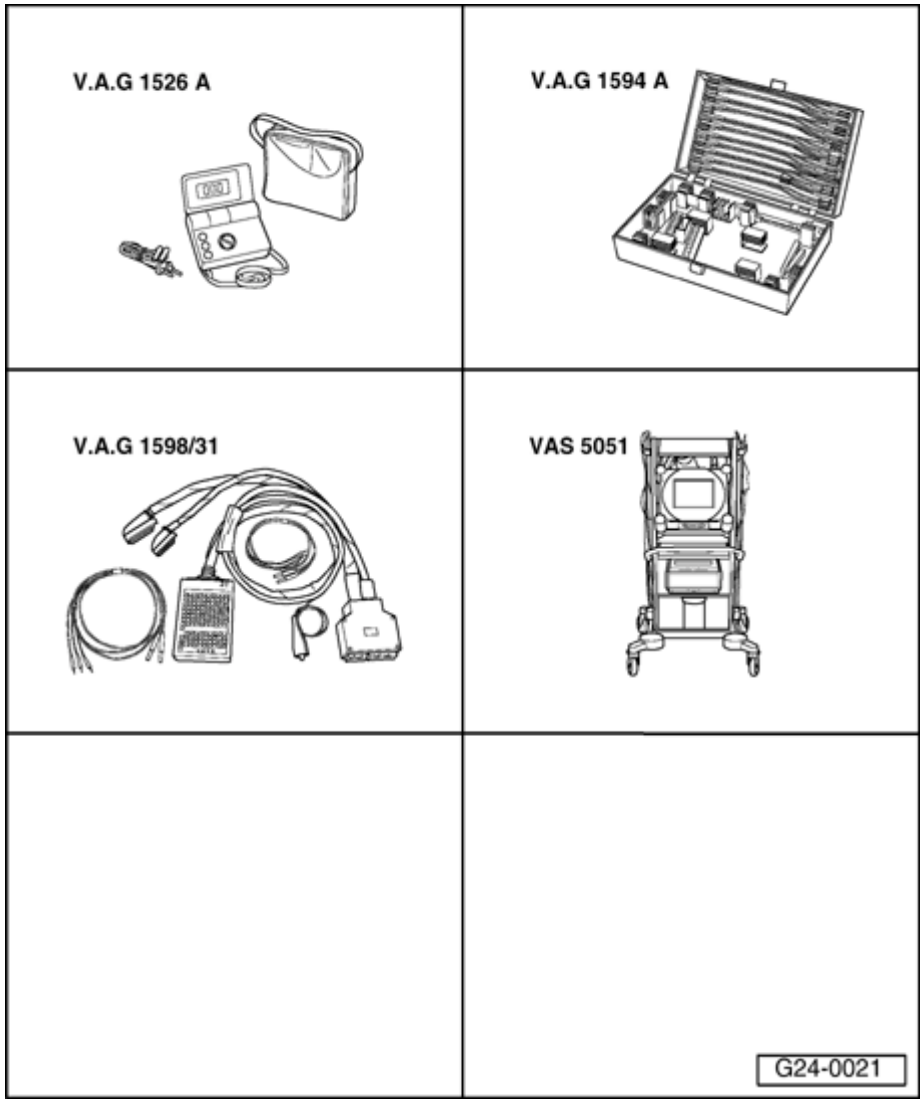
24-71




# Oxygen sensor control, checking

## Oxygen sensor and oxygen sensor control before catalytic converter, checking

### Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31
- VAS5051 with VAG5051/1

- or

- VAG1551 with VAG1551/3A

24-72

**Test requirements:**

- Exhaust system free of leaks.
- Coolant Temperature at least 80 ° C.

**Test sequence**

- Connect VAS5051 tester or VAG1551 scan tool and select control module for engine electronics using "address word" 01 ⇒ Page 01-10 . Engine must run at idle.

| | |
|---|---|
| **Rapid data transfer** **HELP**<br>**Select function XX** | When indicated on display |

- Press buttons -0- and -4- to select "Initiate basic setting" and press -Q- button to confirm input.

| | |
|---|---|
| **Basic Setting** **Q**<br>**Enter display group number XXX** | When indicated on display |

- Press buttons -0-, -3- and -0- to select "display group number 030" and press -Q- button to confirm input.
- Check specified value in display field 1.

***Note:***

- *Increase engine speed to obtain specified values faster.*
- *"Oxygen sensor status" indicates status of oxygen sensor control and oxygen sensors.*

24-73

| | Display fields | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Display group 030: Oxygen sensor status** | | | | |
| **Display** | **X X X** | X X X | | |
| **Indicated** | **Oxygen sensor status, bank 1, sensor 1** | Oxygen sensor status, bank 2, sensor 1 | | |
| **Functional range** | **0 = off**<br>**1 = on** | 0 = off<br>1 = on | | |
| **Specified value** | **1 1 1** | 1 1 0 | | |
| **Note** | **If specified value is not obtained ⇒ Page 24-80**<br>**If specified value is obtained but there is a malfunction stored in DTC memory ⇒Check oxygen sensor adaptation values and control, ⇒ Page 24-74** | | | |

| **Significance of 3 digit indications in display group 030** | | | |
|---|---|---|---|
| X | X | X | **Display fields 1 and 2** |
| | | X | Oxygen sensor control: 0= not active; 1 = active |
| | X | | Operational readiness of oxygen sensor: 0= not active; 1 = active |
| X | | | Condition of oxygen sensor heater: 0= not active; 1 = active |

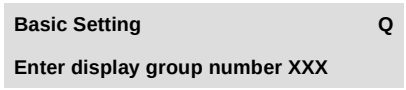
***Note:***

*The first field of the 3 digit indication (heating) fluctuates between 0 and 1.*

- Do not start test until indication in display field 1 has reached "111" at least once.

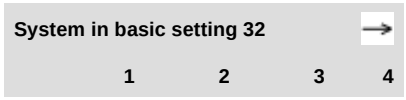
**Checking oxygen sensor adaptation values and control**

- Press -C- button.




