

A/C-HEATER SYSTEM - MANUAL

Article Text

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

ARTICLE BEGINNING

1990-92 AIR CONDITIONING & HEAT
MANUAL A/C-HEATER SYSTEM

Chrysler Motors; Colt, Summit
Mitsubishi; Mirage

* 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

| | |
|-----------------------------------|---|
| Compressor Type | Sanden Scroll |
| Compressor Oil Capacity | 5.0 oz. |
| Compressor Belt Deflection | |
| New | 13/64" (5 mm) |
| Used | 1/4" (6 mm) |
| Refrigerant (R-12) Capacity | 36 oz. |
| System Operating Pressures | |
| Low Side | 19-25 psi (1-1 kg/cm ²) |
| High Side | 172-252 psi (12-18 kg/cm ²) |

DESCRIPTION

Air conditioning system cycling is controlled by A/C compressor control unit. An electric fan operates whenever the A/C system is working, creating airflow through the condenser. System components include compressor, condenser, coolant temperature shutoff switch, evaporator, fan switch, high pressure switch, dual pressure switch, receiver-drier, refrigerant temperature sensor and hoses.

OPERATION

SYSTEM CONTROLS

Air Selector Lever

Lever moves from OUTSIDE position on the left to INSIDE position on the right. With lever in the OUTSIDE position, air enters from outside vehicle. With lever in the INSIDE position, air is recirculated within the passenger compartment. Lever should normally be on the INSIDE position for A/C operation.

A/C Control

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 2)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

Air conditioner has 2 levels of operation. The ECONO position is recommended for low humidity or dry conditions. In this position, the compressor operates intermittently. The A/C position is recommended when humidity is high and temperature is hot. In this position, the compressor operates at maximum capacity.

Blower Motor Control

Blower speed is controlled by a 4-speed position knob. Blower motor must be on for A/C to operate.

Mode Selector Control

Mode selector allows desired distribution of air from various outlets. When operating A/C, mode lever should be placed in VENT position for maximum cooling.

Temperature Control

The temperature control knob operates the blend air door in A/C-heater unit to achieve desired temperature. The system will provide cooled air when A/C switch is on and blower motor is in any position other than off. The temperature selector should be in COOL setting for maximum A/C performance.

ADJUSTMENTS

NOTE: For adjustment procedures, see HEATER SYSTEM article in the AIR CONDITIONING & HEAT Section.

TROUBLE SHOOTING

COMPRESSOR DOES NOT OPERATE

1) Turn ignition switch on. Turn blower switch to HIGH position. Compressor clutch should engage when battery voltage is applied. If compressor clutch did not engage, replace magnetic clutch. If compressor clutch engaged, go to next step.

2) Ensure battery voltage is present at A/C switch connector terminal No. 3 when A/C switch is turned to ECONO position. Ensure battery voltage is present at A/C switch connector terminal No. 4 when A/C switch is turned to A/C position. See Fig. 1. If voltage is not as specified, replace A/C switch.

3) Using an ohmmeter, ensure continuity exists between A/C compressor relay terminals No. 2 and 4. Ensure continuity exists between A/C compressor relay terminals No. 1 and 3 when battery voltage is applied to terminals No. 2 and 4. See Fig. 6. If continuity is not as specified, replace relay.

4) Connect manifold gauge set to system. Ensure refrigerant pressure is 30-384 psi. (2-27 kg/cm²). If pressure is not as specified, add refrigerant or evacuate and recharge system with correct amount of refrigerant. If pressure is correct, ensure continuity exists between dual pressure switch terminals. Dual pressure switch is located on receiver-drier. If continuity does not exist, replace switch.

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 3)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

5) Ensure continuity exists between coolant temperature switch (1.6L engine) terminals with coolant at normal operating temperature. Coolant temperature switch is located on water outlet. If continuity does not exist, replace switch.

6) Ensure resistance of refrigerant temperature sensor is greater than 1000 ohms. Refrigerant temperature sensor is located on rear of compressor. If resistance is less than 1000 ohms, replace temperature sensor.

