

ENGINE COOLING FAN

1988 Jeep Cherokee

1987-88 ENGINE COOLING
Thermostatically Controlled Electric Fans

Cherokee, Comanche, Wagoneer

DESCRIPTION & OPERATION

On Cherokee, Comanche and Wagoneer models with a 4.0L engine, A/C and/or heavy duty cooling system, an auxiliary electric fan is used. The auxiliary fan is controlled by a relay mounted on the left inner fender panel. A radiator temperature switch attached to the radiator outlet tank above the lower radiator hose senses engine coolant temperature.

When coolant temperature is more than 190(0)F (88(0)C), the radiator coolant temperature switch closes allowing current from the ignition switch to flow through the fan relay to ground activating the relay. When relay is activated, battery voltage is supplied to the fan causing it to operate. When coolant temperature is below 190(0)F (88(0)C), the radiator coolant temperature switch opens preventing the relay from being grounded and electric cooling fan from being energized.

When the A/C (if equipped) is turned on, the Electronic Control Unit (ECU) grounds the A/C relay coil allowing current to flow through it. This activates the A/C relay which then supplies current to the A/C clutch, fan diode assembly and cooling fan relay. The cooling fan relay is activated and the fan operates. Whenever the A/C is used, regardless of engine coolant temperature, the auxiliary electric cooling fan operates.

TESTING

NOTE: For following tests, refer to fan relay connector terminal identification and fan controls identification. See Figs. 1 and 2.

With Air Conditioning

1) If electric cooling fan does not work all the time, go to step 3). If electric cooling fan is inoperative when A/C compressor operates, start engine and turn A/C on. Disconnect fan relay connector. Fan relay is located on left inner fender panel.

2) Using a voltmeter, check for voltage at fan relay connector terminal No. 2. If voltmeter does not read battery voltage, replace fan diode assembly.

3) Disconnect fan relay connector. Fan relay is located on left inner fender panel. Using a jumper wire with an in-line 25-amp fuse, supply battery voltage to fan relay connector terminal No. 4.

4) If fan operates, motor is okay. Go to next step. If fan motor does not operate, check continuity between fan relay connector terminal No. 4 and body ground connections. If continuity exists, replace fan motor. If continuity does not exist, repair open and retest.

5) Disconnect fan relay connector. Turn ignition switch to the "RUN" position. Check continuity between fan relay connector terminal No. 5 and body ground connections. If continuity does not exist, repair open circuit. If continuity exists, go to next step.

6) Using a jumper wire with an in-line 25-amp fuse, jump across fan relay connector terminals No. 1 and No. 4. If fan motor operates, go to next step. If fan motor does not operate, repair fan

relay fuse link.

7) Check for battery voltage at fan relay connector terminal No. 2. Connect a jumper wire across radiator temperature switch connector. Radiator temperature switch is located on radiator outlet tank, above lower radiator hose. If fan does not operate, replace radiator temperature switch. If fan operates, go to next step.

8) Check for battery voltage at fan relay connector terminal No. 2. If battery voltage is not present, replace fan diode assembly.

Without Air Conditioning

1) Disconnect fan relay. Fan relay is mounted on left inner fender panel. Using a jumper wire with an in-line 25-amp fuse, supply battery voltage to fan relay connector terminal No. 4.

2) If fan operates, motor is okay. Go to next step. If fan motor does not operate, check continuity between fan relay connector terminal No. 4 and body ground connections.

If continuity exists, replace fan motor. If continuity does not exist, repair open and retest.

3) With fan relay connector disconnected, turn ignition switch to the "RUN" position. Check continuity between fan relay connector terminal No. 5 and body ground connections. If continuity does not exist, repair open. If continuity exists, go to next step.

4) Using a jumper wire with a 25-amp in-line fuse, jump across fan relay connector terminals No. 1 and No. 4. If fan motor operates, leave jumper wire connected and proceed to next step. If fan motor does not operate, repair fan relay fuse link.

5) Check for battery voltage at cooling fan relay connector terminal No. 2. Connect a jumper wire across radiator coolant temperature switch connector. Radiator coolant temperature switch is located on radiator outlet tank above lower radiator hose. If fan does not operate, replace radiator coolant temperature switch.

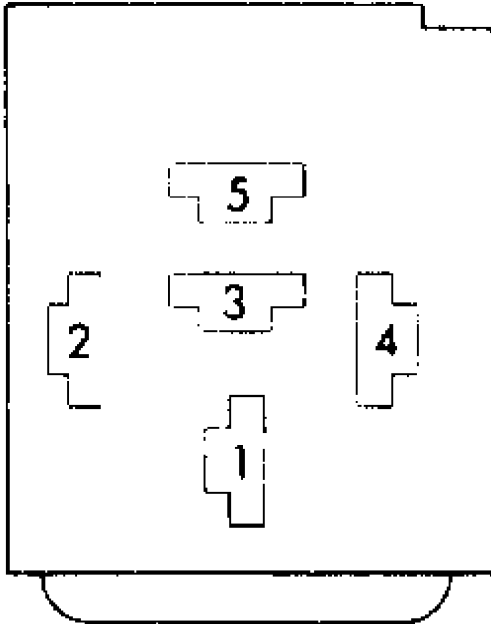


Fig. 1: Fan Relay Connector Terminal Identification
Courtesy of Chrysler Motors.

