

1958 EDSEL

The cooling portion of the Heater-Air Conditioner uses a compressor, condenser, receiver, expansion valve, and an evaporator. These parts are the standard units used in any air conditioner system. In addition to these major cooling components, the Heater-Air Conditioner used a liquid indicator (sight glass), a thermostatic switch, a heater thermostat, a heater core, a blower assembly controlled by a two-speed switch, and a Dial-temp control which operates a servo unit that regulates the various air, water, and refrigerant valves and dampers.

Figure 5-1 shows the air conditioning system for the Ranger and Pacer Models.

Dial-Temp Control

The cooling, heating, and defrosting temperature is controlled by a single rotary dial and control head located on the instrument panel.

The shaft upon which the control dial rotates terminates in a pinion and rack assembly. The rack is a part of the servo control cable which is attached to the control arm on the servo unit.

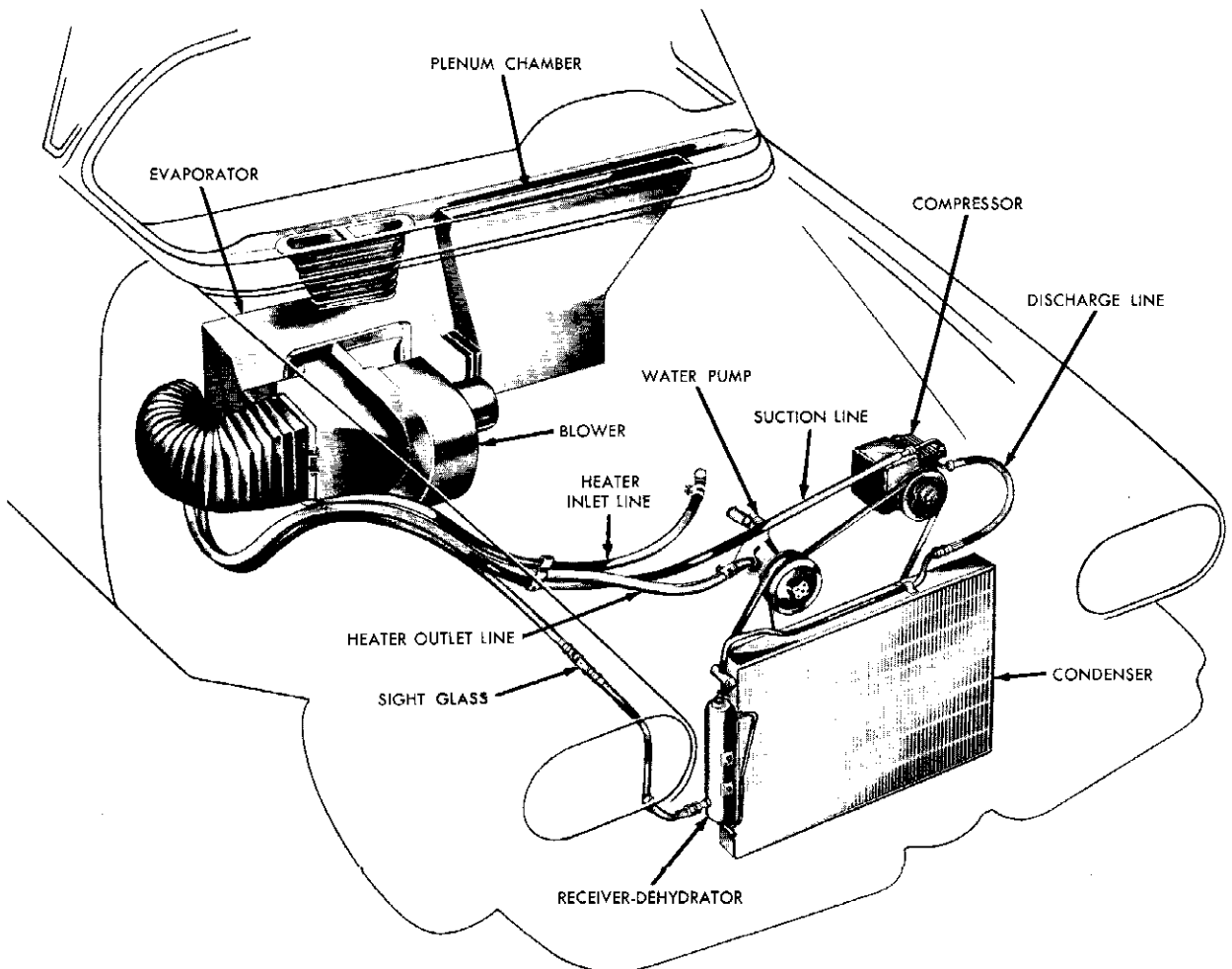


Fig. 5-1—Air Conditioning System-Ranger and Pacer—1958—(F-2626)

1959 EDSEL

Figure 5-2 shows the Dial-Temp heater and air conditioner control system.

The heater and air conditioner unit consists of an air conditioning system integrated with the vacuum controlled blend-air heater.

A single dial push-pull knob controls all function of the heating, ventilating, and cooling systems. The push-pull knob controls the blower motor and regulates the volume of heated or cool air desired. Pull out the control knob half way for

low blower and completely out for high blower.

The cam plate in the vacuum servo is the only difference between heater only and heater and air conditioning servo controls. 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 be serviced as a complete unit.

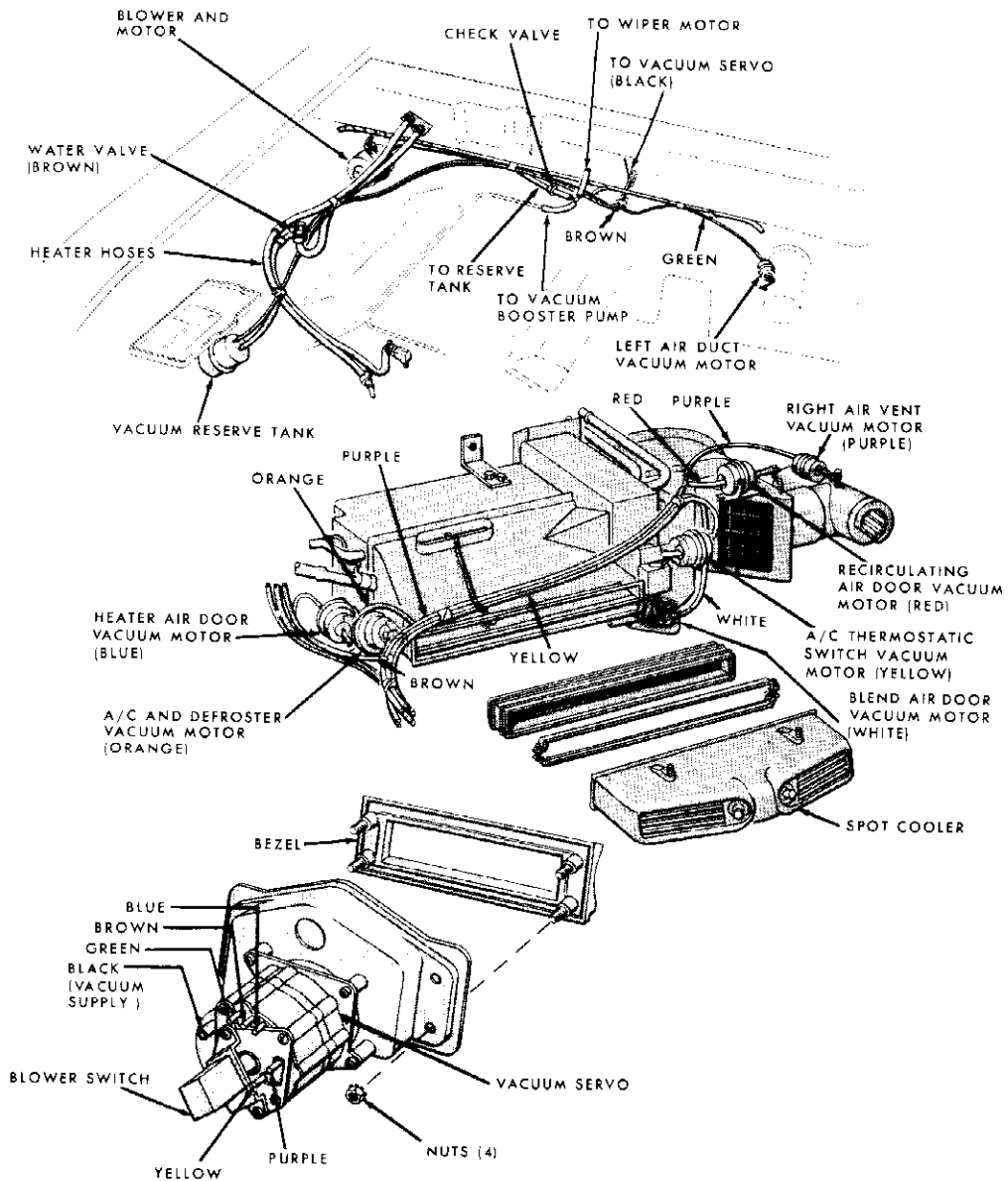


Fig. 5-2-Heater-Air Conditioner and Related Parts-1959-(9E-8842)

1960 EDSEL

Figure 5-3 shows the heater and air conditioning control system.

