VENTILATING, HEATING AND ACCESSORIES — GROUP 16

PART 16-1 VENTILATING SYSTEM AND HEATER

1 DESCRIPTION AND OPERATION—VENTILATING SYSTEM

FRESH AIR VENTS

Two levers are mounted near the centerline of the instrument panel on the underside of the ledge.

The right lever controls the right fresh air door in the heater assembly.

With the lever in the forward position, fresh air is routed through the heater assembly.

With the lever in the rearward position, fresh air enters the car through the fresh air outlet.

The left lever actuates the left ventilation door located in the ventilation duct to the left of the steering column.

With the lever in the forward position, the door is closed.

With the lever in the rearward position, the door is open and fresh air enters the passenger compartment.

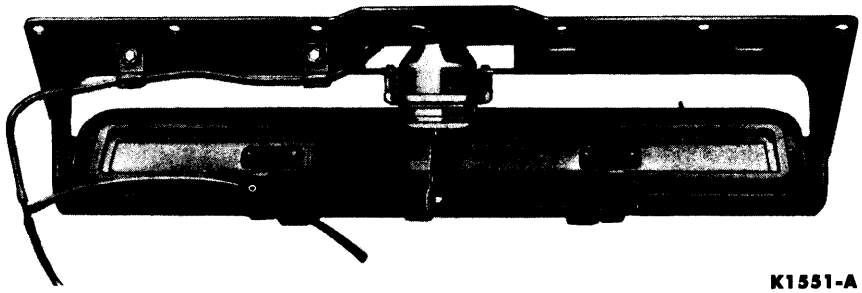

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FIG. 1—Rear Vent in Open Position

REAR VENT

The rear vent (Fig. 1) on the hardtop models is opened and closed by a vacuum control switch on the console. Operation of the switch allows quiet, window-up driving in warm weather under all climatic conditions while speeding ventilation and smoke removal. The rear vent is also valuable in rear window defogging.

2 DESCRIPTION AND OPERATION—HEATING SYSTEM WITHOUT AIR CONDITIONING

Refer to Wiring Diagram Manual Form 7795P-65 for schematics and locations of wiring harnesses.

For the heating system used with air conditioning refer to Part 16-2.

The heater used when air conditioning is not installed is a by-pass air control heater. Fresh air enters the heater from the cowl air inlet into the fresh air inlet chamber of the heater through and/or around the heater core, into the mixing chamber and into the plenum chamber to the discharge air outlets or defroster outlets (Fig. 2).

Air temperature is controlled by the lower horizontal lever on the control assembly located in the console below the radio. Movement of the lever through its range from MIN to MAX actuates the tempera-

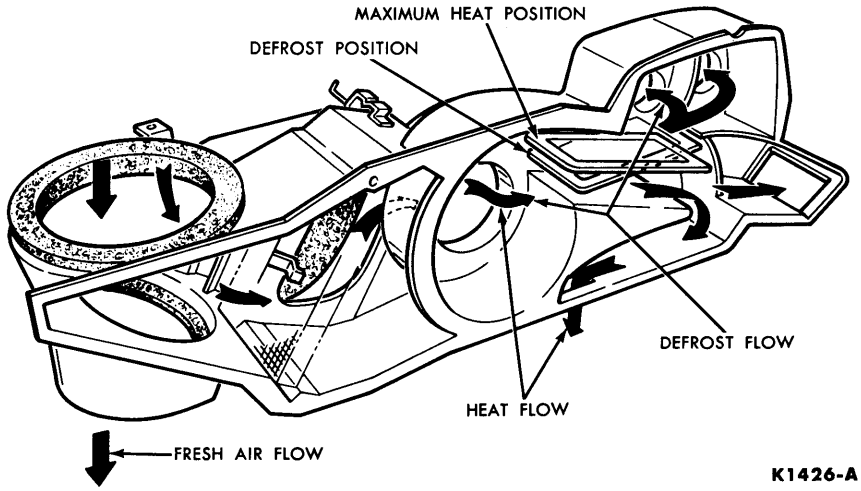

FIG. 2—Heater Air Distribution

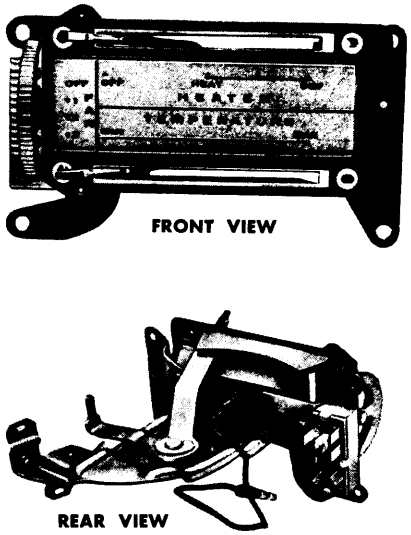

FIG. 3—Heater Control Assembly

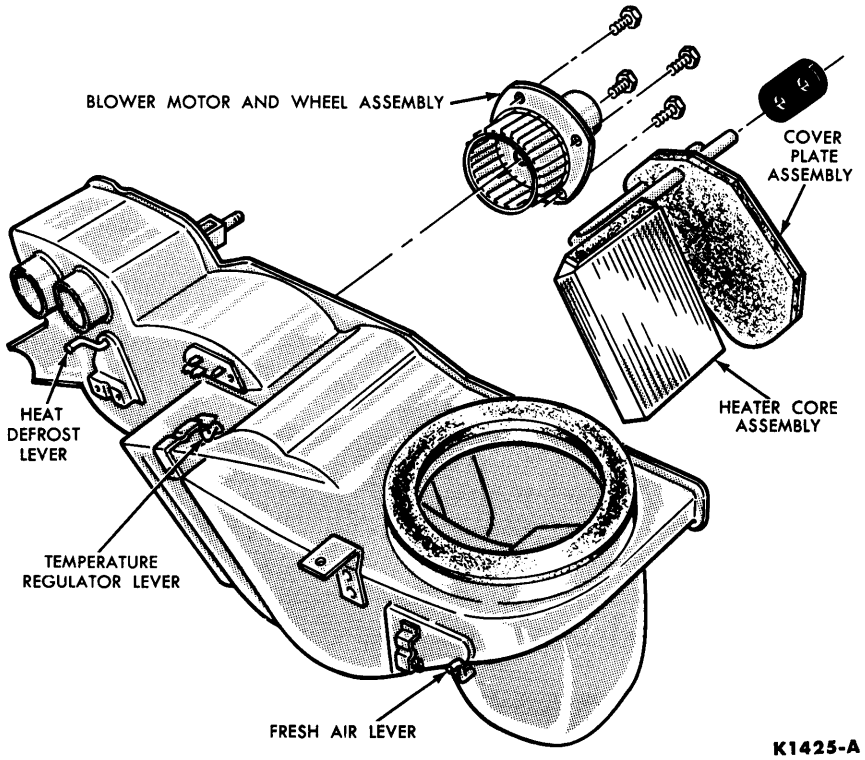

FIG. 4—Heater Components

ture regulator door within the heater assembly (Fig. 3).

With the control set on MIN, the temperature regulator door restricts air flow through the heater core.

With the control set on MAX, the door restricts air flow through the core by-pass chamber.

With the control set in any position between MIN and MAX, fresh cold air is mixed with heated air from the core, pulled in through the blower housing and discharged through the heater air outlets or defroster outlets.

The upper horizontal lever on the control assembly actuates the heat-defrost door in the heater plenum chamber and may be modulated between the two positions. With the lever in the OFF position, the door is closed (Fig. 4).

The blower motor is operated by a three-position toggle switch with a serrated vertical lever located to the left of the horizontal levers on the control asembly.

3 DIAGNOSIS AND TESTING

VENTILATING AND HEATING DIAGNOSIS GUIDE

INSUFFICIENT OR NO HEAT	1. Burned out fuse or loose wires to the heater blower. 2. Defective motor ground. 3. Fan loose on motor shaft or motor stalled. 4. Defective heater blower switch. 5. Defective blower motor. 6. A kinked, clogged, or collapsed water hose.	7. Improperly connected heater hoses. 8. Plugged heater core. 9. Improperly installed engine thermostat. 10. Incorrectly installed and adjusted control cables on cable controlled heater. 11. Air leaks in the ventilation system.

CONTINUED ON NEXT PAGE

VENTILATING AND HEATING DIAGNOSIS GUIDE (Continued)

INSUFFICIENT OR NO DEFROSTING	1. Improperly adjusted defroster control cable or air duct doors. 2. Disconnected defroster hose. 3. Binding defroster door(s).	4. Plugged or loose defroster nozzle. 5. Obstructed defroster openings at windshield.
TOO MUCH HEAT	1. Improperly operating water control valve on valve controlled heater.	2. Malfunctioning thermostat.

TESTING

Refer to Wiring Diagram Manual Form 7795P-65 for schematics and locations of wiring harnesses.

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

HEATER CURRENT DRAW TEST

This test will determine if the blower motor is defective. Connect a 0-50 ammeter as shown in Fig 5. The blower motor will operate independently of the control switch, and the current drawn by the motor will be indicated on the ammeter. Current draw should be to specifications.

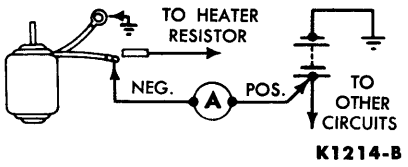

FIG. 5—Heater Motor Current Draw Test

LOOSE MOTOR FAN

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

BLOWER SWITCH

Substitute a known good blower switch for the suspected switch.

PLUGGED HEATER CORE

Start the engine and temporarily remove the outlet hose from the heater core (the hose that leads to the water pump). Very little or no flow of water from the core outlet indicates that the core is plugged. Make certain that water is being supplied to the core inlet.

4 COMMON ADJUSTMENTS AND REPAIRS—VENTILATING SYSTEM

RIGHT AND LEFT VENT CABLES

The right and left fresh air vent cables are adjusted at the control lever by removing the clock housing assembly, although they are not pre-set at the vent doors, and adjustment is possible at the vent doors.

Place each control lever in the forward position. Adjust the Bowden cables so that the vent doors are closed (maximum clockwise position of the right fresh air lever Fig. 4, and maximum counterclockwise position of the left fresh air lever).

REAR VENT SYSTEM

There is an adjustable valve in the vacuum supply line near the switch. To increase bleed-time (time for the vent to operate), turn the adjusting screw clockwise. To decrease bleed-time, turn the adjusting screw counterclockwise.

One-half turn changes the bleed time approximately five seconds. Normal bleed-time is 70 seconds, if the engine vacuum is cut off. The valve is delicate and only a minimum amount of adjustment is recommended.

5 COMMON ADJUSTMENTS AND REPAIRS—HEATING SYSTEM WITHOUT AIR CONDITIONING

The heat-defrost and temperature regulator Bowden cables are pre-set at the heater levers. Bowden cable adjustment can be made at the control head assembly through the access hole on the right side of the console.

HEAT-DEFROST DOOR

Place the heater control (upper lever Fig. 3) in the OFF position. Adjust the Bowden cable at the control head so that the heat-defrost lever (Fig. 4), is in the maximum counterclockwise position.

TEMPERATURE REGULATOR DOOR

Place the temperature control lever (Fig. 3), at the MAX position. Adjust the Bowden cable at the control head so that the temperature regulator lever (Fig. 4) is in the maximum counterclockwise position.

BLEEDING AIR FROM HEATER CORE

Remove the hose at the outlet connection of the heater core (hose that leads to the water pump). Allow any trapped air to flow out. When a continuous flow of coolant is obtained, connect the hose to the core.

HEATER HOSE REPLACEMENT

To replace a heater hose, drain the coolant, remove the hose, cut a

new hose to the same length as the old hose, install the hose, and replace the coolant. **Make certain that the water hose connection to the block (or manifold) goes to the water valve and not the heater core. Also that the heater hoses can not come in contact with any part of the exhaust system.**

After the coolant has been replaced, bleed the air from the heater core.

6 REMOVAL AND INSTALLATION

HEATER ASSEMBLY—WITHOUT AIR CONDITIONING

REMOVAL

1. Partially drain the cooling system.
2. Disconnect the hoses from the heater core (Figs. 6 and 7).
3. Remove the lower instrument panel.
4. Remove the right hand trim panel from the console.
5. Disconnect the defroster hoses at the heater.
6. Disconnect the Bowden control cables from the heater control head and from the fresh air door on the heater. Disconnect the wiring.
7. From under the hood, remove the four nuts which hold the heater to the dash.
8. Remove the rear support screw near the fresh air intake.
9. Ease the heater to the floor of the car.
10. Remove the heater from the car. Do not allow coolant to drip on carpet or trim.

INSTALLATION

1. Position the heater assembly on the floor of the car.
2. Carefully position the heater assembly to the dash.
3. Install the rear support screw.
4. From under the hood, assemble the nuts to the four mounting studs which hold the heater to the dash.
5. Connect the Bowden control cables at the heater control head and at the fresh air door on the heater.
6. Adjust the control cables at the control head.
7. Connect the defroster hoses.
8. Install the right hand trim panel on the console.
9. Install the lower instrument panel.
10. Connect the heater hoses to the heater core.
11. Refill the cooling system, bleed the system at the upper heater core pipe connection, and add coolant to the correct level.
12. Check for leaks, and check the heater operation.

