HVAC

Heating Air Conditioning

01 - ON BOARD DIAGNOSTIC (OBD)

AIR CONDITIONER ON BOARD DIAGNOSTICS (OBD)

Air conditioner On Board Diagnostics (OBD)

NOTE:

- **There are various versions of the control and display unit, Climatronic Control Module J255. On replacement, attention must therefore be paid to precise assignment Parts List.**
- **Air conditioner On Board Diagnostics (OBD) is to be performed by way of "Guided Fault Finding" function using Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051.**
- **At present, control and display unit, Climatronic Control Module J255 cannot be exchanged in the familiar manner, as component protection is active "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If control and display unit, Climatronic Control Module J255 is to be replaced, check coding of J255 and adaptation of J255 prior to removal by way of "Control module replacement" function in Guided Fault Finding routine for this control and display unit "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

On Board Diagnostic (OBD), technical data

Features

- DTC memory is of nonvolatile type and is thus independent of power supply.
- Data are transferred between control and display units, Climatronic Control Module J255 and Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 in "Rapid data transfer" mode "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Fault Read Out Device V.A.G 1551 or vehicle system tester V.A.G 1552 cannot be used for performing On Board Diagnostics (OBD) on this vehicle.
- Tester displays differ and are governed by design and type of tester (e.g. VAS 5051 A/5052 , VAS 5052), software stored in these testers and version of software stored in control and display unit, Climatronic Control Module J255. Displays may therefore not be the same as those shown in this information.

Operation

The air conditioner control and display unit, Climatronic Control Module J255 is equipped with a DTC memory.

Following data analysis, control and display unit, Climatronic Control Module J255 distinguishes between different DTCs --> DTC table and stores them until DTC memory is erased after checking "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Malfunction recognition

Malfunctions occurring in monitored sensors and components are stored in DTC memory together with an indication of the type of malfunction.

The first step in the fault-finding process is always to start On Board Diagnostics (OBD) and check the DTCs stored. This can be implemented by way of the following:

- Diagnostic operation system VAS 5051 A
- Vehicle Diagnosis Service Syst. VAS 5052

The malfunction information displayed is used in conjunction with a DTC table (containing information on possible causes of trouble) to perform pinpointed repair measures.

NOTE:

- **If a malfunction situation exists for longer than a certain period, DTC is stored as being static. If malfunction situation is then no longer detected for a predetermined period, malfunction is reclassified as being sporadic. This process is constantly repeated. Sporadic malfunctions are additionally identified as such by /SP on the display.**
- **A sporadic DTC is erased automatically if it no longer occurs for a predetermined period.**

The On Board Diagnostics (OBD) options can only be utilized at present by way of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

On Board Diagnostics (OBD) is not restricted to storage, checking and erasing of DTCs and Output Diagnostic Test Mode (DTM). It also offers Basic Setting, Control module identification, Read Measuring Value Block, adaptation and coding functions "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Available functions

Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052	Ignition on, engine not running	Engine idling	Vehicle in operation	Example
Address words				
				--> **Diagnostic operation**

08	Air conditioner/heater electronics	yes	yes	yes	**system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions**
00	Automatic test sequence	yes	yes	yes	--> **Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions**
Functions					
01	Check Control Module Versions	yes 1)	yes 1)	yes 1)	--> **Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions**
02	Check DTC memory	yes	yes	yes	--> **Check DTC memory**
03	Output Diagnostic Test Mode (DTM)	yes/no 2)	no/yes 2)	no 2)	--> **Output Diagnostic Test Mode (DTM)**
04	Basic Setting	yes	yes	no	--> **Basic Setting**
05	Erase DTC memory	yes	yes	yes	--> **Diagnostic Trouble Code (DTC) memory, erasing and ending output**
06	End Output	yes	yes	yes	
07	Code Control Module	yes	yes	no	--> **Climatronic Control Module J255 , coding**
08	Read Measuring Value Block	yes	yes	yes	--> **Read Measuring Value Block**
10	Adaptation	yes	yes	no	--> **Climatronic Control Module J255 , adaptation**

*1) Control module version is always displayed on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 during On Board Diagnostics (OBD) process.

*2) Output Diagnostic Test Mode (DTM) can only be implemented at vehicle speeds below 5 km/h "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Safety precautions

Pay attention to the following if testers and measuring instruments have to be used in the course of a test drive:

CAUTION:

- **Always attach testers and measuring instruments to back seat and have them operated from there by a second person.**
- **If testers and measuring instruments were to be operated from the front passengers seat, the person sitting there could suffer injury in the event of an accident due to triggering of the front passengers airbag.**

ON BOARD DIAGNOSTIC (OBD), PROCEDURE

Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions

- Vehicle power supply OK
- Fuses OK --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

NOTE:

- **The various functions of the Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 are described in the system operating instructions.**

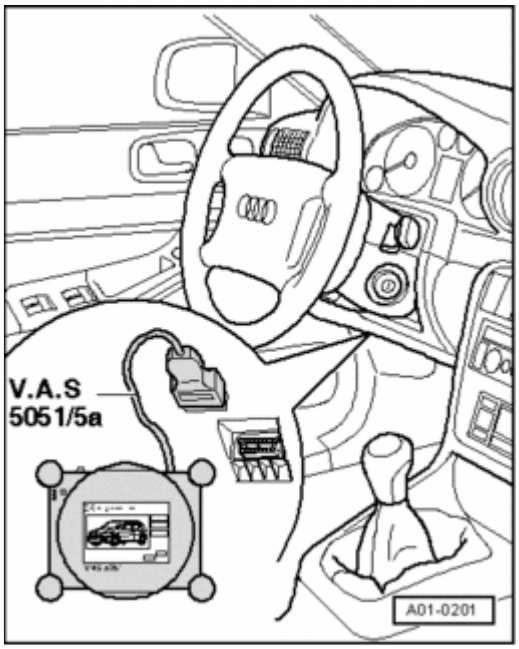

Fig. 1: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition off, connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A to 16-pin Data Link Connector (DLC) in vehicle.
- Switch on ignition.

Or

- Start engine.

NOTE:

- **Pay attention to notes on Output Diagnostic Test Mode (DTM) in --> Output Diagnostic Test Mode (DTM).**
- **Switch on air conditioner (set e.g. "Auto" mode on control and display unit, Climatronic Control Module J255 for drivers and front passengers side) Owners manual.**

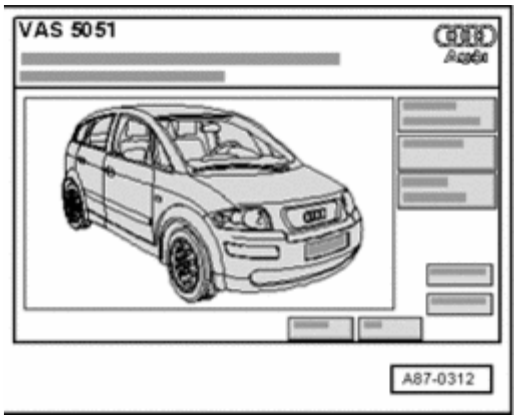

Fig. 2: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Select "Vehicle Self-Diagnosis" function on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

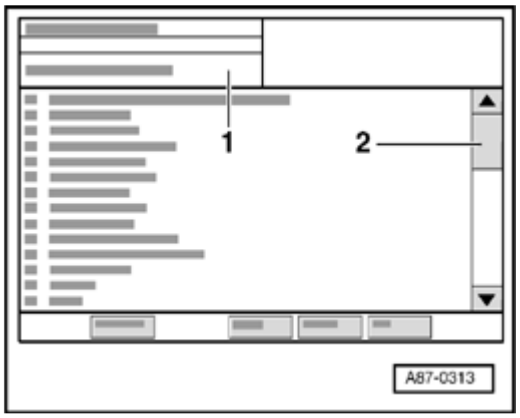

Fig. 3: Identifying Vehicle System Selection Prompt & "Scrolling" Bar
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Select vehicle system required:

- Select control and display unit, Climatronic Control Module J255 by way of address word "08 - Air conditioner/heater electronics".

NOTE:

- **Vehicle system selection prompt appears in display zone - 1 -.**
- **"Scrolling" screen display with bar - 2 - permits display of vehicle systems (for all vehicle models and equipment levels) which are intended for On Board Diagnostics (OBD) but are not currently visible on the screen.**

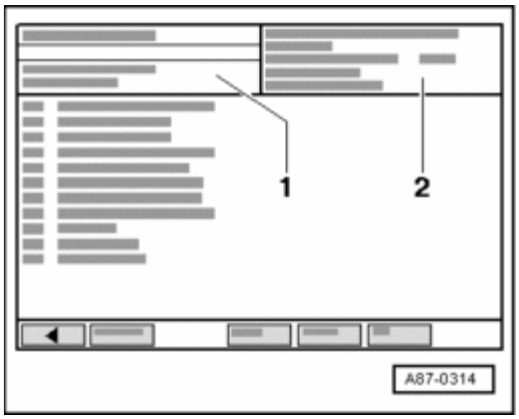

Fig. 4: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wait until "Select diagnostic function" appears in zone - **1** - of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 display.

NOTE:

- **Control module identification now appears in display zone - 2 - of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

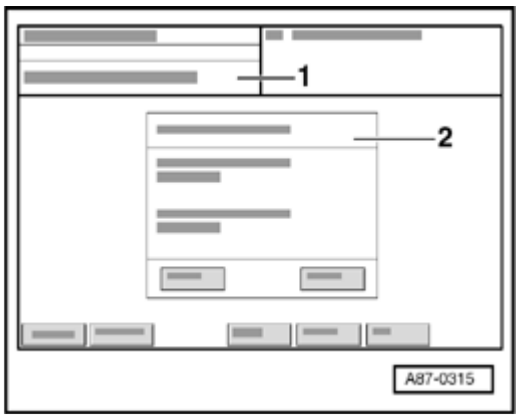

Fig. 5: Identifying "Vehicle System Not Available" & "Diagnostic Bus Interrupted" On Diagnostic Operation System VAS 5051A Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following if "Vehicle system not available" appears in zone - **1** - of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 display:
- Power supply to control and display unit, Climatronic Control Module J255 using wiring diagram --> Electrical Wiring Diagrams, Troubleshooting and Component Locations
- Wiring from 16-pin Data Link Connector (DLC) to Data Bus On Board Diagnostic Interface J533 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 and --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

Fig. 6: Identifying "Vehicle System Not Available" & "Diagnostic Bus Interrupted" On Diagnostic Operation System VAS 5051A Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following if an additional display zone - **2** - with the message "Diagnostic bus malfunction" and references to possible cause of trouble appears on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 display:
- Power supply to 16-pin Data Link Connector (DLC) using wiring diagram --> Electrical Wiring Diagrams, Troubleshooting and Component Locations
- Voltage and condition of vehicle battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL**
- "Diagnostic bus malfunction" display with references to possible cause of trouble also appears on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 if a problem has occurred during On Board Diagnostics (OBD) or in the event of interruption of data exchange between Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 and control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- Current screen display can be printed out by selecting "Print" function on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 display.
- Possible causes of trouble can be displayed by selecting "Help" function on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 display.
- Touching keys depicted on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 display makes it possible to move forwards or backwards in program (arrow keys) or to switch functions.

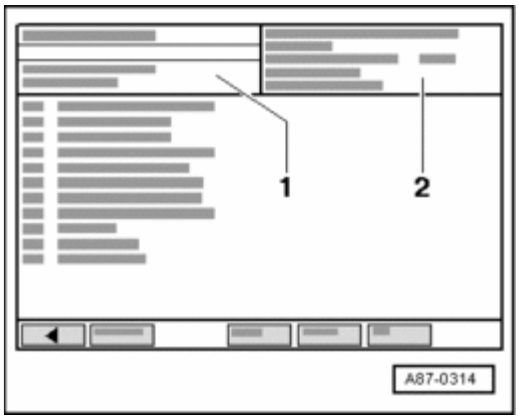

Fig. 7: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Desired function can now be started by way of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 display ("Available functions").

Control module identification (in display zone - 2 - , example)

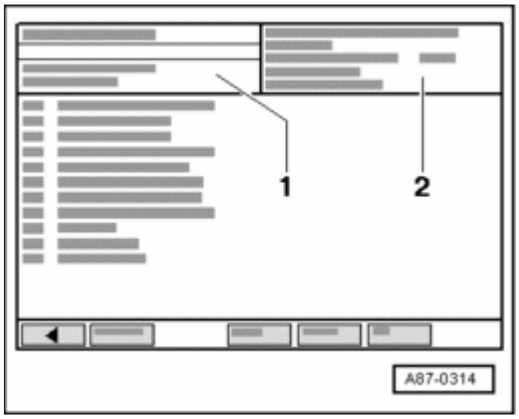

Fig. 8: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

• "08 - Air conditioner/heater electronics"	Vehicle system selected
	Software no. (not displayed with all versions at present) and hardware/part no.; Assignment Parts List ○ Distinction between the following versions at the start of production: • Distinction by way of part number ○ Part no. 4F1 820 043 X for left-hand drive vehicles

• "4F0 910 043 X" / "4FX 820 043 X"	• Distinction by way of part number index ○ Index "H" (or "B" for RHD) = version for vehicles with seat heating (unit used for temperature indication is assigned by way of coding) ○ Index "J" (or "C" for RHD) = version for vehicles with seat heating (unit used for temperature indication is assigned by way of coding) ○ Index "X" = version for vehicles for USA with no "Econ button" (introduction and index not yet finalized) for vehicles with no seat heating (unit used for temperature indication is assigned by way of coding) ○ Index "X" = version for vehicles for USA with no "Econ button" (introduction and index not yet finalized) for vehicles with seat heating (unit used for temperature indication is assigned by way of coding)
• "Air conditioner actuation" or "Automatic AC"	Audi A6 control and display unit, Climatronic Control Module J255
• "XXXXXX"	Data level (hardware and software version) of control and display unit, Climatronic Control Module J255
• Coding "XXXXXXXX"	Coding of vehicle-specific equipment, e.g. "6" for Sedan with left-hand drive, 6-cyl. gasoline engine with Motronic injection and ignition system (MPI = Multi Point Injection) with no further optional extras --> **Climatronic Control Module J255 , coding**
• WSC X "XXXX"	Workshop code with which coding (or Basic Setting) was last performed ("00000" possibly aftermarket or replacement part)

NOTE:

- **The Center Outlet Temperature Sensor G191 has been gradually discontinued, on vehicles without this sensor, only the Climatronic Control Module J255 with part no. 4F1 820 043 as of index "M" is or may be installed Parts Catalog.**
- **In vehicles without Center Outlet Temperature Sensor G191 , if a Climatronic Control Module J255 with part no. 4F1 820 043 up to and including index "L" is installed, the missing sensor is displayed as a malfunction.**
- **Climatronic Control Module J255 units with part no. 4F1 820 043 as of index "M" have already been installed with gradual introduction as of 05.2005 also in vehicles with Center Outlet Temperature Sensor G191 (sensor measured value is no longer required by this A/C control and display unit for regulation and therefore is not evaluated).**

CHECK DTC MEMORY

Check DTC memory

NOTE:

- **This information only gives an outline of the "Check DTC memory" function. When checking DTC memory by way of "Guided Fault Finding" function, appropriate information is given on determining malfunction location and on malfunction rectification "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **In addition to the malfunction display, certain general and ambient conditions under which malfunction occurred may be stored in control module (e.g. mileage, time, date, engine temperature, battery voltage and engine speed). This information is particularly useful for determining sporadic malfunctions "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **DTC table for malfunction locations and types of malfunction relating to air conditioner is contained in Guided Fault Finding routine "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **With ignition switched off, connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A to 16-pin Data Link Connector (DLC) in vehicle and use "Address word" 08 to select "Air conditioner/heater electronics" --> Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

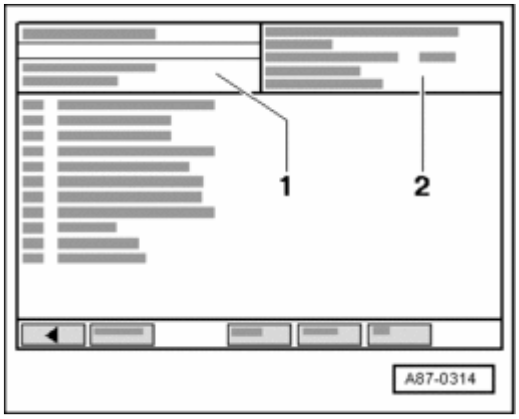

Fig. 9: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Select function "02 - Check DTC memory".

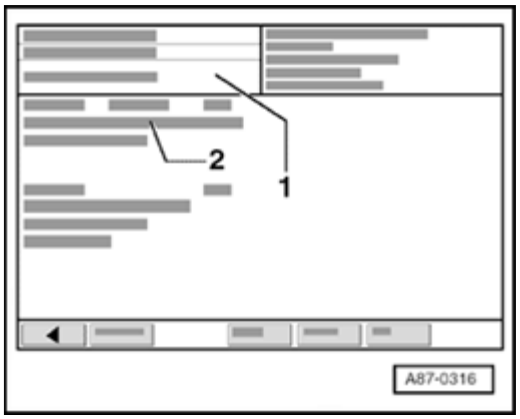

Fig. 10: Identifying Content Of DTC Memory & Identification Of Fault On Diagnostic System VAS 5051 Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Number of stored DTCs appears in display zone - **1** -.
- Diagnostic Trouble Code (DTC), malfunction location and type of DTCs stored appear in display zone - **2** -.

NOTE:

- **Touch <-- key to return to selection program.**
- **Touch --> key for display of general and ambient conditions under which malfunction(s) occurred.**
- **DTC "Test n. OK" is displayed if automatic test sequence was actuated as part of function "Basic Setting 04" but either sequence was not completed or a test condition was not satisfied --> Basic Setting.**
- **DTC "Test n. OK" cannot be erased at present. Following successful completion of Basic Setting in relevant display groups "003" and "004" (for type of malfunction "Implausible signal" or "Upper limit value exceeded"), control and display unit, Climatronic Control Module J255 erases this malfunction entry automatically --> Basic Setting. If a specified measured value is not attained in the course of "Basic Setting" function, start by eliminating cause of non-attainment of specification (e.g. inadequate cooling output or no movement of control motor) and then perform "Basic Setting" again.**
- **Depending on version of control and display unit, Climatronic Control Module J255 , it may be necessary to perform Basic Setting consecutively in display groups "001" , "003" and "004" in order to erase malfunction "Test n. OK " ("Implausible signal" or "Upper limit value exceeded") --> Basic Setting.**
- **If Basic Setting procedure was started in display group "001" but not completed (e.g. terminated by switching off ignition) or a specified value is not attained, compressor cannot be switched on ("Econ mode" warning**

lamp cannot for example be switched off) --> Basic Setting.

- **With control and display units installed at beginning of production, the Climatronic Control Module J255 (up to and including software version "0060") DTCs may be stored at various control motors and at A/C Pressure/temperature Sensor G395 under certain ambient conditions even though there is no malfunction. If necessary, check function of any components displayed as malfunctioning via the "Output Diagnostic Test Mode (DTM)" and "Read measured value block" function and erase the DTC if component function is OK.**
- **Proceed as follows if no malfunction has been detected but there are problems with air conditioner (e.g. constant or intermittent failure of cooling output, inadequate system regulation, no control of fresh air blower speed, "Econ mode" cannot be deactivated):**
- **1. Read measured value block (function 08, e.g. display groups 001 and 002 if there is no air conditioner cooling action) --> Read Measuring Value Block.**
- **2. Perform Output Diagnostic Test Mode (DTM) (function 03) --> Output Diagnostic Test Mode (DTM).**
- **3. Check coding of control and display unit, Climatronic Control Module J255 (function 07) --> Climatronic Control Module J255 , coding.**
- **4. Check adaptation of control and display unit, Climatronic Control Module J255 (function 10) --> Climatronic Control Module J255 , adaptation.**
- **5. Check cooling/heat output of air conditioner --> Air conditioner, checking cooling output or --> Heat output of air conditioner and operation of pump valve unit, checking.**
- **If malfunctions are found:**
- **1. Rectify malfunction.**
- **2. Check DTC memory (function 02) --> Check DTC memory.**
- **3. Erase DTC memory (function 05) --> Diagnostic Trouble Code (DTC) memory, erasing and ending output.**
- **4. Check coding of control and display unit, Climatronic Control Module J255 (function 07) --> Climatronic Control Module J255 , coding.**
- **5. Perform Basic Setting (function 04) --> Basic Setting.**
- **6. Check adaptation of control and display unit, Climatronic Control Module J255 (function 10) --> Climatronic Control Module J255 , adaptation.**
- **7. Check DTC memory of control and display unit, Climatronic Control Module J255 (function 02) --> Check DTC memory and if necessary rectify malfunctions displayed, erase DTC memory (function 05) --> Diagnostic Trouble Code (DTC) memory, erasing and ending output and repeat procedure.**

- **8. End output (function 06) --> Diagnostic Trouble Code (DTC) memory, erasing and ending output.**

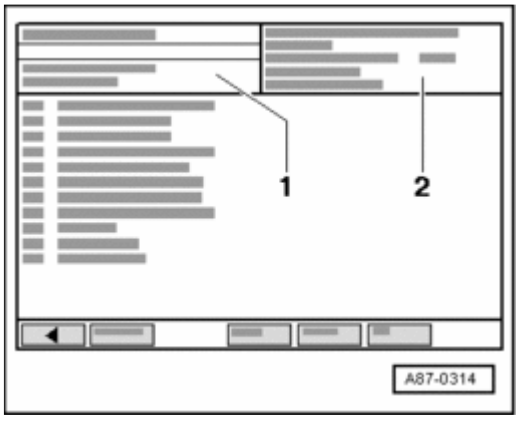

Fig. 11: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- End output (function 06).
- Switch off ignition and unplug diagnostic connector.

OUTPUT DIAGNOSTIC TEST MODE (DTM)

Output Diagnostic Test Mode (DTM)

NOTE:

- **This information only gives an outline of the "Output Diagnostic Test Mode (DTM)" function. When performing "Output Diagnostic Test Mode (DTM)" function by way of Guided Fault Finding, appropriate information is given on the function of the various components during Output Diagnostic Test Mode (DTM) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If a component cannot be actuated, e.g. on account of a malfunction, "Function unknown or cannot be implemented at present" appears on display.**
- **If a component installed is not actuated, e.g. heated windshield or heated seats, check coding of control and display unit, Climatronic Control Module J255. Certain components are only actuated if they have been entered by way of coding --> Climatronic Control Module J255 , coding.**
- **Depending on version of control and display unit, Climatronic Control Module J255 , all components possible with air conditioner are displayed during Output Diagnostic Test Mode (DTM) even if they are not installed in vehicle with this version. Components which are not installed or not encoded are however not actuated (skipped during Output Diagnostic Test**

Mode (DTM)).

- **For component locations of components actuated, refer to --> A/C system control and regulation components in engine compartment and rear body (components for air conditioner control and regulation not in passenger compartment) and --> A/C system control and regulation components in passenger compartment (components for air conditioner control and regulation in passenger compartment).**

Output Diagnostic Test Mode (DTM), initiating

- Note the following as regards Output Diagnostic Test Mode (DTM):

- During Output Diagnostic Test Mode (DTM), displays of control and display unit, Climatronic Control Module J255 are blank.
- Output Diagnostic Test Mode (DTM) can only be implemented at vehicle speeds below 5 km/h.
- If necessary, Output Diagnostic Test Mode (DTM) can be repeated several times.
- Component malfunctions which can be measured electrically are stored in the DTC memory. Malfunctions in the various flap actuating elements for example cannot be detected. For this reason, the various control motors are moved to a specified position during Output Diagnostic Test Mode (DTM) and the Fresh Air Blower V2 actuated at approx. 60% of maximum output. Flap actuation can then be checked by observing the change in air distribution or the temperature of the outflowing air.

- Air conditioner control action and display of control and display unit, Climatronic Control Module J255 are deactivated during Output Diagnostic Test Mode (DTM). The "segment test" function is the only function during which the display segments of the control and display unit, Climatronic Control Module J255 are actuated.
- Air conditioner control motors are moved into a predetermined position by control and display unit, Climatronic Control Module J255 after selecting "Output Diagnostic Test Mode (DTM)" function. During Output Diagnostic Test Mode (DTM), it is therefore not necessary to wait for control motors to reach a specified position.
- The A/C system control motors are driven into a predetermined position by the control and display unit, Climatronic Control Module J255 , after selecting the "Output Diagnostic Test Mode (DTM)" function. During the Output Diagnostic Test Mode (DTM), it is therefore not necessary to wait until the control motors have reached the pre-assigned position.
- Request for actuation of radiator fans (0 to 100%) is transmitted by control and display unit, Climatronic Control Module J255 to the relevant Engine Control Module (ECM). Fan is however only switched on by Engine Control Module (ECM) when engine is running (depending on type and version of engine installed in vehicle "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052).

Output Diagnostic Test Mode (DTM), procedure

- With ignition off, connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A to 16-pin Data Link Connector (DLC) in vehicle --> **Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and**

selecting functions.

- Switch on ignition/start engine.

NOTE:

- **Switch on ignition (actuation of A/C Compressor Regulator Valve N280 is checked with engine not running) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Start engine (for checking actuation of radiator fans) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Switch on air conditioner (set e.g. "Auto" mode on control and display unit, Climatronic Control Module J255 for drivers and front passengers side) Owners manual.**
- **Use address word "08" to select "air conditioner/heater electronics" On Board Diagnostics (OBD) --> Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions.**
- **Open passenger compartment vents (in instrument panel and center console).**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 --> Check DTC memory and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

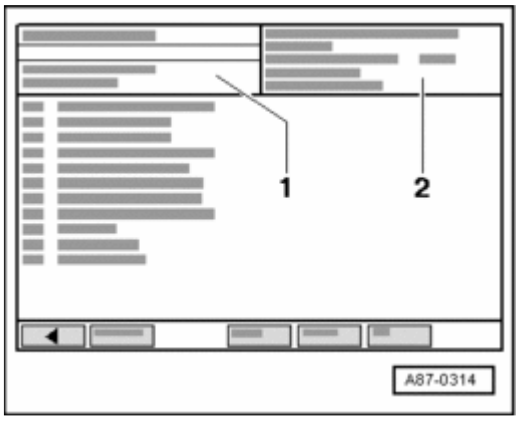

Fig. 12: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Select function "03 - Output Diagnostic Test Mode (DTM)".

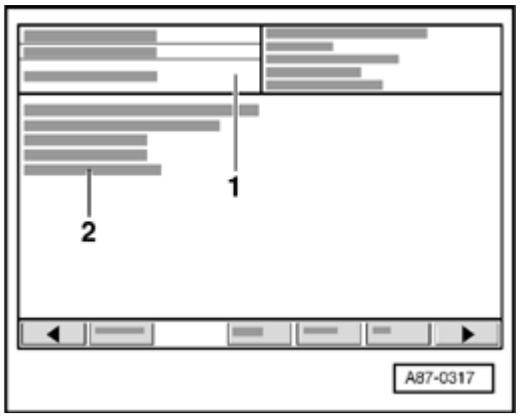

Fig. 13: Identifying Display Field Showing Which Control Element Is Currently Being Activated & Gives Consecutive List Of Control Elements Already Activated
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Display zone - **1** - shows which component is currently being actuated (e.g. 1st component in test).
- Display zone - **2** - gives a consecutive list of components already actuated and the one currently being actuated. The one currently being actuated appears in the bottom line.

  - Touch --> key to select next component. For function and sequence of components actuated, refer to "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

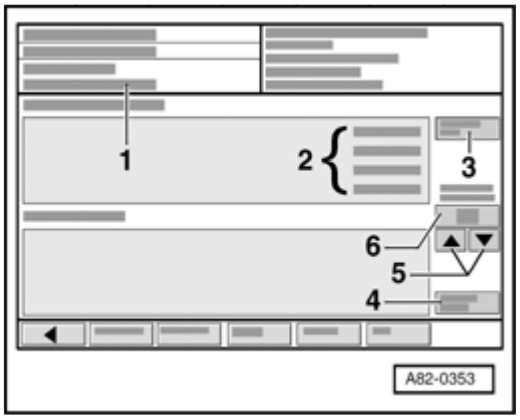

Fig. 14: Display, Showing Measured Value Block Assigned To Corresponding Component
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **This display, showing measured value block assigned to corresponding component, may also appear depending on version of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , control and display unit, Climatronic Control Module J255 and component actuated.**
- **Depending on version of control and display unit, Climatronic Control**

Module J255 , components not installed in vehicle (and also not entered by way of coding) may be displayed for Output Diagnostic Test Mode (DTM). These components can then not be activated and display can be ignored (continue by pressing forward key).

- **Touch <-- key to return to selection program.**
- **Output Diagnostic Test Mode (DTM) can be terminated by pressing C key.**
- **On completion of Output Diagnostic Test Mode (DTM), check DTC memory --> Check DTC memory.**
- **If Output Diagnostic Test Mode (DTM) is aborted, check DTC memory --> Check DTC memory and read measured value block --> Read Measuring Value Block.**

BASIC SETTING

Basic Setting

NOTE:

- **This information only gives an outline of the "Basic Setting" function. Implement "Basic Setting" function as part of Guided Fault Finding routine "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **During "Basic Setting" function, display of control and display unit, Climatronic Control Module J255 may be deactivated depending on version of control and display unit, Climatronic Control Module J255.**
- **If Basic Setting procedure is started in display group "003" or "004" , it must be completely implemented. If it is terminated prematurely (e.g. by switching off ignition) or if a specified measured value is not attained, control and display unit, Climatronic Control Module J255 stores a DTC. This DTC can only be erased if Basic Setting procedure is implemented in full and specified measured values are actually attained.**
- **If Basic Setting has not been implemented in display group "001" after replacing control and display unit, Climatronic Control Module J255 or if a specified value is not attained during Basic Setting, compressor cannot be switched on ("Econ mode" warning lamp cannot be switched off).**
- **If Basic Setting procedure was started in display group "001" but not completed (e.g. terminated by switching off ignition) or a specified value is not attained, compressor cannot be switched on ("Econ mode" warning lamp cannot be switched off).**

Basic Setting, initiating

NOTE:

- **Coding of control and display unit, Climatronic Control Module J255 checked and corrected if necessary --> Climatronic Control Module J255 , coding and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052**

- **Basic Setting in display group "002" continues until ignition is switched off.**
- **With ignition off, connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A to 16-pin Data Link Connector (DLC) in vehicle --> Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions.**
- **Start engine if display groups "002" , "003" or "004" are to be selected.**
- **Use address word "08" to select "air conditioner/heater electronics" --> Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions.**

Basic Setting, procedure

- Control module for Data Bus On Board Diagnostic Interface J533 OK, correctly encoded and adapted "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- DTC memory checked --> **Check DTC memory** , DTC displayed (except those relating to Basic Setting) rectified and DTC memory erased --> **Diagnostic Trouble Code (DTC) memory, erasing and ending output**
- Air conditioner switched on (e.g. "Auto" mode set)

NOTE:

- **During Basic Setting in display groups "001" , "003" and "004" , neither ignition nor engine is to be switched off or function terminated (wait until control and display unit, Climatronic Control Module J255 has completed sequence). This is indicated on display of relevant tester (display of control and display unit, Climatronic Control Module J255 is additionally re-activated).**
- **If function cannot be started in display group "003" or "004" , check time specified for these display groups in "Adaptation" function (adaptation channels "44" and "45" --> Climatronic Control Module J255 , adaptation and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

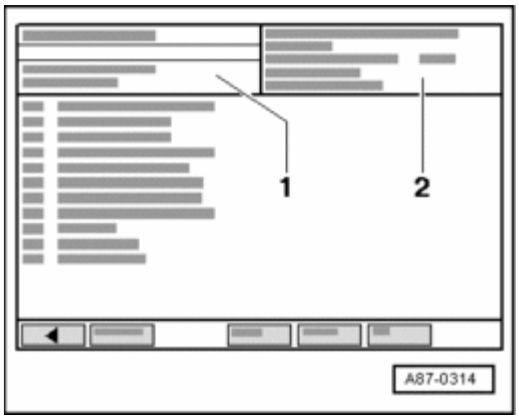

Fig. 15: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Select function "04 - Basic Setting".

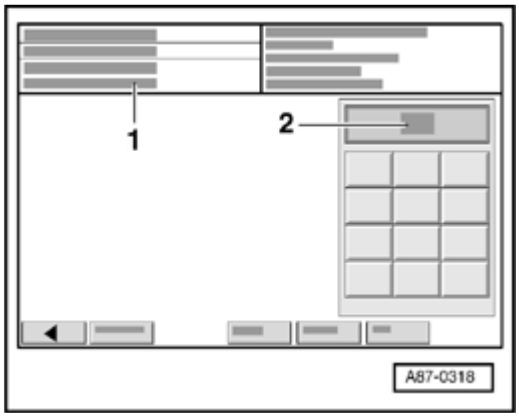

Fig. 16: Identifying Diagnostic Operation System VAS 5051A (Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Prompt for entering display group appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.

- Use input keypad in display zone - **2** - to enter desired display group (e.g. "01" or "001" for "display group number 001") and confirm by touching "Q key" (list of display groups available and functions).

Example of display and sequence after selecting display group "001"

Activate function for example by pressing appropriate button on tester display.

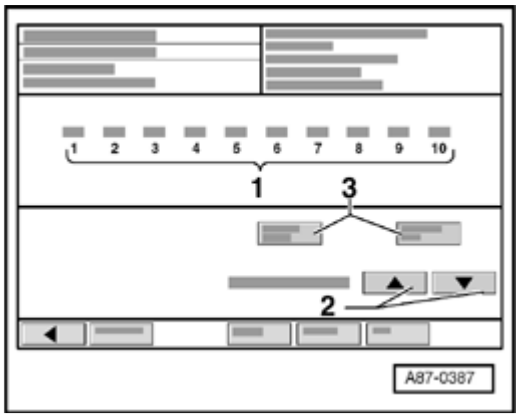

Fig. 17: Identifying Activated Control Motors & Feedback Value
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

The control motors installed are then actuated in the specified sequence.

End positions of control motors (resistance values in stop position) are stored in control and display unit, Climatronic Control Module J255 (resistance value of potentiometers in control motors) and used for further control action.

Once control motors have reached both end stops, they are moved again from one stop to the other. During this process, adjustment time is measured and stored in control and display unit, Climatronic Control Module J255 for use in the event of emergency operation.

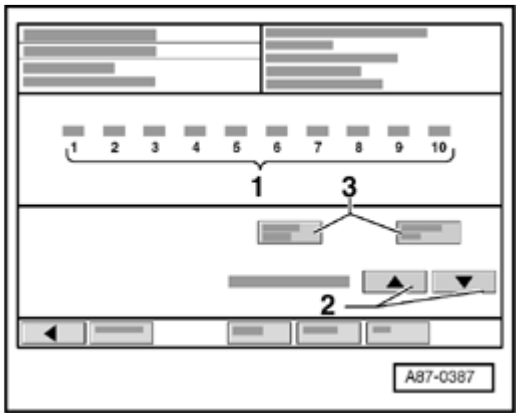

Fig. 18: Identifying Activated Control Motors & Feedback Value
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

Wait (depending on version of control and display unit, Climatronic Control Module J255 and tester model) until e.g. "Test OK" , "Basic Setting OK" (or "0" for feedback values displayed) appears in display zone - **1** -.

NOTE:

- **Display e.g. "Test OK" (in tester display zones) appears on completion of Basic Setting. End of Basic Setting can also be seen from re-activation of display of control and display unit, Climatronic Control Module J255. Display indicating end of Basic Setting depends on version of control and display unit, Climatronic Control Module J255 and tester model "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Touch <-- key to return to selection program.**
- **If malfunction in control motor potentiometer is detected during Basic Setting, substitute value is stored as adaptation value (learned value for this potentiometer) and displayed in the appropriate measured value block. The DTC "Upper limit value exceeded" or "Lower limit value exceeded" is stored in the DTC memory for this control motor.**

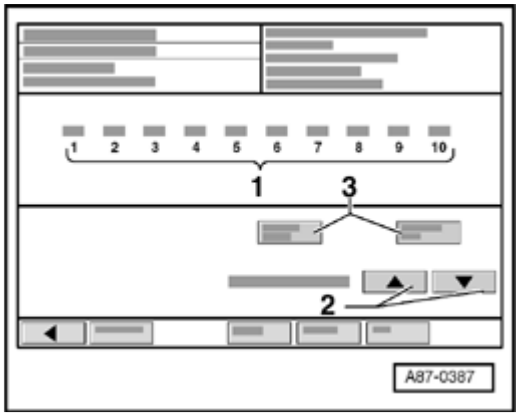

Fig. 19: Identifying Activated Control Motors & Feedback Value
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Touching the keys - **2** - permits switching to a different display group.
- Touching the keys - **3** - permits switching to a different function (e.g. from "Basic Setting" to "Read Measuring Value Block" and back again).

- Check DTC memory --> **Check DTC memory**.

NOTE:

- **If a malfunction has been detected and eliminated, Basic Setting is to be repeated.**
- **If specified values are not attained in display group "003" although air conditioner cooling output is OK (e.g. on account of unfavorable ambient conditions and a high ambient temperature), set engine speed of approx. 2000 RPM before starting Basic Setting and repeat Basic Setting at this engine speed.**
- **If specified values are not attained in display group "004" although air conditioner cooling and heat output is OK (no air trapped in engine coolant circuit and proper operation of pump valve unit with Coolant Pump**

V50 , Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176), set engine speed of approx. 2000 RPM before starting Basic Setting and repeat Basic Setting at this engine speed.

- **If specified values are not attained in display group "003" or "004" or if Basic Setting is not terminated automatically, check time specified for these display groups in "Adaptation" function (adaptation channels "44" and "45" --> Climatronic Control Module J255 , adaptation and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If specified values are not attained in display group "004" , check temperature condition specified for these display groups in "Adaptation" function (adaptation channel "46") --> Climatronic Control Module J255 , adaptation and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Terminate On Board Diagnostics (OBD) with control and display unit, Climatronic Control Module J255 and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

List of available display groups

List of available display groups

Display group	Basic Setting performed	**Function**
001	• Control and display unit, Climatronic Control Module J255 actuates the various air conditioner control motors such that these reach both end stops.	• Resistance values of potentiometers installed in the various control motors are stored for both end stops. ○ If a resistance value is outside the specified limits, this is stored as a DTC in the control and display unit, Climatronic Control Module J255.
	○ Following activation, control and display unit, Climatronic Control Module J255 requires approx. 1 to 2 min. for this function (Basic Setting)	○ With display of control and display unit, Climatronic Control Module J255 goes out and just the background illumination remains lit.
	○ Wait for completion of Basic Setting procedure (control and display unit, Climatronic Control Module J255 transmits message "Basic Setting performed")	• With display of control and display unit, Climatronic Control Module J255 reappears.

Display	Basic Setting performed	**Function**

group		
002	Initialization of air conditioner/compressor ○ This display group is intended for initialization of air conditioner (compressor) at the factory (no relevance to service at present) • For implementation of this Basic Setting, engine must be idling and instrument panel vents must be open. • Compressor should run for at least 5 min. to allow refrigerant oil in new compressor to be distributed through the circuit • This function remains active until ignition is switched off. At present, it cannot be terminated by way of tester. • In the course of this function, settings cannot be made on control and display unit, Climatronic Control Module J255.	• On activation of "Basic Setting" function, control and display unit, Climatronic Control Module J255 makes the following settings: ○ A/C Compressor Regulator Valve N280 is actuated with approx. 650 mA. ○ Temperature for drivers and front passengers side is set to " 22 ° C ". ○ Air distribution control motors are actuated such that air emerges from instrument panel vents ○ Fresh Air Blower V2 is actuated at approx. 75% of maximum speed ○ "Auto" mode is set for both sides, temperature of " 22 ° C " appears on both displays and displays of control and display unit, Climatronic Control Module J255 flash (to indicate that Basic Setting function is currently in progress).
	○ Switch off ignition.	• Basic Setting is terminated and control and display unit, Climatronic Control Module J255 returns to fully operational status

Display group	Basic Setting performed	**Function**
003	Cooling output check for air conditioner/compressor ○ This display group is intended for initialization of air conditioner at the factory (no relevance to service at present) • For implementation of this Basic Setting, engine must at least be idling and instrument panel vents must be open.	• On activation of "Basic Setting" function, control and display unit, Climatronic Control Module J255 makes the following settings: ○ A/C Compressor Regulator Valve N280 is actuated with approx. 650 mA. ○ Temperature for drivers and front passengers side is set to "Lo". ○ Air distribution control motors are actuated such that air emerges from instrument panel vents

	• Sun roof, windows and doors must be closed so as to attain specified measured values at higher ambient temperature. ○ Following activation, control and display unit, Climatronic Control Module J255 requires approx. 5 min. for this function (Basic Setting)	○ Fresh Air Blower V2 is actuated at speed stored in control and display unit, Climatronic Control Module J255 (approx. 75%). ○ "Auto" mode is set for both sides, "Lo" temperature appears on both displays and displays of control and display unit, Climatronic Control Module J255 flash (to indicate that Basic Setting function is currently in progress).
	○ Wait for completion of Basic Setting. • If function is terminated, e.g. by switching off ignition or if measured values are not OK, DTC "Test n. OK" or "System functional test" and type of malfunction "Upper limit value exceeded" are stored in control and display unit, Climatronic Control Module J255. At present, this DTC can only be erased if this function is repeated in its entirety and the temperature sensor measured values are then OK.	• If temperature stored in control and display unit, Climatronic Control Module J255 is not reached or is undershot (less than 1 ° C) at Evaporator Vent Temperature Sensor G263 , Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151 within approx. 5 minutes --> **Read Measuring Value Block** (Read Measuring Value Block, display groups "017" to "019") and (checking cooling output), a DTC is stored in control and display unit, Climatronic Control Module J255. ○ The following values must be attained at present depending on ambient temperature, e.g. approx. 6 ° C at 20 ° C and approx. 9 ° C at 35 ° C ambient temperature. ○ If the specified values are not attained with a properly functioning air conditioner, e.g. on account of unfavorable ambient conditions, repeat this Basic Setting at an engine speed of approx. 2000 RPM for example.
	○ Wait for completion of Basic Setting procedure (control and display unit, Climatronic Control Module J255 transmits message "Basic Setting performed" , display on tester e.g. "Test OK").	• Last valid display of control and display unit, Climatronic Control Module J255 reappears.

Display group	Basic Setting performed	**Function**

004	Interchange test for air conditioner control motors and temperature sensors ○ This display group is intended for air conditioner initialization at the factory. ○ This function can be used by service personnel to check for interchanged electrical connections on completion of repair work (e.g. after installing Heating and A/C unit or replacing control motor) • For implementation of this Basic Setting, engine must be warm and idling and instrument panel vents must be open. ○ Following activation, control and display unit, Climatronic Control Module J255 requires approx. 3 min. for this function (Basic Setting)	• On activation of "Basic Setting" function, control and display unit, Climatronic Control Module J255 makes the following settings: ○ A/C Compressor Regulator Valve N280 is actuated with approx. 650 mA. ○ Temperature for drivers side (left) is set to "Lo" and for front passengers side to "Hi". ○ Left Heat Regulating Valve N175 is constantly actuated ("closed") and Right Heat Regulating Valve N176 is not actuated ("open") --> **Read Measuring Value Block** (Read Measuring Value Block, display group "040"). ○ Air distribution control motors are actuated by control and display unit, Climatronic Control Module J255 such that they reach position specified in control and display unit, Climatronic Control Module J255 --> **Read Measuring Value Block** (Read Measuring Value Block, display groups "003" to "015"). ○ Fresh Air Blower V2 is actuated at speed stored in control and display unit, Climatronic Control Module J255 (approx. 75%).
	○ Wait for completion of Basic Setting procedure (control and display unit, Climatronic Control Module J255 transmits message "Basic Setting performed" , display on tester e.g. "Test OK").	○ "Auto" mode is set for both sides, "Lo" temperature is displayed for one side and "Hi" for other side and displays of control and display unit, Climatronic Control Module J255 flash (to indicate that Basic Setting function is currently in progress).
	• If function is terminated, e.g. by switching off ignition or if measured values are not OK, DTC "Test n. OK" or "System functional test" and type of malfunction "Upper limit value	○ The measured values of the various temperature sensors in the Heating and A/C unit are compared to the specifications stored for this flap position in the control and display unit, Climatronic Control Module J255. ○ If, within approx. 1 minute, a temperature value is not attained (e.g. on account of interchanged electrical connection) or if Basic Setting is terminated prematurely, a DTC is stored in control and display unit,

	exceeded" are stored in control and display unit, Climatronic Control Module J255. At present, this DTC can only be erased if this function is repeated in its entirety and the temperature sensor measured values are then OK.	Climatronic Control Module J255. o If values are not attained, check adaptation in adaptation channels "45" and "46" (adaptation) --> **Climatronic Control Module J255 , adaptation** measured values in display groups "017" to "019" --> **Read Measuring Value Block** (Read Measuring Value Block) and perform Output Diagnostic Test Mode (DTM) --> **Output Diagnostic Test Mode (DTM)** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
	o Wait for completion of Basic Setting procedure (control and display unit, Climatronic Control Module J255 transmits message "Basic Setting performed")	• Last valid display of control and display unit, Climatronic Control Module J255 reappears.

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, ERASING AND ENDING OUTPUT

Diagnostic Trouble Code (DTC) memory, erasing and ending output

- With ignition off, connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A --> **Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Functions - "Erase DTC memory and End Output" , initiating

NOTE:

- **DTC memory of control and display unit, Climatronic Control Module J255 checked --> Check DTC memory and all displayed DTCs rectified**

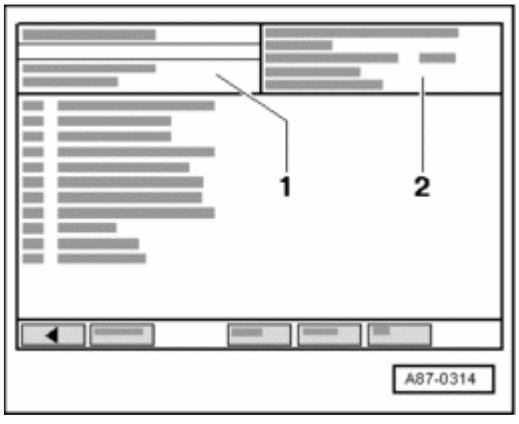

Fig. 20: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Use address word "08" to select "air conditioner/heater electronics" (control and display unit, Climatronic Control Module J255) --> **Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions**.
- Select function "02 - Check DTC memory".

Display zone - **1** - indicates "No malfunction present".

- Terminate function "02 - Check DTC memory".

Function - "Erase DTC memory" , initiating

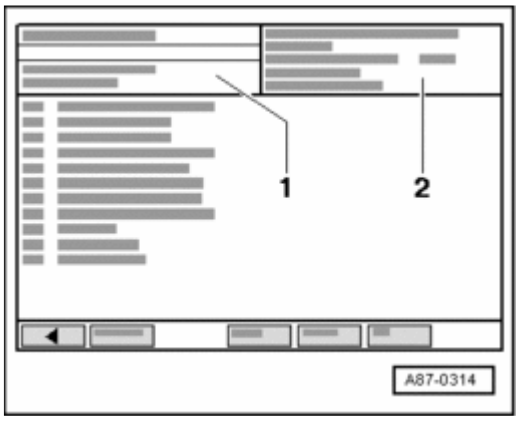

Fig. 21: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Select function "05 - Erase DTC memory".

Fig. 22: Diagnostic System VAS 5051: Display

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- If a DTC has been stored, a box appears in display zone - **2** - with the message that touching "O.K." key will cause (DTC memory) data to be erased and requesting confirmation that function is to be executed.

NOTE:

- **If zone - 1 - displays message "DTC memory not yet checked"**
- **Check DTC memory.**
- **Rectify any malfunctions.**
- **DTC memory is not erased if, for example, ignition is switched off between checking and erasing DTC memory.**
- **On display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , touch "O.K." box in zone - 2 -.**

As soon as DTC memory has been erased, zone - **1** - displays message "DTC memory erased".

- On display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , touch box with <-- key.
- Terminate On Board Diagnostics (OBD) with control and display unit, Climatronic Control Module J255.

Function - "End Output" , initiating

NOTE:

- **DTC memory of control and display unit, Climatronic Control Module J255 checked and erased, Basic Setting performed and coding of control and display unit, Climatronic Control Module J255 checked --> Climatronic Control Module J255 , coding**
- **Adaptation of control and display unit, Climatronic Control Module J255 checked --> Climatronic Control Module J255 , adaptation**

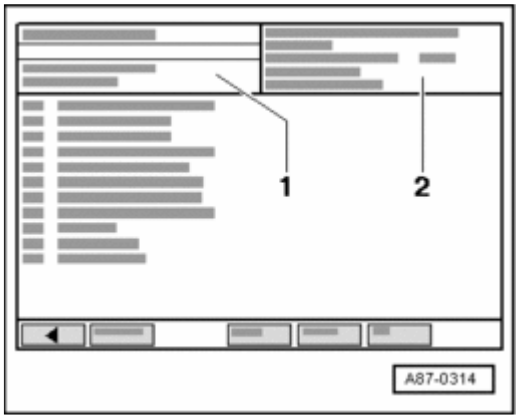

Fig. 23: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Select function "06 - End Output".

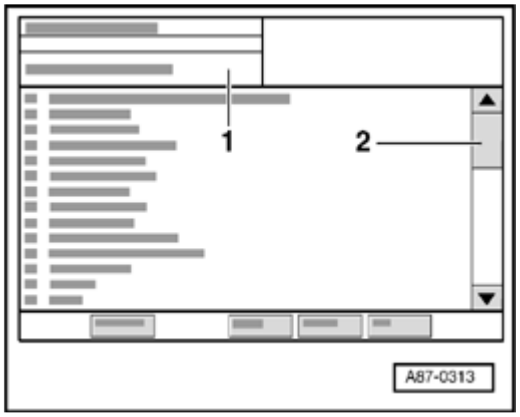

Fig. 24: Identifying Vehicle System Selection Prompt & "Scrolling" Bar
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wait until this display (start menu) appears on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Switch off ignition and unplug diagnostic connector.

CLIMATRONIC CONTROL MODULE J255 , CODING

Climatronic Control Module J255 , coding

NOTE:

- **This information only gives an outline of "Coding" function for control and display unit, Climatronic Control Module J255. Basic Setting and coding are to be performed using "Guided Fault Finding function" "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Control and display unit, Climatronic Control Module J255 can only be encoded if Data Bus On Board Diagnostic Interface J533 has been correctly encoded and adapted (this is particularly important if Data Bus On Board Diagnostic Interface J533 and control and display unit, Climatronic Control Module J255 are replaced at the same time) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **The code for the control and display unit, Climatronic Control Module J255 is made up of 3 parts, the sum of which forms the overall code. As it is easy to make mistakes when entering code directly, it is advisable to always perform coding by way of "Guided Fault Finding function" "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **The coding table below shows the code applicable at the start of**

production.

Coding table

Coding table for control and display unit, Climatronic Control Module J255

- The overall code is the sum of the individual codes (code number for code "1" plus code number for code "2" plus code number for code "3")

Code "3"	Code "2"	Code "1"
XXXXXXXX	XXXXX	XXX
		• Code for number of cylinders, type of engine and country version --> **Code "1" table (number of cylinders, type of engine and country version)** (Code "1" table) • Example for vehicle with 6-cyl. gasoline engine for rest of world (e.g. Germany) "6"
	• Code for body version (body type and steering arrangement) and certain optional extras --> **Code "2" table (body version and certain optional extras)** (Code "2" table) • Example for Audi A6 Sedan with left-hand drive and optional extras "Sun roof with solar cells" and "Auxiliary heater" "6144" (not for USA)	
• Code for type of fuel injection and optional extras which are currently not yet available/not all of which are available (introduction not yet finalized) --> **Planned code "3" table (type of fuel injection and certain optional extras)** (Code "3" table)		

NOTE:

- **Example of overall code for Sedan with left-hand drive, 6-cyl. gasoline engine with Motronic injection and ignition system (MPI = Multi Point Injection) and no further optional extras for rest of world (e.g. Germany):**
- **Overall code "6" (sum of code "1" = "6" plus code "2" = "0" plus code "3" = "0")**

Code "1" table (number of cylinders, type of engine and country version)

NOTE:

- **If the following table contains a "0" for an engine or optional extra, this code number is not to be added to the total.**
- **If the following table contains a "1" for an engine or optional extra, this code number is to be added to the total.**

Code "1"	Code for number of cylinders, type of engine and country version
Code number (for conversion if use is not being made of "Guided Fault Finding" function for coding)	

128	64	32	16	8	4	2	1	
							0	Blank space (no assignment, code number "0")
				Number of cylinders				
				0	1	0		4-cyl. engine (code number "4")
				0	1	1		6-cyl. engine (code number "6")
				1	0	0		8-cyl. engine (code number "8")
				1	0	1		10-cyl. engine (code number "10"
			Type of engine (type of fuel)					
			0					Gasoline engine (code number "0")
Country version								
0	0	0						Rest of world (code number "0") • Code for all countries except USA, Japan and China ○ At present, vehicles for "hot countries " (assignment via factory code) and China are encoded as for rest of world.
0	0	1						USA (code number "32") • Difference from code for rest of world ○ Temperature is displayed in ° F rather than ° C ○ In summer mode, air conditioner is regulated to a somewhat colder characteristic curve
0	1	0						Japan (code number "64") and (China) • Difference from code for rest of world ○ Temperature is displayed in ° F rather than ° C ○ "Recirculated-air mode" function is stored when ignition is switched off and re-activated when ignition is switched on if this mode had been active on switch-off
0	1	1						China (code number "96") • Not used at present (introduction not yet finalized) ○ At present, vehicles for China are encoded as for Japan
1	0	0						Hot country (code number "124") • Not used at present (introduction not yet finalized) ○ At present, vehicles for "hot countries " (assignment via factory code) are encoded as for rest of world ○ In future, the following countries/regions will additionally be encoded as "hot countries" : Greece, Italy,

								Portugal, Spain, all Asian, American (except USA) and African nations o With this code, air conditioner regulation and radiator fan actuation are controlled by way of a different characteristic curve (geared to higher ambient temperatures)

NOTE:

- **Example of code "1" for vehicle with 6-cyl. gasoline engine for Germany**
- **Code "1" = "6" (0 x 1 plus 1 x 2 plus 1 x 4 plus 0 x 8 etc.)**

Code "2" table (body version and certain optional extras)

NOTE:

- **If the following table contains a "0" for a body version or optional extra, this code number is not to be added to the total.**
- **If the following table contains a "1" for a body version or optional extra, this code number is to be added to the total.**

Code "2"								Code for body version, body type and certain optional extras
Code number (for conversion if use is not being made of "Guided Fault Finding" function for coding)								
32768	16384	8192	4096	2048	1024	512	256	
						Body version		
						0	0	Sedan (code number "0")
						0	1	Avant (code number "256")
					Steering arrangement o At present, this code is specified by way of part number and cannot/is not to be altered (different versions of control and display unit, Climatronic Control Module J255 for left-hand and right-hand drive vehicles) Parts List			
					0			Left-hand drive vehicle (code number "0")
					1			Right-hand drive vehicle (code number "1024")
Optional extras								
				0				No factory-installed auxiliary heater (code number "0") (not for USA)
								With factory-installed auxiliary heater (code number "2048") (not for USA) o With code "1" (auxiliary heater installed), system attempts to exchange information with Auxiliary Heater Control Module J364

				1				on convenience CAN-Bus (not for USA). DTC is stored in DTC memory if Auxiliary Heater Control Module J364 fails to respond (not for USA). • At present, only a factory-installed auxiliary heater may be encoded (not for USA) • At present, service installed auxiliary heaters are not to be connected to CAN-Bus system and are therefore not to be encoded and relevant auxiliary heater installation instructions (not for USA).
			0					No sun roof with solar cells installed (code number "0")
			1					Sun roof with solar cells installed (code number "4096") ○ With code "1" (sun roof with solar cells installed), various control motors are actuated after switching off ignition to move flaps actuated by these control motors to position specified for solar mode.
		0						No electric rear window sun blind installed (code number "0")
		1						Electric rear window sun blind installed (code number "8192") ○ Electric rear window sun blind and thus Rear Window Shade Switch (rear) E385 installed
	0							No Air Ionization Module J707 installed (code number "0") ○ At present, this code is to be entered for all vehicles regardless of version ○ Code "1" is not permitted; introduction of Air Ionization Module J707 as optional extra has not yet been finalized. ○ With code "1" (air ionization system installed), system attempts to exchange information on air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with Air Ionization Module J707. DTC is stored in DTC memory if Air Ionization Module J707 fails to respond.
								No Heated Windshield Z2 installed (code number

0								"0") ○ At present, this code is to be entered for all vehicles regardless of version ○ Code "1" is not permitted; introduction of Heated Windshield Z2 as optional extra has not yet been finalized. ○ With code "1" (Heated Windshield Z2 installed), system attempts to exchange information on air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with Heated Windshield Control Module J505. DTC is stored in DTC memory if Heated Windshield Control Module J505 fails to respond.

NOTE:

- **Example of code "2" for Sedan with left-hand drive and no further optional extras**
- **Code "2" = "0" (0 x 256 plus 0 x 512 plus etc.)**
- **Example of code "2" for Sedan with left-hand drive and "sun roof with solar cells" as optional extra**
- **Code "2" = "4096" (0 x 256 plus 0 x 512 plus 0 x 1024 plus 0 x 2048 plus 1 x 4096 plus 0 x 8192 etc.)**

Planned code "3" table (type of fuel injection and certain optional extras)

NOTE:

- **Until the introduction (still to be finalized) of the optional extras listed in the following table, a "0" is to be entered in place of each optional extra.**
- **If the following table contains a "0" for an engine version or optional extra, this code number is not to be added to the total.**
- **If the following table contains a "1" for an engine version (e.g. direct injection gasoline engine installed), this code number is to be added to the total.**

Code "3"								Code for type of fuel injection and certain optional extras
Code number (for conversion if use is not being made of "Guided Fault Finding" function for coding)								
8388608	4194304	2097152	1048576	524288	262144	131072	65536	
					Optional extras (introduction not yet finalized)			

							0	No fingerprint driver identification system installed (fingerprint "one-touch memory" , code number "0") ○ At present, this code is to be entered for all vehicles regardless of version ○ Code "1" is not permitted; introduction of "one-touch memory" as optional extra has not yet been finalized.
					0	0		No Rear A/C Control Head (Climatronic) E265 installed (code number "0") ○ At present, this code is to be entered for all vehicles regardless of version ○ Code "XX" is not permitted; code will not be stipulated until introduction (not yet finalized) of Rear A/C Control Head (Climatronic) E265 as optional extra.
				Type of engine (type of fuel) and type of fuel injection				
				0				• Gasoline engine with Motronic injection and ignition system (MPI = Multi Point Injection) installed (code number "0")
				1				• Gasoline engine with gasoline direct injection (FSI = Fuel Stratified Injection) installed (code number "524288") ○ With code "1" , mixture formation is altered with cold engine, for example, resulting in more rapid heating of coolant and thus enhanced heat output. For further information, refer to "Guided Fault Finding" function of Diagnostic

								operation system/Vehicle diagnosis service system VAS 5051 A/5052 ○ With code "1" , use is made of a different transmission ratio (between engine and compressor) for example for calculation of compressor torque
	Optional extras (introduction not yet finalized)							
			0					Vehicle with no special type and design of seats (code number "0") ○ At present, this code is to be entered for all seats regardless of type ○ Code "1" is not permitted; code will not be stipulated until introduction (not yet finalized) of optional extra.
	0	0						Vehicle with no special type and design of rear window (vehicle glazing, code number "0") ○ At present, this code is to be entered for all rear windows (vehicle glazing) regardless of type ○ Code "XX" is not permitted; code will not be stipulated until introduction (not yet finalized) of optional extra.
Type of On Board Diagnostics (OBD) code word log								
0								○ At present only one code word log is available and "0" is therefore always to be entered here (code number "0")

NOTE:

- **Example of code "3" for vehicle with gasoline engine with Motronic injection and ignition system (MPI = Multi Point Injection)**
- **Code "3" = "0" (0 x 65536 plus 0 x 131072 etc.)**
- **Example of code "3" for vehicle with direct gasoline injection engine (FSI = Fuel Stratified Injection)**

- **Code "3" = "524288" (0 x 65536 plus 0 x 131072 plus 0 x 262144 plus 1 x 524288 plus 0 x 1048576 etc.)**
- **The optional extras listed in this coding table will not be available at the start of production (introduction not yet finalized)**

READ MEASURING VALUE BLOCK

Read Measuring Value Block

NOTE:

- **This information lists the various measured value blocks for information purposes only. When implementing the "Read Measuring Value Block" function as part of "Guided Fault Finding" , an explanation is given of the appropriate measured values in addition to notes on the function of the various components "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **For component locations of components actuated, refer to --> A/C system control and regulation components in engine compartment and rear body (components for air conditioner control and regulation not in passenger compartment) and --> A/C system control and regulation components in passenger compartment (components for air conditioner control and regulation in passenger compartment).**
- **Depending on the position of the control motor, the various flaps are closed or opened over the control motor adjustment range by way of the installed connecting elements (cam plates, gear mechanisms and levers) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If a value of greater than "250" (open circuit or fault in Ground (GND) connection) or less than "5" (open circuit, fault in 5V supply voltage or short to Ground (GND)) is displayed for one (or several) potentiometer(s) in one (or more) control motor(s), this is an indication of a fault in the wiring to the control motor or in the potentiometer of the or a control motor (same positive supply or Ground (GND) connection).**
- **If the value displayed for a control motor is outside the permitted range, check assignment of levers and specified installation of lever in control motor (can also be forced into position in control motor shaft when turned through 180 °), as well as connection of gear elem ents and cam plates linking control motor shaft to flap(s).**
- **If a permissible value cannot be determined for a potentiometer in a control motor during "Basic Setting" function, a substitute value is indicated in the display group for this control motor and a DTC stored in the DTC memory. This substitute value (approx. mid position in permissible tolerance range) is used by control and display unit, Climatronic Control Module J255 to control flap position in emergency operation.**

- **Depending on version of control and display unit, Climatronic Control Module J255 , measured value block reading may be "On" or "1" and "Off" or "0".**

Climatronic Control Module J255 , Read Measuring Value Block

- With ignition off, connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A to 16-pin Data Link Connector (DLC) in vehicle --> **Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions**.
- Switch on ignition or start engine.
- Switch on air conditioner (set e.g. "Auto" mode on control and display unit, Climatronic Control Module J255 for drivers and front passengers side Owners manual.
- Use address word "08" to select air conditioner/heater electronics --> **Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , connecting and selecting functions**.

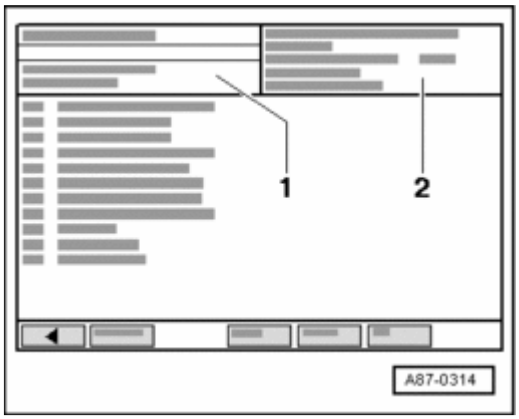

Fig. 25: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Check DTC memory --> **Check DTC memory**.
- Select function "08 - Read Measuring Value Block".

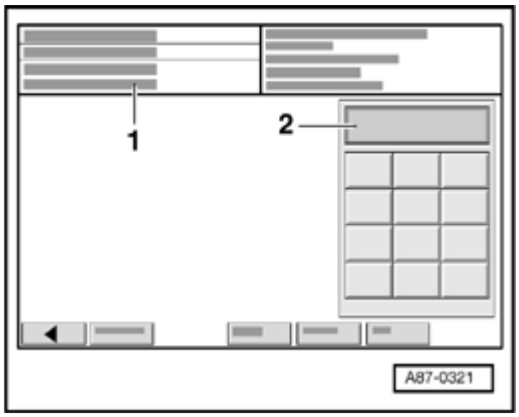

Fig. 26: Identifying Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Prompt for entering display group appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.

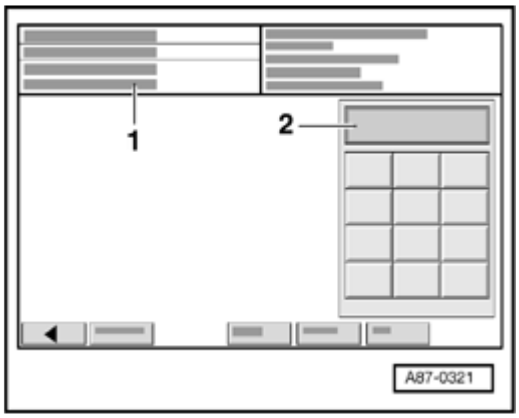

Fig. 27: Identifying Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use input keypad in display zone - **2** - to enter desired display group number (e.g. "001" or "01" for "display group 001") and confirm by touching Q-key.

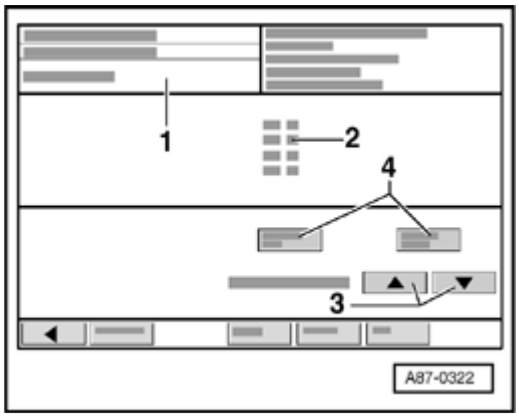

Fig. 28: Identifying Display Group Selected Appears In Zone & Values For Four Display Zones Appear In Zone
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

- Display group selected appears in zone - **1** -.
- The values for the four display zones appear in zone - **2** - :
  - Value for display zone "1" appears on first line.
  - Values for respective display zones appear on second, third and fourth lines.
  - Line remains blank if a display zone is not used.
- Touching the keys - **3** - permits switching to a different display group.
- Touching the keys - **4** - permits switching to a different function (e.g. from "Read Measuring Value Block" to "Basic Setting" and back again).
  - Enter desired display group number.

List of available display group numbers --> **List of available display group numbers**

List of available display group numbers

Display group	Information content
001	• Actuation of A/C Compressor Regulator Valve N280 • Signal from A/C Pressure/temperature Sensor G395
002	Compressor shutoff conditions
003 to 0 12	Feedback values of potentiometers in the various control motors
013 and 014	Display groups not used at present
015	Feedback value of potentiometer in Indirect Ventilation Flap Motor V213
	• Position of potentiometers in center instrument panel vent flaps

016	• Power supply for potentiometers (in control motors), temperature sensors and senders • Voltage at terminal "15"
017 to 019	• Measured values of the various temperature sensors • Speed of Interior Temperature Sensor Fan V42 • Request for idling-speed increase
020	• Engine speed • Vehicle speed • Calculated compressor torque
021	• Actuation of seat ventilation (introduction not yet finalized) • Lighting status display (terminals "58d" and "58s")
022	• Coolant Fan V7 actuation status • Signal from Air Quality Sensor G238 • Recirculated-air mode status

Display group	Information content
023	• Status display for heated rear window • Switching status of Rear Window Shade Switch (rear) E385
024	Signal from Sunlight Photo Sensor G107
025	• Power supply for control and display unit, Climatronic Control Module J255 ○ Terminals "15" , "75" and "30" • Signal from service installed auxiliary heater (not for USA)
026	• Vehicle standing time • Wiper switching status • Actuation of heated seats
027 and 028	Seat heating status displays
029 to 031	Auxiliary and supplementary heater status displays (not for USA)
032	• Ignition key assignment • Fingerprint driver identification (fingerprint, "one-touch memory")
033 and 035	Energy Management Control Module J644 status displays ○ Electrical equipment shutoff due to electrical system overload

036 and 037	Convenience CAN-Bus system status displays
038 and 039	• Signal from humidity sender (installed in control and display unit, Climatronic Control Module J255) o Display need only be followed on vehicles with control and display unit, Climatronic Control Module J255. • Signal for reversing light actuation
040	Actuation of pump valve unit components • Coolant Pump V50 • Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176
041	Display group not used at present (display = "Not used" or "Display group not available")
042 to 044	• Measured values of Fresh Air Blower Control Module J126 • Actuation of Fresh Air Blower V2

Measured value block	Information content
045 and 046	• Measured values of Heated Windshield Control Module J505 • Actuation of Heated Windshield Z2
047	Software and hardware number for • Fresh Air Blower Control Module J126 • Heated Windshield Control Module J505
048 and 049	Display groups not used at present (display = "Not used" or "Display group not available")
050	Coding of control and display unit, Climatronic Control Module J255
051 and 052	Status displays for Air Ionization Module J707 (introduction not yet finalized)
053 and 054	• Status display for speed of Coolant Pump V50 • Status display for signal from A/C Pressure/temperature Sensor G395
055 to 068	Display groups not used at present (display = "Not used" or "Display group not available")
069 and 070	Display groups not used at present (display = "Not used" or "Display group not available") • Intended for On Board Diagnostics (OBD) of control and display unit, Climatronic Control Module J255 without diagnosis tester • Intended for design data of control and display unit, Climatronic Control Module J255
078	Temperature regulation indices
079	Display group not used at present (display = "Not used" or "Display group not available")

080 to 082	Display groups for control and display unit, Climatronic Control Module J255 currently not intended for service use • Control and display unit manufacturer codes • Hardware number, software number, chassis number etc.

Display group "001"

Display group number	Display zone	Designation
001	1	Control current for actuating A/C Compressor Regulator Valve N280 in amps ○ Current flowing via A/C Compressor Regulator Valve N280 • Display = "less than 0.050 A" ○ Compressor switched off • Display = "0.300 A to 0.650 (1.0) A" ○ Compressor in control mode; control current is governed by cooling output required
	2	Actuation of A/C Compressor Regulator Valve N280 in % ○ Ratio of actuation signal • Display = "0%" ○ Compressor switched off • Display = "30 to 40% to 100%" ○ Compressor in control mode

Display group number	Display zone	Designation
		Display zone not used • Display = "Not used" (or display zone blank) ○ Signal from A/C Pressure/temperature Sensor G395 is indicated in display group "054". ○ A/C Pressure/temperature Sensor G395 exchanges information by way of air

001	3	conditioner data bus system "Local Interconnect Network (LIN-Bus)" with control and display unit, Climatronic Control Module J255. Audi A6 is therefore not to be installed with High Pressure Sensor G65 (only emits square-wave signals) Parts List o Pressure signal from A/C Pressure/temperature Sensor G395 is evaluated by control and display unit, Climatronic Control Module J255 and the calculated pressure displayed in zone "4".

Display group number	Display zone	Designation
001	4	Pressure in refrigerant circuit in bar o Calculated by way of signal from A/C Pressure/temperature Sensor G395 by control and display unit, Climatronic Control Module J255 • Display = "less than 2.6 bar or greater than 29 bar" (even briefly) o Pressure in refrigerant circuit too low (system empty) or too high o A/C Pressure/temperature Sensor G395 malfunctioning • Display = "2.6 bar to 29 bar" o Pressure in refrigerant circuit in permissible range

NOTE:

- **In the event of a compressor shutoff condition (Display group 002), A/C Compressor Regulator Valve N280 cannot be actuated even during Output Diagnostic Test Mode (DTM) --> Output Diagnostic Test Mode (DTM).**
- **If no pressure signal is detected from A/C Pressure/temperature Sensor G395 , A/C Compressor Regulator Valve N280 must not be actuated.**
- **Control and display unit, Climatronic Control Module J255 uses signal to calculate pressure in refrigerant circuit.**
- **If refrigerant circuit has been properly charged, pressure settles at 2.6 bar at a temperature of -3 °C. To avoid a DTC being st ored at low temperatures, control and display unit, Climatronic Control Module J255 only recognizes a malfunction in the refrigerant circuit at pressures of less than 1.8 bar (attained at -12 °C). Measured value of A/C Pressure/temperature Sensor G395 is however no longer evaluated at this temperature.**
- **The Audi A6 is installed with a A/C Pressure/temperature Sensor G395 which exchanges information by way of the air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with the control and display unit, Climatronic Control Module J255. The Audi A6 is therefore not to be installed with a High Pressure Sensor G65 (this emits square-**

wave signal). Attention is therefore to be paid to correct part number. The two components cannot always be distinguished from the housing.

- **The permissible specifications can be found in the table stored in the "Guided Fault Finding" function "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Display group "002"

Display group number	Display zone	Designation
002	1	Currently valid compressor shutoff condition • Display = "XX" • Explanatory notes
	2	Last compressor shutoff condition • Display = "XX" • Explanatory notes
	3	Last but one compressor shutoff condition • Display = "XX" • Explanatory notes
	4	Third last compressor shutoff condition • Display = "XX" • Explanatory notes

NOTE:

- **Further notes on compressor shutoff conditions can be found in table stored in "Guided Fault Finding" function "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **In display zones "2" , "3" and "4" only the shutoff conditions marked with an " * " in the following table are entered at present and entry is only made if shutoff condition is present for more than 20 s (shutoff condition "12" longer than 12 s).**
- **Depending on version of control and display unit, Climatronic Control Module J255 (software version), compressor shutoff conditions in display zones "2" to "4" are not always cancelled on erasing DTC memory. Attention should therefore always be paid to corresponding entry in DTC memory.**

Explanatory notes on compressor shutoff condition in display group "002"

Display in zones "1" to "4"	Compressor shutoff condition
0	Compressor on o No compressor shutoff condition detected o Depending on version of control and display unit, Climatronic Control Module J255 , "0" is displayed here with engine stopped although compressor is not actuated
1 " * "	Compressor off o Pressure in refrigerant circuit has been or is too high
2	Compressor off o Basic Setting of control and display unit, Climatronic Control Module J255 not implemented or not performed properly --> **Basic Setting**
3 " * "	Compressor off o Pressure in refrigerant circuit too low
4	Compressor off o Engine not running or in operation for less than 2 s
5	Compressor off o Engine speed less than 300 RPM o Depending on version of control and display unit, Climatronic Control Module J255 , "0" may be displayed instead of "5" with engine stopped
6	Compressor off o Compressor shut off by way of "Econ" function
7	Compressor off o Compressor shut off by way of "OFF" function
8	Compressor off o Ambient temperature measured had been less than + 2 ° C and is still less than + 5 ° C (no request for recirculated-air mode)
9	Compressor off o No display at present
10 " * "	Compressor off o Electrical system voltage less than 9.5 V

Display in	

zones "1" to "4"	Compressor shutoff condition
11 " * "	Compressor off o Coolant temperature too high (currently greater than approx. 118 ° C)
12 " * "	Compressor off o On account of request from Engine Control Module (ECM) (by way of CAN-Bus system)
13	Compressor off o On account of problem with signal from A/C Pressure/temperature Sensor G395 o Depending on version of control and display unit, Climatronic Control Module J255 , this shutoff condition may be displayed when ignition is switched off although there is no malfunction present (if applicable, restart engine and switch on air conditioner)
14 " * "	Compressor off o On account of malfunction in convenience CAN-Bus system
15	Compressor off o Pressure in refrigerant circuit too high at least 30 times during driving cycle
16	Compressor off o Measured temperature downstream of evaporator less than 0 ° C for more than one minute
17	Compressor off o Measured temperature downstream of evaporator less than -5 ° C
18 " * "	Compressor off o No valid ambient temperature measured value available; both ambient temperature sensors (Outside Air Temperature Sensor G17 and Fresh Air Intake Duct Temperature Sensor G89) possibly malfunctioning
19 " * "	Compressor off o Control and display unit, Climatronic Control Module J255 switched on by way of "auxiliary heater" function (not for USA)
20 " * "	Compressor off o Display not used at present o Intended for compressor actuation at reduced power (request for reduction in compressor torque received from relevant Engine Control Module (ECM), compressor regulating valve then only actuated with approx. 300 mA) or for compressor off (energy saving request received from Vehicle Electrical System Control Module J519 or Energy Management Control Module J644)

Display in zones "1" to "4"	Compressor shutoff condition
21	Compressor off ○ Ambient temperature measured had been less than -8 ° C and is still less than -5 ° C (no request for autom. recirculated-air mode) or ambient temperature measured had been less than + 2 ° C and is still less than + 5 ° C and "autom. recirculated-air mode" function is not active
22	Compressor off ○ Passenger compartment temperature measured is less than 8 ° C, ambient temperature measured had been less than -8 ° C and is still less than -5 ° C (no request for recirculated-air mode)
23	Compressor off ○ Malfunction message for actuation of radiator fans transmitted via CAN-Bus system (e.g. by relevant Engine Control Module (ECM)) and received by control and display unit, Climatronic Control Module J255
24	Compressor off ○ Display not used at present
25	Compressor off ○ Display not used at present

Display groups "003" to "012"

Display group number	Display zone	Designation
003	1 to 4	Recirculation Flap Motor V113 • Display zone "1" ○ Actual feedback value of Recirculation Flap Motor Position Sensor G143 (specification: "10 to 250") • Display zone "2" ○ Specified feedback value of Recirculation Flap Motor Position Sensor G143 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Recirculation Flap Motor Position Sensor G143 at lower stop (flap closed, fresh-air mode, specification "10 to 55")

		• Display zone "4" ○ Learned feedback value of Recirculation Flap Motor Position Sensor G143 at upper stop (flap open, recirculated-air mode, specification "200 to 250")

Display group number	Display zone	Designation
004	1 to 4	Air Flow Flap Motor V71 • Display zone "1" ○ Actual feedback value of Back Pressure Flap Motor Position Sensor G113 (specification: "15 to 245") • Display zone "2" ○ Specified feedback value of Back Pressure Flap Motor Position Sensor G113 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Back Pressure Flap Motor Position Sensor G113 at lower stop (air flow flap/fresh-air flap closed, recirculated-air mode, specification: "15 to 65") • Display zone "4" ○ Learned feedback value of Back Pressure Flap Motor Position Sensor G113 at upper stop (air flow/fresh-air flaps open, fresh-air mode, specification: "190 to 245")

Display group number	Display zone	Designation
		Defroster Flap Motor V107 • Display zone "1" ○ Actual feedback value of Defroster Flap Motor Position Sensor G135 (specification: "20 to 245") • Display zone "2" ○ Specified feedback value of Defroster Flap Motor Position Sensor G135

005	1 to 4	(specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Defroster Flap Motor Position Sensor G135 at lower stop (flap to windshield vent closed, specification: "20 to 70") • Display zone "4" ○ Learned feedback value of Defroster Flap Motor Position Sensor G135 at upper stop (flap to windshield vent open, specification: "190 to 245")

Display group number	Display zone	Designation
006	1 to 4	Left Front Upper Body Outlet Motor V237 • On vehicles with control and display unit, Climatronic Control Module J255 , this control motor actuates flap for "left upper body vent". • This control motor is installed on left of Heating and A/C unit. • Display zone "1" ○ Actual feedback value of Left Front Upper Body Outlet Position Sensor G387 (specification: "20 to 245") • Display zone "2" ○ Specified feedback value of Left Front Upper Body Outlet Position Sensor G387 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Left Front Upper Body Outlet Position Sensor G387 at lower stop (flap for "left" or "left and right" upper body vent closed, specification: "20 to 70") • Display zone "4" ○ Learned feedback value of Left Front Upper Body Outlet Position Sensor G387 at upper stop (flap for "left" or "left and right" upper body vent open, specification: "190 to 245")

Display group	Display zone	Designation

number		
007	1 to 4	Right Front Upper Body Outlet Motor V238 • This control motor is only installed on vehicles with control and display unit, Climatronic Control Module J255 and actuates flap for "right upper body vent". • Display zone "1" ○ Actual feedback value of Right Front Upper Body Outlet Position Sensor G388 (specification: "15 to 250") • Display zone "2" ○ Specified feedback value of Right Front Upper Body Outlet Position Sensor G388 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Right Front Upper Body Outlet Position Sensor G388 at lower stop (flap for "right" upper body vent closed, specification: "15 to 70") • Display zone "4" ○ Learned feedback value of Right Front Upper Body Outlet Position Sensor G388 at upper stop (flap for "right" upper body vent open, specification: "195 to 250")

Display group number	Display zone	Designation
008	1 to 4	Left Footwell Flap Motor V108 • On vehicles with control and display unit, Climatronic Control Module J255 , this control motor actuates "left" footwell flap. • This control motor is installed to left of Heating and A/C unit. • Display zone "1" ○ Actual feedback value of Left Footwell Flap Motor Position Sensor G139 (specification: "20 to 245") • Display zone "2" ○ Specified feedback value of Left Footwell Flap Motor Position Sensor

		G139 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Left Footwell Flap Motor Position Sensor G139 at lower stop ("left" or "left and right" footwell flap closed, specification: "20 to 70") • Display zone "4" ○ Learned feedback value of Left Footwell Flap Motor Position Sensor G139 at upper stop ("left" or "left and right" footwell flap open, specification: "190 to 245")

Display group number	Display zone	Designation
009	1 to 4	Right Footwell Flap Motor V109 • This control motor is only installed on vehicles with control and display unit, Climatronic Control Module J255 and actuates "right" footwell flap. • Display zone "1" ○ Actual feedback value of Right Footwell Flap Motor Position Sensor G140 (specification: "20 to 245") • Display zone "2" ○ Specified feedback value of Right Footwell Flap Motor Position Sensor G140 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Right Footwell Flap Motor Position Sensor G140 at lower stop ("right" footwell flap closed, specification: "20 to 70") • Display zone "4" ○ Learned feedback value of Right Footwell Flap Motor Position Sensor G140 at upper stop ("right" footwell flap open, specification: "190 to 245")

Display group number	Display zone	Designation
		Center Vent Adjustment Motor V102

010	1 to 4	• Display zone "1" ○ Actual feedback value of Center Vent Motor Position Sensor G138 (specification: "10 to 250") • Display zone "2" ○ Specified feedback value of Center Vent Motor Position Sensor G138 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Center Vent Motor Position Sensor G138 at lower stop (central vent flap closed, specification: "10 to 60") • Display zone "4" ○ Learned feedback value of Center Vent Motor Position Sensor G138 at upper stop (central vent flap open, specification: "200 to 250")

Display group number	Display zone	Designation
011	1 to 4	Front Cold Air Flap Motor V197 • Display zone "1" ○ Actual feedback value of Front Cold Air Flap Motor Position Sensor G315 (specification: "10 to 250") • Display zone "2" ○ Specified feedback value of Front Cold Air Flap Motor Position Sensor G315 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Front Cold Air Flap Motor Position Sensor G315 at lower stop (cold air flap closed, specification: "10 to 70") • Display zone "4" ○ Learned feedback value of Front Cold Air Flap Motor Position Sensor G315 at upper stop (cold air flap open, specification: "200 to 250")

Display group	Display	Designation

number	zone	
012	1 to 4	Rear Footwell Vent Motor V112 • Display zone "1" ○ Actual feedback value of Rear Footwell Vent Motor Position Sensor G141 (specification: "10 to 250") • Display zone "2" ○ Specified feedback value of Rear Footwell Vent Motor Position Sensor G141 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Rear Footwell Vent Motor Position Sensor G141 at lower stop (rear footwell vent flap closed, specification: "10 to 60") • Display zone "4" ○ Learned feedback value of Rear Footwell Vent Motor Position Sensor G141 at upper stop (rear footwell vent flap open, specification: "200 to 250")

Display group "015"

Display group number	Display zone	Designation
015	1 to 4	Indirect Ventilation Flap Motor V213 • This control motor is only installed on vehicles with control and display unit, Climatronic Control Module J255. • Display zone "1" ○ Actual feedback value of Indirect Ventilation Flap Motor Position Sensor G330 (specification: "10 to 250") • Display zone "2" ○ Specified feedback value of Indirect Ventilation Flap Motor Position Sensor G330 (specification: "6 to 254") • Display zone "3" ○ Learned feedback value of Indirect Ventilation Flap Motor Position

		Sensor G330 at lower stop (indirect ventilation flap closed, specification: "10 to 60") • Display zone "4" ○ Learned feedback value of Indirect Ventilation Flap Motor Position Sensor G330 at upper stop (indirect ventilation flap open, specification: "195 to 250")

Display group "016"

Display group number	Display zone	Designation
016	1	Left Center Air Outlet Sensor G347 • Installed in "center" instrument panel vent • Display is governed by position of potentiometer installed in instrument panel vent (potentiometer is actuated together with flap by way of left knurled wheel installed in instrument panel vent). ○ Control and display unit, Climatronic Control Module J255 recognizes that flap in vent is closed from the fact that value is less than "106" or drops below this level on adjustment. ○ Control and display unit, Climatronic Control Module J255 recognizes that flap in vent is open from the fact that value is greater than "122" or exceeds this level on adjustment. ○ Flap in vent for left side closed, specification: 10 to 85 ○ Flap for left side open, specification: 180 to 250 ○ Note different version of vent for right-hand and left-hand drive vehicles Parts List. ○ If values are not attained, check adjustment mechanism used by knurled wheel for actuating potentiometer (position of gear wheels, one gear wheel possibly missed).
		Right Center Air Outlet Sensor G348 • Installed in "center" instrument panel vent • Display is governed by position of potentiometer installed in instrument panel vent (potentiometer is actuated together with flap by way of right knurled wheel installed in instrument panel vent). ○ Control and display unit, Climatronic Control Module J255 recognizes that flap in vent is closed from the fact that value is less than "106" or drops below

	2	this level on adjustment. o Control and display unit, Climatronic Control Module J255 recognizes that flap in vent is open from the fact that value is greater than "122" or exceeds this level on adjustment. o Flap in vent for right side closed, specification: 10 to 85 o Flap for right side open, specification: 180 to 250 o Note different version of vent for right-hand and left-hand drive vehicles Parts List. o If values are not attained, check adjustment mechanism used by knurled wheel for actuating potentiometer (position of gear wheels, one gear wheel possibly missed).
	3	Voltage at 5 V output of control and display unit, Climatronic Control Module J255 in V (volts) • The potentiometers in the various control motors, as well as the temperature senders and sensors of the air conditioner are supplied with power by way of the outputs (connector "D" , contact "5" and connector "B" , contact "2") --> Electrical Wiring Diagrams, Troubleshooting and Component Locations • Specification : "5.0 V" (tolerance range "4.6 to 5.4 V") • The outputs (connector "D" , contact "5" and connector "B" , contact "2") are designed for a maximum current of 70 mA. If a higher current flows across one of the outputs (e.g. short circuit in potentiometer), the voltage drops below "4.6 V" and a malfunction is indicated in the DTC memory for all components connected to this output.
	4	Voltage measured by control and display unit, Climatronic Control Module J255 at terminal "15" in volts • Voltage is measured at connector "D" between contacts "11" and "1" o In the case of service installation of an auxiliary heater in this vehicle, control and display unit, Climatronic Control Module J255 is actuated by auxiliary heater via this input. This involves altering adaptation of control and display unit, Climatronic Control Module J255 (adaptation channel "17" --> **Climatronic Control Module J255 , adaptation**). (not for USA) • Display = "approx. battery voltage" (with ignition on) o Less than 2 V on vehicles with service installed auxiliary heater switched off (or greater than 8 V with auxiliary heater on and coolant temperature above approx. 40 ° C) (not for USA)

Display groups "017" to "019"

Display group number	Display zone	Designation
017	1	Measured value of Left Vent Temperature Sensor G150 in ° C
	2	Measured value of Right Vent Temperature Sensor G151 in ° C
	3	Measured value of Center Outlet Temperature Sensor G191 in ° C ○ Assigned only for Climatronic Control Module J255 units with part no. 4F1 820 043 up to and including index "L" , see notes below
		Display zone not used at present (display = "Not used" or display zone blank), see notes below ○ Assigned only for Climatronic Control Module J255 units with part no. 4F1 820 043 as of index "M"
	4	Display zone not used at present (display = "Not used" or display zone blank)
018	1	Measured value of Evaporator Vent Temperature Sensor G263 in ° C ○ Specification is governed by ambient conditions, e.g. greater than 1 ° C (at ambient temperature above 0 ° C) and during testing of cooling output within specified limits --> **Checking**.
	2	Measured value of Fresh Air Intake Duct Temperature Sensor G89 in ° C
	3	Measured value transmitted by instrument panel insert (non-filtered value) of Outside Air Temperature Sensor G17 in ° C ○ Calculated by Instrument Cluster Control Module J285 and transmitted via convenience CAN-Bus system
	4	Display zone not used at present (display = "Not used" or display zone blank)

NOTE:

- **The Center Outlet Temperature Sensor G191 has been gradually discontinued, on vehicles without this sensor, only the Climatronic Control Module J255 with part no. 4F1 820 043 as of index "M" is or may be installed Parts Catalog.**
- **In vehicles without Center Outlet Temperature Sensor G191 , if a Climatronic Control Module J255 with part no. 4F1 820 043 up to and including index "L" is installed, the missing sensor is displayed as a malfunction.**
- **Climatronic Control Module J255 units with part no. 4F1 820 043 as of index "M" have already been installed with gradual introduction as of 05.2005 also in vehicles with Center Outlet Temperature Sensor G191 (sensor measured value is no longer required by this A/C control and display unit for regulation and therefore is not evaluated). Depending on Climatronic Control Module J255 software function, a display may possibly appear in display field "3" of display group "017" when this A/C control and display unit is installed in a vehicle with a Center Outlet**

Temperature Sensor G191.

