GROUP 11

EXHAUST SYSTEM

CONTENTS

TIGHTENING REFERENCE

	Foot-Pounds
Ball Joint Screw	20
Exhaust Manifold Nuts	30
Exhaust Pipe Flange Nut	40
Exhaust Pipe Support Clamp Bolts	10
Converter Housing Bracket Screw	15
Heat Control Counterweight Clamp Bolt	50 (inch-pounds)

GROUP 11

EXHAUST SYSTEM

Longer life aluminized exhaust components are used on all models. The exhaust system is suspended by loop type hangers through the propeller shaft tunnel offering greater protection against road damage. Ball joints which allow more accurate alignment of the exhaust system are located ahead of the mufflers, (Figs. 1, 2, 3, 4, 5, 6 and 7).

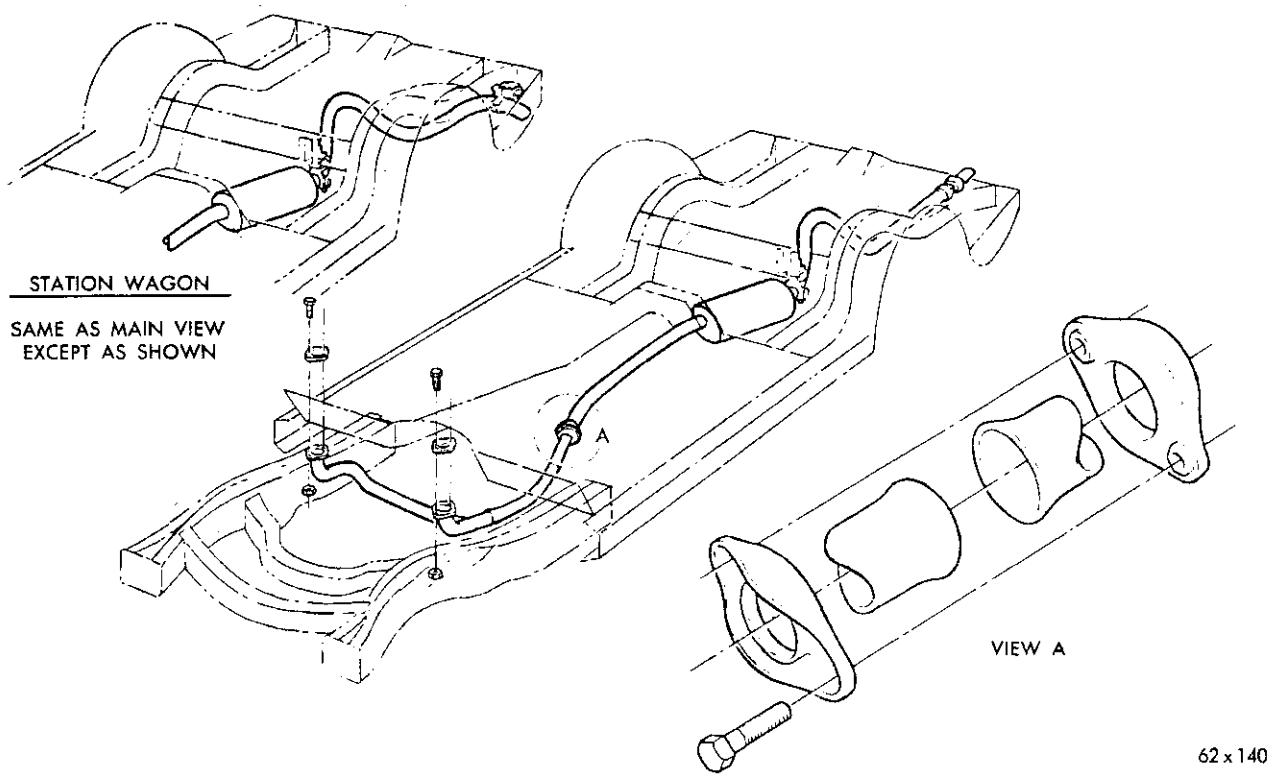

Fig. 1—Exhaust System (SC-1 and SC-2)

