

Engine

- ☐ Engine fails to rotate when attempting to start
- ☐ Engine rotates but will not start
- ☐ Engine difficult to start when cold
- ☐ Engine difficult to start when hot
- ☐ Starter motor noisy or excessively-rough in engagement
- ☐ Engine starts but stops immediately
- ☐ Engine idles erratically
- ☐ Engine misfires at idle speed
- ☐ Engine misfires throughout the driving speed range
- ☐ Engine hesitates on acceleration
- ☐ Engine stalls
- ☐ Engine lacks power
- ☐ Engine backfires
- ☐ Oil pressure warning light illuminated with engine running
- ☐ Engine runs-on after switching off
- ☐ Engine noises
- ☐ Engine oil consumption excessive

Cooling system

- ☐ Overheating
- ☐ Overcooling
- ☐ External coolant leakage
- ☐ Internal coolant leakage
- ☐ Corrosion

Fuel and exhaust systems

- ☐ Excessive fuel consumption
- ☐ Fuel leakage and/or fuel odour
- ☐ Excessive noise or fumes from exhaust system

Clutch

- ☐ Pedal travels to floor - no pressure or very little resistance
- ☐ Clutch fails to disengage (unable to select gears)
- ☐ Clutch slips (engine speed increases with no increase in vehicle speed)
- ☐ Judder as clutch is engaged
- ☐ Noise when depressing or releasing clutch pedal

Manual transmission

- ☐ Noisy in neutral with engine running
- ☐ Noisy in one particular gear
- ☐ Difficulty engaging gears
- ☐ Jumps out of gear
- ☐ Vibration
- ☐ Lubricant leaks

Automatic transmission

- ☐ Fluid leakage
- ☐ Transmission fluid brown, or has burned smell
- ☐ Transmission will not downshift (kickdown) with accelerator pedal fully depressed
- ☐ General gear selection problems
- ☐ Engine will not start in any gear, or starts in gears other than Park or Neutral
- ☐ Transmission slips, is noisy, or has no drive in forward or reverse gears

Driveshafts

- ☐ Clicking or knocking noise on turns (at slow speed on full lock)
- ☐ Vibration when decelerating or accelerating

Braking system

- ☐ Vehicle pulls to one side under braking
- ☐ Noise (grinding or high-pitched squeal) when brakes applied
- ☐ Excessive brake pedal travel
- ☐ Brake pedal feels spongy when depressed
- ☐ Excessive brake pedal effort required to stop vehicle
- ☐ Judder felt through brake pedal or steering wheel when braking
- ☐ Brakes binding

Suspension and steering systems

- ☐ Vehicle pulls to one side
- ☐ Wheel wobble and vibration
- ☐ Excessive pitching and/or rolling around corners, or during braking
- ☐ Wandering or general instability
- ☐ Excessively-stiff steering
- ☐ Excessive play in steering
- ☐ Lack of power assistance
- ☐ Tyre wear excessive

Electrical system

- ☐ Battery will not hold a charge for more than a few days
- ☐ Ignition/no-charge warning light remains illuminated with engine running
- ☐ Ignition/no-charge warning light fails to come on
- ☐ Lights inoperative
- ☐ Instrument readings inaccurate or erratic
- ☐ Horn inoperative, or unsatisfactory in operation
- ☐ Windscreen/tailgate wipers inoperative or unsatisfactory in operation
- ☐ Windscreen/tailgate washers inoperative, or unsatisfactory in operation
- ☐ Electric windows inoperative, or unsatisfactory in operation
- ☐ Central locking system inoperative, or unsatisfactory in operation

Introduction

The vehicle owner who does his or her own maintenance according to the recommended service schedules should not have to use this section of the manual very often. Modern component reliability is such that, provided those items subject to wear or deterioration are inspected or renewed at the specified intervals, sudden failure is comparatively rare. Faults do not usually just happen as a result of sudden failure, but develop over a period of time. Major mechanical failures in particular are usually preceded by characteristic

symptoms over hundreds or even thousands of miles. Those components which do occasionally fail without warning are often small and easily carried in the vehicle.

With any fault-finding, the first step is to decide where to begin investigations. Sometimes this is obvious, but on other occasions, a little detective work will be necessary. The owner who makes half a dozen haphazard adjustments or replacements may be successful in curing a fault (or its symptoms), but will be none the

wiser if the fault recurs, and ultimately may have spent more time and money than was necessary. A calm and logical approach will be found to be more satisfactory in the long run. Always take into account any warning signs or abnormalities that may have been noticed in the period preceding the fault - power loss, high or low gauge readings, unusual smells, etc - and remember that failure of components such as fuses or spark plugs may only be pointers to some underlying fault.

