

2007 Audi S8 Quattro Sedan (4E2) V10-5.2L (BSM)

Vehicle » Powertrain Management » Computers and Control Systems » Testing and Inspection » Component Tests and General Diagnostics » Component Tests (VAG Code Tests) » Heated Oxygen Sensor and Oxygen Sensor Regulation Before Catalytic Converter, Checking

Diagnostic Procedures

Heated Oxygen Sensor and Oxygen Sensor Regulation Before Catalytic Converter, Checking

Heated Oxygen Sensor 1

The following procedure is used to diagnose Heated Oxygen Sensor (HO2S) (G39) which is controlled by the Motronic Engine Control Module (ECM) (J623).

- ✘ Use only gold-plated terminals when servicing terminals in the electrical harness connectors of the Heated Oxygen Sensor (HO2S) (G39).

Special tools, testers and auxiliary items required

- ✘ Multimeter.
- ✘ Wiring diagram.

Test requirements

- ✘ The Motronic Engine Control Module (ECM) (J623) fuses OK.
- ✘ The [Oxygen Sensor](#) (O2S) Heater (Z19) before [catalytic converter](#) OK.
- ✘ Battery voltage at least 12.5 volts.
- ✘ All electrical consumers such as, lights and rear window defroster, switched off.
- ✘ A/C switched off.
- ✘ Ground (GND) connections between engine/transmission/chassis OK.
- ✘ Exhaust system between [catalytic converter](#) and cylinder head properly sealed.
- ✘ Coolant Temperature at least 80°C.

Function test

- Perform the function test located in diagnostic mode 06. Refer to => [OBDMID 01 (\$01): [Oxygen](#)

Sensor Monitor Bank 1 - Sensor 1] See: Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09.

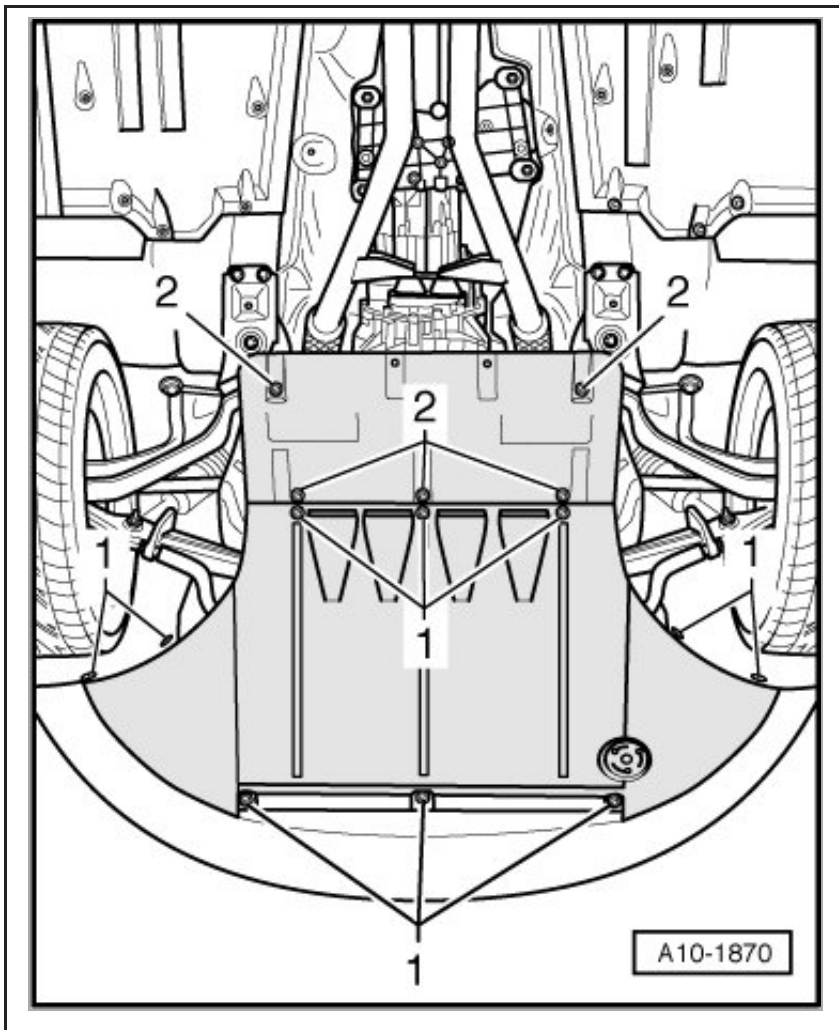
If specified values are obtained:

- End diagnosis and switch the ignition off.

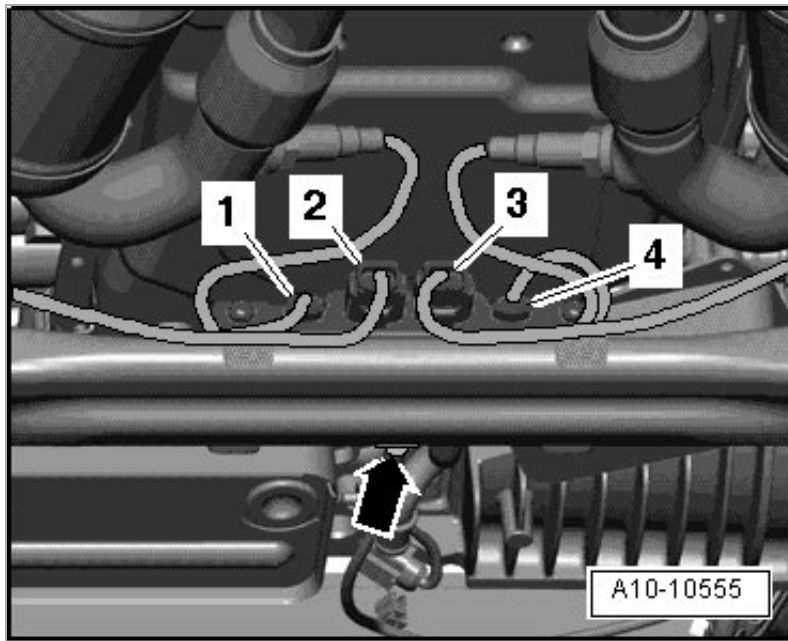
If the specified values are not obtained:

Procedure

- Raise the vehicle.
- Loosen the quick release fasteners - 1 - and - 2 - and remove the noise insulation panel.

