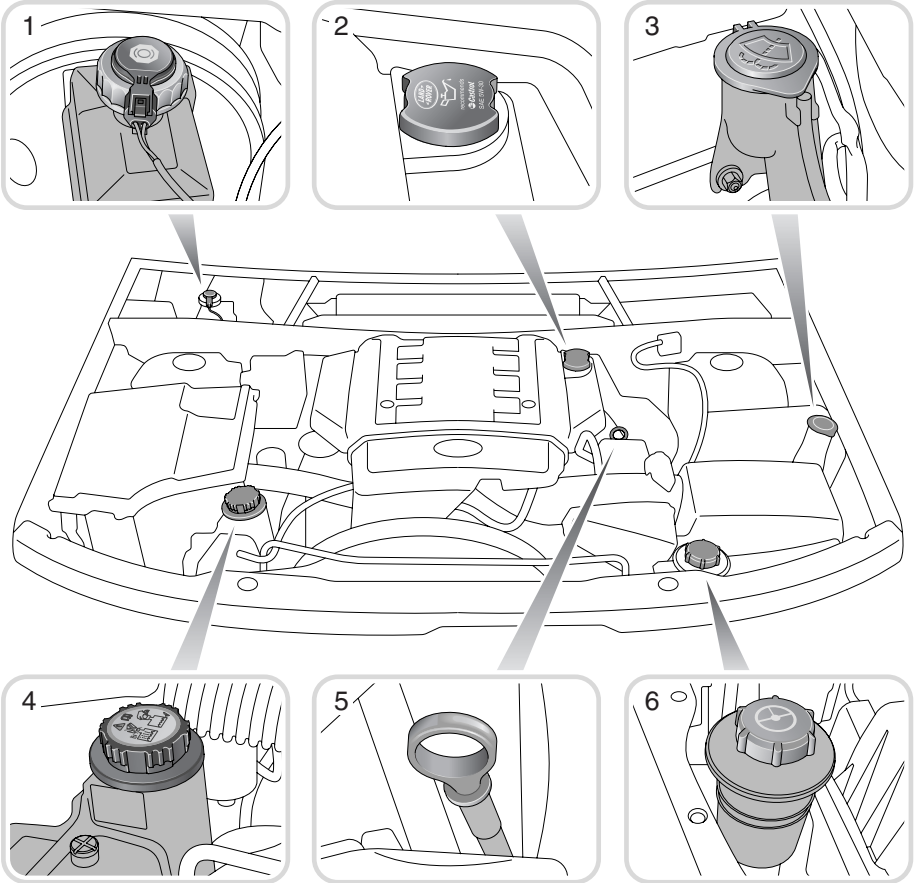
1. Brake fluid reservoir.
2. Engine oil filler cap.
3. Washer reservoir.
4. Engine oil dipstick.
5. Power steering reservoir.
6. Cooling system reservoir.

WARNING

While working in the engine compartment, ALWAYS observe the safety precautions listed under, SAFETY IN THE GARAGE, 194.

Engine Compartment

PETROL ENGINE - V8 Normally Aspirated



H6445R

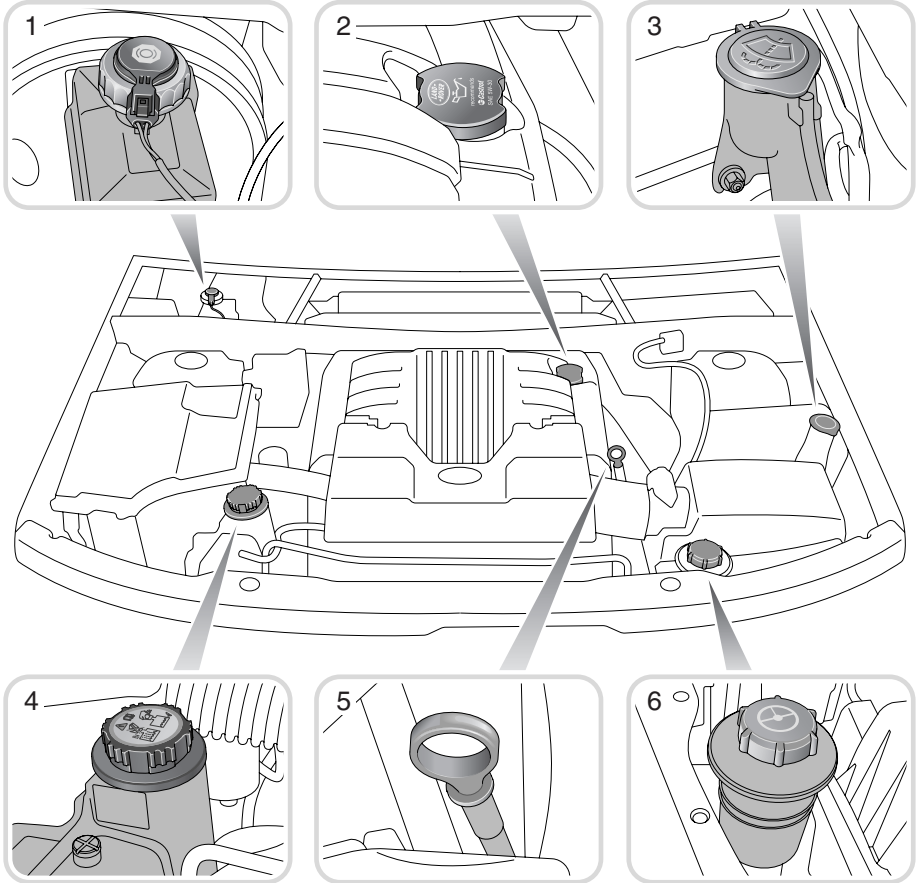
1. Brake fluid reservoir.
2. Engine oil filler cap.
3. Washer reservoir.
4. Cooling system reservoir.
5. Engine oil dipstick.
6. Power steering reservoir.

WARNING

While working in the engine compartment, ALWAYS observe the safety precautions listed under SAFETY IN THE GARAGE, 194.

Engine Compartment

PETROL ENGINE - V8 Supercharged



H6447R

1. Brake fluid reservoir.
2. Engine oil filler cap.
3. Washer reservoir.
4. Cooling system reservoir.
5. Engine oil dipstick.
6. Power steering reservoir.

WARNING

While working in the engine compartment, ALWAYS observe the safety precautions listed under SAFETY IN THE GARAGE, 194.

Engine Oil

CHECK AND TOP-UP

WARNING

Take care to avoid spilling engine oil onto a hot engine - a fire may result!

The oil consumption of your engine is influenced by many factors. Diesel engines consume slightly more oil than petrol engines. Under high loads your engine will also consume more oil.

Check the oil level weekly, when the engine is COLD and with the vehicle resting on level ground.

