

Checking ignition system

Checking Hall senders -G40 and -G163

The two Hall senders (camshaft position sensors) inform the engine control unit of the position of the inlet camshafts.

Notes:

- ♦ Hall sender -G163 is located at rear of left cylinder head (bank 2).
- ♦ Hall sender -G40 is located at front of right cylinder head (bank 1).
- ♦ Hall sender fitting locations =>Page [24-5](#)
- – Remove air cleaner housing => Page [24-78](#).

Checking actuation of Hall sender

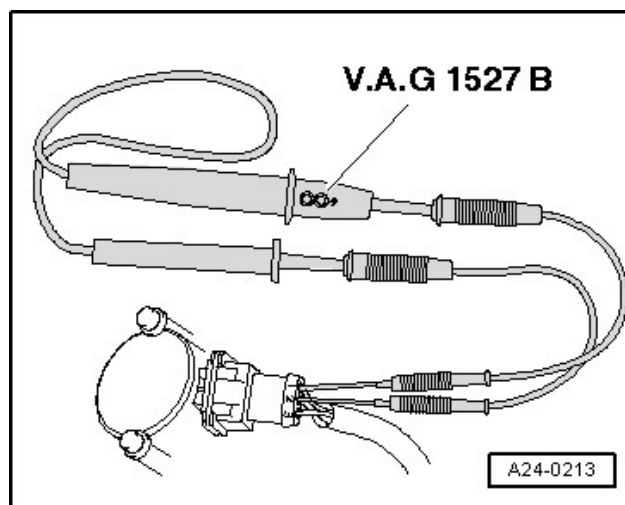
Use is to be made for the following tests of leads from adapter set V.A.G 1594.

- – Push back rubber grommet at connector of relevant Hall sender.
- – → Connect up diode test lamp V.A.G 1527 from rear between contacts 1 and 2 to Hall sender connector (leave connector attached to Hall sender).

Note:

The contacts are numbered accordingly on the back of the connector.

- – Operate starter for several seconds.



Diode test lamp must flash briefly on every second engine revolution.

Note:

Diode test lamps with a low current input do not go out completely after each actuation of engine control unit, but rather continue to glow slightly and become distinctly brighter on actuation.

Check power supply if diode test lamp does not flash.

Checking Hall sender power supply

- – Unplug connector at relevant Hall sender.
- – Switch on ignition.
- – → Connect up portable multimeter V.A.G 1526 for voltage measurement to contacts 1 and 3 of connector.

Specification: approx. 5 V

Checking Hall sender signal wire

- – → Connect up portable multimeter V.A.G 1526 for voltage measurement between contact 2 of relevant connector and engine earth.

Specification: approx. battery voltage

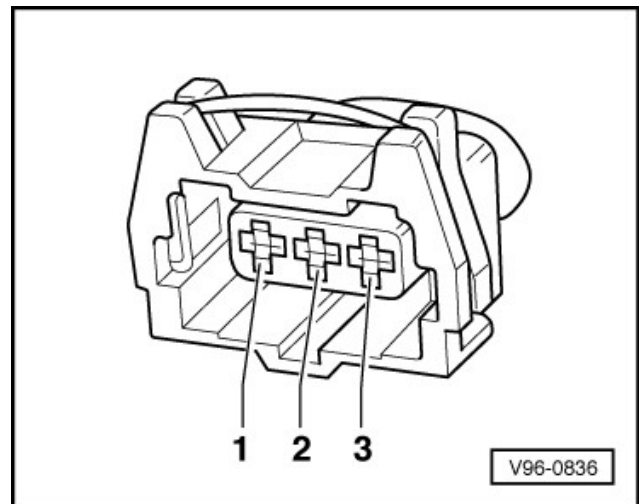
If all readings match specifications and diode test lamp does not flash (measured between contacts 1 and 2 with starter, connector attached):

- – Replace relevant Hall sender.

Check wiring if readings do not match specifications.

Checking wiring between Hall sender and engine control unit

- – Connect up test box V.A.G 1598/31 at wiring harness to engine control unit. Actual engine control unit is not to be connected=>Page [24-34](#).



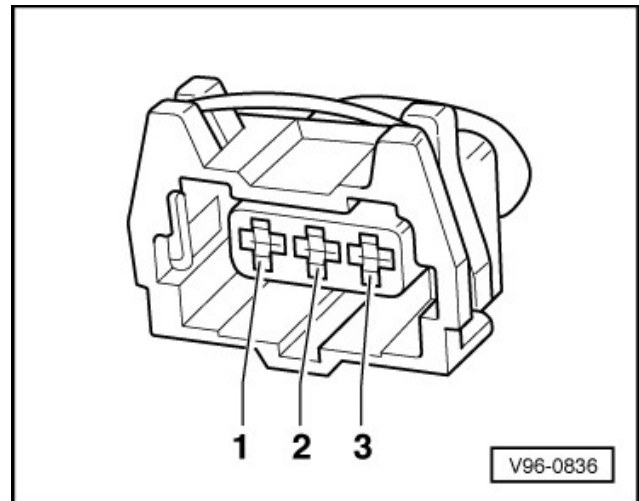
- – → Check wiring from Hall sender
- – to engine control unit for open circuit and short to positive/earth.

