

LINCOLN and CONTINENTAL

1958-1959-1960

The air conditioning and heating system is cowl mounted. It utilizes ducts to direct the warm or cooled air through front door panel ducts to the rear seat as well as through the instrument panel registers for cool air or through defroster outlets for warm air.

The cooling portion of the heating and air conditioning system utilizes a compressor, condenser and reciver, two evaporators, two expansion valves and two blowers. These parts are the major units necessary in the air conditioning system. Besides these major components, the system uses a liquid sight glass, an oil separator (integral in the compressor), a variable thermostatic switch, an icing switch, a combination heater and air conditioner control servo, necessary vacuum hoses, vacuum motors, Bowden cables, and air ducts. Figure 3-1 shows the engine compartment view of an air conditioning installation.

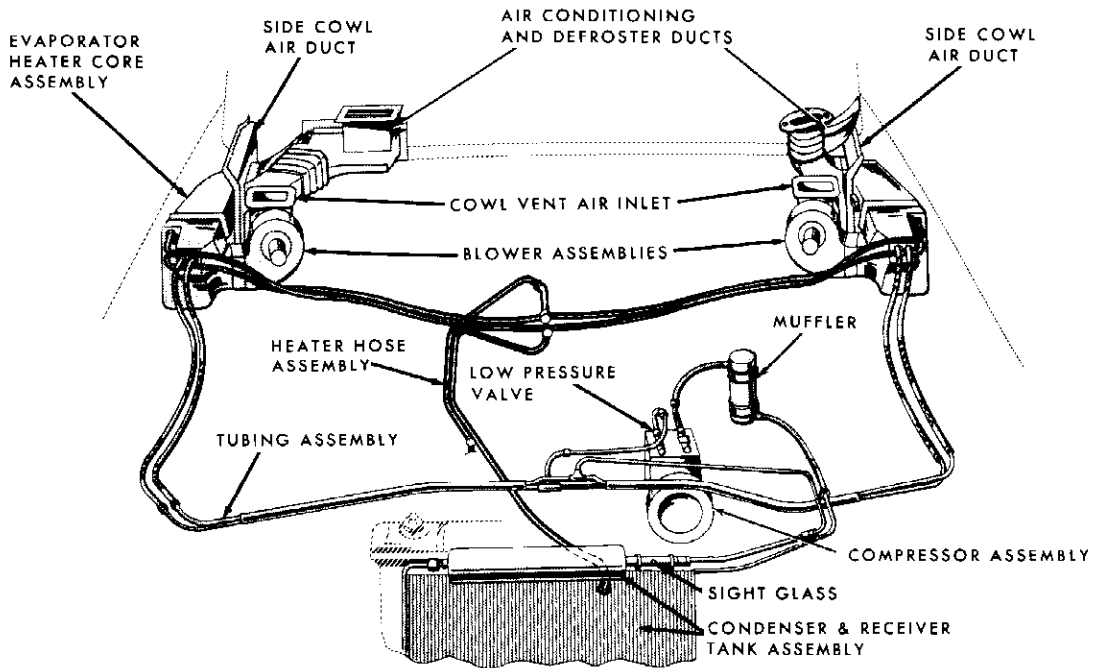


Fig. 3-1—Air Conditioning System Installed—1958-59-60 Lincoln and Continental—(60L-8813)

A liquid sight glass is incorporated in the refrigerant line between the receiver and the expansion valve. The sight glass is used to check the quantity of the refrigerant charge in the system. Bubbles in the sight glass after five minutes of operation indicate a low charge due to a refrigerant leak which must be corrected.

An expansion valve, located at each evaporator, meters the proper amount of high pressure liquid refrigerant into the evaporator coils. A thermal sensing bulb, at the refrigerant outlet line of the

evaporator, is connected to the expansion valve by means of a small sealed capillary tube. Thus, the operation of the expansion valve is controlled by the temperature of the evaporated refrigerant at the point where it leaves the evaporator.

If the gas leaving the evaporator gets too warm, the bulb transmits pressure through its tube to the expansion valve. Inside the valve, this pressure moves a diaphragm which opens the orifice. This will increase the flow of liquid refrigerant until the right amount is fed into the evaporator.

CONTROLS

The 1958 Lincoln employs three different servo controls. The first two types are manually controlled, electrically operated. The third type is both controlled and operated electrically.

1958 TYPES I-II

IDENTIFICATION OF SERVOS

Early Production Servos

The early production servo contact plate and cam assembly do not have an indexing mark for the "OFF" position. (See figure 3-2, No. 1 and No. 2.) If replacement of the contact plate and cam assembly becomes necessary, the new assembly should be installed and positioned as shown in figure 3-2, No. 1 and No. 2, with the thin insulated line 1-1/16 inches from the center of the indicated casting hole.

Later Production Servos

The contact plate and cam assembly has a pointer set into the contact plate, which when aligned with the pointer in the housing, indicates the correct "OFF" position. (See figure 3-2, No. 3.)

The later type servo can be identified on the car by looking at the control cable retaining clip on the servo. The control cable should be visible at the end of the armor before entering the orifice between the housing and back plate. If it is not, replace the servo.

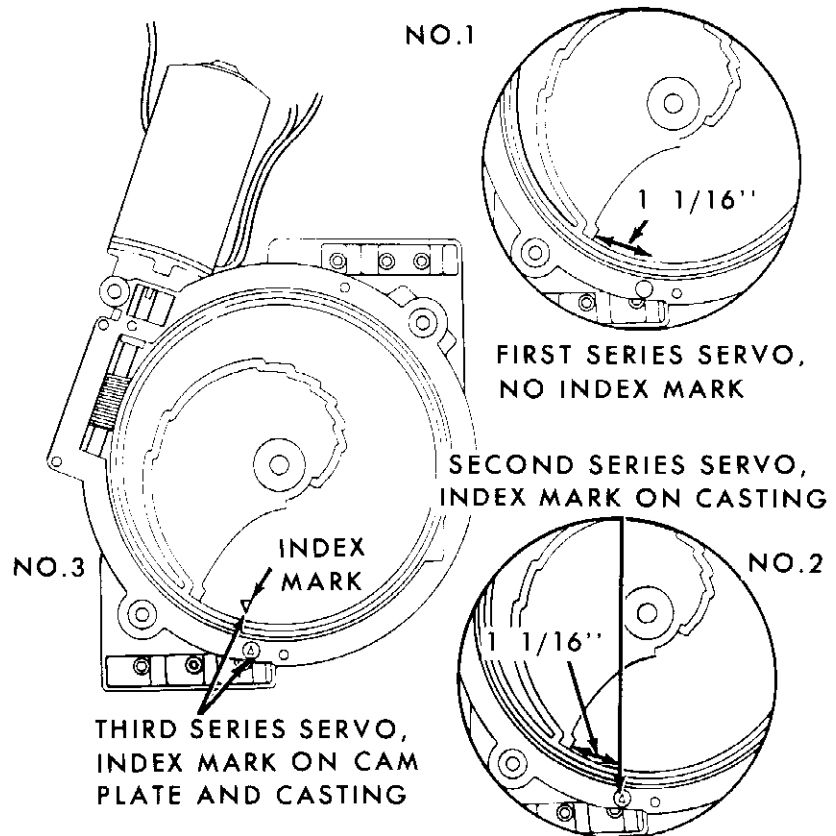


Fig. 3-2—Identification of Servos—(61LT-8821)

The second type servo entered production approximately January 20, 1958. This new servo incorporates a revised contact plate and cam assembly, as well as a smaller movable arm contact point which improves the operation of the unit.

The late contact plate and cam assembly can be used with either the early or late back cover assembly. However, the early contact plate and cam assembly must be used with the early back cover assembly.

DESCRIPTION AND

OPERATION

The selection of the desired heating, ventilating and air conditioning of the car interior is accomplished by the servo control unit. The servo itself is mounted on the cowl panel behind the glove compartment, while the control head, or selector (consisting of the indicating dial, combination two-speed push-pull blower switch, and servo control knob) is mounted at left side of the instrument panel cluster.

The control servo unit is used on both the air conditioner-heater combination cars and on heater only cars with minor deviations in construction. Air conditioned cars have a control head pointer which indicates 10 possible dial settings selected by the driver in addition to intermediate dial settings.

Cars which are equipped with heaters only have eight control head pointer detent positions, with intermediate settings. The air distribution system, on air conditioned cars, incorporates two more Bowden cables than a heater only car. These are manually operated and connect to the defroster duct dampers.

The control servo is placed in operation by rotating the control knob below the dial face either in a clockwise or counterclockwise direction. Rotation of the knob moves the dial pointer and the pinion which are on the same shaft. A rack, meshed with the pinion, is an integral part of one end of the control cable. The other end of the cable is attached to a movable control arm on the servo.

There are two stationary arms mounted on the back cover which complete the ground circuit when the movable arm is positioned to either side of the insulated area on the contact plate. (See figure 3-3). The direction of rotation of the motor is determined by positioning the movable arm terminal inside or outside the insulator strip. One stationary terminal always remains inside and one remains outside of the insulated strip. When the circuit is completed, the motor drives a worm gear which is in constant mesh with the ring gear of the contact plate and cam assembly. This turns the contact plate and cam assembly until the movable arm terminal is again positioned under the insulated area.

There are five lever arms which control the Bowden cables for the dampers and water valve.

NOTE: *There is an additional lever arm on air conditioned cars which is geared to control the air conditioning thermostatic switch.*

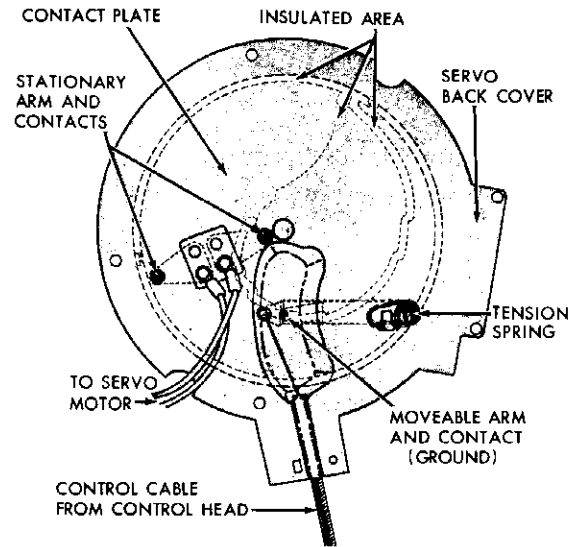


Fig. 3-3--Servo Contact Plate and Back Cover--(61LT-8822)

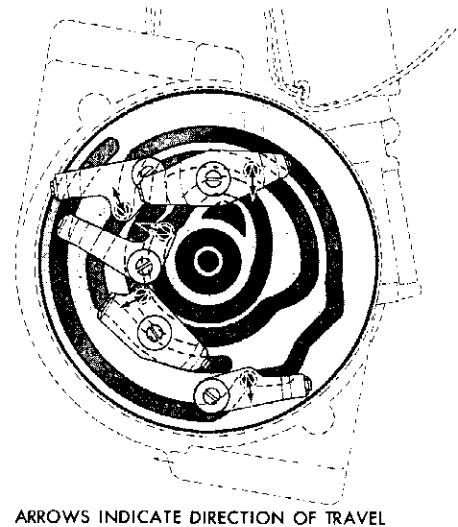


Fig. 3-4--Lever Arm Action--(61LT-8823)

These levers are secured to the housing by a screw and bevel spring washer on a raised pivot. The inner ends of the levers (pivot arms) are mounted in bushings which ride in the cam grooves. (See figure 3-4). As the contact plate and cam assembly rotates, the pivot arms and bushings for the individual levers are moved along in the cam grooves. The cam grooves are irregular, consequently the variation operates the levers to which the bowden cables are attached. This results in the operation of the dampers and water valve.

1958-1959 TYPE III

The following applies to the electrically operated—electrically controlled servo system used in late 1958 and in 1959. Formerly, a movable contact point was operated by the control head through a Bowden cable and rack and pinion.

The electrically controlled servo system has a junction block on the back of the servo which contains 17 stationary contact points and performs the same function as the previously used movable arm contact point. The Bowden cable and the rack and pinion are replaced by a wafer switch which has 17 positions (23 on air conditioned vehicles), a dynamic braking relay and the necessary related wiring. The wafer switch controls the position of the cam plate by means of the various contacts.

The servo assembly (Type III) operates the same seven Bowden

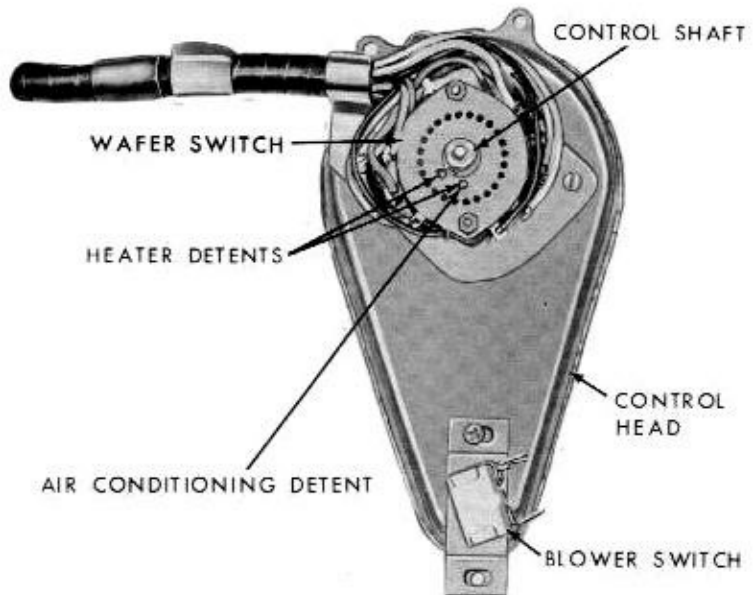


Fig. 3-5—Electric Servo Control Wafer Switch—(9L-8809)

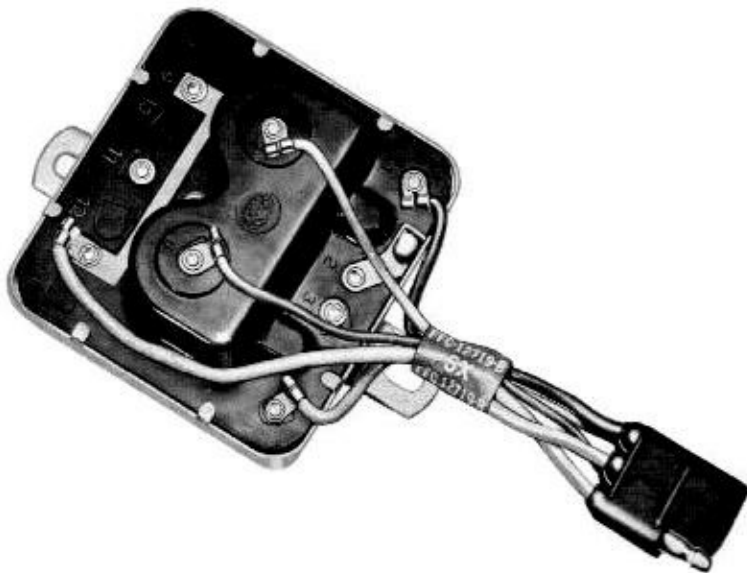


Fig. 3-6—Dynamic Breaking Relay—(9L-8809)

cables as the Type I and the Type II servos. These are attached to the water valve, two ventilation ducts, two front air dampers in the side cowl trim panels, and two rear damper valves in the side cowl trim panels. The servo is mounted on the dash panel behind the glove box. The control head or selector is mounted in the left side of the instrument cluster with the wafer switch coupled to the control head shaft. (See figure 3-5.) The dynamic braking relay shown in figure 3-6 is mounted on the right front fender apron near the cowl.

**CONTROL
OPERATION**

The 1960 Lincoln and Continental uses a vacuum operated servo control system. When the servo control head is turned to the various detent positions by the action of the control knob and cog belt drive, a cam plate releases or depresses five plungers which are part of the servo control head. This action directs vacuum to the respective vacuum motors. Figure 3-7 contains a chart showing the various vacuum motor applications for each control quadrant as well as the vacuum motor locations, vacuum hose routing and the hose connections to the servo control head.

