



## GENERAL INFORMATION (Continued)

**CAUTION:** Before going down a steep or long grade, reduce speed and shift the transmission into a lower gear or lower range to control vehicle speed. Try not to hold the brake pedal down too long or too often. This could cause the brakes to get hot and not work as well.

### DRIVING ON SLIPPERY SURFACES

Take care when on slippery surfaces, especially when speeding up or when shifting into lower gear. Sudden acceleration or engine braking action (due to shifting to a lower gear) could cause the front wheels to skid.

### POWER STEERING

If the power steering system goes out because the engine has stalled or due to failure, the vehicle may still be steered. However, much greater effort is required, especially in sharp turns or at low speeds.

### TILT STEERING WHEEL

The steering wheel can be tilted up above normal position to provide additional room for entrance and exit as well as many different selected driving positions. The tilt mechanism is located on the left side of the steering column just behind the directional signal. To operate, pull the lever towards you and move the steering wheel to your desired position; then release the lever. This permits individual selection for the most comfortable positions for all driving conditions. On longer trips, the steering wheel position may be changed to help minimize tension and fatigue.

### HAZARD WARNING FLASHER

**NOTE:** Operation of the hazard warning flasher is covered on page 18.

### HORN

The horn on your vehicle is actuated by firmly pressing on the pad in the center of the steering wheel. Use of the horn should be kept at a minimum. However, should it ever become necessary to give a warning to a pedestrian or another motorist, use it.

## FLOOR CONTROLS

### BRAKING SYSTEM

The regular braking system is designed for braking performance under a wide range of driving conditions even when the vehicle is loaded to its full rated vehicle load.

**CAUTION:** Driving through water deep enough to wet the brakes may cause the brakes not to work as well. As a result, the vehicle will not slow down at the usual rate, and it may pull to the right or left. After checking to the rear for other vehicles, apply the brakes lightly to check whether this has happened. To dry them quickly, lightly apply the brakes. At the same time, keep a safe forward speed, with plenty of clear space ahead, to the rear, and to the sides. Do this until the brakes return to normal.

### POWER BRAKES

- If power assist is lost because of a stalled engine or other reasons, the brakes can normally still be applied with power assist at least two times using reserve power.
- The system is designed to bring the vehicle to a full stop on reserve power if the brake pedal is applied once and held down. However, the reserve power is partly used up each time the brake pedal is applied and released. Do not pump the brakes when brake power assist has been lost, except when needed to maintain steering control on slippery surfaces.
- Without power assist, the vehicle can still be stopped by pushing much harder on the brake pedal. However, the stopping distance may be longer, even though the brakes themselves remain fully operational.

### ADJUSTING BRAKES

- The only brakes that need periodical adjustment are the rear on some models. These are not self-adjusting and should be adjusted at least every 6000 miles and sooner if heavy usage occurs. They should be adjusted only by a skilled service mechanic.
- The front disc brakes adjust themselves each time the brakes are used.
- If the brake pedal goes down farther than normal it may be due to a lack of adjustment, or loss of hydraulic fluid. Proceed with utmost care to the nearest service establishment and have the brakes adjusted and the hydraulic system checked for leaks and correct functioning. See page 114 for service and adjustment functions.

**NOTE:** "Riding the brake" by resting your foot on the brake pedal when not intending to brake can cause overheated brakes. This can wear out the brake linings faster and damage the brakes themselves, as well as waste fuel.

### PARKING BRAKE

The parking brake control is on the left of the steering column, under the instrument panel and is foot operated. The release lever is just above the pedal. The pedal is connected to a warning light system and buzzer.

- To set the parking brake, push the pedal all the way down.
- For better holding power, first press down the regular brake pedal. Then hold it while setting the parking brake.
- To release the parking brake pull the release lever.
- Never drive the vehicle with the parking brake set as this may overheat the rear brakes, reducing their effectiveness and causing excessive wear or damage.

**NOTE:** The parking brake should be set first whenever leaving the driver's seat. If the vehicle is parked on a grade and the transmission selector lever is placed in "PARK" before the parking brake is set, the weight of the vehicle may exert so



## FLOOR CONTROLS (Continued)

much force on the parking pawl in the transmission that it may be difficult to pull selector lever out of "PARK." This condition is called "torque lock." To prevent this, the parking brake should be applied BEFORE moving the selector lever to "PARK." When preparing to move the vehicle, the selector lever should be moved out of the "PARK" position BEFORE releasing the parking brake. It is good driving practice to set the parking brake first, then release the transmission from "PARK," even on level surfaces. If "torque lock" does occur, it may be necessary to have another vehicle nudge this vehicle uphill to take some of the pressure off the transmission while the driver pulls on the transmission selector lever.

### BRAKE PEDAL TRAVEL

If your vehicle has the Hydro-Boost Brake System, brake pedal travel is slightly different from the brake pedal travel on other vehicles. You can bring the vehicle to a full stop by applying normal force to the brake pedal. Although there is no need to push the pedal beyond the point where it stops, by applying more force you can push it the rest of the way to the floor. A slight hissing noise may be heard when the pedal is pushed beyond the normal travel. This extra brake pedal travel and hissing noise are normal.

### HEADLIGHT BEAM CHANGER

"High" and "Low" headlight beams are controlled by the turn signal lever. The blue indicator lamp will light up when the high beams are in use. To dip or "hi-beam" the headlights, pull the turn signal lever back toward the steering wheel and when you feel it "click", release it.

## INSTRUMENT PANEL AND CONTROLS

### INSTRUMENTS

The instruments, gauges and indicator lights conveniently grouped in the instrument cluster are designed to tell you at a glance many important things about the performance of your vehicle. The following information will enable you to quickly understand and properly interpret these instruments.

### TACHOMETER

The tachometer is located to the left of the speedometer and is offered as a driving aid. It displays the R.P.M. of the engine (revolutions per minute). The peak performance of the 454-cubic-engine is at 3400 rpm. After this rpm has been obtained the horsepower and torque will drop down and the performance will decline. Do not exceed 4000 rpm except as an emergency measure. Prolonged running of the engine over 4000 rpm could cause severe damage. An adjustable pointer is sometimes fixed to the center of the tachometer dial. Set this pointer at 4000 rpm as a reminder to change gears when low or second gear is used for hill climbing.

Never change to a high gear when descending a steep hill in low or second gear unless it is safe to do so, regardless of rpm.

### SPEEDOMETER

The speedometer indicates the miles per hour and the odometer in the top half of the speedometer indicates the accumulated mileage.

NOTE: It is a federal offense to disconnect a mileage odometer or change the accumulated mileage to read less miles than the vehicle has done.

### BRAKE SYSTEM WARNING LIGHT

The regular brake is a dual system designed so that one part will provide some braking action if there is a loss of hydraulic pressure on the other part of the system. The system has a "Brake" light located in the instrument panel.

