1958-1959

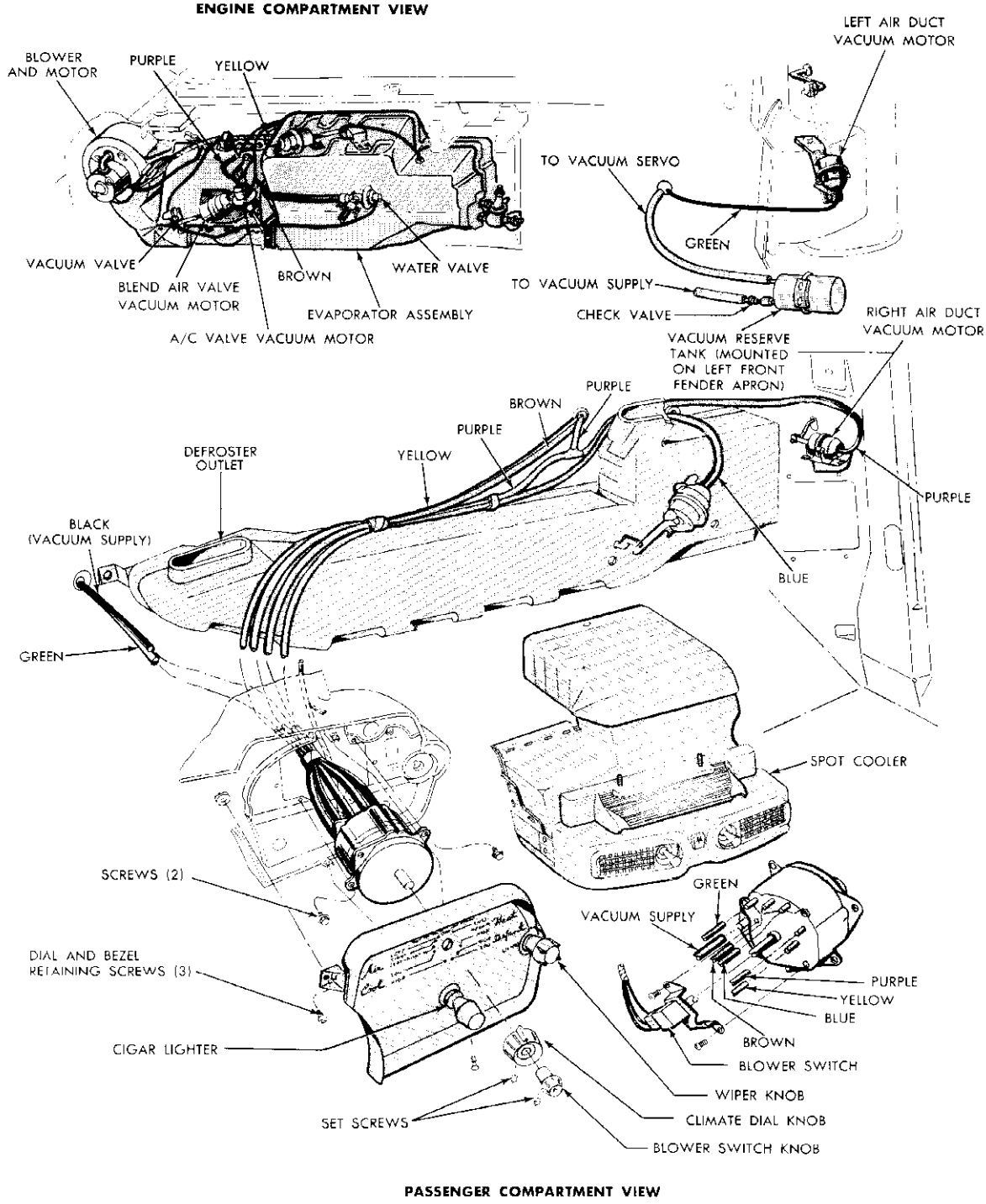

Fig. 4-1–Heater–Air Conditioning and Related Parts–1958-59–(9M-8804)

The Climate Dial heater and air conditioning unit is operated by means of a vacuum servo mechanism which is controlled by one central control knob. One blower motor is used to regulate the volume of heated or cool air desired. This is controlled by a three position blower switch located in the center of the servo control.

A vacuum reserve tank and check valve is included in the system to assure sufficient vacuum for all operating conditions. The tank and valve are located on the left front fender apron.

The cam plate in the vacuum servo is the only difference between the heater only or air conditioning and heater servo control. The heater cam plate has "Heater" stamped on the front face while the heater and air conditioning cam plate has "Air Conditioning" stamped on the front face to provide easy identification. The servo should only be serviced as a complete unit.

Control Operation

Figure 4-1 shows the Climate Dial heater and air conditioning and related parts.

The Climate Dial Control knob, when turned to the various detent positions, rotates the cam plate. The rotating cam plate releases or depresses five plungers which are part of the vacuum servo assembly and controls the vacuum to the respective vacuum motors.

The blower motor speed is selected by pulling the control knob out to either of two positions. To operate the blower motor at low speed, pull the knob half way out, and all the way out for high speed.

The "Spot Cooler" attached to the lower edge of the instrument panel has two registers which can be adjusted to direct air flow as desired.

1960

The Climate Dial "Blend-Air" heater and air conditioning control system is basically the same as used in previous models. (See figure 4-3.) The water valve is controlled directly from the servo control head, however, it is either fully on or fully off. Heater regulation is controlled by blending heated air and outside air in the desired proportion to maintain an even temperature inside the passenger compartment. The blower switch is located on the upper inboard side of the Climate Dial control.

The Climate Dial knob, when turned to the various detent positions, rotates a cam. (See figure 4-2.) The rotating cam raises or lowers the cam follower which controls the modulator and directs the vacuum flow through the servo head to the appropriate vacuum ports. The vacuum hoses connected to the ports are connected to vacuum motors which are activated to open or close the various dampers, thermostatic switch, and water valve.

The modulator acts as a relief valve permitting outside air to enter the various vacuum motors when they are not activated. This allows the pressure of the return spring in the vacuum motor to close the connected units. The vacuum motors apply a 4 to 6 pound pull with 13 inches of vacuum after overcoming approximately 10 pounds of return spring pressure.

A check valve is incorporated in the vacuum servo to retain the vacuum. This prevents inadvertent operation of vacuum motors when the manifold vacuum drops below 13 inches as on acceleration or when the engine is under heavy load.

A vacuum reserve tank and check valve are included in the system to assure sufficient vacuum for all operating conditions. The tank and check

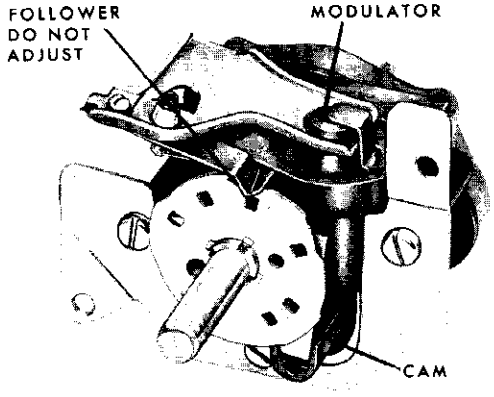

Fig. 4-2–Servo Control Head–(Front View)
1960–(60M-7818)

valve are located on the lower rear portion of the left front fender apron. (See figure 4-3.)

In operation, outside air enters the cowl ventilator grille and is forced by the cars forward motion,

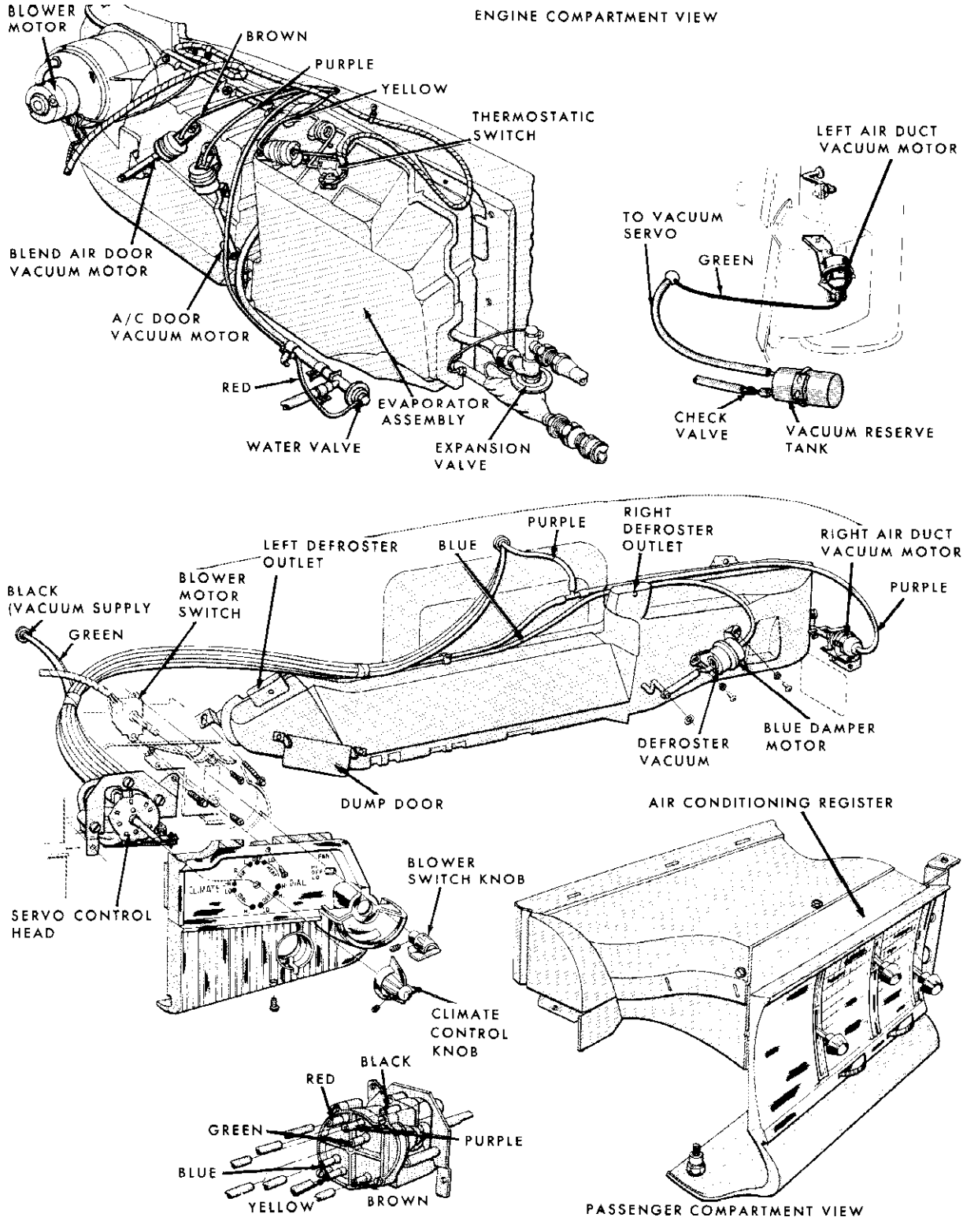

Fig. 4-3–Heater–Air Conditioning and Related Parts–1960–(60M-7808)

or by the blower fan, toward the heater blending valve. The valve then directs only a portion of the air through the heater core to be heated; the balance is directed around the core and is blended with the heated air in the plenum chamber before entering the passenger compartment. The desired temperature is obtained by turning the control knob between the LOW and HIGH dial positions. (See figure 4-4.) In the air conditioning position, the right vent damper is closed permitting inside air to recirculate through the right vent, blower motor housing, evaporator and out through the instrument panel register.