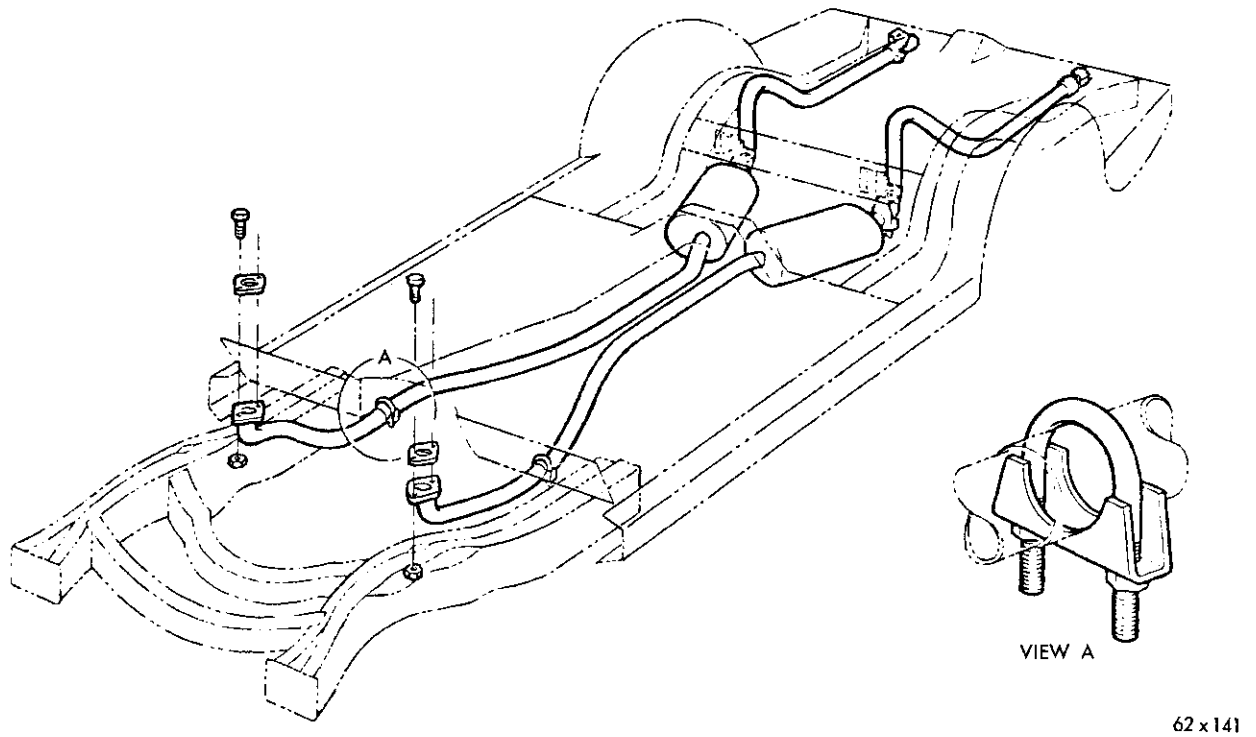

Fig. 2—Exhaust System (C-300H—High Performance)

