

# VAUXHALL/OPEL ASTRA & ZAFIRA

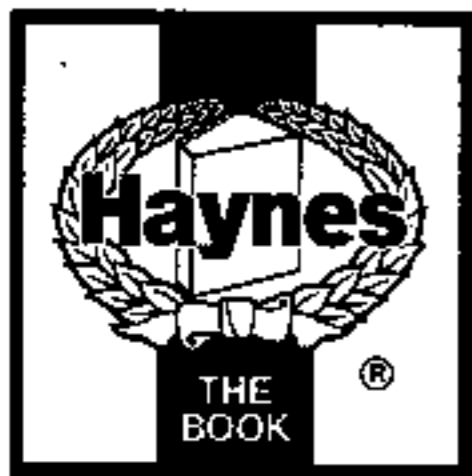


Feb 1998 to Apr 2000 (**R** to **W** registration) Petrol

Haynes **Service and Repair Manual**



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



# Vauxhall Astra and Zafira Service and Repair Manual

A K Legg LAE MIMI and Martynn Randall

## Models covered

(3758-344-10AF1)

Astra Hatchback, Saloon & Estate and Zafira MPV models with petrol engines, including special/limited editions  
1.4 litre (1389cc), 1.6 litre (1598cc), 1.8 litre (1796cc) & 2.0 litre (1998cc)

*For coverage of diesel models, see manual no. 3797  
Does NOT cover bi-fuel models, 2.0 litre turbo or 2.2 litre engines,  
Coupe or 2001 model year vehicles (introduced Sept '00)*

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## Advanced driving

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Many people see the words 'advanced driving' and believe that it won't interest them or that it is a style of driving beyond their own abilities. Nothing could be further from the truth. Advanced driving is straightforward safe, sensible driving - the sort of driving we should all do every time we get behind the wheel.

An average of 10 people are killed every day on UK roads and 870 more are injured, some seriously. Lives are ruined daily, usually because somebody did something stupid. Something like 95% of all accidents are due to human error, mostly driver failure. Sometimes we make genuine mistakes - everyone does. Sometimes we have lapses of concentration. Sometimes we deliberately take risks.

For many people, the process of 'learning to drive' doesn't go much further than learning how to pass the driving test because of a common belief that good drivers are made by 'experience'.

Learning to drive by 'experience' teaches three driving skills:

- Quick reactions. (Whoops, that was close!)
- Good handling skills. (Horn, swerve, brake, horn).
- Reliance on vehicle technology. (Great stuff this ABS, stop in no distance even in the wet...)

Drivers whose skills are 'experience based' generally have a lot of near misses and the odd accident. The results can be seen every day in our courts and our hospital casualty departments.

Advanced drivers have learnt to control the risks by controlling the position and speed of their vehicle. They avoid accidents and near misses, even if the drivers around them make mistakes.

The key skills of advanced driving are **concentration**, effective all-round **observation**, **anticipation** and **planning**. When **good vehicle handling** is added to

these skills, all driving situations can be approached and negotiated in a safe, methodical way, leaving nothing to chance.

**Concentration** means applying your mind to safe driving, completely excluding anything that's not relevant. Driving is usually the most dangerous activity that most of us undertake in our daily routines. It deserves our full attention.

**Observation** means not just looking, but seeing and seeking out the information found in the driving environment.

**Anticipation** means asking yourself what is happening, what you can reasonably expect to happen and what could happen unexpectedly. (One of the commonest words used in compiling accident reports is 'suddenly'.)

**Planning** is the link between seeing something and taking the appropriate action. For many drivers, planning is the missing link.

If you want to become a safer and more skilful driver and you want to enjoy your driving more, contact the Institute of Advanced Motorists at [www.iam.org.uk](http://www.iam.org.uk), phone 0208 996 9600, or write to IAM House, 510 Chiswick High Road, London W4 5RG for an information pack.

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

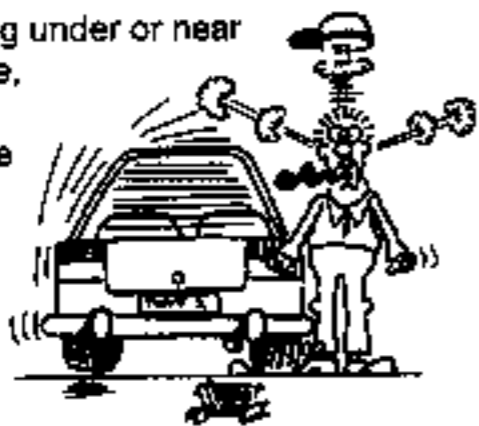
- Don't remove the radiator or expansion tank cap while the engine is hot.
- Engine oil, automatic transmission fluid or power steering fluid may also be dangerously hot if the engine has recently been running.

### 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.**

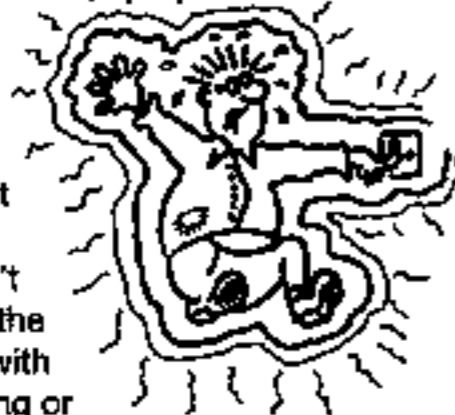
- Take care if loosening or tightening high-torque nuts when the vehicle is on stands. Initial loosening and final tightening should be done with the wheels on the ground.

### 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 fascia. 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.



Vauxhall Astra 5-door Saloon ...



... and Estate models

The Vauxhall Astra-G model was introduced in the UK in February 1998 as a replacement for the previous Astra, the 'F' model. It was available in Saloon, Hatchback and Estate versions with 1.4, 1.6, 1.8 and 2.0 litre petrol engines. The 1.6 litre engines are in either 8-valve or 16-valve form, and the 1.4, 1.8 and 2.0 litre engines are 16-valve. Models may be fitted with a five-speed manual transmission or four-speed automatic transmission mounted on the left-hand side of the engine.

All models have front-wheel-drive with fully-independent front suspension, and semi-independent rear suspension with a torsion beam and trailing arms.

Electro/Hydraulic power steering (PAS) is fitted as standard to all models, whilst Anti-Lock Braking (ABS) is available as an option.

The Zafira range was launched in June 1999, available with 1.6 and 1.8 litre DOHC 16V petrol engines. Whilst the Zafira shares the same drive train and suspension as the Astra, the body is that of a Multi Personnel Vehicle (MPV). Not only does the Zafira have 7 seats arranged in three rows, it quickly converts to a spacious load carrier - thanks to the 'Flex 7' system, which allows the rear seats to fold completely flat into the floor giving an uninterrupted load space.

Both models have a full-sized driver's side airbag fitted as standard, and side impact airbags available as an option. Passenger's side airbags became standard equipment from January 1999. Cruise control is available as an option on certain models.

In February 2000, the Astra was also available with a 2.2 litre petrol engine, whilst in October 2000 a 2.0 litre turbocharged petrol version was introduced. These two engines, along with the various diesel engines fitted to the Astra and Zafira range, are not covered in this manual.

For the home mechanic, the Vauxhall Astra/Zafira is a straightforward vehicle to maintain and repair since design features have been incorporated to reduce the actual cost of ownership to a minimum, and most of the items requiring frequent attention are easily accessible.