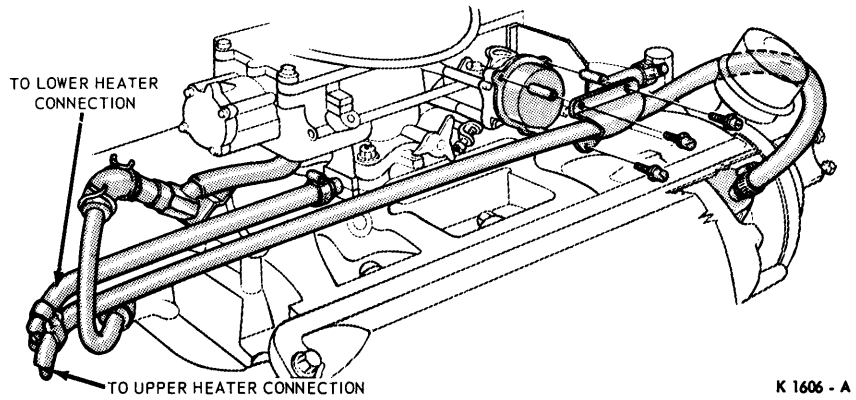

FIG. 6—Heater Hose Connections—Side View

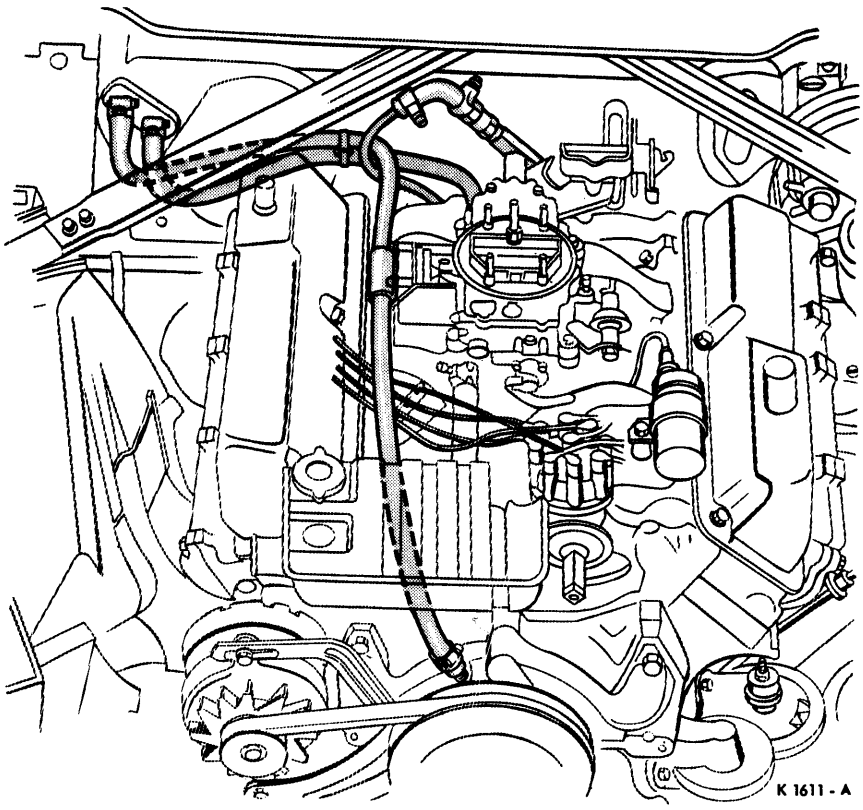

FIG. 7—Heater Hose Connections—Top View

HEATER CORE

Remove the heater assembly, the access plate, and the heater core. Install the core in the heater assembly, install the access plate, then install the heater assembly.

BLOWER MOTOR AND WHEEL ASSEMBLY

The blower motor and wheel assembly can be serviced from the engine compartment. Disconnect the wiring. Remove the mounting screws,

then remove the blower motor and wheel assembly.

The blower motor resistor is located on the front face of the heater.

BLOWER SWITCH

Disconnect the battery ground cable, then remove the finish panel and the control panel. One screw mounts the switch to the control.

HEATER BLOWER RESISTOR

Remove the snap-off mouldings from the right side of the instrument panel, remove the right lower instrument panel, then from below, disconnect the resistor wire. Remove the resistor retaining screws and remove the resistor from the plenum chamber.

CONTROL ASSEMBLY

1. Remove the radio knobs and the control bezel.
2. Remove the heater control knobs.
3. Remove 6 retaining screws, disconnect the wires at the top switch and position the console finish panel to one side.
4. Remove 4 retaining screws and position the heater control panel out. Disconnect the lights and wires.
5. Remove the chrome moulding from the right side of the console. Remove 12 screws from the right side of the console. Remove the side panel.
6. Remove the screws retaining the heat-defroster and temperature Bowden cables. Remove the control assembly.
7. Position the new heater control assembly to the mounting area. Install the temperature and heat-defroster Bowden cables. Plug in the switch connector, light wire and ground.
8. Position the heater control assembly in the console and install the 4 retaining screws. Adjust both cables.
9. Install the console side panel with 12 retaining screws. Install the top chrome moulding on the console.
10. Install the side console moulding. Position the console finish panel, connect the top switch and install the 6 retaining screws.

PART 16-2 AIR CONDITIONING

1 DESCRIPTION AND OPERATION

Refer to Wiring Diagram Manual Form 7795P-65 for schematics and locations of wiring harnesses.

The heater-air conditioner, a combined system, incorporates two control levers. The upper lever controls the air duct doors for fresh air, heated air defrosting, cooled recirculated air and cooled fresh air.

The cooled air can be either recirculated or fresh.

The bottom lever controls both heating and cooling temperatures. A blower switch gives three speeds for low, medium, and high volumes of air for heating, cooling, and defrosting (Fig. 1).

The components of the cooling system are shown in Fig. 2.

RECEIVER UNIT

The air cooling system stores the liquid Refrigerant-12 under pressure in a combination receiver and dehydrator (Fig. 2). The pressure in the receiver normally varies from about 80 to 300 psi, depending on the surrounding air temperature and compressor speed. The receiver and condenser comes charged and marked with the total weight, so that any leak, indicated by a loss in weight, can be detected before assembly.

The dehydrator serves the purpose of removing any traces of moisture that may have accumulated in the system. Even small amounts of moisture will cause an air cooling unit to malfunction. A fusible plug is screwed into the receiver. This will release the refrigerant before the refrigerant temperature exceeds 212° F.

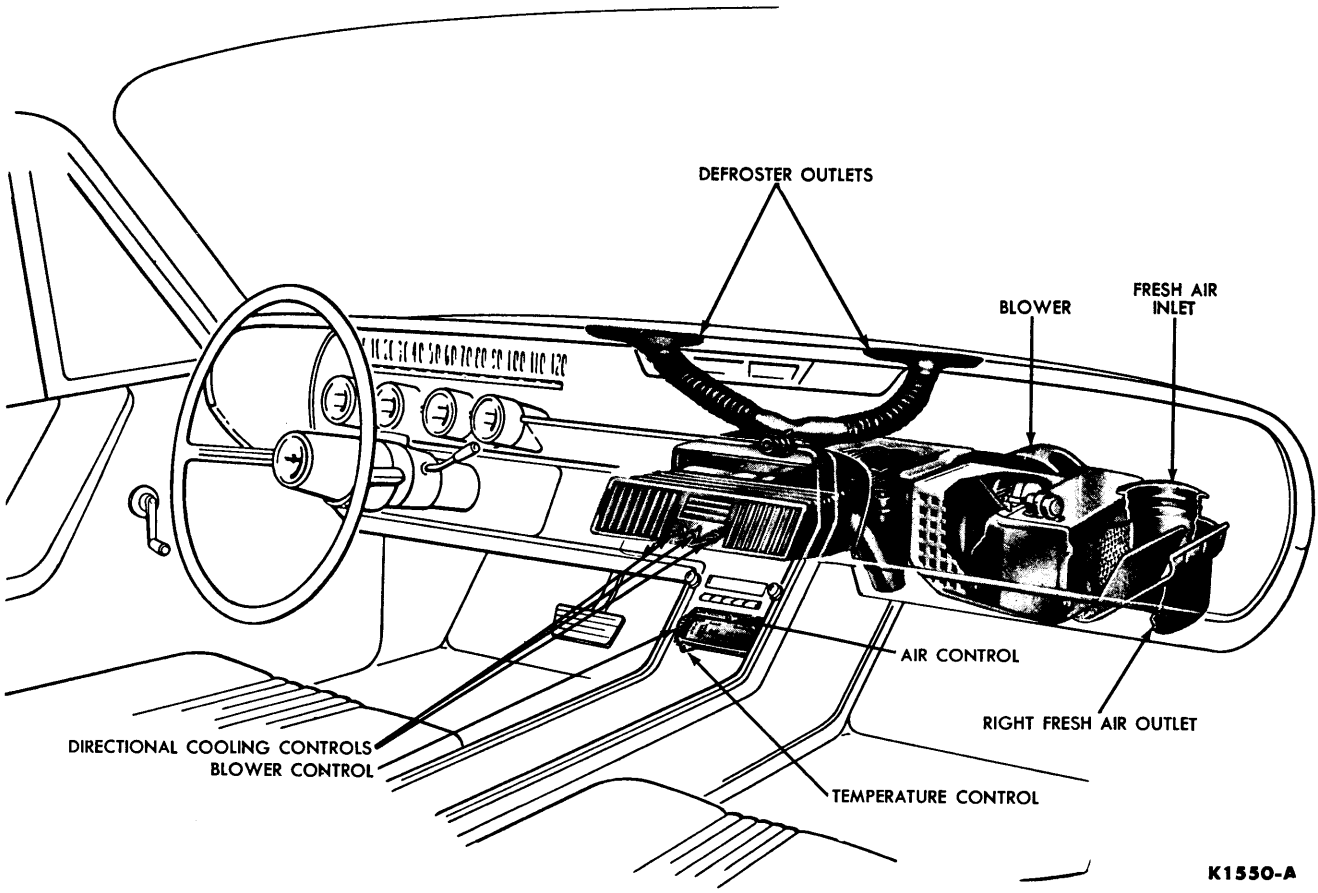

FIG. 1—Heating and Air Conditioning System

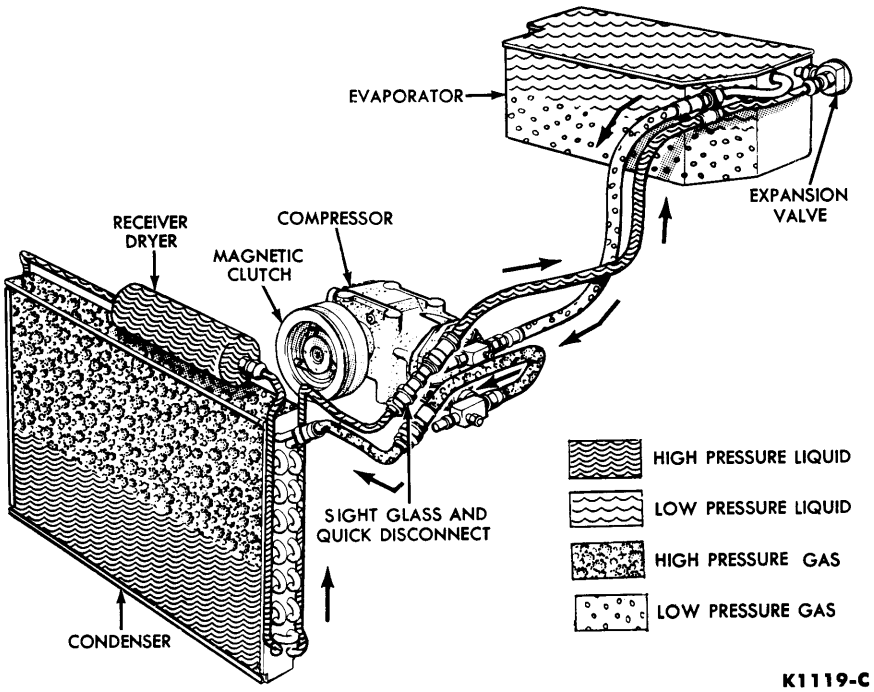

FIG. 2—Air Cooling System—Typical

EVAPORATOR UNIT

When the cooling system is in operation, the liquid Refrigerant-12 flows from the combination receiver and dehydrator unit through a flexible hose to the evaporator (cooling unit) (Fig. 2), where it is allowed to evaporate at a reduced pressure. The evaporator assembly is mounted on the passenger compartment side of the dash.

EXPANSION VALVE

The rate of refrigerant evaporation is controlled by an expansion valve which allows only enough refrigerant to flow into the evaporator to keep the evaporator operating efficiently, depending on its heat load (Fig. 2).

The expansion valve consists of the valve and a temperature sensing capillary tube and bulb. The bulb is clamped to the outlet pipe of the evaporator. Thus the valve is controlled by evaporator outlet temperature. An internal equalizer applies evaporator outlet pressure to one side of the valve diaphragm. Thus, the valve is controlled by both evaporator outlet temperature and outlet pressure.

The restricting effect of the expansion valve at the evaporator causes a low pressure on the low pressure side of the system of 12-50 psi, depending on the surrounding air temperature and compressor speed.

LIQUID SIGHT GLASS

A liquid sight glass is mounted in the high pressure refrigerant line near the left top corner of the radiator (Fig. 3). The sight glass is used to check whether or not there is enough liquid refrigerant in the system. Foam, seen in the sight glass while the compressor is operating, is an indication of loss of refrigerant. See Diagnosis and Testing.

COMPRESSOR UNIT

The evaporated refrigerant leaves the evaporator at a pressure of 12-50 psi and is pumped by the compressor, located on the engine (Fig. 2) into

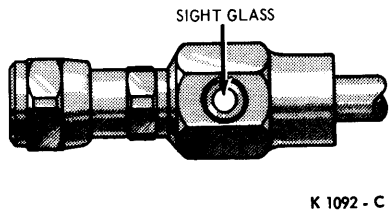

FIG. 3—Sight Glass

the top of the condenser, located in front of the radiator.

The compressor maintains a pressure on its high pressure side of from 80-300 psi, depending on the surrounding air temperature and compressor speed.

As the now heated and compressed refrigerant gas flows down through the condenser, it is cooled by air passing between the sections of the condenser, and the cooled, compressed refrigerant gas condenses to liquid refrigerant which flows into the receiver and then to the expansion valve.

SERVICE VALVES

The service valves on the compressor are used to test and service the cooling system (Fig. 4). The high pressure service valve, mounted at the outlet to the compressor, allows access to the high pressure side of the system for attaching a pressure gauge, or a servicing hose.

The low pressure valve, mounted at the inlet to the compressor, allows access to the low pressure side of the system for attaching a pressure gauge, or a servicing hose.

Both service valves may be used to shut off the rest of the system from the compressor during compressor service.

MAGNETIC CLUTCH

It is necessary to control the amount of cooling that the system

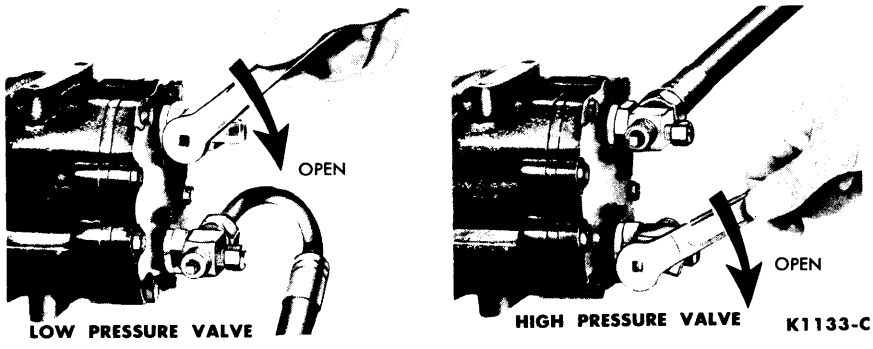

FIG. 4—Opening Service Valve Gauge Ports

produces. To accomplish this, the compressor is electrically cut in and out of operation by the use of a magnetic clutch pulley mounted on the compressor crankshaft (Fig. 2). The magnetic clutch is controlled by a thermostatic switch which has its temperature sensing tube inserted in the fins of the evaporator core.

THERMOSTATIC SWITCH

The thermostatic switch controls the operation of the compressor by controlling the compressor magnetic clutch. The temperature sensing tube of the switch is placed in contact with the evaporator fins. When the temperature of the evaporator becomes too cold, the thermostatic switch opens the magnetic clutch electrical circuit disconnecting the compressor from the engine. When the temperature of the evaporator rises to the upper limit at which the thermostatic switch is set, the thermostatic switch closes and energizes the magnetic clutch. This connects the compressor to the engine and cooling action begins again.

