A/C-HEATER SYSTEM - AUTOMATIC
Article Text

1996 Audi A4

Saturday, January 23, 1999 06:32PM

ARTICLE BEGINNING

1996 AUTOMATIC A/C-HEATER SYSTEMS
Acura Automatic A/C Systems

A4

*** 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 appropriate AIR BAG RESTRAINT SYSTEM article in ACCESSORIES/SAFETY EQUIPMENT SECTION.

A/C-HEATER SYSTEM SPECIFICATIONS

AUTOMATIC A/C-HEATER SYSTEMS SPECIFICATIONS TABLE

Application	Specifications
Compressor Type	Zexel 6-Cyl. Or Nippondenso
Compressor Belt Tension (1)	
System Oil Capacity	
Nippondenso Compressor	(2) 6.9-10.1 ozs.
Zexel Compressor	(2) 7.8-9.2 ozs.
Refrigerant (R-134a) Capacity	23.0-24.8 ozs.
System Operating Pressures (3)	
Low Side	26-29 psi (1.8-2.0 kg/cm ý)
High Side	(4)

(1) - Belt tension is automatically adjusted by belt tensioner.
(2) - Use SP-10 Oil (Part No. G 052 154 A2) on Zexel compressor. Use SP-10 Oil (Part No. G 052 300 A2) on Nippondenso compressor.
(3) - Measured at 77 øF (25øC).
(4) - High side pressure increases from base pressure (engine off) to maximum of 350 psi (24.6 kg/cm ý).

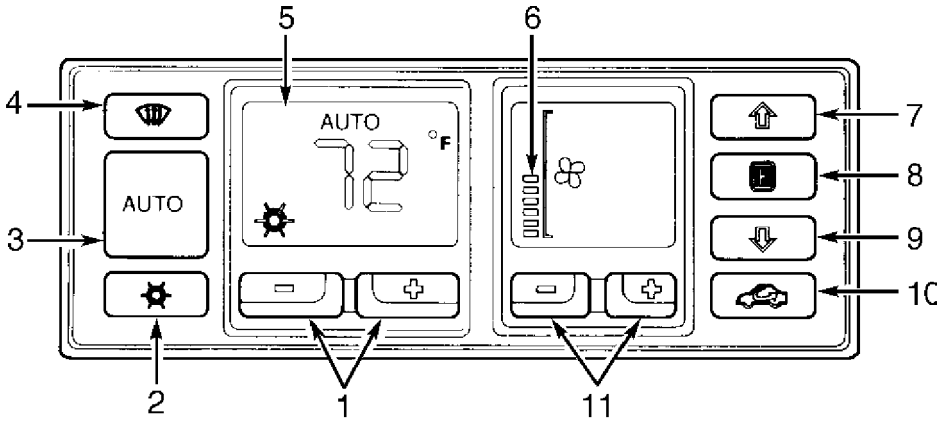
DESCRIPTION

The A/C-heater control panel has buttons to control system. Blower speed is controlled automatically according to difference between selected temperature and interior temperature. Blower speed can also be controlled manually.

The A/C-heater control panel left side display shows selected temperature and automatic functions. See Fig. 1. The right side display indicates manual functions. The A/C-heater system

microprocessor, located within A/C-heater control panel, has a self-diagnostic feature.

The A/C-heater system automatically maintains temperatures from 64 øF (18 øC) to 85 øF (29 øC). If temperature greater than 85 øF (29 øC) is selected, the word HI appears in temperature display. If temperature less than 64 øF (18 øC) is selected, the word LO is displayed. Selection of these temperatures overrides automatic climate control system.



1. Temperature Control Buttons
2. Compressor On/Off Button
3. Automatic Mode Button
4. Defrost Button
5. Display
6. Fan Speed Indicator
7. Air Distribution Button (Directs Air To Windows)
8. Air Distribution Button (Directs Air To Dashboard Outlets & Rear Of Center Console)
9. Air Distribution Button (Directs Air To Footwells)
10. Air Recirculation Button
11. Fan Speed Button

95J60680

Fig. 1: Identifying A/C-Heater Control Panel
Courtesy of Audi of America, Inc.

OPERATION

A/C COMPRESSOR SPEED SENSOR

A/C compressor speed sensor is used on models equipped with Zexel compressors. Sensor is located on compressor and determines A/C compressor speed. A/C-heater control panel then compares compressor speed to engine speed and calculates belt slippage (as a percentage). If slippage is excessive, control panel switches A/C compressor off.

A/C-HEATER CONTROL PANEL & AIR DISTRIBUTION

A/C-Heater Control Panel

A/C-heater control panel has a digital microprocessor that compares values from various sensors. Microprocessor then activates appropriate flap motor and A/C compressor clutch to maintain desired temperature. A/C clutch, blower speed, temperature/blend air door

position, and mode doors are all controlled by A/C-heater control panel.

Air Distribution

Three buttons control air distribution. See Fig. 1. When selected, uppermost air distribution button directs air to windows. When middle air distribution button is selected, air is directed to dashboard outlets and rear of center console. When lower most air distribution button is selected, air is directed to footwells.

Automatic Mode

In this setting, air temperature, air delivery and air distribution are regulated automatically to achieve and maintain desired interior temperature. All previously selected settings are cancelled.

Blower Speed Settings

Blower speed buttons can be used to raise or lower blower speed in all operating modes. Blower speed plus (+) button is used to raise blower speed. Minus (-) button lowers blower speed. If minus (-) button is pushed after blower speed is set at its lowest setting, climate control system will be deactivated.

Climate control system will also be deactivated if minus (-) and plus (+) buttons are pushed simultaneously. To reactivate system, press AUTO button, defrost button, one of the temperature control buttons or blower speed plus (+) button.

Compressor On/Off Button

This button controls A/C compressor operation.

Defrost Mode

In this setting, recirculation door is open. Blower runs at highest speed and temperature is automatically regulated. All air is directed toward windshield.

HIGH PRESSURE SWITCH

High pressure switch switches coolant fan on when A/C system pressure increases. Switch is integrated with high pressure cut-out switch. Switch closes at 207.0-251.0 psi (14.6-17.6 kg/cm ý). Switch opens at 158.0-222.0 (11.0-15.6 kg/cm ý). Difference between opening and closing points must be at least 29.0-49.0 psi (2.0-3.4 kg/cm ý).

NOTE: High pressure switch, high pressure cut-out switch, and low pressure switch may be removed without discharging A/C system.

HIGH PRESSURE CUT-OUT SWITCH

High pressure cut-out switch uses A/C-heater control panel to switch off A/C compressor if excess pressure exists in A/C system. Switch is integrated with high pressure switch. Switch opens at 409.0-

450.0 psi (28.76-31.64 kg/cm ý). Switch closes at 166.8-217.6 psi (11.7-15.3 kg/cm ý).

LOW PRESSURE SWITCH

Low pressure switch shuts A/C compressor off if a pressure drop occurs. Switch opens at 21.0-23.0 psi (1.48-1.62 kg/cm ý). Switch closes at 42.0-49.0 psi (2.95-3.45 kg/cm ý).

PRESSURE RELIEF VALVE

Pressure relief valve is mounted on compressor. At about 551 psi (38.74 kg/cm ý), valve opens to vent excessive pressure. When system pressure is reduced to about 435-508 psi (30.58-35.7 kg/cm ý), valve closes to prevent total refrigerant loss.

SELF-DIAGNOSTICS

NOTE: Scan Tester (VAG 1551) must be used to make full use of the system's self-diagnostic capabilities.

Hard Failures

If A/C-heater system malfunctions are present for more than 5 seconds, they are stored as Diagnostic Trouble Codes (DTCs). Contents of DTC memory is stored until erased (permanent memory).

Intermittent Failures

If a malfunction occurs intermittently, it is stored and considered to be a "sporadic" (intermittent) failure. When displayed on scan tester, intermittent malfunctions will have "SP" (sporadic) on right side of display.

DIAGNOSTIC TROUBLE CODE MEMORY

Retrieving & Clearing Codes

1) Ensure all fuses are okay. Ensure ground connections at engine and transmission are clean and tight. Open rear passenger ashtray in center console, and remove cover for Data Link Connectors (DLC). Turn ignition off. Using Cable (VAG 1551/3), connect Scan Tester (VAG 1551) to DLC.

2) Two displays will alternately appear on scan tester. If necessary, press right arrow button on scan tester to maneuver through program sequence. Press PRINT button to turn on scan tester printer. Turn on ignition or start engine. Press AUTO button. Press "1" button to select RAPID DATA TRANSFER function.

3) With RAPID DATA TRANSFER displayed on scan tester, press "0" and "8" buttons to select A/C/HEATING ELECTRONICS function. Press "Q" button to enter input. If CONTROL MODULE DOES NOT ANSWER, K WIRE NOT SWITCHING TO POSITIVE, or if NO SIGNAL FROM CONTROL MODULE is displayed, press HELP button to print out a list of possible causes. Check DLC wiring for battery voltage and ground.

4) If FAULT IN COMMUNICATION BUILD-UP is displayed, repair

any scan tester malfunctions. Also check voltage supply and ground circuits to A/C compressor clutch control module. After repairing problem, press "0" and "8" buttons to select A/C/HEATING ELECTRONICS function. Press "Q" button to enter input.

5) Scan tester should display TESTER SENDS ADDRESS WORD 08, then A/C compressor control module identification and coding should be displayed. A list of On Board Diagnostic (OBD) functions can be printed out by pressing HELP button. See OBD FUNCTIONS table.

6) Press right arrow button on scan tester until RAPID DATA TRANSFER is displayed on scan tester. When SELECT FUNCTION XX is displayed, press "0" and "2" buttons to select INTERROGATE DTC MEMORY function. Press "Q" button to enter input.

7) An X FAULTS RECOGNIZED (number of codes stored) or NO FAULT RECOGNIZED message will be displayed. Press right arrow button. Diagnostic trouble codes, if any, will be displayed and printed one after another. After last DTC has been displayed, turn ignition off. See appropriate DTC test.

8) Repair A/C system malfunctions (if any). After repairs, test drive vehicle once more. Check for diagnostic trouble codes once again. If A/C compressor clutch does not engage, even though no DTC was recognized, perform MEASURING VALUE BLOCK function and OUTPUT DIAGNOSTIC TEST MODE.

OBD FUNCTIONS TABLE (1)

Function	Description
01	Checking A/C-Heater Control Panel Coding
02	Checking DTC Memory
03 (2)	Output Diagnostic Test Mode
04 (3)	Basic Setting
05	Erasing DTC Memory
06	Ending Output
07 (4)	Coding A/C-Heater Control Panel
08 (5)	Reading Measuring Value Block

(1) - To select an OBD function, press appropriate buttons on scan tester when SELECT FUNCTION XX is displayed (i.e., press "0" and "2" buttons to select function 02).
(2) - See OUTPUT DIAGNOSTIC TEST MODE.
(3) - See BASIC SETTING.
(4) - See A/C-HEATER CONTROL PANEL CODING.
(5) - See MEASURING VALUE BLOCK.

A/C-HEATER CONTROL PANEL CODING

NOTE: Basic setting procedure must be performed each time A/C-heater control panel is coded. See BASIC SETTING.

NOTE: Vehicles equipped with Nippondenso compressors must use an

A/C-heater control panel with Part No. index "H" or higher.

Ensure scan tester is in A/C/HEATING ELECTRONICS function. With RAPID DATA TRANSFER displayed on scan tester, press "0" and "7" buttons to select CODE CONTROL UNIT function. Press "Q" button to enter input. Press right arrow button. Enter code. Press "Q" button to enter input. If incorrect code is entered, system will default to 00042 (4-cylinder gasoline engine).

