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 Passport to Service book. Most of this necessary workshop maintenance requires specialised knowledge and equipment, and should preferably be entrusted to a Land Rover Dealer.

Passport to Service

The Passport to Service 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 to record brake fluid changes.

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

OWNER MAINTENANCE

In addition to 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 tire wear, should be reported to a Land Rover Dealer 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 drips from the air conditioning system are 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.
- Tire pressures and condition.
- Operate the air conditioning.

All fluid specifications and capacities are shown in **LUBRICANTS AND FLUIDS, 274**.

WARNING

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

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 motor vehicle technician. Failure to comply with this instruction may result in fuel spillage with a consequent serious 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.**

WARNING

Cooling fans may continue to operate after the engine is switched off. When the engine is hot, the cooling fans may also start operating after the engine is switched off and continue operating for up to ten minutes. Keep clear of all fans and remove any loose clothing while working in the engine compartment.

- **Keep your hands and clothing away from drive belts and pulleys.**
- **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.**

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, gasoline, diesel, engine oil and windshield 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.

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.

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

ROAD TESTING 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 (and only on a four-wheel drive dynamometer). Contact your Land Rover Dealer for further information.

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

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:

- Repeated short distance driving (e.g. up to 10 km (6 miles)), stop-start driving or idling for long periods.
- 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.

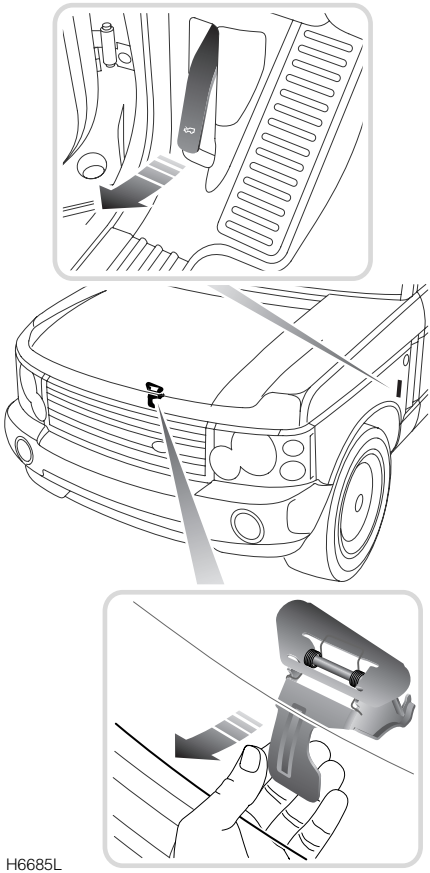
Contact a Land Rover Dealer for advice.

PREPARATION FOR WINTER

Before the onset of winter, to prevent the door seals from freezing closed, apply a Carbaflo lubricant pen 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. For further information, consult a Land Rover Dealer.

HOOD OPENING



H6685L

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

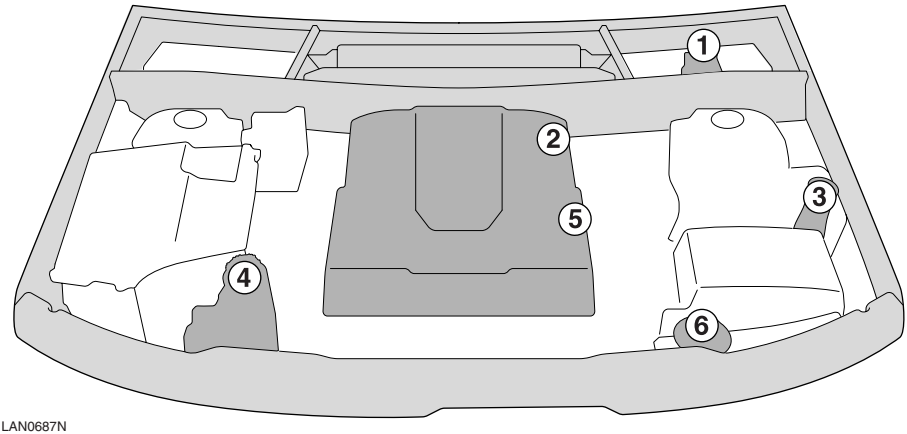
Closing the hood

WARNING

Do not drive with the hood retained by the safety catch alone.

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

FLUID CHECKS

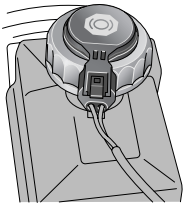


LAN0687N

WARNING

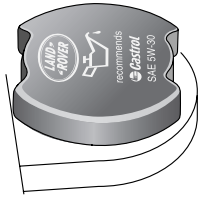
While working in the engine compartment, always observe the safety precautions listed under, SAFETY IN THE GARAGE, 201.

1. Brake fluid reservoir



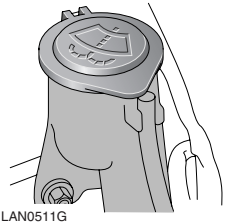
LAN0509G

2. Engine oil filler



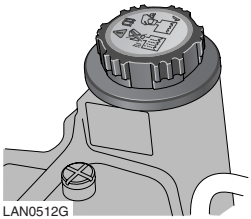
LAN0510G

3. Washer reservoir



LAN0511G

4. Cooling system reservoir



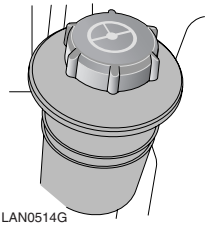
LAN0512G

5. Engine oil dipstick



LAN0513G

6. Power steering reservoir



LAN0514G

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. Under high loads your engine will also consume more oil.

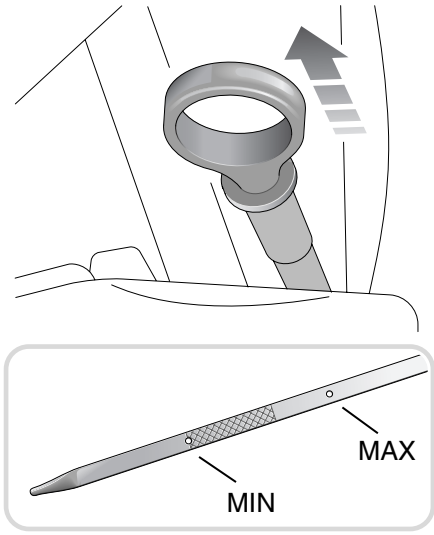
Check the oil level weekly, when the engine is cold and with the vehicle resting on level ground.

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 US pints) of oil.
- Is below the lower mark, add 1 litre (2.11 US pints) of oil and re-check the level after a further five minutes.

