LUBRICATION AND MAINTENANCE

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SCHEDULED MAINTENANCE

RECOMMENDED CUSTOMER MAINTENANCE

The following maintenance services must be performed to assure proper emission control and performance. Keep receipts for al vehicle emission service to keep your emission warranty in force.

Where both mileage and time are shown, the frequency of service is determined by whichever occurs first.

R : REPLACE
I : INSPECT AFTER INSPECTION, CLEAN, ADJUST, REPAIR OR REPLACE IF NECESSARY

NO.	DESCRIPTION	MILES x 1000	7.5	15	22.5	30	37.5	45	52.5	60
		KILOMETERS x 1000	12	24	36	48	60	72	84	96
		MONTHS	5	10	20	30	40	50	60	70
	EMISSION CONTROL ITEMS									
1	ENGINE OIL AND FILTER		R	R	R	R	R	R	R	R
2	FUEL FILTER								R	
3	FUEL LINES AND CONNECTIONS								I	
4	VACUUM, CRANKCASE VENTILATION HOSES								I	
5	FUEL HOSE, VAPOR HOSE & FUEL FILLER CAP								I	
6	AIR CLEANER FILTER					R				R
7	SPARK PLUGS					R				R

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NO.	DESCRIPTION	MILES x 1000	7.5	15	22.5	30	37.5	45	52.5	60
		KILOMETERS x 1000	12	24	36	48	60	72	84	96
		MONTHS	5	10	20	30	40	50	60	70
	GENERAL ITEMS									
1	DRIVE BELT (ENGINE COOLANT PUMP AND GENERATOR)					I				I
2	ENGINE COOLANT					R				R
3	TIMING BELT									R
4	MANUAL TRANSAXLE OIL					I				I
5	AUTO TRANSAXLE OIL			I		R		I		R
6	BRAKE FLUIE					R				R
7	BRAKE HOSES, LINES			I		I		I		I
8	REAR BRAKE DRUMS/LININGS/PARKING BRAKE					I				I
9	BRAKE PADS, CALIPERS, ROTORS			I		I		I		I
10	EXHAUST PIPE CONNECTIONS, MUFFLER & SUSPENSION BOOTS					I				I
11	STEERING GEAR RACK, LINKAGE & BOOTS					I				I
12	WHEEL BEARING GREASE					I				I
13	DRIVESHAFTS & BOOTS			I		I		I		I

MAINTENANCE UNDER SEVERE USAGE CONDITIONS

The following items must be serviced more frequently on cars normaly used under sever driving conditions. Refer to the chart below for the appropriate maintenance intervals.
(I = Inspect, correct or replace if necessary, R = Replace.)

MAINTENANCE ITEM	MAINTENANCE OPERATION	MAINTENANCE INTERVALS	DRIVING CONDITION
ENGINE OIL AND FILTER	R	EVERY 3,000 MILES (4,800 KM) OR 3 MONTHS	A, B, C, F, H
AIR CLEANER FILTER	R	MORE FREQUENTLY	G E
SPARK PLUGS	R	EVERY 24,000 MILES (40,000 KM) OR 18 MONTHS	B, H
BRAKE PADS, CALIPERS, ROTORS	I	MORE FREQUENTLY	C, D, G, H
REAR BRAKE DRUMS/LININGS	I	MORE FREQUENTLY	C, D, G, H
STEERING GEAR RACK LINKAGE 8. BOOTS	I	EVERY 7,500 MILES (12,000 KM) OR 6 MONTHS	C, D, E, F, G
DRIVESHAFTS & BOOTS	I	EVERY 7,500 MILES (12,000 KM) OR 6 MONTHS	C, E, F
AUTOMATIC TRANSAXLE OIL	R	EVERY 15,000 MILES (24,000 KM) OR 10 MONTHS	B,G,H

SEVERE DRIVING CONDITIONS
A - Repeated short distance driving
B - Extensive idling
C - Driving in dusty conditions
D - Driving in areas using salt or other corrosive materials or in very cold weather
E - Driving in sandy areas
F - More than 50% driving in heavy city traftic during hot weather above 90°F (32°C)
G - Driving in mountainous areas
H - Towing a trailer

RECOMMENDED LUBRICANTS AND CAPACITIES

RECOMMENDED LUBRICANTS

Parts	Specifications	Remarks
Engine oil	API classification SG or SG/CD	For further details, refer to SAE viscosity number
Manual transaxle	API classification GL-4	SAE grade number: SAE 75W-85W
Automatic transaxle	GENUINE HYUNDAI AUTOMATIC TRANSMISSION FLUID, MOPAR ATF PLUS TYPE 7176 OR DIAMOND ATF SP.	MOPAR ATF PLUS TYPE 7176 is recommended lubricant
Brake	Conforming to DOT 3 or equivalent	
Rear wheel bearing	Multi-purpose grease NLGI Grade #2, EP	
Cooling system	High quality ethylene glycol	Concentration level 50%
Transaxle linkage, parking brake cable mechanism, hood lock and hook, door latch, seat adjuster, trunk latch, door hinges, trunk hinges	Multipurpose grease NLGI Grade #2	
Power steering	ATF DEXRON II type	

LUBRICANTS CAPACITIES

Description	Capacities	Remarks
Engine oil		
Oil pan	4.0 lit (4.2 U.S. qts., 3.5 Imp.qts.)	
Oil filter	0.4 lit (0.42 U.S. qts., 0.35 Imp.qts.)	
Total	4.4 lit (4.62 U.S. qts., 3.85 Imp.qts.)	
Cooling system	5.0 lit (5.4 U.S. qts., 4.8 Imp.qts.)	
Manual transaxle	1.8 lit (1.9 U.S. qts., 1.6 Imp.qts.)	
Automatic transaxle	6.1 lit (6.4 U.S. qts., 5.4 Imp.qts.)	
Power steering	0.9 lit (0.95 U.S. qts., 0.79 Imp.qts.)	