The heater and air conditioning system consists of an air conditioning system integrated with the conventional heater.

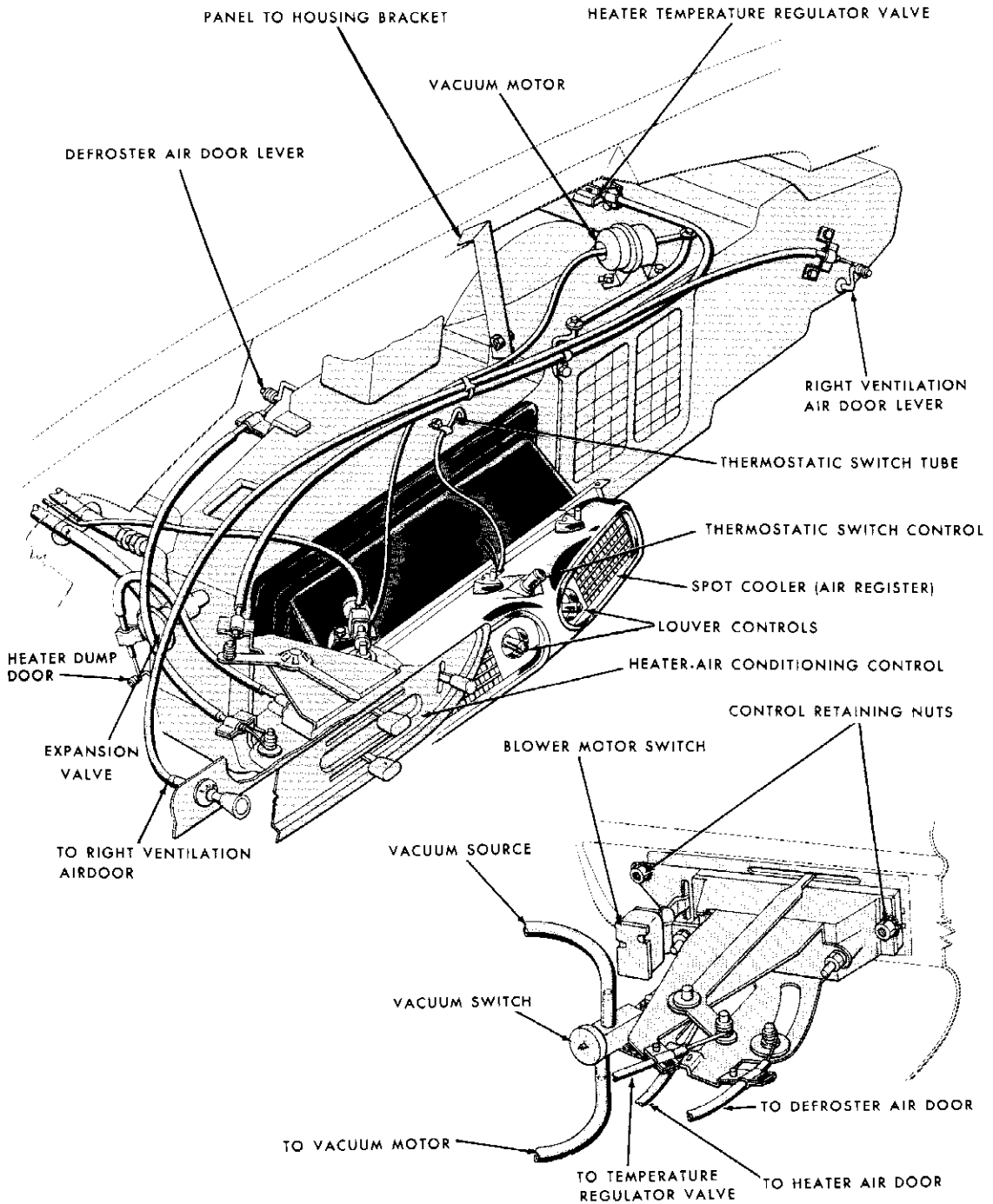


Fig. 5-3-Heater-Air Conditioning Control System-1960-(60E-7818)

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.

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 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.

Figure 5-4 shows the heater-air conditioning air flow system.

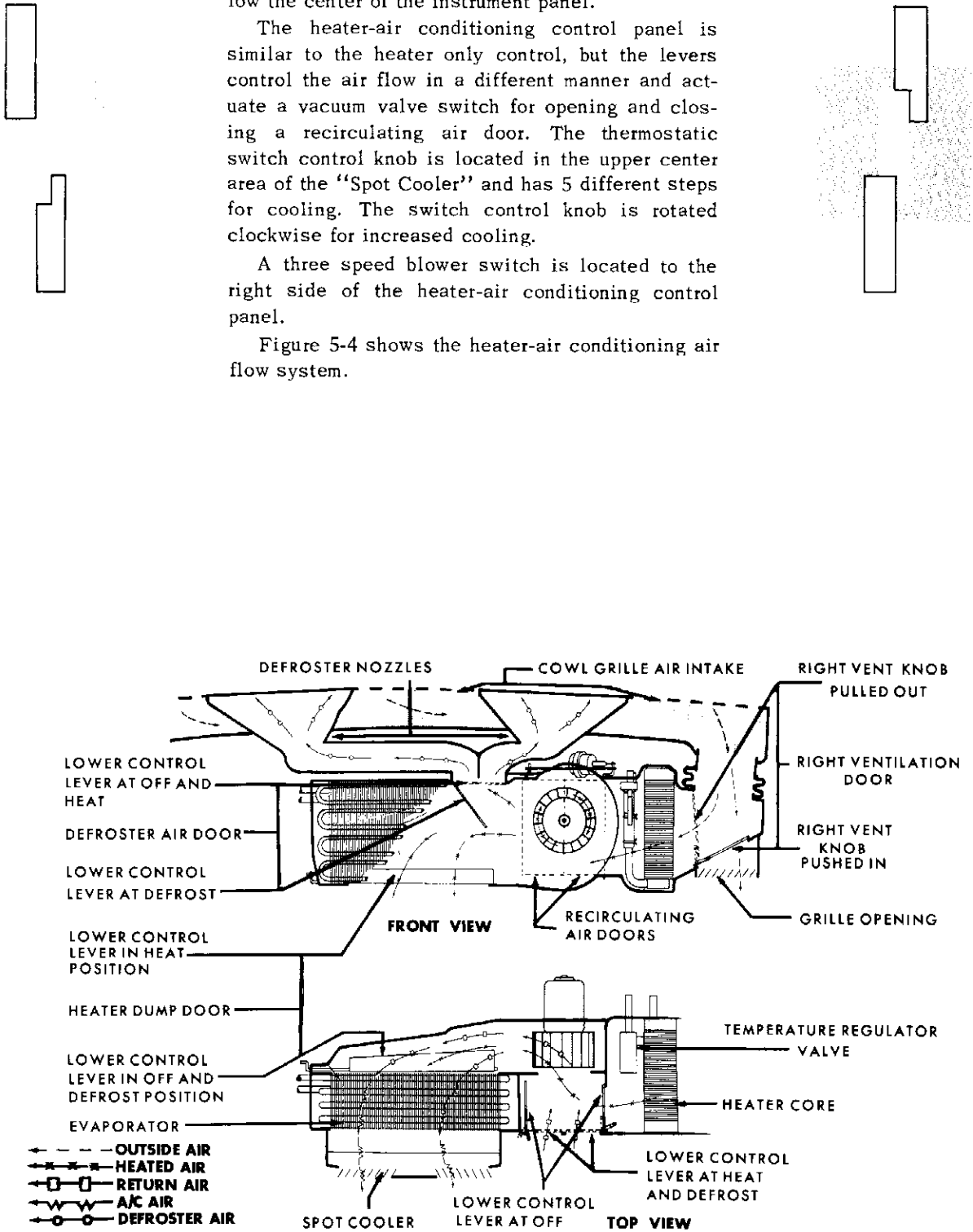


Fig. 5-4-Heater-Air Conditioning Air Flow-1960-(61MM-8809)

REMOVAL AND INSTALLATION

CONTROLS

SERVO UNIT-1958

REMOVAL

1. Disconnect the negative (ground) cable from the battery.
2. Turn the Dial-temp control counterclockwise to the limit of its travel.
3. Remove the fuse panel mounting screws from the parking brake bracket and move the panel down as far as possible.
4. Remove two screws from the servo arm shield; then, remove the shield.
5. Loosen the control cable clamp screws and disconnect all of the cables from the arms on the servo.
6. Remove four servo mounting screws; lower the unit and disconnect the motor feed wire at the circuit breaker.
7. Turn the servo unit on its side; then, lower it past the parking brake bracket.

DISASSEMBLY

Figure 5-5 shows a disassembled view of the servo assembly.

1. Disconnect the motor to terminal block wires at the connector. Loosen the two allen set screws that secure the motor to the servo body; then, remove the motor. Slide the flexible coupling off the worm gear shaft.
2. Remove four cover to body screws and remove the cover. Turn the servo body over so that the contact plate and cam assembly will drop out.
3. Disconnect the ground wire from the cover. Remove the nut and washer from the control arm; then, remove the arm and internal contact.
4. Remove the roll pin securing the worm gear bushing in the body. Tap the gear and bushing out of the body.
5. If it is necessary to remove the arm and roller assemblies, be sure the internal arms and rollers and external arms are kept together.

