Chapter 3 Cooling, heating and air conditioning systems

Contents

Specifications

General

Radiator cap pressure rating	11 to 15 PSI
Thermostat rating	
B1600 through B2000	180° F
B2200 and B2600	188° F

Torque specifications

	Ft-lbs
Thermostat housing cover nuts/bolts	
B2200	14 to 22
All others	
6mm nuts/bolts	5 to 7
8mm nuts/bolts	12 to 17
Water pump bolts	
B2200	14 to 19
B2600	104 to 122 in-lb
All others	
6mm bolts	5 to 7
8mm bolts	12 to 17

1 General information

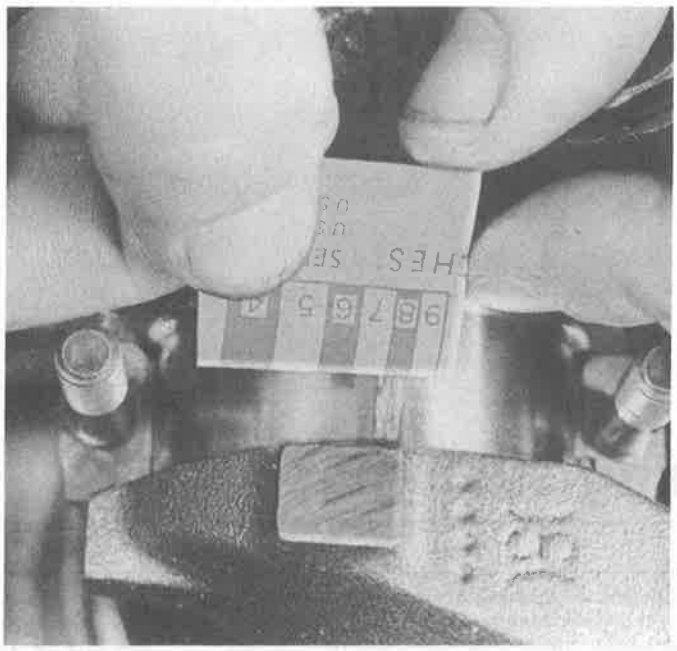
Refer to illustration 1.2

The components of the cooling system are the radiator, upper and lower radiator hoses, water pump, thermostat, radiator cap with pressure relief valve and heater hoses.

The principle of the system is that coolant in the bottom of the radiator circulates up through the lower radiator hose to the water pump, where the pump impeller pushes it around the block and heads through the various cast-in passages to cool the cylinder bores, combustion surfaces and valve seats **(see illustration)**. When sufficient heat has been absorbed by the coolant, and the engine has reached operating temperature, the coolant moves from the cylinder head past the now open thermostat into the top radiator hose and into the radiator header tank. The coolant then travels down the radiator tubes where it is rapidly cooled by the natural flow of air as the vehicle moves down the road. A multi-blade fan, mounted on the water pump pulley, assists this cooling action. The coolant now reaches the bottom of the radiator and the cycle is repeated.

When the engine is cold the thermostat remains closed until the coolant reaches a pre-determined temperature (see the Specifications). This assists rapid warm-up.

The system is pressurized by a spring-loaded radiator filler cap, which prevents premature boiling by increasing the boiling point of the coolant.



24.17 Measuring the width of the crushed Plastigage to determine the rod bearing oil clearance (be sure to use the correct scale — standard and metric scales are included)

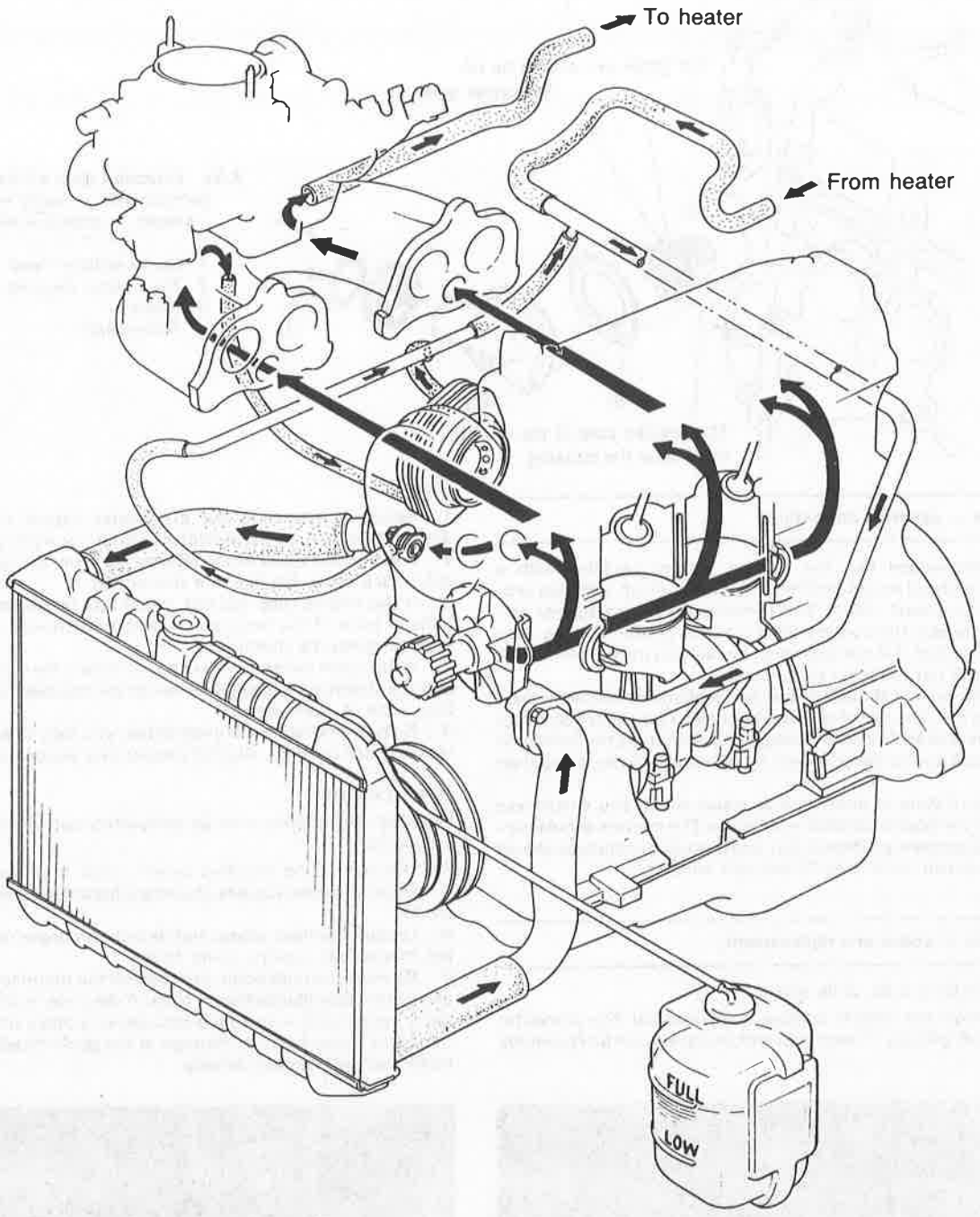
21 Slide the connecting rod back into place on the journal, remove the protective hoses from the rod cap bolts, install the rod cap and tighten the nuts to the specified torque. Again, work up to the torque in three steps.
22 Repeat the entire procedure for the remaining pistons/connecting rods.
23 The important points to remember are . . .
a) Keep the back sides of the bearing inserts and the insides of the connecting rods and caps perfectly clean when assembling them.
b) Make sure you have the correct piston/rod assembly for each cylinder.
c) The arrow or F mark on the piston must face the front of the engine.
d) Lubricate the cylinder walls with clean oil.
e) Lubricate the bearing faces when installing the rod caps after the oil clearance has been checked.