VACUUM MOTOR APPLICATION CHART

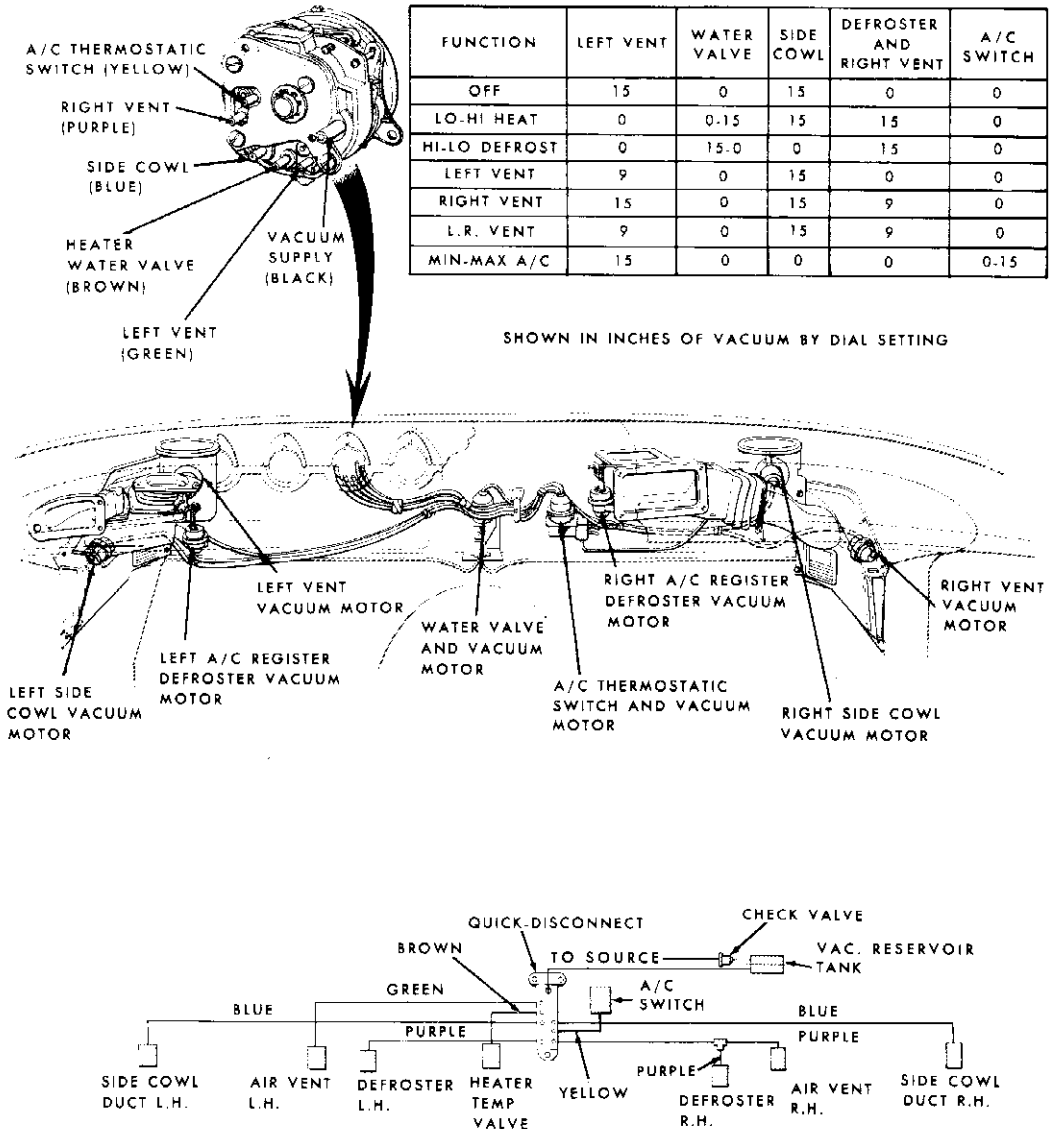


Fig. 3-7—Heater and Air Conditioning Vacuum Control System—1960—(60L-8823)

A relief valve is incorporated in the vacuum servo which permits 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.

A check valve is incorporated in the vacuum servo to retain the vacuum. This prevents inadvertent operation of any vacuum motors when the manifold vacuum drops below 15 inches as on acceleration or when the engine is under heavy load. A reserve tank, located on the right front fender apron below the power box, also assists in retaining a constant vacuum supply to the system. The reserve tank also serves the windshield wiper motor.

The cam plate in the vacuum servo is the only difference between heater only and air conditioning and heater servos. Both cam plates are identified as to their function to prevent improper installation. The vacuum servo cannot be disassembled for repair and must only be replaced in the event of trouble.

The blower motor is controlled by pulling out the control knob one-third for low blower speed, two-thirds for medium blower speed, and completely out for high blower speed. This three speed operation is accomplished by the use of a resistor which is located in the right blower motor housing, below the right front fender.

1961



The air conditioning system is a separately housed system designed to operate with re-circulated air. It is connected to the heating and ventilation system only by the controls. All of the major components of the system except the evaporator are in the engine compartment. The evaporator is located beneath the instrument panel in the passenger compartment. (See figure 3-8.)

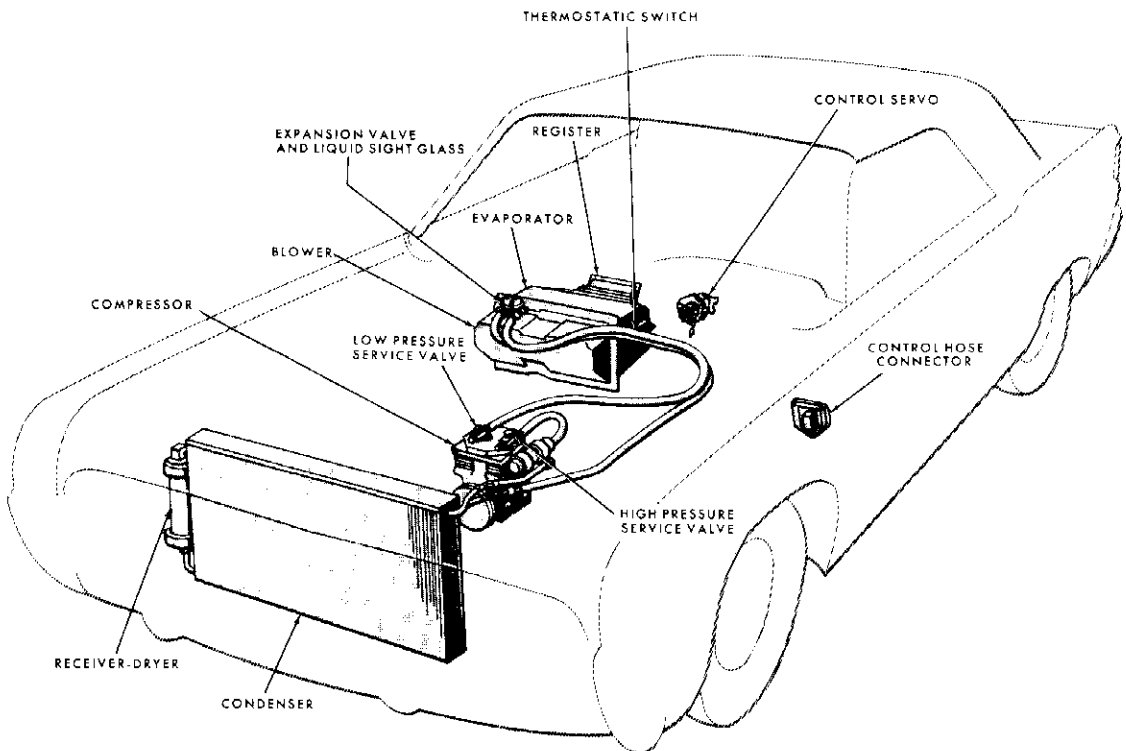


Fig. 3-8— Air Conditioning System Installed—1961—(61LM-8808)

Refrigerated air enters the passenger compartment through a fold-away register in the instrument panel. When the system is not in use, the register folds into the instrument panel below the radio.

The re-circulated air is taken from the passenger compartment by the blower through openings below the evaporator housing. The air is then forced into the evaporator and out through the register. By using this method, it is possible to keep outside odors and dust from entering the car.

CONTROLS

A vacuum control servo is used to operate all phases of the air conditioner, heater, defroster, and ventilating system.

Figure 3-9 shows the vacuum motor application, component locations, and vacuum hose color codes. The control servo used with air conditioning is not interchangeable with the heater only servo.

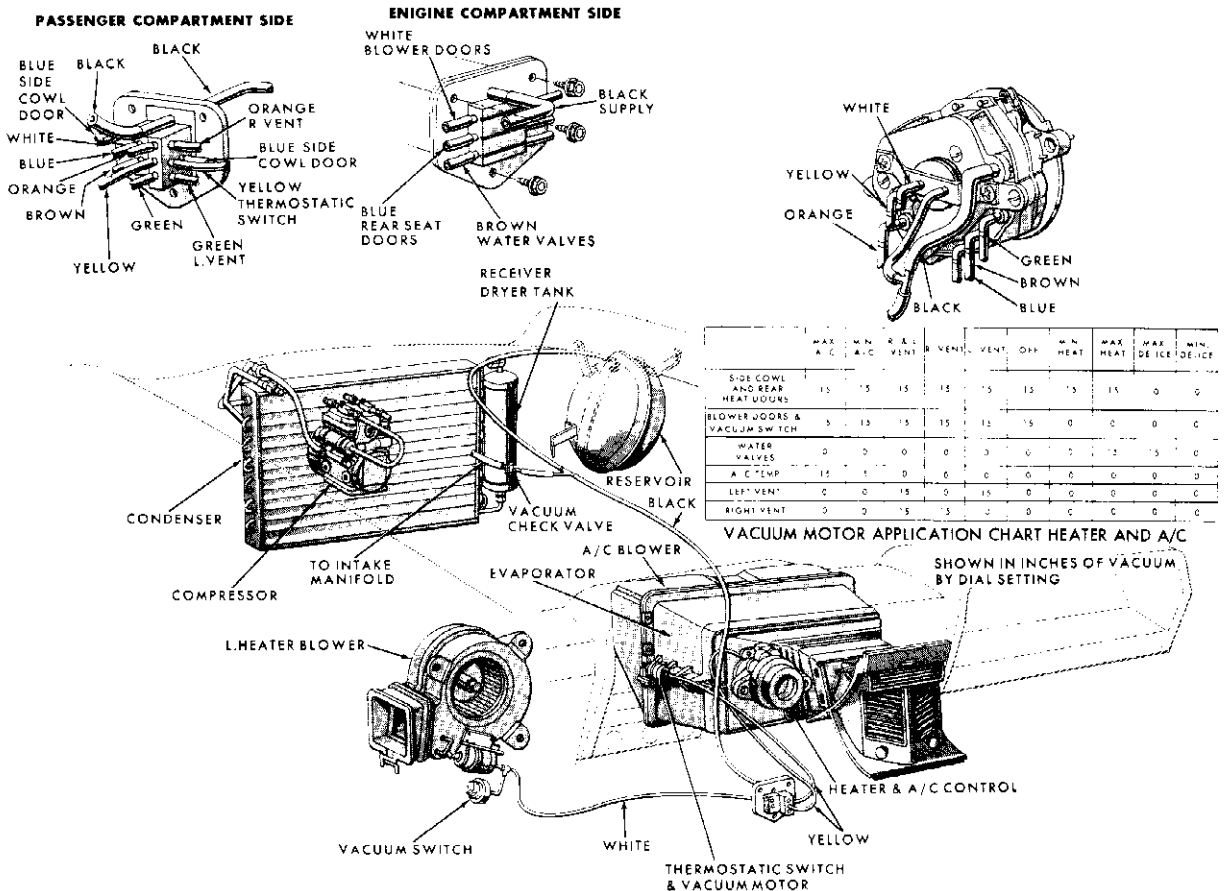


Fig. 3-9—Air Conditioning Vacuum Control System—1961—(61LM-8801)

REMOVAL AND INSTALLATION

Possible malfunction of the various units that comprise the air conditioning system may be determined by following the trouble shooting and test procedure section of this manual.

In many cases, with the exception of the compressor and the correction of leaks, replacement rather than repair of the individual units is recommended. In the case of the compressor, a gasket kit, front seal kit and a valve plate kit are available.

Removal and installation of the controls, blower and motor assemblies, thermostatic switch, and the icing switch can be performed without losing the refrigerant. Other replacement operations require that the system be discharged before removal.

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. 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.*

Following are the removal and installation procedures for each unit or assembly:

CONTROLS

SERVO CONTROL HEAD 1958-59

1. Disconnect the negative (ground) cable from the battery.
2. Remove the instrument cluster top cover plate.
3. Remove the instrument cluster lower left cover plate.
4. Disconnect the wires from the blower switch.
5. Remove the air system control knob from the control.
6. Remove three screws attaching the servo control to the back side of the instrument cluster; then, pull the control from behind the cluster.
7. Remove two screws attaching the control cable or wafer switch to the back of the control servo.
8. Loosen the shaft set screw and remove the control cable or wafer switch from the servo control.
9. To install, reverse the removal procedure and perform any adjustments as necessary. Refer to "Adjustments" in this section of the manual.

SERVO-1958 CABLE CONTROLLED

REMOVAL

1. Disconnect the negative (ground) cable from the battery.
2. Remove two screws retaining the glove compartment to its support bar and remove the glove compartment. Remove the glove compartment cover panel.
3. Remove the lower right instrument panel cover from the car.
4. Disconnect the black servo wire from the circuit breaker and the two wires from the thermostatic switch.
5. Remove the capillary tube mounting screw and carefully remove the tube from the right air duct.
6. Remove one screw and remove the servo cover.
7. Remove the seven Bowden cables from the servo, making certain that each is color coded.
8. From under the hood, remove three nuts retaining the servo to the dash panel.
9. Pull the servo away from the dash panel and remove five screws attaching the back cover to the servo.
10. Remove the Bowden cable from the back cover and remove the servo from the car.

INSTALLATION

1. Connect the Bowden cable to the servo back cover and install the cover to the servo. *Do not tighten the cable clamp at this time.*
2. Position the servo assembly to the dash panel and install the three retaining nuts.
3. Carefully route and install the thermostatic switch capillary tube in the right air duct. Attach the tube in place with one screw.
4. Connect the black servo motor wire to the 6 amp. circuit breaker.
5. Rotate the servo control knob on the instrument panel until the servo control head dial pointer is at the "OFF" position.
6. Connect the battery cable to the battery and turn the ignition switch to the "ON" position.
7. Move the control head cable in or out of the servo until all the servo arms are at their "OFF" index marks.

NOTE: *Special attention should be given to the right vent servo arm. When this servo arm is exactly in the "OFF" position (along with all the other servo arms) tighten the clamp screw on the control cable.*

8. Rotate the servo control knob slowly through the entire operating range and return the pointer to the "OFF" position. Recheck each servo arm to be sure it is at the "OFF" index mark. Readjust the control cable if any servo arm is out of position.
9. With the servo control pointer in the "OFF" position, turn the ignition switch OFF.
10. Check each Bowden cable to insure it is routed properly and no binds or pinches exist. The connection at each duct and at the water valve should be checked to see if there is proper throw to completely open and close the respective unit.

NOTE: *The water valve and the two ventilation lever arms should be in the "OFF" position when connecting the Bowden cables. The two rear air and two front air levers should be set in the "De-Ice" position when installing the Bowden cables. (Refer to Chart 1)*

11. Connect the water temperature valve Bowden cable (red band) first. Check the operation by turning the control head to the full heater position. Make sure that the water valve turns off completely on returning to "OFF" position. The lever arm must be firmly positioned against the "up" stop in the "OFF" position to prevent the possibility of water leaking through the valve because of capillary action.
12. The Bowden cables (yellow band) for the right and left ventilation dampers should be connected next and should be installed separately. Check each Bowden cable for free travel before connecting it to the servo lever arm. The ventilation dampers should be closed by manually pulling the cable, then positioning the cable eyelet over the correct lever arm, which should be in the closed ("OFF") position. Secure the armor by the retaining clip and check the operation to make sure that the ventilation dampers close properly to prevent air leakage.
13. The two Bowden cables (blue band) for the front air door in the side cowlducts and the two Bowden cables (white band) for the rear air damper should be installed individually and the operation checked as each Bowden cable is connected.
14. Operate the servo in all phases of control and check for free operation.
15. Install the servo cover and attach with one screw.
16. Connect the two wires to the thermostatic switch.
17. Install the lower right instrument panel cover, glove compartment, and glove compartment cover panel.

SERVO-1958-59 ELECTRIC CONTROLLED

REMOVAL

1. Disconnect the negative (ground) cable from the battery.
2. Remove the servo control from the instrument cluster. Refer to "SERVO CONTROL HEAD REMOVAL AND INSTALLATION".
3. Remove two screws retaining the glove compartment to its support bar and remove the glove compartment. Remove the glove compartment cover panel.
4. Remove the lower right instrument panel cover.
5. Disconnect the white-violet wire from the fuse panel.

6. Disconnect the green-yellow wire from the ignition switch at the bullet connector.
7. Remove the green-red and green-yellow wires from the 6 amp. circuit breaker and disconnect the black servo motor ground wire.
8. Disconnect the servo relay wire from the servo relay at the relay multiple connector. The servo relay is mounted to the right front fender apron.
9. Remove the two wires from the thermostatic switch.
10. Remove the capillary tube mounting screw and carefully remove the tube from the right air duct.
11. Remove two screws and remove the servo cover.
12. Remove the seven Bowden cables from the servo, making sure that each cable is color coded.
13. From under the hood, remove three nuts retaining the servo to the dash panel.
14. Remove the servo and wire assembly from the car.

