

Chapter 1 Tune up and routine maintenance

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Specifications

Note: Additional specifications and torque figures can be found in each individual Chapter

Recommended fluids and lubricants

Note: Listed here are manufacturer recommendations at the time this manual was written. Manufacturers occasionally upgrade their fluid and lubricant specifications, so check with your local auto parts store for current recommendations.

Engine oil	Consult your owner's manual or local Nissan dealer for recommendations on the particular service grade and viscosity oil recommended for your area
Gear lubricant	Consult your owner's manual or local Nissan dealer for recommendations on the particular service grade and viscosity gear lubricant recommended for your area
Automatic transmission fluid	Dexron
Power steering fluid	Dexron
Brake and clutch fluid	Dot 3
Antifreeze	ethylene glycol base
Chassis lubrication	multi-purpose grease NLGI No. 2

Capacities

Engine oil	
without oil filter	3-7/8 qt
with oil filter	4-1/4 qt
Fuel tank	19 gal
Engine coolant	
reservoir tank	7/8 qt
turbo model	11-5/8 qt
non-turbo model	11-1/8 qt
Transmission	
manual	4 pt
1984 thru 1986	4 pt
1987 on	
FS5W71C	4-1/4 pt
FS5R90A	5-1/8 pt
automatic	7-3/8 qt
Power steering	1 qt
Differential carrier	1-3/8 qt
Windshield and rear window washer tank	3-1/8 qt
Headlight washer tank	2-3/8 qt

General

Clutch	
pedal height	7.68 to 8.07 in
free play	0.04 to 0.12 in
Brake pad wear limit	0.079 in
Rotor thickness limit (minimum)	
front	
1984 thru 1986	0.787 in
1987 on	
CL28VB*	0.787 in
CL28VE*	0.940 in
rear	
1984 thru 1986	0.354 in
1987 on	0.710 in
Brake pedal free height	
manual transmission	7.17 to 7.56 in
automatic transmission	7.24 to 7.64 in
Brake pedal depressed height	3.54 in under force of 110 lbs with engine running

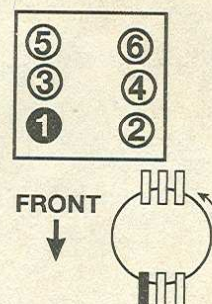
*Rotor part no.

Engine

Ignition timing (1984 thru 1987 only)	20-degrees $\pm$ 2-degrees @ 700 rpm
Spark plug type and gap	NGK BCPR6ES-11 or equivalent @ 0.039 to 0.043 in
Engine idle speed	See Emission Control Label in engine compartment
Engine compression pressure	
standard	
non-turbo	173 psi @ 300 rpm
turbo	165 psi @ 300 rpm (169 on 1988 and later models)
minimum	
non-turbo	128 psi @ 300 rpm
turbo	121 psi @ 300 rpm (125 on 1988 and later models)
Differential limit between cylinders	14 psi @ 300 rpm
Drive belt adjustment deflection	
alternator	
non-turbo	0.24 to 0.31 in
turbo	0.24 to 0.35 in
air conditioning compressor	0.35 to 0.43 in
power steering pump	0.51 to 0.63 in

Torque specifications

	Ft.-lbs
Spark plugs	14 to 22
Exhaust sensor	30 to 37
Oil pan drain plug	22 to 29
Manual transmission drain and filler plugs	
FS5W71C	18 to 25
FS5R90A	14 to 25
Automatic transmission	
pan bolts	3.6 to 5.1
filter bolts	2.2 to 2.9
Differential carrier drain and filler plugs	29 to 43
Wheel lug nuts	
aluminum	72 to 87
steel	58 to 72
Seat belt anchor bolts	17 to 23



The blackened terminal shown on the distributor cap indicates the Number One spark plug wire position

Cylinder location and distributor rotation

1 Introduction

Refer to illustrations 1.1a and 1.1b

This Chapter was designed to help the home mechanic maintain his or her vehicle for peak performance, economy, safety and long life.

On the following pages you will find a maintenance schedule and Sections which deal specifically with each item on the schedule. Included are visual checks, adjustments and item replacements.

Using the time/mileage maintenance schedule and the sequenced Sections will give you a planned program of maintenance for servicing your vehicle. Keep in mind that this is a comprehensive plan. Maintaining only a few items at the specified intervals will not give you the same results.

You will find as you service your vehicle that many of the procedures

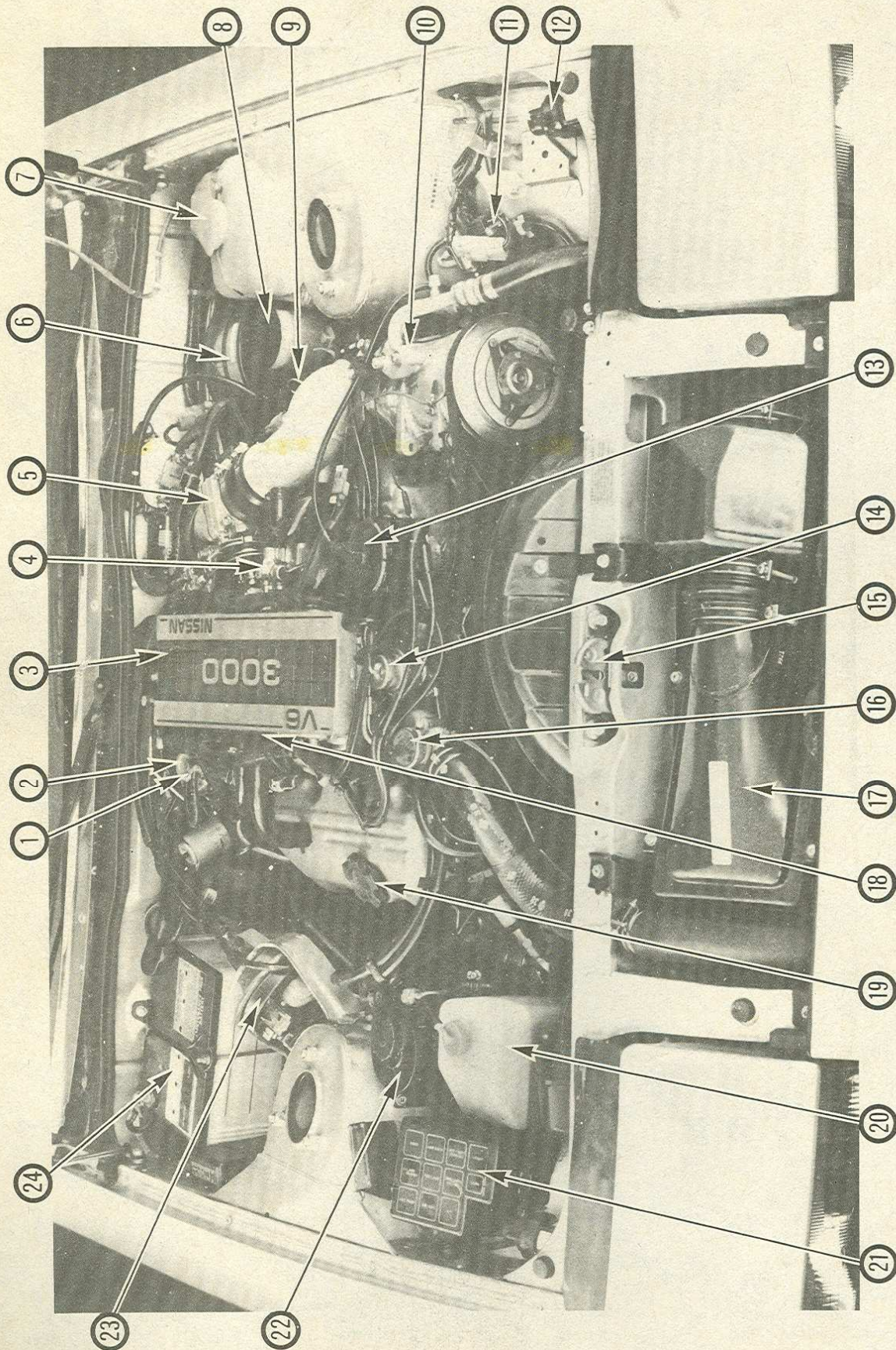
can be grouped together, due to the nature of the job at hand. For example:

If the vehicle is fully raised for a chassis lubrication check the exhaust system, suspension, steering and fuel system.

If the tires and wheels are removed — during a routine tire rotation, for example — check the suspension, brakes and wheel bearings.

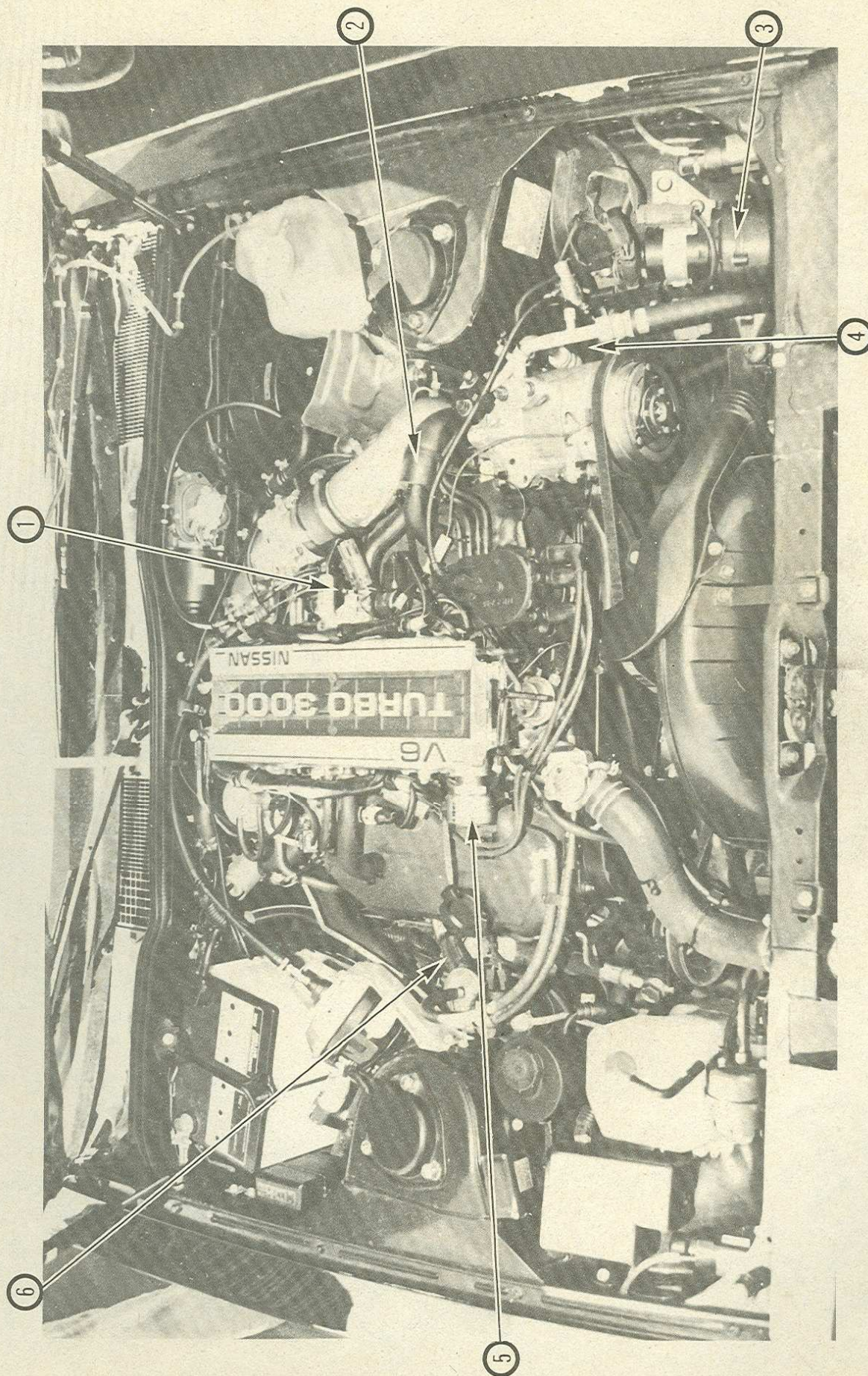
If you must borrow or rent a torque wrench to perform a specific procedure, check the torque on other critical bolts, such as cylinder head bolts, brake caliper bolts, etc. the same day to save time and money.

The first step of any maintenance plan is to decide how you wish to proceed before the actual work begins. In other words, prepare a plan of action. Read through the appropriate Sections to get an idea of what must be done before you begin. Make a list of, then gather together, the necessary parts and tools. If you anticipate possible problem areas, don't hesitate to seek advice from your local parts man or dealer service department.



1.1a Typical view of the engine compartment (non-turbo model)

- | | | |
|-----------------------------------|-------------------------------|-----------------------------|
| 1 EGR control solenoid valve | 13 Distributor | 19 Oil filler cap |
| 2 EGR valve | 14 Fuel pressure regulator | 20 Coolant reservoir |
| 3 Collector cover | 15 Hood latch | 21 Fuse box |
| 4 Idle-up control valve | 16 Remote radiator filler cap | 22 Power steering reservoir |
| 5 Throttle chamber | 17 Air cleaner | 23 Cruise control |
| 6 Brake vacuum booster | 18 PCV valve | 24 Battery |
| 7 Windshield washer reservoir | | |
| 8 Brake master cylinder reservoir | | |
| 9 Oil dipstick | | |
| 10 Air conditioner compressor | | |
| 11 Ignition coil | | |
| 12 Headlight motor | | |



1.1b Typical view of the engine compartment (turbo model). The turbo equipped version of the 300ZX is very similar to the normally aspirated version, with these noted differences:

- | | | |
|-------------------------------|------------------------|--------------------------|
| 1 Auxiliary air control valve | 3 Injector cooling fan | 5 Emergency relief valve |
| 2 Separate PCV hose | 4 Turbocharger | 6 Detonation sensor |

2 Routine maintenance schedule

The following recommendations are provided with the assumption that the vehicle owner will be doing the maintenance or service work, as opposed to having a dealer service department do the work. These are factory maintenance recommendations. However, if you want to keep your vehicle in peak condition at all times — or if you just want to maintain good resale value — many of these procedures should be performed more frequently.

When the vehicle is new it should be serviced by a factory authorized dealer service department to protect the factory warranty. In many cases the initial maintenance check is done at no cost to the owner.

Every 250 miles or weekly, whichever comes first

- Check the engine oil level (Section 4)
- Check the engine coolant level (Section 4)
- Check the windshield washer fluid level (Section 4)
- Check the tires and tire pressures (Section 5)

Every 5000 miles or 6 months, whichever comes first

- Check the power steering fluid level (Section 4)
- Check the torque of the turbocharger and/or EFI mounting bolts (Chapter 4)
- Change the oil and filter in turbo models (Section 7)
- Check the cooling system (Section 21)
- Check the brake master cylinder fluid level (Section 4)
- Check and service the battery (Section 8)
- Check and replace (if necessary) the windshield wiper blades (Section 6)

Every 7500 miles or 6 months, whichever comes first

- Change the oil and filter in non-turbo models (Section 7)

Every 15,000 miles or 12 months, whichever comes first

- Check the engine idle rpm (Section 14)
- Inspect the brake lines and hoses (Section 25)
- Inspect the brake pads and discs (Section 25)
- Check parking brake (Chapter 9)
- Check the manual transmission lubricant, automatic transmission fluid and differential gear oil (Section 4)
- Change the rear axle oil (if vehicle is used to pull trailer) (Section 35)
- Inspect the power steering lines and hoses (Section 30)
- Inspect the steering gear and linkage (Section 26)
- Inspect the rear axle and suspension components (Section 26)
- Lubricate the locks, hinges and hood latch (Section 24)
- Inspect the exhaust system (Section 27)
- Inspect the seat belts, buckles, retractors, anchors and adjuster (Section 36)
- Rotate the tires (Section 5)
- Check the throttle linkage (Section 22)
- Check the air filter (Section 13)

Every 30,000 miles or 24 months, whichever comes first

- Drain, flush and refill the cooling system (Section 21)
- Replace the fuel filter (Section 19)
- Check the EGO sensor (Section 31)
- Check the operation of the EGR valve and sensor (Section 29)
- Inspect and replace, if necessary, the PCV valve (Section 20)
- Replace the air filter and PCV filter (Section 13)
- Inspect the vapor lines (Section 30)

Inspect and replace, if necessary, the distributor cap and rotor (Section 11)

Inspect the spark plug wires (Section 10)

Replace the spark plugs (Section 9)

Inspect the fuel system hoses and fuel tank filler cap (Section 18)

Check the drivebelt tension and condition (Section 12)

Inspect the front wheel bearings (Section 23)

Every 36,000 miles or 36 months

Check and adjust clutch pedal (Chapter 8)

Check the drivetrain (Section 28)

Check EEC filter (Chapter 6)

Every 60,000 miles or 48 months

Change the transmission and differential lubricant (Sections 33 and 34)

Compression the test engine (Section 16)

Replace the timing belt (Chapter 2)

Inspect the tie rod ends (Section 26)

Inspect the balljoints (Section 26)

Severe driving conditions

Severe driving conditions include repeated short distance trips, extensive idling, driving in dusty areas, extremely low or high ambient temperatures, towing, driving in areas using salt or other corrosives on the road or continuous driving on rough and/or muddy roads.

Under these conditions service should be performed more frequently. As a general rule, divide the service time in half. For example, instead of changing the oil and filter in the turbo equipped engine every 5000 miles, change them every 2500 miles.

Here is a guideline for maintenance of items that can deteriorate more rapidly under severe driving conditions:

Replace the air cleaner more frequently.

Change the engine oil and filter every 3000 miles or three months on non-turbo models.

Change the engine oil and filter every 2500 miles or three months on turbo models.

Inspect the brake pads and discs every 7500 miles.

Change the manual/automatic transmission and differential gear oil every 30,000 miles or 24 months.

Inspect the steering gear and linkage, axle, and suspension parts every 7500 miles or 6 months.

Inspect the locks, hinges and hood latch every 7500 miles or 6 months.

Inspect the exhaust system every 7500 miles or 6 months.

3 Tune-up — general information

The term *tune-up* is loosely used for any general operation that restores the engine to its proper running condition. A tune-up is not a specific operation, but rather a series of procedures, such as replacing the spark plugs, adjusting the idle speed, setting the ignition timing, etc.

If the routine maintenance schedule (Section 1) is followed closely, fluid levels are checked frequently and high wear items are inspected regularly from the beginning of the car's service life, as suggested throughout this manual, the engine will remain in good running condition and the need for additional tune-ups will be minimized.

More likely though, there will be times when the engine runs poorly because of irregular maintenance. Such a possibility is even more likely if a used vehicle is purchased. It's difficult to verify the kind of care it has received. In such cases, a complete engine tune-up outside of the regular routine maintenance intervals is highly recommended.

The following series of procedures are often necessary to bring a generally poor running engine back into a proper state of tune.

Minor tune-up

- Clean, inspect and test the battery
- Check all engine-related fluids
- Check and adjust the drivebelts
- Replace the spark plugs
- Inspect the distributor cap and rotor
- Inspect the spark plug and coil wires
- Check and adjust the idle speed
- Check and adjust the timing
- Replace the fuel filter
- Check the PCV valve
- Tighten the EFI mounting bolts
- Check the air and PCV filters
- Clean and lubricate the throttle linkage
- Check all underhood hoses

Major tune-up

- All of the above, plus
- Check the EGR system
- Check the charging system
- Check the fuel system
- Test the battery
- Check the engine compression
- Check the cooling system
- Replace the distributor cap and rotor
- Replace the spark plug wires
- Replace the air and PCV filters

4 Fluid level checks

Refer to illustrations 4.2, 4.4, 4.6, 4.9, 4.15a, 4.15b, 4.19, 4.26, 4.34, 4.40, 4.48a and 4.48b

1 There are a number of components on a vehicle which rely on the use of fluids to perform their job. During normal operation of the vehicle, these fluids are used up and must be replenished before damage occurs. See the Specifications at the front of this Chapter for the specific fluid to be used when addition is required. When checking fluid levels, it is important to have the vehicle on a level surface.

Engine oil

2 The engine oil level is checked with a dipstick located at the left side of the engine. The dipstick extends through a tube to the oil pan at the bottom of the engine (see illustration).

3 The oil level should be checked either before the vehicle has been driven or about 15 minutes after the engine has been shut off. If the oil is checked immediately after driving the vehicle, some of it will remain in the upper engine oil galleries, producing an inaccurate reading on the dipstick.

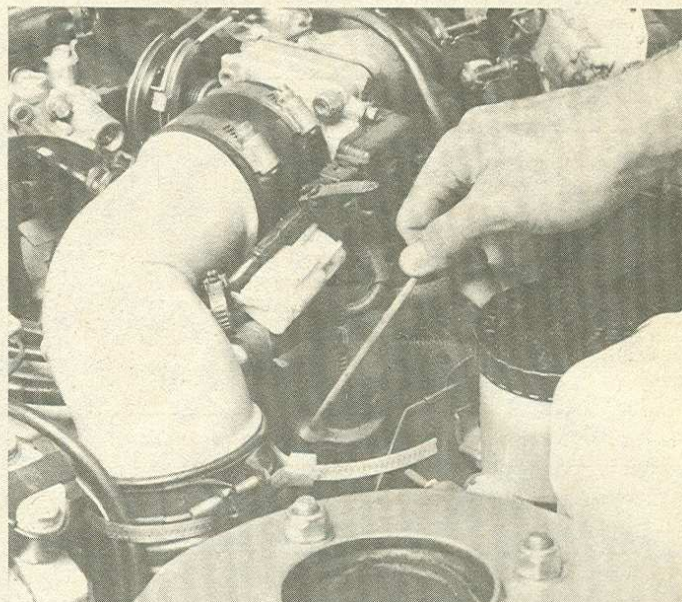
4 Pull the dipstick from the tube and wipe all the oil off the end with a clean rag. Insert the clean dipstick all the way back into the oil pan

and pull it out again. Look at the oil-darkened portion of the dipstick. The oil level should be between the L and H marks (see illustration).

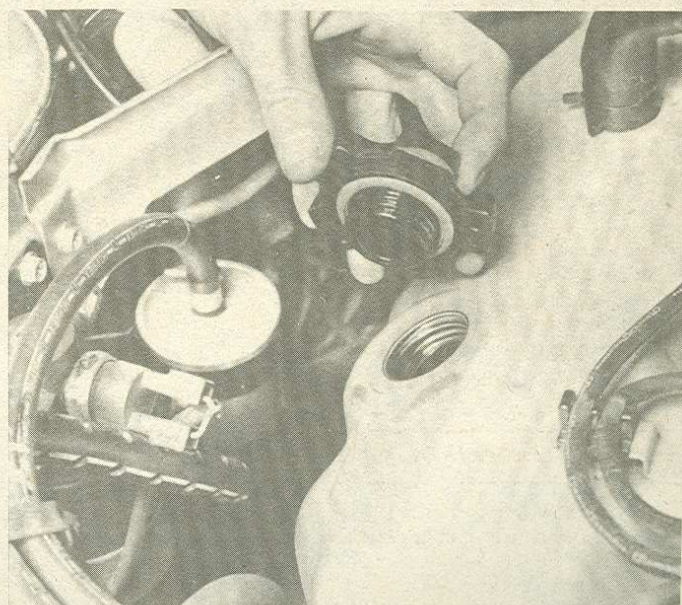
5 It takes one quart of oil to raise the level from the L mark to the H mark on the dipstick. Do not allow the level to drop below the L mark — oil starvation induced engine damage may result. Conversely, do not overfill the engine by adding oil above the H mark — it may result in fouled spark plugs, oil leaks or seal failures.

6 To add oil, remove the twist-off cap located on the right rocker arm cover (see illustration). An oil can spout or funnel will reduce spills.

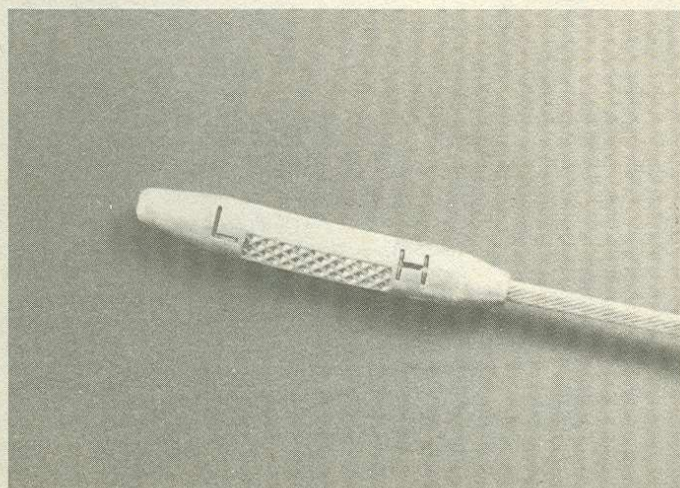
7 Checking the oil level can also be an important preventive maintenance step. You should always check the condition of the oil as well as the level. Take your thumb and index finger and wipe the oil off the dipstick. Look, and feel, for small dirt or metal particles clinging to the dipstick. This is an indication that the oil is dirty and should be changed (Section 6). If you notice that the oil level is dropping quickly, there's either a leak or some serious engine wear that must be corrected. If there are water droplets in the oil, or if it's milky looking, there is a leak between the cooling system and engine, such as a blown head gasket, cracked head, etc., which must be repaired immediately before further damage occurs.



