

Contents

LIVING WITH YOUR METRO

Introduction	Page 0•4
Acknowledgements	Page 0•4
Safety First!	Page 0•5

Roadside Repairs

Jacking and vehicle support	Page 0•6
Towing	Page 0•6
Wheel changing	Page 0•7
Identifying leaks	Page 0•8
Jump starting	Page 0•9

Weekly Checks

Introduction	Page 0•10
Underbonnet check points	Page 0•10
Engine oil level	Page 0•11
Coolant level	Page 0•11
Screen washer fluid level	Page 0•12
Brake fluid level	Page 0•12
Clutch fluid level	Page 0•13
Electrical system	Page 0•13
Battery electrolyte level	Page 0•14
Wiper blades	Page 0•14
Tyre condition and pressure checks	Page 0•15
Lubricants and fluids	Page 0•16
Capacities	Page 0•16
Tyre pressures	Page 0•16

MAINTENANCE

Routine Maintenance and Servicing

Maintenance schedule	Page 1•1
Maintenance procedures	Page 1•4
Servicing Specifications	Page 1•15

Contents

REPAIRS & OVERHAUL

Engine and Associated Systems

Engine in-car repair procedures	Page	2A•1
Engine removal and general overhaul procedures	Page	2B•1
Cooling, heating and ventilation systems	Page	3•1
Fuel and exhaust systems	Page	4•1
Engine electrical systems	Page	5•1

Transmission

Clutch	Page	6•1
Manual gearbox	Page	7A•1
Automatic transmission	Page	7B•1
Final drive	Page	7C•1
Driveshafts	Page	8•1

Brakes and Suspension

Braking system	Page	9•1
Suspension and steering	Page	10•1

Body Equipment

Bodywork and fittings	Page	11•1
Body electrical systems	Page	12•1

Wiring Diagrams

Page 12•16

REFERENCE

Dimensions and Weights	Page	REF•1
Conversion Factors	Page	REF•2
Buying Spare Parts and Vehicle Identification	Page	REF•3
General Repair Procedures	Page	REF•4
Tools and Working Facilities	Page	REF•5
MOT Test Checks	Page	REF•7
Fault Diagnosis	Page	REF•11
Glossary of Technical Terms	Page	REF•18

Index

Page REF•23

The Austin Metro was first introduced in October 1980 and was initially only on sale to the UK market, export sales to the European market following in early 1981.

The 998 cc and 1275 cc engines are fitted, with low compression and economy versions available.

The body is of computer-based design and is assembled and welded by computer-controlled robots. The "A-Plus" engine and gearbox assembly is similar to that fitted to the Mini range, although it is much improved, with durability and economy prime considerations. Drive is through the front wheels and the engine/gearbox unit is fitted transversely across the front of the car.

The most significant design characteristics are bolt-on front wings, self-cleaning distributor contact points, fully closed crankcase ventilation system, front-mounted aluminium radiator, dual circuit braking system, and Hydragas suspension. Instrumentation is comprehensive and includes a seat belt warning lamp, brake pad wear warning lamp, and handbrake warning lamp.

Later additions to the range include a luxurious Vanden Plas version, sporty MG and MG Turbo versions, and 1.0 and 1.3 Vans. The range from 1985 includes 5-door as well as 3-door versions.



Metro 1.3 HLS



Metro Vanden Plas

Your Metro Manual

The aim of this manual is to help you get the best from your car. 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 the 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 step-by-step sequence so that even a novice can do the work.

Its arrangement

The manual is divided into Chapters, each covering a logical subdivision of the vehicle. The Chapters are each divided into Sections, numbered with single figures, e.g. 5; and the Sections are divided into numbered paragraphs.

It is freely illustrated, especially in those parts where there is a detailed sequence of operations to be carried out. The reference numbers used in illustration captions pinpoint the pertinent Section and the paragraph within that Section. That is, illustration 3.2 means that the illustration refers to Section 3, and paragraph 2 within that Section.

