TORQUE SPECIFICATIONS (Cont'd)

Component	Service Set-To Torque	Service Recheck Torque
Power Steering Pump-to-Bracket Nuts		
Four-Cylinder Engine	58 N·m (43 ft-lbs)	50-64 N·m (37-47 ft-lbs)
Thermostat Housing		
Four- and Six-Cylinder Engines	18 N·m (13 ft-lbs)	14-24 N·m (10-18 ft-lbs)
Water Pump Mounting Bolts		
Four- and Six-Cylinder Engines	18 N·m (13 ft-lbs)	12-24 N·m (9-18 ft-lbs)

SEE I.S. NOTES

SPECIFICATIONS

Cooling System Specifications

	Four- and Six-Cylinder Engine (w/V-Belt)	Four- and Six-Cylinder Engine (w/Serpentine Belt)
Radiator Cap Relief Pressure	96.5 kPa (14 psi)	96.5 kPa (14 psi)
Thermostat Rating		
Must be Open 0.076 mm (0.003 inch)	90°C (195°F)	90°C (195°F)
Fully Open	103°C (218°F)	103°C (218°F)
Water Pump Type	Centrifugal	Centrifugal
Drive	V-Belt	Serpentine Belt
Radiator Type	Downflow Tube and Spacer	Downflow Tube and Spacer
Cooling System Capacities	Refer to Cooling System Capacities Chart	
Fan	Refer to Cooling System Components Chart	
Drive Belt		
Angle of V	38°	Serpentine Belt 6 40° Ribs
Width-top of Groove	9.7 – 12.7 mm (0.38 – 0.50 in.)	
Type (Plain or Cogged)	Cogged	

840167(J)

SEE I.S. NOTES

Cooling System Capacities

Engine CID		Capacity (Quarts)		Capacity (Liters)	
4-cyl. 150	6-cyl. 258	Std	w/AC or HD	Std	w/AC or HD
•	•	11	14	10.4	13.2

840168

Cooling System Components

Engine		Package			Fan			Coolant Recovery	Shroud
150	258	Std	HD	A/C	Tempatrol	No. of Blades	Spacer		
•		•				4	•		
•			•		•	7		•	•
	•	•				5	•		
	•		•		•	5		•	•
	•			•	•	5		•	•

NOTE: Consult parts catalog for correct listing of spacer and radiator application. Correct spacer is determined by length. Radiator is identified by part number on upper tank.

NOTE: All radiators have two rows of core tubes. 840169(J)

Engine Drive Belt Tension

	Initial Newtons New Belt	Initial Pounds-Force New Belt	Reset Newtons Used Belt	Reset Pounds-Force Used Belt
V-TYPE BELT				
Air Conditioner – All Engines	556-689	125-155	400-512	90-115
Alternator and Fan – All Engines	556-689	125-155	400-512	90-115
Power Steering – All Engines	556-689	125-155	400-512	90-115
SERPENTINE DRIVE BELT – All Engines	800-890	180-200	623-712	140-160

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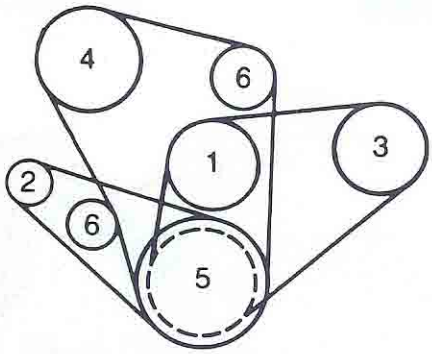
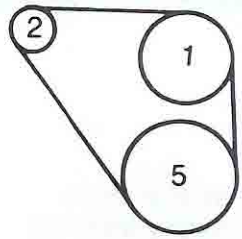
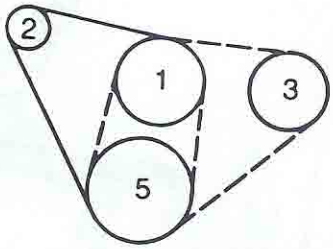
ENGINE DRIVE BELT ARRANGEMENTS



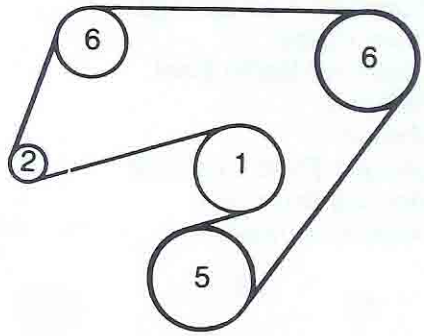
SIX-CYLINDER ENGINE WITH ALTERNATOR, POWER STEERING PUMP, AND A/C COMPRESSOR



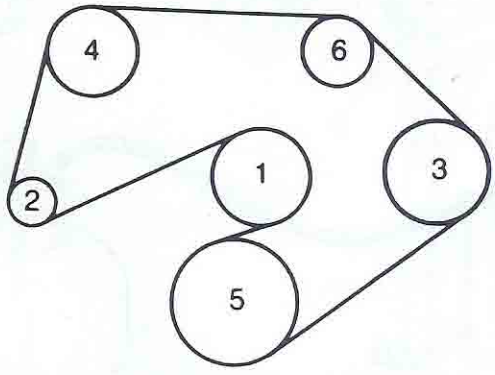
FOUR- AND SIX-CYLINDER ENGINE WITH ALTERNATOR



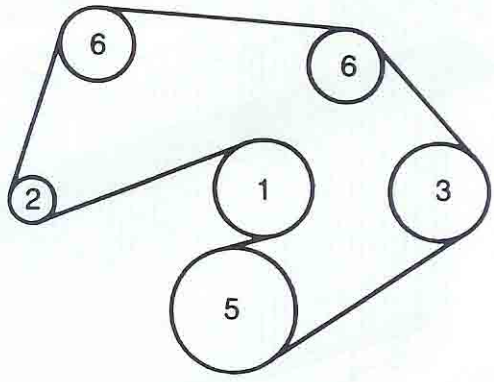
FOUR- AND SIX-CYLINDER ENGINE WITH ALTERNATOR AND POWER STEERING PUMP



SIX-CYLINDER ENGINE WITH SERPENTINE DRIVE AND ALTERNATOR (CALIFORNIA ONLY)



SIX-CYLINDER ENGINE WITH SERPENTINE DRIVE, ALTERNATOR, A/C COMPRESSOR AND POWER STEERING PUMP (CALIFORNIA ONLY)



SIX-CYLINDER ENGINE WITH SERPENTINE DRIVE, ALTERNATOR AND POWER STEERING PUMP (CALIFORNIA ONLY)

1. Water Pump
2. Alternator
3. Power Steering Pump
4. A/C Compressor
5. Drive Pulley
6. Idler Pulley

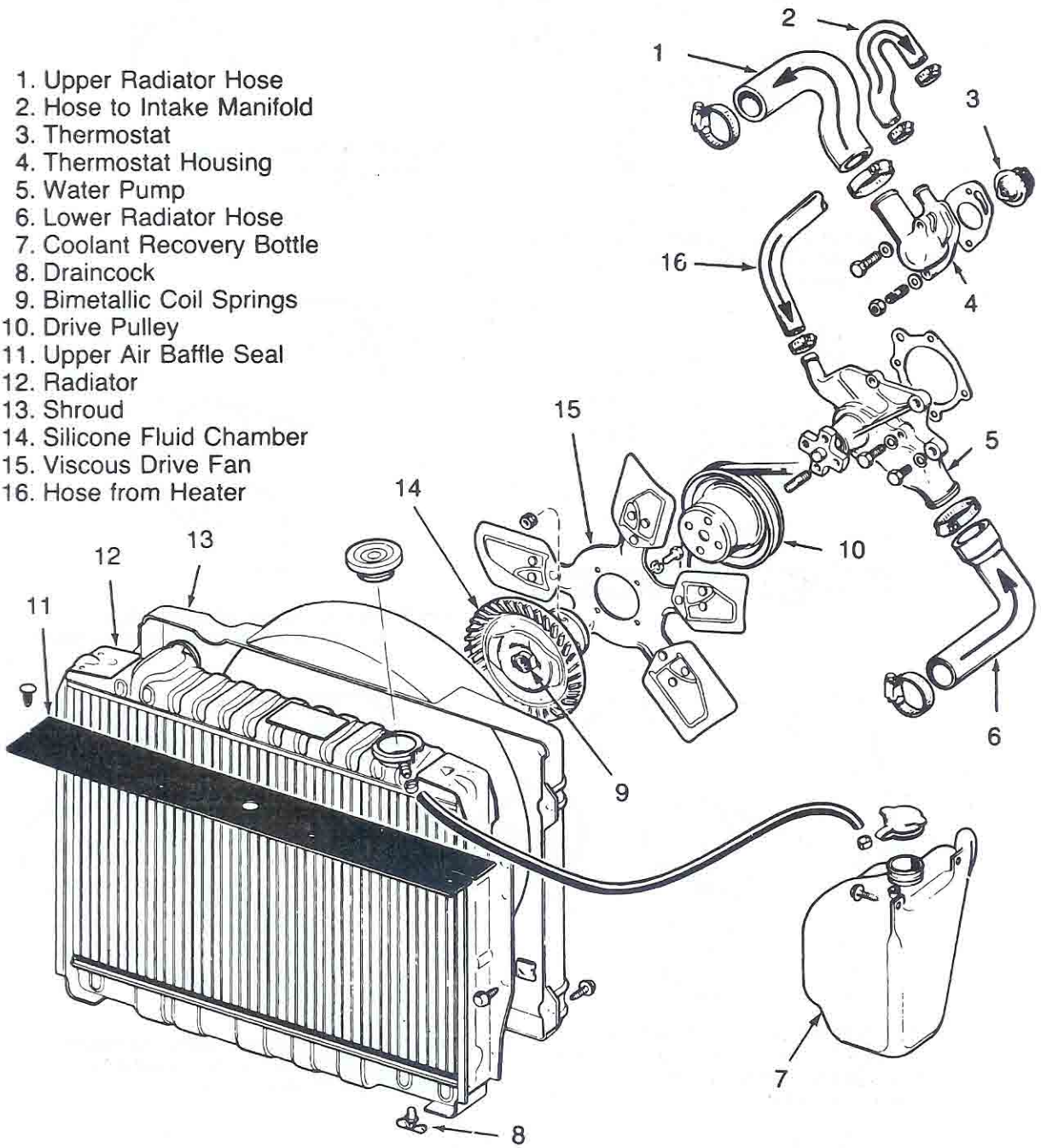
LEGEND
FRONT BELT ——
REAR BELT — — —

840171(J)

SEE I.S. NOTES

COOLING SYSTEM COMPONENTS

1. Upper Radiator Hose
2. Hose to Intake Manifold
3. Thermostat
4. Thermostat Housing
5. Water Pump
6. Lower Radiator Hose
7. Coolant Recovery Bottle
8. Draincock
9. Bimetallic Coil Springs
10. Drive Pulley
11. Upper Air Baffle Seal
12. Radiator
13. Shroud
14. Silicone Fluid Chamber
15. Viscous Drive Fan
16. Hose from Heater



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COOLANT

Maintain the coolant at the specified level with a mixture of ethylene glycol-based antifreeze (containing ALUGARD 340-2™) and low mineral content water.

CAUTION: The antifreeze mixture should always be maintained to satisfy local climatic requirements, or 50 percent, whichever is greater. Maximum protection against freezing is provided with a 68 percent antifreeze concentration, which prevents freezing down to -67.7°C (-90°F). A higher percentage will freeze at a warmer temperature. For example, 100 percent antifreeze freezes at -22°C (-8°F). In addition, a higher percentage of antifreeze can cause the engine to overheat because the specific heat of antifreeze is lower than that of water. The antifreeze concentration MUST ALWAYS be a minimum of 50 percent, year-round and in all climates. If the percentage is lower, engine parts may be eroded by cavitation.

CAUTION: Do not use coolant additives that are claimed to improve engine cooling.

Coolant Level – Without Coolant Recovery System

When the engine is cold, the coolant level should be 38 - 51 mm (1½ - 2 in) below the radiator filler neck sealing surface.

When the engine is at normal operating temperature, it should be 13 - 25 mm (1/2 - 1 in) below the sealing surface.

WARNING: When the engine is hot, removing the radiator cap can cause coolant to spray out and scald the hands, body and face. If it is necessary to check the level, allow the engine to idle for a few moments. Use a heavy rag or towel wrapped over the cap and turn the cap slowly to the first notch to relieve the pressure. Then push down to disengage the locking tabs and remove the cap. If the engine is overheated, operate it above curb idle speed for a few moments with the hood up, then shut the engine OFF and let it cool 15 minutes before removing the cap. The pressure can also be reduced during cooldown by spraying the radiator with cool water.

Coolant Level – With Coolant Recovery System

The coolant level in the recovery bottle should be checked only with the engine at normal operating temperature. It should be between the FULL and ADD marks on the coolant recovery bottle.

NOTE: Do not add coolant unless the level is below the ADD mark with the engine at normal operating temperature.

When adding coolant during normal maintenance, add only to the recovery bottle, not to the radiator.

NOTE: Remove the radiator cap only for testing or when refilling the system after service. Removing the cap unnecessarily can cause loss of coolant and allow air to enter the system, which causes corrosion.

Draining Coolant

NOTE: Do not waste reusable coolant. If the solution is clean and is being drained only to service the engine or cooling system, drain the coolant into a clean container for reuse.

NOTE: If equipped with a coolant recovery system, do not remove the radiator cap when draining the coolant from the recovery bottle. Open the radiator draincock and when the bottle is empty, remove the radiator cap. The coolant

SEE I.S. NOTES

need not be removed from the bottle unless the system is being refilled with a fresh mixture.

WARNING: Do not remove the cylinder block drain plugs or loosen the radiator draincock with system hot and pressurized because serious burns from coolant can occur.

SEE I.S. NOTES

Drain the coolant from the radiator by loosening the draincock on the bottom tank.

For four-cylinder engines, drain the cylinder block by removing the drain plug at the left-rear of the cylinder block.

For six-cylinder engines, drain the coolant from the cylinder block by removing the two drain plugs located on the left side of the cylinder block.

NOTE: The plugs may have been replaced by one or two CTO valves.

Replacing Coolant

Before filling, tighten the radiator draincock and all the cylinder block drain plugs. Add the proper mixture of coolant to satisfy the local climatic requirements for freeze and cooling protection.

CAUTION: The antifreeze concentration must always be a minimum of 50 percent, year-round and in all climates. If the percentage is lower, engine parts may be eroded by cavitation.

Fill the radiator to the correct coolant level. For vehicles with a coolant recovery system, fill the radiator to the top and install the radiator cap. Add sufficient coolant to the recovery bottle to raise the level to the FULL mark.

After refilling the system or when air pockets are suspected, purge the cooling system of excess air.

Purging Air from the Cooling System

Trapped air will hamper or stop coolant flow, or cause burping of engine coolant out of the radiator overflow tube (if not equipped with coolant recovery).

Move the heater control to the HEAT position and the heater temperature control to the full WARM or HIGH position.

For vehicles without a coolant recovery system, purge the air by operating the engine (with a properly filled cooling system) with the radiator cap off until the coolant has completely circulated throughout the engine, or until normal operating temperature is attained.

Add coolant, if necessary, and install the radiator cap.

For vehicles with a coolant recovery system, fill the system with coolant and operate the engine with all coolant caps in place. After the coolant has reached the normal operating temperature, shut the engine OFF and allow it to cool. Add coolant to the recovery bottle as necessary.

NOTE: This procedure may have to be repeated several times to maintain the correct coolant level at normal operating temperature.

NOTE: With some vehicles, it may be necessary to remove a heater hose to provide an escape for trapped air when filling the system.

Coolant Freezing Point Test

Check the coolant freezing point, or freeze protection, with an antifreeze hydrometer to determine the protection level.

Removing Coolant from the Crankcase

If coolant leaks into the lubricating system, it will clog the oil passages and cause the pistons to seize. Severe damage to the engine will result.

If coolant has leaked into the lubricating system, locate the source of the coolant leak(s), such as a faulty head gasket or a cracked cylinder block, and make the necessary repairs. After repairing the source of the leak(s), use AMC Crankcase Cleaner, or equivalent, to flush the engine.

WATER PUMP

Water Pump Pulley Replacement

Removal

Disconnect the fan shroud from the radiator, if equipped.

Loosen all the drive belts routed around the water pump pulley.

Remove the fan or Tempatrol drive attaching screws.

Remove the fan and spacer or Tempatrol fan and drive. Remove the shroud. Refer to Fan Replacement.

Remove the pulley.

Installation

Install the pulley.

Position the fan, spacer (or Tempatrol fan and drive) and shroud.

Install the attaching screws and tighten.

Install and tighten the belts. Refer to Drive Belt Adjustments.

Install the shroud attaching screws and tighten.

Water Pump Replacement

The water pump impeller is pressed on the rear of the pump shaft and bearing assembly. The water pump is serviced only as a complete assembly.

NOTE: Do not waste reusable coolant. If the solution is clean and being drained only to service the cooling system, drain it into a clean container for reuse.

WARNING: Do not remove the cylinder block drain plugs or loosen the radiator draincock with the system hot and pressurized because serious burns from coolant can occur.

Removal

The following procedure applies to all vehicles with or without power steering and air conditioning.

Drain the cooling system. Observe the WARNING and NOTE stated above.

SEE I.S. NOTES

SEE I.S. NOTES

Disconnect the radiator and heater hoses from the pump.

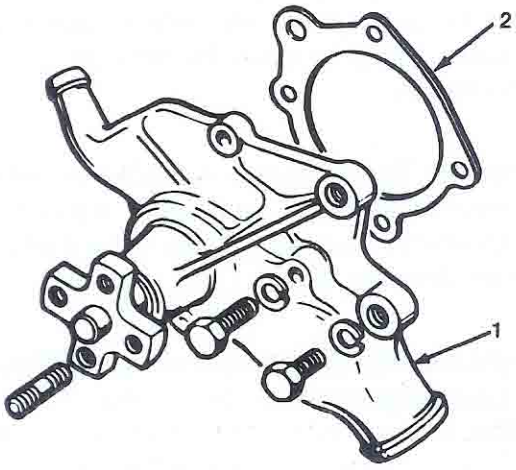
Remove the drive belt(s).

Remove the fan shroud attaching screws (if equipped) from the radiator.

Remove the fan assembly and remove the fan shroud. Refer to Fan Replacement.

NOTE: With some vehicles, fan removal may be easier if the fan shroud is rotated 1/2 turn.

Remove the water pump (1) and gasket (2).



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Installation

Before installing the pump, clean the gasket mating surfaces. If the original pump is to be installed, remove any deposits and other foreign material from the impeller cavity. Inspect the cylinder block surface for erosion or other faults.

Install the replacement gasket (2) and water pump (1). Tighten the bolts with 18 N·m (13 ft-lbs) torque. Rotate the the shaft by hand to ensure it turns freely.

Position the shroud against the front of the engine, if removed, and install the fan assembly. Tighten the screws with 24 N·m (18 ft-lbs) torque.

Install the fan shroud (if equipped) on the radiator.

Install the drive belt(s) and tighten to the specified tension. Test the belt tensions with Tension Gauge J-23600 (J-23600-B for serpentine belts). Refer to Drive Belt Adjustments.

Connect the hoses to the water pump.

Slowly fill the system with coolant. Use the correct mixture.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Operate the engine with the heater control valve open (in the HEAT position) and the radiator cap off until the thermostat opens to purge air from the cooling system.

Check the coolant level and add as required.

Install the radiator cap.

Water Pump Tests

Loose Impeller

NOTE: Do not waste reusable coolant. If the solution is clean and is being drained only to service the cooling system, drain the coolant into a clean container for reuse.

WARNING: Do not remove the cylinder block drain plugs or loosen the radiator draincock with the system hot and pressurized because serious burns from the coolant can occur.

Drain the cooling system.

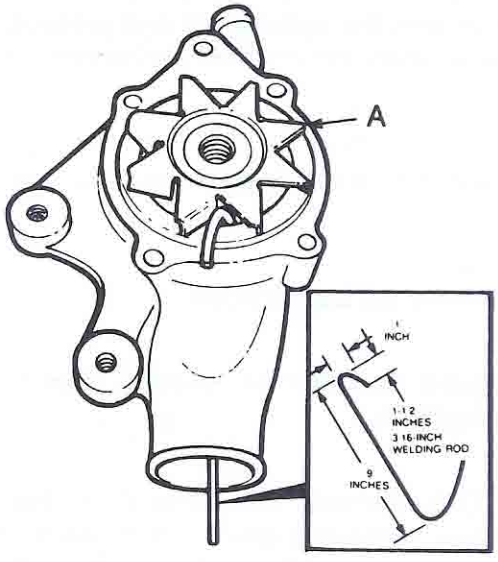
Loosen the fan belt.

Disconnect the lower radiator hose from the water pump.

Bend a stiff clothes hanger or welding rod as illustrated.

Position the rod in the water pump inlet and attempt to hold the impeller while turning the fan blades.

If the impeller (A) is loose and can be held with the rod while the fan blades are turning, the pump is defective. If the impeller turns, the pump is OK.



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NOTE: If equipped with a Tempatrol fan, turn the water pump shaft with a breaker bar and socket attached to a mounting flange nut.

Connect the hose and install the coolant, or proceed with further repairs.

Inspecting For Inlet Restrictions

Inadequate heater performance may be caused by a casting restriction in the water pump heater hose inlet.

NOTE: Do not waste reusable coolant. If the solution is clean and is being drained only to service the cooling system, drain the coolant into a clean container for reuse.

SEE I.S. NOTES

WARNING: Do not loosen the radiator draincock with the system hot and pressurized because serious burns from the coolant can occur.

Drain sufficient coolant from the radiator to decrease the level below the water pump hose inlet.

SEE I.S. NOTES

Remove the heater hose.

Inspect the inlet for casting flash or other restrictions.

NOTE: Remove the pump from the engine before removing any restrictions to prevent contamination of the cooling system with debris. Refer to Water Pump removal.

INTAKE MANIFOLD

Coolant Flow Test

If a restricted coolant flow is suspected, perform the following test procedure.

NOTE: Do not waste reusable coolant. If the solution is clean and is being drained only to service the cooling system, drain the coolant into a clean container for reuse.

WARNING: Do not loosen the radiator draincock with the system hot and pressurized because serious burns from the coolant can occur.

Drain sufficient coolant from the radiator to decrease the level below the intake manifold and remove the coolant hoses from the front and rear fittings on the intake manifold.

Install a 30 cm (12 in) length of 16 mm (5/8 in) inside diameter (ID) heater hose on the intake manifold front fitting and place the funnel in the hose.

The funnel must have a minimum outlet size of 9.5 mm (3/8 in) inside diameter (ID).

Fill a clean container with ½ gallon of water.

Begin pouring the water into the funnel and, with a time device in view, time the water flow through the manifold when the water starts flowing down the funnel.

Continue pouring the water into the funnel until the container is empty and continue timing the water flow until the funnel is empty.

If the water flows through the intake manifold coolant passage in 25 seconds or less, the flow interval is correct and the passage is not restricted.

If the water takes longer than 25 seconds to flow through the intake manifold, inspect the manifold coolant inlet for casting flash or other restrictions. Correct as necessary and proceed to the next step.

Check the length of the hose fitting extending into the intake manifold coolant passages. The extension must not be so excessive in length that the coolant flow is restricted. Replace the fitting if the length is excessive.

If the intake manifold coolant passages are restricted and cannot be cleared, replace the intake manifold. Refer to the replacement procedure in this chapter.

HOSES

Rubber hoses route coolant to and from the radiator, intake manifold and heater core.

NOTE: The radiator lower hose for all engines is spring-reinforced to prevent collapse caused by water pump suction at moderate and high engine speeds.

Hose Inspection

Inspect the hoses at regular intervals. Replace hoses that are cracked, feel brittle when squeezed or swell excessively when the system is pressurized.

In areas where specific routing clamps are not provided, ensure that the hoses are positioned with sufficient clearance from the exhaust manifold and pipe, fan blades, drive belts and sway bars. Otherwise, improperly positioned hoses will be damaged, resulting in coolant loss and overheating.

When performing a hose inspection, inspect the radiator lower hose for proper position and condition of the spring.

THERMOSTAT

An arrow or the words TO RAD is stamped on the thermostat to indicate the proper installed position. An engine should not be operated without a thermostat, except for servicing or testing.

Replacement

WARNING: Do not loosen the radiator draincock with the system hot and pressurized because serious burns from the coolant can occur.

NOTE: Do not waste reusable coolant. If the solution is clean and being drained only to service the cooling system, drain the coolant into a clean container for reuse.

Drain the coolant from the radiator until the level is below the thermostat housing.

Remove the radiator upper hose and intake manifold hose, thermostat housing, gasket and thermostat.

