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COOLING SYSTEM

In an internal-combustion engine high temperatures are produced by burning a fuel-air mixture within the cylinders. The heat produced by this process has a rough distribution of approximately one third for power or useful heat while the remaining two thirds is considered waste heat.

This waste heat is carried away from the engine by two systems, the exhaust where temperatures may range around 1000° F and the cooling system, which contacts areas of the engine where the temperature may range around 500° F. The proportion of waste heat removal is approximately fifty percent by each of the systems.

The failure of the cooling system to perform its part of heat removal will seriously impair the efficient operation of the engine. Should the cooling system fail, excessive engine metal temperatures will reduce the lubricating value of the oil or create chemical changes in the oil which will in turn produce varnish or other harmful engine deposits.

Over cooling, which can be equally dangerous to the engine although the effect will be less sudden, will cause low engine operating temperatures which result in excessive fuel consumption, particularly in cold weather. Formation of sludge, due to condensation of water in the crankcase and dilution of engine oil also results from too low engine temperature operation.

Various types of water used in different sections of the country add to the cooling system problems. Water containing dissolved mineral salts is particularly harmful to the cooling system metal and an acid condition in natural waters will speed up iron corrosion and rust formation. Hard waters with a high lime content will deposit scale at the hot spots in the water jacket, this is particularly true if large quantities of water are added to the cooling system over a period of time.

In view of the advantages of an effective cooling system, preventative maintenance is imperative. Commercial vehicles require maximum cooling due to excessive heat developed by power requirements of high speed or full throttle slow speed operation. Passenger vehicle operation is usually less severe, but the same high standard of cooling efficiency is desired.

Radiators should be periodically checked for breaks and leakage at the tank, water tubes and the inlet and outlet fittings.

Radiator mountings should also be checked and tightened to reduce the effects of shock and vibration damage. Radiator fins should be checked and carefully straightened if necessary. The fins should also be cleaned of bugs, leaves and other debris which would impair air flow.

REMEMBER:

Satisfied customers are more profitable customers and the surest source of future business.

Radiator and heater hose connections, where leaks are most common, should be carefully scrutinized. Engine vibration has a tendency to loosen and wear rubber hose connections. The hose itself has a limited service life due to extremes of temperature which cause rotting, swelling, stripping and general deterioration.

Operation of the thermostat should be checked as rust, wear and extreme temperatures will impair the operation of this important unit. The radiator pressure cap should also be inspected at the cap seat, gasket and valves. Pressure and vacuum valves should be cleaned and tested for tightness. The proper operaion of the pressure cap is of more importance than is generally realized since the additional margin of safety provided by raising the boiling point of water to around 225° F (four pound cap) prevents boiling with high engine temperature during hot weather operation, at high altitudes and under heavy load conditions.

The cooling system should also be inspected for evidence of exhaust leaks into the system since the exhaust gases combine with the water to form acids which attack metal parts. Aeration of the cooling system speeds up rust formation and corrosion and may cause excessive foaming and overflow loss of coolant. Inspect the water pump, lower radiator hoses and all other possible points of leakage on the suction side of the pump. In addition, the correct tension of the fan belt is imperative to efficient water pump operation.

After checking the cooling system, the complete system should be cleaned and flushed. If there is evidence of excessive corrosion or rust the system should be reverse-flushed.

After the cleaning operation a rust inhibitor should be added to the coolant to retard future rust formation. It should be remembered that a rust inhibitor does not clean but only checks future rust formation.

Crankshaft Rear Bearing

The crankshaft rear bearing unit, Part No. 3688839, previously used on all 1948-52 models has been replaced by Part No. 3703894 bearing unit used on all 1953 models without Powerglide. The substitution of the approximately 5/16" narrower No. 3703894 bearing was made to increase bearing durability by relieving thermal distress at the rear edge. The 1953 bearing has adequate width for servicing the earlier models, since there was no effective contact on the rear 5/16" of the wider No. 3688839 bearing.