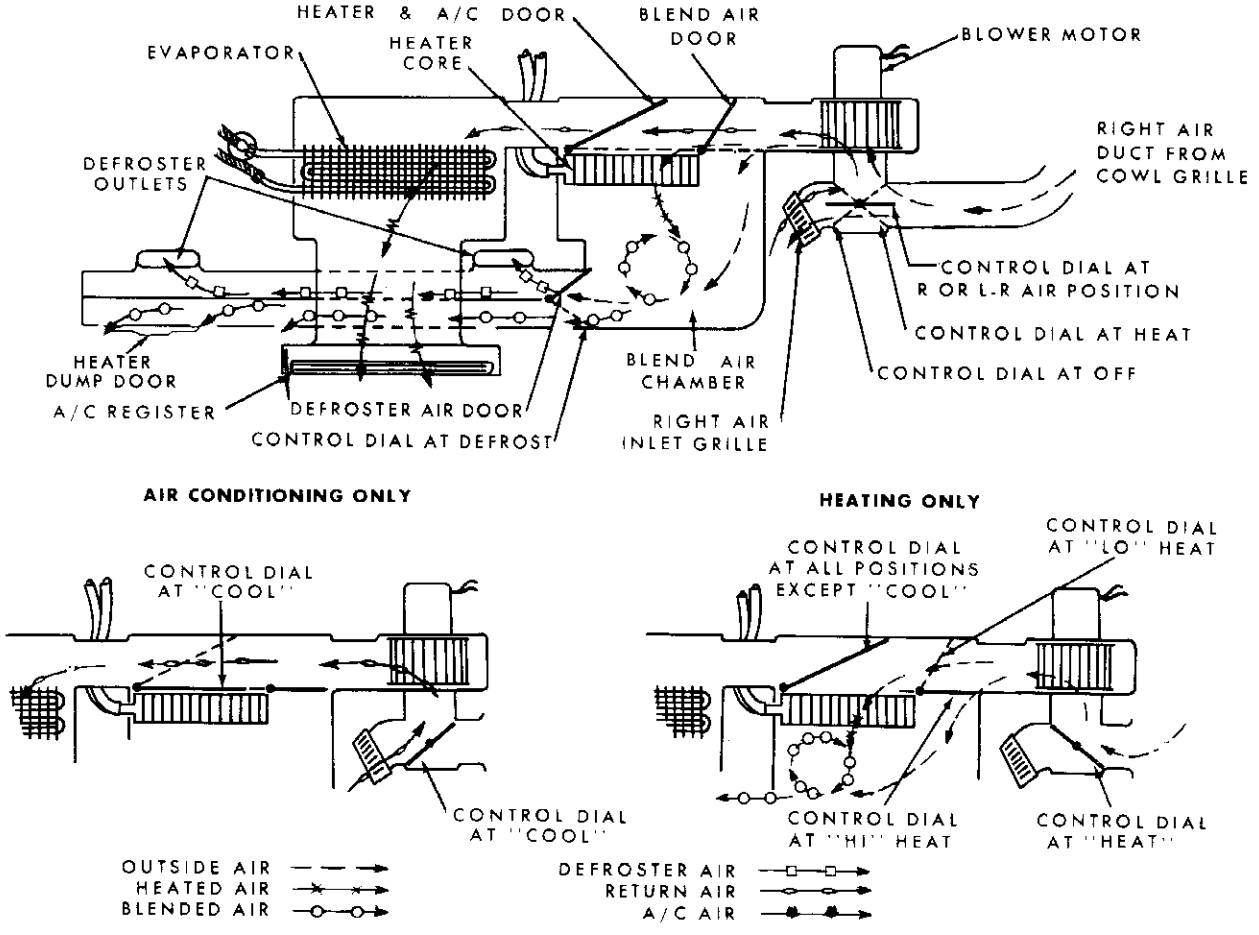

Fig. 4-4–Heater–Air Conditioning Air Flow Chart–1960–(60M-7826)

1961

The operating controls consist of a heater-air conditioning control panel located in the instrument panel and a "Spot Cooler" (air register) with a thermostatic control switch, which is located below the center of the instrument panel. (See figure 4-5.)

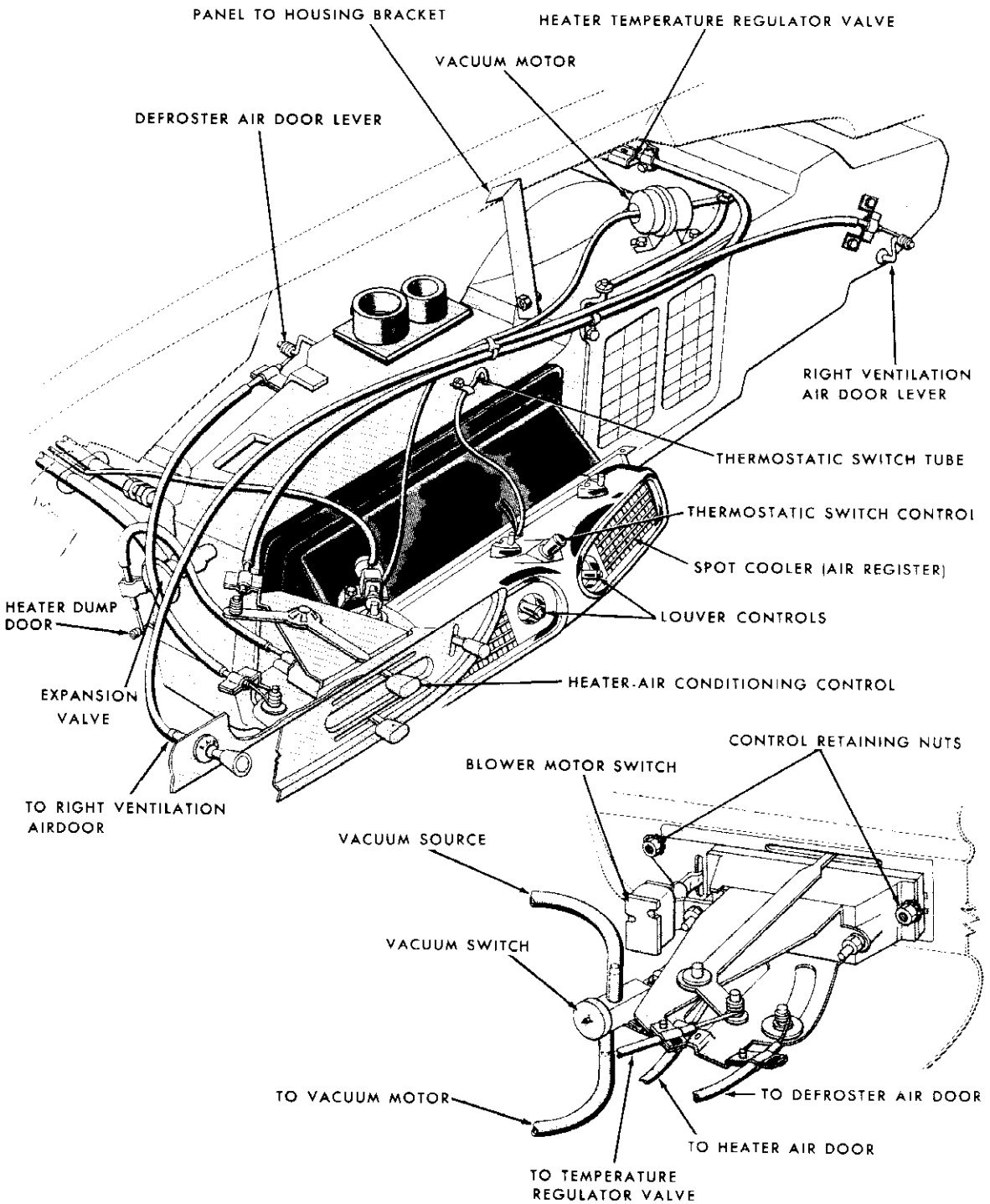

Fig. 4-5–Heater and Air Conditioning Control System–1961–(61MM-8811)

The heater-air conditioning control panel is similar to the heater only control, but the levers control the air flow in a different manner and actuate a vacuum valve switch for opening and closing of a recirculating air door. The thermostatic switch control knob is located in the upper center area of the "Spot Cooler" and has 5 different steps for cooling. The switch control knob is rotated clockwise for increased cooling.

A three speed blower switch is located to the right side of the heater-air conditioning control panel.

All cars equipped with air conditioning have a hand throttle located to the left of the evaporator. This throttle is to be used ONLY when the transmission selector lever is in NEUTRAL or PARK position. The hand throttle MUST be released BEFORE the driver selects a gear range.

Figure 4-6 shows the heater-air conditioning air flow system.

