

SECTION A

43-44000 HEATER SYSTEM

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DIVISION I SPECIFICATIONS AND ADJUSTMENTS

12-1 SPECIFICATIONS

Recommended Coolant	Ethylene-glycol Base
Type of Thermostat	180°
Capacity of Cooling System with Heater	(V-6)-11.2 qts.
	(V-8)-12.7 qts.
	(V-8, 400 cu. in.)-18.5 qts.
Blower Motor Type	12 V.D.C.
Blower Fan Type	Squirrel Cage

12-2 ADJUSTMENT OF AIR CONTROL LEVER AND OUTSIDE AIR DOOR

It is suggested that the control wire regulating the air control lever and outside air door be adjusted when recommended springback of 1/8 to 3/16 inch of air control lever in OFF position is not present, when heater assembly has been removed, or when outside air door does not

open sufficiently to permit maximum air flow.

The following adjustment procedures are based on the assumption that all control wires involved are completely disconnected. Adjustments are accomplished by rotation of the control wire adjuster nut (refer to item 3) without disconnecting the control wires.

1. Attach outside air door control

wire to pin on heater control assembly. See Figure 12-1.

2. Secure outside air control cable to lever of outside air door.

3. Insure that the air control lever is in the OFF position and rotate the control wire adjuster nut until approximately 1/8 to 3/16 inch springback is obtained when air control lever is in OFF position. See Figure 12-1.

