

DIAGNOSIS

COMPLAINT

Insufficient, erratic, or not heat or defrost

Possible Cause

Checks and Corrections

Low radiator coolant due to: ● Coolant leaks ● Engine overheating	Check radiator cap pressure. Replace if below minimum pressure. Fill to level. Pressure test for engine cooling system and heater system leaks. Repair as required. Remove bugs, leaves, etc. from radiator or condenser fins. Check for: - Loose fan belt - Sticking thermostat - Incorrect ignition timing - Water pump impeller damage - Restricted cooling system Repair as required.
Loose fan belt Thermostat	Replace if cracked or worn and/or adjust belt tension. Check coolant temperature at radiator filler neck. If under 170°F, replace thermostat. See Group 27 for complete testing.
Plugged or partially plugged heater core	Clean and backflush engine cooling system and heater core.
Loose or improperly adjusted control cables	Adjust to specifications.
Vacuum hoses crossed, collapsed, or kinked (if applicable)	Check to see if door vacuum motors respond properly to movements of the Functional Control Lever and the Temperature Control Lever. Visually check vacuum hoses, and repair as required.
Air flow control doors sticking or binding	Check to see if door vacuum motors respond properly to movements of Functional and Temperature Control Levers. If hesitation in movement is noticed, disconnect vacuum motor arm from door crank arm, and move crank arm by hand. Repair sticking or binding door as required.
Vacuum motor diaphragm or hose leaks (if applicable)	Disconnect multiple vacuum connector from back of control head, and check each connector opening with hand operated vacuum pump. If one line leaks vacuum, test motor by itself before replacing. (Be careful of vacuum hoses that operate two motors at same time.) Repair vacuum hose(s), or replace vacuum motor as required.

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COMPLAINT

Insufficient, erratic, or no heat or defrost

Possible Cause**Checks and Corrections**

Sticking heater water valve (if applicable)	Vacuum check with hand vacuum pump. Replace if required.
Kinked, clogged, collapsed, soft, swollen, or decomposed engine cooling system or heater system hoses	Replace damaged hoses and backflush engine cooling system, then heater system, until all particles have been removed.
Blocked air inlet	Check cowl air inlet for leaves, foreign material, etc. Remove as required.
Right vent open	Close vent. Replace binding cable and/or adjust cable for proper operation.

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COMPLAINT

Too much heat

Possible Cause**Checks and Corrections**

Loose or improperly adjusted control cables	Adjust as specified.
Sticking water valve (if applicable)	Vacuum check with hand vacuum pump. Replace if required.
Vacuum not available to close water valve (if applicable)	Check vacuum system with hand vacuum pump from control connector. Repair tubing, or replace damaged components as required.

COMPLAINT

Air flow changes direction when vehicle is accelerated

Possible Cause**Checks and Corrections**

Vacuum system leak (if applicable)	Check vacuum system with hand vacuum pump from control head connector. Repair tubing, or replace damaged components as required.
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CONDITION

Air comes out of defroster outlet in any function control lever position.

Possible Cause

Checks and Corrections

Vacuum system (this indicates a very bad leak, and is usually easy to locate)

Listen for vacuum system leak. Look for disconnected vacuum hose connector. Use hand-operated vacuum pump, and check vacuum motors for diaphragm leak. Also check for leaking check valve, and leaking vacuum reservoir tank. Repair hoses, or replace components as required.

CONDITION

Cowl ventilation system leaks air

Possible Cause

Checks and Corrections

Vent door open

Check operation of door for proper adjustment, kinked, or binding door. Repair as required.

CONDITION

Blower does not operate properly

Possible Cause

Check and Corrections

Blower motor

Run jumper wires (same size as blower wire) from battery terminal to connector on blower motor. Check ground lug for proper contact. Repair ground or replace blower as required.

Blower resistor

Check continuity of resistors for opens or shorts (self-powered test light). Repair or replace as required.

Blower wire harness

Check for proper installation of harness connector terminal connectors.
Check wire-to-terminal continuity.
Check continuity of wires in harness for shorts, opens, abrasion, etc.
Repair as required.

Blower switch(s)

Check blower switch(s) for proper contact. Replace switch(s) as required.

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TESTING

The following tests may be made on the heater: burned out fuses, loose wire connections, damaged wires, or collapsed hoses. Loose defroster ducts and air leaks in the body may be determined by visual inspection of the parts.

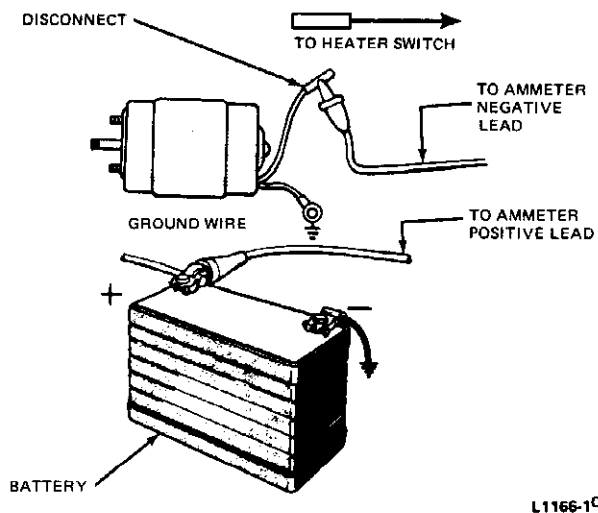


FIG. 2 Heater Blower Motor Current Draw Test

LOOSE BLOWER TEST

Turn on the heater switch and listen for the sound of the motor. If only a hum is heard, the blower is loose on the motor shaft.

BLOWER SWITCH CONTINUITY TEST

Refer to appropriate electrical schematic. Check for continuity between connected terminals as shown on the schematic. Check terminal continuity at every lever position. The light should go on for each connected pair of terminals.

There should be no continuity between the battery terminal and the switch case.

OPEN CIRCUIT TEST

On all electrical circuits, continuity must exist from the source of power (battery), to the unit where the power is used, and back up to the source of power (ground). A check at each connection in a circuit, starting at the battery, will locate an open circuit or will show that the circuit is complete.

An ohmmeter or self-powered test light connected at any two points of a circuit with the power removed from the circuit, will show if the circuit between the two connections is open or continuous.

If the meter does not move or has a light movement (high resistance), the circuit may have a poor connection or broken wire. If the bulb does not light, the circuit is open.

If the meter movement is great or full (low resistance), the circuit is complete. If the bulb lights, the circuit is continuous.

HEATER BLOWER MOTOR CURRENT DRAW TEST

This test will determine if the blower motor is operating properly. Connect a 0-10 ammeter as shown in Fig. 2. The blower motor will operate the control switch, and the current drawn by the motor will be indicated on the ammeter. Current draw should be to specification.

PLUGGED HEATER CORE TEST

Check to be sure the engine coolant is to the proper level, then start the engine and temporarily remove the outlet heater hose from the water pump. Very little or no flow of water from the core outlet indicates that the core is plugged.

BLEEDING AIR FROM HEATER CORE

Check to be sure the engine coolant is to proper level, then start the engine and remove the hose at the pump. Allow any trapped air to flow out. When a continuous flow of coolant is obtained, reconnect the hose to the water pump.

HEATER WATER VALVE TESTS

Before testing, check for proper coolant level, coolant temperature, and fan belt tension. Also look for coolant leaks or plugged hoses or heater core. Correct any defects before proceeding with the water valve tests.

TEST NO. 1

The simplest test is to use a hand-vacuum pump.

1. Disconnect the vacuum line and attach a vacuum pump to the vacuum motor vacuum connection.
2. When vacuum is applied and released, the arm of the vacuum motor should move freely in both directions without sticking.
3. Make sure there is full travel of the arm. This can be checked by manually pushing the arm to make sure the valve is fully seated.
4. Check for any possible leak of the vacuum diaphragm.
5. If the valve does not operate as described, it should be replaced.

TEST NO. 2

Another method that can be used to test the water valve in a heater system is as follows: Set the temperature control lever at WARM. Then, with the function control lever at HEAT position, run the engine until the water is warm.

Under these conditions, warm air should flow from the floor outlets.

If the air is not warm, check the water control valve. Disconnect the 1/8 inch green vacuum hose from the valve and install a vacuum gauge (tee) between the hose and the valve. Observe whether a vacuum signal is available. If not, (0 Hg. reading) and no heat is noted, the water control valve is not operating properly or the

heater core is restricted. If a vacuum is observed, refer to the vehicle applications section on Vacuum Systems for corrective action.

HEATER WATER VALVE VACUUM SWITCH

Some applications use a water valve vacuum switch to send vacuum to the water valve vacuum motor to close the water valve. A plunger in the switch is actuated by the movement of the crank arm with the temperature control lever.

HEATER WATER VALVE VACUUM SWITCH ADJUSTMENT

1. Make sure that the temperature control cable (connects the temperature control lever to the temperature blend door) is properly adjusted.
2. Move the temperature control lever to the COOL position.
3. If the water valve vacuum switch plunger is not fully depressed, adjust the switch as follows:
 - a. Loosen the adjusting screws.
 - b. Move the switch against the temperature blend door crank arm until the plunger is fully depressed.
 - c. Tighten the adjusting screws.

HEATER CORE TESTS

SYSTEM INSPECTION

Check the heater system thoroughly for:

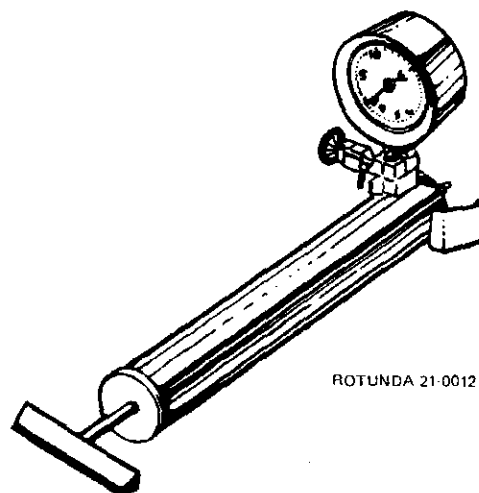
1. Loose hose clamps.
2. Kinked or collapsed heater connector tubes.
3. Kinked, split or leaking vacuum hoses.
4. Properly adjusted temperature control cable.
5. Proper water valve operation.

TESTING HEATER CORE IN VEHICLE

1. Drain the engine coolant.
2. Disconnect the inlet hose at the engine fitting.
3. Disconnect the outlet hose in the engine compartment.

NOTE: The core must remain full of coolant. Any loss must be made up with water prior to performing the test. Be sure all hoses are filled with water and no air is trapped in the core or hoses. **No leakage should exist in the air test pump assembly.**

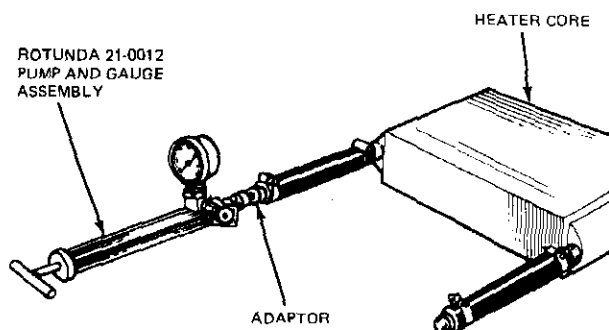
4. Attach an air pump and gauge assembly (Fig. 3) to either the inlet hose or to the outlet hose.
5. Fill the other hose with water and plug the end.
6. Apply 30 psi of air to the core and record the time of pressure loss on the gauge. A good core will hold 30 psi pressure indefinitely. If the pressure drops, the core must be repaired or replaced.



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FIG. 3 Air Pump and Gauge Assembly



L2327-1A

FIG. 4 Heater Core Bench Test

NOTE: Make sure that all hose clamps are tight so that no leaks, other than core leaks, are indicated on the gauge.

BENCH TEST

1. Remove the heater core from the vehicle.
2. Attach an air pump and gauge assembly, as shown in Figure 4, and plug the other hose.
3. Submerge the heater core in water, apply 30 psi of air pressure to the core, and mark the area of the leak.
4. Repair the core and test for leaks.
5. Remove the test equipment, install the core in the vehicle, and connect the hoses.

Ford and Mercury Heating System

**PART
36-11**

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CL2336-2B

DESCRIPTION AND OPERATION

SYSTEM OPERATION AND CONTROL DOORS

The heating system contains a heater core through which flows hot water from the engine, a water valve which controls water flow through the core tubes, a blower, and three air valves or doors.

Outside air is drawn into the system through the cowl air intake into the blower housing. From the blower housing, the air is forced through and/or around the heater core, mixed in the plenum chamber, and then discharged through the defroster outlets, the floor ducts or the vent registers (Fig. 1). The air valves or doors determine the amount of air that goes through the heater core and the particular outlet(s) through which it discharges.

Each door, the water valve, and the vacuum motor or cable that actuates it has been assigned a code number which relates directly to its function in the system. These code numbers are used in illustrations and procedures throughout this group to identify the function and control of each valve or door.

CONTROL ASSEMBLY

The control assembly is located in the instrument panel to the right of the steering column. It contains a blower system off-on switch combined with a two-port vacuum control valve, a three-position blower speed control switch, a function control lever, a temperature control lever, an illumination bulb and, if so equipped, a jewel-type bulb with accessory switch for heated rear window or defogger (Fig. 2).

The functional control lever actuates:

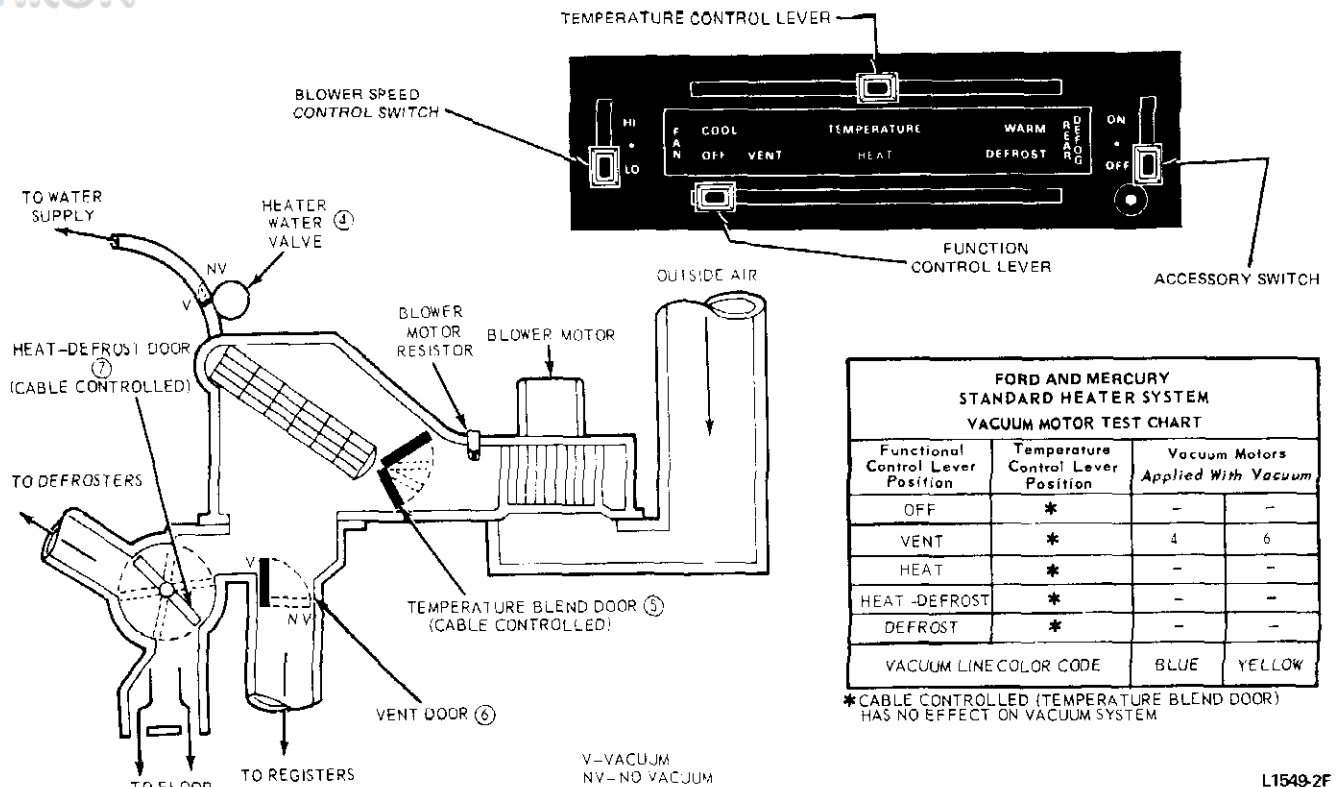
1. The blower system off-on switch, which is connected in series with the three-position blower speed control switch (Fig. 2).
2. The vacuum control valve which connects vacuum to the vent door (6) motor and the water valve (4) motor.
3. The cable that controls the heat/defrost (7) door (Fig. 1).

The temperature control lever actuates the cable that controls the temperature blend (5) door (Fig. 1).

TEMPERATURE CONTROL LEVER OPERATION

Setting the temperature control lever at COOL position (Fig. 1) causes the (5) door to block off passage of the air through and direct it around the heater core into the plenum chamber (unheated). Moving the lever to WARM position causes the (5) door to direct all the air through the heater core and into the plenum chamber (heated). At various positions between COOL and WARM, part of the air goes through the core to be heated and part by-passes the core and blends with the heated air as it passes into the plenum chamber. Thus the temperature of the heated air can be regulated as required.

After the air enters the plenum chamber, its discharge flow is controlled by the function control lever.



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FIG. 1 Control Setting Schematic and Vacuum Application Chart

FUNCTION CONTROL LEVER OPERATION

Discharge Air Flow

Setting the function control lever (Fig. 1) to OFF position closes the (cable controlled) heat/defrost (7) door to shut off passage of air to the floor and defroster outlets, and also closes the power vent (6) door (no vacuum) to prevent air passage through the registers. Thus the flow of outside air from the heater core is closed off or blocked in the plenum chamber.

In VENT position: the power vent (6) door is open to the registers (vacuum); the water valve (4) is closed to water flow through the heater core (vacuum); and the heat/defrost (7) door is opened **slightly** by the cable. Most of the air discharges through the registers with a small bleed to the floor and defrosters.

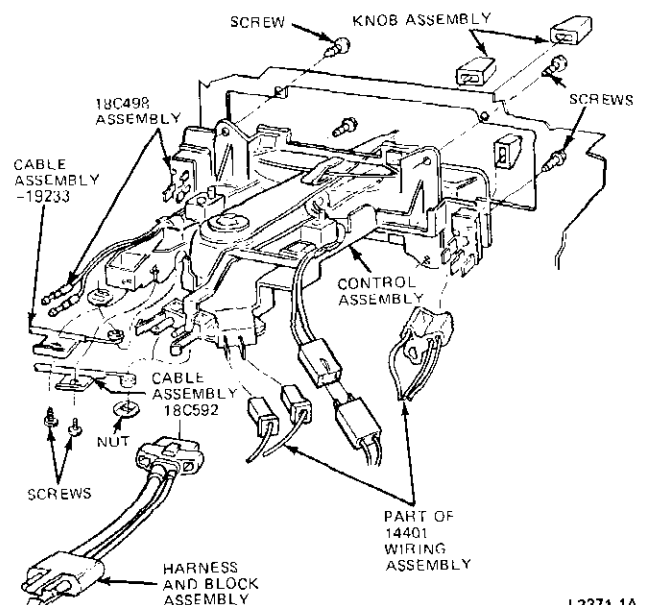
In all other positions of the function control lever (OFF, HEAT or DEFROST), the (6) door is closed (no vacuum) preventing passage of air to the registers; and the (4) valve is open (no vacuum) allowing flow of water through the heater core.

Moving the lever to HEAT position closes the power vent (6) door (no vacuum) and opens the heat/defrost (7) door to full heat position. All the air (except a small bleed to the defrosters) now discharges through the floor outlets.

Moving the functional control lever between HEAT and DEFROST positions provides modulated control from minimum to maximum defrost, as required.

Blower Operation

The function control lever controls the blower system off-on switch (Fig. 2) which connects battery current to



L2371-1A

FIG. 2 Heater and Defroster

the blower through the speed control switch and resistor assembly (mounted on the front surface of the heater case).

In the OFF position, the function control lever opens the system off-on switch to stop current flow to the three-position blower speed control switch (blower stops). As soon as the lever is moved from OFF position to the right (one detent position), it closes the off-on switch to bring current to the blower speed control switch whose sole function is to regulate blower speed through the resistor. From this point on through VENT, HEAT and DEFROST positions, the blower is always running in one of the three speeds as determined by blower speed control switch setting.

POWER VENT FEATURE

The two rectangular registers in the right and left ends of the instrument panel can be pivoted up or down,

and the vertical vanes moved from right to left for air deflection (Fig. 3). The registers are closed by moving the vanes inboard. The Mercury **left** register can be pivoted from side to side and the horizontal vanes can be moved up and down for air deflection. The registers are closed by moving the vanes upward.

Fresh air power ventilation can be obtained by setting the **temperature control** lever to COOL and the **function control** lever to VENT position. For normal driving conditions, leave the blower speed control switch at LO (Fig. 2). For city traffic or slow driving, move the switch to medium or HI.

TESTING

VACUUM CONTROL SYSTEM OPERATION

The test chart in Fig. 1 will determine which vacuum motors should be functioning with applied vacuum during the various function control lever positions. The temperature control lever controls the temperature blend (5) door and has no connection with the vacuum system. Check for proper operation by following the chart and testing the system as follows:

1. Connect a vacuum gauge in the vacuum supply (black) line between the check valve and the vacuum selector valve.
2. Move the function control lever to the first position listed on the test chart (OFF) in Fig. 1.
3. Start the engine and let it run until a good vacuum reading shows on the gauge. Turn the key quickly to the ACCESSORY position and observe the gauge to see if vacuum is maintained or lost. The first control position listed on the chart (OFF, Fig. 1) indicates that no vacuum should be applied to either of the motors. Therefore, if the gauge shows a vacuum loss, there is a leak in the vacuum supply line or at the check valve. If the vacuum reading is maintained, the system is OK up to the vacuum control valve. To isolate the problem, proceed to next listed control position.
4. For the second position on the chart (Fig. 1), move the functional control lever to VENT. Start the

engine again, turn the key quickly to the ACCESSORY position, and watch the gauge. The second position in the chart on Fig. 1 (VENT) indicates that vacuum should be applied to the motor at the heater water valve (4) and at the vent (6) door. If the gauge indicates a vacuum loss there is a leak at one or both of the motors or in the lines (yellow or blue) between the vacuum control valve and motor. Make the necessary repairs or replacements to correct the vacuum leak. If the vacuum reading is maintained, proceed with Step 5 which follows.

5. Check the motor or door that could be causing the complaint. For example: No air comes out of the registers when the function control lever is in VENT position. Reference to the schematic in Fig. 1 would indicate that the No. 6 door is not opening to the registers.

Disconnect the yellow vacuum line at the No. 6 door vacuum motor and connect it to a vacuum gauge. Again, check the vacuum reading (lever at VENT) by starting the engine, building up a vacuum, and quickly turning the key to ACCESSORY position. A zero vacuum reading indicates that the line to the motor is plugged or kinked. If vacuum is indicated, either the door is restricted or the motor should be replaced.

ADJUSTMENTS

FUNCTION CONTROL CABLE

1. Hold the control lever in OFF position (Fig. 2) to make sure that it does not move during cable adjustment.
2. At the plenum chamber (No. 7 door), loosen the cable flag-to-bracket mounting screw in the slot, and slide the cable flag in the bracket groove until the heat-defrost (7) door is in the fully closed position (crank arm all the way to the right). Leave a 1/8-inch clearance between the function control lever and the end of the slot in the control.
3. Lock the adjustment into place by tightening the mounting screw.

TEMPERATURE CONTROL CABLE

1. Move the temperature control lever to the WARM position (Fig. 2), but leave a 1/8-inch clearance between the lever and the right end of the slot in the control. This clearance is necessary to insure full heat position.
2. At the heater case (No. 5 door), loosen the cable flag-to-mounting bracket screw in the slot, and slide the cable flag in the bracket groove until the (5) door crank arm is in full left position. Be sure that this adjustment is made with the temperature lever in full heat position, as described in Step 1.
3. Lock the adjustment into place by tightening the mounting screw.