Display group number	Display zone	Designation
019	1	Measured value of Instrument Panel Interior Temperature Sensor G56 in ° C ○ Installed in control and display unit, Climatronic Control Module J255
	2	Speed of Interior Temperature Sensor Fan V42 in RPM • Interior Temperature Sensor Fan V42 is only installed with control and display unit, Climatronic Control Module J255 ○ Installed in control and display unit, Climatronic Control Module J255 • Display = "2500 to 3000" RPM ○ Min. and max. permissible speed 2000 to 4000 RPM ○ When control and display unit, Climatronic Control Module J255 is switched off, Interior Temperature Sensor Fan V42 is not always actuated (display = "0" RPM)
	3	Coolant temperature in ° C transmitted by Instrument Cluster Control Module J285 via convenience CAN-Bus system
	4	Request for idling-speed increase ○ From control and display unit, Climatronic Control Module J255 via CAN-Bus system to relevant Engine Control Module (ECM) • Display = "Off" or "0" ○ Idling-speed increase "Off" is output if no additional heating or cooling output is required to attain temperatures set in control and display unit, Climatronic Control Module J255. • Display = "On" or "1" ○ Idling-speed increase "On" is output if additional heating or cooling output is required to attain temperatures set in control and display unit, Climatronic Control Module J255 (e.g. in "maximum cooling output" setting).

Display group "020"

Display group number	Display zone	Designation
		Engine speed in RPM received by relevant Engine Control Module (ECM)

020	1	○ From Instrument Cluster Control Module J285 via convenience CAN-Bus system
	2	Vehicle speed in km/h ○ From Instrument Cluster Control Module J285 via convenience CAN-Bus system
	3	Status of information displayed in zone 4 ○ Validity of information on torque required for compressor operation • Display = "0" ○ Compressor torque transmitted up to date • Display = "1" ○ Compressor torque transmitted no longer valid
	4	Compressor torque ○ Engine torque in Nm required for compressor operation calculated by control and display unit, Climatronic Control Module J255 • Display = "0 to 1.0 Nm" ○ Compressor off (A/C Compressor Regulator Valve N280 is not actuated) • Display = "1 to XX Nm" ○ Compressor on (A/C Compressor Regulator Valve N280 is actuated)

NOTE:

- **Control and display unit, Climatronic Control Module J255 uses various measured values for calculating compressor torque (e.g. ambient temperature, pressure in refrigerant circuit, engine speed). Depending on these variables, value calculated may be 1 to 63 Nm with compressor switched on. A value of less than 1.0 Nm is displayed if compressor is switched off.**

Display group "021"

Display group number	Display zone	Designation
		Actuation status of Drivers Seat Ventilation Control Module J672 • Display zone only applicable to vehicles with "seat ventilation" as

021	1	optional extra (introduction not yet finalized) • Display (for vehicles with no Drivers Seat Ventilation Control Module J672) = "Not used". • Actuation is by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)". • Explanatory notes on the various status displays
	2	Actuation status of Front Passengers Seat Ventilation Control Module J673 • Display zone only applicable to vehicles with "seat ventilation" as optional extra (introduction not yet finalized) • Display (for vehicles with no Front Passengers Seat Ventilation Control Module J673) = "Not used". • Actuation is by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)". • Explanatory notes on the various status displays
	3	Voltage at terminal "58d" received from convenience CAN-Bus system • Display = "0 to 100%" (depending on setting of instrument illumination control) o Controlled variable for brightness of indicator lamps in buttons and display illumination. o Adjustment range may be restricted depending on ambient brightness (e.g. 6 to 50%)
	4	Voltage at terminal "58s" received from convenience CAN-Bus system • Display = "0%" o Side lights off • Display = "1 to 100%" o Side lights on; value displayed is governed by setting of instrument illumination control o Controlled variable for brightness of background illumination in buttons and background illumination of displays. o Adjustment range may be restricted depending on ambient brightness (e.g. 6 to 20%)

Explanatory notes on display in zones "1" and "2" of display group "021"

Display in zones "1" and "2" of display group "021"								Actuation status displays for Drivers Seat Ventilation Control Module J672 and Front Passengers Seat Ventilation Control Module J673
				Seat ventilation shutoff conditions • Display "0" indicates that this shutoff condition is not active; seat ventilation could be switched on • Display "1" indicates that this shutoff condition is active				
							X	Seat temperature (shutoff due to insufficient temperature) • Display "1" indicates that seat temperature is too low
						X		Seat occupied sensor • Display "1" indicates that this seat is not occupied (seat occupied switch open)
					X			Seat heating • Display "1" indicates that seat cushion heating is on
				X				Side bolster heating • Display "1" indicates that side bolster heating is on
	Actuation status							
	0	0	0					No request for seat heating set in control and display unit, Climatronic Control Module J255
	0	0	1					No seat ventilation • Control and display unit, Climatronic Control Module J255 set for "seat heating" function
	0	1	0					Seat ventilation with approx. 50 % of max. "on" time
	1	1	0					Seat ventilation with 90 to 100 % of max. "on" time
	1	0	0					Seat ventilation off, control interval
Shutoff on account of inadequate electrical system voltage								
X								Request for shutoff of seat ventilation from Energy Management Control Module J644 • Display "0" indicates that this shutoff condition is not active; seat ventilation could be switched on • Display "1" indicates that this shutoff condition is active

Display group "022"

Display group number	Display zone	Designation
		Request for actuation of Coolant Fan V7

022	1	○ Request calculated by control and display unit, Climatronic Control Module J255 and transmitted on convenience CAN-Bus system ○ Request is calculated for example by way of pressure in refrigerant circuit (checking of pressure signal from A/C Pressure/temperature Sensor G395). • Display = "0 to 4%" ○ No request from control and display unit, Climatronic Control Module J255 for actuation of Coolant Fan V7 to relevant Engine Control Module (ECM) • Display = "5 to 100%" ○ Request from control and display unit, Climatronic Control Module J255 for actuation of Coolant Fan V7 to relevant Engine Control Module (ECM) (prerequisites: engine running and air conditioner on) ○ Depending on version of control and display unit Climatronic Control Module J255 , the request occurs at a specific temperature in the refrigerant circuit or independently of the pressure as soon as the compressor is switched on.

Display group number	Display zone	Designation
022	2	Feedback for actuation of Coolant Fan V7 ○ Request from relevant Engine Control Module (ECM) to Coolant Fan Control (FC)Control Module J293 or directly to Coolant Fan V7 ○ Information is received via CAN-Bus system. • Display = "0 to 4%" ○ No actuation of Coolant Fan V7 by relevant Engine Control Module (ECM) • Display = "5 to 100%" ○ Actuation of Coolant Fan V7 by relevant Engine Control Module (ECM) (prerequisites: engine running and air conditioner on) ○ Depending on relevant Engine Control Module (ECM), Coolant Fan V7 is/are currently actuated at max. 68% to 100%, even if 100% is requested by air conditioner ○ Depending on relevant Engine Control Module (ECM), display in zone "2" may be higher or lower than that in display zone "1"

	3	Signal from Air Quality Sensor G238 ○ Data are exchanged via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with control and display unit, Climatronic Control Module J255. ○ Air Quality Sensor G238 is only installed on vehicles with control and display unit, Climatronic Control Module J255. • Display = "X" (explanatory notes)
	4	Request for fresh-air/recirculated-air mode from control and display unit, Climatronic Control Module J255 • Display = "X" or "XX" (explanatory notes)

Explanatory notes on display in zone "3" of display group "022"

Display in zone "3"	Signal from Air Quality Sensor G238
7	No request for recirculated-air mode from Air Quality Sensor G238
1 or 3	Air Quality Sensor G238 signals slight increase in pollutant level of air ○ Control and display unit, Climatronic Control Module J255 determines whether recirculated-air mode is necessary and possible (observe display in zone "4")
2 or 4	Air Quality Sensor G238 signals major increase in pollutant level of air ○ Control and display unit, Climatronic Control Module J255 determines whether recirculated-air mode is necessary and possible (observe display in zone "4")
0	Control and display unit, Climatronic Control Module J255 does not receive signal from Air Quality Sensor G238

Explanatory notes on display in zone "4" of display group "022"

Display in zone "4"	Request for recirculated-air/fresh-air mode
0 or 00	Recirculated-air mode not requested (fresh-air mode)
10	Recirculated-air mode requested by Air Quality Sensor G238 ○ Request is fulfilled by control and display unit, Climatronic Control Module J255 (recirculated-air mode)
	Recirculated-air mode requested by Air Quality Sensor G238 ; request is not fulfilled by control and display unit, Climatronic Control Module J255 for the following reasons
11	○ "Autom. recirculated-air mode" function deactivated (fresh-air mode)
12	○ Compressor not in operation (fresh-air mode)
	○ "Defrost" mode selected in control and display unit, Climatronic Control Module J255

13	(fresh-air mode)
	Request for recirculated-air mode on account of a specific setting on control and display unit, Climatronic Control Module J255 or another vehicle system
20	○ "Recirculated-air" mode selected in control and display unit, Climatronic Control Module J255
30	○ Wipers currently/previously in "wipe/wash mode" (implemented only in vehicles manufactured at start of production, see note)
40	○ Increased cooling output requested (e.g. with "Lo" temperature setting in control and display unit, Climatronic Control Module J255)
50	○ "Off" mode set in control and display unit, Climatronic Control Module J255
60	Partial recirculated-air mode requested ○ Air conditioner currently switching from fresh-air to recirculated-air mode or vice versa ○ Control and display unit, Climatronic Control Module J255 has calculated, for example, that set temperatures can best be attained by mixing fresh air and air from passenger compartment (air-flow flap set to approx. center position and recirculated-air flap open)

NOTE:

- **The function "recirculated air mode after wipe/wash mode" is active only for control and display units, Climatronic Control Module J255 , from the manufacturer at the beginning of production (up to software version "0060"). For control and display units, Climatronic Control Module J255 , as of software version "0070" , this request is no longer implemented at the manufacturer, however it can be activated upon customer request via the "Adaptation" function in adaptation channel "038".**

Display group "023"

Display group number	Display zone	Designation
023	1	Switching status of push-button switch for Heated Rear Window Z1 (installed in control and display unit, Climatronic Control Module J255) ○ Heated Rear Window Z1 is activated and deactivated by way of button in control and display unit, Climatronic Control Module J255. ○ Heated Rear Window Z1 actuation time is limited as a function of ambient temperature --> **Heated Rear Window Z1 , checking** • Display = "Rear w. Off" or "0" ○ Currently no request in control and display unit, Climatronic Control Module J255 for actuation of Heated Rear Window Z1 ○ If applicable, press push-button switch to switch on heated rear window.

		• Display = "Rear w. On" or "1" ○ Current request in control and display unit, Climatronic Control Module J255 for actuation of Heated Rear Window Z1 ○ If applicable, press push-button switch to switch off heated rear window.

Display group number	Display zone	Designation
023	2	Signal transmitted by control and display unit, Climatronic Control Module J255 on convenience CAN-Bus system for actuation of Heated Rear Window Z1 • Display = "Off" , "Rear w. Off" or "0" ○ No heated rear window actuation transmitted by control and display unit, Climatronic Control Module J255 on convenience CAN-Bus system ○ Indicator lamp in button for Heated Rear Window Z1 in control and display unit, Climatronic Control Module J255 not actuated • Display = "On" , "Rear w. On" or "1" ○ Heated rear window actuation transmitted by control and display unit, Climatronic Control Module J255 on convenience CAN-Bus system ○ Heated Rear Window Z1 and indicator lamp in button for Heated Rear Window Z1 in control and display unit, Climatronic Control Module J255 are actuated if request is fulfilled by Comfort System Central Control Module J393 (--> display zone "3")

Display group number	Display zone	Designation
023	3	Feedback received from convenience CAN-Bus system for actuation of Heated Rear Window Z1 • Display = "Off" , "Rear w. Off" or "0" (shutoff condition exists) ○ Heated rear window off or not switched on despite request from control and display unit, Climatronic Control Module J255 (shutoff condition in Comfort System Central Control Module J393 , e.g. "inadequate electrical system voltage") • Display = "On" , "Rear w. On" or "1" (no shutoff condition) ○ Heated Rear Window Z1 already on/is switched on as soon as request from control and display unit, Climatronic Control Module J255 is received in

		Comfort System Central Control Module J393 (no shutoff condition)
	4	Switching status of Rear Window Shade Switch (rear) E385 • Display for vehicles with no electric rear roller blind = "Not used" ○ Rear Window Shade Switch (rear) E385 is not installed on all vehicles (optional extra). ○ Electric rear roller blind is actuated by Comfort System Central Control Module J393. ○ Request for actuation of electric rear roller blind is transmitted from control and display unit, Climatronic Control Module J255 on convenience CAN-Bus system to Comfort System Central Control Module J393. ○ Display zone only applicable to vehicles with "electric rear roller blind" as optional extra • Display = " Off" or "0" ○ Rear Window Shade Switch (rear) E385 not currently pressed (open) • Display = "On" or "1" ○ Rear Window Shade Switch (rear) E385 currently pressed (closed)

Display group "024"

Display group number	Display zone	Designation
024	1	Measured value of Sunlight Photo Sensor G107 in V for left side • Display = "0.2 to 4.0 V" ○ 3.5 V with maximum sunlight penetration ○ 0.2 V with no sunlight penetration (e.g. in workshop)
	2	Sunlight penetration calculated by control and display unit, Climatronic Control Module J255 in W per m^2 for left side • Display = "0 to 1000 W"
	3	Measured value of Sunlight Photo Sensor G107 in V for right side • Display = "0.2 to 4.0 V" ○ 3.5 V with maximum sunlight penetration ○ 0.2 V with no sunlight penetration (e.g. in workshop)

	4	Sunlight penetration calculated by control and display unit, Climatronic Control Module J255 in W per m^2 for right side • Display = "0 to 1000 W"

NOTE:

- **If a fixed value is always displayed in zones "2" and "4" irrespective of sunlight penetration (e.g. 100 W), check assignment of Sunlight Photo Sensor G107 to control and display unit, Climatronic Control Module J255.**
- **There are various replacement Sunlight Photo Sensor G107 designs. The Audi A6 is only to be installed with the version intended for these control and display units, Climatronic Control Module J255 Parts List.**
- **Sunlight Photo Sensor G107 can be checked for example by shining a flashlight (bulb) at it.**

Display group "025"

Display group number	Display zone	Designation
025	1	Switching status of terminal "15" received from convenience CAN-Bus system • Display = "Off" ○ Ignition off • Display = "On" ○ Ignition on
	2	Switching status of terminal "75" (or terminal "X") received from convenience CAN-Bus system • Display = "Off" ○ Ignition off or engine currently being started • Display = "On" ○ Ignition on
		Switching status measured by control and display unit, Climatronic Control Module J255 for terminal "15" ○ Voltage is measured at connector "D" between contacts "11" and "1" ○ In the case of service installation of an auxiliary heater in this vehicle, control and display unit, Climatronic Control Module J255 is actuated by auxiliary

	3	heater via this input. This involves altering adaptation of control and display unit (adaptation channel "17" --> **Climatronic Control Module J255 , adaptation**) (not for USA). • Display = "Off" ○ Ignition off ○ Ignition on, no cut-in signal from service installed auxiliary heater (not for USA) • Display = "On" ○ Ignition on ○ Ignition off, cut-in signal from service installed auxiliary heater (positive signal) being applied (not for USA)
	4	Voltage measured by control and display unit, Climatronic Control Module J255 at terminal "30" in volts ○ Voltage is measured at connector "D" between contacts "2" and "1" • Display = "11 to 15 V" (approx. battery voltage)

Display group "026"

Display group number	Display zone	Designation
026	1	Period received from convenience CAN-Bus system for time since last engine shutoff with at least 3 min. engine running time and renewed switch-on of ignition ○ Time for calculation of cooling down of coolant after engine operation • Display = "00:00 to 04:00" h ("engine cooling time" period in hours and minutes) ○ Max. display value at present 4 hours ○ This value is used for calculating engine temperature after switching on ignition ○ After a standing time of more than 4 hours, ambient temperature is used as engine temperature (current engine temperature is calculated by control and display unit, Climatronic Control Module J255 by way of a specified cooling curve). ○ In the event of an interruption in the power supply to the Instrument Cluster Control Module J285 before switching on ignition, DTC "Signal for ignition

		off period implausible" may be displayed (switch ignition on, off and back on again and erase DTC memory)
	2	Signals received from convenience CAN-Bus system for operating status of wipers and from Rain/Light Recognition Sensor G397 • Display = "00000" (rain not detected, wipers or wipe/wash mode not activated) • Display = "XXXX1" (wipers in "intermittent mode") • Display = "XXX1X" (wipers set to speed "1" or "flick/wipe mode") • Display = "XX1XX" (wipers set to speed "2") • Display = "X1XXX" (wipers in "wipe/wash mode") • Display = "1XXXX" (control and display unit, Climatronic Control Module J255 has, by way of a signal from Rain/Light Recognition Sensor G397 , detected "Rain"). ○ On vehicles with no Rain/Light Recognition Sensor G397 , control and display unit, Climatronic Control Module J255 determines whether it is raining by way of wiper cut-in signal. ○ Rainfall causes characteristic control curve of control and display unit, Climatronic Control Module J255 for evaporator temperature to be set to a lower value (depending on usage conditions, e.g. to approx. 2 ° C instead of 10 ° C in "Auto" mode) to enhance dehumidification of the air ○ At the start of production, rain (display "1XXXX") is not indicated by control and display unit, Climatronic Control Module J255 by way of signal from Rain/Light Recognition Sensor G397 (sensor not installed on all vehicles, introduction not yet finalized).

Display group number	Display zone	Designation
026	3	Actuation of left front seat heating ○ Seat heating is an optional extra • Display = "n. installed" or "not used" (this control and display unit, Climatronic Control Module J255 is not installed with seat heating switches) • Display = "Off" or "On" ○ Seat heating is switched on if seat temperature measured is lower than temperature specified for this seat heating setting by more than the stipulated value (switching interval between cut-out and cut-in temperature) ○ If generator is not generating sufficient current, seat heating actuation may be

		deactivated by Vehicle Electrical System Control Module J519 (--> display group "034")
	4	Actuation of right front seat heating ○ Seat heating is an optional extra • Display = "n. installed" or "not used" (this control and display unit, Climatronic Control Module J255 is not installed with seat heating switches) • Display = "Off" or "On" ○ Seat heating is switched on if seat temperature measured is lower than temperature specified for this seat heating setting by more than the stipulated value (switching interval between cut-out and cut-in temperature) ○ If generator is not generating sufficient current, seat heating actuation may be deactivated by Vehicle Electrical System Control Module J519 (--> display group "034") ○ In vehicles with seat occupied sensor system, the seat heater is switched off after approx. 10 minutes if Airbag Control Module J234 detects the seat is unoccupied (read measuring value block of Airbag Control Module J234 Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" function).

Display groups "027" and "028"

Display group number	Display zone	Designation
027	1	Setting made in control and display unit, Climatronic Control Module J255 for left front seat heating ○ Seat heating is an optional extra • Display = "n. installed" or "not used" (this control and display unit, Climatronic Control Module J255 is installed with seat heating switches) • Display = "0" to "6" ○ Display is governed by setting made for left front seat heating
	2	Display zone not used at present (display = "Not used" or display zone blank)
	3	Temperature in ° C measured in left front seat by Left Front Seat Temperature Sensor G344 • Display = "n. installed" or "not used" (for vehicles with no heated seats) • Display = " XX ° C " (for vehicles with heated seats)
		Specified temperature in left front seat in ° C calculated by control and display unit, Climatronic Control Module J255 on the basis of setting

	4	• Display = "n. installed" or "not used" (for vehicles with no heated seats) • Display = " XX ° C " (governed by seat heating setting)
		Specified temperatures displayed are governed by version of control and display unit, Climatronic Control Module J255 (exact value depends on software)
		○ Setting "0" (seat heating off) approx. 0 ° C ○ Setting "1" approx. 13 ° C ○ Setting "2" approx. 19 ° C ○ Setting "3" approx. 31 ° C ○ Setting "4" approx. 38 ° C ○ Setting "5" approx. 47 ° C ○ Setting "6" approx. 60 ° C

Display group number	Display zone	Designation
028	1	Setting made in control and display unit, Climatronic Control Module J255 for right front seat heating ○ Seat heating is an optional extra • Display = "n. installed" or "not used" (this control and display unit, Climatronic Control Module J255 is installed with seat heating switches) • Display = "0" to "6" ○ Display is governed by setting made for right front seat heating ○ In vehicles with seat occupied sensor system, the seat heater is switched off after approx. 10 minutes if Airbag Control Module J234 detects the seat is unoccupied (read measuring value block of Airbag Control Module J234 Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" function).
	2	Display zone not used at present (display = "Not used" or display zone blank)
	3	Temperature in ° C measured in right front seat by Right Front Seat Temperature Sensor G345 • Display = "n. installed" or "not used" (for vehicles with no heated seats) • Display = " XX ° C " (for vehicles with heated seats)
		Specified temperature in right front seat in ° C calculated by control and display unit, Climatronic Control Module J255 on the basis of setting

	4	• Display = "n. installed" or "not used" (for vehicles with no heated seats) • Display = " XX ° C " (governed by seat heating setting) ○ Corresponding specified temperatures for the individual seat heating settings can be found in display group "27" in display zone "4" (same values for left and right seat)

Display groups "029" to "031"

Display group number	Display zone	Designation
029	1	Signal received from convenience CAN-Bus system for activation of auxiliary heating/auxiliary ventilation (not for USA) ○ Only applicable to vehicles with auxiliary heater with remote control (not for USA) ○ Information is transmitted from Auxiliary Heater Control Module J364 to control and display unit, Climatronic Control Module J255 (not for USA). • Display = "Off" ○ No signal for activation of auxiliary heating/auxiliary ventilation currently being received by Auxiliary Heater Control Module J364 (not for USA) • Display = "On" ○ Signal for activation of auxiliary heating/auxiliary ventilation currently being received by Auxiliary Heater Control Module J364 (auxiliary heater remote control "on" button pressed) (not for USA) ○ Auxiliary Heater Control Module J364 transmits request (e.g. on receiving remote control "on" signal) for activation of auxiliary heating or auxiliary ventilation (not for USA) ○ Control and display unit, Climatronic Control Module J255 determines mode required ("Immediate heating" or "Immediate ventilation") to attain set temperatures.

Display group number	Display zone	Designation
		Signal received from CAN-Bus system for deactivation of auxiliary heating/auxiliary ventilation (not for USA) ○ Only applicable to vehicles with auxiliary heater with remote control (not

029	2	for USA) ○ Information is transmitted from Auxiliary Heater Control Module J364 to control and display unit, Climatronic Control Module J255 (not for USA). • Display = "Off" ○ No signal for deactivation of auxiliary heating/auxiliary ventilation currently being received by Auxiliary Heater Control Module J364 (not for USA) • Display = "On" ○ Signal for deactivation of auxiliary heating/auxiliary ventilation currently being received by Auxiliary Heater Control Module J364 (auxiliary heater remote control "off" button pressed) (not for USA) ○ Auxiliary Heater Control Module J364 transmits request (e.g. on receiving remote control "off" signal) for deactivation of auxiliary heating or auxiliary ventilation (not for USA) ○ Control and display unit, Climatronic Control Module J255 is deactivated with ignition switched off.

Display group number	Display zone	Designation
030	1	Display zone not used ○ Intended for service installed auxiliary heater cut-in signal to control and display unit, Climatronic Control Module J255 (connector "D" contact "11") (not for USA) ○ "Service installed auxiliary heater" function must be entered by way of "Adaptation" function (in adaptation channel "17") --> **Climatronic Control Module J255 , adaptation**. (not for USA) ○ At the factory, terminal "15" is connected to connector "D" , contact "11". Assignment of this contact must be altered accordingly on service installation of auxiliary heater. (not for USA) • Display = "0" or "Off" ○ No service installation of auxiliary heater (standard wiring) (not for USA) ○ No voltage and thus no signal being applied to input of service installed auxiliary heater (not for USA) ○ Voltage and thus signal being applied to input, but function not adapted in

		specified manner • Display = "1" or "On" ○ Function adapted in specified manner and voltage (positive signal) of service installed auxiliary heater being applied to input (not for USA)
	2	Signals received and transmitted by CAN-Bus system for activation of auxiliary heating/auxiliary ventilation (not for USA) ○ Only applicable to vehicles with factory-installed auxiliary heater (not for USA) ○ Information is exchanged between Multi Media Interface (MMI), Auxiliary Heater Control Module J364 and control and display unit, Climatronic Control Module J255 (not for USA) ○ Choice between "auxiliary heating" or "auxiliary ventilation" is made by control and display unit, Climatronic Control Module J255 (not for USA) ○ Choice between "auxiliary heating" or "auxiliary ventilation" can be deactivated by way of "Adaptation" function (in adaptation channel "06") --> **Climatronic Control Module J255 , adaptation** (not for USA). • Display = "00" ○ No request for auxiliary heating or auxiliary ventilation mode (not for USA) • Display = "10" ○ Auxiliary heating mode requested (not for USA) • Display = "01" ○ Auxiliary ventilation mode requested (not for USA)

Display group number	Display zone	Designation
		Signal received from CAN-Bus system for activation of control action and Fresh Air Blower V2 in auxiliary heating or auxiliary ventilation mode (not for USA) ○ Only applicable to vehicles with factory-installed auxiliary heater (not for USA) ○ Information is exchanged between Auxiliary Heater Control Module J364 and control and display unit, Climatronic Control Module J255 (not for USA) ○ Detection of cut-in signal by control and display unit, Climatronic Control

030	3	Module J255 results in immediate activation of both displays for example ○ Actuation is not always displayed with control and display units, Climatronic Control Module J255 installed at the start of production (note actuation of displays/indicator lamp if applicable). • Display = "Off" ○ No request from Auxiliary Heater Control Module J364 for activation of Fresh Air Blower V2 in auxiliary heating or auxiliary ventilation mode (not for USA) • Display = "On" ○ Control and display unit, Climatronic Control Module J255 is requested by Auxiliary Heater Control Module J364 to activate Fresh Air Blower V2 in auxiliary heating or auxiliary ventilation mode. (not for USA)
	4	Maximum, still permissible auxiliary heating/auxiliary ventilation cut-in time calculated by control and display unit, Climatronic Control Module J255 (not for USA) ○ Only applicable to vehicles with factory-installed auxiliary heater (not for USA) • Display = "0 s" ○ Auxiliary heater switched off (not for USA) ○ No auxiliary heater installed (not for USA) • Display = "1 to 3650 s" ○ Auxiliary heating/auxiliary ventilation will be deactivated in so many seconds at the latest by control and display unit, Climatronic Control Module J255 (even if cut-in signal is still being applied) (not for USA) ○ Time displayed is governed by setting in MMI ○ Depending on version of control and display unit, Climatronic Control Module J255 , remaining cut-in time will still be calculated even after switching off auxiliary heating/auxiliary ventilation and displayed until time has elapsed (not for USA).

Display group number	Display zone	Designation
		Switching status received from convenience CAN-Bus system of "Timer" function set in "MMI" (Multi Media Interface) in "auxiliary heating/auxiliary

031	1	ventilation" mode (not for USA) ○ Only applicable to vehicles with factory-installed auxiliary heater (not for USA) ○ Information is exchanged between "MMI" (Multi Media Interface), Auxiliary Heater Control Module J364 and control and display unit, Climatronic Control Module J255 (not for USA) • Display = "00" ○ "Timer" function not active in "MMI" (Multi Media Interface), no request for activation of auxiliary heating/auxiliary ventilation transmitted (not for USA) • Display = "01" ○ "Timer" function active in "MMI" (Multi Media Interface), cut-in time stored or request for activation of auxiliary heating/auxiliary ventilation transmitted (not for USA) • Display = "02" ○ "Timer" function elapsed in "MMI" (Multi Media Interface), request for deactivation of auxiliary heating/auxiliary ventilation transmitted (not for USA) • Display = "03" ○ DTC stored in "MMI" (Multi Media Interface) or problem with signal for "Timer" function, auxiliary heating/auxiliary ventilation cannot be switched on or is switched off (not for USA)

Display group number	Display zone	Designation
031	2	Operating status of control and display unit, Climatronic Control Module J255 on account of switching status received from convenience CAN-Bus system of "Timer" function set in "MMI" (Multi Media Interface) ○ Only applicable to vehicles with factory-installed auxiliary heater (not for USA) ○ Information is exchanged between "MMI" (Multi Media Interface), Auxiliary Heater Control Module J364 and control and display unit, Climatronic Control Module J255 (not for USA) • Display = "XX" (explanatory notes)

	3	Request for heat output in auxiliary heating mode (not for USA) ○ Only applicable to vehicles with factory-installed auxiliary heater (not for USA) ○ Function is only active with ignition on ○ Information is exchanged between "MMI" (Multi Media Interface), Auxiliary Heater Control Module J364 and control and display unit, Climatronic Control Module J255 via convenience CAN-Bus system (not for USA). • Display = "0" or "00" ○ Auxiliary heater can be switched on or left on (not for USA) • Display = "1" or "01" ○ Control and display unit, Climatronic Control Module J255 transmits request for switching to "Control interval" mode to Auxiliary Heater Control Module J364 (not for USA) ○ Auxiliary heating mode not required to attain set passenger compartment temperature, auxiliary heating is not switched on (only auxiliary ventilation mode is activated) (not for USA)

Display group number	Display zone	Designation
031	4	Request for activation of "Auxiliary ventilation" symbol to Instrument Cluster Control Module J285 (not for USA) ○ Only applicable to vehicles with factory-installed auxiliary heater (not for USA) ○ Information is exchanged between Instrument Cluster Control Module J285 and control and display unit, Climatronic Control Module J255 via convenience CAN-Bus system. • Display = "0" ○ No request transmitted by control and display unit, Climatronic Control Module J255 for activation of "Auxiliary ventilation" symbol to Instrument Cluster Control Module J285 (not for USA) • Display = "1" ○ Transmission of request by control and display unit, Climatronic Control

		Module J255 for activation of "Auxiliary ventilation" symbol to Instrument Cluster Control Module J285 (not for USA)

Explanatory notes on display in zone "4" of display group "029"

Display in zone "4"	Request for additional heat output
00 (or 10)	• Vehicle with gasoline engine and therefore no request for additional heat output by control and display unit, Climatronic Control Module J255 • No shutoff condition; if control and display unit, Climatronic Control Module J255 requests additional heat output, auxiliary heater can be switched on as supplementary heater (not for USA)
01 or 11	Coolant temperature greater than approx. 80 ° C and control and display unit, Climatronic Control Module J255 therefore does not request additional heat output
05 or 15	Engine not running and control and display unit, Climatronic Control Module J255 therefore does not request additional heat output
06 or 16	"Econ" mode set in control and display unit or "MMI" and control and display unit, Climatronic Control Module J255 therefore does not request additional heat output
07 or 17	Control and display unit off ("OFF" mode set) and control and display unit, Climatronic Control Module J255 therefore does not request additional heat output
08 or 18	Ambient temperature determined by control and display unit/received via CAN-Bus greater than 5 ° C and control and display unit, Climatronic Control Module J255 therefore does not request additional heat output
20	Temperature set for both sides (left and right) in control and display unit can be attained without additional heat output and control and display unit, Climatronic Control Module J255 therefore does not request additional heat output
30	"Supplementary heating" function deactivated in "MMI" (Multi Media Interface) and control and display unit, Climatronic Control Module J255 therefore does not request additional heat output (not for USA)

Explanatory notes on display in zone "2" of display group "031"

Display in zone "2"	Display of "Timer" function set in "MMI" (Multi Media Interface)
00	"Timer" function not active in "MMI" , no request for activation of auxiliary heating/auxiliary ventilation transmitted (not for USA)
01	"Timer" function active in "MMI" , request for activation of auxiliary heating/auxiliary ventilation transmitted at set time (choice between "auxiliary heating" or "auxiliary ventilation" is made by control and display unit, Climatronic Control Module J255) (not for USA)
02	Function not used at present
03	"Timer" function active in "MMI" , request for activation of auxiliary heater transmitted (not for USA)
04	"Timer" function active in "MMI" , request for activation of auxiliary ventilation transmitted

	(not for USA)
05	Function not used at present ○ Intended for activation of auxiliary heater at low ambient temperatures and with cold engine to heat coolant more quickly (introduction not yet finalized). (not for USA)
06	Operating time set in "Timer" function in "MMI" elapsed or no longer active (e.g. deactivated in MMI)

Display group "032"

Display group number	Display zone	Designation
032	1	Signal received from CAN-Bus system for ignition key assignment ○ Information is exchanged between Access/Start Control Module J518 and control and display unit, Climatronic Control Module J255 • Display = "0" ○ Ignition switched on using non-assigned key • Display = "1 to 4" ○ Ignition switched on using key stored at position 1, 2, 3 or 4 in corresponding control module
	2	Signal received from CAN-Bus system for fingerprint driver identification (fingerprint, "one-touch memory") ○ "One-touch memory" system is an optional extra (introduction not yet finalized). • Display = "0" ○ Vehicle not equipped with "one-touch memory" system ○ No assigned fingerprint detected • Display = "1 to 4" ○ Detection of fingerprint assigned to driver stored at position 1, 2, 3 or 4
		Information received from CAN-Bus system for ignition key release ○ Information is exchanged between Access/Start Control Module J518 and control and display unit, Climatronic Control Module J255 • Display = "1"

	3	○ Ignition switched on using key released for this vehicle • Display = "0" ○ Ignition off ○ Ignition switched on using key not released for this vehicle
	4	Display zone not used at present (display = "Not used" or display zone blank)

Display groups "033" and "035"

Display group number	Display zone	Designation
033	1	Last request received from CAN-Bus system for deactivation of electrical equipment with engine running ○ Also observe display in display groups "34" and "35" • Display = "0" ○ No request received from Energy Management Control Module J644 • Display = "1 to 3" ○ Request for complete deactivation of loads received from Energy Management Control Module J644 , e.g. deactivation of stage "1" heated windshield and electric supplementary heater, stage "2" seat heating and heated rear window, stage "3" all stage "1" and "2" loads (not for USA) • Display "4" ○ Not available at present • Display "5 to 7" ○ Request for load power reduction received from Energy Management Control Module J644 , e.g. stage "5" heated windshield and electric supplementary heater, stage "6" seat heating and heated rear window, stage "7" all stage "5" and "6" loads (not for USA)
	2	Last but one request received from CAN-Bus system for deactivation of electrical equipment • Display "0" or "1 to 7" (refer to display zone "1")

Display group	Display	Designation

number	zone	
033	3	Third last request received from CAN-Bus system for deactivation of electrical equipment • Display "0" or "1 to 7" (refer to display zone "1")

NOTE:

- **During the first 4 minutes after starting engine, power input of Vehicle Electrical System Control Module J519 or Energy Management Control Module J644 may be restricted to approx. 33 % of maximum possible level (e.g. after starting engine at low ambient and engine temperature to enable battery to recover).**

Display group number	Display zone	Designation
034	1	Last request received from CAN-Bus system for deactivation of electrical equipment with engine stopped (reduction in no-load current input to save vehicle battery) • Display = "0" ○ No request received from Energy Management Control Module J644 or Auxiliary Heater Control Module J364 (not for USA) • Display = "1 to 3" , "5 or 7" ○ Request for full shutdown or reduction in power of electrical equipment received from Energy Management Control Module J644 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 ○ For explanatory notes on display in this zone, refer to display zone "1" of display group "033". • Display = "4" ○ Request received for complete shutdown of loads, on account of vehicle "transportation mode" function (this is entered for example at the factory to save the battery until vehicle is delivered). • Display = "6" ○ Insufficient voltage measured in auxiliary heating or auxiliary ventilation mode by Energy Management Control Module J644 or Auxiliary Heater Control Module J364 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 (not for USA)
		Current emergency shutdown of electrical equipment received from CAN-Bus

	2	system, e.g. on account of sudden voltage dip in electrical system • Display = "0" ○ No request received from Energy Management Control Module J644 • Display = "1 to 7" ○ Request received for complete shutdown or reduction in power of electrical equipment from Energy Management Control Module J644 ○ For explanatory notes on display in this zone, refer to display zone "1" of display group "33". ○ Also observe display in zones "3" and "4" of display group "34"

Display group number	Display zone	Designation
034	3	Electrical system capacity utilization received from CAN-Bus system ○ Capacity utilization is calculated by Energy Management Control Module J644. • Display = "0" ○ No generator regulation; current generation = current consumption • Display = "1 to 3" ○ Generator capacity not being fully utilized; still sufficient reserves for electrical equipment (100 W (watts) for stage "1" , 200 W for stage "2" and min. 300 W for stage "3") • Display = "4" ○ Generator overloaded; at least 400 W (watts) more current being consumed than generated Energy Management Control Module J644 thus requests control and display unit, Climatronic Control Module J255 to shut down electrical equipment (observe display in zone "2" of display group "034") • Display = "5 to 7" ○ Full generator capacity utilization or slight overload; more current being consumed than generated (100 W (watts) for stage "7" , 200 W for stage "6" and 300 W for stage "5")
		Status display for current consumption control received from CAN-Bus system

	4	• Display = "0" ○ Message from Energy Management Control Module J644 that voltage regulation is "not active" • Display = "1" ○ Message from Energy Management Control Module J644 that voltage regulation is "active" ○ Control and display unit, Climatronic Control Module J255 is requested to regulate connected loads such that current consumption of components controlled by control and display unit, Climatronic Control Module J255 does not exceed 600 W (watts) ○ Also observe display in zone "2" of display group "034"

Display group number	Display zone	Designation
035	1	Status display received from air conditioner data bus system (Local Interconnect Network (LIN-Bus)) for actuation of Heated Windshield Z2 ○ Heated Windshield Z2 is an optional extra (introduction not yet finalized). ○ This display group is not used on vehicles with no Heated Windshield Z2 and display can then be ignored (display = "not used" , "254" or "255") ○ Only observe display if Heated Windshield Z2 is switched on ○ Heated Windshield Z2 is actuated via Heated Windshield Control Module J505 by control and display unit, Climatronic Control Module J255 by way of a signal wire (Local Interconnect Network (LIN-Bus)). • Display = "0" ○ Message from Energy Management Control Module J644 that voltage regulation is "not active" and that power limitation is therefore not necessary for Heated Windshield Z2 should this be switched on • Display = "254" ○ Message from Energy Management Control Module J644 that voltage regulation is "active" and that Heated Windshield Z2 can therefore only be actuated with reduced power should this be switched on • Display "255"

		○ Message from Energy Management Control Module J644 that voltage regulation is "active" , electrical system is overloaded and Heated Windshield Z2 can therefore not be actuated ○ Also observe display in zones "2" of display groups "034" and "033". ○ Control and display unit, Climatronic Control Module J255 cannot exchange information with Heated Windshield Control Module J505 (possibly not installed or malfunctioning).

Display group number	Display zone	Designation
035	2	Status display for actuation of heated seats ○ Depending on version of control and display unit, Climatronic Control Module J255 , this display may not yet be active or may be incorrect on control and display units installed at the start of production (e.g. display always "00000000" although seat heating off or e.g. "10100000" with rear seat heating on). • Display = "XXXXXXXX" (explanatory notes) Example • Display = "00000000" (seat heating on or could be switched on; no power reduction requested by Energy Management Control Module J644 on account of full electrical system capacity utilization) ○ Also observe display in zones "2" of display groups "034" and "033" as well as display in display groups "27" and "28".
	3	Number of emergency shutoff operations received from CAN-Bus system during last 3 driving cycles (request for shutdown of electrical equipment on account of electrical system overload) ○ A driving cycle commences on starting engine and ends on switching off engine. ○ Voltage dips on starting engine are not taken into account. • Display "0" ○ No request received from Energy Management Control Module J644 • Display "1 to XXX" ○ Number of requests received from Energy Management Control Module J644

		○ Also observe display in display groups "033" and "034".

Display group number	Display zone	Designation
035	4	Status display for last active request received for shutdown of electrical equipment with engine stopped (reduction in no-load current input to save vehicle battery) • Display "0" ○ No request received from Energy Management Control Module J644 • Display "1 to 7" ○ Last shutoff condition received from Energy Management Control Module J644 ○ For explanatory notes on display in this zone, refer to display zone "1" of display group "033". ○ Also observe display in zones "3" and "4" of display group "034".

Explanatory notes on display in zone "2" of display group "035" (status of heated seat actuation)

Display = "0" (function not active) Display = "1" (function active)								Assignment
							X	Left front seat heating power reduction (to approx. 25 % of max. heat output)
						X		Left front seat heating shut off
					X			Right front seat heating power reduction (to approx. 25 % of max. heat output)
				X				Right front seat heating shut off
			X					Left rear seat heating power reduction (to approx. 25 % of max. heat output)
		X						Left rear seat heating shut off
	X							Right rear seat heating power reduction (to approx. 25 % of max. heat output)
X								Right rear seat heating shut off

NOTE:

- **Shutoff of rear seat heating may be displayed even if rear seat heating is not installed (display can then be ignored).**
- **In vehicles with seat occupied sensor system, the seat heaters for front passengers seat and rear seats may be switched off after approx. 10 minutes, without an indicating display in this measuring value block, if**

Airbag Control Module J234 detects the seat is unoccupied (read measuring value block of Airbag Control Module J234 Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" function).

Display groups "036" and "037"

Display group number	Display zone	Designation
036	1	Operating status of convenience CAN-Bus system • Display = Two-wire ○ Convenience CAN-Bus system operating in two-wire mode (normal status) ○ Reception of information transmitted on convenience CAN-Bus system at both inputs ("Can-Hi" and "Can-Lo") • Display = One-wire ○ Convenience CAN-Bus system operating in one-wire mode (emergency operation) ○ Reception of information transmitted on convenience CAN-Bus at one input only ("Can-Hi" or "Can-Lo")
	2 to 4	Display zones not used at present (display = "Not used" or display zone blank)

NOTE:

- **In contrast to drive CAN-Bus system, convenience CAN-Bus system can also operate in one-wire mode. However system is then set to emergency operation.**
- **If information is not received on convenience CAN-Bus system, control and display unit, Climatronic Control Module J255 does not actuate A/C Compressor Regulator Valve N280 (compressor off).**

Display group number	Display zone	Designation
037	1	Network management version number ○ Operating level of convenience CAN-Bus system ○ Display = e.g. V 3.17 C6- A/C system-V2.6.10 (depending on version of control and display unit, Climatronic Control Module J255)
	2	Display zone not used at present (display = "Not used" or display zone blank)
		Display zone not used at present (display = "Not used" or display zone blank)

	3	○ Intended for communication matrix version in control and display unit, Climatronic Control Module J255 (introduction not yet finalized) ○ Data level of control and display unit, Climatronic Control Module J255 with which information is transmitted on convenience CAN-Bus system and expected by other control modules (introduction not yet finalized) ○ Data level used by dominant control module for convenience CAN-Bus (Data Bus On Board Diagnostic Interface J533)
	4	Display zone not used at present (display = "Not used" or display zone blank)

Display group "038"

Display group number	Display zone	Designation
038	1	Value calculated by control and display unit, Climatronic Control Module J255 for relative humidity level in passenger compartment in % • Display need only be observed on vehicles with control and display unit, Climatronic Control Module J255. • Display = "0 to 100%" (specification) ○ Value is calculated by control and display unit, Climatronic Control Module J255 on the basis of measured and set temperatures (e.g. approx. 51% at ambient temperature of 20 ° C)
	2	Measured value of sender installed in control and display unit, Climatronic Control Module J255 ("Humidity sender") • This sender is only installed on vehicles with control and display unit, Climatronic Control Module J255. ○ If measured relative humidity value is higher than specification, evaporator temperature is reduced by control and display unit, Climatronic Control Module J255 by actuating A/C Compressor Regulator Valve N280 (causes more moisture to condense at evaporator) ○ Operation can be checked, for example, by exhaling into intake grille of control and display unit, Climatronic Control Module J255 (measured value increases) • Display = "0 to 100%" (actual value)
	3 and 4	Display zones not used at present (display = "Not used" or display zone blank)

Display group	Display zone	Designation

number		
039	1	Reverse gear engaged information received from Comfort System Central Control Module J393 • This function is only provided on vehicles with control and display unit, Climatronic Control Module J255. ○ Information is transmitted on convenience CAN-Bus system by Comfort System Central Control Module J393. ○ If reverse gear is engaged for longer than a specified time, control and display unit, Climatronic Control Module J255 assumes that vehicle is being reversed. System switches to recirculated-air mode to prevent exhaust gases being drawn in by air conditioner when reversing. (Introduction of function not yet finalized) • Display = "Off" ○ Reverse gear not engaged ○ No evaluation of function at present with this vehicle (introduction not yet finalized) • Display = "On" ○ Reverse gear engaged
	2 to 4	Display zones not used at present (display = "Not used" or display zone blank)

Display group "040"

Display group number	Display zone	Designation
040	1	Display zone not used at present (display = "Not used" or display zone blank)
	2	Opening time calculated by control and display unit, Climatronic Control Module J255 for Left Heat Regulating Valve N175 in % ○ Valve is open in no-load status (de-energized). • Display = "100%" (valve permanently open, e.g. "Hi" temperature selected for drivers side) • Display = "1 to 99%" (valve is actuated in control mode) • Display = "0%" (valve permanently closed, e.g. "Lo" temperature selected for drivers side)
		Opening time calculated by control and display unit, Climatronic Control Module J255 for Right Heat Regulating Valve N176 in %

	3	○ Valve is open in no-load status (de-energized). • Display = "100%" (valve permanently open, e.g. "Hi" temperature selected for front passengers side) • Display = "1 to 99%" (valve is actuated in control mode) • Display = "0%" (valve permanently closed, e.g. "Lo" temperature selected for front passengers side)
	4	Actuation of Coolant Pump V50 by control and display unit, Climatronic Control Module J255 • Display = "Off" (pump is not actuated, e.g. "Lo" temperature selected for drivers and front passengers side) • Display "On" (pump is actuated as a function of ambient temperatures e.g. "Hi" temperature selected for drivers and/or front passengers side)

Display groups "042" to "044"

Display group number	Display zone	Designation
042	1	Manufacturers serial number for Fresh Air Blower Control Module J126 ○ Serial number is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. ○ Display = e.g. XXXXXXXX (depending on version of Fresh Air Blower Control Module J126)
	2 to 4	Display zones not used at present (display = "Not used" or display zone blank)
043	1 and 2	Display zones not used at present (display = "Not used" or display zone blank)
	3	Actual temperature of electronics in Fresh Air Blower Control Module J126 in ° C (degrees Celsius) ○ Temperature is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = less than " 110 ° C " ○ Display indicates temperature of power output stage in Fresh Air Blower Control Module J126
		Status of Fresh Air Blower V2 and Fresh Air Blower Control Module J126 ○ Status is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control

	4	Module J255. • Display = "XXXXXXXX" (explanatory notes) Example • Display = "00000000" (No malfunction in Fresh Air Blower Control Module J126)

Display group number	Display zone	Designation
044	1	Actual current flowing via Fresh Air Blower V2 ○ Value for current flowing via Fresh Air Blower V2 is regulated by Fresh Air Blower Control Module J126 and transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "0 to XX A" (amps) ○ Current is infinitely regulated between 0 and approx. 25 A (28 A).
	2	Hours of operation of Fresh Air Blower V2 by way of sun roof with solar cells ○ Only applicable to vehicles with "Sun roof with solar cells" as optional extra ○ Operating time value is calculated by control and display unit, Climatronic Control Module J255. Fresh Air Blower V2 operation is transmitted by Fresh Air Blower Control Module J126 via air conditioner data bus system "Local Interconnect Network (LIN-Bus)". • Display = "0 h" (hours, display for vehicle with no "sun roof with solar cells") • Display = "0 to XXXXX h" (hours) ○ Display is governed by period for which vehicle with this control and display unit, Climatronic Control Module J255 was exposed to sunlight.
	3	Actual voltage at Fresh Air Blower V2 ○ Voltage value is measured by Fresh Air Blower Control Module J126 and transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255 • Display = "0 V" (volts) ○ Fresh-air blower switched off

		• Display = "2.0 to 12.5 V" (volts) ○ Fresh-air blower is actuated; voltage is infinitely regulated between 2.0 and approx. 12.5 V depending on setting.
	4	Specified voltage at Fresh Air Blower V2 ○ Voltage value is calculated by Fresh Air Blower Control Module J126 and transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255 • Display = "0 V" (volts) ○ Fresh-air blower is not actuated • Display = "2.0 to 12.5 V" (volts) ○ Fresh-air blower is actuated; voltage is infinitely regulated between 2.0 and approx. 12.5 V depending on setting.

Explanatory notes on display in zone "4" of display group "043"

Display = "XXXXXXXX"								Assignment of possible types of malfunction • Display = "0" (no malfunctions) • Display = "1" (this malfunction has occurred) ○ If a malfunction is detected (display = "1" in any position), Fresh Air Blower V2 is not actuated by Fresh Air Blower Control Module J126 or only with low voltage.
							X	Insufficient voltage at Fresh Air Blower Control Module J126 (less than 8.5 V)
						X		Excessive voltage at Fresh Air Blower Control Module J126 (greater than 16.5 V)
					X			• Fresh Air Blower V2 blocked • Open circuit or short circuit in Fresh Air Blower V2 or relevant wiring
				X				Fresh Air Blower V2 stiff
			X					Open circuit or short circuit in Fresh Air Blower V2 or relevant wiring
		X						Fresh Air Blower Control Module J126 overheating (temperature greater than 110 ° C)
	X							Malfunction in Fresh Air Blower Control Module J126 (integrated relay malfunctioning)
X								Malfunction in electronics of Fresh Air Blower Control Module J126

Display groups "045" and "046"

Display		

group number	Display zone	Designation
045	1	Specified windshield heating power ○ Display only applicable to vehicles with "heated windshield" as optional extra (introduction not yet finalized) ○ Power value is calculated by Heated Windshield Control Module J505 and transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "0 to XXXX W" (watts)
	2	Actual windshield heating power ○ Display only applicable to vehicles with "heated windshield" as optional extra (introduction not yet finalized) ○ Power value is calculated by Heated Windshield Control Module J505 and transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "0 to XXXX W" (watts)
	3	Actual current flowing from electrical system into Heated Windshield Control Module J505 ○ Display only applicable to vehicles with "heated windshield" as optional extra (introduction not yet finalized) ○ Current value is calculated by Heated Windshield Control Module J505 and transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "0 to XXX A" (amps)
	4	Status of Heated Windshield Z2 and Heated Windshield Control Module J505 ○ Display only applicable to vehicles with "heated windshield" as optional extra (introduction not yet finalized) ○ Status is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "XXXXXXXX" (explanatory notes) Example • Display = "00000000" (No malfunction in Heated Windshield Control Module J505)

Display group number	Display zone	Designation
046	1	Lower limit value for resistance of Heated Windshield Z2 ○ Display only applicable to vehicles with "heated windshield" as optional extra (introduction not yet finalized) ○ Resistance value is calculated by Heated Windshield Control Module J505 and transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "0 ohms" (no Heated Windshield Control Module J505 installed or short circuit in wiring to Heated Windshield Z2) • Display = "0.5 to 2.5 ohms" (resistance value OK) • Display = greater than "2.5 ohms" (contact resistance in wiring to Heated Windshield Z2 , checking --> **Heated Windshield Z2 , checking actuation**)
	2	Upper limit value for resistance of Heated Windshield Z2 ○ Display only applicable to vehicles with "heated windshield" as optional extra (introduction not yet finalized) ○ Resistance value is calculated by Heated Windshield Control Module J505 and transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "0 ohms" (no Heated Windshield Control Module J505 installed • Display = "2.5 to 4.0 ohms" (resistance value OK) • Display = greater than "4.0 ohms" (contact resistance in wiring to Heated Windshield Z2 or no Heated Windshield Control Module J505 installed, checking --> **Heated Windshield Z2 , checking actuation**) ○ If resistance is greater than 4.0 ohms following actuation, rated power of Heated Windshield Z2 is no longer attained.
	3	Actual value for resistance of Heated Windshield Z2 ○ Display only applicable to vehicles with "heated windshield" as optional extra (introduction not yet finalized) ○ Display only applicable to vehicles with "heated windshield" as optional extra ○ Power value is transmitted by Heated Windshield Control Module J505 via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to

		control and display unit, Climatronic Control Module J255. • Display = "0.5 to 4.0 ohms" ○ If resistance is greater than 4.0 ohms following actuation, rated power of Heated Windshield Z2 is no longer attained --> **Heated Windshield Z2 , checking actuation**.
	4	Display zone not used at present (display = "Not used" or display zone blank)

Explanatory notes on display in zone "4" of display group "045"

Display = "XXXXXXXX"								Assignment of possible types of malfunction • Display = "0" (no malfunctions) • Display = "1" (this malfunction detected) ○ If a malfunction is detected (display = "1" in any position), Heated Windshield Z2 is not actuated by Heated Windshield Control Module J505.
							X	Insufficient voltage at Heated Windshield Control Module J505 (less than 11.5 V)
						X		Excessive voltage at Heated Windshield Control Module J505 (greater than 16.5 V)
					X			Excessive temperature of electronics in Heated Windshield Control Module J505
				X				Excessive resistance of heating element in Heated Windshield Z2 (wiring resistance or possibly broken windshield)
			X					Insufficient resistance of heating element in Heated Windshield Z2 (possibly short circuit between heating element and vehicle body)
		X						Insufficient resistance of heating element in Heated Windshield Z2 (possibly short circuit in wiring between Heated Windshield Control Module J505 and Heated Windshield Z2)
	X							Display not used at present
X								Malfunction in electronics of Heated Windshield Control Module J505

Display group "047"

Display group number	Display zone	Designation
047	1	Hardware version of Fresh Air Blower Control Module J126 ○ Hardware version is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255.
	2	Software version of Fresh Air Blower Control Module J126 ○ Software version is transmitted via air conditioner data bus system "Local

		Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255.
	3	Hardware version of Heated Windshield Control Module J505 o Hardware version is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. o Display only applicable to vehicles with "heated windshield" as optional extra
	4	Software version of Heated Windshield Control Module J505 o Software version is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. o Display only applicable to vehicles with "heated windshield" as optional extra

Display group "050"

Display group number	Display zone	Designation
050	1	Code "1" for control and display unit, Climatronic Control Module J255 o Code for number of cylinders, type of engine and country version (table for code "1" --> **Code "1" table (number of cylinders, type of engine and country version)**) • Display = " XXXXXXX0" (explanatory notes --> **Code "1" table (number of cylinders, type of engine and country version)**) o Example for vehicle with 6-cyl. gasoline engine for rest of world (e.g. Germany) "00000110"
	2	Code "2" for control and display unit, Climatronic Control Module J255 o Code for body version and certain optional extras (table for code "2" --> **Code "2" table (body version and certain optional extras)**) • Display = " XXXXXXXXX" (explanatory notes --> **Code "2" table (body version and certain optional extras)**) o Example for Sedan with left-hand drive and optional extras "Sun roof with solar cells" and "Electric rear roller blind" "00110000"
		Code "3" for control and display unit, Climatronic Control Module J255

	3	○ Code for type of fuel injection and certain optional extras (table for code "3") --> **Planned code "3" table (type of fuel injection and certain optional extras)** • Display = " 00000000" (explanatory notes --> **Planned code "3" table (type of fuel injection and certain optional extras)**)
	4	Hardware version of control and display unit, Climatronic Control Module J255 • Display = "XX"

Display groups "051" and "052"

Display group number	Display zone	Designation
051	1	Specification for actuation of Air Ionization Module J707 ○ Display only applicable to vehicles with "air ionization system" as optional extra (introduction not yet finalized) ○ This display zone is not used on vehicles with no Air Ionization Module J707 (display = "not used"). • Display = "XX %" (specification only as of introduction of Air Ionization Module J707) ○ Specification can be altered by way of "Adaptation" function of control and display unit, Climatronic Control Module J255.
	2	Actual value for actuation of Air Ionization Module J707 ○ Display only applicable to vehicles with "air ionization system" as optional extra (introduction not yet finalized) ○ This display zone is not used on vehicles with no Air Ionization Module J707 (display = "not used"). • Display = "0 to 100%" ○ Actual value is transmitted by Air Ionization Module J707 to control and display unit, Climatronic Control Module J255 via air conditioner data bus system "Local Interconnect Network (LIN-Bus)".
		Actual voltage for actuation of Air Ionization Module J707 ○ Display only applicable to vehicles with "air ionization system" as optional extra (introduction not yet finalized) ○ This display zone is not used on vehicles with no Air Ionization Module J707 (display = "not used").

	3	• Display = "0 to XX V" (volts) ○ Actual voltage is transmitted by Air Ionization Module J707 to control and display unit, Climatronic Control Module J255 via air conditioner data bus system "Local Interconnect Network (LIN-Bus)".
	4	Status of Air Ionization Module J707 ○ Status is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. ○ This display zone is not used on vehicles with no Air Ionization Module J707 (display = "not used"). • Display = "XXXXXXXX" (explanatory notes) Example • Display = "00000000" (No malfunction in Air Ionization Module J707)

Display group number	Display zone	Designation
052	1	Hardware and software version of Air Ionization Module J707 ○ Hardware and software versions are transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. ○ This display zone is not used on vehicles with no Air Ionization Module J707 (display = "not used"). • Display = " XXXX"
	2	Manufacturers serial number for Air Ionization Module J707 ○ Serial number is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. ○ This display zone is not used on vehicles with no Air Ionization Module J707 (display = "not used"). • Display = "XXXX"
		Hours of operation of Air Ionization Module J707 with actuation by control and display unit, Climatronic Control Module J255 ○ Display only applicable to vehicles with "air ionization system" as optional

	3	extra (introduction not yet finalized) ○ This display zone is not used on vehicles with no Air Ionization Module J707 (display = "not used"). ○ Operating time value is calculated by control and display unit, Climatronic Control Module J255. "On" time is transmitted by Air Ionization Module J707 via air conditioner data bus system "Local Interconnect Network (LIN-Bus)". • Display = "0 to XXXXX" (hours)
	4	Display zone not used at present (display = "Not used" or display zone blank)

Explanatory notes on display in zone "4" of display group "051"

Display = "XXXXXXXX"								Assignment of possible types of malfunction • Display = "0" (no malfunctions) • Display = "1" (this malfunction detected) ○ If a malfunction is detected (display = "1" in any position), Air Ionization Module J707 is not actuated.
							X	Insufficient voltage at Air Ionization Module J707 (less than 11.5 V)
						X		Excessive voltage at Air Ionization Module J707 (greater than 16.5 V)
					X			Display not used at present
				X				Display not used at present
			X					Display not used at present
		X						Display not used at present
	X							Display not used at present
X								Malfunction in electronics of Air Ionization Module J707

Display groups "053" and "054"

Display group number	Display zone	Designation
053	1	Coolant Pump V50 speed pulse actual value ○ Coolant Pump V50 emits a certain number of pulses per revolution, from which control and display unit, Climatronic Control Module J255 calculates speed of Coolant Pump V50. • Display = approx. "0 Hz" (Hertz, pulses per second) ○ Coolant Pump V50 currently not being actuated for example

		• Display = approx. "350 to 650 Hz" (Hertz, pulses per second) ○ Coolant Pump V50 in operation ○ Actual value is governed by voltage applied to control and display unit, Climatronic Control Module J255 (with coolant circuit full and engine running, currently approx. 500 Hz)
	2	Lower limit value for Coolant Pump V50 pulses ○ Pulse lower limit value is calculated by control and display unit, Climatronic Control Module J255. • Display = "200 to 350 Hz" (Hertz, pulses per second) ○ Lower limit value is governed by voltage applied to control and display unit, Climatronic Control Module J255 and adaptation of control and display unit (currently approx. 310 Hz).
	3	Upper limit value for Coolant Pump V50 speed ○ Speed is calculated by control and display unit, Climatronic Control Module J255. • Display = "650 to 800 Hz" (Hertz, pulses per second) ○ Upper limit value is governed by voltage applied to control and display unit, Climatronic Control Module J255 and adaptation of control and display unit (currently 650 Hz).
	4	Actuation of Coolant Pump V50 by control and display unit, Climatronic Control Module J255 • Display = "Off" ○ Coolant Pump V50 not actuated, e.g. "Lo" temperature selected for drivers and front passengers side • Display = "On" ○ Coolant Pump V50 actuation, e.g. "Hi" temperature selected for drivers and/or front passengers side

Display group number	Display zone	Designation
		Pressure in refrigerant circuit in bar ○ Calculated by way of signal from A/C Pressure/temperature Sensor G395 by

054	1	control and display unit, Climatronic Control Module J255 ○ Refrigerant pressure is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "0 to 33 bar" ○ For permissible refrigerant circuit pressure values, refer to display group "1"
	2	Temperature of refrigerant in refrigerant circuit in ° C (Celsius) ○ Calculated by way of signal from A/C Pressure/temperature Sensor G395 by control and display unit, Climatronic Control Module J255 ○ Refrigerant temperature is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = " -100 to 150 ° C " (Celsius) ○ A specific relationship exists between temperature and pressure in refrigerant circuit --> **87 - AIR CONDITIONING** . Insufficient refrigerant in circuit will however lead to disproportionate increase in temperature with air conditioner switched on. ○ On account of the design of the A/C Pressure/temperature Sensor G395 and its component location, temperature displayed differs from actual temperature of refrigerant. At present this is therefore not evaluated and used for air conditioner regulation. ○ If temperature in refrigerant circuit exceeds 80 ° C, check actuation of Coolant Fan V7 and possible contamination of condenser before performing refrigerant circuit repair work.
	3	Hardware and software version of A/C Pressure/temperature Sensor G395 ○ Hardware and software versions are transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "XXXX"
	4	Status of A/C Pressure/temperature Sensor G395 ○ Status is transmitted via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255. • Display = "0000XXXX" (explanatory notes)

		Example • Display = "00000000" (No malfunction in A/C Pressure/temperature Sensor G395)

Explanatory notes on display in zone "4" of display group "054"

Display = "XXXX"					Assignment of possible types of malfunction • Display = "0" (no malfunctions) • Display = "1" (this malfunction detected) ○ If a malfunction is detected (display = "1" in any position), DTC A/C Pressure/temperature Sensor G395 is stored.
				X	Incorrect measured value of integrated pressure sensor
			X		Incorrect measured value of integrated temperature sensor
		X			Malfunction in one of the two integrated sensors or in electronics
	X				Malfunction in electronics of A/C Pressure/temperature Sensor G395
0000					Display not used at present

Display groups "069" and "070"

Display group number	Display zone	Designation
069	1	Design status of control and display unit, Climatronic Control Module J255 ○ Not intended for service use.
	2 to 4	Display zones not used at present (display = "Not used" or display zone blank)
070	1	Display zone not used at present (display = "Not used" or "Display group not available") ○ Not intended for service use. ○ Intended for channel number for On Board Diagnostics (OBD) of control and display unit, Climatronic Control Module J255 without tester
	2	Display zone not used at present (display = "Not used" or "Display group not available") ○ Not intended for service use. ○ Intended for measured values of diagnosis channel displayed in zone 1 for On Board Diagnostics (OBD) of control and display unit, Climatronic Control Module J255 without tester
	3 and 4	Display zones not used at present (display = "Not used" or display zone blank)

Display group "078"

Display group number	Display zone	Designation
078	1	Figure calculated by control and display unit, Climatronic Control Module J255 for actuation of Left Heat Regulating Valve N175 • Display = " -70 to +155 ° C " ○ Figure is governed by set temperature and measured ambient/outflow temperature etc.
	2	Figure calculated by control and display unit, Climatronic Control Module J255 for actuation of Right Heat Regulating Valve N176 • Display = " -70 to +155 ° C " ○ Figure is governed by set temperature and measured ambient/outflow temperature etc.
	3	Figure calculated by control and display unit, Climatronic Control Module J255 for left specified outflow temperature ○ Range displayed for calculated figure varies (depending on type and software version of control and display unit, Climatronic Control Module J255) • Display = " 100 to +155 ° C " or " 3 to 70 ° C " ○ Figure calculated for specified temperature is governed by set temperature and measured ambient/outflow temperature etc.
	4	Figure calculated by control and display unit, Climatronic Control Module J255 for right specified outflow temperature ○ Range displayed for calculated figure varies (depending on type and software version of control and display unit, Climatronic Control Module J255) • Display = " 100 to +155 ° C " or " 3 to 70 ° C " ○ Figure calculated for specified temperature is governed by set temperature and measured ambient/outflow temperature etc.

Control and display unit, Climatronic Control Module J255 , display groups currently not intended for service use

NOTE:

- **Depending on version of control and display unit, Climatronic Control Module J255 , there may not be any display in these measured value blocks or display zone may have a black background.**

Display group number	Display zone	Designation
080	1	Manufacturer and factory code
	2	Date of manufacture of control and display unit, Climatronic Control Module J255 o Depending on version of control and display unit, Climatronic Control Module J255 , this display appears in zone "1"
	3	Manufacturers modification status of control and display unit, Climatronic Control Module J255 o Depending on version of control and display unit, Climatronic Control Module J255 , this display appears in zone "1"
	4	Number of test bench on which control and display unit, Climatronic Control Module J255 was checked at the factory o Depending on version of control and display unit, Climatronic Control Module J255 , this display appears in zone "1"
	5	Manufacturers serial number o Depending on version of control and display unit, Climatronic Control Module J255 , this display appears in zone "1"
081	1	Display zone not used at start of production (display = "Not used" or display zone blank) o Intended for chassis number first transmitted by data bus system and stored in control and display unit, Climatronic Control Module J255 on initialization of control and display unit, Climatronic Control Module J255 (introduction not yet finalized)

Display group number	Display zone	Designation
081	2	Display zone not used (display = "Not used" or display zone blank) o Intended for assemblies or serial number received from/transmitted by CAN-Bus system
	3 and 4	Display zones not used (display = "Not used" or display zone blank) o Intended for type approval number received from/transmitted by CAN-Bus system
082	1	Display zone not used (display = "Not used" or display zone blank) o Intended for flash tool number of data level of control and display unit, Climatronic Control Module J255
		Display zone not used (display = "Not used" or display zone blank)

	2	○ Intended for date on which last flash was implemented for control and display unit, Climatronic Control Module J255 (flash = input of new data)
	3	Display zone not used (display = "Not used" or display zone blank) ○ Intended for (electronics) hardware version of control and display unit, Climatronic Control Module J255
	4	Display zone not used (display = "Not used" or display zone blank) ○ Intended for software version (electronics data level) of control and display unit, Climatronic Control Module J255

CLIMATRONIC CONTROL MODULE J255 , ADAPTATION

List of adaptation channels

NOTE:

- **This information lists the various adaptation channels for information purposes only. When performing "Adaptation" function as part of Guided Fault Finding, an explanation is given of the changes to control functions made in the adaptation channels as well as appropriate notes "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Only adaptation channels "1" to "47" and "81" are intended for service use at present.**
- **Depending on version of control and display unit, Climatronic Control Module J255 , it is possible to enter values other than those described in the following table in the various adaptation channels. As however adaptation values are only stored for the adaptation processes contained in the following table, non-listed adaptation values are not to be entered.**

Adaptation channels "01" to "23"

Adaptation channel	Basic Setting at factory	**Function**
01	0	Temperature increase after starting auxiliary heating/ventilation mode (not for USA) ○ Depending on version of control and display unit, Climatronic Control Module J255 , this adaptation function will not be available for all vehicles at the start of production (introduction not yet finalized) • In Basic Setting "0" , specified temperature in auxiliary heating/ventilation mode is set to same level as specified temperature in air conditioning mode (not for USA)

		○ Adaptation function can be used to increase or reduce specified temperature in 0.5 ° C steps by up to 2.0 ° C (input value 1 to 8)
02	0	Temperature increase at end of specified auxiliary heating/ventilation operating time (not for USA) ○ Depending on version of control and display unit, Climatronic Control Module J255 , this adaptation function will not be available for all vehicles at the start of production (introduction not yet finalized) • In Basic Setting "0" , specified temperature in auxiliary heating/ventilation mode is set to same level as specified temperature in air conditioning mode (not for USA) ○ Adaptation function can be used to increase specified temperature in 0.5 ° C steps by up to 2.0 ° C (input value 1 to 4)

Adaptation channel	Basic Setting at factory	**Function**
03	1	Compressor shutoff by Engine Control Module (ECM) via "Air conditioner compressor shutoff" function • In Basic Setting "1" , actuation of A/C Compressor Regulator Valve N280 is deactivated as soon as request is received from Engine Control Module (ECM). ○ Adaptation function can be used to suppress deactivation of A/C Compressor Regulator Valve -N280- actuation on account of "air conditioner compressor shutoff" by changing adaptation value to "0" (control and display unit, Climatronic Control Module J255 then ignores request from Engine Control Module (ECM)) ○ Adaptation "0" may be activated at the factory depending on version of vehicle and control and display unit, Climatronic Control Module J255 with "Hot country" coding for example.
04	0	Upper control current limit for A/C Compressor Regulator Valve N280 • In Basic Setting "0" , control current for A/C Compressor Regulator Valve N280 is limited in line with coding of control and display unit, Climatronic Control Module J255. ○ Adaptation is not to be (cannot be) altered. ○ If "2.0" has been entered for example, control and display unit limits control current to 200 mA

	Basic	

Adaptation channel	Setting at factory	Function
05	1	Extended air conditioner requirement ○ With control and display units, Climatronic Control Module J255 installed at the start of production, service alteration of this adaptation is not possible (introduction not yet finalized) • In Basic Setting "1" , actuation of A/C Compressor Regulator Valve N280 is deactivated as soon as ambient temperature is less than -5 ° C (less than -8 ° C in the event of request for "autom. air recirculation" from Air Quality Sensor G238). ○ To stop evaporator icing-up at low ambient temperatures, cut-out temperature is raised in accordance with evaporator outflow temperature, passenger compartment temperature and air conditioner operating status ○ Adaptation function can be used to reduce cut-out temperature to approx. +2 ° C by altering adaptation value to "0" (approx. -82 ° C in the event of request for "autom. air recirculation" from Air Quality Sensor G238).
06	0	Decision-making process for auxiliary heating/ventilation mode (not for USA) • In Basic Setting "0" (automatic) and with ignition off, control and display unit, Climatronic Control Module J255 determines by way of measured actual temperatures and set specified temperatures whether auxiliary heater is to be started up or system is to operate in auxiliary ventilation mode (not for USA). • In setting "1" (last function), control and display unit, Climatronic Control Module J255 always requests last mode set and activated in MMI (Multi Media Interface) terminal (auxiliary heating or auxiliary ventilation) regardless of measured/set temperatures (not for USA).

Adaptation channel	Basic Setting at factory	Function
07	0	Shutoff characteristics for auxiliary heating/ventilation mode (not for USA) • In Basic Setting "0" , auxiliary heating/ventilation remains in operation until set operating time has elapsed or until manually deactivated (not for USA). • In setting "1" , auxiliary heating/ventilation is shut off when engine is switched off (not for USA).
		Reduction of fresh-air blower speed on voice recognition ○ This function is not yet active on control and display units installed at the start of production (introduction not yet finalized)

08	0	• In Basic Setting "0" , fresh-air blower speed is not reduced whilst "telephone voice input" information is being transmitted via convenience CAN-Bus system. • In setting "1 to 255" , fresh-air blower speed is reduced by the value set (20 units correspond to approx. 1 V) whilst "telephone voice input" information is being transmitted via convenience CAN-Bus system.

Adaptation channel	Basic Setting at factory	**Function**
09	0	Resetting of all adaptation values to setting corresponding to coding ○ It may not be possible to implement this adaptation with all control and display units, Climatronic Control Module J255 installed at the start of production (introduction not yet finalized) • No resetting takes place with Basic Setting "0" • In setting "1" , all adaptation values altered are reset to Basic Setting corresponding to coding. ○ On completion of adaptation in this channel, display changes to "0"
10	10	Upper regulation limit for temperature of air downstream of evaporator • In setting "10" , evaporator temperature can be regulated to max. +10 ° C (Celsius) depending on setting on control and display units, Climatronic Control Module J255 , measured temperatures etc. • In setting "0 to 9" , air temperature is regulated in line with adaptation, e.g. to max. 6 ° C for setting "6" ○ To stop evaporator icing up, no value less than "2" is to be entered (values less than "2" are intended for extreme usage conditions and are not permissible for countries with a temperate climate).

Adaptation channel	Basic Setting at factory	**Function**
11	1	Display of "Sun roof with solar cells" function in MMI (Multi Media Interface) • In Basic Setting "1" , "Solar operation" function does not appear in MMI display (Multi Media Interface) ○ Adaptation for vehicles with and without factory-installed sun roof with solar cells • In setting "0" , "Solar operation" function appears in MMI display.

		○ Setting "0" can be made for vehicles with sun roof with solar cells on customer request. This enables customers to deactivate "Solar operation" ○ The temperature at which the "Solar operation" function is switched on and off is set via the "Adaptation" function (adaptation channel "43") --> **Climatronic Control Module J255 , adaptation**
12	1	Adaptation channel not used at present ○ Intended for release of On Board Diagnostics (OBD) for control and display unit, Climatronic Control Module J255 without diagnosis tester in measured value block "069" ○ Service alteration of this adaptation is not possible • In Basic Setting "1" , On Board Diagnostics (OBD) without diagnosis tester is disabled ○ Basic Setting is not to be (cannot be) altered.
13	0	Adaptation channel not used at present ○ Intended for development identification number of control and display units, Climatronic Control Module J255 ○ Service alteration of this adaptation is not possible • Display is disabled in Basic Setting "0"
14		Adaptation channel not used at present ○ Service alteration of this adaptation is not possible • Should it be possible to alter the adaptation with an control and display unit, Climatronic Control Module J255 installed at the start of production, this is never to be done, as it may then not be possible to erase entry in DTC memory. • Display is disabled in Basic Setting "0". ○ Intended for display of DTC memory entry "Component protection" for control and display units, Climatronic Control Module J255 during development process for example.

Adaptation channel	Basic Setting at factory	**Function**
		Fresh-air blower speed in auxiliary heating/ventilation mode (not for USA) • In Basic Setting "60" , control and display unit, Climatronic Control Module J255 regulates maximum voltage at Fresh Air Blower V2 to 6V.

15	60	○ In setting "30 to 80" , fresh-air blower speed is regulated to set value ("45" corresponding e.g. to 4.5 V). ○ To avoid excessive loading (and thus too rapid discharge) of battery in auxiliary heating/ventilation mode, no value higher than "60" is to be entered (not for USA)
16		Release of auxiliary heater actuation via "Residual heat" function (not for USA) ○ This function is only active on vehicles with factory-installed "auxiliary heater" (not for USA).
	0	Vehicles with control and display unit, Climatronic Control Module J255 • In Basic Setting "0" , auxiliary heater is not switched on if control and display unit, Climatronic Control Module J255 is in "Residual heat" mode ("Econ" button pressed for longer than approx. 3 s with ignition off) and coolant temperature of engine is not sufficient to attain specified passenger compartment temperature (not for USA) • In setting "1" , auxiliary heater is switched on if control and display unit, Climatronic Control Module J255 is in "Residual heat" mode ("Econ" button pressed for longer than approx. 3 s with ignition off) and coolant temperature of engine is not sufficient to attain specified passenger compartment temperature (not for USA)

Adaptation channel	Basic Setting at factory	**Function**
17	0	Release of service installed auxiliary heater (not for USA) ○ On vehicles with factory-installed auxiliary heater, adaptation is not to be changed to "1" (auxiliary heater and control and display unit, Climatronic Control Module J255 exchange information via convenience CAN-Bus system) (not for USA) • In Basic Setting "0" , control and display unit, Climatronic Control Module J255 cannot be actuated by a service installed auxiliary heater by way of a positive signal (not for USA). ○ Terminal "15" is connected to connector "D" , contact "11" ○ If voltage is applied to connector "D" , contact "11" with ignition off, control and display unit does not start up (DTC may be stored in control and display unit, Climatronic Control Module J255) • In setting "1" , control and display unit, Climatronic Control Module J255 can be actuated by a service installed auxiliary heater by way of a positive signal (not for USA).

		○ Auxiliary heater signal output is connected to connector "D" , contact "11" (not for USA) ○ If voltage is applied to connector "D" , contact "11" with ignition off, control and display unit, Climatronic Control Module J255 starts up ("Auxiliary heating" mode). (not for USA)

Adaptation channel	Basic Setting at factory	**Function**
18	0	Intended for suppression of request for shutdown of electrical equipment from Energy Management Control Module J644 ○ Service alteration of this adaptation is not possible • In Basic Setting "0" , control and display units, Climatronic Control Module J255 shut down electrical equipment as soon as request is received from Energy Management Control Module J644.
20		Adaptation channel not used at present

Adaptation channel	Basic Setting at factory	**Function**
21	0	Display of "incl. engine" or "engine pre-heating" function in MMI display (Multi Media Interface) ○ Depending on version of the MMI, the "incl. engine" function is not displayed, even though it has been enabled in control and display unit, Climatronic Control Module J255 in adaptation channel "21" (introduction not yet finalized). ○ This function is only active in vehicles with a factory-installed "auxiliary heater" and if it is intended in the MMI (not for USA). • In Basic Setting "0" , "incl. engine" function does not appear in MMI display ○ In auxiliary heating mode, Engine Coolant (EC) Switch-Off Valve (heater) N279 is actuated by way of a characteristic curve stored in auxiliary heater control module in such a manner that passenger compartment is warmed as quickly as possible (not for USA) • In setting "1" , "incl. engine" or "engine pre-heating" function appears in MMI display. ○ Setting "1" can be made on customer request. ○ The setting "incl. engine" in MMI enables customers to specify equal

		heating of engine and passenger compartment in auxiliary heating mode (Engine Coolant (EC) Switch-Off Valve (heater) N279 is not actuated, warming of passenger compartment takes accordingly longer) (not for USA)
22	0	Adaptation of fresh-air blower characteristic curve • In Basic Setting "0" , Fresh Air Blower V2 runs at power level assigned to this code. • In setting "1" , Fresh Air Blower V2 runs with slightly reduced power over entire characteristic curve range. • In setting "2" , Fresh Air Blower V2 runs with slightly higher power over entire characteristic curve range. • In setting "3" , Fresh Air Blower V2 runs at power level adapted for use in USA (slightly more power in certain ranges) over entire characteristic curve range ○ Settings "4" and "5" are not permitted at present (no characteristic curve stored)
23	0	Adaptation of temperature characteristic curve • In Basic Setting "0" , control and display unit, Climatronic Control Module J255 regulates temperature to values assigned to this code. • In setting "1" , temperature is regulated to a slightly cooler characteristic curve in winter (cold country characteristic). • In setting "2" , temperature is regulated to a slightly cooler characteristic curve in summer (corresponds to characteristic curve stored for USA coding). ○ Settings "3" , "4" and "5" are not permitted at present (no characteristic curve stored)

Adaptation channels "24" to "81"

Adaptation channel	Basic Setting at factory	**Function**
24	0	Adaptation channel not used at present ○ Intended for suppressing storage of a specific DTC in DTC memory (malfunction "1") ○ Service alteration of this adaptation is not possible • In Basic Setting "0" , all malfunctions detected by control and display unit, Climatronic Control Module J255 are stored.

25	0	Adaptation channel not used at present ○ Intended for suppressing storage of a specific DTC in DTC memory (malfunction "2") ○ Service alteration of this adaptation is not possible • In Basic Setting "0" , all malfunctions detected by control and display unit, Climatronic Control Module J255 are stored.
26	0	Adaptation channel not used at present ○ Intended for suppressing storage of a specific DTC in DTC memory (malfunction "3") ○ Service alteration of this adaptation is not possible • In Basic Setting "0" , all malfunctions detected by control and display unit, Climatronic Control Module J255 are stored.

Adaptation channel	Basic Setting at factory	**Function**
27	2	Run-on time for actuation of valves of pump valve unit after switching off ignition ○ Actuation of valves (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) for a certain period after switching off ignition stops hot coolant flowing into air conditioner. • In Basic Setting "2" , valve actuation is maintained for 20 s by control and display unit, Climatronic Control Module J255 after switching off ignition. • In setting "0 to 180" , valve actuation is maintained for set period after switching off ignition (e.g. 80 s with setting "8").
28	5	Time prior to shutoff of Coolant Pump V50 if speed value set in measured value block "53" is not reached (e.g. pump stiff). • In Basic Setting "5" , pump actuation is maintained for 5 s by control and display units, Climatronic Control Module J255 (before pump is shut down and a DTC stored). • In setting "0 to 255" , pump actuation is maintained for set period (e.g. 10 s with setting "10").

Adaptation channel	Basic Setting at factory	**Function**

29	146	Intended for entry of lowest permissible number of Coolant Pump V50 pulses ○ Service alteration of this adaptation is not possible ○ Coolant Pump V50 emits a certain number of pulses per revolution. ○ Lower pulse limit value is calculated by control and display units, Climatronic Control Module J255 (in setting "146" e.g. 300 pulses per second at a voltage of 12.5 V) • In Basic Setting "146" , DTC is stored if, with an electrical system voltage of approx. 12.5 V, number of pulses is less than 300 per second for longer than time entered in adaptation channel "27" (e.g. pump stiff).
30	650	Intended for entry of highest permissible number of Coolant Pump V50 pulses ○ Service alteration of this adaptation is not possible ○ Coolant Pump V50 emits a certain number of pulses per revolution. ○ Maximum permissible number of pulses is entered at factory in control and display unit, Climatronic Control Module J255. ○ To prevent dry-running of pump, e.g. when coolant circuit is empty, pump is deactivated as soon as number of pulses entered is exceeded • In Basic Setting "650" , pump is deactivated if number of pulses is higher than 650 per min. for a lengthy period.
31	1	Intended for activation of component protection for control and display units, Climatronic Control Module J255 ○ Service alteration of this adaptation is not possible • Component protection is not active in Basic Setting "1".

Adaptation channel	Basic Setting at factory	**Function**
32	0	Intended for actuation of Air Ionization Module J707 by control and display unit, Climatronic Control Module J255 in "recirculated-air" mode (introduction not yet finalized) ○ Service alteration of this adaptation is not possible. • In Basic Setting "0" , Air Ionization Module J707 is not actuated in recirculated-air mode.
		Intended for actuation of Air Ionization Module J707 by control and display units, Climatronic Control Module J255 in "fresh-air" mode (introduction not yet finalized)

33	60	• In Basic Setting "60" , Air Ionization Module J707 is actuated at approx. 60 % of maximum power in fresh-air mode. • In setting "0 to 100" , Air Ionization Module J707 is actuated at entered power level in fresh-air mode (e.g. 40% in setting "40").
34	0	Intended for control and display unit, Climatronic Control Module J255 for alteration of humidity specification (introduction not yet finalized). ○ This adaptation function is not available on control and display units, Climatronic Control Module J255 installed at start of production (introduction not yet finalized, value is however not to be altered)

Adaptation channel	Basic Setting at factory	**Function**
35		Release of "residual heat" function of control and display unit, Climatronic Control Module J255
	0	• In Basic Setting "0" , control and display unit, Climatronic Control Module J255 is not switched on if "Econ" button is pressed for longer than approx. 3 s with ignition off (residual heat function) • In setting "1" , control and display unit, Climatronic Control Module J255 is switched on for max. 30 minutes if "On/Off" button is pressed for longer than approx. 3 s with ignition off (residual heat function)
	1	For vehicles with control and display unit, Climatronic Control Module J255 ○ Service alteration of this adaptation is not possible at present • In Basic Setting "1" , control and display unit, Climatronic Control Module J255 is switched on for max. 30 minutes (and switched off again) if "Econ" button is pressed for longer than approx. 3 s with ignition off (residual heat function). On vehicles with auxiliary heater installed as optional extra, this may be switched on depending on coolant temperature (not for USA) • In setting "0" , control and display unit, Climatronic Control Module J255 is not switched on if "Econ/On/Off" button is pressed for longer than approx. 3 s with ignition off (residual heat function)

Adaptation channel	Basic Setting at factory	**Function**
36		Adaptation channel not used at present
		Type of A/C Pressure/temperature Sensor G395 signal ○ Service alteration of this adaptation is not possible • In Basic Setting "1" , control and display unit, Climatronic Control Module

37	1	J255 expects signal from A/C Pressure/temperature Sensor G395 via air conditioner data bus system "Local Interconnect Network (LIN-Bus)". ○ In setting "0" , control and display unit, Climatronic Control Module J255 expects pressure signal (square-wave signal) from High Pressure Sensor G65 at input, connector "D" , contact "10"
38	0	Activation of "recirculated air mode" function with windshield wiper "wipe/wash mode" ○ The adaptation channel is used only for control and display units, Climatronic Control Module J255 , as of software number "0070" ○ The adaptation channel is not used for control and display units, Climatronic Control Module J255 , up to software number "0060" , A/C system is switched into recirculated air mode upon windshield wiper "wipe/wash mode". • At Basic Setting "0" , it is not switched to recirculated air mode when windshield wiper switch "wipe/wash mode" is operated ○ At setting "1" (may be performed upon customer request), control and display units, Climatronic Control Module J255 , switches the A/C system to recirculated air mode as soon as a request for windshield wiper "wipe/wash mode" is received via the CAN-Bus system (read measured value block, display group "022")
39	10	Display time for certain air conditioner setting functions on MMI display (Multi Media Interface) e.g. temperature setting, air distribution • In Basic Setting "10" , relevant air conditioner function appears in MMI display for 10 seconds. • In setting "2 to 200" , relevant air conditioner function appears in MMI display for set time (e.g. 20 s with setting "20"). ○ Adaptation value of "30" may have been set for control and display units installed at the start of production. If so, value is to be changed to "10". ○ Pressing relevant function button of control and display unit, Climatronic Control Module J255 a second time causes MMI display to return immediately to start menu.

