SECTION C

HEATER SYSTEM (49000 SERIES)

CONTENTS

Division	Paragraph	Subject	Page
I		SPECIFICATIONS AND ADJUSTMENTS:	
	12-25	Specifications	12-15
	12-26	Adjustment of Warmer Lever and Temperature Door	12-15
II		DESCRIPTION AND OPERATION:	
	12-27	General Description	12-16
	12-28	Description of Air Flow	12-16
	12-29	Operation of Heater System Controls	12-16
III		SERVICE PROCEDURES:	
	12-30	Removal and Installation of Instrument Panel Control Assembly	12-19
	12-31	Removal and Installation of Heater Distributor Assembly	12-20
	12-32	Removal and Installation of Vent Distributor Duct	12-20
	12-33	Removal and Installation of Blower and Heater Assembly	12-20
IV		TROUBLE DIAGNOSIS:	
	12-34	Heater-Defroster Trouble Diagnosis	12-21

DIVISION I SPECIFICATIONS AND ADJUSTMENTS

12-25 SPECIFICATIONS

Recommended Coolant	Ethylene-glycol Base
Type of Thermostat	190° F
Capacity of Cooling System with Heater	18.0 qts.
Blower Motor Type	12 V.D.C.
Blower Fan Type	Squirrel Cage

12-26 ADJUSTMENT OF WARMER LEVER AND TEMPERATURE DOOR

It is recommended that the adjustment of the WARMER lever (see Figure 12-18) and temperature door be performed when the recommended springback of lever is not present, the instrument panel control assembly on the blower and heater assembly have been removed, or when the temperature door does not permit proper mixing of the air

1. Move WARMER lever fully to the right and adjust adjuster nut to obtain a slight springback of lever.

2. Reposition lever fully to the left and rotate adjuster nut to obtain 1/8 to 3/16 inch springback of lever.

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

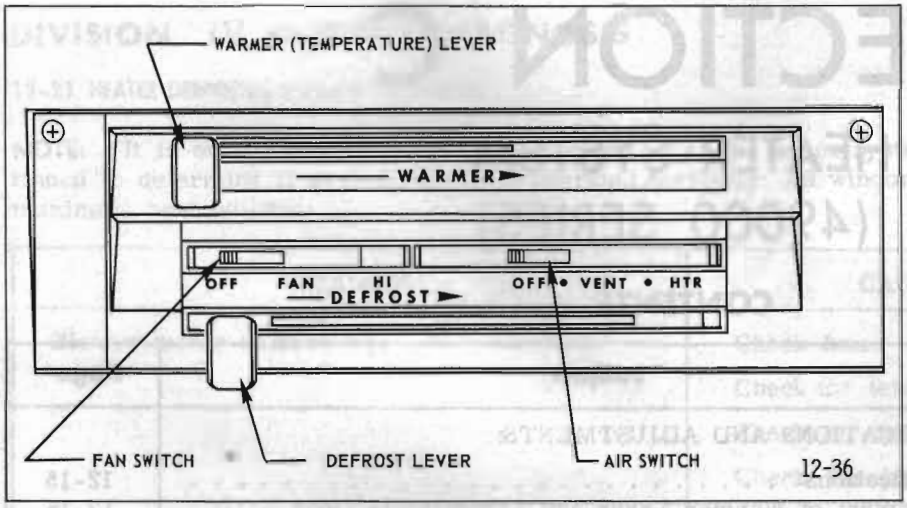

Figure 12-18—Heater Instrument Panel Control Assembly

DIVISION II

DESCRIPTION AND OPERATION

12-27 GENERAL DESCRIPTION

The heater system for 49000 Series cars is an air mix type unit that regulates the temperature of the air by varying the mixture of heated and unheated air. The system consists of six major parts: (1) the heater and blower assembly (see Figure 12-19) which houses the blower motor, the outside air door, the heater-vent door and the vacuum diaphragms; (2) the heater distributor assembly which contains the defroster door (see Figure 12-20); (3) the vent distribution duct; (4) the heater center outlet; and (5) the instrument panel control assembly (see Figure 12-21).

The flow of coolant through the heater system is as shown in Figure 12-22.