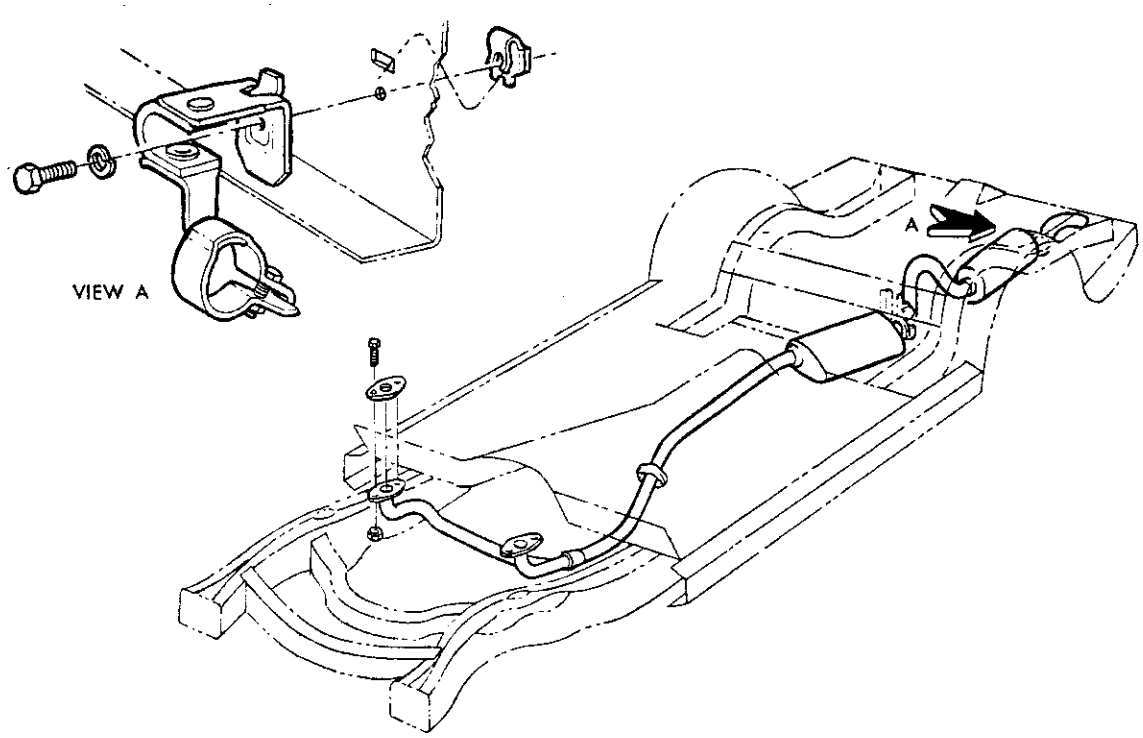

Fig. 3—Exhaust System (SC-3)