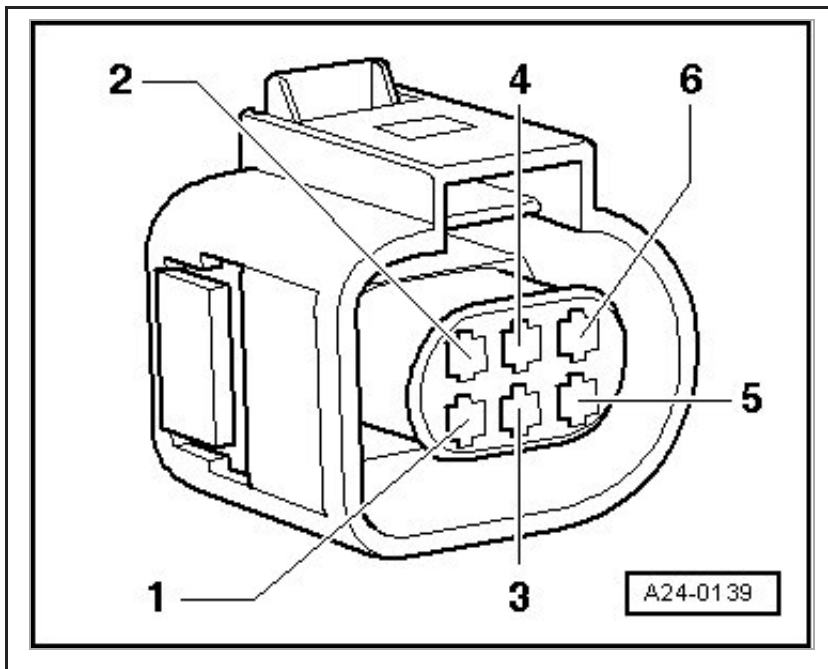


- Disconnect the black Heated Oxygen Sensor (HO2S) (G39) electrical harness connector - 3 -.



Checking primary voltage

- Crank the engine.
- Using a multimeter, check the Heated Oxygen Sensor (HO2S) (G39) electrical harness connector terminals 2 to 6 for voltage.



Specified value: 0.400 to 0.500 Volts

- Switch the ignition off.

If the specified value was not obtained:

- Replace Heated Oxygen Sensor (HO2S) (G39). Refer to Repair Information.

If the specified value was obtained:

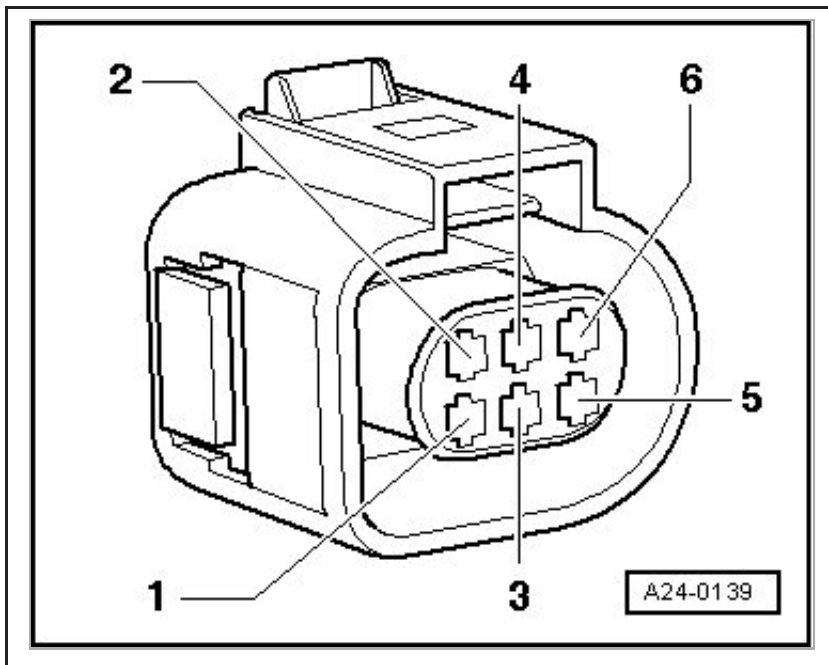
Checking wiring

If the manufacturers test box is being used. Perform the following step.

- Install the test box. Refer to Repair Information.

If the manufacturers test box is not being used. Perform the following step.

- Remove the Motronic Engine Control Module (ECM) (J623). Refer to Repair Information.
- Using a Multimeter, check the Heated Oxygen Sensor (HO2S) (G39) electrical harness connector terminals to the Motronic Engine Control Module (ECM) (J623) electrical harness connector T94a terminals for an open circuit.



Heated Oxygen Sensor (HO2S) (G39) electrical harness connector terminals	Motronic Engine Control Module (ECM) (J623) electrical connector T94a terminals or test box sockets
1	60
2	61
5	81
6	82

Specified value: 1.5 ohms Max.

If the specification was not obtained:

- Check the wiring for a short circuit to each other, Battery (+), and Ground (GND).
- Check the electrical harness connector for damage, corrosion, loose or broken terminals.
- If necessary, repair the faulty wiring connection.

If no malfunction is found in the wiring:

- Replace the Motronic Engine Control Module (ECM) (J623). Refer to Repair Information.
- Assembly is performed in the reverse order of removal.

Final procedures

After repair work, the following work steps must be performed in the following sequence:

1. Check the DTC memory. Refer to => [Diagnostic Mode 03 - Read DTC Memory] [See: Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09.](#)
 2. If necessary, erase the DTC memory. Refer to => [Diagnostic Mode 04 - Erase DTC Memory] [See: Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09.](#)
 3. If the DTC memory was erased, generate readiness code. Refer to => [Readiness Code] [See: Monitors, Trips, Drive Cycles and Readiness Codes.](#)
- End of diagnosis.

