

SECTION A

HEATER SYSTEM (43-44000 SERIES)

CONTENTS

Division	Paragraph	Subject	Page
I		SPECIFICATIONS AND ADJUSTMENTS:	
	12-1	Specifications	12-2
	12-2	Adjustment of Air Control Lever and Outside Air Door . . .	12-2
	12-3	Adjustment of Temperature Control Lever and Temperature Valve	12-3
II		DESCRIPTION AND OPERATION:	
	12-4	Description of System	12-3
	12-5	Operation of Controls	12-5
III		SERVICE PROCEDURES:	
	12-6	Removal and Installation of Heater Control Assembly	12-6
	12-7	Removal and Installation of Blower and Air Inlet Assembly .	12-6
	12-8	Removal and Installation of Heater Assembly	12-7
IV		TROUBLE DIAGNOSIS:	
	12-9	Heater-Defroster Trouble Diagnosis	12-7

DIVISION I SPECIFICATIONS AND ADJUSTMENTS

12-1 SPECIFICATIONS

Recommended Coolant	Ethylene-glycol Base
Type of Thermostat	190°
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.

1. To adjust position the air control lever to 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.

2. 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.

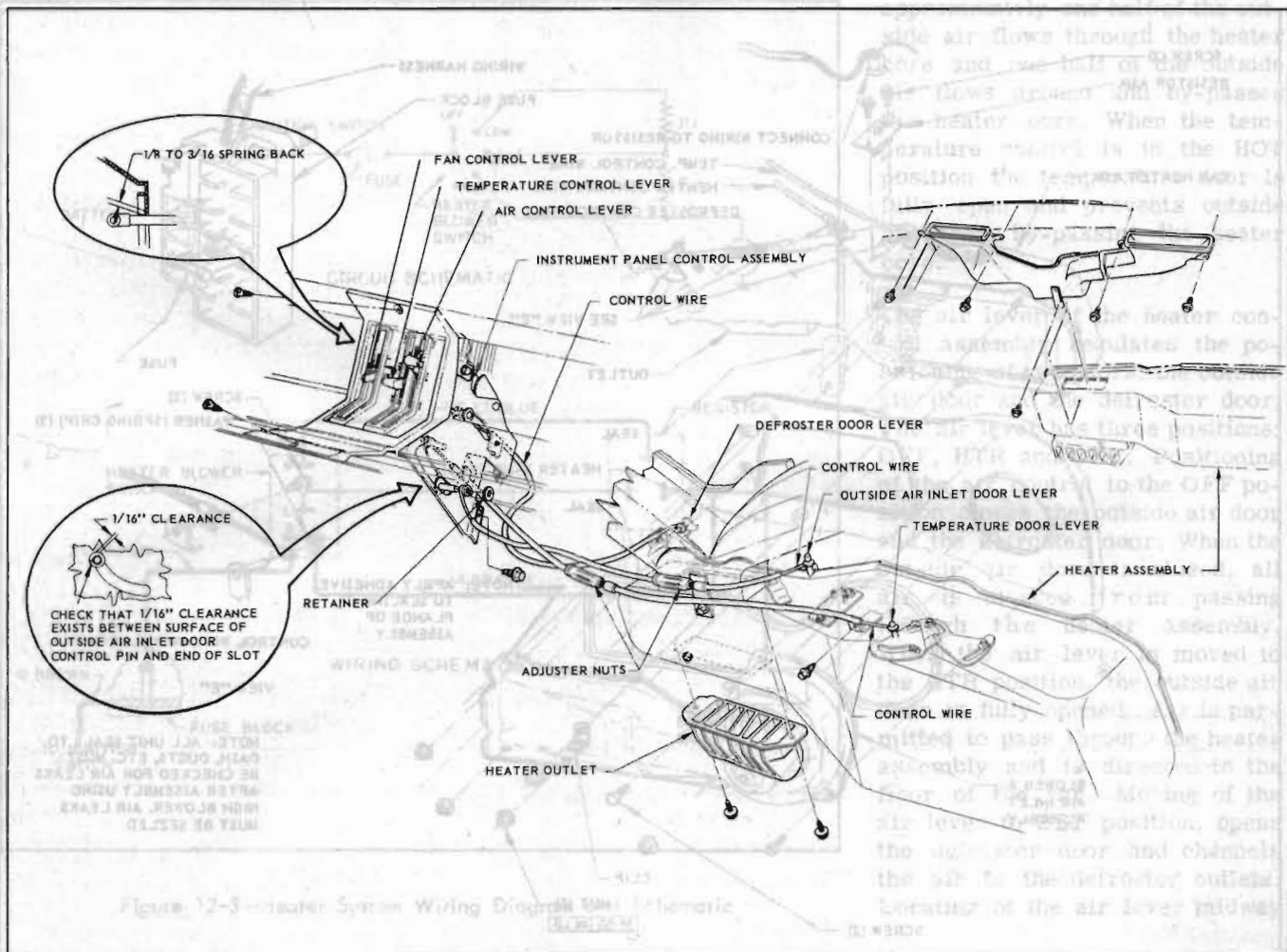


Figure 12-1—Heater Control Wire Installation (43000-44000 Series)

control lever, air control lever, and fan switch lever.

The heater core is located in the

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: The defroster control cable is a non-adjustable, fixed dimension cable and regulates the defroster door to a predetermined travel.

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. To adjust cable proceed as follows:

1. Position temperature lever to OFF and rotate control wire adjuster nut until a slight springback occurs.
2. 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 12-2). The operation of the system is as follows:

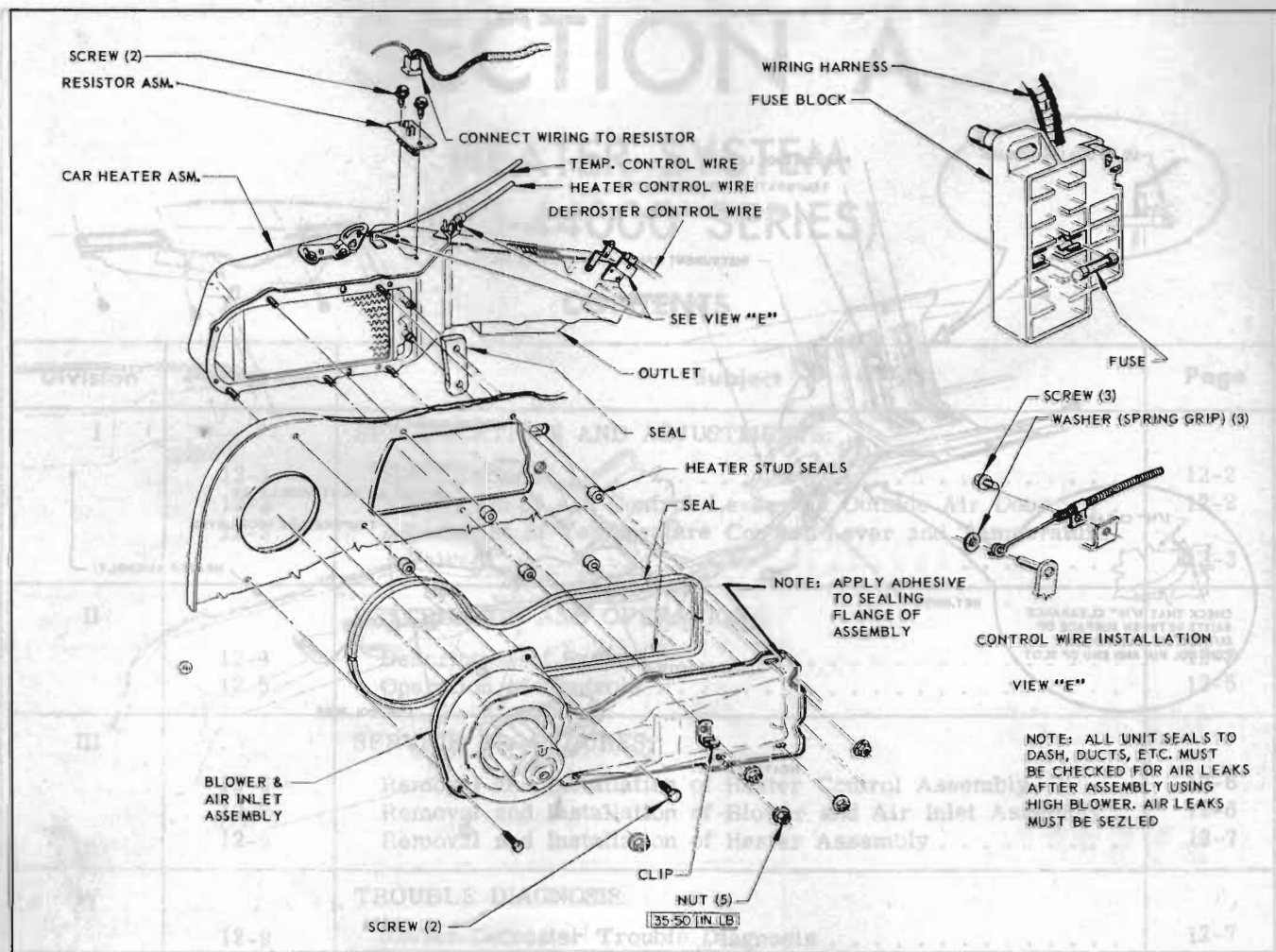


Figure 12-2—Heater Installation (43000-44000 Series)

DIVISION I SPECIFICATIONS AND ADJUSTMENTS

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 12-3 and 12-4). 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 12-4)

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 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 positioned 