

A/C-HEATER SYSTEM - MANUAL

1986 Isuzu Trooper II

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Isuzu A/C-Heater Systems - Manual

P'UP, Trooper II

* 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.

A/C SYSTEM SPECIFICATIONS

SPECIFICATIONS TABLE

Application	Specification
Compressor Type	6-Cylinder Swashplate
R-12 Capacity	
P'UP	30 oz.
Trooper II	33.5 oz.
Oil Capacity	5 oz.
Compressor Belt Deflection4" (10 mm)

DESCRIPTION

The A/C system consists of 5 main units: an evaporator, compressor, condenser, receiver-drier, and expansion valve. The compressor incorporates a magnetic clutch and pulley assembly.

The system is controlled by a control lever on dash. The compressor is protected by a thermostatic switch (compressor on/off switch) that shuts the compressor off when the evaporator gets too cold.

OPERATION

SYSTEM OPERATION

When the air conditioning is turned on, the magnetic clutch on the compressor engages the clutch plate and the compressor becomes operational. The compressor draws low pressure refrigerant vapor from the evaporator and compresses it into a high pressure, high temperature vapor.

The vapor is then pumped to the condenser. Outside air passing through the condenser absorbs the heat from the high temperature vapor. As the vapor cools, it again turns into a high pressure liquid. The high pressure liquid passes to the expansion valve.

The restriction in the expansion valve converts the high pressure liquid to a low pressure liquid. The low pressure liquid then enters the evaporator.

Because the liquid refrigerant is now colder than the car interior air, the air passing through the evaporator coils gives up its heat to the cooler liquid refrigerant. As the refrigerant warms, it boils into a gas again and is drawn into the compressor to repeat the cycle.

COMPRESSOR

The compressor is mounted on the engine and driven by a belt. The belt extends from the engine crankshaft pulley to the clutch pulley on the compressor.

MAGNETIC CLUTCH & PULLEY ASSEMBLY

The magnetic clutch and pulley assembly are attached to the front of the compressor and are driven by a belt from the crankshaft pulley.

CONDENSER

The aluminum condenser is mounted in front of the radiator and serves as a cooler. The high volume of cooler air that passes over the condenser absorbs heat from the condenser.

RECEIVER-DRIER

The receiver-drier acts as a storage tank for liquid refrigerant after it leaves the condenser. This insures a solid column of liquid refrigerant to the expansion valve at all times.

A desiccant (moisture absorbing material) is enclosed within the assembly. A sight glass mounted on the unit permits visual checking of the refrigerant flow for bubbles or foam. The unit is also equipped with a filter screen which prevents foreign material from entering the remainder of the system.

EXPANSION VALVE

The expansion valve is mounted on the evaporator core. Its function is to regulate the flow of refrigerant into the evaporator. The expansion valve is the dividing point between the high and low pressure liquid refrigerant.

EVAPORATOR

The evaporator is mounted within engine compartment. The evaporator assembly consists of an aluminum core, enclosed in a reinforced plastic housing. A rubber water drain sock is mounted on the bottom. The function of the evaporator is to cool and de-humidify the air in the passenger compartment.

THERMOSTATIC SWITCH

The evaporator is protected by a thermostatic switch or compressor on/off switch. This switch turns the compressor off when the evaporator gets too cold.

ADJUSTMENTS

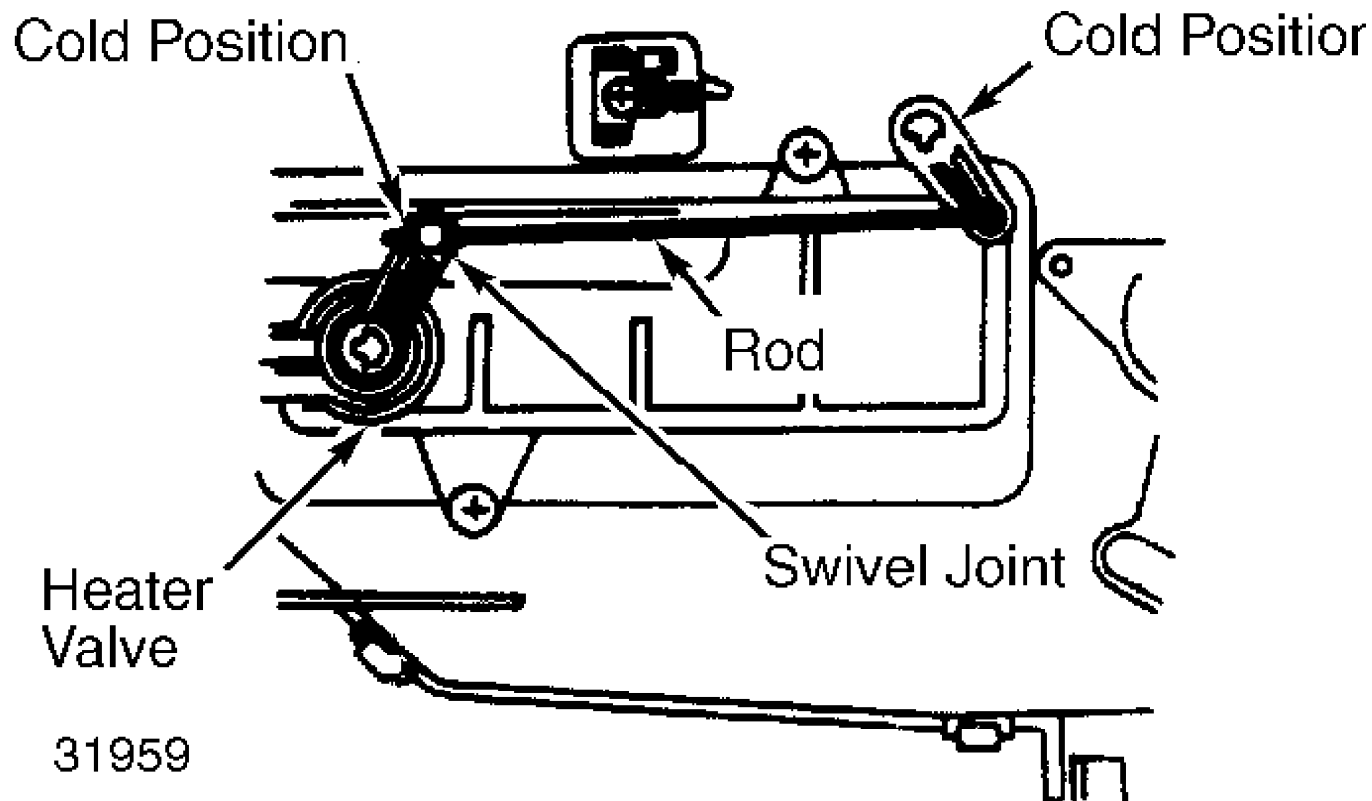
NOTE: For adjustments of I-Mark system control cables and rods, refer to HEATER SYSTEM - ISUZU in HEATER SYSTEM section.

