

Troubleshooting

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This section gives you a guide to the symptoms which may occur in your vehicle. These symptoms and causes are grouped according to various components.

Remembering is not a mystery, it is learned only by professionals. The result of this is that with an intelligent approach to problem solving, starting with the basics, working through the troubleshooting chart never overlooks the obvious.

Finally, a reminder: why a problem occurs is not always the reason to ensure that the electrical system is functioning correctly. The system may be functioning well. If a problem persists, find out why - don't just assume another. Remember, a component can often fail because of an incorrect component or a faulty connection.

Engine and

1 Engine attempt

- 1 Battery corroded. Check battery: tight connections and clean terminals.
- 2 Batteries ends are crossed. Turn the headlights on; if they won't run, check the fuses.
- 3 Automatic park (P) or neutral.
- 4 Broken wires or connectors at the ignition switch.
- 5 Starting gear ring gear missing. Manually turn the engine over (turner 5) and then start (turner 2) at the same time.
- 6 Starter motor.
- 7 Starter solenoid.
- 8 Ignition switch.
- 9 Engine with a broken pulley belt.

Troubleshooting

This section provides an easy reference guide to the more common problems which may occur during the operation of your vehicle. These problems and their possible causes are grouped under headings denoting various components or systems, such as Engine, Cooling system, etc. They also refer you to the chapter and/or section which deals with the problem.

Remember that successful troubleshooting is not a mysterious "black art" practiced only by professional mechanics. It is simply the result of the right knowledge combined with an intelligent, systematic approach to the problem. Always work by process of elimination, starting with the simplest solution and working through to the most complex - and never overlook the obvious. Anyone can run the gas tank dry or leave the lights on overnight, so don't assume that you are exempt from such oversights.

Finally, always establish a clear idea of why a problem has occurred and take steps to ensure that it doesn't happen again. If the electrical system fails because of a poor connection, check the other connections in the system to make sure that they don't fail as well. If a particular fuse continues to blow, find out why - don't just replace one fuse after another. Remember, failure of a small component can often be indicative of potential failure or incorrect functioning of a more important component or system.

Engine and performance

1 Engine will not rotate when attempting to start

1 Battery terminal connections loose or corroded. Check the cable terminals at the battery; tighten cable clamp and/or clean off corrosion as necessary (see Chapter 1).

2 Battery discharged or faulty. If the cable ends are clean and tight on the battery posts, turn the key to the On position and switch on the headlights or windshield wipers. If they won't run, the battery is discharged.

3 Automatic transmission not engaged in park (P) or Neutral (N).

4 Broken, loose or disconnected wires in the starting circuit. Inspect all wires and connectors at the battery, starter solenoid and ignition switch (on steering column).

5 Starter motor pinion jammed in flywheel ring gear. If manual transmission, place transmission in gear and rock the vehicle to manually turn the engine. Remove starter (Chapter 5) and inspect pinion and flywheel (Chapter 2) at earliest convenience.

6 Starter solenoid faulty (Chapter 5).

7 Starter motor faulty (Chapter 5).

8 Ignition switch faulty (Chapter 12).

9 Engine seized. Try to turn the crankshaft with a large socket and breaker bar on the pulley bolt.

2 Engine rotates but will not start

- 1 Fuel tank empty.
- 2 Battery discharged (engine rotates slowly). Check the operation of electrical components as described in previous Section.
- 3 Battery terminal connections loose or corroded. See previous Section.
- 4 Fuel not reaching the fuel injectors. Check for clogged fuel filter or lines and defective fuel pump. Also make sure the tank vent lines aren't clogged (Chapter 4).
- 5 Low cylinder compression. Check as described in Chapter 2.
- 6 Water in fuel. Drain tank and fill with new fuel.
- 7 Dirty fuel injector(s) (Chapter 4).
- 8 Fault with the fuel injection or engine management system (Chapter 4 or 6).
- 9 Timing chain broken (Chapter 2B).

3 Starter motor operates without turning engine

- 1 Starter pinion sticking. Remove the starter (Chapter 5) and inspect.
- 2 Starter pinion or flywheel/driveplate teeth worn or broken. Remove the inspection cover and inspect.

4 Engine hard to start when cold

- 1 Battery discharged or low. Check as described in Chapter 1.
- 2 Fuel not reaching the fuel injectors. Check the fuel filter, lines and fuel pump (Chapters 1 and 4).
- 3 Defective spark plugs (Chapter 1).
- 4 Fault with the fuel injection or engine management system (Chapter 4 or 6).

5 Engine hard to start when hot

- 1 Air filter dirty (Chapter 1).
- 2 Fuel not reaching fuel injectors (see Chapter 4).
- 3 Fault with the fuel injection or engine management system (Chapter 4 or 6).