12-28 DESCRIPTION OF AIR FLOW

The flow of air in the heater system is shown in Figure 12-23. Air enters the plenum chamber thru opening forward of the windshield (not shown in illustration). It then flows to the right hand portion of the plenum chamber and downward into the blower and heater assembly. When the outside air door is open the air flows past this door to the vent-heater door, where depending on the door position, the air flows either to upper level instrument panel outlets or to the heater and/or defroster outlets. When the air is directed toward the heater and/or defroster outlets, the proportion of the air bypassing and flowing thru the heater core is controlled by the temperature door. The air is then directed to the heater distributor assembly where the defroster door distributes the air to the heater and/or defroster outlets. If the air switch on the instrument panel is positioned under the dot to the right of the VENT position vacuum will be applied to the reheat diaphragm and the reheat door will move to the midposition. Under these circumstances a split mode situation exists wherein the air flow is to both the instrument panel and heater and/or defroster outlets.

12-29 OPERATION OF HEATER SYSTEM CONTROLS

The heater system for the 49000 Series cars has two control levers and two switches (see Figure 12-18). They function as follows.

WARMER Lever - This lever regulates the position of the temperature door (see Figure 12-23) thru action of a control cable (see Figure 12-21). As the lever is moved from left to right, the temperature door is progressively opened to direct more air through the heater core.

AIR Switch - This lever controls the vent-heater, outside air door,

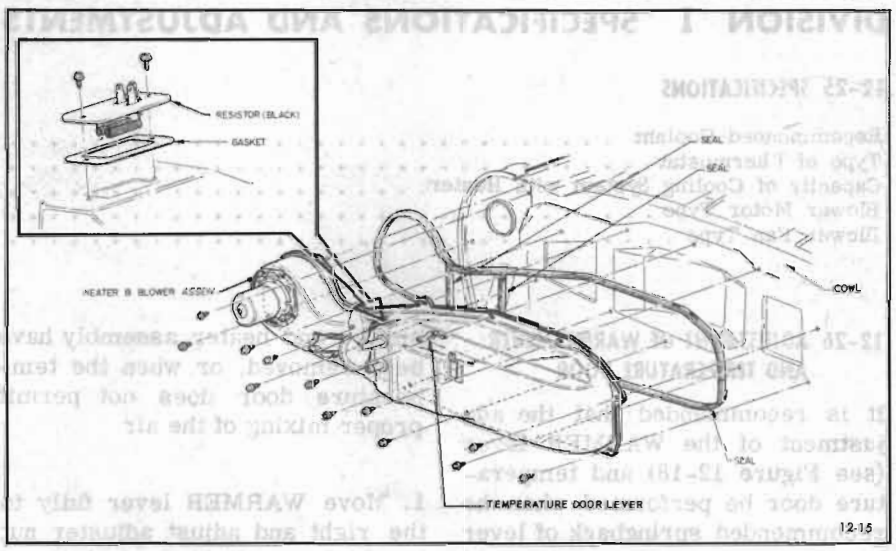

Figure 12-19—Blower and Heater Assembly Installation (49000 Series)