When the ignition switch is off, or the cooling control thermostatic switch is in the off position, the magnetic clutch is not energized, and the cooling system can not operate.

When the ignition switch is on (engine running), and the cooling control is in the cooling range and the blower is operating, the magnetic clutch is energized, the compressor is connected to the engine and the cooling system is in operation.

The thermostatic switch may be adjusted to maintain an average evaporator temperature of from 30°-60° F. (Fig. 5). The thermostatic switch operating differential temperature at any one setting is 6° F. The switch is controlled by the regulator control.

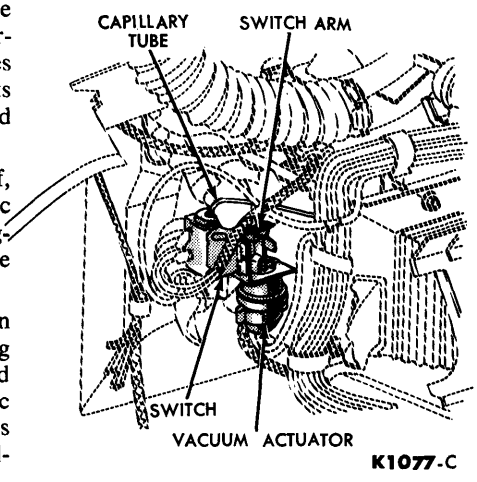

FIG. 5—Thermostatic Switch

2 DIAGNOSIS AND TESTING

AIR CONDITIONING DIAGNOSIS GUIDE

INSUFFICIENT OR NO COOLING	1. Inoperative magnetic clutch. 2. Inoperative blower motor, or switch. 3. Obstructed air passages. 4. Complete loss of charge. (No bubbles in sight glass at system start up.) 5. Partial loss of charge. (Continuous bubbles in sight glass after start up.) 6. Service valves improperly set. (Should be maximum counterclockwise). 7. Inoperative vacuum servo.	8. Compressor defective, or loose or broken compressor belt. 9. Vacuum lines kinked, clogged, loose, or off. 10. A/C thermostat defective. 11. Clutch lead disconnected or broken. 12. Expansion valve inoperative—stays open or closed. 13. Plugs left in compressor under service valve (both gauges indicate the same pressure). 14. Moisture in system.
NOISY COMPRESSOR	1. Loose, torn, or misaligned belt. 2. Loose clutch.	3. Foreign material or damaged parts in compressor. 4. Compressor loose on bracket.
COMPRESSOR VIBRATION	1. Broken or loose mounting bracket, or compressor brace.	2. Loose clutch. 3. Loose belt.

TESTING

Obstructed air passages, broken belts, disconnected or broken wires, loose clutch, loose or broken mounting brackets may be determined by visual inspection of the parts.

CHECKING VACUUM SYSTEM

Use the following procedure to check for malfunction of the heater-air conditioner vacuum system. The procedure will determine if there are leaks, pinched lines or lines not connected.

1. Insert a vacuum gauge in the vacuum supply line (black line) near the dash connector block (Fig. 6). This should be done in the engine compartment.

2. Set the bottom or temperature regulator lever at the MAX position. Set the top or selector lever at the OFF position.

3. Start the engine and run it until at least 16 inches of vacuum is obtained. Stop the engine.

4. Record the vacuum reading. If this reading decreases steadily, there is a leak in the check valve or the vacuum system from the check valve to the selector control (Fig. 6).

5. Move the selector control lever to the positions shown in Table 1 and observe the drop in vacuum on the gauge. Repeat steps 3 and 4 between each lever movement to bring the vacuum back to 16 inches.

6. If any vacuum drop is less than indicated, check for pinched lines, plugged lines, plugged fittings, or partial cycle due to a binding door. If any vacuum is greater than that in-

dicated, check for leaks, lines not connected, or defective components.

If a single vacuum actuator is malfunctioning, check the vacuum at the actuator vacuum line (Table 2). If the vacuum is within limits, the actuator is defective or the door is binding.

TABLE 1–Vacuum Drop vs. Selector Lever Position

Selector Lever Movement	Vacuum Drop Inches of Mercury
DEFROST to HEAT	0.25-2.5
HEAT to OFF	2.5-5.5
FRESH to REC	0.25-2.5

TABLE 2–Heater-Air Conditioner Vacuum Line Installation

Selector Lever Position	Vacuum Line Color Code	Vacuum Applied	Function and Air Door Position
REC	White	Yes	Rec Air Door Open*
	Tan	Yes	Heat Door Closed
	Blue	Yes	Evaporator Shutters Open
	Red	Yes	Defrost Door Closed
	Brown	No	Heat Temperature Control
	Yellow	Regulated	AC Thermostatic Switch
FRESH	White	No	Rec Air Door Closed
	Tan	Yes	Heat Door Closed
	Blue	Yes	Evaporator Shutters Open
	Red	Yes	Defrost Door Closed
	Brown	No	Heat Temperature Control
	Yellow	Regulated	AC Thermostatic Switch
OFF	White	Yes	Rec Air Door Open
	Tan	Yes	Heat Door Closed
	Blue	Yes	Evaporator Shutters Open
	Red	Yes	Defrost Door Closed
	Brown	No	Heat Temperature Control
	Yellow	No	AC Thermostatic Switch
HEAT	White	No	Rec Air Door Closed
	Tan	No	Heat Door Open
	Blue	No	Evaporator Shutters Closed
	Red	Yes	Defrost Door Closed
	Brown	Regulated	Heat Temperature Control
	Yellow	No	AC Thermostatic Switch
HEAT DEFROST	White	No	Rec Air Door Closed
	Tan	No	Heat Door Open
	Blue	No	Evaporator Shutters Closed
	Red	No	Defrost Door Open
	Brown	Regulated	Heat Temperature Control
	Yellow	No	AC Thermostatic Switch
DEFROST	White	No	Rec Air Door Closed
	Tan	Yes	Heat Door Closed
	Blue	No	Evaporator Shutters Closed
	Red	No	Defrost Door Open
	Brown	Regulated	Heat Temperature Control
	Yellow	No	AC Thermostatic Switch

*The Recirculating Air Door is a dual function door. When open to recirculated air, it is closed to fresh air, and vice versa.

CHECKING FOR LEAKS

Attach the manifold gauge set (Fig. 7). Leave both manifold gauge valves at the maximum clockwise position. Set both service valves at the center position. Both gauges should now show approximately 60 to 80 pounds pressure at 75°F. If very little or no pressure is indicated, leave the vacuum pump valve closed, open the Refrigerant-12 tank valve, and set the low pressure manifold gauge valve to the counterclockwise position. This opens the system to tank pressure. Check all connections and the compressor shaft seal for leaks, using a flame type leak detector (Fig. 8). Follow the directions with the leak detector. The smaller the flame the more sensitive it is to leaks. Therefore, to insure accurate leak indication, keep the flame as small as possible. The copper element must be red hot. If it is burned away, replace the element. Hold the open end of the hose at each suspected leak point for two or three seconds. The flame will normally be almost colorless. The slightest leak will be indicated by a bright color to the flame. Be sure to check the manifold gauge set and hoses for leaks as well as the rest of the system.

If the surrounding air is contaminated with refrigerant gas, the leak detector will indicate this gas all the time. Good ventilation is necesary to prevent this situation. A fan, even in a well ventilated area, is very helpful in removing small traces of refrigerant vapor.

USE OF SIGHT GLASS

When observing the sight glass for foam, run the engine at 1500 rpm with the thermostatic switch control lever set for maximum cooling, and the blower on high. Foam in the sight glass indicates an undercharge of refrigerant. Check the system for leaks, repair if necessary and charge the system with the proper amount of Refrigerant-12.

No foam in the sight glass will indicate either a full charge or a complete loss of refrigerant. Clean the sight glass. If the system is fully charged, the sight glass will be perfectly clear. If the system is completely empty of refrigerant, the sight glass will look oily and will not be as clear as when refrigerant is flowing through it.

When the compressor is not oper-

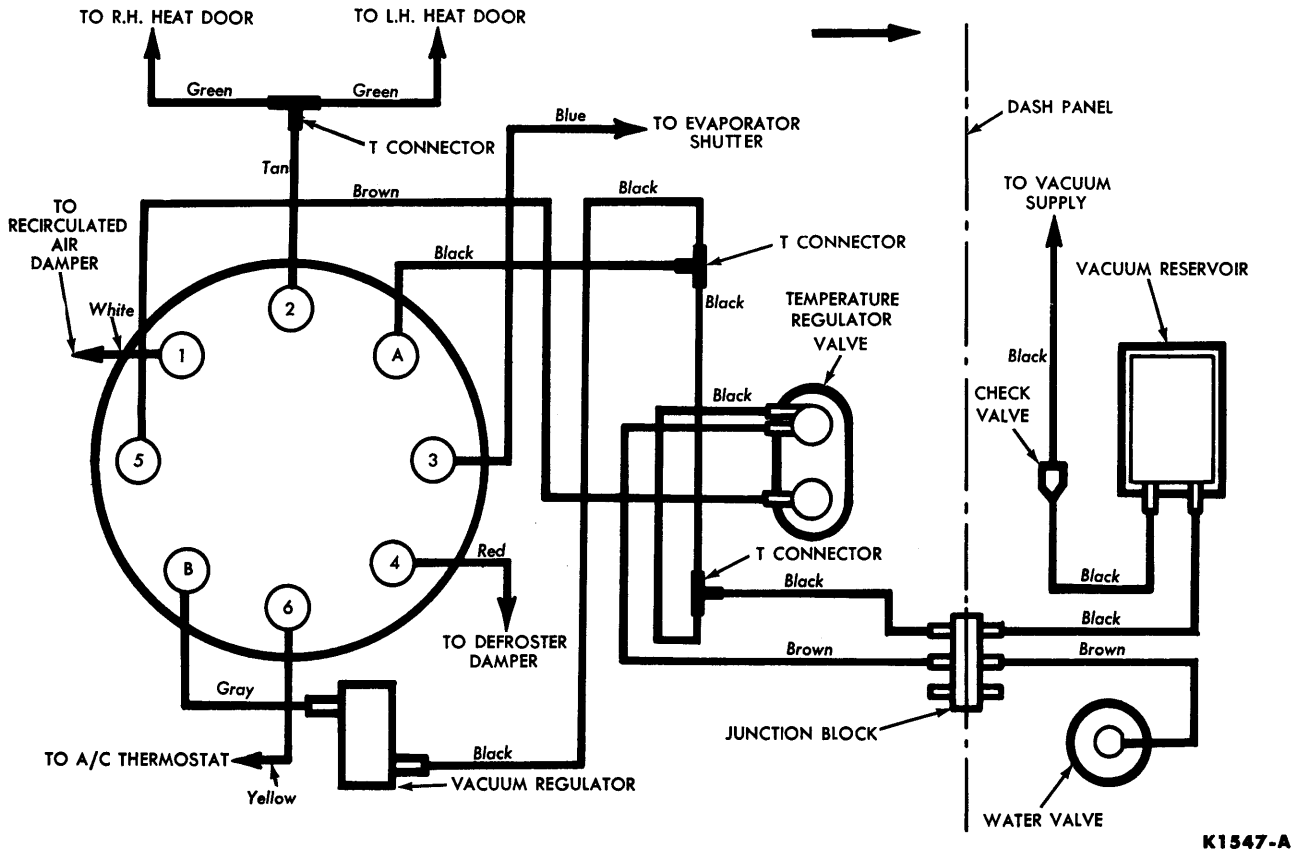

FIG. 6—Heater-Air Conditioner Vacuum Line Connections

ating and when the system is completely charged, an occasional large bubble of Refrigerant-12 vapor will normally be seen in the sight glass.

Under conditions of extremely high temperatures occasional foam or bubbles may appear.

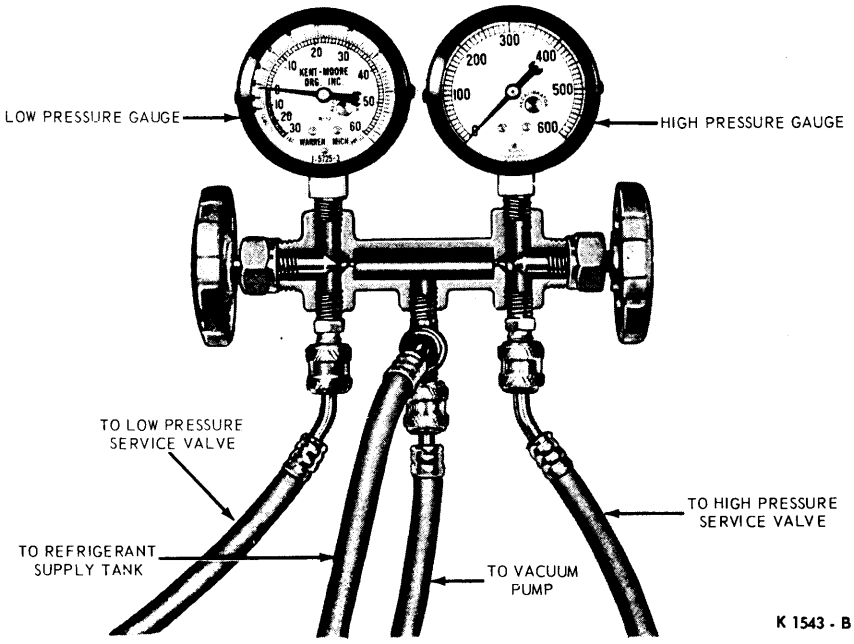

FIG. 7—Manifold Gauge Set

CHECKING SYSTEM PRESSURES

The pressures developed on the high pressure and low pressure side of the compressor indicate whether

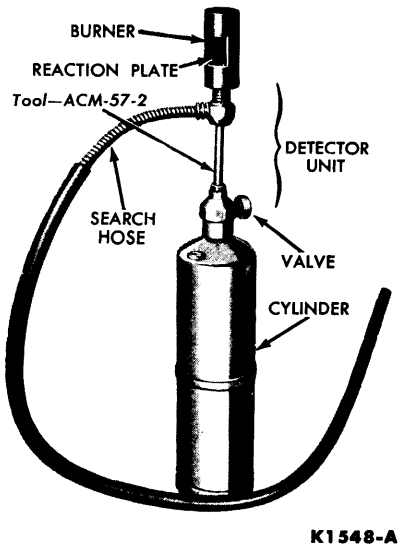

FIG. 8—Flame Type Leak Detector

or not the system is operating properly.

Attach the manifold gauge set. It will not be necessary to attach the Refrigerant-12 tank unless refrigerant is to be added to the system. Set both manifold gauge valves at the maximum clockwise or closed, position. Set both service valves at the center position.

Check the system pressures with the engine running at 1500 rpm, all controls set for maximum cooling, and the front of the car at least 5 feet from any wall.

The actual pressures indicated on the gauges will depend on the temperature of the surrounding air and the humidity. Higher air temperatures along with low humidity, will give higher system pressures. The lowest figures given are for an ambient (surrounding air) temperature of 75° F., 50% relative humidity.