REMOVAL AND INSTALLATION CONTROL ASSEMBLY

1. Disconnect the battery ground cable.
2. Remove the knobs from the blower speed control, function control and temperature control levers. If so equipped, remove the knob from the accessory switch control lever.
3. Remove the two mounting screws on the control panel applique.
4. Disconnect the two control cables from their respective levers at the rear of the control (Fig. 2).
5. Remove the four control head mounting nuts from the front of the control assembly.
6. Slide the control assembly forward out of the engine side of the instrument panel and carefully lower it from the instrument panel.
7. Disconnect the electrical connectors from the blower off-on switch, the speed control switch, the illumination bulb and, if so equipped, the jewel-type bulb and accessory switch (Fig. 2).
8. Disconnect the vacuum harness from the vacuum control valve. The control assembly can now be removed.
9. When installing the assembly, adjust the two control cables as described under Adjustments.

CONTROL SWITCHES AND VACUUM VALVE

1. Remove the control assembly from the instrument panel as described in the foregoing procedure.
2. To remove either the speed control switch or the accessory switch, disassemble the switch mounting bracket from the control assembly (1 screw, Fig. 2).
3. To remove the off-on switch and vacuum control valve assembly remove the two mounting bracket screws.

DEFROSTER NOZZLES

The defroster nozzles are accessible by removing the instrument panel pad. To remove the left nozzle, it is also necessary to loosen the Y-brace forward of the instrument cluster. Remove two defroster-to-panel mounting screws and one defroster-to-defroster duct attaching screw to remove each nozzle. Separate each air duct from the defroster nozzles and remove the nozzles upward through the pad opening (Fig. 4).

PLENUM CHAMBER

It is necessary to remove the lower finish panel from the instrument panel in order to remove the plenum chamber from the vehicle. Remove the defroster nozzles (Fig. 4) and disconnect the register center air duct assembly (Fig. 3). Remove the mounting stud nuts from the engine side of the dash panel (Fig. 4) and remove the plenum chamber from the passenger side of the dash panel.

POWER VENT AIR DUCTS

To remove the air ducts, first remove the instrument panel pad (Group 45) and the lower finish panel from the instrument panel. Remove the attaching screws and remove the ducts as shown in Fig. 3.

REGISTER LOUVER BARRELS

Pry on the end pivot with a thin blade to separate the pivot from the pivot hole and pull the barrel assembly out of the instrument panel as shown in Fig. 5.

The barrels can be installed in one way only because of the size of the two pivots and retaining holes.

HEATER CORE

The heater core is located in the left side of the case which is mounted on the engine side of the dash panel. To remove, drain the cooling system and disconnect the heater hoses from the heater core. Then, remove the core cover and gasket, and slide the heater core and mounting seals out of the case (Fig. 6).

BLOWER MOTOR AND WHEEL ASSEMBLY

The heater case assembly is located on the engine side of the dash panel to the right of the centerline. The blower motor and wheel is located in the right side of the case to the right of the hood hinge under the right front fender. It is necessary to cut out an access opening in the right front fender apron to service the blower motor and wheel assembly.

1. Disconnect the blower motor lead wire (orange) at the rear of the hood right hinge (Fig. 7).
2. Remove the ground wire (black) mounting screw from the upper cowl. Pull both wires out of the clip at the resistor.
3. Remove the right front tire and wheel assembly.
4. Locate the access opening area shown in View A, Fig. 8 and clean this area of the fender apron.
5. Drill a 1-inch hole tangent to the centerline of the bead using the drill dimple provided in the apron 1/2 inch from the centerline of the bead (View B, Fig. 8). **Take precautions necessary to prevent damaging the heater case by drill push-through or over-travel.**
6. Cut out the access opening along the centerline of the bead with aircraft snips. Smooth any rough metal edges. **To avoid damaging the heater case, do not use a sabre saw or similar tool.**
7. Remove the four blower motor mounting plate screws (Fig. 7) and disconnect the cooler tube from the motor. Carefully move the motor and wheel assembly forward out of the heater case through the access hole (Fig. 8). If only the motor is being serviced, remove the motor from the wheel and install the replacement unit to the wheel.
8. Procure a cover plate, Ford Part No. 18A475 or equivalent. Position the cover plate over the access opening and drill eight 1/8-inch holes in the apron. Use the eight holes in the cover as a template (View C, Fig. 8). To protect the heater case, place a metal shield between the fender apron and the case while drilling.
9. After installing the motor cooling tube, apply rope sealer to the motor mounting plate (Fig. 7) and install the blower motor and wheel as an assembly.

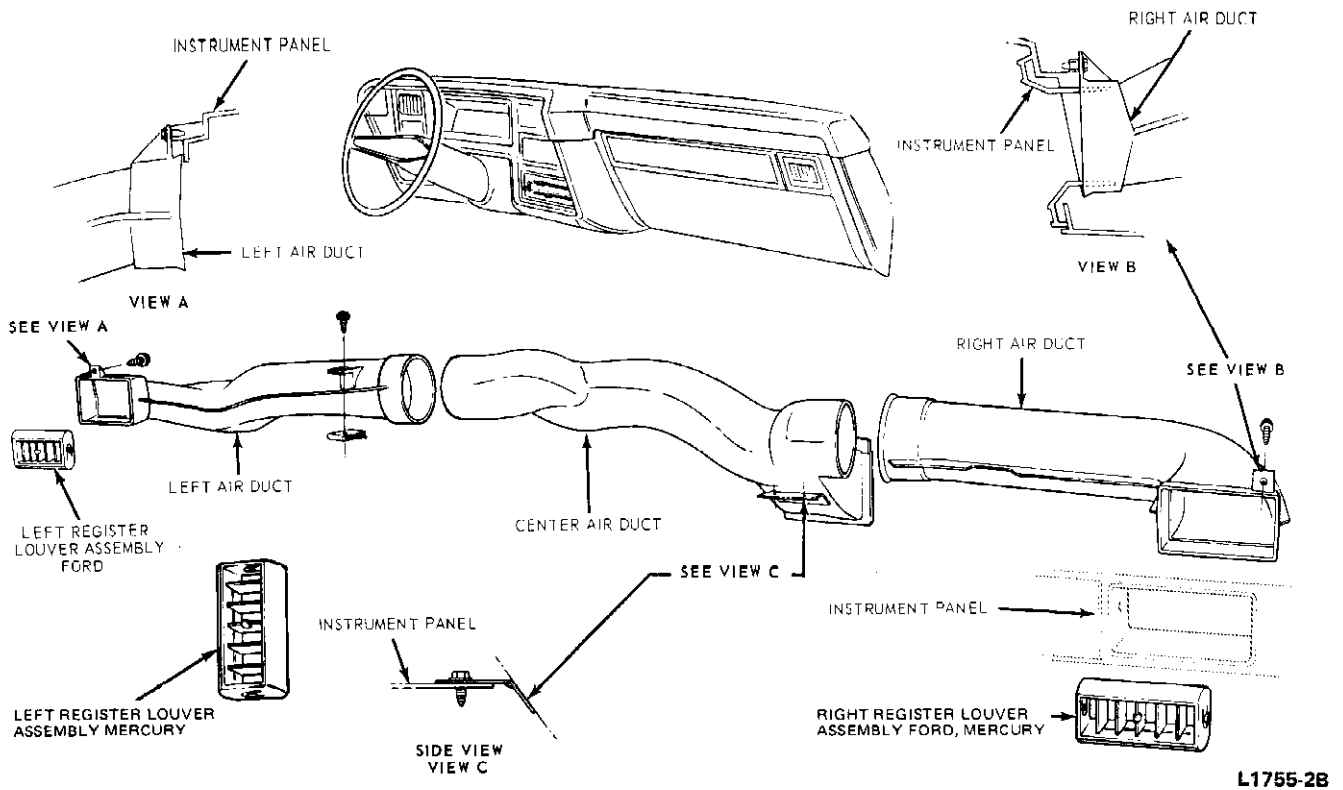


FIG. 3 Power Ventilation System

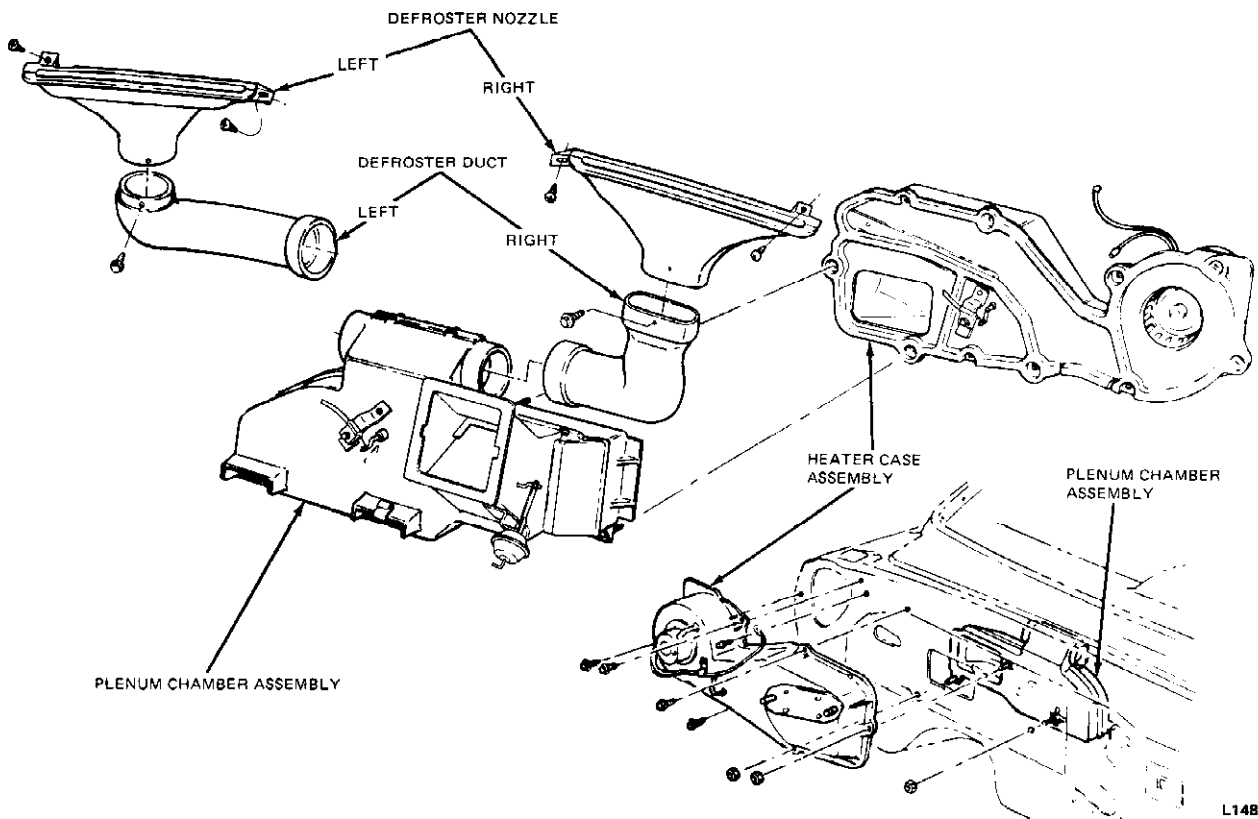
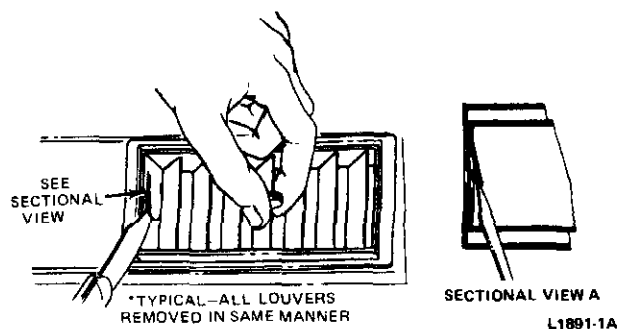
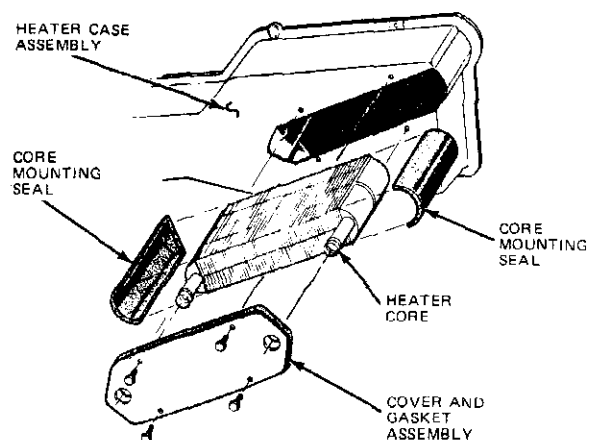


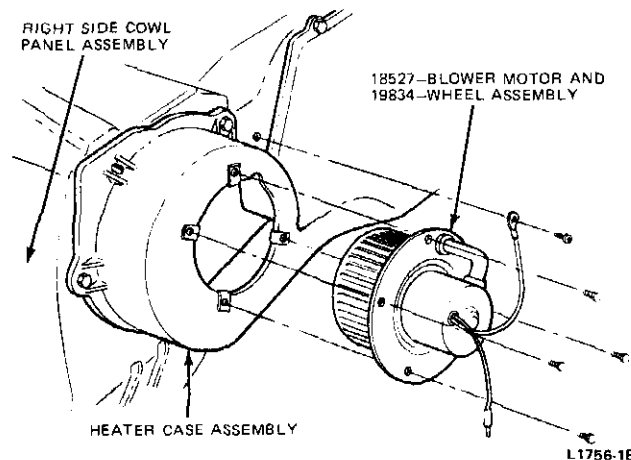
FIG. 4 Heater System—Ford

**FIG. 5 Register Louver Barrel**

10. Route the lead wire and the ground wire through the clip on the resistor; connect the lead wire (orange) to the harness and the ground wire (black) to the cowl (1 screw).
11. Apply rope sealer around the edge of the access cover and position the cover on the fender apron. Secure the cover to the apron with eight self-tapping, round washer head (No. 8-15 x 1/2) screws (View D and Section A-A, Fig. 8).
12. Install the wheel and tire assembly.

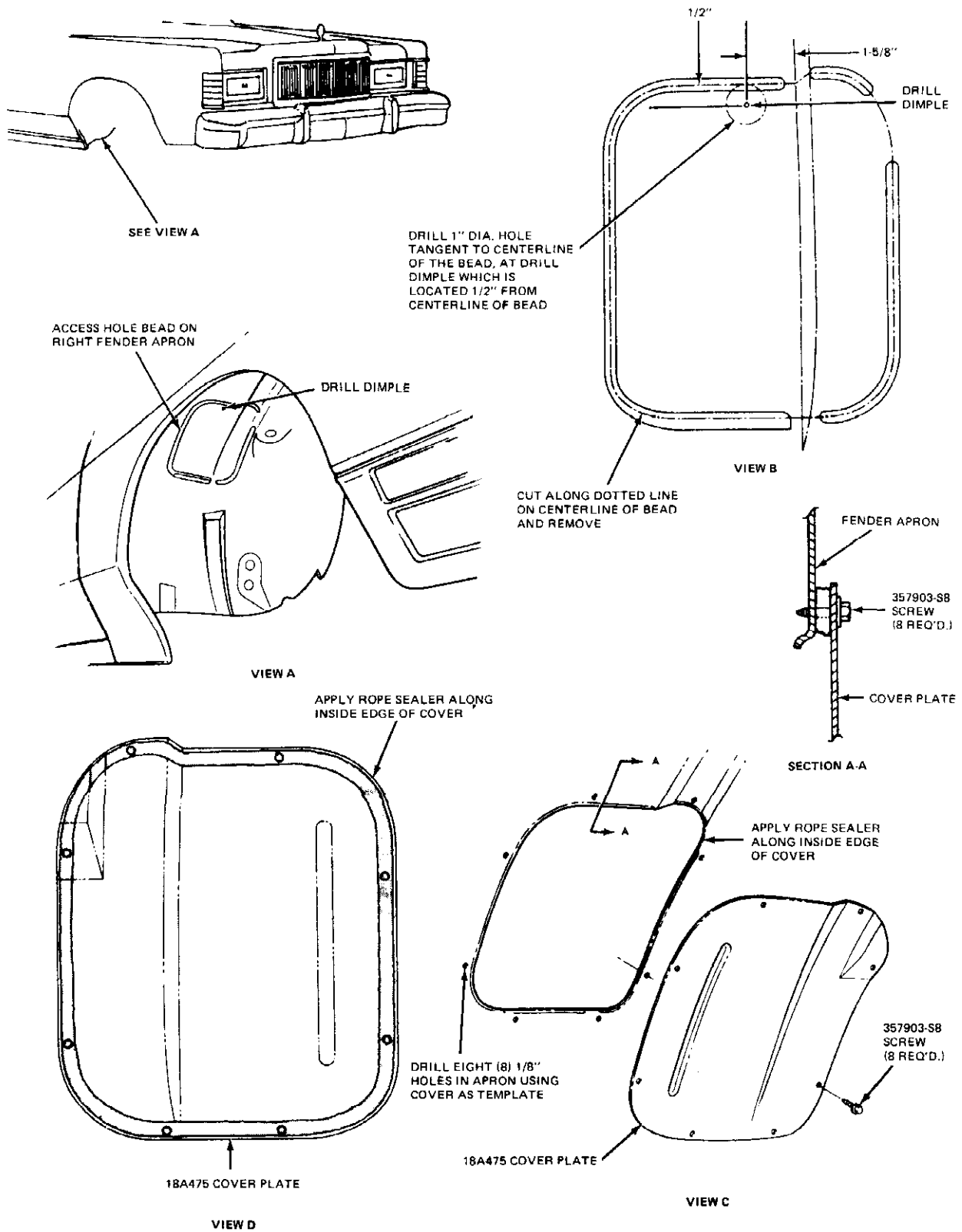


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FIG. 6 Heater Core Removal

L1756-1B

FIG. 7 Blower Motor and Wheel Assembly Installation



L1757-2C

FIG. 8 Blower Access Hole in Fender



DETROIT
IRON

36-11-8

Ford, and Mercury Heating System

36-11-8

SPECIFICATIONS

**Average Blower Motor Current Draw Current at
12.8 Volts**

**Low —3 amps. Medium —5.5 amps. High —9
amps. Circuit Protection—15 amp. Fuse.**

Cougar, LTD II and Thunderbird Heating System

PART
36-12

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Defroster Nozzle	12-3		

CL2337-2B

DESCRIPTION AND OPERATION

For an explanation of the control door code numbers used in this Part, refer to General Information in Part 36-10.

AIR FLOW

The heater assembly is a blend air system, receiving outside air through an opening in the right vent duct, which is connected directly to an opening in the upper cowl. Outside air is drawn into the system from the cowl through the right vent duct into the blower housing, forced through and/or around the heater core, mixed, and then discharged through outlets in the discharge air duct to the floor area or through the defroster outlets (Fig. 1).

CONTROL ASSEMBLY

The control assembly is located in the instrument panel to the left of the steering column. The control assembly contains a system off-on switch, a three-position blower switch, a temperature control lever, a function control lever and an illumination bulb (Fig. 2). The function control lever operates both the system off-on switch and a cable connected to the heat-defrost (7) door (Fig. 1). The system control integrated off-on switch is connected in series with the three-position blower switch and a resistor assembly located in the heater case assembly. The temperature control lever is connected by a cable to the temperature blend (5) door (Fig. 1).

TEMPERATURE CONTROL LEVER OPERATION

The air temperature is controlled by the position of the temperature blend door located between the blower and heater core in the heater case. As the temperature control lever (Fig. 2) is moved from COOL to WARM, a control cable moves the blend (5) door (Fig. 1) from minimum heat to full heat position to modulate the air flow through and/or around the heater core. The air through the core and the air through the bypass chamber is then mixed as it enters the plenum chamber.

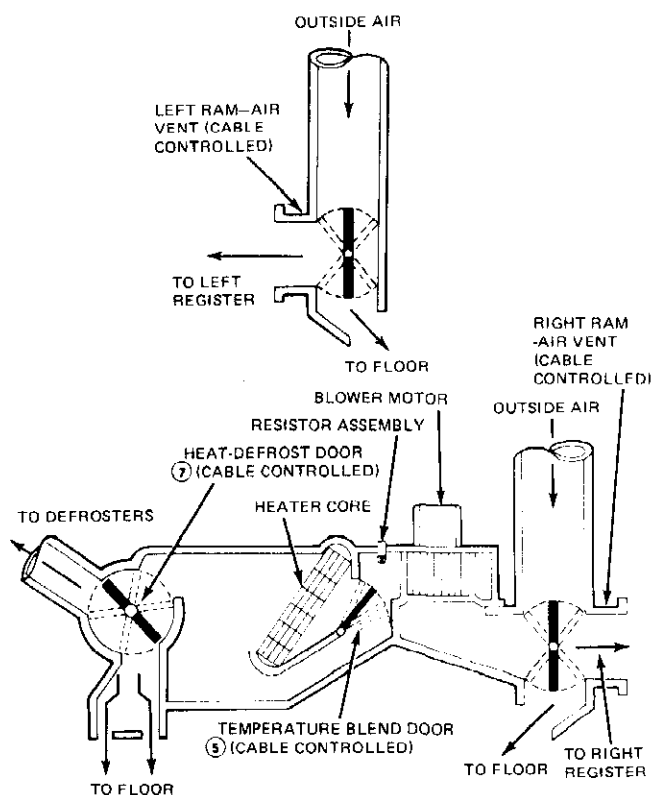
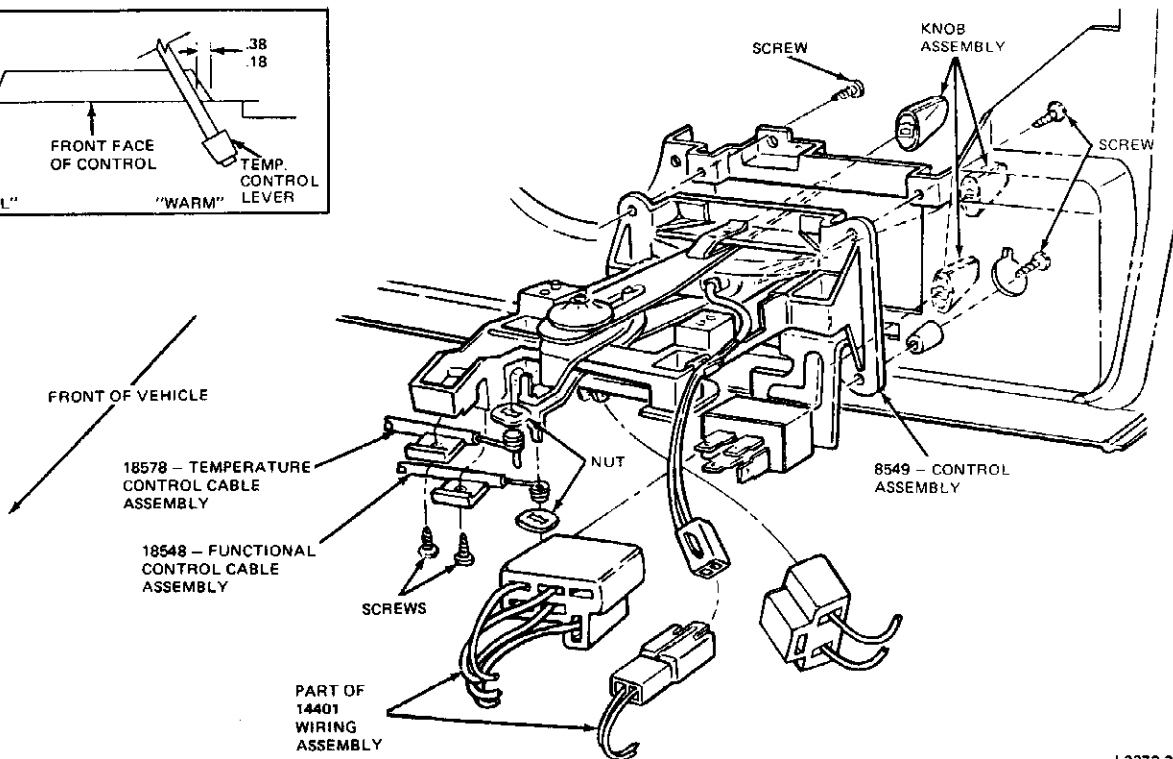
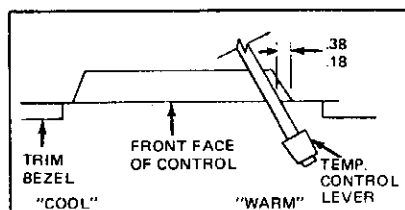


FIG. 1 Heater and Vent System Schematic

FUNCTION CONTROL LEVER OPERATION

In OFF position, the function control lever opens the circuit to the blower switch (blower stops) and closes the heat-defrost (7) door restricting all air flow through the plenum (Fig. 1). As soon as the lever is moved from OFF position to the right about 1/2-inch, it closes the off-on switch to bring current to the blower switch whose sole function is to regulate blower speed through the resistor. From this point on through HEAT and DEFROST positions, the blower is always running in one of the three speeds as determined by blower switch setting.