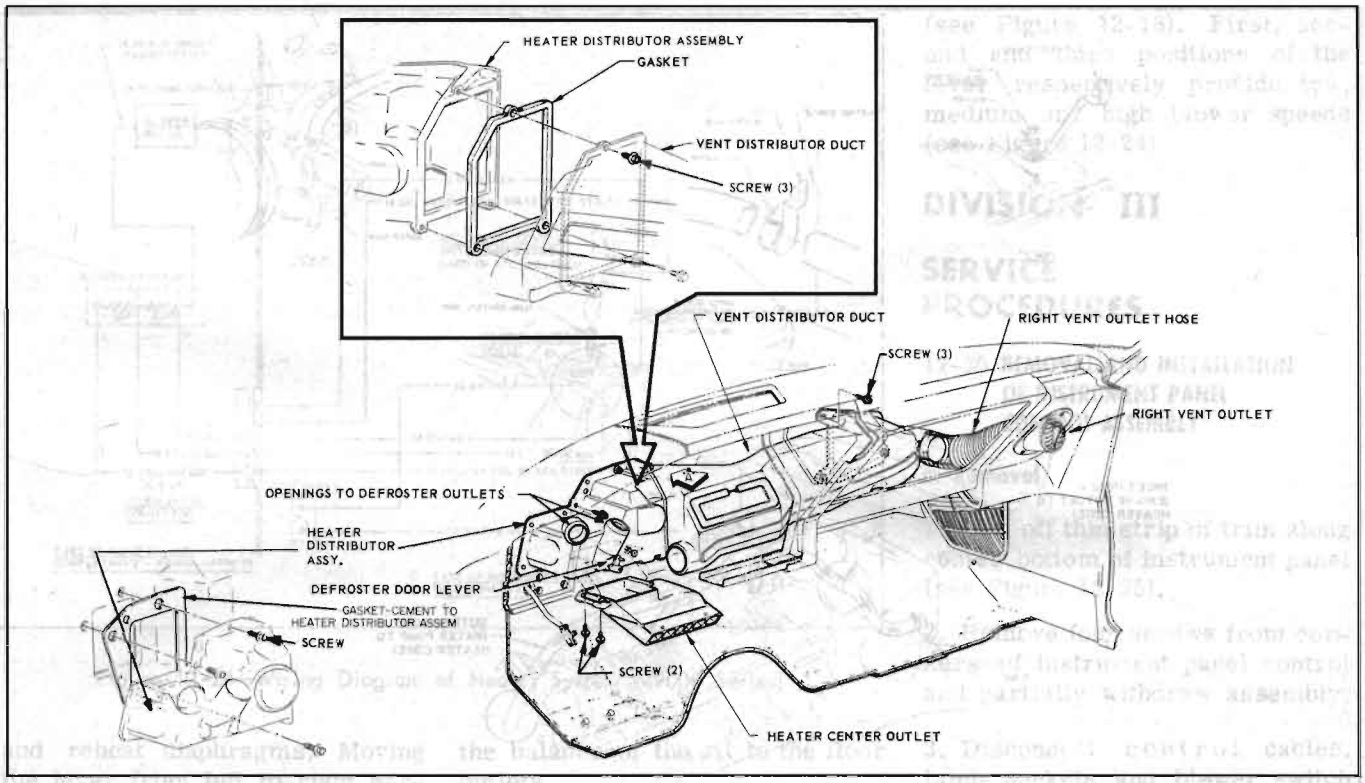

Figure 12-20—Heater Distributor Assembly Vent Distributor Duct and Center Outlet Installation (49000 Series)

