GENERAL INFORMATION

Regular systematic maintenance is the key to ensuring the 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 maintenance requires specialised knowledge and equipment, and should be entrusted to a Land Rover Dealer/Authorised Repairer.

Service Portfolio

The Service Portfolio book includes a Service Record section, which allows for a recording of all the servicing and inspections that are carried out on the vehicle. This section of the book also has an area for brake fluid changes to be recorded.

Ensure your service provider signs and stamps the book after each service and inspection.

Owner Maintenance

CAUTION

Any significant or sudden drop in fluid levels, or uneven tyre wear, should be reported to a qualified technician without delay.

In addition to the routine maintenance, a number of simple checks must be carried out more frequently. These checks are detailed in the following sections.

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.

Weekly checks

- Engine oil level. See **ENGINE OIL CHECK** (page 212).
- Engine coolant check. See **ENGINE COOLANT CHECK** (page 213).
- Brake fluid level. See **BRAKE FLUID CHECK** (page 215).
- Power steering fluid level. See **POWER STEERING FLUID CHECK** (page 216).
- Screen washer fluid level. See **WASHER FLUID CHECK** (page 217).
- Tyre pressures and condition.
- Operate air conditioning.

Note: *The engine oil level must be checked more frequently if the vehicle is driven for long periods at high speeds.*

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 your Dealer for advice.

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. They may also cause 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 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 practised by Land Rover Dealers/Authorised Repairers.

Safety in the garage

WARNINGS

If the vehicle has been driven recently, do not touch exhaust and cooling system components until the engine has cooled.

Never leave the engine running in an unventilated area - exhaust gases are poisonous and extremely dangerous.

Do not work beneath the vehicle with the wheel changing jack as the only means of support.

Keep your hands and clothing away from drive belts, pulleys and fans.Some fans may continue to operate after the engine has stopped.

Remove metal wrist bands and jewellery, before working in the engine compartment. Do not touch electrical leads or components while the engine is running, or with the starter switch turned on.

Do not allow tools or metal parts of the vehicle to make contact with the battery leads or terminals.

Fuel system

WARNINGS

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 serious risk of fire.

Keep sparks and naked lights away from the engine compartment.

Wear protective clothing, including, where practicable, gloves made from an impervious material.

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, clutch and power steering fluid, petrol, diesel, engine oil and windscreen washer additives.

For your own safety, always read and obey all instructions printed on fluid container labels.

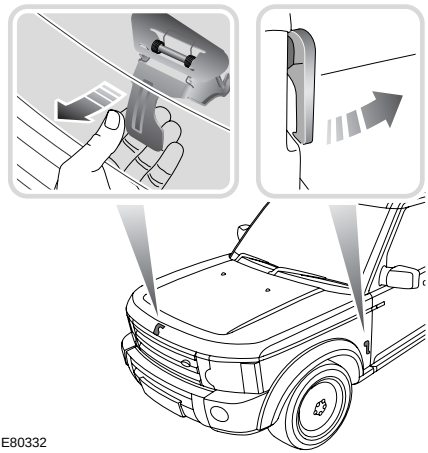
Used engine oil

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 other chemicals.

OPENING AND CLOSING THE BONNET

Opening the bonnet



E80332

1. Pull the bonnet release handle located on the left-hand side of the vehicle.
2. Lift the bonnet safety catch lever located below the centre point of the words LAND ROVER, and raise the bonnet.