24 After all the piston/connecting rod assemblies have been properly installed, rotate the crankshaft a number of times by hand to check for any obvious binding.
25 As a final step, the connecting rod end play must be checked. Refer to Section 12 for this procedure.
26 Compare the measured end play to the Specifications to make sure it's correct. If it was correct before disassembly and the original crankshaft and rods were reinstalled, it should still be right. If new rods or a new crankshaft were installed, the end play may be inadequate. If so, the rods will have to be removed and taken to an automotive machine shop for resizing.

25 Initial start-up and break-in after overhaul

Warning: *Have a fire extinguisher handy when starting the engine for the first time.*

1 Once the engine has been installed in the vehicle, double-check the engine oil and coolant levels.
2 With the spark plugs out of the engine and the ignition system disabled (see Section 3), crank the engine until oil pressure registers on the gauge or the light goes out.
3 Install the spark plugs, hook up the plug wires and restore the ignition system functions (Section 3).
4 Start the engine. It may take a few moments for fuel to reach the carburetor, but the engine should start without a great deal of effort.
Note: *If backfiring occurs through the carburetor, recheck the valve timing and ignition timing.*
5 After the engine starts, it should be allowed to warm up to normal operating temperature. While the engine is warming up, make a thorough check for fuel, oil and coolant leaks.
6 Shut the engine off and recheck the engine oil and coolant levels.
7 Drive the vehicle to an area with minimum traffic, accelerate at full throttle from 30 to 50 mph, then allow the vehicle to slow to 30 mph with the throttle closed. Repeat the procedure 10 or 12 times. This will load the piston rings and cause them to seat properly against the cylinder walls. Check again for oil and coolant leaks.
8 Drive the vehicle gently for the first 500 miles (no sustained high speeds) and keep a constant check on the oil level. It is not unusual for an engine to use oil during the break-in period.
9 At approximately 500 to 600 miles, change the oil and filter and retorque the cylinder head bolts (if the gasket manufacturer recommends it).
10 For the next few hundred miles, drive the vehicle normally. Do not pamper it or abuse it.
11 After 2000 miles, change the oil and filter again and consider the engine broken in.



1.2 Coolant flow diagram – typical

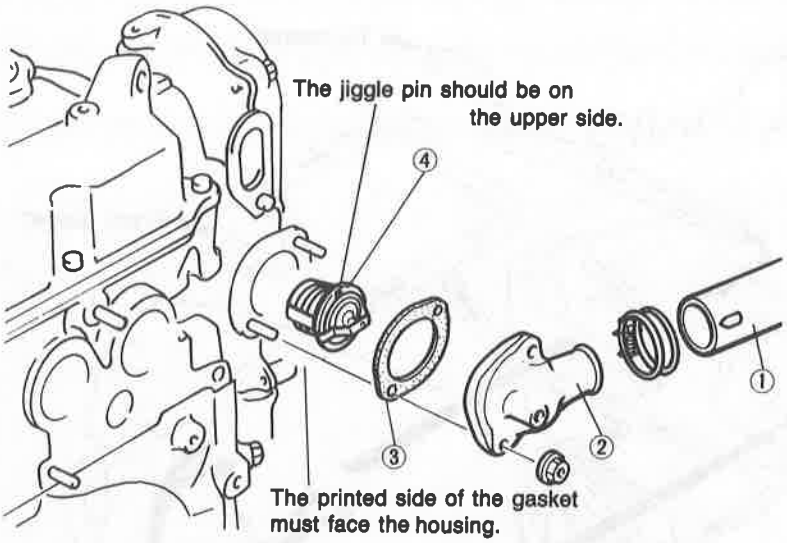
If the coolant temperature goes above this increased boiling point, the extra pressure in the system forces the radiator cap internal spring-loaded valve off its seat and exposes the overflow hose, down which displaced coolant escapes into the coolant recovery reservoir.

The coolant recovery system consists of a plastic reservoir into which the overflow coolant from the radiator flows when the engine is hot. When the engine cools, coolant is drawn back into the radiator from the reservoir and maintains the system at full capacity.

Aside from cooling the engine during operation, the cooling system also provides the heat for the vehicles interior heater and heats the intake manifold. On vehicles equipped with an automatic transmission, the transmission fluid is cooled by a cooler attached to the base of the radiator.

On vehicles equipped with an air conditioning system, a condenser is placed ahead of the radiator.

Most radiator cooling fans incorporate either a fluid coupling or a fluid/temperature controlled coupling. The latter device comprises an oil-operated clutch and is a coiled bi-metallic thermostat which functions to permit the fan to slip when the engine is below normal operating temperature and does not require the supplementary air flow provided by the fan at normal running speed. At higher engine operating temperature, the fan is locked and rotates at the speed of the water pump pulley. The fan coupling is a sealed unit and requires no periodic maintenance. **Warning:** *The radiator cap should not be removed while the engine is hot. The proper way to remove the cap is to wrap a thick cloth around it, rotate the cap slowly counterclockwise to the detent and allow any residual pressure to escape. Do not press the cap down until all hissing has stopped, then push down and twist off.*



3.9a Exploded view of thermostat components — (early model shown — others similar)

1 Upper radiator hose
2 Thermostat housing cover
3 Gasket
4 Thermostat

2 Antifreeze — general information

1 It is recommended that the cooling system be filled with a water/ethylene glycol based antifreeze solution which will give protection down to at least –20 °F. This provides protection against corrosion and increases the coolant boiling point. When handling antifreeze, take care that it is not spilled on the vehicle paint, since it will cause damage if not removed immediately.
2 The cooling system should be drained, flushed and refilled at least every alternate Fall. The use of antifreeze solutions for periods of longer than two years is likely to cause damage and encourage the formation of rust and scale due to the corrosion inhibitors gradually losing their efficiency.
3 The exact mixture of antifreeze to water which you should use depends upon the relative weather conditions. The mixture should contain at least 50 percent antifreeze, but under no circumstances should the mixture contain more than 70 percent antifreeze.