***Note:** If it is necessary to check the oil level when the engine is hot, switch off the engine and let the vehicle stand for five minutes to allow the oil to drain back into the sump. DO NOT start the engine.*

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

- is nearer to the upper mark than the lower, add no oil.
- is nearer to the lower mark than the upper, add 0.5 litre (1.05 pints) of oil.
- is below the lower mark, add 1 litre (2.11 pints) of oil and re-check the level after a further five minutes.

Caution: Driving the vehicle with the engine oil level above the upper mark, or below the lower mark on the dipstick, can damage the engine.

Oil specification

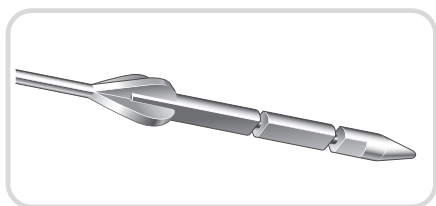
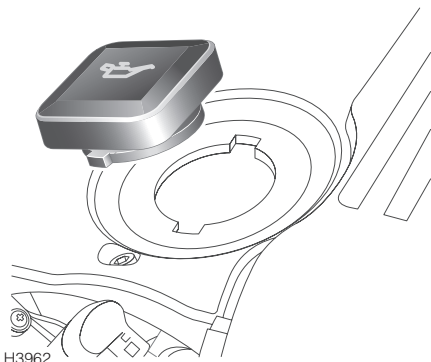
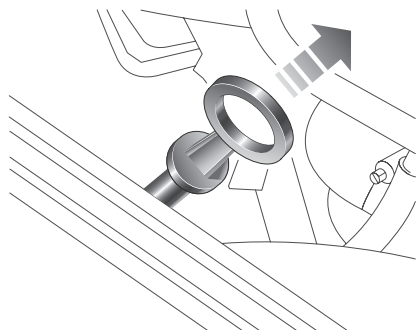
It is essential to use an oil suitable for the climatic conditions in which the vehicle is to be operated. Precise specifications are shown in **LUBRICANTS AND FLUIDS, 264**. If in doubt, contact your Land Rover Dealer/Authorised Repairer.

Caution: Your vehicle's warranty may be invalidated if damage is caused by use of improper engine oil. Low quality or obsolete oils do NOT provide the protection required by modern, high performance engines.

Failure to use an oil that meets the required specification could cause excessive engine wear, a build up of sludge and deposits, and increased pollution. It could also lead to engine failure.

Engine Oil

Diesel engine vehicles

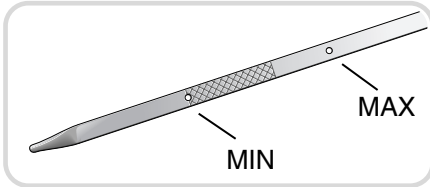
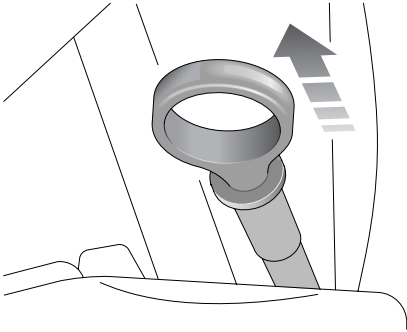


H3963

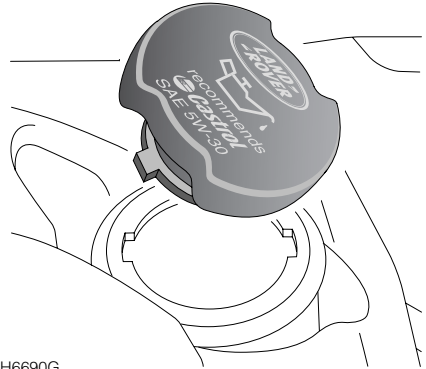
1. Withdraw the dipstick and wipe the blade clean.
2. Fully re-insert the dipstick and withdraw again to check the level, which should NEVER be allowed to fall below the lower mark on the dipstick.
3. To top-up, unscrew the oil filler cap and add oil to maintain the level between the UPPER and LOWER marks on the dipstick.
DO NOT OVERFILL! Clean up any oil spillage incurred when topping-up.
4. Check the oil level again.

Engine Oil

Petrol engine vehicles



H6691G



H6690G

1. Withdraw the dipstick and wipe the blade clean.
2. Fully re-insert the dipstick and withdraw again to check the level, which should **NEVER** be allowed to fall below the lower mark on the dipstick.
3. To top-up, unscrew the oil filler cap and add oil to maintain the level between the **UPPER** and **LOWER** marks on the dipstick.
DO NOT OVERFILL! Clean up any oil spillage incurred when topping-up.
4. Check the oil level again.

Cooling System

COOLANT CHECK AND TOP-UP

WARNING

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

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

Avoid spilling antifreeze onto a hot engine - a fire may result.

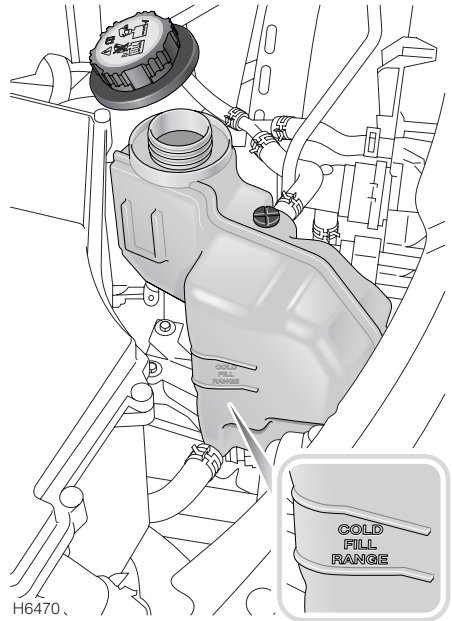
Caution: NEVER run the engine without coolant.

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

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

The coolant level in the expansion tank should only be checked when the **CHECK COOLANT LEVEL** message is displayed on the message centre. Always check the level WHEN THE SYSTEM IS COLD.

If it is necessary to remove the filler cap before the system has fully cooled, loosen the cap slowly, allowing the air pressure to escape gradually.



Top-up with a 50% mixture of antifreeze and water. See **LUBRICANTS AND FLUIDS, 264**. Top-up until the float protrudes slightly from the filler neck and the fluid is level with the upper level indicator mark. **DO NOT OVERFILL.**

Ensure the cap is tightened fully after top-up is completed.

If the level has fallen appreciably, suspect leakage or overheating and arrange for your Land Rover Dealer/Authorised Repairer to examine the vehicle.

Caution: An over-filled expansion tank may cause a build-up of pressure and excess fluid could be expelled through the filler cap.

Cooling System

ANTIFREEZE

WARNING

Antifreeze is poisonous and can be fatal if swallowed - keep containers sealed and out of the reach of children. If accidental consumption is suspected, seek medical attention immediately.

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

Antifreeze contains important corrosion inhibitors. The antifreeze content of the coolant must be maintained at 50% \pm 5% all year round (not just in cold conditions). To ensure that the anti-corrosion properties of the coolant are retained, the antifreeze content should be checked once a year.