- To serve as a reminder, the "Brakes" light is designed to light while the parking brake is set and the ignition key is ON.
- The light is also designed to come on briefly during engine starting so you can check that the bulb is okay.
- Have the system repaired if the light does not come on during engine starting or when the parking brake is set.
- This warning light does not do away with the need for brake inspection and maintenance. The brake fluid level must be checked regularly.

If the light comes on and stays on when the ignition key is on, after the brake pedal has been firmly pushed down, it may mean that there is something wrong with one part of the brake system.

What to do:

1. Check that the parking brake has been released. If it has been released:
2. Pull off the road and stop carefully. And remember that:
  - Stopping distances may be longer.
  - You may have to push harder on the pedal.
  - The pedal may go down farther than normal.

Continued driving without getting it repaired could be very dangerous.

- There is also an "Apply Parking Brake" light next to the "Brakes" light on the dashboard. This light will come on and a buzzer will sound when the vehicle is put into "Park" gear until the Park Brake foot pedal is applied. Then the "Apply Parking Brake" light will go out and the "Brakes" light will come on. The "Brakes" light will go out when the ignition is turned off or to accessory. Failure of the switch to function correctly may also cause the "Brake" light to stay on.
3. Try out the brakes by starting and stopping on the road shoulder; then:
    - If you judge it to be safe, drive cautiously at a safe speed to the nearest dealer for repair or have vehicle towed to dealer for repair.



## INSTRUMENT PANEL & CONTROLS (Continued)

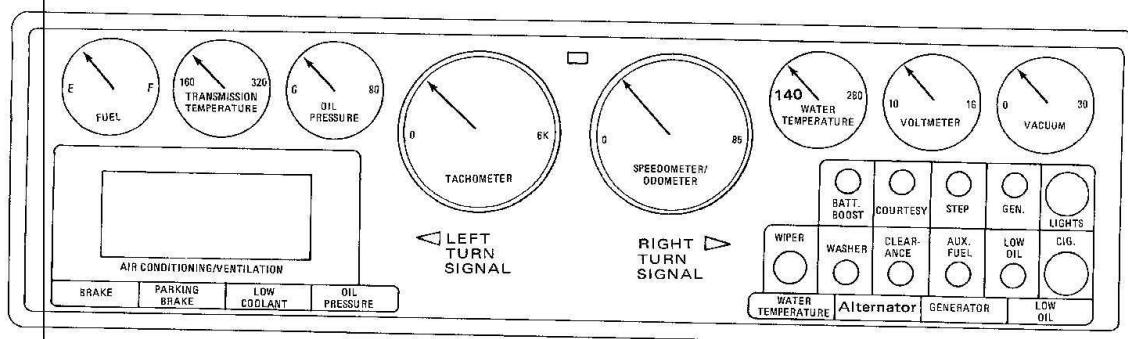


Figure 8 - Instrument Panel and Controls

### VACUUM GAUGE

The vacuum gauge is offered not only as a tuning aid and diagnostic tool to your service mechanic, but also as a fuel economy driving aid. The higher the vacuum gauge reads the better your fuel economy during driving.

**IMPORTANT NOTE-** In your driving habits, train yourself to keep a good watch on all your gauges and warning lights. Not only will it improve your driving awareness, it may save you costly repairs! Or even help prevent an accident.

### TRANSMISSION OIL TEMPERATURE GAUGE

The transmission oil temperature gauge indicates the oil temperature in the transmission oil pan and aids in determining frequency of oil changes. Under normal driving conditions the gauge will read 170°F to 220°F. Climbing a long hill on a hot day or towing a trailer will cause a higher reading. Consistent higher readings above 220°F will require more frequent oil changes. Avoid exceeding 320°F for long periods of time as the transmission oil deteriorates rapidly at 400° - 500°F and the transmission may be damaged.

### VOLTMETER

The voltmeter indicates the automotive electrical system voltage. With engine not running and ignition switch "ON", the gauge will show 11 to 12-volts. Running the engine at fast idle with no electrical load, will cause a voltage indication of approximately 14 volts. Turning on the headlights and air conditioning will cause the voltmeter reading to decrease. A reading continuously far to the left or right indicates an electrical system failure. The cause of failure should be corrected.

### ELECTRONIC OIL DIPSTICK (Optional)

The engine oil level may be checked before starting the engine and without raising the engine cover. To check the oil level the engine must be cold and the ignition "ON." Press the "Check Oil" toggle switch and hold. The light will come on, and then go out. Continue to hold down for 20 seconds. If light starts flashing, add a quart; if light does not flash, engine oil level is correct. A standard metal dipstick should be used periodically to confirm the accuracy of the electronic oil dipstick.

### THERE ARE SEVERAL SWITCHES ON THE RIGHT SIDE OF THE DASH:

**Low Oil Switch.** This enables the checking of the engine oil level without using the more standard method of using the oil dipstick at the engine.

**Auxiliary Fuel Switch.** Flipping this switch to "M" causes fuel to be drawn from the main fuel tank. Moving the switch to "A" or "Aux. Fuel" causes the fuel to be drawn from the auxiliary fuel tank. The switch also makes the fuel gauge read the fuel level in the desired tank.

**Clearance Switch.** Depressing the switch shuts off the running lights to signal other drivers on interstate highways. Releasing the switch brings the lights back on.

**Windshield Wiper and Washer Switches.** Depressing the washer switch sprays water onto the windshield. The wiper control or the switch controls the dual windshield wipers.

**Indicator Lights.** The indicator lights are designed to come on to provide the driver with additional information:

1. **Low Oil** - The light is used with the low oil switch to check the engine oil level before starting the engine.
2. **Generator** - The light comes on when the auxiliary powerplant (generator set) is operating.
3. **Alternator** - The light comes on when the ignition switch is in the "Run" position, but before the engine is started. After the engine starts, the light should go out and remain out. If the light remains on when the engine is running, have your authorized service center locate and correct the trouble.
4. **Water Temperature** - The light comes on to warn the driver that engine coolant has overheated and immediate action should be taken. See the "Engine Coolant" in "In Case of Emergency" paragraph on page 19.
5. **Oil Pressure** - The light will come on as the engine oil pressure drops below 6 psi. Occasionally, the light may flicker momentarily while the engine is running. The oil level should be checked and oil



## INSTRUMENT PANEL & CONTROLS (Continued)

added if necessary. If light stays on continuously and gauge shows no pressure, stop engine immediately and determine cause and repair.

6. **Low Coolant** — The light will come on when the coolant level in the radiator coolant recovery bottle drops below the sensor probes in the bottle. The level in the bottle is lowest when the coolant is cold and rises as the engine warms up. Add water to the coolant recovery bottle if the light comes on.

### LIGHT SWITCH

The three-position light switch controls the instrument lamps, headlamps, marker lamps, parking lamps, tail lamps, and interior lamp. Instrument light intensity can be varied by turning knob clockwise or counterclockwise. Full counterclockwise position turns on interior light in some models.

