

A/C-HEATER SYSTEM - MANUAL

Article Text

1996 Volkswagen Golf
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ARTICLE BEGINNING

1995-96 MANUAL A/C-HEATER SYSTEMS
Volkswagen

Cabrio, Golf, Golf III, GTI, Jetta & Jetta III

* PLEASE READ THIS FIRST *

WARNING: To avoid injury from accidental air bag deployment, read and carefully follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in the AIR BAG RESTRAINT SYSTEM article in the ACCESSORIES/SAFETY EQUIPMENT section.

CAUTION: When battery is disconnected, radio will go into anti-theft protection mode. Obtain radio anti-theft protection code from owner prior to servicing vehicle.

A/C SYSTEM SPECIFICATIONS

SPECIFICATIONS

Application Specification

Compressor Type	Sanden SD7-V16/SD7-V16L 7-Cyl.
Compressor Belt Tension (1)	
System Oil Capacity	3.9 ozs.
Refrigerant (R-134a) Capacity (2)	28.0-29.8 ozs.
System Operating Pressures (3)	
High Side	203 psi (14.27 kg/cm ²)
Low Side	17.4 psi (1.22 kg/cm ²)

(1) - Serpentine belt tension is automatically adjusted by tensioner pulley.

(2) - Use SP-10 PAG Compressor Oil (Part No. G 052 154 A2).

(3) - Measured at 68-86°F (20-30°C) ambient temperature.

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DESCRIPTION & OPERATION

REFRIGERANT SYSTEM

System uses R-134a refrigerant. Variable displacement compressor increases or decreases pressure as necessary to maintain evaporator temperature near 32°F (0°C). Expansion valve restricts refrigerant flow, causing pressure differential. See Fig. 1.

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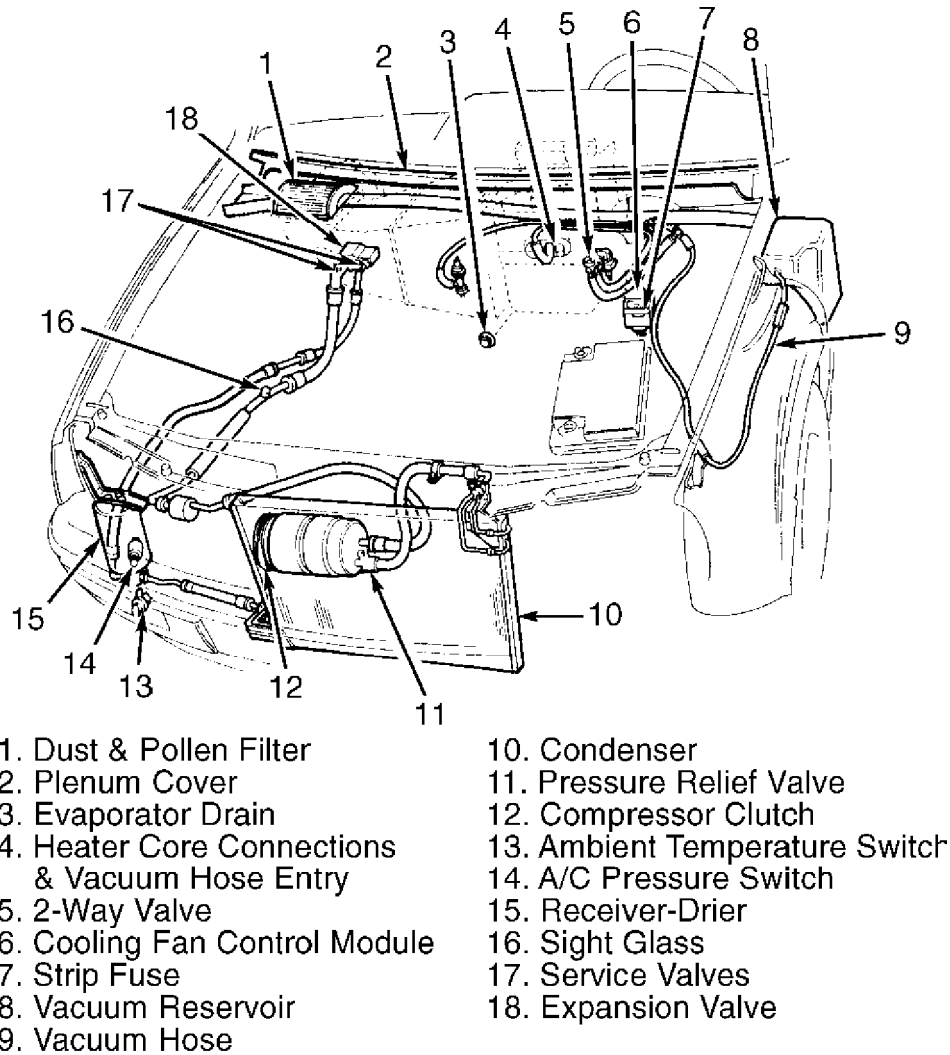
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Fig. 1: A/C-Heater System Component ID (Engine Compartment)
Courtesy of Volkswagen United States, Inc.

