

# NISSAN PRIMERA



1990 to Aug 1999 (H to T registration) Petrol

## Haynes **Service and Repair Manual**



Includes **Roadside Repairs** and **MOT Test Checks**

## 0•4 Introduction

The Nissan Primera was first introduced in the UK in September 1990. The Primera was a new vehicle brought in as a replacement for the Nissan Bluebird, the Primera being much-improved and more refined in all respects. This manual covers models fitted with petrol engines, but other models in the range are available with Diesel engines.

During the course of production, numerous minor changes and refinements were carried out, with a major model facelift occurring in October 1996. This facelift introduced extensive mechanical and cosmetic revisions including modifications to the front suspension and a completely new rear suspension layout.

Two sizes of petrol engines are available in the Primera range; 1.6 and 2.0 litre double overhead camshaft (DOHC) units. The 1.6 litre engines were originally fitted with a carburettor, whereas the 2.0 litre models were available in both single-point and multi-point injection forms.

A multi-point injection 1.6 litre engine was introduced into the range in 1993. All engines are fitted with a range of emissions control systems. The engines are of a well-proven design and, provided regular maintenance is carried out, are unlikely to give trouble.

The Primera is available in 4-door Saloon, 5-door Hatchback and Estate body styles, with a wide range of fittings and interior trim available depending on the model specification.

Fully-independent front suspension is fitted to all models. On pre-October 1996 Saloon and Hatchback models, the rear suspension is fully-independent, with semi-independent rear suspension fitted to Estate models. From October 1996, semi-independent multi-link rear suspension was fitted to all models.

A five-speed manual transmission is fitted as standard across the range. On most 2.0 litre models, a four-speed electronically-controlled transmission was available as an option.

A wide range of standard and optional equipment is available within the Primera range to suit most tastes, including central locking, electric windows, an electric sunroof, an anti-lock braking system and an air bag.

For the home mechanic, the Primera is a straightforward vehicle to maintain, and most of the items requiring frequent attention are easily accessible.

**Note:** In many Chapters throughout this manual references are made to Phase I, Phase II and Phase III models according to year of production. This classification has been necessary where modifications to the model range affect the repair procedure being described. The Phases relate to the model years as follows:

**Phase I** - 1990 to June 1993

**Phase II** - June 1993 to October 1996

**Phase III** - October 1996 to September 1999



Nissan Primera 1.6 LX five-door Hatchback



Nissan Primera 2.0 SLX Estate

## Your Nissan Primera Manual

The aim of this manual is to help you get the best value from your vehicle. It can do so in several ways. It can help you decide what work must be done (even should you choose to get it done by a garage), provide information on routine maintenance and servicing, and give a logical course of action and diagnosis when random faults occur. However, it is hoped that you will use the manual by tackling the work yourself. On simpler jobs, it may even be quicker than booking the car into a garage and going there twice, to leave and collect it. Perhaps most important, a lot of money can be saved by avoiding the costs a garage must charge to cover its labour and overheads.

The manual has drawings and descriptions to show the function of the various components, so that their layout can be understood. Then the tasks are described and photographed in a clear step-by-step sequence.

References to the 'left' or 'right' are in the sense of a person in the driver's seat, facing forward.

### Acknowledgements

Thanks are due to Draper Tools Limited, who provided some of the workshop tools, and to all those people at Sparkford who helped in the production of this manual.

We take great pride in the accuracy of information given in this manual, but vehicle manufacturers make alterations and design changes during the production run of a particular vehicle of which they do not inform us. No liability can be accepted by the authors or publishers for loss, damage or injury caused by any errors in, or omissions from, the information given.

Working on your car can be dangerous. This page shows just some of the potential risks and hazards, with the aim of creating a safety-conscious attitude.

## General hazards

### Scalding

- Don't remove the radiator or expansion tank cap while the engine is hot.
- Engine oil, automatic transmission fluid or power steering fluid may also be dangerously hot if the engine has recently been running.

### Burning

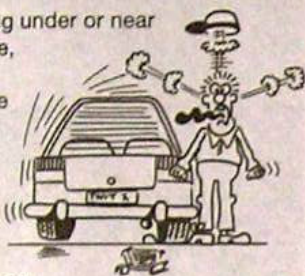
- Beware of burns from the exhaust system and from any part of the engine. Brake discs and drums can also be extremely hot immediately after use.

### Crushing

- When working under or near a raised vehicle, always supplement the jack with axle stands, or use drive-on ramps.

**Never venture under a car which is only supported by a jack.**

- Take care if loosening or tightening high-torque nuts when the vehicle is on stands. Initial loosening and final tightening should be done with the wheels on the ground.

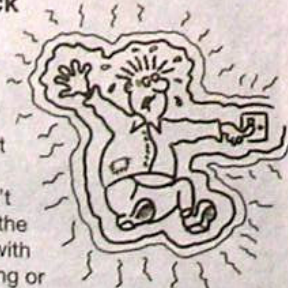


### Fire

- Fuel is highly flammable; fuel vapour is explosive.
- Don't let fuel spill onto a hot engine.
- Do not smoke or allow naked lights (including pilot lights) anywhere near a vehicle being worked on. Also beware of creating sparks (electrically or by use of tools).
- Fuel vapour is heavier than air, so don't work on the fuel system with the vehicle over an inspection pit.
- Another cause of fire is an electrical overload or short-circuit. Take care when repairing or modifying the vehicle wiring.
- Keep a fire extinguisher handy, of a type suitable for use on fuel and electrical fires.

### Electric shock

- Ignition HT voltage can be dangerous, especially to people with heart problems or a pacemaker. Don't work on or near the ignition system with the engine running or the ignition switched on.



- Mains voltage is also dangerous. Make sure that any mains-operated equipment is correctly earthed. Mains power points should be protected by a residual current device (RCD) circuit breaker.

### Fume or gas intoxication

- Exhaust fumes are poisonous; they often contain carbon monoxide, which is rapidly fatal if inhaled.

- Never run the engine in a confined space such as a garage with the doors shut.
- Fuel vapour is also poisonous, as are the vapours from some cleaning solvents and paint thinners.



### Poisonous or irritant substances

- Avoid skin contact with battery acid and with any fuel, fluid or lubricant, especially antifreeze, brake hydraulic fluid and Diesel fuel. Don't syphon them by mouth. If such a substance is swallowed or gets into the eyes, seek medical advice.
- Prolonged contact with used engine oil can cause skin cancer. Wear gloves or use a barrier cream if necessary. Change out of oil-soaked clothes and do not keep oily rags in your pocket.
- Air conditioning refrigerant forms a poisonous gas if exposed to a naked flame (including a cigarette). It can also cause skin burns on contact.

### Asbestos

- Asbestos dust can cause cancer if inhaled or swallowed. Asbestos may be found in gaskets and in brake and clutch linings. When dealing with such components it is safest to assume that they contain asbestos.

## Special hazards

### Hydrofluoric acid

- This extremely corrosive acid is formed when certain types of synthetic rubber, found in some O-rings, oil seals, fuel hoses etc, are exposed to temperatures above 400°C. The rubber changes into a charred or sticky substance containing the acid. *Once formed, the acid remains dangerous for years. If it gets onto the skin, it may be necessary to amputate the limb concerned.*
- When dealing with a vehicle which has suffered a fire, or with components salvaged from such a vehicle, wear protective gloves and discard them after use.

### The battery

- Batteries contain sulphuric acid, which attacks clothing, eyes and skin. Take care when topping-up or carrying the battery.
- The hydrogen gas given off by the battery is highly explosive. Never cause a spark or allow a naked light nearby. Be careful when connecting and disconnecting battery chargers or jump leads.