When indicated on display

- Press buttons -0-, -3- and -2- to select "display group number 032" and press -Q- button to confirm input.



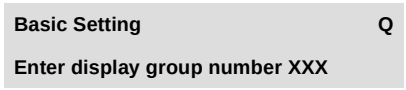

When indicated on display

- Check oxygen sensor values in display fields 1 and 2:

**24-75**

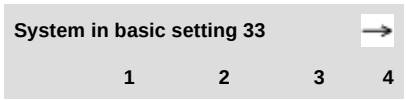
| | Display fields | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Display group 036: Oxygen sensor adaptation values** | | | | |
| **Display** | **xx.x %** | **xx.x %** | | |
| **Indicated** | **Oxygen sensor adaptation value Bank 1, sensor 1at idle (additive)** | **Oxygen sensor adaptation value Bank 1, sensor 1at partial throttle(multiple)** | | |
| **Specified value** | **-10.0 to 10.0 %**<br><br>**can fluctuate slightly** | **-10.0 to 10.0 %**<br><br>**can fluctuate slightly** | | |
| **Note** | **If specified value is not obtained ⇒ Page 24-78** | | | |

- Press -C- button.




When indicated on display

- Press buttons -0-, -3- and -3- to select "display group number 033" and press -Q- button to confirm input.




When indicated on display

- Check oxygen sensor control in display fields 1 and 2.

24-76

| | Display fields | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Display group 033: Oxygen sensor control** | | | | |
| **Display** | **xx.x %** | **x.xxx V** | | |
| **Indicated** | **Oxygen sensor control Bank 1, sensor 1** | **Oxygen sensor voltage, Bank 1, sensor 1** | | |
| **Specified value** | **Value must fluctuate at least 2 % in the range -10.0 to 10.0 %** | **Value must fluctuate approx. 0.3 V in the range 0.000 to 1.000 volts** | | |
| **Note** | **If specified value is not obtained ⇒Continuation, ⇒ Page 24-77** | **If specified value is not obtained ⇒Evaluation display group 033, ⇒ Page 24-80** | | |

24-77

**Continuation**

If specified value in display field 1 is not obtained or if value does not fluctuate at least 2 %:

- Road test vehicle in order to free oxygen sensor of possible residue and repeat test.

If specified value in display field 1 is not obtained even after road test or if value does not fluctuate at least 2 %:

- Check primary voltage ⇒ Page 24-80 .
- Check oxygen sensor heating ⇒ Page 24-99 .
- Check oxygen sensor before catalytic converter for aging ⇒ Page 24-83 .

**Display group 032**

| Display field: 1 / 2 | Possible cause | Corrective action |
|---|---|---|
| Oxygen sensor adaptation value in range: -10.0 to -25.0 % | ♦ Leak in intake area (pressure side between turbocharger and intake manifold) | - Check intake system for leaks and repair false air ⇒ Page 24-68 |
| | ♦ Oil thinning | - Oil change or perform swift country road test |
| | ♦ High oil consumption | |
| | ♦ Mass Air Flow (MAF) sensor faulty | - Mass Air Flow (MAF) sensor, checking ⇒ Page 24-60 |
| | ♦ Evaporative Emission (EVAP) canister purge regulator valve remains stuck in open position | - Check Evaporative Emission (EVAP) canister purge regulator valve ⇒ Page 24-107 |
| | ♦ Fuel pressure too high | - Check fuel pressure regulator ⇒ Page 24-33 |
| | ♦ Fuel injector does not close | - Check fuel injectors ⇒ Page 24-38 . |
| | ♦ Oxygen sensor heating faulty<br>♦ Oxygen sensor faulty | - Check oxygen sensor heating ⇒ Page 24-99 |

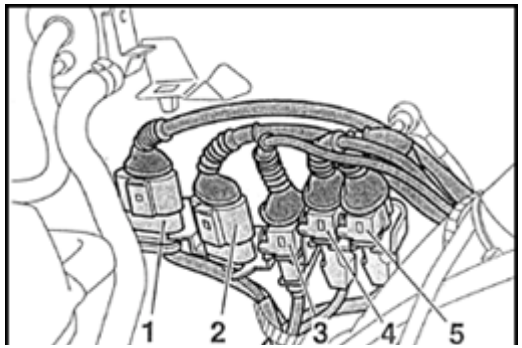
**Display group 032**

| Display field: 1 / 2 | Possible cause | Corrective action |
|---|---|---|
| Oxygen sensor adaptation value in range:10.0 to 25.0 % | ♦ False air in intake area | - Check intake system for leaks and repair false air ⇒ Page 24-68 |
| | ♦ Fuel pressure too low | - Check fuel pressure regulator ⇒ Page 24-33 |
| | ♦ Mass Air Flow (MAF) sensor faulty | - Mass Air Flow (MAF) sensor, checking ⇒ Page 24-60 |
| | ♦ Oxygen sensor heating faulty<br>♦ Oxygen sensor faulty | - Check oxygen sensor heating ⇒ Page 24-99 |
| | ♦ Fuel injector does not open or opens only partially | - Check fuel injectors ⇒ Page 24-38 . |
| | ♦ Evaporative Emission (EVAP) Canister Purge Regulator Valve sticks | - Check Evaporative Emission (EVAP) canister purge regulator valve ⇒ Page 24-107 |

24-80

**Evaluation display group 033**

| Display field: 2 | Possible cause | Corrective action |
|---|---|---|
| constant about 0.450 V | ♦ Open circuit in wire 4 between oxygen sensor and control module | - Check primary voltage ⇒ Page 24-80 |
| | ♦ Open circuit in wire 3 between oxygen sensor and control module | |
| constant about 0.200 V | ♦ Oxygen sensor faulty | - Replace oxygen sensor |
| larger than 1.100 V | ♦ Short circuit to B+ in wire 4 between oxygen sensor and control module | - Check oxygen sensor wiring, oxygen sensor before catalytic converter ⇒ Page 24-81 |
| smaller than 0.150 V | ♦ Short circuit to Ground (GND) in wire 4 between oxygen sensor and control module | |