4.2 The oil dipstick is located on the left side of the engine



4.6 Twist-off the oil cap located on the right rocker arm cover to add engine oil



4.4 Keep the oil level between the L and H marks indicated on the dipstick

Engine coolant

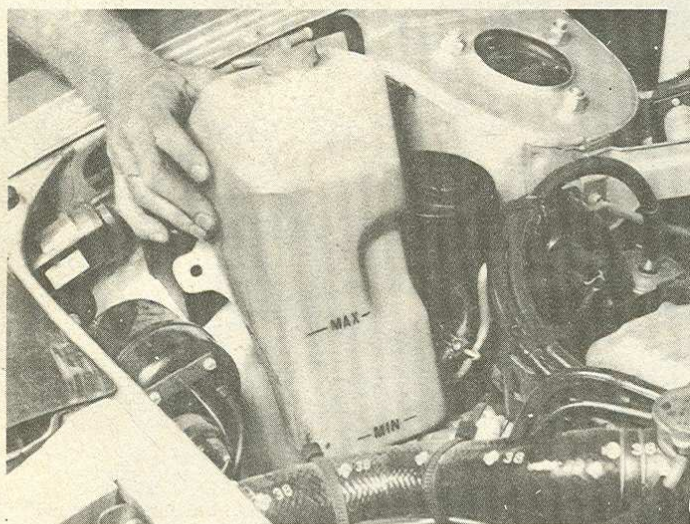
8 All vehicles covered by this manual are equipped with a pressurized coolant recovery system which simplifies coolant level checks. A white plastic coolant reservoir is connected by a hose to the radiator cap. As the engine heats up during operation, coolant vapor escapes from the radiator via the pressure cap, through the connecting tube and into the reservoir. As the engine cools, the coolant is automatically drawn back into the radiator to keep the level correct.

9 The coolant level should be checked when the engine is hot. Observe the level of fluid in the reservoir, which should be between the MAX and MIN marks on the side of the reservoir (see illustration).

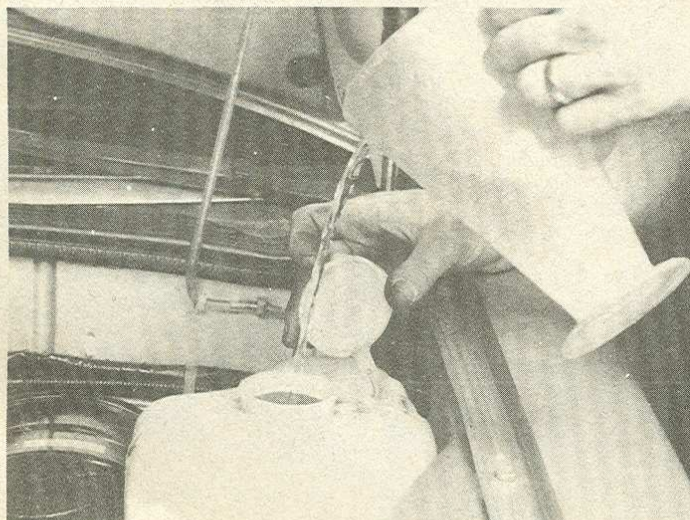
10 **Warning:** Under no circumstances should the radiator cap or the coolant recovery reservoir cap be removed when the system is hot, because escaping steam and scalding liquid can cause serious personal injury. To remove the radiator cap, wait until the system has cooled completely, then wrap a thick cloth around the cap and turn it to the first stop. If any steam escapes, wait until the system has cooled further before removing the cap. The coolant recovery cap may be carefully removed after it is apparent that no further boiling is occurring in the recovery tank.

11 If only a small amount of coolant is required to bring the system up to the proper level, plain water can be used. However, to maintain the proper antifreeze/water mixture in the system, both should be mixed together to replenish a low level. Coolant offering protection to -20°F should be mixed with water in the proportion specified on the container.

Warning: Do not allow antifreeze to come in contact with your skin



4.9 Check the engine coolant level while the engine is warm. The fluid level should be between the MAX and MIN marks



4.15a The windshield washer fluid level should be maintained near the top of the reservoir

or painted surfaces of the vehicle. Flush contacted areas immediately with plenty of water.

12 Add small amounts of coolant at a time to the reservoir, waiting for it to be absorbed by the cooling system before adding more.

13 Note the condition of the coolant while checking the level. It should be relatively clean. If it is rust colored, the system should be drained, flushed and refilled (Section 20).

14 If the cooling system requires repeated additions to maintain the proper level, have the radiator cap pressure checked for proper operation. Also look for leaks in the system such as cracked hoses, loose hose connections, leaking gaskets, or a bad bearing in the water pump (Chapter 3).

Windshield washer fluid

15 Fluid for the windshield washer system is located in the engine compartment in a plastic reservoir attached to the left fender well (see illustration). A separate tank is located near the radiator for vehicles equipped with headlight washers (see illustration). The level in these reservoirs should be maintained near the top, except during periods when freezing temperatures are expected, at which time the fluid level should be no higher than 3/4-full to allow for expansion should the fluid freeze. The use of an additive such as Optikleen will help lower the freezing point of the fluid and will result in better cleaning of the windshield surface. Do not use antifreeze — it will cause damage to the vehicle's paint.

16 In cold weather warm the windshield with the defroster before using the washer to help prevent icing.

Battery electrolyte

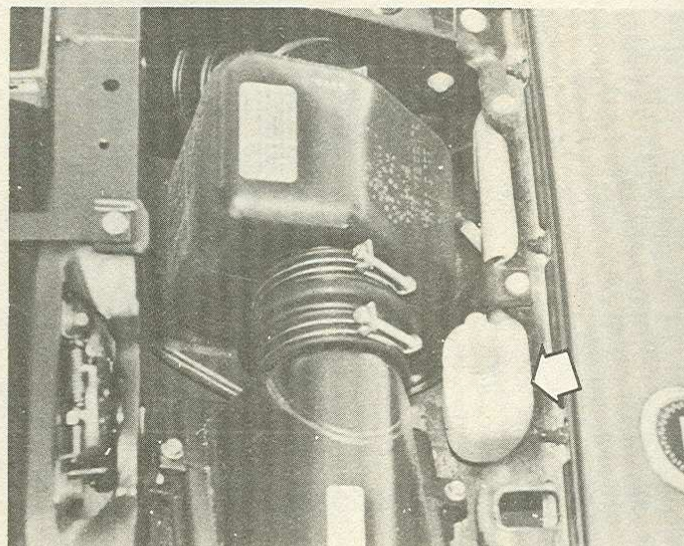
Certain precautions must be taken when working on or near the battery:

- Never expose a battery to open flame or sparks which could ignite the hydrogen gas given off by the battery
- Wear protective clothing and eye protection to reduce the possibility of the corrosive sulfuric acid solution inside the battery harming you. If the fluid is splashed or spilled, flush the contacted area immediately with plenty of water
- Remove all metal jewelry which could contact the positive terminal and another grounded metal source, causing a short circuit
- Always keep batteries and battery acid out of the reach of children.

17 All vehicles with which this manual is concerned are equipped with a maintenance-free battery which is permanently sealed (except for vent holes) and has no filler caps. Water does not have to be added to these batteries at any time.

Brake fluid

Caution: Be careful not to spill brake fluid on any painted surfaces of



4.15b Vehicles equipped with headlight washers have a reservoir (arrow) located in the front of the engine compartment

the car. It can damage the paint finish. Wash spills off immediately with plenty of water.

18 The brake fluid reservoir is attached to the brake master cylinder. Remove any dirt or loose particles from the cover before opening the master cylinder. If checking the brake fluid on a vehicle with water or snow on it, be sure to completely clean the hood and cowl before opening the reservoir. Serious contamination of the brake fluid can result if water is allowed to enter the brake fluid reservoir.

19 To check the level of the brake fluid, note how high the fluid is in relation to the *MAX* and *MIN* marks on the side of the reservoir (see illustration).

20 Additional fluid must be added to the reservoir anytime the brake fluid warning light comes on or the brake fluid level falls below the *MAX* mark on the reservoir.

21 Carefully pour the specified brake fluid into the master cylinder. Be sure to use the recommended fluid. Mixing different types of brake fluid can cause damage to the system. Consult your owner's manual or the Specifications in this Chapter for the correct fluid.

22 At this time the fluid and master cylinder should be inspected for contamination. Normally, the braking system will need no more than periodic draining and refilling, but if rust deposits, dirt particles or water droplets contaminate the fluid, the system should be drained and refilled with fresh fluid and bled.

23 Reinstall the master cylinder cap. Make sure it is properly seated to prevent fluid leakage.

24 The brake fluid in the master cylinder will drop slightly as the brake pads at each wheel wear down during normal operation. If the master cylinder requires repeated replenishing to keep it at the proper level, it's an indication of leakage in the brake system. Correct it immediately. Check all brake lines and calipers and their connections immediately (Chapter 9).

25 If, upon checking the master cylinder fluid level, you discover the reservoir is below the *MIN* mark or empty, the hydraulic system should be bled (Chapter 9).

Manual transmission oil

26 Manual transmissions do not have a dipstick. The oil level is checked with the transmission cold. Locate the plug in the side of the transmission (see illustration) and use a rag to clean the plug and the area around it, then remove the plug.

27 If oil immediately starts leaking out, thread the plug back into the transmission. The level is correct. If there is no leakage, completely remove the plug and place your little finger inside the hole. The oil level should be right at the bottom edge of the plug hole.

28 If it isn't, the transmission needs more oil. Use a syringe to squeeze the recommended lubricant into the plug hole until the fluid level is again just at the bottom edge of the plug hole. See your owner's manual or the front of this Chapter for the correct lubricant.

29 Thread the plug back into the transmission case and tighten it to

the specified torque.

30 Drive the vehicle a short distance, then check for leaks around the plug.

Automatic transmission fluid

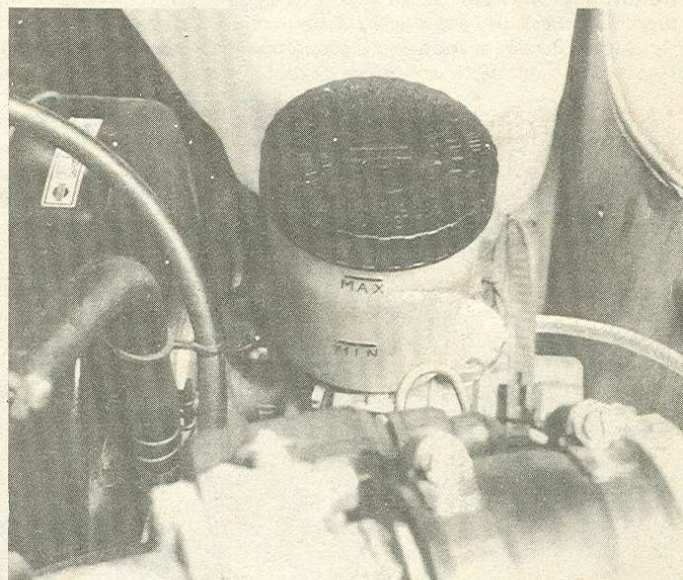
31 The level of the automatic transmission fluid should be carefully maintained. Low fluid level can lead to slipping or loss of drive, while overfilling can cause foaming and loss of fluid.

32 With the parking brake set, start the engine, then move the shift lever through all the gear ranges, ending in Park. The fluid level must be checked with the vehicle on level ground and with the engine running at idle.

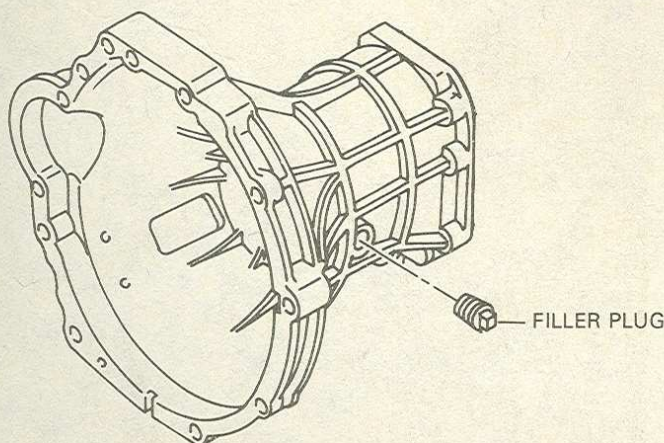
33 **Note:** *Incorrect fluid level readings will result if the vehicle has just been driven at high speeds for an extended period, in city traffic during hot weather or if it's been pulling a trailer. If any of these conditions apply, wait until the fluid cools (about 30 minutes).*

34 Remove the transmission dipstick from the filler tube located on the right side of the engine compartment at the rear of the right cylinder bank (see illustration).

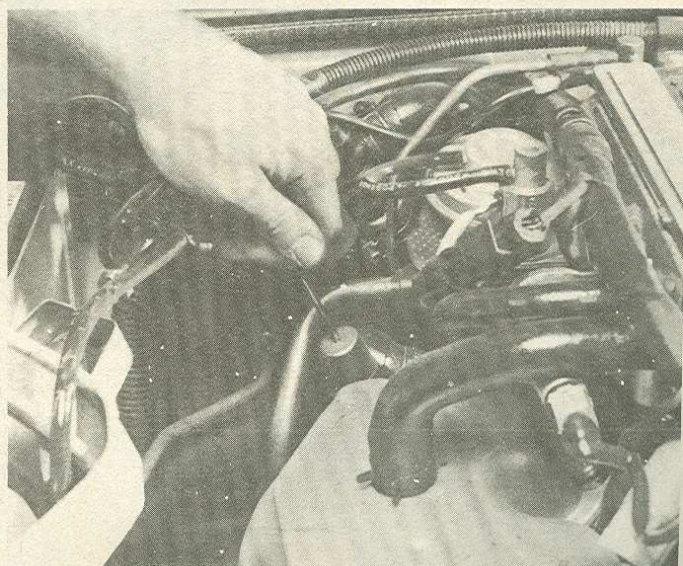
35 Carefully touch the end of the dipstick to determine if the fluid is cool (about room temperature), warm or hot (uncomfortable to the touch).



4.19 Maintain the brake reservoir fluid level between the *MAX* and *MIN* marks



4.26 The manual transmission filler plug is located on the side of the case

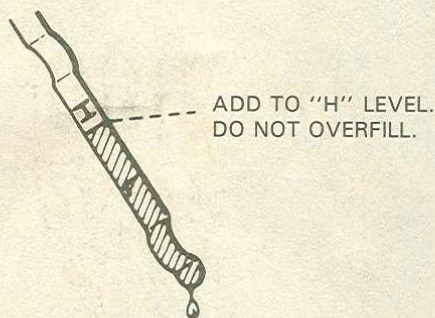


4.34 The automatic transmission dipstick is located at the right rear of the engine

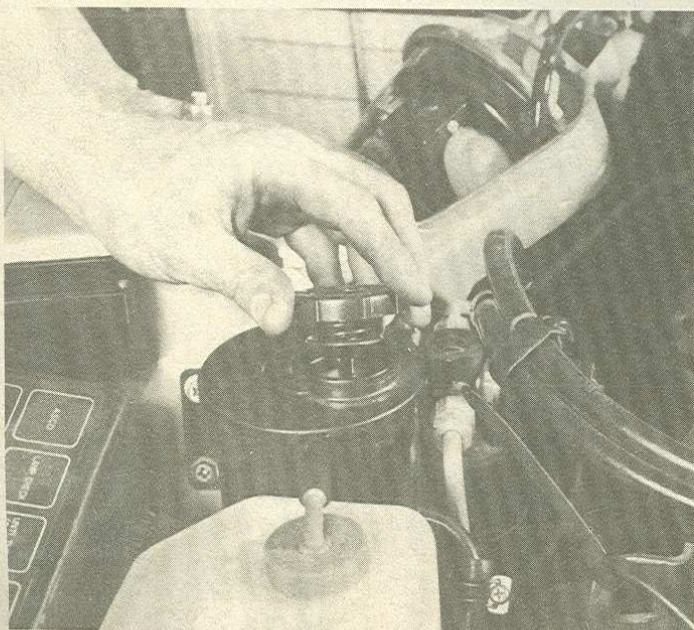
- 36 Wipe the fluid from the dipstick with a clean rag and push the dipstick back into the filler tube until the cap seats.
- 37 Pull the dipstick out again and note the fluid level.
- 38 If the fluid feels cool, the level should be near the *L* mark.
- 39 If the fluid feels warm or hot, the level should be near the *H* mark.
- 40 Add just enough of the recommended fluid to fill the transmission to the proper level (see illustration).
- 41 It takes about one pint to raise the level from the *L* mark to the *H* mark, so add the fluid a little at a time and keep checking the level until it is correct.
- 42 The condition as well as the level of the automatic transmission fluid should be checked. If the fluid is a dark reddish-brown color or if it has a burned smell, it should be changed. If you are in doubt about the condition of the fluid, purchase some new fluid and compare the two for color and smell.

Power steering fluid

- 43 Unlike manual steering, the power steering system relies on fluid which periodically requires replenishing.
- 44 The reservoir for the power steering pump is located on the engine compartment right fender well.
- 45 Before beginning a fluid level check, the front wheels should be pointed straight ahead and the engine should be off.
- 46 Use a clean rag to wipe off the reservoir cap and the area around the cap. This will help prevent any foreign matter from entering the reservoir during the check.
- 47 Make sure the engine is at normal operating temperature.
- 48 Remove the dipstick (see illustration), wipe it off with a clean rag, reinsert it, then withdraw it and read the fluid level. The level should



4.40 Maintain the automatic transmission fluid level near the H mark



4.48a Clean the top of the power steering reservoir before removing the cap

be between the marks (see illustration).

- 49 If additional fluid is required, pour the specified type directly into the reservoir, using a funnel to prevent spills.
- 50 If the reservoir requires frequent fluid additions, carefully check all power steering hoses, hose connections, the power steering pump and the steering assembly for leaks.

Hydraulic clutch fluid

Caution: Be careful not to spill brake fluid on any painted surfaces of the car, as it can damage the paint finish. If spilled, wash immediately with water.

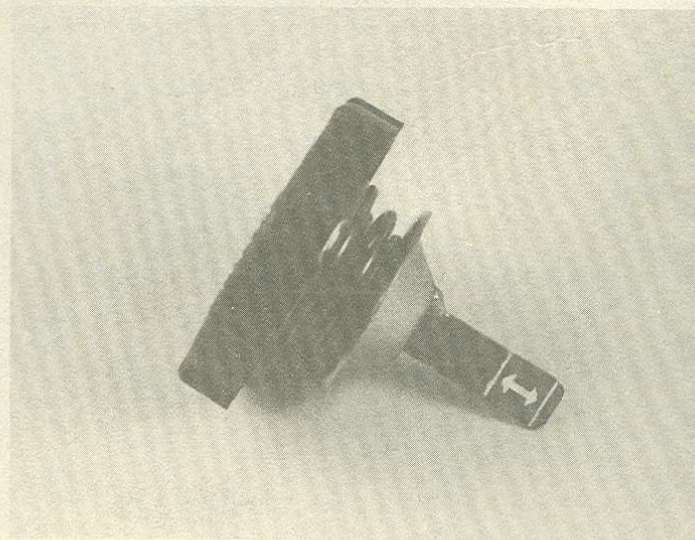
- 51 The fluid master cylinder for the hydraulic clutch is located in the engine compartment on the left side of the firewall, next to the brake master cylinder.
- 52 The clutch master cylinder reservoir fluid level should be checked periodically. If the fluid is significantly below the *MAX* mark, additional fluid should be added to the reservoir.
- 53 Before unscrewing the cap, clean all dirt and grease from around the cap thoroughly. If any foreign matter enters the master cylinder, blockage in the clutch system line can occur.
- 54 Twist the cap counterclockwise to remove it from the reservoir.
- 55 Inspect the master cylinder for contamination. If rust deposits, dirt particles or water droplets are visible, the system should be dismantled, drained and refilled with fresh fluid (Chapter 8).
- 56 Carefully pour the specified brake fluid into the clutch master cylinder.
- 57 Reinstall the master cylinder cap.
- 58 If the system requires repeated fluid replenishment, check the system for leakage. Inspect all clutch lines and connections.
- 59 If the master cylinder fluid level falls below the *MIN* mark or appears empty, the clutch system should be bled (Chapter 8).

5 Wheels and tires — inspection, maintenance and servicing

Refer to illustrations 5.3a, 5.3b, 5.17, 5.20, 5.24, 5.28, 5.33 and 5.37

Inspection

- 1 Periodic inspection of the tires may not only prevent you from being stranded with a flat tire, but can also provide you with clues to steering and suspension system problems before major damage occurs.
- 2 Proper tire inflation adds miles to the lifespan of the tires, allows the vehicle to achieve maximum miles per gallon and contributes to overall ride quality.
- 3 When inspecting the tires, check tread wear first. An irregular tread pattern — such as cupping, flat spots, more wear on one side than the other — is an indication of front end alignment and/or balance problems. If you note any of these symptoms, take the vehicle to an automotive repair shop or a dealer to correct the problem (see illustration). Tread wear indicators are molded into the tire (see illustration) to indicate the limit of useful tread life.



4.48b The power steering fluid level should be within the two marks on the dipstick

4 Check the tread area for cuts and punctures. Many times a nail or tack will embed itself into the tire tread, yet the tire will hold air pressure for a short time. In most cases, a repair shop or gas station can repair the punctured tire.

5 It is also important to check both inner and outer sidewalls of the tires. Look for deteriorated rubber, cuts and punctures. Inspect the in-board sides of the tires for signs of brake fluid leakage, indicating that a thorough brake inspection is needed immediately.

6 Incorrect tire pressure cannot be determined merely by looking at the tires, especially radial tires. A tire pressure gauge must be used. If you do not have a reliable gauge, purchase one and keep it in the glovebox. Pressure gauges built into the nozzles of air hoses at gas stations are often inaccurate.

7 Always check tire inflation when the tires are cold. In this case, cold means that the vehicle has not been driven more than one mile after sitting for three hours or more. It is normal for the pressure to increase four to eight pounds when the tires warm up.

8 Unscrew the valve cap and press the gauge firmly onto the valve. Observe the reading on the gauge and compare it to the recommended tire pressure listed on the tire placard. The tire placard is usually attached to the driver's door.

9 Check all tires and add air as necessary to bring them up to the specified pressure. Do not forget the spare tire. Be sure to reinstall the valve caps to keep dirt and moisture out of the valve stem mechanism.

Wheel and tire replacement

10 Refer to *Jacking and towing* at the front of this manual for the correct procedure for raising the vehicle.

11 Park the car on a level surface. Set the parking brake and put the transmission in gear. Manual transmissions should be in Reverse, automatic transmissions should be in Park.

12 Loosen, but do not remove, the wheel lug nuts by turning them counterclockwise.

13 Raise the car just enough so the tire clears the ground.

14 Remove the lug nuts.

15 Remove the wheel and tire.

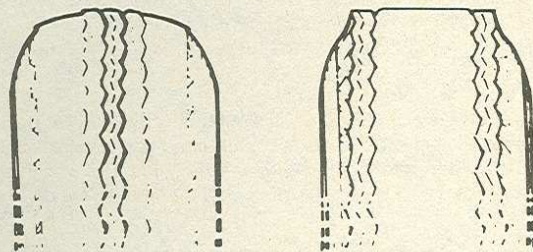
16 If a flat tire is being replaced, ensure that there is adequate ground clearance for the new inflated tire, then mount the wheel and tire on the wheel studs.

17 Apply a light coat of spray lubricant or light oil to the wheel stud threads and install the lug nuts. **Caution:** Aluminum wheels require washers between the wheel and the lug nut. On steel wheels, be sure the cone-shaped end of the lug nut faces the wheel (see illustration).

18 Lightly tighten the wheel lug nuts alternately and evenly until there is no wheel play.

19 Adjust tire pressure to the specified value indicated on the tire placard.

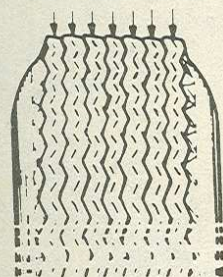
20 Lower the vehicle until the wheel touches the ground, then tighten the wheel lug nuts to the specified torque in a criss-cross pattern (see illustration).