Adaptation channel	Basic Setting at factory	**Function**
		Display time for certain setting functions on MMI display (Multi Media Interface) by way of air conditioner "Set-up" function (e.g. Econ) • In Basic Setting "10" , relevant air conditioner function appears in MMI

40	10	display for 10 seconds. • In setting "2 to 200" , relevant air conditioner function appears in MMI display for set time (e.g. 20 s with setting "20"). ○ Adaptation value of "30" may have been set for control and display units installed at the start of production. If so, value is to be changed to "10". ○ Pressing "Set-up" button a second time causes MMI display to return immediately to start menu.
41	0 (1)	Adaptation of air flow to windshield in summer in "Auto" setting on control and display unit, Climatronic Control Module J255 ○ In "Auto" mode, cooled air is routed to windshield in summer and may under certain circumstances lead to condensation forming on outside of windshield. ○ If code for "USA" or "Japan" has been entered, adaptation "1" is active • In Basic Setting "0" , air flow to windshield corresponds to that stored for this setting in control and display unit, Climatronic Control Module J255 in line with ambient conditions. • In setting "1" , air flow to windshield is less than that set in control and display unit, Climatronic Control Module J255 (defrost flap and indirect ventilation flap are closed almost completely)

Adaptation channel	Basic Setting at factory	**Function**
42	0	Adaptation of air routing to footwell in cooling mode (summer mode) • In Basic Setting "0" , footwell flaps are closed in cooling mode. ○ In setting "1" , footwell flaps are slightly open in cooling mode (approx. 20 %, small quantity of air is routed into footwell).
43	48	Shutoff temperature for "Solar mode" function ○ At low ambient temperatures, condensate may form on windshield in solar mode (fresh air drawn in by fresh-air blower is heated in Heating and A/C unit and absorbs moisture on passing through evaporator; this moisture then condenses again on cold windshield). • In Basic Setting "48" , "Solar mode" function is deactivated at ambient temperatures below 8 ° C (Celsius) • In setting "0 to 120" , "Solar mode" function is deactivated at set ambient temperature (e.g. at 0 ° C in setting "40")

		○ Adaptation value is calculated as follows: Specified shutoff temperature in ° C + 40 = Adaptation value (e.g. 40 + 8 ° C = 48)

Adaptation channel	Basic Setting at factory	**Function**
44	60	Time within which temperatures specified for Basic Setting in display group "003" must be attained • In Basic Setting "60" , specified temperatures must be attained within max. 300 s (60 x 5 = 300 s). ○ Specified time is not to be altered (malfunction has occurred if specified values are not attained) ○ In setting "0" , Basic Setting is not possible in display group "003" ○ In setting "1 to 254" , specified time is between 5 s (in setting "1") and 21 min. (in setting "254") ○ In setting "255" , Basic Setting procedure is implemented without time limitation until ignition is switched off (entry not permitted)
45	12	Time within which temperatures specified for Basic Setting in display group "004" must be attained • In Basic Setting "12" , specified temperatures must be attained within max. 60 s (12 x 5 = 60 s). ○ Specified time is not to be altered (malfunction has occurred if specified values are not attained) ○ In setting "0" , Basic Setting is not possible in display group "004". ○ In setting "1 to 254" , specified time is between 5 s (in setting "1") and 21 min. (in setting "254") ○ In setting "255" , Basic Setting procedure is implemented without time limitation until ignition is switched off (entry not permitted).

Adaptation channel	Basic Setting at factory	**Function**
46	10	Temperature difference between left and right side which must be attained in Basic Setting, display group "004". • In Basic Setting "10" , temperature difference must be at least 10 ° C (Celsius). ○ Specified time is not to be altered (malfunction has occurred if specified values are not attained)

		○ In setting "0 to 100" , specification is between 0 ° C (in setting "0") and 100 ° C (in setting "100") ○ It may no longer be possible to implement Basic Setting properly if value entered is too high (greater than e.g. "20"). Basic Setting value is therefore not to be altered.
47		Adaptation channel not assigned ○ Vehicles until model year 2007
	5 (or 0, depending on coding)	Temperature setting indicator in Multi Media Interface (MMI) display ○ Vehicles with "Comfort" version A/C system from model year 2007 (as running change in production) ○ Depending on coding and adaptation of front Climatronic Control Module J255 , the respective setting does not always appear on Multi Media Interface (MMI) display when turning the rotary temperature control. • At setting "5" (on all vehicles except for USA at this time), the temperature setting is shown on MMI display when turning rotary temperature control of front control and display unit Climatronic Control Module J255 • At setting "0" (only vehicles for USA at this time), the temperature setting is shown on MMI display when turning rotary temperature control of front control and display unit Climatronic Control Module J255 only when the rotary temperature control has been briefly pressed beforehand.
81	0	Adaptation channel not used at present • Intended for erasing chassis number stored in control and display unit, Climatronic Control Module J255 ○ This function is not active on control and display units, Climatronic Control Module J255 installed at the start of production (introduction not yet finalized) ○ At present, chassis number is not stored by control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

AIR CONDITIONING, ELECTRICAL CHECKS

Air conditioning, electrical checks

NOTE:

- **The "Electrical check" function is not described in this information. When**

implementing electrical checks by way of the "Guided Fault Finding" function, information is given on the functions to be checked "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- **The temperature-sensitive resistance values for the various temperature sensors are listed in a table which can be called up via the "Guided Fault Finding" function "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Electrical checks are to be performed as described in Guided Fault Finding routine "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Wiring and component check using test box V.A.G 1598 A

Special tools, testers and other items required

- Test box V.A.G 1598 A with Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12 (for control and display unit, Climatronic Control Module J255)
- Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Multimeter Leads VAS 5051/7 , Dso Measuring Leads 1 2 VAS 5051/8 and Inductive Pickup (50 Amp) VAS 5051/9
- Voltage tester V.A.G 1527 B
- Connector test set V.A.G 1594 C
- Temperature measuring instrument
- Wiring diagram for vehicle system to be checked --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

COMPONENTS ACTUATED BY CONTROL AND DISPLAY UNITS, CLIMATRONIC CONTROL MODULE J255 , ELECTRICAL CHECKS

Heated Rear Window Z1 , checking

NOTE:

- **Situations preventing activation of heated rear window (short circuit in connection to rear window, open circuit in power supply to control and display unit, Climatronic Control Module J255) are stored as DTCs in control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If voltage measured at Energy Management Control Module J644 at terminal "30" drops below value stored in Energy Management Control Module J644 , heated rear window is deactivated e.g. by Vehicle Electrical System Control Module J519 (or power is reduced) to relieve load on generator "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

- **Heated rear window is only actuated by Vehicle Electrical System Control Module J519 when engine is running. With engine stopped, there is no feedback from Vehicle Electrical System Control Module J519 and LED in button of control and display units, Climatronic Control Module J255 goes out again shortly after actuation.**
- **If heated rear window has to be deactivated on account of insufficient voltage, indicator lamp in button for heated rear window in control and display units, Climatronic Control Module J255 remains on. However if deactivation lasts longer than approx. 150 s, control and display units, Climatronic Control Module J255 switch off indicator lamp.**
- **Measured value block of control and display unit, Climatronic Control Module J255 shows that Heated Rear Window Z1 is on or indicates why there is no actuation in spite of corresponding request (display groups "023" and "033" to "035") "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Checking actuation of heated rear window operation is described in Guided Fault Finding for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **At ambient temperatures greater than 0 °C, heated rear window is switched off automatically by control and display unit, Climatronic Control Module J255 on completion of operating period stored in control and display unit, Climatronic Control Module J255 (approx. 10 minutes).**
- **At ambient temperatures below 0 °C, heated rear wi ndow remains switched on until ignition is switched off (manual deactivation and re-activation are possible at any time). If the temperature during a driving cycle rises above 0 °C, Heated Rear Window Z1 is d eactivated on completion of operating period stored in control and display unit, Climatronic Control Module J255 (approx. 10 minutes).**
- **Depending on version of control and display unit, Climatronic Control Module J255 , "heated rear window on" function is stored when ignition is switched off and heated rear window is re-activated after starting engine.**

Heated seats, checking

NOTE:

- **Situations preventing activation of drivers/front passengers seat heating (short circuit in connection to seat heating element, open circuit in power supply to control and display unit, Climatronic Control Module J255) are stored as DTCs in control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Checking actuation of heated seat operation is described in Guided Fault Finding for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

- **If voltage measured at Energy Management Control Module J644 at terminal "30" drops below value stored in Energy Management Control Module J644 , seat heating is deactivated (or power is reduced) to relieve load on generator (electronics system of control and display unit, Climatronic Control Module J255 reduces actuation duty cycle from 100% to 90 to 0%) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 (control modules exchange appropriate information by way of convenience CAN-Bus system).**
- **Measured value block of control and display unit, Climatronic Control Module J255 shows that front seat heating is on or indicates why there is no actuation in spite of corresponding request (display groups "027" , "028" and "033" to "035") "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **In vehicles with seat occupied sensor system, the seat heaters for front passengers seat and rear seats may be switched off after approx. 10 minutes, if Airbag Control Module J234 detects the seat is unoccupied (read measuring value block of Airbag Control Module J234 Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" function).**

Heated Windshield Z2 , checking actuation

NOTE:

- **On vehicles with "heated windshield" as optional extra (introduction not yet finalized), Heated Windshield Control Module J505 is actuated by control and display unit, Climatronic Control Module J255 by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)". Actuation is displayed in measured value block (display groups "033" to "035" and "045" to "047") "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Checking actuation of heated windshield "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052**

"Solar mode" function, checking on vehicles with sun roof with solar cells

NOTE:

- **On vehicles with "sun roof with solar cells" as optional extra (introduction not yet finalized), Fresh Air Blower V2 is started up by way of Fresh Air Blower Control Module J126 with ignition off "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Depending on adaptation of control and display unit, Climatronic Control Module J255 (adaptation channel "011"), "Solar mode" function can be deactivated via MMI (Multi Media Interface) (control modules exchange**

appropriate information via convenience CAN-Bus system) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- **Depending on adaptation of control and display unit, Climatronic Control Module J255 (adaptation channel "043"), "Solar mode" function is deactivated by Fresh Air Blower Control Module J126 at low ambient temperatures (control modules exchange appropriate information by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)") "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Measured value block of control and display unit, Climatronic Control Module J255 indicates for example the number of Fresh Air Blower Control Module J126 operating hours in solar mode (display groups "043" and "044") "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Checking sun roof with solar cells --> Operation of solar roof and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052**

87 - AIR CONDITIONING

SAFETY MEASURES WHEN WORKING ON VEHICLES WITH AIR CONDITIONER AND FOR HANDLING REFRIGERANT

Safety measures when working on vehicles with air conditioner and for handling refrigerant

The assemblies and piping system of the air conditioner are filled with the following refrigerant:

1.1.1.2 tetrafluoroethane (CF_3-CH_2F or CH_2F-CF_3)

This refrigerant is currently marketed in Germany as R134a, H-FKW 134a, SUVA 134a and KLEA 134a (trade names may vary in other countries).

Safety measures

Safety measures

- The subassemblies and lines of the air conditioner are filled with tetrafluoroethane also known as refrigerant R-134a.
- Refrigerant R-134a replaces the refrigerant R-12 which is reported to have harmful effects on the earths ozone layer.
- R-134a and R-12 systems are similar in design but there are very important differences in the refrigerants, lubricating oils, service equipment and A/C system components.

CAUTION:

- **Always use an Underwriters Laboratory (UL) approved refrigerant**

recovery/recycling/recharging unit such as Kent-Moore ACR [4] , or equivalent, whenever discharging an R-134a A/C system.

- **As of January 1, 1992 any person who services a motor vehicle air conditioner MUST, by law, be properly trained and certified and use approve refrigerant recycling equipment. Technicians must complete an EPA approved recycling course to be certified.**
- **State and Provincial governments may have additional requirements regarding air conditioning servicing. Always comply with state and local laws.**
- **A/C system is filled with refrigerant which is under pressure.**
- **Refrigerant must not come in contact with your skin.**

If liquid refrigerant has come in contact with your skin or eyes:

- **Do not rub skin or eyes**
- **Immediately flush with cool water for 15 minutes**
- **Rush to a doctor or hospital**
- **Do not attempt to treat yourself**
- **Switch on existing exhaust/ventilation systems when working on the refrigerant system.**
- **Work in a well ventilated area because refrigerants are heavier than air, displace oxygen and may cause suffocation in areas of poor air circulation, like under the car.**
- **Avoid breathing refrigerant vapors. Exposure may irritate eyes, nose and throat.**
- **Always wear hand and eye protection (gloves and goggles) when working around the A/C refrigerant system.**
- **Do not expose any component of the A/C system to high temperatures (above 80 °C/176 °F) or open flames. Excessive heat will cause a pressure increase which could burst the system.**
- **Keep refrigerant containers stored below 50 °C (12 2 °F) and never drop from high places. DO NOT warm refrigerant containers with an open flame. If refrigerant needs to be warmed, place bottom of tank in warm water.**
- **Keep refrigerant away from open flames because poisonous gas will be produced if it burns. Do not smoke when refrigerant are present for the same reason.**
- **Electric welding near refrigerant hoses causes R-134a to decompose from ultraviolet light. Discharge system before electric welding.**
- **Pressurized R-134a refrigerant in the presence of oxygen may form a combustible mixture. Never introduce compressed air into any**

closed R-134a container (full or empty), A/C component or piece of service equipment.

- **DO NOT exceed maximum rated capacity of refrigerant containers. Never fill a container to more than 60% of its gross weight rating (for example, 18 lb. in a 30 lb. container.) Without sufficient room for expansion of R-134a (gas cushion), the container could explode when the temperature rises causing serious injury.**
- **Do not steam clean condensers or evaporators. Use only cold water or compressed air.**

CAUTION:

- **R-12 and R-134a refrigerants are NOT compatible. Never add R-12 refrigerant to an R-134a system or R-134a refrigerant to an R-12 system. If the refrigerants are mixed, total system contamination will occur and compressor failure may result.**
- **Refrigerant oils used for the R-134a system and R-12 system are NOT compatible. Use only the specified synthetic oil (Polyalkylene Glycol/PAG) for the R-134a refrigerant system. DO NOT use R-12 system oil in an R-134a system or R-134a system oil in an R-12 system. If the refrigerant oils are mixed, system contamination will occur and compressor failure may result.**
- **R-134a refrigerant system oil (PAG oil) absorbs moisture very rapidly. Moisture combines with the refrigerant to form acids which will damage the system. Use only the specified oil from a sealed container and ALWAYS reseal oil container immediately after use. DO NOT use oil if it has become contaminated with moisture or if container has been left open.**
- **Immediately plug open connections on A/C components to prevent dirt and moisture contamination. Likewise, DO NOT remove new component from packaging until ready to install. Immediately tighten component connections after installation.**
- **Always use separate refrigerant recovery/recycling/recharging servicing equipment for R-12 and R-134a systems. DO NOT use one piece of equipment for both R-12 and R-134a systems. The residual traces of refrigerant will contaminate and damage the equipment. Servicing equipment includes recovery/recycling/recharging unit, charging station, vacuum pump, manifold gauges, etc.**
- **DO NOT use R-12 servicing equipment on R-134a systems or R-134a equipment on R-12 systems or damage to both the vehicle A/C system and servicing equipment may result. Use only equipment designed to meet Society of Automotive Engineers (SAE) standards.**
- **R-134a and R-12 systems use different size service fittings. NEVER use adapters to convert an R-12 fitting to R-134a size or R-134a fitting to R-12 size.**

- **R-134a and R-12 A/C components including compressor, hoses, O-rings, evaporator, condenser, receiver-drier, etc. are NOT interchangeable. Components of the R-134a system are identified by lettering "R-134a" or by a green label (or stripe). In addition, a label on the evaporator housing (below plenum tray) identifies which type of refrigerant is used. Use only the correct system component for each refrigerant type.**
- **Always replace damaged and/or leaking A/C system components. Do not attempt repair by soldering, brazing or welding.**
- **Work area must be extremely clean when working on A/C system components.**
- **Use only tools, equipment and parts specified for use with R-134a.**
- **Switch on existing exhaust/ventilation systems when working on the refrigerant system.**
- **Discharge A/C system using refrigerant recovery/recycling/recharging unit Kent-Moore ACR ^{4} , or equivalent, before removing any A/C system component.**
- **Always replace O-rings, DO NOT reuse. Use only the correct size and type of O-rings specified for use with R-134a refrigerant. Lubricate O-ring with refrigerant - oil before installing.**
- **Always reinstall cap(s) over A/C service valve(s).**

Refrigerant circuit, draining

Refrigerant is never to be allowed to escape into the atmosphere, but is rather to be extracted from the refrigerant circuit using an extractor or service station. The refrigerant removed is then either to be reprocessed on site or returned to the manufacturer for proper disposal (different or additional regulations may apply in other countries) Refrigerant R134a - Servicing.

Explanation:

Should it escape into the earths atmosphere, refrigerant R134a will have a detrimental effect in terms of global warming.

NOTE:

- **Refrigerant R134a has far less of a greenhouse effect than R12.**
- **Refrigerant R134a does not affect the earths ozone layer (R134a is an H-FC with no chlorine atoms). Depletion of the ozone layer in the upper atmosphere is however only brought about by the splitting of carbon-chlorine bonds (as is the case, for example, with refrigerant R12).**

After draining air conditioner, unplug connector from A/C Compressor Regulator Valve N280 or from A/C Pressure/temperature Sensor G395.

Explanation:

A/C Compressor Regulator Valve N280 is then no longer actuated and compressor runs at idle. Compressor is designed such that lubrication of compressor components is guaranteed by way of an internal oil circuit at idle (provided there is sufficient refrigerant oil in the compressor).

Working on refrigerant circuit

Work on refrigerant circuit is only to be performed in well ventilated areas where there are no inspection pits, shafts or cellar entrances within a radius of 5 meters. Extraction systems are to be switched on.

Explanation:

The refrigerant emerging is not only colorless and odorless, but also heavier than air and thus displaces oxygen. Should refrigerant gas nevertheless escape, this can result in an imperceptible danger of asphyxiation in poorly ventilated areas and inspection pits.

NOTE:

- **The mixture of gas and air which forms when refrigerant gas escapes must not be inhaled. Use is to be made of suitable workshop extractors.**

Welding, brazing and soldering are not permitted on sections of the air conditioner when filled. This also applies to vehicle welding and soldering work if there is a danger of air conditioner components becoming warm.

Explanation:

Exposure to heat creates considerable pressure in the system which could cause it to burst.

Remedy:

Drain refrigerant circuit.

NOTE:

- **Damaged or leaking parts of the air conditioner are never to be repaired by welding or soldering them. They are always to be replaced.**

When servicing air conditioner, all open components and pipe connections are to be immediately re-sealed.

Explanation:

Moisture will enter air conditioner components if they are left open for a lengthy period. If this is the case, air conditioners cannot be refilled without having to replace parts of the system.

Painting work on vehicles with air conditioner

When performing paintwork repairs, object temperatures of 80 ° C are not to be exceeded in drying booths or their preheating zones.

Explanation:

Exposure to heat creates considerable pressure in the system which could cause it to burst.

Additional information

Relevant wiring diagrams can be found in Electrical Wiring Diagrams, Troubleshooting Component Locations. --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

A label in the engine compartment indicates the refrigerant used as well as the capacity (not provided on all vehicles).

GENERAL REPAIRS, NOTES

General repairs, notes

CAUTION: Remove appropriate fuse(s) before working on wiring.

NOTE:

- **Disconnect batteries before starting electric welding work on vehicle --> 27 - STARTER, GENERATOR, CRUISE CONTROL**

It is only permissible if so required by the pertinent safety regulations ( ), or if parts of the air conditioner refrigerant circuit have to be replaced, to drain and open the air conditioner refrigerant circuit.

The air conditioner refrigerant circuit must remain closed during all other normal vehicle repair operations.

For air conditioner servicing work which can be performed without opening refrigerant circuit, refer to --> **Refrigerant circuit, servicing**.

For air conditioner servicing work requiring opening of the refrigerant circuit, refer to --> **Refrigerant circuit, servicing**.

NOTE:

- **The connections for the senders/switches described in this information are installed with a valve which closes automatically when the switches are unscrewed. These switches can be replaced without draining the refrigerant circuit.**

For air conditioner servicing work which involves draining the refrigerant circuit, refer to --> **Refrigerant circuit, servicing**.

Contact corrosion

Contact corrosion can occur if use is made of unsuitable connecting elements (bolts, nuts, washers), rivets, plugs, grommets, adhesives, etc.

For this reason, all the connecting elements installed have been subjected to special surface treatment by the manufacturer. This can be seen from the greenish color of such elements. Use is also made of rubber and plastic parts as well as adhesives which are not electrically conductive Parts List.

These tested, aluminium-compatible components are also available as replacement parts Parts List.

Always use genuine parts.

Always install new parts in cases of doubt about re-use.

Accessories must have been approved by Audi AG.

Damage caused by contact corrosion is not covered by warranty.

REFRIGERANT CIRCUIT, SERVICING

Component overview

- In the following information, refrigerant circuit servicing work is split up into two categories.
  - All parts/operations marked 1) can be serviced and replaced without opening refrigerant circuit.
  - All parts of the refrigerant circuit not marked 1) as well as all refrigerant hoses and pipes must only be serviced/replaced after draining refrigerant circuit --> **Refrigerant circuit, servicing**.

HD = High-pressure side

ND = Low-pressure side

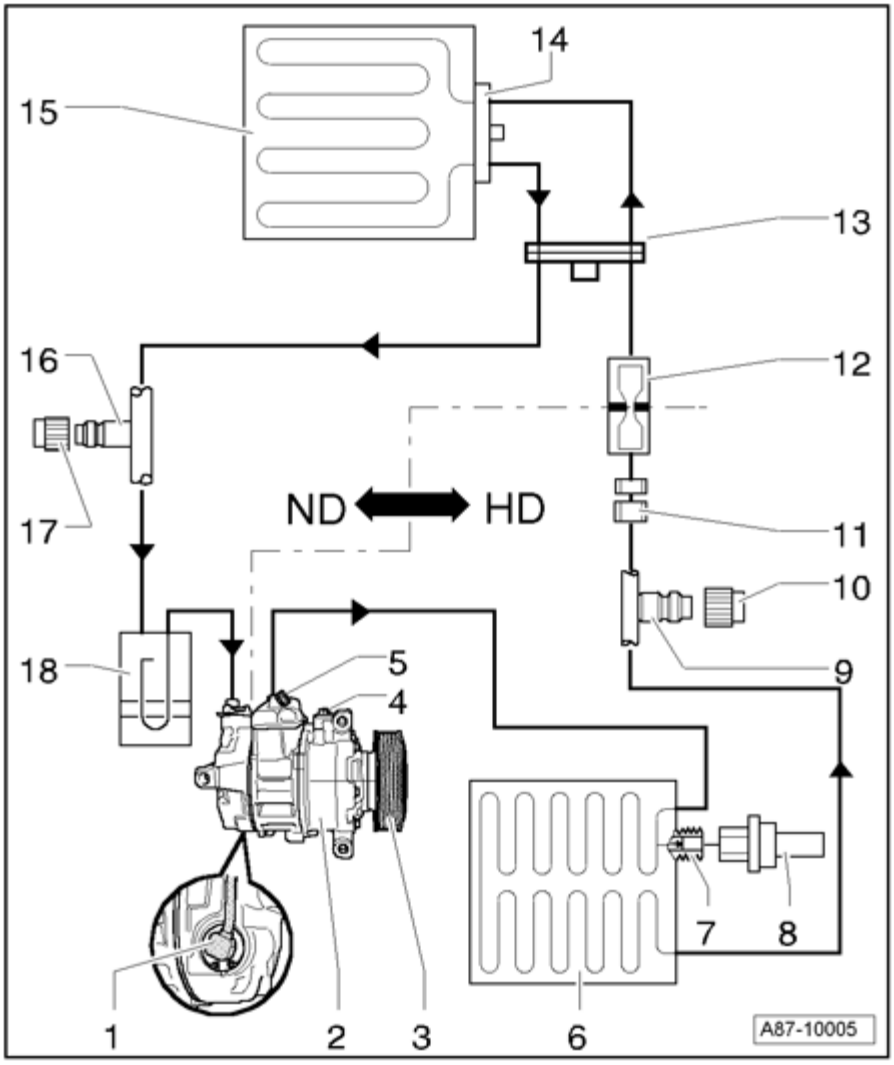

Fig. 29: Refrigerant Circuit, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - A/C Compressor Regulator Valve N280

- Checking actuation and operation --> **A/C Compressor Regulator Valve N280 , checking cut-in signal**1)

2 - Compressor

- Different versions depending on engine Parts List
- Removing compressor with pulley from holder/re-installing (vehicles with 4 or 6-cyl. engine) --> **Compressor (with pulley), removing from holder/installing**1)
- Removing compressor with drive unit (shaft) from holder/re-installing (vehicles with 8-cyl. engine) --> **Compressor (vehicles with 8-cyl. engine), removing and installing**
- Disconnecting refrigerant pipe at compressor/connecting --> **Refrigerant pipes, disconnecting at**

compressor/connecting

- When installing refrigerant pipes and corresponding holder, make sure there is sufficient distance between belt, holder and pulley
- Removing and installing compressor (vehicles with 4 or 6-cyl. engine) --> **Compressor (vehicles with 4 or 6-cyl. engine), removing and installing**
- Removing and installing compressor (vehicles with 8-cyl. engine) --> **Compressor (vehicles with 8-cyl. engine), removing and installing**
- Removing and installing compressor (vehicles with 10 cyl.- engine) --> **Compressor - vehicles with 10-cylinder engine (Audi S6), removing and installing**

3 - Pulley/drive unit for compressor

- Different versions depending on engine Parts List
- Replacing compressor pulley (vehicles with 4 or 6-cyl. engine) [1)] --> **Compressor pulley, replacing**
- Removing and installing poly V-belt [1)] -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA
- Poly V-belt assignment Parts List

- Replacing compressor drive unit (vehicles with 8-cyl. or 10-cyl. engine) --> **Compressor drive unit, checking/replacing**

NOTE:

- **An overload safeguard is installed between pulley and drive shaft of compressor to protect belt if compressor becomes jammed or stiff.**
- **An overload safeguard is installed between drive unit and drive shaft of compressor to protect chain drive of engine if compressor becomes jammed or stiff.**
- **If compressor is not operating smoothly, overload safeguard interrupts power transmission to compressor.**
- **Rubber elements are installed between pulley/drive unit and compressor drive shaft to cushion any vibration occurring during compressor operation (damper function in the event of torque fluctuations).**

4 - Oil drain plug

5 - Pressure relief valve

6 - Condenser

7 - Connection with valve

8 - A/C Pressure/temperature Sensor G395

- Removing and installing --> **A/C Pressure/temperature Sensor G395 , removing and installing**
- Housing color "Grey"
- Checking signal (Read Measuring Value Block, display group "001") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

NOTE:

- **Measured values of A/C Pressure/temperature Sensor G395 can also be read out by way of "Read Measuring Value Block" function in display group "054".**
- **A/C Pressure/temperature Sensor G395 exchanges information by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with control and display unit, Climatronic Control Module J255. Audi A6 is therefore not to be installed with High Pressure Sensor G65 (only emits square-wave signals) Parts List.**
- **On account of the design of the A/C Pressure/temperature Sensor G395 and its component location, temperature measured by A/C Pressure/temperature Sensor G395 differs from actual temperature of refrigerant in refrigerant circuit. At present this is therefore not evaluated and used for air conditioner regulation.**

9 - Service connection

- High-pressure side
- Different versions (with primary sealing valve or Schrader valve) depending on refrigerant pipe; distinguishing features Refrigerant R134a - Servicing
- For measuring, draining and filling

CAUTION: Refrigerant circuit must be drained before removing service connections (connection has no valve).

10 - Cap

- With seal
- Always to be screwed on

11 - Screw connection in refrigerant pipe (with restrictor)

- Refrigerant circuit must be drained before opening screw connection Refrigerant R134a - Servicing

12 - Restrictor

13 - Screw connection in refrigerant pipe (to evaporator)

- Refrigerant circuit must be drained before opening screw connection Refrigerant R134a - Servicing

14 - Refrigerant pipe screw connection (at evaporator)

- Refrigerant circuit must be drained before opening screw connection Refrigerant R134a - Servicing

15 - Evaporator

16 - Service connection

- Low-pressure side
- Different versions (with primary sealing valve or Schrader valve) depending on refrigerant pipe; distinguishing features Refrigerant R134a - Servicing

17 - Cap

- With seal
- Always to be screwed on

18 - Reservoir

A/C Pressure/temperature Sensor G395 , removing and installing

NOTE:

- **Cooling output cannot be checked with A/C Pressure/temperature Sensor G395 removed. Control and display unit, Climatronic Control Module J255 does not switch on compressor.**
- **Refrigerant circuit remains closed (connection with valve).**
- **Measured values of A/C Pressure/temperature Sensor G395 can be read out by way of function "Read Measuring Value Block" (display group "001") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **A/C Pressure/temperature Sensor G395 exchanges information by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display group "054") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

- **On account of the design of the A/C Pressure/temperature Sensor G395 and its component location, temperature measured by A/C Pressure/temperature Sensor G395 differs from actual temperature of refrigerant. At present this is therefore not evaluated and used for air conditioner regulation.**
- **Audi A6 is only to be installed with A/C Pressure/temperature Sensor G395 (housing color "Grey") Parts List.**
- **Audi A6 is not to be installed with High Pressure Sensor G65 (housing color "Black") (only emits square-wave signals) Parts List.**

Removing and installing

Remove front bumper cover --> **63 - BUMPERS** .

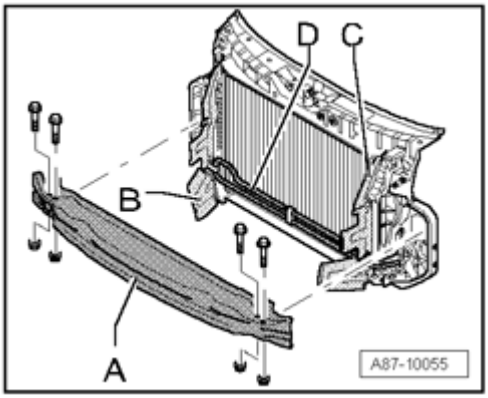

Fig. 30: Identifying Air Duct And Mount For Bumper Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove air duct - **C** - and (depending on vehicle model) mount for bumper cover - **A** - --> **63 - BUMPERS** .

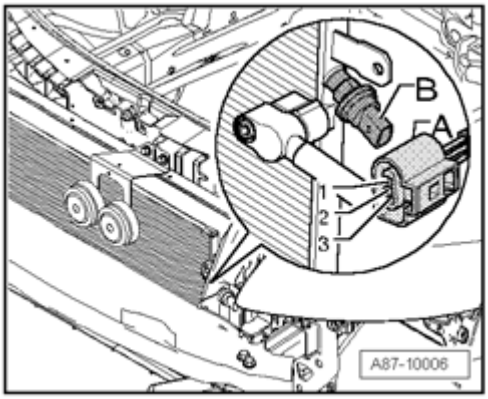

Fig. 31: Identifying Connector And A/C Pressure/Temperature Sensor G395
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unplug connector - **A** - from A/C Pressure/temperature Sensor G395 - **B** -.
- Remove A/C Pressure/temperature Sensor G395 - **B** - (housing color "Grey"), tightening torque: 8 Nm.

NOTE:

- **A/C Pressure/temperature Sensor G395 with black housing may also be installed at the start of production. Attention is therefore to be paid to part number on component (risk of interchange with High Pressure Sensor G65) Parts List.**
- **Replace O-ring - C - --> O-rings for refrigerant circuit (assignment Parts List).**

A/C Pressure/temperature Sensor G395 , pin assignments

Contact 1: Ground (GND)

Contact 2: Signal output (via air conditioner data bus system "Local Interconnect Network (LIN-Bus)" to control and display unit, Climatronic Control Module J255)

Contact 3: Positive (terminal "75")

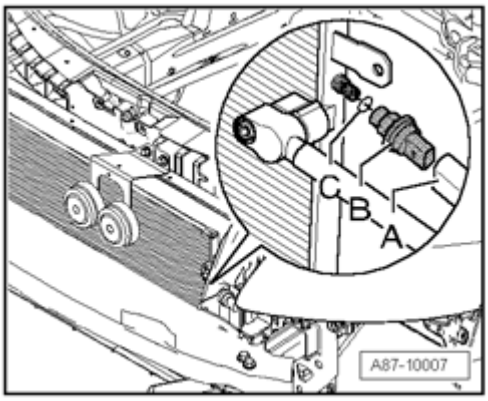

Fig. 32: Identifying Connector And A/C Pressure/Temperature Sensor G395
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **With connector - A - unplugged, compressor (A/C Compressor Regulator Valve N280) is not actuated.**
- **The A/C Pressure/temperature Sensor G395 - B - is an electronic control module.**

O-rings for refrigerant circuit

- O-rings are only ever to be used once and then replaced.
- Moisten O-rings with refrigerant oil before installing.
- Pay attention to correct positioning of O-rings on pipe or in groove.

- Ensure absolute cleanliness when working (even the slightest contamination, e.g. a single hair, could cause leakage).

NOTE:

- **Only O-rings which are resistant to refrigerant R134a and the corresponding refrigerant oil may be installed. Such O-rings are color coded to prevent mix-ups (currently "red" , "lilac" or "violet"): Parts List**

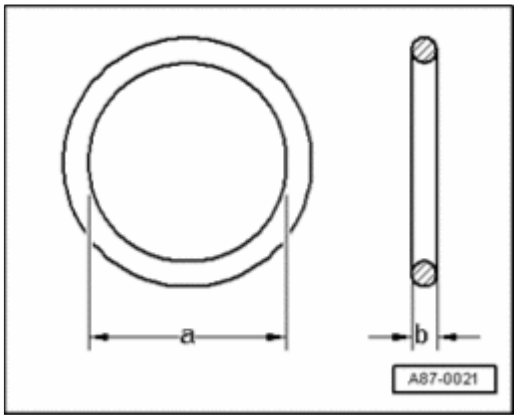

Fig. 33: Identifying A/C Refrigerant System O-rings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Dimensions - **a** - and - **b** - differ depending on component location of O-ring: Parts List
- In addition to the colored O-rings, black O-rings are also used at the factory for certain connections.

Compressor (with pulley), removing from holder/installing

NOTE:

- **Compressor can be removed from holder and re-installed without opening up refrigerant pipes.**
- **Do not drain refrigerant circuit, do not disconnect refrigerant hoses and pipes from compressor.**
- **Do not unfasten refrigerant pipes and corresponding clamps.**
- **After removing, use wire for example to install compressor to longitudinal member. Never leave hanging from refrigerant pipes.**
- **Before removing, mark direction of poly V-belt with chalk or felt-tip pen. Running a used belt in the opposite direction could destroy it.**
- **Different compressors may be installed depending on engine and country version Parts List.**
- **On vehicles with electric engine mountings, pay attention to correct assignment of connectors at engine mounting and A/C Compressor Regulator Valve N280 , as these components have identical connectors. If connectors are interchanged, no DTC is stored (components have roughly the same electrical values). Engine mounting is then actuated by control and display unit, Climatronic Control Module J255 and A/C Compressor**

Regulator Valve N280 by Engine Control Module (ECM).

- **The following illustration shows the compressor for a vehicle with 6-cyl. gasoline direct injection engine (FSI). Position of compressor varies slightly with other engines. Tightening torques and further removing/installing operations are however for the most part identical.**

Compressor with pulley, removing from holder

- Remove top engine cover -->
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

  .
- Remove center noise insulation --> **50 - BODY - FRONT** .
- Mark direction of poly V-belt.
- Loosen and remove poly V-belt -->
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

- Depending on engine version, remove oil filter and oil cooler if necessary and protect sealing surface against damage (on removing compressor) -->
  - **17 - ENGINE LUBRICATION** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **17 - ENGINE - LUBRICATION** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **17 - ENGINE - LUBRICATION** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ

- **17 - ENGINE - LUBRICATION** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
- **17 - ENGINE - LUBRICATION** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

.

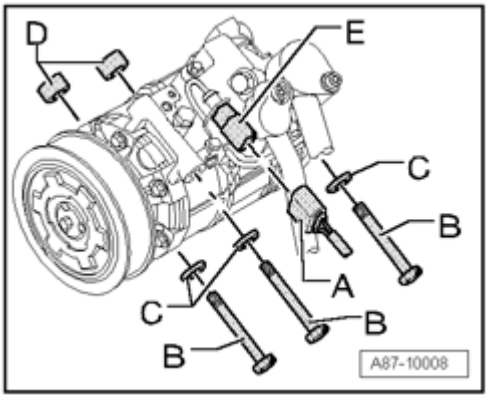

Fig. 34: Identifying Connector, Mating Connector, And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **A** -.
- Unplug connector - **A** - from mating connector - **E** - to A/C Compressor Regulator Valve N280.
- Screw out the three bolts - **B** -.
- Remove compressor and use wire, for example, to attach it to vehicle.

Compressor, installing with pulley to holder

Install in reverse order, paying attention to the following:

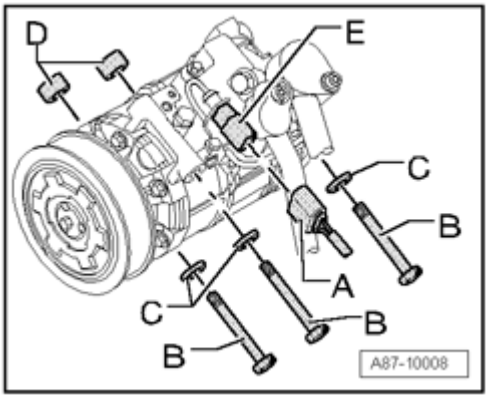

Fig. 35: Identifying Connector, Mating Connector, And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before securing compressor, check position of both bushes - **D** - in holder or compressor.

- Install one washer - **C** - at each bolt - **B** - (tightening torque 25 Nm).
- Before installing poly V-belt, crank compressor 10 times by hand following installation.

NOTE:

- **Cranking action forces any refrigerant oil which may have collected in compression chamber out of compression chamber on removal of compressor.**
- **After installing compressor, check routing of refrigerant pipes. They must be inserted in holders provided (if installed, depends on engine).**
- **After installing compressor, also check refrigerant pipes and corresponding holders for adequate clearance with respect to other components, ensuring sufficient distance between belt, holder and pulley.**

A/C Compressor Regulator Valve N280 , checking cut-in signal

- Switch off ignition.
- Remove noise insulation --> **50 - BODY - FRONT** .

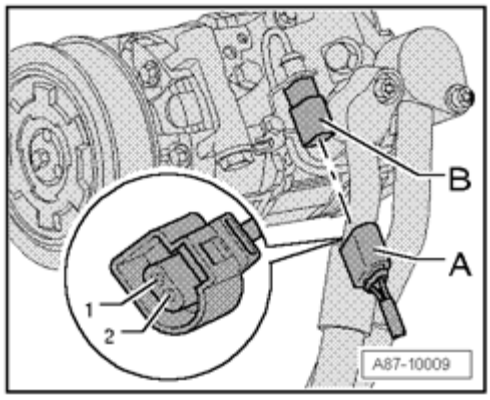

Fig. 36: Identifying Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **A** -.

NOTE:

- **On vehicles with 8-cyl. engine, this connector is not connected to compressor but rather to front of engine above compressor.**
- **On vehicles with electric engine mountings, pay attention to correct assignment of connectors at engine mounting and A/C Compressor Regulator Valve N280 , as these components have identical connectors. If connectors are interchanged, no DTC is stored (components have roughly the same electrical values). Engine mounting is then actuated by control and display unit, Climatronic Control Module J255 and A/C Compressor Regulator Valve N280 by Engine Control Module (ECM).**
- **Unplug connector - A - from mating connector - B - to A/C Compressor**

Regulator Valve N280.

- **Use adapter cable from connector test set V.A.G 1594 C to re-establish connection between connector - A - and connector - B - to A/C Compressor Regulator Valve N280.**

NOTE:

- **Actuation of A/C Compressor Regulator Valve N280 and current measured by control and display unit, Climatronic Control Module J255 which flows via A/C Compressor Regulator Valve N280 are displayed in measured value block of control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display group "001") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

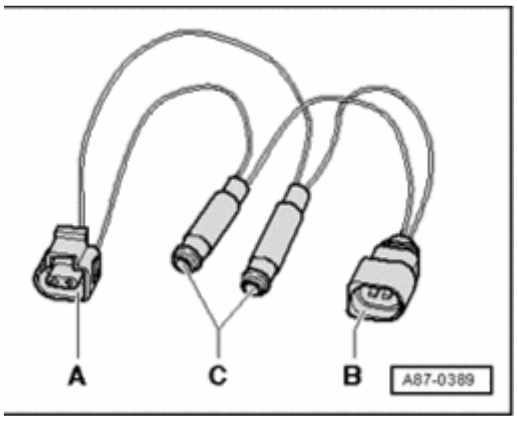

Fig. 37: Identifying Connectors & Sockets For Banana Plugs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use can also be made for this test of an improvised adapter cable. This requires, for example, one connector - **A** - and - **B** - each (with part number 1J0 973 702 and 1J0 973 802 and the corresponding plug contacts), two commercially available sockets for banana plugs - **C** - and two wires with a cross section of 0.5 mm^2 .

  - Connect Dso Measuring Leads 1 2 VAS 5051/8 to adapter leads.

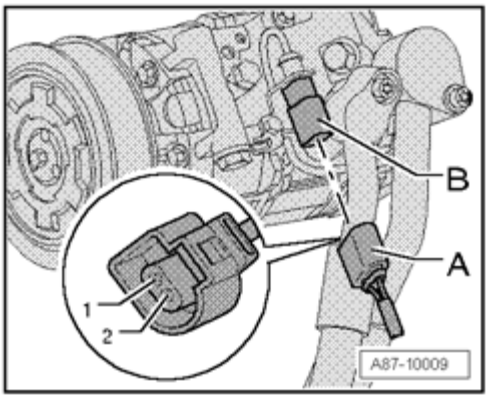

Fig. 38: Identifying Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Test lead (signal wire) to contact - **2** - of connector - **A** -
- Test lead (screen, Ground (GND)) to contact - **1** - of connector - **A** -
- On Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 , set measurement mode: DSO (Digital Storage Oscilloscope) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Make the following setting on Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 : 5V/div DC, 0.5ms/div (5V DC and 0.5 milliseconds per unit)
- Start engine.
- Set temperature for drivers and front passengers side on control and display unit, Climatronic Control Module J255 to maximum cooling output (e.g. "Lo" temperature setting or both rotary temperature controls on "cold stop").
- On control and display unit, Climatronic Control Module J255 , press buttons "Auto" and "Off/On" or "Econ" for example to activate and deactivate actuation of A/C Compressor Regulator Valve N280.

Display on oscilloscope screen will be as follows depending on setting on control and display unit, Climatronic Control Module J255 :

- In "OFF" or "Econ" mode: No square-wave signal (A/C Compressor Regulator Valve N280 is not actuated)

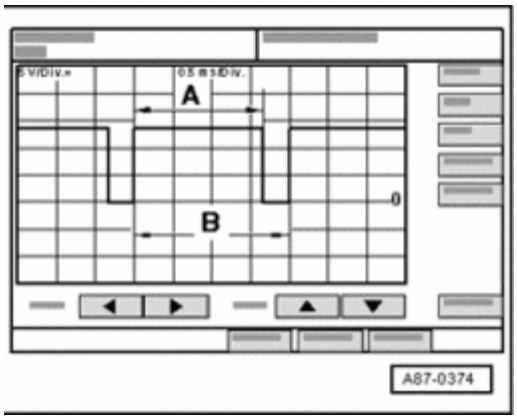

Fig. 39: Oscilloscope Screen Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In "Auto" mode and "Lo" temperature setting: Square-wave signal with pulse width - **A** - between 75% and 100% (A/C Compressor Regulator Valve N280 is actuated)

NOTE:

- **The illustration shows a signal with a ratio of approx. 80%.**
- **Pulse width - A - is governed by required cooling output, electrical system voltage etc. (over width of area - A - , current is controlled via A/C Compressor Regulator Valve N280 by control and display unit, Climatronic Control Module J255).**
- **The signal distance - B - is always 2 milliseconds (corresponding to a frequency of 500 Hertz).**

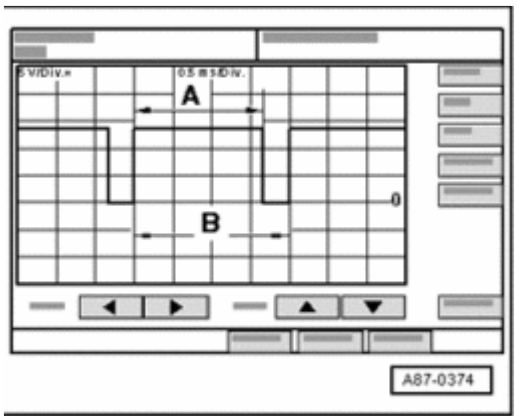

Fig. 40: Oscilloscope Screen Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The signal ratio is derived from the ratio of pulse width - **A** - to signal distance - **B** -.

- Setting on control and display unit, Climatronic Control Module J255 and measured ambient influences govern pulse width of square-wave signal (signal ratio between 100% and greater than 30%, A/C Compressor Regulator Valve N280 is actuated such that compressor output required to obtain specified temperatures is achieved).

NOTE:

- **In "Auto" mode with "Lo" temperature setting, for example A/C Compressor Regulator Valve N280 is actuated such that max. perm. current of approx. 0.65 A flows via A/C Compressor Regulator Valve N280 (maximum compressor output).**
- **In control mode, actuation time is governed by required cooling output and vehicle electrical system voltage, for example. It is however always of sufficient duration to achieve a mean current of 0.3 A.**

COMPRESSOR PULLEY, REPLACING

Pulley, replacing

NOTE:

- **Various pulley designs are installed depending on type of compressor and engine Parts List.**
- **Removing pulley from compressor/re-installing --> Pulley, removing from compressor/re-installing**

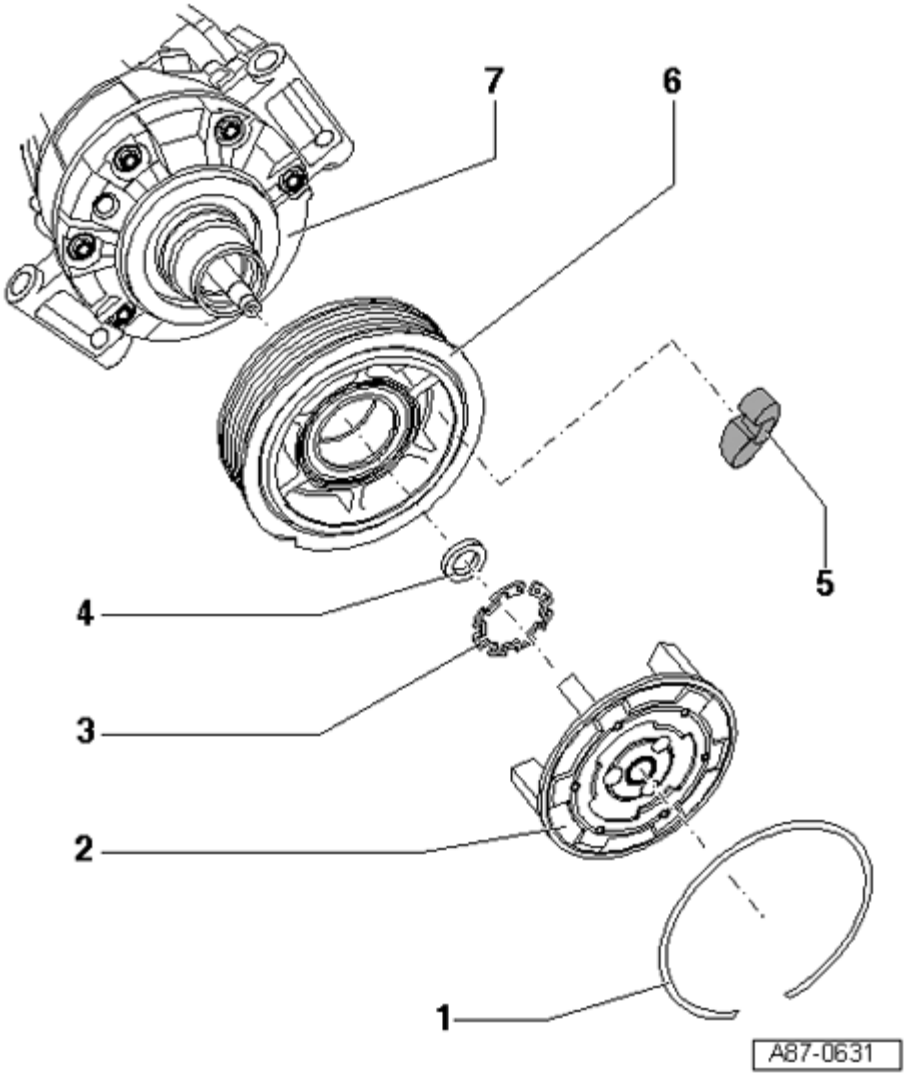

Fig. 41: Belt Pulley (Version "2"), Replacing Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Circlip

- Remove carefully using small screwdriver or pointed-nose pliers (paying particular attention to pulley)
- Removing/installing --> **Pulley, removing from compressor/re-installing**
- As of model year 2006, circlips with a rubber disc vulcanized on to them are installed as a running change, this rubber disc replaces the plastic disc which may be glued on up to then (not present on all compressors)

2 - Drive plate

- Screwed to compressor drive shaft
- Different versions Parts List

- With overload safeguard, tripped in the event of excessive torque (e.g. stiff compressor) and pulley just free-wheels without driving compressor
- Removing/installing --> **Pulley, removing from compressor/re-installing**

- Tightening torque 35 Nm
- A plastic washer may be glued on, depending on time period of production --> **Pulley, removing from compressor/re-installing**.

3 - Circlip

- Replace
- Ensure correct positioning (flat side facing compressor)
- Removing and installing --> **Pulley, removing from compressor/re-installing**

4 - Spacer

- Dimensions: 17.5 x 10 x 3 mm

5 - Rubber elements

- 6x, ensure correct installation --> **Pulley, removing from compressor/re-installing**
- Decouples pulley from compressor drive shaft, damps vibration and noise
- On installation, moisten rubber elements slightly with tire assembly paste or soap solution for example to provide lubrication

6 - Pulley

- Pulley is made of plastic, is sensitive to impact and should be treated with extreme care
- Different versions Parts List
- Removing/installing --> **Pulley, removing from compressor/re-installing**

7 - Compressor

- Different models may be installed depending on engine and country version Parts List
- Clean compressor flange before installing pulley

Pulley, removing from compressor/re-installing

NOTE:

- **If pulley overload safeguard has been tripped, check freedom of movement of compressor before replacing pulley. Replace entire compressor if it is stiff.**
- **Depending on engine version, removing of pulley may involve separating compressor from engine --> Compressor (with pulley), removing from**

holder/installing.

- **Compressor can be removed from holder and re-installed without opening up refrigerant pipes --> Compressor (with pulley), removing from holder/installing.**
- **Before removing, mark direction of poly V-belt with chalk or felt-tip pen. Running a used belt in the opposite direction could destroy it.**
- **Different compressors may be installed depending on engine and country version Parts List.**
- **Pulley is made of plastic, is sensitive to impact and should be treated with extreme care.**

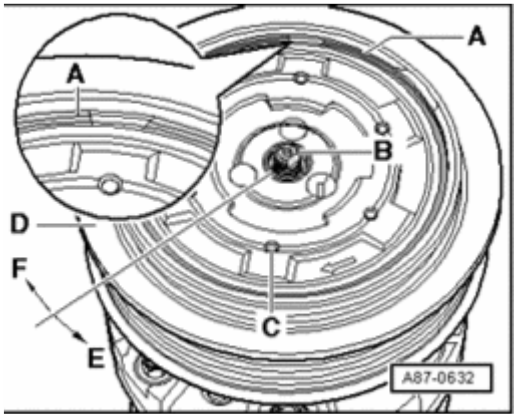

Fig. 42: Identifying Drive Plate, Circlip, And Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If overload safeguard of drive plate - **C** - has been tripped, remove circlip - **A** - and then pry drive plate off pulley - **D** -.

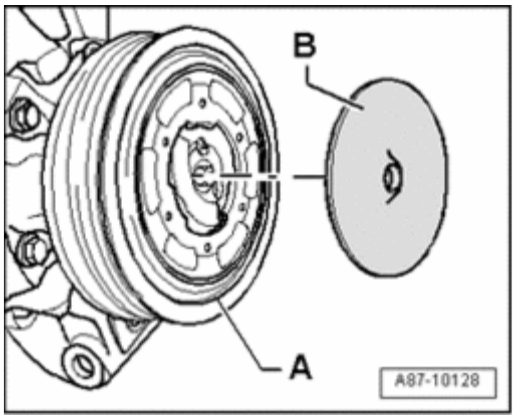

Fig. 43: Identifying Plastic Disc, And Belt Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- A plastic disc - **B** - may be glued on, or a circlip with a rubber disc vulcanized on to it, may be installed on drive plate of belt pulley - **A** - to optimize noise reduction Parts Catalog. This plastic or rubber disc - **B**

- can reduce a clapping (castanet-like) noise which occurs especially at belt pulley in vehicles with Diesel engine in A/C system operating mode "Econ" (the noise is almost inaudible with A/C system operating at full output).

Preparation

- Remove noise insulation --> **50 - BODY - FRONT**
- Loosen and remove poly V-belt -->
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA
- Remove compressor from engine if necessary --> **Compressor (with pulley), removing from holder/installing**.

Pulley, removing

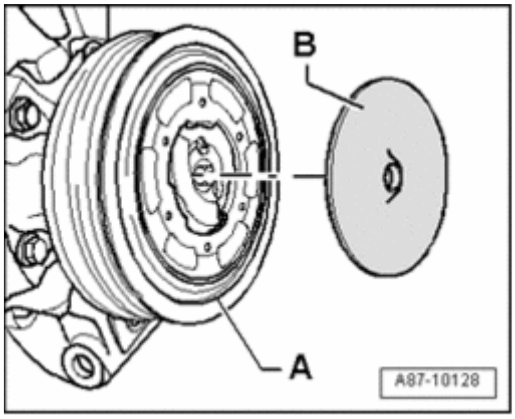

Fig. 44: Identifying Plastic Disc, And Belt Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove plastic disc - **B** - from belt pulley - **A** - (if present).

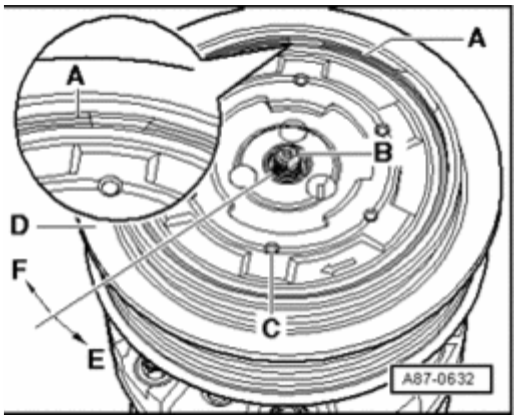

Fig. 45: Identifying Drive Plate, Circlip, And Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using e.g. a small screwdriver or needle-nose pliers, carefully remove circlip - **A** - (which might have rubber disc vulcanized on to it); take extreme care not to damage belt pulley when doing this.
- Hold compressor drive shaft - **B** - in position with commercially available Allen wrench or socket wrench from Shock Absorber Set T10001 (depending on compressor version) and turn drive plate - **C** - with pulley - **D** - in direction of arrow - **E** - (tightening torque 35 Nm).
- Remove drive plate - **C** -.

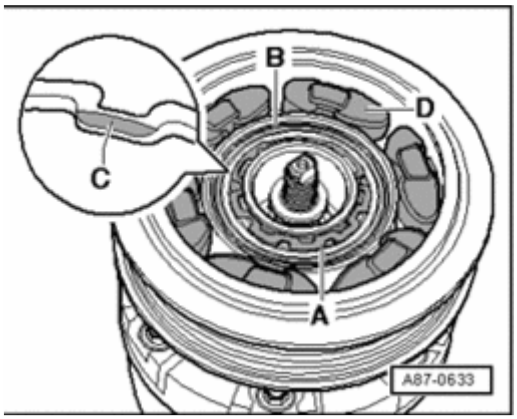

Fig. 46: Identifying Circlip And Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove circlip - **A** -.
- Remove pulley.

Pulley, installing

NOTE:

- **Replace circlip - A -.**
- **Clean compressor flange before installing pulley.**

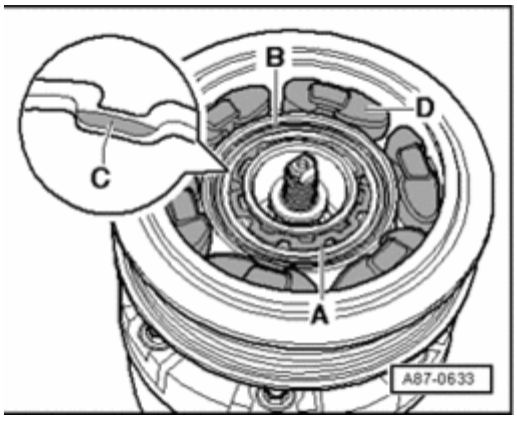

Fig. 47: Identifying Circlip And Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On installing circlip - **A** - , take care not to bend it open more than necessary.

- Install pulley - **B** -.
- Ensure correct insertion of circlip - **A** -. Bevelled side - **C** - faces away from compressor (flat side faces compressor).
- Insert rubber elements - **D** - in pulley - **B** - as shown.
- For installing drive plate, moisten rubber elements - **D** - slightly with tire assembly paste or soap solution for example to provide lubrication.

- Insert drive plate - **C** - in rubber elements - **D** - until it makes contact with shaft of compressor.

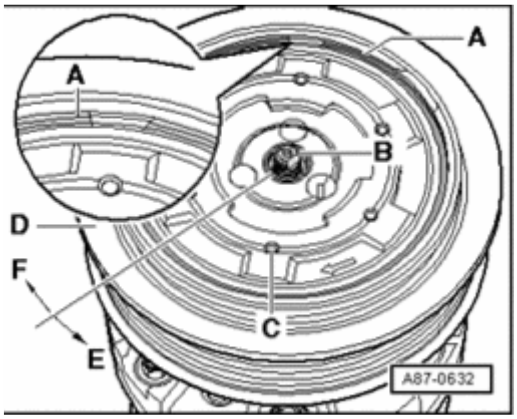

Fig. 48: Identifying Drive Plate, Circlip, And Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw drive plate - **C** - onto compressor shaft - **B** - by turning it in direction of arrow - **F** -.
- By turning it with a commercially available strap wrench (fabric strap) in direction of arrow - **F** - , tighten drive plate - **C** - (by way of pulley - **D** -) to 35 Nm. Hold compressor shaft - **B** - in position with commercially available Allen wrench or socket wrench from Shock Absorber Set T10001.
- Install circlip - **A** -.

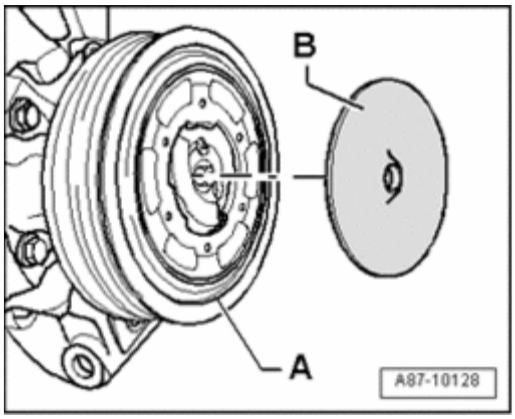

Fig. 49: Identifying Plastic Disc, And Belt Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean drive plate of belt pulley - **A** - and glue plastic disc - **B** - centered onto drive plate (only on compressors without rubber ring on circlip).

A/C SYSTEM CONTROL AND REGULATION COMPONENTS IN ENGINE COMPARTMENT AND REAR BODY

A/C system control and regulation components in engine compartment and rear body

NOTE:

- **In the event of an air conditioner malfunction, start by reading out DTC memory of control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If no DTC is displayed, read out measured value block of control and display unit, Climatronic Control Module J255 (pay particular attention to measured value blocks "001" , "002", "033" and "034") --> Read Measuring Value Block and actuate any problematic component by way of "Output Diagnostic Test Mode (DTM)" function --> Output Diagnostic Test Mode (DTM) and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Refrigerant circuit servicing work is described as of --> Refrigerant circuit, servicing.**
- **For air conditioner servicing work which can be performed without opening refrigerant circuit, refer to --> Refrigerant circuit, servicing.**
- **For air conditioner servicing work requiring opening of the refrigerant circuit, refer to --> Refrigerant circuit, servicing.**
- **Electrical checking of the various control motors, potentiometers and senders is described in the Guided Fault Finding routine "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Perform the following on completion of repair work:

- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed --> **Check DTC memory** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Check coding of control and display unit, Climatronic Control Module J255 --> **Climatronic Control Module J255 , coding** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- If applicable, check adaptation of control and display unit, Climatronic Control Module J255 --> **Climatronic Control Module J255 , adaptation** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Perform air conditioner Basic Setting --> **Basic Setting**"Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

A/C system control and regulation components in engine compartment and rear body, overview

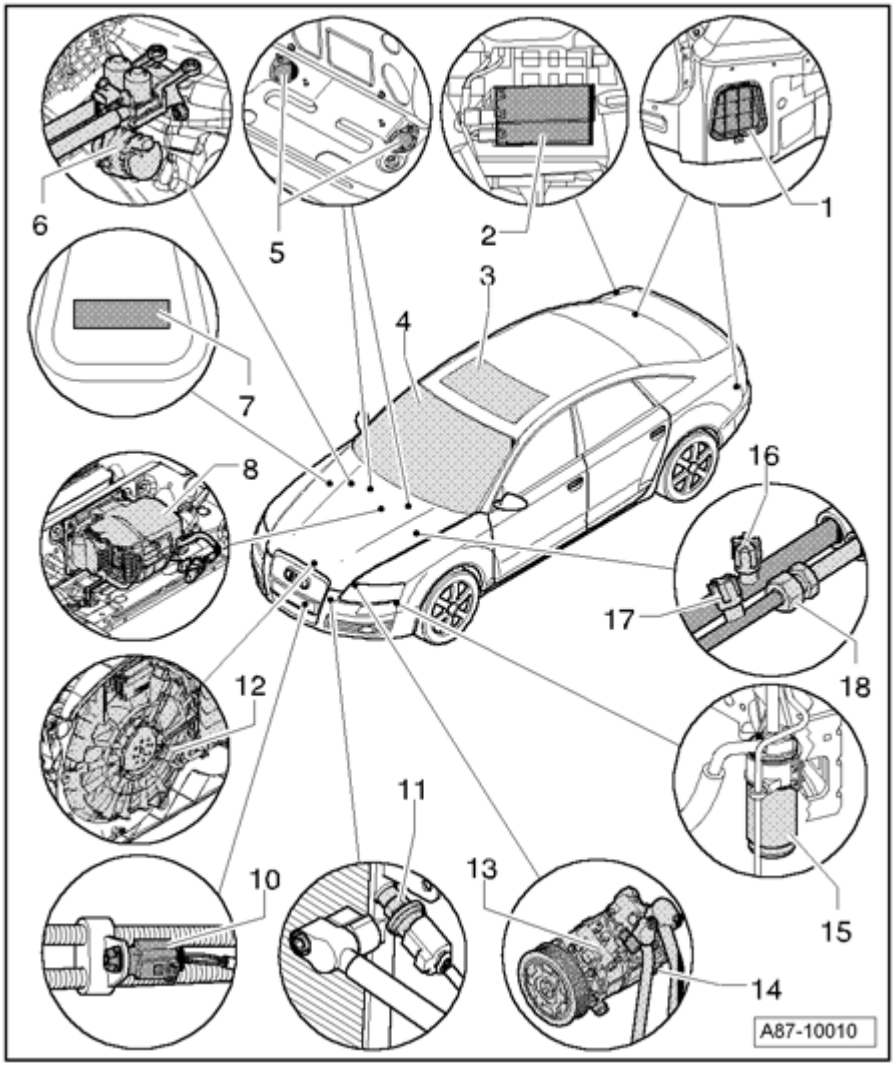

Fig. 50: A/C System Control And Regulation Components In Engine Compartment And Rear Body, Overview

Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Forced air extractor

- Installed on left and right beneath rear bumper
- Sealing lips of vent frame must move freely and close automatically
- To ensure proper functioning of passenger compartment ventilation, air ducts must not be blocked by luggage compartment lining
- Checking --> **Vent frame, checking**

2 - Heated Windshield Control Module J505

- Introduction of "heated windshield" as optional extra not yet finalized
- Installed in luggage compartment on right --> **Heated windshield**

Heated Windshield Control Module J505 exchanges information by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display groups "045" and "046") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

3 - Sun roof (with solar cells)

- Checking operation of solar cells --> **Operation of solar roof**
- Removing and installing --> **60 - SUNROOF**
- MMI (Multi Media Interface) deactivation of "Solar mode" function Owners manual
- Depending on adaptation of control and display unit, Climatronic Control Module J255 , "Solar mode" function is deactivated at low ambient temperatures --> **Climatronic Control Module J255 , adaptation** (adaptation, adaptation channel "043") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

4 - Heated Windshield Z2

- Introduction of "heated windshield" as optional extra not yet finalized
- Actuated by way of Heated Windshield Control Module J505 Electrical system and --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

Heated Windshield Control Module J505 exchanges information by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display groups "045" and "046") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- Operation --> **Heated windshield**
- Removing and installing windshield --> **64 - GLASS, WINDOWS**

5 - Plenum chamber water drain

- Checking, cleaning, removing and installing --> **Plenum chamber water drain, checking, cleaning, removing and installing**

6 - Pump valve unit

- Consists of Left Heat Regulating Valve N175 , Right Heat Regulating Valve N176 and Coolant Pump V50
- Checking operation --> **Heat output of air conditioner and operation of pump valve unit, checking** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

Pump valve unit components are actuated by control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display group "040") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- Removing and installing --> **Pump valve unit, removing and installing**

7 - Label

- Indicates type of refrigerant and intended capacity
- Adhesive label is affixed to hood (not on all vehicles); for refrigerant R134a capacity and notes on refrigerant, refer to **REFRIGERANT R134A - SERVICING**

8 - Air intake unit

- Removing and installing --> **Air intake unit, removing and installing**
- Disassembling and assembling --> **Air intake unit, disassembling and assembling**
- Layout of air intake unit components --> **Air intake components, layout**
- The following components are installed in/attached to air intake unit

  - Recirculation Flap Motor V113
  - Fresh Air Intake Duct Temperature Sensor G89
  - Air Flow Flap Motor V71
  - Air Quality Sensor G238

  - Fresh Air Blower V2
  - Fresh Air Blower Control Module J126
  - Air intake unit water drain hose

9 - Condenser (not pictured)

- Always drain refrigerant circuit before removing Refrigerant R134a - Servicing
- Disconnecting and re-connecting refrigerant pipes --> **Refrigerant pipes, disconnecting from condenser/re-connecting**

- Removing and installing condenser --> **Condenser, removing and installing**

10 - Outside Air Temperature Sensor G17

- Measured value of Outside Air Temperature Sensor G17 is evaluated by Instrument Cluster Control Module J285 and transmitted by way of convenience CAN-Bus system to control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display group "018") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Removing and installing:

  - Remove bumper cover --> **50 - BODY - FRONT**
  - Unplug connector at temperature sensor
  - Unclip Outside Air Temperature Sensor G17 from mount

11 - A/C Pressure/temperature Sensor G395

- Function, removing and installing --> **A/C Pressure/temperature Sensor G395 , removing and installing**
- Sender measured value is displayed in function "Read Measuring Value Block" , display group "001" of control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

12 - Coolant Fan V7

- Request for fan activation is transmitted by control and display unit, Climatronic Control Module J255 via CAN-Bus system ("Drive system") to the relevant Engine Control Module (ECM) (Read Measuring Value Block, display group "022") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Relevant Engine Control Module (ECM) then provides infinitely variable actuation of Coolant Fan V7 or Coolant Fan Control (FC)Control Module J293 with the required power -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

  and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 (for relevant Engine Control Module (ECM)).
- Different versions are installed depending on vehicle equipment Parts List and -->

- **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
- **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
- **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
- **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
- **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

- Actuation by control and display unit, Climatronic Control Module J255 is indicated in measured value block, display group "022" and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 and --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

13 - Compressor

- Different versions depending on engine Parts List
- Removing compressor with pulley from holder/re-installing (vehicles with 4 or 6-cyl. engine) --> **Compressor (with pulley), removing from holder/installing**
- Removing and installing poly V-belt -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA
- Poly V-belt assignment Parts List

- Removing compressor with drive unit (shaft) from holder/re-installing (vehicles with 8-cyl. engine) --> **Compressor (vehicles with 8-cyl. engine), removing and installing**
- Replacing compressor drive unit --> **Compressor drive unit, checking/replacing**
- Disconnecting refrigerant pipe at compressor/connecting --> **Refrigerant pipes, disconnecting at compressor/connecting**
- When installing refrigerant pipes and corresponding holder, make sure there is sufficient distance between belt, holder and pulley

- Removing and installing compressor (vehicles with 4 or 6-cyl. engine) --> **Compressor (vehicles with 4 or 6-cyl. engine), removing and installing**

- Removing and installing compressor (vehicles with 8-cyl. engine) --> **Compressor (vehicles with 8-cyl. engine), removing and installing**
- Removing and installing compressor (vehicles with 10-cyl. engine) --> **Compressor - vehicles with 10-cylinder engine (Audi S6), removing and installing**

14 - A/C Compressor Regulator Valve N280

- Checking actuation and operation --> **A/C Compressor Regulator Valve N280 , checking cut-in signal** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

15 - Reservoir

- Always drain refrigerant circuit before removing Refrigerant R134a - Servicing
- Removing and installing --> **Reservoir, removing and installing**

16 - Service connection

- Low-pressure side
- For measuring, draining and filling
- Cap with seal, always to be screwed on

17 - Service connection

- High-pressure side
- For measuring, draining and filling
- Cap with seal, always to be screwed on

18 - Screw connection in refrigerant pipe (with restrictor)

- Refrigerant circuit must be drained before opening screw connection Refrigerant R134a - Servicing

Air intake components, layout

NOTE:

- **There are various identical connectors in the air intake unit which should be marked before unplugging to avoid interchange.**
- **Different control motors are installed on Heating and A/C unit and in air intake unit. These motors have different electrical values (different adjustment ranges of integrated potentiometers) and part number indices Parts List and should therefore be marked prior to removal to avoid interchange.**

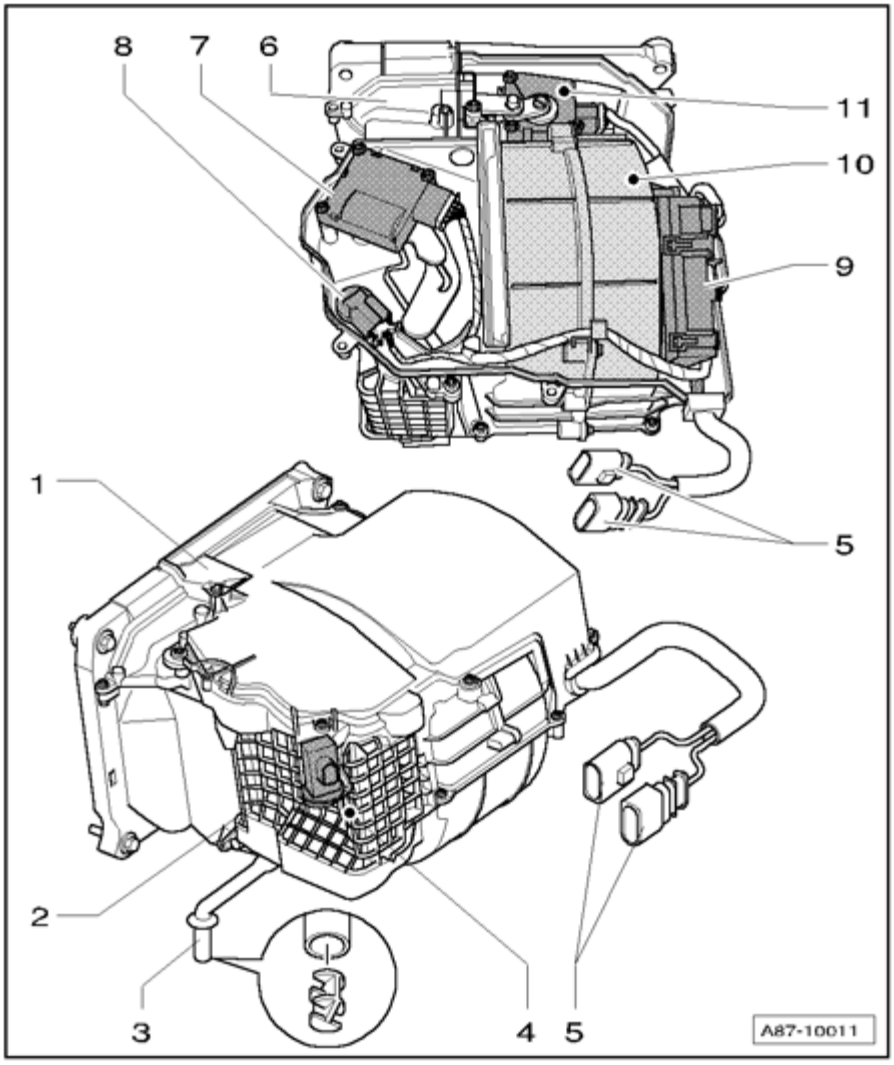

Fig. 51: Air Intake Components, Layout
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Air intake unit assembly

- Removing and installing --> **Air intake unit, removing and installing**
- Disassembling and assembling --> **Air intake unit, disassembling and assembling**

  - Can be largely disassembled and assembled without being removed

2 - Air Quality Sensor G238

- Only installed on vehicles with control and display unit, Climatronic Control Module J255
- Function --> **Air Quality Sensor G238 , operating mode**
- Checking --> **Air Quality Sensor G238 , checking**
- Removing and installing --> **Air Quality Sensor G238 , removing and installing**

- Depending on setting in Multi Media Interface, sun roof closes as soon as control and display unit, Climatronic Control Module J255 effects switching to recirculated-air mode (automatic air recirculation via air quality sensor or manual air recirculation by pressing recirculated-air button); function is equipment-specific and introduction not yet finalized Owners manual
- Measured value of Air Quality Sensor G238 is evaluated by control and display unit, Climatronic Control Module J255 and implemented if there are no shutoff conditions (Read Measuring Value Block, display group "022") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

3 - Air intake unit water drain

- Designed to drain off water entering air intake unit via fresh-air intake
- Plastic element for reducing cross-section is inserted in water drain hose

4 - Grille in front of fresh-air intake

- Removing and installing --> **Grille in front of fresh-air intake, removing and installing**

5 - Connectors to air intake housing

- Design and pin assignment --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

6 - Air intake unit without upper cover

7 - Air Flow Flap Motor V71

- With Back Pressure Flap Motor Position Sensor G113
- Removing and installing --> **Air Flow Flap Motor V71 with Back Pressure Flap Motor Position Sensor G113 , removing and installing**

8 - Fresh Air Intake Duct Temperature Sensor G89

- Removing and installing --> **Fresh Air Intake Duct Temperature Sensor G89 , removing and installing**
- Checking "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Measured value is evaluated by control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display group "018") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

9 - Fresh Air Blower Control Module J126

- Removing and installing --> **Fresh Air Blower Control Module J126 , removing and installing**
- Fresh Air Blower Control Module J126 is actuated by control and display unit, Climatronic Control Module J255 by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)"

"Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

- Air conditioner data bus system "Local Interconnect Network (LIN-Bus)" is used for exchange of information between control and display unit, Climatronic Control Module J255 and Fresh Air Blower Control Module J126 (Read Measuring Value Block, display groups "042" to "044") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Checking "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

10 - Fresh Air Blower V2

- Removing and installing --> **Fresh Air Blower V2 , removing and installing**
- Checking "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

11 - Recirculation Flap Motor V113

- With Recirculation Flap Motor Position Sensor G143
- Removing and installing --> **Recirculation Flap Motor V113 , removing and installing**

Air Quality Sensor G238 , removing and installing

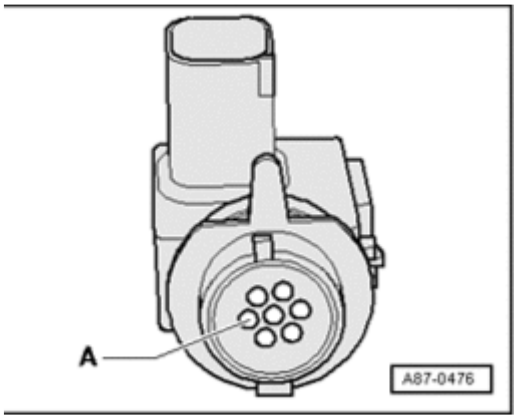

Fig. 52: Identifying Air Quality Sensor G238
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The Air Quality Sensor G238 is a highly sensitive electronic component which could be destroyed by direct exposure to solvents, fuels and certain chemical compounds (contamination can enter by way of area - A - for example).**
- **For this reason, never install an Air Quality Sensor G238 which has been kept in a tool chest or the like.**
- **Following removal, do not set down Air Quality Sensor G238 in areas where it could come into contact with solvents, fuels or certain chemical**

compounds (liquids or vapors).

- **There are various housings for the Air Quality Sensor G238 , but the mode of operation is always identical Parts List.**

Removing and installing

- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Unfasten dome brace if applicable (not necessary on all vehicles, different designs) --> **40 - FRONT SUSPENSION** .

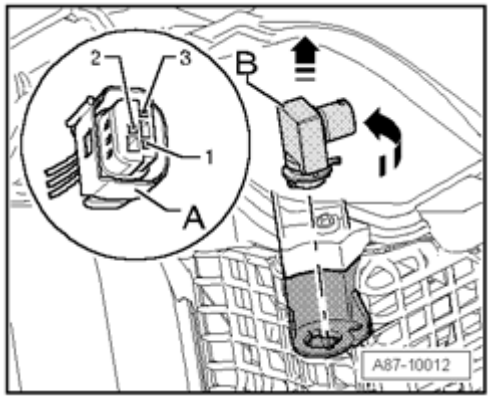

Fig. 53: Identifying Connector And Air Quality Sensor G238
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Turn Air Quality Sensor G238 through 90 ° and lift sensor - **B** - out of mount.
- Unplug connector - **A** - from Air Quality Sensor G238.

Contact assignment in connector - **A** -

1 - Positive (terminal "15")

2 - Negative (terminal "31")

3 - Signal wire to control and display unit, Climatronic Control Module J255 --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

NOTE:

- **Square-wave signal emitted by Air Quality Sensor G238 cannot be evaluated using workshop equipment. Measured value is indicated in measured value block of control and display unit, Climatronic Control Module J255 (display group "022").**

Air Quality Sensor G238 , operating mode

- Depending on setting in MMI (Multi Media Interface), sun roof closes as soon as control and display unit, Climatronic Control Module J255 effects switching to recirculated-air mode (automatic air recirculation via air quality sensor or manual air recirculation by pressing recirculated-air button). Function is equipment-specific and introduction not yet finalized Owners manual.
- The Air Quality Sensor G238 detects pollutants in the ambient atmosphere (generally gasoline and/or diesel emissions) and causes the control and display unit, Climatronic Control Module J255 to switch the air conditioner to recirculated-air mode.
- The control and display unit, Climatronic Control Module J255 recognizes the nature and level of the air pollution from the sensor signal. Depending on ambient temperature and the degree of air pollution, the control and display unit, Climatronic Control Module J255 effects the following (display group "022"):

  - At ambient temperatures greater than approx. + 2 ° C, even a slight increase in pollutant concentration causes switching to recirculated-air mode.
  - At ambient temperatures below approx. -1 ° C and in "Econ mode" , switching only takes place if there is a considerable increase in pollutant concentration and only for approx. 15 s. If there is a renewed increase in pollutant concentration within approx. 2 minutes, control and display unit, Climatronic Control Module J255 does not switch to "automatic recirculated-air mode" within this period.

If the compressor is switched off (e.g. in "Econ" mode), the maximum duration for "automatic recirculated-air mode" is restricted by control and display unit, Climatronic Control Module J255 to approx. 15 seconds to stop the windows misting up.

  - A decrease in concentration results in the air conditioner being switched back to fresh-air mode.
  - The duration of the "automatic recirculated-air mode" is governed by the type of control and display unit, Climatronic Control Module J255. At ambient temperatures below approx. +10 ° C, the system remains in "automatic recirculated-air mode" for approx. 30 s for example. On completion of this period, system is switched to fresh-air mode. In the event of a renewed increase in pollutant concentration within approx. 2 minutes, control and display unit, Climatronic Control Module J255 does not switch to "automatic recirculated-air mode" within this period.

- The "automatic air recirculation" function can be deactivated at any time. If the function is active, the compressor is switched on in the event of a request for "automatic air recirculation" even at ambient temperatures below + 2 ° C. At temperatures below approx. - 8 ° C compressor operation is however also no longer possible.
- If "automatic recirculated-air mode" has been set in MMI (Multi Media Interface), compressor may also be switched on with manually activated air recirculation (via "recirculated-air button") down to temperatures of approx. - 8 ° C.
- To prevent constant air conditioner recirculated-air mode in areas with a persistently high level of pollutant emissions, the Air Quality Sensor G238 is adaptive (sensitivity is matched to environmental impact).
- If the pollutant level in the ambient air remains relatively high for a lengthy period, the Air Quality Sensor G238 starts to adapt to the change in ambient conditions by way of an adaptation program, with the result that a recirculated-air request is generally applied for less than 12 minutes given uniform ambient air pollution. In the event of several consecutive peak impact levels, the air conditioner may also

operate in recirculated-air mode for a longer period.

- Switching of the air conditioner flaps takes a certain length of time. To prevent gaseous pollutants entering the passenger compartment together with the fresh air drawn in before the air flow/fresh-air flaps can close in the event of a sudden increase in pollutant levels (e.g. on driving through a cloud of diesel emissions), vehicles with an Air Quality Sensor G238 are installed with a dust and pollen filter provided with an activated charcoal layer. Once a filter is saturated with pollutants, it can no longer perform this function and is to be replaced.
- To stop the air flow/fresh-air flaps being switched too frequently, switching does not take place immediately in the event of a slight increase in the pollutant level in the ambient atmosphere (Air Quality Sensor G238 does not transmit request to control and display unit, Climatronic Control Module J255). In such cases, the filter effect of the activated charcoal layer in the dust and pollen filter suffices.
- To stop the air flow/fresh-air flaps and recirculated-air flaps being switched too frequently, an Air Quality Sensor G238 request for "automatic recirculated-air mode" is applied for at least 25 s (minimum dwell time) even if the pollutant concentration in the air has decreased again to such an extent that recirculated-air mode would no longer be necessary.
- To clear misted windows as quickly as possible, the control and display unit, Climatronic Control Module J255 does not permit recirculated-air mode during "defrost" operation.

- The Air Quality Sensor G238 requires approx. 30 seconds to warm up after ignition is switched on. During this period no request is sent by Air Quality Sensor G238 to control and display unit, Climatronic Control Module J255 for "automatic air recirculation".
- The Air Quality Sensor G238 is a highly sensitive electronic component which could be destroyed by direct exposure to solvents, fuels and certain chemical compounds. Vehicle should therefore not be installed with sensors which have been in contact with such substances.

Air Quality Sensor G238 , checking

Special tools, testers and other items required

- Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A
- **Test gas D 007 855 A2**

Test requirements:

NOTE:

- **Vehicle standing in a clean atmosphere (away from running engines, exhaust vents, etc.)**
- **Engine compartment and plenum chamber clean (not contaminated with oil or fuel)**
- **Engine compartment and plenum chamber not sprayed with cleaning agents or preservatives containing solvents**

Checking

- With ignition switched off, connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A to 16-pin Data Link Connector (DLC) in vehicle "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Start engine.
- Check DTC memory of control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- On control and display unit, Climatronic Control Module J255 set "Auto" mode.
- By way of MMI (Multi Media Interface) in control and display unit, Climatronic Control Module J255 , activate "Automatic air recirculation" mode (Owners manual).
- Wait 30 s to allow Air Quality Sensor G238 to warm up.
- Use Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 to select "Read Measuring Value Block" function "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Read off displays in display group "022" , zones "3" and "4".

NOTE:

- **Display zone "4" indicates operating status of recirculated-air flap, whereas display zone "3" shows status of Air Quality Sensor G238 signal. For explanatory notes on possible displays, refer to and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Specification in display zone "4" (display "0" or "00" , no request for "recirculated-air mode" , air conditioner in fresh-air mode)**

Or

- Specification in display zone "4" (display "60" , "partial recirculated-air mode" , air flow/fresh-air and recirculated-air flaps open)

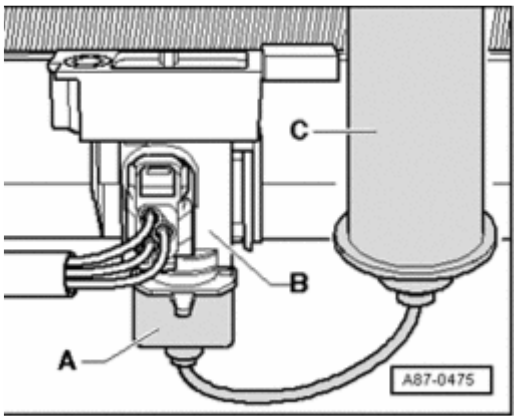

Fig. 54: Identifying Spray Attachment, Air Quality Sensor, And Spray Knob
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position spray attachment - **A** - of test gas canister over air inlet of air quality sensor - **B** -.
- Press spray knob - **C** - of test gas canister for 1 second.

NOTE:

- **There are various housings for the Air Quality Sensor G238 , but the mode of operation is always identical.**
- **The test gas canister is filled with pure oxygen with a specific nitrogen oxide component.**
- **Air Quality Sensor G238 also reacts when exposed to cigarette smoke or cigarette lighter gas (gas is heavier than air, Air Quality Sensor G238 must therefore be removed and turned round).**

- Read off display in zone "4".

- Specification in display zone "4" (display switches to "10" , "automatic recirculated-air mode" requested, request is fulfilled, air conditioner switches to recirculated-air mode)

- Wait briefly (approx.1 minute, depending on amount of test gas sprayed onto sensor).
- Read off display in zone "4".

- Specification in display zone "4" (display switches to "0" , "00" or "60" (no request for "recirculated-air mode" , air conditioner in fresh-air mode or partial recirculated-air mode)

NOTE:

- **To stop the air flow/fresh-air and recirculated-air flaps being switched too frequently, an Air Quality Sensor G238 request for "automatic recirculated-air mode" is applied for at least 25 s (minimum dwell time) even if the pollutant concentration in the air has decreased to such an extent that recirculated-air mode would no longer be necessary.**
- **Actuate windshield wash/wipe switch until Windshield Washer Pump V5 has conveyed fluid for approx. 2 s.**
- **Read off display in zone "4".**
- **Specification: ("Recirculated-air mode" requested on account of windshield washer system, air conditioner switches to recirculated-air mode for approx. 10 sec.)**
- **Wait briefly.**
- **Read off display in zone "4".**
- **Specification: (no request for "recirculated-air mode" , air conditioner in fresh-air or partial recirculated-air mode)**

NOTE:

- **Depending on composition of windshield washer fluid, Air Quality Sensor G238 may detect air pollution and request "Automatic air recirculation".**
- **If system does not switch to recirculated-air mode on actuating windshield wash/wipe switch, check operation ("Windshield wash" information is**

received via convenience CAN-Bus system) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Proceed as follows if Air Quality Sensor G238 functions properly in this test but a customer complaint has been received:

- Check for contamination of dust and pollen filter --> **Dust and pollen filter, removing and installing**.
- Connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 and select function "08 Read Measuring Value Block" --> **Read Measuring Value Block** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Second person is required to read out values displayed whilst driving.
- Pay attention to safety precautions.