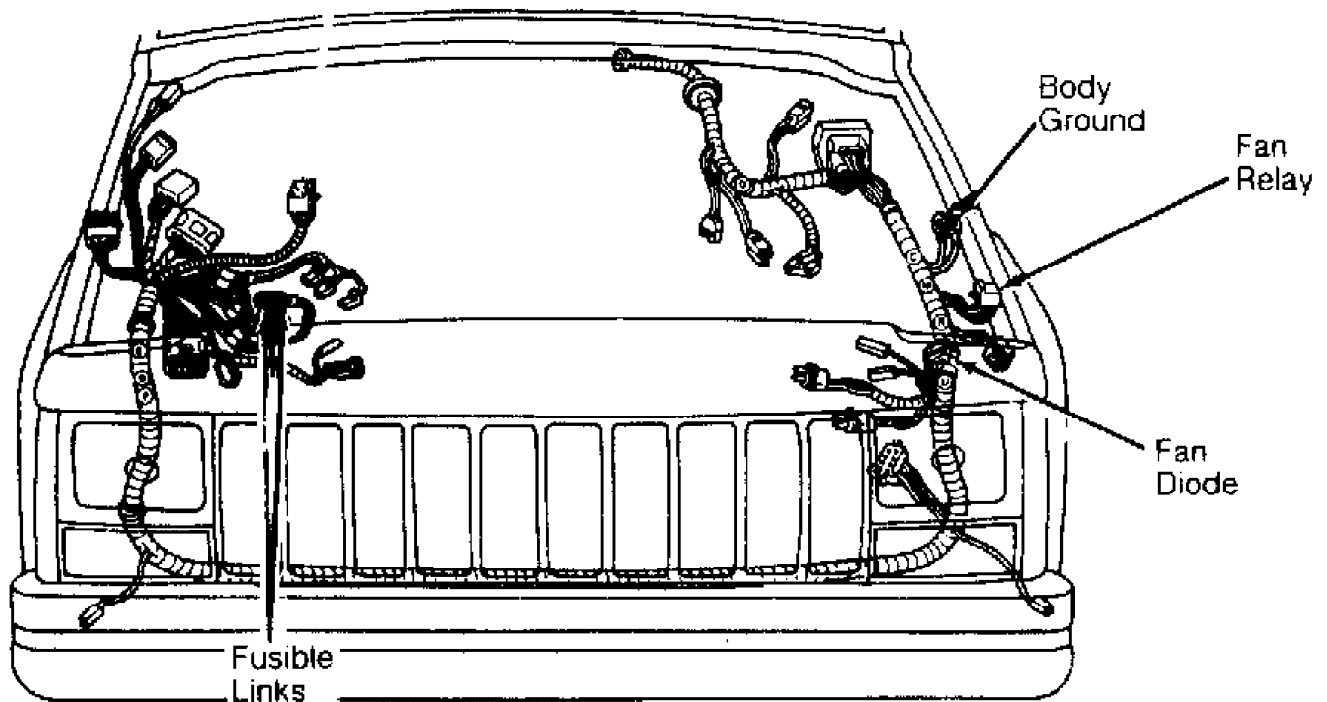


Fig. 2: Fan Controls Identification
 Courtesy of Chrysler Motors.

REMOVAL & INSTALLATION

AUXILIARY ELECTRIC COOLING FAN

Removal

- 1) Auxiliary fan is attached to radiator upper crossmember behind radiator.
- 2) Remove fan retaining screws from radiator upper crossmember. Disconnect electric fan connector. Lift fan straight up out of vehicle.

Disassembly

Components of auxiliary electric cooling fan can be replaced. However, components cannot be repaired. If an auxiliary cooling fan component needs repair it must be replaced with the recommended replacement part only. The auxiliary fan consists of a fan module, fan module retaining clip, fan shroud, and fan motor.

- 1) Place assembly on bench with fan blades facing up. Position an awl between the fan retainer and motor shaft. Pry the retainer off the motor shaft. Slide fan up off of motor.
- 2) Unwind fan motor electrical connector from retaining clips of fan shroud.
- 3) Remove fan motor mounting screws. Remove fan.

Assembly

- 1) Attach fan motor to fan shroud with mounting screws. Wind electrical connector into retaining clips of fan shroud.

The bushing at fan module center has a small groove on the bottom side of it that fits over the alignment dowel on the fan motor shaft. The keyway pin of the alignment dowel fits into the groove in fan motor shaft. A small amount of silicone sealant placed in the groove of the fan motor shaft holds the alignment dowel in place.

2) Place fan module over motor shaft, align groove in fan module with dowel on motor shaft. Start fan module retainer onto the fan motor shaft with open end of the retainer facing the groove in the shaft. When retainer is completely installed the open end will be on side opposite the groove. Use needle nose pliers to finish installing retainer.

Installation

Align lower retaining tabs of fan shroud with slots in bracket at bottom of radiator and push fan down into position. Tighten mounting screws to 36 inch lbs. (4.07 N.m). Connect auxiliary cooling fan electrical connector.