COMPRESSOR CLUTCH CONTROL

Evaporator Temperature Switch

Although compressor clutch does not normally cycle on and off, an evaporator temperature switch turns off the compressor clutch if evaporator temperature decreases to 32°F (0°C). This prevents evaporator icing. See Fig. 6.

A/C Pressure Switch

A/C pressure switch is a triple-pressure switch, which monitors high side pressure. See Fig. 1. If pressure decreases to less than 17.4 psi (1.2 kg/cm²), A/C pressure switch interrupts power to compressor clutch (low-pressure cutout). Switch closes when pressure increases to more than 34.8 psi (2.4 kg/cm²).

If pressure increases to more than 464 psi (32.6 kg/cm²), A/C pressure switch interrupts power to compressor clutch (high-

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pressure cutout). Switch closes when pressure decreases to less than 348 psi (24.5 kg/cm²).

A/C pressure switch also controls cooling fan high speed operation. If pressure increases to more than 232 psi (16.3 kg/cm²), switch contacts close, causing cooling fan to operate at high speed. When pressure decreases to less than 181 psi (12.7 kg/cm²), switch contacts open.

Ambient Temperature Switch

If ambient temperature decreases to less than 36°F (2°C), ambient temperature switch interrupts power to compressor clutch. When ambient temperature increases to more than 45°F (7°C), ambient temperature switch restores power to compressor clutch. See Fig. 1.

AIRFLOW CONTROL

Fresh/Recirculated Air Flap

Fresh/recirculated air flap (door) above blower motor controls air entering ducting system. Flap is controlled by a vacuum servo. See Fig. 6. Vacuum supply to servo is controlled by a 2-way valve (electric solenoid), located between vacuum reservoir and vacuum servo. When voltage signal from A/C-heater control panel is applied to the 2-way valve, the valve opens, allowing vacuum supply to vacuum servo.

Temperature Flap

Temperature flap (door) diverts air through or around heater core. Flap is controlled by a cable connected to the A/C-heater control panel.

Central Flap

Central flap (door) diverts air to face vents or to footwell and defrost vents (or a combination of all 3). Flap is controlled by a cable connected to the A/C-heater control panel.

Footwell/Defrost Flap

Footwell/defrost flap (door) diverts air to footwell or defrost vents (or a combination of both). Flap is controlled by a cable connected to the A/C-heater control panel.

ADJUSTMENTS

TEMPERATURE FLAP CABLE

Ensure cable is connected to A/C-heater control panel and panel is installed. Remove cable sleeve retaining clip (cable sleeve is Blue). See Fig. 2. Disconnect cable from temperature flap lever. Adjust temperature control knob to maximum cold position. Connect cable to temperature flap lever. Push lever in direction of arrow until it stops. Hold lever in position, and install cable retaining clip.

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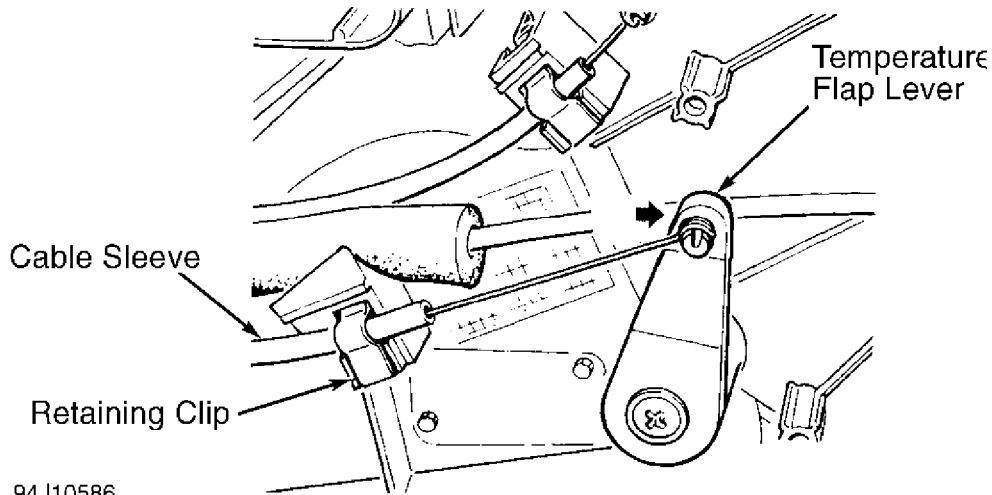
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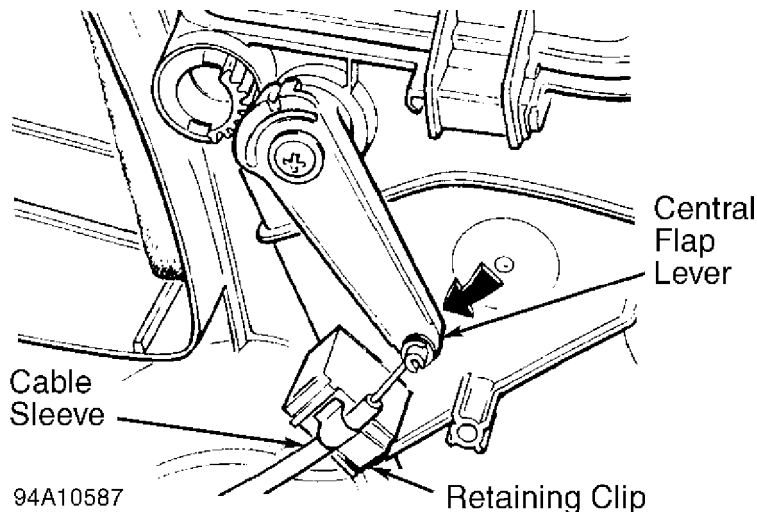


