Servicing Motronic injection system
Checking air mass meter -G70

Test conditions

- Coolant temperature at least 80 °C.
- Electrical consumers switched off (radiator fan must not run during the check)
- Air conditioner switched off
- Fuse for air mass meter OK

=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder

Checking function

– Connect the vehicle diagnostic, testing and information system VAS 5051 or fault reader V.A.G 1551 and select engine electronics control unit 1 with "Address word" 01 => Page 01-15.
For this purpose, the engine must be running at idling speed.

→ Indicated on display:

Rapid data transfer HELP Select function XX

– Press keys 0 and 4 for the function "Initiate basic setting" and confirm entry with Q key.

Note:

During basic setting, the solenoid valve for the activated charcoal filter (ACF valve -N80) is closed and the air conditioning compressor is switched off by the engine control unit.

→ Indicated on display:

Basic setting Q Enter display group number XXX

– Press keys 0, 0 and 2 for "display group number 2" and confirm entry with Q key.

→ Indicated on display:

System in basic setting 2 ⇒ 1 2 3 4

– Check specified results for recorded load.

	Display zones			
	1	2	3	4
Display group 2: Intake air mass at idle and operating temperature				
Display	xxx rpm	xx.x %	**x.x ms**	**xxx.x g/s**
Display	Engine speed (in steps of 40 rpm)	Load	**Average injection period**	**Air mass**
Range	min.: 550 rpm max.: 7200 rpm	min.: 0 % max.: 110 %		
Specified value	600...820 rpm	14.0...24.0 %	**1.0...5.0 ms**	**3.5...7.0 g/s**
Note	---	---	**If specified value is not attained: Evaluation, display zone 3 =>Page 24-68.**	**If specified value is not attained: Evaluation, display zone 4 =>Page 24-69.**

If specified value is attained:

– Press ⇒key.
– Press keys 0 and 6 for the "End output" function and press the Q key to confirm entry.
– Switch ignition off.

Evaluation of display group 002

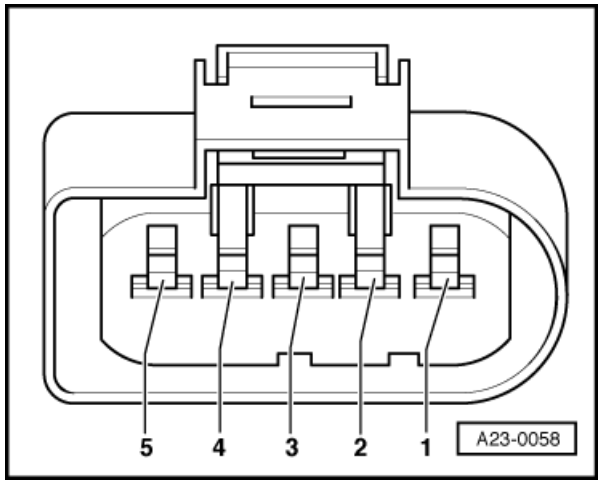
Display zone: 3	Possible causes of fault	Fault remedy
Less than 1.0 ms	- Lower values can only occur when vehicle is on overrun	
Greater than 5.0 ms	- Engine load from ancillaries	- Eliminate load (air conditioner system/ power steering/alternator)
	- Poor idling (not running on all cylinders)	- Test spark plugs Check injectors =>Page 24-48
	- Throttle valve control part - J338 defective	- Check throttle valve control part =>Page 24-168.

Evaluation of display group 002

Display zone: 4	Possible causes of fault	Fault remedy
Less than 3.5 g/s	- Large quantity of unmetered air between intake manifold and air mass meter - Voltage supply to air mass meter or wiring to engine control unit	- Test for leaks (unmetered air) in intake air system => Page 24-70
Greater than 7.0 g/s	- Engine load from ancillaries	- Eliminate load (air conditioner system/ power steering/alternator)
	- Voltage supply to air mass meter or wiring to engine control unit	- Check voltage supply and/or wiring => Page 24-70

Testing voltage supply to air mass meter

– Detach connector from air mass meter.
– → Connect hand-held multimeter for voltage measuring to socket 2 of connector and engine earth.
– Operate the starter briefly.



Specified value: approx. battery voltage

Note:

Voltage supply to air mass meter is from fuel pump relay.

If battery voltage is not present.

– Test wiring from socket 2 on connector via fuse to fuel pump relay for open circuit or short to earth. Rectify, if necessary.

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If the specified value is achieved.