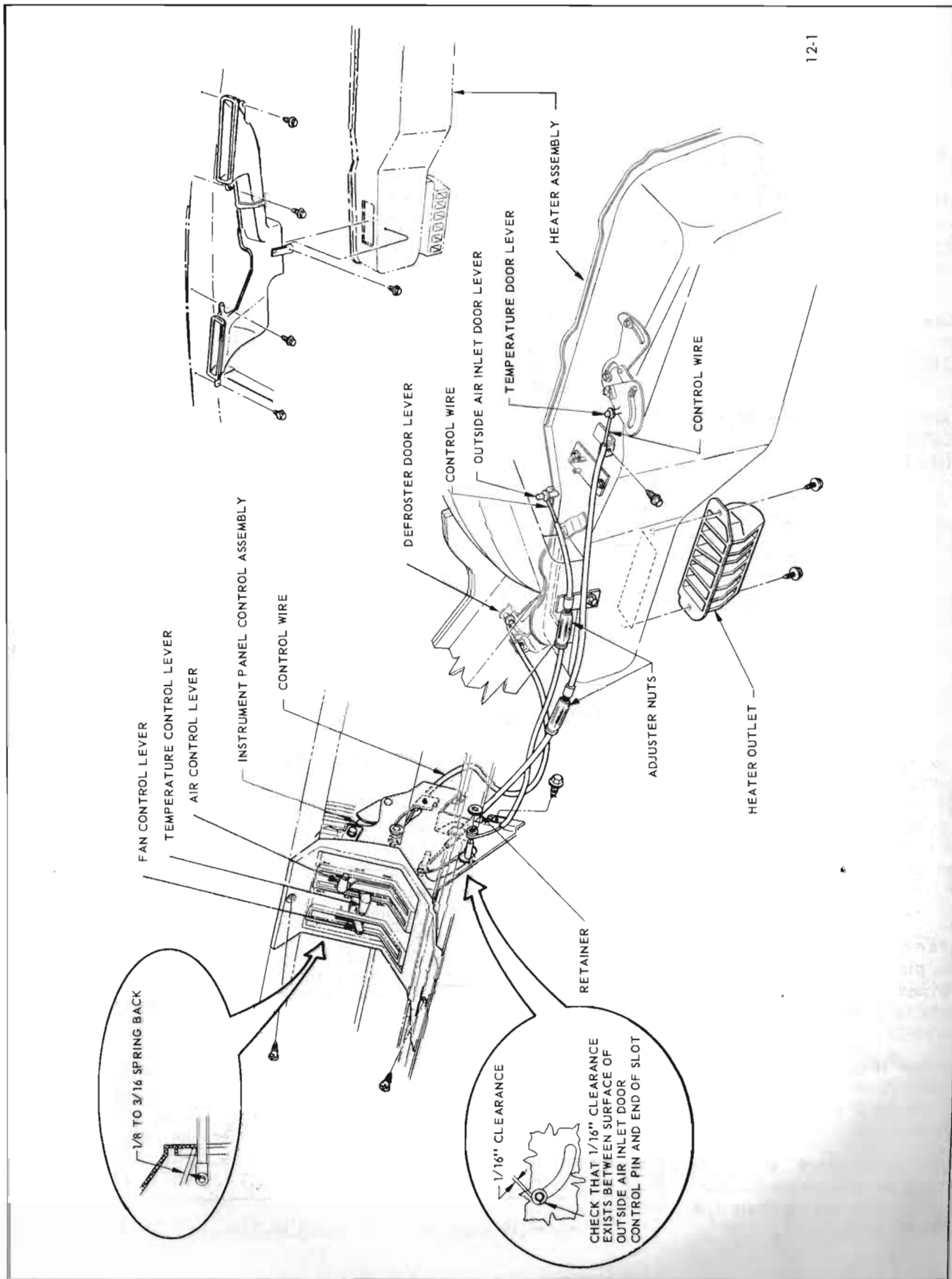


Figure 12-1—Heater Installation 43-44000 Series

NOTE: After adjustment is completed, check that 1/16 inch clearance exists between outside air inlet door control pin and end of slot (see Figure 12-1) when AIR control lever is in OFF position.

NOTE: The air control lever will lock in the mid (HTR) position if less than 1/8 inch springback occurs. The outside air door will not fully open if more than 3/16 inch springback exists.

NOTE: No provisions are made for adjustment of defroster control cable.

12-3 ADJUSTMENT OF TEMPERATURE CONTROL LEVER AND TEMPERATURE DOOR

It is suggested that the control wire regulating the temperature lever and door be adjusted when recommended springback is not present, heater assembly has been removed, or when temperature door does not open sufficiently to permit maximum heating of air.

The following adjustment procedure is based on the assumption that temperature control wire is completely disconnected. Adjustment is accomplished by rotation of the control wire adjuster nut, without disconnecting the control wire.

1. Attach temperature control wire to pin on heater control assembly and to lever of temperature door on heater assembly (see Figure 12-1).

2. Position temperature lever to OFF and rotate control wire adjuster nut until a slight springback occurs.

3. Move temperature lever to HOT position and rotate (if necessary) adjuster nut to obtain 1/8 to 3/16 inch springback.

DIVISION II

DESCRIPTION AND OPERATION

12-4 DESCRIPTION OF SYSTEM

The heater system is an air-mix type system in which outside air is heated and then mixed in varying amounts with cooler outside air to attain the desired air temperature. The system consists basically of three parts: (1) the blower and air inlet assembly, (2) the heater assembly, and (3) the heater control assembly (see Figure 12-5). The operation of the system is as follows:

1. Blower and Air Inlet Assembly—The blower and air inlet assembly draws outside air through the outside air inlet grille located

forward of the windshield reveal molding and channels the air into the heater assembly. The operation of the blower motor is controlled by a FAN switch on the heater control. The motor is connected in series with the three position FAN switch and also the blower resistor assembly (see Figures 12-2 and 12-3). A 30 amp fuse, located in the fuse block, is in series between the blower motor and the battery.

2. Heater Assembly—The heater assembly (see Figure 12-3) houses the heater core and the doors necessary to control mixing and channeling of the air. Air entering the heater assembly divides into two channels: (1) through the heater core and (2) through a by-pass around the heater core. The ratio of the mixture of heated to unheated air

