



## Audi A3 1997 ➤

### Electrical system Self-diagnosis

Edition 02.2002

Audi

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List of Workshop Manual Repair GroupsList of Workshop Manual  
Repair GroupsList of Workshop Manual Repair Groups

**Audi A3 1997 ➤**

**Electrical system Self-diagnosis**

**Repair Group**

**01 - Self-diagnosis**



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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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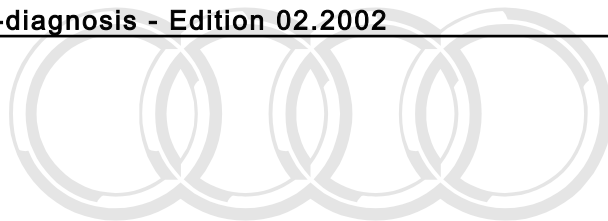
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# 01 - Self-diagnosis

## 1 - Self-diagnosis

### 1.1 - Self-diagnosis

### 1.2 - Safety precautions

Pay attention to the following if testers and measuring instruments have to be used in the course of a test drive:

Attention:

- ♦ **Always attach testers and measuring instruments to back seat and have them operated from there by a second person.** permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- ♦ **If testers and measuring instruments were to be operated from front passenger's seat, person sitting there could suffer injury in the event of an accident due to triggering of front passenger's airbag.**

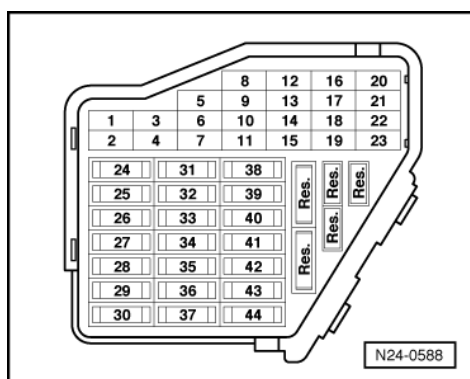
Heed the following so as to avoid possible injury and/or the destruction of electrical and electronic components:

- ♦ Switch off ignition before disconnecting and connecting measuring instruments and testers.
- ♦ Certain tests may lead to a fault being detected by the control unit and stored. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.
- ♦ Always switch off ignition before disconnecting and connecting battery so as not to damage electronic control units.

Attention:

On vehicles fitted with telematics system, activate telematics control-unit service mode before disconnecting battery.=>Radio, Telephone, Navigation; Repair Group 91

### 1.3 - Connecting up vehicle diagnostic, testing and information system VAS 5051 and selecting functions

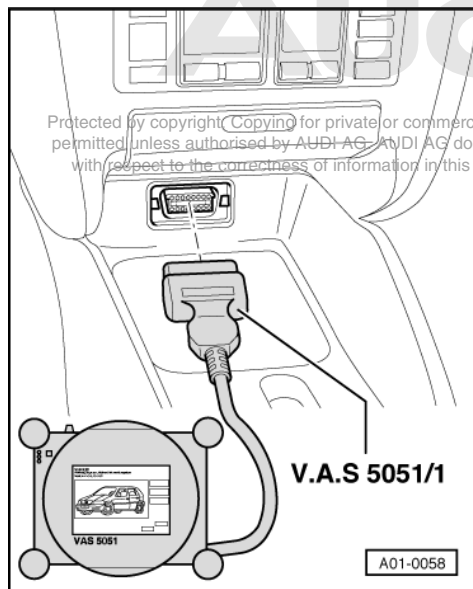


**Test requirements:**

- Vehicle supply voltage OK



- -> Fuses of corresponding system OK
- => Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder
- Earth connections to engine and gearbox OK



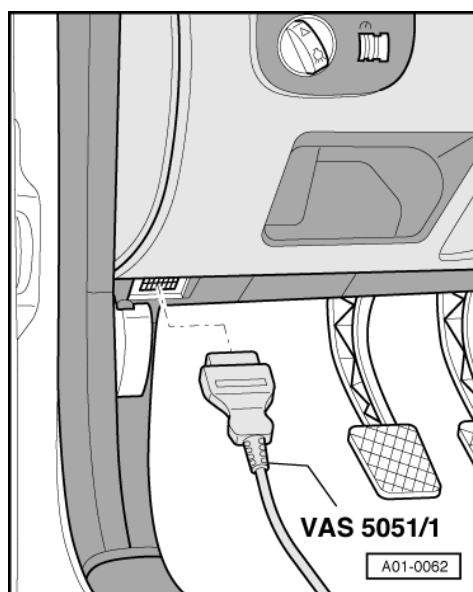
### Sequence of operations

- Switch off ignition.

### Vehicles up to Model Year 1999:

- -> Use diagnostic wire VAS 5051/1 to connect up vehicle diagnostic, testing and information system VAS 5051.

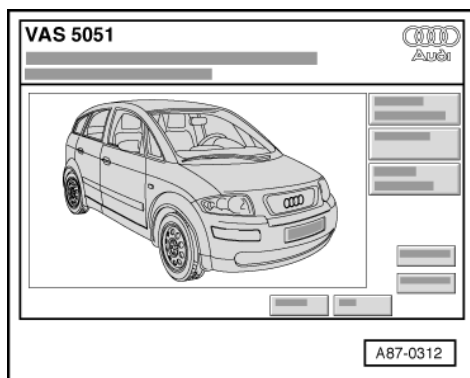
Attention:  
Heed safety precautions => Page **1** .





### Vehicles as of Model Year 2000:

- -> Use diagnostic wire VAS 5051/1 to connect up vehicle diagnostic, testing and information system VAS 5051.



### All models:

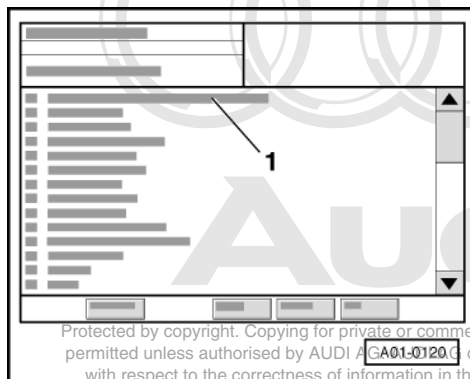
#### **Note:**

*If fault message appears on display:*

=> Operating instructions for vehicle diagnostic, testing and information system VAS 5051

-> Display on VAS 5051:

- Touch "Vehicle self-diagnosis" key.



-> Display on VAS 5051:

#### **Note:**

*Touching "00 - Interrogating fault memory - entire system" in list -1- implements the automatic test sequence, i.e. fault memory interrogation takes place for all vehicle systems with self-diagnosis capability.*



## 2 - Dash panel insert self-diagnosis up to Model Year 1999

### 2.1 - Dash panel insert self-diagnosis up to Model Year 1999

#### 2.2 - General information

##### Technical features of dash panel insert

Two different dash panel insert versions are available for the Audi A3:

- ♦ Midline: With Minicheck system
- ♦ Highline: With driver information system (DIS)

The speedometer is provided with an LCD für mileage counter, trip recorder and service display.

The warning lamps are integrated into the speedometer and rev counter.

For detailed information on dash panel insert, refer to

=> Audi A3 owner's manual

The dash panel insert is controlled by a microprocessor and provided with comprehensive self-diagnosis. Fault codes are stored in the fault memory of the dash panel insert if faults occur in system components. Faults can be determined using the vehicle diagnostic, testing and information system VAS 5051.

##### "dEF" display on trip recorder

If control unit in dash panel insert detects a ROM fault, "dEF" is displayed on trip recorder.

- Replace dash panel insert in the event of "dEF" display.

=> Electrical System; Repair Group 90; Dash panel insert up to Model Year 1999 Dash panel insert up to Model Year 1999

##### Notes on dash panel insert replacement

- ♦ Dash panel insert is not to be dismantled.
- ♦ Warning lamps of bulb type can all be replaced separately.

=> Electrical System; Repair Group 90; Dash panel insert up to Model Year 1999 Dash panel insert up to Model Year 1999

- ♦ If necessary, dash panel insert is to be replaced as part of exchange program.
- ♦ Complete damage report sheet and return together with dash panel insert.
- ♦ Original packaging must be used for return shipment.
- ♦ On replacing dash panel insert, mileage counter and service display can be adapted using vehicle diagnostic, testing and information system VAS 5051 => Page 21 .

### 2.3 - Starting dash panel insert self-diagnosis

#### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Ignition on

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Attention:  
Heed safety precautions => Page 1 .

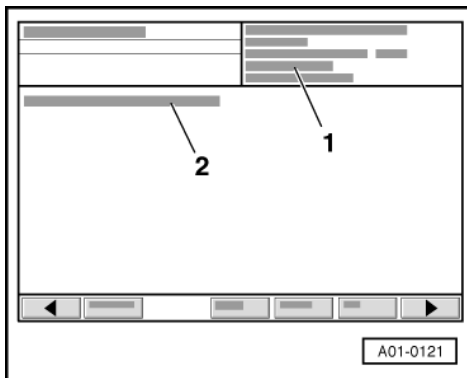


### Sequence of operations

-> Display on VAS 5051:

- From list -1- select vehicle system "17 - Dash panel insert".
- Wait until next display appears.

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-> Display on VAS 5051:

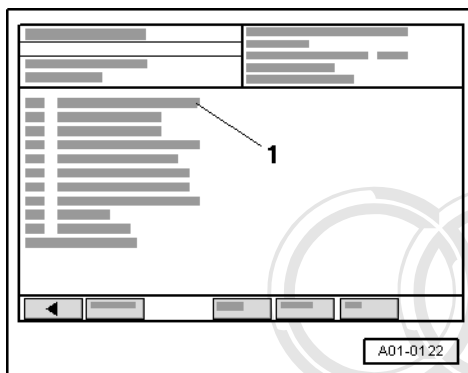
- 1 - Dash panel insert control unit identification
- 2 - Immobilizer control unit identification

Dash panel insert control unit identification (example)	
17 - Dash panel insert	Vehicle system
8L0919880..	Part No.; Assignment => Parts List
AB-DASH PANEL INSERT1) VDO2) D153)	1) Component designation 2) Manufacturer designation (UN4 = Nippon Seiki; VDO = VDO) 3) Data level (software version)
Code 12042	Control unit encoding (checking => Page 15)
Dealership number 12345	Workshop code of VAS 5051 with which encoding was last performed

**Immobilizer control unit identification (example)**

IMMO-IDENT NO: AUZ7Z0T0053877

14-position immobilizer identification no.



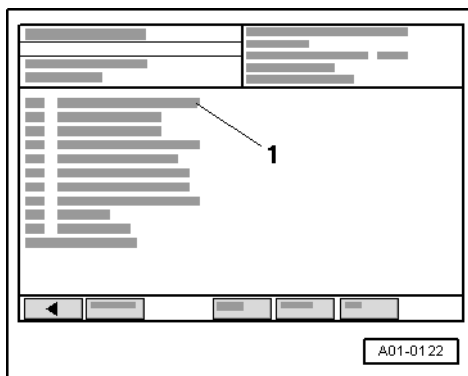
- Touch ▶ key.

-> Display on VAS 5051:

1 - List of diagnosis functions:

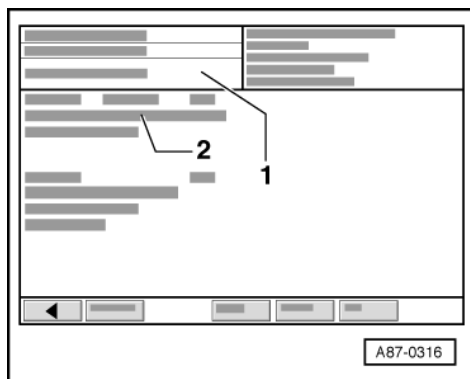
Diagnosis functions	Page
02 Interrogating fault memory	6
03 Final control diagnosis	9
04 Basic setting	-
05 Erasing fault memory	13
06 End of output	15
07 Encoding control unit	15
08 Reading measured value block	18
09 Reading individual measured value	-
10 Adaption	21
11 Login procedure	-
Vehicle ident. no. transfer	-
Release (PIN)	-
Channel 50 adaption (PIN)	-

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**2.4 - Interrogating fault memory**

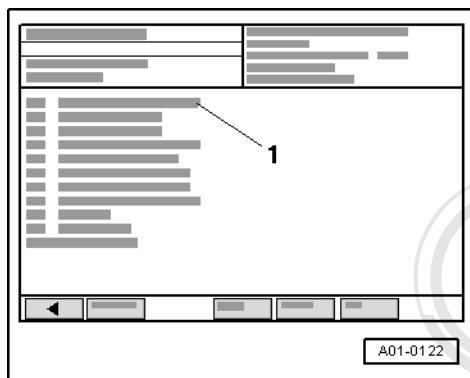
### Sequence of operations

- Start dash panel insert self-diagnosis => Page 4 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "02 - Interrogating fault memory".



-> Display on VAS 5051:

- 1 - Content of fault memory:
  - 0 faults detected
 Or
  - X faults detected
- 2 - Fault
  - Fault code
  - Fault location
  - Type of fault



### A - Faults detected:

- Print out information on screen or self-diagnosis log.
- Terminate function "02 - Interrogating fault memory" by touching ◀ key.

-> Display on VAS 5051:

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- Eliminate fault(s) in line with fault table => Page 8 .
- Select diagnosis function "02 - Interrogating fault memory" again in list and erase fault memory => Page 13 .
- Select diagnosis function "06 - End of output" in list => Page 15 .

**B - No fault detected:**

- Select diagnosis function "06 - End of output" in list => Page 15 .

**2.5 - Fault table****Notes:**

- ♦ Faults occurring in monitored sensors or components are stored in fault memory together with an indication of the type of fault.
- ♦ The fault table is arranged according to the 5-digit fault codes on the left.
- ♦ All static and sporadic faults are stored in the fault memory:  
A fault is recognised as being static if it is present for at least 2 seconds (ambient temperature sender at least 60 seconds, coolant temperature sender only after engine has been running for at least 30 minutes). If a fault is then no longer present, it is stored as being sporadic and "sporadic" also appears on display.
- ♦ After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.
- ♦ Sporadic faults are erased if they do not re-occur in the course of 50 driving cycles (ignition on for at least 5 minutes, vehicle speed greater than 30 km/h).
- ♦ Do not immediately replace components indicated as being defective by VAS 5051, but rather: Start by checking wiring and connectors to these components in line with current flow diagram. Also use current flow diagram to check earth connections. This is particularly important if faults are output as being "sporadic".
- ♦ When eliminating an open circuit in the event of a data bus fault, always remember to twist the two data wires of the corresponding bus system together to prevent electromagnetic interference.
- ♦ On completion of repair work, fault memory is to be interrogated again and erased.

Display on VAS 5051	Possible cause of trouble	Fault remedy
00667 Ambient temperature signal - Open circuit/short to positive - Short to earth	- Open circuit in wiring or short circuit  - Ambient temperature sensor -G17 defective  - Vehicles with air conditioner: Fault stored in fault memory	- Use current flow diagram to perform fault-finding  - Replace -G17  - Interrogate air conditioner fault memory => Heating, Air Conditioner; Repair Group 01

Display on VAS 5051	Possible cause of trouble	Fault remedy
00771 Fuel gauge sender -G - Open circuit/short to positive - Short to earth	- Open circuit in wiring or short circuit between dash panel insert and fuel gauge sender -G or (4WD vehicles) fuel gauge sender -2- -G169  - Fuel gauge sender -G or (4WD vehicles) fuel gauge sender -2- -G169 defective	- Use current flow diagram to perform fault-finding  - Replace -G or -G169 => Fuel Supply System - Petrol Engines; Repair Group 20

Display on VAS 5051	Possible cause of trouble	Fault remedy
00779 Ambient temperature sensor -G17 - Open circuit/short to positive - Short to earth	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding

Display on VAS 5051	Possible cause of trouble	Fault remedy
	- -G17 defective	- Replace -G17
01039 Coolant temperature gauge sender -G2 - Open circuit/short to positive - Short to earth	- Open circuit in wiring or short circuit - -G2 defective	- Use current flow diagram to perform fault-finding - Replace -G2

Display on VAS 5051	Possible cause of trouble	Fault remedy
01402 Data wire from navigation - Implausible signal	- Open circuit in clock, enable or data wire - Problem with interface between navigation system and dash panel insert - Fault caused by electromagnetic interference in or outside vehicle	- Check data wires for damage - Check causes of electromagnetic interference => Radio, Telephone, Navigation; Repair Group 91; Navigation System Navigation System
65535 Control unit defective	- Dash panel insert defective	- Replace dash panel insert => Electrical System; Repair Group 90; Dash panel insert up to Model Year 1999 Dash panel insert up to Model Year 1999

## 2.6 - Final control diagnosis

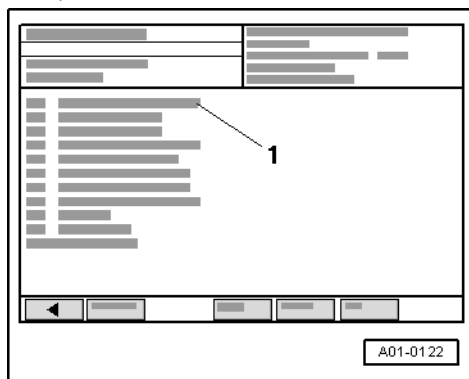
### Notes:

- ◆ Final control diagnosis can only be performed with engine stopped and ignition switched on.
- ◆ If final control diagnosis detects a fault, locate and eliminate cause of problem.

"Final control diagnosis" function consecutively actuates the following dash panel insert control elements (if fitted/encoded):

Actuation sequence
1 Analog displays
2 Minicheck warning lamps <sup>1)</sup>
3 Seat belt warning system warning lamp -K19
4 Gong
5 Segment test
6 Illumination/switches and instruments
7 Excess coolant temperature test

1) Vehicles with no driver information system (DIS)

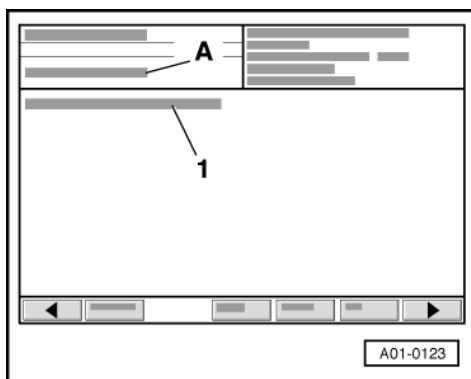


### Test requirement:

- Illumination on

### Sequence of operations

- Start dash panel insert self-diagnosis => Page 4 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "03 - Final control diagnosis".



### Actuation of analog displays

-> Display on VAS 5051:

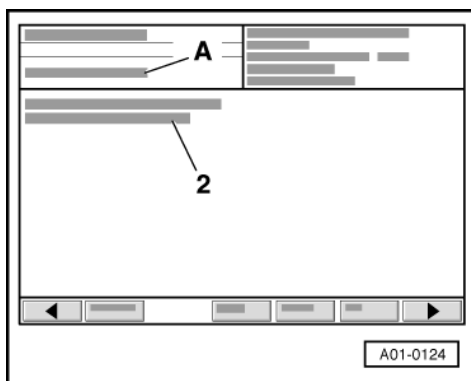
- A - 1st control element being tested
- 1 - Analog displays

The following tests are implemented simultaneously:

- ♦ Passage of coolant temperature gauge needle through entire display range
- ♦ Passage of rev counter needle through entire display range
- ♦ Passage of speedometer needle through entire display range
- ♦ Passage of fuel gauge needle through entire display range

The following fixed values are displayed on completion of the above process:

Coolant temperature gauge:	90 °C
Rev counter:	3000 rpm
Speedometer:	100 km/h
Fuel gauge:	1/2



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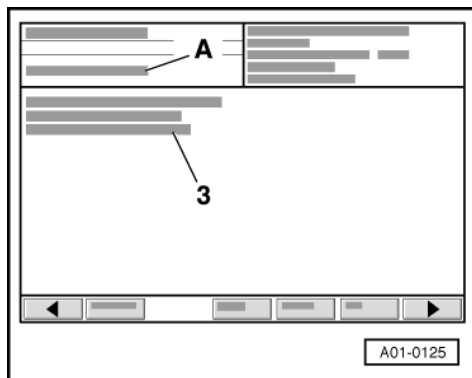
### Actuation of minicheck warning lamps 1)

- 1) Vehicles with no driver information system (DIS)
- Touch ▶ key.

-> Display on VAS 5051:

- A - 2nd control element being tested
- 2 - Minicheck warning lamps

- ◆ Minicheck warning lamps are actuated



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### Actuation of seat belt warning system warning lamp

- Touch ▶ key.

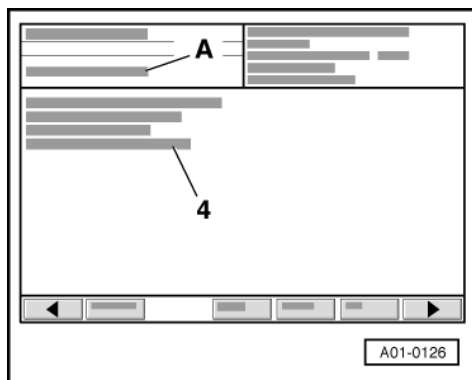
-> Display on VAS 5051:

- A - 3rd control element being tested
- 3 - Seat belt warning system warning lamp -K19

- ◆ Seat belt warning system warning lamp is actuated (lights)

#### Notes:

- ◆ Seat belt warning system warning lamp is only activated in the event of appropriate dash panel insert encoding.
- ◆ Seat belt warning system warning lamp is not active if it is not called up in final control diagnosis function.



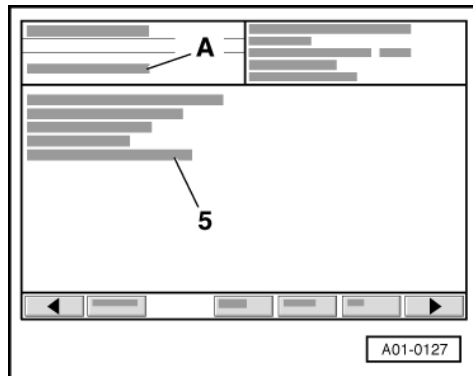
### Actuation of gong

- Touch ▶ key.

-> Display on VAS 5051:

- A - 4th control element being tested
- 4 - Gong

- ♦ Gong sounds intermittently



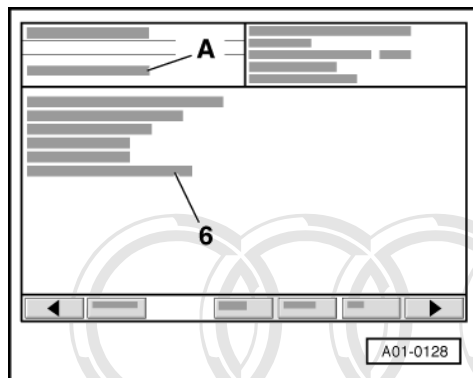
### Actuation of segment test

- Touch ▶ key.

-> Display on VAS 5051:

- A - 5th control element being tested
- 5 - Segment test

- ♦ All elements of multifunction display, clock/date LCD and mileage counter/trip recorder LCD light



### Actuation of illumination/switches and instruments

- Touch ▶ key.

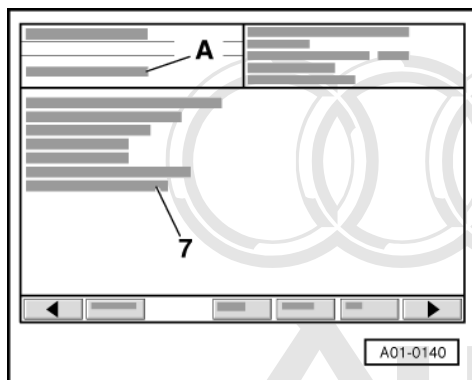
-> Display on VAS 5051:

- A - 6th control element being tested

- 6 - Illumination/switches and instruments

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- ♦ Dash panel insert illumination is dimmed, becomes brighter, is then dimmed again and finally returns to original brightness level



### Actuation of excess coolant temperature test

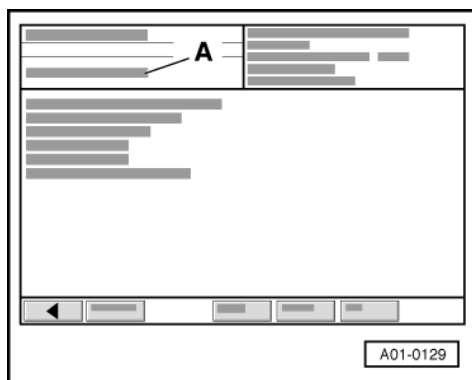
- Touch **►** key.
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-> Display on VAS 5051:

- A - 7th control element being tested
- 7 - Excess coolant temperature test

#### **Note:**

*This control element can be ignored. Press **►** key to continue with final control diagnosis.*



- Touch **►** key.

-> Display on VAS 5051:

- A - Control element test over
- Terminate function "03 - Final control diagnosis" by touching **◀** key.

## 2.7 - Erasing fault memory

#### **Note:**

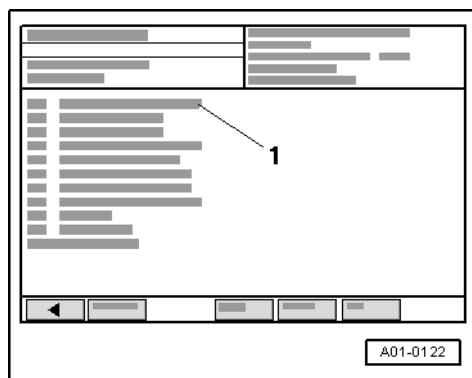
*If fault memory cannot be erased, interrogate fault memory again and eliminate fault.*

#### **Requirements:**

- Fault memory interrogated => Page **6**



- All faults eliminated

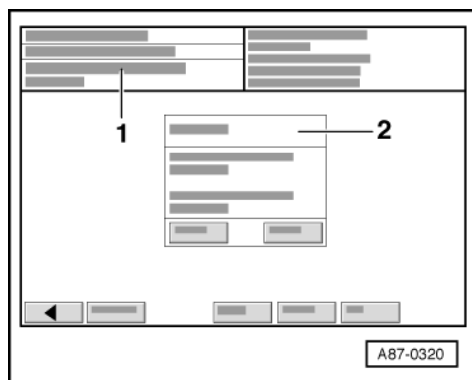


### Sequence of operations

After fault memory interrogation:

-> Display on VAS 5051:

- From list -1- select diagnosis function "05 - Erasing fault memory".



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-> Display on VAS 5051:

- 1 - - No display (prior to erasing)
- Or
- Fault memory erased

### **Note:**

*If the following message appears in display zone -1-: "Fault memory not yet interrogated", this means that sequence of operations has not been precisely observed. Fault memory cannot be erased until it has been interrogated.*

2 - Note:

Is function to be implemented?

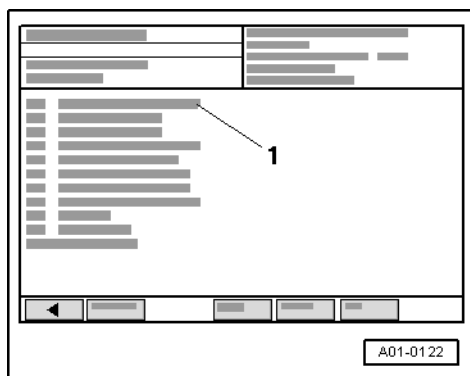
Note: Data will be erased!

- Touch "OK" key in display -2-.
- Terminate function "05 - Erasing fault memory" by touching ◀ key.
- Interrogate fault memory again after performing repair work.

**Note:**

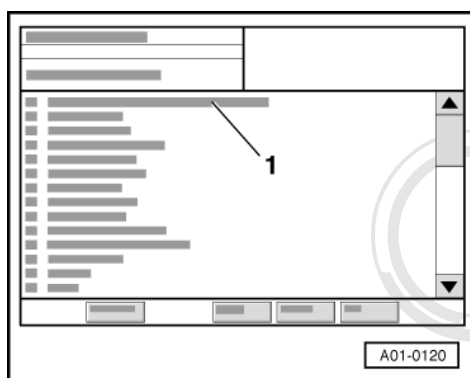
*This erases faults stored during fault elimination e.g. on account of connectors being unplugged.*

## 2.8 - End of output



-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".



-> Display on VAS 5051:

- Switch off ignition and unplug diagnostic connector when this display appears.

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## 2.9 - Encoding control unit

**Notes:**

- ◆ Encoding sets the various driver information system combination alternatives depending on equipment, country version and engine.
- ◆ The encoding table only lists the possible combinations applying to the Audi A3/S3.

### Explanatory notes on encoding

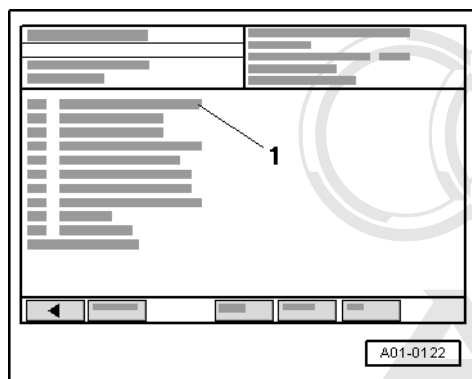
XX		Optional extra
	X	Country version
	X	No. of cylinders



	X	Engine version
--	---	----------------

#### Encoding example

02042	Seat belt warning system active, country version Germany, 4-cyl., petrol engine
-------	---



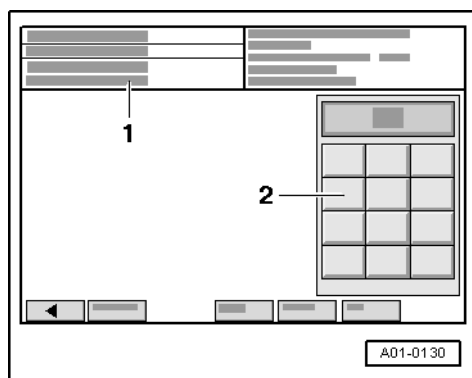
#### Sequence of operations

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- Start dash panel insert self-diagnosis => Page 4.

-> Display on VAS 5051:

- From list -1- select diagnosis function "07 - Encoding control unit".



-> Display on VAS 5051:

1 - Enter code word

- Use keypad -2- to enter 7-position control unit code as per encoding table => Page 16 .

#### Encoding table

Optional extra	00	No optional extra Manual gearbox 02C/02J/02M/Automatic gearbox 01M
Encoding options => Page 17	01	Brake pad wear indicator active
	02	Seat belt warning system active
	04	Washer fluid warning system active
	08	Manual gearbox 02K
	16	Navigation

Country version	0	Germany (D)
	1	Europe (EU) or RoW (rest of world)
	2	USA (US)
	3	Canada (CDN)
	4	Great Britain (GB)
	5	Japan (JP)
	6	Saudi Arabia (SA)
	7	Australia (AUS)

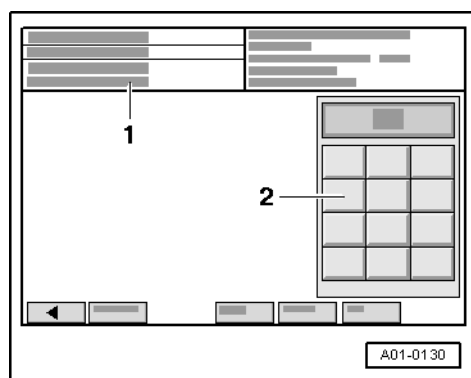
No. of cylinders	4	4-cyl.
Engine version	0	TDI engine
	2	Petrol engine
	4	Turbo engine

### Encoding options for optional extras

If a vehicle is fitted with several encodable optional extras, the first two digits of the code number are to be entered as the sum total of the individual optional extra codes.

#### Examples:

- Brake pad wear indicator active, washer fluid warning system active and navigation  
 $01 + 04 + 16 = 21$
- Brake pad wear indicator active, seat belt warning system active, washer fluid warning system active and navigation  
 $01 + 02 + 04 + 16 = 23$

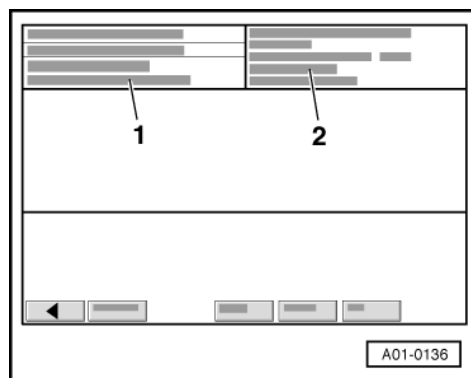


- Confirm entry by touching Q key.

-> Display on VAS 5051:

1 - Encoding in progress

- Wait until next display appears.

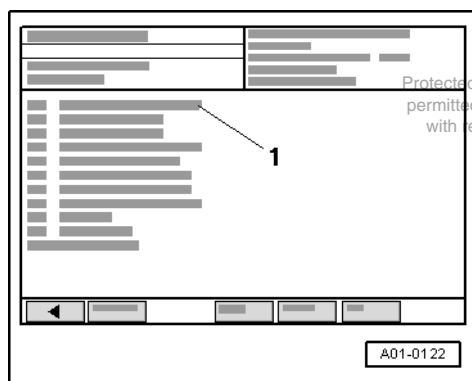


-> Display on VAS 5051:

- 1 - Vehicle system encoding completed
- 2 - Control-unit identification with new code (old code in brackets)

- Terminate function "07 - Encoding control unit" by touching ◀ key.

## 2.10 - Reading measured value block



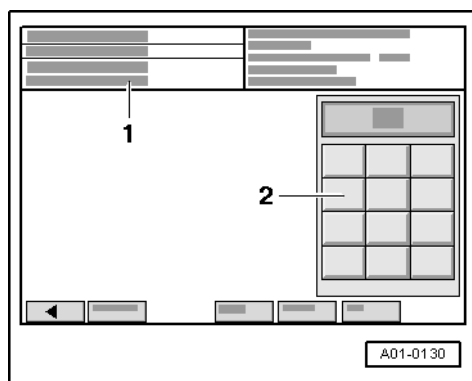
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### Sequence of operations

- Start dash panel insert self-diagnosis => Page 4 .

-> Display on VAS 5051:

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

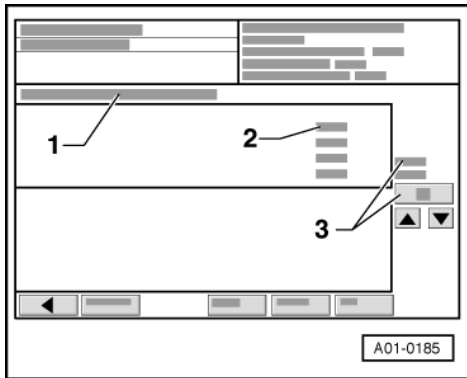


-> Display on VAS 5051:

- 1 - Enter display group

- Use keypad -2- to enter required three-digit display group number  
=>List of display groups, Page 19 and confirm entry by touching Q key.





-> Display on VAS 5051:

- 1 - Reading measured value block
- 2 - Display zone 1
- Display zone 2
- Display zone 3
- Display zone 4
- 3 - Display group X

#### List of display groups

Display group number	Indicated on display
001	1 = Vehicle speed km/h 2 = Engine speed rpm 3 = Oil pressure switch 2 4 = Not used
002	1 = Mileage counter km 2 = Fuel gauge I 3 = Not used 4 = Ambient temperature °C
003	1 = Coolant temperature °C 2 = Not used 3 = Not used 4 = Not used
050	1 = Mileage counter km 2 = Engine speed rpm 3 = Not used 4 = Coolant temperature °C

#### Notes:

- ◆ Display always indicates actual sender and sensor values. The values displayed in the dash panel insert are filtered and may deviate.
- ◆ If the actual coolant temperature is between 80 °C and 100 °C, dash panel insert always displays 90 °C.
- ◆ Display remains blank if a display zone is not used.
- ◆ Proceed as follows to switch to a different display group:

Display group	VAS 5051
Up	Press s key
Down	Press t key

- Terminate function "08 - Reading measured value block" by touching **•** key.

#### Display group 001

### Display group 002

### Display group 003

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## Display group 050

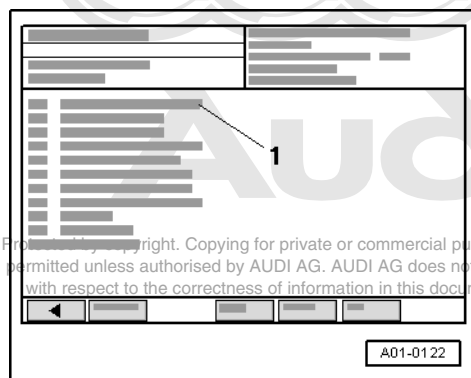
## 2001 - Self-diagnosis

## 2.11 - Adaption

The individual functions are called up by way of the appropriate adaption channel number (refer to adaption table).

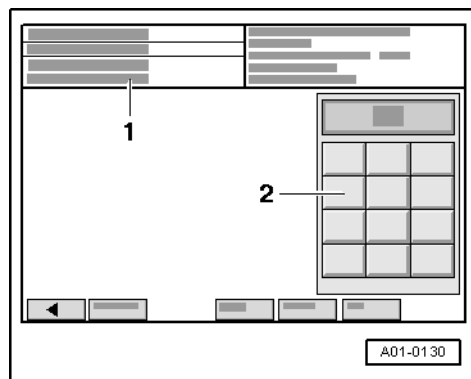
### Adaption table

Adaption channel	Function
02	Resetting of service display following service => Page 25
03	Correction of fuel consumption indicator => Page 27
04	Language version for driver information system (DIS) => Page 29
05	Maximum mileage for OIL CHANGE service => Page 30
06	Maximum mileage for inspection service => Page 32
07	Maximum time interval for inspection service => Page 33
09	Entering mileage after replacing dash panel insert => Page 34
10	Remaining mileage prior to OIL CHANGE service => Page 38
11	Remaining mileage prior to inspection service => Page 40
12	Remaining time prior to inspection service => Page 41
30	Correction of fuel gauge sender resistance range => Page 43



### Implementing function "10 - Adaption"

- Start dash panel insert self-diagnosis => Page 4 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "10 - Adaption".





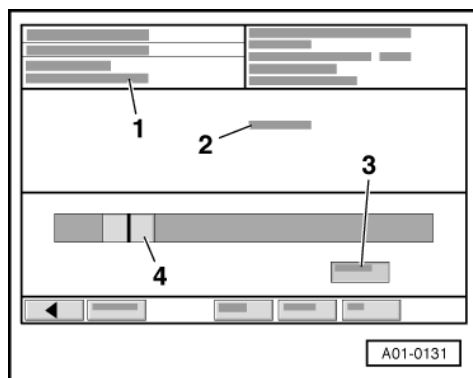
-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter desired adaption channel =>Adaption table, Page 21 .
- Confirm entry by touching Q key.

**Note:**

*After changing adaption value/following termination of an adaption channel, function "10 - Adaption" must be selected again to select a different adaption channel.*



-> Display on VAS 5051:

1 - Channel X

Read and test

2 - Text display for channel selected

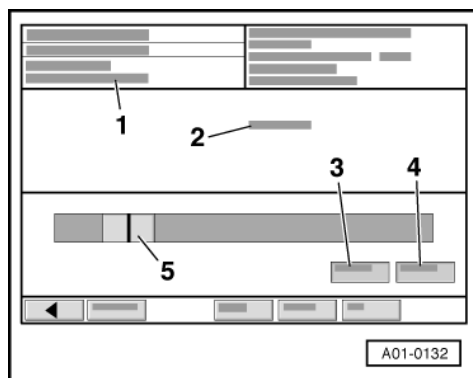
or  
No display

4 - Moving bar positioned on current adaption value



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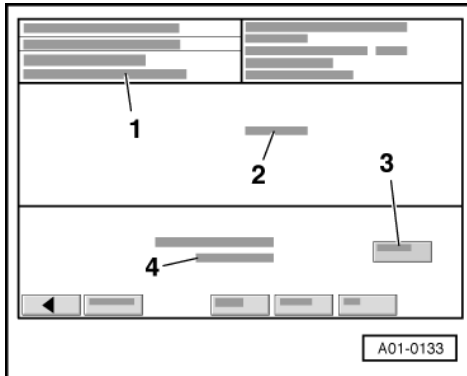
**A - Altering adaption value by means of moving bar**

-> Display on VAS 5051:

- Shift moving bar -5- in required direction or touch area next to bar, thus causing it to move in the desired direction.
- Touch "Save" key -4-.

**Note:**

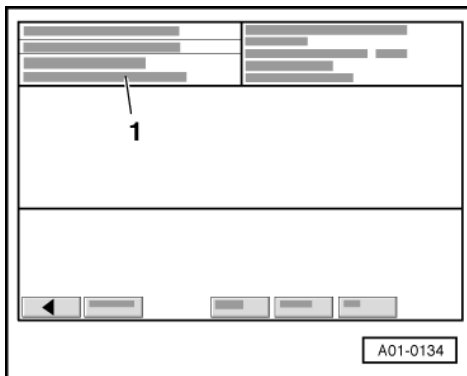
If "Save" key is not displayed, keypad must be used to make direct entry=> Page 24 .



-> Display on VAS 5051:

- 1 - Channel X
- Save
- 2 - Text display for channel selected
- or
- No display
- 4 - Original value X
- New value X

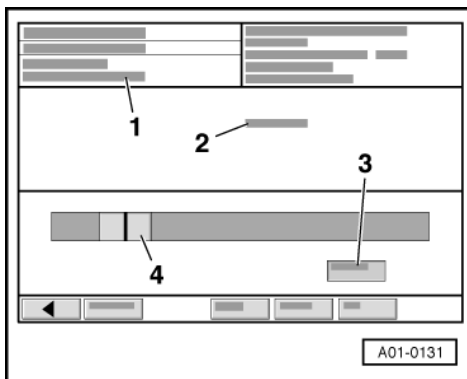
- Confirm new adaption value by touching "Accept" key -3-.



-> Display on VAS 5051:

- 1 - Channel X
- Value X saved

- Terminate function "10 - Adaption" by touching ◀ key.



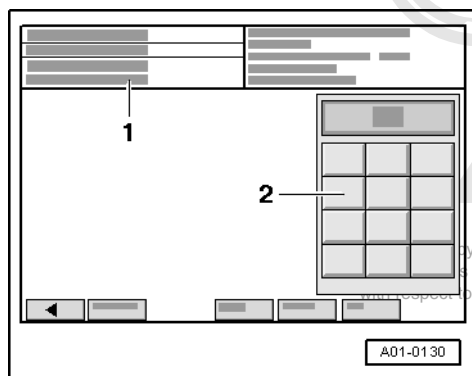
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## B - Changing adaption value by means of direct entry

-> Display on VAS 5051:

- Touch "Keypad" key -3-.



-> Display on VAS 5051:

- 1 - Enter adaption value

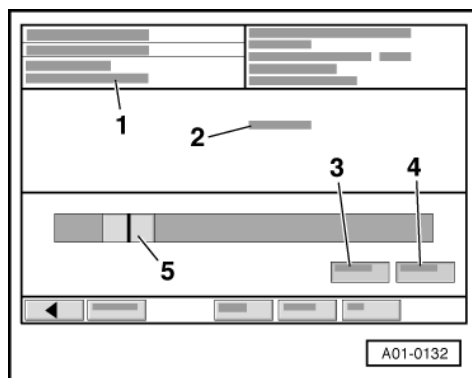
- Use keypad -2- to enter desired 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Desired input: 1

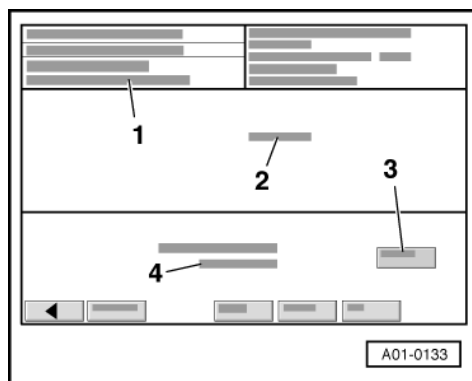
Keypad entry: 00001

- Confirm entry by touching Q key.



-> Display on VAS 5051:

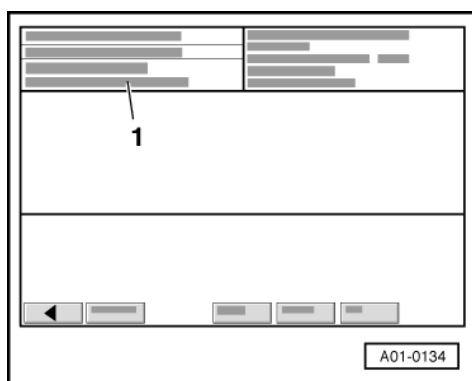
- Touch "Save" key -4-.



-> Display on VAS 5051:

- 1 - Channel X
- Save
- 2 - Text display for channel selected
- or
- No display
- 4 - Original value X
- New value X

- Confirm new adaption value by touching "Accept" key -3-.



-> Display on VAS 5051:

- 1 - Channel X
- Value X saved

- Terminate function "10 - Adaption" by touching ◀ key.

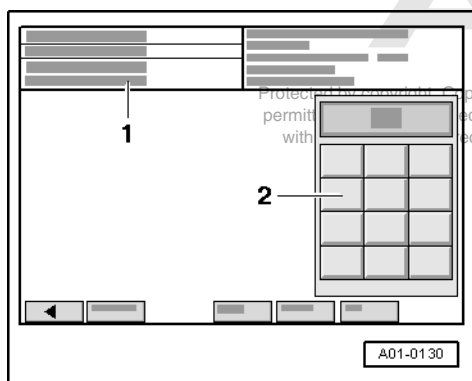
### Adaption channel 02 - Resetting service display following service

#### Notes:

- ◆ The service display is designed to remind drivers that service is due. Message appears on trip counter display.
- ◆ When ignition is switched on, next service due is flashed up for several seconds instead of trip counter display.
- ◆ The service prompt appears as of 10 days/1.000 km before reaching service interval. Display example: After a total mileage of 14000 km, "INSP" (Model Year 1997 vehicles) or "serviceINSP" (vehicles as of Model Year 1998) appears.
- ◆ If service is due, message is flashed up on trip counter display for 60 seconds when ignition is switched on.
- ◆ Information on applicable specifications:

=> Maintenance

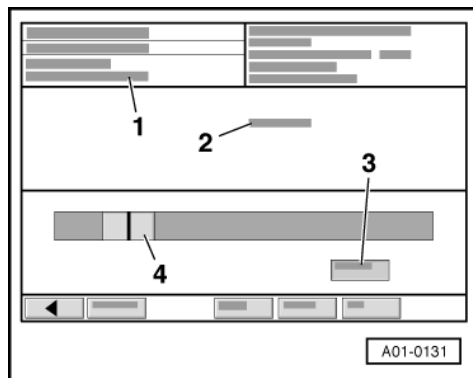
- ◆ Service display can also be reset without using VAS 5051
- => Page 44 .



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-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "02" for "Adaption channel 02" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 2
- Read and test
- 4 - Moving bar positioned on current adaption value

Display	Significance
0	Service not due
1	OIL CHANGEservice due
10	INSPservice due
11	OIL CHANGEservice and INSPservice due

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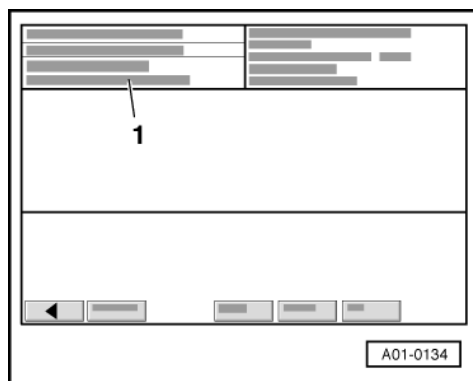
Service status is reset by way of the following adaption value:

Adaption value	Service status
00000	Erase OIL CHANGEservice and INSPservice
00010	Erase OIL CHANGEservice
00001	Erase INSPservice

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .





-> Display on VAS 5051 following adaption:

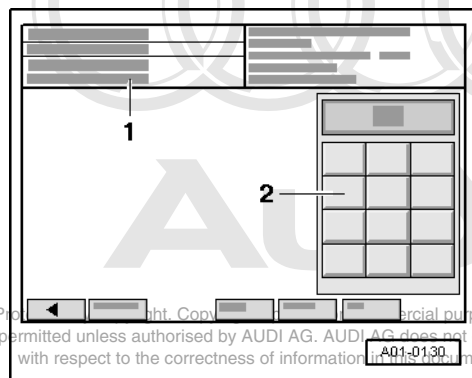
Example:

- 1 - Channel 2
- Value 0 saved

**Note:**

*"0" signifies that "OIL CHANGE" or "INSP" display (Model Year 1997 vehicles) or "OIL CHANGESERVICE"/"INSPSERVICE" (vehicles as of Model Year 1998) display has been reset.*

- Terminate function "10 - Adaption" by touching ◀ key.

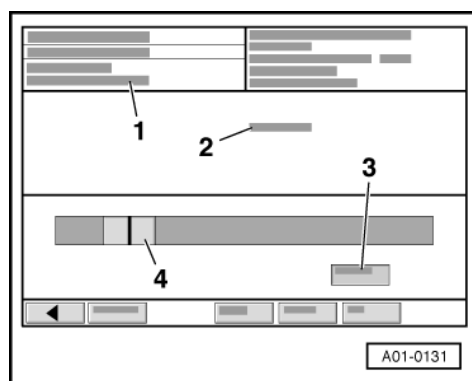


### Adaption channel 03 - Correction of fuel consumption indicator

On vehicles with driver information system (DIS), this function can be used to correct the fuel consumption indicator if dash panel insert display does not correspond to actual fuel consumption.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "03" for "Adaption channel 03" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 3
- Read and test
- 2 - Fuel consumption indicator



4 - Moving bar positioned on current adaption value 100

**Notes:**

- ♦ The adaption value 100 represents the factory-set mean fuel consumption indicator resistance range.
- ♦ It is only possible to make entries between 85% and 115%.
- ♦ Entries must be made in 5% steps.
- ♦ Dash panel insert replacement => Page 44 .

