A/C-HEATER SYSTEM - MANUAL

1988 Jeep Cherokee

1988 Manual A/C-Heater Systems
JEEP

* PLEASE READ THIS FIRST *

CAUTION: When discharging air conditioning system, use only approved refrigerant recovery/recycling equipment. Make every attempt to avoid discharging refrigerant into the atmosphere.

DESCRIPTION

On Cherokee, Comanche and Wagoneer, the Climate Control System is an integral assembly combining air conditioning, heating and ventilating capabilities for models with air conditioning. The A/C registers are built into instrument panel.

On Wrangler models, a dual flow unit with the capability of recirculating air or drawing air from outside is used. It incorporates under-dash registers and uses a blend-air type system.

The A/C components include a compressor, condenser, receiver-drier, a sight glass (in the receiver-to-evaporator line) and evaporator housing. Evaporator housing contains evaporator core, expansion valve, thermostat, wiring and drain tube. Blower motor and fan are located in blower housing, which is attached to evaporator housing.

Vents provided in evaporator housing are adjustable to direct air to different positions in vehicle's interior. System controls include fan and temperature control knobs built into lower evaporator housing assembly or temperature and mode levers on control panel integrated with instrument panel.

OPERATION

A/C SYSTEM CONTROLS

Temperature & Fan Control Knobs
(Wrangler)

The right rotary control knob allows selection of desired temperature. Knob has "OFF" "1", "2" and "3" positions for different levels of cooling. The left rotary fan switch (knob) controls blower motor speed. Knob has "OFF", "LOW", "MED" and "HI" positions. Fan will operate unless mode control lever is in "OFF" position.

The A/C fan switch is a 3-speed unit used in conjunction with a blower motor resistor. Fan switch controls low, medium and high speed operation. Switch may be serviced by removing access plate located on lower evaporator core housing, below control panel.

The A/C temperature control switch has a thermostat unit built-in. Cooling adjustment is done by turning knob in a clockwise rotation. For fast, efficient system operation in hot weather, vehicle should be purged of hot air by driving about 2-3 city blocks with at least one window open. During this time, temperature control knob should be rotated clockwise to "MAX" position and fan control knob placed in "HI" position. This allows evaporator to pre-cool and avoid typical first blast of warm air.

Temperature Control Panel
(Cherokee, Comanche & Wagoneer)

The upper temperature control (mode) lever includes "MAX", "NORM", "BI-LEVEL", "VENT", "HEAT" and "OFF" positions. At the far end

of the scale, a symbol for defroster indicates defrost position. In "BI-LEVEL" position, a mixture of floor heat and defroster air is obtained.

The lower temperature control lever operates blend-air door in heater core housing. At full right position, all air is directed through heater core, providing maximum heat flow. At full left position, all air is directed around heater core providing fresh air. Control can be set in any intermediate position to provide a blend of heated and unheated air. Heater must be in heat or defrost mode before any air can enter vehicle.

TROUBLE SHOOTING

See JEEP TROUBLE SHOOTING at the end of this article.

REMOVAL & INSTALLATION

CONDENSER

Removal (Cherokee, Comanche & Wagoneer) NOTE: On these models, condenser and receiver-drier are replaced as a unit.

1) Drain radiator. Disconnect fan shroud and radiator hoses. Disconnect automatic transmission cooler lines (if equipped). Discharge A/C system using approved refrigerant recovery/recycling equipment.

2) Disconnect A/C hoses from condenser. Unplug low pressure switch. Remove radiator and condenser as an assembly. Detach condenser retaining bolts. Separate condenser from radiator. Remove receiver-drier from condenser.

NOTE: Plug receiver-drier openings whenever unit is removed from condenser. Add 1 oz. of refrigerant oil (AMC No. 8132400) to system when replacing condenser.

Installation

To install, reverse removal procedure. Fill radiator. Evacuate, leak test, recharge and check A/C system operation.

Removal (Wrangler)

1) Discharge system (slowly to prevent loss of compressor oil) using approved refrigerant recovery/recycling equipment. Drain coolant. Remove fan shroud and radiator. Disconnect pressure line at condenser. Remove condenser mounting screws. Tilt bottom of condenser toward engine.

2) From underside of vehicle, disconnect hose attaching receiver-drier to evaporator. Plug all openings to prevent entry of dirt or moisture. Remove receiver-drier and condenser assembly. Remove receiver-drier from condenser.

Installation

To install, reverse removal procedure. Fill radiator. Evacuate, leak test, recharge and check A/C system operation.

RECEIVER-DRIER

NOTE: On Cherokee, Comanche and Wagoneer, receiver-drier is removed with condenser and radiator as an assembly.

Removal (Wrangler)

Discharge system (slowly to prevent loss of compressor oil) using approved refrigerant recovery/recycling equipment. Disconnect evaporator and condenser lines from receiver-drier. Detach mounting screws from receiver-drier bracket. Remove receiver-drier.

Installation

To install, reverse removal procedure. Evacuate, leak test, recharge. Check A/C system for proper operation.