7) Turn A/C switch to OFF position. Measure resistance of air thermo sensor. Resistance should be approximately 1000 ohms or greater at 77°F (25°C). Measure resistance of air inlet sensor. See Fig. 2. Resistance should be approximately 1000 ohms or greater at 77°F (25°C). If resistance is not as specified, replace appropriate sensor.

8) Start engine and turn A/C switch on. Idle speed should increase immediately after A/C switch is turned on. If idle speed does not increase, suspect malfunction of idle speed control (1.5L engine), stepper motor (1.6L engine) or engine control unit. If idle speed increases, replace the A/C compressor control unit. See Fig. 2.

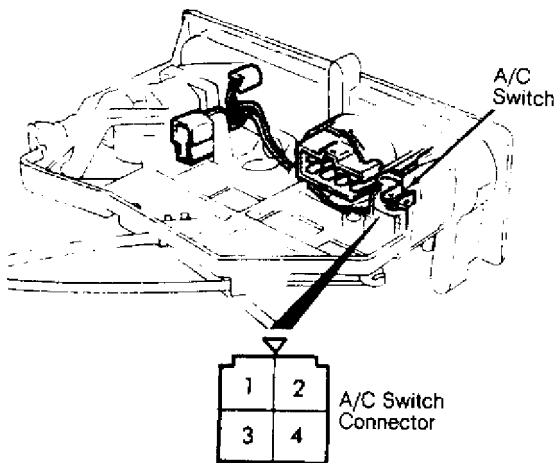


Fig. 1: Identifying A/C Switch Terminals
Courtesy of Chrysler Motors.

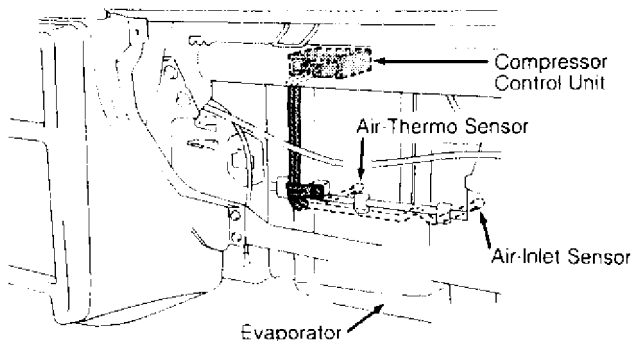


Fig. 2: Locating A/C Air Thermo & Air Inlet Sensors
Courtesy of Chrysler Motors.

TESTING

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 4)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

REFRIGERANT (SIGHT GLASS) CHECK

1) Start engine and operate at idle. Turn A/C control to HIGH position. Sight glass should be clear and compressor clutch engaged. A/C discharge line should be warm and inlet line should be cool.

2) If sight glass is clear and magnetic clutch is engaged, but there is little difference between discharge and inlet lines, check for low refrigerant charge.

3) If sight glass is clear and magnetic clutch is disengaged, check for low refrigerant charge or a defective clutch. Perform dual pressure switch test. See DUAL PRESSURE SWITCH. Check continuity between dual pressure switch and clutch coil.

A/C SWITCH

Disconnect A/C switch harness. A/C switch is located at left center of A/C-heater control panel. See Fig. 1. Using an ohmmeter, measure resistance between switch terminals. If resistance is not as specified, replace switch. See A/C SWITCH SPECIFICATIONS table.

A/C SWITCH SPECIFICATIONS TABLE

| Switch Position | Terminals | Continuity |
|-----------------|-------------|------------|
| OFF | 1-4 | No |
| ECONO | 1 & 3 | Yes |
| A/C | 1 & 4 | Yes |

AIR THERMO & AIR INLET SENSORS

1) Remove sensor connector from A/C compressor control unit (located above evaporator housing). See Fig. 2. Using an ohmmeter, measure continuity between connector terminals. Resistance should be within specification. See AIR THERMO & AIR INLET SENSOR SPECIFICATIONS table.

2) If resistance is not within specification, sensor is faulty and must be replaced. If within specifications and all other components test okay, replace A/C compressor control unit.