Heated Oxygen Sensor 2

The following procedure is used to diagnose Heated Oxygen Sensor (HO2S) 2 (G108) which is controlled by the Motronic Engine Control Module (ECM) (J623).

- ⊗ Use only gold-plated terminals when servicing terminals in the electrical harness connectors of the Heated Oxygen Sensor (HO2S) 2 (G108).

Special tools, testers and auxiliary items required

- ✘ Multimeter.
- ✘ Wiring diagram.

Test requirements

- ✘ The Motronic Engine Control Module (ECM) (J623) fuses OK.
- ✘ The [Oxygen Sensor](#) (O2S) 2 Heater (Z28) before [catalytic converter](#) OK.
- ✘ Battery voltage at least 12.5 volts.
- ✘ All electrical consumers such as, lights and rear window defroster, switched off.
- ✘ A/C switched off.
- ✘ Ground (GND) connections between engine/transmission/chassis OK.
- ✘ Exhaust system between [catalytic converter](#) and cylinder head properly sealed.
- ✘ Coolant Temperature at least 80°C.

Function test

- Perform the function test located in diagnostic mode 06. Refer to => [OBDMID 05 (\$05): [Oxygen Sensor Monitor Bank 2 - Sensor 1](#)] [See: Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09.](#)

If specified values are obtained:

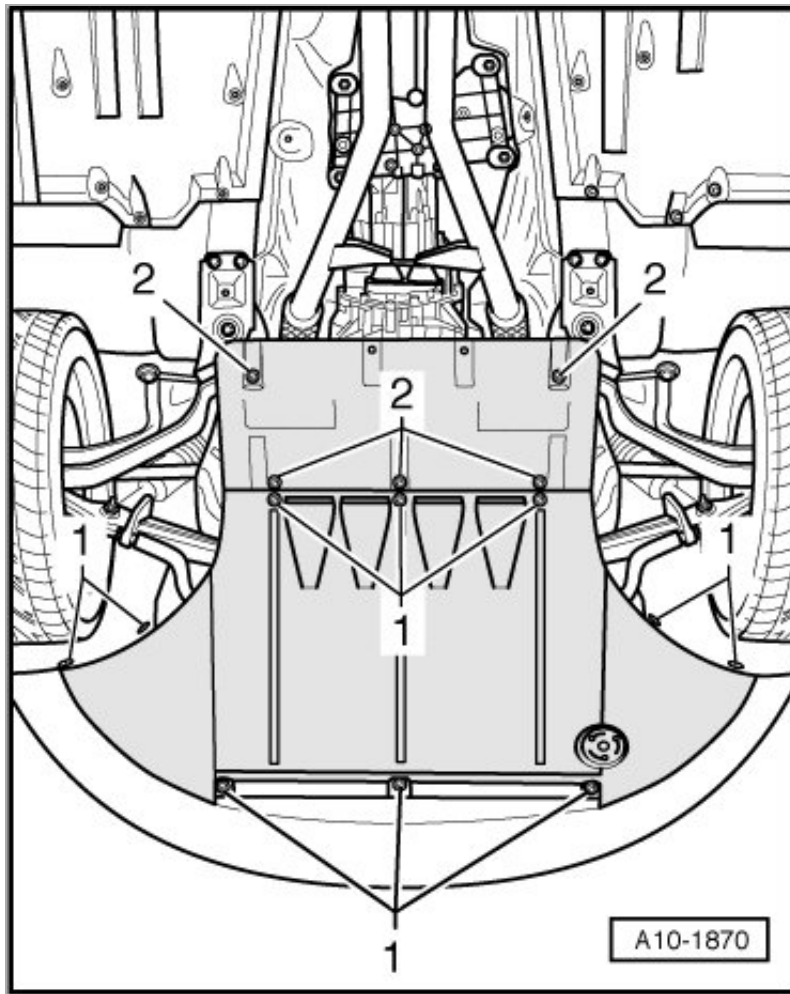
- End diagnosis and switch the ignition off.

If the specified values are not obtained:

Procedure

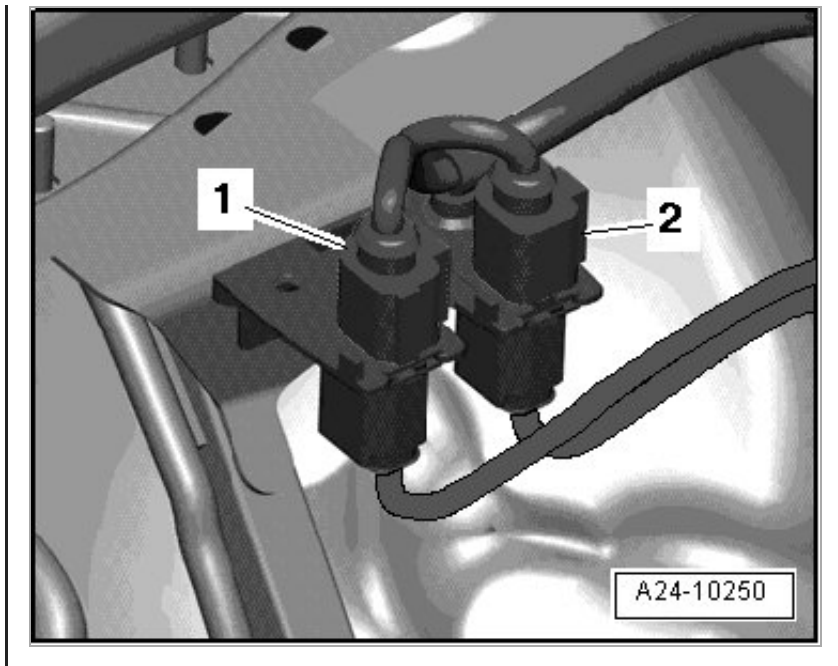
- Raise the vehicle.
- Loosen the quick release fasteners - **1** - and - **2** - and remove the noise insulation panel.