Clean the gasket mating surfaces.

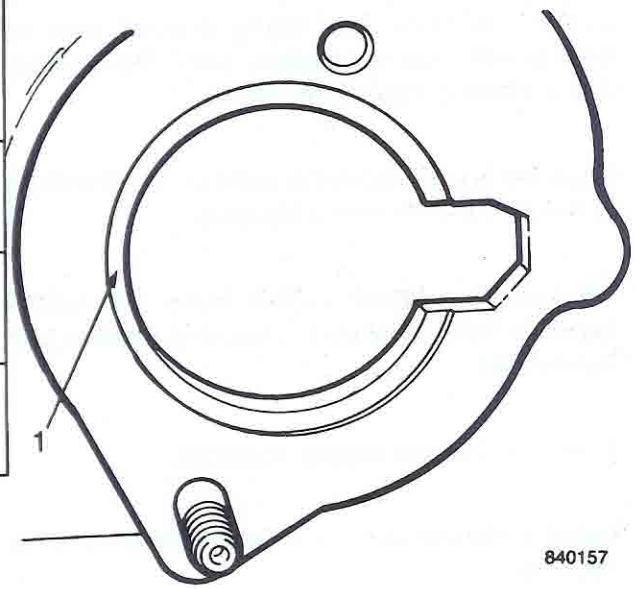
Install a replacement thermostat, gasket and the housing.

NOTE: Install the replacement thermostat so that the pellet, which is encircled by a coil spring, faces the engine. All thermostats are marked on the outer flange to indicate the proper installed position.

SEE I.S. NOTES

CAUTION: Observe the recess in the cylinder head and position the thermostat in the groove (1). Next, install the replacement gasket and thermostat housing. Tightening the housing unevenly or with the thermostat out of its recess will result in a cracked housing.

SEE I.S. NOTES



Tighten the housing bolts with 18 N·m (13 ft-lbs) torque.

Install the radiator upper hose and intake manifold hose.

Ensure that the radiator draincock is tightly closed.

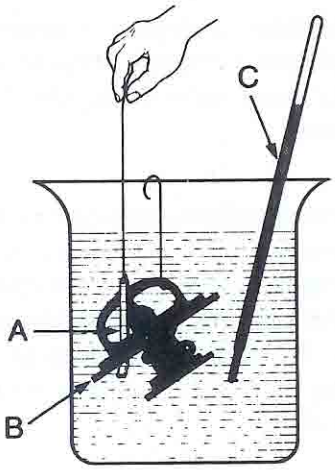
Fill the cooling system to the correct level with the required coolant mixture. Refer to Coolant.

Testing

Remove the thermostat. Refer to Thermostat Replacement.

Insert a 0.076-mm (0.003-in) feeler gauge, with a wire or string attached, between the thermostat valve and seat.

WARNING: Antifreeze is poisonous. Keep out of the reach of children.



A - Feeler Gauge
B - Thermostat
C - Thermometer

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Submerge the thermostat in a container of pure antifreeze and suspend it so that it does not touch the sides or the bottom of the container.

Suspend a thermometer in the antifreeze so that it does not touch the container.

WARNING: Do not breathe the vapor. Ensure the test area is properly ventilated.

Heat the antifreeze.

Apply a slight tension on the feeler gauge while the antifreeze is heated. When the valve opens the feeler gauge will slip free from the valve. Note the temperature. Refer to the Thermostat Calibrations chart. If defective, replace the thermostat.

Install the thermostat. Refer to Thermostat Replacement.

Thermostat Calibrations

	4- and 6-Cylinder
Must Be Open 0.076 mm (0.003-inch)	90°C (195°F)
Must Be Fully Open	103°C (218°F)

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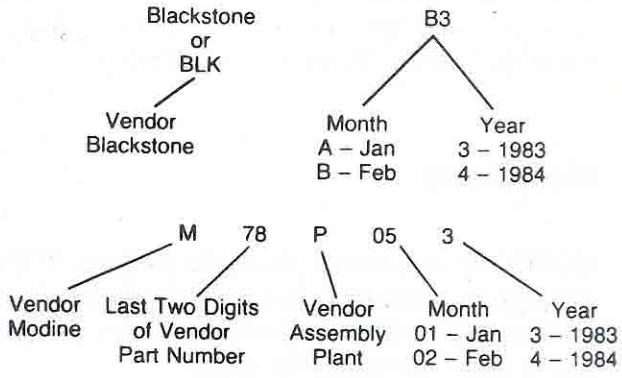
RADIATOR

Identification

Radiators are identified by a Jeep part number and the vendor build code number embossed on the upper tank.

Radiator Identification



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Maintenance

NOTE: To test a radiator for leaks or pressure loss, refer to Cooling System Leakage Tests.

The radiator should be free from any obstruction of airflow. This includes bugs, clogged bug screens, leaves, mud, emblems, flags, fog or driving lamps, improperly mounted license plates, large nonproduction bumper guards or collision damage.

NOTE: Remove dirt and other debris by blowing compressed air from the engine side of the radiator through the cooling fins.

Any one of several faults or defects can affect radiator operation:

- bent or damaged cooling tubes
- corrosion deposits restricting coolant flow
- cooling tubes restricted because of improper soldering

SEE I.S. NOTES

SEE I.S. NOTES

Repair damaged tubes that affect proper operation. Coolant leaks can be detected by applying 21-34 kPa (3-5 psi) of air pressure to the radiator while it is submerged in water. Repair the leak holes with solder. Clean clogged radiators with solvent or by reverse flushing. Refer to Cooling System Maintenance.

Replacement

NOTE: Do not waste reusable coolant. If the solution is clean and is being drained only to service the cooling system, drain the coolant into a clean container for reuse.

WARNING: Do not remove the cylinder block drain plugs or loosen the radiator draincock with the system hot and pressurized because serious burns from the coolant can occur.

Position a drain pan under the radiator and remove the draincock. Observe the WARNING above.

Remove the radiator cap.

Disconnect the radiator upper hose.

Disconnect the coolant recovery hose, if equipped.

Remove the fan shroud screws, if equipped.

Remove the radiator top attaching screws.

Disconnect the radiator lower hose.

Disconnect and plug the transmission fluid cooler pipes, if equipped with an automatic transmission.

Remove the radiator bottom attaching screws.

Remove the radiator.

Install the replacement radiator.

Install the radiator attaching screws.

Position the fan shroud and install the screws, if equipped.

Install the draincock.

Remove the plugs and connect the transmission fluid cooler pipes, if equipped.

Connect the radiator lower hose with a replacement clamp.

Connect the radiator upper hose with a replacement clamp.

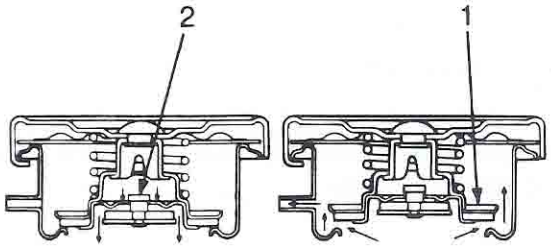
Install the coolant. Use the correct mixture. Refer to Coolant.

Connect the coolant recovery hose, if equipped.

Install the radiator cap.

Pressure Cap

The radiator pressure cap consists of a pressure valve (1) and a vacuum valve (2).



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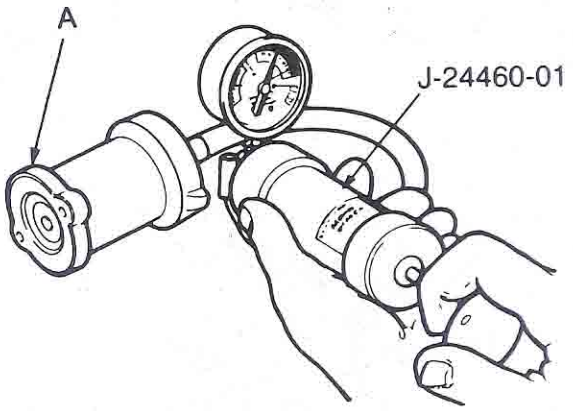
Testing

Remove the cap from the radiator.

Ensure that the seating surfaces are clean.

Moisten the rubber gasket with water and install the cap (A) on tester J-24460-01.



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Operate the tester pump and observe the gauge pointer at its highest point. The cap release pressure should be 82.7 - 103.4 kPa (12 - 15 psi).

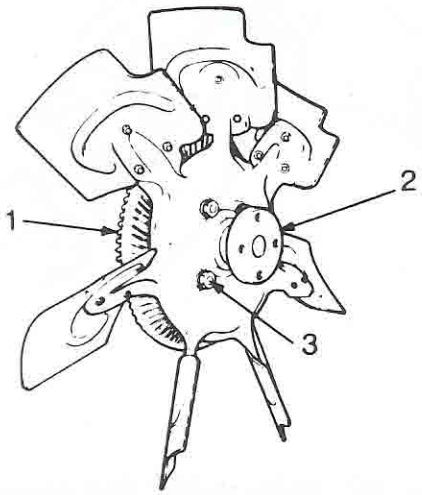
NOTE: The cap is satisfactory when the pressure holds steady or holds within the 82.7 - 103.4 kPa (12 - 15 psi) range for 30 seconds or more. If the pointer drops quickly, replace the cap.

SEE I.S. NOTES

FAN

SEE I.S. NOTES

There are several types of metal fans available for all engines. Most engines with a standard cooling system use a four-bladed rigid fan. Certain engines are fitted with standard equipment multi-bladed viscous drive (Tempatrol) fans.



1 - Silicone Fluid Chamber
2 - Mounting Flange
3 - Fan Blade Attaching Bolts (4)

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Fan blade assemblies are balanced within 0.25 ounce and should not be altered in any way. Replace a damaged or bent fan. Do not attempt repair. Refer to the Cooling System Components chart for fan applications.

CAUTION: Fans are designed to be compatible with certain applications only. Do not attempt to increase the cooling capacity by installing a fan not intended for a given engine. Fan or water pump damage and noise may result.

Replacement

Removal

Disconnect the fan shroud from the radiator, if equipped.

Remove the belt(s).

Remove the attaching nuts and remove the fan and drive as a unit.

Remove the fan shroud.

The Tempatrol drive unit should be replaced if there is an indication of a fluid leak, noise or if roughness is detected when turning by hand. If the drive cannot be turned by hand, or if the leading edge of the fan can be moved more than 6.35 mm (1/4 in) front to rear, replace the drive unit.

If it is necessary to replace either the Tempatrol fan blade unit or the drive unit separately, use the following procedure.

CAUTION: Engines equipped with a serpentine (single) drive belt have a reverse rotating water pump and viscous (Tempatrol) fan drive assembly. The components are identified by the words REVERSE stamped on the cover of the viscous drive and inner side of the fan, and REV cast into the water pump body. Do not install components that are intended for non-serpentine drive belts.

CAUTION: To prevent silicone fluid from draining into the fan drive bearing and contaminating the lubricant, do not place the Tempatrol fan unit on the work bench with the rear mounting flange down.

Remove the bolts attaching the fan blade unit to the drive unit.

Attach the replacement unit. Tighten the bolts with 24 N·m (18 ft-lbs) torque.

Installation

Position the fan shroud, if equipped.

Install the fan attaching nuts and tighten.

Install the belt(s) and tighten to the specified tension. Refer to Drive Belt Adjustments.

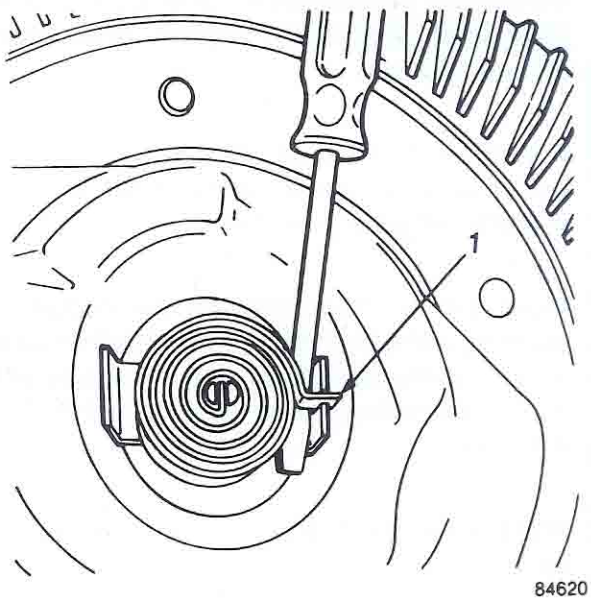
Install the shroud attaching screws and tighten, if removed.

Tempatrol Fan Test

In an engine overheating situation, the Tempatrol drive unit can be statically tested for proper operation by observing the movement of the bimetallic spring coil and shaft.

To test, disconnect the end of the bimetallic spring coil (1) from the slot and rotate it counterclockwise until a stop is felt.

NOTE: Do not force beyond the stop.



The gap between the end of the coil and the clip on the housing should be approximately 13 mm (1/2 in). Replace the unit if the shaft does not rotate with the coil. After testing, connect the end of the coil in the slot.

Dynamic Test

CAUTION: Ensure there is adequate fan blade clearance before drilling.

Drill 3.18-mm (1.8-in) diameter hole in the top center of the fan shroud.

CAUTION: Ensure there is adequate clearance from the fan blades.

SEE I.S. NOTES

Insert a dial thermometer, -18°C to 105°C (0°F to 220 °F) with a 20-mm (8-in) stem, or equivalent, through the hole in the shroud.

Connect a tachometer and ignition timing light (to be used as strobe light). Refer to Ignition System Timing procedures.

SEE I.S. NOTES

Block the air flow through the radiator by securing a sheet of plastic in front of the radiator (or air conditioner condenser). Use tape at the top to secure the plastic and ensure the air flow is blocked.

NOTE: Ensure the air conditioner, if equipped, is turned off.

CAUTION: The cooling system must be in good condition prior to performing the test to ensure against excessively high coolant temperature.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Start the engine and operate at 2400 rpm with the timing light (strobe light) aimed at the fan blades.

Within ten minutes the air temperature indicated on dial thermometer should be 88°C (190°F).

Satisfactory operation of the fan drive requires that it engage before or at 88°C (190°F).

Engagement is distinguishable by a definite increase in the audible fan air flow noise. The timing light will also indicate an increase in the speed of fan.

When the air temperature reaches 88°C (190°F), remove the plastic sheet.

Satisfactory operation of the Tempatrol fan requires the air temperature to drop 11°C (20°F) or more. A definite decrease of audible fan air flow noise should be noticed.

Replace the fan assembly if defective.

FAN SHROUD

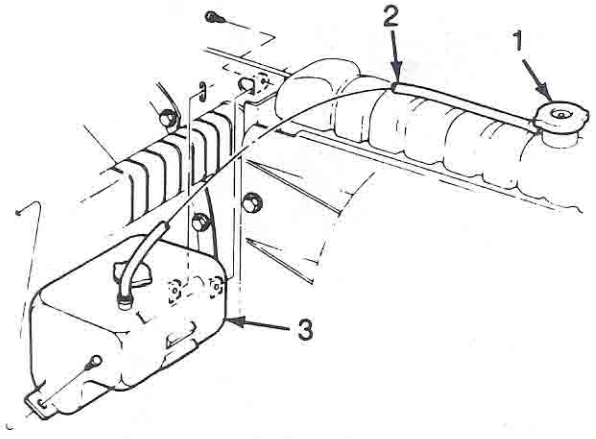
In some extreme situations, the engine fan blades may contact the shroud. An examination for proper engine mounting should isolate the problem. If not, examine the shroud position.

To compensate for normal engine movement, loosen the shroud attaching screws and reposition the shroud to prevent the fan-to-shroud contact.

Inspect the fan for bent blades and replace the fan if necessary.

COOLANT RECOVERY SYSTEM

The coolant recovery system consists of a special pressure radiator cap (1), an overflow tube (2) and a plastic coolant recovery bottle (3).



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Coolant Recovery Bottle Replacement

Removal

Remove the tube from the radiator filler neck fitting.

Remove the bottle from the front wheelhouse panel.

Pour the coolant into a clean container for reuse.

Remove the tube from the bottle.

Installation

Install the tube in a replacement bottle and clamp the tube to the bottle with a replacement clamp.

Install the bottle on the front wheelhouse panel.

Connect the tube to the radiator filler neck fitting and secure with a clamp.

Install coolant in the bottle. Ensure the tube is submerged in the coolant.

CYLINDER BLOCK HEATER

A factory-installed cylinder block heater is optional. It consists of a 600W, 120V heater element fitted into a core plug hole in the cylinder block, a power cord and nylon straps (placed in the glove box for installation when it is necessary to use the heater).

SEE I.S. NOTES

Installation

SEE I.S. NOTES

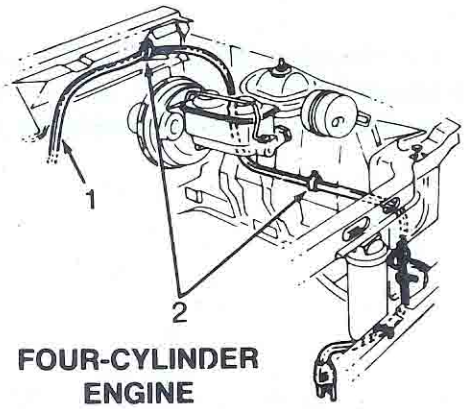
NOTE: Do not waste reusable coolant. If the solution is clean and is being drained only to service the engine or cooling system, drain the coolant into a clean container for reuse.

WARNING: Do not remove the cylinder block drain plugs or loosen the radiator draincock with the system hot and pressurized because serious burns from the coolant can occur.

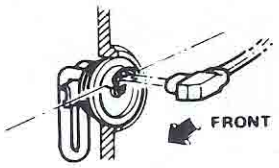
Drain the coolant from the engine. Observe the NOTE and WARNING above.

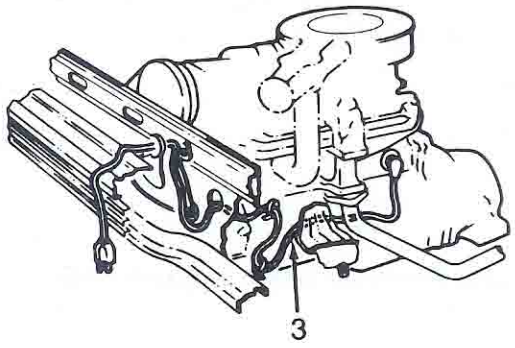
CAUTION: Use care when tightening the cylinder block heater attaching parts. Improper tightening may damage the seal or allow the heater to loosen, resulting in coolant loss and engine damage.

Remove the core plug and install the cylinder block heater. Tighten the T-bolt type with 2.3 N·m (20 in-lbs) torque. Tighten the compression nut-type with 14 N·m (10 ft-lbs) torque.



FOUR-CYLINDER ENGINE





SIX-CYLINDER ENGINE

1 - To the Heater
2 - Route the Cord Through the Harness Clips
3 - Route the Cord Between the Engine Mount and Cylinder Block

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From the front of the vehicle, route the heater (female) end of the power cord through the hole in the front panel, along the wire harness and connect it to the cylinder block heater.

Use the nylon tie straps furnished to secure the cord to the wire harness and to the inside of the grille. Allow the cord to extend outside of the grille.

Refill the radiator with coolant.

COOLING SYSTEM MAINTENANCE

CAUTION: The cooling system normally operates at 82.7 - 103.4 kPa (12 - 15 psi) pressure. Exceeding this pressure may damage the radiator or hoses.

Engine Flushing

Remove the thermostat housing and thermostat. Install the thermostat housing.

Disconnect the upper radiator hose from the radiator and attach the flushing gun to the hose.

Disconnect the lower radiator hose from the water pump and attach a leadaway hose to the water pump inlet fitting.

Connect the water supply hose and air supply hose to the flushing gun.

Allow the engine to fill with water.

When the engine is filled, apply air in short blasts, allowing the system to fill between air blasts. Continue until clean water flows through the leadaway hose.

Remove the leadaway hose, flushing gun, water supply hose and air supply hose.

Remove the thermostat housing and install the thermostat.

Install the thermostat housing with a replacement gasket. Refer to Thermostat Replacement.

Connect the radiator hoses.

Refill the cooling system with the correct anti-freeze/water mixture.

Solvent Cleaning

In some instances, the use of a radiator cleaner (AMC Radiator Kleen, or equivalent) before flushing will soften scale and other deposits and aid the flushing operation.

CAUTION: Ensure that the instructions on the container are followed.

Radiator Reverse Flushing

Disconnect the radiator hoses from the radiator fittings.

Attach a section of radiator hose to the radiator bottom outlet fitting and insert the flushing gun.

Connect a water supply hose and air supply hose to the flushing gun. Note the excess pressure caution.

SEE I.S. NOTES

Allow the radiator to fill with water.

When the radiator is filled, apply air in short blasts, allowing the radiator to refill between blasts.

Continue this reverse flushing until clean water flows out through radiator upper fitting. If flushing fails to clear the radiator cooling tube passages, have the radiator cleaned more extensively by a radiator repair shop.

SEE I.S. NOTES

Transmission Fluid Cooler Repairs

Because of the high pressure applied to the fluid cooler, do not attempt conventional soldering to repair fractures/holes. All repairs must be silver-soldered or brazed.

Core Plugs

Prior to HOT TANKING for cylinder block cleaning, remove the casting flash causing hot spots or coolant flow blockage.

Remove the core plugs with a hammer, chisel and pry tool.

Apply a sealer to the edges of the replacement plugs and position the plugs with the lip toward the outside of the cylinder block. Install with a hammer and suitable tool. Refer to the Core Plug Sizes chart.

Core Plugs

Engine	Location	Diameter	
		mm	in
Four-Cylinder	Head	22	0.875
	Head (Rear)	51	2.0
	Block (3 on Side)	51	2.0
	Block (1 on Rear)	44	1.75
Six-Cylinder	Head (3 Left Side)	22	0.875
	Head (Rear)	51	2.0
	Block (3 Left Side, 1 Rear)	51	2.0

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COOLING SYSTEM DIAGNOSIS

If the cooling system requires frequent addition of coolant to maintain the correct level, inspect all components and hose connections in the cooling system for evidence of leakage.

Perform the inspection with the cooling system cold. Small leaks, which may appear as dampness or dripping, can easily escape detection if they are rapidly evaporated by engine heat.

Telltale stains of a grayish white or rusty color, or dye stains from antifreeze, may appear at connecting joints (e.g., water pump, thermostat housing and cylinder head) in the cooling system.

These stains are almost always a sure indication of small leaks, though there may appear to be no defects.

Air may be drawn into the cooling system through incomplete sealing at the water pump

shaft seal or through incomplete sealing in the coolant recovery system.

Combustion pressure may be forced into the cooling system through a fracture in the cylinder head gasket, though the passage is too small to allow coolant to enter the combustion chamber.

NOTE: Immediately after shutdown, the engine enters a condition known as heat soak. This is caused by the cooling system being inoperative while the engine temperature is still high. If the coolant temperature rises above the boiling point, expansion and pressure may push some coolant out of the radiator overflow tube (if equipped). If this does not occur frequently, it is considered normal.

Refer to the applicable diagnosis chart for specific cooling system faults.

SEE I.S. NOTES

Service Diagnosis

Condition	Possible Cause	Correction
HIGH TEMPERATURE GAUGE INDICATION - OVERHEATING	(1) Coolant level low.	(1) Replenish coolant.
	(2) Fan belt loose.	(2) Adjust fan belt tension.
	(3) Radiator hose(s) collapsed.	(3) Replace hose(s).
	(4) Radiator airflow blocked.	(4) Remove restriction (bug screen, fog lamps, etc.)
	(5) Faulty radiator cap.	(5) Replace radiator cap.
	(6) Ignition timing incorrect.	(6) Adjust ignition timing.
	(7) Idle speed low.	(7) Adjust idle speed.
	(8) Air trapped in cooling system.	(8) Purge air.
	(9) Heavy traffic driving.	(9) Operate at fast idle in neutral intermittently to cool engine.
	(10) Incorrect cooling system component(s) installed.	(10) Install proper component(s).
	(11) Faulty thermostat.	(11) Replace thermostat.