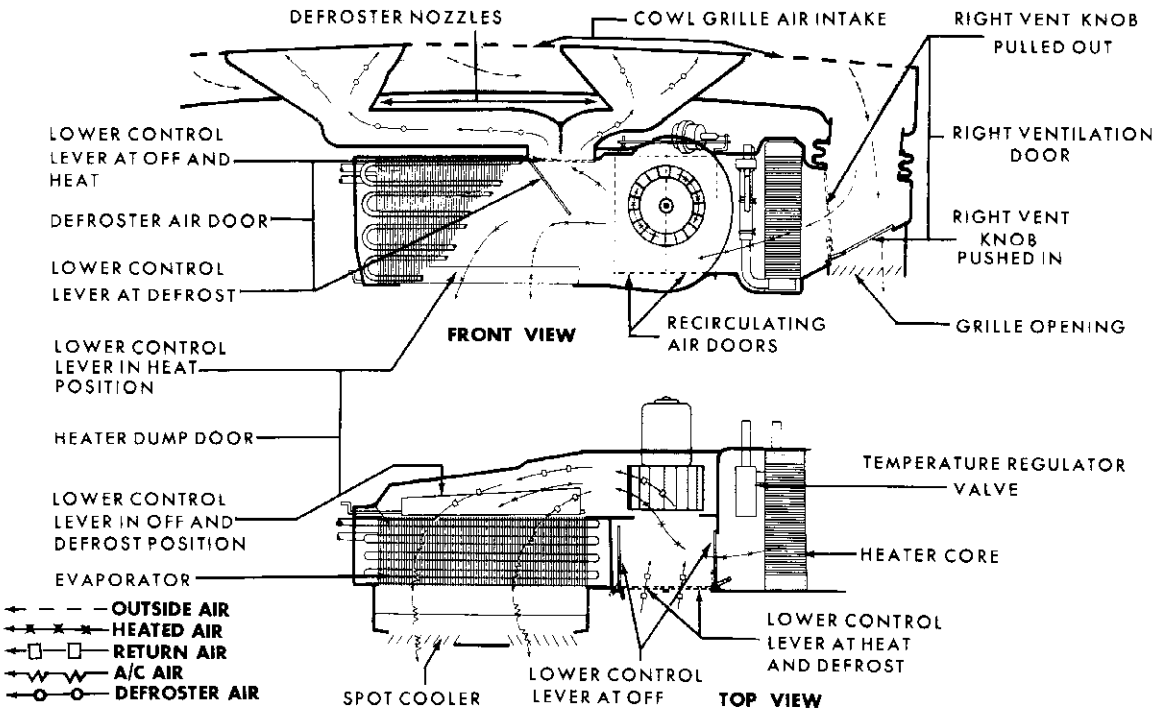

Fig. 4-6–Heater and Air Conditioning Air Flow–1961–(61MM-8809)

REMOVAL AND INSTALLATION CONTROLS

SERVO-1958

REMOVAL

1. Disconnect the negative (ground) battery cable to prevent the possibility of a short circuit during removal and installation operation.
2. Remove the set screw from the switch control knob and pull the knob off the shaft.
3. Remove the left fresh air duct.

4. Remove three screws attaching the servo control assembly to the dial housing. (See figure 4-7.)

5. Remove the servo control assembly; remove the blower switch and shaft and disconnect the vacuum hoses from the servo control.

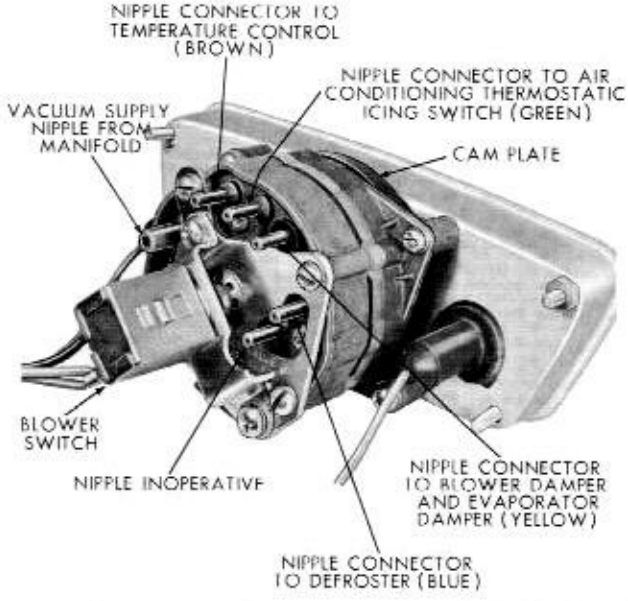

Fig. 4-7–Vacuum Servo Control–1958–(8M-7910)

INSTALLATION

1. Insert the blower switch shaft in the servo control; rotate the switch and shaft so the flat on the shaft mates with the flat in the servo cam plate.

2. Position the blower switch and secure it with the two screws.

3. Connect the vacuum hoses to the servo control.

4. Place the servo control in position on the dial housing and secure with three screws.

5. Install the left fresh air duct.

6. Install the switch control knob and secure with the set screw.

7. Connect the battery ground cable.

8. Start the engine; check the complete heater-air conditioning operations in all Dial positions.

BLOWER SWITCH

1958

REMOVAL

1. Disconnect the negative (ground) battery cable.

2. Remove the set screw from the switch control knob and pull the knob off the shaft.

3. Remove the left fresh air duct.

4. Disconnect the blower switch wires at the connector.

5. Remove two switch attaching screws (figure 4-7) and slide the switch and shaft assembly out of the vacuum servo control.

INSTALLATION

1. Position the blower switch shaft in the servo control. Rotate the switch and shaft so the flat on the shaft mates with the flat in the servo cam plate.

2. Secure the switch to the servo with two screws.

3. Connect the blower switch wires.

4. Install the switch control knob and secure with the set screw.

5. Install the left air duct.

6. Connect the battery ground cable.

7. Check the operation of the blower switch and the left fresh air duct valve.

SERVO AND BLOWER SWITCH

1959

Refer to figure 4-1 and proceed as follows:

1. Remove the negative (ground) cable from the battery.
2. Snap out the chrome bezel located between the two clusters just above the steering column. Use a bent wire and pull from the bottom of the plate.
3. Loosen the wiper control knob set screw and slide off the knob assembly. Remove the wiper switch retaining nut.
4. Loosen the heater blower switch knob set screw and remove the knob.
5. Loosen the climate dial knob set screw and remove the knob.
6. Working through the opening below the cluster, disconnect the cigar lighter wire.
7. Remove three screws securing the bezel to the cluster and remove the bezel and dial plate assembly.
8. Remove two screws securing the vacuum servo to the cluster. Pull the servo out far enough to expose the vacuum hoses.

   NOTE: *The color on the vacuum ports of the servo matches the color on the vacuum hoses so that the hoses can be installed to the correct ports.*

9. Disconnect the vacuum hoses and the blower switch wires at the connector.
10. To remove the blower switch, remove two attaching screws and slide the switch assembly from the servo.
11. To install the vacuum servo and blower switch, reverse the removal procedure.

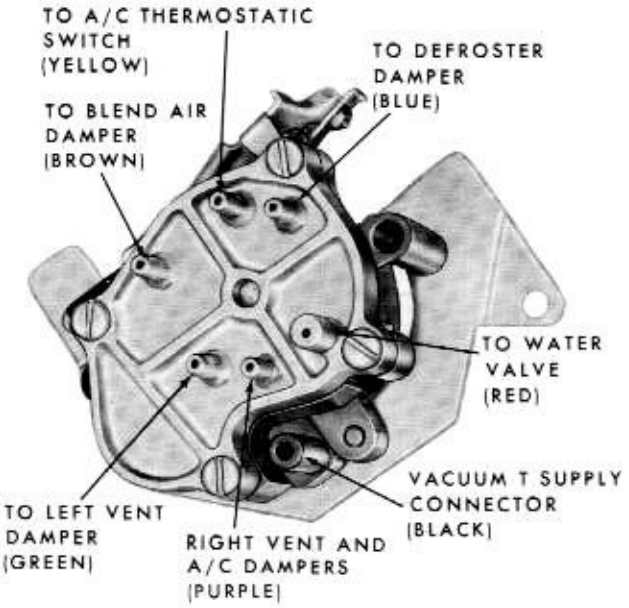

Fig. 4-8–Vacuum Servo Control–Rear View 1960–(60M-7817)

1960

Refer to figure 4-2 and proceed as follows:

1. Remove the negative (ground) cable from the battery.
2. Loosen the wiper control knob set screw and remove the knob. Remove the wiper switch retaining nut.
3. Loosen the heater blower switch knob set screw and remove the knob.
4. Loosen the Climate Dial knob set screw and remove the knob.
5. Working through the opening below the cluster, disconnect the cigar lighter wire.
6. Remove 2 screws securing the bezel to the cluster and remove the bezel and dial plate assembly.
7. Remove 2 screws securing the vacuum servo to the cluster. Pull the servo out far enough to expose the vacuum hoses. *The color on the vacuum ports of the servo matches the color on the vacuum hoses so that the hoses can be installed to the correct ports. (See figure 4-8.)*
8. Disconnect the vacuum hoses.
9. To remove the blower switch, remove 2 attaching screws and slide the switch assembly down through the lower access hole. Disconnect the wiring quick disconnect from the rear of the switch.
10. To install the vacuum servo and blower switch, reverse the removal procedure.

CONTROL ASSEMBLY
1961

1. Disconnect the negative (ground) cable from the battery.
2. Remove the three control lever knobs.
3. Remove the evaporator to "Spot Cooler" duct

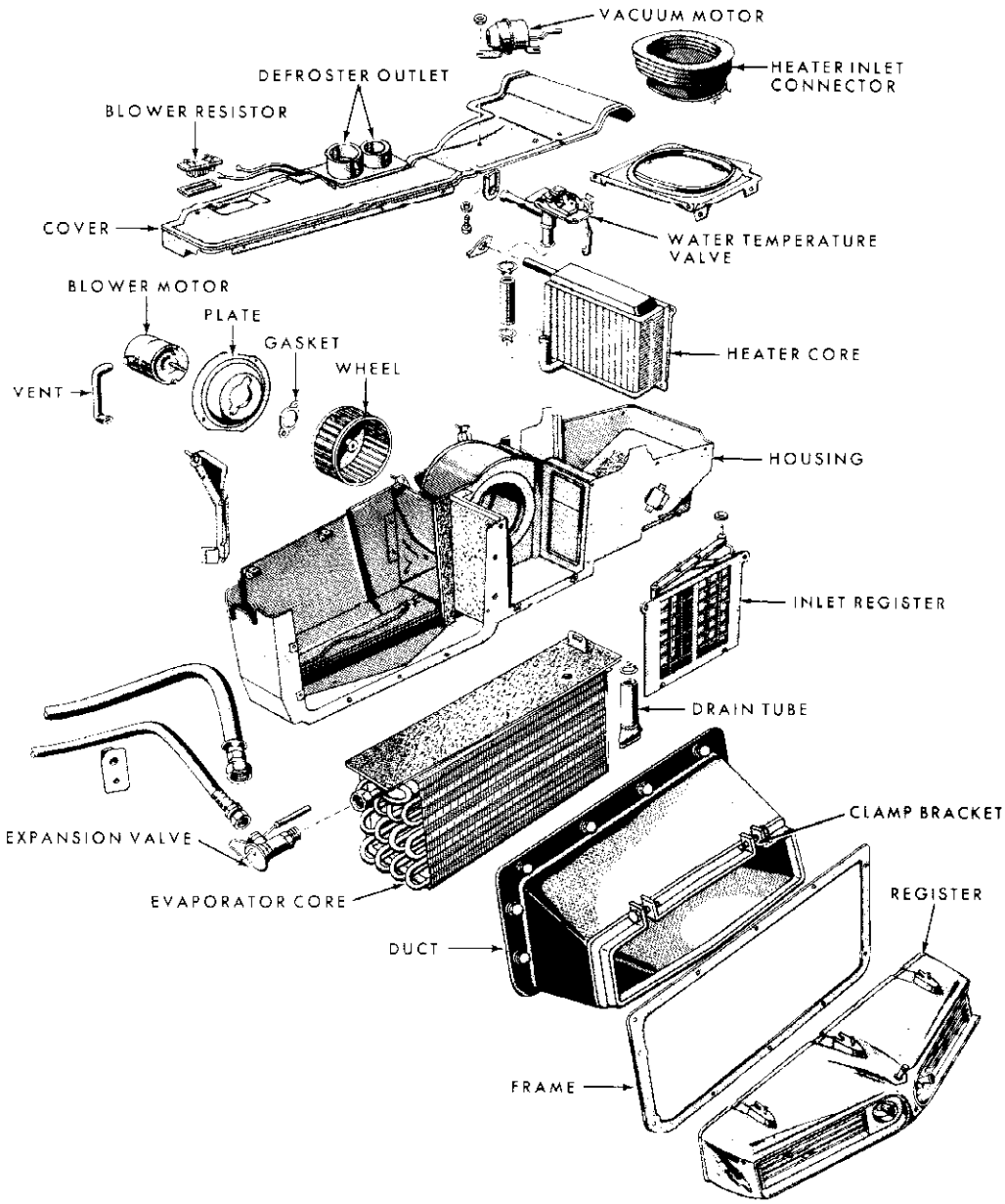

Fig. 4-9–Evaporator and Blower Housing Disassembled–1961–(61MM-8810)