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Fig. 2: Adjusting Temperature Flap Cable
Courtesy of Volkswagen United States, Inc.

CENTRAL FLAP CABLE

Ensure cable is connected to A/C-heater control panel and panel is installed. Remove cable sleeve retaining clip (cable sleeve is Black). See Fig. 3. Disconnect cable from central flap lever. Adjust airflow distribution knob to defrost position. Connect cable to central flap lever. Push lever in direction of arrow until it stops. Hold lever in position, and install cable retaining clip.



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Fig. 3: Adjusting Central Flap Cable
Courtesy of Volkswagen United States, Inc.

FOOTWELL/DEFROST FLAP CABLE

Ensure cable is connected to A/C-heater control panel and panel is installed. Remove cable sleeve retaining clip (cable sleeve is Black). See Fig. 4. Disconnect cable from footwell/defrost flap lever. Adjust airflow distribution knob to defrost position. Connect

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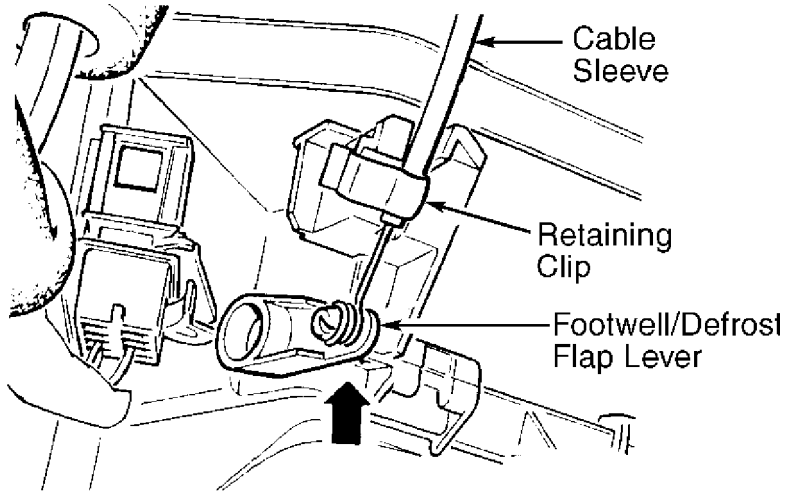
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cable to footwell/defrost flap lever. Push lever in direction of arrow until it stops. Hold lever in position and install cable retaining clip.



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Fig. 4: Adjusting Footwell/Defrost Flap Cable
Courtesy of Volkswagen United States, Inc.

TESTING

WARNING: To avoid injury from accidental air bag deployment, read and carefully follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in the AIR BAG RESTRAINT SYSTEM article in the ACCESSORIES/SAFETY EQUIPMENT section.

A/C SYSTEM PERFORMANCE

1) Ensure no bubbles are present in sight glass. See Fig. 1. Connect manifold gauge set to service valves. Run engine at 1500 RPM. Set air distribution knob to face vent position. Set temperature control knob to full cold position.

2) Press A/C NORM button. Set blower motor on 2nd speed. System is okay if air temperature at center vent is less than 50°F (10°C) after one minute and system operating pressures are within specification. See SPECIFICATIONS table at beginning of article.

A/C PRESSURE SWITCH

NOTE: A/C pressure switch may be removed without discharging A/C system.

Connect manifold gauge set to service valves. Disconnect A/C pressure switch connector. Check continuity between specified A/C pressure switch terminals. See A/C PRESSURE SWITCH CONTINUITY table. See Fig. 5. Replace A/C pressure switch if continuity is not as specified.