The specific gravity of a 50% antifreeze solution at 20°C (68°F) is 1.068 and protects against frost down to -40°C (-40°F).

Antifreeze must be renewed at regular intervals, regardless of distance travelled. See **Service Portfolio** book. Failure to do so may cause corrosion of the radiator and engine components.

Coolant specification

Use **ONLY** a 50% mix of water and an approved antifreeze. See **Engine cooling system, 264**.

In an emergency - and only if this type of antifreeze is unavailable - top-up the cooling system with clean water, but be aware of the resultant reduction in frost protection. **DO NOT** top-up or refill with conventional antifreeze formulations. If in doubt consult a Land Rover Dealer/Authorised Repairer.

Note: *When clean water is added in the event of an emergency, the low coolant indicator will illuminate if the water/antifreeze mix ratio is over-diluted. This indicator will extinguish when the ratio of water/antifreeze is returned to a 50% mix. This should be done at the earliest opportunity.*

Brakes

BRAKE FLUID

WARNING

Brake fluid is highly toxic - keep containers sealed and out of the reach of children. If accidental consumption of fluid is suspected, seek medical attention immediately.

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

Take care not to spill fluid onto a hot engine - a fire may result.

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

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

Check

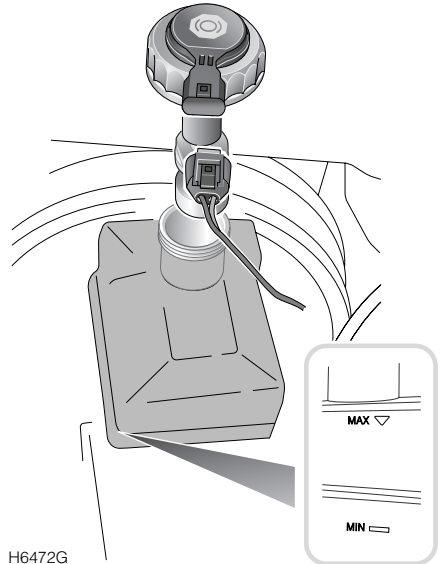
The fluid level may fall slightly during normal use as a result of brake pad wear but should not be allowed to fall below the **MIN** mark. Any substantial drop in fluid indicates a leak in the system, in which case the vehicle must NOT be driven and you should contact your Land Rover Dealer.

WARNING

Contact your Dealer/Authorised Repairer immediately if brake pedal travel is unusually long or if there is any appreciable drop in brake fluid level.

With the vehicle on level ground, check the fluid level at least every week (more frequently in high mileage or arduous operating conditions). Check the level visually through the side of the transparent reservoir without removing the filler cap.

Top-up



H6472G

Wipe the filler cap clean before removing to prevent dirt from entering the reservoir. Unscrew the cap (1/8 turn) and top-up the reservoir to the **MAX** mark using brake fluid conforming to DOT 4 specification.

Use only new fluid from an airtight container (old fluid from opened containers or fluid previously bled from the system will have absorbed moisture, which will adversely affect performance, and must NOT be used). **DO NOT OVERFILL.**

Brake fluid must be completely renewed at regular intervals, regardless of distance travelled. See **Service Portfolio** book.

Power Steering

POWER STEERING FLUID

WARNING

Power steering fluid is highly toxic - keep containers sealed and out of reach of children. If accidental consumption of fluid is suspected, seek medical attention immediately.

If fluid comes into contact with the skin or eyes, rinse immediately with plenty of water.

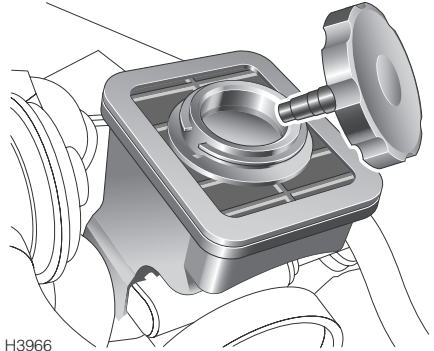
Do not spill the fluid onto a hot engine - a fire may result.

Caution: Power steering fluid will damage painted surfaces: Soak up any spillage with an absorbent cloth immediately and wash the area with a mixture of car shampoo and water.

Check and top-up

Check and top-up the fluid level **ONLY** with the engine switched off and the system cold, and ensure that the steering wheel is not turned after stopping the engine.

Diesel engine



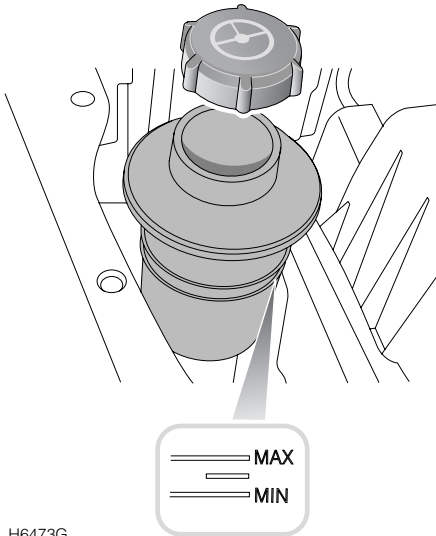
H3966

Wipe the filler cap clean to prevent dirt from entering the reservoir. Remove the filler cap and, using a lint-free cloth, wipe the dipstick clean. Refit the filler cap fully and remove it again to check the fluid level. Add fluid to the reservoir until the level is between the upper mark and the bottom of the dipstick.

DO NOT fill above the upper mark on the dipstick.

Power Steering

Petrol engine



H6473G

With the vehicle on level ground, check the level visually through the side of the transparent reservoir, without removing the filler cap.

Maintain the fluid level so that it is between the MIN and MAX marks on the reservoir.

If topping-up is required, wipe the filler cap clean, to prevent dirt from entering the reservoir. Remove the filler cap and top-up the reservoir to the MAX mark.

DO NOT fill above the MAX mark on the side of the reservoir.

Emergency operation

Any large or sudden drop in the fluid level must be investigated by a Land Rover Dealer/ Authorised Repairer.

If it can be established that fluid loss is slow, then the reservoir may be topped-up to the upper level mark to enable the vehicle to be driven to the nearest Land Rover Dealer/ Authorised Repairer for examination.

If the fluid level has dropped below the lower level mark, top-up the reservoir before starting the engine, or damage to the steering pump could result.

Caution: The engine must NOT be started if the fluid level has dropped below the bottom of the dipstick (diesel engine) or below the MIN mark on the reservoir (petrol engine)-severe damage to the pump could result.