clamp bracket retaining screws and remove the clamp brackets. Carefully pull the duct away from the "Spot Cooler."

4. Disconnect the vacuum valve switch hoses and the blower motor switch wire block connector.

5. Remove 2 control retaining nuts at the back side of the instrument panel. (See figure 4-5.)

6. Pull the control assembly back and down from the panel and disconnect the control cables. Remove the control assembly.

7. On the bench transfer the blower switch and vacuum switch. With the lower control lever at "HEAT" adjust the vacuum valve switch by moving it against the control lever flange until the switch plunger is depressed. Tighten the switch retaining screw.

8. To install, reverse the removal procedure.

BLOWER SWITCH
1961

1. Disconnect the negative (ground) cable from the battery.

2. Remove the blower switch control knob.

3. Remove the ash tray and retainer.

4. Remove the evaporator to "Spot Cooler" duct clamp bracket retaining screws and remove the clamp brackets. Carefully pull the duct away from the "Spot Cooler."

5. Disconnect the blower switch wiring block connector at the switch.

6. Remove one switch retaining nut and lift out the switch.

7. To install, reverse the removal procedure.

VACUUM VALVE SWITCH
1961

1. Remove the evaporator to "Spot Cooler" duct clamp bracket retaining screws and remove the clamp brackets. Carefully pull the duct away from the "Spot Cooler." (See figure 4-9.)

2. Disconnect the two vacuum hoses at the vacuum valve switch. (See figure 4-5.)

3. Remove one screw retaining the vacuum valve switch to the control and remove the switch.

4. To install, reverse the removal procedure.

EVAPORATOR

1958

REMOVAL

1. Install the Manifold Gauge Set and discharge the system.

2. Remove the blower and motor assembly.

3. Disconnect the heater hoses at the cowl panel. Remove the heater tube and refrigerant line retainer plates from the cowl panel.

4. Remove the glove box and disconnect the thermostatic switch control cable and wires; then, remove the switch. Disconnect the control cable from the heater thermostat, defroster damper, and the air diverter valve. Disconnect the vacuum line at the heater thermostat.

5. Loosen the defroster duct clamp on the plenum. Remove six plenum to evaporator screws and one plenum bracket to cowl screw; then, remove the plenum evaporator drip pan and drain tube. Remove the left air register connecting duct from the evaporator.

6. Disconnect the refrigerant lines. Remove four evaporator stud nuts; then, pull the evaporator away from the cowl panel. Roll the evaporator from under the instrument panel.

INSTALLATION

1. Apply Perma-gum sealer, or equivalent, to the cowl panel where the flange of the evaporator case will make contact. Be sure the evaporator case gasket is securely in place on the case.
2. Position the evaporator under the dash; then, install the four evaporator stud nuts.
3. Connect the refrigerant lines, heater hoses, and retainer plates.
4. Install the thermostatic switch; then, connect the control cable and wires. Install the right air register connecting duct; then, install the glove box.
5. Install the left air register connecting duct. Install the evaporator drip pan, plenum, and drain tube. Connect the control cables and heater thermostat vacuum line. Install the defroster duct and tighten the clamp.
6. Install the heater hoses and the blower and motor assembly. Fill the cooling system.
7. Evacuate and charge the system following instructions outlined in Section 2.

1959

REMOVAL

1. Disconnect the negative (ground) cable from the battery.
2. Remove the spot cooler and flexible hose from under the instrument panel.
3. Remove the glove box door and glove box assembly.
4. Remove the heater plenum chamber.
5. Remove seven screws retaining the thermostatic switch housing on the evaporator housing and disconnect the two wires from the switch. Pull the capillary tube out of the evaporator core.
6. Disconnect the vacuum hose from the thermostatic switch vacuum motor.
7. Remove the hood lock and bracket assembly.
8. Remove the accelerator rod to transmission control rod, bracket, and rod assembly.
9. Remove the vacuum hose from the water valve.
10. Remove the water valve bracket and position the water valve and connecting hoses forward on the engine to obtain clearance.
11. Install the Manifold Gauge Set to the service valves and discharge the air conditioning system.
12. Disconnect the high pressure hose connection at the expansion valve.
13. Disconnect the low pressure hose at the evaporator outlet.

NOTE: *Caps or suitable protection should be installed on all open connections to prevent dirt and moisture from entering the system and to protect the threads of the connectors.*

14. Disconnect the rubber coupling between the evaporator housing and the heater core housing.
15. Remove four nuts and washers from the passengers side of the cowl panel.
16. Remove the evaporator core and housing assembly from the vehicle.
17. Remove 16 screws attaching the front and rear evaporator housing sections and remove the core.
18. Remove the expansion valve from the evaporator core. (See figure 4-10.)

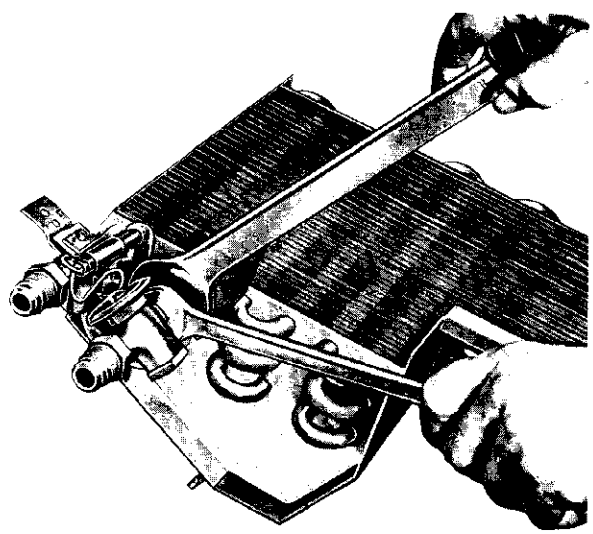

Fig. 4-10–Removing the Expansion Valve (60M-7811)

INSTALLATION

1. Install the expansion valve to the evaporator core.
2. Install the evaporator in the housing and install the 16 screws connecting the two housing sections.
3. Position the evaporator housing on the cowl panel and attach the four nuts and washers to the evaporator core retaining studs.
4. Connect the rubber connector between the evaporator housing and heater core housing.
5. Connect the high and low pressure lines to the expansion valve and evaporator core outlet pipe.
6. Install the hood lock and bracket assembly to cowl panel. (Two nuts on top and two bolts into cage nuts on the bottom).
7. Install the accelerator rod to transmission control rod bracket and rod assembly.
8. Install the heater water valve on the manifold and connect the vacuum hose.
9. Connect the thermostatic switch vacuum motor hose and check the adjustment.
10. Install the thermostatic switch capillary tube into the evaporator fins. Install the switch cover.
11. Install approximately 1 lb. of refrigerant 12 and leak test all connections.
12. Discharge and evacuate the system.
13. Connect the negative cable to the battery. Charge the air conditioning system. Disconnect negative cable from the battery.
14. Install the plenum chamber.
15. Install the glove box assembly and door.
16. Connect the flexible hose to the evaporator outlet at dash panel.
17. Connect the flexible hose to the spot cooler and attach the spot cooler to the instrument panel. Install the spot cooler to the floor pan bracket.
18. Connect the negative cable to the battery.

1960

REMOVAL

1. Disconnect the negative (ground) cable from the battery.
2. Remove the glove box liner.
3. Remove the heater plenum chamber.
4. Remove the instrument panel register and duct assembly.
5. Remove 7 screws retaining the thermostatic switch housing to the evaporator housing and disconnect the two wires from the switch. Pull the capillary tube out of evaporator core and position it out of the way.
6. Disconnect the vacuum hose from the thermostatic switch vacuum motor.
7. Remove the hood lock and bracket assembly and the electric windshield wiper motor.
8. Remove the accelerator rod to transmission control rod, bracket and rod assembly.
9. Remove the vacuum hose to the water valve.
10. Remove the water valve bracket and position the water valve and connecting hoses forward on the engine to obtain clearance.
11. Install the Manifold Gauge Set to the service valves and discharge the air conditioning system.
12. Disconnect the high pressure hose connection at the expansion valve.
13. Disconnect the low pressure hose at the evaporator outlet.

    Caps or suitable protection should be installed on all open connections to prevent dirt and moisture from entering the system and to protect the threads of the connectors.
14. Disconnect the rubber coupling between the evaporator housing and the heater core housing.
15. Remove 4 nuts and washers from the passengers' side of the cowl panel.
16. Remove the evaporator core and housing assembly from the vehicle.
17. Remove 16 screws attaching the front and rear evaporator housing sections and remove the core.
18. Remove the expansion valve from the evaporator core. (See figure 4-10.)

INSTALLATION

1. Install the expansion valve to the evaporator core.
2. Install the evaporator in the housing and install 16 screws connecting the two housing sections.
3. Position the evaporator housing on the cowl panel and attach the 4 nuts and washers to the evaporator core retaining studs.
4. Connect the rubber connector between the evaporator housing and the blower motor housing.
5. Connect the high and low pressure lines to the expansion valve and evaporator core outlet pipe.
6. Install the hood lock and bracket assembly to the cowl panel. (2 nuts on top and 2 bolts into cage nuts on bottom). Install the electric windshield wiper motor.
7. Install the accelerator rod to transmission control rod bracket and rod assembly.
8. Install the heater water valve on the manifold and connect the vacuum hose.
9. Connect the thermostatic switch, blend-air door, and air conditioning door vacuum motor hoses and check the adjustment.
10. Install the thermostatic switch capillary tube in the evaporator fins. Install the switch cover.
11. Install approximately 1 lb. of refrigerant 12 and leak test all connections.
12. Discharge and evacuate the system.
13. Connect the negative cable to the battery. Charge the air conditioning system. Disconnect negative cable from the battery.
14. Install the instrument panel register and duct assembly.
15. Install the plenum chamber.
16. Install the glove box liner.
17. Connect the negative cable to the battery.