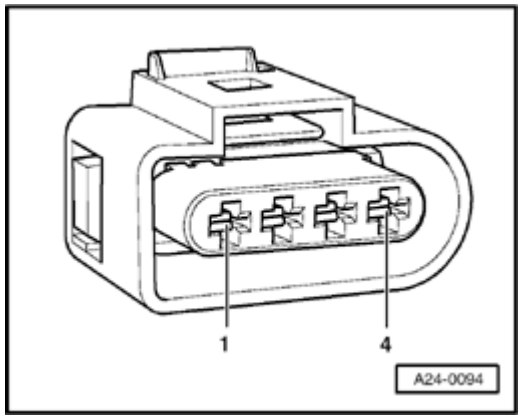



**Checking primary voltage**

- Disconnect 4-pin harness connector -2- (black) to Heated Oxygen Sensor (HO2S) -G39- before catalytic converter.

***Note:***

*Coolant reservoir screws must be removed and coolant reservoir must be placed to side in order to access the harness connector. The coolant hoses can remain connected.*




- Connect multimeter between terminal 3 and 4 for voltage measurement.
- Switch ignition on.
  - ♦ Specification: 0.400 to 0.500 V
- Switch ignition off.

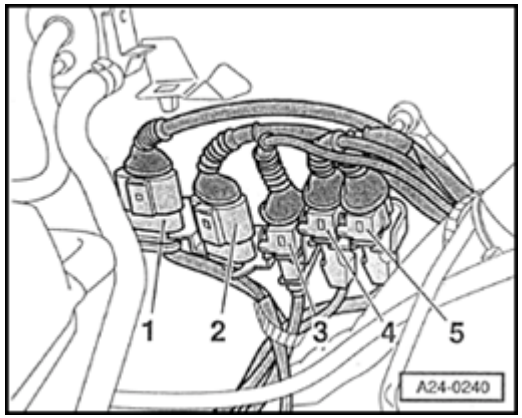
If specified value is not obtained:

- Check oxygen sensor wiring.

If specified value is obtained:

- Replace Heated Oxygen Sensor (HO2S) -G39-.

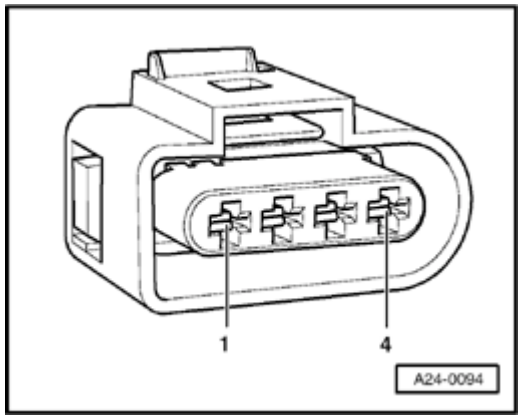
**Checking oxygen sensor wires**




- Disconnect 4-pin harness connector -2- (black) to Heated Oxygen Sensor (HO2S) -G39- before catalytic converter.

***Note:***

*Coolant reservoir screws must be removed and coolant reservoir must be placed to side in order to access the harness connector. The coolant hoses can remain connected.*




- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .

- Check following wire connections for open circuit.

| Harness connector<br><br>Terminal | VAG1598/31 test box<br><br>Socket |
|---|---|
| 3 | 51 |
| 4 | 70 |

- Repair open circuit if necessary.
- Check wires to each other for short circuit.

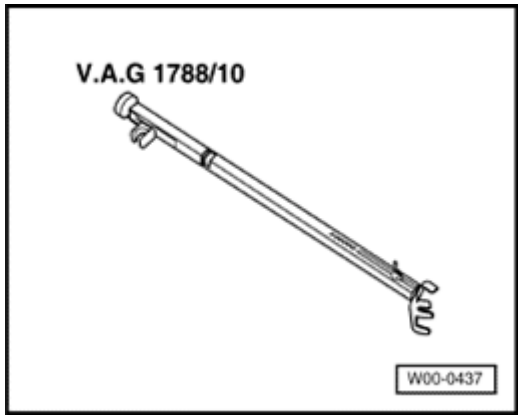
If wire connection is OK:

- Replace Engine Control Module (ECM) ⇒ Page 24-23

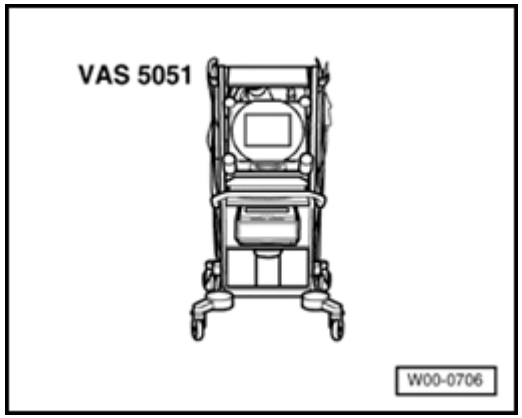
24-83

## Oxygen sensor aging (oxygen sensor before catalytic converter), checking

### Special tools and equipment




- VAG1788/10 RPM adjuster




- VAS5051 with VAG5051/1

or

- VAG1551 with VAG1551/3A

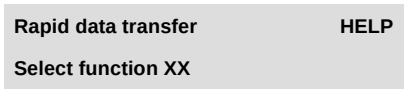
### Test requirement:

- Coolant Temperature at least 80 ° C.

**24-84**

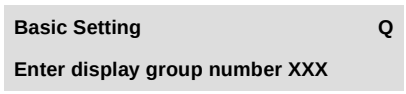
## Test sequence

- Connect VAS5051 tester or VAG1551 scan tool and select control module for engine electronics using "address word" 01 ⇒ Page 01-10 . Engine must run at idle.