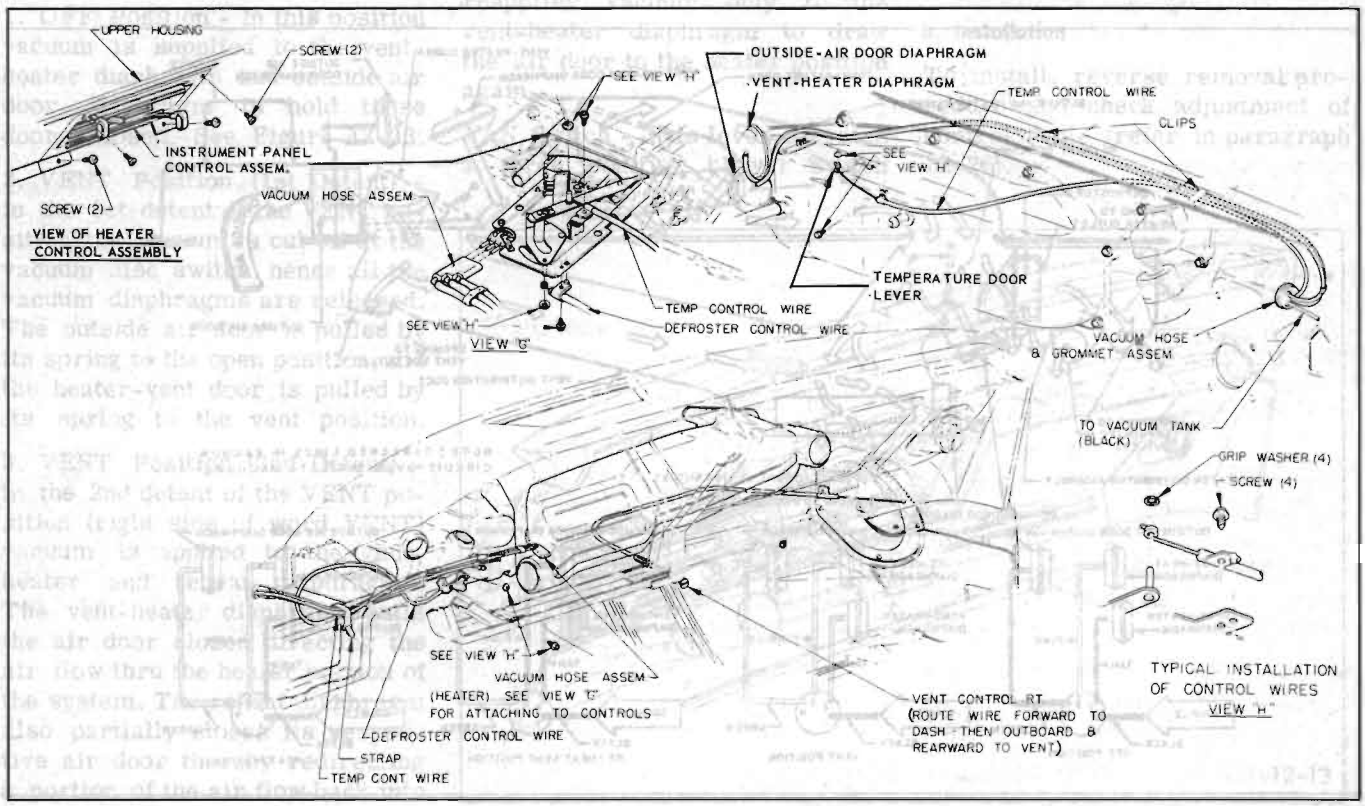

Figure 12-21—Vacuum Line and Control Cable Installation (49000 Series)