3 Thermostat — check and replacement

Refer to illustrations 3.9a, 3.9b and 3.9c

Note: *Don't drive the vehicle without a thermostat! The computer (when equipped) will stay in open loop and emissions and fuel economy will suffer.*

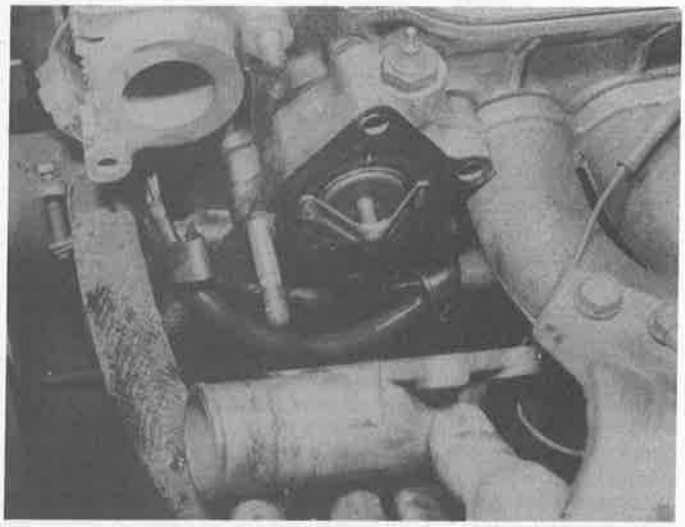
Check

1 Before condemning the thermostat, check the coolant level, drivebelt tension and temperature gauge (or light) operation.
2 If the engine takes a long time to warm up, the thermostat is probably stuck open. Replace the thermostat.
3 If the engine runs too hot, check the temperature of the upper radiator hose. If the hose isn't hot, the thermostat is probably stuck shut. Replace the thermostat.
4 If the upper radiator hose is hot, it means the coolant is circulating and the thermostat is open. Refer to the troubleshooting section for the cause of overheating.
5 If an engine has been overheated, you may find damage such as leaking head gaskets, scuffed pistons and warped or cracked heads.

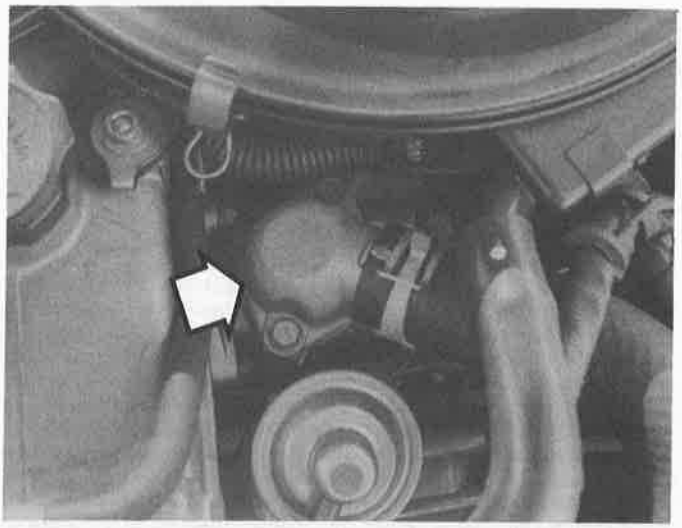
Replacement

Warning: *The engine must be completely cool before beginning this procedure!*

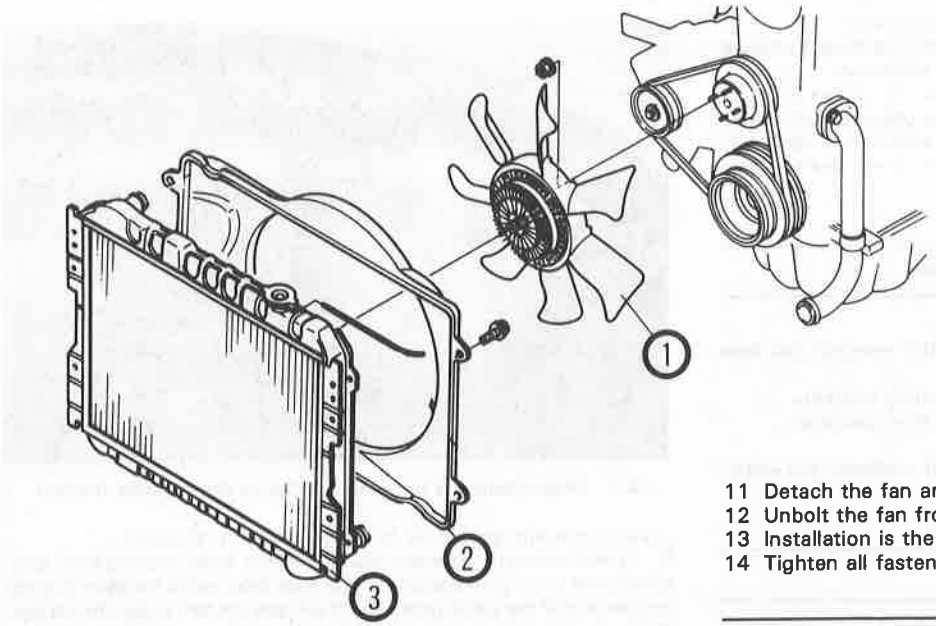
6 Disconnect the negative battery cable from the battery.
7 Drain about two quarts of coolant from the cooling system (Chapter 1).
8 Loosen the hose clamp and detach the upper radiator hose from the thermostat housing cover fitting.
9 Remove the nuts/bolts, then detach the thermostat housing cover and gasket **(see illustrations)**. **Note:** *If the cover is difficult to remove, tap it gently with a soft-face hammer or a block of wood. Don't try to pry the cover loose or damage to the gasket sealing surfaces may result and leaks could develop.*



3.9b On pre-1985 models, the thermostat housing is located at the front of the engine on the intake manifold side



3.9c On 2.6L engines, the thermostat housing (arrow) is located between the distributor and air cleaner



4.10 Fan mounting details (typical)

1 Fan/clutch assembly
2 Fan shroud
3 Radiator

10 Note how it's installed (which end is facing up), then lift out the thermostat.
11 Remove all traces of old gasket material and sealant from the housing and cover with a gasket scraper, then clean the gasket mating surfaces with lacquer thinner or acetone.
12 Apply a thin layer of RTV sealant to the gasket mating surfaces of the housing and cover, then install the new thermostat in the housing. Make sure the correct end faces up — the spring is normally directed into the housing.
13 Position a new gasket on the housing and make sure the bolt holes line up.
14 Carefully position the cover on the housing and install the nuts/bolts. Tighten them a little at a time to the specified torque — don't overtighten them or the cover may be distorted.
15 Reattach the radiator hose to the cover fitting and tighten the hose clamp. Now may be a good time to check and replace all of the cooling system hoses and clamps (see Chapter 1).
16 Refer to Chapter 1 and refill the system, then run the engine and check carefully for leaks.

4 Engine cooling fan and clutch — check and replacement

Refer to illustration 4.10

Check

1 Most engines covered in this manual are equipped with thermostatically controlled fan clutches.
2 Begin the clutch check with a lukewarm engine (start it when cold and let it run for two minutes only).
3 Remove the key from the ignition switch for safety purposes.
4 Turn the fan blades and note the resistance. There should be moderate resistance, depending on temperature.
5 Drive the vehicle until the engine is warmed up. Shut it off and remove the key.
6 Turn the fan blades and again note the resistance. There should be a noticeable increase in resistance.
7 If the fan clutch fails this check or is locked up solid, replacement is indicated. If excessive fluid is leaking from the hub or lateral play over 1/4-inch is noted, replace the fan clutch.
8 If any fan blades are bent, don't straighten them! The metal will be weakened and blades could fly off during engine operation. Replace the fan with a new one.