## Your Vauxhall Astra and Zafira 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.

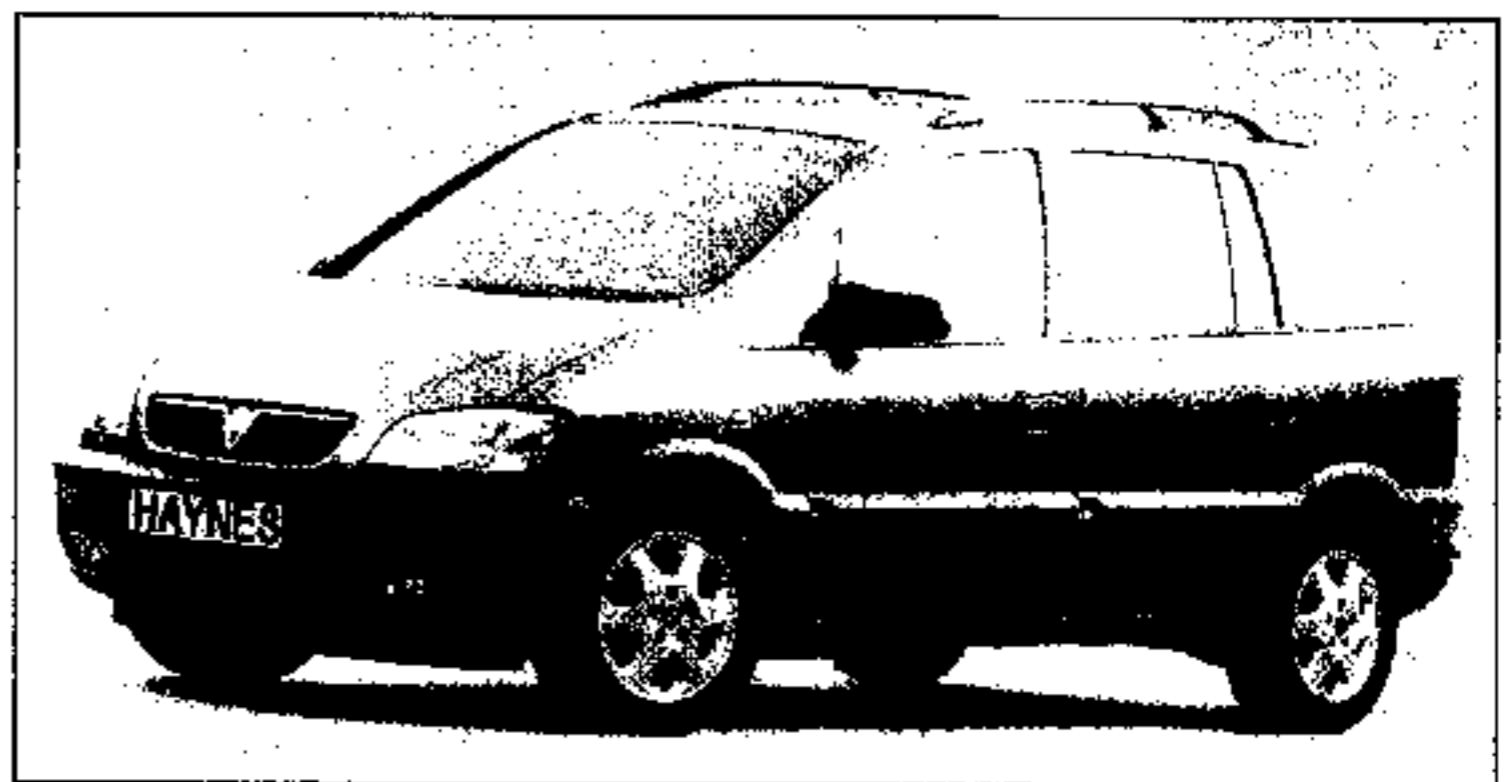
### Acknowledgements

Certain illustrations are the copyright of Vauxhall Motors Limited, and are used with their permission. Thanks are also 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.

### Project vehicles

The main vehicle used in the preparation of this manual, and which appears in many of the photographic sequences, was a Zafira fitted with a 1.8 litre engine. Other vehicles used included 1.6 litre SOHC and DOHC models.



Vauxhall Zafira

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.



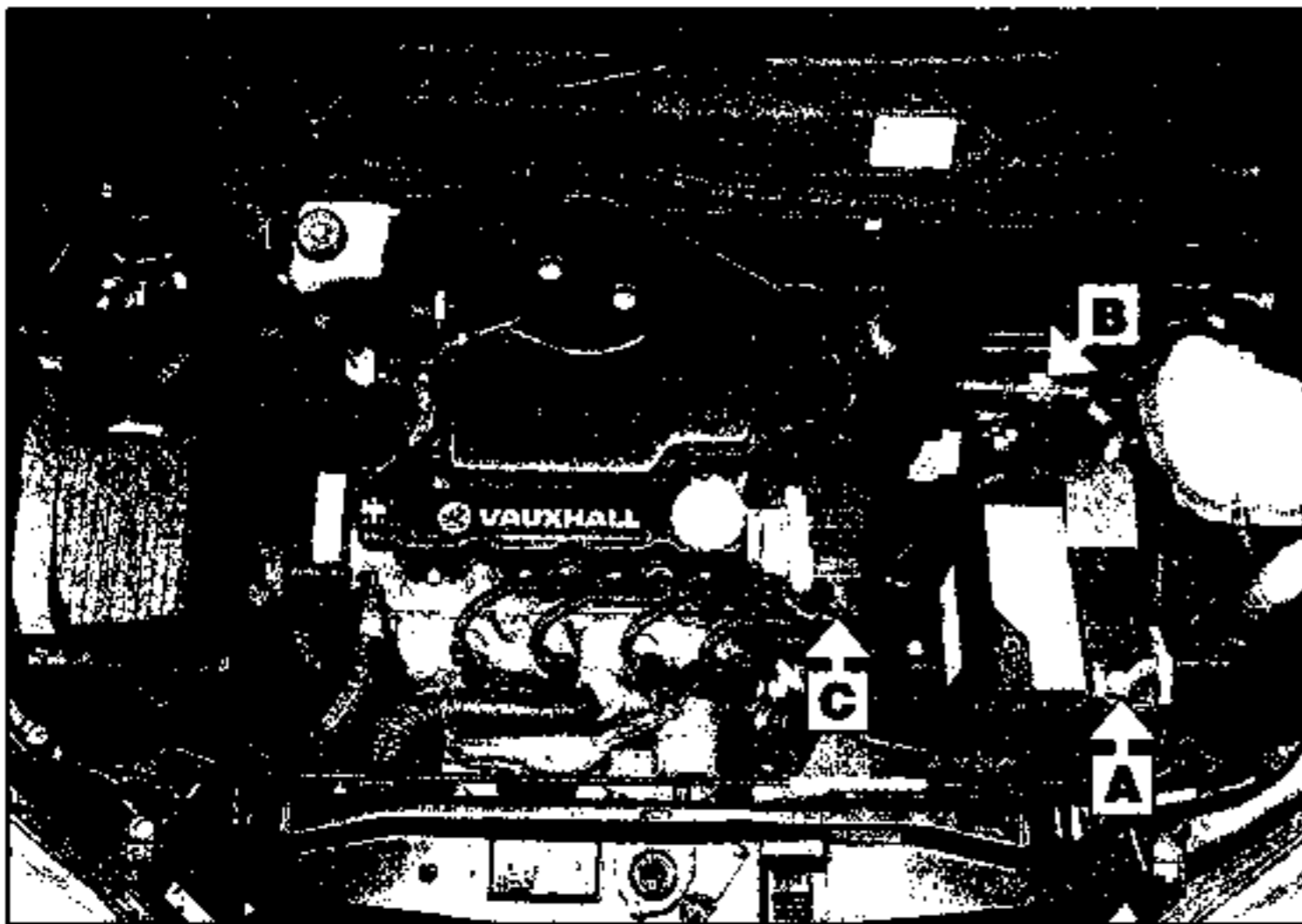
**A** Check the condition and security of the battery connections.