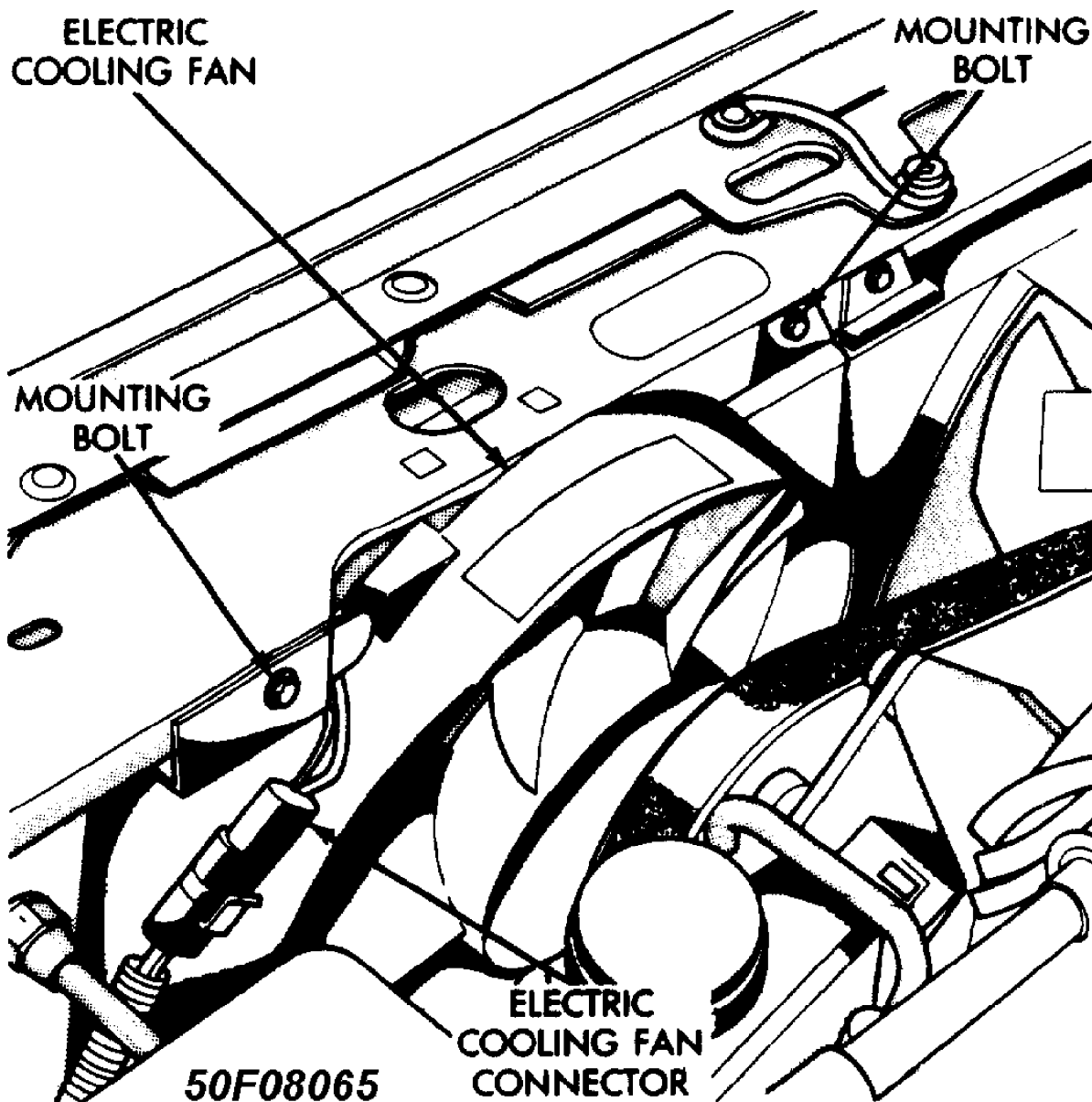
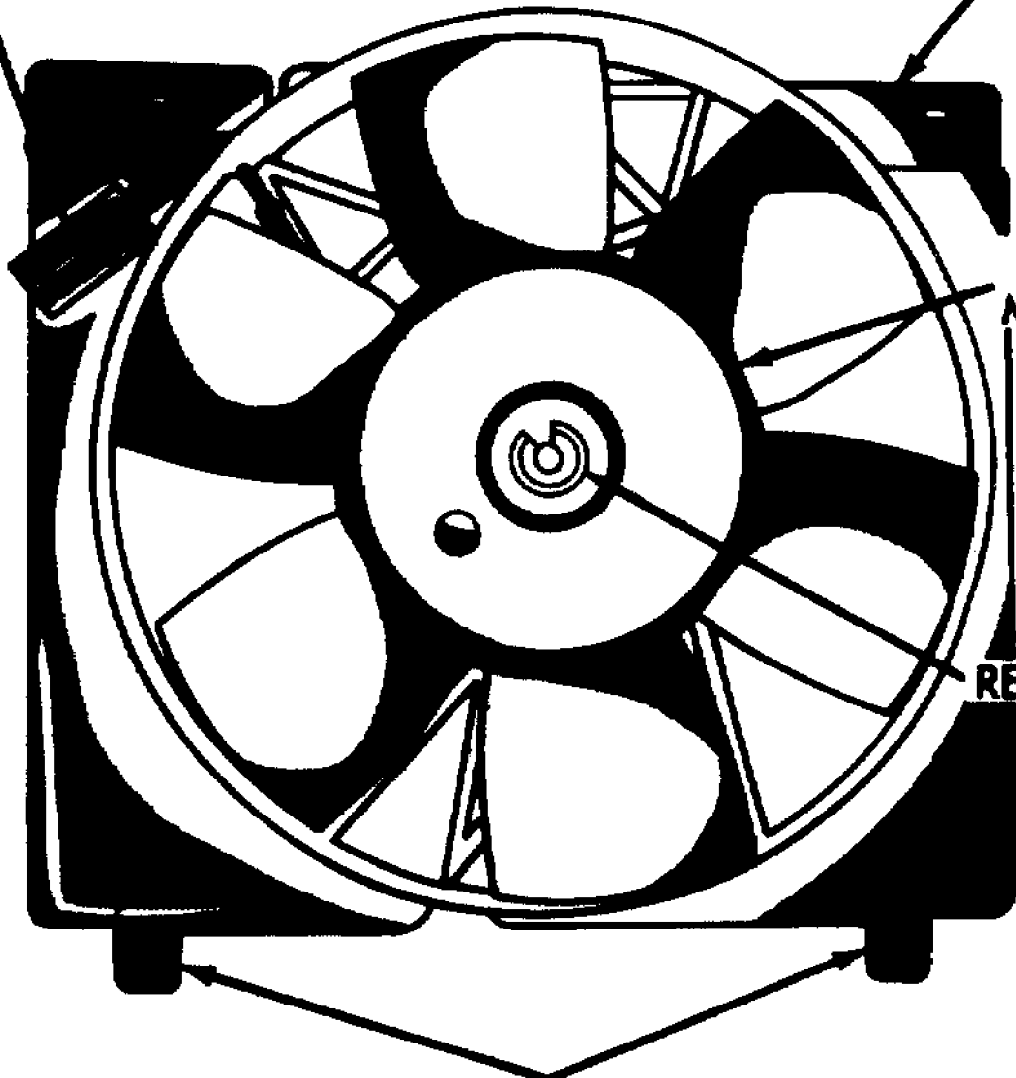