### Air bags

- Air bags can cause injury if they go off accidentally. Take care when removing the steering wheel and/or facia. Special storage instructions may apply.

### Diesel injection equipment

- Diesel injection pumps supply fuel at very high pressure. Take care when working on the fuel injectors and fuel pipes.



**Warning:** Never expose the hands, face or any other part of the body to injector spray; the fuel can penetrate the skin with potentially fatal results.

## Remember...

### DO

- Do use eye protection when using power tools, and when working under the vehicle.
- Do wear gloves or use barrier cream to protect your hands when necessary.
- Do get someone to check periodically that all is well when working alone on the vehicle.
- Do keep loose clothing and long hair well out of the way of moving mechanical parts.
- Do remove rings, wristwatch etc, before working on the vehicle – especially the electrical system.
- Do ensure that any lifting or jacking equipment has a safe working load rating adequate for the job.

### DON'T

- Don't attempt to lift a heavy component which may be beyond your capability – get assistance.
- Don't rush to finish a job, or take unverified short cuts.
- Don't use ill-fitting tools which may slip and cause injury.
- Don't leave tools or parts lying around where someone can trip over them. Mop up oil and fuel spills at once.
- Don't allow children or pets to play in or near a vehicle being worked on.

## 0.6 Roadside repairs

The following pages are intended to help in dealing with common roadside emergencies and breakdowns. You will find more detailed fault finding information at the back of the manual, and repair information in the main chapters.

### If your car won't start and the starter motor doesn't turn

- ☐ If it's a model with automatic transmission, make sure the selector is in 'P' or 'N'.
- ☐ Open the bonnet and make sure that the battery terminals are clean and tight.
- ☐ Switch on the headlights and try to start the engine. If the headlights go very dim when you're trying to start, the battery is probably flat. Get out of trouble by jump starting (see next page) using a friend's car.

### If your car won't start even though the starter motor turns as normal

- ☐ Is there fuel in the tank?
- ☐ Is there moisture on electrical components under the bonnet? Switch off the ignition, then wipe off any obvious dampness with a dry cloth. Spray a water-repellent aerosol product (WD-40 or equivalent) on ignition and fuel system electrical connectors like those shown in the photos. Pay special attention to the ignition coil wiring connector and HT leads.



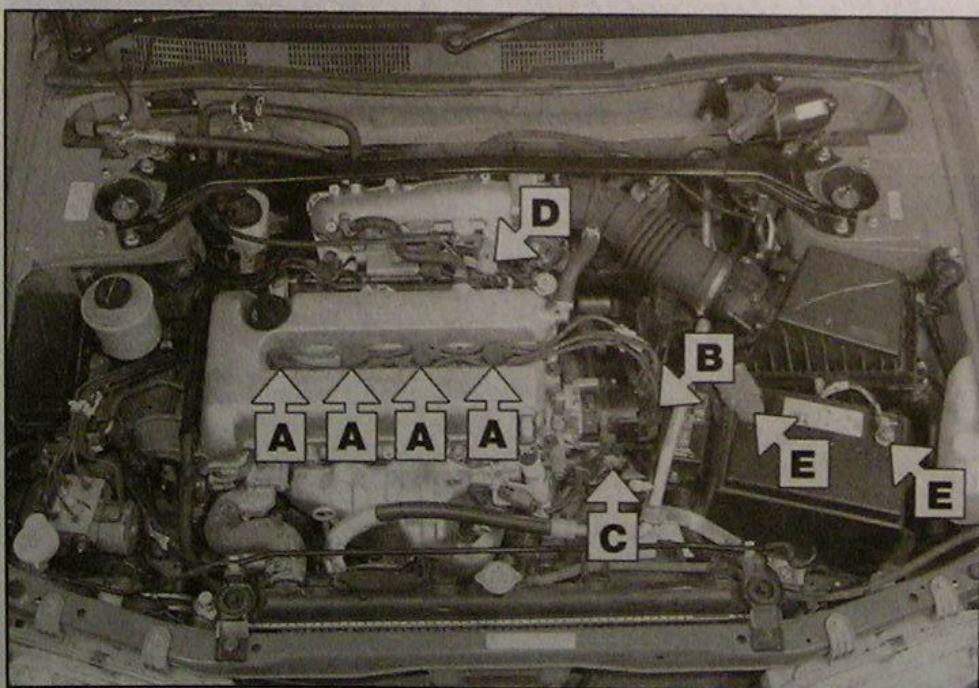
**A** Check that the HT leads are securely connected by pushing them onto the spark plugs ...



**B** ... and onto the distributor cap.



**C** Check that the wiring connector is securely connected to the distributor.



Check that electrical connections are secure (with the ignition switched off) and spray them with a water dispersant spray like WD-40 if you suspect a problem due to damp



**D** Check all engine related wiring multi-plugs for security.



**E** Check the security and condition of the battery terminals.

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Jump starting will get you out of trouble, but you must correct whatever made the battery go flat in the first place. There are three possibilities:

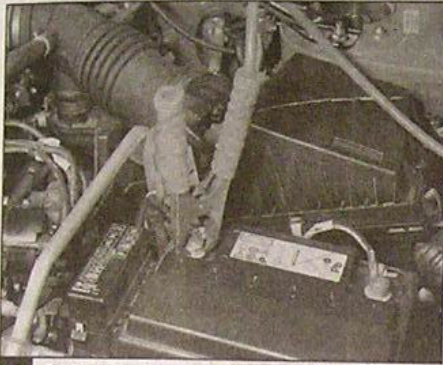
- 1** The battery has been drained by repeated attempts to start, or by leaving the lights on.
- 2** The charging system is not working properly (alternator drivebelt slack or broken, alternator wiring fault or alternator itself faulty).
- 3** The battery itself is at fault (electrolyte low, or battery worn out).

When jump-starting a car using a booster battery, observe the following precautions:

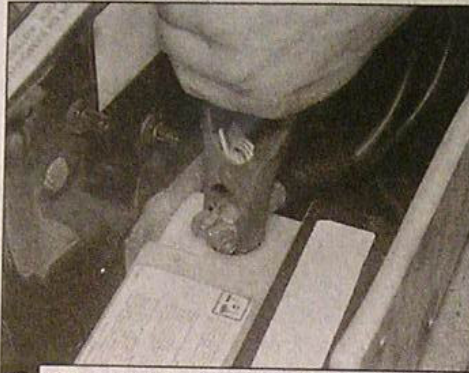
- ✓ Before connecting the booster battery, make sure that the ignition is switched off.
- ✓ Ensure that all electrical equipment (lights, heater, wipers, etc) is switched off.
- ✓ Take note of any special precautions printed on the battery case.

**Jump starting**

- ✓ Make sure that the booster battery is the same voltage as the discharged one in the vehicle.
- ✓ If the battery is being jump-started from the battery in another vehicle, the two vehicles **MUST NOT TOUCH** each other.
- ✓ Make sure that the transmission is in neutral (or PARK, in the case of automatic transmission).