**B** Check the engine wiring harness at the left-hand rear of the engine compartment.



**C** Check the wiring to the DIS ignition module (1.6 engine).



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 the wiring to the airflow meter (1.8 engine).



**E** Remove the engine top cover, and check the wiring for the ignition coils (1.8 engine).



## Jump starting

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.
- ✓ 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).

**HAYNES**  
**HINT**

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).



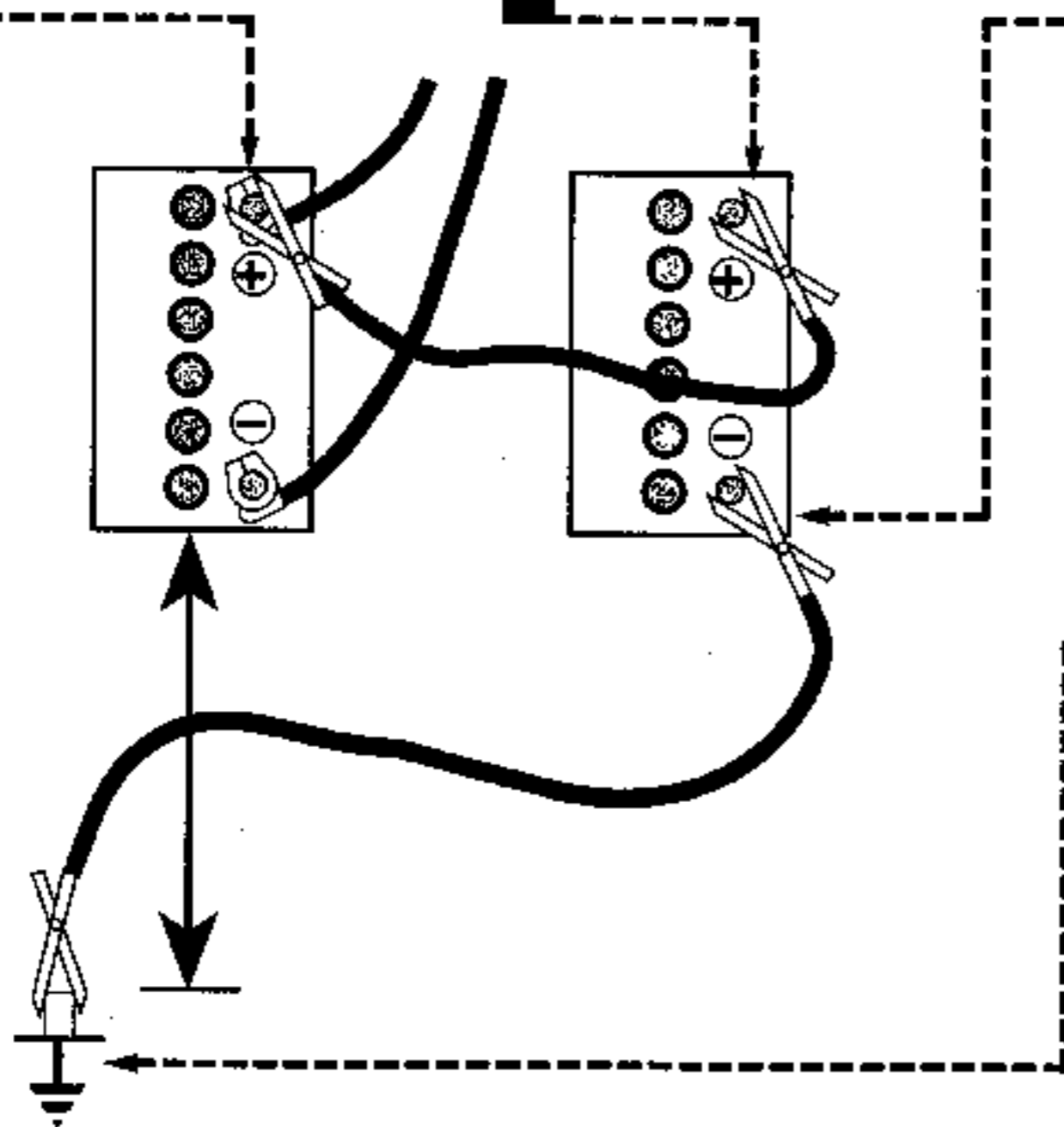
**1** Connect one end of the red jump lead to the positive (+) terminal of the flat battery



**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.

### 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.



**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.

- 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).
- Check 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** On Astra models the jack and wheel brace are stowed under the spare wheel beneath the luggage compartment floor. On Zafira models they are beneath a cover at the rear of the luggage compartment floor.



**2** The spare wheel is beneath a cover in the luggage compartment on Astra models. Raise the cover, remove the screw and lift out the spare wheel. Place it beneath the sill as a precaution against the jack failing. On Zafira models, the spare wheel is under the rear of the vehicle. Lift the rear of the luggage compartment floor, and slacken the bolt in the floor, using the wheel brace. Unhook the catch, lower the spare, and detach the cable. The spare can now be lifted out.



**3** On models with steel wheels, use the special tool to pull the wheel trim from the wheel. On models with alloy wheels, use the screwdriver provided inserted at the wheel bolt holes, to prise off the trim. Where an anti-theft device is fitted, use the tool provided to remove the trim. Loosen each wheel bolt by half a turn.



**4** All models have depressions in the sill vertical web, which indicate the points at which the jack head is to be attached. On Astra models, the depressions are concealed by flaps in the outer sill bodywork. Prise out the flaps to access the jacking points. Position the jack head under the jacking point and make sure that the slot in the head engages correctly with the vertical web of the sill. Turn the handle until the base of the jack touches the ground then make sure that the base is located directly below the sill. Raise the vehicle until the wheel is clear of the ground. If the tyre is flat make sure that the vehicle is raised sufficiently to allow the spare wheel to be fitted.



**5** Remove the bolts and lift the wheel from the vehicle. Place it beneath the sill in place of the spare as a precaution against the jack falling. Fit the spare wheel and tighten the bolts moderately with the wheel brace.



**6** Lower the vehicle to the ground, then finally tighten the wheel bolts in a diagonal sequence. Refit the wheel trim. Note that the wheel bolts should be tightened to the specified torque at the earliest opportunity.

### Finally...

- Remove the wheel chocks.
- Stow the 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 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.

**HAYNES HINT** 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



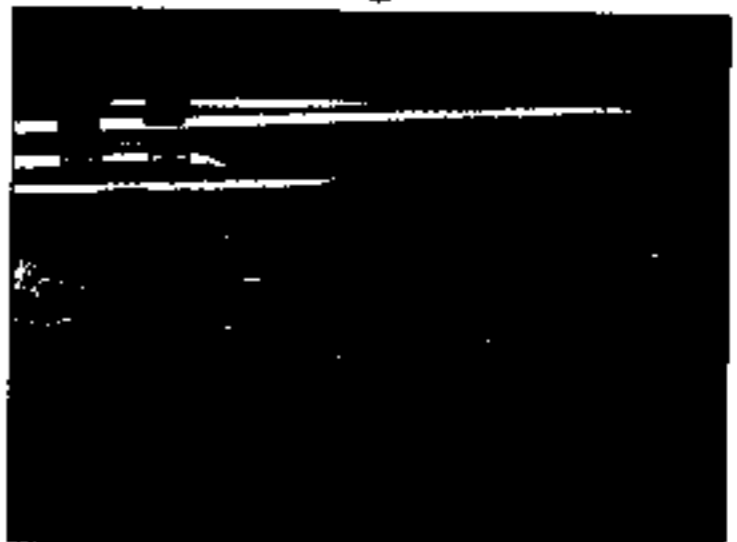
Leaking antifreeze often leaves a crystalline deposit like this.