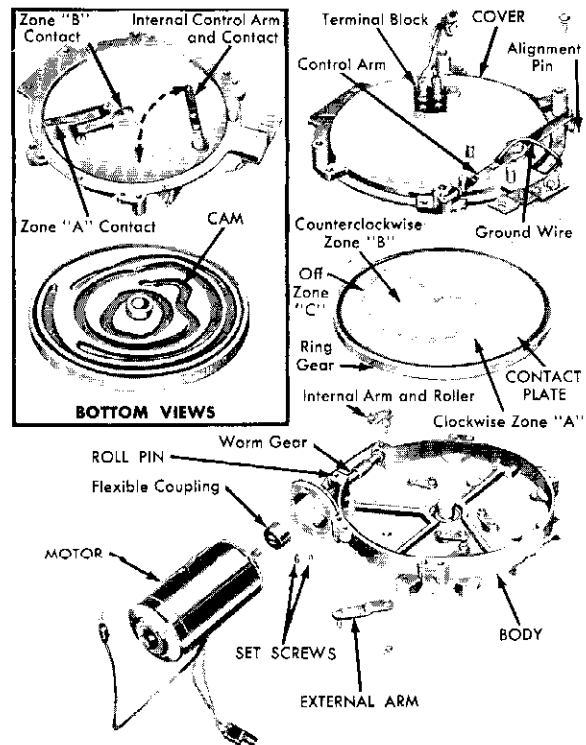


Fig. 5-5-Servo Assembly Disassembled-1958-(E-2614)

ASSEMBLY

Thoroughly clean all internal working parts of the servo. As the servo is being assembled, lubricate the arm and roller assemblies and cam tracks liberally with a lithium base grease. Be sure the contact plate surface and contact points are clean and dry.

1. Install the internal arm and roller assemblies and external arms in their proper locations, matching the color code on the arms and servo body.
2. Place the worm gear and bushing in the servo body. Align the groove in the bushing with the roll pin hole and tap the bushing into the body. Install the roll pin.
3. Set the external arms in the OFF position. Hold the arms in place with tape or body putty during assembly.
4. Align the cam index mark with the index mark on the servo body. Install the cam and contact plate assembly, making sure that the arm rollers are engaged in the cam tracks.
5. Place the flexible coupling on the worm gear shaft.

NOTE: The motor and worm gear shafts are of different diameters and the coupling can be installed in one way only.

6. Install the internal contact and control arm and ground wire assembly in the servo cover. Connect the ground wire to the cover.
7. Install the servo cover on the body with four attaching screws.
8. Install the servo motor, securing it with two allen set screws. Connect the motor to the terminal block wires.
9. Connect the black motor wire to a 12-volt battery and ground the servo unit. Move the control arm

slowly through the full travel in both directions and return it to the OFF position. The servo should operate freely and each external arm must move through its full travel and return to the OFF position.

10. With the control arm in the OFF position, insert a 1/8 x 1 cotter pin through the hole in the servo cover that aligns with the hole in the control arm extension. Expand the cotter pin just enough so that it will remain in place during installation, but so it can be easily removed after the cables are connected.

NOTE: Replacement servos have an alignment pin installed and held in place by tape.

INSTALLATION

1. Raise the servo unit vertically past the parking brake bracket. Position the unit in the mounting bracket and install the four retaining screws.
2. Connect the motor feed wire to the BATT (Battery) terminal of the circuit breaker.
3. Turn the Dial-temp control to the "OFF" position; then, connect the cable to the control arm of the servo unit. Place the clamp over the cable conduit and tighten the clamp screw.
4. Install the cables on the external arms, matching the color code on the external arms with that on the cable conduit bands. (See figures 5-6 and 5-7.) Install the cable clamps and tighten the clamp screws.
5. Install the fuse panel and mounting screws; then, connect the negative (ground) cable to the battery.
6. Remove the alignment pin from the control arm extension and servo cover. Connect an ammeter in series with the servo motor feed wire. Turn the ignition switch to the accessory position. Operate the Dial-temp control through all ranges and note the current draw for each movement of the control cables. A reading in excess of 5 amperes for any one setting indicates an improperly installed or adjusted control cable. Check the cables for sharp bends, tightness in clips, and proper installation of cable terminals on the servo arms. The cables must be installed on the arms with the end of the cable terminal coil away from the arm.

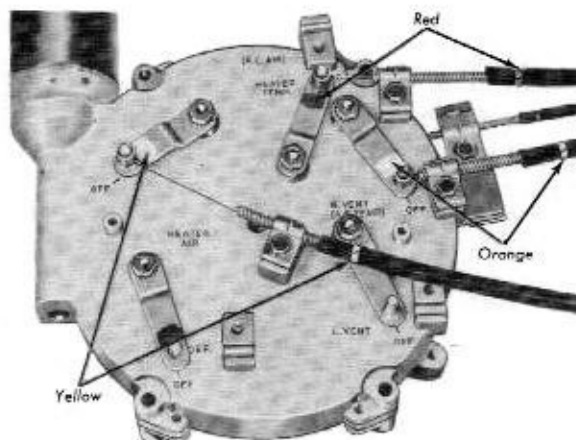


Fig. 5-6—Control Cables Installed—Ranger and Pacer—1958—(E-2642)

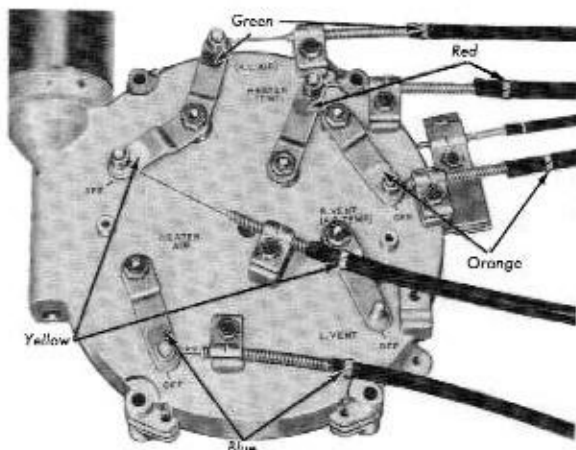


Fig. 5-7—Control Cables Installed—Corsair and Citation—1958—(E-2643)

DIAL-TEMP CONTROL CABLE

1958

1. Loosen the Dial-temp shaft set screw; then, remove the dial and shaft assembly from the instrument panel. (See figure 5-8.)
2. Loosen the control cable clamp on the servo unit and disconnect the cable from the control arm.
3. Remove two control cable drive retaining screws; then, remove the control cable drive assembly.
4. Install the alignment pin in the servo control arm extension. (See figure 5-9.) Install the control cable on the control arm and in the clamp; then, tighten the clamp screw.
5. Position the control cable drive assembly on the bracket and install the two screws.
6. Install the dial and shaft assembly with the back of the pointer engaged in the notch at the top of the panel opening. Tighten the set screw on the dial shaft.
7. Remove the alignment pin from the servo control arm extension before operating the Dial-temp control.

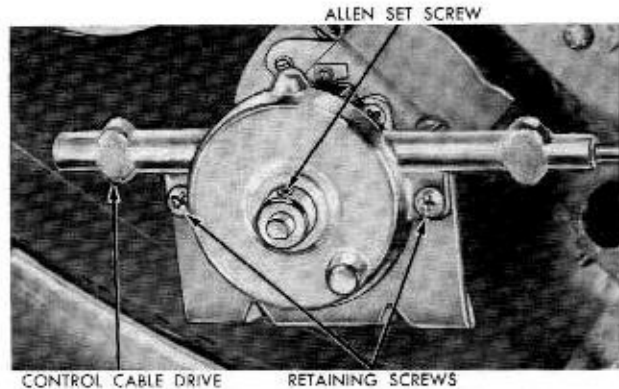


Fig. 5-8—Dial-Temp Control Shaft and Cable Drive—1958—(E-2627)

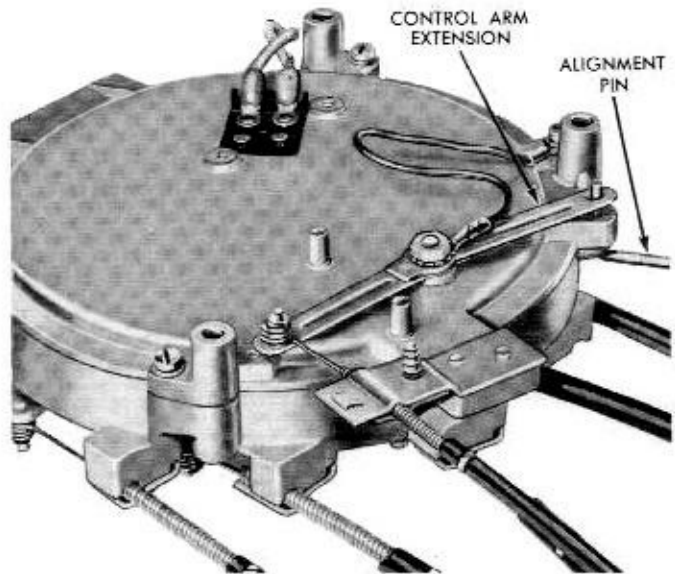


Fig. 5-9—Alignment Pin Installed in Servo—1958—(E-2645)

VACUUM SERVO CONTROL AND BLOWER SWITCH

1959

1. Disconnect the negative (ground) cable from the battery.
2. Remove four nuts retaining the servo control to the instrument panel.
3. Lower the control unit down beneath instrument panel.
4. Disconnect the wire connectors and bulb.
5. Disconnect all vacuum hoses.
NOTE: *The color on the vacuum ports of the servo matches the color on the vacuum boxes to assist in proper installation.*
6. Remove the knob. Remove two blower switch retaining screws and remove the switch and shaft assembly.
7. Remove three control servo unit to dial assembly screws and separate the two parts.
8. Reassemble the control servo to the dial assembly.
9. Assemble the switch and shaft assembly to the control servo and install the knob.
10. Connect the vacuum hoses to the respective servo ports.
11. Connect the wire connector and bulb.
12. Check operation of the control servo and blower switch.
13. Raise the control servo up in the panel. Position it on the bezel studs and secure with four nuts.