### CRUISE CONTROL

The cruise control is also a part of the turn signal lever. To set the control, slide the finger control to the "on" position and at the desired cruising speed, push the button in the end of the lever. To change the speed higher, accelerate to the higher speed and push the button again. To lower the cruise speed, slide the control to "OFF" then "ON" and push the button to set at desired speed. The cruise control will automatically disconnect if the brakes are applied.

### CRUISE CONTROL OPERATING INSTRUCTIONS

In the regulator box of your Speed Control is a safety switch which will not let the system operate until your vehicle is moving above a pre-selected low speed. At the factory this "low speed switch" is set to close between 27 and 33 mph; it should, however, be checked during the Road Test. The **Control Switch** is the switch you use to operate all features of the system described in the following paragraphs. It is installed where the turn signal lever is normally located and serves that purpose as well.

**SET SPEED** — On the control switch, move the slide button to the ON position and drive at any speed above 32 mph at which you want automatic control. Hold that speed with your foot while you press and release the SET/COAST button. One second after release, take your foot off the accelerator pedal. You can increase speed at any time with the accelerator pedal. When you release the pedal, you will return to the set speed.

**ACCELERATION** — Hold the slide button in the RESUME/ACCEL position and your vehicle will accelerate until you release it, then your vehicle will slow to your set speed and again control there. If you want to make the higher speed your new set speed, release the slide button when you reach the speed you want, and as you do, quickly press and release the SET/COAST button. Remember, you set speed as you release the button - not when you press it.

**COAST** — When you press and hold the SET/COAST button, you erase the set speed from the regulator's memory and allow the vehicle to coast. Just before you reach the lower speed you

want, release the button and it will control there, providing it is above the low speed setting.

**DISENGAGEMENT** — Depress the brake pedal about an inch and you again are in control of the vehicle speed. You can also disengage the Speed Control by pushing the slide button to OFF, but this erases the set speed from the regulator's memory.

**RESUME** — When you disengage the system with the brake, you do not erase the set speed from the regulator's memory, even if you come to a complete stop. To return to your chosen speed, drive to a speed above 32 mph, then move the slide button to the RESUME/ACCEL position and release it. The Speed Control will take you back to your set speed and control there. If the rate of acceleration is faster or slower than you like, drive with the accelerator to a speed close to the set speed, then slide the button to the RESUME/ACCEL position and release it.

**UNUSUAL CONDITIONS** — When the regulator is adjusted right, your selected speed should be held within plus or minus 4 mph so long as grades do not exceed 7% (most interstate highways). Since the Speed Control is vacuum operated, this speed range will widen as you drive at higher altitudes. Any opening of the throttle lowers the vacuum to some degree. A wide open throttle can drop the vacuum almost to zero. When you are pulling an extra heavy load, climbing a very steep hill, or bucking a severe head wind, a much wider than normal throttle opening is called for, but this drops the vacuum so low that the throttle is deprived of the strength it needs to hold speed. The way to handle these once-in-a-while problems is to bring the vehicle up to speed with the accelerator pedal - and then let the Speed Control take over again.

## OTHER CONTROLS AND FEATURES

There are several switches on the right side of the dash:

- **The Generator Switch** will stop or start the auxiliary generator.
- **Battery Boost Switch.** If the automotive battery gets discharged to the point that it will not crank the engine, use the following procedure:

1. Start the auxiliary generator (it is cranked by the "house" batteries).
2. With the generator running depress the battery boost switch. (This will connect both the house and automotive batteries in parallel).
3. Start the automotive engine in the normal way.
4. Release the battery boost switch:

- If the "house" battery will not start the generator and the automotive battery is able to start the engine. With the engine running, press the battery boost switch and then start the generator. When the generator is running, release the battery boost switch.



## OTHER CONTROLS & FEATURES (Continued)

- If both batteries are discharged follow the "jump start" instructions in Section 3.
- **Step Switch** (where applicable). This switch will keep the electric entry step out or in and override the entry door switch.
- **Courtesy Light Switch**. This controls the courtesy lights installed by the entry door and under the dash.
- **Heater and Air Conditioner Controls**. The heater/air controls are located on the lower left side of the dash. Starting in 1983, these controls are to the right of the steering column.

### AUTOMOTIVE HEATING & AIR CONDITIONING SYSTEM

The automotive heating and air conditioning system provides circulation of cool air during hot weather and warm air in cold weather. The system may be adjusted to dehumidify incoming air in cool, humid weather. Another feature of the system is that warm air may be directed at the driver and passenger side windows through the dashboard end outlets.

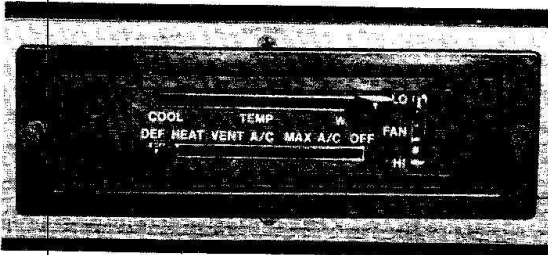


Figure 9 — Automotive Air Conditioner/Heater Controls

**AIR OUTLETS** — Air is directed through the two heater floor vents, the four dashboard vents and the defroster vents at the back of the windshield.

**AIR CONDITIONING CONTROLS** — The controls consist of a 3-speed fan switch, a sliding heater temperature lever, and a lever for selecting the type and source of air.

**FOR COOLING:** Move the bottom lever to either "MAX A/C" or "A/C." For maximum cooling or quick cool down, place this lever to "MAX A/C." This provides 100% recirculated air regardless of fan speed. Moving the lever to "A/C" provides 100% fresh air. The top temperature lever should be in "COOL" position for best cooling but may be moved to "WARM" for dehumidified warm air. This dehumidified warm air can be used to clear the driver's compartment windows in humid, rainy weather.