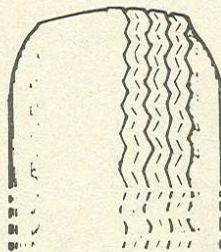
SHOULDER WEAR

CENTER WEAR

FEATHERED EDGE

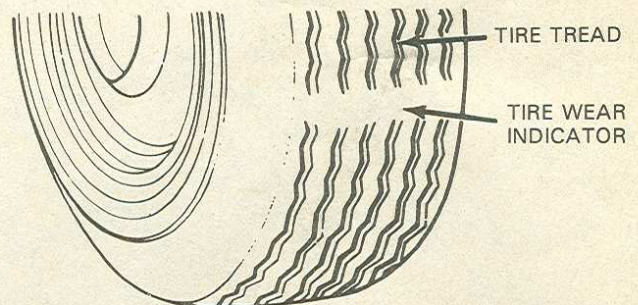


TOE-IN OR TOE-OUT WEAR

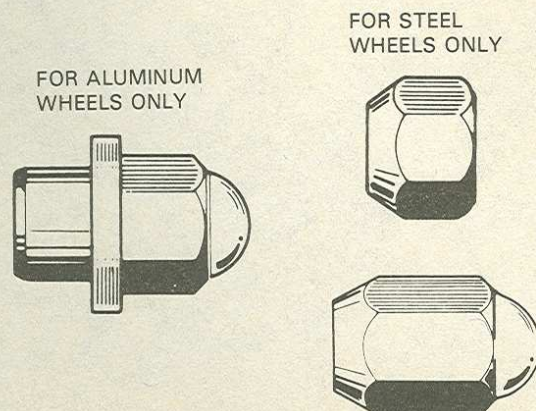


UNEVEN WEAR

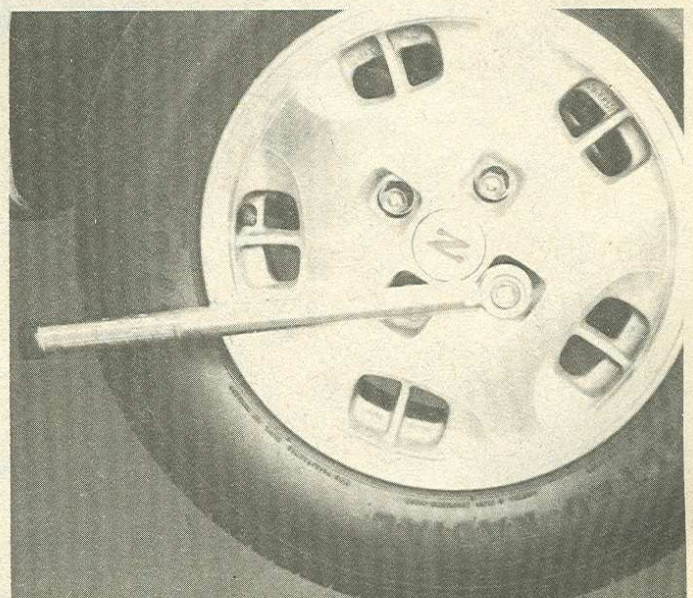
5.3a An irregular tire wear pattern is indicative of various problems in the front end



5.3b Tire wear indicators are designed into the tread of the tires as a warning that they need replacing



5.17 Different wheel lugs are used for aluminum and steel wheels and should not be interchanged

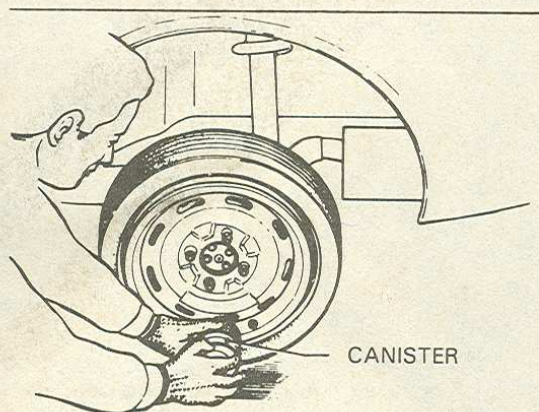


5.20 Use a torque wrench to make sure the wheel lug nuts are properly tightened

Spare tire inflation with air canister

Caution: Prior to inflation, carefully read the directions and caution notes on both the air canister and spare tire.

- 21 Raise the vehicle and install the spare tire (Section 5).
- 22 Position the spare tire so the tire valve is at the 6 o'clock position.
- 23 **Note:** If the outside temperature is below 14°F, the air canister should be warmed prior to operation. This can be done by placing the canister next to the windshield defroster for 5 to 10 minutes.
- 24 Remove the valve cap from the spare tire and position the air canister on the valve. Holding the canister tightly in place, depress the release button (see illustration). You should be able to hear the gas entering the spare tire. **Warning:** The metal parts of the canister become extremely cold during inflation and can cause frostbite, so adequate protection should be used to prevent contact.
- 25 Hold the canister in position with the button depressed for an additional minute after the sound stops to make sure that as much gas as possible has entered the tire.
- 26 After inflating the tire, remove the canister from the tire valve and save it for later disposal. **Note:** Buy another canister promptly so you'll be prepared for further emergencies.
- 27 Replace the tire valve cap, lower the car to the ground, and fully tighten the wheel lug nuts in a criss-cross tightening pattern. **Note:** In cold weather the tire may not appear fully inflated. In this case, drive slowly for the first mile or two until the tire temperature rises and the pressure increases.



5.24 With the canister held tightly in place, push the release button and listen for the gas entering the tire. Protect your hands against the extremely cold can

Spare tire inflation with air compressor

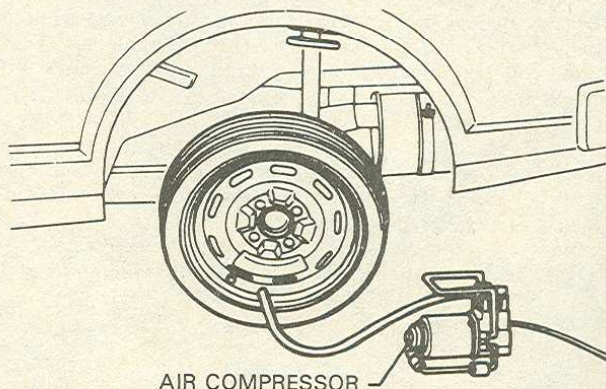
- 28 Mount the spare tire onto the car, remove the valve cap from the spare and connect the air compressor hose to the valve (see illustration).
- 29 Insert the air compressor power cord into the cigarette lighter socket. It will take about six minutes for the compressor to inflate the tire to the recommended pressure.
- 30 Once the tire is fully inflated, remove the power cord plug from the cigarette lighter socket. Check the tire for correct pressure with a pressure gauge and adjust as necessary.
- 31 Disconnect the air compressor hose from the tire valve and replace the valve cap. Lower the car to the ground and tighten the wheel lug nuts to the specified torque.

Spare tire deflation

- 32 After removing the spare tire from the axle, the tire can be deflated by depressing the valve stem button or by removing the valve stem. **Warning:** Do not inhale the gas escaping from the tire.
- 33 After the spare tire is deflated, flatten the tire to its original shape (see illustration), replace the valve stem and cap, then put the spare back in its storage area in the rear compartment.

Tire rotation

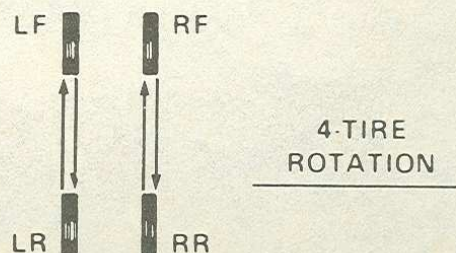
- 34 Tires should be rotated at the specified intervals or any time that uneven wear becomes apparent. **Note:** Since the car must be raised and the tires removed anyway, check the brakes (Section 24) and pack the wheel bearings (Chapter 10).
- 35 Refer to the accompanying illustration for the preferred tire rotation pattern.
- 36 Refer to the information in *Jacking and towing* at the front of this manual for the proper procedures to follow when raising the vehicle and changing a tire. If the brakes are to be checked, do not apply the parking brake as stated. Make sure the tires are blocked to prevent the vehicle from rolling.
- 37 Preferably, the entire vehicle should be raised at the same time. This can be done on a hoist or by jacking up each corner and then lowering the vehicle onto jackstands placed under the frame. Always use four jackstands and make sure the vehicle is firmly supported.



5.28 Inflate the spare tire with the optional air compressor by attaching the compressor hose to the wheel valve and connecting the compressor cord to the cigarette lighter



5.33 The spare tire collapses to take up less storage space



5.35 Correct rotation sequence for radial tires

- 38 After rotation check and adjust the tire pressures as necessary and be sure to check the lug nut tightness.
 39 For further information on the wheels and tires, refer to Chapter 10.

6 Windshield wiper blades — inspection and replacement

Refer to illustrations 6.4 and 6.5

- 1 The windshield wiper and blade assembly should be inspected periodically for damage, loose components and cracked or worn blade elements.
- 2 Road film can build up on the wiper blades and affect their efficiency, so they should be washed regularly with a mild detergent solution.
- 3 The action of the wiper mechanism may loosen the nuts, bolts and fasteners, so check and tighten them as necessary at the same time the wiper blades are checked.
- 4 To remove a wiper blade assembly, remove the two screws attaching it to the arm (see illustration).
- 5 Grasping the wiper blade assembly in one hand, squeeze the retaining tabs of the metal tip with needle nose pliers, then pull the rubber element out of the blade assembly (see illustration).
- 6 With the blade assembly in one hand, position the new rubber wiper blade, then slide it back into place on the blade assembly until it seats. Be sure that the tangs of the metal tip are locked into place.
- 7 Reverse the disassembly procedure for installation.

7 Engine oil and filter change

Refer to illustrations 7.3 and 7.9

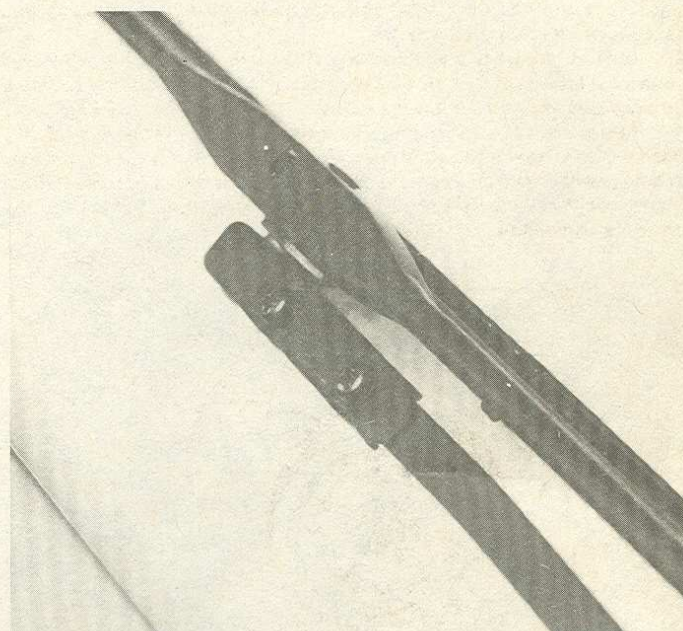
- 1 Frequent oil changes are the best preventive maintenance available to the home mechanic. As engine oil ages, it becomes diluted and contaminated. If allowed to remain in the engine, old oil can cause premature engine wear.
- 2 Some sources recommend oil filter changes every other oil change, but the minimal cost and relative ease of installation of an oil filter, plus the potential damage that can be caused by an ineffective filter, makes it more effective to change the filter along with the oil.
- 3 The tools necessary for a normal oil and filter change are a wrench to fit the oil pan drain plug, an oil filter wrench to remove the old filter, a six-quart capacity container into which to drain the old oil, a funnel or spout to pour in the new oil and clean shop rags or newspaper to mop up any spills (see illustration).
- 4 Access to the underside of the vehicle is greatly improved if the vehicle can be lifted on a hoist, driven onto ramps or supported by jackstands. **Warning:** Do not work under a vehicle which is supported only with a bumper, hydraulic or scissor-type jack.
- 5 If this is your first oil change on the vehicle, it is a good idea to crawl underneath and familiarize yourself with the locations of the oil

drain plug and the oil filter. The engine and exhaust components will be hot, so figure out how to work around them before beginning.

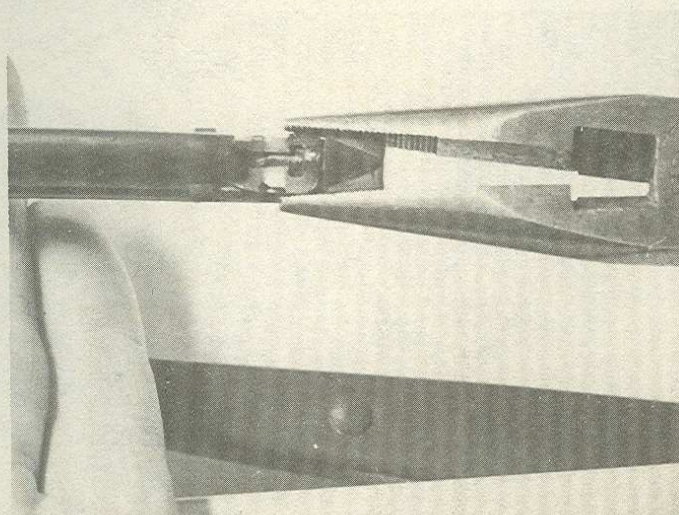
6 Allow the engine to warm to normal operating temperature. Use this warm-up time to gather everything necessary for the job. The correct type of oil to buy for your application can be found in your owner's manual. Once the engine oil is warm, it will drain better and more built-up sludge will be removed.

7 Raise and support the vehicle. Notched jacking points are provided front and rear on both sides of the car for jacking. Make sure the car is firmly supported. Jackstands should be placed toward the front of the square-section frame rails running the length of the vehicle.

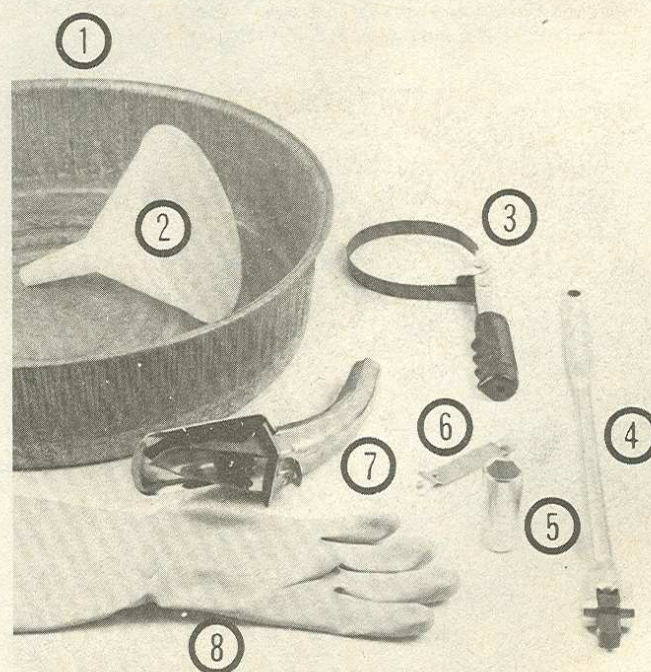
8 Move all necessary tools, rags and newspapers under the vehicle. Position the drain pan under the drain plug. Keep in mind that the oil will initially flow from the pan with some force, so place the pan accordingly.



6.4 Remove the two attaching screws holding the wiper blade to the arm



6.5 Squeeze the wiper blade retaining tabs inwards, then pull the metal tip of the rubber element from the blade



7.3 Typical tools required to perform an engine oil and filter change

- 9 Being careful not to touch any of the hot exhaust components, use a wrench to remove the drain plug (see illustration). Depending on oil temperature, you may want to wear gloves while unscrewing the plug the final few turns.
- 10 Drain the old oil into the pan. It may be necessary to move the pan farther under the engine as the oil flow slows to a trickle.
- 11 After all the oil has drained, wipe off the drain plug with a clean rag. Small metal particles clinging to the plug will quickly contaminate the new oil if not removed.
- 12 Clean the area around the drain plug opening and reinstall the plug. Tighten the plug to the specified torque.
- 13 Move the drain pan into position under the oil filter.
- 14 Working from above, reach down and loosen the oil filter canister, which is located on the lower right rear side of the engine block, with an oil filter wrench.
- 15 Sometimes the oil filter is screwed on so tightly that it cannot be loosened. As a last resort, you can punch a metal bar or long screwdriver directly through the canister and use it as a T-bar to turn the filter. If you do it this way, be prepared for oil to spurt out of the canister as it is punctured.
- 16 Completely unscrew the old filter. It will still have some oil in it,

so be careful. Dump the contents of the oil filter into the drain pan.

- 17 Compare the old filter with the new one to make sure they are the same size and type.

18 Use a clean rag to remove all oil, dirt and sludge from the area where the oil filter mounts to the engine. Check the old filter to make sure the rubber gasket is not stuck to the engine mounting surface. If it is, peel it off. The new filter comes with a new gasket and will not seal properly if the old gasket is left on the block.

- 19 Open one of the cans of oil apply a light coat of oil to the rubber gasket.

20 Attach the new filter to the engine block in accordance with the directions printed on the packing box or the canister itself. It's best to use only your hand to tighten the new filter canister. Most filter manufacturers recommend not using a filter wrench because over-tightening the canister will damage the seal.

- 21 Remove everything from under the vehicle before lowering the vehicle.

22 Unscrew the oil filler cap located on the right rocker arm cover of the engine. The cap will be labeled *Engine oil* or *Oil*.

- 23 Push the spout into the top of the oil can and pour the fresh oil through the filler opening. A funnel may also be used.

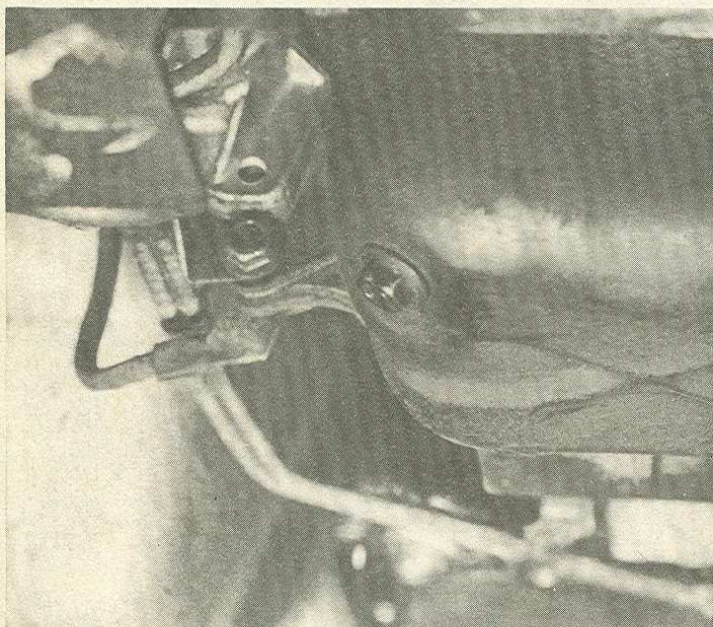
24 Pour three quarts of fresh oil into the engine. Wait a few minutes to allow the oil to drain into the pan, then check the level on the oil dipstick (see Section 3 if necessary). If the oil level is at or near the *L* mark, start the engine and allow the new oil to circulate.

- 25 Run the engine for only about a minute and then shut it off. Immediately look under the vehicle and check for leaks at the oil pan drain plug and around the oil filter.

26 With the new oil circulated and the filter now completely full, recheck the level on the dipstick and add enough oil to bring the level to the *F* mark on the dipstick.

- 27 During the first few trips after an oil change, make it a point to check frequently for leaks and proper oil level.

28 The old oil drained from the engine cannot be reused in its present state and should be disposed of. Oil reclamation centers, auto repair shops and gas stations will normally accept the oil, which can be refined and used again. After the oil has cooled it can be drained into a suitable container (capped plastic jugs, topped bottles, milk cartons, etc.) for transport to one of these disposal sites.



7.9 Drain the engine oil by removing the oil pan drain plug

8 Battery — servicing and replacement

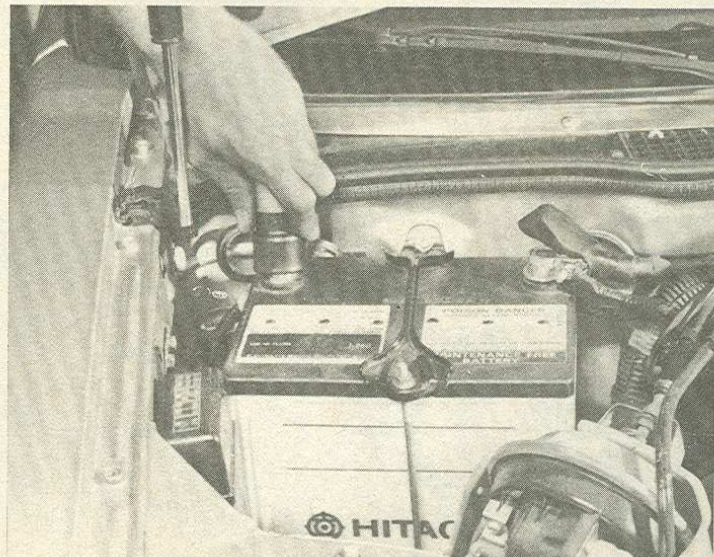
Refer to illustrations 8.1, 8.5 and 8.12

Servicing

- 1 Tools and materials required for battery maintenance include eye and hand protection, baking soda, petroleum jelly, a battery cable puller and a cable/post cleaning tool (see illustration).



8.1 Eye and hand protection, baking soda, petroleum jelly and tools required for battery maintenance



8.5 Remove the battery cable from the post and clean the battery post and cables

2 A sealed maintenance free battery is standard equipment on all vehicles with which this manual is concerned. Although this type of battery has many advantages over the older, capped cell type and never requires the addition of water, it should nevertheless be routinely maintained according to the procedures which follow. **Warning: Hydrogen gas in small quantities is present in the area of the two small side vents on sealed batteries, so keep lighted tobacco and open flames or sparks away from them.**

3 The external condition of the battery should be monitored periodically for damage such as cracked case or cover.

4 Check the tightness of the battery cable clamps to ensure a good electrical connection and check the entire length of each cable for cracks and frayed conductors.

5 If corrosion is evident, remove the cables from the terminals, clean them with a battery brush (see illustration) and reinstall the cables. Corrosion can be kept to a minimum by applying a layer of petroleum jelly or grease to the terminals and cable clamps after they are assembled.

6 If your vehicle is equipped with a rubber protector over the positive terminal, make sure that it's not torn or missing. It should completely cover the terminal.

7 Make sure that the battery tray is in good condition and that the hold-down clamp bolts are tight. If the battery is removed from the tray, make sure that no parts remain on the tray when the battery is reinstalled. Do not overtighten the hold-down clamp bolts.

8 Corrosion on the hold-down components, battery case and surrounding areas may be removed with a solution of water and baking soda. Protective gloves will protect your hands while working on corroded surfaces. Thoroughly wash all cleaned areas with plain water.

9 Any metal parts of the vehicle damaged by corrosion should be covered with a zinc-based primer then painted.

10 Further information on the battery, charging system and jump-starting can be found in Chapter 5 and at the front of this manual.

Replacement

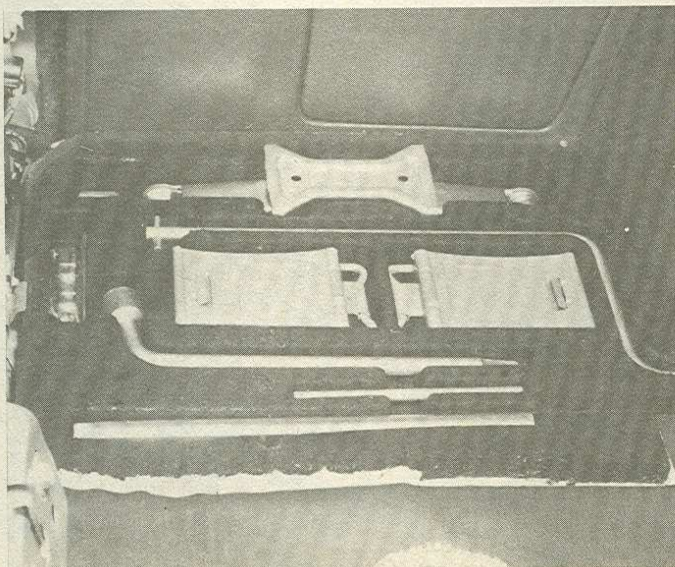
11 Disconnect the negative cable from the battery by loosening the battery clamp hold-down bolt.

12 Install the cable puller onto the cable connector and turn the adjusting screw to raise the connector off of the battery post (see illustration).

13 Remove the positive cable from the battery in the same manner. **Caution: Don't twist the battery clamps. Twisting them can break the battery post loose inside the battery.**

14 Lift the battery off the battery tray and replace it with a new one of an equivalent or better reserve cold cranking capacity.

15 When installing the battery cable connectors to the battery carefully tap the connectors onto the post with a small hammer before tightening the hold-down clamp. **Caution: Always replace the battery cables in the reverse order of removal — positive cable first, then negative.**



9.2 A special plug wrench is supplied in the tool kit

9 Spark plugs — replacement

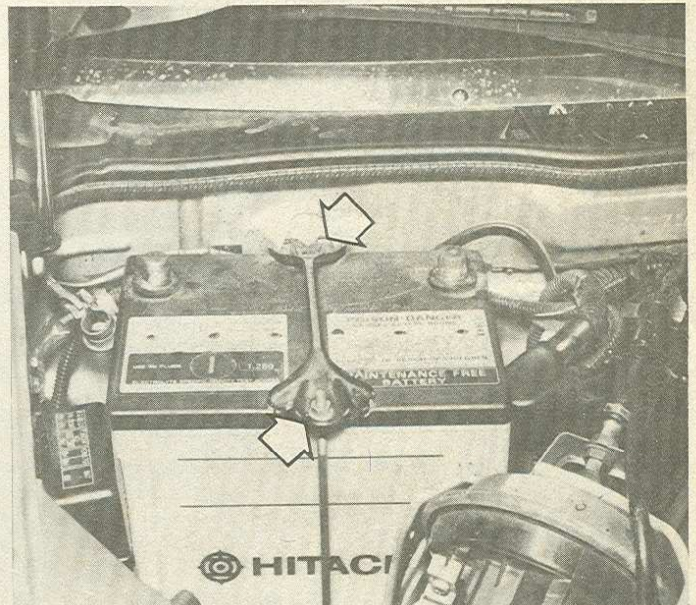
Refer to illustrations 9.2, 9.4 and 9.7

1 The best policy to follow when replacing spark plugs is to buy the new spark plugs beforehand, adjust them to the proper gap (see the Vehicle Emission Control Information label under the hood) and replace each plug one at a time. Be sure you obtain the correct type plugs for your specific engine.