AIR THERMO & AIR INLET SENSOR RESISTANCE SPECIFICATIONS TABLE

| Sensor Temperature | Ohms |
|--------------------|--------|
| Air Thermo Sensor | |
| 32°F (0°C) | 11,400 |
| 50°F (10°C) | 7320 |
| 68°F (20°C) | 4860 |
| 86°F (30°C) | 3310 |
| 104°F (40°C) | 2320 |
| Air Inlet Sensor | |

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 5)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

| | | |
|--------------|-------|------|
| 32°F (0°C) | | 3310 |
| 50°F (10°C) | | 2000 |
| 68°F (20°C) | | 1250 |
| 86°F (30°C) | | 810 |
| 104°F (40°C) | | 530 |

BLOWER MOTOR

Remove passenger side footwell shower duct. Disconnect blower motor electrical connector. Apply battery voltage to one blower motor terminal, and ground the other. Ensure blower motor operates smoothly. Reverse battery and ground leads. Blower motor should reverse direction and continue to run smoothly. Replace blower motor if it does not operate as specified.

BLOWER RESISTOR

Remove glove box. Disconnect blower resistor connector. Blower resistor is located in left side of evaporator housing. See Fig. 3. Using an ohmmeter, measure resistance between resistor terminals. If resistance is not as specified, replace blower resistor. See BLOWER RESISTOR VALUE table.

BLOWER RESISTOR VALUES TABLE

| Terminals | Resistance (Ohms) |
|-----------|-------------------|
| 2 & 4 | 1.79-2.06 |
| 3 & 4 | 1.10-1.26 |
| 1 & 4 | 0.38-0.44 |

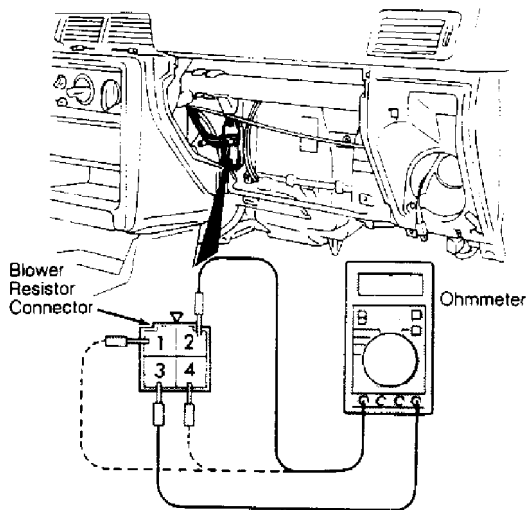


Fig. 3: Testing Blower Resistor
Courtesy of Chrysler Motors.

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 6)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

BLOWER SWITCH

Disconnect blower switch harness. Using an ohmmeter, measure resistance between switch terminals. See Fig. 4. If resistance is not as specified, replace switch. See BLOWER SWITCH SPECIFICATIONS table.

BLOWER SWITCH SPECIFICATIONS TABLE

| Switch Position | Terminals | Continuity |
|-------------------|-----------------------|------------|
| Off | 1-8 | No |
| Low | 1 & 8; 3 & 5 | Yes |
| Medium Low | 1 & 8; 5 & 6 | Yes |
| Medium High | 1, 4 & 8; 5 & 8 | Yes |
| High | 1, 4 & 8; 5 & 7 | Yes |

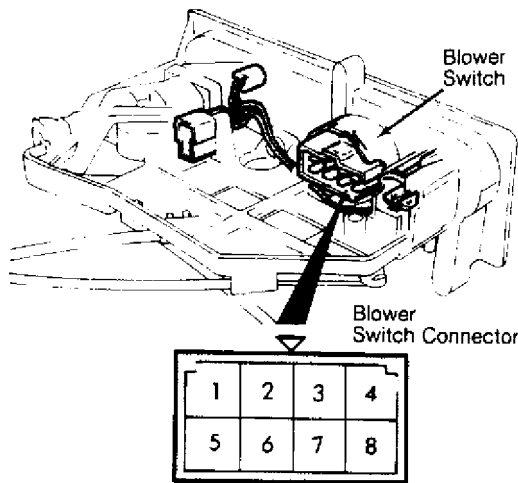


Fig. 4: Identifying Blower Switch Terminals
Courtesy of Chrysler Motors.