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 rear 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 12-5.

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

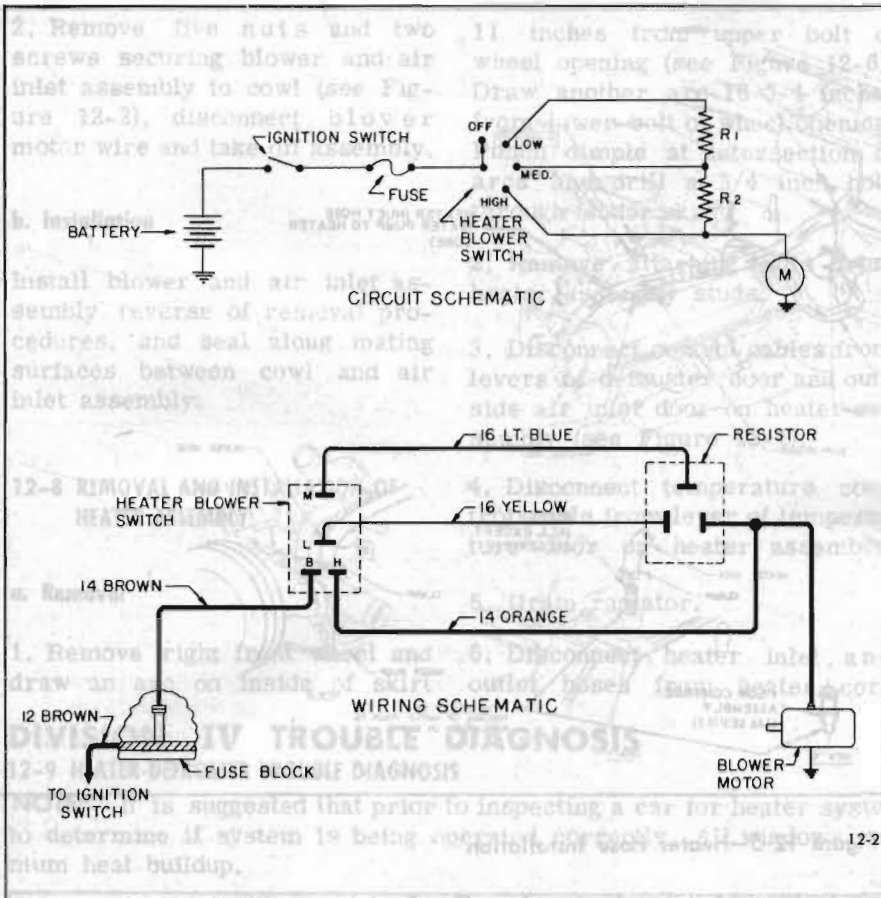


Figure 12-3—Heater System Wiring Diagram and Schematic

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

control lever, air control lever, and fan switch lever.