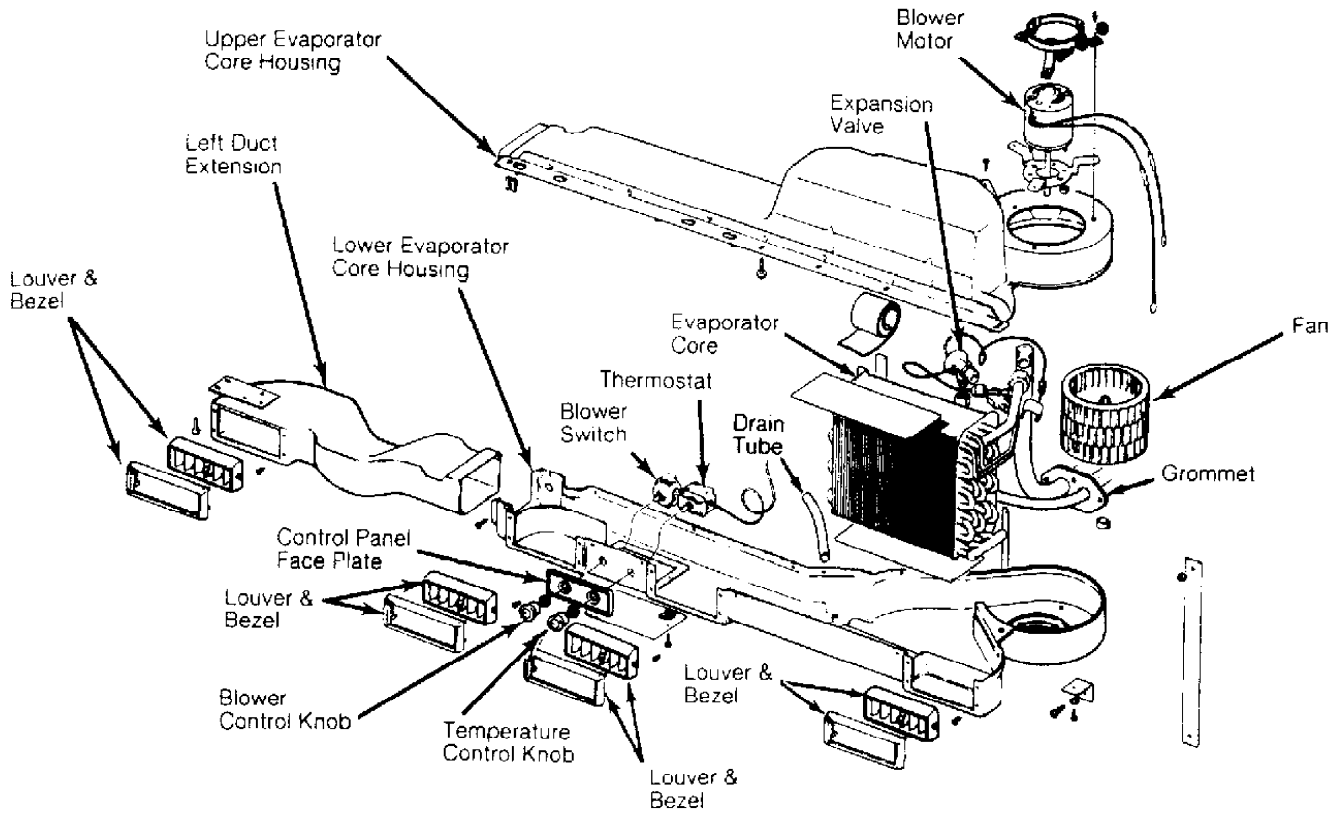


Fig. 1: Exploded View of Wrangler Evaporator Housing
Courtesy of Chrysler Motors.

EVAPORATOR-BLOWER HOUSING & HEATER & EVAPORATOR CORES

NOTE: The following procedures are for vehicles with A/C-heater systems only. For replacement of heater cores on vehicles with heater systems only, see HEATER SYSTEMS, JEEP article.

Removal (Cherokee, Comanche & Wagoneer)

1) Disconnect battery ground. Discharge A/C system using approved refrigerant recovery/recycling equipment. Disconnect A/C hoses from expansion valve. Drain cooling system. Disconnect heater hoses at core tubes. Disconnect blower motor wires and vent tube.

2) Remove console (if equipped). Remove lower instrument panel. Disconnect electrical connectors at A/C relay, blower motor resistors and A/C thermostat. Disconnect vacuum hose at vacuum motor. Cut plastic retaining strap holding evaporator-blower housing to heater core housing.

3) Disconnect blend-air heater control cable. Detach clip at rear of blower housing flange and remove retaining screws. Remove

housing attaching nuts from studs on engine compartment side of dash panel. Remove evaporator drain tube.

4) Remove right kick panel. Detach instrument panel support bolt. Gently pull on right side of dash, then rotate housing downward and toward rear of vehicle to disengage housing studs from dash panel. Remove evaporator-blower housing.

5) To remove heater core, detach retaining screws. Remove heater core by pulling straight out of housing. To remove evaporator core, detach top housing retaining screws, then remove top of evaporator housing.

6) Remove thermostatic switch and capillary tube. Detach 2 evaporator retaining screws and lift evaporator core from housing. Remove expansion valve from evaporator.

Installation

1) To install components, reverse removal procedure. When installing evaporator core, install thermostatic switch and capillary tube before installing top of housing.

