

A-1955 LINCOLN

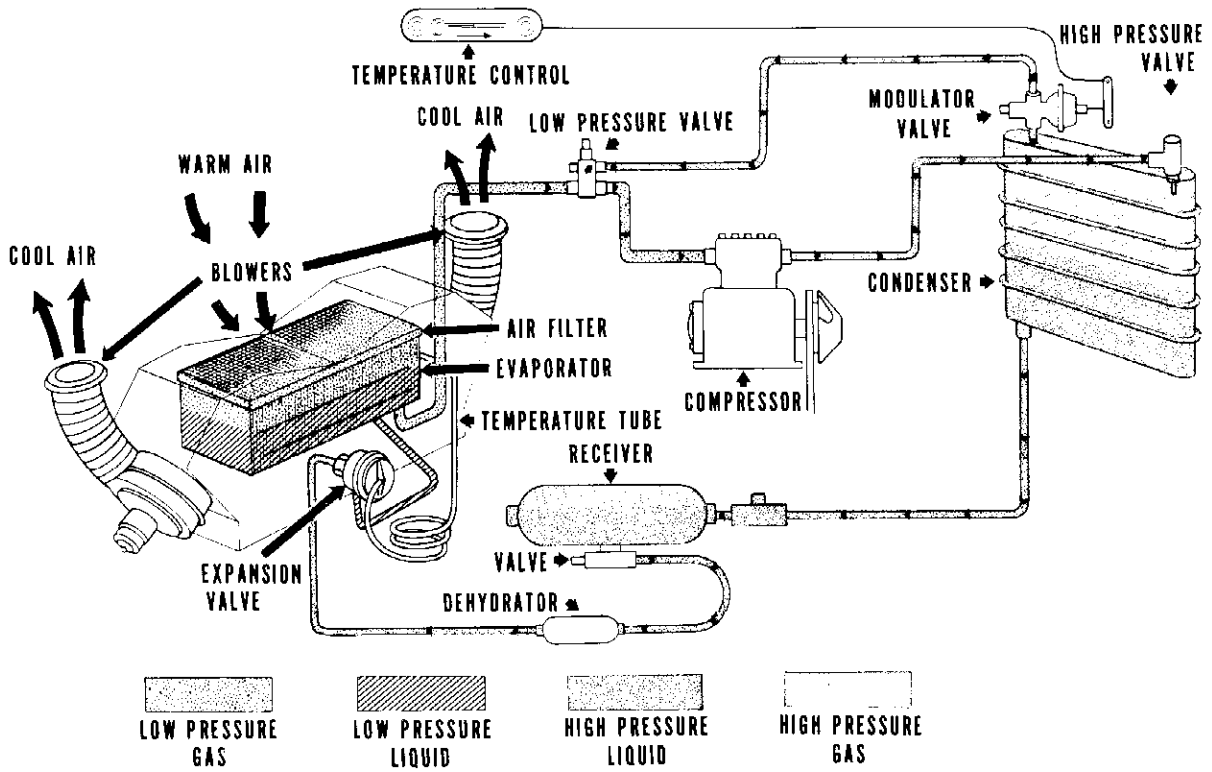


Fig. 7A-1—The Air Conditioning System—(LMOM-3689)

The Air Conditioning System for the 1955 Lincoln consists of a Mechanical Refrigeration System and an Air Duct System. The Air Duct System permits outside air, and air withdrawn from the passenger compartment to be filtered, cooled, dehumidified, and returned to compartment. (Refer to figure 7A-1).

Two blowers, one on each side of the evaporator case, circulate the air in the passenger compartment. The cooled air from inside the closed evaporator is withdrawn by the blowers and routed through connecting ducts to registers located along the roofside rails. Warm air from inside the passenger compartment is drawn into the evaporator through two grills located on the package tray and connected to the evaporator case by flexible rubber ducts. There are also two outside air intake scoops, one on each quarter panel. These air scoops are connected to the evaporator chamber by two flexible ducts. The outside air ducts may be opened or closed manually.

When they are open the ducts account for approximately 15% to 20% of the total air circulated by the blowers. The manual controls for the outside air ducts are located on the package tray, beside each package tray intake.

The controls for regulating both cooling and air circulation are mounted on the lower edge of the instrument panel.

Moving the temperature control lever to the right increases cooling. Moving the lever to the left decreases it. When the lever is moved to the

extreme left or off position, the entire Air Conditioning system is off. When the lever is lifted out of the recess and moved to the right, both blower motors automatically start operating in "low position". The blowers may be operated individually in the "high position" only by pulling out the appropriate button on the control panel.

MODULATOR VALVE

In order to compensate for the variable speed of the engine driven compressor, a device called a Modulator Valve is placed in the system to maintain a uniform low side pressure. (Refer to figure 7A-1.)

This valve is located in the by-pass line running from the condenser to the low pressure (fender apron) valve. When the engine-driven compressor speed increases and the low side pressure drops, high pressure vapor is returned to the low pressure side through the modulator valve and the by-pass line to control the low side pressure; thus controlling evaporator temperature.

An inoperative modulator valve, like an inoperative expansion valve, can cause a serious malfunction in the system. If the automatic feature of the modulator valve should stick open, it would allow too much circulation in the by-pass system. This would cause lowered high pressure readings, and raised low pressure readings in the main system, which would result in inadequate refrigeration. If the refrigeration is excessive and there is no control when the manual lever is moved, it could be the result of a modulator valve sticking closed.

OIL SEPARATOR AND SILENCER

Some units are equipped with an oil separator and a silencer.

A portion of the compressor lubricating oil is pumped through the system along with the refrigerant. To trap this oil and return it to the crankcase, an oil separator maybe placed in the low pressure line just before it enters the compressor.

To silence the pulsating noise that is sometimes present in a refrigerating system, a silencing or muffler chamber may be placed in the low pressure line.

OFF SEASON SHUT DOWN OF COMPRESSOR

Design of the compressor pulley permits the sheaves to free-wheel on a ball bearing mount on the pulley hub for compressor shutdown. The sheaves are locked to the hub for compressor drive by inserting two special capscrews through the front face of the pulley. (See figure 7A-2).

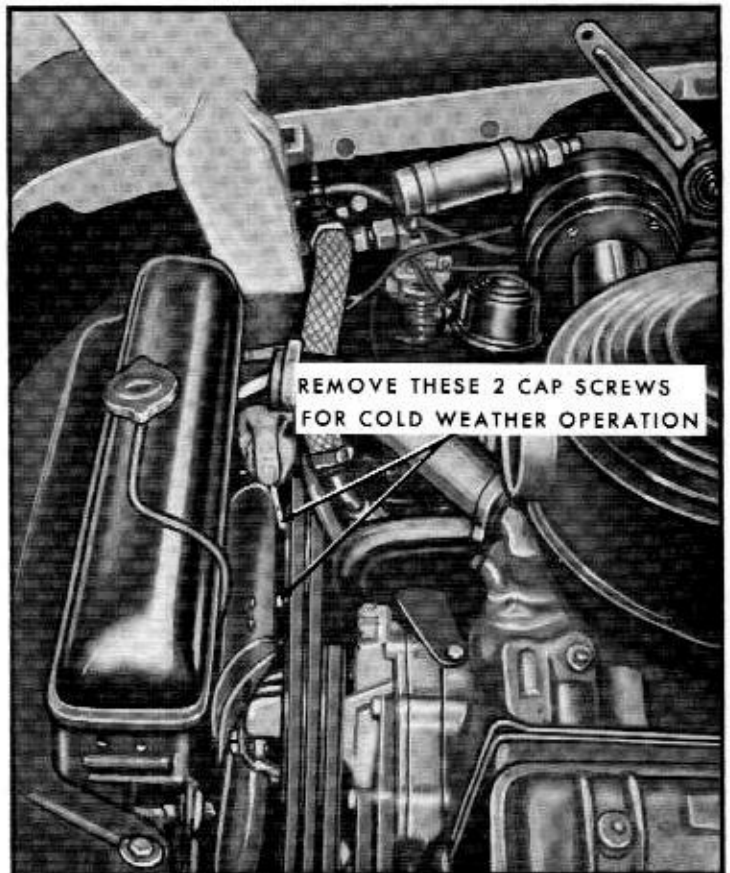
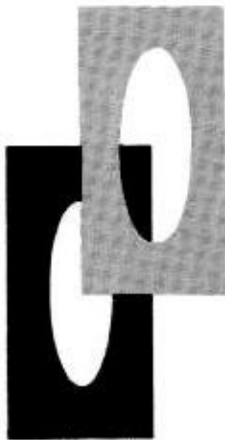


Fig. 7A-2—Compressor Pulley Cap Screws—(61LT-8804)

AUTOMATIC THROTTLE CONTROL

An automatic fast-idle throttle control was installed on some vehicles equipped with air-conditioning. This feature is designed to provide improved engine cooling and air conditioner output at idle speed in high ambient temperature.

This throttle control consists of a vacuum operated diaphragm connected through an actuating rod to the throttle linkage on the carburetor. Manifold vacuum, which is applied to the diaphragm, is controlled by an electric solenoid. With the control installed, the engine will idle at approximately 800 R.P.M. whenever the air conditioner is operating and the transmission selector is in neutral. The engine will return to normal idle speed when either the transmission selector is moved out of neutral position or the air conditioning system is turned off.

When the air conditioner control is moved toward the full cold position the blower low position switch is automatically closed. Current then flows from the "A" terminal of the ignition switch through the blower switch to energize the coil in the fast idle relay. (See figure 7A-3.) When the transmission selector lever is placed in neutral, closing the transmission neutral switch, current flows from the starting motor relay, across the points in the fast idle relay (closed when the coil was energized), to energize the fast idle solenoid. This opens the vacuum passage to the diaphragm.

The vacuum connection to the intake manifold is made with a special connector. This connector is tapped to receive the vacuum lines for the vacuum booster section of the fuel pump, the power brake vacuum line and the vacuum line for the automatic throttle control. A plug is supplied for use when power brakes are not installed.

The connection to the throttle linkage is made with a slotted clip that clamps on the throttle lever and straddles the operating rod of the control assembly. The end of the operating rod is threaded to take a knurled adjusting nut and a locknut. With the engine warm, air conditioning system operating, and transmission in neutral, the knurled nut should be adjusted and locked to provide the desired idle speed of 800 R.P.M. The idle should then be checked to make sure that it returns to

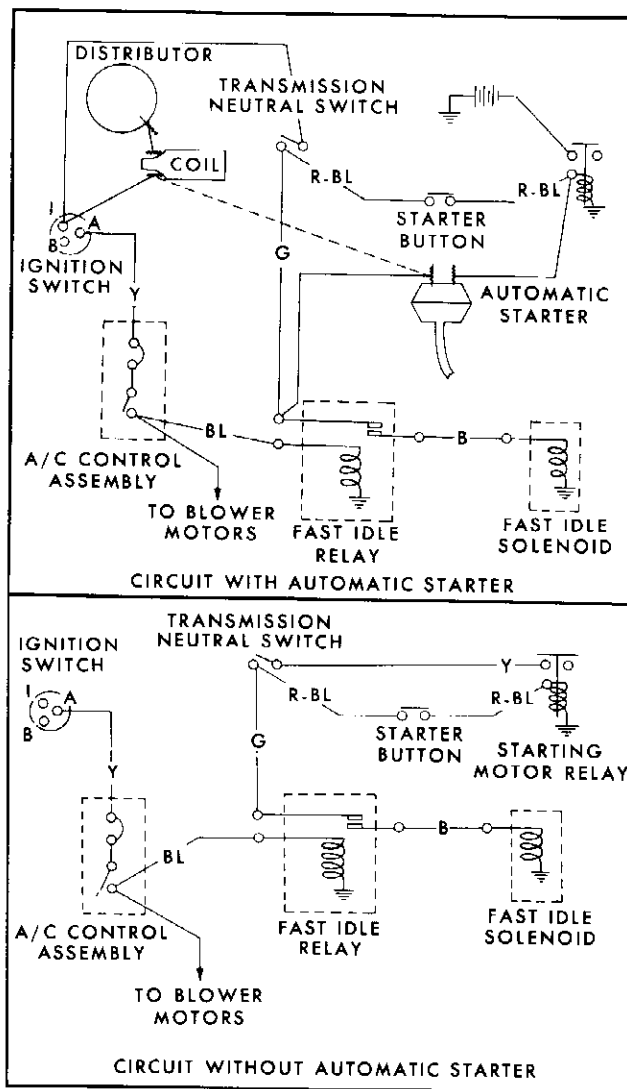


Fig. 7A-3—Automatic Throttle Control
Circuit—(61LT-8806)

normal whenever the air conditioner is turned off or the transmission is shifted out of "neutral."

NOTE: Engine idle should be checked and set to specifications before attempting to adjust the fast idle device.

TROUBLE DIAGNOSIS

If the fast idle control does not operate, check the system as follows:

1. Start engine, place transmission selector lever in neutral and air conditioner lever in full cold position. Touch test light probe to black wire on fast idle solenoid. If light comes on, move air conditioner control lever from "off" to "full cold" a few times and listen for a faint click in the solenoid. If the solenoid is operating remove the rubber vacuum hose from the diaphragm connection and connect to a vacuum gauge. Gauge should read manifold vacuum. If there is no vacuum, check rubber hose and connection to manifold. If there is vacuum, check diaphragm connection for leaks. If diaphragm proves to be defective, replace.
2. If light does not come on in first part of step 1, move probe to the black lead on the fast idle relay. If light comes on, replace black lead.
3. If light does not come on, move probe to green

lead on fast idle relay. If light comes on replace fast idle relay.