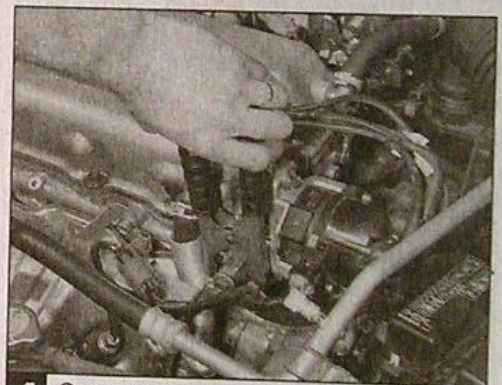
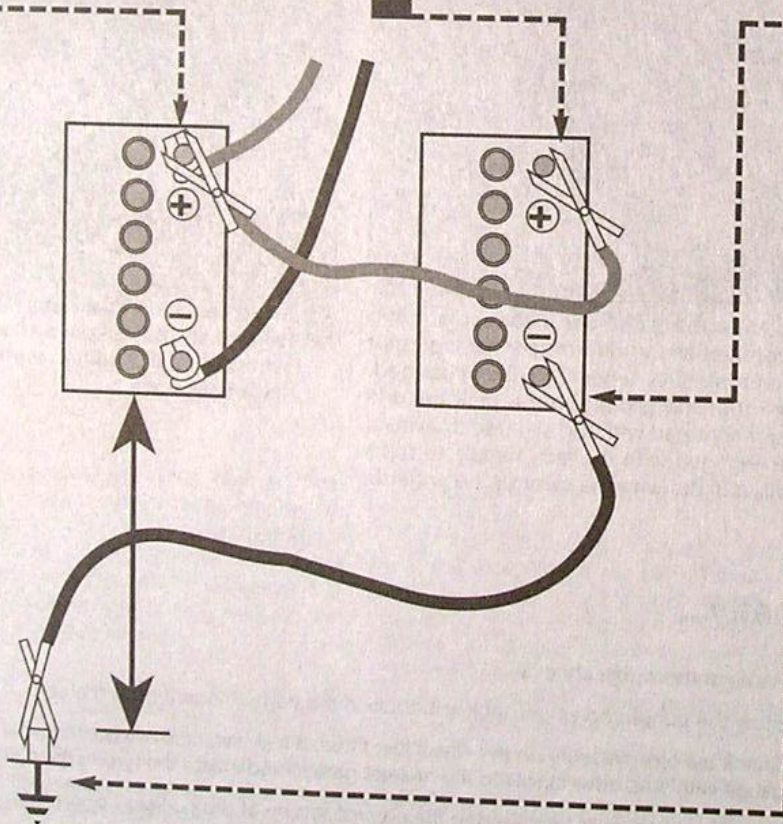
- 1** Connect one end of the red jump lead to the positive (+) terminal of the flat battery



- 2** Connect the other end of the red lead to the positive (+) terminal of the booster battery.



- 3** Connect one end of the black jump lead to the negative (-) terminal of the booster battery



- 4** Connect the other end of the black jump lead to a bolt or bracket on the engine block, well away from the battery, on the vehicle to be started.

- 5** Make sure that the jump leads will not come into contact with the fan, drivebelts or other moving parts of the engine.

- 6** Start the engine using the booster battery and run it at idle speed. Switch on the lights, rear window demister and heater blower motor, then disconnect the jump leads in the reverse order of connection. Turn off the lights etc.

## Wheel changing

Some of the details shown here will vary according to model. For instance, the location of the spare wheel and jack is not the same on all cars. However, the basic principles apply to all vehicles.



**Warning:** Do not change a wheel in a situation where you risk being hit by another vehicle. On busy roads, try to stop in a lay-by or a gateway. Be wary of passing traffic while changing the wheel - it is easy to become distracted by the job in hand.

### Preparation

- ☐ When a puncture occurs, stop as soon as it is safe to do so.
- ☐ Park on firm level ground, if possible, and well out of the way of other traffic.
- ☐ Use hazard warning lights if necessary.

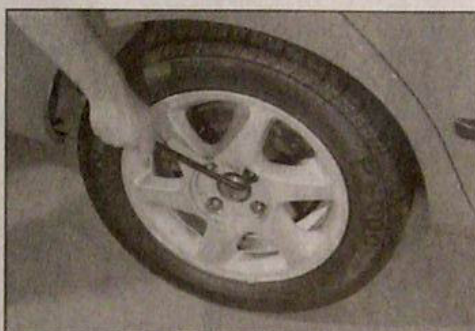
- ☐ If you have one, use a warning triangle to alert other drivers of your presence.
- ☐ Apply the handbrake and engage first or reverse gear (or Park on models with automatic transmission).

- ☐ Chock the wheel diagonally opposite the one being removed - a couple of large stones will do for this.
- ☐ If the ground is soft, use a flat piece of wood to spread the load under the jack.

### Changing the wheel



- 1** The spare wheel and tools are stored in the luggage compartment beneath the floor covering. Unscrew the central plastic nut to release the spare wheel.



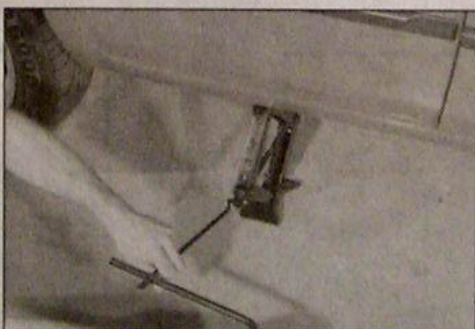
- 2** Lift out the tool bag (located behind the spare wheel) then remove the spare wheel from its location.



- 3** Open the stowage compartment and remove the jack. On Estate models the jack is located under a removable trim covering.



- 4** Where applicable, prise off the wheel trim from the wheel with the flat tyre then loosen each wheel nut by half a turn. Where anti-theft wheel nuts are used, a special adapter will be required.



- 5** Locate the jack head between the two notches at the reinforced jacking point nearest the wheel to be changed. Ensure that the groove in the jack head is properly engaged with the sill. Use the wheel brace engaged with the jack handle to raise the car until the wheel is clear of the ground.



- 6** Unscrew the wheel nuts, lift the wheel clear then fit the spare wheel. Refit the wheel nuts and tighten moderately with the wheel brace.



- 7** Lower the car to the ground then finally tighten the wheel nuts in a diagonal sequence.

### Finally...

- ☐ Remove the wheel chocks.
- ☐ Stow the punctured wheel, jack and tools in the correct locations in the car.
- ☐ Check the tyre pressure on the wheel just fitted. If it is low, or if you don't have a pressure gauge with you, drive slowly to the nearest garage and inflate the tyre to the right pressure.
- ☐ Have the wheel nuts tightened to the correct torque at the earliest opportunity.
- ☐ Have the damaged tyre or wheel repaired as soon as possible.

## Identifying leaks

Puddles on the garage floor or drive, or obvious wetness under the bonnet or underneath the car, suggest a leak that needs investigating. It can sometimes be difficult to decide where the leak is coming from, especially if the engine bay is very dirty already. Leaking oil or fluid can also be blown rearwards by the passage of air under the car, giving a false impression of where the problem lies.



**Warning:** Most automotive oils and fluids are poisonous. Wash them off skin, and change out of contaminated clothing, without delay.

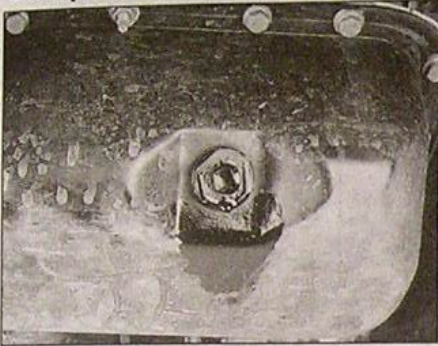


The smell of a fluid leaking from the car may provide a clue to what's leaking. Some fluids are distinctively coloured.

It may help to clean the car carefully and to park it over some clean paper overnight as an aid to locating the source of the leak.

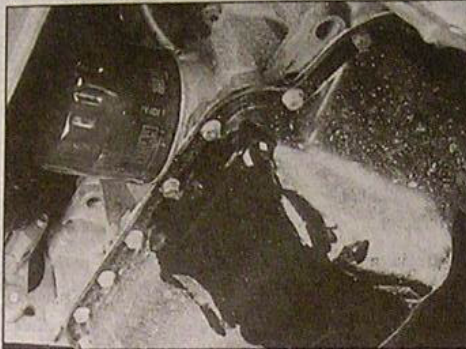
Remember that some leaks may only occur while the engine is running.