1961

REMOVAL

1. Disconnect the negative (ground) cable from the battery.
2. Drain the engine coolant and disconnect the water hoses from the heater core tubes on the engine side of the dash panel.
3. Remove the heater core tube grommets and the blower motor cooling tube.
4. Disconnect the blower motor lead wires and motor ground wire.
5. Remove the five motor retaining plate to cowl screws and remove the retaining plate.
6. Remove the retaining plate gasket seal and insulation.
7. If the heater core or water temperature valve is to be removed, front seat both compressor service valves. Loosen the service valve gauge port caps and bleed the refrigerant from the compressor.
8. If the evaporator is to be removed, install the manifold gauge set and discharge the system. Refer to "Manifold Gauge Set Installation" and "Discharging the System". Remove the band strap securing the high and low pressure hoses in the engine compartment.
9. Remove the high and low pressure line grommet at the cowl.
10. Remove the low pressure service valve from the compressor and cover and openings to prevent dirt or moisture from entering the compressor and low pressure hose.
11. Disconnect the high pressure hose at the self-sealing connector just forward of the sight glass.
12. Remove the glove box, ash tray, and ash tray retainer.
13. Remove the plenum chamber to "Spot Cooler" rubber connector bracket retaining screws and remove the brackets. Carefully pull the connector away from the "Spot Cooler."
14. Remove the three retaining nuts and remove the "Spot Cooler" and thermostatic switch assembly.

When lowering the assembly, disconnect the two thermostatic switch wires and carefully remove the switch temperature sensing tube from the evaporator.

15. Disconnect the heater dump door and the right ventilator door control cables at the door levers.
16. Disconnect the defroster control cable at the control head.
17. Disconnect the heater temperature regulator control cable at the water valve.
18. Disconnect the vacuum hose from the vacuum motor.
19. Disconnect the evaporator drain hose clamp and remove the hose from the drain tube.
20. Remove one nut and bolt retaining the evaporator bracket (located on top of the evaporator in the center) to the panel bracket.
21. Disconnect the defroster hoses from the housing.

CAUTION: *Tape the bottom of the instrument panel to the right of the steering column to prevent scratching the paint.*

22. Remove the carburetor air cleaner.
23. Remove six evaporator and blower housing assembly mounting nuts from the engine side of the dash panel.
24. Pull the evaporator and blower assembly slightly away from the cowl. Disconnect the right ventilator inlet boot and disconnect the blower resistor wires.
25. Carefully pull the assembly away and to the left from the cowl and remove it from the car passenger compartment. An assistant should aid in routing the refrigerant hoses through the cowl.

INSTALLATION

1. Position the complete assembly with hoses in the passenger compartment.
2. *During installation, be careful not to damage the instrument panel, wiring, and control cables.*
3. Route the refrigerant hoses through the opening in the cowl, low pressure hose and valve first.
4. Install the evaporator and blower housing assembly. Move the assembly up under the instrument panel from the right side.
5. Position the assembly studs part way into the holes in the cowl.
6. Connect the right ventilator rubber connector to the heater air inlet. Connect the defroster hoses to the evaporator housing. Connect the blower resistor wires.
7. Push the assembly all the way forward so the studs protrude through the cowl. Retain with 6 washers and nuts.
8. Connect the panel to the evaporator bracket on top of the assembly and retain with one nut and bolt.
9. Connect, adjust, and check operation of the temperature regulator valve, right ventilator door, heater dump door, and defroster air door control cables.
10. Connect the vacuum hose to the recirculating air door vacuum motor.
11. Install the evaporator drain hose and clamp.
12. Install the "Spot Cooler" with the thermostatic switch. While installing the "Spot Cooler," route the temperature sensing tube to the top of the evaporator housing and push the tube into the hole on top of the housing between the fins.
13. Secure the "Spot Cooler" to the instrument panel with three nuts.
14. Attach the plenum chamber to "Spot Cooler" rubber connector and retain with brackets.
15. Install the blower motor insulation and cover plate seal.
16. Install the blower retaining plate.
17. Install the blower motor cooler tube and connect the blower wires.
18. Place the grommets on the heater core tubes and connect the heater hoses. (The water inlet hose goes to the bottom tube and the outlet hose to the upper tube.)
19. Fill the radiator.
20. Using a new gasket, assemble the low pressure valve to the compressor.
21. Connect the high pressure hose to the self-sealing coupling just forward of the receiver.
22. Install the band strap around the high and low pressure hoses in the engine compartment.
23. Install the hose grommet at the cowl and seal.

If the refrigerant was discharged, check for leaks, evacuate, and charge the system. If the refrigerant was not discharged, purge the compressor and back seat both service valves. If necessary add refrigerant.

24. Connect the battery.
25. Check operation of all controls, air doors, heater, and air conditioning.
26. Remove the tape from the instrument panel. Install the glove box, ash tray and ash tray retainer.

EXPANSION VALVE

1958

1. Install the manifold gauge set and discharge the system.
2. Remove the evaporator drip pan.
3. Remove the insulation covering from the expansion valve sensing bulb.
4. Remove the clips that retain the bulb to the evaporator outlet (low pressure) line.
5. Disconnect the expansion valve at the outlet line pressure fitting, the pressure equalizer tube, and the inlet line. Then remove the expansion valve.
6. Install the new expansion valve and connect the three fittings securely.
7. Attach the temperature sensing bulb to the evaporator outlet line with two clips. Cover the bulb and line with insulation; then, cement the seam with weatherstrip adhesive.
8. Evacuate and charge the system.
9. Test the refrigerant lines for leaks; then, install the drip pan.

1959

REMOVAL

1. For ease of removal, disconnect the hood lock and bracket and position it out of the way. Remove the accelerator rod to transmission control rod, bracket, and rod assembly mounted on the rear of the engine block.
2. Connect the manifold gauge set to the service valves.
3. Discharge the system through the center hose of the gauge set.
4. Disconnect the high pressure line connected to the expansion valve.
5. Disconnect the connection between the expansion valve and the evaporator. Carefully move the expansion valve away so that the by-pass (equalizer) line and temperature bulb may be removed.

   CAUTION: *Whenever a connection is opened, caps or suitable protection should be installed to prevent dirt and moisture from entering the system and to protect the threads of the connectors.*
6. Disconnect the by-pass (equalizer) tube.
7. Peel back the insulation covering the temperature sensing bulb. Unclip the bulb and remove the expansion valve.

   NOTE: *Always use two wrenches to avoid damaging any connections. It is important that a new copper gasket be installed in any fitting which has scored mating surfaces and also where a gasket had been installed previously.*

INSTALLATION

1. Clip the temperature bulb to the outlet pipe, making sure that the contact surface is clean and that a good firm contact is attained. Cover the bulb and pipe with the original insulation.
2. Connect the by-pass (equalizer) tube to the low pressure outlet line.
3. Connect the expansion valve to the evaporator and the high pressure hose to the expansion valve.
4. Install the accelerator rod to transmission control rod, bracket and rod assembly. Install the hood lock and bracket assembly.
5. Leak test, evacuate, and charge the system.

1960

REMOVAL

1. Remove the electric windshield wiper motor.
2. Connect the manifold gauge set to the service valves and discharge the system.
3. Disconnect the high pressure line connected to the expansion valve.
4. Disconnect the connection between the expansion valve and the evaporator. Carefully move the expansion valve away so that the bypass (equalizer) line and temperature bulb may be removed.

   Whenever a connection is opened, caps or suitable protection should be installed to prevent dirt and moisture from entering the system and to protect the threads of the connectors.

5. Disconnect the bypass (equalizer) tube.
6. Peel back the insulation covering the temperature sensing bulb. Unclip the bulb and remove the expansion valve.

   Always use two wrenches to avoid damaging any connections. It is important that a new copper gasket be installed in any fitting which has scored mating surfaces, and also where a gasket has been installed previously.

INSTALLATION

1. Clip the temperature bulb to the outlet pipe, making sure that the contacting surface is clean and that good firm contact is attained. Cover the bulb and pipe with the original insulation.
2. Connect the bypass (equalizer) tube to the low pressure outlet line.
3. Connect the expansion valve to the evaporator and the high pressure hose to the expansion valve.
4. Install the windshield wiper motor.
5. Leak test, evacuate, and charge the system.

1961

The expansion valve is located at the left side of the evaporator and may be replaced with the air conditioning assembly in the car. (See figure 4-9.)

1. Install the manifold gauge set to the compressor service valves and discharge the refrigerant. Refer to "Manifold Gauge Set Installation" and "Discharging the System".
2. Peel back the insulation covering the lines and the temperature sensing bulb.
3. Unclip the bulb from the low pressure line.
4. Disconnect the high pressure line fitting at the evaporator and the fitting between the expansion valve and the evaporator.
5. Remove the expansion valve.

   Cap all fittings to prevent dirt and moisture from entering the system and to protect the threads of the fittings.

6. To install, reverse the removal procedure.
7. After installation, evacuate and charge the system and leak test.

THERMOSTATIC SWITCH

1958

REMOVAL

1. Remove the radio speaker grille and speaker from the car.
2. Disconnect the vacuum hose from the vacuum motor.
3. Disconnect the wires from the vacuum switch.

4. Remove two screws attaching the thermostatic switch to the evaporator housing.

5. Carefully remove the capillary tube from the evaporator core and remove the switch assembly from the car.

INSTALLATION

1. Install the capillary tube into the evaporator fins and carefully form the tube to align the switch mounting screw holes.

2. Connect the two wires to the thermostatic switch.

3. Attach the vacuum hose to the switch vacuum motor.

4. Install the thermostatic switch to the evaporator housing with two screws.

5. Start the engine and check the operation of the vacuum motor by turning the A/C control from the "OFF" to the "HIGH" position and observe the action of the vacuum motor arm.

6. Turn the ignition switch on with the A/C control set in the "HIGH" position. Listen for the click of the magnetic clutch as it engages.

7. Operate the engine for a few minutes to be sure the air conditioning system is cycling properly. This will be indicated by the magnetic clutch engaging and disengaging.