The low pressure gauge should indicate a pressure of from 12-50 pounds. The high pressure gauge should indicate a pressure of 6 or 7 times the low pressure or 80-300 pounds.

At idle speed and a surrounding air temperature of 100°-110° F., the high pressure may go as high as 300 pounds or more. If it becomes necessary to operate the air conditioner under these conditions, keep the high pressure down with a fan directed at the condenser and radiator.

INTERPRETING ABNORMAL SYSTEM PRESSURES

Low Pressure Below Normal, High Pressure Normal. These pressures indicate a restriction between the receiver and the expansion valve or between the expansion valve and the low pressure service valve. If the low pressure is actually a vacuum, the expansion valve is probably closed tightly. Shut the system down and allow it to warm to room temperature. Start the engine and if the evaporator will now become cool, the expansion valve was frozen because of moisture in the system. Release the refrigerant, replace the dryer-receiver assembly, check for leaks, then evacuate and charge the system.

Whenever the system has been opened three times the receiver dryer should be replaced as a precaution against internal icing of the expansion valve.

Check the system between the receiver outlet and the low pressure service valve for restrictions, by feeling all of the connections and components. Any portion that is cold to the touch or that frosts up, with the pressures as indicated here, is restricting the refrigerant flow.

Low Pressure Above Normal, High Pressure Normal. Observe both pressure gauges. If the low pressure is above normal (12-50 pounds) and the high pressure is at or near normal (80-300 pounds), the expansion valve is not operating properly. This condition may cause the compressor to receive slugs of liquid and thus to be very noisy. Also, the suction side of the compressor and the crankcase and head will be colder than normal and will frost up.

The expansion valve will allow too much liquid refrigerant to flow to the compressor if it is defective or, if the temperature sensing element is not making close contact with the evaporator outlet pipe. Make sure that the element is securely clamped to the outlet pipe, and properly covered.

High Pressure Below Normal, Low Pressure Above Normal. If the two pressures are equal or within 30 pounds of each other, the compressor may be defective. Perform a compressor volumetric efficiency test. Repair or replace the compressor as needed.

High Pressure Above Normal. High compressor head pressures are caused by an overcharge of refrigerant, condenser air passages clogged, a restriction between the condenser inlet and the receiver, or high surrounding air temperatures. High head pressures are generally evidenced by a noisy compressor.

Discharge excess refrigerant until foam is seen in the sight glass (system operating at 1500 engine rpm), then add ½ pound of refrigerant.

THERMOSTATIC SWITCH TEST

The switch must be removed for this test. Move the switch arm to the coldest temperature setting by holding the arm against the stop nearest to the vacuum actuator. At room temperature the switch should be closed. Use a self powered test light or an ohmmeter connected to the switch leads to check whether or not the switch is closed. Release the switch arm. The switch should be open.

WATER TEMPERATURE VALVE

1. Set the temperature control lever at the MIN position, and start the engine.
2. Remove the vacuum hose from the water temperature valve and attach a vacuum gauge to the hose. It should show no vacuum.
3. Move the temperature control lever to the MAX position. The vacuum gauge should immediately show at least 15 inches of vacuum. If it shows no vacuum, the trouble is in the control head, the thermostat or the connecting hoses.
4. If it shows vacuum, return the temperature control lever to the MIN position and allow the engine to warm up to operating temperature.
5. When the engine reaches operating temperature, check the hose at the bottom of the water temperature valve and at the top connection of the heater core. These two hoses should not be hot. If they are hot it indicates a leak in the water temperature valve which will cause the car to be hotter than normal during warm or hot weather. Replace the water temperature valve.
6. If the two hoses were not hot, move the temperature control lever to the MAX position. In two or three minutes the two hoses should be hot. If they are not, the water temperature valve is defective and should be replaced.

MAGNETIC CLUTCH

Disconnect the magnetic clutch wire at the bullet connector, and connect it to the negative lead of an ammeter. Connect the positive lead of the ammeter to the battery positive terminal. The magnetic clutch should pull it in with a distinct click and the current reading on the ammeter should be to specification.

BLOWER MOTOR

Disconnect the blower motor wire at the bullet connector, and connect it to the negative lead of an ammeter. Connect the positive lead of the ammeter to the battery positive terminal. The motor should operate and the reading on the ammeter should be to specification.

EXPANSION VALVE

Remove the expansion valve from the evaporator. Connect the Refrigerant-12 supply hose to the expansion valve inlet with a suitable adapter. Open the refrigerant supply valve slightly. Refrigerant gas should come out of the expansion valve outlet. If

no gas comes out of the outlet, the temperature sensing element has lost its charge and the expansion valve must be replaced.

COMPRESSOR VOLUMETRIC EFFICIENCY TEST

Malfunction of the compressor can be isolated by checking the compressor volumetric efficiency with a special tool. Make the test with the car in a clean dry atmosphere.

Run the engine at 1500 rpm with all controls at maximum cooling for at least 10 minutes. Adjust the engine idle with a tachometer to exactly 515 rpm with the compressor clutch engaged. Turn the engine off and set the cooling control to the OFF position. Isolate the compressor, then remove both high and low pressure service valve gauge port caps, allowing the gas in the compressor to escape.

Attach the special tool (calibrated orifice with gauge attached) to the high pressure service valve gauge port (Fig. 9). Start the engine. Engage the magnetic clutch for 15 second intervals, by moving the cooling control from the OFF position to the maximum cooling position, and

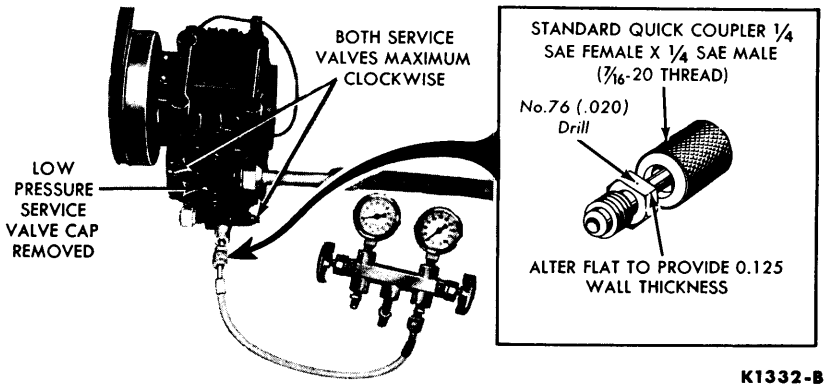

FIG. 9—Volumetric Efficiency Test

observe the maximum gauge pressure at the end of each 15 second interval. **Be sure to allow the gauge pressure to drop to zero between the 15 second intervals. Stop the engine.**

A good compressor will bring the pressure to 200 psi in 15 seconds. If the pressure does not come up to 200 psi, in 15 seconds, clean the compressor intake screen. If the intake screen is clean, remove and inspect the valve plate. Most of the failures to come up to the 200 psi specification will be caused by small foreign particles under the valve plate leaves or a defective valve plate. Clean the valve plate and assemble it to the compressor using new gaskets. If this does not effect a cure, replace the valve plate or the compressor as required.

If no further work is to be done on the system after making the volumetric efficiency test, disconnect the orifice tool and gauge, evacuate the compressor and connect it back into the system.

3 COMMON ADJUSTMENTS AND REPAIRS

SAFETY PRECAUTIONS

The refrigerant used in the air conditioner system is Refrigerant-12. Refrigerant-12 is nonexplosive, noninflammable, noncorrosive, has practically no odor, and is heavier than air. Although it is classified as a safe refrigerant, certain precautions must be observed to protect the parts involved and the person who is working on the unit. **Use only Refrigerant-12.**

Liquid Refrigerant-12, at normal atmospheric pressures and temperatures, evaporates so quickly that it tends to freeze anything that it contacts. For this reason, extreme care must be taken to prevent any liquid refrigerant from coming in contact with the skin and especially the eyes.

Refrigerant-12 is readily absorbed by most types of oil. It is therefore recommended that a bottle of sterile mineral oil and a quantity of weak boric acid solution be kept nearby when servicing the air conditioning system. Should any liquid refrigerant get into the eyes, use a few drops of mineral oil to wash them out, then wash the eyes clean with the weak boric acid solution. Seek a doctor's aid immediately even though irritation may have ceased.

Always wear safety goggles when servicing any part of the refrigerating system.

The Refrigerant-12 in the system is always under pressure. Because the system is tightly sealed, heat applied to any part would cause this pressure to build up excessively.

To avoid a dangerous explosion, never weld, use a blow torch, solder, steam clean, bake body finishes, or use any excessive amount of heat on, or in the immediate area of, any part of the air cooling system or refrigerant supply tank, while they are closed to the atmosphere, whether filled with refrigerant or not.

The liquid refrigerant evaporates so rapidly that the resulting refrigerant gas will displace the air surrounding the area where the refrigerant is released. To prevent possible suffocation in enclosed areas, always discharge the refrigerant from an air cooling system into the garage exhaust collector. Always maintain good ventilation surrounding the work area. **If the car is to be undercoated, make certain that the undercoating does not plug the evaporator drain tubes.**

Although Refrigerant-12 gas, under normal conditions, is not poisonous, the discharge of refrigerant gas near an open flame can produce a very poisonous gas. This gas will also attack all bright metal surfaces. This poisonous gas is generated in small quantities when the flame-type leak detector is used. Avoid inhaling the fumes from the leak detector. **Make certain that Refrigerant-12 is both stored and installed in accordance with all state and local ordinances.**

When admitting Refrigerant-12 gas into the cooling unit, always keep the tank in an upright position. If the tank is on its side or upside down, liquid Refrigerant-12 will enter the system and damage the compressor. **In surrounding air**

temperatures above 90°F., prolonged engine idle will result in excessively high compressor pressures.

DISCHARGING THE SYSTEM

Discharge the refrigerant from the system before replacing any part of the system, except the compressor.

To discharge the system, connect the manifold gauge set to the system. Do not connect the manifold center connection hoses to the Refrigerant-12 tank, or vacuum pump. Place the open end of these hoses in a garage exhaust outlet. Set the high pressure manifold gauge valve at the maximum counterclockwise or open position. Open the high pressure service valve a slight amount (Fig. 4) and allow the refrigerant to discharge slowly from the system.

Do not allow the refrigerant to rush out, as the oil in the compressor will be forced out along with it.

EVACUATING THE SYSTEM

Attach the manifold gauge set, a tank of Refrigerant-12 and a vacuum pump to the system. Make certain that the Refrigerant-12 tank valve is tightly closed. Set both service valves to the mid-position. Open both manifold valves. Release any pressure in the system. Open the vacuum pump valve and run the pump until the low pressure gauge reads at least 25 inches, and as close to 30 inches, of vacuum as possible. Continue vacuum pump operation for 20 to 30 minutes to boil any moisture out of the system. Close the pump valve. Turn off the pump.

CHARGING THE SYSTEM

MAKING A PARTIAL CHARGE

Attach the manifold gauge set. Open both manifold valves. Close the vacuum pump valve. Open the Refrigerant-12 tank valve. Purge the air from the high pressure hose by loosening the high pressure hose at the service valve for a few seconds. Tighten the connections and set the high pressure manifold gauge valve at the maximum clockwise position. Loosen the low pressure gauge hose slightly at the low pressure service valve, for a few seconds, to purge the air from the hose. Tighten the connection. Set both service valves at the center position (Fig. 10).

Run the engine at 1500 rpm with all controls at the maximum cold position. Charge the system until all foam disappears from the sight glass, then add ½ pound of Refrigerant-12. Shut the Refrigerant-12 tank valve.

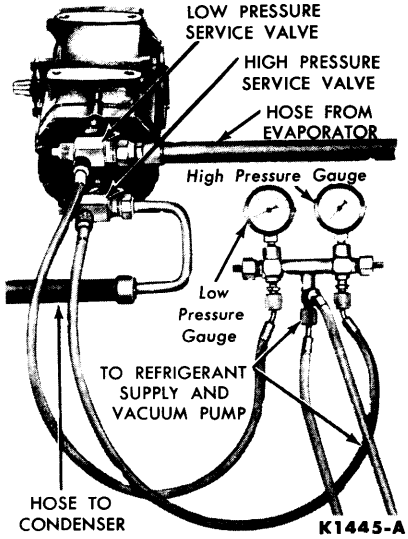

FIG. 10–Charging the Air Conditioning System

It may be necessary to place the Refrigerant-12 tank in a container of hot water at about 150°F. to force the gas from the tank during charging.

Never heat the Refrigerant-12 tank with a torch. A dangerous explosion may result.

Set both service valves at the maximum counterclockwise position. Remove the gauge set, and cap the service valve gauge ports and valve stems.

MAKING A COMPLETE CHARGE

Check for leaks first (see Diagnosis and Testing), release the pressure, then evacuate the system. Leave both service valves at the mid-position and the vacuum pump valve closed. Leave the low pressure manifold gauge valve at the maximum counterclockwise or open position. Set the high pressure manifold gauge valve at the maximum clockwise or closed position. Set all controls to the maximum cold position.

Open the Refrigerant-12 tank valve. Run the engine at 1500 rpm. Charge the system until 2½ pounds of refrigerant have been weighed into it. During the charging, the high pressure may build up to an excessive value. This can be caused by an overcharge of refrigerant, or an overheated engine in combination with high surrounding temperatures. Never allow the high pressure to exceed 240 pounds while charging. Stop the engine, determine the cause, and correct it.

After the proper charge has been made, close the Refrigerant-12 tank valve, and check the system pressures for proper operation. Set both service valves at the maximum counterclockwise position. Remove the gauge set, and cap the service valve gauge ports and valve stems.

CHARGING FROM SMALL CONTAINERS

Refrigerant-12 is available in 1 pound cans. A scale is not necessary if these small containers are used instead of a tank.

Attach the hose, that would normally go to the large tank to the special valve that is provided for the small cans. Close the valve (maximum clockwise position) and follow the procedure for leak testing, evacuating and charging the system as previously given.

For charging, attach a 1 pound can of Refrigerant-12 to the special valve, and open the valve. Keep the can in an upright position. When the can is empty (no frost showing), close the valve, remove the empty can, attach a new one, and open the valve again.

Allow only ½ of the third can of refrigerant to be pumped into the system by closing the valve at the can when the frost line has reached ½ way down the can. The system will then have been charged with 2½ pounds of refrigerant.

Check the system pressure, and set both service valves at the maximum counterclockwise position. Remove the gauge set, and cap the service valve gauge ports and valve stems.

COMPRESSOR OIL LEVEL CHECK

Under normal conditions, when the air cooling system is operating satisfactorily, the compressor oil level need not be checked. There is no place for the oil to go except inside the sealed system. When the car is first started, some of the oil will be pumped into the rest of the system. After 15 minutes of operation, most of the oil is returned to the compressor crankcase.

Check the compressor oil level only if a portion of the refrigerant system is being replaced, or if there was a

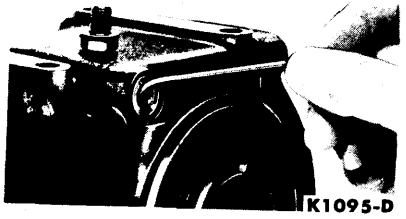

FIG. 11—Oil Level Check

leak in the system and the refrigerant is being replaced.

