

Maintenance

GENERAL INFORMATION

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

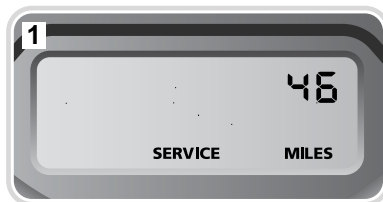
Maintenance is the owner's responsibility and you must ensure that owner maintenance operations, oil services, inspections and brake fluid and coolant changes are carried out when required and according to the manufacturer's recommendations.

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.

Service intervals

An upcoming service interval will be notified to the driver in one of two ways. As a distance left to travel, or a number of days remaining. Once the distance or time are exceeded the display will show a negative value (-) to indicate that a service is overdue.

When the ignition is turned on the Odometer display will show the service information for five seconds.



E86516

1. Distance to service.
2. Distance by which service is overdue.



E86517

1. Number of days to service.
2. Number of days by which service is overdue.

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One or both types of service interval (distance and time) may be displayed. For example, if an engine oil service is due based on mileage, and a brake fluid change is due based on time, both distance and time countdowns will display.

Passport to Service

The Passport to Service book includes a Service Record section, which enables a record to be kept 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. Advice is given on the pages that follow.

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 148).
- Engine coolant check. See **ENGINE COOLANT CHECK** (page 150).

- Brake fluid level. See **BRAKE FLUID CHECK** (page 151).
- Power steering fluid level. See **POWER STEERING FLUID CHECK** (page 153).
- Screen washer fluid level. See **WASHER FLUID CHECK** (page 154).
- Tyre pressures and condition.
- Operate air conditioning.

Note: The engine oil level should be checked more frequently if the vehicle is driven for prolonged 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 a Land Rover 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.

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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.

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.

WARNINGS



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.



Ensure sparks and naked lights are kept 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, engine oil and windscreen washer additives.

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

Used engine oil

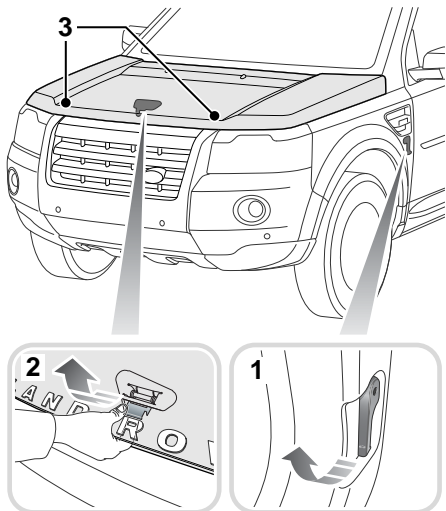
Prolonged contact with engine oil may cause serious skin disorders, including dermatitis and cancer of the skin. Always wash thoroughly after contact.

Maintenance



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

OPENING AND CLOSING THE HOOD



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Opening

Pull the hood release lever **1**.

Lift the hood safety catch lever **2**, and raise the hood.

Closing

WARNINGS



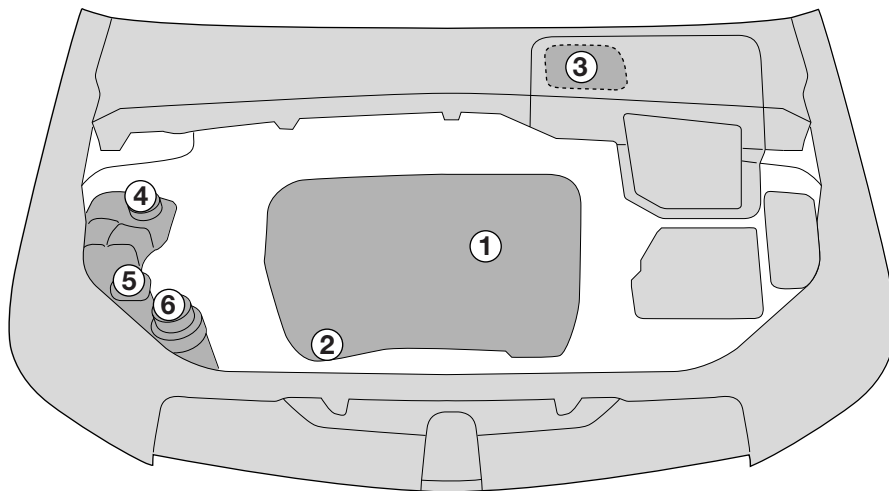
Do not drive with the hood retained by the safety catch alone.

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

Check that both catches **3** are engaged by trying to lift the front edge of the hood.