2) When installing heater core, ensure seal is properly cemented in place to prevent it from moving when blower assembly is installed. Evacuate, leak test, recharge and check A/C system operation.

NOTE: The evaporator housing mounting location is similar to Wrangler, except blower motor is mounted horizontally to firewall.

Removal (Wrangler)

1) Discharge system using approved refrigerant recovery/recycling equipment. Disconnect inlet line at compressor. Disconnect hose, at quick-disconnect coupling, between receiver-drier and evaporator. Remove hose clamps and dash grommet retaining screws. See Fig. 2.

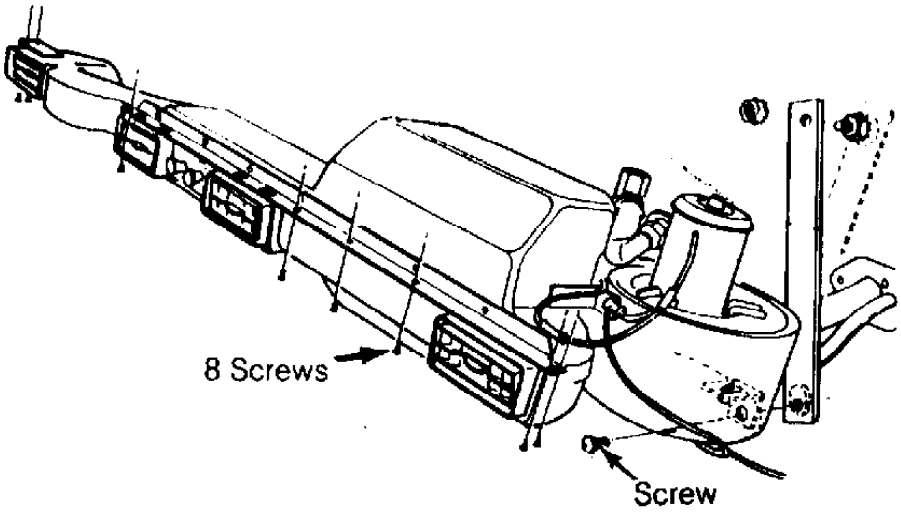


Fig. 2: Wrangler Evaporator Housing Mounting Screw Locations
Courtesy of Chrysler Motors.

NOTE: It is not necessary to discharge system to service blower motor. Evaporator housing may be lowered from instrument

panel to gain access to blower motor mounting screws.

2) Remove screws attaching evaporator housing to instrument panel and mounting bracket. Lower evaporator housing and pull hoses and grommet through opening.

Installation

To install, reverse removal procedure. Evacuate, leak test, recharge and check A/C system for proper operation.

EXPANSION VALVE

Removal (Cherokee, Comanche & Wagoneer)

Discharge A/C system using approved refrigerant recovery/recycling equipment. Disconnect A/C hoses from expansion valve. Disconnect expansion valve from evaporator core inlet and outlet tubes. Remove expansion valve.

Installation

To install, reverse removal procedure. Evacuate, leak test, recharge and check A/C system operation.

NOTE: The expansion valve is pre-set and should not be adjusted. A faulty valve requires replacement.

Removal (Wrangler)

1) Discharge system using approved refrigerant recovery/recycling equipment. Remove evaporator housing. Remove insulation wrapped around suction line and expansion valve.

2) Mark capillary tube location on suction line. Disconnect inlet and outlet connections, capillary tube clamp and equalizer tube. Remove expansion valve.

Installation

1) Clean suction line to provide positive contact with replacement expansion valve capillary tube. Connect inlet and outlet hoses. Clamp capillary tube securely at marked position and connect equalizer tube.

2) Wrap expansion valve and line with insulation. Install evaporator housing assembly. Evacuate, leak test, recharge and check A/C system operation.

TEMPERATURE CONTROL THERMOSTAT

Removal (Cherokee, Comanche & Wagoneer)

1) Disconnect battery ground. Remove console (if equipped). Remove lower instrument panel. Disconnect electrical connection at thermostat. See Fig. 3.

2) Remove capillary tube retaining screw. Remove thermostat retaining screws. Remove capillary tube from tube guide hole.

Installation

1) To install, feed capillary tube through tube guide hole until Red tape on capillary tube just enters hole in housing. Install capillary tube retaining screw and clip.

2) Install thermostat retaining screws and attach electrical connection. To complete installation, reverse removal procedure.

CAUTION: Handle capillary tube with care to avoid bends or kinks which could cause thermostat to malfunction.

Removal (Wrangler)

Remove evaporator housing assembly. Remove lower cover.

Carefully remove thermostat and capillary tube.

NOTE: On Wrangler models, servicing temperature control thermostat requires disassembly of evaporator core housing.

Installation

To install, insert capillary tube into evaporator coil a minimum of 2" (51 mm). See Fig. 4. Install thermostat and evaporator housing lower cover.