COOLANT TEMPERATURE SWITCH

1.6L Engine

Remove coolant temperature switch from coolant outlet housing. Using an ohmmeter, ensure switch is closed at temperatures less than 222-239°F (108-115°C). Immerse switch in hot oil. Ensure switch is open at temperatures greater than 222-239°F (108-115°C). If switch does not function as specified, replace switch.

COMPRESSOR

1) Install manifold gauge set. Start engine and operate at idle speed. Turn A/C control to HIGH position. If pressure on suction side of gauge is 43-57 psi (3-4 kg/cm²), and 284 psi (20 kg/cm²) on discharge side, air in system is indicated. Evacuate system and recharge with refrigerant.

2) If pressure on suction side of gauge is negative, and 85-

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 7)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

142 psi (6-10 kg/cm²) on discharge side, water in system is indicated. Check for leaks. Replace receiver-drier. Evacuate and recharge system.

3) If pressure on suction side of gauge is 71 psi (5 kg/cm²), and 128 psi (9 kg/cm²) on discharge side, compressor failure is indicated. Discharge system. Replace compressor and receiver-drier. Evacuate and recharge system.

DUAL PRESSURE SWITCH

1) With engine off, disconnect harness connector at dual pressure switch (located on receiver-drier). Connect a jumper wire across harness connector. Turn A/C switch and blower switch on. Momentarily turn the ignition on while listening for the compressor clutch to engage.

2) If compressor clutch does not engage, connect manifold gauge set to system, and check operating pressures. Dual pressure switch should allow compressor operation if system pressures are between 30-384 psi (2-27 kg/cm²). If dual pressure switch does not operate within specified pressure range, discharge A/C system using approved refrigerant recovery/recycling equipment and replace switch.

3) After replacing switch, recharge system and monitor pressures for proper compressor function. If dual pressure switch cuts power to compressor clutch while driving, even though temperatures inside vehicle have not yet decreased, it is possible that high pressure side of the dual pressure switch has been activated. Go to next step.

4) Discharge A/C system using approved refrigerant recovery/recycling equipment. Replace switch, and recharge system again. Ensure compressor clutch is operating within pressure range given in step 2), and check for sufficient system cooling.

MAGNETIC CLUTCH

Disconnect compressor clutch wiring harness connector. Apply battery voltage to compressor clutch wiring harness connector terminals. If compressor clutch engages, clutch is okay. If compressor clutch does not engage, pulley and armature are not making contact. Repair as required.

PRESSURE SWITCH

1.6L Engine

1) Install A/C manifold gauge set. Ensure system operating pressure is correct. Disconnect pressure switch connector located above high-pressure pipe. Disconnect compressor clutch connector.

2) Using an ohmmeter, measure resistance between pressure switch terminals. See PRESSURE SWITCH SPECIFICATIONS table. If resistance is not as specified, replace switch.

PRESSURE SWITCH SPECIFICATIONS TABLE

System Pressure

Continuity

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 8)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

| | | |
|--|-------|-----|
| Less Than 213 psi (15 kg/cm ²) | | No |
| More Than 256 psi (18 kg/cm ²) | | Yes |

RECEIVER-DRIER

Operate A/C system, and check temperature of tubes entering and leaving receiver-drier. If temperature is different from side to side, receiver-drier is restricted. Repair as required.

REFRIGERANT TEMPERATURE SENSOR

Remove refrigerant temperature sensor connector (located on compressor). Using an ohmmeter, measure resistance between the 2 bottom terminals. Resistance should be approximately 80,500 ohms at 77°F (25°C). If resistance is not as specified, replace refrigerant temperature sensor.

RELAYS

4-Terminal Relay

1) Remove relay from holder. See Fig. 5. Using an ohmmeter, ensure continuity exists between terminals No. 2 and 4, and no continuity exists between terminals No. 1 and 3. See Fig. 6.