CONTROL RODS

Heater Valve Link Rod

Set air mix door at stop position in a counterclockwise direction (cold position). Move heater valve lever to stop position

in a clockwise direction (cold position). Secure link rod to swivel joint with screw.



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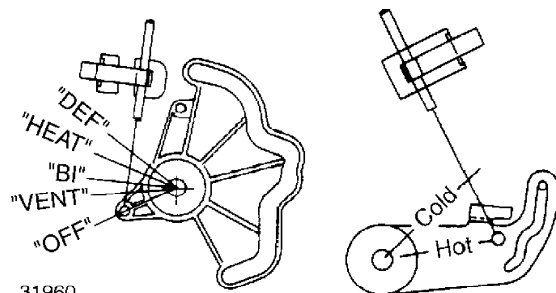
Fig. 1: Adjusting Link Rod
Courtesy of Isuzu Motor Co.

CABLES

Mode & Temp Control Cables

1) Attach control assembly to instrument panel using screws. Connect cable, with mode selector lever and heater assembly lever set in "OFF" position. Secure outer tube with cable clip.

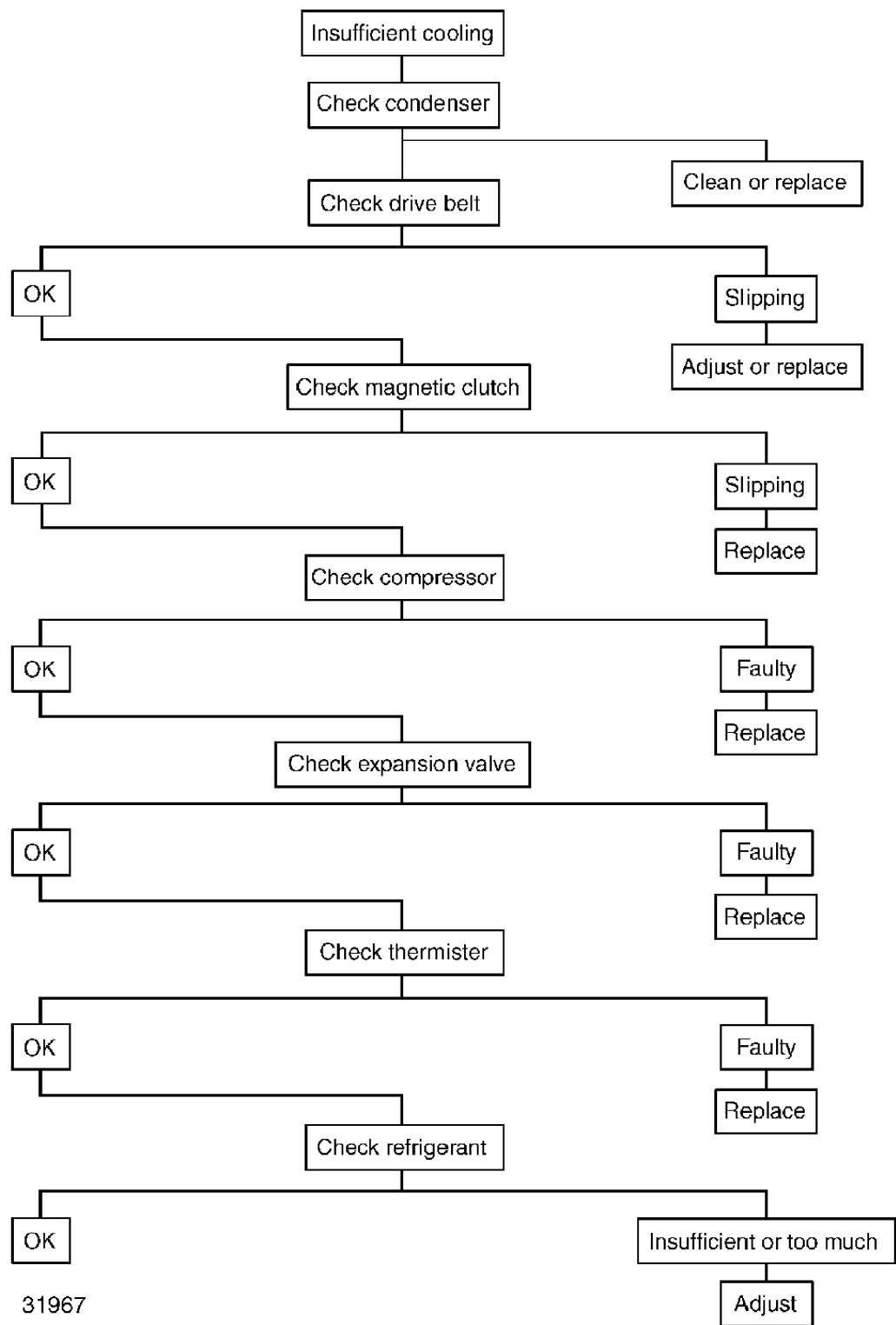
2) Connect cable with temperature lever and heater lever set in "HOT" position. Fix outer tube with a cable clip. Check all doors and water valve. If doors or valve are not closing properly, loosen cable clamp screw at control and adjust cable length as required.