6 Starter motor noisy or engages roughly

- 1 Pinion or flywheel/driveplate teeth worn or broken. Remove the inspection cover on the left side of the engine and inspect.
- 2 Starter motor mounting bolts loose or missing.

7 Engine starts but stops immediately

- 1 Loose or damaged wire harness connec-

tions in the ignition system or at the alternator.

- 2 Intake manifold vacuum leaks. Make sure all mounting bolts/nuts are tight and all vacuum hoses connected to the manifold are attached properly and in good condition (Chapters 2A, 2B and 4).
- 3 Insufficient fuel flow to fuel injectors (Chapter 4).

8 Engine 'lopes' while idling or idles erratically

- 1 Vacuum leaks. Check mounting bolts at the intake manifold for tightness. Make sure that all vacuum hoses are connected and in good condition. Use a stethoscope or a length of fuel hose held against your ear to listen for vacuum leaks while the engine is running. A hissing sound will be heard. A soapy water solution will also detect leaks. Check the intake manifold gasket surfaces.
- 2 Plugged PCV valve (see Chapters 1 and 6).
- 3 Air filter clogged (Chapter 1).
- 4 Fuel pump not delivering sufficient fuel (Chapter 4).
- 5 Leaking head gasket. Perform a cylinder compression check (Chapter 2C).
- 6 Timing chain worn (Chapter 2).
- 7 Camshaft lobes worn (Chapter 2).
- 8 Valve clearance out of adjustment (Chapter 1).
- 9 Valves burned or otherwise leaking (Chapter 2).
- 10 Ignition system not operating properly (Chapters 1 and 5).
- 11 Dirty or clogged injector(s) (Chapter 4).
- 12 Fault with the fuel injection or engine management system (Chapter 4 or 6).

9 Engine misses at idle speed

- 1 Spark plugs faulty or not gapped properly (Chapter 1).
- 2 Faulty ignition coil (Chapter 5).
- 3 Sticking or faulty emissions systems (see Chapter 6).
- 4 Clogged fuel filter and/or foreign matter in fuel.
- 5 Vacuum leaks at intake manifold or hose connections. Check as described in Section 8.
- 6 Low or uneven cylinder compression. Check as described in Chapter 2.
- 7 Clogged or dirty fuel injectors (Chapter 4).

10 Excessively high idle speed

- 1 Intake air leak (Chapters 2 and 4).
- 2 Malfunction in the engine management system (Chapter 6).

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11 Battery will not hold a charge

- 1 Alternator drivebelt defective or not adjusted properly (Chapter 1).
- 2 Battery cables loose or corroded (Chapter 1).
- 3 Alternator not charging properly (Chapter 5).
- 4 Loose, broken or faulty wires in the charging circuit (Chapter 5).
- 5 Short circuit causing a continuous drain on the battery.
- 6 Battery defective internally.

12 Alternator light stays on

- 1 Fault in alternator or charging circuit (Chapter 5).
- 2 Drivebelt defective or not properly adjusted (Chapter 1).

13 Alternator light fails to come on when key is turned on

- 1 Faulty bulb (Chapter 12).
- 2 Defective alternator (Chapter 5).
- 3 Fault in the printed circuit, dash wiring or bulb holder (Chapter 12).

14 Engine misses throughout driving speed range

- 1 Fuel filter clogged and/or impurities in the fuel system. Check fuel filter or clean system (Chapter 4).
- 2 Faulty or incorrectly gapped spark plugs (Chapter 1).
- 3 Emissions system components faulty (Chapter 6).
- 4 Low or uneven cylinder compression pressures. Check as described in Chapter 2.
- 5 Weak or faulty ignition coil(s) (Chapter 5).
- 6 Vacuum leaks at intake manifold or vacuum hoses (see Section 8).
- 7 Dirty or clogged fuel injector (Chapter 4).

15 Hesitation or stumble during acceleration

- 1 Ignition system not operating properly (Chapter 5).
- 2 Dirty or clogged fuel injector(s) (Chapter 4).
- 3 Low fuel pressure. Check for proper operation of the fuel pump and for restrictions in the fuel filter and lines (Chapter 4).
- 4 Fault with the fuel injection or engine management system (Chapter 4 or 6).

16 Engine stalls

- 1 Fuel filter clogged and/or water and impurities in the fuel system (Chapter 1).

- 2 Emissions system components faulty (Chapter 6).
- 3 Faulty or Incorrectly gapped spark plugs (Chapter 1).
- 4 Vacuum leak at the throttle body, the intake manifold or vacuum hoses. Check as described in Section 8.
- 5 Valve clearances incorrect (Chapter 1).
- 6 Fault with the fuel injection or engine management system (Chapter 4 or 6).