The pages which follow provide an easy-reference guide to the more common problems which may occur during the operation of the vehicle. These problems and their possible causes are grouped under headings denoting various components or systems, such as Engine, Cooling system, etc. The general Chapter which deals with the problem is also shown in brackets; refer to the relevant Part of that Chapter for system-specific information. Whatever the fault, certain basic principles apply. These are as follows:

Verify the fault. This is simply a matter of being sure that you know what the symptoms are before starting work. This is particularly important if you are investigating a fault for someone else, who may not have described it very accurately.

Don't overlook the obvious. For example, if the vehicle won't start, is there petrol in the tank? (Don't take anyone else's word on this particular point, and don't trust the fuel gauge either!) If an electrical fault is indicated, look for loose or broken wires before digging out the test gear.

Cure the disease, not the symptom. Substituting a flat battery with a fully-charged one will get you off the hard shoulder, but if the underlying cause is not attended to, the new battery will go the same way. Similarly, changing oil-fouled spark plugs for a new set will get you moving again, but remember that the reason for the fouling (if it wasn't simply an incorrect grade of plug) will have to be established and corrected.

Don't take anything for granted. Particularly, don't forget that a 'new' component may itself

be defective (especially if it's been rattling around in the boot for months), and don't leave components out of a fault diagnosis sequence just because they are new or recently fitted. When you do finally diagnose a difficult fault, you'll probably realise that all the evidence was there from the start.

Consider what work, if any, has recently been carried out. Many faults arise through careless or hurried work. For instance, if any work has been performed under the bonnet, could some of the wiring have been dislodged or incorrectly routed, or a hose trapped? Have all the fasteners been properly tightened? Were new, genuine parts and new gaskets used? There is often a certain amount of detective work to be done in this case, as an apparently-unrelated task can have far-reaching consequences.

Engine

Engine fails to rotate when attempting to start

- ☐ Battery terminal connections loose or corroded (*Weekly checks*).
- ☐ Battery discharged or faulty, or electrolyte level low (Chapter 1 or 5A).
- ☐ Broken, loose or disconnected wiring in the starting circuit (Chapter 5A).
- ☐ Defective starter solenoid or switch (Chapter 5A).
- ☐ Defective starter motor (Chapter 5A).
- ☐ Starter pinion or flywheel ring gear teeth loose or broken (relevant part of Chapter 2 or 5A).
- ☐ Engine/transmission earth leads broken or disconnected (Chapter 2E or 5A).
- ☐ Automatic transmission not in Park/Neutral position, or selector cable adjustment incorrect (Chapter 7B).

Engine rotates but will not start

- ☐ Fuel tank empty.
- ☐ Fuel pump not working, or fuel lines blocked/damaged (Chapter 4A or 4B).
- ☐ Fuel filter blocked, where applicable (Chapter 1).
- ☐ Fuel injector wiring disconnected or damaged (Chapter 4A or 4B).
- ☐ Battery discharged, or electrolyte level low (engine rotates slowly) (Chapter 1 or 5A).
- ☐ Battery terminal connections loose or corroded (*Weekly checks*).
- ☐ Ignition components damp or damaged (Chapter 1 or 5B).
- ☐ Broken, loose or disconnected wiring in the ignition circuit (Chapter 1 or 5B).
- ☐ Immobiliser fault (Chapter 12, or *Disconnecting the battery*).
- ☐ Worn, faulty or incorrectly-gapped spark plugs (Chapter 1).
- ☐ Low cylinder compressions (relevant part of Chapter 2).
- ☐ Major mechanical failure (eg timing belt broken) (relevant part of Chapter 2).

Engine difficult to start when cold

- ☐ Battery discharged or faulty, or electrolyte level low (Chapter 1 or 5A).
- ☐ Battery terminal connections loose or corroded (*Weekly checks*).
- ☐ Worn, faulty or incorrectly-gapped spark plugs (Chapter 1).
- ☐ Other ignition system fault (Chapter 1 or 5B).
- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Low cylinder compressions (relevant part of Chapter 2).

Engine difficult to start when hot

- ☐ Air cleaner element dirty or clogged (Chapter 1).
- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Low cylinder compressions (relevant part of Chapter 2).

Starter motor noisy or excessively-rough in engagement

- ☐ Starter pinion or flywheel ring gear teeth loose or broken (Chapter 2 or 5A).
- ☐ Starter motor mounting bolts loose or missing (Chapter 5A).
- ☐ Starter motor internal components worn or damaged (Chapter 5A).

Engine starts but stops immediately

- ☐ Loose or faulty electrical connections in the ignition circuit (Chapter 1 or 5B).
- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).