Washers

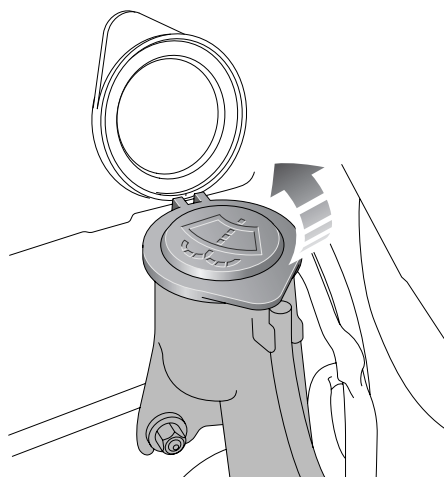
WINDSCREEN WASHER TOP-UP

Fluid top-up

WARNING

If you operate your vehicle in temperatures below 5°C (40°F), use washer fluid with antifreeze protection. In cold weather, failure to use washer fluid with antifreeze protection could result in impaired windshield vision and increase the risk of a vehicle crash.

Some screenwash products are inflammable, particularly if high or undiluted concentrations are exposed to sparking. DO NOT allow screenwash to come into contact with naked flames or sources of ignition.



H6474G

The windscreen washer reservoir supplies both front and rear screen washer jets and headlamp washer jets.

Check the reservoir level at least every week and top-up with a mixture of water and Land Rover Parts STC 8249 Screenwash. Preferably mix the recommended quantities of water and screenwash in a separate container before topping-up, and always follow the instructions on the container. Note that an approved screenwash is necessary to prevent freezing in very cold weather.

Caution: DO NOT use an antifreeze or vinegar/water solution in the washer reservoir - antifreeze will damage painted surfaces, while vinegar can damage the windshield washer pump.

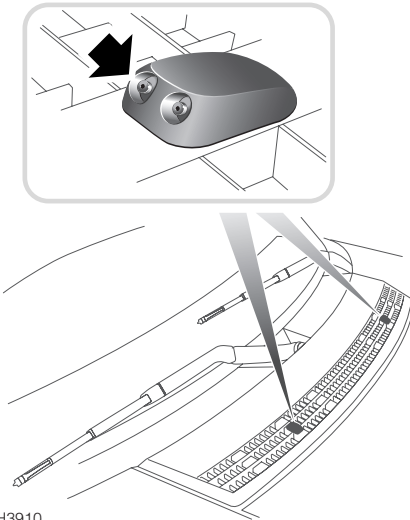
Caution: Body panels may suffer discolouration as a result of screenwash spillage. Take care to avoid spillage, particularly if an undiluted or high concentration is being used. If spillage occurs, wash the affected area immediately with water.

Washers

WASHER JETS

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

The windscreen washer jets are set during manufacture and should not need adjusting. However, if adjustment is ever necessary, insert a needle into the jet orifice and lever gently to position each jet, so that the spray is directed towards the centre of the windshield.



H3910

The rear screen jets located in the wiper arm are not adjustable.

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

HEADLAMP WASHERS

The spray jets are set during manufacture and should not need to be adjusted.

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

Wiper Blades

WIPER BLADE REPLACEMENT

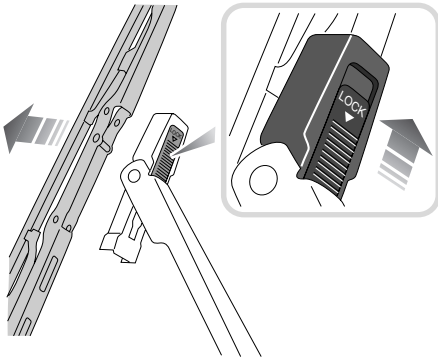
Only fit replacement wiper blades that are identical to the original specification.

Grease, silicone and petrol based products impair the blade's wiping capability. Wash the wiper blades in warm soapy water and periodically check their condition.

If signs of hardness or cracking in the rubber are found, or if the wipers leave streaks or unwiped areas on the windscreen during use, then the wiper blades should be replaced.

Clean the windscreen regularly with an approved glass cleaner and ensure the screen is thoroughly cleaned before fitting replacement wiper blades.

Front wiper blades

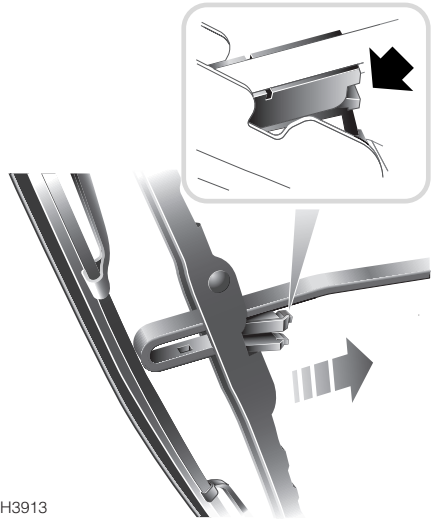


H3912

Lift the wiper arm away from the windscreen. Disconnect the blade by pushing the locking tab (see inset in illustration) to the unlock position.

Fitting a replacement blade is a reversal of this process. Check that the blade is securely locked before returning the wiper assembly to the windscreen.

Rear wiper blade



H3913

Lift the wiper arm away from the rear screen and pivot the blade assembly away from the arm. Press the tab (arrowed in inset), to release the blade assembly and slide the assembly off the end of the wiper arm. Carefully replace the arm to its stowed position.

To replace, position the wiper arm into the aperture in the middle of the blade assembly and push firmly into position until the blade clips into place.

Battery

BATTERY SAFETY

WARNING

ALWAYS wear appropriate eye protection when working around batteries.

Batteries contain acid, which is both corrosive and poisonous. If spillage occurs:

- On clothing or the skin - remove any contaminated clothing immediately, flush the skin with large amounts of water, and seek medical attention urgently.
- In the eyes - flush with clean water immediately for at least 15 minutes. Seek medical attention urgently.

Swallowing battery acid can be fatal unless **IMMEDIATE** action is taken - seek medical attention urgently.

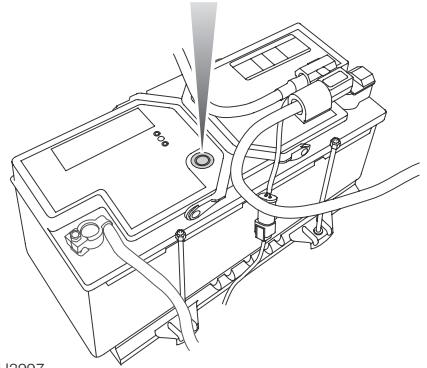
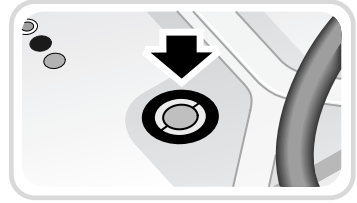
During normal operation batteries emit explosive hydrogen gas - ensure sparks and naked lights are kept away from the engine compartment.

For your safety, remove all metal wrist bands and jewellery before working in the engine compartment and **NEVER** allow the battery terminals or vehicle leads to make contact with tools or metal parts of the vehicle.

Battery posts, terminals and related accessories contain lead and lead compounds. Wash hands after handling.