BASIC SETTING

1) Check Diagnostic Trouble Code (DTC) memory. See DIAGNOSTIC TROUBLE CODE MEMORY. Repair A/C system malfunctions (if any). Erase DTC memory, and check coding of A/C-heater control panel. See A/C-HEATER CONTROL PANEL CODING.
2) Ensure scan tester is in A/C/HEATING ELECTRONICS function. With RAPID DATA TRANSFER displayed on scan tester, press "0" and "4" buttons to select START BASIC SETTING function. Press "Q" button to enter input.
3) With ENTER DISPLAY NUMBER XX displayed on scan tester, press "0" and "4" buttons. Press "Q" button to enter input. Flap motors will then be actuated in the following sequence: temperature regulator flap motor, central flap motor, footwell/defroster flap motor, and air-flow flap motor. End positions are determined from resistance values of potentiometers installed in flap motors.
4) When all readout fields on scan tester indicate "0", basic setting is complete. Press right arrow button to end procedure. If DTC for A/C engine coolant temperature sensor is set, erase DTC memory.

MEASURING VALUE BLOCK

1) Check Diagnostic Trouble Code (DTC) memory. See DIAGNOSTIC TROUBLE CODE MEMORY. Repair A/C system malfunctions (if any). After checking DTC memory, keep engine running and turn A/C system to AUTO mode. Run fan at high speed for about one minute.
2) Ensure scan tester is in A/C/HEATING ELECTRONICS function. With RAPID DATA TRANSFER displayed on scan tester, press "0" and "8" buttons to select READ MEASURING VALUE BLOCK function. Press "Q" button to enter input.
3) With ENTER DISPLAY GROUP NUMBER displayed on scan tester, enter desired display group number. See DISPLAY GROUP NUMBER IDENTIFICATION table. Press "Q" button to enter input.
4) With READ MEASURING VALUE BLOCK X displayed on scan tester, check component function, measured value or operating conditions using display field reference. See DISPLAY GROUP NUMBER IDENTIFICATION table. To select a different display group number, press "C" button. Press right arrow button to end procedure.

DISPLAY GROUP NUMBER IDENTIFICATION TABLE

Display Group No.	Display Field	Application

01	1	A/C Compressor Switch-Off Conditions	
01	2	A/C Clutch Voltage	
01	3	A/C-Heater Control Panel Voltage	
01	4	Not Used	
02	1-4	Temperature Regulator Flap Motor	
03	1-4	Central Flap Motor	
04	1-4	Footwell/Defroster Flap Motor	
05	1-4	Airflow Flap Motor	
06	1	Calculated Ambient Temperature For Outside Air Temperature Display	
06	2	Fresh Air Intake Duct Temperature Sensor	
06	3	Outside Air Temperature Sensor	
06	4	Not Used	
07	2	Instrument Panel Interior Temperature Sensor	
07	3	Not Used	
07	4	Not Used	
08	1	Fresh Air Blower Specified Voltage	
08	2	Fresh Air Blower Actual Voltage	
08	3	Instrument Panel Dimmer Switch Voltage	
08	4	Parking Light (Terminal 58)	
09	1	Engine Speed	
09	2	(1) A/C Compressor Speed	
09	3	Vehicle Speed	
09	4	Auxiliary Heater	

10	1	A/C Kickdown Switch
10	2	Coolant Temperature Switch
10	3	A/C Compressor Intervention
10	4	A/C High Pressure Cut-Out Switch

(1) - Not applicable to Nippondenso compressors.

OUTPUT DIAGNOSTIC TEST MODE

NOTE: On models with A/C-Heater Control Panel (Part No. 8D0 820 043 D), DTC 01270 may be stored even if no fault is present. When output diagnostic test mode is completed, check for codes. If DTC 01270 is present, erase codes.

NOTE: During output diagnostic test mode, vehicle must not be moved and engine speed must be less than 3000 RPM.

1) Start engine. Press AUTO button to switch on A/C compressor. Adjust airflow to center instrument panel outlets. Check Diagnostic Trouble Code (DTC) memory. See DIAGNOSTIC TROUBLE CODE MEMORY. Press PRINT button to turn on scan tester printer.

2) Ensure scan tester is in A/C/HEATING ELECTRONICS function. With RAPID DATA TRANSFER displayed on scan tester, press "0" and "3" buttons to select OUTPUT DIAGNOSTIC TEST MODE (DTM) function. Press "Q" button to enter input.

3) Use right arrow button to advance through component checks. See OUTPUT DIAGNOSTIC TEST MODE table. If FUNCTION UNKNOWN OR CANNOT BE CARRIED OUT AT THE MOMENT is displayed at start of test, press button and re-enter test. If FUNCTION UNKNOWN OR CANNOT BE CARRIED OUT AT THE MOMENT is still displayed, read measuring value block. See MEASURING VALUE BLOCK.

4) Output diagnostic test mode can be ended by pressing "C" button. When test is complete, FUNCTION UNKNOWN OR CANNOT BE CARRIED OUT AT THE MOMENT will be displayed. Press right arrow button to end procedure.

OUTPUT DIAGNOSTIC TEST MODE TABLE

Application	Function	Probable Cause Or Defect
A/C Clutch (1)	(2) Control Voltage Switches 0-12 Volts Every 2 Seconds	Circuits Or Components
Fresh Air Blower	(3) Fresh Air Blower Runs For 2 Seconds	Binding, Bad Ground Or Components

Coolant Fan	Stage No. 1 Switched On/Off Every 5 Seconds	Circuits Or Components
Fresh/Recirc. Air Flap Valve	Switches Fresh/Recirc. Every 5 Seconds	Vacuum Supply, Circuits Or Components
Temperature Regulator Flap Motor	(4) Moves From Stop To Stop	Binding, Circuits Or Components
Central Air Flap Motor	(5) Moves From Stop To Stop	Binding, Circuits Or Components
Footwell/ Defroster Flap Motor	(6) Moves From Stop To Stop	Binding, Circuits Or Components
Airflow Flap Motor	Moves From Stop To Stop	Binding, Circuits Or Components
Interior Temp. Sensor Fan	(7) Fan Switched On/Off Every 5 Seconds	Restriction In Slot Or Intake Hose, Circuits Or Components

(1) - A/C clutch will not be actuated if certain A/C compressor switch-off conditions exist. See A/C COMPRESSOR SWITCH-OFF CONDITIONS table.
(2) - A/C clutch should also click every 2 seconds. To verify voltage at A/C-heater control panel, switch compressor on and off using ECON button while reading measured value block of Engine Control Module (ECM).
(3) - Apply 0, 3, 6, 9, 12, 15, then 0 volts to fresh air blower.
(4) - Wait until temperature regulator flap is in heat position before pressing right arrow button to continue test.
(5) - Wait until central air flap is in footwell/defroster position before pressing right arrow button to continue test. Close all instrument panel air outlets.
(6) - Wait until footwell/defroster flap is in defrost position before pressing right arrow button to continue test.
(7) - Verify operation by blowing smoke over intake slot on center of instrument panel.

A/C COMPRESSOR SWITCH-OFF CONDITIONS TABLE

Code No. (Condition)	Affected Circuit/Cause
0 (A/C Compressor On) (1)	Switch-Off Condition Not Recognized
1 (A/C Compressor Off)	(2) Open Circuit Between High Pressure Cut-Out Switch & A/C-Heater Control Panel Or Open High Pressure Cut-Out Switch
2 (A/C Compressor Off)	(3) A/C Compressor Speed Signal Not Recognized, Sticking A/C Compressor, Loose Or Slipping Belt, Or Improper A/C-Heater Control Panel Coding
3 (A/C Compressor Off) (4)	(2) Open Circuit Between Low Pressure Switch & A/C-Heater Control Panel Or Open Low Pressure Switch
4 (A/C Compressor Off For 12 Seconds)	Transmission Control Module (TCM) Input Switched To Ground, Short To Ground Between TCM & A/C-Heater Control Panel Or (5) Closed A/C Kickdown Switch
5 (A/C Compressor Off)	(6) Engine Speed Signal Not Recognized Or Engine Speed Less Than 300 RPM
6 (A/C Compressor Off)	A/C Compressor Switched Off At ECON Button
7 (A/C Compressor Off)	A/C Compressor Switched Off At "-" Button For Fresh Air Blower Speed
8 (A/C Compressor Off)	(7) Incorrect Values Supplied By Outside Air Temperature Sensor Or Fresh Air Intake Duct Temperature Sensor, Or Outside Ambient Temperature Less Than 42 øF (5øC)
10 (A/C Compressor Off)	Supply Voltage For A/C Clutch Less Than 9.5 Volts
11 (A/C Compressor Off)	Short To Ground Between Instrument Cluster & A/C-Heater

	Control Panel Or Excessive Engine Temperature
12 (A/C Compressor Off)	(1) ECM Or Transmission Control Module (TCM) Has Switched Off A/C Compressor
13 (A/C Compressor Off)	(8) A/C Compressor Cut-In Time Lag (About 10 Seconds) At Engine Speeds Higher Than 6000 RPM
14 (A/C Compressor Off)	(9) High Pressure Cut-Out Switch Has Switched On & Off 30 Times During Present Driving Period

(1) - If A/C compressor does not come on, perform OUTPUT DIAGNOSTIC TEST MODE.
(2) - Test switch. See A/C COMPRESSOR SPEED SENSOR, PRESSURE SWITCHES & INTERIOR TEMPERATURE SENSOR FAN under TESTING. Check A/C system pressures. See A/C SYSTEM PERFORMANCE under TESTING.
(3) - Check for shorted or open circuit between A/C compressor speed sensor and A/C-heater control panel. Check A/C clutch and A/C compressor speed sensor, and repair or replace as necessary.
(4) - If voltage at A/C-heater control panel is less than 6 volts, Code No. 3 may set.
(5) - A/C kickdown switch may either be mounted as a separate component or integrated into Transmission Control Module (TCM).
(6) - Check for open circuit between instrument cluster, ECM, and A/C-Heater control panel. Check for unusable engine speed signal supplied by ECM or instrument cluster.
(7) - Test outside air temperature sensor or fresh air intake duct temperature sensor. See TEMPERATURE SENSORS under TESTING.
(8) - No service is necessary.
(9) - Check for poor connection or open circuit between high pressure cut-out switch and A/C-heater control panel. Test high pressure cut-out switch. See A/C COMPRESSOR SPEED SENSOR, PRESSURE SWITCHES & INTERIOR TEMPERATURE SENSOR FAN under TESTING. Check A/C system pressures. See A/C SYSTEM PERFORMANCE under TESTING.

DTC 00000 - NO DTC RECOGNIZED

System is operating properly.

DTC 00529 - SPEED INFORMATION MISSING

NOTE: This code may be generated during output diagnostic test mode when no engine speed signal is recognized even when A/C compressor speed is detected.

Possible Causes

Open circuit in wiring between Engine Control Module (ECM), instrument cluster and A/C-heater control panel. ECM and instrument cluster producing an unusable engine speed signal.

Corrective Actions

Repair open circuit between Engine Control Module (ECM), instrument cluster and A/C-heater control panel. Read measuring value block. See MEASURING VALUE BLOCK. Test engine speed signal.

DTC 00532 - SUPPLY VOLTAGE TOO LOW

NOTE: If voltage at A/C-heater control panel connector drops to less than 9.5 volts, A/C compressor will switch off for a minimum of 25 seconds. A/C compressor will switch on again when voltage exceeds 10.8 volts.

Possible Causes

Voltage drops to less than 9.5 volts. Check for high resistance in wiring harness and connections to low pressure switch.

Corrective Actions

Check generator and voltage regulator. Repair high resistance in wiring harness and connections to low pressure switch.

DTC 00600 - TEMPERATURE REGULATOR FLAP MOTOR POSITION SENSOR

NOTE: When fault exists at temperature regulator flap motor position sensor, flap motor can be set manually by operating buttons for temperature selection.

Possible Causes

Shorted or open circuit between temperature regulator flap motor position sensor and A/C-heater control panel. Interchanged wires between temperature regulator flap motor position sensor and A/C-heater control panel. Temperature flap not operating freely. Inoperative temperature regulator flap motor position sensor.