Engine idles erratically

- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Fuel injectors partially blocked (Chapter 4A or 4B).
- ☐ Air cleaner element dirty or clogged (Chapter 1).
- ☐ Crankcase breather hoses blocked or damaged (Chapter 1 or 5B).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).
- ☐ Worn, faulty or incorrectly-gapped spark plugs (Chapter 1).
- ☐ Uneven or low cylinder compressions (relevant part of Chapter 2).
- ☐ Camshaft lobes worn (relevant part of Chapter 2).

Engine misfires at idle speed

- ☐ Worn, faulty or incorrectly-gapped spark plugs (Chapter 1).
- ☐ Faulty spark plug HT leads, where applicable (Chapter 5B).
- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Fuel injector(s) partially blocked (Chapter 4A or 4B).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).
- ☐ Uneven or low cylinder compressions (relevant part of Chapter 2).
- ☐ Disconnected, leaking or perished crankcase breather hoses (Chapter 1 or 5B).
- ☐ Crankshaft sensor dirty or damaged (Chapter 5B).

Engine (continued)

Engine misfires throughout the driving speed range

- ☐ Fuel filter choked (Chapter 1).
- ☐ Fuel pump faulty (relevant part of Chapter 4).
- ☐ Fuel tank vent blocked or fuel pipes restricted (relevant part of Chapter 4).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).
- ☐ Worn, faulty or incorrectly-gapped spark plugs (Chapter 1).
- ☐ Faulty spark plug HT leads, where applicable (Chapter 5B).
- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Fuel injector(s) partially blocked (Chapter 4A or 4B).
- ☐ Uneven or low cylinder compressions (relevant part of Chapter 2).
- ☐ Crankshaft sensor dirty or damaged (Chapter 5B).

Engine hesitates on acceleration

- ☐ Worn, faulty or incorrectly-gapped spark plugs (Chapter 1).
- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Fuel injector(s) partially blocked (Chapter 4A or 4B).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).

Engine stalls

- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Fuel injector(s) partially blocked (Chapter 4A or 4B).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).
- ☐ Fuel filter choked (Chapter 1).
- ☐ Fuel pump faulty (relevant part of Chapter 4).
- ☐ Fuel tank vent blocked or fuel pipes restricted (Chapter 4A or 4B).
- ☐ Crankshaft sensor dirty or damaged (Chapter 5B).

Engine lacks power

- ☐ Engine management system fault - possibly in 'limp-home' mode (Chapter 1, 4A, 4B or 5B).
- ☐ Fuel injector(s) partially blocked (Chapter 4A or 4B).
- ☐ Timing belt incorrectly fitted (relevant part of Chapter 2).
- ☐ Fuel filter choked (Chapter 1).
- ☐ Fuel pump faulty (relevant part of Chapter 4).
- ☐ Knock sensor faulty - ignition retarded (Chapter 5B).
- ☐ Uneven or low cylinder compressions (relevant part of Chapter 2).
- ☐ Worn, faulty or incorrectly-gapped spark plugs (Chapter 1).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).
- ☐ Brakes binding (Chapter 1 or 9).
- ☐ Clutch slipping (Chapter 6).
- ☐ Automatic transmission fluid level incorrect (Chapter 1).

Engine backfires

- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Spark plug HT leads incorrectly fitted (Chapter 5B).
- ☐ Timing belt incorrectly fitted (relevant part of Chapter 2).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).
- ☐ Emission control system fault (Chapter 4C).

Oil pressure warning light illuminated with engine running

- ☐ Low oil level or incorrect oil grade (Chapter 1).
- ☐ Faulty oil pressure switch (relevant part of Chapter 2).
- ☐ Worn engine bearings and/or oil pump (relevant part of Chapter 2).
- ☐ High engine operating temperature (Chapter 3).
- ☐ Oil pump pressure relief valve defective (relevant part of Chapter 2).
- ☐ Oil pick-up pipe strainer clogged (relevant part of Chapter 2).

Engine runs-on after switching off

- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Excessive carbon build-up on cylinder head/piston crowns (relevant part of Chapter 2).
- ☐ High engine operating temperature (Chapter 3).

Engine noises

Pre-ignition (pinking) or knocking during acceleration or under load

- ☐ Incorrect grade of fuel (Chapter 4A or 4B).
- ☐ Knock sensor faulty (Chapter 5B).
- ☐ Vacuum leak at the inlet manifold or associated hoses (Chapter 1, 4A or 4B).
- ☐ Excessive carbon build-up on cylinder head/piston crowns (relevant part of Chapter 2).

Whistling or wheezing noises

- ☐ Leaking inlet manifold gasket (Chapter 4A or 4B).
- ☐ Leaking exhaust manifold gasket or front pipe-to-manifold joint (Chapter 4C).
- ☐ Leaking vacuum hose (Chapter 1, 4, 5B or 9).
- ☐ Blowing cylinder head gasket (relevant part of Chapter 2).