4. If light does not come on, move probe to green lead on transmission neutral switch. If light comes on, replace green lead.
5. If this point has been reached and the trouble is still not located, return to the fast idle relay and touch probe to the blue lead. If the light comes on, replace fast idle relay.
6. If light does not come on, move probe to blue lead on the air conditioner low blower switch. If light comes on, replace blue lead.
7. If light does not come on, move probe to yellow lead on air conditioning low blower switch. If light comes on, replace low blower switch.
8. If light does not come on, move probe to yellow lead on ignition switch. If light comes on, replace yellow lead.

MAINTENANCE

The Low Pressure Service Valve (Suction Side) is located on the right fender apron and has its valve stem on the top side of the valve (upward direction).

The High Pressure Service Valve (Discharge Side) is located on the right front side of the condenser. The valve is accessible through the upper grille opening. The valve stem is inverted and is on the bottom side of the valve (downward direction).

Before installation of the Pressure Test Gauge Manifold (Manifold Gauge Set) always "BACK

SEAT" both the Low Pressure Valve and the High Pressure Valve.

CAUTION: In the procedures throughout this manual, the rotation of the service valve is as viewed from the stem side of the valve.

Do not remove the gauge port caps and/or disconnect any refrigerant lines until the service valves are in their proper "FRONT SEAT" or "BACK SEAT" position. Always open the gauge port caps and refrigerant lines with extreme care.

PUMP DOWN PROCEDURE

When any assembly, except the receiver tank or compressor is to be replaced or serviced, most of the refrigerant charge can be saved by pumping the system down. This traps the gas in the receiver tank.

To replace the receiver, the complete charge must be exhausted. To replace the compressor, it is only necessary to close both high and low pressure valves, thereby saving most of the system charge.

1. Raise the car and remove the valve stem protector caps from both the receiver inlet and outlet valves.
2. Turn the stem on the receiver outlet valve clockwise until seated. (See figure 7A-4).

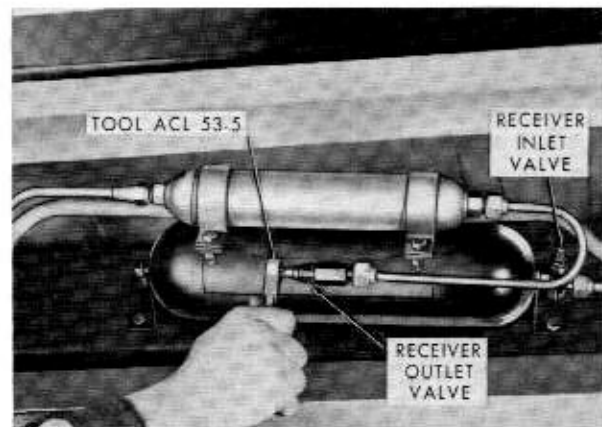


Fig. 7A-4—Closing Receiver Outlet Valve—(4L-715)

3. Lower the car and start the engine. Run the engine on high idle for four minutes. At this point, there should be no more refrigerant visible in the evaporator sight gauge.
4. While the engine is still running, turn the stem on the receiver inlet valve clockwise until seated.
5. Shut off the engine.
6. To release the pumped down pressure, turn the receiver outlet valve counterclockwise until seated. When the system pressure has neutralized, turn the receiver inlet valve counterclockwise until seated.
7. Replace the receiver valve stem protector covers.

EVACUATING A PUMPED DOWN SYSTEM

Whenever any part or assembly in the Air Conditioning System is removed for repair or replacement, there is a good possibility that moist air and other contaminants will be drawn in through the open fittings. To get rid of these contaminants, the system must be thoroughly evacuated with a vacuum pump.

When the system is in the "Pumped Down" condition, everything but the receiver may be evacuated by following this procedure.

1. Clamp the Pressure Test Gauge Manifold (Tool ACL 53-3) to the radiator air deflector.
2. Remove the protector cap from the condenser valve stem and make sure the stem is turned in full counterclockwise direction (Back Seated).
3. Remove the cap from the condenser valve service port and low pressure gauge hose.
4. Connect low pressure gauge hose to condenser valve service port.
5. Make sure high pressure gauge valve is turned in the full clockwise direction.
6. Connect the center hose of the gauge manifold to the vacuum pump. Start pump.
7. Turn low pressure gauge valve counterclockwise about 2 turns.
8. Turn condenser valve stem to its center position.
9. Evacuate system to a minimum of 24" Hg. after 20 minutes.
10. Turn low pressure gauge valve clockwise until seated.
11. Release pump down pressure by turning receiver outlet valve counterclockwise until seated. When system pressure has neutralized, turn receiver inlet valve counterclockwise until seated.
12. Disconnect vacuum pump, and turn low pressure gauge valve counterclockwise about 1/2 turn. Allow refrigerant from the system to purge through the gauge manifold for a few seconds to clear the manifold of any air. Turn low-pressure gauge valve clockwise until seated.
13. Check system pressures, and test for leaks.
14. If it is necessary, add a partial charge of refrigerant.
15. If Pressure Test Gauge Manifold is not going to be used further, it may be removed at this time. To remove, turn valve stems on both condenser and fender apron valves counterclockwise until back seated. Disconnect both gauge hoses from service ports, cap hoses and ports. Replace condenser and fender apron valve stem protector caps.

REMOVAL AND INSTALLATION

The Low Pressure Service Valve (Suction Side) is located on the right fender apron and has its valve stem on the top side of the valve (upward direction).

The High Pressure Service Valve (Discharge Side) is located on the front side of the upper right corner of the condenser. The valve is accessible through the upper grille opening. The valve stem is inverted and is on the bottom side of the valve (downward direction).

Before installation of the Manifold Gauge Set always "BACK SEAT" both the Low Pressure Valve and the High Pressure Valve.

CAUTION: *In the procedures throughout this manual, the rotation of the service valve is as viewed from the stem side of the valve. Do not remove the gauge port caps and/or disconnect any refrigerant lines until the service valves are in their proper "Front Seat" or "BACK SEAT" position. Always open the gauge port caps and refrigerant lines with extreme care.*

CONDENSER ASSEMBLY WITH MODULATOR VALVE ATTACHED

REMOVAL

1. Clamp Pressure Test Gauge Manifold (Tool ACL 53-3) to radiator air deflector.
 2. Remove protector caps from valve stems on condenser valve and fender apron valve. Turn both valve stems counterclockwise until back seated. Remove service port caps.
 3. Attach high pressure gauge hose to condenser valve service port, and low pressure gauge hose to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
 4. Check system pressure turning the valve stem on the condenser and fender apron valves to their center position. Both gauges should read between 50-80 psi.
 5. If there is pressure in the system, pump the charge down. See "Pump Down Procedure."
 6. Disconnect by-pass line at the modulator valve fitting, cap line and fitting immediately. Remove cap screw holding by-pass line clamp to the top of the condenser.
 7. Disconnect high pressure hose at the condenser valve fitting. Cap hose and fitting immediately.
 8. Loosen clamp holding Bowden wire housing to modulator valve mounting bracket. Slip wire down off pin on modulator valve actuating arm.
 9. Disconnect high pressure line at the fitting on the lower right hand corner of condenser assembly. Cap line and fitting immediately.
 10. Remove two bolts, nuts and flat washers holding hood lock support to upper radiator braces.
 11. Remove four bolts, nuts and washers holding lower hood lock support braces to radiator support and four nuts, bolts and washers holding hood lock support to fender apron.
 12. Remove acorn nut holding hood lock support to hood lock support rod.
 13. Remove hood lock support with two lower braces attached.
- NOTE:** *It will be necessary to slip head lamp wiring loom out of clips on the under side of the hood lock support.*
14. Remove six caps screws, 3 each side, holding condenser mounting brackets to radiator support assembly. Remove condenser assembly with modulator and condenser mounting brackets attached.

NOTE: *When replacing condenser assembly, transfer modulator valve and condenser mounting brackets to new condenser.*

15. If it is necessary to remove Pressure Test Gauge Manifold, turn valve stems on both condenser and fender apron valves counterclockwise until back seated. Disconnect both gauge hoses from service ports. Cap hoses and ports. Replace condenser and fender apron valve stem protector caps.

INSTALLATION

If Pressure Test Gauge Manifold (Tool ACL 53-3) has been removed, install as follows:

1. Clamp manifold assembly to radiator air deflector.
2. Remove protector caps from valve stems on fender apron and condenser valves. Turn both stems counterclockwise until back seated. Remove caps from service ports.
3. Attach high-pressure gauge hose to condenser valve service port, and low-pressure gauge hose to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
4. Place condenser assembly, with mounting brackets and modulator valve attached, in position on radiator support and attach with six mounting cap screws.
5. Place hood lock support, with two lower braces attached, in position on fender apron mounting brackets and install four attaching cap screws.
6. Install acorn nut holding hood lock support to hood lock support rod.
7. Install four bolts, nuts and washers holding lower hood lock support braces to radiator support.
8. Install two bolts, nuts and flat washers holding hood lock support to upper radiator braces. Slip head lamp wiring loom into clips on under side of hood lock support.
9. Remove caps from high-pressure line and fitting on bottom right corner of condenser assembly. Using a new copper seal, connect line to fitting.
10. Remove caps from modulator valve fitting, and by-pass line. Using a new copper seal, connect line to fitting.
11. Remove caps from flexible high-pressure hose and condenser valve fitting. Using new copper seal, connect hose to fitting.
12. Secure by-pass line clamp to the top of the condenser with cap screw and lock washer.
13. Place manual temperature control in the full cold position. Rotate the modulator valve actuating arm as far as it will go towards the right hand side without forcing it, and slip the Bowden wire loop up over the end of the actuating arm pin.
14. Clamp Bowden wire housing to modulator valve mounting bracket.
15. Replace dehydrator. See "Removal and Installation of Dehydrator Assembly."
16. If system was pumped down, first evacuate. See "Evacuating a Pumped Down System." Release pumped down pressure by turning receiver outlet valve counterclockwise until seated. When system pressure has neutralized, turn receiver inlet valve counterclockwise until seated.
17. Test the entire system for leaks.
18. If there was no system pressure, Evacuate, Charge and Leak test the system.
19. Turn valve stems on condenser valve and fender apron valve counterclockwise until back seated.
20. Remove Pressure Test Gauge Manifold, replace protector caps on condenser valve, fender apron valve, and both valves on receiver. Cap service ports, and manifold hoses.

MODULATOR VALVE

REMOVAL

1. Clamp Pressure Test Gauge Manifold Tool (ACL 53-3) to radiator air deflector.
2. Remove protector caps from valve stems and

- service ports on condenser valve and fender apron valve. Turn both valve stems counterclockwise until back seated before removing service port protector caps.
3. Attach high-pressure gauge hose to condenser valve service port and low-pressure gauge hose to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
 4. Check system pressure by turning the valve stem on the condenser and fender apron valves to their center position.
 5. If there is pressure in system, pump refrigerant into receiver tank. See "Pump Down Procedure."
 6. Disconnect by-pass line at the modulator valve fitting, cap line and fitting immediately.
 7. Disconnect clamp holding Bowden wire housing to modulator valve mounting bracket. Slip wire down off pin on modulator valve actuating arm.
 8. Remove two cap screws holding modulator valve to mounting bracket.
 9. Disconnect modulator valve from short tube on condenser assembly. Remove modulator valve.
 10. If it is necessary to remove Pressure Test Gauge Manifold, turn valve stem on both condenser and fender apron valves counterclockwise until back seated. Disconnect both gauge hoses from service ports. Cap hoses and ports. Replace condenser and fender apron valve stem protector caps.
 2. Remove protector caps from valve stems. Turn both stems counterclockwise until back seated. Remove caps from service ports.
 3. Attach high-pressure gauge hose to condenser valve service port and low-pressure gauge hose to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
 4. Connect modulator valve assembly to short tube on condenser assembly. Use new copper seal.
 5. Secure modulator valve to mounting bracket with two cap screws.
 6. Place manual temperature control in the full cold position. Rotate modulator valve actuating arm as far toward the right side of the vehicle as it will go without forcing it. Slip the Bowden wire loop up over the end of the actuating arm pin.
 7. Clamp Bowden wire housing to modulator valve mounting bracket.
 8. Install a new dehydrator. See "Removal and Installation of Dehydrator Assembly."
 9. If system was pumped down, first evacuate. See "Evacuating a Pumped Down System." Release pumped down pressure by turning receiver outlet valve counterclockwise until seated. When system pressure has neutralized turn receiver inlet valve counterclockwise until seated.
 10. Check for leaks.
 11. If there was no system pressure, Evacuate, Charge, and Leak test the system.
 12. Turn valve stem on condenser valve and fender apron valve counterclockwise until back seated.
 13. Remove Pressure Test Gauge Manifold. Replace protector caps on condenser valve and fender apron valve and both valves on receiver tank. Cap service ports and manifold hoses.