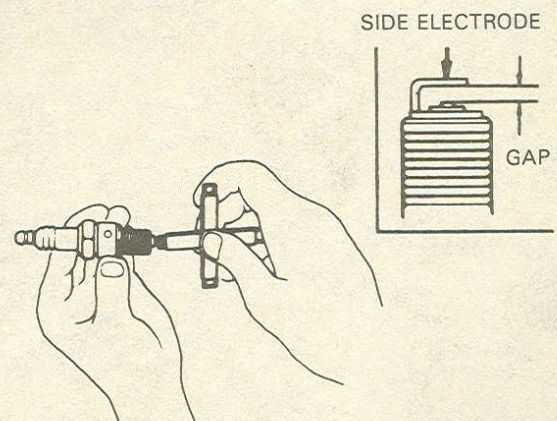
2 The spark plugs are located in deep ports and replacing them requires patience. An accessory plug wrench is included in the kit (see illustration). **Note: To get at the left rear plugs, remove the harness support before inserting the plug wrench.**

3 Allow the engine to cool thoroughly before attempting to remove the plugs. During this time, each of the new spark plugs should be inspected for defects and the gap checked.

4 The plug gap is checked by inserting the proper thickness wire plug gauge, or a feeler gauge, between the electrodes at the tip of the plug. There should be a slight drag on the gauge as it is dragged between the two electrodes. If the gap is incorrect, use the notched adjuster on the gauge body to bend the curved side electrode slightly until the proper gap is achieved (see illustration). If the side electrode is not exactly over the center one, use the notched adjuster to align the two.



8.12 Remove both cables and unscrew the two hold-down clamp nuts (arrows) which will allow battery removal



9.4 Use the notched adjuster on the feeler gauge body to bend the curved side of the electrode to adjust the gap or to center it

5 With the engine cold, remove the spark plug wire from one spark plug. A spark plug wire puller is available from your local parts store for removing the wires. Otherwise grab the boot at the end (base) of the wire, not by the wire itself. Sometimes it is necessary to use a twisting motion while the boot and plug wire are pulled free.

6 Before the plug is removed use compressed air to blow any dirt or foreign material away from the spark plug area. A common bicycle pump will also work.

7 Place the spark plug wrench or a socket with swivel and an extension over the plug and remove it by turning it in a counterclockwise direction (see illustration). **Note:** A quick visual inspection of the old spark plugs will reveal a great deal about the running condition of the engine. Compare each spark plug to the accompanying chart for diagnosis.

8 Carefully insert one of the new plugs into the spark plug hole and tighten it by hand. **Caution:** Be careful not to cross-thread the spark plug in the hole. If resistance is felt as you thread the spark plug in by hand, back it out and start again. Do not, under any circumstances, force the spark plug into the hole with a wrench or socket or you may strip the threads.

9 Once you have installed the plug as far as it will go by hand, tighten it to the specified torque.

10 Before pushing the spark plug wire onto the end of the plug, inspect it for cracks and corrosion.

11 Attach the plug wire to the new spark plug, again using a twisting motion on the boot until it is firmly seated on the spark plug. Make sure the wire is routed away from the exhaust manifold.

12 Follow the same procedure for each spark plug. If you replace them one at a time, you won't mix up the wires.

13 After the rear spark plug on the left side of the engine has been replaced, install the harness support in its original position.

10 Spark plug wires — inspection and replacement

Refer to illustration 10.8

1 The spark plug wires should be checked at the recommended intervals and whenever new spark plugs are installed in the engine.

2 The wires should be inspected one at a time to prevent mixing up the firing order.

3 Disconnect the plug wire from the spark plug. A removal tool can be used for this purpose or you can grab the rubber boot, twist slightly and pull the wire free. Do not pull on the wire itself — only on the rubber boot.

4 Inspect inside the boot for corrosion, which will look like a white or green crusty powder. Push the wire and boot back onto the end of the spark plug. It should be a tight fit on the plug. If it isn't, remove the wire and use pliers to carefully crimp the metal connector inside the boot until it fits securely on the end of the spark plug.

5 Using a clean rag, wipe the entire length of the wire to remove any built-up dirt and grease. Once the wire is clean, check for burns, cracks and other damage. Do not bend the wire sharply. The conductor inside might break.

6 Disconnect the wire from the distributor. Again, pull only on the rubber boot. Check for corrosion and a tight fit. Push the wire back onto the distributor terminal.

7 Check both ends of the remaining spark plug wires one at a time, making sure they are securely fastened at the distributor and the spark plug when the check is complete.

8 If new spark plug wires are required, purchase a new set for your specific engine model. Pre-cut wire sets are available with the rubber boots already installed. Remove and replace the wires one at a time to avoid mix-ups in the firing order (see illustration).

9 Check the distributor cap and rotor for wear (Section 11). It is common practice to install a new cap and rotor whenever new spark plug wires are installed. When installing a new cap, remove the wires from the old cap one at a time and attach them to the new cap in the exact same location — do not simultaneously remove all the wires from the old cap or firing order mix-ups may occur.

11 Distributor — check

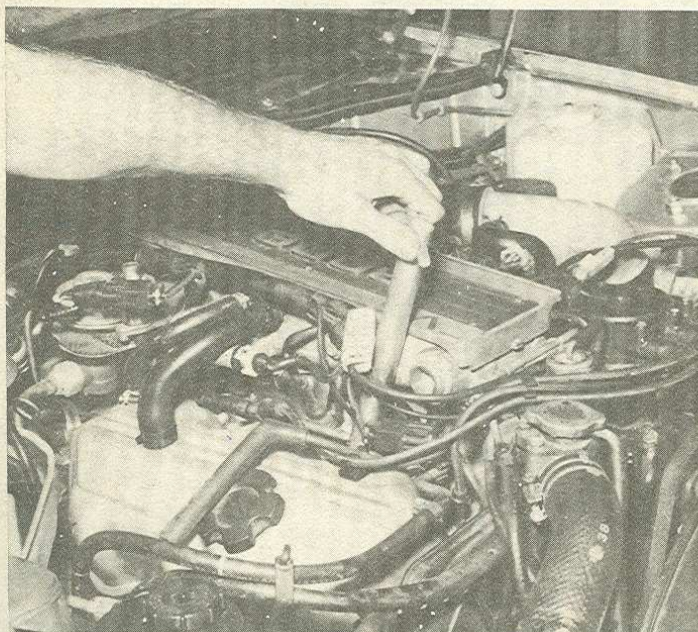
Refer to illustrations 11.4 and 11.7

Caution: When servicing the distributor cap or rotor, only spray cleaner on components while removed from the vehicle. The crank angle sensor located under the rotor is a delicate component and should not be exposed to any chemical, so use cleaning agents cautiously to avoid blowing any dirt or dust on it.

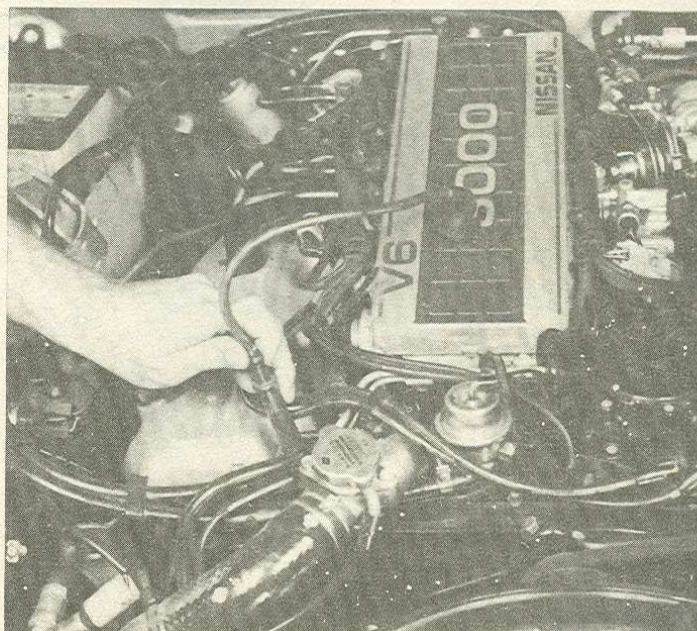
1 Although the breakerless distributor used on this vehicle requires much less maintenance than conventional distributors, periodic inspections should be performed when the plug wires are inspected.

2 Remove the distributor cap by first disconnecting the ignition coil wire from the coil, then removing the two retaining screws holding the cap to the distributor body.

3 Place the cap, with the spark plug and coil wires still attached, out of the way. If necessary, use a length of wire or tape to secure



9.7 On this engine the spark plugs are located on the intake side of the head



10.8 Remove and replace the spark plug wires one at a time to avoid mix-ups in the firing order

the cap so it won't flop back in your way.

4 Remove the set screw in the base of the rotor (see illustration) and lift the rotor from the shaft.

5 Inspect the rotor for cracks or damage. Carefully check the condition of the metal contact at the top of the rotor for excessive burning or pitting. If its condition is doubtful, replace it with a new one.

6 Install the rotor and tighten the set screw in the base.

7 Before installing the distributor cap, inspect the cap for cracks or other damage. Closely examine the contacts on the inside of the cap for excessive corrosion or damage. Slight scoring is normal. Again, if in doubt as to the quality of the cap, replace it with a new one (see illustration).

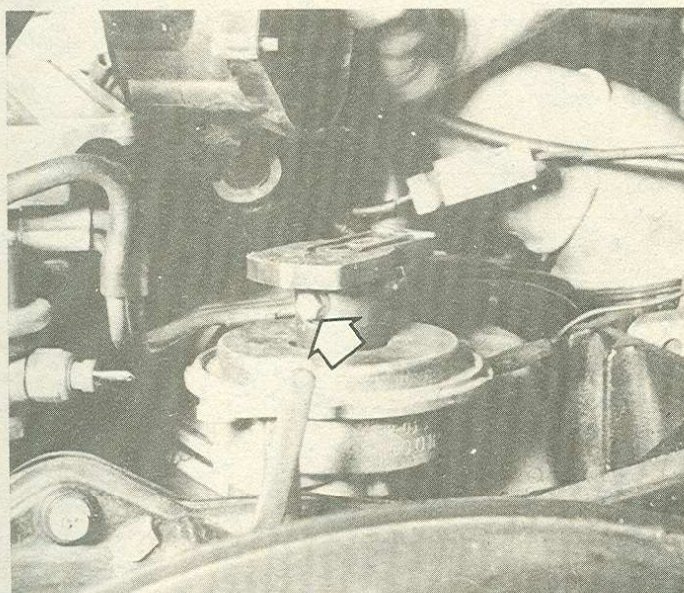
8 Replace the cap and secure it with the two hold down screws.

9 Connect the ignition coil wire to the coil.

12 Drivebelts — check and adjustment

Refer to illustrations 12.2a, 12.2b, 12.5, 12.6 and 12.11

1 The drivebelts, or V-belts as they are sometimes called, are located



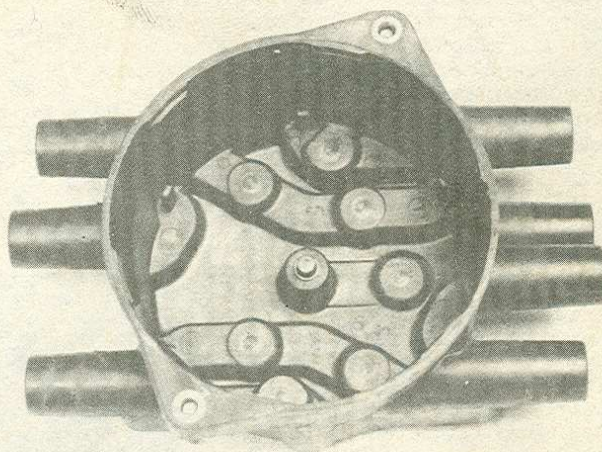
11.4 A set screw in the base of the rotor must be loosened for rotor removal

at the front of the engine and play an important role in the overall operation of the vehicle and its components. Due to their function and material make-up, drivebelts are prone to failure after extended use. They should be inspected and adjusted periodically to prevent failure in use.

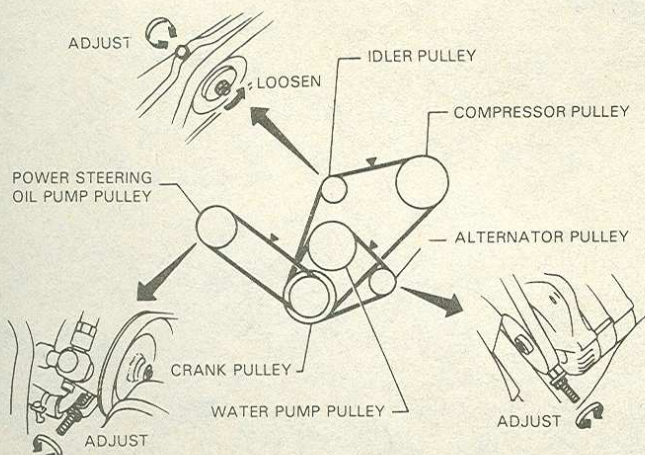
2 Drivebelts are used to turn the alternator, power steering pump, water pump and air-conditioning compressor. There are three drivebelts on this vehicle (see illustrations).

3 With the engine off, open the hood and locate the belts at the front of the engine. Using your fingers (and a flashlight, if necessary), move along the belts checking for fraying, cracks and separation of the belt plies. Also watch for glazing, which gives the belt a shiny appearance. Both sides of the belt should be inspected, which means you will have to twist the belt to check the underside.

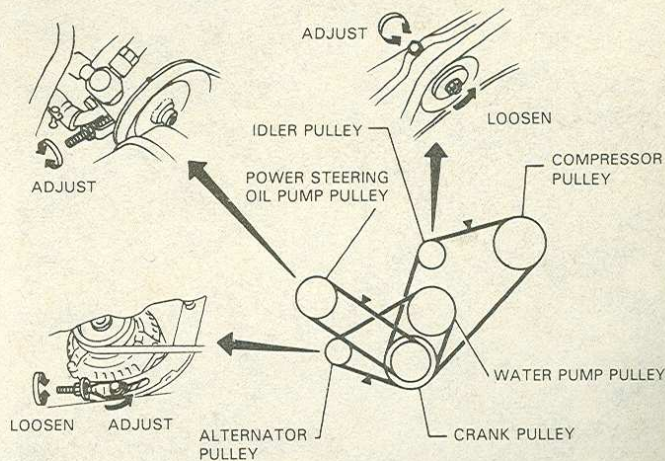
4 The tension of each belt is checked by pushing on the belt at a distance halfway between the pulleys. Push firmly with your thumb and see how much the belt deflects. Compare your measurements with the specified belt deflection for each drivebelt. A rule of thumb: If the distance from pulley center-to-pulley center is between 7 and 11 inches, the belt should deflect 1/4-inch. If the belt is longer and travels between pulleys spaced 12 to 16 inches apart, the belt should deflect 1/2-inch.



11.7 Check the distributor for cracks or other damage and check contacts for excessive corrosion



12.2a Non-turbo drive belt arrangement and belt adjusters



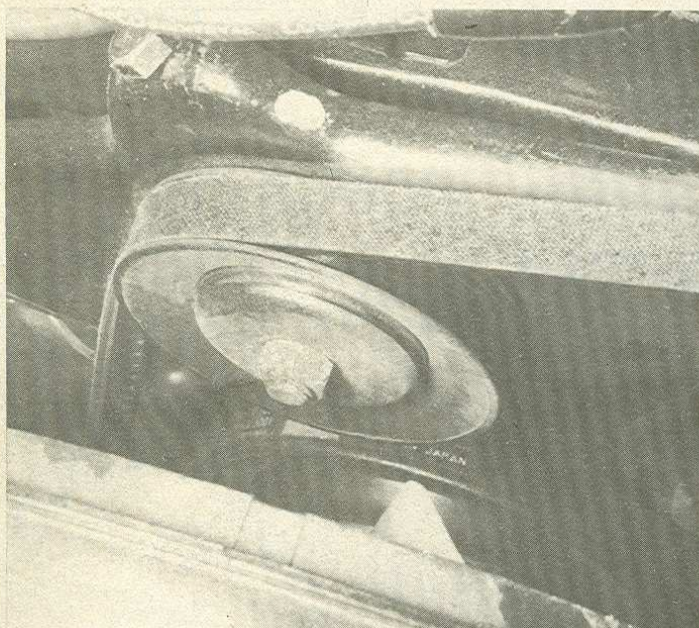
12.2b Turbo model drive belt arrangement and belt adjusters

Air conditioning compressor

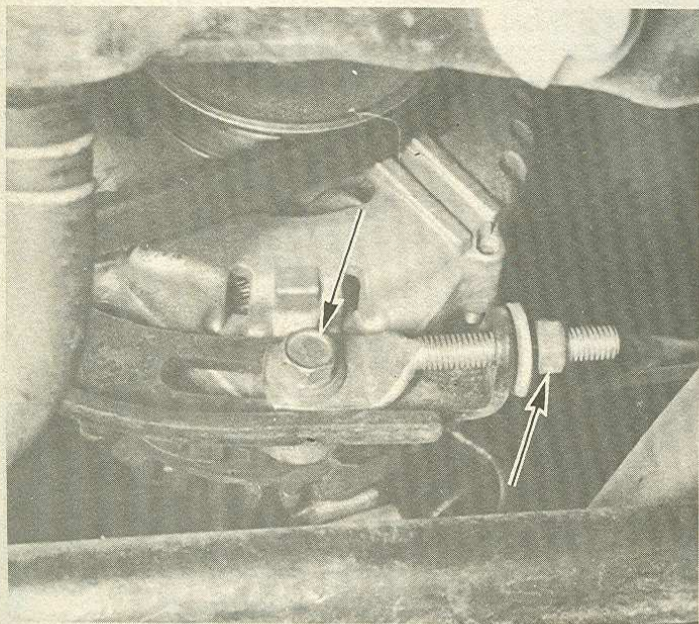
- 5 Loosen the center bolt on the idler pulley (see illustration).
- 6 Turn the adjusting nut on the compressor bracket (clockwise to tighten) until tension of the air conditioning compressor drivebelt is correct (see illustration).
- 7 Tighten the center bolt on the idler pulley.

Alternator

- 8 The alternator is on the left side of the engine on non-turbo models and on the right side on turbo models.
- 9 Remove the six bolts retaining the engine splash shield from underneath the front of the car.
- 10 Loosen the top pivot bolt and the bottom locking bolt on the alternator.
- 11 Turn the adjusting nut clockwise to tighten the belt (see illustration).
- 12 Once the specified tension is achieved, tighten the locking and pivot bolts.
- 13 Install the engine splash shield.



12.5 To adjust the air conditioner belt tension, first loosen the center bolt on the idler pulley



12.11 Loosen the bottom locking bolt and turn the adjusting nut to obtain specified alternator belt tension

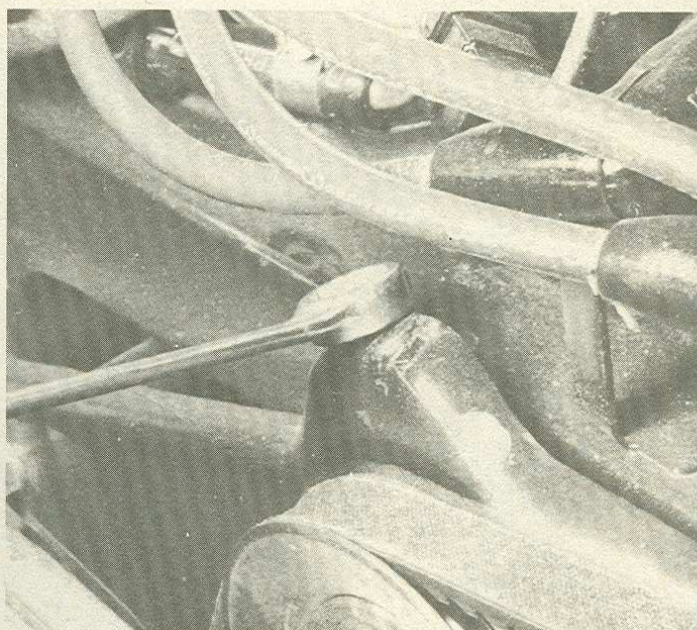
Power steering pump

- 14 Remove the six bolts retaining the engine splash shield from underneath the front of the car.
- 15 Working from underneath the car, loosen the pump hold-down bolt.
- 16 From inside the engine compartment locate the power steering pump adjuster and turn the adjusting bolt until the specified tension is achieved.
- 17 From underneath the vehicle, tighten the pump hold down bolt.
- 18 Install the engine splash shield.

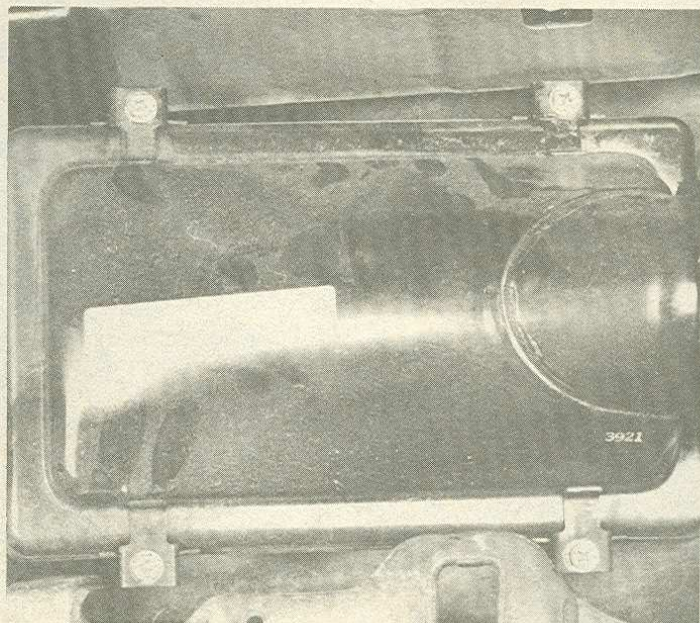
13 Air filter — replacement

Refer to illustrations 13.2 and 13.3

- 1 The air filter is located inside the air cleaner housing at the front of the engine compartment.
- 2 To remove the filter, unscrew the four retaining screws at the top of the cleaner housing and lift the cover (see illustration).



12.6 Turn the adjusting bolt clockwise to tighten the air conditioner belt



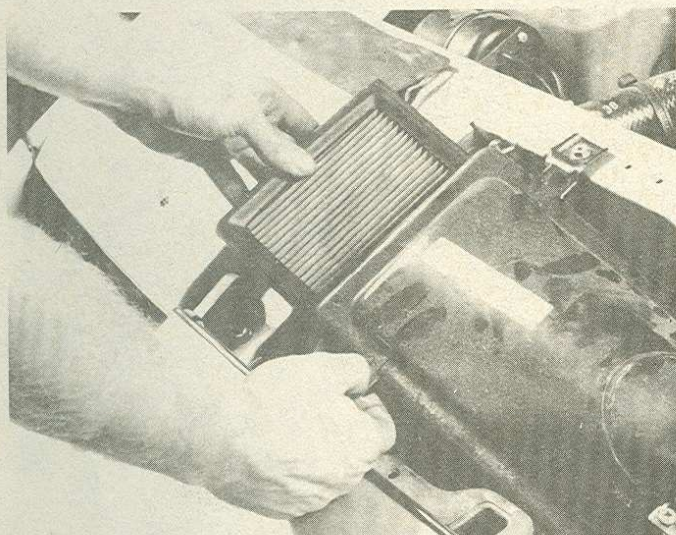
13.2 Gain access to the air filter by removing the four retaining screws at the top of the air cleaner housing

- 3 Carefully lift the air filter out of the housing (see illustration).
- 4 The paper type air filter cannot be washed. If it is slightly dirty, you can blow it out with compressed air. If that doesn't restore it, replace it with a new unit.
- 5 Reverse the removal procedure for installation.