Closing the bonnet

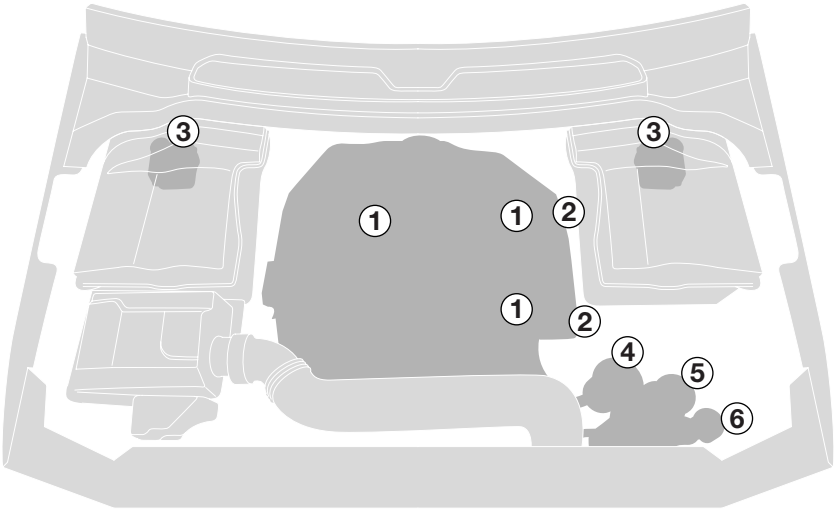
WARNING

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

Lower the bonnet until the safety catch engages. Using both hands, press the bonnet down until the catches click.

Check that both catches are fully engaged by attempting to lift the front edge of the bonnet, which should be free from any movement.

ENGINE COMPARTMENT OVERVIEW



E89409

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

WARNING

While working in the engine compartment, always observe the safety precautions listed under Safety in the garage. See **GENERAL INFORMATION** (page 207).

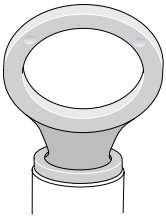
Do not drive the vehicle if there is a possibility that leaked fluid will come into contact with a hot surface, such as the exhaust. A resulting fire may cause death or serious injury.

1. Engine oil filler cap (black)



E89410

2. Engine oil dipstick (yellow)



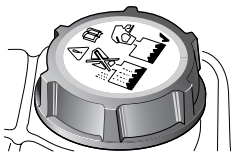
E89412

3. Brake fluid reservoir cap (yellow)



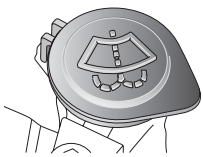
E83862

4. Coolant reservoir cap (yellow)



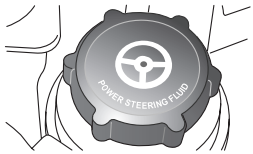
E83863

5. Washer fluid reservoir cap (blue)



E83864

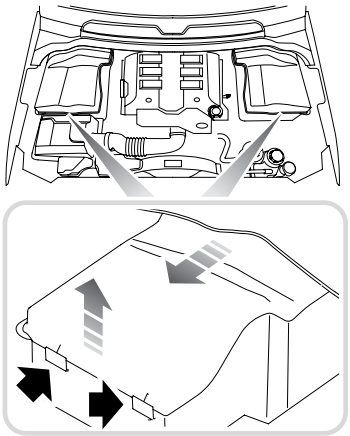
6. Power steering fluid reservoir cap (black)



E83865

UNDER BONNET COVERS

Removal



E80386

1. Press the two tabs to release the front edge of the cover.
2. Lift the front edge of the cover and slide forwards.

Fitting

CAUTION

Before refitting the engine covers, ensure that no pipes, cables, or other items have been trapped between the cover and casing.

1. Slide the rear edge of the cover under the rubber trim fitted to the scuttle panel.
2. Make sure the front edge of the cover in flush to the casing and then press down until the tabs click into place.

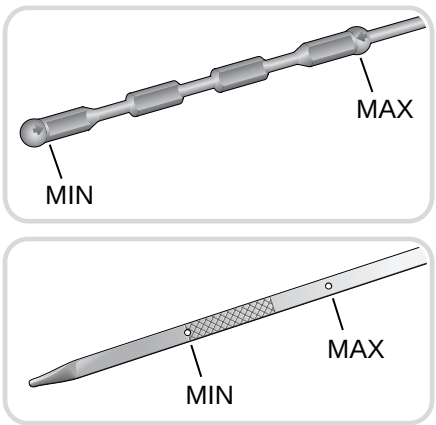
ENGINE OIL CHECK

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

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

Checking the oil level

Note: *If you need 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.*



LAN1169

1. Withdraw the dipstick and wipe the blade clean with a lint-free cloth.
2. Fully re-insert the dipstick and then withdraw again to check the oil level. Never allow the oil level to fall below the lower mark or hole on the dipstick.