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A/C PRESSURE SWITCH CONTINUITY

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Terminal No. & Pressure	Continuity
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1 & 2

Low-Pressure Cutout

Decreasing To 17.4 psi (1.2 kg/cm ²) No
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Increasing To 34.8 psi (2.4 kg/cm ²) Yes
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High-Pressure Cutout

Increasing To 464 psi (32.6 kg/cm ²) No
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Decreasing To 348 psi (24.5 kg/cm ²) Yes
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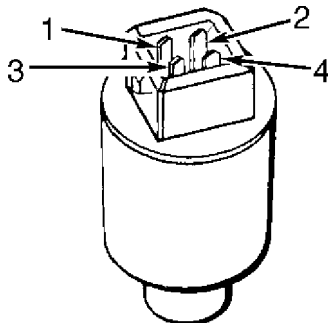
3 & 4

Cooling Fan High Speed

Increasing To 232 psi (16.3 kg/cm ²) Yes
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Decreasing To 181 psi (12.7 kg/cm ²) No
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Fig. 5: Identifying A/C Pressure Switch Terminals
Courtesy of Volkswagen United States, Inc.

NOTE: Additional testing information is not available from manufacturer. Use wiring diagrams as guide. See **WIRING DIAGRAMS**.

REMOVAL & INSTALLATION

WARNING: To avoid injury from accidental air bag deployment, read and carefully follow all **SERVICE PRECAUTIONS** and **DISABLING & ACTIVATING AIR BAG SYSTEM** procedures in the **AIR BAG RESTRAINT SYSTEM** article in the **ACCESSORIES/SAFETY EQUIPMENT** section.

NOTE: For removal and installation procedures not covered in this article, see **HEATER SYSTEM** article in this section.

A/C COMPRESSOR

Removal & Installation

1) Mark direction of serpentine belt rotation for installation reference. Loosen serpentine belt tensioner pulley.

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Remove serpentine belt.

2) Discharge A/C system using approved refrigerant recovery/recycling equipment. Disconnect refrigerant lines from A/C compressor. Remove A/C compressor bracket and/or A/C compressor, if necessary. To install, reverse removal procedure.

CONDENSER

Removal & Installation

Discharge A/C system using approved refrigerant recovery/recycling equipment. Remove front bumper. Remove bumper cross support. Disconnect refrigerant lines from condenser. Remove condenser. To install, reverse removal procedure.

EVAPORATOR HOUSING & EVAPORATOR

Removal & Installation

Discharge A/C system using approved refrigerant recovery/recycling equipment. Drain coolant. Remove instrument panel and support bracket. See INSTRUMENT PANEL. Remove evaporator housing. See Fig. 6.

Disassemble evaporator housing. See Fig. 7.

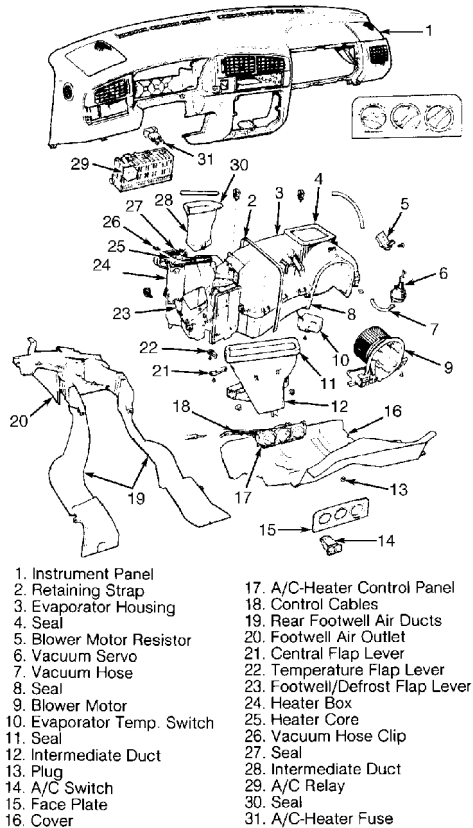


Fig. 6: Exploded View Of A/C-Heater System Components
Courtesy of Volkswagen United States, Inc.

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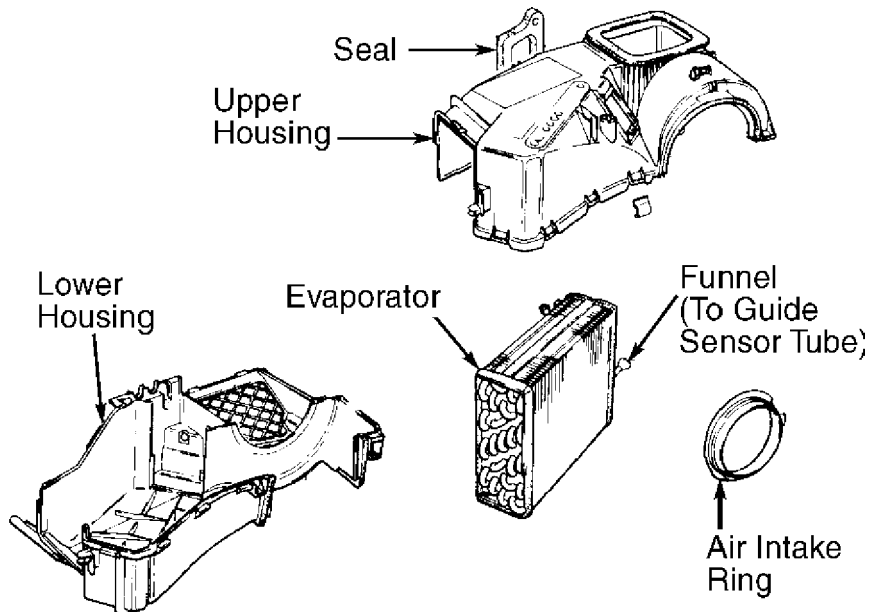


Fig. 7: Exploded View Of Evaporator Housing
Courtesy of Volkswagen United States, Inc.