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Service Diagnosis (Continued)

SEE I.S. NOTES

Condition	Possible Cause	Correction
HIGH TEMPERATURE INDICATION-OVERHEATING (Continued)	(12) Water pump shaft broken or impeller loose.	(12) Replace water pump.
	(13) Radiator tubes clogged.	(13) Flush radiator.
	(14) Cooling system clogged.	(14) Flush system.
	(15) Casting flash in cooling passages.	(15) Repair or replace as necessary. Flash may be visible by removing cooling system components or removing core plugs.
	(16) Brakes dragging.	(16) Repair brakes.
	(17) Excessive engine friction.	(17) Repair engine.
	(18) Antifreeze concentration over 68%.	(18) Lower antifreeze concentration percentage.
	(19) Missing air seals.	(19) Replace air seals.
	(20) Faulty gauge or sending unit.	(20) Repair or replace faulty component.
	(21) Loss of coolant flow caused by leakage or foaming.	(21) Repair or replace leaking component, replace coolant.
	(22) Viscous fan drive failed.	(22) Replace unit.
LOW TEMPERATURE INDICATION—UNDERCOOLING	(1) Thermostat stuck open.	(1) Replace thermostat.
	(2) Faulty gauge or sending unit.	(2) Repair or replace faulty component.
COOLANT LOSS—BOILOVER	**Refer to Overheating Causes in addition to the following items.**	
	(1) Overfilled cooling system.	(1) Reduce coolant level to proper specification.
	(2) Quick shutdown after hard (hot) run.	(2) Allow engine to run at fast idle prior to shutdown.
	(3) Air in system resulting in occasional "burping" of coolant.	(3) Purge system.
	(4) Insufficient antifreeze allowing coolant boiling point to be too low.	(4) Add antifreeze to raise boiling point.
	(5) Antifreeze deteriorated because of age or contamination.	(5) Replace coolant.
	(6) Leaks due to loose hose clamps, loose nuts, bolts, drain plugs, faulty hoses, or defective radiator.	(6) Pressure test system to locate source of leak(s) then repair as necessary.

NOTE: *Immediately after shutdown, the engine enters a condition known as heat soak. This is caused by the cooling system being inoperative while engine temperature is still high. If coolant temperature rises above boiling point, expansion and pressure may push some coolant out of the radiator overflow tube. If this does not occur frequently it is considered normal.*

Service Diagnosis (Continued)

Condition	Possible Cause	Correction
COOLANT LOSS — BOILOVER (Continued)	(7) Faulty head gasket.	(7) Replace head gasket.
	(8) Cracked head, manifold, or block.	(8) Replace as necessary.
	(9) Faulty radiator cap.	(9) Replace cap.
COOLANT ENTRY INTO CRANKCASE OR CYLINDER(S)	(1) Faulty head gasket.	(1) Replace head gasket.
	(2) Crack in head, manifold or block.	(2) Replace as necessary.
COOLANT RECOVERY SYSTEM INOPERATIVE	(1) Collant level low.	(1) Replenish coolant to FULL mark.
	(2) Leak in system.	(2) Pressure test to isolate leak and repair as necessary.
	(3) Pressure cap not tight or seal missing, or leaking	(3) Repair as necessary.
	(4) Pressure cap defective.	(4) Replace cap.
	(5) Overflow tube clogged or leaking.	(5) Repair as necessary.
	(6) Recovery bottle vent restricted.	(6) Remove restriction.
NOISE	(1) Fan contacting shroud.	(1) Reposition shroud and inspect engine mounts.
	(2) Loose water pump impeller.	(2) Replace pump.
	(3) Glazed fan belt.	(3) Apply silicone or replace belt.
	(4) Loose fan belt.	(4) Adjust fan belt tension.
	(5) Rough surface on drive pulley.	(5) Replace pulley.
	(6) Water pump bearing worn.	(6) Remove belt to isolate. Replace pump.
	(7) Belt alignment.	(7) Check pully alignment. Repair as necessary.
NO COOLANT FLOW THROUGH HEATER CORE	(1) Restricted return inlet in water pump.	(1) Remove restriction.
	(2) Heater hose collapsed or restricted.	(2) Remove restriction or replace hose.
	(3) Restricted heater core.	(3) Remove restriction or replace core.
	(4) Restricted outlet in thermostat housing.	(4) Remove flash or restriction.
	(5) Intake manifold bypass hole in cylinder head restricted.	(5) Remove restriction.
	(6) Faulty heater control valve.	(6) Replace valve.
	(7) Intake manifold coolant passage restricted.	(7) Remove restriction or replace intake manifold.

SEE I.S. NOTES

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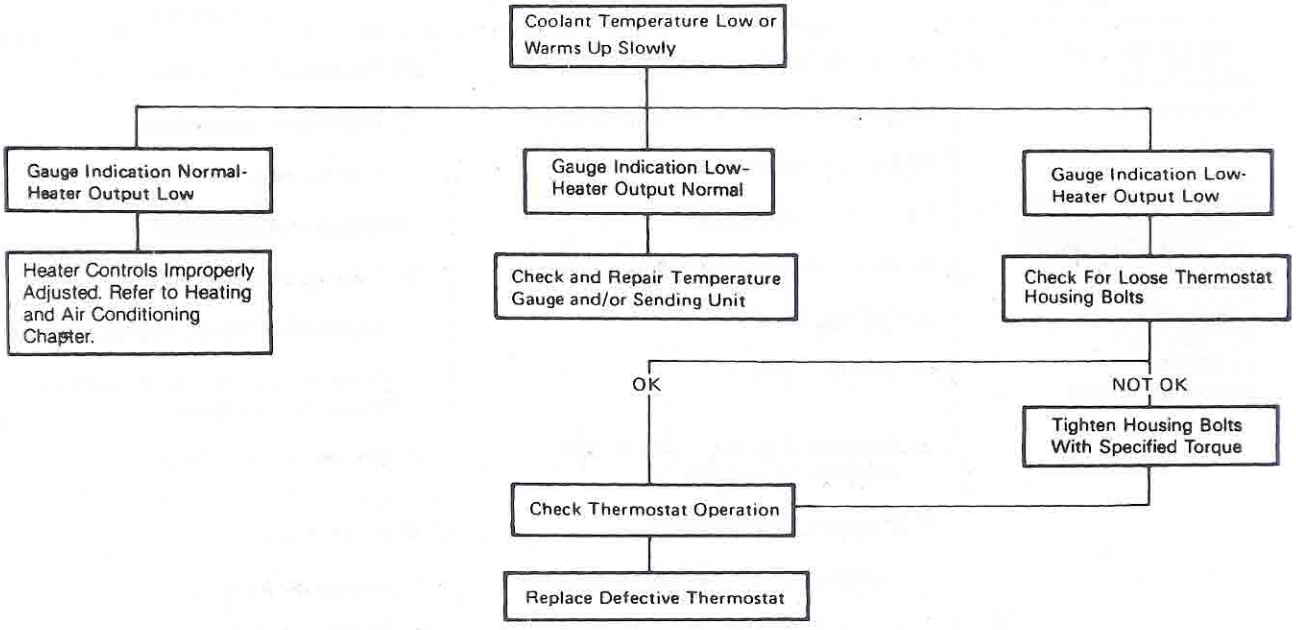
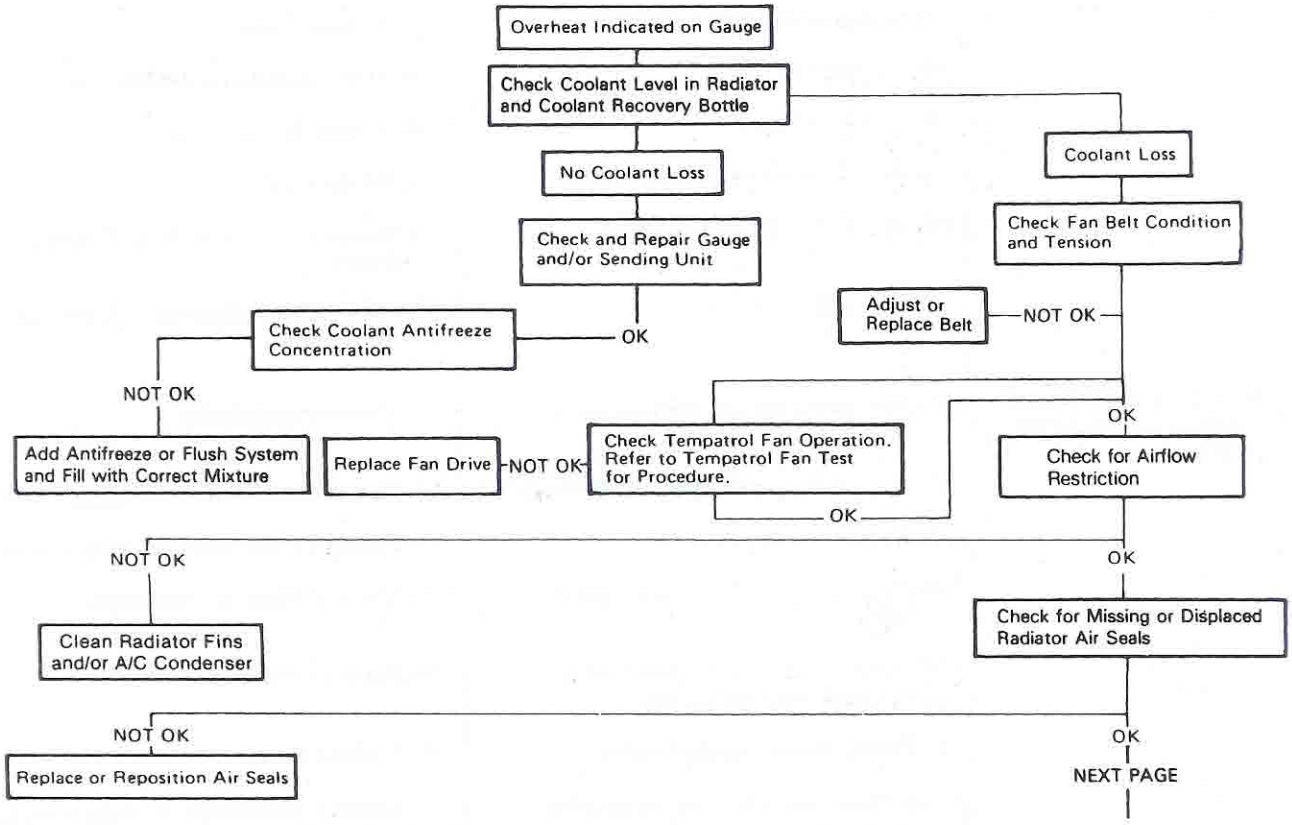
SEE I.S. NOTES

Low Coolant Temperature Diagnosis Guide



Engine Overheating Diagnosis Guide



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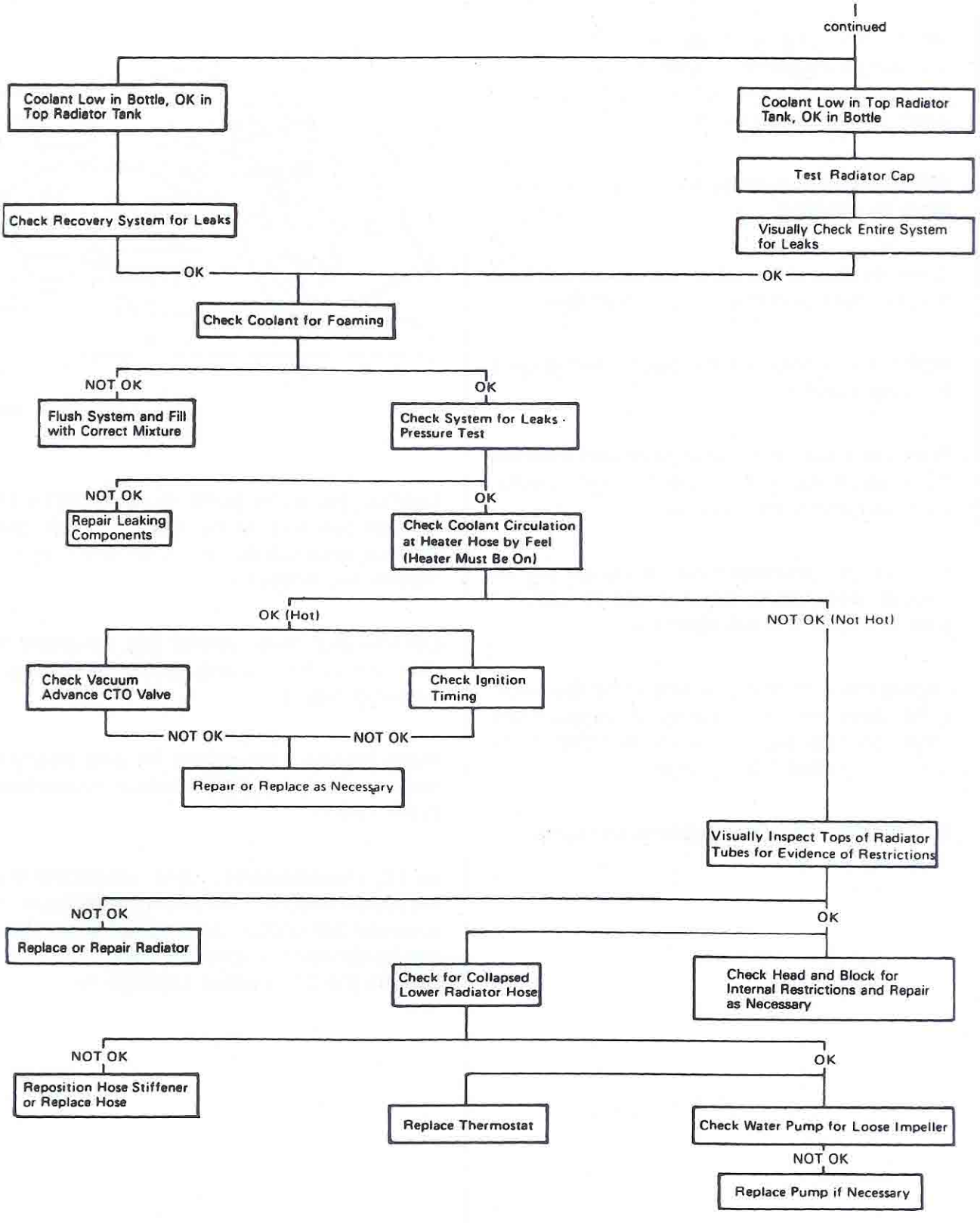
Engine Overheating Diagnosis Guide (Continued)



SEE I.S. NOTES

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Cooling System Leakage Tests

SEE I.S. NOTES

NOTE: The engine should be at the normal operating temperature. Inspect the system cold if the cause of coolant loss is not located during warm engine examination.

WARNING: Hot, pressurized coolant can cause injury by scalding.

Carefully remove the radiator pressure cap from the filler neck and check the coolant level.

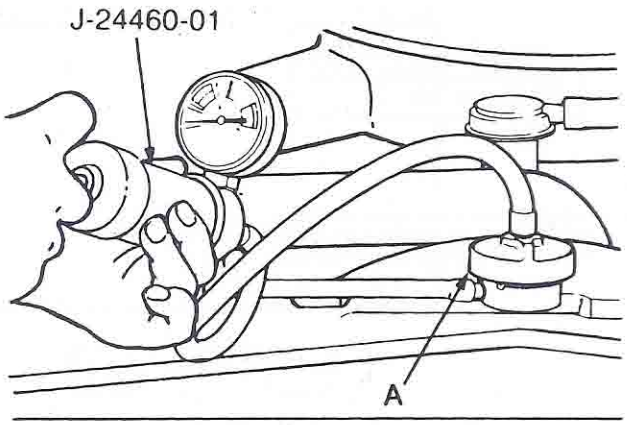
NOTE: Push down on the cap to disengage it from the stop tabs.

Wipe the inside of the filler neck and examine the lower inside sealing seat for nicks, cracks, paint, dirt and solder residue.

Inspect the overflow tube (if equipped) for internal obstructions. Insert a wire through the tube to ensure it is not obstructed.

Inspect the cams on the outside of the filler neck. If the cams are bent, seating of pressure cap valve and tester seal will be affected. Bent cams can be reformed if done carefully.

Attach a pressure tester (J-24460-01) to the filler neck (A). Do not force.



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Operate the tester pump to apply 103.4 kPa (15 psi) pressure to the system. If the hoses enlarge excessively or bulge while testing, replace as necessary.

Observe the gauge pointer and determine the condition of the cooling system according to following criteria.

Holds Steady: if the pointer remains steady for two minutes, there are no serious coolant leaks in the system.

NOTE: There could be an internal leak that does not appear with normal system test pressure. If it is certain that coolant is being lost and no leaks can be detected, inspect for interior leakage or perform the Combustion Leakage Test.

Drops Slowly: indicates a small leak or seepage is occurring. Examine all connections for seepage or slight leakage with a flashlight. Inspect the radiator, hoses, gasket edges and heater. Seal small leak holes with AMC Sealer Lubricant, or equivalent. Repair the leak holes and reinspect the system with pressure applied.

Drops Quickly: indicates that a serious leakage is occurring. Examine the system for serious ex[illegible]

WARNING: Do not allow pressure to exceed 103.4 kPa (15 psi). Turn the engine Off. To release the pressure, rock the tester from side to side. When removing the tester, do not turn the tester more than 1/2 turn if the system is under pressure.

If there is no immediate pressure increase, pump the pressure tester until the indicated pressure is within the system range.

SEE I.S. N O T E

SEE I.S. NOTES

Drain sufficient coolant to allow the thermostat to be removed. Refer to Thermostat Replacement.

Disconnect the water pump drive belt.

Disconnect the radiator upper hose from the thermostat housing.

Remove the housing and thermostat. Install the thermostat housing on the cylinder head.

Add coolant to the radiator to raise the level to within 6.3 mm (1/4 in) of the top of the thermostat housing.

CAUTION: Avoid overheating. Do not operate the engine for an excessive period of time. Open the draincock immediately after the test to eliminate boilover.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Start the engine and accelerate rapidly three times, to approximately 3000 rpm while observing the coolant.

If internal engine combustion gases are leaking into the cooling system, bubbles will appear in the coolant. If bubbles do not appear, there is no internal combustion gas leakage.

Transmission Fluid Cooler Leakage Test

Transmission fluid cooler leaks can be detected by the presence of transmission fluid in the coolant.

If fluid appears in the coolant, check the fluid level in the automatic transmission. If the fluid level is low, test the fluid cooler according to the following procedure.

Disconnect the transmission-to-cooler pipes at the radiator.

Plug one cooler fitting.

Remove the radiator cap and ensure the radiator is filled with coolant.

Apply shop air pressure 344 - 690 kPa (50 - 100 psi) to the other cooler fitting.

CAUTION: Because of high fluid pressure, conventional soldering must not be used for fluid cooler repair. All repairs must be silver-soldered or brazed.

Bubbles in the coolant at the filler neck indicate a leak in the fluid cooler.

If a transmission fluid cooler leak is discovered, remove the radiator for cooler repair. Remove the outlet tank for access to the fluid cooler.

DRIVE BELT ADJUSTMENTS

General

After the need for adjustment has been determined, drive belts are adjusted by pivoting the driven component in its mount to achieve the specified tension.

In some applications, a belt may either drive several components or a single drive belt (serpentine) is used to drive all the components.

It is necessary to loosen and pivot only one component.

Locate the drive belt that is to be tested for the correct tension.

Test the tension with Gauge Tool J-23600 or J-29550 if accessibility is limited (e.g., A/C compressor drive belt). Use Gauge Tool J-23600-B for serpentine drive belts.

If necessary, adjust the drive belt.

Re-test tension after the adjustment.

Adjustments

Alternator and Fan (Without Air Conditioner) – All Engines

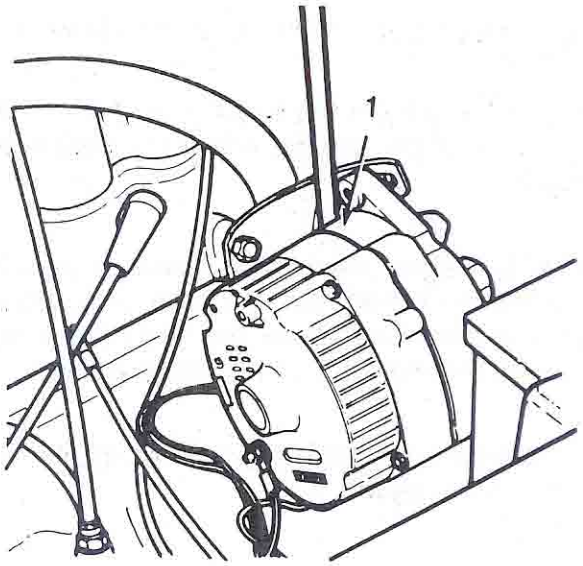
Position Tension Gauge Tool J-23600 or J-29550 on the upper section of the belt midway between the alternator pulley and the fan pulley.

Test the belt tension according to the manufacturer's instructions.

Adjust the belt tension to the specification if less than 400 N (90 lb-f).

Adjustment procedure (except serpentine):

- loosen the alternator pivot and adjusting bolts
- pry on the alternator front housing only (1)
- tighten the belt with a pry bar
- tighten the adjusting bolt with 27 N·m (20 ft-lbs) torque
- tighten the pivot bolt with 38 N·m (28 ft-lbs) torque
- re-test the tension



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Alternator (With Air Conditioner) – Six-Cylinder Engine

Position Tension Gauge Tool J-29550 on a section of the belt left of the alternator and below the A/C compressor.

Test the belt tension according to manufacturer's instructions.

NOTE: Battery removal is not necessary when using Tension Gauge Tool J-29550.

Adjust the belt tension to the specification if less than 400 N (90 lb-f).

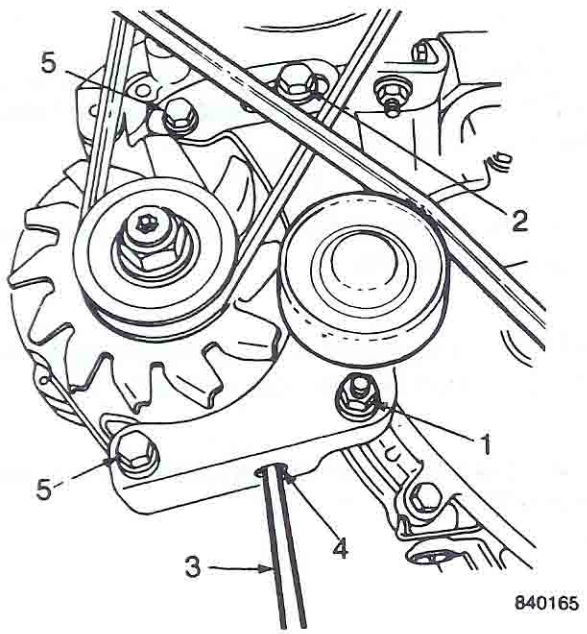
SEE I.S. NOTES

Adjustment procedure (except serpentine):

- from the underside of the engine compartment, loosen the lower mounting bracket pivot nut (1) and adjusting bolt (2)
- do not loosen the bracket attaching bolts (5)
- insert a pry bar (3) into the hole (4) in the bottom of the bracket and pry to tighten the belt

NOTE: Some alternator brackets have a 12.7-mm (1/2-in) square hole to facilitate adjustments from above the alternator with a 12-mm (1/2-in) drive rachet and extension.

- tighten the adjusting bolt and nut with 38 N·m (28 ft-lbs) torque
- tighten the pivot bolt and nut with 38 N·m (28 ft-lbs) torque
- re-test the tension



Air Conditioner Compressor – Six-Cylinder Engine

Position Tension Gauge Tool J-23600 or J-29550 on the upper section of the belt midway between the compressor pulley and the idler pulley.

Test the belt tension according to the manufacturer's instructions.

Adjust the belt tension to the specification if less than 400 N (90 lb-f).

Adjustment procedure (except serpentine):

- loosen the clamp bolt and the idler pulley bracket pivot bolt
- insert the drive lug of a 12-mm (1/2-in) drive ratchet into the adjustment hole in the idler pulley bracket and pivot the bracket to tighten the belt
- tighten the bolts with 41 N·m (30 ft-lbs) torque
- re-test the tension

Power Steering Pump – All Engines

Position Tension Gauge Tool J-23600 or J-29550 on the lower section of the belt midway between the power steering pump pulley and the crankshaft pulley.

Test the belt tension according to the manufacturer's instructions.

Adjust the belt tension to the specification if less than 400 N (90 lb-f).

Adjustment procedure (except serpentine):

- loosen the adjusting bolts that attach the power steering pump bracket to the adapter plates

NOTE: The bolt that attaches the pump bracket to the rear adapter plate is located behind the rear adapter plate flange.