Check the oil after the system has been charged and has been operating at an engine speed of 1500 rpm for 15 minutes in 60°F. surrounding air temperature or above. Turn off the engine, and isolate the compressor. Remove the oil filler plug from the compressor (Fig. 11) and insert a flattened ⅛-inch diameter rod in the oil filler hole until it bottoms. The rod should show ⅞ inch of oil. This is equivalent to 11 ounces of oil. It may be necessary to rotate the compressor crankshaft slightly (by hand) so that the dip rod will clear the crankshaft. If additional oil is needed in the compressor, add Suniso 5 or Capella E refrigerator compressor oil, or equivalent.

If more than ⅞ inch of oil is indicated, as might happen if a new compressor is installed and oil already in the system is pumped back to the compressor, draw out the excess oil until the proper quantity is indicated.

Replace the oil filler plug, then evacuate and connect the compressor back into the system. Be sure to check the compressor filler opening for leaks.

ISOLATING THE COMPRESSOR

This procedure is used when checking the compressor oil level and when it is desired to replace the compressor without losing the refrigerant charge.

To isolate the compressor from the system, turn both the high and the low pressure service valves to the extreme clockwise position. Loosen the cap on the high pressure service valve gauge port, and allow the gas to escape until the compressor is relieved of refrigerant pressure.

Loosen the cap a small amount only and do not remove it until the pressure is completely relieved.

To connect the compressor back into the system, evacuate the compressor at the high pressure service valve gauge port, close the vacuum pump valve, turn both service valves to the maximum counterclockwise position, and cap the high pressure service valve gauge port and service valve stems.

VACUUM ACTUATORS

The vacuum actuators are adjustable for proper air door operation.

The single acting actuators are adjusted so that the actuator return springs are preloaded for about ⅛ inch travel of the actuator connecting link with no vacuum applied. Perform the adjustment as follows:

1. Loosen the vacuum actuator attaching screws or nuts.
2. Move the actuator until the preload indicator is flush with the motor body. (The air door must be in its normal position with no vacuum applied.)
3. Tighten the bracket attaching screws or nuts and check the operation of the door.

THERMOSTATIC SWITCH VACUUM ACTUATOR

The factory sealed setting of this vacuum actuator should not be disturbed.

4 REMOVAL AND INSTALLATION

HEATER TEMPERATURE CONTROL VALVE—WITH AIR CONDITIONING

REMOVAL

1. Remove the blower motor.
2. Through the blower motor opening reaching up and slightly outboard, remove the two screws retaining the temperature control valve to the top of the plenum chamber.
3. Lift the valve out through the opening and remove the three vacuum hoses. (Identify the hoses for proper assembly.)

INSTALLATION

1. Connect the three vacuum hoses to the new valve (Fig. 12), position the valve to the plenum chamber and install the two retaining screws.
2. Install the heater blower motor.

REAR VENT CONTROL SWITCH

Remove the finish panel and the two mounting nuts. Then disconnect and remove the switch.

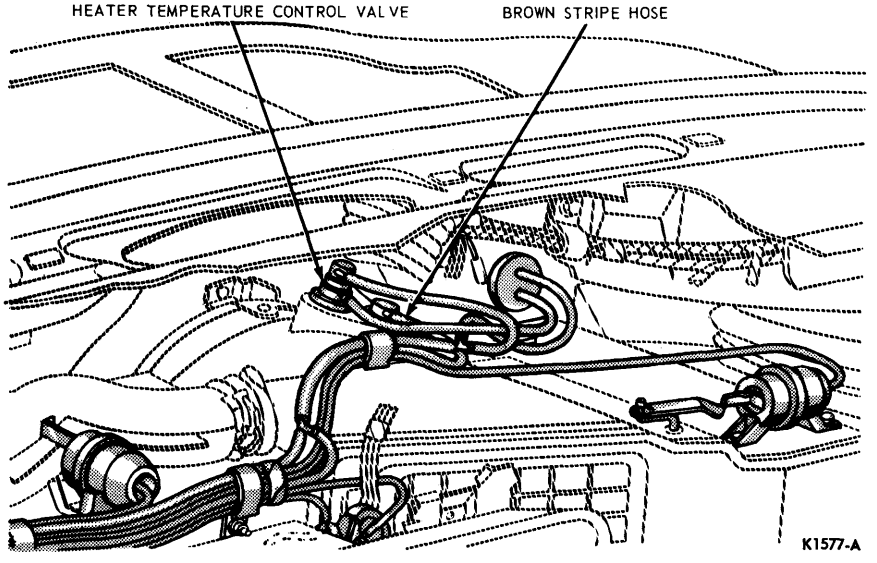

FIG. 12—Temperature Control Valve Mounting

EVAPORATOR CORE

REMOVAL

1. Remove the instrument panel from the car (Group 18).
2. Drain the coolant, remove the air cleaner, and disconnect the heater hoses at the heater.

3. Remove the retaining screws and the vacuum reservoir tank at the dash panel.
4. Disconnect the blower motor lead, and the vacuum line at the water valve. Remove the blower motor vent tubes.
5. Remove the blower motor cover plates and the gasket.
6. Remove the nuts retaining the evaporator to the dash.
7. Remove the hose cover plates and the grommet at the dash.
8. Make sure that there is no refrigerant in the system, then disconnect the low pressure hose at the compressor and the high pressure hose at the condenser.
9. Remove the clamp retaining the hoses to the dash brace.
10. Disconnect the right air intake boot and the cable.
11. Disconnect the wires at the thermostatic switch and remove the bolt retaining the wiring harness to the evaporator case, and disconnect the vacuum hoses.
12. Loosen the column support at the floor and position it out of the way.
13. Remove the retaining screws and position the door lock control valve out of the way.
14. Remove the screws retaining the heater and air conditioner control assembly to the console. Disconnect the four quick disconnects and remove the console.
15. Disconnect the four quick disconnects at the control assembly.
16. Remove the evaporator assembly with the heater control, feeding the hoses through dash.
17. Remove the insulation from the hose ends and the expansion valve.
18. Disconnect the evaporator-to-compressor hose.
19. Remove the sensing bulb screw and clip, the expansion valve and the hose from the core.
20. Remove the screws retaining the evaporator top cover. Disconnect the vacuum hose, pull upward carefully on the sensing tube and remove the top cover.
21. Remove the retaining screws and remove the evaporator core from the case.

INSTALLATION

1. Position the evaporator core in the case and install the retaining screws.
2. Position the evaporator top cover, feeding the sensing tube in the core fins, and install the retaining screws. Connect the vacuum hose.
3. Install the high pressure hose with the expansion valve to the evaporator.
4. Position the sensing bulb to the core, and install the clamp and the retaining screw.
5. Install the low pressure hose to the evaporator.
6. Apply insulation to the expansion valve and to the hose ends.
7. Feed the evaporator hoses thru the dash panel and position the evaporator assembly in the car.
8. Position the evaporator assembly to the dash, and install the retaining nuts.
9. Connect the vacuum hoses at the temperature valve.
10. Position the blower motor cover plates and seal, then install the retaining screws.
11. Connect the blower motor lead wire and install the blower motor vent tube.
12. Connect the vacuum hose to the water valve. Connect the heater hoses at the heater.
13. Position the vacuum reservoir tank at the dash above the heater motor and install the mounting screws.
14. Position the air conditioner hose cover plates and grommet at the dash and install the retaining screws.
15. Fasten the evaporator hoses to the dash support bracket.
16. Connect the low pressure hose to the compressor. Connect the high pressure hose at the sight glass, and connect the wires to the thermostatic switch.
17. Connect the right air vent boot and cable.
18. Position the door lock valve, and install the retaining screws.
19. Connect the heater blower motor connector.
20. Leak test, evacuate and charge the system. Check the air conditioner operation.
21. Install the instrument panel in the car (Group 18).

COMPRESSOR

REMOVAL

1. Loosen the idler pulley and remove the drive belt.
2. Isolate the compressor (See Common Adjustments and Repairs in this Part) and disconnect the two service valves and hoses from the compressor (Fig. 13). Energize the clutch and loosen and remove the clutch mounting bolt.
3. Install a 5/8-11 bolt in the clutch drive shaft hole. With the clutch still energized, tighten the bolt to loosen the clutch from the shaft. Disconnect the clutch wire at the bullet connector.
4. Remove the clutch, and then remove the mounting bolts and the compressor.
5. With the compressor on the work bench, remove the key from the shaft.

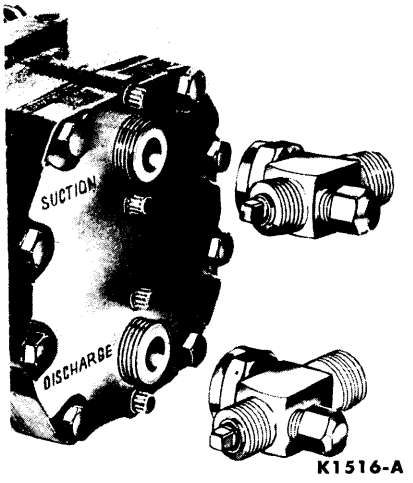

FIG. 13–Compressor–Service Valves Removed

INSTALLATION

Before installing the compressor, see Cleaning and Inspection in this part.

1. Mount the clutch on the shaft and install the mounting screw and washer finger tight. Place the compressor on the mounting bracket and install the four mounting bolts, and tighten to specification. Do not exceed the torque specification as misalignment can result.
2. Connect the clutch wire, energize the clutch and torque the clutch mounting bolt to specification. **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.** Install and adjust the drive belt, and tighten the idler pulley.
3. Install the service valves on the compressor using new Teflon seals (Fig. 13). Tighten the service valve flared nuts to specification. **Do not over tighten the flared nuts. The new ROTO-LOK service valves can be rotated slightly on their**

seat without breaking the high pressure seal. This is not an indication of a loose valve. Leak test the compressor, then evacuate it and connect it back into the system.

4. Check the oil level in the compressor and add or remove oil if necessary. (See Cleaning and Inspection in this part.)

COMPRESSOR COMPONENTS

All compressor removal and installation operations, except belt replacement, can be performed only after the unit has been isolated from the rest of the system. (See Common Adjustments and Repairs in this part.)

VALVE PLATE

REMOVAL

1. Isolate the compressor and disconnect the service valves. Remove the 12 head bolts.
2. Remove the cylinder head and valve plate from the top of the compressor body (Fig. 14). Do not tap or hit the head with any hard tool, as damage could result.
3. Remove and discard all gaskets, and be sure to clean gasket shreds from all gasket surfaces. Examine the cylinders and top of the pistons, particularly in case of valve breakage. If there are score marks, replace the compressor assembly
4. If the cylinders and pistons are in good condition, check the valve plate and valve reeds for damage. If the valve assembly is in good condition, it can be used again. If the valve plate is damaged, install the entire replacement kit which includes the valve plate, valve reeds, and the two gaskets (Fig. 14).
5. When the valve plate assembly is re-used, wash it in clean solvent and dry in dry air. Check the oil for dirt. If the system is not clean, replace the oil with new oil, flush out all foreign material from the system.

INSTALLATION

1. Starting with the valve plate gasket, assemble the parts in the order shown in Fig. 14. Insert the cylinder head bolts carefully to avoid damaging the gaskets. Before assembly apply a film of new refrigeration oil to both sides of both gaskets.
2. Tighten all bolts finger tight, then torque the bolts ¼ turn at a time to specification. Tighten the bolts in a sequence so those diagonally opposite are evenly drawn to the required torque.
3. Connect the compressor into the system. Check the oil level in the compressor, and add or remove oil if necessary. (See Cleaning and Inspection in this part.)

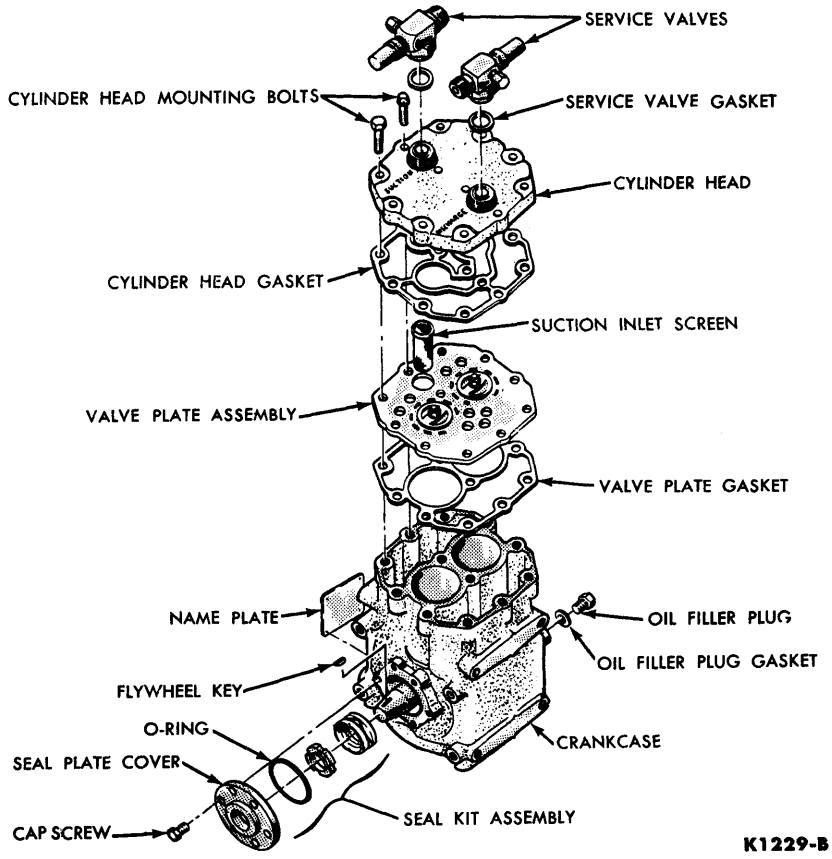

FIG. 14—Tecumseh Cylinder Head and Valve Assembly

CRANKSHAFT SEAL

REMOVAL

1. Isolate the compressor, loosen and remove the belt.
2. Remove the clutch and the Woodruff key.
3. Carefully remove all accumulated dirt and foreign material from the seal plate and surrounding area of the compressor, and position a small drain pan beneath the seal plate.
4. Remove the seal plate bolts, plate and gasket. Do not mar the sealing surfaces or the polished shaft surface.
5. Remove the carbon seal ring and seal housing assembly from the crankshaft. A disassembled view of the crankshaft seal assembly is included in Fig. 14.
6. Clean all old gasket material from the seal plate and the compressor. Make certain that the shaft, the seal plate and the compressor gasket surfaces are completely clean before installing the new seal.

INSTALLATION

1. Lubricate the new shaft seal parts in clean compressor oil, and position the seal assembly on the crankshaft, with the carbon ring toward the seal plate.
2. Position the new gasket on the compressor and install the seal plate.
3. Torque the bolts to specification.
4. Make certain that there are no burrs or dirt on the compressor shaft. Then install the key, the belt, and the clutch.
5. Install and adjust the belt.
6. Check the oil level (see Common Adjustments and Repairs).