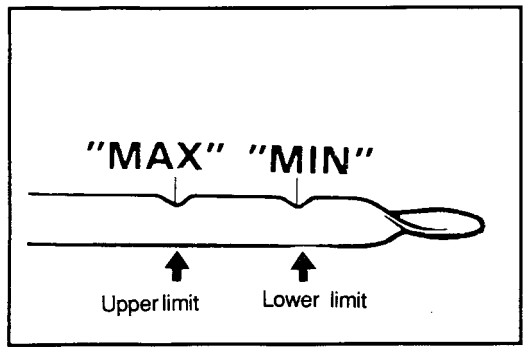
MAINTENANCE SERVICE

CHECKING ENGINE OIL

1. Position the vehicle on a level surface.
2. Warm up the engine.

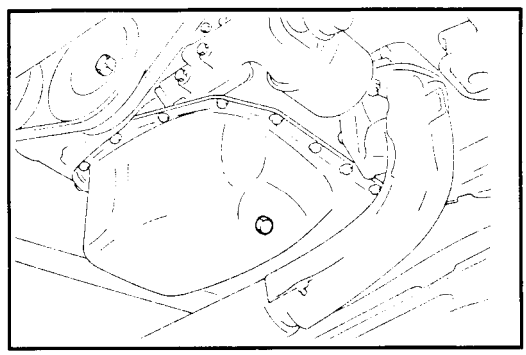
NOTE
If a vehicle that has been out of service for a prolonged period of time, warm up the engine for approximately 20 minutes.

3. Stop the engine, and wait 2 or 3 minutes, then check the oil level after engine oil drains to the oil pan.
4. Check that the engine oil level is within the level range indicated on the oil dipstick. If the oil level is found to have fallen to the - lower limit (the MIN mark), refill to the “MAX” mark.



NOTE
When refilling, use the same type of engine oil as the one currently being used.

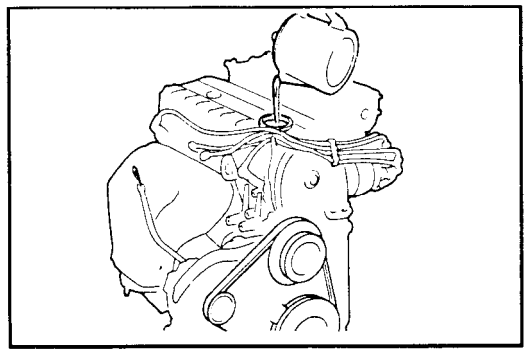
5. Check that the oil is not dirty or contaminated with coolant or gasoline, and that it has the proper viscosity.



CHANGING THE ENGINE OIL

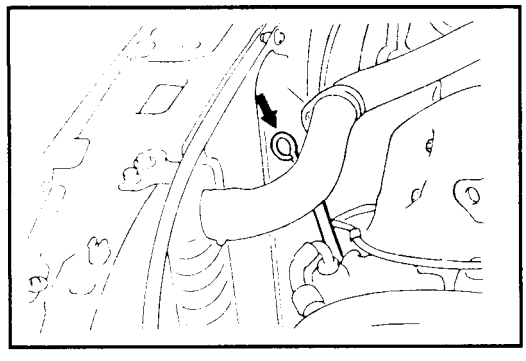
1. Warm up the engine.
2. With the engine off remove engine oil drain plug and drain oil.
3. Reinstall the drain plug and tighten.

Tightening torque
Drain plug ..... 35-45 Nm (350-450 kg.cm, 25-33 lb.ft)



4. Fill the crankcase with fresh oil through the filler port.

Dry fill ..... 4.4 lit. (4.62 U.S.qts., 3.85 Imp.qts.)
Drain and refill
Without oil filter: 2.9 lit (3.06 U.S.qts., 2.55 Imp.qts.)
With oil filter: 3.3 lit (3.49 U.S.qts., 2.90 Imp.qts.)



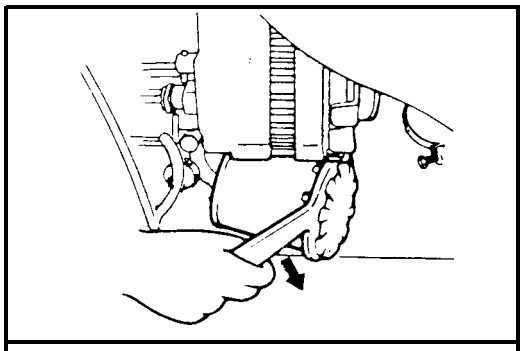
5. Check the oil level.
6. Install the filler cap.
7. After a road test, recheck the level of the engine oil.