CONTROL ASSEMBLY

1960

1. Disconnect the negative (ground) cable from the battery.
2. Remove the three control lever knobs.
3. 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."
4. Disconnect the vacuum valve switch hoses and the blower motor switch wire block connector.
5. Remove 2 control assembly retaining nuts at the back side of the instrument panel. (See figure 5-3.)
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. Then, tighten the switch retaining screw.
8. To install, reverse the removal procedure.



BLOWER MOTOR SWITCH

1960

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 remove the switch.
7. To install, reverse the removal procedure.

VACUUM VALVE SWITCH

1960

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."
2. Disconnect the two vacuum hoses at the vacuum valve switch.
3. Remove one screw retaining the vacuum valve switch to the control and remove the switch.
4. To install, reverse the removal procedure.

EVAPORATOR HOUSING ASSEMBLY

RANGER AND PACER-1958

The evaporator core and the heater core are more accessible for replacement operations when the evaporator assembly is removed from the car. The thermostatic switch and expansion valve can be serviced with the evaporator installed in the car.

REMOVAL

1. Discharge the system. Refer to "Discharging the System".
2. Remove the blower and motor assembly.
3. Drain the cooling system; then, disconnect the heater hoses at the cowl panel.
4. Remove 17 evaporator drip pan to case screws and remove the pan.
5. Remove the thermostatic switch control cable clamp; then, lift the cable from the switch cam arm. Remove the wires from the thermostatic switch.
6. Disconnect the suction and discharge lines at the fittings. (See figure 5-10.) Seal the evaporator and lines to prevent the entrance of dirt and moisture.
7. Remove the glove box liner; then, disconnect the evaporator case to air register connecting boot.
9. Remove four bolts and two nuts securing the evaporator assembly to the cowl panel. Lower the evaporator and move it to the left; then, pull the refrigerant lines from the side of the evaporator case.
10. Remove the evaporator assembly from the car.

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 assembly under the dash and put the refrigerant lines through the holes in the case. Be sure the rubber grommets are in place around the holes.
3. Install the evaporator assembly on the cowl panel; then, install the nuts on the case studs finger tight. Install four evaporator to cowl panel bolts.

NOTE: Tighten the bolts and nuts evenly so that a good seal is maintained and the evaporator case is not distorted.

4. Install the evaporator case support bracket on the dash panel and case. Install the radio, if the car is so equipped.
5. Install the evaporator case to the plenum chamber and air register connecting boots. Install the glove box. Install the vacuum line to the thermostat in the plenum chamber.

NOTE: The connecting boots will regain their preformed shape when soaked briefly in warm water before installation.

8. Remove the radio, if the car is so equipped. Remove the evaporator case support bracket from the cowl panel and case.

6. Connect the suction and discharge lines at the fittings shown in figure 5-10.

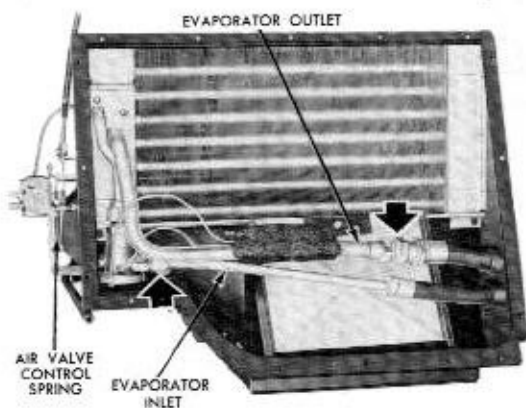


Fig. 5-10—Evaporator Suction and Discharge Line Connections—Ranger and Pacer—1958—E-2634)

Remove the evaporator case to plenum chamber connecting boot. Disconnect the vacuum line to the thermostat in the plenum chamber.

7. Install the thermostatic switch control cable and wires. Check the travel of the control cable for proper operation of the thermostatic switch and the air diverter valve.
8. Install the heater hoses and the blower and motor assembly. Fill the cooling system.
9. Evacuate and charge the system. Refer to "Evacuating the System" and "Charging the System". Install the evaporator drip pan after the refrigerant lines have been leak tested.

CORSAIR AND CITATION-1958

The thermostatic switch, expansion valve, and heater core can be serviced with the evaporator installed in the car.

REMOVAL

1. Discharge the system. Refer to "Discharging 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 liner 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-hand 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-hand air register connecting duct; then, install the glove box liner.
5. Install the left-hand 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. Refer to "Evacuating the System" and "Charging the System".

1959

1. Disconnect negative ground battery cable
2. Drain the engine coolant and disconnect the two water hoses from the heater core tubes on the engine side of the dash panel.
3. Disconnect two blower motor lead wires and the motor ground wire.
4. Install the manifold gauge set to the compressor service valves and discharge the refrigerant. Refer to "Manifold Gauge Set Installation" and "Discharging the System".
5. Remove the low pressure service valve from the

- compressor and cap it to prevent dirt or moisture from entering the compressor and low pressure line.
6. Disconnect the high pressure hose at the quick disconnect at the sight glass on the left front fender apron.
7. Remove the glove box liner.
8. Remove the radio.
9. Disconnect the vacuum hoses from the right vent, recirculating air door, blend-air door, and thermostatic switch vacuum motors.

10. Disconnect the plenum chamber to "Spot Cooler" rubber connector.
11. Remove two retaining nuts and remove "Spot Cooler."
12. Disconnect the heater and air conditioning defroster vacuum motor hoses.
13. Disconnect the defroster hose connector at the plenum chamber.
14. Disconnect the air inlet valve rubber connector from the right air inlet duct.
15. Remove the resistor wires.
16. Remove the carburetor air cleaner.
17. Remove 6 evaporator and blower housing assembly mounting nuts from the engine side of the dash panel.
18. Remove the evaporator drain hose from the floor pan orifice.
19. Remove the evaporator and blower housing assembly from the dash panel and place it on the floor pan.

NOTE: *It will be necessary to feed the high and low pressure air conditioning hoses through the dash panel in order to lower the evaporator housing.*

20. To install, reverse the removal procedure. Then evacuate, leak test, and charge the system.

1960

REMOVAL

1. Disconnect the negative (ground) cable from the battery.
2. Drain the engine coolant and disconnect the two 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 ground wire.
5. Remove the five motor retaining plate to cowl screws and remove the two-piece retaining plate.
6. Remove the retaining plate gasket seal and the insulation.
7. TO REMOVE THE HEATER TEMPERATURE REGULATOR VALVE AND/OR HEATER CORE, Front seat both compressor service valves, loosen the service valve gauge port caps and bleed the refrigerant from the compressor.
8. TO REMOVE THE EVAPORATOR, Install the manifold gauge set and discharge the system. Remove the high pressure line retaining clamp on the left fender apron and 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 the 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 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 (blue band) at the control head.

17. Disconnect the heater temperature regulator control cable at the water valve.
18. Disconnect the vacuum hose at 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 panel bracket.
21. Remove one defroster outlet to evaporator housing retaining screw. Disconnect the defroster outlet from the housing.

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

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 right side of the passenger compartment. An assistant should aid in routing the refrigerant hoses through the cowl.
26. Remove the assembly from the car.

INSTALLATION

1. Position the complete assembly with hoses in the passenger compartment on the right side floor area.
2. *During installation be careful not to damage the 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 air inlet. Connect the defroster outlet to the evaporator housing and secure with one screw. 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 bracket 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 the brackets provided.
15. Install the blower motor insulation and cover plate seal.
16. Install the two-piece 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. Secure the high pressure hose to the left fender apron with a clamp.
23. Install the band strap around the high and low pressure hoses in the engine compartment.
24. 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.