INSTALLATION

1. Position the servo to the dash panel and install three retaining nuts.
2. Carefully route and install the thermostatic switch capillary tube in the right air duct. Attach the tube in place with one screw.
3. Route the servo relay wires through the dash panel and connect the wires at the relay connector.
4. Connect the green-red and green-yellow wires to the 6 amp. circuit breaker and connect the black motor wire to ground.
5. Connect the green-yellow wire to the ignition switch at the bullet connector.
6. Connect the white-violet wire at the fuse panel.
7. Install the servo control in the instrument panel.
8. Connect the negative battery cable to the battery and turn the ignition switch to the "ON" position.
9. Rotate the servo control knob through one complete cycle and check to be sure each servo lever operates.
10. With the servo control pointer in the "OFF" position, turn the ignition switch "OFF".
11. Check each Bowden cable to insure it is routed properly and no binds or pinches exist. The connection at each duct and at the water valve should be checked to see if there is proper throw to completely open and close the respective unit.
- NOTE: *The water valve and the two ventilation lever arms should be in the "OFF" position when connecting the Bowden cables. The two rear air and two front air levers should be set in the "De-Ice" position when installing the Bowden cables. (See chart 1)*
12. Connect the water temperature valve Bowden cable (red band) first. Check the operation by turning the control head to the full heater position. Make sure that the water valve turns off completely on returning to "OFF" position. The lever arm must be firmly positioned against the "up" stop in the "OFF" position to prevent the possibility of water leaking through the valve because of capillary action.
13. The Bowden cables (yellow band) for the right and left ventilation dampers should be connected next and should be installed separately. Check each Bowden cable for free travel before connecting it to the servo lever arm. The ventilation dampers should be closed by manually pulling the cable, then positioning the cable eyelet over the correct lever arm, which should be in the closed ("OFF") position. Secure the armor by the retaining clip and check the operation to make sure that the ventilation dampers close properly to prevent air leakage.
14. The two Bowden cables (blue band) for the front air door in the side cowl ducts and the two Bowden cables (white band) for the rear air damper should be installed individually and the operation checked as each Bowden cable is connected.

CHART I

DAMPER AND WATER VALVE CHART

SELECTOR DIAL SETTING	Heater Water Valve	A/C Thermo-Control Switch	SIDE COWL DEFROSTER DUCT DOORS		Cowl Vent Air Inlet Damper	Instr. Panel A/C and Defroster Outlet	Cowl Vent Air Inlet Damper	Instr. Panel A/C and Defroster Outlet	SIDE COWL DEFROSTER DUCT DOORS	
			Rear Air Damper	Front Air Door					Front Air Door	Rear Air Damper
Off	Closed		O	O	C		C		O	O
TURNING DIAL POINTER CLOCKWISE										
Heater – 1st Detent	Starts to Open		O	O	O	OPERATION	O	OPERATION	O	O
Heater – Last Detent	Fully Open		O	O	O		O		O	
De-Ice – 1st Detent	Fully Open		C	C	O		O		C	C
De-Ice – Last Detent	Closed		C	C	O		O		C	C
TURNING DIAL POINTER COUNTER-CLOCKWISE										
R – Detent	Closed		O	O	Mid. Pos.	MANUAL	C	MANUAL	O	O
L – Detent	Closed		O	O	C		Mid. Pos.		O	O
L-R – Detent	Closed		O	O	Mid. Pos.		Mid. Pos.		O	O
Air Cond. – 1st Detent	Closed	Min. Cool.	O	C	C		C		C	O
Air Cond. – Last Detent	Closed	Max. Cool.	O	C	C		C		C	O

O—Open C—Closed

15. Install the servo cover and attach with two screws.

16. Connect the two wires to the thermostatic switch.

17. Install the lower right instrument panel cover, glove compartment, and glove compartment cover panel.

VACUUM SERVO CONTROL AND/OR BLOWER MOTOR SWITCH-1960

LINCOLN AND CONTINENTAL

1. Remove the left instrument panel register upper molding to gain access to the outboard cluster cover retaining screw.
2. Remove the 3 screws holding the cluster cover to the main casting.
3. Loosen the control knob set screw and remove knob.
4. Remove the blower switch mounting nut and bezel.
5. Remove the 2 control head bezel assembly screws and carefully remove the control head and blower switch assembly from the cluster.
6. The blower switch can be replaced by removing the 2 retaining screws from the rear of the housing. (See figure 3-10).
7. To remove the servo control, remove the 3 screws attaching the bezel and mask to the housing and remove bezel. Remove the pointer and mask. Remove the 3 screws retaining the servo to the housing and remove servo control.
8. To install the components, reverse the removal procedure.

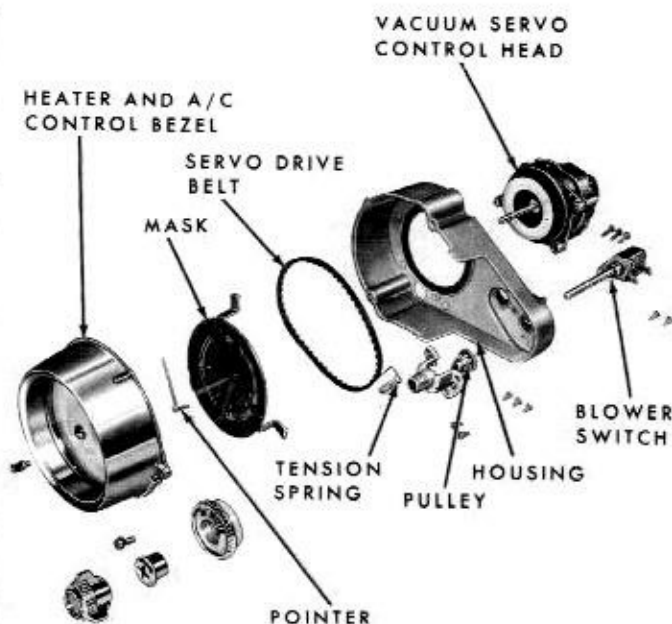


Fig. 3-10—Heater—Air Conditioning Controls—1960—(60L-8815)

CONTROL SERVO-1961 LINCOLN CONTINENTAL

(See Figure 3-11.)

1. Remove the lower right instrument cluster from the car.
2. Remove the blower control and air system knobs.
3. Remove the blower control and air system bezel nuts and bezels.
4. Pull the blower control switch from the cluster.
5. Remove the cigar lighter and socket from the cluster with Tool 15056.
6. Remove six screws and remove the back plate from the cluster.

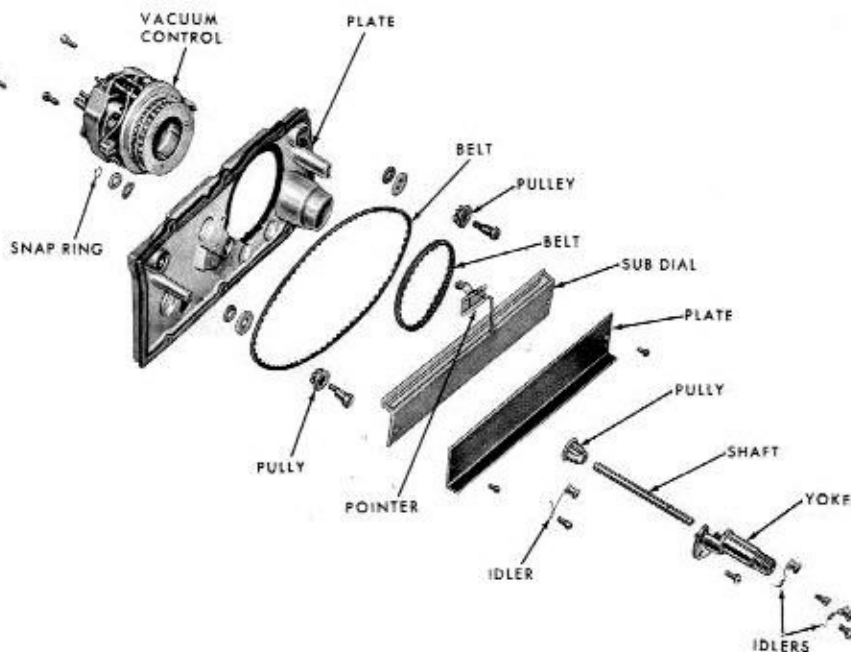


Fig. 3-11—Heater—Air Conditioning Controls—1961—(61LM-7811)

7. Move the pointer to the left side of the dial and mark its location; then, remove the pointer.
8. Remove two screws and remove the plate and sub dial.
9. Remove one pulley and remove the large belt from the servo.
10. Remove the snap ring from the control shaft.
11. Remove three screws and remove the yoke and two idlers from the assembly.
12. Remove the small belt from the pulley and servo.

13. Remove three screws and remove the servo from the cluster back plate.
14. To install, reverse the removal procedure. When installing the large belt, be sure that the pointer mark is at the position marked at disassembly. The servo must also be turned to its full counterclockwise position. Before installing the back plate to the cluster, position it on the cluster and check the air control detent positions with respect to the pointer.

EVAPORATOR OR HEATER CORE

1958-59-60

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

NOTE: To remove the heater core, the system does not have to be discharged.

2. Drain the engine coolant.
3. Remove the front wheel.
4. Remove the front fender splash shield.
5. Disconnect the heater hoses from the evaporator-heater core assembly.
6. Uncouple the self-sealing disconnects at the top of the front fender apron and cap the connections. *Use two wrenches to avoid damaging the self-sealing disconnects.*
7. Remove the side cowl duct.



Fig. 3-12—Removing The Evaporator Assembly—(9L-8822)

8. Remove the upper and lower capscrews that retain the evaporator housing to the cowl.
9. Remove 2 capscrews from the base of the evaporator housing assembly. The entire evaporator-heater core assembly can now be removed from the front fender wheel opening. (See figure 3-12.)
10. Remove the evaporator housing cover and the

screws that retain the heater and evaporator cores in the housing.

11. Separate and replace the desired core assembly. Figure 3-13 shows an exploded view of the evaporator unit.
12. To install either component, reverse the removal procedure.

13. If evaporator core was replaced, the system must be evacuated and recharged as previously described. Servicing the heater core will not affect the refrigerant in the evaporator. Refer to "Evacuating the System" and "Charging the System".

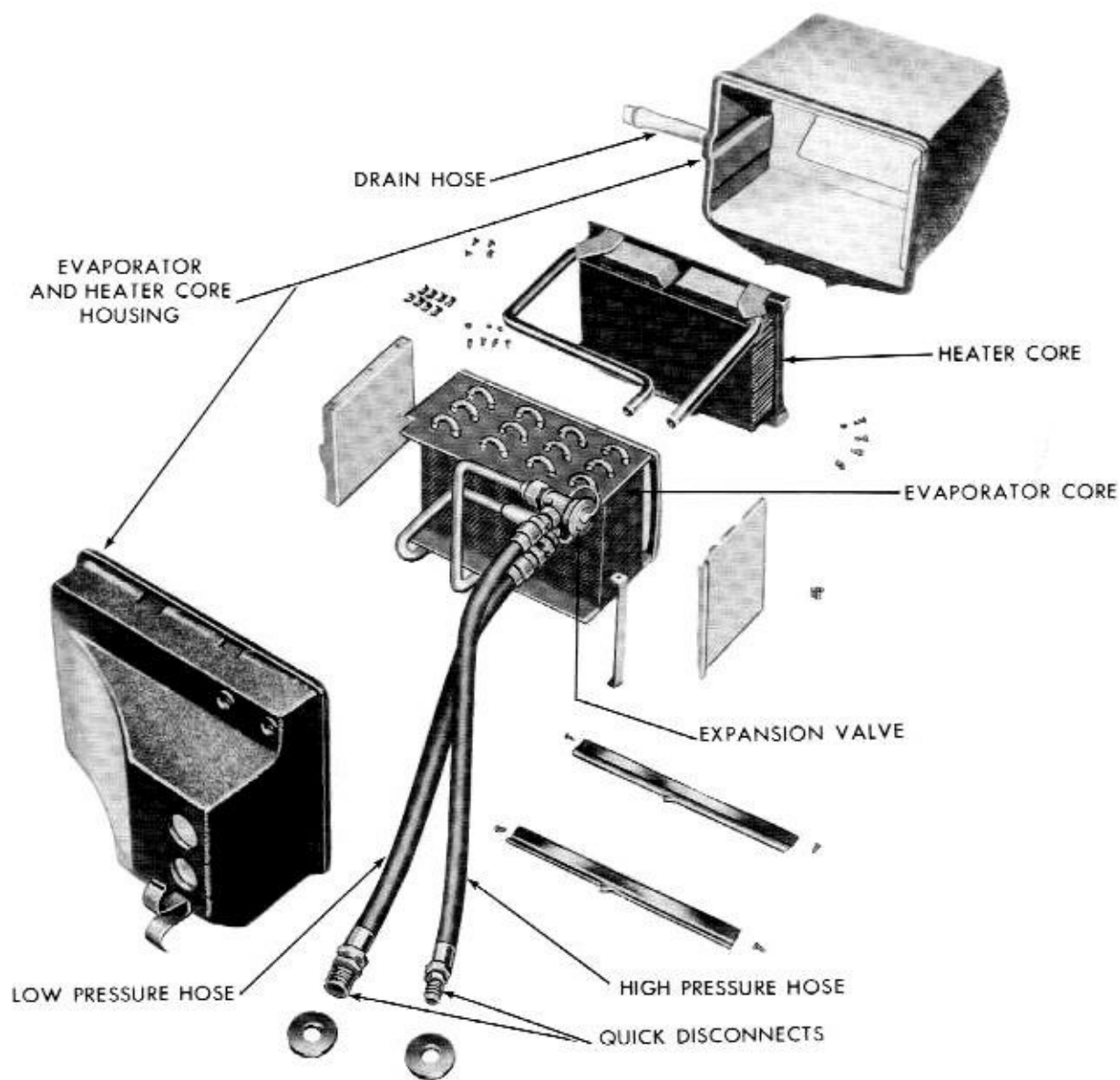


Fig. 3-13—Evaporator Assembly Disassembled—(60L-8808)

THERMOSTATIC SWITCH

1. Remove the glove box and liner.
2. Remove the right instrument panel lower access panel.
3. Remove the capillary tube mounting screw which is attached to the right instrument panel register duct.
4. Remove the capillary tube from the duct and

thread the tube back to the switch.

5. Disconnect the vacuum motor hose and the two wire spade connectors.
6. Remove two switch retaining sheet metal screws and remove the assembly.
7. To install the thermostatic switch and vacuum motor assembly, reverse the removal procedure.

EVAPORATOR CORE AND THERMOSTATIC SWITCH

Figure 3-14 shows the evaporator core and housing disassembled.

1. Connect the manifold gauge set to the compressor service valves and discharge the air conditioning system.
2. Disconnect the high pressure (small) line from the expansion valve and plug the openings.
3. Remove the expansion valve bulb from the low pressure (large) line.
4. Remove the expansion valve from the evaporator core.
5. Disconnect the low pressure (large) tube from the evaporator core and plug tube openings.
6. Remove four screws and remove two evaporator tube seal plates and gasket.
7. Remove the lower radio speaker and grille.
8. Remove the right and left lower instrument panel covers.
9. Remove the glove compartment door and liner from the instrument panel.
10. Remove the air conditioning register from the instrument panel.
11. Remove the screws from the bellows retainers located in the register opening and remove the retainers.
12. Remove the lower evaporator housing clamp.
13. Remove ten screws from the lower edge and ends of the lower housing.

1961 LINCOLN CONTINENTAL

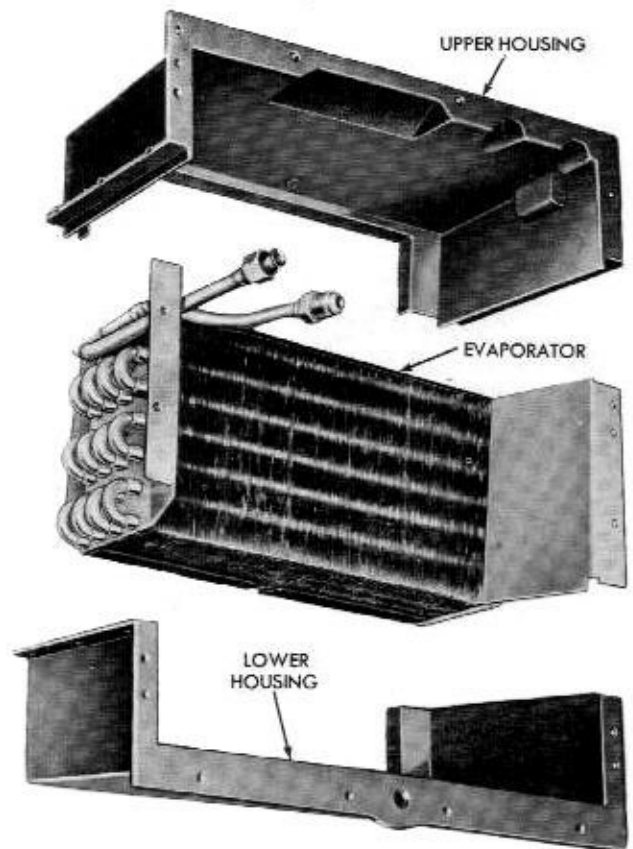


Fig. 3-14—Evaporator Cover and Housing Disassembled—(61L-8803)

14. Disconnect the wires from the thermostatic switch. *Do not attempt to pull the capillary tube from the evaporator housing at this time.*
15. Pull the lower half of the housing away from the cowl until the drain tube nipple clears the cowl. Then, pull the lower housing downward and remove it from the car.
16. In the engine compartment, remove six upper housing retaining screws.
17. Under the instrument panel, remove the evaporator tubing clamp plate to free the evaporator tubes.
18. Pull the upper housing downward and carefully remove the thermostatic switch capillary tube from the evaporator core.
19. Push the rubber bellows and upper housing upward and remove the evaporator core from the car.
20. Remove the bellows and upper housing from the car.
21. To install, reverse the removal procedure.
22. After installation, evacuate, charge, and leak test the system.