L2372-2B

FIG. 2 Heater Control Assembly

In HEAT position, the lever moves the (7) door to discharge the air through the air distribution duct to the floor area (Fig. 1). In DEFROST position, the air is discharged to the windshield through the defroster

nozzle. Air flow can also be modulated in direct proportion to the control setting between HEAT and DEFROST positions.

ADJUSTMENTS

FUNCTION CONTROL (OFF-FLOOR-DEFROST CABLE)

1. Place the lever in the OFF position.
2. Loosen the screw that retains the cable to the heater case (Fig. 3, View A) and rotate the door crank arm to the full counterclockwise position.
3. Move the control lever back far enough to provide 3/16-inch clearance between the lever and the edge of the slot, making sure that the (5) door does not move.
4. With the door crank arm and the lever in these positions, tighten cable to the heater retaining screw to 20 in-lbs torque.

TEMPERATURE CONTROL CABLE

1. Move the temperature control lever to the WARM end of the slot.
2. Loosen the screw that retains the cable to the heater case, and rotate the (5) door crank arm to the full clockwise position (Fig. 3).
3. Move the control lever back far enough to provide 3/16-inch clearance between the lever and the edge of the slot, making sure that the (5) door does not move.
4. Tighten the cable retaining screw to 20 in-lbs torque.

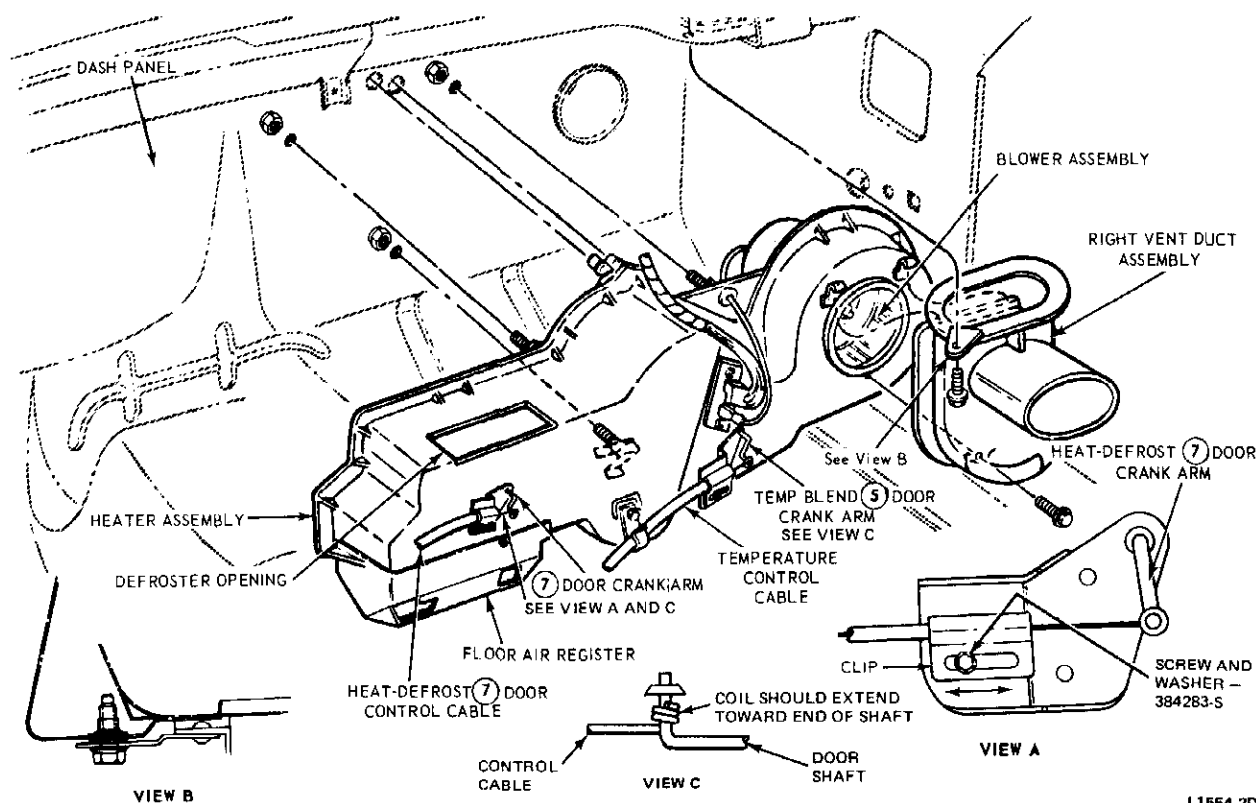


FIG. 3 Heater Assembly

REMOVAL AND INSTALLATION

HEATER CONTROL ASSEMBLY

1. Disconnect the battery ground cable.
2. Remove the knobs from the function, temperature and blower switch control levers.
3. Disconnect the cable end at each control lever (one nut for each lever), and separate the cables from the control head (one screw and retaining clip for each cable), as shown in Fig. 2.
4. Remove the four control assembly-to-instrument panel retaining screws, and move the control back toward the engine side of the instrument panel.
5. Disconnect the electrical wiring connectors from the blower switch, the system off-on switch, the accessory switch if so equipped, and the illumination bulb. Then, lower the control assembly and remove it from under the instrument panel.
6. When installing the assembly, be sure that the wires and cables are properly connected. After installation, adjust the cables as outlined in the Adjustment section.

DEFROSTER NOZZLE

1. Remove the instrument panel upper finish panel.
2. Remove the two screws that hold the defroster left outlet (Fig. 4) to the cowl inner panel.
3. Remove the clip that holds the defroster nozzle to the heater plenum (Fig. 4).
4. Remove the two screws that hold the defroster right outlet to the cowl inner panel.

5. Carefully remove the nozzle assembly upward through the opening in the instrument panel.

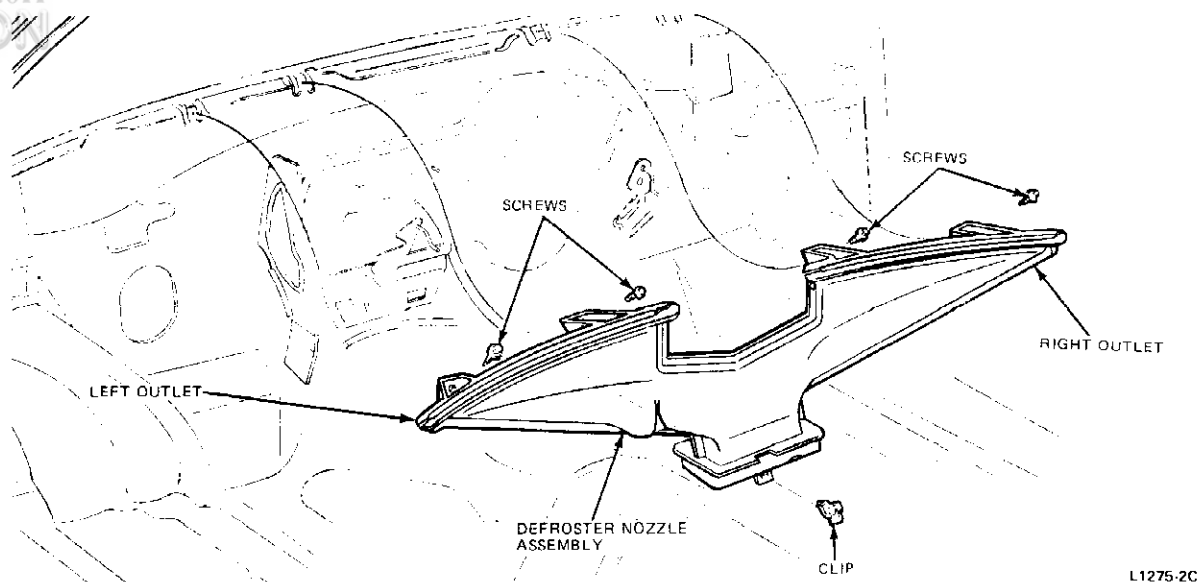
HEATER ASSEMBLY

Removal

1. Drain the cooling system.
2. Disconnect both heater hoses at the dash. Position or plug the hoses so that the coolant will not drain out.
3. Remove the nuts retaining the heater assembly to the dash.
4. Disconnect the control cables at the No. (5) and (7) door crank arms (Fig. 3).
5. Disconnect the wires from the resistor, and disconnect the blower motor wires.
6. Remove the glove box.
7. Remove the two bolts and nuts retaining the right air duct control to the instrument panel. Remove the screws retaining the right air duct and remove the duct assembly.
8. Remove the heater assembly to a bench.

Installation

1. Position the heater assembly in the vehicle and install the retaining nuts.
2. Connect the heater hoses.
3. Connect the motor and resistor leads.

**FIG. 4 Defroster Nozzle**

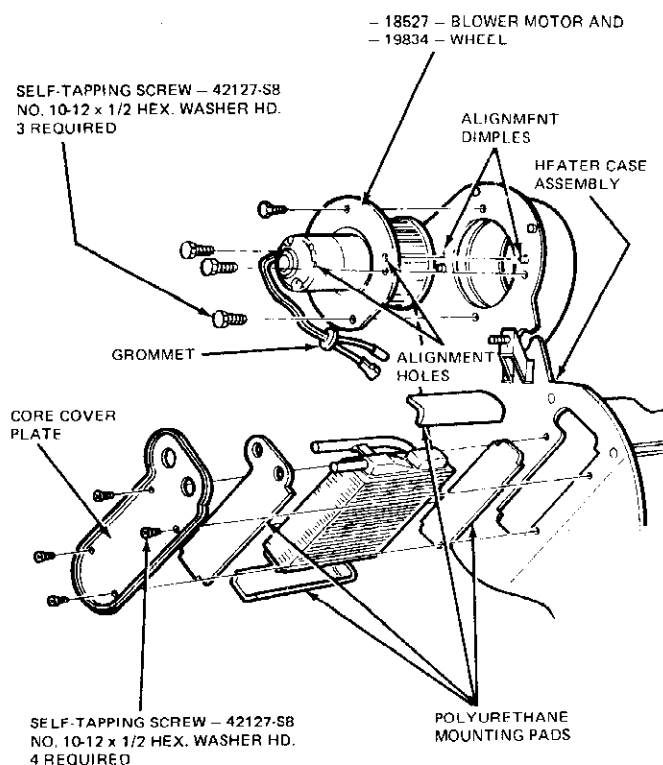
4. Connect the temperature and function control cables to the No. (5) and (7) door crank arms respectively (Fig. 3). Adjust the cables as outlined in the Adjustment section.
5. Install the right air duct, and install the control cable to the instrument panel.
6. Install the glove box, and fill the cooling system.

HEATER CORE

1. Remove the heater assembly from the vehicle as outlined in the preceding procedure and place it on a bench.
2. Remove the heater core cover and pad and slide the core out of the case (Fig. 5).
3. If the core is being replaced, transfer the polyurethane pads from the old to the new core when installing the core in the case.

HEATER BLOWER MOTOR AND WHEEL ASSEMBLY

1. Remove the heater assembly from the vehicle, as outlined in this section, and place it on a bench.
2. Remove the four mounting screws and remove the blower motor and wheel assembly from the blower scroll (Fig. 5).
3. When installing the blower motor and wheel assembly, match the alignment holes as shown in Fig. 5. Install the motor ground screw to the mounting plate.

**FIG. 5 Heater Blower Motor and Core Assemblies**

SPECIFICATIONS

HEATING SYSTEM SPECIFICATIONS	
Blower Motor Current Draw at 12.8 Volts 7 to 9 Amps on High Blower	Control Illumination
Protection Device	LTD II, Cougar and Thunderbird One 1 CP No. 161 Bulb
LTD II, Cougar and Thunderbird 20 Amp Fuse in Fuse Panel	

CL1556-2G

Fairmont and Zephyr Heating System

**PART
36-13**

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CL2576-2A

DESCRIPTION AND OPERATION

HIGH/LOW VENTILATION SYSTEM (FIG. 1)

Two openings in the upper cowl force or ram the outside air, from the forward motion of the vehicle, into the top of the left and right ventilator assemblies (Fig. 2). The amount of air flow may be increased by opening the side ventilation louvers (if so equipped) or by slightly opening a side window of the vehicle.

LEFT VENTILATION

The left ventilator assembly, register duct and register assembly are independent from the heater system. Together, they provide outside air to the driver's side of the passenger compartment from the left register assembly in the instrument panel (high), or to the floor (low) from the lower opening in the ventilator assembly.

Left Ventilation Control

Controlled by a non-adjustable control cable assembly mounted on the lower edge of the instrument panel, the left ventilator control door can be infinitely positioned from (Fig. 3):

1. Closed to outside air.
2. Proportioned air between left instrument panel register and floor.
3. Maximum air through the left instrument panel register only.

Left Ventilator Assembly

Three mounting stud nuts secure the left ventilator assembly (Fig. 9), with its polyurethane foam gasket, against an opening in the left upper cowl. Another

polyurethane foam gasket on the register outlet of the left ventilator assembly prevents air leakage at the left register duct and limits the amount of air leakage behind the instrument panel.

Left Register Duct

The left register duct provides a path for the outside air to flow between the left ventilator assembly and the instrument panel register (Fig. 9). Its mounting bracket is secured to the top of the instrument panel with one retaining screw. The instrument panel pad must be removed for access to the mounting bracket retaining screw (Fig. 14).

Left Register Assembly

Upper and lower retaining tabs vertically lock the left register assembly into the register housing of the instrument trim panel (Fig. 13). The retaining tabs allow the register assembly to swivel and direct the outside ram air from side to side. The louvers of the register assembly permit closing of the register or controlling the upward and downward air distribution.

RIGHT VENTILATION

Outside air ventilation for the right side of the passenger compartment is controlled in the same manner as for the left side (Fig. 3). The right side, however, also provides outside air for the heater case assembly when the right ventilation control lever is pushed IN to the CLOSED position. **NOTE: THE RIGHT VENTILATOR CONTROL DOOR MUST BE CLOSED FOR MAXIMUM HEATER PERFORMANCE.**

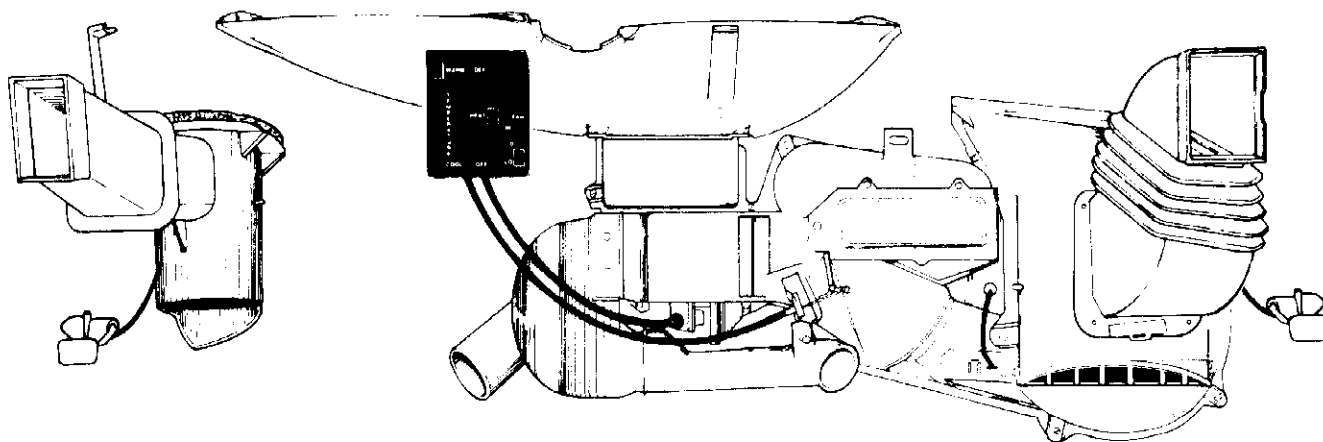


FIG. 1 Heater and High/Low Ventilation System

Right Outside Air Inlet Duct

The right outside air inlet duct (Fig. 29) is secured to the top of the blower housing portion of the heater case assembly with two retaining screws. A polyurethane foam gasket, on top of the duct opening, seals the outside air inlet opening in the right upper cowl. The heater case assembly must be removed for access to the two outside air inlet duct-to-heater case retaining screws.

Right Ventilator Assembly

The right ventilator assembly (Fig. 11) is removable and is secured to the heater case assembly and outside air inlet duct with four retaining screws. It must be removed from the vehicle, to provide clearance for removal and installation of the heater case assembly.

Right Register Duct

The right register duct provides a path for the outside air to flow between the right ventilator assembly and the instrument panel register. Its mounting bracket is secured to the lower edge of the instrument panel with one retaining screw (Fig. 11). The mounting bracket retaining screw must be removed and the register duct pulled back toward the instrument panel to provide clearance for removal and installation of the right ventilator assembly.

A polyurethane foam gasket on the inlet surface of the right register duct provides a seal between the register duct and the right ventilator assembly to prevent air leakage behind the instrument panel.

Right Register Assembly

Upper and lower retaining tabs vertically lock the right register assembly in the register housing of the right instrument panel trim applique (Fig. 13). The retaining tabs allow the register assembly to swivel and direct the outside air from side to side. The louvers of the register assembly permit closing of the register or controlling the upward and downward air distribution.

HEATER SYSTEM

AIR FLOW

The heater assembly is a blend-air system receiving outside air through an opening in the top of the right ventilator assembly (Fig. 4), when the ventilator control door is in the closed position.

NOTE: The right ventilator control door must be closed for maximum heater performance.

A blower motor and wheel assembly draws outside air into the system from an opening in the upper cowl, then through the right ventilator assembly and into the blower wheel housing. From there the blower wheel forces the air through and/or around the heater core. The outside air and heated air then blend together prior to distribution out of the heater floor distribution outlets, to the floor area, or out of the defroster outlets, onto the windshield.

TEMPERATURE CONTROL

A Temperature Blend Door (Fig. 5), as its name implies, directs the outside air to flow through the heater core for heating, or to by-pass the heater core for cooling the vehicle. It is controlled between COOL and

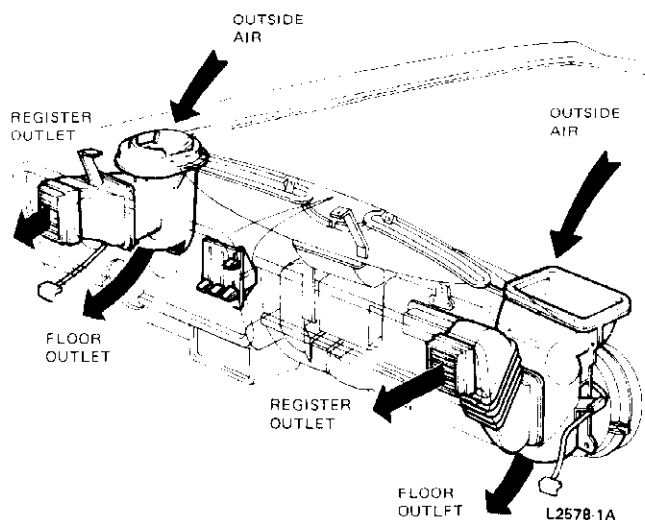


FIG. 2 Ventilation System Air Distribution

WARM by the Temperature Lever of the Control Assembly, located in the center of the instrument panel.

A cable assembly connects the Temperature Control Lever to the Temperature Blend Door. When the Temperature Control Lever is in the COOL position, the Temperature Blend Door directs the outside air to by-pass the heater core and it remains COOL. When the Temperature Control Lever is in the WARM position, the Temperature Blend Door directs the outside air through the heater core where it is heated.

Positioning the Temperature Lever in any position between COOL and WARM causes the Temperature Blend Door to direct more or less outside air through or around the heater core for whatever proportion of heat or outside air cooling the driver desires.

When the air leaves the area of the heater core and Temperature Blend Door, it blends together as it approaches the Heat-Defrost Door for distribution.

AIR DISTRIBUTION

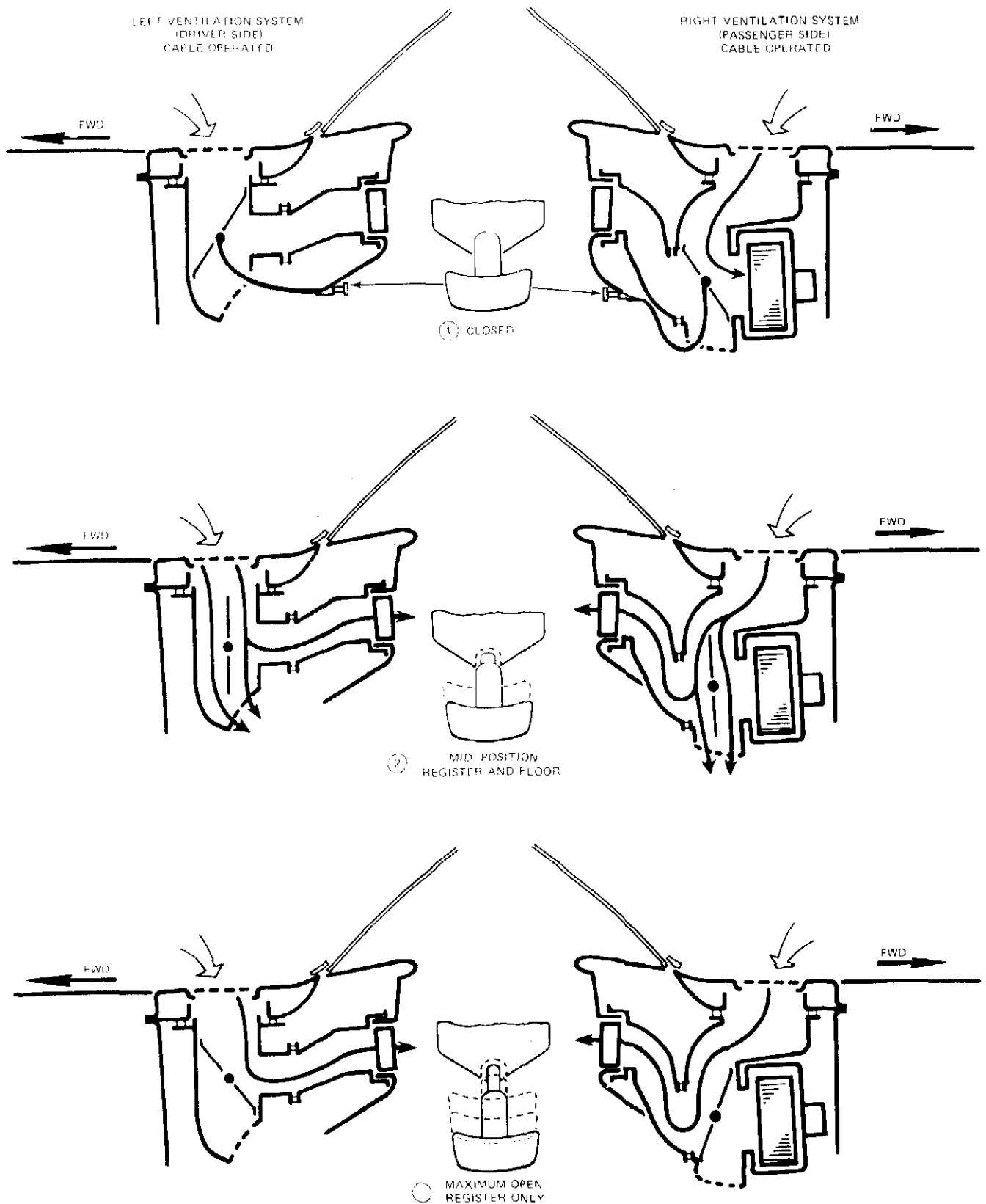
The blended warm and cool outside air is distributed to either the defroster outlets or to the floor distribution outlets by positioning the Heat-Defrost Door (Fig. 5).