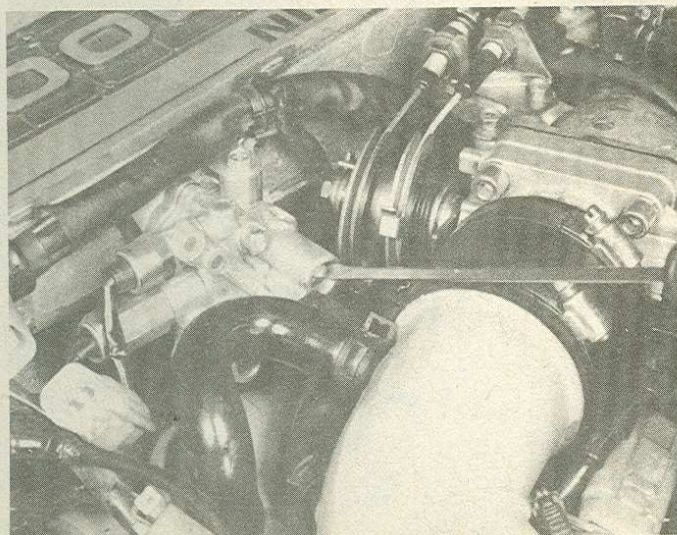
14 Engine idle speed — check and adjustment

Refer to illustrations 14.6 and 14.9

- 1 The engine idle speed is adjustable on VG30E (non-turbo) models. It should be checked at the specified maintenance interval with the engine at normal operating temperature.
- 2 Set the parking brake and block both front wheels with wheel chocks.
- 3 Turn off all electrical accessories. There must be no electrical load on the engine during the idle speed adjustment.
- 4 Attach a tachometer in accordance with the manufacturer's instructions.
- 5 Run the engine at 2000 rpm for two minutes under no load.
- 6 Disconnect the idle-up solenoid harness connector (see illustration) and race the engine two or three times under no load, then run the engine at idle speed.
- 7 Place automatic transmission equipped vehicles in the *D* position.
- 8 See the VECI label under the hood for the correct idle speed for



13.3 Lift up on the air cleaner housing cover and carefully lift the air filter from the housing



14.9 Adjust the idle speed by turning the idle speed adjusting screw

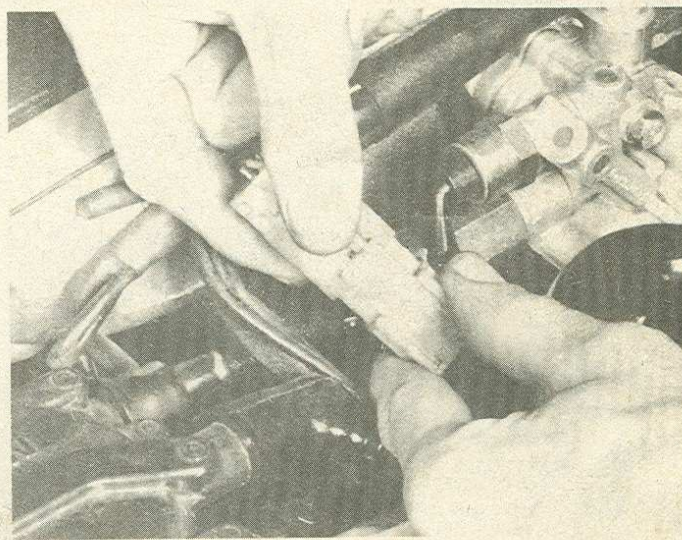
your vehicle.

- 9 If the idle speed is not correct, turn the idle speed adjusting screw with a screwdriver (see illustration) until the desired rpm is attained.
- 10 Once the correct idle speed is attained, stop the engine and reconnect the idle-up solenoid harness connector. Put the shift lever back in *P* on automatic transmission equipped models.
- 11 Disconnect the tachometer.
- 12 Remove the wheel chocks.

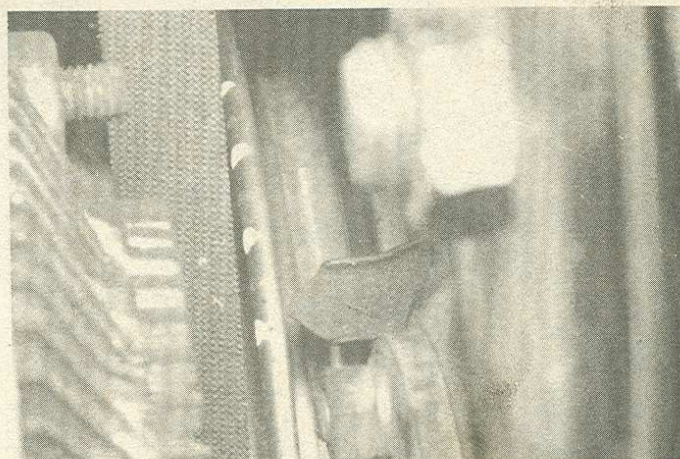
15 Ignition timing

Refer to illustrations 15.2, 15.6, 15.8 and 15.9

- 1 The ignition timing setting for your car is printed on the VECI decal located on the underside of the hood.
- 2 Locate the timing marks — a series of notches on the edge of the crankshaft pulley. With the engine turning in its normal clockwise operating direction (as you look at it from the front), the first mark to approach the stationary pointer attached to the oil pump housing is the 30° mark (see illustration). Each subsequent mark is in 5° increments. The last mark to approach the pointer is the 0° mark.
- 3 Locate the timing notch on the pulley specified for your vehicle and mark it with a dab of paint or chalk so it will be visible under the timing light.
- 4 Connect a tachometer in accordance with the manufacturer's in-



14.6 Disconnect the idle-up solenoid by pressing down on the locking tab and pulling the connector apart



15.2 As the crankshaft pulley turns clockwise (looking from the front of the engine), the first mark to approach the pointer is the 30° mark, and each subsequent mark indicates another 5°, so the last mark to approach the pointer will be the 0° mark

structions and check the idle speed (Section 14).

5 Allow the engine to reach normal operating temperature. Be sure the air conditioner and other electrical accessories are off.

6 Turn the ignition off. Connect the pick-up lead of the timing light to the number one spark plug wire (see illustration). Use either a jumper lead between the spark plug wire and plug or an inductive-type pick-up. Do not pierce the spark plug wire or attempt to insert a wire between the boot and the spark plug wire.

7 Make sure that the wires of the timing light are clear of all moving engine components, then start the engine.

8 Point the strobe timing light at the timing marks (see illustration), again being careful to avoid entanglement with moving parts. The notch that you painted should appear stationary and should be in alignment with the stationary pointer. If the notch and pointer are not in alignment, or if the painted notch appears blurry or jumpy, you must adjust the timing.

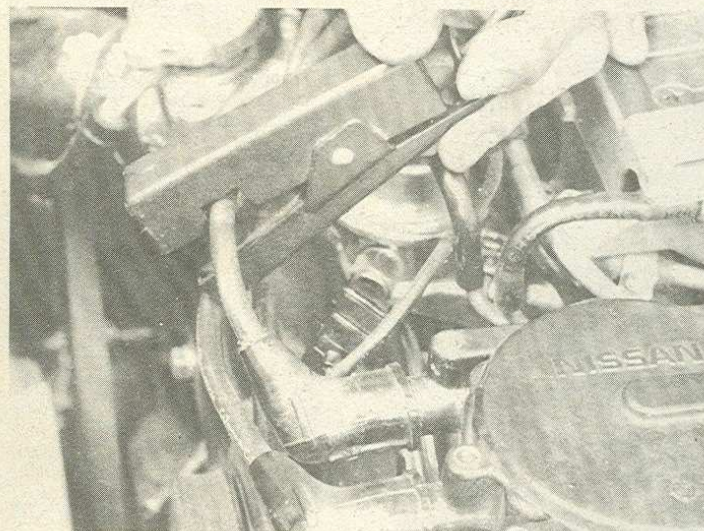
9 If the timing marks do not coincide, turn off the engine and loosen the adjusting nut at the base of the distributor (see illustration) just enough to rotate the distributor.

10 Start the engine and slowly twist the distributor either left or right until the painted notch and the pointer coincide.

11 Shut off the engine and tighten the distributor adjusting nut, being careful not to move the distributor.

12 Start the engine and recheck the timing to make sure the notch and pointer are still in alignment.

13 Disconnect the timing light.



15.6 Clip the timing light connector to the number one spark plug wire



15.9 If the timing notch and pointer don't align, loosen the distributor hold-down bolt and turn the distributor until the notch and pointer line up

14 Race the engine two or three times and then allow it to run at idle. Recheck the idle speed with the tachometer. If it has changed from its correct setting, readjust it.

16 Compression check

Refer to illustration 16.6

1 A compression check can tell you a lot about the condition of the engine. For example, it can tell you if compression is weak because of worn piston rings, defective valves and seats or a blown head gasket. Make sure the engine oil is the correct viscosity and that the battery is fully charged before doing a compression check.

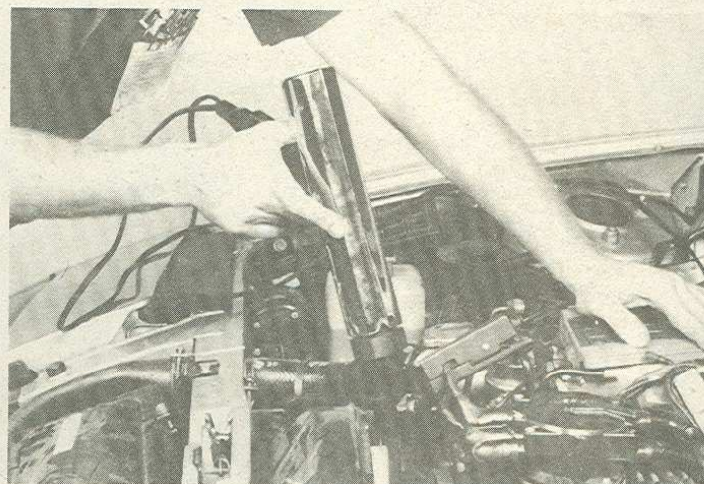
2 Run the engine until it reaches normal operating temperature.

3 Turn the engine off and have an assistant depress the accelerator pedal to the floor so that the throttle valve is fully open.

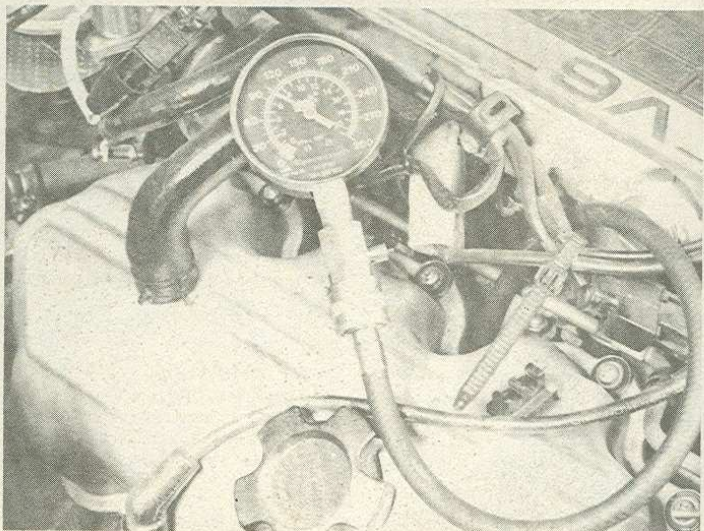
4 Remove all spark plug wires from the plugs after marking them clearly so that they can be installed in their original positions. Clean the area around the spark plugs before you remove them to keep dirt from falling into the cylinders while performing the compression test. Remove the spark plugs.

5 Disconnect the coil wire from the coil.

6 Install the compression gauge into the number one cylinder spark plug hole (see illustration).

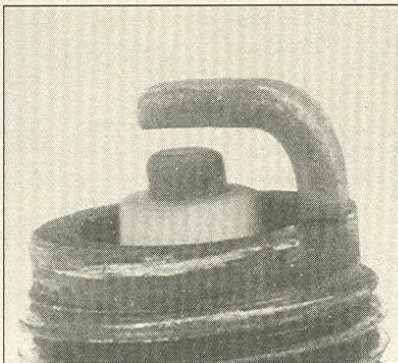


15.8 When you point the timing light at the crankshaft pulley and the stationary pointer with the engine running, the notch should appear stationary and should be aligned with the pointer



16.6 Install the compression gauge in the number one cylinder, then observe the number of compression strokes required to reach the highest setting and record the reading

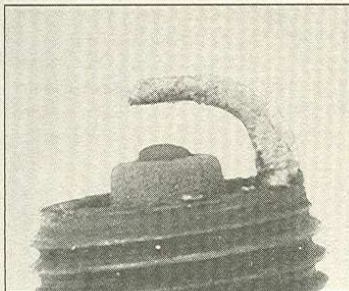
Common spark plug conditions



NORMAL

Symptoms: Brown to grayish-tan color and slight electrode wear. Correct heat range for engine and operating conditions.

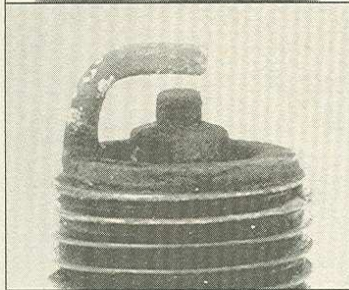
Recommendation: When new spark plugs are installed, replace with plugs of the same heat range.



WORN

Symptoms: Rounded electrodes with a small amount of deposits on the firing end. Normal color. Causes hard starting in damp or cold weather and poor fuel economy.

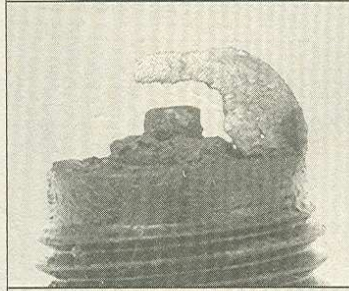
Recommendation: Plugs have been left in the engine too long. Replace with new plugs of the same heat range. Follow the recommended maintenance schedule.



CARBON DEPOSITS

Symptoms: Dry sooty deposits indicate a rich mixture or weak ignition. Causes misfiring, hard starting and hesitation.

Recommendation: Make sure the plug has the correct heat range. Check for a clogged air filter or problem in the fuel system or engine management system. Also check for ignition system problems.



ASH DEPOSITS

Symptoms: Light brown deposits encrusted on the side or center electrodes or both. Derived from oil and/or fuel additives. Excessive amounts may mask the spark, causing misfiring and hesitation during acceleration.

Recommendation: If excessive deposits accumulate over a short time or low mileage, install new valve guide seals to prevent seepage of oil into the combustion chambers. Also try changing gasoline brands.



OIL DEPOSITS

Symptoms: Oily coating caused by poor oil control. Oil is leaking past worn valve guides or piston rings into the combustion chamber. Causes hard starting, misfiring and hesitation.

Recommendation: Correct the mechanical condition with necessary repairs and install new plugs.



GAP BRIDGING

Symptoms: Combustion deposits lodge between the electrodes. Heavy deposits accumulate and bridge the electrode gap. The plug ceases to fire, resulting in a dead cylinder.

Recommendation: Locate the faulty plug and remove the deposits from between the electrodes.



TOO HOT

Symptoms: Blistered, white insulator, eroded electrode and absence of deposits. Results in shortened plug life.

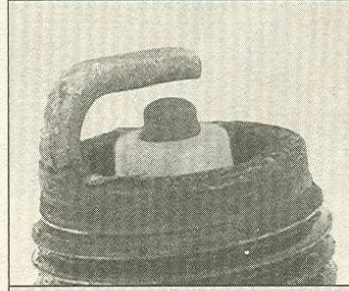
Recommendation: Check for the correct plug heat range, over-advanced ignition timing, lean fuel mixture, intake manifold vacuum leaks, sticking valves and insufficient engine cooling.



PREIGNITION

Symptoms: Melted electrodes. Insulators are white, but may be dirty due to misfiring or flying debris in the combustion chamber. Can lead to engine damage.

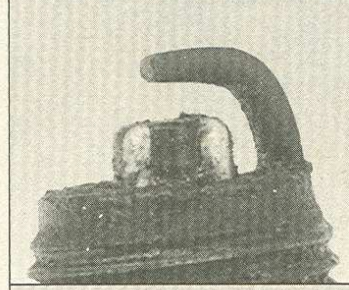
Recommendation: Check for the correct plug heat range, over-advanced ignition timing, lean fuel mixture, insufficient engine cooling and lack of lubrication.



HIGH SPEED GLAZING

Symptoms: Insulator has yellowish, glazed appearance. Indicates that combustion chamber temperatures have risen suddenly during hard acceleration. Normal deposits melt to form a conductive coating. Causes misfiring at high speeds.

Recommendation: Install new plugs. Consider using a colder plug if driving habits warrant.



DETONATION

Symptoms: Insulators may be cracked or chipped. Improper gap setting techniques can also result in a fractured insulator tip. Can lead to piston damage.

Recommendation: Make sure the fuel anti-knock values meet engine requirements. Use care when setting the gaps on new plugs. Avoid lugging the engine.



MECHANICAL DAMAGE

Symptoms: May be caused by a foreign object in the combustion chamber or the piston striking an incorrect reach (too long) plug. Causes a dead cylinder and could result in piston damage.

Recommendation: Repair the mechanical damage. Remove the foreign object from the engine and/or install the correct reach plug.

7 Crank the engine over about five or six times with a remote starter switch or have an assistant operate the ignition switch.

8 Observe the number of compression strokes required to reach the highest reading. Also note the pattern in which the cylinder builds up to its highest reading. Compression should rise quickly in a healthy engine. Low compression on the first stroke, followed by gradually increasing pressure on successive strokes, indicates worn piston rings. An initially low compression reading which does not build up during successive compression strokes indicates leaking valves or a defective head gasket. Record the highest gauge reading obtained. Repeat this procedure for the remaining cylinders and compare the readings with the standards given in the Specifications.

9 Further diagnosis of the cylinders can be accomplished through a wet compression test.

10 To perform a wet compression test on a low reading cylinder, pour a couple of teaspoons of engine oil — a squirt can works well — into the cylinder through the spark plug hole and repeat the compression test.

11 If compression increases after oil is added, the piston rings are worn. If the compression does not increase significantly, leakage is occurring at the valves or head gasket.

12 If two adjacent cylinders have equally low compression, there is a good possibility that the head gasket between them is blown. The existence of coolant in the combustion chambers or the crankcase

would also be a strong indication of a blown head gasket.

13 If compression is higher than normal, the combustion chambers may be coated with carbon deposits. If they are, they must be removed and decarbonized.

14 If compression is way down, or varies greatly between cylinders, it would be a good idea to have a leak-down test performed by an automotive shop. A leak-down test can pinpoint exactly where the leakage is occurring.

15 Remove the compression gauge, replace the spark plugs and attach the spark plug wires. Plug the ignition coil wire back into the coil.

17 Fuel pressure — relief

Refer to illustrations 17.2 and 17.3

Warning: There are certain precautions to take when inspecting or servicing the fuel system components. Work in a well-ventilated area and do not allow open flames (cigarettes, appliance pilot lights, etc.) to get near the work area. Mop up spills immediately and do not store fuel soaked rags where they could ignite.

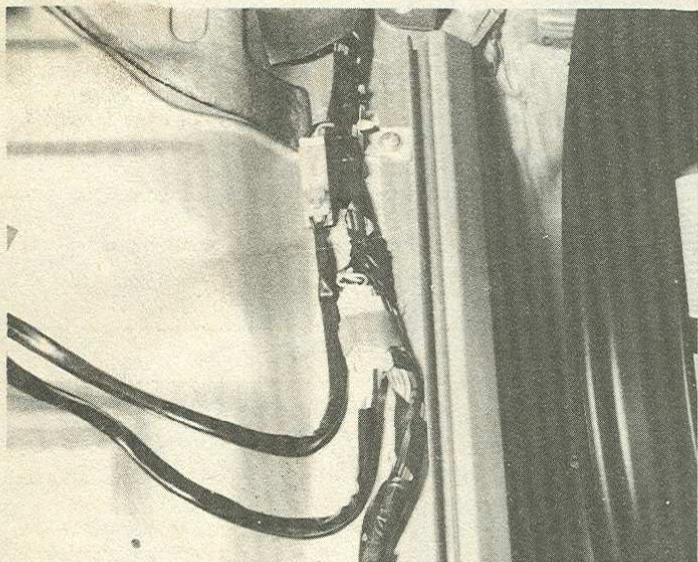
- 1 Start the engine and let it run at idle speed.
- 2 Remove the luggage floor mat and locate the fuel pump harness (blue connector) (see illustration).
- 3 Push down on the locking tabs on the connector and pull the connector apart (see illustration).
- 4 After the engine stalls, crank it over two or three times to make sure that all pressure is released.
- 5 Turn the ignition switch off.
- 6 Connect the fuel pump harness connector after servicing the fuel system.

18 Fuel system check

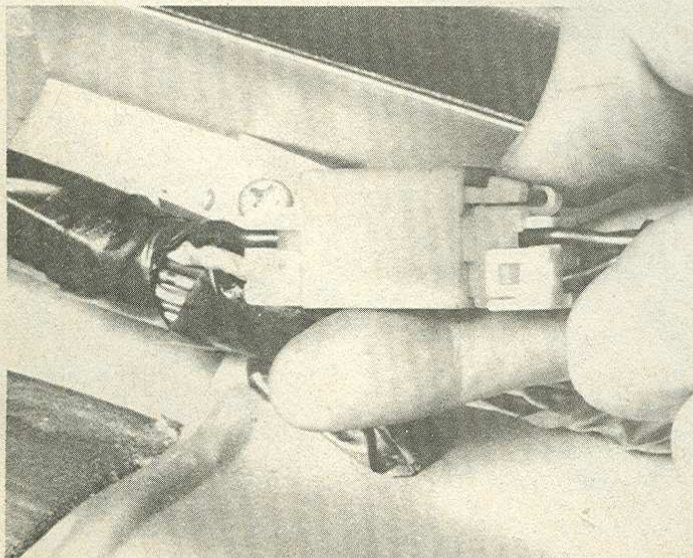
Refer to illustration 18.4

Warning: There are certain precautions to take when inspecting or servicing the fuel system components. Work in a well-ventilated area and do not allow open flames (cigarettes, appliance pilot lights, etc.) near the work area. Mop up spills immediately and do not store fuel soaked rags where they could ignite.

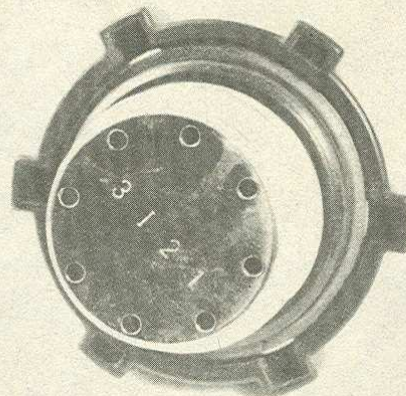
- 1 Relieve the fuel pressure (Section 17) before servicing any component of the fuel system.
- 2 The fuel system is most easily checked with the vehicle raised on a hoist or supported on jackstands so that the components underneath the vehicle are visible and readily accessible.
- 3 Any time the smell of gasoline is apparent while driving or after the vehicle has been in the sun, the system should be inspected.
- 4 Remove the gas filler cap and check for corrosion. The rubber seal imprint should be unbroken (see illustration). Replace the cap if any damage is apparent.



17.2 The fuel pump harness is located under the luggage floor mat



17.3 Push down on the locking tabs and pull the fuel pump connector apart



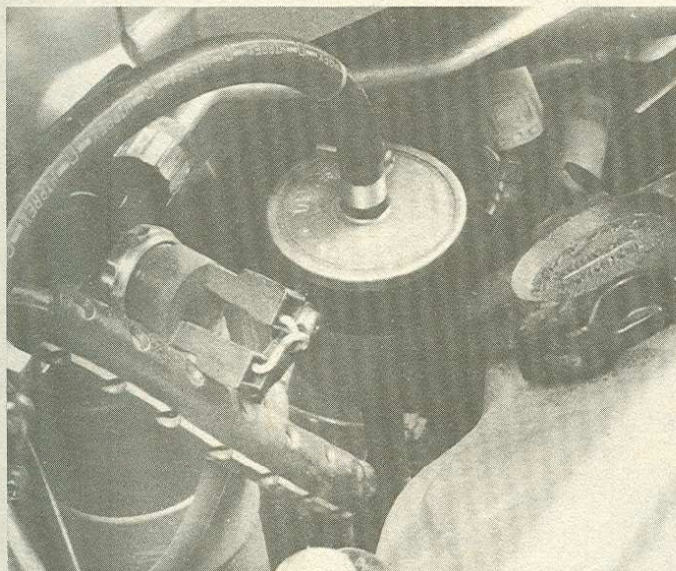
18.4 Remove the gas filler cap and check the O-ring seal for damage

- 5 With the vehicle raised, inspect the gas tank and filler neck for punctures, cracks and other damage. The connection between the filler neck and the tank is especially critical. Sometimes a rubber filler neck will leak because of loose clamps or rubber deterioration. **Warning:** *Do not, under any circumstances, try to repair a fuel tank yourself (except rubber components). A welding torch or any open flame can easily cause the fuel vapors to explode if the proper precautions are not taken.*
- 6 Carefully check all rubber hoses and metal lines leading away from the fuel tank. Check for loose connections, deteriorated hoses, crimped lines and other damage. Follow the lines up to the front of the vehicle, carefully inspecting them all the way. Repair or replace any damaged sections.
- 7 Ensure that hose clamp screws do not come in contact with adjacent parts when tightening.

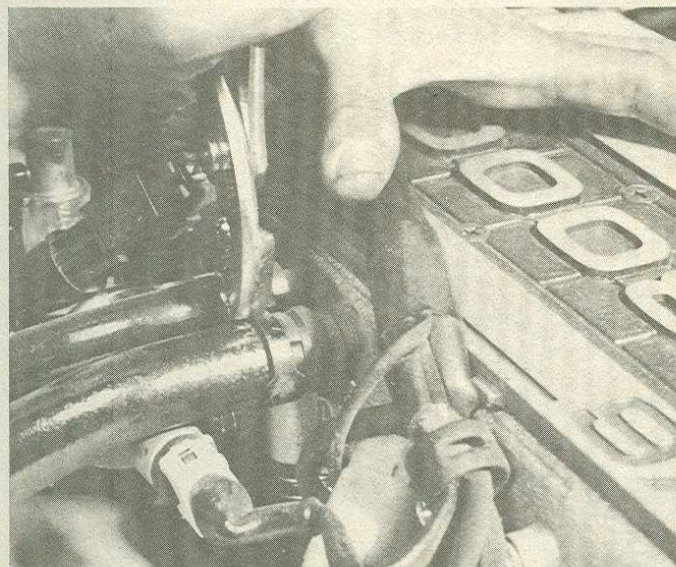
19 Fuel filter — replacement

Refer to illustration 19.2

Warning: *There are certain precautions to take when inspecting or servicing the fuel system components. Work in a well-ventilated area and do not allow open flames (cigarettes, appliance pilot lights, etc.) to*



19.2 Loosen both hose clamps and the filter retaining clamp screw to remove the fuel filter



20.1 Squeeze the hose clamp, then pull it off the PCV valve

get near the work area. Mop up spills immediately and do not store fuel soaked rags where they could ignite.