- Select display group "022" --> **Read Measuring Value Block**.
- Start by driving vehicle into an area with a relatively clean atmosphere (system in fresh-air mode).
- Then drive vehicle into an area where the atmosphere is polluted (e.g. onto an uphill road with truck traffic).
- Read off displays in zones "3" and "4". Display in zones "3" and "4" must change, for example, on driving through a cloud of diesel emissions.

- Refer also to --> **Dust and pollen filter, removing and installing** and --> **Air Quality Sensor G238 , operating mode** for description.

Vent frame, checking

NOTE:

- **Fig. shows vent frames with rear bumper removed.**

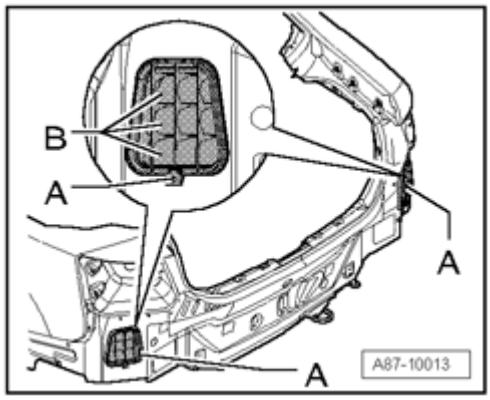

Fig. 55: Identifying Vent Frame And Sealing Lips
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- One vent frame - **A** - is installed on both left and right for forced air extraction.

- Sealing lips - **B** - only close properly if vent frame - **A** - has been installed correctly.

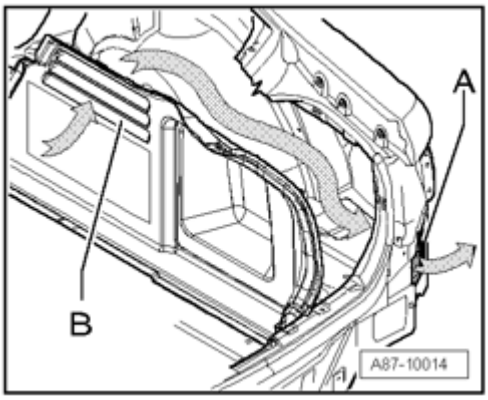

Fig. 56: Identifying Vent Opening And Frames
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- To ensure proper functioning of passenger compartment ventilation, vent openings - **B** - in left and right luggage compartment lining are never to be sealed off.
- Space between wing and luggage compartment lining must not be obstructed to avoid impedance of air flow from vent openings - **B** - to vent frames - **A** -.
- On Sedan models, for example, air from passenger compartment flows via vent slits in rear shelf and through slits incorporated into upper lining into luggage compartment.
- Clogged ducts or gummed sealing lips could cause windows to mist up.

- Check for blockage of air ducts from vent openings - **B** - on left and right to the two vent frames - **A** - in luggage compartment.

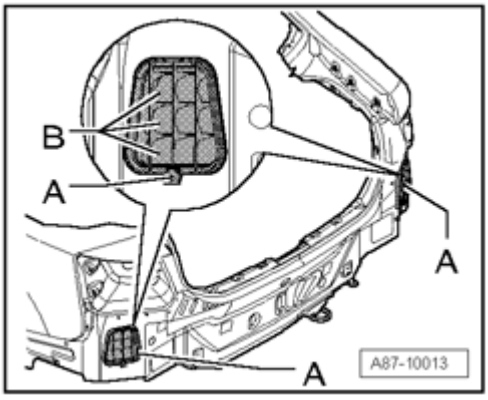

Fig. 57: Identifying Vent Frame And Sealing Lips
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With rear bumper cover removed, check sealing lips - **B** - in vent frames - **A** - (must move freely and close automatically).

Plenum chamber water drain, checking, cleaning, removing and installing

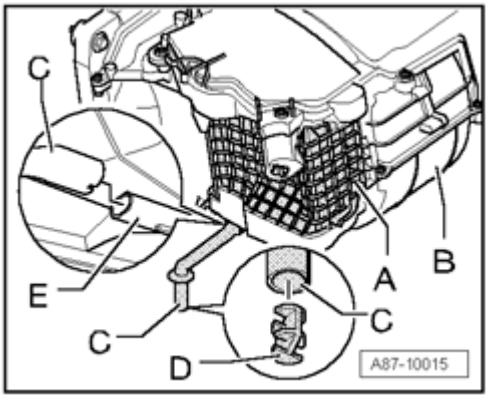

Fig. 58: Identifying Fresh Air Intake, Air Intake Unit, Water Drain Hose, And Plastic Element
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Drainage of water out of plenum chamber may be impaired by deposits such as leaves and pine needles accumulating in the water drains. If the vehicle is then driven through a car wash or in the event of heavy rainfall, the water level in the plenum chamber will rise and water enter via the fresh-air intake - A - into the air intake unit - B -.**
- **The water drain hose - C - is intended to discharge the small amounts of water entering the air intake unit via the fresh-air intake in normal operation.**
- **The water drains via the water drain hose - C - out of the plenum chamber (via connection - D -) into the transmission tunnel in the area behind the noise and heat insulation mat (a hole is provided specifically for this in the bottom of the plenum chamber).**
- **A plastic element - D - for reducing the cross-section is inserted in the water drain hose - C -. If plastic element - D - is not installed, noise may occur depending on Fresh Air Blower V2 speed.**

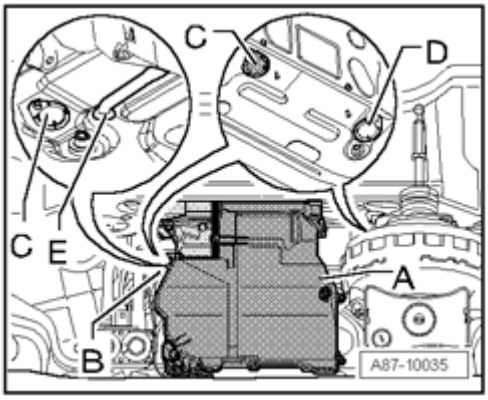

Fig. 59: Identifying Water Drain Socket And Air Intake Unit

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Water drain socket - **C** - is accessible after removing Alarm Horn H12 of anti-theft alarm - **B** -. Water drain socket - **D** - is not accessible with brake servo and air intake unit - **A** - in position.
- If the water drain sockets - **C** - and - **D** - are clogged with leaves and pine needles, the drains may freeze up in winter and prevent water drainage. After driving a short distance, the heat emitted by the engine and exhaust system causes the ice in the drains to thaw again. It is possible that the water will have drained off from the plenum chamber again by the time the vehicle arrives at the workshop.
- Water drain socket - **C** - can be cleaned for example after removing Alarm Horn H12 of anti-theft alarm - **B** - (removing Alarm Horn H12 --> **96 - LIGHTS, SWITCHES - INTERIOR, ANTI-THEFT**).
- Coarse dirt can be removed from water drain socket - **D** - using a commercially available flexible gripping tool for example. Fine deposits and sludge can be removed for example using a thin water hose or a pressure-feed spray gun V.A.G 1538 and a nylon probe V.A.G 1538/2.

- If one of the two water drain sockets - **C** - or - **D** - is blocked and there are leaves, for example, in the plenum chamber, remove coarse dirt from area beneath air intake unit using a commercially available flexible gripping tool for instance. Fine deposits and sludge can be removed for example using a thin water hose or a pressure-feed spray gun V.A.G 1538 and a nylon probe V.A.G 1538/2.
- To stop water from the plenum chamber flowing via the water drain hose - **E** - into the air intake unit, the hose ends in the area behind the noise and heat insulation mat in the transmission tunnel.

Upper cover of air intake unit, removing and installing

NOTE:

- **The air intake unit housing and its corresponding upper cover is available in different versions (up to 05.04 version "1" and as of 05.04 version "2" with floating conversion, distinguishing characteristics --> Distinguishing characteristics of air intake unit version "1" and "2"), if upper cover or housing of version "1" must be replaced in vehicles which were produced up to 05.04, housing or upper cover of air outlet unit must also be replaced (only components of version "2" may be obtained as replacement parts) Parts Catalog.**

Removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Remove Air Quality Sensor G238 if installed --> **Air Quality Sensor G238 , removing and installing**.

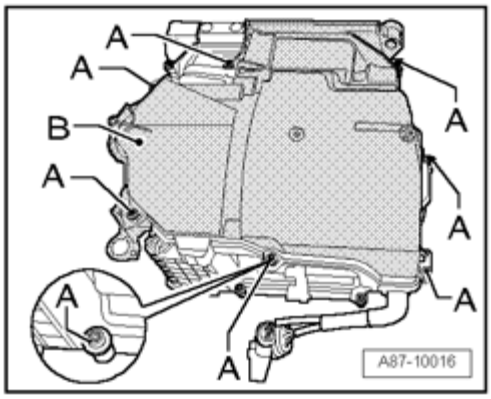

Fig. 60: Identifying Upper Cover And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts - **A** -.
- Remove upper cover - **B** -.

Installing

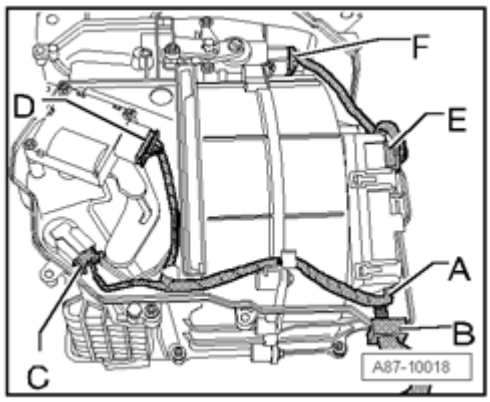

Fig. 61: Identifying Connectors, Routing Of Wiring, And Socket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before installing upper cover of air intake unit, check proper connection of connectors - **C** - to - **F** - , routing of wiring - **A** - and positioning of socket - **B** -.

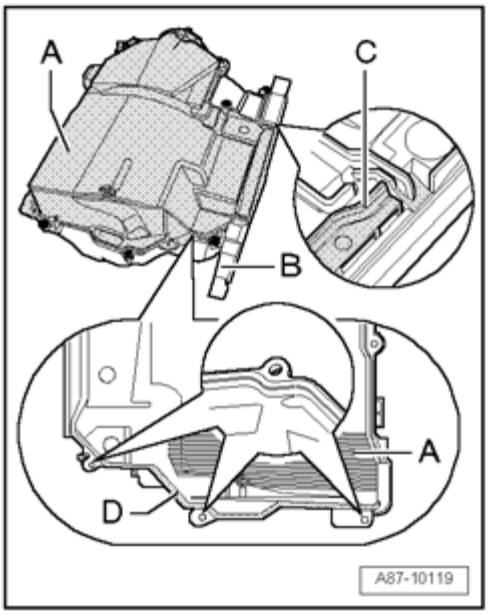

Fig. 62: Inserting Sealing Cord (Dimension 2 X 2 Mm) Into Groove Of Upper Cover Or Seal Groove/Spring Joint On Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In vehicles with an air intake unit of version "1" (floating conversion to version "2" as of 05.04, distinguishing characteristics for version "2" --> **Distinguishing characteristics of air intake unit version "1" and "2"**), insert a sealing cord (dimension 2 x 2 mm) into groove - **D** - of upper cover - **A** - or seal groove/spring joint on housing - **B** - using e.g. silicon adhesive sealant "D 176 001 A3".
- In vehicles with an air intake unit of version "1" , seal the area between the upper cover - **A** - and housing - **B** - (and inner cover) in area - **C** - using e.g. silicon adhesive sealant "D 176 001 A3".

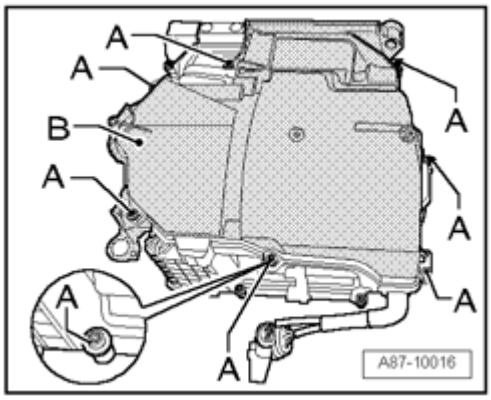

Fig. 63: Identifying Upper Cover And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Re-install upper cover - **B** - of air intake unit.
- Hand-tighten bolts - **A** - (10 Ncm).

- Re-install components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- If necessary, perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Air Flow Flap Motor V71 with Back Pressure Flap Motor Position Sensor G113 , removing and installing

NOTE:

- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and connecting element.**
- **There are various identical connectors in the air intake unit which should be marked before unplugging to avoid interchange.**
- **Different control motors are installed on Heating and A/C unit and in air intake unit. These motors have different electrical values and part number indices Parts List and should therefore be marked prior to removal to avoid interchange.**
- **This control motor is installed with a potentiometer with an adjustment range of 120 °; part number index at start of prod uction: "A" Parts List.**

Control motor, removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Remove upper cover of air intake unit --> **Upper cover of air intake unit, removing and installing**.

- Screw out bolts - **A** -.
- Unplug connector - **B** - from control motor.
- Remove control motor - **C** -.

Shaft/control motor connecting element, removing

- Insert Release Tool T40072 - **A** - in connecting element - **B** -.
- Release fasteners - **E** - of connecting element - **B** - by screwing in knurled wheel at Release Tool T40072 - **A** -.
- Carefully pry off connecting element - **B** - (using screwdriver for example).

NOTE:

- **Lever - C - is of a different design to connecting element - B - and can therefore not be removed with Release Tool T40072 - A - (pry off with screwdriver if necessary).**

Control motor, installing

Install in reverse order, paying attention to the following:

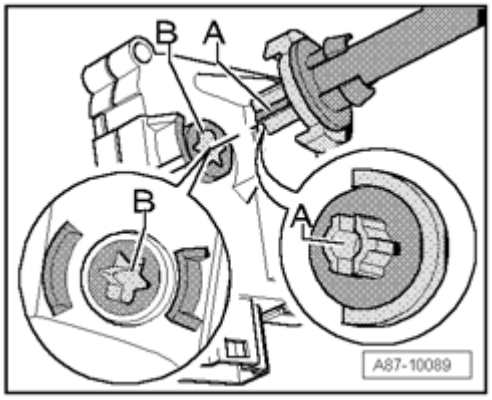

Fig. 64: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been**

installed or to move shaft to correct position if connecting element cannot be installed.

- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

- Before installing control motor, check air flow flap mount and connecting element - **D** -.
- Check position of shaft - **E** - of Air Flow Flap Motor V71 (must be in position shown).

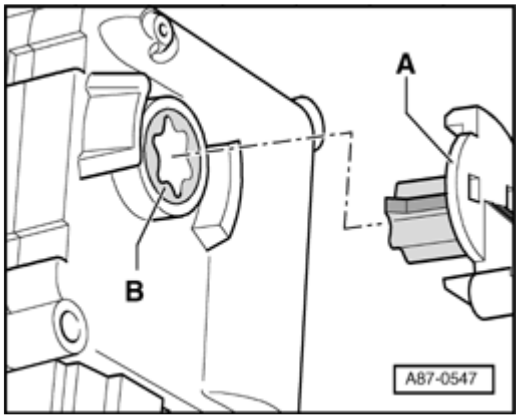

Fig. 65: Identifying Connecting Element And Mount Of Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Check positioning of connecting element. There must not be any clearance between mount of control motor - A - and connecting element - B - (remove connecting element if necessary).**
- **Connecting element - B - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check mount of motor - A - as this may be turned through 180 °.**
- **Install connecting element - A - to shaft of air flow flap.**

- Install control motor - **C** -.
- Hand-tighten bolts - **A** - (10 Ncm).
- Plug connector - **B** - to control motor - **C** -.
- Before installing upper cover of air intake unit, check correct connection of connector - **B** - and routing of wiring.

- Re-install components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Adapter cables, preparing for control motor actuation

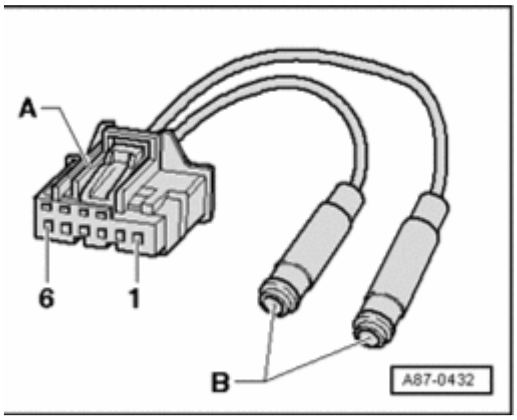

Fig. 66: Adapter Cable, Modifying To Activate Positioning Motors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Make connection to contacts "5" and "6" of connector - **A** - (part number 6Q0 972 706) using wire with a cross section of 0.25 mm ^{2} in each case Parts List.
- Connect other end of each wire to a commercially available banana plug **- B** -.

Fresh Air Intake Duct Temperature Sensor G89 , removing and installing

Removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Remove upper cover of air intake unit --> **Upper cover of air intake unit, removing and installing**.

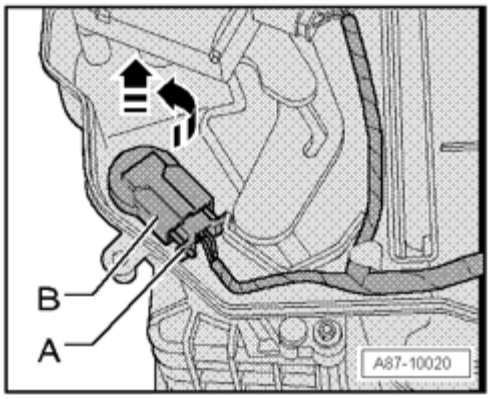

Fig. 67: Identifying Connector And Temperature Sensor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unplug connector - **A** - from temperature sensor - **B** -.
- Give temperature sensor - **B** - approx. 90 ° turn in direction of arrow and remove it from intake housing.

Installing

- Install temperature sensor - **B** -.
- Plug connector - **A** - to temperature sensor - **B** -.
- Before installing upper cover of air intake unit, check correct connection of connector - **A** - and routing of wiring.
- Re-install components removed in reverse order.

- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Fresh Air Blower Control Module J126 , removing and installing

Removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Remove upper cover of air intake unit --> **Upper cover of air intake unit, removing and installing**.

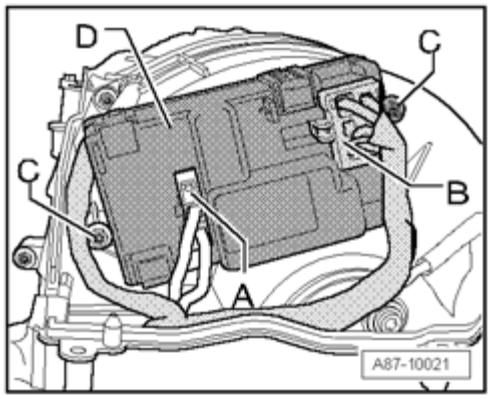

Fig. 68: Identifying Connectors And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unplug connectors - **A** - (to Fresh Air Blower V2) and - **B** -.
- Screw out bolts - **C** -.
- Remove Fresh Air Blower Control Module J126 - **D** -.

Installing

- Install Fresh Air Blower Control Module J126 - **D** -.
- Hand-tighten bolts - **C** - (10 Ncm).
- Plug in connectors - **A** - (to Fresh Air Blower V2) and - **B** -.
- Before installing upper cover of air intake unit, check correct connection of connectors - **A** - and - **B** - as well as routing of wiring.
- Re-install components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Fresh Air Blower V2 , removing and installing

Removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER**

SYSTEM .

- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Remove upper cover of air intake unit --> **Upper cover of air intake unit, removing and installing**.
- Remove Fresh Air Blower Control Module J126 --> **Fresh Air Blower Control Module J126 , removing and installing**.

CAUTION: Heat sink of Fresh Air Blower Control Module J126 may be hot.

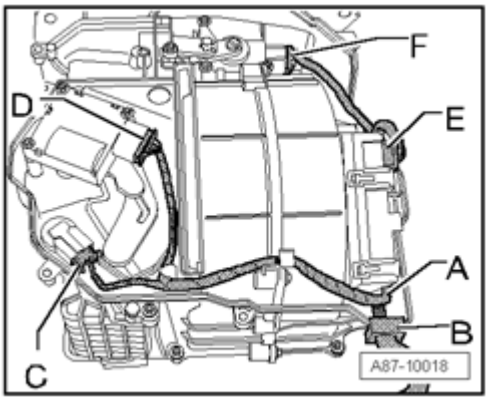

Fig. 69: Identifying Connectors, Routing Of Wiring, And Socket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unplug connectors - **C** - , - **D** - and - **F** - from the various components.
- Unfasten grommet - **B** - from housing of air intake unit and lay aside wiring harness - **A** -.

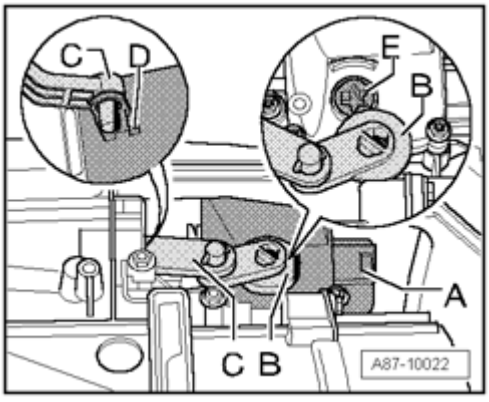

Fig. 70: Identifying Connecting Element, Control Motor, Connecting Rod, And Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully (e.g. with a screwdriver) release connecting element - **B** - from control motor - **A** -.

CAUTION: Connecting rod - C - is engaged at lever - D - of recirculated-air flap; lever

would break away if bent by way of connecting rod.

- Position connecting rod - **C** - and connecting element - **B** - such that they cannot become bent on removing Fresh Air Blower V2.

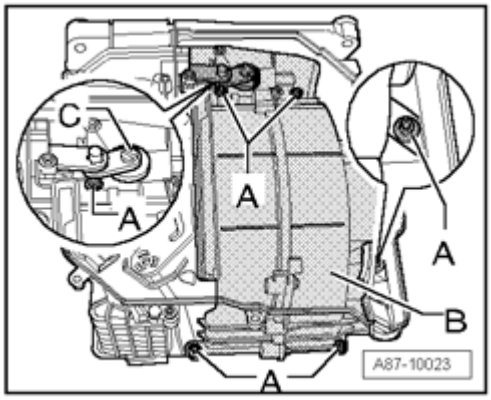

Fig. 71: Identifying Bolts, Fresh Air Blower V2, And Connecting Elements
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts - **A** - (5x).

CAUTION: Do not grasp hold of impeller of Fresh Air Blower V2. Applying force to impeller or moving balancing weights attached to impeller could cause imbalance and thus operating problems.

- Carefully remove Fresh Air Blower V2 - **B** - , taking particular care not to bend connecting elements - **C** - .

Installing

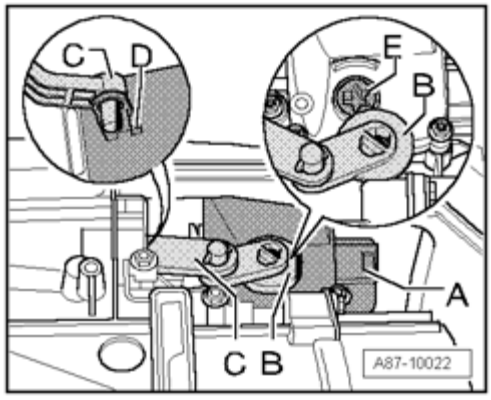

Fig. 72: Identifying Connecting Element, Control Motor, Connecting Rod, And Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of shaft - **E** - of Recirculation Flap Motor V113 (must be in position shown).

NOTE:

- **Control motor shaft - E - has no stop. It rotates constantly if voltage is applied to contacts 5 and 6 at connector of control motor - A -. When control motor has been removed, voltage is therefore only to be applied with connecting element - B - installed.**
- **If control motor shaft - E - has been turned through 180 °, pre-tension is required to insert connecting element - D - in control motor.**
- **If control motor shaft - E - is so awkwardly positioned that connecting element cannot be installed, use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery.**
- **Turn control motor until shaft - E - is in position shown and no pre-tension is required to install connecting element. Direction of rotation can be reversed by interchanging positive and negative.**
- **Check positioning of connecting element. There must not be any clearance between mount of control motor and connecting element (remove connecting element if necessary).**
- **Assemble Recirculation Flap Motor V113 and Fresh Air Blower V2 --> Recirculation Flap Motor V113 , removing and installing.**

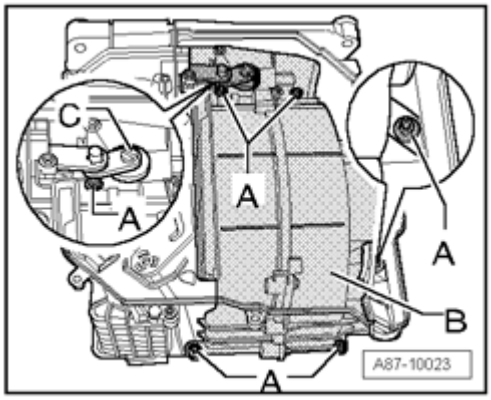

Fig. 73: Identifying Bolts, Fresh Air Blower V2, And Connecting Elements
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully insert Fresh Air Blower V2 - **B** - , taking particular care not to bend connecting elements - **C** -.

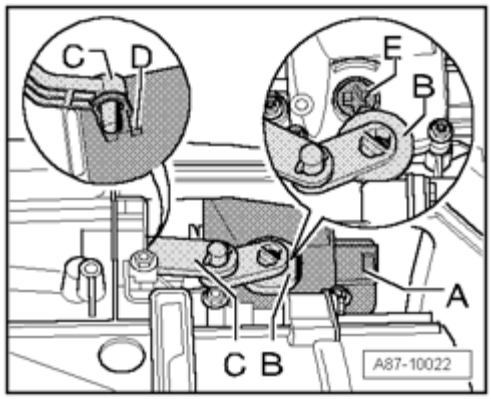

Fig. 74: Identifying Connecting Element, Control Motor, Connecting Rod, And Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully insert connecting element - **B** - in shaft - **E** - of control motor - **A** -.

CAUTION: Connecting rod - C - is engaged at lever - D - of recirculated-air flap; lever would break away if bent by way of connecting rod.

- Check connection between connecting element - **B** - and shaft of control motor (connecting element must be engaged).

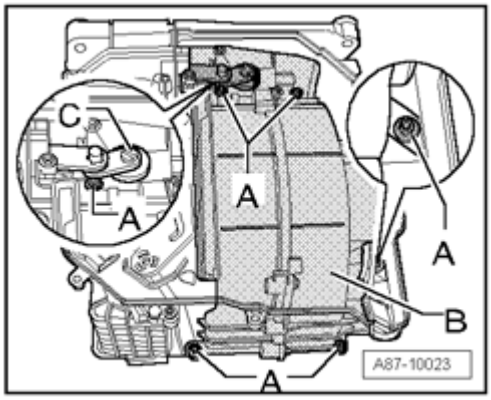

Fig. 75: Identifying Bolts, Fresh Air Blower V2, And Connecting Elements
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install bolts - **A** -.
- Hand-tighten bolts - **A** - (10 Ncm).

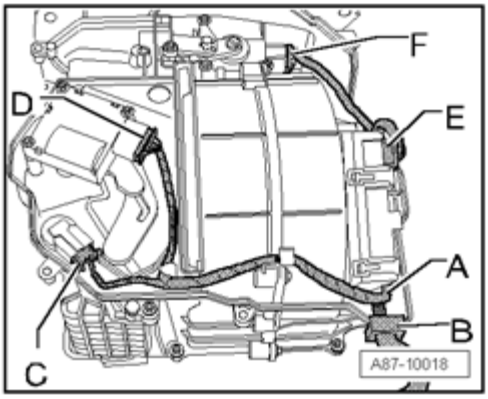

Fig. 76: Identifying Connectors, Routing Of Wiring, And Socket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install grommet - **B** - and wiring harness - **A** - as shown.
- Plug in connectors - **C** - , - **D** - and - **F** - of the various components.
- Install Fresh Air Blower Control Module J126 --> **Fresh Air Blower Control Module J126 , removing and installing**.
- Before installing upper cover of air intake unit, check correct connection of connectors - **A** - and - **B** - as well as routing of wiring.
- Re-install components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Recirculation Flap Motor V113 , removing and installing

NOTE:

- **There are various identical connectors in the air intake unit which should be marked before unplugging to avoid interchange.**
- **Different control motors are installed on Heating and A/C unit and in air intake unit. These motors have different electrical values and part number indices Parts List and should therefore be marked prior to removal to avoid interchange.**
- **This control motor is installed with a potentiometer with an adjustment range of 120 °; part number index at start of prod uction: "A" Parts List.**

Removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove Fresh Air Blower V2 --> **Fresh Air Blower V2 , removing and installing**.

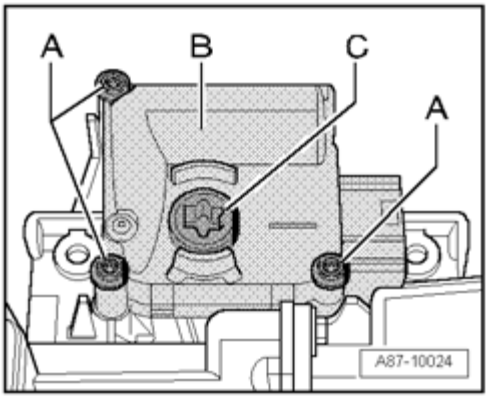

Fig. 77: Identifying Bolts And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts - **A** -.
- Remove control motor - **B** -.

Installing

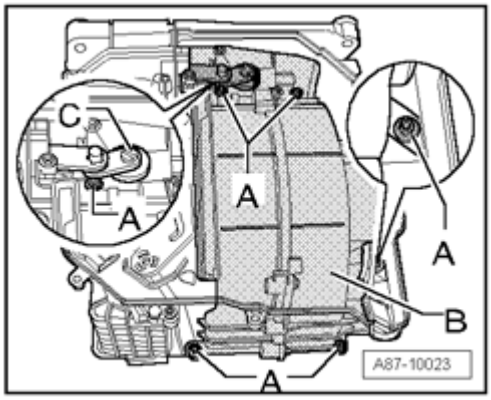

Fig. 78: Identifying Bolts, Fresh Air Blower V2, And Connecting Elements
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of shaft - **E** - of Recirculation Flap Motor V113 (must be in position shown).

NOTE:

- **Control motor shaft - E - has no stop. It rotates constantly if voltage is applied to contacts 5 and 6. When control motor has been removed, voltage is therefore only to be applied with connecting element (to**

recirculated-air flap) - B - installed to control motor.

- **Control motor shaft may be incorrectly positioned if pre-tension is required to insert connecting element - B - in control motor.**
- **If shaft is so awkwardly positioned that connecting element cannot be installed, use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery.**
- **Turn control motor until no pre-tension is required to install connecting element. Direction of rotation can be reversed by interchanging positive and negative.**

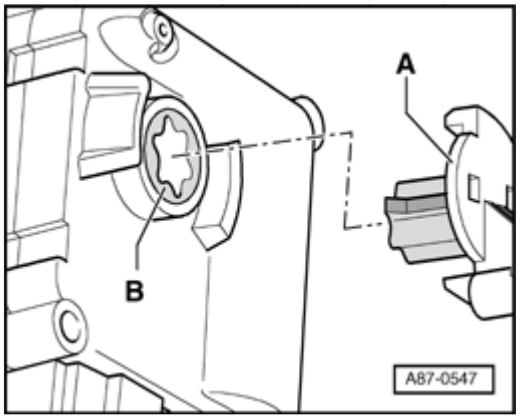

Fig. 79: Identifying Connecting Element And Mount Of Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check positioning of connecting element. There must not be any clearance between mount of control motor - **A** - and connecting element - **B** -.
- Check positioning of connecting element - **B** -. It must engage in shaft of motor - **A** - and there must not be any clearance between control motor shaft and connecting element.
- Connecting element - **B** - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check mount of motor - **A** - as this may be turned through 180 °.
- Motor may be incorrectly positioned if pre-tension is required to insert connecting element - **A** - in control motor.

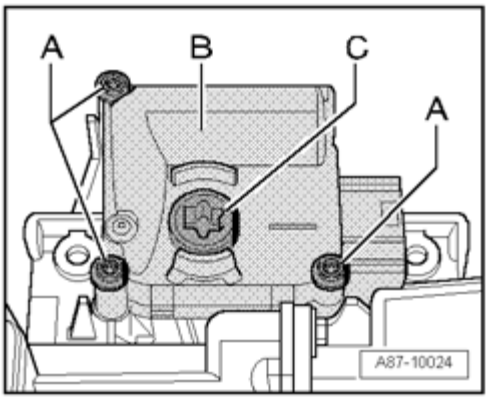

Fig. 80: Identifying Bolts And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** -.
- Hand-tighten bolts - **A** - (10 Ncm).
- Install Fresh Air Blower V2 --> **Fresh Air Blower V2 , removing and installing**.
- Re-install components removed in reverse order.

- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Cover with air intake unit flap, removing and installing

NOTE:

- **The air intake unit housing and its corresponding upper and inner cover is available in different versions (up to 05.04 version "1" and as of 05.04 version "2" with floating conversion, distinguishing characteristics --> Distinguishing characteristics of air intake unit version "1" and "2"), if upper cover or housing of version "1" must be replaced in vehicles which were produced up to 05.04, housing or upper cover of air outlet unit must also be replaced (only components of version "2" may be obtained as replacement parts) Parts Catalog.**

Removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove Fresh Air Blower V2 --> **Fresh Air Blower V2 , removing and installing**.
- Remove Air Flow Flap Motor V71 --> **Air Flow Flap Motor V71 with Back Pressure Flap Motor Position Sensor G113 , removing and installing**.

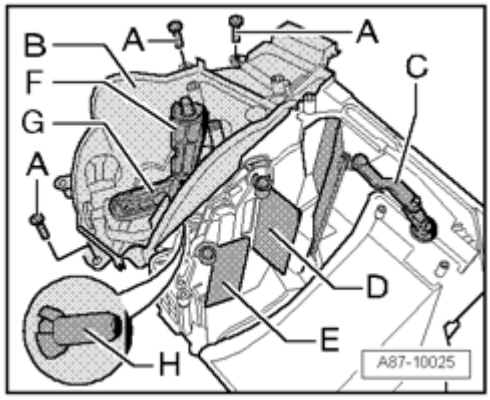

Fig. 81: Identifying Bolts, Cover, Recirculated Air Flap, And Fresh-Air/Air Flow Flaps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts - **A** -.
- Remove cover - **B** -.

NOTE:

- **Recirculated-air flap - C - (with connecting elements) and the two fresh-air/air flow flaps - D - and - E - are inserted in air intake unit housing.**
- **Shaft/control motor connecting element - F - and lever - G - are held in position by way of retainer tabs - H - in cover - B -.**
- **Removing shaft/control motor connecting element**
- **Design differs from that of connecting element - F - and special tool can therefore not be used for removal (pry off with screwdriver if necessary).**

Installing

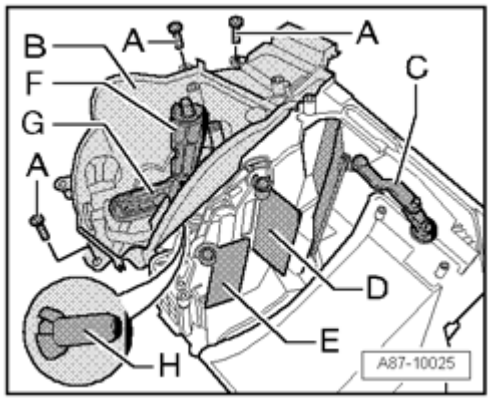

Fig. 82: Identifying Bolts, Cover, Recirculated Air Flap, And Fresh-Air/Air Flow Flaps

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert recirculated-air flap - **C** - (with connecting elements) and the two fresh-air/air flow flaps - **D** - and - **E** - in the corresponding mounts in the air intake unit housing.

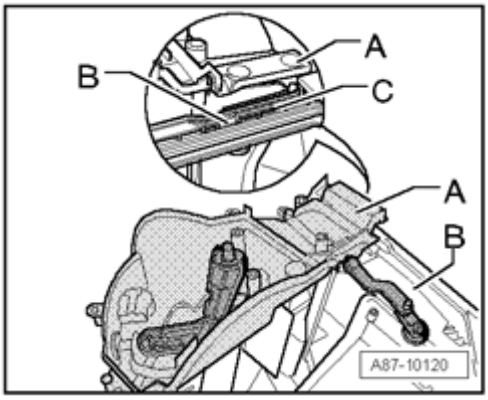

Fig. 83: Sealing The Area Between Inner Cover And Housing In Area Using E.G. Silicon Adhesive Sealant "D 176 001 A3"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In vehicles with an air intake unit of version "1" (floating conversion to version "2" as of 05.04, distinguishing characteristics for version "2" --> **Distinguishing characteristics of air intake unit version "1" and "2"**) seal the area between inner cover - **A** - and housing - **B** - in area - **C** - using e.g. silicon adhesive sealant "D 176 001 A3".

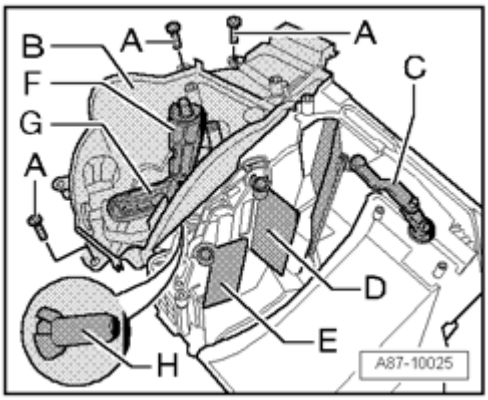

Fig. 84: Identifying Bolts, Cover, Recirculated Air Flap, And Fresh-Air/Air Flow Flaps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install cover - **B** - , taking particular care to ensure that the two shafts (of shaft/control motor connecting element - **F** - and lever - **G** -) are correctly inserted in the appropriate flap.
- Check position of recirculated-air flap - **C** - in mounts.
- Hand-tighten bolts - **A** - (10 Ncm).
- Install Fresh Air Blower V2 --> **Fresh Air Blower V2 , removing and installing**.

- Re-install components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Grille in front of fresh-air intake, removing and installing

Removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Remove upper cover of air intake unit --> **Upper cover of air intake unit, removing and installing**.

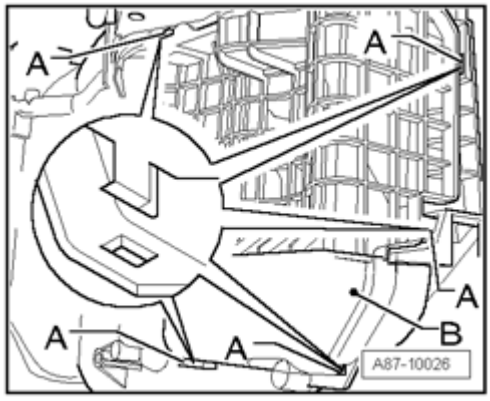

Fig. 85: Releasing Fasteners And Removing Grille For Fresh-Air Intake From Air Intake Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release fasteners - **A** - and remove grille for fresh-air intake - **B** - from air intake unit.

Installing

- Clean plenum chamber in area beneath air intake unit.
- Install grille for fresh-air intake - **B** - to air intake unit.
- Re-install components removed in reverse order.

Air intake unit, removing and installing

Special tools, testers and other items required

- Hose Clamps Up To 25mm Dia. 3094 or Hose Clamps, Up To 40 mm. 3093
- Commercially available compressed-air gun
- Cooling System Tester V.A.G 1274 (and appropriate adapters)

Removing

- Switch off ignition.
- Dissipate pressure in coolant circuit by opening cap at coolant expansion tank Relevant engine, mechanics
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

  .
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove wipers and unclip drip rail from air intake unit --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Remove Alarm Horn H12 --> **96 - LIGHTS, SWITCHES - INTERIOR, ANTI-THEFT** .
- Remove Air Quality Sensor G238 if applicable --> **Air Quality Sensor G238 , removing and installing**.

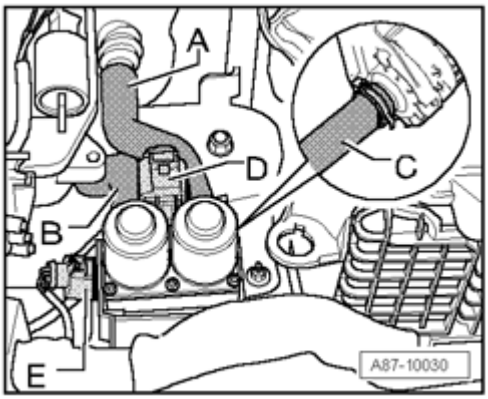

Fig. 86: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pinch off coolant hose - **C** - (supply from engine to Coolant Pump V50) e.g. using Hose Clamps Up To 25mm Dia. 3094.

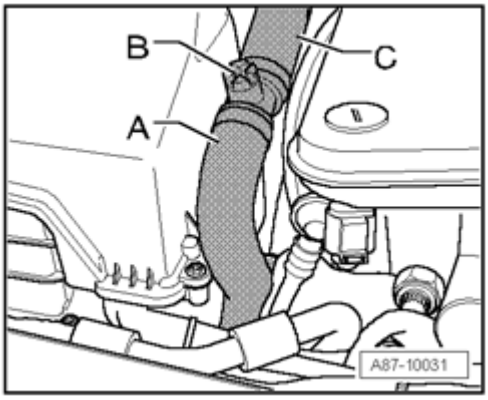

Fig. 87: Identifying Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pinch off coolant hose - **A** - (return from heater core to engine), e.g. using Hose Clamps Up To 25mm Dia. 3094.
- Disconnect coolant hose - **C** - from connection at Heating and A/C unit and lay aside.

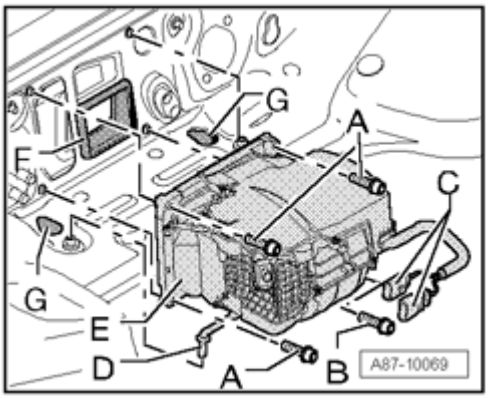

Fig. 88: Unplugging Connector And Screwing Out Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unplug connector - **C** -.
- Screw out bolt - **B** - (tightening torque 7 Nm).

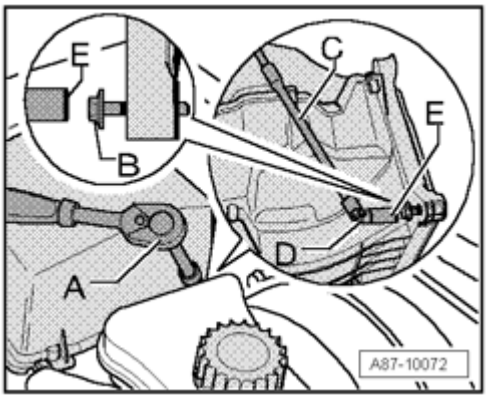

Fig. 89: Identifying Bolt, Ratchet, Extensions, Universal Joint, And Socket Attachment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **To avoid having to remove brake servo, loosen and tighten bolt - B - using ratchet - A - from $^{1}/_{4}$ inch socket wrench set with 2 long extensions - C - , universal joint - D - and a socket attachment - E -.**

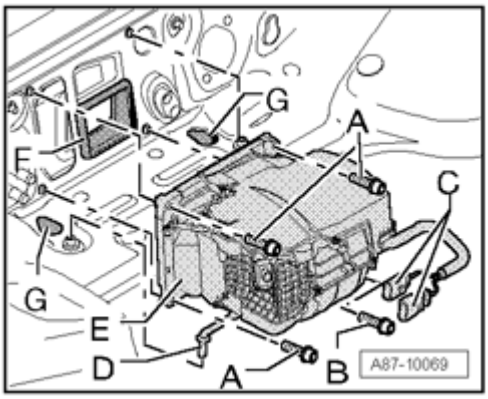

Fig. 90: Unplugging Connector And Screwing Out Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts - **A** - (tightening torque 7 Nm).
- Unfasten water drain - **D** - from opening in plenum chamber or from air intake unit.
- If necessary, unfasten wiring harness (installed in plenum chamber between plenum chamber front wall and air intake unit) from the various holders.
- Remove air intake unit - **E** -.

Installing

Install in reverse order, paying attention to the following:

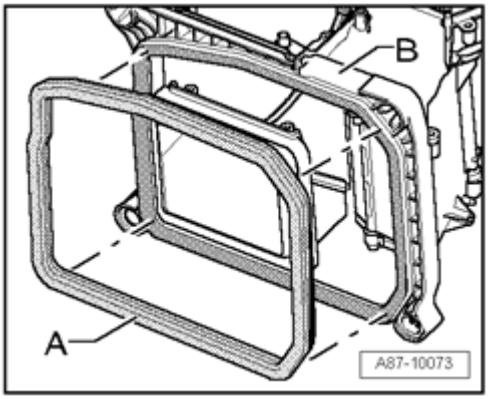

Fig. 91: Identifying Seal And Air Intake Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check seal - **A** - for damage and proper installation in air intake unit - **B** -.

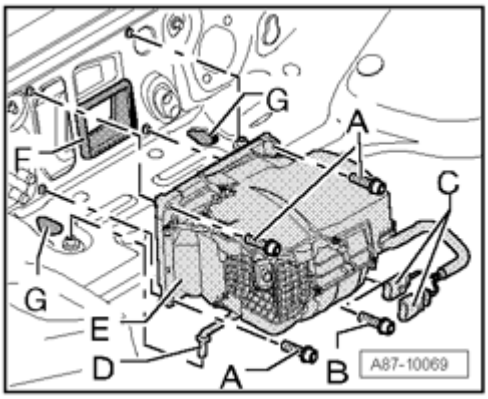

Fig. 92: Unplugging Connector And Screwing Out Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the two water drain sockets - **G** - for damage and contamination and clean if necessary.
- Check socket - **F** - for damage and correct installation at Heating and A/C unit as well as in back wall of plenum chamber.
- Clean plenum chamber.
- Check water drain - **D** - for damage and contamination and clean if necessary.

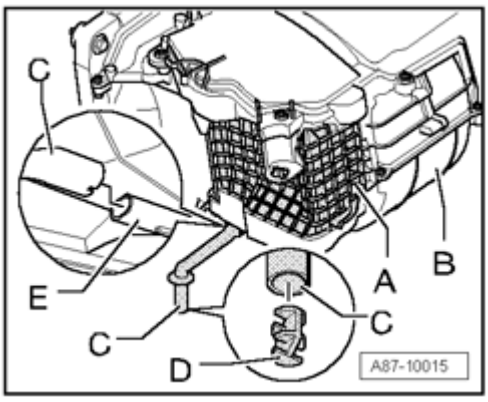

Fig. 93: Identifying Fresh Air Intake, Air Intake Unit, Water Drain Hose, And Plastic Element
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Drainage of water out of plenum chamber may be impaired by deposits such as leaves and pine needles accumulating in the water drains. If the vehicle is then driven through a car wash or in the event of heavy rainfall, the water level in the plenum chamber will rise and water enter via the fresh-air intake - A - into the air intake unit - B -.**
- **The water drain hose - C - is intended to discharge the small amounts of water entering the air intake unit via the fresh-air intake in normal operation.**
- **The water drains via the water drain hose - C - out of the plenum chamber**

(via connection - E -) into the transmission tunnel in the area behind the noise and heat insulation mat (a hole is provided specifically for this in the bottom of the plenum chamber).

- **A plastic element - D - for reducing the cross-section is inserted in the water drain hose - C -. If plastic element - D - is not installed, noise may occur depending on Fresh Air Blower V2 speed.**

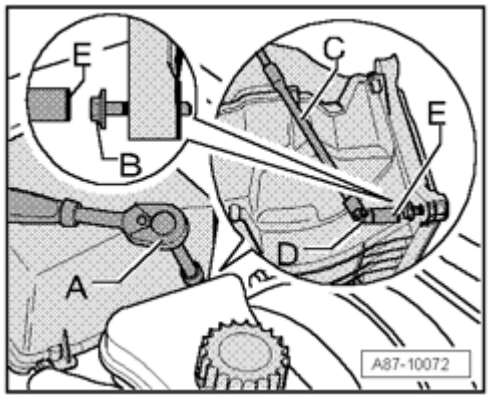

Fig. 94: Identifying Bolt, Ratchet, Extensions, Universal Joint, And Socket Attachment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert bolt - **B** - e.g. with a piece of "butyl cord" in hole of air distributor unit such that it does not fall out on inserting air intake unit.

NOTE:

- **To avoid having to remove brake servo, loosen and tighten bolt - B - using ratchet - A - from $^{1}/_{4}$ inch socket wrench set with 2 long extensions - C - , universal joint - D - and a socket attachment - E -.**

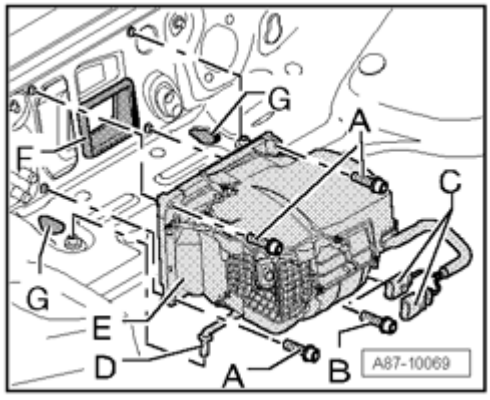

Fig. 95: Unplugging Connector And Screwing Out Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install air intake unit - **E** - and secure with bolts - **A** - (tightening torque 7 Nm).

- Tighten bolt - **B** - (tightening torque 7 Nm).
- Re-install components removed in reverse order.

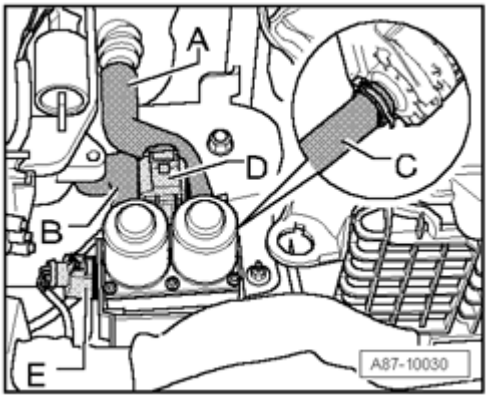

Fig. 96: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Following installation, check correct positioning of socket between engine compartment and plenum chamber at coolant hose - **C** -.
- Filling and bleeding coolant circuit -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA
- After bleeding, check cooling system for leaks -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

.

NOTE:

- **When bleeding coolant circuit, take particular care to ensure complete bleeding of heater cores. If air bubbles remain in heater cores, complaints may be received about lack of heat output in winter or differences in temperature of air flowing out of vents with same setting in control mode.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Operation of solar roof

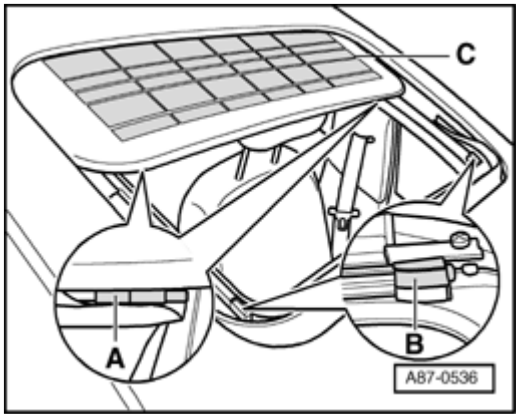

Fig. 97: Identifying Solar Roof Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Solar mode is only possible with sun roof closed or tilted (solar energy converted into electrical energy by solar roof - C - is supplied to vehicle electrical system via contacts - A - (at front edge of sun roof) and - B - (at sun roof frame).**
- **If solar operation of fresh-air blower is not required, function can be deactivated depending on adaptation of control and display unit, Climatronic Control Module J255 in MMI (Multi Media Interface) Owners manual.**
- **Measured value block of control and display unit, Climatronic Control Module J255 (display group "044") indicates the number of Fresh Air Blower V2 operating hours in solar mode and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Design of Fresh Air Blower Control Module J126 is such that in solar mode, Fresh Air Blower V2 is only actuated given generation of sufficient operating energy by solar cells (at present, minimum voltage with Fresh**

Air Blower V2 actuated must be greater than 2 V).

- **The energy supplied by the Solar Cells C20 is transferred via the Fresh Air Blower Control Module J126 directly to the Fresh Air Blower V2. The Fresh Air Blower V2 converts the electrical energy generated into blower power.**
- **On vehicles with no sun roof with Solar Cells C20 , all air conditioner control motors come to a halt in their instantaneous position when ignition is switched off. Ventilation of the passenger compartment in solar mode does however require the air flow/fresh-air and recirculated-air flaps to be set to "fresh-air mode". On vehicles with solar roof, the control and display unit, Climatronic Control Module J255 is therefore informed that solar cells are installed by way of the coding. The control and display unit, Climatronic Control Module J255 then moves the flaps in the air intake unit to the "fresh-air mode" position after switching off ignition.**
- **The Fresh Air Blower Control Module J126 checks the voltage at the input of the solar cells at regular intervals when the ignition is off (no signal detected by control and display unit, Climatronic Control Module J255) and converts the voltage generated by the solar cells in such a manner that the fresh-air blower runs at the maximum possible speed if sufficient solar energy is being generated.**
- **With a degree of insulation of 500 W/m ^{2} , the electrical energy supplied by the solar roof is approx. 12 W and is calculated as follows: 500 W/m ^{2} (insulation) x 0.21 m ^{2} (solar area of sun roof) x 0.13 (efficiency of Solar Cells C20) x 0.9 (efficiency of Fresh Air Blower Control Module J126).**

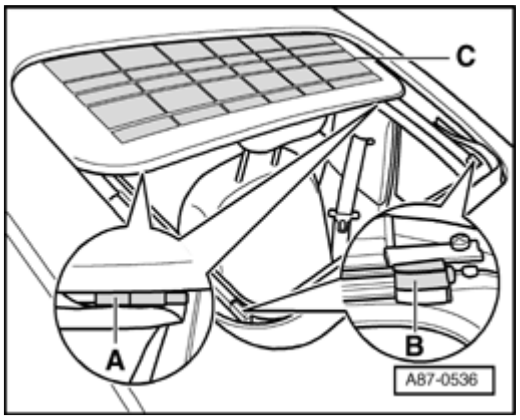

Fig. 98: Identifying Solar Roof Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Contacts - **A** - and - **B** - (at sun roof and sun roof frame) for transferring the electrical energy generated must be clean and free from normal lubricant.
- If necessary, contacts - **A** - and - **B** - can be coated with a small quantity of contact grease (electrically conductive preservative and lubricant available from electronics dealers).

Solar roof, checking operation

- Move vehicle into the sun.

NOTE:

- **If weather conditions are not suitable, shine two commercially available 500 W halogen lamps for example onto solar roof, maintaining a distance of 500 mm (19.7 in) from solar roof. So that the Solar Cells C20 can supply sufficient electrical energy to drive the Fresh Air Blower V2 , make sure that all sunroof Solar Cells C20 are illuminated completely and evenly.**
- **Electrical energy supplied is only approx. 1.5 W on shining halogen lamps onto solar roof (Fresh Air Blower V2 rotates but air flow is hardly perceptible).**
- **Open "center" instrument panel vents and close all other vents.**
- **Check adaptation of control and display unit, Climatronic Control Module J255 (adaptation for "Sun roof with solar cells" function must have been performed) --> Climatronic Control Module J255 , adaptation and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Check setting on MMI (Multi Media Interface). "Solar mode" function must have been set Owners manual.**
- **Close sun roof.**
- **Switch off ignition (control and display unit, Climatronic Control Module J255 blank).**

A current of air can be felt from the instrument panel vents (moisten palm of hand to check if necessary).

If no current of air can be felt:

- Check DTC memory of control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Check coding and adaptation of control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

NOTE:

- **The current, which is supplied by sunroof with Solar Cells C20 to the Fresh Air Blower V2 , can be read out in measuring value block (display group "044") depending on version of the Climatronic Control Module J255. Move the vehicle e.g. into the sun with sunroof closed (or beneath two lamps as described above) and then select the respective measuring value block of Climatronic Control Module J255 Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" function. After switching off the ignition, the current is then displayed which was supplied by sunroof with Solar Cells C20 when switching off the ignition (and the brief period afterward).**
- **Switch off ignition.**
- **Remove plenum chamber cover.**

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

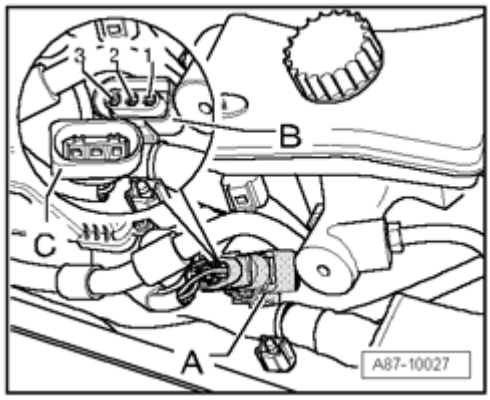

Fig. 99: Identifying Connectors And Contacts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open 3pin connector - **A** - of vehicle wiring harness to air intake unit (to Fresh Air Blower Control Module J126).
- Measure voltage at connector - **B** - between contact - **2** - (of solar roof) and contact - **3** - (Ground (GND)) --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.

- Specification: 8 to 12 V DC (depending on sunlight intensity)

- Connect test lamp (12 V, max. 5 W) between contacts - **2** - and - **3** - at connector - **B** -.
- Test lamp glows or lights (depending on sunlight intensity).

NOTE:

- **Solar roof function is OK if test lamp glows or lights. If Fresh Air Blower V2 does not run, check freedom of movement of Fresh Air Blower V2 and actuation of Fresh Air Blower Control Module J126 by control and display unit, Climatronic Control Module J255. Replace Fresh Air Blower Control Module J126 if no malfunction is found.**

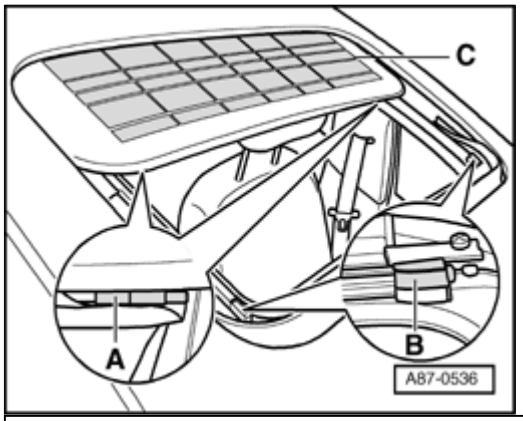

Fig. 100: Identifying Solar Roof Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If test lamp does not glow or light, check wiring to the two contacts - **B** - at the sun roof opening. If no malfunction is found, check solar panel --> Electrical Wiring Diagrams, Troubleshooting and Component Locations and --> **60 - SUNROOF** .
- Electrical energy supplied is only approx. 1.5 W on shining halogen lamps onto solar roof (Fresh Air Blower V2 rotates but air flow is hardly perceptible).

AIR INTAKE UNIT, DISASSEMBLING AND ASSEMBLING

Air intake unit, disassembling and assembling

NOTE:

- **With the exception of the housing, all air intake unit components can be removed/installed without taking out the entire unit.**
- **There are various identical connectors in the air intake unit which should be marked before unplugging to avoid interchange.**
- **Different control motors are installed on Heating and A/C unit and in air intake unit. These motors have different electrical values and part number indices Parts List and should therefore be marked prior to removal to avoid interchange.**
- **The air intake unit housing and its corresponding upper cover is available in different versions (up to 05.04 version "1" and as of 05.04 version "2" with floating conversion, distinguishing characteristics --> Distinguishing characteristics of air intake unit version "1" and "2"), if upper cover or housing of version "1" must be replaced in vehicles which were produced up to 05.04, housing or upper cover of air outlet unit must also be replaced (only components of version "2" may be obtained as replacement parts) Parts Catalog.**

Components installed in air intake unit

CAUTION: Do not grasp hold of impeller of Fresh Air Blower V2. Applying force to impeller or moving balancing weights attached to impeller could cause imbalance and thus operating problems.

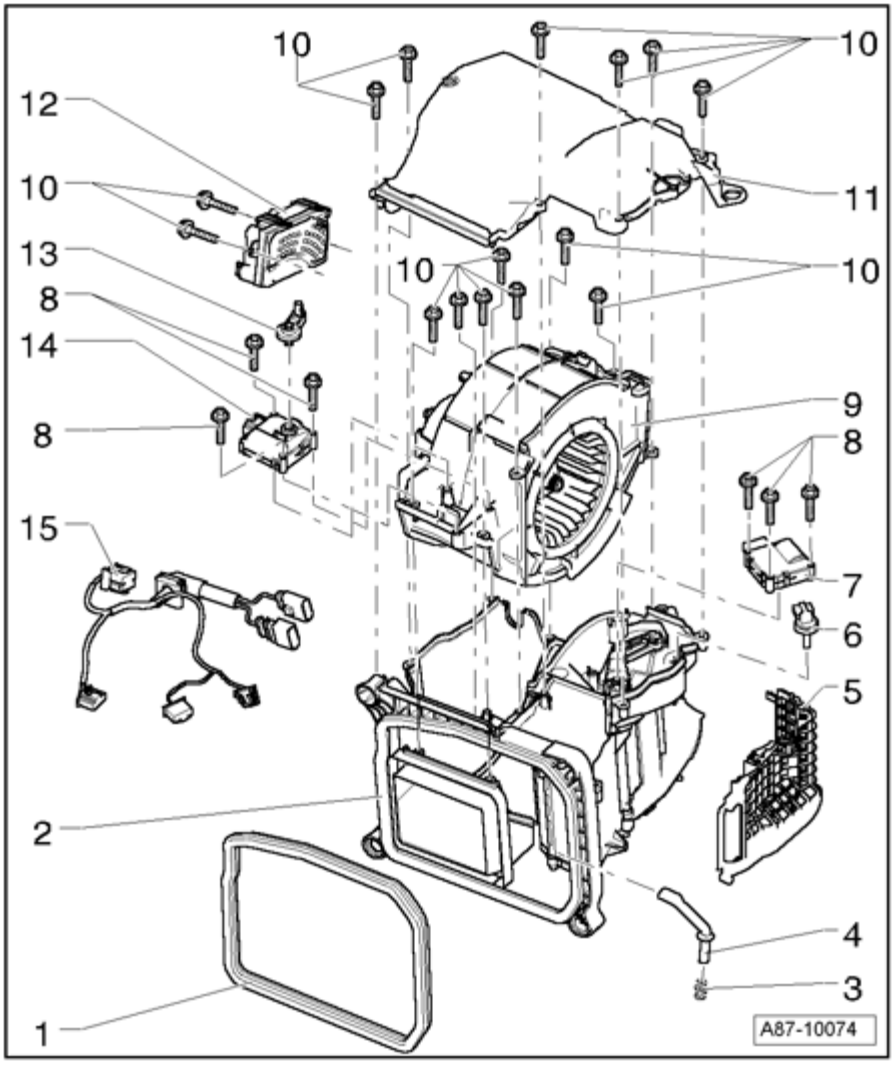

Fig. 101: Components Installed In Air Intake Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Seal

- Between plenum chamber wall and air intake unit

2 - Housing of air intake unit with air flaps

- Removing and installing --> **Air intake unit, removing and installing**
  - Installed components can for the most part be removed/installed with housing in position
- Removing and installing air flaps of air intake unit --> **Air flaps of air intake unit, removing and installing**

3 - Plastic element for reducing cross-section in water drain

4 - Air intake unit water drain

- Designed to drain off water entering air intake unit via fresh-air intake
- Plastic element for reducing cross-section is inserted in water drain hose

5 - Grille in front of fresh-air intake

- Removing and installing --> **Grille in front of fresh-air intake, removing and installing**

6 - Fresh Air Intake Duct Temperature Sensor G89

- Removing and installing --> **Fresh Air Intake Duct Temperature Sensor G89 , removing and installing**
- Checking "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

7 - Air Flow Flap Motor V71

- With Back Pressure Flap Motor Position Sensor G113
- Removing and installing --> **Air Flow Flap Motor V71 with Back Pressure Flap Motor Position Sensor G113 , removing and installing**

8 - Bolt

- Tightening torque 10 Ncm

9 - Fresh Air Blower V2

- Removing and installing --> **Fresh Air Blower V2 , removing and installing**
- Checking "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

10 - Bolt

- Tightening torque 10 Ncm

11 - Upper cover of air intake unit

- Seal off groove/spring joint between upper cover and air intake unit housing of version "1"

12 - Fresh Air Blower Control Module J126

- Removing and installing --> **Fresh Air Blower Control Module J126 , removing and installing**
- Checking "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

13 - Lever

14 - Recirculation Flap Motor V113

- With Recirculation Flap Motor Position Sensor G143
- Removing and installing --> **Recirculation Flap Motor V113 , removing and installing**

15 - Air intake unit wiring harness

- Design and pin assignment --> Electrical Wiring Diagrams, Troubleshooting and Component Locations
- Pay attention to correct routing

Air flaps of air intake unit, removing and installing

NOTE:

- **Removing and installing air flaps of air intake unit with air intake unit in position --> Cover with air intake unit flap, removing and installing**
- **The air intake unit housing and its corresponding upper cover is available in different versions (up to 05.04 version "1" and as of 05.04 version "2" with floating conversion, distinguishing characteristics --> Distinguishing characteristics of air intake unit version "1" and "2"), if upper cover or housing of version "1" must be replaced in vehicles which were produced up to 05.04, housing or upper cover of air outlet unit must also be replaced (only components of version "2" may be obtained as replacement parts) Parts Catalog.**

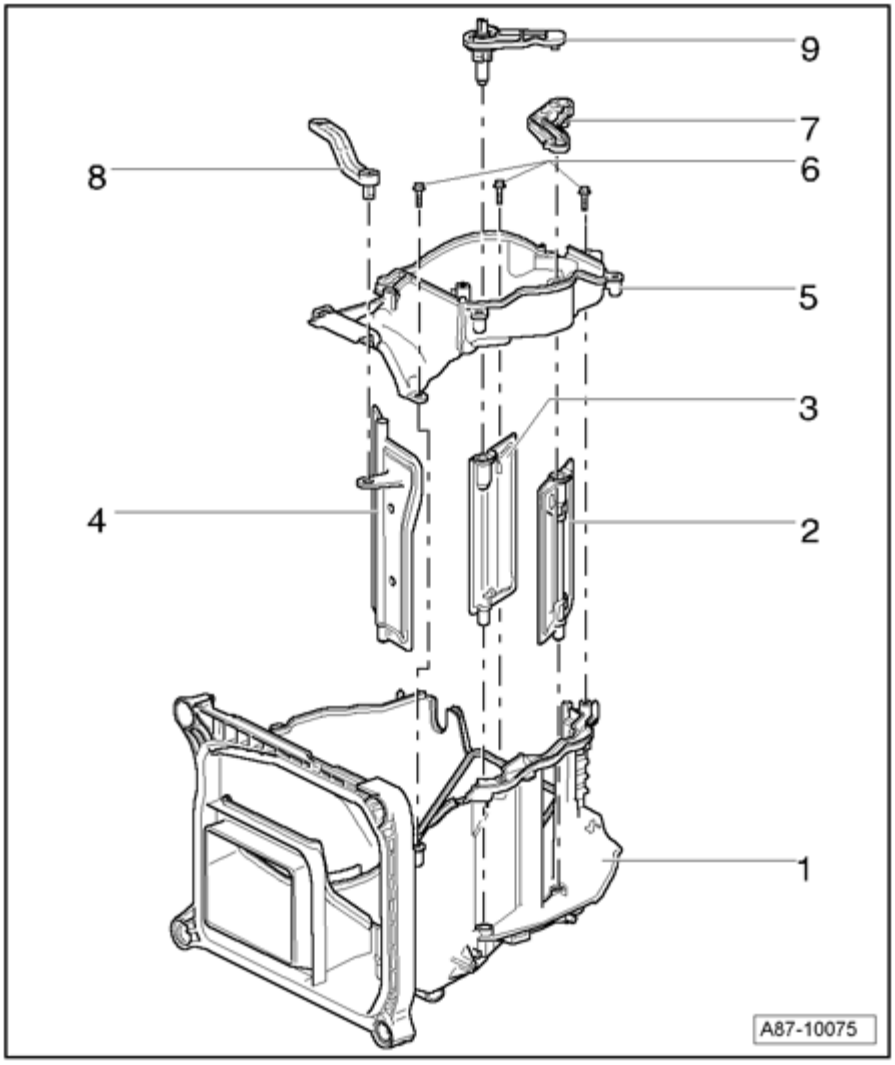

Fig. 102: Air Flaps Of Air Intake Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Housing

- Seal off connection point between inner cover and air intake unit housing of version "1"

2 - Fresh-air/air flow flap "1"

3 - Fresh-air/air flow flap "2"

4 - Recirculated-air flap

5 - Inner cover

- Seal off connection point between inner cover and air intake unit housing of version "1"

6 - Bolt

7 - Lever

- Removing and installing --> **Cover with air intake unit flap, removing and installing**

8 - Lever

- Removing and installing --> **Cover with air intake unit flap, removing and installing**

9 - Lever

- Removing and installing --> **Cover with air intake unit flap, removing and installing**

Distinguishing characteristics of air intake unit version "1" and "2"

NOTE:

- **The air intake unit housing and its corresponding upper cover is available in different versions (up to 05.04 version "1" and as of 05.04 version "2" with floating conversion), if upper cover or housing of version "1" must be replaced in vehicles which were produced up to 05.04, housing or upper cover of air outlet unit must also be replaced (only components of version "2" may be obtained as replacement parts) Parts Catalog.**
- **In the following illustration, the details designated - A - show the state of version "1" , the details designated - B - show the state of version "2".**
- **The entry of water via the various connection points into the air intake housing is prevented by the changes in version "2".**
- **So that no water can penetrate into air intake housing via the various connection points of version "1" components, a sealing cord has been inserted during production into groove of the groove/spring joint between upper cover and housing and the connection points between inner cover and housing have been sealed off with a piece of butyl sealing cord.**

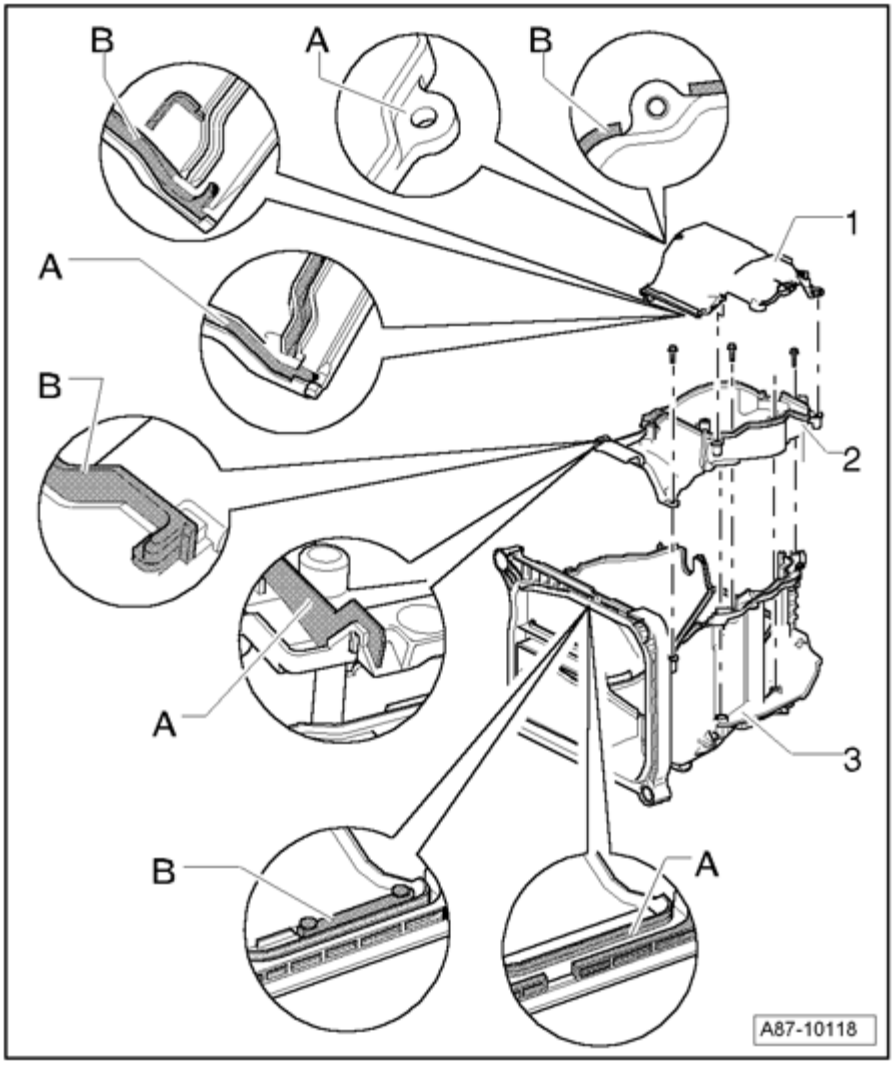

Fig. 103: Distinguishing Characteristics Of Air Intake Unit Version "1" And "2"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Upper cover of air intake unit

- Seal off groove/spring joint between upper cover and air intake unit housing of version "1"

2 - Inner cover

- Seal off connection point between inner cover and air intake unit housing of version "1"

3 - Housing

- Seal off connection point between inner cover and air intake unit housing of version "1"

INCORPORATION OF HEATING AND A/C UNIT INTO ENGINE COOLANT CIRCUIT

Incorporation of Heating and A/C unit into engine coolant circuit

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

NOTE:

- **With ignition on, valves of pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) are constantly actuated as a function of temperature setting on control and display unit, Climatronic Control Module J255. Valves may therefore be warm or even hot despite engine being cold.**
- **The two valves of the pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) are interchanged on left and right-hand drive vehicles (different connection assignment --> Electrical Wiring Diagrams, Troubleshooting and Component Locations).**
- **If Coolant Pump V50 is noisy, check for complete bleeding of cooling system before removing pump valve unit (noise may be caused by air in coolant circuit) -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

  .
- **Valves of pump valve unit are open when de-energized. If power supply or valve connection to control and display unit, Climatronic Control Module J255 is interrupted, air conditioner heat output cannot be regulated (air conditioner provides constant heating) --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.**

Incorporation of Heating and A/C unit into coolant circuit

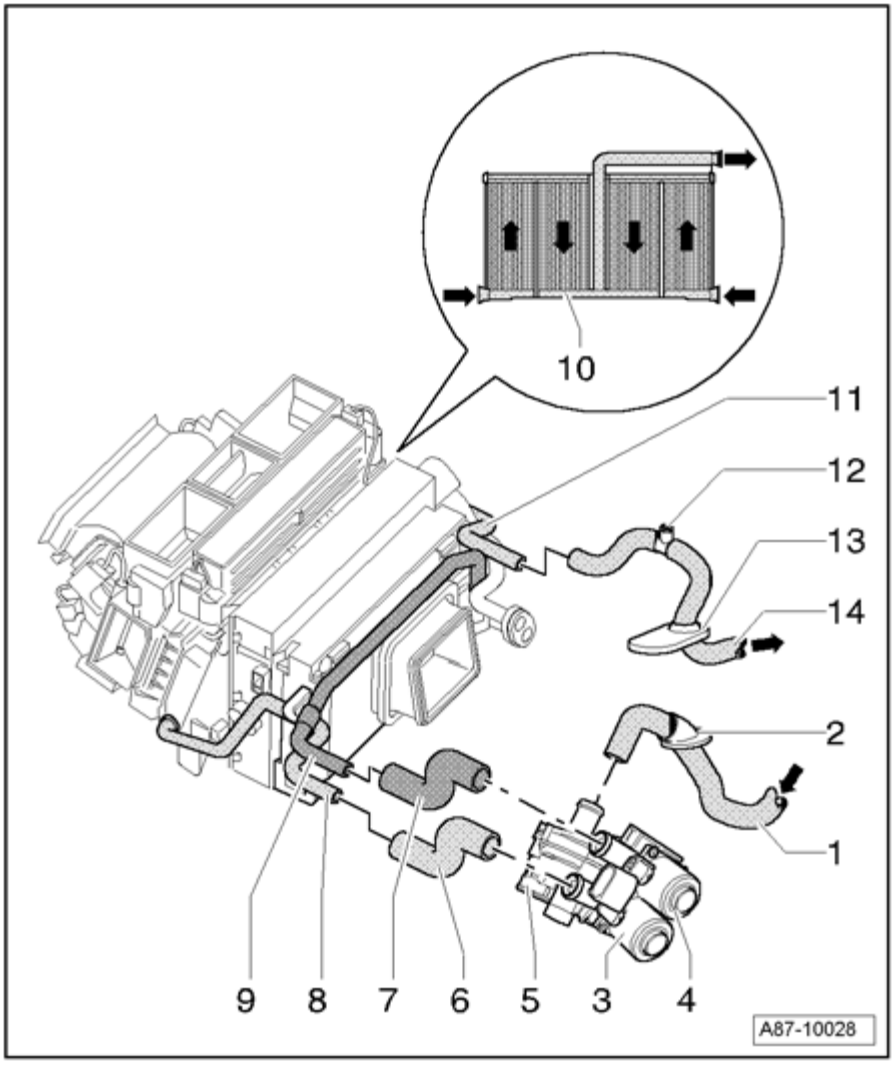

Fig. 104: Incorporation Of Heating And A/C Unit Into Coolant Circuit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Coolant hose

- Coolant supply from engine to pump valve unit
- Connection of coolant hose to relevant engine -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK

- **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

2 - Socket

- For coolant hose passage from engine compartment to plenum chamber

3 - Right Heat Regulating Valve N176 (front passengers side)

- Part of pump valve unit

4 - Left Heat Regulating Valve N175 (drivers side)

- Part of pump valve unit

5 - Coolant Pump V50

- Part of pump valve unit

6 - Coolant hose to heater core (front passengers side)

7 - Coolant hose to heater core (drivers side)

8 - "Supply" coolant pipe to heater core (front passengers side)

9 - "Supply" coolant pipe to heater core (drivers side)

10 - Heater (Heating and A/C unit) heater core

- Heater core splits up in center (drivers and front passengers side)
- Removing and installing --> **Heater core, removing and installing**

11 - "Return" coolant pipe from heater core

12 - T-piece with bleeder valve

- As of 07.2005, T-pieces with restrictors have been installed with gradual introduction (the constriction eliminates the noise from pressure pulsations which may occur while switching valves of the pump valve unit under some operating conditions).

13 - Socket

- For coolant hose passage from plenum chamber to engine compartment

14 - Coolant hose

- Coolant return from Heating and A/C unit heater core to engine
- Connection of coolant hose to relevant engine -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

Pump valve unit, removing and installing

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

NOTE:

- **With ignition on, valves of pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) are constantly actuated as a function of temperature setting on control and display unit, Climatronic Control Module J255. Valves may therefore be warm or even hot despite engine being cold.**
- **If Coolant Pump V50 is noisy, check for complete bleeding of cooling system before removing pump valve unit (noise may be caused by air in coolant circuit) -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

  .
- **Valves of pump valve unit are open when de-energized. If power supply or valve connection to control and display unit, Climatronic Control Module J255 is interrupted, air conditioner heat output cannot be regulated (air conditioner provides constant heating) --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.**

- **The two valves of the pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) are interchanged on left and right-hand drive vehicles (different connection assignment --> Electrical Wiring Diagrams, Troubleshooting and Component Locations).**
- **In the event of a problem with "poor heat output" , check the following before removing pump valve unit:**
- **Connection of pump valve unit and Heating and A/C unit heater core return to engine coolant circuit (proper assignment of supply and return connection to engine); interchanging the two connections would cause engine coolant pump to work in opposition to Coolant Pump V50**
- **Possible interchange of wiring to Coolant Pump V50 ("+" and "-"); interchanging the connections would cause pump to run in wrong direction (and work in opposition to engine coolant pump) --> Electrical Wiring Diagrams, Troubleshooting and Component Locations**
- **Bleeding of coolant circuit (bleed again if necessary)**
- **Heat output of air conditioner --> Heat output of air conditioner and operation of pump valve unit, checking**

Tools required for removal/installation of pump valve unit

Special tools, testers and other items required

- Hose Clamps Up To 25mm Dia. 3094 or Hose Clamps, Up To 40 mm. 3093
- Cooling System Tester V.A.G 1274 (and appropriate adapters)

Removing

- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Dissipate pressure in coolant circuit by opening cap at coolant expansion tank -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK

- **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

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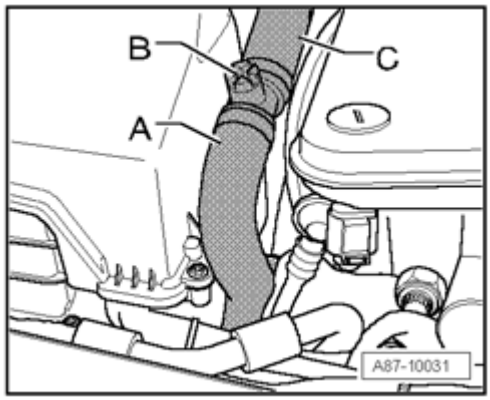

Fig. 105: Identifying Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pinch off coolant hose - **A** - (return from Heating and A/C unit heater core to engine), e.g. using Hose Clamps Up To 25mm Dia. 3094.

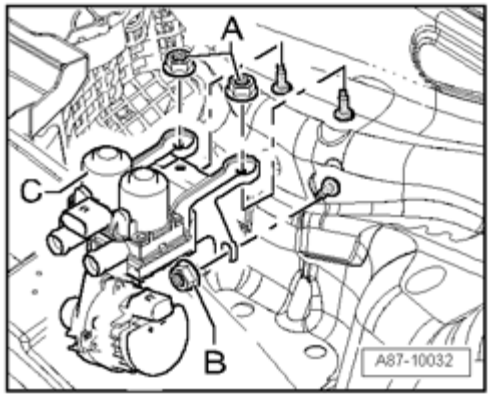

Fig. 106: Identifying Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **A** - and - **B** - (tightening torque 4 Nm).

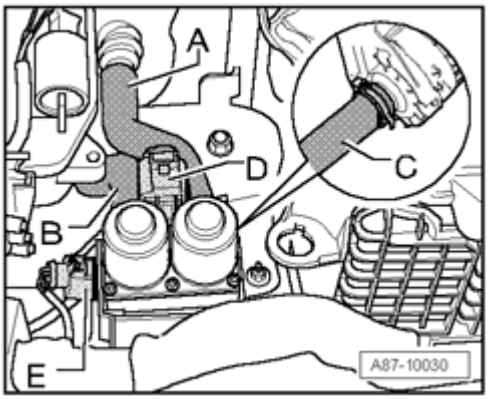

Fig. 107: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark arrangement of coolant hoses - **A** - (supply to left heater core) and - **B** - (supply to right heater core).
- Unplug connector - **D** - to Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176.
- Unplug connector - **E** - to Coolant Pump V50.
- Pinch off coolant hose - **C** - (supply from engine to Coolant Pump V50) e.g. using Hose Clamps Up To 25mm Dia. 3094.

- Disconnect coolant hoses - **A** - , - **B** - and - **C** - from connections of pump valve unit.

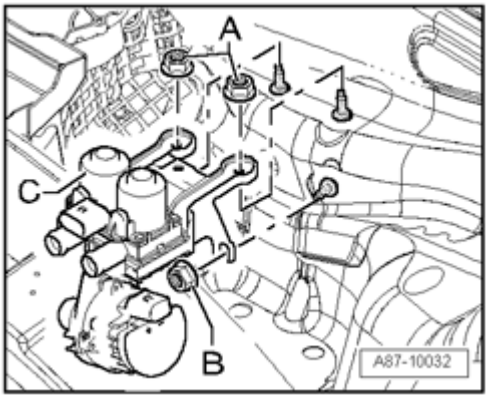

Fig. 108: Identifying Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove pump valve unit - **C** -.

Installing

NOTE:

- **Coolant Pump V50 for circulating pump valve unit coolant is not to be started up until coolant circuit has been bled (dry running would destroy Coolant Pump V50).**

- **For bleeding coolant circuit, the two valves of the pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) must be open (this is the case when not actuated).**
- **Switching on ignition with pump valve unit connectors unplugged causes the malfunctions Coolant Pump V50 , Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 to be detected by control and display unit, Climatronic Control Module J255 and stored.**

Install in reverse order, paying attention to the following:

- Re-install components removed in reverse order (with the exception of plenum chamber cover).

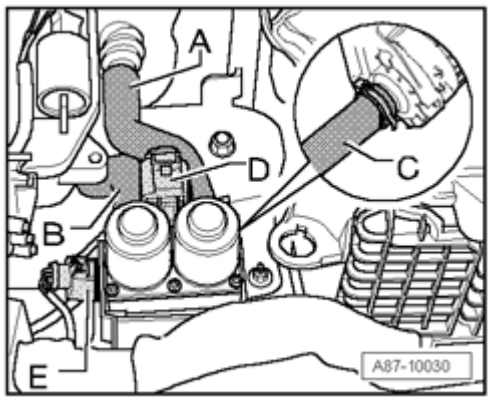

Fig. 109: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Following installation, check correct positioning of socket between engine compartment and plenum chamber at coolant hose - **C** -.
- Check pump valve unit; it must not make contact with other components (noise).
- Bleed coolant circuit -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

  .
- Plug in connectors - **D** - to Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 and - **E** - to Coolant Pump V50 after bleeding coolant circuit.

- Remove residual coolant from plenum chamber.
- Re-install remaining components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Pump valve unit holder, removing and installing

- Remove pump valve unit --> **Pump valve unit, removing and installing**.

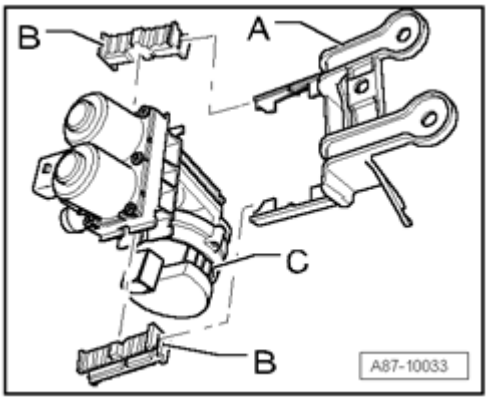

Fig. 110: Identifying Holder, Rubber Elements, And Pump Valve Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Left and right-hand drive vehicles have a different holder - A -.**
- **Rubber elements - B - are installed between pump valve unit - C - and holder - A - to prevent operating noise of pump valve unit - C - being transmitted to body.**

HEATED WINDSHIELD

Heated windshield

NOTE:

- **Availability of heated windshield as optional equipment has not been confirmed for USA/CDN at time of publication.**

Operation of heated windshield

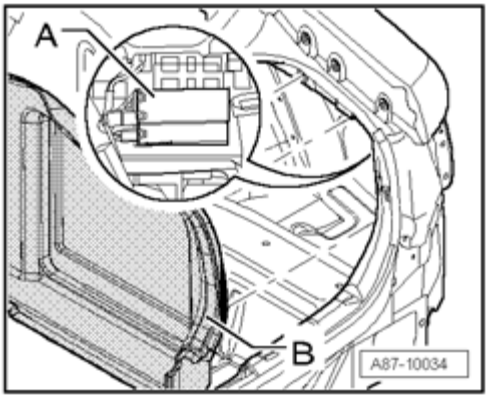

Fig. 111: Identifying Heated Windshield Control Module J505 And Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Heated Windshield Control Module J505 - **A** - is installed in luggage compartment on right behind lining - **B** -.
- Heated Windshield Control Module J505 - **A** - is actuated as follows by control and display unit, Climatronic Control Module J255 by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)" (Read Measuring Value Block, display group "045") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 :

  - After starting cold engine if ambient temperature is less than + 5 ° C and control and display unit, Climatronic Control Module J255 is set to "Auto" mode; temperature setting on control and display unit, Climatronic Control Module J255 must be such that air conditioner is in heating mode and temperature measured by senders (Left Vent Temperature Sensor G150 , Right Vent Temperature Sensor G151 , Center Outlet Temperature Sensor G191) must not be in excess of + 35 ° C; heating period is governed by ambient temperature (max. 6 minutes at -40 °).
  - On selecting "Defrost" mode on control and display unit, Climatronic Control Module J255 if ambient temperature is less than + 5 ° C; heating period is between 2 and 6 minutes depending on ambient temperature; lamp in Defrost button flashes as long as heated windshield is switched on; actuation only takes place with engine running.