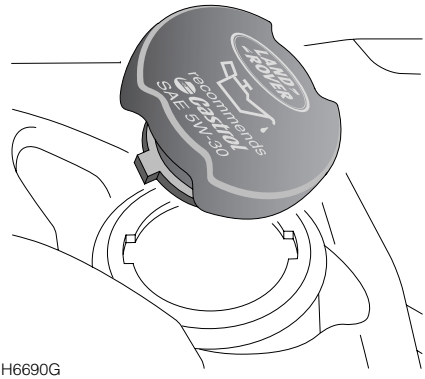
Caution: Driving the vehicle with the engine oil level above the upper mark, or below the lower mark on the dipstick, can damage the engine.



H6691G

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.



H6690G

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, 274**. If in doubt, contact your Land Rover Dealer.

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.

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.

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

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

Caution: Never run the engine without coolant.

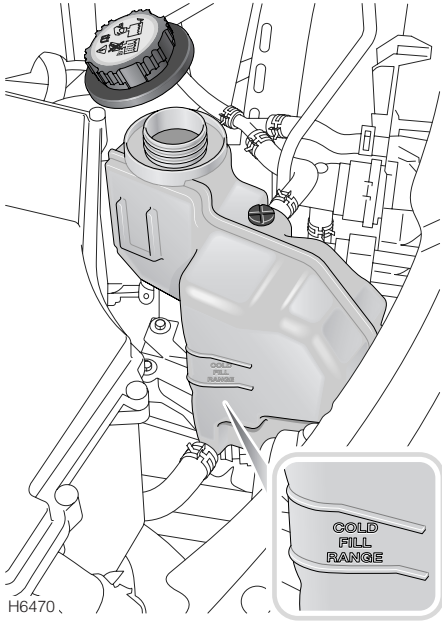
Antifreeze will damage painted surfaces; soak up any spillage with an absorbent cloth immediately and wash the area with a mixture of car shampoo and water.

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.

Note: *Coolant expands when hot. This may cause the level to rise above the upper level mark on the side of the expansion tank.*

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, 274**. Top-up to the upper level indicator mark located above the COLD FILL LEVEL text, on the side of the expansion tank. This should be viewed from standing in front of the vehicle. Ignore any coolant visible in the top section of the tank.

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

If the level has fallen appreciably, suspect leakage or overheating and arrange for your Land Rover Dealer 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.

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% ± 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 (refer to your **Passport to Service** 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, 274**.

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.

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.*

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

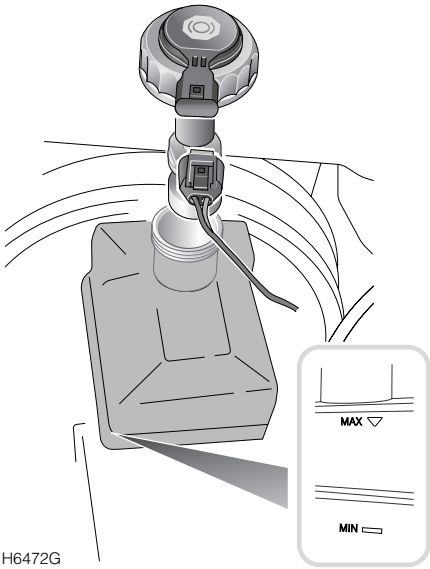
The fluid level may fall slightly during normal use as a result of brake pad wear but should not be allowed to fall below the **MIN** mark. Any substantial drop in fluid indicates a leak in the system, in which case the vehicle must not be driven and you should contact your Land Rover Dealer.

WARNING

Contact your Dealer 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



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. See **Lubricants and Fluids, 274**, for a full 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 (refer to your **Passport to Service** book).

POWER STEERING FLUID

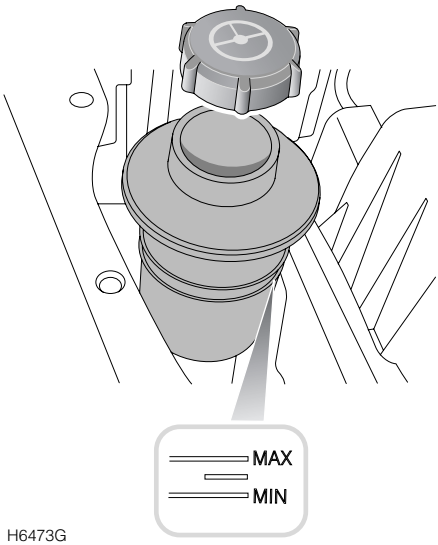
WARNING

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.



H6473G

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.

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 side of the reservoir.

Emergency operation

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

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 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 MIN mark on the side of the reservoir - severe damage to the pump could result.

WINDSHIELD 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.

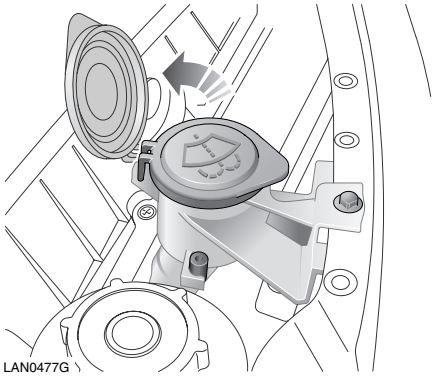
Some screenwash products are inflammable, particularly if high or undiluted concentrations are exposed to sparking. Do not allow screenwash to come into contact with naked flames or sources of ignition.

Do not put engine coolant in the windshield washer fluid reservoir. If engine coolant is sprayed onto the windshield, it could make it difficult to see through the windshield.

Caution: State or local regulations on volatile organic compounds may restrict the use of methanol, a common windshield washer antifreeze additive. Washer fluids containing non-methanol antifreeze agents should be used only if they provide cold weather protection without damaging the vehicle's paint finish, wiper blades or washer system.

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.



The windshield washer reservoir supplies both windshield and rear screen washer jets and headlamp washer jets.

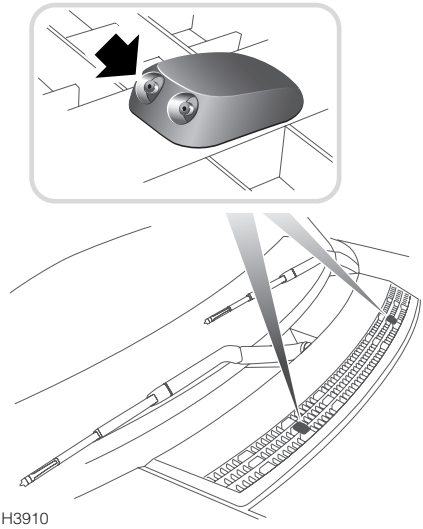
Check the reservoir level at least every week and to prevent freezing in cold weather, top-up with a mixture of water and a recommended screenwash. Use Land Rover Parts STC 8249 Screenwash or any good quality proprietary screenwash.

