SECTION 11-B
HEATER SYSTEM

CONTENTS OF SECTION 11-B

11-5 DESCRIPTION AND OPERATION OF HEATER SYSTEM (45000, 46000 and 48000 SERIES)

The heater system for the 45000, 46000 and 48000 Series cars is a air-mix type system in which the temperature of the air is varied by diluting heated air with unheated air. The outside air, after it enters the system, is divided into two air streams. Part of the air flow is diverted to the heater core and the balance of the air flow is by-passed around the heater core.

The heater system consists of three major assemblies: (1) a blower and air inlet assembly (see Figure 11-30) which contains

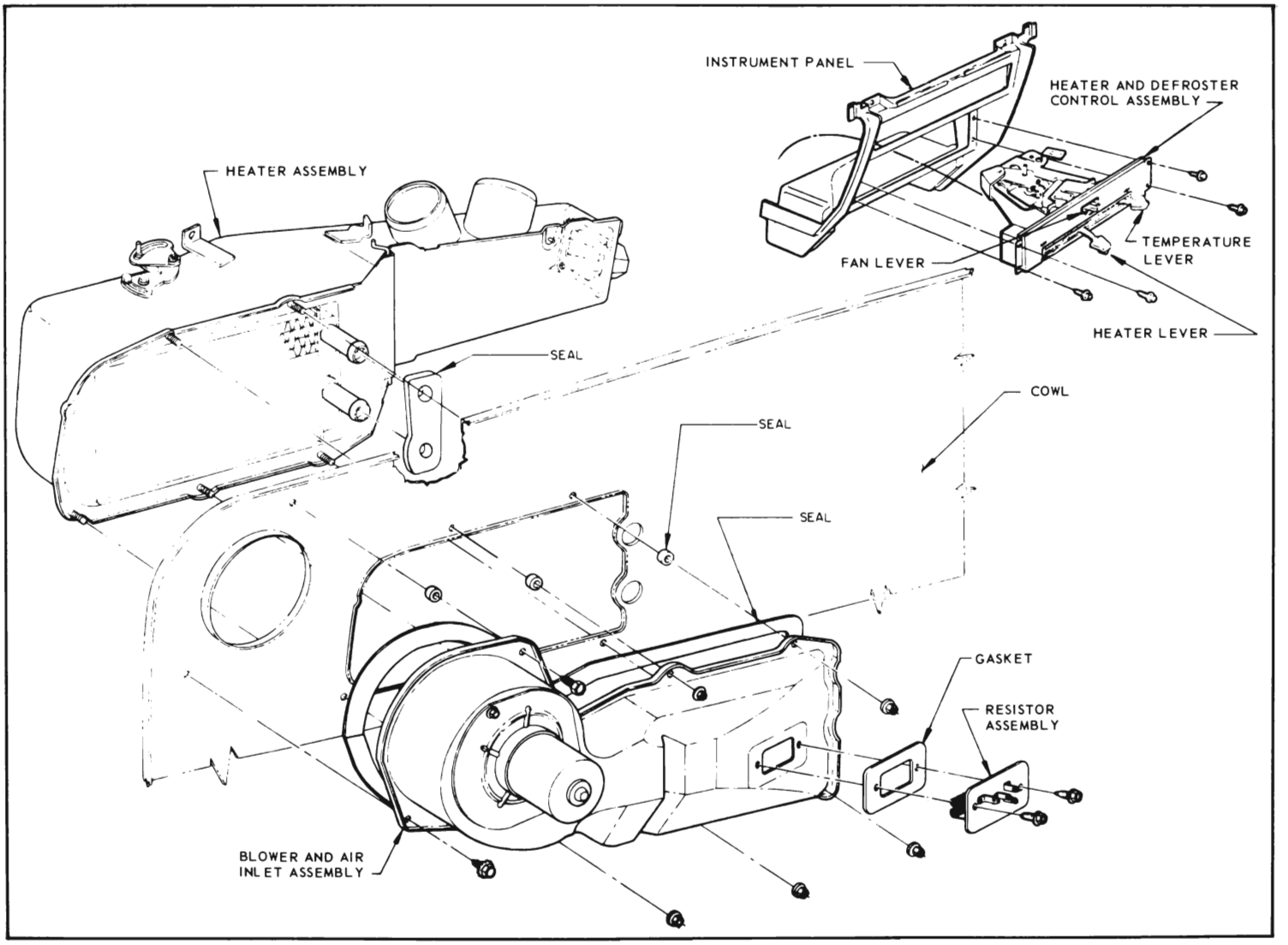
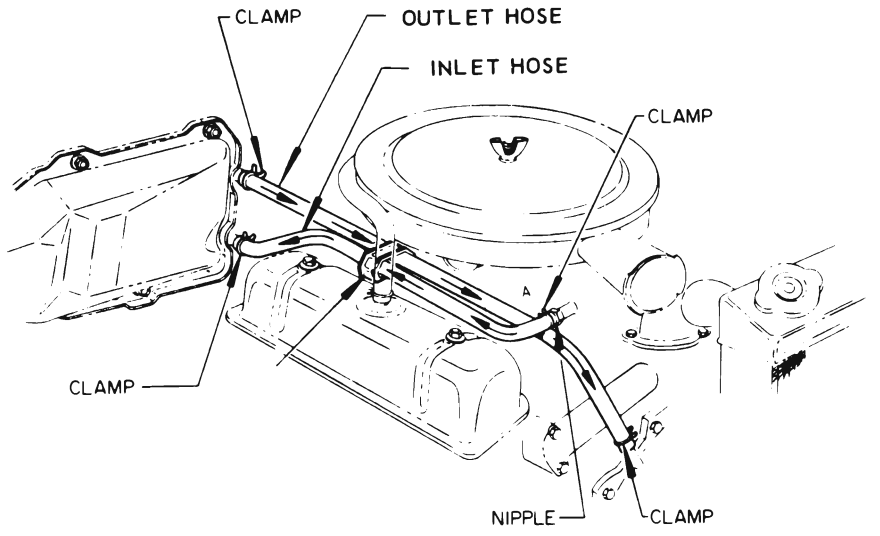
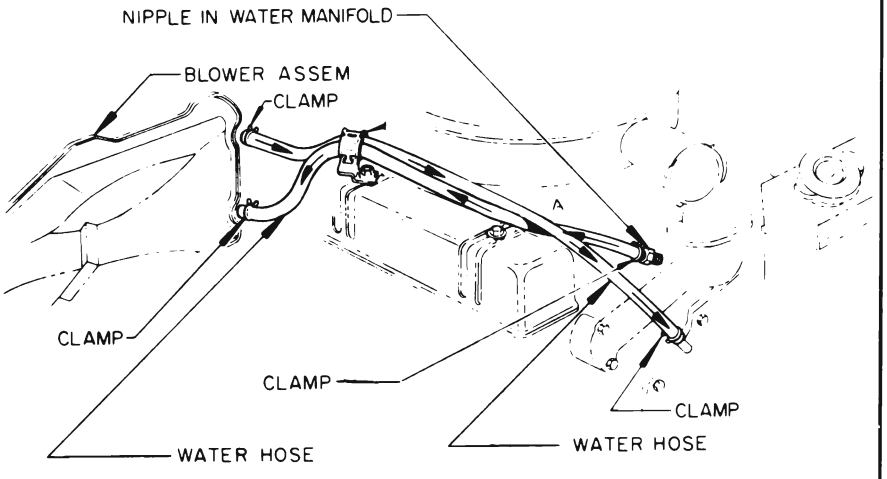