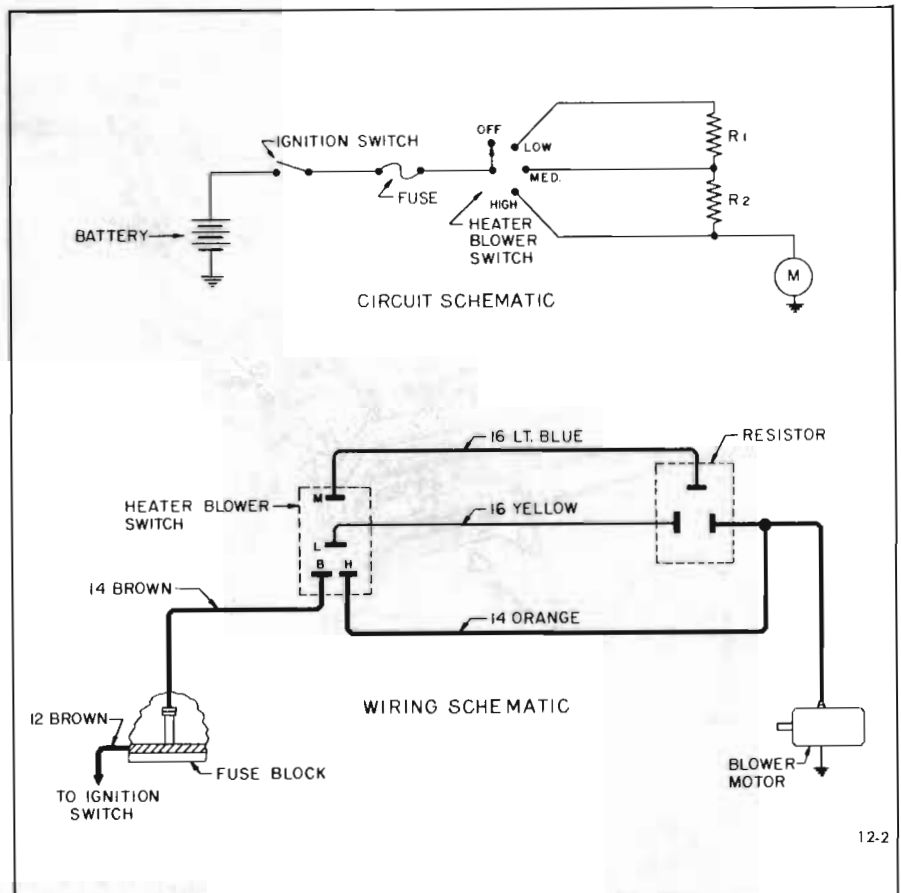


Figure 12-2—Heater System Wiring Diagram and Schematic

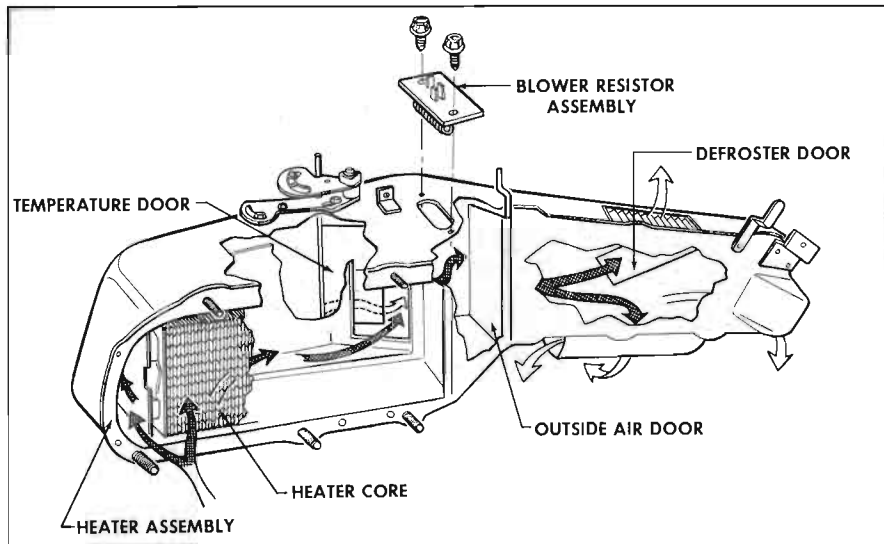


Figure 12-3—Heater Assembly

is controlled by the temperature door. An outside air inlet door initiates the air flow through the heater assembly. A defroster door controls the amount of air deflected through the defroster outlets. The defroster door may be adjusted to deflect all air to the defroster outlet, all air to the floor outlet, or to both the defroster and floor outlets.

The heater core, located in the heater assembly, has water flowing through it at all times. The water flow begins at the right front portion of the intake manifold and flows to the lower inlet port of the heater core, thru the heater core, out the upper outlet port of the heater core and to the suction port of the water pump. See Figure 12-4.

The heater assembly has fixed vane outlets to distribute air evenly throughout the passenger compartment.

3. Heater Control Assembly—The heater control assembly (see Figure 12-1) consists of three controls, namely the temperature control lever, air control lever, and fan switch lever. The temperature control lever is connected by a control wire to the

temperature door on the heater assembly, and regulates the ratio of mixture between heated and unheated air—hence the temperature of the air. The temperature control lever has three detents: OFF, MED, and HOT. When the temperature control is in the OFF position the temperature door is fully closed and prevents heated air from flowing through the heater core. When the temperature control is in MED position, the outside air flow is split and approximately one half of the outside air flows through the heater core and one half of the outside air flows around and by-passes the heater core. When the temperature control is in the HOT position the temperature door is fully open and prevents outside air from by-passing the heater core.