Hall sender -G40 (bank 1)

3-pin connector at wiring harness, socket	Test box V.A.G 1598/31, socket
1 (positive)	98
2 (signal)	87
3 (earth)	108

Hall sender -G163 (bank 2)

3-pin connector at wiring harness, socket	Test box V.A.G 1598/31, socket
1 (positive)	98
2 (signal)	86
3 (earth)	108



Resistance: max. 1.5 ohms

- – Eliminate open circuit in wiring/short circuit if necessary.

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

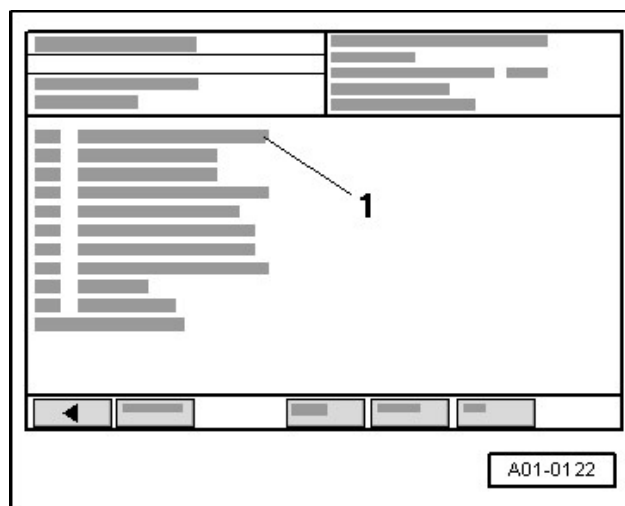
- – Possible problem if, after erasing fault memory on a trial basis, fault relating to camshaft sensor (Hall sender) is still displayed although all preceding checks were OK:
 - – Hall sender rotor ring twisted; check phase position.

Checking phase position of Hall senders

- – Connect up vehicle diagnostic, testing and information system VAS 5051=>Page [01-7](#) and select vehicle system "01 - Engine electronics" from list. Engine must be idling.

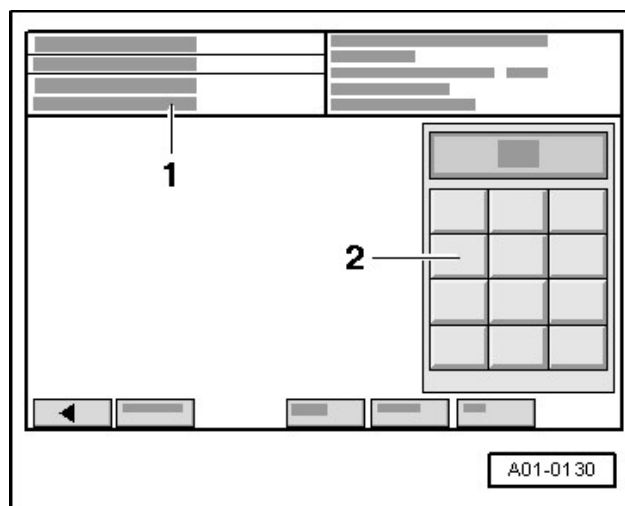
→ Indicated on VAS 5051:

- – From list -1- select diagnostic function "08 - Reading measured value block".



→ Indicated on VAS 5051:

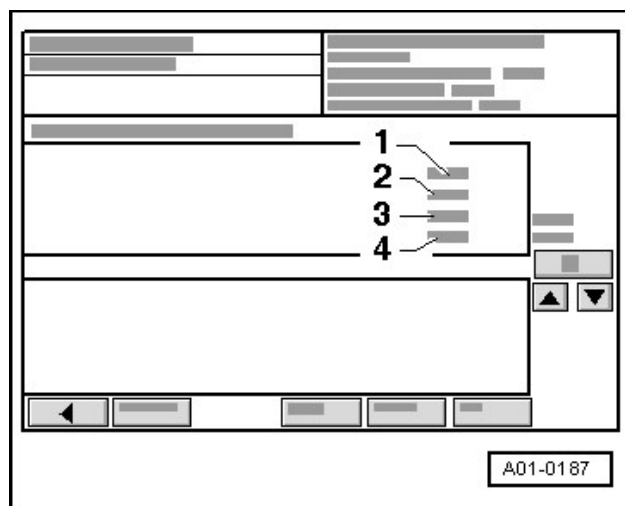
- 1 - Enter display group
- – Use keypad -2- to enter "093" for "Display group number 093" and confirm by touching Q key.



→ Indicated on VAS 5051:

- – Check display in zones -1- to -4-.

	Display zones			
	1	2	3	4
Display group 93: Phase position of Hall senders, bank 1 and bank 2, engine idling				
Display	xxx rpm	xx %	x.x ° CA	x.x ° CA
Significance	Engine speed	Engine load	Phase position bank 1	Phase position bank 2
Operating range				
Specification	730 ... 790 rpm	xx %	-6...6 ° CA	-6...6 ° CA
	If readings do not match specifications, unscrew Hall sender and check whether rotor ring has been correctly installed at camshaft			



Note	(incorrect installation causes retainer tab to be squashed on tightening bolt). Additionally check camshaft timing control and valve timing =>Engine, Mechanics.
------	--

Note:

If display zones 3 and 4 in display group 93 remain blank, bank 1 phase position can be read from display group 91, zone 4, and bank 2 phase position from display group 92, zone 4. Specifications in each case: -6°CA...6°CA

- – Terminate function "08 - Reading measured value block" by touching ◀ key.