Figure 11-30—Heater System - 45000, 46000 and 48000



45000 SERIES - 300 CU. INCH ENGINE



46000 AND 48000 SERIES - 401 AND 425 CU. INCH ENGINE

Figure 11-31—Heater System Water Flow

the blower motor, (2) the heater assembly which houses the temperature door, the outside air door, the defroster door, and also the heater core, (3) and a heater-defroster control assembly which regulates the opening and closing of the doors in the heater assembly.

The flow of coolant through the heater system is as shown in Figure 11-31.

a. Description of Air Flow

The air flow begins at air intake grille located on the cowl forward of the windshield (see Figure 11-32). The outside air passes through the air intake grille into the cowl air chamber, and then into the blower and air inlet assembly. The air flows thru the blower and to the heater assembly.

At the heater assembly, the air stream divides and may flow through the heater core or through the duct by-passing the core. The regulation of the flow of air at this point is controlled by the temperature door. When the door is fully closed, air flow through heater core is blocked and all air is forced to circulate around the core. When the door is fully open, the air stream through the by-pass around the core is blocked and all air is forced through the heater core. Intermediate positioning of the door mixes heated and unheated air in proportionate amounts.

After the air passes through or around, or both through and around the heater core, it flows past the outside air door and is directed to the defroster door. When the defroster door is closed all air is channeled to the front floor area. When the defroster door is fully open all air is ducted to the defroster outlets. Intermediate positioning of the defroster valve apportions air to both the defroster and the floor. Depending on how much heat is being directed to the defroster outlet, the balance of the air stream will flow through the center heater outlet (see Figure 11-33) to the front floor area.

b. Description and Operation of Heater System Controls

The heater system is regulated by three control levers which function as follows:

1. TEMPERATURE Lever - This lever opens and closes the temperature door thereby controlling the amount of air either by-passing or flowing thru the heater core. Moving of the lever to the right opens door and diverts the air thru the heater core proportionate to the travel of the lever.

2. HEATER Lever - This lever regulates the outside air door and the defroster door of the heater assembly. When the lever