17 Engine lacks power

- 1 Faulty or incorrectly gapped spark plugs (Chapter 1).
- 2 Air filter dirty (Chapter 1).
- 3 Faulty ignition coil(s) (Chapter 5).
- 4 Automatic transmission fluid level incorrect, causing slippage (Chapter 1).
- 5 Clutch slipping (Chapter 8).
- 6 Fuel filter clogged and/or impurities in the fuel system (Chapters 1 and 4).
- 7 Use of sub-standard fuel. Fill tank with proper octane fuel.
- 8 Low or uneven cylinder compression pressures. Check as described in Chapter 2C.
- 9 Air leak at intake manifold (check as described in Section 8).
- 10 Fault with the fuel injection or engine management system (Chapter 4 or 6).
- 11 Brakes binding (Chapters 1 and 10).

18 Engine backfires

- 1 Thermostatic air cleaner system not operating properly (Chapter 6).
- 2 Vacuum leak (see Section 8).
- 3 Valve clearances incorrect (Chapter 1).
- 4 Damaged valve springs or sticking valves (Chapter 2).
- 5 Intake air leak (see Section 8).

19 Engine surges while holding accelerator steady

- 1 Intake air leak (see Section 8).
- 2 Fuel pump not working properly (Chapter 4).
- 3 Fault with the fuel injection or engine management system (Chapter 4 or 6).

20 Pinging or knocking engine sounds when engine is under load

- 1 Incorrect grade of fuel. Fill tank with fuel of the proper octane rating.
- 2 Carbon build-up in combustion chambers. Remove cylinder heads and clean combustion chambers (Chapter 2).
- 3 Incorrect spark plugs (Chapter 1).
- 4 Fault with the fuel injection or engine management system (Chapter 4 or 6).

21 Engine continues to run after being turned off

- Faulty ignition switch (Chapter 12).

22 Low oil pressure

- 1 Improper grade of oil.
- 2 Oil pump worn or damaged (Chapter 2).
- 3 Engine overheating (see Section 27).
- 4 Clogged oil filter (Chapter 1).
- 5 Clogged oil strainer (Chapter 2).
- 6 Oil pressure gauge not working properly (Chapter 2C).

23 Excessive oil consumption

- 1 Loose oil drain plug.
- 2 Loose bolts or damaged oil pan gasket (Chapter 2).
- 3 Loose bolts or damaged timing chain cover gasket (Chapter 2).
- 4 Front or rear crankshaft oil seal leaking (Chapter 2).
- 5 Loose bolts or damaged valve cover gasket (Chapter 2).
- 6 Loose oil filter (Chapter 1).
- 7 Loose or damaged oil pressure switch (Chapter 2).
- 8 Pistons and cylinders excessively worn (Chapter 2).
- 9 Piston rings not installed correctly on pistons (Chapter 2).
- 10 Worn or damaged piston rings (Chapter 2).
- 11 Intake and/or exhaust valve oil seals worn or damaged (Chapter 2).
- 12 Worn valve stems.
- 13 Worn or damaged valves/guides (Chapter 2).

24 Excessive fuel consumption

- 1 Dirty or clogged air filter element (Chapter 1).
- 2 Low tire pressure or incorrect tire size (Chapter 11).
- 3 Fuel leakage. Check all connections, lines and components in the fuel system (Chapter 4).
- 4 Dirty or clogged fuel injectors (Chapter 4).
- 5 Fault with the fuel injection or engine management system (Chapter 4 or 6).

25 Fuel odor

- 1 Fuel leakage. Check all connections, lines and components in the fuel system (Chapter 4).
- 2 Fuel tank overfilled. Fill only to automatic shut-off.
- 3 Charcoal canister in Evaporative Emis-

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- sions Control system defective (Chapter 1).
4 Vapor leaks from Evaporative Emissions Control system lines (Chapter 6).