### Sump oil



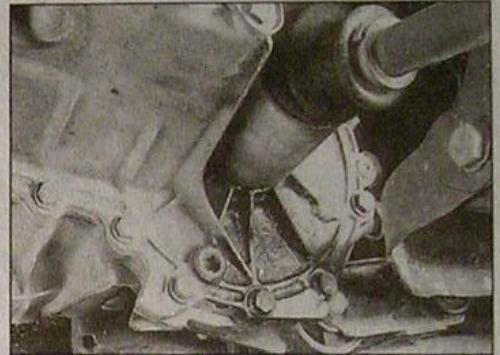
Engine oil may leak from the drain plug...

### Oil from filter



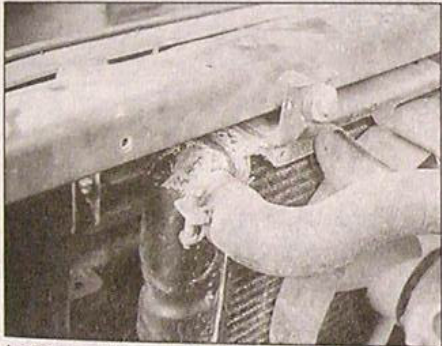
...or from the base of the oil filter.

### Gearbox oil



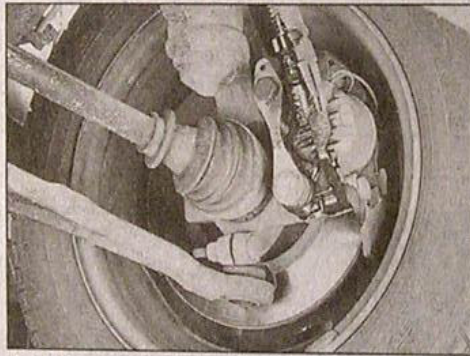
Gearbox oil can leak from the seals at the inboard ends of the driveshafts.

### Antifreeze



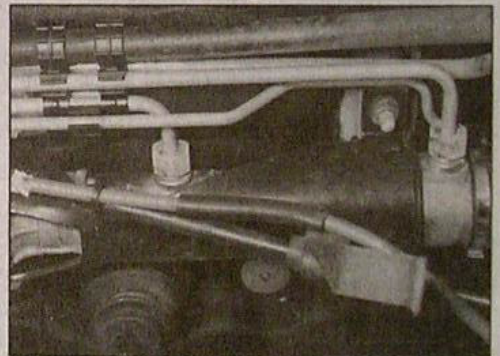
Leaking antifreeze often leaves a crystalline deposit like this.

### Brake fluid



A leak occurring at a wheel is almost certainly brake fluid.

### Power steering fluid



Power steering fluid may leak from the pipe connectors on the steering rack.

When all else fails, you may find yourself having to get a tow home – or of course you may be helping somebody else. Long-distance recovery should only be done by a garage or breakdown service. For shorter distances, DIY towing using another car is easy enough, but observe the following points:

- ☐ Use a proper tow-rope – they are not expensive. The vehicle being towed must display an ON TOW sign in its rear window.
- ☐ Always turn the ignition key to the 'on' position when the vehicle is being towed, so that the steering lock is released, and that the direction indicator and brake lights will work.

- ☐ Only attach the tow-rope to the towing eyes provided.
- ☐ Before being towed, release the handbrake and select neutral on the transmission.
- ☐ Note that greater-than-usual pedal pressure will be required to operate the brakes, since the vacuum servo unit is only operational with the engine running.
- ☐ On models with power steering, greater-than-usual steering effort will also be required.
- ☐ The driver of the car being towed must keep the tow-rope taut at all times to avoid snatching.
- ☐ Make sure that both drivers know the route before setting off.

- ☐ Only drive at moderate speeds and keep the distance towed to a minimum. Drive smoothly and allow plenty of time for slowing down at junctions.
- ☐ On models with automatic transmission, special precautions apply. If in doubt, do not tow, or transmission damage may result.



**Warning:** To prevent damage to the catalytic converter, a vehicle must not be push-started, or started by towing, when the engine is at operating temperature. Use jump leads (see Jump starting).

## Towing

## Introduction

There are some very simple checks which need only take a few minutes to carry out, but which could save you a lot of inconvenience and expense.

These Weekly checks require no great skill or special tools, and the small amount of time they take to perform could prove to be very well spent, for example;

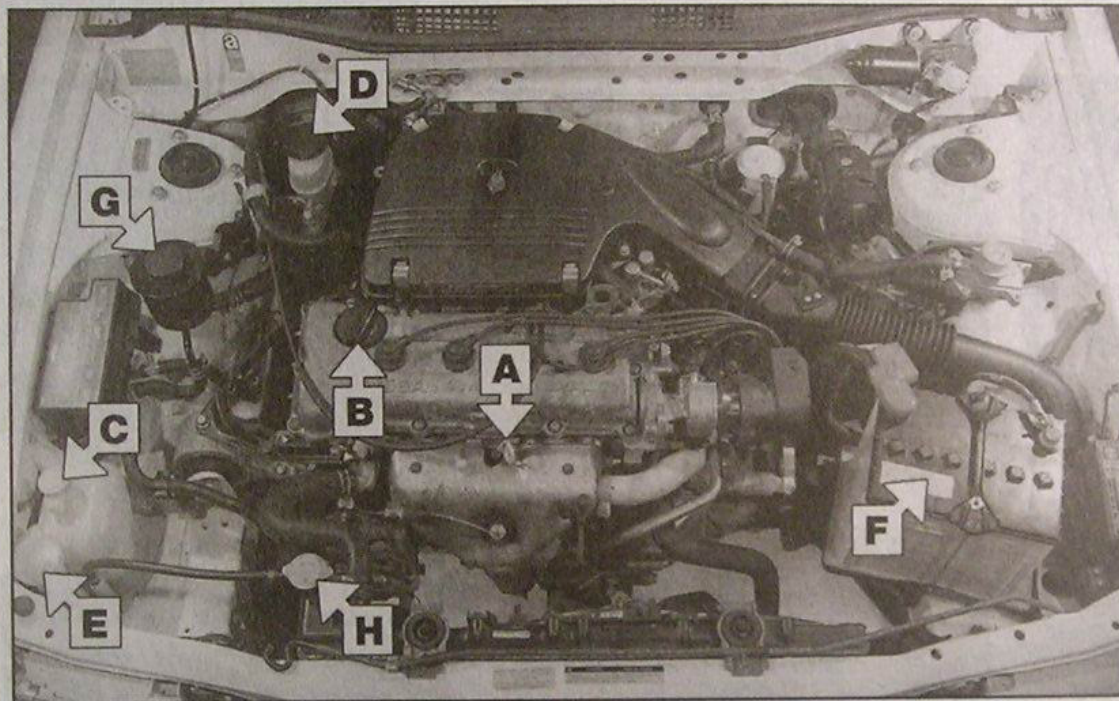
□ Keeping an eye on tyre condition and pressures, will not only help to stop them wearing out prematurely, but could also save your life.

□ Many breakdowns are caused by electrical problems. Battery-related faults are particularly common, and a quick check on a regular basis will often prevent the majority of these.

□ If your car develops a brake fluid leak, the first time you might know about it is when your brakes don't work properly. Checking the level regularly will give advance warning of this kind of problem.