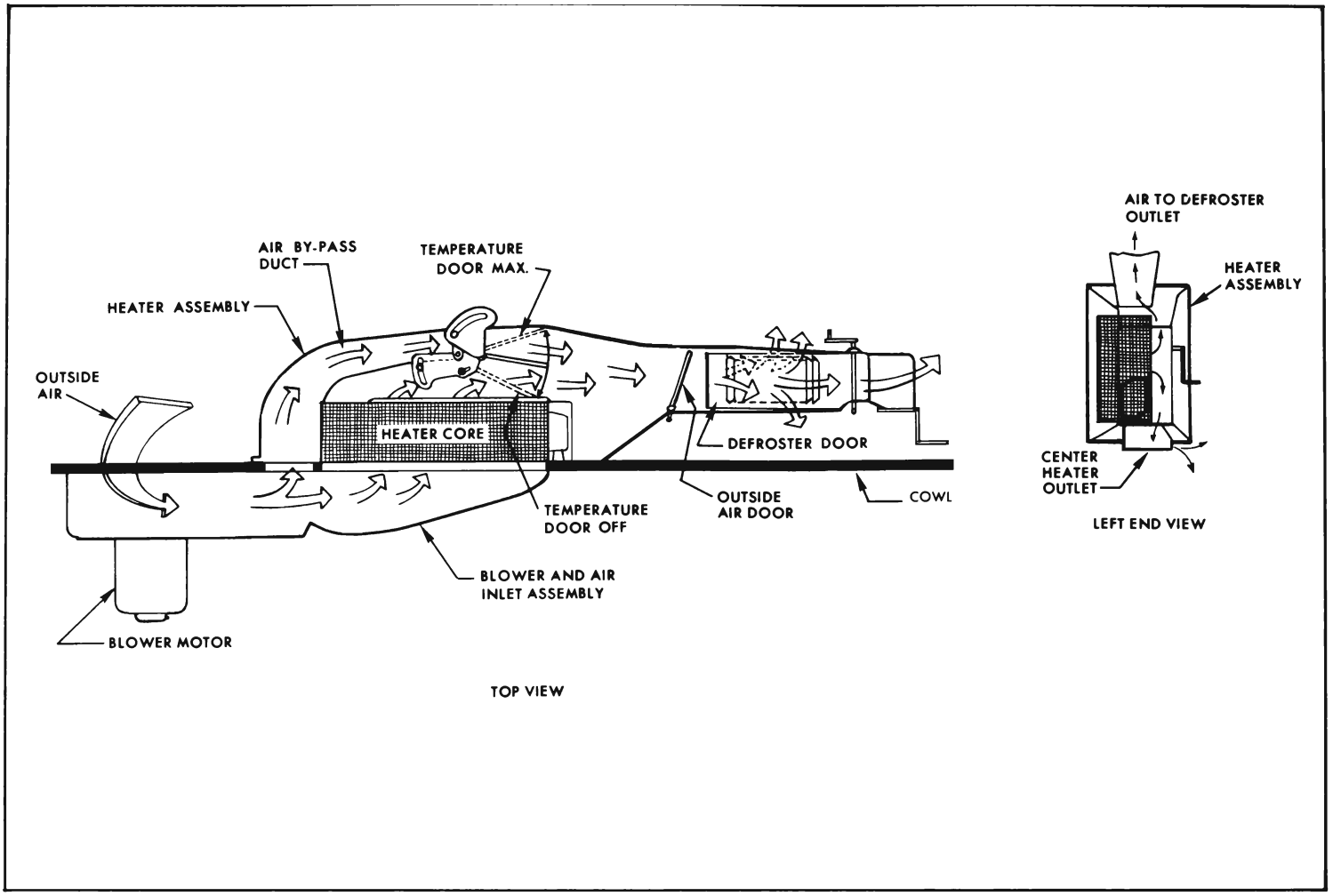


Figure 11-32—Heater System Air Flow - 45000, 46000 and 48000 Series

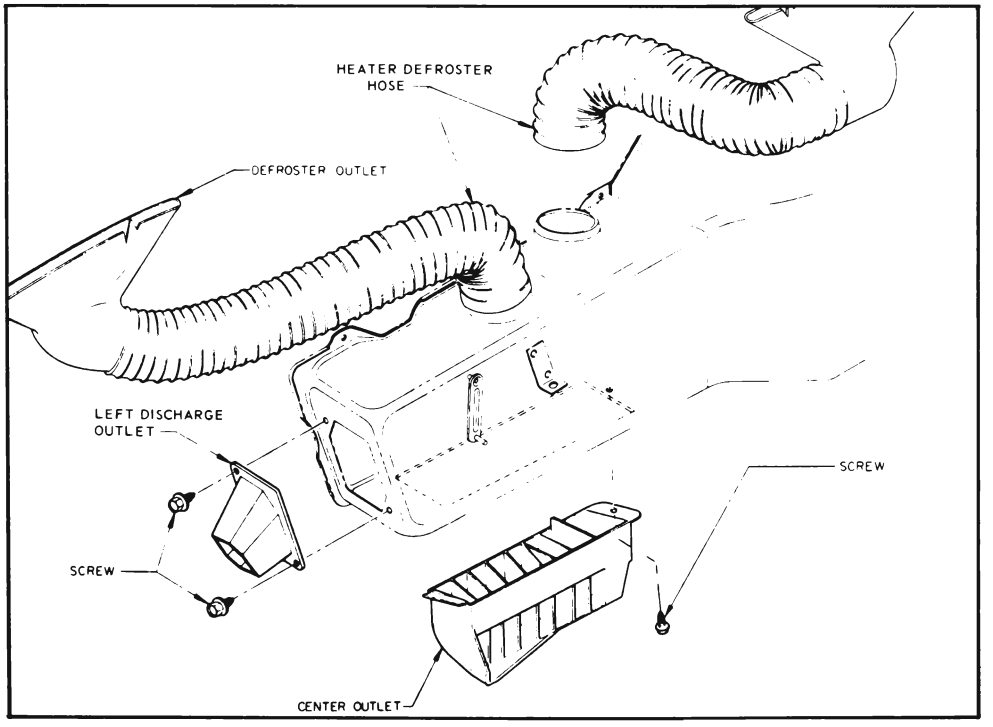


Figure 11-33—Heater Assembly Outlets - 45000, 46000 and 48000

is positioned at the mid-position the outside air door is fully opened, permitting outside air to flow thru the system to the interior heater outlets. Movement of the lever fully to the right will fully open the defroster door and direct all the air flow to the defroster outlets.

Intermediate positioning of the lever from mid-position to full right position will apportion the air to both defroster and floor outlets.

3. FAN Lever - This control operates the blower motor at three blower speeds. Movement of the control to the right will respectively provide low, medium and high blower motor speeds.

