Your Vehicle: 2010 Audi Q7 Quattro (4LB) V6-3.0L DSL Turbo (CATA)





## Testing and Inspection

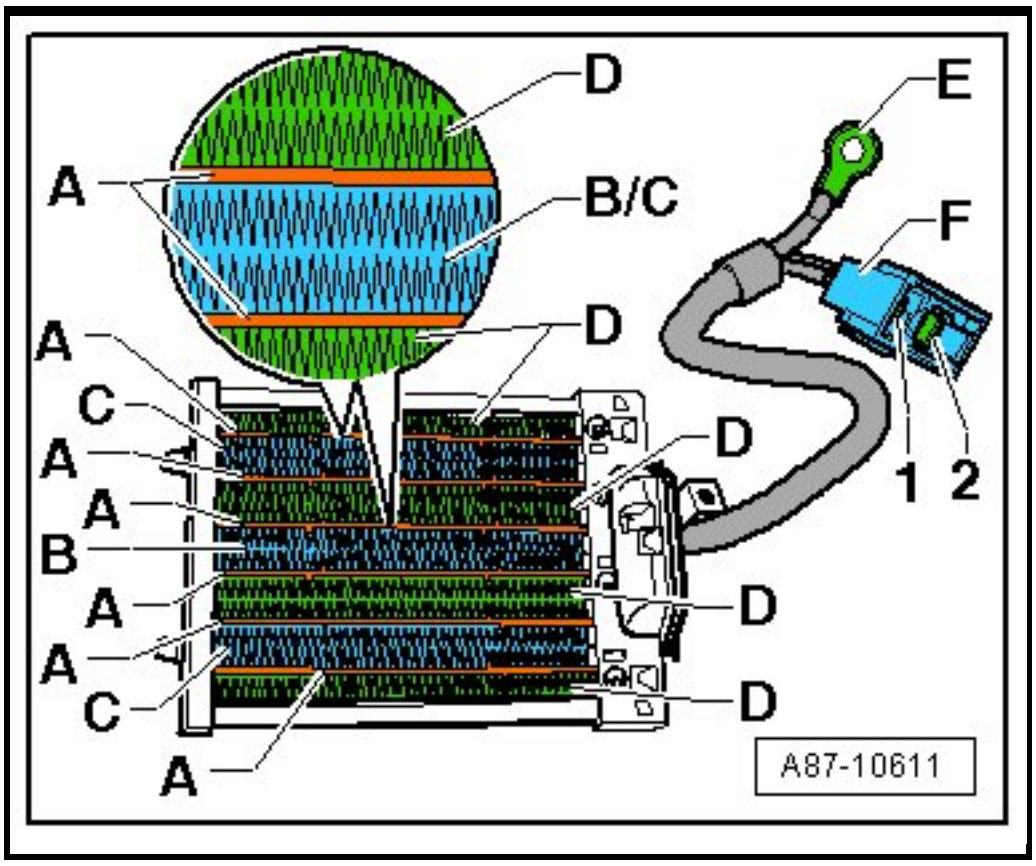
### Auxiliary Heater Heating Element (Z35), Checking

Install only on certain vehicles with a 6 cylinder TDI engine, from MY 09. Refer to Audi Sales Program.

- Vehicles with a diesel engine through MY 08 always have a fuel driven auxiliary heater.
- Starting with MY 2009, certain vehicles with a 6 cylinder TDI engine without an auxiliary heater, have an auxiliary air heater heating element installed depending on the emissions standard (running change depending on the engine). If the vehicle has an auxiliary air heater heating element then the fuel driven auxiliary heater is deleted. Refer to Audi Sales Program.
- At this time, no additional heater is installed in vehicles with gasoline engine, i.e. auxiliary heater is not activated as additional heater.
- In vehicles with a diesel engine and optional parking heater without an auxiliary air heater heating element installed (depends on equipment), the parking heater takes on the function of auxiliary heater and works as a fuel-driven auxiliary heater (the parking heater sends thermal energy to the coolant) (Refer to Audi Sales Program ).
- The electrical auxiliary heater (the auxiliary air heater heating element) is activated via the respective engine control module (the control modules exchange information about this via the databus system). Check using Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" function and.
- The measured value block for the Climatronic Control Module (J255) indicates if the auxiliary heater (electric or fuel driven auxiliary heater or the auxiliary heater function of the parking heater) is switched on or why it is not activated despite the low ambient temperature. Check using Vehicle Diagnosis, Testing and Information System VAS 5051 in the "Guided Fault Finding" function.
- The check of the auxiliary air heater heating element activation can be found in Vehicle Diagnosis, Testing and Information System VAS 5051 in the "Guided Fault Finding" function (for the engine installed in the vehicle).
- Auxiliary heater heating element, removing and installing, refer to => [ Auxiliary Heater Heating Element ] See: Auxiliary Heater Element\Service and Repair.
- A reinforced auxiliary air heater heating element with a maximum output of 1500 W (instead of 1200 W) is installed for vehicles from MY 2013 with running changes. Make sure that the auxiliary air heater heating element is allocated correctly to the vehicle. Refer to the Electronic Parts Catalog (ETKA).