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Fig. 2: Adjusting Cables
Courtesy of Isuzu Motor Co.

TROUBLE SHOOTING



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Fig. 3: Insufficient Cooling

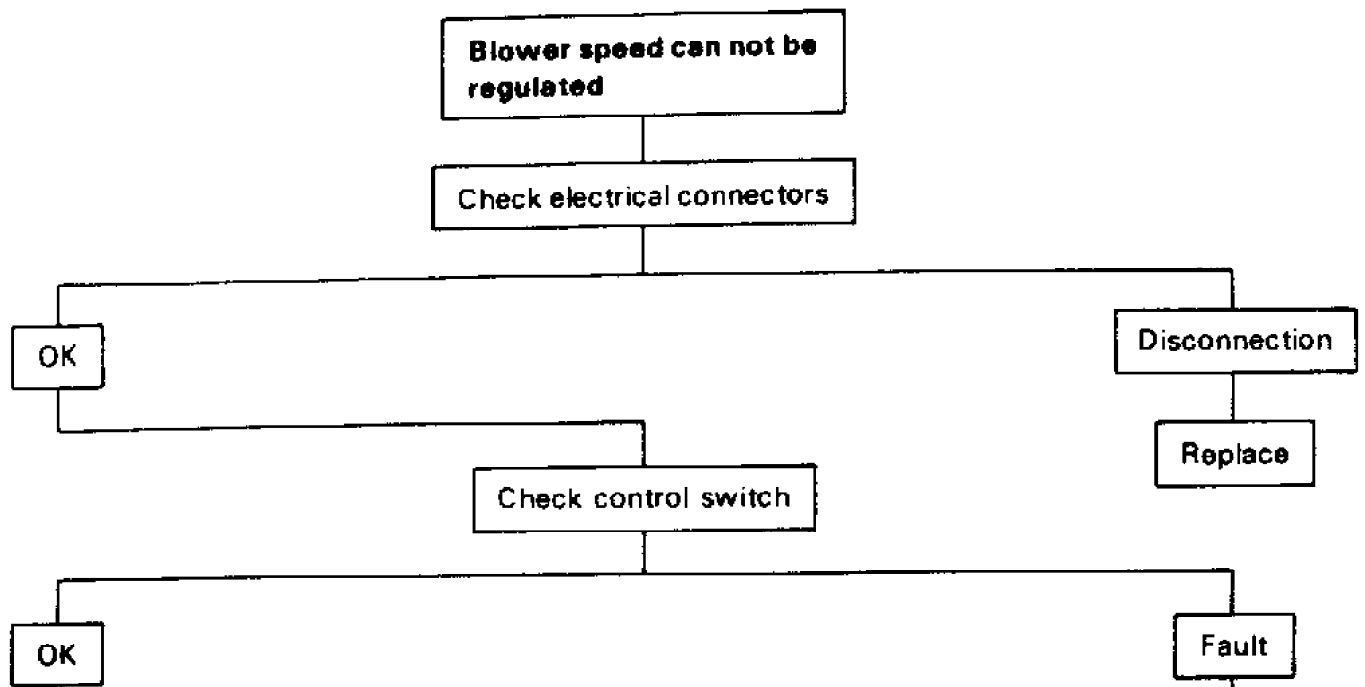