Tapping or rattling noises

- ☐ Worn valve gear or camshafts (relevant part of Chapter 2).
- ☐ Worn or faulty hydraulic tappets (relevant part of Chapter 2).
- ☐ Worn timing belt, tensioner, or idler pulleys (relevant part of Chapter 2).
- ☐ Ancillary component fault (coolant pump, alternator, etc) (Chapter 3 or 5A).

Knocking or thumping noises

- ☐ Worn big-end bearings (regular heavy knocking, perhaps less under load) (Chapter 2E).
- ☐ Worn main bearings (rumbling and knocking, perhaps worsening under load) (Chapter 2E).
- ☐ Piston slap (most noticeable when cold - engine worn) (Chapter 2E).
- ☐ Ancillary component fault (coolant pump, alternator, etc) (Chapter 3 or 5A).

Engine oil consumption excessive

- ☐ Wrong grade of oil, or oil level too high (*Weekly checks*).
- ☐ Oil filter or sump drain plug loose (Chapter 1).
- ☐ Oil seal leaking (relevant part of Chapter 2).
- ☐ Camshaft cover seal leaking (Chapter 2B or 2D).
- ☐ Sump seal leaking (relevant part of Chapter 2).
- ☐ Cylinder head gasket leaking (relevant part of Chapter 2).
- ☐ Engine burning oil - piston ring or cylinder bore wear (Chapter 2E).

Cooling system

Overheating

- ☐ Insufficient coolant in system (*Weekly checks*).
- ☐ Thermostat faulty - not opening (Chapter 3).
- ☐ Radiator core blocked or grille restricted (Chapter 3).
- ☐ Radiator electric cooling fan(s) or coolant temperature sensor faulty (Chapter 3).
- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Pressure cap faulty (Chapter 3).
- ☐ Auxiliary drivebelt worn or slipping (Chapter 1).
- ☐ Airlock in cooling system (Chapter 1, Section 31).

Overcooling

- ☐ Thermostat faulty - not closing, or thermostat missing (Chapter 3).
- ☐ Inaccurate coolant temperature sensor (Chapter 3).

External coolant leakage

- ☐ Deteriorated or damaged hoses or hose clips (Chapter 1).
- ☐ Radiator core or heater matrix leaking (Chapter 3).
- ☐ Pressure cap faulty (Chapter 3).
- ☐ Coolant pump seal leaking (Chapter 3).
- ☐ Boiling due to overheating (Chapter 3).

Internal coolant leakage

- ☐ Leaking cylinder head gasket (relevant part of Chapter 2).
- ☐ Cracked cylinder head or cylinder bore (Chapter 2E).

Corrosion

- ☐ Infrequent draining and flushing (Chapter 1).
- ☐ Incorrect antifreeze mixture, or inappropriate antifreeze type (Chapter 1 or 3).

Fuel and exhaust systems

Excessive fuel consumption

- ☐ Unsympathetic driving style, or adverse conditions.
- ☐ Air cleaner filter element dirty or clogged (Chapter 1).
- ☐ Engine management system fault (Chapter 1, 4A, 4B or 5B).
- ☐ Fuel injector(s) partially blocked (Chapter 4A or 4B).
- ☐ Tyres under-inflated (*Weekly checks*).

Fuel leakage and/or fuel odour

- ☐ Damaged or corroded fuel tank, pipes or connections (Chapter 1).

Excessive noise or fumes from exhaust system

- ☐ Leaking exhaust system or manifold joints (Chapter 1 or 4C).
- ☐ Leaking, corroded or damaged silencers or pipe (Chapter 1 or 4C).
- ☐ Broken mountings, causing body or suspension contact (Chapter 1 or 4C).

Clutch

Note: The clutch is actuated either by a cable, or by hydraulics (using a master and slave cylinder). Refer to Chapter 6 and establish which type is fitted.

Pedal travels to floor - no pressure or very little resistance

- ☐ Air in clutch hydraulic system (Chapter 6).
- ☐ Faulty clutch slave cylinder (Chapter 6).
- ☐ Faulty clutch master cylinder (Chapter 6).
- ☐ Clutch cable broken (Chapter 6).
- ☐ Pedal return spring detached or broken (Chapter 6).
- ☐ Broken diaphragm spring in clutch pressure plate (Chapter 6).

Clutch fails to disengage (unable to select gears)

- ☐ Air in clutch hydraulic system (Chapter 6).
- ☐ Faulty clutch slave cylinder (Chapter 6).
- ☐ Faulty clutch master cylinder (Chapter 6).
- ☐ Clutch cable incorrectly adjusted (Chapter 6).
- ☐ Clutch disc sticking on transmission mainshaft splines (Chapter 6).
- ☐ Clutch disc sticking to flywheel or pressure plate (Chapter 6).
- ☐ Faulty pressure plate assembly (Chapter 6).
- ☐ Clutch release mechanism worn or incorrectly assembled (Chapter 6).