Fig. 3: Auxiliary Fan Removal & Installation

**ELECTRICAL
CONNECTOR**

SHROUD



**FAN
MODULE**

RETAINER

**ALIGNMENT
TAB**

50H08066

Fig. 4: Auxiliary Fan

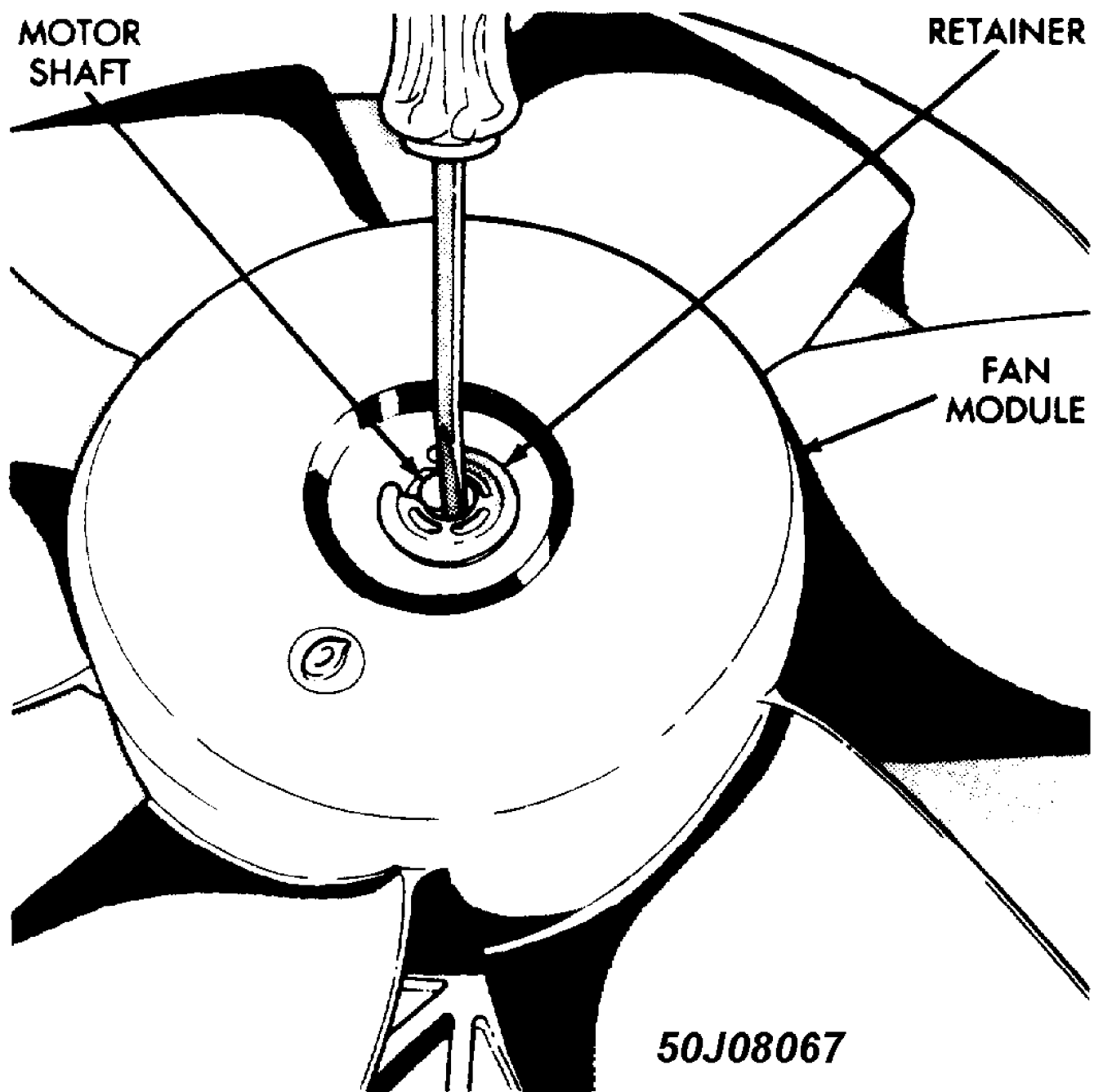