Fig. 4: Blower Speed Can Not Be Regulated

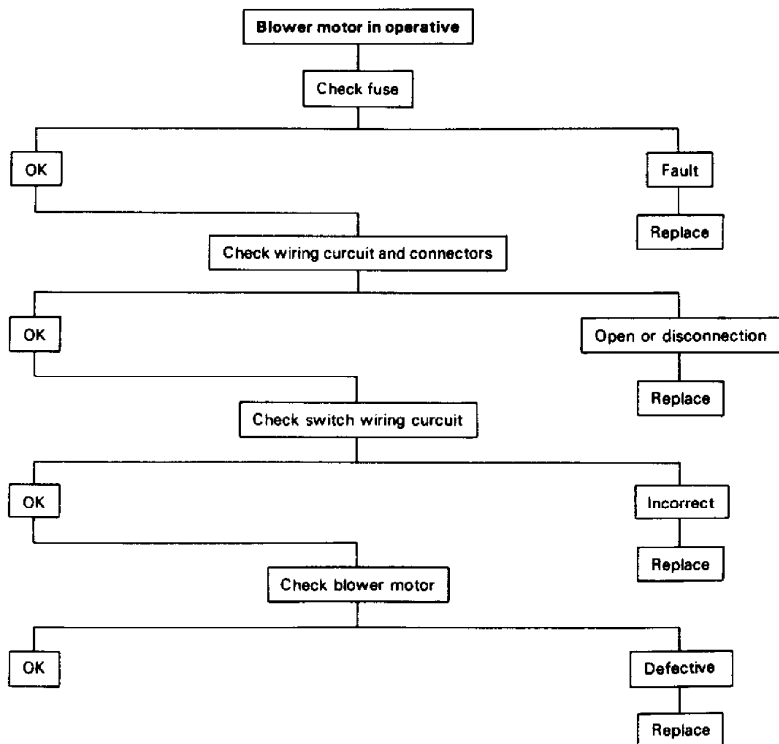
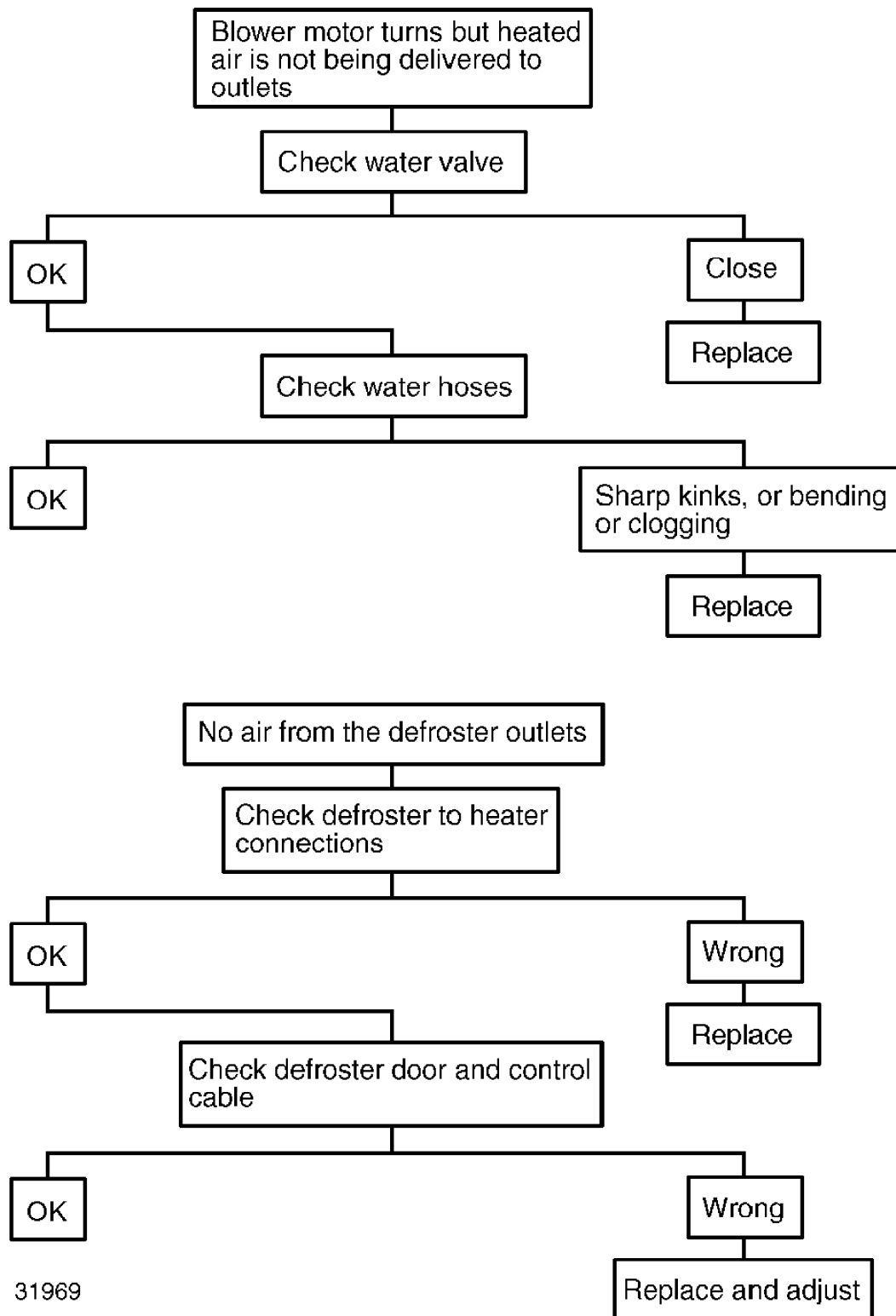


Fig. 5: Blower Motor Turns But No Heat (1 Of 2)



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Fig. 6: Blower Motor Turns But No Heat (2 Of 2)