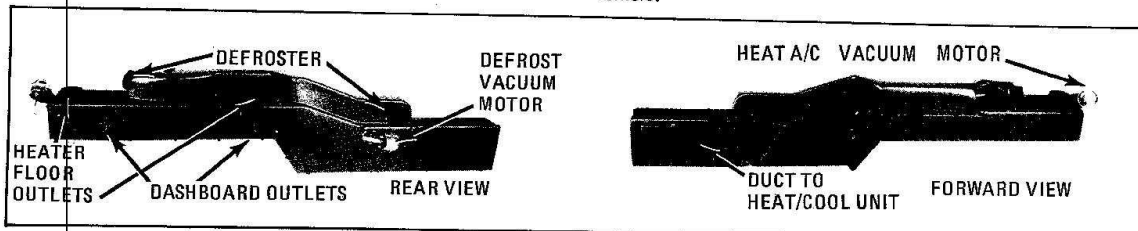


Figure 10 — Automotive Dash Air Conditioner Outlets

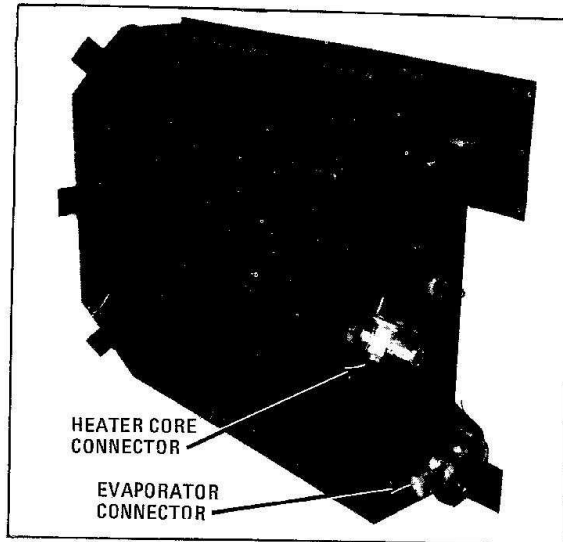


Figure 11 — Automotive Heater Core/Evaporator

**FOR VENTILATING:** With the bottom lever in "VENT" position, 100% fresh air enters the vehicle through the dashboard vents. Heat may be added to vent air by operating the top temperature lever. By redirecting the outboard vents to the side windows, these windows may be defogged with warm air.

**FOR HEATING:** Move the bottom lever to "HEAT" to bring heated air to the two heater floor vents. The top lever should be positioned for the desired air temperature and the fan switch moved for the proper air flow.

**FOR DEFROSTING:** Moving the bottom lever to "DEF" brings 100% fresh air to the defroster vents. Adjusting the top temperature lever and fan switch produces the desired temperature and air volume.

**SERVICING HEAT/COOL UNIT** — The blower assembly, heater core and evaporator may be individually removed from the case. These parts must be removed from forward of the firewall. Remove the sheet metal angle at the front top of the case. Take out the screws securing the front cover of the case (one screw is accessible from under the dashboard) and remove the cover. Disconnect the wires or hoses and slide out the defective part.

An adjustable A/C evaporator thermostat is mounted on the case in the passenger footwell. This control should be rotated fully clockwise.

The fresh air/recirculated air vacuum motor is also mounted on the heat/cool unit and is accessible from the front of the vehicle.



# OTHER CONTROLS AND FEATURES (Continued)

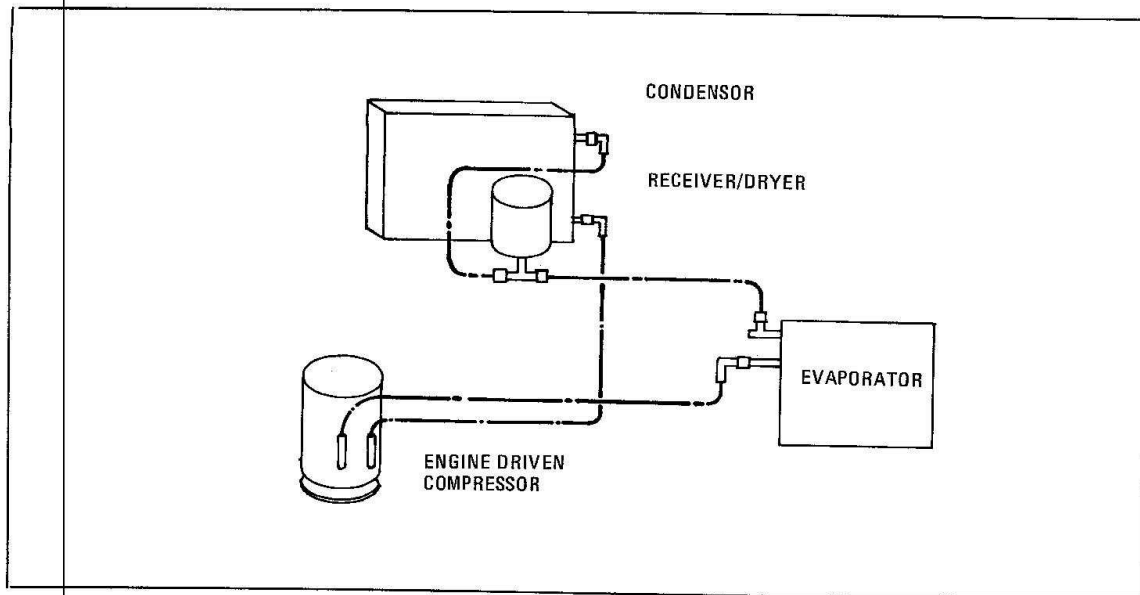


Figure 12 — Automotive Air Conditioning Hose Routing

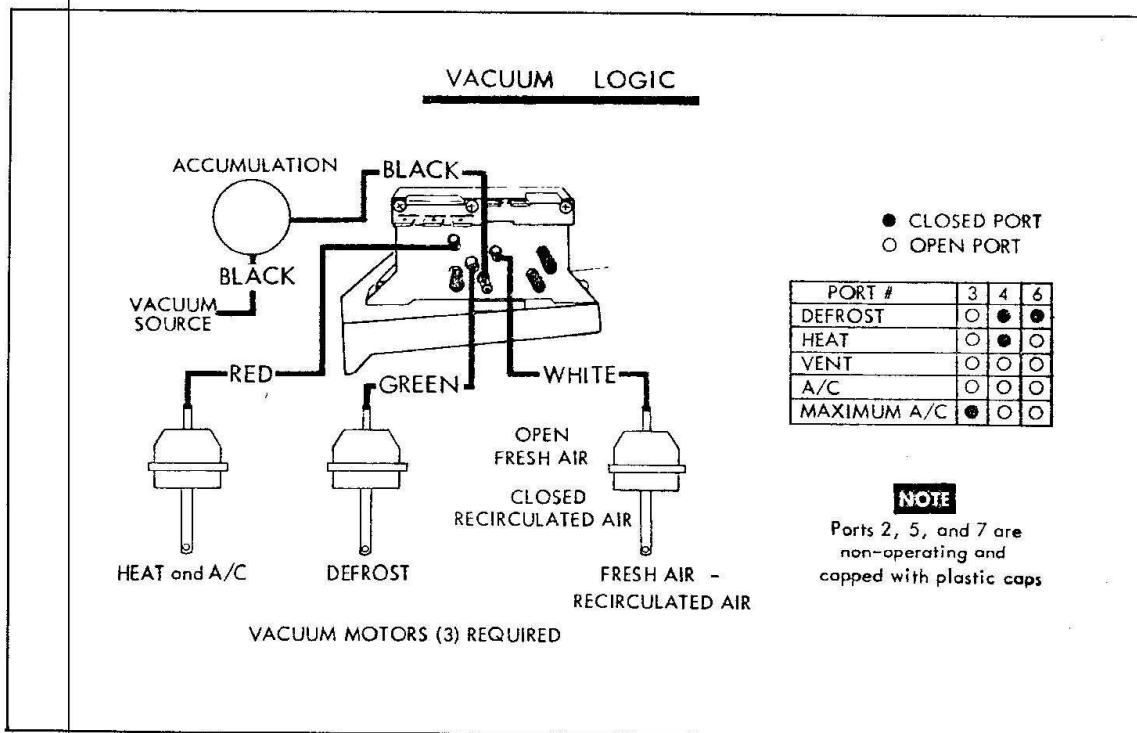


Figure 13 — Vacuum System Schematic for Automotive Air Conditioning/Heater System





