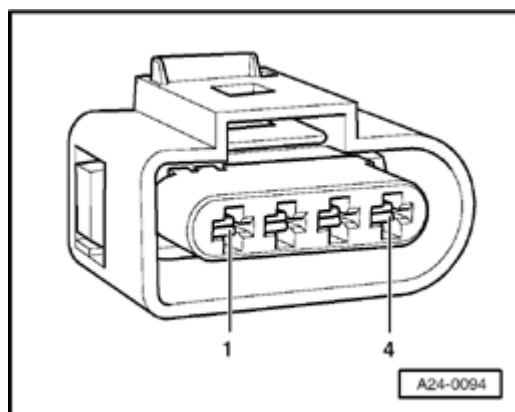


- A** - Disconnect the 4-pin harness connector -1- at one ignition coil -2-.

Note:

For further testing, connect the multimeter to harness connector in place of an ignition coil.



- A** - Connect multimeter for voltage measurement as follows.

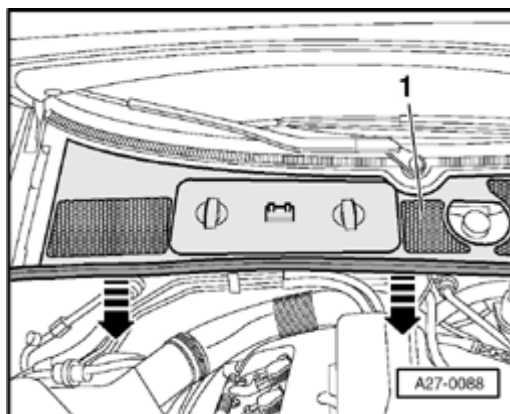
Harness connector	Measure to
Terminal	
1	Engine Ground (GND)

- Switch ignition on.
 - ◆ Specified value: approx. battery voltage
- Switch ignition off.

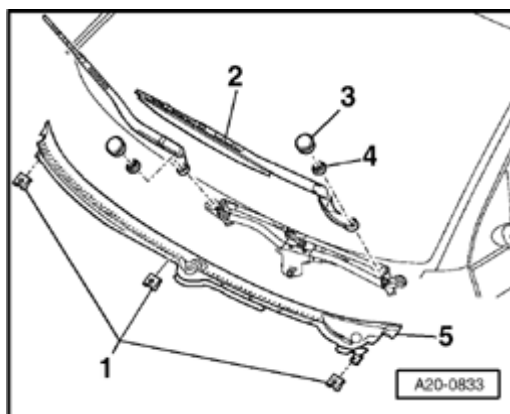


If specified value is not obtained:

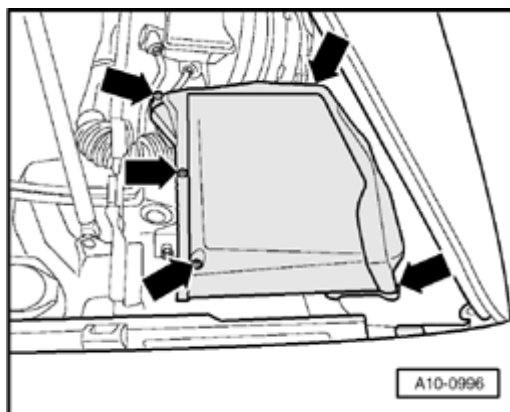
- Remove rubber seal for plenum chamber cover.



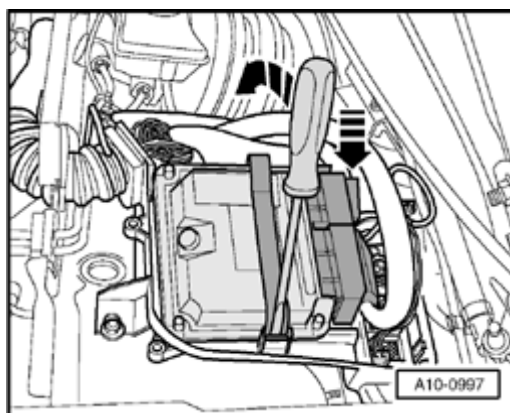
- A** - Remove plenum chamber cover -1- toward front (arrows).