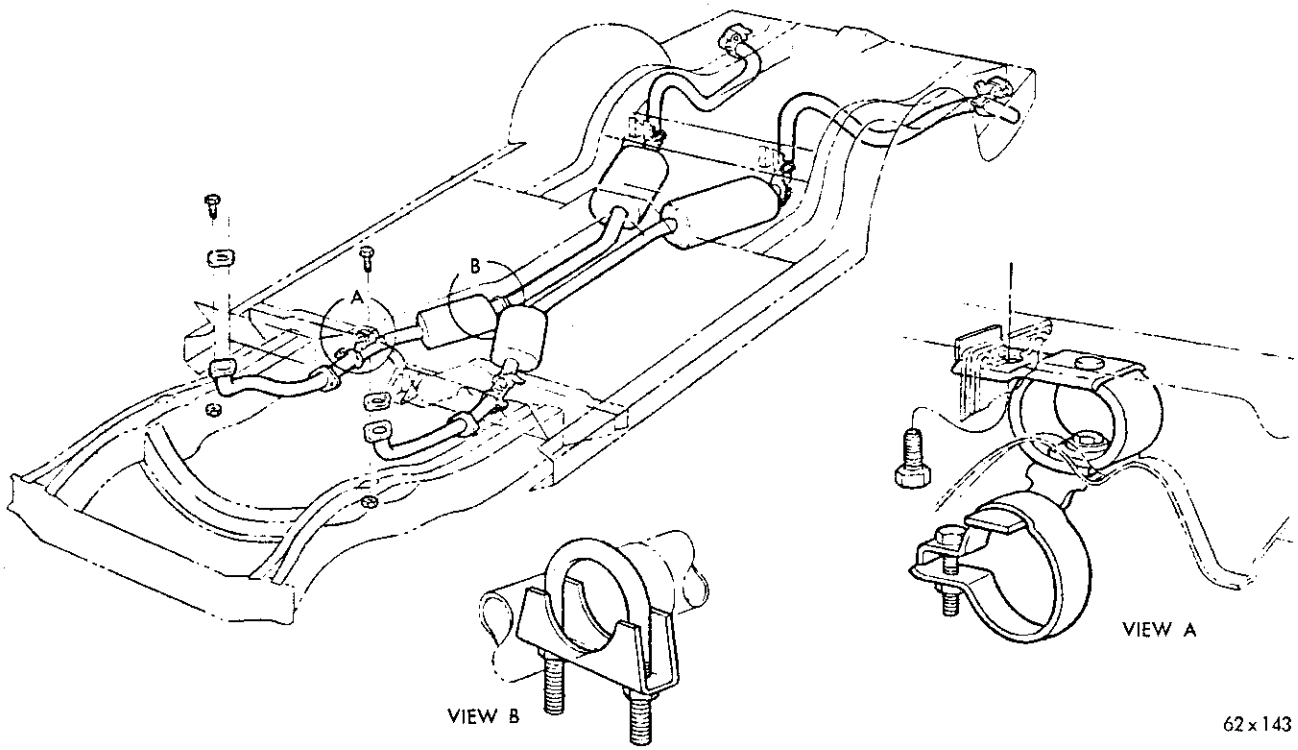

Fig. 4—Exhaust System (SC-3) Town and Country

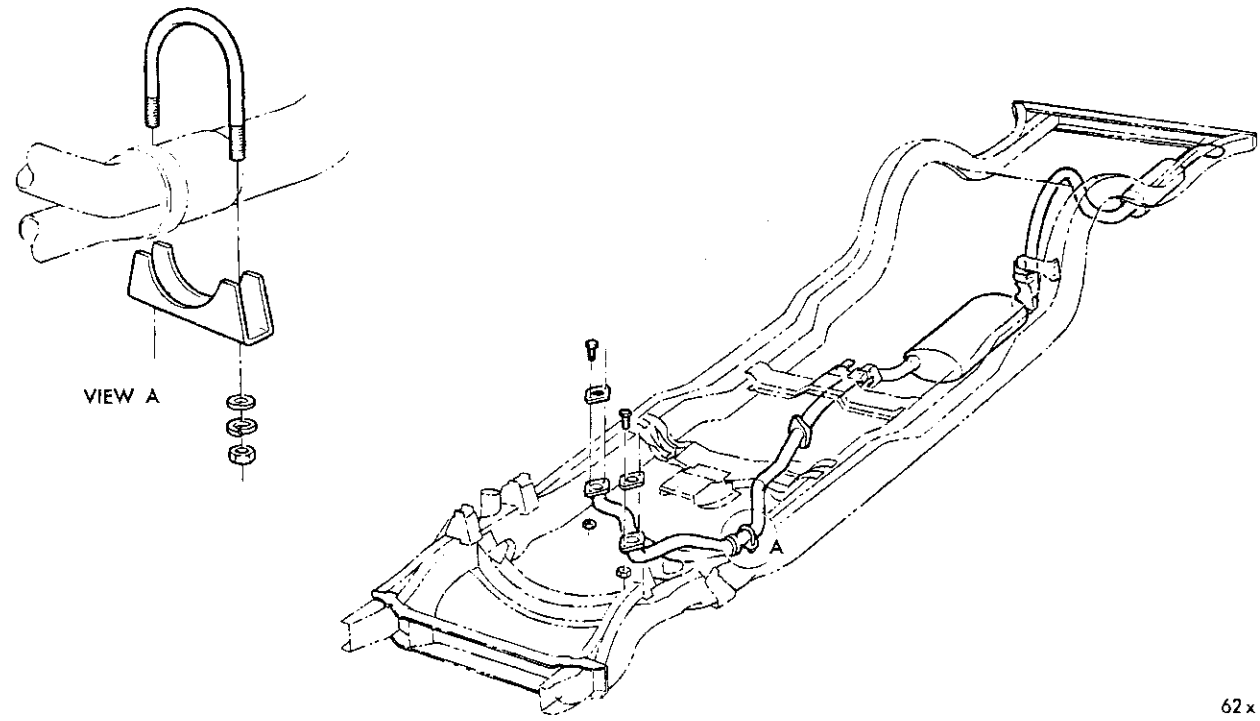

Fig. 5—Exhaust System (SY-1)

INTAKE MANIFOLD (Figure 8)

Refer to the "Engine" Group 9 for removal and installation of the intake manifold.

EXHAUST MANIFOLD

a. Removal

(1) Disconnect the spark plug cables at the spark plugs.

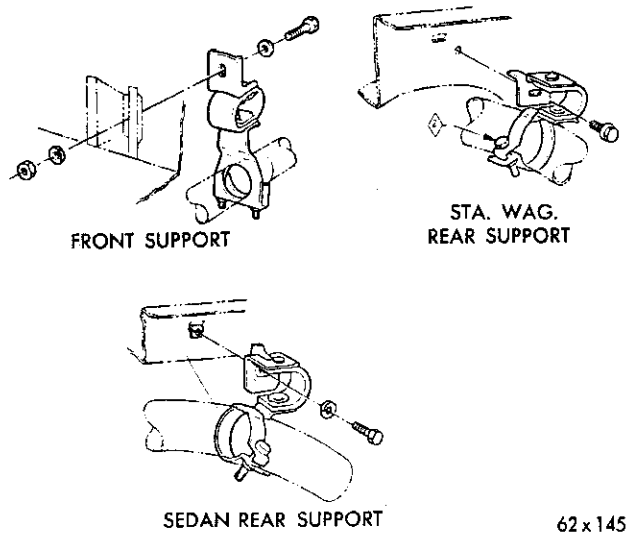

Fig. 6—Exhaust System Supports (SC-1, SC-2, SC-3)