INSTALLATION

If Pressure Test Gauge Manifold (Tool ACL 53-3) has been removed, install as follows:

1. Clamp manifold assembly to radiator air deflector.

COMPRESSOR

REMOVAL

1. Drain coolant from radiator and engine block.
2. Disconnect battery ground cable to prevent shorts.
3. Remove protector caps from valve stems on condenser valve and fender apron valve. Turn valve stems clockwise until front seated.
4. Remove oil filler cap and oil level indicator.
5. Disconnect heater outlet tube at water pump connection and remove cap screw securing heater tube clamp to compressor.
6. Raise car and remove generator as follows:
 - a. Remove radiator splash shield.
 - b. Loosen generator bracket to remove belt tension.
 - c. Loosen generator mounting cap screws.
 - d. Remove drive belts.
 - e. Remove Arm, Field and Ground wires from connections on generator.
 - f. Remove generator mounting cap screws. Remove generator.
7. Remove two cap screws securing compressor to engine block. Note wiring harness clip on front cap screw.
8. Lower vehicle and disconnect flexible high-pressure hose and flexible low-pressure hose at the compressor fittings. Cap hoses and fittings immediately.
9. Remove two cap screws holding compressor to mounting bracket.

CAUTION: Support compressor assembly to keep it from falling when cap screws are removed.
10. Remove compressor by lifting up around heater connections and out through engine compartment.

INSTALLATION

1. Place a headless stud in one of the compressor side bracket mounting holes. Place compressor in position in engine compartment with stud through bracket for support.

2. Install one compressor to bracket attaching cap screw. Remove headless stud and install the second cap screw.

NOTE: Slip oil dipstick tube brace over rear cap screw before installing.

3. Place compressor drive belts in position over compressor, generator, and crankshaft pulleys.
4. Connect heater return line to water pump. Secure heater tube clamp to compressor.
5. Connect flexible low-and high-pressure hoses to compressor. Use new copper seals.
6. Install oil filler cover and oil level indicator.
7. Replace two compressor to engine block mounting cap screws. Make sure wiring harness clip is placed on front cap screw before installing.
8. Install generator according to the following procedure:
 - a. Place in position in mounting bracket and install rear cap screw.
 - b. Install front cap screw with *spacer between generator and mounting bracket.*
 - c. Install Field, Arm and Ground wires.
 - d. Place drive belts in position on pulleys.
 - e. Adjust belt tension by pulling down on generator assembly and tightening generator mounting cap screws and generator bracket.
 - f. Replace radiator splash shield.
9. Purge the compressor of all air and moisture.
10. Turn the valve stems on both the condenser and the fender apron valves counterclockwise until back seated.
11. Install a new dehydrator assembly. See "Removal and Installation of Dehydrator Assembly."
12. Pressure test system. See "Pressure Testing System."
13. "Leak Test" System.
14. If bubbles or foaming can be seen in evaporator sight gauge with engine running on high idle, add a partial charge of refrigerant.
15. If there is no charge in system, Evacuate, Charge, and Leak Test.

LOW-PRESSURE VALVE

REMOVAL

1. Check system pressures. Leave pressure test gauge manifold attached.
2. If there is still a charge of refrigerant in system, pump it down into the receiver tank. See "Pump Down Procedure."
3. Loosen the fitting attaching the line from the evaporator to the fender apron valve and allow any refrigerant to bleed off. Disconnect and cap line and fitting.
4. Disconnect the fitting attaching the flexible hose from the compressor to the fender apron valve. Cap hose and fitting.
5. Remove two cap screws holding fender apron valve to fender apron. Remove valve assembly.

INSTALLATION

1. Place fender apron valve in position and attach to fender apron with two cap screws.
2. Remove caps and using new copper seal, attach flexible low-pressure hose running from compressor to fender apron valve.

3. Remove caps and using new copper seal, attach line running from evaporator to fender apron valve.
4. Remove valve stem protector cap, and check to make sure valve stem is turned full counterclockwise until back seated.
5. Install new dehydrator. See "Removal and Installation of Dehydrator Assembly".
6. If system was pumped down, evacuate and release pressure as follows:
 - a. Open receiver outlet valve.
 - b. When pressure neutralizes, open receiver inlet valve.
7. Pressure test the system.
8. Check for leaks.
9. If there was no charge in the system, Evacuate, Charge, and Leak Test the system.

10. Make sure both condenser and fender apron valve stems are turned counterclockwise until back seated. Remove manifold gauge hoses, cap hoses and service ports. Replace valve stem protector caps on condenser, fender apron and both receiver valves.

DEHYDRATOR ASSEMBLY

REMOVAL

1. Check system pressure.
2. If there is a charge of refrigerant in the system, pump it into the receiver tank. See "Pump Down Procedure".
3. Loosen connections at both ends of short tube running from receiver to dehydrator. Allow any charge remaining in the system to exhaust.
4. Disconnect short tube from dehydrator, cap line. Turn tube down out of the way and tighten receiver connection.
5. Loosen two bolts which are used to clamp dehydrator in dehydrator mounting bracket.
6. Disconnect dehydrator outlet fitting and cap line.

7. Remove dehydrator.

INSTALLATION

1. Place dehydrator in position in dehydrator mounting brackets. Make sure arrow showing direction of flow points toward rear of vehicle.
2. Remove caps from the outlet connection on dehydrator and also from tube leading to evaporator. Using a new copper seal, connect tube to fitting.
3. Loosen the fitting on the receiver end of the tube leading from receiver to dehydrator.
4. Remove the caps from the dehydrator inlet fitting, and the dehydrator end of short tube. Using new copper seal, connect tube to fitting.

5. Tighten connection on receiver end of short tube.
6. Tighten dehydrator bracket clamp screws.
7. If system was pumped down, evacuate and release pressure as follows:
 - a. Open receiver outlet valve.
 - b. When pressure neutralizes, open receiver inlet valve.
8. Pressure test system.
9. Check for leaks.
10. If there was no charge in the system, Evacuate, Charge, and Leak Test the System.

RECEIVER TANK WITH DEHYDRATOR

Any time the receiver tank is removed, it will be necessary to install a new dehydrator. For this reason it is recommended that the receiver and dehydrator be removed as a unit. The dehydrator may be replaced more easily when the unit is off.

REMOVAL

1. Clamp Pressure Test Gauge Manifold (Tool ACL-53-3) on radiator air deflector.
2. Remove valve stem protector caps on condenser and fender apron valve and make sure both stems are turned counterclockwise until back seated.
3. Remove caps from service ports on condenser and fender apron valve, and from high and low pressure gauge hoses. Attach high-pressure gauge hose to condenser valve service port, and low-pressure gauge hose to fender apron valve service port.
4. Make sure both valves on Pressure Test Gauge Manifold are turned clockwise until seated.
5. Turn both fender apron and condenser valve stems to their center position.
6. Turn both gauge valves counterclockwise about $\frac{1}{2}$ turn and release system pressure through the center hose.

CAUTION: *There will be a certain amount of oil discharged along with the refrigerant. Do not allow this oil to spray on painted surfaces.*

7. Turn the stems on the condenser and fender apron valve counterclockwise until back seated. Turn manifold gauge valves clockwise until seated. Replace cap on center hose.
8. Raise car and disconnect inlet line fitting to

receiver and outlet line fitting on dehydrator. Cap lines and fittings.

9. Remove cap screws securing receiver tank to frame. Remove receiver and dehydrator assembly.
10. To remove dehydrator:
 - a. Disconnect dehydrator inlet connection. Cap line.
 - b. Loosen dehydrator mounting clamps.
 - c. Remove and discard dehydrator.

INSTALLATION

1. Install dehydrator in dehydrator mounting clamps on receiver tank. Do not tighten mounting clamps.

NOTE: *Make sure that dehydrator is installed so that arrow, indicating direction of flow, points toward rear of receiver tank, (end with safety plug).*

2. Remove caps from inlet side of dehydrator and dehydrator inlet line. Using new copper seal, connect line to fitting.
3. Position receiver assembly mounting brackets over holes in frame and secure with cap screws.
4. Remove caps from receiver inlet fitting and inlet line. Using new copper seal, attach line to fitting.
5. Remove caps from dehydrator outlet fitting and outlet line. Using new copper seal, attach line to fitting.

6. Tighten dehydrator mounting clamps.
7. Check compressor oil level.
8. Lower car and Evacuate, Charge and Leak Test the system.
9. Turn valve stems on condenser valve and fender apron valve counterclockwise until back seated. Replace protector caps.
10. Disconnect manifold gauge hoses from service ports, cap hoses and ports.
11. Replace receiver valve stem protector caps.

EXPANSION VALVE

REMOVAL

1. Check system pressure.
2. If there is pressure in system, pump the gas into the receiver tank. See "Pump Down Procedure".
3. Remove the screws holding evaporator cover to evaporator frame. Lift cover from lower clips and remove.
4. Loosen line from sight gauge to expansion valve at sight gauge fitting and allow any pressure in system to bleed off. Disconnect and cap line and fitting.
5. Disconnect small equalizer line fitting.
6. Disconnect expansion valve manifold from expansion valve. Cap both fittings.
7. Remove screw holding small capillary tube clamp to expansion valve mounting bracket. Remove clips holding temperature bulb to evaporator core manifold.
8. Remove two screws and clamps holding expansion valve to mounting bracket. Remove valve. (See figure 7A-5.)
9. If a new valve is to be installed, it will be necessary to transfer short tube which runs from the expansion valve to the sight gauge. Use new copper seal when attaching line to new valve.

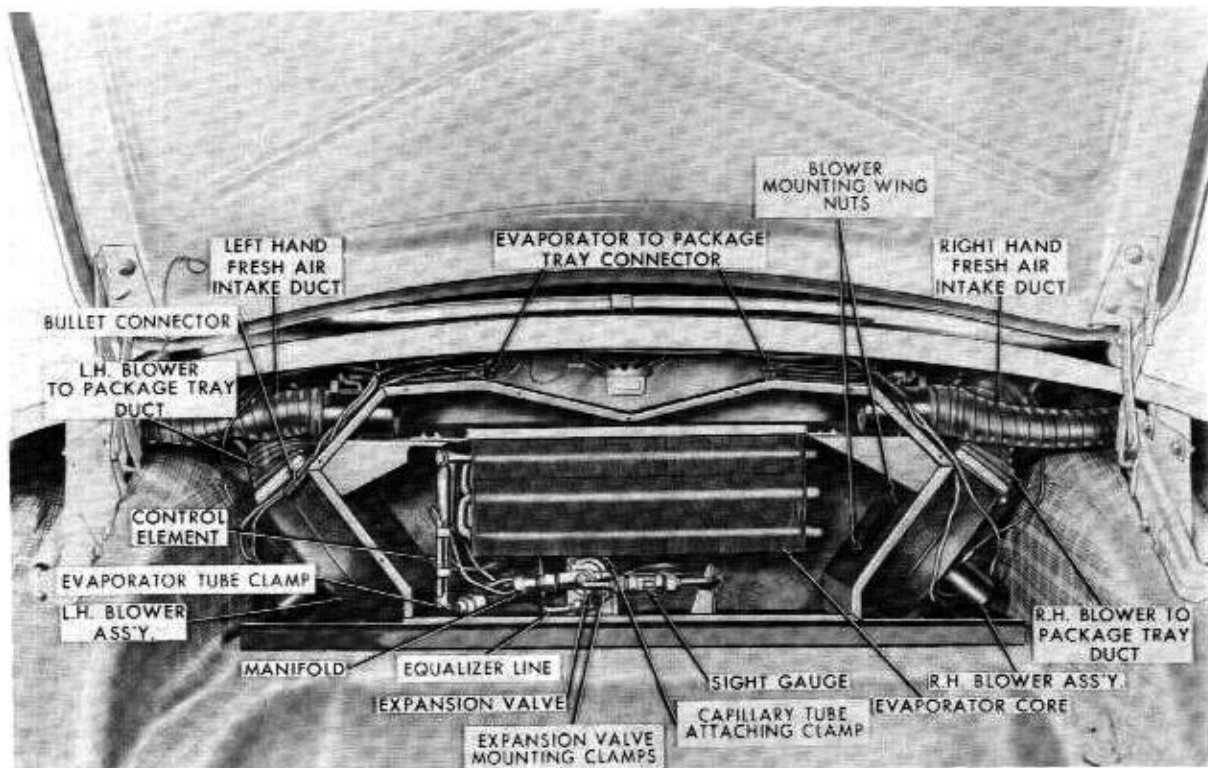


Fig. 7A-5—Overall View of Evaporator Assembly—(4L-737)

10. If it is necessary to remove Pressure Test Gauge Manifold, turn valve stems on both condenser and fender apron valves counterclockwise until back seated. Disconnect both gauge hoses from service ports. Cap hoses and ports. Replace condenser and fender apron valve stem protector caps.

INSTALLATION

If Pressure Test Gauge Manifold (Tool ACL-53-3) has been removed, install as follows.

1. Clamp manifold assembly to radiator air deflector.
2. Remove protector caps from valve stems on fender apron and condenser valve and turn both stems counterclockwise until back seated. Remove caps from service ports.
3. Attach high-pressure gauge hose to condenser valve service port and low-pressure gauge hose to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
4. Place expansion valve in position in expansion valve mounting bracket and secure with mounting clamps.
5. Attach capillary tube clip to expansion valve mounting bracket.
6. Clip temperature bulb to evaporator core tubing.
7. Remove caps from expansion valve fitting and short line running from sight gauge to expansion valve. Using a new copper seal, attach line to fitting.
8. Remove caps from expansion valve manifold and expansion valve fitting. Using new copper seal connect manifold to expansion valve.
9. Remove caps from small equalizer line and fitting on expansion valve. Using new seal, connect line to fitting. (See figure 7A-5).
10. Install a new dehydrator. See "Removal and Installation of Dehydrator Assembly"
11. If system was pumped down, evacuate and re-lease pumped down pressure by turning receiver outlet valve counterclockwise until seated. When system pressure equalize, open receiver inlet valve.
12. Test entire system for leaks.
13. If there was no system pressure, Evacuate, Charge, and Leak Test the system.
14. Install the evaporator cover to evaporator frame.
15. Turn valve stems on condenser and fender apron valves counterclockwise until back seated.
16. Remove Pressure Test Gauge Manifold, replace protector caps on condenser valve, fender apron valve and both valves on receiver. Cap the service ports and manifold hoses.