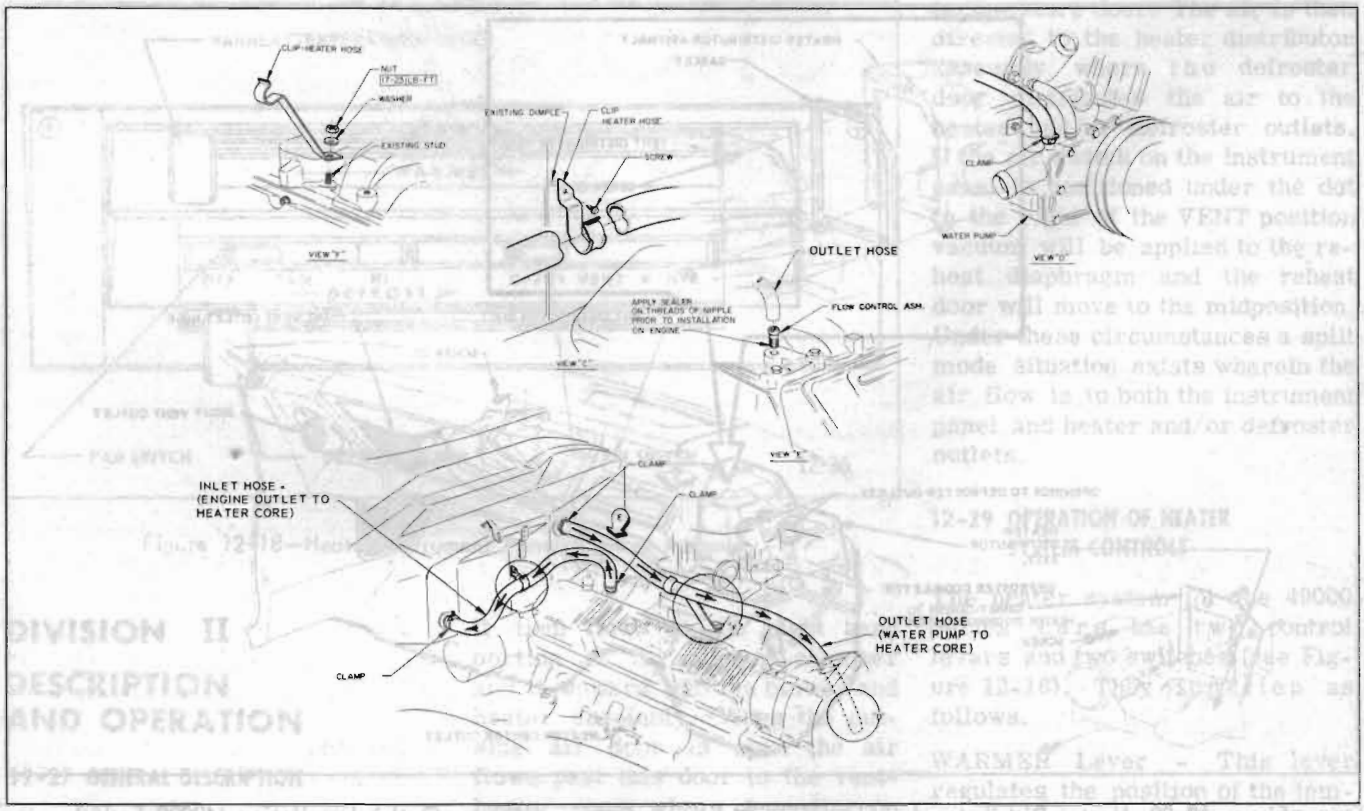

Figure 12-22—Heater Hose Routing (49000 Series)