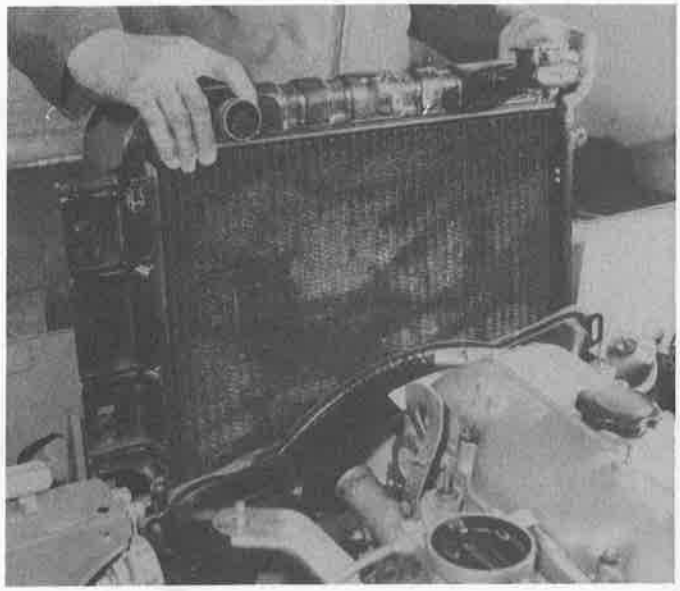
Replacement

9 Remove the fan shroud.
10 Remove the fasteners holding the fan assembly to the water pump hub **(see illustration)**.
11 Detach the fan and clutch assembly.
12 Unbolt the fan from the clutch (if necessary).
13 Installation is the reverse of removal.
14 Tighten all fasteners securely.

5 Radiator — removal and installation

Refer to illustration 5.9

1 With the engine cold, disconnect the negative battery cable.
2 Remove the undercover (belly pan).
3 Open the drain valve on the underside of the radiator and drain the coolant into a container (see Chapter 1).
4 Remove both the upper and lower radiator hoses.
5 Disconnect the reservoir hose from the radiator filler neck.
6 Remove the screws that attach the shroud to the radiator and slide the shroud toward the engine.
7 If equipped with an automatic transmission, disconnect the cooler hoses from the radiator. Place a drip pan to catch the fluid.
8 Remove the bolts that attach the radiator to the body.
9 Lift out the radiator **(see illustration)**. The shroud may be lifted out now, if desired.
10 With the radiator removed, it can be inspected for leaks or damage. If it requires repair, have a radiator shop or dealer service department perform the work as special techniques are required.
11 Bugs and dirt can be cleaned from the radiator with compressed air and a soft brush. Don't bend the cooling fins as this is done.

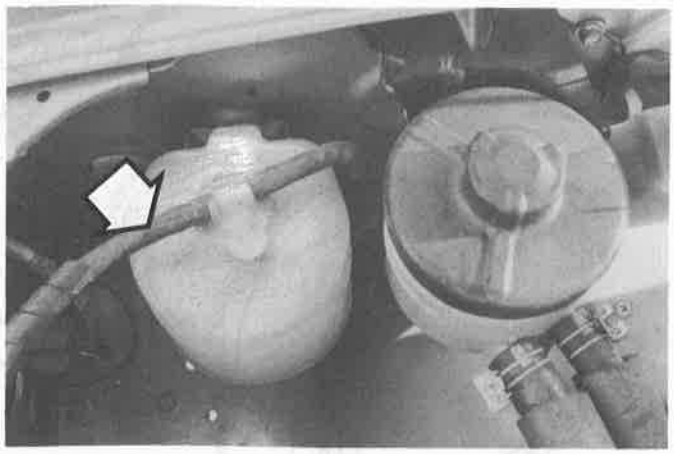


5.9 Let the fan shroud hang on the front of the engine while you lift the radiator out

12 Installation is the reverse of the removal procedure.
13 After installation, fill the cooling system with the proper mixture of antifreeze and water. Refer to Chapter 1 if necessary.
14 Start the engine and check for leaks. Allow the engine to reach normal operating temperature, indicated by the upper radiator hose becoming hot. Recheck the coolant level and add more if required.
15 On automatic transmission equipped models, check and add fluid as needed.

6 Coolant reservoir — removal and installation

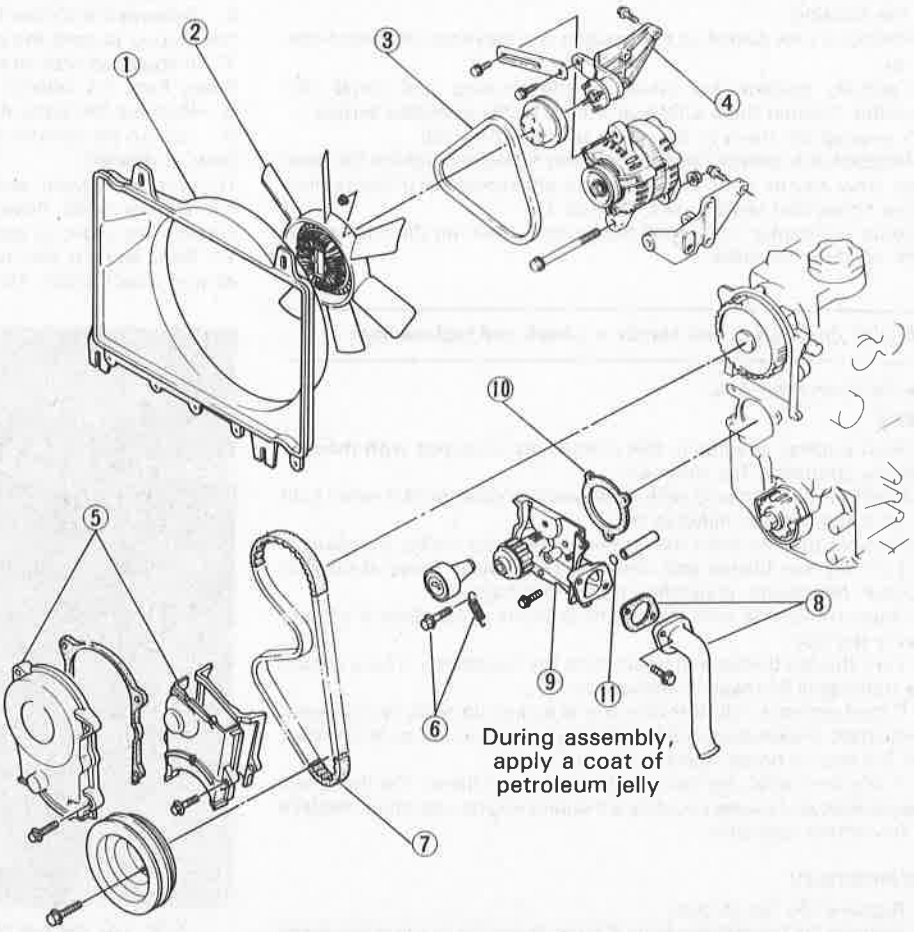
Refer to illustration 6.1
1 Disconnect the coolant overflow hose at the reservoir cap **(see illustration)**.
2 Lift the reservoir straight up from its mounting bracket.
3 Pour the contents of the reservoir into a clean container.
4 Installation is the reverse of removal.
5 Refill the container with the proper mixture of antifreeze and water. Refer to Chapter 1 if necessary.