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

- Is nearer to the maximum than the minimum, add no oil.
- Is nearer to the minimum than the maximum, add half a litre (one pint) of oil.
- Is below the minimum, add one litre (two pints) of oil and, after five minutes, re-check the level.

Topping up the oil

CAUTIONS

Your vehicle warranty may be invalidated if damage is caused by using oil that does not meet the required specification.

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

Overfilling with oil could result in severe engine damage. Oil should be added in small quantities and the level re-checked to ensure that the engine is not overfilled.

1. Remove the oil filler cap.
2. Add oil to maintain the level between the **MIN** and **MAX** marks or holes on the dipstick. Clean up any oil spilled during topping-up.
3. Check the oil level again after five minutes.

It is essential to use the correct specification oil, and to ensure it is suitable for the climatic conditions in which the vehicle is to be operated.

Note: *The approximate quantity of oil required to raise the level from **MIN** to **MAX** on the dipstick is 1.5 litres (2.64 pints).*

Engine oil specification

Variant	Specification
Diesel vehicles	SAE 5W-30 meeting specification WSS-M2C913-B only
Petrol vehicles	WSS-M2C913-B [1]

[1] If you are unable to find an oil that meets the specification defined by WSS-M2C913-B, you must use an SAE 5W-30 oil meeting specification ACEA:A3/B3.

Land Rover recommends:

Castrol

ENGINE COOLANT CHECK

If the fluid in the coolant reservoir drops below the recommended level, an amber warning indicator lamp in the instrument pack illuminates. Stop the vehicle and check the coolant level.

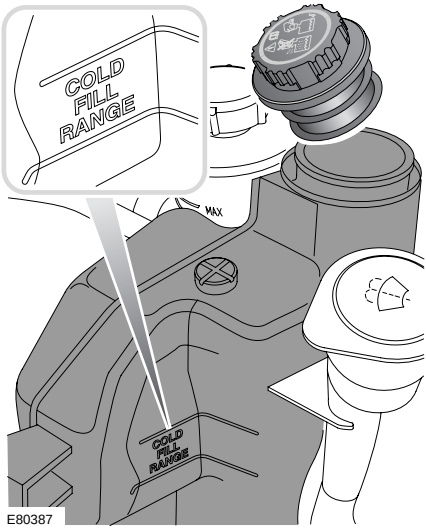
On vehicles with a message centre, the message **LOW COOLANT LEVEL** or **COOLING SYSTEM FAULT MONITOR GAUGE** is displayed.

Checking the coolant level

CAUTION

Running the engine without coolant will cause serious engine damage.

The coolant level in the expansion tank should be checked at least weekly (more frequently in high mileage or arduous operating conditions). Always check the level when the system is cold.



E80387

Ensure the coolant level is maintained between the level indicator marks located above and below **COLD FILL RANGE**, on the side of the expansion tank. This should be viewed by standing in front of the vehicle. Ignore any coolant visible in the top section of the tank.

If the level has fallen appreciably, suspect leakage in the system, or overheating, and arrange for the vehicle to be examined by a qualified technician.

Topping up the coolant

WARNINGS

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

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

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

CAUTION

When travelling in territories where the water supply contains salt, always ensure you carry a supply of fresh (rain or distilled) water. Topping up with salt water will cause serious engine damage.

Top-up to the upper level indicator mark located above **COLD FILL RANGE**, on the side of the expansion tank. Use only a 50% mix of water and Castrol SF antifreeze.

Ensure the cap is tightened fully after top-up is completed by turning the cap until the ratchet cap clicks.

Note: *In an emergency - and only if the approved 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 qualified technician.*

Antifreeze

WARNINGS

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.

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

CAUTIONS

The use of non-approved antifreeze will have an adverse effect on the engine cooling system and therefore engine durability.

CAUTIONS

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.

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 and completely renewed every ten years, regardless of distance travelled. Failure to do so may cause corrosion of the radiator and engine components.

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).

BRAKE FLUID CHECK

WARNINGS

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

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

Do not drive the vehicle with the fluid level below the **MIN** mark.

If the quantity of fluid in the brake reservoir drops below the recommended level, a red warning indicator in the instrument pack will illuminate or the message **CHECK BRAKE FLUID** will be displayed in the message centre.