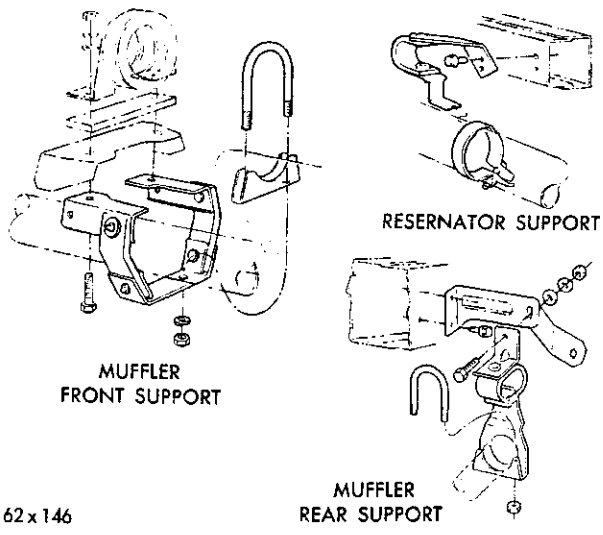

Fig. 7—Exhaust System Supports (SY-1)

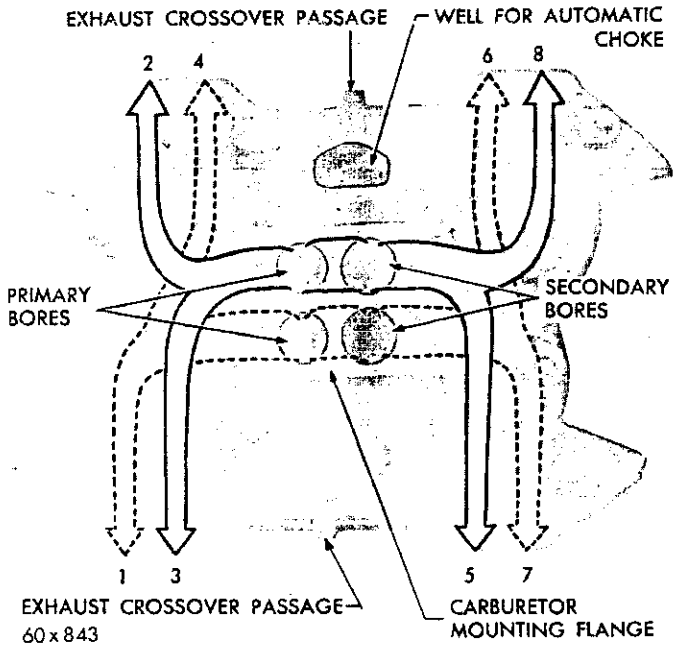

Fig. 8—Intake Manifold

(2) Remove the alternator from the right exhaust manifold.

(3) Disconnect the exhaust pipes at the exhaust manifold flanges.

(4) Remove the nuts that hold the exhaust manifolds to the cylinder heads.

(5) Slide the manifolds off the studs and away from the cylinder heads.

(6) Clean the exhaust manifolds in solvent. Blow dry with compressed air.

(7) Inspect the manifolds for cracks and distortion.

b. Installation

(1) Place the exhaust manifolds on the studs on the cylinder heads and install the nuts. Tighten to 30 foot-pounds torque.

(2) Connect the exhaust pipes at the exhaust manifolds. Tighten the nuts to 40 foot-pounds torque.

(3) Install the alternator on the right cylinder head and adjust the belt tension.

(4) Connect the spark plug cables to the spark plugs.

EXHAUST PIPES, MUFFLERS, TAIL PIPES

a. Removal

(1) Raise the vehicle on a hoist and lubricate the clamp nuts and bolts with penetrating oil to loosen the rust and dirt.

(2) Remove the clamps from the exhaust pipes, mufflers and tail pipes.

(3) Disconnect the exhaust pipe at the exhaust manifold and remove the exhaust pipe.

(4) Remove the muffler, extension pipe and the tail pipe assembly.

NOTE: If only the muffler is to be replaced, cut the extension at the muffler with a hack saw. It is unnecessary to remove the exhaust pipe. The replacement muffler is installed using a clamp at the front of the muffler.

b. Installation

(1) Connect the exhaust pipes to the exhaust manifolds. Tighten the nuts to 40 foot-pounds torque.