2) Connect battery voltage to terminal No. 2, and ground terminal No. 4. Ensure continuity exists between terminals No. 1 and 3. See Fig. 6. If continuity is not as specified, replace relay.

6-Terminal Relay

Remove relay from holder. See Fig. 5. Using an ohmmeter, ensure continuity exists between terminals No. 2 and 5 and terminals No. 1 and 3. Ensure no continuity exists between terminals No. 3 and 6. See Fig. 7. Connect battery voltage to terminal No. 2, and ground terminal No. 5. Ensure continuity exists between terminals No. 3 and 6, and no continuity exists between terminals No. 1 and 3. See Fig. 7. If continuity is not as specified, replace relay.

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 9)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

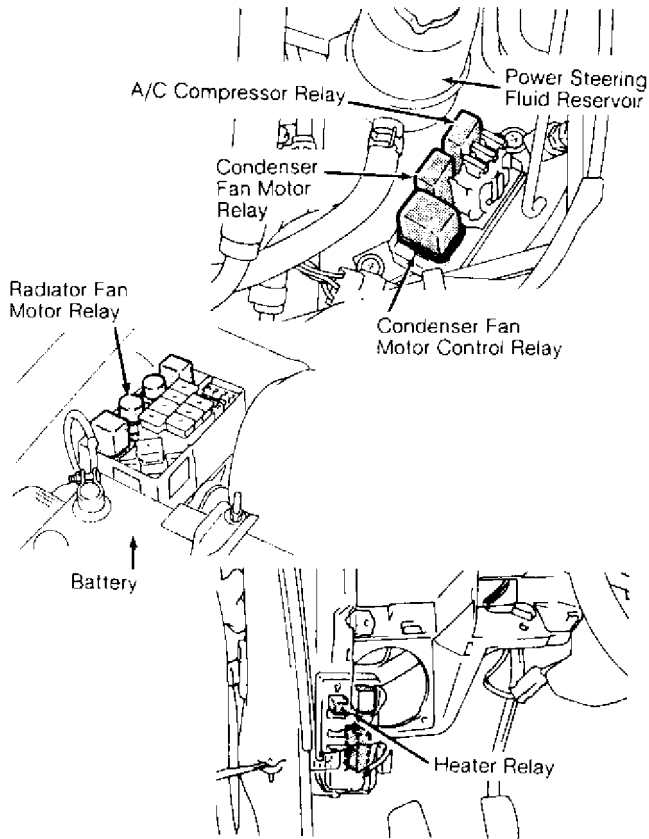


Fig. 5: Locating & Identifying Relays
Courtesy of Chrysler Motors.

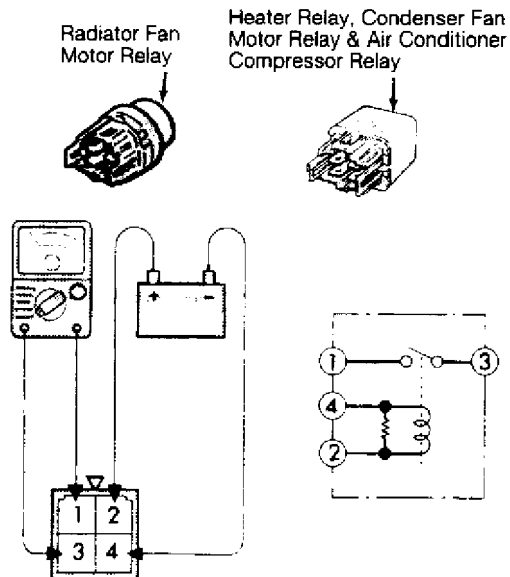


Fig. 6: Testing 4-Terminal Relay
Courtesy of Chrysler Motors.