Note: *If the warning indicator illuminates, or the message is displayed while the vehicle is being driven, stop the vehicle as soon as safety permits by gently applying the brakes.*

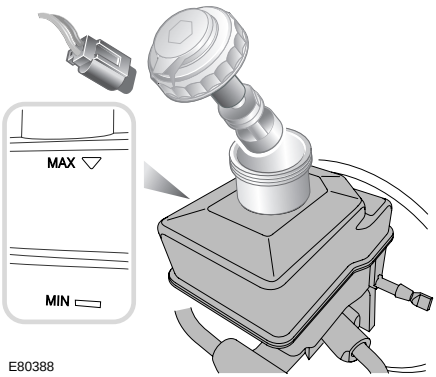
Check and top-up the fluid level if necessary.

Checking the fluid level

WARNING

If brake pedal travel is unusually long or if there is any significant loss of brake fluid, seek qualified assistance immediately. Driving under such conditions could result in extended stopping distances or complete brake failure.

With the vehicle on level ground, check the fluid level at least once per week (more frequently in high mileage or arduous operating conditions).



Look at the level through the side of the transparent reservoir without removing the filler cap.

The brake fluid level must be between the **MIN** and the **MAX** marks.

The fluid level may fall slightly during normal use as a result of brake pad wear but should never be allowed to fall below the **MIN** mark.

Topping up the fluid

CAUTIONS

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.

Only use new fluid from an airtight container. 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.

1. Clean the filler cap before removing to prevent dirt from entering the reservoir.
2. Disconnect the electrical lead.
3. Unscrew the cap (1/8 turn) and remove.
4. Top-up the reservoir to the **MAX** mark using Shell DOT4 ESL brake fluid. If Shell DOT4 ESL is not available, a low viscosity DOT4 brake fluid that meets ISO 4925 class 6 and Land Rover LRES22BF03 requirements may be used.
5. Replace the cap and reconnect the electrical lead, ensuring that the lead points to the centre-line of the vehicle.

POWER STEERING FLUID CHECK

WARNINGS

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 the 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.

Checking the fluid level

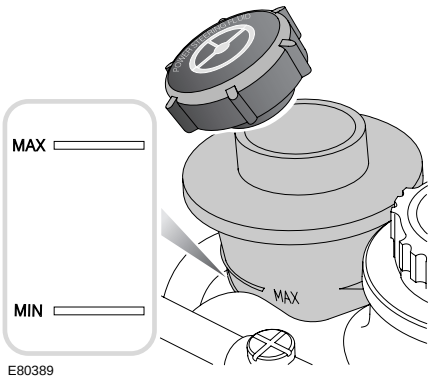
CAUTIONS

Do not start the engine if the fluid level has dropped below the **MIN** mark. Severe damage to the steering pump could result.

Seek qualified assistance immediately if there is a large or sudden drop in the fluid level.

If loss is slow, the reservoir may be topped-up to the upper level mark to enable the vehicle to be driven to a repair facility for examination. However, it is recommended that you seek qualified assistance before driving the vehicle.

Check and top-up the fluid with the vehicle on level ground, engine switched off and the system cold. Ensure that the steering wheel is not turned after stopping the engine.



E80389

Look at the level through the side of the transparent reservoir without removing the filler cap.

The fluid level should be between the **MIN** and the **MAX** marks.

Topping up the fluid

CAUTIONS

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.

Do not fill the reservoir above the **MAX** mark.

1. Clean the filler cap before removing to prevent dirt from entering the reservoir.
2. Remove filler cap.
3. Using Texaco Cold Climate PAS fluid, top-up the reservoir until the fluid level is between the **MIN** and **MAX** marks.
4. Replace the filler cap.

WASHER FLUID CHECK

WARNINGS

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

If the vehicle is operated in temperatures below 4°C (40°F), use a washer fluid with frost protection. In cold weather, failure to use a washer fluid with frost protection, could result in impaired vision and increase the risk of a vehicle crash.