8. Install the radio speaker and grille in the car.

1959-60

1. Remove 7 screws attaching the thermostatic switch cover to the evaporator housing and remove the cover.

2. Disconnect the wires from the thermostatic switch and carefully pull the capillary tube out of the evaporator core.

3. Disconnect the vacuum motor arm from the switch. Remove 2 switch attaching screws and remove the switch from the car.

4. To install the switch, reverse the removal procedure. Exercise care when installing the capillary tube into the evaporator fins and setting the preload on the vacuum motor.

1961

1. Remove the evaporator to "Spot Cooler" duct clamp bracket retaining screws and remove the clamp brackets. Carefully pull the duct away from the "Spot Cooler". (See Figure 4-9.)

2. Remove the control knob retaining screw and remove the knob.

3. Remove the two switch and bracket retaining screws.

4. Remove the ash tray and glove box liner.

5. Loosen the switch capillary tube bracket on top of the evaporator housing and carefully pull the tube out of the evaporator core. Remove the switch and tube assembly.

6. To install, reverse the removal procedure.

When installing the capillary tube, push the tube into the hole on top of the housing between the evaporator fins.

COMPRESSOR

1958-60

1. Disconnect the clutch feed wire.

2. Install the manifold gauge set. Front seat both service valves and discharge the compressor through the test manifold and into an exhaust system.

3. After pressure is completely relieved, the capscrews which retain each service valve to the head can be removed.

4. Loosen 3 bolts securing the compressor mounting bracket. Tilt the assembly and remove the drive belt from the clutch pulley.

5. Remove 4 bolts securing the compressor to the mounting bracket and remove the compressor and clutch assembly.

6. Remove capscrew and flat washer securing the clutch to the crankshaft. Screw in a 5/8 - 11 x 1½ inch bolt into the threaded clutch plate. Tightening will force the clutch off.

7. Remove the clutch and Woodruff key.

8. To install the compressor, reverse the removal procedure.

Before a compressor is installed on a vehicle, the crankcase should be checked for the proper amount of oil (10 ozs.) Use only "Suniso 5G", Sun Oil Company; "Capella E", Texas Oil Company; or a refrigeration oil which has the same specifications. "Suniso 4G" or "Capella D" may be used if the specified oils are not available.

1961

1. Disconnect the magnetic clutch feed wire at the bullet connector.

2. Install the manifold gauge set to the compressor service valves. Refer to "Manifold Gauge Set Installation".

3. Front seat both compressor service valves (full clockwise) and discharge the compressor.

4. Remove two screws from each service valve and remove the service valves from the compressor. Cover the openings to prevent dirt and moisture from entering the system.

5. 352 and 390 C.I.D. Engines: Remove two screws and remove the coil from the compressor.

6. Remove four bolts attaching the compressor to the mounting bracket and remove the belt from the clutch assembly.

7. To install the compressor, reverse the removal procedure.

Before a compressor is installed on a vehicle, the crankcase should be checked for the proper amount of oil (10 ozs.). Use only "Suniso 5G" Sun Oil Company; "Capella E", Texas Oil Company; or a refrigeration oil which has the same specifications.

8. Torque the service valves 10-12 lbs. ft.

9. Adjust the compressor drive belt tension to 100-150 lbs. with a belt tension gauge (Tool BT-33-73F).

10. Purge the compressor of air and moisture. See "Purging the Compressor."

11. Check the refrigerant supply and leak test the compressor fittings and crankshaft oil seal. See "Refrigerant Tests."

12. Operate the engine for about 10 minutes; then, reset the compressor belt tension to 80-120 lbs. with a belt tension gauge (Tool BT-33-73F).

MAGNETIC CLUTCH

1958-61

The magnetic clutch can be removed from the compressor, while the compressor is mounted in the vehicle, by using the following procedure:

1. Loosen 3 bolts securing the compressor mounting bracket; tilt the assembly and remove the drive belt from the clutch pulley.
2. Energize the clutch to facilitate removing the capscrew attaching the clutch to the compressor output shaft, if possible.
3. Remove the capscrew and flat washer.
4. Disconnect the clutch feed wire.
5. Screw in a $\frac{5}{8}$- 11 x $1\frac{1}{2}$ inch bolt into the threaded clutch plate. Tightening will force the clutch off.
6. To install, position the clutch on the compressor output shaft and install the capscrew and washer. Torque the capscrew to 18-22 lbs. ft.

CONDENSER

Collision service will be the most frequent cause for replacement of the condenser and receiver-dryer. If the system has been open for more than 15 or 20 minutes, the receiver-dryer will absorb an excessive amount of moisture and must be replaced. The system should then be evacuated before charging with refrigerant.

1958

1. Install the manifold gauge set to the compressor service valves and discharge the system.
2. Remove the hood and hood hinges from the car.
3. Disconnect the lines between the condenser and the compressor and between the receiver and the liquid sight glass. Plug both lines.
4. Remove four bolts and nuts securing the condenser to the radiator support bracket and remove the condenser and receiver from the car.
5. To install, reverse the removal procedure. It will be necessary to leak test, evacuate and charge the system.

1959

1. Install the manifold gauge set on the compressor service valves.
2. Discharge the refrigerant as described in "Discharging the System".
3. Remove the high pressure service valve and install a cover over the service valve orifice of the compressor to prevent dirt or moisture from entering.
4. Remove the clamp on the left radiator support which retains the two high pressure hoses.
5. Remove the hood from the hinges, being sure to mark the exact location to facilitate installation.
6. Disconnect the quick disconnect fitting near the receiver.
7. Remove two lower radiator and condenser mounting bolts from the engine side of the radiator. These two lower bolts are secured by two cage nuts mounted on the condenser.
8. Insert a hammer handle or some other suitable item under the radiator and on the front cross member to support it when the upper two retaining bolts are removed.
9. Remove the two upper support bracket radiator and condenser mounting bolts. Hold the condenser to prevent it from dropping and damaging the coils.
10. Remove the condenser and receiver assembly.
11. Remove two receiver to mounting bracket retaining nuts.
12. To install, reverse removal procedure. It will be necessary to leak test, evacuate and charge the air conditioning system.

1960

1. Install the manifold gauge set to the compressor service valves.
2. Discharge the refrigerant from the system.
3. Remove the high pressure service valve and muffler and install a cover over the service valve orifice of the compressor to prevent dirt or moisture from entering.
4. Remove the hood from the hinges, being sure to mark the exact location to facilitate installation.
5. Disconnect the high pressure line at the receiver inlet.
6. Drain the engine coolant.
7. Disconnect the upper and lower radiator hoses and the 2 transmission oil cooler connections at the lower tank.
8. Remove 2 lower and 2 center radiator mounting bolts from the engine side of the radiator.

9. *Support the condenser so that when the upper mounting bolts are removed, the condenser will not drop and become damaged.*

10. Remove 2 upper radiator mounting bolts and remove the radiator from the vehicle. The radiator shroud can be left over the fan until the radiator is again installed.

11. Remove the condenser assembly.

12. To install, reverse the removal procedure. It will be necessary to leak test, evacuate and charge the system.

1961

1. Install the manifold gauge set to the compressor service valves and discharge the system. Refer to "Manifold Gauge Set Installation".

2. Drain the radiator.

3. Disconnect the upper and lower radiator hoses.

4. On automatic transmission equipped vehicles, disconnect the oil cooler lines at the radiator.

5. Disconnect the compressor to condenser hose fitting at the quick disconnect.

6. Disconnect the fitting between the receiver-dryer and sight glass.

   Cap all fittings to prevent dirt and moisture from entering the system and to protect the threads of the fittings.

7. Remove 4 condenser mounting capscrews.

8. Remove four screws and remove the top section of the fan shroud assembly.

9. Remove 2 lower radiator mounting capscrews and remove the lower fan shroud section.

10. Remove 2 upper radiator mounting screws and remove the radiator.

11. Remove the condenser, high pressure line, and receiver-dryer as an assembly.

12. On the bench, transfer the high pressure line and the receiver-dryer bracket to a new condenser.

    It is necessary to replace the receiver-dryer any time the condenser is repaired or replaced, as the moisture-absorbing chemical in the receiver will be saturated and consequently will not operate properly.

13. To install, reverse the removal procedure.

14. Leak test, evacuate, and charge the system.

RECEIVER-DRYER

1958-59

1. Install the manifold gauge set to the compressor service valves.

2. Discharge the system as described in the "Discharging the System".

3. Disconnect the high pressure line fitting (near receiver) from the condenser.

4. Disconnect the quick disconnect fitting.

5. Remove two nuts which retain the receiver to the bracket and remove the receiver.

   NOTE: *Cap all fittings to prevent dirt and moisture from entering the system and to protect the threads of the fittings.*

6. To install, reverse the removal procedure. It will be necessary to leak test, evacuate and charge the system.

1960

1. Connect the manifold gauge set to the compressor and discharge the system.
2. Disconnect the high pressure line fitting (at receiver) from the condenser.
3. Disconnect the quick disconnect fitting.

4. Remove 2 sheet metal screws which retain the receiver bracket to the left front fender apron.

Cap all fittings to prevent dirt and moisture from entering system and to protect the threads of the fittings.

5. To install, reverse the removal procedure. It will be necessary to leak test, evacuate and charge the system.

1961

1. Install the manifold gauge set to the compressor service valves and discharge the system. Refer to "Manifold Gauge Set Installation".
2. Disconnect the fitting between the receiver-dryer and the sight glass.
3. Disconnect the condenser to receiver-dryer fitting at the receiver-dryer.

Cap all fittings to prevent dirt and moisture from entering system and to protect the threads of the fittings.

4. Remove two receiver-dryer retaining nuts and bolts and remove the receiver-dryer.
5. To install, reverse the removal procedure.
6. Check for leaks, evacuate, and charge the system.

TROUBLE SHOOTING AND ADJUSTMENTS

1958-60

VACUUM MOTORS

The vacuum motor is designed to operate with a preload at all times. Therefore, each vacuum motor has a preload indicator notch on the link. The location of the vacuum motors are shown in figures 4-1 and 4-2.

Adjustments for the types of vacuum motors used are as follows:

Link Adjustment

1. Loosen the link adjustment screw.
2. Adjust the link until the preload indicator is flush with the motor body. (See Figure 4-11.) The damper must be in its normal position with no vacuum applied.