Recommended engine oil

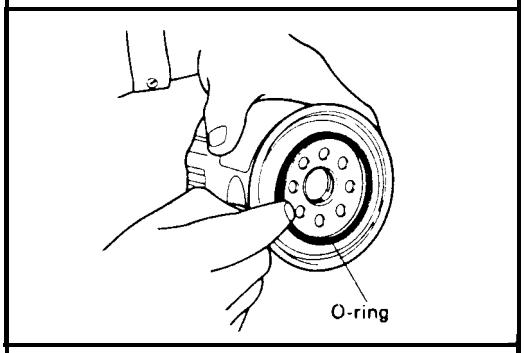
API SG or SG/CD
SAE 20W-40, 20W-50 (ABOVE 32°F OR 0°C)
10W-30, 10W-40, 10W-50 (ABOVE -10°F OR -23°C)
5W-30, 5W-40 (BELLOW 95°F OR 35°C)

REPLACEMENT OF THE ENGINE OIL FILTER

1. Replace the oil filter at every oil change.
2. Use a filter wrench to remove the oil filter.
3. Drain the oil in the filter.



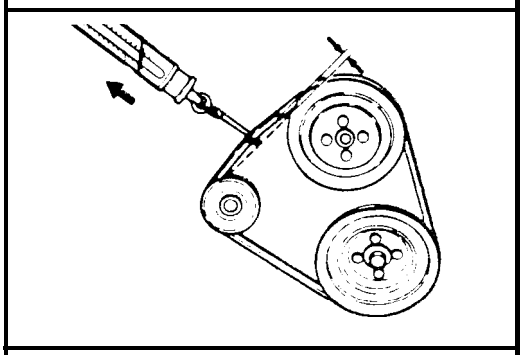
4. Lightly coat the O-ring (1) of the new oil filter with engine oil, and install the filter by turning it by hand.



CHECKING AND ADJUSTMENT OF V-BELT TENSION

Measure the deflection of the V-belt at the point shown in the illustration.

V-belt deflection [under a tension of 10 kg (22 lb)] ..... 9.0-11.5 mm (0.35-0.45 in.)



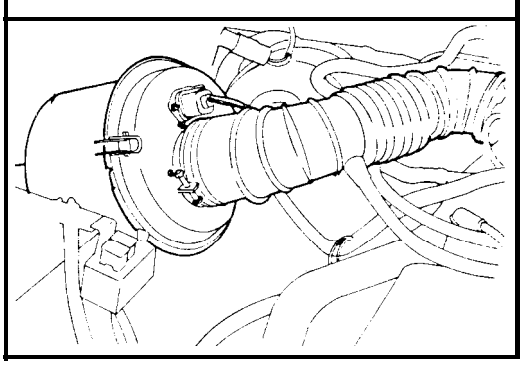
REPLACEMENT OF THE AIR CLEANER FILTER

The air cleaner filter will become dirty and loaded with dust during use and the filtering effect will be substantially reduced. Replace with a new one.

1. Remove the intake air hose and air duct.
2. Disconnect the connector for the volume airflow sensor from the air cleaner filter cover.
3. Disconnect the volume air cleaner filter cover clip.
4. Remove the air cleaner filter cover.

CAUTION
The air cleaner filter cover should be removed carefully because it includes volume the air flow sensor.

5. Remove the air cleaner filter.
6. Insert in a new air cleaner filter and clamp the air cleaner filter cover closed.



COOLING SYSTEM

Check the cooling system for damaged hoses, loose or leaking connections.

Antifreeze

The engine cooling system is provided with a mixture of 50% ethylene glycol anti-freeze and 50% water at the time of manufacture. (For the vehicles of tropical area, the engine cooling system is provided with a mixture of 40% ethylene glycol anti-freeze and 60% water at the time of manufacture.)
Since the cylinder head and engine coolant pump body are made of aluminum alloy casting, be sure to use a 30 to 60% ethylene glycol antifreeze coolant to provide corrosion protection and freezing prevention.

CAUTION
If the concentration of the antifreeze is below 30%, the anticorrosion property will be adversely affected. In addition, if the concentration is above 60%, both the antifreezing and engine cooling properties will decrease, adversely affecting the engine. For these reasons, be sure to maintain the concentration level within the specified range.

Measurement of Antifreeze Concentration

Run the engine until coolant is fully mixed. Drain some coolant (antifreeze), and measure temperature and specific gravity of the coolant. Determine concentration and safe working temperature. If the coolant is short of antifreeze, add antifreeze up to a concentration of 50%.

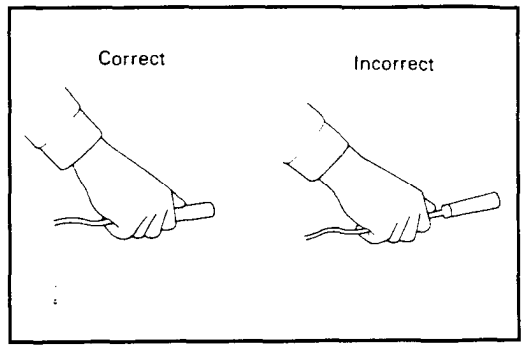
Replacement the Engine Coolant

1. Set the temperature control level to the hot position.
2. Remove the radiator cap.

   CAUTION
   Remove cap slowly as the system is pressurized and the coolant may be hot.