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

EVAPORATOR CORE

1960

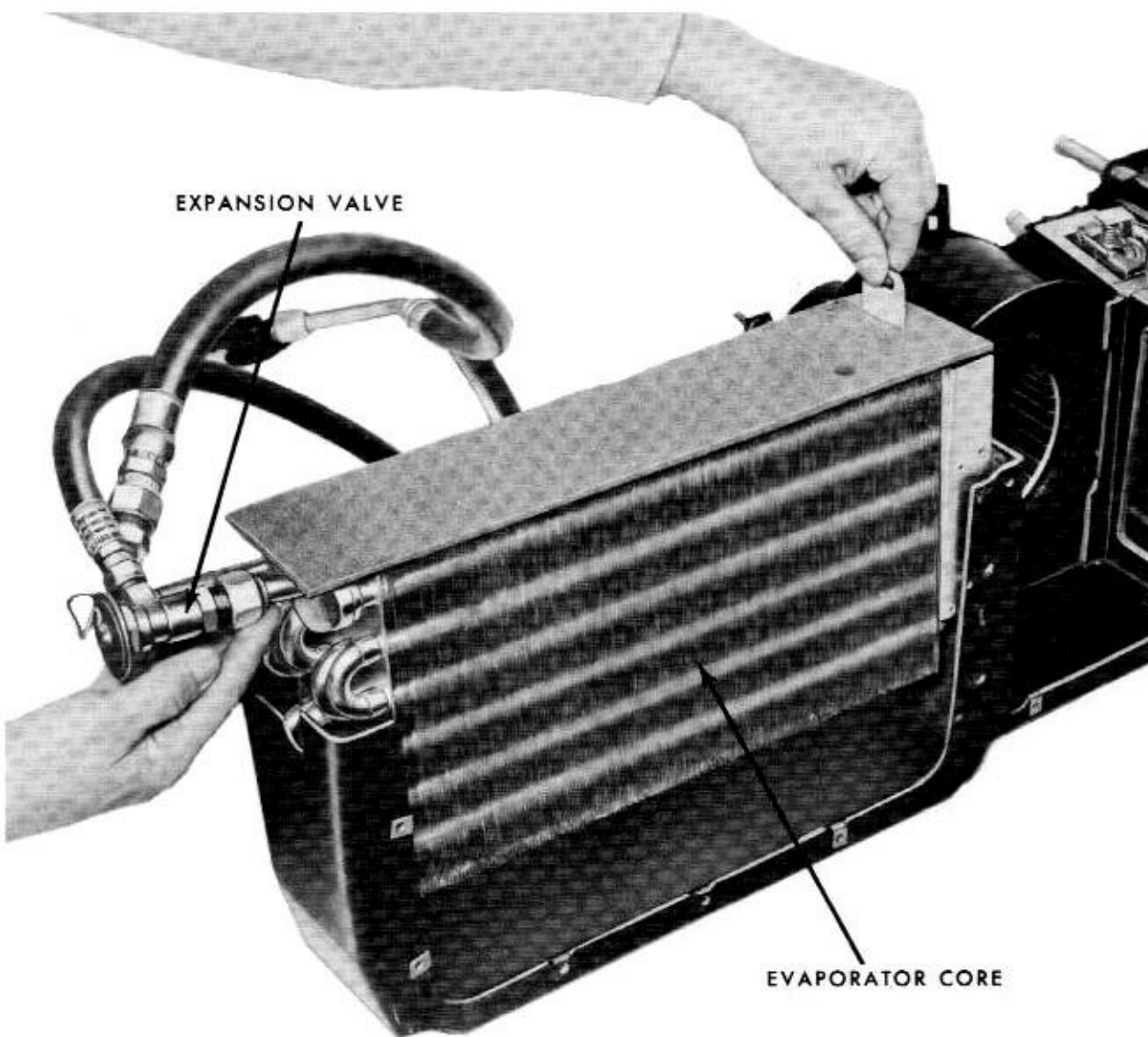


Fig. 5-11—Evaporator Core Removal—1960—(60E-7812)

1. Remove the Tinnerman nut retaining the vacuum motor to the recirculating air door. Disconnect the arm from the lever.
2. Remove four recirculating air door retaining screws and remove the door and lever assembly.
3. Remove the evaporator top cover and temperature regulator valve retaining screws. Carefully remove the top cover with the vacuum motor and blower switch resistor attached.
4. Remove five evaporator core to evaporator case retaining screws. *The two screws at the left rear side also retain the left mounting bracket.*
5. Remove the evaporator, expansion valve, and refrigerant hoses as an assembly. (See figure 5-11.)
6. Disconnect the low pressure hose and the expansion valve from the evaporator core. Cap the connections.
7. To install, reverse the removal procedure. Before installation, leak test the evaporator core.

EXPANSION VALVE

RANGER AND PACER-1958

1. Discharge the system. Refer to "Discharging the System".
2. Remove the evaporator drip pan.
3. Carefully slit the insulation that covers the temperature sensing bulb and remove the insulation. Remove the clips that retain the bulb to the evaporator inlet lines.
4. Disconnect the expansion valve at the three fittings indicated by the large arrows in figure 5-12. When disconnecting the valve from the evaporator inlet lines, hold the valve stationary while turning the flare nut.
5. Position the replacement expansion valve and connect the three fittings indicated by the large arrows in figure 5-12.
6. Attach the temperature sensing bulb to the evaporator outlet line with two clips. Cover the

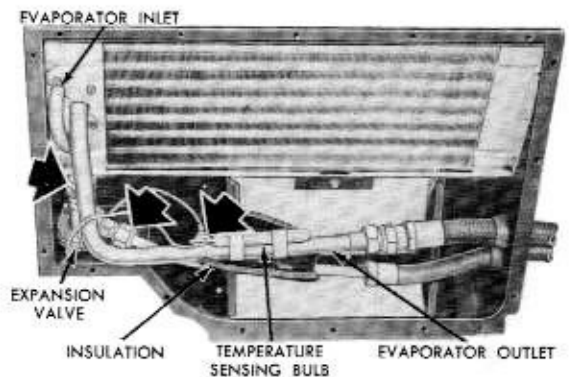


Fig. 5-12—Expansion Valve Connections—Ranger and Pacer—1958—(E-2637)

bulb and line with the insulation; then, cement the seam with weatherstrip adhesive.

7. Evacuate and charge the system. Install the evaporator drip pan after the refrigerant lines have been leak tested.

CORSAIR AND CITATION-1958

1. Discharge the system. Refer to "Discharging the System".
2. Remove the plenum, drip pan, and drain tube.
3. Carefully slit the insulation that covers the temperature sensing bulb and remove the insulation. Remove the clips that retain the bulb to the evaporator inlet lines.
4. Disconnect the expansion valve at the evaporator inlet and outlet lines and at the equalizer line connection. When disconnecting the valve from the evaporator inlet and outlet lines, hold

the valve stationary while turning the flare nuts.

5. Position the replacement valve and connect the inlet, outlet, and equalizer lines.
6. Attach the temperature sensing bulb to the evaporator outlet line with two clips. Cover the bulb and line with the insulation; then, cement the seam with weatherstrip adhesive.
7. Evacuate and charge the system. Install the evaporator drip pan, drain tube, and plenum after the refrigerant lines have been leak tested.

1959

1. Remove the evaporator from the dash panel. Refer to "Evaporator Housing Assembly Removal and Installation".
2. Disconnect the high pressure line connected to the expansion valve.

3. Disconnect the by-pass (equalizer) tube.
4. Peel back the insulation covering the temperature sensing bulb and unclip the bulb.
5. Disconnect the connection between the expansion valve and evaporator.

CAUTION: Whenever a connection is opened, caps or suitable protection should be installed to prevent dirt and moisture from entering the system. 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 where a gasket has been installed previously.