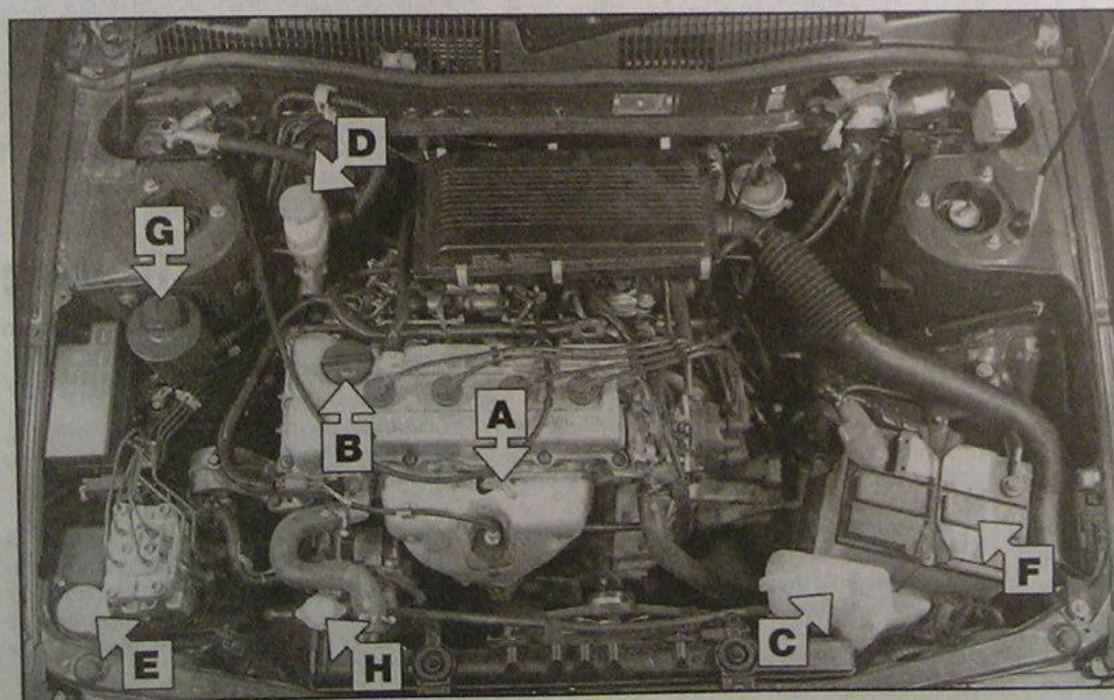
□ If the oil or coolant levels run low, the cost of repairing any engine damage will be far greater than fixing the leak, for example.

## Underbonnet check points



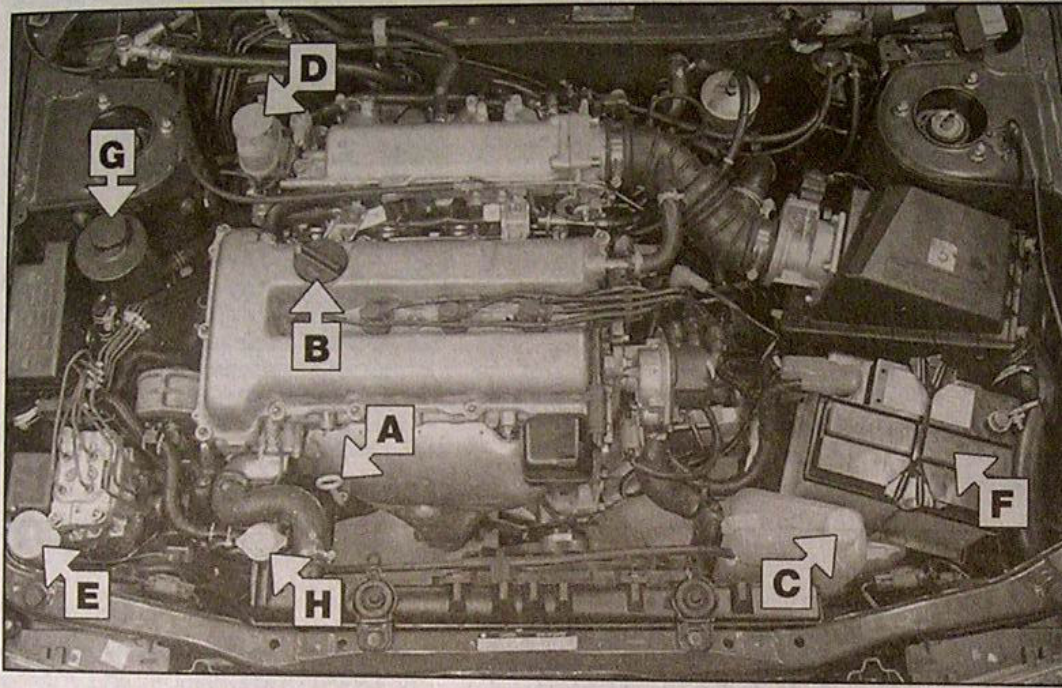
### ◀ 1.6 litre carburettor engine

- A** Engine oil level dipstick
- B** Engine oil filler cap
- C** Coolant expansion tank
- D** Brake fluid reservoir
- E** Screen washer fluid reservoir
- F** Battery
- G** Power steering fluid reservoir
- H** Radiator filler cap



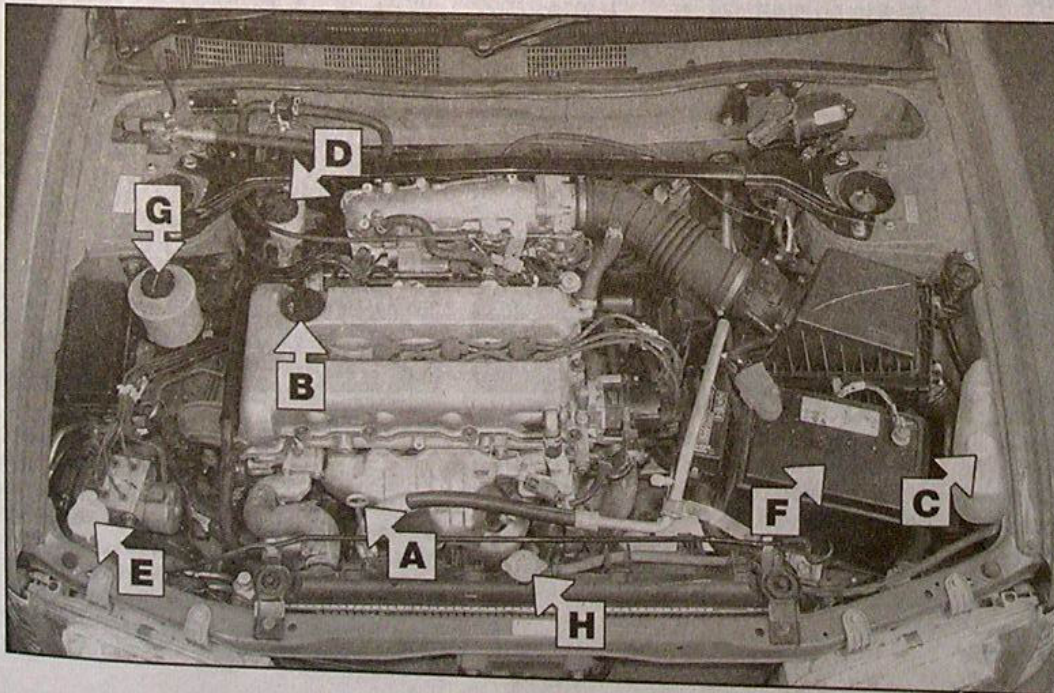
### ◀ 1.6 litre fuel-injected engine

- A** Engine oil level dipstick
- B** Engine oil filler cap
- C** Coolant expansion tank
- D** Brake fluid reservoir
- E** Screen washer fluid reservoir
- F** Battery
- G** Power steering fluid reservoir
- H** Radiator filler cap



◀ **2.0 litre Phase II  
fuel-injected  
engine**

- A** Engine oil level dipstick
- B** Engine oil filler cap
- C** Coolant expansion tank
- D** Brake fluid reservoir
- E** Screen washer fluid reservoir
- F** Battery
- G** Power steering fluid reservoir
- H** Radiator filler cap



◀ **2.0 litre Phase III  
fuel-injected  
engine**

- A** Engine oil level dipstick
- B** Engine oil filler cap
- C** Coolant expansion tank
- D** Brake fluid reservoir
- E** Screen washer fluid reservoir
- F** Battery
- G** Power steering fluid reservoir
- H** Radiator filler cap

## Engine oil level

### Before you start

- ✓ Make sure that your car is on level ground.
- ✓ Check the oil level before the car is driven, or at least 5 minutes after the engine has been switched off.