26 Miscellaneous engine noises

- 1 A strong dull noise that becomes more rapid as the engine accelerates indicates worn or damaged crankshaft bearings or an unevenly worn crankshaft. To pinpoint the trouble spot, remove the spark plug wire (or ignition coil electrical connector on coil-over-plug systems) from one plug at a time and crank the engine over. If the noise stops, the cylinder with the removed plug wire indicates the problem area. Replace the bearing and/or service or replace the crankshaft (Chapter 2).
- 2 A similar (yet slightly higher pitched) noise to the crankshaft knocking described in the previous paragraph, that becomes more rapid as the engine accelerates, indicates worn or damaged connecting rod bearings (Chapter 2). The procedure for locating the problem cylinder is the same as described in Paragraph 1.
- 3 An overlapping metallic noise that increases in intensity as the engine speed increases, yet diminishes as the engine warms up indicates abnormal piston and cylinder wear (Chapter 2). To locate the problem cylinder, use the procedure described in Paragraph 1.
- 4 A rapid clicking noise that becomes faster as the engine accelerates indicates a worn piston pin or piston pin hole. This sound will happen each time the piston hits the highest and lowest points in the stroke (Chapter 2). The procedure for locating the problem piston is described in Paragraph 1.
- 5 A metallic clicking noise coming from the water pump indicates worn or damaged water pump bearings or pump. Replace the water pump with a new one (Chapter 3).
- 6 A rapid tapping sound or clicking sound that becomes faster as the engine speed increases indicates "valve tapping" or improperly adjusted valve clearances. This can be identified by holding one end of a section of hose to your ear and placing the other end at different spots along the valve cover. The point where the sound is loudest indicates the problem valve. Adjust the valve clearance (Chapter 1). If the problem persists, you likely have a collapsed valve lifter or other damaged valve train component. Changing the engine oil and adding a high viscosity oil treatment will sometimes cure a stuck lifter problem. If the problem still persists, the lifters, pushrods and rocker arms must be removed for inspection (see Chapter 2).
- 7 A steady metallic rattling or rapping sound coming from the area of the timing chain cover indicates a worn, damaged or out-of-adjustment timing chain. Service or replace the chain and related components (Chapter 2).

Cooling system

27 Overheating

- 1 Insufficient coolant in system (Chapter 1).
- 2 Drivebelt defective or not adjusted properly (Chapter 1).
- 3 Radiator core blocked or radiator grille dirty or restricted (Chapter 3).
- 4 Thermostat faulty (Chapter 3).
- 5 Fan not functioning properly (Chapter 3).
- 6 Radiator cap not maintaining proper pressure. Have cap pressure tested by gas station or repair shop.
- 7 Defective water pump (Chapter 3).
- 8 Improper grade of engine oil.
- 9 Inaccurate temperature gauge (Chapter 12).

28 Overcooling

- 1 Thermostat faulty (Chapter 3).
- 2 Inaccurate temperature gauge (Chapter 12).

29 External coolant leakage

- 1 Deteriorated or damaged hoses. Loose clamps at hose connections (Chapter 1).
- 2 Water pump seals defective. If this is the case, water will drip from the weep hole in the water pump body (Chapter 3).
- 3 Leakage from radiator. This will require the radiator to be professionally repaired (see Chapter 3 for removal procedures).
- 4 Engine drain plugs or water jacket freeze plugs leaking (see Chapters 1 and 2).
- 5 Leak from engine coolant temperature switch (Chapter 6).
- 6 Leak from damaged gaskets or small cracks (Chapter 2).
- 7 Damaged head gasket. This can be verified by checking the condition of the engine oil as noted in Section 30.

30 Internal coolant leakage

Note: Internal coolant leaks can usually be detected by examining the oil. Check the dipstick and inside the valve cover for water deposits and an oil consistency like that of a milkshake.

- 1 Leaking cylinder head gasket. Have the system pressure tested or remove the cylinder head (Chapter 2) and inspect.
- 2 Cracked cylinder bore or cylinder head. Dismantle engine and inspect (Chapter 2).

31 Abnormal coolant loss

- 1 Overfilling system (Chapter 1).
- 2 Coolant boiling away due to overheating (see causes in Section 27).

- 3 Internal or external leakage (see Sections 29 and 30).

- 4 Faulty radiator cap. Have the cap pressure tested.

- 5 Cooling system being pressurized by engine compression. This could be due to a cracked head or block or leaking head gaskets.

32 Poor coolant circulation

- 1 Inoperative water pump. A quick test is to pinch the top radiator hose closed with your hand while the engine is idling, then release it. You should feel a surge of coolant if the pump is working properly (Chapter 3).
- 2 Restriction in cooling system. Drain, flush and refill the system (Chapter 1). If necessary, remove the radiator (Chapter 3) and have it reverse flushed or professionally cleaned.
- 3 Loose drivebelt (Chapter 1).
- 4 Thermostat sticking (Chapter 3).
- 5 Insufficient coolant (Chapter 1).

33 Corrosion

- 1 Excessive impurities in the water. Soft, clean water is recommended. Distilled or rainwater is satisfactory.
- 2 Insufficient antifreeze solution (refer to Chapter 1 for the proper ratio of water to antifreeze).
- 3 Infrequent flushing and draining of system. Regular flushing of the cooling system should be carried out at the specified intervals as described in Chapter 1.

Clutch

Note: All clutch related service information is located in Chapter 8, unless otherwise noted.

34 Fails to release (pedal pressed to the floor - shift lever does not move freely in and out of Reverse)

- 1 Freeplay incorrectly adjusted.
- 2 Clutch contaminated with oil. Remove clutch plate and inspect.
- 3 Clutch plate warped, distorted or otherwise damaged.
- 4 Diaphragm spring fatigued. Remove clutch cover/pressure plate assembly and inspect.
- 5 Leakage of fluid from clutch hydraulic system. Inspect master cylinder, operating cylinder and connecting lines.
- 6 Air in clutch hydraulic system. Bleed the system.
- 7 Insufficient pedal stroke. Check and adjust as necessary.
- 8 Piston seal in master or release cylinder deformed or damaged.
- 9 Lack of grease on pilot bearing.