The cable assembly connects the Heat-Defrost Door with the Function Control Lever in the Control Assembly. When the Function Control Lever is in the OFF position, the Heat-Defrost Door blocks all passage of air to the distribution outlets.

As the Function Control Lever is moved toward the HEAT position, air flow gradually increases to full air flow from the floor heat distribution outlets. A small amount of air will also be released to the windshield from the defroster outlets.

When the Function Control Lever is moved from HEAT to the DEFROST (DEF) position, the amount of air flow from the floor heat distribution outlets will gradually reduce and the amount of air flow from the defroster outlets will increase.

With the Function Control Lever in DEFROST (DEF), all of the air will be discharged from the defroster outlets onto the windshield.



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FIG. 3 Left and Right High/Low Ventilation Air Flow

BLOWER (FAN) CONTROL

System ON-OFF Switch

Power to the blower motor is provided by a system ON-OFF slide switch, located on the back of the Function Control Lever (Fig. 16). The switch contacts close when the Function Control Lever is moved from OFF to approximately midway between OFF and HEAT. It remains closed throughout the rest of the Function Control Lever travel. The system ON-OFF switch completes the power circuit between the fuse panel and the Blower (fan) Speed Switch, located in the Control Assembly (Fig. 6).

Blower Speed Control

Blower motor speed is controlled by a three position switch (Lo, Medium and HI), identified by the word FAN on the face of the control assembly. Its purpose is to provide a current path through or around the resistor coils of the resistor assembly, until full current flow is available to the blower motor (Fig. 6).

With the switch in the LO position, current flow to the blower motor is restricted by the two resistor coils in the resistor assembly.

When the switch is moved to the center (Medium) position, one of the resistor coils is by-passed out of the circuit and current flow to the blower motor is restricted by only one resistor.

In the HI position, the blower speed switch provides a current path around both resistors and full current (power) is available for the blower motor to operate at full speed.

TESTS

Refer to the Heater System Electrical Wiring Diagram and Continuity Tests (Fig. 6), Heater System Air Flow (Fig. 5) and heater hose routing illustrations (Figs. 26,27 and 28) for additional heater system information.

BLOWER MOTOR

Voltage Test

1. Connect the positive leads (+ red) of the voltmeter to the blower motor connector terminal at the resistor assembly (261A orange w/black stripe), as shown in Fig. 7.
2. Connect the negative lead (- black) of the voltmeter to a good frame ground.
3. Position the Temperature Control Lever in the mid-position for an average air flow around and through the heater core.
4. Position the Function Control Lever in the HEAT position to turn the blower motor ON and to obtain maximum air flow.

5. Turn the ignition switch to the ON position.
6. With a fully charged battery, blower voltage should be within the specified range for each blower switch position as indicated in the blower switch chart of the electrical wiring diagram (Fig. 6).

Current Draw Test

1. Disconnect the blower motor connector (261A orange w/black stripe) from the spade terminal of the resistor assembly (Fig. 7).
2. Connect the positive ammeter lead clip to the male, blower motor spade terminal connector on the resistor assembly.
3. Insert a male spade terminal (-14294-J Faston Tab) into the female spade terminal connector on the blower motor lead (Fig. 6). Connect the negative ammeter lead clip onto end of the male spade terminal.
4. Position the Temperature Control Lever in the mid-position for an average air flow around and through the heater core.
5. Position the Function Control Lever in the HEAT position to turn the blower motor ON and to obtain maximum air flow.
6. Turn the ignition switch to the ON position.
7. With a fully charged battery, the blower motor current (amps.) should be approximately as indicated for each blower speed shown in the blower switch chart of the electrical wiring diagram (Fig. 6).

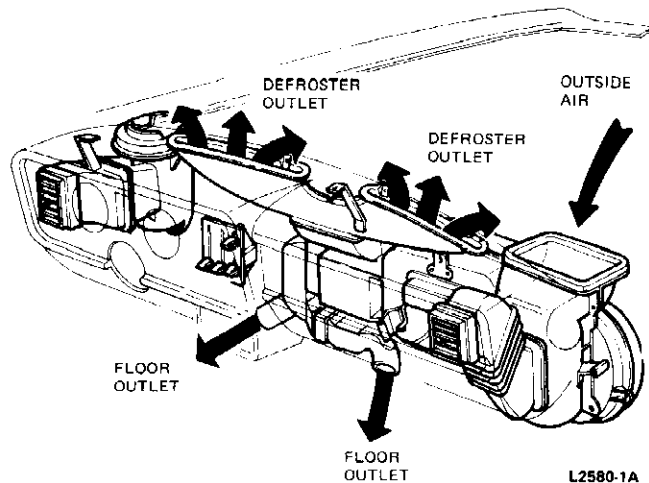
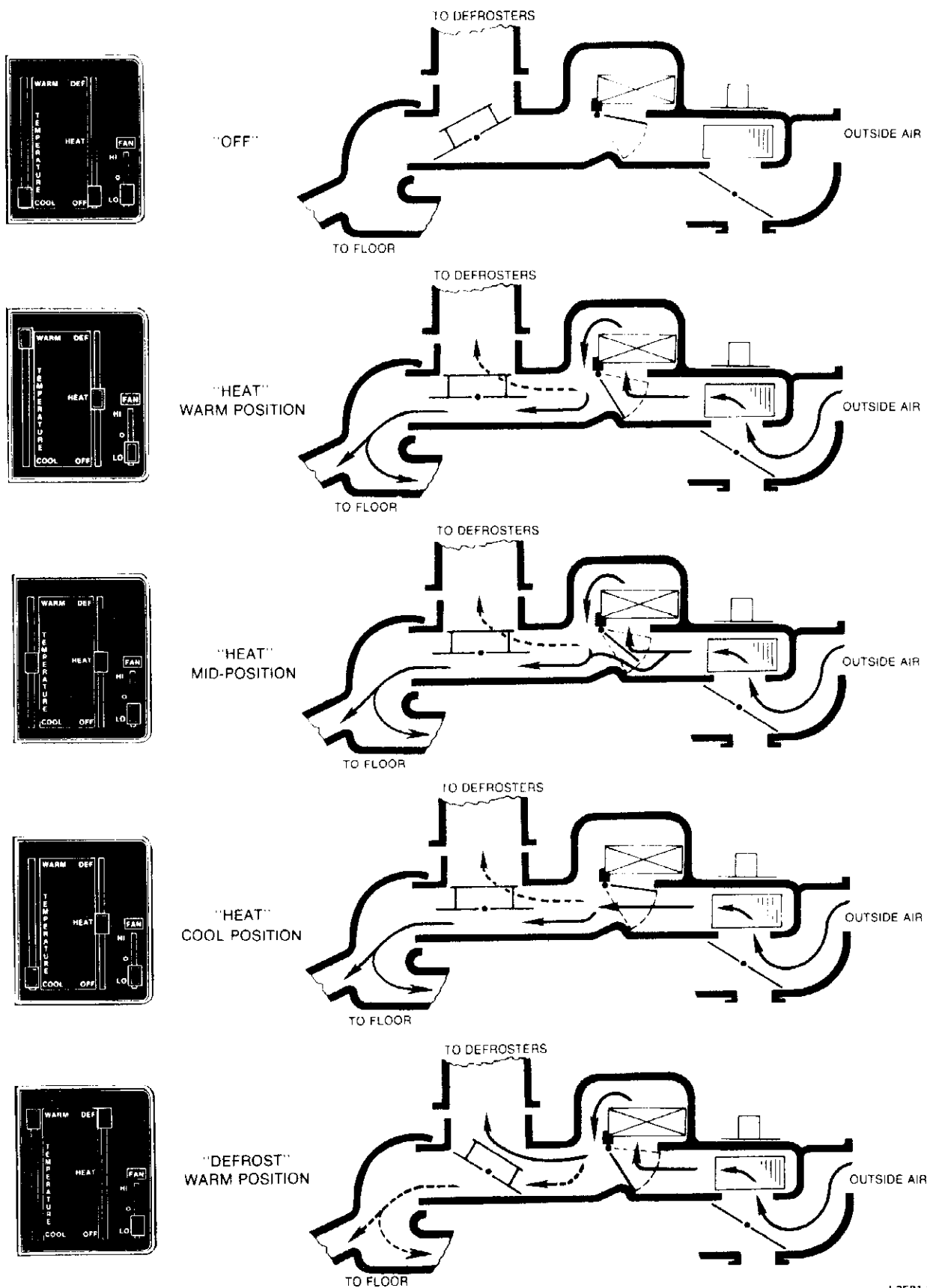
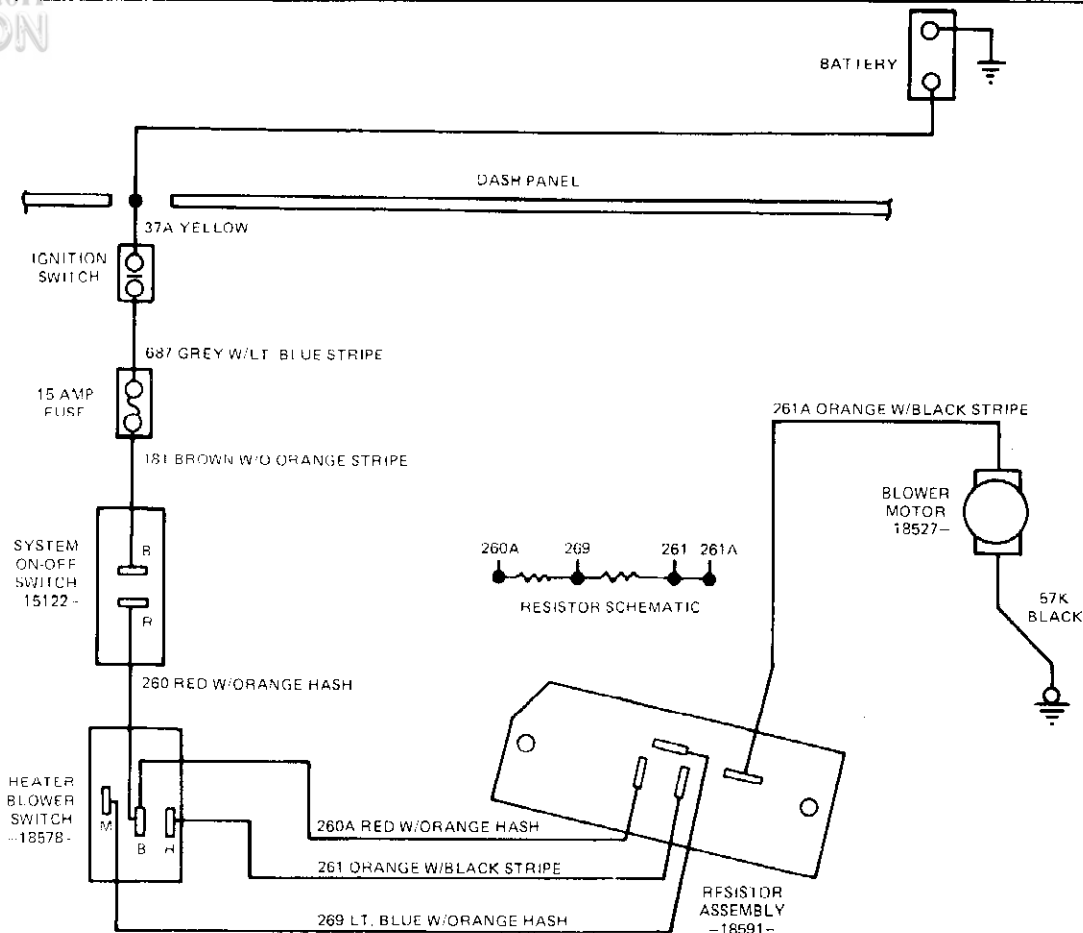


FIG. 4 Heater System Air Distribution



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FIG. 5 Heater System Air Flow

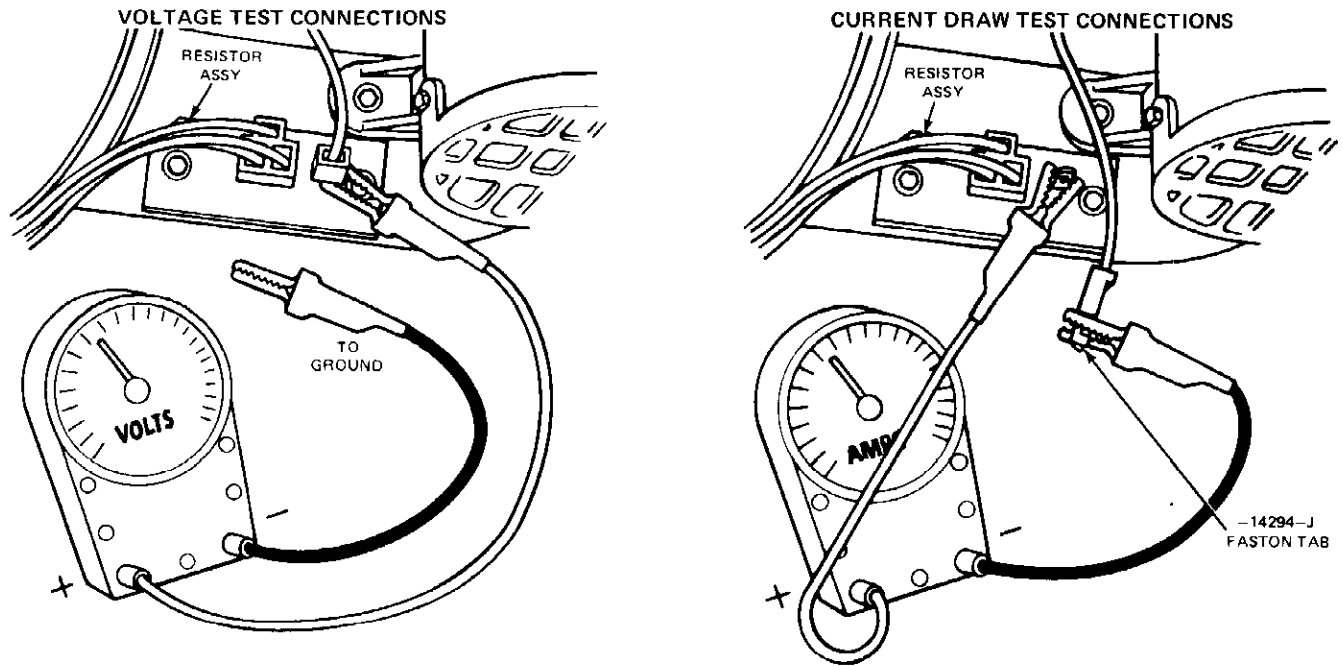


SYSTEM ON-OFF SWITCH --15122--			
SWITCH SCHEMATIC	TERMINAL CONNECTIONS		
	OFF	HEAT	DEFROST
	NONE	B-R	

HEATER BLOWER SWITCH --18578--			
BLOWER SPEED	TERMINAL CONNECTIONS	CURRENT IN CAR (AMPS.)	BLOWER VOLTAGE
LOW	NONE	3.6	4.6
MEDIUM	M-B	5.3	7.4
HIGH	M-B-H	8.5	12.8

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FIG. 6 Heater System Electrical Wiring Diagram and Continuity Test



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FIG. 7 Blower Motor Voltage and Current Draw Test Connections

ADJUSTMENTS

CONTROL CABLES

Function and/or Temperature Control Cables

The function and temperature control cables are self-adjusting with the movement of the respective control levers to the top of the slot(s) (WARM and DEF) in the face of the control assembly. To prevent kinking of the control cable wire, a pre-set adjustment should be made before attempting to perform the self-adjustment operation. The pre-set adjustment may be performed either in the vehicle, with the cable installed or before installation.

CABLE PRE-SET AND SELF-ADJUSTMENT

Before Installation

1. Insert the blade of a small pocket screwdriver into the wire and loop (crank arm end) of the respective function or temperature control cable as shown in Fig. 8.
2. Grip the self-adjusting cable attaching clip with pliers and slide it down the shaft (away from the end loop) approximately one inch.
3. Install the cable assembly. Refer to control assembly and function and/or temperature Control Cable Removal and Installation procedure and Figs. 16 and 17.
4. Move the control lever(s) to the top of the slot (temperature WARM-Function DEF) to position the self-adjusting clip.
5. Check for proper control operation.

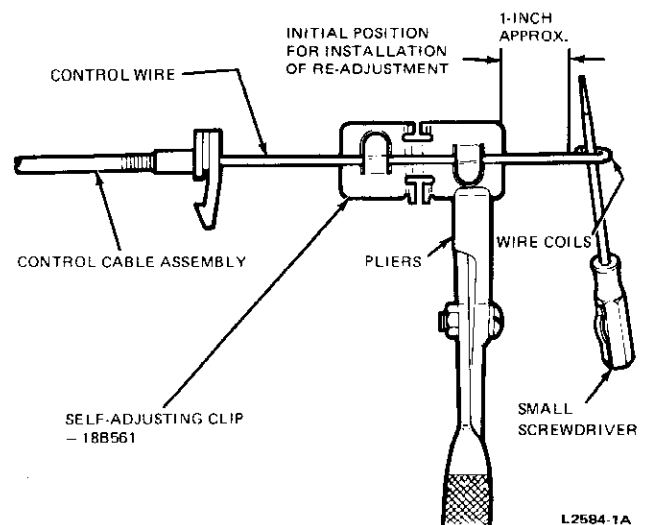


FIG. 8 Control Cable Pre-Set Adjustment

After Installation

1. Move the control lever (temperature or function control) to the COOL (temperature lever) and/or OFF (function lever) position.
2. Hold the crank arm firmly in position, insert the blade of a small pocket screwdriver into the wire loop, as shown in Fig. 8, and pull the cable wire through the self-adjusting clip until there is a space of approximately one inch between the clip and the wire end loop.

3. Move the control lever(s) to the top of the slot (temperature WARM-function DEF) to position the self-adjusting clip.
4. Check for proper control operation.

REMOVAL AND INSTALLATION

LEFT OR RIGHT VENTILATOR CONTROL CABLE ASSEMBLY

Removal

1. Remove the retaining screws (2) securing the ventilator control cable lever assembly to the lower edge at the instrument panel.
2. Remove the push nut from the door crank arm.
3. Remove the control cable housing-to-ventilator bracket retaining screw (1) and remove the control cable assembly from the ventilator assembly.

Installation

1. Align the cable housing mounting tab with the ventilator bracket, install the cable loop on the door crank arm and secure with a new push nut.
2. Align the hole of the cable housing mounting tab with the hole in the ventilator bracket assembly, install the retaining screw (1) and tighten to specification.
3. Position the control cable lever housing onto the lower edge at the instrument panel, aligning the locator tab with the tab slot of the instrument panel.
4. Install the control cable lever housing retaining screws (2) and tighten to specification.
5. Check the ventilator door for proper operation.

LEFT VENTILATOR ASSEMBLY

Removal

1. Remove the retaining screws (2) securing the ventilator control cable lever assembly to the lower edge at the instrument panel (Fig. 9).
2. Remove the retaining stud nuts (3) securing the ventilator assembly to the upper cowl and remove the ventilator assembly.
3. Remove the push nut from the door crank arm.
4. Remove the control cable housing retaining screw (1) and remove the control cable assembly from the ventilator assembly.

Installation

1. Align the cable housing mounting tab, install the cable loop on the door crank arm and secure with a new push nut (Fig. 9).
2. Align the hole of the cable housing mounting tab with the hole in the bracket assembly, install the retaining screw (1) and tighten to specification.
3. Position the ventilator assembly over the opening in the upper cowl and onto the retaining studs (3).
4. Install the retaining stud nuts (3) to secure the ventilator assembly to the upper cowl. Tighten the stud nuts to specification.
5. Position the control cable lever housing onto the lower edge at the instrument panel, aligning the locator tab with the tab slot of the instrument panel.

LEFT AND RIGHT VENTILATOR CONTROL CABLES

The left and right ventilator control cables are non-adjustable.

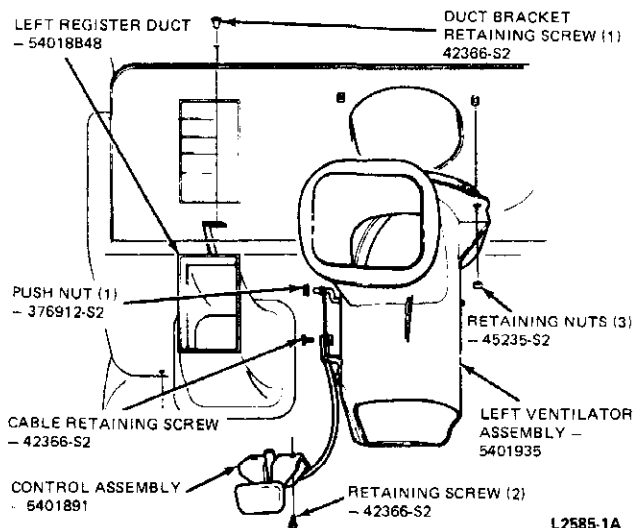


FIG. 9 Left Ventilator and Register Duct Removal

6. Install the control cable lever housing retaining screws (2) and tighten to specification.
7. Check the ventilator door for proper operation.

LEFT VENTILATOR DOOR

Removal

1. Remove the left ventilator assembly as outlined in the procedure.
2. Position the door for convenient access to the retaining screw (1) securing the door on the crank arm shaft, and remove the retaining screw (Fig. 10).
3. Slide the door off the loop of the crank arm shaft and remove from the top of the ventilator housing.

Installation

1. Position the door crank arm to align with the V-slot of the control cable housing mounting bracket.
2. Slide the door into the top of the ventilator housing and position the pocket of the door mounting bracket over the loop of the crank arm shaft.
3. Install the door retaining screw (1) and tighten to specification.
4. Install the ventilator assembly as outlined in the procedure.

LEFT REGISTER DUCT

Removal

1. Remove the left ventilator assembly. Refer to procedure and Fig. 9.
2. Remove the instrument panel pad. Refer to procedure and Fig. 14.

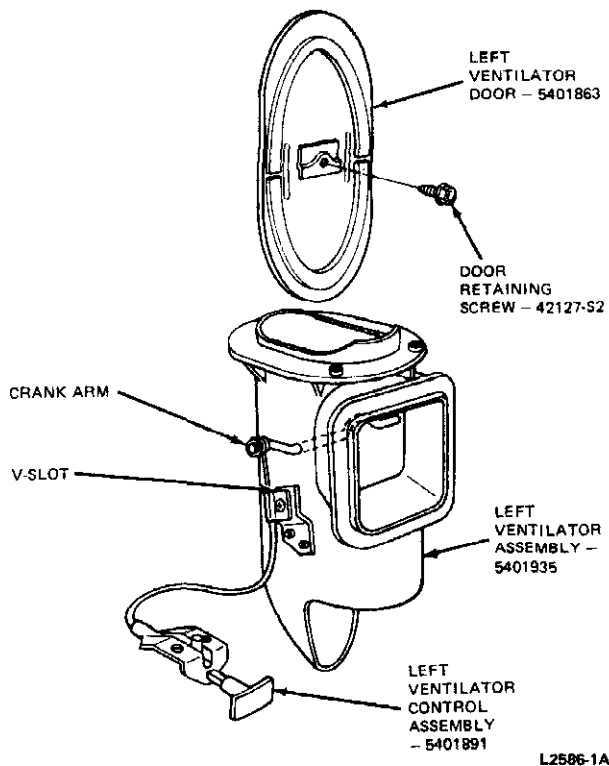


FIG. 10 Left Ventilator Door Removal

3. Remove the register duct bracket retaining screw (1) located on top of the instrument panel and on the left side nearest the windshield.
4. Disengage the register duct from the register opening, behind the instrument panel and remove from under the instrument panel.