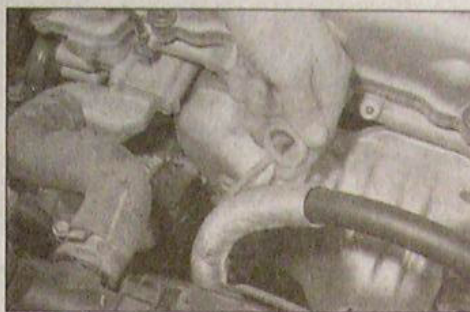
**HAYNES**  
**HINT** If the oil is checked immediately after driving the vehicle, some of the oil will remain in the upper engine components, resulting in an inaccurate reading on the dipstick!

### The correct oil

Modern engines place great demands on their oil. It is very important that the correct oil for your car is used (See Lubricants and fluids).

### Car Care

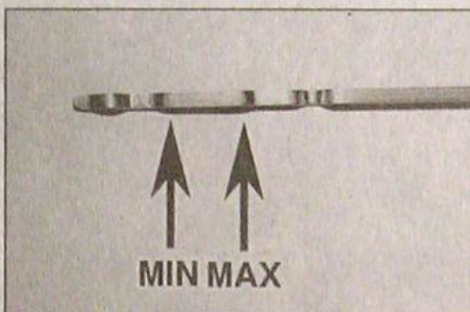
- If you have to add oil frequently, you should check whether you have any oil leaks. Place some clean paper under the car overnight, and check for stains in the morning. If there are no leaks, the engine may be burning oil.
- Always maintain the level between the upper and lower dipstick marks (see photo 3). If the level is too low severe engine damage may occur. Oil seal failure may result if the engine is overfilled by adding too much oil.



**1** The dipstick is located at the front of the engine and is brightly coloured for easy identification (see *Underbonnet check points*).



**2** Withdraw the dipstick. Using a clean rag or paper towel, remove all oil from the dipstick. Insert the clean dipstick into the tube as far as it will go, then withdraw it again.



**3** Note the oil level on the end of the dipstick, which should be within the cross-hatched area.



**4** Oil is added through the filler cap aperture. Add the oil a little at a time, checking the level on the dipstick often. Using a funnel will help to reduce spillage. Don't overfill (see *Chapter 1*).

## Coolant level

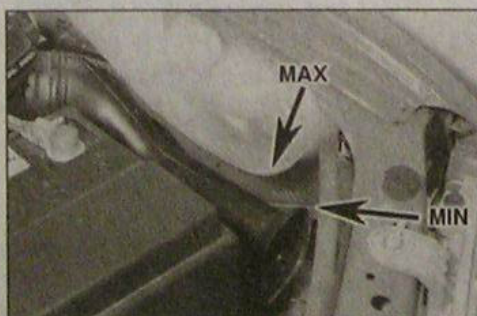


**Warning:** DO NOT attempt to remove the radiator cap or expansion tank pressure cap when the engine is hot, as there is a very great risk of scalding. Do not leave open containers of coolant about, as it is poisonous.

### Car Care

- Adding coolant should not be necessary on a regular basis. If frequent topping-up is required, it is likely there is a leak. Check the radiator, all hoses and joint faces for signs of staining or wetness, and rectify as necessary.

- It is important that antifreeze is used in the cooling system all year round, not just during the winter months. Don't top-up with water alone, as the antifreeze will become too diluted.



**1** The coolant level should be checked in the expansion tank, which is located at the right-hand or left-hand side of the engine compartment according to model (see *Underbonnet check points* for exact location). The expansion tank has MAX and MIN level markings. When the engine is cold, the level should be between the two marks. When the engine is hot, the level may rise slightly above the MAX mark.



**2** If topping up is necessary, wait until the engine is cold. Slowly unscrew the expansion tank cap to release any pressure present in the cooling system, and remove it. Add a mixture of water and antifreeze to the expansion tank until the coolant level is up to the MAX mark, then refit the cap.



**3** If the expansion tank is empty, check the level in the radiator. With the engine cold, turn the pressure cap on the radiator anti-clockwise until it reaches the first stop. Wait until any pressure in the system is released then remove the cap. If necessary, top-up the radiator to the level of the filler opening then refit the pressure cap. When the radiator has been topped-up, top-up the expansion tank, as described previously.

## Brake fluid level



### Warning:

- Brake fluid can harm your eyes and damage painted surfaces, so use extreme caution when handling and pouring it.
- Do not use fluid that has been standing open for some time, as it absorbs moisture from the air, which can cause a dangerous loss of braking effectiveness.

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- Make sure that your car is on level ground.
- The fluid level in the reservoir will drop slightly as the brake pads wear down, but the fluid level must never be allowed to drop below the "MIN" mark.



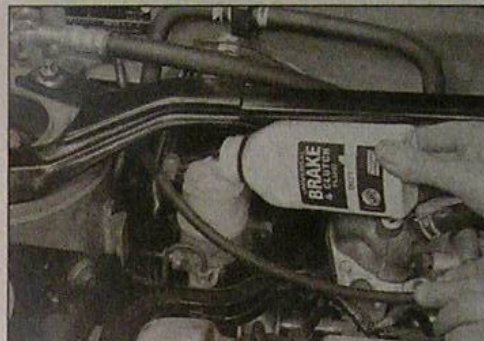
1 The MIN and MAX marks are indicated on the side of the reservoir which is located at the rear of the engine compartment on the driver's side. The fluid level must be kept between the marks at all times.



2 If topping-up is necessary, first wipe clean the area around the filler cap to prevent dirt entering the hydraulic system.

## Safety First!

- If the reservoir requires repeated topping-up this is an indication of a fluid leak somewhere in the system, which should be investigated immediately.
- If a leak is suspected, the car should not be driven until the braking system has been checked. Never take any risks where brakes are concerned.



3 Carefully add fluid, taking care not to spill it onto the surrounding components. Use only the specified fluid; mixing different types can cause damage to the system. After topping-up to the correct level, securely refit the cap and wipe off any spilt fluid.

## Power steering fluid level

### Before you start:

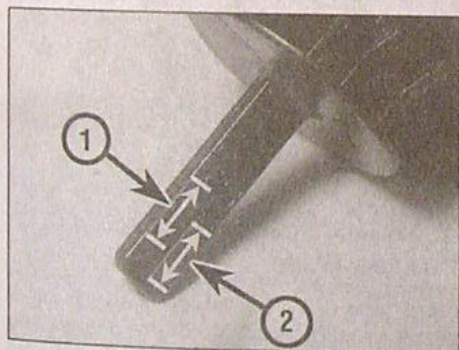
- ✓ Park the vehicle on level ground.
- ✓ Set the steering wheel straight-ahead.
- ✓ The engine should be turned off.