Corrective Actions

Repair shorted, open or incorrect wiring between temperature regulator flap motor position sensor and A/C-heater control panel. Repair binding of temperature flap. Replace temperature flap motor.

DTC 00601 - CENTRAL FLAP MOTOR POSITION SENSOR

NOTE: If travel limit is exceeded, fault will only be recognized during basic setting procedure.

Possible Causes

Shorted or open circuit between central flap motor position sensor and A/C-heater control panel. Interchanged wires between central flap motor position sensor and A/C-heater control panel. Central flap not operating freely. Inoperative central flap motor position sensor.

Corrective Actions

Repair shorted, open or incorrect wiring between central flap motor position sensor and A/C-heater control panel. Repair binding of central flap. Both end stops must be reached. Replace central air flap motor.

DTC 00602 - FOOTWELL/DEFROSTER MOTOR POSITION SENSOR

NOTE: If travel limit is exceeded, fault will only be recognized during basic setting procedure.

Possible Causes

Shorted or open circuit between footwell/defroster flap motor position sensor and A/C-heater control panel. Interchanged wires between footwell/defroster flap motor position sensor and A/C-heater control panel. Footwell/defroster flap not operating freely. Inoperative footwell/defroster flap motor position sensor.

Corrective Actions

Repair shorted, open or incorrect wiring between footwell/defroster flap motor position sensor and A/C-heater control panel. Repair binding of footwell/defroster flap. Both end stops must be reached. Replace footwell/defroster flap motor.

DTC 00603 - FOOTWELL/DEFROSTER FLAP MOTOR

Possible Causes

Shorted or open circuit between footwell/defroster flap motor and A/C-heater control panel. Interchanged wires between footwell/defroster flap motor and A/C-heater control panel. Footwell/defroster flap not operating freely. Inoperative footwell/defroster flap motor.

Corrective Actions

Repair shorted, open or incorrect wiring between footwell/defroster flap motor and A/C-heater control panel. Repair binding of footwell/defroster flap. Both end stops must be reached. Check footwell/defroster flap motor. See MEASURING VALUE BLOCK.

DTC 00604 - BACK PRESSURE FLAP MOTOR POSITION SENSOR

NOTE: If travel limit is exceeded, fault will only be recognized during basic setting procedure.

Possible Causes
Shorted or open circuit between back pressure flap motor position sensor and A/C-heater control panel. Interchanged wires between back pressure flap motor position sensor and A/C-heater control panel. Airflow flap not operating freely. Inoperative back pressure flap motor position sensor.

Corrective Actions
Repair shorted, open or incorrect wiring between back pressure flap motor position sensor and A/C-heater control panel. Repair binding of airflow flap. Both end stops must be reached. Replace airflow flap motor.

DTC 00625 - ROAD SPEED SIGNAL

Possible Causes
Poor connections between vehicle speed sensor, instrument cluster, vehicle speed sensor related components (i.e., radio or cruise control module) and A/C-heater control panel. Unusable signal supplied by speedometer or instrument cluster. Disruption of signal by vehicle speed sensor related component.

Corrective Actions
Locate and repair poor connections between vehicle speed sensor, instrument cluster, vehicle speed sensor related components and A/C-heater control panel. Test road speed signal between speedometer, instrument cluster and vehicle speed sensor related components.

DTC 00779 - OUTSIDE AIR TEMPERATURE SENSOR

Possible Causes
Shorted or open circuit between outside air temperature sensor and A/C-heater control panel. Faulty outside air temperature sensor.

Corrective Actions
Repair shorted or open circuit between outside air temperature sensor and A/C-heater control panel. Test outsideair temperature sensor. See TEMPERATURE SENSORS underTESTING.

DTC 00785 - INSTRUMENT PANEL INTERIOR TEMPERATURE SENSOR

Possible Causes
Shorted or open circuit between instrument panel interior temperature sensor and A/C-heater control panel. Inoperative instrument panel interior temperature sensor.

Corrective Actions
Repair shorted or open circuit between instrument panel interior temperature sensor and A/C-heater control panel. Test instrument panel interior temperature sensor. See TEMPERATURE SENSORS

under TESTING.

DTC 00787 - FRESH AIR INTAKE DUCT TEMPERATURE SENSOR

Possible Causes
Shorted or open circuit between fresh air intake duct temperature sensor and A/C-heater control panel. Inoperative fresh air intake duct temperature sensor.

Corrective Actions
Repair shorted or open circuit between fresh air intake duct temperature sensor and A/C-heater control panel. Test fresh air intake duct temperature sensor. See TEMPERATURE SENSORS under TESTING.

DTC 00797 - SUNLIGHT PHOTO SENSOR

Possible Causes
Shorted or open circuit between sunlight photo sensor and A/C-heater control panel. Interchanged wires between sunlight photo sensor and A/C-heater control panel. Inoperative sunlight photo sensor.

Corrective Actions
Repair shorted, open or incorrect wiring between sunlight photo sensor and A/C-heater control panel. Test sunlight photo sensor. See MEASURING VALUE BLOCK. Replace sunlight photo sensor, if necessary.

DTC 00801 - HIGH PRESSURE CUT-OUT SWITCH

NOTE: If an open high pressure cut-out switch is detected 30 times during a driving period, A/C compressor will switch off. A/C compressor may be switched on manually by pressing compressor on/off button or by turning ignition off and on. If fault occurs over several driving periods, A/C compressor cannot be switched on again until DTCs are erased.

Possible Causes
Open circuit between high pressure cut-out switch and A/C-heater control panel. Coolant fan malfunction in low speed. Dirty radiator or condenser. Coolant fan malfunction in high speed when controlled by high pressure switch. Faulty high pressure cut-out switch or high pressure switch. Malfunction in A/C system.

Corrective Actions
Repair open between high pressure cut-out switch and A/C-heater control panel. Test low speed coolant fan operation. See OUTPUT DIAGNOSTIC TEST MODE. See A/C CLUTCH RELAY & COOLANT FAN LOW SPEED under TESTING. Check high pressure cut-out switch and high pressure switch pressures. SeeA/C COMPRESSOR SPEED SENSOR, PRESSURE SWITCHES & INTERIOR TEMPERATURE SENSOR FAN under TESTING. CheckA/C system pressures. See SPECIFICATIONS table at beginning of article.

DTC 01270 - A/C CLUTCH (OPEN CIRCUIT)

NOTE: This DTC is detected only on models equipped with an A/C compressor speed sensor.

Possible Causes

Shorted or open circuit between A/C compressor speed sensor and A/C-heater control panel. Open circuit between A/C compressor speed sensor and A/C clutch relay. Poor connections or open circuit between A/C clutch relay and A/C-heater control panel. Faulty A/C clutch relay. Faulty A/C clutch. Malfunction in A/C system circuits (i.e., no A/C compressor speed sensor signal or seized A/C compressor).

Corrective Actions

Repair shorted or open circuit between A/C compressor speed sensor and A/C-heater control panel. Test A/C compressor speed sensor, and replace as necessary. See A/C COMPRESSOR SPEED SENSOR, PRESSURE SWITCHES & INTERIOR TEMPERATURE SENSOR FAN under TESTING.

Repair open circuit between A/C compressor speed sensor and A/C clutch relay. Repair poor connections or open circuit between A/C clutch relay and A/C-heater control panel. Replace A/C clutch relay. Replace A/C clutch. Replace A/C compressor.

DTC 01270 - A/C CLUTCH (SPEED DIFFERENCE TOO GREAT)

NOTE: If speed difference is 30-60 percent, A/C-heater control panel will switch A/C clutch on no more than 9 times during a driving period. If speed difference is greater than 60 percent, A/C clutch remains off until engine is started again.

Possible Causes

Loose drive belt. Incorrectly coded A/C-heater control panel. Poor connections or high resistance between A/C clutch and A/C clutch relay. Poor connections or high resistance between A/C compressor speed sensor and A/C-heater control panel. Slipping A/C clutch. Incorrect crankshaft vibration damper. Malfunction in A/C system (i.e. , A/C compressor not operating freely).

Corrective Actions

Check belt tension. Compare speeds of engine and A/C compressor. See MEASURING VALUE BLOCK. Check coding of A/C-heater control panel. See A/C-HEATER CONTROL PANEL CODING. Repair poor connections or high resistance between A/C clutch and A/C clutch relay. Repair poor connections or high resistance between A/C compressor speed sensor and A/C-heater control panel. Repair or replace A/C clutch. Ensure correct crankshaft vibration damper is installed. Check A/C compressor, and replace if necessary.

DTC 01270 - A/C CLUTCH (MECHANICAL MALFUNCTION)

NOTE: This code sets when A/C compressor cannot be turned off, and is only recorded during output diagnostic test mode.

Possible Causes

Drive belt and A/C clutch pulley are stuck together. Short to power in circuits between A/C clutch and A/C clutch relay. Faulty A/C clutch relay. Short to ground in circuits between A/C clutch relay and A/C-heater control panel.

Corrective Actions

Repair or replace A/C clutch. Repair short to power in circuits between A/C clutch and A/C clutch relay. ReplaceA/C clutch relay. Repair short to ground in circuits between A/C clutch relay and A/C-heater control panel.

DTC 01271 - TEMPERATURE REGULATOR FLAP MOTOR

Possible Causes

Shorted or open circuits between temperature regulator flap motor and A/C-heater control panel. Interchanged wires between temperature regulator flap motor and A/C-heater control panel. Sticking temperature flap. Faulty temperature regulator flap motor.

Corrective Actions

Repair shorted, open or incorrect wiring between temperature regulator flap motor and A/C-heater control panel. Check for free operation of temperature flap. Test temperature regulator flap motor. See OUTPUT DIAGNOSTIC TEST MODE.

DTC 01272 - CENTRAL AIR FLAP MOTOR

Possible Causes

Shorted or open circuits between central air flap motor and A/C-heater control panel. Interchanged wires between central air flap motor and A/C-heater control panel. Sticking central flap. Faulty central air flap motor.

Corrective Actions

Repair shorted, open or incorrect wiring between central air flap motor and A/C-heater control panel. Check for free operation of central flap. Test central air flap motor. See OUTPUT DIAGNOSTIC TEST MODE.

DTC 01273 - FRESH AIR BLOWER

Possible Causes

Shorted or open circuit between fresh air blower, fresh air blower control module and A/C-heater control panel. Open power or ground circuit to fresh air blower control module. Faulty fresh air blower control module. Faulty fresh air blower.

Corrective Actions

Repair shorted or open circuit between fresh air blower, fresh air blower control module and A/C-heater control panel. Repair open power or ground circuit to fresh air blower control module. Test fresh air blower control module. See FRESH AIR BLOWER & FRESH AIR BLOWER CONTROL MODULE under TESTING. Replace fresh air blower.

DTC 01274 - AIRFLOW FLAP MOTOR

Possible Causes

Shorted or open circuits between airflow flap motor and A/C-heater control panel. Interchanged wires between airflow flap motor and A/C-heater control panel. Sticking airflow flap. Faulty airflow flap motor.

Corrective Actions

Repair shorted, open or incorrect wiring between airflow flap motor and A/C-heater control panel. Check for free operation of airflow flap. Test airflow flap motor. See OUTPUT DIAGNOSTIC TEST MODE.

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 appropriate AIR BAG RESTRAINT SYSTEM article in ACCESSORIES/SAFETY EQUIPMENT SECTION.

A/C SYSTEM PERFORMANCE

1) Check for any Diagnostic Trouble Codes (DTCs) which may be present, and repair as necessary. See SELF-DIAGNOSTICS. Perform basic setting and A/C-heater control panel coding checks. See SELF-DIAGNOSTICS.

2) Park vehicle out of direct sunlight. Ensure condenser and radiator are free of obstructions. Close engine hood. Ensure compressor drive belt and generator are in good condition. Ensure engine is at normal operating temperature. Close doors, windows, and sun roof. Record ambient temperature.