Installation

1. Position the register duct onto the register opening, behind the instrument panel as shown in Fig. 9.
2. Align the hole of the register duct bracket with retaining screw hole at the top of the instrument panel.
3. Install the register duct bracket retaining screw (1) and torque to specification.
4. Install the instrument panel pad. Refer to procedure and Fig. 14.
5. Install the left ventilator assembly. Refer to procedure and Fig. 9.

RIGHT VENTILATOR ASSEMBLY

Removal

1. Remove the retaining screw (1) securing the right register duct mounting bracket to the lower edge of the instrument panel (Fig. 11).
2. Remove the retaining screws (2) securing the ventilator control cable lever assembly to the lower edge of the instrument panel.
3. Remove the glovebox liner for access to the ventilator upper left retaining screw.
4. Remove the plastic rivets (2) securing the grille to the ventilator floor outlet opening and remove the

grille from the bottom of the ventilator assembly as shown in Fig. 12, for access to the lower right ventilator assembly retaining screw.

5. Remove right register duct and register assembly (refer to procedures) for access to the upper right ventilator retaining screw. Use long extension through register opening.
6. Remove the retaining screws (4) securing the ventilator assembly to the blower housing portion of the heater case assembly.
7. Slide the ventilator assembly to the right and then down to remove from under the instrument panel.
8. Remove the push nut from the door crank arm.
9. Remove the control cable housing retaining screw (1) and remove the control cable assembly from the ventilator assembly.

Installation

1. Align the control cable housing mounting tab, install the cable loop on the door crank arm and secure with a new push nut.
2. Align the hole of cable housing mounting tab with the hole in the bracket assembly, install the retaining screw (1) and tighten to specification.
3. Slide the ventilator up and to the left to position the ventilator assembly into the blower housing of the heater case assembly (Fig. 11).
4. Install the retaining screws (4) to secure the ventilator assembly on the blower housing and tighten to specification.
5. Position the grille over the floor outlets opening and install new plastic rivets (2), or No. 10 x 1/2 inch sheet metal screws, to secure the grille onto the ventilator assembly.
6. Reinstall right register duct and register assembly. Refer to procedures.
7. Position the control cable lever housing onto the lower edge of the instrument panel, aligning the locator tab with the tab slot of the instrument panel.
8. Install the control cable lever housing retaining screws (2) and tighten to specification.
9. Align the hole of the right register duct mounting bracket with the hole in the lower edge of the instrument panel and install and tighten the retaining screw (1) to specification.
10. Check the ventilator door for proper operation.
11. Install the glovebox liner.

RIGHT VENTILATOR DOOR

Removal

1. Remove the plastic rivets (2) securing the grille to the ventilator floor outlet opening and remove the grille from the bottom of the ventilator assembly as shown in Fig. 12.
2. Position the door for convenient access to the retaining screw (1) securing the door on the crank arm shaft and remove the retaining screw.
3. Slide the door off the loop of the crank arm shaft and remove from the floor outlet opening of the ventilation assembly.

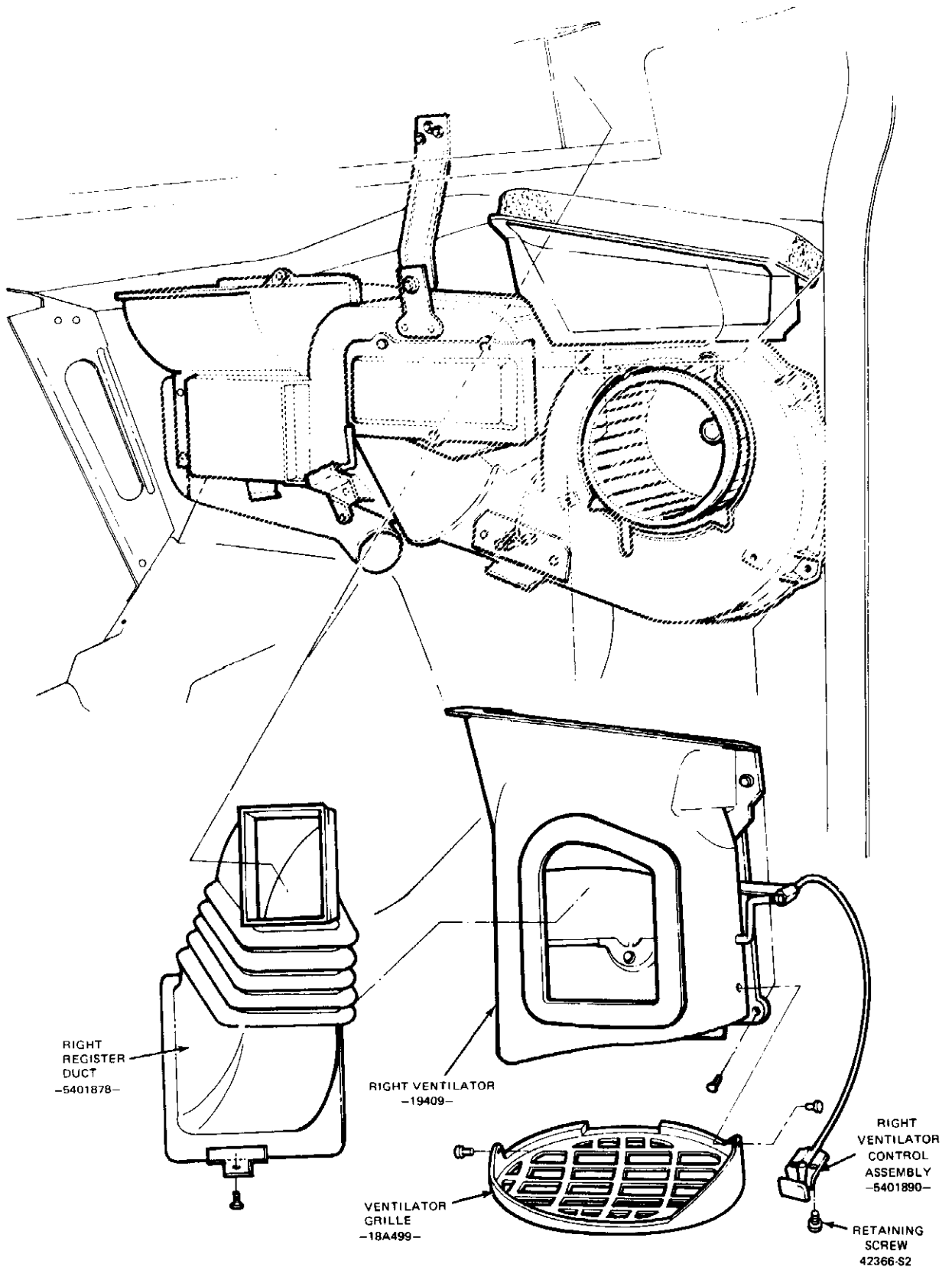


FIG. 11 Right Ventilator and Register Duct Removal

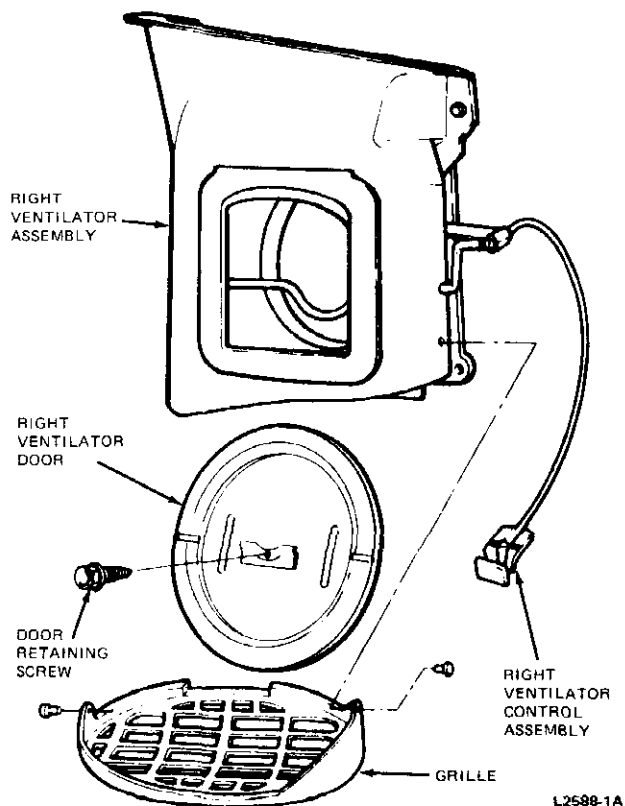


FIG. 12 Right Ventilator Door Removal

Installation

1. Slide the door into the floor outlet opening of the ventilator housing (Fig. 12) and position the pocket of the door mounting bracket over the loop of the crank arm shaft.
2. Install the door retaining screw (1) and tighten to specification.
3. Position the grille over the floor outlet opening and install new plastic rivets (2) to secure the grille onto the ventilator assembly.

RIGHT REGISTER DUCT**Removal**

1. Remove the glovebox liner.
2. Remove the register duct bracket retaining screw (1) on the lower edge of the instrument panel.
3. Disengage the register duct from the register outlet opening and remove through the glovebox opening.

Installation

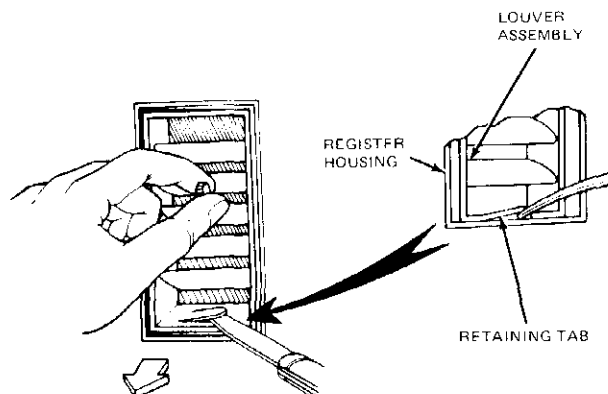
1. Position the register duct over the register outlet opening behind the instrument panel (Fig. 11).
2. Install the register duct bracket retaining screw (1) and tighten to specification.
3. Install the glovebox liner.

REGISTER ASSEMBLY**Removal**

1. Insert a thin blade under the retaining tab (Fig. 13) and pry the retaining tab toward the louvers until

the retaining tab pivot clears the hole in the register opening.

2. Pull the register assembly end out from the housing only enough to prevent the pivot from going back into the pivot hole.
3. Repeat Step 1 for the other retaining tab and pull the register assembly from the register opening.



INSERT A THIN BLADE THROUGH THE LOUVER AND CAREFULLY PRY THE RETAINING TAB TOWARD THE LOUVERS TO ALLOW THE PIVOT TO CLEAR THE HOLE IN THE REGISTER OPENING.

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FIG. 13 Instrument Panel Register Removal

Installation

The pivots on each end of the register assembly are different diameters and therefore determine the installed position of the register assembly.

1. Position the register assembly into the opening with the largest diameter pivot near the largest pivot hole.
2. Depress the retaining tabs, push the register assembly into the register opening and engage the retaining tab pivots in the pivot holes.

INSTRUMENT PANEL PAD**Removal**

1. Remove the retaining screws (3) securing the top edge of the instrument cluster trim panel and remove the instrument cluster trim panel. Refer to Fig. 14.
2. Remove the retaining screws (2) securing the left side instrument panel pad retaining tabs to the instrument panel, in the upper right and left corners of the instrument panel cluster area.
3. Remove the retaining screws (2) securing the right side instrument panel pad retaining tabs to the instrument panel, located in the two openings at the top edge of the right instrument panel trim applique, above the glove box.
4. Using a magnetic or locking tang-type phillips screwdriver, remove the retaining screws (2) securing the leading edge of the instrument panel pad to the defroster openings.

CAUTION: CARE SHOULD BE TAKEN TO PREVENT RETAINING SCREW LOSS IN THE DEFROSTER OUTLET OPENINGS. DAMAGE TO

THE PLENUM DOORS MAY OCCUR, RESULTING IN CASE ASSEMBLY REMOVAL AND DISASSEMBLY FOR PROBLEM CORRECTION.

5. Raise the overhanging brow edge of the instrument panel pad, to clear the retaining tabs, and pull rearward to remove from the top of the instrument panel.

Installation

1. Position the instrument panel pad onto the top of the instrument panel with the leading edge inserted below the lower edge of the windshield trim and the overhanging brow slightly elevated above the instrument panel. Refer to Fig. 14.
2. Align the defroster opening retaining screw holes (2) and lower the overhanging brow edge until the retaining tab and screw openings align with their respective retaining screw holes (7).
3. Using a magnet or locking tang-type phillips screwdriver, loosely install the instrument panel pad retaining screws (2) in the retaining screw holes of the defroster outlet openings.

CAUTION: CARE SHOULD BE TAKEN TO PREVENT RETAINING SCREW LOSS IN THE DEFROST OUTLET OPENINGS. DAMAGE TO THE PLENUM DOORS MAY OCCUR, RESULTING IN CASE ASSEMBLY REMOVAL AND DISASSEMBLY FOR PROBLEM CORRECTION.

4. Loosely install the right side instrument panel pad retaining screws (2) in the retaining tab slots at the

top edge of the right instrument panel trim applique, above the glove box.

5. Loosely install the left side instrument panel pad retaining screws (2) in the retaining tab slot openings in the upper right and left corners of the instrument panel cluster area.
6. Secure the instrument panel pad in position by tightening the retaining screws (6) described in Steps 3, 4 and 5 to specifications.
7. Install the lower locking tabs (4) of the instrument cluster trim panel into the tab slots at the lower edge of the instrument panel cluster area and press the instrument cluster trim panel into position.
8. Install the instrument cluster trim panel retaining screws (3) in the holes (3) at the top edge of the instrument cluster trim panel and tighten to specifications.

CONTROL ASSEMBLY

Removal

1. Remove retaining screws (3) securing the top edge of the instrument cluster trim panel and remove the instrument cluster trim panel for access to the control assembly. Refer to Fig. 15.
2. Remove retaining screws (4) securing the control assembly to the instrument panel and pull the control rearward from the instrument panel for access to the electrical wire harness connectors and the control housing attachments.
3. Disengage the function and temperature control cable assemblies from the heater case assembly. Refer to Function and/or Temperature Control cable removal procedure and Fig. 17.

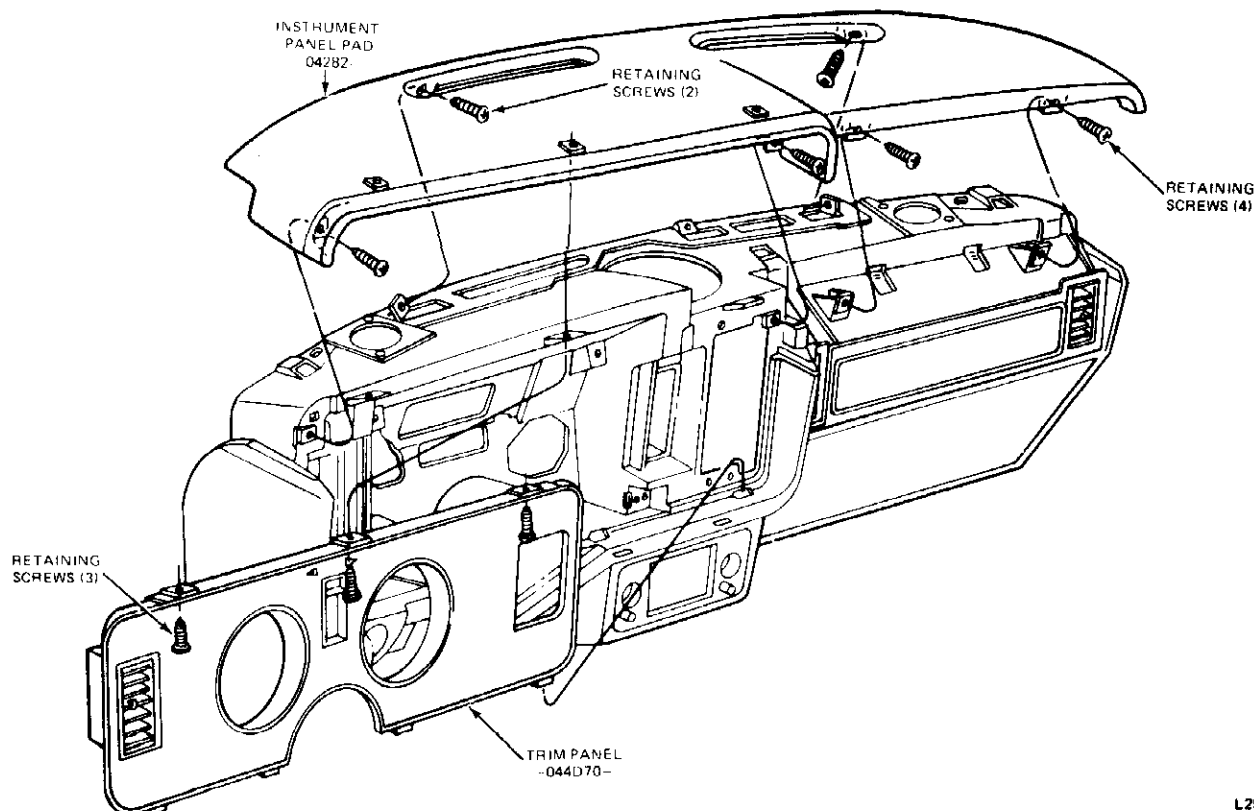


FIG. 14 Instrument Panel Pad Removal

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4. Disconnect the blower speed switch, system on-off switch and the control illumination wire harness connectors.
5. Remove the control assembly with the control cables.
6. Depress the locking tang (white) on the end of the function control cable housing and disengage the function control cable and housing assembly from the function lever tang and the frame of the control assembly (Fig. 16).
7. Depress the locking tang (black) on the end of the temperature control cable and housing assembly from the temperature lever tang and frame of the control assembly.

Installation

1. Slip the end wire loop of the temperature control cable and housing assembly (black) over the tang on the rear of the temperature control lever (Fig. 16). The wire loop coil should face outward, away from the base of the tang on the temperature control lever. Then, slide the cable housing end into the bracket of the control assembly frame until the locking tang snaps into position.
2. Repeat Step No. 2 for connection of the function control cable and housing assembly (white).
3. Feed the control cables through the panel opening and position the control assembly near the instrument panel opening (Fig. 15).
4. Connect the wire harness connectors for the control illumination, system on-off switch and the blower speed switch.
5. Align the alignment tabs (upper and lower) on the back of the control assembly with the hole (upper) and slot (lower) of the instrument panel and position the control assembly onto the instrument panel (Fig. 15).
6. Install the control assembly retaining screws (4) and tighten to specification.
7. Install the lower locking tabs (4) of the instrument cluster trim panel into the tab slots at the lower edge of the instrument panel cluster area and press the instrument cluster trim panel into position.
8. Install the instrument cluster trim panel retaining screws (3) in the holes at the top edge of the instrument cluster trim panel and tighten to specification.
9. Install the function and temperature control cable assemblies on the heater case assembly. Refer to procedure and Fig. 17.
10. Test the system for proper operation.

SYSTEM ON-OFF SWITCH ASSEMBLY

Removal

1. Remove the Control Assembly from the instrument panel. Refer to procedure and Fig. 15.
2. Disconnect the wire harness connector from the system on-off switch.
3. Remove the system on-off switch retaining screws (2), securing the switch to the Control Assembly, and remove the switch assembly (Fig. 16).

Installation

1. Align the Function Control Lever tab with the slot of the system on-off switch and position the system on-off switch assembly on the locator pins of the Control Assembly (Fig. 16).
2. Install the system on-off switch retaining screws (2) and tighten to specification.
3. Connect the system on-off switch wire harness connector and check for proper operation.
4. Install the Control Assembly in the instrument panel. Refer to procedure and Fig. 15.

BLOWER SWITCH ASSEMBLY

Removal

1. Remove the Control Assembly from the instrument panel. Refer to procedure and Fig. 15.
2. Disconnect the wire harness connectors from the rear of the blower switch.
3. Use a screwdriver to disengage the tang of the blower speed switch control knob and remove the control knob from the shaft (Fig. 16).
4. Remove the retaining screw (1) securing the blower switch assembly to the back of the Control Assembly and remove the switch assembly.

Installation

1. Insert the switch shaft into the slotted opening and position the blower switch onto the locator pin on the back of the control assembly (Fig. 16).
2. Install the switch retaining screw (1) and tighten to specification.
3. Connect the blower switch wire harness connector and check the switch for proper operation.
4. Install the control knob on the shaft of the blower switch assembly.
5. Install the control assembly in the instrument panel. Refer to procedure and Fig. 15.

FUNCTION AND/OR TEMPERATURE CONTROL CABLES

Removal

1. On the heater case cable housing mounting brackets (Fig. 17), raise the control cable housing locking tang (function cable, white-temperature cable, black) and slide the end of the cable housing out of the U-shaped slot of the cable housing mounting bracket.
2. Slide the self adjusting cable attaching clip off of the end of the crank arm.
3. Perform Steps 1, 2, 4, 5, 6 and/or 7 of the control assembly removal procedure to disengage the function (white) and/or temperature (black) control cable assemblies from the control assembly.