- 1 Relieve the fuel pressure (Section 17).
- 2 After fuel pressure has been released, loosen both fuel hose clamps and loosen the filter retaining clamp screw (see illustration).
- 3 Note the flow direction of the filter before removing it. The top of the filter should read *out* and the bottom should say *in*.
- 4 Wrap a rag around the fuel filter to absorb spilled fuel.
- 5 Hold the filter with one hand and pull the hose off the top of the filter with the other. Remove the hose clamp.
- 6 With the filter in one hand, pull the hose off the bottom. Remove the old hose clamp.
- 7 Remove the old filter from its retaining clamp bracket and insert the new filter with the word *out* facing up.
- 8 Slide a screw clamp onto each hose.
- 9 Insert the bottom hose onto the *in* side of the filter and tighten the hose clamp.
- 10 Insert the top hose, leading to the fuel injection unit, onto the *out* side of the filter and tighten the hose clamp.
- 11 Tighten the fuel filter retaining clamp screw.

20 PCV valve — checking and replacement

Refer to illustration 20.1

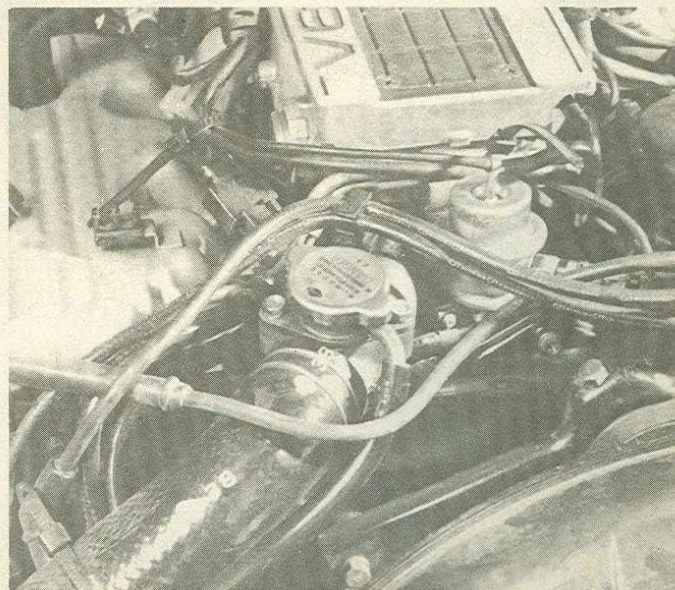
- 1 Check the PCV valve by removing the ventilation hose (see illustration). The engine must be running. If the valve is working properly, a hissing noise will be heard as air passes through the valve.
- 2 Another way to check the PCV valve is to place your finger over the mouth of the valve. If the valve is working properly, a strong vacuum should be felt immediately.
- 3 To replace the PCV valve, remove the hose and screw the valve out of the intake manifold.
- 4 Screw the new valve into the intake manifold and replace the hose.
- 5 Tighten the hose clamp.

21 Cooling system — check and servicing

Refer to illustrations 21.3, 21.4a, 21.4b, 21.13 and 21.14

Check

- 1 Many engine and automatic transmission failures can be attributed to a faulty cooling system.
- 2 The cooling system should be checked with the engine cold.
- 3 Remove the remote coolant cap (see illustration) and thoroughly clean it inside and out with a scrub brush and clean water.



21.3 Thoroughly clean the remote radiator filler cap

4 Carefully check the upper and lower radiator hoses and the smaller diameter heater hoses. Inspect each hose along its entire length, replacing any hose which is cracked, swollen or shows signs of deterioration. Cracks may become more apparent if the hose is squeezed (see illustrations).

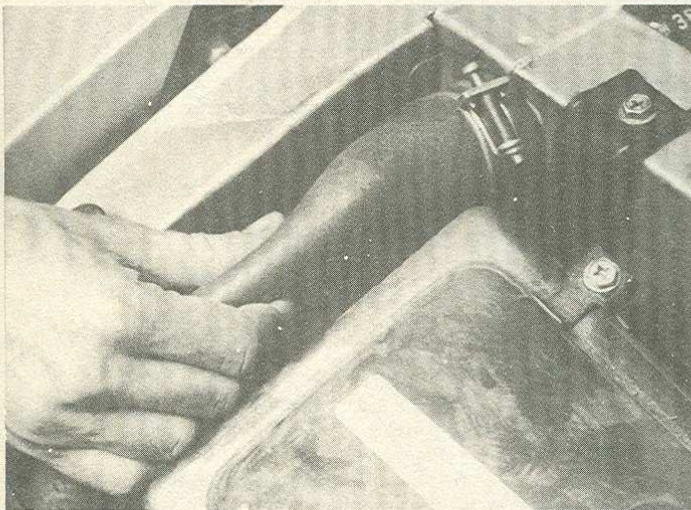
5 Make sure that all hose connections are tight. A leak in the cooling system will usually leave a telltale white or rust colored deposit on the area around the leak.

6 Use compressed air or a soft brush to remove bugs, leaves, etc. from the front of the radiator or air-conditioning condenser. Do not damage the delicate cooling fins or cut yourself on them.

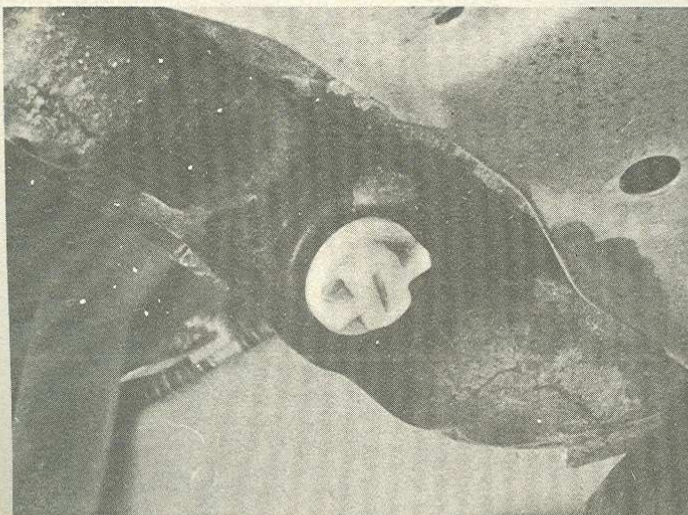
7 Have the cap and system pressure tested. If you do not have a pressure tester, most gas stations and repair shops will do this for a minimal charge.

Servicing

8 Periodically the cooling system should be drained, flushed and re-filled with water/antifreeze mixture. This will prevent rust and corrosion which can impair the performance of the cooling system and ultimately cause engine damage. **Warning:** *Antifreeze is a poisonous solution. Do not spill it on either yourself or your vehicle. Rinse off spills immediately with plenty of water. It is especially important to mop up coolant spills if you or your neighbors have pets because animals are attracted to the taste of coolant.* Before dumping any antifreeze down the kitchen sink or a storm drain it is advisable to consult your local authorities about the local laws regarding the proper disposal of coolant. In some areas, reclamation centers have been set up to collect both oil and coolant instead of allowing these liquids to be introduced into the sewage and water facilities.



21.4a Cracks may become more apparent if the hose is squeezed



21.13 Drain the radiator by removing the drain plug

9 On models without automatic air conditioning, slide the temperature control lever to the *Hot* position.

10 On automatic air conditioning equipped models, turn the ignition switch *On* and set the temperature to maximum. Turn off the ignition switch.

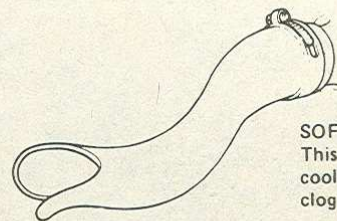
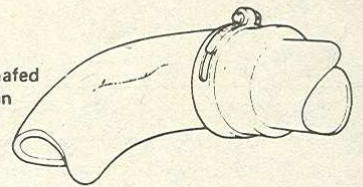
11 With the engine cold, remove the radiator remote fill pressure cap.

12 Place a large container under the radiator and engine block to catch the coolant mixture as it drains.

13 Drain the radiator by removing the drain plug from the bottom of the radiator (see illustration). Do not splash the solution on your skin or in your eyes.

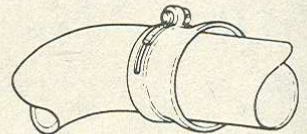
14 Locate and open the drain valves located on the sides of the engine block (see illustration).

ALWAYS CHECK hose for chafed or burned areas that may cause an untimely and costly failure.



SOFT hose indicates inside deterioration. This deterioration can contaminate the cooling system and cause particles to clog the radiator.

HARDENED hose can fail at any time. Tightening hose clamps will not seal the connection or stop leaks.



SWOLLEN hose or oil soaked ends indicate danger and possible failure from oil or grease contamination. Squeeze the hose to locate cracks and breaks that cause leaks.



21.4b Radiator hose inspection procedure



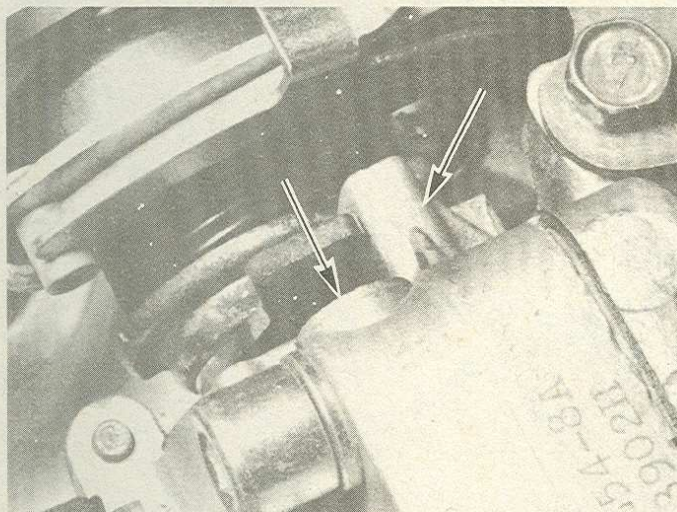
21.14 Open the engine block drain valve

- 15 Screw in the drain plug on the radiator and close the drain valves on the engine block.
- 16 Fill the radiator with water and warm the engine.
- 17 Stop the engine and let it cool.
- 18 Repeat Steps 13 through 17 two or three times.
- 19 Drain the cooling system a final time then fill the radiator and engine with a new antifreeze/water mixture up to the filler opening. Follow the instructions on the antifreeze container for the proper ratio of antifreeze to water.
- 20 Fill the reservoir tank to the *MAX* level, then install and tighten the radiator cap.
- 21 Run the engine at approximately 2000 rpm for about one minute.
- 22 Check for coolant leaks.
- 23 Stop the engine and let it cool. Add more mixture until the coolant level is up to the filler opening.
- 24 Fill the reservoir tank with coolant up to the *MAX* level.

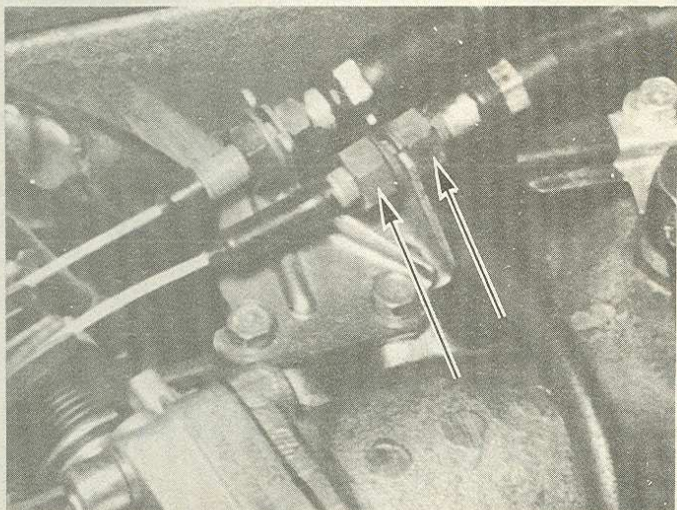
22 Throttle linkage — check and adjustment

Refer to illustrations 22.3 and 22.4

- 1 With the engine off, depress the throttle pedal several times to make sure that the cable linkage is operating smoothly without jamming or dragging. Make sure that the pedal returns to its original position when released. If it doesn't, the cable is either binding or too tight.



22.3 The dog on the throttle valve actuator should meet the stop on the EFI throttle chamber



22.4 Adjust the slack out of the accelerator cable by loosening the locking nut and turning the adjusting nut until the desired tension is attained

- 2 To check the throttle cable for correct adjustment, have an assistant hold the throttle pedal to the floor.
- 3 The half-round throttle valve actuator should open until the dog meets the stop on the EFI throttle chamber (see illustration).
- 4 If the throttle valve does not open all the way it must be adjusted. Back off the cable adjustment locking nut and remove slack from the throttle cable by turning the adjusting nut until the dog reaches the stop (see illustration).

23 Wheel bearings — check

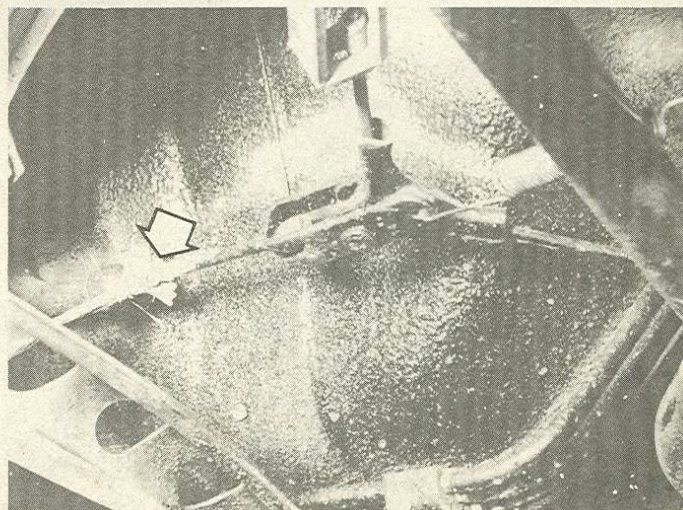
- 1 Generally, the wheel bearings will require infrequent service. However, they should be checked whenever the wheels are raised for any reason.
- 2 With the vehicle securely supported on jackstands, spin each wheel and check for noise, rolling resistance or free play.
- 3 Grasp the top of the tire with one hand and the bottom with the other. Rock the tire on the spindle. If the wheel moves (has side play), the bearings should be removed, inspected and, if necessary, replaced (Chapter 10).
- 4 Remove each wheel and tire. Inspect the area around the bearings for grease leaking past the wheel bearing seals. Seals must be replaced (Chapter 10) if any leakage is apparent.

24 Chassis and body — lubrication and inspection

Refer to illustrations 24.8, 24.11 and 24.12

Note: The 300ZX steering connections are "sealed-for-life" and require no lubrication. But they should still be periodically checked for leaks, cracks and other obvious signs of wear.

- 1 For easier access to the underside of the vehicle, raise it and place jackstands under the frame. Make sure the vehicle is securely supported by the jackstands.
- 2 From underneath the car, inspect the rear axle and suspension components for looseness, wear or damage.
- 3 Rock each front wheel sideways and listen for rattles indicating loose components. Adjust the wheel bearing preload, if necessary (Chapter 10).
- 4 Tighten all steering and suspension nuts and bolts.
- 5 Check the struts (shock absorbers) for oil leakage or damage. If any damage is apparent, replace the struts.
- 6 Check the balljoints for grease leakage or other damage.
- 7 Check the rear wheels for looseness by shaking them from side to side. Adjust the wheel bearing preload if necessary.
- 8 While you are under the vehicle, clean and lubricate the parking brake cable, along with the cable guides and levers. Smear multi-purpose grease onto the cable and its guides with your fingers (see illustration).



24.8 Multi-purpose grease is used to lubricate the parking brake cable, guides and levers

9 Lubricate the transmission shift linkage rods and swivels with a few drops of engine oil.

10 Lower the vehicle to lubricate the body components.

11 Open the hood and lubricate the hood latch mechanism with a few drops of oil (see illustration). The hood has an inside release, so have an assistant pull the release knob from inside the vehicle as you lubricate the cable at the latch.

12 Lubricate all the hinges — door, hood, hatch — with a few drops of engine oil to keep them in proper working order (see illustration).

13 The key lock cylinders can be lubricated with spray-on graphite, which is available at auto parts stores.

25 Brake check

Refer to illustrations 25.5 and 25.8

Note: For detailed illustrations of the brake system, refer to Chapter 9.

1 The brakes should be inspected every time the wheels are removed or whenever a defect is suspected. There are several symptoms of a

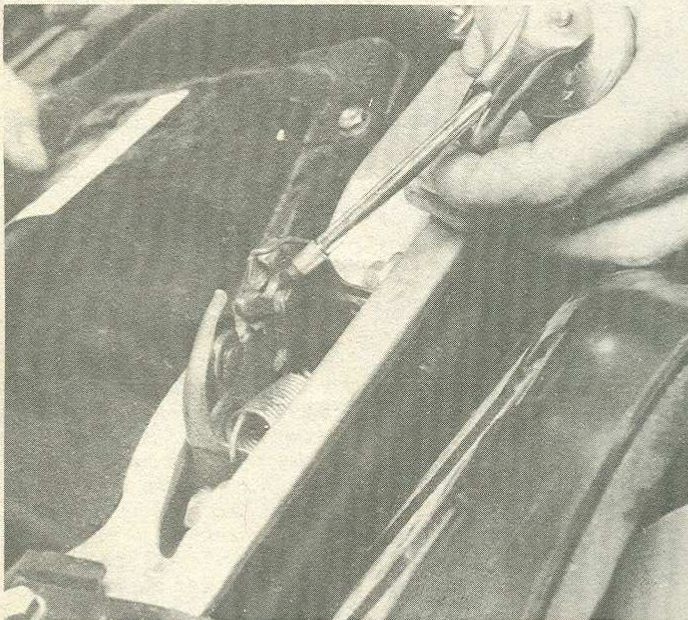
potential brake system defect: The vehicle pulls to one side when the brake pedal is depressed; the brakes make odd noises — squealing, grating, grinding, etc. — when they are applied; brake pedal travel is excessive; the pedal pulsates; fluid is leaking, usually on the inside of the tire or wheel. **Warning:** Wheel assemblies should be cleaned with a vacuum. Dust and dirt present on brake and clutch assemblies may contain asbestos fibers that are hazardous to your health. Cleaning off components with compressed air blows these fibers into the air around you, increasing the likelihood that you will inhale them.

2 Check the brake hydraulic fluid reservoir atop the master cylinder. The fluid level should be near the MAX mark.

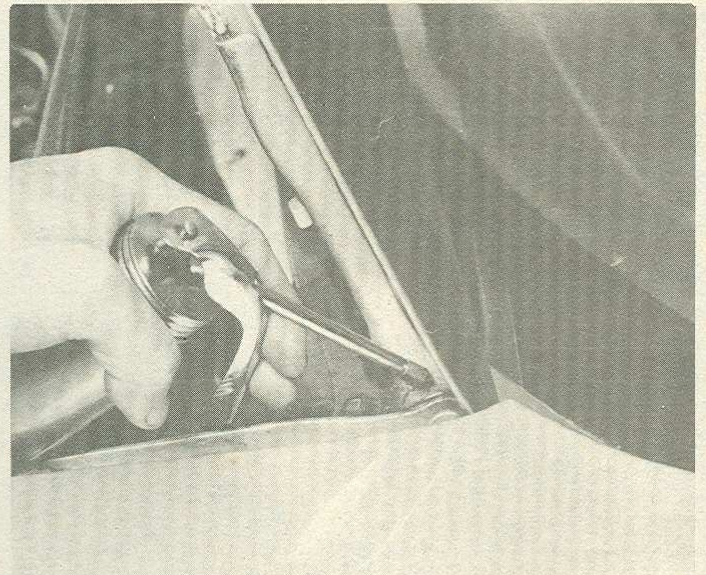
3 Raise the vehicle and support it securely on jackstands. Remove the wheels.

4 The disc brake pads inside the brake calipers should be inspected. There is an outer pad and an inner pad in each caliper.

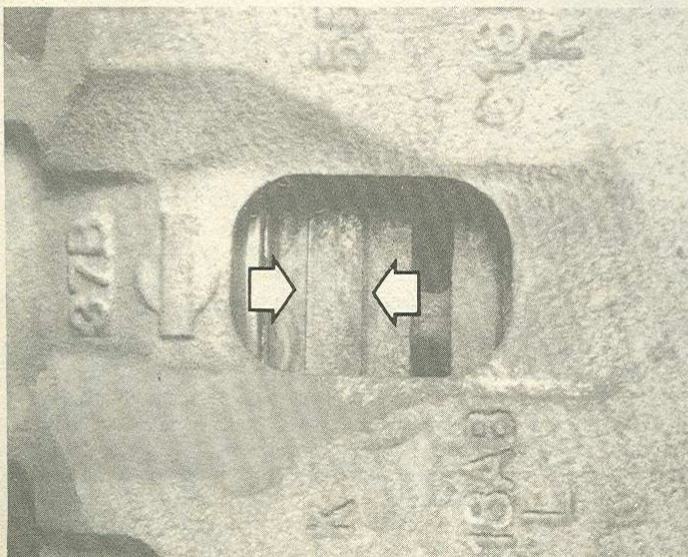
5 Check the pad thickness by looking through the inspection holes in the caliper body (see illustration). If the lining material is worn thinner than the specified brake pad wear limit, the pads should be replaced. Keep in mind that the friction material is riveted or bonded to a metal backing shoe. The metal backing is not included in this measurement.



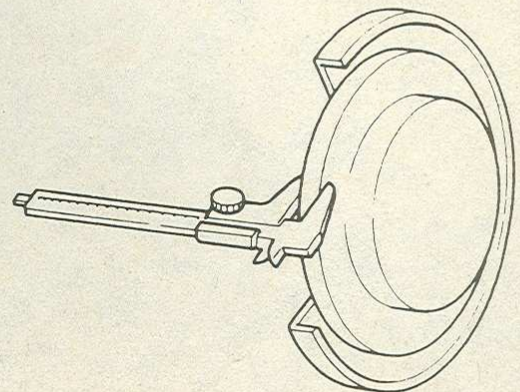
24.11 Apply a few drops of oil to the hood latch mechanism



24.12 Lubricate the hinges with a few drops of light oil



25.5 Inspect the brake pad thickness through the inspection hole in the caliper



25.8 Measure the rotor with a caliper to make sure it's not thinner than the specified minimum thickness

Note: All four pads — two per wheel — should be replaced at the same time.

6 Since it may be difficult to measure the exact thickness of the remaining friction material while the pads are installed in the calipers, remove the pads (Chapter 9) for further inspection or replacement if you are concerned about their condition.

7 Before installing the wheels, check the brake hose connections leading to the caliper for leakage and damage (cracking, splitting, etc.) to the brake hose. Replace the hose or fittings as necessary (Chapter 9).

8 Check the condition of the rotor. It should be measured at several different points along its circumference with a dial caliper (see illustration) to determine if it's beyond the thickness wear limit. Also look for scoring, gouging and bluish (burned) spots. If these conditions exist, the hub/rotor assembly should be removed for servicing (Chapter 9).

9 Check the hydraulic lines inside the engine compartment for any leakage. Also check the vacuum line running to the power brake booster. It should not be hardened or cracked and the connectors should be tight.

Parking brake

10 The easiest way to check the operation of the parking brake is to park the vehicle on a steep hill with the parking brake set and the transmission in Neutral. If the parking brake cannot prevent the vehicle from rolling, it is in need of adjustment (Chapter 9).

Brake pedal height

11 Check the brake pedal for smooth operation. Its range of motion should be within the limits of specified free height and depressed height (Chapter 9).

26 Suspension and steering check

1 Whenever the front of the vehicle is raised for service, visually check the suspension and steering components for wear.

2 Indications of a fault in these systems are excessive play in the steering wheel before the front wheels react, excessive sway around corners, body movement over rough roads or binding at some point as the steering wheel is turned.

3 Before the vehicle is raised for inspection, test the shock absorbers by pushing down to rock the vehicle at each corner. If you push down and the vehicle does not come back to a level position within one or two bounces, the shocks are worn and should be replaced. While you're compressing the suspension components, listen for squeaks and

strange noises. If this quick check indicates that further inspection is warranted, the questionable suspension components must be removed (Chapter 10).

4 Raise the front of the vehicle and support it securely on jackstands.

Warning: The following procedures must be performed underneath the car, so make sure the jackstands are well placed so that there is no danger of the car falling.

5 Crawl under the vehicle and retighten all nuts and bolts. Check for broken or disconnected parts and deteriorated rubber bushings on all suspension and steering components. Look for grease or fluid leaking from around the steering rack and pinion unit. Check the power steering hoses and connections for leaks.

6 Check the balljoint seals. Inspect them for wear, cracks and damage. Replace damaged seals (Chapter 10).

7 Check the wheel bearings for free play (Section 23). If play is evident, adjust the wheel bearing preload (Chapter 10).

8 Have an assistant turn the steering wheel from side-to-side and check the steering components for free play, chafing and binding. If the steering does not react briskly to steering wheel movement, try to determine where the slack is located.

9 Check for play at the outer ends of the tie rods, or excessive play within the rack-and-pinion steering mechanism itself.