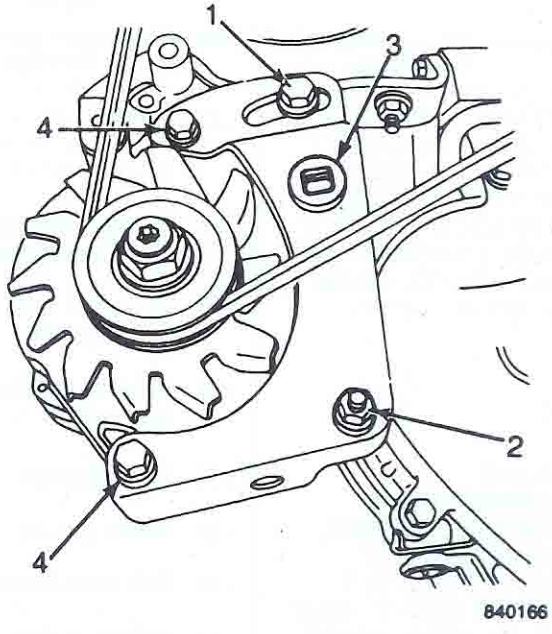
- insert the drive lug of a 12-mm (1/2-in) drive ratchet into the adjustment hole in the bracket and pivot the bracket to tighten the belt

- tighten the bolts with 38 N·m (28 ft-lbs) torque

- re-test the tension

Serpentine Drive Belt

Position Tension Gauge Tool J-23600-B on the longest accessible span of the belt



- from the underside of the engine compartment, loosen the alternator adjustment (1) and pivot bolts (2)

- do not loosen the bracket attaching bolts (4)

Serpentine Drive Belt Diagnosis

SEE I.S. NOTES

Condition	Possible Cause	Correction
TENSION SHEETING FABRIC FAILURE (WOVEN FABRIC ON OUTSIDE CIRCUMFERENCE OF BELT HAS CRACKED OR SEPARATED FROM BODY OF BELT)	(1) Grooved or backside idler pulley diameters are less than minimum recommended.	(1) Replace pulley(s) not conforming to specification.
	(2) Tension sheeting contacting (rubbing) stationary object.	(2) Correct rubbing condition.
	(3) Excessive heat causing woven fabric to age.	(3) Replace belt.
	(4) Tension sheeting splice has fractured.	(4) Replace belt.
NOISE (OBJECTIONAL SQUEAL, SQUEAK, OR RUMBLE IS HEARD OR FELT WHILE DRIVE BELT IS IN OPERATION)	(1) Belt slippage.	(1) Adjust belt.
	(2) Bearing noise.	(2) Locate and repair.
	(3) Belt misalignment.	(3) Align belt/pulley(s).
	(4) Belt-to-pulley mismatch.	(4) Install correct belt.
	(5) Driven component inducing vibration.	(5) Locate defective driven component and repair.
	(6) System resonant frequency inducing vibration.	(6) Vary belt tension within specifications. Replace belt.
RIB CHUNKING (ONE OR MORE RIBS HAS SEPARATED FROM BELT BODY)	(1) Foreign objects imbedded in pulley grooves.	(1) Remove foreign objects from pulley grooves.
	(2) Installation damage.	(2) Replace belt.
	(3) Drive loads in excess of design specifications.	(3) Adjust belt tension.
	(4) Insufficient internal belt adhesion.	(4) Replace belt.
RIB OR BELT WEAR (BELT RIBS CONTACT BOTTOM OF PULLEY GROOVES)	(1) Pulley(s) misaligned.	(1) Align pulley(s).
	(2) Mismatch of belt and pulley groove widths.	(2) Replace belt.
	(3) Abrasive environment.	(3) Replace belt.
	(4) Rusted pulley(s).	(4) Clean rust from pulley(s).
	(5) Sharp or jagged pulley groove tips.	(5) Replace pulley.
	(6) Rubber deteriorated.	(6) Replace belt.
LONGITUDINAL BELT CRACKING (CRACKS BETWEEN TWO RIBS)	(1) Belt has mistracked from pulley groove.	(1) Replace belt.
	(2) Pulley groove tip has worn away rubber-to-tensile member.	(2) Replace belt.

81102A

Serpentine Drive Belt Diagnosis (Continued)

Condition	Possible Cause	Correction
BELT SLIPS	(1) Belt slipping because of insufficient tension.	(1) Adjust tension.
	(2) Belt or pulley subjected to substance (belt dressing, oil, ethylene glycol) that has reduced friction.	(2) Replace belt and clean pulleys.
	(3) Driven component bearing failure.	(3) Replace faulty component bearing.
	(4) Belt glazed and hardened from heat and excessive slippage.	(4) Replace belt.
"GROOVE JUMPING" (BELT DOES NOT MAINTAIN CORRECT POSITION ON PULLEY, OR TURNS OVER AND/OR RUNS OFF PULLEYS)	(1) Insufficient belt tension.	(1) Adjust belt tension.
	(2) Pulley(s) not within design tolerance.	(2) Replace pulley(s).
	(3) Foreign object(s) in grooves.	(3) Remove foreign objects from grooves.
	(4) Excessive belt speed.	(4) Avoid excessive engine acceleration.
	(5) Pulley misalignment.	(5) Align pulley(s).
	(6) Belt-to-pulley profile mismatched.	(6) Install correct belt.
	(7) Belt cordline is distorted.	(7) Replace belt.
BELT BROKEN (NOTE: IDENTIFY AND CORRECT PROBLEM BEFORE REPLACEMENT BELT IS INSTALLED)	(1) Excessive tension.	(1) Replace belt and adjust tension to specification.
	(2) Tensile members damaged during belt installation.	(2) Replace belt.
	(3) Belt turnover.	(3) Replace belt.
	(4) Severe pully misalignment.	(4) Align pulley(s).
	(5) Bracket, pulley, or bearing failure.	(5) Replace defective component and belt.
CORD EDGE FAILURE (TENSILE MEMBER EXPOSED AT EDGES OF BELT OR SEPARTED FROM BELT BODY)	(1) Excessive tension.	(1) Adjust belt tension.
	(2) Drive pulley misalignment.	(2) Align pulley.
	(3) Belt contacting stationary object.	(3) Correct as necessary.
	(4) Pulley irregularities.	(4) Replace pulley.
	(5) Improper pulley construction.	(5) Replace pulley.
	(6) Insufficient adhesion between tensile member and rubber matrix.	(6) Replace belt and adjust tension to specifications.

SEE I.S. NOTES

81102B

SEE I.S. NOTES

Serpentine Drive Belt Diagnosis (Continued)

Condition	Possible Cause	Correction
SPORADIC RIB CRACKING (MULTIPLE CRACKS IN BELT RIBS AT RANDOM INTERVALS)	(1) Ribbed pulley(s) diameter less than minimum specification.	(1) Replace pulley(s).
	(2) Backside bend flat pulley(s) diameter less than minimum.	(2) Replace pulley(s).
	(3) Excessive heat condition causing rubber to harden.	(3) Correct heat condition as necessary.
	(4) Excessive belt thickness.	(4) Replace belt.
	(5) Belt overcured.	(5) Replace belt.
	(6) Excessive tension.	(6) Adjust belt tension.

81102C

SPECIAL TOOLS

Tool Ref.	Description	Required	Recommended
J-10174-01	Main Jet Removal and Installation Tool		■
J-9789-C	Universal Carburetor Gauge Kit		■
J-23738	Hand Operated Vacuum Pump		■
ET-501-82	FFB System Tester	■	
ET-501-84	FFB System Tester Adapter	■	
	Tach/Dwell Meter		■

TORQUE SPECIFICATIONS

Component	Service Set-To Torque	Service Recheck Torque
Fuel Pump Mounting Bolts	22 N·m (16 ft-lbs)	18-26 N·m (13-19 ft-lbs)
Fuel Pipe-To-Fuel Pump Fitting	25 N·m (18 ft-lbs)	16-34 N·m (12-25 ft-lbs)
Carburetor-To-Intake Manifold Nuts	19 N·m (14 ft-lbs)	16-27 N·m (12-20 ft-lbs)

MODEL YFA CARBURETOR

General

The 2.46 liter (150 CID) four-cylinder engine is equipped with a model YFA carburetor.

This carburetor has an integral mixture control (MC) solenoid that provides the proper air/fuel ratio by controlling the intake airflow.

The MC solenoid is controlled by the micro computer unit (MCU).

Specifications

SEE I.S. NOTES

Model YFA Carburetor Calibrations

List Number	7700	7702
Throttle Bore Size	43mm (1.69 in)	43mm (1.69 in)
Main Venturi Size	38mm (1.50 in)	38mm (1.50 in)
Fuel Inlet Diameter	2.38mm (0.0935 in)	2.38mm (0.0935 in)
Low Speed Jet	0.9mm (0.035 in)	0.9mm (0.035 in)
Bypass Air Bleed	1.15mm (0.046 in)	1.15mm (0.046 in)
Economizer	1.35mm (0.055 in)	1.3mm (0.052 in)
Idler Air Bleed	1.25mm (0.049 in)	1.25mm (0.049 in)
Metering Rod Jet Number	120W-2410	120W-2407
Metering Rod Jet Size	2.8mm (0.110 in)	2.7mm (0.107 in)
Metering Rod Number	75W-8522	75W-8525
Step Up Limiter Shim	None	None
Nozzle Bleed	1.65mm (0.0645 in)	1.65mm (0.0645 in)
Anti-Perc Bleed	1.0mm (0.040 in)	1.0mm (0.040 in)
Pump Discharge Nozzle (Jet)	2.4mm (0.096 in)	2.4mm (0.096 in)
Vacuum Spark Port	1.0mm (0.040 in)	1.0mm (0.040 in)
Spark Port Location Above Closed Throttle	1.0mm (0.040 in)	1.0mm (0.040 in)
Thermostatic Pump Bleed	0.5mm (0.021 in)	0.5mm (0.021 in)

840215(J)

Model YFA Carburetor Specifications

List Number	Application	Float Level		Initial Choke Valve Clearance		Fast Idle Cam Setting Index		Automatic Choke Cover Setting		Choke Unloader	Fast Idle Speed (Step 2)	
		Set To	OK Range	Set To	OK Range	Set To	OK Range	Set To			Set To	OK Range
7700	150 Man 50-S	0.600	0.570 to 0.630	0.240	0.225 to 0.255	0.175	0.160 to 0.190	N/A TR		0.370	2000*	± 100
7702	150 Man High Alt	0.600	0.570 to 0.630	0.240	0.225 to 0.255	0.175	0.160 to 0.190	N/A TR		0.370	2000*	± 100

***EGR valve disconnected and the engine fully warm.**
TR – Tamper Resistant.

84630(J)

SEE I.S. NOTES

Replacement

Removal

SEE I.S. NOTES

Remove the air cleaner.

Identify and mark all the hoses attached to the carburetor for aid during installation.

Remove the control shaft from the throttle lever.

Disconnect the in-line fuel filter, external bowl vent hose, vacuum hoses, pullback spring and all electrical connectors.

Remove the carburetor retaining nuts and remove the carburetor.

Remove the carburetor mounting gasket from the spacer.

Installation

Clean the gasket mounting surfaces on the spacer and carburetor.

Install a replacement gasket on the spacer.

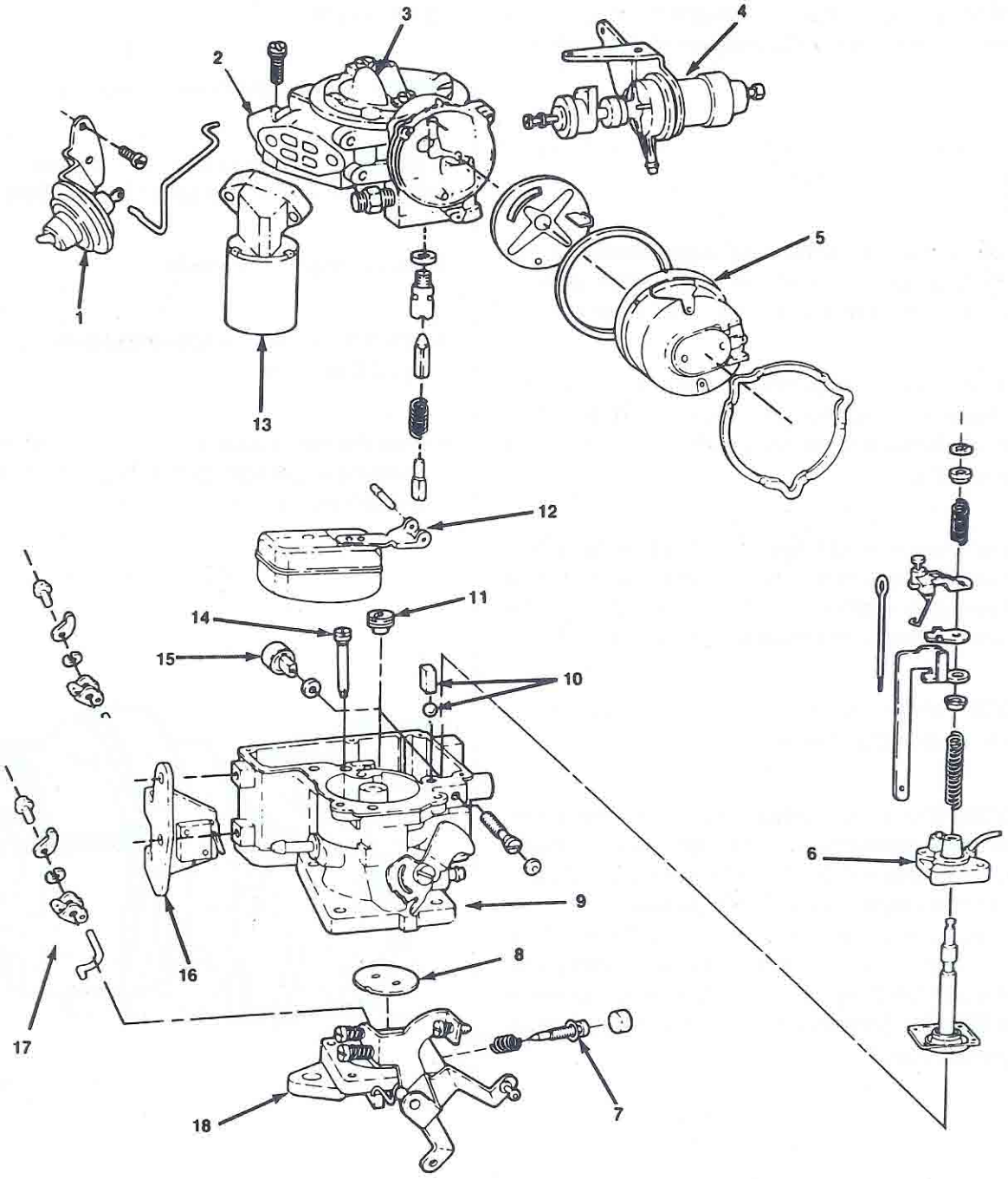
Position the carburetor on the spacer and gasket. Secure it with the retaining nuts.

Connect the in-line fuel filter, control shaft, pullback spring, vacuum hoses, external bowl vent hose and all the electrical connectors.

Install the air cleaner.

Adjust the curb idle speed and fast idle speed. Refer to the Service Adjustment Procedures.

Carburetor Overhaul



1. Vacuum Break
2. Air Horn
3. Choke Plate
4. Sole-Vac Throttle Positioner
5. Choke Assembly
6. Accelerator Pump Assembly
7. Idle Mixture Screw with O-ring
8. Throttle Plate
9. Main Body
10. Accelerator Pump Check Ball and Weight
11. Main Metering Jet
12. Float Assembly
13. Mixture Control Solenoid
14. Low Speed Jet
15. Accelerator Pump Vent Valve
16. Wide Open Throttle (WOT) Switch
17. Throttle Shaft and Lever
18. Throttle Body

84643

SEE I.S. NOTES

The following procedures apply to a complete overhaul with the carburetor removed from the engine.

A complete disassembly is not necessary when performing adjustments.

In most instances, service adjustments of the individual circuits can be completed without removing the carburetor from the engine.

A complete carburetor overhaul includes disassembly, thorough cleaning, inspection, and replacement of all gaskets and worn or damaged parts.

It also includes curb idle speed adjustment, idle mixture adjustment (if removal of the adjustment screw was necessary) and fast idle speed adjustment after the carburetor is installed.

NOTE: When using an overhaul kit, use all the parts included in the kit.

NOTE: Flooding, hesitation on acceleration, and other performance problems are in many instances caused by the presence of dirt, water or other foreign matter in the carburetor. To aid in diagnosing a problem, carefully remove the carburetor from the engine without removing the fuel from the bowl. Examine the bowl contents and filter for contamination as the carburetor is disassembled.

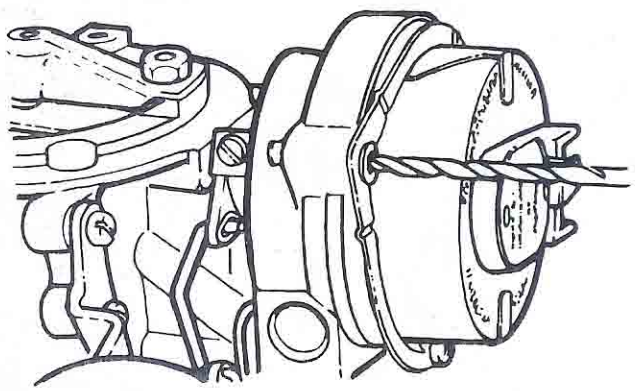
Disassembly

NOTE: The choke cover is not adjustable.

CAUTION: This procedure below must be followed to retain the original rivet hole size.

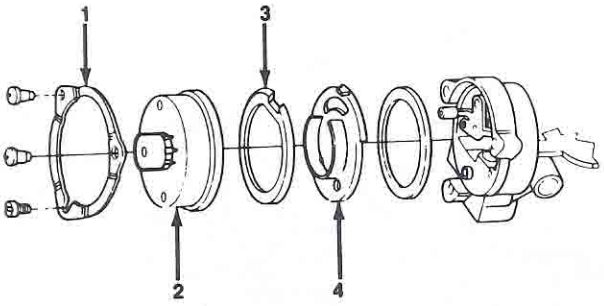
Remove the choke cover:

- drill out the rivet heads with a 3-mm (1/8-in) or No. 30 drill bit
- after the rivet heads are removed, drive out the remaining portion of the rivets with a 3-mm (1/8-in) punch



840178

- remove the screw holding the retainer



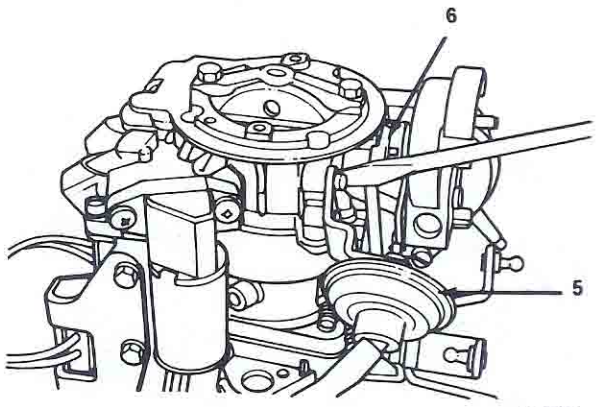
84644

Continue the choke cover removal by removing the following:

- retainer (1)
- thermostat spring housing assembly (2)
- spring housing gasket (3)
- locking and indexing plate (4)

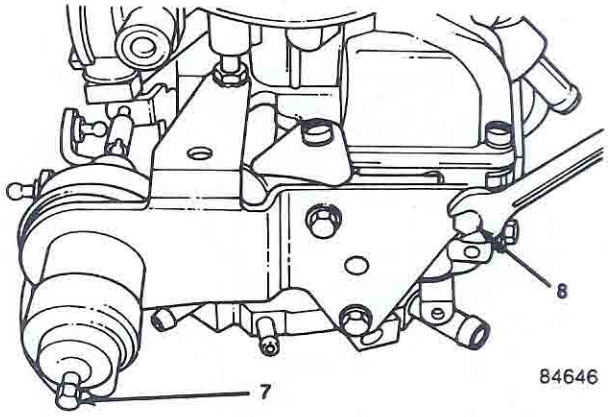
Remove the vacuum break (5).

Disengage and remove the vacuum break connector link (6) from the choke shaft lever.



84645

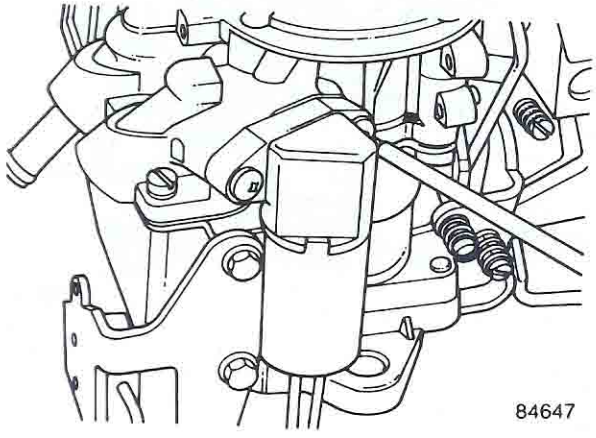
Remove the Sole-Vac throttle positioner (7) and the mounting bracket (8).



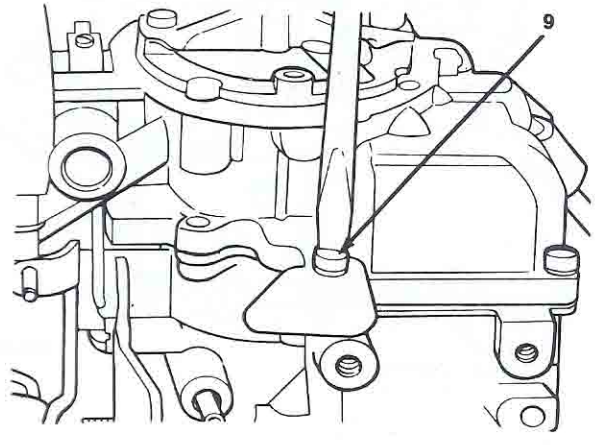
84646

SEE I.S. NOTES

Remove the mixture control (MC) solenoid from the air horn.



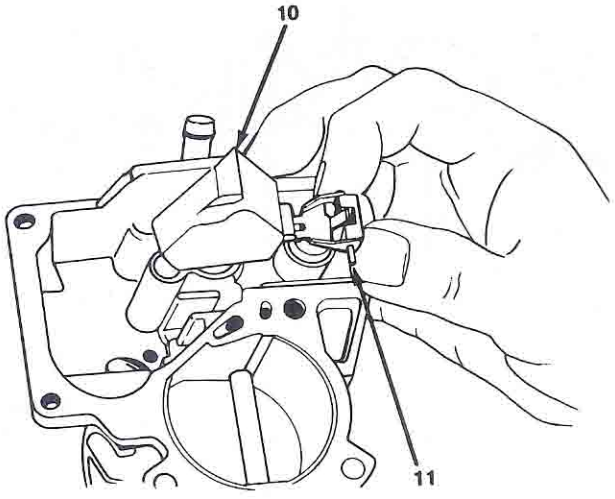
Remove the air horn attaching screws (9).



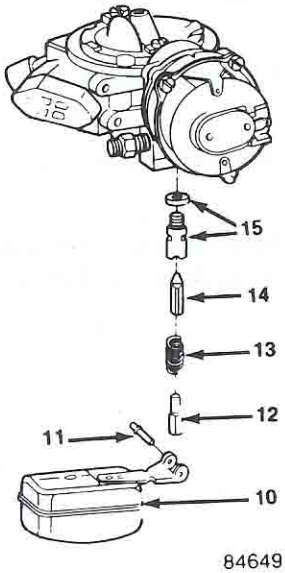
Remove the fast idle cam link.

Remove the air horn and gasket from the carburetor main body.

To remove the float (10) from the air horn, hold the air horn bottom side up and remove the float pin (11) and float (10).

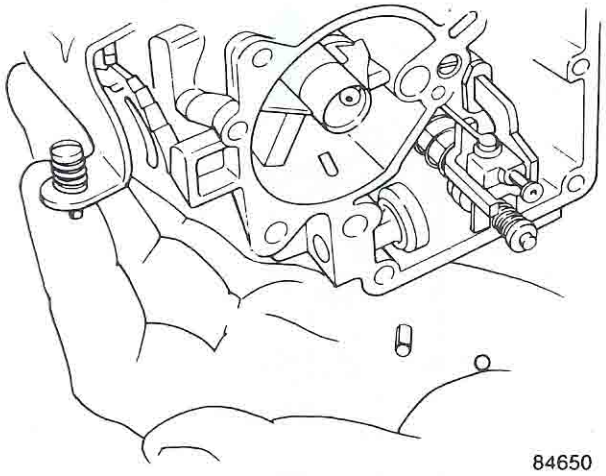


Invert the air horn, and catch the needle pin (12), spring (13) and needle (14).

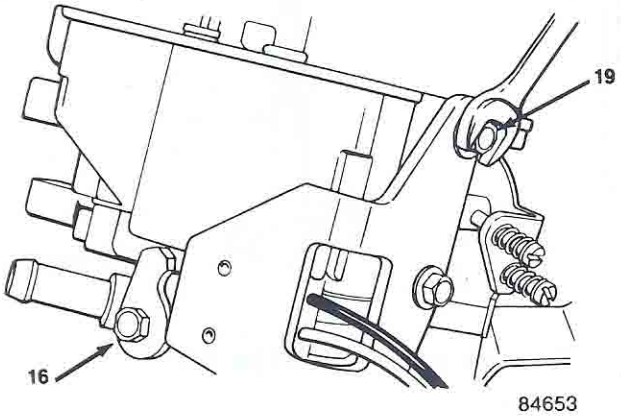


Remove the needle seat and gasket (15).