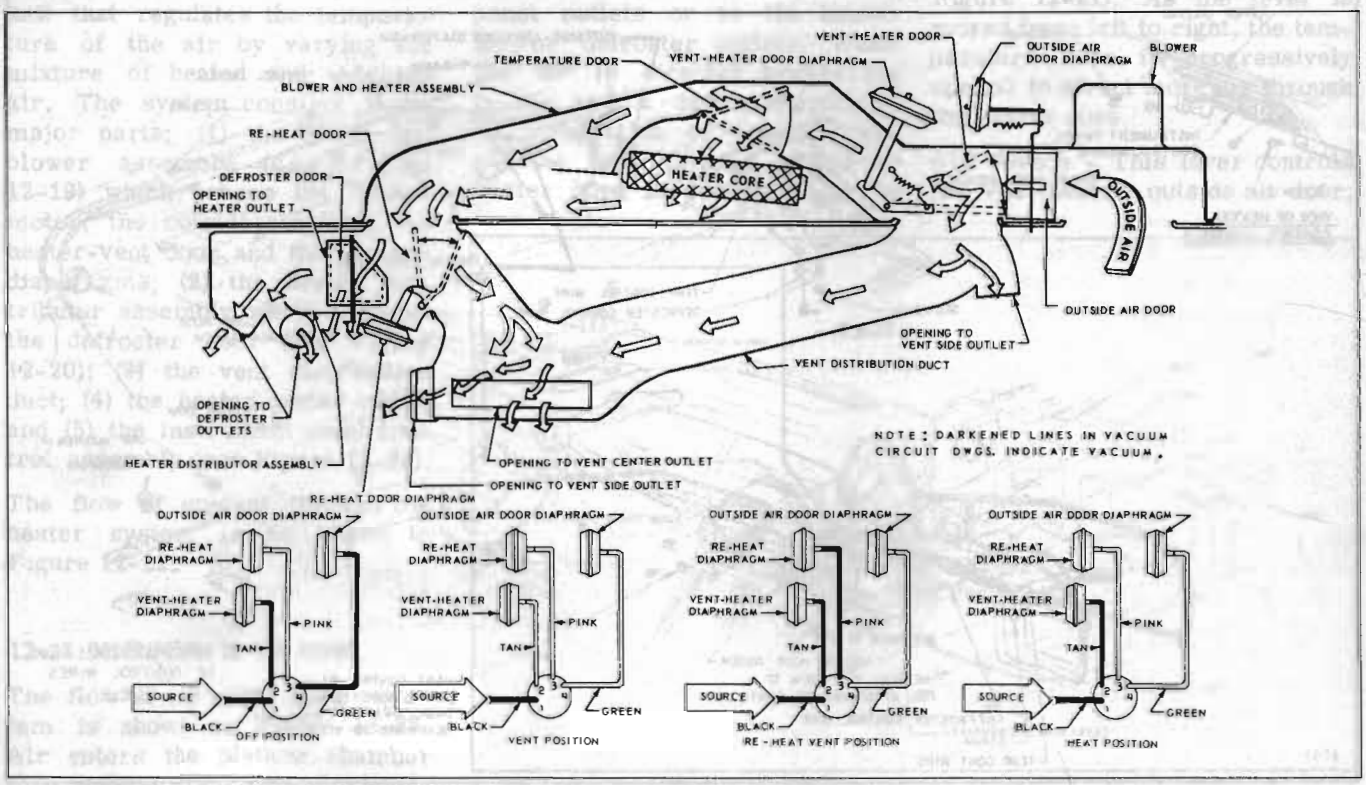

Figure 12-23—Heater System Air Flow (49000 Series)

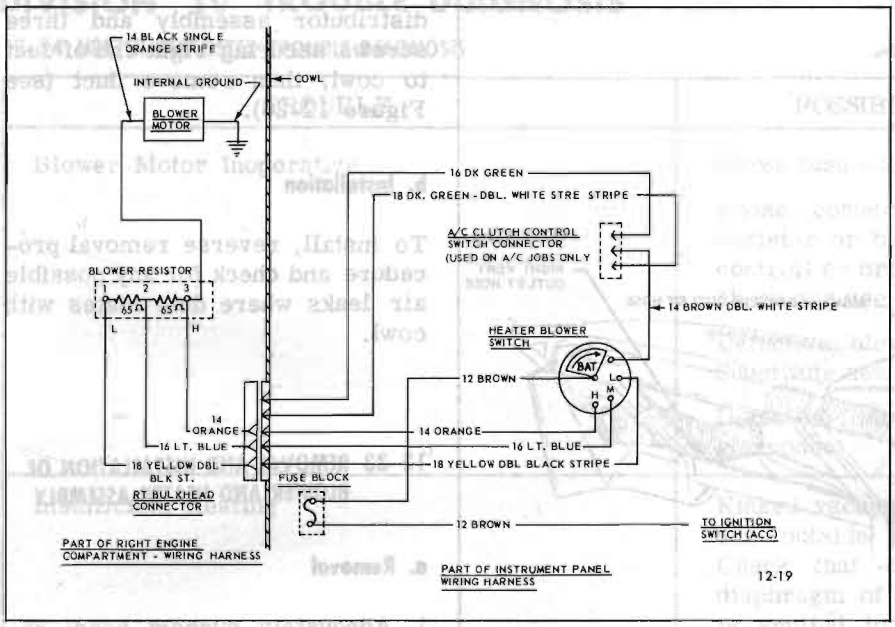

Figure 12-24—Wiring Diagram of Heater System (49000 Series)

and reheat diaphragms. Moving the lever from left to right performs three following system changes:

1. OFF Position - In this position vacuum is supplied to the vent-heater diaphragm and outside air door diaphragm to hold these doors closed. See Figure 12-23.

2. VENT Position (1st Detent) - In the 1st detent of the VENT position the vacuum is cut off at the vacuum disc switch, hence all the vacuum diaphragms are released. The outside air door is pulled by its spring to the open position, and the heater-vent door is pulled by its spring to the vent position.

3. VENT Position (2nd Detent) - In the 2nd detent of the VENT position (right side of word VENT) vacuum is applied to the vent-heater and reheat diaphragms. The vent-heater diaphragm pulls the air door closed directing the air flow thru the heater portion of the system. The reheat diaphragm also partially closes its respective air door thereby redirecting a portion of the air flow back into the ducting leading to the instrument panel outlets and channeling the balance of the air to the floor outlets.

4. HTR position - Heater position reapplies vacuum only to the vent-heater diaphragm to draw the air door to the heater position again.

FAN Switch - This lever operates a three position blower switch (see Figure 12-18). First, second and third positions of the lever respectively provide low, medium and high blower speeds (see Figure 12-24).