Powerglide Shift Patterns and Pressures

The following data on 1953 Powerglide shift patterns and representative pressures is presented to give service personnel more information to assist in diagnosing Powerglide operation. The figures may vary considerably due to variations in gauges, speedometers and oil temperature as well as variations in individual transmissions.

SHIFT PATTERNS

Upshift-Drive Range (Automatic)

Throttle Position	*Range*
Light throttle	10-20 MPH
To Detent	23-33 MPH
Thru Detent	*37-44 MPH

Downshift-Drive Range (Automatic)

Throttle Position	*Range*
Light throttle	8-10 MPH
To Detent	13-16.5 MPH
Thru Detent	*32-37 MPH

**This may be somewhat higher on early production units.*

REPRESENTATIVE PRESSURES

NOTE: *All pressures may vary approximately 5% (higher or lower) from the mean pressures shown. Locations of pressure check plugs are shown in Figures 1 and 2.*

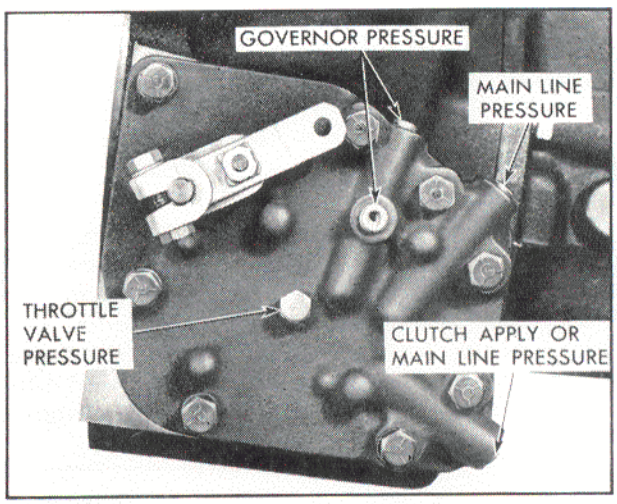

Fig. 1

Low (Manual)

Idle 450 RPM — 140# Front Pump (Main Line) Pressures (fig. 1).

30 MPH

Location	*Part Throttle Road Load*	*Full Throttle Thru Detent*
Low Apply (fig. 2)	160±	190±
**Governor (fig. 1)	60±	60±

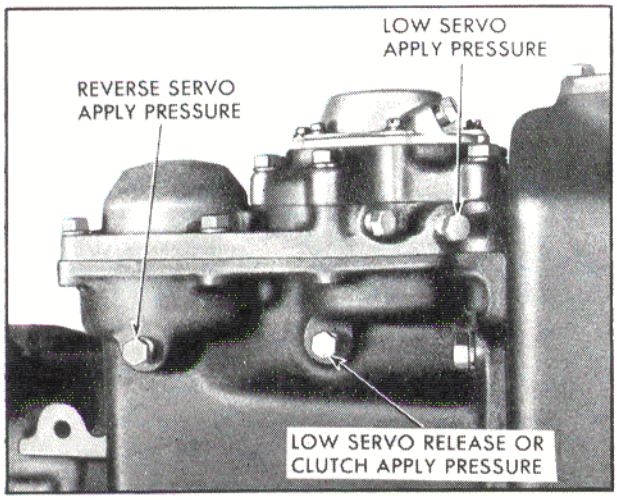

Fig. 2

Drive (Automatic)

Transmission in Low Range			Transmission in High Range	
Light Throttle 10 MPH	*Thru Detent 30 MPH*	*Location*	*Light Throttle 30 MPH*	*To Detent 40 MPH*
70#	115#	Low Apply (fig. 2)	55#	120±
0	0	Clutch Apply (fig. 1)	55#	120#
10#	60#	**Governor (fig. 1)	68#	75±
—	45#	Throttle Valve (fig. 1)	45#	58±

***When governor pressure only is being checked, the vacuum line to the modulator must be disconnected to get a proper reading.*

Windshield Wiper Transmission Assembly

Parts stock of the windshield wiper transmission with cable assemblies Part Nos. 4601062-63 (1st type) and 4630411-12 (2nd type) used on 1953 Passenger cars, are received with the transmission drums in the fully loaded position.