EVAPORATOR CORE

REMOVAL

1. Clamp Pressure Test Gauge Manifold (Tool ACL-53-3) to radiator air deflector.
2. Remove protector caps from valve stems and service ports on condenser valve and fender apron valve. Turn both valve stems counterclockwise until back seated before removing service port caps.
3. Attach high-pressure gauge hose to condenser valve service port and low-pressure gauge hose to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
4. Check system pressure by turning the valve stems on the condenser and fender apron valves to their center position.
5. If there is pressure in the system, pump the charge down. See "Pump Down Procedure."
6. Remove spare wheel.
7. Remove 9 sheet metal screws holding evaporator cover to evaporator housing. Lift up and remove cover.
8. Remove filter assembly.

9. Loosen fitting attaching small manifold to expansion valve and allow refrigerant left in system to bleed off.
10. Disconnect and cap manifold and expansion valve fitting.
11. Disconnect fitting attaching evaporator core tubing to low-pressure return line. Cap line and fitting.
12. Remove clips holding temperature bulb to evaporator core tubing, and clamp holding capillary tube to expansion valve mounting bracket. Move capillary tubing and temperature bulb down out of way.
13. Disconnect small equalizer line from expansion valve. Cap line and fitting.
14. Remove screw holding evaporator tube clamp to mounting bracket. (See figure 7A-5.)
15. Remove four bolts, nuts and lock washers attaching evaporator core to evaporator case. Remove core assembly by sliding it forward out of evaporator case.
16. If it is necessary to remove Pressure Test Gauge Manifold, turn fender apron and condenser valve stems counterclockwise until back seated. Disconnect both gauge hoses from service ports. Cap hoses and ports. Replace condenser and fender apron valve stem protector caps.
- to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
4. Slide evaporator core assembly into position on mounting brackets in evaporator case. Secure to brackets with four bolts, nuts and lockwashers.
5. Remove caps from small manifold assembly and expansion valve fitting. Using new copper seal connect manifold to valve fitting.
6. Remove caps from evaporator core tube fitting and low-pressure line. Using new copper seal, connect line to fitting.
7. Remove caps from small equalizer line and fitting on expansion valve. Using new copper seal, connect line to fitting.
8. Place evaporator core tube clamp in position on mounting bracket and secure with metal screw.
9. Clip temperature control bulb to evaporator core tube. (See figure 7A-5.)
10. Install filter assembly.
11. Replace dehydrator. See "Removal and Installation of Dehydrator Assembly".
12. If system was pumped down, evacuate and release pumped down pressure by turning receiver outlet valve counterclockwise until seated. When system pressure has neutralized turn receiver inlet valve counterclockwise until seated.

INSTALLATION

If Pressure Test Gauge Manifold (Tool ACL-53-3) has been removed, install as follows:

1. Clamp Manifold assembly to radiator air deflector.
2. Remove protector caps from valve stems on fender apron and condenser valve and turn both stems counterclockwise until back seated. Remove caps from service ports.
3. Attach high-pressure gauge hose to condenser valve service port and low-pressure gauge hose
13. Test the entire system for leaks.
14. If there was no system pressure, Evacuate, Charge, and Leak Test the system.
15. Turn valve stems on condenser valve and fender apron valve counterclockwise until back seated.
16. Remove Pressure Test Gauge Manifold, replace protector caps on condenser valve, fender apron valve and both valves on receiver. Cap service ports and manifold hoses.
17. Replace evaporator hoses and cover assembly.
18. Replace spare wheel assembly.

SIGHT GAUGE

REMOVAL

1. Clamp Pressure Test Gauge Manifold (Tool ACL-53-3) to radiator air deflector.
 2. Remove protector caps from valve stems and service ports on condenser valve and fender apron valve. Turn both valve stems counterclockwise until back seated before removing service port caps.
 3. Attach high-pressure gauge hose to condenser valve service port and low-pressure gauge hose to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
 4. Check system pressure by turning the valve stems on the condenser and fender apron valves to their center position.
 5. If there is pressure in the system pump the charge down. See "Pump Down Procedure".
 6. Remove spare wheel.
 7. Remove 9 sheet metal screws holding evaporator cover to evaporator housing. Lift cover up out of clips and remove.
 8. Loosen sight gauge inlet fitting and allow refrigerant left in system to bleed off.
 9. Disconnect inlet line from sight gauge. Cap line and fitting.
 10. Disconnect sight gauge from short outlet line running to expansion valve. Cap line and fitting. (See figure 7A-5.)
 11. If it is necessary to remove Pressure Test Gauge Manifold, turn valve stems on both condenser and fender apron valves counterclockwise until back seated. Disconnect both gauge hoses from service ports cap hoses and ports. Replace condenser and fender apron valve stem protector caps.
1. Clamp manifold assembly to radiator air deflector.
 2. Remove protector caps from condenser and fender apron valve stems and turn both stems counterclockwise until back seated.
 3. Attach high-pressure gauge hose to condenser valve service port and low-pressure gauge hose to fender apron valve service port. Make sure both valves on gauge manifold are turned clockwise until seated.
 4. Remove caps from one fitting on sight gauge, and from short tube leading to expansion valve. Using new copper seal, connect gauge to tube.
 5. Remove cap from other end of sight gauge, and from inlet line. Using new copper seal, connect line to fitting.
- NOTE: *Make sure glass is positioned so that it may be seen through window in evaporator cover.*
6. Install new dehydrator assembly. See "Removal and Installation of Dehydrator Assembly".
 7. If system was pumped down, evacuate and release pumped down pressure by turning receiver outlet valve counterclockwise until seated. When system pressure has neutralized, turn receiver inlet valve counterclockwise until seated.
 8. Check for leaks.
 9. If there was no system pressure, Evacuate, Charge, and Leak Test the system.
 10. Turn valve stems on condenser and fender apron valves counterclockwise until back seated.
 11. Remove Pressure Test Gauge Manifold, replace protector caps on condenser valve, fender apron valve, and both valves on receiver tank. Cap service ports and manifold hoses.

INSTALLATION

If Pressure Test Gauge Manifold (Tool ACL-53-3) has been removed, install as follows:

12. Place evaporator cover in position secure with 9 sheet metal screws.
13. Replace spare wheel.

FILTER

The air drawn into the evaporator unit by the blowers must first pass through an air filter. This filter is a permanent type which may be washed in clear cold water and reused.

1. Remove spare wheel.
2. Remove 9 sheet metal screws holding evaporator cover to evaporator case. Lift cover free of clips and remove.
3. Slide filter assembly out of frame on top of evaporator core.
4. To replace, reverse removal procedure.

BLOWER ASSEMBLIES

1. Remove spare wheel.
2. Remove the 9 sheet metal screws holding evaporator cover to evaporator housing. Lift cover up out of bottom clips and remove.
3. Loosen clamp holding flexible outlet duct to blower housing.
4. Remove sheet metal screws holding black ground wire to body panel.
5. Disconnect remaining wires from blower motor at bullet connection.
6. Remove four attaching wing nuts, and remove blower assembly.
7. To install, reverse removal procedures.

DISASSEMBLY AND ASSEMBLY

1. Remove 5 sheet metal screws holding blower motor mounting plate to blower housing assembly. Remove plate with motor and blower wheel attached.
 2. Loosen allen screw holding wheel to motor shaft. Remove blower wheel.
 3. Remove two nuts holding mounting plate to motor assembly. Remove mounting plate.
 4. To assembly, reverse disassembly procedure.
- NOTE: When assembling, make sure the two black ground wires are mounted under one of the blower mounting plate attaching screws.*

OUTSIDE AIR INTAKE SCOOP AND DUCT

1. If right-hand scoop and duct assembly is to be removed, remove spare wheel.
2. Remove 9 sheet metal screws holding evaporator cover to evaporator case. Lift cover up out of clips and remove.
3. Remove two screws, one on each end, holding flexible duct running from fresh air intake flue to evaporator case. Remove flexible duct.
4. Remove four nuts and washers holding outside air scoop and duct to rear quarter panel. Remove scoop, screen and scoop seal from the outside of quarter panel. Remove duct with flue attached from the inside of quarter panel.
5. To install, reverse removal procedure.

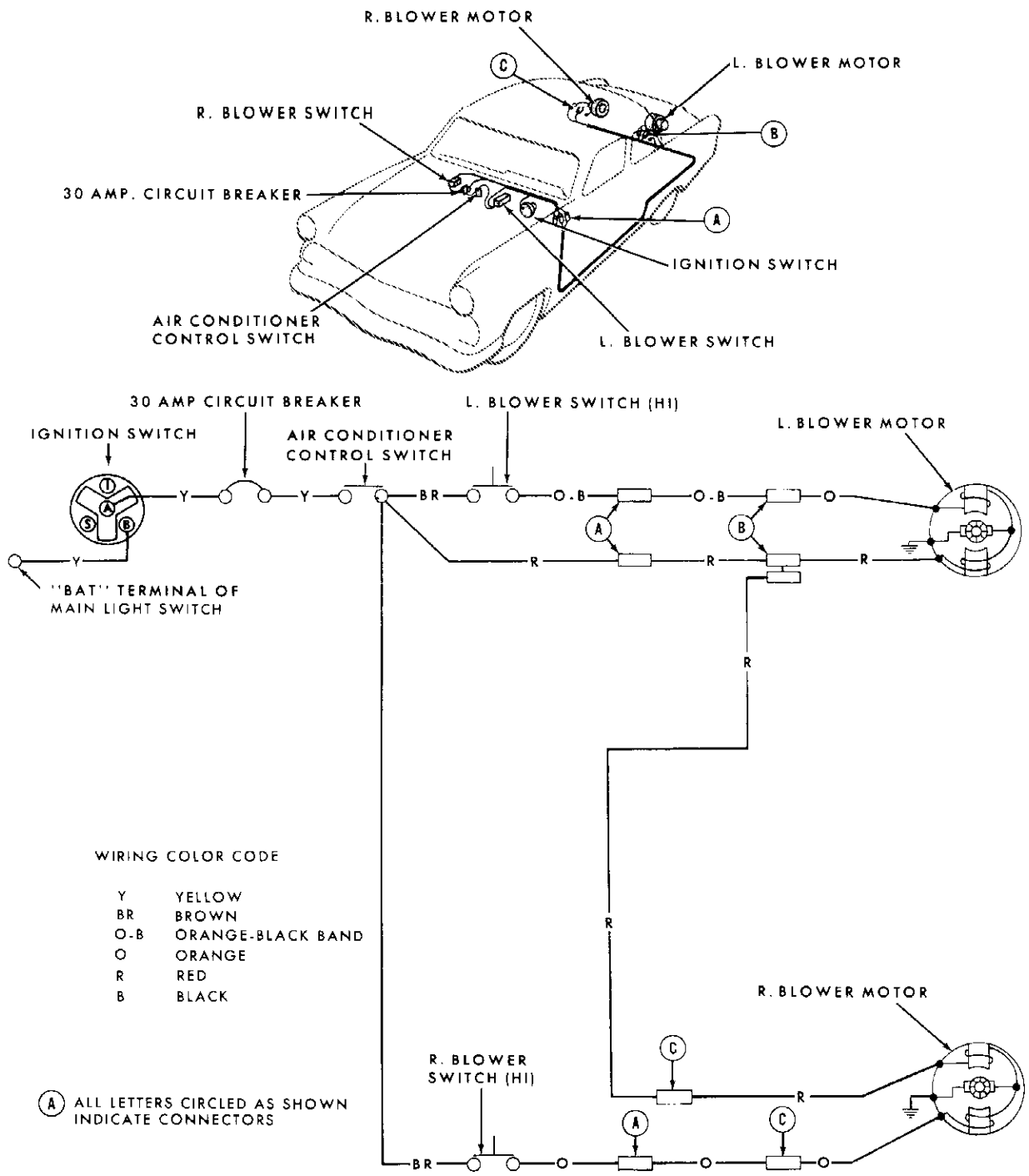


Fig. 7A-6—Wiring Diagram—1955 Lincoln—(61LT-8807)

B-1956 LINCOLN

The Air Conditioning System, installed in the 1956 Lincoln, is similar to the 1955 installation with changes and improvements as follows:

TWELVE (12) VOLT ELECTRICAL COMPONENTS USED IN THE SYSTEM

All electrical components of the air conditioning system are designed for 12 volt operation such as blower motors, circuit breaker, compressor clutch windings, etc.

RECEIVER-DEHYDRATOR

The dehydrator assembly, formerly located in the line adjacent to the receiver tank, is now constructed as an internal part of the receiver tank assembly. (See figure 7B-1). Dehydrator replacement will require removal and replacement of the complete receiver-dehydrator assembly.