DIVISION III

SERVICE PROCEDURES

12-30 REMOVAL AND INSTALLATION OF INSTRUMENT PANEL CONTROL ASSEMBLY

a. Removal

1. Pry off thin strip of trim along center bottom of instrument panel (see Figure 12-25).

2. Remove four screws from corners of instrument panel control and partially withdraw assembly.

3. Disconnect control cables, lamp sockets and blower switch connector and complete removal of blower assembly.

b. Installation

To install, reverse removal procedure and check adjustment of control cable (refer to paragraph 12-26).

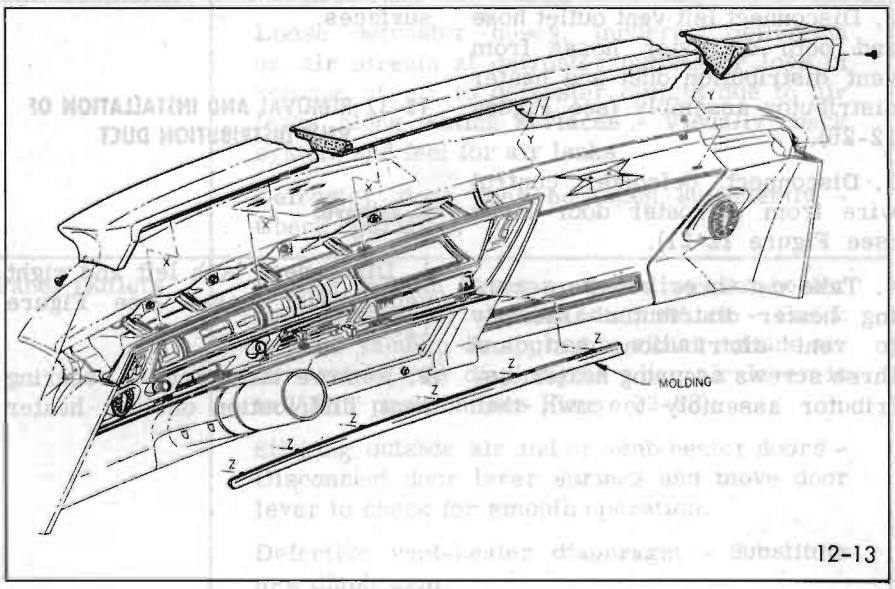

Figure 12-25—Instrument Panel Assembly

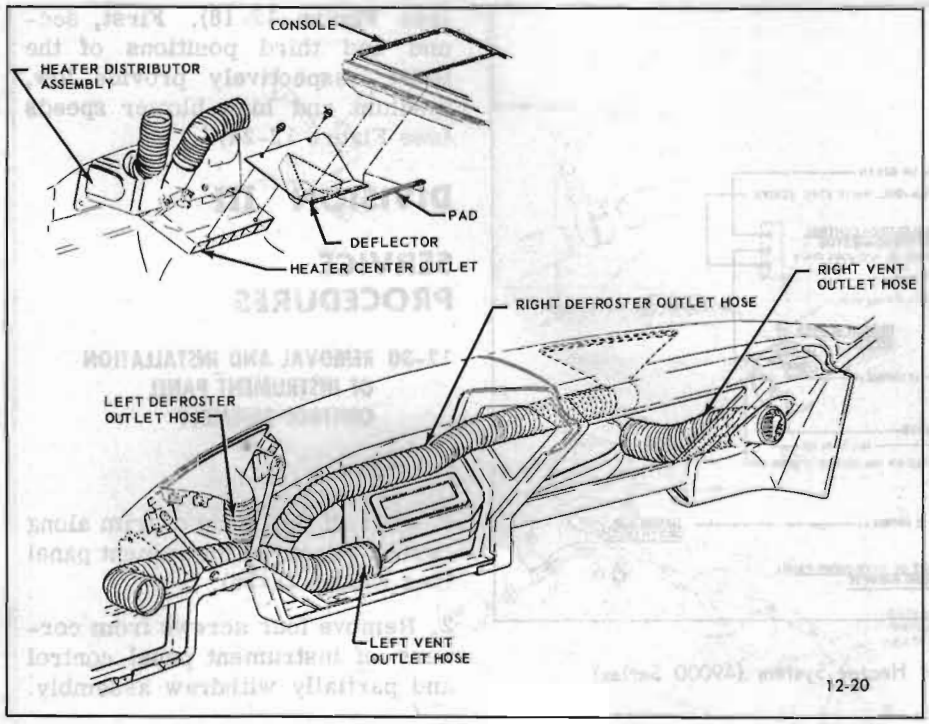

Figure 12-26—Installation of Air Hoses - 49000 Series

12-31 REMOVAL AND INSTALLATION OF HEATER-DISTRIBUTOR ASSEMBLY

a. Removal

1. Remove two screws and lower out heater center outlet (see Figure 12-20).

2. Disconnect left vent outlet hose and both defroster hoses from vent distribution duct and heater distributor assembly (see Figure 12-26).

3. Disconnect defroster control wire from defroster door lever (see Figure 12-21).

4. Take out three screws securing heater distributor assembly to vent distribution duct, and three screws securing heater distributor assembly to cowl, then remove assembly (see Figure 12-20).

b. Installation

To install, reverse removal procedure and check adjustment of control cable. Check for any possible air leaks along mating surfaces.

12-32 REMOVAL AND INSTALLATION OF VENT DISTRIBUTION DUCT

a. Removal

1. Disconnect both left and right vent outlet hoses (see Figure 12-26).

2. Remove three screws securing vent distribution duct to heater distributor assembly and three screws securing right end of duct to cowl, then remove duct (see Figure 12-20).

b. Installation

To install, reverse removal procedure and check for any possible air leaks where duct mates with cowl.

12-33 REMOVAL AND INSTALLATION OF BLOWER AND HEATER ASSEMBLY

a. Removal

1. Adequately support hood; remove right hood hinge and hinge support.

2. Disconnect vacuum hoses attached to vacuum diaphragms. See Figure 12-21.

3. Disconnect wire attached to blower motor connector and pull off connector plugged into blower resistor.

4. Disconnect control wire attached to temperature door lever.