6. The expansion valve can be installed by reversing the removal procedure.

1960

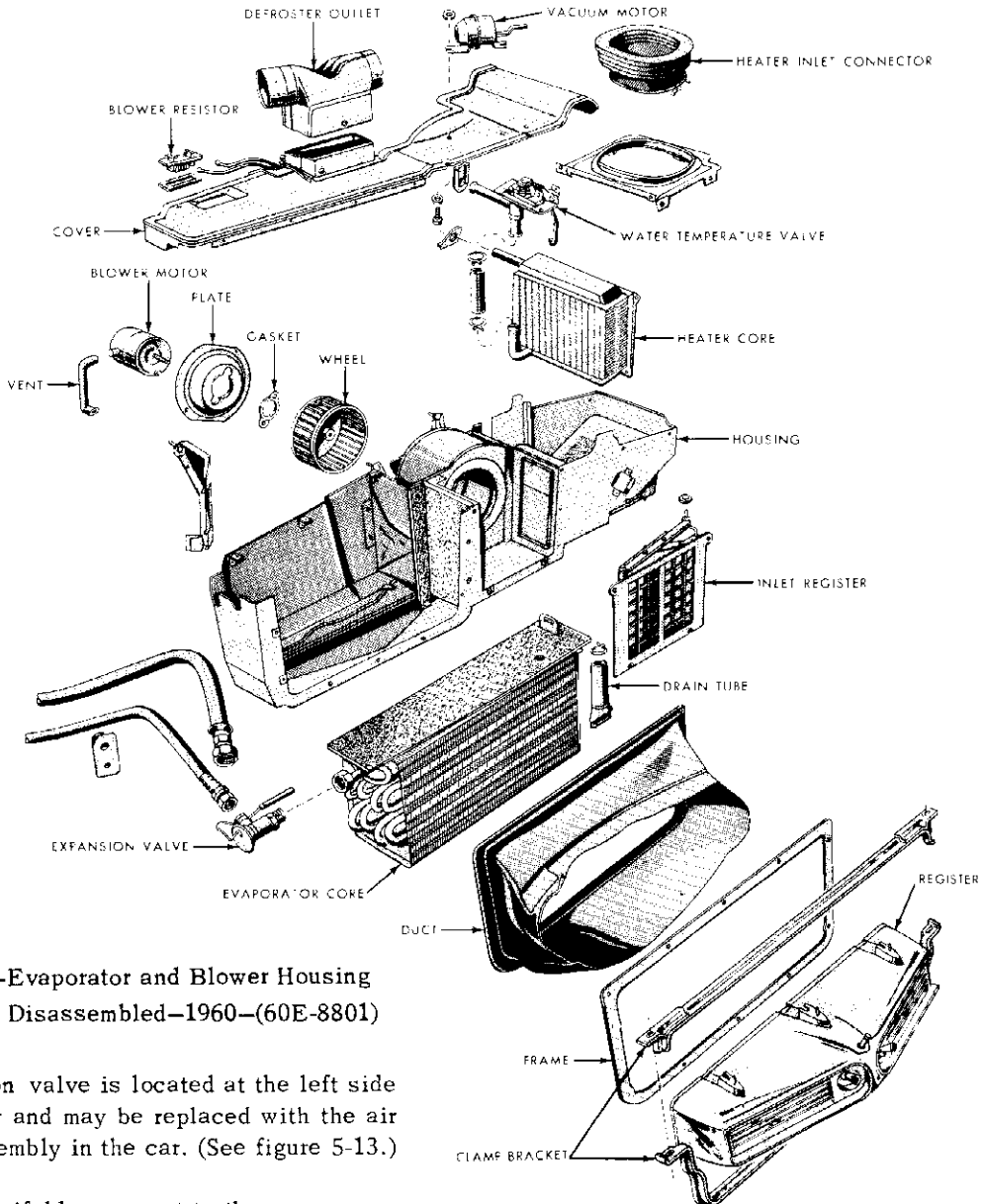


Fig. 5-13—Evaporator and Blower Housing Disassembled—1960—(60E-8801)

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 5-13.)

1. Install the manifold gauge set to the compressor service valves and discharge the refrigerant.
2. Remove 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. Check for leaks, evacuate, and charge the system.

THERMOSTATIC SWITCH

RANGER AND PACER-1958

1. Remove the glove box liner and the evaporator drip pan.
2. Remove the temperature sensing tube from the clip on the top of the evaporator case; then, remove the tube from between the evaporator fins.
3. Remove the control cable from the switch cam arm. Remove two wires from the switch terminals. Remove the four switch mounting screws; then, remove the switch. (See figure 5-14.)
4. Install the replacement switch with the four mounting screws. Connect the two wires to the terminals on the switch. Attach the control cable to the switch cam arm; then, test the operation of the cam arm for full travel and air diverter valve control. Install the evaporator drip pan.
5. Insert the temperature sensing tube between the evaporator fins to a minimum depth of two inches. Install the tube in the clip on the evaporator case.
6. Operate the cooling portion of the air conditioner at MAX COOL for 15 minutes. Turn the Dial-temp control from MAX COOL to MIN COOL to make sure the magnetic clutch disengages. If the clutch does not disengage, the temperature

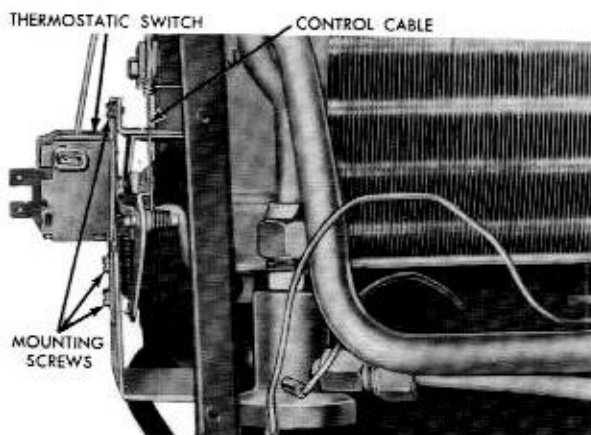


Fig. 5-14—Thermostatic Switch Installation—Ranger and Pacer—1958—(E-2638)

sensing tube is not inserted far enough between the evaporator fins. When the sensing tube is properly adjusted, install the glove box.

CORSAIR AND CITATION-1958

1. Remove the glove box liner.
2. Remove the temperature sensing tube from the clip on the top of the evaporator case, then remove the tube from between the evaporator fins.
3. Remove the control cable from the switch cam arm. Remove two wires from the switch terminals. Remove two switch mounting screws; then, remove the switch.
4. Install the replacement switch with two mounting screws. Connect the two wires to the terminals on the switch. Attach the control cable to the switch cam arm; then, test operation of the cam arm for full travel.
5. Insert the temperature sensing tube between the evaporator fins to a minimum depth of two inches. Install the tube in the clip on the evaporator case.
6. Operate the cooling portion of the air conditioner at MAX COOL for 15 minutes. Turn the Dial-temp control from MAX COOL to MIN COOL to make sure the magnetic clutch disengages. If the clutch does not disengage, the temperature sensing tube is not inserted far enough between the evaporator fins. When the sensing tube is properly adjusted, install the glove box.

1960

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 5-13.)
2. Remove the control knob retaining screw and remove the knob.
3. Remove 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 and 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

REMOVAL

1. Isolate the compressor from the system.
2. Remove the suction and discharge service valves and lines from the compressor. Seal the valves and compressor openings to prevent the entrance of dirt.
3. Remove four mounting bolts and washers from the bottom side of the mounting bracket.
NOTE: If the car is equipped with power steering, the compressor mounting bolts are more accessible when the power steering pump is loosened so that all tension is off of the drive belt.
4. Remove the compressor drive belt. Disconnect the magnetic clutch feed wire at the bullet connector; then, lift the compressor from the car.

INSTALLATION

1. Position the compressor, magnetic clutch, and the brush holder assembly on the compressor mounting bracket. Install the four mounting bolts, flat washers, and lockwashers. Do not tighten the bolts at this time.
2. Install the compressor drive belt. Adjust the belt tension (1/4 inch deflection between pulleys) and torque the compressor mounting bolts to 16 lbs. ft.
3. Install the suction and discharge service valves and lines, using new gaskets between the valves and the compressor. Torque the valve attaching screws to 15 lbs. ft.
NOTE: Replacement compressors are charged with dry nitrogen as a moisture preventative. Remove the suction and discharge port blank flanges carefully to release the pressure.
4. Purge the compressor and restore it to the system. Leak test the compressor.

1959

1. Disconnect the clutch feed wire.
2. Connect the test manifold gauge hoses to the service valves. Front seat both the service valves and discharge the compressor through the test manifold and into an exhaust system.
3. After pressure is completely relieved, the cap screws which retain each service valve to the head can be removed. Remove the screen and gasket from the suction valve and the gasket from the high pressure valve.
4. Remove 4 bolts securing the compressor to the mounting bracket. Remove the drive belt from the pulley and remove the compressor assembly.

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

NOTE: *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.*

1960

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 cap screws which retain each service valve to the head can be removed.
4. For ease of operation, remove 2 upper fan shroud retaining capscrews and 2 side attaching screws; then, remove the upper fan shroud.
5. Remove 4 bolts securing the compressor to the mounting bracket. Remove the drive belt from the pulley and remove the compressor and clutch assembly.
6. Remove the capscrew and flat washer securing

the clutch to the crankshaft. Screw a 5/8 - 11 x 1½" 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 and purge the compressor.

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.

The head bolts and base cover bolts should also be retightened any time a compressor is removed for servicing. Refer to the specifications at the end of this manual.

MAGNETIC CLUTCH

A Warner Magnetic clutch was used as an alternate with the Eaton Clutch in 1960 Edsel production. This clutch is of a two-piece design with the field coils attached to the front seal plate of the compressor. This eliminates the need for a brush assembly.

EATON CLUTCH

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

1. 1960 ONLY: For ease of operation, remove two upper fan shroud retaining cap screws and two side attaching screws and remove the upper fan shroud.
2. Loosen 4 bolts securing the compressor to the mounting bracket.
3. Slide the compressor towards the engine; then, remove the drive belt.
4. Energize the clutch to facilitate removing the cap screw attaching the clutch to the compressor output shaft, if possible.
5. Remove the cap screw and flat washer.

6. Disconnect the clutch feed wire.
7. Screw a 5/8 - 11 x 1½" bolt into the threaded clutch plate. Tightening will force the clutch off.
8. To install, position the clutch on the compressor shaft. Install the cap screw and washer and torque the cap screw to 18-22 lbs. ft.

WARNER CLUTCH

The Warner Clutch and Pulley removal and installation procedure is the same as that for the Eaton Clutch and Pulley.

The field coils can be removed only after the compressor service valves have been front seated and the refrigerant charge relieved. The three attaching bolts and field coils can then be removed.

To install the field coils, insert the centering pilot in the coil assembly; then, install the coil assembly and three attaching bolts. Torque the bolts to 10-13 lbs. ft. Remove the centering pilot after tightening the coil assembly. It will be necessary to purge the compressor after installation of the field coils.

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 thoroughly evacuated before charging with refrigerant.

1958

REMOVAL

1. Discharge the system. Refer to "Discharging the System".
2. Remove the hood, hood hinges and vertical support assemblies, gusset supports, and the center grille assembly.
3. Disconnect the lines between the condenser and 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; then, remove the condenser and receiver.