ICING SWITCH

1958-59-60 LINCOLN AND CONTINENTAL

The icing switch is mounted on the inboard side of the left evaporator housing. The capillary tube is inserted into the evaporator fins through a hole in the top of the evaporator housing.

1. Remove the left front wheel.
2. Remove the capscrews from the left front fender splash shield. Remove the splash shield to expose the evaporator and blower.
3. Drain the cooling system. Remove heater hoses at the evaporator-heater core housing.
4. Disconnect the refrigerant lines at the self sealing disconnects on the top of the left front fender apron and cap the fitting with suitable caps. Remove the hose cover plate.
5. Remove 2 capscrews, located on the underside of the evaporator mounting bracket, that secure the evaporator housing.
6. Remove the left side cowl duct to expose the 2 capscrews that retain the evaporator housing to the cowl and remove the capscrews.
7. Tilt the evaporator housing assembly forward into the wheel housing and disconnect the wires to the icing switch. Then, completely remove the housing from the car.
8. Remove the icing switch retaining screws and pull the capillary tube from the evaporator housing hole.
9. To install, reverse the removal procedure. Observe the following items:
 - a. Insert the capillary tube into the evaporator fins through the hole in the evaporator housing. Make sure that the capillary tube is pushed well into the evaporator and makes good contact with the fins.
 - b. Carefully form the capillary tube so that the icing switch may be aligned with the original mounting hole in the evaporator housing. Seal (body caulking) around the tube opening hole in the evaporator housing.

EXPANSION VALVE

1958-59-60 LINCOLN AND CONTINENTAL

The expansion valves are located inside of both the right and left evaporator and heater core housing assemblies. (Refer to figure 3-13.)

1. Install the manifold gauge set to the compressor service valves and discharge the system. Refer to "Manifold Gauge Set Installation" and "Discharging the System".
2. Drain the engine coolant.
3. Remove the front wheel.
4. Remove the fender splash shield.
5. Disconnect the heater hoses from the evaporator-heater core assembly.
6. Uncouple the self-sealing disconnects at the top of the front fender apron and cap the connections. *Use two wrenches to avoid damaging the self-sealing disconnects.*
7. Remove the side cowl duct.
8. Remove the upper and lower capscrews that retain the evaporator housing to the cowl.
9. Remove 2 capscrews from the base of the evaporator housing assembly. The entire evaporator-heater core assembly can now be removed from the front fender wheel opening. (See figure 3-12.)
10. The evaporator housing and cover may be separated from the housing assembly after the 8 spring retaining clips have been removed.
11. Disconnect the connection between the expansion valve and the high pressure line.
12. Unsolder the by pass line; disconnect the low pressure hose and carefully peel back the insulation covering the sensing bulb. Unclip the sensing bulb and remove the expansion valve. Cap the open refrigerant lines.
13. To install the expansion valve, reverse the removal procedure and observe the following items:
 - a. Silver solder the bypass line to the low pressure outlet line.
 - b. Clip the temperature bulb to the outlet pipe, making sure that the contacting surface is clean.
14. Leak test, evacuate and charge the system as previously described.

1961 LINCOLN CONTINENTAL

1. Connect a manifold gauge set (Tool ACL-53-3) to the compressor service valves and discharge the air conditioning system.
2. Disconnect the high pressure (small) line from the expansion valve. (See Figure 3-15.)
3. Remove the expansion valve bulb from the low pressure (large) line.
4. Remove the expansion valve from the evaporator core tube.
5. To install, reverse the removal procedure.
6. After installation, evacuate, charge and leak test the system.

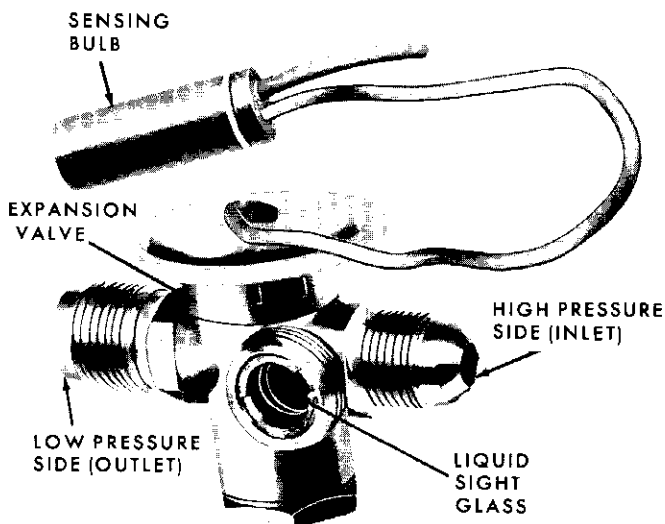


Fig. 3-15—Expansion Valve and Liquid Sight Glass—(61LM-7808)

BLOWER ASSEMBLY

1958-59-60 LINCOLN AND CONTINENTAL

1. Remove the front wheel.
2. Remove the front fender splash shield.
3. Disconnect the three wires and ground wire from the blower motor.
4. Remove the ventilation ducts (2 screws hold duct to instrument panel and 1 to cowl).
5. Remove 4 nuts that attach the blower motor housing assembly to cowl.
6. Remove the blower housing assemblies.
7. Installation of the blower housing assembly can be accomplished by reversing the removal procedure.

1961 LINCOLN CONTINENTAL

1. Remove the carburetor air cleaner.
2. Disconnect the hood latch release cable from the hood latch and remove the cable bracket.
3. Remove four screws and remove the hood latch.
4. Disconnect the windshield wiper control cable from the wiper motor.
5. Disconnect the co-ordinator vacuum hose from the wiper motor.
6. Remove two screws attaching the windshield wiper motor to the cowl.
7. Remove two screws attaching the wiper control valve to the cowl. Position the wiper motor away from the cowl.
8. Unplug the blower wires from the power box side of the blower housing.
9. Remove two screws and remove the connector from the blower housing.
10. Remove six blower housing upper retaining screws.
11. Remove the lower radio speaker and grille.
12. Remove the right and left lower instrument panel covers.
13. Remove three blower housing retaining cap-screws located below the blower air intake screen in the passenger compartment.
14. Remove four screws attaching the lower section of the evaporator housing to the blower housing and cowl.
15. Disconnect three accelerator rods and two springs at the bracket.
16. Remove the accelerator bracket from the engine.
17. Disconnect the heater hose return bracket and relocate it away from the blower housing.
18. Loosen the air conditioning engine idle speed rod locknut at the valve and re-position the valve and rod for clearance.
19. Remove the crankcase emission tube bracket at the right rear corner of the engine.
20. Tilt the left end of the blower housing up and remove the housing from the car.
On some cars, it may be necessary to slightly loosen the low pressure hose fitting at the evaporator, re-position the hose and tighten the fitting.
21. Remove nine spring clamps attaching the blower assembly to the housing.
22. Remove the blower assembly from the housing.
23. To install, reverse the removal procedure.

COMPRESSOR

1958-59-60 LINCOLN AND CONTINENTAL

All compressor service operations, except belt and clutch replacement, can be performed only after the unit has been isolated from the rest of the system.

The compressor is not completely serviceable. All necessary repairs can be made by replacement of certain service parts. If these parts will not restore normal service, replace the compressor.

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. Loosen the 3 bolts securing compressor mounting bracket, tilt the assembly and remove the drive belt from the compressor pulley.
5. Remove 4 bolts securing the compressor to the mounting bracket and remove the compressor.
6. 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 F" Texas Oil Company; or a refrigeration oil which has the same specifications.*

If these refrigeration oils are not available locally, "Suniso 4G" or Capella D" may be used. The head bolts and base cover bolts should also be retightened any time a compressor is removed for servicing.

1961 LINCOLN CONTINENTAL

1. Disconnect the negative (ground) cable from the battery.
2. Disconnect the clutch feed wire at the bullet connector.
3. Install the manifold gauge set (Tool ACL-53-3.) See "Manifold Gauge Set Installation". Front seat the compressor service valves (fully clockwise) and discharge the compressor.
4. Loosen the muffler bracket attaching bolt located below the muffler.
5. 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.
6. Remove the bolt attaching the compressor upper adapter to the engine cylinder head brace.
7. Loosen three bolts securing the compressor mounting bracket to the engine. Tilt the compressor inward and remove the drive belt from the pulley.
8. Remove the four bolts attaching the compressor to the mounting bracket and remove the compressor assembly from the car.
9. To install, position the compressor to the mounting bracket and install four attaching bolts. Torque each bolt 164-200 lbs. in. (14-17 lbs. ft.) *Before installing the compressor, check the crankcase for the correct amount of oil (10 oz.). Use Suniso "5G", Sun Oil Company; Capella "F", Texas Oil Company; or a refrigerant oil with the same specifications.*
If these oils are not available, Suniso "4G" or Capella "D" may be used.
10. Position the drive belt on the compressor pulley.
11. Loosen two nuts attaching the compressor upper adapter to the compressor.
12. Install the bolt attaching the upper adapter to the engine cylinder head brace.
13. Adjust the compressor drive belt tension to 100-150 lbs. with a belt tension gauge (Tool BT 33-73F).
14. Tighten the two compressor head upper adapter attaching nuts.
15. Install new gaskets and install the service

valves to the compressor. Be sure to wet the mounting gaskets with refrigeration oil before installing them. Torque the service valves screws 4-6 lbs. ft.; then, re-torque 10-12 lbs. ft.

cable.

16. Tighten the muffler bracket attaching bolt.
17. Purge the compressor of air and moisture. See "PURGING THE COMPRESSOR".
18. Connect the clutch feed wire and the battery
19. Check the refrigerant supply and leak test the compressor fittings and crankshaft oil seal. See "REFRIGERANT TESTS".
20. Operate the car for about 10 minutes; then, reset the compressor drive belt tension to 80-120 lbs. with a belt tension gauge (Tool BT-33-73F).

MAGNETIC CLUTCH

1958-59-60 LINCOLN AND CONTINENTAL

The magnetic clutch can be removed from the compressor (with the compressor 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 compressor pulley.
2. Energize the clutch to facilitate removing the screw 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 a $\frac{5}{8}$ - 11 x 1 $\frac{1}{2}$ " bolt into the threaded clutch plate. Tightening will force the clutch off.
6. To install, position the clutch on the compressor output shaft, install capscrew and washer, and torque capscrew to 18-22 lbs. ft.

1961 LINCOLN CONTINENTAL

1. Disconnect the negative (ground) cable from the battery.
2. Remove the fuel line bracket from the radiator assembly.
3. Loosen three bolts attaching the compressor mounting bracket to the engine.
4. Loosen one bolt attaching the compressor upper adapter to the cylinder head brace and remove the drive belt from the clutch assembly.
5. Remove the bolt and washer retaining the clutch assembly to the compressor shaft.
6. Screw a $\frac{5}{8}$ - 11 x 1 $\frac{1}{2}$ " bolt into the clutch retaining bolt hole.
7. Turn the bolt clockwise until the clutch breaks free of the compressor shaft.

8. Remove the clutch assembly from the car.
9. Remove the $\frac{5}{8}$ inch bolt from the clutch assembly.
10. To install, position the clutch assembly on the compressor shaft.
11. Install the clutch retaining washer and bolt. Torque the bolt to 18-22 lbs. ft.
12. Place the compressor drive belt on the clutch assembly.
13. Adjust the compressor drive belt tension to 100-150 lbs. with a belt tension gauge (Tool BT-33-73F).
14. Tighten the upper adapter to cylinder head brace bolt and three compressor mounting bracket to engine attaching bolts.
15. Install the fuel line bracket to the radiator assembly and connect the battery cable.
16. Operate the car for about 10 minutes; then, reset the compressor drive belt tension to 80-120 lbs. with a belt tension gauge (Tool BT-33-73-F).

CONDENSER

1. Connect the test manifold gauge set and discharge the refrigerant into an exhaust system. Refer to "Manifold Gauge Set Installation" and "Discharging the System".
2. Hood hinges are elongated for adjustment. Mark the exact position of the hood on hinges before loosening the bolts. Support the hood on each side. Remove the bolts and lift hood off, being careful not to mar the paint on the fenders.
3. Disconnect the high pressure hose at the compressor muffler and the sight glass connector.
4. Disconnect the line from the condenser to the receiver. Remove 2 bolts retaining the receiver to the grille support and remove the receiver.
5. Remove the clamp attaching the 2 high pressure hoses to the radiator support bracket.
6. Remove 3 bolts securing the top grille brackets to the grille support bracket.
7. Remove 4 bolts securing the grille support bracket and remove the bracket.
8. Remove 4 bolts securing the condenser to the radiator frame and lift the condenser from the car.
9. Install the condenser by reversing the removal procedure.
10. Leak test, evacuate, and charge the system. *In the event that it is necessary to replace the condenser, the receiver-dryer should also be replaced as it has probably been saturated with moisture. Refer to "Evacuating the System" and "Charging the System".*

1961 LINCOLN CONTINENTAL

1. Remove the hood from the car.
2. Connect a manifold gauge set (Tool ACL-53-3) to the compressor service valves and discharge the air conditioning system.
3. Remove eight screws and remove the upper radiator support shield.
4. Remove the front bumper splash shield.
5. Remove three lower capscrews attaching the bottom of the condenser to the radiator.
6. Disconnect the lines from the condenser and plug the lines.
7. Remove the condenser from the car.
8. To install, reverse the removal procedure. Torque the 6 condenser attaching cap screws 60-65 lbs. in. (5-5 $\frac{1}{2}$ lbs. ft.).
9. After installation, Evacuate, Charge and Leak Test the system.

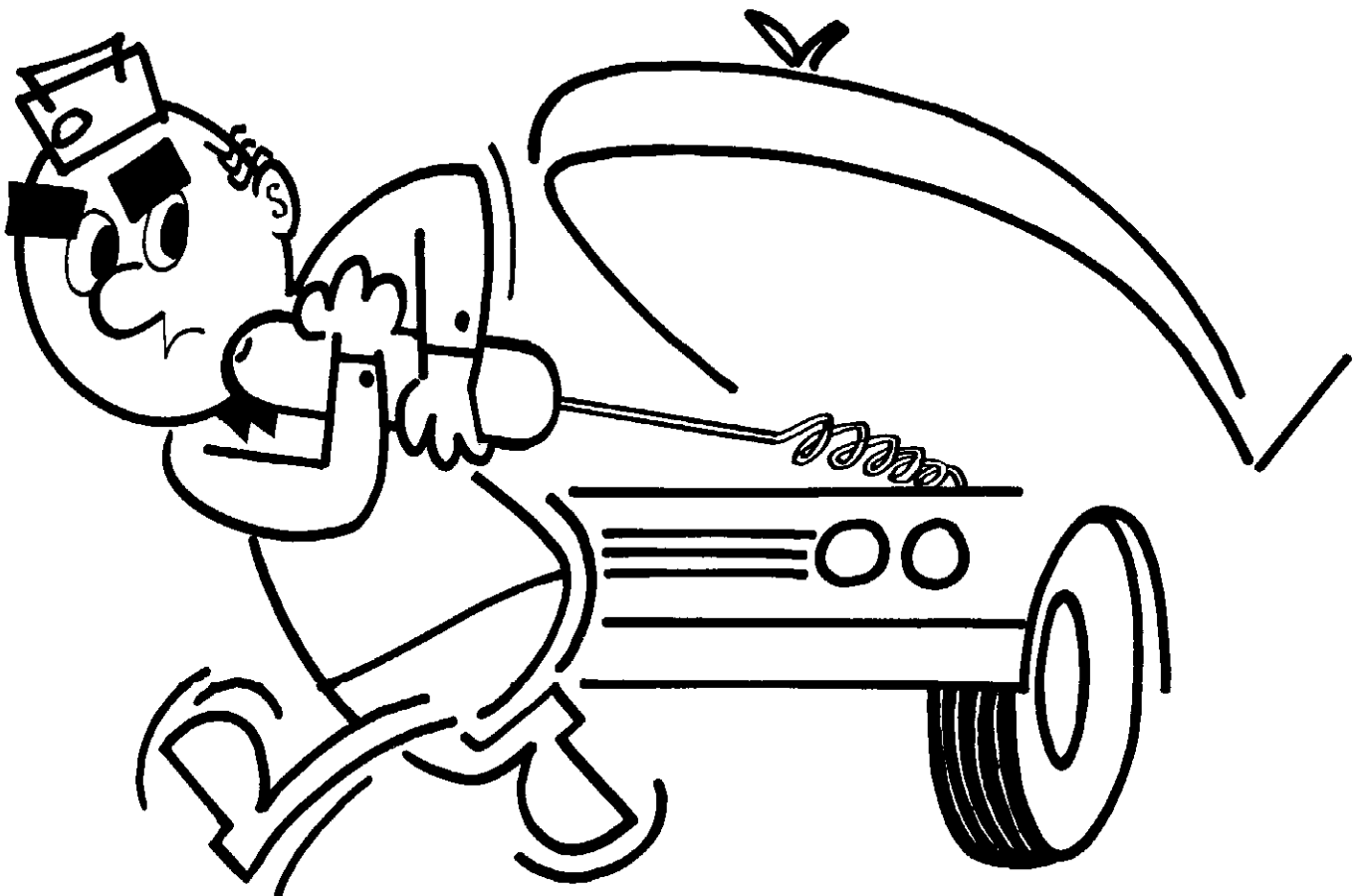
RECEIVER- DRYER

1958-59-60 LINCOLN AND CONTINENTAL

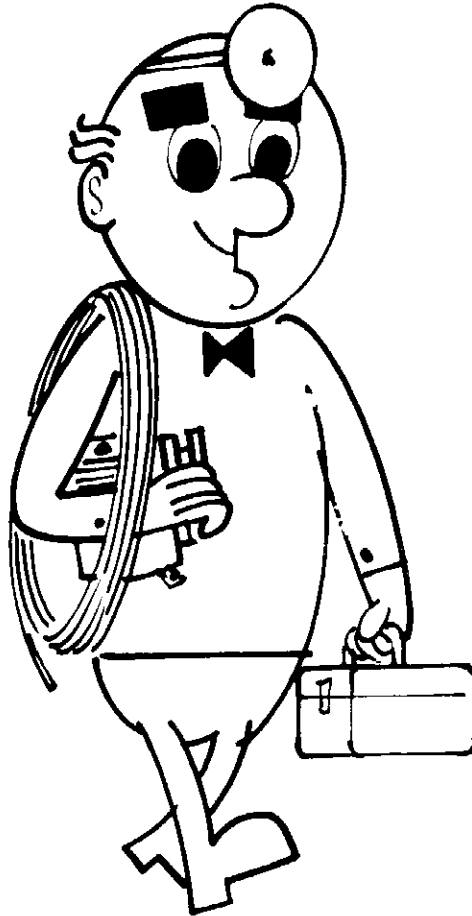
1. Install the manifold gauge set to the compressor service valves and discharge the system. Refer to "Manifold Gauge Set Installation" and "Discharging the System".
2. Disconnect the fitting between the sight glass and the high pressure hose.
3. Disconnect the condenser to receiver-dryer fitting at the receiver-dryer.
4. Remove two receiver-dryer retaining nuts and bolts and remove the receiver-dryer.
5. To install, reverse the removal procedure.
6. Leak test, evacuate, and charge the system. Refer to "Evacuating the System" and "Charging the System"