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

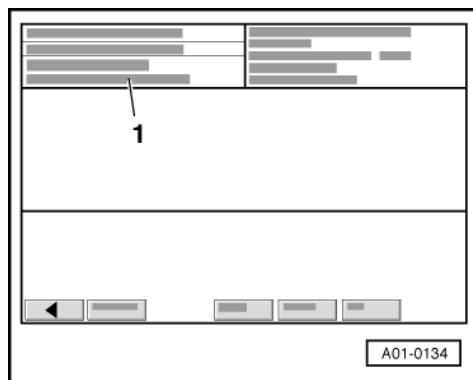
Desired input: 90%

Keypad entry: 00090

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**Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.**

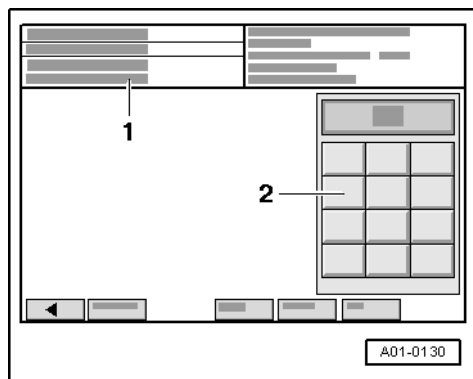


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 3  
Value 90 saved

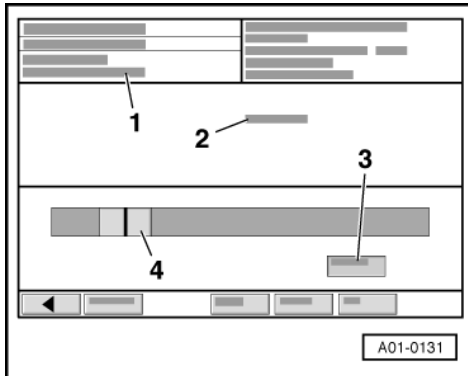
- Terminate function "10 - Adaption" by touching ◀ key.



### Adaption channel 04 - Language version for driver information system (DIS)

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "04" for "Adaption channel 04" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 4
- Read and test
- 2 - Language
- 4 - Moving bar positioned on current adaption value

Language version is adapted by entering the following values:

Language version	Code
German	1
English	2
French	3
Italian	4
Spanish	5
Portuguese	6

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

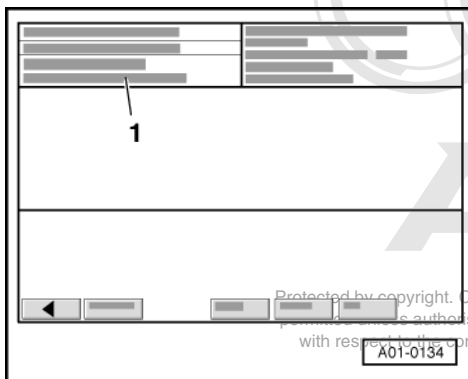
Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Code: 1 (German)

Keypad entry: 00001



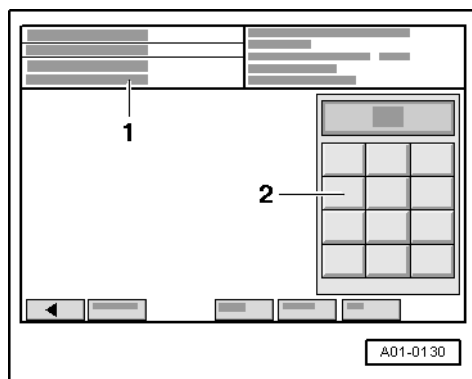
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-> Display on VAS 5051 following adaption:

Example:

1 - Channel 4  
Value 1 saved

- Terminate function "10 - Adaption" by touching ◀ key.



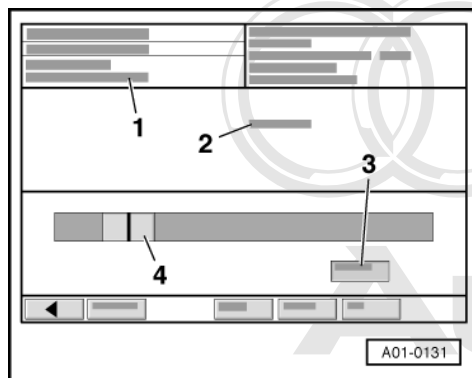
### Adaption channel 05 - Maximum mileage for OIL CHANGE service

This function can be used to enter an interval (mileage in km) between two OIL CHANGE services differing from the fixed factory specification.

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "05" for "Adaption channel 05" and confirm by touching Q key.



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-> Display on VAS 5051:

1 - Channel 5  
Read and test  
4 - Moving bar positioned on current adaption value 15

### Notes:

- ♦ The respective specification can only be entered in steps of 1000 km; the display is thus also in 1000 km.
- ♦ The adaption value 15 represents the factory-set maximum mileage of 15000 km for the OIL CHANGE service.
- ♦ Adaption must be made in kilometres even in countries where distances are measured in miles. This involves converting adaption value from miles to kilometres.

♦ Dash panel insert replacement => Page 44 .

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Specification: 12,000 km

Keypad entry: 00012

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*

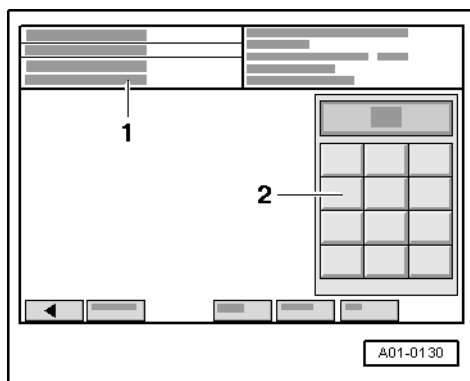


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 5  
Value 12 saved

- Terminate function "10 - Adaption" by touching ◀ key.



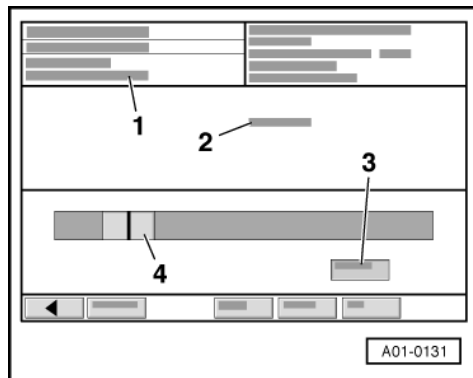
## Adaption channel 06 - Maximum mileage for inspection service

This function can be used to enter an interval (mileage in km) between two inspection services differing from the fixed factory specification.

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "06" for "Adaption channel 06" and confirm by touching Q key.



-> Display on VAS 5051:

1 - Channel 6

Read and test

4 - Moving bar positioned on current adaption value 30

### Notes:

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- The respective specification can only be entered in steps of 1000 km; the display is thus also in 1000 km.
- The adaption value 30 represents the factory-set maximum mileage of 30,000 km for the inspection service.
- Adaption must be made in kilometres even in countries where distances are measured in miles. This involves converting adaption value from miles to kilometres.
- Dash panel insert replacement => Page 44 .

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

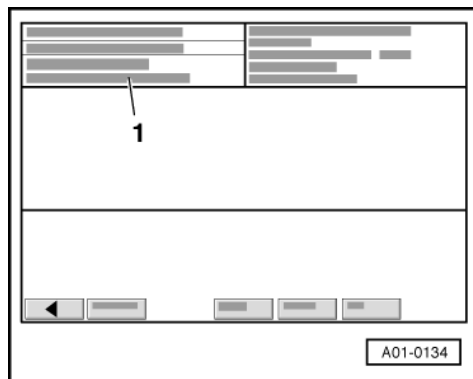
Example:

Specification: 24,000 km

Keypad entry: 00024

### Note:

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*

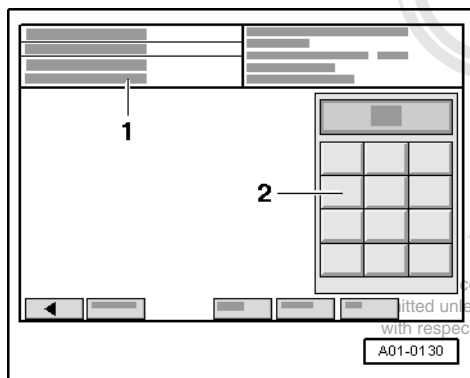


-> Display on VAS 5051 following adaption:

Example:

- 1 - Channel 6
- Value 24 saved

- Terminate function "10 - Adaption" by touching ◀ key.



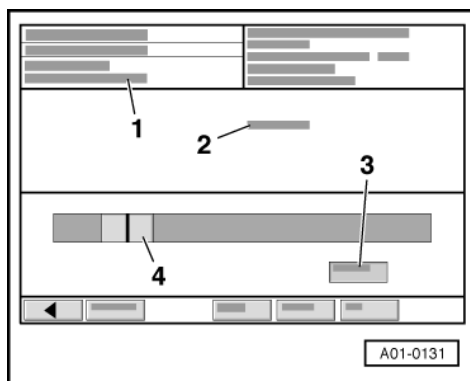
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### Adaption channel 07 - Maximum time interval for inspection service

This function can be used to enter an interval (time in days) between two inspection services differing from the fixed factory specification.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "07" for "Adaption channel 07" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 7
- Read and test
- 4 - Moving bar positioned on current adaption value 37

#### Notes:

- ◆ The respective specification can only be entered in 10-day steps; the display is thus also in 10 day units.
- ◆ The adaption value 37 represents the factory-set maximum time of 370 days for the inspection service.

- ♦ Dash panel insert replacement => Page 44 .
- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

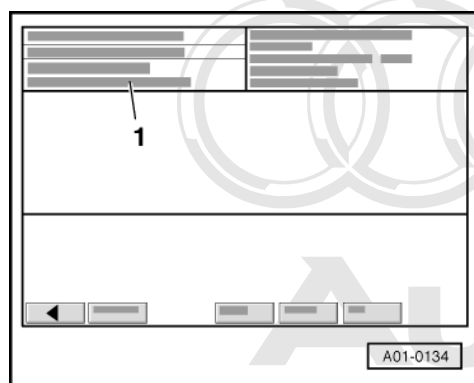
Example:

Specification: 240 days

Keypad entry: 00024

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*



-> Display on VAS 5051 following adaption

Example:

1 - Channel 7

Value 24 saved

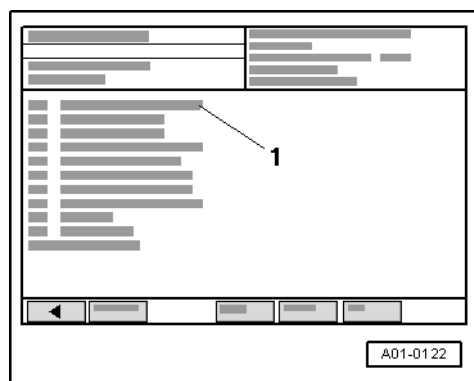
- Terminate function "10 - Adaption" by touching ◀ key.

### Adaption channel 09 - Entering mileage after replacing dash panel insert

This function can be used to enter mileage count on dash panel insert replacement.

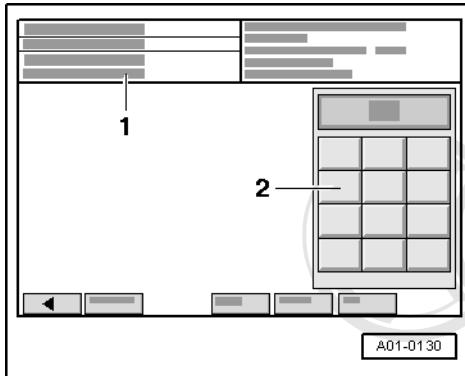
**Notes:**

- ♦ Adaption is only possible for dash panel inserts with a mileage of up to max. 100 km.
- ♦ Adaption can only be performed once for a given dash panel insert.
- ♦ It is only possible to enter a higher adaption value (greater than 100 km).
- ♦ Confirmed incorrect entries cannot be corrected. Dash panel insert must then be replaced.
- ♦ Adaption must be made in kilometres even in countries where distances are measured in miles. This involves converting adaption value from miles to kilometres.





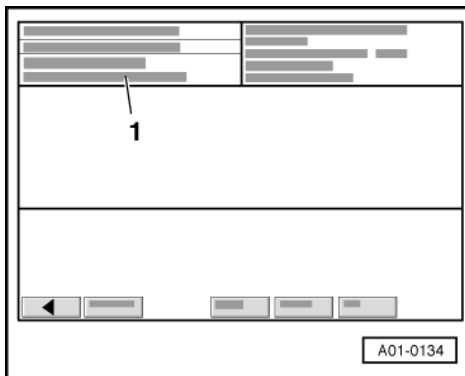
- Start dash panel insert self-diagnosis => Page 4.
- > Display on VAS 5051:
- From list -1- select diagnosis function "11 - Login procedure".



- > Display on VAS 5051:
- 1 - Enter code word

Use keypad -2- to enter code number 13861.

- Confirm entry by touching Q key.



- > Display on VAS 5051:
- 1 - Function successfully implemented

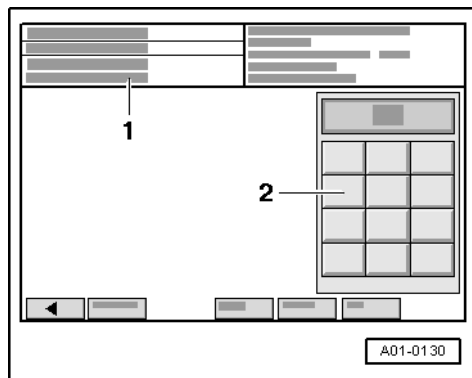
- Touch ◀ key.





-> Display on VAS 5051:

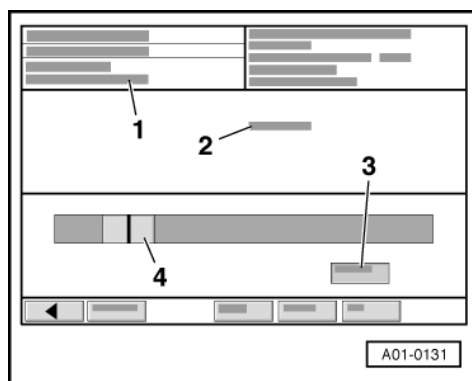
- From list -1- select diagnosis function "10 - Adaption".



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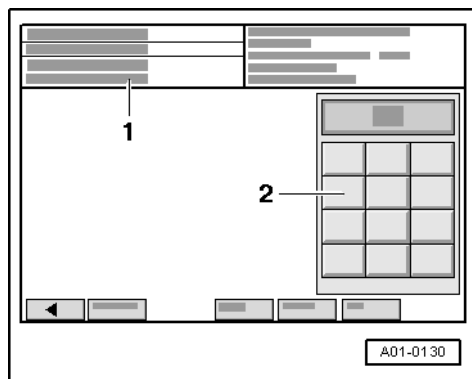
-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "09" for "Adaption channel 09" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 9
- Read and test
- 2 - Mileage
- in 10
- km units
- 4 - Moving bar positioned on current adaption value
- Touch "Keypad" key -3-.



-> Display on VAS 5051:

- 1 - Enter adaption value
- Use keypad -2- to enter 5-digit adaption value (=> Measured value block 002, Page 20 ).

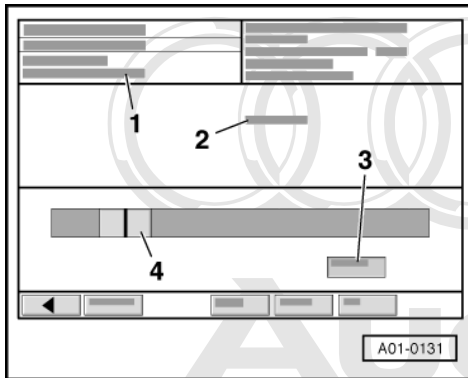
X				Hundred thousands: 100000 ... 655350 km
	X			Ten thousands: 10000 ... 90000 km
		X		Thousands: 1000 ... 9000 km
			X	Hundreds: 100 ... 900 km
			X	Tens: 10 ... 90 km
				Units: Round up to nearest ten

**Example:**

*Mileage = 89627*

**Keypad entry: 08963**

- Confirm entry by touching Q key.

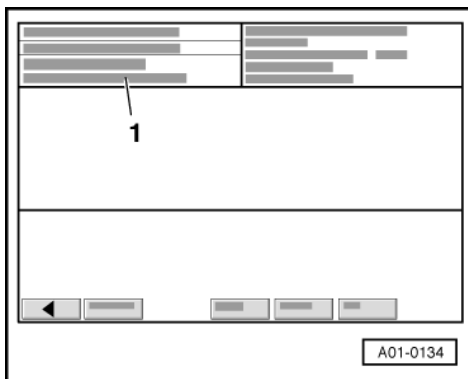


-> Display on VAS 5051:

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- 1 - Channel 9
- Save
- 2 - Mileage
- in 10
- km units
- 4 - Original value 0
- New value 8963

- Confirm new adaption value by touching "Accept" key -3-.

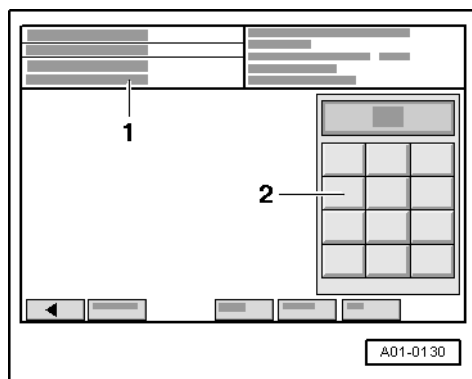


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 9  
Value 8963 saved

- Terminate function "10 - Adaption" by touching ◀ key.



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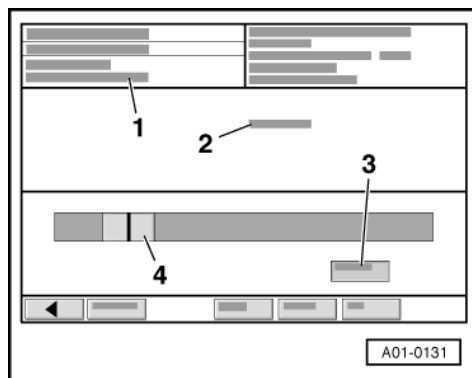
### Adaption channel 10 - Remaining mileage prior to OIL CHANGE service

This function can be used to enter remaining mileage in km prior to next OIL CHANGE service on dash panel insert replacement.

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "10" for "Adaption channel 10" and confirm by touching Q key.



-> Display on VAS 5051:

1 - Channel 10  
Read and test  
4 - Moving bar positioned on current adaption value 15

#### Notes:

- ♦ The respective specification can only be entered in steps of 1000 km; the display is thus also in 1000 km.
- ♦ The adaption value 15 represents the factory-set maximum mileage of 15000 km for the OIL CHANGE service.
- ♦ Adaption must be made in kilometres even in countries where distances are measured in miles. This involves converting adaption value from miles to kilometres.

- ♦ The value entered is decremented down to 0 km.
- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .
- Or
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

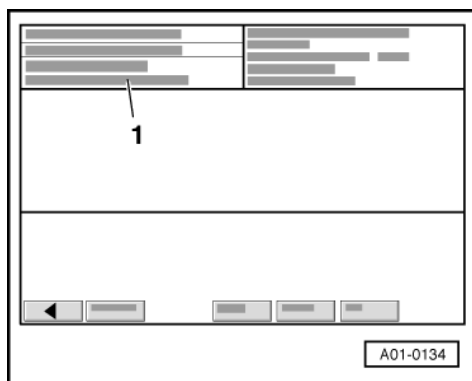
Example:

Remaining mileage: 1000 km

Keypad entry: 00001

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**Note:** Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.

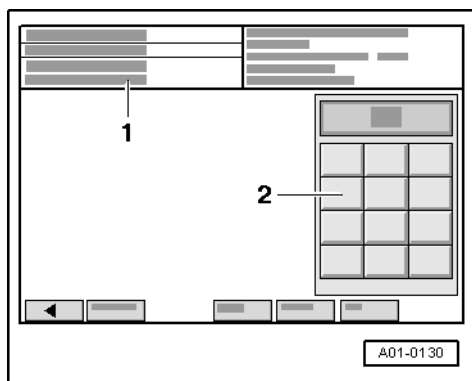


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 10  
Value 1 saved

- Terminate function "10 - Adaption" by touching ◀ key.



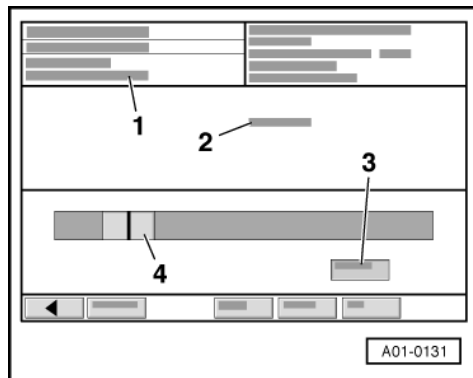
## Adaption channel 11 - Remaining mileage prior to inspection service

This function can be used to enter remaining mileage in km prior to next inspection service on dash panel insert replacement.

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "11" for "Adaption channel 11" and confirm by touching Q key.



-> Display on VAS 5051:

1 - Channel 11

Read and test

4 - Moving bar positioned on current adaption value 30

### Notes:

- ♦ The respective specification can only be entered in steps of 1000 km; the display is thus also in 1000 km.
- ♦ The adaption value 30 represents the factory-set maximum mileage of 30,000 km for the inspection service.
- ♦ Adaption must be made in kilometres even in countries where distances are measured in miles. This involves converting adaption value from miles to kilometres.
- ♦ The value entered is decremented down to 0 km.

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

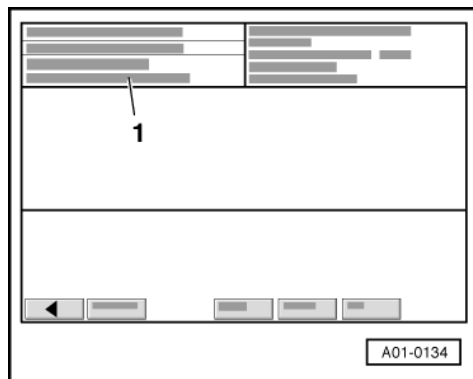
Example:

Remaining mileage: 20000 km

Keypad entry: 00020

### Note:

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*



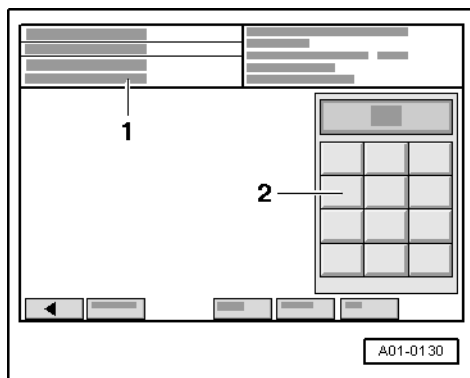
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-> Display on VAS 5051 following adaption:

Example:

1 - Channel 11  
Value 20 saved

- Terminate function "10 - Adaption" by touching ◀ key.



### Adaption channel 12 - Remaining time prior to inspection service

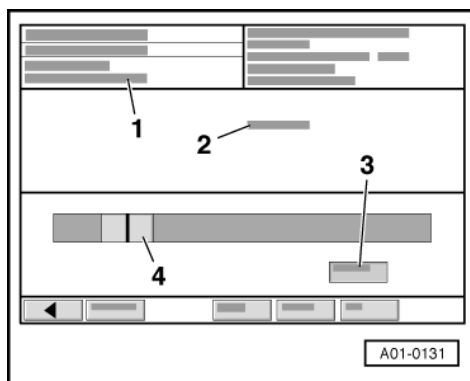
This function can be used to enter remaining time in days prior to next inspection service on dash panel insert replacement.

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "12" for "Adaption channel 12" and confirm by touching Q key.

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-> Display on VAS 5051:

1 - Channel 12  
Read and test  
4 - Moving bar positioned on current adaption value 37

#### Notes:

- ◆ The respective specification can only be entered in 10-day steps; the display is thus also in 10 day units.
- ◆ The adaption value 37 represents the factory-set maximum time of 370 days for the inspection service.



- ♦ The value entered is decremented down to 0 days.

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

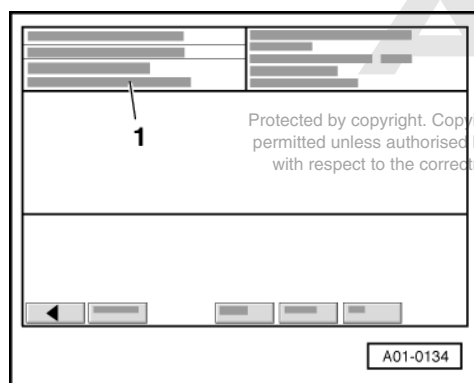
Example:

Specification: 280 days

Keypad entry: 00028

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*

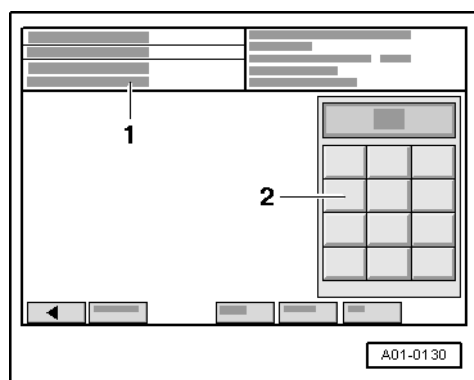


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 12  
Value 28 saved

- Terminate function "10 - Adaption" by touching ◀ key.



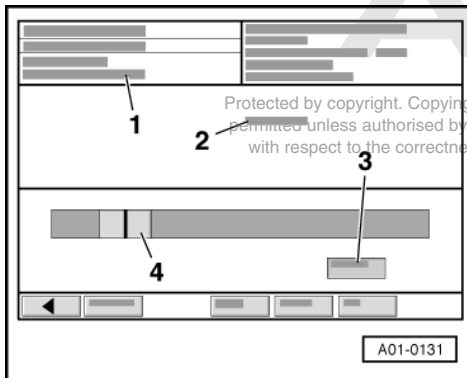


### Adaption channel 30 - Correction of fuel gauge sender resistance range

This function can be used to shift the fuel gauge sender resistance range if dash panel insert display does not correspond to actual tank content.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "30" for "Adaption channel 30" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 30
- Read and test
- 2 - Fuel-gauge sender
- 4 - Moving bar positioned on current adaption value 128

#### Notes:

- ◆ The adaption value 128 represents the factory-set mean fuel gauge sender resistance range.
- ◆ The fuel gauge sender resistance can be changed by  $\pm 8$  ohms to an adaption value of 120 ... 136.
- ◆ Dash panel insert replacement => Page 44 .

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 22 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 24 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

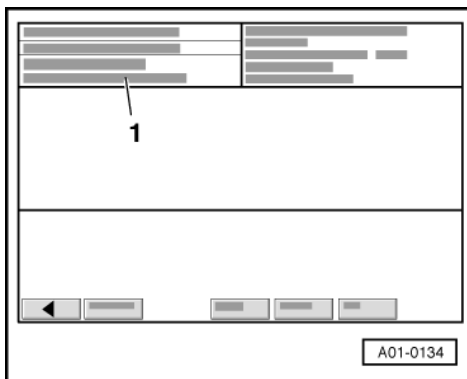
Example:

Desired input: 132

Keypad entry: 00132

#### Note:

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*





-> Display on VAS 5051 following adaption:

Example:

1 - Channel 30  
Value 132 saved

- Terminate function "10 - Adaption" by touching ◀ key.

## 2.12 - Input values on dash panel insert replacement

The following items must always be heeded on replacing dash panel insert:

**Perform the following before replacing dash panel insert:**

- If still possible, read out and print out values of all service display adaption channels from old dash panel insert.
- Note down mileage count.

**Notes:**

- ♦ Adaption of service display and mileage counter must be made in kilometres even in countries where distances are measured in miles. This involves converting adaption values from miles to kilometres or entering adaption values previously noted down.
- ♦ The immobilizer control unit is integrated into the dash panel insert. Immobilizer adaption must therefore be performed following dash panel insert replacement.

**Perform the following after replacing dash panel insert:**

- Encode dash panel insert => Page 15

and

- Enter mileage => Page 34
- Enter language version for driver information system (DIS)  
=> Page 29
- Correct fuel consumption indicator => Page 27 (only if fixed value changed)
- Correct fuel gauge sender resistance range => Page 43 (only if fixed value changed)
- Reset service display on completion of service work => Page 25

or

- Enter remaining mileage prior to OIL CHANGE service  
=> Page 38
- Enter remaining mileage prior to inspection service => Page 40
- Enter remaining time prior to inspection service => Page 41

and

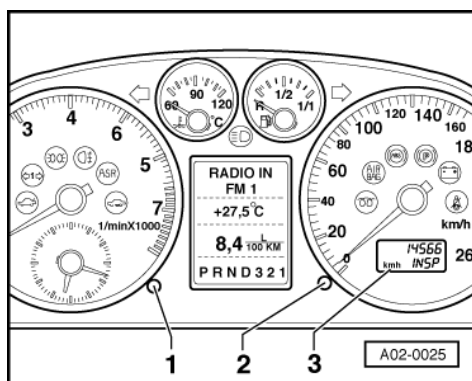
- Perform immobilizer adaption after replacing dash panel insert  
=> Page 156

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## 2.13 - Resetting service display on completion of service work (without VAS 5051)

Corresponding service message must be reset after performing service.

Service display can be reset using "Adaption" function of vehicle diagnostic, testing and information system VAS 5051 => Page 21 .



### Sequence of operations

The service display can also be reset as follows:

- Switch off ignition.
- -> Press and hold reset button for trip counter -2- in dash panel insert.
- Switch on ignition whilst pressing button.
- Release button.

The following appears on trip counter display: "OIL CHANGE" (Model Year 1997 vehicles) or "OEL CHANGEservice" (vehicles as of Model Year 1998)

- Pull clock adjuster knob -1- in dash panel insert until message "OIL CHANGE" (Model Year 1997 vehicles) or "OEL CHANGEservice" (vehicles as of Model Year 1998) is reset.

The following appears on display -3-:  
"- - -" (Model Year 1997 vehicles) or  
"service - - -" (vehicles as of Model Year 1998)

- Press trip recorder reset button to select next service message.

The following appears on display -3-:  
"INSP" (Model Year 1997 vehicles) or  
"INSPservice" (vehicles as of Model Year 1998)

- Pull clock adjuster knob -1- in until message "INSP" (Model Year 1997 vehicles) or "INSPservice" (vehicles as of Model Year 1998) is reset.

The following appears on display -3-:  
"- - -" (Model Year 1997 vehicles) or  
"service - - -" (vehicles as of Model Year 1998)

- Switch off ignition.



### 3 - Self-diagnosis of dash panel insert with Long Life Service as of Model Year 2000

#### 3.1 - Self-diagnosis of dash panel insert with Long Life Service as of Model Year 2000

#### 3.2 - General information

##### Long Life Service

As of Model Year 2000, the dash panel insert features a service display which can process flexible data. The dash panel insert calculates the service requirement for the vehicle concerned on the basis of various input variables, such as driving style or oil consumption.

By means of suitable limit value programming, the Long Life Service is capable of simulating the behaviour of the conventional service display. For this purpose, the limit values are designed to be flexible. In addition, the oil temperature can be incorporated into calculation of service intervals by means of appropriate adaption channels in the self-diagnosis function.

##### Table of service display values with Long Life Service

The following adaption values must be entered in countries utilising Long Life Service

Channel 42 (min. mileage)	15000 km
Channel 43 (max. mileage), petrol engines	30000 km
Channel 43 (max. mileage), 6-cyl. diesel engines	35000 km
Channel 43 (max. mileage), 4-cyl. diesel engines	50000 km
Channel 44 (max. time interval prior to service)	730 days
Channel 45 (oil grade for max. mileage of 30000 km)	2
Channel 45 (oil grade for max. mileage of 35000 km)	3
Channel 45 (oil grade for max. mileage of 50000 km)	4

##### Table of service display values without Long Life Service

The conventional service display has been retained for certain vehicles:

- ♦ A3 with 1.9 l UIS engine up to vehicle ident no. 8L\_1A 102 980
- ♦ A3/S3 for certain countries

=> Maintenance

The following fixed adaption values must be entered for the above vehicles:

Channel 42 (min. mileage)	15000 km
Channel 43 (max. mileage)	15000 km
Channel 44 (max. time interval prior to service)	365 days

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Channel 45 (oil grade)	1
------------------------	---

### Technical features of dash panel insert

Two different dash panel insert versions are available for the Audi A3:

- ◆ Midline: With Minicheck system
- ◆ Highline: With driver information system (DIS)

The speedometer features a mileage counter and trip recorder LCD.

The rev counter features a clock/date LCD.

The warning lamps are integrated into the speedometer and rev counter.

The service display is located in the centre display.

For detailed information on dash panel insert, refer to

=> Audi A3 owner's manual

The dash panel insert is controlled by a microprocessor and provided with comprehensive self-diagnosis. Fault codes are stored in the fault memory of the dash panel insert if faults occur in system components. Faults can be determined using the vehicle diagnostic, testing and information system VAS 5051.

### "dEF" display on trip recorder

If control unit in dash panel insert detects a ROM fault, "dEF" is displayed on trip recorder.

- Replace dash panel insert in the event of "dEF" display.

=> Electrical System; Repair Group 90; Dash panel insert as of Model Year 2000 Dash panel insert as of Model Year 2000

### Notes on dash panel insert replacement

- ◆ Dash panel insert is not to be dismantled.
- ◆ If necessary, dash panel insert is to be replaced as part of exchange program.
- ◆ Complete damage report sheet and return together with dash panel insert.
- ◆ Original packaging must be used for return shipment.
- ◆ On replacing dash panel insert, mileage counter and service display can be adapted using vehicle diagnostic, testing and information system VAS 5051 => Page 71 .

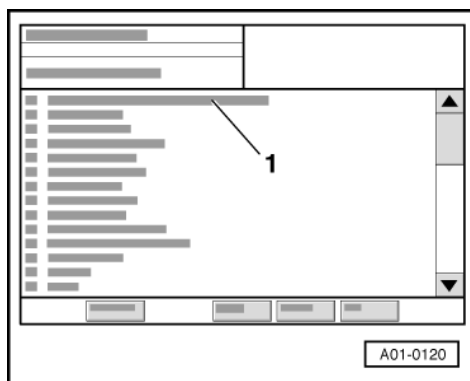
## 3.3 - Starting dash panel insert self-diagnosis

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### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Ignition on

Attention:  
Heed safety precautions => Page 1 .

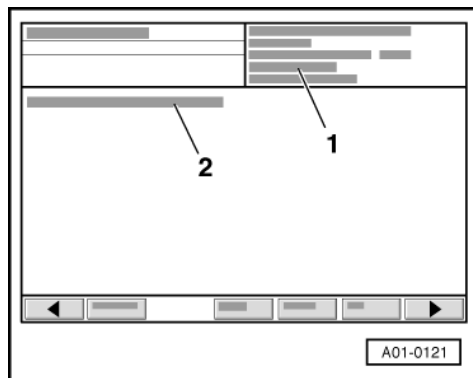




## Sequence of operations

-> Display on VAS 5051:

- From list -1- select vehicle system "17 - Dash panel insert".
- Wait until next display appears.



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-> Display on VAS 5051:

- 1 - Dash panel insert control unit identification
- 2 - Immobilizer control unit identification => Page 48

Dash panel insert control unit identification (example)	
17 - Dash panel insert	Vehicle system
8L0920900..	Part No.; Assignment => Parts List
DASH PANEL INSERT+IMMOBILIZER 1) M73 2) D06 3)	1) Component designation 2) Manufacturer designation 3) (M73 = Magneti Marelli; VDO = VDO) Data level
Code 8140	Control unit encoding (checking => Page 60 )
Dealership number 12345	Workshop code of VAS 5051 with which encoding was last performed

Immobilizer control unit identification (example)	
WAUZZZ8LZ1A016096 1) AUZ7Z0Y1554764 2)	1) 17-position ident no. (chassis number) of vehicle (display 2) as of immobilizer III => Page 166 ) 14-position immobilizer identification no.

- Touch ▶ key.



-> Display on VAS 5051:

1 - List of diagnosis functions:

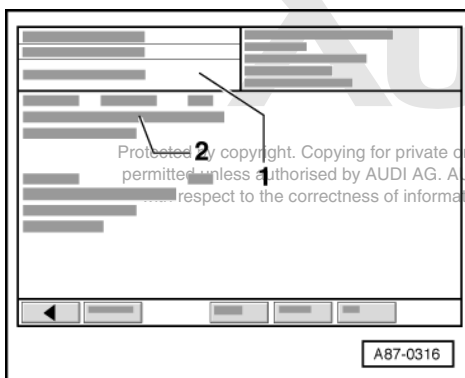
Diagnosis functions	Page
02 Interrogating fault memory	49
03 Final control diagnosis	54
04 Basic setting	-
05 Erasing fault memory	58
06 End of output	59
07 Encoding control unit	60
08 Reading measured value block	63
09 Reading individual measured value	-
10 Adaption	71
11 Login procedure	-
Vehicle ident. no. transfer	-
Release (PIN)	-
Channel 50 adaption (PIN)	-

### 3.4 - Interrogating fault memory



#### Sequence of operations

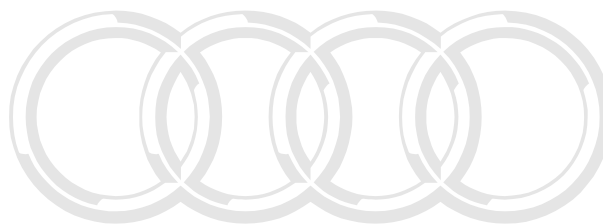
- Start dash panel insert self-diagnosis => Page 47 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "02 - Interrogating fault memory".





-> Display on VAS 5051:

- 1 - Content of fault memory:
  - 0 faults detected
- Or
- X faults detected
- 2 - Fault
  - Fault code
  - Fault location
  - Type of fault



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#### **A - Faults detected:**

- Print out information on screen or self-diagnosis log.
- Terminate function "02 - Interrogating fault memory" by touching  
◀ key.

-> Display on VAS 5051:

- Eliminate fault(s) in line with fault table => Page **50** .
- Select diagnosis function "02 - Interrogating fault memory" again in list and erase fault memory => Page **58** .
- Select diagnosis function "06 - End of output" in list => Page **59** .

#### **B - No fault detected:**

- Select diagnosis function "06 - End of output" in list => Page **59** .

### **3.5 - Fault table**

#### **Notes:**

- ♦ Faults occurring in monitored sensors or components are stored in fault memory together with an indication of the type of fault.
- ♦ The fault table is arranged according to the 5-digit fault codes on the left.
- ♦ All static and sporadic faults are stored in the fault memory:  
A fault is recognised as being static if it is present for at least 2 seconds (ambient temperature sender at least 60 seconds, coolant temperature sender only after engine has been running for at least 30 minutes). If a fault is then no longer present, it is stored as being sporadic and "sporadic" also appears on display.
- ♦ After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.
- ♦ Sporadic faults are erased if they do not re-occur in the course of 50 driving cycles (ignition on for at least 5 minutes, vehicle speed greater than 30 km/h).
- ♦ Do not immediately replace components indicated as being defective by VAS 5051, but rather: Start by checking wiring and connectors to these components in line with current flow diagram. Also use current flow diagram to check earth connections. This is particularly important if faults are output as being "sporadic".
- ♦ When eliminating an open circuit in the event of a data bus fault, always remember to twist the two data wires of the corresponding bus system together to prevent electromagnetic interference.



- ♦ On completion of repair work, fault memory is to be interrogated again and erased.

Display on VAS 5051	Possible cause of trouble	Fault remedy
00562 Oil level/temperature sender -G266 - Open circuit/short to positive - Short to earth - Implausible signal	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding
	- G266 defective - Sender electronics defective	- Replace -G266
00667 Ambient temperature signal - Open circuit/short to positive - Short to earth - Implausible signal	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding
	- Ambient temperature sensor -G17 defective	- Replace -G17
	- Vehicles with air conditioner: Fault stored in fault memory	- Interrogate air conditioner fault memory => Heating, Air Conditioner; Repair Group 01

Display on VAS 5051	Possible cause of trouble	Fault remedy
00668 Vehicle voltage terminal 30 - Power supply too low	- Disconnection of battery - Open circuit in wiring or short circuit at control unit or sender	- Perform automatic test sequence to establish control unit responsible for fault message => Check power supply of defective control unit Use current flow diagram to perform fault-finding Erase fault memory and continue to monitor vehicle
	- Disconnection of battery	- Erase fault memory and continue to monitor vehicle

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Display on VAS 5051	Possible cause of trouble	Fault remedy
00771 Fuel gauge sender -G - Open circuit/short to positive - Short to earth  - Implausible signal	- Open circuit in wiring or short circuit between dash panel insert and fuel gauge sender -G or (4WD vehicles) fuel gauge sender -2- -G169	- Use current flow diagram to perform fault-finding
	- Fuel gauge sender -G or (4WD vehicles) fuel gauge sender -2- -G169 defective	- Replace -G or -G169 => Fuel Supply System - Petrol Engines; Repair Group 20

Display on VAS 5051	Possible cause of trouble	Fault remedy
00779 Ambient temperature sensor -G17 - Open circuit/short to positive - Short to earth	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding
	- G17 defective	- Replace -G17
01039		



Display on VAS 5051	Possible cause of trouble	Fault remedy
Coolant temperature gauge sender -G2 - Open circuit/short to positive - Short to earth	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding
	- -G2 defective	- Replace -G2

Display on VAS 5051	Possible cause of trouble	Fault remedy
01300 Nav. with CD drive control unit - No communication	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding
	- Incorrect control unit, i.e. no CAN capability	- Replace control unit with one featuring CAN capability
	- "1" not displayed in measured value block 140 for navigation control unit =>Page 70 - Dash panel insert adaption not performed correctly	- Select adaption channel 62 and enter correct adaption value => Page 105

Display on VAS 5051	Possible cause of trouble	Fault remedy
01302 Telematic control unit - No communication	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding
	- Incorrect control unit, i.e. no CAN capability	- Replace control unit with one featuring CAN capability
	- "1" not displayed in measured value block 140 for telematics control unit =>Page 70 - Dash panel insert adaption not performed correctly	- Select adaption channel 62 and enter correct adaption value => Page 105

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Display on VAS 5051	Possible cause of trouble	Fault remedy
01303 Telephone transmitter/receiver unit - No communication	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding
	- Incorrect control unit, i.e. no CAN capability	- Replace control unit with one featuring CAN capability
	- "1" not displayed in measured value block 140 for telephone control unit =>Page 70 - Dash panel insert adaption not performed correctly	- Select adaption channel 62 and enter correct adaption value => Page 105

Display on VAS 5051	Possible cause of trouble	Fault remedy
01304 Radio - No communication	- Open circuit in wiring or short circuit	- Use current flow diagram to perform fault-finding
	- Incorrect control unit, i.e. no CAN capability	- Replace control unit with one featuring CAN capability

Display on VAS 5051	Possible cause of trouble	Fault remedy
	<ul style="list-style-type: none"> <li>- "1" not displayed in measured value block 140 for radio =&gt;Page 70</li> <li>- Dash panel insert adaption not performed correctly</li> </ul>	<ul style="list-style-type: none"> <li>- Select adaption channel 62 and enter correct adaption value =&gt; Page 105</li> </ul>

Display on VAS 5051	Possible cause of trouble	Fault remedy
01311 Data bus information - Defective	<ul style="list-style-type: none"> <li>- Open circuit in wiring or short circuit at control unit in information data bus</li> <li>- Incorrect control unit in information data bus, i.e. no CAN capability</li> <li>- "1" not displayed in measured value block 140 for control unit with CAN capability =&gt;Page 70</li> <li>- Dash panel insert adaption not performed correctly</li> </ul>	<ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding</li> <li>- Replace control unit with one featuring CAN capability</li> <li>- Select adaption channel 62 and enter correct adaption value =&gt; Page 105</li> </ul>
- In one-wire operation	- Data bus only operating on one wire (may lead to EMC problems)	- Check data exchange => Page 109

Display on VAS 5051	Possible cause of trouble	Fault remedy
01312 Drive train data bus - Defective	<ul style="list-style-type: none"> <li>- Open circuit in wiring or short circuit at control unit in drive train data bus</li> <li>- Incorrect control unit in drive train data bus, i.e. no CAN capability</li> <li>- "1" not displayed in measured value block 125 for control unit with CAN capability =&gt;Page 70</li> <li>- Control unit with CAN capability not adapted during dash panel insert adaption</li> </ul>	<ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding</li> <li>- Replace control unit with one featuring CAN capability</li> <li>- Select adaption channel 60 and enter correct adaption value =&gt; Page 102</li> </ul>

Display on VAS 5051	Possible cause of trouble	Fault remedy
01314 Engine control unit - No communication	<ul style="list-style-type: none"> <li>- Open circuit in wiring or short circuit</li> <li>- Incorrect control unit, i.e. no CAN capability</li> <li>- "1" not displayed in measured value block 125 for engine control unit =&gt;Page 70</li> <li>- Dash panel insert adaption not performed correctly</li> </ul>	<ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding</li> <li>- Replace control unit with one featuring CAN capability</li> <li>- Select adaption channel 60 and enter correct adaption value =&gt; Page 102</li> </ul>

Display on VAS 5051	Possible cause of trouble	Fault remedy
01315 Gearbox control unit - No communication	<ul style="list-style-type: none"> <li>- Open circuit in wiring or short circuit</li> <li>- Incorrect control unit, i.e. no CAN capability</li> </ul>	<ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding</li> <li>- Replace control unit with one featuring CAN capability</li> </ul>



Display on VAS 5051	Possible cause of trouble	Fault remedy
	- "1" not displayed in measured value block 125 for automatic gearbox control unit =>Page 70 - Dash panel insert adaption not performed correctly	- Select adaption channel 60 and enter correct adaption value => Page 102

Display on VAS 5051	Possible cause of trouble	Fault remedy
01336 Group convenience data bus - Defective        - In one-wire operation	- Open circuit in wiring or short circuit at control unit in group convenience data bus	- Use current flow diagram to perform fault-finding
	- Incorrect control unit in group convenience data bus, i.e. no CAN capability	- Replace control unit with one featuring CAN capability
	- "1" not displayed in measured value block 132 for radio =>Page 70 - Control unit with CAN capability not adapted during dash panel insert adaption	- Select adaption channel 61 and enter correct adaption value => Page 104
	- Data bus only operating on one wire (may lead to EMC problems)	- Check data exchange => Page 109

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Display on VAS 5051	Possible cause of trouble	Fault remedy
01402 Data wire from navigation - Implausible signal	- Open circuit in clock, enable or data wire	- Check data wires for damage
	- Problem with interface between navigation system and dash panel insert - Fault caused by electromagnetic interference in or outside vehicle	- Check causes of electromagnetic interference => Radio, Telephone, Navigation; Repair Group 91; Navigation System Navigation System
65535 Control unit defective	- Dash panel insert defective	- Replace dash panel insert => Electrical System; Repair Group 90; Dash panel insert as of Model Year 2000 Dash panel insert as of Model Year 2000

### 3.6 - Final control diagnosis

#### Notes:

- ♦ Final control diagnosis can only be performed with engine stopped and ignition switched on.
- ♦ If final control diagnosis detects a fault, locate and eliminate cause of problem.

"Final control diagnosis" function consecutively actuates the following dash panel insert control elements (if fitted/encoded):

Actuation sequence
1 Analog displays
2 Dash panel insert warning lamp test
3 Seat belt warning system warning lamp -K19
4 Gong

5 Segment test
6 Illumination/switches and instruments

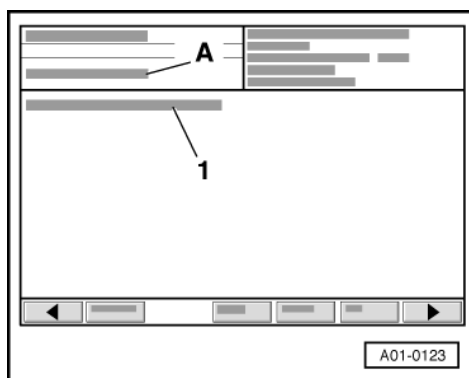


**Test requirement:**

- Illumination on

**Sequence of operations**

- Start dash panel insert self-diagnosis => Page 47 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "03 - Final control diagnosis".



**Actuation of analog displays**

-> Display on VAS 5051:

- A - 1st control element being tested
- 1 - Analog displays

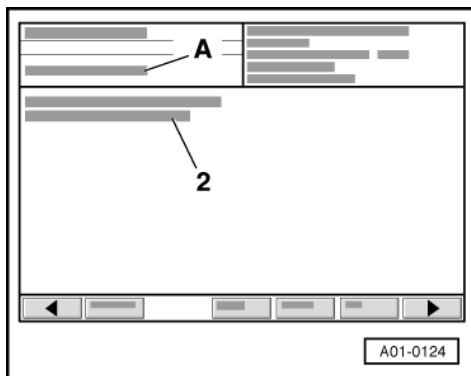
The following tests are implemented simultaneously:

- ◆ Passage of coolant temperature gauge needle through entire display range
- ◆ Passage of rev counter needle through entire display range
- ◆ Passage of speedometer needle through entire display range
- ◆ Passage of fuel gauge needle through entire display range

The following fixed values are displayed on completion of the above process:

Coolant temperature gauge:	90 °C
Rev counter:	3000 rpm

Speedometer:	100 km/h
Fuel gauge:	1/2



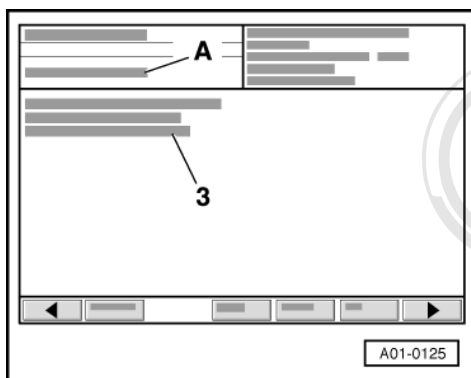
### Actuation of warning lamp test for dash panel insert

- Touch ▶ key.

-> Display on VAS 5051:

- A - 2nd control element being tested
- 2 - Dash panel insert warning lamp test

♦ Warning lamps in dash panel insert are actuated



### Actuation of seat belt warning system warning lamp

- Touch ▶ key.

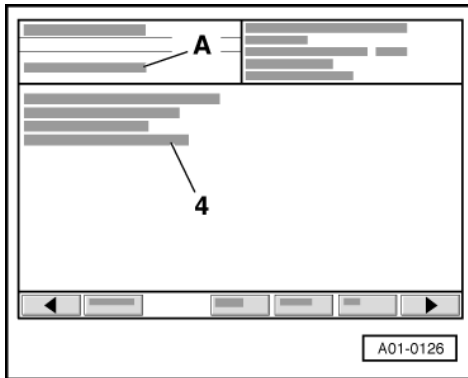
-> Display on VAS 5051:

- A - 3rd control element being tested
- 3 - Seat belt warning system warning lamp -K19

♦ Seat belt warning system warning lamp is actuated (lights)

### Notes:

- ♦ Seat belt warning system warning lamp is only activated in the event of appropriate dash panel insert encoding.
- ♦ Seat belt warning system warning lamp is not active if it is not called up in final control diagnosis function.