### 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.

## Towing

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:

- A towing eye is provided with the warning



The towing eye has a left-hand thread

triangle in the luggage compartment.

- To fit the towing eye, prise the cover from the front bumper, then screw in the towing eye anti-clockwise as far as it will go using the handle of the wheel brace to turn the eye. Note that the towing eye has a left-hand thread (see illustration). A rear towing eye is provided beneath the rear of the vehicle.
- 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.
- Before being towed, release the handbrake and select neutral on the transmission.

- On models with automatic transmission, only tow with the vehicle facing forwards, at less than 50 mph, and no further than 60 miles. If in doubt, do not tow, or transmission damage may result.

- 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.
- 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.

## 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:

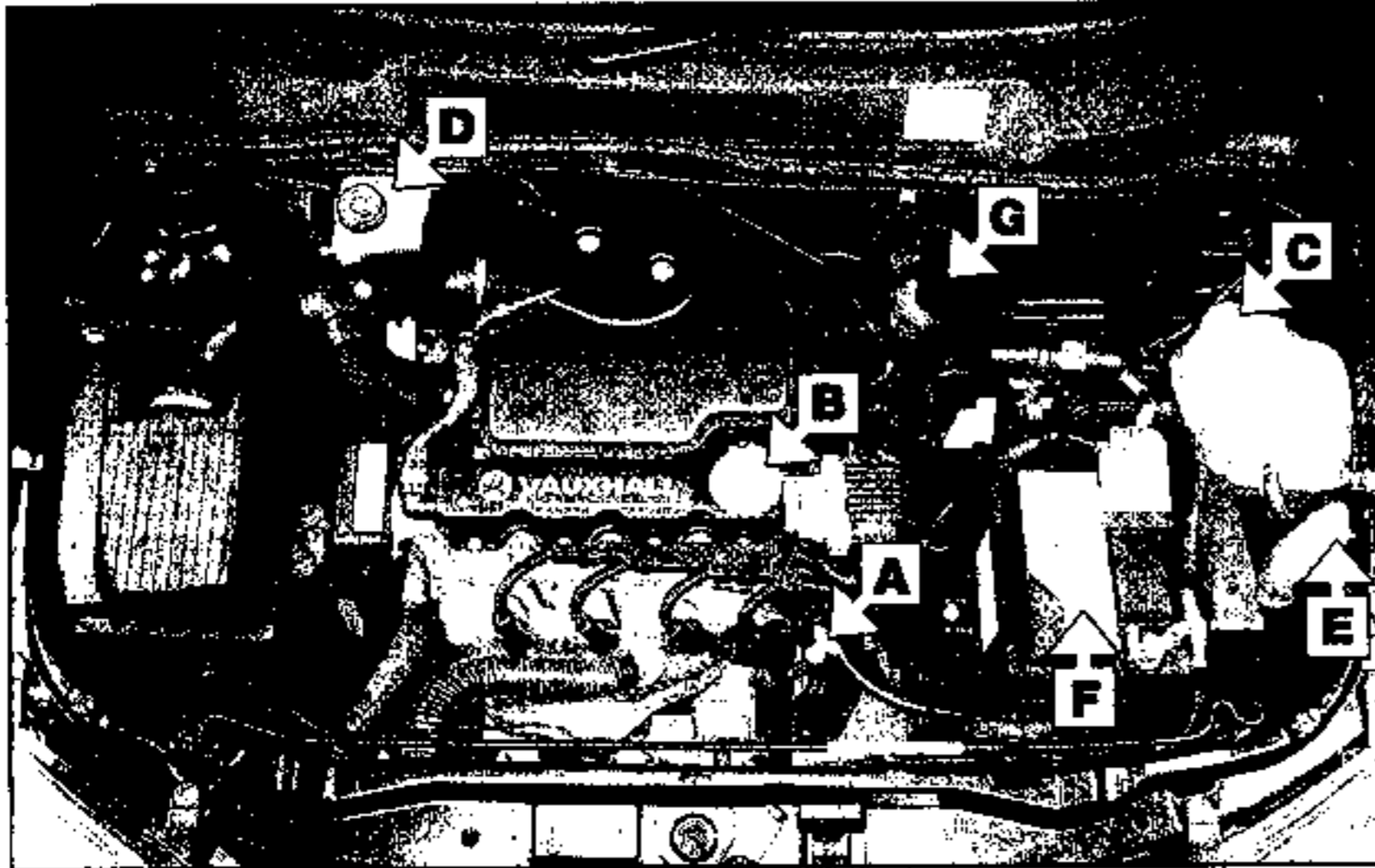
□ Keeping an eye on tyre condition and pressures, will not only help to stop them wearing out prematurely, but could also save your life.

□ 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.

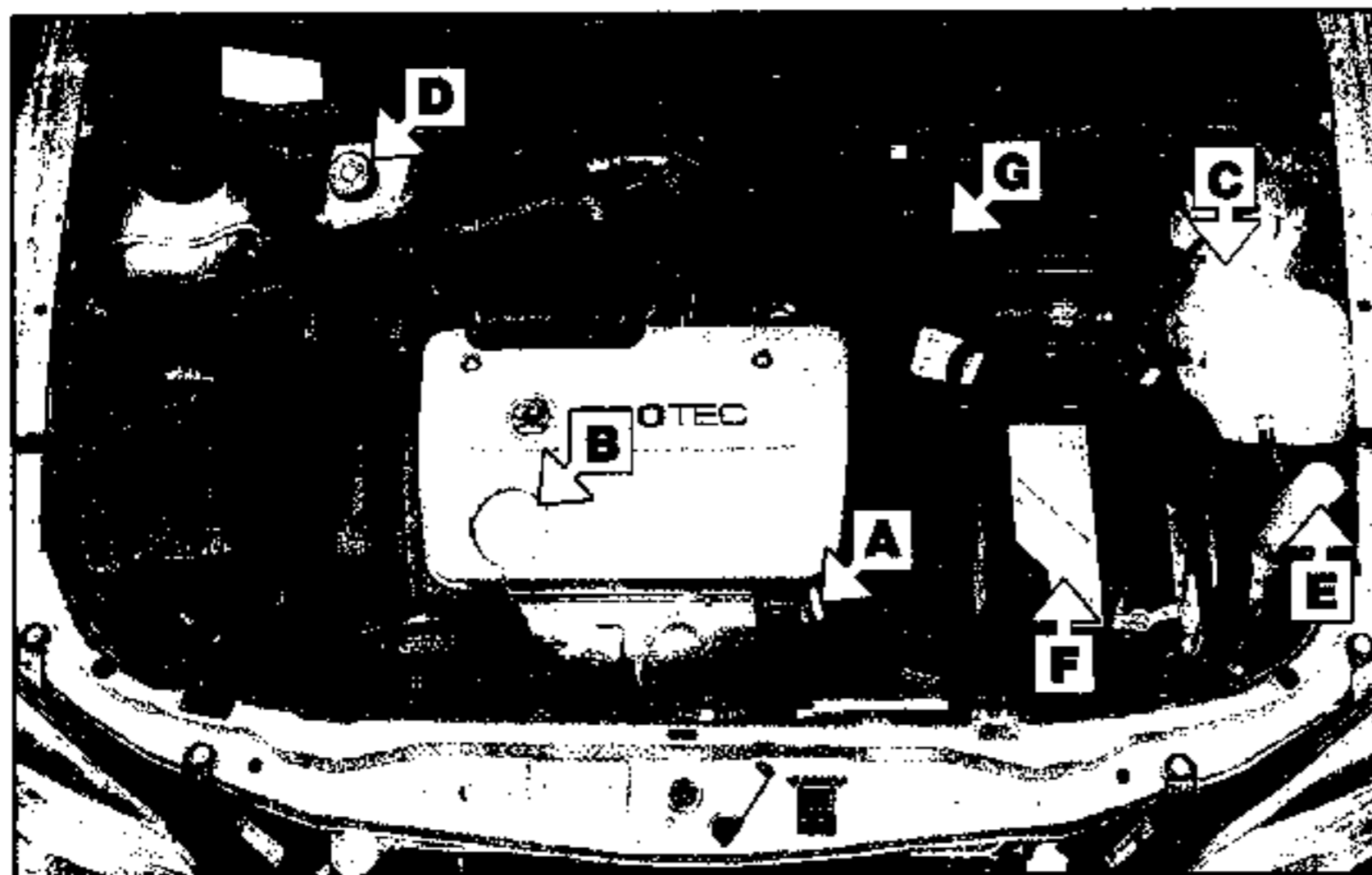
□ If the oil or coolant levels run low, the cost of repairing any engine damage will be far greater than fixing the leak, for example.