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ENGINE COMPARTMENT OVERVIEW



E84852

WARNINGS



While working in the engine compartment, always observe the safety precautions listed under Safety in the garage. See **GENERAL INFORMATION** (page 143).



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.

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1. Engine oil filler cap (Black)



E84850

2. Engine oil dipstick (Yellow)



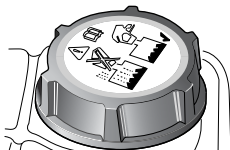
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3. Brake fluid reservoir cap (Yellow)



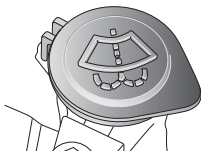
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4. Coolant reservoir cap (Yellow)



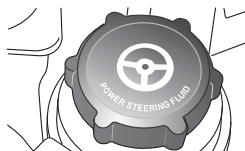
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5. Washer fluid reservoir cap (Blue)



E83864

6. Power steering fluid reservoir cap (Black)



E83865

ENGINE OIL CHECK

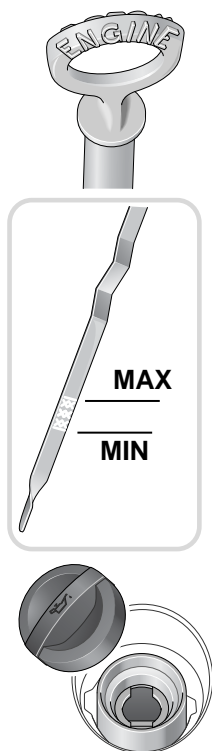
The oil consumption of an engine is influenced by many factors. Under high loads an engine will consume more oil than usual.

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

Checking the oil level

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.

Maintenance



E84849

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

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

- Is nearer to the upper mark or notch than the lower, add no oil.
- Is nearer to the lower mark or notch than the upper, add one pint (half a litre) of oil.
- Is below the lower mark or notch, add two pints (one litre) of oil and re-check the level after a further five minutes.

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 could 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. Unscrew the oil filler cap.
2. Add oil to maintain the level between the **MIN** and **MAX** marks or notches on the dipstick. Clean up any oil spilled during topping-up.
3. Check the oil level again after 5 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 2.5 pints (1.2 litres).

Engine oil specification

Specification
Use only SAE 5W-30 oils conforming to:- ACEA A1/B1 + ILSAC GF3, or ILSAC specification GF-4, or ACEA A5/B5.

Land Rover recommends Castrol oils.

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ENGINE COOLANT CHECK

If the quantity of fluid in the coolant reservoir drops below the recommended level, the message **LOW COOLANT LEVEL** will be 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.



Ensure the coolant level is maintained between the level indicator marks located on the side of the expansion tank.

If the level has fallen appreciably, suspect leakage 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 on the side of the expansion tank. Use only a 50% mix of water and Texaco XLC antifreeze.

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.*

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

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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.



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.

Canada only



USA only



If the quantity of fluid in the brake reservoir drops below the recommended level, a red warning indicator in the instrument pack will illuminate.

Note: *If the warning indicator illuminates 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.

Maintenance

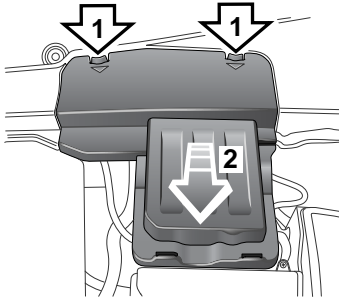
Checking the fluid level

WARNING



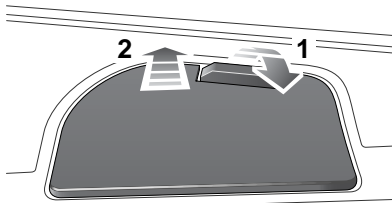
Seek qualified assistance immediately if brake pedal travel is unusually long or if there is any significant loss of brake fluid. Driving under such conditions could result in extended stopping distances or complete brake failure.

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



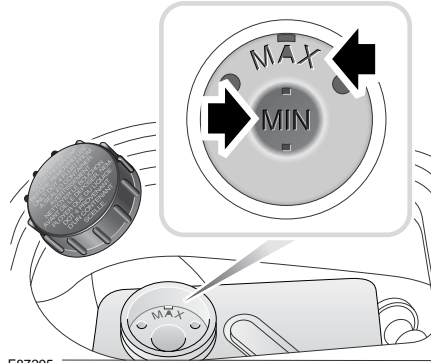
E83617

1. Release the two catches and lift the rear of the cover.
2. Slide the cover forward and lift it off completely.



E84161

1. Release the catch.
2. Remove the cover.



E87295

3. Clean the filler cap before removing to prevent dirt from entering the reservoir.
4. Remove the filler cap.
5. The brake fluid level should be between the **MIN** and the **MAX** marks.