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 10)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

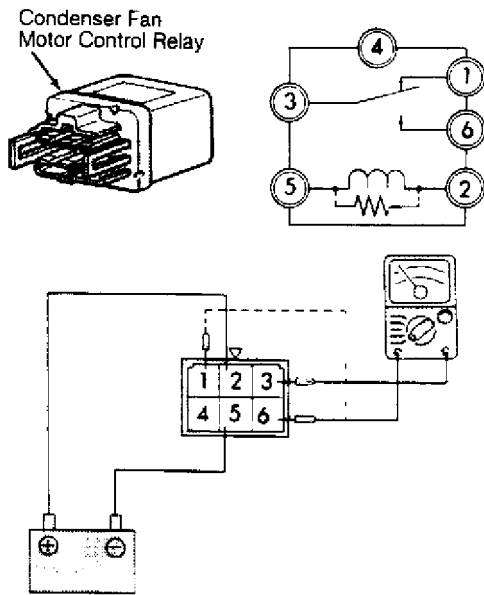


Fig. 7: Testing 6-Terminal Relay
Courtesy of Chrysler Motors.

REMOVAL & INSTALLATION

NOTE: For removal and installation procedures not covered in this article, see HEATER SYSTEM article in the AIR CONDITIONING & HEAT Section.

A/C SWITCH

Removal & Installation

A/C switch is located on A/C-heater control panel. Remove glove box. Remove knobs from control levers. Remove control panel mounting screws and control panel. Remove retaining clip. Disconnect electrical connectors. Remove switch. To install, reverse removal procedure.

COMPRESSOR

Removal & Installation

Remove distributor cap. Loosen idler pulley, and remove belt. Disconnect compressor clutch connector. Discharge A/C system using approved refrigerant recovery/recycling equipment. Remove high and low pressure lines and "O" rings from compressor. Remove compressor mounting bolts and compressor. To install, reverse removal procedure.

CONDENSER

Removal & Installation

1) Discharge A/C system using approved refrigerant recovery/recycling equipment. Remove battery holder and windshield washer tank. Remove insulator mounting bolts and condenser fan.

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 11)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

2) Remove and plug pressure lines from condenser. Remove front end cover and condenser harness. Disconnect electrical fan connector. Remove 2 condenser mounting bolts. Lift and remove condenser from vehicle. To install, reverse removal procedure.

EVAPORATOR

Removal & Installation

1) Remove glove box. Discharge A/C system using approved refrigerant recovery/recycling equipment. Remove refrigerant line connections and "O" rings from evaporator. See Fig. 8. Disconnect suction hose connection. Remove dash insert and lap heater duct.

2) Remove defroster duct. Remove heater and blower duct joints. Disconnect A/C switch harness connector. Disconnect main harness connector. Remove evaporator unit mounting nuts and evaporator unit. To install, reverse removal procedure.

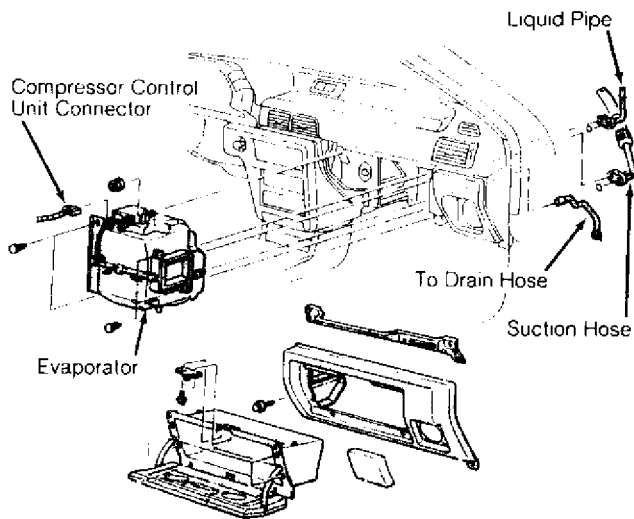


Fig. 8: Exploded View of Evaporator Assembly
Courtesy of Chrysler Motors.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

| Application | Ft. Lbs. (N.m) |
|-----------------------------------|-----------------|
| Belt Tensioner Nut | 18-21 (24-28) |
| Clutch Mounting Nut | 12 (16) |
| Compressor Bracket Bolts | 33-40 (45-54) |
| Compressor-To-Bracket Bolts | 17-20 (23-27) |
| | INCH Lbs. (N.m) |
| Duct Screws | 13-21 (1.5-2.4) |

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 12)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

