GENERAL COOLING SYSTEM SERVICING

DESCRIPTION

The basic liquid cooling system consists of a radiator, water pump, thermostat, cooling fan, pressure cap, heater (if equipped), various connecting hoses, and cooling passages in the block and cylinder head. In addition, many cars use a fan clutch, which may incorporate a thermostatic control, or a flexible fan blade, or both, to reduce noise and power requirements at higher engine speeds. Some models, with exhaust emission control, use a thermostatic vacuum switch to advance ignition timing in the event of overheating. Coolant recovery systems are being used more commonly to prevent loss of the recommended permanent (ethylene glycol) type, year round, anti-freeze.

MAINTENANCE

DRAINING

Remove radiator cap, open heater control valve to maximum heat position (if equipped), open drain cocks or remove plugs in bottom of radiator and in engine block. In-line engines usually have one plug or cock, while V-engines will have two, one in each bank of cylinders.

CLEANING

A good cleaning compound will remove most rust and scale. Follow manufacturer's instructions in the use of the cleaner. If considerable rust and scale will have to be removed, flushing will be necessary. Also, clean radiator air passages by blowing out with compressed air from back to front of radiator.

FLUSHING

CAUTION — ***Pontiac uses an aluminum plastic radiator on some models (identified by a note below the filler neck). Material used for cleaning and flushing must be compatible with aluminum, according to manufacturer's recommendations.***

Back flushing is a very effective means of removing rust and scale from a cooling system. For best results, the radiator, engine, and heater core should be flushed separately. To flush radiator, connect flushing gun to water outlet of radiator and disconnect water inlet hose. Use a leadaway hose, connected to radiator inlet, to prevent flooding the engine. Use air in short bursts only as a clogged radiator could be easily damaged. Continue flushing until water runs clear. To flush engine, first remove thermostat and replace housing. Connect flushing gun to water outlet of engine. Disconnect heater hoses from engine. Flush using short air bursts until water runs clean. Flush heater core as described for radiator. Make sure heater valve is set to maximum heat position before flushing heater.

REFILLING

Engine should be running while refilling cooling system to prevent air from being trapped in the engine block. After system is full, continue running engine until thermostat is open, then recheck fill level. Do not overfill system. Refer to appropriate article for correct cooling system capacity.

THERMOSTAT

Visually inspect thermostat for corrosion and proper sealing of valve and seat. If satisfactory, suspend thermostat and a thermometer in a container with a 50/50 mixture of anti-freeze and water (AMC recommends 100% anti-freeze). See *Fig. 1.*

Do not allow either thermostat or thermometer to touch bottom of container as this concentration of heat could cause an incorrect reading. Heat water until thermostat just begins to open.

NOTE — *AMC recommends placing a .003" feeler gauge between thermostat valve and seat. When valve begins to open, feeler gauge will slip out easily.*

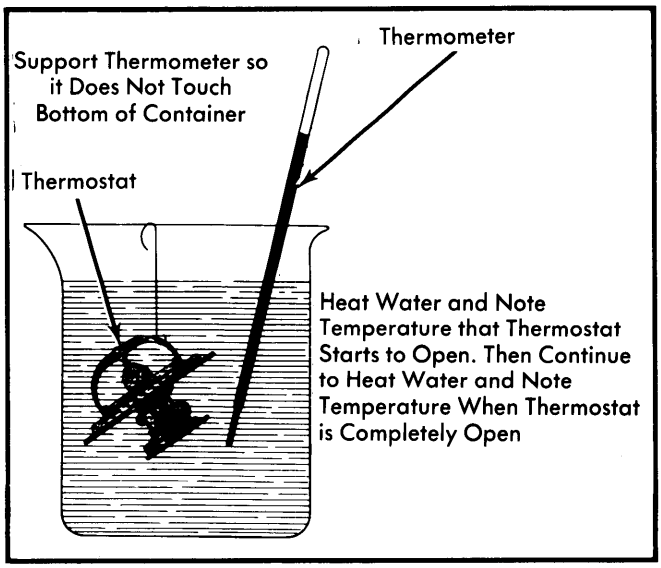

Fig. 1 Thermostat Test

Read temperature on thermometer. This is the initial opening temperature and should be within specifications. Continue heating water until thermostat is fully open and note temperature. This is the fully opened temperature. If either reading is outside of specifications, replace thermostat, as it is not adjustable.

NOTE — *Chevrolet recommends hanging thermostat in 33% solution at 25° above temperature stamped on thermostat valve, agitating solution to distribute heat; valve should open. Remove thermostat from solution and place in similar solution at 10° below stamped temperature; valve should close.*

PRESSURE TESTING

A pressure testing tool is used to test both radiator cap and complete cooling system. Test as follows, following tool manufacturer's instructions.

Radiator Cap —Visually inspect radiator cap, dip cap in water and connect to tester. Pump tester to bring pressure to upper limit of cap specifications. If cap fails to hold pressure within specifications, replace cap.