## Underbonnet check points



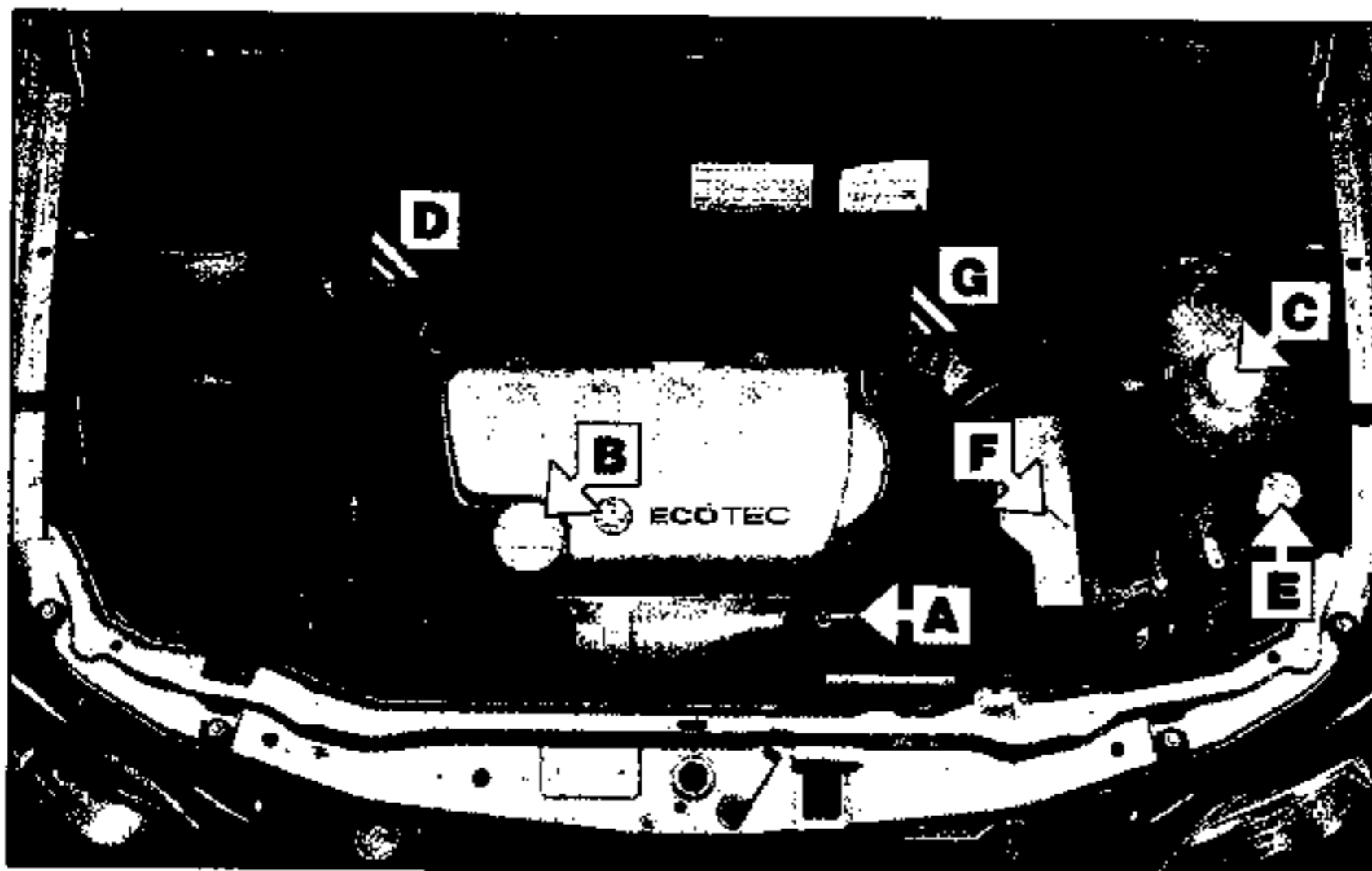
### ◀ 1.6 litre SOHC

- A** Engine oil level dipstick
- B** Engine oil filler cap
- C** Coolant reservoir (expansion tank)
- D** Brake and clutch fluid reservoir
- E** Washer fluid reservoir
- F** Battery
- G** Power steering fluid reservoir



### ◀ 1.4 & 1.6 litre DOHC

- A** Engine oil level dipstick
- B** Engine oil filler cap
- C** Coolant reservoir (expansion tank)
- D** Brake and clutch fluid reservoir
- E** Washer fluid reservoir
- F** Battery
- G** Power steering fluid reservoir



◀ 1.8 litre DOHC

- A Engine oil level dipstick
- B Engine oil filter cap
- C Coolant reservoir (expansion tank)
- D Brake and clutch fluid reservoir
- E Washer fluid reservoir
- F Battery
- G Power steering fluid reservoir

## 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*).

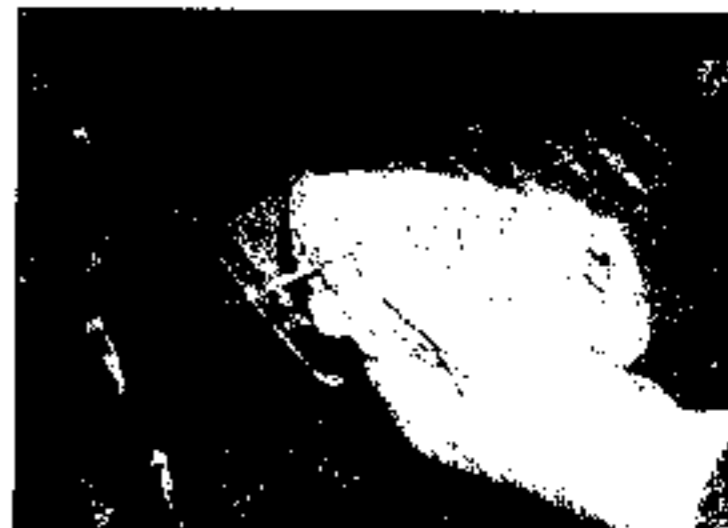
### Car Care

● 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.