Design and function of the auxiliary air heater heating element

- On vehicles with an electric air heater, the air is supplied with heat energy after leaving the heater core of the A/C unit if there is a request from the Climatronic control module (J255) and no shut-off conditions are stored in the engine control module, check using Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding" and.
- To achieve the maximum heat output at the auxiliary air heater heating element, the heating element has to be cold and the Alternator may not be overloaded, or still have sufficient output reserves. If the Alternator is overloaded, the respective engine control module partially or completely switches off the auxiliary air heater heating element, verify using Vehicle Diagnosis, Testing and Information System VAS 5051 in the "Guided Fault Finding" function (for the engine installed in the vehicle).
- The auxiliary air heater heating element has several layers of resistance elements - **A** -, which together reach a heat out of approximately 1200 W (1500 W from MY 13 with running change). When level 1 is activated, the current is guided via contact 1 in the connector - **F** - to the heating element - **B** -. It then flows over both resistance elements- **A** - to the connected heating element - **D** - connected to the ground connection - **E** -. When level 2 is activated, the current is guided via the contact 2 inside the connector - **F** - to the heating elements - **C** -. It then flows over the four resistance elements - **A** - to the connected heating elements - **D** - on the ground connection - **E** -.

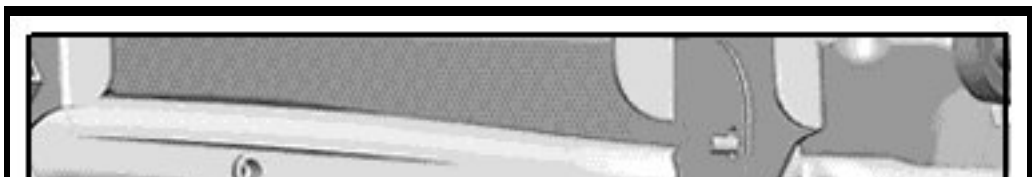


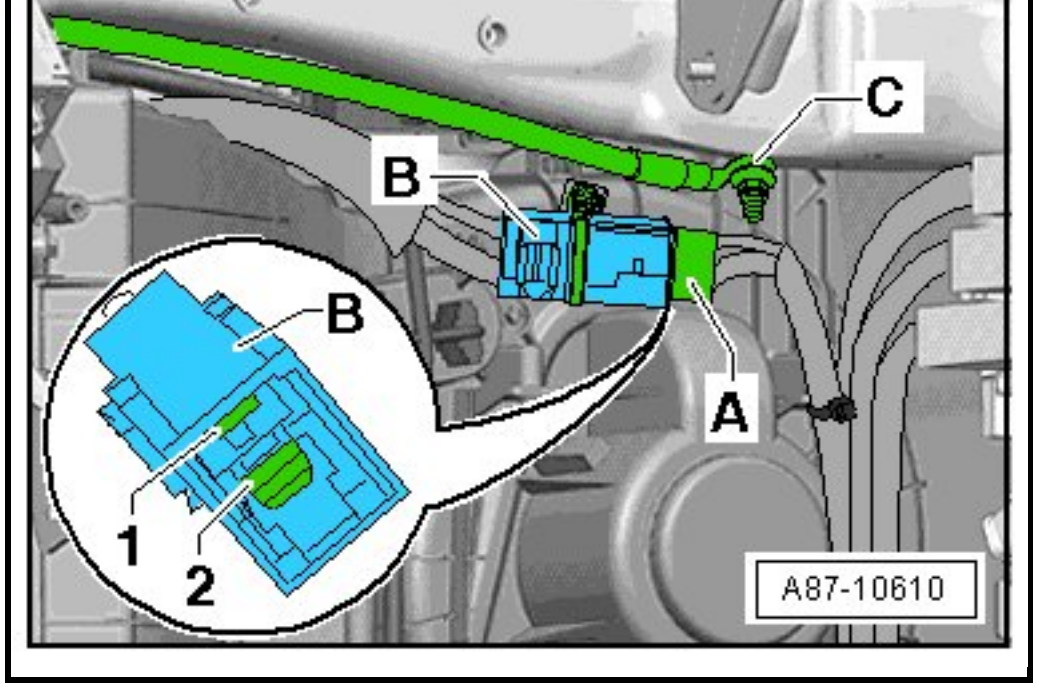

Zoom Sized for Print

- The auxiliary air heater heating element is designed so that, when switched on, no current greater than 40 A /45 A flows via the contact 1 inside the connector- **F** - and no current great than 80 A / 90 A flow via the contact 2 inside the connector - **F** - (the resistance of the resistance heating element - **A** - increases and the current decreases immediately after the switching on).
- To reach the maximum heating output of approximately 1200 W (1 x 400 W and 1 x 800 W) or approximately 1500 W, the resistance heating elements temperature must be low and the generator must deliver enough current.