3. Loosen the drain plug to drain the coolant.
4. Drain the coolant from the reserve tank.
5. After draining the coolant, tighten the drain plug securely.
6. Supply the coolant into the radiator until it is filled up to its filler neck.
7. Fill into the reserve tank with coolant.
8. After warming the engine until the thermostat opens, remove the radiator cap and check the coolant level.
9. Fill the radiator with coolant up to the filler neck, and install the radiator cap securely.
10. Fill the reserve tank with coolant up to the “FULL” line.

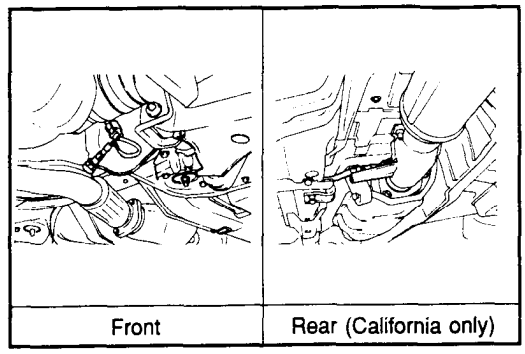
REPLACEMENT OF IGNITION CABLES



The ignition cables should be replaced periodically with new ones. After replacing, make sure that the ignition cables and terminals are properly connected and fully seated.

N O T E
When disconnecting an ignition cable be sure to hold cable cap. If the cable is disconnected by pulling on the cable alone an open circuit might result.

REPLACEMENT HEATED OXYGEN SENSOR



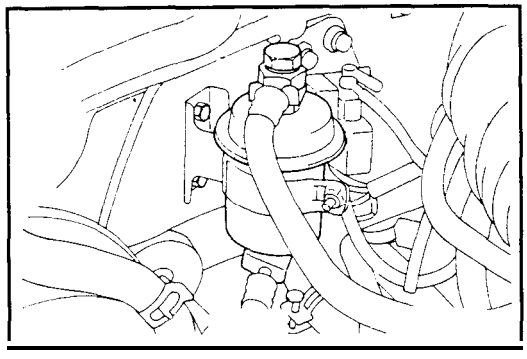
The heated oxygen sensor is a device which controls the fuel mixture. If the heated oxygen sensor is damaged, the exhaust-gas cleaning effect as well *as* driveability deteriorates. Therefore, it should be replaced periodically with a new one.

FUEL SYSTEM

Tank, Lines And Connections

1. Check for damage or leakage in the fuel lines and connections.
2. Inspect the surface of fuel hoses for heat and mechanical damage. Hard and brittle rubber, cranking, checking, tears, cuts, abrasions and excessive swelling indicate deterioration of the rubber.
3. If the fabric casing of the rubber hose is exposed by cracks and abrasions in the fuel system, the hoses should be changed.