EVAPORATOR TEMPERATURE SWITCH

Removal & Installation

Remove screw(s) and evaporator temperature switch from bottom of evaporator housing. See Fig. 6. To install, apply tape 13" (330 mm) from end of sensor tube. Install sensor tube into evaporator until tape reaches grommet. DO NOT bend sensor tube.

INSTRUMENT PANEL

Removal

1) Obtain radio anti-theft protection code from vehicle owner. Disconnect negative battery cable. Remove center console and radio. Remove steering wheel and combination switch on steering column. On left side of instrument panel, remove lower cover and lower trim pieces.

2) Remove lower trim piece from right side of instrument panel. Remove face plate from A/C-heater control panel, and remove screws. Push A/C-heater control panel back into cavity. Remove instrument cluster cover and instrument cluster.

3) Remove nuts and screws securing instrument panel (nuts are accessible through plenum with plenum cover removed). See Fig. 1. Pull instrument panel off carrier, and disconnect necessary electrical connectors for removal. Remove instrument panel.

Installation

To install, reverse removal procedure. Ensure wiring harnesses are not pinched during installation.

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VACUUM DIAGRAM

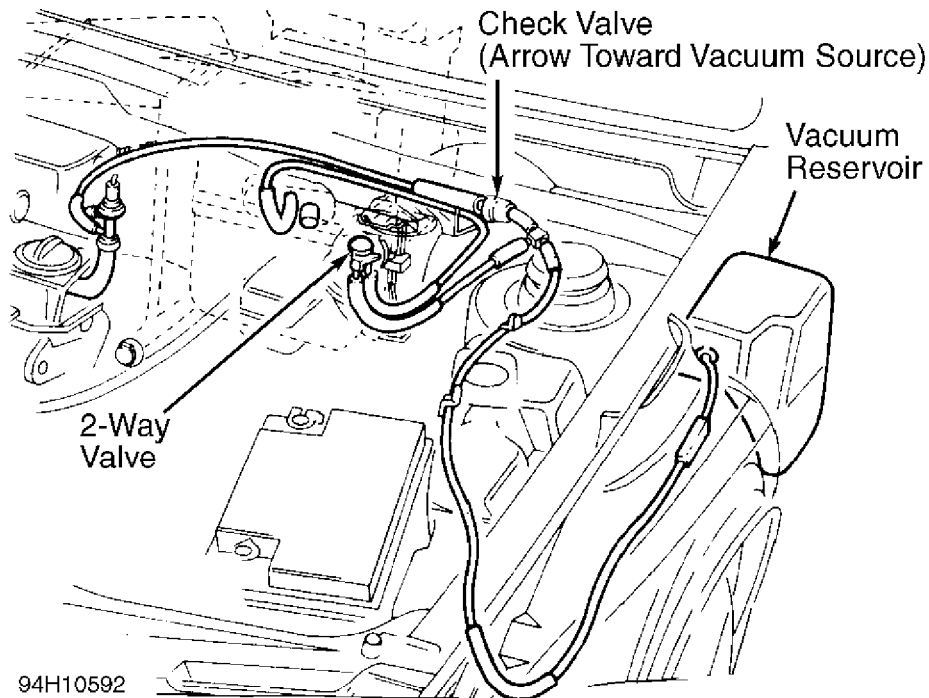


Fig. 8: Vacuum Diagram (Cabrio, Golf, Golf III & Jetta)
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WIRING DIAGRAMS