Fig. 5: Fan Module Removal

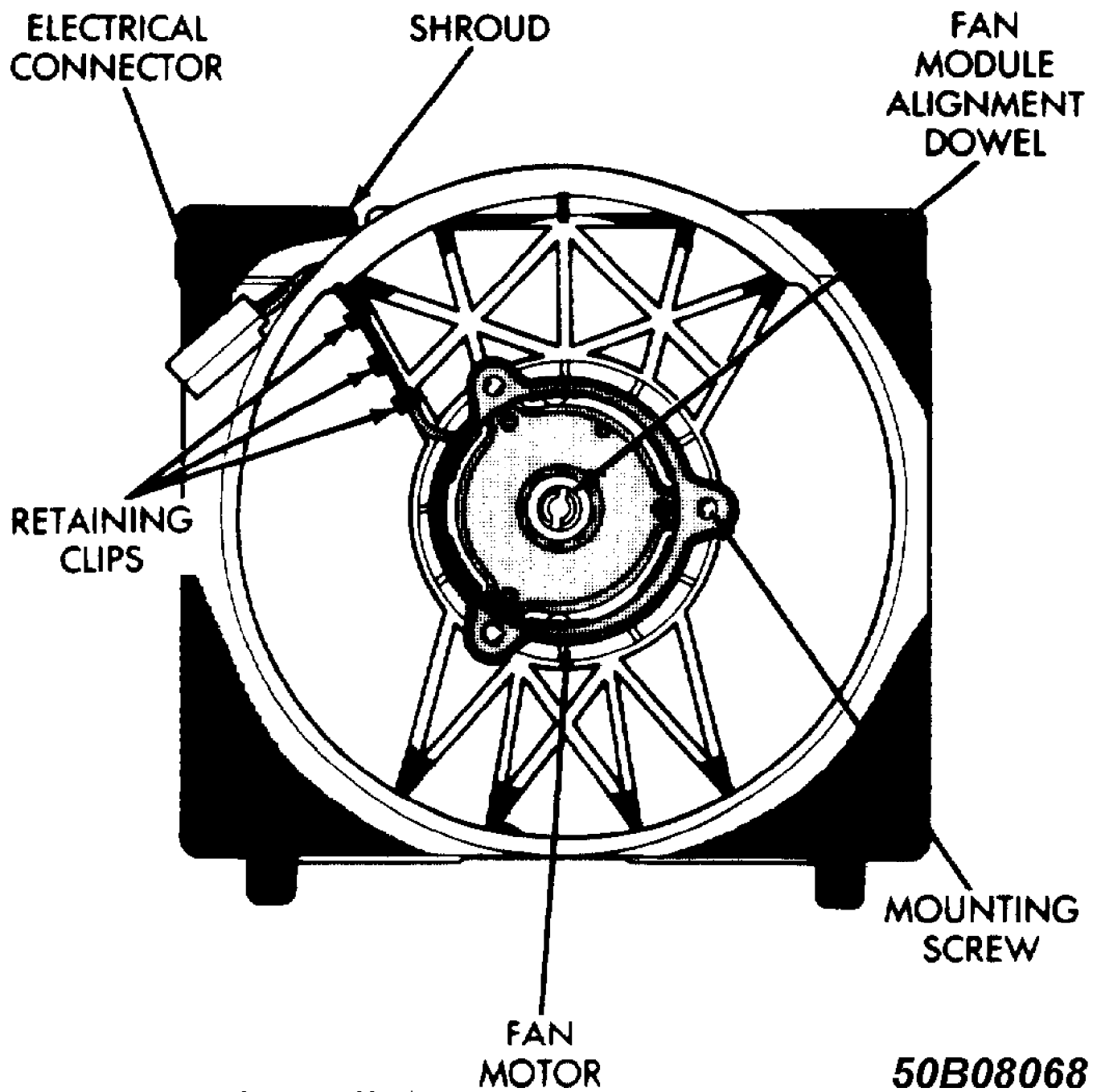


Fig. 6: Fan Motor Removal & Installation

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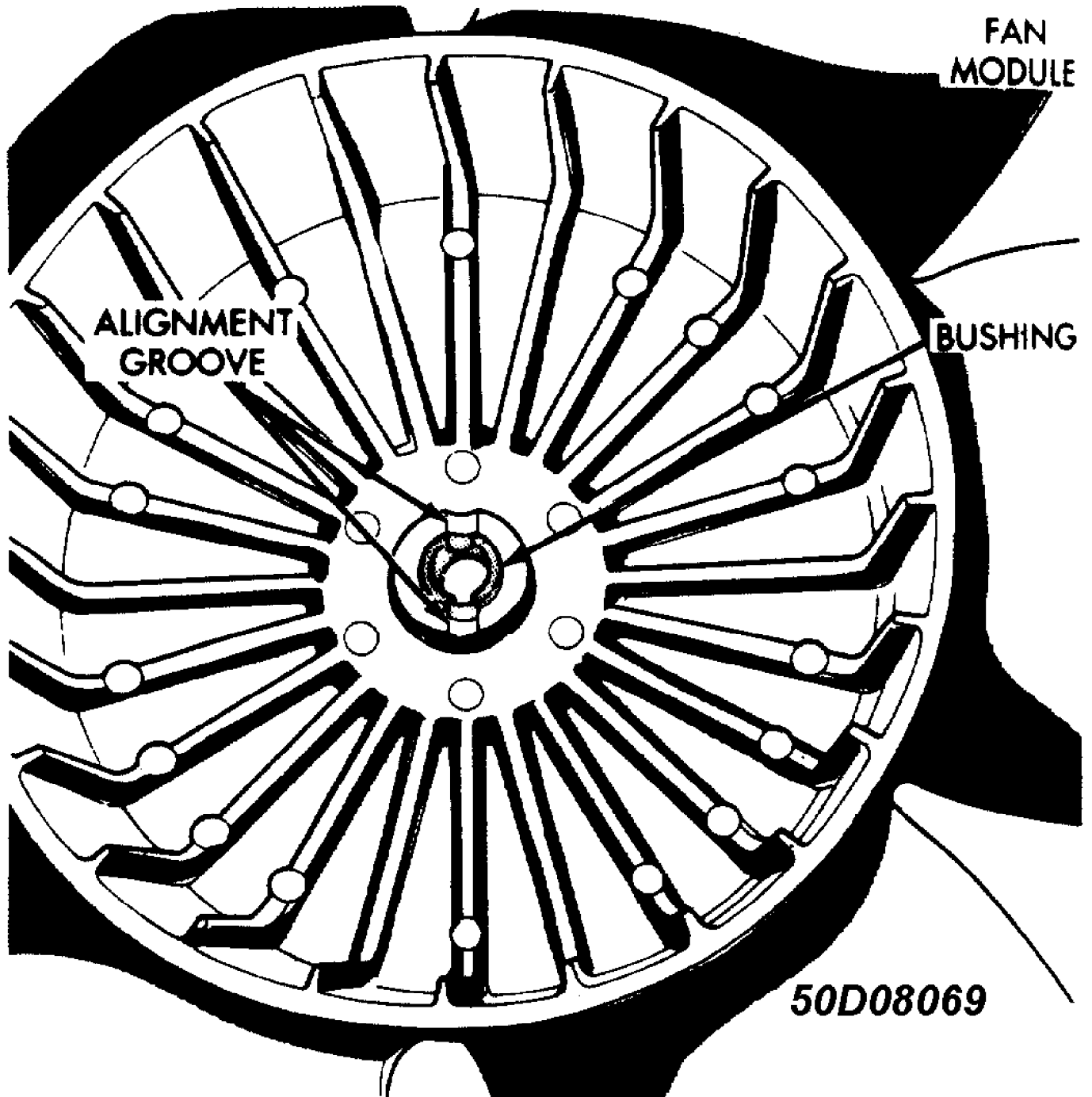


