

- Before I dip, is there anything on my side of the road

– that I might endanger?

– that might endanger me?

Examples include a stationary vehicle, a cyclist, a pedestrian, or an unlit skip.

When your headlights are on full beam

- dip early enough to avoid dazzling oncoming drivers, but not too early
- check the left-hand verge before you dip.



If you're dazzled

If the headlights of oncoming vehicles dazzle you, slow down and, if necessary, stop. Don't look directly at oncoming headlights.

Don't retaliate by leaving your lights on full beam and dazzling the oncoming driver.

On a left-hand bend

Dip earlier. Your headlights will cut straight across the eyes of anyone coming towards you. On a right-hand bend this might not happen, or it won't happen so soon.



Section fourteen

→ Basic maintenance

This section covers

- Vehicle checks
- Fuel
- Oils and coolant
- Steering and suspension
- Brakes
- Tyres
- Electrical systems
- Basic fault-finding

➡ Vehicle checks

Everyday vehicle checks

Before driving, you should check your vehicle to make sure it's safe and ready for the road.

Make a habit of checking daily that

- the windscreens, windows and mirrors are clean
- all lights (including brake lights and indicators) are working; replace any dead bulbs immediately (it's a good idea to carry spare fuses and bulbs)
- the brakes are working; **don't drive with faulty brakes.**

Periodic checks

These checks are necessary both for safety and for good vehicle maintenance.

Check and top up if necessary

- engine oil
- water level in the radiator or expansion tank
- brake fluid level
- battery; top up with distilled water if necessary (some batteries are maintenance-free and don't need topping up)
- windscreen and rear window washer bottles.

You should also check tyres and make sure they're

- legal; they must have the correct tread depth and be free of dangerous cuts and defects
- at the right pressure.

How often you make the checks depends on how much you drive. Consult your vehicle handbook. If you drive a lot, you may need to do these every day.



Regular servicing

Have your vehicle serviced regularly. The vehicle handbook will tell you when servicing is recommended.

Having your vehicle serviced according to its maintenance schedule helps the engine work more efficiently, so saving fuel and reducing the effect on the environment by cutting emissions.

➡ Fuel

Make sure you have enough fuel

Don't let the fuel in your tank run too low. This can cause running problems and even damage the engine. Fill up before you reach that stage. Some vehicles have a warning light which shows when the fuel is getting low.

Fuel cans

If you carry reserve fuel in a can, make sure the can is of an approved type for carrying fuel. It's illegal and dangerous to carry fuel in a container not intended for that purpose.



Motorway driving

Before driving onto a motorway, make sure you have at least enough fuel to reach the next service area. It's better if you have much more than this, in case you encounter unexpected delays or there are problems at the service area you planned to use.

Driving at higher speeds tends to use more fuel and there can sometimes be quite a distance between service areas.

Petrol engines

All modern petrol-engined vehicles are fitted with a catalytic converter to help reduce exhaust emissions. These vehicles must use unleaded fuel for the system to operate correctly.

LPG and natural gas engines

Liquefied petroleum gas (LPG) and natural gas can both be used in spark ignition engines. Unlike petrol and diesel, the fuel is gaseous at room temperature and is stored in steel tanks. These tanks can add extra weight to the vehicle, particularly if it has two tanks and is able to operate on gas or conventional fuels.

Refuelling differs from petrol and diesel vehicles in that the refuelling hose is locked in place to create a pressurised, sealed system.

If you're planning a long trip, it's worth remembering that not all garage forecourts have LPG refuelling points. Satellite navigation (sat-nav) systems can usually direct you to the nearest LPG refuelling point; if you don't have that facility, make a note of gas-ready service stations before you leave home. Always make sure that you have enough fuel to reach your first refuelling stop.

Electric cars

Electric cars use an on-board battery and convert energy stored in the cells to provide power. They require recharging from the mains – either at home or at on-street charging points.

Remember that current electric cars have a limited range before they require a recharge. Make sure that your vehicle is fully charged before you start your journey and factor in any additional time that charging the battery will require if you need to power up.

Diesel engines

With the development of clean diesel technology and good fuel economy, diesel vehicles are environmentally friendly, provided the engine is tuned correctly.

Diesel particulate matter can be harmful, but most diesel cars are now fitted with a diesel particulate filter (DPF), a device that filters particulates from exhaust gases.

These filters reduce diesel particulate emissions, helping vehicles to meet European emission standards and improving air quality and public health. It's therefore important to maintain the vehicle's DPF in accordance with the manufacturer's recommendations.

Take care to avoid spilling diesel fuel when refuelling, since it will create an extremely slippery surface.

Take care never to put petrol into a diesel vehicle, or diesel fuel into a petrol-engined vehicle. Look carefully at the pump you're going to use.