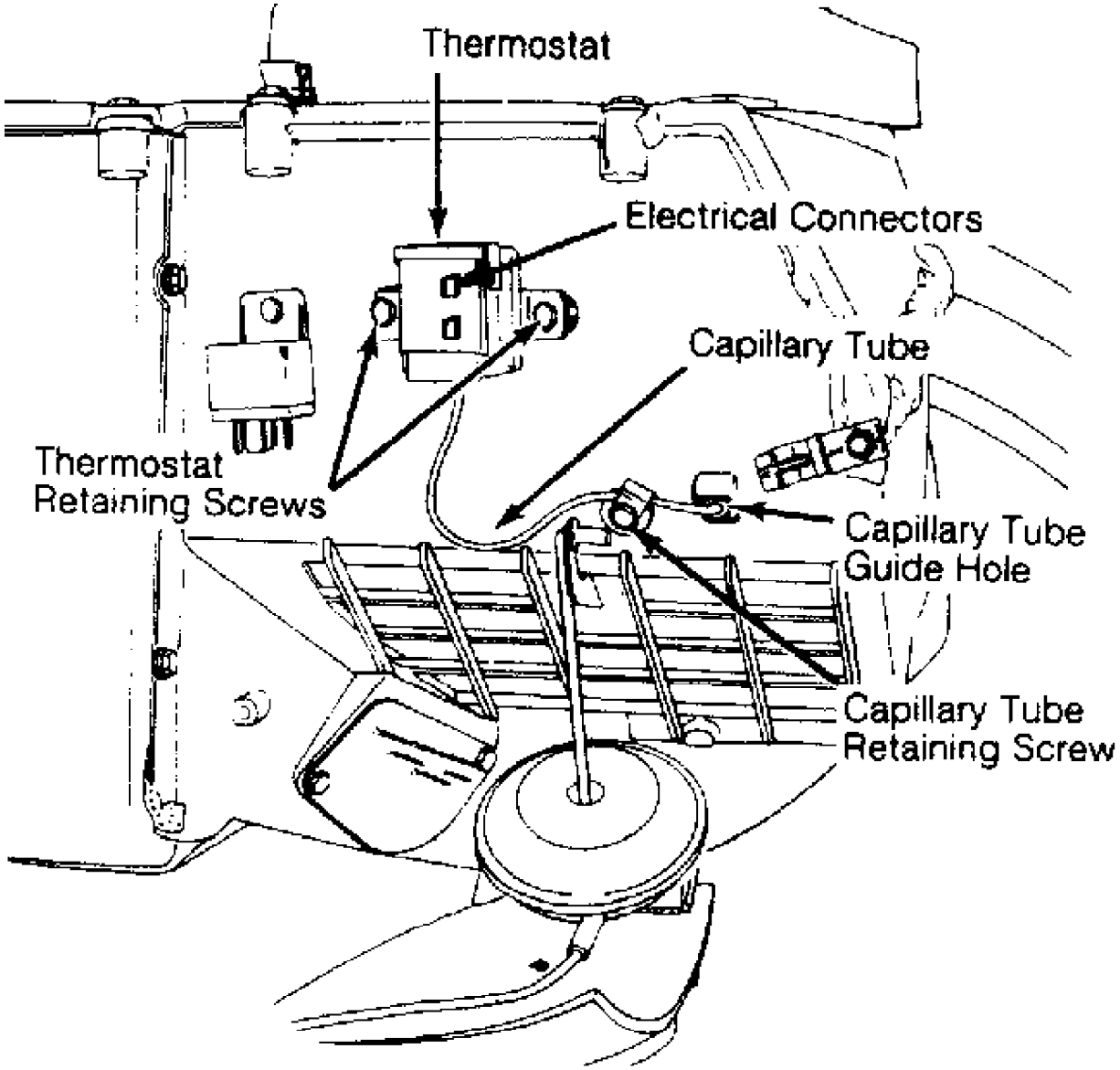


Fig. 3: Capillary Tube & Temperature Control Thermostat Locations
Cherokee, Comanche and Wagoneer locations are shown.