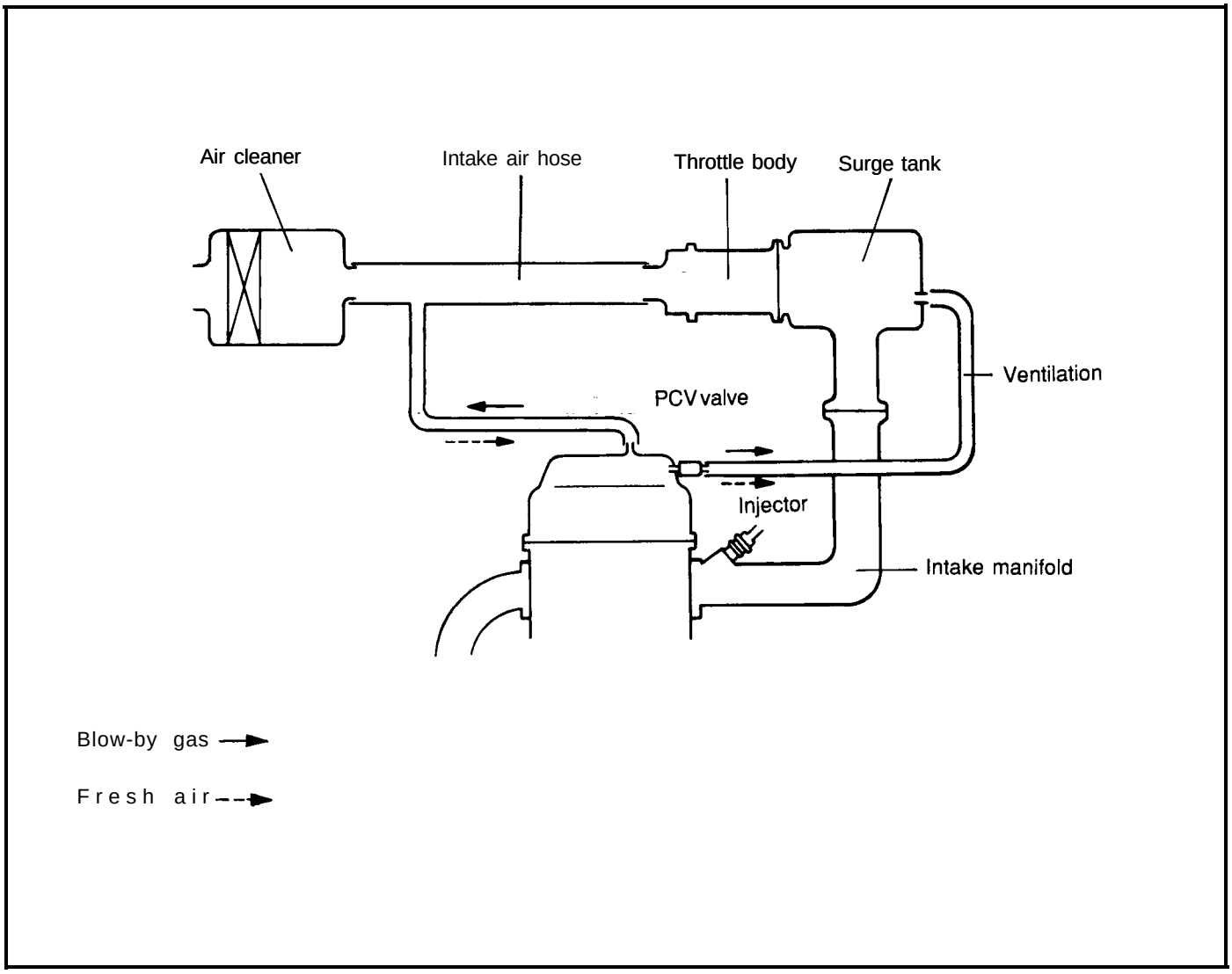
Fuel Filter



The fuel filter should be replaced regularly because its performance is reduced by dirt and water collected over an extended period of use. Replace as required.

CRANKCASE EMISSION SYSTEM (PCV valve)

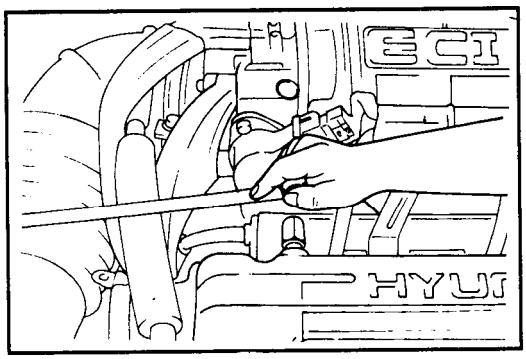
The crankcase ventilation system must be kept clean to maintain good engine performance.
Periodic servicing is required to remove combustion By-products from the PCV valve.



1. Disconnect the ventilation hose from the positive crankcase ventilation (PCV) valve. Then, remove PCV valve from the rocker cover and reconnect it to the ventilation hose.
2. Idle the engine and put a finger to the open end of PCV valve to make sure that intake manifold vacuum is felt on the finger.

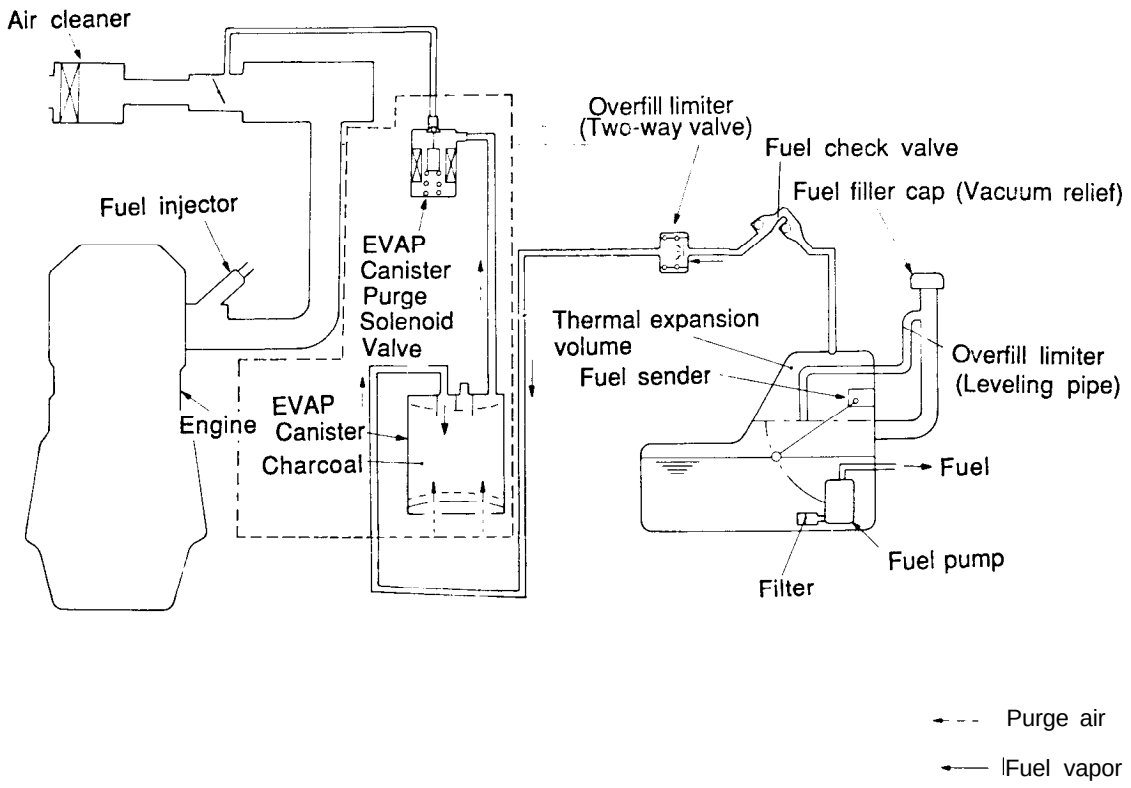
   NOTE
   At this time, the plunger inside the PCV valve should move back and forth.