Clutch slips (engine speed increases with no increase in vehicle speed)

- ☐ Clutch cable incorrectly adjusted (Chapter 6).
- ☐ Clutch disc linings excessively worn (Chapter 6).
- ☐ Clutch disc linings contaminated with oil or grease (Chapter 6).
- ☐ Faulty pressure plate or weak diaphragm spring (Chapter 6).

Judder as clutch is engaged

- ☐ Clutch disc linings contaminated with oil or grease (Chapter 6).
- ☐ Clutch disc linings excessively worn (Chapter 6).
- ☐ Faulty or distorted pressure plate or diaphragm spring (Chapter 6).
- ☐ Worn or loose engine/transmission mountings (relevant part of Chapter 2).
- ☐ Clutch disc hub or transmission input shaft splines worn (Chapter 6).

Noise when depressing or releasing clutch pedal

- ☐ Worn clutch release bearing (Chapter 6).
- ☐ Worn or dry clutch pedal bushes (Chapter 6).
- ☐ Faulty pressure plate assembly (Chapter 6).
- ☐ Pressure plate diaphragm spring broken (Chapter 6).
- ☐ Broken clutch disc cushioning springs (Chapter 6).
- ☐ Clutch cable sticking or damaged (Chapter 6).

Manual transmission

Noisy in neutral with engine running

- ☐ Mainshaft bearings worn (noise apparent with clutch pedal released, but not when depressed) (Chapter 7A).*
- ☐ Clutch release bearing worn (noise apparent with clutch pedal depressed, possibly less when released) (Chapter 6).

Noisy in one particular gear

- ☐ Worn, damaged or chipped gear teeth (Chapter 7A).*
- ☐ Worn bearings (Chapter 7A).*

Difficulty engaging gears

- ☐ Clutch fault (Chapter 6).
- ☐ Selector cables out of adjustment (Chapter 7A).
- ☐ Worn synchroniser assemblies (Chapter 7A).*

Jumps out of gear

- ☐ Selector cables out of adjustment (Chapter 7A).
- ☐ Worn synchroniser assemblies (Chapter 7A).*
- ☐ Worn selector forks (Chapter 7A).*

Vibration

- ☐ Lack of oil (Chapter 1).
- ☐ Worn bearings (Chapter 7A).*

Lubricant leaks

- ☐ Leaking driveshaft/transmission oil seal (Chapter 7A).
- ☐ Leaking housing joint (Chapter 7A).*
- ☐ Leaking input shaft oil seal (Chapter 7A).

* Although the corrective action necessary to remedy the symptoms described is beyond the scope of the home mechanic, the above information should be helpful in isolating the cause of the condition, so that the owner can communicate clearly with a professional mechanic.

Automatic transmission

Note: Due to the complexity of the automatic transmission, it is difficult for the home mechanic to properly diagnose and service this unit. For problems other than the following, the vehicle should be taken to a dealer service department or automatic transmission specialist.

Fluid leakage

- ☐ Automatic transmission fluid is usually dark in colour. Fluid leaks should not be confused with engine oil, which can easily be blown onto the transmission by airflow.
- ☐ To determine the source of a leak, first remove all built-up dirt and grime from the transmission housing and surrounding areas, using a degreasing agent, or by steam-cleaning. Drive the vehicle at low speed, so airflow will not blow the leak far from its source. Raise and support the vehicle, and determine where the leak is coming from. The following are common areas of leakage:
 - a) Transmission fluid sump (Chapter 1 or 7B).
 - b) Dipstick tube (Chapter 1 or 7B).
 - c) Transmission-to-fluid cooler pipes/unions (Chapter 1 or 7B).
 - d) Transmission fluid seals (Chapter 7B).

Transmission fluid brown, or has burned smell

- ☐ Transmission fluid level low, or fluid in need of renewal (Chapter 1).

Transmission will not downshift (kickdown) with accelerator pedal fully depressed

- ☐ Low transmission fluid level (Chapter 1).
- ☐ Incorrect selector cable adjustment (Chapter 1 or 7B).
- ☐ Automatic transmission ECU or sensor fault (Chapter 7B).

General gear selection problems

- ☐ Checking and adjusting the selector cable is covered in Chapter 1 and 7B. The following are common problems which may be caused by a poorly-adjusted cable:
 - a) Engine starting in gears other than Park or Neutral.
 - b) Indicator on gear selector lever pointing to a gear other than the one actually being used.
 - c) Vehicle moves when in Park or Neutral.
 - d) Poor gear shift quality or erratic gear changes.

Refer to Chapter 7B for the selector cable adjustment procedure.

Engine will not start in any gear, or starts in gears other than Park or Neutral

- ☐ Incorrect selector cable adjustment (Chapter 7B).
- ☐ Automatic transmission ECU or sensor fault (Chapter 7B).