6.1 Disconnect the hose connected to the radiator (arrow)

7 Water pump — check

1 Water pump failure can cause overheating of and serious damage to the engine. There are three ways to check the operation of the water pump while it's installed on the engine. If any one of the three following quick checks indicates water pump failure, it should be replaced immediately.
2 Start the engine and warm it up to normal operating temperature. Squeeze the upper radiator hose. If the water pump is working properly, a pressure surge should be felt as the hose is released.
3 A seal protects the water pump impeller shaft bearing from contamination by engine coolant. If the seal fails, weep holes in the top and bottom of the water pump snout will leak coolant under the vehicle. If the weep hole is leaking, shaft bearing failure will follow. Replace the water pump immediately.
4 Besides contamination by coolant after a seal failure, the water pump impeller shaft bearing can also be prematurely worn out by an improperly tensioned drivebelt. When the bearing wears out, it emits a high pitched squealing sound. If noise is coming from the water pump during engine operation, the shaft bearing has failed. Replace the water



8.7 Exploded view of water pump — models with timing belt

1 Radiator shroud
2 Cooling fan and pulley
3 Alternator drivebelt
4 Cooling fan idler bearing bracket
5 Timing belt cover, upper and lower
6 Timing belt tensioner and spring
7 Timing belt
8 Coolant inlet pipe and gasket
9 Water pump
10 Gasket
11 O-ring

pump immediately.
5 To identify excessive bearing wear before the bearing actually fails, grasp the water pump pulley and try to force it up-and-down or from side-to-side. If the pulley can be moved either horizontally or vertically, the bearing is nearing the end of its service life. Replace the water pump.

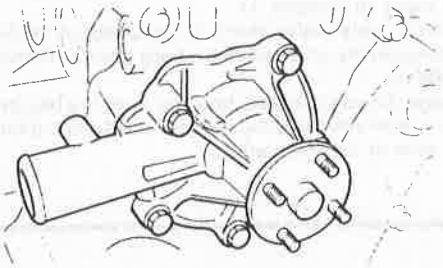
8 Water pump — removal and installation

1 Disconnect the negative cable from the battery.
2 Drain the cooling system (see Chapter 1).
3 Remove the radiator and shroud for clearance, if necessary (see Section 5).
4 Remove the cooling fan assembly (see Section 4).
5 Remove the drivebelts and any pulleys which are in the way.
6 Disconnect the coolant hoses from the water pump.

Engines with timing belt only

Refer to illustration 8.7

7 Remove the cooling fan idler bearing bracket **(see illustration)**.
8 Remove the timing belt and idler pulley (see Chapter 2, Part A).
9 Remove the coolant inlet pipe.



8.10 2.6L water pump — pre-1985 models similar

All models

Refer to illustration 8.10

10 Unbolt and detach the water pump **(see illustration)**.
11 Thoroughly clean away all traces of old gasket and O-ring material.
12 Install the pump with a new gasket, RTV sealer, and an O-ring, where applicable. On 2.6L models, slip the heater hose onto the rear of the pump during installation. Be sure the bolt holes line up with the gasket.
13 Tighten the bolts to the specified torque. The remainder of installation is the reverse of removal.
14 Refill the cooling system, run the engine and check for leaks.

9 Coolant temperature sending unit — check and replacement

Warning: *The engine must be completely cool before removing the sending unit. Antifreeze/coolant is toxic, keep it away from children and pets.*

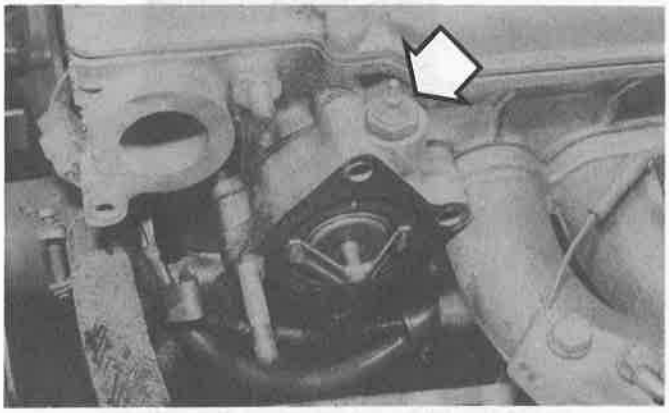
Refer to illustration 9.10

Check

1 If the coolant temperature gauge is inoperative, check the fuses first (see Chapter 12).
2 If the temperature gauge shows excessive temperature after running a while, see the *Troubleshooting* Section in the front of the manual.
3 If the temperature gauge indicates Hot shortly after the engine is started cold, disconnect the wire at the coolant temperature sensor. If the gauge reading drops, replace the sending unit. If the reading remains high, the wire to the gauge may be shorted to ground or the gauge is faulty.
4 If the coolant temperature gauge fails to show any indication after the engine has been warmed up, (approximately 10 minutes) and the fuses checked out OK, shut off the engine. Disconnect the wire at the sending unit and using a jumper wire, connect it to a clean ground on the engine. Turn on the ignition without starting the engine. If the gauge now indicates Hot, replace the sending unit.
5 If the gauge still does not work, the circuit may be open or the gauge may be faulty, see Chapter 12 for additional information.

Replacement

6 Disconnect the negative cable from the battery.
7 With the engine completely cool, remove the cap from the radiator to release any pressure and then replace the cap. This reduces coolant loss during sending unit replacement.
8 Disconnect the wiring connector from the sending unit.
9 Prepare the new sending unit for installation by applying a light coating of sealer to the threads.
10 Unscrew the sending unit from the engine **(see illustration)** and quickly install the new one to prevent excessive coolant loss.
11 Tighten the sending unit securely and connect the wiring plug.
12 Refill the cooling system and run the engine. Check for leaks and proper gauge operation.