To remove the accelerator pump check ball and weight, turn the main body casting upside down and catch the pump check ball and weight.

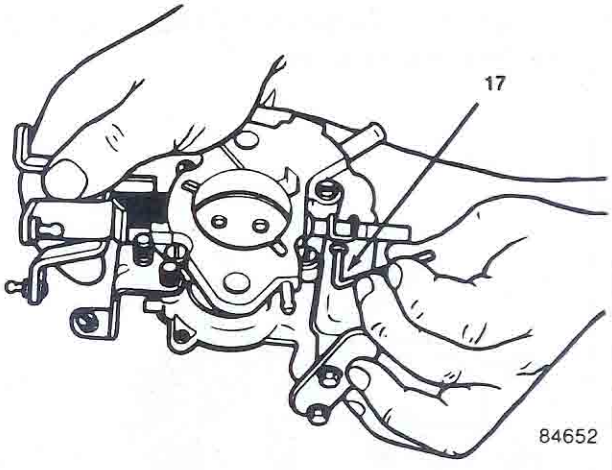

84650

Remove the throttle shaft retaining bolt (16) and wide-open throttle (WOT) switch actuator.



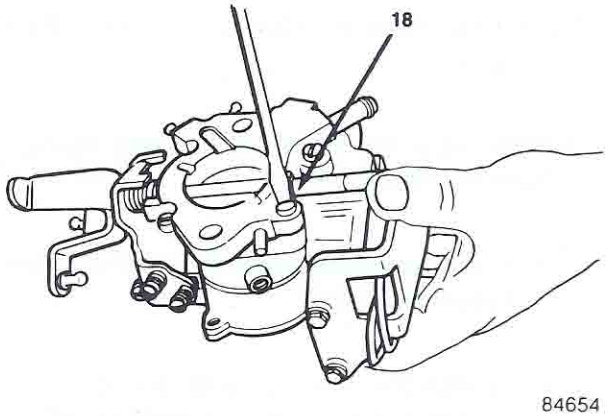
84653

Loosen the throttle shaft arm screw (17) and remove the arm and pump connector link.



84652

Remove the retaining screws (18) and separate the throttle body from the main body.



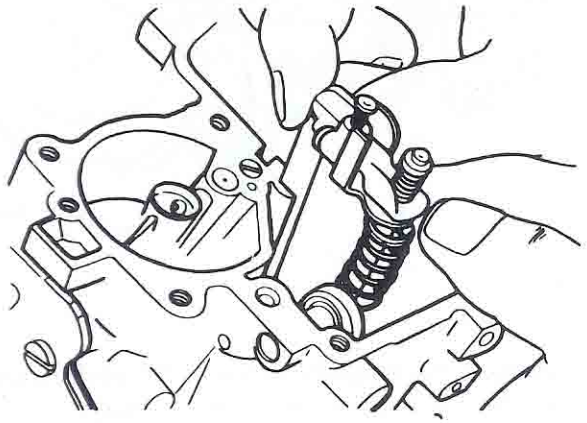
84654

SEE I.S. NOTES

Remove the wide-open throttle switch and mounting bracket (19).

Remove the accelerator pump housing screws from the main body.

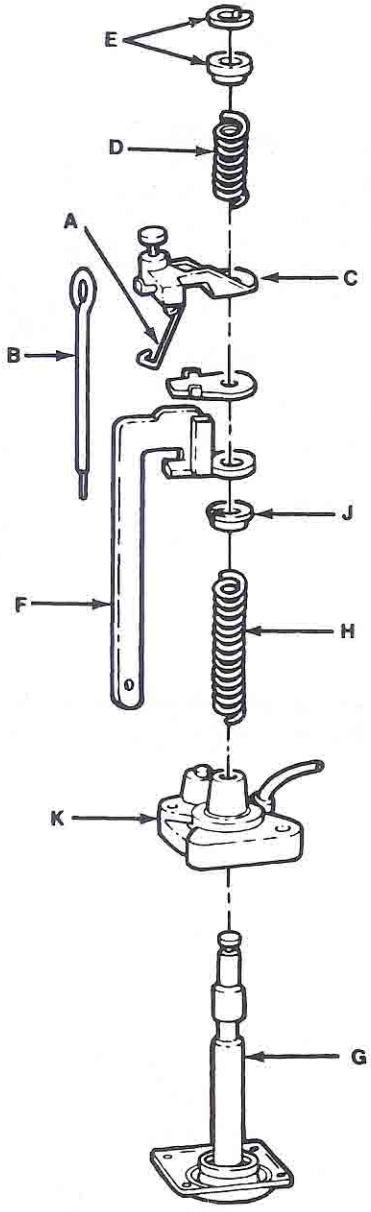
Lift out the pump assembly, pump lifter link and metering rod as a unit.



84655

To disassemble the pump, use the following procedure:

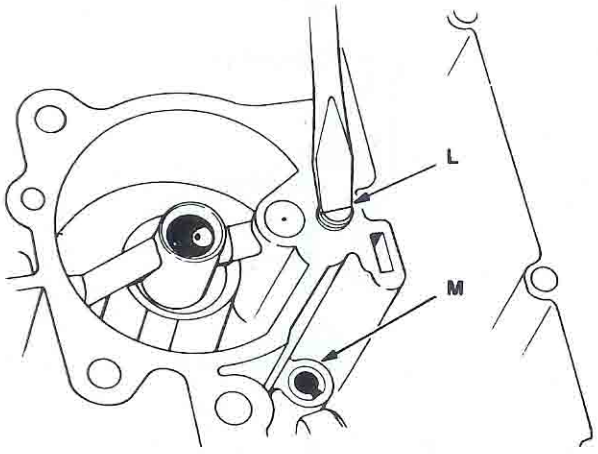
- disengage the metering rod arm spring (A) from the metering rod (B)
- remove the metering rod (B) from the metering rod assembly (C)
- compress the upper pump spring (D), and remove the spring retainer and cup (E)
- remove the upper spring (D), metering rod arm assembly (C) and pump lifter link (F) from the pump diaphragm shaft (G)
- compress the pump diaphragm spring (H), and remove the pump diaphragm spring retainer (J), spring (H) and pump diaphragm housing assembly from the pump diaphragm shaft assembly (K)



84656

Remove the low speed jet (L).

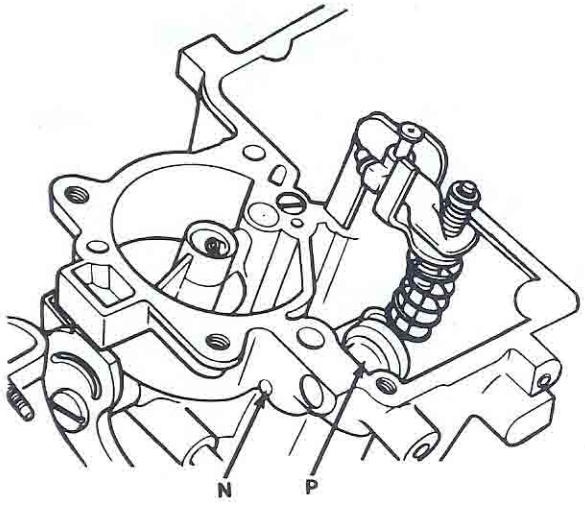
Remove the main metering jet (M).



84657

With a sharp punch, remove the accelerator pump bleed valve plug (N) from outside the main body casting.

Loosen the bleed valve screw, and remove the valve (P).

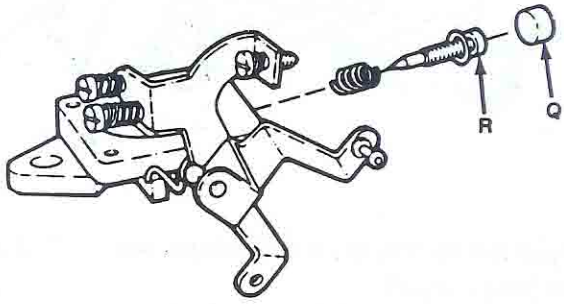


84658

Drill out and remove the tamper resistant plug (Q).

After removing the plug, count and record the number of turns required to lightly seat the idle mixture screw.

Remove the idle mixture screw, O-ring and spring (R).

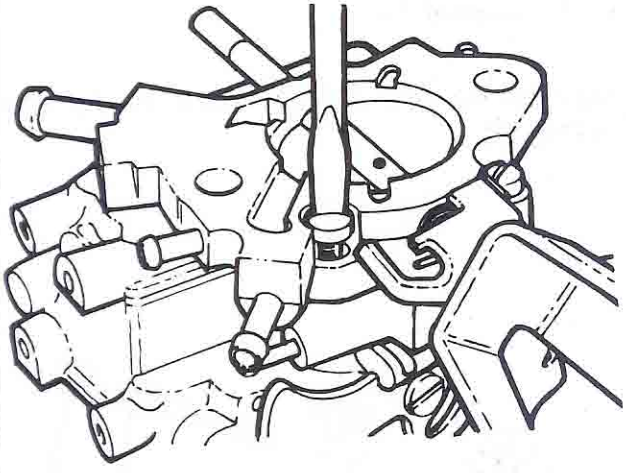


84659

SEE I.S. NOTES

Assembly

SEE I.S. NOTES



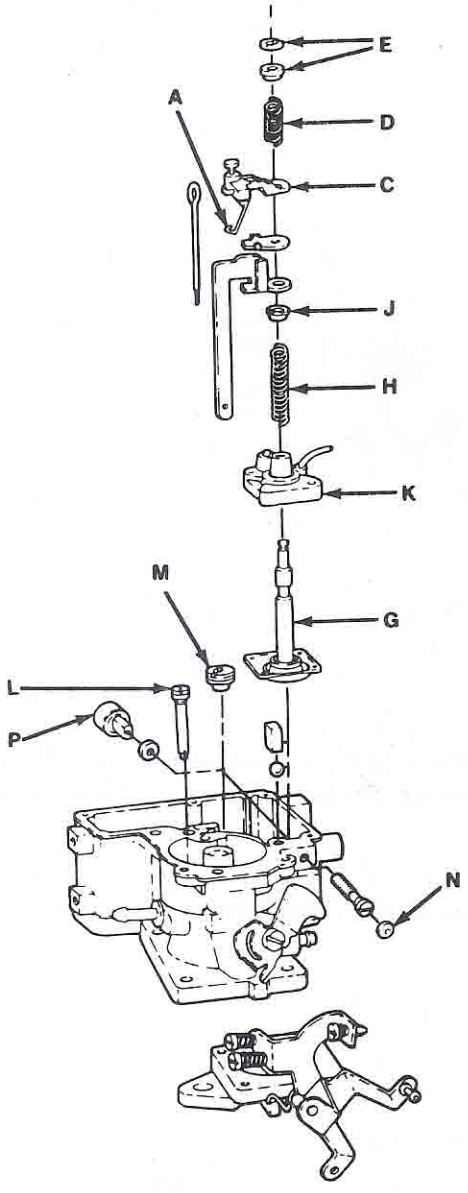
840193

Attach the throttle body to the main body with the retaining screws.

NOTE: Use LOCTITE® on the retaining screws.

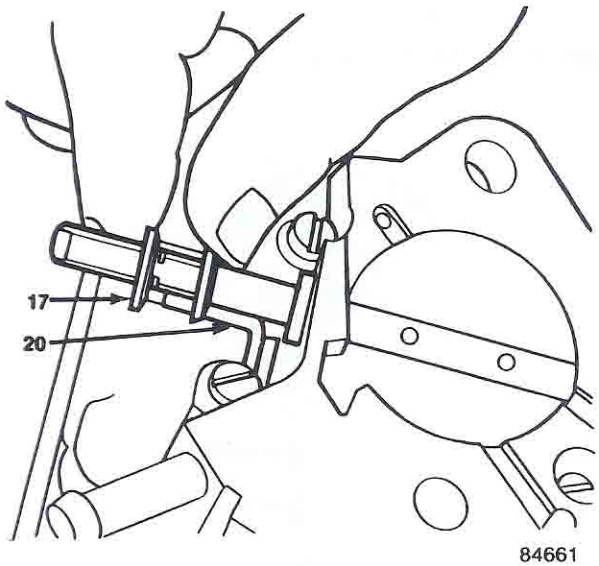
Install the following:

- low speed jet (L)
- main metering jet (M)
- pump bleed valve (P) and plug (N)
- accelerator pump assembly
- pump passage tube



84660

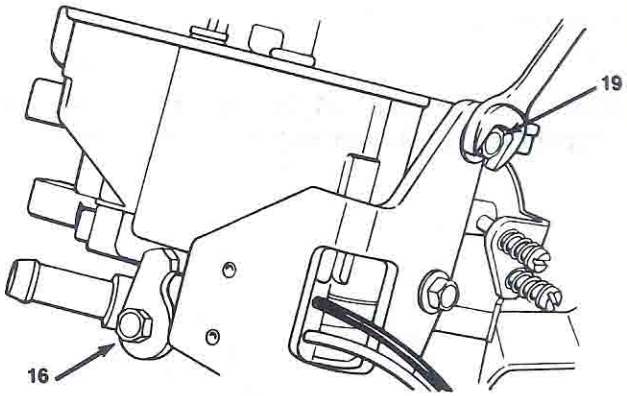
Install the throttle shaft arm and retaining screw (17), and pump connector link (20).



84661

Install the following components:

- wide-open throttle (WOT) switch actuator
- throttle shaft retaining bolt (16)
- wide-open throttle (WOT) switch and bracket (19)



84653

SEE I.S. NOTES

SEE I.S. NOTES

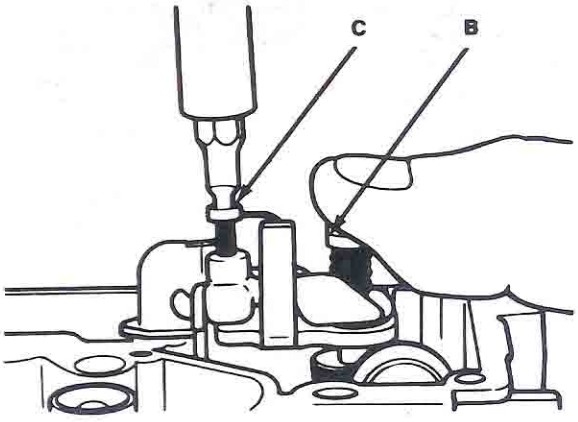
Metering Rod Adjustment –

Before adjusting the metering rod, ensure that the idle speed adjustment screw allows the throttle plate to close tightly in the throttle bore.

Press down on top of the pump diaphragm shaft (B) until the assembly bottoms.

While holding the pump diaphragm down, adjust the metering rod by turning the metering rod adjustment screw (C) counterclockwise until the metering rod lightly bottoms in the main metering jet.

Turn the metering rod adjustment screw (C) clockwise one turn for the final adjustment.

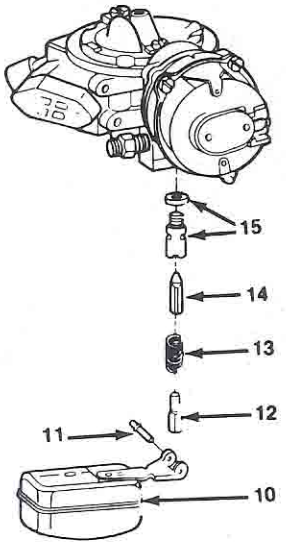


84632

Float Level Adjustment –

Install the needle pin (12), spring (13), needle (14), seat and gasket (15).

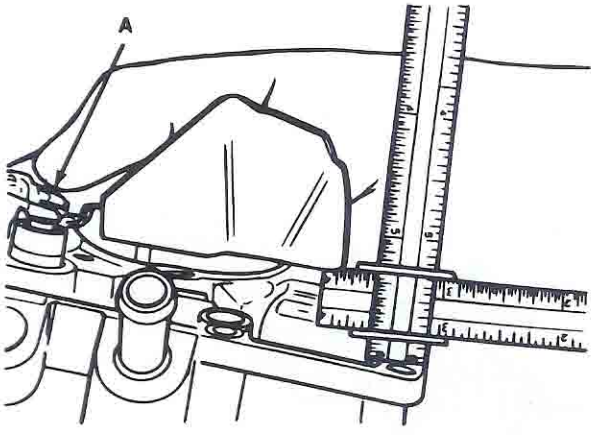
Install the float (10) and pin (11).



84649

Invert the air horn assembly.

Measure the clearance from the top of the float to the bottom of the air horn with a float level gauge.



84631

The float arm should be resting on the needle pin.

Bend the float arm (A) as necessary to adjust the float level. Refer to the Specifications chart for the correct clearance.

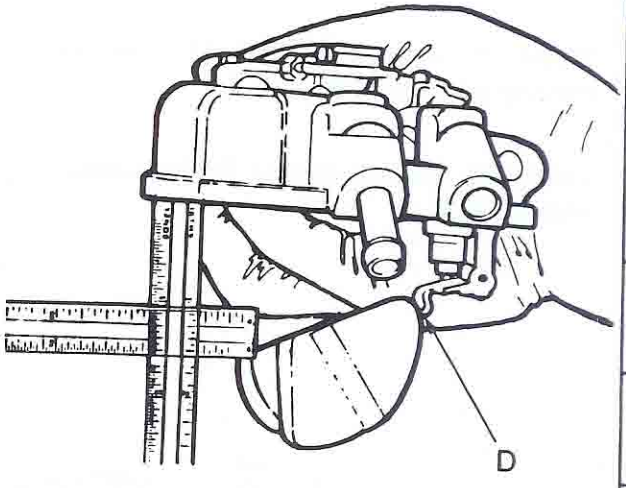
Float Drop Adjustment –

Hold the air horn upright, and let the float hang freely.

Measure the maximum clearance from the toe end of the float to the casting surface.

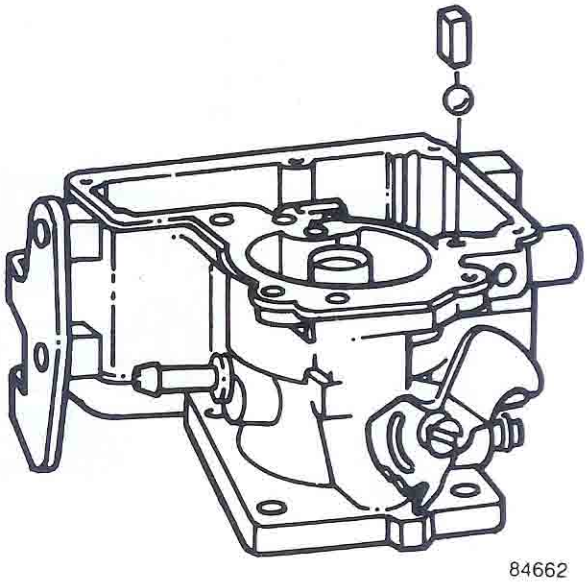
Hold the air horn at eye level while measuring.

To adjust, bend the tab (D) at the end of the float arm to obtain the specified dimension. Refer to the Specifications chart.



840199

Install the accelerator pump check ball and weight.



84662

SEE I.S. NOTES

SEE I.S. NOTES

Attach the air horn (9) and gasket to the main body.

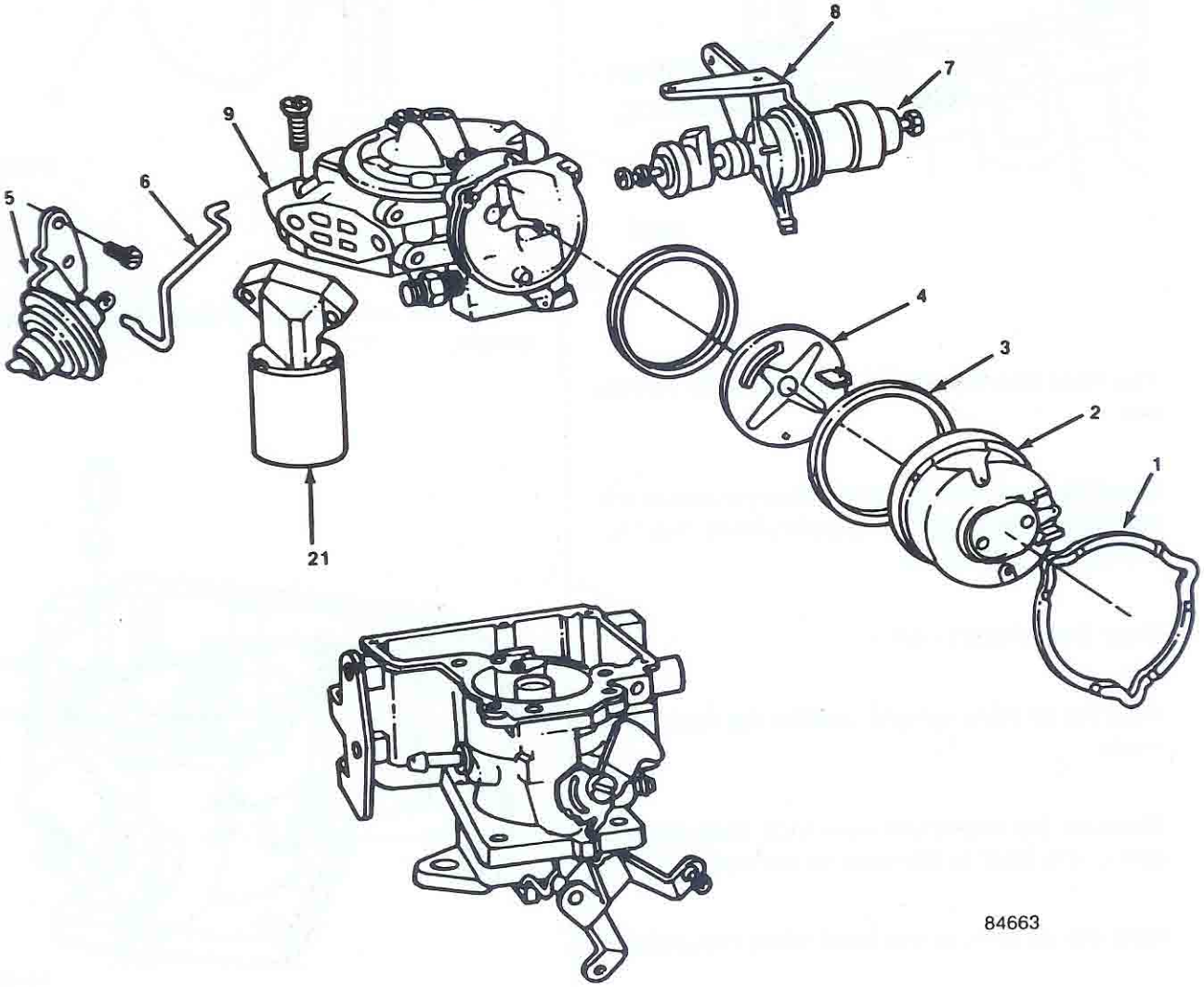
Install the fast idle cam link.

Install the Sole-Vac throttle positioner (7) and mounting bracket (8).

Install the mixture control (MC) solenoid (21) and gasket.

Install the choke cover locking and indexing plate (4), choke cover and housing gasket (3), choke cover and housing assembly (2), retainer (1) and replacement breakaway screws.

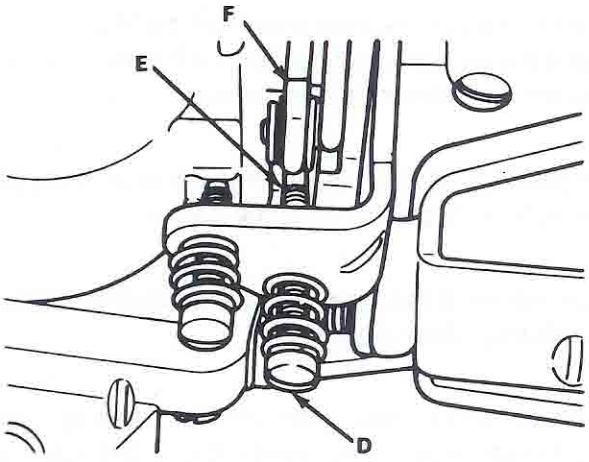
Install the vacuum break connector link (6), vacuum break (5) and attaching screws.