Preferably, mix the recommended quantities of water and screenwash in a separate container before topping-up, and always follow the instructions on the container.

WASHER JETS

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

The windshield 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 windshield washer reservoir to prevent freezing.

WIPER BLADE REPLACEMENT

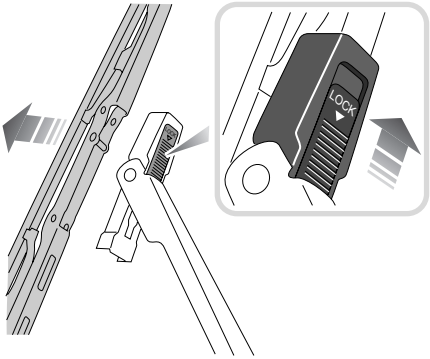
Only fit replacement wiper blades that are identical to the original specification.

Grease, silicone and petroleum 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 windshield during use, then the wiper blades should be replaced.

Clean the windshield and rear screen regularly, with an approved glass cleaner and ensure they are thoroughly cleaned before fitting replacement wiper blades.

Front wiper blades

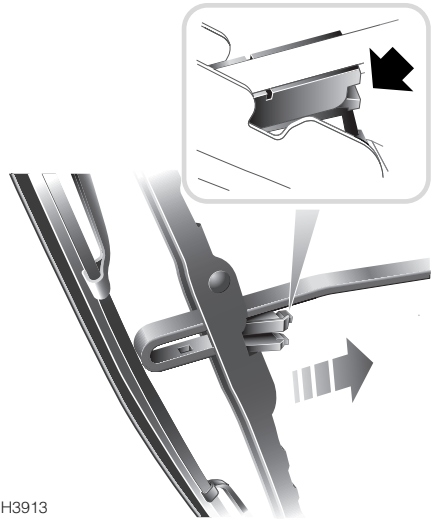


H3912

Lift the wiper arm away from the windshield. 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 windshield.

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 WARNING SYMBOLS

There is a label on the battery, depicting a number of warning symbols. The warning symbols are as follows:



No smoking, flames, no sparks (Red).



Shield eyes (Blue).



Keep away from children (Red).



Explosive gas (Yellow).



Battery acid (Yellow).

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.

Do not attempt to start the vehicle if the electrolyte in the battery is suspected of being frozen.

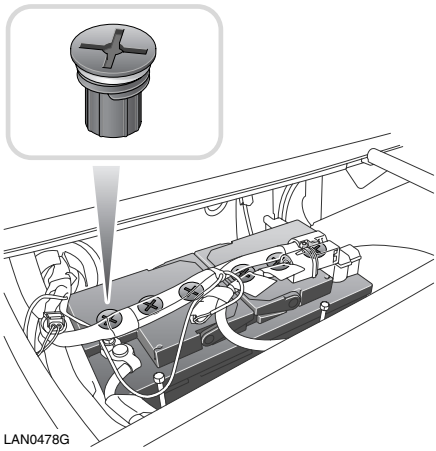
For your safety, remove all metal wrist bands and jewellery before working in the engine compartment and never allow the battery terminals or vehicle leads to make contact with tools or metal parts of the vehicle.

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

Take care when working near rotating parts of the engine.

Battery

BATTERY CARE



WARNING

The cell plugs and vent pipe must be in place at all times when the battery is in the vehicle. Failure to fit, or incorrect fitting of these items is potentially hazardous. Ensure that the vent pipe is free from kinks or damage.

If battery acid comes into contact with your skin or eyes, immediately rinse with cold water and consult a doctor.

Never charge or boost a frozen battery.

Switch off the starter switch before disconnecting battery terminals. Always disconnect the earth terminal first and reconnect last.

Do not let battery acid come into contact with painted surfaces or fabric.

A low maintenance battery, specifically designed for use with this vehicle, is fitted in the engine compartment.

In hot climates, more frequent checks of the battery electrolyte level are required. If necessary, the battery cells can be topped up with distilled water.

The exterior of the battery should occasionally be wiped clean, to remove any dirt or grease.

Note: *The service life of the battery is dependent on its condition of charge. It must always be sufficiently charged for the battery to last the optimum length of time.*

Note: *Do not connect any 12 volt equipment (for example, a 12 volt lamp), directly to the battery terminals. Use one of the accessory sockets located within the vehicle for connecting Land Rover approved accessories.*

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 disposal

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

BATTERY DISCONNECTION, CHARGING, REMOVAL AND REPLACEMENT

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, battery charging and removal should only be attempted by qualified personnel.

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 remote control to turn it off.

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.

TIRE CARE

WARNING

Defective tires are dangerous. Do not drive the vehicle if a tire is damaged, excessively worn, or incorrectly inflated.

Avoid contaminating the tires with vehicle fluids, as they may cause damage to the tire.

Avoid spinning the wheels. The forces released, can damage the structure of the tire and cause it to fail.

If wheels spin is unavoidable due to loss of traction (in deep snow, for example), do not exceed the 50 km/h (30 mph) point on the speedometer.

All of the vehicle's tires (including the spare) should be checked regularly for damage, wear and distortion. If you are in any doubt about the condition of a tire, have it checked immediately by a tire repair centre or your Land Rover Dealer.

Tire wear

Good driving practise will improve the distance you obtain from your tires and avoid unnecessary damage.

- Always ensure that the tire pressures are correctly adjusted.
- Always observe the posted speed limits and advisory speeds for bends.
- Avoid pulling away quickly and hard acceleration.
- Avoid making fast turns or braking sharply.
- Wherever possible, avoid potholes and obstacles on the road.
- Do not drive up curbs or rub the tires against them when parking.

Wear indicators


LAN0330G

WARNING

Wear indicators show at the point of minimum tread. Tires which have worn to this point will have reduced grip and poor water displacement characteristics.

Do not drive with tires worn to this limit, the safety of the vehicle and occupants will be adversely affected.

Caution: If tread wear is uneven across a tire, or if the tire wears excessively, the vehicle should be checked by your Land Rover Dealer as soon as possible.

Note: *Tire condition should be checked after the vehicle has been used off-road. As soon as the vehicle returns to a normal, hard road surface, stop the vehicle and check for damage to the tires.*

When the tread has worn down to approximately 1.6 mm (0.62 in.), wear indicators start to appear at the surface of the tread pattern. This produces a continuous band of rubber across the tread as a visual indicator.

The tire must be replaced as soon as the wear indicator becomes visible, or sooner, if legislation requires replacement.

Note: *Tread depth should be checked regularly, in some cases more frequently than the service intervals.*

Age degradation

Tires degrade over time, even when they are not being used. It is recommended that tires generally be replaced after six years of normal service. Heat caused by hot climates or frequent high loading conditions can accelerate the ageing process.