INSTALLATION

1. Position the condenser and receiver assembly in front of the radiator and install the four condenser to radiator support mounting bolts and nuts.
2. Remove the service plugs and caps from the refrigerant lines. Connect the lines between the compressor and condenser and between the receiver and liquid sight glass.
3. Evacuate, charge, and leak test the system. Refer to "Evacuating the System" and "Charging the System".
4. Install the hood hinges and vertical support assemblies, gusset supports, center grille assembly, gusset supports, center grille assembly, and the hood.

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 cap screws retaining the upper air deflector and remove the deflector.
4. Remove the receiver from the mounting bracket.
5. Disconnect the compressor to condenser hose connection.
6. Remove 4 condenser mounting bolts and remove the condenser.

NOTE: Cap all fittings to prevent dirt and

moisture from entering the system and to protect the threads of the fittings.

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

NOTE: *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 perform the intended function of removing moisture from the system.*

1960

1. Install the manifold gauge set to the compressor service valves and discharge the system.
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 compressor.
6. Disconnect the fitting between the receiver-dryer and the 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 the upper fan shroud section.
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. The moisture absorbing chemical in the receiver will be saturated and consequently will not perform the intended function of removing moisture from the system.

13. To install, reverse the removal procedure.
14. Leak test, evacuate, and charge the system.

RECEIVER-DRYER

1958

1. Install the manifold gauge set to the service valves and discharge the system. Refer to "Manifold Gauge Set Installation" and "Discharging the System".
2. Disconnect the lines from the receiver-dryer and plug both lines.
3. Remove two nuts attaching the receiver-dryer

to the condenser and remove the receiver-dryer from the car.

4. To install, reverse the removal procedure; then, evacuate, leaktest, and charge the system. Refer to "Evacuating the System", "Leak Testing", and "Charging the System".

1959

1. Install the manifold gauge set to the compressor service valves.
2. Discharge the system as described in "Discharging the System".
3. Remove the cap screws retaining the upper air deflector and remove the deflector.
4. Disconnect the condenser to receiver connection (upper connection).
5. Disconnect the receiver to evaporator connector

(lower connection on receiver).

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

6. Remove two receiver to bracket retaining nuts and remove the receiver.
7. To install, reverse the 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 and discharge the system.
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.

ADJUSTMENTS

CONTROL CABLE

1958

Efficient operation of the air conditioning system is dependent upon proper adjustment of the control cables.

The switches, valves, and dampers are controlled by three cables on the Ranger and Pacer Models. (See figure 5-6.) Five cables are used on the Corsair and Citation Models. (See figure 5-7.)

Control cables are of different lengths and are not interchangeable. The clinch rings on the cable armor covers are color coded and the cables are installed on the servo external arms which are correspondingly coded. (See figures 5-6 and 5-7.) Refer to the following table for the correct cable lengths and color codes for the various cable functions of specific models.

CONTROL CABLE IDENTIFICATION

Control Cable Function	Servo External Arm Identification	Color Code	Length (inches)	Model Application
Operates Thermostatic Switch *	A. C. Temp	Orange	41-7/8 41	Ranger-Pacer Corsair-Citation
Operates Recirculating Air Duct Damper	Heater Air	Yellow	64 59-1/2	Ranger-Pacer Corsair-Citation
Operates Heater Water Control Valve	Heater Temp	Red	29-1/8 41	Ranger-Pacer Corsair-Citation
Operates Air Diverter Valve	A. C. Air	Green	62-3/16	Corsair-Citation
Operates Defroster Damper	Def.	Blue	27	Corsair-Citation
Operates Servo Control Arm	None-Cable Connected on Top of Servo	None	11 12-1/2	Ranger-Pacer Corsair-Citation

*Also Operates Air Diverter Valve on Ranger and Pacer.

Before attempting to adjust individual cables, turn the Dial-temp control to the OFF position; then, insert the alignment pin (or a $\frac{1}{8}$ x 1 cotter pin) through the hole in the servo cover and the hole in the control arm extension. (See figure 5-9.)

If the pin cannot be inserted freely, the servo internal arm is not in the off position. Loosen the Dial-temp control cable clamp. Adjust the cable armor in or out until the alignment pin can be inserted; then, tighten the clamp. Turn the ignition switch to the ACC (accessory) position so that the servo external arms will index with the OFF marks on the servo body.

NOTE: Make all control cable adjustments with the alignment pin installed.

To adjust the control arm travel of any switch, valve, or damper, loosen the cable armor clamp screw; then, slide the cable armor in or out of the clamp. Adjustment can be made at either end of the cable. Tighten the cable armor clamp when the control arm is correctly adjusted. Do not bend or spring the control arms or cable clamp brackets.

NOTE: Remove the alignment pin from the servo before turning the Dial-temp Control to test the system operation.

1960

RIGHT AIR VENT CONTROL

1. Loosen, but do not remove the cable housing retainer screw at the right ventilator door. (See figure 5-3).
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 AIR VENT CONTROL

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.

HEATER DUMP DOOR CONTROL

1. Loosen but do not remove the control cable housing retainer screw at the heater dump door lever. (See figure 5-15.)

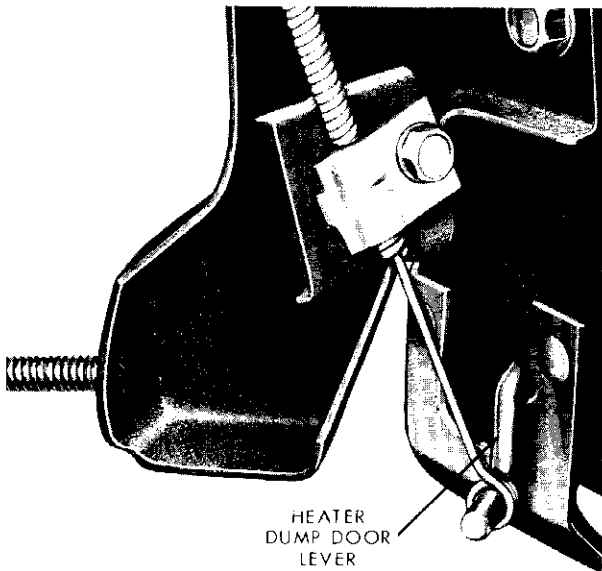


Fig. 5-15—Heater Dump Door Adjustment—
1960—(60E-8808)

2. With the lower control lever in the off detent position, move the heater dump door lever to the full counterclockwise position. (See figure 5-15.)
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 DOOR CONTROL

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 5-3.)

1. Loosen, but do not remove the defroster control cable housing (blue band) retainer screw at the control head. (See figure 5-3.)
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 must 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 5-3.)
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 with the lever at "HI".

VACUUM VALVE SWITCH

1. Loosen the vacuum valve switch retaining screw only 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.

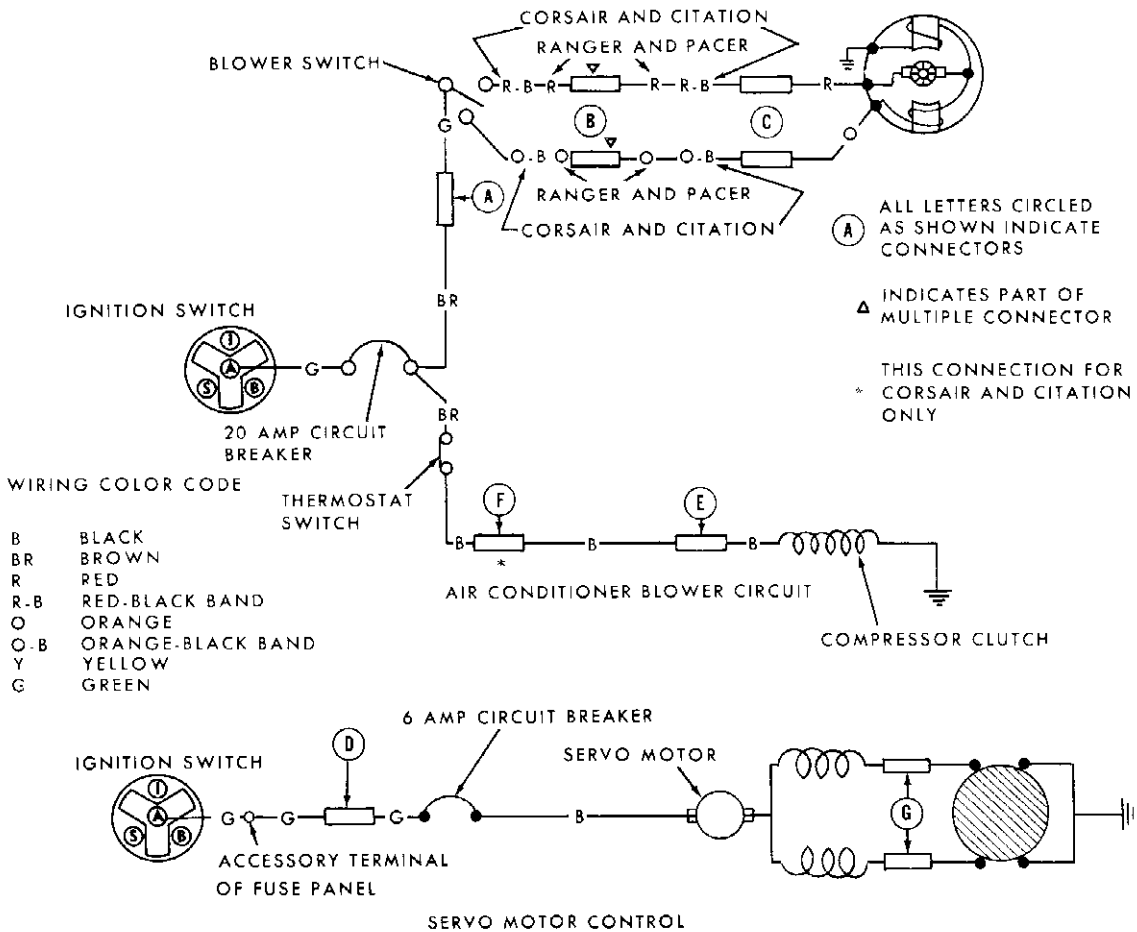
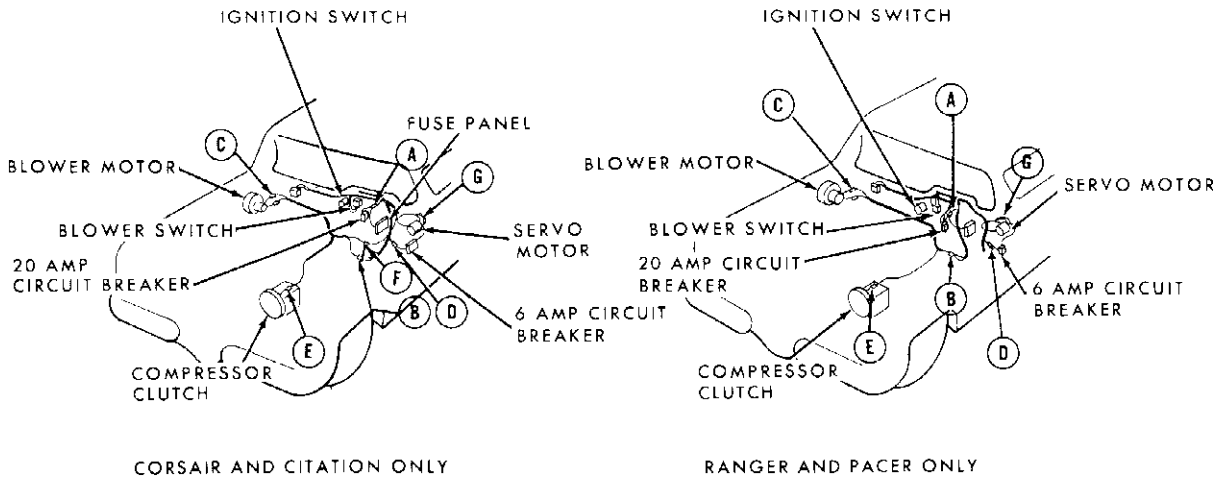