84663

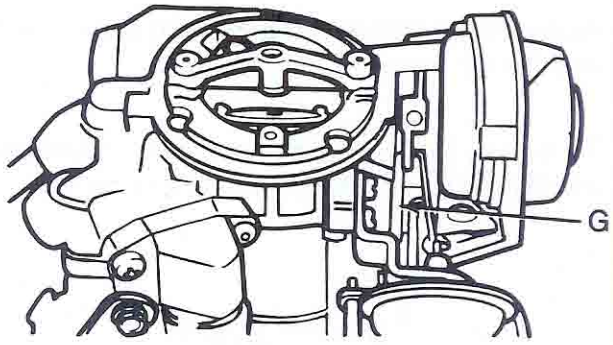
Fast Idle Cam Index Adjustment –

Position the fast idle adjustment screw (D) on the second step (E) of the fast idle cam (F) and against the shoulder of the high step.



84634

Adjust by bending the fast idle cam link (G) to obtain the specified clearance between the lower edge of the choke plate and the carburetor air horn.



84635

SEE I.S. NOTES

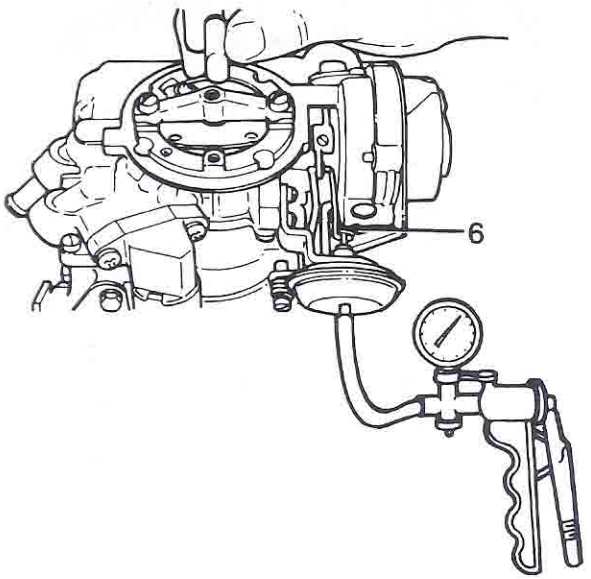
Initial Choke Valve Clearance Adjustment –

Position the fast idle adjustment screw on the top step of the fast idle cam.

Seat the vacuum break with an external vacuum source (vacuum pump).

Measure the distance between the choke plate and the air horn.

To adjust, bend the vacuum break connector link (6). Refer to the Specifications chart.



84633

Choke Unloader Adjustment –

Hold the throttle (H) wide open.

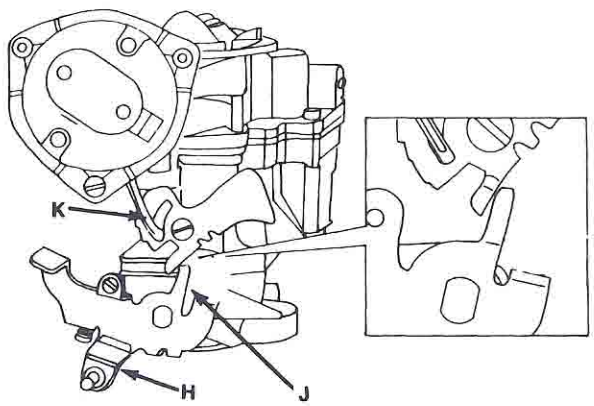
Insert the specified plug gauge and apply light pressure to close the choke valve.

Measure the distance between the choke valve and the air horn wall. Refer to the Specifications chart for the correct dimension.

Adjust by bending the choke unloader tang (J), which contacts the fast idle cam (K).

Do not bend the tang so that it binds or interferes with any other component.

Bend toward the cam (K) to increase the clearance (L) and away from the cam to decrease the clearance (L).



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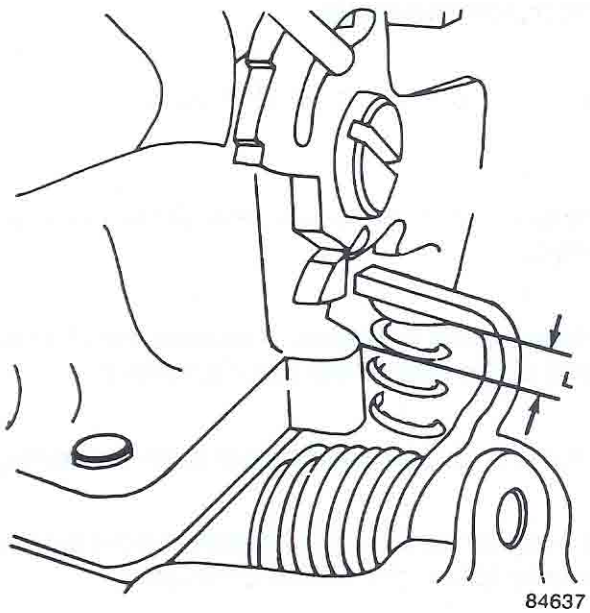
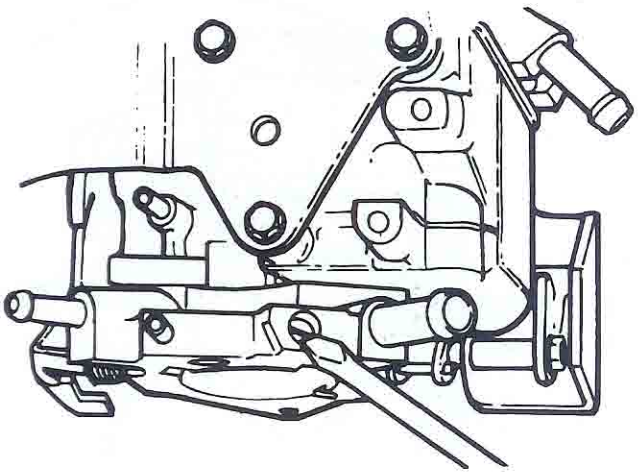


84637

Initial Idle Mixture Adjustment –



840209

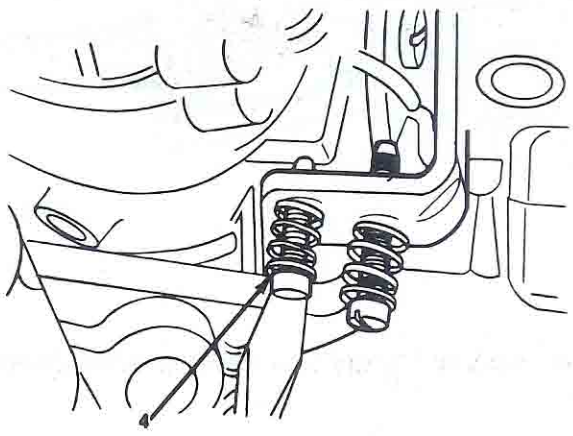
Install and position the idle mixture adjustment screw at the same number of turns from the lightly seated position as recorded during disassembly.

After carburetor installation, refer to the Service Adjustment Procedures for the final idle mixture adjustment.

TRC (Anti-Diesel) Adjustment –

The TRC (anti-diesel) adjustment screw is statically set at 3/4 of a turn from the throttle valve closed position during factory assembly and normally does not require readjustment.

To adjust, turn the adjustment screw (4) counterclockwise to the throttle valve closed position and then clockwise 3/4 of a turn.



84641

Install the carburetor on the engine and perform the idle speed and mixture adjustments. Refer to the Service Adjustment Procedures.

SEE I.S. NOTES

Service Adjustment Procedures

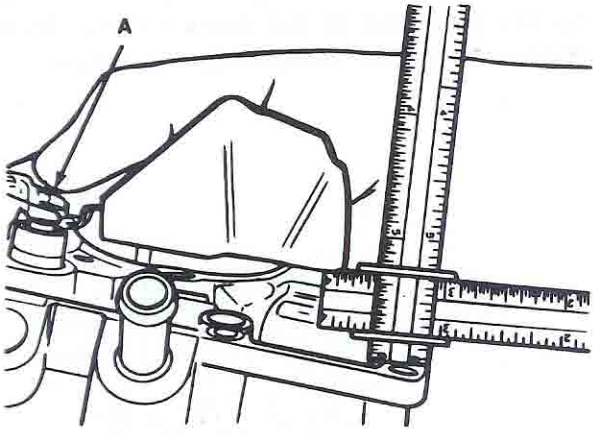
Float Level Adjustment

SEE I.S. NOTES

Remove the air horn and gasket from the carburetor.

Invert the air horn assembly.

Measure the clearance from the top of the float to the bottom of the air horn with a float level gauge.



84631

The float arm should be resting on the needle pin.

Bend the float arm (A) as necessary to adjust the float level. Refer to the Specifications chart for the correct clearance.

Attach the air horn and gasket to the main body.

Float Drop Adjustment

Remove the air horn and gasket from the carburetor.

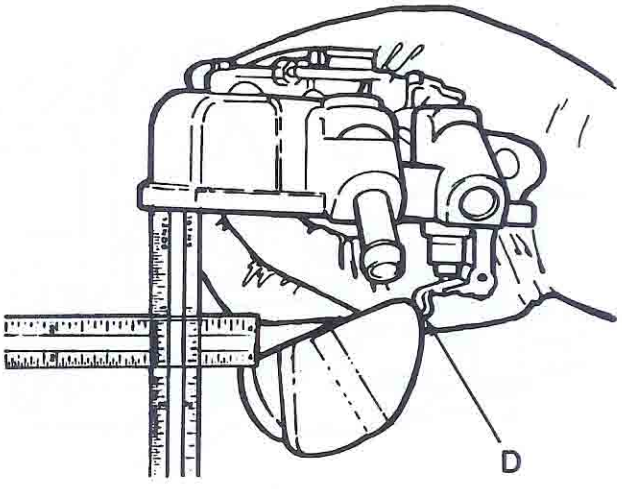
Hold the air horn upright, and let the float hang freely.

Measure the maximum clearance from the toe end of the float to the casting surface.

Hold the air horn at eye level while measuring.

To adjust, bend the tab (D) at the end of the float arm to obtain the specified dimension.

Attach the air horn and gasket to the main body.



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Metering Rod Adjustment

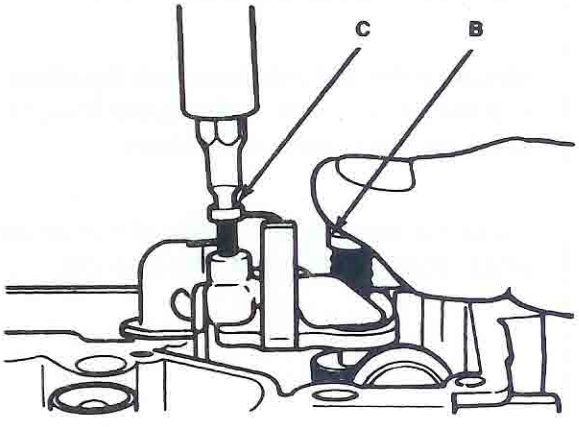
Remove the air horn and gasket from the carburetor.

Before adjusting the metering rod, ensure that the idle speed adjustment screw allows the throttle plate to close tightly in the throttle bore.

Press down on top of the pump diaphragm shaft (B) until the assembly bottoms.

While holding the pump diaphragm down, adjust the metering rod by turning the metering rod adjustment screw (C) counterclockwise until the metering rod lightly bottoms in the main metering jet.

Turn the metering rod adjustment screw (C) clockwise one turn for the final adjustment.



84632

Attach the air horn and gasket to the main body.

Adjust the curb idle speed to the specified rpm.

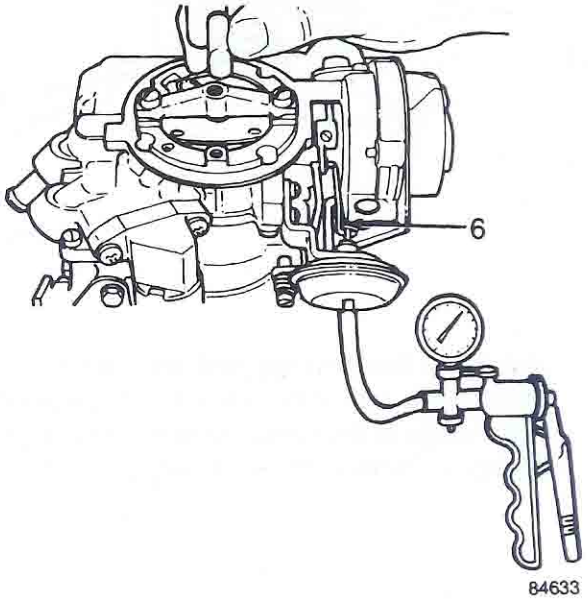
Initial Choke Valve Clearance Adjustment

Position the fast idle adjustment screw on the top step of the fast idle cam.

Seat the vacuum break with an external vacuum source (vacuum pump).

Measure the distance between the choke plate and the air horn.

To adjust, bend the vacuum break connector link (6). Refer to the Specifications chart.



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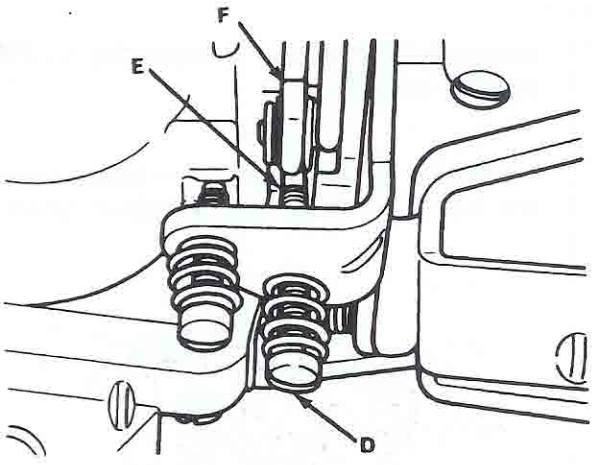
SEE I.S. NOTES

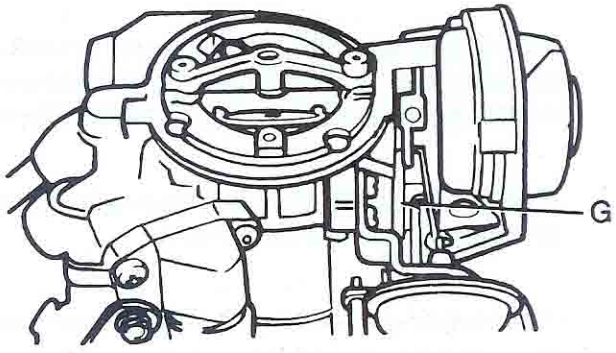
Fast Idle Cam Index Adjustment

Position the fast idle adjustment screw (D) on the second step (E) of the fast idle cam (F) and against the shoulder of the high step.



84634

Adjust by bending the fast idle cam link (G) to obtain the specified clearance between the lower edge of the choke plate and the carburetor air horn. Refer to the Specifications chart.



84635

Choke Unloader Adjustment

Hold the throttle (H) wide open.

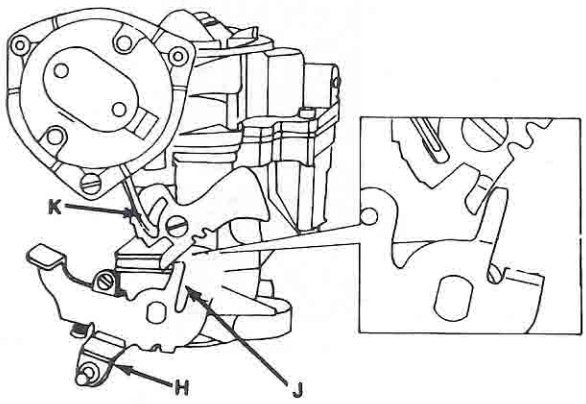
Insert the specified plug gauge and apply light pressure to close the choke valve.

Measure the distance between the choke valve and the air horn wall. Refer to the Specifications chart for the correct dimension.

Adjust by bending the choke unloader tang (J), which contacts the fast idle cam (K).

Do not bend the tang so that it binds or interferes with any other component.

Bend toward the cam (K) to increase the clearance (L) and away from the cam to decrease the clearance (L).



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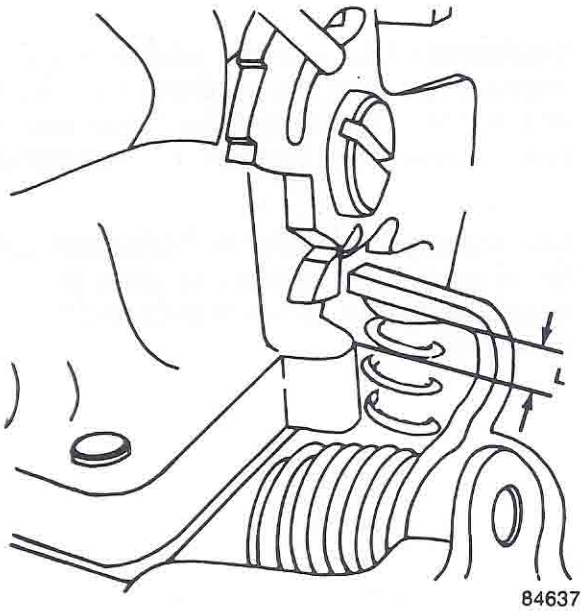


84637

Choke Adjustment

The choke adjustment is preset during factory assembly and should not normally require readjustment. The choke should be serviced only during major carburetor overhaul.

Idle Mixture Adjustment

NOTE: The idle mixture is preset during factory assembly and should not normally require readjustment. The idle mixture adjustment screw has a tamper resistant plug to prohibit easy access to the screw. Idle mixture adjustment should normally be required only after major carburetor overhaul. However, if adjustment is necessary because of the results of system diagnosis, contamination, replacement of components, etc., it can be adjusted according to the procedure outlined below.

The mixture control (MC) solenoid dwell (indicated on a dwell meter) is used as a reference for the adjustment.

With the engine at idle speed, it is normal for the MC solenoid dwell to increase and decrease fairly consistently over a relatively narrow range (e.g., 5 degrees).

However, it may occasionally vary by as much as 10 to 15 degrees momentarily because of temporary abrupt mixture changes.

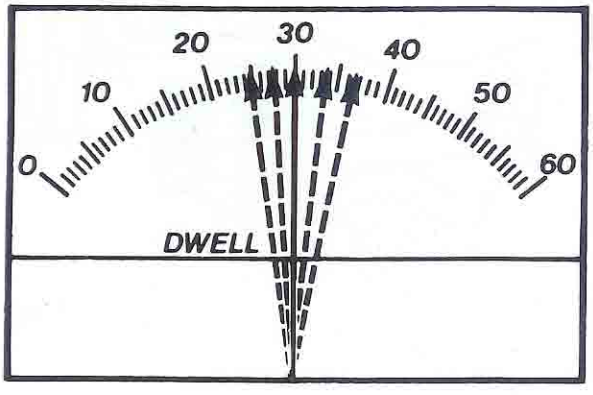
The MC solenoid dwell specified in the procedure is the average for the most consistent variation.

The engine must be allowed to stabilize at idle speed (750 rpm) before the MC solenoid dwell is acceptable as a reference for the adjustment.

SEE I.S. NOTES

Return the engine to idle speed and adjust the carburetor for an idle speed of 750 rpm (N). Refer to the idle speed adjustment procedure.

Adjust the idle mixture adjustment screw to obtain an average dwell of 30 degrees (25 to 35 degrees).



83076B

If the the dwell is too low, slowly turn the screw counterclockwise (out). If the dwell is too high, slowly turn the screw clockwise (in).

Allow time for the system to react and stabilize after each movement of the adjustment screw. The feedback system is very sensitive to adjustment.

Observe the final dwell indication with the adjustment tool removed.

If the specified dwell cannot be obtained by adjustment, inspect the carburetor idle circuit for air leaks, restrictions, etc. Repair as necessary.

Connect the canister purge hose.

Adjust the idle speed to the specification listed on the Vehicle Emission Control Information Label. Refer to the idle speed adjustment procedure.

Stop the engine. Disconnect the tachometer and dwell meter.

Plug the idle mixture adjustment screw opening with RTV sealant.

Install the gasket and air cleaner.

Fast Idle Speed Adjustment

Disconnect and plug the EGR valve vacuum hose at the valve.

Connect a tachometer to the ignition coil TACH wire connector.

Place the transmission in the neutral position.

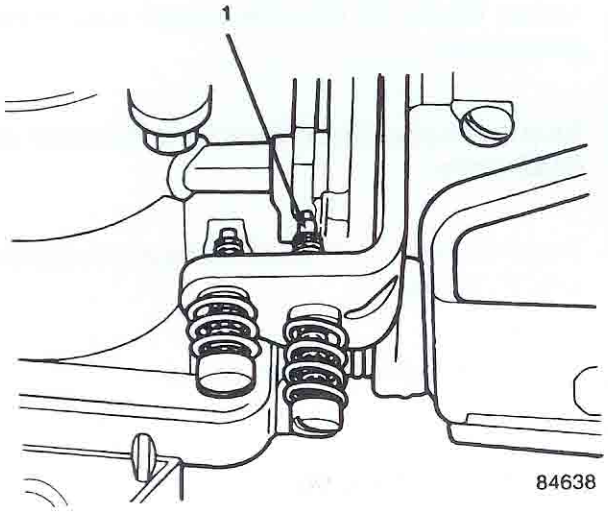
WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Start the engine and allow it to attain the normal operating temperature.

SEE I.S. NOTES

Position the fast idle speed adjustment screw on the second step (1) of the fast idle speed cam.

Turn the fast idle adjustment screw into contact with the fast idle cam until an engine speed of approximately 1500 rpm is achieved.



NOTE: Always check the specifications listed on the Vehicle Emission Control Information Label located under the hood.

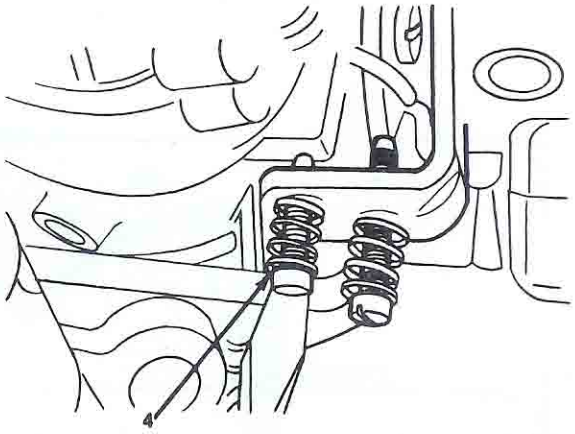
Allow the throttle to return to curb idle speed and connect the EGR valve vacuum hose.

Stop the engine and disconnect the tachometer.

TRC (Anti-Diesel) Adjustment

The TRC (anti-diesel) adjustment screw is statically set at 3/4 of a turn from the throttle valve closed position during factory assembly and normally does not require readjustment.

To adjust, turn the adjustment screw (4) counterclockwise to the throttle valve closed position and then clockwise 3/4 of a turn.



Sole-Vac Vacuum Actuator Adjustment

Connect a tachometer to the ignition coil TACH wire connector.

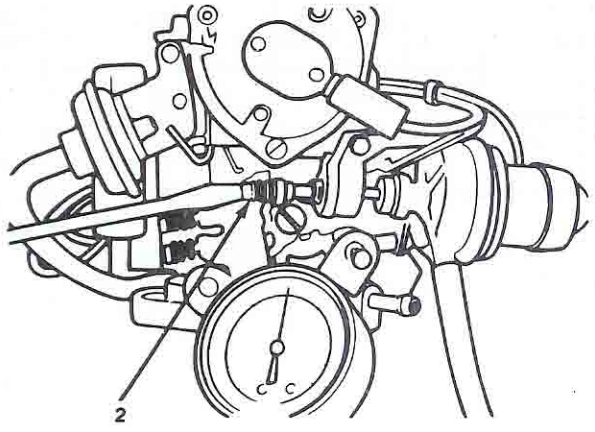
Place the transmission in the neutral position.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Start the engine and allow it to attain the normal operating temperature.

Connect an external vacuum source (vacuum pump) and apply 34-51 kPa (10-15 in Hg) of vacuum to the Sole-Vac vacuum actuator.

Adjust the vacuum actuator (2) until an engine speed of approximately 1000 rpm is achieved.



84639

NOTE: Always check the specifications on the Vehicle Emission Control Information Label located under the hood.

NOTE: The Sole-Vac curb idle speed should be adjusted following the vacuum actuator adjustment.

Stop the engine and remove the vacuum source and tachometer.

Sole-Vac Curb Idle Speed Adjustment

Connect a tachometer to the ignition coil TACH wire connector.