- Heated Windshield Control Module J505 - **A** - switches on Heated Windshield Z2 if the following conditions are fulfilled:

  - Control and display unit, Climatronic Control Module J255 actuating Heated Windshield Control Module J505
  - Voltage at Heated Windshield Control Module J505 greater than 12.70 V
  - Heated Windshield Control Module J505 not overheated

- Heated Windshield Control Module J505 is actuated by control and display unit, Climatronic Control Module J255 by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)". If a condition exists in Heated Windshield Control Module J505 which does not permit activation of heated windshield, control and display unit, Climatronic Control Module J255 is informed by way of this signal wire that heated windshield is not to be activated (Read Measuring Value Block, display group "045")

and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- Resistance of metal foil in Heated Windshield Z2 is approx. 1.9 ohms. A voltage greater than electrical system voltage is required to attain maximum possible heat output of approx. 1000 W (watts) at windshield. Heated Windshield Control Module J505 converts electrical system voltage for Heated Windshield Z2 into a variable voltage of between 25 and 48 V depending on electrical system voltage. With an electrical system voltage of 13.1 V at Heated Windshield Control Module J505 , control module supplies Heated Windshield Z2 with a voltage of 41 V "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052..
- To prevent electrical system overload, Heated Windshield Control Module J505 regulates heat output for Heated Windshield Z2. With an electrical system voltage of 12.70 V this is approx. 200 W and is infinitely regulated to 1000 W at 13.10 V. Heated Windshield Control Module J505 permits an increase in power output of max. 200 W per second to guard against voltage dips in the electrical system on switching on heated windshield.
- To prevent actuation of Heated Windshield Z2 in the event of short circuit or open circuit in wiring, Heated Windshield Control Module J505 checks resistance of Heated Windshield Z2. If resistance measured is less than approx. 1.5 W (short circuit) or greater than approx. 2.5 W (open circuit or contact resistance), Heated Windshield Control Module J505 does not switch on windshield heating or switches it off "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

A/C SYSTEM CONTROL AND REGULATION COMPONENTS IN PASSENGER COMPARTMENT

A/C system control and regulation components in passenger compartment

NOTE:

- **In the event of an air conditioner malfunction, start by reading out DTC memory of control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If no DTC is displayed, read out measured value block of control and display unit, Climatronic Control Module J255 (pay particular attention to measured value blocks "001" , "002", "033" and "034") --> Read Measuring Value Block and actuate any problematic component by way of "Output Diagnostic Test Mode (DTM)" function --> Output Diagnostic Test Mode (DTM) and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Refrigerant circuit servicing work is described as of --> Refrigerant circuit, servicing.**
- **For air conditioner servicing work which can be performed without opening refrigerant circuit, refer to --> Refrigerant circuit, servicing.**
- **For air conditioner servicing work requiring opening of the refrigerant circuit, refer to --> Refrigerant circuit, servicing.**
- **Electrical checking of the various control motors, potentiometers and senders is described in the Guided Fault Finding routine "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis**

service system VAS 5051 A/5052.

Perform the following on completion of repair work:

- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed --> **Check DTC memory** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Check coding of control and display unit, Climatronic Control Module J255 --> **Climatronic Control Module J255 , coding** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- If applicable, check adaptation of control and display unit, Climatronic Control Module J255 --> **Climatronic Control Module J255 , adaptation** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Perform air conditioner Basic Setting --> **Basic Setting**"Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

A/C system control and regulation components in passenger compartment, left side overview

CAUTION: The following information contains references to two different A/C system types: "Convenience" and "Basic". As of the time of publication, A6 models sold in the USA and Canada are only equipped with the "Convenience" A/C system type. Please disregard all "Basic" A/C system type information.

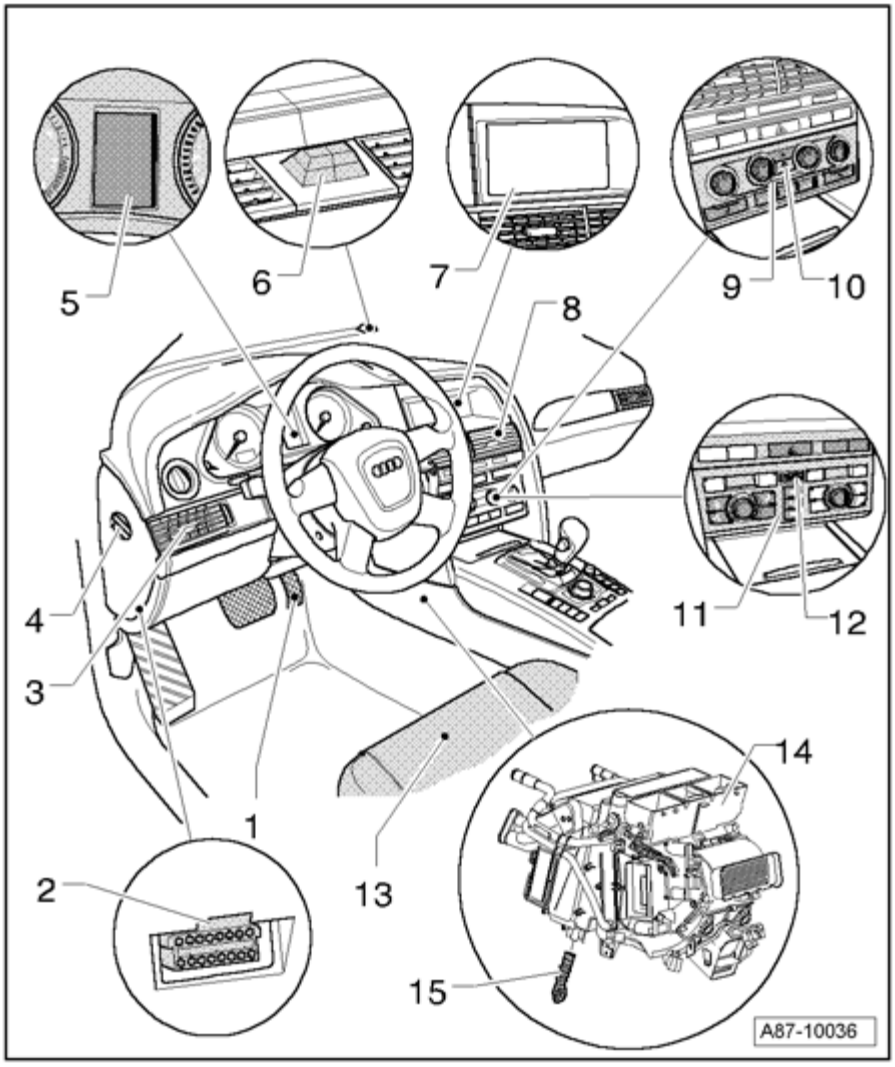

Fig. 112: A/C System Control And Regulation Components In Passenger Compartment, Left Side Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Accelerator mechanism

- Kick-down deactivation of compressor by control and display unit, Climatronic Control Module J255 (via A/C Compressor Regulator Valve N280) is implemented when requested by Engine Control Module (ECM) (data are exchanged via CAN-Bus system). Current status can be read off in measured value block of control and display unit, Climatronic Control Module J255 (display group "001") "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

2 - Data Link Connector (DLC)

- Air conditioner On Board Diagnostics (OBD) procedure "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

3 - Left instrument panel vent

- Removing and installing instrument panel vent --> **70 - INTERIOR TRIM**

4 - Vent to left front door (drivers door)

5 - Driver information system (DIS) in instrument panel insert

- With Outside Air Temperature Display G106
- Ambient temperature output by control and display unit, Climatronic Control Module J255 is displayed (Read Measuring Value Block, display groups "018" and "019"
- If temperature display is not OK, check measured values of temperature sensors (Read Measuring Value Block, display groups "018" and "019") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Measured value of Outside Air Temperature Sensor G17 is evaluated by Instrument Cluster Control Module J285 and transmitted by way of convenience CAN-Bus system to control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display group "018") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

6 - Sunlight Photo Sensor G107

- Removing and installing --> **Sunlight Photo Sensor G107 , removing and installing**
- Sunlight penetration measured by Sunlight Photo Sensor G107 and calculated by control and display unit, Climatronic Control Module J255 is indicated in measured value block (Read Measuring Value Block, display group "024") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

7 - Multi Media Interface (MMI) display

- Different versions and operation depending on type of MMI ("Infotainment" or "Basic") and vehicle equipment Owners manual
- MMI display indicates functions selected on control and display unit, Climatronic Control Module J255 (and various additional air conditioner functions) Owners manual
- "Set-up" button on control and display unit, Climatronic Control Module J255 or MMI terminal can be used to call up and alter setting of various additional air conditioner functions Owners manual
- On vehicles with "Comfort" version A/C system from model year 2007, depending on coding and adaptation of front Climatronic Control Module J255 , the respective setting does not always appear on Multi Media Interface (MMI) display when turning the rotary temperature control (on the USA coding, the indication appears e.g. only when the rotary temperature control has been briefly pressed beforehand).

8 - Center instrument panel vent

- With Left Center Air Outlet Sensor G347 and Right Center Air Outlet Sensor G348

- The two sensors enable the control and display unit, Climatronic Control Module J255 to detect position of flap in corresponding vent (open or closed)

- Removing and installing instrument panel vent --> **70 - INTERIOR TRIM**
- The temperature of the air outflow can be altered via the Multi Media Interface (MMI) Operating instructions

9 - Control and display unit, Climatronic Control Module J255 of "Basic" type

- Not for USA

10 - Infrared temperature and sunlight penetration sensor

- Not for USA

11 - Control and display unit, Climatronic Control Module J255 of "Convenience" type

- Different versions (for vehicles without/with seat heating, with left or right-hand drive, with "Econ / On / Off" button or just "On / Off" , assignment Parts List
- Removing and installing --> **Notes on removing and installing control and display unit, Climatronic Control Module J255**
- Instrument Panel Interior Temperature Sensor G56 is integrated into control and display unit, Climatronic Control Module J255 and cannot be replaced separately
- "Humidity sender" is installed in area of Instrument Panel Interior Temperature Sensor G56 in control and display unit, Climatronic Control Module J255 and cannot be replaced separately

- Interior Temperature Sensor Fan V42 is installed in control and display unit, Climatronic Control Module J255 but can be replaced separately --> **Interior Temperature Sensor Fan V42 , removing and installing**
- Also observe additional notes on control and display unit --> **Notes on removing and installing control and display unit, Climatronic Control Module J255**
- Control and display unit, Climatronic Control Module J255 On Board Diagnostics (OBD) is to be performed as described in Guided Fault Finding routine "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Buttons and display zones are illuminated by LEDs which cannot be replaced

12 - Interior Temperature Sensor Fan V42 and Instrument Panel Interior Temperature Sensor G56

- Installed in control and display unit, Climatronic Control Module J255 ; checking "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Removing and installing Interior Temperature Sensor Fan V42 --> **Interior Temperature Sensor Fan V42 , removing and installing**
- Instrument Panel Interior Temperature Sensor G56 cannot be replaced separately

13 - Left Front Seat Temperature Sensor G344 and Left Front Heated Seat Z45

- Not all vehicles feature seat heating (and seat ventilation); optional extra (introduction of seat ventilation not yet finalized)
- Actuation of seat heating is indicated in measured value block of control and display unit, Climatronic Control Module J255 ; checking (Read Measuring Value Block, display groups "026" and "027") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Servicing seat heating (and seat ventilation) --> **74 - SEATS - UPHOLSTERY, COVERS**

14 - Heating and A/C unit (viewed from left)

- Different versions (for control and display unit, Climatronic Control Module J255 of "Convenience" type, left or right-hand drive vehicle Parts List
- Heating and A/C unit components --> **Heating and A/C unit components**
- Air routing in Heating and A/C unit and vehicle --> **Diagram of air distribution and air routing in Heating and A/C unit and air intake unit**
- Removing and installing Heating and A/C unit --> **Heating and A/C unit, removing and installing**

15 - Condensate drain hose

- Left (drivers side)
- Checking, removing and installing --> **Condensate drain hose, checking, removing and installing**
- 1 condensate drain hose each for drivers and front passengers side

A/C system control and regulation components in passenger compartment, right side overview

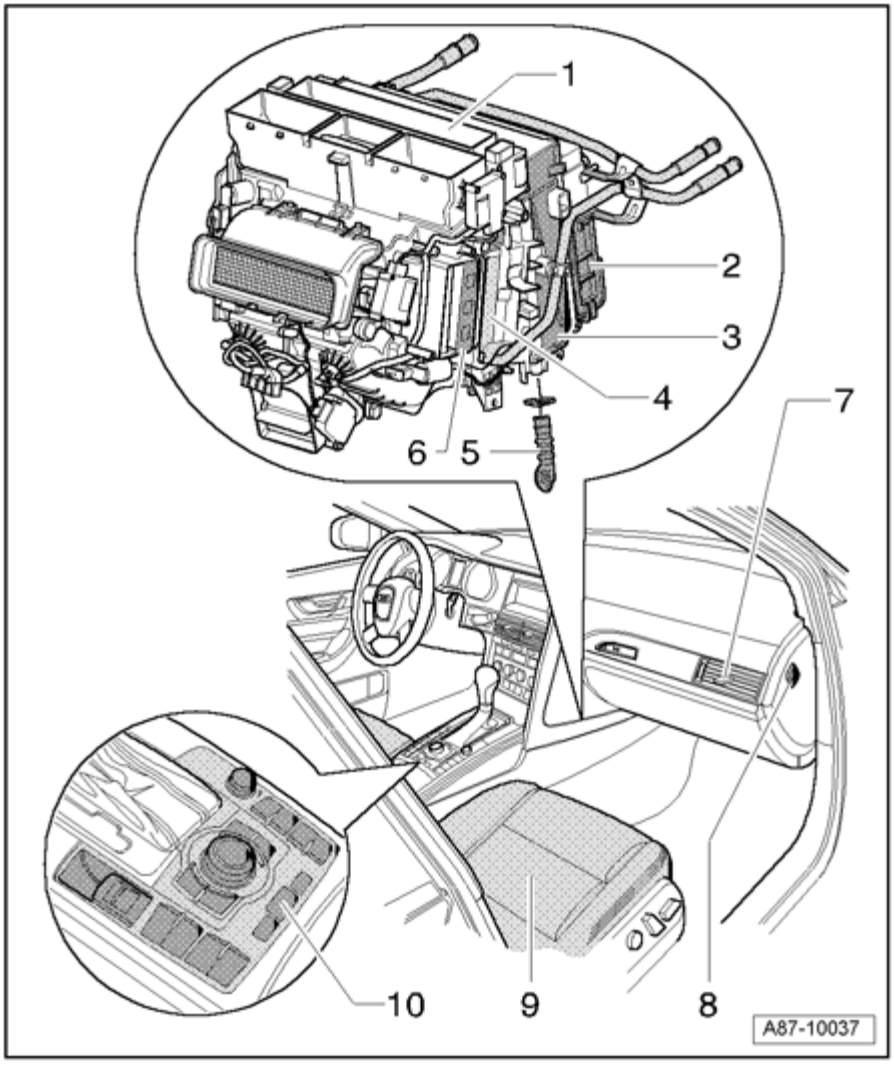

Fig. 113: A/C System Control And Regulation Components In Passenger Compartment, Right Side Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Heating and A/C unit (viewed from right)

- Different versions (for control and display unit, Climatronic Control Module J255 , left or right-hand drive vehicle Parts List
- Heating and A/C unit components --> **Heating and A/C unit components**
- Air routing in Heating and A/C unit and vehicle --> **Diagram of air distribution and air routing in Heating and A/C unit and air intake unit**
- Removing and installing Heating and A/C unit --> **Heating and A/C unit, removing and installing**

2 - Dust and pollen filter (with/without ACF element)

- Observe replacement intervals

- Different versions depending on vehicle equipment Parts List
  - With ACF filter element on vehicles with control and display unit, Climatronic Control Module J255 ; such vehicles are also installed with Air Quality Sensor G238
- Removing and installing --> **Dust and pollen filter, removing and installing**

3 - Evaporator

- Always drain refrigerant circuit before removing Refrigerant R134a - Servicing
- Removing and installing --> **Evaporator, removing and installing**
- Clean A/C system evaporator using ultrasonic HVAC cleaning system VAS 6189 --> **A/C system evaporator, cleaning using ultrasonic HVAC cleaning system VAS 6189**

4 - Heating system heater core

- Removing and installing --> **Heater core, removing and installing**

5 - Auxiliary Air Heater Heating Element Z35

- Not for USA

6 - Condensate drain hose

- Right (front passengers side)
- Checking, removing and installing --> **Condensate drain hose, checking, removing and installing**
- 1 condensate drain hose each for drivers and front passengers side

7 - Right instrument panel vent

- Removing and installing instrument panel vent **70 - INTERIOR TRIM**

8 - Vent to left front door (drivers door)

9 - Right Front Seat Temperature Sensor G345 and Right Front Heated Seat Z46

- Not all vehicles feature seat heating (and seat ventilation); optional extra (introduction of seat ventilation not yet finalized)
- Actuation of seat heating is indicated in measured value block of control and display unit, Climatronic Control Module J255 ; checking (Read Measuring Value Block, display groups "026" and "027") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Servicing seat heating and seat ventilation --> **74 - SEATS - UPHOLSTERY, COVERS**
- In vehicles with seat occupied sensor system, the seat heaters for front passengers seat and rear seats may be switched off after approx. 10 minutes, without an indicating display in this measuring value block, if

Airbag Control Module J234 detects the seat is unoccupied (read measuring value block of Airbag Control Module J234 Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" function).

10 - Multi Media Interface (MMI) terminal

- Different versions and operation depending on type of MMI ("Infotainment" or "Basic") and vehicle equipment Owners manual
- "Set-up" button on control and display unit, Climatronic Control Module J255 or MMI terminal can be used to call up and alter setting of various additional air conditioner functions Owners manual
- MMI display indicates functions selected on control and display unit, Climatronic Control Module J255 (and various additional air conditioner functions) Owners manual

Heating and A/C unit components

NOTE:

- **Different versions depending on vehicle model and equipment (vehicle with control and display unit, Climatronic Control Module J255 , left or right-hand drive Parts List**
- **Air routing in Heating and A/C unit and vehicle --> Diagram of air distribution and air routing in Heating and A/C unit and air intake unit**
- **Removing and installing Heating and A/C unit --> Heating and A/C unit, removing and installing**
- **The Heating and A/C unit wiring harness has various identical connectors which should be marked before unplugging to avoid interchange.**
- **Different control motors are installed on Heating and A/C unit and in air intake unit. These motors have different electrical values and part number indices Parts List and should therefore be marked prior to removal to avoid interchange.**

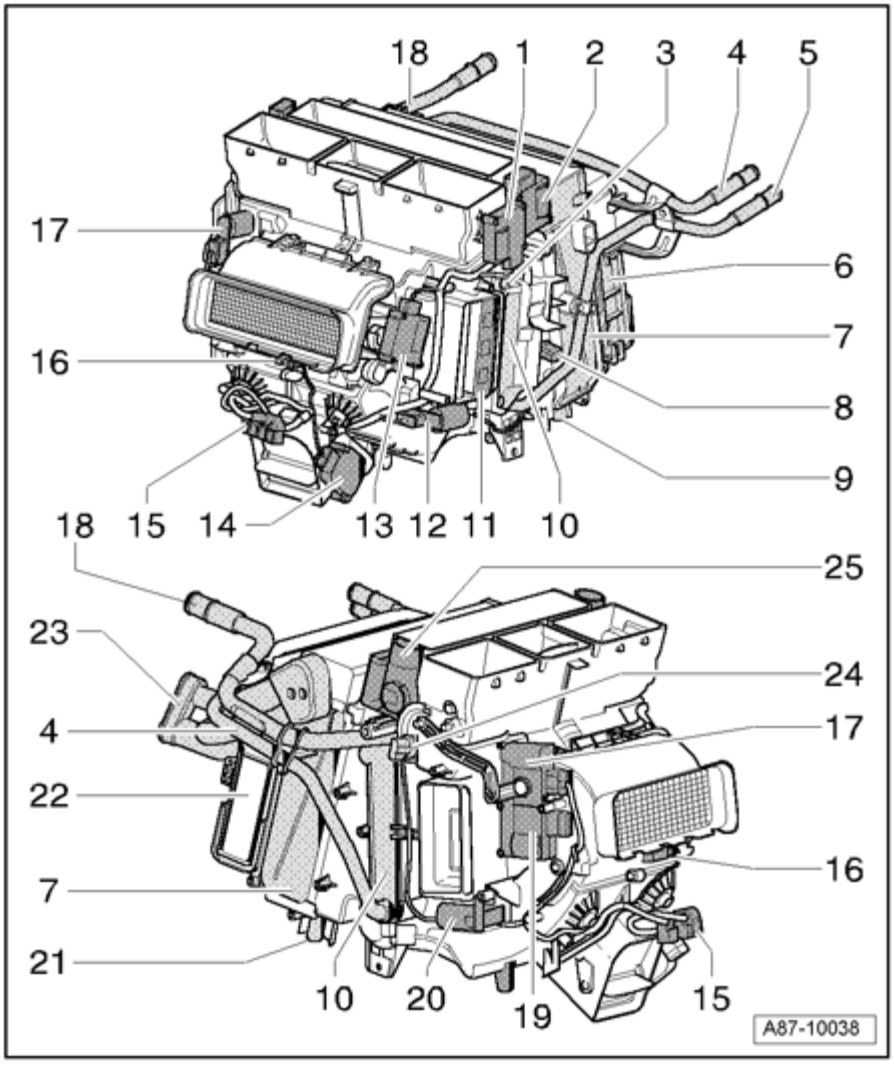

Fig. 114: Heating And A/C Unit Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Right Front Upper Body Outlet Motor V238

- Right Front Upper Body Outlet Motor V238 has an integrated Right Front Upper Body Outlet Position Sensor G388.
- Removing and installing --> **Right Front Upper Body Outlet Motor V238 , removing and installing**

2 - Defroster Flap Motor V107

- With Defroster Flap Motor Position Sensor G135
- Removing and installing --> **Defroster Flap Motor V107 , removing and installing**

3 - Right Vent Temperature Sensor G151

- Removing and installing --> **Right Vent Temperature Sensor G151 , removing and installing**

4 - Coolant pipe

- Supply from pump valve unit to left side of heater core
- Different versions for LHD and RHD vehicles Parts List
- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes were converted as a running change in production from an axial/radial seal to a radial seal, pay attention to correct assignment --> **Heater core, removing and installing**.

5 - Coolant pipe

- Supply from pump valve unit to right side of heater core
- Different versions for LHD and RHD vehicles Parts List
- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes were converted as a running change in production from an axial/radial seal to a radial seal, pay attention to correct assignment --> **Heater core, removing and installing**.

6 - Dust and pollen filter (with/without ACF element)

- Observe replacement intervals
- Different versions depending on vehicle equipment Parts List
  - With ACF filter element on vehicles with control and display unit, Climatronic Control Module J255 ; such vehicles are also installed with Air Quality Sensor G238
- Removing and installing --> **Dust and pollen filter, removing and installing**

7 - Evaporator

- Always drain refrigerant circuit before removing Refrigerant R134a - Servicing
- Removing and installing --> **Evaporator, removing and installing**
- Clean A/C system evaporator using ultrasonic HVAC cleaning system VAS 6189 --> **A/C system evaporator, cleaning using ultrasonic HVAC cleaning system VAS 6189**

8 - Evaporator Vent Temperature Sensor G263

- Removing and installing --> **Evaporator Vent Temperature Sensor G263 , removing and installing**

9 - Connection for condensate drain, right

- Checking, removing and installing condensate drain hose --> **Condensate drain hose, checking, removing and installing**

- 1 condensate drain hose each for drivers and front passengers side

10 - Heater (Heating and A/C unit) heater core

- Removing and installing --> **Heater core, removing and installing**
- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes were converted as a running change in production from an axial/radial seal to a radial seal, pay attention to correct assignment --> **Heater core, removing and installing**.

11 - Auxiliary Air Heater Heating Element Z35

- Not for USA

12 - Right Footwell Flap Motor V109

- Right Footwell Flap Motor V109 has an integrated Right Footwell Flap Motor Position Sensor G140.
- Removing and installing --> **Right Footwell Flap Motor V109 , removing and installing**
- Right Footwell Flap Motor V109 is only installed on vehicles with control and display unit, Climatronic Control Module J255.

13 - Front Cold Air Flap Motor V197

- With Front Cold Air Flap Motor Position Sensor G315
- Removing and installing --> **Front Cold Air Flap Motor V197 , removing and installing**

14 - Rear Footwell Vent Motor V112

- With Rear Footwell Vent Motor Position Sensor G141
- Removing and installing --> **Rear Footwell Vent Motor V112 , removing and installing**

15 - Connector to control and display unit, Climatronic Control Module J255

16 - Center Outlet Temperature Sensor G191

- Removing and installing --> **Center Outlet Temperature Sensor G191 , removing and installing**
- The Center Outlet Temperature Sensor G191 is being gradually discontinued, therefore pay attention to correct assignment of Climatronic Control Module J255 (different versions) Parts Catalog

17 - Indirect Ventilation Flap Motor V213

- With Indirect Ventilation Flap Motor Position Sensor G330

  - Indirect Ventilation Flap Motor V213 is only installed on vehicles with control and display unit, Climatronic Control Module J255.

- Removing and installing --> **Indirect Ventilation Flap Motor V213 , removing and installing**

18 - Coolant pipe

- Return from heater core to engine
- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes were converted as a running change in production from an axial/radial seal to a radial seal, pay attention to correct assignment --> **Heater core, removing and installing**.

19 - Center Vent Adjustment Motor V102

- With Center Vent Motor Position Sensor G138
- Removing and installing --> **Center Vent Adjustment Motor V102 , removing and installing**

20 - Left Footwell Flap Motor V108

- With Left Footwell Flap Motor Position Sensor G139
- Left Footwell Flap Motor V108 is installed on left on vehicles with control and display unit, Climatronic Control Module J255.
- Removing and installing --> **Left Footwell Flap Motor V108 , removing and installing**

21 - Connection for condensate drain, left

- Checking, removing and installing condensate drain hose --> **Condensate drain hose, checking, removing and installing**
- 1 condensate drain hose each for drivers and front passengers side

22 - Cover

- Removing and installing dust and pollen filter --> **Dust and pollen filter, removing and installing**

23 - Refrigerant pipes to evaporator

- Disconnecting refrigerant pipes from evaporator/connecting, removing and installing evaporator --> **Evaporator, removing and installing**
- Disconnecting refrigerant pipe to Heating and A/C unit/connecting --> **Refrigerant pipes, disconnecting from Heating and A/C unit/connecting**

24 - Left Vent Temperature Sensor G150

- Removing and installing --> **Left Vent Temperature Sensor G150 , removing and installing**

25 - Left Front Upper Body Outlet Motor V237

- With Left Front Upper Body Outlet Position Sensor G387
- Left Front Upper Body Outlet Motor V237 is installed on left on vehicles with control and display unit, Climatronic Control Module J255.
- Removing and installing --> **Left Front Upper Body Outlet Motor V237 , removing and installing**

Dust and pollen filter, removing and installing

NOTE:

- **Replacement interval for dust and pollen filter**
- **The dust and pollen filter consists of 2 identical filter elements. Pay attention to correct installation position when installing (direction of flow is marked with arrows).**
- **If necessary, clean plenum chamber after replacing dust and pollen filter. Pay particular attention to area beneath air intake unit.**
- **Clean dust and pollen filter mounting slot in Heating and A/C unit before installing new filter.**
- **There are different dust and pollen filter versions. The two filters have a different air resistance. Particular attention is therefore to be paid to correct version. Control characteristic for actuation of Fresh Air Blower V2 is adapted accordingly in control and display unit, Climatronic Control Module J255.**
- **Filter with activated charcoal element (as integrated odor filter) is installed on vehicles with control and display unit, Climatronic Control Module J255 Parts List. Such vehicles are equipped with an Air Quality Sensor G238.**

Removing

NOTE:

- **Depending on vehicle equipment, for certain versions or certain optional equipment (e.g. vehicles equipped with "Global Positioning System"), it may be necessary to remove the glove compartment (it is possible other specific control modules which are installed in this area, e.g. Special Purpose Vehicle Control Module J608 must also be removed).**

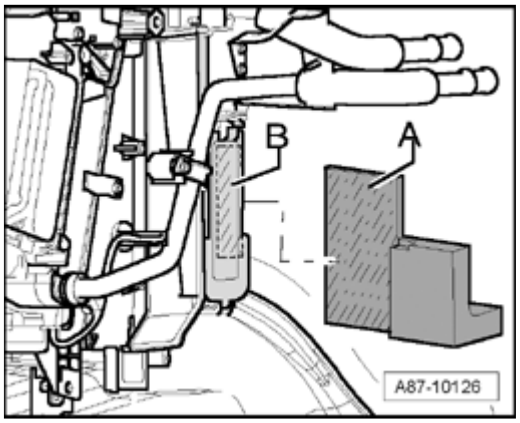

Fig. 115: Identifying Foam Insulation Element And Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Depending on vehicle equipment, a foam insulation element - **A** - may be installed (glued) in area of cover - **B** - on certain versions, remove it if necessary.

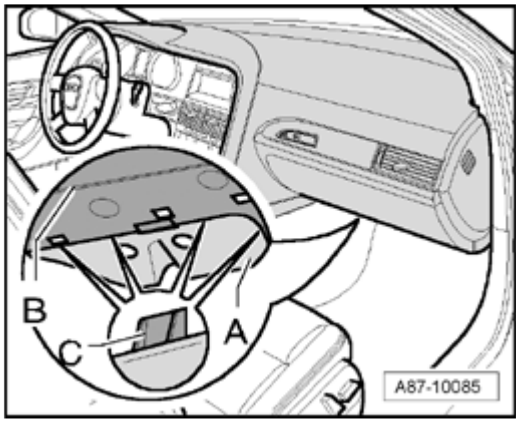

Fig. 116: Identifying Lid For Lower Glove Compartment Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover - **A** - from lower trim of glove compartment - **B** -.

NOTE:

- **Cover - A - is held in position in lower trim of glove compartment - B - by way of 4 fasteners. These may be difficult to release and care is therefore to be taken to avoid damaging lower trim of glove compartment - B - on removal.**
- **Protect floor covering with paper in area beneath slot for dust and pollen filter in Heating and A/C unit in front passengers footwell.**

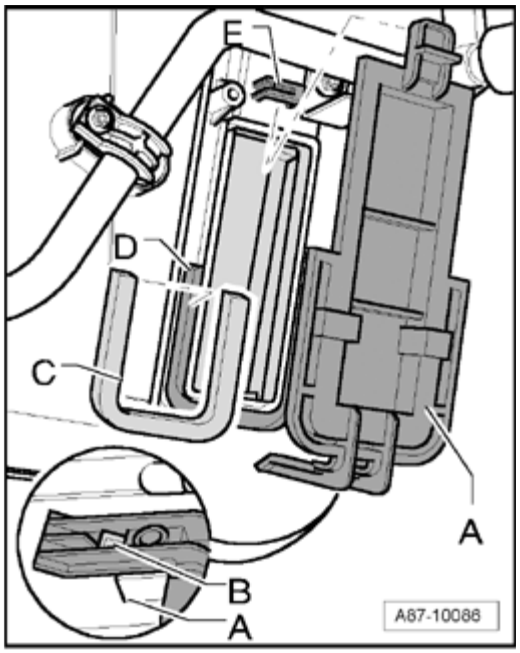

Fig. 117: Identifying Catches And Pollen Filter Cover For Air Conditioning Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release fastener - **B** - and remove cover - **A** - for dust and pollen filter from Heating and A/C unit.

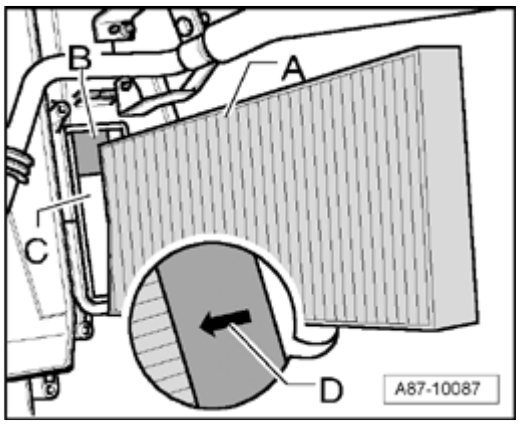

Fig. 118: Identifying Dust And Pollen Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove first section of dust and pollen filter - **A** - from Heating and A/C unit.

NOTE:

- **2 identical filter elements are installed in vertical arrangement in Heating and A/C unit.**
- **Reach into slot of Heating and A/C unit - C - and pull second section of dust and pollen filter - B - downwards (at tab) and then out of air conditioner slot.**

Installing

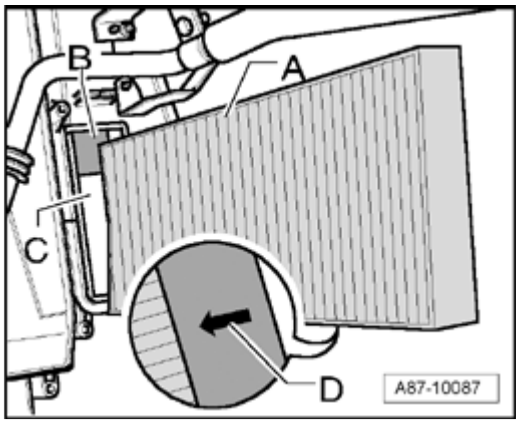

Fig. 119: Identifying Dust And Pollen Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove leaves, dust and other contamination from mounting slot for dust and pollen filter of Heating and A/C unit - **C** - using commercially available vacuum cleaner, Suction Nozzle With Brush VAS 6288 (and corresponding hose).

NOTE:

- **Dust and other contamination may cling to Heating and A/C unit. A brush is attached to Suction Nozzle With Brush VAS 6288 for removing such contamination.**
- **Insert first section - B - of dust and pollen filter into slot of Heating and A/C unit - C - and slide it into upper installation position, paying attention to direction of flow (arrows on filter - D - point towards evaporator).**
- **If necessary, use steel rule for example to hold first section of dust and pollen filter - B - in upper installation position.**
- **Slide second section of dust and pollen filter - A - (beneath first section - B - installed) into slot of Heating and A/C unit, paying attention to direction of flow (arrows on filter - D - point towards evaporator).**

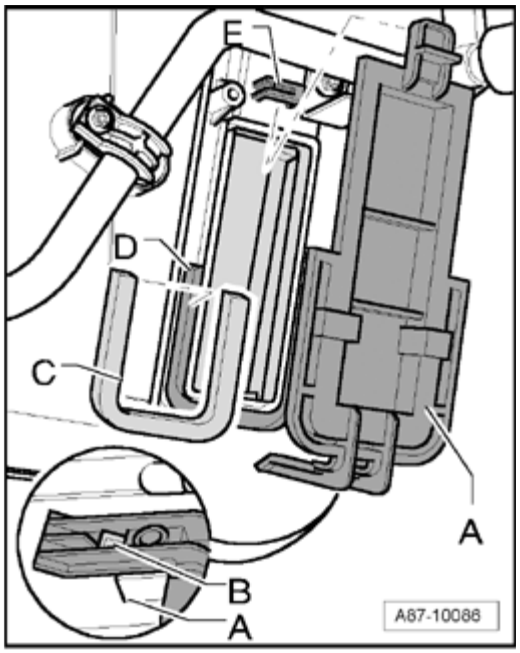

Fig. 120: Identifying Catches And Pollen Filter Cover For Air Conditioning Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of seal - **C** - in groove - **D** -.
- Install cover - **A** - , paying attention to correct positioning in mount - **E** - and fastener - **B** -.
- Re-install remaining components removed in reverse order.

Dust and pollen filter with activated charcoal filter element

- Dust and pollen filter with additional activated charcoal filter element is installed on vehicles with control and display unit, Climatronic Control Module J255. These vehicles are additionally equipped with an Air Quality Sensor G238 --> **Air Quality Sensor G238 , operating mode**.
- Whilst acting as a dust and pollen filter, the activated charcoal filter element is also designed to filter out gaseous pollutants such as ozone, benzene and nitrogen dioxide from the flow of air.
- The purpose of the activated charcoal is to absorb the gaseous pollutants in the air flow until the air flow/fresh-air flaps are closed and the air conditioner is operating in recirculated-air mode. Switching from fresh-air to recirculated-air mode is implemented by control and display unit, Climatronic Control Module J255 as soon as Air Quality Sensor G238 detects gaseous pollutants in the ambient atmosphere ("automatic air recirculation" function must have been selected).
- The activated charcoal layer in the dust and pollen filter acts differently on the various pollutants in the air:

- Certain pollutants are permanently bonded in the activated charcoal layer.
- Others are converted into harmless compounds as in a catalytic converter.
- In all other respects, the activated charcoal acts like a condenser. As the impact level increases, pollutants are initially absorbed until a certain degree of saturation is attained. If the pollutant content decreases, the activated charcoal layer continuously emits the absorbed particles again.

- As the activated charcoal layer permanently bonds some of the pollutant particles, it is appropriate to renew the dust and pollen filter sooner than specified under the following usage conditions:

  - Vehicle operation in areas with severe air pollution
  - Vehicle operation with "Automatic air recirculation" function predominantly deactivated

- On vehicles with Air Quality Sensor G238 , air conditioner should be operated as far as possible in "automatic air recirculation" mode. Should it however be necessary or desirable to deactivate the function, attention must be paid to the following:

- Activated charcoal layer in dust and pollen filter becomes saturated after a certain length of time.

- A saturated filter can no longer absorb pollutants and allows them to pass unhindered.

- The main function of the activated charcoal layer of the dust and pollen filter and Air Quality Sensor G238 is to prevent peak pollution levels entering the passenger compartment. The following must however be observed:

  - If a vehicle is driven in an area with a relatively clean environment (with few gaseous pollutants in the air), the point at which switching from fresh to recirculated-air mode takes place is different to that in areas with a high basic impact level (e.g. industrial estates).
  - Irrespective of the basic impact level, switching from fresh to recirculated-air mode always takes place if there is an increase in pollutant level (e.g. on driving through a cloud of diesel emissions from a truck).

A/C system evaporator, cleaning using ultrasonic HVAC cleaning system VAS 6189

NOTE:

- **Odors from the A/C system can have various causes, only a portion of these odors originate in the A/C system evaporator and therefore can be eliminated by cleaning the evaporator using ultrasonic HVAC cleaning system VAS 6189.**

Possible cause for odors

- Odor from burned oil.

  - Occurs mostly in engine compartment from a leak on the engine or transmission.

- Sulphurous odor from exhaust gas.

  - From leak on the exhaust system.
  - From exhaust gas entering passenger compartment e.g. while driving in reverse (by driving through an exhaust cloud).

- Fishy odor from coolant.

- From leak at cooling system of engine or of A/C system heater core.

NOTE:

- **If fishy odor is detected also in recirculated air mode as well as in fresh air mode, check A/C system heater core for proper seal.**
- **Odor from a scorched clutch**
- **Emanations from floor mats, subsequently installed decorative seat covers etc.**
- **Rotten moldy odor from plenum chamber.**
- **From accumulation and depositing of various contaminants like leaves, tree needles etc.**
- **From water which cannot flow out of the plenum chamber or air intake housing.**

NOTE:

- **Check water drains of plenum chamber and of air intake housing --> Plenum chamber water drain, checking, cleaning, removing and installing.**
- **Odor from the heating and A/C unit.**

NOTE:

- **Odors originating in heating and A/C unit can mainly be detected in fresh air mode as well as in recirculated air mode. If there is a complaint of odor while in fresh air mode or recirculated air mode only, the cause is not in the heating and A/C unit in most cases.**
- **If heater core is leaking, the odor of the escaping coolant can be detected even in fresh air mode as well as in recirculated air mode (heater core has continuous air flow).**
- **From excessive water condensation in heating and A/C unit.**

NOTE:

- **Check both condensation water drains --> Condensate drain hose, checking, removing and installing.**
- **From an old or severely soiled dust and pollen filter.**

NOTE:

- **Check dust and pollen filter --> Dust and pollen filter, removing and installing.**
- **From deposits on evaporator lamellae.**

NOTE:

- **Clean evaporator using ultrasonic HVAC cleaning system VAS 6189.**

Cleaning evaporator

NOTE:

- **Cleaning of the evaporator using the ultrasonic HVAC cleaning system VAS 6189 is demonstrated in the VW - Audi TV broadcast no. 201 Audi**

Service Net VW - Audi TV archive broadcast no. 201.

Required tools

- Ultrasonic HVAC cleaning system VAS 6189
- Cleaning fluid VAS 6189/1.
- Standard vacuum cleaner and suction nozzle with bush VAS 6288.

Preparation

- Check whether the odor actually originates in the A/C system evaporator by switching from fresh air mode to recirculated air mode.

NOTE:

- **Only when the odor originates in the evaporator can it be eliminated by cleaning using the ultrasonic HVAC cleaning system VAS 6189.**
- **Check plenum chamber and the water drain valves installed there and clean them if necessary --> Plenum chamber water drain, checking, cleaning, removing and installing.**
- **Remove dust and pollen filter and check it for odor and soiling --> Dust and pollen filter, removing and installing.**

NOTE:

- **On this vehicle, the dust and pollen filter is installed between Fresh Air Blower V2 and evaporator, therefore it must be removed for the cleaning.**
- **Clean the installation compartment for dust and pollen filter of heating and A/C unit of leaves, dust and other contaminants using a standard vacuum cleaner, suction nozzle with bush VAS 6288 (and hose attachment) --> Dust and pollen filter, removing and installing.**
- **Close again the opening, over which the dust and pollen filter was removed, on heating and A/C unit.**
- **Start engine.**
- **Set operating mode "recirculated air mode" on Climatronic Control Module J255 and switch off compressor "Econ mode".**
- **Open instrument panel vents and set the lowest possible temperature for drivers and front passengers sides (e.g. temperature preselect "Lo") on Climatronic Control Module J255.**
- **Close vehicle windows and sunroof.**
- **Set Climatronic Control Module J255 to lowest air blower speed and select "instrument panel vents" for the air outlet direction.**

Cleaning

- Shake the bottle of cleaning fluid VAS 6189/1 and pour into ultrasonic HVAC cleaning system VAS

6189 , note the ultrasonic HVAC cleaning system VAS 6189 operating instructions when doing this.

- Place the ultrasonic HVAC cleaning system VAS 6189 in the front passengers footwell.
- Start up the ultrasonic HVAC cleaning system VAS 6189 (according to operating instructions) and route the outlet hose belonging to it so that the vapor escaping via the recirculated air opening of the heating and A/C unit (beneath instrument panel) is drawn in by the Fresh Air Blower V2.
- Close vehicle doors.

NOTE:

- **Cleaning procedure lasts approx. 15 to 20 minutes, it is complete when vapor no longer escapes from outlet hose.**

Final procedures

- Switch off the ultrasonic HVAC cleaning system VAS 6189.
- Open vehicle doors and ventilate vehicle for a minimum of 10 minutes.
- Remove ultrasonic HVAC cleaning system VAS 6189 from vehicle and clean it according to the operating instructions.
- Switch ignition off.
- Install dust and pollen filter --> **Dust and pollen filter, removing and installing**.

Sunlight Photo Sensor G107 , removing and installing

- Switch off ignition.
- Carefully pry cover panel with Sunlight Photo Sensor G107 - **A** - out of instrument panel vent to windshield.

NOTE:

- **Cover panel with Sunlight Photo Sensor G107 - A - is held in position in instrument panel by means of clips - C -.**
- **Unplug connector - B -.**
- **Remove Sunlight Photo Sensor G107 - D - from cover panel - E -.**

Interior Temperature Sensor Fan V42 , removing and installing

NOTE:

- **Interior Temperature Sensor Fan V42 is only installed in control and display unit, Climatronic Control Module J255.**
- **Remove control and display unit, Climatronic Control Module J255 --> Notes on removing and installing control and display unit, Climatronic Control Module J255.**

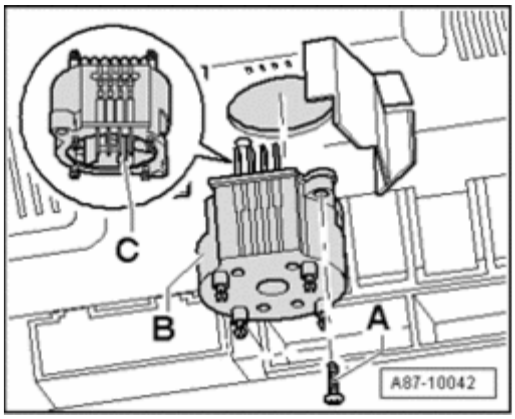

Fig. 121: Identifying Bolts And Interior Temperature Sensor Fan V42
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** -.
- Pull Interior Temperature Sensor Fan V42 - **B** - out of control and display unit, Climatronic Control Module J255.

NOTE:

- **When installing Interior Temperature Sensor Fan V42 , do not press on motor - C - but rather hold blower at housing.**

Notes on removing and installing control and display unit, Climatronic Control Module J255

General notes on control and display unit, Climatronic Control Module J255

- There are different control and display unit, Climatronic Control Module J255 models and in turn different versions of these models. When replacing control and display unit, Climatronic Control Module J255 , attention must therefore be paid to exact assignment Parts List.
- The Center Outlet Temperature Sensor G191 has been gradually discontinued, on vehicles without this sensor, only the Climatronic Control Module J255 with part no. 4F1 820 043 as of index "M" is or may be installed Parts Catalog.
- In vehicles without Center Outlet Temperature Sensor G191 , if a Climatronic Control Module J255 with part no. 4F1 820 043 up to and including index "L" is installed, the missing sensor is displayed as a malfunction.
- Climatronic Control Module J255 units with part no. 4F1 820 043 as of index "M" have already been installed with gradual introduction as of 05.2005 also in vehicles with Center Outlet Temperature Sensor G191 (sensor measured value is no longer required by this A/C control and display unit for regulation and therefore is not evaluated).

- Control and display units can no longer be exchanged in the familiar manner. Component protection is activated as soon as an control and display unit, Climatronic Control Module J255 has been matched to a vehicle "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- If an control and display unit, Climatronic Control Module J255 with active component protection (anti-theft system) is installed in a different vehicle, the functions required for vehicle security can still be

selected, but not the convenience functions "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- Component protection can only be cancelled by entering certain vehicle data Guided Fault Finding function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- The functions selected are indicated by lighting of LEDs in the various control and display unit, Climatronic Control Module J255 buttons.

- Display zones and controls of control and display unit, Climatronic Control Module J255 are illuminated by way of LEDs (which cannot be replaced).

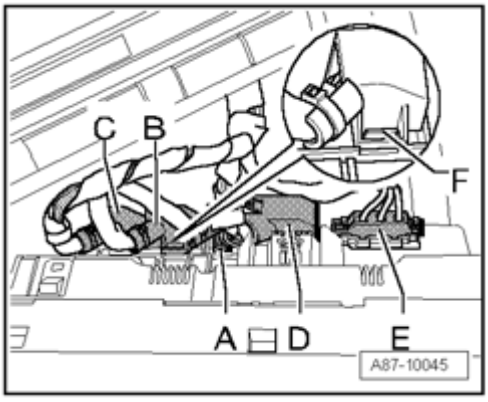

Fig. 122: Disconnecting Electrical Harness Connectors In Sequence By Releasing Catches
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Control and display unit, Climatronic Control Module J255 is not always connected to terminal "15". Following interruption of power supply (via connector - **D** -), it is therefore necessary to wait at least 30 s before unplugging remaining connections so as to protect electronics --> Electrical Wiring Diagrams, Troubleshooting and Component Locations
- If a new control and display unit, Climatronic Control Module J255 has been installed and Basic Setting not performed, air conditioner control action is restricted and this is displayed as a malfunction in the DTC memory "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Always perform the following operations after replacing control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052:

  - Check coding.
  - Implement Basic Setting.
  - Check adaptation.
  - Check DTC memory.

Notes on control and display unit, Climatronic Control Module J255

- Unit (° C or ° F) for temperature display of control and display unit, Climatronic Control Module J255 is transmitted by MMI (Multi Media Interface) via convenience CAN-Bus system and is determined by

setting entered.

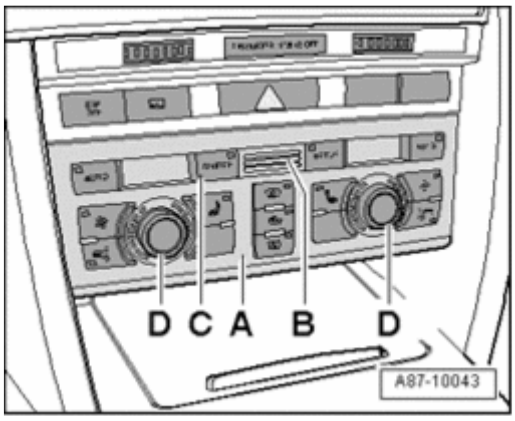

Fig. 123: Identifying A/C System Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The control and display unit, Climatronic Control Module J255 - **A** - is available in the following versions (without/with seat heating button, for vehicles with left or right-hand drive, with button - **C** - for "Econ, On / Off" or just "On / Off" function).
- On control and display unit, Climatronic Control Module J255 - **A** - , the two controls - **D** - can be removed and thus replaced separately Parts List.
- In the event of incorrect Instrument Panel Interior Temperature Sensor G56 measurements (only installed with control and display unit, Climatronic Control Module J255 - **A** -) check intake grille - **B** - of trim panel of control and display unit, Climatronic Control Module J255 (must not be sealed) and operation of Interior Temperature Sensor Fan V42 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Control and display unit, Climatronic Control Module J255 type can be started up for a certain length of time (up to approx. 30 minutes) after switching off ignition by pressing "Econ, On / Off" button (operating time is governed by battery charge; maximum time approx. 10 minutes) Owners manual.

- "Humidity sender" is installed in area of Instrument Panel Interior Temperature Sensor G56 in control and display unit, Climatronic Control Module J255 and cannot be replaced separately.

Control and display unit, Climatronic Control Module J255 , removing

- Check coding and adaptation of control and display unit, Climatronic Control Module J255 by way of "Control module replacement" function in Guided Fault Finding routine (if control and display unit, Climatronic Control Module J255 is to be replaced) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Switch off ignition.

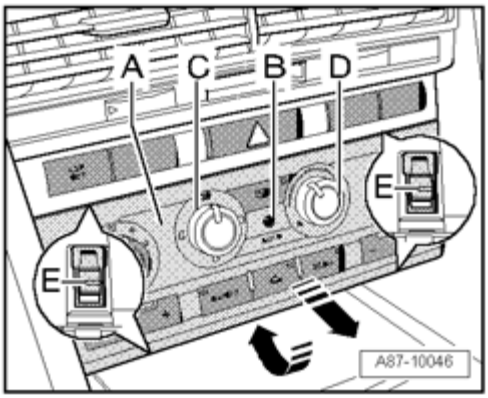

Fig. 124: Pulling Climatronic Control Module J255 Out Of Center Console
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Control and display unit, Climatronic Control Module J255 - A - is held in position in center console by way of 4 clips - E -.**

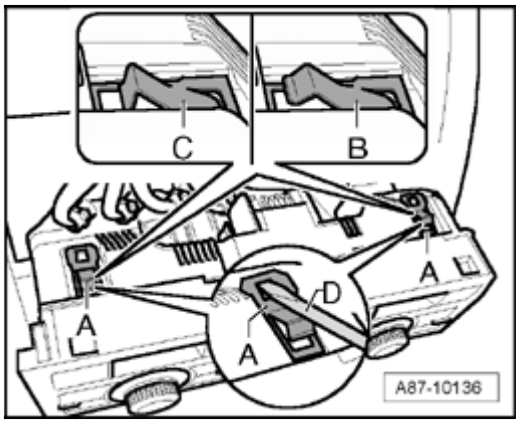

Fig. 125: Identifying Clips For Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- As of the beginning of 2006, Climatronic Control Module J255 units are installed with gradual introduction of modified clips - **A** - on the top (clips on bottom remain the same, version - **B** -), at the same time instrument panel center sections with modified mounting bracket for the top clips version - **C** - are also introduced. For Climatronic Control Module J255 units on which clip - **B** - is installed (force-fitted clip with an angle of approx. 120 ° installed, on the version that was installed up to beginning of 2006, panel colored pearl-gray metallic), this control and display unit can be removed without removing the center instrument panel vent.

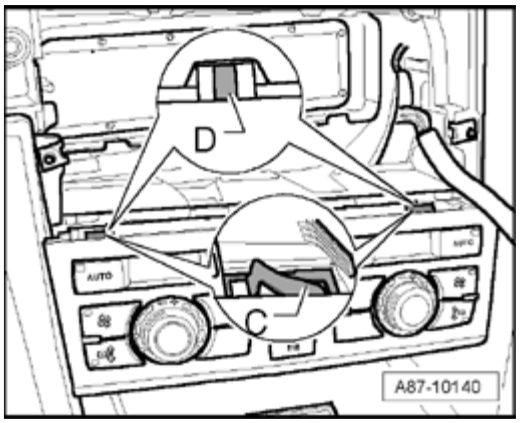

Fig. 126: Identifying Clips And Slot For Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- For Climatronic Control Module J255 units on which clip - **C** - is installed (form-fitted clip with an angle of approx. 65 ° installed, on the version that was installed as of beginning of 2006, panel colored Nero), this control and display unit can only be removed with the center instrument panel vent removed --> **68 - INTERIOR EQUIPMENT** . So that clips - **C** - can be disengaged, one slot - **D** - each in instrument panel center section has been applied in area of upper mounting bracket for clips.

CAUTION:

- **With the introduction of form-fitted clips - C - (with an angle of approx. 65 °) on top of the A/C control and displa y unit, modified instrument panel center sections have also been introduced (can be detected by a vertical slot - D - in area of top mounting bracket.) If an A/C control and display unit with clips - C - should be installed in an instrument panel center section without this slot - D - , possibly it can only be removed after removing the instrument panel center section (form-fit connection can only be disengaged from the front via this slot).**

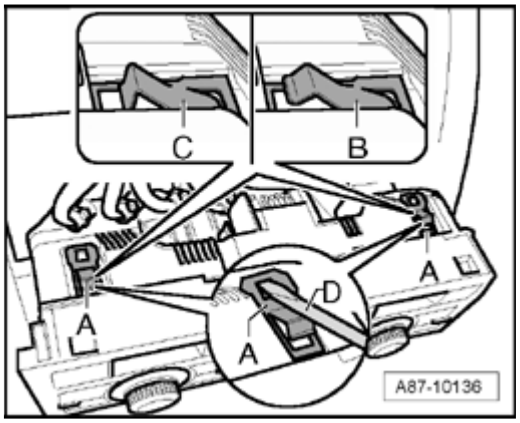

Fig. 127: Identifying Clips For Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Climatronic Control Module J255 units which were installed at the beginning of 2006 with a panel colored "pearl-gray metallic" , force-fitted clips - B - are installed on the top, deviating from this however during the transition period, form-fitted clips - C - may also be installed at some components, only form-fitted clips - C - are installed with the introduction of A/C control and display units with a panel colored "Nero".**

Removing on a vehicle with a production date as of beginning of 2006

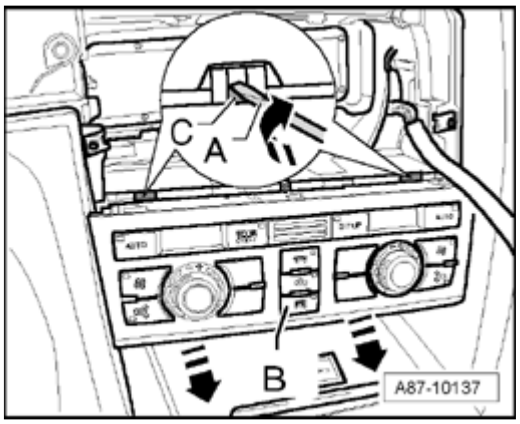

Fig. 128: Pulling Climatronic Control Module J255 Out Of Center Console
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Grasp under Climatronic Control Module J255 - **B** - and carefully pull Climatronic Control Module J255 out of center console (A/C control and display unit with a panel colored "pearl-gray metallic"), if it cannot be disengaged from the instrument panel center section, remove center instrument panel vent --> **68 - INTERIOR EQUIPMENT** .
- Remove center instrument panel vent (A/C control and display unit with a panel colored "Nero") --> **68 - INTERIOR EQUIPMENT**
- Using two small screwdrivers - **A** - , disengage catches of both top clips - **C** - (above slots in instrument panel center section), then grasp under Climatronic Control Module J255 - **B** - and carefully pull it out of center console

Removing on a vehicle with a production date up to beginning of 2006

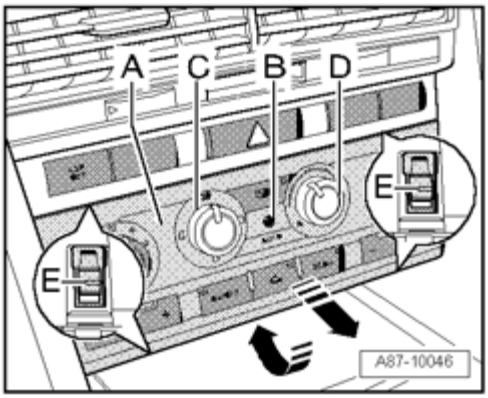

Fig. 129: Pulling Climatronic Control Module J255 Out Of Center Console
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Grasp under Climatronic Control Module J255 - **A** - and carefully pull it out of center console (A/C control and display unit with a panel colored "pearl-gray metallic").

Continued procedure

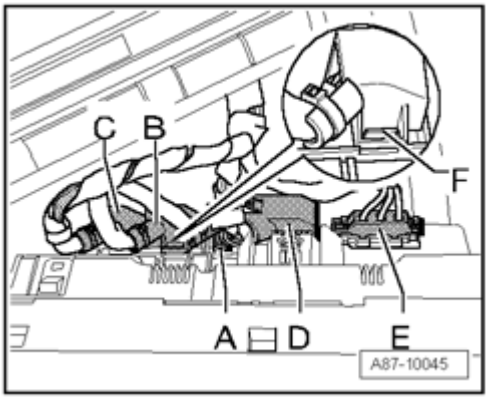

Fig. 130: Disconnecting Electrical Harness Connectors In Sequence By Releasing Catches
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release fasteners of connector - **D** - by pressing retainer tabs - **F** - and unplug connector.
- Wait 30 s (to protect electronics in control and display unit, Climatronic Control Module J255).
- Release and unplug connector - **E** -.
- Release fasteners of connectors - **A** - to - **C** - by pressing retainer tabs - **F** - and unplug connectors.

Control and display unit, Climatronic Control Module J255 , installing

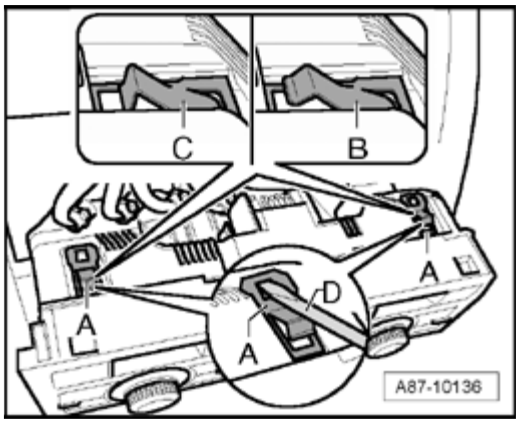

Fig. 131: Identifying Clips For Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the clips on top of Climatronic Control Module J255 , if there should be different clips - **A** - on the new A/C control and display unit to be installed than those on the removed A/C control and display unit (e.g. clips - **B** - instead of - **C** -), remove these clips using a small screwdriver - **D** - and replace them with the correct version.

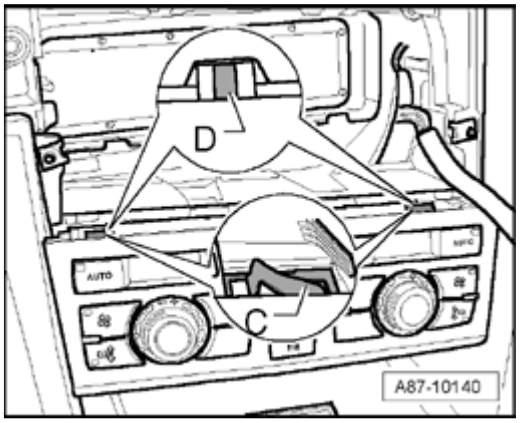

Fig. 132: Identifying Clips And Slot For Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Only then install Climatronic Control Module J255 on which clips - C - are installed (form-fitted clips with an angle of approx. 65 °), when slots - D - are present in instrument panel center section (without this slot, the A/C control and display unit can only then be removed again with the instrument panel center section removed, the clips cannot be disengaged on an instrument panel center section without slot).**

Install control and display unit, Climatronic Control Module J255 in reverse order of removal.

- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- Perform Basic Setting, coding, adaptation and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Condensate drain hose, checking, removing and installing

NOTE:

- **This vehicle is installed with 2 condensate drains (on right and left at Heating and A/C unit/transmission tunnel).**

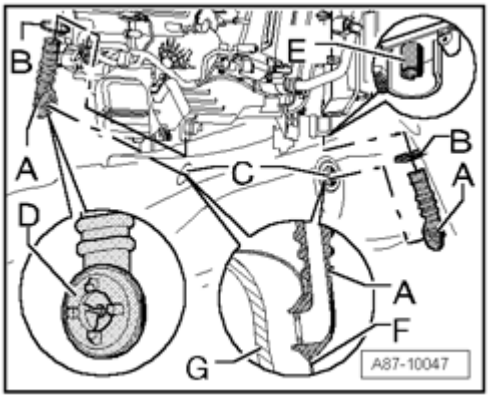

Fig. 133: Condensate Drain Hose, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- There is no flap at outlet opening of condensate drain hose - **A** - ; condensate drains off by way of rubber lips - **D** -.

Checking

NOTE:

- **Always check both condensate drains.**

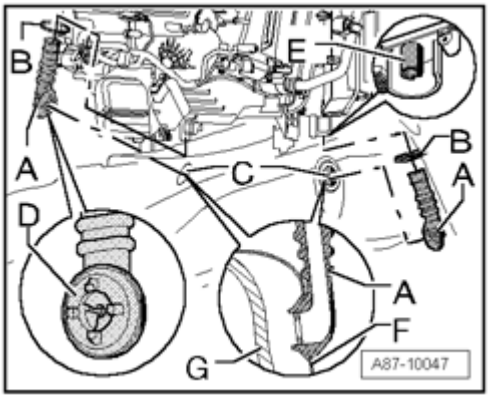

Fig. 134: Condensate Drain Hose, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove both condensate drain hoses - **A** - and check the following:

  - Gap between floor panel - **F** - and insulation mat - **G** - in transmission tunnel; there must be sufficient space for condensate to be able to drain out of condensate drain opening - **D** -
  - Contamination of condensate drain of Heating and A/C unit - **E** - with a piece of wire, for example; clean if necessary
  - Installation position of floor covering; cross-section of condensate drain hose - **A** - must not be constricted

- In the event of moisture problems in passenger compartment, check the following components in addition to the condensate drains:

  - Water drain openings in plenum chamber --> **Plenum chamber water drain, checking, cleaning, removing and installing**
  - Water drain from air intake unit --> **Plenum chamber water drain, checking, cleaning, removing and installing**
  - Plenum chamber cover and scuttle panel trim for damage and correct installation --> **50 - BODY - FRONT**
  - Dust and pollen filter for contamination and correct installation --> **Dust and pollen filter, removing and installing**

  - Forced-air extraction in luggage compartment --> **Vent frame, checking**
  - Actuation and operation of fresh-air/air flow flaps and recirculated-air flap (e.g. by way of "Output Diagnostic Test Mode (DTM)" function) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
  - Signal for detection of wiper operation at control and display unit, Climatronic Control Module J255 (Read Measuring Value Block, display group "022") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

- Check temperature of air flowing out of evaporator by way of measured values of Evaporator Vent Temperature Sensor G263 under usage conditions described by customer with following settings on control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052:

  - "Lo" temperature setting for drivers and front passengers side
  - Medium fresh-air blower speed (approx. 7V) "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
  - "Fresh-air" mode
  - Check measured value of Evaporator Vent Temperature Sensor G263 (Read Measuring Value Block, display group "018") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052. If measured value is too low (at ambient temperature above 0 ° C, colder than 0 ° C for lengthy period) or too high (greater than e.g. 10 ° C although air conditioner is functioning properly), note information on checking cooling output --> **Air conditioner, checking cooling output**.

Removing

- Remove center console cover on left and/or right --> **68 - INTERIOR EQUIPMENT** .

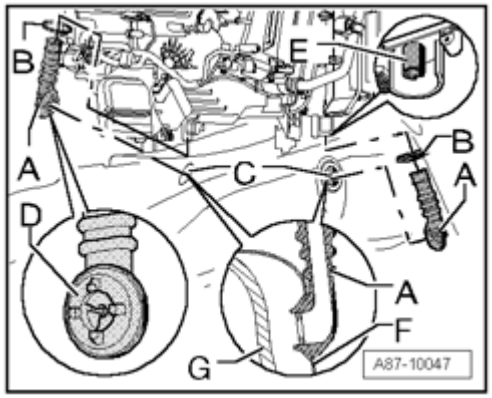

Fig. 135: Condensate Drain Hose, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, carefully fold back floor covering until condensate drain hose - **A** - is visible.
- Unfasten clip - **B** -.
- Protect area of floor covering beneath condensate drain hose - **A** - with absorbent paper (to stop any water running onto or beneath floor covering).
- Remove condensate drain hose - **A** -.

Installing

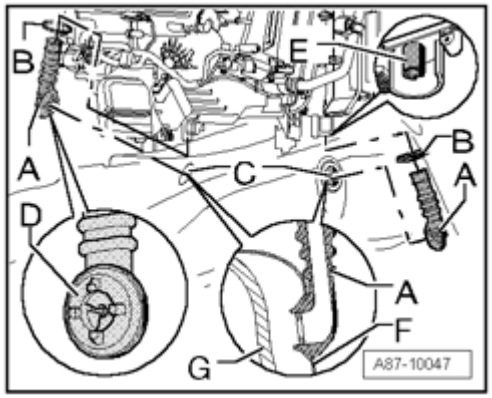

Fig. 136: Condensate Drain Hose, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following before installing condensate drain hose - **A** - :

- Gap between floor panel - **F** - and insulation mat - **G** - in transmission tunnel; there must be sufficient space for condensate to be able to drain out of condensate drain opening - **D** -

- Contamination of condensate drain of Heating and A/C unit - **E** - with a piece of wire, for example; clean if necessary
- Insert condensate drain in opening in lower floor panel - **C** -.
- Connect condensate drain hose - **A** - to condensate drain of Heating and A/C unit - **E** - and secure connection with clip - **B** -.

- Check installation position of floor covering; cross-section of condensate drain hose - **A** - must not be constricted.
- Install center console covers on left and/or right, taking care to avoid contact with condensate drain hose - **A** - and thus constriction of its cross-section.

ELECTRICAL COMPONENTS OF HEATING AND A/C UNIT (WITH HEATING AND A/C UNIT IN POSITION), REMOVING AND INSTALLING

Electrical components of Heating and A/C unit (with Heating and A/C unit in position), removing and installing

NOTE:

- **The Heating and A/C unit wiring harness has various identical connectors which should be marked before unplugging to avoid interchange.**
- **Different control motors are installed on Heating and A/C unit and in air intake unit. These motors have different electrical values (different adjustment ranges of integrated potentiometers) and part number indices Parts List and should therefore be marked prior to removal to avoid interchange.**

Center Vent Adjustment Motor V102 , removing and installing

NOTE:

- **This control motor is installed with a potentiometer with an adjustment range of 120 °; part number index at start of prod uction: "A" Parts List.**
- **If necessary, mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**
- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices) Parts List.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and connecting element.**

Removing

- Switch off ignition.
- Remove drivers storage compartment --> **70 - INTERIOR TRIM**

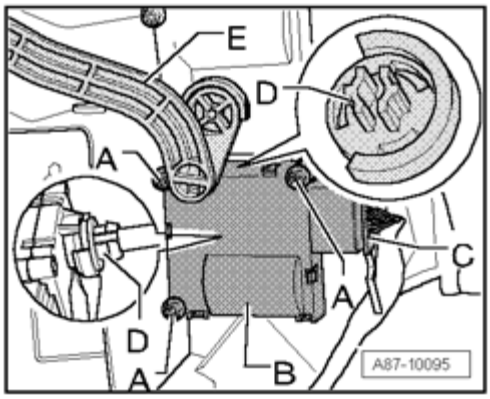

Fig. 137: Identifying Connector, Bolts, Connecting Element, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **C** - to control motor (to prevent interchange with other identical connectors).
- Unplug connector - **C** - from Center Vent Adjustment Motor V102.
- Remove bolts - **A** - (tightening torque 10 Ncm).
- Use a screwdriver to carefully pry connecting element - **D** - off control motor - **B** - and remove control motor.

NOTE:

- **If Indirect Ventilation Flap Motor V213 is so awkwardly positioned that connecting elements - E - impede control motor removal, then these must be removed --> Indirect Ventilation Flap Motor V213 , removing and installing.**
- **Leave connecting element - D - to flap shaft in position at Heating and A/C unit.**
- **Removing connecting element to shaft of flap - D - --> Connecting elements, removing and installing to the various Heating and A/C unit flaps**

Installing

Install in reverse order, paying attention to the following:

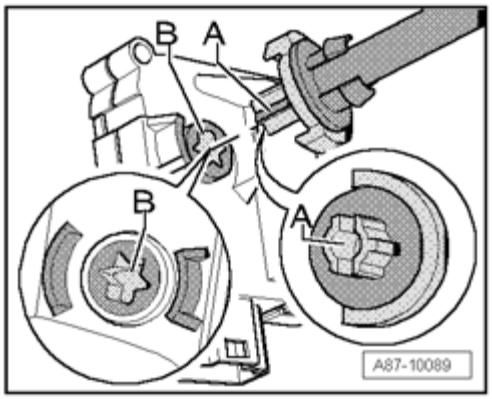

Fig. 138: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot be installed.**
- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

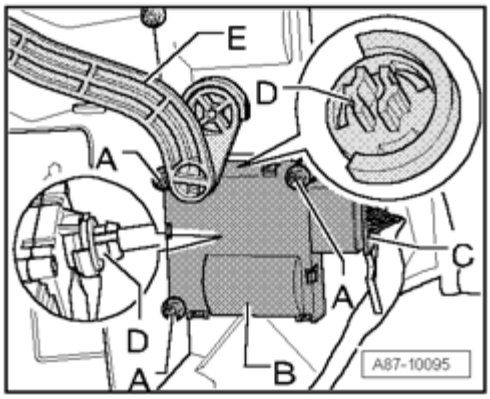

Fig. 139: Identifying Connector, Bolts, Connecting Element, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** - to connecting element - **D** - of shaft to flap for center vent.

NOTE:

- **Check positioning of connecting element. It must engage in shaft of motor and there must not be any clearance between control motor shaft and connecting element.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Defroster Flap Motor V107 , removing and installing

NOTE:

- **This control motor is installed with a potentiometer with an adjustment range of 120 °; part number index at start of prod uction: "A" Parts List.**
- **If necessary, mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**
- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices) Parts List.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and connecting element.**

Removing

- Switch off ignition.
- Remove entire instrument panel front --> **70 - INTERIOR TRIM**

NOTE:

- **If necessary, obtain radio anti-theft code before disconnecting battery.**

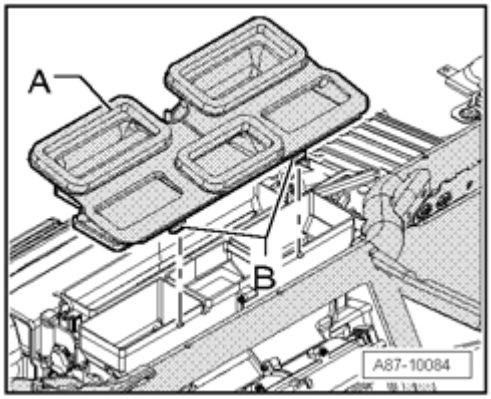

Fig. 140: Releasing Fasteners And Removing Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release fasteners - **B** - and remove air duct - **A** -.

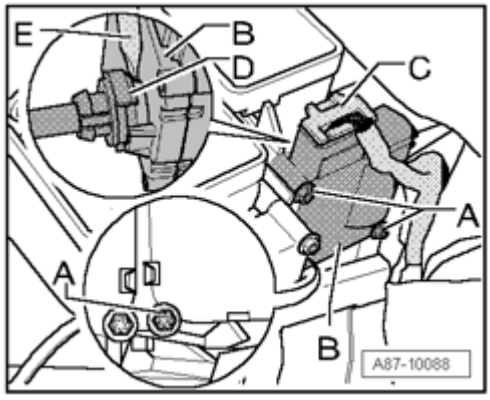

Fig. 141: Identifying Connector, Bolts, Connecting Element, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, mark connector - **C** - to Defroster Flap Motor V107 to prevent interchange with other identical connectors.
- Unplug connector - **C** - from Defroster Flap Motor V107.
- Remove bolts - **A** - (e.g. using Ratchet Wrench T40083 or ring wrench bent to appropriate shape) (tightening torque 10 Ncm).
- Use a screwdriver to carefully pry connecting element - **D** - off control motor - **B** - and remove control motor.

NOTE:

- **Leave connecting element - D - in position at Heating and A/C unit.**
- **Removing connecting element to shaft of flap in Heating and A/C unit --> Connecting elements, removing and installing to the various Heating and A/C unit flaps**

Installing

Install in reverse order, paying attention to the following:

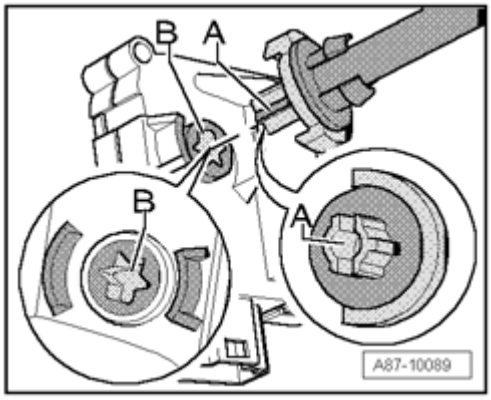

Fig. 142: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot be installed.**
- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

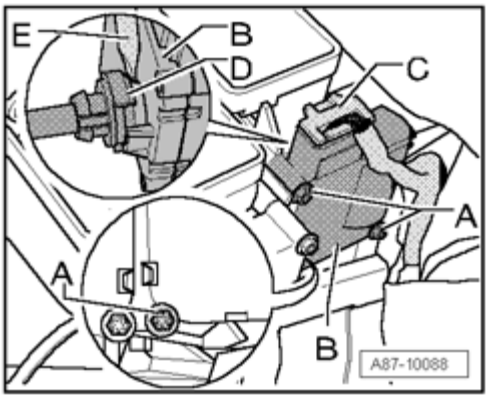

Fig. 143: Identifying Connector, Bolts, Connecting Element, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** - to connecting element - **D** - of shaft to defrost flap.

NOTE:

- **If necessary, reach into vent and move flap into position in which control motor can be installed.**
- **Check positioning of connecting element. It must engage in shaft of motor and there must not be any clearance between control motor shaft and connecting element.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Left Footwell Flap Motor V108 , removing and installing

NOTE:

- **This control motor is installed with a potentiometer with an adjustment range of 120 °; part number index at start of prod uction: "A" Parts List.**
- **Mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**
- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices) Parts List.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and**

connecting element.

Removing

- Switch off ignition.
- Remove drivers storage compartment --> **70 - INTERIOR TRIM**
- Remove lower left trim of center console --> **68 - INTERIOR EQUIPMENT**

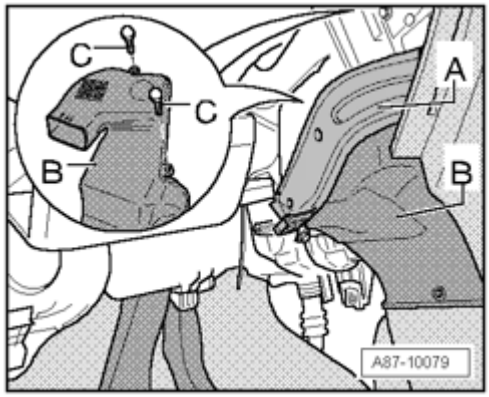

Fig. 144: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On left side, remove holder for instrument panel - **A** - and bolts - **C** - --> **68 - INTERIOR EQUIPMENT** .
- Remove air duct to footwell vent - **B** - for drivers side.

NOTE:

- **Depending on vehicle equipment and positional tolerance between Heating and A/C unit and bracket for pedal cluster, removal of footwell vent - B - for drivers side may involve removing pedal cluster from vehicle and sliding it slightly to left --> 46 - BRAKES - MECHANICAL COMPONENTS .**

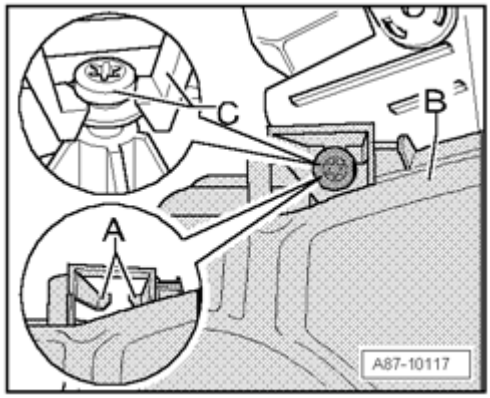

Fig. 145: Identifying Footwell Vent, Upper Bolt, And Retaining Tabs

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In model year 2005, the mount of air channel to footwell vent - **B** - has been changed (gradual introduction), the upper bolt - **C** - must then no longer be removed, the air channel is clipped in with retaining tabs - **A** -.

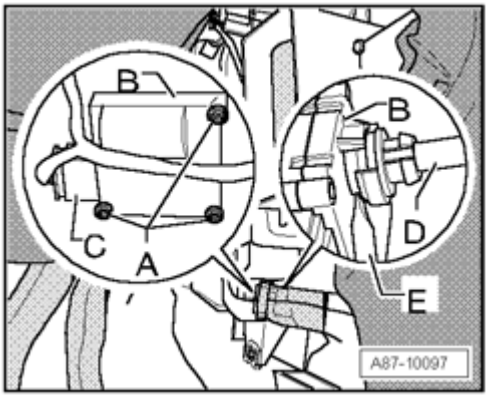

Fig. 146: Identifying Connector, Bolts, Connecting Element, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **C** - to control motor (to prevent interchange with other identical connectors).
- Unplug connector - **C** - from Left Footwell Flap Motor V108.
- Remove bolts - **A** - (tightening torque 10 Ncm).
- Use a screwdriver to carefully pry connecting element - **D** - off control motor - **B** - and remove control motor.

NOTE:

- **Leave connecting element - D - in position at Heating and A/C unit.**
- **Removing connecting element - D - to shaft of flap in Heating and A/C unit --> Connecting elements, removing and installing to the various Heating and A/C unit flaps**

Installing

Install in reverse order, paying attention to the following:

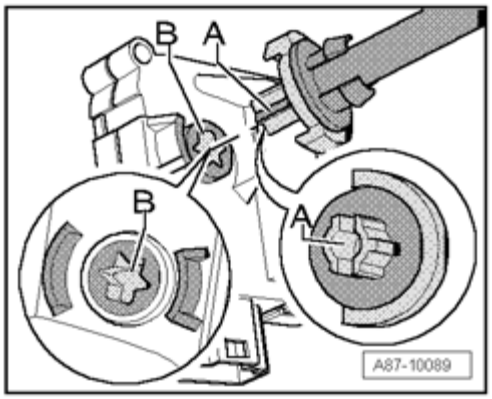

Fig. 147: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot be installed.**
- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

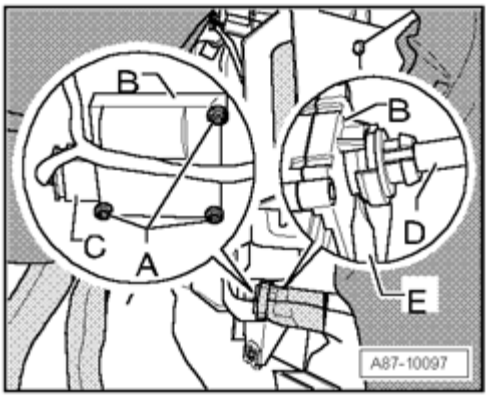

Fig. 148: Identifying Connector, Bolts, Connecting Element, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** - to connecting element - **D** - of shaft to footwell flap.

NOTE:

- **If necessary, reach into vent and move flap - E - into position in which control motor can be installed.**
- **Check positioning of connecting element. It must engage in shaft of motor and there must not be any clearance between control motor shaft and connecting element.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Right Footwell Flap Motor V109 , removing and installing

NOTE:

- **This control motor is installed with a potentiometer with an adjustment range of 120 °; part number index at start of prod uction: "A" Parts List.**
- **Mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**
- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices) Parts List.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and**

connecting element.

Removing

- Switch off ignition.
- Remove glove compartment --> **70 - INTERIOR TRIM**
- Remove lower right trim of center console --> **68 - INTERIOR EQUIPMENT**

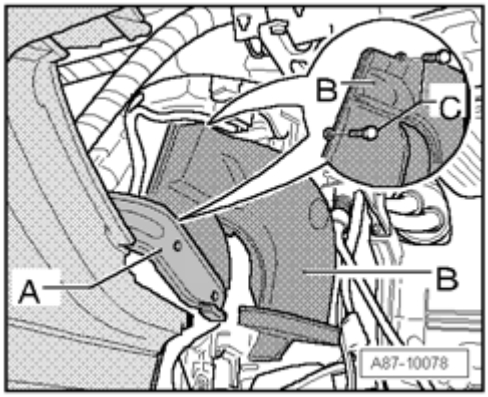

Fig. 149: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On right side, remove holder for instrument panel - **A** - and bolts - **C** - --> **68 - INTERIOR EQUIPMENT** .
- Remove air duct to footwell vent - **B** - for front passengers side.

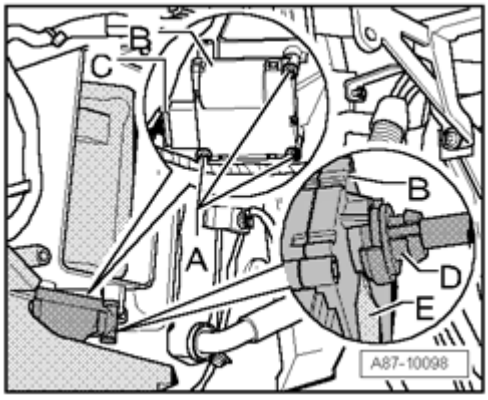

Fig. 150: Identifying Connector, Bolts, Connecting Element, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **C** - to control motor (to prevent interchange with other identical connectors).
- Unplug connector - **C** - from control motor.
- Remove bolts - **A** - (tightening torque 10 Ncm).

- Use a screwdriver to carefully pry connecting element - **D** - off control motor - **B** - and remove control motor.

NOTE:

- **Leave connecting element - D - in position at Heating and A/C unit.**
- **Removing connecting element - D - to shaft of flap in Heating and A/C unit --> Connecting elements, removing and installing to the various Heating and A/C unit flaps**

Installing

Install in reverse order, paying attention to the following:

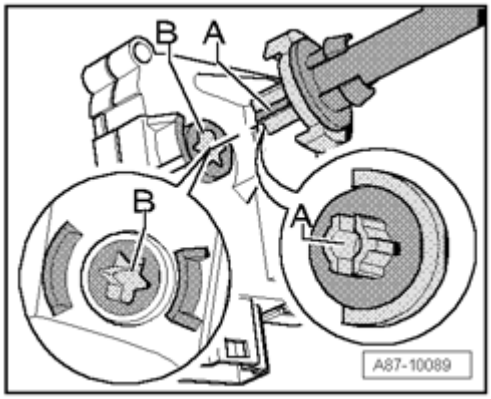

Fig. 151: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot**

be installed.

- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

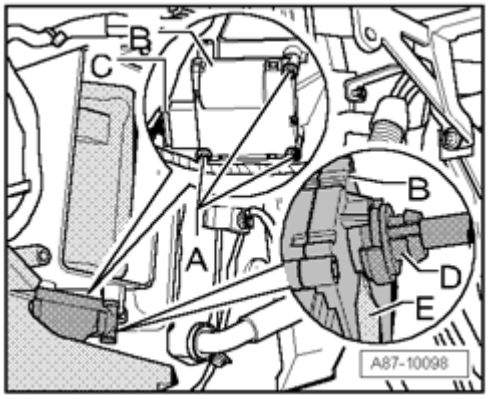

Fig. 152: Identifying Connector, Bolts, Connecting Element, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** - to connecting element - **D** - of shaft to footwell flap.

NOTE:

- **If necessary, reach into vent and move flap - E - into position in which control motor can be installed.**
- **Check positioning of connecting element. It must engage in shaft of motor and there must not be any clearance between control motor shaft and connecting element.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Rear Footwell Vent Motor V112 , removing and installing

NOTE:

- **With the exception of the Rear Footwell Vent Motor V112 , the housings of the Heating and A/C unit control motors are currently identical. This control motor is installed with a potentiometer with an adjustment range of 120 °; part number of this control motor has no in dex at start of production Parts List.**
- **Mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**

- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices with identical housing) Parts List.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and connecting element.**

Removing

- Switch off ignition.
- Remove control and display unit, Climatronic Control Module J255 --> **Notes on removing and installing control and display unit, Climatronic Control Module J255**.
- Remove lower right trim of center console --> **68 - INTERIOR EQUIPMENT**

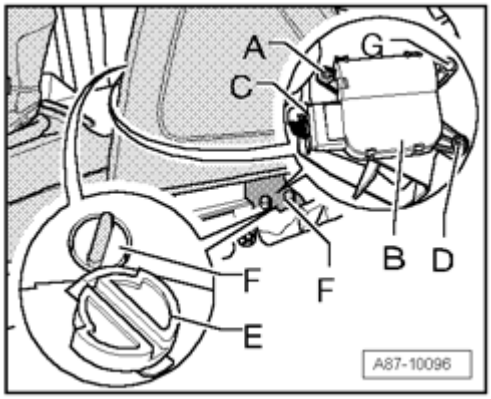

Fig. 153: Identifying Lower Right Holder And Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, remove lower right holder - **H** - between central tube of instrument panel and transmission tunnel (to provide better access) --> **68 - INTERIOR EQUIPMENT** .
- If necessary, mark connector - **C** - to control motor (to prevent interchange with other identical connectors).
- Reach through mounting slot for control and display unit, Climatronic Control Module J255 and unplug connector - **C** - from Rear Footwell Vent Motor V112.
- Reach through mounting slot for control and display unit, Climatronic Control Module J255 and remove bolt - **A** - (tightening torque 10 Ncm).
- Remove bolt - **D** - (from underneath by way of gap between instrument panel front and transmission tunnel) (tightening torque 10 Ncm).
- Remove control motor - **B** -.
- Use screwdriver for example to carefully pry connecting element - **E** - off control motor - **B** -.