3. If vacuum is felt, replace the PCV valve and clean the ventilation hose in cleaning solvent or replace if necessary.



EVAPORATIVE EMISSION SYSTEM

1. If the fuel-vapor vent line is clogged or damaged, a fuel-vapor mixture excapes into the atmosphere causing excessive emissions. Disconnect the line at both ends, and blow it clean with compressed air. Remove the filler cap from the filler pipe and check to see if there is evidence that the packing makes improper contact to the filler pipe.
2. The overfill limiter (Two-way valve) installed on the vapor line between the EVAP canister inlet and fuel tank outlet should be checked for correct operation.



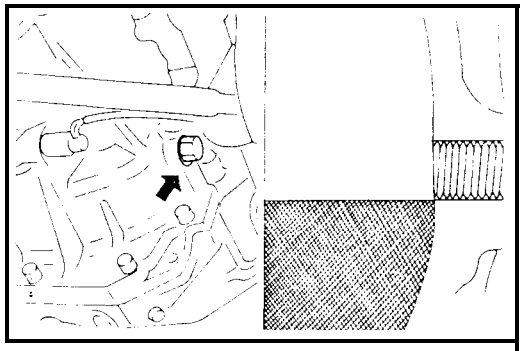
EVAP CANISTER (Replacement)

If the EVAP canister filter becomes clogged, the purge airvolume will decrease and the EVAP canister should be reduced.

MANUAL TRANSAXLE (Inspect oil level)

Inspect each component for evidence of leakage, and check the oil level by removing the filler plug. If the oil is contaminated, it is necessary to replace it with new oil.

1. With the vehicle parked at a level place, remove the filler plug and make sure that oil level is at the same level as the plug hole.
2. Check to be sure that the transaxle oil is not dirty.



TRANSAXLE OIL (Replacement)

1. With the vehicle parked at a level place, remove the magnetic drain plug to drain transaxle oil.
2 Replace waswer with a new one and install the magnetic plug;
3. Pump transaxle oil (through the filler plug hole) until the oil level is at the same level as the plug hole.

Transaxle oil capacity :
1.8 liters (1.9 U.S. qts., 1.6 Imp. qts.)

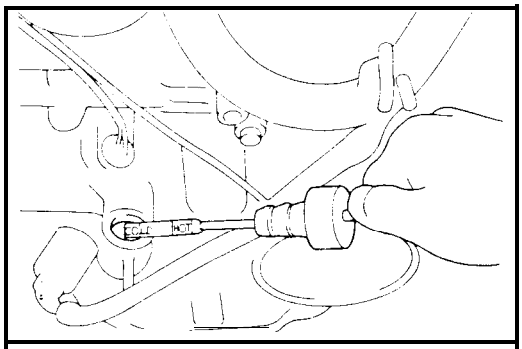
AUTOMATIC TRANSAXLE (Change fluid)

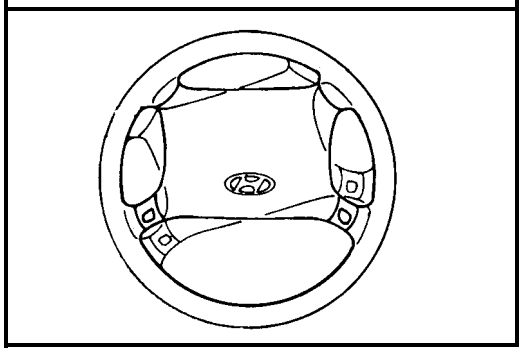
Drain the fluid and check whether there is any evidence of contamination.

Replenish with new fluid after the cause of any contamination has been, corrected.

1. Remove drain plug at differential bottom to let fluid drain.
2. Place a drain container with large opening under the transaxle oil pan.
3. Loosen oil pan bolts and tap pan at one corner to break it loose allowing fluid to drain, then remove oil pan.
4. Check the oil filter for clogging and damage and replace if necessary.
5. Clean drain plug and tighten drain plug with gasket to 30-35 Nm (300-350 kg.cm, 22-25 lb.ft).
6. Clean both gasket surfaces of transaxle case and oil pan.
7. Install oil pan with new gasket and tighten oil pan bolts to 10-12 Nm (100-120 kg.cm, 7.5-8.5 lb.ft).
8. Pour 4 liters (4.2 U.S.qts., 3.5 Imp.qts.) of AFF into case through dipstick hole. [Total quantity of ATF required is approx. 6.1 liters (6.4 U.S.qts., 5.4 Imp.qts.). However, approx. 4.5 liters (4.8 U.S.qts., 4.0 Imp.qts.) of fluid can be replaced, the ballance of the fluid remains in the torque converter.]

9. Start engine and allow to idle for at least two minutes. Then, with parking brake on, move selector lever momentarily to each position., ending in “N” Neutral position.
10. Add sufficient ATF to bring fluid level to lower mark.
    Recheck fluid level after transmission is at normal operating temperature.
    Fluid level should be between upper and lower marks of “HOT” range. Insert dipstick fully to prevent dirt from entering transmission.