BATTERY MAINTENANCE

The battery is designed to be maintenance free, so topping-up is unnecessary.



H3997

On the top of the battery there is a battery condition indicator (arrowed in inset). Examine the indicator periodically to check the battery's condition. When the indicator shows:

- GREEN - the battery is in a good state of charge.
- DARK (turning to black) - the battery needs charging.
- CLEAR (or light yellow) - the battery must be replaced. Do not charge the battery or jump start the vehicle in this condition.

Note: If the indicator shows clear or yellow, tap the indicator with the handle of a screwdriver to disperse any air bubbles. If the colour is unchanged, the battery must be replaced.

Battery

Note: When checking the battery condition indicator, if necessary, clean the battery top to ensure a clear view.

Battery disconnection, charging, removal and replacement

There may at times be a requirement to disconnect the battery:

- Turn the starter switch off and remove the starter key.
- Wait for at least two minutes before starting the disconnection procedure. Ensure you have your remote control available as you may have to turn off the alarm sounder.
- Disconnect **ONLY** the negative (-) terminal.
- Wait for two minutes before reconnecting the battery.

If the alarm sounds when the battery is reconnected, use the key fob to turn it off.

WARNING

The battery positive (+) terminal is fitted with a pyrotechnic charge, designed to disconnect the battery as a safety precaution in the event of a severe collision. For this reason, the battery charging, disconnection and removal should only be attempted by qualified personnel.

Effects of battery disconnection

Following disconnection and subsequent reconnection of the vehicle battery, a number of the vehicle systems will be reset automatically. This may take a few minutes and with some systems, sensors have to detect certain actions whilst driving before full operability returns. This in no way affects the safe operation of the vehicle.

Replacement batteries

WARNING

Only fit a replacement battery of the same type and specification as the original - other batteries may vary in size or have different terminal positions which could cause a fire hazard when connected to the vehicle's electrical system.

Battery specification

Battery type	Group 95R, sealed for life
Voltage and polarity	12 V, negative (-) earth

Battery disposal



Used batteries should be recycled. However, batteries are hazardous - you should seek advice about disposal from a Land Rover Dealer/Authorised Repairer or your local authority.

Tyres

CARING FOR YOUR TYRES

WARNING

DEFECTIVE TYRES ARE DANGEROUS! Do not drive if any tyre is damaged, is excessively worn, or is inflated to an incorrect pressure.

ALWAYS replace worn or defective tyres with the factory recommended specification. See **WHEELS AND TYRES, 267**. Failure to do so may affect the safe handling of the vehicle.

Always drive with consideration for the condition of the tyres, and regularly inspect the tread and side walls for any sign of distortion (bulges), cuts or wear.

The way you drive has a great influence on your tyre mileage and safety. Cultivate good habits for your own benefit:

- Observe posted speed limits.
- Avoid fast starts, stops and turns.
- Avoid potholes and objects in the road.
- Do not run over kerbs or hit the tyre against the kerb when parking.

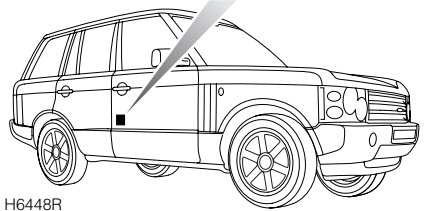
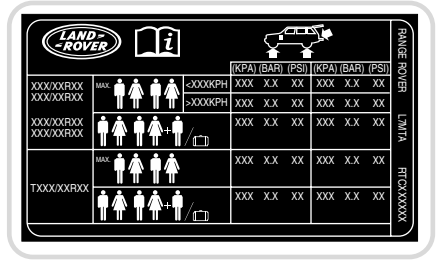
Caution: If possible, protect tyres from contamination by oil, grease, fuel and other automotive fluids.

WARNING

If your vehicle becomes stuck:

- **Avoid spinning the tyre.** The forces created by rapidly spinning a tyre can cause damage to, and failure of, the tyre structure.
- **Never exceed the 50 km/h (30 mph) point indicated on the speedometer.**
- **Do not allow anyone to stand near to, or directly behind, a tyre that might spin.**

Tyre information label



H6448R

The tyre label is visible on the pillar behind the drivers door (also known as the B pillar), giving information specific to the wheel and tyre equipment fitted to the vehicle when it was built.

This label contains information relating to tyre and wheel sizes along with recommended pressures for all wheel and tyre combinations.

Tyres

Tyre wear

WARNING

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



H4942

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

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

Note: If tyre wear is uneven (on one side of the tyre only) or becomes abnormally excessive, the wheel alignment should be checked by your Land Rover Dealer/Authorised Repairer.

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

Note: After off-road use, check to make sure there are no cuts, bulges, or exposure of the ply/cord structure.

Age degradation

Tyres degrade over time, even when they are not being used. It is recommended that tyres generally be replaced after 6 years of normal service. Degradation can be caused by ultra violet (U.V.) exposure, hot climates or frequent high loading conditions.

Replace the spare tyre when you replace the other road tyres due to the ageing of the spare tyre.

Tyre use after storage

After a long period of a vehicle standing, tyres may become locally distorted with a flat area. This will cause an uneven ride for a few miles until the tyres have warmed up and the flat rounds off.

Valves

Keep the valve caps screwed down firmly - they prevent dirt from entering the valve. Check the valve for leaks (listen for a tell-tale hissing) when you check the tyre pressure.

Tyres

Tyre pressures

WARNING

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

Under-inflation causes excessive flexing and uneven wear to the tyre. This can lead to sudden failure. Over-inflation causes a harsh ride, uneven tyre wear and poor handling.

A hot tyre, at or below the recommended cold inflation pressure, is dangerously under-inflated.

Correctly inflated tyres will ensure that you enjoy the best combination of tyre life, ride comfort, fuel economy and road handling.

Under-inflated tyres wear more rapidly, can seriously affect the vehicle's road handling characteristics and fuel consumption, as well as increasing the risk of tyre failure.

Over-inflated tyres give a harsher ride, wear unevenly and are more prone to damage.

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

It is impossible to determine if a tyre is properly inflated just by looking at it.

The recommended tyre pressures are listed on a label on the B pillar on the driver's side (visible with the driver's door open). See **Tyre information label, 213**.

Tyre pressures listed on the tyre information label are considered to be the recommended cold tyre inflation pressure, at maximum gross vehicle weight condition, measured when the tyres are **cold**, after the vehicle has been parked for at least 3 hours or driven less than 3 miles (5 km).

Check the pressures (including the spare wheel) when the tyres are cold - be aware that it only takes 1.5 km (1 mile) of driving to warm up the tyres sufficiently to affect the tyre pressures.

When you drive for more than 3 miles (5 km), the tyres and the air inside them, warm up and it is normal for the tyre pressure to increase above the recommended cold pressure. When checking tyre pressure in this condition, never reduce air pressure.