Installing

Install in reverse order, paying attention to the following:

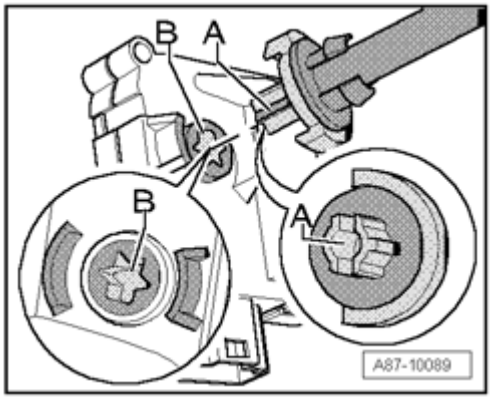

Fig. 154: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot be installed.**
- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

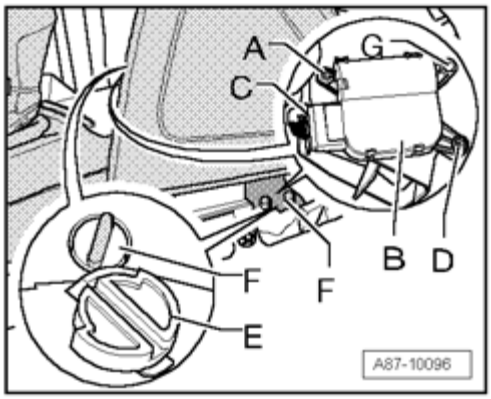

Fig. 155: Identifying Lower Right Holder And Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Move connecting element of rear footwell flap - **F** - into position in which it is aligned with groove in connecting element of control motor - **E** -.
- Insert control motor in mount - **G** - and join the two connecting elements - **E** - and - **F** -.

NOTE:

- **Check positioning of both connecting elements.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Front Cold Air Flap Motor V197 , removing and installing

NOTE:

- **This control motor is installed with a potentiometer with an adjustment range of 150 °; part number index at start of prod uction: "B" Parts List.**
- **Mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and connecting element.**
- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices) Parts List.**
- **This control motor actuates cold air flap (installed in air duct bypassing**

heater core).

Removing

- Switch off ignition.
- Remove glove compartment --> **70 - INTERIOR TRIM**
- Remove lower right trim of center console --> **68 - INTERIOR EQUIPMENT**

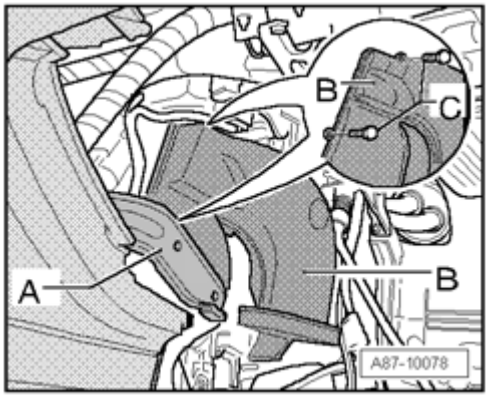

Fig. 156: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On right side, remove holder for instrument panel - **A** - and bolts - **C** - --> **68 - INTERIOR EQUIPMENT** .
- Remove air duct to footwell vent - **B** - for front passengers side.

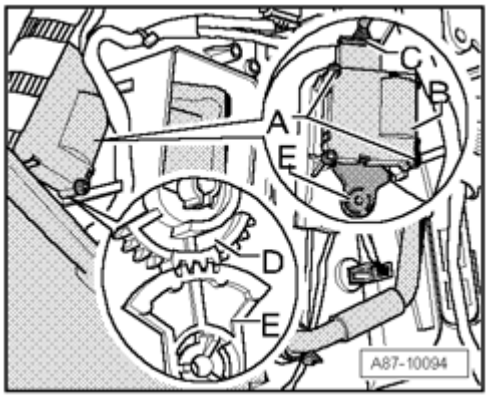

Fig. 157: Identifying Connector, Bolts, Control Motor, And Connecting Element
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **C** - to control motor (to prevent interchange with other identical connectors).
- Unplug connector - **C** - from Front Cold Air Flap Motor V197.
- Remove bolts - **A** - (tightening torque 10 Ncm).

- Remove control motor - **B** -.
- Use screwdriver to carefully pry connecting element - **D** - off control motor - **B** -.

NOTE:

- **Leave connecting element - E - to flap shaft in position at Heating and A/C unit.**
- **Removing connecting element to shaft of flap - E - --> Connecting elements, removing and installing to the various Heating and A/C unit flaps**

Installing

Install in reverse order, paying attention to the following:

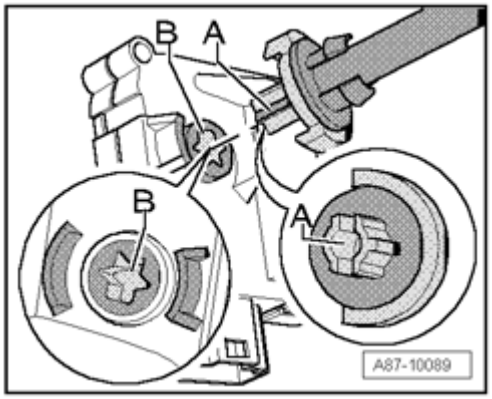

Fig. 158: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).
- Install connecting element - **A** - to control motor shaft - **B** -.

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **Check positioning of connecting element. It must engage in shaft of motor and there must not be any clearance between control motor shaft and connecting element.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting**

element). Direction of rotation can be reversed by interchanging positive and negative.

- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot be installed.**
- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

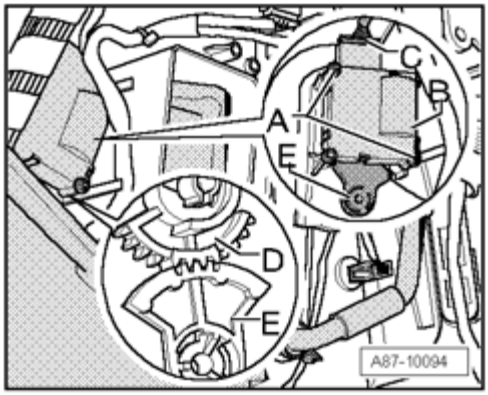

Fig. 159: Identifying Connector, Bolts, Control Motor, And Connecting Element
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** - , paying attention to correct mutual positioning of the two connecting elements - **D** - and - **E** -.

NOTE:

- **In cases of doubt regarding correct mutual positioning of the two connecting elements - D - and - E - , use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until end position is reached (direction of rotation can be reversed by interchanging positive and negative) and in doing so observe the two connecting elements.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Indirect Ventilation Flap Motor V213 , removing and installing

NOTE:

- **This control motor is installed with a potentiometer with an adjustment range of 150 °; part number index at start of prod uction: "B" Parts List.**
- **Mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**
- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices) Parts List.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and connecting element.**

Removing

- Switch off ignition.
- Remove drivers storage compartment --> **70 - INTERIOR TRIM**
- Remove lower left trim of center console --> **68 - INTERIOR EQUIPMENT**

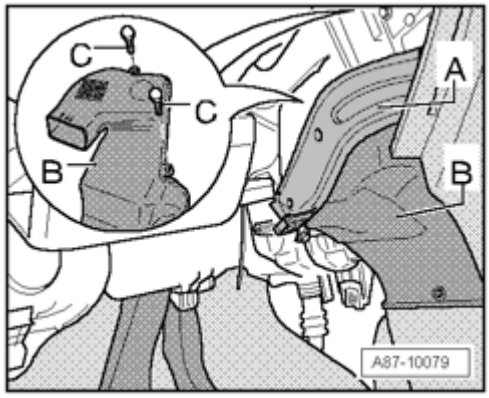

Fig. 160: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On left side, remove holder for instrument panel - **A** - and bolts - **C** - --> **68 - INTERIOR EQUIPMENT** .
- Remove air duct to footwell vent - **B** - for drivers side.

NOTE:

- **Depending on vehicle equipment and positional tolerance between Heating and A/C unit and bracket for pedal cluster, removal of footwell vent - B - for drivers side may involve removing pedal cluster from vehicle and sliding it slightly to left --> 46 - BRAKES - MECHANICAL COMPONENTS .**

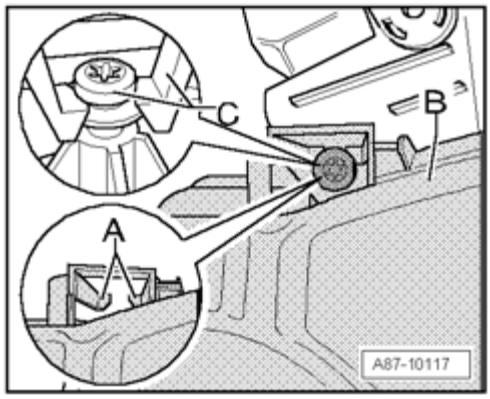

Fig. 161: Identifying Footwell Vent, Upper Bolt, And Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In model year 2005, the mount of air channel to footwell vent - **B** - has been changed (gradual introduction), the upper bolt - **C** - must then no longer be removed, the air channel is clipped in with retaining tabs - **A** -.

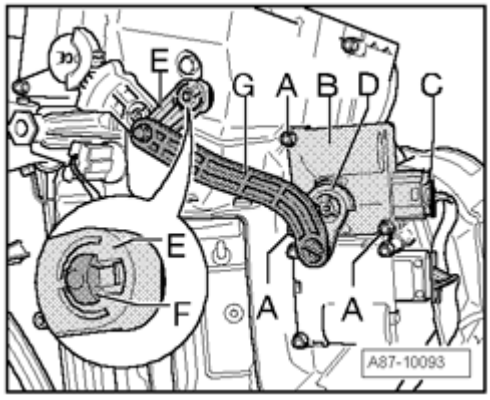

Fig. 162: Identifying Connector, Fastener, Bolts, Control Motor, Connecting Rod, And Connecting Element
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **C** - to control motor (to prevent interchange with other identical connectors).
- Unplug connector - **C** - from Indirect Ventilation Flap Motor V213.
- Carefully pry connecting element - **D** - off control motor.
- Release fastener - **F** - at connecting element - **E** - (at shaft to flap) and remove connecting elements with connecting rod - **G** -.

- Remove bolts - **A** - (tightening torque 10 Ncm).
- Remove control motor - **B** -.

Installing

Install in reverse order, paying attention to the following:

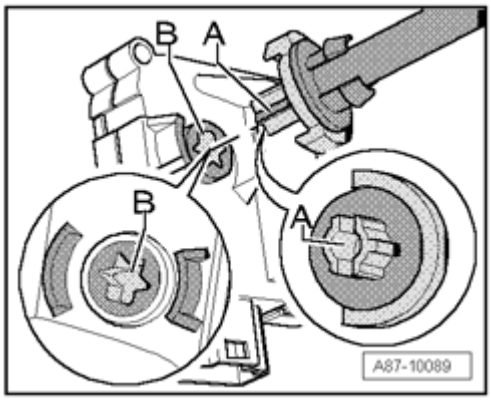

Fig. 163: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot be installed.**
- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

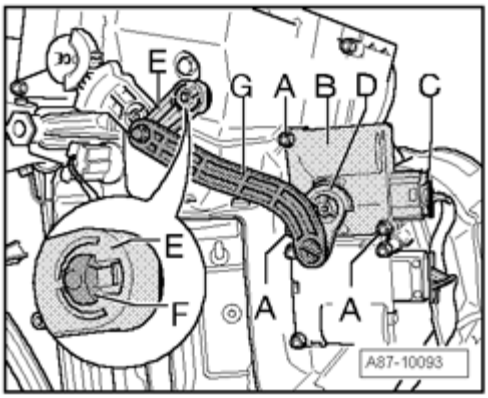

Fig. 164: Identifying Connector, Fastener, Bolts, Control Motor, Connecting Rod, And Connecting Element
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** -.
- Install connecting element - **E** - to shaft to flap, taking care to ensure firm connection at fastener - **F** -.
- Install connecting element - **D** - at control motor shaft, taking care to ensure correct positioning and engagement in control motor shaft.

NOTE:

- **Check positioning of connecting element. It must engage in shaft of motor and there must not be any clearance between control motor shaft and connecting element.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Left Front Upper Body Outlet Motor V237 , removing and installing

NOTE:

- **This control motor is installed with a potentiometer with an adjustment range of 120 °; part number index at start of prod uction: "A" Parts List.**
- **Mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**
- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices) Parts List.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check**

motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and connecting element.

Removing

- Switch off ignition.
- Remove entire instrument panel front --> **70 - INTERIOR TRIM**

NOTE:

- **If necessary, obtain radio anti-theft code before disconnecting battery.**

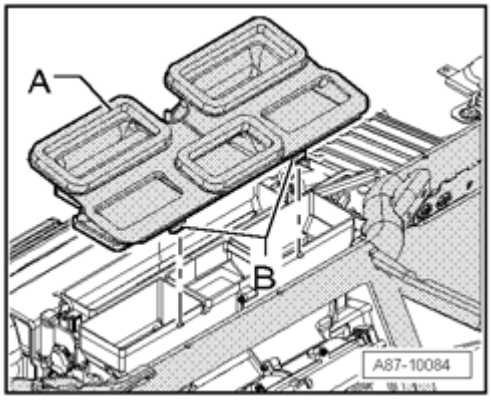

Fig. 165: Releasing Fasteners And Removing Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release fasteners - **B** - and remove air duct - **A** -.

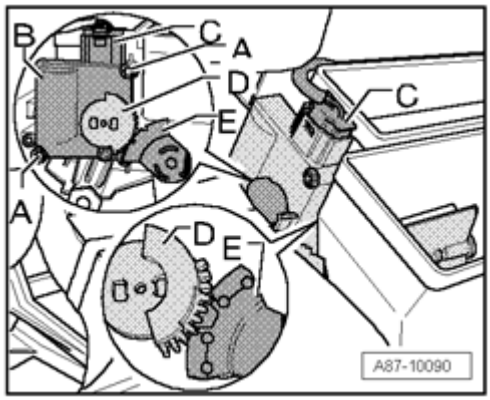

Fig. 166: Identifying Connector, Bolts, Connecting Element, Flap, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, mark connector - **C** - to Left Front Upper Body Outlet Motor V237 to prevent interchange with other identical connectors.
- Unplug connector - **C** - from Left Front Upper Body Outlet Motor V237.

- Remove bolts - **A** - (e.g. using Ratchet Wrench T40083 or ring wrench bent to appropriate shape) (tightening torque 10 Ncm).
- Use a screwdriver to carefully pry connecting element - **D** - off control motor - **B** - and remove control motor.

NOTE:

- **Leave connecting element - E - to shaft of flap - F - in position at Heating and A/C unit.**
- **Removing connecting element to shaft of flap - E - --> Connecting elements, removing and installing to the various Heating and A/C unit flaps**

Installing

Install in reverse order, paying attention to the following:

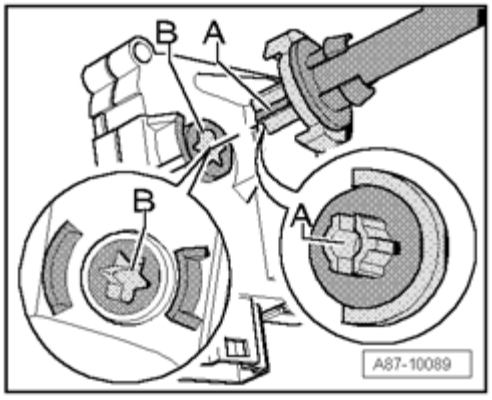

Fig. 167: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is**

applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot be installed.

- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

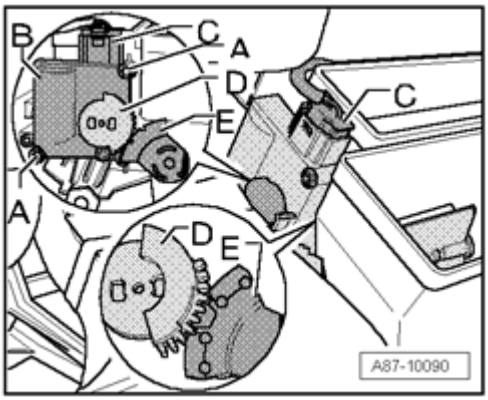

Fig. 168: Identifying Connector, Bolts, Connecting Element, Flap, And Control Motor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** -.
- Install connecting element - **D** - of control motor shaft, paying attention to correct mutual positioning of the two connecting elements - **D** - and - **E** -.

NOTE:

- **If necessary, reach into vent and move flap - F - to correct position.**
- **Check positioning of connecting element. It must engage in shaft of motor and there must not be any clearance between control motor shaft and connecting element.**
- **In cases of doubt regarding correct mutual positioning of the two connecting elements - D - and - E - , use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until end position is reached (direction of rotation can be reversed by interchanging positive and negative) and in doing so observe the two connecting elements.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air**

conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Right Front Upper Body Outlet Motor V238 , removing and installing

NOTE:

- **This control motor is installed with a potentiometer with an adjustment range of 120 °; part number index at start of prod uction: "A" Parts List.**
- **Mark motor/flap connecting element on removal to avoid interchange with connecting elements of other control motors.**
- **Mark control motor prior to removal. Pay attention to correct assignment on installation, as well as correct part number/index on replacement (the various control motors have different electrical values and part number indices) Parts List.**
- **In the event of malfunction "Upper or lower limit value exceeded" , check motor/flap connecting element. It must be properly installed to motor and there must not be any clearance between control motor mount and connecting element.**

Removing

- Switch off ignition.
- Remove entire instrument panel front --> **70 - INTERIOR TRIM**

NOTE:

- **If necessary, obtain radio anti-theft code before disconnecting battery.**

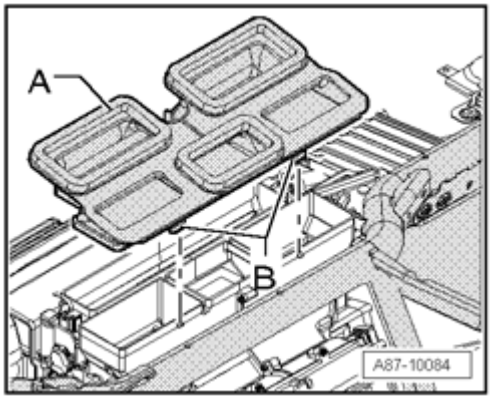

Fig. 169: Releasing Fasteners And Removing Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release fasteners - **B** - and remove air duct - **A** -.

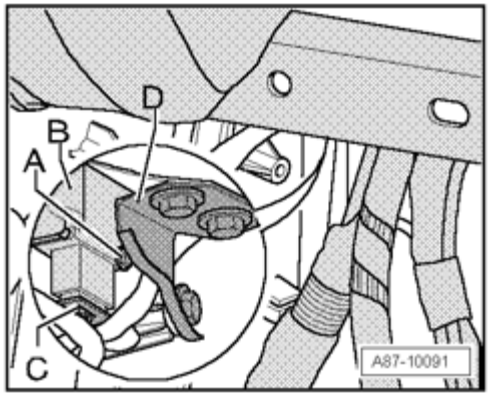

Fig. 170: Identifying Holder, Connector, And Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove holder - **D** - between Heating and A/C unit and central tube of instrument panel.
- If necessary, mark connector - **C** - to control motor (to prevent interchange with other identical connectors).
- Unplug connector - **C** - from control motor.
- Remove bolt - **A** - (e.g. using Ratchet Wrench T40083) (tightening torque 10 Ncm).

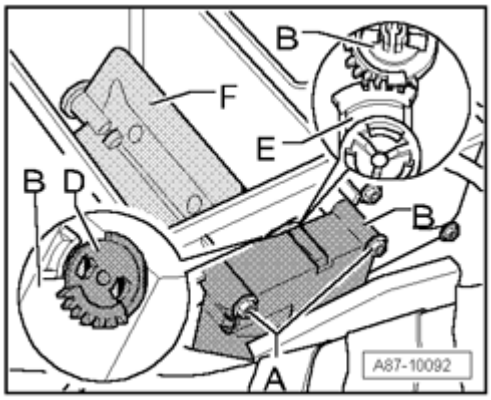

Fig. 171: Identifying Bolts, Control Motor, And Connecting Element
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** - (tightening torque 10 Ncm).
- Remove control motor - **B** -.
- Use screwdriver to carefully pry connecting element - **D** - off control motor - **B** -.

NOTE:

- **Leave connecting element - E - to shaft of flap - F - in position at Heating and A/C unit.**
- **Removing connecting element to shaft of flap - E - --> Connecting elements, removing and installing to the various Heating and A/C unit flaps**

Installing

Install in reverse order, paying attention to the following:

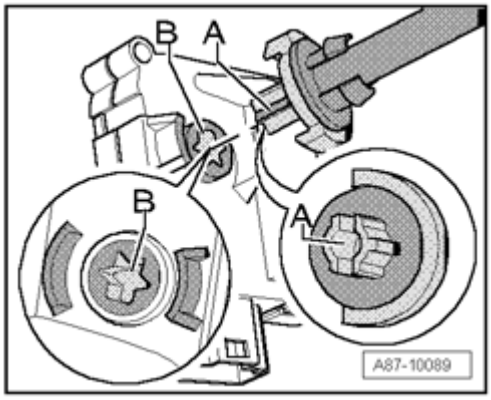

Fig. 172: Identifying Element And Motor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of control motor shaft - **B** - (must be in position shown).
- Install connecting element - **A** - to control motor shaft - **B** -.

NOTE:

- **Connecting element - A - is only to be installed in the position in which it engages without having to exert force. If pre-tension is required to insert connecting element, check motor shaft - B - as this may be turned through 180 °.**
- **Check positioning of connecting element. It must engage in shaft of motor and there must not be any clearance between control motor shaft and connecting element.**
- **If motor shaft - B - is not in position shown (only position in which connecting element can be installed), use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until shaft is in position shown (no pre-tension required to install connecting element). Direction of rotation can be reversed by interchanging positive and negative.**
- **Control motor shaft - B - has no stop. It rotates constantly if voltage is applied between contacts 5 and 6. Consequently, voltage should only be applied with control motor removed if connecting element - A - has been installed or to move shaft to correct position if connecting element cannot be installed.**
- **Shaft may be incorrectly positioned if pre-tension is required to insert connecting element - A - in control motor.**

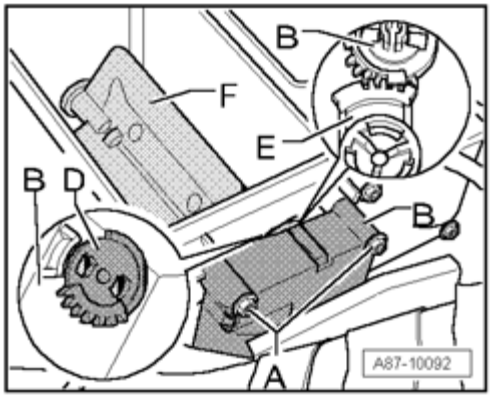

Fig. 173: Identifying Bolts, Control Motor, And Connecting Element
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install control motor - **B** - , paying attention to correct mutual positioning of the two connecting elements - **D** - and - **E** -.

NOTE:

- **If necessary, reach into vent and move flap - F - to correct position.**
- **In cases of doubt regarding correct mutual positioning of the two connecting elements - D - and - E - , use adapter cable for example --> Adapter cables, preparing for control motor actuation or test lead from connector test set V.A.G 1594/C to connect contacts 5 and 6 of control motor by way of a 5 A fuse to a 12 V battery. Turn control motor until end position is reached (direction of rotation can be reversed by interchanging positive and negative) and in doing so observe the two connecting elements.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Left Vent Temperature Sensor G150 , removing and installing

Removing

- Switch off ignition.
- Remove drivers storage compartment --> **70 - INTERIOR TRIM**
- Remove lower left trim of center console --> **68 - INTERIOR EQUIPMENT**

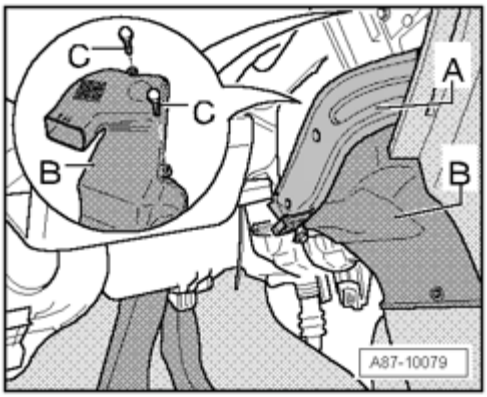

Fig. 174: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On left side, remove holder for instrument panel - **A** - and bolts - **C** - --> **68 - INTERIOR EQUIPMENT** .
- Remove air duct to footwell vent - **B** - for drivers side.

NOTE:

- **Depending on vehicle equipment and positional tolerance between Heating and A/C unit and bracket for pedal cluster, removal of footwell vent - B - for drivers side may involve removing pedal cluster from vehicle and sliding it slightly to left --> 46 - BRAKES - MECHANICAL COMPONENTS .**

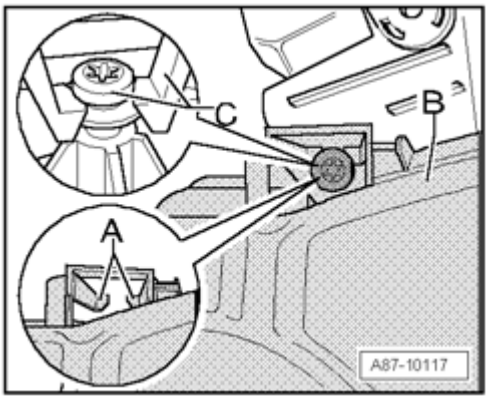

Fig. 175: Identifying Footwell Vent, Upper Bolt, And Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In model year 2005, the mount of air channel to footwell vent - **B** - has been changed (gradual introduction), the upper bolt - **C** - must then no longer be removed, the air channel is clipped in with retaining tabs - **A** -.

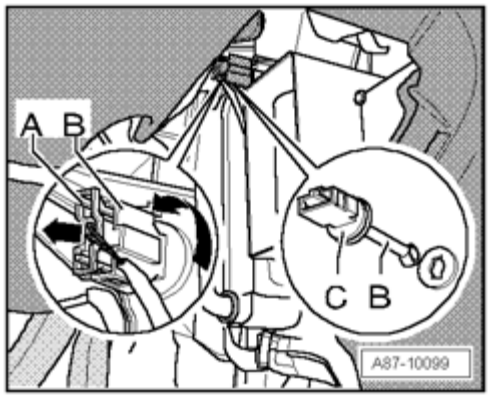

Fig. 176: Identifying Connector And Left Vent Temperature Sensor G150
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **A** - to Left Vent Temperature Sensor G150 to prevent interchange with other identical connectors.
- Unplug connector - **A** - from Left Vent Temperature Sensor G150.
- Give Left Vent Temperature Sensor G150 - **B** - approx. 90 ° turn in direction of arrow.
- Take Left Vent Temperature Sensor G150 - **B** - out of Heating and A/C unit.

Installing

Install in reverse order, paying attention to the following:

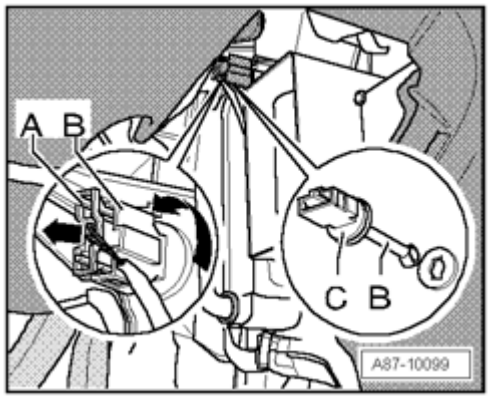

Fig. 177: Identifying Connector And Left Vent Temperature Sensor G150
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert Left Vent Temperature Sensor G150 - **B** - in correct position in mount - **D** - of Heating and A/C unit.
- Check correct positioning of Left Vent Temperature Sensor G150 in mount - **D** -.

NOTE:

- **Left Vent Temperature Sensor G150 - B - can only be inserted in one position in mount - D - ; turn through 180 °if nec essary.**

- **If Left Vent Temperature Sensor G150 does not install firmly in mount - D - , an O-ring - C - can additionally be installed if necessary.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Right Vent Temperature Sensor G151 , removing and installing

Removing

- Switch off ignition.
- Remove glove compartment --> **70 - INTERIOR TRIM**
- Remove lower right trim of center console --> **68 - INTERIOR EQUIPMENT**

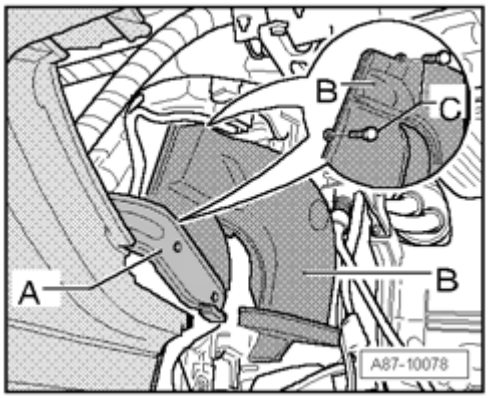

Fig. 178: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On right side, remove holder for instrument panel - **A** - and bolts - **C** - --> **68 - INTERIOR EQUIPMENT** .
- Remove air duct to footwell vent - **B** - for front passengers side.

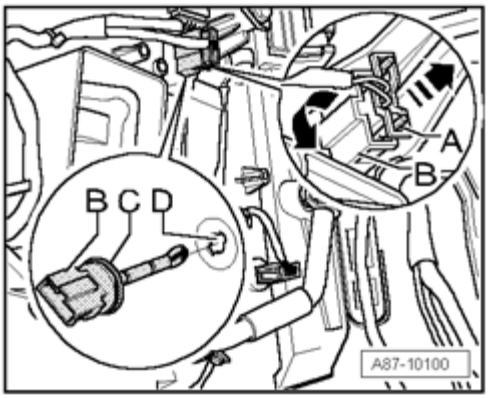

Fig. 179: Identifying Connector And Right Vent Temperature Sensor G151
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **A** - to Right Vent Temperature Sensor G151 to prevent interchange with other identical connectors.
- Unplug connector - **A** - from Right Vent Temperature Sensor G151.
- Give Right Vent Temperature Sensor G151 - **B** - approx. 90 ° turn in direction of arrow.
- Take Right Vent Temperature Sensor G151 - **B** - out of Heating and A/C unit.

Installing

Install in reverse order, paying attention to the following:

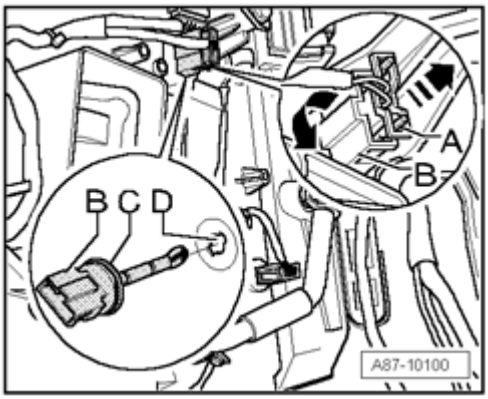

Fig. 180: Identifying Connector And Right Vent Temperature Sensor G151
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert Right Vent Temperature Sensor G151 - **B** - in correct position in mount - **D** - of Heating and A/C unit.
- Check correct positioning of Right Vent Temperature Sensor G151 in mount - **D** -.

NOTE:

- **Right Vent Temperature Sensor G151 - B - can only be inserted in one position in mount - D - ; turn through 180 °if nec essary.**

- **If Right Vent Temperature Sensor G151 does not install firmly in mount - D - , an O-ring - C - can additionally be installed if necessary.**
- **Re-install components removed in reverse order.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Center Outlet Temperature Sensor G191 , removing and installing

NOTE:

- **The Center Outlet Temperature Sensor G191 has been gradually discontinued, on vehicles without this sensor, only the Climatronic Control Module J255 with part no. 4F1 820 043 as of index "M" is or may be installed Parts Catalog.**
- **In vehicles without Center Outlet Temperature Sensor G191 , if a Climatronic Control Module J255 with part no. 4F1 820 043 up to and including index "L" is installed, the missing sensor is displayed as a malfunction.**
- **Climatronic Control Module J255 units with part no. 4F1 820 043 as of index "M" have already been installed with gradual introduction as of 05.2005 also in vehicles with Center Outlet Temperature Sensor G191 (sensor measured value is no longer required by this A/C control and display unit for regulation and therefore is not evaluated).**

Removing

- Switch off ignition.
- Remove control and display unit, Climatronic Control Module J255 --> **Notes on removing and installing control and display unit, Climatronic Control Module J255**.

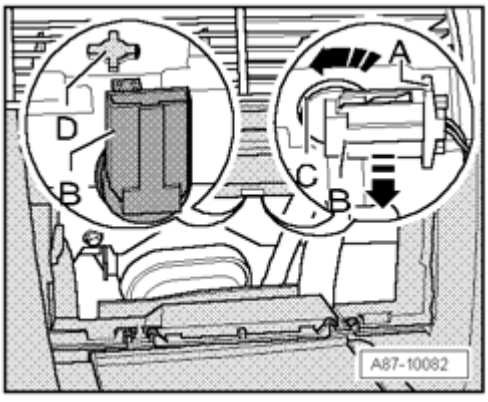

Fig. 181: Identifying Connector And Temperature Sender
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach through mounting slot for control and display unit, Climatronic Control Module J255 and unplug connector - **A** -.
- Give vent temperature sender - **B** - approx. 90 ° turn in direction of arrow.
- Pull vent temperature sender - **B** - out of Heating and A/C unit.

Installing

Install in reverse order, paying attention to the following:

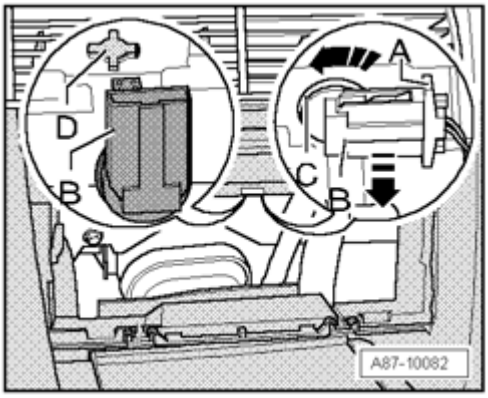

Fig. 182: Identifying Connector And Temperature Sender
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check seal - **C** - for damage and correct positioning.
- Insert Center Outlet Temperature Sensor G191 - **B** - in correct position in mount - **D** - of Heating and A/C unit.
- Re-install components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Evaporator Vent Temperature Sensor G263 , removing and installing

Removing

- Switch off ignition.
- Remove glove compartment --> **70 - INTERIOR TRIM**
- Remove lower right trim of center console --> **68 - INTERIOR EQUIPMENT**

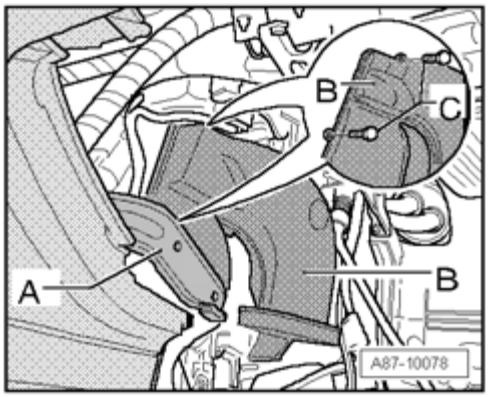

Fig. 183: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On right side, remove holder for instrument panel - **A** - and bolts - **C** - --> **68 - INTERIOR EQUIPMENT** .
- Remove air duct to footwell vent - **B** - for front passengers side.

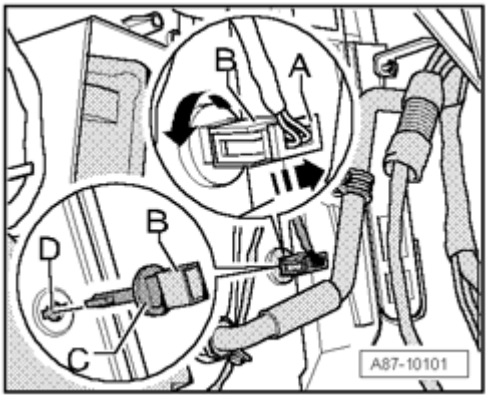

Fig. 184: Identifying Connector And Evaporator Vent Temperature Sensor G263
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark connector - **A** - to Evaporator Vent Temperature Sensor G263 to prevent interchange with other identical connectors.
- Unplug connector - **A** - from Evaporator Vent Temperature Sensor G263.
- Give Evaporator Vent Temperature Sensor G263 - **B** - approx. 90 ° turn in direction of arrow.
- Take Evaporator Vent Temperature Sensor G263 - **B** - out of Heating and A/C unit.

Installing

Install in reverse order, paying attention to the following:

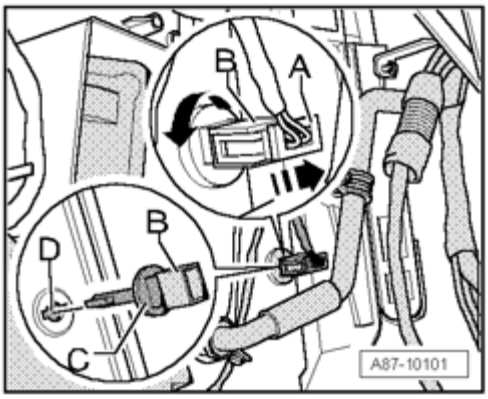

Fig. 185: Identifying Connector And Evaporator Vent Temperature Sensor G263
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check seal - **C** - for damage and correct positioning.
- Insert Evaporator Vent Temperature Sensor G263 - **B** - in correct position in mount - **D** - of Heating and A/C unit.
- Re-install components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

HEATER CORE, REMOVING AND INSTALLING

Heater core, removing and installing

Special tools, testers and other items required

- Hose Clamps Up To 25mm Dia. 3094 or Hose Clamps, Up To 40 mm. 3093
- Commercially available compressed-air gun with rubber mouthpiece
- Cooling System Tester V.A.G 1274 (and appropriate adapters)

Preparation for heater core removal

NOTE:

- **With ignition on, valves of pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) are constantly actuated as a function of temperature setting on control and display unit, Climatronic Control Module J255. Valves may therefore be warm or even hot despite engine being cold.**
- **Switch off ignition.**
- **Dissipate pressure in coolant circuit by opening cap at coolant expansion tank Relevant engine, mechanics**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**

- **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
- **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
- **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
- **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

.

- **Remove plenum chamber cover.**

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .

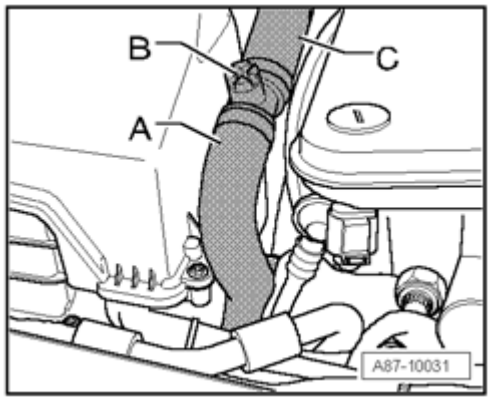

Fig. 186: Identifying Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pinch off coolant hose - **A** - (return from heater core to engine), e.g. using Hose Clamps Up To 25mm Dia. 3094.

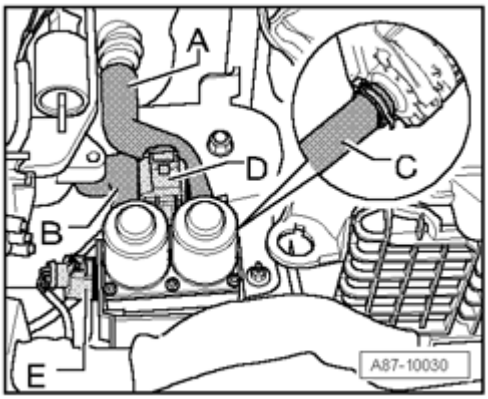

Fig. 187: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark arrangement of coolant hoses - **A** - (supply to left heater core) and - **B** - (supply to right heater core).
- Unplug connector - **D** - (to Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176).
- Unplug connector - **E** - (to Coolant Pump V50).
- Pinch off coolant hose - **C** - (supply from engine to Coolant Pump V50) e.g. using Hose Clamps Up To 25mm Dia. 3094.

- Disconnect coolant hoses - **A** - and - **B** - from connections of pump valve unit.

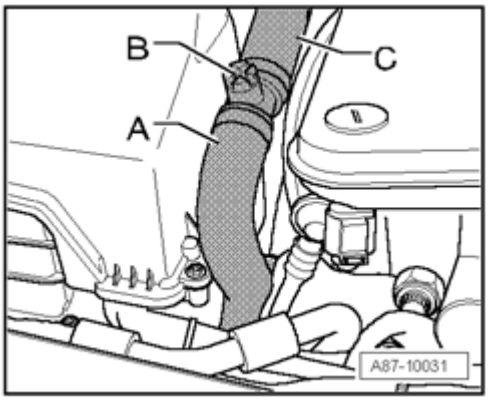

Fig. 188: Identifying Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove screw plug from bleeder valve - **B** -.

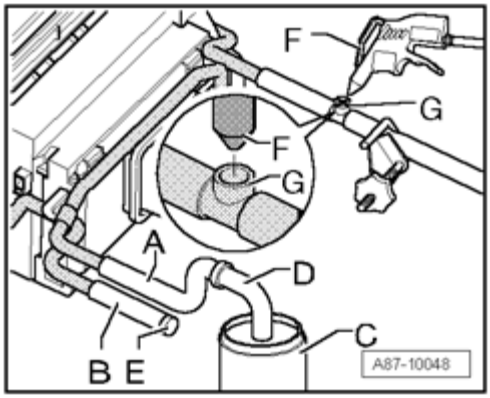

Fig. 189: Identifying Hose Section, Coolant Hose, Plug, Vessel, Extension Hose, Bleeder Valve, And Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hose section - **D** - (as extension) to coolant hose - **A** -.
- Seal coolant hose - **B** - (e.g. with plug - **E** -).
- Place vessel - **C** - beneath extension hose - **D** -.
- Use compressed-air gun (with rubber mouthpiece) - **F** - to carefully blow coolant by way of open connection for bleeder valve - **G** - out of "drivers" heater core (into vessel - **C** -).

- Remove plug - **E** - from coolant hose - **B** - and insert it in coolant hose - **A** -.
- Connect hose section - **D** - (as extension) to coolant hose - **B** -.
- Use compressed-air gun (with rubber mouthpiece) - **F** - to carefully blow coolant by way of open connection for bleeder valve - **G** - out of "front passengers" heater core (into vessel - **C** -).
- Remove glove compartment and lower instrument panel trim (on drivers side) --> **68 - INTERIOR EQUIPMENT** .

- Depending on vehicle equipment, remove electrical control modules and possibly corresponding holders impeding heater core removal (e.g. Front Information Display Control Head Control Module J523 and corresponding holder) --> **91 - COMMUNICATION** .
- Remove center console side trim on right and left --> **68 - INTERIOR EQUIPMENT**

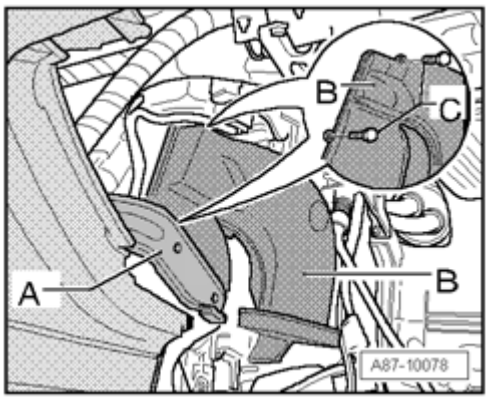

Fig. 190: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On right side, remove holder - **A** - for glove compartment --> **68 - INTERIOR EQUIPMENT** .
- Screw out bolts - **C** -.
- Remove air duct to footwell vent - **B** - for front passengers side.

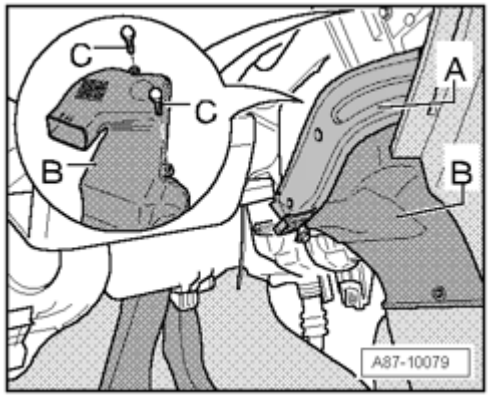

Fig. 191: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On left side, remove holder - **A** - for trim beneath instrument panel --> **68 - INTERIOR EQUIPMENT** .
- Screw out bolts - **C** -.
- Remove air duct to footwell vent - **B** - for drivers side.

NOTE:

- **Depending on vehicle equipment and positional tolerance between Heating and A/C unit and bracket for pedal cluster, removal of footwell vent - B - for drivers side may involve removing pedal cluster from vehicle and sliding it slightly to left --> 46 - BRAKES - MECHANICAL COMPONENTS .**

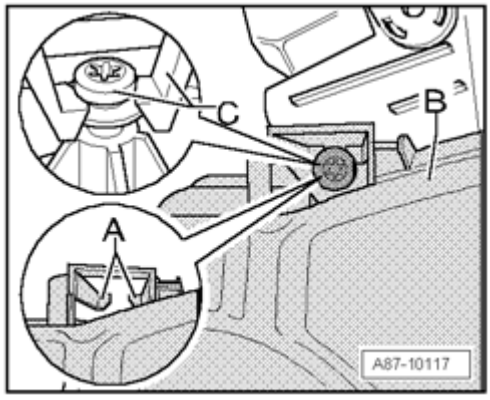

Fig. 192: Identifying Footwell Vent, Upper Bolt, And Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In model year 2005, the mount of air channel to footwell vent - **B** - has been changed (gradual introduction), the upper bolt - **C** - must then no longer be removed, the air channel is clipped in with retaining tabs - **A** -.

Heater core, removing and installing

Removing

- Perform preparatory work for heater core removal --> **Preparation for heater core removal**.

- Protect floor covering in area of transmission tunnel on left and right beneath heater core with impermeable sheeting and absorbent paper.

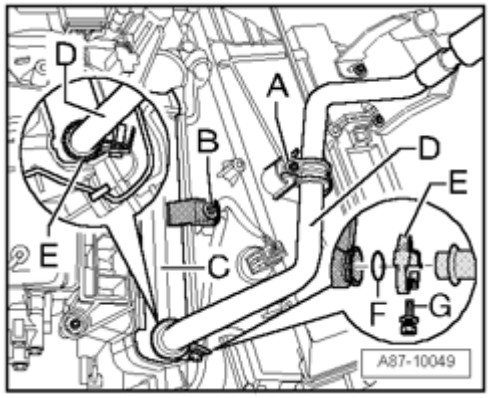

Fig. 193: Identifying Holders, Coolant Pipe, Heater Core, Bolt, And Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove holder - **A** - for coolant pipe - **D** - and holder - **B** - for heater core - **C** -.
- Loosen bolt - **G** - at clamp - **E** - for coolant pipe - **D** -.
- Remove clamp - **E** -.
- Place vessel beneath connection for coolant pipe - **D** - at heater core.

- Take coolant pipe - **D** - out of heater core.

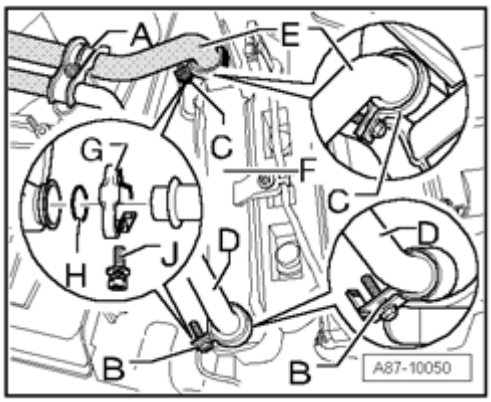

Fig. 194: Identifying Coolant Pipes, Holder, Clamps, And Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove holder - **A** - for coolant pipes - **D** - and - **E** -.
- Remove clamps - **B** - and - **C** -.
- Place vessel beneath connection for coolant pipe - **D** - at heater core.
- Take coolant pipe - **D** - out of heater core.

- Take coolant pipe - **E** - out of heater core.

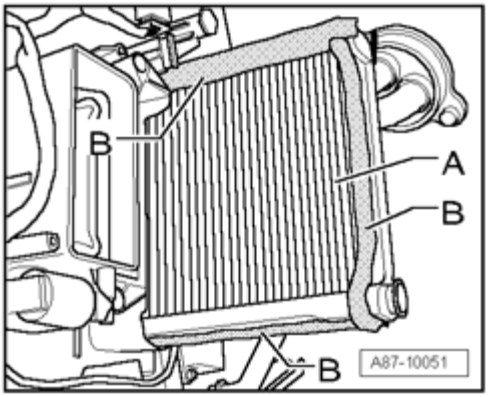

Fig. 195: Sliding Heater Core To Right Out Of Heating And A/C Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Slide heater core - **A** - to right out of Heating and A/C unit.

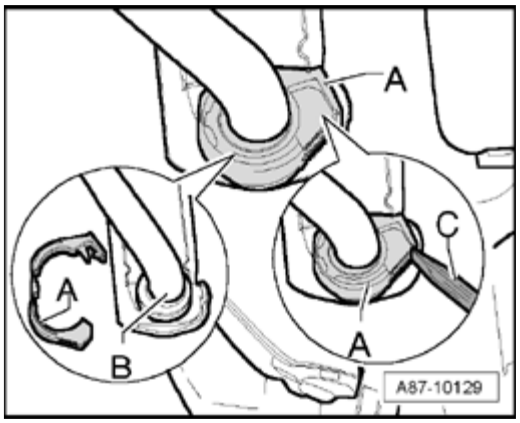

Fig. 196: Identifying Coolant Pipes, And Plastic Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **On vehicles with a radial seal on coolant pipes - B - to heater core, a plastic clamp - A - may also be installed instead of a screw clip, open it e.g. using a screw driver - C -.**

CAUTION: A plastic clamp - A - is or may be installed only on vehicles with a radial seal on coolant pipes - B -.

Installing

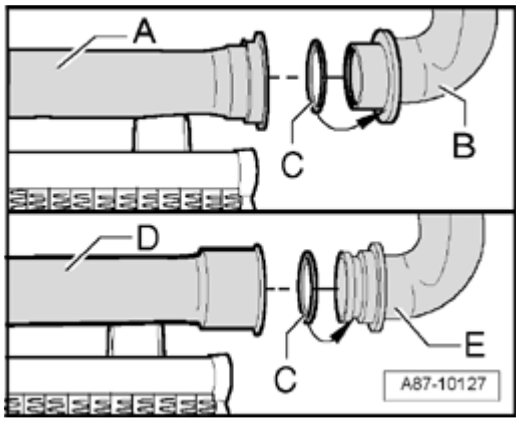

Fig. 197: Identifying Radial Seal Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes was converted as a running change in production from an axial/radial seal - A - and - B - to a radial seal - D - and - E - , make sure the version is correct when replacing the heater core Parts Catalog**

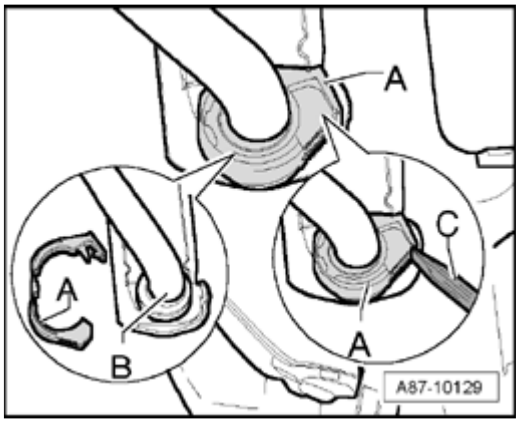

Fig. 198: Identifying Coolant Pipes, And Plastic Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles with a radial seal on coolant pipes - **B** - to heater core, a plastic clamp - **A** - may also be installed instead of screw clip Parts Catalog.

CAUTION: A plastic clamp - A - is or may be installed only on vehicles with a radial seal on coolant pipes - B -.

- Check the following before installing heater core:

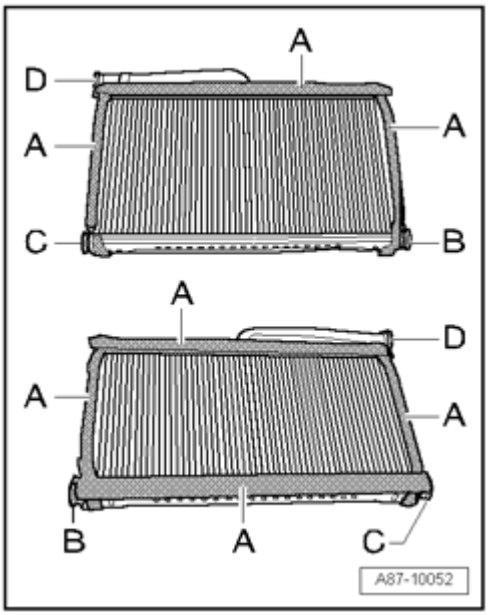

Fig. 199: Identifying Foam Seals Of Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Foam seals - **A** - of heater core for damage and proper installation (foam seals must not become removed on installing heater core)

NOTE:

- **Seal may curl up on insertion if not correctly bonded on.**
- **Cold air may flow past heater core if seal is damaged or not properly installed.**
- **Always replace sealing rings and clamps Parts List.**
- **Check connections at heater core - B - , - C - and - D - for damage or contamination.**
- **By way of heater core mounting slot, check Heating and A/C unit for dirt or residual coolant and clean if necessary.**

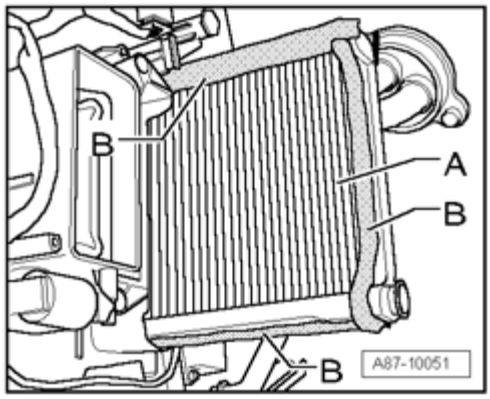

Fig. 200: Sliding Heater Core To Right Out Of Heating And A/C Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Working from right, slide heater core - **A** - into Heating and A/C unit such that it is flush with housing of Heating and A/C unit on right and left. When doing so, make sure seal - **B** - does not curl up or become damaged.

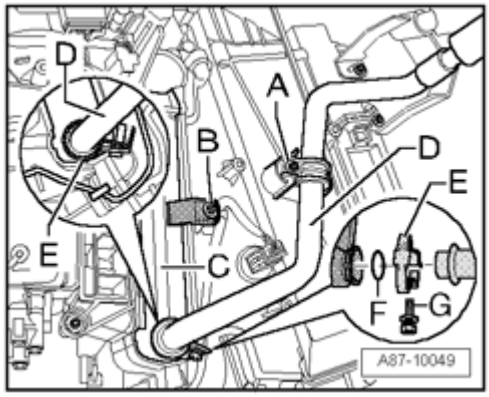

Fig. 201: Identifying Holders, Coolant Pipe, Heater Core, Bolt, And Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install holder - **B** - for heater core - **C** -.
- Remove bolt - **G** - from new clamp - **E** -.
- Position new clamp - **E** - on coolant pipe such that clamp can be fastened as shown.
- Moisten sealing ring - **F** - with small quantity of coolant and install sealing ring on coolant pipe - **D** -.

- Insert coolant pipe - **D** - in heater core.
- Press coolant pipe - **D** - into heater core and install clamp - **E** - as shown at joint with heater core.

NOTE:

- **Clamp - E - engages on being pressed together.**
- **Install bolt - G - in clamp and secure clamp by tightening bolt.**
- **Install holder - A - for coolant pipe - D -.**

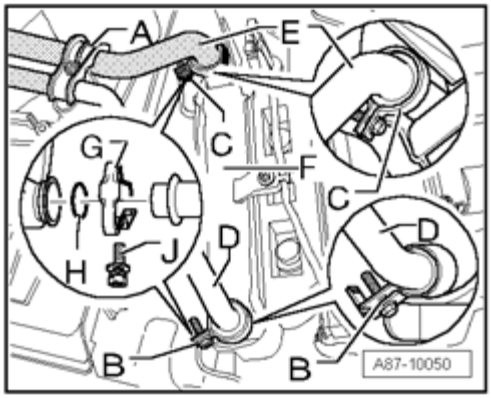

Fig. 202: Identifying Coolant Pipes, Holder, Clamps, And Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install coolant pipe - **E** - in heater core as described for coolant pipe on right side.

NOTE:

- **Sealing rings and clamp for coolant pipes - D - and - E - have different diameters.**
- **Install coolant pipe - D - in heater core in same manner as described for coolant pipe on right side.**
- **Install holders - A - for coolant pipes.**
- **Check position of sockets in coolant pipe penetrations to plenum chamber.**

NOTE:

- **Bleed cooling circuit before plugging in 2-pin connector to Coolant Pump V50 of pump valve unit.**
- **Coolant circuit must be bled before starting up Coolant Pump V50 of pump valve unit.**
- **Dry running of pump in pump valve unit would lead to destruction.**
- **Re-install all components removed in reverse order except plenum chamber cover, glove compartment and drivers storage compartment.**
- **Filling and bleeding coolant circuit -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

- **After bleeding, check cooling system for leaks, paying particular attention to coolant pipe joints to heater core -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

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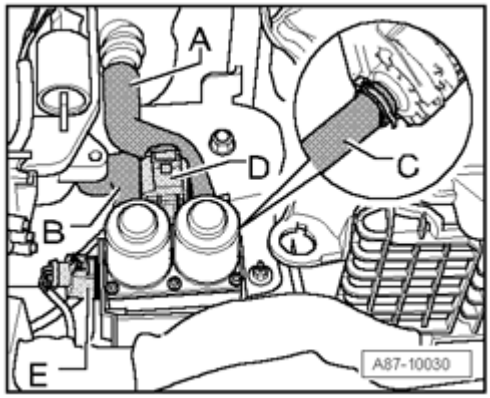

Fig. 203: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Following installation, check correct positioning of socket between engine compartment and plenum chamber at coolant hose - **C** -.
- Check pump valve unit; it must not make contact with other components (noise).
- Plug in connectors - **D** - to Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 and - **E** - to Coolant Pump V50 after bleeding coolant circuit.
- Remove residual coolant from plenum chamber.

- Re-install remaining components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

NOTE:

- **When bleeding coolant circuit, take particular care to ensure complete bleeding of heater cores. If air bubbles remain in heater core, complaints**

may be received about lack of heat output in winter or differences in temperature of air flowing out of vents with same setting in control mode.

DIAGRAM OF AIR DISTRIBUTION AND AIR ROUTING IN HEATING AND A/C UNIT AND AIR INTAKE UNIT

Diagram of air distribution and air routing in Heating and A/C unit and air intake unit

NOTE:

- **Air routing and air distribution in passenger compartment --> Air routing and air distribution in passenger compartment**
- **Air routing in air intake unit and Heating and A/C unit --> Air routing in air intake unit and Heating and A/C unit**
- **Component locations of individual components not installed in passenger compartment --> A/C system control and regulation components in engine compartment and rear body**
- **Component locations of individual components in passenger compartment --> A/C system control and regulation components in passenger compartment**

Air inlet and vents of Heating and A/C unit

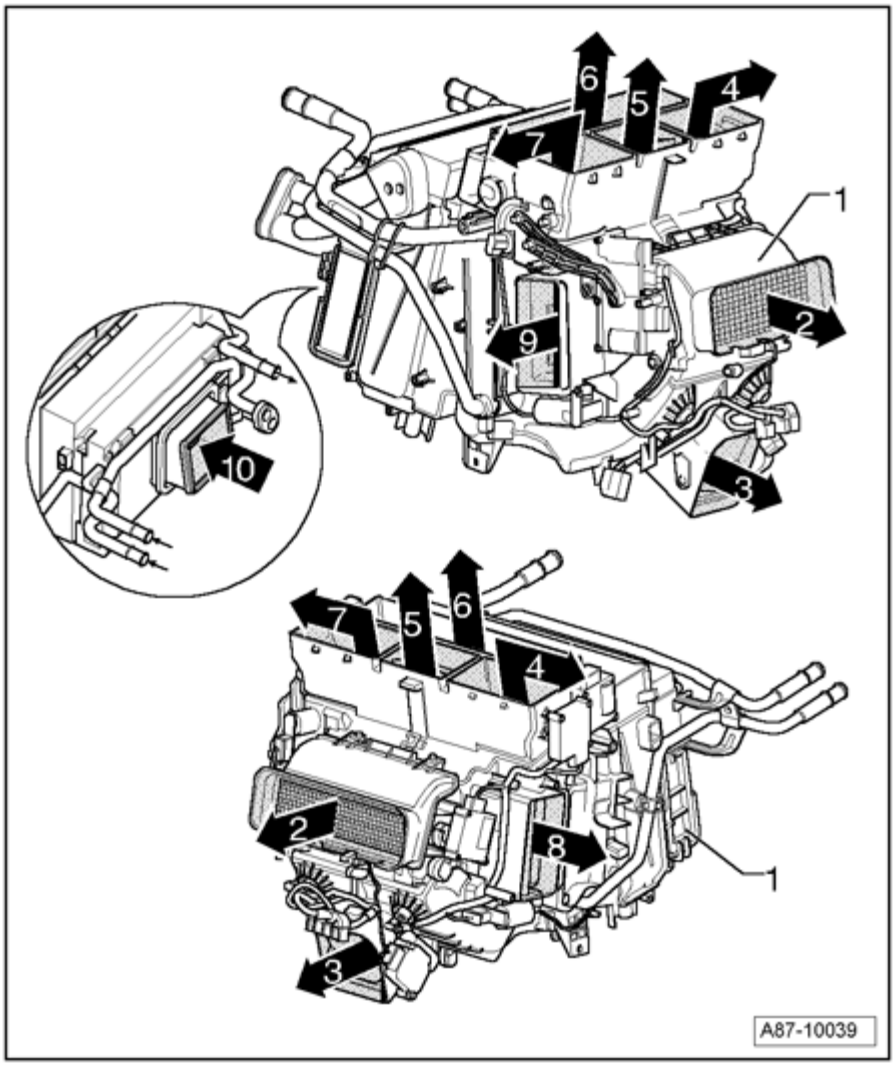

Fig. 204: Air Inlet And Vents Of Heating And A/C Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Heating and A/C unit

- Different versions depending on vehicle model and equipment (control and display unit, Climatronic Control Module J255 , left or right-hand drive Parts List
- Heating and A/C unit components --> **Heating and A/C unit components**
- Air routing in passenger compartment --> **Air routing and air distribution in passenger compartment**
- Removing and installing Heating and A/C unit --> **Heating and A/C unit, removing and installing**

2 - To center instrument panel vent (upper body vent)

3 - To vent in rear center console (rear footwell vent)

4 - To right instrument panel vent

- Via air duct in instrument panel to right instrument panel vent (upper body vent)

5 - To indirect ventilation vent

- Via air ducts in instrument panel to vent in upper instrument panel trim
- Air only emerges via these vents on vehicles with control and display unit, Climatronic Control Module J255
- Flap in Heating and A/C unit is opened if control and display unit, Climatronic Control Module J255 is set for example to "air to instrument panel upper body vents"

6 - To instrument panel defroster vent

- Via air ducts in instrument panel to windshield and vents in left and right front doors

7 - To left instrument panel vent

- Via air duct in instrument panel to left instrument panel vent (upper body vent)

8 - To right footwell vents

9 - To left footwell vents

10 - Air inlet from air intake unit

Air routing in air intake unit and Heating and A/C unit

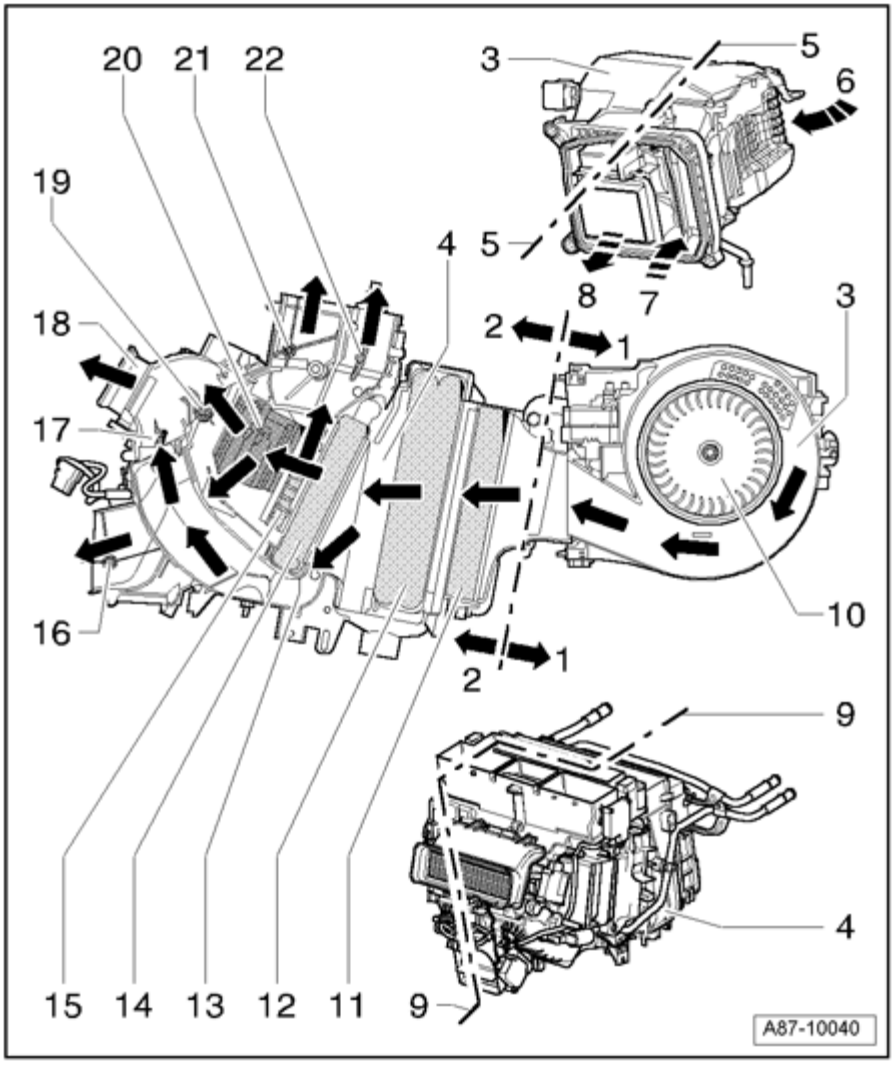

Fig. 205: Air Routing In Air Intake Unit And Heating And A/C Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Plenum chamber (engine compartment)

2 - Passenger compartment

3 - Air intake unit

4 - Heating and A/C unit

5 - Section through air intake unit

- Sectional view shows air intake unit as if it were cut away at this line

6 - Fresh-air intake from plenum chamber

- In fresh-air mode, air is drawn in beneath plenum chamber cover

7 - Recirculated-air intake behind instrument panel

- In recirculated-air mode, air is drawn in via opening in plenum chamber wall beneath instrument panel

8 - Air outlet from air intake unit into Heating and A/C unit

- An air duct socket is installed between Heating and A/C unit and opening in plenum chamber wall

9 - Section through Heating and A/C unit

- Sectional view shows Heating and A/C unit as if it were cut away at this line

10 - Fresh Air Blower V2

- Removing and installing --> **Fresh Air Blower V2 , removing and installing**

11 - Dust and pollen filter

- Observe replacement intervals
- Different versions depending on vehicle equipment Parts List
- Removing and installing --> **Dust and pollen filter, removing and installing**

12 - Evaporator

13 - Cold air duct

- This duct routes air past heater core to center instrument panel vent

14 - Heating system heater core

- Removing and installing --> **Heater core, removing and installing**

15 - Auxiliary Air Heater Heating Element Z35

- Not for USA

16 - To vent in rear center console (rear footwell vent)

- Also to vents in "B-pillars" (vehicles with control and display unit, Climatronic Control Module J255)

17 - Cold air flap

- This flap is actuated by Front Cold Air Flap Motor V197

18 - To center instrument panel vent

19 - Flap for center vent

- This flap is actuated by Center Vent Adjustment Motor V102

20 - To left footwell vents

21 - To right instrument panel vent

- Via air duct in instrument panel to right instrument panel vent

22 - To instrument panel defroster vent

- Via air ducts in instrument panel to windshield and vents in left and right front doors

Air routing and air distribution in passenger compartment

NOTE:

- **Air intake and air routing in Heating and A/C unit --> Air inlet and vents of Heating and A/C unit**
- **Component locations of individual components in passenger compartment --> A/C system control and regulation components in passenger compartment**

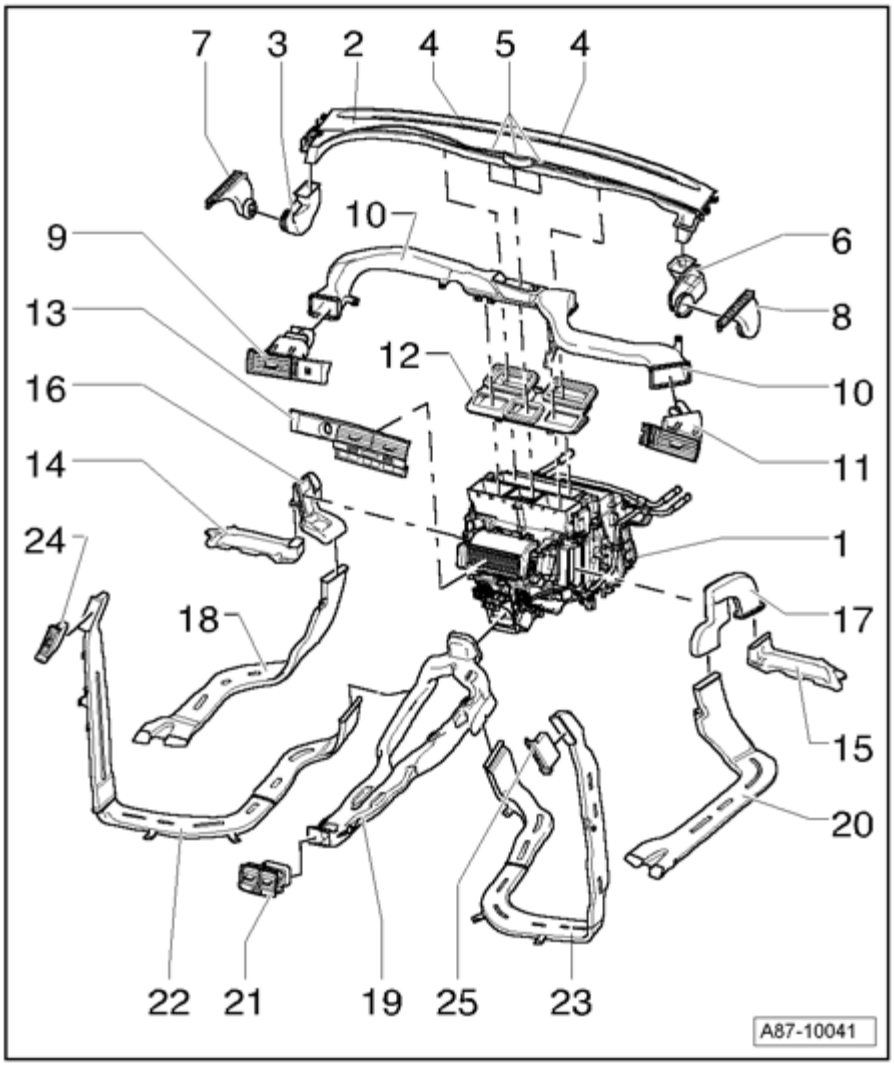

Fig. 206: Air Routing And Air Distribution In Passenger Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Heating and A/C unit

- Different versions (control and display unit, Climatronic Control Module J255 , left or right-hand drive vehicle Parts List
- Heating and A/C unit components --> **Heating and A/C unit components**

Air routing in air intake unit and Heating and A/C unit --> **Air routing in air intake unit and Heating and A/C unit**

- Removing and installing Heating and A/C unit --> **Heating and A/C unit, removing and installing**

2 - Instrument panel air duct

- To windshield "defrost" vent, to vents in front doors
- In addition to indirect ventilation vents on vehicles with control and display unit, Climatronic Control Module J255
- Air duct forms part of instrument panel and cannot be replaced separately --> **70 - INTERIOR TRIM**
- Removing and installing instrument panel trim and vents --> **70 - INTERIOR TRIM**

3 - To intermediate piece to vent in left front door

- Removing and installing --> **70 - INTERIOR TRIM**

4 - Windshield "defrost" vent

- Removing and installing instrument panel trim and vents --> **70 - INTERIOR TRIM**

5 - Indirect ventilation vent

- Air only emerges via these vents on vehicles with control and display unit, Climatronic Control Module J255
- Via air ducts in instrument panel to vent in upper instrument panel trim

6 - To intermediate piece to vent in right front door

- Removing and installing --> **70 - INTERIOR TRIM**

7 - Intermediate piece to vent in left front door

- Removing and installing --> **70 - INTERIOR TRIM**

8 - Intermediate piece to vent in right front door

- Removing and installing --> **70 - INTERIOR TRIM**

9 - Left instrument panel vent (upper body vent)

- Removing and installing --> **70 - INTERIOR TRIM**

10 - Air duct to left and right instrument panel vents

- Removing and installing instrument panel air duct --> **70 - INTERIOR TRIM**

11 - Right instrument panel vent (upper body vent)

- Removing and installing --> **70 - INTERIOR TRIM**

12 - Center instrument panel vent (upper body vent)

- Removing and installing --> **70 - INTERIOR TRIM**

13 - Intermediate piece to instrument panel air ducts

- Removing and installing --> **70 - INTERIOR TRIM**

14 - Left front footwell vent

- Footwell vent is part of drivers storage compartment

15 - Right front footwell vent

- Footwell vent is part of glove compartment/corresponding trim

16 - Intermediate piece to left footwell vents

17 - Intermediate piece to right footwell vents

18 - Left rear footwell vent

- Air emerges beneath seat

19 - Air duct to vent in rear center console (rear footwell vent)

- On vehicles with control and display unit, Climatronic Control Module J255 in addition to vents in "B-pillars"

20 - Right rear footwell vent

- Air emerges beneath seat

21 - Vent in center console (rear footwell vent)

- Removing and installing --> **70 - INTERIOR TRIM**

22 - Air duct to vent in left "B-pillar"

- Only installed on vehicles with control and display unit, Climatronic Control Module J255

23 - Air duct to vent in right "B-pillar"

- Only installed on vehicles with control and display unit, Climatronic Control Module J255

24 - Vent in left "B-pillar"

- Only installed on vehicles with control and display unit, Climatronic Control Module J255

- Removing and installing --> **70 - INTERIOR TRIM**

25 - Vent in right "B-pillar"

- Only installed on vehicles with control and display unit, Climatronic Control Module J255
- Removing and installing --> **70 - INTERIOR TRIM**

AIR CONDITIONER, CHECKING COOLING OUTPUT

Air conditioner, checking cooling output

Special tools, testers and other items required

- Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 (or Vehicle Diagnosis Service Syst. VAS 5052)
- Commercially available thermometer (for temperature measurement; if applicable use thermometer with 2 probes for simultaneous measurement of temperature e.g. on right and left)

Test requirements

- Ambient temperature above 15 ° C
- Radiator and condenser clean (clean if necessary)
- Poly V-belt for compressor drive OK and correctly tensioned, pulley actually driving compressor (vehicles with 4 or 6-cyl. engine) --> **Compressor pulley, replacing**
- Compressor drive unit correctly installed, compressor actually being driven (vehicles with 8-cyl. or 10-cyl. engine) --> **Compressor drive unit, checking/replacing**

- All air ducts, covers and seals OK and properly installed
- Air flow through dust and pollen filter not impeded by contamination --> **Dust and pollen filter, removing and installing**.
- Vehicle not exposed to sunlight
- Engine warm

- DTC memory of control and display unit, Climatronic Control Module J255 checked and erased, Basic Setting performed
- Coding and adaptation of control and display unit, Climatronic Control Module J255 checked "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- All instrument panel vents open
- Hood closed

- Make the following settings on control and display unit, Climatronic Control Module J255

  - "Auto" mode

- "LO" temperature setting (for drivers and front passengers side)
- Compressor on ("Econ" function not active)

- Check the following functions with engine running:

- Operation of Coolant Fan V7 (speed governed by pressure in refrigerant circuit and engine coolant temperature)

NOTE:

- **Depending on version of control and display unit Climatronic Control Module J255 , the request occurs at a specific temperature in the refrigerant circuit or independently of the pressure as soon as the compressor is switched on.**
- **Operation of Fresh Air Blower V2 at maximum speed**
- **Switching of air conditioner to recirculated air mode (approx. 1 minute after starting engine, air flow/fresh-air flaps are closed, recirculated-air flap is opened and air is drawn in by Fresh Air Blower V2 from passenger compartment beneath instrument panel)**
- **No operation of Coolant Pump V50**
- **Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 closed (coolant hoses/coolant pipes to heating system heater cores in Heating and A/C unit cool down)**

NOTE:

- **If one of these test requirements is not fulfilled, check DTC memory, perform Output Diagnostic Test Mode (DTM) and read out measured value block of control and display unit, Climatronic Control Module J255 (paying particular attention to display groups "001" and "002") --> Read Measuring Value Block and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Checking

- Measure ambient temperature (must be above 15 ° C).
- Close doors, hood, windows and sun roof.
- Open all instrument panel vents.
- Switch on ignition.

- Set "Econ" mode on vehicle with control and display unit, Climatronic Control Module J255 by way of MMI terminal (Multi Media Interface) by pressing "Econ" button Owners manual.
- Close vents in "B" pillars.
- By way of MMI terminal set temperature for adjustable center vent to "warm".
- Start engine.

- Start air conditioner On Board Diagnostics (OBD) "Guided Fault Finding" function of Diagnostic

operation system/Vehicle diagnosis service system VAS 5051 A/5052.

- In "Read Measuring Value Block" function, select display group "001" --> **Read Measuring Value Block** and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Check display in display zones:
- Display zone "2" shows 0% (compressor off).
- Display zone "4" indicates that pressure in refrigerant circuit at measured ambient temperature is equal to or greater than value in table.

Ambient temperature in ° C	Pressure display (in bar absolute)
15	4.7
20	5.6
25	6.6
30	7.6
35	8.8

NOTE:

- **At absolute pressure, 0 bar corresponds to an absolute vacuum. Normal ambient pressure thus corresponds to roughly 1 bar absolute. On the scales of most pressure gauges, 0 bar corresponds to an absolute pressure of one bar (can be seen from -1 mark below 0).**
- **Pressure in refrigerant circuit is governed by ambient temperature. Due to heat emitted by components (e.g. radiator), pressure displayed with warm engine is slightly higher than that indicated for the relevant ambient temperature.**
- **If pressure displayed is lower than that given in the table:**
- **Check signal of A/C Pressure/temperature Sensor G395 and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If signal of A/C Pressure/temperature Sensor G395 is found to be OK, there is not enough refrigerant in the circuit Refrigerant R134a - Servicing.**
- **If pressure in refrigerant circuit is OK:**
- **Switch on compressor (to do so, select "Auto" mode on control and display unit, Climatronic Control Module J255.**
- **Select "Lo" temperature (for drivers and front passengers side) on control and display unit, Climatronic Control Module J255.**
- **Set air outflow direction on control and display unit, Climatronic Control Module J255 to "instrument panel vents".**
- **In "Read Measuring Value Block" function, select display group "001" and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Check diagnosis tester display in the various display zones:**

- **Display zone "2" shows a duty cycle of greater than 30% (actuation of A/C Compressor Regulator Valve N280 , compressor is switched on).**
- **Display zone "1" shows a current of greater than 0.3 A (current flowing via A/C Compressor Regulator Valve N280 , compressor is switched on).**
- **Pressure displayed in zone "4" rises above value when compressor is switched off.**

NOTE:

- **A/C Compressor Regulator Valve N280 is actuated by control and display unit, Climatronic Control Module J255 such that temperature of air downstream of evaporator reaches specified value (approx. 2 to 5 °C):**
- **After starting vehicle, value greater than 75 % (0.55A) is displayed depending on measured temperature, engine speed and electrical system voltage.**
- **As soon as temperature measured by Evaporator Vent Temperature Sensor G263 approaches specified value, actuation of A/C Compressor Regulator Valve N280 is cancelled and compressor output thus reduced.**
- **Connectors to A/C Compressor Regulator Valve N280 and electric engine mounting are identical. If connectors are interchanged, no entry is made in DTC memory, but evaporator may ice up as compressor is constantly actuated (by Engine Control Module (ECM)).**
- **If display zone "1" shows no or insufficient current, check actuation of A/C Compressor Regulator Valve N280.**
- **If pressure displayed in zone "4" does not change and actuation of compressor is OK (display zones "1" and "2"), check whether compressor is actually being driven (overload safeguard is installed between compressor and pulley/drive unit; compressor is not driven if this has been tripped). If no malfunction is found, there is a problem with the refrigerant circuit Refrigerant R134a - Servicing.**
- **Press "recirculated-air mode" button on control and display unit, Climatronic Control Module J255 (symbol for "recirculated-air mode" in button lights).**
- **Set engine speed to 2000 RPM (start of time measurement).**
- **In "Read Measuring Value Block" function, select display group "018" and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

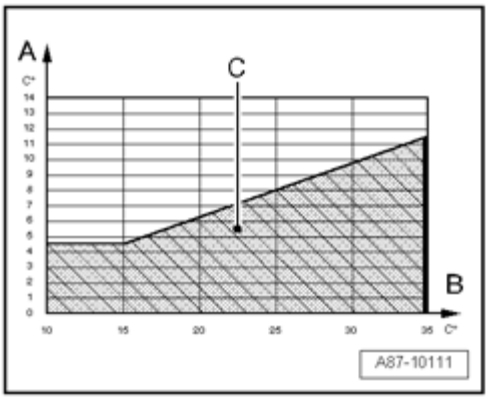

Fig. 207: Identifying Vehicle Data Screen
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Compare measured value indicated in display zone "1" (for Evaporator Vent Temperature Sensor G263) to values in graph.

A - Air temperature measured by Evaporator Vent Temperature Sensor G263

B - Measured ambient temperature

C - Permissible tolerance range

Depending on ambient temperature, air temperature measured at Evaporator Vent Temperature Sensor G263 must be within stated tolerance range after 5 minutes.

NOTE:

- **If required values are not attained, check measured value of Evaporator Vent Temperature Sensor G263. Compare measured values shown in display groups "018" , zone "1" and "017" , zones "1" and "2".**
- **If measured value in zone "1" or "2" of display group "017" only differs slightly from measured value of Evaporator Vent Temperature Sensor G263 in display group "018" , perform "Measures to be taken if readout does not match specification" --> Measures to be taken if readout does not match specification.**
- **If measured value of Evaporator Vent Temperature Sensor G263 is higher than that of Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151 , check proper installation of Evaporator Vent Temperature Sensor G263 and perform electrical check for this sender "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Operation of air conditioner can be established, for example, from cooling down of refrigerant pipe on low pressure side (thick pipe).**

If measured value of Evaporator Vent Temperature Sensor G263 (and thus system cooling output) is OK:

- Compare measured value indicated in zone "1" of display group "018" (for Evaporator Vent Temperature Sensor G263) to measured values of display group "017" , zones "1" and "2" (Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151).

NOTE:

- **After 5 minutes, measured values in display group "017" , zones "1" and "2" (Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151) must not be more than 3 °C higher th an value in zone "1" of display group "018" (for Evaporator Vent Temperature Sensor G263).**
- **If required values are not attained, compare measured values indicated in display group "017" , zones "1" and "2". If measured value is not OK in one or both display zones "1" or "2" , check actuation and operation of Left Heat Regulating Valve N175 , Right Heat Regulating Valve N176 and Coolant Pump V50 --> Measures to be taken in the event of temperature increase downstream of evaporator and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If measured value in zone "1" or "2" of display group "017" is lower than that in zone "1" of display group "018" , check Evaporator Vent Temperature Sensor G263 , Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151 for proper installation and contact resistance at electrical connections and replace malfunctioning sender if necessary --> Measures to be taken in the event of temperature increase downstream of evaporator and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If no malfunction is found at Left Vent Temperature Sensor G150 , Right Vent Temperature Sensor G151 , Left Heat Regulating Valve N175 , Right Heat Regulating Valve N176 and Coolant Pump V50 , perform measures to be taken in the event of temperature increase downstream of evaporator --> Measures to be taken in the event of temperature increase downstream of evaporator and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Temperature of air flowing out of "center" instrument panel vents can also be read off for example in display group "017" , zone "3" or measured using a commercially available thermometer.**
- **If air flowing out of adjustable center vent (in "Lo" setting or with rotary temperature control on "cold" stop for drivers and front passengers side at control and display unit, Climatronic Control Module J255) is colder with "cold" setting on MMI for adjustable center vent than in "warm" setting, check operation of Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **If cooling output on one side (e.g. drivers side) is still adequate, but values are no longer attained on other side (e.g. front passengers side), this is an indication of insufficient refrigerant in refrigerant circuit (stratification in**

evaporator due to lack of refrigerant).

- **Problems relating to differences between temperature of air emitted by vents with identical setting in air conditioner control mode may be due to the following:**
- **Cold or warm air flaps in air ducts not closing fully or not attaining end position "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052**
- **Air in heater cores (different flow on either side of heater core and uneven heat distribution)**
- **Detachment of foam seal on heater core installation, allowing air to flow past heater core**

Possible causes of problems which may occur even though cooling output is OK:

- Repeated or sporadic failure of air conditioner (no cooling/heat output) after a long journey; air conditioner functions properly again after a short delay following engine shutoff.
- Misting up of windows on inside after a long journey; windows are initially not cleared even by pressing "Defrost" button; air conditioner functions properly again after a short delay following engine shutoff.

- Under certain operating conditions residual moisture in the coolant circuit may lead to the formation of ice at A/C Compressor Regulator Valve N280. Such ice formation impairs compressor control, the evaporator is cooled excessively and ices up. Icing-up of evaporator may give rise to the following problems:
- Remedy:

- Check measured value of Evaporator Vent Temperature Sensor G263 by way of "Read Measuring Value Block" function, display group "018" and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- If sender measured value is too high under usage conditions described by customer (greater than e.g. 10 ° C although air conditioner is functioning properly), check Evaporator Vent Temperature Sensor G263 (incorrect measured value can cause evaporator to ice up).
- If sender measured value is too low under usage conditions described by customer (colder than 0 ° C for lengthy period at ambient temperature above 0 ° C), there is a malfunction in the refrigerant circuit Refrigerant R134a - Servicing.
- Check refrigerant pipe between evaporator and reservoir (thick pipe, low-pressure side) with engine running. If this pipe is severely iced up when problem occurs (thin layer of ice is permissible), this also indicates that evaporator temperature is too low Refrigerant R134a - Servicing.