Fig. 7: Alignment Groove in Fan Module Bushing

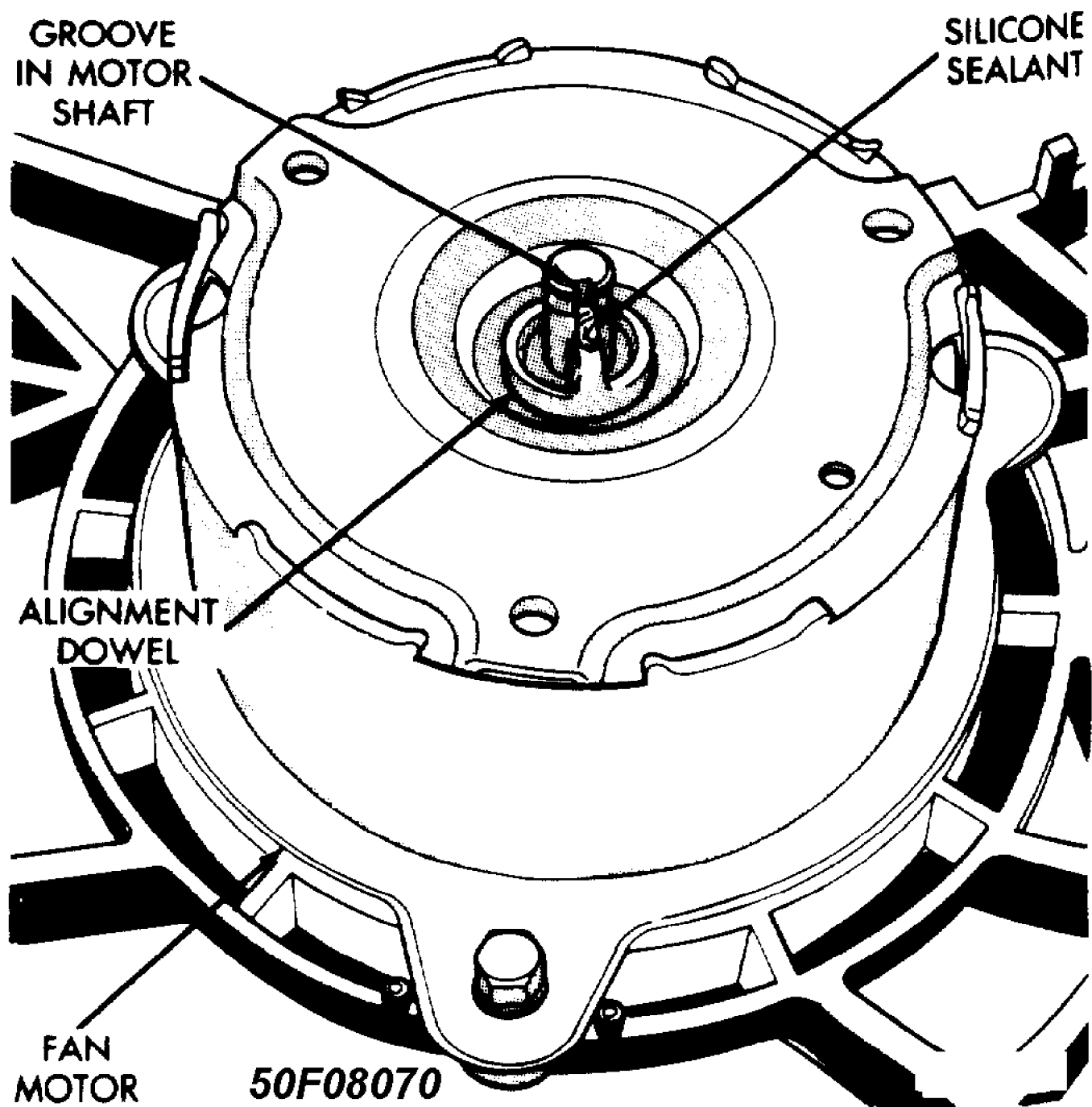


Fig. 8: Alignment Dowel (Fan Module to Motor)