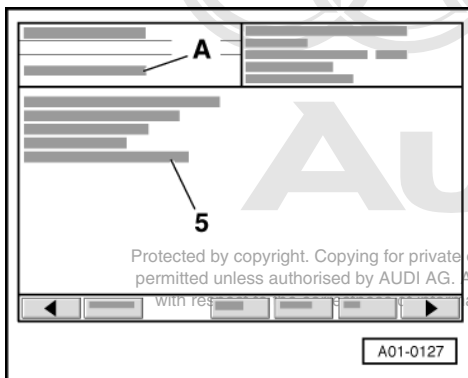
#### Actuation of gong

- Touch ▶ key.

-> Display on VAS 5051:

- A - 4th control element being tested
- 4 - Gong

- ◆ Gong sounds intermittently



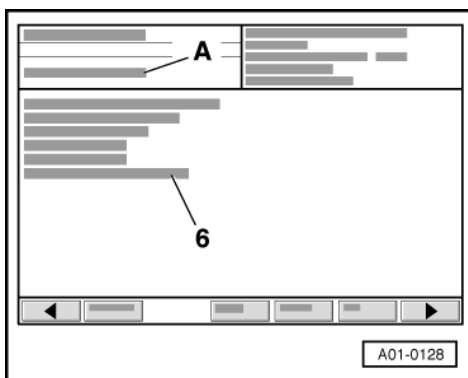
#### Actuation of segment test

- Touch ▶ key.

-> Display on VAS 5051:

- A - 5th control element being tested
- 5 - Segment test

- ◆ All elements of multifunction display, clock/date LCD and mileage counter/trip recorder LCD light



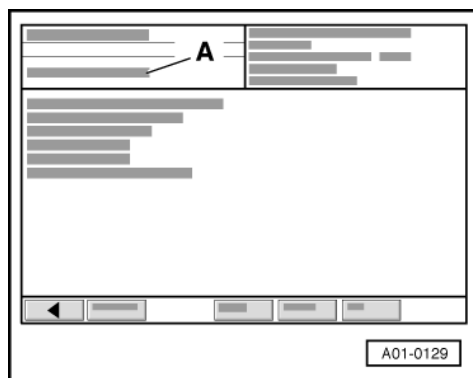
## Actuation of illumination/switches and instruments

- Touch ► key.

-> Display on VAS 5051:

- A - 6th control element being tested
- 6 - Illumination/switches and instruments

- ♦ Dash panel insert illumination is dimmed, becomes brighter, is then dimmed again and finally returns to original brightness level



- Touch ► key.

-> Display on VAS 5051:

- A - Control element test over

- Terminate function "03 - Final control diagnosis" by touching ◀ key.

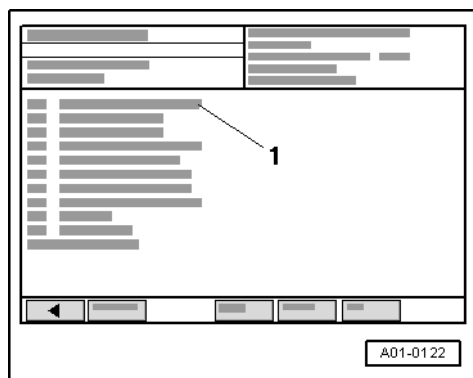
## 3.7 - Erasing fault memory

### Note:

If fault memory cannot be erased, interrogate fault memory again and eliminate fault.

### Requirements:

- Fault memory interrogated => Page 49
- All faults eliminated



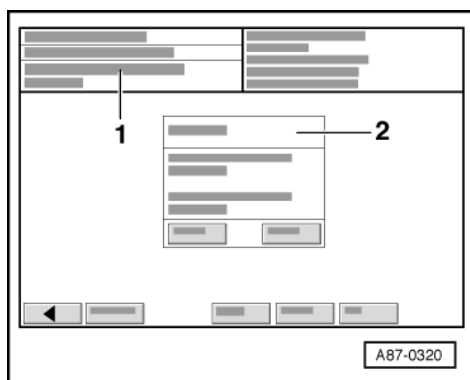


## Sequence of operations

After fault memory interrogation:

-> Display on VAS 5051:

- From list -1- select diagnosis function "05 - Erasing fault memory".



-> Display on VAS 5051:

- 1 - - No display (prior to erasing)
- Or
- Fault memory erased

### Note:

*If the following message appears in display zone -1-: "Fault memory not yet interrogated", this means that sequence of operations has not been precisely observed. Fault memory cannot be erased until it has been interrogated.*

- 2 - Note:
- Is function to be implemented?
- Note: Data will be erased!

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- Touch "OK" key in display -2-
- Terminate function "05 - Erasing fault memory" by touching ◀ key.
- Interrogate fault memory again after performing repair work.

### Note:

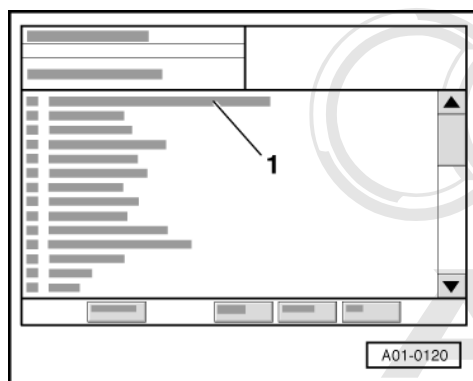
*This erases faults stored during fault elimination e.g. on account of connectors being unplugged.*

## 3.8 - End of output



-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".



-> Display on VAS 5051:

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- Switch off ignition and unplug diagnostic connector when this display appears.

### 3.9 - Encoding control unit

#### Notes:

- ◆ Encoding sets the various driver information system combination alternatives depending on equipment, country version and engine.
- ◆ The encoding table only lists the possible combinations applying to the Audi A3/S3.

#### Explanatory notes on encoding

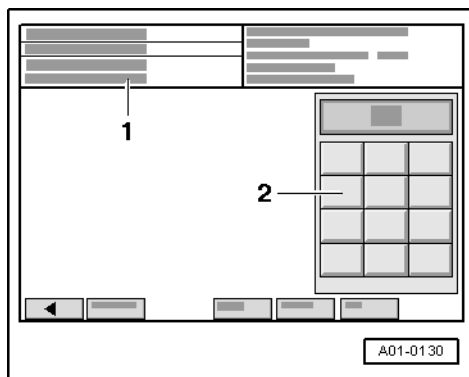
XX	Optional extra		
	X	Country version	
		X	No. of cylinders
		X	Engine version

Encoding example	
02042	Seat belt warning system active, country version Germany, 4-cyl., petrol engine



### Sequence of operations

- Start dash panel insert self-diagnosis => Page 47 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "07 - Encoding control unit".



-> Display on VAS 5051:

- 1 - Enter code word
- Use keypad -2- to enter 7-position control unit code as per encoding table => Page 61 .

### Encoding table

Optional extra Encoding options => Page 62	00	No optional extra Manual gearbox 02C/02J/02M (S3)/Automatic gearbox 01M
	01	Larger fuel tank volume (Quattro)
	02	Seat belt warning system active
	04	Manual gearbox 02M (A3)/Automatic gearbox 09A
	08	Manual gearbox 02K
Country version	0	Germany (D)
	1	RoW/Left-hand drive
	2	USA (US)
	3	Canada (CDN)
	4	Great Britain (GB)
	5	Japan/left-hand drive (JP)
	6	Saudi Arabia (SA)
	7	Australia (AUS)
	8	RoW/Right-hand drive
	9	Japan/right-hand drive (JP)

No. of cylinders	4	4-cyl.
Engine version	0	TDI engine
	2	Petrol engine
	4	Turbo engine

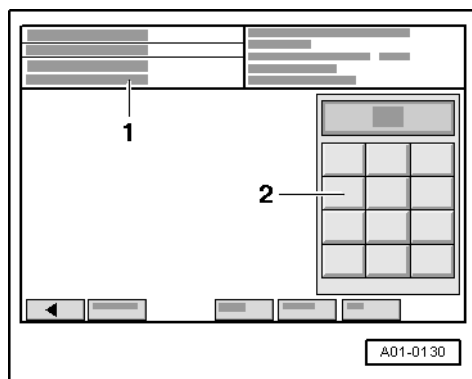
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## Encoding options for optional extras

If a vehicle is fitted with several encodable optional extras, the first two digits of the code number are to be entered as the sum total of the individual optional extra codes.

### Example:

- A3 Quattro with manual gearbox 02M  
01 + 04 = 05
- Confirm entry by touching Q key.



-> Display on VAS 5051:

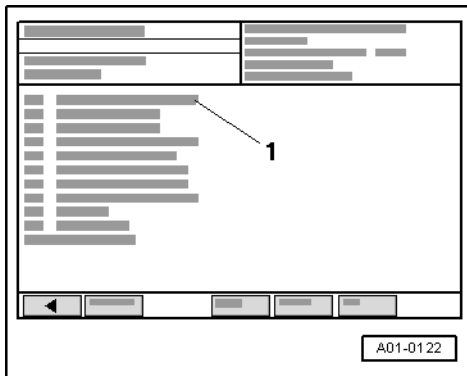
- 1 - Encoding in progress
- Wait until next display appears.



-> Display on VAS 5051:

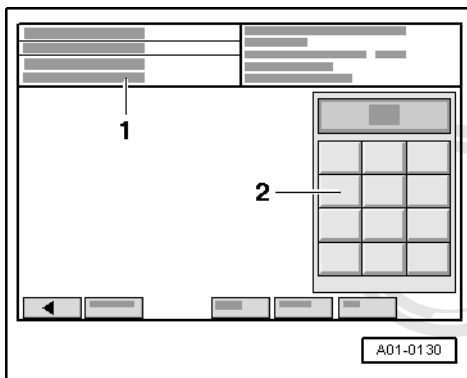
- 1 - Vehicle system encoding completed
- 2 - Control-unit identification with new code  
(old code in brackets)
- Terminate function "07 - Encoding control unit" by touching ◀ key.

### 3.10 - Reading measured value block



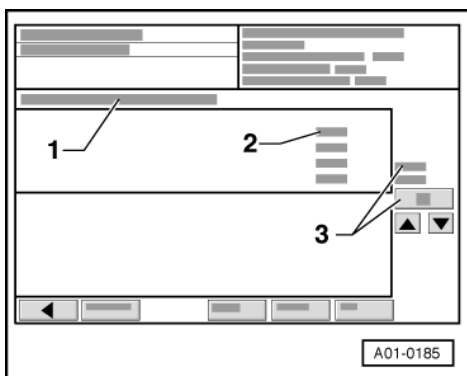
#### Sequence of operations

- Start dash panel insert self-diagnosis => Page 47 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "08 - Reading measured value block".



-> Display on VAS 5051:

- 1 - Enter display group
- Use keypad -2- to enter required three-digit display group number  
=>List of display groups, Page 64 and confirm entry by touching Q key.





-> Display on VAS 5051:

- 1 - Reading measured value block
- 2 - Display zone 1  
Display zone 2  
Display zone 3  
Display zone 4
- 3 - Display group X

#### List of display groups:

Display group number	Indicated on display
001	1 = Vehicle speed 2 = Engine speed rpm 3 = Oil pressure switch 2 4 = Time h
002	1 = Mileage counter 2 = Fuel gauge I 3 = Fuel gauge sender ohms 4 = Ambient temperature ° C
003	1 = Coolant temperature ° C 2 = Not used 3 = Not used 4 = Not used

Display group number	Indicated on display
010	1 = Channel 30 2 = Fuel gauge sender adaption 3 = Channel 9 4 = Mileage counter
011	1 = Channel 4 2 = Language version 3 = Channel 3 4 = Fuel consumption indicator
012	1 = Channel 40 2 = Mileage since service 3 = Channel 41 4 = Time since service
013	1 = Channel 42 2 = Min. mileage 3 = Channel 43 4 = Max. mileage
014	1 = Channel 44 2 = Max. time interval 3 = Not used 4 = Not used
015	1 = Channel 45 2 = Oil grade 3 = Channel 46 4 = Total consumption

Display group number	Indicated on display
016	1 = Channel 47 2 = Soot index 3 = Channel 48 4 = Thermal load
017 1)	1 = Channel 60 2 = Drive train data bus 3 = Channel 61 4 = Convenience data bus

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Display group number	Indicated on display
018 1)	1 = Channel 62 2 = Communication data bus 3 = Not used 4 = Not used
019 1)	1 = Not used 2 = Not used 3 = Channel 19 4 = Ambient temperature/radio clock/illumination configuration
050	1 = Mileage counter 2 = Engine speed rpm 3 = Oil temperature ° C 4 = Coolant temperature ° C

1) As of Model Year 2002

Display group number	Indicated on display
125	1 = Engine 2 = Gearbox 3 = Not used 4 = Not used
132 1)	1 = Not used 2 = CAN radio 2) 3 = Not used 4 = Not used
140	1 = CAN radio 3) 2 = Telephone 3 = Navigation 4 = Telematics

1) As of Model Year 2002

2) Midline dash panel insert only

3) Highline dash panel insert only

**Notes:**

- ◆ Display always indicates actual sender and sensor values. The values displayed in the dash panel insert are filtered and may deviate.
- ◆ If the actual coolant temperature is between 80 °C and 100 °C, dash panel insert always displays 90 °C.
- ◆ Display remains blank if a display zone is not used.
- ◆ Data from display groups 010...019 must be printed out on replacing dash panel insert.
- ◆ Measured value block 125 indicates drive train data bus users.
- ◆ Measured value block 132 indicates group convenience data bus users.
- ◆ Measured value block 140 indicates information data bus users.
- ◆ Proceed as follows to switch to a different display group:

Display group	VAS 5051
Up	Press s key
Down	Press t key

- Terminate function "08 - Reading measured value block" by touching \* key.

**Measured value block 001**

--





**Note:**

*If value "128" in display zone 2 has been changed due to customer complaint, modified value must be adopted on dash panel insert replacement.*

**Measured value block 011**

Display group 11				Indicated on display
4	X	3	100	Display zones 1 ... 4
Factory-set adaption value				
Adaption channel for fuel consumption indicator				
Language selected				
▪ 1- German; 2 - English; 3 - French; 4 - Italian; 5 - Spanish; 6 - Portuguese; 8 - Chinese				
Adaption channel for language version for driver information system (DIS)				

**Note:**

*If value "100" in display zone 4 has been changed due to customer complaint, modified value must be adopted on dash panel insert replacement.*

**Measured value block 012**

Display group 12				Indicated on display
40	X	41	XX	Display zones 1 ... 4
Elapsed time				
▪ e.g. 10 = 10 days				
Adaption channel for time since service				
Distance driven				
▪ e.g. 8 = 800 km or miles				
Adaption channel for mileage since service				

**Measured value block 013**

Display group 13				Indicated on display
42	15	43	30	Display zones 1 ... 4
Maximum mileage				
▪ 30 = 30000 km1)				
Adaption channel for maximum mileage prior to service				
Minimum mileage				
▪ 15 = 15000 km 1)				
Adaption channel for minimum mileage prior to service				

1) Information on applicable specifications:

=> Maintenance

**Measured value block 014**[illegible]

1) Information on applicable specifications:

=> Maintenance

**Measured value block 015**

<div> <div> <div>45</div> <div>X</div> <div>46</div> <div>XXX</div> </div> <div> <div>Indicated on display</div> <div>Display zones 1 ... 4</div> </div> </div>			
Arithmetic value for total consumption			
Adaption channel for total consumption (petrol engines only)			
Oil grade			
▪ Entries between 1 and 4 are possible 1)			
Adaption channel for oil grade			

1) Information on applicable specifications:

=> Maintenance

**Note:**

*Adaption to oil grade must be checked after service.*

**Measured value block 016**

Display group 16				<ul style="list-style-type: none"> <li>Indicated on display</li> <li>Display zones 1 ... 4</li> </ul>
47	XXX	48	XXX	
			Arithmetic value for thermal load	
			Adaption channel for thermal load (diesel engines only)	
			Arithmetic value for amount of soot in engine oil	

Adaption channel for amount of soot in engine oil (diesel engines only)

### Measured value block 017

Display group 17			▀ Indicated on display
60	XXX	61	XXX ▀ Display zones 1 ... 4
			Adaption value for convenience data bus users
			Adaption channel for convenience data bus users
			Adaption value for drive train data bus users
			Adaption channel for drive train data bus users

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### Measured value block 018

Display group 18			▀ Indicated on display
62	XXX	-	- ▀ Display zones 1 ... 4
			Adaption value for communication data bus users
			Adaption channel for communication data bus users

### Measured value block 019

Display group 19			▀ Indicated on display
-	-	19	XXXXX ▀ Display zones 1 ... 4
			Adaption value for ambient temperature display/radio clock/dash panel insert illumination
			Adaption channel for ambient temperature display/radio clock/dash panel insert illumination configuration

### Measured value block 050

Display group 50			▀ Indicated on display
XXXX km	XXXX rpm	XX.X °C	XX.X °C ▀ Display zones 1 ... 4
			Coolant temperature
			▀ 50 ... 130 °C
			Oil temperature



	Engine speed ▪ 0 ... 9990 rpm
	Mileage counter display value

## Measured value block 125

Display group 125			▪ Indicated on display
Engine 1	Gearbox 1	-	▪ Display zones 1 ... 4
		Automatic gearbox control unit - drive train data bus link	
		▪ 1 - Control unit is drive train data bus user	
		▪ 0 - Control unit with CAN capability is not drive train data bus user	
		▪ No display - no control unit CAN capability	
		Engine control unit - drive train data bus link	
		▪ 1 - Control unit is drive train data bus user	
		▪ 0 - Control unit with CAN capability is not drive train data bus user	
		▪ No display - no control unit CAN capability	

## Measured value block 132

Display group 132			▪ Indicated on display
-	Radio 1	-	▪ Display zones 1 ... 4
		Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.	
		CAN radio as of Model Year 2002 in conjunction with Midline dash panel insert (no driver information system) - convenience data bus link	
		▪ 1 - Control unit is convenience data bus user	
		▪ 0 - Control unit with CAN capability is not convenience data bus user	
		▪ No display - no control unit CAN capability	

## Measured value block 140

Display group 140			▪ Indicated on display
Radio 1	Telephone 1	Navigat 1	▪ Display zones 1 ... 4
			Telematics control unit - information data bus link
			▪ 1 - Control unit is information data bus user
			▪ 0 - Control unit with CAN capability is not information data bus user
			▪ No display - no control unit CAN capability

		<p>Navigation control unit - information data bus link</p> <ul style="list-style-type: none"> <li>▪ 1 - Control unit is information data bus user</li> <li>▪ 0 - Control unit with CAN capability is not information data bus user</li> <li>▪ No display - no control unit CAN capability</li> </ul>
		<p>Telephone control unit - information data bus link</p> <ul style="list-style-type: none"> <li>▪ 1 - Control unit is information data bus user</li> <li>▪ 0 - Control unit with CAN capability is not information data bus user</li> <li>▪ No display - no control unit CAN capability</li> </ul>
		<p>symphony radio/CAN radio as of Model Year 2002 in conjunction with Highline dash panel insert - information data bus link</p> <ul style="list-style-type: none"> <li>▪ 1 - Control unit is information data bus user</li> <li>▪ 0 - Control unit with CAN capability is not information data bus user</li> <li>▪ No display - no control unit CAN capability</li> </ul>

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### 3.11 - Adaption

The individual functions are called up by way of the appropriate adaption channel number (=> Adaption table, Page 72 ).

The current dash panel insert adaption values can be read out in measured value blocks 010...016 and 019.

Adaption channel	Measured value block
03	011, Page 67
19	019, Page 69
30	010, Page 66
40 and 41	012, Page 67
42 and 43	013, Page 67
44	014, Page 68
45 and 46	015, Page 68
47 and 48	016, Page 68

**Note:**

*Adaption channels 03 and 30 are only required if factory-set adaption value has been changed due to a customer complaint.*

Up to Model Year 2001, dash panel insert adaption values for control units with CAN capability cannot be seen from measured value blocks; they can only be read out in the appropriate adaption channel. The adaption value is given in the appropriate adaption channel.

As of Model Year 2002, dash panel insert adaption values for control units with CAN capability can be read out in measured value blocks 017 and 018.

Adaption channel	Measured value block
60, 61	017, Page 69
62	018, Page 69

**Note:**

*Adaption channels 60, 61 and 62 are only required if the dash panel insert uses the corresponding system bus.*

Following adaption, control units using the corresponding system bus are displayed in measured value blocks 125, 132 and 140.

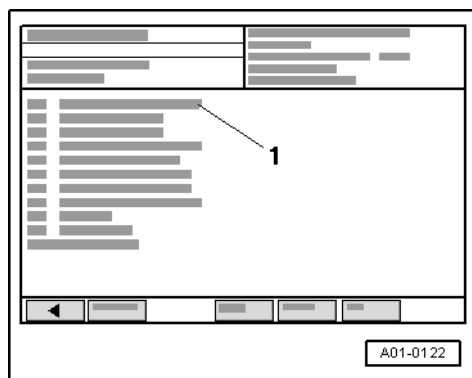


Adaption channel	Measured value block
60	125, Page 70
61	132, Page 70
62	140, Page 70

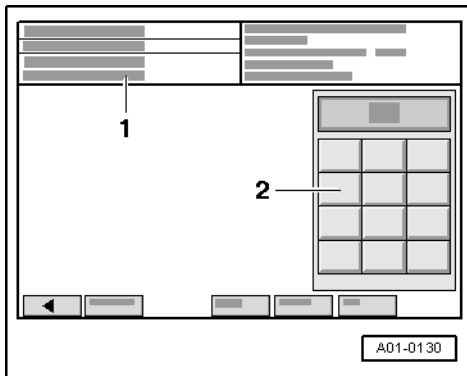
**Adaption table**

Adaption channel	Function
02	Resetting of service display following service => Page 76
03	Correction of fuel consumption indicator => Page 78
04	Language version for driver information system (DIS) => Page 80
09	Entering mileage after replacing dash panel insert => Page 81
19	Ambient temperature display/radio clock/dash panel insert illumination => Page 85
30	Correction of fuel gauge sender resistance range => Page 87
35	Correction of engine speed level => Page 88
40	Mileage since service => Page 90
41	Days since service => Page 91
42	Minimum mileage prior to service => Page 92
43	Maximum mileage prior to service => Page 94
44	Maximum time interval prior to service => Page 95
45	Oil grade => Page 96
46	Total consumption (petrol engines only) => Page 98
47	Amount of soot in engine oil (diesel engines only) => Page 99
48	Thermal load (diesel engines only) => Page 101
60	Control units using drive train data bus => Page 102
61	Control units using information data bus => Page 104
62	Control units using information data bus => Page 105

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**Implementing function "10 - Adaption"**

- Start dash panel insert self-diagnosis => Page 47 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "10 - Adaption".

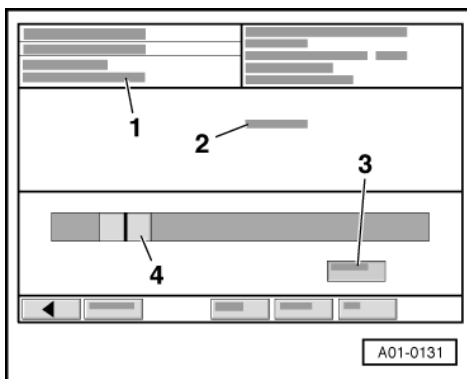


-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter desired adaption channel =>Adaption table, Page 72 .
- Confirm entry by touching Q key.

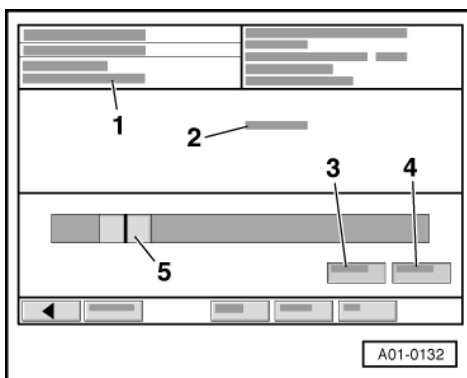
**Note:**

*After changing adaption value/following termination of an adaption channel, function "10 - Adaption" must be selected again to select a different adaption channel.*



-> Display on VAS 5051:

- 1 - Channel X
- Read and test
- 2 - Text display for channel selected
- or
- No display
- 4 - Moving bar positioned on current adaption value



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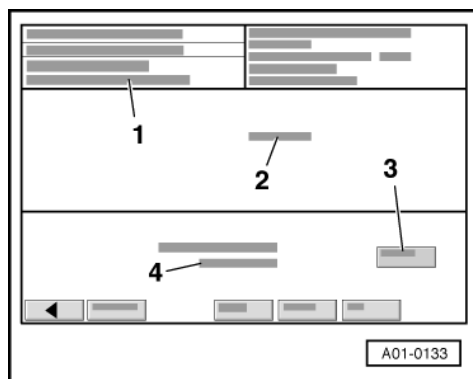
## A - Altering adaption value by means of moving bar

-> Display on VAS 5051:

- Shift moving bar -5- in required direction or touch area next to bar, thus causing it to move in the desired direction.
- Touch "Save" key -4-.

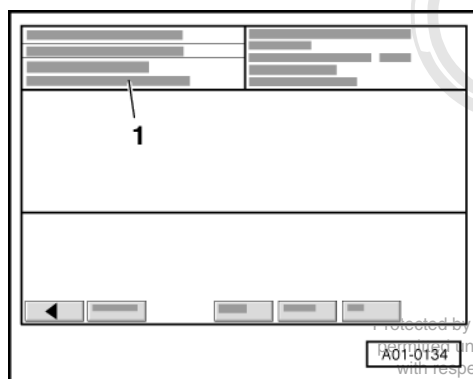
### Note:

If "Save" key is not displayed, keypad must be used to make direct entry=> Page 75.



-> Display on VAS 5051:

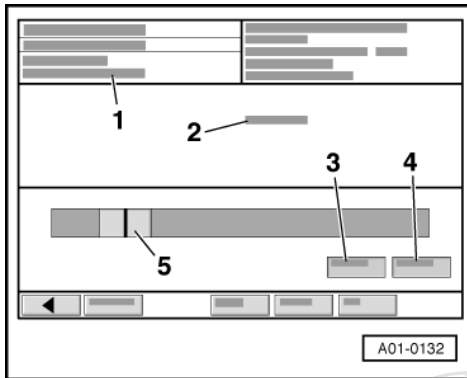
- 1 - Channel X
- Save
- 2 - Text display for channel selected
- or
- No display
- 4 - Original value X
- New value X
- Confirm new adaption value by touching "Accept" key -3-.



-> Display on VAS 5051:

- 1 - Channel X
- Value X saved
- Terminate function "10 - Adaption" by touching ◀ key.

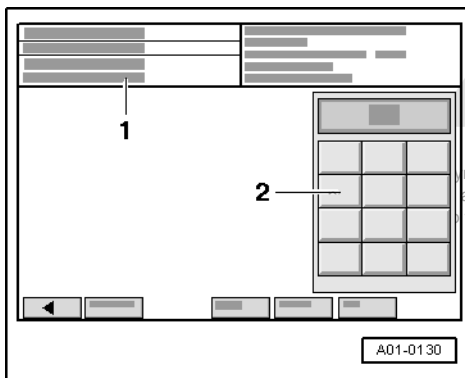




### B - Changing adaption value by means of direct entry

-> Display on VAS 5051:

- Touch "Keypad" key -3-.



-> Display on VAS 5051:

- 1 - Enter adaption value

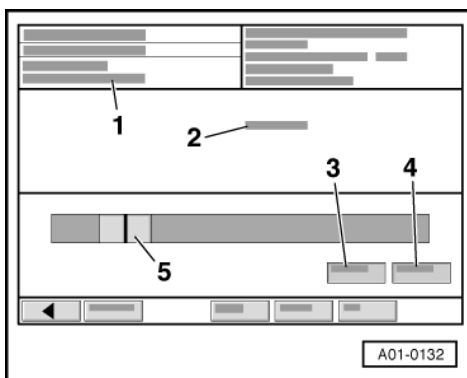
- Use keypad -2- to enter desired 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Desired input: 1

Keypad entry: 00001

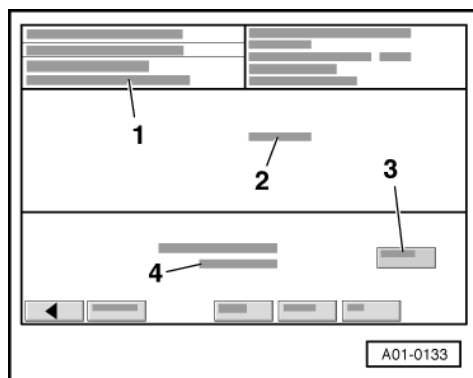
- Confirm entry by touching Q key.





-> Display on VAS 5051:

- Touch "Save" key -4-.

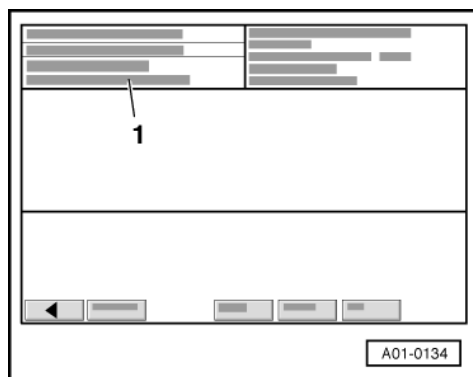


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-> Display on VAS 5051:

- 1 - Channel X
- Save
- 2 - Text display for channel selected
- or
- No display
- 4 - Original value X
- New value X

- Confirm new adaption value by touching "Accept" key -3-.



-> Display on VAS 5051:

- 1 - Channel X
- Value X saved

- Terminate function "10 - Adaption" by touching ◀ key.

### **Adaption channel 02 - Resetting service display following service**

#### **Notes:**

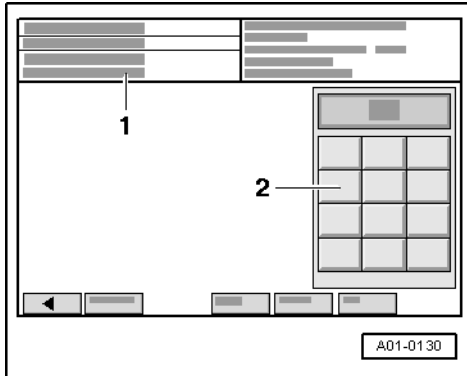
- ♦ The service display is designed to remind drivers that service is due. The display appears in the centre display.
- ♦ The service prompt appears as of 1 month/2000 km before reaching service limit.  
Display example: "SERVICE IN 1300 KM" is displayed after a total mileage of 13700 km.
- ♦ The remaining mileage prior to service can be called up by way of the menu in the centre display by pressing the clock adjuster button once.
- ♦ If service is due, message appears on centre display for 5 seconds when ignition is switched on.

It is displayed after the automatic gearbox info and after entering destination for navigation system where appropriate. Display: "SERVICE!"

- ◆ Information on applicable specifications:

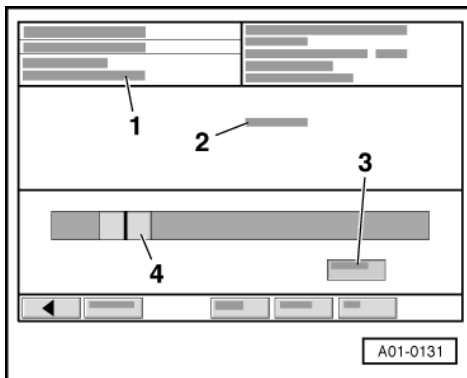
=> Maintenance

- ◆ Channels 40, 41, 46, 47 and 48, which display dynamic service values, are set automatically to "0".



-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "02" for "Adaption channel 02" and confirm by touching Q key.



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-> Display on VAS 5051:

- 1 - Channel 2
- Read and test
- 4 - Moving bar positioned on current adaption value

Display	Significance
0	Service not due
1	Service due

Service status is reset by way of the following adaption value:

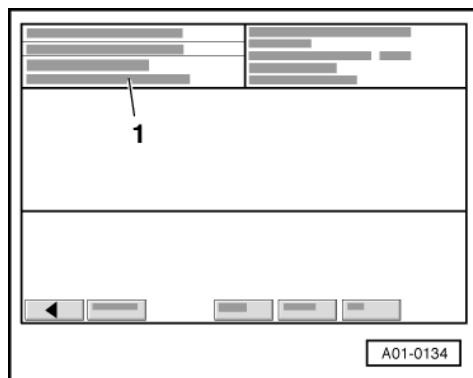
Adaption value	Service status
00000	Cancel service

- Use moving bar to change adaption value =>"A - Changing adaption value with moving bar", Page 74 .



Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page **75**.

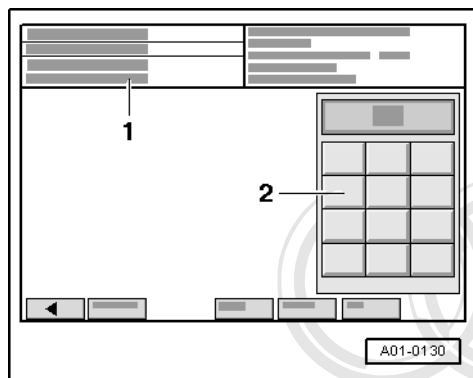


-> Display on VAS 5051 following adaption:

1 - Channel 2  
Value 0 saved

**Notes:**

- ♦ "SERVICE IN 15000 KM" is displayed in dash panel insert.
- ♦ 15000 km is the initial value for the service display. Conversion to higher mileage (e.g. 30000 km for petrol engines) is performed during vehicle operation.
- Check service specifications in measured value blocks 013...016  
=> Page **67** onwards.



**Adaption channel 03 - Correction of fuel consumption indicator**

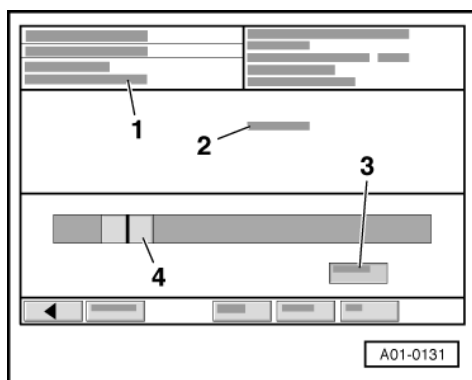
On vehicles with driver information system (DIS), this function can be used to correct the fuel consumption indicator if dash panel insert display does not correspond to actual fuel consumption.

-> Display on VAS 5051:

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1 - Enter channel number

- Use keypad -2- to enter "03" for "Adaption channel 03" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 3  
Read and test
- 2 - Fuel consumption  
indicator
- 4 - Moving bar positioned on current adaption value 100

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**Notes:**

- ◆ The adaption value 100 represents the factory-set mean fuel consumption indicator resistance range.
- ◆ It is only possible to make entries between 85% and 115%.
- ◆ Entries must be made in 5% steps.
- ◆ Dash panel insert replacement => Page 108 .
- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 74 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

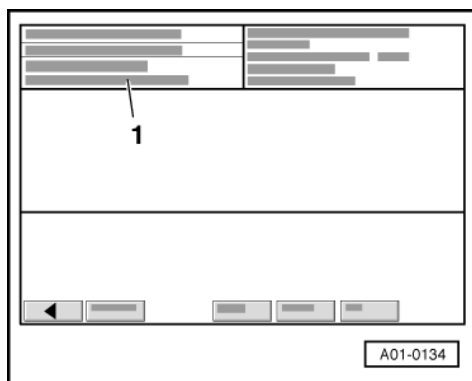
Example:

Desired input: 90%

Keypad entry: 00090

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*



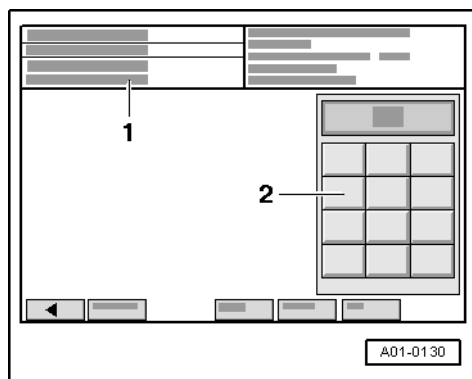


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 3  
Value 90 saved

- Terminate function "10 - Adaption" by touching ◀ key.

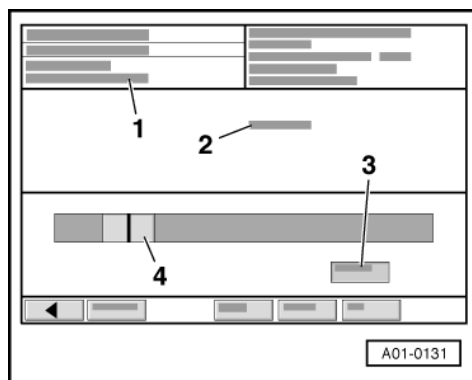


#### Adaption channel 04 - Language version for driver information system (DIS)

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "04" for "Adaption channel 04" and confirm by touching Q key.



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-> Display on VAS 5051:

1 - Channel 4  
Read and test  
2 - Language  
4 - Moving bar positioned on current adaption value

Language version is adapted by entering the following values:

Language version	Code
German	1
English	2
French	3
Italian	4

Language version	Code
Spanish	5
Portuguese	6
Chinese	8

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 74 .

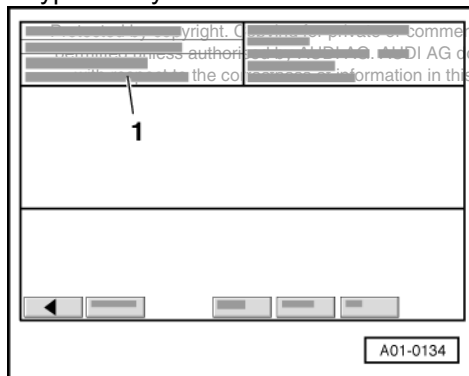
Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Code: 1 (German)

Keypad entry: 00001



-> Display on VAS 5051 following adaption:

Example:

1 - Channel 4  
Value 1 saved

- Terminate function "10 - Adaption" by touching ◀ key.

### Adaption channel 09 - Entering mileage after replacing dash panel insert

This function can be used to enter mileage count on dash panel insert replacement.

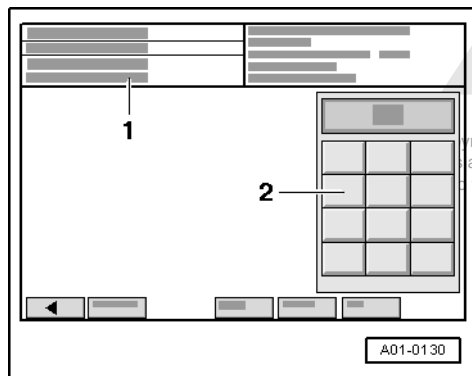
#### Notes:

- ◆ Adaption is only possible for dash panel inserts with a mileage of up to max. 100 km.
- ◆ Adaption can only be performed once for a given dash panel insert.
- ◆ It is only possible to enter a higher adaption value (greater than 100 km).
- ◆ Up to Model Year 2001: Confirmed incorrect entries cannot be corrected. Dash panel insert must then be replaced.
- ◆ As of Model Year 2002: Incorrect entries can be corrected until a distance of 5 km has been covered once following initial change.
- ◆ Adaption is implemented in miles in countries where distances are measured in miles.

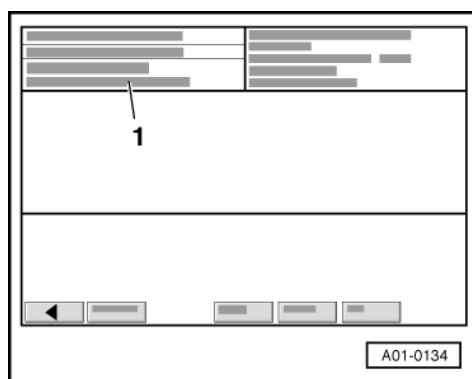




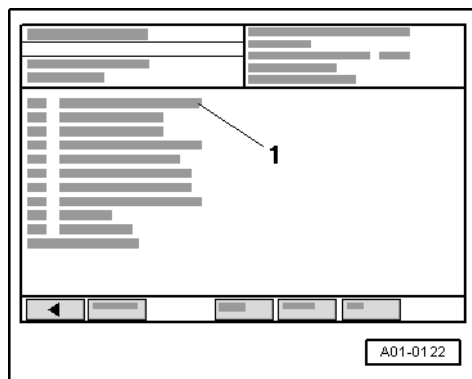
- Start dash panel insert self-diagnosis => Page **47**.
- > Display on VAS 5051:
- From list -1- select diagnosis function "11 - Login procedure".



- > Display on VAS 5051:
    - 1 - Enter code word
- Use keypad -2- to enter code number 13861.
- Confirm entry by touching Q key.



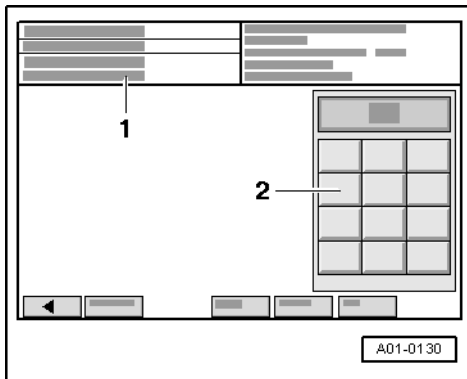
- > Display on VAS 5051:
  - 1 - Function successfully implemented
- Touch ◀ key.





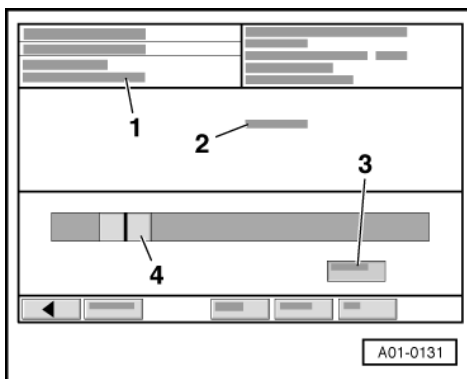
-> Display on VAS 5051:

- From list -1- select diagnosis function "10 - Adaption".



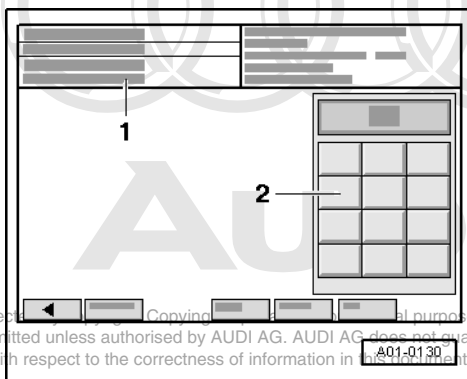
-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "09" for "Adaption channel 09" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 9
- Read and test
- 2 - Mileage
- in 10
- km units
- 4 - Moving bar positioned on current adaption value
- Touch "Keypad" key -3-.



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-> Display on VAS 5051:

- 1 - Enter adaption value
- Use keypad -2- to enter 5-digit adaption value (=> Measured value block 002, Page 66 ).

X				Hundred thousands: 100000 ... 655350 km
	X			Ten thousands: 10000 ... 90000 km
		X		Thousands: 1000 ... 9000 km
			X	Hundreds: 100 ... 900 km
			X	Tens: 10 ... 90 km
				Units: Round up to nearest ten

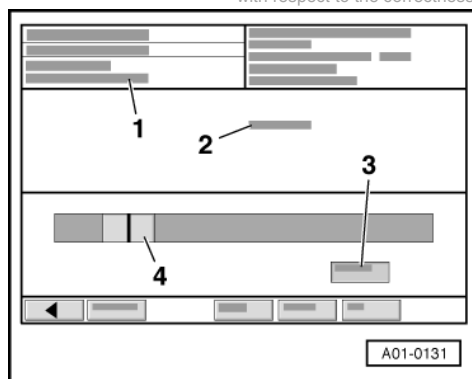
**Example:**

*Mileage = 89627*

**Keypad entry: 08963**

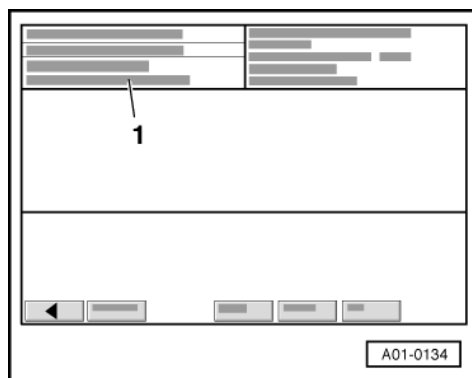
- Confirm entry by touching Q key.

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-> Display on VAS 5051:

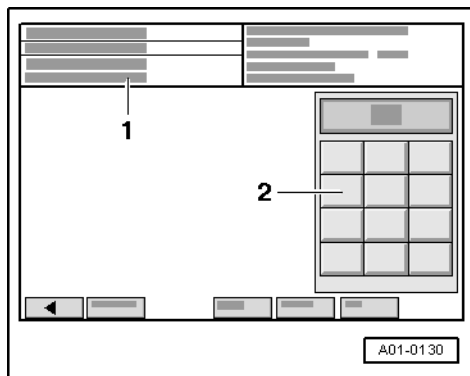
- 1 - Channel 9
- Save
- 2 - Mileage
- in 10
- km units
- 4 - Original value 0
- New value 8963
- Confirm new adaption value by touching "Accept" key -3-.



-> Display on VAS 5051 following adaption:

1 - Channel 9  
Value 8963 saved

- Terminate function "10 - Adaption" by touching ◀ key.



### Adaption channel 19 - ambient temperature display/radio clock/dash panel insert illumination

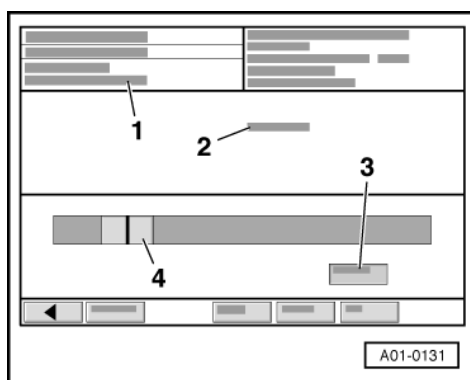
**Note:**

*This adaption channel is only used for vehicles as of Model Year 2001.*

This function permits adaption of ambient temperature and radio clock display on dash panel insert replacement.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "19" for "Adaption channel 19" and confirm by touching Q key.



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-> Display on VAS 5051:

- 1 - Channel 19
- Read and test
- 4 - Moving bar positioned on current adaption value

**Notes:**

- ◆ Current adaption value for channel 19 can be read out as of Model Year 2002 in measured value block 019  
=> Page 69.



- ♦ Dash panel insert replacement => Page 108 .

Ambient temperature/radio clock display is adapted by entering the following values:

Ambient temperature display					
X	X	X	0	X	No ambient temperature display
X	X	X	1	X	With ambient temperature display
Radio clock					
X	X	X	X	0	No radio clock
X	X	X	X	1	With radio clock

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Instrument illumination function can be adapted as of Model Year 2002 by entering the following values:

Instrument illumination					
0	X	X	X	X	Pointers and scales light with dipped beam "on"
1	X	X	X	X	Pointers light with ignition "on", scales light with dipped beam "on" (Standard for A3)
2	X	X	X	X	Scales light with ignition "on", pointers light with dipped beam "on"
3	X	X	X	X	Pointers and scales light with ignition "on" (Standard for S3)

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

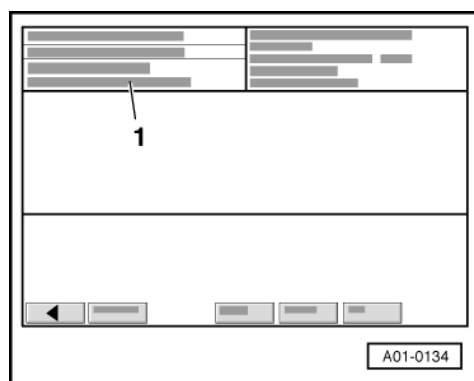
Example:

Desired input: 10001 for A3 without ambient temperature display with radio clock

Keypad entry: 10001

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*

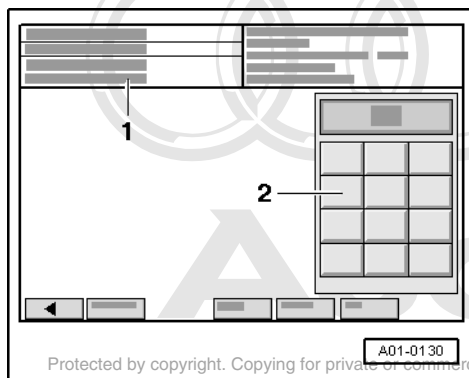


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 19  
Value 10001 saved

- Terminate function "10 - Adaption" by touching ◀ key.



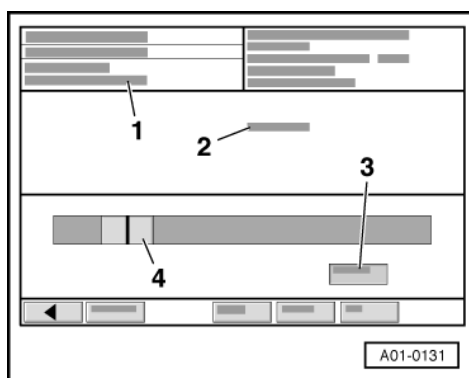
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### Adaption channel 30 - Correction of fuel gauge sender resistance range

This function can be used to shift the fuel gauge sender resistance range if dash panel insert display does not correspond to actual tank content.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "30" for "Adaption channel 30" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 30
- Read and test
- 2 - Fuel-gauge sender
- 4 - Moving bar positioned on current adaption value 128

#### Notes:

- ♦ The adaption value 128 represents the factory-set mean fuel gauge sender resistance range.
- ♦ The fuel gauge sender resistance can be changed by  $\pm 8$  ohms to an adaption value of 120 ... 136.
- ♦ Dash panel insert replacement => Page 108 .
- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 74 .
- Or
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.