3) Start engine and run it at 2000 RPM. Turn A/C system on and press recirculation button on. Set A/C-heater control panel to maximum cold position (ice crystal symbol should glow). Open all instrument panel air outlets. Run fresh air blower at maximum speed. Set air distribution so that air flows out of instrument panel vents.

4) Check outlet air temperature at center instrument panel vent after A/C system has run for 5 minutes. See A/C SYSTEM PERFORMANCE SPECIFICATIONS table.

A/C SYSTEM PERFORMANCE SPECIFICATIONS TABLE

Ambient	Outlet Air

Temperature ºF (ºC)	Temperature ºF (ºC)
59 (15)	37-43 (3-6)
68 (20)	37-43 (3-6)
77 (25)	37-43 (3-6)
86 (30)	37-43 (3-6)
95 (35)	39-45 (4-7)
104 (40)	41-46 (5-8)

TEST EQUIPMENT HOOK-UP

NOTE: Test Box (VAG 1598) must not be connected to A/C-heater control panel connector when performing On Board Diagnostic using Scan Tester (VAG 1551).

1) Ensure battery voltage is okay. Ensure engine and transmission grounds are okay. Ensure fuses No. 42 (40-amp), No. 51 (5-amp), No. 225 (30-amp) and No. 15 (10-amp) are okay.

2) Turn ignition off. Remove A/C-heater control panel, and disconnect electrical connectors. See Fig. 2 . While performing tests, DO NOT connect adapter harnesses to A/C-heater control panel, or A/C-heater control panel will be damaged.

3) Connect Adapter Cable (VAG 1598/11 or 12) to appropriate A/C-heater control panel connector. For Adapter Cable (VAG 1598/12), terminals are identical to A/C-heater control panel terminals. For Adapter Cable (VAG 1598/11), test box terminal numbers and A/C-heater control panel wiring harness terminal numbers are not the same. Connector "A" terminals No. 1-12 are identified as terminals No. 41-52 on test box. Connector "B" terminals No. 1-20 are identified as terminals No. 21-40. Connector "C" and "D" terminal No. 1-16 are identified as terminals No. 1-16.

CAUTION: Switch Digital Volt-Ohmmeter (DVOM) to correct measuring range before connecting test leads, or electronic components may be damaged.

NOTE: When Adapter Cable (VAG 1598/11) is connected, no ground connection exists. Use external ground source or second test box during electrical testing. When Adapter Cable (VAG 1598/12) is connected, ground exists at terminals No. 14 and 15.

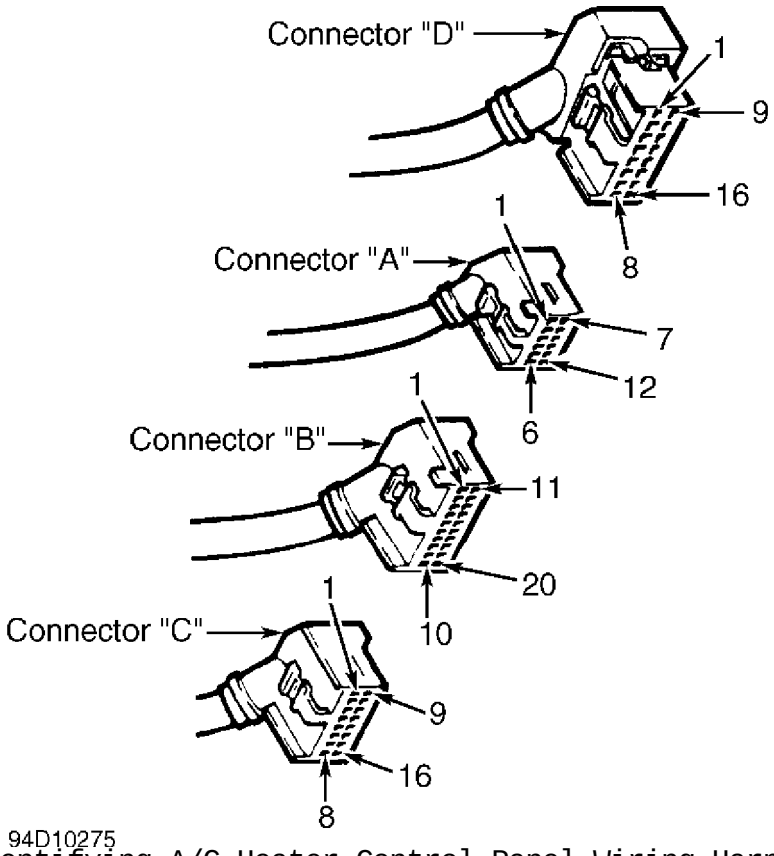


Fig. 2: Identifying A/C-Heater Control Panel Wiring Harness Terminals
Courtesy of Audi of America, Inc.

A/C-HEATER CONTROL PANEL

1) Put DVOM in 20-volt range. Using Adapter Cable (VAG 1598/12), use DVOM to check voltage between Test Box (VAG 1598) terminals No. 9 and 14. Turn ignition on. If about battery voltage does not exist, check Black/Blue or Brown/Blue wire between fuse block and A/C-heater control panel. Check Brown wires between A/C-heater control panel and ground. Repair as necessary.

2) Check voltage between test box terminals No. 9 and 15. Turn ignition on. If about battery voltage does not exist, check Brown wires between A/C-heater control panel and ground. Repair as necessary.

3) Put DVOM in 200-ohm range. Using Adapter Cable (VAG 1598/11), use DVOM to check resistance between Test Box (VAG 1598) terminals No. 49 and 52. If resistance is not less than 20 ohms, check Brown wires between A/C-heater control panel and ground. Repair as necessary.

4) Put DVOM in 20-volt range. Using Adapter Cable (VAG 1598/12), use DVOM to check voltage between Test Box (VAG 1598) terminal No. 13 and ground. Turn ignition off. If about battery voltage does not exist, check Red/Blue wire between fuse block and A/C-heater control panel. Repair as necessary.

5) Check voltage between test box terminal No. 7 and ground.

Turn ignition on. Turn parking lights on. If about battery voltage does not exist, check Gray/Green or Gray wire between headlight switch andA/C-heater control panel. Repair as necessary.

6) Check voltage between test box terminal No. 7 and ground. Turn ignition on. Turn parking lights off. If less than 2 volts does not exist, repair short to power in Gray/Green or Gray wire between headlight switch and A/C-heater control panel.

7) Check voltage between test box terminal No. 45 and ground. Turn ignition on. Turn parking lights on. When illumination rheostat is turned, voltage should fluctuate between zero and 12 volts depending on setting. If voltage is not as specified, check Gray/Green or Gray wire between headlight switch and A/C-heater control panel. Repair as necessary.

8) Check voltage between test box terminal No. 45 and ground. Turn ignition on. Turn parking lights off. If less than 2 volts does not exist, repair short to power in Gray/Green or Gray wire between headlight switch and A/C-heater control panel.

TEMPERATURE SENSORS

1) Put DVOM in 20,000-ohm range. Using Adapter Cable (VAG 1598/11), use DVOM to check resistance between Test Box (VAG 1598) terminals No. 48 and 52. Measure temperature at mounting location of outside air temperature sensor. See TEMPERATURE SENSOR RESISTANCES table. If resistance is not as specified, check for short, open or high resistance in Brown/Yellow wire between A/C-heater control panel and outside air temperature sensor. Check for short, open or high resistance in Brown/White wire between outside air temperature sensor and ground. Check outside air temperature sensor. Repair or replace as necessary.

2) Check resistance between test box terminals No. 50 and 52. Measure temperature at mounting location of instrument panel interior temperature sensor. See TEMPERATURE SENSOR RESISTANCES table. If resistance is not as specified, check for short, open or high resistance in Blue/Black wire between A/C-heater control panel and instrument panel interior temperature sensor. Check for short, open or high resistance in Brown/White wire between instrument panel interior temperature sensor and ground. Check instrument panel interior temperature sensor. Repair or replace as necessary.

3) Check resistance between test box terminals No. 47 and 52. Measure temperature at mounting location of fresh air intake duct temperature sensor. See TEMPERATURE SENSOR RESISTANCES table. If resistance is not as specified, check for short, open or high resistance in Brown/Green wire between A/C-heater control panel and fresh air intake duct temperature sensor. Check for short, open or high resistance in Brown/White wire between fresh air intake duct temperature sensor and ground. Check fresh air intake duct temperature sensor. Repair or replace as necessary.

TEMPERATURE SENSOR RESISTANCES TABLE

Application &

Temperature - øF (øC)	Ohms
Fresh Air Intake Duct Temperature Sensor & Outside Air Temperature Sensor	
32 (0)	3280
41 (5)	2540
50 (10)	1990
59 (15)	1570
68 (20)	1250
77 (25)	1000
86 (30)	800
95 (35)	650
104 (40)	530
122 (50)	360
140 (60)	250
Instrument Panel Interior Temperature Sensor	
32 (0)	9400
41 (5)	7270
50 (10)	5660
59 (15)	4450
68 (20)	3500
77 (25)	2790
86 (30)	2230
95 (35)	1800
104 (40)	1450
122 (50)	790
140 (60)	670
158 (70)	470
176 (80)	330

FRESH AIR BLOWER & FRESH AIR BLOWER CONTROL MODULE

1) Put DVOM in 20-volt range. Using Adapter Cable (VAG 1598/11), use DVOM to check voltage between Test Box (VAG 1598) terminal No. 16 and ground. Turn ignition on. If reading is not less than 5 volts or blower runs, check for short to power in Green/Black wire between fresh air blower control module and A/C-heater control panel. Check fresh air blower control module. Repair or replace as necessary.

2) Check voltage between test box terminal No. 14 and ground. Turn ignition on. If about battery voltage does not exist, check Black/Blue wire between A/C-heater control panel and fresh air blower. Repair as necessary.

3) Check voltage between test box terminal No. 11 and ground. Turn ignition on. If about battery voltage does not exist, check Brown/Green wire between fresh air blower control module and fresh air blower. Repair as necessary.

4) Check voltage between test box terminals No. 13 and 16. Turn ignition on. Using LED Tester (US 1115), ensure LED in tester comes on and fresh air blower runs. If LED in tester does not come on or fresh air blower does not run, check for open in Brown/Green or

Green/Black wire between fresh air blower control module and A/C-heater control panel. Ensure fresh air blower operates freely. Repair or replace as necessary.

AIR/TEMPERATURE DISTRIBUTION FLAP MOTORS & SENSORS

NOTE: Potentiometer resistance (3600-5700 ohms between flap motor terminals No. 3 and 4) can only be measured directly at flap motor. Measure with flap motor installed. If any potentiometer-related DTC is set, test all potentiometers.

1) Put DVOM in 20,000-ohm range. Using Adapter Cable (VAG 1598/11), use DVOM to check resistance between Test Box (VAG 1598) terminal No. 52 and indicated terminal. See TEST BOX TERMINAL IDENTIFICATION table. Resistance should be greater than 100 ohms and less than 570 ohms, depending on position of flap motor. If resistance is not as specified, check for short, open or high resistance in circuits between inoperative flap motor, A/C-heater control panel and ground. See WIRING DIAGRAMS. Check inoperative flap motor. Repair or replace as necessary.

2) Check resistance between test box terminal No. 8 and indicated terminal. See TEST BOX TERMINAL IDENTIFICATION table. Resistance should be greater than 100 ohms and less than 570 ohms, depending on position of flap motor. If resistance is not as specified, check for short, open or high resistance in circuits between inoperative flap motor, A/C-heater control panel and ground. Check inoperative flap motor. Repair or replace as necessary.

TEST BOX TERMINAL IDENTIFICATION TABLE

Application	VAG 1598 Terminal No.
Airflow Flap Motor	37
Central Air Flap Motor	29
Footwell/Defroster Flap Motor	30
Temperature Regulator Flap Motor	28

3) Put DVOM in 20,000-ohm range. Using Adapter Cable (VAG 1598/12), use DVOM to check resistance between Test Box (VAG 1598) terminals No. 2 and 10. If resistance is not 20-100 ohms, check for short, open or high resistance in circuits between temperature regulator flap motor, A/C-heater control panel, and ground. Check temperature regulator flap motor. Repair or replace as necessary.