(2) Adjust the hanger heights for proper alignment.

(3) Tighten all slip joints to 10 foot-pounds torque. Work from the rear to the front of vehicle.

(4) Tighten all support clamps to 10 foot-pounds torque when installing the mufflers.

(5) Tighten the ball joint flange bolts to 20 foot-pounds torque. The inner surfaces of the flanges should be parallel to each other and perpendicular to the pipe axis.

(6) Adjust the converter housing bracket, so that it is flat against the converter housing and in the proper contact with the pipe tab. Tighten screws to 15 foot-pounds torque.

MANIFOLD HEAT CONTROL VALVE

The purpose of the manifold heat control valve (Fig. 9) is to direct hot exhaust gas to a heat chamber in the intake manifold and pre-heat the fuel and air

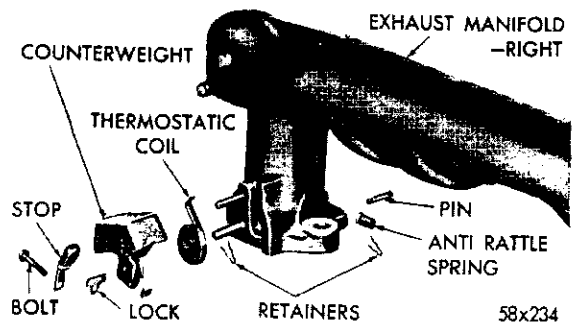

Fig. 9—Manifold Heat Control Valve

mixture, thus the fuel is vaporized to a greater degree before entering into the combustion chambers, providing faster warm up of cold engines.

When a cold engine is started the thermostatic coil exerts enough tension to keep the valve closed. Thus, exhaust gases from the right exhaust manifold pass through the exhaust crossover branch in the intake manifold and into the left exhaust manifold.

When the spring heats up, it loses tension and the valve opens, permitting exhaust gas from the right exhaust manifold to pass directly to the exhaust pipe.

TESTING MANIFOLD HEAT CONTROL VALVE

Inspect the operation of the heat control valve every 1,000 miles and apply manifold heat control valve solvent MoPar Part No. 1879318 to both ends of the valve shaft. With engine idling (car standing) accelerate the engine and release quickly. The counterweight should respond by moving clockwise approximately ½ inch and return to its normal position. The heat control valve can be disassembled and repaired as follows:

a. Disassembly (Figure 9)

(1) Loosen the retaining nut and remove the counterweight, lock and stop from the end of the shaft, exposing the thermostatic coil.

(2) Unhook the coil from the pin and remove by prying out of valve shaft slot.

(3) If the valve shaft is frozen in the manifold, apply manifold heat control valve solvent, MoPar Part No. 1879318, and allow to stand several minutes. Loosen by rotating the shaft back and forth until the shaft turns easily.

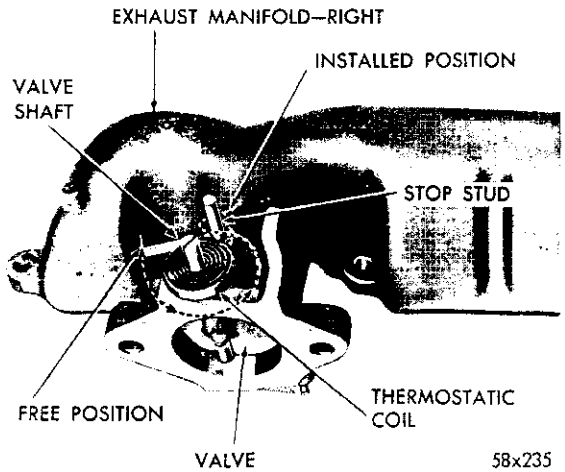

Fig. 10—Positioning the Coil

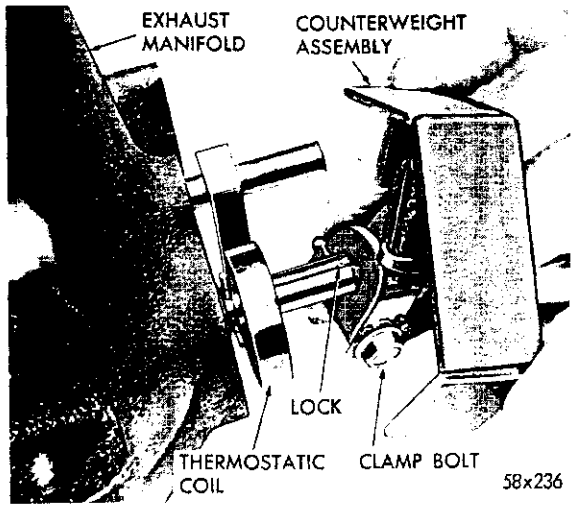

Fig. 11—Installing the Counterweight

b. Assembly

(1) Position the valve shaft in the extreme counterclockwise position.