Installation

1. Perform Steps 1 and/or 2 then, 3 through 8 of the Control Assembly Installation procedure.
2. On the heater case (Fig. 17), slide the self adjusting cable attaching clip over the end of the door crank arm until it seats on the tab stop.
3. Slide the cable housing end slots into the cable housing mounting bracket U-shaped slot (function

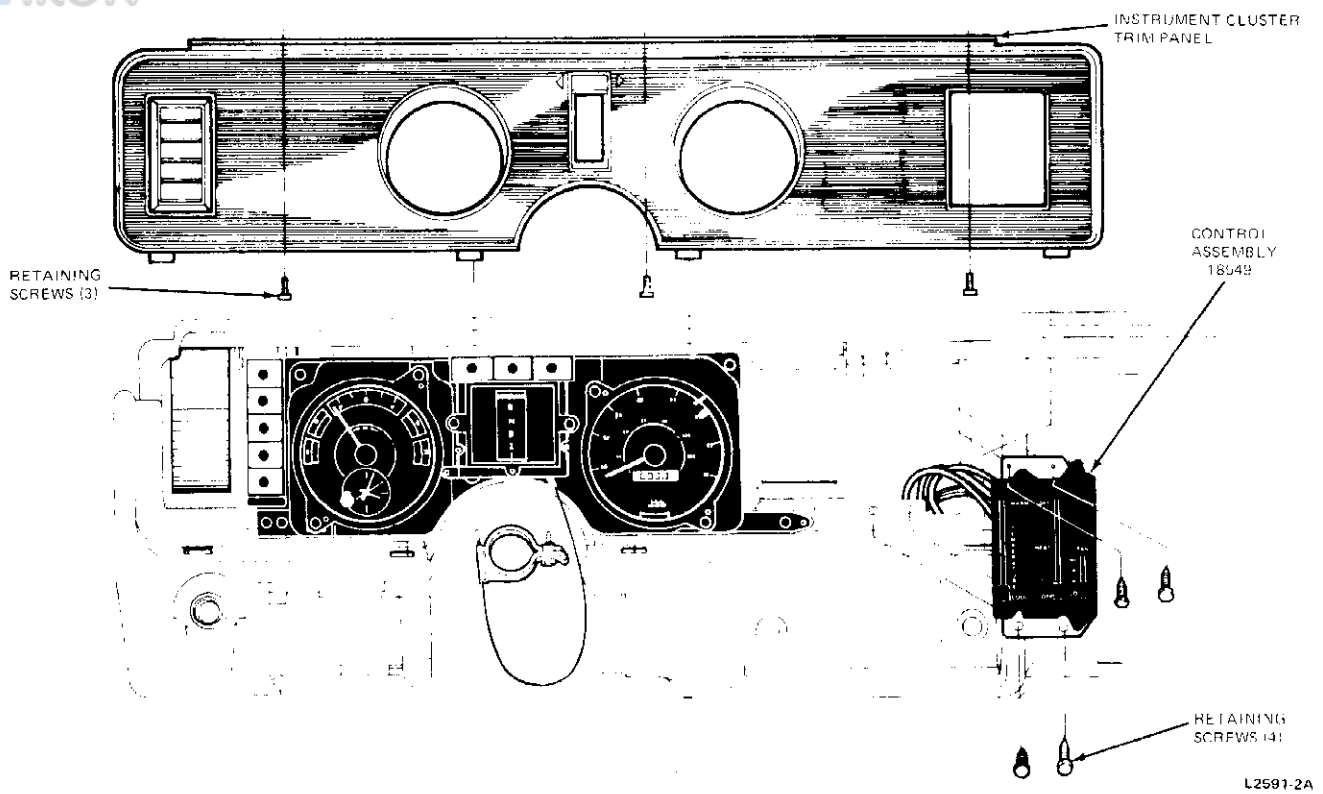


FIG. 15 Control Assembly Removal

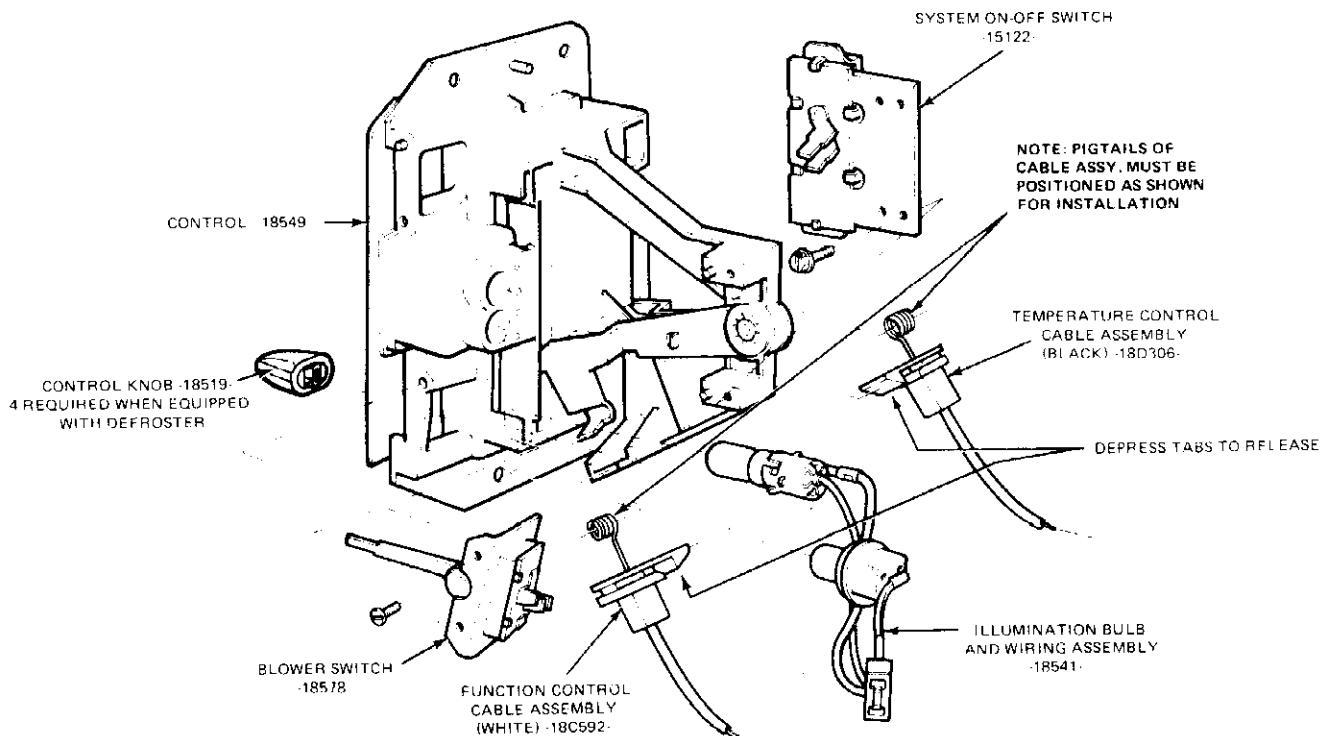
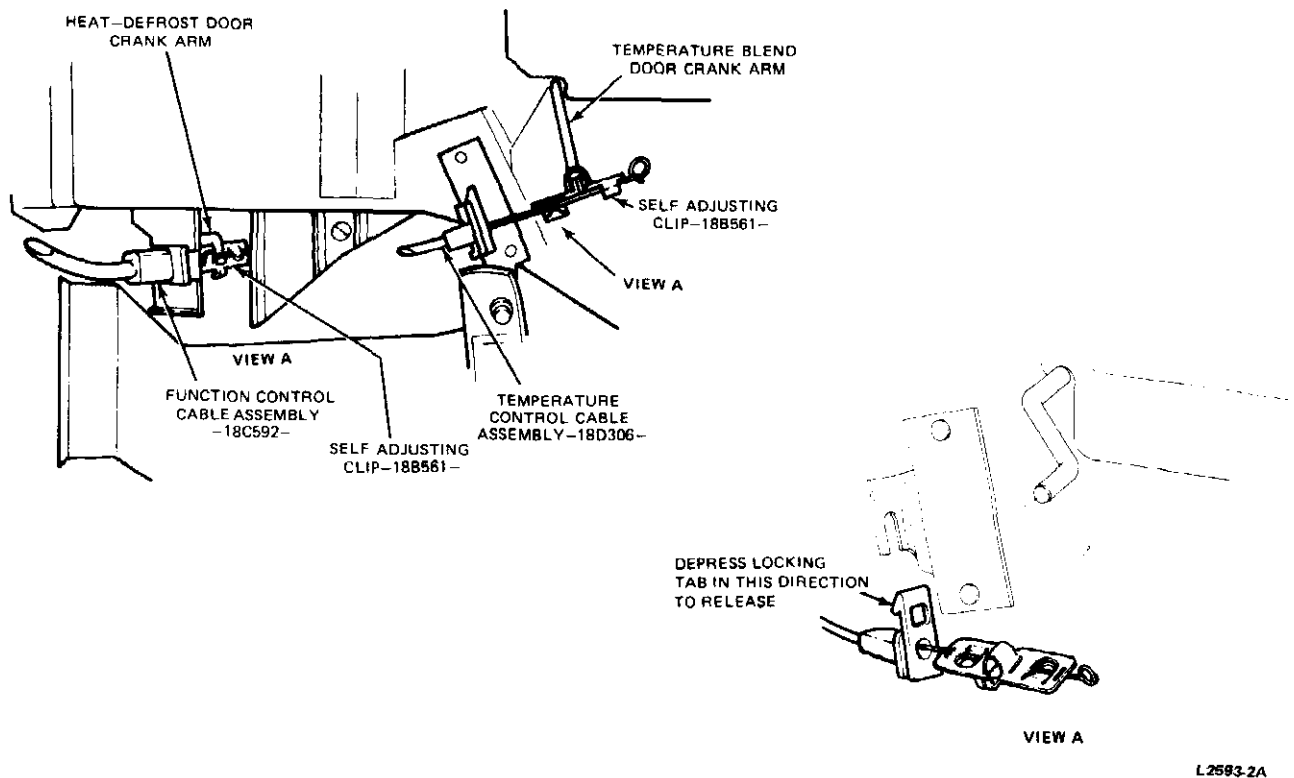


FIG. 16 Control Assembly Disassembled



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FIG. 17 Function and Temperature Control Cable—Removal

cable, white-temperature cable, black) until the locking tang snaps into position.

4. Follow the control cable adjustment procedure to adjust the temperature and/or function control cable.
5. Test the system for proper operation.

HEATER BLOWER RESISTOR ASSEMBLY

Removal

1. Disconnect the two wire harness connectors (Fig. 18).
2. Remove the resistor assembly retaining screws (2) securing the resistor board to the heater case assembly.
3. Remove the resistor assembly.

Installation

1. Apply rope sealer to the outer edge of the resistor board to prevent air leakage (Fig. 18).
2. Position the resistor assembly onto the resistor opening of the heater case assembly.
3. Install the resistor assembly retaining screws (2) and tighten to specification.
4. Install the two wire harness connectors and test blower for proper operation.

BLOWER ASSEMBLY

Removal

1. Remove the right ventilator assembly. Refer to procedure and Fig. 11.
2. Disconnect the blower lead wire (orange/black stripe) connector from spade terminal of the resistor

assembly and push it back through the hole in the case (Fig. 19).

3. Remove the right side cowl trim panel for access to the blower ground terminal lug (black) and remove the ground terminal lug retaining screw.
4. Remove the blower motor flange retaining screws (3) from inside the blower housing.
NOTE: The blower wheel may be removed for improved access. Refer to procedure and Fig. 20.
5. Remove the blower motor from the housing.

Installation

1. Insert the blower motor wires through the opening at the back of the housing and position the blower motor mounting flange onto the locator pins (2) of the blower housing.
2. Install the blower flange retaining screws (Fig. 19) and tighten to specification.
3. Install the blower wheel on the shaft of the blower motor. Refer to procedure and Fig. 20.
4. Position the ground terminal lug, install the ground terminal lug retaining screw and tighten to specification.
5. Install the right side cowl trim panel.
6. Route the blower power lead wire (orange/black stripe) through the hole in the center of the case and install the connector on the spade terminal of the resistor assembly.
7. Install the right ventilator assembly. Refer to procedure and Fig. 11.
8. Test the blower for proper operation.

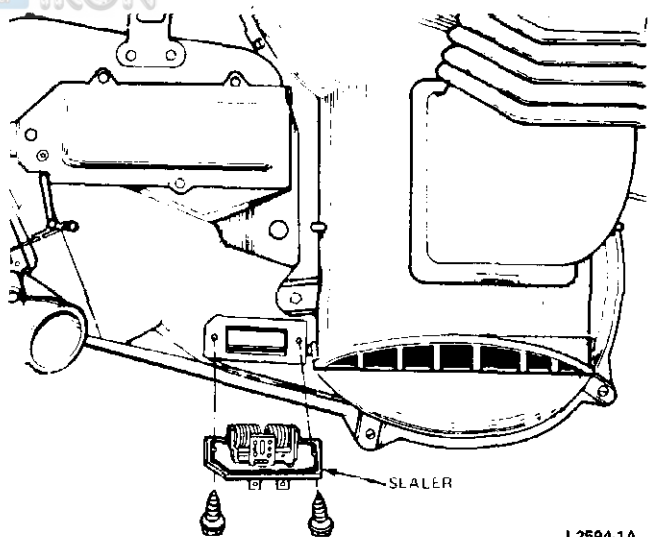


FIG. 18 Resistor Assembly Removal

BLOWER WHEEL

Removal

1. Remove the right ventilator assembly. Refer to procedure and Fig. 11.
2. Remove the hub clamp spring from the wheel hub. Refer to Fig. 20.
Note: Hose clamp pliers for flat spring type clamps will simplify this operation.
3. Slide the blower wheel from the motor shaft.

Installation

1. Align the flat surface on the ID of the blower wheel hub with the flat surface of the motor shaft (Fig. 20).
2. Slide the blower wheel onto the motor shaft until it is fully seated.
3. Using flat spring type hose clamp pliers, install a new hub clamp spring. Position clamp 90 degrees to flat on shaft. NOTE: DO NOT RE-USE THE OLD HUB CLAMP SPRING.
4. Check to be sure the wheel rotates freely in the housing.
5. Install the right ventilator assembly. Refer to procedure and Fig. 11.
6. Check wheel rotation to be sure wheel does not contact the air inlet ring on the ventilator assembly.
7. Test system for proper operation.

HEATER CORE

Removal

1. Loosen radiator cap, open the radiator drain cock and partially drain coolant from engine cooling system to drain heater core. Close the radiator drain cock.
2. Loosen heater core inlet and outlet heater hose clamps (Fig. 26, 27 or 28) and disconnect the heater hoses from the heater core tubes. Cap the heater core tubes to prevent spilling coolant in the passenger compartment.

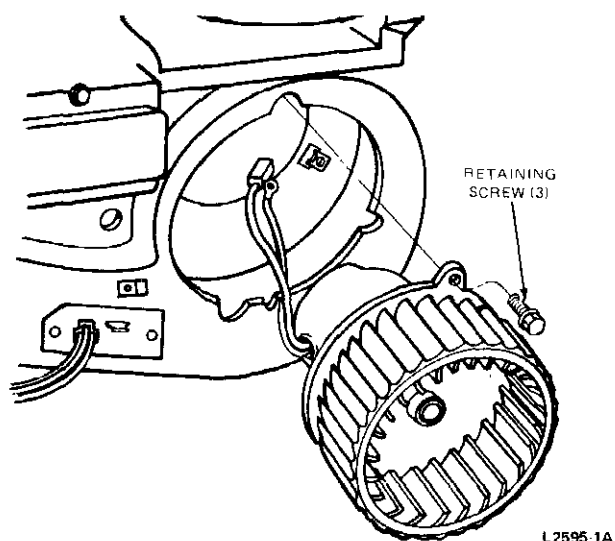


FIG. 19 Blower Motor and Wheel Assembly Removal

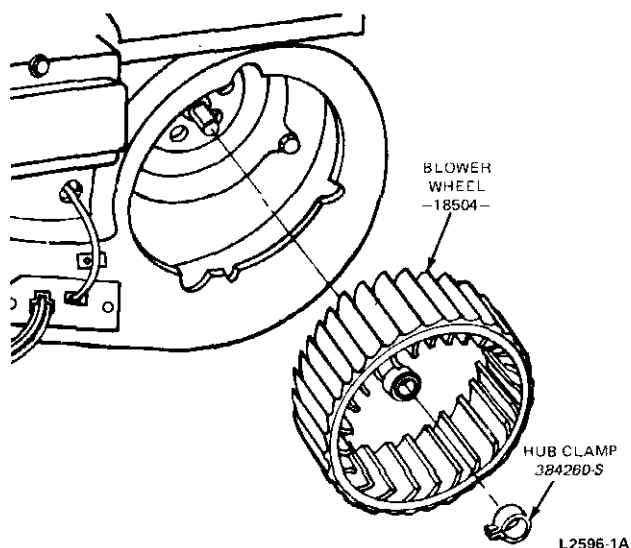


FIG. 20 Blower Motor Wheel Removal

3. Remove glove box liner for access to heater core cover.
4. Remove instrument panel-to-cowl brace retaining screws (2) and remove brace.
5. Move temperature control lever to warm position.
6. Remove heater core cover retaining screws (4) as shown in Fig. 21.
7. Remove heater core cover through the glove box opening.
8. From the engine compartment, loosen the heater case assembly mounting stud nuts (3) as shown in Fig. 22.
9. Push heater core tubes and seal toward the passenger compartment to loosen the heater core assembly from the heater case assembly.
10. Remove the heater core from the heater case assembly by withdrawing through the glove box opening (Fig. 21).

Installation

1. Align heater core with the heater case opening (with core tubes on top) and slide the heater core into the heater case assembly (Fig. 21).
2. Position the heater core cover onto the opening of the case assembly and install core cover retaining screws (4). Tighten cover retaining screws to specifications.
3. Tighten the heater case assembly mounting stud nuts (3) to specification (Fig. 22).
4. Install instrument panel-to-cowl brace and retaining screws (2). Tighten screws to specification.
5. Install the glove box liner.
6. Remove heater core tube plugs, if applicable and install the heater hoses onto the heater core tubes. Position and tighten the heater hose clamps to specification (Fig. 26, 27 or 28).
7. Refill cooling system to proper level and recheck the coolant level after operating the engine.
8. Check for proper heater temperature and function.

HEATER CASE ASSEMBLY

Removal

1. Remove right register assembly, register duct and right ventilator assembly. Refer to removal procedures and Figs. 11 and 13.
2. Remove the floor heat duct assembly from heater case assembly. Refer to floor heat duct assembly removal procedure and Fig. 23.
3. Remove glovebox and door.
4. Remove instrument panel-to-cowl brace retaining screws (2) and remove brace.
5. Remove the nut (1) securing the heater case mounting bracket to the heater case-to-cowl mounting bracket (Fig. 22).
6. Disconnect the temperature and function control cables from their respective control crank arms. Refer to procedure and Fig. 17.
7. Disconnect the 14401 wire harness electrical connector from the resistor assembly.
8. Remove the right side cowl trim panel and remove the screw (1) securing the blower ground terminal lug to the body ground.

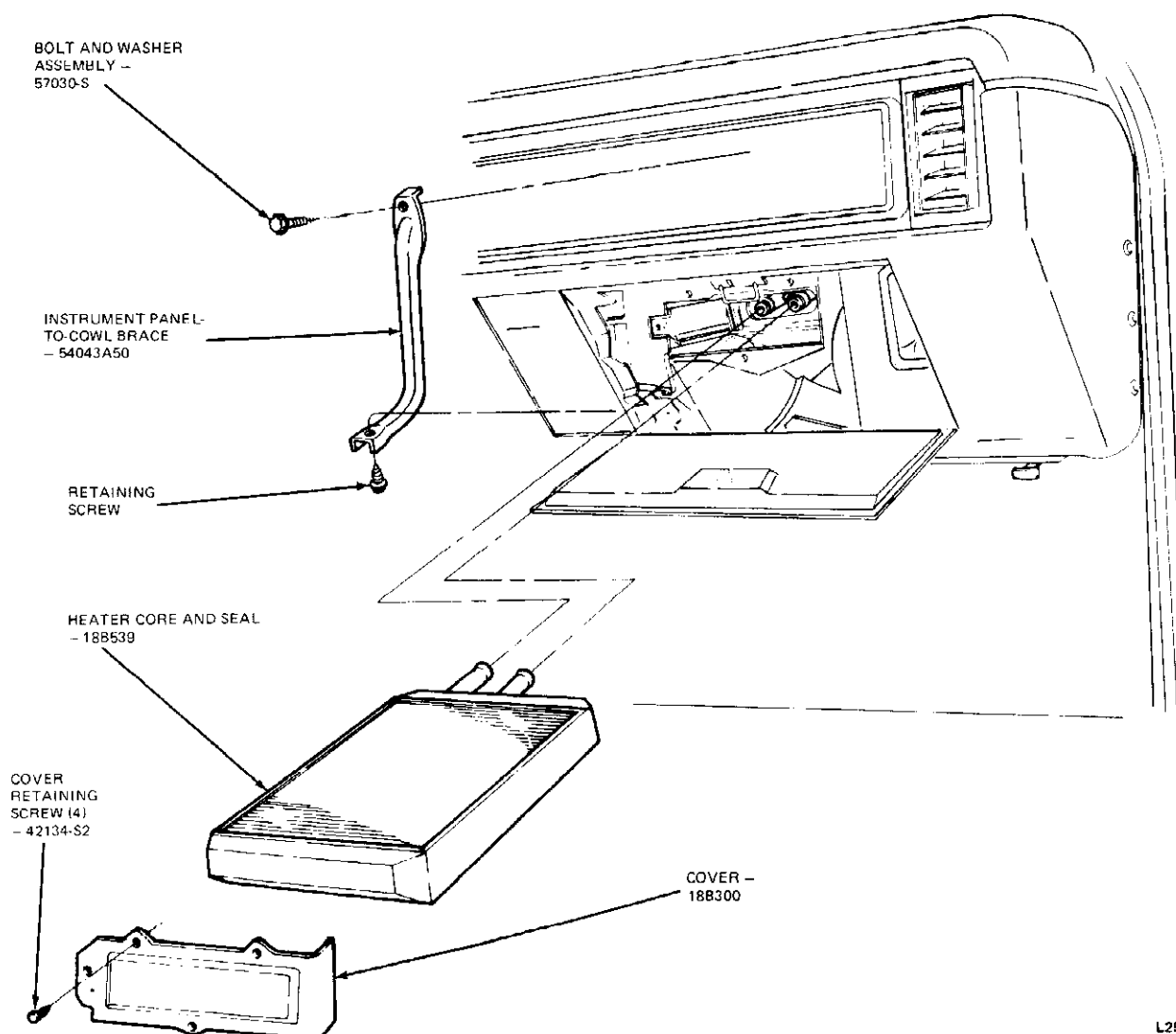


FIG. 21 Heater Core Removal

9. Remove the radiator cap, open the radiator drain cock and partially drain the engine coolant to drain the heater core. Close the radiator drain cock.
10. Loosen heater hose clamps and disconnect the heater hoses from the heater core tubes. Cap the core tubes to prevent the spilling of coolant in the passenger compartment.
11. Remove the heater case assembly-to-dash panel mounting stud nuts (3) as shown in Fig. 22.
12. Remove the heater case assembly from the vehicle.

Installation

1. Position the heater case assembly so that the mounting studs (3) protrude through the dash panel mounting holes. Loosely install mounting stud nuts (Fig. 22).
2. Hang the heater case mounting bracket over the stud on the heater case-to-cowl mounting bracket and install and tighten the retaining nut (1) to specification.
3. Install instrument panel-to-cowl brace and retaining screws (2) and tighten screws to specification.
4. Install glovebox.
5. Tighten the heater case assembly-to-dash panel mounting stud nuts (3) to specification.
6. Connect heater hoses to core tubes and tighten hose clamps to specification (Figs. 26, 27 or 28).
7. Refill cooling system with specified coolant to proper coolant level and install the radiator cap.
8. Connect the 14401 wire harness electrical connector to the spade terminals (3) of the resistor assembly.
9. Position the blower ground terminal lug on the body frame hole and install and tighten the ground lug retaining screw (7) to specification.
10. Install the right side cowl trim panel.
11. Connect the temperature and function control cables to their respective door crank arms (Fig. 17).
12. Install the floor heat duct assembly. Refer to the floor heat duct installation procedure and Fig. 23.
13. Install the right ventilator assembly, right register duct and register assembly. Refer to the installation procedures and Figs. 11 and 13.
14. Start the engine and recheck for proper coolant level.

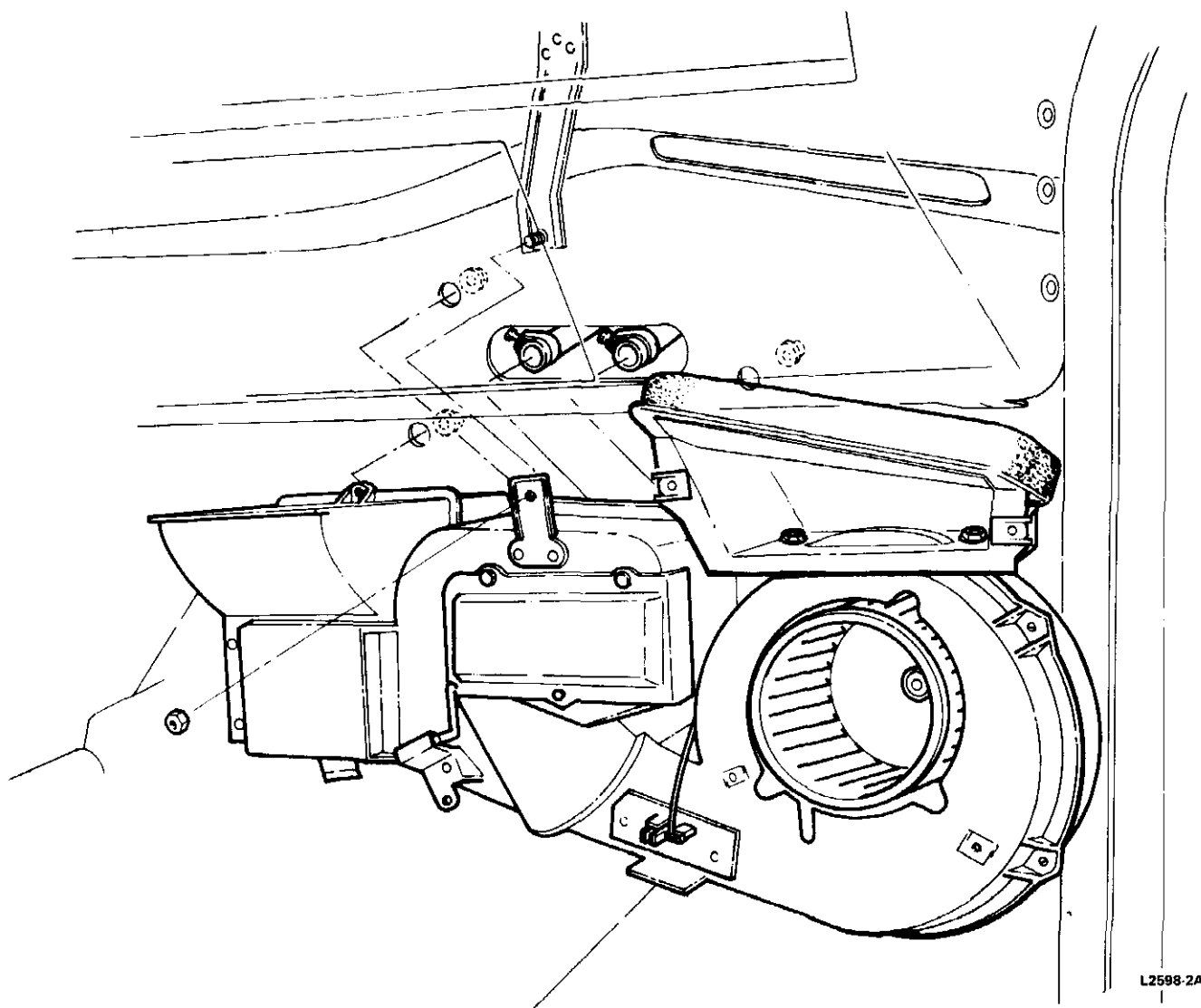


FIG. 22 Heater Case Assembly Removal

15. Test the heater system for proper operation.

FLOOR HEAT DISTRIBUTION DUCT ASSEMBLY

Removal

1. Remove the retaining screw (1) securing the right half of the floor heat distribution duct assembly to the temperature control cable housing mounting bracket (Fig. 23).
2. Slide the right half of the floor heat distribution duct assembly toward the right (passenger side) of the vehicle and remove.
3. Remove the retaining screws (2) securing the left half of the floor heat distribution duct to the heater case assembly.