4) Check resistance between test box terminals No. 4 and 12. If resistance is not 20-100 ohms, check for short, open or high resistance in circuits between central flap motor, A/C-heater control panel, and ground. See WIRING DIAGRAMS. Check central flap motor. Repair or replace as necessary.

5) Check resistance between test box terminals No. 5 and 13. If resistance is not 20-100 ohms, check for short, open or high resistance in circuits between airflow flap motor, A/C-heater control

panel, and ground. See WIRING DIAGRAMS. Check airflow flap motor. Repair or replace as necessary.

6) Check resistance between test box terminals No. 3 and 11. If resistance is not 20-100 ohms, check for short, open or high resistance in circuits between footwell/defroster flap motor, A/C-heater control panel, and ground. See WIRING DIAGRAMS. Check footwell/defroster flap motor. Repair or replace as necessary.

A/C COMPRESSOR SPEED SENSOR, PRESSURE SWITCHES & INTERIOR TEMPERATURE SENSOR FAN

NOTE: Steps 1-3 do not apply to vehicles equipped with Nippondenso compressors.

1) Put DVOM in 20,000-ohm range. Using Adapter Cable (VAG 1598/11), use DVOM to check resistance between Test Box (VAG 1598) terminals No. 5 and 49. If resistance is not 800-1500 ohms, check for short, open or high resistance in Gray/Green or Brown/White wire between A/C compressor speed sensor, A/C-heater control panel, and ground. Check A/C compressor speed sensor. Repair or replace as necessary.

2) Check resistance between test box terminal No. 5 and ground. If resistance is not greater than 2000 ohms, check for short circuit in Gray/Green or Brown/White wire between A/C compressor speed sensor, A/C-heater control panel, and ground. Check A/C compressor speed sensor. Repair or replace as necessary.

3) Put DVOM in 20-volt range. Check voltage between test box terminal No. 5 and ground. Start engine. Ensure A/C compressor is not running. If reading is not less than one volt, repair short in Gray/Green or Brown/White wire between A/C compressor speed sensor, A/C-heater control panel, and ground.

4) Put DVOM in 2-volt range. Check voltage between test box terminal No. 5 and ground. Start engine. Turn A/C compressor on. RemoveA/C clutch relay. Connect jumper wire between Black/Red and Green/Yellow wires at A/C clutch relay harness connectors (A/C clutch should be switched on). If reading is not greater than 0.05 volt (depending on engine speed), replace A/C compressor speed sensor.

5) Put DVOM in 200-ohm range. Check resistance between test box terminals No. 2 and 49. If resistance is not less than 20 ohms, check for poor connection, open or high resistance in Brown/Blue or Brown/White wire between high pressure cut-out switch, A/C-heater control panel and ground. Check high pressure cut-out switch. Repair or replace as necessary.

6) Put DVOM in 20-volt range. Check voltage between test box terminal No. 3 and ground. Turn ignition on. If about battery voltage does not exist, check for open in Gray, Black, or Black/Blue wire between low pressure switch, A/C-heater control panel and ground. Check low pressure switch. Check A/C system pressures. Repair or replace as necessary.

7) Put DVOM in 20-amp range. Check amperage between test box terminal No. 44 and ground. Turn ignition on. If reading is not less than one amp or interior temperature sensor fan does not run, check

for open or short in Brown wire between interior temperature sensor fan and A/C-heater control panel. Repair as necessary.

8) Connect LED Tester (US 1115) between test box terminals No. 12 and 13. Start engine. If LED in tester comes on, check for short in circuits between A/C compressor, A/C-heater control panel, and ground. See WIRING DIAGRAMS. Check for A/C compressor switch-off conditions caused by ECM or TCM. See A/C COMPRESSOR SWITCH-OFF CONDITIONS table under SELF-DIAGNOSTICS. Repair or replace as necessary.

9) Connect LED tester between test box terminals No. 13 and 51. Start engine. If LED in tester comes on, check for short in circuits between A/C compressor, A/C-heater control panel, and ground. See WIRING DIAGRAMS. Check for A/C compressor switch-off conditions caused by instrument cluster. See A/C COMPRESSOR SWITCH-OFF CONDITIONS table under SELF-DIAGNOSTICS. Repair or replace as necessary.

A/C CLUTCH RELAY & COOLANT FAN LOW SPEED

1) Put DVOM in 20-amp range. Using Adapter Cable (VAG 1598/12), use DVOM to check amperage between Test Box (VAG 1598) terminals No. 8 and 14. Start engine. If reading is not less than one amp or A/C compressor is not engaged and running, check for short or open in circuits between A/C clutch, A/C clutch relay, and A/C-heater control panel. See WIRING DIAGRAMS. Check for open low pressure switch. Check A/C clutch. Check A/C clutch relay. Repair or replace as necessary.

2) Start engine. Check amperage between test box terminals 14 and 16. If amperage is not less than one amp or coolant fan does not run in low speed, check for short or open in circuits between coolant fan control relay and A/C-heater control panel. See WIRING DIAGRAMS. Check coolant fan. Repair or replace as necessary.

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 appropriate AIR BAG RESTRAINT SYSTEM article in ACCESSORIES/SAFETY EQUIPMENT SECTION.

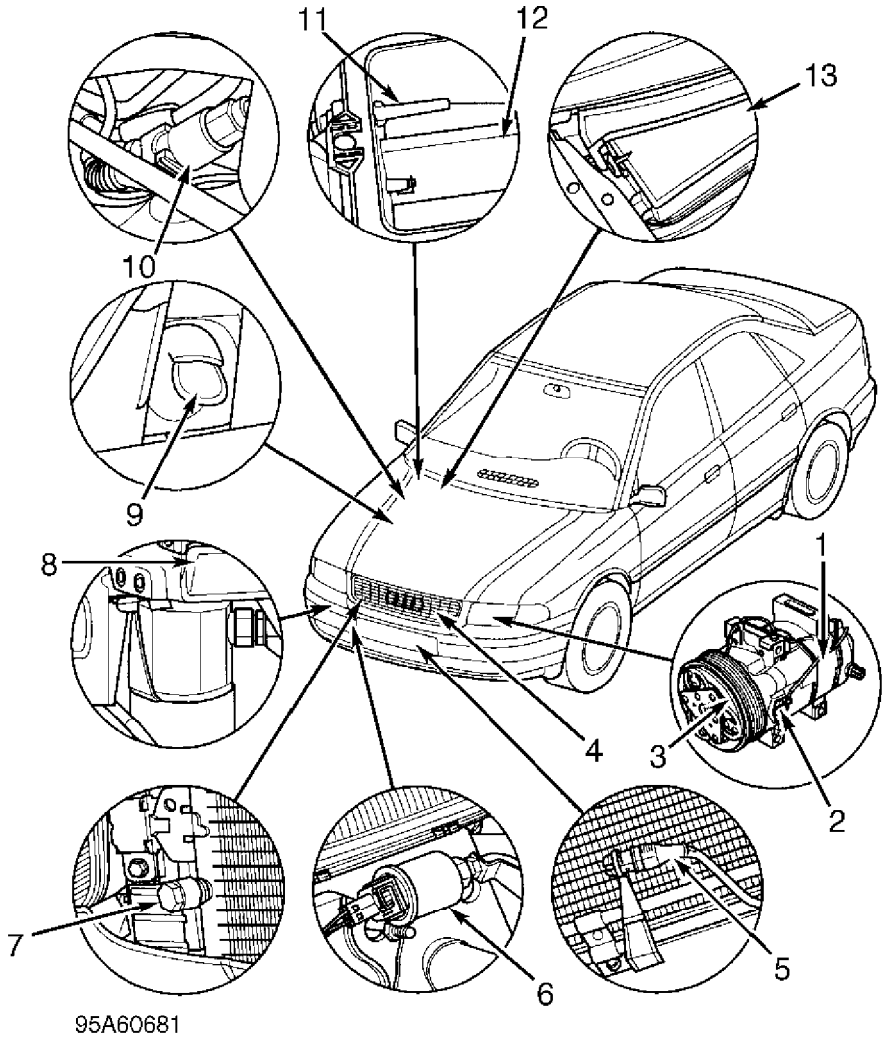
A/C COMPRESSOR

Removal & Installation

1) Discharge A/C system, using approved refrigerant recovery/recycling equipment. Detach bumper/grille assembly, and remove front noise insulation panel under engine.

2) Mark direction of drive belt. Loosen drive belt tensioner and remove drive belt. Remove bolts and A/C compressor. See Fig. 3. Remove and plug high and low pressure lines from A/C compressor.

3) To install, reverse removal procedure. Tighten connections to specification. See TORQUE SPECIFICATIONS. Evacuate and charge A/C system.



1. A/C Compressor
2. A/C Compressor Speed Sensor
3. A/C Clutch
4. Condenser
5. Outside Air Temperature Sensor
6. High Pressure Switches
7. High Pressure Valve
8. Accumulator
9. Evaporator Housing Drain Valve
10. Low Pressure Switch
11. Fresh Air Intake Duct Temperature Sensor
12. Airflow Flap
13. Dust & Pollen Filter

95A60681

Fig. 3: Identifying A/C-Heater System Components
Courtesy of Audi of America, Inc.

A/C COMPRESSOR SPEED SENSOR

Removal & Installation (Zexel Compressors)

Discharge A/C system, using approved refrigerant recovery/recycling equipment. Disconnect speed sensor connector. Remove A/C compressor. See A/C COMPRESSOR. Remove screws and sensor.

To install, reverse removal procedure. Tighten screws to specification. See TORQUE SPECIFICATIONS.

A/C-HEATER ASSEMBLY & INSTRUMENT PANEL

Removal

1) Using Scan Tester (VAG 1551), access mode 03. See DIAGNOSTIC TROUBLE CODE MEMORY under SELF-DIAGNOSTICS. Proceed through output diagnostic mode test until airflow flap closes. See OUTPUT DIAGNOSTIC TEST MODE under SELF-DIAGNOSTICS. Press "C" button on scan tester to cancel output test.

2) Ensure wheels are in straight-ahead position. Move power seats to rearmost position. Obtain radio anti-theft protection code. Disconnect negative battery cable. Disable air bag system. See appropriate AIR BAG RESTRAINT SYSTEM article in ACCESSORIES/SAFETY EQUIPMENT SECTION. Discharge A/C system, using approved refrigerant recovery/recycling equipment.

3) Remove right air plenum cover. Remove water guide. Remove dust and pollen filter. Remove coolant expansion tank cap slowly to release pressure. Clamp coolant hoses, and disconnect hoses from heater core. Place container under heater core connections, and apply compressed air through inlet hole to blow coolant out of heater core. Remove boot and bolt from heater core.

4) Remove refrigerant lines from evaporator. Plug evaporator connections to prevent contamination. Remove boot from evaporator. Disconnect low pressure switch connector, and secure aside.

5) Remove glove box. Unclip cap for instrument panel. Remove bolts from driver's side stowage compartment. Disengage stowage compartment from clips, and remove stowage compartment. Remove center console. See CENTER CONSOLE. Remove pedal assembly mounting bolt from instrument panel. See Fig. 4.

6) Using T30 Torx bit, remove screws securing air bag module to steering wheel. Remove air bag module, and disconnect electrical connector. Remove steering wheel. Remove steering column from steering gear, and secure with wire. See Fig. 4.

7) Remove auxiliary relay panel/auxiliary fuse holder (located in bottom left footwell), and secure aside. Disconnect instrument panel electrical connectors. Remove instrument panel and A/C-heater assembly as a unit.

8) Remove footwell air outlet. Disconnect all electrical connectors between A/C-heater assembly and instrument panel. Mark instrument panel-to-A/C-heater assembly screws/bolts for installation reference. Remove screw/bolts, and separate instrument panel from A/C-heater assembly.