Measures to be taken if readout does not match specification

- In "Read Measuring Value Block" function, select display group "001" and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Repeat cooling output test.

- During cooling output test, observe display in zones "1" and "4". Actuation of A/C Compressor Regulator Valve N280 deactivated during cooling output test (drop in control current to below 0.50 A)?).

? yes ?	? no ?	
Check DTC memory, eliminate DTCs displayed and erase DTC memory "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.	• Increase in pressure in refrigerant circuit (display zone "4") during cooling output test?	
? Read measured value block, display group "002" (compressor shutoff conditions) and eliminate cause of deactivation "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052. ?	? yes ?	? no ?
Repeat cooling output test.	Continued: Increase in pressure in refrigerant circuit ?	Malfunction in refrigerant circuit Refrigerant R134a - Servicing.

- Increase in pressure in refrigerant circuit

- Open hood.
- Repeat cooling output test.

- Operation of Coolant Fan V7 during cooling output test (speed is governed by coolant temperature and pressure in refrigerant circuit; determined by Engine Control Module (ECM))?
- Depending on version of control and display unit Climatronic Control Module J255 , from a specific temperature in the refrigerant circuit (approx. 9 bar) or independently of the pressure as soon as the compressor is switched on.

? yes ?	? no ?
Read measured value block, display group "001" (pressure in refrigerant circuit) and "022" (actuation of radiator fans) and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052. • Operation of Coolant Fan V7 at higher speed as pressure in refrigerant circuit increases (as of	Check actuation of Coolant Fan V7 , e.g. in "Output Diagnostic Test Mode (DTM)" function "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052. Repair actuation of Coolant Fan V7. Repeat cooling output test.

approx. 16 bar)?		
? yes ?	? no ?	
○ Malfunction in refrigerant circuit Refrigerant R134a - Servicing.	○ Check actuation of Coolant Fan V7 , e.g. in "Output Diagnostic Test Mode (DTM)" function "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052. ○ Repair actuation of Coolant Fan V7 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 (for relevant Engine Control Module (ECM)).	

NOTE:

- **Pressure in refrigerant circuit is governed by various factors. In general, however, at an ambient temperature of 20 to 25 °C the pressure should not exceed 20 bar. Under extreme usage conditions (e.g. in hot countries with high ambient temperatures, "stop and go traffic" and high relative humidity), the extremely high cooling output involved may also result in pressures of up to 31 bar.**
- **At ambient temperatures below 25 °C the pressure i n the refrigerant circuit does not usually rise above 16 bar (radiator fan runs and cools condenser).**
- **Measured value of A/C Pressure/temperature Sensor G395 (Read Measuring Value Block, display group "054" and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052) is used by control and display unit, Climatronic Control Module J255 to calculate pressure in refrigerant circuit and this is indicated in display group "001" , zone "4" and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **At absolute pressures of less than approx. 1.8 bar and greater than approx. 32 bar, control and display unit, Climatronic Control Module J255 does not switch on compressor (A/C Compressor Regulator Valve N280 is not actuated). Compressor is only switched on again once absolute pressure has risen above 1.8 bar or dropped below 16 bar.**
- **For further information on pressure in refrigerant circuit (Read Measuring Value Block, display group "001"), refer to and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **To prevent abrupt compressor shutoff on account of excessive pressure in refrigerant circuit or excessive coolant temperature, compressor output is reduced by control and display unit, Climatronic Control Module J255 :**
- **As soon as pressure in refrigerant circuit exceeds 30 bar (absolute) (full compressor output is not released again until pressure has dropped below**

27 bar)

- **As soon as coolant temperature exceeds 115 °C (ful l shutdown at 118 °C)**
- **If pressure in refrigerant circuit exceeds 32 bar in spite of regulation, control and display unit, Climatronic Control Module J255 does not switch compressor back on until pressure has dropped below 29 bar.**

Measures to be taken in the event of temperature increase downstream of evaporator

- Pinch off coolant hose from heater core of Heating and A/C unit to engine or from engine to pump valve unit, e.g. using Hose Clamps Up To 25mm Dia. 3094 --> **Preparation for heater core removal**.
- Repeat cooling output test.

• Less than 3 ° C difference between the measured values in zones "1" and "2" of display group "017" and measured value of Evaporator Vent Temperature Sensor G263 (zone "1" of display group "018") ? and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052	
? yes ?	? no ?
○ Remove hose clamps up to Ø 25 mm VAS 3094 from coolant hose. ? ○ Check actuation of Left Heat Regulating Valve N175 , Right Heat Regulating Valve N176 and Coolant Pump V50 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052. ○ Continued:	○ Check correct installation of sender with measured value deviation, as well as checking electrical connections for contact resistance. ? ○ Eliminate cause of incorrect measured value and replace malfunctioning sender if necessary "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Actuation of Left Heat Regulating Valve N175 , Right Heat Regulating Valve N176 and Coolant Pump V50 OK?	
? yes ?	? no ?
○ Connect test box V.A.G 1598 A with Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12 to wiring harness to control and display unit, Climatronic Control Module J255 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052. ?	○ Eliminate cause of malfunction "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

<table>
<tr><td colspan="2">o Perform electrical checks for Left Heat Regulating Valve N175 , Right Heat Regulating Valve N176 and Coolant Pump V50 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

?</td><td>--> Electrical Wiring Diagrams, Troubleshooting and Component Locations ?

o Repeat cooling output test.</td></tr>
<tr><td colspan="2">• Operation of Left Heat Regulating Valve N175 , Right Heat Regulating Valve N176 and Coolant Pump V50 OK?</td><td></td></tr>
<tr><td>? yes</td><td>? no</td><td></td></tr>
<tr><td>?

o Replace control and display unit, Climatronic Control Module J255 --> <u>Notes on removing and installing control and display unit, Climatronic Control Module J255</u> and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

?</td><td>?

o Replace pump valve unit --> <u>Pump valve unit, removing and installing</u>.

?</td><td></td></tr>
<tr><td colspan="3">o Repeat cooling output test --> <u>Air conditioner, checking cooling output</u>.</td></tr>
</table>

HEAT OUTPUT OF AIR CONDITIONER AND OPERATION OF PUMP VALVE UNIT, CHECKING

Heat output of air conditioner and operation of pump valve unit, checking

NOTE:

- **If coolant circuit is not completely bled after filling, air may accumulate in heater cores of Heating and A/C unit and thus reduce heat output. In addition, noise may occur or complaints may be received about differences in temperature of air from drivers and front passengers vents despite identical setting.**
- **Remedy:**
- **On control and display unit, Climatronic Control Module J255 set air conditioner to max. heat output for drivers and front passengers side ("Hi" temperature setting or both rotary temperature controls on right stop).**
- **Perform lengthy test drive at high engine speed (at least 10 minutes, engine speed above 2500 RPM). In doing so, select low gear to prevent excessive vehicle speed.**

- **In the event of complaints about poor heat output at certain engine speeds, check incorporation of pump valve unit into coolant circuit. If both coolant hoses (supply and return) from engine to pump valve unit or electrical connections in connector to Coolant Pump V50 have been interchanged, engine coolant pump works in opposition to pump in pump valve unit and there will be no flow of coolant into the heater core at certain engine speeds -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

  and --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

Special tools, testers and other items required

- Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 (or Vehicle Diagnosis Service Syst. VAS 5052)

Pump valve unit, checking operation

This test is used to check operation of pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 as well as Coolant Pump V50).

- If temperatures determined are below specified value (inadequate heat output):

  - Check operation of Left Heat Regulating Valve N175 , Right Heat Regulating Valve N176 and Coolant Pump V50 "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

If no malfunction is found:

  - Check for interchange and cross-sectional constriction of coolant hoses (from engine to pump valve unit or from pump valve unit to heater cores of Heating and A/C unit) -->
    - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK

- **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
- **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
- **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

.

- Check for interchanged electrical contacts of Coolant Pump V50 of pump valve unit (direction of pump operation) --> Electrical Wiring Diagrams, Troubleshooting and Component Locations

Test requirements

- Coolant circuit bled in specified manner -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA
- All air ducts, covers and seals OK and properly installed
- Air throughput of dust and pollen filter not impaired by dirt --> **Dust and pollen filter, removing and installing**
- Engine warm
- Vehicle battery (Battery A) OK and adequately charged (to prevent Energy Management Control Module J644 switching off control and display unit, Climatronic Control Module J255 during test)
- DTC memory of control and display unit, Climatronic Control Module J255 checked and erased, Basic Setting performed and coding of control and display unit, Climatronic Control Module J255 checked "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Adaptation of control and display unit, Climatronic Control Module J255 checked "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052
- Vehicle not exposed to sunlight

Checking

- Close hood.
- Close doors, windows and sun roof.
- Start engine and leave it running for several minutes at maximum cooling output (compressor on, "Lo"

temperature setting for drivers and front passengers side or both rotary temperature controls on left stop).

- Switch off ignition.
- With ignition switched off, connect Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052 with Diagnostic Cable - 3 Meter VAS 5051/5A to 16-pin Data Link Connector (DLC) in vehicle and use address word "08" to select air conditioner/heater electronics "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052..
- Switch on ignition.

Control and display unit, Climatronic Control Module J255 starts up, Coolant Pump V50 is not actuated and does not run (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 are actuated and closed).

- Read out measured value block, display groups "033" and "03". There must not be any deactivation requests from Energy Management Control Module J644 and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Read out measured value block, display group "017" and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Check display in zones "1" and "2".

- Specification: Ambient temperature plus max. 15 ° C

- On control and display unit, Climatronic Control Module J255 set temperature for left side (drivers side) to maximum heat output ("Hi" temperature setting or turn left rotary temperature control to right stop).
- Read out display in zone "1" (temperature value increases).

- Specification: approx. engine temperature (operation of Coolant Pump V50 , Left Heat Regulating Valve N175 open)

- Read out display in zone "2" (temperature value remains roughly constant).

- Temperature increase less than 15 ° C (Right Heat Regulating Valve N176 closed)

- On control and display unit, Climatronic Control Module J255 set temperature for right side (front passengers side) to maximum heat output ("Hi" temperature setting or turn right rotary temperature control to right stop).
- Read out display in zone "2" (temperature value increases).

- Specification: approx. engine temperature (operation of Coolant Pump V50 , Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 open)

- On control and display unit, Climatronic Control Module J255 set temperature for drivers and front passengers side to "cold" (no heat output, "Lo" temperature setting or turn both rotary temperature controls to left stop).
- Read out display in zones "1" and "2".

- Specifications: Temperature drops within 5 minutes to ambient temperature (plus max. 15 ° C) (no operation of Coolant Pump V50 , Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 closed)

REFRIGERANT CIRCUIT, SERVICING

Refrigerant circuit, servicing

NOTE:

- **Refrigerant in refrigerant circuit is never to be topped up (drain, evacuate and refill circuit) Refrigerant R134a - Servicing.**
- **Compressor is always driven when engine is running; there is no magnetic clutch. Engine is therefore not to be started unless refrigerant circuit has been properly assembled. If, for example, refrigerant pipes have not been connected to compressor, heat generation inside compressor with engine running may lead to destruction of compressor. Internal heating is caused by the compressor operating even at almost 0 % delivery rate in opposition to a fixed resistance (sealed circuit).**
- **To stop the compressor being destroyed when the refrigerant circuit is empty, it is designed such that delivery is reduced to roughly 0 % and lubrication is maintained by way of an internal oil circuit with the oil left in the compressor.**
- **Replacement compressors contain the full quantity of refrigerant oil required for the refrigerant circuit Refrigerant R134a - Servicing.**
- **Different types of refrigerant oil are specified for Zexel, Sanden and Denso compressors Refrigerant R134a - Servicing and Parts List.**
- **Moisten O-rings slightly with refrigerant oil before installing --> O-rings for refrigerant circuit.**
- **The specified O-ring diameters and the tightening torques also apply to bolted joints of refrigerant pipes/hoses between the individual components.**
- **Only install O-rings approved for refrigerant R134a Refrigerant R134a - Servicing and Parts List.**
- **Checking cooling output of air conditioner --> Air conditioner, checking cooling output**
- **Checking pressures in refrigerant circuit Refrigerant R134a - Servicing**
- **For all other refrigerant circuit servicing and testing work not described in this information, refer to REFRIGERANT R134A - SERVICING .**

Refrigerant circuit, servicing

HD = High-pressure side

ND = Low-pressure side

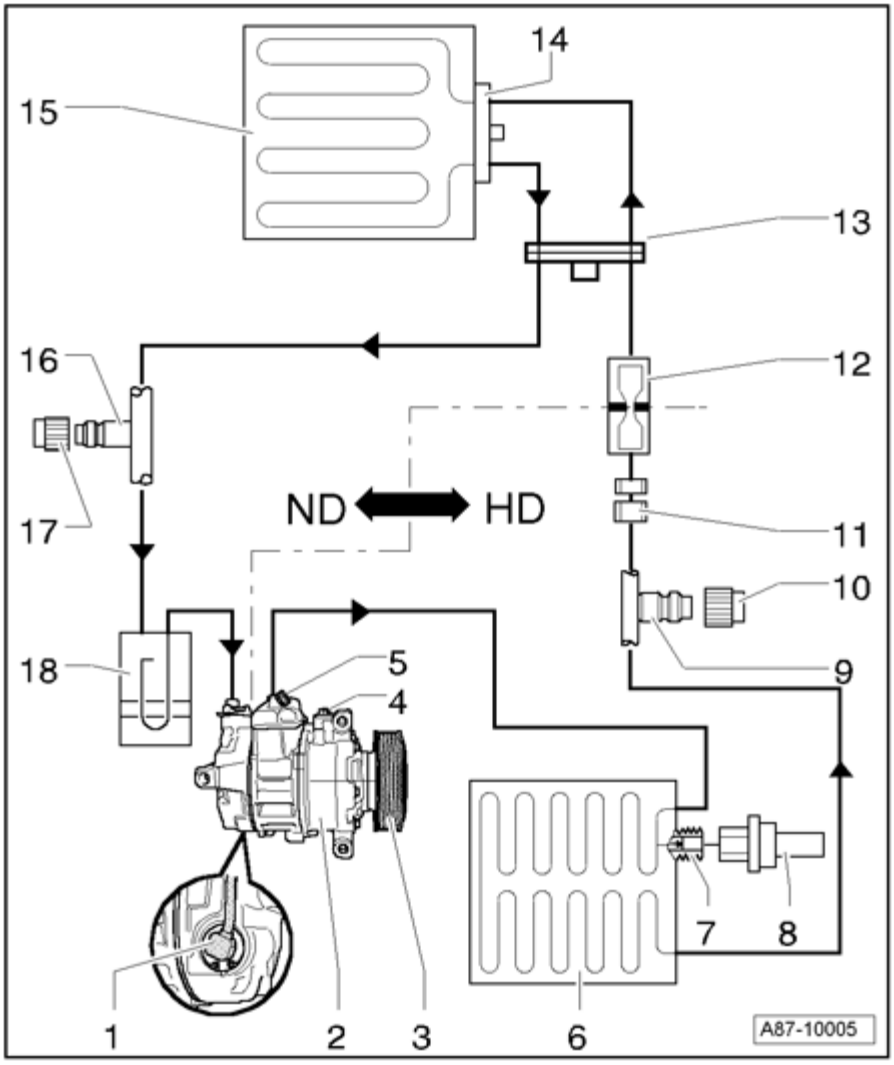

Fig. 208: Refrigerant Circuit, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - A/C Compressor Regulator Valve N280

- Checking actuation and operation --> **A/C Compressor Regulator Valve N280 , checking cut-in signal**
- Not to be removed

NOTE:

- **A/C Compressor Regulator Valve N280 is actuated by control and display unit, Climatronic Control Module J255 and controls pressure on low-pressure side of refrigerant circuit.**

2 - Compressor

- Different versions depending on engine Parts List

- Removing compressor with pulley from holder/re-installing --> **Compressor (with pulley), removing from holder/installing**
- Removing compressor with drive unit (shaft) from holder/re-installing --> **Compressor (vehicles with 8-cyl. engine), removing and installing**
- Disconnecting refrigerant pipe at compressor/connecting --> **Refrigerant pipes, disconnecting at compressor/connecting**

- Removing poly V-belt -->
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA
- Removing and installing compressor (vehicles with 4 or 6-cyl. engine) --> **Compressor (vehicles with 4 or 6-cyl. engine), removing and installing**
- Removing and installing compressor (vehicles with 8-cyl. engine) --> **Compressor (vehicles with 8-cyl. engine), removing and installing**
- Removing and installing compressor (vehicles with 10-cyl. engine) --> **Compressor - vehicles with 10-cylinder engine (Audi S6), removing and installing**

NOTE:

- **To protect compressor, engine is only to be started following complete assembly of refrigerant circuit.**
- **When installing refrigerant pipes and corresponding holder, make sure there is sufficient distance between belt, holder and pulley.**
- **After installing compressor and before installing belt/screwing in drive shaft, crank compressor roughly 10 times by hand (to prevent compressor damage). Any refrigerant oil which may have collected in compression chamber on removing compressor or after pouring in fresh refrigerant oil (e.g. after blowing out refrigerant circuit) is forced out of compression chamber by cranking action.**

3 - Pulley/drive unit for compressor

- Different versions depending on engine Parts List
- Replacing compressor pulley --> **Compressor pulley, replacing**
- Removing and installing poly V-belt -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE

(S): BKH

- **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
- **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
- **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
- **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

- Poly V-belt assignment Parts List
- Replacing compressor drive unit --> **Compressor drive unit, checking/replacing**

NOTE:

- **An overload safeguard is installed between pulley and drive shaft of compressor to protect belt if compressor becomes jammed or stiff.**
- **If compressor is not operating smoothly, overload safeguard interrupts power transmission to compressor.**
- **Rubber elements are installed between pulley/drive unit and compressor drive shaft to cushion any vibration occurring during compressor operation (damper function in the event of torque fluctuations).**

4 - Oil drain plug

- Denso compressor is installed with an oil seal which is always to be replaced Parts List
- Tightening torque: 30 Nm
- Compressor must be removed before screwing out to drain off refrigerant oil. Crank compressor by way of pulley/drive unit to accelerate drainage of refrigerant oil Refrigerant R134a - Servicing.

5 - Pressure relief valve

- Not to be removed
- Tightening torque: 10 Nm

6 - Condenser

- Removing and re-installing refrigerant pipes --> **Refrigerant pipes, disconnecting from condenser/re-connecting**
- Removing and installing condenser --> **Condenser, removing and installing**

7 - Connection with valve

8 - A/C Pressure/temperature Sensor G395

- Removing and installing --> **A/C Pressure/temperature Sensor G395 , removing and installing**
- Housing color "Grey"
- Checking signal (Read Measuring Value Block, display group "001") and "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052

NOTE:

- **Measured values of A/C Pressure/temperature Sensor G395 can also be read out by way of "Read Measuring Value Block" function in display group "054".**
- **A/C Pressure/temperature Sensor G395 exchanges information by way of air conditioner data bus system "Local Interconnect Network (LIN-Bus)" with control and display unit, Climatronic Control Module J255. Audi A6 is therefore not to be installed with High Pressure Sensor G65 (only emits square-wave signals) Parts List.**
- **On account of the design of the A/C Pressure/temperature Sensor G395 and its component location, temperature measured by A/C Pressure/temperature Sensor G395 differs from actual temperature of refrigerant in refrigerant circuit. At present this is therefore not evaluated and used for air conditioner regulation.**

9 - Service connection

- High-pressure side
- For service station for measuring, draining and filling Refrigerant R134a - Servicing
- Different versions (with primary sealing valve or Schrader valve) depending on refrigerant pipe; distinguishing features Refrigerant R134a - Servicing

CAUTION: Refrigerant circuit must be drained before removing service connections (connection has no valve).

10 - Cap

- With seal
- Always to be screwed on

11 - Screw connection in refrigerant pipe (with restrictor)

- Replace O-ring, version Parts List
- Tightening torque: 15 Nm
- Refrigerant circuit must be drained before opening screw connection

12 - Restrictor

- O-ring: 7.5 mm / 1.5 mm

- Replace restrictor with O-ring Parts List
- Removing and installing --> **Restrictor, removing and installing**
- Moisten O-ring slightly with refrigerant oil before installing restrictor

13 - Refrigerant pipe screw connection at Heating and A/C unit

- Refrigerant circuit must be drained before opening screw connection Refrigerant R134a - Servicing
- Disconnecting refrigerant pipe to Heating and A/C unit/connecting --> **Refrigerant pipes, disconnecting from Heating and A/C unit/connecting**

14 - Refrigerant pipe screw connection (at evaporator)

- Unfastening and assembling screw connection --> **Evaporator, removing and installing** (removing and installing evaporator)
- Tightening torque: Hex socket-head bolt 25 Nm
- Refrigerant circuit must be drained before opening screw connection Refrigerant R134a - Servicing

15 - Evaporator

- Removing and installing evaporator --> **Evaporator, removing and installing**
- Replace O-rings, version Parts List
- Disconnecting refrigerant pipe to Heating and A/C unit/connecting --> **Refrigerant pipes, disconnecting from Heating and A/C unit/connecting**

16 - Service connection

- Low-pressure side
- For measuring and draining Refrigerant R134a - Servicing
- Different versions (with primary sealing valve or Schrader valve) depending on refrigerant pipe; distinguishing features Refrigerant R134a - Servicing

CAUTION: Refrigerant circuit must be drained before removing service connections (connection has no valve).

17 - Cap

- With seal
- Always to be screwed on

18 - Reservoir

- Replace O-rings, version Parts List
- Moisten O-rings slightly with refrigerant oil before installing

- Tightening torque: Hex socket-head bolt at block connection: 10 Nm
- Removing and installing --> **Reservoir, removing and installing**

Refrigerant pipes, disconnecting at compressor/connecting

NOTE:

- **Compressor is always driven when engine is running; there is no magnetic clutch. Engine is therefore not to be started unless refrigerant circuit has been properly assembled. If, for example, refrigerant pipes have not been connected to compressor, heat generation inside compressor with engine running may lead to destruction of compressor.**
- **On vehicles with electric engine mountings, pay attention to correct assignment of connectors at engine mounting and A/C Compressor Regulator Valve N280 , as these components have identical connectors. If connectors are interchanged, no DTC is stored (components have roughly the same electrical values). Engine mounting is then actuated by control and display unit, Climatronic Control Module J255 and A/C Compressor Regulator Valve N280 by Engine Control Module (ECM).**
- **The following illustration shows the compressor for a vehicle with 6-cyl. gasoline direct injection engine (FSI). Position of compressor varies slightly with other engines. Tightening torques and further removing/installing operations are however for the most part identical. On vehicles with 8-cyl. or 10cyl. engine for example, compressor is driven via a drive shaft and installation position is 180 ° of fset --> Compressor (vehicles with 8-cyl. engine), removing and installing. Refrigerant pipes are however disconnected and connected in the same manner irrespective of installation position.**
- **Seal open pipes and connections at compressor with suitable caps (to prevent ingress of dirt and moisture).**

Removing

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Depending on engine version, remove compressor from holder if necessary.

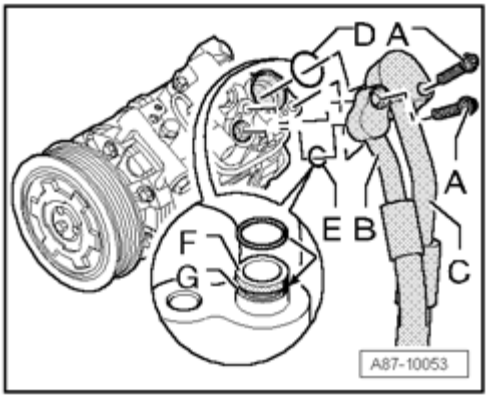

Fig. 209: Identifying Bolts And Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** -.
- Disconnect refrigerant pipes - **B** - and - **C** -.

Installing

Install in reverse order, paying attention to the following:

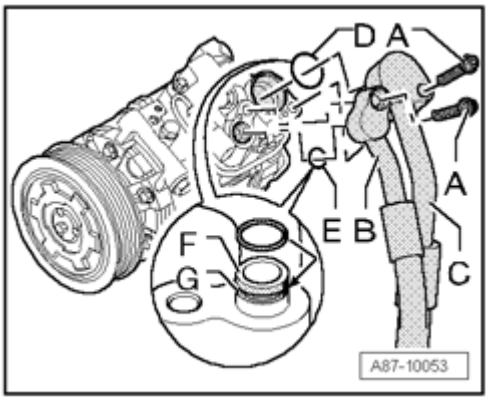

Fig. 210: Identifying Bolts And Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-rings - **D** - and - **E** - , version Parts List.
- Check guide ring - **F** - at connections of both refrigerant pipes - **B** - and - **C** - for damage.
- Insert appropriate O-ring (- **D** - and - **E** -) in groove - **G** - at connections of both refrigerant pipes - **B** - and - **C** -.

NOTE:

- **Use is not to be made of O-rings from caps of replacement compressor connections.**
- **Moisten O-rings with small quantity of refrigerant oil before installing.**

- **Following connection of refrigerant pipes to compressor (and installation of compressor) check routing of pipes. They must be inserted in holders provided and not make contact with other components.**
- **Insert both refrigerant pipes - B - and - C - in corresponding compressor connections.**
- **Tighten bolts - A - to 25 Nm.**
- **Evacuate and refill refrigerant circuit Refrigerant R134a - Servicing.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Compressor (vehicles with 4 or 6-cyl. engine), removing and installing

NOTE:

- **On account of possible interchange with connector to electric engine mounting, mark connector to A/C Compressor Regulator Valve N280 (interchanging connectors does not result in entry in DTC memory, but evaporator could ice up as compressor is constantly actuated).**
- **On vehicles with electric engine mountings, pay attention to correct assignment of connectors at engine mounting and A/C Compressor Regulator Valve N280 , as these components have identical connectors. If connectors are interchanged, no DTC is stored (components have roughly the same electrical values). Engine mounting is then actuated by control and display unit, Climatronic Control Module J255 and A/C Compressor Regulator Valve N280 by Engine Control Module (ECM).**

Removing

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Disconnect refrigerant pipes from compressor --> **Refrigerant pipes, disconnecting at compressor/connecting**.
- Remove compressor from holder --> **Compressor (with pulley), removing from holder/installing**.

NOTE:

- **Seal open pipes and connections at condenser with suitable caps (to prevent ingress of dirt and moisture).**

Installing

Before installing compressor Refrigerant R134a - Servicing

Install in reverse order, paying attention to the following:

- Install compressor to holder --> **Compressor (with pulley), removing from holder/installing**.

NOTE:

- **Tightening torques for bolts between compressor and holder --> Compressor (with pulley), removing from holder/installing**
- **The compressor removed contains an indeterminate amount of refrigerant oil. Attention is therefore to be paid to notes on compressor replacement Refrigerant R134a - Servicing.**
- **Assemble refrigerant circuit before starting engine.**
- **Only start engine with refrigerant circuit full if at all possible.**
- **Replace O-rings at opened connections, version Parts List.**
- **Connect refrigerant pipes to compressor --> Refrigerant pipes, disconnecting at compressor/connecting.**
- **Before installing poly V-belt, crank compressor 10 times by hand following installation (to prevent compressor damage on initial activation).**

NOTE:

- **Any refrigerant oil which may have collected in compression chamber on removing compressor or after pouring in fresh refrigerant oil (e.g. after blowing out refrigerant circuit) is forced out of compression chamber by cranking action.**
- **Evacuate and fill refrigerant circuit Refrigerant R134a - Servicing.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

NOTE:

- **Different compressors depending on country version and engine Parts List**
- **Moisten O-rings with small quantity of refrigerant oil before installing.**
- **Compressor is always driven by pulley (there is no magnetic clutch).**
- **Compressor is equipped with an "internal oil circuit" to prevent damage if refrigerant circuit is empty. This internal lubrication is only possible if there is still a residual quantity of refrigerant oil in the compressor. However, as there is no refrigerant available, the refrigerant oil required for compressor lubrication is not conveyed.**
- **Engine is not to be started unless refrigerant circuit has been properly assembled. If, for example, refrigerant pipes have not been connected to compressor, heat generation inside compressor with engine running may lead to destruction of compressor.**
- **A/C Compressor Regulator Valve N280 is not actuated if refrigerant circuit is empty and compressor runs at idle with engine.**
- **Pay attention to the following if engine has to be started when refrigerant circuit is empty:**
- **Refrigerant circuit must be fully assembled.**

- **Compressor must contain at least a quarter of the amount of refrigerant oil specified for this refrigerant circuit.**
- **Engine should not be left running for longer than is absolutely necessary.**
- **Engine speed must not exceed 2500 RPM.**
- **Pay attention to the following on starting engine for the first time after charging refrigerant circuit:**
- **Start engine with compressor switched off ("Econ" mode) and wait for idling speed to stabilize.**
- **Open instrument panel vents.**
- **On Climatronic Control Module J255 , set "Lo" temperature for drivers and front passengers side.**
- **Then switch on compressor ("Auto" mode selected and "Econ" deactivated) and allow it to run for at least 5 minutes with engine idling.**

Compressor (vehicles with 8-cyl. engine), removing and installing

Compressor with drive unit, removing from holder

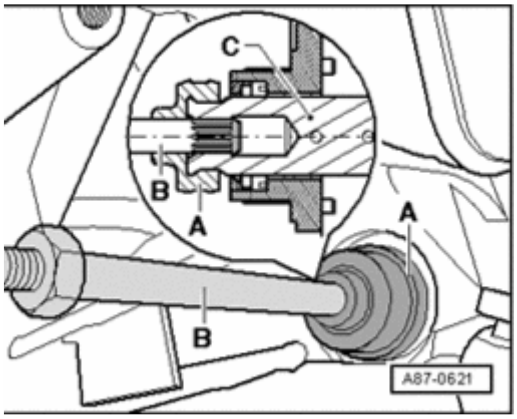

Fig. 211: Removing/Installing Boot & Pulling Drive Shaft Out/In Of Splines Of Drive Pinion
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Compressor is driven via a gear wheel and drive shaft - B -.**
- **Removing compressor holder from engine/installing -->**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**

- **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

- **On vehicles with 8-cyl. or 10-cyl. engine, removing compressor involves draining refrigerant circuit and then removing both refrigerant pipes from compressor --> Refrigerant pipes, disconnecting at compressor/connecting and Refrigerant R134a - Servicing.**

Removing

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Remove front bumper.
- Unfasten front end module and pull it forwards as far as possible.
- Unscrew guide tube for dipstick at cylinder head and lift it off -->
  - **10 - ENGINE, REMOVING AND INSTALLING** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE (S): BAT, BNK
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE (S): BVJ
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **10 - ENGINE - ASSEMBLY** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

  .

- Remove left engine support -->
  - **10 - ENGINE, REMOVING AND INSTALLING** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE (S): BAT, BNK
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE (S): BVJ
  - **10 - ENGINE - ASSEMBLY** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **10 - ENGINE - ASSEMBLY** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

  .

- Disconnect both refrigerant pipes from compressor --> **Refrigerant pipes, disconnecting at compressor/connecting**.

NOTE:

- **Seal open pipes and connections at condenser with suitable caps (to prevent ingress of dirt and moisture).**

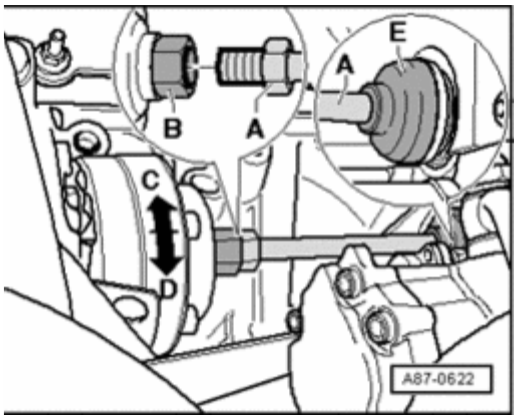

Fig. 212: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use open-ended wrench to hold compressor drive shaft - **A** - in position and turn compressor drive unit - **B** - in direction of arrow - **C** -.

NOTE:

- **Drive shaft - A - is not to be turned.**
- **After unfastening screw connection, drive shaft - A - can be pushed through socket - E - into drive gear.**
- **Mark 2pin connector to A/C Compressor Regulator Valve N280 (to avoid interchange with connector to engine mounting).**
- **Unplug 2-pin connector to A/C Compressor Regulator Valve N280 (connected to front of engine above compressor).**

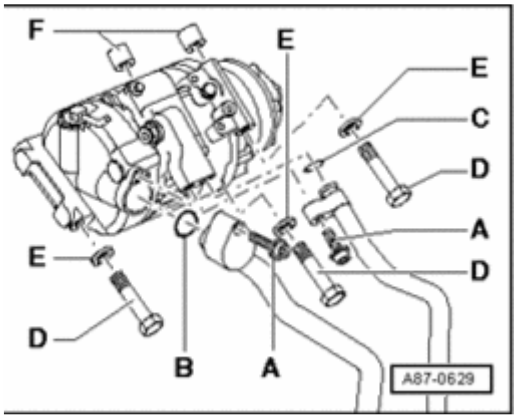

Fig. 213: Identifying Bolts & Bushings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts - **D** - (tightening torque 25 Nm).
- Remove compressor to front.
- If necessary, remove sockets - **F** - from compressor.

Installing

Before installing compressor Refrigerant R134a - Servicing

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type Parts Catalog**
- **The compressor removed contains an indeterminate amount of refrigerant oil. Attention is therefore to be paid to notes on compressor replacement Refrigerant R134a - Servicing.**

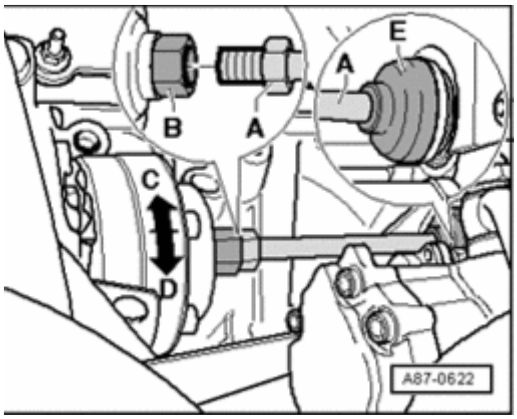

Fig. 214: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install compressor drive shaft - **A** - (in drive gear) and check both proper installation and corresponding socket - **E** - --> **Compressor drive shaft, unfastening and tightening**.

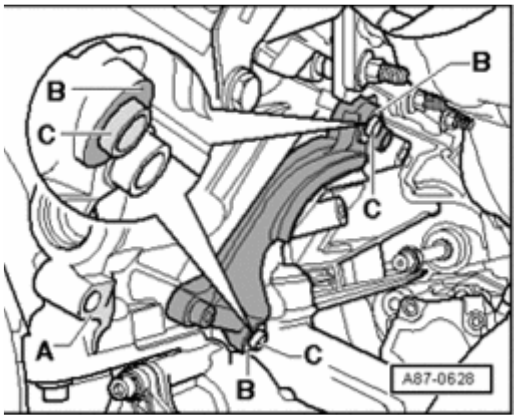

Fig. 215: Identifying Bushings & Contact Surfaces
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, remove bushings - **C** - from compressor holder.
- Thoroughly clean contact surfaces - **A** - and - **B** - at holder (as well as contact surfaces at compressor).

- Install bushings - **C** - in compressor holder.

NOTE:

- **Pay attention to correct positioning of bushings - C - as well as clean contact surfaces. Incorrectly installed bushings or dirty/damaged contact surfaces could lead to misalignment between compressor and engine. In the course of operation, misalignment results in drive shaft or compressor damage.**
- **Check connections of compressor and refrigerant pipes for damage or dirt --> Refrigerant pipes, disconnecting at compressor/connecting.**

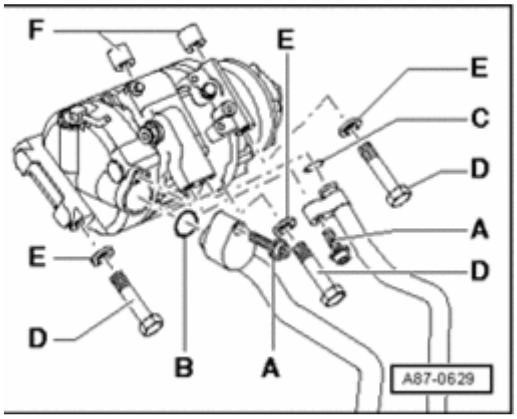

Fig. 216: Identifying Bolts & Bushings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install compressor with bolts - **D** - (and washers - **E** -) to holder (tightening torque 25 Nm).
- Connect refrigerant pipes to compressor --> **Refrigerant pipes, disconnecting at compressor/connecting** (tightening torque of bolts - **A** - 25 Nm). For dimensions of O-rings - **B** - and - **C** - and further information, refer to --> **Refrigerant pipes, disconnecting at compressor/connecting** and Parts List.

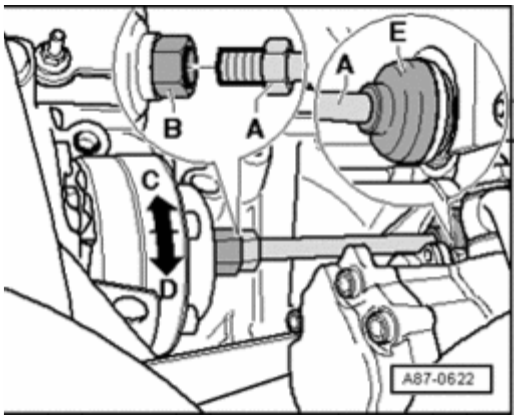

Fig. 217: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- After installing compressor and before screwing in drive shaft, crank compressor 10 times by hand in direction of arrow - **C** - by way of compressor drive unit - **B** - (to prevent compressor damage on initial activation).

NOTE:

- **Any refrigerant oil which may have collected in compression chamber on removing compressor or after pouring in fresh refrigerant oil (e.g. after blowing out refrigerant circuit) is forced out of compression chamber by cranking action.**
- **Tighten drive shaft. Use open-ended wrench to hold compressor drive shaft - A - in position and turn compressor drive unit - B - in direction of arrow - D - (tightening torque 60 Nm).**

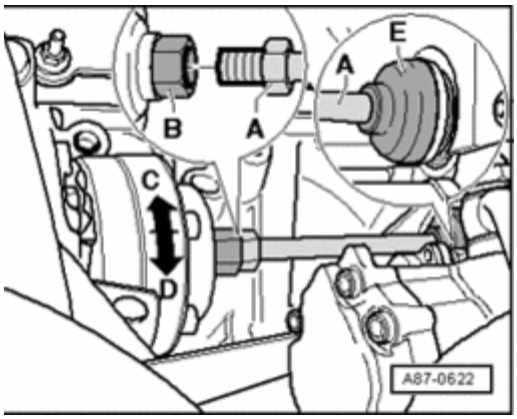

Fig. 218: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Drive shaft - A - is not to be turned.**
- **After installing drive shaft - A - , check installation position of socket - E -.**
- **Socket - E - is secured against slipping off by a clamp on power steering pump (introduction of clamp as a running change in production in model year 2006, install clamp as a retrofit if necessary) Parts Catalog.**
- **Re-install remaining components removed.**
- **Evacuate and fill refrigerant circuit Refrigerant R134a - Servicing.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**
- **Observe notes on start-up of air conditioner after installing compressor.**

Compressor - vehicles with 10-cylinder engine (Audi S6), removing and installing

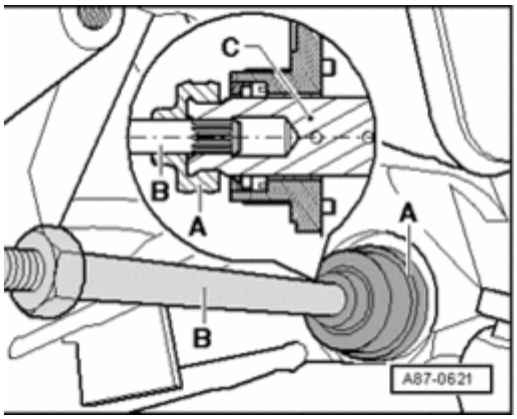

Fig. 219: Removing/Installing Boot & Pulling Drive Shaft Out/In Of Splines Of Drive Pinion
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Compressor is driven via a toothed gear and a drive shaft - B -.**
- **Removing compressor bracket from engine and installing -->**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

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- **To remove the compressor on vehicles with an 10-cyl. engine, refrigerant circuit must be discharged and then both refrigerant lines must be disconnected from compressor --> Refrigerant pipes, disconnecting at compressor/connecting and Refrigerant R134a - Servicing.**

Special tools, testers and auxiliary items required

- Engine Support Bridge 10-222A
- Old oil collecting and extracting device V.A.G 1782
- Hose Clip Pliers VAG1921
- Spring Type Clip Pliers VAS5024a VAS5024A
- Engine Support Supplement Set T40093

Removing

- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .
- Drain engine coolant -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

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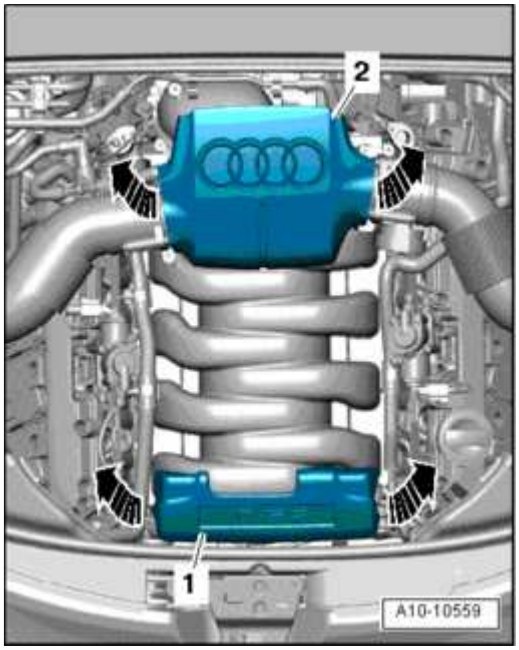

Fig. 220: Removing Rear Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off engine cover at front - **1** - and rear - **2** - - **arrows** -.
- Remove left air filter housing -->
  - **24 - MULTIPORT FUEL INJECTION** for 3.2 LITER V6 4V GENERIC SCAN TOOL, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V GENERIC SCAN TOOL,

ENGINE CODE(S): BNK

- **24 - MULTIPORT FUEL INJECTION (MFI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

.

- Extract power-steering hydraulic oil from reservoir using old oil collecting and extracting device V.A.G 1782 --> **48 - STEERING** .

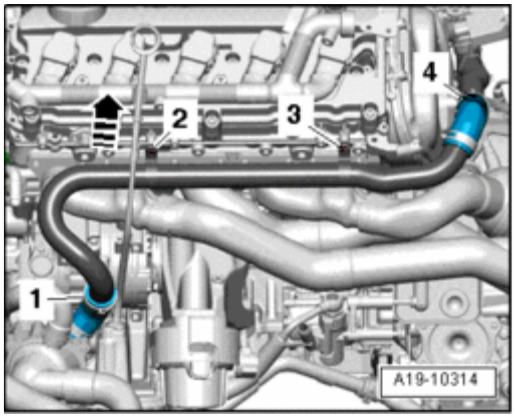

Fig. 221: Removing Bolts And Pulling Off Oil Dipstick Guide Tube Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **2** - and - **3** -.
- Pull off oil dipstick guide tube upward - **arrow** -.

NOTE:

- **Disregard - item 1 - and - item 4 -.**

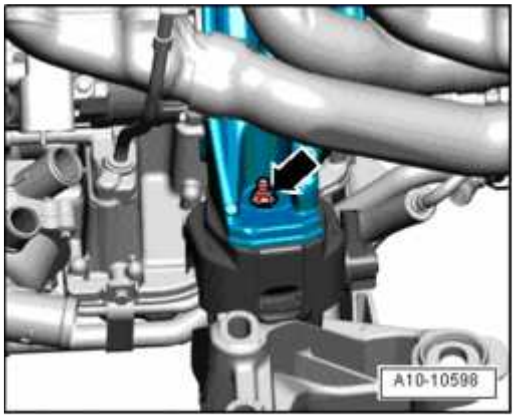

Fig. 222: Identifying Bolt For Left Engine Mount
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **arrow** - for left engine mount.

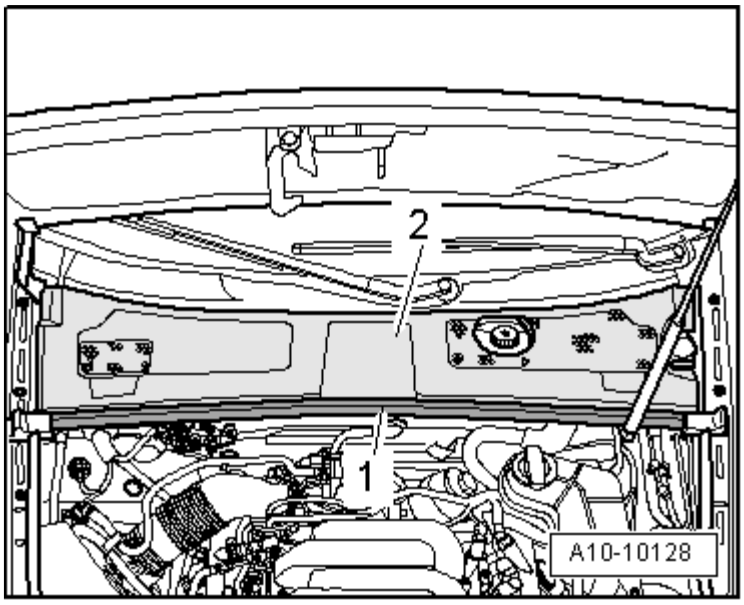

Fig. 223: Removing Rubber Seal And Plenum Chamber Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off rubber seal - **1** - and remove plenum chamber cover - **2** -.

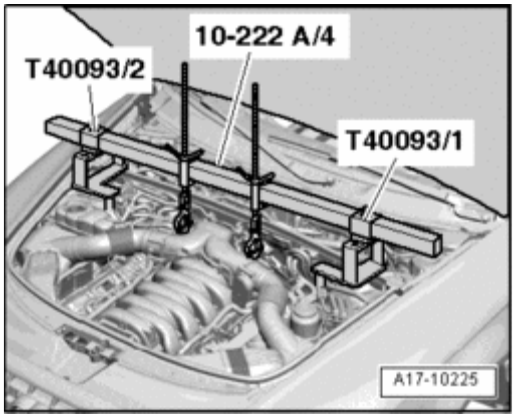

Fig. 224: Securing Engine Support Bridge 10-222 A With Supports T40093/1 And T40093/2 To Suspension Strut Domes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure Engine Support Bridge 10-222 A with supports T40093/1 and T40093/2 to suspension strut domes.

- The supports are marked for the left and right vehicle sides.

- Secure spindles of Engine Support Bridge 10-222 A to rear engine lifting eyelets.
- Pre-tension engine using spindles on engine support bridge.

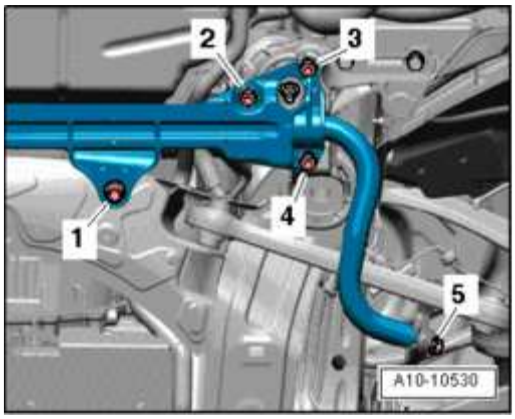

Fig. 225: Identifying Bolt And Nut Removal Sequence
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Uniformly unscrew left and right bolts and nuts - **1 to 5** -.
- Remove anti-roll bar with transverse beam --> **40 - FRONT SUSPENSION** .

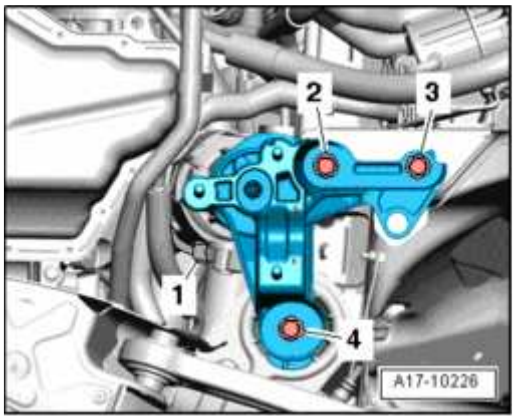

Fig. 226: Identifying Electrical Harness Connector And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** -. (Mark the connector to prevent the risk of interchange)
- Remove bolts - **2, 3, 4** - and remove left engine console with engine mount.

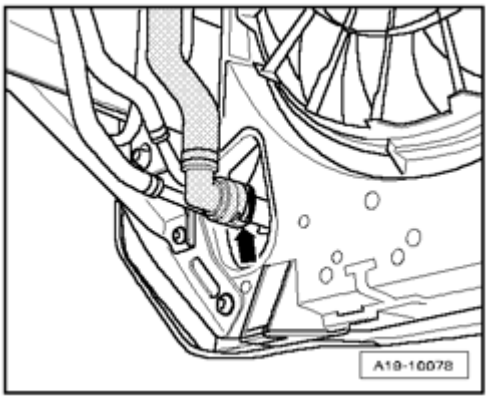

Fig. 227: Disconnecting Coolant Hose From Lower Left Of Radiator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect coolant hose - **arrow** - at bottom left from radiator.

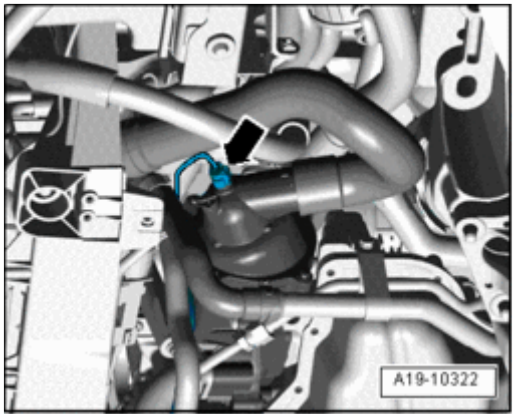

Fig. 228: Disconnecting Electrical Connector On Map Controlled Engine Cooling Thermostat F265
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at Engine Coolant Temperature (ECT) Sensor (on Radiator) G83.

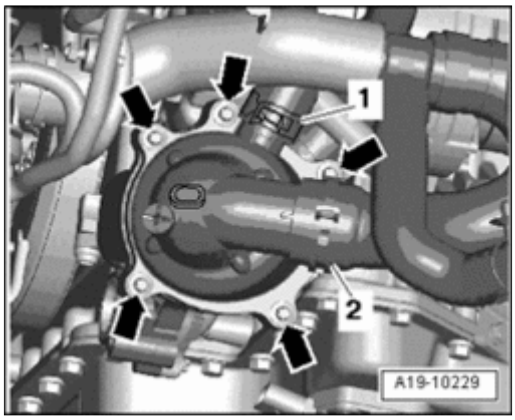

Fig. 229: Identifying Coolant Hose, Bolts & Coolant Thermostat Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect bottom coolant hose - **2** - from coolant regulator housing.
- Remove bolts - **arrows** -.
- Remove coolant regulator housing and disconnect top coolant hose - **1** - from coolant regulator housing.

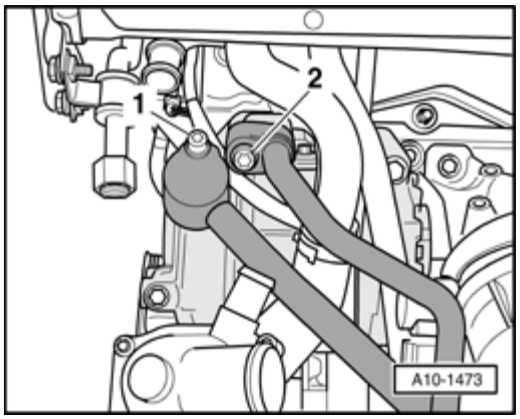

Fig. 230: Removing Bolts & Right Refrigerant Line From A/C Compressor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Do not bend, kink or stretch lines or hoses as refrigerant lines and refrigerant hoses may be damaged.**
- **Remove bolts - 1 - and - 2 -.**
- **Disconnect refrigerant lines from A/C compressor.**

NOTE:

- **Seal all open lines and connections on A/C compressor with suitable caps (preventing dirt and moisture from entering the system).**

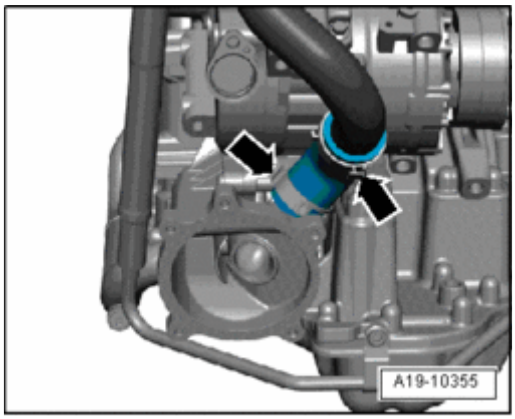

Fig. 231: Removing Coolant Hose And Bringing Coolant Pipe Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose - **arrows** - and bring the coolant pipe upward.

NOTE:

- **Place a rag under separating point to catch escaping hydraulic fluid.**

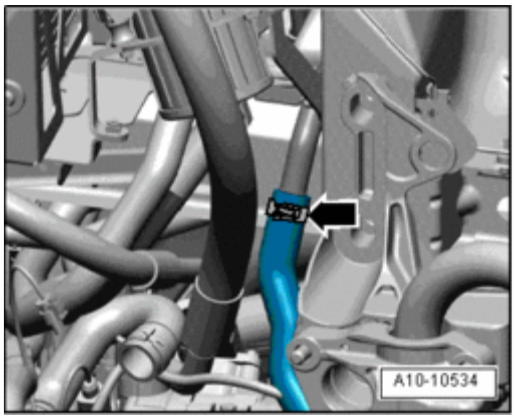

Fig. 232: Disconnecting Hydraulic Hose From Line At Left Longitudinal Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect hydraulic hose - **arrow** - from line at left longitudinal member.

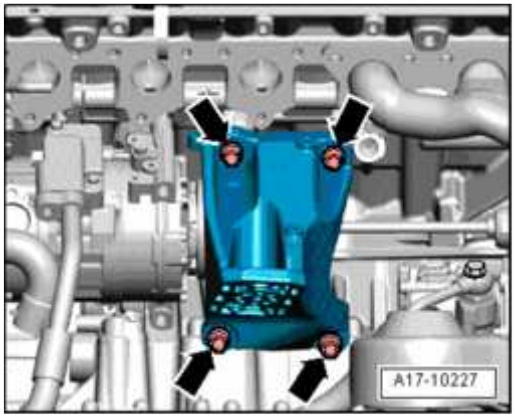

Fig. 233: Identifying Bolts For Left Engine Support
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove left engine support.

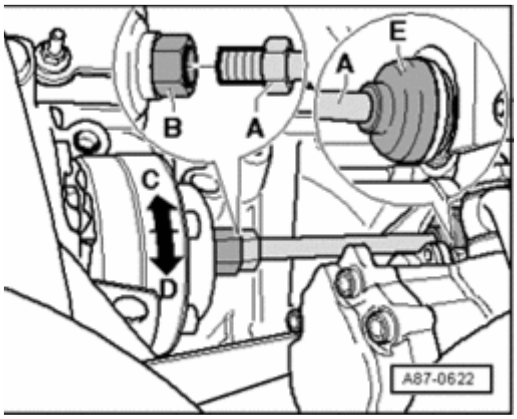

Fig. 234: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hold compressor drive shaft - **A** - in place using an open-end wrench and turn compressor drive unit - **B** - in - **direction of arrow C** -.

NOTE:

- **Compressor drive shaft - A - must not be turned.**
- **Compressor drive shaft - A - can be slid into drive wheel through the boot - E - after loosening threaded connection.**

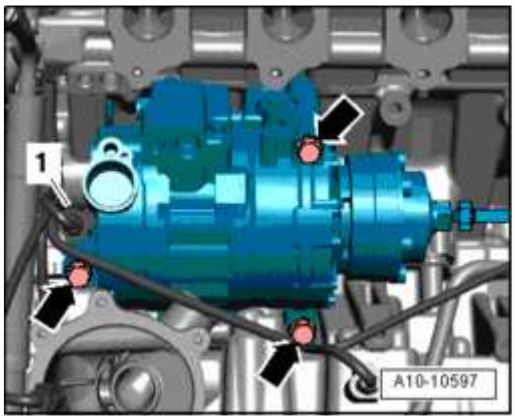

Fig. 235: Identifying Electrical Harness Connector And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - to A/C Compressor Regulator Valve N280 (mark the connector to prevent risk of interchange with connector to engine mount).
- Remove bolts - **arrows** -.
- Remove A/C compressor.

Installing

Install in reverse order, noting the following:

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type Parts Catalog**
- **An unknown quantity of refrigerant oil remains in a removed compressor, therefore observe notes for replacing the compressor. Refrigerant R134a - Servicing**

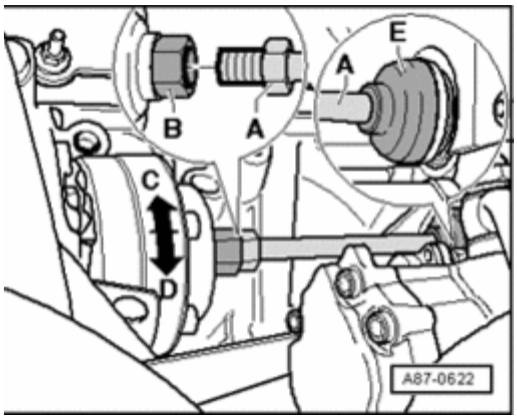

Fig. 236: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install compressor drive shaft - **A** - (into drive wheel of engine) and check seating as well as the associated boot - **E** - --> **Compressor drive shaft, unfastening and tightening**.

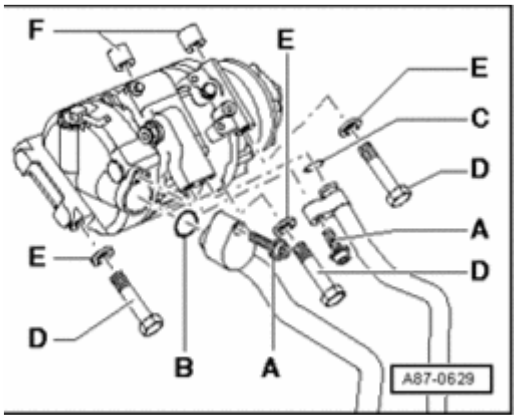

Fig. 237: Identifying Bolts & Bushings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thoroughly clean contact surfaces on bracket (and contact surfaces on compressor), to do so, remove bushings - **F** - from compressor bracket or compressor if necessary.
- Check connections of compressor and of refrigerant lines for damage or soiling --> **Refrigerant pipes, disconnecting at compressor/connecting**.
- Ensure that bushings - **F** - are inserted in A/C compressor or in bracket.

NOTE:

- **Ensure that bushings - F - have proper seating and contact surfaces are clean. Incorrectly installed bushings, soiled or damaged contact surfaces can lead to misalignment between compressor and engine. Misalignment leads to damage at drive shaft or at compressor over running time.**
- **Install compressor on to bracket with bolts - D - and washers - E - (tightening torque 25 Nm).**

- **Replace sealing rings - B - and - C - --> O-rings for refrigerant circuit.**
- **Connect refrigerant lines to compressor --> Refrigerant pipes, disconnecting at compressor/connecting (tightening torque of bolts - A - 25 Nm), dimensions of O-ring seals - B - and - C - as well as additional information --> Refrigerant pipes, disconnecting at compressor/connecting and Parts Catalog.**

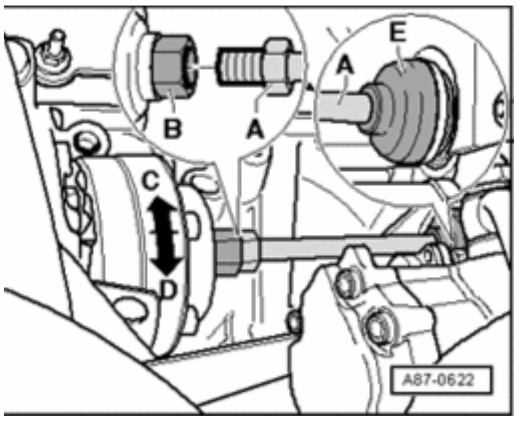

Fig. 238: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before threading in the drive shaft, rotate compressor 10 rotations by hand via the compressor drive unit - **B** - in direction of arrow - **C** - after installing (to prevent damage to compressor when first switching on).

NOTE:

- **By rotating, refrigerant oil which has accumulated in the compressor compression chamber in the removed compressor or after adding fresh refrigerant oil (e.g. after blowing through the refrigerant circuit) is forced out of the compression chamber.**
- **Tighten drive shaft, hold compressor drive shaft - A - in place using open-end wrench and turn compressor drive unit - B - in direction of arrow - D - (tightening torque 60 Nm).**

NOTE:

- **Drive shaft - A - must not be turned.**
- **After installing drive shaft - A - , check installation position of boot - E -.**
- **Boot - E - is secured against slipping by a clamp on power steering pump flange Parts Catalog.**
- **Install engine supports -->**
  - **10 - ENGINE, REMOVING AND INSTALLING for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **10 - ENGINE - ASSEMBLY for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**

- **10 - ENGINE - ASSEMBLY for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
- **10 - ENGINE - ASSEMBLY for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
- **10 - ENGINE - ASSEMBLY for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

.

- **Install coolant regulator housing -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

.

- **Install engine mount console --> 40 - FRONT SUSPENSION .**
- **Install anti-roll bar --> 40 - FRONT SUSPENSION .**
- **Install left air filter housing -->**
  - **24 - MULTIPORT FUEL INJECTION for 3.2 LITER V6 4V GENERIC SCAN TOOL, ENGINE CODE(S): BKH**
  - **24 - MULTIPORT FUEL INJECTION (MFI) for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ**
  - **24 - MULTIPORT FUEL INJECTION (MFI) for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **24 MULTIPORT FUEL INJECTION (MFI) for 4.2 LITER V8 5V GENERIC SCAN TOOL, ENGINE CODE(S): BNK**
  - **24 - MULTIPORT FUEL INJECTION (MFI) for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA**

.

- **Add hydraulic oil to power steering fluid reservoir --> 48 - STEERING .**
- **Fill with coolant -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE**

MECHANICAL, ENGINE CODE(S): BVJ

- **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
- **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

.

- **Reinstall all removed components.**
- **Evacuate and recharge refrigerant circuit. Refrigerant R134a - Servicing**
- **Check DTC memory of control and display unit Climatronic Control Module J255 and erase malfunctions displayed if necessary. Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" function.**
- **Pay attention to notes concerning first operation of A/C system after installing compressor.**

Compressor drive unit, checking/replacing

NOTE:

- **If drive plate overload safeguard has been tripped, check freedom of movement of compressor before replacing drive unit. Replace entire compressor if it is stiff.**

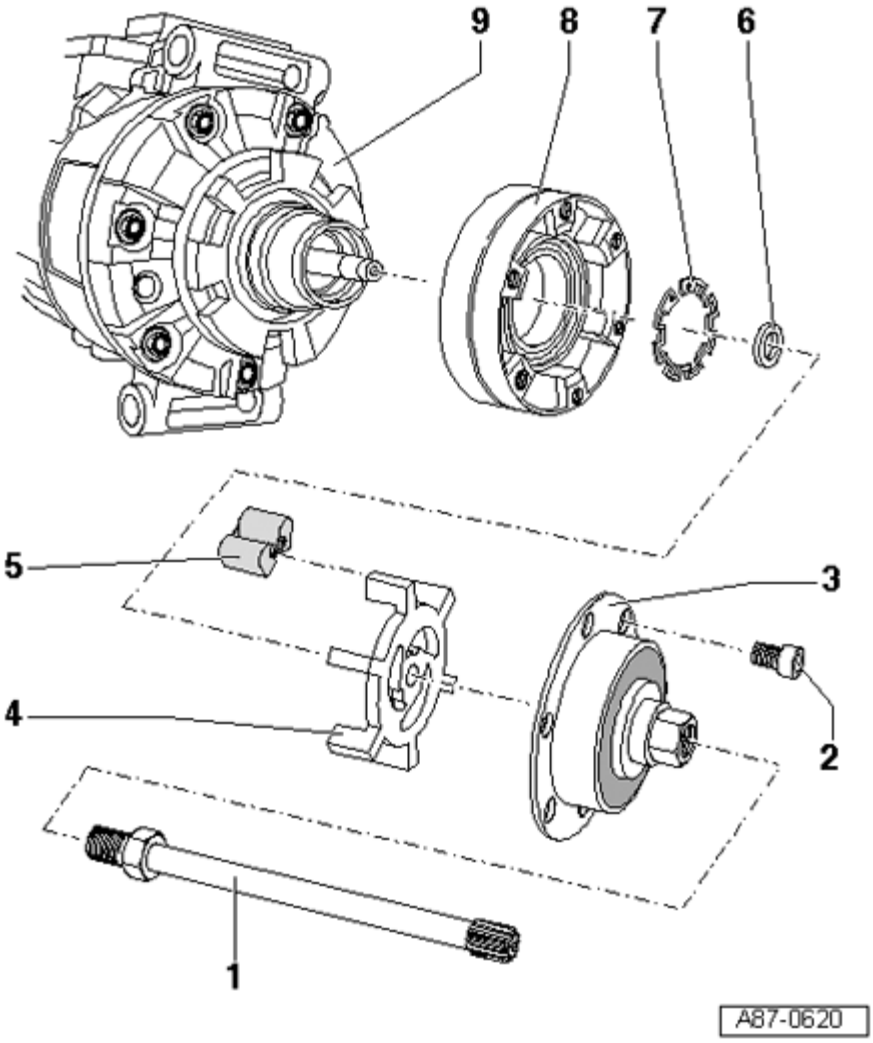

Fig. 239: Compressor Drive Unit, Checking, Replacing Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Compressor drive shaft

- Check; after tightening screw connection, drive shaft must engage snugly in splines of drive gear --> **Compressor drive shaft, removing and installing**
- Tightening torque 60 Nm
- Loosening and tightening --> **Compressor drive shaft, unfastening and tightening**
- Removing and installing --> **Compressor drive shaft, removing and installing**

- Lubricate drive gear splines with special grease G 000 100 Parts List

2 - Hex socket-head bolt

- Tightening torque 10 Nm

3 - Drive plate

- With overload safeguard, tripped in the event of excessive torque (e.g. stiff compressor) and drive shaft just free-wheels without driving compressor
- Checking concentricity and adjusting --> **Concentricity of drive plate with overload safeguard, checking/adjusting**
- Removing/installing --> **Drive plate with overload safeguard, removing/installing**

4 - Drive plate

- Screwed to compressor drive shaft
- With overload safeguard, tripped in the event of excessive torque (e.g. stiff compressor) and drive shaft just free-wheels without driving compressor
- Tightening torque 30 Nm
- Removing/installing --> **Drive plate from compressor, unscrewing/screwing on**

5 - Rubber element

- Isolates drive unit, damps vibration and noise
- On installation, moisten rubber elements slightly with soap solution for example to provide lubrication
- Removing/installing --> **Drive plate from compressor, unscrewing/screwing on**

6 - Spacer

- Genuine spacer must be installed
- Dimensions: 17.5 x 10 x 3 mm

7 - Circlip

- Replace
- Ensure correct positioning (flat side facing compressor)
- Removing and installing --> **Drive plate with rolling bearing, removing and installing**

8 - Drive plate

- With rolling bearing
- Removing/installing --> **Drive plate with rolling bearing, removing and installing**
- Clean flange of compressor before installing drive plate

9 - Compressor

- Different models may be installed depending on engine and country version Parts List.

Compressor drive shaft, unfastening and tightening

NOTE:

- **Extensive preparation is required before compressor drive shaft can be unfastened (removing and installing compressor on vehicles with 8 cyl.- engine), --> Compressor - vehicles with 10-cylinder engine (Audi S6), removing and installing. (removing and installing compressor on vehicles with 10 cyl.- engine).**
- **Drive shaft can also be checked and tightened without opening refrigerant circuit.**

Drive shaft, unfastening

- Remove components hindering access to drive shaft (removing and installing compressor on vehicles with 8 cyl.-engine), --> **Compressor - vehicles with 10-cylinder engine (Audi S6), removing and installing**. (removing and installing compressor on vehicles with 10 cyl.- engine).

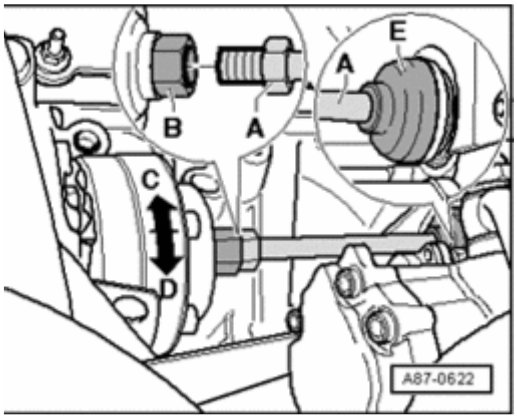

Fig. 240: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use open-ended wrench to hold compressor drive shaft - **A** - in position and turn compressor drive unit - **B** - in direction of arrow - **C** -.

NOTE:

- **Drive shaft - A - is not to be turned.**
- **After unfastening screw connection, drive shaft - A - can be pushed through socket - E - into drive gear.**
- **After installing drive shaft - A - , check installation position of socket - E -.**

Drive shaft, tightening

- Use open-ended wrench to hold compressor drive shaft - **A** - in position and turn compressor drive unit - **B** - in direction of arrow - **D** - (tightening torque 60 Nm).
- After tightening compressor drive shaft, check installation position of socket - **E** -.

Compressor drive shaft, removing and installing

Removing

- Remove compressor (vehicles with 8-cyl. engine), --> **Compressor - vehicles with 10-cylinder engine (Audi S6), removing and installing** (vehicles with 10-cyl. engine).

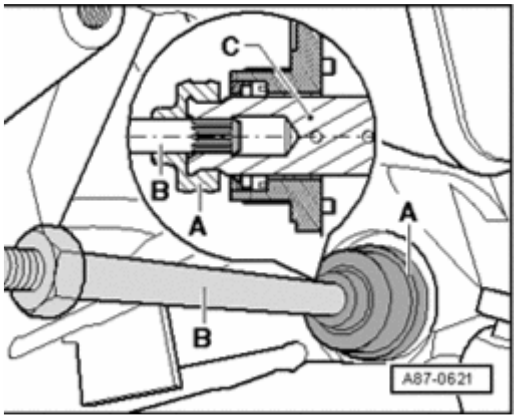

Fig. 241: Removing/Installing Boot & Pulling Drive Shaft Out/In Of Splines Of Drive Pinion
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove socket - **A** -.
- Pull drive shaft - **B** - out of splines of drive gear - **C** -.

Installing

Install in reverse order, paying attention to the following:

- Check drive shaft - **B** -. Splines must not exhibit signs of wear and must engage snugly in splines of drive gear - **C** -.
- Before installing, coat splines of drive shaft - **B** - with special grease G 000 100.

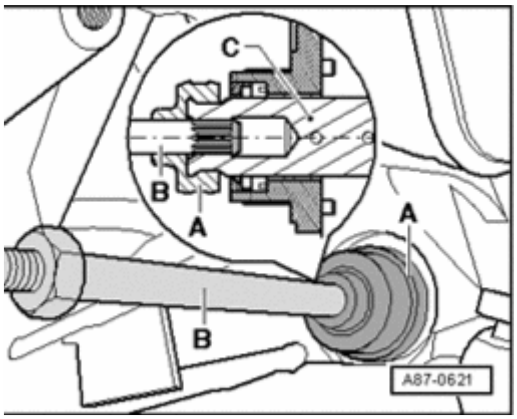

Fig. 242: Removing/Installing Boot & Pulling Drive Shaft Out/In Of Splines Of Drive Pinion
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before installing compressor, insert drive shaft - **B** - and slide it home in drive gear - **C** -.

- After installing compressor, check installation position of socket - **A** -.

Socket - **A** - is secured against slipping off by a clamp on power steering pump (introduction of clamp as running change in production in model year 2006, install clamp as a retrofit if necessary) Parts Catalog.

Drive plate with overload safeguard, removing/installing

- Remove compressor (vehicles with 8-cyl. engine), --> **Compressor - vehicles with 10-cylinder engine (Audi S6), removing and installing** (vehicles with 10-cyl. engine).

Removing

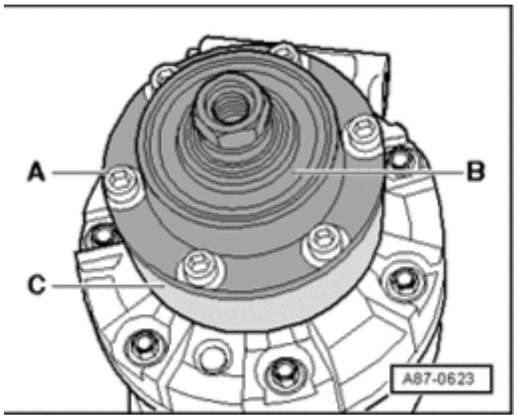

Fig. 243: Removing Bolts & Using Commercially Available Band Wrench (With Webbed Band) To Provide Support At Drive Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** -.

NOTE:

- **Use commercially available strap wrench (with fabric strap) to provide support at drive plate - C -.**

Installing

- Install drive plate with overload safeguard - **B** - to drive plate - **C** -.
- Insert and hand-tighten bolts - **A** -.
- Check concentricity of drive plate - **B** - --> **Concentricity of drive plate with overload safeguard, checking/adjusting**.
- Finish-tighten bolts - **A** - (tightening torque 10 Nm).

- Check concentricity of drive plate - **B** - again --> **Concentricity of drive plate with overload safeguard, checking/adjusting**.

Concentricity of drive plate with overload safeguard, checking/adjusting

- Remove compressor.

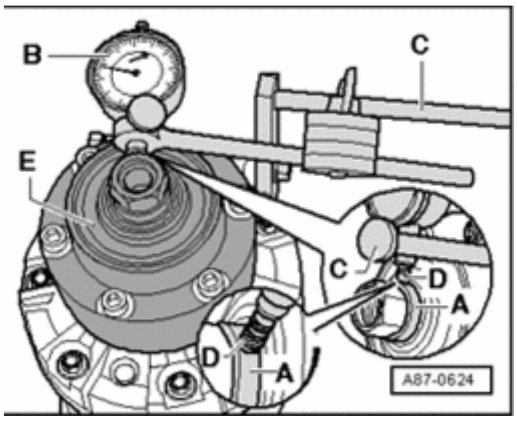

Fig. 244: Run-Out Of Drive Plate With Overload Protection, Checking/Adjusting
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean flange at drive plate - **A** -.
- Attach dial gauge - **B** - with dial gauge holder - **C** - (e.g. Dial Gauge Holder VW387) to compressor.
- Attach probe of dial gauge - **D** - to flange of drive plate - **A** - with a pre-tension of approx. 1.0 mm.
- Give compressor drive unit - **E** - several turns.

Specification: Eccentricity less than 0.21 mm (dial gauge deflection, difference between lowest and highest measured value max. 0.2 mm)

- If eccentricity exceeds 0.2 mm, loosen bolts at drive plate --> **Drive plate with overload safeguard, removing/installing** and re-adjust drive plate.

Drive plate from compressor, unscrewing/screwing on

- Remove drive plate with overload safeguard --> **Drive plate with overload safeguard, removing/installing**.

Unscrewing

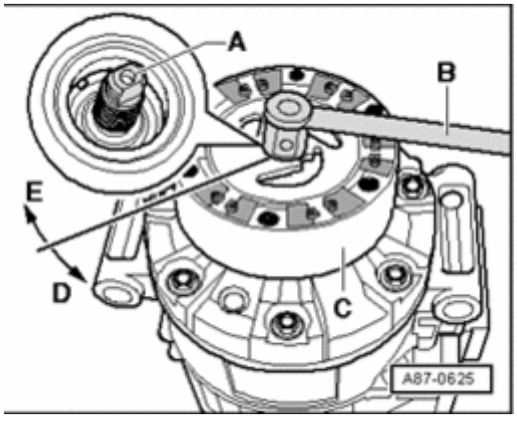

Fig. 245: Loosening Drive Plate & Providing Support For Compressor Shaft By Applying Counterhold To Compressor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unfasten drive plate - **C** - by turning it with a commercially available strap wrench (with fabric strap) in direction of arrow - **D** -. Provide support for compressor shaft - **A** - by applying counterhold - **B** - to compressor shaft - **A** -.

NOTE:

- **Depending on compressor design (compressor shaft differs), use must be made to provide support of a ring wrench, or e.g. socket wrench T10001/10 from Shock Absorber Set T10001 or Counter Holder 3079.**

Screwing on

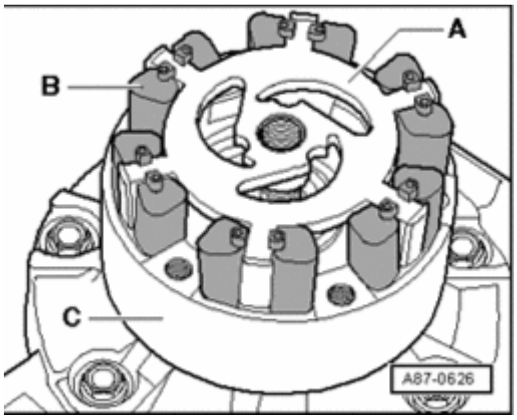

Fig. 246: Identifying Rubber Elements & Drive Plates
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On installation, moisten rubber elements - **B** - slightly with soap solution for example to provide lubrication.
- Insert rubber elements - **B** - in drive plate - **A** - as shown.
- Insert drive plate - **A** - with rubber elements - **B** - in drive plate - **C** - as shown until it makes contact with compressor shaft.

NOTE:

- **Fig. shows rubber elements - B - of type "1". Rubber elements - B - of type "2" are connected at top.**

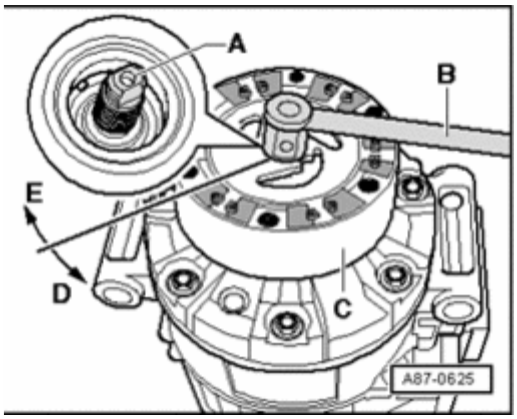

Fig. 247: Loosening Drive Plate & Providing Support For Compressor Shaft By Applying Counterhold To Compressor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw drive plate - **C** - onto compressor shaft - **A** - by turning it in direction of arrow - **E** -.
- Tighten drive plate - **C** - (30 Nm) by turning it with a commercially available strap wrench (with fabric strap) in direction of arrow - **E** -. Provide support for compressor shaft - **A** - by applying counterhold - **B** - to compressor shaft - **A** -.

NOTE:

- **Depending on compressor design (compressor shaft differs), use must be made to provide support of a ring wrench, or e.g. socket wrench T10001/10 from Shock Absorber Set T10001 or Counter Holder 3079.**

Drive plate with rolling bearing, removing and installing

- Remove drive plate from compressor shaft --> **Drive plate from compressor, unscrewing/screwing on**.

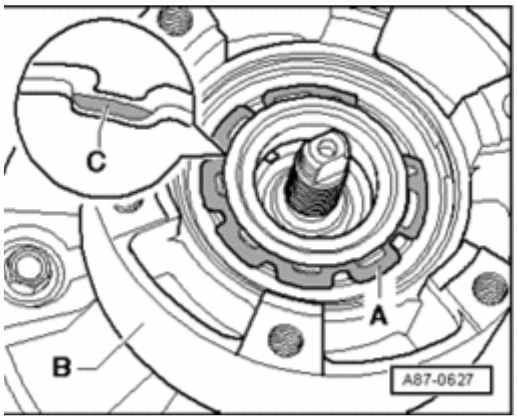

Fig. 248: Identifying Securing Ring, Drive Plate & Bevelled Side
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove circlip - **A** -.
- Remove drive plate - **B** -.

NOTE:

- **Replace circlip - A -.**
- **Clean compressor flange before installing drive plate.**
- **On installing circlip - A - , take care not to bend it open more than necessary.**
- **Ensure correct insertion of circlip - A -. Bevelled side - C - faces away from compressor (flat side faces compressor).**

Refrigerant pipes, disconnecting from condenser/re-connecting

NOTE:

- **There are different condenser versions depending on vehicle model Parts List.**

Disconnecting

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Remove front bumper cover --> **63 - BUMPERS** .

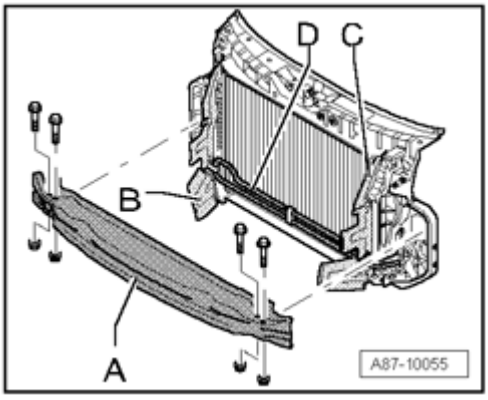

Fig. 249: Identifying Air Duct And Mount For Bumper Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Depending on vehicle model, remove mount for bumper cover - **A** - and air duct - **C** - if necessary --> **63 - BUMPERS** .

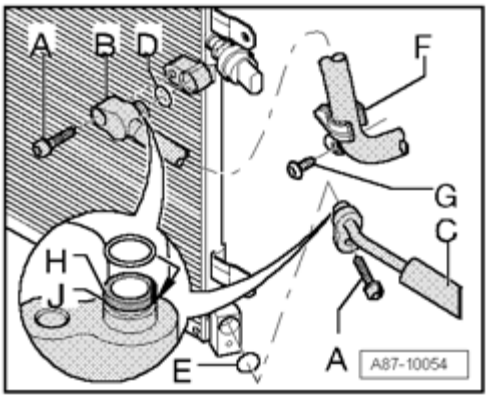

Fig. 250: Screwing Out Bolts And Disconnecting Refrigerant Pipes From Condenser
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts - **A** - (tightening torque 10 Nm).
- Disconnect refrigerant pipes - **B** - and - **C** - from condenser.

NOTE:

- **Seal open pipes and connections at condenser with suitable caps (to prevent ingress of dirt and moisture).**

Installing

Install in reverse order, paying attention to the following:

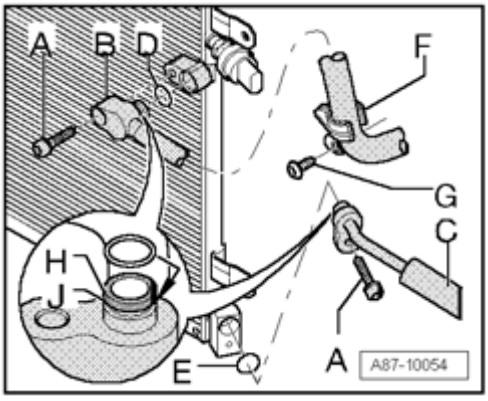

Fig. 251: Screwing Out Bolts And Disconnecting Refrigerant Pipes From Condenser
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-rings - **D** - and - **E** - , version Parts List.
- Check guide ring - **H** - at connections of both refrigerant pipes - **B** - and - **C** - for damage.
- Insert appropriate O-ring (- **D** - and - **E** -) in groove - **J** - at connections of both refrigerant pipes - **B** - and - **C** -.

NOTE:

- **Moisten O-rings with small quantity of refrigerant oil before installing.**
- **Following connection, check routing of refrigerant pipes. They must be inserted in holders provided and not make contact with other components.**
- **Evacuate and refill refrigerant circuit Refrigerant R134a - Servicing.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Condenser, removing and installing

NOTE:

- **There are different condenser versions depending on vehicle model Parts List.**
- **The condenser removed contains refrigerant oil which has to be returned to the refrigerant circuit Refrigerant R134a - Servicing.**

Removing

- Drain refrigerant circuit Refrigerant R134a - Servicing.

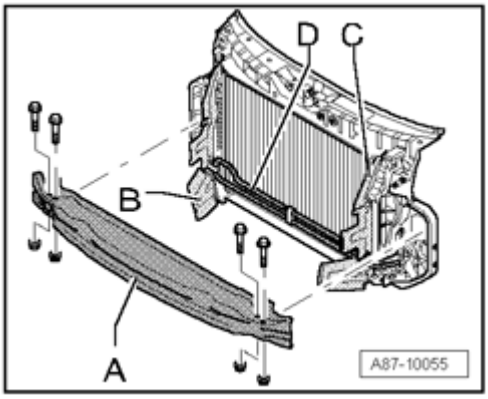

Fig. 252: Identifying Air Duct And Mount For Bumper Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bumper cover and mount for bumper cover - **A** - --> **63 - BUMPERS** .
- Remove the two air ducts - **B** - and - **C** -.
- If necessary, remove power steering oil cooler - **D** - from front end module (not required with all models) --> **48 - STEERING** .

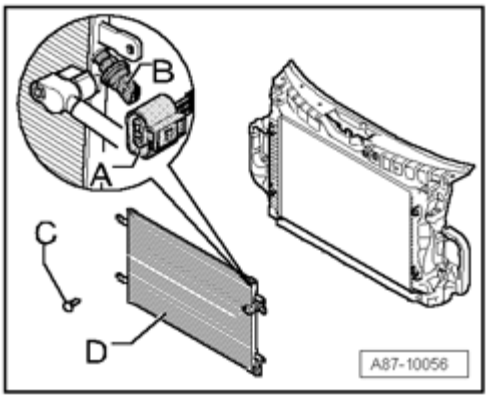

Fig. 253: Unplugging Connector From A/C Pressure/Temperature Sensor G395
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unplug connector - **A** - from A/C Pressure/temperature Sensor G395 - **B** -.
- Disconnect refrigerant pipes from condenser --> **Refrigerant pipes, disconnecting from condenser/re-connecting**.
- If condenser is to be replaced, remove A/C Pressure/temperature Sensor G395 - **B** - --> **A/C Pressure/temperature Sensor G395 , removing and installing**.
- Screw out bolts - **C** - (tightening torque 5 Nm).
- Remove condenser - **D** -.

Installing

NOTE:

- **There are different condenser versions depending on vehicle model Parts List.**
- **The condenser removed contains refrigerant oil which has to be returned to the refrigerant circuit Refrigerant R134a - Servicing.**

Install in reverse order, paying attention to the following:

- Connect condenser refrigerant pipes --> **Refrigerant pipes, disconnecting from condenser/re-connecting**.
- Evacuate refrigerant circuit after assembly and refill Refrigerant R134a - Servicing.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Restrictor, removing and installing

NOTE:

- **This vehicle is only to be installed with a red colored restrictor (depending on manufacturer, color may also tend towards orange) Parts List and Refrigerant R134a - Servicing.**

- **Differently colored replacement restrictors are available ("yellow" restrictor, diameter of bore/constriction 1.54 mm; "red" restrictor, diameter of bore/constriction 1.42 mm). Attention is therefore to be paid to assignment (different refrigerant circuit matching).**
- **There are different types of refrigerant pipe between evaporator and compressor/reservoir depending on vehicle model Parts List.**

Removing

- Drain refrigerant circuit Refrigerant R134a - Servicing.