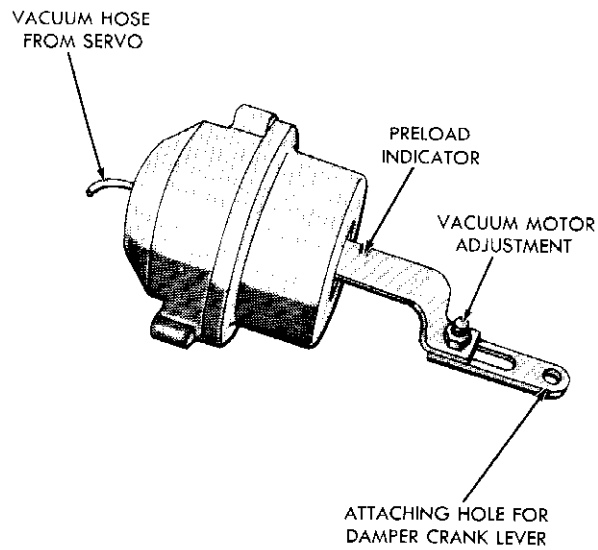

Fig. 4-11—Vacuum Motor Link Adjustment—(61LM-7818)

3. Tighten the link adjustment screw and check the operation of the motor.

Bracket Adjustment

1. Loosen the two vacuum motor attaching screws or nuts. (See Figure 4-12.)

2. Move the motor until the preload indicator is flush with the motor body. The damper must be in its normal position with no vacuum applied.

3. Tighten the two bracket attaching screws or nuts and check the operation of the motor.

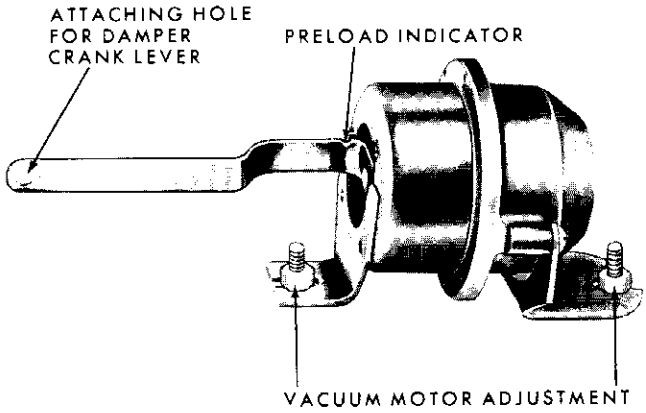

Fig. 4-12–Vacuum Motor Bracket Adjustment (61LM-7817)

SERVO CONTROL

The servo control head is a single modulator type which is preset before installation into the vehicle. (See figure 4-3.) If difficulty is encountered, as described in the following trouble shooting section, the unit should be replaced. *Do not adjust the follower setscrew adjustment or attempt to disassemble the control head for repairs.*

CONTROL SYSTEM

In the event that one or more of the vacuum motors do not respond when the Climate Dial is turned as indicated by figure 4-13, the following trouble shooting procedure should be used.

1. With the engine idling, turn the Climate Dial in an attempt to activate the inoperative motor. Figure 4-13 indicates which vacuum motors are activated at each position on the dial.

2. Pull off the vacuum line at the inoperative vacuum motor. If vacuum is present, remove the vacuum motor; if vacuum is not present, continue with Step 4.

3. Connect the vacuum hose of a distributor tester to the suspected defective vacuum motor. Turn the vacuum rheostat to 13 inches. If the vacuum motor is good, the diaphragm will be pull-

ed in. If the vacuum motor tests good, the damper is binding and this condition must be corrected.

4. If there is no vacuum at the disconnected hose and the Climate Dial is set to activate the particular vacuum motor as indicated in figure 4-13, turn the dial to check the operation of the other vacuum motors.

5. If all but one vacuum motor operates, check the vacuum hose from the vacuum motor to the vacuum servo for leaks, sharp bends, or pinches which would prevent the vacuum from operating the motor. If the vacuum hose is disconnected at the vacuum servo, reconnect it and test operation.

   CAUTION: *Do not use any lubricant or sealer when installing the vacuum hoses as it could plug up the hose or vacuum servo.*

6. If the vacuum hose is properly connected at the vacuum servo, disconnect it and check the vacuum at the port. If no vacuum is present at the port with the Climate Dial in the correct detent and all other vacuum motors operate properly, replace the vacuum servo.

7. If none of the vacuum motors operate, check the input hose for vacuum. If there is no vacuum, check the hose to the reserve tank and to the vacuum source for a sharp bend, pinch, or broken connection. Inspect the check valve to insure that it is not reversed. The check valve is marked indicating the correct air flow. It must be remembered that loose hose connections may cause malfunctions to all of the vacuum motors. A leak in any of the vacuum hoses to the vacuum motors or in the vacuum motor diaphragm may result in a continuous singing or buzzing noise in the vacuum servo.

To insure proper operation of the vacuum motors, Tinnerman clips must be installed on the damper crank arms.

SELECTOR DIAL SETTING	RIGHT VENT	LEFT VENT	DEFROSTER	BLEND AIR DOOR	A/C DAMPER DOOR	A/C THERMOSTATIC SWITCH	WATER VALVE ACTUATION
Left Vent	C	1/2 O	C	C	O		C
Right Vent	1/2 O	C	C	C	C		C
Right and Left Vent	1/2 O	1/2 O	C	C	C		C
Low A/C	C	C	C	O	O	Min. Cool	C
High A/C	C	C	C	O	O	Max. Cool	C
Low Defrost	O	C	O	C	C		C
High Defrost	O	C	O	Max. O	C		O
Low Heat	O	C	C	C	C		C
High Heat	O	C	C	Max. O	C		O

O – Open C – Closed

Fig. 4-13–Vacuum Motor Application–1958-60

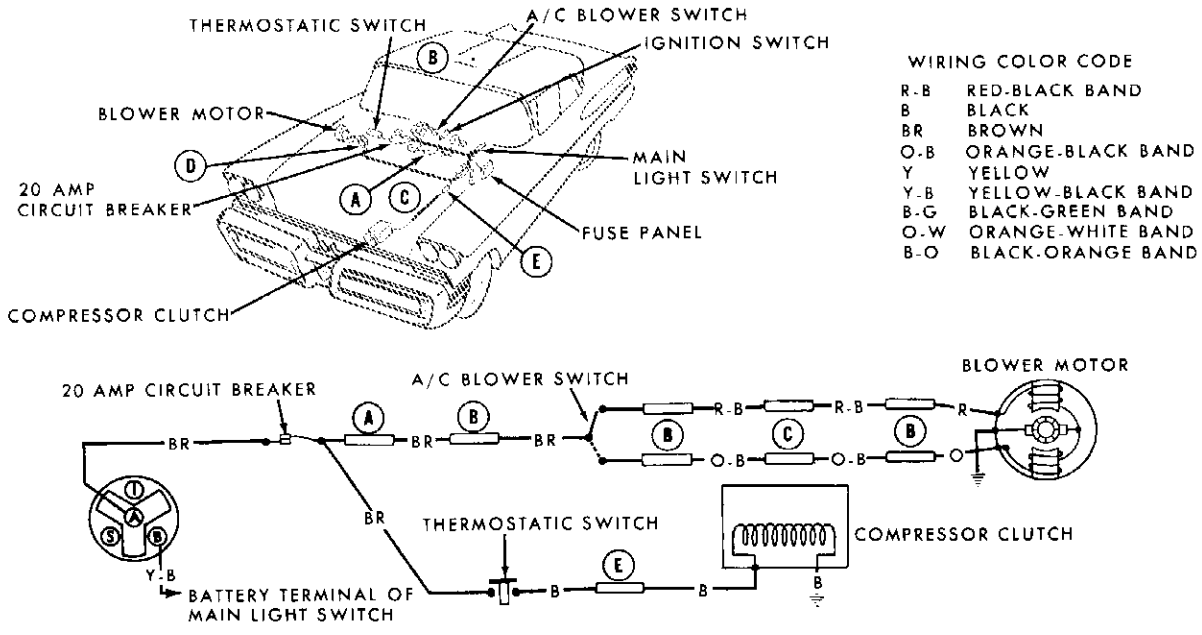

Fig. 4-14–Air Conditioning and Heater Blower Circuits–1958–(61MT-8821)

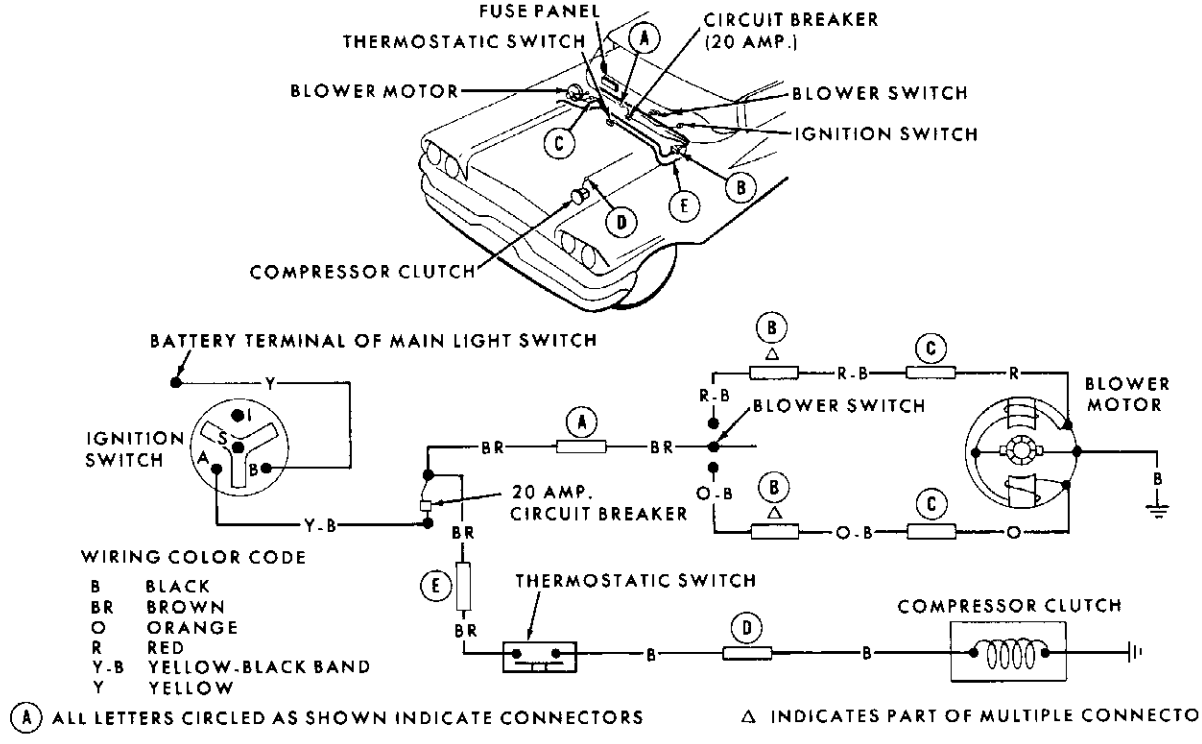

Fig. 4-15–Air Conditioner and Heater Blower Circuits–1959–(61MT-8822)