1961 LINCOLN CONTINENTAL

1. Remove the condenser from the car.
2. Disconnect the two lines from the receiver.
3. Remove two retaining nuts and remove the receiver from the condenser.
4. To install, reverse the removal procedure.



TROUBLE SHOOTING, REPAIR AND ADJUSTMENTS



SERVO ASSEMBLY

MANUAL CONTROL

1958 LINCOLN AND CONTINENTAL

ADJUSTMENT PROCEDURES

Intermittent Operation of the Servo Unit

On early production servos, the two rivets which secure the motor leads to the stationary contacts on the back cover may be loose. Intermittent operation can result from this condition. It can be corrected by soldering the lead wire terminals to the rivets.

Control Head Dial Settings Will Not Correlate With Servo Lever Arm Movement

This condition may result from a maladjusted control cable, or if the movable arm contact point makes only partial contact with the contact plate and insulated strip. A properly finished movable arm contact point will make partial contact only if the servo back cover is distorted. If correlation cannot be attained by adjustment of the control cable, the following procedure should be used to get full movable arm point contact:

1. Remove the servo from the cowl panel.

NOTE: The back cover must incorporate the coil tension spring on the movable arm. If there is no coil spring, replace the back cover.

2. Remove the servo back cover from the housing and disconnect the control cable from the movable arm.
3. Place a 2" x 8" piece of No. 600 grit carborundum paper face up on the contact plate.

NOTE: Cut a 1" diameter hole in the center

of the strip so that it can be placed over the center shaft and will lie flat on the contact plate.

4. Use a length of discarded Bowden cable or fashion a wire with a looped end to fit over the stud on the movable arm as a means of moving the arm.
5. Hold the back cover on the servo housing with the carborundum paper under the movable arm contact point. Refinish the contact point by moving the movable arm back and forth across the paper.

CAUTION: Remove only 1/3 to 1/2 of the wedge portion of the contact point.

6. Examine the two stationary contact points and remove any burrs or roughness with No. 460 grit paper.
7. Reassemble the control cable to the back cover. Install the back cover to the servo housing.

NOTE: On very early production vehicles, the insulating pad, used between the servo and the dash panel, was not cut out sufficiently to allow the stationary arm contact rivets and wires, the raised portion of the servo back cover, and the movable arm tension spring and pivot to be free from pressure after installation. On these vehicles it will be necessary to cut out additional sections of the insulation pad to provide necessary clearance at this critical point. This condition can also result in hard turning of the control head knob.

Control Does Not Actuate Servo

The control knob is connected to the indicator and control cable rack and pinion assembly by a drive cable in the control head. If the control knob and shaft turn and the indicator does not move, replace the control head.

If the control knob is turned and the indicator moves but the servo does not operate, the lever arms may be binding in the cam assembly. If a

binding condition exists after all Bowden cables have been removed, check each lever arm for slight movement. Remove the binding lever arm and operate the servo to bring it back to the "OFF" position.

If the Bowden cables are kinked, bent or misrouted, the servo may stall. This can be corrected only by rerouting the cables in the correct position and replacing any that may be kinked. (See figure 3-16.)

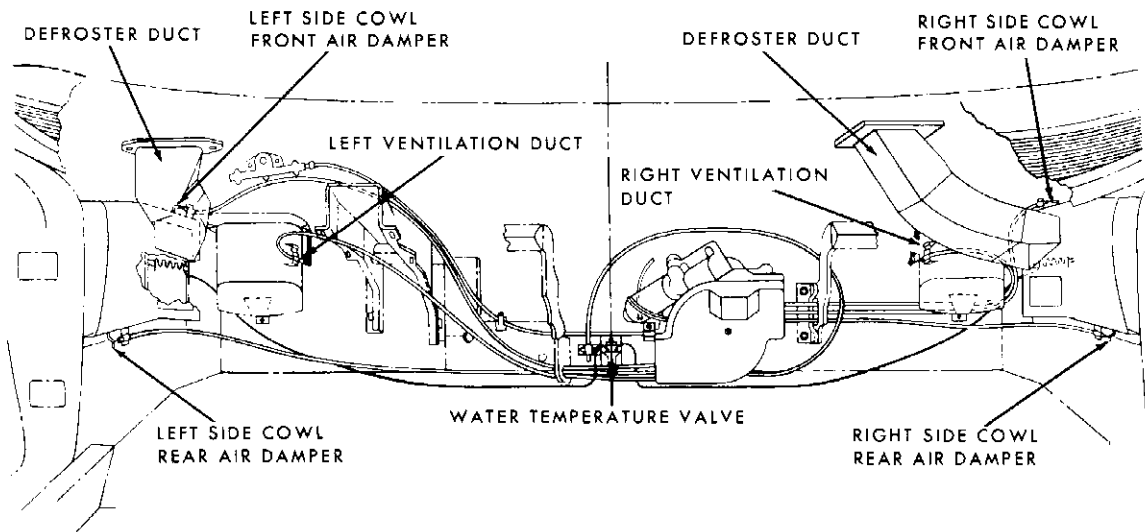


Fig. 3-16—Cable Routing—(61LT-8826)

Remove the instrument panel top cover and check that the Allen set screw in the control cable rack and pinion is tightly secured to the control head shaft. This will reduce the possibility of mal adjustment.

Servo Motor Will Operate Only a Short Time After Ignition Key Has Been Turned On

The 6 amp circuit breaker is constructed so that once the unit is opened, due to overload, a heater winding keeps the circuit breaker open until the ignition switch is turned off. Therefore, check and correct anything which may cause an overload, such as binding Bowden cables. Replace the circuit breaker if found defective.

Servo Assembly Vibrates (Cycles)

If the servo assembly seems to vibrate or operate back and forth while driving the car over a rough road, the control cable from the control head may be connected too low or close to the contact plate on the movable arm. This results in grounding the contact plate through the control cable, consequently operating the motor until the eyelet portion of the cable is in the insulated area.

However, the contact point of the movable arm will then be in contact with the contact plate and operate the servo in the reverse direction until it is in the insulated area.

Control Cable Adjustment

CAUTION: The ignition coil primary wire should be disconnected before adjusting the system, to prevent burning the ignition points.

The most important single adjustment in the entire system is the main control cable adjustment. It must be adjusted to correctly correlate the indicated positions of the control head with the action of the servo.

The following procedure should be used to effectively attain the correct control cable adjustment:

1. Remove the glove box and cover to gain access to the servo.
2. Remove all servo cover.
3. Remove all the bowden cables from the levers on the servo.

NOTE: On air conditioned vehicles, remove the thermostatic switch and position it away from the servo.

4. Turn the control knob so that the indicator is in the exact "OFF" position.

CAUTION: Any bent lever arms on the servo

must be replaced before continuing. Check tightness of pivot screws.

5. Loosen the control cable retaining clip (See figure 3-17).
6. Move the control cable armor back and forth while watching the right and left vent lever arms. If the control cable armor is positioned in too far, the right ventilation duct lever arm will move off the index mark. If the control cable and armor is positioned out too far, both the right and left ventilation duct lever arms will move off their index marks.

CAUTION: This is a very important adjustment and should be performed with extreme care.

7. Position the armor in the exact center of this travel and tighten the clip.
8. When the armor has been positioned so that both the right and left ventilation lever arms are in their indexed positions, operate the servo control through its complete cycle while observing the lever arm movement when turned to the "OFF" position. The left and right ventilation arms will return to the index (OFF) position if the control cable is properly correlated.

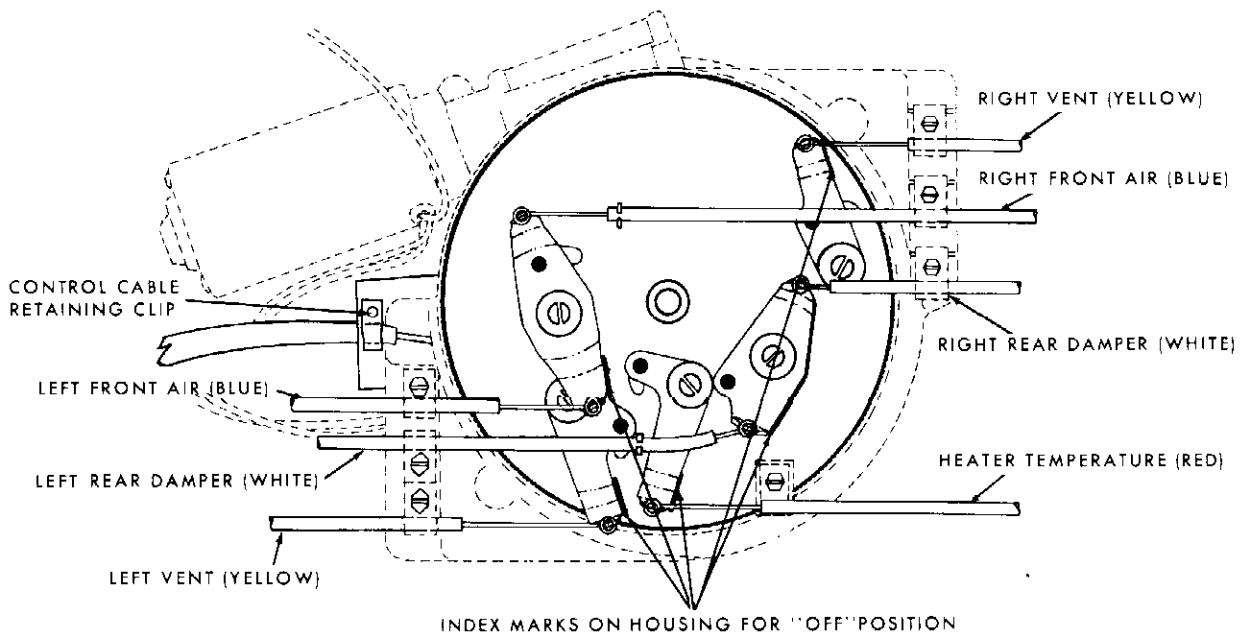


Fig. 3-17—Control Cables and Servo Lower Arms—(61LT-8827)

**Servo Motor,
Cam Plate and
Lever Arms –
Repair and Adjustment**

1. Turn the ignition switch "ON". Rotate the control knob to determine whether the servo motor is operating.
 - a. If the motor does not run, proceed with step 2.
 - b. If motor runs, loosen the motor attaching set screw and remove the motor from the servo. (See figure 3-18.) Inspect the servo drive coupling and replace the coupling if it is damaged. If the coupling is satisfactory, disconnect the seven Bowden cables from the face of the servo. Remove the thermostatic switch from the servo and move it to one side. Exercise care not to damage the capillary tube. Remove the servo from the dash panel and remove the contact cover plate assembly and control head Bowden cable from the back of the servo. Examine the motor driveshaft for breakage or for worn or broken worm gear teeth. Inspect the ring gear teeth on the outside diameter of the cam and plate assembly for worn or broken teeth. Replace parts as necessary. Pack the assembly with petroleum jelly.

NOTE: The servo driveshaft and bearings may be removed by driving out the roll pin from the servo housing. To remove the cam and plate assembly from the servo, remove the "C" washer from the servo cam pivot and remove the cam and plate assembly from the servo housing.

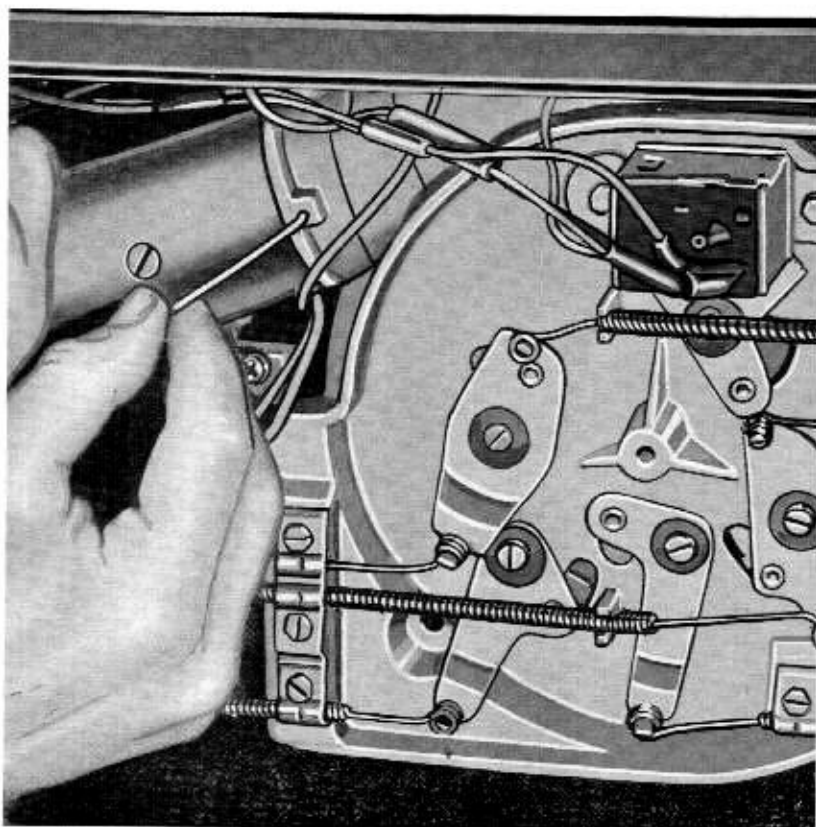


Fig. 3-18—Removing Servo Motor Set Screw—(61LT-8828)

2. Check the voltage at the 6 amp. circuit breaker on the dash panel above the servo. (See Heater and Air Conditioner Circuit Diagram, figure

3-19.)

a. If voltage is available at both terminals, proceed to step 3.

