



SI 0105
For technical personnel only!
1/2

SERVICE INFORMATION

AIR MASS SENSOR WITH FREQUENCY OUTPUT

TESTING AND TEST VALUES

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



Potential complaints:

- Black smoke
- Lack of power
- Limp home function
- Diagnostic trouble code P0100 to P0104

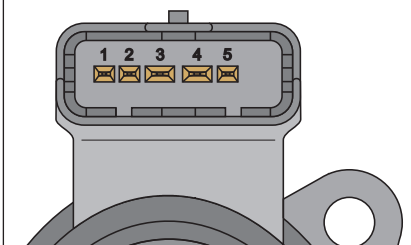
These complaints can indicate a defective air mass sensor. With this air mass sensor, the measured air mass flow rate is output as a frequency modulated rectangular signal. Therefore, an oscilloscope or a multimeter with frequency measuring range is required for testing.

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

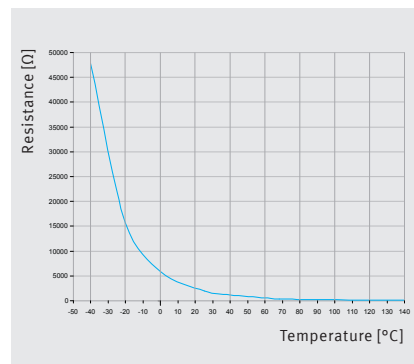


Pin assignment

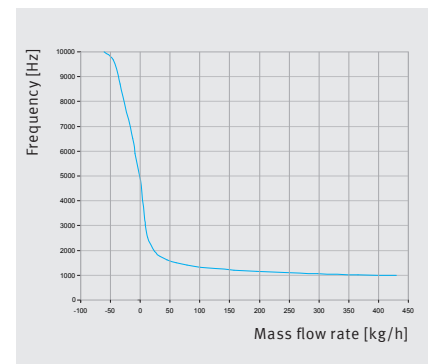
- 1 Temperature resistance
- 2 Earth
- 3 (not assigned)
- 4 Supply voltage (12 V)
- 5 Frequency output



Temperature sensor characteristic curve



Mass flow sensor characteristic curve



All content including pictures and diagrams is subject to change. For assignment and replacement, refer to the current catalogues or systems based on TecAlliance.

* 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.
Set-point value: on-board voltage ($\approx 11\text{ V}$)

TESTING THE TEMPERATURE SENSOR

Equipment:

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

- Use an engine tester to test the actual intake air temperature values stored in the engine control unit.
Set-point value: ambient air temperature

Alternatively:

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

Example:

°C	0	25	40	60	120
Ω	5846	2000	1128	546	103

TESTING THE AIR MASS FLOW RATE

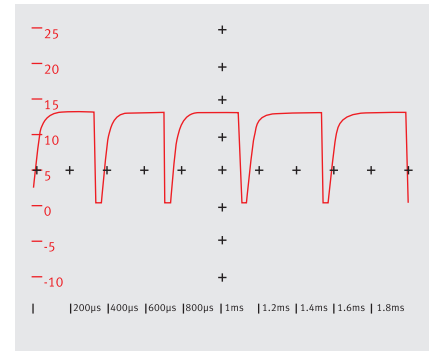
Equipment:

Oscilloscope or corresponding function on an engine tester

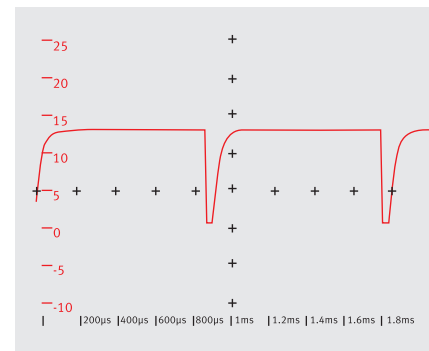
- Air mass sensor can remain installed.
Plug must remain connected.

As no method is available in the repair shop 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.

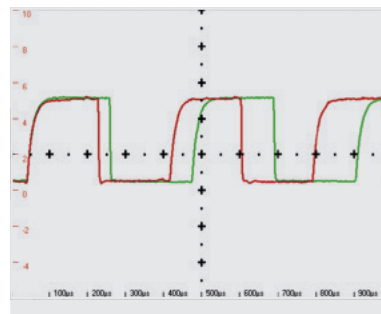
- Turn on the ignition. Do not start the engine.
- Measure the frequency between pin 2 and pin 5.
Set-point value: $5000 \pm 10\text{ Hz}$
- The signal voltage of the sensor must be around 12 V . In the oscilloscope image, this is the highest value of the rectangular signal.
- Start the engine.
- Press the accelerator 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 accelerator pedal pressed



Green: displayed reference signal



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.