Auxiliary Air Heater Heating Element, Checking

- Switch off ignition.
- Remove glove compartment. Refer to (Storage Compartments and Covers).
- Disconnect the connectors - **A** - and - **B** - (connector- **B** - with wire connection to the auxiliary air heater heating element).






Zoom | Sized for Print

- Measure the resistance between the contact 1 inside the connector - **B** - and the ground point - **C** - on the instrument panel cross-member (for example, with the Vehicle Diagnosis, Testing and Information System (VAS 5051 A) )

Specified value: greater than 0.2 ohm and less than 5 ohm

- Measure the resistance between the contact 2 inside the connector - **B** - and the ground point - **C** - on the instrument panel cross-member (for example, with the Vehicle Diagnosis, Testing and Information System (VAS 5051 A) )

Specified value: greater than 0.2 ohm and less than 5 ohm

¤ Since resistances smaller than 10 ohm cannot be measured with sufficient precision using workshop tools, a short circuit in the auxiliary air heater heating element cannot be determined.

¤ The current that flows via the auxiliary air heater heating element is routed to the vehicle body via the ground point - **C** - and the instrument panel cross-member. If there is a contact resistance between the instrument panel cross-member and the body, the function of the auxiliary air heater heating element will be compromised.

¤ The resistance elements are activated by each engine control module in 3 stages (example of an auxiliary heater heating element with 1200 W, stage 1 approximately 400 W via contact "1" inside the connector - **B** -, stage 2 approximately 800 W via the contact "2" inside the connector - **B** - and stage 3 approximately 1200 W via both contacts inside the connector - **B** -).

¤ When the temperature of the auxiliary air heater heating element reaches 20 °C (68 °F), the resistance between the contact 1 inside the connector - **B** - and the ground point - **C** - will be approximately 0.6 ohms. Between the contact 2 inside the connector - **B** - and the ground point - **C** - it will be approximately 0.3 ohms. If the heating element was activated, the electrical resistance increases (if the component temperature reaches approximately 60 °C (140 °F), it is already greater

than 2 or 2 ohms).

¤ The resistance elements are activated via the engine control module and the different relays (for example, the Low heat output relay (J359) and the High heat output relay (J360) ) in 3 stages (stage 1 approximately 400 W via the Low heat output relay, stage 2 approximately 800 W via the High heat output relay and stage 3 approximately 1200 W via both relays). Depending on the version, the activation of stage 2 can also occur via two separate relays.

¤ The auxiliary heater heating element is designed so that, when switched on, no current greater than 40 A /45 A flows via the contact 1 inside the connector- **B** - and no current great than 80 A / 90 A flow via the contact 2 inside the connector - **B** - (the resistance increases and the current decreases immediately after the switching on).

¤ The auxiliary heater heating element is comprised of several layers of resistance elements that collectively achieve a heating output of approximately 1200 W / 1500 W (when activating both stages 1 and 2 at the same time). These resistance elements have a positive temperature coefficient (their resistance increases with the temperature and the current consumption decreases), so that the nominal output is achieved only at a low component temperature.

Conditions for activating the auxiliary heater heating element

The following conditions must be met in order for the engine control module to activate the auxiliary heater heating element, verify using Vehicle Diagnosis, Testing and Information System VAS 5051 in "Guided Fault Finding":

- The engine speed is greater than 500 rpm
- The ambient temperature is below 10 °C (50 °F).
- The coolant temperature is below 60 °C (140 °F)
- The generator is not overloaded or drained (the load is less than 90% of the maximum output)
- There are no faults stored in the engine control module, which can prevent the auxiliary heater heating element from activating.
- There is a request from the Data bus system to switch on the auxiliary air heater by the Climatronic control module.

In order for the Climatronic control module to send a request to the Data bus system to activate the auxiliary heater heating element:

- ECON must not be on.
- The temperature setting for at least one side (driver or front passenger) must set so that additional heat output is needed to reach the set temperature (for example, temperature set to Hi).
- The Climatronic control module is not storing a fault that prevents the auxiliary heater heating element from activating.