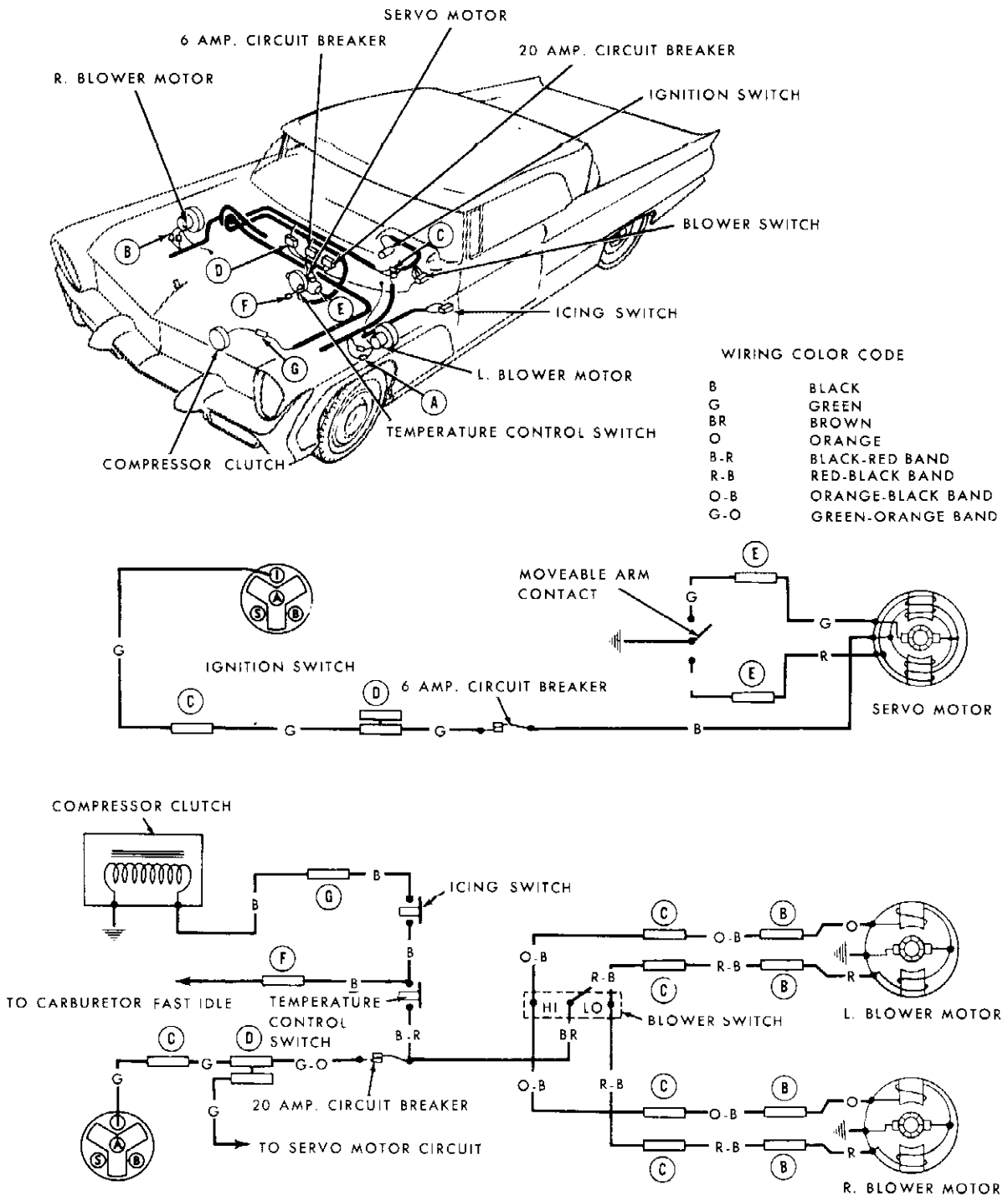


Fig. 3-19—Heater, Air Conditioner and Compressor Clutch Circuits—1958—(61LT-8829)

- b. If voltage is available at only one terminal, replace the circuit breaker.
 - c. If voltage is not available at either terminal, check for open or loose connections in the wire between the ignition switch terminal and the circuit breaker.
3. Loosen the servo motor attaching set screw and move the motor from the servo. (Leave the three motor wires connected.) Rotate the control knob on the instrument panel.
 - a. If the motor does not run, proceed to step 4.
 - b. If the motor runs, disconnect the seven Bowden cables from the servo. Remove the Ranco thermostatic switch from the servo and move it to one side. Exercise care not to damage the capillary tube. Install the motor to the servo and again rotate the control knob on the instrument panel.
 - c. If the motor runs, carefully inspect all Bowden cables for any condition which could cause a bind (rust, corrosion, kinks, or improper cable routing resulting in bends of too small a radius). Check each damper door and the air conditioner control unit for freedom of operation. (See figure 3-20.)
 - d. If the motor does not run, remove the servo from the dash panel and remove the contact plate assembly from the back of the servo. Remove the "C" washer from the servo cam

pivot and remove the cam and plate assembly from the servo housing. Inspect the cam grooves, the cam gear teeth, and the servo arm and roller assemblies for any condition which could cause the servo to bind or lock up (bent servo arms, stripped or damaged cam gear teeth, worn or broken rollers, or cam grooves worn or gouged). Make certain that the servo motor drive shaft turns freely in its bearings and that the worm gear teeth are intact. (Refer to note in step 1-B.) Pack assembly with petroleum jelly.

NOTE: When the servo arms are removed for any reason, they should be suitably marked so that they may be reinstalled in their original positions. (Refer to servo arm identification sketch figure 3-17.)

4. Disconnect the red and green servo motor field wires from the servo. Alternately ground the field wires momentarily.

If the motor runs in each direction, disconnect the seven Bowden cables from the face of the servo.

Remove the thermostatic switch from the servo and move it to one side, taking care not to damage the capillary tube. Remove the servo from the dash

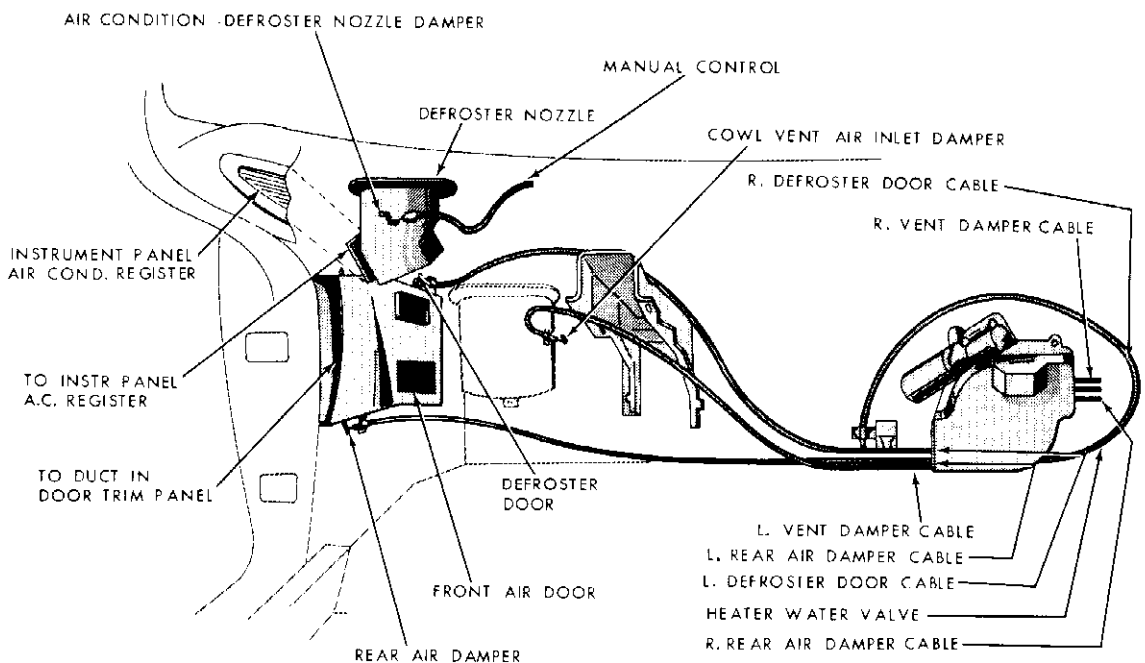


Fig. 3-20—Air Duct and Damper Identification—(9L-8804)

panel and remove the contact cover plate assembly from the back of the servo. Rotate the servo control knob to see if the servo control cable moves the servo control contact arm assembly.

- a. If the contact arm does not move, replace the regulator control drive cable assembly.
 - b. If the contact arm moves, examine the contact cover plate assembly (the terminal block assembly and attached wires and the servo control contact arm) and the contact surface of the servo cam and plate assembly for any condition which could result in an open for the servo motor control circuit. Repair or replace parts as necessary.
 - c. If the motor does not run, or runs in one direction only and the motor wires are not broken inside their insulation, replace the motor.
5. To reassemble the servo:
- a. Align each servo arm with "OFF" index marks on the servo housing.
 - b. Align the arrow on the servo cam with the "OFF" index mark on the servo housing. Refer to figure 3-2 (No. 3).
 - c. Properly mesh the gear teeth of the servo motor driveshaft and the servo cam. The servo cam will then drop into position on its center pivot. Install the "wave" washer and the "C" washer on the cam pivot. Recheck all servo arms to be sure they are in the "OFF" position.
 - d. Rotate the servo control knob on the instrument panel until the servo control head dial pointer is at the minimum defrost detent (full clockwise travel from the "OFF" position.) Move the servo control arm and contact assembly (on the servo contact cover plate) until the arm is against the end of the recess in the cover plate nearest the control cable clamp. With the control arm in this position, clamp the end of the control cable in place.
 - e. Install the contact cover plate assembly on the servo.
 - f. Install the servo motor and tighten the motor mounting set screw. Connect the red and green motor field wires to the servo.
 - g. Mount the servo on the dash panel. Connect the servo motor feed wire. Set the thermostatic switch to the "OFF" position, with the actuating cam arm rotated fully clockwise and attach the thermostatic switch to servo making certain that the gear teeth on the thermostatic switch cam are fully counterclockwise and properly meshed with the gear teeth on the servo arm.
 - h. Rotate the servo control knob on the instrument panel until the servo control head dial pointer is at the "OFF" position. Turn on the ignition switch.
NOTE: When the ignition switch is turned on, the servo motor should run momentarily and the right and left vent servo arms should move slightly from their "OFF" index marks as indicated on the housing.
 - i. Loosen the servo control cable clamp screw and slide the control cable armor in towards the servo very slowly. This will cause the servo motor to operate and the right and left vent servo arms will move back towards their "OFF" index marks. Continue to move the control cable armor slowly until all of the servo arms are at their "OFF" index marks.
NOTE: Particular attention should be given to the right vent servo arm. When this servo arm is exactly in the "OFF" position (along with all the other servo arms) tighten the clamp screw on the control cable.
 - j. Rotate the servo control knob slowly through the entire operating range and return the pointer to the "OFF" detent position. Recheck each servo arm to be sure it is at the "OFF" index mark and readjust the control cable armor if necessary.

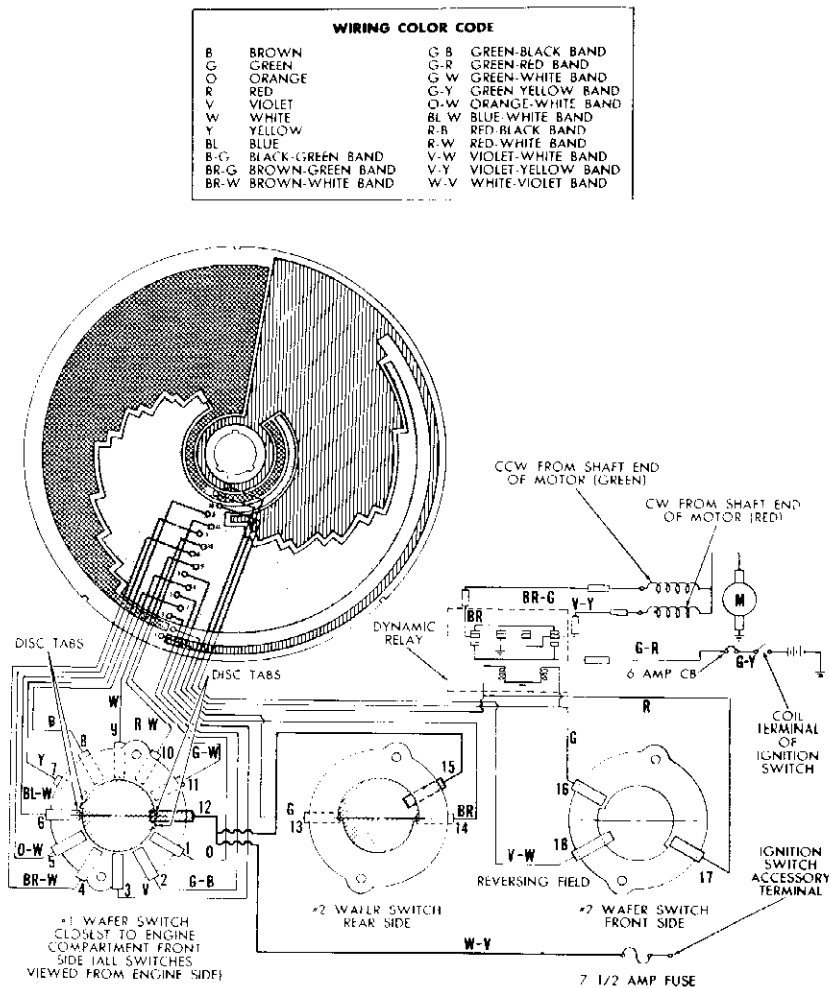
6. Install the cables on the servo lever arms.

SERVICE DIAGNOSIS

Oscillation or Constant Movement of Servo

This condition could result from three causes. The first would be a defective relay, in which case it will be necessary to install a new one. The second cause could be a short between two contacts on the wafer switch, a short between two wires in the harness, or a short between two contacts on the back of the servo on the junction block. This condition can only be corrected by tracing for a

short and possibly by visual inspection. This condition could also result from excessive end play in the servo motor shaft or tooth wear on the contact plate and cam assembly. The servo motor shaft should have .007" end play. If the end play is over approximately .012", it may be necessary to drive out the roll pin and the shaft bushing. Then, turn the bushing 180° and drive the bushing in until the end play is again to specifications. A groove should then be drilled and the roll pin installed. If the teeth on the contact plate and cam assembly are worn, the assembly must be replaced.



- NOTES:**
1. View Showing Front Face of Contact Plate
 2. Plate Rotation is Opposite that of Motor
 3. Switch and Servo Shown in "OFF" Position

Fig. 3-21—Electric Servo Control Wiring Diagram—1958—1959—(9L-8811)

No Control in One or a Few Detent Positions

In the event that one or more movements of the control pointer do not result in movement of the servo, the most probable trouble is an open wire or connection at the wafer switch, open in the wiring harness or on open at the contact on the junction block of the servo. It is also possible for one or more of the contacts on the junction block to be bent and not making contact with the contact plate.

A wafer switch which has contacts that are bent or broken can usually be identified by harder operation of the switch.

Control Head Pointer Not Exactly Coordinated with Servo Action

This condition could only result if the allen set-screw which secures the wafer switch to the control head shaft is loose.

NOTE: In the event of wafer switch or wiring harness replacement, care must be exercised when removing or installing the wafer switch as well as when routing the wiring harness due to space limitations.

Servo Motor Bound-up

In the event that both of the energizing coils in the relay are activated, because of a short in the wiring harness or contacts in the wafer switch or junction block, the servo motor will lock up. This condition can be checked by putting a test light on both of the servo motor lead wires to ground. If both sides light up, disconnect the servo motor to prevent damage to the motor.

Indexing Mark on Servo Contact Plate

The servo housing has retained the arrow head index mark on the edge of the casting. However, the arrow head has been removed from the contact plate and a small insulated dot has been inserted in the outer edge of the plate. When, these marks are aligned, the "OFF" position is reached.

Inoperative Servo

The servo will not operate if any of the following conditions are present:

1. Fuse blown in the fuse panel.
2. An open wire from the fuse to the wafer switch.
3. If No. 12 contact on the wafer switch is open.
4. Circuit breaker open.
5. Open in wiring from the circuit breaker to the relay.
6. Inoperative relay.
7. Open wiring from the relay to the servo motor.
8. Inoperative servo motor.
9. Open in the servo motor ground wire.
10. Open in No. 18 contact of the junction block.
11. Inoperative front side of the No. 2 wafer switch.
12. Mechanical bending of the unit.

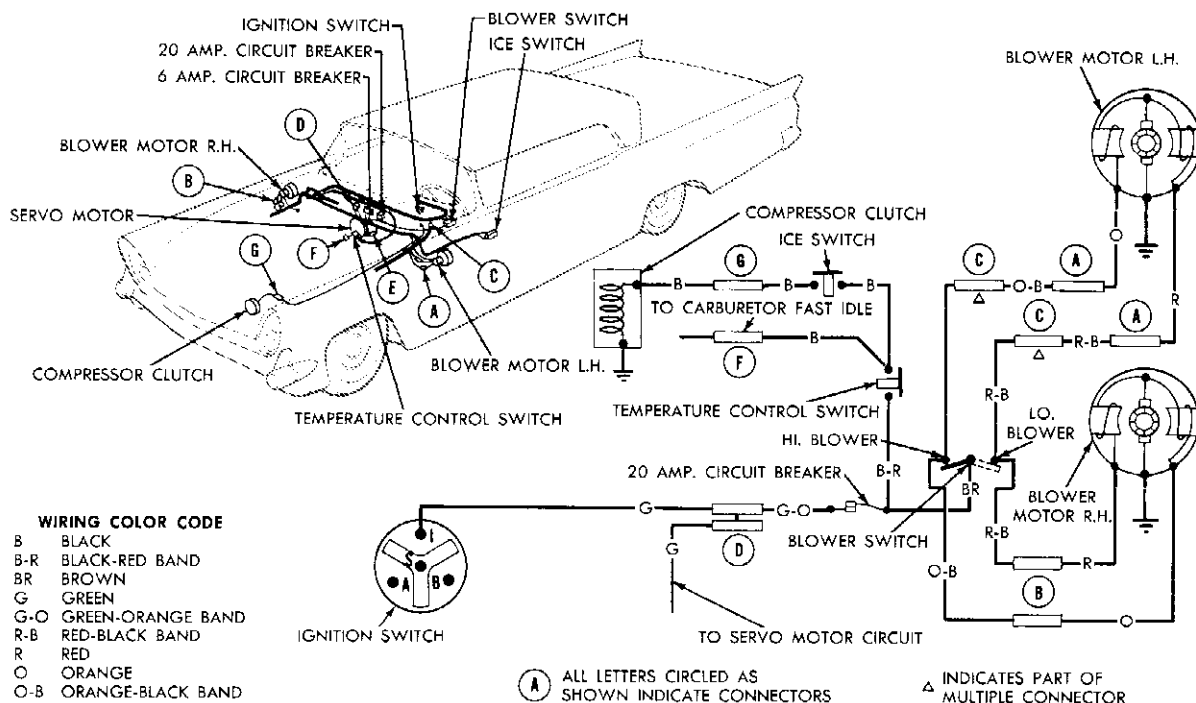


Fig. 3-22—Air Conditioning—Heater Blowers and Compressor Clutch Circuits—1959—(9L-7764)

VACUUM CONTROL SYSTEM

1960 LINCOLN AND CONTINENTAL

ADJUSTMENTS

VENTILATION DUCT VACUUM MOTOR

The ventilation duct must be removed in order to adjust the vacuum motor (See figure 3-23.)