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

- 1 Worn or oil-soaked clutch plate.
- 2 Diaphragm spring weak or damaged. Remove clutch cover/pressure plate assembly and inspect.
- 3 Clutch hydraulic line damaged internally (not allowing fluid to return to the clutch master cylinder).
- 4 Binding in the release mechanism.

36 Grabbing (chattering) as clutch is engaged

- 1 Oil on clutch plate. Remove and inspect. Repair any leaks.
- 2 Worn or loose engine or transmission mounts. They may move slightly when clutch is released. Inspect mounts and bolts.
- 3 Worn splines on transmission input shaft. Remove clutch components and inspect.
- 4 Warped pressure plate or flywheel. Remove clutch components and inspect.
- 5 Diaphragm spring fatigued. Remove clutch cover/pressure plate assembly and inspect.
- 6 Clutch linings hardened or warped.
- 7 Clutch lining rivets loose.

37 Squeal or rumble with clutch engaged (pedal released)

- 1 Improper pedal adjustment. Adjust pedal freeplay.
- 2 Release bearing binding on transmission shaft. Remove clutch components and check bearing. Remove any burrs or nicks, clean and relubricate before reinstallation.
- 4 Clutch rivets loose.
- 5 Clutch plate cracked.
- 6 Fatigued clutch plate torsion springs. Replace clutch plate.

38 Squeal or rumble with clutch disengaged (pedal depressed)

- 1 Worn or damaged release bearing.
- 2 Worn or broken pressure plate diaphragm fingers.
- 3 Pilot bearing worn or damaged.

39 Clutch pedal stays on floor when disengaged

Binding release bearing.

Manual transmission

Note: All manual transmission service information is located in Chapter 7A, unless otherwise noted.

40 Noisy in Neutral with engine running

- 1 Input shaft bearing worn.
- 2 Damaged main drive gear bearing.
- 3 Insufficient transmission oil (Chapter 1).
- 4 Transmission oil in poor condition. Drain and fill with proper grade oil. Check oil for water and debris (Chapter 1).
- 5 Noise can be caused by variations in engine torque. Change the idle speed and see if noise disappears.

41 Noisy in all gears

- 1 Any of the above causes, and/or:
- 2 Worn or damaged output gear bearings or shaft.

42 Noisy in one particular gear

- 1 Worn, damaged or chipped gear teeth.
- 2 Worn or damaged synchronizer.

43 Slips out of gear

- 1 Stiff shift lever seal.
- 2 Shift linkage binding.
- 3 Broken or loose input gear bearing retainer.
- 4 Dirt between clutch lever and engine housing.
- 5 Worn linkage.
- 6 Damaged or worn check balls, fork rod ball grooves or check springs.
- 7 Worn mainshaft or countershaft bearings.
- 8 Loose engine mounts (Chapter 2).
- 9 Excessive gear endplay.
- 10 Worn synchronizers.

44 Oil leaks

- 1 Excessive amount of lubricant in transmission (see Chapter 1 for correct checking procedures). Drain lubricant as required.
- 2 Rear oil seal or speedometer oil seal damaged.
- 3 To pinpoint a leak, first remove all built-up dirt and grime from the transmission. Degreasing agents and/or steam cleaning will achieve this. With the underside clean, drive the vehicle at low speeds so the air flow will not blow the leak far from its source. Raise the vehicle and determine where the leak is located.

45 Difficulty engaging gears

- 1 Clutch not releasing completely.
- 2 Loose or damaged shift linkage. Make a thorough inspection, replacing parts as necessary.
- 3 Insufficient transmission oil (Chapter 1).
- 4 Transmission oil in poor condition. Drain and fill with proper grade oil. Check oil for water and debris (Chapter 1).
- 5 Worn or damaged striking rod.
- 6 Sticking or jamming gears.

46 Noise occurs while shifting gears

- 1 Check for proper operation of the clutch (Chapter 8).
- 2 Faulty synchronizer assemblies.

Automatic transmission

Note: Due to the complexity of the automatic transmission, it's difficult for the home mechanic to properly diagnose and service. For problems other than the following, the vehicle should be taken to a reputable mechanic.