Fig. 5-16—Air Conditioning and Servo Wiring Diagrams—1958—(61ET-8801)

WIRING COLOR CODE

- B BLACK
- R-B RED-BLACK BAND
- BR BROWN
- O ORANGE
- O-B ORANGE-BLACK BAND
- R RED
- Y-B YELLOW-BLACK BAND

(A) ALL LETTERS CIRCLED AS SHOWN INDICATE CONNECTORS

△ INDICATES PART OF MULTIPLE CONNECTOR

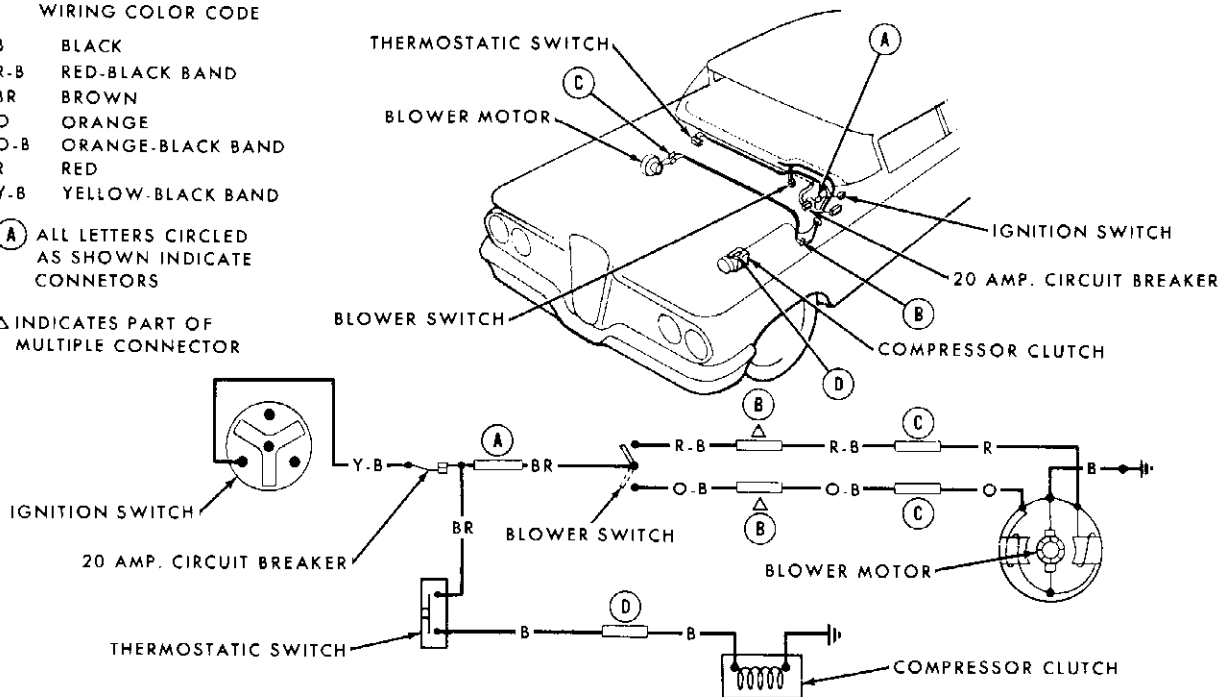
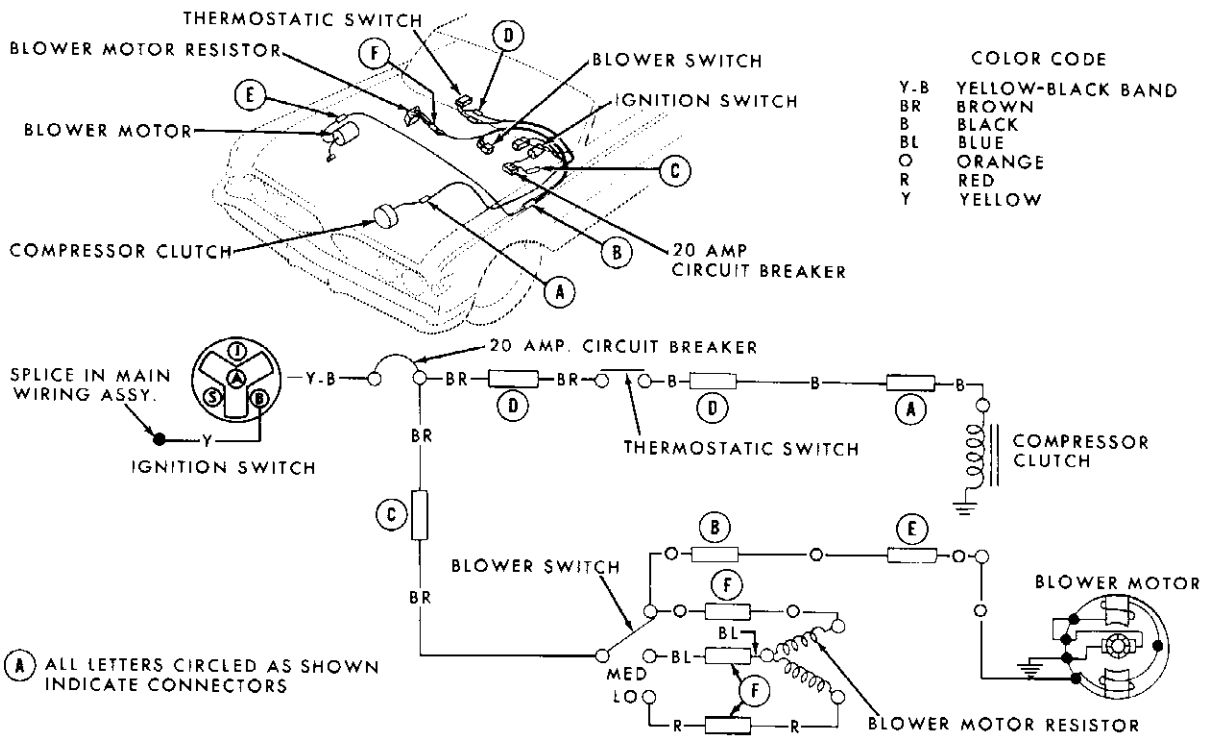


Fig. 5-17 - Air Conditioning Wiring Diagram - 1959 - (61ET-8802)



- COLOR CODE
- Y-B YELLOW-BLACK BAND
 - BR BROWN
 - B BLACK
 - BL BLUE
 - O ORANGE
 - R RED
 - Y YELLOW

(A) ALL LETTERS CIRCLED AS SHOWN INDICATE CONNECTORS

Fig. 5-18 - Air Conditioning Wiring Diagram - 1960 - (61ET-8803)