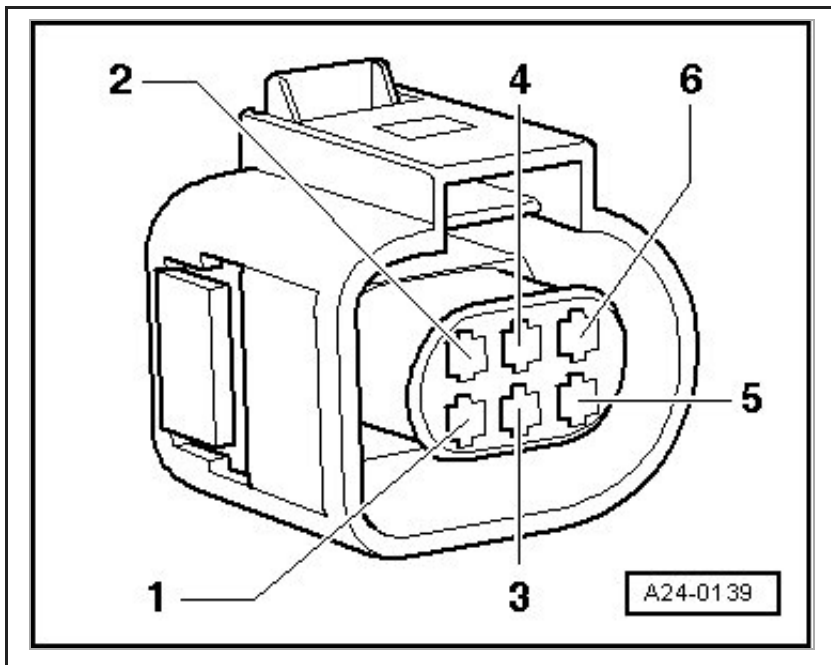
- Disconnect the black Heated Oxygen Sensor (HO2S) 2 (G108) electrical harness connector- 1 -.





Checking primary voltage

- Using a multimeter, check the Heated Oxygen Sensor (HO2S) 2 (G108) electrical harness connector terminals 2 to 6 for voltage.



Specified value: 0.400 to 0.500 Volts

- Switch the ignition off.

If the specified value was not obtained:

- Replace the Heated Oxygen Sensor (HO2S) 2 (G108). Refer to Repair Information.

If the specified value was obtained:

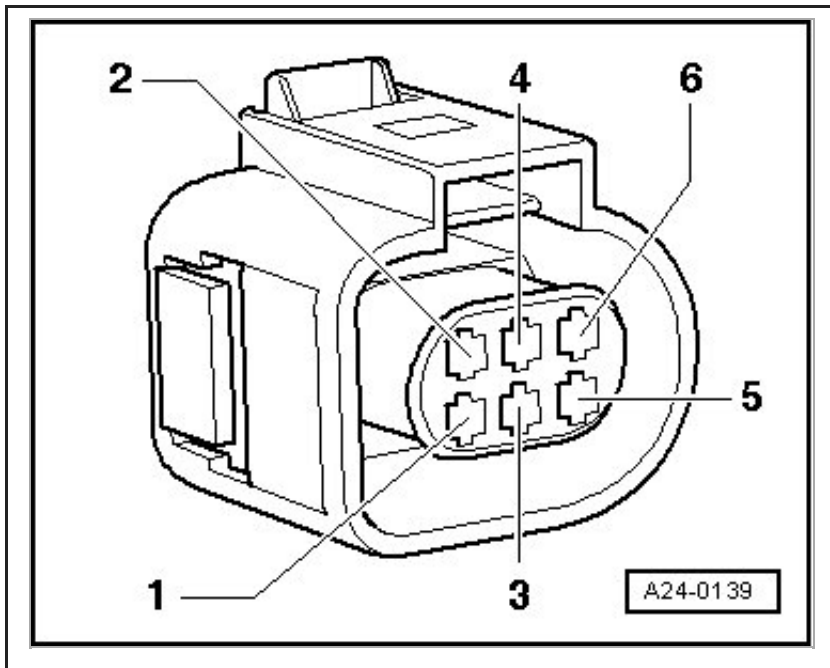
Checking wiring

If the manufacturers test box is being used. Perform the following step.

- Install the test box. Refer to Repair Information.

If the manufacturers test box is not being used. Perform the following step.

- Remove the Motronic Engine Control Module (ECM) (J623). Refer to Repair Information.
- Using a Multimeter, check the Heated Oxygen Sensor (HO2S) 2 (G108) electrical harness connector terminals to the Motronic Engine Control Module (ECM) (J623) electrical harness connector T94a terminals for an open circuit.



Heated Oxygen Sensor (HO2S) 2 (G108) electrical harness connector terminals	Motronic Engine Control Module (ECM) (J623) electrical connector T94a terminals or test box sockets
1	59
2	84
5	83
6	62

Specified value: 1.5 ohms Max.

If the specification was not obtained:

- Check the wiring for a short circuit to each other, Battery (+), and Ground (GND).
- Check the electrical harness connector for damage, corrosion, loose or broken terminals.
- If necessary, repair the faulty wiring connection.

If no malfunction is found in the wiring:

- Replace the Motronic Engine Control Module (ECM) (J623). Refer to Repair Information.
- Assembly is performed in the reverse order of removal.

Final procedures

After repair work, the following work steps must be performed in the following sequence:

1. Check the DTC memory. Refer to => [Diagnostic Mode 03 - Read DTC Memory] [See: Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09.](#)
 2. If necessary, erase the DTC memory. Refer to => [Diagnostic Mode 04 - Erase DTC Memory] [See: Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09.](#)
 3. If the DTC memory was erased, generate readiness code. Refer to => [Readiness Code] [See: Monitors, Trips, Drive Cycles and Readiness Codes.](#)
- End of diagnosis.