Transmission slips, is noisy, or has no drive in forward or reverse gears

- ☐ There are many probable causes for the above problems, but the home mechanic should be concerned with only one possibility - fluid level. Before taking the vehicle to a dealer or transmission specialist, check the fluid level and condition of the fluid as described in Chapter 1. Correct the fluid level as necessary, or change the fluid if needed. If the problem persists, professional help will be necessary.

Driveshafts

Clicking or knocking noise on turns (at slow speed on full lock)

- ☐ Lack of constant velocity joint lubricant, possibly due to damaged gaiter (Chapter 8).
- ☐ Worn outer constant velocity joint (Chapter 8).

Vibration when decelerating or accelerating

- ☐ Worn inner constant velocity joint (Chapter 8).
- ☐ Bent or distorted driveshaft (Chapter 8).

Braking system

Note: Before assuming that a brake problem exists, make sure that the tyres are in good condition and correctly inflated, that the front wheel alignment is correct, and that the vehicle is not loaded with weight in an unequal manner. Apart from checking the condition of all brake pipes/hoses and electrical connections, any faults occurring on the Anti-lock Braking System (ABS) should be referred to a FIAT dealer for repair.

Vehicle pulls to one side under braking

- ☐ Worn, defective, damaged or contaminated front brake pads (or rear brake shoes) on one side (Chapter 9).
- ☐ Seized or partially-seized front brake caliper piston or rear wheel cylinder (Chapter 9).
- ☐ A mixture of brake pad/shoe lining materials fitted between sides (Chapter 9).
- ☐ Brake caliper mounting bolts loose (Chapter 9).
- ☐ Worn or damaged steering or suspension components (Chapter 10).

Noise (grinding or high-pitched squeal) when brakes applied

- ☐ Brake friction material worn down to metal backing (Chapter 9).
- ☐ Excessive corrosion of brake disc (may be apparent after the vehicle has been standing for some time) (Chapter 9).

Excessive brake pedal travel

- ☐ Faulty master cylinder (Chapter 9).
- ☐ Air in hydraulic system (Chapter 9).
- ☐ Rear brake shoe adjuster mechanism seized or faulty (Chapter 9).

Brake pedal feels spongy when depressed

- ☐ Air in hydraulic system (Chapter 9).
- ☐ Deteriorated flexible rubber brake hoses (Chapter 9).
- ☐ Master cylinder mounting nuts loose (Chapter 9).
- ☐ Faulty master cylinder (Chapter 9).

Excessive brake pedal effort required to stop vehicle

- ☐ Faulty vacuum servo unit (Chapter 9).
- ☐ Disconnected, damaged or insecure brake servo vacuum hose (Chapter 9).
- ☐ Primary or secondary hydraulic circuit failure (Chapter 9).
- ☐ Seized brake caliper piston(s) or rear wheel cylinder(s) (Chapter 9).
- ☐ Brake pads/shoes incorrectly fitted (Chapter 9).
- ☐ Incorrect grade of brake pads/shoes fitted (Chapter 9).
- ☐ Brake pad/shoe linings contaminated (Chapter 9).

Judder felt through brake pedal or steering wheel when braking

- ☐ Excessive run-out or distortion of front discs or rear drums (Chapter 9).
- ☐ Brake pad/shoe linings worn (Chapter 9).
- ☐ Brake caliper mounting bolts loose (Chapter 9).
- ☐ Wear in suspension or steering components or mountings (Chapter 10).

Brakes binding

- ☐ Seized brake caliper piston(s) or rear wheel cylinder(s) (Chapter 9).
- ☐ Faulty handbrake mechanism (Chapter 9).
- ☐ Faulty master cylinder (Chapter 9).

Suspension and steering systems

Note: Before diagnosing suspension or steering faults, be sure that the trouble is not due to incorrect tyre pressures, mixtures of tyre types, or binding brakes.

Vehicle pulls to one side

- ☐ Defective tyre (*Weekly checks*).
- ☐ Excessive wear in suspension or steering components (Chapter 10).
- ☐ Incorrect front or rear wheel alignment (Chapter 10).
- ☐ Accident damage to steering or suspension components (Chapter 10).

Wheel wobble and vibration

- ☐ Front roadwheels out of balance (vibration felt mainly through the steering wheel) (*Weekly checks*).
- ☐ Rear roadwheels out of balance (vibration felt throughout the vehicle) (*Weekly checks*).
- ☐ Roadwheels damaged or distorted (*Weekly checks*).
- ☐ Faulty or damaged tyre (*Weekly checks*).
- ☐ Worn steering or suspension joints, bushes or components (Chapter 10).
- ☐ Roadwheel bolts loose (Chapter 1).