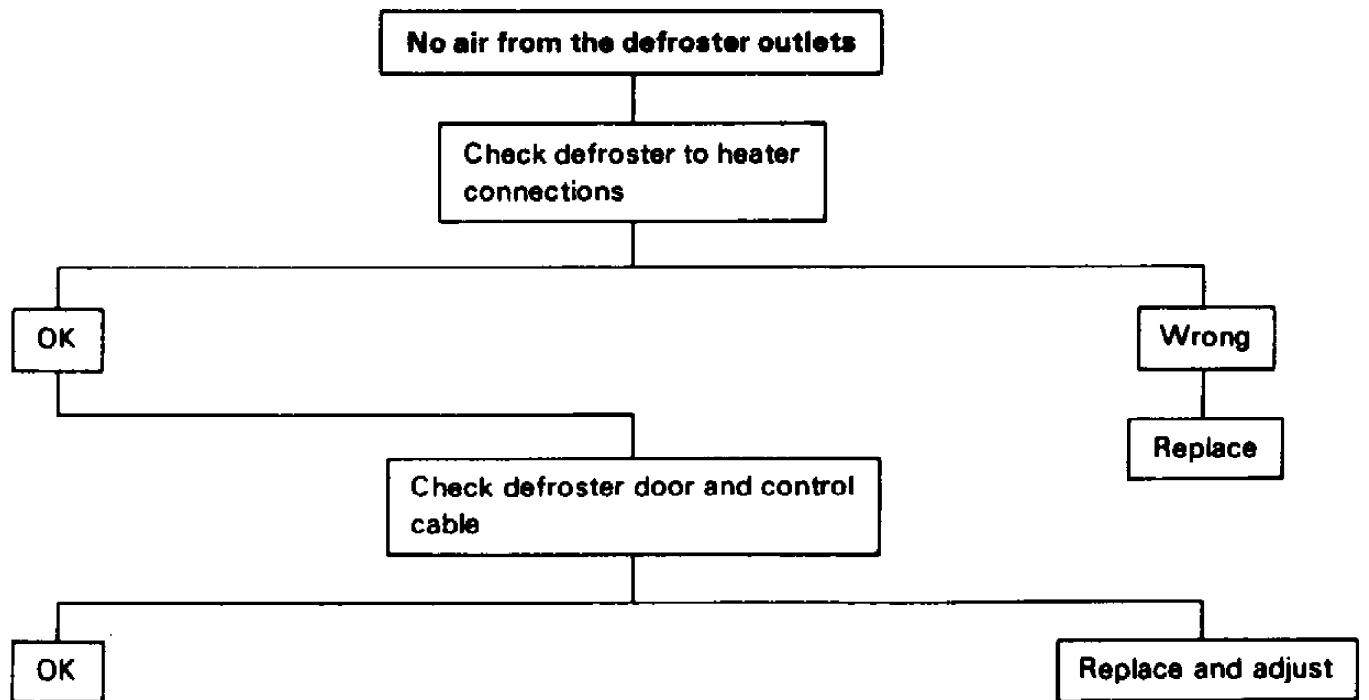


Fig. 7: No Air From Defroster Outlets

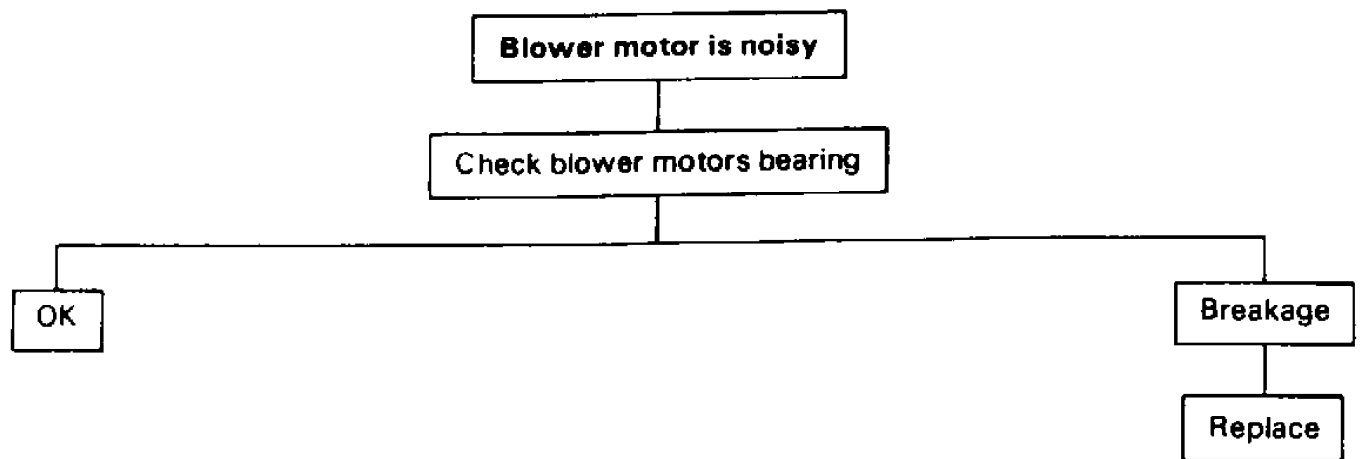


Fig. 8: Blower Motor Noisy

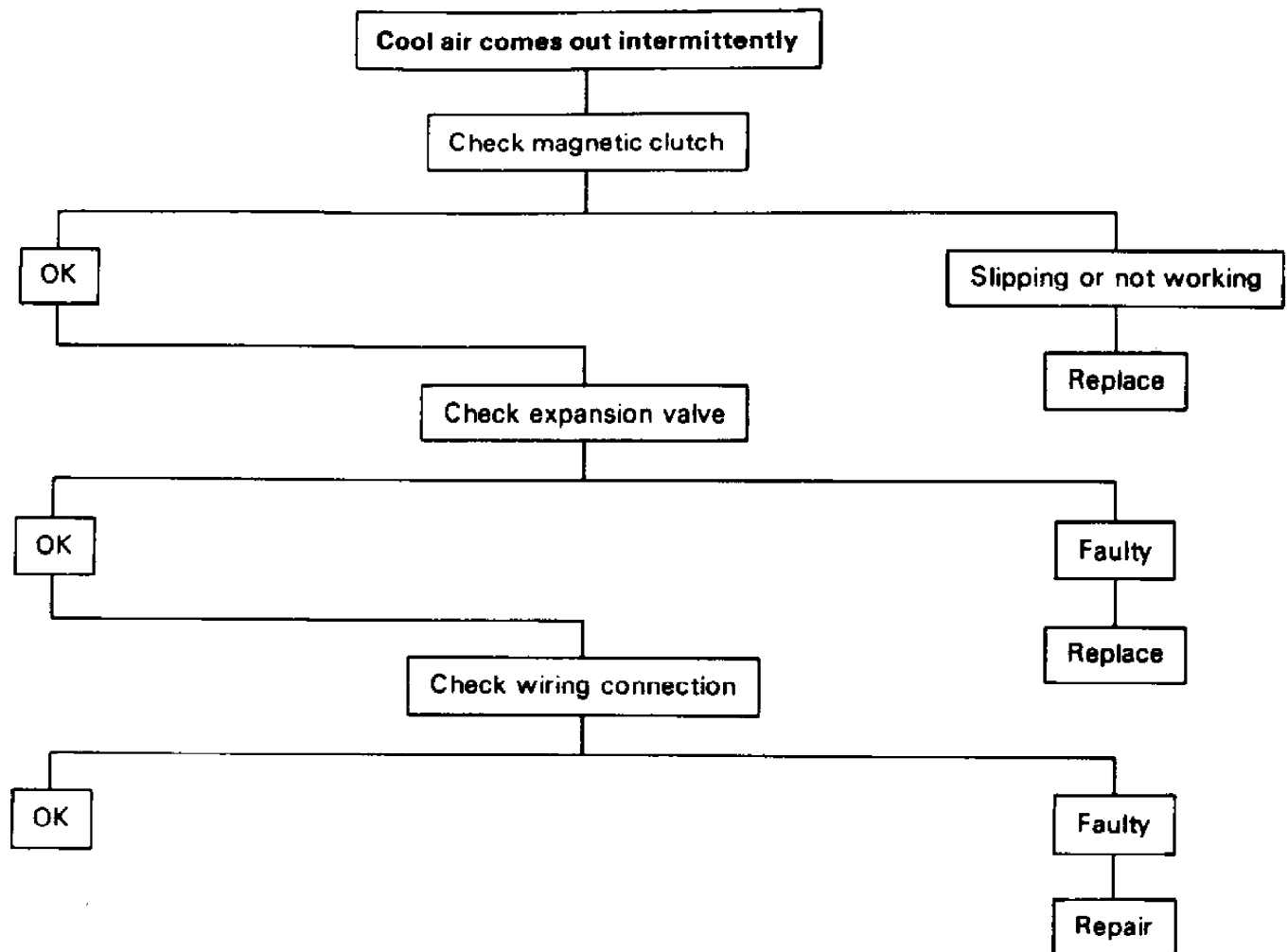


Fig. 9: Intermittent Cool Air

COMPRESSOR

Compressor malfunction will appear in one of four ways: noise, seizure, leakage or low discharge pressure. Resonant compressor noises are not cause for alarm. However, irregular noise or rattles may indicate broken parts or excessive clearances due to wear.

To check seizure, de-energize magnetic clutch and check to see if drive plate can be rotated. If rotation is impossible, compressor is seized. Low discharge pressure may be due to a faulty internal seal of compressor, or a restriction in compressor.

Low discharge pressure may also be due to an insufficient refrigerant charge or a restriction elsewhere in system. These possibilities should be checked prior to servicing compressor. If compressor is inoperative, but not seized, check to see if current is being supplied to magnetic clutch coil terminals.

CONDENSER

A condenser may malfunction in two ways: it may leak, or it may be restricted. A condenser restriction will result in excessive

compressor discharge pressure.

If a partial restriction is present, sometimes ice or frost will form immediately after restriction as refrigerant expands after passing through restriction.

If air flow through condenser or radiator is blocked, high discharge pressures will result. During normal condenser operation, outlet pipe will be slightly cooler than inlet pipe.