Dehydrator replacement usually accompanies pump down and repair of any air conditioning system. On 1956 Lincoln models, which incorporate a combination receiver-dehydrator tank assembly, replacement of the dehydrator necessitates replacing the complete receiver-dehydrator tank assembly, thus preventing the use of a pump down procedure and eliminating the need for a shut-off valve on each end of the receiver tank. For any procedure which

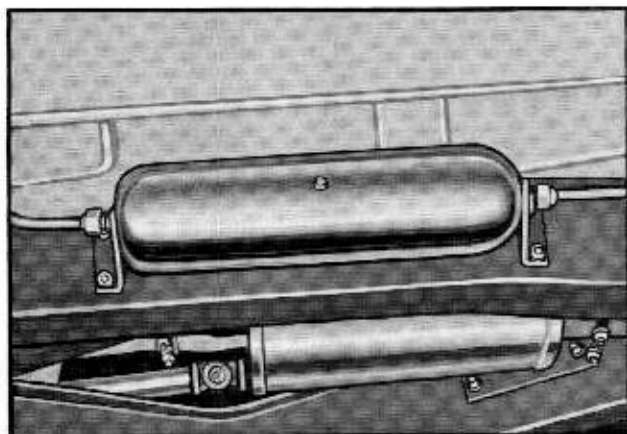


Fig. 7B-1—Receiver Dehydrator Assembly—
(61LT-8808)

called for pump down, it will be necessary to release the entire charge instead. Use $6\frac{1}{2}$ lbs. of Freon to charge the system.

MAGNETIC CLUTCH

The 1956 Lincoln air conditioning compressor incorporates a drive pulley with an electrically

operated clutch for compressor shutdown rather than the disconnect pulley used on 1955 Lincoln.

(See figure 7B-2). The control circuit energizes the clutch to operate the compressor whenever the air conditioning system is turned "ON." With the air conditioning turned "OFF," the clutch sheaves free wheel on the hub, allowing the compressor to remain idle.

The compressor has a tapered shaft to accept the electrically operated clutch assembly. (See figure 7B-3). For this reason the 1956 Lincoln compressor is not interchangeable with the 1955 service compressor. The component parts of these compressors are alike, however, and existing service kits and procedures apply to each component except the drive pulley.

Proper operation of the clutch assembly may be easily checked because its operation can be seen and heard. When the clutch feed wire is energized, the front face of the clutch assembly snaps rearward and seats tightly against the sheaves.

Clutch failure is usually caused by poor contact between the brushes (See figure 7B-3) and sliprings (See figure 7B-2). This assembly can be removed with the compressor mounted on the car by removing the special locking capscrew and its special washer from the end of the compressor crankshaft (See figure 7B-4) and jarring the clutch assembly loose from the tapered compressor shaft.

The brushes are serviced as a brush holder assembly (See figure 7B-5) and its bracket is attached to the compressor front bearing housing with two No. 8-32 screws and lockwashers.

The sliprings are an integral part of the clutch assembly (See figure 7B-2). If the sliprings have become grooved or pitted they may be polished as needed provided the bearing is protected by tape or other positive means to prevent entry of dust or dirt. If the sliprings are damaged severely, the entire clutch assembly must be replaced.

When installing the clutch assembly, extreme care must be taken to assure that it is properly aligned on the tapered compressor shaft and that its retaining bolt is tightened as much as possible before the drive belts are installed. If an attempt is made to first install the belts and then install and tighten

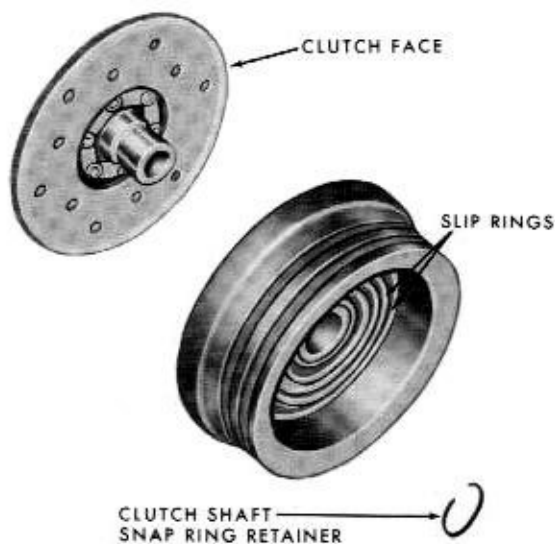


Fig. 7B-2—Electrically Operated Clutch—(61LT-8809)

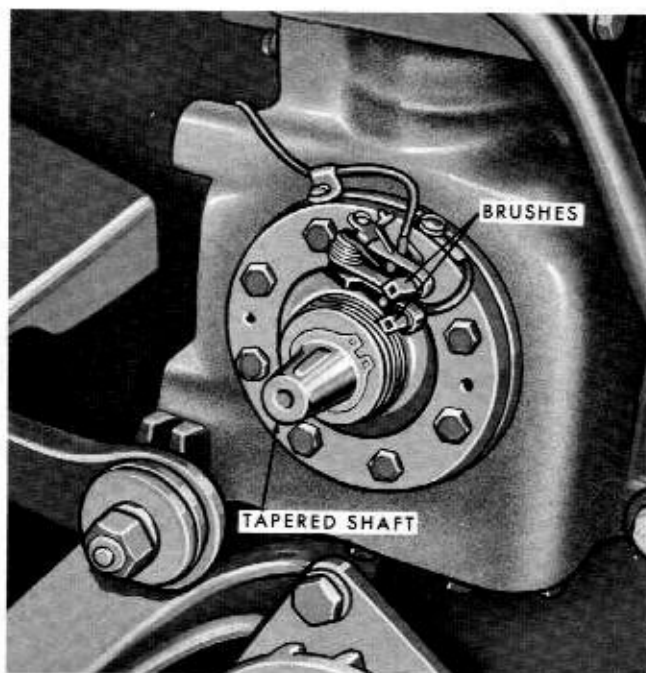


Fig. 7B-3—Compressor Assembly, Clutch Removed—(61LT-8810)

the clutch assembly, the side thrust imposed by the belts will prevent proper seating of the clutch hub on the tapered shaft and result in a failed clutch, with the clutch hub slipping within the inner race of its integral ball bearing. The clutch hub is a loose slip fit to its ball bearing and is dependent upon the uniform expansion of the hub when it is drawn onto the tapered shaft to provide the proper operation fit.

Following is the recommended sequence for installing the clutch assembly:

1. Assure that the brush holder assembly is properly installed. Place the clutch assembly on the compressor shaft and start the locking capscrew and washer to hold the clutch assembly in place.
2. Connect the feed wire and energize the clutch to prevent free wheeling.
3. Tighten the locking capscrew as much as possible while holding the clutch assembly to prevent turning. Since this is a special self-locking capscrew with a nylon insert in the threads, it will offer some resistance to turning.
4. Install the compressor drive belts to aid in preventing compressor rotation, and tighten the locking capscrew to 18-22 lbs. ft.

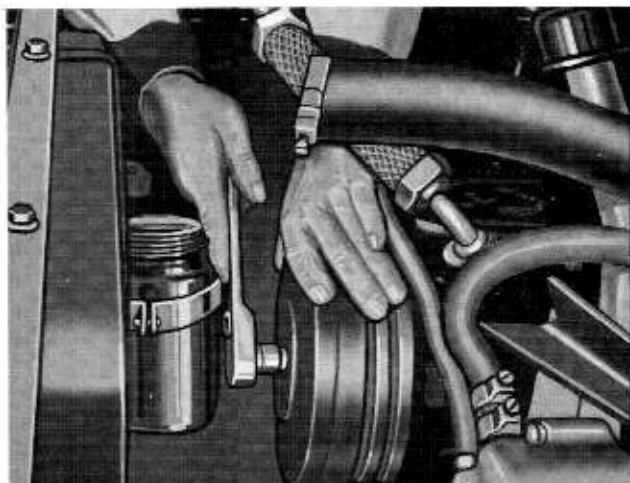


Fig. 7B-4—Removing the Locking Cap Screw and Washer—(61LT-8811)

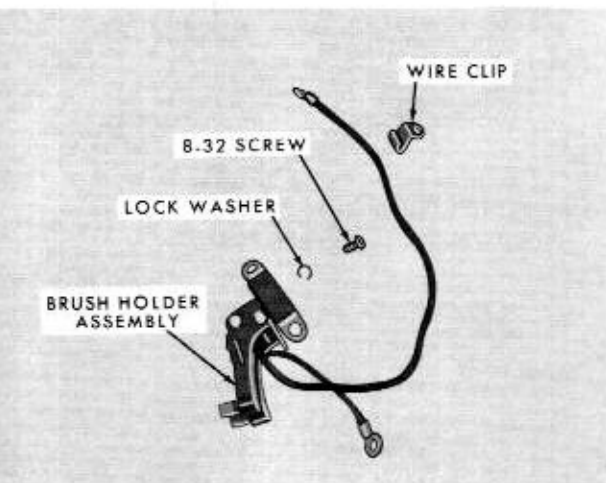


Fig. 7B-5—Brush Holder Assembly—(61LT-8812)

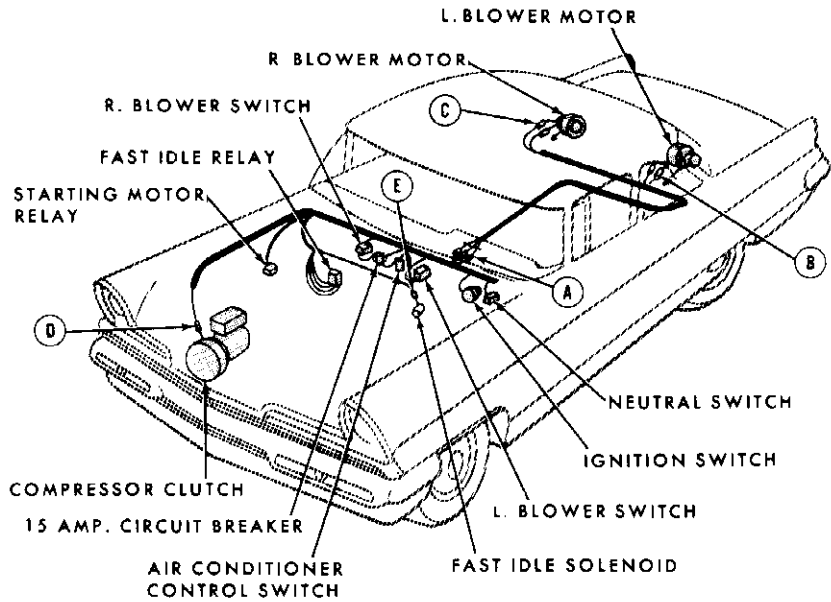
GENERAL INFORMATION

Internal components of the compressor assembly remain unchanged over the 1955 compressor.

It is possible to isolate the oil separator, compressor and flexible high and low pressure lines from the rest of the system by turning the condenser and fender apron valves all the way in until they seat, thus, when servicing these assemblies it will not be necessary to release the charge.

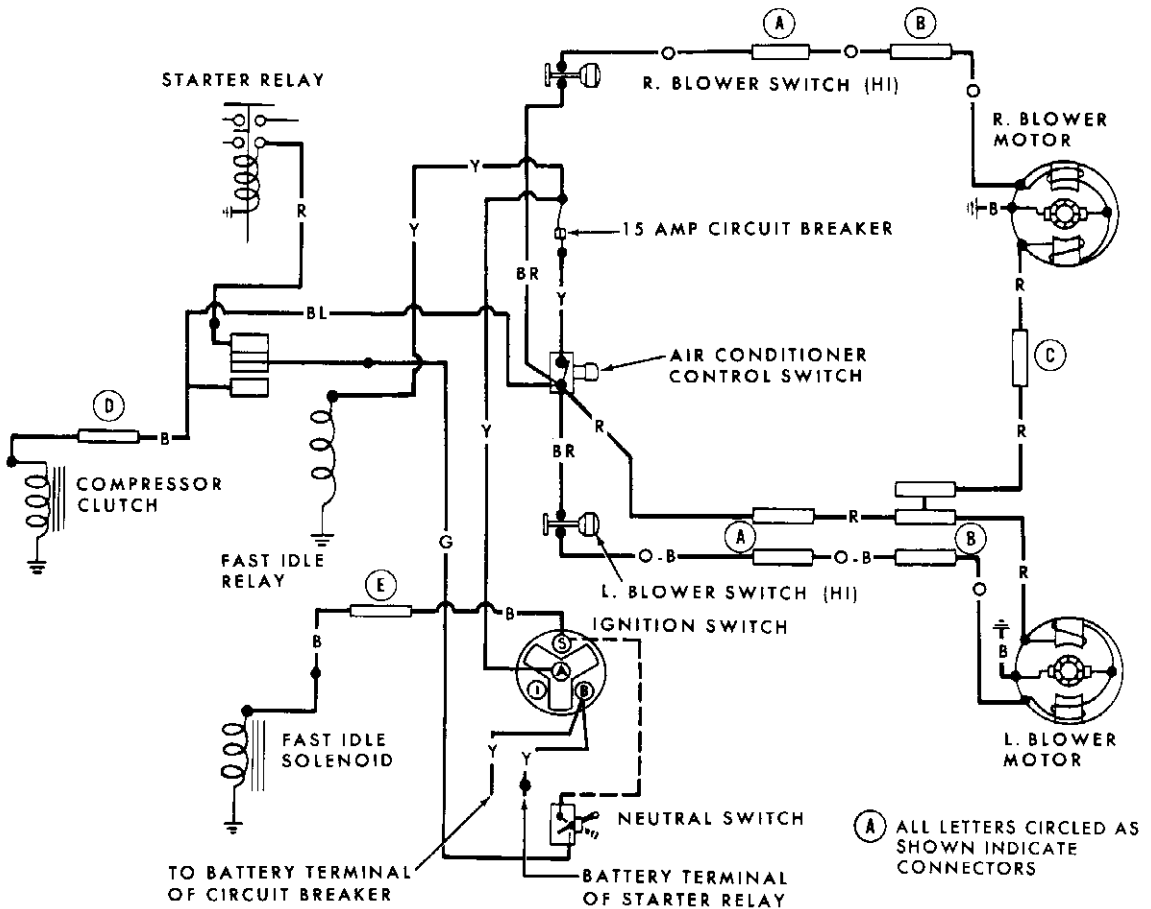
After servicing, it is merely necessary to "purge" the serviced part, then open both valves fully to restore the system to use. To purge, loosen the line fitting furthest away from the fender apron valve on the assembly being serviced. Open the fender apron valve and allow gas to escape for a few seconds. Tighten the fitting.