c. Description of Ventilation Doors

An outside air vent is provided

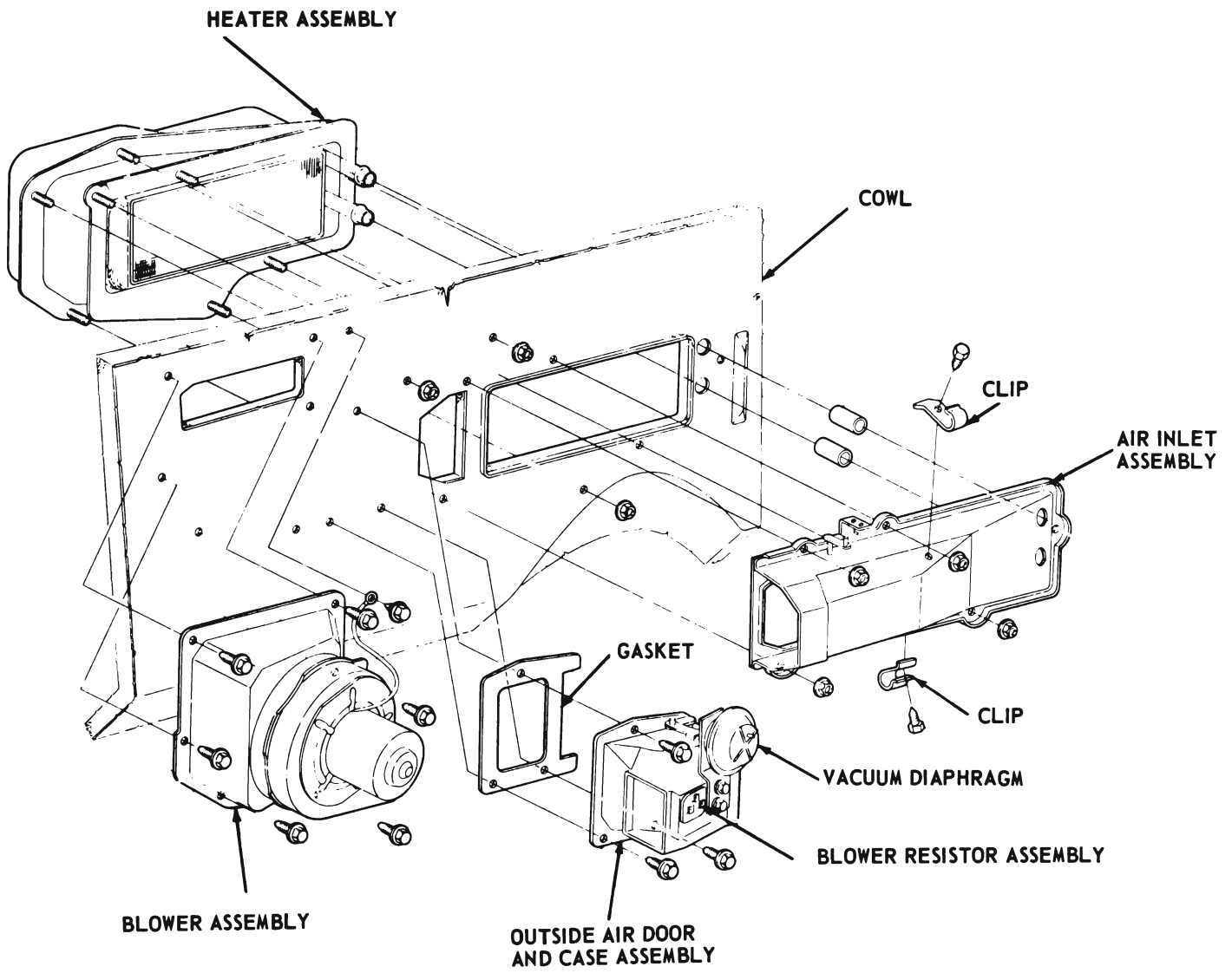


Figure 11-34—Heater System Installation - 49000 Series

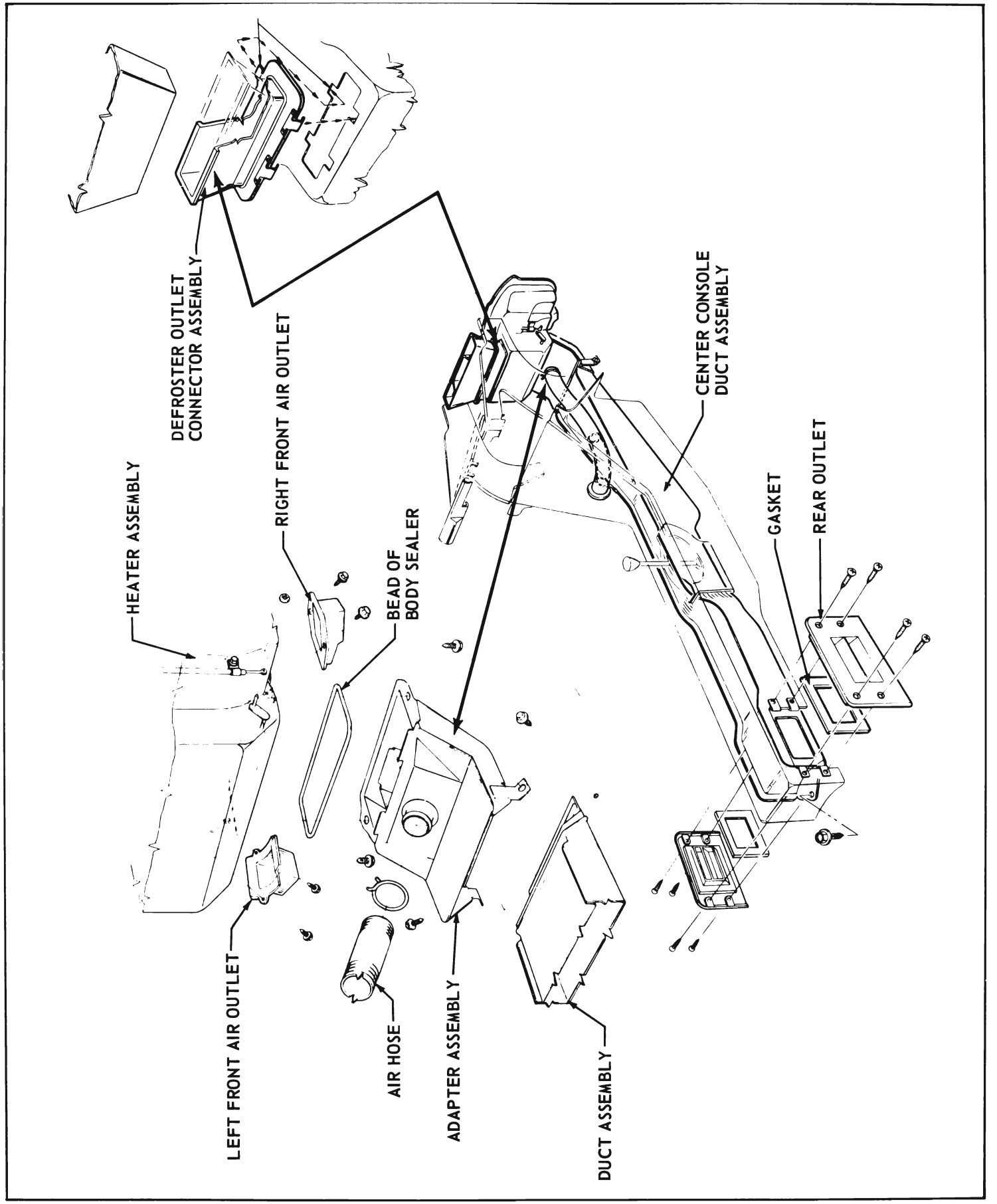


Figure 11-35—Heater System Installation - 49000 Series

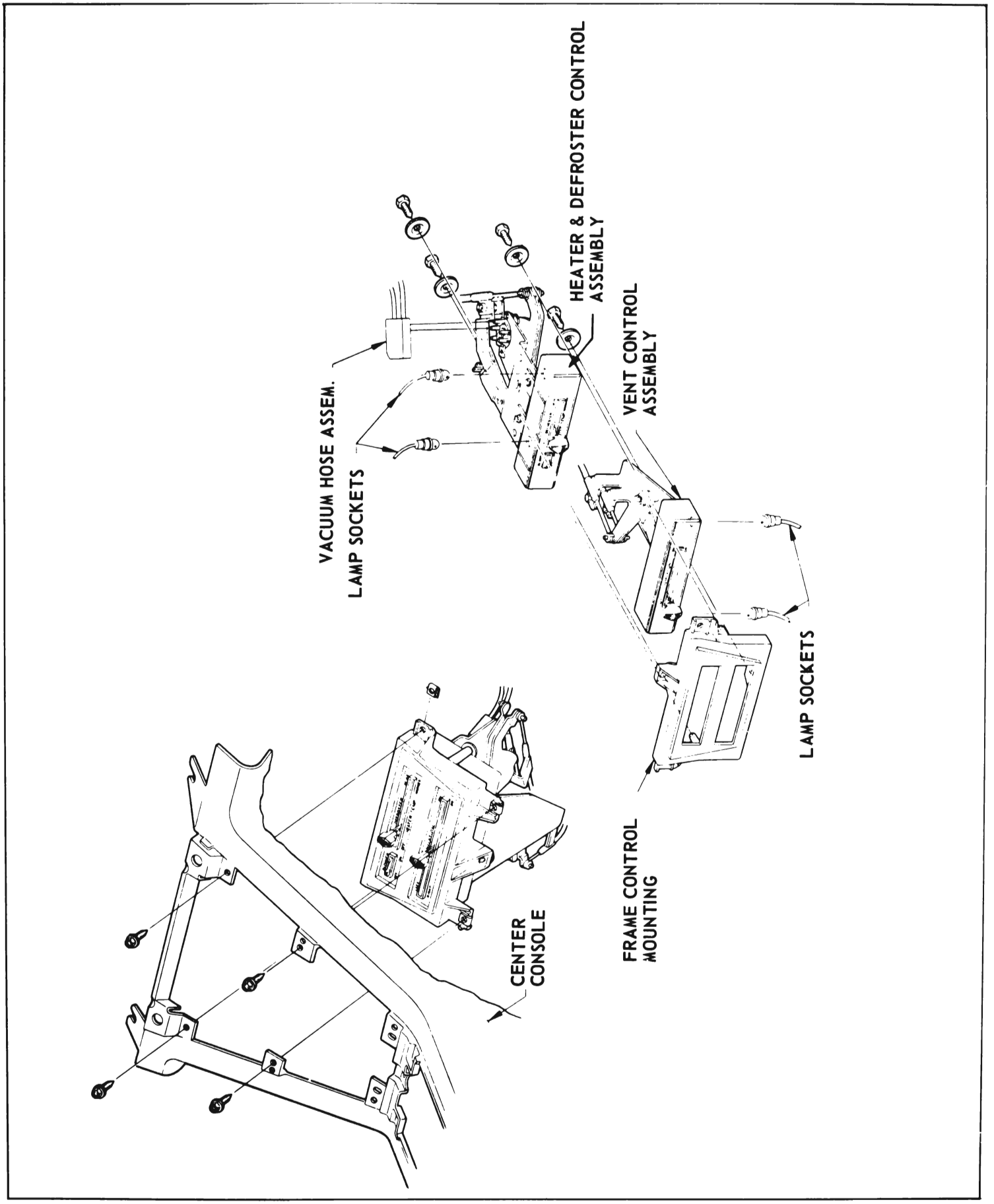


Figure 11-36—Heater and Defroster and Vent Control Assemblies Installation - 49000 Series

on each of the floor side kick pads. The opening and closing of the vent doors is controlled by a control knob on the instrument panel.