INSPECT STEERING LINKAGE

1. Check steering wheel freeplay.

— Maximum steering wheel freeplay ..... 30 mm (1.181 in.)

2. Check steering linkage for looseness and damage as follows.
   1) Tie rod ends do not have excessive play.
   2) Dust seals and boots are not damaged.
   3) Boot clamps are not loose.

POWER STEERING OIL PUMP BELT (Check and service as required)

1. Inspect the belt for evidence of cuts and cracks. Replace, if necessary.
2. Check belt for proper tension. If necessary, adjust the belt tension as follows.
   1) Push the belt with a force of 98 N (22 lb) at a point halfway between the power steering oil pump pulley and engine coolant pump pulley. The belt deflection should be 6 to 9 mm (0.24-0.35 in.)
   2) If belt deflection is not within specified limits, loosen oil pump mounting bolt, and move the oil pump to obtain proper belt deflection at 98 N (22 lb) force.

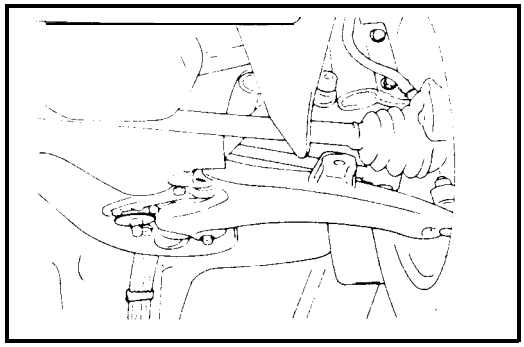
POWER STEERING FLUID LEVEL (Inspect fluid level)

1. Park the vehicle on a flat, level surface, start the engine, and then turn the steering wheel several times to raise the temperature of the fluid to approximately 50°C (122°F).
2. With the vehicle still idling, turn the wheel all the way to the left and right several times.
   Check the fluid in the oil reservoir for foaming, check the fluid level, and add fluid in the oil reservoir through the oil filler if necessary.

POWER STEERING HOSES (Check for deterioration or leaks)

1. Check the hose connections for fluid leaks.
2. The power steering hoses should be replaced if there are severe surface cracking, pulling, scuffing or worn steps. Deterioration of the hoses could cause premature failure.

BALL JOINT AND STEERING LINKAGE SEALS, STEERING AND DRIVE SHAFT BOOTS



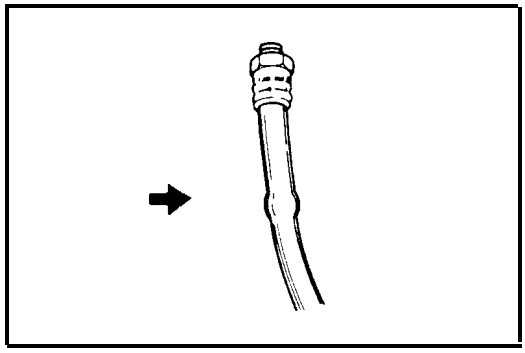
1. These components, which are permanently lubricated at the factory, do not require periodic lubrication. Damaged seals and-boots should be replaced to prevent leakage or contamination of the grease.
2. Inspect the dust cover and boots for leakage and damage. Replace them if defective.

REAR WHEEL BEARINGS (Inspect for grease leaks)

Inspect for evidence of grease leakage around the hub cap and the back of the hub. If there is leakage of grease, remove the hub and inspect its oil seal for damage. Clean the grease off the hub and bearing and repack with specified new grease.

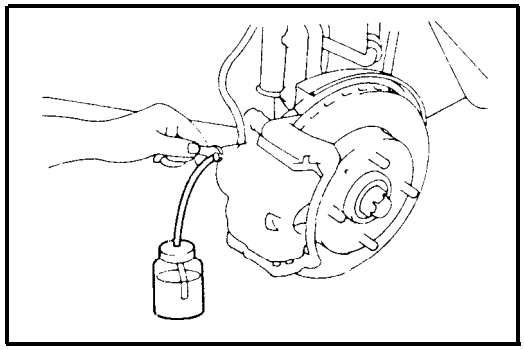
Specified grease :
Multipurpose grease SAE J310a, NLGI No. 2

INSPECT BRAKE LINE



1. Check all brake pipes and hoses for damage, wear, cracks, corrosion, leaks, bends, twists.
2. Check all clamps for tightness.
3. Check that the lines are clear of sharp edges, moving parts and the exhaust system.

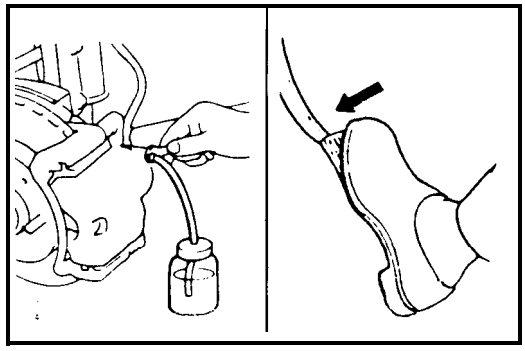
CHANGING OF THE BRAKE FLUID



1. Refer to page 58-5 for air-bleeding procedures.
2. Connect a vinyl tube to the bleeder screw of each wheel cylinder. Put the other end of the vinyl tube in a vessel for receiving the brake fluid.