There is an alphabetical index at the back of the manual, as well as a contents list at the front. Each Chapter is also preceded by its individual contents list.

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

Unless otherwise stated, nuts and bolts are removed by turning anti-clockwise, and tightened by turning clockwise.

Vehicle manufacturers continually make changes to specifications and recommendations, and these, when notified, are incorporated into our manuals at the earliest opportunity.



MG Metro Turbo

Acknowledgements

Thanks are due to Champion Spark Plug, who supplied the illustrations showing spark plug conditions. Thanks are also due to Rover for the supply of technical information. Sykes-Pickavant Limited provided some of the workshop tools. Special thanks are due 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 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

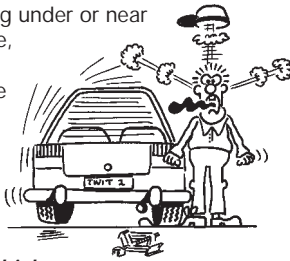
- Don't remove the radiator or expansion tank cap while the engine is hot.
- Engine oil, automatic transmission fluid or power steering fluid may also be dangerously hot if the engine has recently been running.

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.**



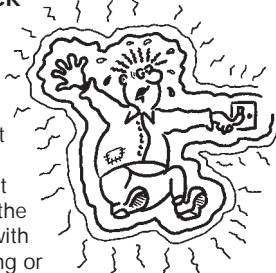
- Take care if loosening or tightening high-torque nuts when the vehicle is on stands. Initial loosening and final tightening should be done with the wheels on the ground.

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

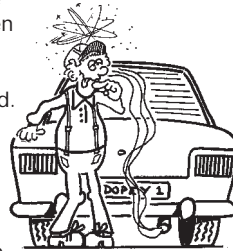
- Ignition HT voltage can be dangerous, especially to people with heart problems or a pacemaker. Don't work on or near the ignition system with the engine running or the ignition switched on.



- 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.