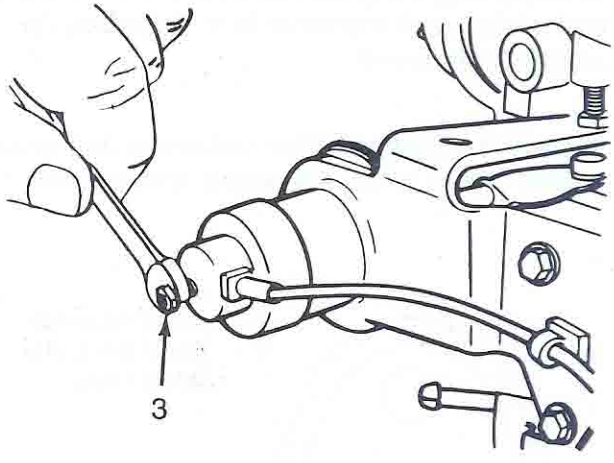
Place the transmission in the neutral position.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Start the engine and allow it to attain the normal operating temperature.

Disconnect and plug the vacuum actuator vacuum hose.

Turn the hex-head curb idle speed adjustment screw (3) until an engine speed of approximately 500 rpm is achieved.



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NOTE: Always check the specifications listed on the Vehicle Emission Control Information Label located under the hood.

Stop the engine and remove the tachometer. Connect the vacuum actuator vacuum hose.

MODEL BBD CARBURETOR

SEE I.S. NOTES

The 4.2 liter (258 CID) six-cylinder engine is equipped with a Model BBD two-venturi, feedback type carburetor.

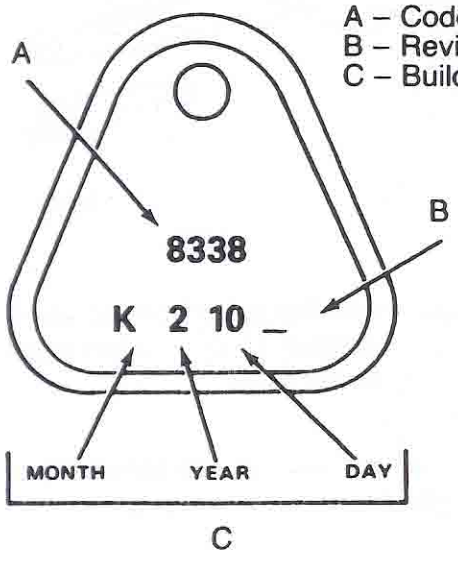
The stepper motor included with this carburetor has two tapered metering pins. Each metering pin is moved in and out of the carburetor air cavity to achieve the proper air/fuel ratio.

Identification

The carburetor is identified by a code number and a build date stamped on the identification tag.

Each carburetor build month is coded alphabetically beginning with the letter A in January and ending with the letter M in December (the letter I is not used).

The tag is attached to the carburetor and must remain with it to assure proper identification.



60430

Specifications

Model BBD Carburetor Idle Speed

Displacement and Carburetion	Trans.	Curb Idle Speed – RPM (Auto in Drive, Manual in Neutral)		Sole-Vac Adjustment		
				Vacuum Actuator Energized	Holding Solenoid Energized	
		Set To	OK Range	Set To		OK Range
258 CID 2V	M	680	±50	1100	900	±50
	A	600	±50	900	800	±50

90744

Model BBD Carburetor Mixture Adjustment

Displacement and Carburetion	Transmission	Application	Idle Drop
258 CID 2V	Manual	All	50 rpm
	Automatic	All	50 rpm

90745

90745

Model BBD Carburetor Specifications

List Number	258 (2V) Application		Float Level		Vacuum Piston Gap		Initial Choke Valve Clearance		Fast Idle Cam Setting		Automatic Choke Cover Setting (Notches Rich)		Accelerator Pump Dimension		Choke Unloader	Fast Idle Speed (RPM)		Bowl Vent Starts To Open	Choke Bi-Metal ID	Choke
	Model	Trans.	Set To	OK Range	Set To	OK Range	Set To	OK Range	Set To	OK Range	Set To	OK Range	Set To	OK Range	(Min.)	Set To	OK Range			
8383	87 88 (50 ST.)	Auto.	6.35 mm (0.25 in)	5.56-7.14 mm (0.218-0.282 in)	0.9 mm (0.035 in)	0.5-1.3 mm (0.020-0.050 in)	3.5 mm (0.140 in)	3.18-3.97 mm (0.125-0.155 in)	2.4 mm (0.095 in)	2.0-2.8 mm (0.080-0.110 in)	1	1/2-1 1/2	13.1 mm (0.520 in)	12.7-13.6 mm (0.500-0.540 in)	7.1 mm (0.280 in)	1850	1950-1750	2nd Step	ET	TR
8384	87 88 (50 ST.)	Man.	6.5 mm (0.25 in)	5.56-7.14 mm (0.218-0.282 in)	0.9 mm (0.035 in)	0.5-1.3 mm (0.020-0.050 in)	3.5 mm (0.140 in)	3.18-3.97 mm (0.125-0.155 in)	2.4 mm (0.095 in)	2.0-2.8 mm (0.080-0.110 in)	1	1/2-1 1/2	13.1 mm (0.520 in)	12.7-13.6 mm (0.500-0.540 in)	7.1 mm (0.280 in)	1700	1800-1600	2nd Step	ET	TR

840234

Model BBD Carburetor Calibrations

List Number	8383	8384
Throttle Bore Size	36.5mm (1.44 in)	36.5mm (1.44 in)
Main Venturi Valve	27mm (1.0625 in)	27mm (1.0625 in)
Fuel Inlet Diameter	2.6mm (0.101 in)	26mm (0.101 in)
Low Speed Jet (Tube)	0.75mm (0.0295 in)	0.75mm (0.0295 in)
Economizer	1.5mm (0.059 in)	1.5mm (0.059 in)
Idle Air Bleed	1.7mm (0.067 in)	1.7mm (0.067 in)
Mainjet Size	2.35mm (0.092 in)	2.35mm (0.092 in)
Accelerator Pump Jet	0.85mm (0.033 in)	0.85mm (0.033 in)
Main Metering Jet Number	120-392	120-392
Metering Rod Number	75-2384	75-2384

840235

Replacement

Removal

SEE I.S. NOTES

Remove the air cleaner.

Identify and tag all the hoses attached to the carburetor for aid during installation.

Remove the throttle cable from the throttle lever and disconnect the vacuum hoses, return spring, PCV valve hose, fuel pipe, choke heater wire connector, stepper motor wire connector, bowl cooler deflector (if equipped) and solenoid wire connector.

Remove the carburetor retaining nuts.

Remove the carburetor.

Remove the carburetor gasket from the spacer.

Installation

Clean the gasket mating surface on the spacer and install a replacement gasket.

Position the carburetor on the spacer and gasket and install the nuts.

To prevent leakage, distortion or damage to the carburetor body flange, alternately tighten the nuts in a crisscross pattern with 9 N·m (7 ft-lbs) torque.

Complete the tightening sequence by alternately tightening in a crisscross pattern with 19 N·m (14 ft-lbs) torque.

Connect the fuel pipe, throttle cable, choke heater wire connector, PCV valve hose, return spring, stepper motor wire connector, all the vacuum hoses and the solenoid wire connector.

Install the air cleaner.

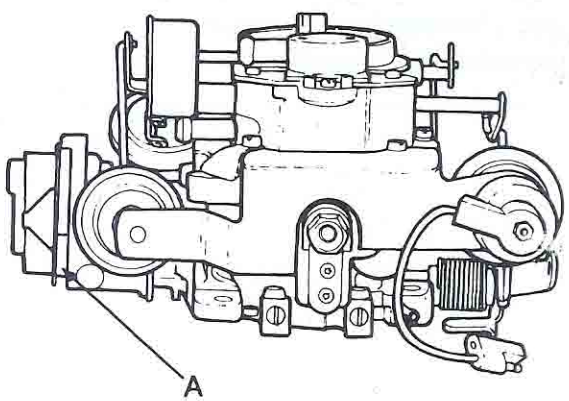
Adjust the engine idle speed, idle mixture (if necessary) and idle speed control (Sole-Vac) solenoid. Refer to Idle Speed and Mixture Adjustment procedures.

Choke Mechanism Service

Disassembly

NOTE: The choke mechanism on model BBD carburetors cannot be serviced with the carburetor on the engine. The carburetor must be removed to properly service the choke components.

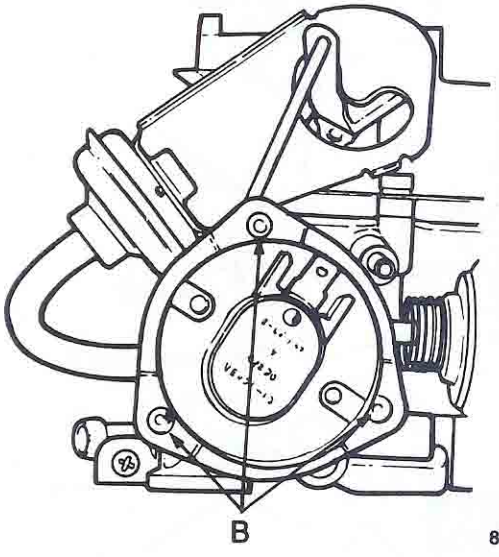
Note and record the color and position of the choke housing index key (A) for assembly reference. The key color indicates the basic choke setting.



840218

Grind the heads off the choke cover rivets (B) and remove the retainer, choke cover and coil, gasket and baffle.

Remove the remaining portion of the rivets after removing the cover.



Remove the choke lever screw and the choke lever.

Disconnect the choke rod and remove the choke shaft from the housing.

Clean and polish the choke shaft and the shaft bore in the housing with crocus cloth.

Inspect the choke cover and coil. Replace both components as an assembly if either part is damaged. Replace the cover gasket if damaged and replace the choke lever or baffle if they are damaged.

Assembly

Install the choke shaft in the housing and connect the choke rod to the shaft.

Install the choke lever and lever attaching screw.

Install the choke baffle, gasket, cover and coil, and index key. Ensure that the key notch in the cover is aligned with the index key tang.

Install the choke cover retainer. Secure the retainer and cover with screws. Do not tighten the screws completely at this time.

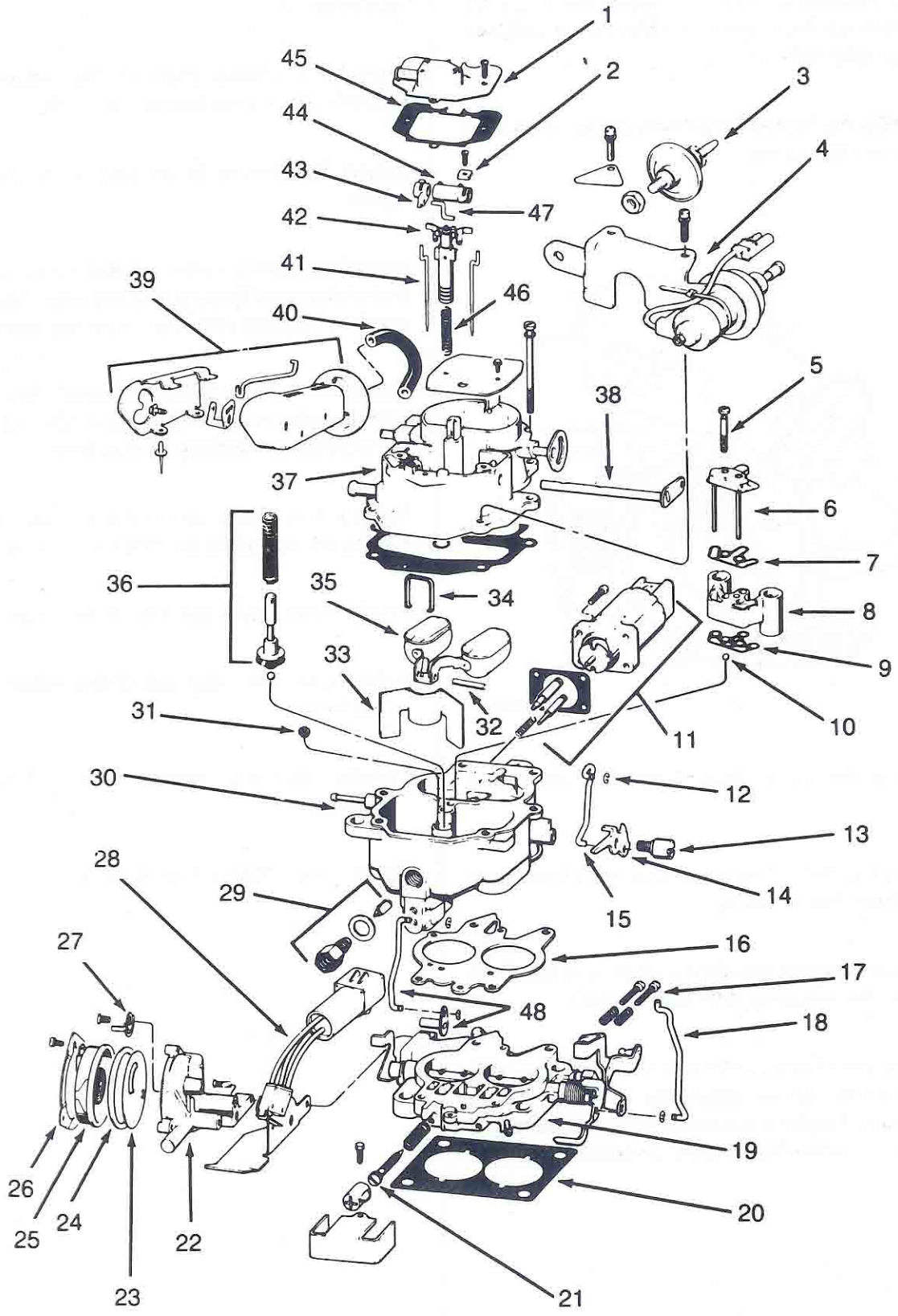
Position the choke cover at the following basic setting as indicated by index key color:

- gold index key – set the choke index at 0
- red index key – set the choke index at one-notch rich
- green index key – set the choke index at two-notches rich

Tighten the choke cover screws.

MODEL BBD CARBURETOR (EXPLODED)

SEE I.S. NOTES



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Overhaul

1. Rollover Check Valve and Bowl Vent
2. Lock
3. Dashpot
4. Solenoid and Bracket
5. Cluster Screw
6. Idle Fuel Pickup Tube
7. Gasket
8. Venturi Cluster
9. Gasket
10. Check Ball (Small)
11. Stepper Motor (Actuator)
12. Clip
13. Screw
14. Fast Idle Cam
15. Choke Link
16. Gasket
17. Screw
18. Pump Link
19. Throttle Body
20. Flange Gasket
21. Idle Mixture Screw
22. Choke Housing
23. Baffle
24. Gasket
25. Choke Coil
26. Retainer
27. Lever
28. Wide Open Throttle Switch and Bracket
29. Needle and Seat Assembly
30. Main Body
31. Main Metering Jet
32. Pin
33. Baffle
34. Fulcrum Retainer
35. Float
36. Spring and Accelerator Pump Plunger
37. Air Horn
38. Accelerator Pump Lever
39. Choke Vacuum Diaphragm and Housing
40. Hose
41. Metering Rod
42. Vacuum Piston
43. Pump Arm
44. Rod Lifter
45. Gasket
46. Spring
47. S-Link
48. Choke Rod and Shaft

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The following procedures apply to a complete overhaul with the carburetor removed from the engine.

NOTE: A complete disassembly is not necessary for adjustments. In most instances, service adjustments of the individual circuits may be completed without removing the carburetor from the engine.

A complete carburetor overhaul includes disassembly, thorough cleaning, inspection and replacement of all gaskets, and worn or damaged components. It also includes idle speed adjustment, idle mixture adjustment (if necessary) and fast idle speed adjustment after the carburetor is installed.

NOTE: When using an overhaul kit, use all the parts included in the kit.

NOTE: Flooding, hesitation on acceleration, and other performance problems are in many instances caused by the presence of dirt, water or other foreign matter in the carburetor. To aid in diagnosing a problem, carefully remove the carburetor from the engine without removing the fuel from the bowl. Examine the bowl contents for contamination as the carburetor is disassembled.

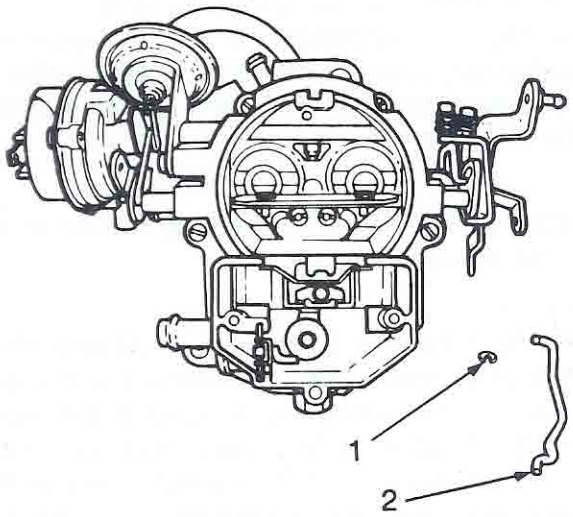
SEE I.S. NOTES

Disassembly

Place the carburetor on a repair stand to protect the throttle valves from damage and to provide a stable work surface.

Remove the stepper motor.

Remove the retaining clip (1) from the accelerator pump arm link (2) and remove the link.



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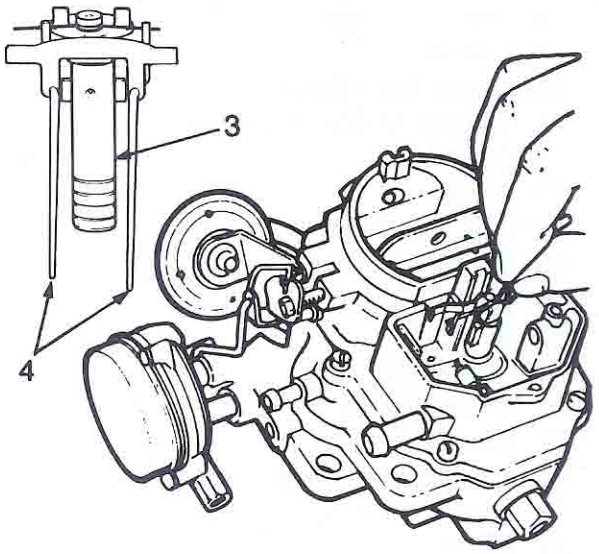
Remove the cover and gasket from the top of the air horn.

Remove the screws and locks from the accelerator pump arm and vacuum piston rod lifter.

Slide the pump lever out of the air horn. Remove the pump arm and rod lifter.

Remove the vacuum piston (3) and metering rods (4) straight up and out of the air horn as an assembly.

Remove the vacuum piston spring.



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If the main body is to be immersed in cleaning solution, perform following steps:

- rotate the bowl vent assembly up and out of the bowl as far as possible to gain access to the rubber valve seal
- carefully remove the valve seal from the lever

Disconnect the clips and remove the link from the choke housing lever and choke lever.

Remove the screw and lever from the choke shaft.

Remove the vacuum hose between the carburetor main body and the choke vacuum diaphragm.

Remove the choke vacuum diaphragm, linkage and bracket assembly. Place the diaphragm aside to be cleaned separately.

Remove the fast idle cam retaining screw. Remove the fast idle cam, linkage and clip.

Grind the heads off the choke cover rivets. Remove the choke housing cover, retainers and the remaining portion of the rivets. Remove the gasket and baffle.

Remove the choke housing from the throttle body.

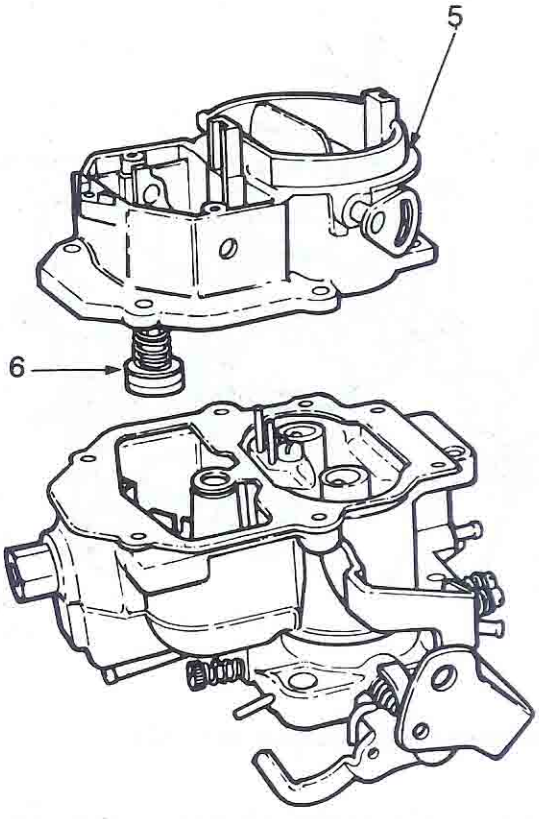
Remove the air horn retaining screws and lift the air horn (5) straight up and away from the main body.

Remove the solenoid. Discard the gasket.

Invert the air horn and compress the accelerator pump drive spring (6).

Remove the S-link from the pump shaft. Remove the pump assembly.

Remove the fuel inlet needle valve (7), seat (8) and gasket from the main body.



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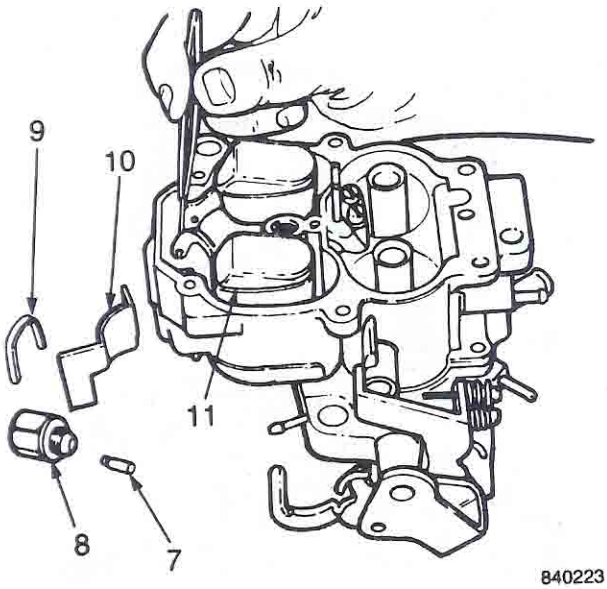
SEE I.S. NOTES

Lift out the float fulcrum pin retainer (9) and baffle (10). Lift out the floats (11) and fulcrum pin.



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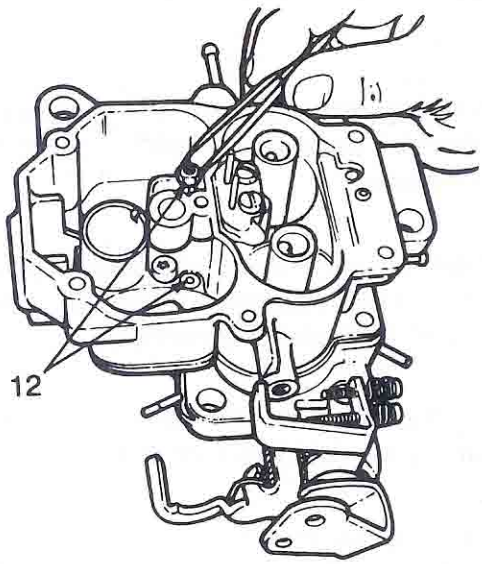
Remove main metering jets (12).

Remove the venturi cluster screws. Lift the venturi cluster and gaskets away from the main body. Discard the gaskets.

Do not remove the idle orifice tubes or main vent tubes from the cluster.

Clean the tubes with cleaning solvent and dry with compressed air.



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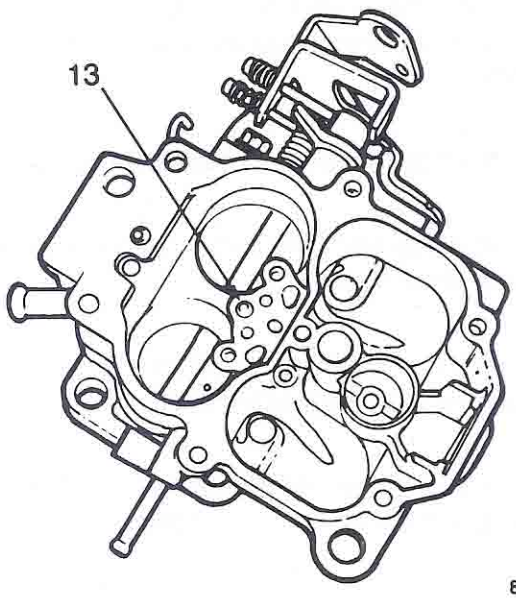
Invert the carburetor main body and drop out the accelerator pump discharge check valve ball (13).



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Remove the screws attaching the throttle body to the main body and separate the bodies. Discard the gasket.

NOTE: If it is necessary to remove the idle mixture adjustment screws because of inability to clean the passages with air pressure or by soaking, remove the dowel pins with a drill and punch.