NOTE: IF THE VEHICLE IS EQUIPPED WITH ANY RADIO OTHER THAN THE STANDARD AM RADIO, IT WILL BE NECESSARY TO REMOVE THE RADIO TO PROVIDE CLEARANCE FOR THE REMOVAL OF THE LEFT HALF OF FLOOR HEAT DISTRIBUTION DUCT.

4. Slide the left half of the floor heat distribution duct toward the left (driver side) of the vehicle and remove.

Installation

1. Position the left half of the floor heat distribution duct onto the left end opening of the heater case assembly (Fig. 23). Be sure the floor heat distribution duct is fully engaged in the retaining clip on the heater case opening near the dash panel.
2. Install the retaining screws (2) and secure the left half of the floor heat distribution duct to the heater case assembly. Tighten the retaining screws to specification.
3. Position the right half of the floor heat distribution duct onto the end opening of the left half of the floor heat distribution duct.
4. Install the retaining screw (1) and secure the right half of the floor heat distribution duct bracket to the temperature control cable housing mounting bracket. Tighten the retaining screw to specification.
5. Install the radio (if applicable).

DEFROSTER NOZZLE ASSEMBLY

Removal

1. Remove the heater case assembly. Refer to procedure and Fig. 22.
2. Remove the instrument panel pad. Refer to procedure and Fig. 14.
3. Remove the retaining screws (5) securing the defroster nozzle assembly and brace to the instrument panel (Fig. 24).

4. Remove the defroster nozzle from under the instrument panel.

Installation

1. Position the defroster nozzle assembly under the instrument panel onto the outlet openings at the instrument panel (Fig. 24).
2. Install the retaining screws (5) which secure the defroster nozzle assembly and brace to the instrument panel. Tighten the retaining screws to specification.
3. Install the heater case assembly. Refer to procedure and Fig. 22.
4. Install the instrument panel pad. Refer to procedure and Fig. 14.
5. Check system for proper defroster operation.

TEMPERATURE BLEND DOOR

Removal

1. Remove the heater core as outlined in procedure and shown in Fig. 21.
2. Remove the heater core support channel from the heater core opening (Fig. 25).
3. Disengage the temperature control cable self adjusting clip from the door crank arm.
4. Disengage the temperature blend door crank arm from the case at the lower left corner of the heater core opening.
5. Remove the temperature blend door from case assembly through the heater core opening.

Installation

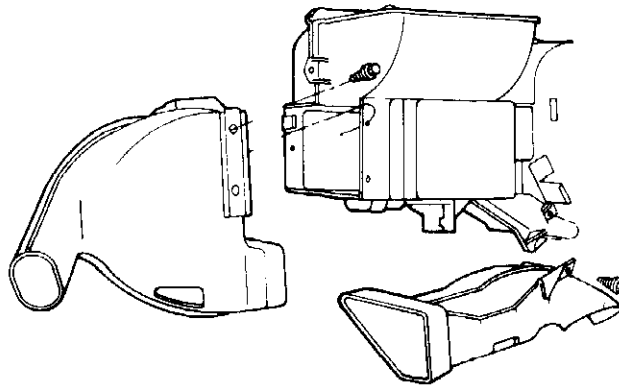
1. Insert the temperature blend door assembly through the heater core opening and insert the end of the shaft into the shaft journal of the case assembly (Fig. 25).
2. Snap the crank arm end of the shaft into the opening at the lower left corner of the heater core opening.
3. Install the heater core support channel, the heater core and core cover.
4. Engage the end of the crank arm into the slot of the self adjusting clip on the temperature control cable.
5. Check for proper operation.

HEAT-DEFROST DOOR

Refer to Heater Case Removal and Installation (Fig. 22) and Disassembly and Assembly procedure and Fig. 29 for removal of the Heat-Defrost Door.

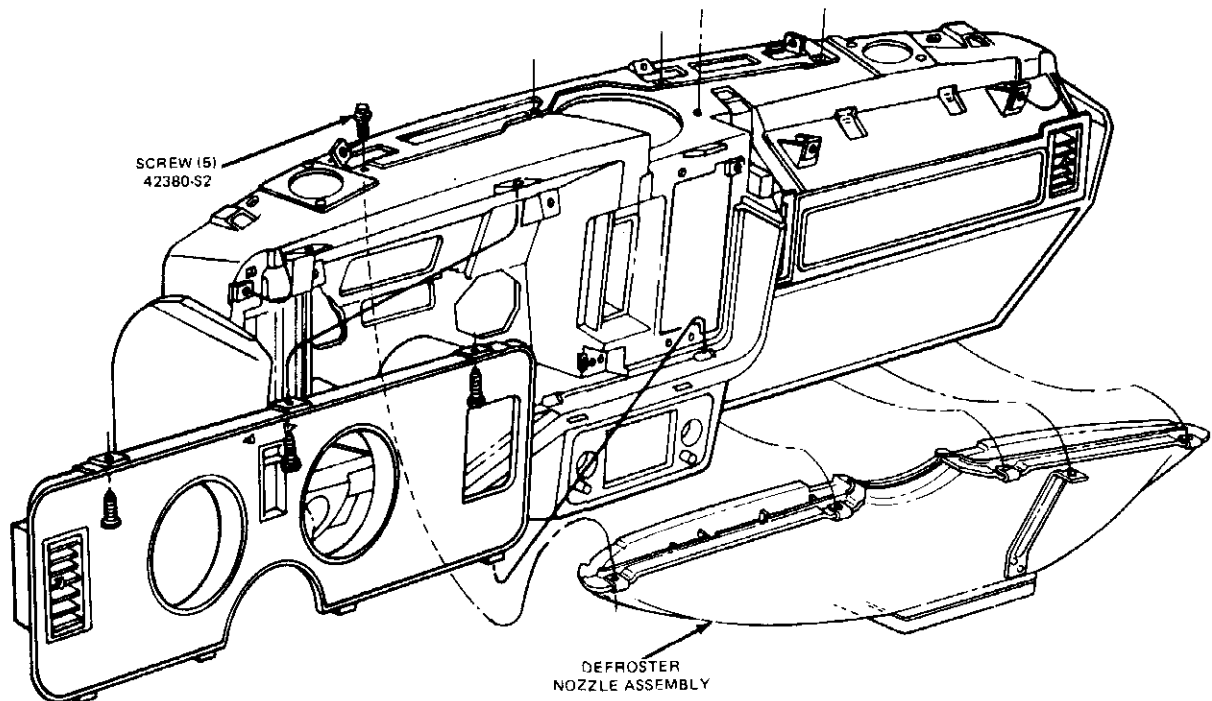
HEATER HOSES

Refer to Figs. 26, 27 and 28 for engine compartment heater hose routings.



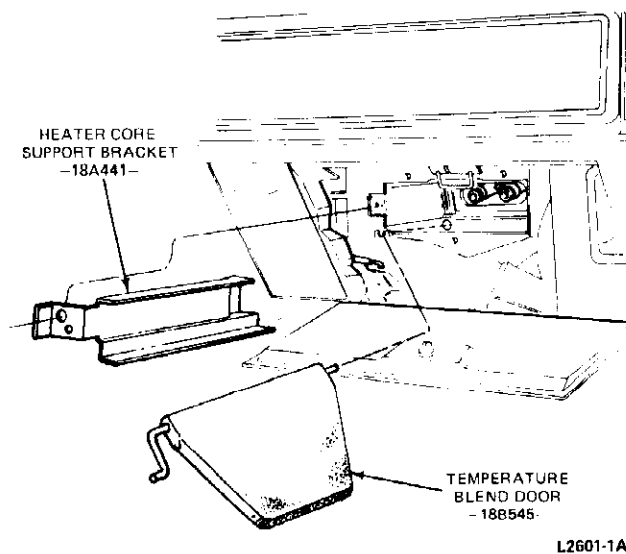
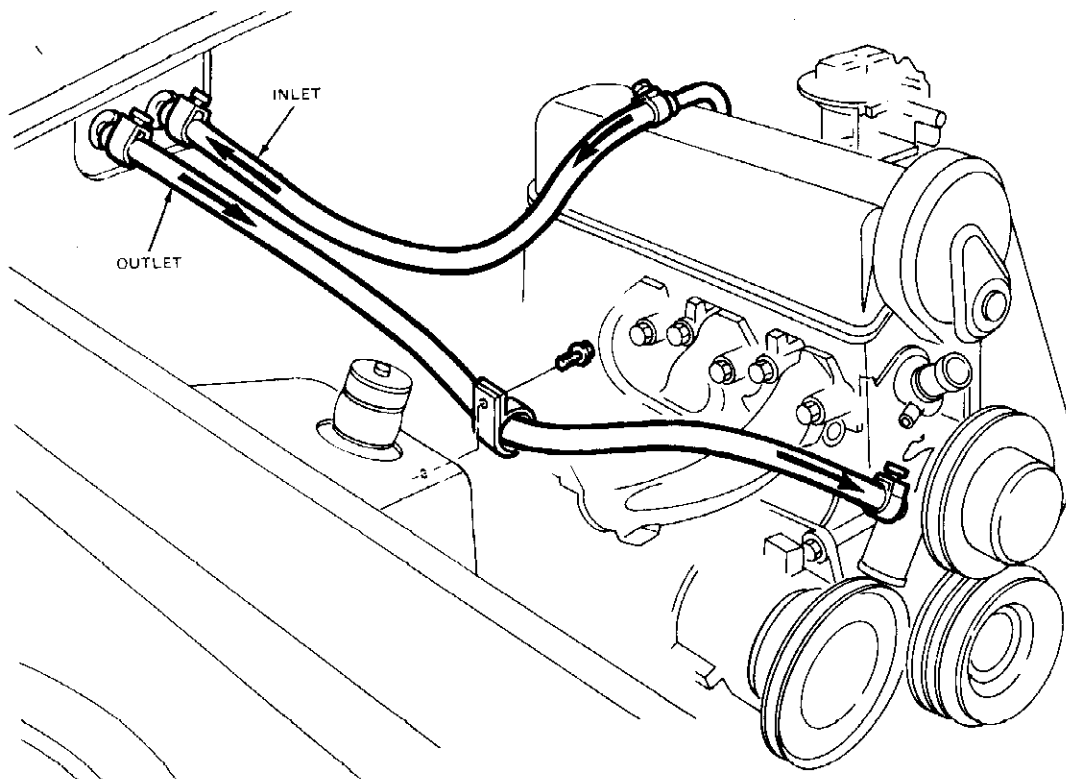
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FIG. 23 Floor Heat Distribution Duct Assembly Removal



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FIG. 24 Defroster Nozzle Removal

**FIG. 25 Temperature Blend Door Removal****FIG. 26 Heater Hose Routing—2.3L I-4 Engine**

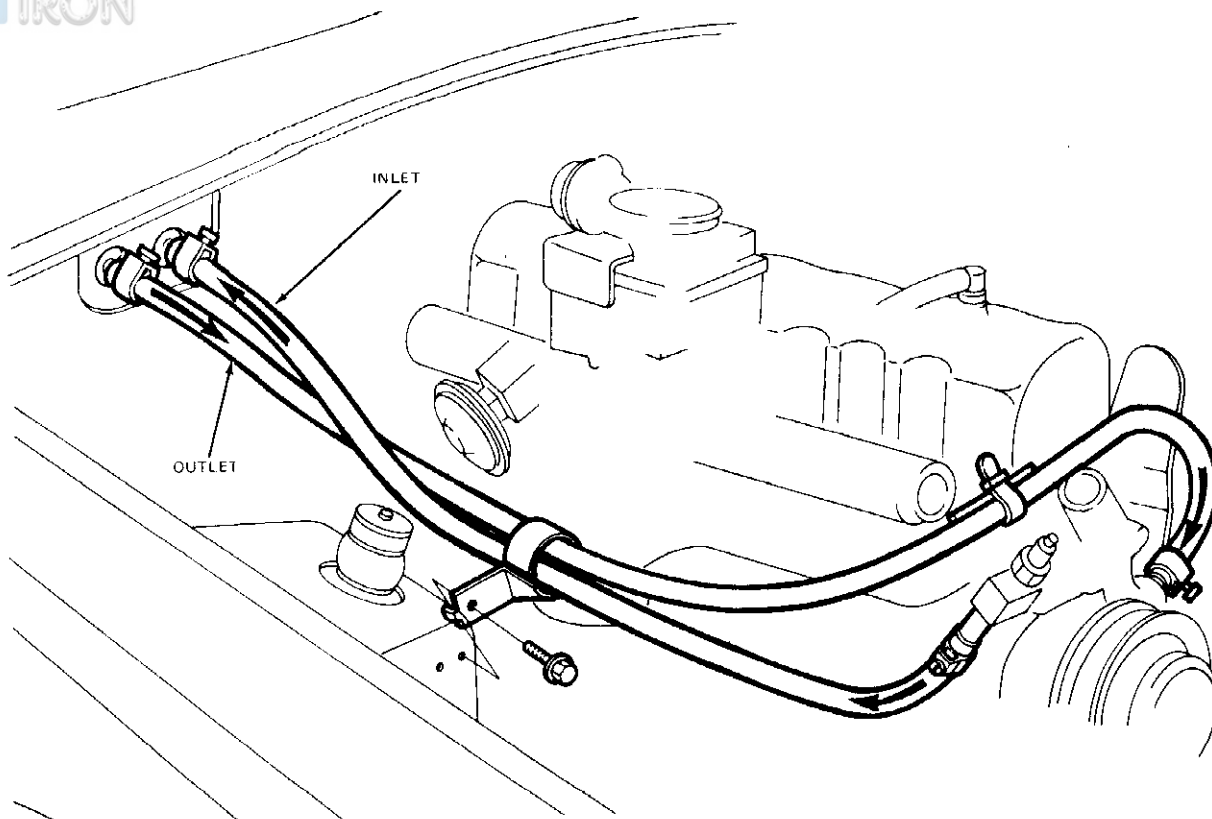


FIG. 27 Heater Hose Routing—3.3L (200 CID) I-6 Engine

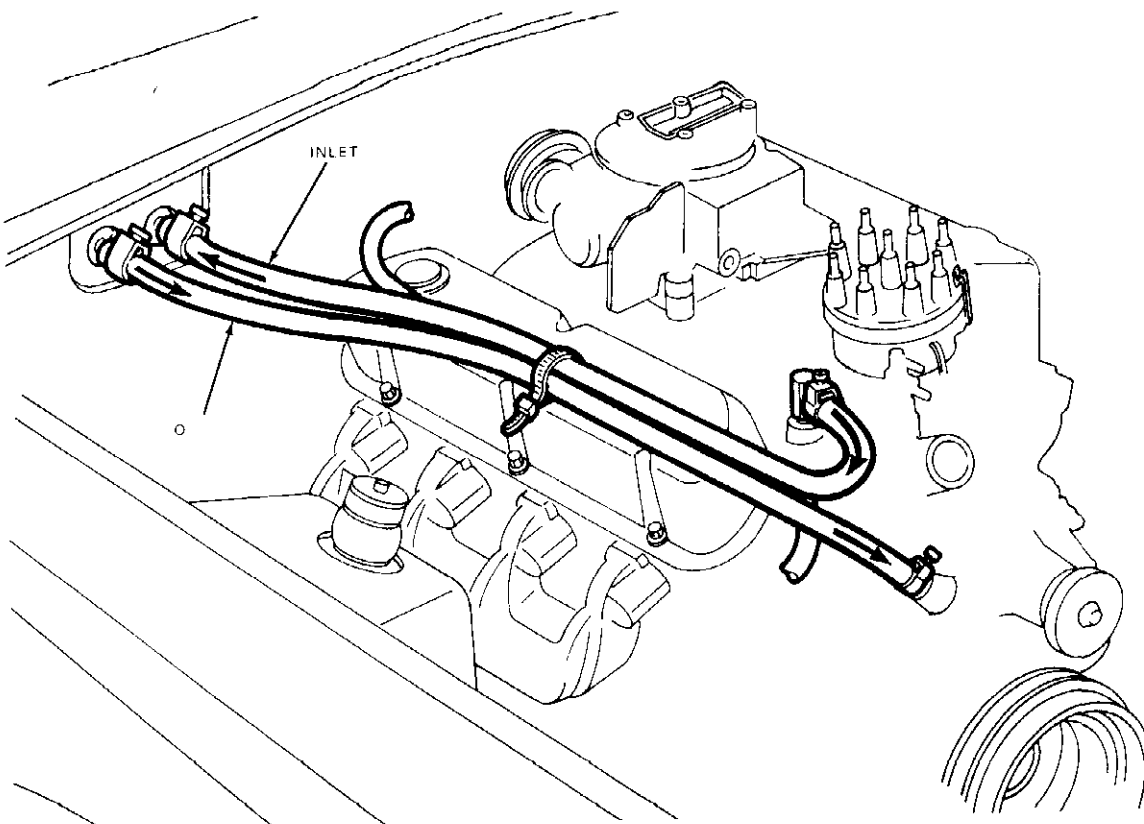


FIG. 28 Heater Hose Routing—5.0L (302 CID) V-8 Engine

DISASSEMBLY AND ASSEMBLY

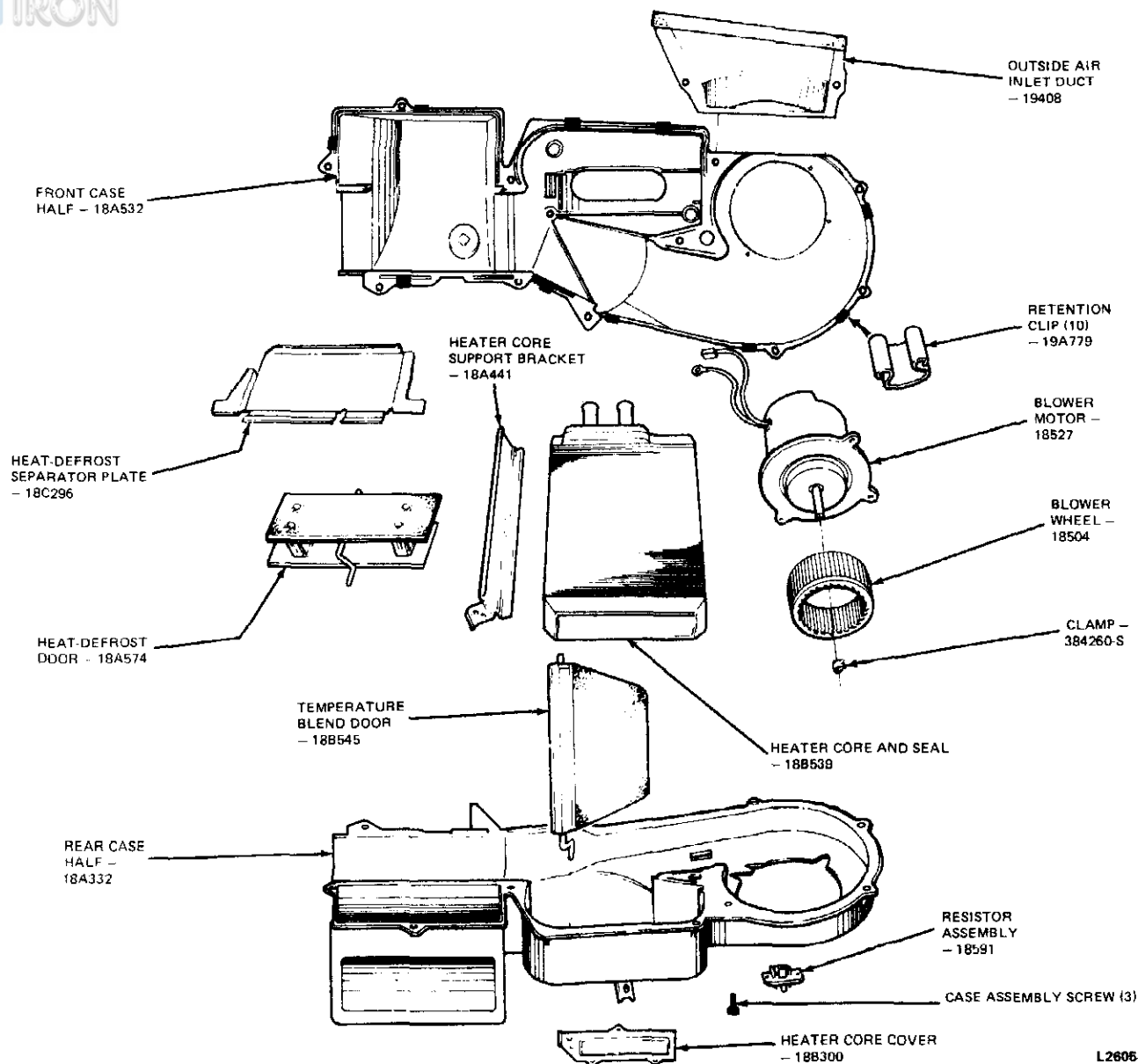
HEATER CASE ASSEMBLY

Disassembly

1. Remove the retaining screws (2) securing the outside air inlet duct to the heater case assembly, and remove the duct from the heater case assembly (Fig. 29).
2. Disconnect the blower motor power lead wire connector (orange/black stripe wire) from the terminal of the resistor assembly and pull back through the center hole of the case assembly.
3. Remove the retaining screws (2) securing the resistor assembly to the heater case assembly and remove the resistor assembly.
4. Remove the heater core cover retaining screws (4) and remove the cover.
5. Remove the heater core and the internal heater core support bracket.
6. Disengage the Temperature Blend Door crank arm shaft from the journal notch of the rear case half.
7. Remove the case half assembly screws (3) and retention clips (10) and separate the case halves.
8. Remove the blower motor flange retaining screws (3) and remove the blower motor and wheel assembly from the front case half.
9. Remove the Temperature Blend Door and Crank Arm Assembly from the front case half.
10. Remove the Heat-Defrost Door and Crank Arm Assembly from the front case half.
NOTE: Wrap a short piece of tape on the crank arm to prevent loss of the bearing thrust washer.
11. Remove the metal Heat-Defrost separator plate from the front case half.