Installation

1) To install, reverse removal procedure. Ensure A/C system vacuum supply hose with heater core fixture, low pressure switch connector and evaporator fixture are inserted together through plenum chamber openings. Use NEW "O" rings. Tighten all nuts and bolts to specification. See TORQUE SPECIFICATIONS.

2) Ensure evaporator drain valve flap does not stick, closes

completely and drain opening is pointing downward. Ensure drain valve does not touch heat shield. Ensure foam seal fits tightly against drain funnel, drain funnel is secured to floor panel, and operation of drain valve is free from obstruction. Evacuate and charge A/C system.

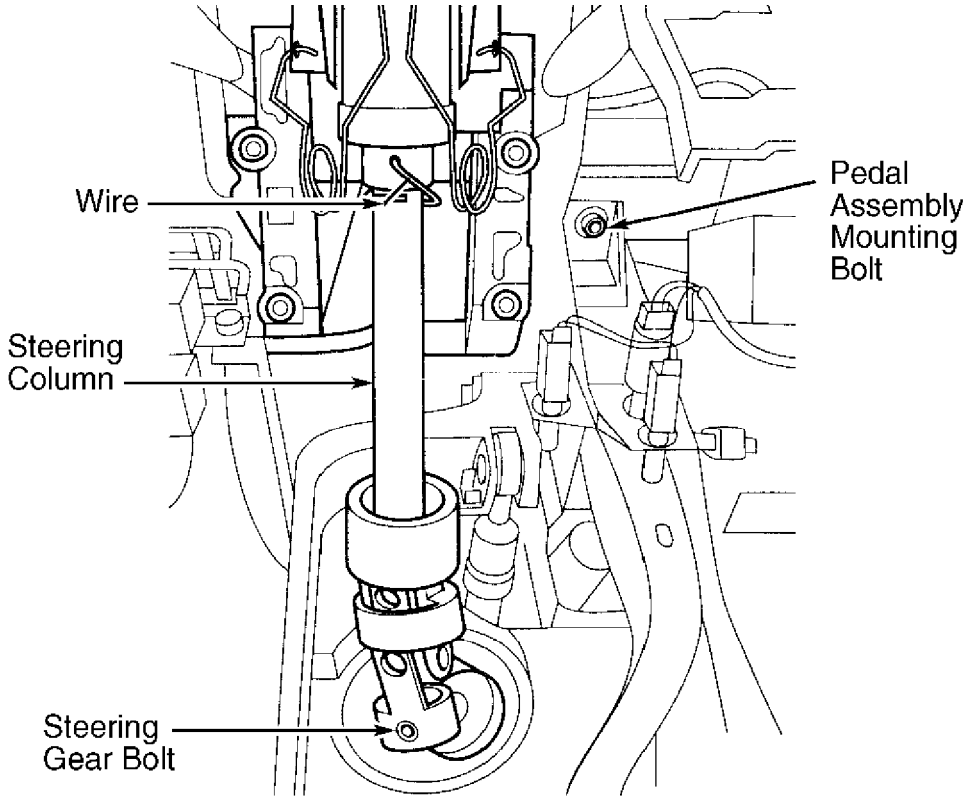


Fig. 4: Removing Steering Column
Courtesy of Audi of America, Inc.

A/C-HEATER CONTROL PANEL

NOTE: Check for codes before removing A/C-heater control panel. See DIAGNOSTIC TROUBLE CODE MEMORY under SELF-DIAGNOSTICS. After A/C-heater control panel is replaced, check coding and perform basic setting. Check for codes, and repair as necessary.

Removal & Installation

1) Obtain radio anti-theft protection code. Disconnect negative battery cable. Remove radio. Remove screws and center instrument panel trim. Remove screws and A/C-heater control panel. Push back connector locks, and disconnect electrical connectors.

2) To install, reverse removal procedure. Ensure shaped hose to instrument panel interior temperature sensor is routed properly and not kinked. Tighten screws to specification. See TORQUE SPECIFICATIONS.

ACCUMULATOR

Removal & Installation

1) Discharge A/C system, using approved refrigerant recovery/recycling equipment. Remove bolts and nuts from bracket. Remove refrigerant line from right side of accumulator. Remove accumulator and bracket assembly. Remove refrigerant line from left side of accumulator. Remove accumulator from bracket and insulating sleeve.

2) To install, reverse removal procedure. Use NEW "O" rings. Tighten refrigerant lines to specification. See TORQUE SPECIFICATIONS. Align spring with mounting hole on bracket and mark on refrigerant hose.

AIR DISTRIBUTION FLAP MOTORS

Removal

1) Disable air bag system. See AIR BAG RESTRAINT SYSTEM article in ACCESSORIES/SAFETY EQUIPMENT SECTION. Remove glove box. Remove center console. See CENTER CONSOLE. Unclip cap for instrument panel. Remove bolts from driver's side stowage compartment. Disengage stowage compartment from clips, and remove stowage compartment.

2) Remove ducts between footwell and rear passenger compartment air outlets. Using T30 Torx bit, remove screws securing air bag module to steering wheel. Remove air bag module, and disconnect electrical connector. Remove instrument panel trim at center tunnel. Remove screws and footwell air outlet.

3) Remove 3 screws from central air flap motor. Disconnect Blue electrical connector. Release relay lever, and remove central air flap motor. See Fig. 5.

4) Remove 3 screws from footwell/defroster flap motor. Disconnect Red electrical connector. Release relay lever, and remove footwell/defroster flap motor. See Fig. 6.

5) Remove 3 screws from temperature regulator flap motor. Disconnect Black electrical connector. Release relay lever, and remove temperature regulator flap motor. See Fig. 7.

Installation

To install, reverse removal procedure. Ensure relay lever is correctly positioned. Check for codes. See DIAGNOSTIC TROUBLE CODE MEMORY under SELF-DIAGNOSTICS. Test appropriate flap motor. See OUTPUT DIAGNOSTIC TEST MODE under SELF-DIAGNOSTICS. See AIR/TEMPERATURE DISTRIBUTION FLAP MOTORS & SENSORS under TESTING.

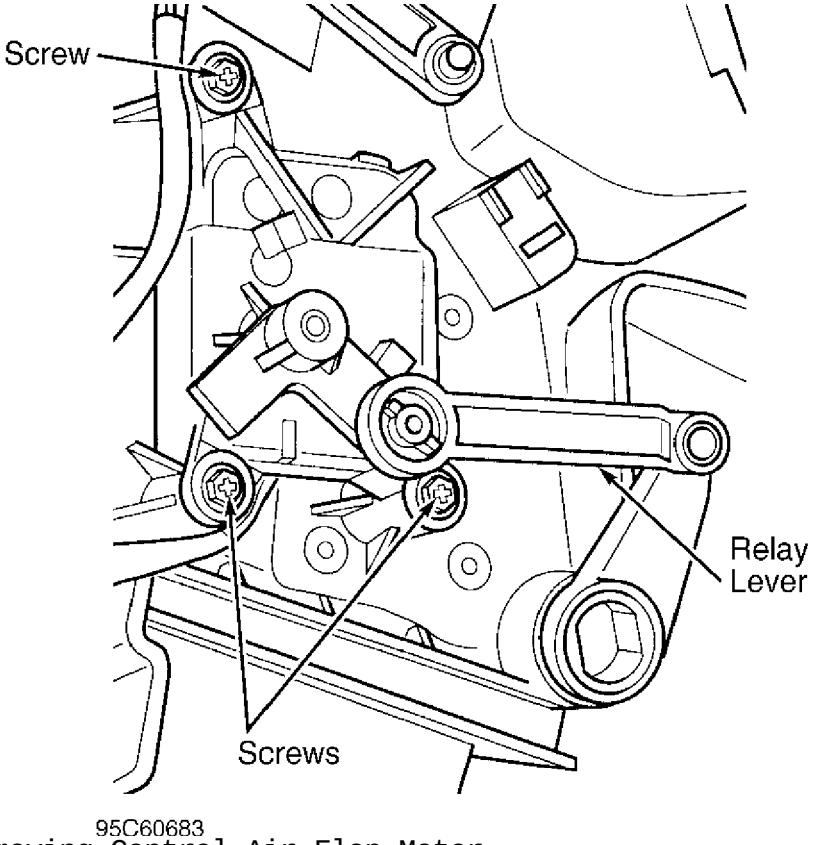


Fig. 5: Removing Central Air Flap Motor
Courtesy of Audi of America, Inc.

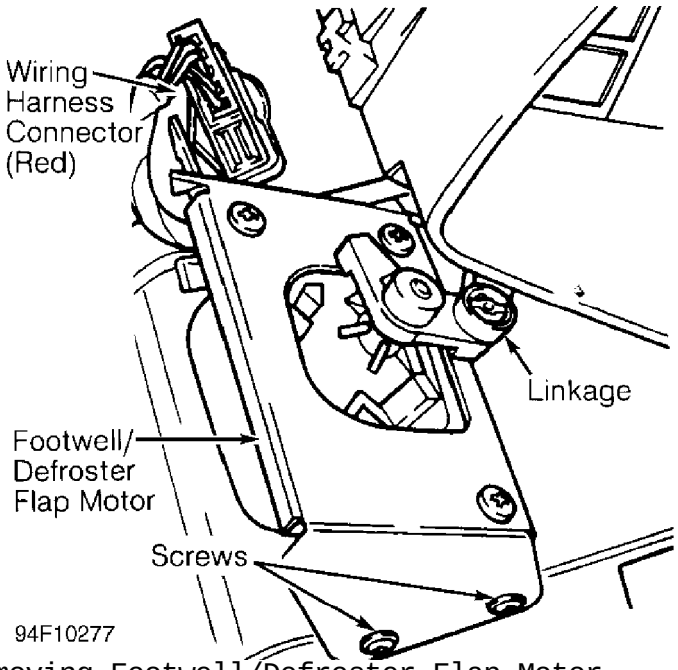


Fig. 6: Removing Footwell/Defroster Flap Motor
Courtesy of Audi of America, Inc.

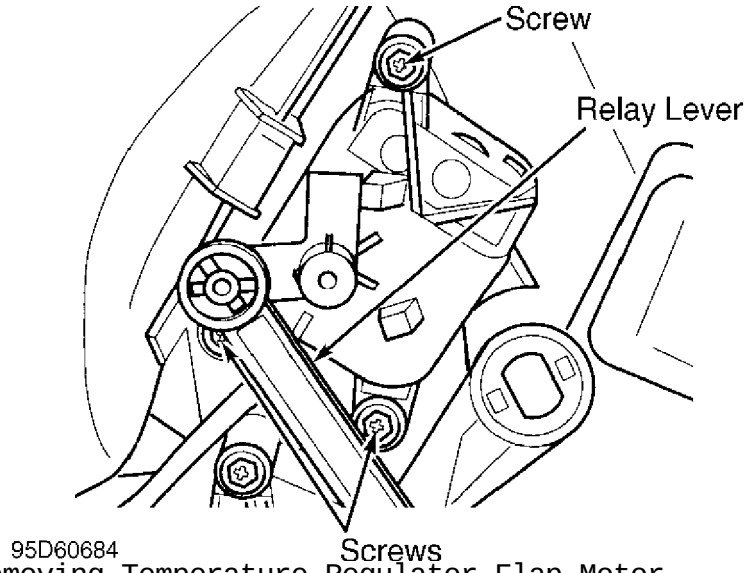


Fig. 7: Removing Temperature Regulator Flap Motor
Courtesy of Audi of America, Inc.

CENTER CONSOLE

Removal & Installation (Rear)

1) Pry out locking pin, and remove parking brake lever trim. Unclip cover and remove bolts. See Fig. 8. Remove ashtray. Remove nut from behind parking brake lever.

2) Apply parking brakes. Raise console slightly, and disconnect from front center console. Remove rear center console. Disconnect electrical connector.

3) To install, reverse removal procedure. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS.

Removal & Installation (Front)

1) Remove rear center console. Remove 4 front center console mounting bolts. Remove A/C-heater control panel. See A/C-HEATER CONTROL PANEL.