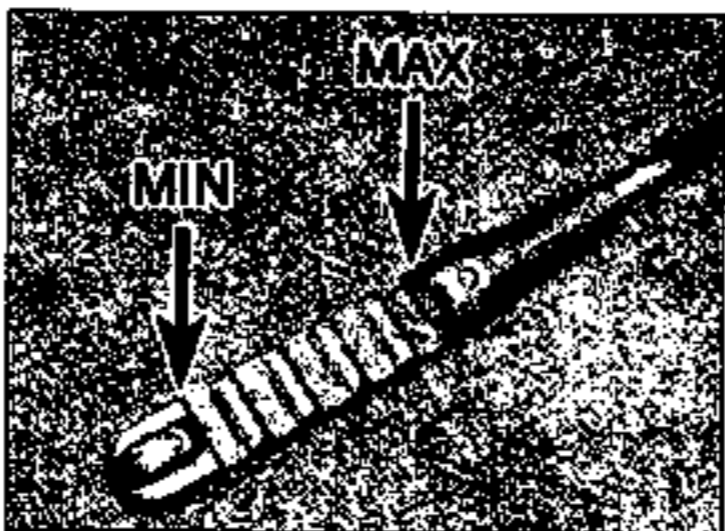
● Always maintain the level between the upper and lower dipstick marks (see photo 3). If the level is too low severe engine damage may occur. Oil seal failure may result if the engine is overfilled by adding too much oil.



1 The dipstick is located on the front of the engine (see *Underbonnet Check Points* for exact location). Withdraw the dipstick.



2 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 between the upper (MAX) mark and lower (MIN) mark. Approximately 1.0 litre of oil will raise the level from the lower mark to the upper mark.



4 Oil is added through the filler cap. Rotate the cap through a quarter-turn anti-clockwise and withdraw it. Top-up the level. A funnel may help to reduce spillage. Add the oil slowly, checking the level on the dipstick often. Do not overfill.

## Coolant level



**Warning:** DO NOT attempt to remove the 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

● With a sealed-type cooling system, 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 varies with the temperature of the engine. When the engine is cold, the coolant level should be slightly above the KALT/COLD mark on the side of the tank. When the engine is hot, the level will rise.



**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.



**3** Add a mixture of water and antifreeze to the expansion tank until the coolant is up to the MAX level mark. Refit the cap and tighten it securely.

## Brake (and clutch) 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.

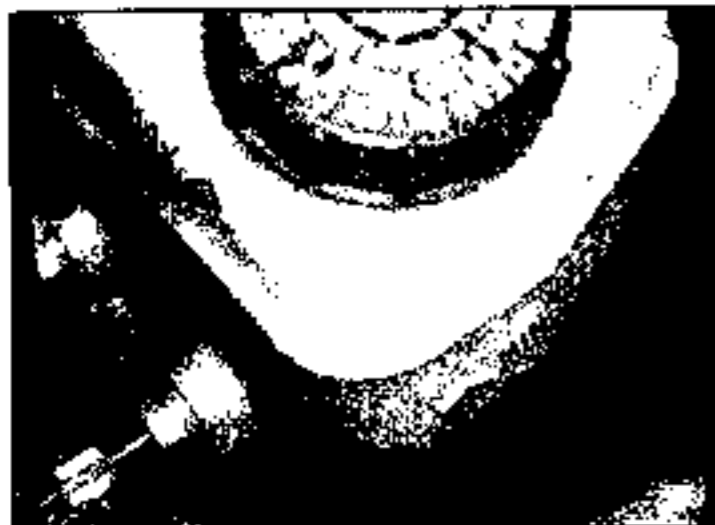


● Make sure that your car is on level ground.  
● The fluid level in the reservoir will drop slightly as the brake pads wear down, but the fluid level must never be allowed to drop below the MIN mark.

### 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.



**1** The MAX and MIN marks are indicated on the front of the reservoir. The fluid level must be kept between the marks at all times. **Note:** On Zafira models, first remove the plastic water deflector from in front of the windscreen



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



**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.

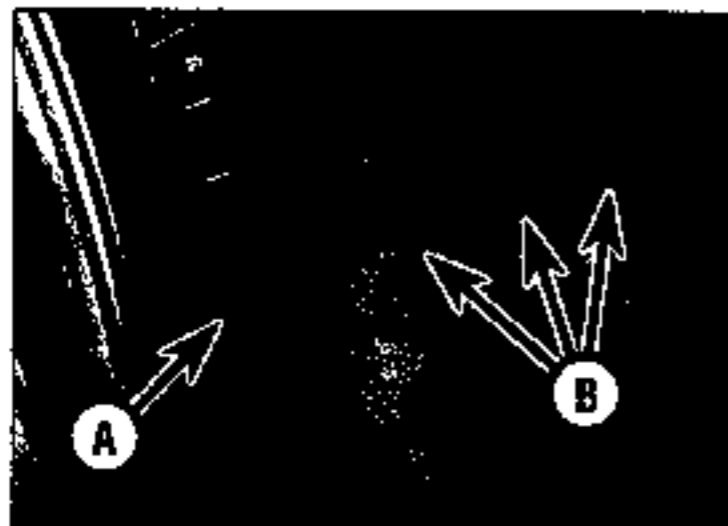
## Tyre condition and pressure

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.



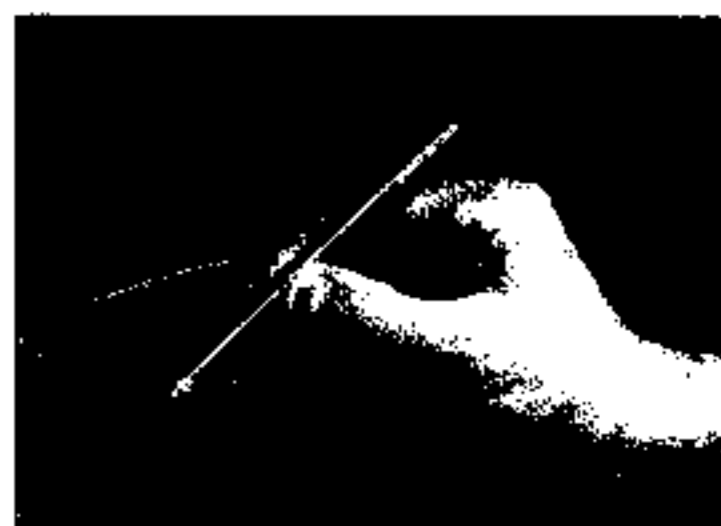
### 1 Tread Depth - visual check

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.