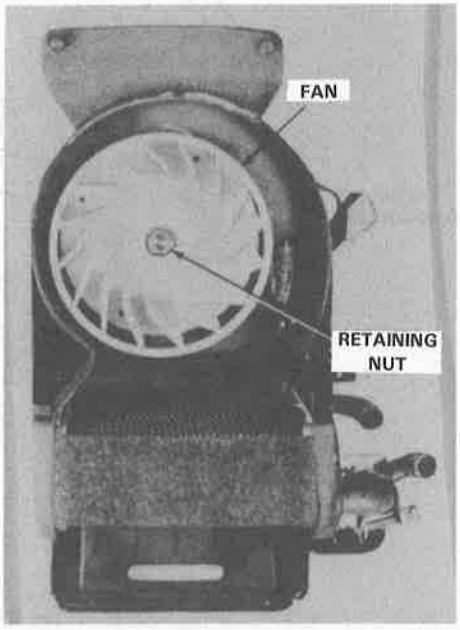
9.10 The coolant temperature sending unit is located adjacent to the thermostat housing on all models (B1600 shown)

10 Blower unit — removal and installation

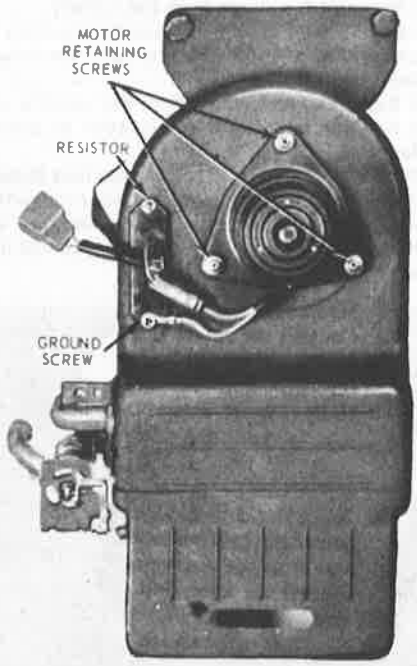
Refer to illustrations 10.2 and 10.3

Early models

1 Remove the heater assembly as described in Section 11.
2 Separate the two halves of the heater assembly (5 screws). Loosen the fan retaining nut **(see illustration)**, then lightly tap the nut to loosen the fan so that it can be removed from the motor shaft.



10.2 The fan is located on the firewall side of the heater assembly



10.3 The wiring and motor mounting screws are located on the side facing the passenger compartment

3 Remove the three motor-to-case retaining screws **(see illustration)**, disconnect the in-line connector to the resistor and the ground screw.
4 Rotate the motor slightly to remove it from the case.
5 Installation is the reverse of removal.

Later models

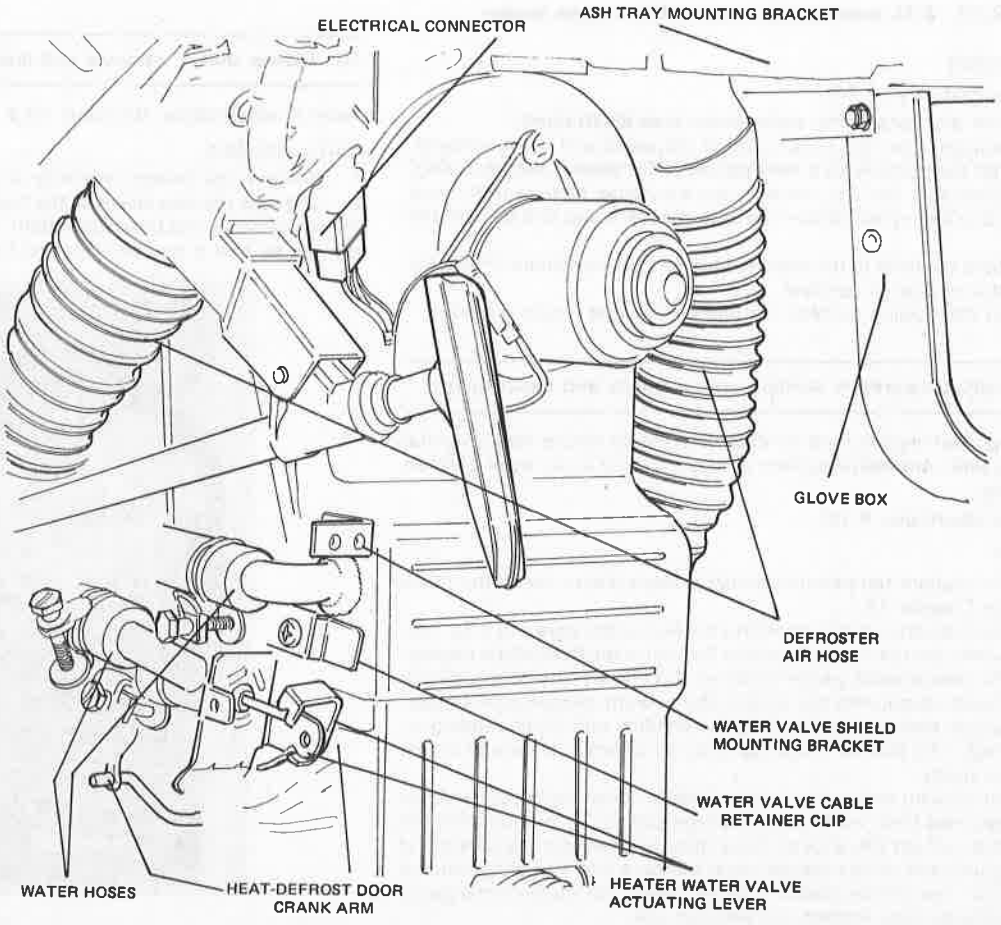
6 This procedure applies to models where the blower unit is mounted below the glove compartment adjacent to the right kick panel.
7 Disconnect the negative cable from the battery.
8 Remove the right kick panel.
9 Working under the right side of the dash, disconnect the blower motor wires adjacent to the motor.
10 Remove the blower retaining screws and detach the blower unit from the vehicle.
11 nstallation is the reverse of removal.

11 Heater components – removal, installation and adjustment

Refer to illustrations 11.2 and 11.7

Heater assembly

1 Disconnect the negative cable from the battery and drain the cooling system (refer to Chapter 1)
2 Remove the water valve shield (if equipped) at the left-hand side of the heater assembly, and loosen the hose clamps. Remove the hoses **(see illustration)**.
3 Disengage the control cable housing from the heater at the heat/defrost door, water valve and the outside/recirculation door. Disconnect each cable wire at its crank arm.



11.2 Typical heater components

4 Disconnect the fan motor wires.
5 Remove the glovebox and working in the engine compartment, remove the heater assembly retaining bolt and two retaining nuts. Later models also have a bolt inside the passenger compartment.
6 Disconnect the two defrost ducts from the heater and remove the heater assembly from the vehicle.

Heater core

7 To remove the heater core, remove the screws and separate the two halves of the heater **(see illustration)**.
8 Loosen the hose clamps and slide the heater core from the case.
9 Install the replacement core into the case, connecting the core tube to the water valve tube with the short hose and clamps.
10 Assemble the two halves of the heater and fit the retaining screws, then install the heater core to the heater assembly.
11 Position the heater assembly to the firewall, ensuring that the heater duct aligns with the air intake duct and the mounting studs enter the hoses in the firewall.
12 From the engine side of the firewall, install the nuts on the mounting studs. With an assistant lifting the heater up from inside, install the mounting bolt.
13 Connect the defrost ducts. Connect the heat/defrost door control cable wire to the door crank arm and adjust, as described below.
14 Connect the water valve control cable wire to the crank arm on the water valve actuating lever, and locate the housing in the mounting clip. Adjust as described below.
15 Insert the outside/recirculation door control cable wire into the door crank arm hole and tighten the set screw. Adjust as described below.
16 Install the glovebox and secure with the attaching screws.
17 Reconnect the fan motor.
18 Reconnect the heater core hoses and tighten the clamps.
19 Install the water valve shield, fill the cooling system and connect the battery negative cable. Run the engine and bleed the cooling system, if necessary, referring to Chapter 1.