5. Drain radiator and disconnect heater coolant hoses attached to blower and heater assembly (see Figure 12-22).

6. Remove 12 screws securing blower and heater assembly to cowl and remove assembly (see Figure 12-19).

b. Installation

To install, reverse removal procedures and check for air leaks along mating surfaces. Check adjustment of control cable.

DIVISION IV TROUBLE DIAGNOSIS

12-34 HEATER-DEFROSTER TROUBLE DIAGNOSIS

TROUBLE	POSSIBLE CAUSES AND CHECKS
Blower Motor Inoperative	Blown fuse - Substitute new fuse. Loose connectors at blower motor, blower resistor or blower switch (on instrument panel control) or broken or grounded wires - Visually check and use test light. Defective blower resistor or blower switch - Substitute new components. Defective blower motor - Substitute new component.
Insufficient Heating	Kinked vacuum hoses or defective vent-heater and outside air door vacuum disc switch - Check that there is no vacuum applied to diaphragm of outside air door, and that vacuum is applied to diaphragm of vent-heater door (see Figure 12-23) when air lever is in HTR position. Sticking outside air door - Disconnect door lever spring and move door lever to check for smooth operation. Temperature door does not open sufficiently - Check operation and adjustment of door and WARMER control lever (refer to paragraph 12-26). Insufficient coolant or plugged heater core - Feel and compare temperature of heater core inlet and outlet pipes. Both hoses should be hot and approximately same temperature.
Insufficient Defrosting	Loose defroster hoses, incorrect deflection or air stream at defroster outlets or loss of volume of air to defroster outlets due to air leaks along mating surfaces - Visually check system and feel for air leaks. Defroster door does not open sufficiently - Check operation.
Insufficient Air thru Instrument Panel Outlets	Kinked vacuum hoses or defective vent-heater and outside air vacuum disc switch - Check that no vacuum is applied to either outside air or vent-heater diaphragms when air lever is in VENT position (see Figure 12-23). Sticking outside air and or vent-heater doors - Disconnect door lever springs and move door lever to check for smooth operation. Defective vent-heater diaphragm - Substitute new diaphragm.