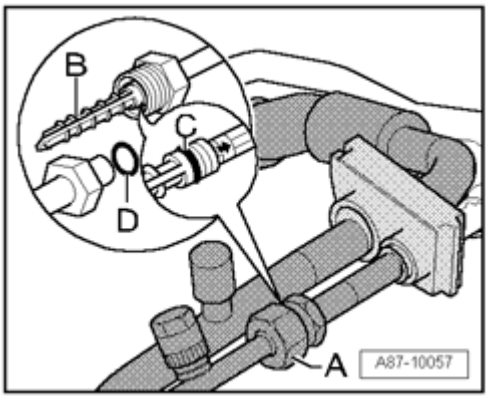

Fig. 254: Disconnecting Refrigerant Pipe At Screw Connection (Seal Open Connections) And Pulling Restrictor Out Of Refrigerant Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect refrigerant pipe at screw connection - **A** - (seal open connections).
- Use pointed-nose pliers to pull restrictor - **B** - out of refrigerant pipe.

Installing

NOTE:

- **Only install restrictors of same type. Restrictors of different color have different bore diameters Parts List.**

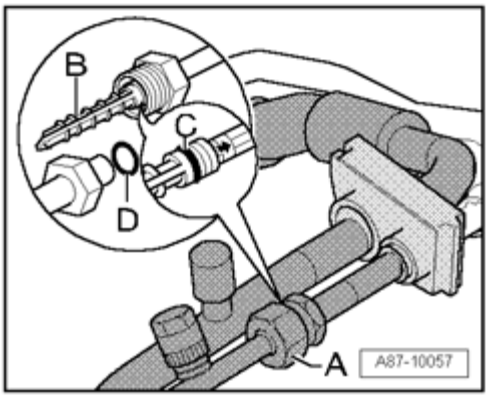

Fig. 255: Disconnecting Refrigerant Pipe At Screw Connection (Seal Open Connections) And Pulling Restrictor Out Of Refrigerant Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check correct positioning of O-ring - **C** - (7.5 mm; 1.5 mm) in groove.
- Before installing, moisten O-ring (of restrictor and at screw connection) with a small quantity of refrigerant oil.
- Ensure correct positioning of restrictor - **B** - on installation (arrow on restrictor pointing towards evaporator).
- Check positioning of restrictor (snug fit in refrigerant pipe).

- Replace O-ring - **D** - , version Parts List.
- Install refrigerant pipes such that they are not strained.
- Tighten screw connection - **A** - to 15 Nm.

NOTE:

- **Check position of refrigerant pipes after tightening screw connection (pipes must not make contact with other components).**
- **Evacuate and refill refrigerant circuit Refrigerant R134a - Servicing.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Refrigerant pipes, removing and installing from condenser and reservoir to Heating and A/C unit

Refrigerant pipe - A - , removing (from screw connection in refrigerant pipe to connection at Heating and A/C unit)

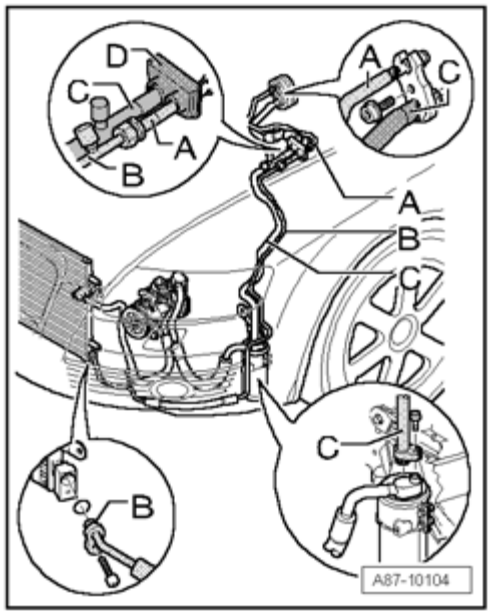

Fig. 256: Identifying Socket, And Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Remove air intake unit --> **Air intake unit, removing and installing**.
- Disconnect refrigerant pipes from connection to Heating and A/C unit --> **Refrigerant pipes, disconnecting from Heating and A/C unit/connecting**.
- Open screw connection in refrigerant pipe (between - **A** - and - **B** -) --> **Restrictor, removing and installing** (removing and installing restrictor).

- Disconnect refrigerant pipe - **A** - from socket - **D** - and remove refrigerant pipe.

Refrigerant pipe - B - , removing (from connection at condenser to screw connection in refrigerant pipe)

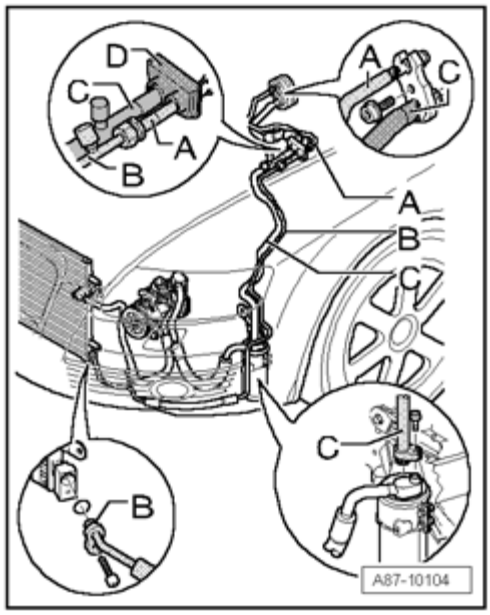

Fig. 257: Identifying Socket, And Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Remove front bumper cover --> **63 - BUMPERS** .
- Open screw connection in refrigerant pipe (between - **A** - and - **B** -) --> **Restrictor, removing and installing** (removing and installing restrictor).
- Disconnect refrigerant pipe - **B** - from connection at condenser --> **Refrigerant pipes, disconnecting from condenser/re-connecting**.
- Remove refrigerant pipe - **B** -.

Refrigerant pipe - C - , removing (from connection at reservoir to connection at Heating and A/C unit)

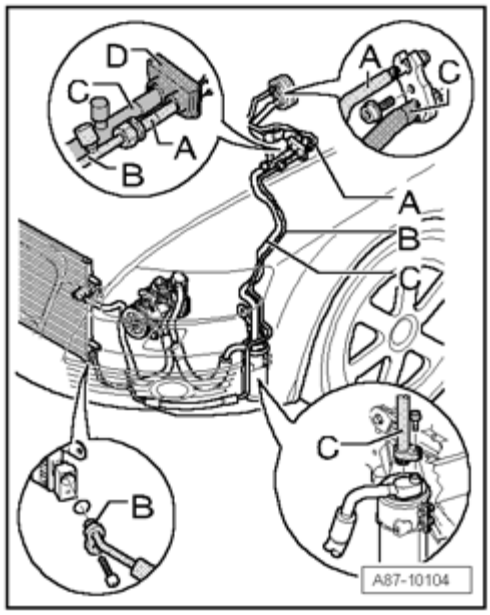

Fig. 258: Identifying Socket, And Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Remove air intake unit --> **Air intake unit, removing and installing** or brake master cylinder and brake servo --> **47 - BRAKES - HYDRAULIC COMPONENTS** .
- Disconnect refrigerant pipes from connection to Heating and A/C unit --> **Refrigerant pipes, disconnecting from Heating and A/C unit/connecting**.
- Remove both brake pipes from brake master cylinder to hydraulic unit --> **47 - BRAKES - HYDRAULIC COMPONENTS** .

- Open screw connection in refrigerant pipe (between - **A** - and - **B** -) --> **Restrictor, removing and installing** (removing and installing restrictor).
- Remove front bumper cover --> **63 - BUMPERS** .
- Disconnect refrigerant pipe - **C** - from connection at reservoir --> **Reservoir, removing and installing**.
- Remove socket - **D** - from plenum chamber front wall.

- Jointly remove refrigerant pipes - **A** - and - **C** -.
- Separate refrigerant pipes - **A** - and - **C** -.

Refrigerant pipes from condenser and reservoir to Heating and A/C unit, installing

Install in reverse order, paying attention to the following:

- Moisten O-rings with small quantity of refrigerant oil before installing.
- Following connection, check routing of refrigerant pipes. They must be inserted in holders provided and not make contact with other components.

- Re-install remaining components removed.
- Evacuate and refill refrigerant circuit Refrigerant R134a - Servicing.

- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Reservoir, removing and installing

NOTE:

- **There are different reservoir versions depending on vehicle model Parts List.**

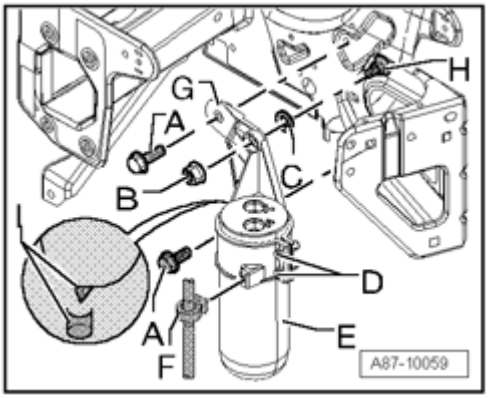

Fig. 259: Identifying Bolts, Nuts, Refrigerant Pipe Holder, And Reservoir
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Up to 09.04, reservoir brackets were installed which have transferred noise from A/C system operation to the body under certain conditions of operation (howling noises from engine compartment due to vibrations of the bracket during A/C system operation). As of 09.04, production switched over gradually to an optimized bracket - **G** - Parts Catalog.
- If an optimized bracket - **G** - is installed in vehicles which were produced up to 09.04, double bolt which secures nut - **B** - must be removed if necessary and installed again turned around 180 ° (longer side must face bracket), it may also be necessary that a longer version must be used for bolts - **A** -.

Removing

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Remove front bumper cover --> **63 - BUMPERS** .
- If necessary, remove charge air cooler and / or left headlamp --> **94 - LIGHTS, SWITCHES - EXTERIOR** , depending on vehicle.

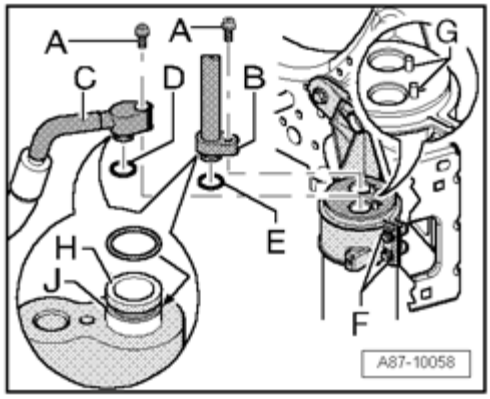

Fig. 260: Screwing Out Bolts And Disconnecting Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolts - **A** - and disconnect refrigerant pipes - **B** - and - **C** -.

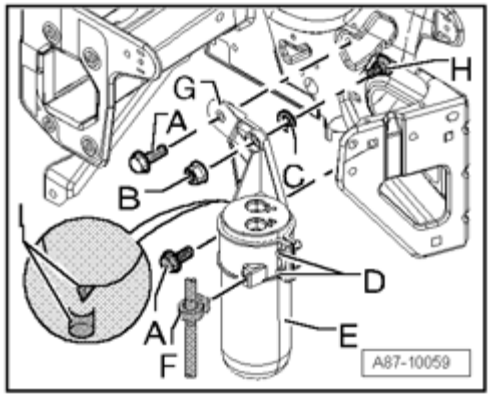

Fig. 261: Identifying Bolts, Nuts, Refrigerant Pipe Holder, And Reservoir
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** - and nut - **B** -.
- Remove refrigerant pipe holder - **F** - from holder - **G** -.
- Remove reservoir - **E** - with holder - **G** -.
- Loosen bolts - **D** - and remove reservoir - **E** - from holder - **G** -.

NOTE:

- **Seal open pipe connections.**
- **Connection of refrigerant pipes differs depending on engine version Parts List.**
- **Keep reservoir closed as long as possible. Only remove caps immediately prior to installation (reservoir contains a desiccant bag which soon becomes saturated with moisture and hence unusable after opening reservoir).**
- **The reservoir removed contains refrigerant oil which has to be returned to**

the refrigerant circuit Refrigerant R134a - Servicing.

Installing

- Before installing reservoir Refrigerant R134a - Servicing
- The removed reservoir contains refrigerant oil which has to be returned to the refrigerant circuit (with new reservoir). Adjustment of oil quantity depends on nature of complaint:

  - If, for example, reservoir has been damaged in an accident (no loss of refrigerant, no ingress of moisture and dirt into refrigerant circuit), air conditioner can be serviced by weighing old and new reservoir without the need for extensive repair work. Pour refrigerant oil into new reservoir until it weighs the same as the reservoir removed Refrigerant R134a - Servicing.
  - If an indeterminate amount of refrigerant oil has escaped or dirt and moisture have entered refrigerant circuit, it must be cleaned using compressed air and nitrogen Refrigerant R134a - Servicing.

NOTE:

- **Connections at reservoir may be marked "IN" (from evaporator) and "Out" (to compressor).**

Install in reverse order, paying attention to the following:

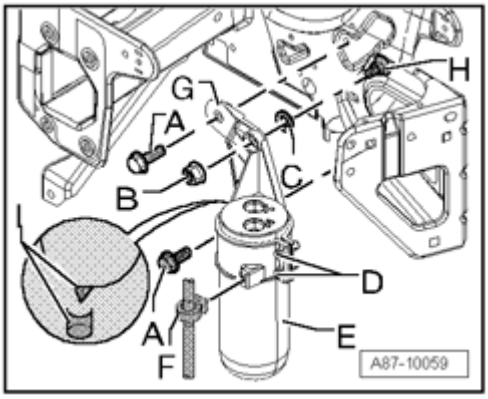

Fig. 262: Identifying Bolts, Nuts, Refrigerant Pipe Holder, And Reservoir
Courtesy of VOLKSWAGEN UNITED STATES, INC.

  - Insert reservoir - **E** - in holder - **G** - , paying attention to locking and locating element - **I** -.
  - Tighten bolts - **D** -.
  - Install washer - **C** - to pin - **H** -.
  - Install reservoir - **E** - with holder - **G** -.
  - Install bolts - **A** - and nut - **B** - (tightening torque 10 Nm).

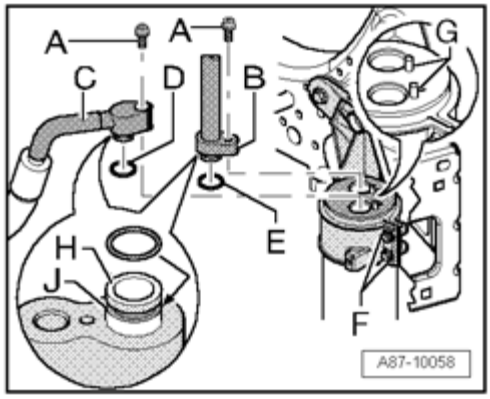

Fig. 263: Screwing Out Bolts And Disconnecting Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-rings - **D** - and - **E** - , version Parts List.
- Check guide ring - **H** - at connections of both refrigerant pipes - **B** - and - **C** - for damage.
- Insert appropriate O-ring (- **D** - and - **E** -) in groove - **J** - at connections of both refrigerant pipes - **B** - and - **C** -.

NOTE:

- **Moisten O-rings with small quantity of refrigerant oil before installing.**
- **Install refrigerant pipes - B - and - C -.**
- **Install bolts - A - (tightening torque 10 Nm).**
- **Following connection, check routing of refrigerant pipes. They must be inserted in holders provided and not make contact with other components.**
- **Re-install remaining components removed.**
- **Evacuate and refill refrigerant circuit Refrigerant R134a - Servicing.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Refrigerant pipes, disconnecting from Heating and A/C unit/connecting

Disconnecting

- Drain refrigerant circuit Refrigerant R134a - Servicing.
- Switch off ignition.
- Remove plenum chamber cover.

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms, scuttle panel trim and wiper assembly --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .
- Remove air intake unit --> **Air intake unit, removing and installing**.

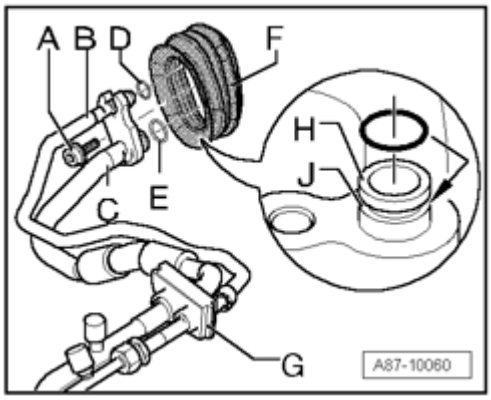

Fig. 264: Screwing Out Bolt And Disconnecting Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw out bolt - **A** - (tightening torque 20 Nm).
- Disconnect refrigerant pipes - **B** - and - **C** - from connecting flange of refrigerant pipes to Heating and A/C unit and seal open connections.

NOTE:

- **Seal open connections at connecting flange of refrigerant pipes to Heating and A/C unit and refrigerant pipes - B - and - C - (to prevent ingress of dirt and moisture).**

Installing

Install in reverse order, paying attention to the following:

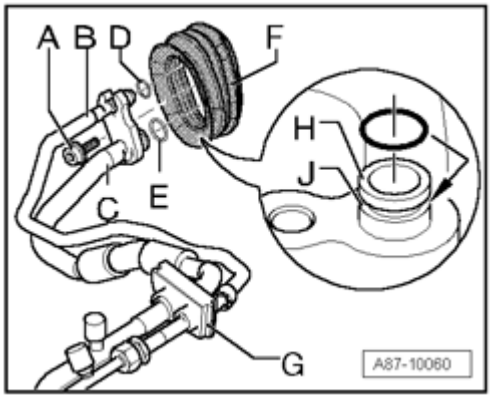

Fig. 265: Screwing Out Bolt And Disconnecting Refrigerant Pipes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check socket - **F** - for damage.
- Replace O-rings - **D** - and - **E** - , version Parts List.

NOTE:

- **Moisten O-rings with small quantity of refrigerant oil before installing.**
- **Check guide ring - H - at connections of both refrigerant pipes - B - and - C - for damage.**
- **Insert appropriate O-ring (- D - and - E -) in groove - J - at connections of both refrigerant pipes - B - and - C -.**
- **Install refrigerant pipes - B - and - C - such that they are not strained.**
- **Install bolt - A - (tightening torque 20 Nm).**
- **Following connection, check routing of refrigerant pipes. They must be inserted in holders provided and not make contact with other components.**
- **Check correct installation of socket - F -.**
- **Remove residual coolant from plenum chamber.**
- **Re-install remaining components removed.**
- **After connecting refrigerant pipes and installing brake master cylinder, check pipe penetration - G - and position of refrigerant pipes - B - and - C - (no contact with other components).**
- **Evacuate and refill refrigerant circuit Refrigerant R134a - Servicing.**
- **Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.**

Evaporator, removing and installing

Special tools, testers and other items required

- Hose Clamps Up To 25mm Dia. 3094 or Hose Clamps, Up To 40 mm. 3093
- Commercially available compressed-air gun (with rubber mouthpiece)
- Cooling System Tester V.A.G 1274 (and appropriate adapters)
- Cut-proof gloves
- Rigid sharp pointed knife (e.g. strong carpet knife)

Preparation for evaporator removal

- Drain refrigerant circuit Refrigerant R134a - Servicing.

NOTE:

- **With ignition on, valves of pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) are constantly actuated as a function of temperature setting on control and display unit, Climatronic**

Control Module J255. Valves may therefore be warm or even hot despite engine being cold.

- **Switch off ignition.**
- **Dissipate pressure in coolant circuit by opening cap at coolant expansion tank Relevant engine, mechanics**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

  .
- **Remove plenum chamber cover.**

CAUTION: The two valves of the pump valve unit may be hot even if the engine is cold.

- Remove wiper arms and scuttle panel trim --> **92 - WINDSHIELD WIPER AND WASHER SYSTEM** .
- Remove dome brace if necessary (not installed on all vehicles) --> **40 - FRONT SUSPENSION** .

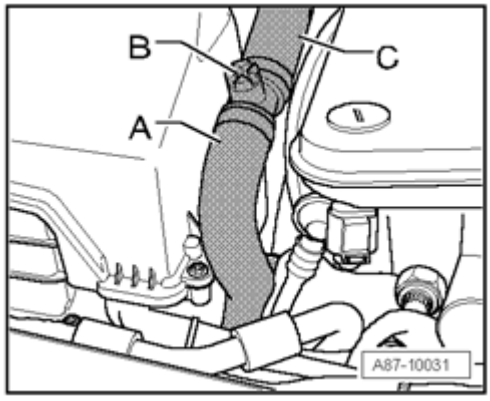

Fig. 266: Identifying Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pinch off coolant hose - **A** - (return from heater core to engine), e.g. using Hose Clamps Up To 25mm Dia. 3094.

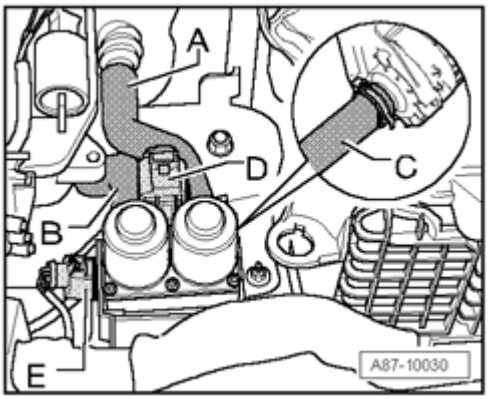

Fig. 267: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark arrangement of coolant hoses - **A** - (supply to left heater core) and - **B** - (supply to right heater core).
- Unplug connector - **D** - to Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176.
- Unplug connector - **E** - to Coolant Pump V50.
- Pinch off coolant hose - **C** - (supply from engine to Coolant Pump V50) e.g. using Hose Clamps Up To 25mm Dia. 3094.

- Disconnect coolant hoses - **A** - and - **B** - from connections of pump valve unit.

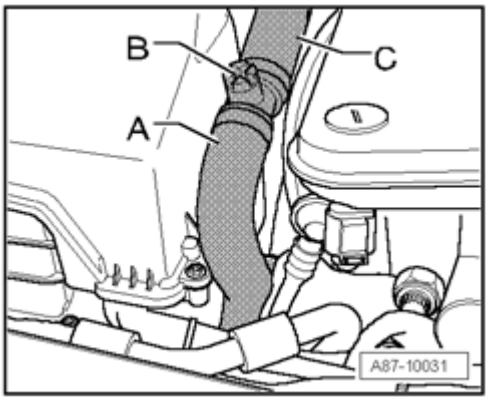

Fig. 268: Identifying Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove screw plug from bleeder valve - **B** -.

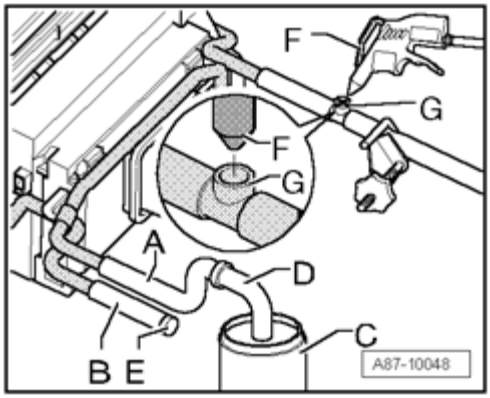

Fig. 269: Identifying Hose Section, Coolant Hose, Plug, Vessel, Extension Hose, Bleeder Valve, And Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hose section - **D** - (as extension) to coolant hose - **A** -.
- Seal coolant hose - **B** - with plug - **E** -.
- Place vessel - **C** - beneath extension hose - **D** -.
- Use compressed-air gun (with rubber mouthpiece) - **F** - to carefully blow coolant by way of open connection for bleeder valve - **G** - out of "drivers" heater core (into vessel - **C** -).

- Remove plug - **E** - from coolant hose - **B** - and insert it in coolant hose - **A** -.
- Connect hose section - **D** - (as extension) to coolant hose - **B** -.
- Use compressed-air gun (with rubber mouthpiece) - **F** - to carefully blow coolant by way of open connection for bleeder valve - **G** - out of "front passengers" heater core (into vessel - **C** -).
- Remove glove compartment --> **68 - INTERIOR EQUIPMENT** .

- Remove storage compartment beneath instrument panel on drivers side --> **68 - INTERIOR EQUIPMENT** .
- Remove center console side trim on right and left --> **68 - INTERIOR EQUIPMENT**

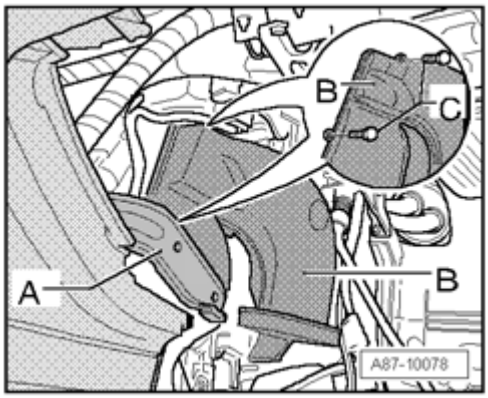

Fig. 270: Identifying Instrument Panel, Bolts, And Footwell Vent

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On right side, remove holder - **A** - for glove compartment --> **68 - INTERIOR EQUIPMENT** .
- Screw out bolts - **C** -.
- Remove air duct to right footwell vent - **B** - (for front passengers side).

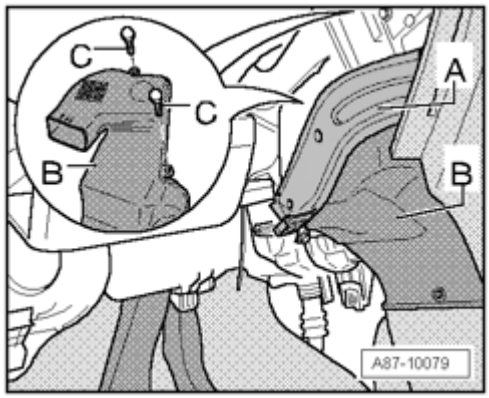

Fig. 271: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On left side, remove holder - **A** - for trim beneath instrument panel --> **68 - INTERIOR EQUIPMENT** .
- Screw out bolts - **C** -.
- Remove air duct to left footwell vent - **B** - (for drivers side).

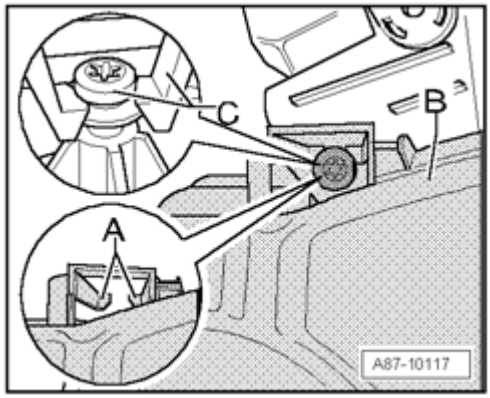

Fig. 272: Identifying Footwell Vent, Upper Bolt, And Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **In model year 2005, the mount of air channel to footwell vent - B - has been changed (gradual introduction), the upper bolt - C - must then no longer be removed, the air channel is clipped in with retaining tabs - A -.**
- **Remove pedal cluster --> 46 - BRAKES - MECHANICAL COMPONENTS .**

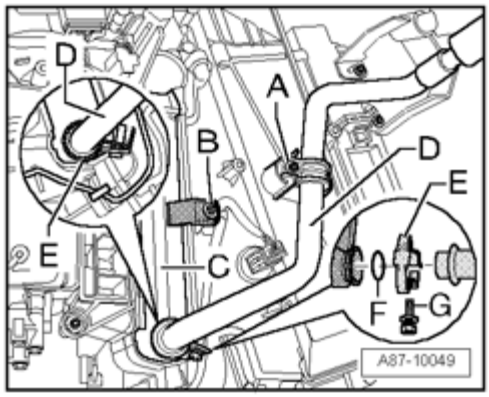

Fig. 273: Identifying Holders, Coolant Pipe, Heater Core, Bolt, And Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Protect floor covering in area of transmission tunnel on right beneath connection for coolant pipe - **D** - under heater core with impermeable sheeting and absorbent paper.
- Remove holder - **A** - for coolant pipe - **D** -.
- Remove clamp - **E** -.
- Position vessel beneath connection for coolant pipe - **D** - at heater core to catch any coolant escaping.
- Take coolant pipe - **D** - out of heater core.

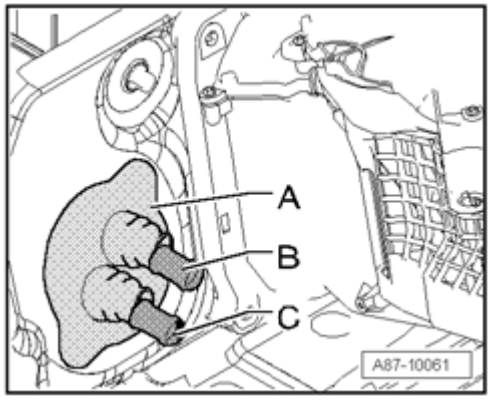

Fig. 274: Disconnect Coolant Hoses From Connections And Removing Socket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- After marking (to prevent interchange), disconnect coolant hoses from connections - **B** - and - **C** -.
- Remove socket - **A** -.
- Depending on vehicle equipment, remove electrical control modules and possibly corresponding holders impeding evaporator removal (e.g. Front Information Display Control Head Control Module J523) --> **91 - COMMUNICATION** .

Removing

- Perform preparatory work for evaporator removal.

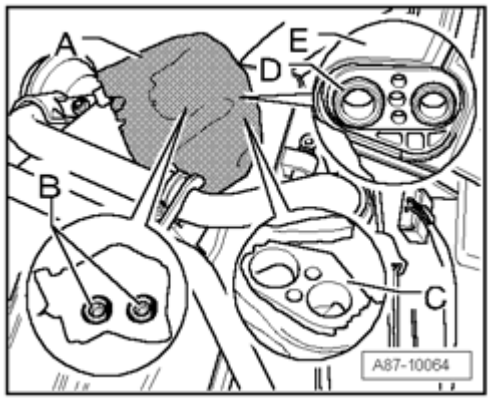

Fig. 275: Identifying Heat Insulation, Bolts, Evaporator, And Connecting Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat insulation - **A** - from connecting flange of refrigerant pipes at evaporator - **E** - (on left of Heating and A/C unit).
- Remove bolts - **B** -.
- Disconnect connecting flange - **C** - (of refrigerant pipes) from connecting flange - **D** - (at evaporator - **E** -).

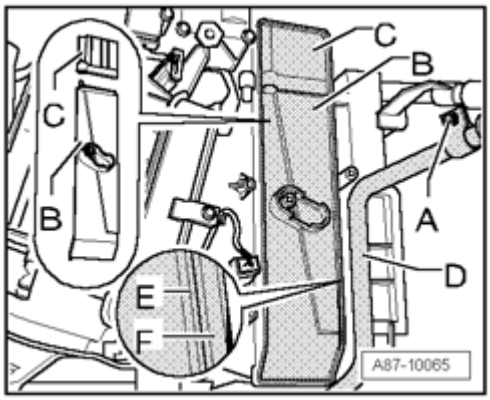

Fig. 276: Identifying Bolts, Coolant Pipe, Housing Wall, Parting Line, And Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolt - **A** - at holder for coolant pipes (on right of Heating and A/C unit, do not remove) and lay aside coolant pipe - **D** -.
- Wear cut-proof gloves (to protect hands when cutting out housing wall of Heating and A/C unit).
- Use sharp knife (e.g. strong pointed carpet knife with blade safely and firmly attached in handle) to cut housing wall - **B** - and - **C** - (on right of Heating and A/C unit) at parting line - **E** - out of Heating and A/C unit.

NOTE:

- **Take care not to damage flange - F - (seals Heating and A/C unit service cover).**

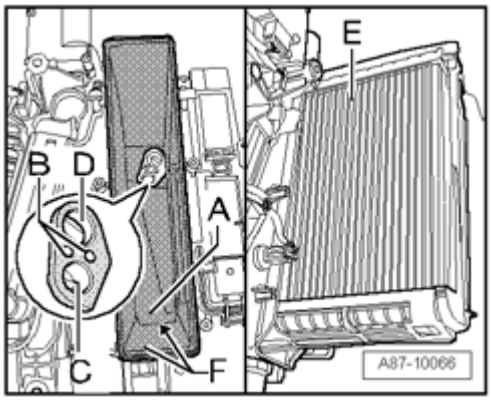

Fig. 277: Pulling Evaporator To Right Out Of Heating And A/C Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull evaporator - **E** - to right out of Heating and A/C unit.

NOTE:

- **If evaporator is stuck in Heating and A/C unit because of the all-round rubber seal, remove dust and pollen filter if necessary --> Dust and pollen filter, removing and installing to gain a firmer grip on evaporator.**

Installing

Before installing evaporator Refrigerant R134a - Servicing

Install in reverse order, paying attention to the following:

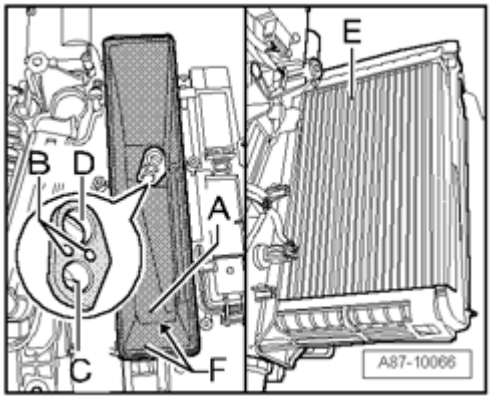

Fig. 278: Pulling Evaporator To Right Out Of Heating And A/C Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean mounting slot for evaporator in Heating and A/C unit - **A** -.

- Check both connections - **C** - and - **D** - in evaporator connecting flange of refrigerant pipes - **B** - for dirt and damage and clean if necessary.

NOTE:

- **Replacement of refrigerant pipes - B - with evaporator connecting flange involves removing air intake unit and disconnecting refrigerant pipes to Heating and A/C unit.**
- **Before installing evaporator, check openings of condensate drains - F - (on left and right in Heating and A/C unit) for dirt and clean if necessary.**

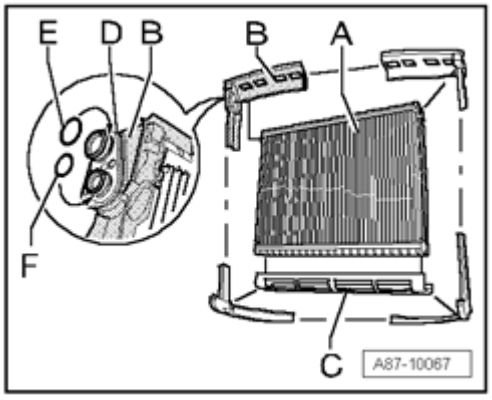

Fig. 279: Identifying Plastic Tray, Evaporator, Rubber Seal, Connecting Flange, And O-Rings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install plastic tray - **C** - to evaporator - **A** -.
- Install all-round rubber seal - **B** - to evaporator - **A** - , paying attention to correct positioning at evaporator connecting flange - **D** -.
- Replace O-rings - **E** - and - **F** - at connections - **D** - at evaporator - **A** - , version Parts List.

NOTE:

- **Moisten O-rings with small quantity of refrigerant oil before installing.**
- **Pay attention to correct positioning of O-rings - E - and - F - in groove in connecting pipes at evaporator connecting flange - D -.**
- **The evaporator removed contains refrigerant oil, which must be returned to refrigerant circuit Refrigerant R134a - Servicing.**
- **Moisten rubber seal - B - at bottom and top of evaporator with a small quantity of lubricant (e.g. soap solution).**

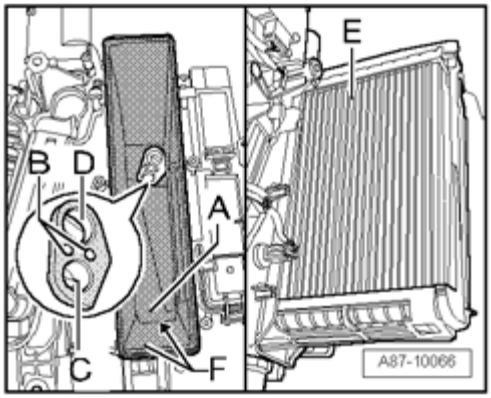

Fig. 280: Pulling Evaporator To Right Out Of Heating And A/C Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully install evaporator - **E** - in slot - **A** - of Heating and A/C unit, taking care not to damage evaporator connections.
- Check position of evaporator connecting flange - **D** - (must be flush with housing of Heating and A/C unit - **A** -).

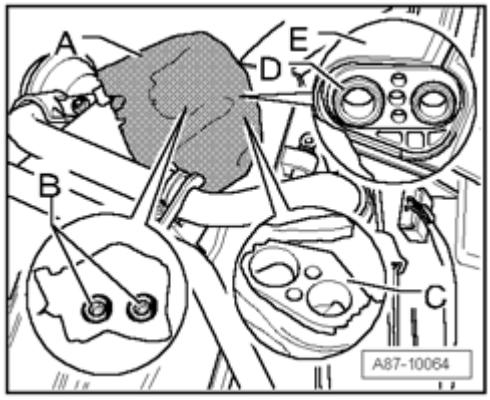

Fig. 281: Identifying Heat Insulation, Bolts, Evaporator, And Connecting Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check connecting flange of refrigerant pipes - **C** - and connecting flange at evaporator - **D** - for dirt and damage.
- Assemble connecting flange - **C** - (of refrigerant pipes) and connecting flange - **D** - at evaporator - **E** -.
- Install bolts - **B** - (tightening torque 10 Nm).
- Re-insulate connecting flange area at evaporator (from which insulation has been removed) with a section of self-adhesive thermal insulation mat - **A** -.

NOTE:

- **Thermal insulation mat is available as replacement item Parts List.**

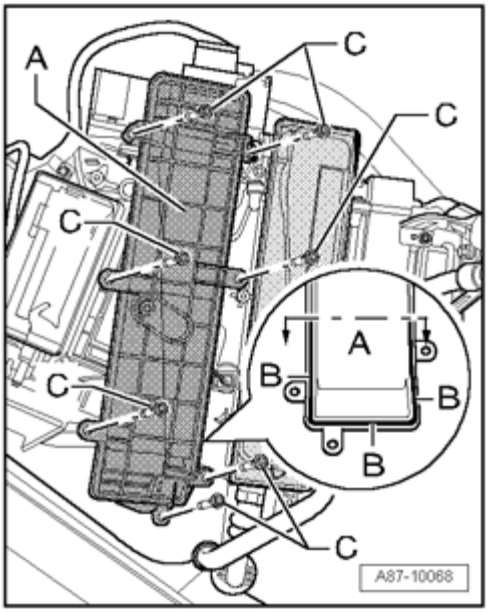

Fig. 282: Identifying Groove, Cover, And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fill groove - **B** - in bottom part of service cover - **A** - with silicone adhesive sealant D176 001 A3 for example.

NOTE:

- **Replacement service covers - A - are available with 7 bolts - C - Parts List.**
- **If Heating and A/C unit/service cover connection is not sealed, condensate may escape from Heating and A/C unit into footwell for example when cornering.**
- **Install service cover - A - over evaporator slot of Heating and A/C unit.**
- **Re-install components removed in reverse order except lower instrument panel trim (drivers side), glove compartment and plenum chamber cover.**

NOTE:

- **Bleed cooling circuit before plugging in 2-pin connector to Coolant Pump V50 of pump valve unit.**
- **Coolant circuit must be bled before starting up Coolant Pump V50 (in pump valve unit)**
- **Dry running of pump in pump valve unit would lead to destruction.**
- **Filling and bleeding coolant circuit -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**

- **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
- **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

NOTE:

- **When bleeding coolant circuit, take particular care to ensure complete bleeding of heater cores. If air bubbles remain in heater core, complaints may be received about lack of heat output in winter or differences in temperature of air flowing out of vents with same setting in control mode.**
- **After bleeding, check cooling system for leaks, paying particular attention to coolant pipe joints to heater core -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

  .
- **Check correct positioning of sockets in coolant pipe penetrations from plenum chamber to passenger compartment.**

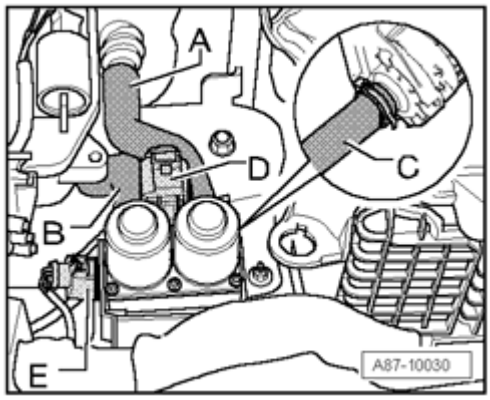

Fig. 283: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Following installation, check correct positioning of socket between engine compartment and plenum chamber at coolant hose - **C** -.
- Check pump valve unit; it must not make contact with other components (noise).

- Plug in connectors - **D** - to Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 and - **E** - to Coolant Pump V50 after bleeding coolant circuit.
- Evacuate and refill refrigerant circuit Refrigerant R134a - Servicing.
- After filling refrigerant circuit, check refrigerant pipe joints in plenum chamber and at evaporator for leaks e.g. with an electronic leak detector Refrigerant R134a - Servicing.
- Remove residual coolant from plenum chamber.
- Re-install remaining components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

Capacities

- Evacuating and filling refrigerant circuit Refrigerant R134a - Servicing.

NOTE:

- **Always fill refrigerant circuit as far as upper tolerance limit (some refrigerant remains in filler hoses) Refrigerant R134a - Servicing.**
- **Refrigerant circuit is only to be filled with approved refrigerant oils Parts List. Different types of refrigerant oil are specified for Zexel, Sanden and Denso compressors Refrigerant R134a - Servicing and Parts List.**
- **Refrigerant oil G 052 300 A2 is currently to be used for Denso compressors Parts List and Refrigerant R134a - Servicing.**
- **Refrigerant oil (PAG oil) from containers which have been open for a long time absorbs moisture and is no longer to be used.**
- **Further information Refrigerant R134a - Servicing**

Refrigerant R134a capacities for Audi A6 (4F_) 2005 -->

Characteristics of refrigerant circuit:

- Restrictor (red colored)
- Reservoir
- "Denso" compressor with A/C Compressor Regulator Valve N280 (without A/C clutch)

Vehicle model	Production period	Capacity in grams	Differing characteristics of this refrigerant circuit
Audi A6	04.04 onwards	530 $^{+}$ / - 20	• Red colored restrictor

NOTE:

- **Replacement restrictors with different holes are available (yellow colored 1.54 mm, red colored 1.42 mm).**
- **Depending on manufacturer, color of red restrictor may tend more towards orange.**

- **To avoid altering the cooling output of the air conditioner, only red colored restrictors are to be installed.**
- **Different compressors are installed depending on model Air conditioning and Parts List.**

Refrigerant oil capacities for Audi A6 (4F_) 2005 -->

Characteristics of refrigerant circuit:

- Restrictor
- Reservoir
- "Denso" compressor with A/C Compressor Regulator Valve N280 Air conditioning and Parts List

Vehicle model	Production period	Total quantity of oil in refrigerant circuit in cm^3	Quantity of refrigerant oil in replacement compressor in cm^3
Audi A6	04.04 onwards	130^{+} / -10	130^{+} / - 10

NOTE:

- **The replacement compressor contains the full quantity of oil intended for the refrigerant circuit. On replacement, the quantity of oil in the compressor is therefore to be adjusted.**
- **The Audi A6 is installed with different compressors depending on the engine and production period.**
- **As there are different replacement versions of this compressor, the exact part no. must be observed Air conditioning and Parts List.**
- **The compressor may have been installed at the factory with a rating plate indicating the part number and the quantity of refrigerant oil in the compressor.**

HEATING AND A/C UNIT, REMOVING AND INSTALLING

Heating and A/C unit, removing and installing

Special tools, testers and other items required

- Hose Clamps Up To 25mm Dia. 3094
- Commercially available compressed-air gun (with rubber mouthpiece)
- Cooling System Tester V.A.G 1274 (and appropriate adapters)

Preparation for removing Heating and A/C unit

NOTE:

- **With ignition on, valves of pump valve unit (Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176) are constantly actuated as a**

function of temperature setting on control and display unit, Climatronic Control Module J255. Valves may therefore be warm or even hot despite engine being cold.

- **If necessary, obtain radio anti-theft code before disconnecting battery.**
- **On vehicles with electrically adjustable seats, move seats to rearmost position before disconnecting battery.**
- **Drain refrigerant circuit Refrigerant R134a - Servicing.**
- **Move electrically operated seats to rearmost position.**
- **Switch off ignition.**
- **Place protective covers over drivers and front passengers seats.**
- **Disconnect Ground (GND) connection from battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL**
- **Remove center console and instrument panel --> 70 - INTERIOR TRIM .**

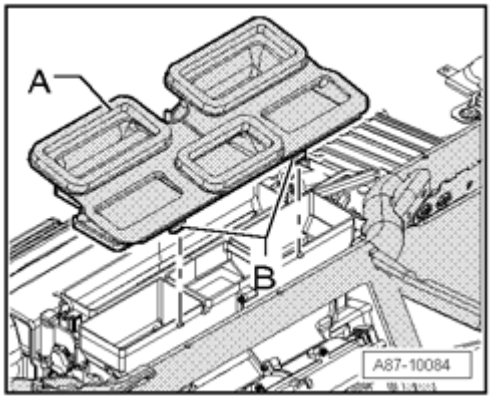

Fig. 284: Releasing Fasteners And Removing Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release fasteners - **B** - and remove air duct - **A** -.
- Remove central tube of instrument panel (instrument panel cross member) --> **70 - INTERIOR TRIM** .
- Dissipate pressure in coolant circuit by opening cap at coolant expansion tank -->
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
  - **19 - ENGINE - COOLING SYSTEM** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

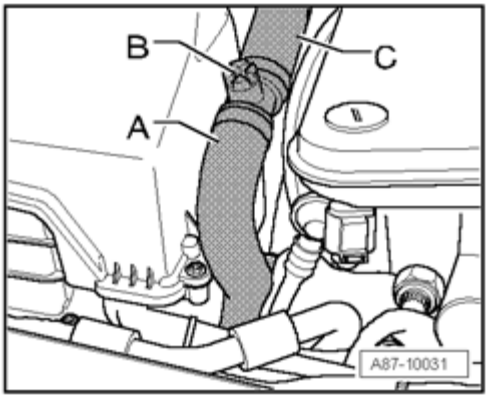

Fig. 285: Identifying Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pinch off coolant hose - **A** - (return from heater core to engine), e.g. using Hose Clamps Up To 25mm Dia. 3094.

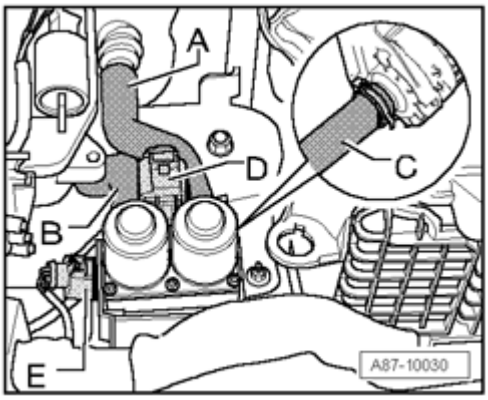

Fig. 286: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark arrangement of coolant hoses - **A** - (supply to left heater core) and - **B** - (supply to right heater core).
- Unplug connector - **D** - to Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176.
- Unplug connector - **E** - to Coolant Pump V50.
- Pinch off coolant hose - **C** - (supply from engine to Coolant Pump V50) e.g. using Hose Clamps Up To 25mm Dia. 3094.

- Disconnect coolant hoses - **A** - and - **B** - from connections of pump valve unit.

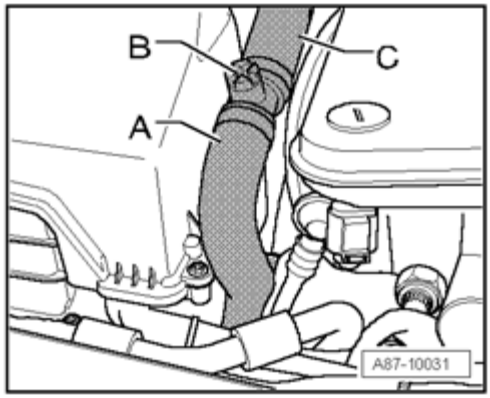

Fig. 287: Identifying Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove screw plug from bleeder valve - **B** -.

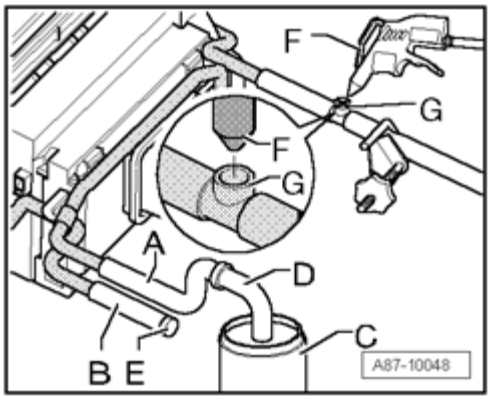

Fig. 288: Identifying Hose Section, Coolant Hose, Plug, Vessel, Extension Hose, Bleeder Valve, And Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hose section - **D** - (as extension) to coolant hose - **A** -.
- Seal coolant hose - **B** - with plug - **E** -.
- Place vessel - **C** - beneath extension hose - **D** -.
- Use compressed-air gun (with rubber mouthpiece) - **F** - to carefully blow coolant by way of open connection for bleeder valve - **G** - out of "drivers" heater core (into vessel - **C** -).

- Remove plug - **E** - from coolant hose - **B** - and insert it in coolant hose - **A** -.
- Connect hose section - **D** - (as extension) to coolant hose - **B** -.
- Use compressed-air gun (with rubber mouthpiece) - **F** - to carefully blow coolant by way of open connection for bleeder valve - **G** - out of "front passengers" heater core (into vessel - **C** -).
- Remove air intake unit --> **Air intake unit, removing and installing**.

- Disconnect refrigerant pipe from connection to Heating and A/C unit --> **Refrigerant pipes,**

disconnecting from Heating and A/C unit/connecting.

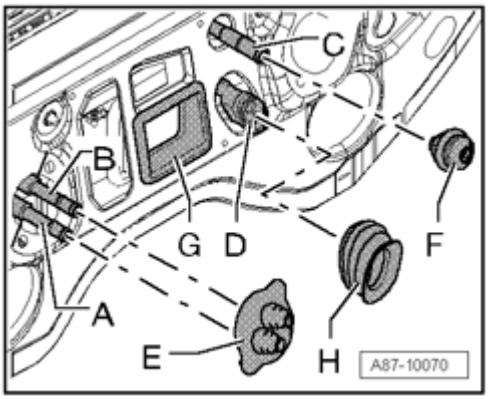

Fig. 289: Identifying Coolant Pipes And Sockets
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- After marking (to prevent interchange), disconnect coolant hoses from coolant pipes - **A** - , - **B** - and - **C** - .
- Remove sockets - **E** - and - **F** - from coolant pipes.
- Remove socket - **H** - from connecting flange of refrigerant pipes - **D** -.
- Remove socket - **G** - of air duct to Heating and A/C unit.

Removing

- Perform preparatory work for removing Heating and A/C unit --> **Preparation for removing Heating and A/C unit**.

NOTE:

- **On removal, note down bolt lengths and assignment for re-installation.**
- **All cable ties and other wiring harness fasteners released or cut open on removing Heating and A/C unit are to be re-installed in same position on installation.**
- **Remove air duct to vents in center console --> Air routing and air distribution in passenger compartment.**

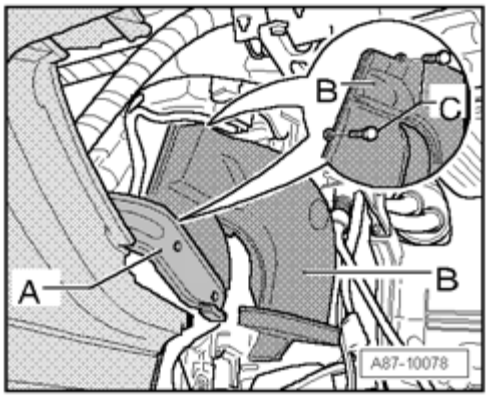

Fig. 290: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **C** -.
- Remove air duct to right footwell vent - **B** - (for front passengers side).

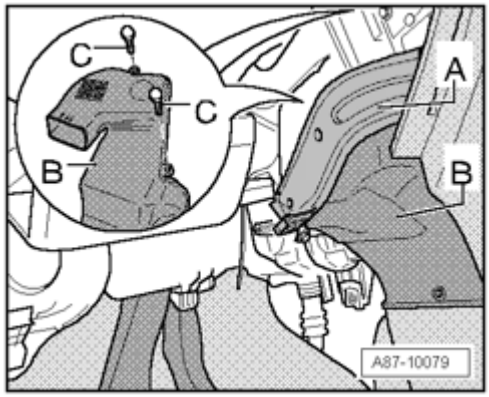

Fig. 291: Identifying Instrument Panel, Bolts, And Footwell Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **C** -.
- Remove air duct to left footwell vent - **B** - (for drivers side).

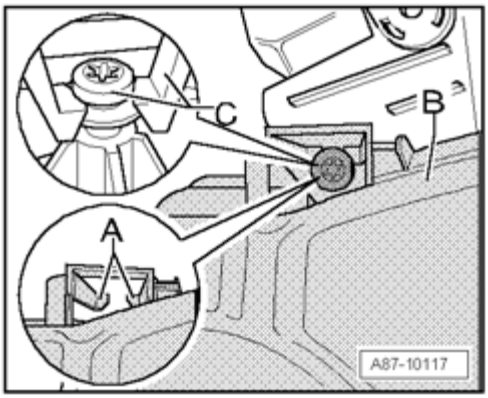

Fig. 292: Identifying Footwell Vent, Upper Bolt, And Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **In model year 2005, the mount of air channel to footwell vent - B - has been changed (gradual introduction), the upper bolt - C - must then no longer be removed, the air channel is clipped in with retaining tabs - A -.**

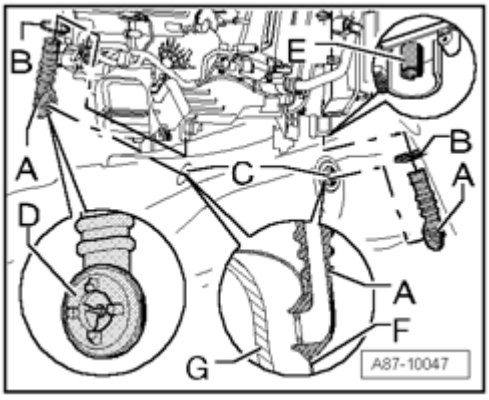

Fig. 293: Condensate Drain Hose, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove both condensate drains of Heating and A/C unit - **A** - --> **Condensate drain hose, checking, removing and installing**.

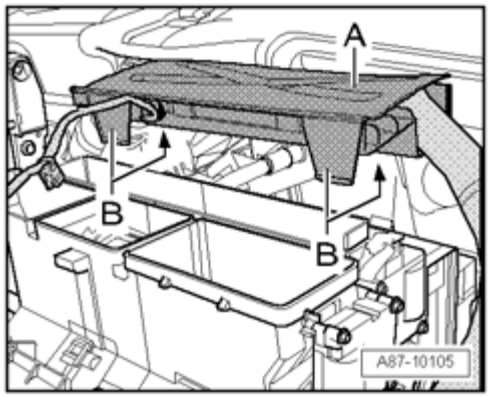

Fig. 294: Removing Cable Duct From Heating And A/C Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cable duct - **A** - from Heating and A/C unit (held in position by way of fasteners - **B** -).

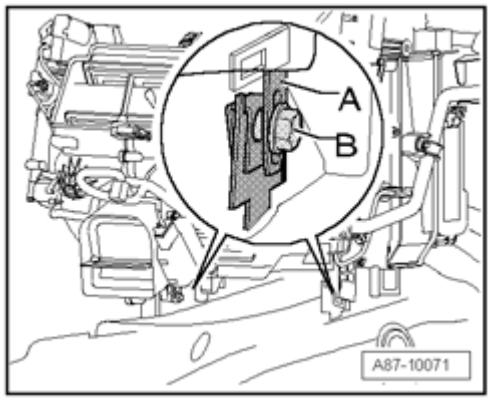

Fig. 295: Removing Bolts And Folding Back Holders
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **B** - (on left and right at transmission tunnel) and fold back holders - **A** -.
- Remove Heating and A/C unit.

Installing

Install in reverse order, paying attention to the following:

NOTE:

- **On inserting Heating and A/C unit, pay attention to wiring to control motors and seals (must not be trapped or damaged by studs).**
- **Check all seals and replace if necessary Parts List.**
- **Make sure coolant hoses are properly connected to heater core.**
- **Secure all hose connections with standard hose clamps/clips or approved replacement parts Parts List.**

- **Install Heating and A/C unit.**
- **Install central tube of instrument panel (instrument panel cross member) --> 70 - INTERIOR TRIM .**
- **Install holders between Heating and A/C unit and central tube of instrument panel insert --> 70 - INTERIOR TRIM .**

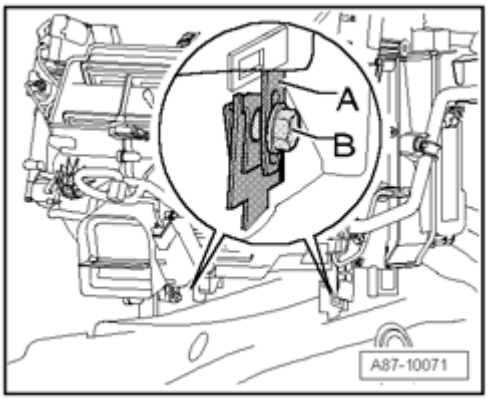

Fig. 296: Removing Bolts And Folding Back Holders
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fold holders - **A** - towards transmission tunnel and install bolts - **B** - (on left and right at transmission tunnel).

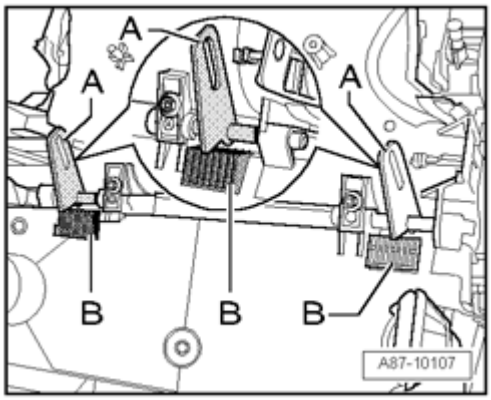

Fig. 297: Identifying Moveable Holders Attached To Heating And A/C Unit And Splines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Moveable holders - A - attached to Heating and A/C unit and splines - B - provide compensation for tolerance fluctuations and permit alignment of Heating and A/C unit with transmission tunnel.**
- **Re-install components removed in reverse order except lower instrument panel trim (drivers side), glove compartment and plenum chamber cover.**

NOTE:

- **Bleed cooling circuit before plugging in 2-pin connector to Coolant Pump V50 of pump valve unit.**
- **Coolant circuit must be bled before starting up Coolant Pump V50 (in pump valve unit).**
- **Dry running of pump in pump valve unit would lead to destruction.**
- **Filling and bleeding coolant circuit -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

NOTE:

- **When bleeding coolant circuit, take particular care to ensure complete bleeding of heater cores. If air bubbles remain in heater cores, complaints may be received about lack of heat output in winter or differences in temperature of air flowing out of vents with same setting in control mode.**
- **After bleeding, check cooling system for leaks, paying particular attention to coolant pipe joints to heater core -->**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK**
  - **19 - ENGINE - COOLING SYSTEM for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA**

  .
- **Check correct positioning of sockets in coolant pipe penetrations and at connecting flange of refrigerant pipes from plenum chamber to passenger compartment.**

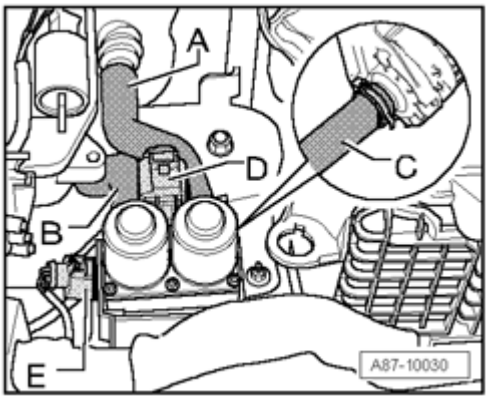

Fig. 298: Pinching Off Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Following installation, check correct positioning of socket between engine compartment and plenum chamber at coolant hose - **C** -.
- Check pump valve unit; it must not make contact with other components (noise).
- Plug in connectors - **D** - to Left Heat Regulating Valve N175 and Right Heat Regulating Valve N176 and - **E** - to Coolant Pump V50 after bleeding coolant circuit.
- Evacuate and refill refrigerant circuit Refrigerant R134a - Servicing.
- After filling refrigerant circuit, check refrigerant pipe joints in plenum chamber and at evaporator for leaks e.g. with an electronic leak detector Refrigerant R134a - Servicing.
- Remove residual coolant from plenum chamber.
- Re-install remaining components removed in reverse order.
- Check DTC memory of control and display unit, Climatronic Control Module J255 and erase any DTCs displayed "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.
- Perform Basic Setting and Output Diagnostic Test Mode (DTM) for air conditioner "Guided Fault Finding" function of Diagnostic operation system/Vehicle diagnosis service system VAS 5051 A/5052.

AIR CONDITIONER UNIT, DISASSEMBLY AND ASSEMBLY

Air conditioner unit, disassembly and assembly

NOTE:

- **On removing, mark the various control motors and the corresponding connecting elements between flap and motor to avoid interchange with connecting elements of other control motors.**
- **If connecting elements are interchanged, control motors with incorrect connecting elements do not attain specified end position and DTC "upper or lower limit value exceeded" may be displayed in DTC memory after Basic Setting.**

- **On disconnecting, mark the various connectors to the control motors to avoid interchange with identical connectors and control motors.**
- **The Heating and A/C unit wiring harness has various identical connectors which should be marked before unplugging to avoid interchange.**
- **The control motor housings are currently identical (exception: Rear Footwell Vent Motor V112). The shaft of each motor is however positioned differently as a result of different connecting elements and installation of connecting element may not be possible if this has been interchanged.**
- **Heating and A/C unit and air intake unit are installed with different control motors with different electrical values (e.g. potentiometer with adjustment range of 120 °or 150 °) and part number indices (at start of production e.g. no index, index "A" or index "B") Parts List. Control motors are therefore to be marked prior to removal to avoid interchange.**
- **Moisten guides of connecting elements as well as pins and toothed segments at flap levers with small quantity of grease G 000 150 .**
- **Refrigerant circuit must be drained before removing Heating and A/C unit Refrigerant R134a - Servicing.**
- **Removing and installing Heating and A/C unit --> Heating and A/C unit, removing and installing**

Heating and A/C unit, disassembling and assembling

NOTE:

- **Before disassembling, remove heating system heater core from Heating and A/C unit --> Housing for evaporator and heater core, disassembling and assembling and unplug connector from Evaporator Vent Temperature Sensor G263.**

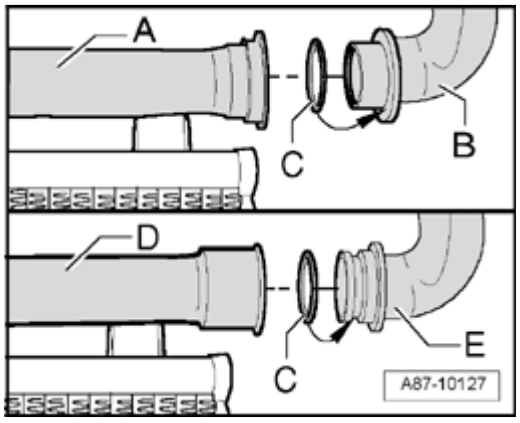

Fig. 299: Identifying Radial Seal Connections
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes was converted as a running change in production from an axial/radial seal - **A** - and - **B** - to a radial seal - **D** - and - **E** - , make sure the version

is correct when replacing the heater core Parts Catalog and O-ring seal - **C** - is in the correct installation position.

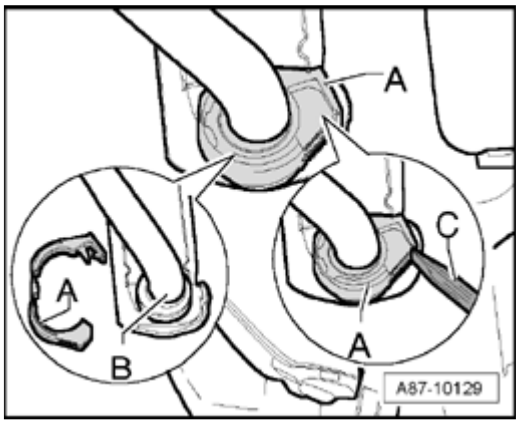

Fig. 300: Identifying Coolant Pipes, And Plastic Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles with a radial seal on coolant pipes - **B** - to heater core, a plastic clamp - **A** - may also be installed instead of screw clip Parts Catalog.
- Refrigerant circuit must be drained before removing Heating and A/C unit Refrigerant R134a - Servicing.
- Removing and installing Heating and A/C unit --> **Heating and A/C unit, removing and installing**

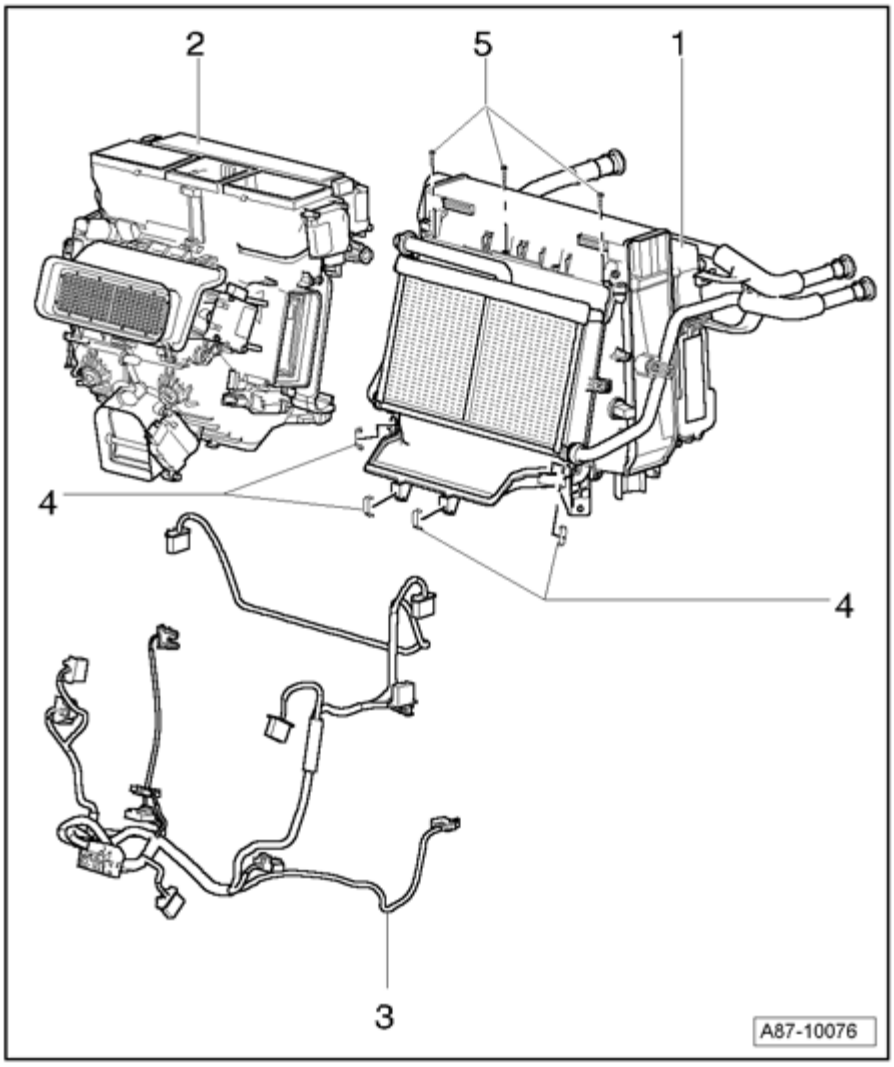

Fig. 301: Identifying Housing For Evaporator And Heater Core, Air Distributor Housing, Heating And A/C Unit Wiring Harness, Clip, And Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Housing for evaporator and heater core

- Different versions for LHD and RHD vehicles Parts List
- Disassembling and assembling --> **Housing for evaporator and heater core, disassembling and assembling**

2 - Air distributor housing

- Removing and installing electrical components with housing in position --> **Electrical components of Heating and A/C unit (with Heating and A/C unit in position), removing and installing**
- Removing electrical components and corresponding connecting elements from air distributor housing/re-installing --> **Electrical components and corresponding connecting elements, removing from air**

distributor housing/re-installing

3 - Heating and A/C unit wiring harness

- Mark the various connectors before unplugging to avoid interchange with identical connectors and control motors.
- Different versions for LHD and RHD vehicles Parts List

NOTE:

- **The Heating and A/C unit wiring harness has various identical connectors which should be marked before unplugging to avoid interchange.**

4 - Clip

5 - Bolt

Housing for evaporator and heater core, disassembling and assembling

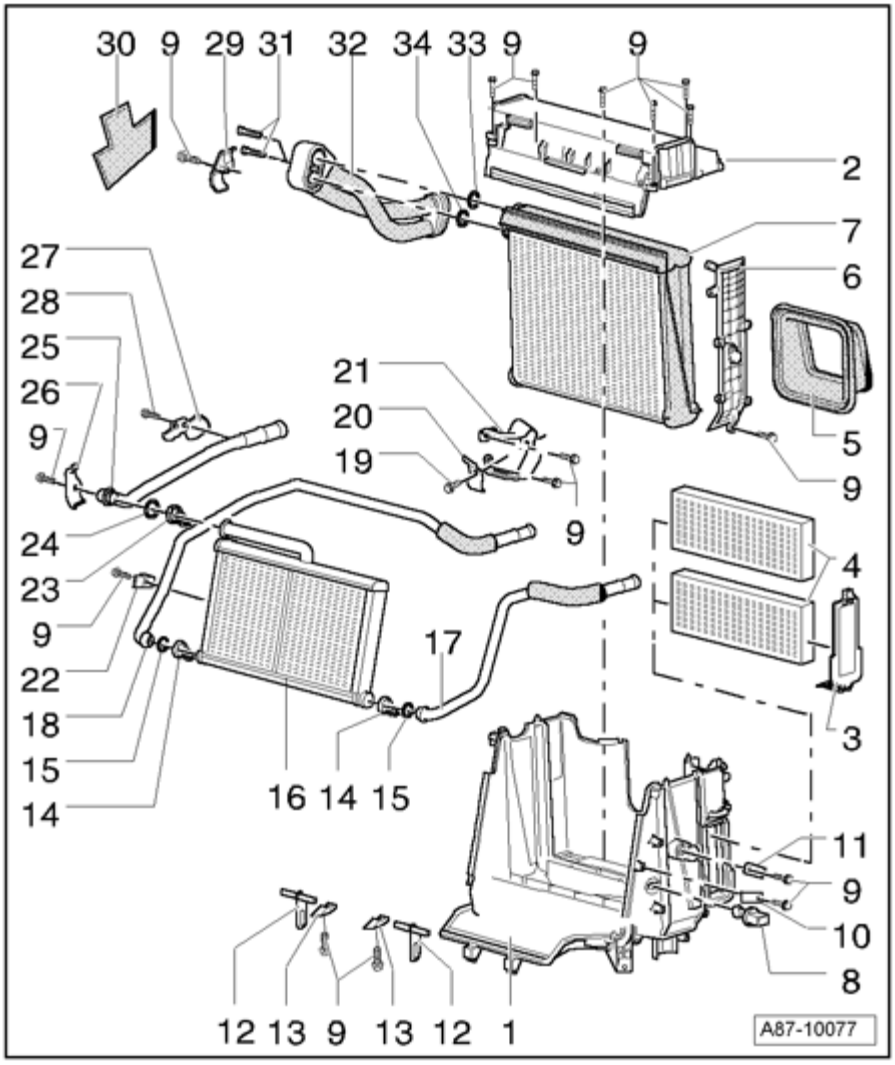

Fig. 302: Housing For Evaporator And Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bottom part of housing

- Different versions for LHD and RHD vehicles Parts List

2 - Top part of housing

3 - Slot cover for dust and pollen filter

- Removing and installing --> **Dust and pollen filter, removing and installing**

4 - Dust and pollen filter

- Removing and installing --> **Dust and pollen filter, removing and installing**

5 - Socket

- Air emerging from air intake unit is routed into Heating and A/C unit through this socket
- Socket is clipped into plenum chamber back wall; checking --> **Air intake unit, removing and installing**

6 - Service cover

- Removing and installing --> **Evaporator, removing and installing**

7 - Evaporator

- With rubber seal, plastic tray and O-rings --> **Evaporator, removing and installing**
- Removing and installing --> **Evaporator, removing and installing**

8 - Evaporator Vent Temperature Sensor G263

- Removing and installing --> **Evaporator Vent Temperature Sensor G263 , removing and installing**

9 - Bolt

10 - Holder for right heater core

11 - Holder for coolant pipe to heater core

12 - Holder for Heating and A/C unit at transmission tunnel

- This holder is used to compensate for positional tolerance between Heating and A/C unit and transmission tunnel

13 - Holder

14 - Clip

- Replace
- Special service version Parts List
- Removing and installing --> **Heater core, removing and installing**

15 - O-ring

- Replace Parts List

16 - Heating system heater core

- Removing and installing --> **Evaporator, removing and installing**
- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the

seal between connections on heater core and coolant pipes were converted as a running change in production from an axial/radial seal to a radial seal, pay attention to correct assignment --> **Heater core, removing and installing**.

17 - Coolant pipe

- Supply from pump valve unit to right side of heater core
- Different versions for LHD and RHD vehicles Parts List
- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes were converted as a running change in production from an axial/radial seal to a radial seal, pay attention to correct assignment --> **Heater core, removing and installing**.

18 - Coolant pipe

- Supply from pump valve unit to left side of heater core
- Different versions for LHD and RHD vehicles Parts List
- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes were converted as a running change in production from an axial/radial seal to a radial seal, pay attention to correct assignment --> **Heater core, removing and installing**.

19 - Bolt

20 - Holder for coolant pipe

21 - Holder for coolant pipe

22 - Holder for left heater core

23 - Clip

- Replace
- Special service version Parts List
- Removing and installing --> **Evaporator, removing and installing**

24 - O-ring

- Replace Parts List

25 - Coolant pipe

- Return from heater core to engine
- There are different versions of the heater core and the associated coolant pipes. In model year 2006, the seal between connections on heater core and coolant pipes were converted as a running change in

production from an axial/radial seal to a radial seal, pay attention to correct assignment --> **Heater core, removing and installing**.

26 - Holder for left coolant pipes

- Different versions for LHD and RHD vehicles Parts List

27 - Holder for left coolant pipe (return)

28 - Bolt

29 - Holder for refrigerant pipes

30 - Heat insulation

- Self-adhesive
- For connecting flange of refrigerant pipes at evaporator Parts List

31 - Bolt

- Tightening torque 10 Nm

32 - Refrigerant pipes

- From connecting flange in plenum chamber to evaporator
- With heat insulation

33 - O-ring

- Replace Parts List

34 - O-ring

- Replace Parts List

Electrical components and corresponding connecting elements, removing from air distributor housing/re-installing

NOTE:

- **On removing, mark the various control motors and the corresponding connecting elements between flap and motor to avoid interchange with connecting elements of other control motors.**
- **On disconnecting, mark the various connectors to the control motors to avoid interchange with identical connectors and control motors.**
- **The Heating and A/C unit wiring harness has various identical connectors which should be marked before unplugging to avoid interchange.**
- **If connecting elements are interchanged, control motors with incorrect**

connecting elements do not attain specified end position and DTC "upper or lower limit value exceeded" may be displayed in DTC memory after Basic Setting.

- **The control motor housings are currently identical (exception: Rear Footwell Vent Motor V112). The shaft of each motor is however positioned differently as a result of different connecting elements and installation of connecting element may not be possible if this has been interchanged.**
- **Heating and A/C unit and air intake unit are installed with different control motors with different electrical values (e.g. potentiometer with adjustment range of 120 °or 150 °) and part number indices (at start of production e.g. no index, index "A" or index "B") Parts List. Control motors are therefore to be marked prior to removal to avoid interchange.**
- **Moisten guides of connecting elements as well as pins and toothed segments at flap levers with small quantity of grease G 000 150 .**

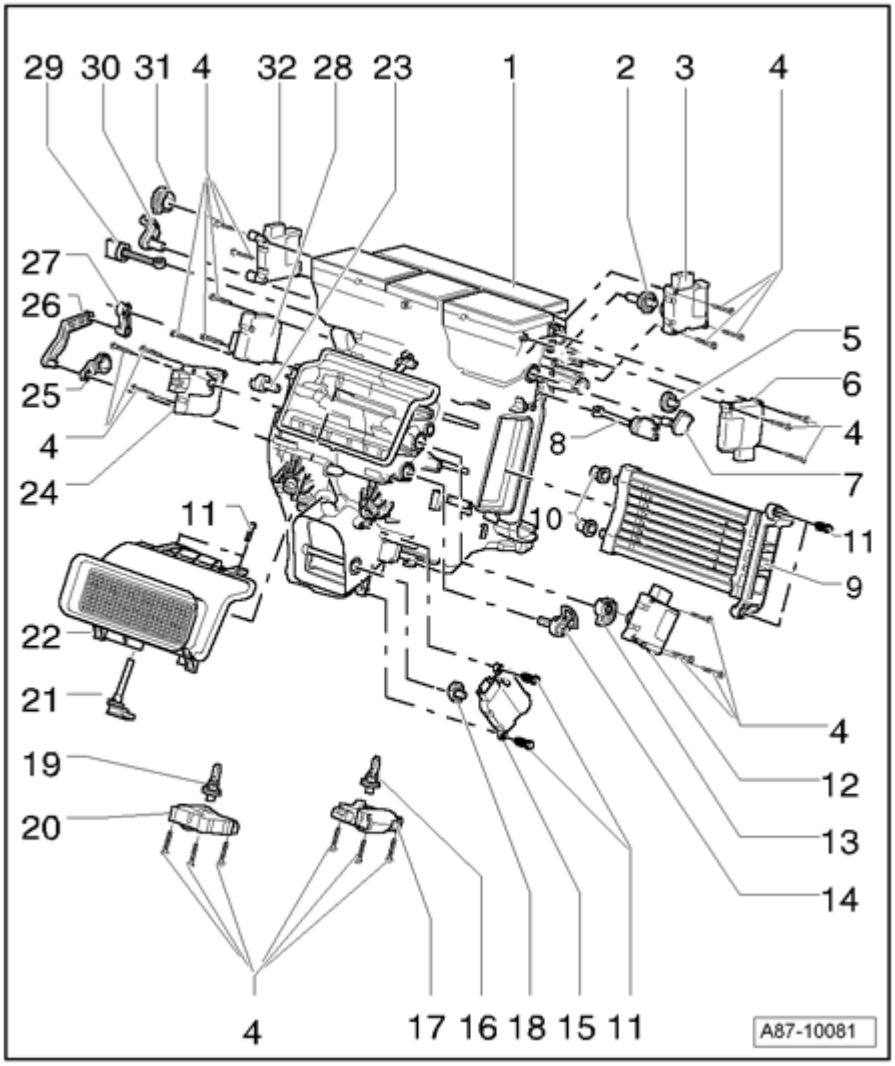

Fig. 303: Electrical Components And Corresponding Connecting Elements

Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Air distributor housing

- Not to be further disassembled

2 - Connecting element (shaft/control motor)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Connecting elements, removing and installing to the various Heating and A/C unit flaps**

3 - Defroster Flap Motor V107

- With Defroster Flap Motor Position Sensor G135
- Removing and installing --> **Defroster Flap Motor V107 , removing and installing**

4 - Bolt

5 - Connecting element (to control motor)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Right Front Upper Body Outlet Motor V238 , removing and installing**

6 - Right Front Upper Body Outlet Motor V238

- Right Front Upper Body Outlet Motor V238 has an integrated Right Front Upper Body Outlet Position Sensor G388.
- Removing and installing --> **Right Front Upper Body Outlet Motor V238 , removing and installing**

7 - Connecting element (to shaft)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Connecting elements, removing and installing to the various Heating and A/C unit flaps**

8 - Right Vent Temperature Sensor G151

- Removing and installing --> **Right Vent Temperature Sensor G151 , removing and installing**

9 - Auxiliary Air Heater Heating Element Z35

- Not for USA

10 - Rubber bush

11 - Bolt

12 - Front Cold Air Flap Motor V197

- With Front Cold Air Flap Motor Position Sensor G315
- Removing and installing --> **Front Cold Air Flap Motor V197 , removing and installing**

13 - Connecting element (to control motor)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Front Cold Air Flap Motor V197 , removing and installing**

14 - Connecting element (to shaft)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Connecting elements, removing and installing to the various Heating and A/C unit flaps**

15 - Rear Footwell Vent Motor V112

- With Rear Footwell Vent Motor Position Sensor G141
- Removing and installing --> **Rear Footwell Vent Motor V112 , removing and installing**

16 - Connecting element (shaft/control motor)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Rear Footwell Vent Motor V112 , removing and installing**

17 - Right Footwell Flap Motor V109

- Right Footwell Flap Motor V109 has an integrated Right Footwell Flap Motor Position Sensor G140.
- Removing and installing --> **Right Footwell Flap Motor V109 , removing and installing**

18 - Connecting element (shaft/control motor)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Connecting elements, removing and installing to the various Heating and A/C unit flaps**

19 - Connecting element (shaft/control motor)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Connecting elements, removing and installing to the various Heating and A/C unit flaps**

20 - Left Footwell Flap Motor V108

- With Left Footwell Flap Motor Position Sensor G139
- This control motor is only installed on vehicles with control and display unit, Climatronic Control Module J255
- Removing and installing --> **Left Footwell Flap Motor V108 , removing and installing**

21 - Center Outlet Temperature Sensor G191

- Removing and installing --> **Center Outlet Temperature Sensor G191 , removing and installing**
- The Center Outlet Temperature Sensor G191 is being gradually discontinued, therefore pay attention to correct assignment of Climatronic Control Module J255 (different versions) Parts Catalog

22 - Air duct to center instrument panel vents

- Integrated grille helps to improve swirl and mixing of air flow
- This air duct is available as a replacement part with and without opening for mounting of Center Outlet Temperature Sensor G191 Parts Catalog. Close mounting opening or open mounting opening by breaking out the plastic at the locations marked, depending on the vehicle equipment

23 - Connecting element (shaft/control motor)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Connecting elements, removing and installing to the various Heating and A/C unit flaps**

24 - Center Vent Adjustment Motor V102

- With Center Vent Motor Position Sensor G138
- Removing and installing --> **Center Vent Adjustment Motor V102 , removing and installing**

25 - Connecting element (control motor/connecting rod)

- Removing and installing --> **Indirect Ventilation Flap Motor V213 , removing and installing**
- Only installed on vehicles with control and display unit, Climatronic Control Module J255

26 - Connecting rod

- Removing and installing --> **Indirect Ventilation Flap Motor V213 , removing and installing**
- Only installed on vehicles with control and display unit, Climatronic Control Module J255

27 - Connecting element (shaft/connecting rod)

- Removing and installing --> **Indirect Ventilation Flap Motor V213 , removing and installing**

- Only installed on vehicles with control and display unit, Climatronic Control Module J255

28 - Indirect Ventilation Flap Motor V213

- With Indirect Ventilation Flap Motor Position Sensor G330
  - This control motor is only installed on vehicles with control and display unit, Climatronic Control Module J255.
- Removing and installing --> **Indirect Ventilation Flap Motor V213 , removing and installing**

29 - Left Vent Temperature Sensor G150

- Removing and installing --> **Left Vent Temperature Sensor G150 , removing and installing**

30 - Connecting element (to shaft)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Connecting elements, removing and installing to the various Heating and A/C unit flaps**

31 - Connecting element (to control motor)

- Mark prior to removal to avoid interchange
- Removing and installing --> **Left Front Upper Body Outlet Motor V237 , removing and installing**
- Only installed on vehicles with control and display unit, Climatronic Control Module J255

32 - Left Front Upper Body Outlet Motor V237

- This control motor is only installed on vehicles with control and display unit, Climatronic Control Module J255
- Removing and installing --> **Left Front Upper Body Outlet Motor V237 , removing and installing**

Connecting elements, removing and installing to the various Heating and A/C unit flaps

Removing

- Remove relevant control motor --> **Electrical components of Heating and A/C unit (with Heating and A/C unit in position), removing and installing** (removing and installing electrical components of Heating and A/C unit with unit in position).

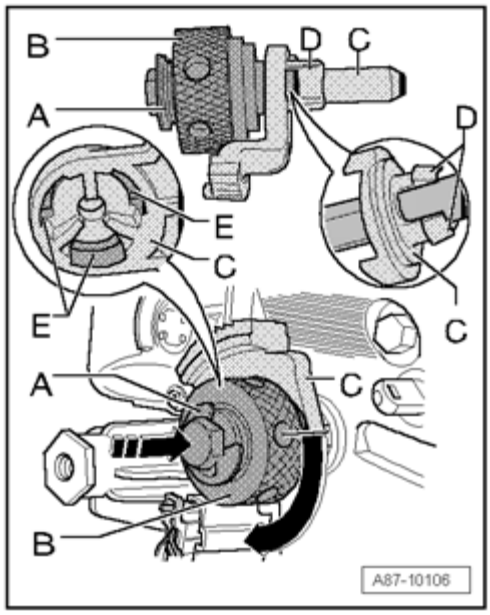

Fig. 304: Identifying Connecting Element And Knurled Wheel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert Release Tool T40072 - **A** - as shown in openings - **E** - of connecting element - **C** -.

NOTE:

- **Due to the different types of connecting element - C - , it is not always possible to insert special Release Tool T40072 - A - to the same depth.**
- **Press special Release Tool T40072 in direction of connecting element - C - and release fasteners - D - by turning knurled wheel - B - in direction of arrow.**
- **Pull connecting element - C - out of Heating and A/C unit.**

Installing

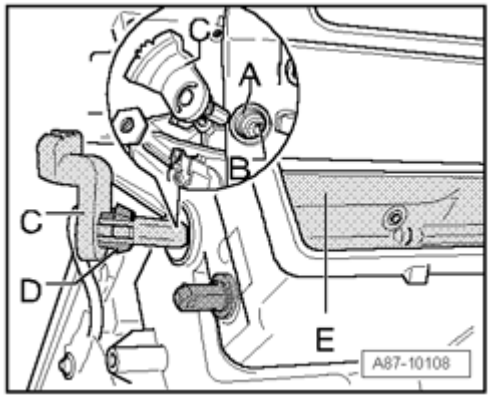

Fig. 305: Identifying Connecting Element, Flap, And Retainer Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Moisten mount of connecting element - **A** - in Heating and A/C unit with small quantity of **grease G 000 150** .

NOTE:

- **Fig. shows connecting element at flap for center vent.**
- **Check position of flap - E - in Heating and A/C unit, taking care to also ensure that flap is properly located in second mount.**
- **Check retainer tabs - D - at connecting element - C - for damage.**
- **Insert connecting element - C - in mount - B - of flap - E - , paying attention to grooves of connecting element - C - and lugs in flap mount.**
- **Check engagement of connecting element - C - in Heating and A/C unit.**
- **Check freedom of movement of flap - E - and connecting element - C -.**