WIRING DIAGRAMS

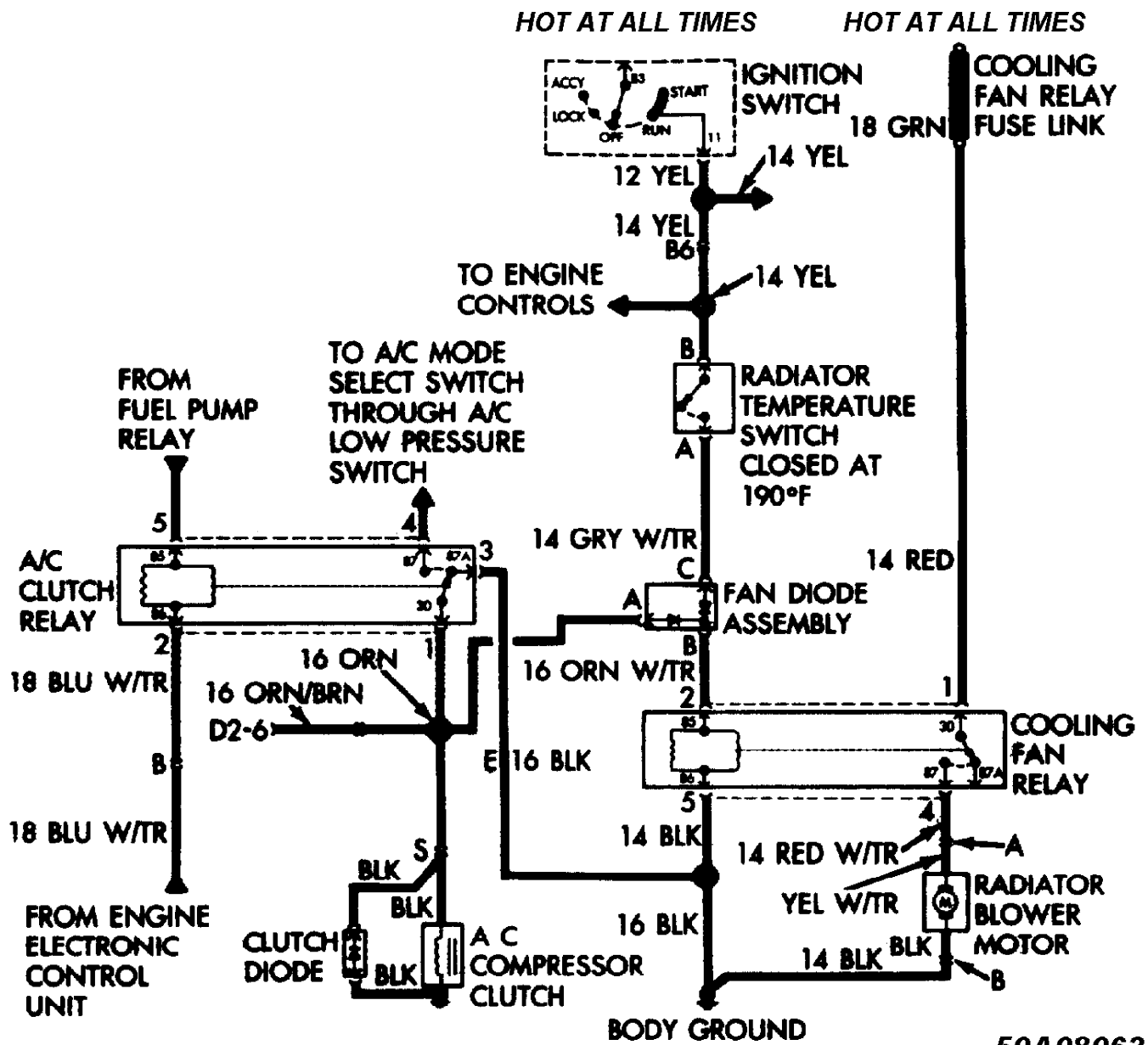


Fig. 9: Wiring Diagrams (With A/C)

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