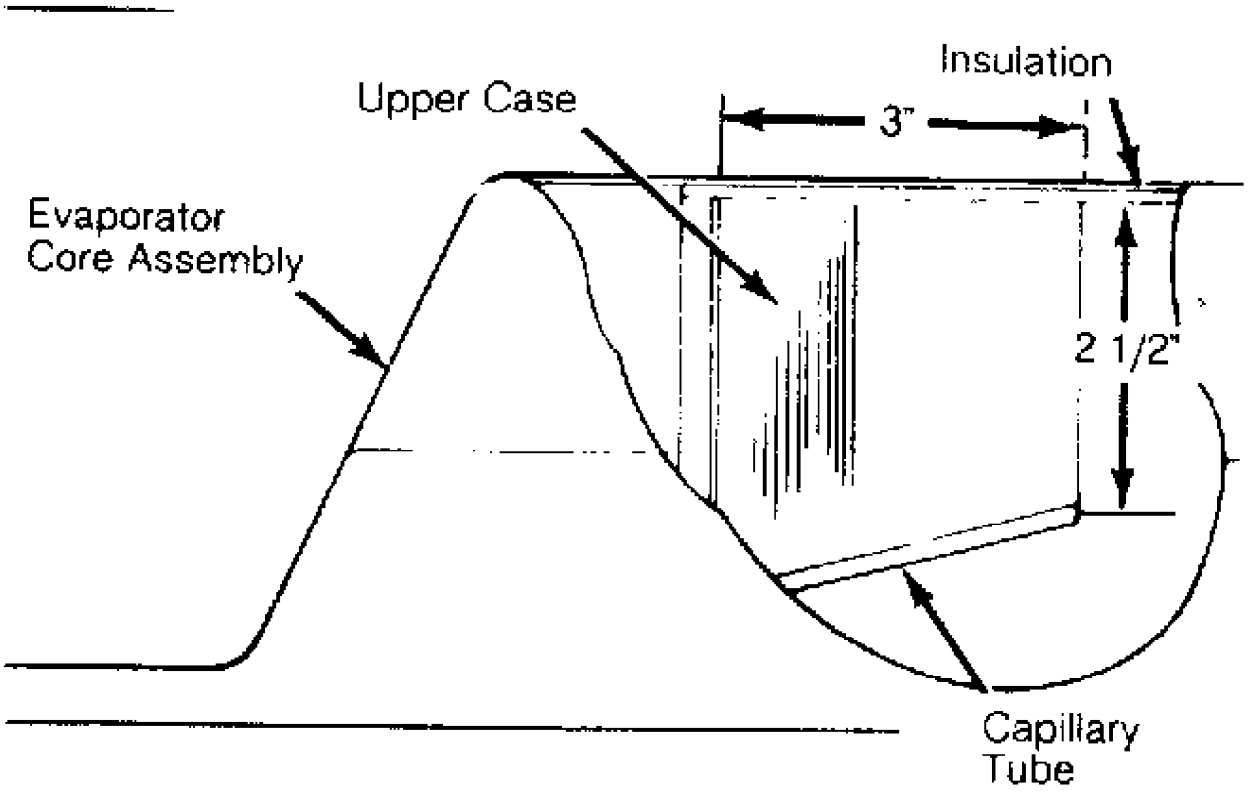


Fig. 4: Wrangler Capillary Tube Position
Courtesy of Chrysler Motors.