You should replace the spare tire when you replace the other road tires, due to ageing of the spare tire.

Punctured tires

WARNING

Do not drive the vehicle with a punctured tire. Even if the punctured tire has not deflated, it is unsafe to use as the tire may deflate suddenly at any time.

Not all punctures result in the tire deflating immediately. Therefore, it is important to check the tires for damage and foreign objects regularly.

When driving, if a sudden vibration or change to the vehicle's handling is noticed, reduce speed immediately. Do not brake or make any sudden manoeuvres or direction changes. Drive slowly to an area away from the main highway and stop the vehicle.

Note: *Driving the vehicle to a safe area may cause damage to the punctured tire, but occupant safety is far more important.*

Inspect the tires for signs of punctures, damage or under-inflation. If any damage or deformity is detected, the tire should be replaced. If a spare tire is not available, then the vehicle should be recovered to a tire repair centre or Land Rover Dealer.

Replacement tires

WARNING

Wheels and tires are matched to suit the handling characteristics of the vehicle. For safety, always check that replacement tires comply with the original specification (see Wheels and Tires, 277) 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 for further information or assistance.

Do not fit cross-ply tires.

Do not fit tubed tires.

Always fit replacement tires of the same type, and wherever possible, of the same make and tread pattern as the factory recommended specification. Failure to do so may affect the safe handling of the vehicle.

Do not swap tires around the vehicle. Tires bed in to the specific characteristics of each wheel position. Swapping them around may affect the vehicle's handling and traction.

Replacement wheels should be genuine Land Rover parts. This will maintain the designed driving characteristics, both on and off road.

If the use of tires not recommended by Land Rover is unavoidable, ensure that you read and fully comply with the tire manufacturer's instructions.

Always have replacement wheels and tires balanced before use.

Ideally, tires should be replaced in sets of four. If this is not possible, replace the tires in pairs (front and rear).

The correct tire specification for your vehicle can be found on the tire information label. See **TIRE INFORMATION LABELS, 232**. For an explanation of the label information, see **Wheels and Tires, 277**.

Directional tires

Directional tires are designed to operate correctly when rotating forwards (when the vehicle is travelling forwards).



Typical directional tire indicators

Temporary spare tire

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 tire should be fitted as soon as possible, and only one temporary spare wheel should be fitted to the vehicle at any one time.

Tire pressures

WARNING

If the vehicle has been parked in strong sunlight or used in high ambient temperatures, do not reduce tire pressures; instead, move the vehicle into the shade and allow the tires to cool before checking.

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

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

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

Under-inflated tires wear more rapidly, can seriously affect the vehicle's road handling characteristics and fuel consumption, as well as increasing the risk of tire failure.
Over-inflated tires give a harsher ride, wear unevenly.

Tire 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 tire is properly inflated just by looking at it.

The recommended pressures for cold tires are shown in on a placard on the B post (visible with the driver's door open). See **TIRE INFORMATION LABELS, 232**.

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

Use a tire gauge to check the tire inflation pressures (including the spare wheel) when the tires are cold - be aware that it only takes a 1.5 km (1 mile) of driving to warm up the tires sufficiently to affect the tire pressures. Check the pressures at least weekly and before long journeys. Land Rover strongly recommends using a reliable tire pressure gauge, as automatic service station gauges may be inaccurate.

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

Note: *Air pressure naturally increases in warm tires; if it is necessary to check the tires when they are warm (after the vehicle has been driven for a while), you should expect the pressures to have increased between 30 - 40 kPa (0.3 - 0.4 Bar or 4 - 6 lbf/in^2). In this circumstance, never let air out of the tires in order to match the recommended pressures.*

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

Note: *Tire pressure increases in warm weather and decreases in cold weather.*

Checking tire inflation pressures

Loading conditions		kPa	bar	lbf/in^2
All operating conditions	F	250	2.5	36
	R	300	3.0	44

Check the tire inflation pressure when the tires are cold, i.e. before driving.

1. Remove the cap from the valve on one tire.
2. Firmly press a tire gauge onto the valve.
3. Read the tire pressure from the gauge. If required, add air to achieve the recommended tire pressure.
4. If air is added to the tire, remove the gauge from the valve and re-attach it before checking that the pressure is correct.

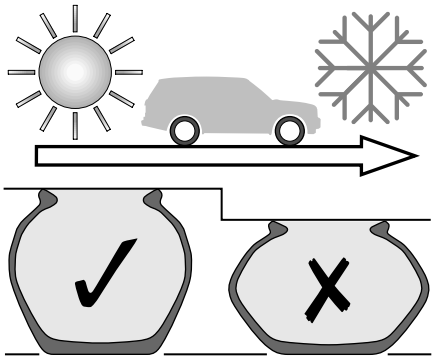
   Failure to remove and re-attach the gauge to the valve, could cause the gauge to show an incorrect reading.
5. If you over-inflate the tire, remove the gauge from the valve and release air by pressing the centre of the valve.

   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. Replace the valve cap.
7. Repeat with each tire.

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 tire pressure.

Pressure compensation for ambient temperature changes



LAN0599G

If the ambient temperature drops, the tire pressures will decrease, which may cause under-inflation. This should be borne in mind when travelling to, or through, areas of lower temperature.

Under-inflation causes the tire side wall height to reduce which, in turn, results in uneven tire wear and a risk of tire failure.

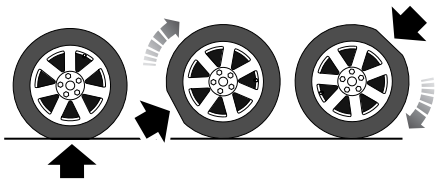
Tire pressures may be adjusted before setting off on a journey to, or through, areas of low temperature. Alternatively, the tire pressures can be adjusted when low temperature areas are reached.

Note: *If the tire pressures are to be adjusted in the lower temperature area, the vehicle should be left standing for at least one hour prior to adjustment.*

Tire pressures should be increased by 0.14 bar/14 kPa (2 lbf/in^2) for each 10°C (20°F) temperature decrease.

Flat spots

If the vehicle is stationary for a long period when the ambient temperature is high, the tires may form flat spots. When the vehicle is driven, these flat spots will cause a vibration, which will steadily disappear as the tires regain their original shape.



LAN0600G

In order to minimise flat-spotting, the tire pressures can be increased.

Tire pressures should be increased by 0.14 bar/14 kPa (2 lbf/in^2) for each 10°C (20°F) temperature increase.

Long-term storage

Flat-spotting can be minimised during long-term storage, by increasing the tire pressures to the maximum indicated on the tire sidewall.

Note: *The tire pressures should be reduced to the correct pressure, before the vehicle is driven.*

High performance tire and wheel combinations

Caution: This vehicle may be fitted with a high performance wheel and low aspect tire combination, designed to give enhanced dry road performance, with consideration for aquaplaning resistance.