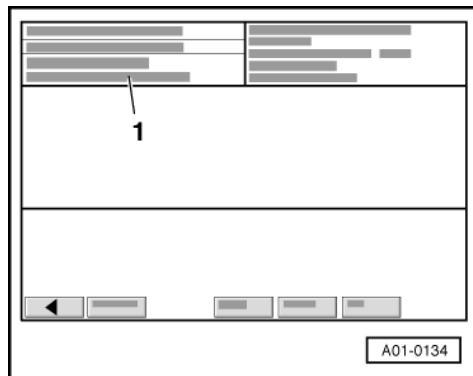
Example:

Desired input: 132

Keypad entry: 00132

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*



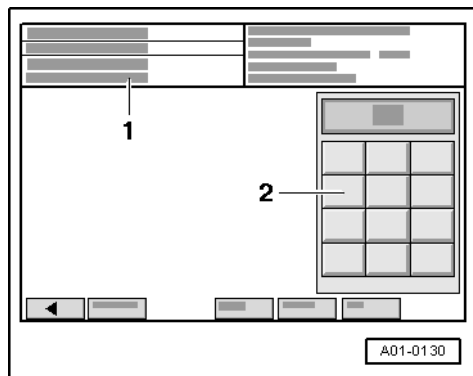
-> Display on VAS 5051 following adaption:

Example:

1 - Channel 30

Value 132 saved

- Terminate function "10 - Adaption" by touching ◀ key.



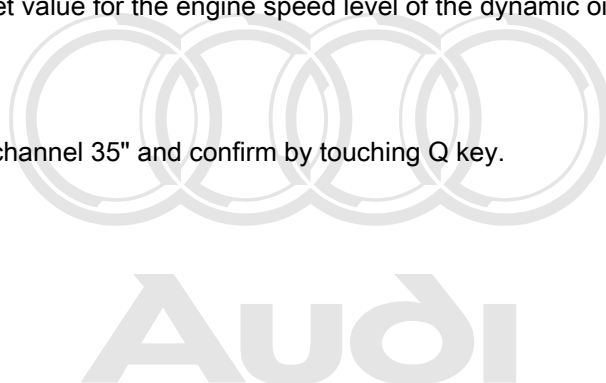
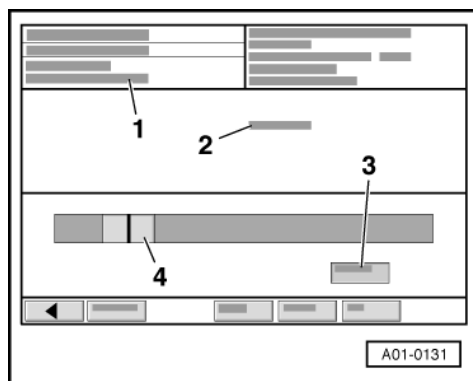
**Adaption channel 35 - Correction of engine speed level**

This function can be used to influence the offset value for the engine speed level of the dynamic oil-pressure warning system.

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "35" for "Adaption channel 35" and confirm by touching Q key.



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-> Display on VAS 5051:

- 1 - Channel 35
- Read and test
- 4 - Moving bar positioned on current adaption value 0

**Notes:**

- ◆ Adaption value 0 corresponds to factory-set oil-pressure warning if oil pressure drops below 1.2 bar at an engine speed of 1500 rpm.
- ◆ Adaption can be performed in four steps (0 -1000).
- ◆ The adaption value "250" changes the engine speed level to 1750 rpm.
- ◆ Dash panel insert replacement => Page **108**.
- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page **74**.

Or

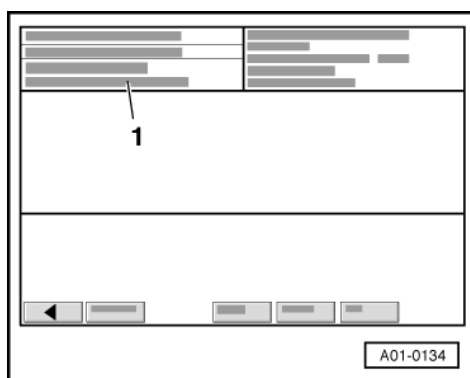
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page **75**.
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Desired input: +250 rpm  
Keypad entry: 00250

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*

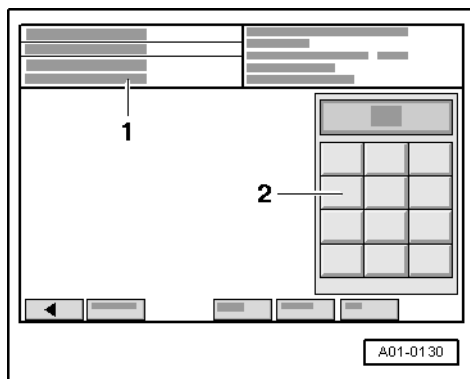


-> Display on VAS 5051 following adaption:

Example:

- 1 - Channel 35
- Value 250 saved

- Terminate function "10 - Adaption" by touching ◀ key.

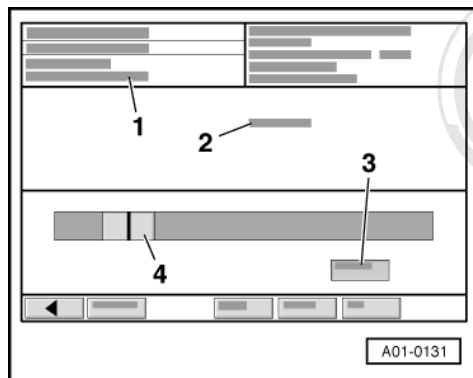


## Adaption channel 40 - mileage since service

This function can be used to enter mileage since last service on dash panel insert replacement.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "40" for "Adaption channel 40" and confirm by touching Q key.



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-> Display on VAS 5051:

- 1 - Channel 40
- Read and test
- 4 - Moving bar positioned on current adaption value

### Notes:

- ♦ The respective specification can only be entered in steps of 100 km; the display is thus also in 100 km.
- ♦ Adaption is implemented in miles in countries where distances are measured in miles.

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 74 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

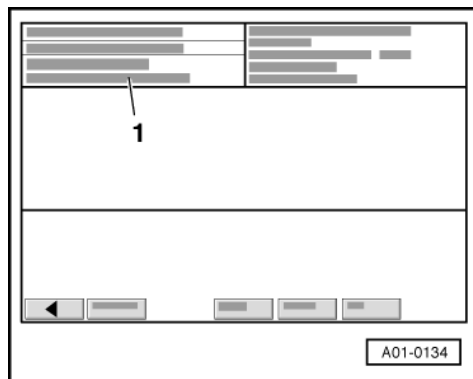
Example:

Desired input: 1000 km

Keypad entry: 00010

### Note:

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*



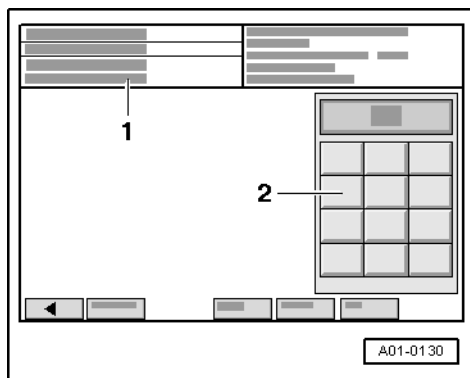


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 40  
Value 10 saved

- Terminate function "10 - Adaption" by touching ◀ key.



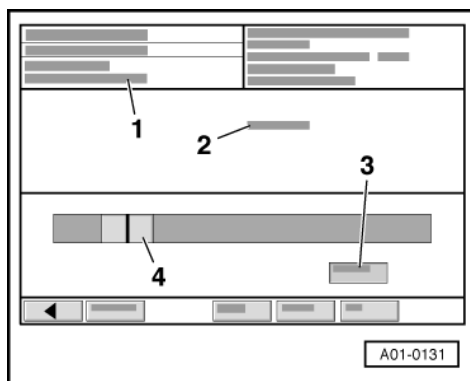
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### Adaption channel 41 - days since service

This function can be used to enter time in days since last service on dash panel insert replacement.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "41" for "Adaption channel 41" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 41
- Read and test
- 4 - Moving bar positioned on current adaption value

### Note:

*The respective specification can only be entered in one-day steps; the display is thus also in days.*

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .

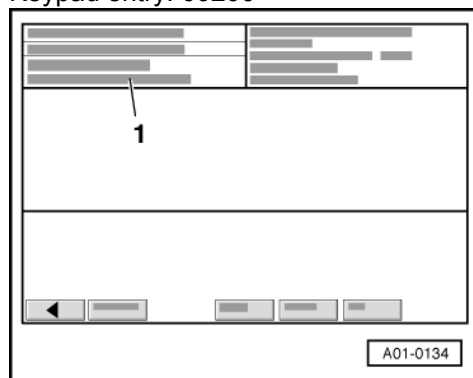


- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Desired input: 200 days

Keypad entry: 00200



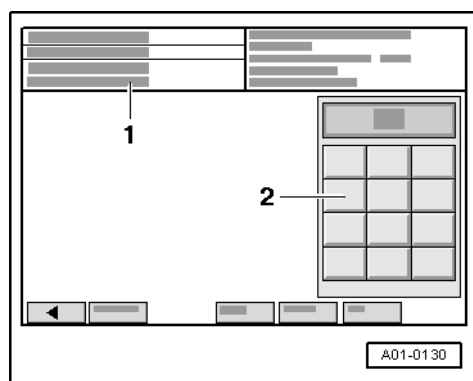
-> Display on VAS 5051 following adaption:

Example:

1 - Channel 41

Value 200 saved

- Terminate function "10 - Adaption" by touching ◀ key.



### Adaption channel 42 - Minimum mileage prior to service

This function can be used to specify a minimum mileage for the service display in the dash panel insert.

#### **Note:**

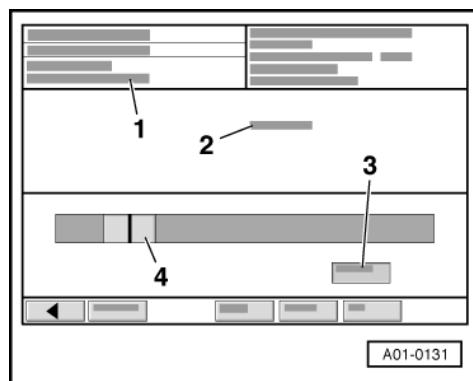
*The minimum mileage can be reduced to min. 5000 km. For this, oil grade in adaption channel 45 must be set to "1".*

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-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "42" for "Adaption channel 42" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 42
- Read and test
- 4 - Moving bar positioned on current adaption value

**Notes:**

- ◆ Information on applicable specifications:

=> Maintenance

- ◆ The respective specification can only be entered in steps of 1000 km; the display is thus also in 1000 km.
- ◆ Adaption is implemented in miles in countries where distances are measured in miles.

Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 74 .  
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- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

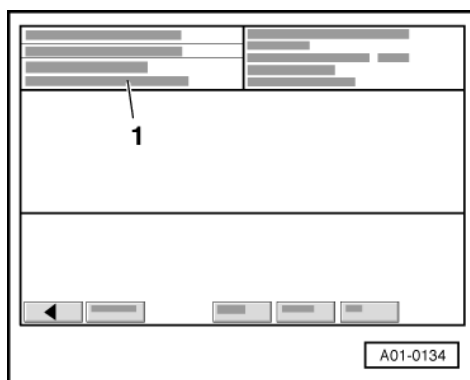
Example:

Specification: 15000 km

Keypad entry: 00015

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*

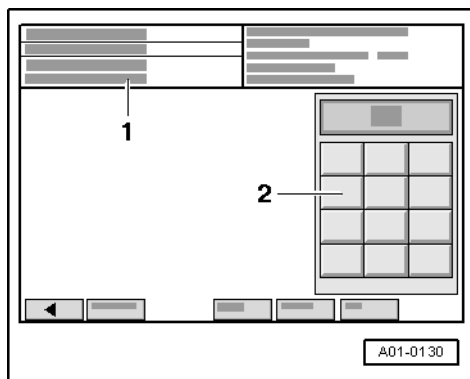


-> Display on VAS 5051 following adaption:

Example:

- 1 - Channel 42
- Value 15 saved

- Terminate function "10 - Adaption" by touching ◀ key.

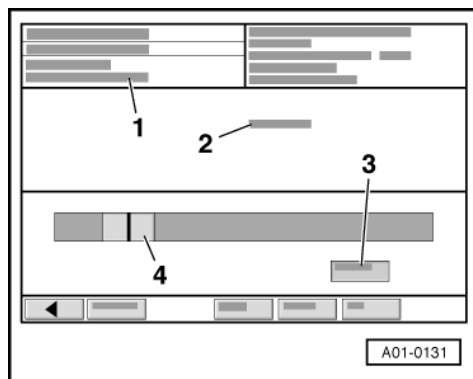


### Adaption channel 43 - Maximum mileage prior to service

This function can be used to specify a maximum mileage for the service display in the dash panel insert.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "43" for "Adaption channel 43" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 43
- Read and test
- 4 - Moving bar positioned on current adaption value

#### Notes:

- ♦ Information on applicable specifications:

=> Maintenance

- ♦ Adaption value entered for respective engine version must coincide with value in table => Page 46 .
- ♦ The respective specification can only be entered in steps of 1000 km; the display is thus also in 1000 km.
- ♦ Adaption is implemented in miles in countries where distances are measured in miles.

- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 74 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

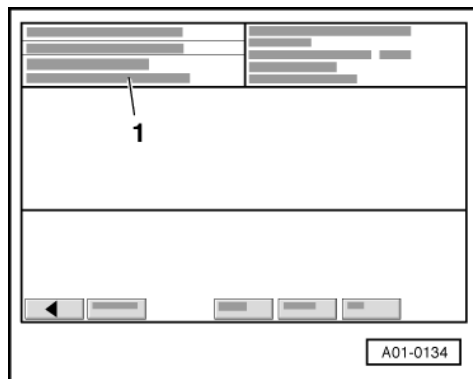
Example:

Specification: 30000 km

Keypad entry: 00030

#### Note:

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*

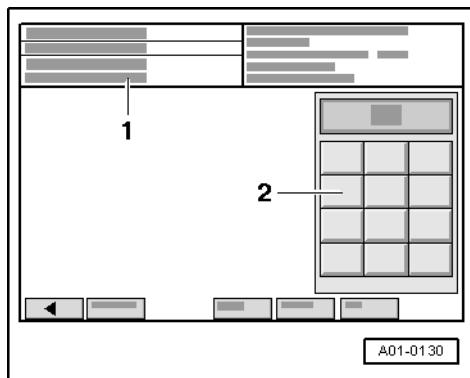


-> Display on VAS 5051 following adaption:

Example:

- 1 - Channel 43
- Value 30 saved

- Terminate function "10 - Adaption" by touching ◀ key.

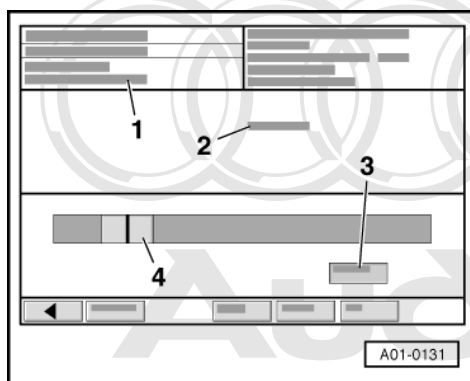


#### Adaption channel 44 - Maximum time interval prior to service

This function can be used to specify a maximum time in days for the service display in the dash panel insert.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "44" for "Adaption channel 44" and confirm by touching Q key.



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-> Display on VAS 5051:

- 1 - Channel 44
- Read and test
- 4 - Moving bar positioned on current adaption value

#### Notes:

- ◆ Information on applicable specifications:

=> Maintenance

- ◆ Adaption value entered for respective engine version must coincide with value in table => Page 46 .



- ♦ The respective specification can only be entered in one-day steps; the display is thus also in days.
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75.
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

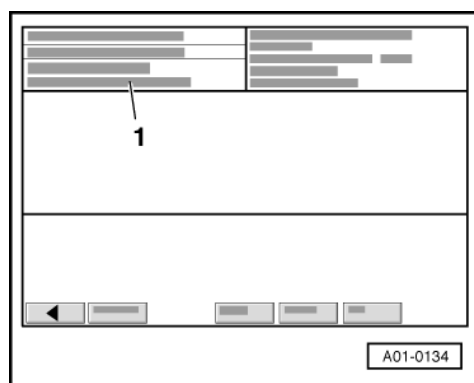
Example:

Specification: 730 days

Keypad entry: 00730

**Note:**

*Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.*

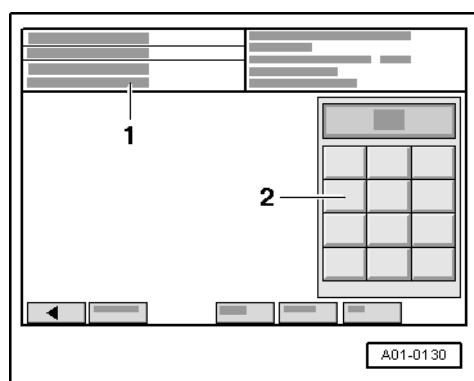


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 44  
Value 730 saved

- Terminate function "10 - Adaption" by touching ◀ key.



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**Adaption channel 45 - oil grade**

**Notes:**

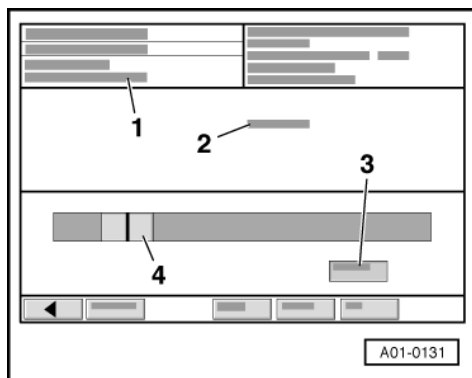
- ♦ Oil used must be re-adapted following manual service reset.

- ♦ Adaption value can be set from 1 to 4. Each value 1...4 is linked to a max. mileage (channel 43) and a max. time (channel 44).

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "45" for "Adaption channel 45" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 45
- Read and test
- 4 - Moving bar positioned on current adaption value

#### Notes:

- ♦ Information on applicable specifications:

=> Maintenance

- ♦ Adaption value entered for respective engine version must coincide with value in table => Page 46 .
- Use moving bar to change adaption value => "A - Changing adaption value with moving bar", Page 74 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

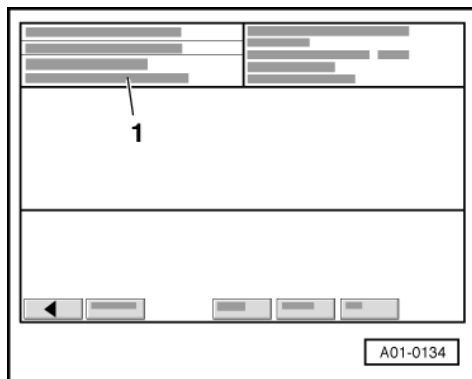
Specification: 2

Keypad entry: 00002

#### Note:

**Fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.**

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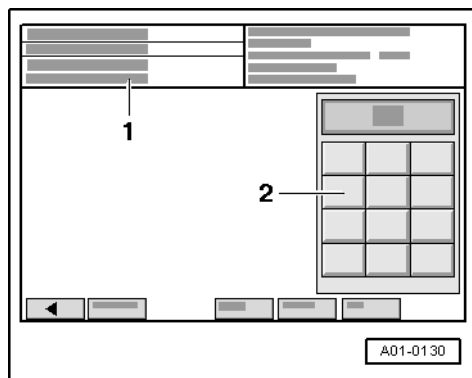


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 45  
Value 2 saved

- Terminate function "10 - Adaption" by touching ◀ key.



#### Adaption channel 46 - total consumption

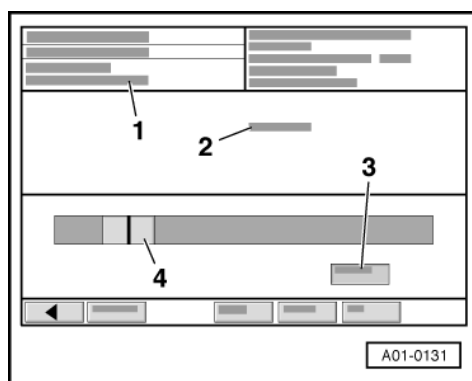
##### **Note:**

*This adaption channel is only used for vehicles with petrol engine.*

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "46" for "Adaption channel 46" and confirm by touching Q key.



-> Display on VAS 5051:

1 - Channel 46  
Read and test  
4 - Moving bar positioned on current adaption value

##### **Notes:**

- ♦ The value does not represent the actual consumption, but is rather an arithmetic value for the service display

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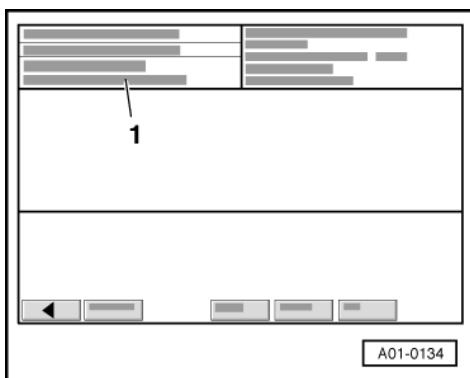


- ♦ Dash panel insert replacement => Page 108 .
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Desired input: 936

Keypad entry: 00936

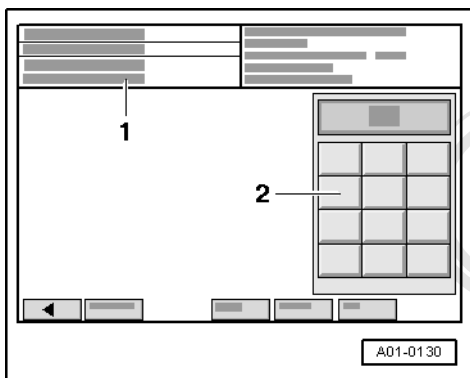


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 46  
Value 936 saved

- Terminate function "10 - Adaption" by touching ◀ key.



### Adaption channel 47 - amount of soot in engine oil

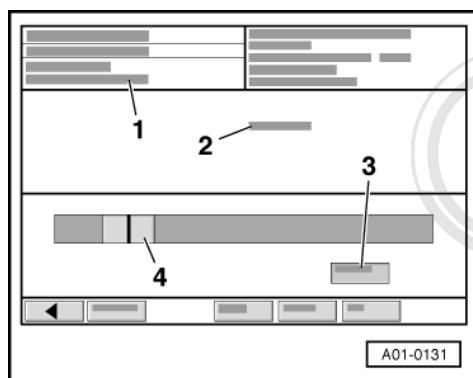
**Note:**

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*This adaption channel is only used for vehicles with diesel engine.*

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "47" for "Adaption channel 47" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 47
- Read and test
- 4 - Moving bar positioned on current adaption value

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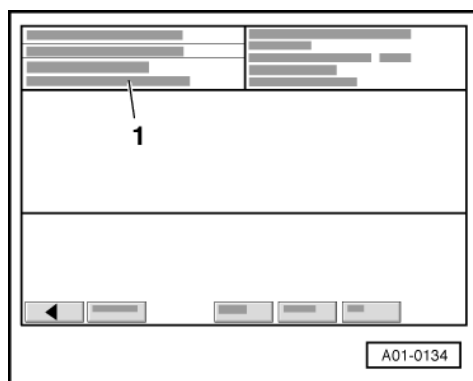
### Notes:

- ♦ Value given represents a comparison value (0 - 600) for the service display.
- ♦ The value displayed is an arithmetic value for the amount of soot in the engine oil referenced to a distance of 100 km.
- ♦ Dash panel insert replacement => Page **108**.
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page **75**.
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Desired input: 400

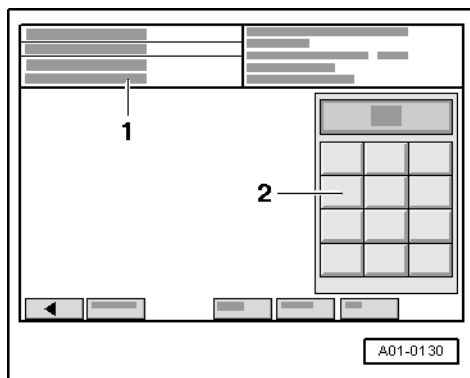
Keypad entry: 00400



-> Display on VAS 5051 following adaption:

Example:

- 1 - Channel 47
- Value 400 saved
- Terminate function "10 - Adaption" by touching ◀ key.



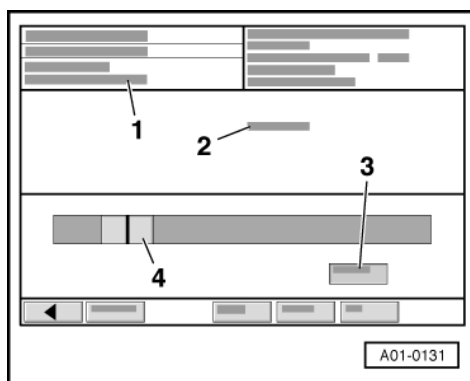
### Adaption channel 48 - thermal load

#### **Note:**

*This adaption channel is only used for vehicles with diesel engine.*

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "48" for "Adaption channel 48" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 48
- Read and test
- 4 - Moving bar positioned on current adaption value

#### **Notes:**

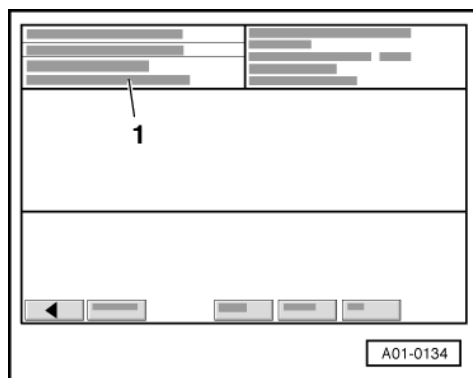
- ♦ Value given represents a comparison value (0 - 600) for the service display.
- ♦ The value displayed is an arithmetic value for the thermal loading of the engine oil referenced to a distance of 100 km.
- ♦ Dash panel insert replacement => Page 108 .
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:



Desired input: 500

Keypad entry: 00500



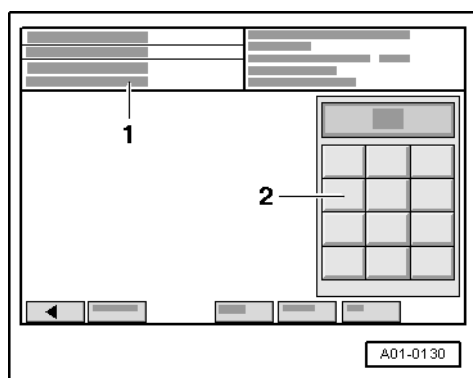
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-> Display on VAS 5051 following adaption:

Example:

1 - Channel 48  
Value 500 saved

- Terminate function "10 - Adaption" by touching ◀ key.



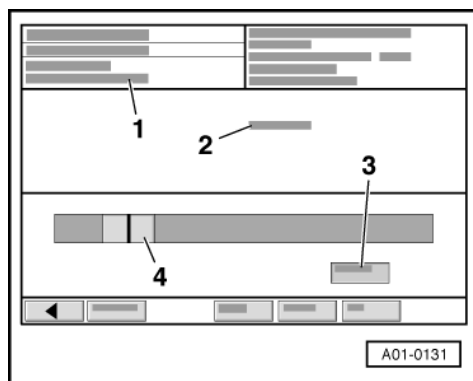
### Adaption channel 60 - control units using drive train data bus

This function can be used to enter control units using drive train data bus on dash panel insert replacement.

-> Display on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "60" for "Adaption channel 60" and confirm by touching Q key.



- > Display on VAS 5051:
- 1 - Channel 60
  - Read and test
  - 4 - Moving bar positioned on current adaption value

**Notes:**

- ◆ Current adaption value for channel 60 can be read out as of Model Year 2002 in measured value block 017  
=> Page 69 .
- ◆ Following adaption, control units using drive train data bus are displayed in measured value block 125  
=>Page 70 . Dash panel insert with CAN capability is not displayed in measured value block 125.
- ◆ Dash panel insert replacement => Page 108 .

Control units using drive train data bus are adapted by entering the following values:

Drive train data bus control units	Code
Engine and dash panel insert with immobilizer II	0
Engine and dash panel insert with immobilizer III 1)	1025
Engine, automatic gearbox and dash panel insert with immobilizer III 1)	1027

- 1) Immobilizer III is identified by value "4" in adaption channel 91
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75 .
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Desired input: 1027 for automatic gearbox

Keypad entry: 01027

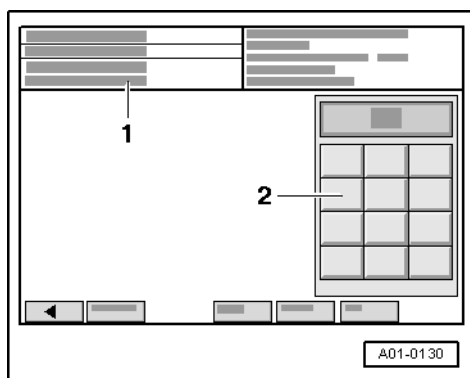


-> Display on VAS 5051 following adaption:

Example:

- 1 - Channel 60
- Value 1027 saved

- Terminate function "10 - Adaption" by touching ◀ key.



## Adaption channel 61 - control units using convenience data bus (Midline dash panel insert only)

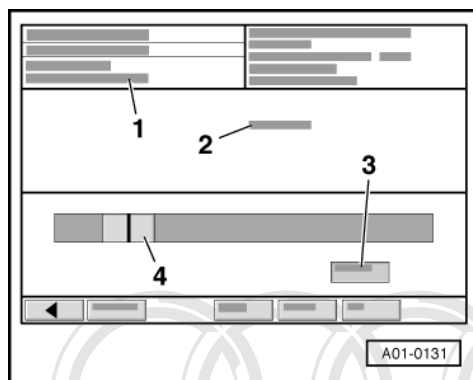
### Note:

*This adaption channel is only used for vehicles as of Model Year 2002 with Midline dash panel insert (no driver information system).*

This function can be used to enter control units using convenience data bus on dash panel insert replacement.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "61" for "Adaption channel 61" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 61
- Read and test
- 4 - Moving bar positioned on current adaption value

### Notes:

- ♦ New dash panel insert is adapted to value "0".
- ♦ Current adaption value for channel 61 can be read out in measured value block 017 => Page 69 .
- ♦ Following adaption control units using convenience data bus are displayed in measured value block 132 => Page 70 . Dash panel insert with CAN capability is not displayed in measured value block 132.
- ♦ Adaption value must be corrected on replacing Audi CAN radio with a radio with no CAN capability (e.g. other make).
- ♦ Dash panel insert replacement => Page 108 .

Control units using convenience data bus are adapted by entering the following values:

Convenience data bus control units	Code
Dash panel insert and no radio/no radio with CAN capability (e.g. other make)	0
Dash panel insert and radio with CAN capability 1)	4352
Dash panel insert and permanently installed telephone 2)	8448
Dash panel insert, radio with CAN capability 1) and permanently installed telephone 2)	12544

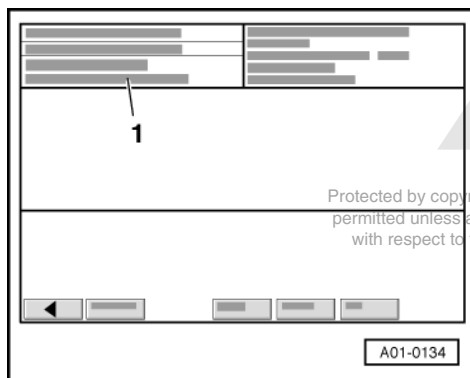
- 1) All Audi radios as of Model Year 2002 feature CAN capability
- 2) Not telematics

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75.
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

Example:

Desired input: 4352 for CAN radio

Keypad entry: 04352

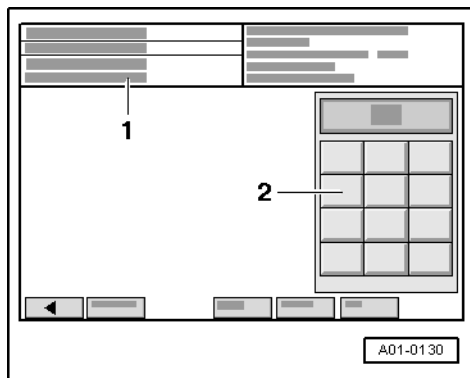


-> Display on VAS 5051 following adaption:

Example:

1 - Channel 61  
Value 4352 saved

- Terminate function "10 - Adaption" by touching ◀ key.



#### Adaption channel 62 - control units using information data bus (Highline dash panel insert only)

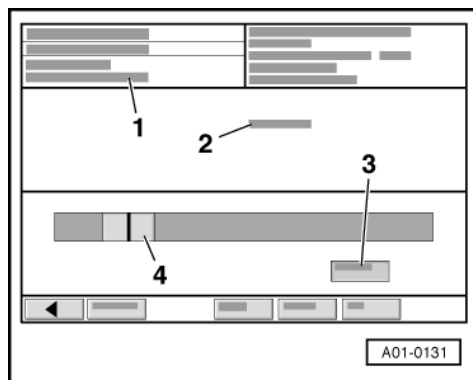
##### **Note:**

*This adaption channel is only used for vehicles with Highline dash panel insert (with driver information system).*

This function can be used to enter control units using information data bus on dash panel insert replacement.

-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "62" for "Adaption channel 62" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 62
- Read and test
- 4 - Moving bar positioned on current adaption value

#### Notes:

- ♦ New dash panel insert is adapted to value "0".
- ♦ Current adaption value for channel 62 can be read out as of Model Year 2002 in measured value block 018 => Page 69 .
- ♦ Following adaption, control units using communication data bus are displayed in measured value block 140 =>Page 70 . Dash panel insert with CAN capability is not displayed in measured value block 140.
- ♦ Dash panel insert replacement => Page 108 .

#### Vehicles up to Model Year 2001:

Control units using information data bus are adapted by entering the following values:

Information data bus control units	Code
Dash panel insert and navigation NS-Low	4
Dash panel insert and navigation RNS-D (screen navigation)	5
Dash panel insert and telematics/permanently installed telephone with multi-function steering wheel	10
Dash panel insert, telematics/permanently installed telephone with multi-function steering wheel and navigation NS-Low	14
Dash panel insert, telematics/permanently installed telephone with multi-function steering wheel and navigation RNS-D (screen navigation)	15

#### Vehicles as of Model Year 2002:

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Control units using information data bus are adapted by entering the following values:

Information data bus control units	Code
Dash panel insert and radio with CAN capability 1)	1
Dash panel insert and permanently installed telephone 2) with multi-function steering wheel 3)	2
Dash panel insert, radio with CAN capability 1) and permanently installed telephone 2) with multi-function steering wheel 3)	3



Information data bus control units	Code
- Dash panel insert, radio with CAN capability 1) and navigation NS-Low Or - Dash panel insert, radio with CAN capability 1) and navigation RNS-D (screen navigation)	5
- Dash panel insert, radio with CAN capability 1), navigation NS-Low and permanently installed telephone 2) with multi-function steering wheel 3) Or - Dash panel insert, radio with CAN capability 1), navigation RNS-D (screen navigation) and permanently installed telephone 2) with multi-function steering wheel 3)	7
Dash panel insert, radio with CAN capability 1) and telematics without multi-function steering wheel	9
Dash panel insert, radio with CAN capability 1) and telematics with multi-function steering wheel	11
- Dash panel insert, radio with CAN capability 1), navigation NS-Low and telematics without multi-function steering wheel Or - Dash panel insert, radio with CAN capability 1), navigation RNS-D (screen navigation) and telematics without multi-function steering wheel	13
- Dash panel insert, radio with CAN capability 1), navigation NS-Low and telematics with multi-function steering wheel Or - Dash panel insert, radio with CAN capability 1), navigation RNS-D (screen navigation) and telematics with multi-function steering wheel	15

- 1) All Audi radios as of Model Year 2002 feature CAN capability
- 2) Not telematics
- 3) Permanently installed telephone without multi-function steering wheel is not adapted

**All models:**

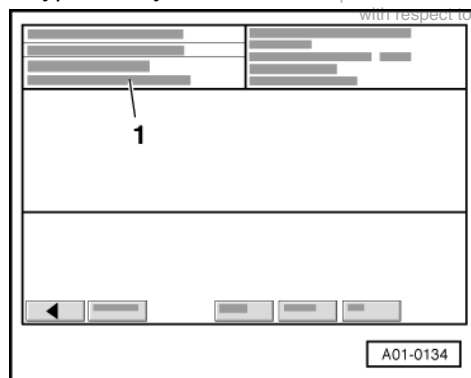
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 75.
- Enter 5-digit adaption value. Use "0" to fill up empty spaces.

**Example:**

Desired input: 5

Dash panel insert, radio with CAN capability and navigation

Keypad entry: 00005



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-> Display on VAS 5051 following adaption:

Example:

1 - Channel 62  
Value 5 saved

- Terminate function "10 - Adaption" by touching ◀ key.

### 3.12 - Input values on dash panel insert replacement

The following items must always be heeded on replacing dash panel insert:

**Perform the following before replacing dash panel insert:**

- Use measured value blocks 010...140 to read out values in old dash panel insert which have to be transferred to new dash panel insert.
- Before replacing, note down mileage count/mileage display value in measured value block 010 (display zone 4) => Page 66 and enter when prompted.

**Note:**

*Service display and mileage counter are adapted in miles in countries where distances are measured in miles.*

**Perform the following after replacing dash panel insert:**

- Encode dash panel insert => Page 60

and

- Enter mileage => Page 81
- Enter language version for driver information system (DIS)  
=> Page 80
- Correct fuel consumption indicator => Page 78 (only if fixed value changed)
- Correct fuel gauge sender resistance range => Page 87 (only if fixed value changed)
- Correct engine speed level => Page 88 (only if fixed value changed)
- Enter oil grade => Page 96
- Enter mileage since service => Page 90
- Enter days since service => Page 91
- Enter maximum mileage prior to service => Page 94
- Enter maximum time interval prior to service => Page 95
- Enter total consumption (petrol engines only) => Page 98
- Enter amount of soot in engine oil (diesel engines only)  
=> Page 99
- Enter thermal load (diesel engines only) => Page 101
- Set ambient temperature display/radio clock/dash panel insert illumination configuration => Page 85
- Enter control units using drive train data bus => Page 102
- Enter control units using convenience data bus => Page 104
- Enter control units using information data bus => Page 105

and

- Perform immobilizer adaption after replacing dash panel insert  
=> Page 130
- Perform matching of vehicle keys => Page 150

### 3.13 - Resetting service display on completion of service work (without VAS 5051)

**Attention:**

Resetting without V.A.G 5051 automatically sets service to a fixed interval.

Service prompt must be reset after performing service.

Service display should only be reset using "Adaption" function of vehicle diagnostic, testing and information system VAS 5051=>Page 76 .

The service display can also be reset as follows:

- Switch off ignition.
- Press and hold reset button for trip counter in dash panel insert.
- Switch on ignition whilst pressing button.
- Release button.

"SERVICE!" is displayed after releasing trip recorder button.

- Press clock adjuster knob in dash panel insert within 5 seconds until message is reset to "SERVICE IN 15000 KM".
- Switch off ignition.

**Notes:**

- ◆ Channels 40, 41, 46, 47 and 48, which display dynamic service values, are set automatically to "0".
- ◆ Resetting without VAS 5051 automatically sets service to a fixed interval (see table).

Channel 42 (min. mileage)	15000 km
Channel 43 (max. mileage)	15000 km
Channel 44 (max. time interval prior to service)	365 days
Channel 45 (oil grade)	1

### 3.14 - Checking data exchange between control units

**Notes:**

- ◆ Data are exchanged between the individual control units by means of a bus system.
- ◆ "CAN bus" is the term used to describe a data transfer and distribution system.
- ◆ The wires between the control units on which data are transmitted are referred to as signal wires.
- ◆ Data are transmitted serially on these signal wires to the connected control units.

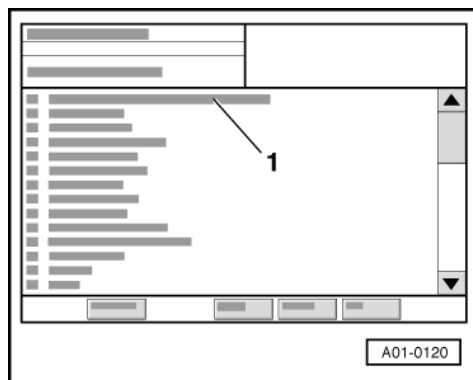
**Checking bus system**

If fault table indicates that data exchange on bus should be checked.

**Requirements:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Ignition on

Attention:  
Heed safety precautions => Page 1 .



### Sequence of operations

-> Display on VAS 5051:

- From list -1- select diagnosis function "00 - Interrogating fault memory - entire system".
  - Fault memories of all vehicle systems with self-diagnosis capability are interrogated
- Wait until next display appears.

If a control unit responds with its identification, the number of stored faults or "No faults detected" appears on the display.

Any stored system faults are consecutively displayed. VAS 5051 then transmits the next address word.

If a fault relating to "Data bus..." or "...no communication" is displayed:

- Check whether correct control units have been fitted for vehicle (part number and code).

If correct control units have been fitted:

- Check for proper connection of multi-pin connectors of control units.

If multi-pin connectors are properly attached:

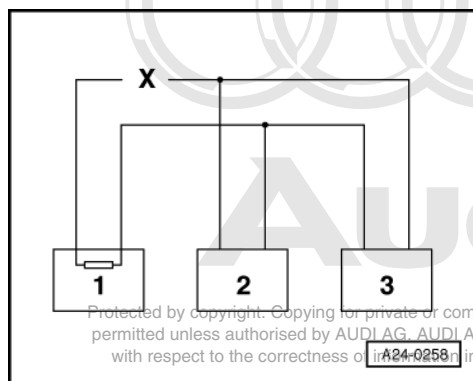
- Check CAN bus system.

### Testing "two-wire bus system"

- Assess faults stored in control units.

#### **Note:**

*Assessment helps to localise wiring fault.*



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### Example 1:

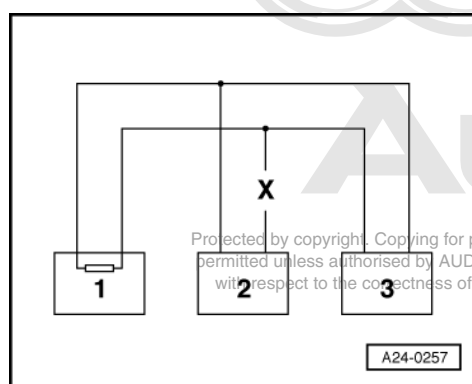
Faults entered in fault memories reveal that control unit 1 has no link with control units 2 and 3.

Control unit	Faults entered in fault memory
1	- No message from control unit 2 - No message from control unit 3
2	- No message from control unit 1
3	- No message from control unit 1

- Switch off ignition.
- Disconnect control units linked by bus wires and examine bus wires for open circuit.

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

- Replace control unit 1 if no faults are found in bus wires.



### Example 2:

Faults entered in fault memories reveal that control unit 2 has no link with control units 1 and 3.

Control unit	Faults entered in fault memory
1	- No message from control unit 2
2	- No message from control unit 1 - No message from control unit 3
3	- No message from control unit 2

- Switch off ignition.
- Disconnect control units linked by bus wires and examine bus wires for open circuit.

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

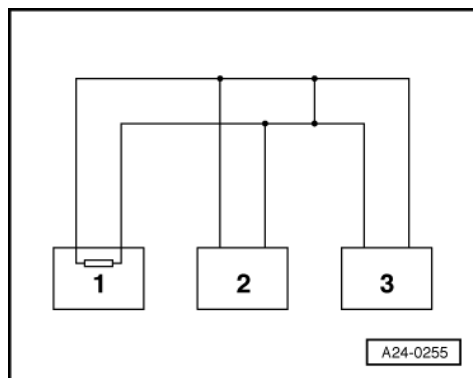
- Replace control unit 2 if no faults are found in bus wires.

### Example 3:

Faults entered in fault memory reveal that none of the control units can transmit or receive.

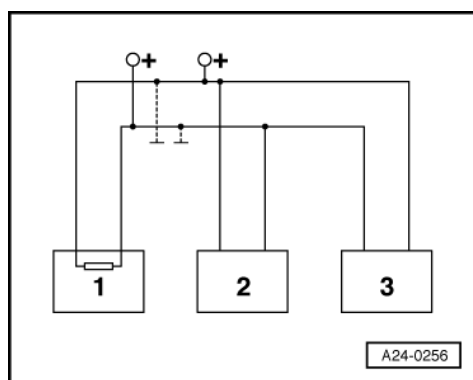
Control unit	Faults entered in fault memory
1	- e.g. Drive train data bus defective
2	- e.g. Drive train data bus defective
3	- e.g. Drive train data bus defective

- Switch off ignition.



- -> Disconnect control units linked by bus wires and examine bus wires for mutual short circuit.

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



- -> Examine bus wires for short to positive/earth.

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

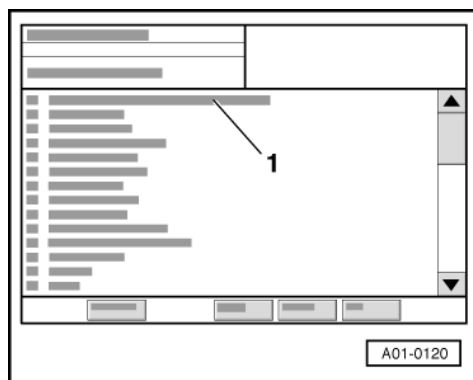
If cause of "Drive train data bus defective" fault, for example, is not found in bus wires, check whether one of the control units is responsible for the problem.

**Test requirement:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

All control units using CAN bus for communication still disconnected; ignition off.

- Connect one of the control units.

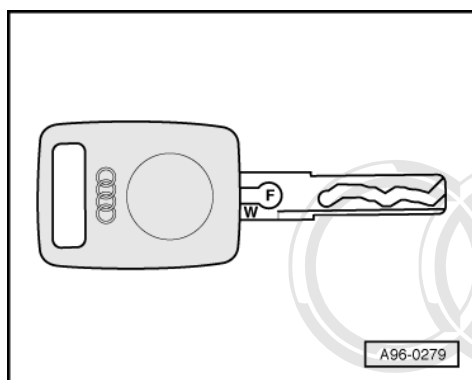


-> Display on VAS 5051:

- Switch on ignition.
- From list -1- select appropriate vehicle system.
- Interrogate and erase fault memory of control unit just connected.
- Touch ◀ key.
  
- From list -1- select diagnosis function "06 - End of output".
- Switch ignition off and on again.
- Leave ignition switched on for 10 seconds. Then use fault reader to read out fault memory of control unit just connected.
- If fault "Drive train data bus defective" is read out, replace control unit just connected.
- If fault "Drive train data bus defective" is not read out, connect next control unit and repeat sequence.

## 4 - Immobilizer self-diagnosis - immobilizer I (fixed code)

### 4.1 - Immobilizer self-diagnosis - immobilizer I (fixed code)



#### **Note:**

-> With immobilizer I with fixed code, the keys were originally not marked. Since the introduction of newer immobilizers, the keys have been marked with a "W" and an "F". Keys for immobilizers II and III are only marked with a "W".

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### 4.2 - General information

#### **Function**

The electronic immobilizer consists of the following:

- ◆ Immobilizer control unit (integrated into dash panel insert electronics)
- ◆ Fault lamp in dash panel insert
- ◆ Reader coil at ignition lock and
- ◆ Matched ignition keys with electronics (transponder)

The electronic immobilizer control unit is an integral part of the dash panel insert, i.e. the dash panel insert has to be replaced in the event of a defective control unit.

=> Electrical System; Repair Group 90

Immobilizer acts on engine-management system by way of an adapted engine control unit.

Reader coil for immobilizer reads response code of transponder each time ignition is switched on.



Fault lamp lights briefly if an authorised vehicle key is being used.

The fault lamp flashes continuously when the ignition is switched on if an unauthorised vehicle key is used or in the event of a system fault.

The electronic immobilizer is provided with comprehensive self-diagnosis. Fault codes are stored in the fault memory of the immobilizer if faults occur in system components. Faults can be determined using the vehicle diagnostic, testing and information system VAS 5051.

**Immobilizer self-diagnosis can now only be implemented using the vehicle diagnostic, testing and information system VAS 5051**

For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits.

The PIN can only be used with the vehicle diagnostic, testing and information system VAS 5051 as of basic CD version V02.00.

The 7-digit PIN must be obtained by way of the appropriate Regional Sales Centre/importer on the basis of the 14-position immobilizer/engine control unit identification number.

The 14-position immobilizer/engine control unit identification number can be read out with the self-diagnosis function.

The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.

The 4- digit PIN can no longer be requested in countries in which the online and fax call procedure has been switched to the 7-digit PIN.

Attention:

- ◆ Check data of vehicle diagnostic, testing and information system VAS 5051 with regard to Sales Centre/importer and dealership number, as well as date and time.
- ◆ Immobilizer adaption function cannot be implemented with incorrect data.

### Notes on use/matching of vehicle keys

The engine will only start if use is made of an authorised key, i.e. of a key matched to the immobilizer.

Vehicle key matching => Page 124 involves matching all vehicle keys, i.e. including spare and emergency keys, to the immobilizer.

Matching must be performed for all vehicle keys if new or additional keys are required.

If, for any reason, e.g. loss of keys en route, it is not possible to perform matching for all vehicle keys, customers are to be informed of the necessity of subsequent matching for all keys.

It is particularly important to re-match all the remaining vehicle keys if any have been lost to ensure that the lost key is no longer authorised to start the vehicle.

## 4.3 - Starting immobilizer self-diagnosis

### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Ignition switched off for approx. 30 s and then back on again

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Attention:  
Heed safety precautions => Page 1 .

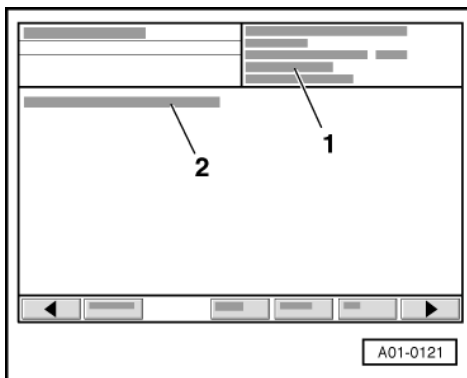


#### Sequence of operations

- From list -1- select vehicle system "17 - Dash panel insert".

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*The joint address word for the dash panel insert has to be used, as the immobilizer control unit is an integral part of the dash panel insert.*

- Wait until next display appears.



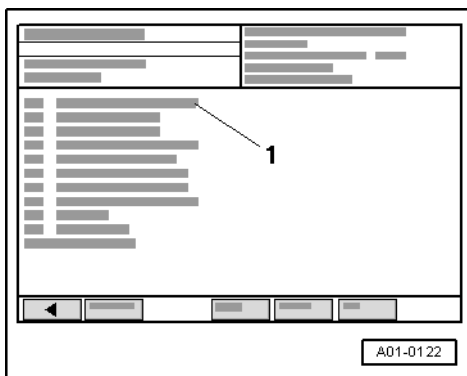
-> Display on VAS 5051:

- 1 - Dash panel insert control unit identification => Page 5
- 2 - Immobilizer control unit identification

#### Immobilizer control unit identification (example)

IMMO IDENT NO: AUZ7Z0T0033877

14-position immobilizer identification no.