Excessive pitching and/or rolling around corners, or during braking

- ☐ Defective shock absorbers (Chapter 10).
- ☐ Broken or weak coil spring and/or suspension component (Chapter 10).
- ☐ Worn or damaged anti-roll bar or mountings (Chapter 10).

Wandering or general instability

- ☐ Incorrect wheel alignment (Chapter 10).
- ☐ Worn steering or suspension joints, bushes or components (Chapter 10).
- ☐ Roadwheels out of balance (*Weekly checks*).
- ☐ Faulty or damaged tyre (*Weekly checks*).
- ☐ Roadwheel bolts loose (Chapter 1).
- ☐ Defective shock absorbers (Chapter 10).

Excessively-stiff steering

- ☐ Broken or slipping steering pump (auxiliary) drivebelt (Chapter 1).
- ☐ Steering pump faulty (Chapter 10).
- ☐ Seized track rod end balljoint or suspension balljoint (Chapter 10).
- ☐ Incorrect front wheel alignment (Chapter 10).
- ☐ Steering rack or column bent or damaged (Chapter 10).

Excessive play in steering

- ☐ Worn steering column universal joint(s) (Chapter 10).
- ☐ Worn steering track rod end balljoints (Chapter 10).
- ☐ Worn steering gear (Chapter 10).
- ☐ Worn steering or suspension joints, bushes or components (Chapter 10).

Lack of power assistance

- ☐ Broken or slipping steering pump (auxiliary) drivebelt (Chapter 1).
- ☐ Incorrect fluid level (*Weekly checks*).
- ☐ Restriction in fluid hoses (Chapter 10).
- ☐ Faulty steering pump (Chapter 10).
- ☐ Faulty steering gear (Chapter 10).

Tyre wear excessive

Tyres worn on inside or outside edges

- ☐ Tyres under-inflated (*Weekly checks*).
- ☐ Incorrect camber or castor angles (wear on one edge only) (Chapter 10).
- ☐ Worn steering or suspension joints, bushes or components (Chapter 10).
- ☐ Excessively-hard cornering.
- ☐ Accident damage.

Tyre treads exhibit feathered edges

- ☐ Incorrect toe setting (Chapter 10).

Tyres worn in centre of tread

- ☐ Tyres over-inflated (*Weekly checks*).

Tyres worn on inside and outside edges

- ☐ Tyres under-inflated (*Weekly checks*).

Tyres worn unevenly

- ☐ Tyres out of balance (*Weekly checks*).
- ☐ Excessive wheel or tyre run-out (*Weekly checks*).
- ☐ Worn shock absorbers (Chapter 10).
- ☐ Faulty tyre (*Weekly checks*).

Electrical system

Note: For problems associated with the starting system, refer to the faults listed under *Engine* earlier in this Section.

Battery will not hold a charge for more than a few days

- ☐ Battery defective internally (Chapter 5A).
- ☐ Battery electrolyte level low (Chapter 1).
- ☐ Battery terminal connections loose or corroded (*Weekly checks*).
- ☐ Auxiliary drivebelt worn or slipping (Chapter 1).
- ☐ Alternator not charging at correct output (Chapter 5A).
- ☐ Alternator or voltage regulator faulty (Chapter 5A).
- ☐ Short-circuit causing continual battery drain (Chapter 5A or 12).

Ignition/no-charge warning light remains illuminated with engine running

- ☐ Auxiliary drivebelt worn or slipping (Chapter 1).
- ☐ Alternator brushes worn, sticking, or dirty (Chapter 5A).
- ☐ Alternator brush springs weak or broken (Chapter 5A).
- ☐ Internal fault in alternator or voltage regulator (Chapter 5A).
- ☐ Broken, disconnected, or loose wiring in charging circuit (Chapter 5A).

Ignition/no-charge warning light fails to come on

- ☐ Warning light bulb blown (Chapter 12).
- ☐ Broken, disconnected, or loose wiring in warning light circuit (Chapter 12).
- ☐ Alternator faulty (Chapter 5A).

Lights inoperative

- ☐ Bulb blown (Chapter 12).
- ☐ Corrosion of bulb or bulbholder contacts (Chapter 12).
- ☐ Blown fuse (Chapter 12).
- ☐ Faulty relay (Chapter 12).
- ☐ Broken, loose, or disconnected wiring (Chapter 12).
- ☐ Faulty switch (Chapter 12).

Instrument readings inaccurate or erratic

Instrument readings increase with engine speed

- ☐ Faulty instrument panel control components or circuitry (Chapter 12).

Tachometer gives no reading, or gives inaccurate reading

- ☐ Faulty instrument panel control components or circuitry (Chapter 12).
- ☐ Faulty crankshaft sensor (Chapter 5B).
- ☐ Engine management system fault (Chapter 4A, 4B or 5B).
- ☐ Wiring open-circuit (Chapter 12).
- ☐ Faulty gauge (Chapter 12).