3. Depress the brake pedal a few times. Then loosen the bleeder (with the brake pedal still depressed), and tighten it after the brake fluid stops flowing.
4. Repeat the above operation until no air bubbles are in the brake fluid.
5. Repeat these steps for the other cylinders.
6. Add fresh brake fluid up to the "MAX" level in the reserve tank.

Brake fluid ..... DOT 3 or equivalent



CHECKING TIRE INFLATION PRESSURE

Check the Tire inflation Pressures as Follows.

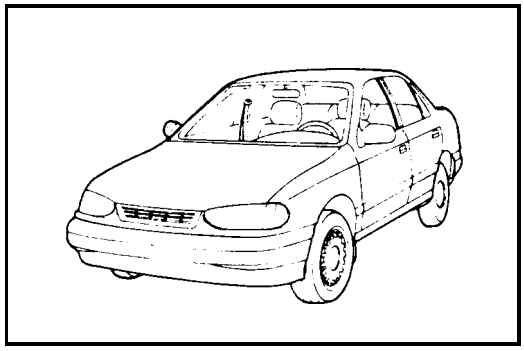
TIRE INFLATION PRESSURE (Check with Tires Cool)

Tire size	Front	Rear
P175/65 HR 14 P185/60 HR 14	200 kPa (29 psi)	200 kPa (29 psi)
T125/70 D 15 (Temporary)	414 kPa (60psi)	414 kPa (60 psi)

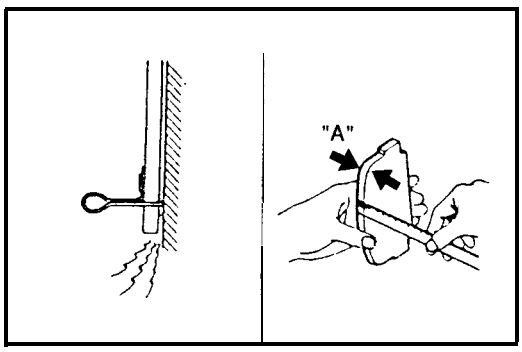
ROAD TEST

Drive the vehicle and check for abnormal conditions.

1. Check for oil, fluid, fuel, engine coolant and exhaust gas leaks.
2. Check free play of clutch pedal and brake pedal.
3. Check operation of brake booster.
4. Check operation of service brake and parking brake systems.
5. Check stroke of parking brake lever.
6. Check driveability of engine.
7. Check condition of instruments, gauges, indicators, exterior lamps, heater and ventilators.
8. Check abnormal noise.



FRONT AND REAR DISC BRAKE PADS



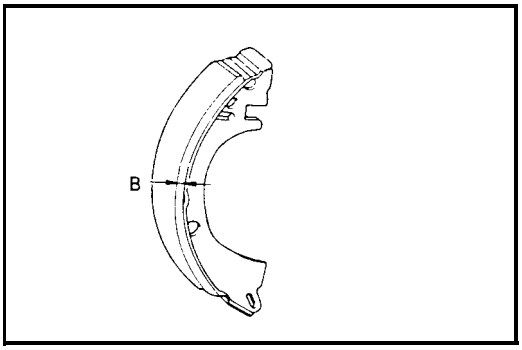
Check for fluid contamination and wear. Replace complete set of pads if defective.

NOTE:
If a squealing or scraping noise occurs from the brakes during driving, check rod pad wear indicator contacting the disc, the brake pad should be replaced.

CAUTION
The pads for the right and left wheels should be replaced at the same time. Never "split" or intermix brake pad sets.
All pads must be replaced as a complete set.

Thickness of pad lining "A" [Limit]	2.0 mm (0.079 in.)

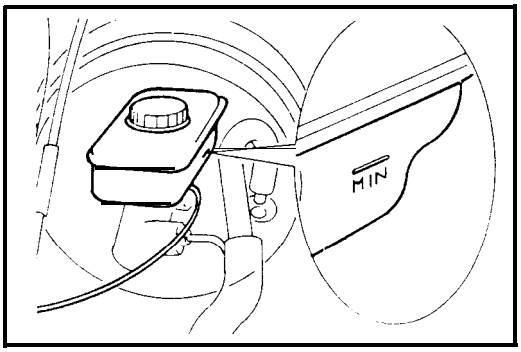
REAR DRUM BRAKE LININGS AND REAR WHEEL CYLINDERS



1. Remove the brake drum and check the thickness of brake shoe lining for wear. Check the automatic brake adjusting system by hand to see if it operates smoothly. Also see if the gears are in proper mesh with each other. To assure smooth functioning, apply a very thin coat of grease to the friction surface of adjuster and link shaft.
2. Inspect the wheel cylinder boots for evidence of a brake fluid leak. Visually check the boots for cuts, tears or heat cracks. (A slight amount of fluid on the boot may not be a leak, but may be preservative fluid used at assembly.)
   1) Check the brake shoes for wear.

Thickness of lining "B" [Limit]	1.5 mm (0.059 in.)

CHECKING THE BRAKE FLUID LEVEL



1. Visually check the level of the brake fluid in the reserve tank of the master cylinder.
2. The level should be between the "MAX" and "MIN" marks.
3. If the level is lower than the "MIN" marks, add fresh brake fluid up to the "MAX" mark.