Control cable adjustment

20 Locate the adjustment point by following the cable from the dash control assembly to its other end. Loosen the adjusting clip or screw and move the dash control lever so that the cable is withdrawn into its sheath. Move the under-dash lever toward the cable and tighten the screw or clip. Check the dash mounted control to be sure it can move through its full range of travel. Readjust as necessary.

12 Air conditioner and heater control assembly — removal and installation

Early models

1 Disconnect the negative cable from the battery and remove the ashtray and mounting bracket (3 screws).
2 Pull off the heater control knobs, then carefully pry out the control panel and remove the two illumination bulbs.
3 From beneath the instrument panel, remove the two control assembly retaining nuts.
4 Remove the nut retaining the forward end of the control assembly to the bracket on the upper section of the dashpanel.
5 Push the assembly forward and lower it from under the instrument panel. At each of the three cable connections, remove the retaining clip and disconnect the wire from the control lever.
6 When installing, connect the heat/defrost door cable wire to the upper control assembly lever, and the outside/recirculation door cable and the water valve cable wires to the center and lower levers respectively. Secure the housings in the clips.
7 Raise the control assembly up from beneath the instrument panel into the opening, ensuring that the mounting bracket stud on the upper section of the dash panel enters the stud hole in the forward end of the control assembly. Install the mounting nut.
8 Install the nuts (2) which secure the control assembly to the instrument panel and fit the two illumination bulbs.
9 Slide the control panel slots over the center levers and snap the panel into the control assembly.
10 Fit the three control knobs, install the ashtray mounting bracket and ashtray, and reconnect the battery negative cable.

11.7 Remove the retaining screws to separate the case for access to the heater core (early model shown)

Later models

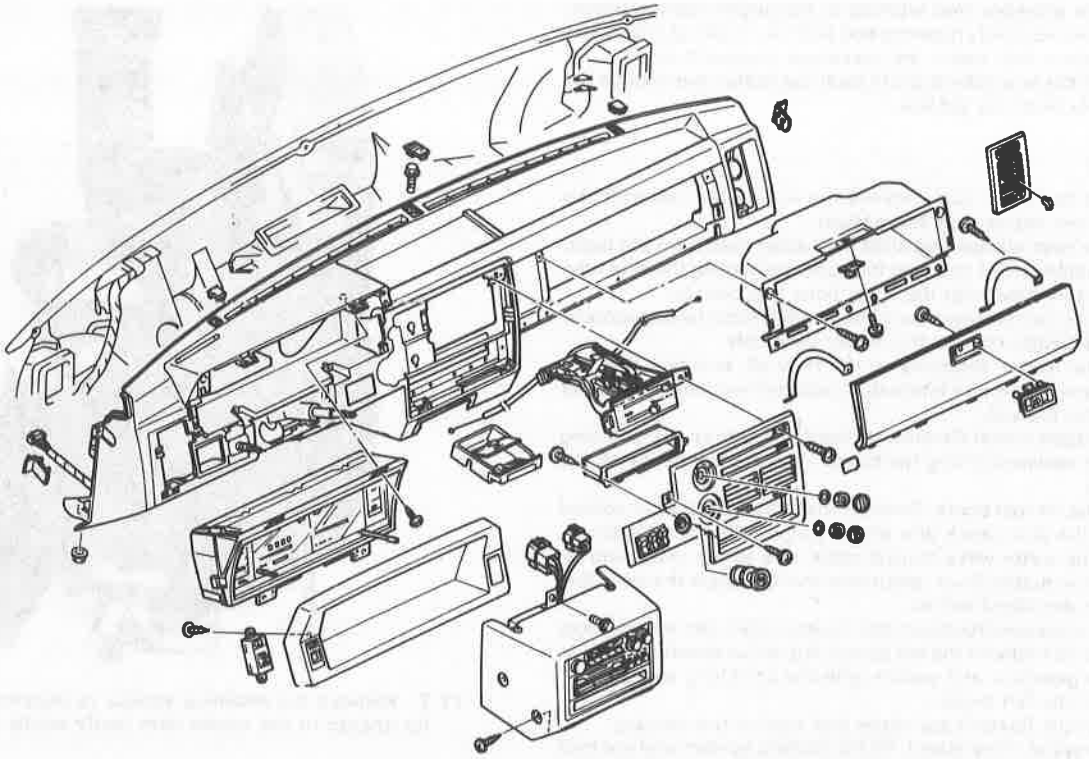
Refer to illustration 12.12

11 Disconnect the negative battery cable.
12 Remove the instrument cluster rim **(see illustration)**.
13 Remove the glove compartment liner.
14 Pull the control knobs off.
15 Remove the retaining nuts and screws and lift the face plate off.
16 Label and then disconnect the wiring and cables from the control assembly. See Section 11 for the adjustment procedure.
17 Remove the screws retaining the control assembly and carefully pull the unit from the dash.
18 Installation is the reverse of removal.

13 Air conditioning system — check and maintenance

Warning: *The air conditioning system is pressurized at the factory and requires special equipment for service and repair. Any work should be left to a dealer service department or a refrigeration shop. Do not, under any circumstances, disconnect the air conditioning hoses while the system is under pressure.*

1 The following maintenance steps should be performed on a regular basis to ensure that the air conditioner continues to operate at peak efficiency.
   a) Check the tension of the drivebelt and adjust if necessary. (Chapter 1).
   b) Inspect the condition of the hoses. Check for cracks, hardening and deterioration. **Warning:** *Do not replace A/C hoses until the system has been discharged by a dealer or air conditioning specialist.*
   c) Inspect the fins of the condenser for leaves, bugs and any other foreign material. A soft brush and compressed air can be used to remove them.
   d) Maintain the correct refrigerant charge.
2 The A/C compressor should be run for about 10 minutes at least once a month. This is particularly important during the winter months because long-term non-use can cause hardening of the internal seals.
3 Because of the complexity of the air conditioning system and the special equipment required to effectively work on it, accurate trouble-shooting and repair of the system should be left to a professional mechanic. One probable cause for poor cooling that can be determined



12.12 Exploded view of late model dash components

by the home mechanic is low refrigerant charge. Should the system lose its cooling ability, the following procedure will help you pinpoint the cause.

4 Warm the engine to normal operating temperature.
5 The hood and doors should be open.
6 Set the control mode selector lever to the Norm position.
7 Set the temperature selector lever to the Cold position.
8 Set the blower control selector knob to the Hi position.
9 With the compressor engaged, feel the evaporator inlet pipe between the expansion valve and the evaporator. Compare that to the surface of the accumulator housing.
10 If both surfaces feel about the same temperature and if both feel a little cooler than the ambient temperature, the freon level is probably okay. The problem is elsewhere.
11 If the inlet pipe has frost accumulation or feels cooler than the accumulator surface, the freon charge is low. Add freon as follows.
12 Buy an automotive air conditioner recharge kit and hook it up to the accumulator in accordance with the kit manufacturer's instructions. Add freon until both the accumulator surface and the evaporator inlet pipe feel about the same temperature. Allow stabilization time between each addition.
13 Add one additional can of refrigerant.