47 Fluid leakage

- 1 Automatic transmission fluid is a deep red color, and fluid leaks should not be confused with engine oil which can easily be blown by air flow to the transmission.
- 2 To pinpoint a leak, first remove all built-up dirt and grime from the transmission. Degreasing agents and/or steam cleaning will achieve this. With the underside clean, drive the vehicle at low speeds so the air flow will not blow the leak far from its source. Raise the vehicle and determine where the leak is located. Common areas of leakage are:

- a) **Fluid pan:** tighten mounting bolts and/or replace pan gasket as necessary (Chapter 1).
- b) **Rear extension:** tighten bolts and/or replace oil seal as necessary.
- c) **Filler pipe:** replace the rubber oil seal where pipe enters transmission case.
- d) **Transmission oil lines:** tighten fittings where lines enter transmission case and/or replace lines.
- e) **Vent pipe:** transmission overfilled and/or water in fluid (see checking procedures, Chapter 1).
- f) **Speedometer connector:** replace the O-ring where speedometer cable enters transmission case.

48 General shift mechanism problems

Chapter 7B deals with checking and adjusting the shift cable on automatic trans-

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missions. Common problems which may be caused by out-of-adjustment linkage are:

- a) Engine starting in gears other than P (park) or N (Neutral).
- b) Indicator pointing to a gear other than the one actually engaged.
- c) Vehicle moves with transmission in P (Park) position.

49 Transmission will not downshift with the accelerator pedal pressed to the floor

Since these transmissions are electronically controlled, check for any diagnostic trouble codes stored in the PCM. The actual repair will most likely have to be performed by a qualified repair shop with the proper equipment.

50 Engine will start in gears other than Park or Neutral

Chapter 7B deals with adjusting the Park/Neutral position switch installed on automatic transmissions.

51 Transmission slips, shifts rough, is noisy or has no drive in forward or Reverse gears

- 1 There are many probable causes for the above problems, but the home mechanic should concern himself only with one possibility: fluid level.
- 2 Before taking the vehicle to a shop, check the fluid level and condition as described in Chapter 1. Add fluid, if necessary, or change the fluid and filter if needed. If problems persist, have a professional diagnose the transmission.

Driveshaft

Note: Refer to Chapter 8, unless otherwise specified, for service information.

52 Leaks at front of driveshaft

Defective transmission rear seal. See Chapter 7 for replacement procedure. As this is done, check the splined yoke for burrs or roughness that could damage the new seal. Remove burrs with a fine file or whetstone.

53 Knock or clunk when transmission is under initial load (just after transmission is put into gear)

- 1 Loose or disconnected rear suspension

components. Check all mounting bolts and bushings (Chapters 7 and 10).

- 2 Loose driveshaft bolts. Inspect all bolts and nuts and tighten them securely.
- 3 Worn or damaged universal joint bearings. Inspect the universal joints (Chapter 8).
- 4 Worn sleeve yoke and mainshaft spline.

54 Metallic grating sound consistent with vehicle speed

Pronounced wear in the universal joint bearings. Replace U-joints or driveshafts, as necessary.

55 Vibration

Note: Before blaming the driveshaft, make sure the tires are perfectly balanced and perform the following test.

- 1 Install a tachometer inside the vehicle to monitor engine speed as the vehicle is driven. Drive the vehicle and note the engine speed at which the vibration (roughness) is most pronounced. Now shift the transmission to a different gear and bring the engine speed to the same point.
- 2 If the vibration occurs at the same engine speed (rpm) regardless of which gear the transmission is in, the driveshaft is NOT at fault since the driveshaft speed varies.
- 3 If the vibration decreases or is eliminated when the transmission is in a different gear at the same engine speed, refer to the following probable causes.
- 4 Bent or dented driveshaft. Inspect and replace as necessary.
- 5 Undercoating or built-up dirt, etc. on the driveshaft. Clean the shaft thoroughly.
- 6 Worn universal joint bearings. Replace the U-joints or driveshaft as necessary.
- 7 Driveshaft and/or companion flange out of balance. Check for missing weights on the shaft. Remove driveshaft and reinstall 180-degrees from original position, then recheck. Have the driveshaft balanced if problem persists.
- 8 Loose driveshaft mounting bolts/nuts.
- 9 Defective center bearing, if so equipped.
- 10 Worn transmission rear bushing (Chapter 7).

56 Scraping noise

Make sure the dust cover on the sleeve yoke isn't rubbing on the transmission extension housing.

57 Whining or whistling noise

Defective center bearing.

Axles and differential

Note: For differential servicing information, refer to Chapter 8, unless otherwise specified.

58 Noise - same when in drive as when vehicle is coasting

- 1 Road noise. No corrective action available.
- 2 Tire noise. Inspect tires and check tire pressures (Chapter 1).
- 3 Front wheel bearings or rear axle bearings, worn or damaged (Chapters 8 and 10).
- 4 Insufficient differential oil (Chapter 1).
- 5 Defective differential.

59 Knocking sound when starting or shifting gears

Defective or incorrectly adjusted differential.

60 Noise when turning

Defective differential.