### HAYNES HiNT

For the check to be accurate, the steering must not be turned once the engine has been stopped.

## Safety First!

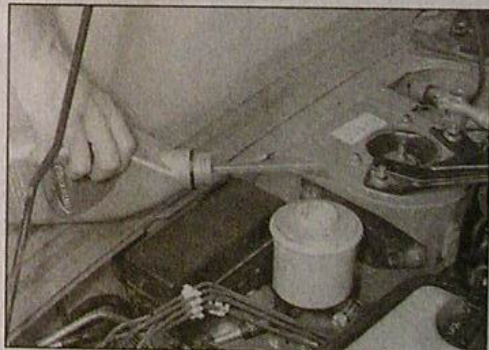
- The need for frequent topping-up indicates a leak, which should be investigated immediately.



1 The reservoir is located on the right-hand side of the engine compartment, in front of the suspension turret. On early models, the reservoir has a filler cap incorporating a dipstick. Wipe the area around the filler cap, then unscrew the cap, and read off the level on the dipstick. If the vehicle has recently been driven on a reasonable run, the level should be read from the HOT range (1) on the dipstick. If the vehicle has not recently been driven, and the engine is cold, the level should be read from the COLD range (2).



2 On later models, a translucent reservoir is fitted with fluid level markings indicated on the side. As with the dipstick type reservoir, maximum and minimum marks are provided for both hot and cold conditions.



3 If necessary, top-up to the relevant MAX mark using the specified type of fluid, then refit the filler cap. Take great care not to allow any dirt or foreign matter to enter the hydraulic system, and do not overfill the reservoir.

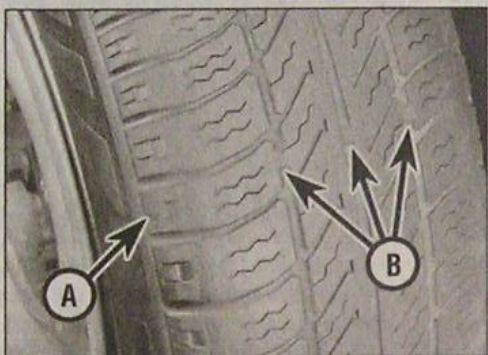
## Tyre condition and pressure

It is very important that tyres are in good condition, and at the correct pressure - having a tyre failure at any speed is highly dangerous. Tyre wear is influenced by driving style - harsh braking and acceleration, or fast cornering, will all produce more rapid tyre wear. As a general rule, the front tyres wear out faster than the rears. Interchanging the tyres from front to rear ("rotating" the tyres) may result in more even wear. However, if this is completely effective, you may have the expense of replacing all four tyres at once! Remove any nails or stones embedded in the tread before they penetrate the tyre to cause deflation. If removal of a nail does reveal that

the tyre has been punctured, refit the nail so that its point of penetration is marked. Then immediately change the wheel, and have the tyre repaired by a tyre dealer.

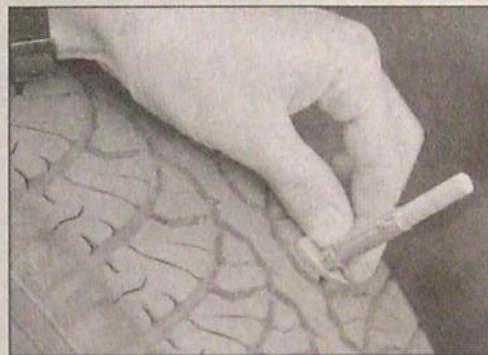
Regularly check the tyres for damage in the form of cuts or bulges, especially in the sidewalls. Periodically remove the wheels, and clean any dirt or mud from the inside and outside surfaces. Examine the wheel rims for signs of rusting, corrosion or other damage. Light alloy wheels are easily damaged by "kerbing" whilst parking; steel wheels may also become dented or buckled. A new wheel is very often the only way to overcome severe damage.

New tyres should be balanced when they are fitted, but it may become necessary to re-balance them as they wear, or if the balance weights fitted to the wheel rim should fall off. Unbalanced tyres will wear more quickly, as will the steering and suspension components. Wheel imbalance is normally signified by vibration, particularly at a certain speed (typically around 50 mph). If this vibration is felt only through the steering, then it is likely that just the front wheels need balancing. If, however, the vibration is felt through the whole car, the rear wheels could be out of balance. Wheel balancing should be carried out by a tyre dealer or garage.



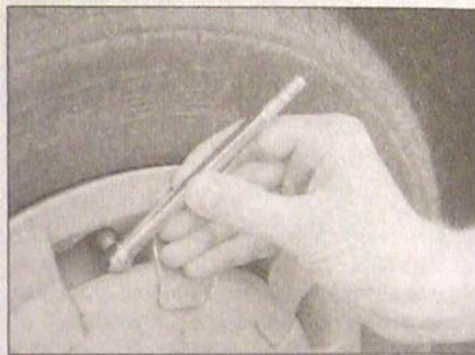
### 1 Tread Depth - visual check

The original tyres have tread wear safety bands (B), which will appear when the tread depth reaches approximately 1.6 mm. The band positions are indicated by a triangular mark on the tyre sidewall (A).



### 2 Tread Depth - manual check

Alternatively, tread wear can be monitored with a simple, inexpensive device known as a tread depth indicator gauge.



### 3 Tyre Pressure Check

Check the tyre pressures regularly with the tyres cold. Do not adjust the tyre pressures immediately after the vehicle has been used, or an inaccurate setting will result.

## Tyre tread wear patterns



### Shoulder Wear

#### Underinflation (wear on both sides)

Under-inflation will cause overheating of the tyre, because the tyre will flex too much, and the tread will not sit correctly on the road surface. This will cause a loss of grip and excessive wear, not to mention the danger of sudden tyre failure due to heat build-up.

*Check and adjust pressures*

#### Incorrect wheel camber (wear on one side)

*Repair or renew suspension parts*

#### Hard cornering

*Reduce speed!*



### Centre Wear

#### Overinflation

Over-inflation will cause rapid wear of the centre part of the tyre tread, coupled with reduced grip, harsher ride, and the danger of shock damage occurring in the tyre casing.

*Check and adjust pressures*

*If you sometimes have to inflate your car's tyres to the higher pressures specified for maximum load or sustained high speed, don't forget to reduce the pressures to normal afterwards.*



### Uneven Wear

Front tyres may wear unevenly as a result of wheel misalignment. Most tyre dealers and garages can check and adjust the wheel alignment (or "tracking") for a modest charge.

#### Incorrect camber or castor

*Repair or renew suspension parts*

#### Malfunctioning suspension

*Repair or renew suspension parts*

#### Unbalanced wheel

*Balance tyres*

#### Incorrect toe setting

*Adjust front wheel alignment*

**Note:** The feathered edge of the tread which typifies toe wear is best checked by feel.

## Battery

**Caution:** Before carrying out any work on the vehicle battery, read the precautions given in *Safety* first at the start of this manual.

✓ Make sure that the battery tray is in good condition, and that the clamp is tight. Corrosion on the tray, retaining clamp and the battery itself can be removed with a solution

of water and baking soda. Thoroughly rinse all cleaned areas with water. Any metal parts damaged by corrosion should be covered with a zinc-based primer, then painted.

✓ Periodically (approximately every three months), check the charge condition of the battery as described in Chapter 5A.

