

**Fault, Fault Code****Possible Causes, Elimination, Remarks****Checking the hot wire signal with System Tester 9288**

The mass air flow sensor signal may be tested directly in the **Actual values** menu item using System Tester 9288.

To check the signal, remove upper air cleaner section and start engine.

**Display:** approx. 1.0 Volt

Blow against hot wire.

This must cause the System Tester display to change.

**Checking the hot wire signal (V)**

Connect plug to mass air flow sensor.

Pull off DME plug.

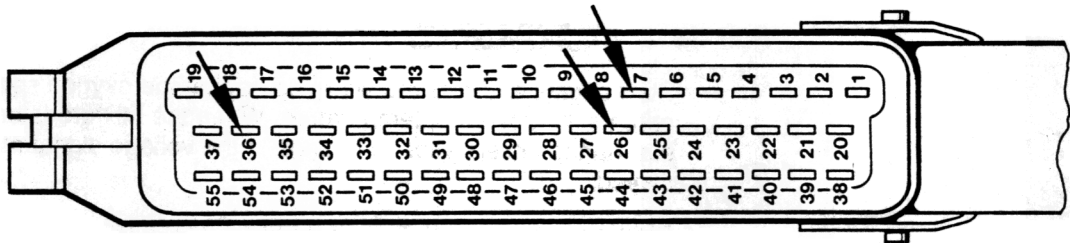
Bridge DME relay.

Connect DME plug terminal 36 to ground (e.g. door stop).

Connect voltmeter to DME plug terminal 7 and 26 (ground).

**Display:** 160 mV

Blow against hot wire in mass air flow sensor and observe voltmeter. A **voltage change** must occur.

**Test point 7**

Oxygen sensor (V)

(Sensor signal)

**Fault code 1 - 22**

**Checking the sensor signal**

Using the System Tester 9288, the oxygen sensor signal may be read directly under the **Actual values** menu item.

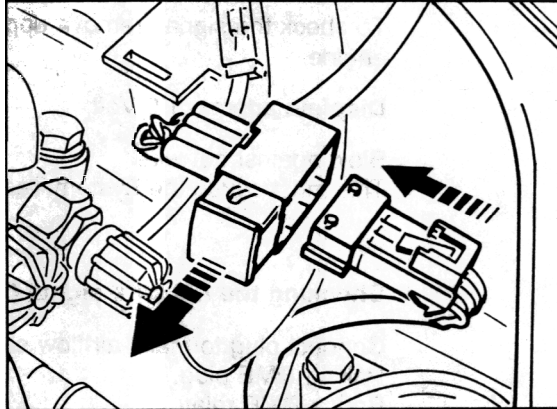
Diagnosis can only be carried out if an engine temperature of 70 °C has been reached for more than 1 minute.

**Fault, Fault Code**

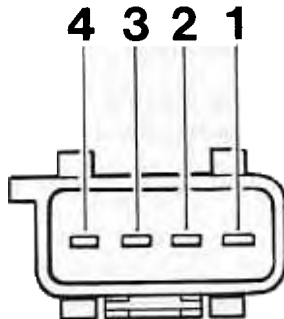
**Possible Causes, Elimination, Remarks**

If not:

Disconnect oxygen sensor plug.



Connect digital voltmeter with terminals 3 and 4 at the sensor end.

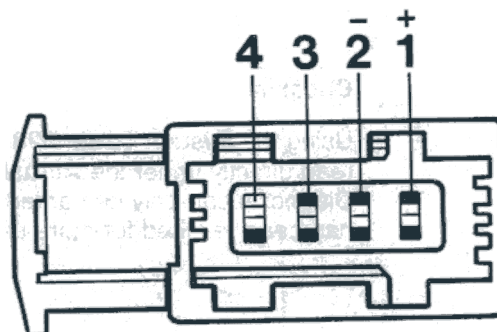


Start engine and allow to warm up so that the oxygen sensor reaches its operating temperature. When the mixture is enriched, e.g. during acceleration, a change in the voltage signal must be displayed.

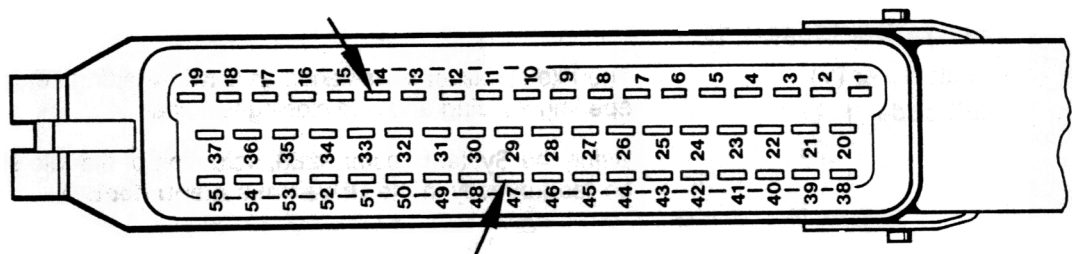
**Display:** approx. 150 mV - 900 mV (acc. to mixture composition)

**Oxygen sensor heating test**

In case of delayed regulation response, check the oxygen sensor heating. To do so, connect voltmeter to terminals 1 (+) and 2 of the disconnected sensor plug on the control unit end with the engine running. On-board voltage must be present.



Fault, Fault Code	Possible Causes, Elimination, Remarks
<b>Test point 8</b> Oxygen regulation stop <b>Fault code 1_23</b>	<p>The oxygen regulator cannot operate within its control range if extreme problems of mixture preparation occur, e.g. due to an excessively lean setting because of unmetered air, or due to an excessively rich setting because of a faulty injector valve. The oxygen regulator then moves up to the stop position.</p> <p>Oxygen regulation <b>too rich</b>:</p> <ul style="list-style-type: none"> <li>• Check intake system for leaks</li> </ul> <p>Oxygen regulation <b>too lean</b>:</p> <ul style="list-style-type: none"> <li>• Check fuel pressure</li> <li>• Check injector valves for leaks</li> </ul>
Oxygen sensor Short to +/short to ground <b>Fault code 1_24</b>	<p>If the control unit detects an oxygen sensor voltage signal of more than 1.4 V or less than 0.1 V, the control unit switches to operation without oxygen sensor. (Short to ground or open circuit).</p> <p>If regulation does not work and the sensor voltage is O.K., use System Tester 9288 to check the coding of the control unit before replacing it.</p>
<b>Test point 9</b> Intake air temperature sensor <b>Fault code 1_25</b>	<p>Using the System Tester 9288, the intake air temperature may be read directly under the <b>Actual values</b> menu item.</p> <p>If no display or unplausible value:</p> <p>Connect terminals 47 and 14 of disconnected DME control unit plug to ohmmeter.</p>



Display at:	0 °C =	4.4 - 6.8 kΩ
	15 - 30 °C =	1.4 - 3.6 kΩ
	40 °C =	1 - 1.3 kΩ