WIRING DIAGRAM

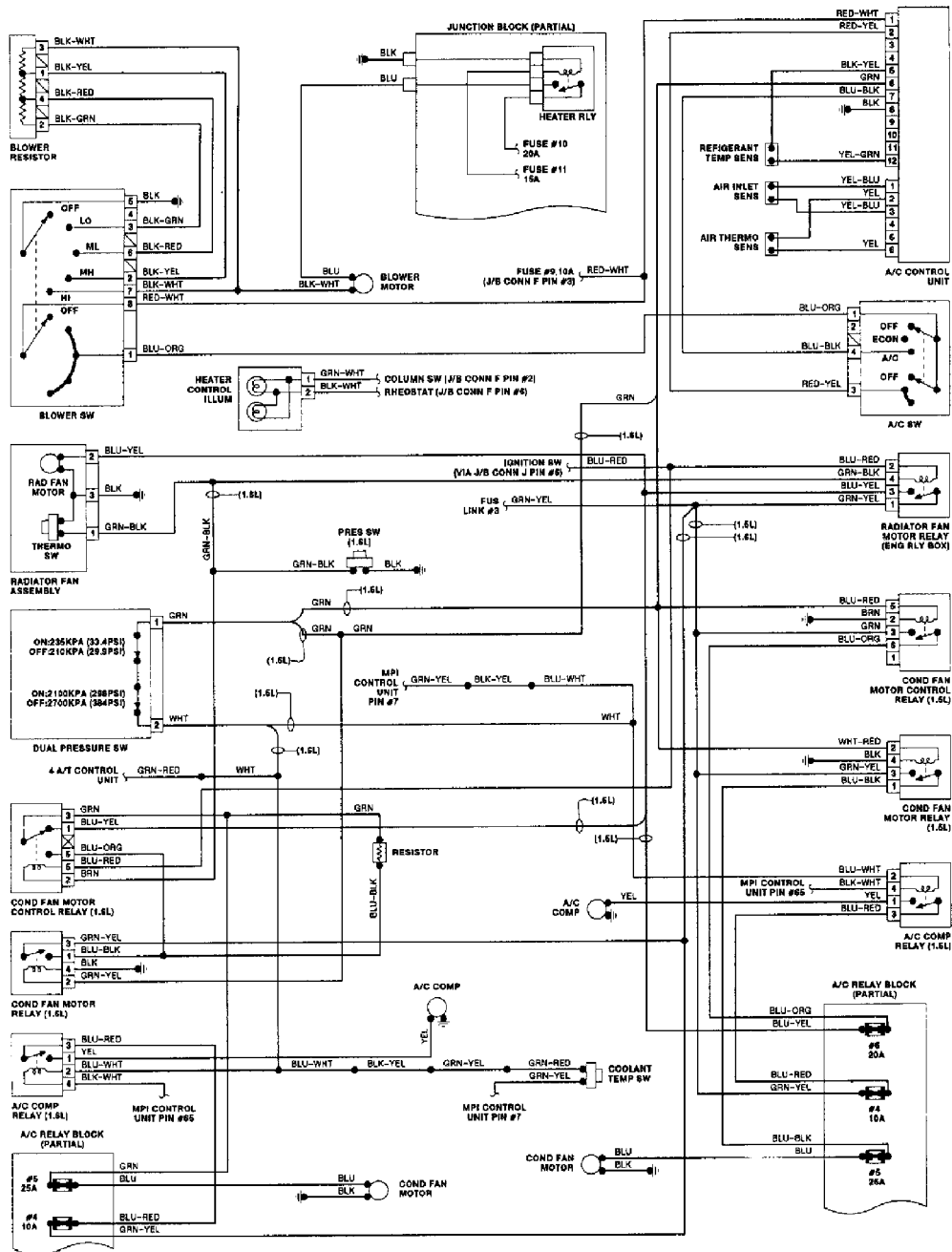


Fig. 9: Manual A/C-Heater Wiring Diagram (1990 Models)

A/C-HEATER SYSTEM - MANUAL

Article Text (p. 13)