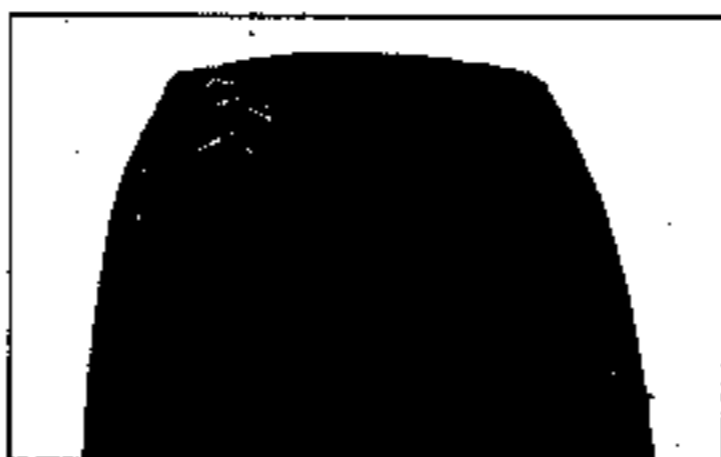
*Check and adjust pressures*

#### 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.

## Screen washer fluid level

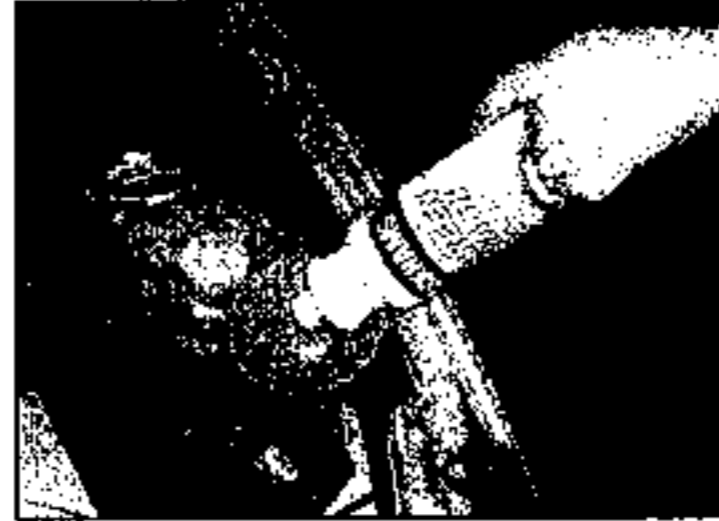
Screenwash additives not only keep the windscreen clean during foul weather, they also prevent the washer system freezing in cold

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 reservoir for the windscreen and rear window (where applicable) washer systems is located on the front left-hand side of the engine compartment. If topping-up is necessary, open the cap.

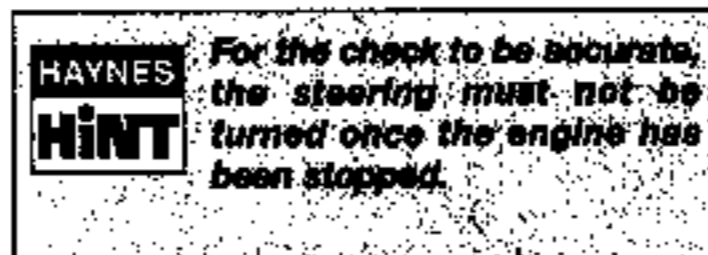


**2** When topping-up the reservoir(s) a screenwash additive should be added in the quantities recommended on the bottle.

## Power steering fluid level

### Before you start

- ✓ Park the vehicle on level ground.
- ✓ With the engine idling, turn the steering wheel slowly from lock to lock 2 or 3 times and set the front wheels at the straight-ahead position, then stop the engine.



### Safety First!

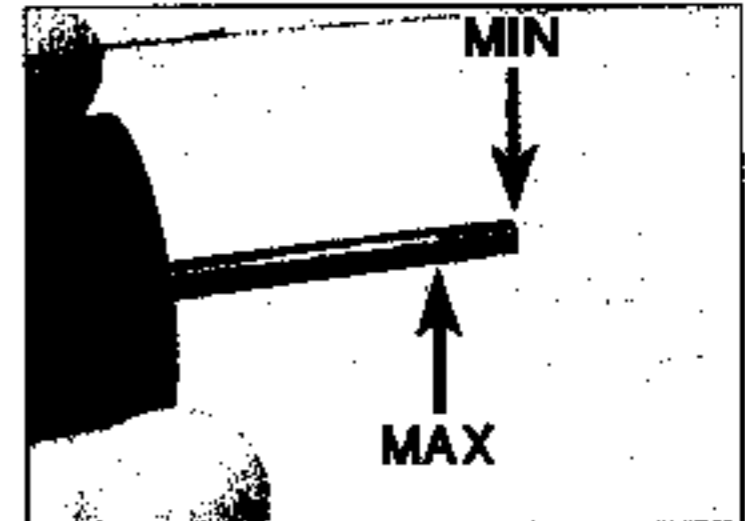
- The need for frequent topping-up indicates a leak, which should be investigated immediately.



**1** The power steering fluid reservoir is located on RHD vehicles on the left-hand side of the engine compartment between the transmission and the bulkhead. On LHD vehicles, the reservoir is located between the engine and bulkhead on the right-hand side of the engine compartment. The fluid level should be checked with the engine stopped. **Note:** On Zafira models, first remove the plastic water deflector from in front of the windscreen.



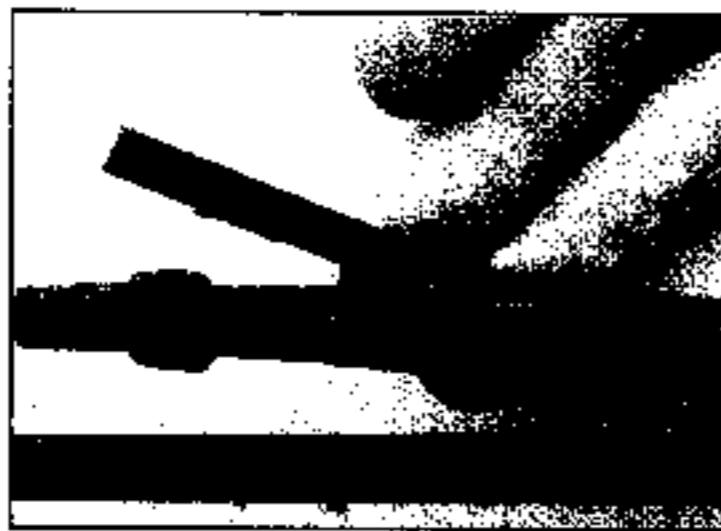
**2** Unscrew the filler cap from the top of the reservoir. On TRW manufactured units, the dipstick is incorporated into the filler cap, whilst Delphi manufactured units have the dipstick incorporated into the filler immediately below the filler cap. Wipe all fluid from the dipstick with a clean rag. Refit the dipstick, then remove it again. Note the fluid level on the dipstick.



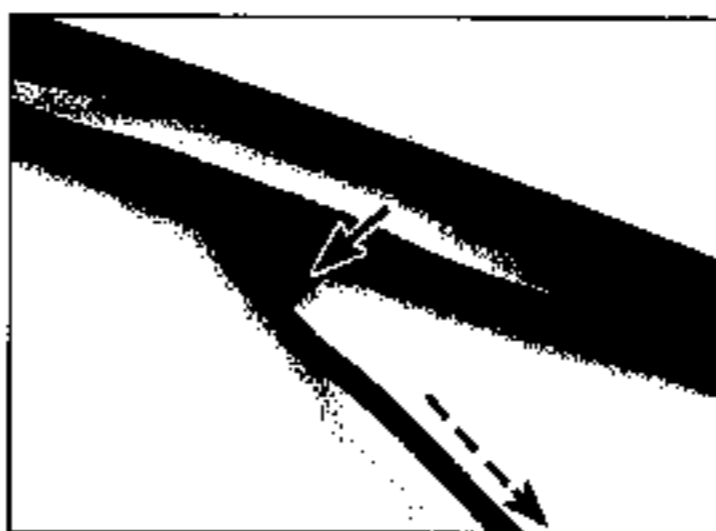
**3** When the engine is cold, the fluid level should be between the upper and lower marks on the dipstick. Top up the fluid level using the specified type of fluid (do not overfill the reservoir), then refit and tighten the filler cap.



## 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.



**2** To remove a wiper blade, pull the arm fully away from the glass until it locks. Swivel the blade through 90°, then squeeze the locking clip, and detach the blade from the arm. When fitting the new blade, make sure that the blade locks securely into the arm, and that the blade is orientated correctly.