10 A similar inspection of all suspension components should be conducted at the rear (Chapter 10). Again, tighten all bolts and check for damaged or disconnected parts and deteriorated rubber bushings.

27 Exhaust system — check

Refer to illustration 27.2

1 The engine and exhaust system must be cold. Check the complete exhaust system from the exhaust manifold to the muffler and tailpipe. It's easier to work on the exhaust system if the car is raised.

2 Check the exhaust pipes and all connections for leakage and corrosion that might cause leakage. Make sure that all brackets and rubber hangers are in good condition and tight (see illustration).

3 Inspect the underside of the body for holes, corrosion, open seams, etc. which may allow exhaust gases to enter the passenger compartment. Seal all body openings with silicone or body putty.

4 Rattles and other noises can often be traced to the exhaust system, especially the mounts and hangers. Try to move the pipes, muffler and catalytic converter. If the components are touching body or suspension parts, secure the exhaust system with new mounts.

5 While you're inspecting the exhaust system, check the running condition of the engine by inspecting inside the end of the tailpipe. The exhaust deposits here are an indication of engine state-of-tune. If the pipe is black and sooty or coated with white deposits, the engine is in need of a tune-up.

28 Drivetrain inspection

Refer to illustrations 28.7a and 28.7

1 Raise the rear of the vehicle and support it securely on jackstands. The transmission should be in Neutral.

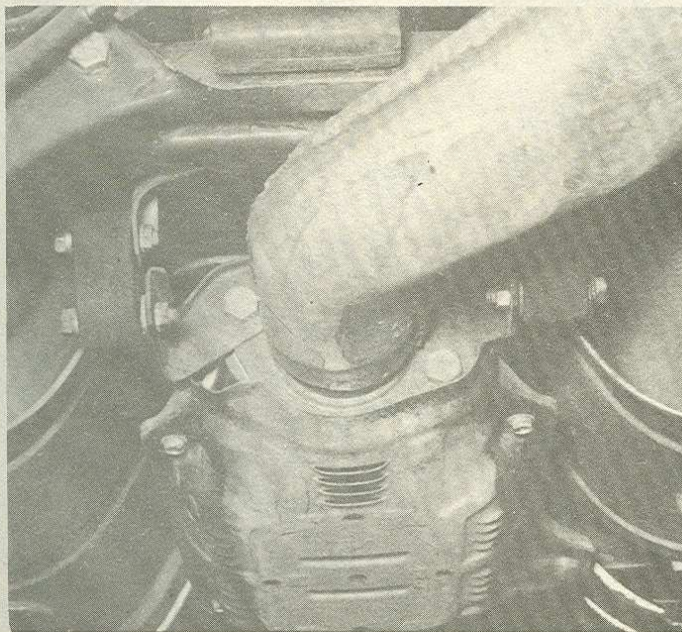
2 From under the car inspect the condition of the driveshaft. Look for any dents or cracks in the tubing. If any damage is found, the driveshaft must be replaced (Chapter 8).

3 Check for oil leakage at the forward and rear ends of the driveshaft. Leakage at the forward end of the driveshaft, where it connects to the transmission, indicates a defective rear transmission seal. Leakage at the rear, where the driveshaft enters the differential carrier, indicates a defective pinion seal. If either seal is leaking, it must be replaced (Chapters 7 and 8 respectively).

4 Have an assistant turn the rear wheel so the driveshaft will rotate. As it does, check the universal joints. They should not be binding, loose or noisy. If they are, replace them (Chapter 8).

5 The universal joints can also be checked while stationary. Grip both sides of each joint and attempt to twist them. The slightest movement in either joint is a sign of wear. Also try lifting up the shaft. If you can push it up at all, this is also an indication that the joints are worn.

6 Check the driveshaft mounting bolts at both ends to make sure they are tight (Chapter 8).



27.2 Check pipes and connections for signs of leakage and/or corrosion indicating a potential failure

7 Check for free play in the universal joints of the rear drive axles in the same manner described above. Also check for grease or oil leakage from the rear drive axles and inspect the rubber boots at both ends of each axle (see illustration). Oil leakage at the differential junction indicates a defective rear axle grease seal (see illustration). Leakage from either boot means that it's torn and must be replaced (Chapter 8).

8 Check the differential carrier housing fluid level. Open the filler plug (the upper one) located on the back of the carrier. The fluid level should be even with the bottom of the filler hole. If it isn't, fill it to the bottom edge of the hole.

29 EGR valve — check

Refer to illustrations 29.1 and 29.5

- 1 Open the hood and locate the EGR valve at the right rear of the engine (see illustration).
- 2 Reach under the EGR valve and push the valve diaphragm up with a finger to make sure that the valve isn't stuck. It should spring back when released.
- 3 Start the engine and warm it to operating temperature.
- 4 With the engine still running, disconnect the vacuum hose attached to the EGR valve.
- 5 Connect a hand held vacuum pump to the nipple where the vacuum hose was removed (see illustration).
- 6 Pump up the vacuum pump. The diaphragm inside the valve should

open and the engine should cough and stumble badly, or stall. If it does, the valve works.

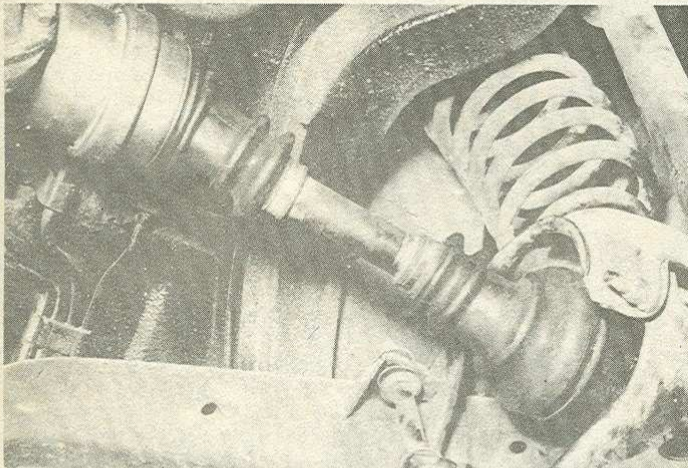
7 If the engine doesn't stall or run poorly when vacuum is applied to the EGR valve, the valve is defective. Remove it and look for blockage or carbon buildup. If there is no apparent cause for valve malfunction, replace it (Chapter 6).

30 Underhood hoses — check

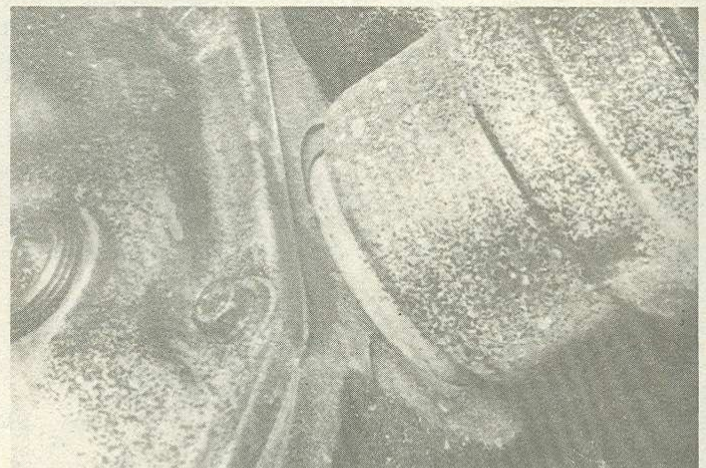
Refer to illustrations 30.2 and 30.3

Warning: Replacement of air-conditioning hoses must be left to a dealer or air-conditioning specialist who has the proper equipment to depressurize the system safely. Never remove air conditioning components or hoses until the system has been depressurized.

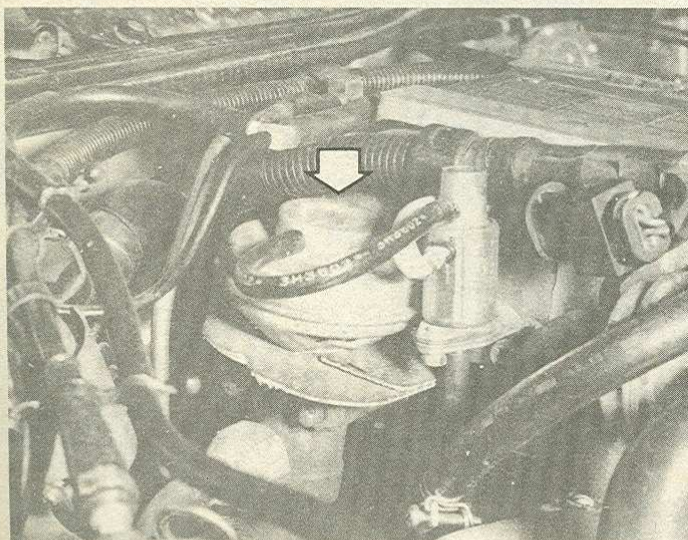
- 1 The high temperatures present under the hood can cause deterioration of the numerous rubber and plastic hoses used for engine, accessory and emission systems operation.
- 2 Periodic inspection should be made for cracks, loose clamps, material hardening and leaks (see illustration).
- 3 Some, but not all, vacuum hoses use clamps to secure the hoses to fittings. Check all hose clamps for tension. Loose clamps allow hoses to leak. Make sure unclamped hoses have not expanded and/or hardened where they slip over fittings (see illustration) or they will leak.
- 4 It is quite common for vacuum hoses, especially those in the emissions system, to be color coded or identified by colored stripes molded



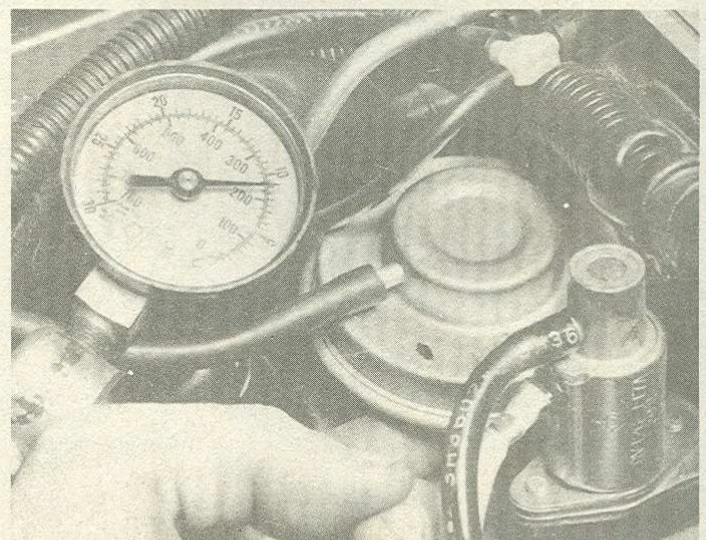
28.7a Pull back on the boot and inspect for cracks and signs of leakage



28.7b Inspect around the carrier housing for leaks where the inboard ends of the axles protrude from the carrier



29.1 The EGR valve is located at the right rear of the engine



29.5 Apply vacuum to the EGR valve with a vacuum pump and, if the valve is working properly, the engine should run rough or die

into the hose. Various systems require hoses with different wall thicknesses, collapse resistance and temperature resistance. When replacing hoses be sure to use the same hose material on the new hose.

5 Often the only effective way to check a hose is to remove it completely from the vehicle. Where more than one hose is removed, be sure to label the hoses and their attaching points to insure proper attachment.

6 When checking vacuum hoses, be sure to include any plastic T-fittings in the check. Check the fittings for cracks, and the hose where it fits over the fitting for enlargement, which could cause leakage.

7 A small piece of vacuum hose (1/4-inch inside diameter) can be used as a stethoscope to detect vacuum leaks. Hold one end of the hose to your ear and probe around the vacuum hoses and fittings, listening for the hissing sound characteristic of a vacuum leak. **Warning:** When probing with the vacuum hose stethoscope, be careful not to allow your body or the hose to come into contact with moving engine components such as drivebelts, the cooling fan, etc.

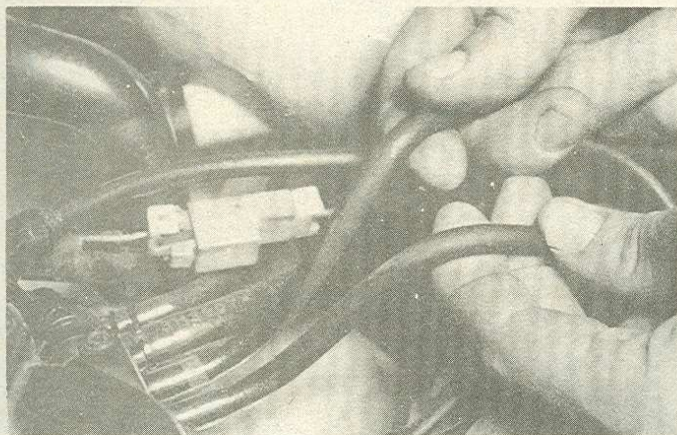
Fuel hose

Warning: There are certain precautions which must be taken when inspecting or servicing fuel system components. Work in a well ventilated area and do not allow open flames (cigarettes, appliance pilot lights, etc.) or bare light bulbs near the work area. Mop up any spills immediately and do not store fuel soaked rags where they could ignite.

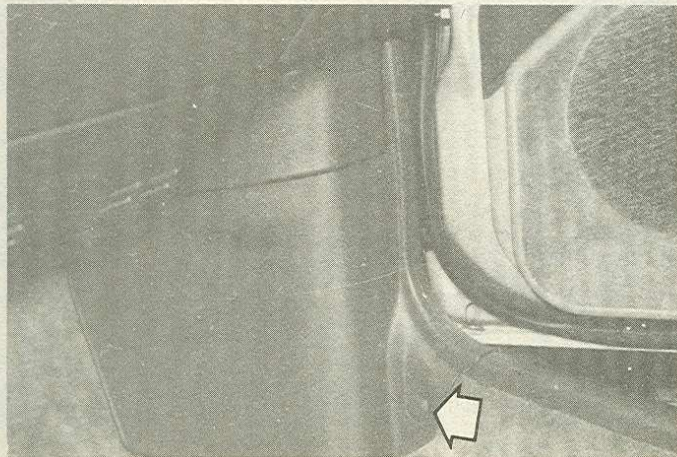
8 The fuel lines are usually under a small amount of pressure, so be prepared to catch spilling fuel anytime fuel lines are disconnected.

Warning: Fuel injected engines generally have high pressure in the fuel lines even after shutting off the engine, for a considerable time. That's why you must relieve fuel pressure (Section 17) before disconnecting any fuel lines on fuel injected engines.

9 Check all rubber fuel lines for deterioration and chafing. Check especially for cracking in areas where the hoses bend and near clamping points such as where hoses are attached to the fuel pump, fuel filter and carburetor or fuel injection unit.



30.2 Check the vacuum hoses for cracks and hardening



31.2 To get at the ECU, turn the plastic retaining screw 90° and pull out the kick panel

10 High quality fuel lines should be used for fuel line replacement. Under no circumstances should unreinforced vacuum line, clear plastic tubing or water hose be used for fuel line replacement.

11 Fuel lines are commonly equipped with spring-type clamps. These clamps often lose their tension over a period of time or they are sprung during removal. That's why it's a good idea to replace spring-type clamps with screw clamps whenever a hose is replaced.

Metal lines

12 Sections of metal line are often used to route fuel between the fuel pump and carburetor or fuel injection unit. Check such lines for crimps and cracks in the vicinity of any bent sections. Watch for cracks or loose fittings where the brake lines are connected to the master cylinder and the proportioning valve. Any sign of leakage calls for an immediate and thorough inspection of the entire brake system (Chapter 9).

13 If a section of metal line must be replaced, seamless steel tubing must be used. Copper and aluminum tubing do not have the strength necessary to withstand engine vibration.

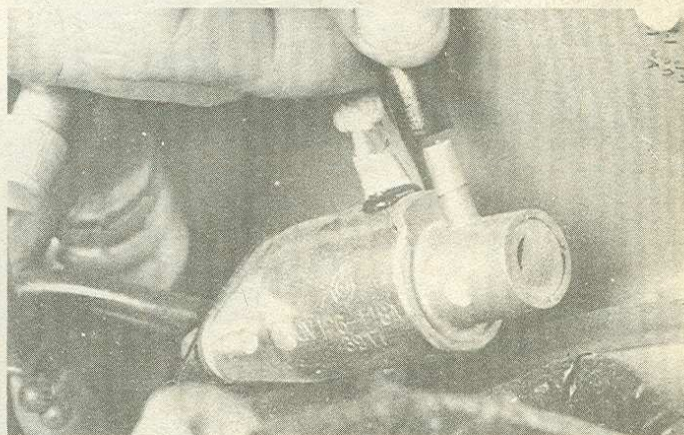
31 Exhaust gas sensor — servicing

Refer to illustrations 31.2, 31.3, 31.6, 31.10 and 31.13

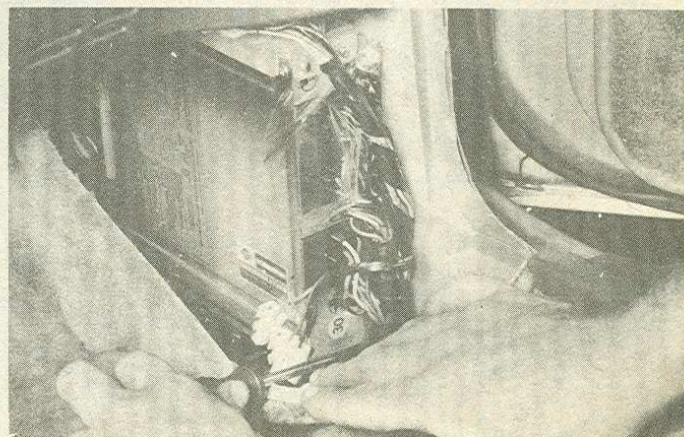
1 The exhaust gas sensor is a screw-in unit located in the exhaust manifold. The sensor should be inspected at the specified intervals but need not be replaced unless found to be faulty.

2 The electronic control unit (ECU) is equipped with a self diagnostic system for checking the sensor. To reach the ECU, turn the plastic retaining screw on the passenger side kick panel 90° (see illustration), then remove the panel.

3 Remove the two screws attaching the ECU to the body and remove



30.3 Pull the hose from the component and check for a tight fit — a loose hose will not hold a proper vacuum



31.3 Pull back the insulation and remove the two retaining screws attaching the ECU to the body

it (see illustration).

4 Start the engine and warm it to normal operating temperature.

5 Run the engine at about 2000 rpm for about two minutes.

6 Verify that the diagnosis mode selector on the ECU is turned fully counterclockwise (see illustration).

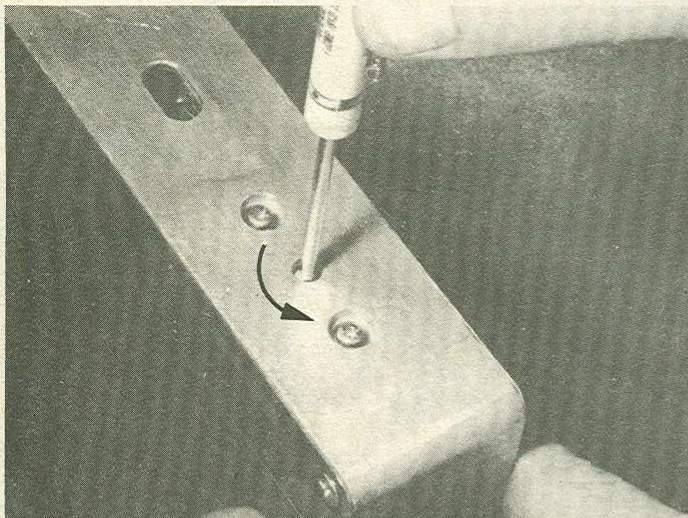
7 With the engine running at 2000 rpm, check the green inspection light on the bottom of the ECU. It should blink on and off more than five times during a 10-second period.

8 If the control unit inspection light is operating as described, there is no problem. If it isn't, the system should be checked by a Nissan dealer.

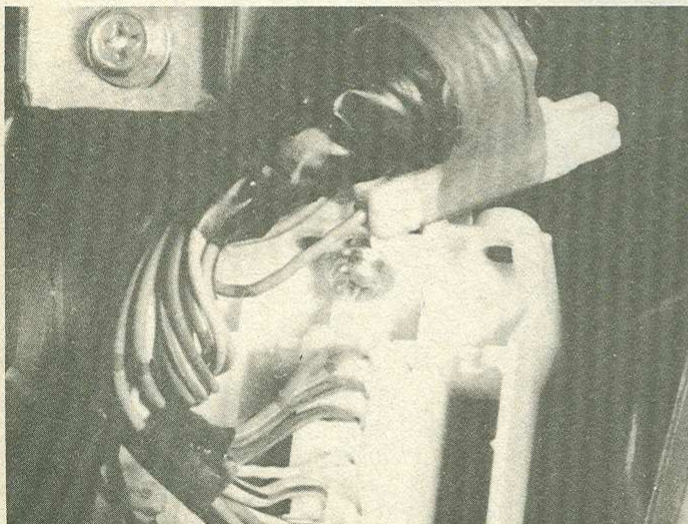
9 Shut off the engine and replace the control unit by reversing the removal procedure.

10 If the exhaust gas sensor needs to be replaced, it may be difficult to remove when the engine is cold, so the operation is best done with the engine at operating temperature.

- Remove the wiring connector from the sensor.
- Apply a penetrating oil to the threads of the exhaust gas sensor and allow it to soak in for 5 minutes.
- Carefully unscrew the sensor and remove it (see illustration). Be careful that you do not damage the threads in the exhaust manifold while removing the sensor.
- Coat the threads of the new sensor with anti-seize compound and install it.
- Carefully tighten the sensor to the specified torque.
- Reconnect the wiring connector to the sensor.



31.6 Make sure that the diagnosis mode selector is turned fully counterclockwise



31.13 Disconnect the exhaust gas sensor connector, which is taped to a harness next to the hood latch release handle

Sensor warning lamp

11 The exhaust gas sensor warning lamp will come on at 30,000 miles, whether the sensor has been replaced during that service interval or not, to let you know that the sensor should be inspected and, if necessary, replaced. **Note:** After the third inspection at 90,000 miles disconnect the warning lamp wiring harness so that the warning lamp will not come on again.

12 To gain access to the sensor warning light connector, remove the three screws retaining the driver side under-dash cover and remove the cover.

13 Locate the connector taped to the left of the hood latch release handle and disconnect it (see illustration).

14 Replace the under dash cover.

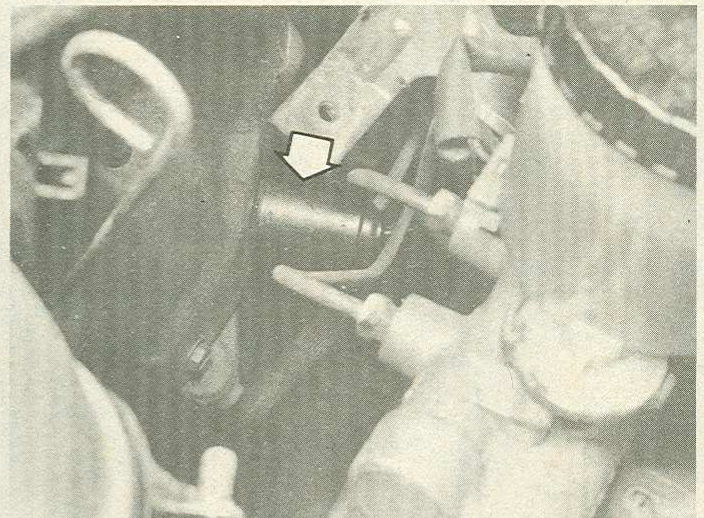
32 Drive train insulators — check

Refer to illustration 32.3

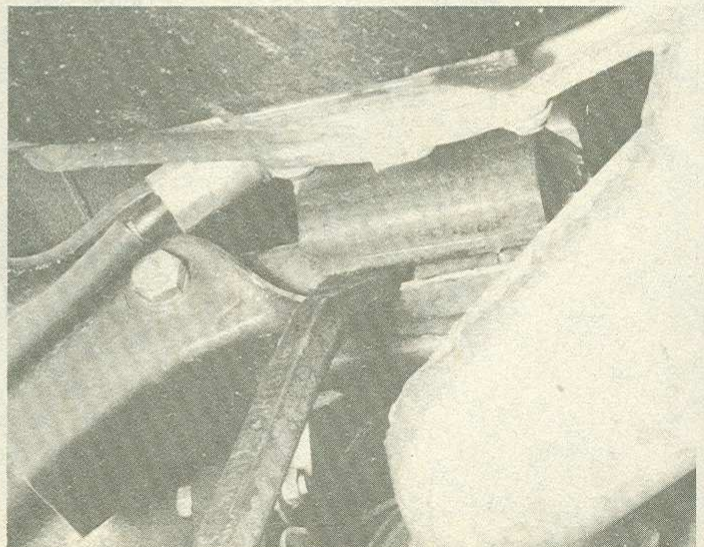
1 When checking the underside of the chassis, inspect the condition of the engine, transmission and rear differential carrier insulators.

2 Inspect the rubber portion of the insulators for deterioration and check for loose mounting bolts.

3 Insert a large screwdriver or pry bar in between each insulator and drive train component. Carefully pry it apart to see if the rubber has separated from the steel base (see illustration).