Heated Oxygen Sensor 3

The following procedure is used to diagnose Heated Oxygen Sensor (HO2S) 3 (G285) which is controlled by the Engine Control Module (ECM) 2 (J624).

- ⊠ Use only gold-plated terminals when servicing terminals in the electrical harness connectors of the Heated Oxygen Sensor (HO2S) 3 (G285).

Special tools, testers and auxiliary items required

- ⊠ Multimeter.
- ⊠ Wiring diagram.

Test requirements

- ✘ The Engine Control Module (ECM) 2 (J624) fuses OK.
- ✘ The [Oxygen Sensor \(O2S\) 3 Heater \(Z62\)](#) before [catalytic converter](#) OK.
- ✘ Battery voltage at least 12.5 volts.
- ✘ All electrical consumers such as, lights and rear window defroster, switched off.
- ✘ A/C switched off.
- ✘ Ground (GND) connections between engine/transmission/chassis OK.
- ✘ Exhaust system between [catalytic converter](#) and cylinder head properly sealed.
- ✘ Coolant Temperature at least 80°C.

Function test

- Perform the function test located in diagnostic mode 06. Refer to => [OBDMID 09 (\$09): [Oxygen Sensor Monitor Bank 3 - Sensor 1](#)] [See: Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09.](#)

If specified values are obtained:

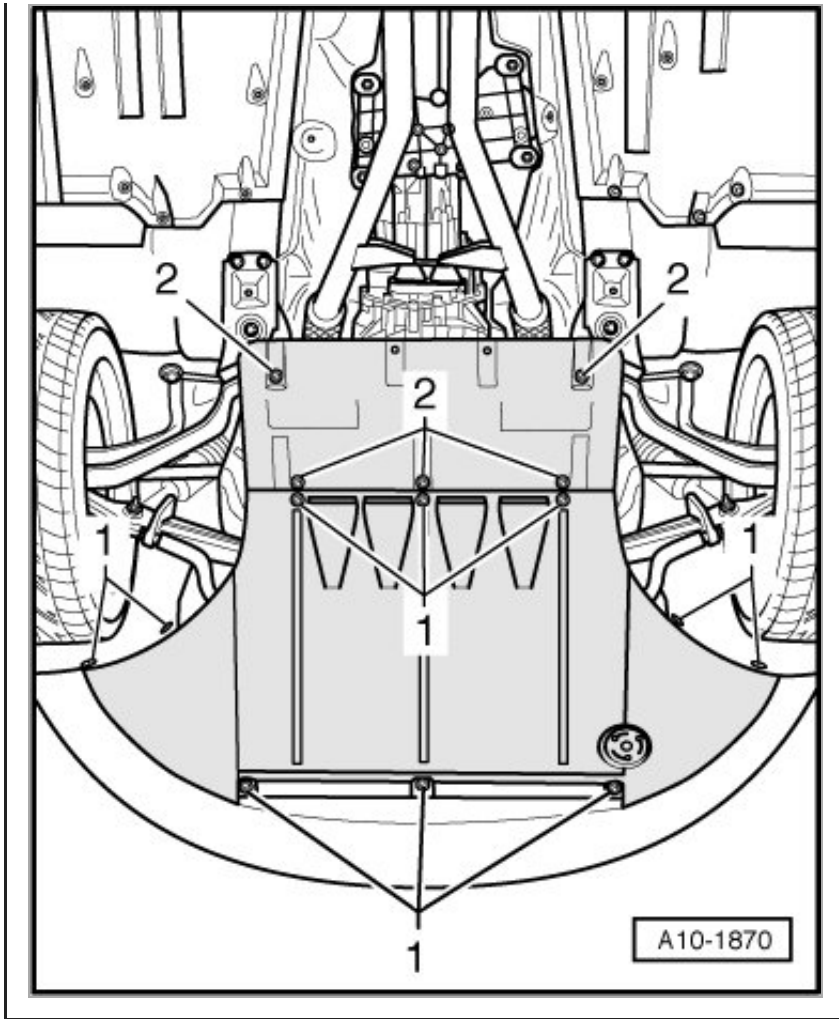
- End diagnosis and switch the ignition off.

If the specified values are not obtained:

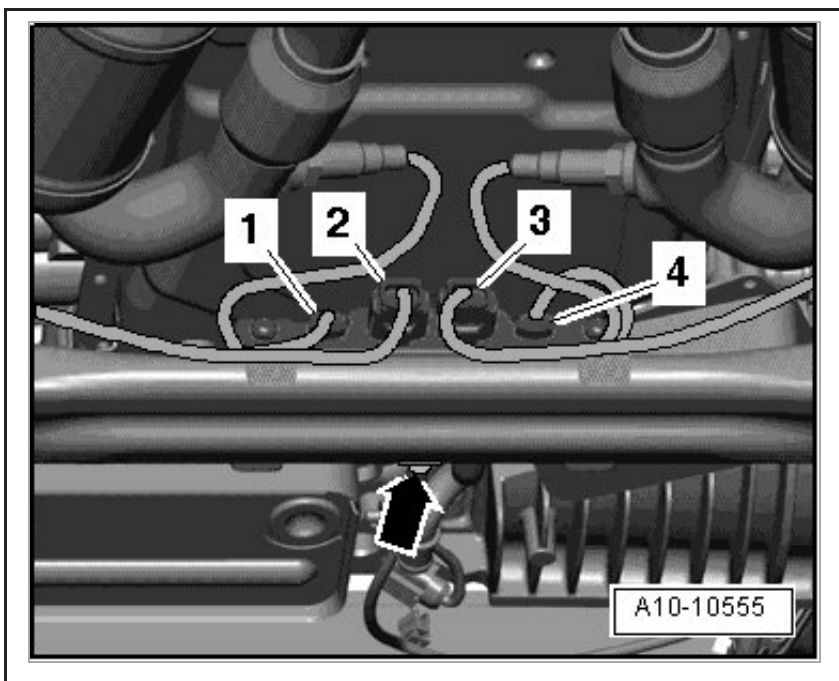
Procedure

- Raise the vehicle.
- Loosen the quick release fasteners - **1** - and - **2** - and remove the noise insulation panel.