It should be noted that the same vacuum motor and attaching bracket are used on both the right and left ventilation ducts. However, the left ventilation duct vacuum motor and attaching bracket is inverted 180° so that the adjustment of the right damper is at full "OFF" position, while the left damper would be in the full heater and defroster position. Adjust the link to position the preload indicator flush with the motor body.

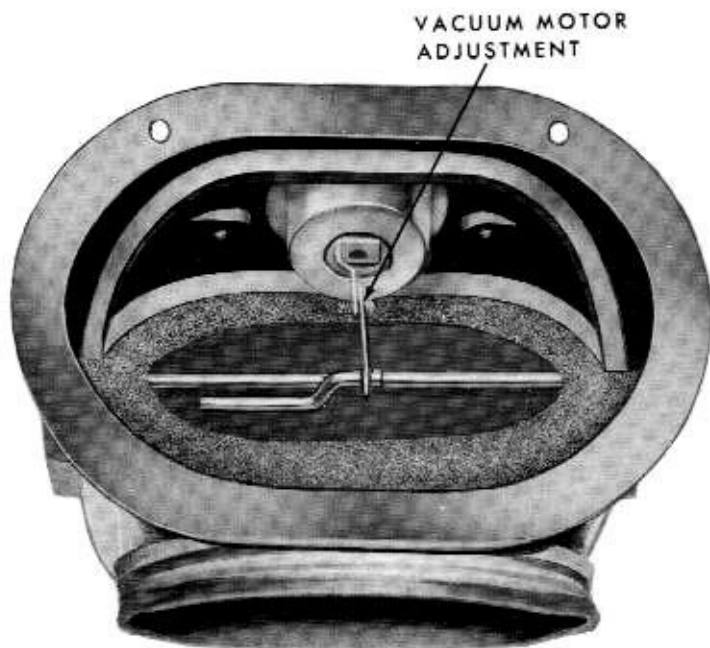
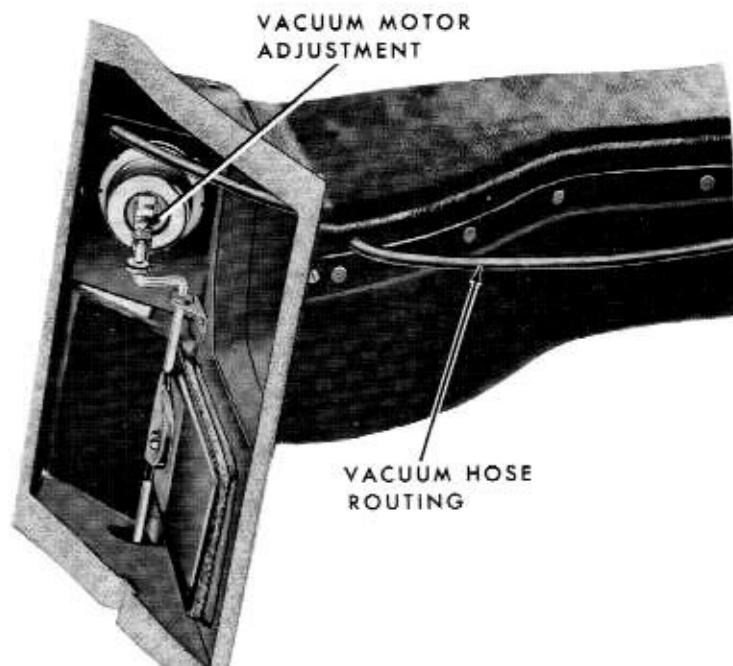


Fig. 3-23—Ventilation Duct Vacuum Motor Adjustment—(60L-8817)



RIGHT SIDE COWL DUCT VACUUM MOTOR

The right side cowl duct must be removed in order to adjust the vacuum motor. See figure 3-24. After removal, the link should be adjusted so the preload indicator is flush with the motor body when the heater side cowl door is closed.

Fig. 3-24—Right Side Cowl Duct Vacuum Motor Adjustment—(60L-8816)

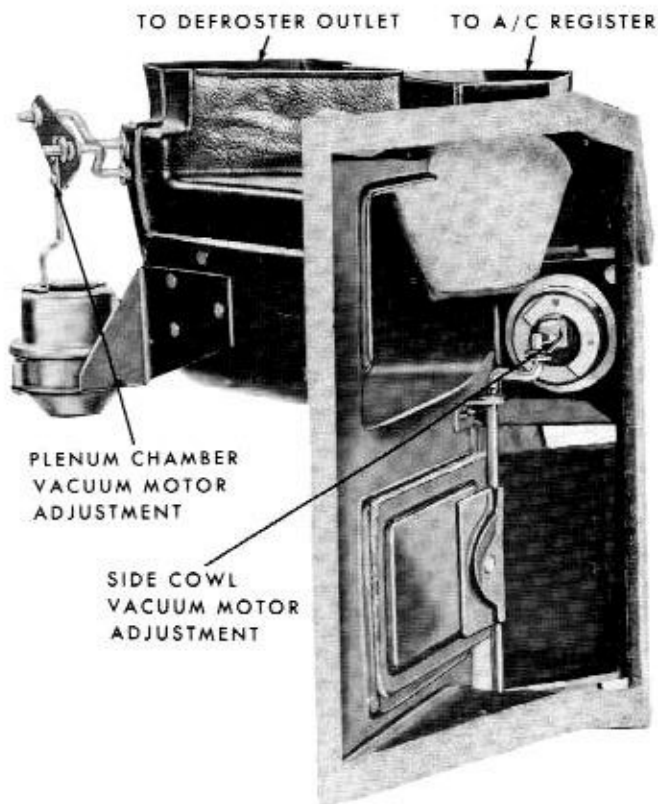


Fig. 3-25—Left Side Cowl Duct and Plenum Chamber Vacuum Motor Adjustment—(60L-8824)

RIGHT INSTRUMENT PANEL REGISTER AND DEFROSTER VACUUM MOTOR

The glove box and liner must be removed to adjust the right instrument panel register and defroster vacuum motor. Once it has been removed, the link setscrew should be loosened and the preload indicator set flush with the motor body. The preload indicator cannot be seen, however, it can be felt and properly set in this manner. (See figure 3-26.)

It is extremely important that all setscrews be securely tightened after adjustment to prevent the possibility of losing the required preload after a period of use.

LEFT SIDE COWL DUCT AND PLENUM VACUUM MOTOR

The left side cowl duct and plenum chamber (defroster, A/C duct) must be removed as an assembly in order to adjust either the side cowl or plenum chamber vacuum motor. (See figure 8-25.) Adjust the side cowl vacuum motor link to bracket, so the preload indicator is flush with the motor body.

WATER VALVE AND A/C THERMOSTATIC SWITCH VACUUM MOTOR

The water valve and A/C thermostatic switch vacuum motors may be adjusted only after the glove box and liner have been removed. Position the servo control head in either the "OFF" or ventilation position to assure that both water valve and A/C thermostatic switch are off. Then, adjust the vacuum motor links so that the preload indicators are flush with the motor body.

While the glove box and liner are removed, the vacuum hose multiple disconnect should be checked to insure there are no vacuum leaks and the clamp screw is tight.

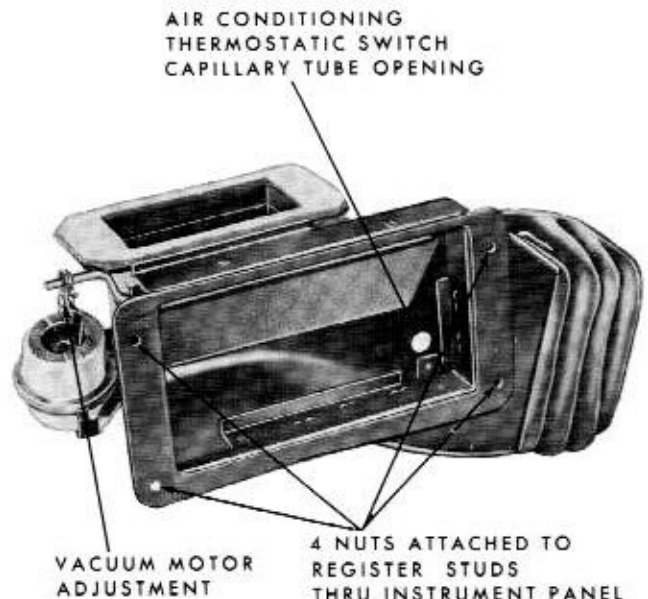


Fig. 3-26—Right Instrument Panel Register and Defroster Duct Vacuum Motor Adjustment—(60L-8824)

TROUBLE SHOOTING

In the event that one or more of the vacuum motors does not respond when the control head is turned, the following trouble shooting procedure should be used:

1. With the engine idling, turn the control knob in an attempt to activate the inoperative motor. Figure 3-7 indicates which vacuum motors are activated at each position on the dial.
2. Remove the vacuum line from 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 15 inches. If the vacuum motor is good, the diaphragm will be pulled in; if not, replace it. If the vacuum motor tests good, the damper could be binding. This condition must be corrected.
4. If there is no vacuum at the disconnected hose and the control head is set to activate the particular vacuum motor as indicated in figure 3-7, 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 dash panel disconnect and to the vacuum servo for leaks, sharp bends or pinches which would prevent the vacuum from operating the motor. If the vacuum hose is found to be disconnected, 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 control head 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. 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 bussing noise in the vacuum servo.

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

Insufficient or No Cooling

1. BLOWER MOTOR OR MOTORS DO NOT RUN:
 - a. Check the blower motor circuit breaker.
 - b. Check for poor connections or an open circuit.
 - c. Check the blower motor resistor.
 - d. Check the blower switch.
 - e. Check the blower motor or motors.
2. BLOWER OPERATES, BUT DOES NOT HAVE 3 SPEEDS:
 - a. Check the blower motor resistor.
 - b. Check the blower switch.
 - c. Check for an open connection.
 - d. Check the high blower relay.
3. BLOWER OPERATES BUT AIR OUTPUT IS NOT NORMAL:
 - a. Check operation of the heater and A/C control. Determine if the air doors are operating properly.
 - b. Check air passages for obstructions. Check for adequate air delivery from air registers.
4. CLUTCH DOES NOT ENGAGE (CONTROL POINTER ON MAXIMUM COOLING, IGNITION SWITCH "ON", TEMPERATURE ABOVE 40° F.):
 - a. Check voltage at clutch. If voltage is present, repair or replace clutch.
 - b. If no voltage is present at clutch, check clutch brushes; using a jumper wire, bypass the thermostatic switch. Check thermostatic switch vacuum motor and servo control if required. If the clutch engages, repair wiring or replace thermostatic switch.

c. Thermostatic switch bypassed (no voltage to the clutch). Connect a jumper wire from the thermostatic switch to compressor. If clutch now engages, loose connection, defective icing switch or open circuit is causing the trouble. Repair wiring.

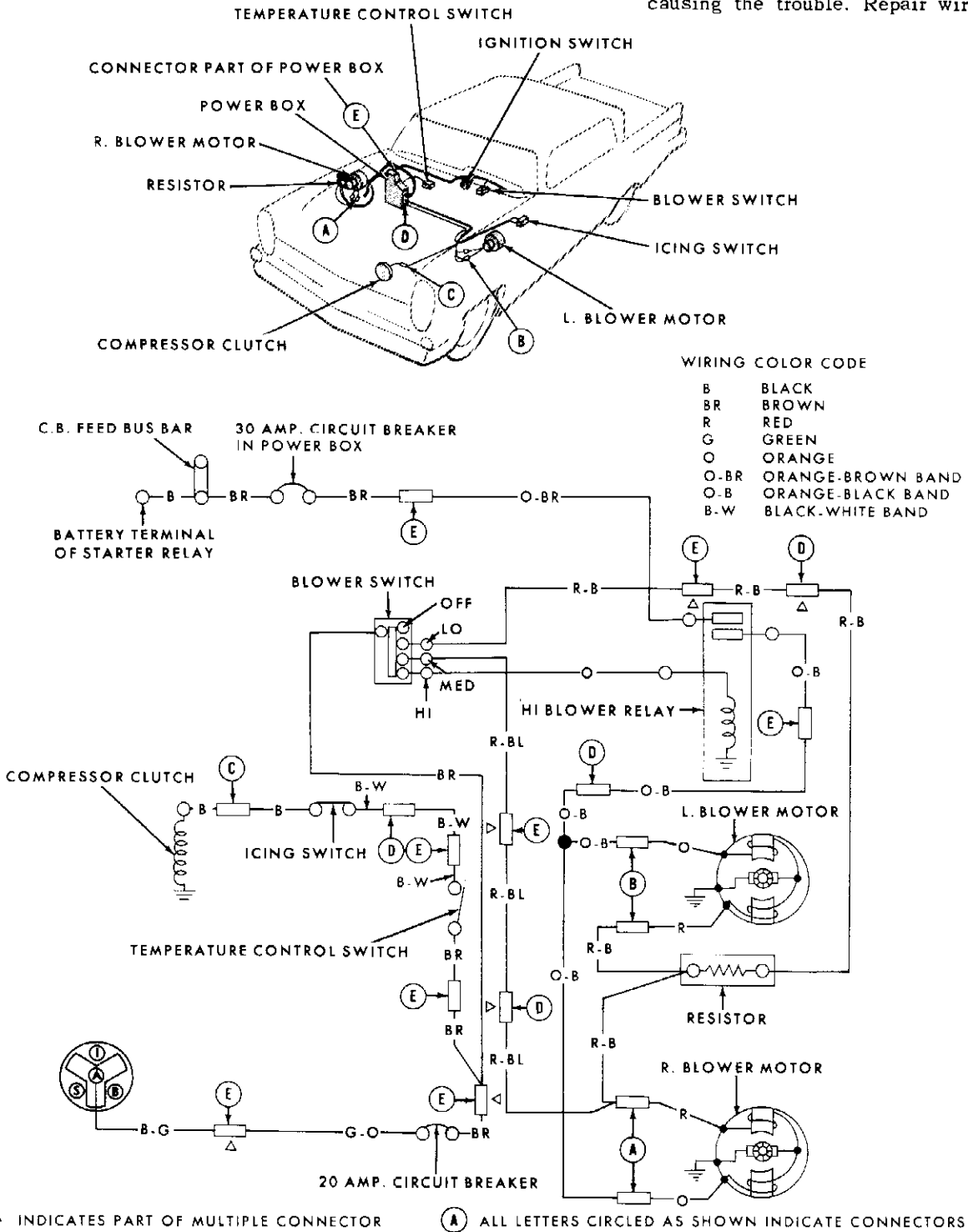


Fig. 3-27—A/C Blower and Compressor Clutch Circuits (All Except Model 23-A)—1960—(61LT-8824)