***Note:** Air pressure naturally increases in warm tyres; if it is necessary to check the tyres when they are warm (after the vehicle has been driven for a while), you should expect the pressures to have increased by up to 30 - 40 kPa (0.3 - 0.4 bar/4 - 6 lbf/in²). In this circumstance, DO NOT let air out of the tyres in order to match the recommended cold tyre pressures.*

***Note:** The pressure for your spare tyre should be set to the highest value given for your vehicle's wheel/tyre size combination, and adjusted after fitment.*

***Note:** When towing heavy trailers or with the tow vehicle loaded, the additional imposed nose weight may cause the GVW tyre loading to be exceeded. This is permissible provided that road speeds are limited to 100 km/h (60 mph) and rear tyre pressures are increased by at least 20 kPa (3 lbf/in²). This excludes the temporary spare, where 80 km/h (50 mph) is the maximum permitted speed and tyre pressure should be maintained at the pressures shown on the tyre information label. See **Tyre information label, 213**.*

Tyres

Checking tyre pressures

The following procedure should be used to check and adjust tyre pressures:

1. Remove the valve cap.
2. Firmly attach a tyre pressure gauge/inflator to the valve.
3. Read the tyre pressure from the gauge. If required add air to the tyre.
4. If air is added to the tyre, remove the gauge from the valve and re-attach it before checking that the pressure is correct.

Failure to remove and re-attach the gauge to the valve could cause the gauge to show an incorrect reading.

5. If too much air is added, remove the gauge from the valve and allow air out of the tyre by pressing the centre of the valve.

Reconnect the gauge to the valve and check that the air pressure is correct. If the pressure is still not correct, repeat this process and re-check.

6. Refit the valve cap.

Note: *It is an offence in certain countries to drive a vehicle with tyres that are not properly inflated in accordance with the vehicle's proper use.*

Punctured tyres

No matter how carefully you drive, there is always the possibility of a puncture.

Your vehicle is fitted with tubeless tyres, which may not leak if penetrated by a sharp object, provided the object remains in the tyre.

If, however, you feel a sudden vibration or ride disturbance while driving, or you suspect your tyre or vehicle has been damaged, immediately reduce your speed. Drive slowly, while avoiding heavy braking or sharp steering inputs, to the closest safe area out of traffic. This may further damage the flat tyre, but your safety is more important.

Stop and inspect the tyres for damage. If a tyre is under-inflated or damaged, remove the tyre and wheel and replace it with the spare wheel. If you cannot detect a cause, have the vehicle towed to the nearest vehicle or tyre dealer, to have the vehicle inspected.

A puncture will eventually cause the tyre to lose pressure, which is why frequent checking of tyre pressures is important. Punctured or damaged tyres must be permanently repaired or replaced as soon as possible.

DO NOT DRIVE WITH A PUNCTURED TYRE.

Tyres

Replacement tyres

WARNING

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

For optimum performance and handling ALWAYS replace tyres with the same make and type as those fitted from new at the factory. If these tyres are not available, consult your Dealer/Authorised Repairer for advice on Land Rover approved alternatives. Failure to do so may adversely affect vehicle handling.

Always ensure replacement tyres have the correct rating and specifications (e.g. load index, size, speed rating) for your vehicle. Contact your Land Rover Dealer/Authorised Repairer for more information.

Your vehicle is fitted with tubeless road wheels that will NOT accept inner tubes. DO NOT fit a tube tyre.

ONLY Land Rover approved wheel and tyre combinations should be fitted to the vehicle. DO NOT replace wheels or tyres with any type other than genuine Land Rover parts. Wheels and tyres are designed for both off-road and on-road use and have a very important influence on vehicle handling. Alternative wheels which do not meet original equipment specifications should not be fitted.

Always have replacement wheels and tyres balanced before use (excluding temporary spare).

Wheel rims and tyres are matched to suit the handling characteristics of the vehicle. For safety, ALWAYS check that replacement tyres comply with the original specification (see **WHEELS AND TYRES, 267**) and that the load and speed ratings shown on the side wall are the same as that of the original equipment. Contact your Land Rover Dealer/Authorised Repairer for further information or assistance.

Tyres of the correct size and type, but of different make have widely varying characteristics. It is therefore recommended that only Land Rover approved tyres are fitted to all wheels.

Ideally, tyres should be replaced as sets of four, but if this is not possible, replace the tyres as axle sets.

Always have the wheels re-balanced after replacing tyres.

Temporary spare tyre

WARNING

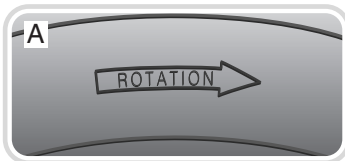
If a temporary spare is in use, the vehicle must be driven with caution at reduced speed (80 km/h [50 mph] maximum). A standard wheel and tyre should be fitted as soon as possible, and only one temporary spare wheel should be fitted to the vehicle at any one time.

Tyres

Directional tyres

Directional tyres give greater benefit when they rotate in a forward direction, i.e., when the vehicle is moving forwards. They give enhanced levels of deep-water grip while still maintaining low tyre noise generation.

Should a tyre be fitted to a vehicle in the wrong directional sense, these benefits will only be maintained if the tyre is remounted to the rim so that it rotates in the direction indicated on the sidewall.



H4562

There are two types of directional tyre and the direction indicators are shown in the illustration below.

SNOW CHAINS

Snow chains are designed for use on hard-surface roads in extreme snow conditions only, and are not recommended for off-road use. If it is necessary to fit snow chains to your vehicle, ALWAYS observe the following:

- **Front wheels:** Snow chains must not be fitted to the front wheels.
- **Rear wheels:** Snow chains can only be fitted to 18 and 19 inch rear wheels, provided the wheels and tyres conform to the specifications of the original equipment. See **WHEELS AND TYRES, 267**.
- Snow chains **must not** be fitted to a temporary spare wheel.
- ONLY Land Rover approved chains should be used - these are designed for your vehicle and will eliminate any risk of damage to other components. Approved snow chains are only available from a Land Rover Dealer/Authorised Repairer.
- Always adhere to the snow chain fitting and retensioning instructions and the speed limitations recommended for varying road conditions. NEVER exceed 50 km/h (31 mph).
- ONLY fit snow chains in pairs.
- Avoid tyre damage by removing the chains as soon as the road is free from snow.

Caution: DO NOT fit unapproved snow chains - this could damage tyres, wheels, suspension and brake components and could result in damage to the bodywork of the vehicle.

Tyres

TYRE PRESSURE MONITORING SYSTEM

Your vehicle may be equipped with a Tyre Pressure Monitoring System (TPMS) which monitors pressure in each tyre, including the full-size spare tyre. Temporary spare tyres are not fitted with sensors and are consequently not monitored.

Each tyre, including the spare (if provided), should be checked monthly when cold and inflated to the inflation pressure recommended by the vehicle manufacturer on the tyre inflation pressure label. (If your vehicle has tyres of a different size than the size indicated on the tyre inflation pressure label, you should determine the proper tyre inflation pressure for those tyres.)