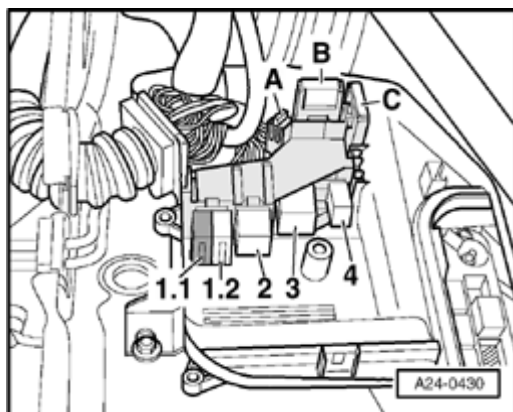
- A** - Pry off both covers -3- using a screwdriver.
- Loosen hex-nuts -4- by several turns.
- Loosen wiper arm -2- from wiper axle by lightly tilting.
- Remove hex nuts completely and remove wiper arms.
- Disconnect securing clips -1- and remove cowl grill -5-.



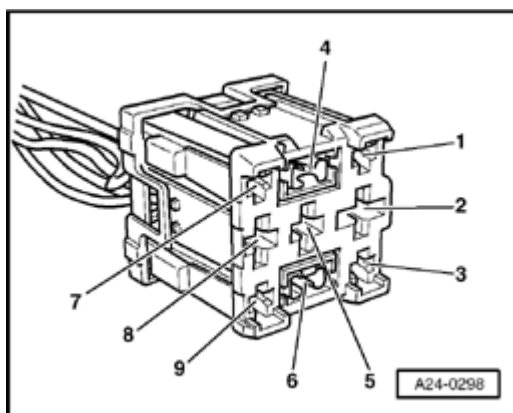
- A**
- Remove cover for E-box, plenum chamber (arrows).



- A**
- Pry off Engine Control Module (ECM) retaining bracket (arrows) using a screwdriver and set control module aside.
 - If installed, unclip Transmission Control Module (TCM) retaining bracket and set control module aside.



A - Disconnect voltage supply relay -3-.



A - Check the following wire connection for open circuit according to wiring diagram:

Relay carrier in E-box, plenum chamber, position 3	Harness connector at ignition coils
Terminal	Terminal
8	1

◆ Specified value: Wire resistance max 1.5 Ω

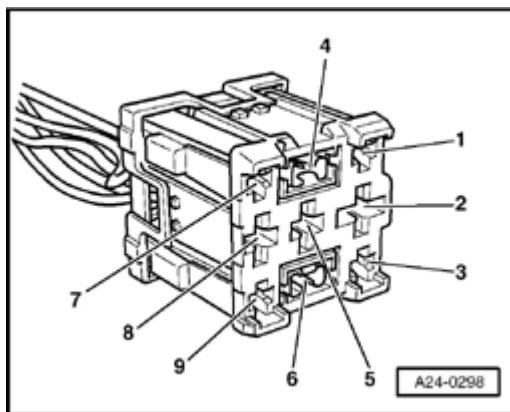
- If necessary, repair wire connection.



If no malfunctions are found in wires:

- Check voltage supply of Motronic Engine Control Module (ECM) voltage supply relay - J271 - => [Page 24-158](#) .
- Check activation of Motronic Engine Control Module (ECM) voltage supply relay - J271 - => [Page 24-159](#) .

Checking voltage supply



- Connect multimeter for voltage measurement as follows.

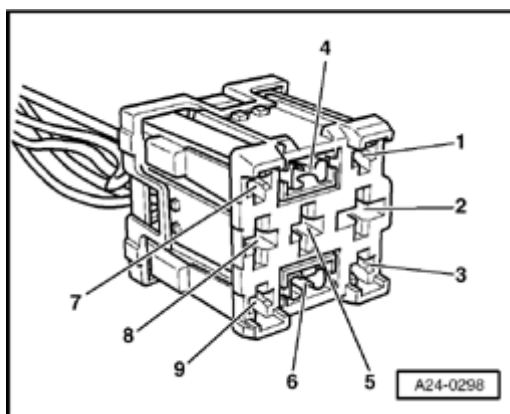
Relay carrier in E-box, plenum chamber, position 3	Measure to
Terminal	
1	Engine Ground (GND)
2	Engine Ground (GND)

◆ Specified value: approx. battery voltage

If specified value is not obtained:

- Check wire connections for open circuit according to wiring diagram.