RECEIVER-DRIER

A receiver-drier may fail due to a restriction inside body of unit. A restriction at inlet to receiver-drier will cause high head pressures. Outlet tube restrictions will be indicated by low head pressures and little or no cooling. An excessively cold receiver-drier outlet may be indicative of a restriction.

EXPANSION VALVE

Expansion valve failures usually will be indicated by low suction and discharge pressures, and insufficient evaporator cooling. The failure is generally due to a restricted external equalizing line. A less common cause of the above symptom is clogged inlet screen.

EVAPORATOR

When evaporator malfunctions, trouble will show up as inadequate supply of cool air. A partially plugged core due to dirt or a malfunctioned blower will generally be the cause.

REFRIGERANT LINE RESTRICTIONS

Restrictions in refrigerant lines will be indicated as follows. A restricted suction line will cause low suction pressure at compressor, low discharge pressure and little or no cooling. A restriction in discharge line generally will cause discharge line to leak. A liquid line restriction will be evidenced by low discharge and suction pressure, and insufficient cooling.

REMOVAL & INSTALLATION

EVAPORATOR & EXPANSION VALVE

NOTE: If expansion valve or refrigerant lines have been exposed to atmosphere for any length of time, moisture may have entered valve or system. Evacuate system and install a new receiver-drier or valve as needed.