As an added safety feature, your vehicle has been equipped with a tyre pressure monitoring system (TPMS) that illuminates a low tyre pressure telltale when one or more of your tyres is significantly under-inflated. Accordingly, when the low tyre pressure telltale illuminates, you should stop and check your tyres as soon as possible, and inflate them to the proper pressure. Driving on a significantly under-inflated tyre causes the tyre to overheat and can lead to tyre failure. Under-inflation also reduces fuel efficiency and tyre tread life, and may affect the vehicles handling and stopping ability.

Please note that the TPMS is not a substitute for proper tyre maintenance, and it is the driver's responsibility to maintain correct tyre pressure, even if under-inflation has not reached the level to trigger illumination of the TPMS low tyre pressure telltale.

Your vehicle will also indicate a TPMS malfunction by illuminating the warning telltale, displaying the text message **TYRE PRESSURE MONITORING SYSTEM FAULT** and sounding an audible warning. When a malfunction occurs the system may not be able to detect or signal low tyre pressure as intended. TPMS malfunctions may occur for a variety of reasons, including the installation of incompatible replacement tyres on the vehicle. Always check the TPMS malfunction telltale after replacing one or more tyres on your vehicle to ensure that the replacement tyres are compatible with the TPMS.

*Note: The TPMS does **NOT** reinflate tyres.*

WARNING

The tyre pressures should be checked regularly using an accurate pressure gauge when the tyres are cold. Failure to properly maintain your tyre pressures could increase the risk of tyre failure, with consequential loss of vehicle control and personal injury.

The TPMS can NOT register damage to the tyre. Regularly check the condition of your tyres, especially if the vehicle is driven off-road.

Caution: When inflating the tyres, care should be taken to avoid bending or damage to the TPMS valves. Always ensure correct alignment of the inflation head to the valve stem.

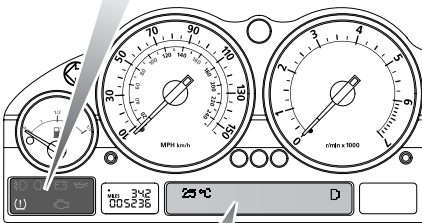
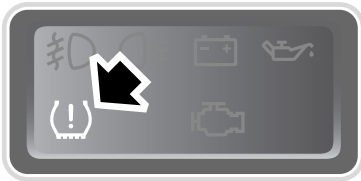
Tyres

TPMS operation

The system monitors the pressure of the tyres via sensors located in each wheel and a receiver located within the vehicle. Communication between sensor and receiver is via Radio Frequency (RF) signals.



The tyre pressure warning comprises a yellow warning indicator (telltale) within the instrument pack and an associated message within the message center.



H6560R

Spare tyre pressure

The full size spare tyre should be inflated to the highest pressure for the specified tyre size.

Full-size spare wheel and tyre change

Should it be necessary to change a wheel and tyre with the spare, then the system will automatically recognise the change in wheel positions. After driving above 25 km/h (18 mph), any deflation warning will clear, typically within five minutes.

Temporary spare wheel and tyre change

Should it be necessary to change a wheel and tyre with the temporary spare, then the system will automatically recognise the change in wheel positions. Then, after approximately 10 minutes of driving above 25 km/h (18 mph), the yellow warning telltale will illuminate, a text message, e.g. **FRONT RIGHT TYRE PRESSURE NOT MONITORED** will be displayed and accompanied by an audible warning.

Tyre pressure warning with speed

If the vehicle is to be driven at speeds in excess of 160 km/h (100 mph), the tyre pressures should be increased as stated on the tyre information label. Failure to increase the tyre pressures and driving in excess of 160 km/h (100 mph), will illuminate the yellow warning telltale and display the message **TYRE PRESSURES LOW FOR SPEED**. In the event of this warning being displayed, vehicle speed should be reduced.

Tyres

If a tyre needs to be changed

It is recommended that you always have your tyres serviced by a Land Rover Dealer/ Authorised Repairer or qualified technician. If TPMS is fitted, each wheel and tyre assembly, with the exception of a temporary spare, is equipped with a tyre pressure sensor connected to the tyre valve stem.

In order to avoid damage to the sensor, the tyres **must** be removed and refitted to the road wheel in a specified manner. Care must be taken to avoid contact between the bead of the tyre and the sensor during removal and refitting of the tyre, otherwise the sensor may become damaged and/or inoperable.

Valve stem seal, washer, nut, valve core and cap should be replaced at every tyre change.

Valve stem seal, washer and nut must be replaced if valve retention nut is loosened.

Sensor units and nuts must be refitted using the correct torque.

To remove a sensor unscrew the valve retention nut.

Replacement sensor fitment procedure

A replacement sensor must be fitted to a running wheel in order to be recognised by the system. Recognition only occurs when the vehicle is driven above 25 km/h (18 mph) for approximately 10 minutes.

Should the TPMS warning for any wheel not clear, even after ensuring correct inflation and driving for more than 10 minutes above 25 km/h (18 mph), please consult your Land Rover Dealer/Authorised Repairer.

Cleaning and Vehicle Care

WASHING YOUR VEHICLE



H6538G

Caution: Read individual product warnings before using any car cleaning or washing products.

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

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

- Do not use hot water!
- Do not use detergent soap products or washing-up liquid!
- In hot weather, do not wash the vehicle in direct sunlight.

Removing tar spots

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

Underbody maintenance

Corrosive materials used for snow and ice removal and dust control can collect on underbody parts. If these materials are not removed, accelerated rusting can occur. Use a hose to regularly flush the underbody with plain water, taking particular care to thoroughly clean those areas where mud and other debris can easily collect.

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

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

If damage or corrosion to the underbody area is detected, please have the vehicle checked by a Land Rover Dealer/Authorised Repairer at the earliest opportunity.

Cleaning after off-road driving

Ensure that the vehicle and underside is cleaned soon after off-road driving, taking particular care to clean areas where mud and debris has compacted.

Cleaning and Vehicle Care

Body protection

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

Polishing

Occasionally treat the paint surface with an approved polish containing the following properties:

- Very mild abrasives to remove surface contamination without removing or damaging the paint.
- Filling compounds that will fill scratches and reduce their visibility.
- Wax to provide a protective coating between the paint and the elements.

Note: *DO NOT apply car polish to the unpainted areas of the bumper mouldings - polish will become ingrained in the textured finished.*

Glass and mirrors

Clean the rear window with a soft cloth to avoid damaging the heating elements. **DO NOT** scrape the glass or use an abrasive cleaning fluid.

Mirror glass is particularly susceptible to damage. Wash with soapy water. **DO NOT** use abrasive cleaning compounds or metal scrapers to remove ice.

CLEANING THE INTERIOR

Caution: Read individual product warnings before using any car cleaning or washing products.