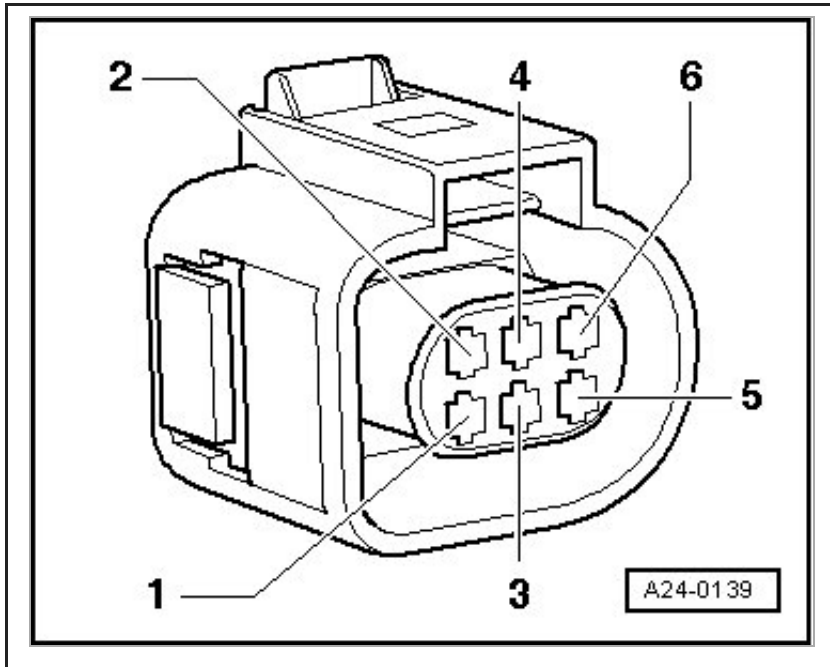


- Disconnect the brown Heated Oxygen Sensor (HO2S) 3 (G285) electrical harness connector - 2 -.



Checking primary voltage

- Crank the engine.
- Using a multimeter, check the Heated Oxygen Sensor (HO2S) 3 (G285) electrical harness connector terminals 2 to 6 for voltage.



Specified value: 0.400 to 0.500 Volts

- Switch the ignition off.

If the specified value was not obtained:

- Replace Heated Oxygen Sensor (HO2S) 3 (G285). Refer to Repair Information.

If the specified value was obtained:

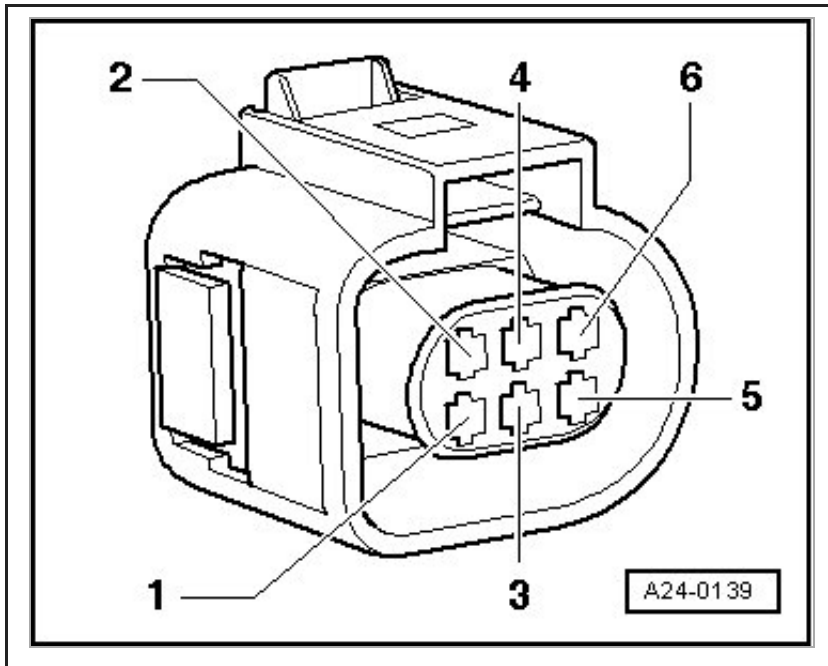
Checking wiring

If the manufacturers test box is being used. Perform the following step.

- Install the test box. Refer to Repair Information.

If the manufacturers test box is not being used. Perform the following step.

- Remove the Engine Control Module (ECM) 2 (J624). Refer to Repair Information.
- Using a Multimeter, check the Heated Oxygen Sensor (HO2S) 3 (G285) electrical harness connector terminals to the Engine Control Module (ECM) 2 (J624) electrical harness connector T94d terminals for an open circuit.



Heated Oxygen Sensor (HO2S) 3 (G285) electrical harness connector terminals	Engine Control Module (ECM) 2 (J624) electrical connector T94d terminals or test box sockets
1	60
2	61
5	81
6	82

Specified value: 1.5 ohms Max.

If the specification was not obtained:

- Check the wiring for a short circuit to each other, Battery (+), and Ground (GND).
- Check the electrical harness connector for damage, corrosion, loose or broken terminals.
- If necessary, repair the faulty wiring connection.

If no malfunction is found in the wiring:

- Replace the Engine Control Module (ECM) 2 (J624). Refer to Repair Information.
- Assembly is performed in the reverse order of removal.

Final procedures

After repair work, the following work steps must be performed in the following sequence:

1. Check the DTC memory. Refer to => [Diagnostic Mode 03 - Read DTC Memory] See: [Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09](#).
 2. If necessary, erase the DTC memory. Refer to => [Diagnostic Mode 04 - Erase DTC Memory] See: [Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09](#).
 3. If the DTC memory was erased, generate readiness code. Refer to => [Readiness Code] See: [Monitors, Trips, Drive Cycles and Readiness Codes](#).
- End of diagnosis.