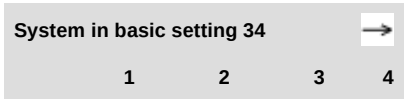

When indicated on display

- Press buttons -0- and -4- to select "Initiate basic setting" and press -Q- button to confirm input.




When indicated on display

- Press buttons -0-, -3- and -4- to select "display group number 034" and press -Q- button to confirm input.




When indicated on display

- Use VAG1788/10 RPM adjuster to adjust engine speed to between 1800 and 2200 RPM.
- Check specified value in display field 4:

***Note:***

*This process can take a few minutes.*

**24-85**

| | Display fields | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Display group 034: Diagnostic oxygen sensor aging** | | | | |
| **Display** | xxxx/min | xxx °C | **x.x s** | **---** |
| **Indicated** | Engine speed (RPM) | Exhaust temperature | **Period duration Oxygen sensor before Catalytic converter** | Diagnostic condition |
| **Functional range** | | | | **Test OFF**<br>**Test ON**<br>**B1-S2 OK**<br>**B1-S2 not OK** |
| **Specified value** | 1800 to 2200 RPM | more than 350 °C | **0.0 to 1.0 s** | B1-S2 OK |
| **Note** | | | **If specified value is not obtained ⇒Continuation, ⇒ Page 24-86** | |

***Note for display field 2:***

*Calculated value from engine speed and engine load.*

***Note for display fields 3 and 4:***

*Period duration is the time between two oxygen sensor voltage jumps (e.g. rich - lean - rich) and is therefore a measurement of the aging condition of the oxygen sensor. If the specified time is exceeded, display field 4 will indicate = B1-S1 not OK.*

**Continuation**

If specified value in display field 3 and 4 is not obtained:

- Road test vehicle in order to free oxygen sensor of possible residue and repeat test.

If specified value in display field 3 and 4 is not obtained, even after road test:

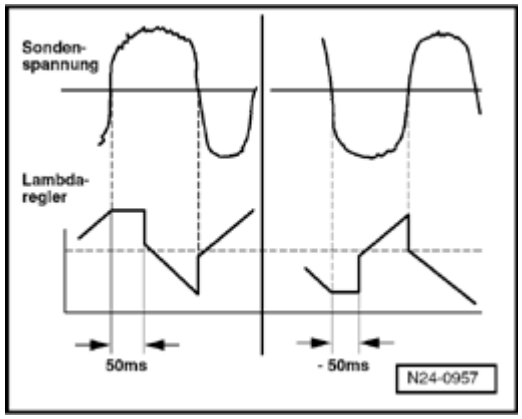
- Replace Heated Oxygen Sensor (HO2S) - G39-.

**24-87**

## Heated Oxygen Sensor (HO2S) and oxygen sensor control after Three Way Catalytic Converter (TWC), checking

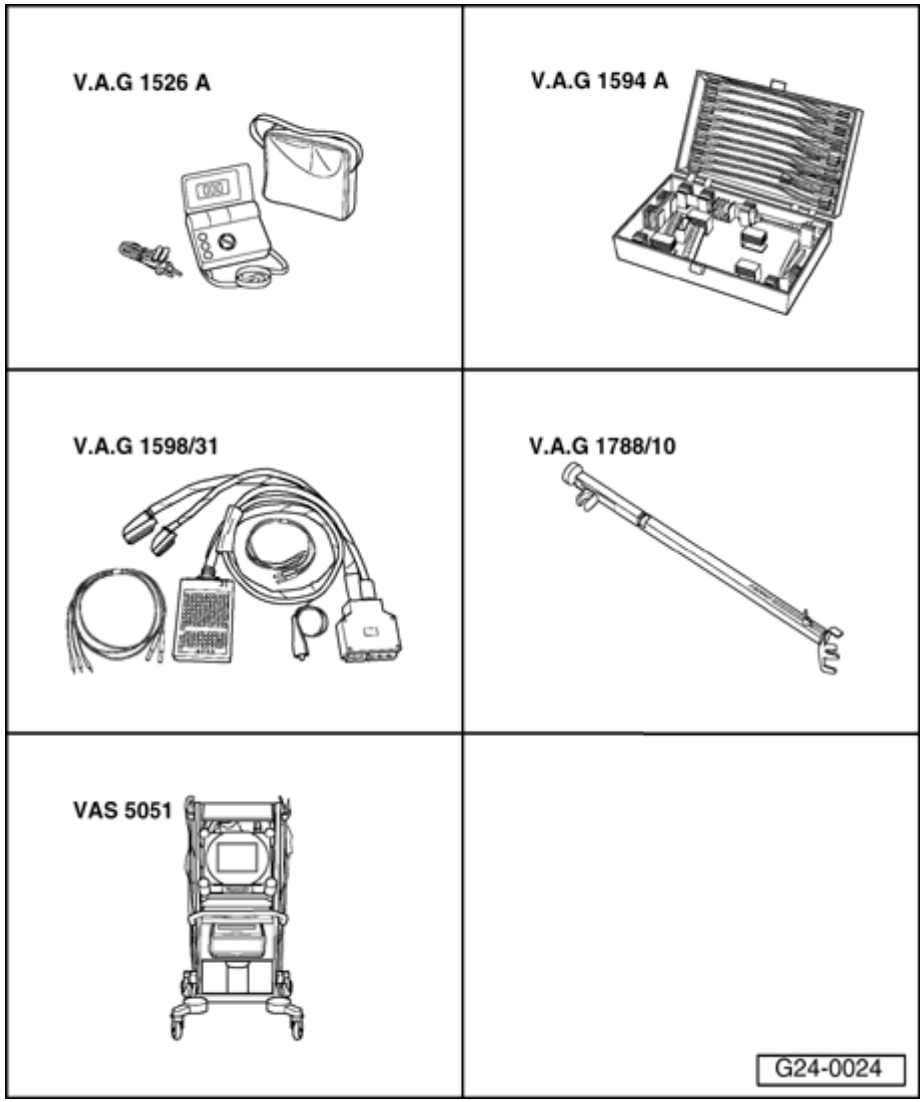
***Note:***

*Oxygen sensor control behind catalytic converter is superior to oxygen sensor control before catalytic converter and is responsible for control correction.*