A/C-HEATER ASSEMBLY

Removal

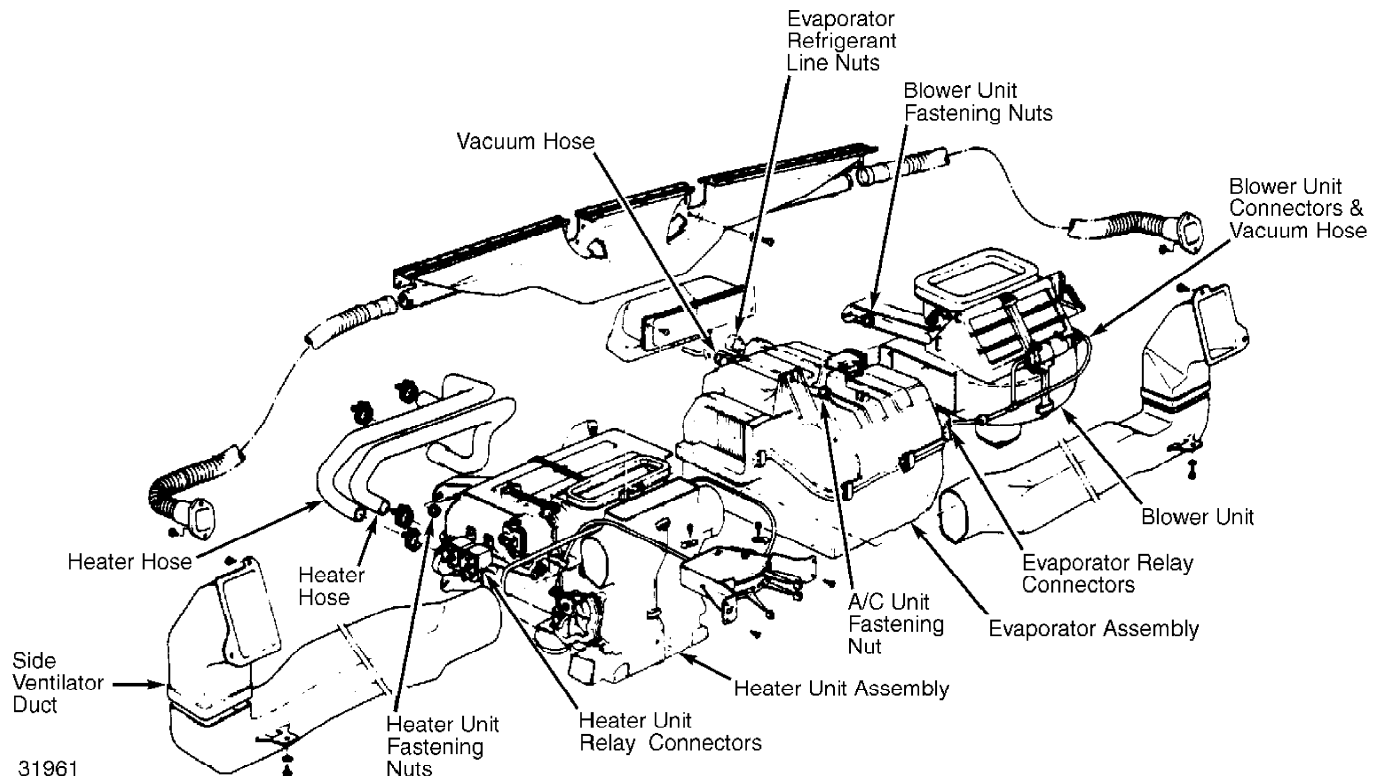
1) Disconnect refrigerant line flare nuts at evaporator core. Disconnect vacuum hose. Disconnect evaporator relay connectors. Remove evaporator nut.

2) Remove evaporator core assembly. Disconnect heater hoses at heater core. Remove side ventilator duct. Disconnect heater relay connectors.

3) Remove heater assembly retaining nuts. Remove heater unit assembly. Disconnect vacuum hose and electrical connectors from blower assembly. Remove blower assembly retaining nuts and remove blower assembly.

Installation

To install, reverse removal procedure.



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Fig. 10: Exploded View of Isuzu Manual A/C-Heater System Assembly
P'UP shown. Trooper II is similar. Courtesy of Isuzu Motor Co.

EVAPORATOR CORE

Removal

1) Remove compressor relay. Remove vacuum seal and connector. Remove seal. Remove drain hose and seal. Remove seal. Remove clips. Remove upper case.

2) Remove lower case. Remove core assembly. Remove thermostat switch. Remove sensing bulb clip and remove expansion valve assembly.

Installation

To install, reverse removal procedure.