## IN CASE OF EMERGENCY

### FOUR-WAY HAZARD WARNING FLASHER

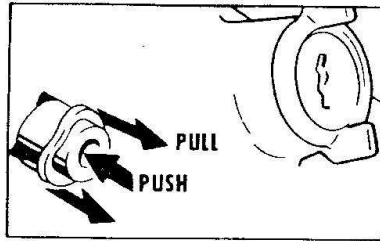


Figure 14 — Hazard Warning Flasher

Use the warning flasher to warn other drivers any time your vehicle becomes a traffic hazard, day or night.

Avoid stopping on the roadway if possible.

Turn on the hazard warning flasher by pushing in on the button (inside the collar) located on the column just below the steering wheel. The flasher will work with the ignition key either on or off.

The turn signals do not work when the hazard flashers are on.

If the brake pedal is depressed, the lights will not flash; they will stay on until the brake is released.

To turn off the flasher, pull the button collar out.

### EMERGENCY STARTING

**NOTE:** Do not push or tow this vehicle to start it. Under some conditions, this may damage parts of the vehicle.

If your vehicle has a discharged battery, it can be started by using energy from another battery — a procedure called, "jump starting." Before resorting to jump starting, however, see information on the Battery Boost Switch on page 16.

### JUMP STARTING (Use Only If Vehicle Cannot Be Started Using Battery Boost Switch)

**CAUTION:** Be sure to exactly follow the instructions given below or personal injury (particularly to eyes) or property damage may result from battery explosion, battery acid, or electrical (short circuit) burns.

**THE MAJOR SAFETY PRECAUTION IS TO MAKE THE FINAL CONNECTION TO GROUND** (a solid, stationary metallic object) on the engine at some distance from the battery. This helps reduce the chance of an explosion due to sparks.

To lessen the chance of an explosion, never expose the battery to open flames or electric sparks. Also, do not smoke near the battery. Batteries give off a gas which is inflammable and explosive.

To lessen the risk of injury in case an explosion does occur, wear eye protection or shield your eyes when working near any battery. Do not lean over a battery.

Do not allow battery fluid to contact eyes, skin, fabrics, or painted surfaces because battery fluid is a corrosive acid. Flush any contacted area with water immediately and thoroughly. Also, get medical help if eyes are affected.

To lessen the risk of a short circuit, remove rings, metal watch bands, and other metal jewelry. Also, do not allow metal tools to contact at the same time the positive battery terminal (or any metal connected to this terminal) and any other metal on either vehicle. Make certain when attaching the jumper cable clamps to the positive terminals of the batteries that neither clamp contacts any other metal.

This vehicle has 12-volt battery and a negative ground electrical system. Make sure that the other vehicle also has a 12-volt battery and that the negative terminal is grounded (attached to a metal part of the vehicle). Its owner's manual may give you that information.

**CAUTION:** If unsure of the other vehicle's voltage (or if the voltage and ground on the other vehicle are different from your vehicle), do not try to jump start as a personal injury or severe damage to electrical and electronic parts may result.

Position the vehicle with the good (charged) battery so that the jump starting cables will reach. Do not allow vehicles to touch.

Turn off all electric motors and accessories in both vehicles. Turn off all lights except those needed to protect the vehicle or light up the work area. Turn off the ignition; apply the parking brake firmly and put the automatic transmission in "PARK" (manual transmission in "NEUTRAL") in both vehicles.

If the discharged battery has filler caps, check the fluid level. (Do not check with an open flame and do not smoke.) Add clear drinking water to the proper level if low, and replace caps before jump starting. If the battery is a Delco sealed type, do not try to jump start the vehicle, or charge, or test the battery if the test indicator in the battery is bright or light yellow (see illustration). Instead, install a new battery.

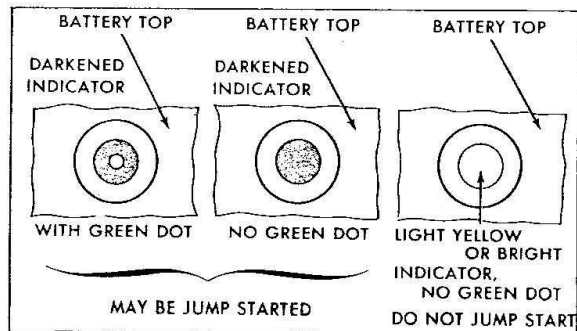


Figure 15 — Battery Charge Indication

For jumper cable connection instructions, see illustration. Make the connections in numerical order, as follows:

Connect the first jumper cable from the positive "+" (red) terminal on one battery to the positive "+" (red) terminal on the other battery. **NEVER** connect "+" (red) terminal to "-" (black), or "-" to "+".



## IN CASE OF EMERGENCY (Continued)

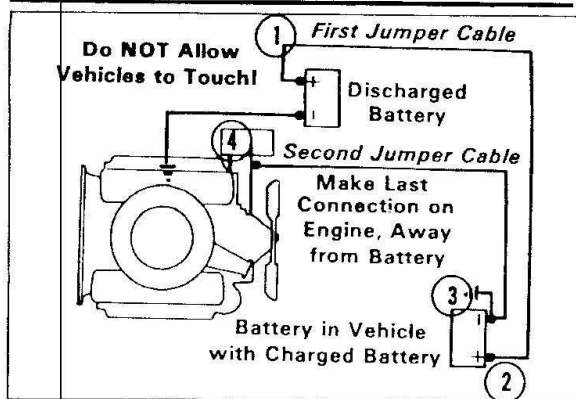


Figure 16 - Battery Jumper Cable Schematic

Next, connect one end of the second cable to the grounded negative "-" (black) terminal of the good (charged) battery.

Lastly, connect the other end of the second jumper cable to a solid, stationary, metallic point on the engine of the vehicle with the discharged battery but at a point away from the battery - 18 inches (450 millimeters) or more from the battery if possible. Do not connect it to pulleys, fans, or other parts that move. Don't touch hot manifolds which can cause severe burns. (The mounting brackets for the Delcotron generator, or the air conditioning compressor, generally make a good point for this final ground attachment. Take care that the jumper cable does not contact moving parts on or near the generator or compressor.)

Start the engine on the vehicle with the good (charged) battery and run the engine at a moderate speed.

Start the engine of the REVCON that has the discharged battery.

Remove the battery cables by reversing the above sequence exactly. Start by removing the last clamp first; that is, remove the jumper cable from the engine of the vehicle with the discharged battery as the first step.