→ Oils and coolant

Engine oil

Oil is necessary to lubricate your engine. You need to keep the oil at the level recommended by the vehicle manufacturer. Check regularly and top up the oil when necessary, especially before a long journey.

Ideally you should check the oil level every time you fill up with fuel.



How to check the oil level

The dipstick will tell you the amount of oil in the engine.

Some manufacturers recommend that you check the oil while the engine is cold, whereas others suggest you check it while it's warm. Your vehicle handbook will give you this information.

You'll need a clean, dry cloth to wipe the dipstick.

- Ensure the vehicle is on a level area and not on a slope.
- Look for the dipstick on the engine block of your vehicle.
- Take particular care if your vehicle is fitted with automatic transmission. There may be an additional dipstick for checks on the level of transmission oil. Consult the vehicle handbook.

Oil changes

Follow the manufacturer's recommendations. Remember to have the oil filter changed at the same time as the oil.

Oil is toxic and, if it comes into contact with skin, can cause skin problems. Use protective gloves or a barrier cream and always wash oil off your hands immediately.

Keep containers storing oil out of reach of children.

Oil use

The amount of oil an engine will use depends on

- the type of engine
- the amount of wear
- how you drive.

Don't

- run the engine when the oil level is below the minimum mark
- add so much oil that the level rises above the maximum mark. You'll create excess pressure that could damage the engine seals and gaskets, and cause oil leaks. Moving internal parts can hit the oil surface in an overfull engine and may do serious or even terminal damage.

Warning light

If the oil pressure warning light on your instrument panel comes on when you're driving, stop as soon as you can and check the oil level.

The oil in your engine has to perform several tasks at high pressures and temperatures up to 300°C. It helps to



- resist wear on the moving surfaces

- counteract the corrosive acids formed as the hydrocarbons in the fuel are burnt in the engine

- keep the engine cool.

Over time the oil will become contaminated with combustion products, metal particles and moisture. Regular oil and filter changes are necessary to ensure the engine is protected by clean oil.

Make sure you always use the lubricants recommended in the vehicle handbook.

Coolant

Most vehicles today use a mixture of water and anti-freeze to make up the coolant. This stays in the radiator all year round and helps to keep the engine comparatively cool while it's running. The anti-freeze stops the coolant from freezing in cold conditions.

The anti-freeze also contains a corrosion inhibitor, which reduces rust and oxidation and prolongs the life of the system. In cold weather, keep the recommended strength of anti-freeze. Have it checked at least annually – late summer or early autumn is best.

You should check the coolant level frequently, particularly before a long trip, topping it up as necessary. Look for the high/low level markings on the header tank, where one is fitted. The need to top up often might indicate a leak or other fault in the cooling system. Have it checked by your garage or dealer.

It's a good idea to carry a spare supply of coolant in your vehicle.

Warning

- Never remove a radiator or header tank cap when the engine is hot.
- Never add cold water to an overheated engine; let it cool for a while first.
- Don't overfill or the system will blow the excess out as soon as it warms up.



→ Steering and suspension

Issues to look out for

If you feel or hear any knocking or rattling noises from the steering or suspension, you should seek advice.

Excessive movement or play in the steering wheel may indicate wear in the steering mechanism. You should seek qualified advice without delay.

Power-assisted steering

When the ignition is on and/or the engine is running, movement of the steering wheel will cause hydraulic pressure or electrical energy to assist the driver and make the steering easier. If the steering needs a lot of effort (becomes heavy) the power-assistance system may not be working properly.

Before starting a journey, two simple checks can be made.

- Gentle pressure on the steering wheel, maintained while the ignition switch is moved to 'on' or the engine is started, should result in a slight but noticeable movement as the system begins to operate.
- Alternatively, turning the steering wheel just after moving off will tell you immediately whether the power assistance is functioning.

Check the level of fluid in the pump reservoir regularly when the engine is switched off. The level should be between the 'min' and 'max' marks.

Never run the engine without oil in the pump reservoir. You could severely damage the pump or cause it to seize up completely.



Suspension

Check the condition of shock absorbers by examining them for signs of fluid leaks and by bouncing the vehicle. It shouldn't continue to bounce unduly when tested. If in doubt, seek qualified help.