Count the number of turns required to lightly seat each mixture screw and record this for use during assembly. Remove the screws and springs from the throttle body.

Cleaning and Inspection

Dirt, gum, water and carbon contamination in the carburetor or on exterior moving parts is often responsible for unsatisfactory engine performance. Efficient carburetion depends upon careful cleaning and inspection.

The cleaning and inspection procedures listed below do not involve those parts included in the carburetor overhaul/repair kit.

Install all gaskets and parts included in the repair kit when the carburetor is assembled. Discard the original gaskets and parts.

CAUTION: Do not use a wire brush to clean any component. Do not use a drill bit or wire to clean out openings or passages. This may enlarge the passages and change the calibration of the carburetor.

Wash all the components (except the vacuum break diaphragm, solenoid, bowl vent seal and stepper motor) in clean, commercial carburetor cleaning solvent.

If a commercial solvent is not available, use mineral spirits, lacquer thinner or denatured alcohol.

If a commercial solvent is used, rinse the components in hot water to remove all traces of the cleaning solvent, then blow dry with compressed air.

Wipe the components that cannot be immersed in solvent with a clean, soft, dry cloth. Ensure that all dirt, gum, carbon and other foreign matter are removed from the components.

Force compressed air through all carburetor passages.

Inspect the choke shaft for excessive looseness or binding.

Inspect the choke valve for nicked edges and for ease of operation.

Inspect the throttle shaft for excessive looseness or binding in its bore.

Inspect throttle valve for burrs or nicks that might prevent proper closing.

Inspect the main body, throttle body, air horn, venturi assemblies, choke housing and choke cover for cracks.

Replace the float if the arm needle contact surface is grooved.

If the float is serviceable, polish the needle contact surface of the arm with crocus cloth or steel wool.

Replace the float shaft if worn.

SEE I.S. NOTES

Replace all damaged screws and nuts and all distorted or broken springs.

Inspect all gasket mating surfaces for nicks or burrs.

Replace any components that have damaged gasket surfaces.

SEE I.S. NOTES

Assembly

NOTE: Ensure that all holes in the replacement gaskets have been properly punched and that no foreign material has adhered to the gaskets.

If removed, install the idle mixture screws and springs in the throttle body.

Turn the screws lightly against the seats.

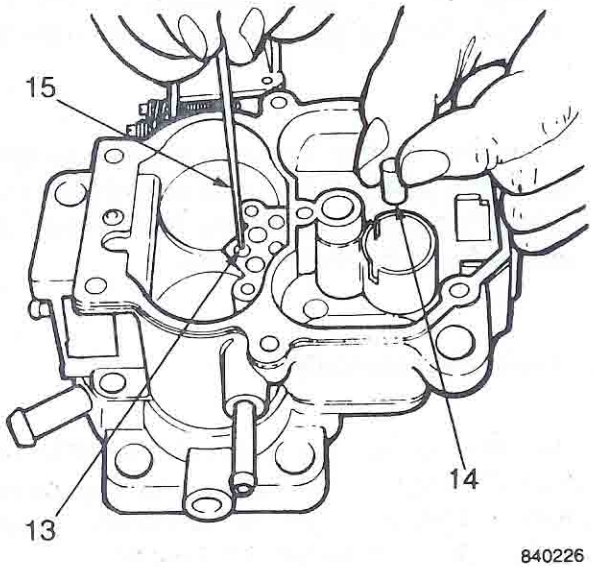
Turn the screws out the same number of turns counted and recorded during disassembly.

Invert the main body. Place the throttle body on the main body and align. Install the screws and tighten securely.

Install the accelerator pump discharge check valve ball (13) in the discharge passage.

Test the accelerator pump (14) circuit.

- pour clean no-lead fuel into the carburetor bowl 13 mm (1/2 in) deep
- insert the pump piston (14) into the pump cylinder and work the piston up and down gently to expel air from the pump passage
- with a suitable, clean brass rod (15), hold the discharge check valve firmly against its seat
- raise the piston and press down
- no fuel should be emitted from either the intake or discharge passages



Clean the passage and valve seat if leakage is evident. If leakage persists, replace the main body.

Install replacement gaskets on the venturi cluster. Install the cluster screws and tighten securely.

Install the main metering jets.

Install the floats with the fulcrum pin and pin retainer in the main body.

Install the inlet needle, seat and gasket. Tighten securely.

Adjust the float level. Refer to Service Adjustment Procedures.

Install the baffle plate.

Place the accelerator pump drive spring on the pump plunger shaft and insert the shaft into the air horn. Compress the spring and insert the S-link.

Place the vacuum piston spring in the vacuum piston bore.

Position a replacement gasket on the main body and install the air horn.

Tighten the retaining screws alternately to compress the gasket evenly.

Install the solenoid.

Adjust the vacuum piston gap. Refer to Service Adjustment Procedures.

Carefully install the vacuum piston and metering rod assembly into its bore in the air horn.

Ensure that the metering rods are inserted in the main metering jets.

Ensure that the metering rod springs are installed properly.

Rotate the bowl vent assembly up and out of the bowl and install the vent seal, if removed.

Place two of the plastic rod lifter tangs under the piston yoke.

Slide the accelerator pump lever shaft through the rod lifter and pump arm.

Install the locks and adjusting screws, but do not tighten.

Install the fast idle cam and linkage. Tighten the retaining screw securely.

Connect the accelerator pump linkage to the pump lever and throttle lever.

Install the retaining clip.

Adjust the vacuum piston and accelerator pump.

Adjust the bowl vent. Refer to Service Adjustment Procedures.

Install the rollover check valve. Use a replacement gasket.

Install the diaphragm assembly and secure with the attaching screws.

Do not connect the vacuum hose to the vacuum break diaphragm fitting until the initial choke valve clearance has been adjusted. Refer to Service Adjustment Procedures.

Engage the diaphragm link with the slot in the choke lever.

Install the choke lever and screw on the choke shaft.

Install the choke housing on the throttle body.

Install the baffle, gasket and cover on the choke housing. Turn the cover 1/4 turn rich (clockwise) and tighten one straight slot-type screw for preliminary adjustment purposes.

Install the link and retainer between the choke lever and the choke housing lever.

Attach the link and retainer to the fast idle cam and choke lever.

Adjust the initial choke valve clearance. Refer to Service Adjustment Procedures.

Adjust the fast idle cam clearance. Refer to Service Adjustment Procedures.

SEE I.S. NOTES

Adjust the choke unloader clearance. Refer to Service Adjustment Procedures.

Remove the choke cover screw and rotate the cover index to the following basic setting as indicated by index key color:

- gold index key – set the choke index at 0
- red index key – set the choke index at one-notch rich
- green index key – set the choke index at two-notches rich

Install and tighten the choke cover replacement screws.

Install the stepper motor with a replacement gasket.

Install the carburetor. Refer to the installation procedure.

Service Adjustment Procedures

Float Level Adjustment

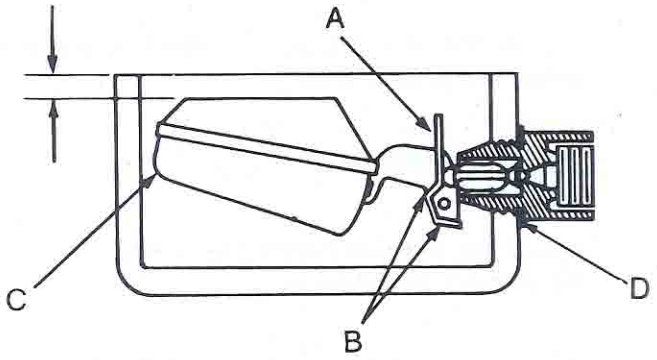
Remove the air horn.

Hold the float gently against the inlet needle to raise the float.

Place a straightedge across the float bowl to measure the float level. Refer to the Specifications chart.

CAUTION: Never bend the float lever while it is resting against the inlet needle. Pressure may damage the synthetic tip and cause an incorrect adjustment.

If adjustment is necessary, release the floats and bend the float lever.



A - Apply Slight Pressure
B - Bend to Adjust
C - Float
D - Gasket

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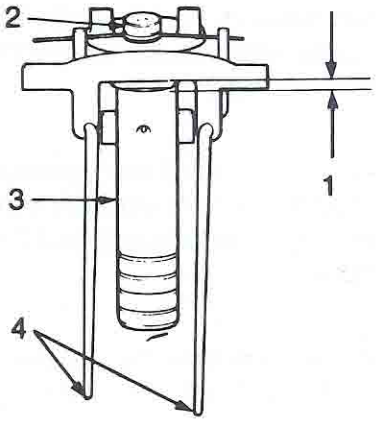
Install the air horn.

Vacuum Piston Gap Adjustment

The correct vacuum piston gap (1) is a critical adjustment.

- turning the adjusting screw (2) clockwise richens the air/fuel mixture
- turning the adjusting screw counterclockwise leans the air/fuel mixture

Turn the adjusting screw to adjust the gap. Refer to the Specifications chart.



1 - Gap
2 - Adjustment Screw
3 - Vacuum Piston
4 - Metering Rods

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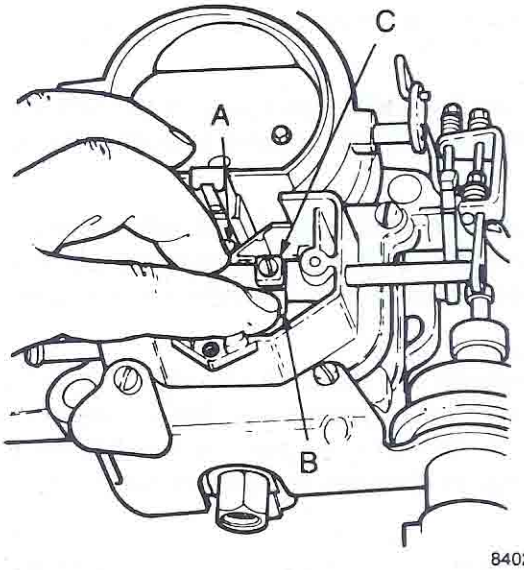
Vacuum Piston Adjustment

Adjust the vacuum piston gap to the specified dimension.

Turn the curb idle speed adjustment screw counterclockwise until the throttle valves are completely closed. Count and record the number of turns so the screw can be returned to the original position.

Fully depress the vacuum piston (A) while holding moderate pressure on the rod lifter tab (B). While in this position, tighten the rod lifter lock screw (C).



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Release the piston and rod lifter.

Adjust the accelerator pump. Refer to Accelerator Pump Adjustment.

Return the curb idle speed adjustment screw to its original position.

SEE I.S. NOTES

SEE I.S. NOTES

Accelerator Pump Adjustment

Turn the curb idle speed adjustment screw counterclockwise until the throttle valves are completely closed. Count and record the number of turns so that the screw can be returned to the original position.

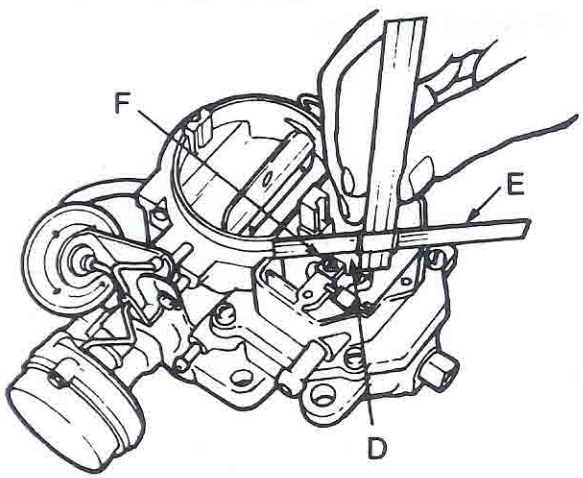
Open the choke valve so that the fast idle cam allows the throttle valves to seat in the bores.

Turn the curb idle speed adjustment screw clockwise until it just barely contacts the stop, then continue two complete turns further.

Measure the distance between the surface of the air horn and the top of the accelerator pump shaft (D) with a T-scale (E). Refer to the Specifications chart for the correct dimension.

Loosen the pump arm adjusting lock screw (F) and rotate the sleeve to adjust the pump travel to the correct dimension. Tighten the lock screw.

Return the curb idle speed adjustment screw to its original position.



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Initial Choke Valve Clearance Adjustment

Grind off the choke housing cover rivets. Remove the remaining portion of the cover rivets.

Turn the cover to 1/4 turn rich position (1). Install and tighten one retaining screw. Use a straight-slot type screw for service.

Open the throttle valve slightly and place the fast idle speed adjustment screw on the high step of the cam.

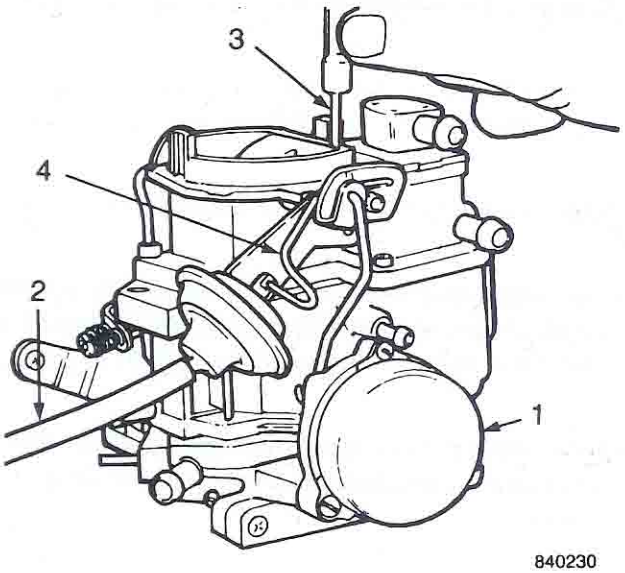
Use Tool J-23738 or any vacuum source that provides vacuum of at least 64 kPa (19 in. Hg) and apply vacuum to force the diaphragm against the stop (2).

Measure the clearance between the choke valve and the air horn wall with a plug gauge (3). Refer to the Specifications chart for the correct dimension.

Adjust the clearance by bending the vacuum diaphragm connector link (4).

Loosen the choke housing cover retaining straight slot screw and adjust the choke cover index to the specified position.

Install and tighten all the cover retaining screws.



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Fast Idle Cam Position Adjustment

Grind off the choke housing cover retaining rivets. Remove the remaining portion of the rivets.

Turn the cover to the 1/4 turn rich position (A). Install and tighten one retaining straight-slot type screw.

Open the throttle slightly and place the fast idle speed adjustment screw on the second step of the cam (B).

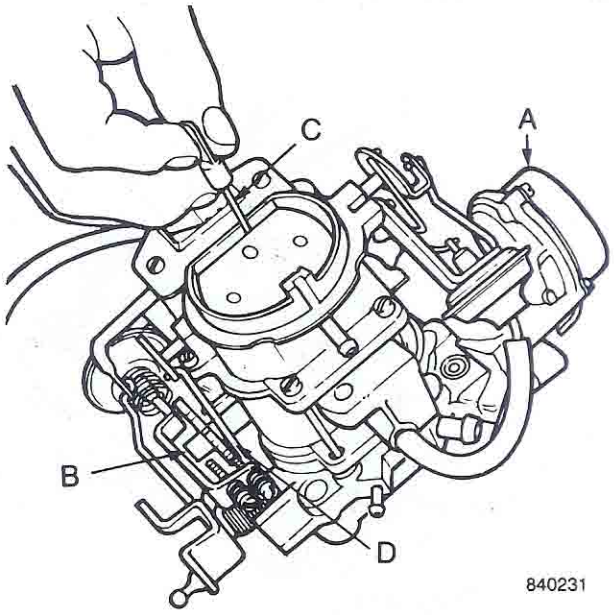
Measure the distance between the choke valve and the air horn wall with a plug gauge (C). Refer to the Specifications chart for the correct dimension.

Adjust by bending the fast idle cam link (D) down to increase the distance or up to decrease the distance.

Remove the choke housing cover retaining straight slot screw.

Adjust the choke cover index to the specified position.

Install and tighten the choke cover retaining screws.



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SEE I.S. NOTES

SEE I.S. NOTES

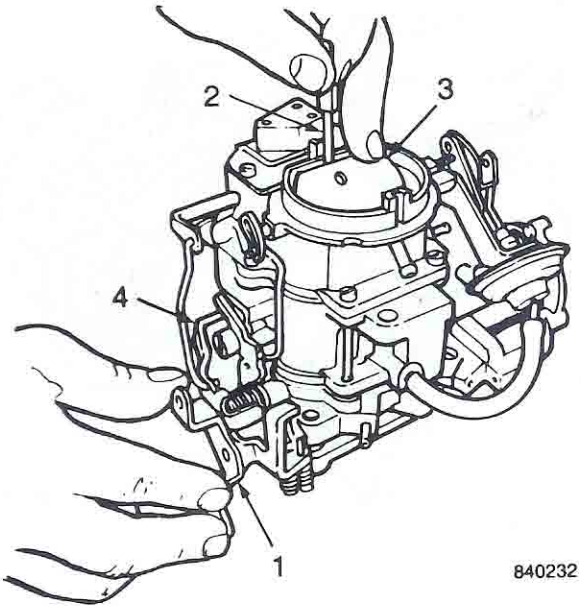
Choke Unloader Adjustment

Hold the throttle wide open (1).

Insert a plug gauge (2) and apply light pressure to close the choke valve (3).

Measure the distance between the choke valve and the air horn wall. Refer to the Specifications chart for the correct dimension.

Adjust by bending choke unloader tang (4). Do not bend the tang so that it binds or interferes with any other component.



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Fuel Bowl Vent Adjustment

This is not a precise adjustment. It is only necessary to ensure that the mechanical fuel bowl vent is open at idle speed and closed at greater throttle openings.

The adjustment can be accomplished with the carburetor either on or off the engine.

Remove the rollover check valve from the air horn to gain access to the metering rod area.

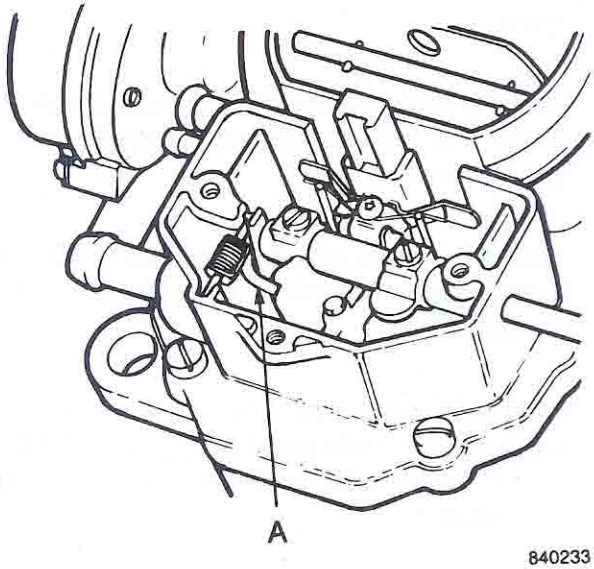
Open the throttle and position the fast idle speed adjustment screw on the high step of the cam.

Observe the fuel bowl vent. It should be closed.

Manually move the cam until the fast idle speed screw drops into the second step of the fast idle cam. The bowl vent should just begin to open.

If the valve is not closed on high, fourth or third steps of the cam, bend the valve tab (A) until it is closed.

If the valve does not just begin to open with the fast idle speed adjustment screw on the second step of the cam, bend the tab until it is just off its seat.



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Choke Adjustment (On- or Off-Engine)

NOTE: The choke adjustment is preset during factory assembly and should not normally require readjustment. The choke should be serviced only if absolutely necessary or during major carburetor overhaul.

The automatic choke adjustment is accomplished by removing the housing cover retainers and rotating the cover in the desired direction as indicated by the arrow on the face of the cover.

NOTE: Break-away torq-head cover retaining screws are used to discourage indiscriminate choke adjustment.

Position the choke cover at the following basic setting as indicated by index key color:

- gold index key – set the choke index at 0
- red index key – set the choke index at one-notch rich
- green index key – set the choke index at two-notches rich

NOTE: The richer the choke setting, the greater length of time that spring tension is exerted against the linkage to hold the choke valve in a closed position. As the electric heater relaxes the spring tension, the fast idle cam weight opens the choke valve.

Fast Idle Speed Adjustment

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Adjust the fast idle speed with the engine at normal operating temperature and the EGR valve vacuum hose disconnected and plugged.

Connect a tachometer to the ignition coil negative (TACH) terminal and observe it for the adjustment.

Position the fast idle speed adjustment screw in contact with and against the shoulder of the second step of the fast idle cam.

Refer to the Specifications chart and adjust the engine speed for the correct rpm. Adjust by turning the fast idle speed adjustment screw.

Disconnect the tachometer.

Idle Speed Adjustment

Install the carburetor, fuel pipe, vacuum hoses etc., if removed. Refer to the installation procedure.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Connect a tachometer to the ignition coil negative (TACH) terminal.

Start and allow the engine to attain the normal operating temperature.

The carburetor choke and intake manifold heater must be off. This occurs when the engine coolant heats to approximately 71°C (160°F).

SEE I.S. NOTES

SEE I.S. NOTES

NOTE: When adjusting the idle speed, place a manual transmission in Neutral or an automatic transmission in Drive. Turn all accessories off.

WARNING: Set the parking brake firmly. Do not accelerate the engine.

Disconnect the vacuum hose from the Sole-Vac vacuum actuator and plug it.

Disconnect the Sole-Vac holding solenoid wire connector.

Adjust the carburetor curb (slow) idle speed adjustment screw to obtain the specified curb (slow) idle engine rpm, if not at the specified speed. Refer to the Idle Speed chart.

Apply a direct source of vacuum to the vacuum actuator. Use Vacuum Pump Tool J-23738, or equivalent.

When the Sole-Vac throttle positioner is fully extended, turn the vacuum actuator adjustment screw on the throttle lever until the specified engine rpm is obtained.

Disconnect the vacuum source from the vacuum actuator.

With a jumper wire, apply battery voltage (12V) (or connect the holding solenoid wire connector and turn ON the air conditioner with the compressor clutch wire connector disconnected) to energize the holding solenoid.

Hold the throttle open manually to allow the throttle positioner to fully extend.

NOTE: Without the vacuum actuator, the throttle must be opened manually to allow the Sole-Vac throttle positioner to be fully extended.

If the holding solenoid idle speed is not within specification, adjust the Sole-Vac throttle positioner (hex-head adjustment screw) to obtain the specified engine rpm.

Remove the jumper wire from the Sole-Vac holding solenoid wire connector (if connected).

Connect the Sole-Vac holding solenoid wire connector (if disconnected).

Connect the original vacuum hose to the vacuum actuator.

Remove the tachometer.

If disconnected, connect the A/C compressor clutch wire connector.

Idle Mixture Adjustment

NOTE: It is necessary to remove the carburetor to gain access for removing the dowel pins. Refer to Carburetor Removal for the procedure.

CAUTION: The idle mixture adjustment should only be performed if the adjustment screws were removed during carburetor overhaul for cleaning purposes.

WARNING: Use extreme caution when the engine is operating. Do not stand in a direct line with the fan. Do not put your hands near the pulleys, belts or fan. Do not wear loose clothing.

Install the carburetor, fuel pipe, vacuum hoses, etc. Refer to the installation procedure.

Connect a tachometer. Start the engine and warm it to the normal operating temperature.

NOTE: Use a tachometer with an expanded scale of 400-800 or 0-1000 rpm. Inspect periodically to ensure the accuracy is within two percent.

Position the gear selector in NEUTRAL for manual transmissions and DRIVE for automatic transmissions. Set the parking brake firmly.

Adjust the idle speed as described in the adjustment procedure. Use the Set-To engine rpm.

Adjust the mixture screw(s) leaner (clockwise) until a perceptible loss of rpm is noted.

Turn the mixture screw(s) richer (counter-clockwise) until the highest rpm indication is obtained. Do not turn the screw(s) any further than the point at which the highest rpm is first obtained. This is referred to as LEAN BEST IDLE.

NOTE: The engine speed will increase above the curb idle speed by an amount that corresponds to approximately the IDLE DROP specification to be obtained in the next step.

As a final adjustment, turn the mixture screws clockwise (leaner) to obtain the specified drop in engine idle rpm.

Turn both the idle mixture screws in small, equal amounts until the specified IDLE DROP is achieved. Refer to the Mixture Adjustment chart.

NOTE: If the final engine rpm differs more than ±30 rpm from the original curb idle rpm, adjust the curb idle speed to the specified rpm and repeat the last two steps listed above.

NOTE: It is necessary to remove the carburetor to gain access for installing the dowel pins. Refer to Carburetor Removal for the procedure.

Install the dowel pins after completing the idle mixture adjustment. Use care to prevent disturbing the mixture adjustment screw positions.

SEE I.S. NOTES