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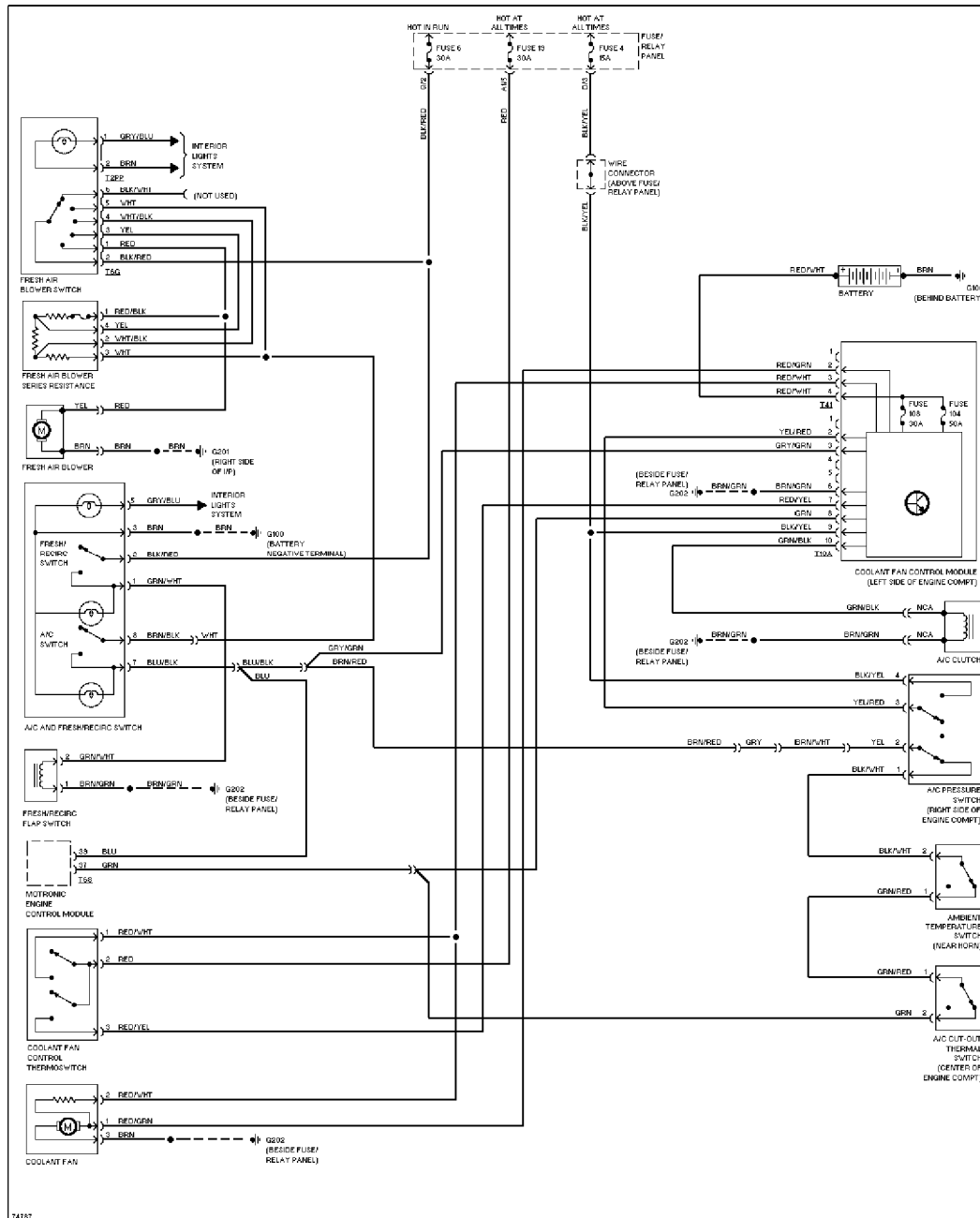


Fig. 9: Wiring Diagram (1995-96 Cabrio)

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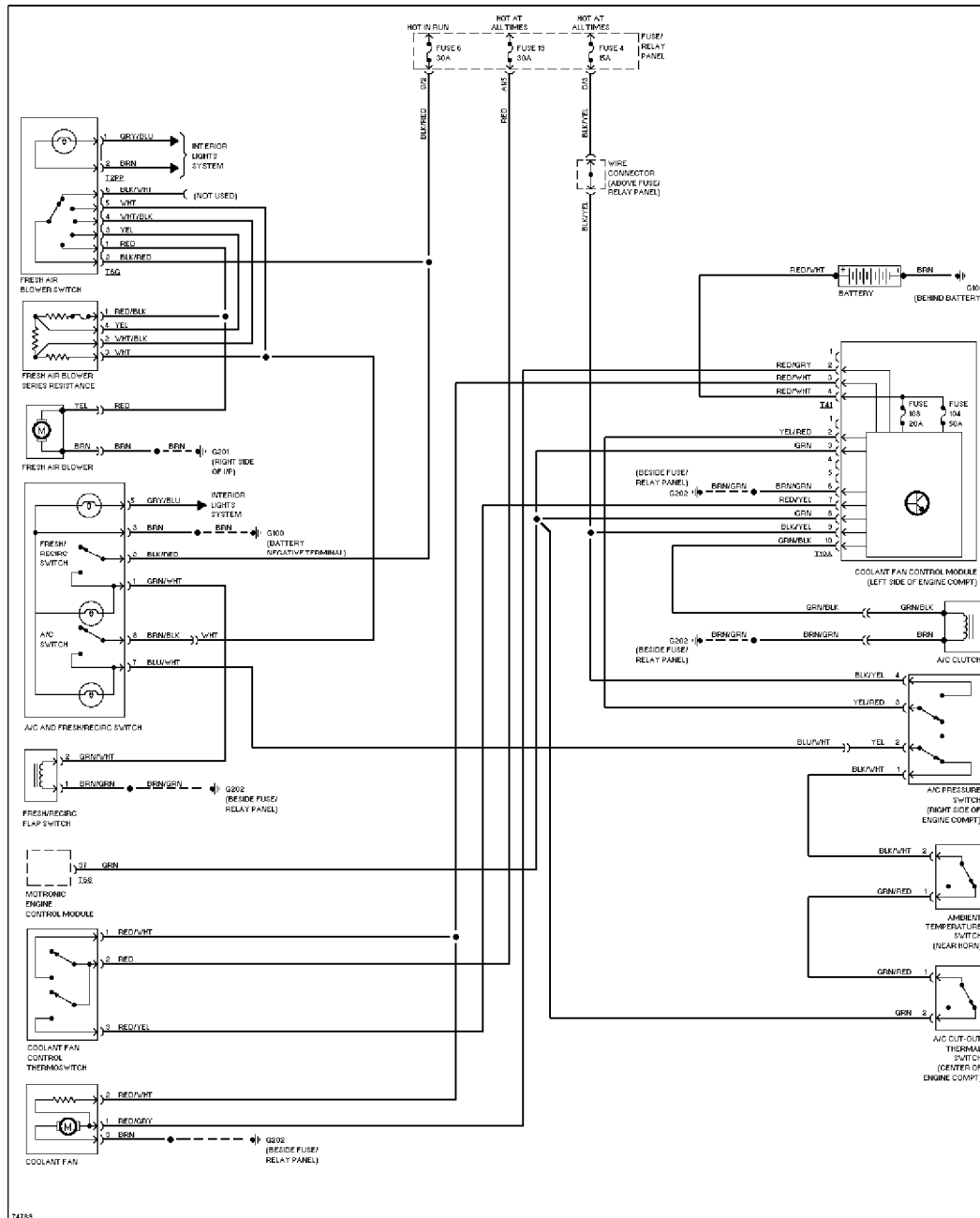