(2) Place the new coil in position over the shaft slot, with the outer end tongue of the coil in the lower right-hand position, as shown in Figure 10. Press the inner end of the coil into the slot of the shaft and seat firmly.

(3) Move the outer end tongue around and hook under the pin, as shown in Figure 10.

(4) Place the counterweight over the shaft (with the weight in the upward position) and insert the lock in the shaft slot, as shown in Figure 11. Center the counterweight on the shaft and turn the assembly clockwise until the stop passes the pin. Press the counterweight on the shaft until seated, install the stop and tighten the clamp bolt 50 inch-pounds torque, with Tool T109-173. Test the valve for proper operation.

NOTE: If the composition on the stop is worn, replace with a new stop.

MANIFOLD HEAT CONTROL VALVE REPLACEMENT

a. Removal

(1) Remove the alternator.

(2) Remove the exhaust pipe from the manifold.

(3) Remove the exhaust manifold from the engine.

(4) Remove the counterweight, thermostatic spring, shaft, clips and anti-rattle spring.

(5) Cut the valve plate off of the shaft.

(6) Remove the shaft and bushings from the manifold.

b. Installation

(1) Install the new bushings in the exhaust manifold.

(2) Position the shaft into both bushings and check the shaft for freedom of turning. Should the shaft fail to turn freely, it will be necessary to burnish the bushings.

(3) Pull the shaft out far enough to position the valve plate on the shaft, then slide shaft into position in both bushings.

(4) Align the hole in the valve plate with the hole in the shaft and insert a drift into both holes to maintain correct positioning of the valve plate as it is being welded to the shaft.

(5) Remove the drift from the valve plate and shaft.

(6) Install the new anti-rattle spring, shaft clips, thermostatic spring and counterweight assembly on the shaft.

(7) Install the manifold on the engine assembly.

(8) Using a new gasket, connect the exhaust pipe to the manifold.

(9) Install the alternator.

(10) Start the engine and test the operation of the manifold heat control valve assembly.

c. Servicing

Test the manifold heat control valve for proper operation during lubrication and engine tune-up and apply Manifold Heat Control Valve Solvent MoPar Part No. 1879318 to both ends of valve shaft. See "Lubrication," Group 0.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
Excessive Exhaust Noise	(a) Leaks at the pipe joints.	(a) Tighten the clamps at the leaking joints.
	(b) Burned or blown out muffler.	(b) Replace the muffler assembly.
	(c) Burned or rusted out exhaust pipe.	(c) Replace the exhaust pipe.
	(d) Exhaust pipe leaking at the manifold flange.	(d) Install a new gasket and tighten the exhaust pipe flange nuts 40 foot-pounds torque.
	(e) Exhaust manifold cracked or broken.	(e) Replace the manifold.
	(f) Leak between the manifold and and cylinder block.	(f) Tighten the manifold to cylinder block nuts 30 foot-pounds torque.
Leaking Exhaust Gases	(a) Leaks at the pipe joints.	(a) Tighten the clamps at the leaking joints.
	(b) Damaged or improperly installed gaskets.	(b) Replace gaskets as necessary.
	(c) Restriction in muffler or tail pipe.	(c) Remove the restriction, if possible or replace as necessary.

SERVICE DIAGNOSIS CONT'D.

Condition	Possible Cause	Correction
Engine Hard to Warm Up or Will Not Return to Normal Idle	(a) Heat control valve frozen in the open position.	(a) Free up the manifold heat control valve using solvent number 1879318.
Noise in Manifold	(a) Thermostatic spring broken.	(a) Replace the spring.
	(b) Weak or broken anti-rattle spring.	(b) Replace the spring.
Manifold Heat Control Valve Rattle	(a) Thermostatic spring broken.	(a) Replace the thermostatic spring.
	(b) Broken or weak anti-rattle spring.	(b) Replace the spring.