**ENGINE COOLANT**

Your cooling system may overheat temporarily during severe operating conditions, such as:

- Climbing a long hill on a hot day.
- Stopping after high-speed driving.
- Idling for long periods in traffic.
- Towing a trailer.

If the coolant temperature gauge needle goes over 250°F and your air conditioner is on, turn it off. If the gauge shows over 250°F while stopped in traffic, place the transmission shift lever in Neutral ("N").

The water temperature warning light will also come on to indicate overheating.

If the temperature gauge needle doesn't start to drop within a minute or two:

Pull over to a safe place and stop the vehicle. Set the parking brake and shift to "Park."

DON'T TURN OFF THE ENGINE. INCREASE THE ENGINE IDLE SPEED until it sounds like it's going about twice as fast as normal idle speed. Bring the idle back to normal after two or three minutes.

If the temperature needle doesn't start to drop, NOW TURN OFF THE ENGINE and proceed as follows:

Open the engine hood. Look at the coolant level in the "see through" coolant recovery tank. The coolant level should be between the "Full Hot" and "Full Cold" marks on the tank. If the coolant appears to be "boiling," wait until it stops before proceeding further. (It should not be necessary to remove the radiator cap to check the coolant level, and it can be dangerous if the engine is still hot.

**CAUTION:** To help avoid the danger of being burned:

**DO NOT REMOVE** the coolant recovery cap while the coolant is boiling, and

**DO NOT REMOVE** the radiator cap while the engine and radiator are still hot.

Scalding fluid and steam can be blown out under pressure if either cap is taken off too soon.

If the coolant level is low:

Look for leaks at the radiator hoses and connections, heater hoses and connections, radiator, and water pump. See that the fan belts are not broken or off the pulleys, and that the fan turns when the engine is started.

Add coolant to the coolant recovery tank.

If the coolant level in the coolant recovery tank is at the correct level and the gauge needle is still in the warning zone, air may be trapped in the cooling system. This may prevent coolant from returning to the radiator. In this case, it may be necessary to add coolant directly to the radiator. (See page 28 for Coolant Replacement information.)

After the gauge needle is back to normal, resume driving at a reduced speed. Return to normal driving after about 10 minutes if the needle does not go back to the warning zone. Normal temperature for the coolant is 195° to 220°F.

**JACKING**

**CAUTION:** To reduce the possibility of personal injury:

- Use this jack only for lifting vehicle during wheel changing.
- Never get beneath the vehicle when supported by this jack.
- Do not start or run the engine while vehicle is supported by this jack.

MODELS	JACKING POINT ON VEHICLE	
	FRONT	REAR
ALL	Chassis Sub-frame "Box"	Housing Near Wheel at Centre of Tandem Only





## IN CASE OF EMERGENCY (Continued)

### JACKING INSTRUCTIONS

- Park on level surface and set parking brake firmly.
- Set automatic transmission in "Park."
- Turn on hazard warning flasher.
- Remove any wheel opening cover, if equipped. Remove lug-nut decor caps.
- Loosen, but do not remove, wheel nuts by rotating wrench counterclockwise.

**NOTE:** Capped chrome nuts can be damaged if wheel nut wrench is not fully seated on wheel nuts.

- Locate jack beneath vehicle (base must sit flat).
- Block front and back of wheel diagonally opposite jack position.
- Pump jack up & down so tire just clears surface. (Always operate jack with a slow smooth motion.)
- Replace wheel and slightly tighten wheel nuts. Wheel must be seated on hub.
- Turn hydraulic release on jack to lower vehicle, then fully tighten wheel nuts in a criss-cross sequence.
- Wheel nut torque should be set to specifications shown below.

### WHEEL NUT TORQUE

**CAUTION:** When the Motor Home, or wheel, or fasteners are new, have a mechanic tighten wheel nuts with a torque wrench at 100, 1000, and 6000 miles (160, 1600, and 9600 kilometers). This precaution is necessary because the clamping system used on REVCON Motor Home wheels in some cases needs to seat before the fasteners will hold a uniform clamp load and remain fully tightened. Also have a mechanic tighten wheel nuts with a torque wrench as soon as possible after installing any wheel. In addition, nut tightness on all wheels should be set with a torque wrench every 6000 miles (9600 kilometers).

Use the correct torque listed for the type of wheels as shown in the table which follows. Wheel nuts should be tightened

	DESCRIPTION	TORQUE
REVCON WHEELS	5/8" and 9/16" Bolts	Power Torque (all bolts) 110 - 140 ft. lbs. Hand Torque (all bolts) 140 - 160 ft. lbs.

alternately and evenly to the correct torque in the sequence shown below. Never use oil or grease on studs or nuts. Im-

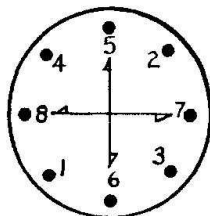


Figure 17 — Wheel Nut Torque Sequence

properly tightened wheel nuts could eventually allow the wheel to come off while the Motor Home is in motion, possibly causing loss of control. (Also see the caution in the Service and Maintenance section of this manual regarding the danger of mixing metric and customary fasteners.)

### STOWAGE OF TIRE AND JACK

**CAUTION:** Always securely restow the spare tire assembly, all jacking equipment, and any covers or doors, using the means provided. This will help keep such things from being thrown about and injuring people in the vehicle in an accident.

### TOWING YOUR REVCON

Proper equipment must be used to prevent damage to vehicles during any towing. State (Provincial in Canada) and local laws which apply to vehicle in tow must be followed. Get detailed towing instructions from your dealer.

Your vehicle may be towed on all six wheels, at speeds of less than 35 mph (60 km/h), for distances up to 50 miles (80 kilometers), provided the driveline and steering are normally operable. For such towing the steering must be unlocked, transmission in neutral, and the parking brake released. Connect to main structural parts of the vehicle. Do NOT attach to bumpers or brackets. Remember also that power brakes and power steering will not work when engine is "Off." REVCON does not recommend that the vehicle be towed in this manner.

If the vehicle is to be towed by a wrecker, use only equipment designed for this purpose following the instructions of the wrecker manufacturer. A safety chain system must be used for all towing. Your REVCON is provided with tow hooks at the front for lifting or towing. Please use them if lifting or towing is necessary.

### FREEING VEHICLE FROM SAND, MUD, SNOW OR ICE

If your vehicle gets stuck in sand, mud, snow or ice, move the shift lever from Drive ("D") to Reverse ("R") in a repeat pattern. Apply a light pressure to the accelerator pedal while the transmission is in the "D" or "R" range. Remove your foot from the accelerator while shifting between ranges. Do not race the engine. For best traction, avoid spinning the wheels. Incorrect rocking of vehicle while stuck may result in damage to vehicle components.

**CAUTION:** Do not spin wheels faster than 20 mph (35 km/h). Personal injury and damage, including tire, transmission and/or front axle failure, may result from excessive wheel spinning.