After transmissions are installed on the car and the cable ends are secured to the wiper motor auxiliary drive, the screw in the end of the transmission shaft should be released by at least 2 turns (fig. 3) so the transmission drum may rotate freely to the correct position. A ratcheting sound will serve as a guide that the drum is moving.

CAUTION: *The screw should not be backed out more than 4 turns as any further movement or pushing against the screw separates the drum to the point where the spring hook disengages from the groove.*

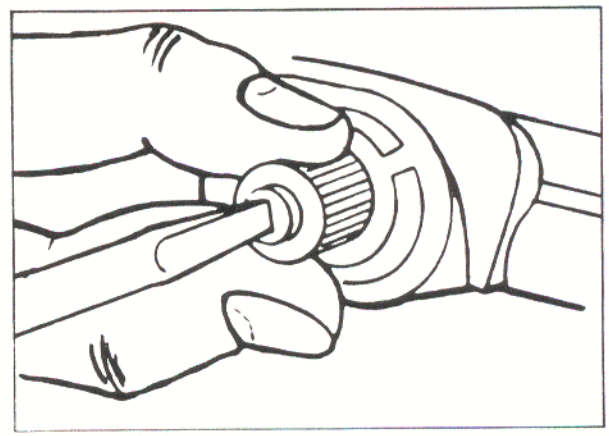

Fig. 3

If the drum does not spin and create a ratchet sound with 2 turns of the screw, slight pressure should be exerted endwise on the screw to disengage the drum.

Final tensioning of the windshield wiper cables should be performed as outlined in the March, 1953 Chevrolet Service News.

Cooling System Capacity

The cooling system capacity information listed on page 90 of the 1953 Truck Owner's Manual (1st, 2nd and 3rd editions) is corrected to read as follows:

Models	*Qts.*
½, ¾, 1, 1½ Ton (production radiator and "216" engine)	15
¾, 1, 1½ Ton (heavy duty radiator option; forward control models with production radiator; 1½ ton with "235" engine option)	16
2 Ton (production radiator) 1½ Ton ("235" engine and heavy duty radiator options)	17
2 Ton (heavy duty radiator option)	18

Subsequent editions of the Truck Owner's Manual will be corrected to include this information.

Fuel Pump Installation

Current model fuel pump, Part No. 5592627, may be installed in 1937-51 models by bending the gas lines to meet the angular connections as follows:

1. Install fuel pump and slide fitting on pump to carburetor line back on fuel line approximately 2½ inches.
2. Insert a 6" rod in the loose flared end of the pipe and position a box wrench over the fitting. Then using the rod as a lever and the fitting held in the box wrench as a pivotal point, carefully bend the pipe inward to meet with the fuel pump nipple.
3. Carefully hand-bend the gas tank to fuel pump line as required for connection to fuel pump.

Front Seat Backs

Where front seat backs on 1953 two door models have taken a "set" to the rear of normal position due to bent center hinge arm supports, they should be re-aligned and reinforced as follows:

1. From ⅛ inch steel stock, cut out two (2) reinforcements using the template shown in Figure 4.
2. Remove affected front seat back from the body and place upon a covered bench.
3. Remove the seat back side panel and inner finish trim strip.
4. Loosen the seat back trim and padding and turn back to clear working area.
5. Using the previously made reinforcement as a template, straighten the center hinge arm support until surfaces "A" and "B" of reinforcement (fig. 5) are flush against the support.