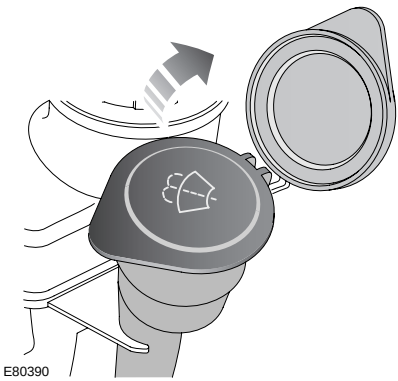
CAUTIONS

Do not use an antifreeze or vinegar/water solution in the washer reservoir - antifreeze will damage painted surfaces, while vinegar can damage the windscreen washer pump.

CAUTIONS

Body panels may suffer discolouration as a result of screen wash 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.

If the quantity of fluid remaining in the washer reservoir drops to less than one litre, an amber warning indicator in the instrument pack will illuminate or the message **LOW WASHER FLUID** will be displayed in the message centre.



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

Check and top-up the reservoir level at least once per week. In cold climates, always top-up with screen washer fluid to prevent freezing. Operate the washers to check that the nozzles are clear and properly directed.

TECHNICAL SPECIFICATIONS

Lubricants and fluids

Part	Variant	Specification
Engine oil	Diesel vehicles	SAE 5W-30 meeting specification WSS-M2C913-B only
Engine oil	Petrol vehicles	WSS-M2C913-B [1]
Main gearbox oil	Manual transmission	Castrol MTF BOT338
Main gearbox oil	Automatic transmission	Shell ATF M1375.4
Transfer gearbox oil	All vehicles	Shell TF 0753
Front differential oil	All vehicles	SAF XO
Rear differential oil	Non-locking	SAF XO
Rear differential oil	Electronic locking	Castrol SAF Carbon Mod Plus
Power steering fluid	All vehicles	Texaco Cold Climate PAS fluid
Brake fluid	All vehicles	Shell DOT4 ESL [2]
Screen washer	All vehicles	Screen wash with frost protection
Coolant	All vehicles	50% mixture of Castrol SF antifreeze and water.

[1] If you are unable to find an oil that meets the specification defined by WSS-M2C913-B, you must use an SAE 5W-30 oil meeting specification ACEA:A3/B3.

[2] If Shell DOT4 ESL is not available, a low viscosity DOT4 brake fluid that meets ISO 4925 class 6 and Land Rover LRES22BF03 requirements may be used.

Capacities

CAUTION

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

Adjustments

Item	Setting
Brake pedal free travel	Not adjustable
Clutch pedal free travel	Not adjustable

Item	Variant	Capacity
Fuel tank	Diesel vehicles	82 litres (18 gallons)
	Petrol vehicles	86 litres (19 gallons)
Engine oil (dry fill)	Diesel vehicles	6.55 litres (11.53 pints)
	V8 Petrol vehicles	8.0 litres (14.10 pints)
	V6 Petrol vehicles	6.4 litres (12.08 pints)
Engine oil refill and filter change	Diesel vehicles	5.45 litres (9.6 pints)
	V8 Petrol vehicles	7.7 litres (13.5 pints)
	V6 Petrol vehicles	5.7 litres (10 pints)
Engine oil **MIN** to **MAX** on dipstick	Diesel vehicles	1.5 litres (2.64 pints)
	V8 Petrol vehicles	1.5 litres (2.64 pints)
	V6 Petrol vehicles	1.4 litres (2.46 pints)
Manual gearbox	All vehicles	1.6 litres (2.6 pints)
Automatic gearbox	All vehicles	Filled for life
Transfer box	All vehicles	1.5 litres (2.64 pints)
Front differential	All vehicles	0.66 litres (1.2 pints)
Rear differential - non-locking	All vehicles	1.16 litres (2.0 pints)
Rear differential - electronic locking	All vehicles	1.61 litres (2.8 pints)
Washer reservoir	All vehicles	5.0 litres (8.8 pints)
Cooling system (fill from dry)	Diesel vehicles	18.0 litres (31.7 pints)
	V8 Petrol vehicles	14.0 litres (24.63 pints)
	V6 Petrol vehicles	17.0 litres (29.91 pints)
Cooling system (refill)	Diesel vehicles	8.0 litres (14.1 pints
	V8 Petrol vehicles	9.5 litres (16.7 pints)
	V6 Petrol vehicles	8.5 litres (15 pints)