14 Air conditioner accumulator — removal and installation

Refer to illustration 14.4

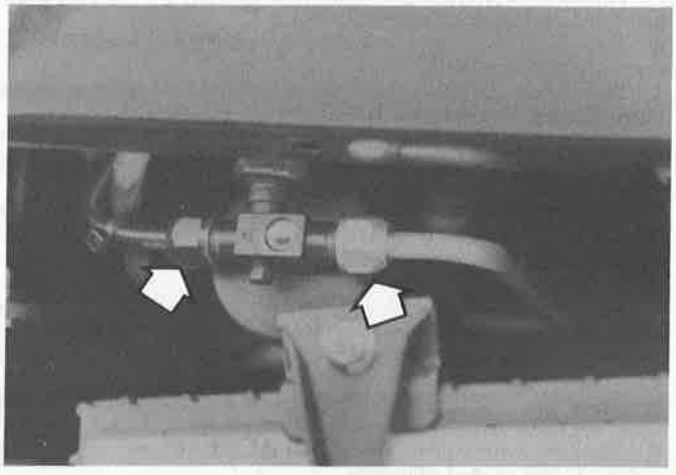
Warning: *The air conditioning system is under high pressure. Do not loosen any hose fittings or remove any components until after the system has been discharged by a dealer service department or automotive air conditioning shop. After the system has been discharged, residual pressure may still remain — be sure to wear eye protection when loosening line fittings!*

1 Have the system discharged.
2 Disconnect the negative cable from the battery.
3 Disconnect the wire from the switch near the top of the accumulator.
4 Detach the refrigerant lines from the accumulator **(see illustration)** and then cap the open fittings.
5 Unbolt the accumulator from the engine compartment, removing the grille, if necessary (see Chapter 11).
6 Installation is the reverse of removal. Be sure to use new O-rings on the line fittings.
7 Have the system evacuated and recharged by an air conditioning shop or service station.

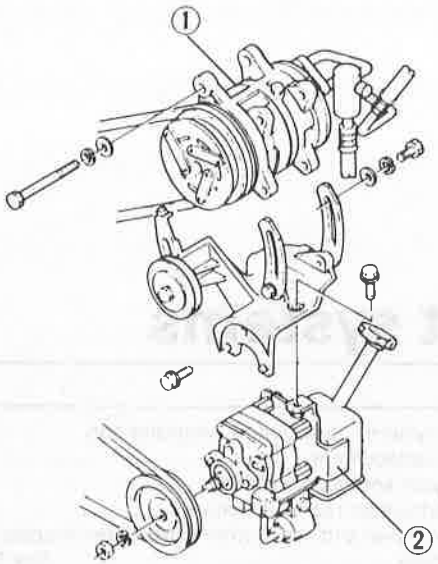
15 Air conditioner compressor — removal and installation

Refer to illustration 15.6

Warning: *The air conditioning system is under high pressure. Do not loosen any hose fittings or remove any components until after the system has been discharged by a dealer service department, automotive*



14.4 Detach the refrigerant lines (arrows) from the accumulator



15.6 Exploded view of typical A/C compressor mount

1 Compressor 2 Power steering pump

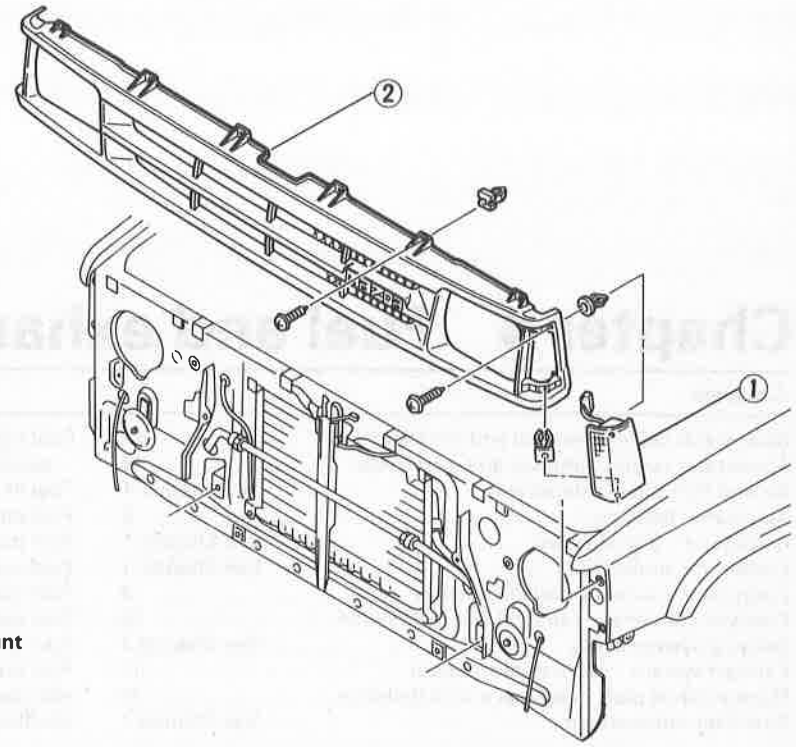
air conditioning shop or service station. After the system has been discharged, residual pressure may still remain – be sure to wear eye protection when loosening line fittings!

1 Have the system discharged.
2 Disconnect the negative battery cable from the battery.
3 Remove the drivebelt (Chapter 1).
4 Detach the wire harness from the compressor.
5 Unbolt the refrigerant hose manifold from the compressor and cap all the fittings.
6 Unbolt the compressor and remove it from the vehicle **(see illustration)**.
7 Installation is the reverse of removal. Refer to Chapter 1 and adjust the drivebelt.
8 Have the system evacuated and recharged by an air conditioning shop or service station.

16 Air conditioner condenser – removal and installation

Refer to illustration 16.4

Warning: *The air conditioning system is under high pressure. Do not loosen any hose fittings or remove any components until after the system has been discharged by a dealer service department, automotive air conditioning shop or service station. After the system has been discharged, residual pressure may still remain – be sure to wear eye protection when loosening line fittings!*



16.4 Remove the vertical tie bar support (arrow)

1 Have the system discharged.
2 Disconnect the negative battery cable from the battery.
3 Remove the grille as described in Chapter 11.
4 Remove the radiator tie bar support **(see illustration)**.
5 Disconnect the refrigerant lines from the condenser. Use a back-up wrench to prevent twisting the tubing.
6 Carefully lift the condenser out of the vehicle. Don't lose the rubber mounting pads. Store it upright so the oil won't run out.
7 Cap all open fittings to keep dirt and moisture out.
8 Installation is the reverse of removal. If you're replacing the condenser, drain the oil out of it into a measuring cup and record the amount. The amount drained, plus one ounce, must be replaced during recharging. Use 525 viscosity refrigerant oil.
9 Have the system evacuated, recharged and leak tested by an air conditioning shop or service station.