2) Unclip cover, and remove nuts and bolts. Disconnect and pull front center console rearward to remove from vehicle.

3) To install, reverse removal procedure. Ensure center console is inserted into clip. See Fig. 9. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS.

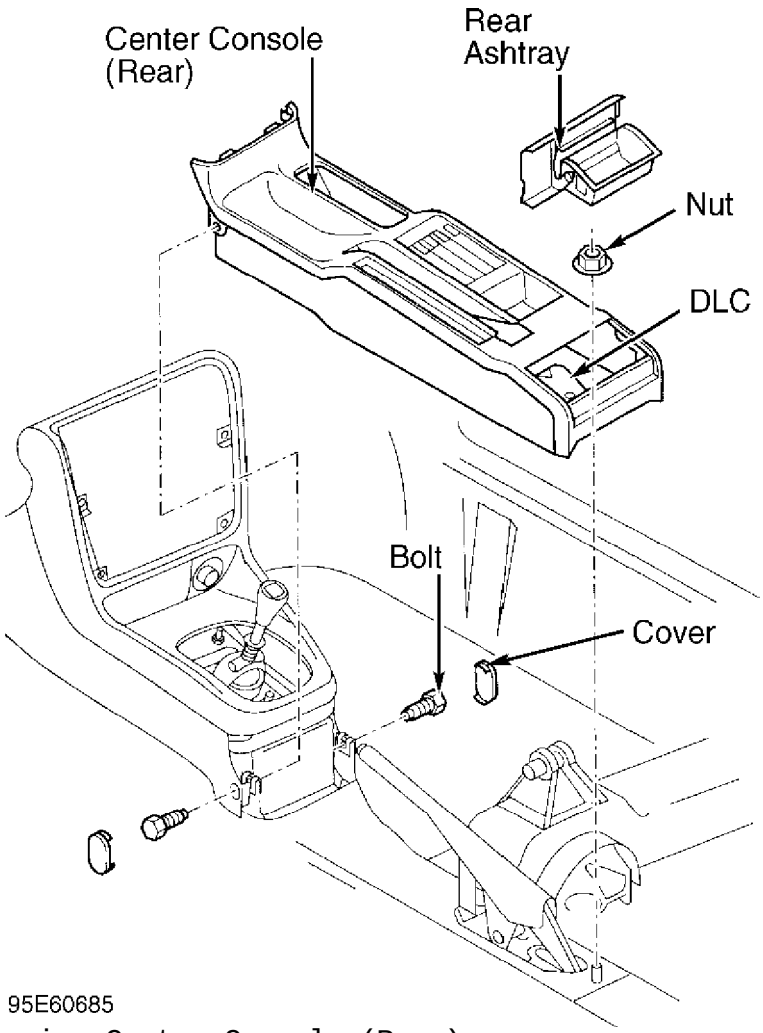


Fig. 8: Removing Center Console (Rear)
Courtesy of Audi of America, Inc.

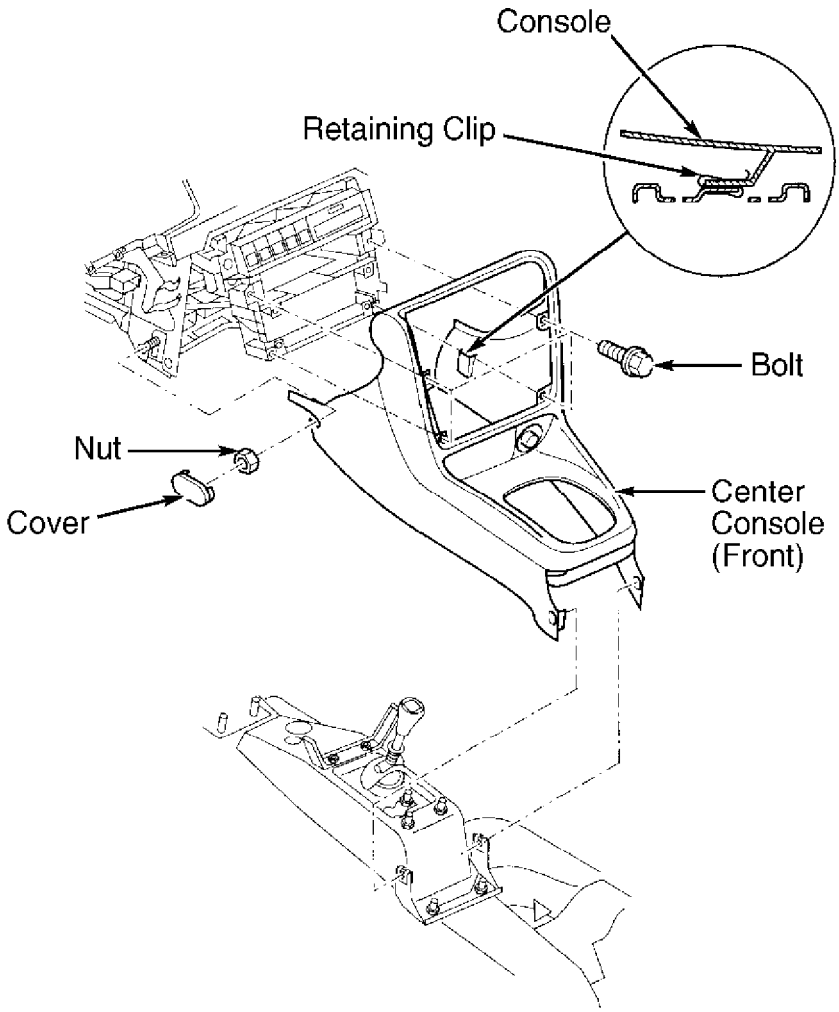


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Fig. 9: Removing Center Console (Front)
Courtesy of Audi of America, Inc.

EVAPORATOR

Removal

1) Remove A/C-heater assembly and instrument panel. See A/C-HEATER ASSEMBLY & INSTRUMENT PANEL. Remove heater core. See HEATER CORE. Remove heater flap housing. See Fig. 10 .

2) Remove 3 screws and airflow flap motor. Remove intake duct from evaporator housing. See Fig. 11 . Remove fresh/recirculating air flap vacuum unit. Remove top part of evaporator housing and gasket. Remove evaporator.

Installation

1) To install, reverse removal procedure. Using silicone rubber, coat sealing surfaces of housing halves. When installing airflow flap motor, ensure markings on gears of flap motor and airflow flap are aligned (longer tooth and continuous tooth intermediate space). See Fig. 12 .

2) If lever of airflow flap motor rests against stop, intake shaft through airflow flap must be closed when flap motor is installed. Longer side of airflow flap should face in direction of travel.

3) Check for codes. See DIAGNOSTIC TROUBLE CODE MEMORY under SELF-DIAGNOSTICS. Test airflow flap motor. See OUTPUT DIAGNOSTIC TEST MODE under SELF-DIAGNOSTICS. See AIR/TEMPERATURE DISTRIBUTION FLAP MOTORS & SENSORS under TESTING.

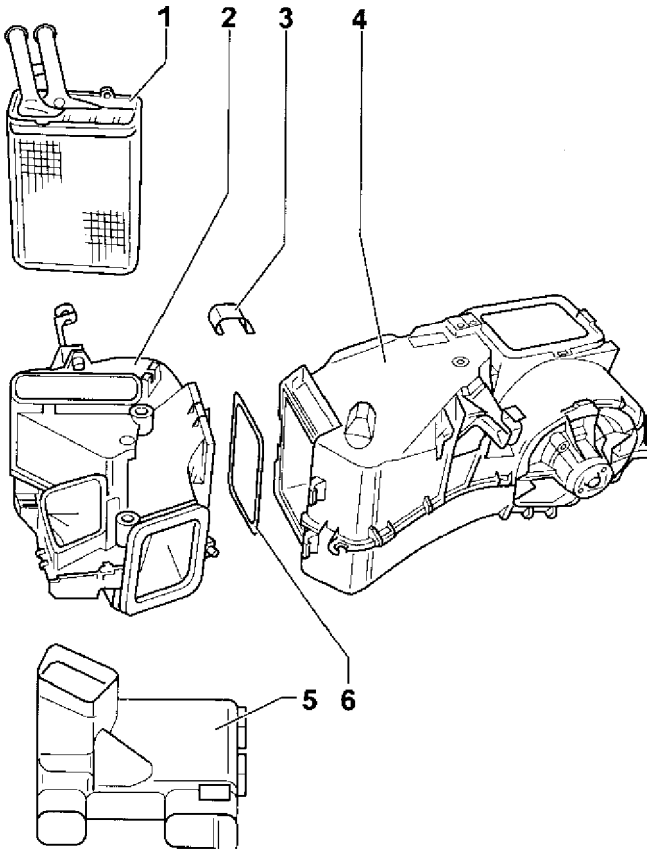

Fig. 10: Removing Heater Core
Courtesy of Audi of America, Inc.

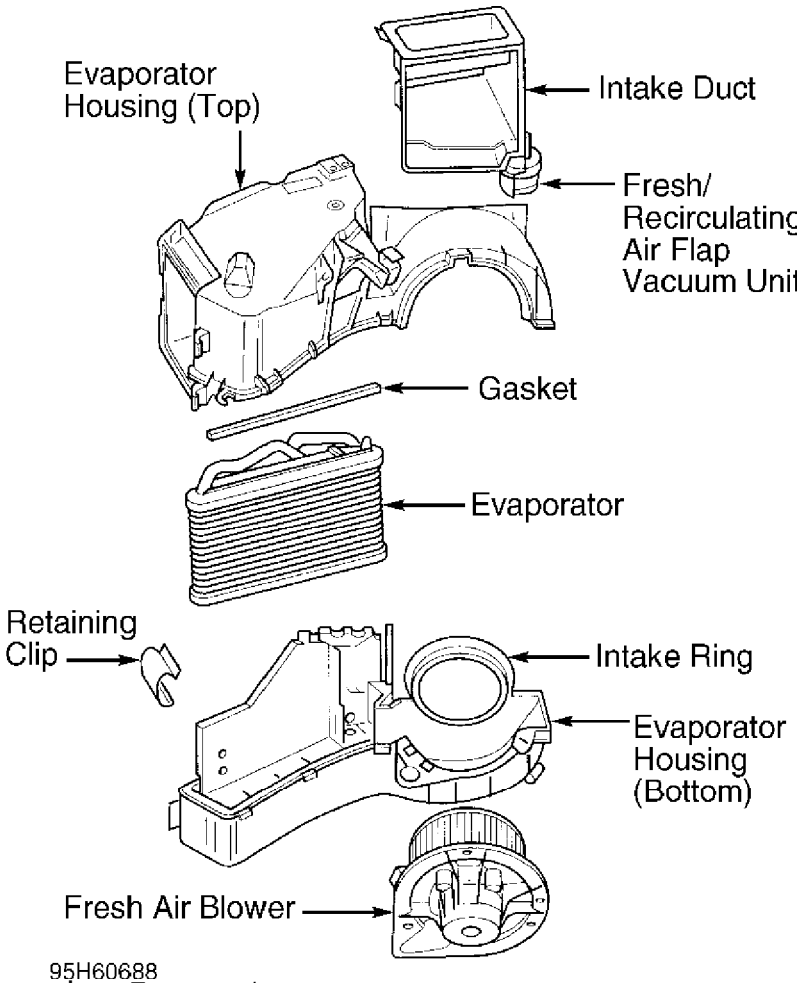

Fig. 11: Removing Evaporator
Courtesy of Audi of America, Inc.