*It corrects slight changes in the mixture (i.e. enrichment) via the oxygen sensor before catalytic converter by holding oxygen sensor control before catalytic converter at its higher or lower point for a specific time (dwell time). If this time is in the positive range (i.e. 50 ms), mixture is shifted in the -enrich- direction. If it is in the negative range (e.g. -50 ms), mixture will be shifted in the -lean- direction.*

**24-88**




## Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31
- VAG1788/10 RPM adjuster
- VAS5051 with VAG5051/1

- or

- VAG1551 with VAG1551/3A

**24-89**

**Test requirements:**

- Road test performed and DTC memory erased.
- Coolant Temperature at least 80 ° C.

**Test sequence**

- Connect VAS5051 tester or VAG1551 scan tool and select control module for engine electronics using "address word" 01 ⇒ Page 01-10 . Engine must run at idle.

| | |
|---|---|
| **Rapid data transfer** **HELP**<br>**Select function XX** | When indicated on display |

- Press buttons -0- and -4- to select "Initiate basic setting" and press -Q- button to confirm input.

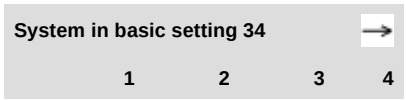
***Note:***

*During basic setting, the Evaporative Emission (EVAP) canister purge regulator valve (EVAP valve -N80-) is closed and the A/C compressor is switched off*

| | |
|---|---|
| **Basic Setting** **Q**<br>**Enter display group number XXX** | When indicated on display |

- Press buttons -0-, -3- and -4- to select "display group number 034" and press -Q- button to confirm input.

**24-90**



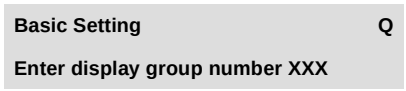

When indicated on display

- Use VAG1788/10 RPM adjuster to adjust engine speed to between 2800 and 3200 RPM.
- Continue test as soon as display field 2 indicates an exhaust temperature of more than 350 ° C.

***Note:***

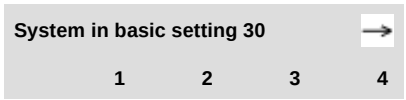
*This process can take a few minutes.*

- Press -C- button.
- Use VAG1788/10 RPM adjuster to adjust engine speed to between 1800 and 2200 RPM.




When indicated on display

- Press buttons -0-, -3- and -0- to select "display group number 030" and press -Q- button to confirm input.




When indicated on display

- Check oxygen sensor status for oxygen sensor behind catalytic converter in display field 2.

***Note:***

*"Oxygen sensor status" indicates status of oxygen sensor control and oxygen sensor.*

| | Display fields | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Display group 030: Oxygen sensor status with engine at idle** | | | | |
| **Display** | X X X | **X X X** | | |
| **Indicated** | Oxygen sensor status, bank 1, sensor 1 | **Oxygen sensor status Bank 2, sensor 1** | | |
| **Functional range** | 0 = off<br>1 = on | **0 = off**<br>**1 = on** | | |
| **Specified value** | 1 1 1 | **1 1 0** | | |
| **Note** | **If specified value is not obtained ⇒ Page 24-99** | | | |

| **Significance of 3 digit indications in display group 030** | | | |
|---|---|---|---|
| X | X | X | **Display fields 1 and 2** |
| | | X | Oxygen sensor control: 0= not active; 1 = active |
| | X | | Operational readiness of oxygen sensor: 0= not active; 1 = active |
| X | | | Condition of oxygen sensor heater: 0= not active; 1 = active |

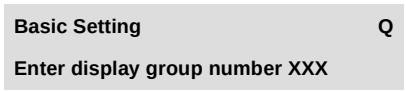
***Note:***

- *Oxygen sensor control of oxygen sensor behind catalytic converter (B1-S2) is not active without engine load.*
- *The first position of the 3 digit indication (heating) fluctuates between 0 and 1.*

**24-92**

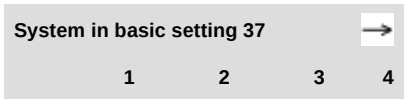
## Checking oxygen sensor control behind catalytic converter

- Press -C- button.




When indicated on display

- Press buttons -0-, -3- and -7- to select "display group number 037" and press -Q- button to confirm input.




When indicated on display

- Check oxygen sensor voltage in display field 2.
- Check dwell time of oxygen sensor control before catalytic converter in display field 3 and diagnostic result in display field 4.

**24-93**

| | Display fields | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Display group 037: Diagnostic oxygen sensor control system** | | | | |
| **Display** | xxx % | **x.xxx volts** | **xxx ms** | **---** |
| **Indicated** | Engine load | **Oxygen sensor voltage Bank 2, sensor 1** | **Dwell time, oxygen sensor control before catalytic converter, bank 1** | Diagnostic condition |
| **Functional range** | | | | **Test OFF**<br>**Test ON**<br>**System OK**<br>**System not OK** |
| **Specified value** | 15 to 33 % | **0.100 to 0.900 V** | **-150 to 150 ms** | System OK |
| **Note** | | **If specified value is not obtained: Evaluation display field 2 ⇒ Page 24-94** | **If value climbs to above 300 ms, this indicates a leaking exhaust system or faulty oxygen sensor** | **If "SYST not OK" is displayed: Check DTC memory ⇒ Page 01-16** |