Fig. 10: Wiring Diagram (1995 Golf III & Jetta III 2.0L)

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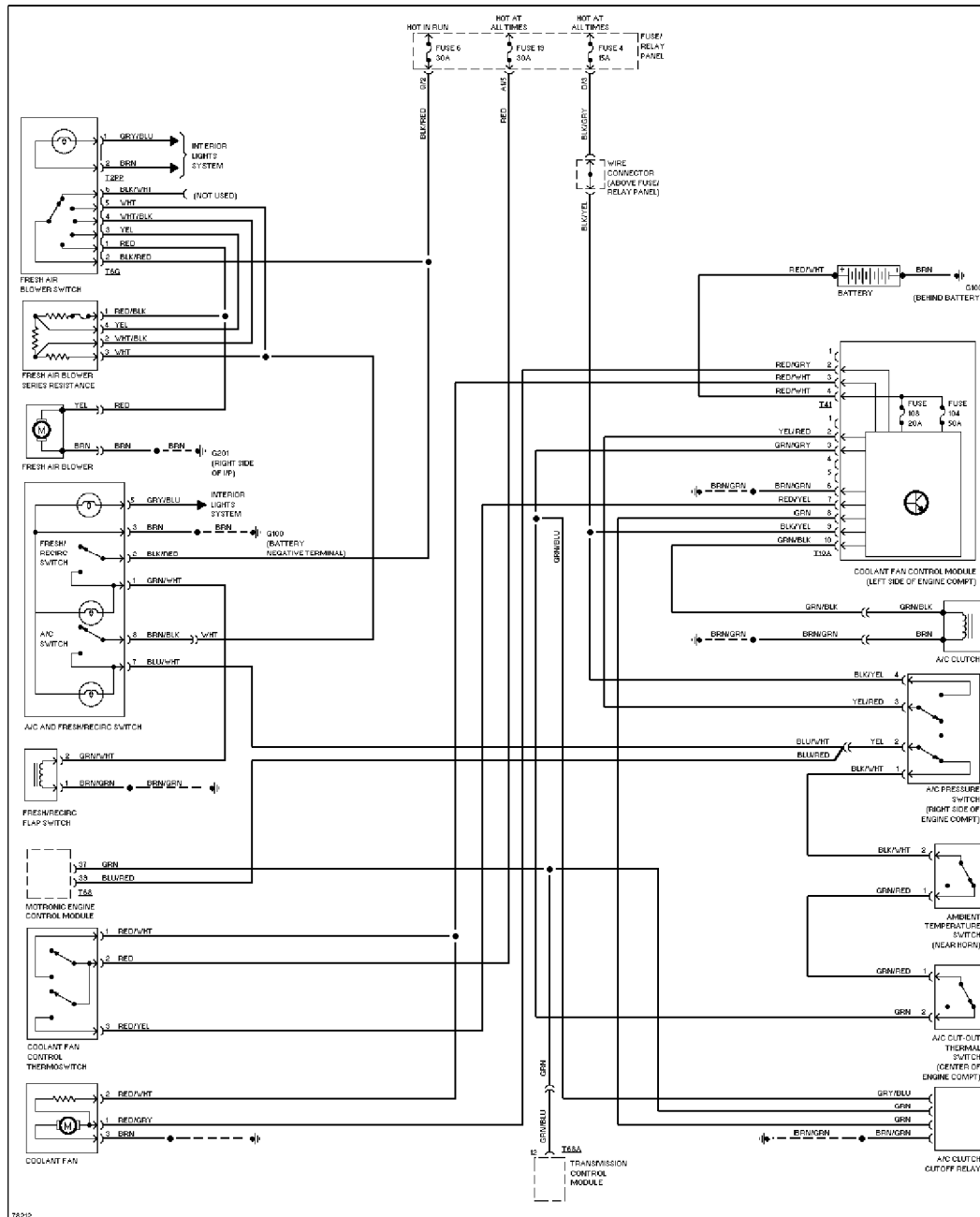