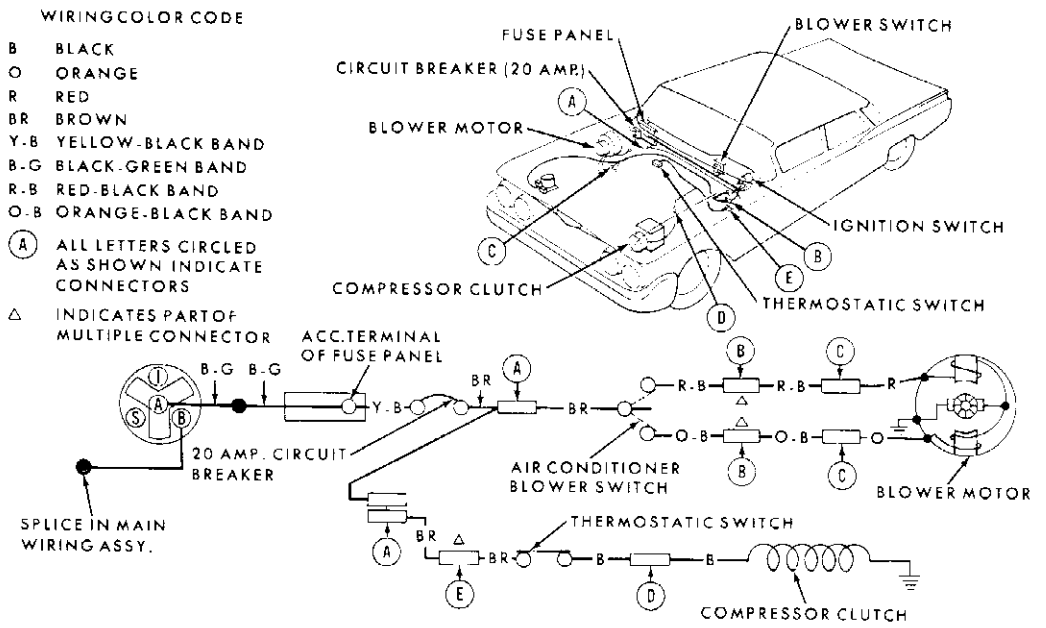

Fig. 4-16–Air Conditioning Wiring Diagram–1960–(61MT-8823)

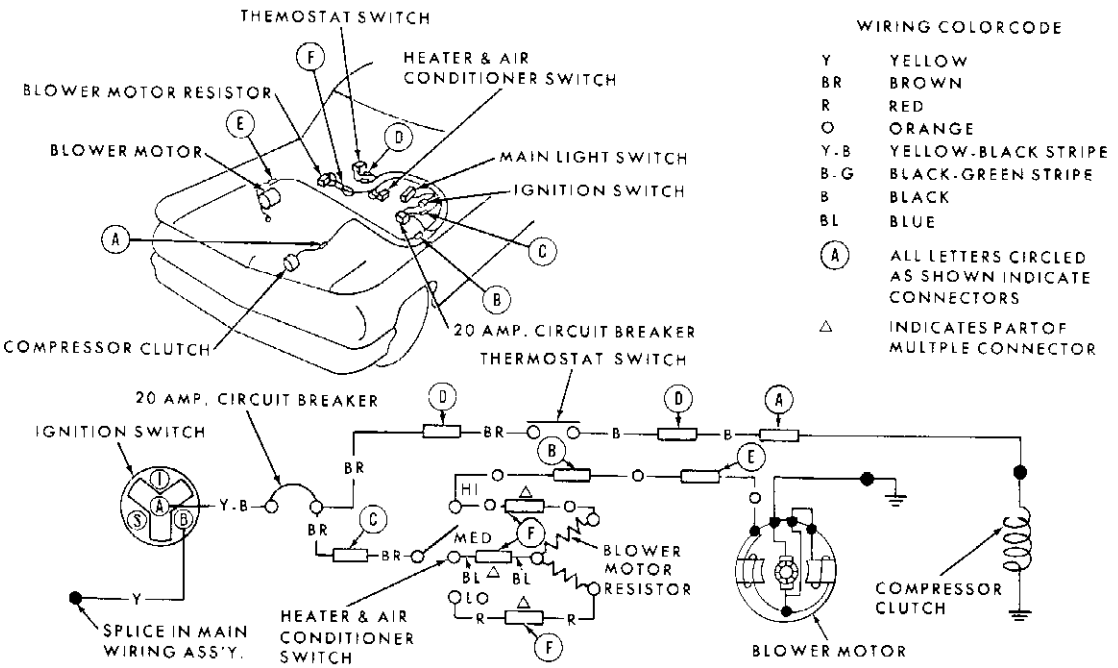

Fig. 4-17–Air Conditioning Wiring Diagram–1961–(61MT-8840)

1961

HAND THROTTLE

1. Connect a tachometer to the engine.

2. Place the transmission selector lever in the neutral or park position.

3. Turn the air conditioner on and check to be sure the magnetic clutch is engaged.

4. Adjust the stop on the Bowden cable so that the engine r.p.m. cannot be increased above 700 with the hand throttle. (See Figure 4-17.)

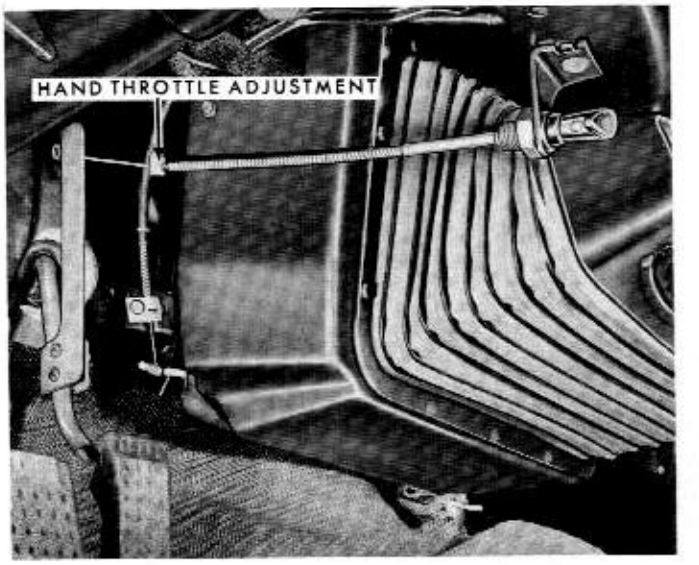

Fig. 4-17–Air Conditioning Hand Throttle Adjustment 1961–(61MM-8802)

AIR VENT CONTROL

Right

1. Loosen, but do not remove, the cable housing retainer screw at the right ventilator door. (See Figure 4-5.)

2. With the right air vent control positioned approximately $\frac{1}{16}$ inch from the all-the-way-in position, move the ventilation lever to the full clockwise position.

3. Tighten the cable retainer.

4. Check operation of the control to assure full opening and closing of the ventilation door.

Left

1. Loosen, but do not remove, the cable housing retainer screw at the left ventilation door.

2. With the left air vent control positioned approximately $\frac{1}{16}$ inch from the all-the-way-in position, move the ventilation door lever to the full clockwise position.

3. Tighten the cable retainer.

4. Check operation of the control to assure full opening and closing of the ventilation door.

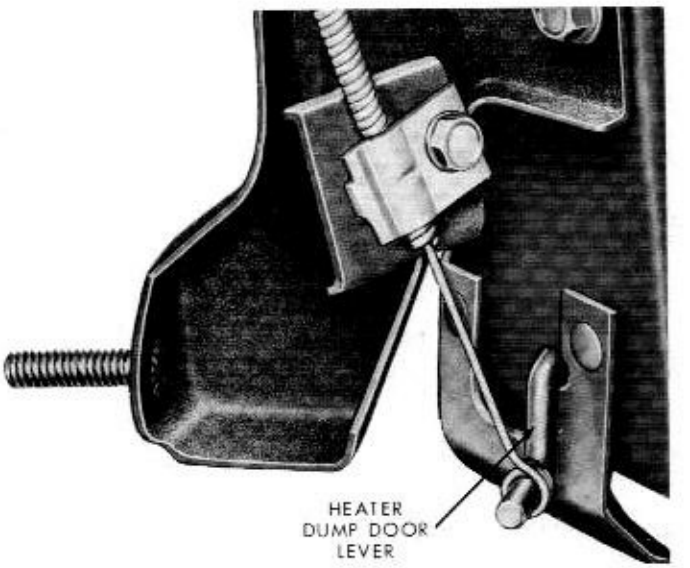

Fig. 4-18–Heater Dump Door Adjustment 1961–(60E-8808)

DOOR CONTROL

Heater Dump

1. Loosen, but do not remove, the control cable housing retainer screw at the heater dump door lever. (See Figure 4-18.)

2. With the lower control cable in the off detent position, move the heater dump door lever to the full counter-clockwise position. (See Figure 4-18.)

3. Tighten the retainer.

4. Check operation of the control. At "OFF", the heater dump door should be closed. At "HEAT", the door should be full open. At "DEFROST", the door should be closed.

DEFROSTER AIR

The defroster air door control cable should be adjusted at the control head. The cable has a fixed adjustment at the defroster air door. (See figure 4-5.)

1. Loosen, but do not remove, the defroster control cable housing retainer screw at the control head. (See figure 4-5.)

2. Position the lower control lever in the "OFF" detent position. Adjust the defroster control cable so that the defroster air door lever is full clockwise and the air door is closed. This is accomplished by pulling the control cable away from the door lever.

3. Tighten the cable housing retainer at the control head.

4. Check operation of the control. The defroster air door should be closed in the "OFF" and "HEAT" positions and open at the "DEFROST" position.

HEATER TEMPERATURE REGULATOR VALVE

The temperature regulator valve control cable should be adjusted at the control head. The cable has a fixed adjustment at the temperature regulator valve assembly.

1. Loosen, but do not remove, the upper cable housing retainer screw at the control head. (See figure 4-5.)

2. Position the upper control lever at the "LO" position. Adjust the temperature control cable so that the regulator valve lever is in a full forward position and the valve is closed. This is accomplished by moving the control cable toward the regulator valve until the valve is closed.

3. Tighten the cable housing retainer at the control head.

4. Check operation of the control to assure full closing of the valve with the lever at "LO" and full opening of the lever at "HI."

VACUUM VALVE SWITCH

1. Loosen the vacuum valve switch retaining screw enough to allow movement of the switch bracket.

2. Position the heater-air conditioning control lower lever at the "HEAT" position.

3. Move the vacuum valve switch against the control lever flange until the switch plunger is depressed. Tighten the switch retaining screw.

4. With the vacuum hoses connected to the switch, check operation of the recirculating air doors.

RECIRCULATING AIR DOOR VACUUM MOTOR

The vacuum motor preload must be set by positioning the attaching bracket, with slotted holes, so that when there is no vacuum applied to the motor, the preload indicator is lined up with the edge of the vacuum motor body. This will assure proper sealing of the recirculating air door. See figure 4-12.