TROUBLE SHOOTING

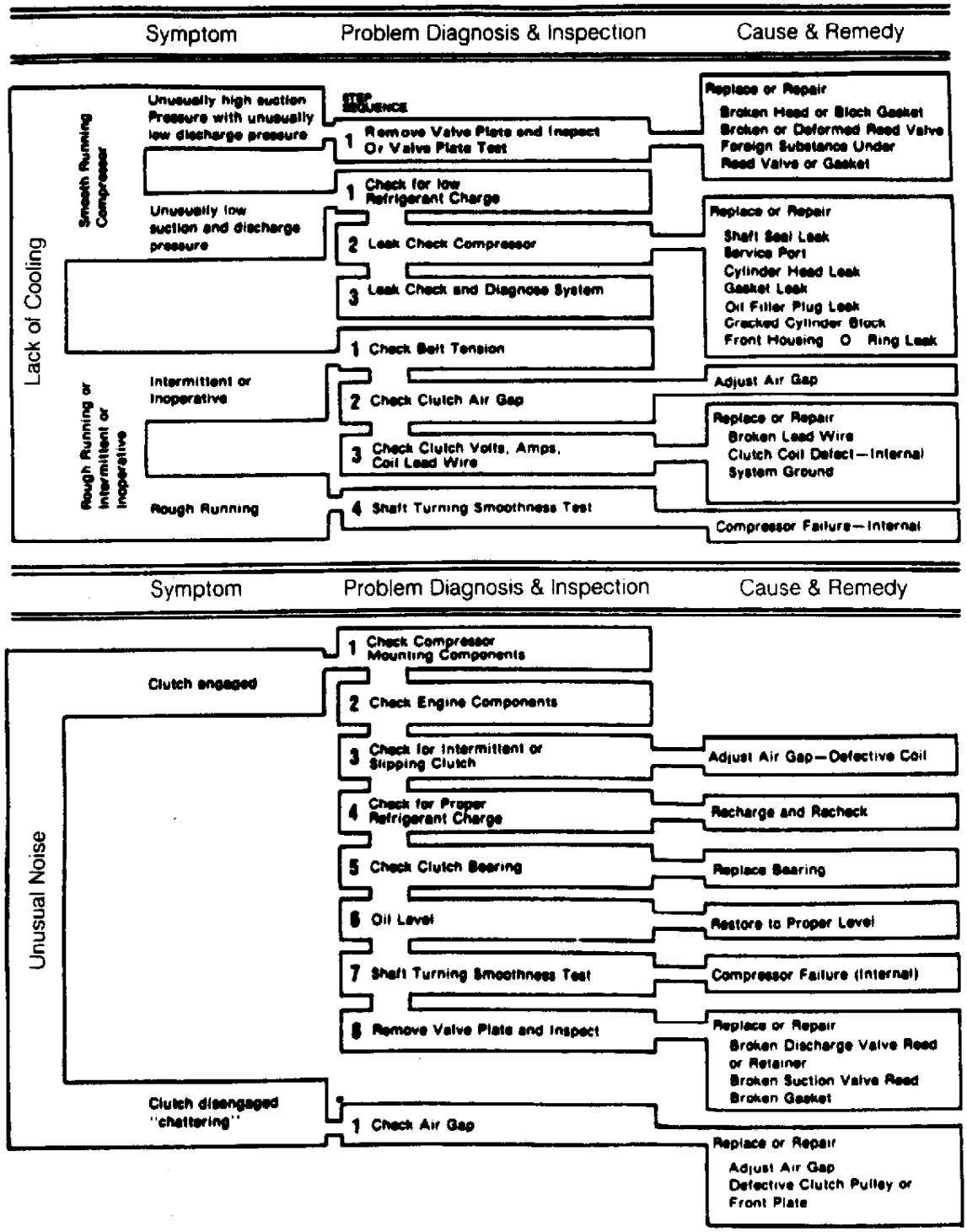


Fig. 5: Jeep Trouble Shooting Chart

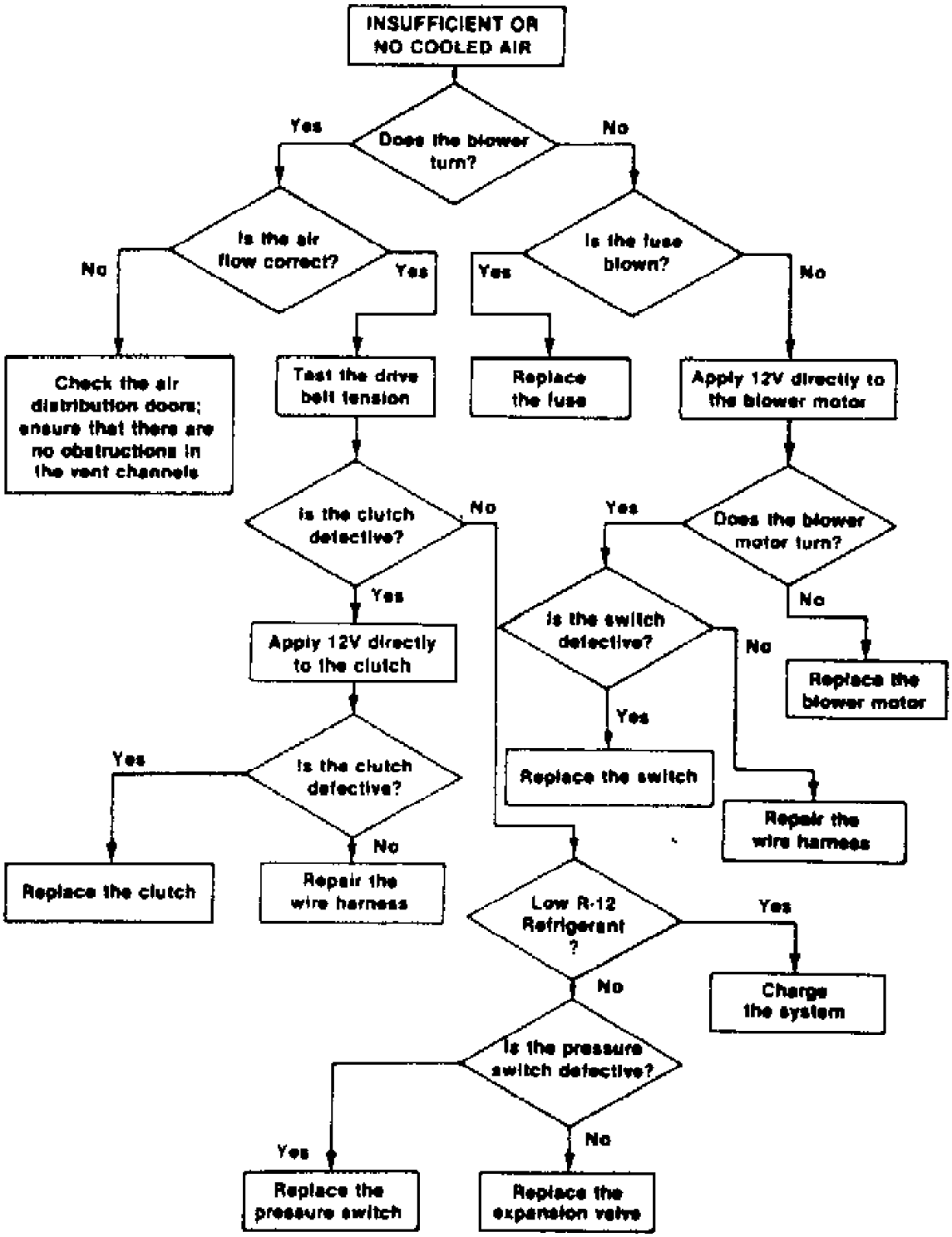
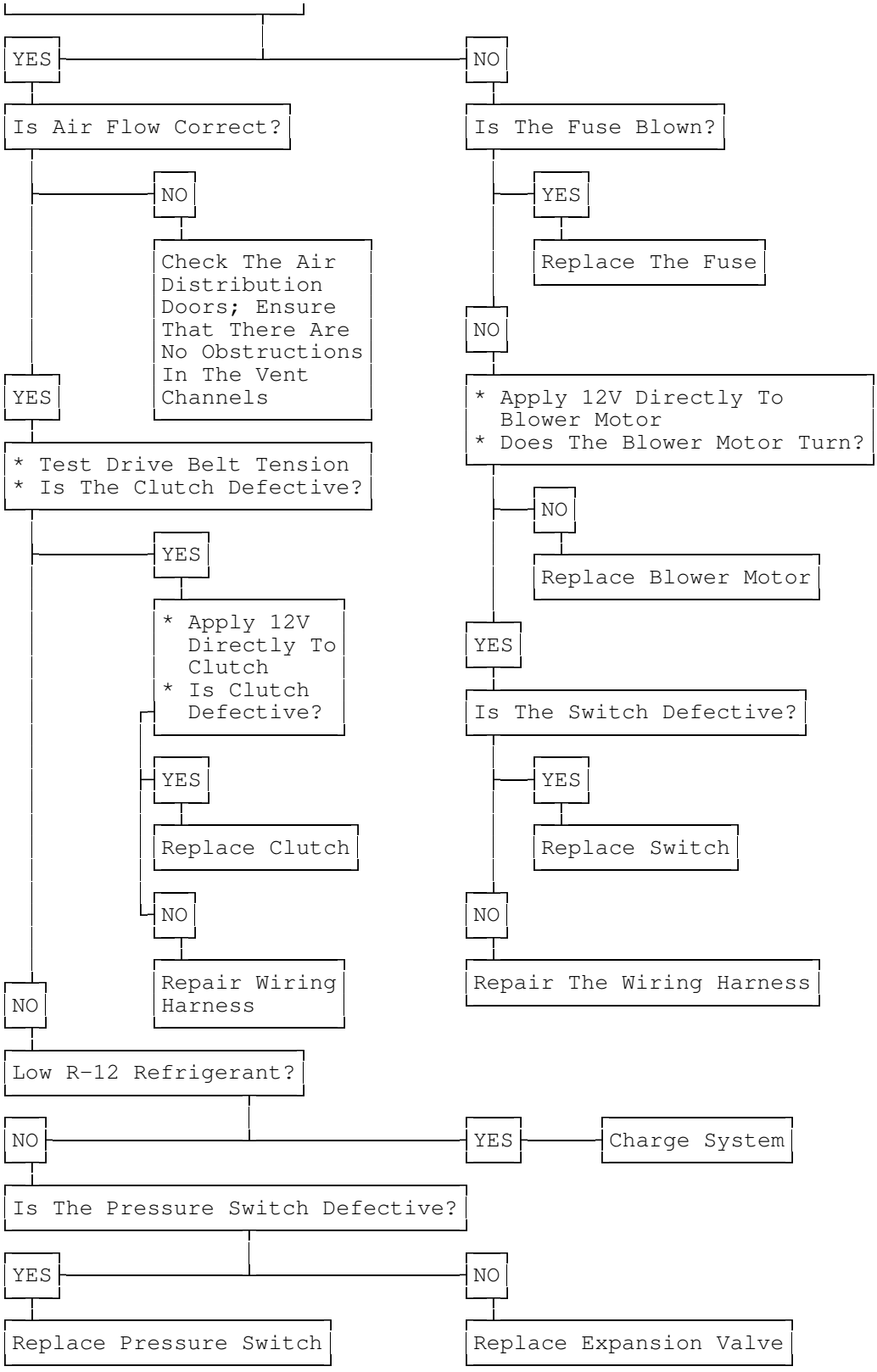