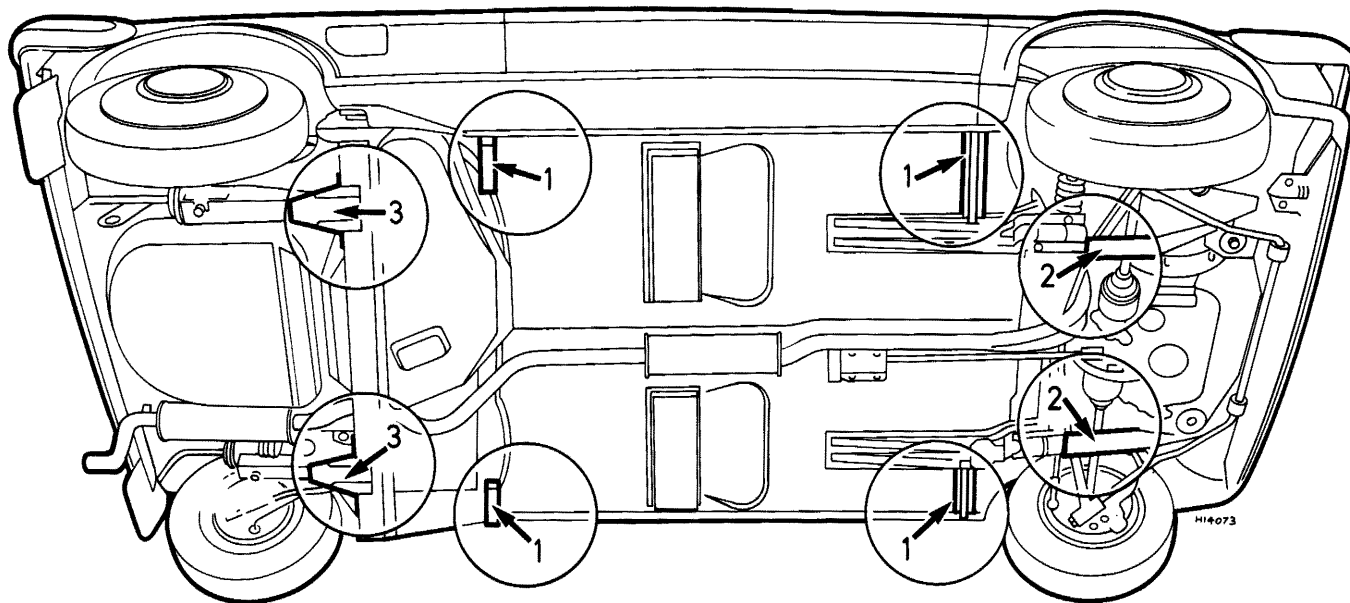
Jacking and vehicle support

The jack provided with the vehicle is designed primarily for emergency wheel changing, and its use for servicing and overhaul work on the vehicle is best avoided. Instead, a more substantial workshop jack (trolley jack or similar) should be used. Whichever type is employed, it is essential that additional safety support is provided by means of axle stands designed for this purpose. Never use makeshift means such as wooden blocks or piles of house bricks, as

these can easily topple or, in the case of bricks, disintegrate under the weight of the vehicle. When jacking up the car with a trolley jack, lift under the widest points of the subframe (see illustration). To raise both wheels at the same time use a 36 in (914 mm) length of square steel tubing placed beneath the subframes with a central spigot to fit the jack. Never jack up the car beneath the suspension arms. To support the car, place axle stands under the jacking points beneath

the sills or under the widest points of the subframe.

If removal of the wheels is not required, the use of drive-on ramps is recommended. Caution should be exercised to ensure that they are correctly aligned with the wheels, and that the vehicle is not driven too far along them so that it promptly falls off the other ends, or tips the ramps.



Jacking and support points

1 Jacking brackets

2 Front jacking points (servicing)

3 Rear jacking points (servicing)

Towing

Provided a fault has not developed in the gearbox or final drive, the car may be towed on its four wheels using either lashing eye located on the front subframe. The lashing eye located beneath the left-hand rear underbody is intended for use on a transporter only, and should not be used for towing another vehicle (see illustration).

On automatic transmission models always check that the engine oil level is correct before towing the car. Do not tow the car at speeds greater than 30 mph (50 km/h) or for a distance of more than 30 miles (50 km). If these conditions cannot be met, or if transmission damage is suspected, the car must be towed with the front wheels clear of the ground.



Rear lashing eye - not to be used for towing

Wheel changing

To change a roadwheel, remove the spare wheel and tool kit from the well in the rear compartment (see illustration). Apply the handbrake and chock the wheel diagonally opposite the one to be changed. Make sure that the car is located on firm level ground. Lever off the hub cover (see illustration) and slightly loosen the wheel nuts with the

spanner provided. Raise the jack and insert the peg in the nearest jacking point to the wheel being removed (see illustration). Using the handle provided, raise the jack until the wheel is free of the ground (see illustration). Unscrew the wheel nuts and remove the wheel, then remove the wheel finisher if fitted.

Fit the finisher to the spare wheel and fit the

wheel on the studs. Fit and tighten the wheel nuts with their tapered ends towards the wheel. Lower the jack, then finally tighten the wheel nuts and refit the hub cover. Remove the chock, and refit the wheel and tool kit to the rear compartment.



Spare wheel compartment



Levering off the hub cover



Body jacking point



Jacking the car

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



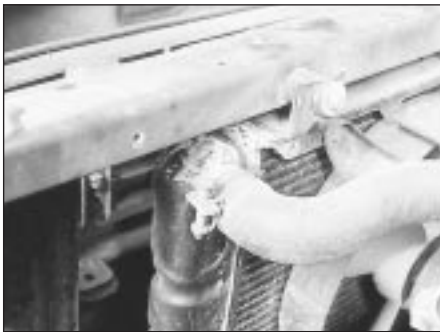
...or from the base of the oil filter.