◆ Specified value: Wire resistance max 1.5 Ω



Checking activation

A

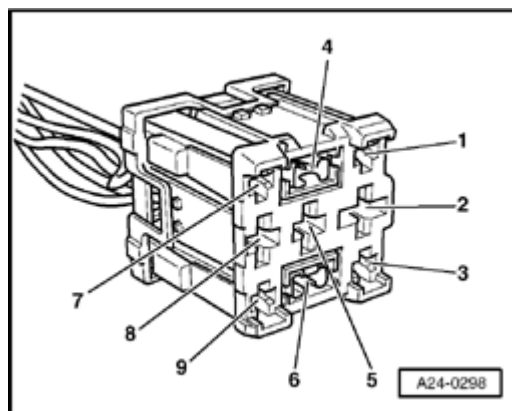
- Connect multimeter for voltage measurement as follows.

Relay carrier in E-box, plenum chamber, position 3	Measure to
Terminal	
4	B+

- Switch ignition on.
 - ◆ Specified value: approx. battery voltage
- Switch ignition off.

If specified value is not obtained:

- Connect test box to wiring harness of Engine Control Module (ECM) ⇒ [Page ST-14](#) ; ECM is not connected.



- Check the following wire connection for open circuit according to wiring diagram:

Relay carrier in E-box, plenum chamber, position 3		Test box
Terminal		Socket
	4	23

- ◆ Specified value: Wire resistance max 1.5 Ω
- Also check the wire for short circuit to B+ and Ground (GND).
 - ◆ Specified value: $\infty \Omega$ (no continuity)
- If necessary, repair wire connection.

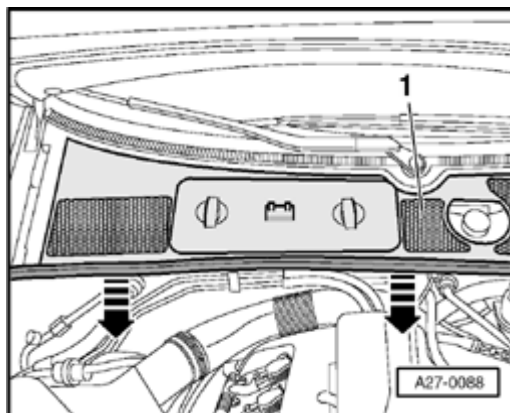
If no malfunctions are detected:

- Replace Motronic Engine Control Module (ECM) voltage supply relay - J271 -.