Fig. 6: Jeep Trouble Shooting Flow Chart

Does The Blower Turn?



CONDITION & POSSIBLE CAUSE

Compressor Runs Rough
  * Incorrect oil or refrigerant level.
  * Internal compressor damage.

Compressor Intermittent or Inoperative
  * Drive belt slipping.
  * Faulty clutch air gap.
  * Clutch coil wiring broken or frayed.

Noisy Compressor
  * Mounting bolts loose.
  * Clutch slipping.
  * Improper charge in system.
  * Bad clutch or pulley bearings.
  * Incorrect oil level.
  * Valve plate damaged.
  * Piston slap.

Excessive Vibration
  * Incorrect belt tension.
  * Clutch loose.
  * Pulley misaligned.
  * System overcharged.

A/C Air Flow Stops on Acceleration
  * Defective vacuum storage tank.
  * Vacuum line separated or defective.
  * Vacuum switch defective.
  * Vacuum leak.

High Suction Pressure with Very Low Discharge Pressure
  * Valve plate or gasket broken or deformed.

Very Low Suction and Discharge Pressure
  * Low refrigerant charge.
  * Compressor leak.
  * System leak.

Heater Control Valve Does Not Close with Vacuum Applied
  * Faulty heater control valve.

No Vacuum at Heater Control Valve with Lever at Extreme Left
  * Vacuum source hose disconnected.
  * Leaking vacuum hose.
  * Faulty check valve.
  * Control panel switch defective or misadjusted.

Frozen Evaporator Core
  * Faulty thermostat.
  * Thermostat capillary tube improperly installed.
  * Thermostat not adjusted properly.

Condensation Dripping in Passenger Compartment
  * Drain hose plugged or improperly installed.
  * Insulation missing or improperly installed.

TESTING

Note: The following test applies to all Jeep models except Cherokee and Wagoneer.

System Charge Test

1) To check system refrigerant level, a sight glass has been incorporated into the receiver-to-evaporator hose at the receiver end. A continuous stream of bubbles will appear in the sight glass of a system that is not properly charged. However, both properly charged systems and discharged systems will appear the same because of a lack of bubbles.