- Touch ▶ key.

-> Display on VAS 5051:

- 1 - List of diagnosis functions:

Diagnosis functions	Page
02 Interrogating fault memory	116
03 Final control diagnosis	-
04 Basic setting	-
05 Erasing fault memory	119
06 End of output	120
07 Encoding control unit	-
08 Reading measured value block	121
09 Reading individual measured value	-
10 Adaption	123
11 Login procedure	124
Vehicle ident. no. transfer	
Release (PIN)	131
Channel 50 adaption (PIN)	-

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## 4.4 - Interrogating fault memory



### **Note:**

*Fault information displayed is not updated constantly, but rather only on starting self-diagnosis/implementing function 05 "Erasing fault memory".*

- Start immobilizer self-diagnosis => Page 114 .

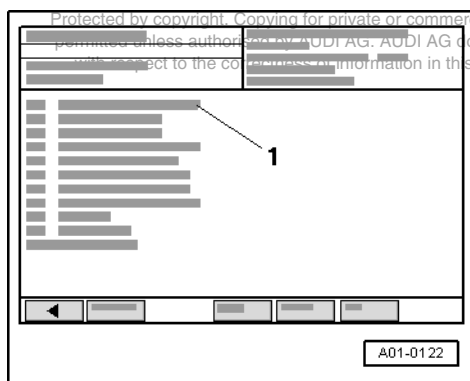
-> Display on VAS 5051:

- From list -1- select diagnosis function "02 - Interrogating fault memory".



-> Display on VAS 5051:

- 1 - Content of fault memory:
  - 0 faults detected
  - Or
  - X faults detected
- 2 - Fault
  - Fault code
  - Fault location
  - Type of fault



#### A - Faults detected:

- Print out information on screen or self-diagnosis log.
- Terminate function "02 - Interrogating fault memory" by touching < key.

-> Display on VAS 5051:

- Eliminate fault(s) in line with fault table => Page 118 .
- Select diagnosis function "02 - Interrogating fault memory" again in list and erase fault memory => Page 119 .
- Select diagnosis function "06 - End of output" in list => Page 120 .

#### B - No fault detected:

- Select diagnosis function "06 - End of output" in list => Page 120 .



## 4.5 - Fault table

### Notes:

- Faults occurring in monitored sensors or components are stored in fault memory together with an indication of the type of fault.
- The fault table is arranged according to the 5-digit fault codes on the left.
- Dash panel insert faults may also be displayed, as the immobilizer is an integral part of the dash panel insert.
- All static and sporadic faults are stored in the fault memory:  
A fault is recognised as being static if it is present for at least 2 seconds. If a fault is then no longer present, it is stored as being sporadic and "sporadic" also appears on display.
- After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.
- Sporadic faults are erased if they do not re-occur in the course of 50 driving cycles (ignition on for at least 5 minutes, vehicle speed greater than 30 km/h).
- Do not immediately replace components indicated as being defective by VAS 5051, but rather: Start by checking wiring and connectors to these components in line with current flow diagram. Also use current flow diagram to check earth connections. This is particularly important if faults are output as being "sporadic".
- On completion of repair work, fault memory is to be interrogated again and erased.

### Attention:

As an additional step on completion of repair work, fault memory of engine control unit is to be read out separately and entry "Engine control unit blocked" erased. Check other faults stored and eliminate if necessary.

Display on VAS 5051	Possible cause of trouble	Fault remedy
01128 Immobilizer reading spool-D2	- Connector not attached or fault in reader coil and wiring	- Check connector and reader coil as well as wiring (visual inspection) and replace reader coil if necessary => Electrical System; Repair Group 96
	- Immobilizer control unit (integrated into dash panel insert) defective	- Erase fault memory => Page 119 , interrogate again and replace dash panel insert if necessary => Electrical System; Repair Group 90

Display on VAS 5051	Possible cause of trouble	Fault remedy
01176 Key		
Signal too low	- Reader coil or wire defective (contact resistance/loose contact)	- Check reader coil as well as wiring and connector (visual inspection) and replace reader coil if necessary => Electrical System; Repair Group 96
	- No electronics in ignition key (transponder) or not functioning	- Replace ignition key, re-match all ignition keys and check operation => Page 124
Not authorised	- Mechanically suitable ignition key not matched	- Re-match all ignition keys and check operation => Page 124

Display on VAS 5051	Possible cause of trouble	Fault remedy
01177 Engine control unit		
Not authorised	- Engine control unit not adapted	- Adapt engine control unit =>Page 131
	- Open circuit in wiring or short circuit at W-wire	- Use current flow diagram to perform fault-finding
01179		

Display on VAS 5051	Possible cause of trouble	Fault remedy
Incorrect key programming	- Ignition keys not properly matched	- Re-match all ignition keys with entry of PIN and check operation=>Page <b>124</b>
65535 Control unit defective	- Dash panel insert (with integrated immobilizer) defective	- Replace dash panel insert => Electrical System; Repair Group 90

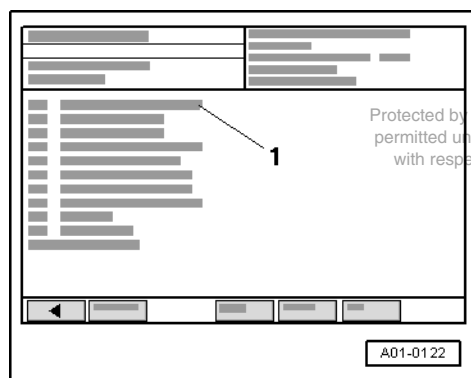
## 4.6 - Erasing fault memory

### **Note:**

*If fault memory cannot be erased, interrogate fault memory again and eliminate fault.*

### **Requirements:**

- Fault memory interrogated => Page **116**
- All faults eliminated

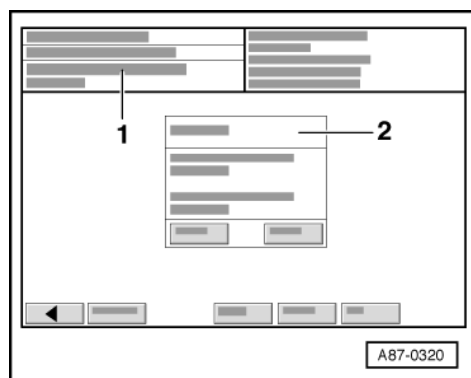


### **Sequence of operations**

After fault memory interrogation:

-> Display on VAS 5051:

- From list -1- select diagnosis function "05 - Erasing fault memory".



-> Display on VAS 5051:

- 1 - - No display (prior to erasing)
- Or



-Fault memory erased

**Note:**

If the following message appears in display zone -1-: "Fault memory not yet interrogated", this means that sequence of operations has not been precisely observed. Fault memory cannot be erased until it has been interrogated.

2 - Note:

Is function to be implemented?

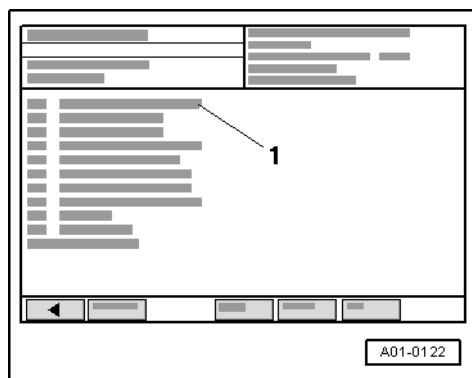
Note: Data will be erased!

- Touch "OK" key in display -2-
- Terminate function "05 Erasing fault memory" by touching ◀ key.
- Interrogate fault memory again after performing repair work.

**Note:**

This erases faults stored during fault elimination e.g. on account of connectors being unplugged.

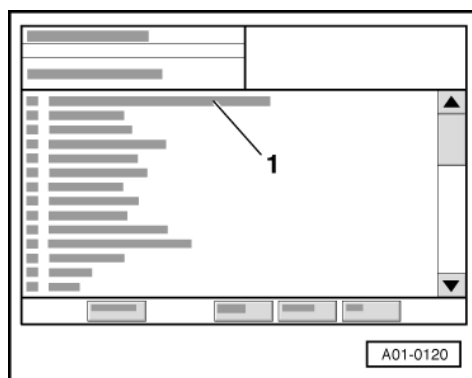
## 4.7 - End of output



### Sequence of operations

-> Display on VAS 5051:

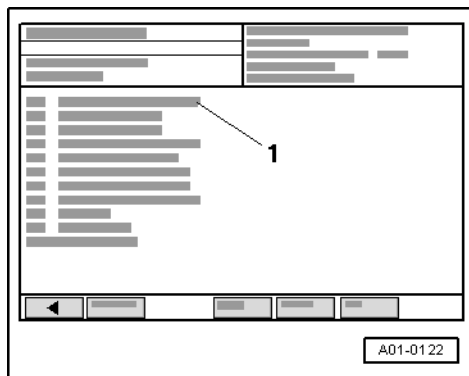
- From list -1- select diagnosis function "06 - End of output".



-> Display on VAS 5051:

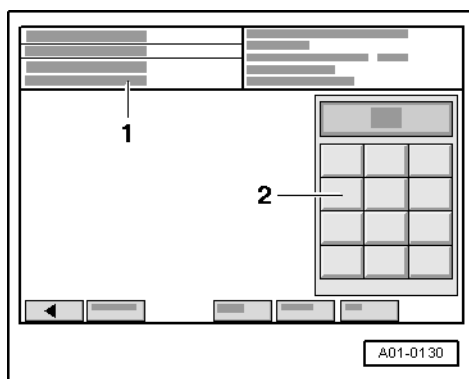
- Switch off ignition and unplug diagnostic connector when this display appears.

## 4.8 - Reading measured value block



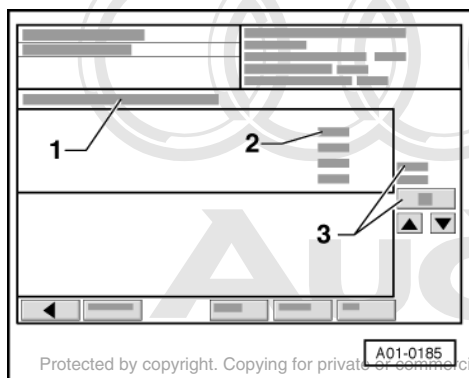
### Sequence of operations

- Start immobilizer self-diagnosis => Page 114 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "08 - Reading measured value block".



-> Display on VAS 5051:

- 1 - Enter display group
- Use keypad -2- to enter required three-digit display group number  
=>List of display groups, Page 122 and confirm entry by touching Q key.



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-> Display on VAS 5051:

- 1 - Reading measured value block
- 2 - Display zone 1  
Display zone 2  
Display zone 3  
Display zone 4
- 3 - Display group X

**Notes:**

- ♦ Display remains blank if a display zone is not used.
- ♦ Proceed as follows to switch to a different display group:

Display group	VAS 5051
Up	Press s key
Down	Press t key

- Terminate function "08 - Reading measured value block" by touching **•** key.

**List of display groups**

Display group number	Indicated on display
020	1 = 1st and 2nd ident no. position 2 = 3rd and 4th ident no. position 3 = 5th and 6th ident no. position 4 = 7th and 8th ident no. position
021	9 = 9th and 10th ident no. position 2 = 11th and 12th ident no. position 3 = 13th and 14th ident no. position 4 = Not used
022	1 = Starting authorised 2 = Engine control unit response 3 = Key status OK 4 = Not used

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**Measured value block 020**

Display group 20				• Indicated on display
AU	Z7	Z0	T0	• Display zones 1 ... 4
				7th and 8th ident no. position
				5th and 6th ident no. position
				3rd and 4th ident no. position
				1st and 2nd ident no. position

**Measured value block 021**

Display group 21				• Indicated on display
03	38	77	-	• Display zones 1 ... 4



		13th and 14th ident no. position
		11th and 12th ident no. position
		9th and 10th ident no. position

#### Measured value block 022

Display group 22			◀ Indicated on display
X	X	X	
			Key status OK
			▪ 1 = Yes
			▪ 0 = No, i.e. vehicle key not/incorrectly matched or transponder defective
			Engine control unit response 1)
			▪ 1 = Yes
			▪ 0 = No, i.e. fault in engine control unit or wiring
			Starting authorised
			▪ 1 = Yes
			▪ 0 = No, i.e. vehicle key not/incorrectly matched or engine control unit incorrectly encoded/defective

1) Depending on engine control unit, measured value block is set for 10 ... 30 s after switching off engine and ignition to "0 = Engine control unit response no", i.e. engine control unit released and no fault present. Start self-diagnosis again as a check => Page **114**.

## 4.9 - Adaption

### Note:

Adaption function can only be implemented after establishing immobilizer PIN => Establishing PIN, Page **123**.

The adaption function can be used to make and save the following changes:

- ◆ Matching of vehicle keys => Page **124**
- ◆ Adaption following replacement of engine control unit=>Page **131**
- ◆ Adaption following replacement of dash panel insert => Page **130**

## 4.10 - Establishing PIN

For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits.

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The PIN can only be used with the vehicle diagnostic, testing and information system VAS 5051 as of basic CD version V02.00.

The 7-digit PIN must be obtained by way of the appropriate Regional Sales Centre/importer on the basis of the 14-position immobilizer/engine control unit identification number.



The 14-position immobilizer/engine control unit identification number can be read out with the self-diagnosis function.

The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.

The 4- digit PIN can no longer be requested in countries in which the online and fax call procedure has been switched to the 7-digit PIN.

## 4.11 - Matching of vehicle keys

### Notes:

- ♦ If new or additional ignition keys are required, they have to be matched to the immobilizer.
- ♦ All keys - including the existing authorised ones - have to be re-matched.
- ♦ It is particularly important to re-match all the remaining vehicle keys if any have been lost to ensure that the lost key is no longer authorised to start the vehicle.
- ♦ If matching cannot be performed for all keys, for example when matching is required en route, customers are to be informed of the necessity of subsequent re-matching at their local Audi Dealership.
- ♦ The number of keys already matched is indicated after selecting adaption function (channel 21).

### Requirement:

- All ignition keys available. If no old ignition key is available, refer to => "Procedure in the event of loss of keys", Page 130 .

### Sequence of operations

- Insert first key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 114 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### Note:

*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*



-> Display on VAS 5051:

- From list -1- select diagnosis function "Release (PIN)".

t Display on VAS 5051	
Vehicle self-diagnosis	17 - Dash panel insert 8L0919880

Functional test		AB-DASH PANEL INSERT VDO D15	
Release (PIN)		Code 12042 Dealership number 12345	
<div style="display: flex; justify-content: space-between;"> <div style="width: 70%;"> <p>Information</p> <p>PIN is used for release of key matching/adaption in vehicle system</p> <p>PIN provided on the basis of immobilizer identification number is only valid for one day</p> </div> <div style="width: 25%; text-align: right;"> <div style="border: 1px solid black; padding: 2px 10px;">Ready</div> </div> </div>			
◀	Meas. method	Skip	<div style="border: 1px solid black; padding: 2px 10px;">Print</div> <div style="border: 1px solid black; padding: 2px 10px; margin-left: 10px;">Help</div>

- Touch "Ready" key.

t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>		17 - Dash panel insert 8L0919880	
Functional test		AB-DASH PANEL INSERT VDO D15	
Release (PIN)		Code 12042 Dealership number 12345	
<div style="display: flex;"> <div style="width: 70%;"> <p>PIN entry</p> <p>Enter PIN provided using displayed keypad</p> <p>Confirm PIN entry with Continue key ( ▶ key)</p> <div style="border: 1px solid black; padding: 10px; text-align: center; margin-top: 20px;">             Press here to display entry keypad           </div> </div> <div style="width: 30%; font-size: small; padding: 5px;">             Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express authorisation by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.           </div> </div>			
◀	Meas. method	Skip	<div style="border: 1px solid black; padding: 2px 10px;">Print</div> <div style="border: 1px solid black; padding: 2px 10px; margin-left: 10px;">Help</div> <div style="text-align: right; width: 10%;">▶</div>

- Touch key "Press here to display entry keypad".

t Display on VAS 5051									
<b>Vehicle self-diagnosis</b>		17 - Dash panel insert 8L0919880							
Functional test		AB-DASH PANEL INSERT VDO D15							
Release (PIN)		Code 12042 Dealership number 12345							
1	2	3	+		A	B	C	D	
					E	F	G	H	
4	5	6	-		I	J	K	L	
					M	N	O	P	
7	8	9	.		Q	R	S	T	
					U	V	W	X	



C	0	Q		Y	Z			
◀	Meas. method	Skip	Print	Help	▶			

- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

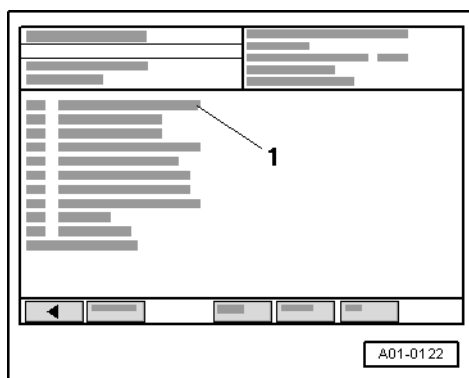
t Display on VAS 5051				
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880			
Functional test	AB-DASH PANEL INSERT VDO D15			
Release (PIN)	Code 12042 Dealership number 12345			
PIN entry				
PIN XXXXXXXX entered OK?	<div>Yes</div> <div>No</div>			
◀	Meas. method	Skip	Print	Help

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

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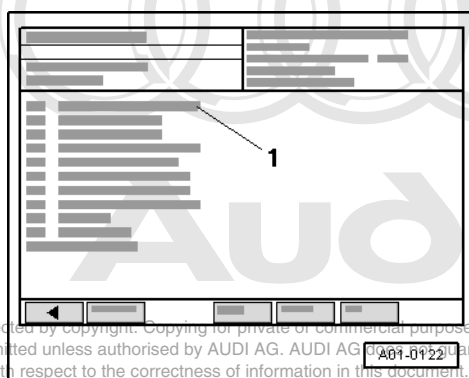
t Display on VAS 5051				
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880			
Functional test	AB-DASH PANEL INSERT VDO D15			
Release (PIN)	Code 12042 Dealership number 12345			
PIN transfer				
PIN valid Key matching/adaption can be implemented	<div>Ready</div>			
◀	Meas. method	Skip	Print	Help

- Touch "Ready" key.
- When this display appears, fault lamp in dash panel insert lights and immobilizer has been released



**Notes:**

- ◆ Heed instructions on display if fault message appears.
- ◆ -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnosis function "06 - End of output" in list -1-.
- ◆ The waiting time is doubled up to a maximum of 255 minutes after every 3 further incorrect entries.

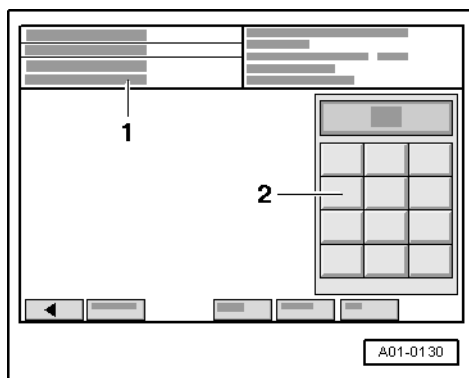


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Once immobilizer has been released:

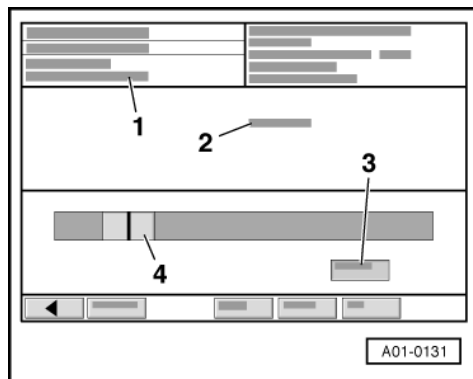
-> Display on VAS 5051:

- From list -1- select diagnosis function "10 - Adaption".



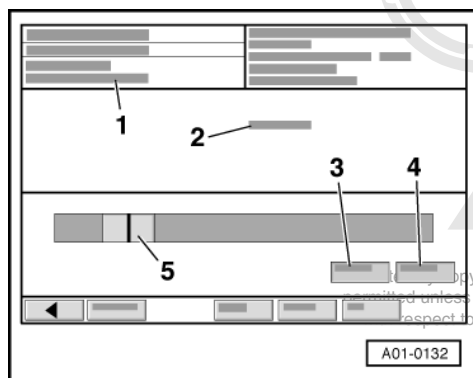
-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "21" for "Adaption channel 21" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 21
  - Read and test
  - 2 - New number of keys
  - 4 - Moving bar positioned on current adaption value, e.g. "2"
- Display shows number of ignition keys (in this case "2") matched to system



-> Display on VAS 5051:

- Enter number of keys to be matched.

Example: 4 keys including key inserted in ignition lock

#### **Note:**

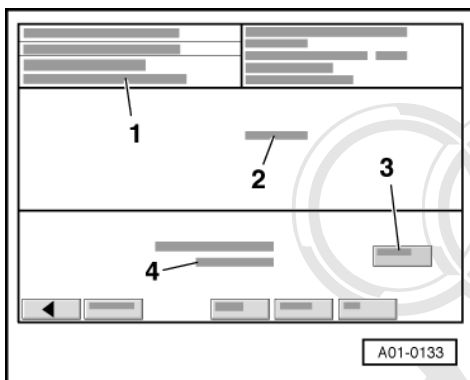
*A maximum of 8 keys can be matched.*

- Shift moving bar -5- to right or touch area to right of bar until it is positioned under number "4" (example).

#### **Note:**

*Another alternative is to touch "Keypad" key -3-, enter number "4" on keypad and confirm entry by touching Q key.*

- Touch "Save" key -4-.



-> Display on VAS 5051:

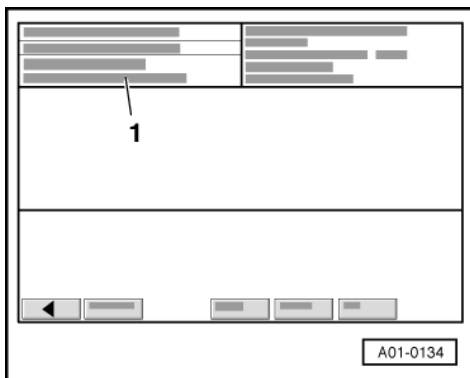
- 1 - Channel 21
- Read and test
- 2 - New number of keys
- 4 - Original value "2"
- New value "4" (example)

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- Confirm new adaption value by touching "Accept" key -3-
- Adaption is then implemented

**Note:**

*The adaption period for each key must not exceed 30 seconds, as otherwise fault lamp in dash panel insert starts to flash and entire release procedure (PIN) must be repeated.*



-> Display on VAS 5051 following adaption:

- 1 - Channel 21
- Value "4" saved
- Fault lamp in dash panel insert goes out; key in ignition lock matched
- Terminate function "10 - Adaption" by touching ◀ key.





-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".
- Switch off ignition.
- Insert next key in ignition lock and switch on ignition.
- Repeat procedure until all keys have been matched.
- On vehicle key matching, the fixed code of the respective key (transponder) is matched to the immobilizer.
- Following key matching, interrogate fault memory => Page 116 .

If there are no faults stored, then "Key matching" function has been successfully completed.

Ignition key matching is terminated automatically:

- ♦ On reaching the number of keys to be matched
- ♦ If the ignition is switched on again and left switched on for more than 1 s using a key which has already been matched (fault is stored)
- ♦ If the permitted matching time of 30 s per key as of switching on the ignition is exceeded (fault is stored)
- ♦ If a fault is stored during key matching

## 4.12 - Procedure in the event of loss of keys

- Make/order replacement ignition keys on the basis of the lock number.
- Match all vehicle keys => Page 124 .
- On vehicles with remote control, match all keys to remote control unit

=> Body Self-diagnosis; Repair Group 01; Central Locking Self-diagnosis; Matching of/cancelling remote control keys Central Locking Self-diagnosis Matching of/cancelling remote control keys

## 4.13 - Adaption following replacement of dash panel insert

### **Note:**

*The dash panel insert (with integrated immobilizer) is adapted to the engine control unit. Adaption to the engine control unit must be performed if the dash panel insert is replaced.*

### **Requirement:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

### **Sequence of operations**

- Insert old (authorised) ignition key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis at new dash panel insert => Page 114 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### **Note:**

*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*

- Match all vehicle keys => Page 124 .

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## 4.14 - Adaption following replacement of engine control unit

### Notes:

- ♦ The engine control unit is matched to the dash panel insert (with integrated immobilizer). Adaption to the immobilizer must be performed if the engine control unit is replaced.
- ♦ If there is no authorised ignition key available, all keys must be replaced=> Page 130 .

### Requirement:

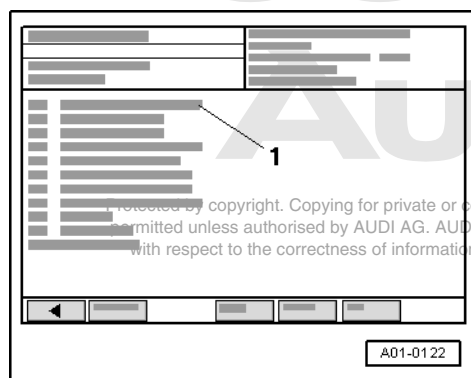
- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

### Sequence of operations

- Insert old (authorised) key in ignition lock.
- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 114 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### Note:

*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*



-> Display on VAS 5051:

- From list -1- select diagnosis function "Release (PIN)".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880
Functional test	AB-DASH PANEL INSERT VDO D15
Release (PIN)	Code 12042 Dealership number 12345
<div style="display: flex; justify-content: space-between;"> <div style="width: 70%;"> <p><b>Information</b></p> <p>PIN is used for release of key matching/adaption in vehicle system</p> <p>PIN provided on the basis of immobilizer identification number is only valid for one day</p> </div> <div style="width: 25%; text-align: center;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">Ready</div> </div> </div>	



◀	Meas. method	Skip	Print	Help
---	--------------	------	-------	------

- Touch "Ready" key.

t Display on VAS 5051					
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880				
Functional test	AB-DASH PANEL INSERT VDO D15				
Release (PIN)	Code 12042 Dealership number 12345				
PIN entry					
Enter PIN provided using displayed keypad					
Confirm PIN entry with Continue key ( ▶ key)					
Press here to display entry keypad					
◀	Meas. method	Skip	Print	Help	▶

- Touch key "Press here to display entry keypad".

t Display on VAS 5051							
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880						
Functional test	AB-DASH PANEL INSERT VDO D15						
Release (PIN)	Code 12042 Dealership number 12345						
1	2	3	+	A	B	C	D
				E	F	G	H
4	5	6	-	I	J	K	L
				M	N	O	P
7	8	9	.	Q	R	S	T
				U	V	W	X
C	0	Q		Y	Z		
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◀	Meas. method	Skip	Print	Help	▶		

- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

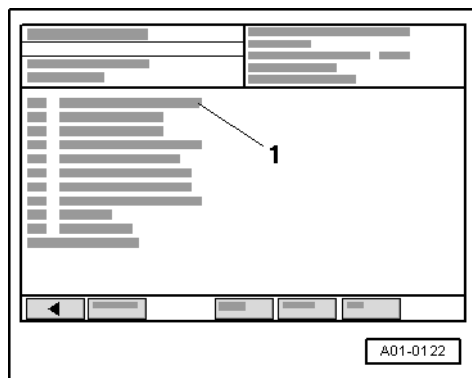
t Display on VAS 5051
-----------------------

<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880			
Functional test	AB-DASH PANEL INSERT VDO D15			
Release (PIN)	Code 12042 Dealership number 12345			
<b>PIN entry</b>				
PIN XXXXXXXX entered OK?				<input type="button" value="Yes"/>  <input type="button" value="No"/>
<input type="button" value="◀"/> <input type="button" value="Meas. method"/> <input type="button" value="Skip"/> <input type="button" value="Print"/> <input type="button" value="Help"/>				

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

t Display on VAS 5051				
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880			
Functional test	AB-DASH PANEL INSERT VDO D15			
Release (PIN)	Code 12042 Dealership number 12345			
<b>PIN transfer</b>				
PIN valid Key matching/adaption can be implemented				<input type="button" value="Ready"/>
<input type="button" value="◀"/> <input type="button" value="Meas. method"/> <input type="button" value="Skip"/> <input type="button" value="Print"/> <input type="button" value="Help"/>				

- Touch "Ready" key.
  - When this display appears, fault lamp in dash panel insert lights and immobilizer has been released



**Notes:**

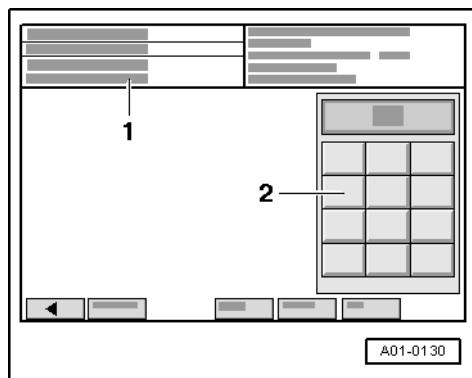
- ♦ Heed instructions on display if fault message appears.
- ♦ -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnosis function "06 - End of output" in list -1-.
- ♦ The waiting time is doubled up to a maximum of 255 minutes after every 3 further incorrect entries.



Once immobilizer has been released:

-> Display on VAS 5051:

- From list -1- select diagnosis function "10 - Adaption".

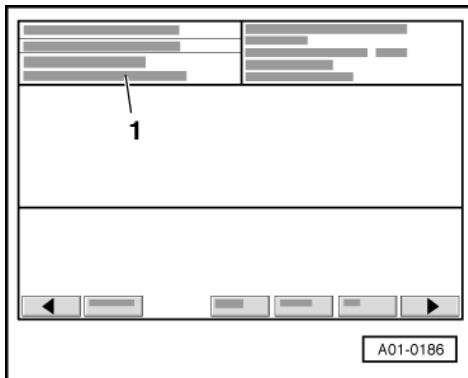


-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "00" for "Adaption channel 0" and confirm by touching Q key.



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-> Display on VAS 5051:

1 - Channel 0  
Erase learned values?

- Touch ▶ key.

Display on VAS 5051:

1 - Channel 0  
Learned values erased  
- Engine control unit identifier is stored in immobilizer and engine can be started.

## 4.15 - Emergency starting function with VAS 5051

The emergency starting function enables a stranded vehicle with disabled immobilizer to be released and driven to the nearest Audi Dealership.

### Requirements:

- Customers must be able to furnish proof of vehicle ownership by way of vehicle documents and appropriate identification.
- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

### Sequence of operations

- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 114 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### Note:

*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*





-> Display on VAS 5051:

- From list -1- select diagnosis function "Release (PIN)".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880
Functional test	AB-DASH PANEL INSERT VDO D15
Release (PIN)	Code 12042 Dealership number 12345
<b>Information</b>	
PIN is used for release of key matching/adaption in vehicle system	
PIN provided on the basis of immobilizer identification number is only valid for one day	
<div>Ready</div>	
<div>◀ Meas. method Skip Print Help</div>	

- Touch "Ready" key.


t Display on VAS 5051		Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the correctness of information in this document. Copyright by AUDI AG.	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880		
Functional test	AB-DASH PANEL INSERT VDO D15		
Release (PIN)	Code 12042 Dealership number 12345		
<b>PIN entry</b>			
Enter PIN provided using displayed keypad			
Confirm PIN entry with Continue key ( ▶ key)			
Press here to display entry keypad			
<div>◀ Meas. method Skip Print Help ▶</div>			

- Touch key  
"Press here to display entry keypad".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0919880
Functional test	AB-DASH PANEL INSERT VDO D15

Release (PIN)				Code 12042 Dealership number 12345			
1	2	3	+	A	B	C	D
				E	F	G	H
4	5	6	-	I	J	K	L
				M	N	O	P
7	8	9	.	Q	R	S	T
				U	V	W	X
C	0	Q		Y	Z		
◀	Meas. method	Skip	Print	Help	▶		

- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b> Functional test Release (PIN)	17 - Dash panel insert 8L0919880 AB-DASH PANEL INSERT VDO D15 Code 12042 Dealership number 12345
PIN entry PIN XXXXXXX entered OK?	
	
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<div style="display: flex; justify-content: flex-end; gap: 20px;"> <div style="border: 1px solid black; padding: 5px 20px;">Yes</div> <div style="border: 1px solid black; padding: 5px 20px;">No</div> </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">◀</div> <div style="text-align: center;">Meas. method</div> <div style="text-align: center;">Skip</div> <div style="text-align: center;">Print</div> <div style="text-align: center;">Help</div> <div style="text-align: center;">▶</div> </div>	

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b> Functional test Release (PIN)	17 - Dash panel insert 8L0919880 AB-DASH PANEL INSERT VDO D15 Code 12042 Dealership number 12345
PIN transfer PIN valid Key matching/adaption can be implemented	
<div style="display: flex; justify-content: flex-end; gap: 20px;"> <div style="border: 1px solid black; padding: 5px 20px;">Ready</div> </div>	



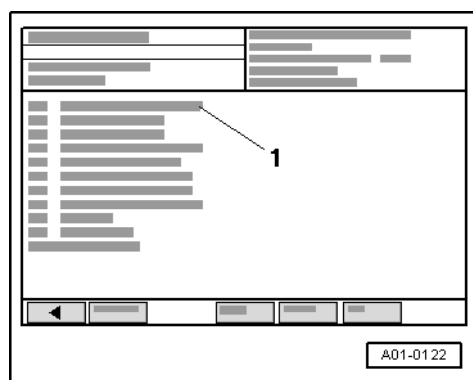
◀	Meas. method	Skip	Print	Help

- Touch "Ready" key.

**Note:**

*If release (PIN) has been successfully implemented, fault lamp lights constantly and immobilizer is released:*

- ♦ As long as engine is running and ignition key remains in lock
- ♦ For 45 minutes if ignition key remains in lock (engine not running)
- ♦ For 10 minutes if ignition key is removed



-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".
- Switch off ignition and then start engine.

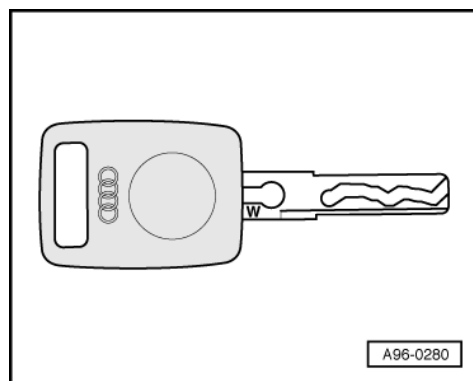
## 5 - Immobilizer self-diagnosis - immobilizer II (variable code)

### 5.1 - Immobilizer self-diagnosis - immobilizer II (variable code)

**Notes:**

- ♦ As of Model Year 1998, the Audi A3 features an immobilizer with variable code. Immobilizer servicing is identical to that for the previous version.

=> Electrical System; Repair Group 96; Servicing immobilizer Servicing immobilizer



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- ♦ -> With immobilizer II (variable code), the keys are marked with a "W".

## 5.2 - General information

### Function

The electronic immobilizer consists of the following:

- ♦ Immobilizer control unit
- ♦ Fault lamp in dash panel insert
- ♦ Reader coil at ignition lock and
- ♦ Matched ignition keys with electronics (transponder / response reader memory)

The electronic immobilizer control unit is an integral part of the dash panel insert, i.e. the dash panel insert has to be replaced in the event of a defective control unit.

=> Electrical System; Repair Group 90

The immobilizer is a system designed to enable/disable the engine control unit (via W-wire).

The transponder code consists of a fixed code (as with old system) and an additional variable code. This changes whenever the vehicle is started and thus prevents the transponder being copied.

Each immobilizer has a different arithmetic rule for the variable code, which remains the same over the entire service life. On vehicle key matching, the immobilizer writes this arithmetic rule into the key transponder and at the same time learns the respective transponder fixed code.

The fixed code identifies each individual key, thus enabling a lost key to be disabled. Whenever the ignition is switched on, the immobilizer reader coil reads out the fixed transponder code for the key and then the variable code and checks whether this key is authorised for starting.

The fault lamp lights briefly (max. 3 seconds) and then goes out if use is being made of an authorised vehicle key.

The fault lamp flashes continuously when the ignition is switched on if an unauthorised vehicle key is used or in the event of a system fault.

The electronic immobilizer is provided with comprehensive self-diagnosis. Fault codes are stored in the fault memory of the immobilizer if faults occur in system components. Faults can be determined using the vehicle diagnostic, testing and information system VAS 5051.

**Immobilizer self-diagnosis can now only be implemented using the vehicle diagnostic, testing and information system VAS 5051**

For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits.

The PIN can only be used with the vehicle diagnostic, testing and information system VAS 5051 as of basic CD version V02.00.

The 7-digit PIN must be obtained by way of the appropriate Regional Sales Centre/importer on the basis of the 14-position immobilizer/engine control unit identification number.

The 14-position immobilizer/engine control unit identification number can be read out with the self-diagnosis function.

The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.



The 4- digit PIN can no longer be requested in countries in which the online and fax call procedure has been switched to the 7-digit PIN.

Attention:

- ♦ Check data of vehicle diagnostic, testing and information system VAS 5051 with regard to Sales Centre/ importer and dealership number, as well as date and time.
- ♦ Immobilizer adaption function cannot be implemented with incorrect data.

### Notes on use/matching of vehicle keys

The engine will only start if use is made of an authorised key, i.e. of a key matched to the immobilizer.

Vehicle key matching => Page **150** involves matching all vehicle keys, i.e. including spare and emergency keys, to the immobilizer.

Matching must be performed for all vehicle keys if new or additional keys are required.

If, for any reason, e.g. loss of keys en route, it is not possible to perform matching for all vehicle keys, customers are to be informed of the necessity of subsequent matching for all keys.

It is particularly important to re-match all the remaining vehicle keys if any have been lost to ensure that the lost key is no longer authorised to start the vehicle.

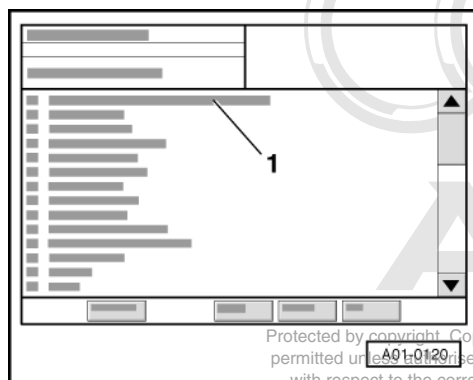
## 5.3 - Starting immobilizer self-diagnosis

### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page **1**
- Ignition on

Attention:

Heed safety precautions => Page **1**.



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### Sequence of operations

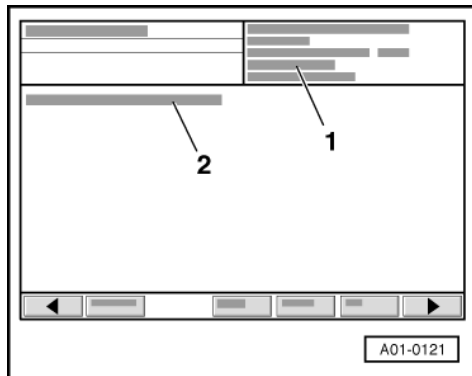
-> Display on VAS 5051:

- From list -1- select vehicle system "17 - Dash panel insert".

**Note:**

The joint address word for the dash panel insert has to be used, as the immobilizer is an integral part of the dash panel insert.

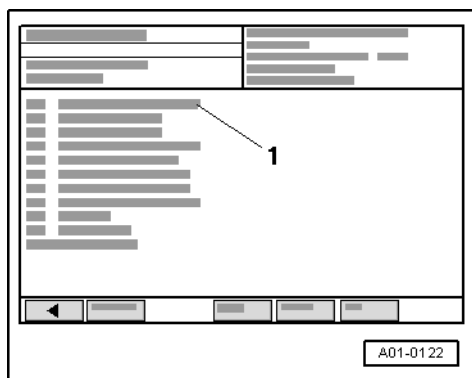
- Wait until next display appears.



-> Display on VAS 5051:

- 1 - Dash panel insert control unit identification => Page 5
- 2 - Immobilizer control unit identification

Immobilizer control unit identification (example)	
Immobilizer ident no.: AUZ7Z0Y1132013 1)	1) 14-position immobilizer identification no.



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- Touch ▶ key.

-> Display on VAS 5051:

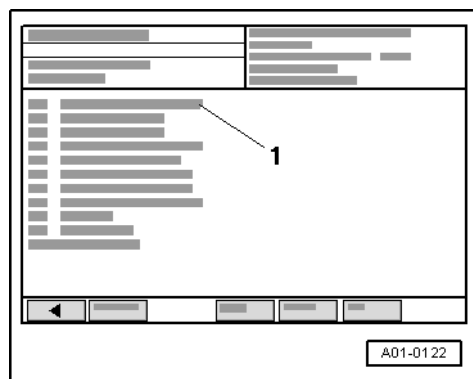
- 1 - List of diagnosis functions:

Diagnosis functions	Page
02 Interrogating fault memory	142
03 Final control diagnosis	-
04 Basic setting	-
05 Erasing fault memory	144
06 End of output	146
07 Encoding control unit	-
08 Reading measured value block	146
09 Reading individual measured value	-



10 Adaption	149
11 Login procedure	-
Vehicle ident. no. transfer	-
Release (PIN)	157
Channel 50 adaption (PIN)	-

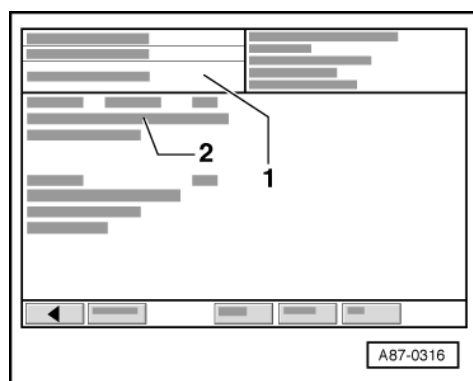
## 5.4 - Interrogating fault memory



### Note:

*Fault information displayed is not updated constantly, but rather only on starting self-diagnosis/implementing function 05 "Erasing fault memory".*

- Start immobilizer self-diagnosis => Page 140 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "02 - Interrogating fault memory".



-> Display on VAS 5051:

- 1 - Content of fault memory:
  - 0 faults detected
- Or
- X faults detected
- 2 - Fault
  - Fault code
  - Fault location



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- Type of fault



#### A - Faults detected:

- Print out information on screen or self-diagnosis log.
- Terminate function "02 - Interrogating fault memory" by touching  
◀ key.

-> Display on VAS 5051:

- Eliminate fault(s) in line with fault table => Page 143 .
- Select diagnosis function "02 - Interrogating fault memory" again in list and erase fault memory => Page 144 .
- Select diagnosis function "06 - End of output" in list => Page 146 .

#### B - No fault detected:

- Select diagnosis function "06 - End of output" in list => Page 146 .

## 5.5 - Fault table

#### Notes:

- ◆ Faults occurring in monitored sensors or components are stored in fault memory together with an indication of the type of fault.
- ◆ The fault table is arranged according to the 5-digit fault codes on the left.
- ◆ Dash panel insert faults may also be displayed, as the immobilizer is an integral part of the dash panel insert.
- ◆ All static and sporadic faults are stored in the fault memory:  
A fault is recognised as being static if it is present for at least 2 seconds. If a fault is then no longer present, it is stored as being sporadic and "sporadic" also appears on display.
- ◆ After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.
- ◆ Sporadic faults are erased if they do not re-occur in the course of 50 driving cycles (ignition on for at least 5 minutes, vehicle speed greater than 30 km/h).
- ◆ Do not immediately replace components indicated as being defective by VAS 5051, but rather: Start by checking wiring and connectors to these components in line with current flow diagram. Also use current flow diagram to check earth connections. This is particularly important if faults are output as being "sporadic".
- ◆ On completion of repair work, fault memory is to be interrogated again and erased.

#### Attention:

As an additional step on completion of repair work, fault memory of engine control unit is to be read out separately and entry "Engine control unit blocked" erased. Check other faults stored and eliminate if necessary.

Display on VAS 5051	Possible cause of trouble	Fault remedy
01128		



Display on VAS 5051	Possible cause of trouble	Fault remedy
Immobilizer reading spool -D2	- Connector not attached or fault in reader coil and wiring	- Check connector and reader coil as well as wiring (visual inspection) and replace reader coil if necessary => Electrical System; Repair Group 96
	- Immobilizer control unit (integrated into dash panel insert) defective	- Erase fault memory => Page 144 , interrogate again and replace dash panel insert if necessary => Electrical System; Repair Group 90

Display on VAS 5051	Possible cause of trouble	Fault remedy
01176 Key Signal too low	- Reader coil or wire defective (contact resistance/loose contact)	- Check reader coil as well as wiring and connector (visual inspection) and replace reader coil if necessary => Electrical System; Repair Group 96
	- No electronics in ignition key (transponder) or not functioning	- Replace ignition key, re-match all ignition keys and check operation => Page 150
Not authorised	- Mechanically suitable ignition key not matched	- Re-match all ignition keys and check operation => Page 150

Display on VAS 5051	Possible cause of trouble	Fault remedy
01177 Engine control unit Not authorised	- Engine control unit not adapted	- Adapt engine control unit =>Page 157
	- Open circuit in wiring or short circuit at W-wire	- Use current flow diagram to perform fault-finding
01179 Incorrect key programming	- Ignition keys not properly matched	- Re-match all ignition keys with entry of PIN and check operation=>Page 150
65535 Control unit defective	- Dash panel insert (with integrated immobilizer) defective	- Replace dash panel insert => Electrical System; Repair Group 90

## 5.6 - Erasing fault memory

### Notes:

- ♦ If fault memory cannot be erased, interrogate fault memory again and eliminate fault.
- ♦ After erasing fault memory, faults are not updated until ignition has been switched off and on again.

### Requirements:

- Fault memory interrogated => Page 142
- All faults eliminated

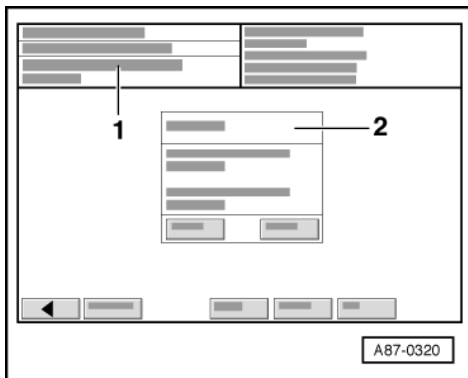


### Sequence of operations

After fault memory interrogation:

-> Display on VAS 5051:

- From list -1- select diagnosis function "05 - Erasing fault memory".



-> Display on VAS 5051:

- 1 - - No display (prior to erasing)
- Or
- Fault memory erased



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### Note:

*If the following message appears in display zone -1-: "Fault memory not yet interrogated", this means that sequence of operations has not been precisely observed. Fault memory cannot be erased until it has been interrogated.*

- 2 - Note:
- Is function to be implemented?
- Note: Data will be erased!

- Touch "OK" key in display -2-.
- Terminate function "05 - Erasing fault memory" by touching ◀ key.
- Interrogate fault memory again after performing repair work.

### Note:

*This erases faults stored during fault elimination e.g. on account of connectors being unplugged.*



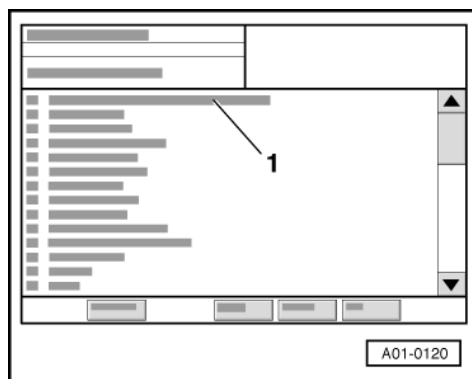
## 5.7 - End of output



### Sequence of operations

-> Display on VAS 5051:

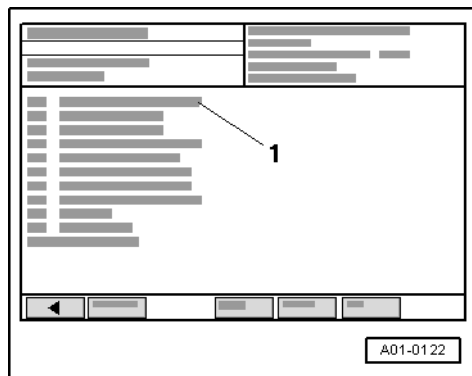
- From list -1- select diagnosis function "06 - End of output".



-> Display on VAS 5051:

- Switch off ignition and unplug diagnostic connector when this display appears.

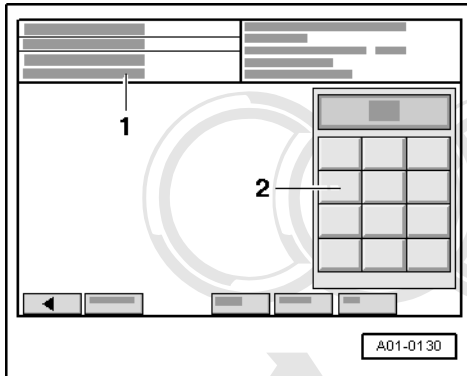
## 5.8 - Reading measured value block





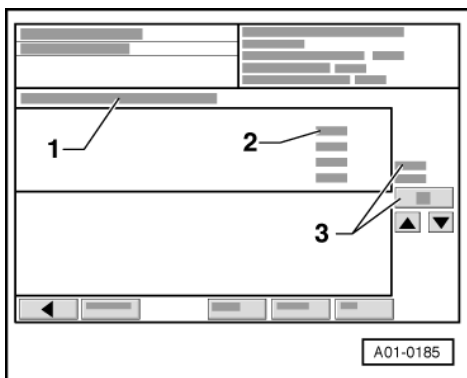
### Sequence of operations

- Start immobilizer self-diagnosis => Page 140 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "08 - Reading measured value block".



-> Display on VAS 5051:

- 1 - Enter display group
- Use keypad 2, to enter required three-digit display group number  
=>List of display groups, Page 148 and confirm entry by touching Q key.



-> Display on VAS 5051:

- 1 - Reading measured value block
- 2 - Display zone 1
- Display zone 2
- Display zone 3
- Display zone 4
- 3 - Display group X

### Notes:

- ◆ Display remains blank if a display zone is not used.
- ◆ Proceed as follows to switch to a different display group:

Display group	VAS 5051
Up	Press s key



Display group	VAS 5051
Down	Press t key

- Terminate function "08 - Reading measured value block" by touching **t** key.