The air lever of the heater control assembly regulates the positioning of two doors the outside air door and the defroster door. The air lever has three positions: OFF, HTR and DEF. Positioning of the air control to the OFF position closes the outside air door and the defroster door. When the outside air door is closed, all

air is blocked from passing through the heater assembly. When the air lever is moved to the HTR position, the outside air door is fully opened. Air is permitted to pass through the heater assembly and is directed to the floor of the car. Moving of the air lever to DEF position, opens the defroster door and channels the air to the defroster outlets. Locating of the air lever midway between HTR and DEF positions causes the air to be routed to both the defroster outlets and the floor outlets.

The fan lever operates a four-position switch. A two resistor blower resistor assembly is connected in series between the blower motor and the switch, and serves to reduce the speed of the motor. When the fan lever is positioned fully downward, the blower motor is off. Movement of the lever upward provides low, medium and high blower speeds. A 180°F. thermostat is provided as standard equipment on all series cars.

12-5 OPERATION OF CONTROLS

The heater system is completely controlled by the air, temperature and fan levers located on the instrument panel. These levers should be operated as follows:

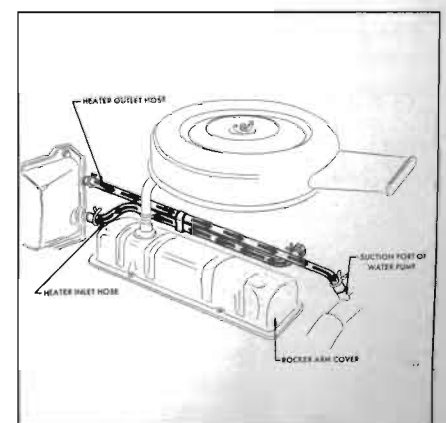


Figure 12-4—Heater Hose Routing

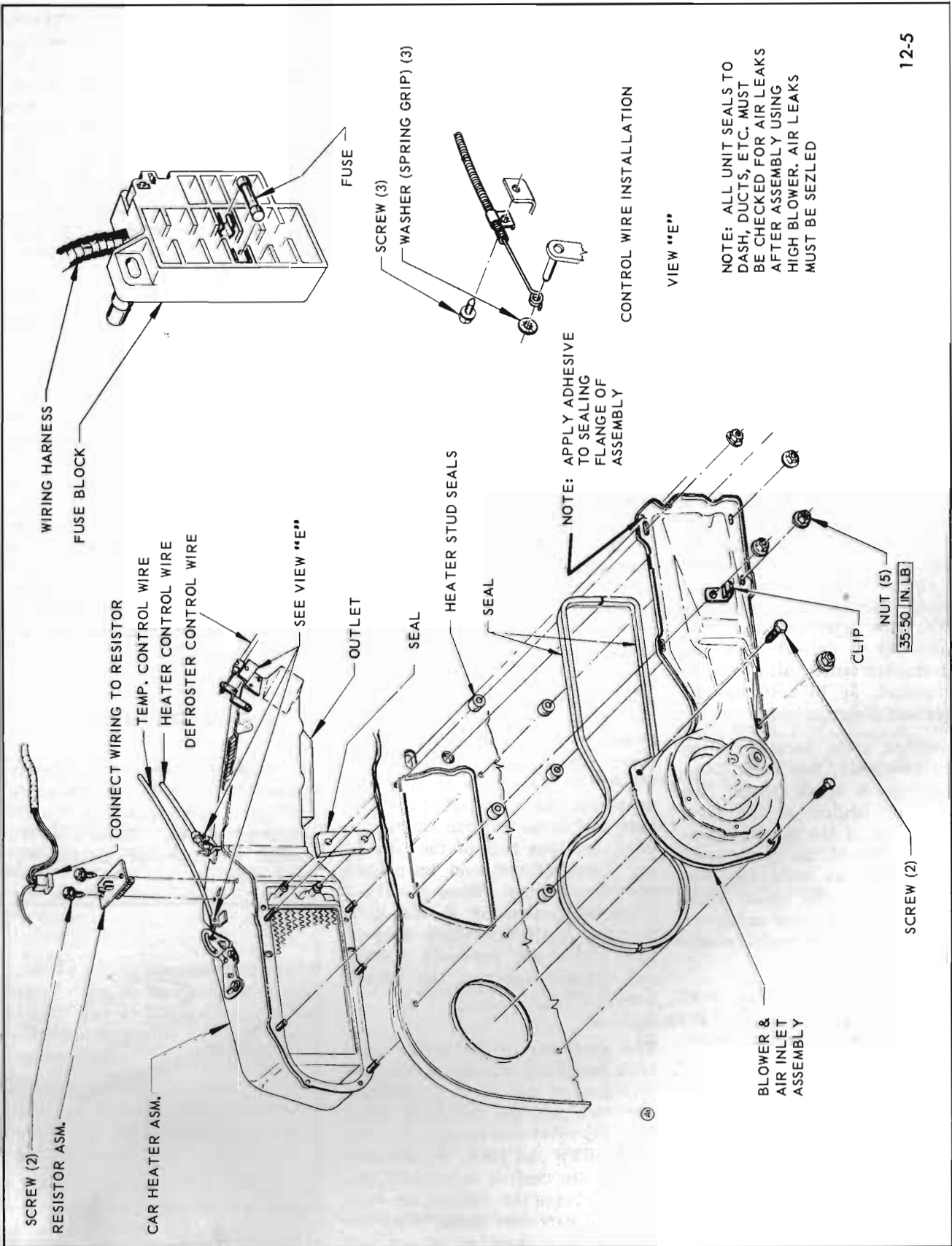


Figure 12-5—Heater Installation 43-44000 Series

1. **Air Lever**—The air lever opens and closes heater system doors for channeling or routing of outside air through the system. If channeling of the air flow to the floor is desired, move air lever from OFF position to HTR position. Any downward movement beyond the HTR detent increases air flow to the defroster nozzles and decreases flow to floor. If maximum defrosting is desired, push air lever to full down (DEF) position.