***Note for display field 3:***

*Oxygen sensor control behind catalytic converter is superior to oxygen sensor control before catalytic converter and is responsible for control correction. It corrects slight changes in the mixture (i.e. toward rich or lean) due to the oxygen sensor before catalytic converter by holding oxygen sensor control before catalytic converter at its higher or lower point for a specific time (dwell time). If this time is in the positive range (i.e. 50 ms), mixture is shifted in the -enrich- direction. If this time is in the negative range (i.e. -50 ms), mixture is shifted in the -lean- direction.*

24-94

**Evaluation display group 037**

| Display field: 2 | Possible cause | Corrective action |
|---|---|---|
| constant about 0.450 V | ♦ Open circuit in wire 4 between oxygen sensor and control module | - Check primary voltage ⇒ Page 24-96 |
| | ♦ Open circuit in wire 3 between oxygen sensor and control module | |
| larger than 1.100 V | ♦ Short circuit to B+ in wire 4 between oxygen sensor and control module | - Check oxygen sensor wiring, oxygen sensor behind catalytic converter ⇒ Page 24-97 |
| smaller than 0.150 V | ♦ Short circuit to Ground (GND) in wire 4 between oxygen sensor and control module | |

**24-95**

**Continuation**

If specified value in display field 3 and 4 is not obtained:

- Road test vehicle in order to free oxygen sensor of possible residue and repeat test.

If specified value in display field 3 and 4 is not obtained, even after road test:

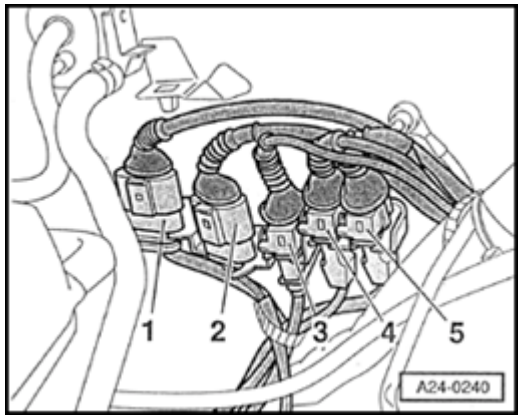
- Replace Heated Oxygen Sensor (HO2S) - G39-.

***Note:***

*If oxygen sensor voltage is OK and dwell time of oxygen sensor control behind catalytic converter is still above 1200 ms, even after a road test, this suggests aging of the oxygen sensor before catalytic converter.*

**24-96**

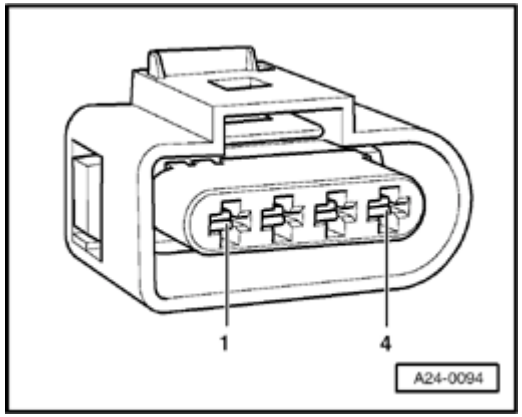
### Checking primary voltage




- Disconnect 4-pin harness connector -1- (brown) to Oxygen Sensor (O2S) behind Three Way Catalytic Converter (TWC) -G130-.

***Note:***

*Coolant reservoir screws must be removed and coolant reservoir must be placed to side in order to access the harness connector. The coolant hoses can remain connected.*




- Connect multimeter between terminal 3 and 4 for voltage measurement.
- Switch ignition on.
  - ♦ Specification: 0.400 to 0.500 V
- Switch ignition off.

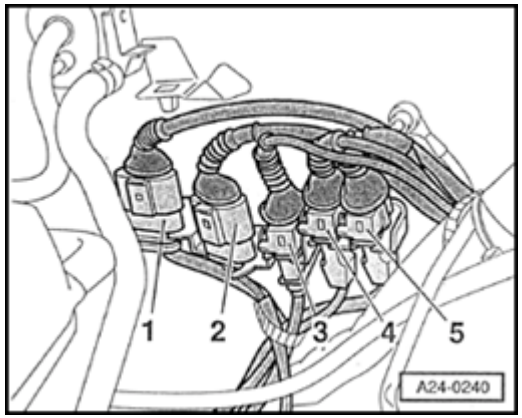
If specified value is not obtained:

- Check oxygen sensor wiring.

If specified value is obtained:

- Replace Oxygen Sensor (O2S) behind Three Way Catalytic Converter (TWC) -G130-.

## Checking oxygen sensor wires

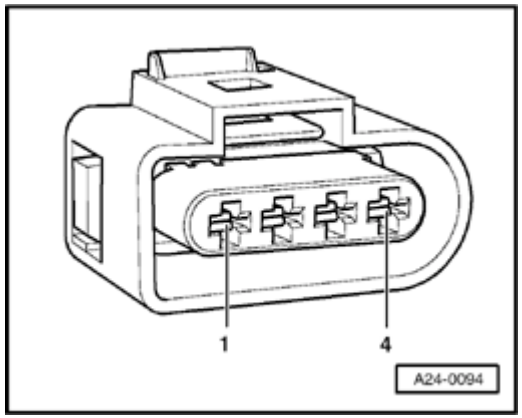



- Disconnect 4-pin harness connector -1- (brown) to Oxygen Sensor (O2S) behind Three Way Catalytic Converter (TWC) -G130-.

***Note:***

*Coolant reservoir screws must be removed and coolant reservoir must be placed to side in order to access the harness connector. The coolant hoses can remain connected.*

- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .




- Check following wire connections for open circuit.

| Harness connector<br><br>Terminal | VAG1598/31 test box<br><br>Socket |
|---|---|
| 3 | 68 |
| 4 | 69 |

**24-98**

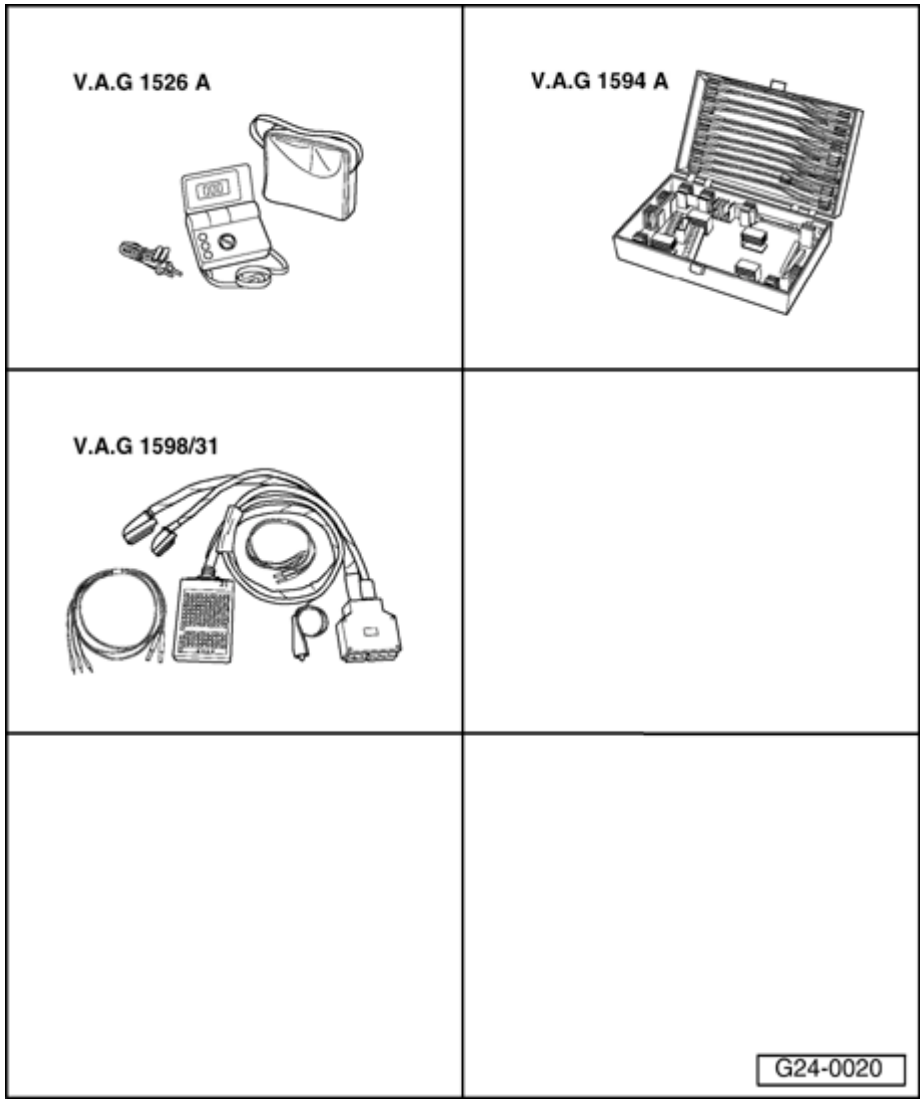
- Repair open circuit if necessary.

- Check wires to each other for short circuit.

If wire connection is OK:

- Replace Engine Control Module (ECM) ⇒ Page 24-23

24-99




## Oxygen Sensor (O2S) heater -Z19- and oxygen sensor heater 1 -Z29- for oxygen sensor before catalytic converter and oxygen sensor behind catalytic converter, checking

### Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31

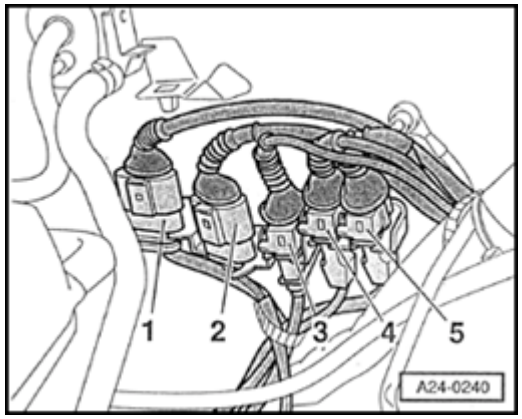
**24-100**

**Test requirements:**

- Coolant Temperature at least 80 ° C.
- Fuse for oxygen sensor heating OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

**Test sequence**




- Disconnect 4-pin harness connector -2- (black) to Heated Oxygen Sensor (HO2S) -G39- before catalytic converter.

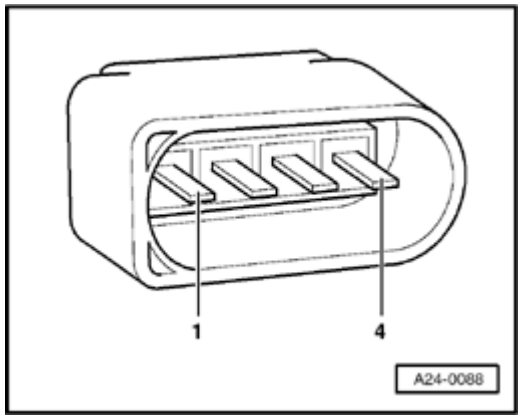
or

- Disconnect 4-pin harness connector -1- (brown) to Oxygen Sensor (O2S) behind Three Way Catalytic Converter (TWC) -G130-.