If vehicle remains stuck after several rocking attempts, seek other assistance.



## APPEARANCE CARE

**CAUTION:** Many cleaners may be poisonous or flammable, and their improper use may cause personal injury or damage the inside of the vehicle. Therefore, when cleaning the inside of the vehicle, do not use volatile cleaning solvents such as: acetone, lacquer thinners, enamel reducers, nail polish removers; or such cleaning materials as laundry soaps, bleaches or reducing agents (except as noted in the manufacturers cleaning instruction on stain removal.) Never use carbon tetrachloride, gasoline or naphtha for any cleaning purpose.

Because fumes are more dangerous in a small, enclosed space, be sure the vehicle is well ventilated while using any cleaning agent. Follow the manufacturer's advice in using such products.

### CARE AND CLEANING OF INTERIOR TRIM

With the use of modern trim materials, it is VERY IMPORTANT that proper cleaning techniques and cleaners be used. Failure to do this on the first cleaning may result in water spots, spot rings, or setting of stains or soilage, all of which make it more difficult to remove in a second cleaning. If in doubt about cleaning interior items, ask your REVCON dealer's advice.

### EXTERIOR

Frequent washing and a thorough cleaning after exposure are recommended to prevent damage to vehicle finish from calcium chloride and other salts, road tar, insects, tree sap, factory chemical and other foreign matter. Use either cold or lukewarm water. Never wash vehicle in the direct rays of the sun. Be very careful if you climb on the roof to stand on rivet "lines," where the reinforcement structure is attached to the outside skin, otherwise you may dent or damage the "stressed skin" of the vehicle.

### UNDERBODY MAINTENANCE

Corrosive materials used for ice and snow removal and dust control can collect on the underbody. If these materials are not removed, accelerated corrosion (rust) can occur on underbody parts such as fuel lines, frame, floor pan, and exhaust system.

At least every spring, flush these materials from the underbody with plain water. Take care to clean well any areas where mud and other debris can collect. Sediment packed in closed areas of the frame should be loosened before being flushed.

If desired, your dealer can perform this service for you. Your dealer can also recommend additional underbody rust preventive materials which will help protect your vehicle from the corrosion.

## SERVICE AND MAINTENANCE

**CAUTION:** As with any machine, care should be taken when making any check, doing any maintenance, or making any repair to avoid being injured. Improper or incomplete service could also lead to the vehicle itself not working properly which may result in personal injury, or damage to the vehicle or its equipment. If you have any question about carrying out some service, have the service done by a skilled mechanic.

### REPLACEMENT FASTENERS

During vehicle maintenance, any fasteners used to replace older ones must have the same measurements and strength as those removed, whether metric or customary. (The numbers on the heads of metric bolts and on the surfaces of metric nuts show their strength. Customary bolts use radial lines to show this, while most customary nuts do not have strength markings.) Fasteners taken from the vehicle should be saved for re-use in the same spot when possible. Where a fastener cannot be used again, care should be taken to choose a replacement that matches the old one. For information and help, see your dealer.

**CAUTION:** This vehicle has some parts dimensioned in the metric system as well as in the customary system. Some of the fasteners are metric and are very close in dimension to well known customary fasteners in the inch system. Mismatched or incorrect fasteners can result in damage to the vehicle or possibly personal injury.

### MAINTENANCE SCHEDULE

For owner convenience, a complete maintenance schedule will be found on the chart on page 29. It also briefly describes the safety, emission control, lubrication, and general service that your vehicle requires.

### FUEL REQUIREMENTS

Your **Heavy Duty Emission Class Vehicle** engine is designed to operate on unleaded gasoline. It minimizes spark plug fouling and emission control system damage. **The engine requires Premium grade fuel.** If there is "knocking," a metallic rapping noise that sometimes happens during the combustion process, and the knocking persists, consult your dealer. Continuous or excessive knocking may result in engine damage. Failure to take steps to stop such knocking is misuse of the engine for which the manufacturing division is not responsible under the terms of the new vehicle warranty.

Use 91 octane rated unleaded gasoline meeting Federal Government regulations. The Federal Government specifies the minimum octane number of unleaded gasoline. Federal regulations require that pumps delivering such gasoline be labeled with the words: **UNLEADED - MINIMUM 91 OCTANE RATED GASOLINE TO BE USED.**

### ENGINE OIL AND FILTER RECOMMENDATIONS

#### (GASOLINE ENGINES)

Use only SE or better quality engine oils (see markings on the containers).



## SERVICE & MAINTENANCE (Continued)

Change the engine oil and the engine oil filter as outlined on page 33.

The oil and filter change intervals for your engine are based on the use of SE-quality oils and high-quality filters like AC oil filters. Use of non-SE oils or oil change intervals longer than listed on page 29, could reduce engine life and might affect your warranty.

Your engine was filled with an SE-quality engine oil when it was built. You do not have to change this oil before the suggested change period. Keep in mind your engine may use more oil when it is new. Check the oil level more often when your engine is new.

### OIL VISCOSITY

Engine oil viscosity (thickness) has a noticeable effect on fuel economy. Lower viscosity engine oils can provide increased fuel economy; however, higher temperature weather conditions require higher viscosity engine oils for satisfactory lubrication. The following chart lists the engine oil viscosities that will provide the best balance of fuel economy, engine life, and oil economy.

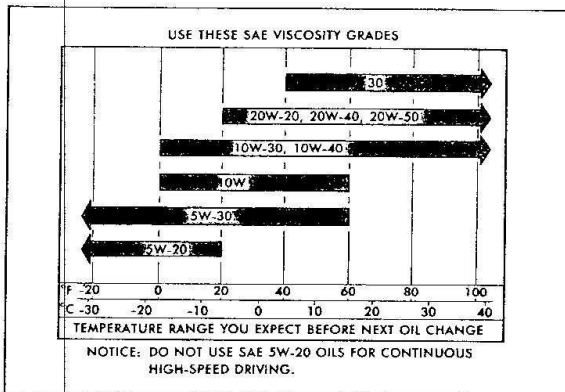


Figure 18 - Oil Viscosity Chart

### CHECKING OIL LEVEL

**Electronic Oil Dipstick** — The use of the electronic oil dipstick was described on page 15. A metal dipstick also is supplied with the REVCON to check engine oil level if desired. Disconnect the spring at the top of the oil dipstick tube. Pull out the orange electronic dipstick. Check the oil level with the metal dipstick as required. Carefully reinstall the orange electronic dipstick. Do not damage the sensor at the bottom.

**Warm** — The best time to check the engine oil level is when the oil is warm, such as during a fuel stop. First, allow about five (5) minutes for the oil to drain back to the oil pan. Then pull the dipstick out, wipe it clean, and push it back down all the way. Now pull the dipstick out and look at the oil level on the dipstick. Some dipsticks are marked with "Add" and "Full" lines. Others are marked "Add 1 QT" and "Operating Range." In all cases, keep the oil level above the "Add" line. Push the dipstick back down

all the way after taking the reading. Add oil if needed.