Gearbox oil



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

Antifreeze



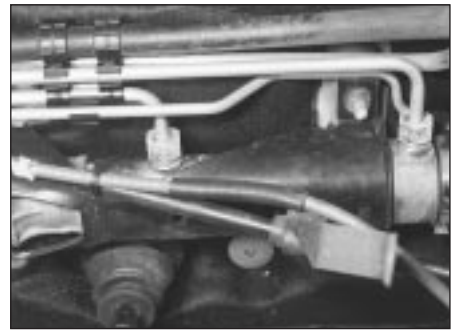
Leaking antifreeze often leaves a crystalline deposit like this.

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.

Jump starting

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).

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.

- ✓ 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).



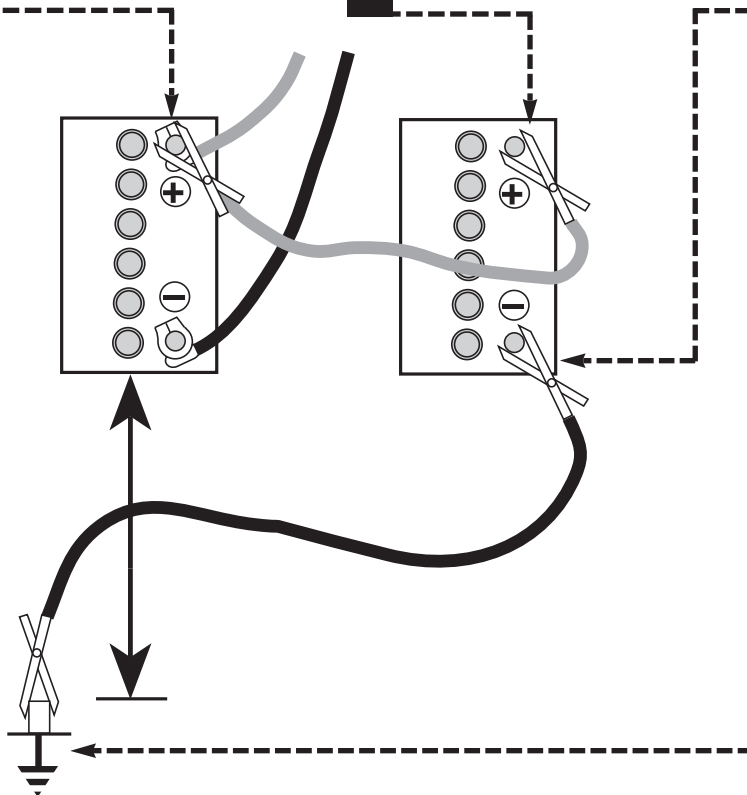
1 Connect one end of the red jump lead to the positive (+) terminal of the flat battery



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, then with the engine running at idle speed, disconnect the jump leads in the reverse order of connection.

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;