12-5 OPERATION OF CONTROLS

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

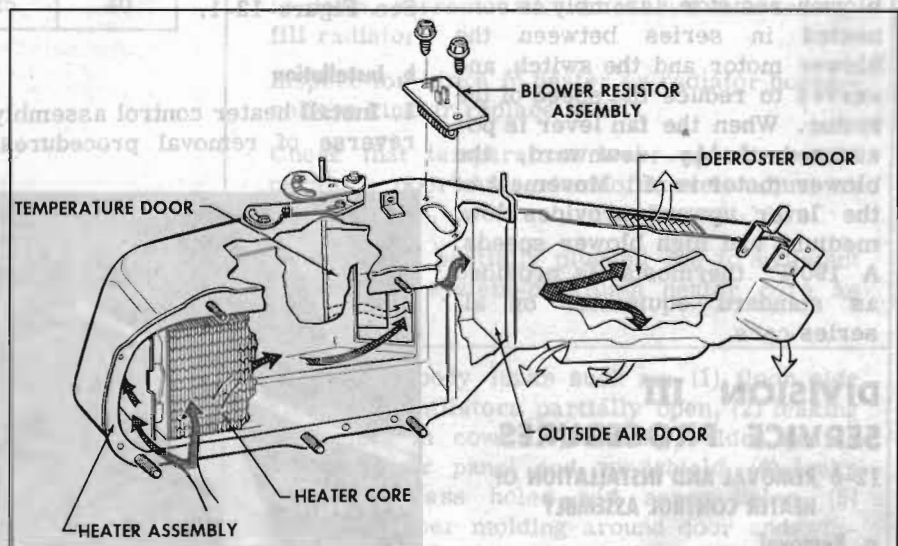


Figure 12-4—Heater Assembly

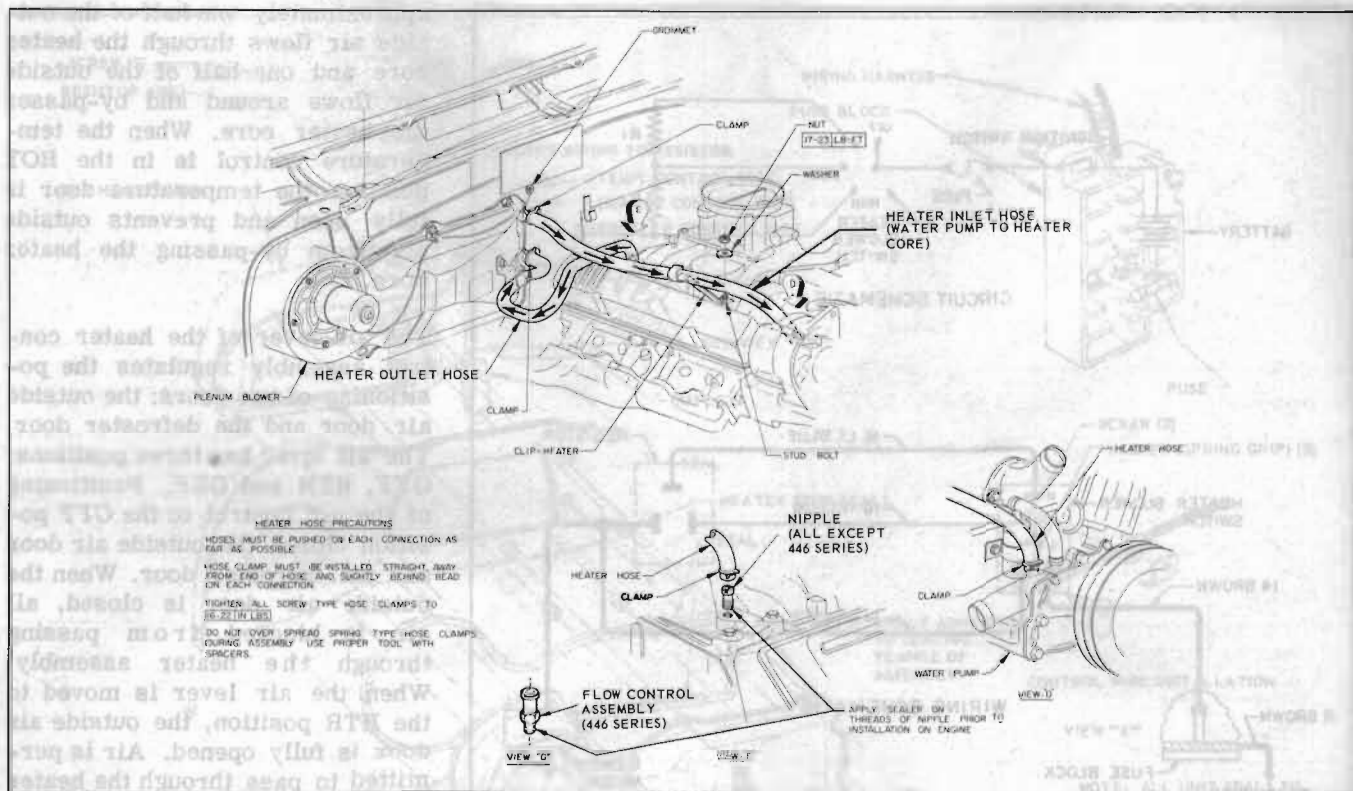


Figure 12-5—Heater Hose Installation

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 190°F. thermostat is provided as standard equipment on all series cars.