#### List of display groups

Display group number	Indicated on display
020 1)	1 = 1st and 2nd ident no. position 2 = 3rd and 4th ident no. position 3 = 5th and 6th ident no. position 4 = 7th and 8th ident no. position
021 1)	9 = 9th and 10th ident no. position 2 = 11th and 12th ident no. position 3 = 13th and 14th ident no. position 4 = Not used
022	1 = Starting authorised 2 = Engine control unit response 3 = Key status OK 4 = Number of matched keys
023 1)	1 = Variable code authorised 2 = Key status (transponder) 3 = Fixed code authorised 4 = Not used

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- 1) Not applicable to more recent versions

#### Measured value block 020

Display group 20				• Indicated on display
AU	Z7	Z0	Y1	• Display zones 1 ... 4
				7th and 8th ident no. position
				5th and 6th ident no. position
				3rd and 4th ident no. position
				1st and 2nd ident no. position

#### Measured value block 021

Display group 21				• Indicated on display
13	20	13	-	• Display zones 1 ... 4
				13th and 14th ident no. position
				11th and 12th ident no. position
				9th and 10th ident no. position

### Measured value block 022

Display group 22				◀ Indicated on display
X	X	X	X	◀ Display zones 1 ... 4
				Number of matched keys
				▪ Up to max. 8 keys
				Key status OK
				▪ 1 = Yes
				▪ 0 = No, i.e. not possible to read formally correct transponder fixed code (regardless of whether authorised or not)
				Engine control unit response 1)
				▪ 1 = Yes
				▪ 0 = No, i.e. fault in engine control unit or wiring
				Starting authorised
				▪ 1 = Yes
				▪ 0 = No, i.e. vehicle key not/incorrectly matched or engine control unit incorrectly encoded/defective

1) Depending on engine control unit, measured value block is set for 10 ... 30 s after switching off engine and ignition to "0 = Engine control unit response no", i.e. engine control unit released and no fault present. Start self-diagnosis again as a check => Page **140**.

### Measured value block 023

Display group 23				◀ Indicated on display
X	X	X	-	◀ Display zones 1 ... 4
				Fixed code authorised
				▪ 1 = Yes
				▪ 0 = No, i.e. transponder fixed code of key not authorised
				Arithmetic rule in key can be overwritten
				▪ 1 = No
				▪ 0 = Yes
				Variable code authorised
				▪ 1 = Yes
				▪ 0 = No, i.e. variable code not authorised (arithmetic rule for variable code in key not the same as in dash panel insert)

## 5.9 - Adaption

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### Note:

*Adaption function can only be implemented after establishing immobilizer PIN => Establishing PIN, Page **150**.*

The adaption function can be used to make and save the following changes:

- ◆ Matching of vehicle keys => Page **150**
- ◆ Adaption following replacement of engine control unit=>Page **157**
- ◆ Adaption following replacement of dash panel insert => Page **156**

## 5.10 - Establishing PIN

For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits.

The PIN can only be used with the vehicle diagnostic, testing and information system VAS 5051 as of basic CD version V02.00.

The 7-digit PIN must be obtained by way of the appropriate Regional Sales Centre/importer on the basis of the 14-position immobilizer/engine control unit identification number.

The 14-position immobilizer/engine control unit identification number can be read out with the self-diagnosis function.

The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.

The 4- digit PIN can no longer be requested in countries in which the online and fax call procedure has been switched to the 7-digit PIN.

## 5.11 - Matching of vehicle keys

### Notes:

- ♦ If new or additional ignition keys are required, they have to be matched to the immobilizer.
- ♦ All keys - including the existing authorised ones - have to be re-matched.
- ♦ It is particularly important to re-match all the remaining vehicle keys if any have been lost to ensure that the lost key is no longer authorised to start the vehicle.
- ♦ If matching cannot be performed for all keys, for example when matching is required en route, customers are to be informed of the necessity of subsequent re-matching at their local Audi Dealership.
- ♦ The number of keys already matched is displayed following selection of adaption function (channel 21) and in measured value block 022.
- ♦ Once a key has been matched, it is blocked and cannot be matched to any other immobilizer system.

### Requirement:

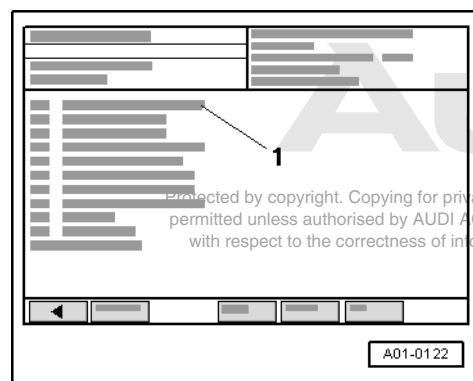
- All ignition keys available. If no old ignition key is available, refer to => "Procedure in the event of loss of keys", Page 156 .

### Sequence of operations

- Insert first key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 140 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### Note:

*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*



-> Display on VAS 5051:

- From list -1- select diagnosis function "Release (PIN)".

t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930		
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14		
Release (PIN)	Code 5044 Dealership number 12345		
<div style="display: flex; justify-content: space-between;"> <div style="width: 65%;"> <p><b>Information</b></p> <p>PIN is used for release of key matching/adaption in vehicle system</p> <p>PIN provided on the basis of immobilizer identification number is only valid for one day</p> </div> <div style="width: 30%; text-align: center;"> <p>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p> </div> <div style="width: 5%;"> <p><b>Ready</b></p> </div> </div>			
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div>			

- Touch "Ready" key.

t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930		
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14		
Release (PIN)	Code 5044 Dealership number 12345		
<div style="display: flex; justify-content: space-between;"> <div style="width: 65%;"> <p><b>PIN entry</b></p> <p>Enter PIN provided using displayed keypad</p> <p>Confirm PIN entry with Continue key ( ▶ key)</p> <div style="border: 1px solid black; padding: 10px; text-align: center; margin-top: 20px;"> <p>Press here to display entry keypad</p> </div> </div> <div style="width: 30%;"></div> </div>			
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> <span>▶</span> </div>			

- Touch key "Press here to display entry keypad".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14

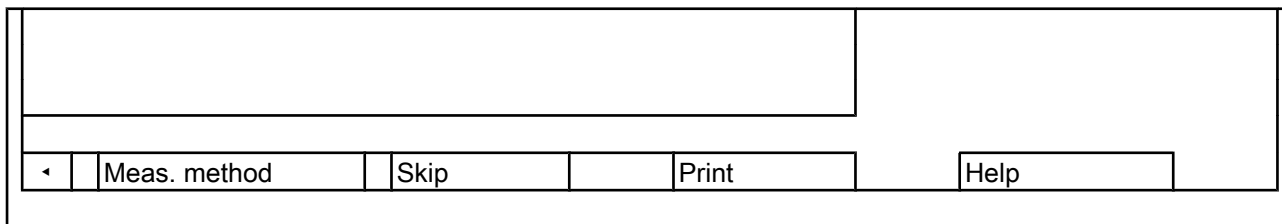
Release (PIN)				Code 5044 Dealership number 12345			
1	2	3	+	A	B	C	D
				E	F	G	H
4	5	6	-	I	J	K	L
				M	N	O	P
7	8	9	.	Q	R	S	T
				U	V	W	X
C	0	Q		Y	Z		
<	Meas. method	Skip	Print	Help	>		

- Use keypad to enter previously established 7-digit PIN.
  - Touch ► key.
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t Display on VAS 5051	
Vehicle self-diagnosis	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14
Release (PIN)	Code 5044 Dealership number 12345
PIN entry	
PIN XXXXXXXX entered OK? <div style="float: right;"> <input type="text" value="Yes"/>   <input type="text" value="No"/> </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>&lt;</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div>	

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

t Display on VAS 5051	
Vehicle self-diagnosis	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14
Release (PIN)	Code 5044 Dealership number 12345
PIN transfer	
PIN valid Key matching/adaption can be implemented	Ready

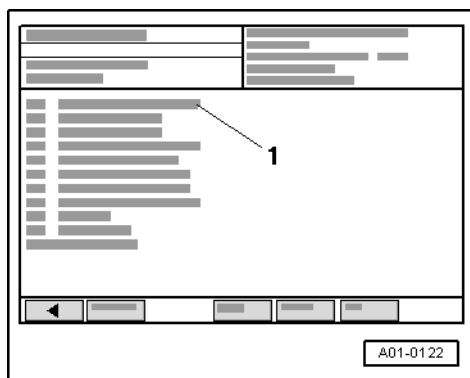


- Touch "Ready" key.
- When this display appears, fault lamp in dash panel insert lights and immobilizer has been released



**Notes:**

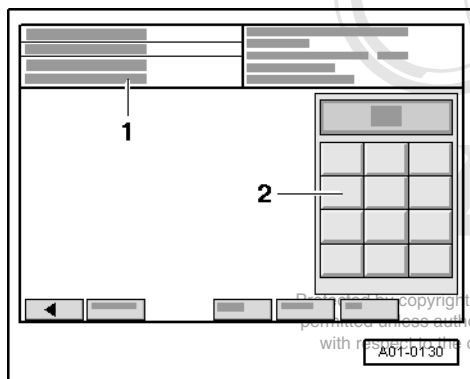
- ◆ Heed instructions on display if fault message appears.
- ◆ -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnosis function "06 - End of output" in list -1-.
- ◆ The waiting time is doubled up to a maximum of 255 minutes after every 3 further incorrect entries.



Once immobilizer has been released:

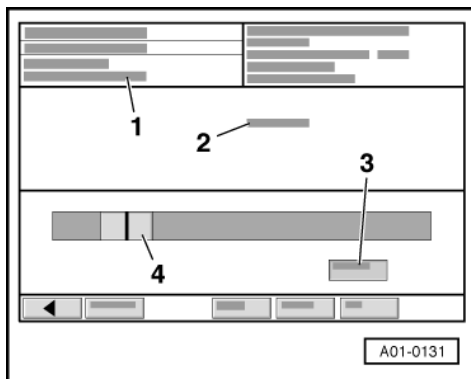
-> Display on VAS 5051:

- From list -1- select diagnosis function "10 - Adaption".



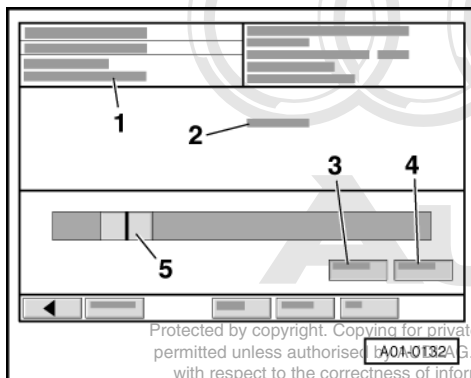
-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "21" for "Adaption channel 21" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 21
  - Read and test
  - 2 - New number of keys
  - 4 - Moving bar positioned on current adaption value, e.g. "2"
- Display shows number of ignition keys (in this case "2") matched to system



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-> Display on VAS 5051:

- Enter number of keys to be matched.

Example: 4 keys including key inserted in ignition lock

#### Note:

*A maximum of 8 keys can be matched.*

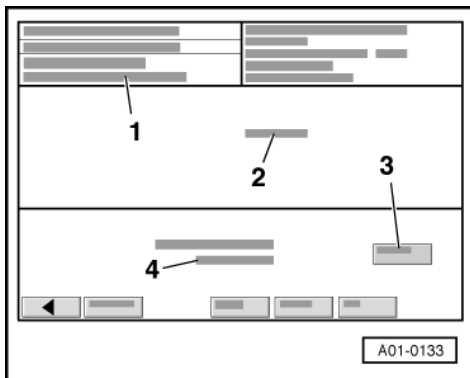
- Shift moving bar -5- to right or touch area to right of bar until it is positioned under number "4" (example).

#### Note:

*Another alternative is to touch "Keypad" key -3-, enter number "4" on keypad and confirm entry by touching Q key.*

- Touch "Save" key -4-.





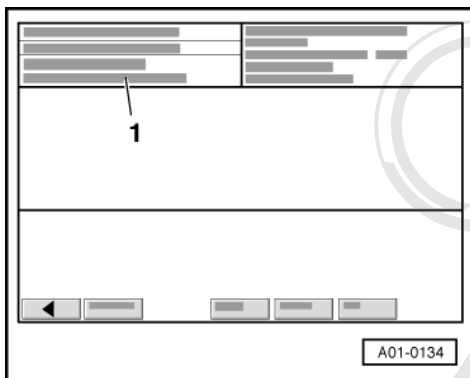
-> Display on VAS 5051:

- 1 - Channel 21
- Read and test
- 2 - New number of keys
- 4 - Original value "2"
- New value "4" (example)

- Confirm new adaption value by touching "Accept" key -3-
- Adaption is then implemented

**Note:**

*The adaption period for each key must not exceed 30 seconds, as otherwise fault lamp in dash panel insert starts to flash and entire release procedure (PIN) must be repeated.*



-> Display on VAS 5051 following adaption:

- 1 - Channel 21
- Value "4" saved
- Fault lamp in dash panel insert goes out; key in ignition lock matched

- Terminate function "10 - Adaption" by touching ◀ key.





-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".
- Switch off ignition.
- Insert next key in ignition lock and switch on ignition. Fault lamp lights when ignition is switched on and goes out after approx. 1 second, indicating that this key has also been matched.
- Repeat procedure until all keys have been matched. With the last key, the fault lamp goes out approx. 2 s following successful matching and a brief confirmation signal is given (lamp off for 0.5 s, lamp on for 0.5 s, lamp off).
- Following key matching, interrogate fault memory => Page 142 .

If there are no faults stored, then "Key matching" function has been successfully completed.

Ignition key matching is terminated automatically:

- ♦ On reaching the number of keys to be matched
- ♦ If the ignition is switched on again and left switched on for more than 1 s using a key which has already been matched (fault is stored)
- ♦ If the permitted matching time of 30 s per key as of switching on the ignition is exceeded (fault is stored)
- ♦ If a fault is stored during key matching

## 5.12 - Procedure in the event of loss of keys

- Make/order replacement ignition keys on the basis of the lock number.
- Match all vehicle keys => Page 150 .
- On the appropriate vehicles, match all remote control keys to central locking control unit.

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=> Body Self-diagnosis; Repair Group 01; Central Locking Self-diagnosis; Matching of/cancelling remote control keys Central Locking Self-diagnosis Matching of/cancelling remote control keys

## 5.13 - Adaption following replacement of dash panel insert

### **Note:**

*The dash panel insert (with integrated immobilizer) is adapted to the engine control unit. Adaption to the engine control unit must be performed if the dash panel insert is replaced.*

### **Requirement:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

### **Sequence of operations**

- Insert old (authorised) ignition key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis at new dash panel insert => Page 140 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### **Note:**

*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*

- Match all vehicle keys => Page 150 .

## 5.14 - Adaption following replacement of engine control unit

### Notes:

- ♦ The engine control unit is matched to the dash panel insert (with integrated immobilizer). Adaption to the immobilizer must be performed if the engine control unit is replaced.
- ♦ If there is no authorised ignition key available, all keys must be replaced=> Page 156 .

### Requirement:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

### Sequence of operations

- Insert old (authorised) key in ignition lock.
- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 140 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### Note:

*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*



-> Display on VAS 5051:

- From list -1- select diagnosis function "Release (PIN)".

t Display on VAS 5051	
Vehicle self-diagnosis	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14
Release (PIN)	Code 5044 Dealership number 12345
Information	
PIN is used for release of key matching/adaption in vehicle system	
PIN provided on the basis of immobilizer identification number is only valid for one day	
Ready	



◀	Meas. method	Skip	Print	Help
---	--------------	------	-------	------

- Touch "Ready" key.

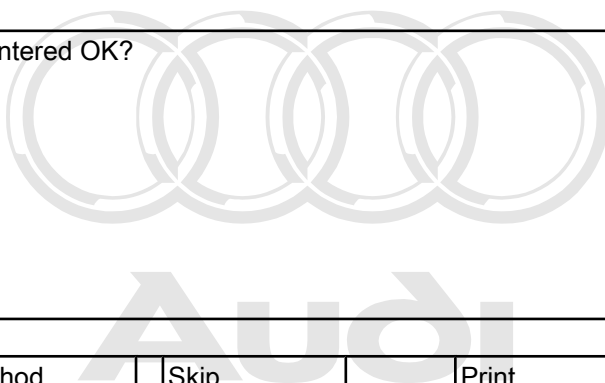
t Display on VAS 5051					
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930				
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14				
Release (PIN)	Code 5044 Dealership number 12345				
PIN entry					
Enter PIN provided using displayed keypad					
Confirm PIN entry with Continue key ( ▶ key)					
Press here to display entry keypad					
◀	Meas. method	Skip	Print	Help	▶

- Touch key "Press here to display entry keypad".

t Display on VAS 5051							
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930						
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14						
Release (PIN)	Code 5044 Dealership number 12345						
1	2	3	+	A	B	C	D
				E	F	G	H
4	5	6	-	I	J	K	L
				M	N	O	P
7	8	9		Q	R	S	T
				U	V	W	X
C	0	Q		Y	Z		
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◀	Meas. method	Skip	Print	Help	▶		

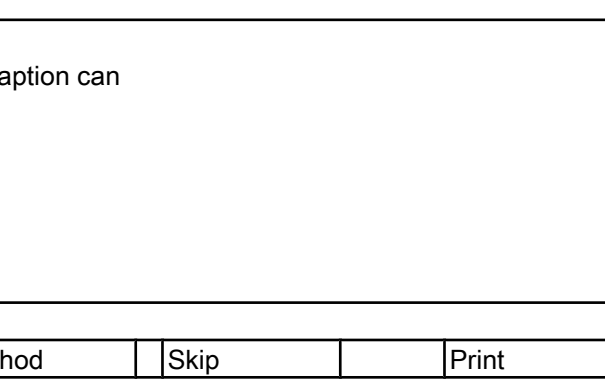
- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

t Display on VAS 5051
-----------------------

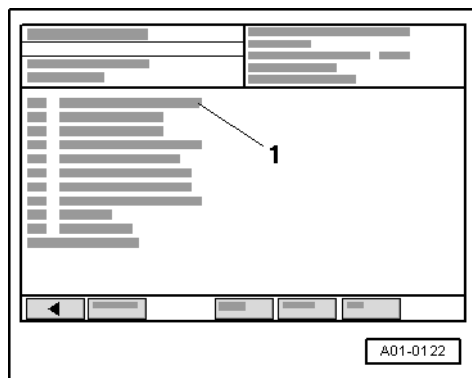
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930		
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14		
Release (PIN)	Code 5044 Dealership number 12345		
<b>PIN entry</b>			
PIN XXXXXXXX entered OK?		<input type="button" value="Yes"/>	
		<input type="button" value="No"/>	
			
◀	Meas. method	Skip	Print
			Help

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- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

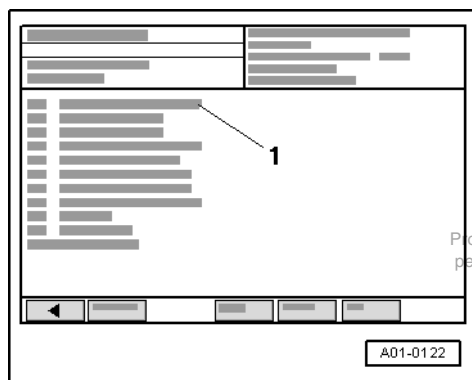
<b>t Display on VAS 5051</b>			
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930		
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14		
Release (PIN)	Code 5044 Dealership number 12345		
<b>PIN transfer</b>			
PIN valid		<input type="button" value="Ready"/>	
Key matching/adaption can be implemented			
			
◀	Meas. method	Skip	Print
			Help

- Touch "Ready" key.
  - When this display appears, fault lamp in dash panel insert lights and immobilizer has been released



### Notes:

- Heed instructions on display if fault message appears.
- -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnosis function "06 - End of output" in list -1-.
- The waiting time is doubled up to a maximum of 255 minutes after every 3 further incorrect entries.

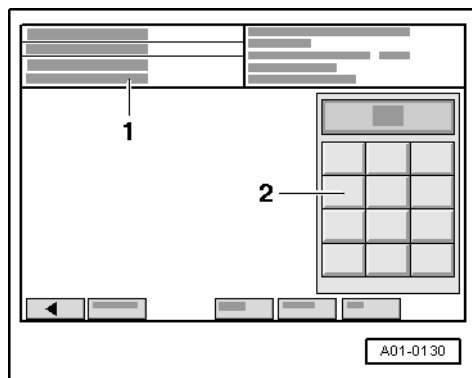


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Once immobilizer has been released:

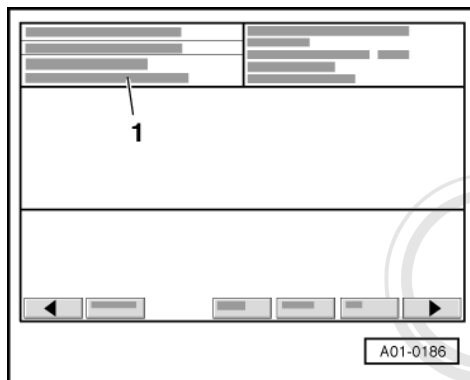
-> Display on VAS 5051:

- From list -1- select diagnosis function "10 - Adaption".



-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "00" for "Adaption channel 0" and confirm by touching Q key.



-> Display on VAS 5051:

1 - Channel 0  
Erase learned values?

- Touch ▶ key.

Display on VAS 5051:

1 - Channel 0  
Learned values erased

- Engine control unit identifier is stored in immobilizer and engine can be started.

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## 5.15 - Emergency starting function with VAS 5051

The emergency starting function enables a stranded vehicle with disabled immobilizer to be released and driven to the nearest Audi Dealership.

### **Requirements:**

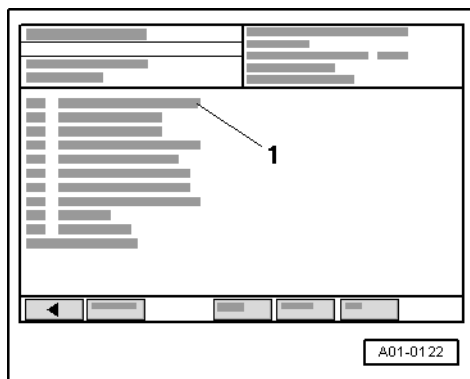
- Customers must be able to furnish proof of vehicle ownership by way of vehicle documents and appropriate identification.
- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

### **Sequence of operations**

- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 140 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### **Note:**

*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*





-> Display on VAS 5051:

- From list -1- select diagnosis function "Release (PIN)".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14
Release (PIN)	Code 5044 Dealership number 12345
Information	
PIN is used for release of key matching/adaption in vehicle system	
PIN provided on the basis of immobilizer identification number is only valid for one day	
Ready	
<div>◀ Meas. method Skip Print Help</div>	

- Touch "Ready" key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14
Release (PIN)	Code 5044 Dealership number 12345
PIN entry	
Enter PIN provided using displayed keypad	
Confirm PIN entry with Continue key ( ▶ key)	
Press here to display entry keypad	
<div>◀ Meas. method Skip Print Help ▶</div>	

- Touch key  
"Press here to display entry keypad".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14



Release (PIN)				Code 5044 Dealership number 12345			
1	2	3	+	A	B	C	D
				E	F	G	H
4	5	6	-	I	J	K	L
				M	N	O	P
7	8	9	.	Q	R	S	T
				U	V	W	X
C	0	Q		Y	Z		
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> <span>▶</span> </div>							

- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

**t Display on VAS 5051**

<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14
Release (PIN)	Code 5044 Dealership number 12345

**PIN entry**

PIN XXXXXXX entered OK?

Yes

No

◀
Meas. method
Skip
Print
Help

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

**t Display on VAS 5051**

<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920930
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D14
Release (PIN)	Code 5044 Dealership number 12345

**PIN transfer**

PIN valid

Key matching/adaption can be implemented

Ready



◀	Meas. method	Skip	Print	Help

- Touch "Ready" key.

**Note:**

*If release (PIN) has been successfully implemented, fault lamp lights constantly and immobilizer is released:*

- ♦ As long as engine is running and ignition key remains in lock
- ♦ For 45 minutes if ignition key remains in lock (engine not running)
- ♦ For 10 minutes if ignition key is removed



-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".
- Switch off ignition and then start engine.

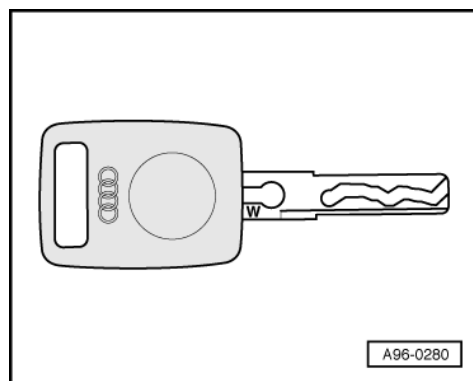
## 6 - Immobilizer self-diagnosis - immobilizer III

### 6.1 - Immobilizer self-diagnosis - immobilizer III

**Notes:**

- ♦ As of week 18/00, the Audi A3 is fitted with immobilizer III. In contrast to immobilizer II, immobilizer III features active involvement of engine control unit in evaluation and monitoring process. The immobilizer control unit is integrated into the dash panel insert.

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- ◆ -> With immobilizer III, the keys are marked with a "W". As with immobilizer II, the code is again made up of a fixed code and a variable code component.

## 6.2 - General information

### Function

Immobilizer III comprises:

- ◆ Adapted immobilizer control unit (integrated into dash panel insert)
- ◆ Fault lamp in dash panel insert
- ◆ Reader coil at ignition lock
- ◆ Adapted engine control unit and
- ◆ Matched ignition keys with electronics (transponder)

The electronic immobilizer control unit is an integral part of the dash panel insert, i.e. the dash panel insert has to be replaced in the event of a defective control unit.

=> Electrical System; Repair Group 90

The immobilizer is a system designed to enable/disable the engine control unit (via CAN wire).

The transponder code consists of a fixed code and a variable code. This changes whenever the vehicle is started and thus prevents the transponder being copied.

Each immobilizer has a different arithmetic rule for the variable code, which remains the same over the entire service life. On vehicle key matching, the immobilizer writes this arithmetic rule into the key transponder and at the same time learns the respective transponder fixed code.

The fixed code identifies each individual key, thus enabling a lost key to be disabled. Whenever the ignition is switched on, the immobilizer reader coil reads out the fixed transponder code for the key and then the variable code and checks whether this key is authorised for starting.

The fault lamp lights briefly (max. 3 seconds) and then goes out if use is being made of an authorised vehicle key.

The fault lamp flashes continuously when the ignition is switched on if an unauthorised vehicle key is used or in the event of a system fault.

The electronic immobilizer is provided with comprehensive self-diagnosis. Fault codes are stored in the fault memory of the immobilizer if faults occur in system components. Faults can be determined using the vehicle diagnostic, testing and information system VAS 5051.

### **Immobilizer self-diagnosis can now only be implemented using the vehicle diagnostic, testing and information system VAS 5051**

For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits.

The PIN can only be used with the vehicle diagnostic, testing and information system VAS 5051 as of basic CD version V02.00.

The 7-digit PIN must be obtained by way of the appropriate Regional Sales Centre/importer on the basis of the 14-position immobilizer/engine control unit identification number.

The 14-position immobilizer/engine control unit identification number can be read out with the self-diagnosis function.

The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.



The 4- digit PIN can no longer be requested in countries in which the online and fax call procedure has been switched to the 7-digit PIN.

**Attention:**

- ♦ Check data of vehicle diagnostic, testing and information system VAS 5051 with regard to Sales Centre/ importer and dealership number, as well as date and time.
- ♦ Immobilizer adaption function cannot be implemented with incorrect data.

### Notes on use/matching of vehicle keys

The engine will only start if use is made of an authorised key, i.e. of a key matched to the immobilizer.

Vehicle key matching => Page 176 involves matching all vehicle keys, i.e. including spare and emergency keys, to the immobilizer.

Matching must be performed for all vehicle keys if new or additional keys are required.

If, for any reason, e.g. loss of keys en route, it is not possible to perform matching for all vehicle keys, customers are to be informed of the necessity of subsequent matching for all keys.

It is particularly important to re-match all the remaining vehicle keys if any have been lost to ensure that the lost key is no longer authorised to start the vehicle.

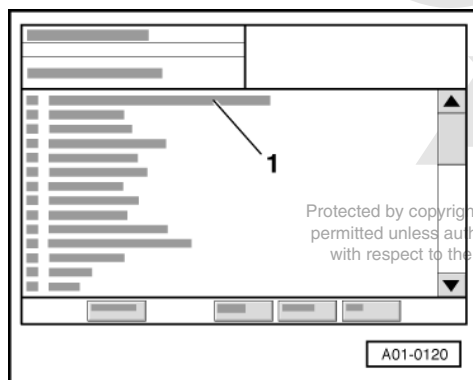
## 6.3 - Starting immobilizer self-diagnosis

### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Ignition on

**Attention:**

Heed safety precautions => Page 1 .



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### Sequence of operations

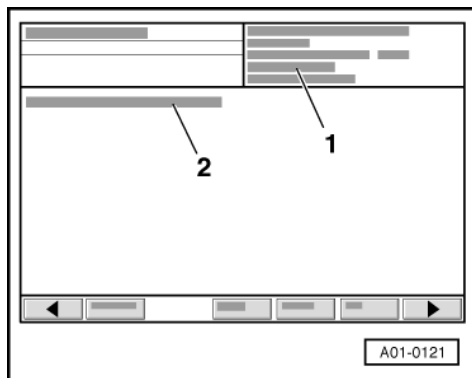
-> Display on VAS 5051:

- From list -1- select vehicle system "17 - Dash panel insert".

**Note:**

The joint address word for the dash panel insert has to be used, as the immobilizer is an integral part of the dash panel insert.

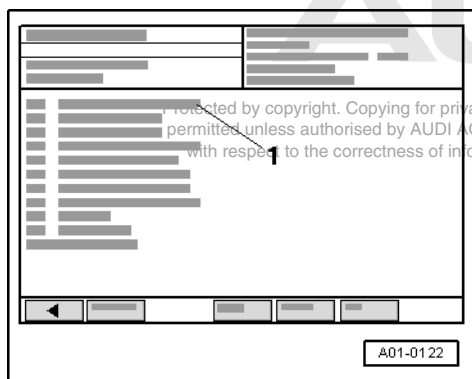
- Wait until next display appears.



-> Display on VAS 5051:

- 1 - Dash panel insert control unit identification => Page 48
- 2 - Immobilizer control unit identification

Immobilizer control unit identification (example)		
WAUZZZ8L42A1064321 1) AUZ7Z0X1137197 2)		
	1)	17-position vehicle identification no. (chassis number)
	2)	14-position immobilizer identification no.



- Touch ▶ key.

-> Display on VAS 5051:

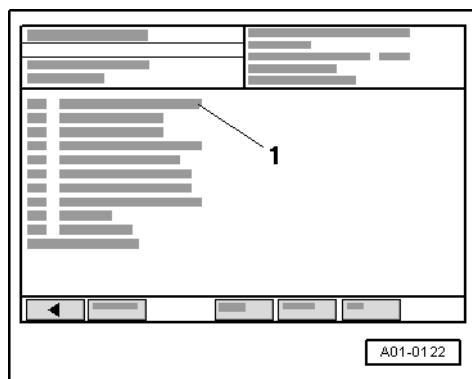
- 1 - List of diagnosis functions:

Diagnosis functions	Page
02 Interrogating fault memory	168
03 Final control diagnosis	-
04 Basic setting	-
05 Erasing fault memory	170
06 End of output	171
07 Encoding control unit	-
08 Reading measured value block	172



09 Reading individual measured value	-
10 Adaption	175
11 Login procedure	-
Vehicle ident. no. transfer	192
Release (PIN)	176
Channel 50 adaption (PIN)	188

## 6.4 - Interrogating fault memory

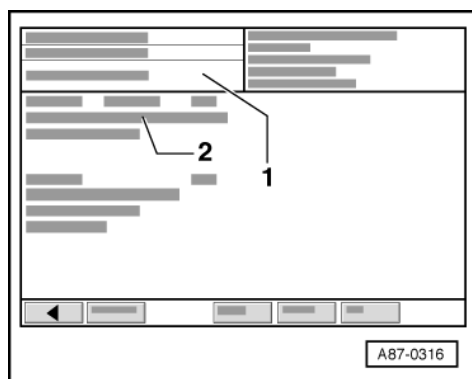


### Note:

*Fault information displayed is not updated constantly, but rather only on starting self-diagnosis/implementing function 05 "Erasing fault memory".*

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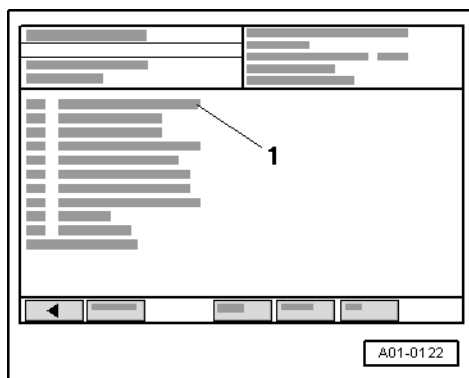
- Start immobilizer self-diagnosis => Page 166.
- > Display on VAS 5051:
- From list -1- select diagnosis function "02 - Interrogating fault memory".



-> Display on VAS 5051:

- 1 - Content of fault memory:
  - 0 faults detected
- Or
- X faults detected
- 2 - Fault
  - Fault code
  - Fault location

- Type of fault



#### A - Faults detected:

- Print out information on screen or self-diagnosis log.
- Terminate function "02 - Interrogating fault memory" by touching  
◀ key.

-> Display on VAS 5051:

- Eliminate fault(s) in line with fault table => Page **169** .
- Select diagnosis function "02 - Interrogating fault memory" again in list and erase fault memory => Page **170** .
- Select diagnosis function "06 - End of output" in list => Page **171** .

#### B - No fault detected:

- Select diagnosis function "06 - End of output" in list => Page **171** .

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## 6.5 - Fault table

#### Notes:

- ◆ Faults occurring in monitored sensors or components are stored in fault memory together with an indication of the type of fault.
- ◆ The fault table is arranged according to the 5-digit fault codes on the left.
- ◆ Dash panel insert faults may also be displayed, as the immobilizer is an integral part of the dash panel insert.
- ◆ All static and sporadic faults are stored in the fault memory:  
A fault is recognised as being static if it is present for at least 2 seconds. If a fault is then no longer present, it is stored as being sporadic and "sporadic" also appears on display.
- ◆ After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.
- ◆ Sporadic faults are erased if they do not re-occur in the course of 50 driving cycles (ignition on for at least 5 minutes, vehicle speed greater than 30 km/h).
- ◆ Do not immediately replace components indicated as being defective by VAS 5051, but rather: Start by checking wiring and connectors to these components in line with current flow diagram. Also use current flow diagram to check earth connections. This is particularly important if faults are output as being "sporadic".
- ◆ On completion of repair work, fault memory is to be interrogated again and erased.

#### Attention:

As an additional step on completion of repair work, fault memory of engine control unit is to be read out separately and entry "Engine control unit blocked" erased. Check other faults stored and eliminate if necessary.

Display on VAS 5051	Possible cause of trouble	Fault remedy
01128		



Display on VAS 5051	Possible cause of trouble	Fault remedy
Immobilizer reading spool -D2	- Connector not attached or fault in reader coil and wiring	- Check connector and reader coil as well as wiring (visual inspection) and replace reader coil if necessary => Electrical System; Repair Group 96
	- Immobilizer control unit (integrated into dash panel insert) defective	- Erase fault memory => Page 170 , interrogate again and replace dash panel insert if necessary => Electrical System; Repair Group 90

Display on VAS 5051	Possible cause of trouble	Fault remedy
01176 Key Signal too low	- Reader coil or wire defective (contact resistance/loose contact)	- Check reader coil as well as wiring and connector (visual inspection) and replace reader coil if necessary => Electrical System; Repair Group 96
	- No electronics in ignition key (transponder) or not functioning	- Replace ignition key, re-match all ignition keys and check operation => Page 176
Not authorised	- Mechanically suitable ignition key not matched	- Re-match all ignition keys and check operation => Page 176

Display on VAS 5051	Possible cause of trouble	Fault remedy
01177 Engine control unit Not authorised	- Engine control unit not adapted	- Adapt engine control unit=>Page 188
01179 Incorrect key programming	- Ignition keys not properly matched	- Re-match all ignition keys with entry of PIN and check operation=>Page 176
65535 Control unit defective	- Dash panel insert (with integrated immobilizer) defective	- Replace dash panel insert => Electrical System; Repair Group 90

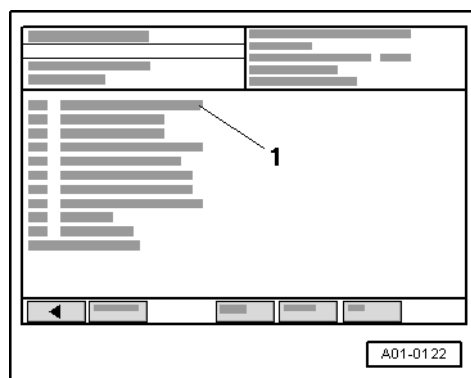
## 6.6 - Erasing fault memory

### Notes:

- ♦ If fault memory cannot be erased, interrogate fault memory again and eliminate fault.
- ♦ After erasing fault memory, faults are not updated until ignition has been switched off and on again.

### Requirements:

- Fault memory interrogated => Page 168
- All faults eliminated





## Sequence of operations

After fault memory interrogation:

-> Display on VAS 5051:

- From list -1- select diagnosis function "05 - Erasing fault memory".



-> Display on VAS 5051:

- 1 - - No display (prior to erasing)
- Or
- Fault memory erased

### Note:

*If the following message appears in display zone -1-: "Fault memory not yet interrogated", this means that sequence of operations has not been precisely observed. Fault memory cannot be erased until it has been interrogated.*

- 2 - Note:
- Is function to be implemented?
- Note: Data will be erased!

- Touch "OK" key in display -2-.
- Terminate function "05 - Erasing fault memory" by touching ◀ key.
- Interrogate fault memory again after performing repair work.

### Note:

*This erases faults stored during fault elimination e.g. on account of connectors being unplugged.*

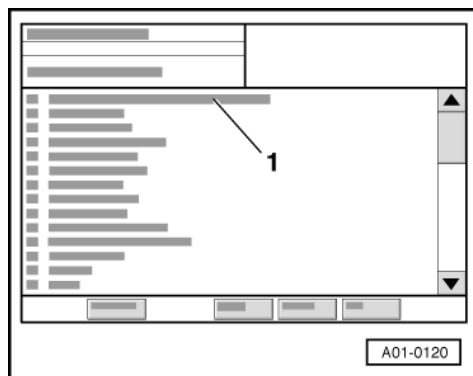
## 6.7 - End of output



### Sequence of operations

-> Display on VAS 5051:

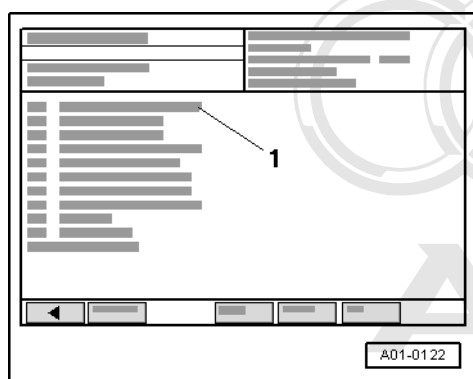
- From list -1- select diagnosis function "06 - End of output".



-> Display on VAS 5051:

- Switch off ignition and unplug diagnostic connector when this display appears.

### 6.8 - Reading measured value block



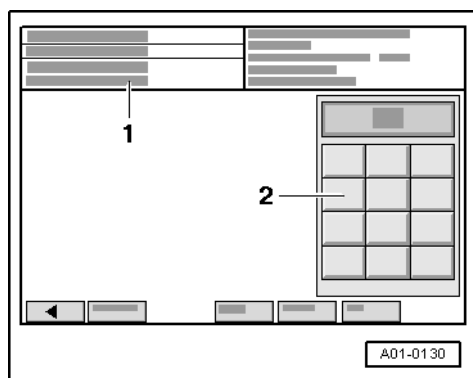
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### Sequence of operations

- Start immobilizer self-diagnosis => Page **166**.

-> Display on VAS 5051:

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



-> Display on VAS 5051:

- 1 - Enter display group
- Use keypad -2- to enter required three-digit display group number  
=>List of display groups, Page 173 and confirm entry by touching Q key.



-> Display on VAS 5051:

- 1 - Reading measured value block
- 2 - Display zone 1
- Display zone 2
- Display zone 3
- Display zone 4
- 3 - Display group X

**Notes:**

- ◆ Display remains blank if a display zone is not used.
- ◆ Proceed as follows to switch to a different display group:

Display group	VAS 5051
Up	Press s key
Down	Press t key

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

**List of display groups:**

Display group number	Indicated on display
022	1 = Starting authorised 2 = Engine control unit response 3 = Key status OK 4 = Number of matched keys
023	1 = Variable code authorised 2 = Key status (transponder) 3 = Fixed code authorised 4 = Immobilizer status
024	1 = Dash panel insert disabled time 2 = Engine control unit disabled time 3 = Emergency release disabled time 4 = Transponder identification disabled time



Display group number	Indicated on display
025	1 = CAN communication 2 = Not used 3 = Not used 4 = Not used

## Measured value block 022

Display group 22				Indicated on display
X	X	X	X	Display zones 1 ... 4
				Number of matched keys ▪ Up to max. 8 keys
				Key status OK ▪ 1 = Yes, i.e. possible to read formally correct transponder fixed code (regardless of whether authorised or not) ▪ 0 = No, i.e. not possible to read formally correct transponder fixed code
				Engine control unit response ▪ 1 = Yes (regardless of whether engine control unit authorised or not) ▪ 0 = No, i.e. engine control unit in run-on mode 1)
				Starting authorised ▪ 1 = Yes ▪ 0 = No, i.e. vehicle key not/incorrectly matched or engine control unit incorrectly encoded/defective

1) Depending on engine control unit, measured value block is set for 10 ... 30 s after switching off engine and ignition to "0 = Engine control unit response no", i.e. engine control unit released and no fault present. Start self-diagnosis again as a check => Page 166.

## Measured value block 023

Display group 23				Indicated on display
X	X	X	X	Display zones 1 ... 4
				Immobilizer status ▪ 4: Service new; service as-delivered condition (replacement dash panel insert) ▪ 5: Service blocked; service adaption data programmed ▪ 6: Immobilizer adapted; normal function status ▪ 7: Key matching active; key matching via tester
				Fixed code authorised ▪ 1 = Yes ▪ 0 = No, i.e. transponder fixed code of key not authorised
				Key status (transponder) ▪ 1 = Transponder in key blocked, i.e. arithmetic rule in key can no longer be overwritten; key cannot be matched to any other immobilizer system ▪ 0 = Transponder in key not blocked, i.e. transponder not yet matched to dash panel insert (new replacement key)
				Variable code authorised ▪ 1 = Yes ▪ 0 = No, i.e. variable code not authorised (arithmetic rule for variable code in key not the same as in dash panel insert)

**Measured value block 024**

Display group 24				<ul style="list-style-type: none"> <li>Indicated on display</li> <li>Display zones 1 ... 4</li> </ul>
X	X	X	X	
				<p>The transponder identification disabled time indicates the period after which transponder identification is again possible; this disabled function is activated if the transponder of a non-authorized key has been read out on 20 consecutive occasions</p> <ul style="list-style-type: none"> <li>0 ... 10 min</li> </ul>
				<p>The emergency release disabled time indicates the period after which PIN can be entered again via menu function in dash panel insert (emergency starting function without VAG 1551); control unit is disabled for 10 1) minutes if PIN is entered incorrectly three times</p> <ul style="list-style-type: none"> <li>0 ... 255 min</li> </ul>
				<p>The engine control unit disabled time indicates the period after which adaption function can be implemented again by engine control unit; control unit is disabled for 10 minutes 1) if PIN is entered incorrectly three times during channel 50 adaption</p> <ul style="list-style-type: none"> <li>0 ... 255 min</li> </ul>
				<p>The dash panel insert disabled time indicates the period after which login procedure can be implemented again at dash panel insert; control unit is disabled for 10 minutes 1) if PIN is entered incorrectly three times during login procedure (matching of vehicle keys or old dash panel insert)</p> <ul style="list-style-type: none"> <li>0 ... 255 min</li> </ul>

1) Time is doubled up to max. 255 minutes after every 3 further incorrect attempts

**Measured value block 025**

Display group 25				<ul style="list-style-type: none"> <li>Indicated on display</li> <li>Display zones 1 ... 4</li> </ul>
X	-	-	-	
				<p>CAN communication with engine control unit</p> <ul style="list-style-type: none"> <li>1 = Yes</li> <li>0 = No, i.e. no CAN communication between immobilizer and engine control units - key matching not possible</li> </ul>

## 6.9 - Adaption

**Note:**

Adaption function can **only be implemented after establishing immobilizer PIN => Establishing PIN, Page 176**.  
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The adaption function can be used to make and save the following changes:

- ♦ Matching of vehicle keys => Page 176
- ♦ Adaption following replacement of dash panel insert => Page 182
- ♦ Adaption following replacement of engine control unit=>Page 188

- ♦ Adaption following replacement of dash panel insert and engine control unit => Page 192

## 6.10 - Establishing PIN

For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits.

The PIN can only be used with the vehicle diagnostic, testing and information system VAS 5051 as of basic CD version V02.00.

The 7-digit PIN must be obtained by way of the appropriate Regional Sales Centre/importer on the basis of the 14-position immobilizer/engine control unit identification number.

The 14-position immobilizer/engine control unit identification number can be read out with the self-diagnosis function.

The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.

The 4- digit PIN can no longer be requested in countries in which the online and fax call procedure has been switched to the 7-digit PIN.

## 6.11 - Matching of vehicle keys

### Notes:

- ♦ If new or additional ignition keys are required, they have to be matched to the immobilizer.
- ♦ All keys - including the existing authorised ones - have to be re-matched.
- ♦ It is particularly important to re-match all the remaining vehicle keys if any have been lost to ensure that the lost key is no longer authorised to start the vehicle.
- ♦ If matching cannot be performed for all keys, for example when matching is required en route, customers are to be informed of the necessity of subsequent re-matching at their local Audi Dealership.
- ♦ The number of keys already matched is displayed following selection of adaption function (channel 21) and in measured value block 022.
- ♦ Once a key has been matched, it is blocked and cannot be matched to any other immobilizer system.

### Requirement:

- All ignition keys available. If no old ignition key is available, refer to => "Procedure in the event of loss of keys", Page 182 .

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### Sequence of operations

- Insert first key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 166 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### Note:

The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.



-> Display on VAS 5051:

- From list -1- select diagnosis function "Release (PIN)".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Release (PIN)	Code 8140 Dealership number 12345
<div style="border: 1px solid black; padding: 5px;"> <b>Information</b>  <p>PIN is used for release of key matching/adaption in vehicle system</p> <p>PIN provided on the basis of immobilizer identification number is only valid for one day</p> </div> <div style="float: right; margin-top: -40px;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">Ready</div> </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div>	

- Touch "Ready" key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Release (PIN)	Code 8140 Dealership number 12345
<div style="border: 1px solid black; padding: 5px;"> <b>PIN entry</b>  <p>Enter PIN provided using displayed keypad</p> <p>Confirm PIN entry with Continue key ( ▶ key)</p> <div style="border: 1px solid black; padding: 10px; text-align: center; margin-top: 20px;"> Press here to display entry keypad </div> </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> <span>▶</span> </div>	

- Touch key "Press here to display entry keypad".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06



Release (PIN)				Code 8140 Dealership number 12345			
1	2	3	+	A	B	C	D
				E	F	G	H
4	5	6	-	I	J	K	L
				M	N	O	P
7	8	9	.	Q	R	S	T
				U	V	W	X
C	0	Q	Y	Z			

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◀ Meas. method Skip Print Help ▶

- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

t Display on VAS 5051

<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Release (PIN)	Code 8140 Dealership number 12345

PIN entry

PIN XXXXXXX entered OK?

Yes

No

◀ Meas. method Skip Print Help

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

t Display on VAS 5051

<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Release (PIN)	Code 8140 Dealership number 12345

PIN transfer

PIN valid


Key matching/adaption can be implemented

Ready



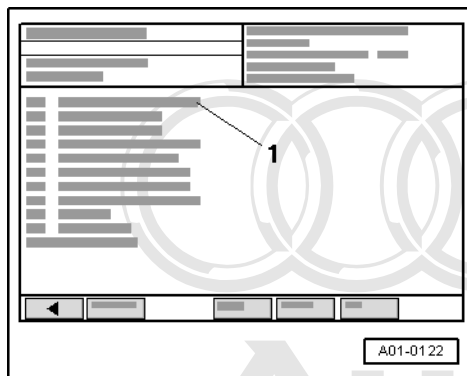
◀	Meas. method	Skip	Print	Help

- Touch "Ready" key.
- When this display appears, fault lamp in dash panel insert lights and immobilizer has been released



**Notes:**

- ◆ Heed instructions on display if fault message appears.
- ◆ -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnosis function "06 - End of output" in list -1-.
- ◆ The waiting time is doubled up to a maximum of 255 minutes after every 3 further incorrect entries.

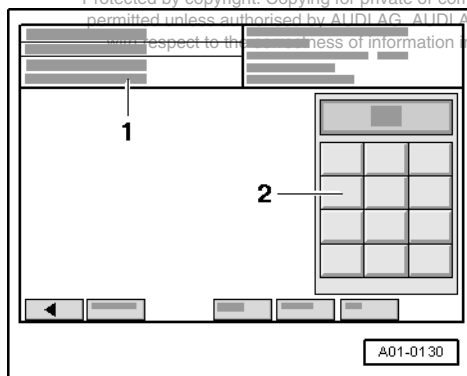


Once immobilizer has been released:

-> Display on VAS 5051:

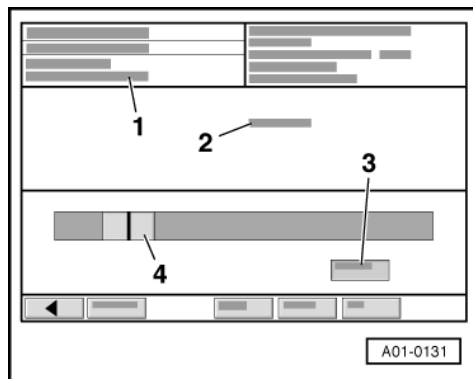
- From list -1- select diagnosis function "10 - Adaption".