EXPANSION VALVE

REMOVAL

1. Discharge the air conditioning system.
2. Remove the instrument panel from the car (Group 18).
3. Drain the coolant, remove the air cleaner, and disconnect the heater hoses at the heater.
4. Remove the heater hose retain-

ing clamp at the heater motor and position it to one side.

5. Disconnect the blower motor lead, and the vacuum line at the water valve. Remove the blower motor vent tubes.

6. Remove the blower motor cover plates and the gasket.

7. Remove the nuts retaining the evaporator to the dash.

8. Remove the hose cover plates and the grommet at the dash.

9. Disconnect the low pressure hose at the compressor and the high pressure hose at the condenser.

10. Remove the clamp retaining the hoses to the dash brace.

11. Disconnect the right air intake boot and the cable.

12. Disconnect the wires at the thermostatic switch and remove the bolt retaining the wiring harness to the evaporator case, and disconnect the vacuum hoses.

13. Disconnect one vacuum hose and two connectors at the control switch assembly.

14. Position the evaporator assembly back from the dash.

15. Remove the insulation from the hose ends and the expansion valve.

16. Remove the sensing bulb screw and clip. Remove the hose from the expansion valve and remove the expansion valve from the core.

INSTALLATION

1. Install the new expansion valve on the core fitting, and install the hose to the expansion valve.

2. Position the sensing bulb to the core. Install the clamp and the retaining screw.

3. Apply insulation to the expansion valve and hose ends.

4. Position the evaporator assembly to the dash, and install the retaining nuts.

5. Connect the vacuum hoses at the temperature valve.

6. Position the blower motor cover plates and seal, then install the retaining screw.

7. Connect the blower motor lead wire and install the blower motor vent tube.

8. Connect the vacuum hose to the water valve. Connect the heater hoses at the heater.

9. Position the air conditioner hose cover plates and grommet at the dash and install the retaining screws.

10. Fasten the evaporator hoses to the dash support bracket.

11. Connect the low pressure hose to the compressor. Connect the high pressure hose at the sight glass, and connect the wires to the thermostatic switch.

12. Connect the right air vent boot and cable.

13. Leak test, evacuate and charge the system. Check the air conditioner operation.

14. Install the instrument panel in the car (Group 18).

THERMOSTATIC SWITCH

REMOVAL

1. Remove the battery ground cable.

2. Remove the left front seat.

3. At the left side of the evaporator remove the retaining nuts, the wires and the vacuum hose from the thermostatic switch.

4. Remove the retaining nuts, radio knobs and the bezel.

5. Remove the retaining screws, the headlight switch control knob and bezel nut, then remove the center finish panel.

6. Remove the retaining screws and remove the evaporator register.

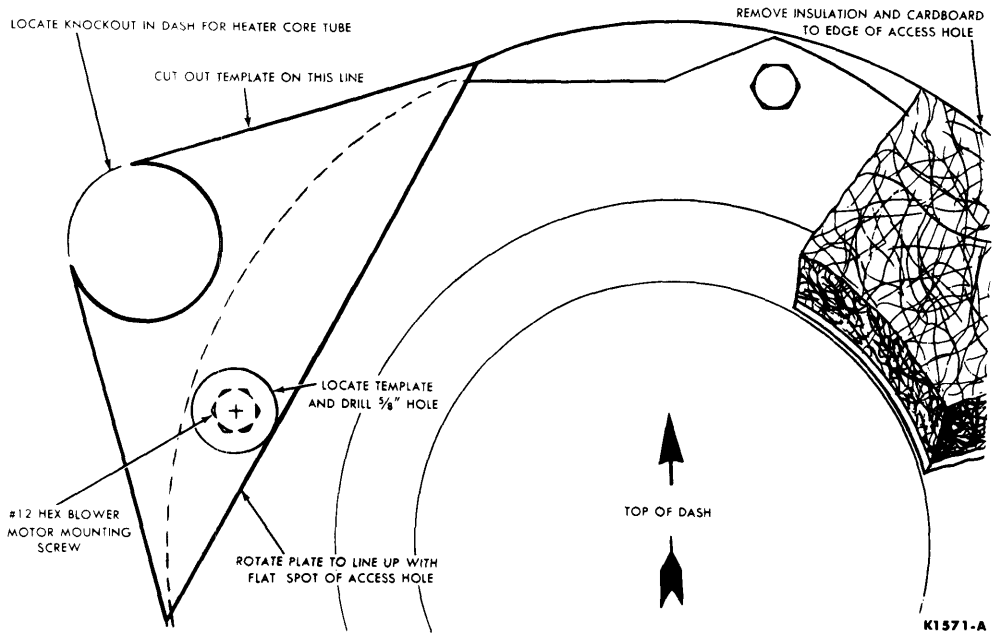

FIG. 15—Air Conditioner Blower Motor Accessibility

7. Draw the capillary tube carefully from the evaporator core and outward to the left of the evaporator case, then remove the thermostatic switch.

INSTALLATION

1. **Carefully** feed the capillary tube back through from the left side of the evaporator case.
2. Position the thermostatic switch and install the retaining nuts.
3. Connect the wires and install the vacuum hose.
4. **Carefully** insert the bulb end of the capillary tube into the center area of the evaporator core, **making certain to insert it one or two fins over from where it was originally withdrawn.** This assures the best contact and transfer of temperature changes.
5. Position the register and install the retaining screws.
6. Position the center finish panel, install the retaining screws, the light switch bezel nut, and the control knob.
7. Position the radio bezel, and install the retaining nuts and the knobs.
8. Install the left front seat.
9. Install the battery ground cable.
10. Check the operation of the thermostatic switch.

BLOWER MOTOR AND WHEEL

REMOVAL

1. Disconnect the battery ground cable.
2. Disconnect the motor wires.
3. Remove five screws and remove the cover and seal.
4. Remove (cut) the insulation from around the motor (Fig. 15).
5. Using a template (Fig. 15) drill one 5/8 inch hole to gain access to one screw which retains the motor and plate to the heater-air conditioner assembly. (Ninety degree drill motor required for this.)
6. Remove the four screws retaining the motor to the heater-air conditioner assembly.
7. Rotate and remove the blower motor.
8. Loosen the set screw and remove the blower wheel.
9. Remove the two nuts, and remove the mounting plate.

INSTALLATION

1. Position the motor mounting plate to the motor and install the two retaining nuts.
2. Position the blower wheel on the motor shaft and tighten the set screw.
3. Cement a new gasket on the motor plate.
4. Position the blower motor to the heater-air conditioner assembly.
5. Install the four screws which retain the blower motor to the heater-air conditioner assembly.
6. Position the seal and cover and install the five retaining screws.
7. Connect the wiring.
8. Connect the battery ground cable.

BELT

1. Loosen the idler pulley and remove the belt.
2. Place the new belt in position, and adjust the tension to specification, then tighten the idler pulley.

CLUTCH

1. Loosen the idler pulley and remove the belt, energize the clutch and loosen and remove the clutch mounting bolt.
2. Install a 5/8-11 bolt in the clutch drive shaft hole. With the clutch still energized, tighten the bolt to loosen the clutch from the shaft, then remove the magnetic clutch.
3. Install the clutch, the clutch mounting bolt, and the washer.
4. Energize the clutch, and torque the bolt to specification.
5. Place the new belt in position and adjust the tension to specification, then tighten the idler pulley.

5 CLEANING AND INSPECTION

On compressor clutch installations, carefully remove any burrs or dirt that may be on the compressor shaft. The shaft must be dry and brightly polished. Then install the key in the shaft.

When the compressor is disassembled, completely clean all surfaces of gasket shreds and foreign objects.

If the compressor shaft seal is being replaced, inspect the compressor internally and clean out dirt or chips as required.

When installing a new control assembly or parts, inspect for dirt and foreign objects. Also check for cleanliness of the hoses and see that they are not pinched, or cracked.

PART 16-3 SPEED CONTROL

1 DESCRIPTION AND OPERATION

Refer to Wiring Diagram Manual Form 7795P-65 for schematics and locations of wiring harnesses.

The speed control automatically holds the car speed at any selected setting. It has an operating range of approximately 25 mph to 80 mph. It operates effectively on hills as well as on the level.

When the speed control switch button in the control head on the console is pulled to energize the control, it is held in this position magnetically. It will return to the OFF position only if pushed in manually, or if the ignition is turned off. The large speed adjusting wheel control, also located at the control head, should be turned to the extreme forward position. This provides a controlled speed of approximately 25 mph.

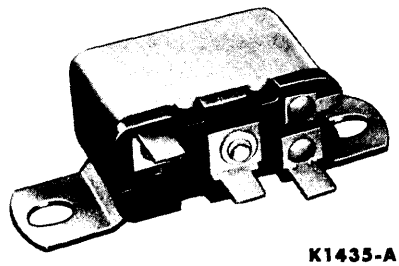

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FIG. 1—Engagement Relay

When the car is accelerated to slightly over the speed setting, a click will he heard at the engagement relay (Fig. 1).

When the foot is removed from the accelerator the car will go on automatic speed control. The large speed adjusting wheel control also can be used as a throttle and can be turned until the desired cruising speed is reached. Turning this wheel, rotates a cam in the metering valve (Fig. 2) which varies the spring pressure exerted on a pilot valve.

A low friction sensor pump (Fig. 3), driven by the speedometer cable, converts road speed to pressure which applies a balancing force to the pilot valve.

The sensor pump operates whenever the car is in motion, whether or not the speed control is energized and in operation. Because of the car motion, the sensor pump is a sealed unit containing a non-volatile lubri-

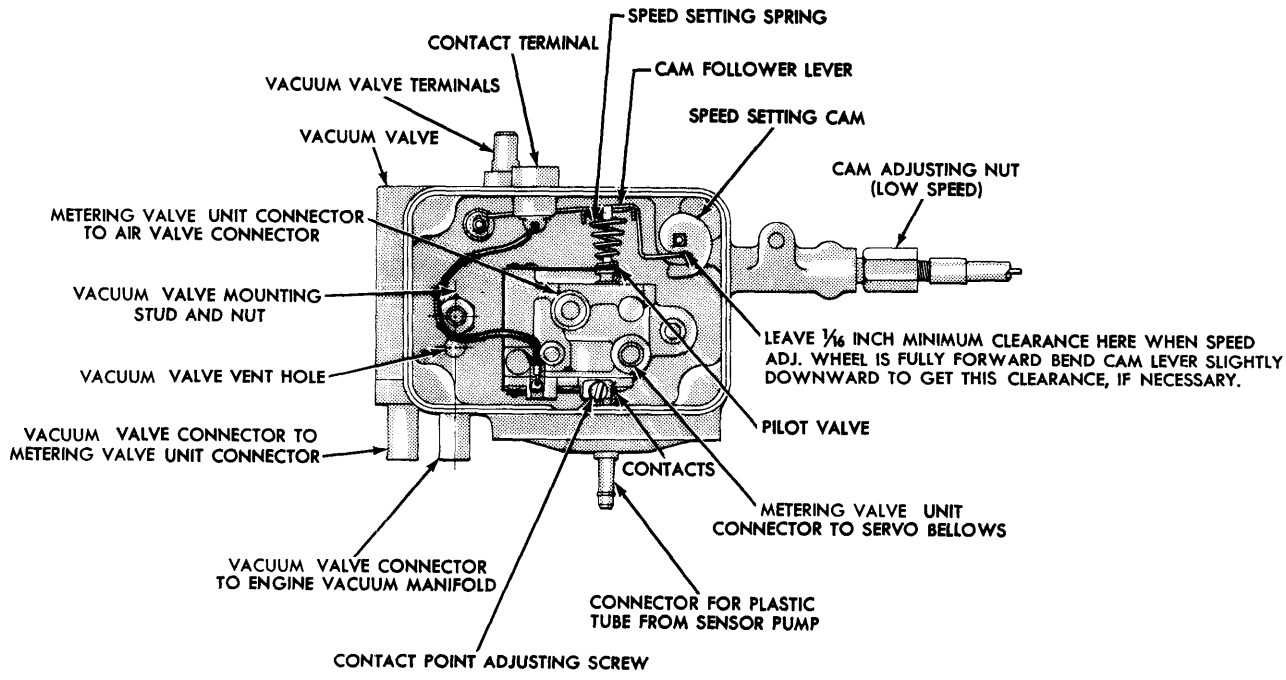

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FIG. 2—Metering Valve Unit Detail

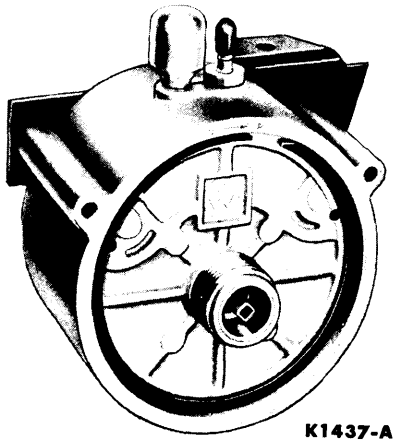
K1437-A

FIG. 3—Sensor Pump

cant of high viscosity stability. When the car is accelerated to the set speed, pressure from the sensor pump increases to balance the spring pressure exerted on the pilot valve. This causes the vacuum valve to snap open (Fig. 4), and the points in the metering valve unit to close. Manifold vacuum is thus available to the pilot valve which meters vacuum to the servo attached to the throttle linkage (Fig. 5). As the pilot valve is now in equilibrium position, the servo does not move the throttle. If for any reason the sensor pump is removed from the car, it must be kept in its normal vertical position or lubricant will leak out.

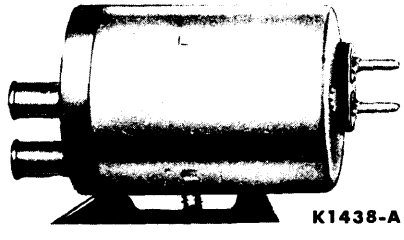
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FIG. 4—Vacuum Valve

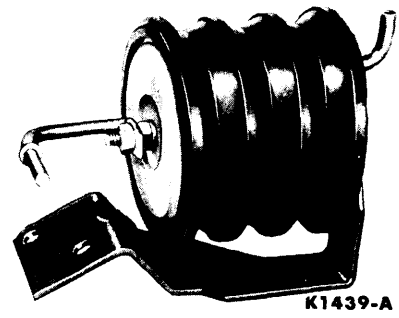

K1439-A

FIG. 5—Servo

When climbing a hill the car speed and the sensor pump pressure are reduced. This reduces the pressure on the pilot valve. The spring force, which is constant for the set speed, moves the valve which meters more vacuum to the servo. This opens the throttle, accelerating the car until equilibrium force is again reached.

On a downgrade the same principle applies, reversing the action. As the speed rises, so does the pressure of the sensor pump, causing the pilot valve to overpower the set speed spring force. Less vacuum is therefore available to the servo and the throttle closes slightly until the pilot valve forces are again equalized.