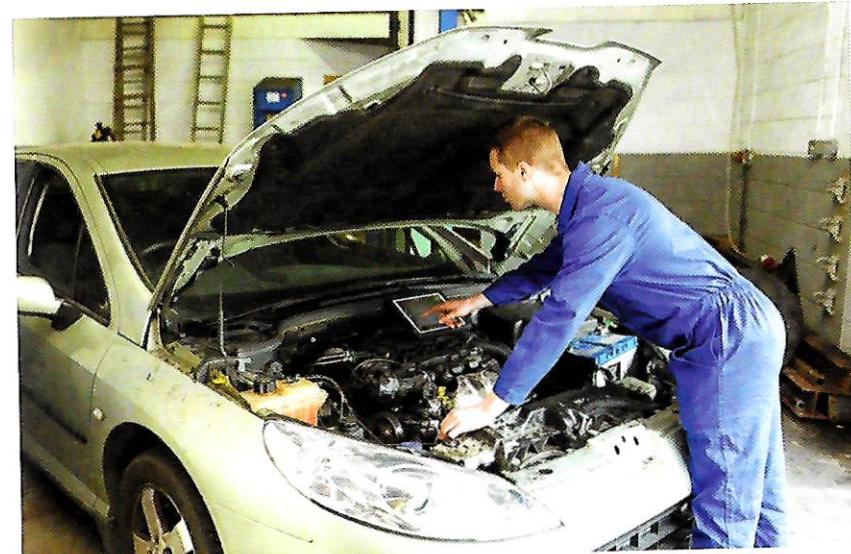
Worn shock absorbers make a vehicle difficult to control and can increase your stopping distance.

→ Brakes

Regular servicing

Regular servicing will help to ensure your brakes work properly. Follow the manufacturer's recommendation on service intervals. Unless you're a skilled mechanic, leave brake checking, adjustment and replacement of brake pads and shoes to your garage.

If you're in any doubt about your vehicle's brakes, don't use the vehicle. Have it checked immediately.



Warning lights

Most vehicles are equipped with a warning signal to indicate certain faults within the braking system. If the red warning signal shows, consult your vehicle handbook or obtain guidance from a mechanic. Driving the vehicle with faulty brakes could be dangerous and may be illegal.

Anti-lock braking systems

If your vehicle has anti-lock brakes (ABS), there will also be a warning light for that system to indicate a fault. If this light comes on, have the system checked immediately. Consult your vehicle handbook or your garage before driving the vehicle. Only if it's safe, drive carefully to the nearest garage.

Footbrake

Note any variations in braking efficiency. If the brakes feel spongy or slack, have them checked by a qualified mechanic. They're too important to be ignored.

Testing your brakes

Test the brakes every day as you set out. Choose a safe spot on the road.

If you hear any strange noises, or if the vehicle pulls to one side, consult your garage immediately.

Check the brake fluid level regularly, but don't overfill. Look for the high/low markings on the reservoir. Make sure the brake fluid reservoir is kept topped up. Consult the vehicle handbook.

Parking brake

Check for excessive wear on the parking brake in the following way.

When applying the brake, ensure that there's no excessive travel of the brake lever and that the lever locks securely. The parking brake must prevent the vehicle from moving.

I have the parking brake checked if

- the amount of travel is above the limit specified in the vehicle handbook
- the vehicle can roll on a gradient when the parking brake is fully set.

Tyres

Your tyres are your only contact with the road. The area of contact is as small as the sole of a shoe for each tyre. Tyres won't grip properly and safely unless they're in good condition and correctly inflated. They can easily become damaged, so check for wear and tear and replace them when necessary.

The penalties for using faulty tyres or tyres worn beyond the minimum legal tread depth are very severe. They may include a fixed fine, driving licence endorsement for every faulty tyre and discretionary disqualification.

Checking the condition of your tyres

- Check that the walls of the tyres are free from cuts and bulges.
- Check that all your tyres have a good depth of tread right across and all around them. The legal requirement for cars, vans, trailers and caravans is no less than 1.6 mm tread depth across the central three-quarters of the breadth of the tyre and around the entire outer circumference. However, it's recommended that you replace your tyres before this legal limit is reached.
- Have the wheel alignment and wheel balance, suspension and braking system checked regularly. If there's a fault, have it put right as soon as you can, otherwise the wear on the tyres will be excessive or uneven.
- If you see that parts of the tread are wearing before others, seek advice. This can indicate a tyre, brake, steering or suspension fault.

Remove anything (stones, glass, etc) caught in the treads. These can work their way in and cause damage.

How to save wear and tear on tyres

- Check tyre pressures frequently.
- Avoid driving over potholes and broken road surfaces. If you can't avoid them, slow down.
- Don't drive over kerbs or scrape the wheels along them when manoeuvring. You'll damage the wall of the tyre and this could cause a blow-out later.
- Hitting the kerb can also affect the tracking of the front wheels. If there are any signs of uneven front tyre wear, have the tracking checked.
- Think and plan ahead. High speeds, fast cornering and heavy braking all increase tyre wear.



Tyre pressure

You can't guess pressures just by looking at a tyre, except when it's obviously flat.

Check your tyres' pressures regularly – at least once a week. The vehicle handbook will show the correct pressure.

Check your tyres and adjust the pressure when they're cold. Don't forget the spare tyre and remember to refit the valve caps.