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-> Display on VAS 5051:

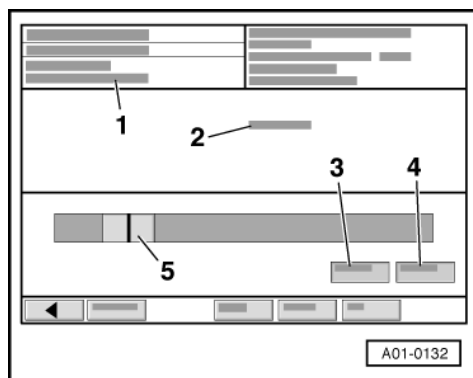
- 1 - Enter channel number
- Use keypad -2- to enter "21" for "Adaption channel 21" and confirm by touching Q key.



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-> Display on VAS 5051:

- 1 - Channel 21
  - Read and test
  - 2 - New number of keys
  - 4 - Moving bar positioned on current adaption value, e.g. "2"
- Display shows number of ignition keys (in this case "2") matched to system



-> Display on VAS 5051:

- Enter number of keys to be matched.

Example: 4 keys including key inserted in ignition lock

#### **Note:**

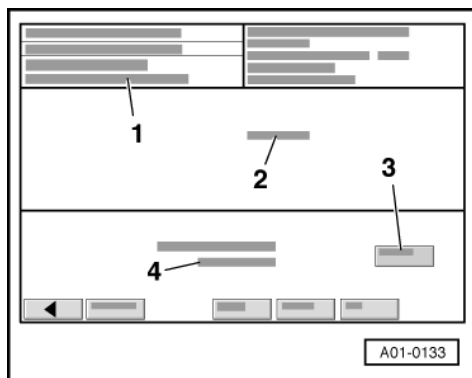
*A maximum of 8 keys can be matched.*

- Shift moving bar -5- to right or touch area to right of bar until it is positioned under number "4" (example).

#### **Note:**

*Another alternative is to touch "Keypad" key -3-, enter number "4" on keypad and confirm entry by touching Q key.*

- Touch "Save" key -4-.



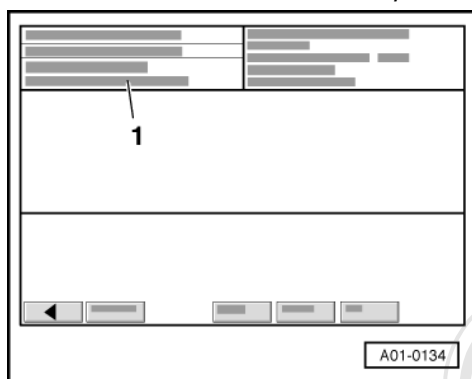
-> Display on VAS 5051:

- 1 - Channel 21
- Read and test
- 2 - New number of keys
- 4 - Original value "2"
- New value "4" (example)

- Confirm new adaption value by touching "Accept" key -3-
- Adaption is then implemented

**Note:**

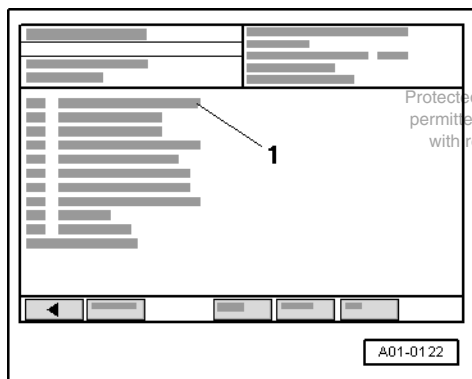
*The adaption period for each key must not exceed 30 seconds, as otherwise fault lamp in dash panel insert starts to flash and entire release procedure (PIN) must be repeated.*



-> Display on VAS 5051 following adaption:

- 1 - Channel 21
- Value "4" saved
- Fault lamp in dash panel insert goes out; key in ignition lock matched

- Terminate function "10 - Adaption" by touching ◀ key.



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-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".
- Switch off ignition.
- Insert next key in ignition lock and switch on ignition. Fault lamp lights when ignition is switched on and goes out after approx. 1 second, indicating that this key has also been matched.
- Repeat procedure until all keys have been matched. With the last key, the fault lamp goes out approx. 2 s following successful matching and a brief confirmation signal is given (lamp off for 0.5 s, lamp on for 0.5 s, lamp off).
- On vehicle key matching, the fixed code of the respective key (transponder) is matched to the immobilizer. Furthermore, the arithmetic rule for the variable code is written into each key and blocked. Accordingly, with immobilizer III, keys can only be matched if they have the correct arithmetic rule for the variable code (key already matched to system) or if they have still to be blocked (replacement key). Once they have been matched, vehicle keys cannot be used with a different immobilizer system.
- Following key matching, interrogate fault memory => Page 168 .

If there are no faults stored, then "Key matching" function has been successfully completed.

Ignition key matching is terminated automatically:

- ♦ On reaching the number of keys to be matched
- ♦ If the ignition is switched on again and left switched on for more than 1 s using a key which has already been matched (fault is stored)
- ♦ If the permitted matching time of 30 s per key as of switching on the ignition is exceeded (fault is stored)
- ♦ If a fault is stored during key matching

## 6.12 - Procedure in the event of loss of keys

- Make/order replacement ignition keys on the basis of the lock number.
- Match all vehicle keys => Page 176 .
- On the appropriate vehicles, match all remote control keys to central locking control unit.

=> Body Self-diagnosis; Repair Group 01; Central Locking Self-diagnosis; Matching of/cancelling remote control keys Central Locking Self-diagnosis Matching of/cancelling remote control keys

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## 6.13 - Adaption following replacement of dash panel insert

### Notes:

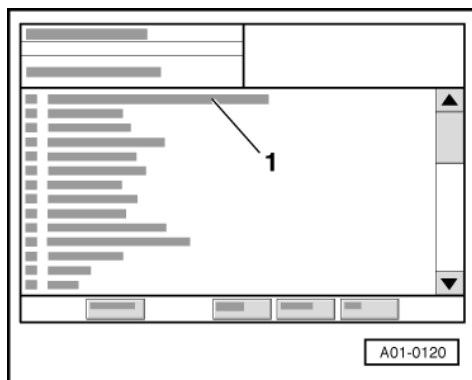
- ♦ The dash panel insert (with integrated immobilizer) is adapted to the engine control unit. Adaption to the engine control unit must be performed if the dash panel insert is replaced.
- ♦ After adapting dash panel insert to engine control unit, vehicle key matching is required => Page 176 .
- ♦ If there is no authorised ignition key available, engine control unit and all keys must also be replaced=> Page 192 .

### Requirement:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

### Sequence of operations

- Insert old (authorised) ignition key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis at old dash panel insert => Page 166 .

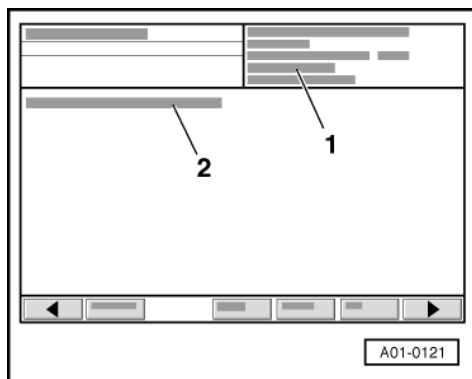


If this is not possible:

- Establish immobilizer identification number by starting engine control unit self-diagnosis.

-> Display on VAS 5051:

- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next display appears.



-> Display on VAS 5051:

- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification

**Note:**

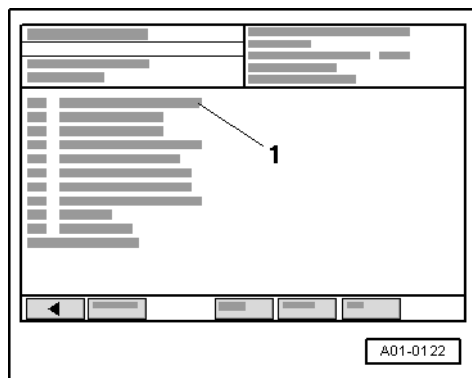
*With certain engine control units, it is also possible to read out immobilizer control unit identification in measured value block 081.*

Immobilizer control unit identification (example)		
WAUZZZ8L42A1064321		1) 17-position vehicle identification no. (chassis number)
1) AUZ7Z0X1137197	2) 14-position immobilizer identification no.	

- On the basis of the 14-position immobilizer/engine control unit identification number, request 7-digit PIN from appropriate Sales Centre/importer.

**Note:**

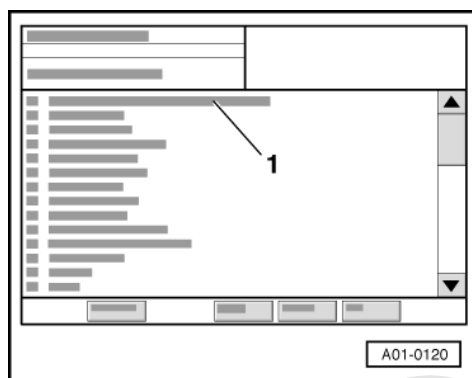
*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*



- Touch ▶ key.

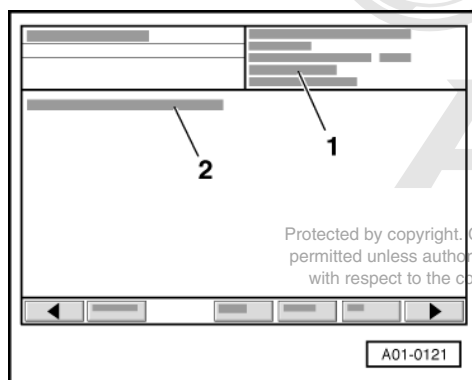
-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".



-> Display on VAS 5051:

- From list -1- select vehicle system "17 - Dash panel insert".
- Wait until next display appears.



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-> Display on VAS 5051:

- 1 - Dash panel insert control unit identification
- 2 - Immobilizer control unit identification

Immobilizer control unit identification (example)	
XXXXXXXXXXXXXXXXX AUZ4Z0X9745213 1)	1) 14-position immobilizer identification no.

Replacement dash panel inserts already have a 14-position identification number (required if dash panel insert and engine control unit are replaced at the same time). This is however overwritten on adapting dash panel insert to engine control unit.

- Touch ▶ key.
- Release dash panel insert => Page **195**.

**Note:**

*New/old dash panel inserts must always be released. Then proceed as follows:*



-> Display on VAS 5051:

- From list -1- select vehicle system "Channel 50 adaption".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Channel 50 adaption (PIN)	Code 8140 Dealership number 12345
<div style="display: flex; justify-content: space-between;"> <div style="width: 65%;"> <p><b>Information</b></p> <p>PIN is used for release of key matching/adaption in vehicle system</p> <p>PIN provided on the basis of immobilizer identification number is only valid for one day</p> </div> <div style="width: 30%; text-align: center;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">Ready</div> </div> </div>	
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <div style="border: 1px solid black; padding: 2px 10px;">Meas. method</div> <div style="border: 1px solid black; padding: 2px 10px;">Skip</div> <div style="border: 1px solid black; padding: 2px 10px;">Print</div> <div style="border: 1px solid black; padding: 2px 10px;">Help</div> </div>	

- Touch "Ready" key.



t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>		17 - Dash panel insert 8L0920900	
Functional test		DASH PANEL INSERT+IMMOBILIZER M73 D06	
Channel 50 adaption (PIN)		Code 8140 Dealership number 12345	
PIN entry			
Enter PIN provided using displayed keypad			
Confirm PIN entry with Continue key ( ▶ key)			
Press here to display entry keypad			
◀	Meas. method	Skip	Print Help ▶

- Touch key  
"Press here to display entry keypad".

t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>		17 - Dash panel insert 8L0920900	
Functional test		DASH PANEL INSERT+IMMOBILIZER M73 D06	
Channel 50 adaption (PIN)		Code 8140 Dealership number 12345	
1	2	3	+
4	5	6	-
7	8	9	.
C	0	Q	
A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P
Q	R	S	T
U	V	W	X
Y	Z		
Press here to display entry keypad			
◀	Meas. method	Skip	Print Help ▶

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- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Channel 50 adaption (PIN)	Code 8140 Dealership number 12345
PIN entry	

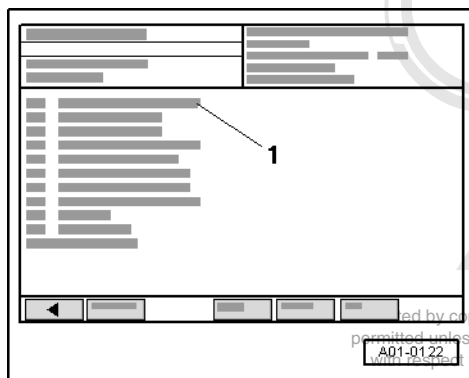


PIN XXXXXXXX entered OK?	<div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 10px;"></div> <div style="border: 1px solid black; width: 100px; height: 20px;"></div>
<div style="display: flex; justify-content: space-between; border-top: 1px solid black; border-bottom: 1px solid black;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div>	

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b> Functional test Channel 50 adaption (PIN)	17 - Dash panel insert 8L0920900 DASH PANEL INSERT+IMMOBILIZER M73 D06 Code 8140 Dealership number 12345
PIN transfer <div style="border: 1px solid black; padding: 10px; min-height: 100px;">           PIN valid            Key matching/adaption can be implemented         </div>	
<div style="border: 1px solid black; width: 100px; height: 20px; float: right;"></div>	
<div style="display: flex; justify-content: space-between; border-top: 1px solid black; border-bottom: 1px solid black;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div>	

- Touch "Ready" key.



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**Notes:**

- ◆ Heed instructions on display if fault message appears.
- ◆ -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnosis function "06 - End of output" in list -1-.



- ♦ The waiting time is doubled up to a maximum of 255 minutes after every 3 further incorrect entries.

Once dash panel insert has been successfully matched to engine control unit:

- Match all vehicle keys => Page 176 .

## 6.14 - Adaption following replacement of engine control unit

### Notes:

- ♦ The engine control unit is matched to the dash panel insert (with integrated immobilizer). Adaption to the immobilizer must be performed if the engine control unit is replaced.
- ♦ If there is no authorised ignition key available, dash panel insert and all keys must also be replaced=> Page 192 .

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### Requirement:

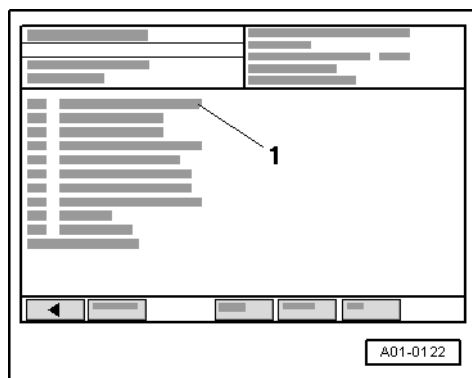
- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

### Sequence of operations

- Insert old (authorised) ignition key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 166 .
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### Note:

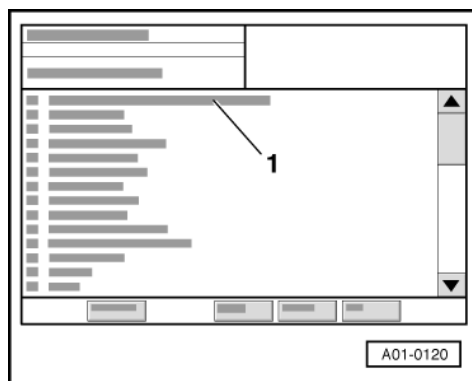
*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*



- Touch ▶ key.

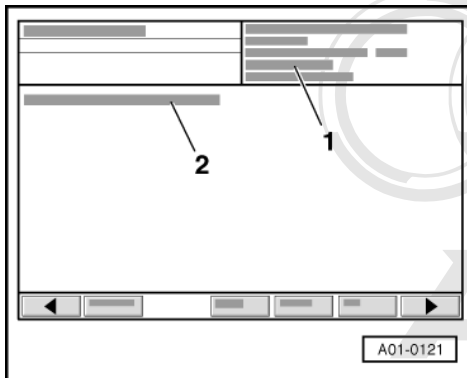
-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".



-> Display on VAS 5051:

- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next display appears.



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-> Display on VAS 5051:

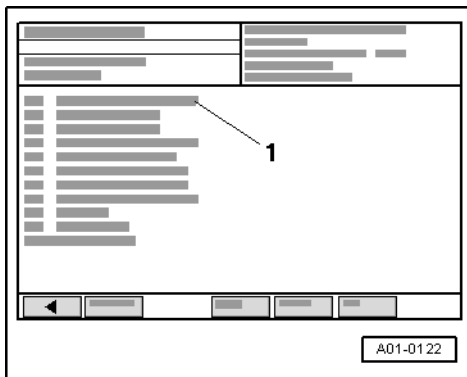
- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification

Immobilizer control unit identification	
XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX

**Note:**

An old engine control unit must be released => Page **195**. Then proceed as follows:

- Touch ▶ key.



-> Display on VAS 5051:

- From list -1- select vehicle system "Channel 50 adaption".

t Display on VAS 5051	
Vehicle self-diagnosis	01 - Engine electronics 06A906018
Functional test	1.8L R4/5VT G 0003
Channel 50 adaption (PIN)	Code 10710 Dealership number 12345



Information				
PIN is used for release of key matching/adaption in vehicle system				Ready
PIN provided on the basis of immobilizer identification number is only valid for one day				
◀	Meas. method	Skip	Print	Help

- Touch "Ready" key.

t Display on VAS 5051				
<b>Vehicle self-diagnosis</b>		01 - Engine electronics 06A906018		
Functional test		1.8L R4/5VT G 0003		
Channel 50 adaption (PIN)		Code 10710 Dealership number 12345		
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PIN entry				
Enter PIN provided using displayed keypad				
Confirm PIN entry with Continue key ( ▶ key)				
Press here to display entry keypad				
◀	Meas. method	Skip	Print	Help ▶

- Touch key "Press here to display entry keypad".

t Display on VAS 5051							
<b>Vehicle self-diagnosis</b>		01 - Engine electronics 06A906018					
Functional test		1.8L R4/5VT G 0003					
Channel 50 adaption (PIN)		Code 10710 Dealership number 12345					
1	2	3	+	A	B	C	D
				E	F	G	H
4	5	6	-	I	J	K	L
				M	N	O	P
7	8	9	.	Q	R	S	T
				U	V	W	X
C	0	Q		Y	Z		

◀	Meas. method	Skip	Print	Help ▶

- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

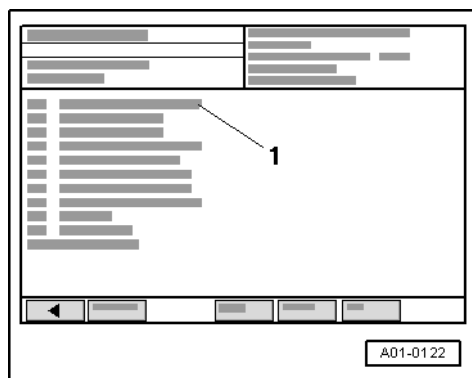
t Display on VAS 5051						
<b>Vehicle self-diagnosis</b> Functional test Channel 50 adaption (PIN)	01 - Engine electronics 06A906018 1.8L R4/5VT G 0003 Code 10710 Dealership number 12345					
PIN entry PIN XXXXXXXX entered OK?						
<div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">Yes</div>  <div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">No</div>						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;">◀</td> <td style="width: 30%; text-align: center;">Meas. method</td> <td style="width: 15%; text-align: center;">Skip</td> <td style="width: 15%; text-align: center;">Print</td> <td style="width: 25%; text-align: center;">Help</td> </tr> </table>		◀	Meas. method	Skip	Print	Help
◀	Meas. method	Skip	Print	Help		

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

t Display on VAS 5051						
<b>Vehicle self-diagnosis</b> Functional test Channel 50 adaption (PIN)	01 - Engine electronics 06A906018 1.8L R4/5VT G 0003 Code 10710 Dealership number 12345					
PIN transfer PIN valid Key matching/adaption can be implemented						
<div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">Ready</div>						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;">◀</td> <td style="width: 30%; text-align: center;">Meas. method</td> <td style="width: 15%; text-align: center;">Skip</td> <td style="width: 15%; text-align: center;">Print</td> <td style="width: 25%; text-align: center;">Help</td> </tr> </table>		◀	Meas. method	Skip	Print	Help
◀	Meas. method	Skip	Print	Help		

- Touch "Ready" key.

- This concludes adaption of engine control unit to immobilizer and vehicle can be started.



#### Notes:

- ♦ Heed instructions on display if fault message appears.
- ♦ -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnosis function "06 - End of output" in list -1-.
- ♦ The waiting time is doubled up to a maximum of 255 minutes after every 3 further incorrect entries.

## 6.15 - Adaption following replacement of dash panel insert and engine control unit

In the event of simultaneous destruction of dash panel insert and engine control unit (caused for example by overvoltage) and if immobilizer identification number can no longer be read out, all vehicle keys must additionally be changed on replacing dash panel insert and engine control unit.

Reason: The old keys are blocked following adaption to immobilizer and cannot be matched to any other immobilizer.

The immobilizer in the new dash panel insert contains a different arithmetic rule for the variable code. This new rule is written on adaption into the engine control unit and at the same time into the transponder of the new vehicle keys. The keys are then blocked.

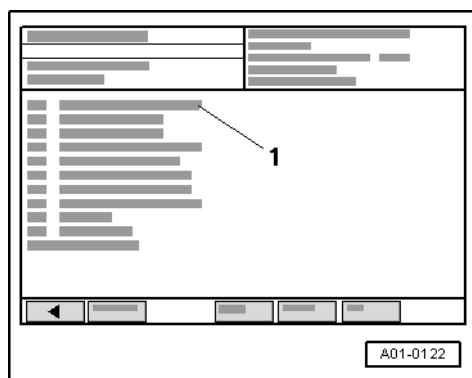
#### Note:

*Replacement of all vehicle keys is not necessary if immobilizer identification number can still be read out of one of the control units to be replaced. Control units are then to be replaced consecutively.*

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#### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Ignition on



### Sequence of operations

- Start immobilizer self-diagnosis => Page **166** .
- > Display on VAS 5051:
- From list -1- select diagnosis function "Vehicle ident no."

t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900		
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06		
Vehicle ident. no. transfer	Code 8140 Dealership number 12345		
Vehicle ident. no. entry			
Vehicle ident. no. entry Max. 17 characters			
Press Continue key ( ▶ key) to confirm entry			
Press here to display entry keypad			
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> <span>▶</span> </div>			

- Touch key "Press here to display entry keypad".

t Display on VAS 5051							
<b>Vehicle self-diagnosis</b>							
17 - Dash panel insert 8L0920900							
Functional test							
DASH PANEL INSERT+IMMOBILIZER M73 D06							
Vehicle ident. no. transfer							
Code 8140 Dealership number 12345							
1	2	3	+	A	B	C	D
				E	F	G	H
4	5	6	-	I	J	K	L
				M	N	O	P
7	8	9		Q	R	S	T
				U	V	W	X
C	0	Q		Y	Z		
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> <span>▶</span> </div>							

- Use keypad to enter 17-position vehicle identification number.
  - Touch ▶ key.
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t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>		17 - Dash panel insert 8L0920900	
Functional test		DASH PANEL INSERT+IMMOBILIZER M73 D06	
Vehicle ident. no. transfer		Code 8140 Dealership number 12345	
Character conversion			
Checking characters entered			
Please wait			
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<	Meas. method	Skip	Print
			Help

- Wait until next display appears or (in the event of incorrect characters) heed instructions regarding correct entry.

t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>		17 - Dash panel insert 8L0920900	
Functional test		DASH PANEL INSERT+IMMOBILIZER M73 D06	
Vehicle ident. no. transfer		Code 8140 Dealership number 12345	
Vehicle ident. no. transfer			
Transfer of character X to vehicle system			
<	Meas. method	Skip	Print
			Help

- The 17 positions in the vehicle identification number are transferred one at a time to the vehicle system. Wait for completion of this program stage.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Vehicle ident. no. transfer	Code 8140 Dealership number 12345
Vehicle ident. no. display	



Is entered and transferred vehicle ident. no. XXXXXXXXXX to be saved? Vehicle ident. no. forms the first 17 positions in the identification Once saved, vehicle ident. number can no longer be changed	<div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div> Yes
	<div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div> No
<div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div>	

- Check entry and then touch "Yes" key.
- Incorrect vehicle ident. no. entry can be corrected by touching "No" key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>  Functional test Vehicle ident. no. transfer	17 - Dash panel insert 8L0920900 DASH PANEL INSERT+IMMOBILIZER M73 D06 Code 8140 Dealership number 12345
Saving of vehicle ident. no. Transfer successfully completed  Conclude function with Ready key	
<div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 5px;"></div> Ready	
<div style="text-align: center; font-size: 2em; opacity: 0.3; margin: 10px 0;">Audi</div> <small>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the correctness of the information in this document. Copyright © 2002 AUDI AG.</small>	
<div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>◀</span> <span>Meas. method</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div>	

- Touch "Ready" key.
- Then perform matching for all vehicle keys => Page 176 .

This completes adaption/matching of dash panel insert, engine control unit and vehicle keys and vehicle can be started.

## 6.16 - Control unit release

### *Note:*

*New/old dash panel inserts or old engine control unit must always be released.*

### *Requirements:*

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Ignition on



## Sequence of operations

- Establish immobilizer identification number by starting self-diagnosis for appropriate control unit (engine or immobilizer).
- On the basis of the 14-position immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### Note:

The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.



-> Display on VAS 5051:

- From list -1- select diagnosis function "Release (PIN)".

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Channel 50 adaption (PIN)	Code 8140 Dealership number 12345
<b>Information</b>	
PIN is used for release of key matching/adaption in vehicle system	
PIN provided on the basis of immobilizer identification number is only valid for one day	
<div>Ready</div>	
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<	Meas. method
Skip	Print
Help	

- Touch "Ready" key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06

Channel 50 adaption (PIN)		Code 8140 Dealership number 12345	
PIN entry			
Enter PIN provided using displayed keypad			
Confirm PIN entry with Continue key ( ▶ key)			
Press here to display entry keypad			
◀	Meas. method	Skip	Print
Help		▶	

- Touch key  
"Press here to display entry keypad".

t Display on VAS 5051			
<b>Vehicle self-diagnosis</b>		17 - Dash panel insert 8L0920900	
Functional test		DASH PANEL INSERT+IMMOBILIZER M73 D06	
Channel 50 adaption (PIN)		Code 8140 Dealership number 12345	
1	2	3	+
4	5	6	-
7	8	9	.
C	0	Q	
A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P
Q	R	S	T
U	V	W	X
Y	Z		
Press here to display entry keypad			
◀	Meas. method	Skip	Print
Help		▶	

- Use keypad to enter previously established 7-digit PIN.
- Touch ▶ key.

t Display on VAS 5051	
<b>Vehicle self-diagnosis</b>	17 - Dash panel insert 8L0920900
Functional test	DASH PANEL INSERT+IMMOBILIZER M73 D06
Channel 50 adaption (PIN)	Code 8140 Dealership number 12345
PIN entry	
PIN XXXXXX entered OK?	<div style="text-align: right;"> <input style="width: 100px;" type="text" value="Yes"/>   <input style="width: 100px;" type="text" value="No"/> </div>



◀	Meas. method	Skip		Print	Help	

- Check entry and then touch "Yes" key.
- Incorrect PIN entry can be corrected by touching "No" key.

t Display on VAS 5051					
Vehicle self-diagnosis			17 - Dash panel insert 8L0920900		
Functional test			DASH PANEL INSERT+IMMOBILIZER M73 D06		
Channel 50 adaption (PIN)			Code 8140 Dealership number 12345		
PIN transfer					
PIN valid Key matching/adaption can be implemented				Ready	
◀	Meas. method	Skip		Print	Help

- Touch "Ready" key.

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A01-0122	

**Notes:**

- ♦ Heed instructions on display if fault message appears.
- ♦ -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnosis function "06 - End of output" in list -1-.
- ♦ The waiting time is doubled up to a maximum of 255 minutes after every 3 further incorrect entries.

Proceed in a similar manner for engine control unit release.

Once dash panel insert/engine control unit release has been successfully completed:

- Continue with adaption.
  - Adaption following replacement of dash panel insert  
=> Page **185**
  - Adaption following replacement of engine control unit  
=> Page **189**

## 7 - Cruise control system (CCS) self-diagnosis

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### 7.1 - Cruise control system (CCS) self-diagnosis

#### 7.2 - General information

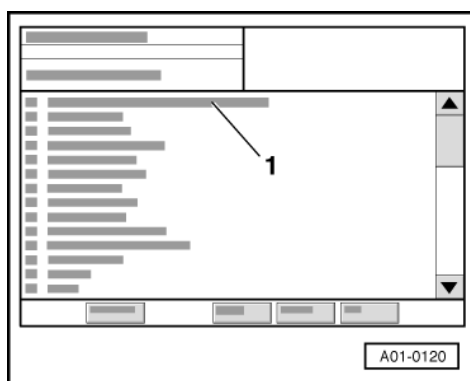
On vehicles with petrol engines and electronic engine output control (electronic throttle) as well as with diesel engines, there are no components specific to the cruise control system with the exception of the operating switch. All functions are executed by the engine control unit.

#### 7.3 - Checking cruise control system (CCS) - petrol engines with electronic throttle

##### *Requirements:*

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page **1**
- Engine idling

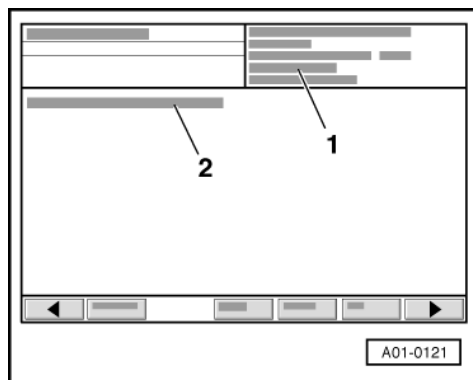
Attention:  
Heed safety precautions => Page **1** .



##### **Sequence of operations**

-> Display on VAS 5051:

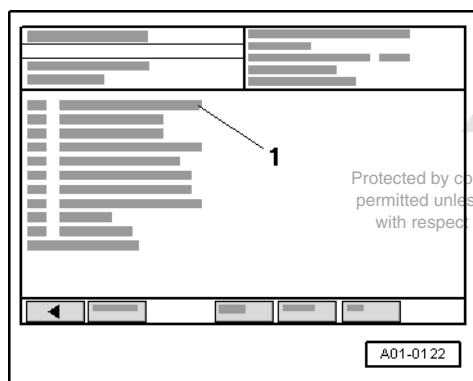
- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next display appears.



-> Display on VAS 5051:

- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification

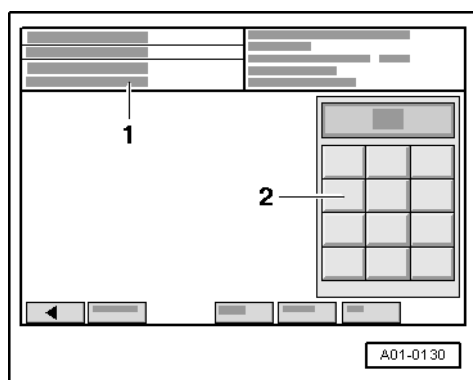
- Touch ▶ key.



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-> Display on VAS 5051:

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



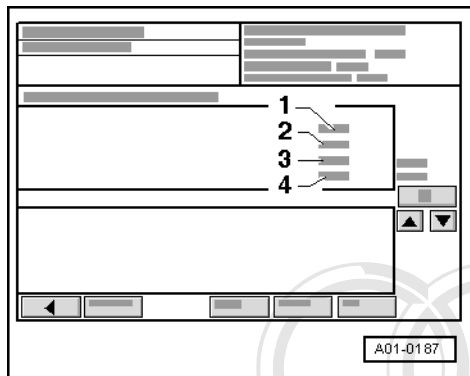
-> Display on VAS 5051:

- Use keypad -2- to enter "066" for "Display group number 066" and confirm by touching Q key.

**Note:**

On vehicles with automatic gearbox, cruise control system switch is only supplied with power at speeds in excess of 30 km/h and with selector lever set to 2, 3 or D. Power supply is then maintained even at idle, provided that gear (other than 1 or R) is engaged.

- Perform test drive, exceeding a speed of 30 km/h once. Then leave engine running and selector lever set to 2, 3 or D.
- Apply parking brake.



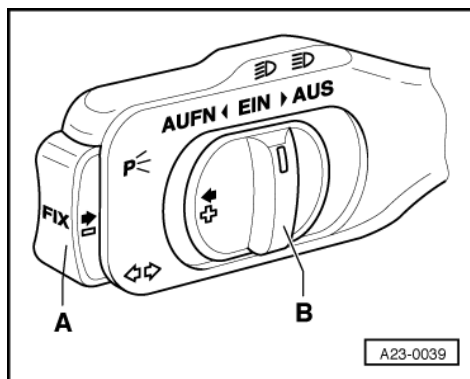
-> Display on VAS 5051:

- Check display in zones -2- and -4-.

**4-digit display in zones 2 and 4:**

Test condition	Display zone 2
CCS released <sup>1)</sup>	1 0 0 0
Brake pedal pressed	0 1 1 1
Clutch pedal pressed	1 1 0 0

- 1) If 0 is displayed: Activate cruise control system  
=> Page 206



Test condition	Display zone 4
Switch B set to "OFF", engaged	0 0 0 0
Switch B set to "ON"	0 0 1 1
Switch A pressed "FIX"	0 1 1 1
Switch B set to "ACTIV"	1 0 1 1
Switch B set to "OFF", before engagement point (deceleration)	0 0 0 1



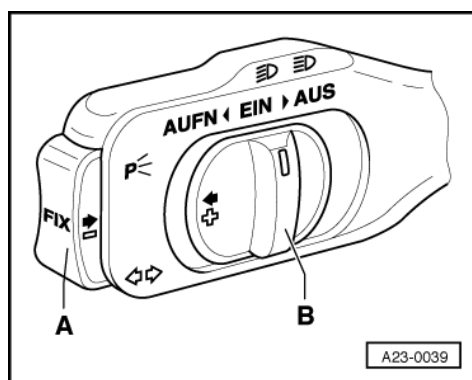
If readings do not match specifications:

- Check wiring =>Page **202** .

#### 8-digit display in zones 2 and 4:

Test condition	Display zone 2
CCS released1)	0 0 0 0 1 0 1 1
Brake pedal pressed	0 0 0 0 1 0 1 1
Clutch pedal pressed	0 0 0 0 1 1 0 0

- 1) If 0 is displayed: Activate cruise control system  
=> Page **206**



Test condition	Display zone 4
Switch B set to "OFF", engaged	0 0 0 0 0 0 0 0
Switch B set to "ON"	0 0 0 0 0 0 1 1
Switch A pressed "FIX"	0 0 0 0 0 1 1 1
Switch B set to "ACTIV"	0 0 0 0 1 0 1 1
Switch B set to "OFF", before engagement point (deceleration)	0 0 0 0 0 0 0 1

If readings do not match specifications:

- Check wiring =>Page **202** .

#### Checking wiring

- Unplug connector at CCS switch.

=> General Body Repairs, Interior; Repair Group 70; Dash Panel Dash Panel

- Connect appropriate test box V.A.G 1598.. to unplugged connectors of engine control unit.

=> Injection and Ignition System; Repair Group 24

#### Notes:

- ♦ For connection of measuring instruments (e.g. voltage tester V.A.G 1527 B, portable multimeter V.A.G 1526 A), always make use of adapter set V.A.G 1594 A.
- ♦ Contact numbers of connector coincide with socket numbers of test box.

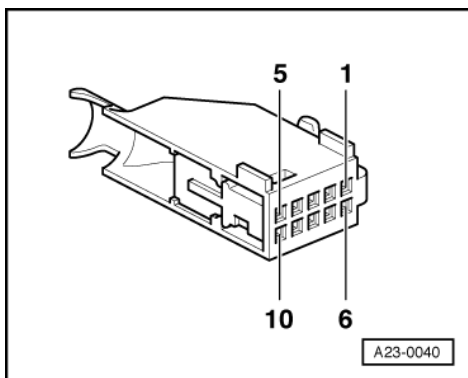
#### Attention:

So as not to destroy electronic components, select required measuring range before connecting test leads and observe test conditions.



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- -> Check for open circuit and short to earth/positive in the following wiring.

Connector Contact	Test box V.A.G 1598/.. Socket
2	=>Binder Current flow diagrams, Fault-finding/ Electrics and Fitting locations
3	
4	
5	
6	
7	

- If necessary, eliminate open circuit in wiring/short circuit.

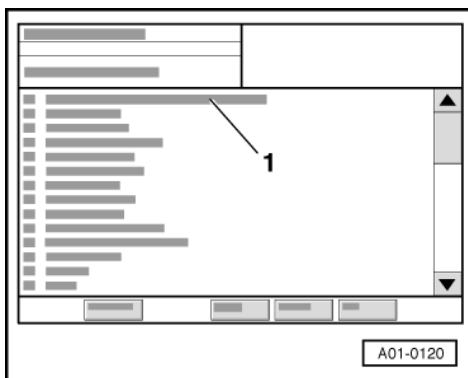
## 7.4 - Checking cruise control system (CCS) - diesel engines

### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Engine idling

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Attention:  
Heed safety precautions => Page 1 .



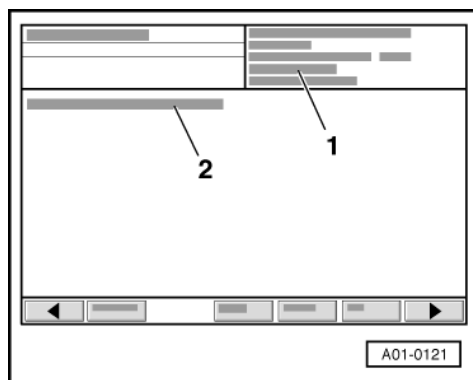
### Sequence of operations

-> Display on VAS 5051:

- From list -1- select vehicle system "01 - Engine electronics".



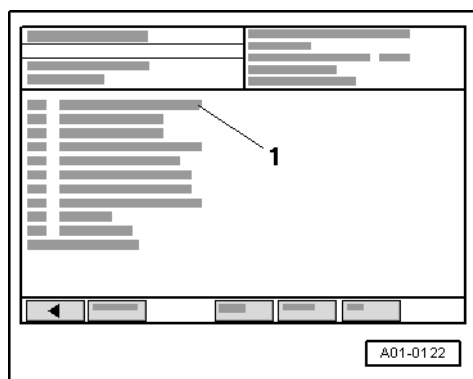
- Wait until next display appears.



-> Display on VAS 5051:

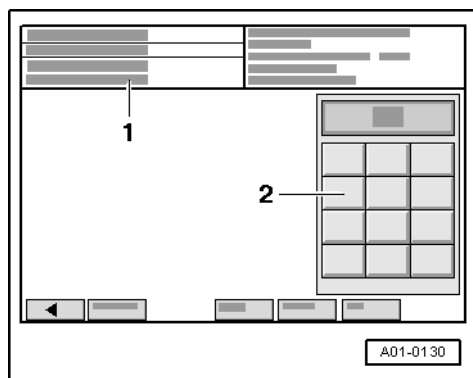
- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification

- Touch ▶ key.



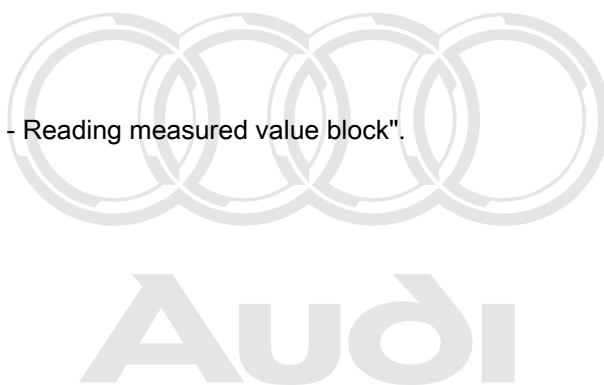
-> Display on VAS 5051:

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



-> Display on VAS 5051:

- Use keypad -2- to enter "006" for "Display group number 006" and confirm by touching Q key.

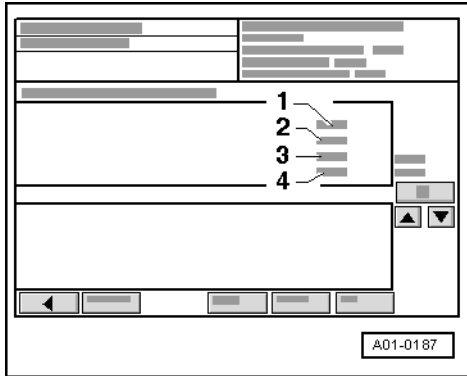


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**Note:**

*On vehicles with automatic gearbox, cruise control system switch is only supplied with power at speeds in excess of 30 km/h and with selector lever set to 2, 3 or D. Power supply is then maintained even at idle, provided that gear (other than 1 or R) is engaged.*

- Perform test drive, exceeding a speed of 30 km/h once. Then leave engine running and selector lever set to 2, 3 or D.
- Apply parking brake.

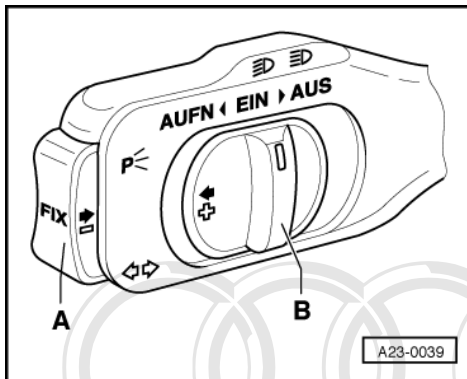


-> Display on VAS 5051:

- Check display in zones -3- and -4-.

Test condition	Display zone 4
CCS released1)	0
CCS on	1

- 1) If 255 is displayed: Activate cruise control system  
=> Page 206



Test condition	Display zone 3
Switch B set to "OFF", engaged	0 0 0 0 0 0
Switch B set to "ON"	0 0 0 0 1 1
Switch A pressed "FIX"	0 0 0 1 1 1
Switch B set to "ACTIV"	0 0 1 0 1 1
Switch B set to "OFF", before engagement point (deceleration)	0 0 0 0 0 1
Brake pressed	0 1 0 0 1 1
Clutch pressed	1 0 0 0 1 1

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If readings do not match specifications:

- Check wiring =>Page 206 .

### Checking wiring

- Unplug connector at CCS switch.

=> General Body Repairs, Interior; Repair Group 70; Dash Panel Dash Panel

- Connect appropriate test box V.A.G 1598.. to unplugged connectors of engine control unit.

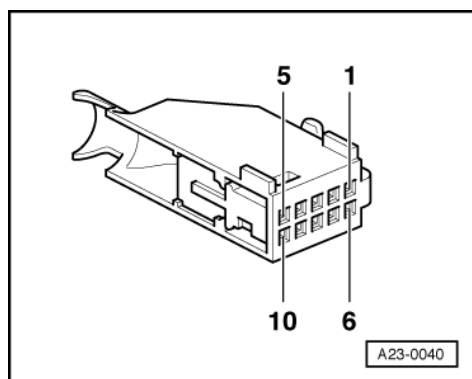
=> Injection and Glow Plug System; Repair Group 23

### Notes:

- ♦ For connection of measuring instruments (e.g. voltage tester V.A.G 1527 B, portable multimeter V.A.G 1526 A), always make use of adapter set V.A.G 1594 A.
- ♦ Contact numbers of connector coincide with socket numbers of test box.

### Attention:

So as not to destroy electronic components, select required measuring range before connecting test leads and observe test conditions.



- -> Check for open circuit and short to earth/positive in the following wiring.

Connector Contact	Test box V.A.G 1598/.. Socket
2	=>Binder Current flow diagrams, Fault-finding/ Electrics and Fitting locations
3	
4	
5	
6	
7	

- If necessary, eliminate open circuit in wiring/short circuit.

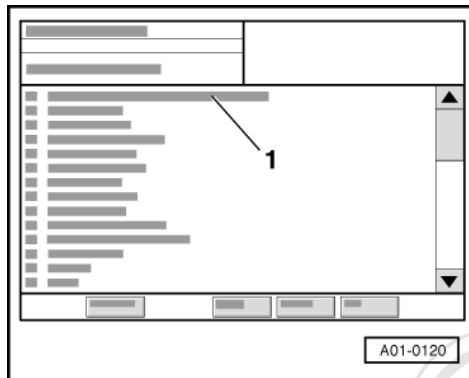
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## 7.5 - Activating/deactivating cruise control system

### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1

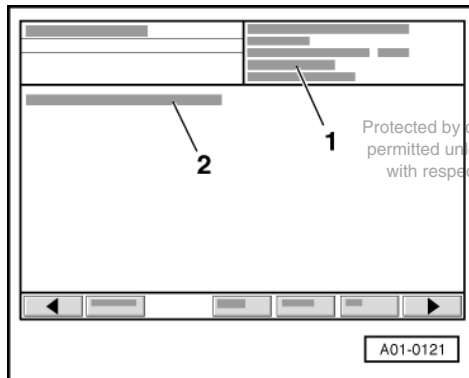
- Ignition on



### Sequence of operations

-> Display on VAS 5051:

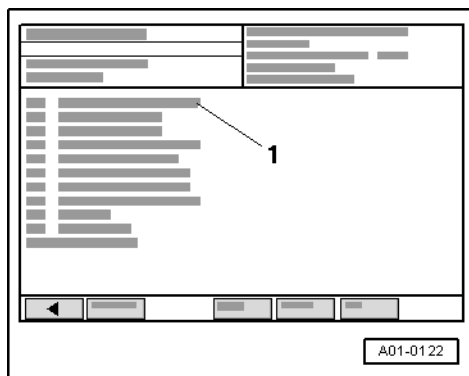
- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next display appears.



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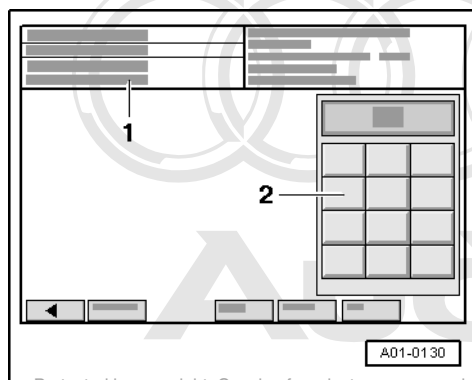
-> Display on VAS 5051:

- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification
- Touch ▶ key.



-> Display on VAS 5051:

- From list -1- select diagnosis function "11 - Login procedure".



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-> Display on VAS 5051:

- 1 - Enter code word

#### Activating CCS:

- Use keypad -2- to enter "11463" and confirm entry by touching Q key.

#### Deactivating CCS:

- Use keypad -2- to enter "16167" and confirm entry by touching Q key.
- Terminate function "11 - Login procedure" by touching ◀ key.
- Touch "06 - End of output".
- Switch off ignition.

## 8 - Acoustic Parking System (APS) self-diagnosis

### 8.1 - Acoustic Parking System (APS) self-diagnosis

### 8.2 - General information

On reversing, the parking aid system uses the echo-sounding principle to measure the distance between the back end of the vehicle and an obstacle.

Four ultrasonic sensors are fitted for this purpose in the non-painted area of the rear bumper.

The sensors are deactivated if a trailer is hitched up and the trailer socket connected.

Proximity warning distance on reversing (parking aid system active):

- ♦ Less than approx. 60 cm for all side sensors
- ♦ Less than approx. 160 cm for rear centre sensors

The 4-channel parking aid system comprises:

- ♦ Parking aid control unit -J446
- ♦ Rear left parking aid sender -G203
- ♦ Centre rear left parking aid sender -G204
- ♦ Centre rear right parking aid sender -G205
- ♦ Rear right parking aid sender -G206

- ♦ Rear parking aid warning buzzer -H15

#### Function:

A self-test lasting less than one second is performed after switching on the ignition.

The control unit is then permanently in operation, however the distance sensing function is only activated on engaging reverse gear.

A brief signal tone sounds to indicate that parking aid is ready for operation (time lag of one second on vehicles with automatic gearbox on account of P-D shift).

A continuous tone sounds for 5 seconds if the control unit detects a system fault during the self-test.

The intervals between the acoustic pulses become shorter as a function of the decreasing gap. When the gap is less than 30 cm the pulses become a continuous tone. Adaption of volume and pitch (audio frequency)

=>Page 220 .

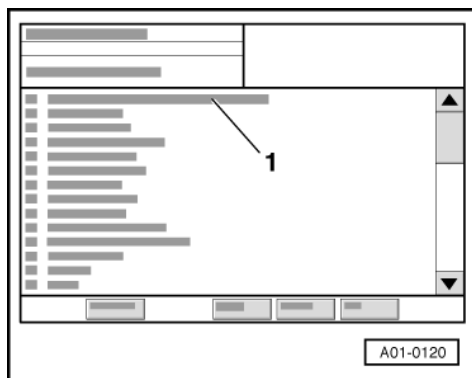
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### 8.3 - Starting parking aid system self-diagnosis

#### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 1
- Ignition on

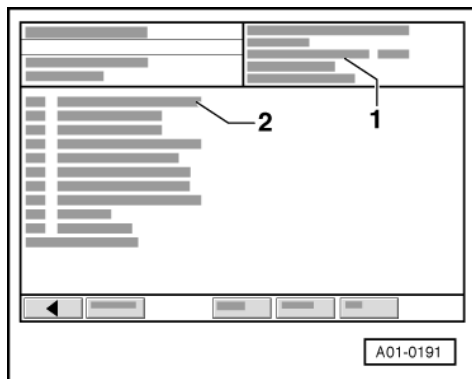
Attention:  
Heed safety precautions => Page 1 .



#### Sequence of operations

-> Display on VAS 5051:

- From list -1- select vehicle system "76 - Parking aid".
- Wait until next display appears.





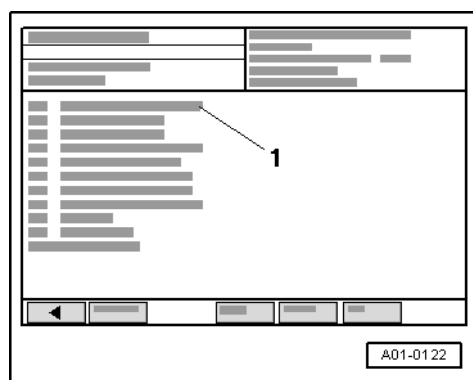
-> Display on VAS 5051:

- 1 - Parking aid control unit identification
- 2 - List of diagnosis functions => Page 210

Parking aid control unit identification (example)	
76 - Parking aid	Vehicle system
8L0920900..	Part No.; Assignment => Parts List
Parking system1)A3 ROW2)D183)	1) Component designation 2) Model/country version 3) Data level (software version) of control unit
Code 1103	Control unit encoding (checking => Page 215 )
Dealership number 12345	Workshop code of VAS 5051 with which encoding was last performed

Diagnosis functions	Page
02 Interrogating fault memory	210
03 Final control diagnosis	-
04 Basic setting	-
05 Erasing fault memory	213
06 End of output	214
07 Encoding control unit	215
08 Reading measured value block	217
09 Reading individual measured value	-
10 Adaption	220
11 Login procedure	-

## 8.4 - Interrogating fault memory



### Note:

Fault information displayed is not updated constantly, but rather only on starting self-diagnosis/implementing function 05 "Erasing fault memory".