2) To test for discharge condition, cycle the clutch off and on with engine at 1500 RPM. When clutch is off, bubbles will appear if there is refrigerant in the system. If no bubbles appear, system is discharged. If discharged, leak test, repair and recharge system.

A/C SYSTEM OPERATION CHART & VACUUM DIAGRAM

A/C SYSTEM OPERATION TABLE

MODE LEVER POSITION	AIR DISCHARGE	BLOWER SPEEDS	PANEL DOOR	FLOOR DOOR	DEFROST DOOR	WATER VALVE
Off(1)(2)	Closed	None	Open	(3)	Closed	Closed
Max A/C (1)(4)	Panel Registers With Floor Bleed	4	Open	Bleed	Closed	Open(5)
Norm A/C (7)(4)	Panel Registers With Floor Bleed	4(6)	Open	Bleed	Closed	Open(5)
Bi-Level (7)(4)	Panel Registers and Floor With Def. Bleed	4(6)	Open	Open	Bleed	Open(1)
Vent (7)(2)	Panel Registers With Floor Bleed	4	Open	Bleed	Closed	Closed
Heat (7)(2)	Floor With Def. Bleed	4	Closed	Open	Bleed	Open(1)
Def. (7)(2)	Defroster With Floor Bleed	4	Closed	Bleed	Open	Open(1)

(1) - Recirculating Door is in Recirc. position.
(2) - Indeterminate
(3) - A/C Compressor is OFF
(4) - A/C Compressor is ON
(5) - Water valve closes in full "COOL" temperature lever position.
(6) - Speeds are reduced by approximately 2.0 Volts.
(7) - Recirculating Door is in Outside position.

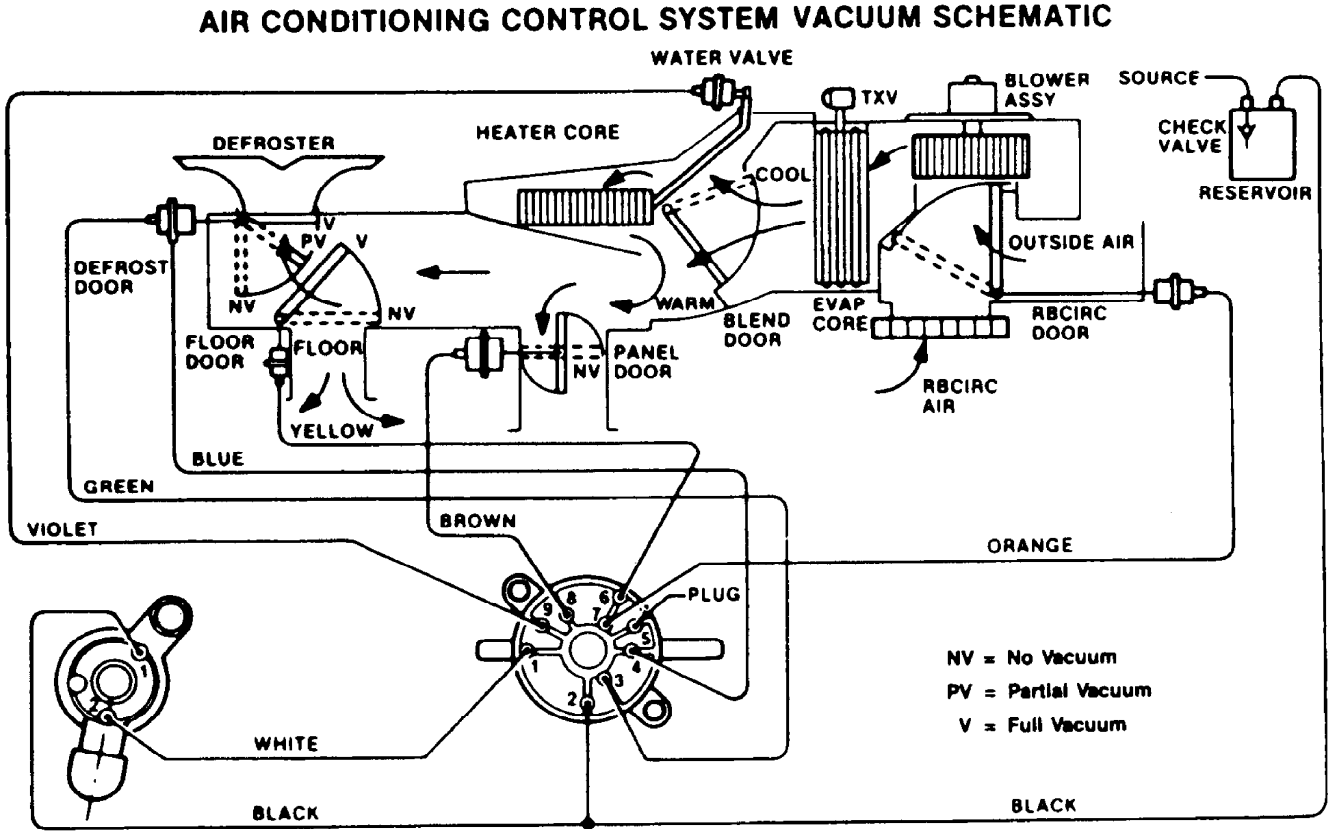


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Fig. 7: A/C Control System Vacuum Diagram