The fluid level may drop slightly during normal use as a result of brake pad wear but should not be allowed to drop 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).

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1. 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.
2. Replace the cap.
3. Fit the reservoir cover in the reverse order of removal.

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.



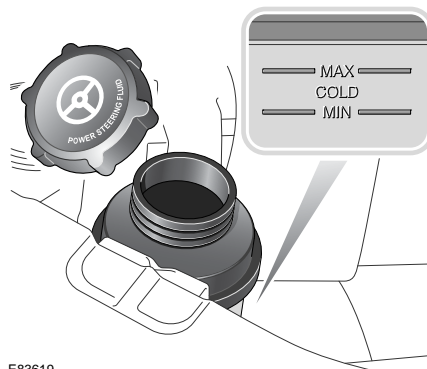
If the fluid comes into contact with the skin or eyes, rinse immediately with plenty of water.

Checking the fluid level

CAUTIONS

- ⚠ The engine must not be started 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 noticeable drop in the fluid level. Severe damage to the steering pump could result.
- ⚠ If fluid 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.



E83619

The level of fluid can be seen through the translucent body of the reservoir.

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 Pentosin CHF202 fluid, top-up the reservoir until the fluid level is between the **MIN** and **MAX** marks.
 4. Replace filler cap.

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WASHER FLUID CHECK

WARNINGS



Some screen washer products are inflammable, particularly if high or undiluted concentrations are exposed to sparking. Do not allow screen washer 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

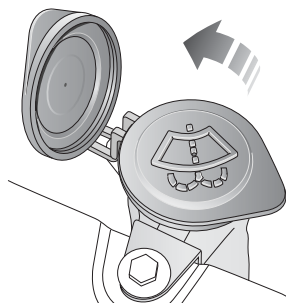


Do not use an antifreeze or vinegar/water solution in the washer reservoir - antifreeze will damage painted surfaces, while vinegar can damage the windscreen washer pump.



Body panels may suffer discolouration as a result of screen washer fluid 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, the message **LOW WASHER FLUID** will be displayed in the message centre.



E83620

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

Check and top-up the reservoir level at least every week. Always top-up with screen washer fluid to prevent freezing.

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

Topping up the fluid

1. Clean the filler cap before removing to prevent dirt from entering the reservoir.
2. Remove filler cap.
3. Top-up the reservoir until the fluid is visible in the filler neck.
4. Replace filler cap.

Washer reservoir capacity

- Models without headlamp wash - 3.1 litres (6.5 pints).
- Models with headlamp wash - 5.8 litres (12 pints).

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TECHNICAL SPECIFICATIONS

Lubricants and fluids

Part	Variant	Specification
Engine oil	All vehicles	SAE 5W-30 oils conforming to:- ACEA A1/B1 + ILSAC GF3, or ILSAC specification GF-4, or ACEA A5/B5.
Main gearbox oil	Automatic transmission	Esso JWS3309US
Power transfer unit fluid	All vehicles	Castrol BOT118 +
Rear differential oil	All vehicles	Castrol EPX
Rear differential on demand coupler fluid	All vehicles	STAT OIL SL01-301
Power steering fluid	All vehicles	Pentosin CHF202
Brake fluid	All vehicles	Shell DOT4 ESL ¹
Screen washer	All vehicles	Screen wash with frost protection
Coolant	All vehicles	50% mixture of Texaco XLC antifreeze and water.

¹ 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.

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Capacities

Item	Variant	Capacity
Fuel tank	All vehicles	70 litres (18.5 gallons)
Engine oil refill including filter change	All vehicles	7.5 litres (16.5 pints)
Engine oil MIN to MAX on dipstick	All vehicles	1.2 litres (2.5 pints)
Automatic gearbox	All vehicles	7 litres (15 pints)
Power transfer unit	All vehicles	0.75 litres (1.6 pints)
Rear differential	All vehicles	0.7 litres (1.5 pints)
Rear differential coupling unit	All vehicles	0.65 litres (1.4 pints)
Washer reservoir	With headlamp wash	5.8 litres (12 pints)
Washer reservoir	Without headlamp wash	3.1 litres (6.5 pints)
Cooling system (fill from dry)	All vehicles	8.0 litres (17 pints)

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.