The expansion valve in the evaporator is soldered into the line for more positive connection. It is possible to service the assembly; however, all soldered joints should be thoroughly tested for leaks after installation.



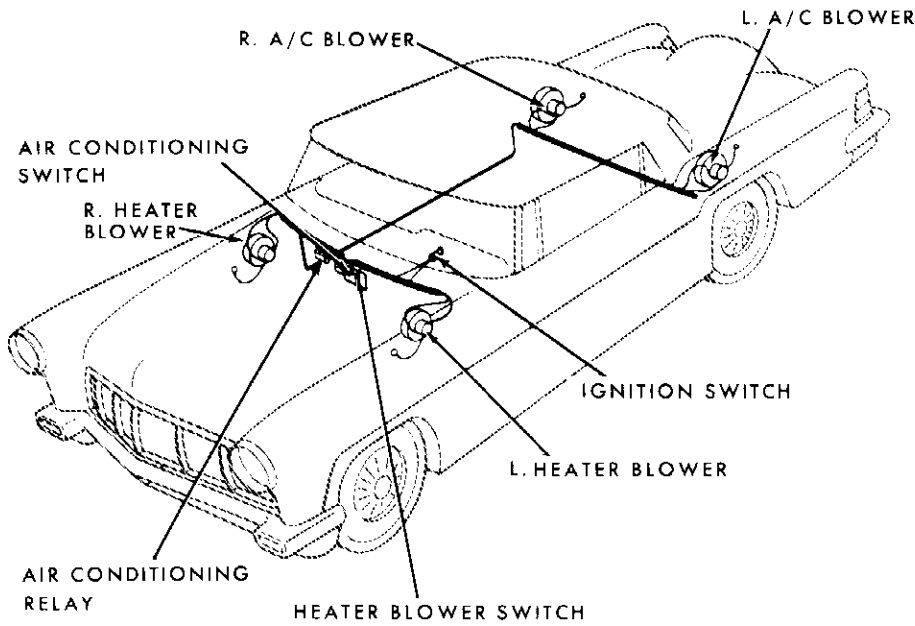
WIRING COLOR CODE

B	BLACK
BR	BROWN
BL	BLUE
G	GREEN
O	ORANGE
O-B	ORANGE-BLACK BAND
R	RED
Y	YELLOW



(A) ALL LETTERS CIRCLED AS SHOWN INDICATE CONNECTORS

Fig. 7B-6—Air Conditioning Wiring Diagram—1956 Lincoln—(61LT-8813)



WIRING COLOR CODE

- B-O BLACK-ORANGE BAND
- BR BROWN
- O ORANGE
- O-B ORANGE-BLACK BAND
- O-G ORANGE -GREEN BAND
- R RED
- R-B RED-BLACK BAND
- R-BL RED-BLUE BAND
- W-R WHITE- RED BAND
- Y YELLOW
- Y-B YELLOW-BLACK BAND

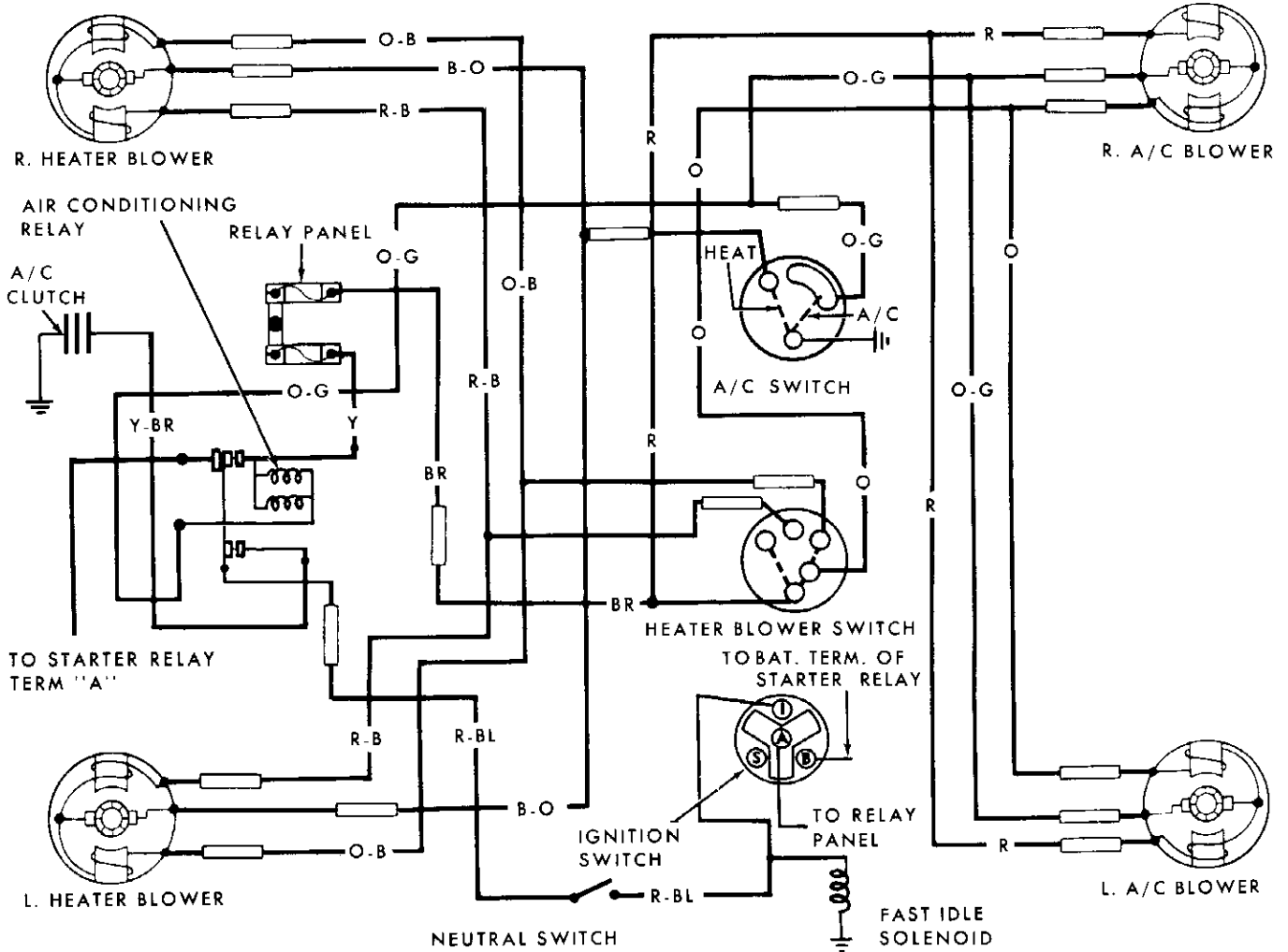


Fig. 7B-7-Heater and Air Conditioning Wiring Diagram-Continental Mark II-(61LT-8814)

C-1957 LINCOLN

The Air Conditioning System, as installed in the 1957 Lincoln, is similar to the 1956 installation with changes as follows:

TEMPERATURE CONTROL SYSTEM

A different temperature control system is used for the 1957 Lincoln Air Conditioning System. The modulator valve is no longer used. To control the car interior temperature, the compressor clutch is cycled on and off. When the clutch electro-magnet is energized, the clutch engages and couples the compressor to the engine.

When the clutch magnet is not energized, the clutch is disengaged and the compressor pulley turns freely on ball bearings without driving the

compressor.

The magnetic clutch control is accomplished through the use of a control switch on the instrument panel, a thermostatic control switch and an icing switch. See figure 7C-1.

The thermostatic control switch is mounted to the evaporator and blower housing with its sensing unit mounted in the return air stream of the left package tray air inlet. This thermostat is adjustable by positioning the instrument panel control.

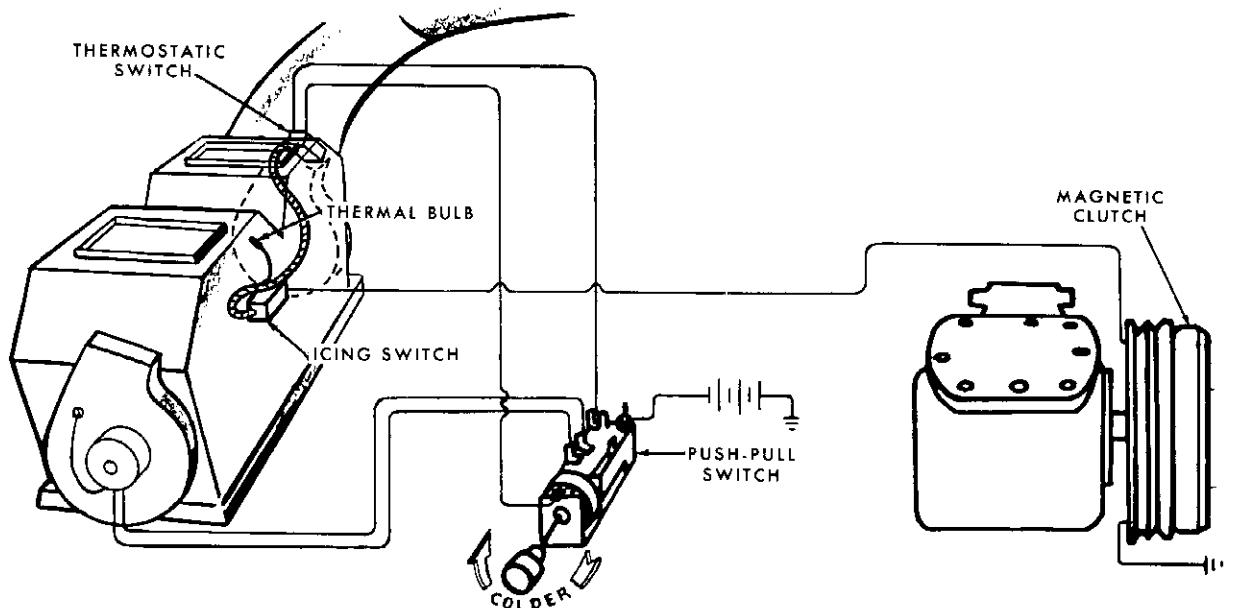


Fig. 7C-1—Temperature Control System—(61LT-8815)

When the temperature of the air in the return air duct becomes lower than the setting of the switch, the switch opens the magnetic clutch electrical circuit, disengaging the compressor. When the temperature in the return air duct rises to the upper limit at which the switch is positioned, the switch closes and energizes the magnetic clutch. This engages the compressor with the engine and starts the cooling action again.

The icing switch is mounted to the left side of the evaporator and blower housing with its capillary tube positioned in the evaporator fins. The

purpose of the icing switch is to prevent formation of ice in the evaporator core. The icing switch is wired in series with the compressor clutch (See figure 7C-1). When the evaporator fin temperature decreases to a point where ice could form, the icing switch will open the clutch circuit until the fin temperature rises to a predetermined valve.

The system is controlled from a single knob on the instrument panel. Rotating the knob from the OFF position puts the system in operation on low blower speed. Pulling the knob out one notch operates the system on high blower speed.

REMOVAL AND INSTALLATION COMPRESSOR AND SERVICE VALVES

A four (4) cylinder "V" type compressor is used in the 1957 Lincoln air conditioning system. (See figure 7C-2). This compressor is equipped with an internal oil separator and a positive displacement oil pump which provides lubrication to all moving parts and the oil seal cavity. Also, due to the compressors internal design, a self-contained sound baffle is available, thus eliminating the need for an exterior muffler. The high and low pressure service valves are mounted to the compressor assembly. These valves were formerly mounted to the fender apron and condenser. (See Figure 7C-2.)

REMOVAL

1. Close both the high and low pressure valves and carefully loosen the high pressure service cap on the high pressure valve to relieve the pressure.
2. Remove the two cap screws securing each service valve to the compressor. Remove the screen and gasket from the low pressure valve and the gasket from the high pressure valve.
3. Disconnect the clutch feed wire at the bullet connector.
4. Loosen the four bolts securing the compressor to the mounting bracket and remove the drive belt from the compressor pulley.
5. Remove four bolts, nuts, lockwashers, and eight flat washers securing the compressor to mounting bracket.

6. Remove the compressor from the vehicle.

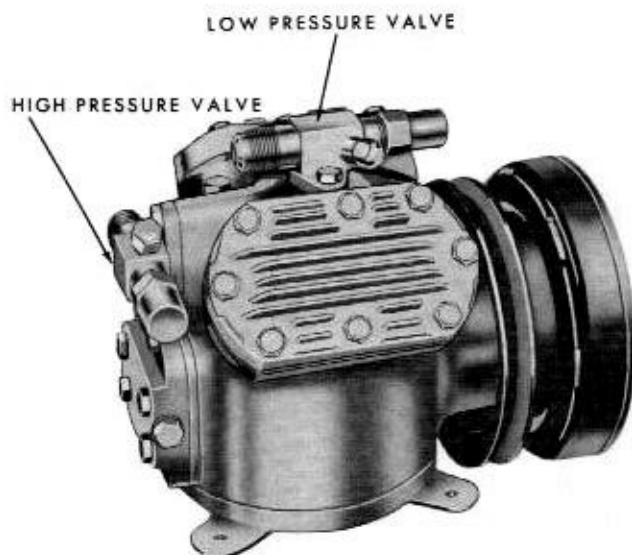


Fig. 7C-2—Lincoln 4 Cylinder A/C Compressor
(61LT-8816)

INSTALLATION

1. Place the compressor on the mounting bracket and secure with four mounting bolts, lockwashers, nuts, and eight flat washers. Tighten the nuts finger tight.