11-6 DESCRIPTION AND OPERATION OF HEATER SYSTEM (49000 SERIES)

The heater system for the 49000 Series cars is essentially similar to the system for 45000, 46000 and 49000 Series cars in so far as it is an air-mix type system, and the air flow is basically the same. The heater system has six major assemblies: (1) a blower assembly (see Figure 11-34) which houses the blower fan and motor; (2) an outside air door and case assembly which contains the outside air door, blower resistor assembly and the vacuum diaphragm to operate the door; (3) the air inlet assembly which houses the temperature door; (4) a heater assembly which contains the heater core; (5) console center duct and adapter assemblies (see Figure 11-35); (6) a heater and defroster control assembly which controls regulation of doors and blower motor (see Figure 11-36).

The flow of coolant thru the heater system is as shown in Figure 11-37. A vacuum operated water valve shuts off flow of coolant thru heater core when system is inoperative.

a. Description of Air Flow

The air flow (see Figure 11-38) is similar to 45000, 46000 and 48000 Series heater system, except that the temperature door and outside air door are respectively located in the air inlet assembly and the outside air door and case assembly. There is a constant flow of heat to the rear outlets as well as the front outlets when air is being directed to the floor of the car.

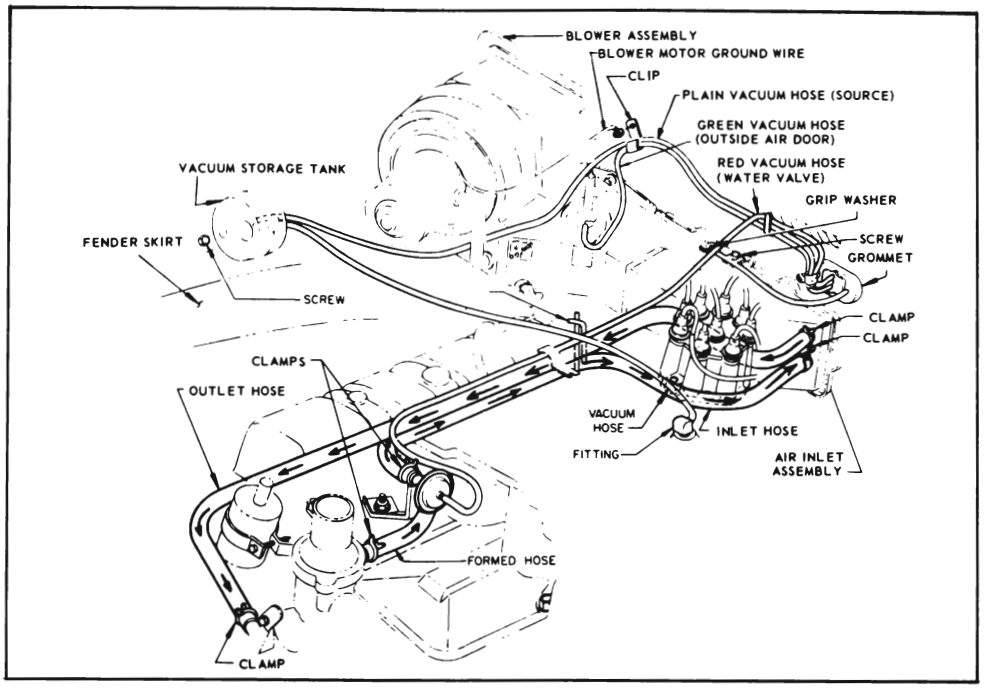


Figure 11-37—Vacuum Hose and Water Hose Routing - 49000 Series

b. Description and Operation of Heater System Controls

The heater system for the 49000 Series cars has three control levers: HEATER lever, DEFROSTER lever, and BLOWER lever (see Figure 11-39). They function as follows:

1. HEATER Control Lever - This lever regulates the positioning of the temperature door, outside air door, closes one of the electrical switches necessary for operation of the blower motor, and also opens the water valve. Initial movement of the lever from OFF position applies vacuum to the vacuum diaphragms controlling the outside air door and water valve and closes a switch in the blower circuit. Further movement of the lever opens the temperature door.

2. DEFROSTER Control Lever - This lever regulates the positioning of the defroster door. In addition, similar to the HEATER control, the lever also opens the outside air door and closes a switch in the blower circuit. Initial movement of the lever just past OFF position applies vacuum to the outside air door vacuum diaphragm and closes one of the blower circuit switches. Further movement of the lever opens the defroster door.

3. BLOWER Switch Control - This control operates a three position blower switch. First, second and third positions of lever respectively provide low, medium, and high blower speeds.

NOTE: For blower motor operation both circuit switches (the switch controlled jointly by the HEATER and DEFROSTER control levers, and the switch controlled by the BLOWER lever) must be closed.

11-7 SERVICING HEATER SYSTEM COMPONENTS (45000, 46000 and 48000 SERIES)