31.10 Carefully unscrew the exhaust sensor from the exhaust manifold



32.3 Use a pry bar to determine whether the rubber has separated from its component

33 Automatic transmission fluid and filter change

Refer to illustrations 33.8, 33.9 and 33.11

1 At the specified time intervals, the transmission fluid should be changed and the filter replaced with a new one. Since there is no drain plug, the transmission oil pan must be removed from the bottom of the transmission to drain the fluid.

2 Before draining, purchase the specified transmission fluid (see *Recommended lubricants* near the front of this Chapter) a new filter and all necessary gaskets. **Caution:** *Because of the susceptibility of automatic transmissions to contamination, the old filter and gaskets should not be reused under any circumstances.*

3 Other tools necessary for this job include jackstands to support the vehicle in a raised position, a wrench to remove the oil pan bolts, a standard screwdriver, an 8-pint capacity drain pan, newspapers and clean rags.

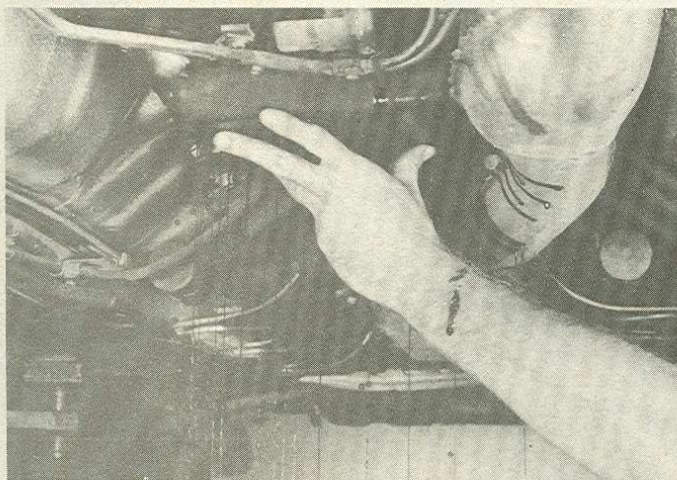
4 The fluid should be drained while it's still warm (within 30 minutes after a drive) to help remove any built-up sediment. Wear protective gloves — fluid temperatures can exceed 350 °F in a hot transmission.

5 After the car has been driven to warm up the fluid, raise it and place it on jackstands.

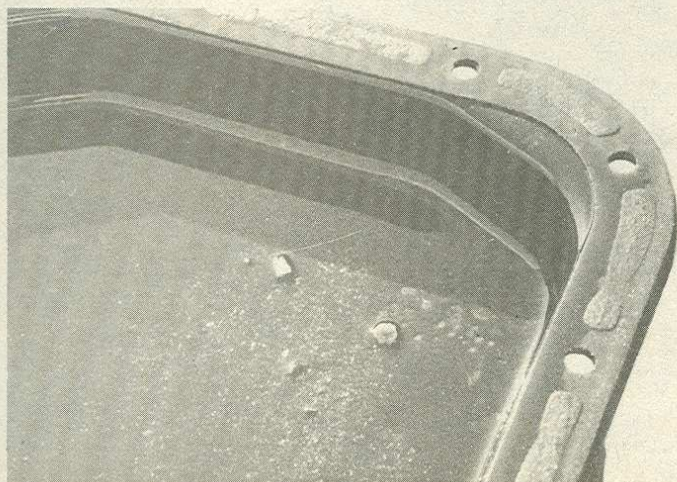
6 Move the equipment you will need under the vehicle. Avoid contact with hot components.

7 Place the drain pan under the transmission oil pan and remove the oil pan bolts along the rear edge and both sides of the pan. Loosen, but do not remove, the front pan bolts.

8 Carefully pry the pan down at the rear, allowing the hot fluid to drain into the drain pan (see illustration). If necessary use a screwdriver to break the gasket seal at the rear of the pan, but do not damage the



33.8 Lower the back of the pan to start draining the fluid



33.9 A small amount of fine metal shavings indicates normal wear, but the size of the metal chips in this pan warrants further inspection of the transmission

pan or the mating surface of the transmission case in the process.

9 Support the pan and remove the remaining bolts at the front of the pan. Lower the pan and pour the remaining fluid into the drain pan. Check the fluid and the bottom of the pan for metal particles that may indicate transmission failure (see illustration).

10 Thoroughly clean the transmission oil pan with solvent. Dry with compressed air if available. It is important that all remaining gasket material be removed from the oil pan mounting flange. Use a gasket scraper or putty knife for this.

11 Remove the bolts holding the filter to the valve body (see illustration) and clean or replace the filter/strainer.

12 Replace the filter/strainer and tighten the bolts to the specified torque.

13 Apply a bead of gasket sealant around the oil pan mounting surface. Apply the sealant between the bolt holes and the inner edge of the pan flange. Press the new gasket into place on the pan, making sure all the bolt holes line up.

14 Lift the pan up to the bottom of the transmission and install the mounting bolts. Working around the pan, snug the bolts in a diagonal fashion, until they're finger tight. Then tighten them to the specified torque.

15 Remove the jackstands and lower the vehicle.

16 Open the hood and remove the dipstick from its guide tube. Insert a funnel into the dipstick tube to avoid spills.

17 It is best to add a little fluid at a time, continually checking the level with the dipstick. Allow the fluid time to drain into the pan. Add fluid until the level just registers on the dipstick. In most cases, a good starting point is 4 to 5 pints.

18 With the selector lever in the Park position, apply the brake and, if possible, start the engine without depressing the accelerator. Do not race the engine at high speed — run it at a low idle for at least two minutes.

19 Depress the brake pedal and shift the transmission through each gear. Place the selector back in Park and, with the engine still at idle, check the level on the dipstick. Look under the vehicle for leaks around the transmission oil pan mating surface.

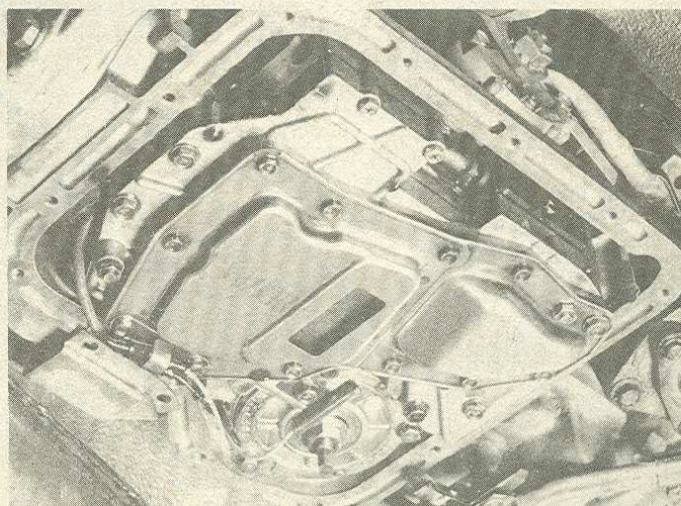
20 Add more fluid through the dipstick tube until the level on the dipstick is 1/4-inch below the lower mark on the dipstick. Add no more fluid at this time or you may overfill the transmission.

21 Push the dipstick back into the tube and drive the vehicle until it reaches normal operating temperature. Park on a level surface and check the fluid level with the engine idling and the selector in Park. The level should now be at the upper mark on the dipstick. If it isn't, add more fluid to bring it up to this point. Again, do not overfill.

34 Manual transmission — oil change

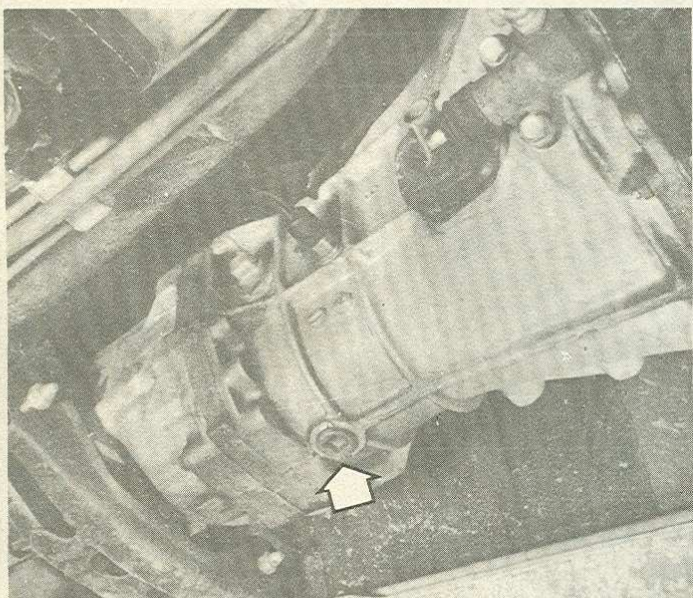
Refer to illustration 34.3

1 Drive the vehicle for 15 minutes in stop-and-go traffic to warm the oil in the case.

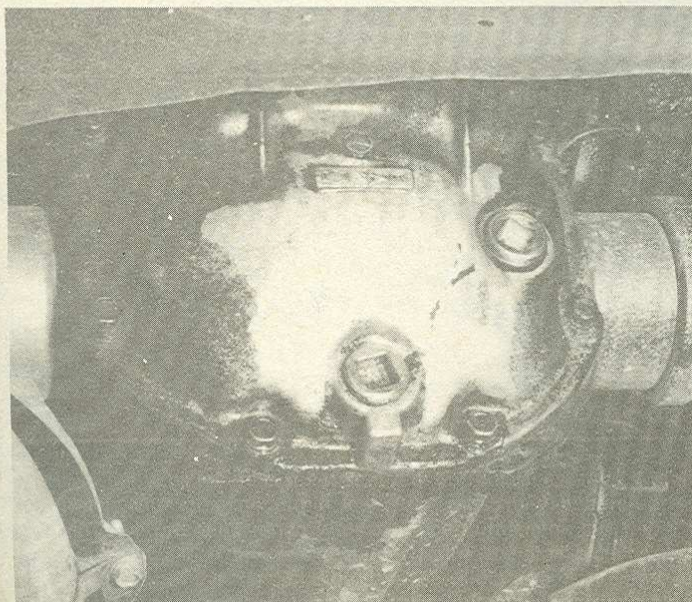


33.11 Remove the bolts holding the filter/strainer to the valve body

- 2 Raise the vehicle and place it securely on four jackstands. Move a drain pan with at least a 5 pint capacity, rags, newspapers and a 1/2-inch drive ratchet wrench with extension under the car.
- 3 Insert the 1/2-inch drive socket extension into the drain plug located in the underside of the transmission case (see illustration) and remove the plug. If it's not too hot, you can usually unscrew the drain plug with your fingers after the first couple of turns, but if the plug is still too hot to touch, use the wrench and simply let the plug drop into the pan. You can retrieve it once the oil has cooled. Allow plenty of time for the oil to drain.
- 4 If the transmission is equipped with a magnetic drain plug, inspect the bits of metal clinging to it. If they are any bigger than dust particles, some of the gear components in the transmission may be excessively worn. If so, they should be inspected as soon as practical. If the transmission is not equipped with a magnetic drain plug, allow the oil in the pan to cool and then feel with your hands along the bottom of the drain pan for any metal bits.
- 5 After all the lubricant has drained, clean off the drain plug and reinstall it, tightening it to the specified torque.
- 6 Remove the oil inspection/fill plug located on the left side of the transmission and fill the transmission with a hand pump or syringe with



34.3 Use a 1/2-inch drive ratchet with an extension to remove the drain plug (arrow), located in the underside of the transmission case



35.4 The differential drain plug is the lower one

- the specified amount and grade of lubricant until the level is just at the bottom edge of the inspection plug hole.
- 7 Replace the filler plug and tighten to the specified torque.
- 8 Remove the jackstands and lower the vehicle.
- 9 After driving the vehicle, check the drain and filler plugs for any signs of leakage.

35 Differential oil change

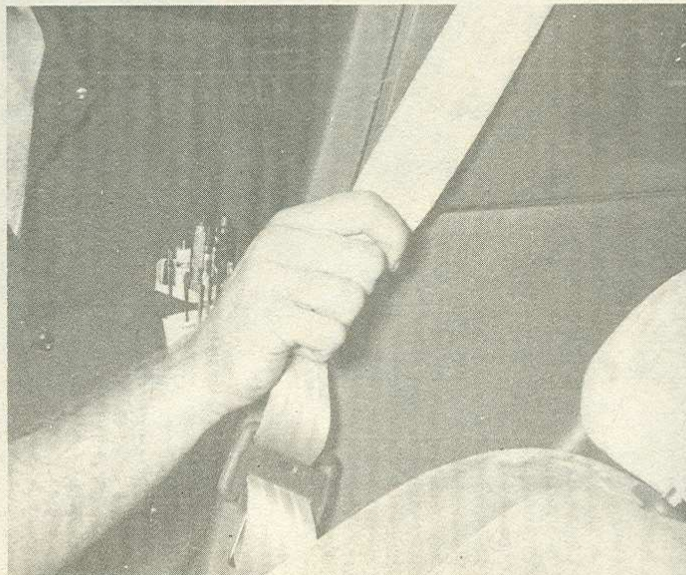
Refer to illustration 35.4

- 1 Drive the vehicle for 10 to 15 minutes at highway speeds to warm up the axle lubricant to operating temperature.
- 2 Raise the vehicle and support on jackstands and place a drain pan of at least 5 pint capacity under the differential carrier.
- 3 Wire brush the filler and drain plug areas of the axle carrier cover to prevent possible entry of rust, dirt, etc. into the axle assembly.
- 4 Remove the differential lubricant drain plug. The drain plug is the lower plug located on the rear of the differential carrier rear housing (see illustration).
- 5 Allow the lubricant sufficient time to drain completely. Replace the drain plug and tighten to the specified torque.
- 6 Feel with your hands along the bottom of the drain pan for any metal bits that may have come out with the oil. If you discover any bits coarser than a fine metal sludge, it's an indication of possibly excessive wear of differential components. The internals of the differential will have to be carefully inspected in the near future.
- 7 Remove the differential inspection/filler plug located above the drain plug. Using a hand pump or syringe, fill the transmission with the specified amount and grade of lubricant until the level is right at the bottom edge of the inspection plug hole.
- 8 Install the inspection/filler plug and tighten it to the specified torque.
- 9 Remove the jackstands and lower the vehicle.

36 Seat belts, buckles, retractors, anchors and adjuster — check

Refer to illustrations 36.3 and 36.4

- 1 Carefully inspect the seat belt webbing. If it is cut, frayed, or damaged, replace the belt assembly.
- 2 The front seat belt retractors are designed to lock and restrict belt movement when the belt is pulled quickly from the retractors.
- 3 If the operation of either seat belt is questionable, grasp the shoulder belt and pull sharply forward (see illustration). The retractor should lock instantly, thereby preventing further belt movement. If the retractor does not lock during this check replace it with a new one.



36.3 Check the shoulder harness for correct operation by yanking on it — a quick yank should lock the harness

- 4 Push the belt tongue into the the belt buckle until an audible click is heard. Grab the two parts of the belt and yank on them (see illustration). The belt should remain locked.
- 5 Press the release button and note whether the buckle disconnects decisively.
- 6 Check retractors for smooth operation by pulling each belt out and watching it retract — the retractor should reel it in smoothly and quickly.
- 7 Check all the anchor bolts for tightness. Tighten them to the specified torque as necessary.

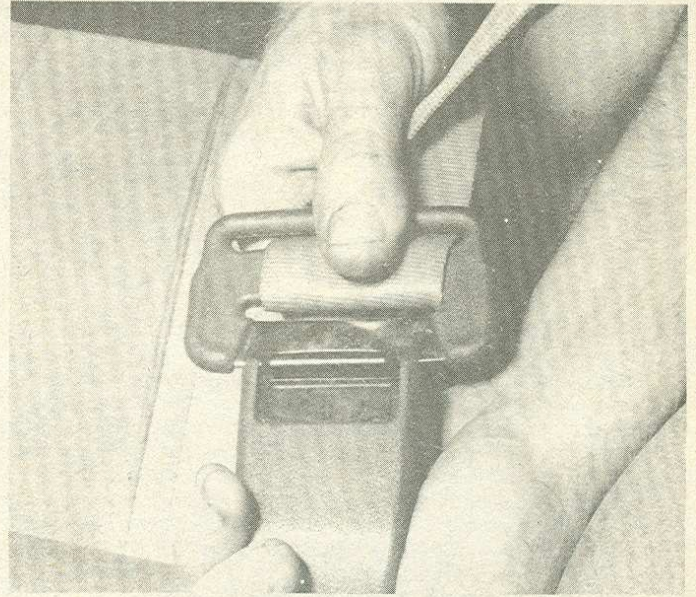
37 Warning lights — general information

Refer to illustration 37.1

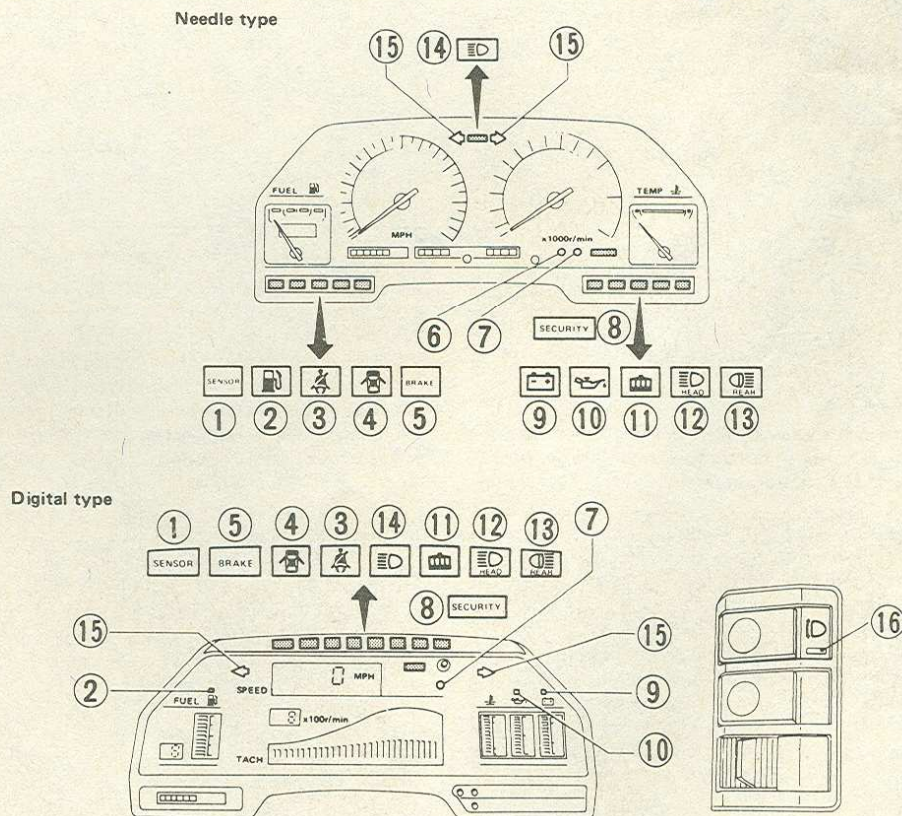
1 Your Nissan is equipped with several dash mounted warning lights (see illustration) and a voice warning system to inform you of the operating condition of your vehicle. Many times the warning is something simple, such as a door ajar or the headlights on. The system also warns of vital engine functions such as engine oil pressure loss, low coolant level, brake system failure and low electrical charging rate. When one of these lights comes on, it is a sign that the problem must be dealt with immediately.

Oil pressure warning light

2 The oil pressure warning light indicates that the engine oil pressure is low. Should the light flicker on and off or stay on during normal driving



36.4 Buckle the belt and jerk on the buckle assembly to verify its locking ability



37.1 Instrument warning lamp description

- | | | |
|-------------------------------------|--------------------------------------|--|
| 1 Exhaust gas sensor warning light | 7 Cruise control pilot light (Green) | 12 Headlight warning light |
| 2 Fuel level warning light | 8 Theft warning indicator light | 13 Tail light warning light |
| 3 Seat belt warning light | 9 Charge warning light | 14 High beam indicator light |
| 4 Door warning light | 10 Oil pressure warning light | 15 Turn signal/Hazard indicator lights |
| 5 Brake warning light | 11 Coolant level warning light | 16 Retractable headlight warning light |
| 6 Cruise control pilot light (Blue) | | |

speeds you should pull off the road immediately and stop the engine until the cause is found and corrected (Chapter 2). **Caution:** *Continued operation of the engine when the oil pressure warning light is on may damage the engine.*

Retractable headlight warning light

3 This light comes on while the retractable headlights are opening and closing. Should the warning light remain on after the headlights have opened or closed, something is wrong with the retracting mechanism and it should be checked (Chapter 12).

Charge (alternator) warning light

4 The charge warning light indicates an alternator or electrical wiring harness malfunction.

5 This light should glow only when the ignition switch is in the *ON* position (engine off), indicating the bulb itself and the electrical wiring are satisfactory. It should go out when the engine is started.

6 Should the light come on during normal operation, the alternator and electrical system should be checked as soon as possible (Chapter 5). **Note:** *If the alternator and electrical system are functioning normally, but the electrical load is too heavy for the system, the warning light may glow slightly. When this occurs, there is no need to check the alternator and electrical system as long as the light goes out once electrical accessories are turned off.*

Fuel level warning light

7 This light serves as a fuel reserve warning system. When it comes on, 2-1/8 US gallons of fuel remain in the tank. **Note:** *Generally speaking, it's good practice to keep the gas tanks of fuel injected automobiles full, especially in moist climates, because it helps to ward off moisture caused by condensation.*

Exhaust gas sensor warning light

8 This light, which comes on every 30,000 miles, means that the exhaust gas sensor should be inspected. The exhaust gas sensor warning light also comes on when the ignition switch is turned to the *ON* position before the engine starts.

Brake warning light

9 The brake warning light serves both the foot brake system and the parking brake.

10 The light glows when the ignition switch is turned to *ON* before the engine is started.

11 Should the light fail to come on when the ignition switch is turned to *ON*, check the electrical system for a burned-out bulb or look for an open circuit in the wiring for the brake light system (Chapter 12).

12 The light will continue to glow when the parking brake is set with the engine running.

13 If the warning light comes on while you are driving, it's an indication that the brake fluid level is lower than the prescribed level. Pull over and check the brake fluid level immediately. If the reservoir is low, fill it to the specified level.

14 **Warning:** *If these checks cannot be made immediately, pull off the road and stop carefully. Remember that your stopping distance may be longer and the pedal may go down farther than normal and be more difficult to operate. Test the brakes by carefully starting and stopping the vehicle on the shoulder of the road. If you judge it to be safe, drive carefully to the nearest service station for repairs. Otherwise, have your car towed. Driving the vehicle with the brake warning light on may be dangerous.*

Seat belt warning light and chime

15 The driver's seat is equipped with a seat belt warning light and chime system. When the ignition switch is turned to the *ON* position, the seat belt warning light will come on and remain on for about six seconds. The chime will also sound for about six seconds any time the ignition switch is turned to *ON* but it will be deactivated sooner if the driver's seat belt is securely fastened.

Lights 'ON' warning chime/voice

16 When the key is removed from the ignition and the driver's door is opened, a chime and/or voice warning will alert you if the headlight switch is still turned on. Both warnings cancel as soon as the headlights are turned off.

Key warning chime

17 A warning chime tells the driver that the key is in the ignition. The chime will sound any time the driver's door is open when the ignition key is in the *ACC*, *OFF* or *LOCK* position.

Door warning light

18 The door warning light comes on if one of the doors or the rear hatch is not closed securely when the engine is running. It also glows when the ignition switch is turned *ON* and the engine is not running.

Coolant level warning light

19 This light comes on when the coolant level in the reservoir tank drops below the *MIN* mark on the reservoir.

Headlight warning light

20 This light comes on when the headlight switch is in the *ON* position with the engine off, or if a headlight bulb is burned out.

Tail light warning light

21 This light comes on with the light switch in the *ON* position with the engine off or when a tail light bulb is burned out.

High beam indicator light

22 With the headlights on, the high beam indicator glows whenever the high beams are in use and goes out when the driver switches to low beams. If it fails to come on when the lights are switched to the high beam, check the headlights for a burned out high beam filament. If the headlights are both good, check the high beam indicator bulb itself (Chapter 12).

Turn signal/hazard indicator lights

23 The green indicator light on the dash panel should flash when the exterior turn signal lights flash. If it doesn't, check the flasher module, the wiring and the turn signal lights (Chapter 12).

Theft warning indicator light

24 The theft warning light is indicated by the word *Security* on the dash panel. Once the key is removed from the ignition and all the doors are locked the indicator will come on for 30 seconds.

25 Once the light goes off the theft alarm system remains armed until one of the doors is opened with a key. If the theft warning indicator light fails to come on for any reason, the theft warning system should be checked (Chapter 12).

Cruise control pilot light

26 When the cruise control unit is in operation, the green pilot light on the combination meter panel will glow.

27 Once the desired speed is set by pushing the *Coast* set switch, a blue pilot light will light up on an analog (needle type) dashboard and the set speed will light up in the graphic display on a digital dashboard. If either light fails to come on when the system is in use, inspect the dashboard bulbs and the cruise control wiring (Chapter 12).

Voice warning

28 A voice warning is sounded to warn the driver of an open left or right door, a low fuel level or a parking brake left on when the ignition switch is in the *ON* position. Each warning will continue until the condition is corrected, except the low fuel level warning, which repeats two or three times, then stops.

29 The voice warning will sound once the vehicle is moving over 5 mph if one of the doors is open or if the parking brake is on.

30 A voice warning indicating the lights are still on will sound if the driver's door is opened and the ignition switch is not in the *ON* position.