NOTE: *Check the compressor oil level before installing the compressor in the car.*

2. Install the drive belt and adjust tension. Tighten the compressor mounting bolts to 22-28 lbs. ft.
3. Connect the clutch feed wire at the bullet connector.
4. Install the low pressure valve screen and the service valves, tighten to 10-13 lbs. ft. Use new gaskets on the service valves.
5. Purge the compressor. Refer to "Purging the Compressor" in Section II.
6. Open the service valves (back seated). Start the engine and operate the air conditioning at maximum cooling for fifteen minutes.
7. Check the sight gauge for bubbles with the system operating at maximum cooling. If bubbles appear, partially charge system.
8. Stop the engine and check for leaks and compressor oil level.

CARBURETOR FAST IDLE CONTROL

The carburetor fast idle control, installed on some 1957 air conditioned Lincolns, is an accessory which provides better engine cooling, more efficient air conditioning and adequate generator output during prolonged periods of engine idling.

The carburetor fast idle control, operates by vacuum and is electrically controlled. A toggle switch, mounted to the left and approximately 5 inches below the ash receiver on the instrument panel, controls current to actuate a solenoid on the control assembly. With the switch on, vacuum is allowed to act on a diaphragm, pulling the shaft of the control assembly up, engaging the carburetor linkage.

If properly adjusted and with the fast idle control switch in the "ON" position, the engine will idle at 800 RPM when the transmission selector lever is in the "NEUTRAL" position.

Fast Idle Control Adjustment:

The fast idle control adjustment should be made with the transmission selector lever in the "NEUTRAL" position and the fast idle control switch in the "ON" position.

1. Loosen the lock nut on the control assembly shaft. (See figure 7C-3).
2. Adjust the knurled nut on the control assembly shaft until an engine idle speed of 800 RPM is

obtained.

3. Tighten the lock nut securely to prevent the knurled adjusting nut from coming loose.

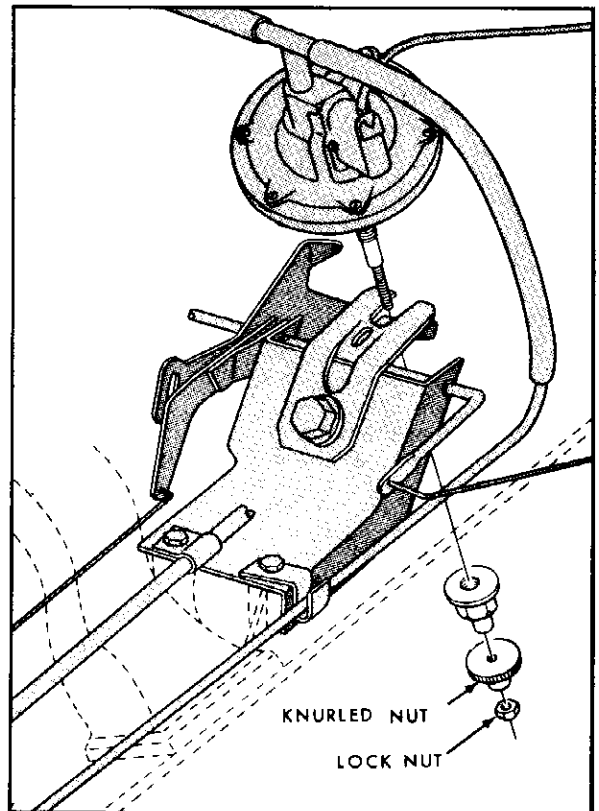


Fig. 7C-3—Carburetor Fast Idle Control—(61LT-8817)

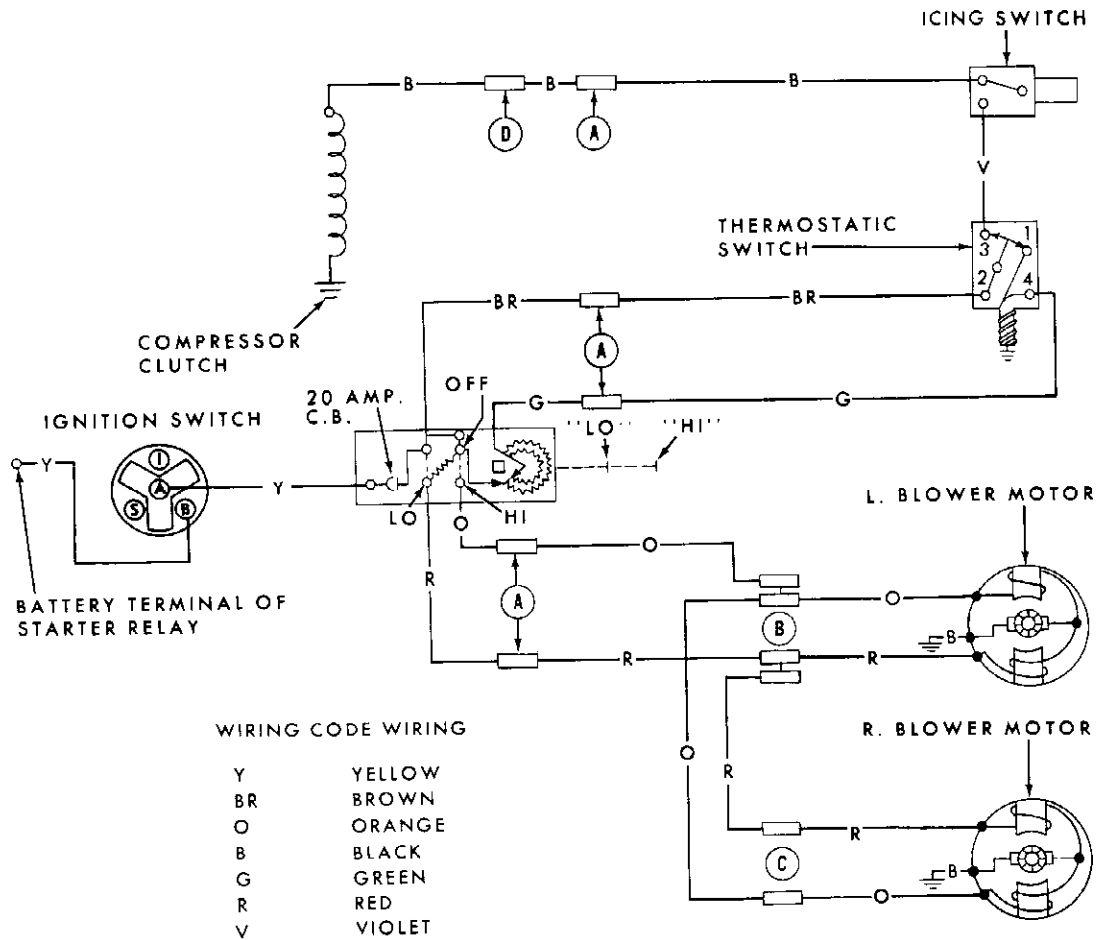
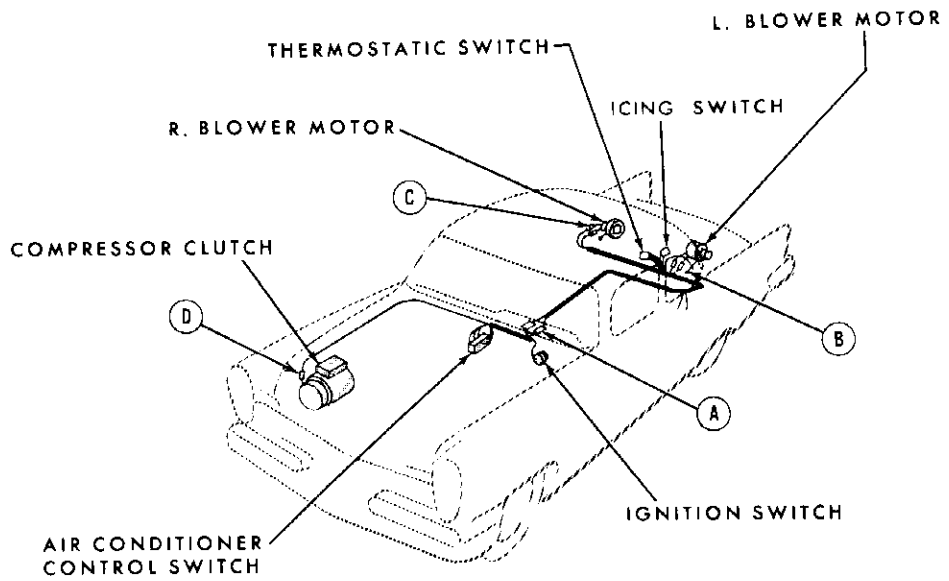


Fig. 7C-4—Air Conditioner Wiring Diagram—1957 Lincoln—(61LT-8818)

D-1957 MERCURY

The Air Conditioning system is a front mounted unit, with all of the major components of the system, except the evaporator, contained in the engine compartment. (See figure 7D-1.) The evaporator unit is installed on the rear side of the firewall under the right side of the instrument panel. A valve (damper) and ductwork on the under side of the evaporator unit allow air to be directed either through the evaporator core for air conditioning, or through the heater core for heating. The selection of heating or air conditioning is at the discretion of the driver. A blower, common to both systems, provides either fresh air or recirculated air, depending on whether heat or air conditioning is desired.

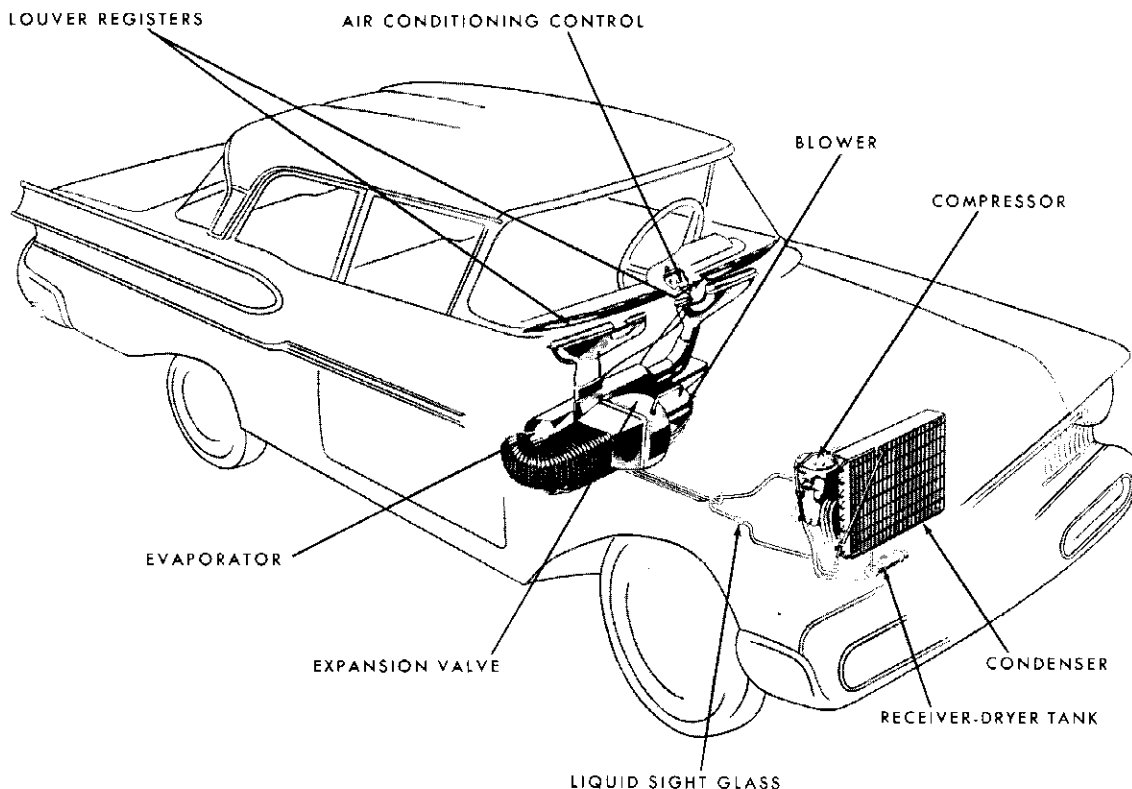


Fig. 7D-1—Air Conditioner Installed—1957 Mercury—(61MT-8824)

REMOVAL AND INSTALLATION

EVAPORATOR

REMOVAL

Perform the following operations inside the car.

1. Remove the ash tray.
2. Remove the radio speaker grille and speaker.

3. Remove the clock.
4. Remove the radio.
5. Tape the ends of all loose wires.
6. Disconnect all Bowden cables (not at the instrument panel).
7. Remove the right defroster duct hose from the outlet on top of the evaporator case. Remove the defroster duct hose from the outlet on the left side of the evaporator case.

NOTE: On early production models, a metal duct was used instead of a rubber duct hose at the left side of the evaporator case. It may be necessary to remove the right radio support bracket to remove the screw securing the duct to the evaporator case.