61 Vibration

- 1 See probable causes under Driveshaft. Proceed under the guidelines listed for the driveshaft. If the problem persists, check the rear wheel bearings by raising the rear of the vehicle and spinning the wheels by hand. Listen for evidence of rough (noisy) bearings. Remove and inspect (Chapter 8).
- 2 Worn driveaxle CV joint (Chapter 8).

62 Oil leaks

- 1 Pinion oil seal damaged (Chapter 8).
- 2 Axleshaft oil seals damaged (Chapter 8).
- 3 Loose filler or drain plug on differential (Chapter 1).
- 4 Clogged or damaged breather on differential.

Transfer case

Note: Unless otherwise specified, refer to Chapter 7C for service and repair information.

63 Gear jumping out of mesh

- 1 Interference between the control lever and the console.
- 2 Internal wear or incorrect adjustments.

Troubleshooting

64 Difficult shifting

- 1 Lack of oil.
- 2 Internal wear, damage or incorrect adjustment.

- 2 Insufficient fluid in master cylinder. Check (Chapter 1) and add fluid - bleed system if necessary.
- 3 Air in system. Bleed system.
- 4 Drum brakes out of adjustment. Check the operation of the automatic adjusters.
- 5 Defective proportioning valve. Replace valve and bleed system.

65 Noise

- 1 Lack of oil in transfer case.
- 2 Noise in 4H and 4L, but not in 2H indicates cause is in the front differential or front axle.
- 3 Noise in 2H, 4H and 4L indicates cause is in rear differential or rear axle.
- 4 Noise in 2H and 4H but not in 4L, or in 4L only, indicates internal wear or damage in transfer case.

Brakes

Note: Before assuming a brake problem exists, make sure the tires are in good condition and inflated properly, the front end alignment is correct and the vehicle is not loaded with weight in an unequal manner. All service procedures for the brakes are included in Chapter 9, unless otherwise noted.

66 Vehicle pulls to one side during braking

- 1 Defective, damaged or oil contaminated brake pad on one side. Inspect as described in Chapter 1. Refer to Chapter 9 if replacement is required.
- 2 Excessive wear of brake pad material or disc on one side. Inspect and repair as necessary (Chapter 9).
- 3 Loose or disconnected front suspension components. Inspect and tighten all bolts securely (Chapters 1 and 11).
- 4 Defective caliper assembly. Remove caliper and inspect for stuck piston or damage.
- 5 Scored brake disc (Chapter 9).

69 Brake pedal feels spongy when depressed

- 1 Air in brake lines. Bleed the brake system.
- 2 Deteriorated rubber brake hoses. Inspect all system hoses and lines. Replace parts as necessary.
- 3 Master cylinder mounting nuts loose. Inspect master cylinder bolts (nuts) and tighten them securely.
- 4 Master cylinder faulty.
- 5 Incorrect shoe or pad clearance.
- 6 Deformed rubber brake lines.
- 7 Soft or swollen caliper seals.
- 8 Poor quality brake fluid. Bleed entire system and fill with new approved fluid.

70 Excessive effort required to stop vehicle

- 1 Power brake booster not operating properly.
- 2 Excessively worn linings or pads. Check and replace if necessary.
- 3 One or more caliper or wheel cylinder pistons seized or sticking. Inspect and replace caliper or wheel cylinder as required.
- 4 Brake pads or linings contaminated with oil or grease. Inspect and replace as required.
- 5 New pads or linings installed and not yet seated. It'll take a while for the new material to seat against the disc or drum.
- 6 Worn or damaged master cylinder or caliper assemblies. Check particularly for frozen pistons.
- 7 Also see causes listed under Section 69.

71 Pedal travels to the floor with little resistance

Little or no fluid in the master cylinder reservoir caused by leaking caliper piston(s) or loose, damaged or disconnected brake lines. Inspect entire system and repair as necessary.

72 Brake pedal pulsates during brake application

- 1 Wheel bearings damaged or worn (Chapter 10).
- 2 Disc not within specifications. Check for

excessive lateral runout and parallelism. Have the discs resurfaced or replace them with new ones. Also make sure that all discs are the same thickness.

- 3 Out-of-round rear brake drums. Remove the drums and have them resurfaced or replace them with new ones.

73 Brakes drag (indicated by sluggish engine performance or wheels being very hot after driving)

- 1 Output rod adjustment incorrect at the brake pedal.
- 2 Obstructed master cylinder fill port.
- 3 Master cylinder piston seized in bore.
- 4 Caliper sticking.
- 5 Piston cups in master cylinder or caliper assembly deformed.
- 6 Parking brake assembly will not release.
- 7 Clogged brake lines.
- 8 Brake pedal height improperly adjusted.
- 9 Wheel cylinder sticking.
- 10 Improper shoe-to-drum clearance. Adjust as necessary.