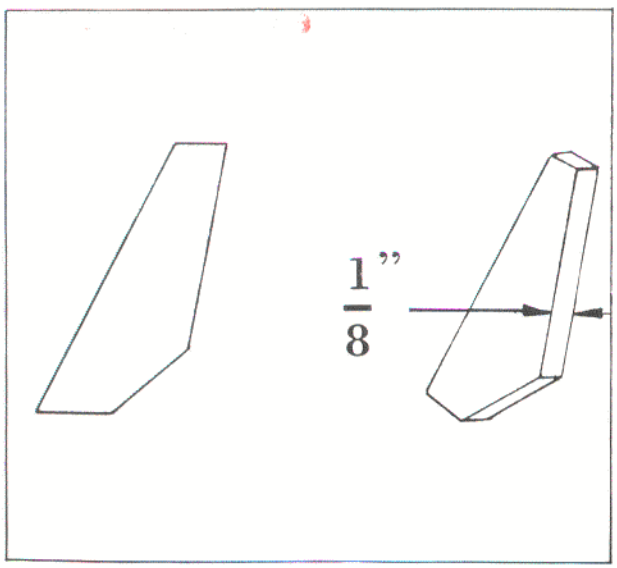

Fig. 4

6. Grind or file a radius along one edge of the reinforcement as shown in Figure 5.

NOTE: *Radius to be on opposite edge on the reinforcement for the other seat back.*

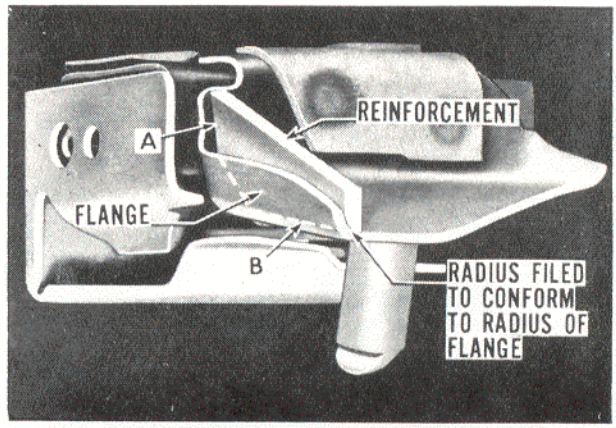

Fig. 5

7. Carefully bend metal flange "A" (fig. 6) to obtain clearance for brazing.
8. Block spring border wires away from the immediate brazing area with a wood block. Protect springs with an asbestos paste and trim with sheet asbestos as shown in Figure 6.

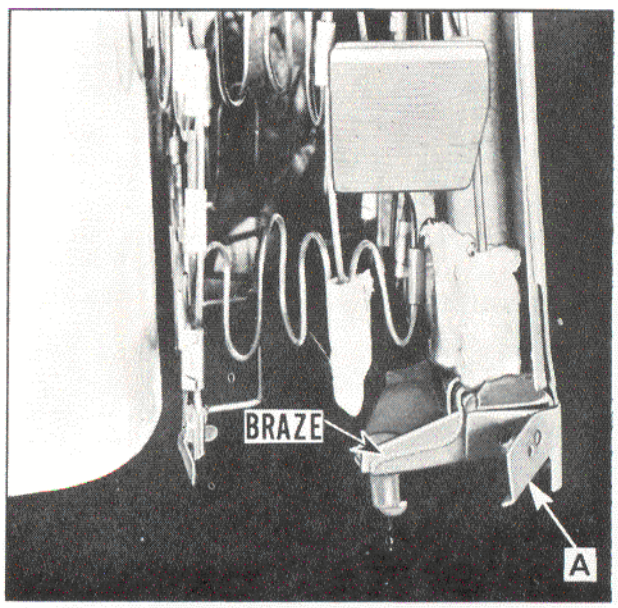

Fig. 6

9. Clamp reinforcement to hinge arm and tack braze into position, then remove clamp and braze reinforcement along outer surfaces as shown in Figure 6. Also apply a bead of brazing along inner contacting surfaces of reinforcement.
10. Carefully bend flange "A" back into position and refasten seat back padding and trim cover.
11. Assemble seat side panel and inner finish trim strip and reinstall seat back assembly.