– Check earth connection to engine control unit => Page 24-71.

Checking earth connection

– → Connect hand-held multimeter for voltage measuring to sockets 2 and 3 of the connector.
– Operate the starter briefly.

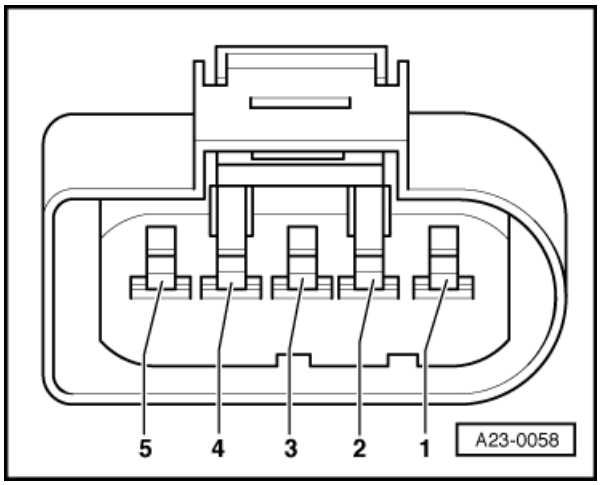
Specified value: approx. battery voltage

Note:

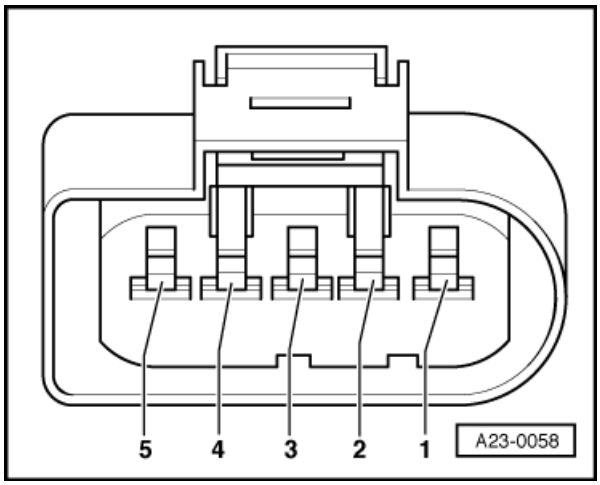
Engine control unit earth is present at socket 3 of the connector.

If specified value is not attained:

– Check the wiring connections
=>Page 24-72.



– → Connect hand-held multimeter for voltage measuring to sockets 3 and 4 of the connector.
– Switch the ignition on.



Specified value: approx. 5 V.

If specified value is not attained:

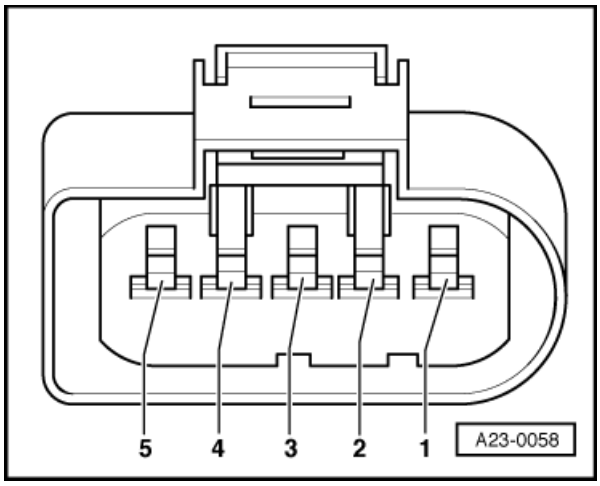
– Check the wiring connections
=>Page 24-72.

Checking wiring to air mass meter

Note:

The signal wire is also checked during the wiring check.

– Connect test box V.A.G 1598/31 to wiring harness for engine control unit; the engine control unit must not be connected => Page 24-12.
– → Check for open circuit and short to positive or earth in the following wiring connections:



Connector for air mass meter -G70, socket	Test box V.A.G 1598/31 socket
3	27
4	53
5 (signal wire)	29

Wire resistance: max. 1.5 Ohm

– Rectify any open/short circuit as necessary.

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– Additionally check all wires for short to one another.

Connector for air mass meter -G70, socket	Test box V.A.G 1598/31 socket
3	53 and 29
4	27 and 29
5 (signal wire)	27 and 53

Specified value: infinite resistance (no continuity)

– If the voltage supply and the wiring are OK, renew the air mass meter -G70.