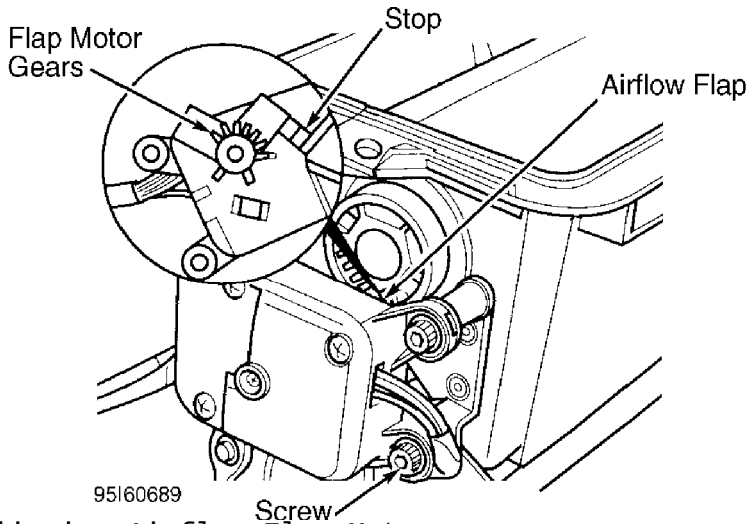

Fig. 12: Aligning Airflow Flap Motor
Courtesy of Audi of America, Inc.

FRESH AIR BLOWER

Removal & Installation

Disable air bag system. See AIR BAG RESTRAINT SYSTEM article in ACCESSORIES/SAFETY EQUIPMENT SECTION. Remove glove box and glove box mounting. Remove mounting for passenger air bag. Remove 4 screws and fresh air blower from A/C-heater assembly. See Fig. 11 . To install, reverse removal procedure.

FRESH AIR BLOWER CONTROL MODULE

Removal & Installation

Remove glove box and glove box mounting. Disconnect electrical connector from fresh air blower control module. Remove screw, and remove fresh air blower control module. To install, reverse removal procedure.

HEATER CORE

NOTE: If replacing heater core only, it is not necessary to separateA/C-heater assembly from instrument panel.

Removal & Installation

1) Remove A/C-heater assembly and instrument panel. See A/C-HEATER ASSEMBLY & INSTRUMENT PANEL. Press catches on heater core, and remove heater core from housing.

2) Apply self-adhesive seals to heater core. Ensure no gaps exist between seals and heater core. To install, reverse removal procedure. If heater core does not engage in heater housing, attach with 2 screws.

ORIFICE TUBE

Removal & Installation

Discharge A/C system, using approved refrigerant recovery/recycling equipment. Loosen refrigerant line clamp and remove lines from evaporator. Using needle nose pliers, remove restrictor (orifice tube) from evaporator inlet. Plug openings to prevent contamination.

2) To install, reverse removal procedure. Use NEW "O" rings. Insert orifice tube with arrow pointing toward evaporator, and push until firmly seated.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
A/C Compressor Bolts	18 (25)
A/C Compressor Bracket Bolts	18 (25)
A/C Compressor High Pressure Connection	22 (30)

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A/C Compressor Low Pressure Connection  ...........  30 (40)
Accumulator Lines  ................................  30 (40)
Condenser
 Inlet Line  ......................................  22 (30)
 Outlet Line  .....................................  11 (15)
Refrigerant Line Clamp Bolt  ......................  11 (15)
Steering Wheel Nut  ...............................  30 (40)

                                              INCH Lbs. (N.m)

A/C Compressor Speed Sensor  .......................  44 (5)
A/C-Heater Control Panel  ..........................  44 (5)
Air Bag Module Screws  .............................  53 (6)
Center Console Bolts  ..............................  44 (5)
Center Console Nut
 Front  ........................................... 31 (3.5)
 Rear  ............................................  89 (10)
Center Instrument Panel Trim Screws  ............. 31 (3.5)
High Pressure Cut-Out Switch (  1)  ..................  44 (5)
High Pressure Switch ( 1)  ..........................  44 (5)
Low Pressure Switch ( 1)  ...........................  44 (5)
Stowage Compartment Screws  ........................  44 (5)

(1) - High pressure switch, high pressure cut-out switch,
      and low pressure switch may be removed without
      discharging A/C system.
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WIRING DIAGRAMS

A/C-HEATER SYSTEM - AUTOMATIC
Article Text (p. 38)
1996 Audi A4
For DIAKOM-AUTO chechova,22 taganrog miklin@diakom.ttn.ru 8-86344

Saturday, January 23, 1999 06:33PM

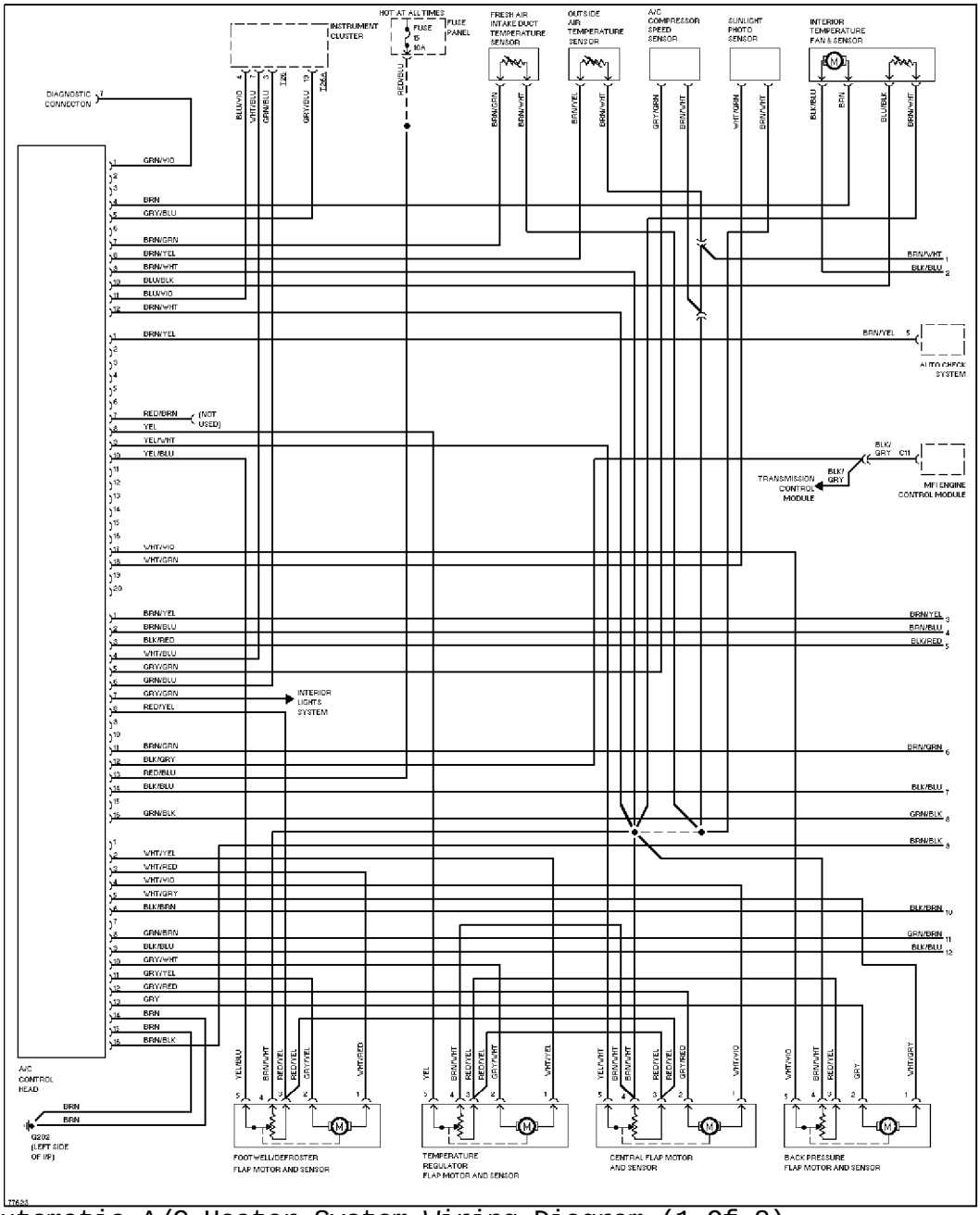

Fig. 13: Automatic A/C-Heater System Wiring Diagram (1 Of 2)

A/C-HEATER SYSTEM - AUTOMATIC
Article Text (p. 39)
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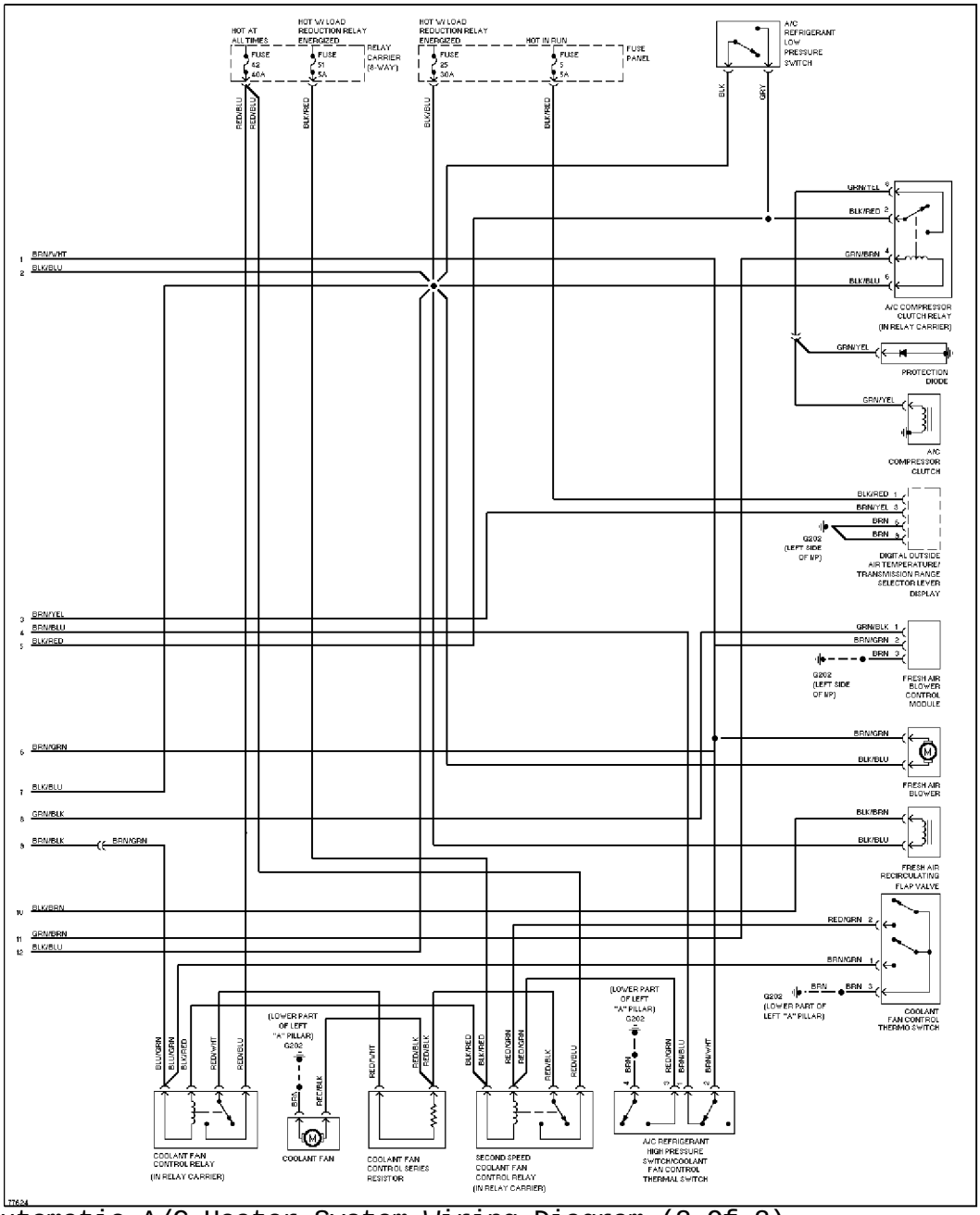

Fig. 14: Automatic A/C-Heater System Wiring Diagram (2 Of 2)

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