Heated Oxygen Sensor 4

The following procedure is used to diagnose Heated Oxygen Sensor (HO2S) 4 (G286) which is controlled by the Engine Control Module (ECM) 2 (J624).

- ⊠ Use only gold-plated terminals when servicing terminals in the electrical harness connectors of the Heated Oxygen Sensor (HO2S) 4 (G286).

Special tools, testers and auxiliary items required

- ⊠ Multimeter.
- ⊠ Wiring diagram.

Test requirements

- ⊠ The Engine Control Module (ECM) 2 (J624) fuses OK.
- ⊠ The [Oxygen Sensor \(O2S\) 4 Heater \(Z63\)](#) before [catalytic converter](#) OK.
- ⊠ Battery voltage at least 12.5 volts.
- ⊠ All electrical consumers such as, lights and rear window defroster, switched off.
- ⊠ A/C switched off.
- ⊠ Ground (GND) connections between engine/transmission/chassis OK.
- ⊠ Exhaust system between [catalytic converter](#) and cylinder head properly sealed.
- ⊠ Coolant Temperature at least 80°C.

Function test

- Perform the function test located in diagnostic mode 06. Refer to => [OBDMID 13 (\$0D): Oxygen Sensor Monitor Bank 4 - Sensor 1] See: [Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09](#).

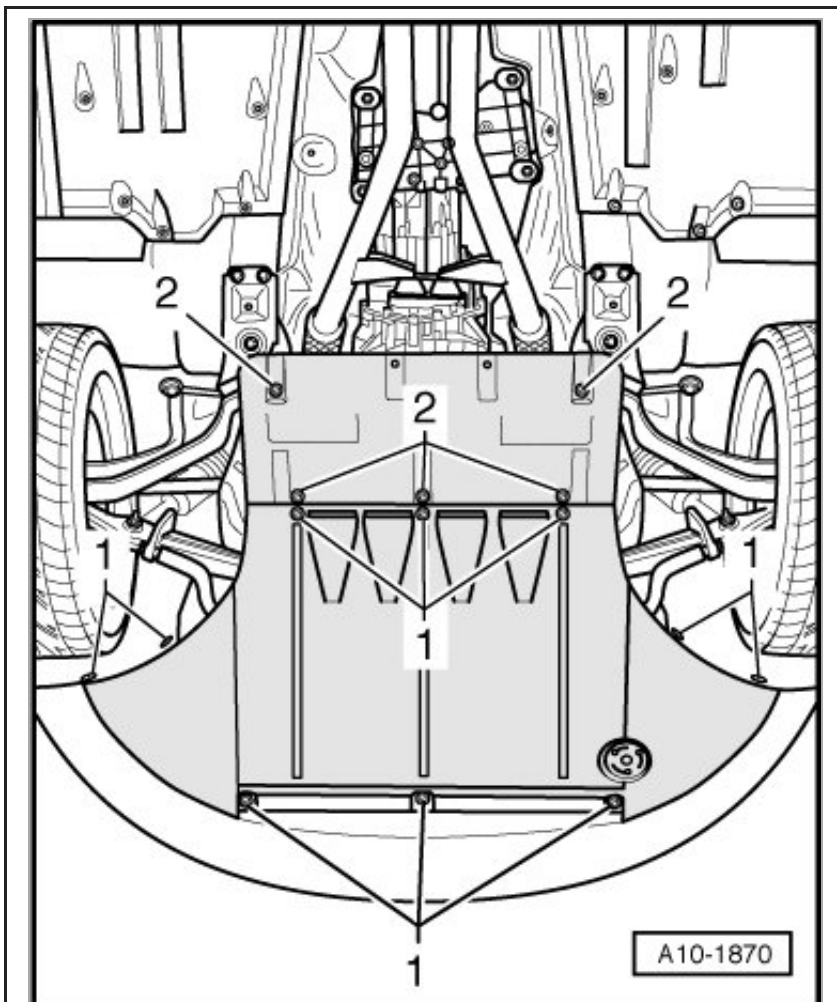
If specified values are obtained:

- End diagnosis and switch the ignition off.

If the specified values are not obtained:

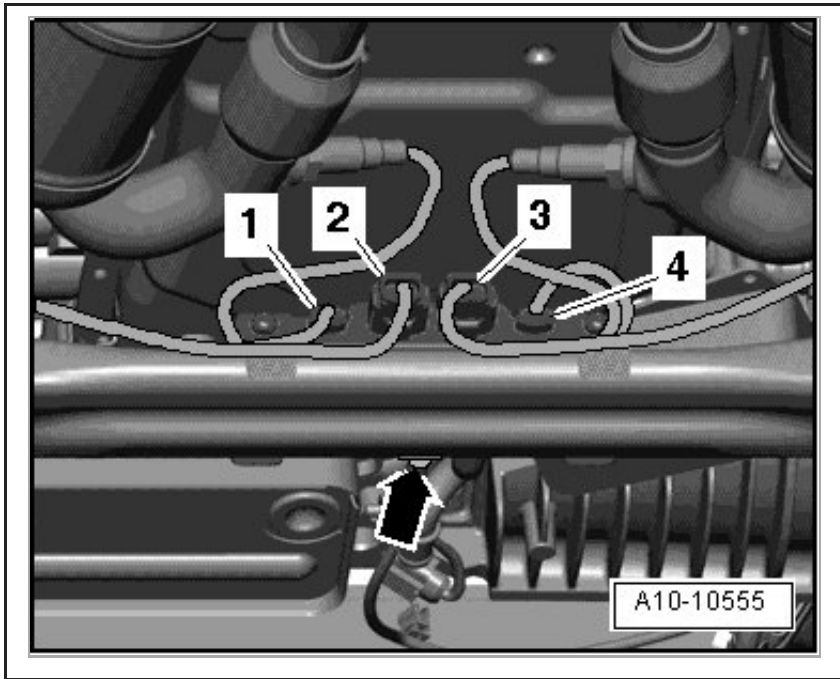
Procedure

- Raise the vehicle.
- Loosen the quick release fasteners - 1 - and - 2 - and remove the noise insulation panel.