**DIVISION III
SERVICE PROCEDURES**

**12-6 REMOVAL AND INSTALLATION OF
HEATER CONTROL ASSEMBLY**

a. Removal

1. Disconnect lamp sockets from heater control assembly, detach

control cables and work off blower switch connector.

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

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).

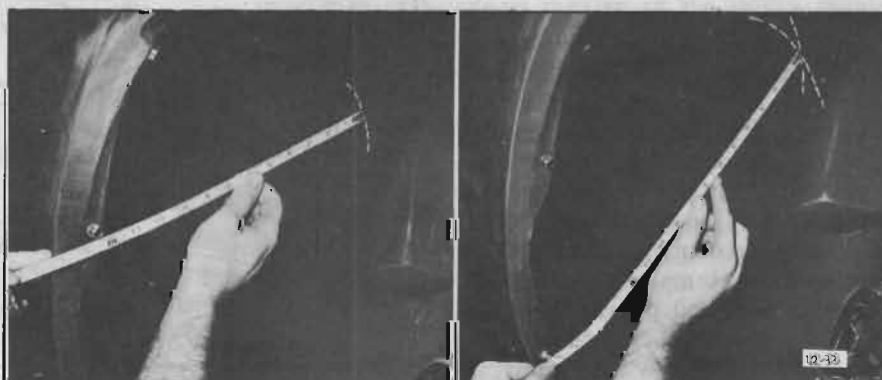


Figure 12-6—Locating Dimple on Right Inner Fender Skirt

2. Remove five nuts and two screws securing blower and air inlet assembly to cowl (see Figure 12-2), 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 right front wheel and draw an arc on inside of skirt

11 inches from upper bolt of wheel opening (see Figure 12-6). Draw another arc 16 3/4 inches from lower bolt of wheel opening. Punch dimple at intersection of arcs and drill a 3/4 inch hole through fender skirt.

2. Remove attaching nuts from heater assembly studs.

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

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

5. Drain radiator.

6. Disconnect heater inlet and outlet hoses from heater core

inlet and outlet ports (see Figure 12-5).

7. Remove connector from blower resistor assembly (see Figure 12-4).

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

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

b. Installation

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

2. Install a 3/4" body plug (Group No. 12,980, Part No. 4725594) in fender skirt hole.

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
Temperature of heater air at outlets too low				Check radiator cap for proper sealing action—replace if necessary. Check for proper engine coolant level. If level is down, correct cause of coolant loss and re-fill radiator. Inspect for kinks in heater or radiator hoses—relieve kink or replace hose. Check that temperature lever operates temperature door full extent of travel—adjust as required. Heater core partially plugged due to sediment in cooling system—backflush heater core as necessary.
Outlet Air	145	150	155	
Ambient Air	0	25	40	
Temperature of heater air at outlets adequate—car will not build up sufficient heat				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.

TROUBLE	CAUSE AND CORRECTION
<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> <p>Check position of defroster nozzle openings and instrument panel openings.</p>
<p>Inadequate heated air circulated through car</p>	<p>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.</p>
<p>Erratic heater operation</p>	<p>Partially plugged heated core—backflush heater core as necessary.</p> <p>Sediment in heater lines and radiator causing engine thermostat to stick open—flush system and replace thermostat if necessary.</p> <p>Check for kinked heater hoses—relieve kinks or replace hose as necessary.</p>
<p>Hard operating or broken control wires</p>	<p>Check for loose wire tab screws or mis-adjusted wires—correct as required.</p> <p>Check for sticking heater system door(s) - lubricate as required using Buick Silicone Spray (Group No. 8.800, Part No. 980473).</p>
<p>Blower inoperative</p>	<p>Check fuse in fuse block and replace if necessary.</p> <p>Check wiring for open circuit—correct as necessary.</p> <p>Inspect for defective fan switch—replace as necessary.</p> <p>Check for defective blower motor—replace as necessary.</p> <p>Check blower resistor—replace if necessary.</p>