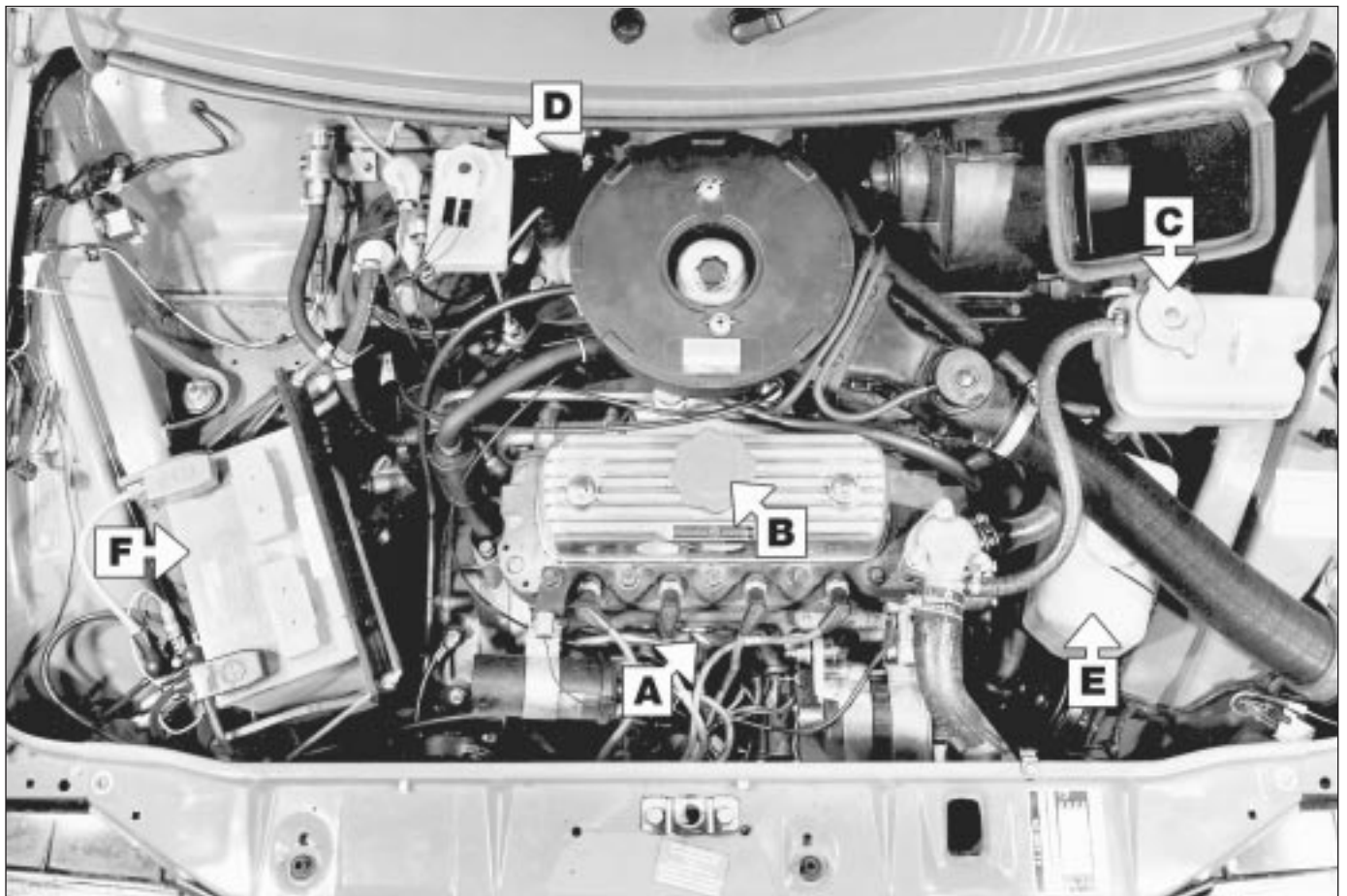
□ Keeping an eye on tyre condition and pressures, will not only help to stop them wearing out prematurely, but could also save your life.

□ 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



A Oil level dipstick

B Engine oil filler cap

C Coolant expansion tank cap

D Brake fluid reservoir

E Windscreen washer reservoir

F Battery

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.



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 (see "Fault Finding").
- 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 engine oil level is checked with a dipstick that extends through the dipstick tube on the side of the cylinder block and into the sump at the bottom of the engine.



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 0.5 litre of oil will raise the level from the lower mark to the upper mark.



4 Oil is added through the filler cap. Unscrew the cap and top-up the level; a funnel may help to reduce spillage. Add the oil slowly, checking the level on the dipstick frequently. Avoid overfilling (see "Car Care").

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 as shown. 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 turn the expansion tank cap anti-clockwise to relieve the system pressure. Once any pressure is released, turn the cap anti-clockwise until it can be lifted off.



3 Add a mixture of water and antifreeze through the expansion tank filler neck until the coolant reaches the "MAX" level mark. Refit the cap, turning it clockwise as far as it will go until it is secure.