CAR CARE PRODUCTS	PART NUMBER
Facia Cleaner (300 ml aerosol)	STC4683
Fabric Cleaner (300 ml aerosol)	STC4685
Leather Cleaning Kit	BAC500490
Insect Remover (300 ml aerosol)	STC4686
Glass Cleaner (300 ml aerosol)	STC4681
Bumper Cleaner (300 ml aerosol)	STC4679
De-icer (300 ml aerosol)	STC4677
De-icer (500 ml trigger spray)	STC4676
Screenwash (250 ml bottle)	STC4672
Screenwash (500 ml bottle)	STC4687
Alloy Wheel Cleaner (500 ml trigger spray)	STC4675
Wash n Wax (300 ml bottle)	STC4680
Wax Polish (300 ml bottle)	STC4682

Cleaning and Vehicle Care

Plastic materials

Clean plastic-faced or cloth covered surfaces with warm water and a non-detergent soap and wipe with a clean cloth.

Caution: DO NOT polish facia components - for safety, these should remain non-reflective.

Leather

Leather faced features should be cleaned with a damp cloth moistened with undiluted leather cleaner. Dry and polish the leather with a dry, lint-free cloth.

Land Rover recommends that leather is cleaned and protected at least every six months, but maybe as often as every 1-2 months for high mileage cars or cars kept in a hostile environment. Leather cleaning kit BAC500490 is recommended and endorsed by Land Rover for this purpose. Use in accordance with the instructions printed on the label.

***Note:** Some materials/fabrics are prone to dye-transfer, which can cause unsightly discolouration of lighter coloured leathers. Affected areas should be cleaned and re-protected as soon as possible.*

DO NOT use chemical or abrasive materials to clean leather. Petrol, methylated spirits, alcohol, detergents, washing-up liquid, household cleaners, furniture polishes/creams or solvents should never be used on leather. While these products may give initially impressive results, their use will lead to rapid deterioration of the leather and will invalidate the warranty.

Carpet and fabrics

Clean with diluted nylon upholstery cleaner - test on a concealed area first.

Instrument pack, clock and radio

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

Seat belts

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

Airbag module covers

WARNING

To prevent airbag SRS damage, the steering wheel centre pad and other areas containing airbags should ONLY be cleaned sparingly with a damp cloth, warm water and a non-detergent soap.

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

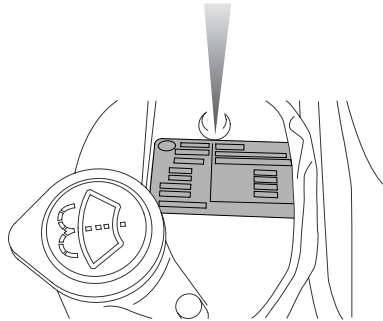
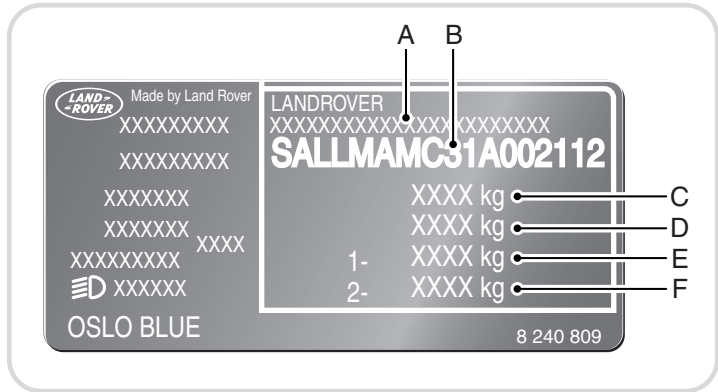
Heated rear window

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

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

Identification Numbers

VEHICLE IDENTIFICATION NUMBER (VIN)



H4251

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

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

The VIN (and recommended maximum vehicle weights) is stamped on a plate riveted to the top of the left hand front suspension tower in the engine compartment (this should match the VIN recorded in the Service Portfolio book).

In addition, as a deterrent to car thieves and to assist the police, the VIN is stamped on a plate which is visible through the lowest part of the left side of the windscreen and also stamped on the vehicle body (on the front face of the right-hand front suspension tower).

Parts and Accessories

PARTS AND ACCESSORIES

WARNING

DO NOT fit unapproved accessories or conversions, as they could affect the safety of the vehicle.

Land Rover will not accept any liability for death, personal injury or damage to property which may occur as a direct result of fitment on non-approved accessories or the carrying out of non-approved conversions to Land Rover vehicles.

Land Rover strongly advise against making any modifications to the suspension or steering system. This could seriously affect the handling and stability of the vehicle leading to loss of control or rollover.

The vehicle has been designed, built and tested to cope with a variety of off-road driving conditions, some of which can place the severest possible demands on control systems and components. As such, fitting replacement parts and accessories that have been developed and tested to the same stringent standards as the original components will safeguard the continued reliability, safety and performance of your vehicle.

To augment the vehicle's already impressive performance, a comprehensive range of Land Rover-approved spare parts and accessories is available, enabling the vehicle to fulfil a wide variety of roles, and enhancing and protecting the vehicle in the many tasks to which it can be applied.

Land Rover parts are the only parts built to original equipment specifications AND approved by Land Rover designers; this means that every single part and accessory has been rigorously tested by the same engineering team that designed and built the vehicle and can therefore be guaranteed for twelve months with unlimited mileage.

A full list and description of all accessories is available from your Land Rover Dealer/Authorised Repairer.

After-sales service

The After Sales Parts service is of paramount importance, both in the UK and across the world. In the UK there are over 100 authorised Land Rover Dealer/Authorised Repairer, all computer linked for rapid ordering of parts and accessories.

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

Travelling abroad

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

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

Parts and Accessories

Electrical equipment

WARNING

It is extremely hazardous to fit or replace parts or accessories whose installation requires the dismantling of, or addition to, either the electrical or fuel or airbag SRS systems as damage to the proper operation these systems could result.

ALWAYS consult a Land Rover Dealer/Authorised Repairer before fitting any accessory.

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

It is recommended that you always consult a Land Rover Dealer/Authorised Repairer for advice regarding the approval, suitability, installation and use of any parts or accessories before fitting.

Airbag SRS

WARNING

The components that make up the airbag SRS are sensitive to electrical or physical interference, either of which could easily damage the system and cause inadvertent operation or a malfunction of the airbag module.

To prevent any airbag SRS malfunction, ALWAYS consult a Land Rover Dealer/Authorised Repairer before fitting any of the following:

- **Electronic equipment such as a mobile phone, two-way radio or in-car entertainment system.**
 - **Accessories attached to the front of the vehicle.**
 - **Any modification to the front of the vehicle.**
 - **Any modification involving the removal or repair of any wiring or component in the vicinity of any of the SRS components (yellow wiring harness), including the steering wheel, steering column, instrument and fascia panels.**
 - **Any modification to the fascia panels or steering wheel.**
-