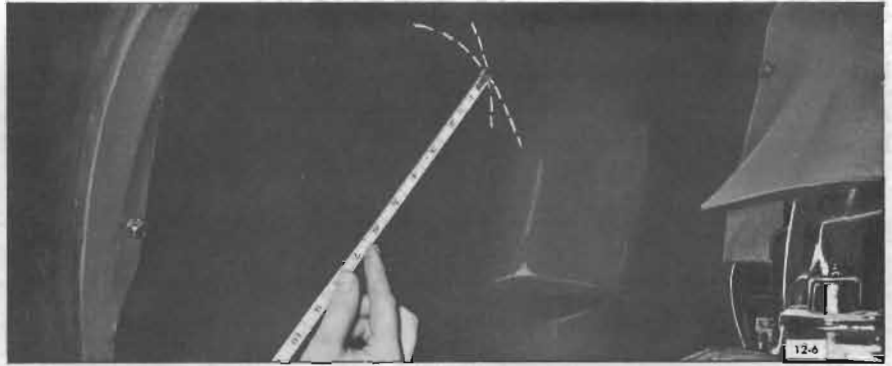


Figure 12-6—Locating Dimple on Right Inner Fender Skirt

2. **Temperature Lever**—If heating of the outside air flowing through the heater system is desired, the temperature lever is moved downward. Depending on the position of the temperature lever, mildly warmed to hot air can be obtained. As the lever is moved downward, heated air passing through the heater core is diluted in gradually decreasing amounts with unheated outside air. Full downward position ducts all outside air through heater core.

3. **Fan Lever**—To turn blower on move lever upward. There are three detents which provide low, medium and high blower speeds.

DIVISION III SERVICE PROCEDURES

12-6 REMOVAL AND INSTALLATION OF HEATER CONTROL ASSEMBLY

a. Removal

1. Remove two screws holding heater control assembly to instrument panel and partially withdraw heater control assembly. See Figure 12-1.

2. Disconnect lamp socket from assembly, detach control cables

and pry off blower switch connector.

3. Complete removal of heater control assembly.

b. Installation

1. Install heater control assembly reverse of removal procedures.

2. Adjust air and temperature control levers as necessary (see paragraphs 12-2 and 12-3).

12-7 REMOVAL AND INSTALLATION OF BLOWER AND AIR INLET ASSEMBLY

a. Removal

1. Remove right front fender (refer to Group 110, Section A, paragraph 110-7).

2. Remove five nuts and two screws securing blower and air inlet assembly to cowl (see Figure 12-5), disconnect blower motor wire and take off assembly.

b. Installation

Install blower and air inlet assembly reverse of removal procedures, and seal along mating surfaces between cowl and air inlet assembly.