**Cold** — If you check the oil level when the oil is cold, do not run the engine first. The cool oil will not drain back to the pan fast enough to give a true oil level.

### ENGINE OIL ADDITIVES

There are many extra engine oil helpers or additives for sale. Your engine should not need these extra additives if you use SE-quality engine oil and change it as suggested. If you think your engine has an oil related problem, talk to your authorized dealer. If needed, your dealer can provide you with a tested and approved oil additive called "GM Engine Oil Supplement."

### AUTOMATIC TRANSMISSION FLUID RECOMMENDATIONS

Use only automatic transmission fluid labeled DEXTRON®II. You can buy this fluid from your dealer or other service outlets.

### CHECK THE FLUID LEVEL WITH CARE

Check the automatic transmission fluid level at each engine oil change. Before checking the fluid level, set the parking brake and then start the engine. Apply the regular brakes and then move the shift lever through all of the gear ranges, ending in "Park." You must check the fluid level with the engine running at slow idle and the vehicle level.

**NOTE:** You cannot read the correct fluid level if you have just driven the vehicle for a long time at high speed, in city traffic in hot weather, or if the vehicle has been pulling a trailer. Wait until the fluid has cooled down (about 30 minutes).

Remove the dipstick. Carefully touch the wet end of the dipstick to find out if the fluid is cool, warm or hot. Wipe it clean and push it back in until the cap seats. Pull out the dipstick and read the fluid level.

If it felt cool (about room temperature), the level should be 1/8 to 3/8 inch (3 to 10 millimeters) below the "Add" mark. The dipstick has two dimples below the "Add" mark to show this range.

If it felt warm, the level should be close to the "Add" mark (either above or below).

If it was too hot to hold, the level should be at the "Full" marks.

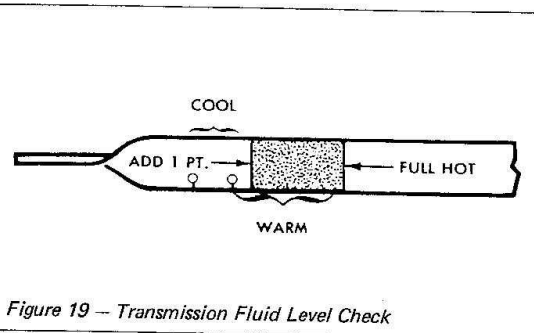


Figure 19 - Transmission Fluid Level Check

Add just enough DEXTRON®II fluid to fill the transmission. It takes only one pint (0.5 litre) to raise the level from "Add" to "Full" with a hot transmission.



## SERVICE & MAINTENANCE (Continued)

Do not overfill the transmission. Overfilling can cause foaming and loss of fluid, which could result in transmission damage. Automatic transmissions are often overfilled because the fluid level is checked when the fluid is cold. When cold, the dipstick shows that fluid should be added. However, the cold low reading is normal; the fluid level will rise about 3/4 inch (19 millimeters) as the fluid warms up from 60°F to 180°F (16°C to 82°C).

### AUTOMATIC TRANSMISSION DRAIN INTERVALS

Change the transmission fluid and change the filter (or clean the screen) as outlined on page 29.

### ENGINE COOLING SYSTEM

The coolant recovery system is standard. The coolant in the radiator expands with heat, and the overflow is collected in the recovery tank. When the system cools down, the coolant is drawn back into the radiator.

The cooling system has been filled at the factory with a quality coolant that meets GM Specification 1899-M. Because the cooling system has been designed to use coolant rather than plain water, the coolant solution should be used year round. It has many advantages, such as:

- Provides boiling protection up to 262°F (128°C).
- Protects against rust and corrosion in the cooling system.
- Maintains the proper engine temperature for efficient operation and emission control.
- Allows proper operation of the coolant gauge.

The coolant should be replaced in accordance with the maintenance schedule on page 28.

### COOLING SYSTEM CARE

It is not usually necessary to remove the radiator cap to check the coolant level. Open the hood and look at the "see through" coolant recovery tank. This should be done at regular intervals, such as during fuel stops. When the engine is cold, the coolant level should be at or slightly above the "Full Cold" mark on the tank. When the engine has fully warmed up, the level should be at or slightly below the "Full Hot" mark on the tank. If the coolant level is low, remove the cap on the coolant recovery tank. Add enough of a 50/50 mixture of a good quality ethylene glycol (antifreeze) and water to the tank to bring the level up to the proper mark. Reinstall the cap on the tank.

There are conditions which can happen, such as air being trapped in the system, that may affect the coolant level in the radiator. It is recommended that the coolant level in the radiator be checked at periodic intervals such as at the time of engine oil changes when the engine is cold. Follow steps 1, 8, 9, and 10 of the following section "Coolant Replacement," (page 24), for radiator cap removal and coolant addition method.

If coolant has to be added more than four times a year, either to the recovery tank or to the radiator, see your dealer for a cooling system check.

NOTE: If the proper quality antifreeze is used, there is no need to add extra inhibitors or additives that claim to improve the system. They may be harmful to the proper operation of the system.

### COOLANT SYSTEM SERVICE

The cooling system should be serviced as follows:

1. Wash the radiator cap and filler neck with clean water. See step 1 of "Coolant Replacement," (page 24,) to remove radiator cap.
2. Check the coolant level in the radiator and have it tested for freeze protection. Add ethylene glycol antifreeze, if needed, to maintain the specified freeze protection.
3. Have the cooling system and radiator cap tested for a pressure capacity of 15 psi (105 kPa). If a replacement cap is needed, use an AC-Delco cap, or an equivalent cap, designed for coolant recovery systems and specified for your model.
4. Tighten all radiator and heater hose clamps and inspect all hoses. Replace the hoses if they are "checked" or swollen, or otherwise worn.
5. Clean the front of the radiator core and air conditioning condenser to remove dirt and other objects. Also clean the auxiliary engine and/or transmission oil cooler if the vehicle has them.

### COOLANT REPLACEMENT

1. Remove the radiator cap when the engine is cool:  
Turn the cap slowly to the left until it reaches a "stop." (Do not press down while turning the cap.)

Wait until the pressure is relieved (indicated by a hissing sound), then press down on the cap and continue to turn it to the left.

**CAUTION:** To help avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot. Scalding fluid and steam can be blown out under pressure if the cap is taken off too soon.

2. When the cap is removed, run the engine until the upper radiator hose is hot (this shows that the thermostat is open and the coolant is flowing through the system).
3. Stop the engine and open the radiator drain valve to drain the coolant. (Drainage may be speeded by removing the drain plugs in the block.)
4. Close the drain valve (install block drain plugs, if removed). Add water until the system is filled and run the engine until the upper radiator hose is hot again.
5. Repeat steps 3 and 4 several times until the drained liquid is nearly colorless.

