Oxygen Sensor (O2S) control, checking (before three way catalytic converter)

Note:

- *G39 = Heated Oxygen Sensor (HO2S), bank 1*
- *G108 = Heated Oxygen Sensor (HO2S) 2, bank 2*

- Read measuring value block using VAG 1551 scan tool until display shows "Read measuring value block 1" (display group 001) ⇒ Repair Group 01.

Read measuring value block 1 →

1 2 3 4

≺ Indicated on display

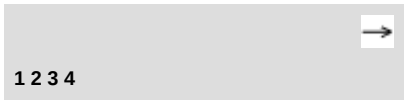
Note:

Continue with the test only if the value in display field 1 (engine coolant temperature) is at least 80° C (176° F).

- Press -C- button.
- Press buttons -0-, -1- and -0- to input display group 010.
- Press -Q- button to confirm input.

Read measuring value block 10

≺ Indicated on display



Display fields 3 and 4 show the signal voltages of both heated oxygen sensors.

If sensor voltage fluctuates very slowly ⇒ page 24-41 .

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If a constant sensor voltage of 0.000V is displayed, there is a short to Ground (GND).

- Check DTC memory ⇒ Repair Group 01.

If sensor voltage is constant between 0.350 and 0.450 volts, the signal is interrupted:

- Check DTC memory ⇒ page 01-13 .

If sensor voltage is a constant 2.550 volts, there is a short to battery positive voltage (B+):

- Check DTC memory ⇒ page 01-13 .

- If sensor voltage is a constant 0.0 to 0.3 volts, the oxygen sensor measures a lean mixture:

- Check DTC memory ⇒ page 01-13 .

- If sensor voltage is a constant 0.6 to 0.9 volts, the oxygen sensor measures a rich mixture:

- Check DTC memory ⇒ page 01-13 .

- Press -C- button.

Read measuring value block Q

- Indicated on display

Input display group number XXX

With a properly functioning oxygen sensor, the actual control learning values can be checked.

Various malfunctions (e.g. intake air leakage, faulty fuel injectors etc.) can cause a change in the mixture composition. These malfunctions are recognized by the oxygen sensor and are corrected via oxygen sensor control by adjusting the fuel injection time via the ECM. Fuel injection time that deviates from the programmed basic fuel injection time indicates a malfunction of some type.

These deviations are shown (oxygen sensor control learned values) in display group 005 (bank 1) or 006 (bank 2). There is a deviation between idle and partial load readings; the deviation between actual fuel injection times and the programmed basic settings are indicated as a percentage (%).

Positive oxygen sensor control learned values (+%):

Programmed basic fuel injection time too short (mixture too lean), actual fuel injection time by ...% longer , so that λ = 1 can be obtained.

Negative oxygen sensor control learned value (-%):

Programmed basic fuel injection time too long (mixture too rich) , actual fuel injection time

by ...% shorter, so that λ = 1 can be obtained.

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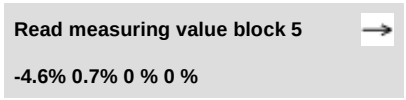
- Press buttons -0-, -0- and -5- to input display group number 005 for bank 1, or press buttons -0-, -0- and -6- to input display group number 006 for bank 2.

- Press -Q- button to confirm input.



➢ Indicated on display (example)

Note:

If necessary, display group 005 (bank 1) or 006 (bank 2) for troubleshooting can be read using "Basic Setting" function 04 and then printed out ⇒ page 01-150 , Basic Setting. By selecting this function (among other things) the evaporative emissions factor is not included.