Fig. 11: Wiring Diagram (1996 Golf & Jetta 2.0L)

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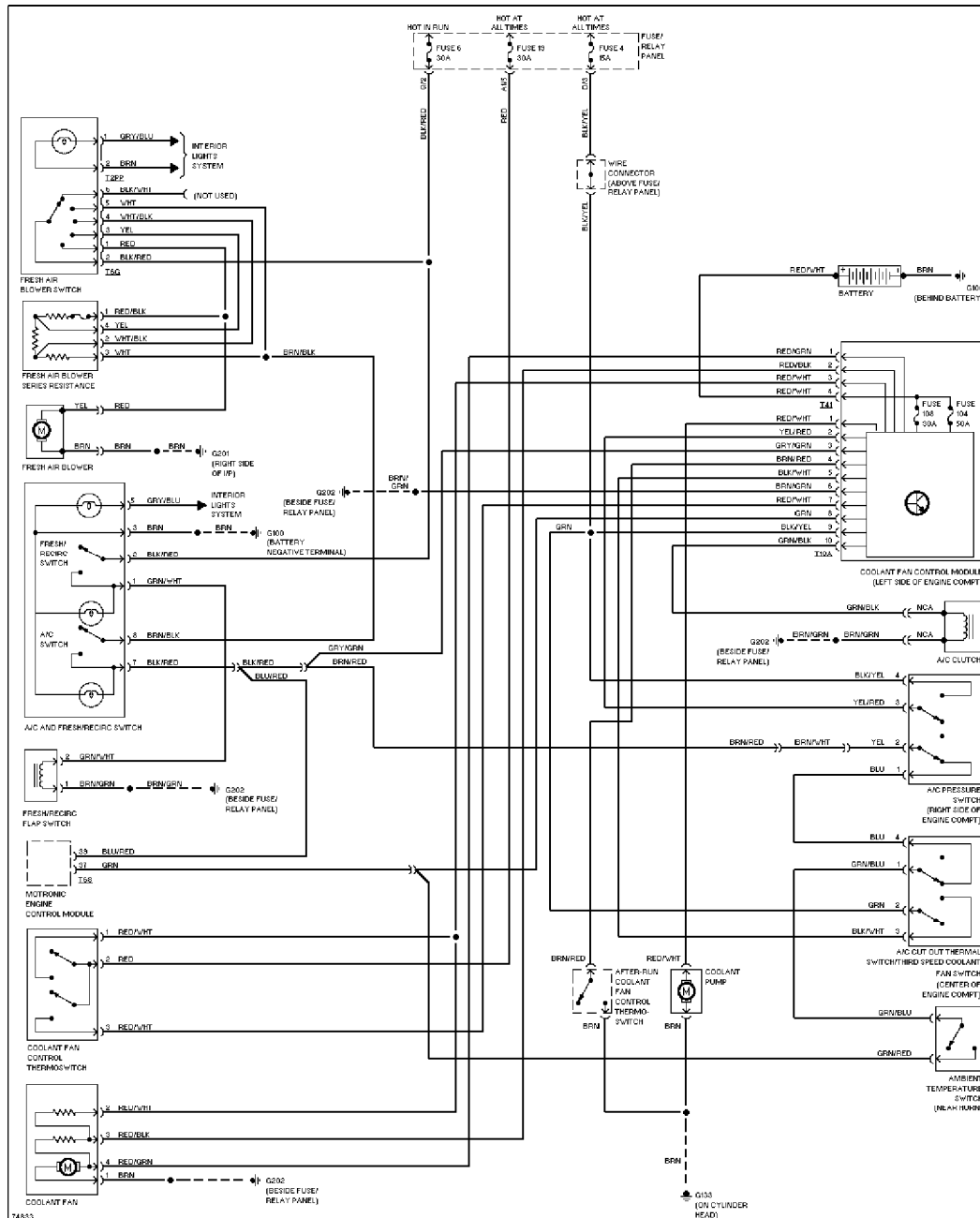


Fig. 12: Wiring Diagram (1995 - 96 GTI & Jetta, Jetta III 2.8L)

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