1992 Dodge Colt

For a a a a

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Saturday, April 27, 2002 07:27PM

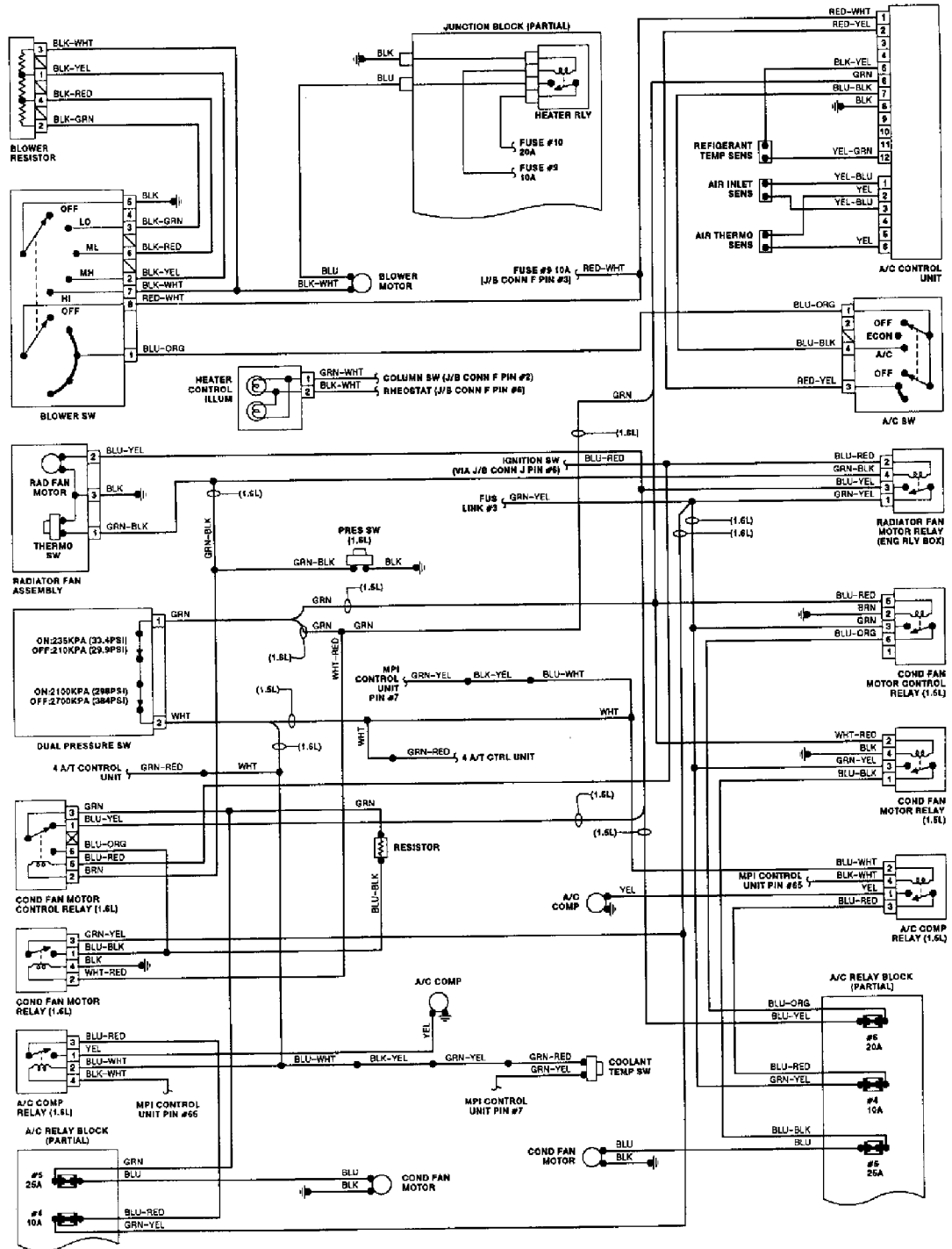


Fig. 10: Manual A/C-Heater Wiring Diagram (1991 Models)

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Fig. 11: Manual A/C-Heater Wiring Diagram (1992 Models)