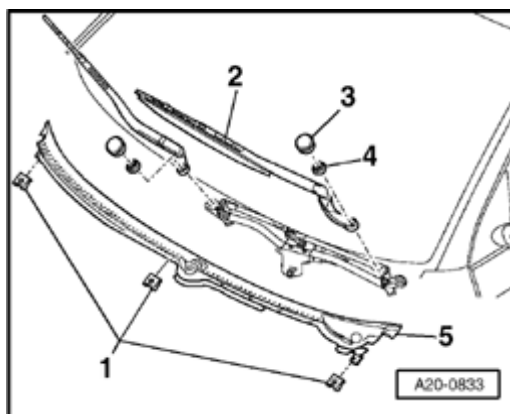


Engine Control Module (ECM), removing and installing

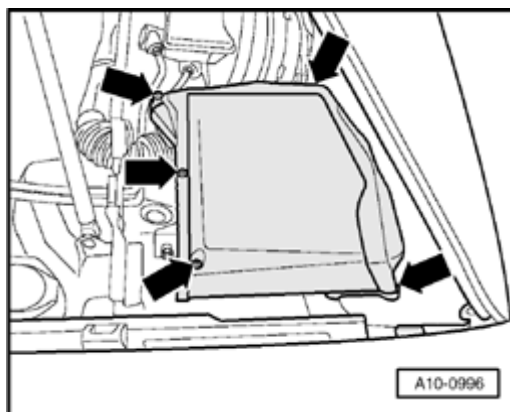
Removing



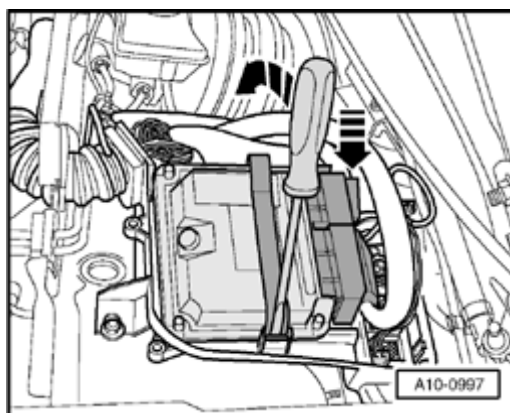
- A - Pull off rubber seal of plenum chamber cover in direction of arrow.
- Remove cover -1- toward front.



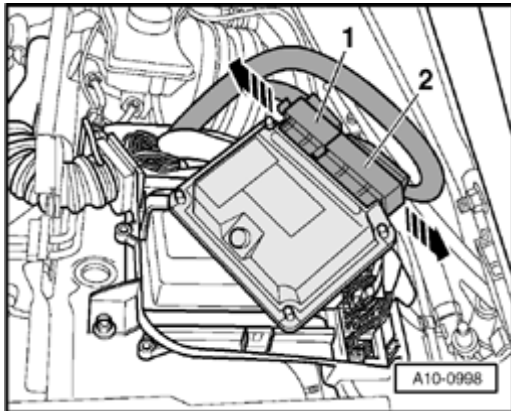
- A - Pry off both covers -3- using a screwdriver.
- Loosen hex-nuts -4- by several turns.
- Loosen wiper arm -2- from wiper axle by lightly tilting.
- Remove hex nuts completely and remove wiper arms.
- Disconnect securing clips -1- and remove cowl grill -5-.



- A - Remove cover for E-box, plenum chamber (arrows).



- A - Using a screwdriver, pry off retaining bracket (arrows).



A

- Disengage connector catches (arrows) and disconnect harness connectors -1- and -2- from Engine Control Module (ECM).

Note:

Adaptation values are erased when connector is disconnected from the Engine Control Module (ECM), DTC memory content remains intact.

- Remove Engine Control Module (ECM).

Installing

Installation is performed in the reverse order of removal.

Final procedures

After connecting harness connectors to Engine Control Module (ECM), the following work steps must be performed in the mentioned sequence:

- 1 - Check DTC memory ⇒ "Mode 3: Check DTC memory" ⇒ [Page ST-25](#) .
- 2 - If necessary, erase DTC memory ⇒ "Mode 4: Reset/erase diagnostic data" ⇒ [Page ST-30](#) .
- 3 - If DTC memory was erased, generate readiness code ⇒ [Page ST-66](#) .



Replacing Engine Control Module (ECM)

Notes:

To achieve optimal anti-theft protection for the vehicle, an anti-theft immobilizer was installed. The anti-theft immobilizer is a system for enabling/locking the Engine Control Module (ECM).

So that this system cannot be circumvented, it is necessary to perform adaptation of the anti-theft immobilizer using the VAS 5052 in the On Board Diagnostic (OBD) function.

The great availability of equipment options makes adaptation of the Engine Control Module (ECM) necessary (e.g. cruise control system). This "writing" function is not possible with the generic scan tool, therefore it is necessary to use the VAS 5052 in On Board Diagnostic (OBD) function for this purpose.

- Procedure to replace Engine Control Module (ECM):

⇒ Motronic Fuel Injection and Ignition (4-cylinder Turbo); Repair Group 24; Engine Control Module (ECM), replacing



Final procedures

After connecting harness connectors to Engine Control Module (ECM), the following work steps must be performed in the mentioned sequence:

1 - Check DTC memory ⇒ "Mode 3: Check DTC memory" ⇒ [Page ST-25](#) .

2 - If necessary, erase DTC memory ⇒ "Mode 4: Reset/erase diagnostic data" ⇒ [Page ST-30](#) .

3 - If DTC memory was erased, generate readiness code ⇒ [Page ST-66](#) .