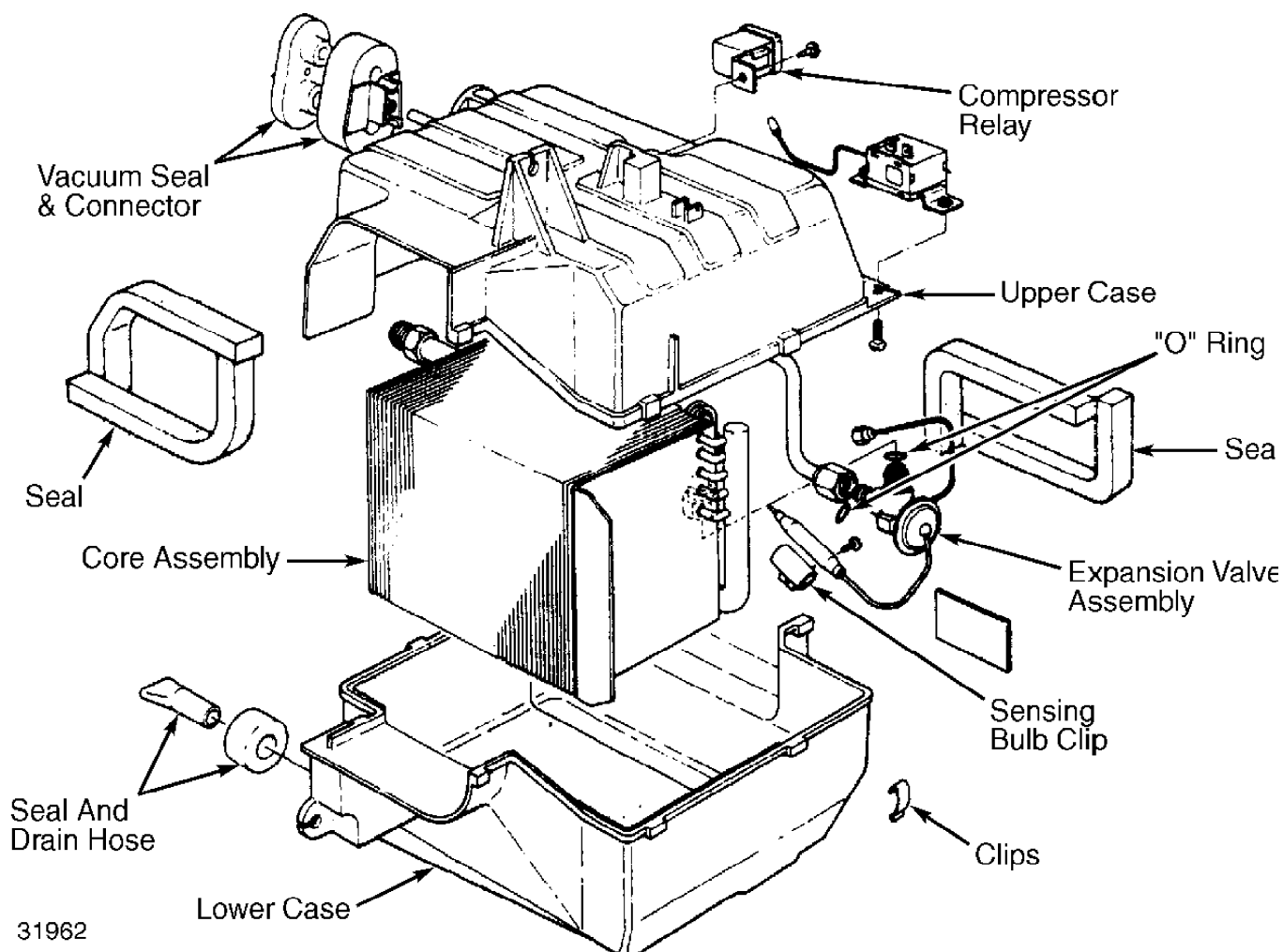


Fig. 11: Exploded View Of Evaporator Core Assembly

CONDENSER ASSEMBLY

NOTE: If refrigerant circuit or condenser have been exposed to atmosphere, moisture may be present in circuit. System and/or component must be evacuated prior to installation.

Removal

Discharge system using approved refrigerant recovery/recycling equipment. Disconnect refrigerant lines from inlet and outlet on condenser. Remove condenser-to-radiator support mounting screws. Remove condenser.

Installation

To install, reverse removal procedure.

RECEIVER-DRIER

Removal

1) Discharge system using approved refrigerant recovery/recycling equipment. Disconnect refrigerant lines from both ends of receiver-drier. Tape closed open ends of refrigerant lines, and inlet and outlet ports on receiver-drier.

2) Disconnect dual pressure switch connector (if equipped).

Fig. 13: P'UP (Gas) Manual A/C-Heater System Wiring Diagram

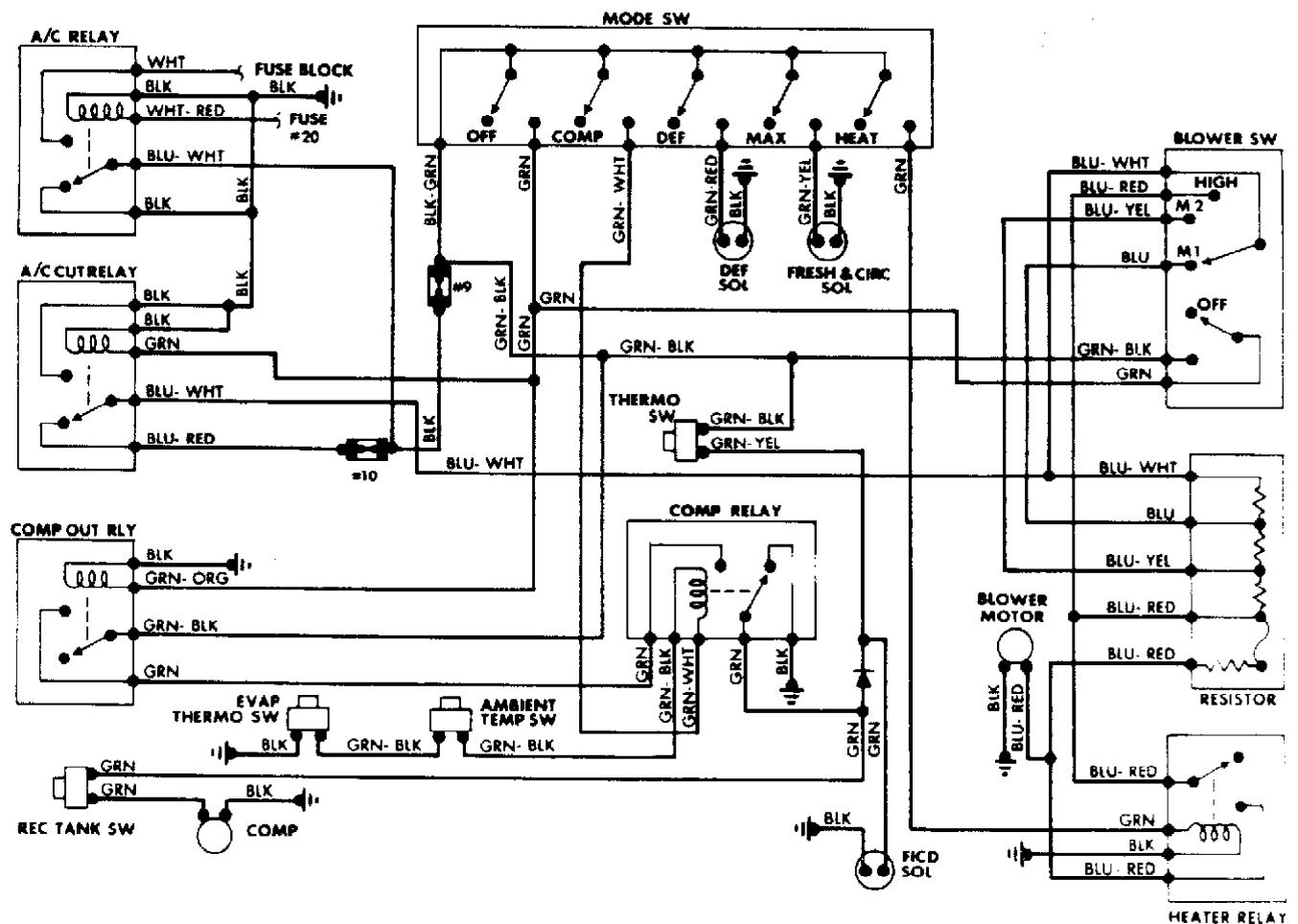


Fig. 14: Trooper II Manual A/C-Heater System Wiring Diagram