a. Defroster Cable Installation and Adjustment

1. Assemble control cable to instrument panel control (see Figure 11-40).

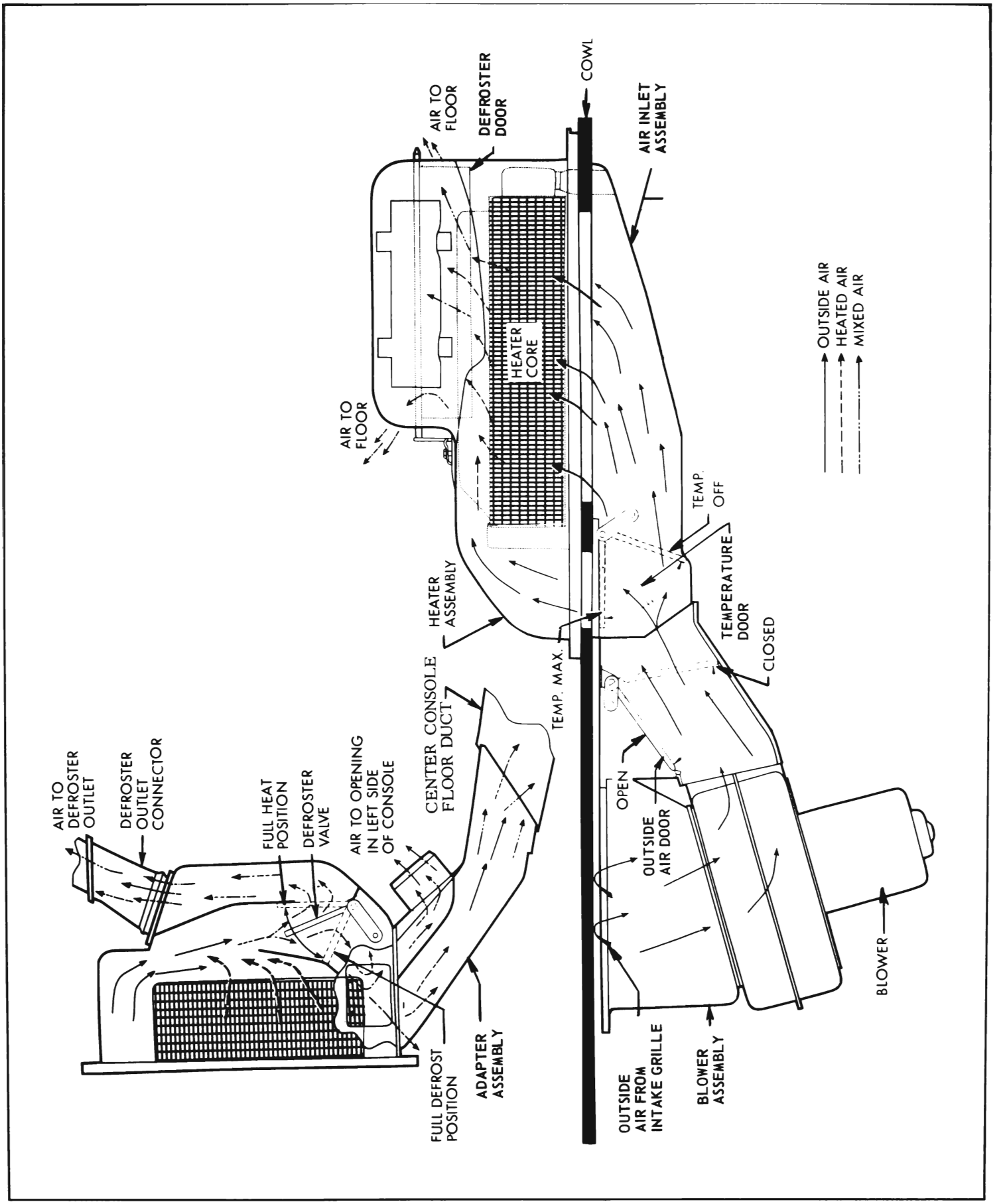


Figure 11-38—Heater System Air Flow - 49000 Series

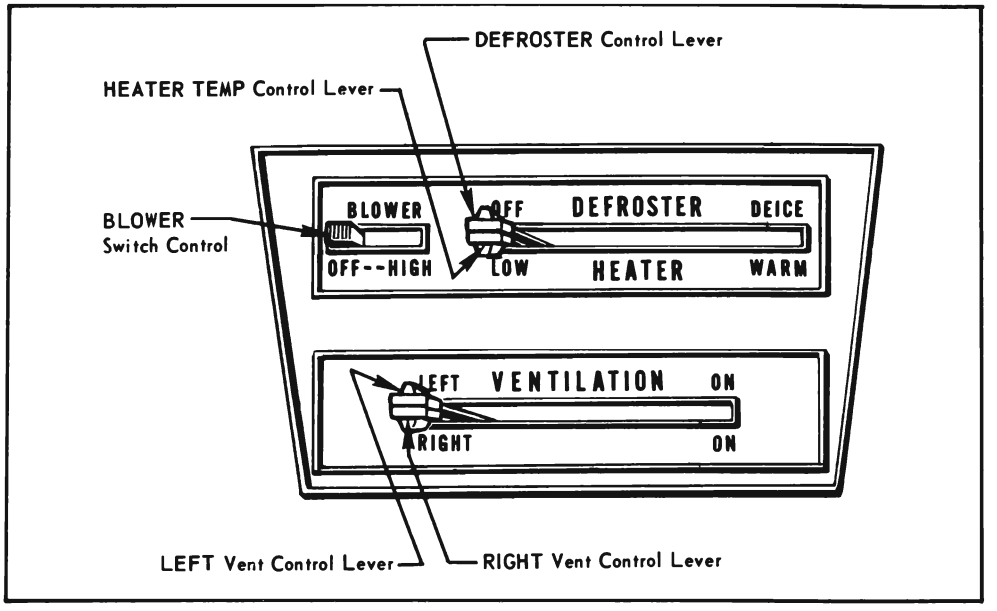


Figure 11-39—Heater System Control Levers - 49000 Series

2. Loose assemble other end of control cable to lever of defroster door on heater assembly.

3. With DEFROSTER lever on instrument panel in OFF position and while holding defroster door lever on heater assembly closed, tighten cable clamp on heater securely.

b. Temperature and Outside Air Cables Installation and Adjustment

1. Attach control cables to instrument panel control.

2. Secure control cables to respective lever on heater assembly.

3. Rotate adjuster nut on temperature and outside air cables to obtain 1/8 to 3/16 inch springback when TEMPERATURE and HEATER levers (on instrument panel) are fully to the left position.