74 Rear brakes lock up under light brake application

- 1 Tire pressures too high.
- 2 Tires excessively worn (Chapter 1).

75 Rear brakes lock up under heavy brake application

- 1 Tire pressures too high.
- 2 Tires excessively worn (Chapter 1).
- 3 Front brake pads contaminated with oil, mud or water. Clean or replace the pads.
- 4 Front brake pads excessively worn.
- 5 Defective master cylinder or caliper assembly.

Suspension and steering

Note: All service procedures for the suspension and steering systems are included in Chapter 10, unless otherwise noted.

76 Vehicle pulls to one side

- 1 Tire pressures uneven (Chapter 1).
- 2 Defective tire (Chapter 1).
- 3 Excessive wear in suspension or steering components (Chapter 1).
- 4 Wheel alignment incorrect.
- 5 Front brakes dragging (Chapter 9).
- 6 Wheel bearings improperly adjusted (Chapter 1 or 8).
- 7 Wheel lug nuts loose.

68 Excessive brake pedal travel

- 1 Partial brake system failure. Inspect entire system (Chapter 1) and correct as required.

Troubleshooting

77 Shimmy, shake or vibration

- 1 Tire or wheel out-of-balance or out-of-round. Have them balanced on the vehicle.
- 2 Defective wheel bearings (Chapter 10).
- 3 Suspension components worn or damaged. Check for worn bushings in the upper and lower links.
- 4 Wheel lug nuts loose.
- 5 Incorrect tire pressures.
- 6 Excessively worn or damaged tire.
- 7 Loosely mounted steering gear housing.
- 8 Loose, worn or damaged steering components.
- 9 Worn balljoint.

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

- 1 Defective shock absorbers. Replace as a set.
- 2 Broken or weak springs and/or suspension components.
- 3 Worn or damaged stabilizer bar or bushings.

79 Wandering or general instability

- 1 Improper tire pressures.
- 2 Worn or damaged upper and lower control arm bushings.
- 3 Incorrect front end alignment.
- 4 Worn or damaged steering gear or suspension components.
- 5 Out-of-balance wheels.
- 6 Loose wheel lug nuts.
- 7 Worn rear shock absorbers.
- 8 Fatigued or damaged rear leaf springs.

80 Excessively stiff steering

- 1 Lack of lubricant in power steering fluid reservoir (Chapter 1).
- 2 Incorrect tire pressures (Chapter 1).
- 3 Balljoints worn (Chapter 10).
- 4 Front end out of alignment.
- 5 Worn or damaged steering gear.

81 Excessive play in steering

- 1 Excessive wear in suspension bushings (Chapter 1).
- 2 Steering gear worn.
- 3 Steering gear mounting bolts loose.
- 4 Worn tie-rod ends.

82 Lack of power assistance

- 1 Drivebelt or tensioner faulty (Chapter 1).
- 2 Fluid level low (Chapter 1).
- 3 Hoses or pipes restricting the flow. Inspect and replace parts as necessary.
- 4 Air in power steering system. Bleed system.
- 5 Defective power steering pump.

83 Steering wheel fails to return to straight-ahead position

- 1 Incorrect front end alignment.
- 2 Tire pressures low.
- 3 Steering gear worn or damaged.
- 4 Worn or damaged balljoint.
- 5 Worn or damaged tie-rod end.
- 6 Lack of fluid in power steering pump.

84 Steering effort not the same in both directions (power system)

- 1 Leaks in steering gear.
- 2 Clogged fluid passage in steering gear.

85 Noisy power steering pump

- 1 Insufficient oil in pump.
- 2 Clogged hoses or oil filter in pump.
- 3 Loose pulley.
- 4 Improperly adjusted drivebelt (Chapter 1).
- 5 Defective pump.

86 Miscellaneous noises

- 1 Loose or worn steering gear or suspension components.

2 Defective shock absorber.

3 Defective wheel bearing.

4 Worm or damaged suspension bushings.

5 Damaged leaf spring.

6 Loose wheel lug nuts.

87 Excessive tire wear (not specific to one area)

- 1 Incorrect tire pressures.
- 2 Tires out of balance.
- 3 Wheels damaged. Inspect and replace as necessary.
- 4 Suspension or steering components worn (Chapter 1).

88 Excessive tire wear on outside edge

- 1 Incorrect tire pressure.
- 2 Excessive speed in turns.
- 3 Front end alignment incorrect (excessive toe-in).

89 Excessive tire wear on inside edge

- 1 Incorrect tire pressure.
- 2 Front end alignment incorrect (toe-out).

90 Tire tread worn in one place

- 1 Tires out of balance. Have them balanced on the vehicle.
- 2 Damaged or buckled wheel. Inspect and replace if necessary.
- 3 Defective tire.