Low aspect, high speed rated tires have a softer tread compound. If driven aggressively, they may suffer increased tread wear and a shorter life than can be expected from other tire types. This wheel and tire combination is susceptible to damage if driven off-road. This combination has less performance in snow and ice conditions than M and S tires. High performance tires must be replaced with winter tires when weather conditions dictate.

Punctured tires

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

A puncture of this kind will eventually cause the tire to lose pressure, which is why regular (and frequent) checking of tire pressures is important. Punctured or damaged tires must be permanently repaired, where possible within industry legislation by a qualified technician, or replaced as soon as possible.

If you sustain a puncture, reduce driving speed immediately in a straight line where possible, whilst avoiding heavy braking or sharp steering inputs. Pull over at the first safe place possible to change your tire.

Highway hazards

No matter how carefully you drive, there is always the possibility of a puncture on the highway. In this event, drive slowly to the closest safe area out of traffic. This may further damage the flat tire, but your safety is more important.

If you feel a sudden vibration or ride disturbance while driving, or you suspect that your tire or vehicle has been damaged, immediately reduce your speed. Drive with caution and safely pull off the road at the earliest opportunity. Stop and inspect the tire for damage. If the tire is under-inflated or damaged, remove the tire and wheel and replace it with your spare. If you cannot detect a cause, have the vehicle towed to the nearest vehicle or tire Dealer to have the vehicle inspected.

UNIFORM TIRE QUALITY GRADING

Quality Grades can be found where applicable on the tire sidewall between tread shoulder and maximum section width. For example:

Treadwear 200	*Traction AA*	*Temperature A*

Tires that are deep tread, winter-type snow tires are exempt from the marking requirements as described above. Consequently, the tires fitted to your vehicle may not carry these markings.

All passenger car tires must conform to Federal Safety Requirements in addition to these grades.

Treadwear

The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test course. For example; a tire graded 150 would wear one and one-half (1½) times as well on the government course as a tire graded 100. The relative performance of tires depends upon the actual conditions of their use however, and may depart significantly from the norm due to variations in driving habits, service practices and differences in road characteristics and climate.

Traction

The traction grades, from highest to lowest, are AA, A, B and C. The grades represent a tire's ability to stop on wet pavement as measured

under controlled conditions on specified government test surfaces of asphalt and concrete. A tire marked **C** may have poor traction performance.

WARNING

The traction grade assigned to this tire is based on straight-ahead braking traction tests, and does not include acceleration, cornering, hydroplaning, or peak traction characteristics.

Temperature

The temperature grades **A** (the highest), **B**, and **C**, represent a tire's resistance to the generation of heat and its ability to dissipate heat when tested under controlled conditions on a specified indoor laboratory test wheel. Sustained high temperatures can cause the material of a tire to degenerate and reduce tire life, and excessive temperature can lead to sudden tire failure.

The grade **C** corresponds to a level of performance which all passenger car tires must meet under the Federal Motor Safety Standard No 109.

Grades **B** and **A** represent higher levels of performance on the laboratory test wheel than the minimum required by law.

WARNING

The temperature grade for this tire is established for a tire that is properly inflated and not overloaded. Excessive speed, under inflation, or excessive loading, either separately or in combination can cause heat buildup and possible tire failure.

USING WINTER TIRES

Winter tires are more suitable during extremes of low temperatures, snow and ice and will considerably improve the vehicle's handling during these conditions.

Winter tires must be fitted on all four wheels.

Approved winter tires

19 inch wheels:

255/55 R19 111H Goodyear Ultra Grip

Note: *If your vehicle is fitted with 20 inch wheels, it will be necessary to fit a set of 19 inch wheels before winter tires can be fitted.*

Winter tire pressures:

The cold tire inflation pressures for winter tires are the same as those for normal tires of the same size.

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/tires.
- **Rear wheels:** Snow chains can only be fitted to 19 inch rear wheels, provided the wheels and tires conform to one of the original equipment or applicable accessory fit specifications, listed later in the handbook. See **WHEELS AND TIRES, 277**.

  Note: *If your vehicle is fitted with 20 inch wheels, it will be necessary to fit a set of 19 inch wheels before snow chains can be used.*
- 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.
- 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 tire damage by removing the chains as soon as the road is free from snow.

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

TIRE PRESSURE MONITORING SYSTEM

WARNING

The TPMS is not a substitute for manually checking tire pressures.

The TPMS only provides a low tire pressure warning and does not re-inflate the tires.

Tire pressures should be checked regularly, when cold, using an accurate pressure gauge.

Failure to properly maintain your tire pressures could increase the risk of tire failure, with consequential loss of vehicle control and personal injury.

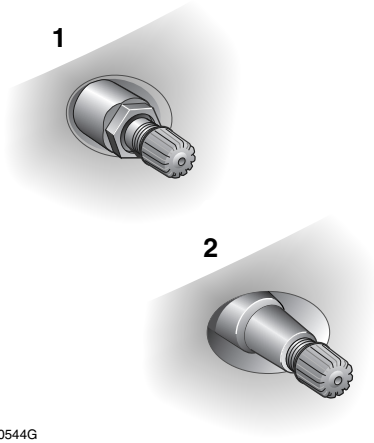
The TPMS cannot register damage to the tire. Regularly check the condition of your tires, especially if the vehicle is driven off-road.

Non-approved accessories may interfere with the system. If this occurs, **TIRE MONITORING SYSTEM FAULT** is displayed in the message centre.

Different types of tire may affect the performance of TPMS. Always replace tires in accordance with recommendations. See **TIRE INFORMATION LABELS, 232**.

Your vehicle may be equipped with a Tire Pressure Monitoring System (TPMS), which monitors pressure in each tire, including the full-size spare tire.

Note: *TPMS only provides a low tire pressure warning and does* ***not*** *re-inflate the tires.*



LAN0544G

Wheels fitted with TPMS can be easily visually identified by the external metal lock nut and valve (1). All Land Rover non-TPMS wheels have a rubber valve fitted (2).

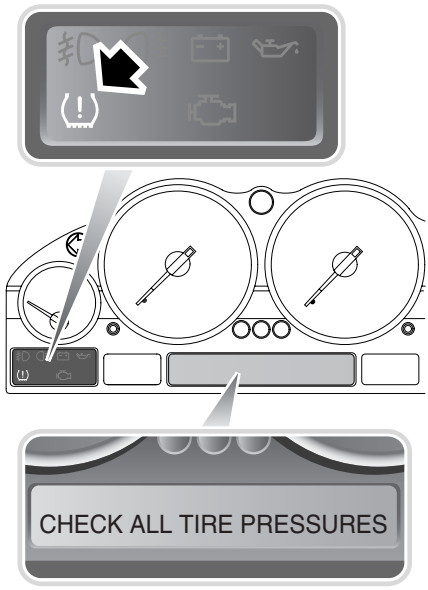
TPMS operation

The TPMS monitors the pressure of the tires 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 tire pressure warning comprises a yellow warning indicator (telltale) within the instrument pack and an associated message within the message centre.