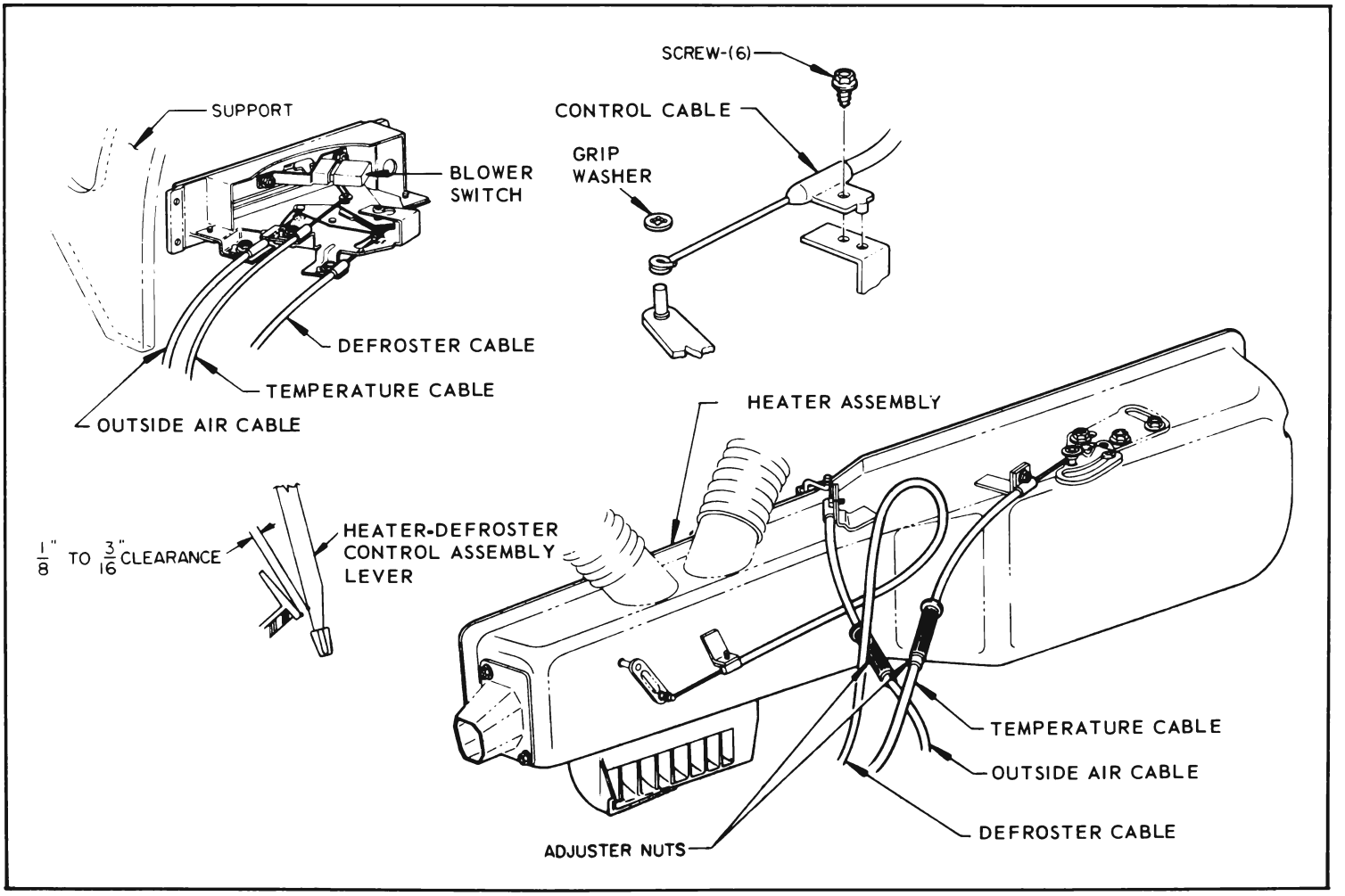


Figure 11-40—Control Cable Installation - 45000, 46000 and 48000 Series

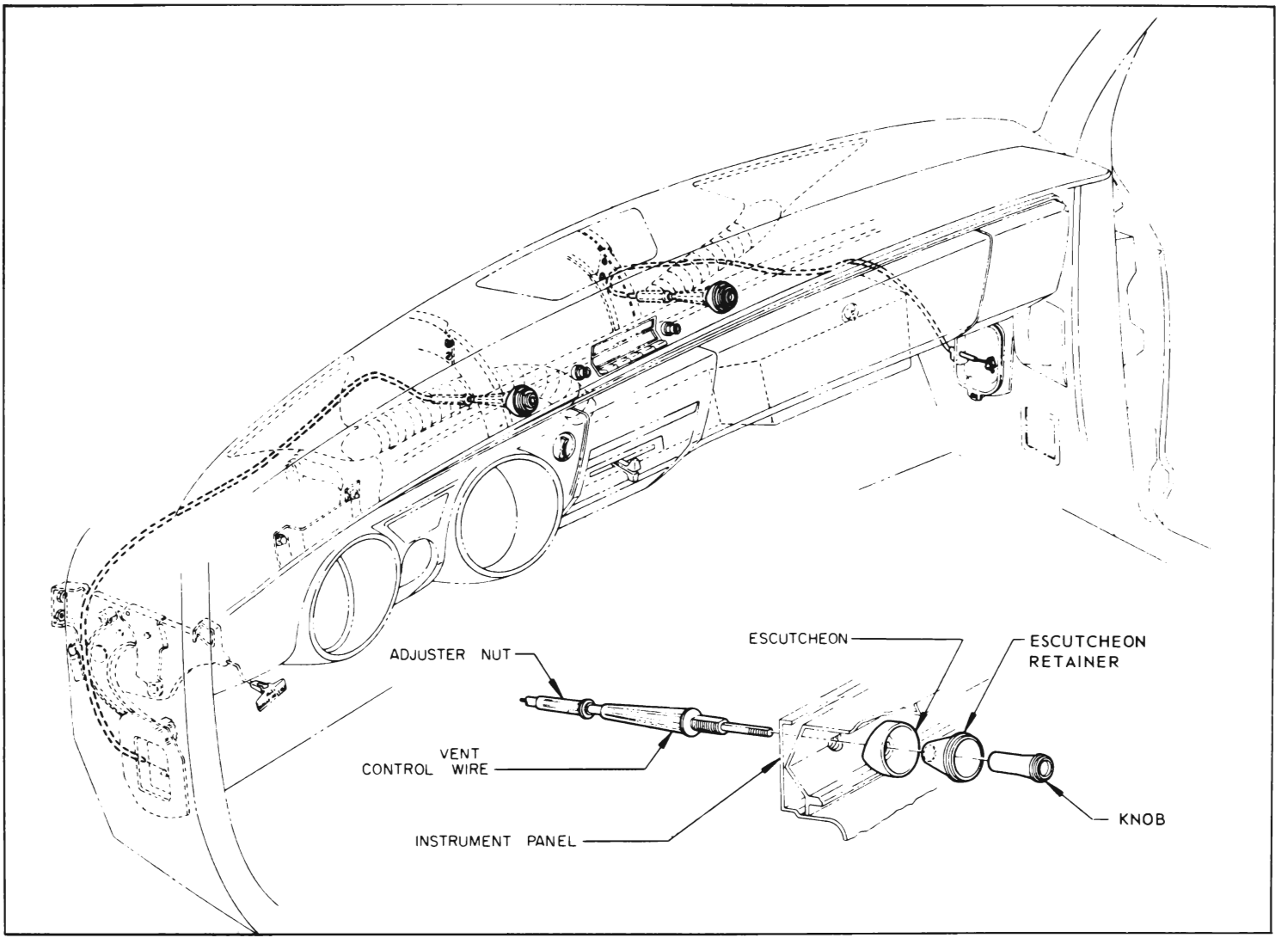


Figure 11-41—Vent Control Cable Installation - 45000, 46000 and 48000 Series

NOTE: The HEATER lever will lock in the mid-position if less than 1/8 spring-back occurs and will not fully open the outside air door if more than 3/16 inch spring-back occurs.