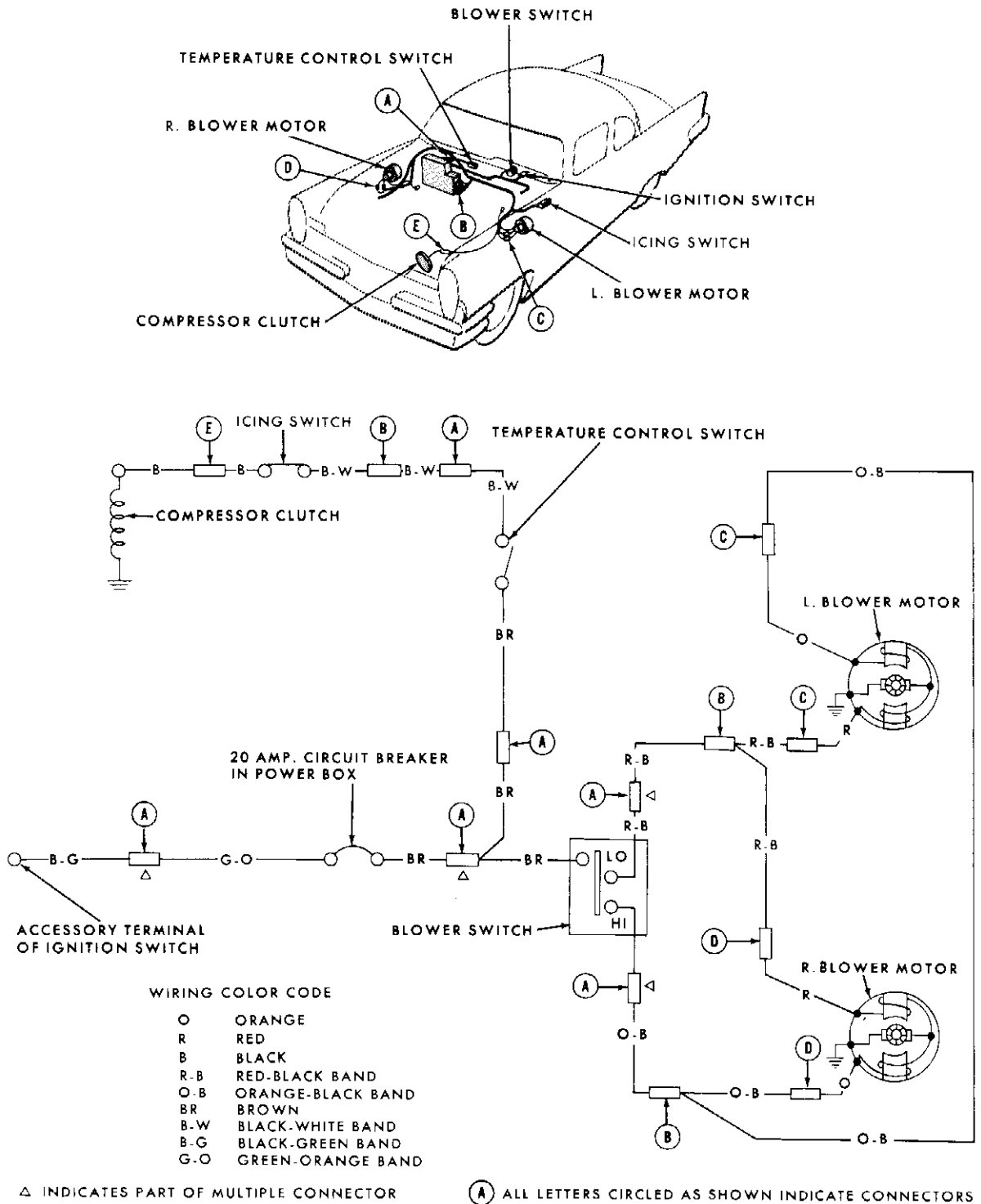
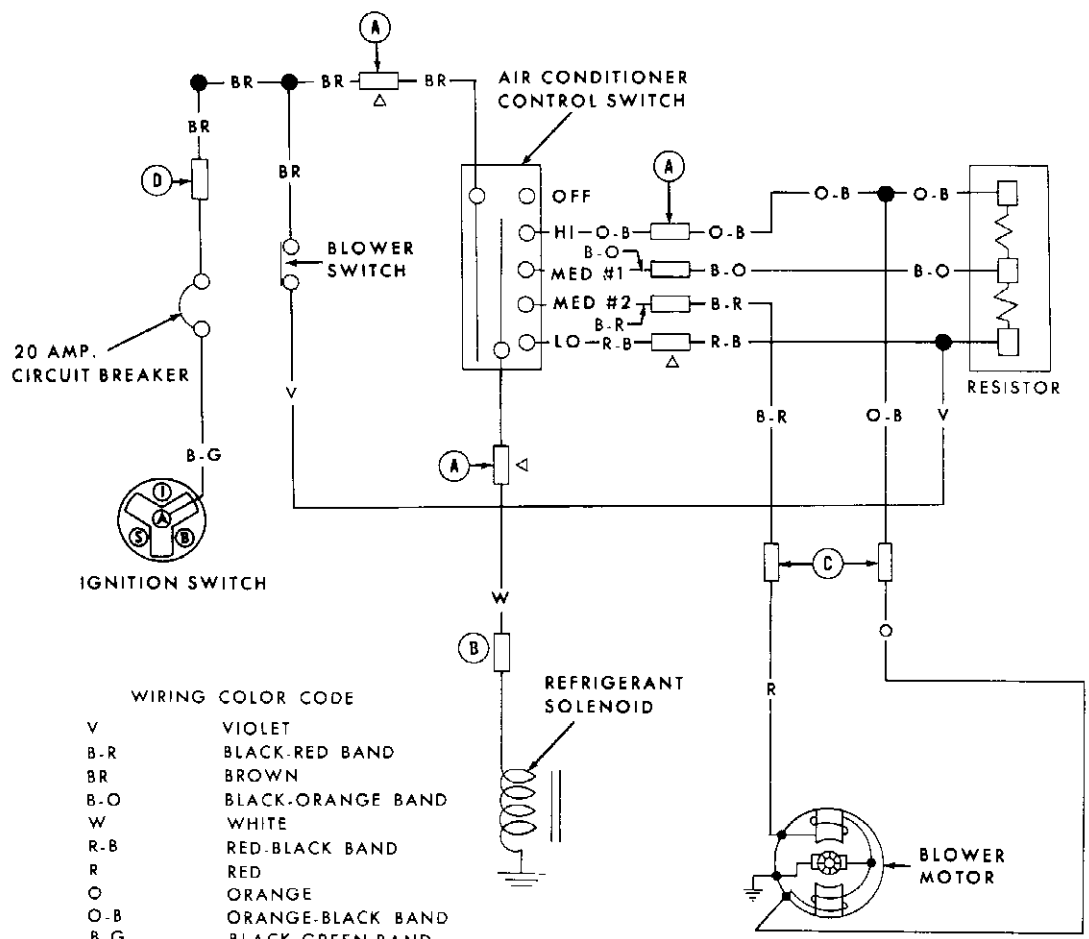
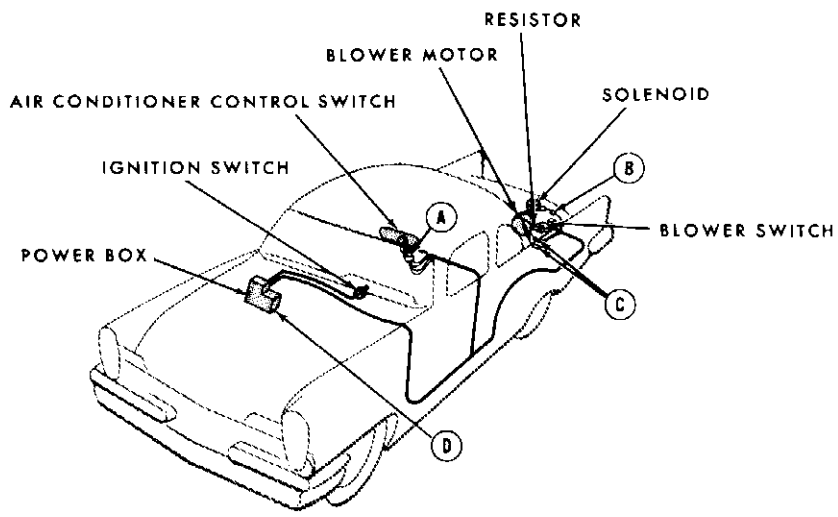


Fig. 3-28-A/C Blower and Compressor Clutch Circuits (Model 23-A)—1960-61LT-8825)



△ INDICATES PART OF MULTIPLE CONNECTOR

Ⓐ ALL LETTERS CIRCLED AS SHOWN INDICATE CONNECTORS

Fig. 3-29-A/C Blower and Refrigerant Solenoid-Rear (Model 23-A)-1960-(61LT-8830)

1961 LINCOLN CONTINENTAL

ADJUSTMENTS

THERMOSTATIC SWITCH

1. Remove the lower left instrument panel cover.
2. Loosen the link adjustment screw. (See Figure 3-30.)
3. Adjust the link until the preload indicator is flush with the motor body. The switch arm must be in the full forward position for adjustment.
4. Tighten the link adjustment screw and install the lower left instrument panel cover.

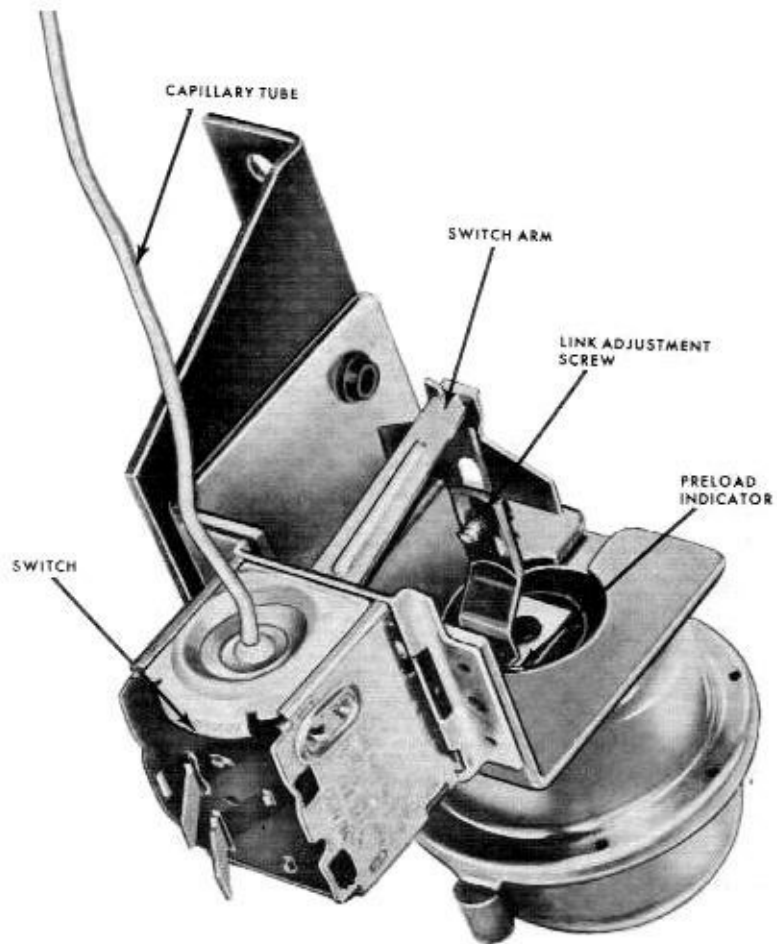


Fig. 3-30—Thermostatic Switch Adjustment—(61LM-7807)

TROUBLE SHOOTING

NO BLOWER OPERATION

With a test lamp, test for voltage at the output side of the heater and air conditioning circuit breaker. The circuit breaker is located in the top section of the power box.

If voltage is available at the output side of the circuit breaker, test the blower control switch. If tests indicate the blower switch is good, check the resistor and blower housing terminal.

If no voltage is available at the blower, check the operation of the vacuum switch. With vacuum applied, the switch should ground the A/C blower motor. If a test light indicates an open circuit, check to see if vacuum is available at the switch when the control is in the A/C positions. If vacuum is available, replace the switch.

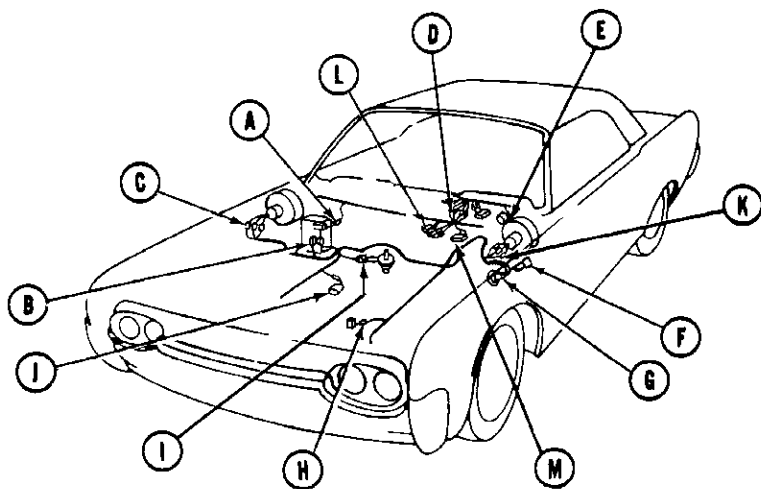
Control Servo

Inspect all hoses at the control servo and the

control hose connector for proper hose hookup. (Refer to Figure 3-9 for the proper connections.)

If all hoses are connected properly, remove the large black supply hose from the servo and check it for vacuum. If no vacuum is present, check the supply hose for leaks or an inoperative vacuum check valve.

Be sure that the vacuum check valve is properly installed. If vacuum is present at the servo supply hose, connect the hoses to a new servo and check its operation. If all components function properly, replace the vacuum control servo.



WIRING COLOR CODE

- O ORANGE
- BL BLUE
- R RED
- W WHITE
- R-BL RED-BLUE STRIPE
- G-O GREEN-ORANGE STRIPE
- R-B RED-BLACK STRIPE
- O-B ORANGE-BLACK STRIPE
- V VIOLET
- B-G BLACK-GREEN STRIPE
- BR-G BROWN-GREEN STRIPE
- BR-O BROWN-ORANGE STRIPE
- BR-V BROWN-VIOLET STRIPE
- B-W BLACK-WHITE STRIPE
- BR BROWN
- B BLACK
- B-R BLACK-RED STRIPE

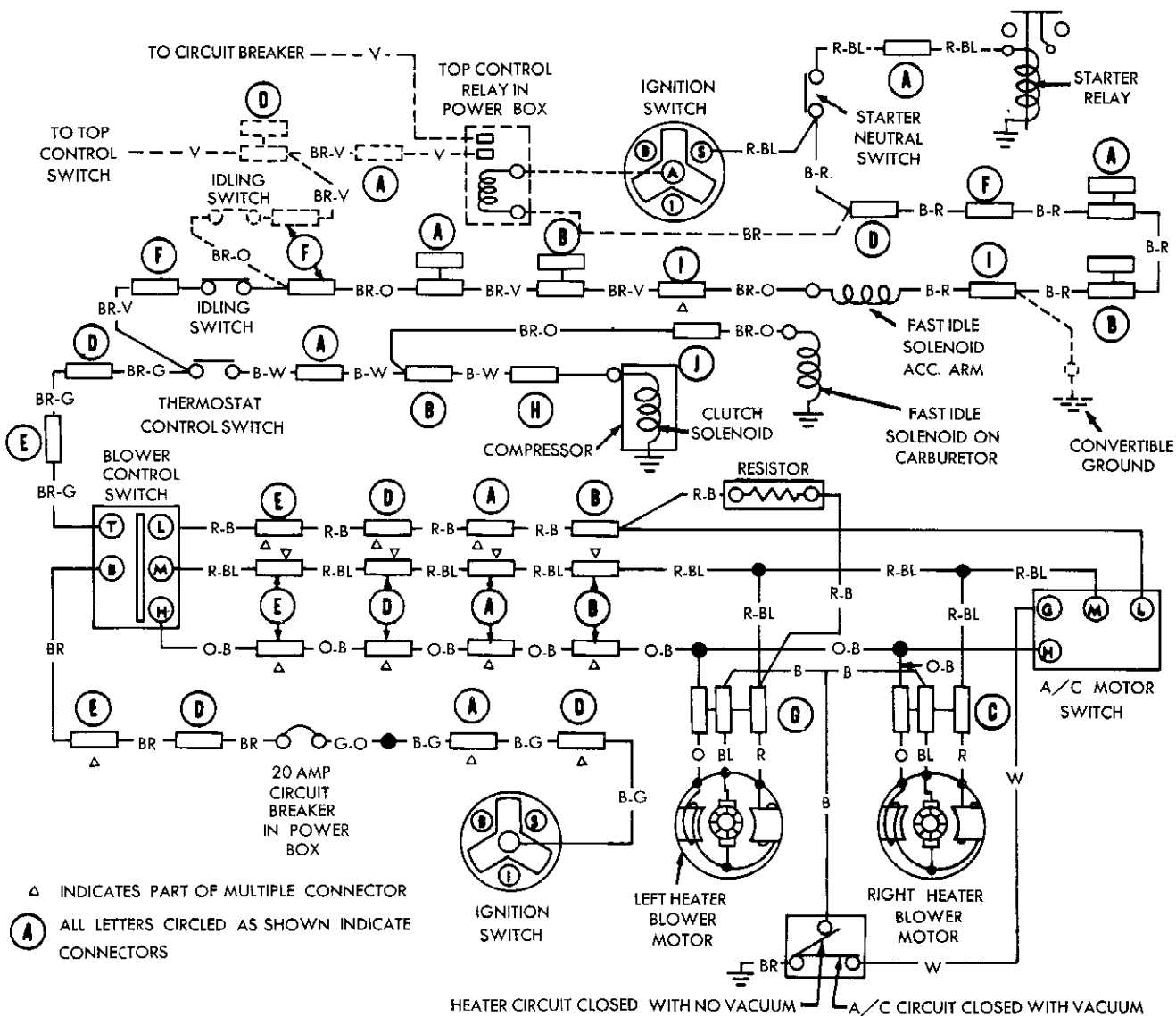


Fig. 3-31-Heater-Air Conditioning Wiring Diagram-1961(61LM-7814)