



Air mass sensor with frequency output:

Testing and test values

Vehicles: CITROEN, FORD, PEUGEOT		Product: Air mass sensor		
Models with 1.6 l diesel engine		PIERBURG No.	Replacement for	O.E. No.*
CITROEN	Berlingo, C2, C3, C4, C5, Jumpy, Xsara Picasso (HDi)	7.28342.06.0	7.28342.04.0	9650010780; 1232096; 1255117; 3M5A12B579BA; 3M5A12B579BB; Y60113215; 1920GV; 30774680
FORD	Fiesta, Focus, Fusion (TDCi)			
PEUGEOT	Expert, Partner, 1007, 206, 207, 307, 308, 407 (HDi)			



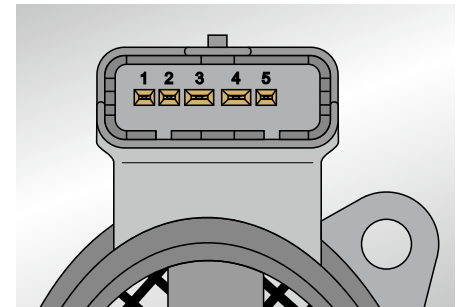
Potential complaints:

- Black smoke
- Lack of power
- Limp home function
- Fault code P0100 ... P0104

These complaints can indicate a defective air mass sensor.

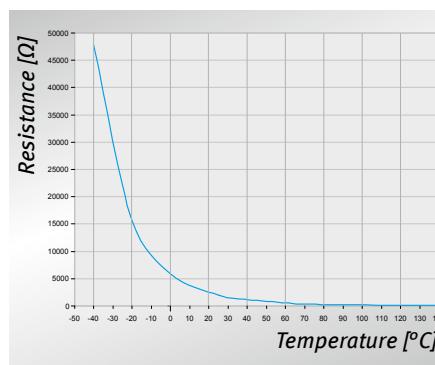
With this air mass sensor, the measured air mass flow rate is output as a frequency modulated rectangular signal. Therefore, an oscilloscope or a multimeter with frequency measuring range is required for testing.

An integrated temperature sensor records the intake air temperature. It can be measured as an electrical resistance with a standard Ohm meter or multimeter.

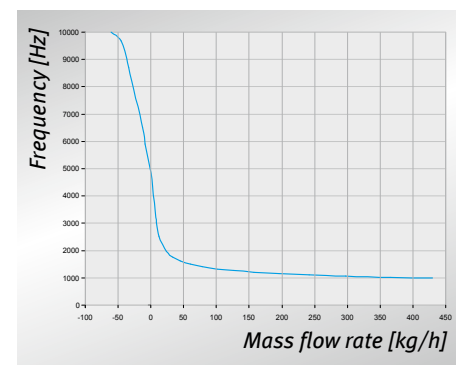


Pin assignment

- 1 Temperature resistance
- 2 Earth
- 3 (Not assigned)
- 4 Supply voltage (12 V)
- 5 Frequency output



Temperature sensor characteristic curve



Mass flow rate sensor characteristic curve

The right of changes and deviating pictures is reserved. Assignment and usage, refer to the each case current catalogues, TecDoc CD respectively systems based on TecDoc.

* The reference numbers given are for comparison purposes only and must not be used on invoices to the consumer.



Testing the supply voltage

Equipment:

Oscilloscope or corresponding function on an engine tester or multimeter

- Disconnect the plug from the air mass sensor.
- Connect multimeter or oscilloscope to pin 4 and pin 2 of the connecting cable ("Volt" measuring range).
- Turn on the ignition.
Setpoint value:
On-board voltage (> 11 V)

Testing the temperature sensor

Equipment:

Multimeter or engine tester, thermometer, suitable equipment for generating heat, e.g. hot air gun.

- Use a motor tester to test the actual intake air temperature values stored in the engine control unit.
Setpoint value:
Ambient air temperature

Alternatively:

- Disconnect the plug from the air mass sensor.
- Connect the multimeter to pin 1 and earth (2) on the air mass sensor ("Resistance" measuring range).
- Use a hot air gun and the thermometer to set various testing points.

Examples:

°C	0	25	40	60	120
Ω	5846	2000	1128	564	103

Testing the air mass flow rate

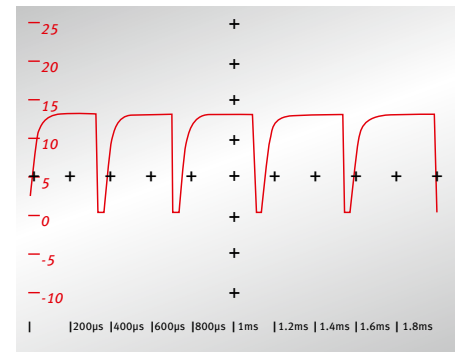
Equipment:

Oscilloscope or corresponding function on an engine tester

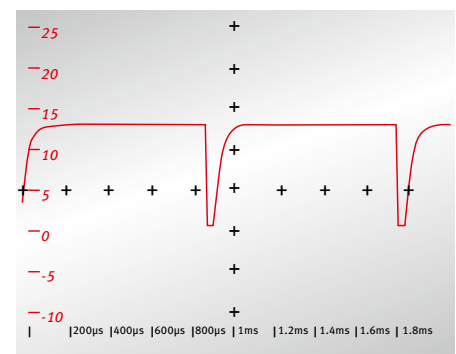
- Air mass sensor can remain installed. Plug must remain connected.

As no method available in the workshop for determining the actual air mass passing through as a reference, the measured value with the engine stopped, i.e. air mass = 0, is used as a reference variable.

- Turn on the ignition. Do not start the engine.
- Measure the frequency between pin 2 and pin 5.
Setpoint value: 5000 ±10 Hz
- The signal voltage from the sensor must be around 12 V. In the oscilloscope image, this is the highest value of the rectangular signal.
- Start the engine.
- Press the gas pedal.
- The frequency must now fall, i.e. the curve in the oscilloscope is extended further.

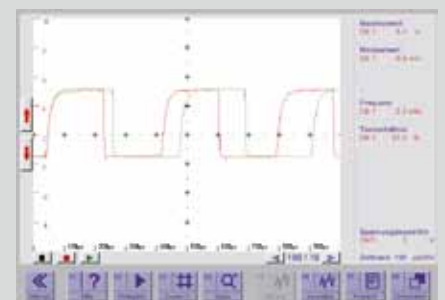


Signal when idle
(depending on idle speed)



Signal when gas pedal pressed

- ! On some engine testers that have an integrated oscilloscope, it is possible to display a reference signal. The reference signal shows the voltage curve when idle. The two curves must be approximately congruent when idle.



Green: Displayed reference signal