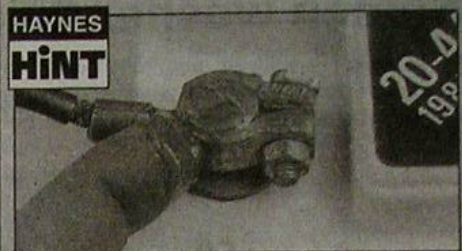
✓ If the battery is flat, and you need to jump start your vehicle, see *Roadside Repairs*.



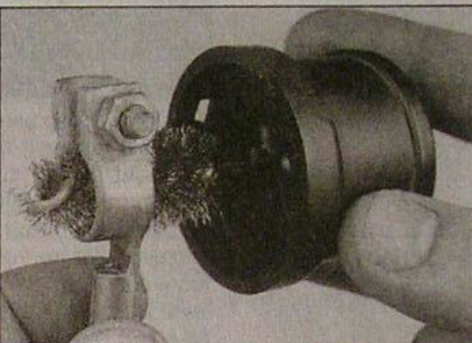
**1** The battery is located on the left-hand side of the engine compartment. The exterior of the battery should be inspected periodically for damage such as a cracked case or cover, and the battery cable clamps should be checked for tightness to ensure good electrical connections. Also check each cable for cracks and frayed conductors.



**2** If corrosion (white, fluffy deposits) is evident, remove the cables from the battery terminals, clean them with a small wire brush, then refit them. Automotive stores sell a tool for cleaning the battery post...



**Battery corrosion can be kept to a minimum by applying a layer of petroleum jelly to the clamps and terminals after they are reconnected.**

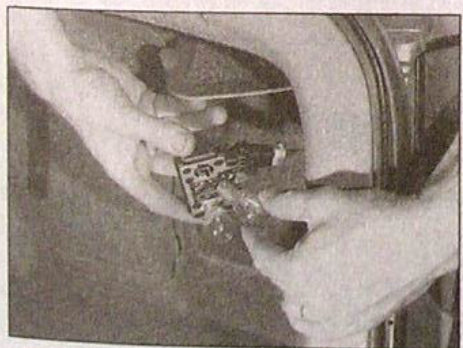


**3** ... as well as the battery cable clamps

## Electrical systems

✓ Check all external lights and the horn. Refer to the appropriate Sections of Chapter 12 for details if any of the circuits are found to be inoperative.

✓ Visually check all accessible wiring connectors, harnesses and retaining clips for security, and for signs of chafing or damage.



**1** If a single indicator light, stop-light or headlight has failed, it is likely that a bulb has blown and will need to be replaced. Refer to Chapter 12 for details. If both stop-lights have failed, it is possible that the switch has failed (see Chapter 9).



**2** If more than one indicator light or tail light has failed it is likely that either a fuse has blown or that there is a fault in the circuit (see Chapter 12). The main fuses are located in the fusebox on the driver's side of the fascia, with supplementary fuses located in the engine compartment. For access to the main fuses, pull open the cover flap.

**HAYNES HiNT** If you need to check your brake lights and indicators unaided, back up to a wall or garage door and operate the lights. The reflected light should show if they are working properly.



**3** To replace a blown fuse, simply pull it out using the special plastic tool and fit a new fuse of the correct rating (see Chapter 12). If the fuse blows again, it is important that you find out why - a complete checking procedure is given in Chapter 12.

## Screen washer fluid level

Screenwash additives not only keep the windscreen clean during foul weather, they also prevent the washer system freezing in cold

weather - which is when you are likely to need it most. Don't top up using plain water as the screenwash will become too diluted, and will

freeze during cold weather. **On no account use coolant antifreeze in the washer system - this could discolour or damage paintwork.**

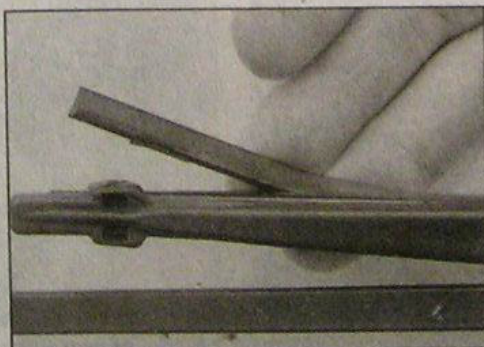


**1** The windscreen/tailgate/headlight washer fluid reservoir filler is located at the front right-hand corner of the engine compartment, behind the headlight. Certain models are fitted with a facia-mounted warning light, to indicate when topping-up is required. On models without a warning light, a level indicator tube is fitted to the reservoir filler cap. To check the level, use a finger to cover the breather hole in the top of the filler cap, then pull the cap from the reservoir. Fluid will be retained in the tube to indicate the level in the reservoir.

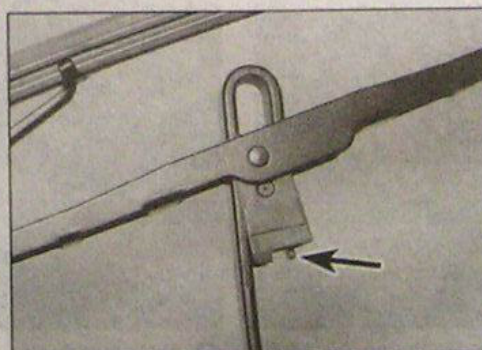


**2** When topping-up the reservoir, add a screenwash additive in the quantities recommended on the bottle. Use of a funnel will prevent spillage.

## Wiper blades



**1** Check the condition of the wiper blades; if they are cracked or show any signs of deterioration, or if the glass swept area is smeared, renew them. Wiper blades should be renewed annually. Don't forget to check the tailgate wiper as well.



**2** To remove a wiper blade, pull the arm fully away from the screen until it locks. Swivel the blade through 90°, press the locking tab with your fingers and slide the blade out of the arm's hooked end.

## Lubricants and fluids

Engine .....	Multigrade engine oil, viscosity SAE 10W/30 to 15W/50, to API SH/SJ and/or ACEA-A3-96
Cooling system .....	Ethylene glycol-based antifreeze and soft water
Manual gearbox .....	Hypoid gear oil, viscosity SAE 80W to API GL4
Automatic transmission .....	Dexron type II automatic transmission fluid (ATF)
Braking system .....	Hydraulic fluid to SAE J1703F, DOT 4
Power steering .....	Dexron type II automatic transmission fluid (ATF)

## Choosing your engine oil

Engines need oil, not only to lubricate moving parts and minimise wear, but also to maximise power output and to improve fuel economy.

### HOW ENGINE OIL WORKS

#### • Beating friction

Without oil, the moving surfaces inside your engine will rub together, heat up and melt, quickly causing the engine to seize. Engine oil creates a film which separates these moving parts, preventing wear and heat build-up.

#### • Cooling hot-spots

Temperatures inside the engine can exceed 1000° C. The engine oil circulates and acts as a coolant, transferring heat from the hot-spots to the sump.

#### • Cleaning the engine internally

Good quality engine oils clean the inside of your engine, collecting and dispersing combustion deposits and controlling them until they are trapped by the oil filter or flushed out at oil change.

### OIL CARE - FOLLOW THE CODE

To handle and dispose of used engine oil safely, always:



0800 66 33 66  
www.oilbankline.org.uk

- Avoid skin contact with used engine oil. Repeated or prolonged contact can be harmful.
- Dispose of used oil and empty packs in a responsible manner in an authorised disposal site. Call 0800 663366 to find the one nearest to you. Never tip oil down drains or onto the ground.

## Tyre pressures

Refer to the manufacturer's tyre specification plate fitted to the driver's door rear pillar (visible when the door is open) for

the correct tyre pressures for your particular vehicle. Pressures apply only to original-equipment tyres, and may vary if any other

make or type is fitted; check with the tyre manufacturer or supplier for correct pressures if necessary.