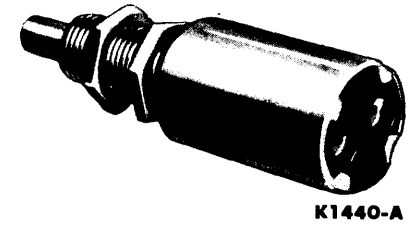
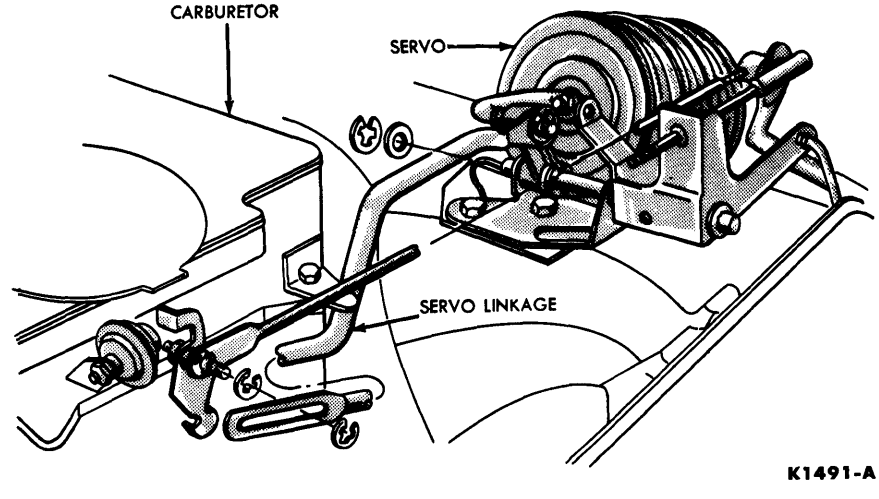

K1440-A

FIG. 6—Brake Switch

If the brake pedal is applied even slightly, the speed control is immediately disconnected. This is done with a small push button switch which remains closed until the pedal is depressed (Fig. 6). The speed control will resume control of the vehicle as soon as it is again accelerated to the set speed. The driver also can turn the control on or off at any speed with the switch in the control head.



K1491-A

FIG. 7—Servo Linkage

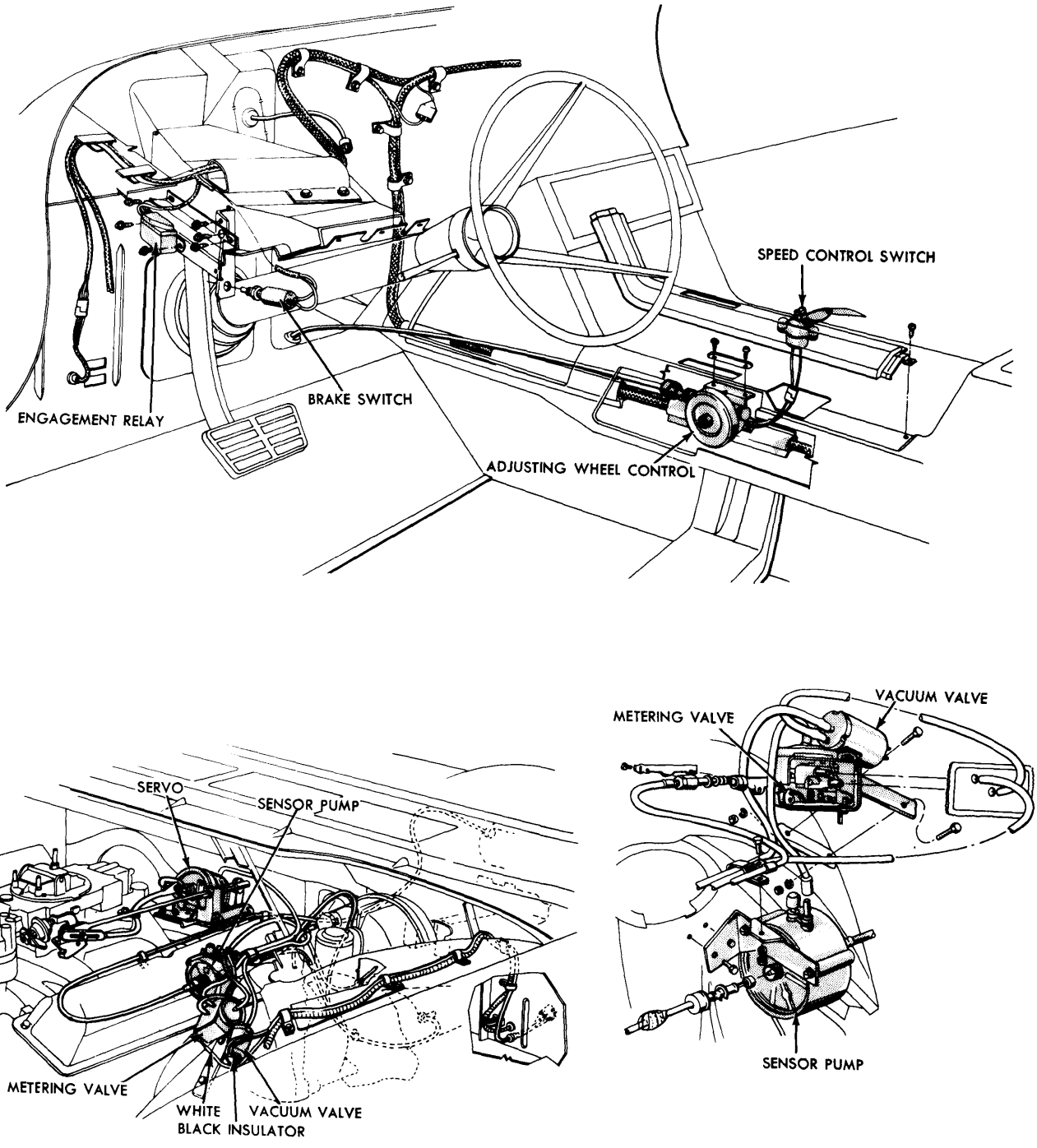


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FIG. 8—Speed Control Installation

2 DIAGNOSIS AND TESTING

SPEED CONTROL DIAGNOSIS GUIDE

SPEED CONTROL SWITCH BUTTON WON'T STAY OUT, SYSTEM IS INOPERATIVE	1. Fuse blown. 2. Wire off back of speed control switch, or ignition switch or wire(s) defective. 3. Speed control switch burned out.
SPEED CONTROL SWITCH BUTTON STAYS OUT BUT SYSTEM IS INOPERATIVE	1. Plastic tube between the sensor pump and metering valve unit off or leaking. 2. Fluid low or gone from the sensor pump due to leaks. 3. Vacuum tubes from the metering valve unit off or leaking. 4. Brake switch out of adjustment. 5. Speed setting knob set too high. 6. Wire off of the speed control switch, brake switch, engagement relay, vacuum valve or metering valve unit, or defective wire(s). 7. Contacts in metering valve unit dirty. 8. Brake switch, engagement relay, vacuum valve or metering valve unit defective. 9. Ruptured servo bellows. 10. Servo disconnected from carburetor linkage. 11. Speedometer cable broken between the transmission and sensor pump.
ENGAGEMENT RELAY IS HEARD, BUT SYSTEM IS INOPERATIVE	1. Vacuum hose off or split between manifold and vacuum valve, or between vacuum valve and metering valve unit; or, plastic tube off or split between metering valve unit and sensor pump. 2. Ruptured servo bellows. 3. Servo disconnected from carburetor linkage. 4. Defective vacuum valve. 5. Wire off vacuum valve, or wire defective.
SYSTEM HUNTS (SPEED CONTINUOUSLY CHANGES UP AND DOWN)	1. Vacuum hose split between manifold and vacuum valve, vacuum valve and metering valve unit, metering valve unit and servo. 2. Ruptured servo bellows. 3. Defective metering valve unit. 4. Sticky carburetor or accelerator linkage.
LOW SPEED SETTING TOO HIGH	1. Defective sensor pump. 2. Defective metering valve unit. 3. Cam not properly adjusted (Section 2, Part 16-8).
SYSTEM SLUGGISH, WILL NOT HOLD SPEED ON HILLS	1. Defective sensor pump. 2. Sticky carburetor or accelerator linkage. 3. Vacuum leak in hoses or servo.
SPEED CONTROL REGULATES, BUT SPEEDOMETER DOES NOT REGISTER	1. Broken speedometer cable between sensor pump and speedometer. 2. Inoperative speedometer mechanism.
WHILE OPERATING, VEHICLE OVERSPEEDS SPEED SETTING	1. Plastic tube between sensor pump and metering valve unit leaking. 2. Defective metering valve unit diaphragm. 3. Hoses to metering valve unit reversed.
SLOW RESPONSE WHEN ADJUSTING SPEED AND SPEED DROPS EXCESSIVELY ON HILLS	1. Kinked or leaking vacuum hoses between manifold and vacuum valve, vacuum valve and metering valve unit, or metering valve unit and servo. 2. Small leak in servo bellows.

TESTING

SYSTEM FAILS TO OPERATE

If Speed Control Switch Button Won't Stay Out. Replace the fuse. If this fails to correct the problem, examine the back of the speed control switch, and the ignition switch, for disconnected or defective wires. Finally, if the trouble still exists, replace the speed control switch.

If Speed Control Switch Button Stays Out

1. Check the brake switch for correct adjustment.
2. Be sure that the speed setting knob has not been set too high.
3. In the following order, examine the speed control switch, brake switch, engagement relay, vacuum valve and metering valve unit for disconnected, damaged, or missing wires. Make necessary corrections.
4. Examine the plastic tube between the sensor pump and the metering valve unit, and the vacuum tubes connected to the metering valve unit for improper connection or leaks.
5. Check the servo bellows for

ruptures or other leak causing damage, and for proper connection and adjustment to the throttle linkage. Make any necessary corrections or replacements.

6. If the trouble still exists, it could be caused by an internal defect in the brake switch, engagement relay, vacuum valve, or metering valve unit. To determine which is at fault use the following procedure:

1. Turn the ignition switch to ACC.

2. Pull out the knob of the speed control switch (it should remain out).

3. Ground one wire of a 12-volt trouble light to the engine.

4. Remove the red wire from the vacuum valve.

5. Touch this wire to the ungrounded wire of the trouble light.

If the light comes on, the brake switch and the associated wiring are satisfactory to put the system into operation. If the light does not come on, the brake switch may be out of adjustment or defective, or the associated wiring from the speed control switch may be loose or defective. Repair or replace the defective items. Connect the red wire to the vacuum valve and disconnect the test light.

6. Remove the white wire from the metering valve unit and ground it. A thump should be heard in the vacuum valve. This indicates that the vacuum valve is satisfactory. Immediately repeat this test. No thump should be heard. If no thump is heard on this second test, the engagement relay is satisfactory. If a thump is heard, either the engagement relay is defective, or it is not properly grounded. Connect the white wire to the metering valve unit.

7. Push in the knob of the speed control switch. **This must be done to unground the system for this test.** Pull out the knob of the speed control switch. Remove the air filter screen of the metering valve unit. **Carefully** close the contact points. If a thump is heard at the vacuum valve, the metering valve unit is satisfactory electrically. If not, clean the points. (See Cleaning and Inspection in this part.)

It should be noted that this is a one time test. Subsequent attempts to get this thump will result in no thump which is as it should be. Should there be any doubt as to whether a thump was heard, push in the knob of the speed control switch, then pull it out again before repeating the point closing test.

8. If the above tests all were satisfactory, the pressure diaphragm could be at fault. To test the diaphragm, raise the car from the floor and set the speed control at the low speed setting. Operate the car in drive range. Raise, then lower the engine speed several times, noting whether the points in the metering valve unit close and open consistently in relation to the rise and fall of the engine speed.

If the points do not close and open consistently in relation to the rise and fall of the car speed, or if the points fail to operate at all, the pressure diaphragm could be defective, in which case replace the entire metering valve unit.

It is normal during this test for the car speed to hunt, or raise and lower slightly, as the car will not be under load. **Before making any decision that the metering valve unit should be replaced, it should be determined whether the sensor pump has lost its fluid. Check for leaks into the speedometer cable. If the fluid is low, or gone, replace the pump.**

ENGAGEMENT RELAY OPERATES

1. A careful examination should be made of the vacuum hose for fractures or splits and for a secure connection at the manifold, the vacuum valve and the metering valve unit. Replace any defective sections.

2. If the servo bellows is fractured, cracked, or porous, it should be replaced.

3. Make sure that the servo connection and the adjustment to the throttle linkage are to specifications.

4. Make a trouble light check, as outlined above to determine whether the vacuum valve is operating. If all wiring and connections are satisfactory, and the trouble light will not light, replace the vacuum valve.

SYSTEM OPERATES ERRATICALLY—CAR SPEED VARIES FROM WHEEL SETTING

If the system hunts (speed continuously changes up and down), check for slight leaks in the vacuum lines or the servo bellows. Check also for restricted or sticky action of the carburetor or accelerator linkage. Take necessary corrective action.

If the low speed setting is too high, reset it by turning the cam adjusting nut of the metering valve unit (Fig. 2). If this does not stabilize the speed, any of the above listed defects which cause hunting could make this trouble.

SPEED CONTROL OPERATES BUT SPEEDOMETER DOES NOT REGISTER

A broken speedometer cable between the sensor pump and the speedometer, or an inoperative speedometer mechanism, would account for this. Replace the defective unit.

3 COMMON ADJUSTMENTS AND REPAIRS

Make all adjustments with the engine stopped.

BRAKE SWITCH

Adjust the brake switch so that the plunger is depressed ¼ inch (Fig. 6) with the brake pedal in the normal released position (See Description and Operation in this part).

SERVO LINKAGE ADJUSTMENT

Make this adjustment with the engine stopped. Be sure that the fast idle cam does not hold the throttle open even slightly. Adjust the length of the connecting cable, or rod, between the servo and the throttle linkage so that from ⅛ inch to ¼ inch movement of the servo bellows is allowed before it moves the throttle linkage.

METERING VALVE UNIT ADJUSTMENT FOR SET SPEED

Adjustments can be made without removing the metering valve unit (Fig. 2) from the car. The system should be adjusted to engage at approximately two mph above the set speed.

1. Remove the two vacuum hoses from the front face (screen side) of the metering valve unit.

2. Carefully remove the air filter screen from the face of the metering valve unit using a small screwdriver.

3. If the system engages at less than the set speed, rotate the small plastic cam screw slightly clockwise (Fig. 2) to open the contacts. If the system engages at more than the set speed, rotate the small plastic cam screw slightly counterclockwise to close the contacts.

4. Install the air filter screen.

5. Road test the car by driving it on a level road at some definite speed; 35 mph is suggested. Depress the brake pedal lightly to disengage the speed control. Accelerate very gradually until a click is heard. If the adjustment is correct, the speed should be approximately 37 mph. If not repeat steps 1 to 5 above.

4 REMOVAL AND INSTALLATION

VACUUM SERVO

The vacuum servo is mounted on a bracket which is bolted to the engine (Fig. 7). The servo is linked to the carburetor throttle shaft as shown. The links are held on by the use of snap rings.