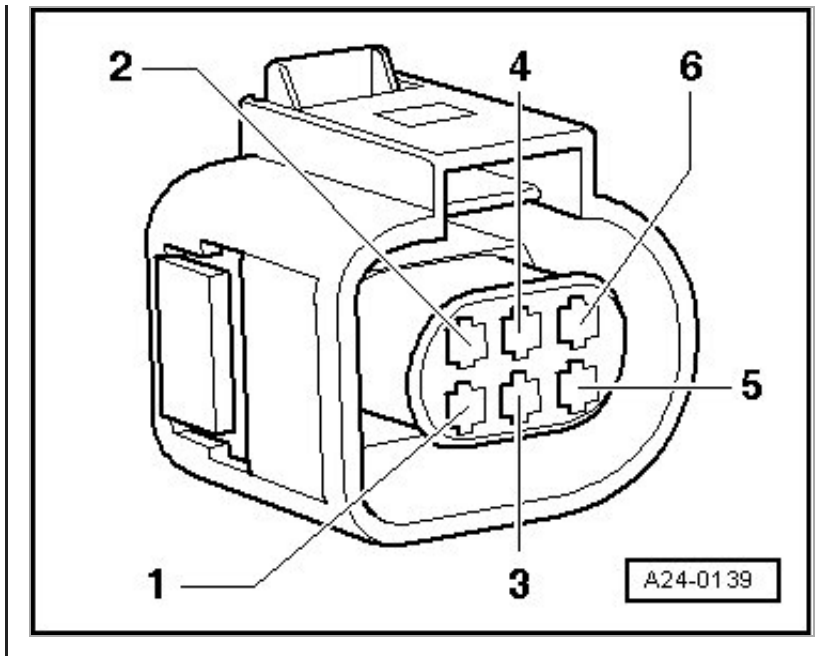
- Disconnect the black Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) (G131) electrical harness connector- 4 -.



Checking primary voltage

- Using a multimeter, check the Heated Oxygen Sensor (HO2S) 4 (G286) electrical harness connector terminals 2 to 6 for voltage.





Specified value: 0.400 to 0.500 Volts

- Switch the ignition off.

If the specified value was not obtained:

- Replace the Heated Oxygen Sensor (HO2S) 4 (G286). Refer to Repair Information.

If the specified value was obtained:

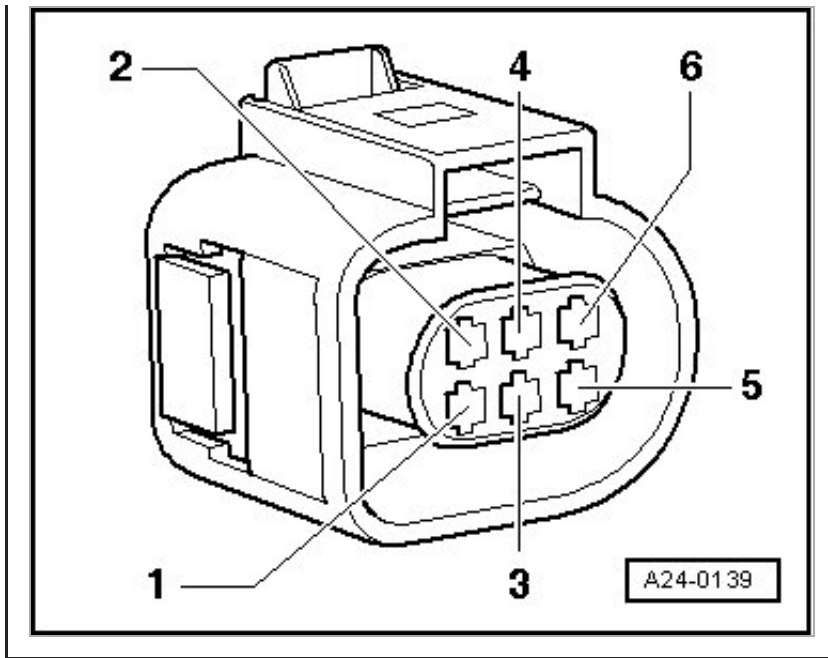
Checking wiring

If the manufacturers test box is being used. Perform the following step.

- Install the test box. Refer to Repair Information.

If the manufacturers test box is not being used. Perform the following step.

- Remove the Engine Control Module (ECM) 2 (J624). Refer to Repair Information.
- Using a Multimeter, check the Heated Oxygen Sensor (HO2S) 4 (G286) electrical harness connector terminals to the Engine Control Module (ECM) 2 (J624) electrical harness connector T94d terminals for an open circuit.



Heated Oxygen Sensor (HO2S) 4 (G286) electrical harness connector terminals	Engine Control Module (ECM) 2 (J624) electrical connector T94d terminals or test box sockets
1	59
2	84
5	83
6	62

Specified value: 1.5 ohms Max.

If the specification was not obtained:

- Check the wiring for a short circuit to each other, Battery (+), and Ground (GND).
- Check the electrical harness connector for damage, corrosion, loose or broken terminals.
- If necessary, repair the faulty wiring connection.

If no malfunction is found in the wiring:

- Replace the Engine Control Module (ECM) 2 (J624). Refer to Repair Information.
- Assembly is performed in the reverse order of removal.

Final procedures

After repair work, the following work steps must be performed in the following sequence:

1. Check the DTC memory. Refer to => [Diagnostic Mode 03 - Read DTC Memory] [See: Scan Tool](#)

[Testing and Procedures\Diagnostic Modes 01 - 09.](#)

2. If necessary, erase the DTC memory. Refer to => [[Diagnostic Mode 04 - Erase DTC Memory](#)] [See: Scan Tool Testing and Procedures\Diagnostic Modes 01 - 09.](#)
 3. If the DTC memory was erased, generate readiness code. Refer to => [[Readiness Code](#)] [See: Monitors, Trips, Drive Cycles and Readiness Codes.](#)
- End of diagnosis.