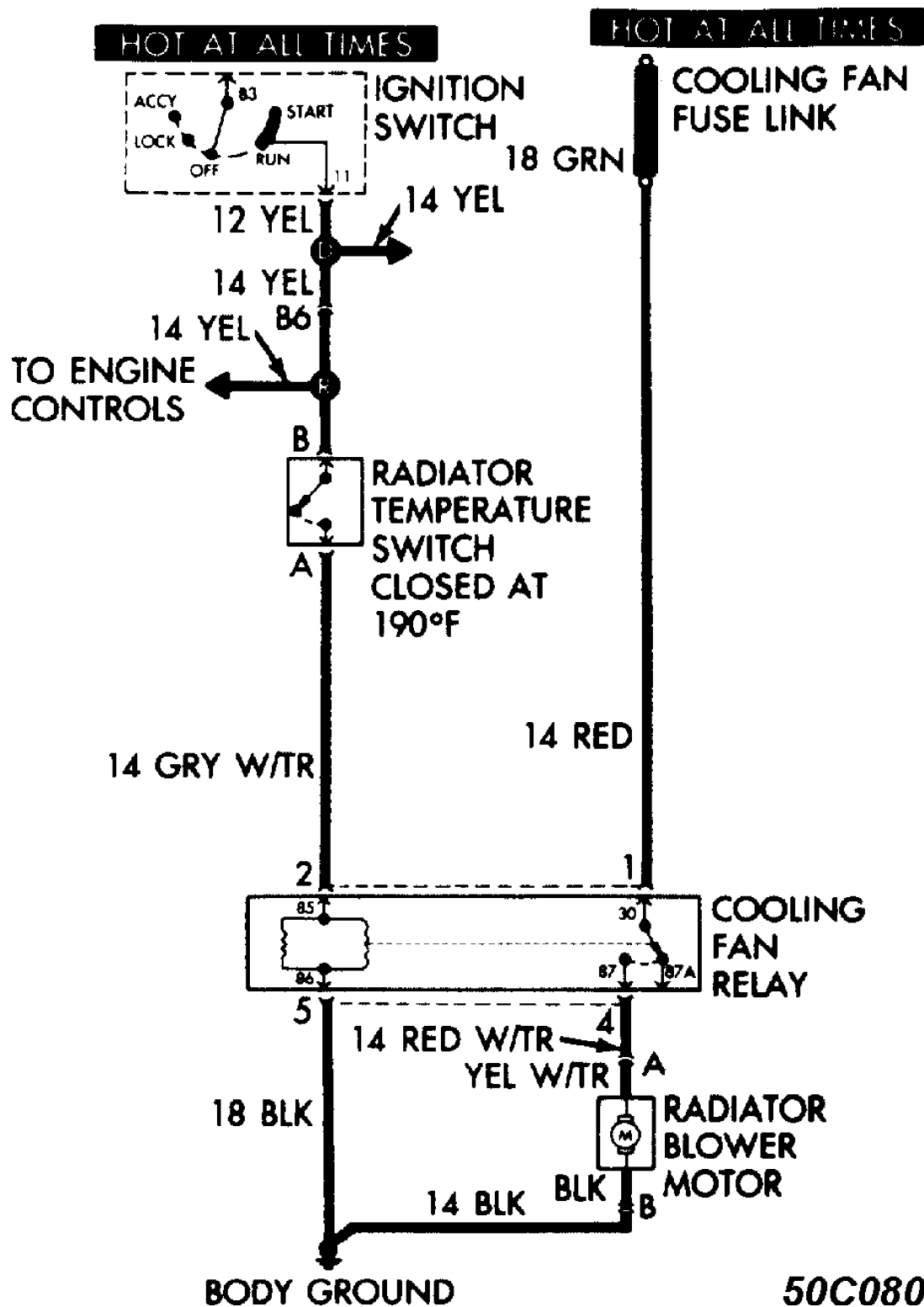


Fig. 10: Wiring Diagrams (Without A/C)

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