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



LAN0565N

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

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

Your vehicle has also been equipped with a TPMS malfunction indicator to indicate when the system is not operating properly. The TPMS malfunction indicator is combined with the low tire pressure telltale. When the system detects a malfunction, the telltale will flash for approximately one minute and then remain continuously illuminated. This sequence will continue upon subsequent vehicle start-ups as long as the malfunction exists. When the malfunction indicator is illuminated, the system may not be able to detect or signal low tire pressure as intended. TPMS malfunctions may occur for a variety of reasons, including the installation of replacement or alternate tires or wheels on the vehicle that prevent the TPMS from functioning properly. Always check the TPMS malfunction telltale after replacing one or more tires or wheels on your vehicle to ensure that the replacement or alternate tires and wheels allow the TPMS to continue to function properly.

Your vehicle will also indicate a TPMS malfunction by displaying the text message **TIRE MONITORING SYSTEM FAULT** and sounding an audible warning.

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

Spare tire pressure

The spare tire should be inflated to the highest pressure for the specified tire size, when not in use in the vehicle.

Full-size spare wheel and tire change

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

Temporary spare wheel and tire change

If a temporary spare wheel is used, the system will automatically recognise the change in wheel positions. Then after approximately ten minutes of driving at above 25 km/h a message, e.g. **FRONT RIGHT TIRE PRESSURE NOT MONITORED** will be displayed, accompanied by illumination of the warning telltale and an audible warning.

The warning telltale will initially flash and will subsequently revert to continuous illumination. Extended use of the temporary spare wheel, will produce an additional text message **TIRE MONITORING SYSTEM FAULT**. This TPMS display sequence will be activated at every ignition cycle until the temporary spare wheel is replaced by a fully operational full size wheel and tire assembly.

Always replace the temporary spare wheel before having TPMS faults investigated. The fault may well be rectified with the fitment of a fully operational full size running tire in lieu of the temporary spare wheel assembly.

Tire pressure warning with speed

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

If a tire needs to be changed

Always have your tires serviced by a Land Rover Dealer or qualified technician. When TPMS is fitted, each wheel and tire assembly, with the exception of a temporary spare, is equipped with a tire pressure sensor connected to the tire valve stem.

In order to avoid damage to the sensor, the tires **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 tire and the sensor during removal and refitting of the tire, otherwise the sensor may become damaged and/or inoperable.

Caution: Valve stem seal, washer, nut, valve core and cap must be replaced at every tire change.

Valve stem seal, washer and nut must be replaced if valve retention nut is loosened. Sensor units and nuts must be refitted using correct torques and associated torque profile.

Sensors can be removed from the wheel by unscrewing the valve retention nut

Damage to the vehicle may result if these precautions are not taken.

Replacement sensor fitment procedure

Sensor replacement should be carried out by a Land Rover Dealer.

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 ten minutes.

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

Type approval numbers

The TPMS devices comply with part 15 of the FCC rules and RSS-210. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept interference received, including interference that may cause undesired operation.

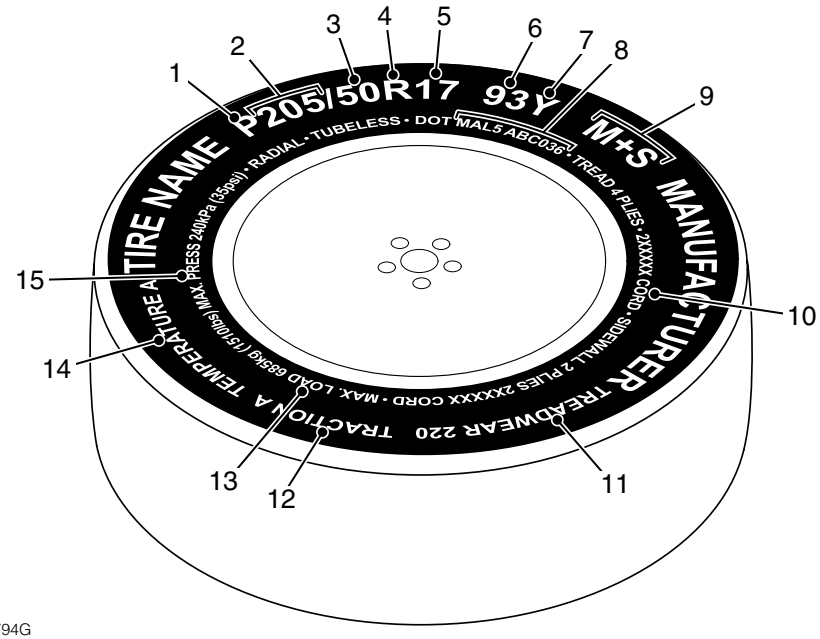
Changes or modifications not expressly approved by the manufacturer could void the users authority to operate the equipment.

The TPMS radio frequency approval numbers for the USA and Canada are:

USA FCC ID: KR5S120123, KR55WK47594

Canada IC: 267T-S120123, 267T-5WK47594

TIRE MARKINGS



H5794G

P (1)

The **P** indicates the tire is for passenger vehicles.

Tire width (2)

This three-digit number gives the width in millimetres of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Aspect ratio (3)

This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width (this is also known as the tire profile). The lower the number, the shorter the tire's sidewall.

R (4)

The **R** stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Wheel diameter (5)

This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Load index (6)

This two or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support.

Note: *You may not find this information on all tires because it is not required by law.*

Speed rating (7)

The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 160 km/h to 300 km/h (99 mph to 186 mph). These ratings are listed in the following table.

Note: *You may not find this information on all tires because it is not required by law.*

Letter	Speed Rating	
	km/h	mph
Q	160	99
R	170	106
S	180	112
T	190	118
U	200	124
H	210	130
V	240	149
W	270	168
Y	300	186

U.S. DOT tire identification number (8)

This begins with the letters DOT and indicates that the tire meets all Federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3105 means the 31st week of 2005. The other numbers are marketing codes used at the manufacturer's discretion. This information can be used to contact consumers if a tire defect requires a recall.

M+S (9)

The M+S or M/S indicates that the tire has some mud and snow capability. Most radial tires have these markings, as they have some mud and snow capability.

Tire ply composition and materials used (10)

The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Treadwear number (11)

This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction letter (12)

This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your vehicle on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as AA, A, B, and C.