***Note:***

*Coolant reservoir screws must be removed and coolant reservoir must be placed to side in order to access the harness connector. The coolant hoses can remain connected.*

**24-101**




- Connect multimeter between terminal 1 and 2 for resistance measurement.
  - ♦ Specified value at room temperature: 1 to 5 Ω

***Note:***

*At higher temperatures, resistance climbs sharply.*

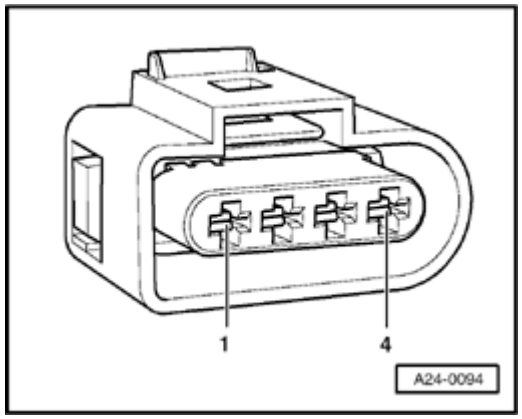
If specified value is not obtained:

- Replace Oxygen Sensor (O2S).

If specified value is obtained:

- Check voltage supply of oxygen sensor heating ⇒ Page 24-101 .

**Checking voltage supply for oxygen sensor heating**




- Connect multimeter between terminal 1 (B+) and 2 (Ground -GND-) for voltage measurement.

**24-102**

- Start engine.

  - Specification: approx. battery voltage, possibly fluctuating

***Note:***

- *At certain operating points, the ECM "pulses" the Ground (GND) for oxygen sensor heating. This means that the Ground (GND) is constantly switched on and off at these points. It is therefore possible that the voltage displayed on the tester will fluctuate.*

- *When the ECM switches oxygen sensor heating on and off can be observed, if necessary, via the function "read measuring value block" display group number 041.*

If there is no voltage:

- Connect multimeter for voltage measurement as follows:

| **Harness connector**<br><br>**Terminal** | **Measure to** |
|---|---|
| 1 (B+) | Vehicle Ground (GND) |

- Operate starter briefly.

  - Specification: approx. battery voltage

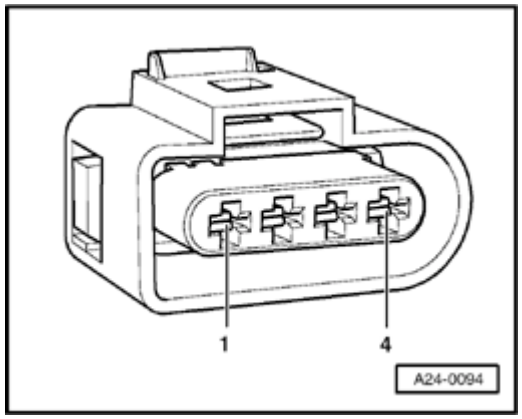
**24-103**

If there is no voltage again:

- Check wire connection from terminal 1 of connector to Fuel Pump (FP) relay via fuse for open circuit:

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

If voltage supply is OK:



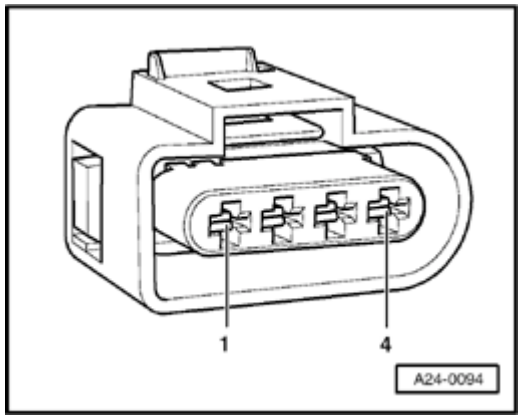

- Connect multimeter for voltage measurement as follows:

| **Harness connector**<br><br>**Terminal** | **Measure to** |
|---|---|
| 2 (Ground -GND- activation of Engine Control Module - ECM-) | B+ |

- Start engine.
  - ♦ Specification: approx. battery voltage, possibly fluctuating
- Switch ignition off.

If there is no voltage:

- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .




- Check following wire connection for open circuit:

**Oxygen Sensor (O2S) heater -Z19- for oxygen sensor before catalytic converter:**

| Harness connector<br><br>Terminal | VAG1598/31 test box<br><br>Socket |
|---|---|
| 2 | 5 |

**Oxygen sensor heater 1 -Z29- for oxygen sensor behind catalytic converter:**

| Harness connector<br><br>Terminal | VAG1598/31 test box<br><br>Socket |
|---|---|
| 2 | 63 |

- Repair open circuit if necessary.

If wire connection is OK, but there is no Ground (GND) supply for oxygen sensor heating:

- Replace Engine Control Module (ECM) ⇒ Page 24-23

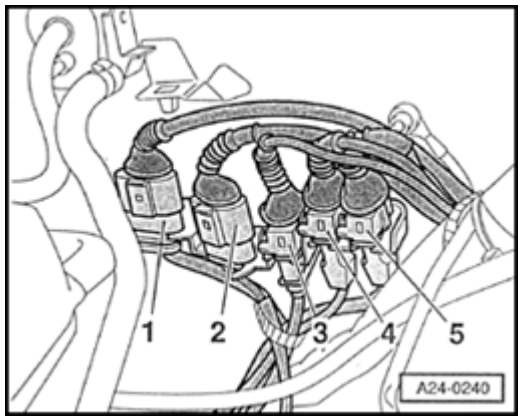
**24-105**

## Oxygen sensor, removing and installing

### Special tools and equipment

- 3337 wrench, 7-piece set
- Locking compound G 052 112 A3

### Procedure




- Disconnect 4-pin harness connector of oxygen sensor and lay it to side.

1 - (brown) for Oxygen Sensor (O2S) behind Three Way Catalytic Converter (TWC) -G130-

2 - (black) for Heated Oxygen Sensor (HO2S) -G39- before catalytic converter

***Note:***

*Coolant reservoir screws must be removed and coolant reservoir must be placed to side in order to access harness connectors. The coolant hoses can remain connected.*

- Unscrew oxygen sensor using special tool 3337.

**24-106**

When installing:

***Note:***

- *Oxygen sensor threads are coated with an assembly paste. This paste must not contact sensor openings.*
- *Tightening torque: 55 Nm*
- *Cable of oxygen sensor must always be secured in the same position when installing so that contact with the exhaust pipe is avoided.*