Fuel or temperature gauges give no reading

- ☐ Faulty instrument panel control components or circuitry (Chapter 12).
- ☐ Engine management system fault (Chapter 4A, 4B or 5B).
- ☐ Faulty gauge sender unit (Chapter 3, 4A or 4B).
- ☐ Wiring open-circuit (Chapter 12).
- ☐ Faulty gauge (Chapter 12).

Fuel or temperature gauges give continuous maximum reading

- ☐ Faulty instrument panel control components or circuitry (Chapter 12).
- ☐ Faulty gauge sender unit (Chapter 3, 4A or 4B).
- ☐ Wiring short-circuit (Chapter 12).
- ☐ Faulty gauge (Chapter 12).

Horn inoperative, or unsatisfactory in operation

Horn fails to operate

- ☐ Blown fuse (Chapter 12).
- ☐ Steering wheel wiring connections loose, broken or disconnected (Chapter 10).
- ☐ Faulty horn (Chapter 12).

Horn emits intermittent or unsatisfactory sound

- ☐ Steering wheel cable connections loose, broken or disconnected (Chapter 10).
- ☐ Horn mountings loose (Chapter 12).
- ☐ Faulty horn (Chapter 12).

Horn operates all the time

- ☐ Horn push either earthed or stuck down (Chapter 10).
- ☐ Steering wheel cable connections earthed (Chapter 10).

Windscreen/tailgate wipers inoperative or unsatisfactory in operation

Wipers fail to operate, or operate very slowly

- ☐ Wiper blades stuck to screen, or linkage seized or binding (Chapter 12).
- ☐ Blown fuse (Chapter 12).
- ☐ Wiring or connections loose, broken or disconnected (Chapter 12).
- ☐ Faulty relay (Chapter 12).
- ☐ Faulty wiper motor (Chapter 12).

Wiper blades sweep over too large or too small an area of the glass

- ☐ Wiper arms incorrectly positioned on spindles (Chapter 12).
- ☐ Excessive wear of wiper linkage (Chapter 12).
- ☐ Wiper motor or linkage mountings loose or insecure (Chapter 12).

Wiper blades fail to clean the glass effectively

- ☐ Wiper blade rubbers worn or perished (*Weekly checks*).
- ☐ Wiper arm tension springs broken, or arm pivots seized (Chapter 12).
- ☐ Insufficient windscreen washer additive to adequately remove road film (*Weekly checks*).

Windscreen/tailgate washers inoperative, or unsatisfactory in operation

One or more washer jets inoperative

- ☐ Blocked washer jet (Chapter 12).
- ☐ Disconnected, kinked or restricted fluid hose (Chapter 12).
- ☐ Insufficient fluid in washer reservoir (*Weekly checks*).

Washer pump fails to operate

- ☐ Broken or disconnected wiring or connections (Chapter 12).
- ☐ Blown fuse (Chapter 12).
- ☐ Faulty washer switch (Chapter 12).
- ☐ Faulty washer pump (Chapter 12).

Washer pump runs for some time before fluid is emitted from jets

- ☐ Faulty one-way valve in fluid supply hose (Chapter 12).

Electrical system (continued)

Electric windows inoperative, or unsatisfactory in operation

Window glass will only move in one direction

- ☐ Faulty switch (Chapter 12).

Window glass slow to move

- ☐ Incorrectly-adjusted door glass guide channels (Chapter 11).
- ☐ Regulator seized or damaged, or in need of lubrication (Chapter 11).
- ☐ Door internal components or trim fouling regulator (Chapter 11).
- ☐ Faulty motor (Chapter 12).

Window glass fails to move

- ☐ Incorrectly-adjusted door glass guide channels (Chapter 11).
- ☐ Blown fuse (Chapter 12).
- ☐ Faulty relay (Chapter 12).
- ☐ Broken or disconnected wiring or connections (Chapter 12).
- ☐ Faulty motor (Chapter 12).

Central locking system inoperative, or unsatisfactory in operation

Complete system failure

- ☐ Blown fuse (Chapter 12).
- ☐ Faulty relay (Chapter 12).
- ☐ Broken or disconnected wiring or connections (Chapter 12).

Latch locks but will not unlock, or unlocks but will not lock

- ☐ Faulty door lock microswitch (Chapter 11).
- ☐ Broken or disconnected latch operating rods or levers (Chapter 11).
- ☐ Faulty relay (Chapter 12).

One lock motor fails to operate

- ☐ Broken or disconnected wiring or connections (Chapter 12).
- ☐ Faulty lock motor (Chapter 11).
- ☐ Broken, binding or disconnected latch operating rods or levers (Chapter 11).
- ☐ Fault in door latch (Chapter 11).