Maximum load rating (13)

This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

Temperature letter (14)

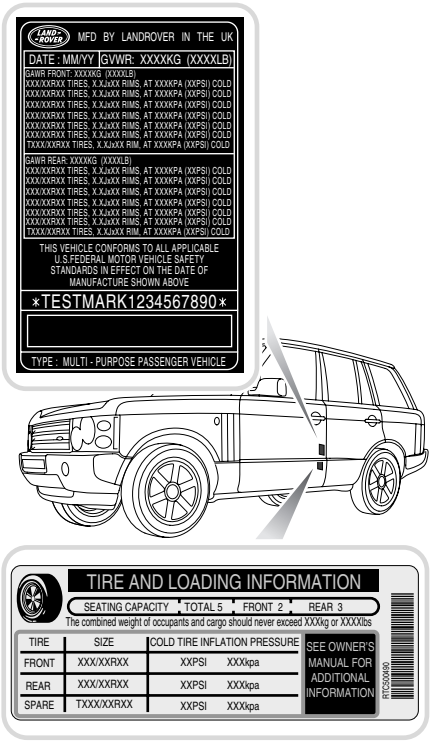
This letter indicates a tire's resistance to heat. The temperature grade is for a tire that is inflated properly and not overloaded. Excessive speed, under-inflation or excessive loading, either separately or in combination, can cause heat build-up and possible tire failure. From highest to lowest, a tire's resistance to heat is graded as A, B, or C.

Maximum permissible inflation pressure (15)

This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

TIRE INFORMATION LABELS

Tire pressure label/placard (USA only)



H6729N

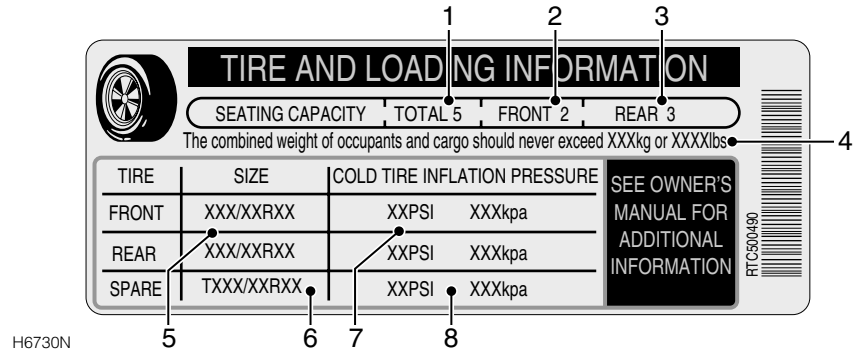
Two tire information labels are visible on the pillar behind the driver's door (also known as the **B** pillar), giving information specific to the wheel and tire equipment fitted to the vehicle when it was built.

The top label contains information relating to tire and wheel sizes and recommended pressures for all wheel and tire combinations.

The lower label contains the following information:

- The maximum number of occupants (1), divided between the front (2) and rear (3) of the vehicle.
- The vehicle capacity weight (4), which includes the weight of the driver, passengers and cargo.
- The size of the tires (5) with which the vehicle was originally equipped and the spare (6).
- Cold inflation pressures for the front and rear tires (7) and for the spare (8).

Note: *The label must not be changed, even if different wheels are fitted at a later stage. Use the table in the Technical Data section of this handbook to record details and pressures of any accessory wheels and tires fitted to your vehicle. See* ***WHEELS AND TIRES, 277****.*



H6730N

Steps for determining correct load limit

WARNING

Do not exceed the vehicle capacity weight (the total weight of driver, passengers and cargo) given. See TIRE INFORMATION LABELS, 232.

1. Locate the statement "The combined weight of occupants and cargo should never exceed XXXX kg or YYYY lb" on your vehicle's placard. See **TIRE INFORMATION LABELS, 232**.
2. Determine the combined weight of the driver and passengers that will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXXX kg or YYYY lb (weight given on placard).
4. The resulting figure equals the available amount of cargo and luggage load capacity. For example, if the XXXX amount equals 1400 lb (635 kg), and there will be five 150 lb (68 kg) passengers in your vehicle, the amount of available cargo and luggage load capacity is 650 lb (295 kg):

   (1400 - 750 (5 x 150) = 650 lbs.)

   (635 - 340 (5 x 68) = 295 kg).
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity calculated in Step 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult **TOWING, 190**, to determine how this reduces the available cargo and luggage load capacity of your vehicle (subtract the trailer tongue load from the available cargo and luggage load capacity).

The number and weight of passengers will affect the cargo and luggage load capacity. In the example above, the cargo and luggage load capacity is 650 lb (295 kg). However, if fewer passengers ride in the vehicle, the luggage load capacity will increase. If this vehicle carries three 150 lb (68 kg) passengers, the cargo and luggage load capacity will increase to 950 lb (431 kg):

3 x 150 = 450 lb, and 1400 - 450 = 950 lb
(3 x 68 = 204 kg, and 635 - 204 = 431 kg).

If the passengers weigh more, the cargo and luggage load capacity will decrease.

WARNING

The weight of accessories must also be subtracted from the available cargo and luggage load capacity. If you are unsure of the weight of any accessories fitted to your vehicle, contact your Land Rover Dealer.

Overloading the vehicle will have an adverse affect on braking and handling characteristics, which could compromise your safety. Overloading a vehicle may also cause tire damage or failure.
Never overload your vehicle.

TIRE GLOSSARY

Cold tire pressure:

Pressure in a tire that has been driven for less than one mile or has been standing for three hours or more.

Maximum inflation pressure:

Maximum air pressure, to which a cold tire may be inflated, this figure (in kPa and lbf/in^2) is moulded onto the sidewall of a tire.

Curb weight:

The weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, coolant and if so equipped, air conditioning and additional weight of optional engine.

Gross vehicle weight:

The maximum permissible weight of a motor vehicle with driver, passengers, payload equipment and towing attachment load (where applicable).

Accessory weight:

The combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Production options weight:

The combined weight of those installed production options weighing over 1.4 kg (3 lb) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levellers, roof rack, heavy duty battery and special trim.

Vehicle capacity weight:

The rated cargo and luggage load plus 68 kg (150 lb) times the vehicle's designated seating capacity.

Maximum loaded vehicle weight:

This is the sum of:

- Curb weight.
- Accessory weight.
- Vehicle capacity weight.
- Production options weight.

Rim:

A metal support for a tire, or a tire and tube assembly, upon which the tire beads are seated.

Bead:

The part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.

CLEANING THE EXTERIOR


H6538G

Caution: Some high pressure cleaning systems are sufficiently powerful to penetrate door/window seals and damage trim and door locks. Never aim the water jet directly at the engine air intake, heater air intakes, body seals (doors, sunroof, windows etc.) or at any component which may be damaged (lamps, mirrors, exterior trim etc.).