12-8 REMOVAL AND INSTALLATION OF HEATER ASSEMBLY

a. Removal

1. Remove remaining four attaching nuts from heater assembly studs.

2. Disconnect control cables from levers of defroster door and outside air inlet door on heater assembly (see Figure 12-1).

3. Disconnect temperature control cable from lever of temperature door on heater assembly.

4. Drain radiator.

5. Disconnect heater inlet and outlet hoses from heater core inlet and outlet ports (see Figure 12-4).

6. Remove connector from blower resistor assembly (see Figure 12-3).

7. Remove screw securing lower portion of defroster outlet assembly to top of heater assembly.

8. Work heater assembly rearward until studs clear cowl, and remove heater assembly.

b. Installation

Adjust control wires as necessary (ref. paragraph 12-2 and 12-3) and seal along mating surfaces between defroster outlet assembly and heater.

DIVISION IV TROUBLE DIAGNOSIS

12-9 HEATER-DEFROSTER TROUBLE DIAGNOSIS

NOTE: It is suggested that prior to inspecting a car for heater system malfunctions, the owner be checked to determine if system is being operated correctly. All windows and vents must be closed to effect maximum heat buildup.

TROUBLE	CAUSE AND CORRECTION								
<p>Temperature of heater air at outlets too low</p> <table border="1" data-bbox="105 538 700 662"> <tr> <td>Outlet Air</td> <td>145</td> <td>150</td> <td>155</td> </tr> <tr> <td>Ambient Air</td> <td>0</td> <td>25</td> <td>40</td> </tr> </table>	Outlet Air	145	150	155	Ambient Air	0	25	40	<p>Check radiator cap for proper sealing action—replace if necessary.</p> <p>Check for proper engine coolant level. If level is down, correct cause of coolant loss and re-fill radiator.</p> <p>Inspect for kinks in heater or radiator hoses—relieve kink or replace hose.</p> <p>Check thermostat operation by measuring temperature of coolant at radiator filler neck. Temperature should be within $\pm 5^{\circ}\text{F}$. of rated thermostat value.</p> <p>NOTE: This will be true when ambient temperature is below approximately 50°F.</p> <p>Check that temperature lever operates temperature door full extent of travel—adjust as required.</p> <p>Heater core partially plugged due to sediment in cooling system—backflush heater core as necessary.</p>
Outlet Air	145	150	155						
Ambient Air	0	25	40						
<p>Temperature of heater air at outlets adequate—car will not build up sufficient heat</p>	<p>Check for body leaks such as: (1) floor side kick pad ventilators partially open, (2) leaking grommets in cowl, (3) leaking welded seams along rocker panel and windshield, (4) leaks through access holes and screw holes, (5) leaking rubber molding around door and windows, (6) leaks between sealing edge of blower and air inlet assembly and cowl, and between sealing edge of heater assembly and cowl.</p>								
<p>Inadequate defrosting action</p>	<p>Check owner to determine if window side vents are kept closed to promote maximum defrosting.</p> <p>Check that air lever completely opens defroster door in DEF position.</p> <p>Check for air leak in ducting between defroster outlet on heater assembly and defroster duct under instrument panel—seal area as necessary with body sealer.</p> <p>Insure that temperature and outside air doors open to full limit of travel.</p>								

TROUBLE	CAUSE AND CORRECTION
Inadequate heated air circulated through car	Inspect floor carpet to insure that carpet lies flat under front seat and does not obstruct air flow under seat, and also inspect around outlet ducts to insure that carpet is well fastened to floor to prevent cupping of air flow—correct as necessary.
Erratic heater operation	Partially plugged heated core—backflush heater core as necessary. Sediment in heater lines and radiator causing engine thermostat to stick open—flush system and replace thermostat if necessary. Check for kinked heater hoses—relieve kinks or replace hose as necessary.
Hard operating or broken control wires	Check for loose wire tab screws or mis-adjusted wires—correct as required. Check for sticking heater system door(s) - lubricate as required using Buick Silicone Spray (Group No. 8.800, Part No. 980473).
Blower inoperative	Check fuse in fuse block and replace if necessary. Check wiring for open circuit—correct as necessary. Inspect for defective fan switch—replace as necessary. Check for defective blower motor—replace as necessary. Check blower resistor—replace if necessary.