The handbook will also tell you if you need different pressures for different conditions.

Generally, the pressure should be higher for a heavily loaded vehicle or if you're intending to drive at high speed for a long distance – for example, a long motorway journey.

Find out more about tyre safety in this video.

youtube.com/watch?v=fxkb6y5uqrQ



➡ Electrical systems

Battery

Most modern batteries are maintenance-free and sealed for life. The terminals should be secure, clean and greased.

If the battery is fitted with a filler cap or caps, check the level of the fluid. The plates in each cell should be covered. Top up with distilled water if necessary, but avoid overfilling.

Lights

Check the operation of the front and rear lights, brake lights and indicators, including hazard lights, each time you use the vehicle.

Make use of reflections in windows and garage doors, or ask someone to help you.

Carry a selection of spare bulbs and replace any faulty ones immediately. Your vehicle handbook should give the bulb replacement procedure.

Headlights **MUST** be properly adjusted to

- avoid dazzling other road users
- enable the driver to see the road ahead.

All lights **MUST**

- be clean and in good working order
- show a steady light.

Indicators **MUST**

- be clearly visible
- be in good working order
- show the correct colour
- flash between once and twice per second.

Windscreen washers and wipers

Check the windscreen washer mechanism and the washer reservoirs. Make sure there's enough liquid.

The washer can be very important in wet, muddy conditions. If you carry a supply of water, you can use a sponge to wash away dirt wherever you happen to be.

Check the wipers. Replace worn or damaged blades. If your vehicle is fitted with headlight washers, the same attention should be paid to these.

The horn

Check the horn is working properly and sounding clearly. Take care not to alarm or annoy others when doing so.

Basic fault-finding

For detailed advice, consult the vehicle handbook, a workshop maintenance manual or a qualified mechanic.

The table that follows gives only a brief guide to simple fault-finding and remedies.

If you have any doubts about the roadworthiness of the vehicle, seek specialist help without delay. Don't ignore any warning signs.

Some minor faults can be easily identified and corrected, but problems with more complex engine management and electronic systems are better left to qualified mechanics – especially when the vehicle's warranty might be affected.

REMEMBER, prevention is better (and cheaper) than cure. Having your vehicle serviced according to the maintenance schedule helps the engine work more efficiently. This will save fuel and reduce the effect on the environment by cutting emissions. If you notice any fault, consult your garage.



Recognising basic faults

Symptom	Probable cause	Remedy
Brakes		
Vehicle pulls to one side when braking	Incorrect adjustment	Seek qualified help
Warning light shows	Undue wear in pads/shoes System fault Low brake fluid level Brake light failed	Seek qualified help Seek qualified help Check level. If low, seek qualified help Replace bulb
Brakes not working well on good road surfaces	Possible component failure Brakes need adjusting	Seek qualified help Seek qualified help
Parking brake won't hold vehicle	Cable adjustment or replacement needed	Seek qualified help
Lights		
Light doesn't come on	Bulb failure Fuse failure	Check and replace Check and replace
Indicator flashing irregularly	Possible bulb failure Relay failure	Check and replace Check and replace
Main/dip beam not lit	Part failure of unit	Check and replace
Tyres/steering		
Steering 'heavy' or erratic	Puncture Fault in power-assisted steering unit	Change wheel and repair or replace tyre Seek qualified help
Vibration in steering at specific speeds	Front wheel out of balance or tyre defect	Have the wheel balanced or tyre changed
Engine		
Misfiring or won't run	Fuel or electrical fault Defective spark plugs	Examine connections and seek help Examine and replace if necessary

Symptom	Probable cause	Remedy
Engine, continued		
Fails to start	Out of fuel Damp in electrical circuits	Check gauge Use anti-damp spray
Starter doesn't operate	Battery discharged (flat)	Charge or change battery Jump start Push start
Starter or solenoid clicks	Starter motor jammed	Rock vehicle backwards and forwards in gear with ignition off Turn 'square' end on starter with a spanner
Overheating	Fan belt snapped or hose leaking Fuse blown on electric cooling fan	Replace belt or hose Tape hose for temporary repair Replace fuse

Maintenance

Check all levels and systems as recommended.

Changing filters and spark plugs at the recommended intervals will help keep your vehicle reliable and prolong its life.

Air filter

Replace the air filter at the intervals recommended by the manufacturer, or sooner if the vehicle is used in exceptionally dusty conditions.

Overhead camshaft engines

On this design of engine it's vital to have the camshaft drive belt (if fitted) replaced at the recommended intervals. Serious damage can be caused to the engine if the belt breaks.



Section fifteen

→ Breakdowns

This section covers

- Be prepared
- If you break down
- Breakdowns on motorways
- Breakdowns on dual carriageways
- Punctures and blow-outs