Do not use a power wash system in the engine bay area, as it may damage fragile components, electrical systems etc.

Ensure that you read and comply with all warnings and instructions supplied with any cleaning products. Never use cleaning products which are not approved for use on vehicles.

Washing the vehicle

Remove heavy deposits of mud and dirt with a hose, before washing the vehicle.

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

When washing the vehicle:-

- Do not use hot water.
- Only use cleaning products approved for use on vehicles.
- During hot weather, do not wash the vehicle in direct sunlight.

Caution: Substances which are corrosive, such as bird droppings, tree resin, dead insects, tar spots, road salt and industrial fall-out, can damage the vehicle's paintwork. Any such deposits should be removed as soon as possible, to prevent damage to the vehicle's paintwork.

Removing tar spots

Use white spirit to remove tar spots and stubborn grease stains from paintwork. Ensure that after using white spirit, the area is washed immediately with soapy water to remove all traces of spirit.

Underbody maintenance

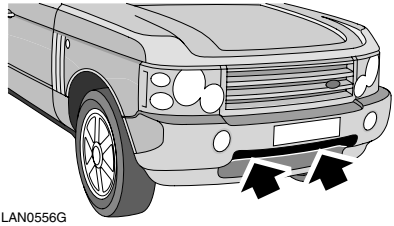
Corrosive materials used on highways to control snow and ice, as well as accumulations from off-road driving or wading in salt water, can collect on the vehicle's underbody. If these materials are not removed, accelerated corrosion can occur. Regularly flush the underbody with plain water and pay particular attention to areas where mud and debris collect.

If damage or corrosion is detected, have the vehicle checked by a Land Rover Dealer as soon as possible.

Cleaning after driving off-road

Caution: After driving off-road, ensure that areas around air intakes and the front grille are clean and clear of debris. Failure to do so may cause the engine to overheat.

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.



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This should include using a low pressure hose to flush water through the lower grille area (arrowed in illustration), to clean the cooling system components.

Repairing minor paint damage

Regularly inspect the paintwork for damage. and any stone chips, fractures or deep scratches in the paint/bodywork should be repaired promptly. Bare metal will corrode quickly and, if left untreated, can result in expensive repairs.

Minor chips and scratches can be touched-up using materials available from a Land Rover Dealer. Larger areas of damage will require professional repair and you should consult a Land Rover Dealer.

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

The rear screen and mirror glass should only be cleaned using soapy water and a soft cloth. This will avoid damaging the reflective surface of the mirror and the heating elements and antenna in the rear screen.

Never use abrasive cleaning products or metal ice scrapers on the mirrors or the front/rear screens.

CLEANING THE INTERIOR

WARNING

Ensure that you read all of the information and instructions for use, which are provided with cleaning products. Some products contain substances that are harmful and can cause health problems if used incorrectly.

Caution: Ensure that you read all of the information and instructions for use, which are provided with cleaning products. Some products, if used incorrectly, can cause damage to the interior surfaces of the vehicle.

Plastic and cloth

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

WARNING

Do not polish the instrument panel. Polished surfaces are reflective and may interfere with the driver's view.

Leather

Caution: Only use cleaning products specifically designed for use on leather. Do not use chemical, alcohol or abrasive materials, as they will cause rapid deterioration of the leather. The use of products which are not approved, will invalidate your warranty.

If you are in any doubt as to which products to use, consult your Land Rover Dealer.

It is recommended that leather is cleaned and protected at least every six months.

Land Rover recommend the use of leather cleaning kit BAC500490. Use only in accordance with the instructions.

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

Carpets and fabrics

Only clean with a dilute solution of an approved upholstery cleaner. It is advisable to test all cleaners on a concealed area before use.

Instrument pack, clock and audio equipment

Only use a soft, dry cloth to clean the instrument pack, clock and audio equipment. Do not use cleaning fluids or sprays.

Seat belts

Extend the seat belts fully, then use warm water and a non-detergent soap to clean. Allow the seat belts to dry naturally while fully extended.

WARNING

Do not allow any water, cleaners or fabric from cloths, to enter the seat belt mechanism. Any substance which enters the mechanism may affect the performance of the seat belt in an impact.

Note: *When cleaning the seat belt, take the opportunity to examine the webbing for damage/ wear. Any wear or damage should be reported to, and rectified by, a Land Rover Dealer.*

Airbag module covers

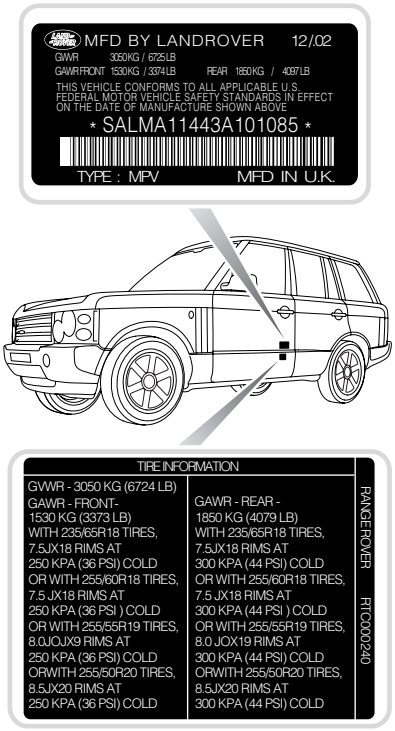
WARNING

Airbag covers should only be cleaned using a slightly dampened cloth and a small amount of upholstery cleaner.

Do not allow the airbag covers or surrounding areas, to become contaminated with liquids. Any substance which enters the mechanism, can prevent correct deployment of an airbag during an impact.

VEHICLE IDENTIFICATION NUMBER (VIN)

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



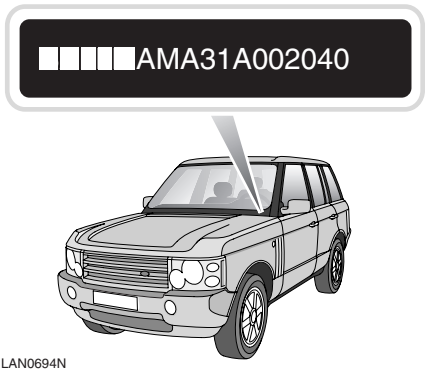
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The VIN and other information concerning the vehicle can be found on the certification label affixed to the lock face of the front left-hand door.

WARNING

Do not exceed the gross weight or axle loads stated on the certification label attached to the vehicle. Exceeding allowable vehicle and axle loads will increase the risk of tire or suspension failure, increase vehicle brake stopping distance, and adversely affect vehicle handling and stability which may result in a crash or roll-over.

Federal VIN plate



LAN0694N

In addition, the Federal VIN plate is mounted to the vehicle body so that it is visible through the lowest part of the left side of the windshield.