Perform the following operations in the engine compartment of the car:

1. Discharge the air conditioning system.
2. Remove the blower motor and blower duct from the car, as an assembly, in the following manner:
 - a. Disconnect the blower motor wires and the two flexible ducts connected to the blower.
 - b. Remove two hex head sheet metal screws securing the blower baffle plate to the blower duct. The baffle plate and screws are located on the underside of the blower, above and adjacent to the heater core water hose connections.
 - c. Remove two blower duct-to-dash retaining nuts located on the left side of blower and one retaining nut located under the rubber blower-to-dash fresh air duct.
 - d. Separate the blower assembly from the dash and disconnect the blower damper Bowden wire cable control. Remove the blower duct assembly.
3. Drain the engine coolant from the radiator.
4. Disconnect the heater hose at the firewall.
5. Disconnect the air conditioner lines at the firewall and cap both lines and the fittings at the evaporator.
6. Remove the baffle plate securing the heater

lines in the firewall.

7. Remove one hex head nut and lockwasher from the stud adjacent to the evaporator connections. This will allow the evaporator unit to be removed from the passenger compartment side of the firewall.

Perform the following operations inside the car:

1. Disconnect the wires from the thermostatic switch on top of the evaporator unit.
2. Remove the retainer screw from the bracket at the left end of the plenum chamber.
3. Detach the plenum chamber from the bottom of the evaporator unit and remove the plenum chamber from the car.
4. Pull the evaporator unit away from the firewall; then, lift it out of the car. Be careful not to damage the drain hose which is attached to the bottom of the evaporator unit and which must be pulled from the floor pan as the unit is removed.

INSTALLATION

Install the evaporator-heater unit and blower assembly in the reverse order of the removal procedure. To be sure that heater-air conditioner functions satisfactorily after assembly. The following operations should be performed where they apply, at the time of assembly.

1. After installation of the evaporator assembly, be sure that the damper channel seals extend beyond the firewall sufficiently to mate with the mounting surface of the blower motor duct assembly.
2. Seal around the evaporator lines, at the opening in the firewall, after the fittings are tightened. Body caulking compound may be used.
3. Be sure the evaporator drain hose is open at the bottom.
4. Carefully adjust all Bowden cables so that they operate freely and with sufficient travel to assure positive operation. In some cases, it may be necessary to bend the cable retaining bracket to align the Bowden cable with the control.

5. Pay particular attention to the adjustment of the Bowden cable which operates the thermostatic switch on top of the evaporator assembly. This cable must be adjusted so that with the air conditioner control lever in the "off" position, the thermostatic switch is also in the full "off" position.
6. Inspect the control assemblies at the instrument panel to be sure they are operating freely with no binds or restrictions. Be sure the control levers are not sprung or bent due to previous hard operation.

EXPANSION VALVE

The expansion valve can be removed with the evaporator either in or out of the car. If the evaporator is out of the car, the removal is very simple. The procedure given here is for removing the expansion valve with the evaporator in the car.

1. Discharge the air conditioning system.
2. Disconnect the high and low pressure lines at the firewall and cap both lines and the fittings on the evaporator unit.
3. Remove the plenum chamber.
4. Disconnect the bowden cable from the crank at the lower left side of the evaporator unit.
5. Remove the side shield covering the expansion valve from the left side of the evaporator.
6. The fittings securing the expansion valve to the evaporator unit can now be loosened. The expansion valve is replaced in the reverse order of removal. Be sure that the side shield is properly sealed when it is installed. Thoroughly leak test the unit before charging.

THERMOSTATIC SWITCH

The thermostatic switch can be replaced with the evaporator unit in the car. It is necessary to remove the radio speaker grille and the radio speaker to gain access to the switch. Care should be taken to be sure that the switch cable is adjusted properly when the new switch is installed. The capillary sensing bulb must be carefully inserted in the evaporator core to be sure it makes positive contact with the fins. If possible, insert it so that it does not go into the same hole from which it was removed. Be sure that it goes into the core at least two inches and is placed at least one inch from any side.

COMPRESSOR

1. Isolate the compressor. Raise the car on a hoist or on jacks.
2. From underneath the car, remove the generator adjusting bracket bolt. Loosen the two generator to compressor mounting bolts. Swing the generator inward and disengage the two belts from the generator and compressor pulleys.
3. Disconnect three leads from the generator; remove the two generator mounting bolts and remove the generator from the car. Remove the compressor to cylinder block bolt and the compressor to lower bracket bolt.
4. Lower the car and complete the operation in the engine compartment. Disconnect the magnetic clutch wire at the bullet connector. Disconnect the low pressure service valve and the discharge hose from the compressor.
5. Remove two compressor mounting bolts. Loosen the angle bracket bolt and remove the compressor from the engine.
6. With the compressor on the work bench, remove the clutch mounting screw and washer and remove the clutch from the shaft (use a wheel puller if necessary). Remove the key from the shaft.

7. Remove the retaining bolt and the "S" shaped bracket from the compressor. Invert the compressor and remove the twelve retaining bolts, compressor adapter plate, and gasket. Scrape the old gasket from the adapter plate.
8. Remove the shipping base and screws from the replacement compressor. Position the new gasket and install the adapter plate with the twelve retaining screws.
9. Carefully remove any burrs or dirt that may be on the new compressor shaft; then, install the key in the shaft.
10. Force the clutch on the shaft with the bolt and large washer by screwing the bolt into the center of the shaft. Torque to 18-22 lbs. ft. Install the "S" shaped bracket to the compressor.

If the new compressor was shipped with a bolt and washer in the end of the crankshaft, remove and discard the bolt and use a bolt with a nylon

insert in it.

11. Position the new compressor to the engine block and install the two compressor mounting bolts. Tighten the mounting bolts and the angle bracket bolt.
12. Raise the car on a hoist of jacks and install the compressor to cylinder block bolt and the compressor to lower bracket bolt. Connect the three leads to the generator and install the generator. Install the generator adjusting bracket bolt but do not tighten it. Engage the two belts with the generator pulley and compressor clutch and adjust the belt tension. Tighten the generator adjusting bracket bolt; then, tighten the two generator to compressor mounting bolts.
13. Lower the car and connect the low pressure service valve and the discharge hose to the compressor, using new gasket.
14. Check for leaks, purge the compressor and connecting hose and cut it back into the system.

CONDENSER

1. Discharge the air conditioning system.
2. Remove the hood.
3. Remove the grille to radiator bracket center support.
4. Disconnect the lines between the condenser and compressor and between the condenser and the receiver-dryer. Cap both lines immediately.
5. Remove four bolts securing the condenser to the radiator bracket and remove the condenser from the car.
6. Replace the condenser in the reverse order of removal.

RECEIVER-DRYER

1. Discharge the air conditioning system.
2. Disconnect the line from the condenser to the receiver and the line from the receiver to the expansion valve, at the receiver. Immediately cap both lines.
3. Carefully inspect both lines over their entire length to be sure there are no kinks or dents. If replacement is required, it should be done when the receiver is being replaced.
4. Remove four nuts securing the receiver-dryer to the front splash pan and take the receiver from under the car.
5. Replace the receiver-dryer in the reverse order of removal. Be sure all fittings are tightened securely.

CAUTION: Always wear goggles when working on the air conditioning system. This is especially important if the car is on a hoist so that the receiver-dryer is above eye level.

HEATER CORE

Late production models have heater cores that can be removed simply by removing the four screws in the bottom of the evaporator unit with the unit in the car. However, it is necessary to remove the plenum chamber first.

On early production units, the heater core is removed as follows:

1. Discharge the air conditioning system.
 2. Remove the evaporator unit from the car.
 3. After the evaporator is removed from the car, it is necessary to separate the evaporator upper case and coils from the lower case and side pan, in order to remove the heater core. To do this, proceed as follows:
 - a. Remove fifteen hex head sheet metal screws located around the base of the undercoated upper case.
 - b. Remove seven hex head sheet metal screws securing the side pan to the lower case and remove the side pan.
 - c. Remove four hex head sheet metal screws on each side of the lower case.
 - d. The upper case, complete with evaporator coils, expansion valve, and connections can then be removed from the lower case by lifting the assembly upwards and to the side to disengage the expansion valve from its retaining clamp.
 - e. Remove the damper hinge shaft clip and the hinge shaft and damper valve.
 - f. Remove ten hex head sheet metal screws securing the heater case and damper channel assembly to the underside of the lower case.
 - g. Insert a thin blade putty knife between the top of the damper channel and the top surface of the lower case. Tap the blade to each side of the damper channel to allow the forward edge of the damper channel to clear the mounting flange of the lower case.
4. After the damper channel is removed from the lower duct, the heater core can be lifted out.
 5. Replace the heater core and assemble the lower duct and evaporator upper case in the reverse order of disassembly.

NOTE: It will be necessary to seal all joints and around all screw holes when the unit is assembled.

BLOWER AND MOTOR

The blower motor and blower can be removed with the blower housing in the car. Remove the motor cooling hose. Disconnect the blower motor wires at the bullet connectors. Remove the seven screws in the blower motor housing and pull the blower and the motor from the housing. The sirocco cage is secured to the motor shaft with an allen screw.

ADJUSTMENT CABLE CONTROL

Figure 7D-2 shows the cable lengths, identification, and application. The heater control on the instrument panel operates the blower motor damper and the heater water control valve, located on the front of the plenum chamber. The cable to the blower motor damper should be adjusted so that, with the heater control lever in the full "off" position, the damper is positioned to shut-off the air intake through the cowl register. The cable to the water control valve should be adjusted to that, when the heater control lever is moved to the full "off" position, the vacuum valve is in the full "off" (lever on the side of the valve in the up position) position just as the control closes the blower motor damper.

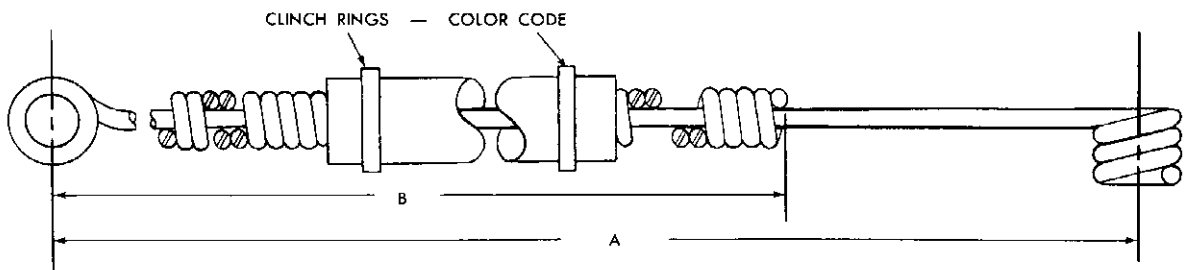
The air conditioner control on the instrument panel operates the thermostatic switch and damper inside the evaporator lower duct. The damper actuating crank is on the left side of the evaporator lower duct assembly. When the crank is moved away from the passenger

compartment toward the firewall, the damper is positioned so that air is directed downward through the heater core. With the damper in this position, the air conditioner control lever is in the full "off" position. When the air conditioner control lever is moved toward the "Max" cooling position, the first 1/2 to 3/4 inch of travel causes the damper to be positioned so that air is directed upward through the evaporator core. The balance of the control lever travel is for adjusting the degree of cooling desired by positioning the thermostatic switch.

The thermostatic switch is located on top of the evaporator case to the right of the outlet of the right louver register. It is necessary to remove the radio speaker grille and speaker in order to adjust the Bowden cable at the switch. The switch cable should be adjusted so that the switch lever is in the full "off" position when the air conditioner control lever is in the full "off" position. You can tell when the thermostatic switch is "off" by listening for the click that is made as the switch lever is moved to the left (toward the centerline of the car). The cable should be adjusted so that the switch lever has full travel from the "off" position to the "Max" cooling position.

If full control lever travel is not possible, it may be due to the cable housing extending too far through the cable retaining bracket on the control plate behind the instrument panel. If this occurs, it will be necessary to loosen the cable retaining bracket screw and position the end of the cable housing flush with the edge of the cable retaining bracket. The cable can then be adjusted to operate properly.

If a control lever is sprung or bent, it should be replaced. Once the lever is bent, the geometry of the control assembly is disturbed and hard operation may result or full range operation of the control involved might not be possible.



FUNCTION	PART NAME	DIMENSION "A"	DIMENSION "B"	COLOR CODE	MODEL APPLICATION
OPERATES AIR COND. TEMPERATURE SWITCH	CONTROL ASSEMBLY-AIR COND. TEMP.	35.38	33.12	GREEN	ALL CARS
OPERATES AIR COND. OR HEATER DAMPER	CONTROL ASSEMBLY-AIR COND. AND HEATER AIR	27.05	25.25	ORANGE	ALL CARS
OPERATES BLOWER DAMPER	CONTROL ASSEMBLY-HEATER AIR	55.25	53.25	YELLOW	ALL CARS
OPERATES HEAT OR DEFROST DAMPER	CONTROL ASSEMBLY-HEATER DEFROSTER	30.62	28.25	BLUE	ALL EXCEPT 65 AND 75
OPERATES HEATER TEMPERATURE SWITCH	CONTROL ASSEMBLY-HEATER TEMP.	46.75	44.50	RED	ALL CARS
OPERATES HEAT OR DEFROST DAMPER	CONTROL ASSEMBLY-HEATER DEFROSTER	35.00	32.62	BLUE	65 AND 75

Fig. 7D-2-Control Cable Identification