## Battery

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

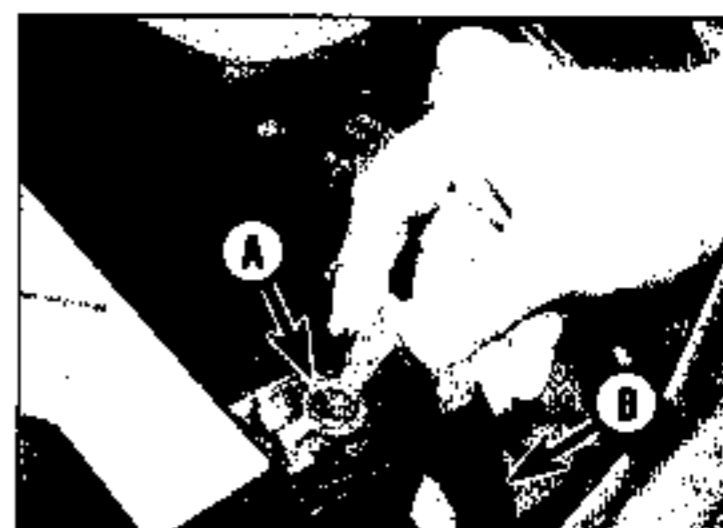
✓ Make sure that the battery tray is in good condition, and that the clamp is tight. Corrosion on the tray, retaining clamp and the battery itself can be removed with a solution of water and baking soda. Thoroughly rinse all cleaned areas with water. Any metal parts damaged by corrosion should be covered 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. Unclip the fabric cover from the top of the battery (if fitted) for access to the terminals. The exterior of the battery should be inspected periodically for damage such as a cracked case or cover.



**2** Check the tightness of battery clamps (A) to ensure good electrical connections. You should not be able to move them. Also check each cable (B) for cracks and frayed conductors.



**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** 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 . . .



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

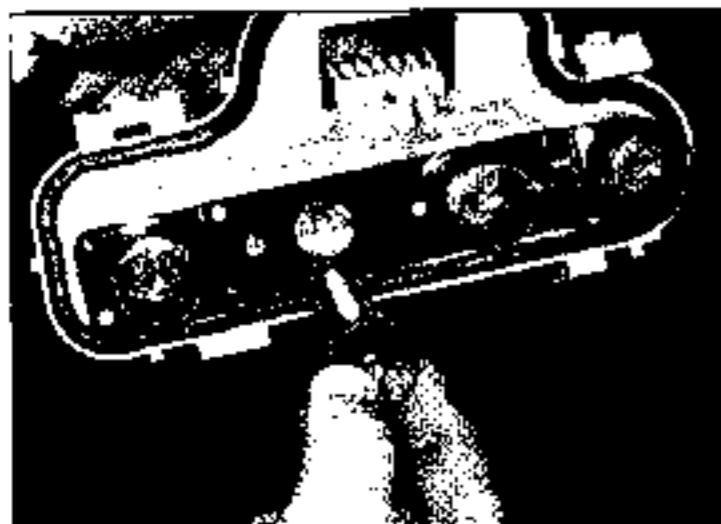
## Electrical systems

✓ 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.

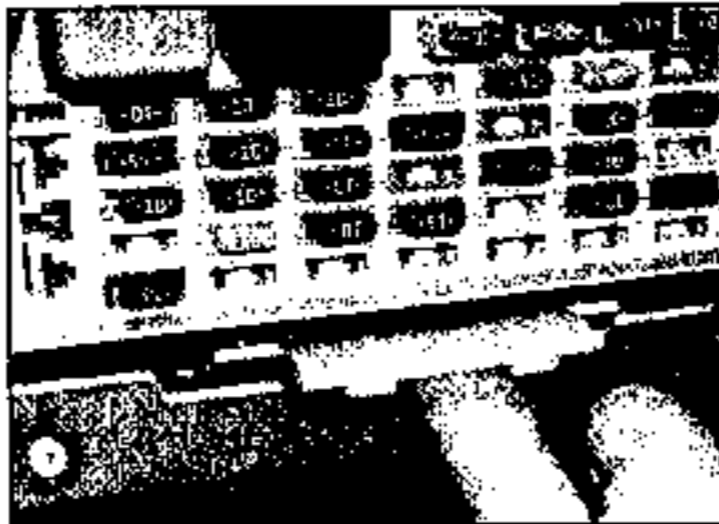
✓ Visually check all accessible wiring connectors, harnesses and retaining clips for security, and for signs of chafing or damage.

**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.*



**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 headlight has failed, it is likely that either a fuse has blown or that there is a fault in the circuit (see Chapter 12). On Zafira models, the main fuses are located beneath a cover on the driver's side of the fascia between the steering column and the drivers' door. Pull out and remove the cover, then pull out the bottom of the fusebox. On Astra models, the main fuses are located next to the steering column behind the storage compartment. Open the compartment, squeeze the lugs at each side, pull the compartment down to its full extent and detach it. Remove the fixing screws and remove the storage compartment frame, then pull out the bottom of the fusebox. Additional fuses and relays are located in the left-hand side of the engine compartment.



**3** To replace a blown fuse, remove it, where applicable, using the plastic tool provided. Fit a new fuse of the same rating, available from car accessory shops. It is important that you find the reason that the fuse blew (see *Electrical fault finding* in Chapter 12).

## Lubricants and fluids

Engine .....	Multigrade engine oil, viscosity SAE 5W/40, 10W/40 or 15W/40, to ACEA A2-96 or A3-96
Cooling system .....	Vauxhall Anti-Freeze GM L 1301
Manual gearbox .....	Gear oil, Vauxhall part number 09 120 541 or 09 540 998
Automatic transmission .....	Automatic transmission oil, Vauxhall part number 09 117 946
Power steering reservoir .....	Special steering fluid, Vauxhall part number 90 544 116
Brake and clutch fluid reservoir .....	Hydraulic fluid to SAE J1703, DOT 4

## 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.oilcare.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 (cold)

**Note:** Pressures apply to original-equipment tyres, and may vary if any other make or type of tyre is fitted; check with the tyre manufacturer or supplier for correct pressures if necessary. The pressures are given on the inside of the fuel filler flap.

### Astra

All models except 2.0 litre engine (all tyre sizes):

	Front	Rear
Up to 3 persons .....	2.2 bar (32 psi)	1.9 bar (28 psi)
Full load .....	2.4 bar (35 psi)	2.8 bar (41 psi)
2.0 litre engine models:		
195/60 tyres:		
Up to 3 persons .....	2.2 bar (32 psi)	1.9 bar (28 psi)
Full load .....	2.3 bar (33 psi)	2.8 bar (41 psi)
205/50 tyres:		
Up to 3 persons .....	2.3 bar (33 psi)	2.0 bar (29 psi)
Full load .....	2.5 bar (36 psi)	2.9 bar (42 psi)

### Zafira

All tyre sizes:

Up to 3 persons .....	2.2 bar (32 psi)	2.2 bar (32 psi)
Full load .....	2.6 bar (38 psi)	3.0 bar (44 psi)

# Chapter 1






## Routine maintenance and servicing

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### Degrees of difficulty

<p><b>Easy</b>, suitable for novice with little experience</p> 	<p><b>Fairly easy</b>, suitable for beginner with some experience</p> 	<p><b>Fairly difficult</b>, suitable for competent DIY mechanic</p> 	<p><b>Difficult</b>, suitable for experienced DIY mechanic</p> 	<p><b>Very difficult</b>, suitable for expert DIY or professional</p> 
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