Assembly

1. Install the metal Heat-Defrost separator plate in the front case half.
2. Install the Heat-Defrost Door and Crank Arm Assembly in the front case half, with the bearing thrust washer positioned between the door and lower edge of the heater case (Fig. 29).
3. Install the Temperature Blend Door in the front case half, with the straight shaft end inserted into the bearing journal.
4. Insert the blower power and ground wire leads through the blower housing opening in the front case half. Position the blower mounting flange onto the locator pins (2) and install and tighten the blower motor mounting screws (3) to specification.
5. Position the rear case half onto the front case half. NOTE: MAKE CERTAIN THE LIP SEAL ON THE EDGE OF THE HEAT-DEFROST DOOR DOES NOT BECOME PINCHED BETWEEN THE CASE HALVES. Install the case half assembly screws (3) and retention clips (10) and tighten the assembly screws to specification.
6. Snap the crank arm end of the Temperature Blend Door Assembly into the journal notch in the lower left corner of the heater core opening.
7. Insert the heater core support bracket into the heater core opening. Position the straight end into the slot of the front case half and the bent flange end over the guide pin of heater core opening on the rear case half.
8. Align the heater core with the heater case opening (with core tubes on top) and slide the heater core into the heater case assembly.
9. Position the heater core cover onto the opening of the case assembly and install the core cover retaining screws (4). Tighten the cover retaining screws to specification.
10. Apply rope sealer to the outer edge of the resistor board to prevent air leakage.
11. Position the resistor assembly onto the resistor opening of the heater case and install and tighten the retaining screws (2) to specification.
12. Feed the blower power lead wire (orange/black stripe) through the center case hole and install the connector on the appropriate spade terminal of the resistor assembly.
13. Position the outside air inlet duct onto the heater case assembly and install and tighten the retaining screws (2) to specification.
14. Check for free operation of Heat-Defrost and Temperature Blend doors, and blower wheel prior to installation in the vehicle.



L2606-2A

FIG. 29 Heater Case Disassembled

SPECIFICATIONS

HEATER SYSTEM ELECTRICAL

BLOWER MOTOR

Blower Speed	Current (Amps)	Voltage
LO	3.6	4.6
Medium	5.3	7.4
HI	8.5	12.8
Protective Device	15 Amp. fuse in fuse panel.	

CL2606-2A

Mustang II, Pinto and Bobcat Heating System

PART
36-14

SUBJECT	PAGE	SUBJECT	PAGE
DESCRIPTION AND OPERATION		REMOVAL AND INSTALLATION	
Air Flow	14-1	Blower Motor Resistor	14-5
Control Assembly	14-1	Blower Motor and Wheel Assembly	14-4
Function Control Lever Operation	14-1	Control Assembly	14-3
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ADJUSTMENTS		Heater Case Assembly	14-3
Function Control Cable	14-2	Heater Core	14-4
Temperature Control Cable	14-2	Heater Switch	14-3
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DESCRIPTION AND OPERATION

CL2339-2B

For an explanation of the control door code numbers used throughout this Part, refer to General Information in Part 36-10.

AIR FLOW

The blower motor in the Mustang II, Pinto and Bobcat heater assembly is located behind the heater core instead of in front of it.

Outside air enters the right duct of the heater assembly through the cowl opening. With the right air vent closed, the air is drawn through the (5) blend door opening(s) through and/or around the heater core into the blower housing (Fig. 1). The blower then forces the air into the plenum chamber where it discharges either through the defroster nozzle or the air distribution duct to the floor.

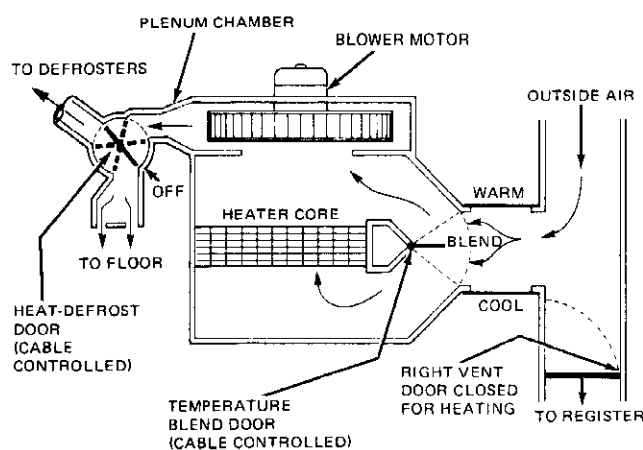
CONTROL ASSEMBLY

The system has only two doors: the temperature blend (5) door and the heat/defrost (7) door (Fig. 1). Both doors are cable controlled by levers in the control assembly (Fig. 2). The cable from the (5) door connects to the temperature control (upper) lever; the cable from the (7) door connects to the function control (lower) lever (Fig. 2).

The system off switch shuts the blower motor off when the function control lever is in the OFF position. The lever at the left end of the control head operates the blower switch which provides three blower speeds; low, medium and high.

TEMPERATURE CONTROL LEVER OPERATION

When the temperature control (upper) lever (Fig. 2) is set at COOL, the (5) door (Fig. 1) shuts off air passage to the heater core and by-passes it directly to the blower housing unheated.



L1513-1B

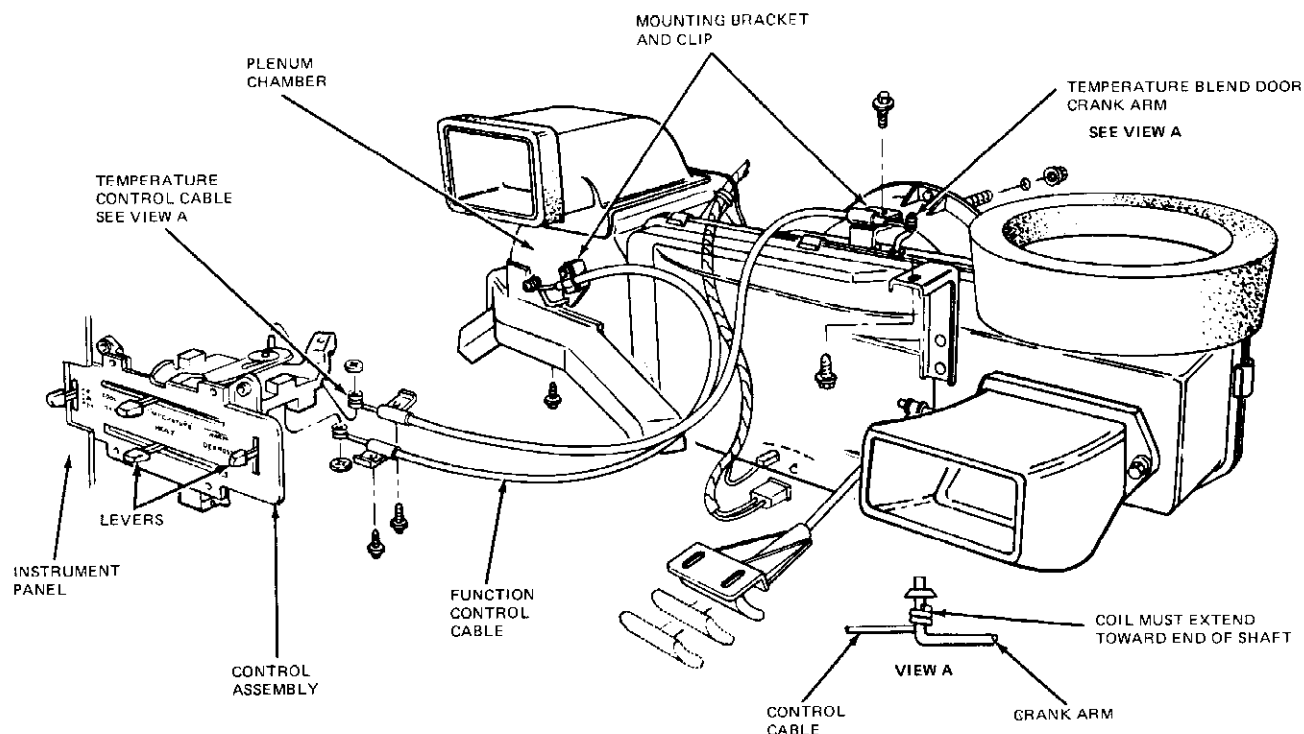
FIG. 1 Heater Air Flow

As the temperature control lever is moved from COOL to WARM, the control cable moves the blend (5) door (Fig. 1) from minimum heat to full heat position to modulate the air flow through and/or around the heater core. The air through the core and the air through the by-pass chamber is then mixed as it enters the blower housing.

At full WARM position, the by-pass to the blower is shut off, and all the air passes through the heater core to pick up maximum heat before entering the blower housing.

FUNCTION CONTROL LEVER OPERATION

The function control (lower) lever actuates a control cable connected to the heat-defrost (7) door in the plenum chamber (Fig. 2). In the OFF position, the door is closed blocking all air passage through the plenum (Fig. 1). In HEAT position, air is discharged through the



L1512-2G

FIG. 2 Heater Control Cable Adjustments—Mustang II Shown

air distribution duct to the floor area. A small amount of air will be discharged through the defroster nozzle. In DEFROST position, air is discharged to the windshield through the defroster nozzle. A small amount of air is bled through the air distribution duct to the floor. Air flow can also be modulated in direct proportion to the control setting between HEAT and DEFROST positions.

A single defroster nozzle, connected to the top of the plenum chamber, distributes air through two openings in the forward instrument panel to the windshield.

ADJUSTMENTS

FUNCTION CONTROL CABLE

1. Loosen the function control cable mounting screw (Fig. 2).
2. Move the function control lever to DEFROST position. Leave a 1/8-inch gap on the Mustang II or a 1/4-inch gap on the Pinto and Bobcat between the lever and the end of the slot.
3. Place the (7) door crank arm in the DEFROST position and tighten the screw (Fig. 2).

TEMPERATURE CONTROL CABLE

1. Loosen the temperature control cable mounting screw (Fig. 2).
2. Move the temperature control lever to the full WARM position (right end of control slot), and then back it off 1/8 inch on the Mustang II or 1/4 inch on the Pinto and Bobcat.
3. Move the (5) door crank arm toward the mounting bracket (Fig. 2), and tighten the screw.

REMOVAL AND INSTALLATION

CONTROL CABLES

Pinto and Bobcat

1. Remove the two control assembly-to-instrument panel mounting screws, and pull the control assembly from the panel.
2. Remove the screw and two push nuts that retain the two cables to the control assembly and disconnect

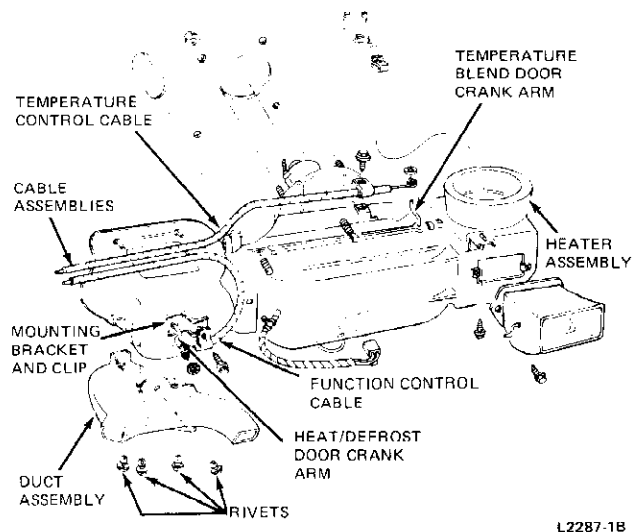
the cable(s) from the control lever(s) (Fig. 3).

3. To remove the function control cable, remove the push nut and screw that connects the cable to the (7) door, and pull the cable out.

To gain access to the temperature control cable connections, open the glove box door and reach through the glove box opening. Remove the push nut and screw

that connects the cable to the (5) door, and pull the cable out.

4. When installing, first connect the cable(s) to the control assembly, push the cable(s) through the opening and install the control assembly to the instrument panel. Then connect the cable(s) to the (5) and/or (7) door. Adjust the cable as outlined under ADJUSTMENTS.



L2287-1B

FIG. 3 Heater Control Cable Adjustments—Pinto and Bobcat

Mustang II

1. Remove the push nuts and screws that retain the cables to the control head.
2. To remove the function control cable, remove the push nut and screw that connects the cable to the (7) door, and pull the cable out (Fig. 2).
3. To install, connect the cables to the (5) and/or (7) door, leaving the attaching screws loose. Attach the cables to the control head. Adjust the cables as outlined under ADJUSTMENTS.

CONTROL ASSEMBLY

Pinto and Bobcat

1. Remove the two control head-to-instrument panel mounting screws from the face of the assembly.
2. Pull the control assembly out of the opening in the instrument panel, and then disconnect the switch lead wires and illumination lamp lead wire.
3. Remove the screw and push nut that retains the cables to the control assembly. Disconnect the cables from the control levers and remove the control (Fig. 3).
4. When installing the control assembly adjust both cables as outlined in the Adjustment Section.

Mustang

1. Remove the lower instrument panel to control support bracket mounting screw.
2. Remove the two control mounting screws from front of instrument panel. Lower the control assembly from under panel.

3. Disconnect the electrical connectors from the blower switch, system off switch and illumination bulb harness.
4. Disconnect the electrical connectors from the defogger switch and warning lamp, if so equipped.
5. Disconnect the function control cable and temperature control cable from the control head and remove the control head assembly.
6. When installing the control assembly adjust both cables as outlined in the Adjustment Section.

HEATER SWITCH

Pull the knob off the switch lever, and remove the two control head-to-instrument panel screws and the bracket screw on the Mustang II. Pull the control head out of the panel for access, disconnect the switch lead wire, and remove the switch from forward side of the control (one screw).

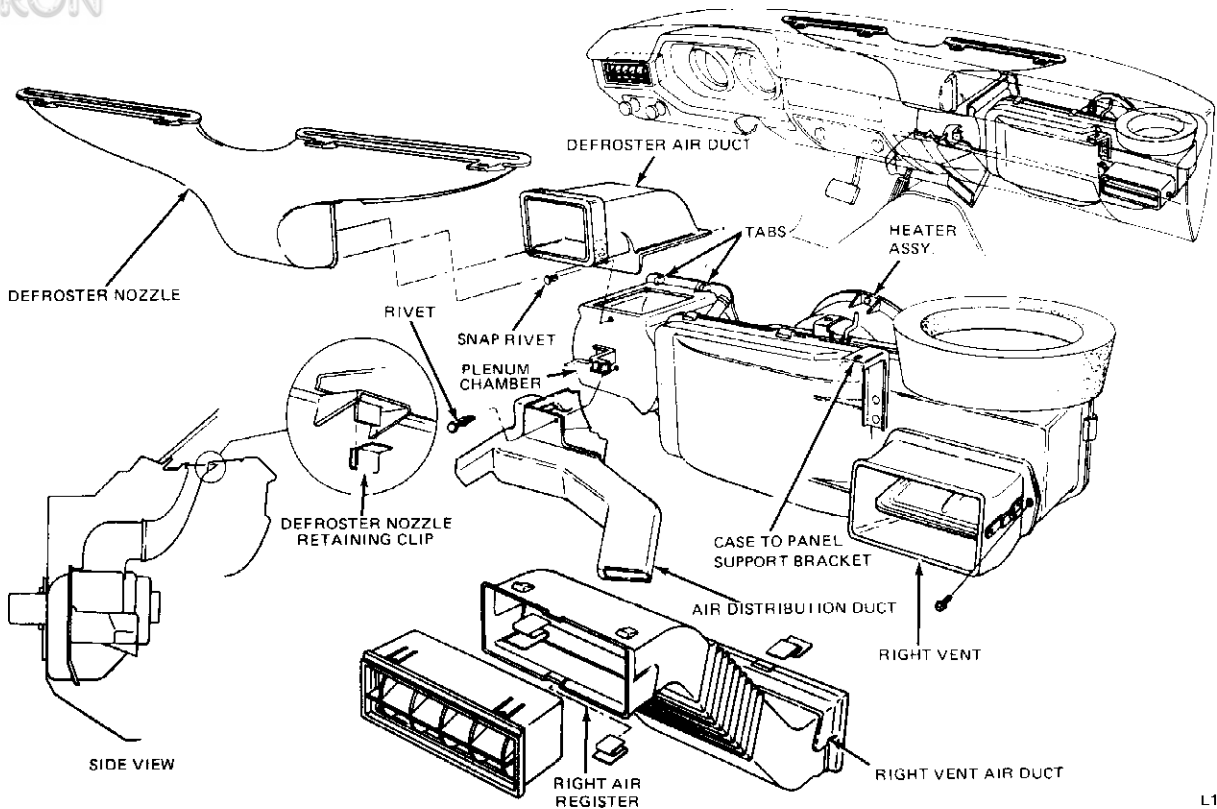
DEFROSTER NOZZLE

The defroster air duct has to be removed before the nozzle can be removed. The air duct is attached to the top of the plenum chamber by a snap rivet at the front and two tabs at the rear (Fig. 4). Remove the snap rivet and move the air duct back into the defroster nozzle to disengage it from the tabs on the plenum chamber. Now, tilt the forward edge of the duct up and forward to disengage it from the nozzle, and remove it from the left side of the heater assembly.

On the Pinto and Bobcat, the defroster nozzle is retained by four mounting tabs integral with the instrument panel flange. These tabs are twisted to retain the defroster nozzles to the instrument panel. They must be straightened to remove the nozzles and twisted during installation. Lower the nozzle rearward to clear the plenum chamber and remove it.

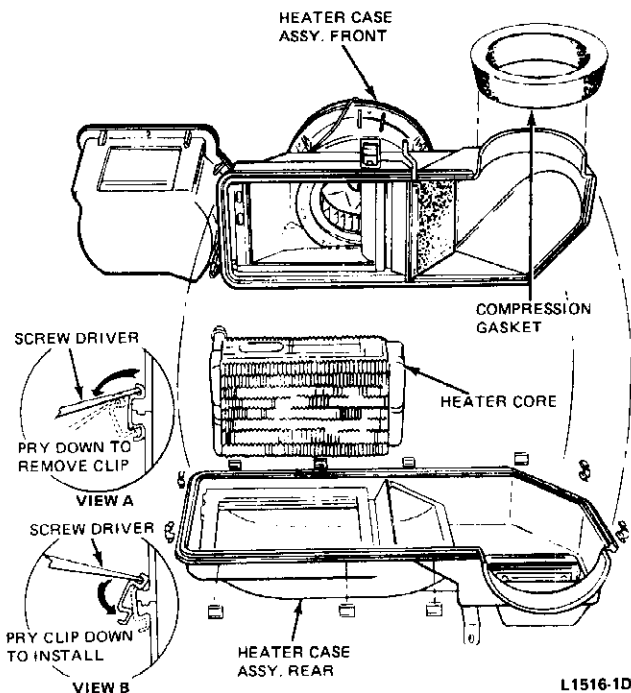
HEATER CASE ASSEMBLY

1. Drain the engine coolant, and disconnect the battery.
2. Disconnect the blower motor ground wire (black) at the engine side of the dash panel.
3. Disconnect the heater hoses at the engine block.
4. Remove the four heater assembly-to-dash panel mounting nuts from the engine side of the dash panel.
5. From inside the vehicle, remove the glove box.
6. Remove the mounting bracket clips and disconnect the control cables from the (5) and (7) door crank arms (Fig. 2). Disconnect the motor lead wire from the resistor (Fig. 3).
7. Remove the radio for access as outlined in Group 35.
8. From inside the vehicle, remove the snap rivet that attaches the forward side of the defroster air duct to the plenum chamber (Fig. 4). Move the air duct back into the defroster nozzle to disengage it from the tabs on the plenum chamber. Now, tilt the forward edge of the duct up and forward to disengage it from the nozzle, and remove it from the left side of the heater assembly.



L1514-2F

FIG. 4 Heating System—Pinto and Bobcat Shown



L1516-1D

FIG. 5 Heater Core Removal

9. Remove the heater case-to-instrument panel support bracket mounting screw (Fig. 4), and pull

the heater case away from the dash panel. At the same time, pull the two heater hoses in through the dash panel. Then, disconnect the hoses from the heater core tubes, and remove the heater case assembly from the vehicle.

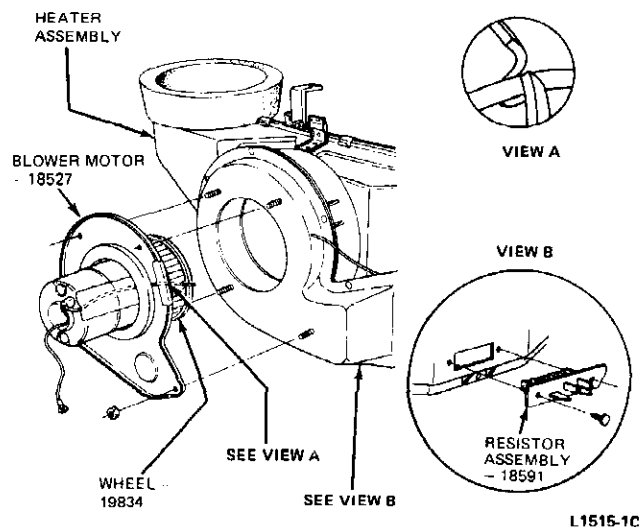
10. After installing the heater case assembly, be sure to adjust the control cables as outlined in Section 3. Then install the radio (Group 35).

HEATER CORE

1. Remove the heater case assembly from the vehicle as outlined in the foregoing procedure.
2. Remove the compression gasket at the cowl air inlet.
3. Remove the eleven clips from around the front and rear case flanges (View A, Fig. 5), and separate the front and rear halves of the case.
4. Lift the heater core from the front half of the case (Fig. 5).
5. When installing, assemble the two halves of the case as shown in View B, Fig. 5.

BLOWER MOTOR AND WHEEL ASSEMBLY

1. Remove the heater case assembly from the vehicle as outlined in this section.
2. Disconnect the blower motor lead wire (orange) from the resistor (Fig. 6).
3. Remove the four blower motor mounting plate nuts and remove the motor and wheel assembly from the heater assembly (Fig. 6).



BLOWER MOTOR RESISTOR

The resistor is mounted on the lower part of the heater case just above the passenger's feet (Fig. 6). To replace, disconnect two push-on connectors and remove two retaining screws.

FIG. 6 Blower Motor and Wheel Assembly

SPECIFICATIONS

Blower Motor Current Draw:

Low 7 volts, 4 amps max.

Medium 9 volts, 5 amps max.

High 12.8 volts, 7 amps max.

Protective Device is 15 amp Fuse in Fuse Panel

Granada and Monarch Heating System

PART
36-16

SUBJECT	PAGE	SUBJECT	PAGE
DESCRIPTION AND OPERATION		REMOVAL AND INSTALLATION	
Air Flow	16-1	Blower Motor and Wheel Assembly	16-4
Function Control Lever Operation	16-1	Control Assembly	16-3
Temperature Control Lever Operation	16-1	Defroster Nozzle	16-4
ADJUSTMENTS		Heater Assembly	16-3
Function Control Cable	16-3	Heater Core	16-4
Temperature Control Cable	16-3	SPECIFICATIONS	16-4

CL2340-2B

DESCRIPTION AND OPERATION

The Granada and Monarch heater system is an independent case type, wherein the entire heater installation is contained in a single case attached to the passenger compartment side of the dash panel. The blower is located upstream of the heater core.

AIR FLOW

The heater assembly is a blend-air system receiving outside air through an opening in the right vent duct, which is, in turn, connected directly to an opening in the upper cowl. Outside air is drawn into the system from the cowl through the right vent duct, into the blower housing, forced through and/or around the heater core, mixed, and then discharged through outlets in the discharge air duct to the floor area or through the defroster outlets to the windshield. Refer to the airflow charts in Fig. 1. With this system, the right vent control must be pushed in for heater operation.

TEMPERATURE CONTROL LEVER OPERATION

The air discharge temperature is controlled by the position of the Temperature Blend Door located between the blower and the heater core in the heater

case. As the Temperature Control Lever is moved from COOL to WARM, a control cable attached to the lever moves the Temperature Blend Door, (Fig. 1) from minimum to full heat position, directing the airflow through and/or around the heater core. The air flowing through the core and the by-pass chamber is then mixed in the plenum chamber and discharged into the vehicle.

FUNCTION CONTROL LEVER OPERATION

The Function Control Lever actuates a cable connected to the Heat-Defrost Door in the plenum chamber. In the OFF position, the door is closed, preventing airflow through the plenum. In HEAT position, air is discharged through the air distribution duct to the floor area. Air flows to the windshield through the defroster nozzle in DEFROST position. Airflow to the floor and the windshield can be modulated in direct proportion to the control setting between HEAT and DEFROST (Fig. 1).

A single defroster nozzle connected to the top of the plenum chamber distributes air through two openings in the forward instrument panel to the windshield (Fig. 2)