4. Move the TEMPERATURE lever fully to the right and adjust for a slight spring-back from HOT position.

c. Right and Left Vent Control Cable Installation and Adjustment

1. Place control wire ends over respective arms of vent doors (see Figure 11-41) and secure in position.

2. Place vent knobs on instrument panel in full OFF position and rotate adjuster nut so that it has approximately 1/8 inch spring-back from OFF position.

d. Removal of Heater System Components

Removal of the blower and air inlet assembly (see Figure 11-30) will require prior removal of the right front fender. Refer to Group 12 for fender installation drawings. Removal of all other components will be obvious upon inspection (see Figures 11-30 and 11-33).

NOTE: Due to the fact that the defroster duct hoses are cemented in position, it is recommended that the hoses be cut for removal purposes. Retape hoses together for installation.

11-8 SERVICING HEATER SYSTEM COMPONENTS (49000 SERIES)

a. Vent, Temperature and Defroster Control Wire Adjustment

The temperature and defroster levers are adjusted by means of

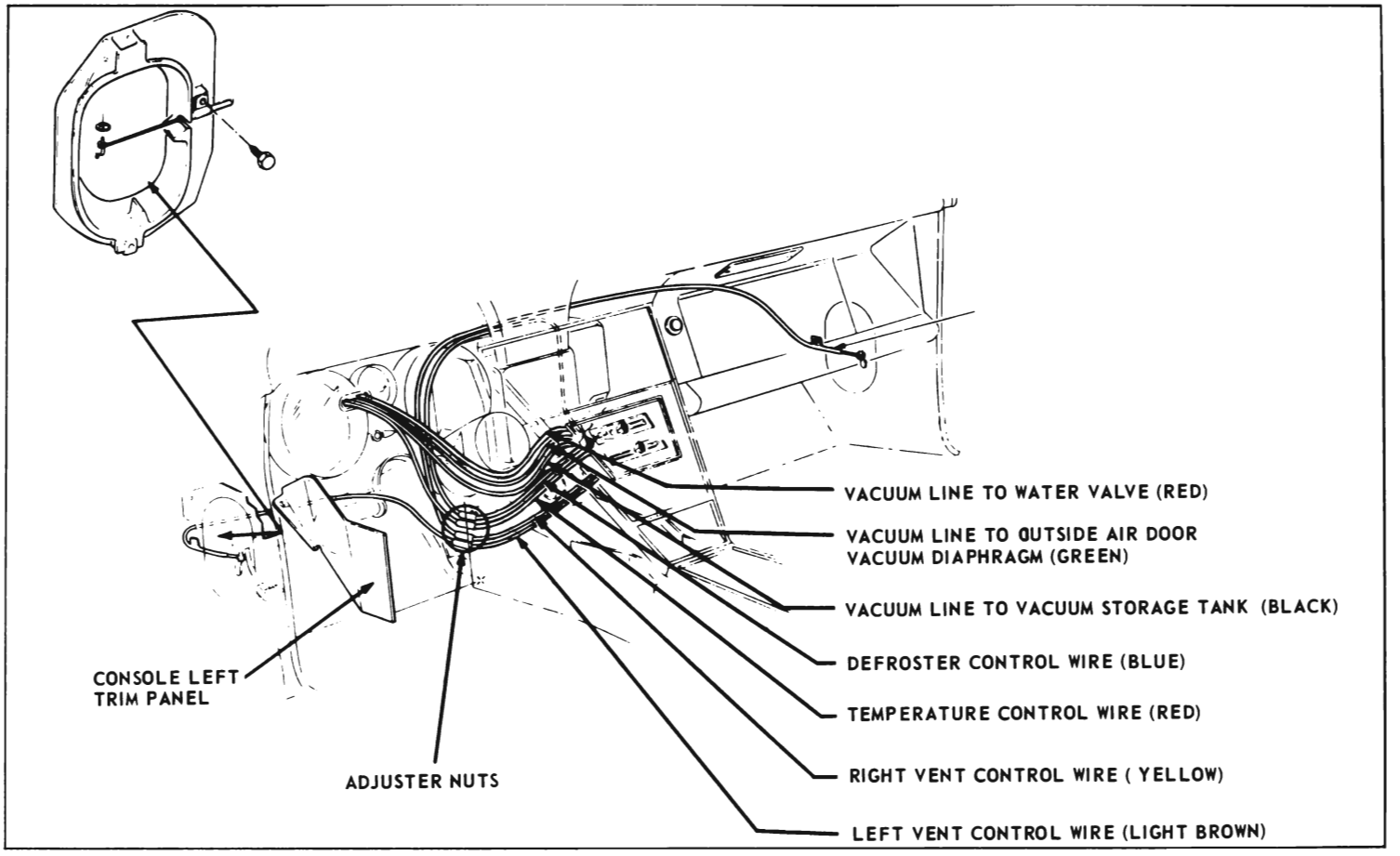


Figure 11-42—Heater System Control Wires - 49000 Series

adjuster nuts on the control wires (see Figure 11-42). To gain access to adjuster nuts remove three screws securing console left trim panel to center console and take out trim panel. Adjust control levers to full off and rotate adjuster nuts until lever knobs are in line and approximately 1/16 inch spring-back exists. Work lever back and forth several times and recheck for proper adjustment.

b. Removal of Heater System Components

To remove heater core it is necessary to take out heater assembly. Removal of components of heater system will be obvious upon inspection (see Figures 11-34, 11-35 and 11-36).

11-9 HEATER SYSTEM 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	CORRECTION
45000, 46000 & 48000 Series	
1. Blower motor inoperative.	1a. Check fuse. 1b. Check for defective heater blower switch (see Figure 11-40). 1c. Check motor ground wire. 1d. Check for defective blower resistor assembly (see Figure 11-30). 1e. Check for loose connectors or broken wires.

TROUBLE	CORRECTION
2. Insufficient heating.	2a. Check operation of outside air door (ref. subpar. 11-7, "b"), and temperature door, to insure full opening and closing. 2b. Check for air leaks around sealing edges of components. 2c. Check for insufficient coolant.
3. Inadequate defrosting.	3a. Check operation of outside air door (ref. subpar. 11-7, "a" or "b"), temperature door or defroster door. 3b. Also refer to above corrections 2b and 2c.
49000 Series	
4. Blower motor inoperative.	4a. Check fuse. 4b. Check for defective heater blower switches (2) located on heater-defroster control assembly. 4c. Check blower motor ground wire (see Figure 11-37). 4d. Check for defective blower resistor assembly (see Figure 11-34). 4e. Check for loose connections or broken wires.
5. Insufficient heating.	5a. Check for vacuum on diaphragm of outside air door (see Figure 11-37). Check operation of temperature control cable. 5b. Also refer to above corrections 2b and 2c.
6. Insufficient defrosting.	6a. Refer to correction 5a. 6b. Check operation of defroster door (ref. subpar. 11-8 "a").