METERING VALVE

The metering valve is mounted on the left hand fender well. It is connected to the sensor pump, vacuum valve and servo with vacuum hoses (Fig. 8).

VACUUM VALVE

The vacuum valve is mounted on the left hand fender well. It is connected to the metering valve and the car vacuum system with vacuum hoses (Fig. 8).

SENSOR PUMP

The sensor pump is attached to a bracket mounted on the left wheel suspension tower. It is connected by flexible cables to the speedometer and the transmission. It is connected to the metering valve by a hose (Fig. 8).

ENGAGEMENT RELAY AND BRAKE SWITCH

The engagement relay and brake switch are attached to a bracket above the brake pedal (Fig. 8).

SPEED CONTROL SWITCH

The speed control switch is mounted on the tunnel directly behind the adjusting wheel control (Fig. 8).

ADJUSTING WHEEL CONTROL

The adjusting wheel control is mounted on the left side of the tunnel beside the driver's seat (Fig. 8). It is connected by a flexible cable to the metering valve.

5 CLEANING AND INSPECTION

METERING VALVE UNIT CONTACT POINTS

1. Carefully remove the hoses and the air filter screen.

2. Insert a piece of paper approximately ¼ inch wide by 2 inches long between the contact points. Use typewriter bond paper for this. **Do not, under any condition, use emery paper, sandpaper, or a point file between these gold contact points.**

3. Lift up the pilot valve **gently** with a small screwdriver or a similar tool. To do this, insert the tool under the leaf spring just below the small end of the speed setting spring (Fig. 2). This will close the contacts and hold the paper between them.

4. Pull the paper through to wipe both of the contacts.

5. Repeat steps 2, 3, and 4 until the paper shows no markings or dirt from the contacts.

6. To complete this operation, repeat steps 2, 3, and 4, again, but before the paper is pulled all the way through, allow the contacts to open slightly to prevent any possibility of paper fragments being left between them.

7. Use all possible caution not to bend the contacts, as this will affect the speed at which the speed control will go into operation.

PART 16-4 RADIO

1 DESCRIPTION AND OPERATION

Refer to Wiring Diagram Manual Form 7795P-65 for locations of wiring harnesses.

An AM and an AM/FM radio are available. The AM radio is a Motorola, model number 5TMS. The AM/FM radio is a Bendix, model TOB5TBS. Both radios have push button tuning as well as manual tuning. The antenna is mounted on the right fender. On the manual antenna the antenna wand can be removed from the base without removing the base from the fender. A rear seat speaker and a front speaker are used.

2 DIAGNOSIS AND TESTING

RADIO DIAGNOSIS GUIDE

NO RECEPTION	1. Burned out fuse. 2. Reversed battery polarity. 3. Defective antenna or lead. 4. Shorted speaker lead or defective speaker.	Be sure that proper voltage is available at the set then substitute the known good antenna and speaker.
NOISY OR ERRATIC RECEPTION	**NOISY RECEPTION–ENGINE NOT RUNNING** 1. Loose connections. **NOISY RECEPTION–ENGINE RUNNING** 1. Defective suppression equipment. 2. Suppression condensers not properly grounded.	3. Receiver not properly grounded to the instrument panel. **NOISY RECEPTION–CAR IN MOTION** 1. Loose or broken lead-in cable. 2. Loose or defective radio antenna. 3. Defective wheel static collectors.
DISTORTED OR GARBLED SOUND	1. Voice coil rubbing on center pole piece of speaker magnet (either front or rear speaker). 2. Torn speaker cone.	3. Foreign material on speaker cone. 4. Bent or twisted speaker mounting.
WEAK RECEPTION	1. Beyond normal reception distance from station (FM only). 2. Defective antenna. If FM reception is poor be sure that the antenna is at 30-32 inch height before trying a new antenna.	

TESTING

Tests for any of the components in the radio system may be made by substituting known good parts. In the case of an antenna or speaker, it will not be necessary to remove the suspected antenna or speaker. Disconnect the antenna or speaker at the radio and plug in the known good unit. Check the antenna with the car outside of the garage. Plug the antenna lead into the antenna socket in the radio, and extend the antenna wand through the open window of the car.

3 COMMON ADJUSTMENTS AND REPAIRS

PUSH BUTTON ADJUSTMENT – AM RADIO

Turn the radio on and allow it to warm up for 15 minutes. Pull out the desired push button and reduce the volume to a low value. Tune in the desired station with the manual tuning knob. The station is correctly tuned in when the clearest tone is heard. Carefully push the button in all the way, then release it.

Adjust the remaining buttons and check all the positions for repeat accuracy. Repeat the procedure for any buttons that shift from the correct tuning point.

On the AM/FM radio push one AM button all the way in before adjusting the AM buttons. Push one FM button all the way in before adjusting the FM buttons.

PUSH BUTTON ADJUSTMENT—AM-FM RADIO

AM PUSH BUTTONS

Press in firmly any one of the push buttons which has been pre-set to the AM position. Pull out the push button to be set to unlock the push button mechanism. If the red bar on the push button face is down, pull out the push button approximately 1/10 inch further until the button is free to rotate and rotate the button 180° to the bar up position. Carefully tune in the desired AM station with the manual tuning knob. After the station is clearly tuned in push the button straight in until it stops and then release it. Repeat this procedure for the remaining buttons.

FM PUSH BUTTONS

Press in firmly any one of the push buttons which has been pre-set to the FM position. Pull out the push button to be set to unlock the push button mechanism. If the red bar on the push button face is up, pull out the push button approximately 1/10 inch further until the button is free to rotate and rotate the button 180° to the bar down position. Carefully tune in the desired FM station with the manual tuning knob. After the station is clearly tuned in, push the button straight in until it stops and then release it. Repeat this procedure for the remaining buttons.

4 REMOVAL AND INSTALLATION

RADIO CHASSIS

REMOVAL

1. Pry off the right and left side console mouldings. Remove the right and left side console moulding retainers.
2. Pry off the right and left side instrument panel chrome mouldings.
3. Remove the six screws and two bolts retaining the lower right and left side finish panels to the instrument panel and pull the finish panels away from the instrument panel.
4. Remove the screws retaining the right and left side console finish panels and remove the finish panels.
5. Remove the two screws attaching the lower end of the radio to the support brackets.
6. Remove the radio knobs and the bezel mounting nuts and washers.
7. Disconnect the antenna and speaker connectors and remove the radio.

INSTALLATION

1. Position the radio in the console, and install the antenna and speaker leads.
2. Position the control shafts into the console openings and install the bezel lock washers, nuts and knobs.
3. Install the two screws securing the radio to the support brackets.
4. Install the right and left side console finish panels.
5. Install the right and left side lower finish panels to the instrument panel.
6. Install the chrome mouldings between the instrument panel and the lower finish panels.
7. Position the carpeting and moulding retainer to the right and left side of the console and install the retaining screws and the console moulding.

STANDARD ANTENNA

REMOVAL

1. Pry off the right side console moulding. Remove the right side console moulding retainer.
2. Pry off the right side instrument panel chrome moulding.
3. Remove the three screws and one bolt retaining the lower right side finish panel to the instrument panel and pull the finish panel away from the instrument panel.
4. Remove the screws retaining the right side console finish panel and remove the finish panel.
5. Reach through this opening, and from behind the radio, remove the antenna lead-in wire.
6. Attach a piece of strong string to the lead-in wire to save time on installation.
7. Remove the fender splash shield and remove the antenna nut and stanchion assembly from the top of the fender, then remove the antenna.

INSTALLATION

1. Attach the string to the antenna lead-in wire.
2. Reach through the console finish panel opening and pulling the string, draw the lead-in wire through to the rear of the radio.
3. Plug the lead-in wire into the radio. Install the antenna nut and stanchion assembly, then install the fender splash shield.
4. Install the console finish panel, and the retaining screws.
5. Position the lower right side finish panel to the instrument panel and install the three screws and one bolt.
6. Install the chrome moulding carefully, on the right side instrument panel.
7. Position the carpeting and moulding retainer to the right side of the console, and install the retaining screws and the console moulding.

POWER ANTENNA

REMOVAL

1. Raise the car part way on a hoist.
2. Remove the retaining screws and one nut, and remove the right fender splash shield.
3. Disconnect the antenna lead and the electrical plug.
4. At the lower end of the antenna remove the bracket to wheel housing mounting screw, then remove the screws retaining the antenna to the ground support collar.
5. Remove the antenna from under the fender.
6. Remove the retaining nut and washer beneath the fender and remove the ground support collar stanchion assembly.

INSTALLATION

1. Transfer the mounting bracket from the old antenna to the new antenna.
2. Position the stanchion assembly and ground support collar, and install the retaining washer and nut.
3. Position the antenna under the

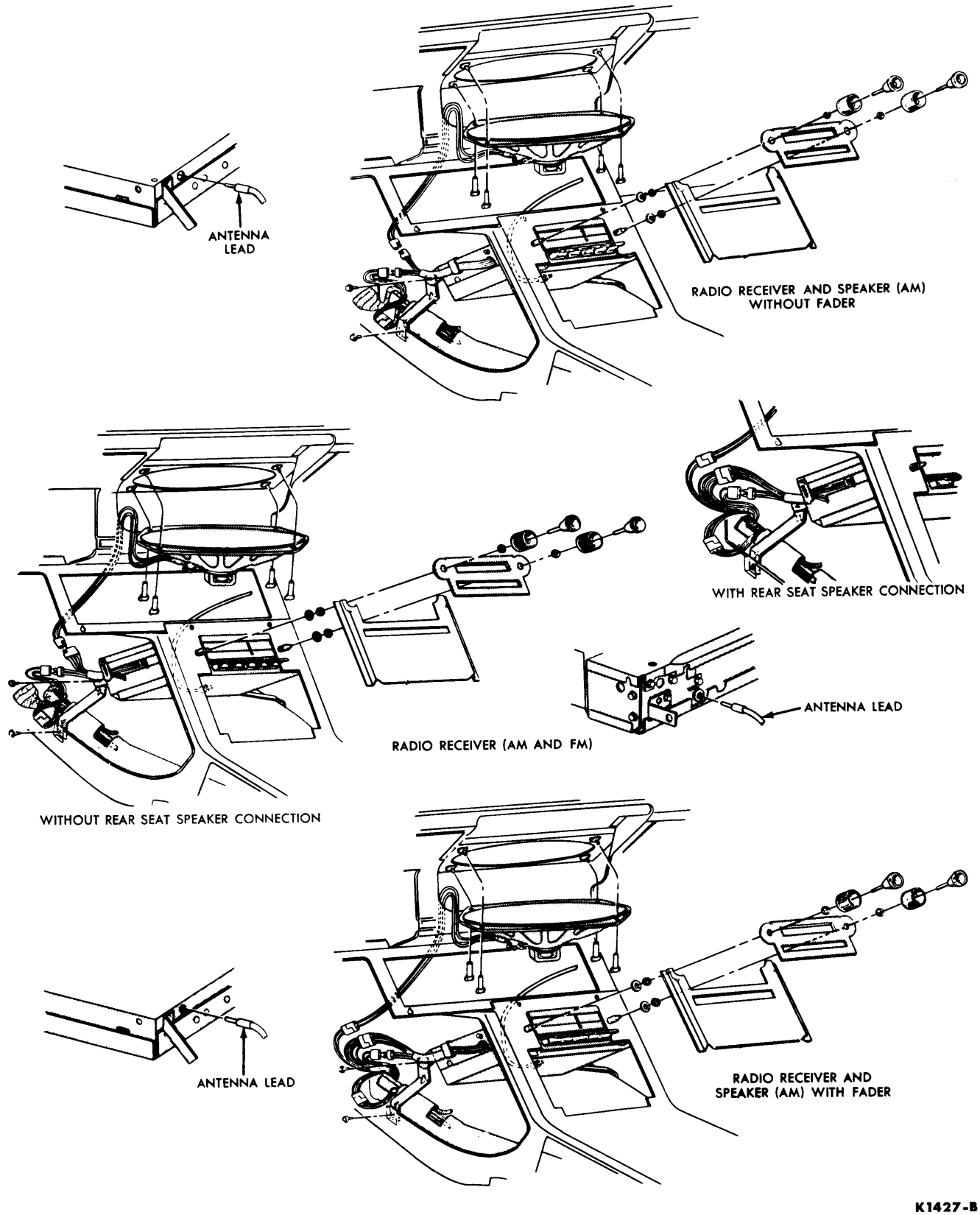

FIG. 1 – Speaker Lead Connections

fender and install the retaining screws in the ground collar and at the mounting bracket to wheel housing.

4. Connect the antenna lead and the electrical plug.
5. Check the antenna operation.
6. Position the splash shield and install the retaining screws and nut.
7. Lower the car to the floor.

POWER ANTENNA SWITCH

REMOVAL

1. Remove the battery ground cable.
2. Apply tape below the clock housing to prevent paint damage.
3. Remove the retaining screws, then remove the knobs from the wiper, the washer, the right air and the left air control knobs.
4. Remove the clock housing retaining screws, then pull back the clock housing.
5. From the power antenna switch disconnect the connector plug, then remove the retaining screws and remove the switch.

INSTALLATION

1. Transfer the control arm and the knob to the new switch.
2. Position the switch to the clock housing, install the retaining screws and install the connector plug.
3. Position the clock housing and install the retaining screws.
4. Check the operation of the switch.
5. Position the knobs on the wiper and washer, the left air and the right air control levers and install the retaining screws.
6. Remove the protective tape and connect the battery ground cable.

FRONT SPEAKER

1. Remove the four knobs and four screws from the clock housing and position the clock housing down out of the way.
2. Disconnect the speaker lead. Remove the speaker mounting wing nuts, and remove the speaker.
3. Place the new speaker in position and install the mounting wing nuts.
4. Connect the speaker lead (Fig. 1).
5. Install the clock housing and install the four knobs.

PART 16-5 SPECIFICATIONS

BLOWER MOTOR CURRENT DRAW

At Low Speed	2-4	Amperes at 12 volts
At Medium Speed	4-5	Amperes at 12 volts
At High Speed	6.3-7.5	Amperes at 12 volts*

*When in A/C position 13.2 Amperes at 12 volts.

RADIO

Radio Current Draw .... 1 ampere max. @ 12 volts

AIR CONDITIONING COMPRESSOR

Location	Torque (Ft-lbs)
Cylinder Head	20-24
Front Seal Plate	6-10
Service Valve (Rotolock)	35 Max.
Mounting Bolt	14-17
Oil Filler Plug	18-22
Clutch Mounting	15-22

Oil capacity: 7/8 inch Minimum. Use Suniso No. 5 or Capella E.

SPEED CONTROL

BRAKE PEDAL RELEASE SWITCH
Adjustment Nut Torque .....48-60 in-lbs

CIRCUIT PROTECTION

Heater	20 Amp C.B.
Air Conditioner	20 Amp C.B.

DRIVEN BELT TENSION

Between Fan Pulley and Air Conditioner Compressor
All Engines .....New 120-150
Used* 90-120

*Belt operated for a minimum of 10 minutes is considered a used belt.