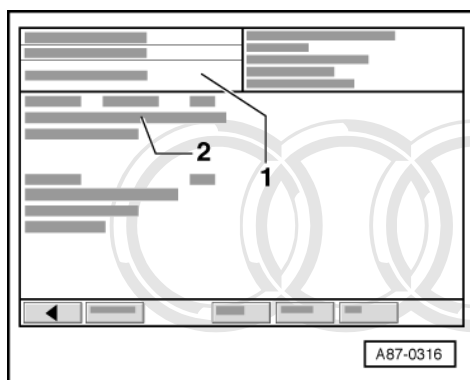
- Start parking aid self-diagnosis => Page 209 .

-> Display on VAS 5051:

- From list -1- select diagnosis function "02 - Interrogating fault memory"

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-> Display on VAS 5051:

1 - Content of fault memory:

- 0 faults detected

Or

- X faults detected

2 - Fault

- Fault code

- Fault location

- Type of fault



#### A - Faults detected:

- Print out information on screen or self-diagnosis log.
- Terminate function "02 - Interrogating fault memory" by touching < key.

-> Display on VAS 5051:

- Eliminate fault(s) in line with fault table => Page 212 .
- Select diagnosis function "02 - Interrogating fault memory" again in list and erase fault memory => Page 213 .
- Select diagnosis function "06 - End of output" in list => Page 214 .

#### B - No fault detected:

- Select diagnosis function "06 - End of output" in list => Page 214 .



## 8.5 - Fault table

### Notes:

- Faults occurring in monitored sensors or components are stored in fault memory together with an indication of the type of fault.
- The fault table is arranged according to the 5-digit fault codes on the left.
- All static and sporadic faults are stored in the fault memory:  
A fault is recognised as being static if it is present for at least 2 seconds. If a fault is then no longer present, it is stored as being sporadic and "sporadic" also appears on display.
- After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.
- Sporadic faults are erased if they do not re-occur in the course of 50 driving cycles (ignition on for at least 5 minutes, vehicle speed greater than 30 km/h).
- Do not immediately replace components indicated as being defective by VAS 5051, but rather: Start by checking wiring and connectors to these components in line with current flow diagram. Also use current flow diagram to check earth connections. This is particularly important if faults are output as being "sporadic".
- On completion of repair work, fault memory is to be interrogated again and erased.

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Display on VAS 5051	Possible cause of trouble	Fault remedy
00532 Supply voltage - Signal too low	- Open circuit in wiring or short circuit in power supply	- Use current flow diagram to perform fault-finding
00625 Speed signal - Implausible signal	- Fault is set if vehicle-speed signal is implausible (e.g. 500 km/h); occurs, for example, in the event of loose contact in wiring	- Use current flow diagram to perform fault-finding
01543 Parking aid warning buzzer -H15 - Short to positive - Open circuit/short to earth	- Open circuit in wiring or short circuit between -H15 and control unit	- Use current flow diagram to perform fault-finding
	- H15 defective	- Replace -H15

Display on VAS 5051	Possible cause of trouble	Fault remedy
01545 RL parking aid sender -G203 - Short to positive - Open circuit/short to earth - Defective component - Implausible signal	- Open circuit in wiring or short circuit between -G203 and control unit	- Use current flow diagram to perform fault-finding
	- -G203 defective	- Replace -G203
01546 RL, ctr, parking aid sender -G204 - Short to positive - Open circuit/short to earth - Implausible signal	- Open circuit in wiring or short circuit between -G204 and control unit	- Use current flow diagram to perform fault-finding
	- -G204 defective	- Replace -G204

Display on VAS 5051	Possible cause of trouble	Fault remedy
01547 RR, ctr, parking aid sender -G205		

- Short to positive - Open circuit/short to earth - Implausible signal	- Open circuit in wiring or short circuit between -G205 and control unit - -G205 defective	- Use current flow diagram to perform fault-finding - Replace -G205
01548 RR parking aid sender -G206 - Short to positive - Open circuit/short to earth - Implausible signal	- Open circuit in wiring or short circuit between -G206 and control unit - -G206 defective	- Use current flow diagram to perform fault-finding - Replace -G206

Display on VAS 5051	Possible cause of trouble	Fault remedy
01549 Voltage supply for parking aid sender - Short to earth	- Short to earth between parking aid sender and control unit	- Use current flow diagram to perform fault-finding
01550 Reverse gear signal - Short to positive	- Short to positive between reversing light switch and control unit	- Use current flow diagram to perform fault-finding
65535 Control unit defective	- Parking aid control unit -J446 defective	- Replace control unit

## 8.6 - Erasing fault memory

### **Note:**

*If fault memory cannot be erased, interrogate fault memory again and eliminate fault.*

### **Requirements:**

- Fault memory interrogated => Page 210
- All faults eliminated



### **Sequence of operations**

After fault memory interrogation:

-> Display on VAS 5051:

- From list -1- select diagnosis function "05 - Erasing fault memory".



-> Display on VAS 5051:

- 1 - - No display (prior to erasing)
- Or
- Fault memory erased

#### Note:

If the following message appears in display zone -1-: "Fault memory not yet interrogated", this means that sequence of operations has not been precisely observed. Fault memory cannot be erased until it has been interrogated.

2 - Note:

Is function to be implemented?

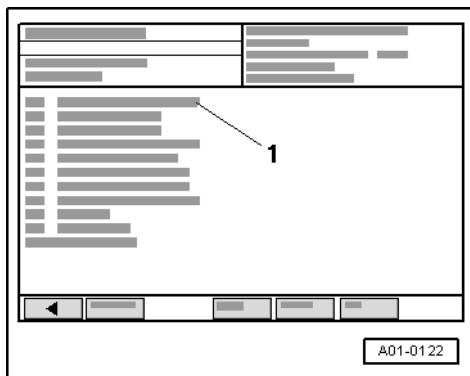
Note: Data will be erased!

- Touch "OK" key in display -2-.
- Terminate function "05 - Erasing fault memory" by touching ◀ key.
- Interrogate fault memory again after performing repair work.

#### Note:

This erases faults stored during fault elimination e.g. on account of connectors being unplugged.

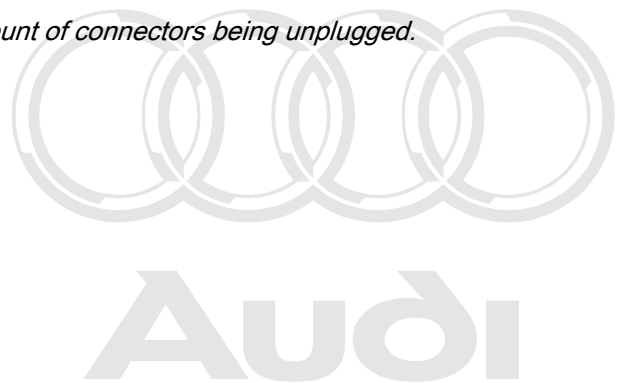
## 8.7 - End of output



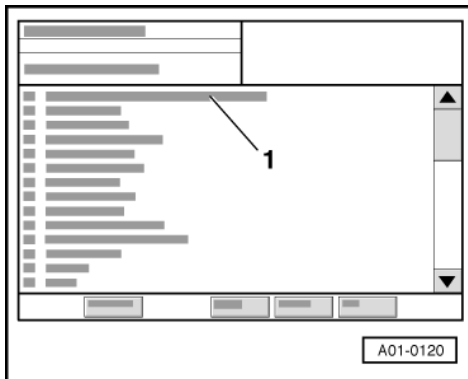
#### Sequence of operations

-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".



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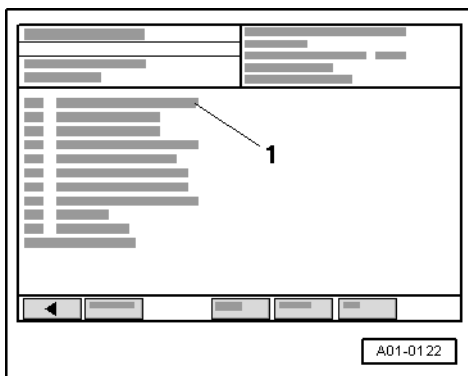
-> Display on VAS 5051:

- Switch off ignition and unplug diagnostic connector when this display appears.

## 8.8 - Encoding control unit

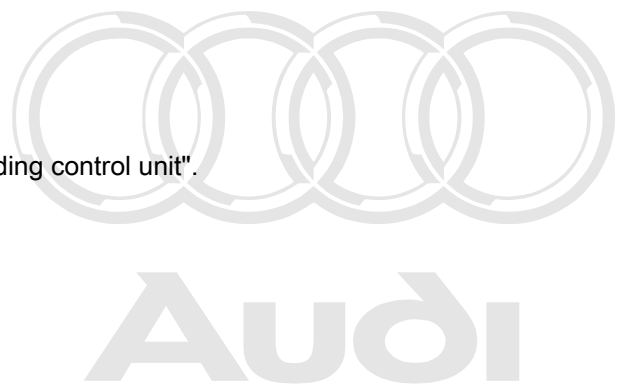
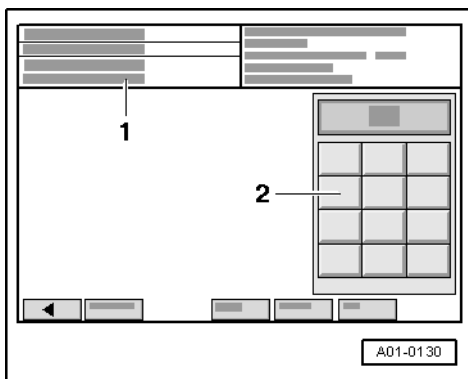
### *Note:*

*The encoding adapts the universal parking aid control unit -J446 to the particular requirements of the vehicle concerned.*



### Sequence of operations

- Start parking aid self-diagnosis => Page 209 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "07 - Encoding control unit".



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-> Display on VAS 5051:

- 1 - Enter code word
- Use keypad -2- to enter control unit code as per encoding table.

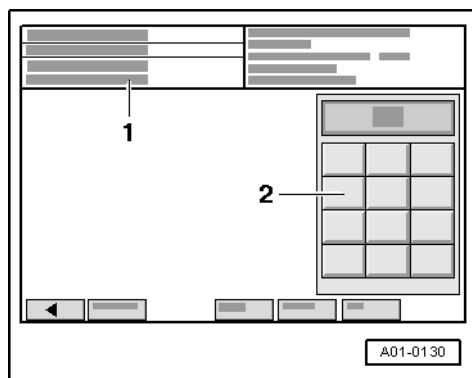
Code	Settings
0	Filler
0	Manual gearbox
1	Automatic gearbox
0	No function confirmation
1	With confirmation of function (ex works)
0	Saloon
3	A3

Example:

Desired input: 1103

Keypad entry: 01103

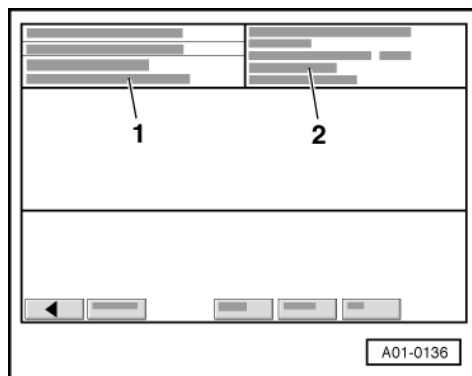
- Confirm entry by touching Q key.



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-> Display on VAS 5051:

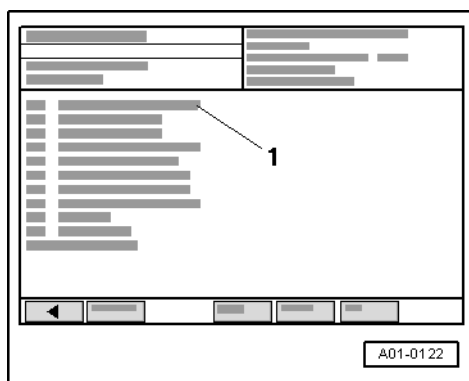
- 1 - Encoding in progress
- Wait until next display appears.



-> Display on VAS 5051:

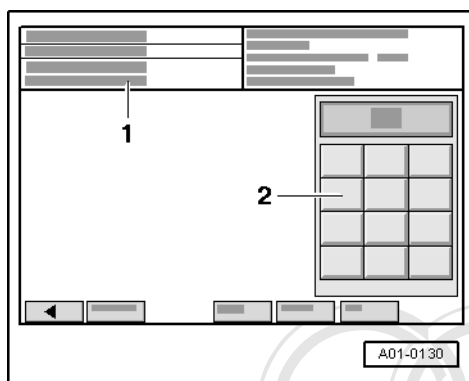
- 1 - Vehicle-system encoding completed
- 2 - Control-unit identification with new code  
(old code in brackets)
- Terminate function "07 - Encoding control unit" by touching ◀ key.

## 8.9 - Reading measured value block



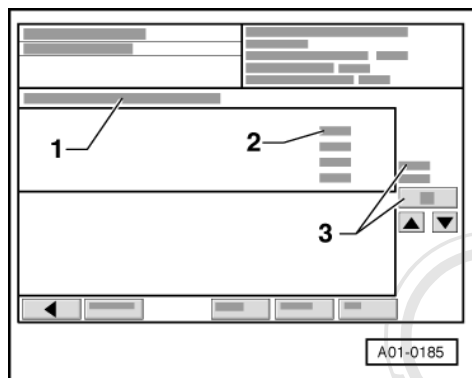
### Sequence of operations

- Start parking aid self-diagnosis => Page 209 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "08 - Reading measured value block".



-> Display on VAS 5051:

- 1 - Enter display group
- Use keypad -2- to enter required three-digit display group number  
=>List of display groups, Page 218 and confirm entry by touching Q key.



-> Display on VAS 5051:

- 1 - Reading measured value block
- 2 - Display zone 1
- Display zone 2
- Display zone 3
- Display zone 4
- 3 - Display group X

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- ♦ Display remains blank if a display zone is not used.
- ♦ Proceed as follows to switch to a different display group:

Display group	VAS 5051
Up	Press s key
Down	Press t key

- Terminate function "08 - Reading measured value block" by touching \* key.

**List of display groups**

Display group number	Indicated on display
001	1 = Distance from rl sensor in cm 2 = Distance from rlc sensor in cm 3 = Distance from rrc sensor in cm 4 = Distance from rr sensor in cm
002	1 = Minimum distance in cm 2 = Vehicle speed km/h 3 = Warning buzzer 4 = Not used
003	1 = Supply voltage V 2 = Reverse gear 3 = Trailer 4 = Not used
004	1 = rl sensor settling time in ms 2 = rlc sensor settling time in ms 3 = rrc sensor settling time in ms 4 = rr sensor settling time in ms

**Measured value block 001**

Display group 1	◀ Indicated on display
XX cm    XX cm    XX cm    XX cm	◀ Display zones 1 ... 4



			Distance from rear right sensor ▪ 0 ... 200 cm
			Distance from rear right centre sensor ▪ 0 ... 200 cm
			Distance from rear left centre sensor ▪ 0 ... 200 cm
			Distance from rear left sensor ▪ 0 ... 200 cm

#### Measured value block 002

Display group 2				▪ Indicated on display
XX cm	XX km/h	Tone XXX	-	▪ Display zones 1 ... 4
				Warning buzzer ▪ Tone on ▪ Tone off
				Vehicle speed ▪ 0 ... 300 km/h
				Minimum distance ▪ Smallest value of the four measured distances

#### Measured value block 003

Display group 3				▪ Indicated on display
XX V	Reverse XX	Trailer XXX	-	▪ Display zones 1 ... 4
				Trailer display ▪ Trailer yes ▪ Trailer no
				Reverse gear display ▪ Reverse yes ▪ Reverse no
				Sensor supply voltage ▪ 0 ... 15 V

#### Measured value block 004

Display group 4				▪ Indicated on display
X.XX ms	X.XX ms	X.XX ms	X.XX ms	▪ Display zones 1 ... 4
				Rear right sensor settling time
				Rear right centre sensor settling time
				Rear left centre sensor settling time
				Rear left sensor settling time



**Note:**

Values of greater than 4.00 ms with reverse gear engaged are an indication of a defective ultrasonic sensor or an open circuit in the wiring.

## 8.10 - Adaption

The adaption function can be used to make and save the following changes:

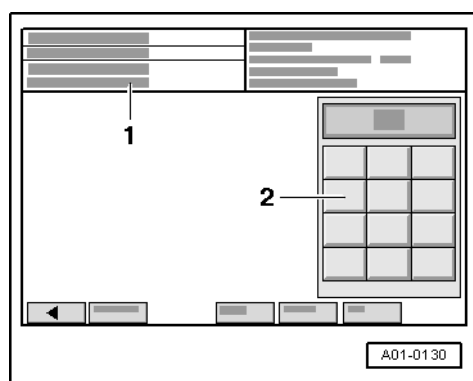
- ♦ Volume of warning tone
- ♦ Pitch (audio frequency) of warning tone



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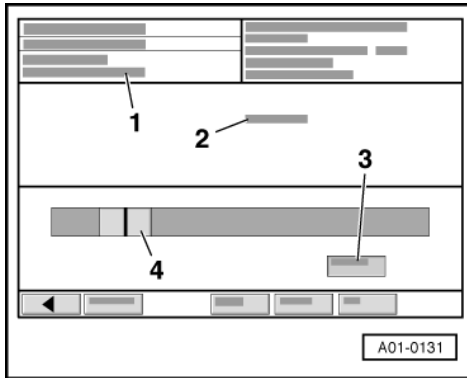
### Adaption channel 01 - Volume of warning tone

- Start parking aid self-diagnosis => Page 209 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "10 - Adaption".



-> Display on VAS 5051:

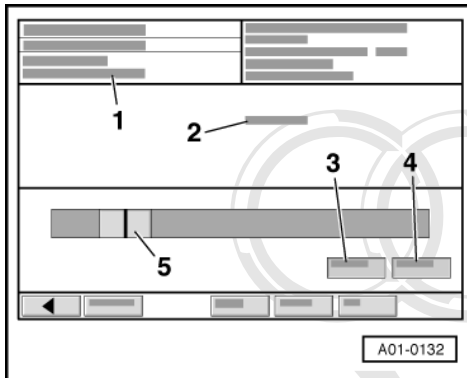
- 1 - Enter channel number
- Use keypad -2- to enter "01" for "Adaption channel 01" and confirm by touching Q key.



-> Display on VAS 5051:

- 1 - Channel 1
- Read and test
- 4 - Moving bar positioned on current adaption value

Volume	Low ... High						
Adaption value	2	3	4	5	6	7	



-> Display on VAS 5051:

- Enter desired volume adaption value.

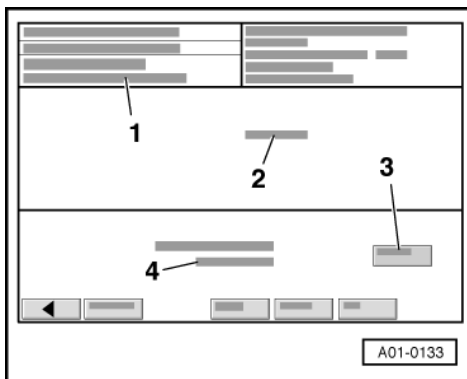
Example: Adaption value 4 for mid volume

- Shift moving bar -5- in required direction or touch area next to bar until it is positioned under number "4" (example).

**Note:**

Another alternative is to touch "Keypad" key -3-, enter number "4" on keypad and confirm entry by touching Q key.

- Touch "Save" key -4-.

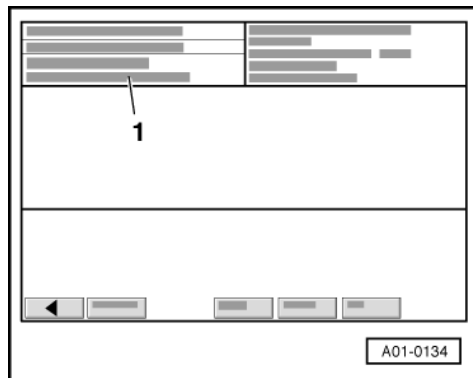




-> Display on VAS 5051:

- 1 - Channel 1
- Read and test
- 4 - Original value "7"
- New value "4" (example)

- Confirm new adaption value by touching "Accept" key -3-.



-> Display on VAS 5051 following adaption:

- 1 - Channel 1
- Value "4" saved

- Terminate function "10 - Adaption" by touching ◀ key.

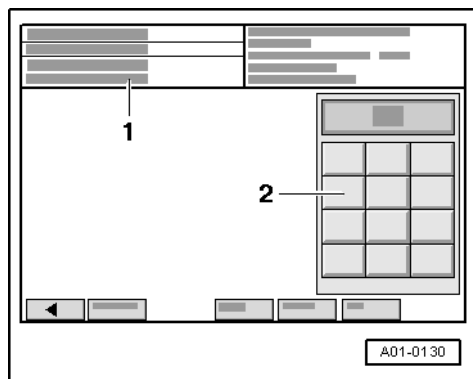


### Adaption channel 02 - Pitch (audio frequency) of warning tone

- Start parking aid self-diagnosis => Page 209 .

-> Display on VAS 5051:

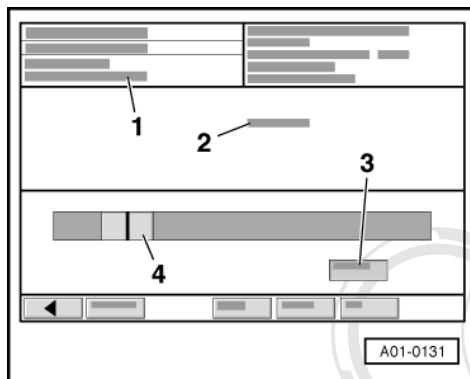
- From list -1- select diagnosis function "10 - Adaption".



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-> Display on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "02" for "Adaption channel 02" and confirm by touching Q key.

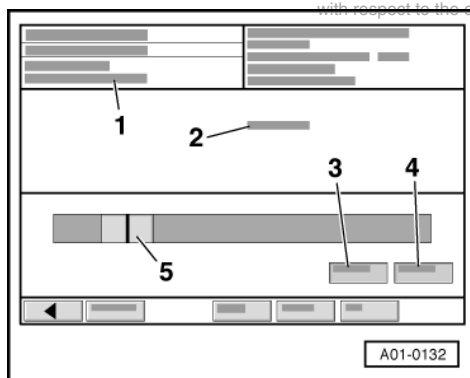


-> Display on VAS 5051:

- 1 - Channel 2
- Read and test
- 4 - Moving bar positioned on current adaption value

Pitch kHz	0.5	...	2
Adaption value	0	1	2

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-> Display on VAS 5051:

- Enter desired pitch adaption value.

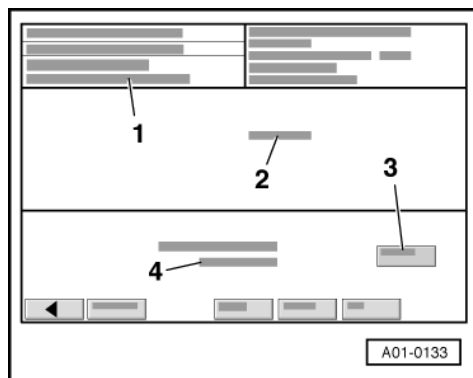
Example: Adaption value 0 for 0.5 kHz

- Shift moving bar -5- in required direction or touch area next to bar until it is positioned under number "0" (example).

**Note:**

Another alternative is to touch "Keypad" key -3-, enter number "0" on keypad and confirm entry by touching Q key.

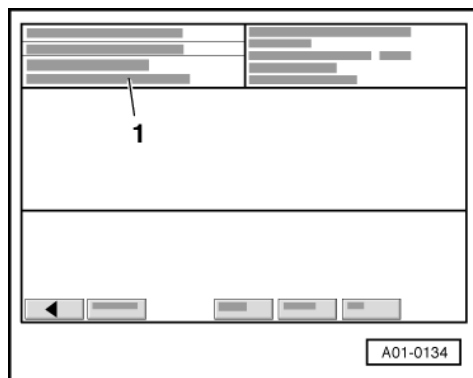
- Touch "Save" key -4-.



-> Display on VAS 5051:

- 1 - Channel 2
- Read and test
- 4 - Original value "3"
- New value "0" (example)

- Confirm new adaption value by touching "Accept" key -3-.



-> Display on VAS 5051 following adaption:

- 1 - Channel 2
- Value "0" saved

- Terminate function "10 - Adaption" by touching ◀ key.



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## 9 - Automatic headlight range control self-diagnosis

### 9.1 - Automatic headlight range control self-diagnosis

### 9.2 - General information

#### Function

The automatic headlight range control system corrects the angle of the dipped beam at the start of a journey/ with vehicle stationary.

One level sender each at the front and rear axle signals the compression of the vehicle suspension. In addition, a signal proportional to vehicle speed is processed by the ABS control unit.

The control unit evaluates these signals and actuates the headlight range controller when the lights are on.

The headlight range control system consists of the following:

- ◆ Headlight range control unit -J431
- ◆ Rear left vehicle level sender -G76
- ◆ Front left vehicle level sender -G78
- ◆ Headlight range control motor, left -V48
- ◆ Headlight range control motor, right -V49

**Note:**

*If faults occur in the system, the driver is informed accordingly by a warning symbol in the dash panel insert centre display.*

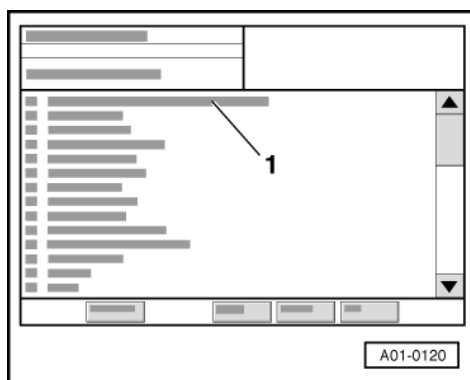
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### 9.3 - Starting automatic headlight range control self-diagnosis

**Requirements:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page **1**
- Ignition on

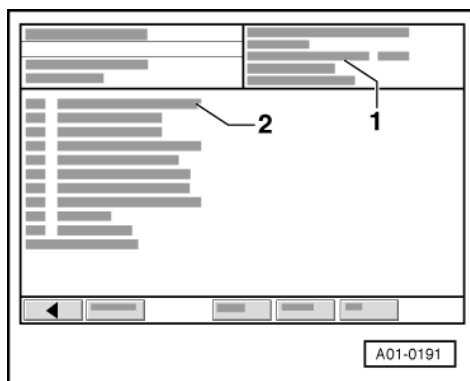
**Attention:**  
Heed safety precautions => Page **1** .



**Sequence of operations**

-> Display on VAS 5051:

- From list -1- select vehicle system "55 - Headlight range control".
- Wait until next display appears.





-> Display on VAS 5051:

- 1 - Headlight range control unit identification
- 2 - List of diagnosis functions => Page 226

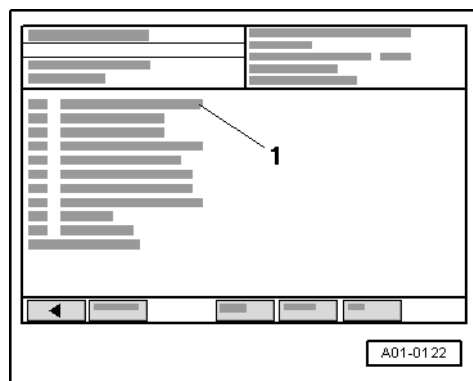
Headlight range control unit identification (example)		
55 - Headlight range control	Vehicle system	
4B0907357	Part No.; Assignment => Parts List	
HEADLIGHT RANGE CONTROLLER 1) D004 2)	1) 2)	Component designation Data level (software version)
Code 13	Control unit encoding (checking => Page 235 )	
Dealership number 12345	Workshop code of VAS 5051 with which encoding was last performed	

Diagnosis functions	Page
02 Interrogating fault memory	226
03 Final control diagnosis	229
04 Basic setting	231
05 Erasing fault memory	233
06 End of output	234
07 Encoding control unit	235
08 Reading measured value block	237
09 Reading individual measured value	-
10 Adaption	-
11 Login procedure	-



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## 9.4 - Interrogating fault memory



### Note:

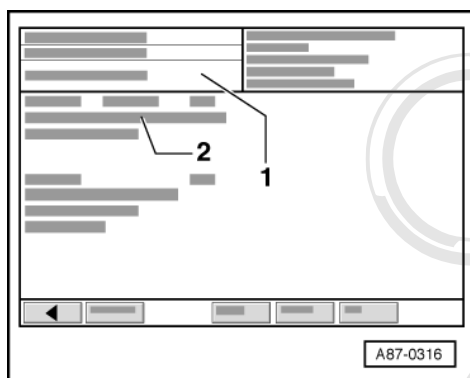
*Fault information displayed is not updated constantly, but rather only on starting self-diagnosis/implementing function 05 "Erasing fault memory".*

- Start automatic headlight range control self-diagnosis=>Page 225 .

-> Display on VAS 5051:

- From list -1- select diagnosis function "02 - Interrogating fault memory".





-> Display on VAS 5051:

**1 - Content of fault memory:**

- 0 faults detected

Or

- X faults detected

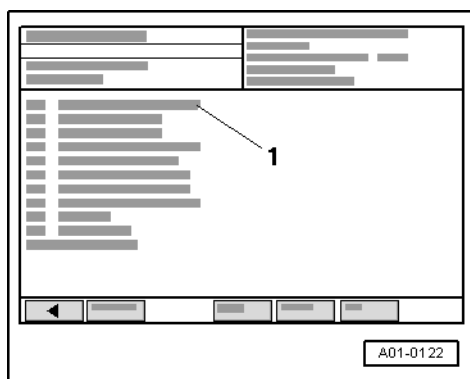
**2 - Fault**

- Fault code

- Fault location

- Type of fault

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**A - Faults detected:**

- Print out information on screen or self-diagnosis log.
- Terminate function "02 - Interrogating fault memory" by touching **◀** key.

-> Display on VAS 5051:

- Eliminate fault(s) in line with fault table => Page **228** .
- Select diagnosis function "02 - Interrogating fault memory" again in list and erase fault memory => Page **233** .
- Select diagnosis function "06 - End of output" in list => Page **234** .

**B - No fault detected:**

- Select diagnosis function "06 - End of output" in list => Page **234** .



## 9.5 - Fault table

### Notes:

- Faults occurring in monitored sensors or components are stored in fault memory together with an indication of the type of fault.
- The fault table is arranged according to the 5-digit fault codes on the left.
- All static and sporadic faults are stored in the fault memory:  
A fault is recognised as being static if it is present for at least 2 seconds. If a fault is then no longer present, it is stored as being sporadic and "sporadic" also appears on display.
- After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.
- Sporadic faults are erased if they do not re-occur in the course of 50 driving cycles (ignition on for at least 5 minutes, vehicle speed greater than 30 km/h).
- Do not immediately replace components indicated as being defective by VAS 5051, but rather: Start by checking wiring and connectors to these components in line with current flow diagram. Also use current flow diagram to check earth connections. This is particularly important if faults are output as being "sporadic".
- On completion of repair work, fault memory is to be interrogated again and erased.

Display on VAS 5051	Possible cause of trouble	Fault remedy
00532 Supply voltage - Signal too low	- Open circuit in wiring or short circuit in power supply	- Use current flow diagram to perform fault-finding
00625 Speed signal - Implausible signal	- Open circuit in wiring or short circuit between ABS with EDL control unit -J104 and headlight range control unit -J431	- Use current flow diagram to perform fault-finding
	- ABS with EDL control unit -J104 defective	- Replace -J104

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Display on VAS 5051	Possible cause of trouble	Fault remedy
00774 RL self-levelling sender -G76 - Short to positive - Open circuit/short to earth	- Open circuit in wiring or short circuit between -G76 and control unit	- Use current flow diagram to perform fault-finding
	- -G76 defective	- Replace -G76
00776 FL self-levelling sender -G78 - Short to positive - Open circuit/short to earth	- Open circuit in wiring or short circuit between -G78 and control unit	- Use current flow diagram to perform fault-finding
	- -G78 defective	- Replace -G78

Display on VAS 5051	Possible cause of trouble	Fault remedy
01532 Combi-instrument signal wire - Short to positive - Open circuit/short to earth	- Open circuit in wiring or short circuit between headlight range control unit -J431 and dash panel insert	- Use current flow diagram to perform fault-finding
	- Dash panel insert defective	- Replace dash panel insert
01533 Terminal 56 (headlight)		

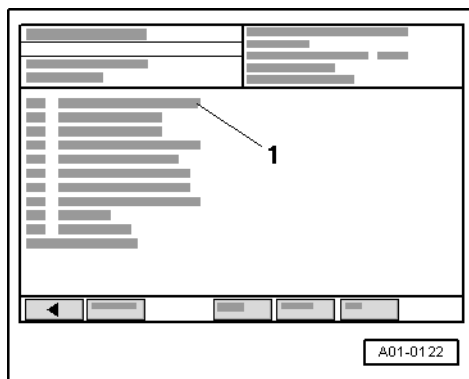
- Open circuit in wiring	- Open circuit in wiring/terminal 56 between lighting switch -E1 and headlight range control unit -J431	- Use current flow diagram to perform fault-finding
01534 L headlight range ctrl posit. motor -V48 - Open circuit in wiring/short to earth - Short to positive	- Open circuit in wiring or short to positive/earth between -V48 and control unit -J431 - -V48 defective	- Use current flow diagram to perform fault-finding - Replace -V48
<b>Display on VAS 5051</b>	<b>Possible cause of trouble</b>	<b>Fault remedy</b>
01535 R headlight range ctrl posit. motor -V49 - Open circuit in wiring/short to earth - Short to positive	- Open circuit in wiring or short to positive/earth between -V49 and control unit -J431 - -V49 defective	- Use current flow diagram to perform fault-finding - Replace -V49
01537 Sender for veh. level/supp. volt. - Short to positive - Open circuit/short to earth	- Open circuit in wiring or short to positive/earth between control unit and vehicle level sender	- Use current flow diagram to perform fault-finding
<b>Display on VAS 5051</b>	<b>Possible cause of trouble</b>	<b>Fault remedy</b>
01539 Headlights not set	- Basic setting 2 not performed - Vehicle level sender outside adjustment range	- Perform full basic setting => Page 231 - Replace holder for vehicle level sender
01577 Switch-off due to excess temperature	- Excess temperature in electronics of headlight range control unit (headlight range control motor/headlight mechanical system stiff)	- Replace headlight range control motor/headlight
65535 Control unit defective	- Headlight range control unit -J431 defective	- Replace control unit

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## 9.6 - Final control diagnosis

### Notes:

- ♦ Final control diagnosis can only be performed with engine stopped and ignition switched on.
- ♦ If final control diagnosis detects a fault, locate and eliminate cause of problem.



### Test requirement:

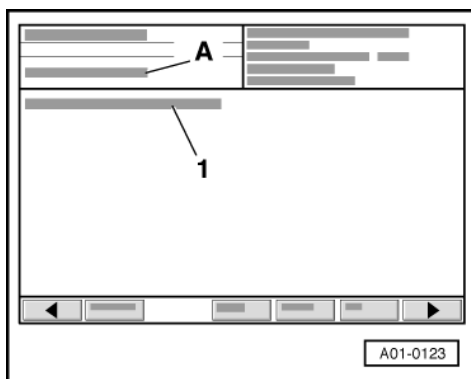
- Dipped beam on

### Sequence of operations

- Start automatic headlight range control self-diagnosis=>Page 225 .

-> Display on VAS 5051:

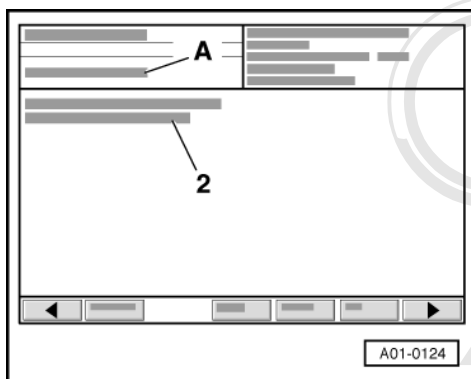
- From list -1- select diagnosis function "03 - Final control diagnosis".



### Actuation of headlight lowering

- A - 1st control element being tested
- 1 - Headlights are lowered

- ♦ Headlights are lowered until upper end position is reached



### Actuation of headlight raising

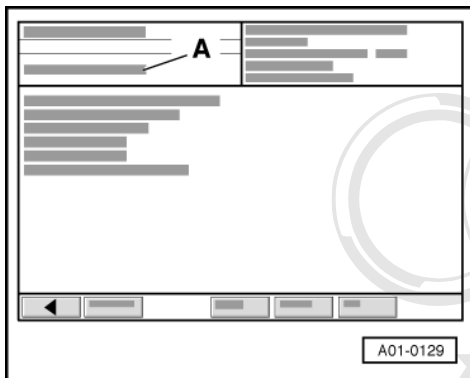
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- Touch ► key.

-> Display on VAS 5051:

- A - 2nd control element being tested
- 2 - Headlights are raised

- ♦ Headlights are raised until upper end position is reached



- Touch ▶ key.

-> Display on VAS 5051:

#### A - Control element test over

- Terminate function "03 - Final control diagnosis" by touching ◀ key.

## 9.7 - Basic setting

Basic setting must be performed following replacement of headlight, axle sensor or control unit. Heed the following:

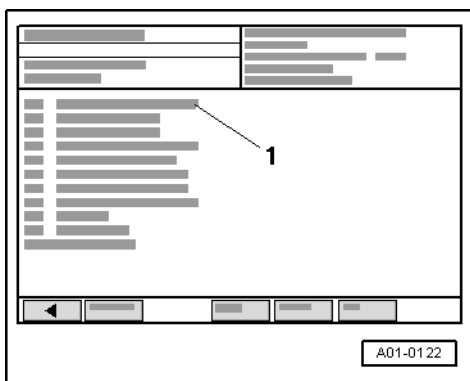
#### Notes:

- ◆ Vehicle must be in a precisely defined load status.
- ◆ For information on specifications and load requirements:

=> Maintenance

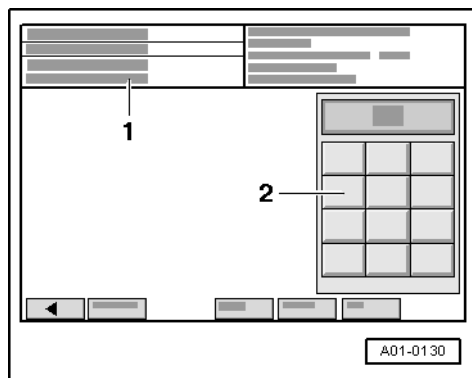
#### Sequence of operations

- Achieve uniform extension of suspension by moving body up and down several times at each wheel and allowing vehicle to settle.
- Start automatic headlight range control self-diagnosis=>Page 225 .



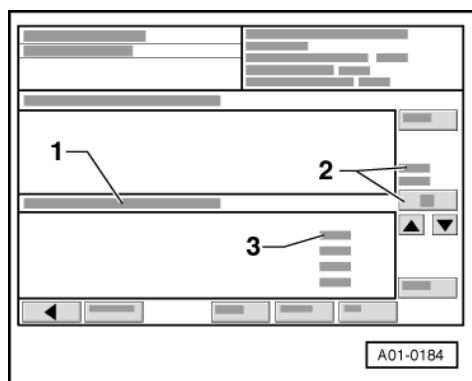
-> Display on VAS 5051:

- From list -1- select diagnosis function "04 - Basic setting".



-> Display on VAS 5051:

- Use keypad -2- to enter "001" for "Display group number 001" and confirm by touching Q key.



-> Display on VAS 5051:

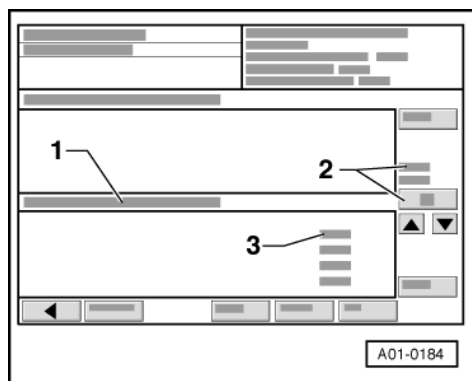
- 1 - Basic setting
- 2 - Display group 1
- 3 - Wait

- ◆ Headlights are moved to adjustment position
- Wait until next display appears.
- 3 - Headlight adjustment
- ◆ Headlights are now in adjustment position
- Set headlights with headlight aiming device VAS 5046.

**Note:**

*Basic setting 1 deactivates control mode and "Headlights not adjusted" is entered in fault memory.*

- Touch s key to switch to display group 002.



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-> Display on VAS 5051:

- 1 - Basic setting
- 2 - Display group 2
- 3 - Control position learnt
- Control unit now recognises this position as being the control position

**Note:**

*Entry in fault memory ("Headlights not adjusted") is erased and control mode re-activated.*

- Terminate function "04 - Basic setting" by touching ◀ key.

## 9.8 - Erasing fault memory

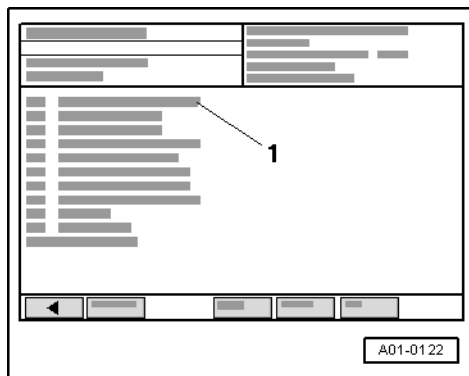
**Note:**

*If fault memory cannot be erased, interrogate fault memory again and eliminate fault.*

**Requirements:**

- Fault memory interrogated => Page 226
- All faults eliminated

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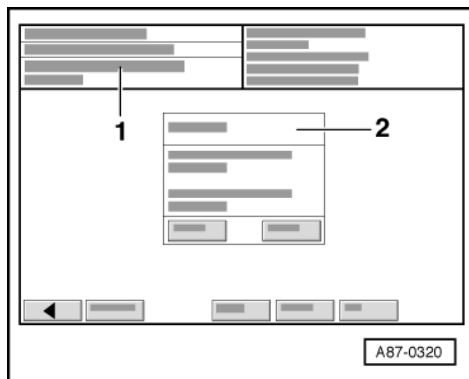


**Sequence of operations**

After fault memory interrogation:

-> Display on VAS 5051:

- From list -1- select diagnosis function "05 - Erasing fault memory".





-> Display on VAS 5051:

- 1 - - No display (prior to erasing)
- Or
- Fault memory erased

**Note:**

*If the following message appears in display zone -1-: "Fault memory not yet interrogated", this means that sequence of operations has not been precisely observed. Fault memory cannot be erased until it has been interrogated.*

2 - Note:

Is function to be implemented?

Note: Data will be erased!

- Touch "OK" key in display -2-.
- Terminate function "05 - Erasing fault memory" by touching ◀ key.
- Interrogate fault memory again after performing repair work.

**Note:**

*This erases faults stored during fault elimination e.g. on account of connectors being unplugged.*

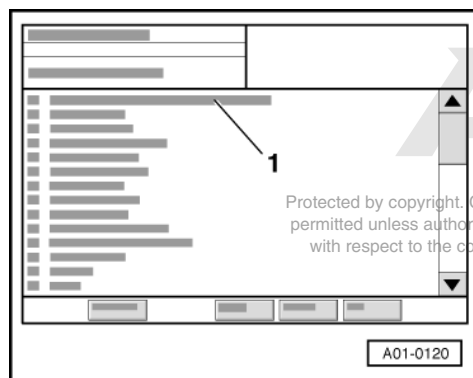
## 9.9 - End of output



### Sequence of operations

-> Display on VAS 5051:

- From list -1- select diagnosis function "06 - End of output".



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-> Display on VAS 5051:

- Switch off ignition and unplug diagnostic connector when this display appears.

## 9.10 - Encoding control unit

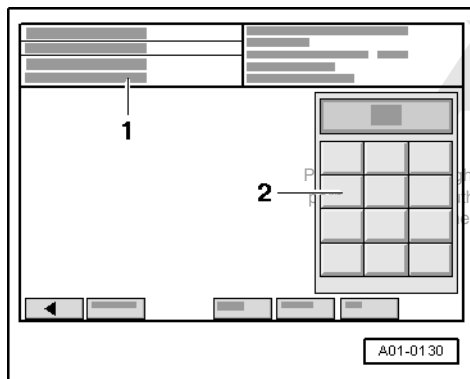
### **Note:**

*The encoding adapts the universal headlight range control unit to the particular requirements of the vehicle concerned.*



### **Sequence of operations**

- Start automatic headlight range control self-diagnosis=>Page 225 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "07 - Encoding control unit".



-> Display on VAS 5051:

- 1 - Enter code word
- Use keypad -2- to enter control unit code as per encoding table.

Code	Type of vehicle/type of drive
00001	A3 FWD Up to Model Year 2000
00002	A3 4WD/S3 Up to Model Year 2000



Code	Type of vehicle/type of drive
00013	A3 FWD As of Model Year 2001
00014	A3 4WD/S3 As of Model Year 2001

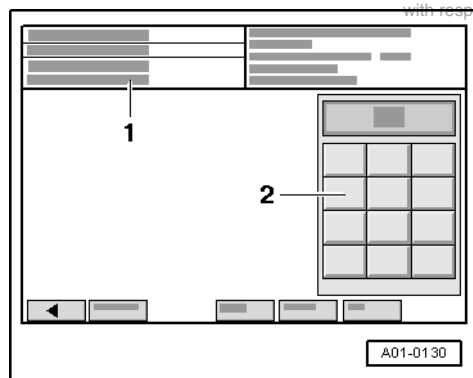
Example:

Desired input: 13

Keypad entry: 00013

- Confirm entry by touching **Q** key.

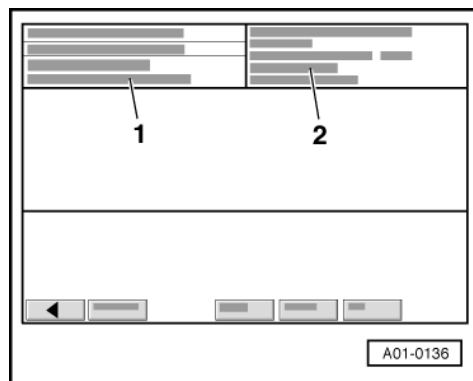
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-> Display on VAS 5051:

- 1 - Encoding in progress

- Wait until next display appears.

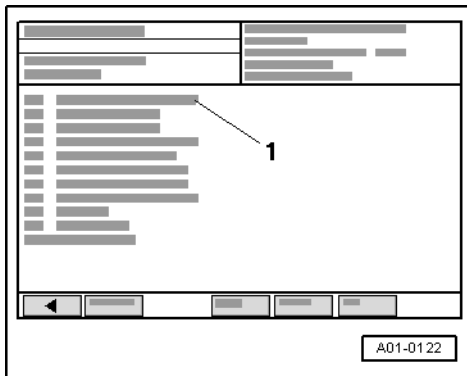


-> Display on VAS 5051:

- 1 - Vehicle system encoding completed
- 2 - Control-unit identification with new code (old code in brackets)

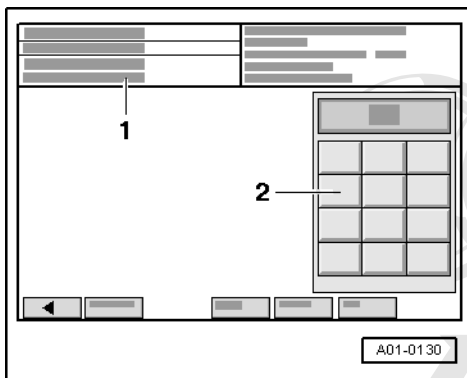
- Terminate function "07 - Encoding control unit" by touching ◀ key.

## 9.11 - Reading measured value block



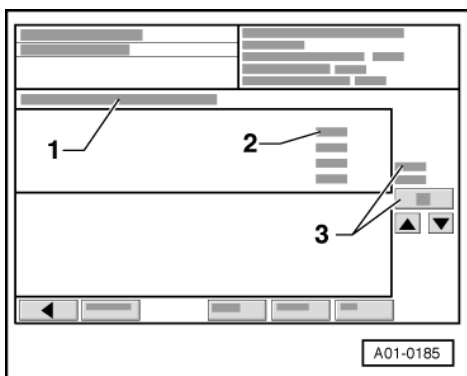
### Sequence of operations

- Start automatic headlight range control self-diagnosis=>Page 225 .
- > Display on VAS 5051:
- From list -1- select diagnosis function "08 - Reading measured value block".



-> Display on VAS 5051:

- 1 - Enter display group
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- Use keypad -2- to enter required three-digit display group number  
=>List of display groups, Page 238 and confirm entry by touching Q key.





-> Display on VAS 5051:

- 1 - Reading measured value block
- 2 - Display zone 1
- Display zone 2
- Display zone 3
- Display zone 4
- 3 - Display group X

**Notes:**

- ♦ Display remains blank if a display zone is not used.
- ♦ Proceed as follows to switch to a different display group:

Display group	VAS 5051
Up	Press s key
Down	Press t key

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

**List of display groups:**

Display group number	Indicated on display
001	1 = Voltage supply term. 15 2 = Dipped beam voltage via 3 = term. 56b 4 = Vehicle speed km/h Not used
002	1 = Front level sender 2 = Rear level sender 3 = Control motor actuation 4 = Not used

**Display group 001**

Display group 1				• Indicated on display • Display zones 1 ... 4
XX.X V	XX.X V	XXX km/h	-	
				Vehicle speed ▪ 0 ... 300 km/h
				Dipped beam voltage via term. 56b ▪ 0 ... 15 V
				Voltage supply term. 15 ▪ 0 ... 15 V

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**Display group 002**

Display group 2				• Indicated on display • Display zones 1 ... 4
X.X V	X.X V	ADP. XX	-	
				Control motor actuation ▪ ADP. in progress (control motor actuation provides compensation for deviation) ▪ ADP. OK (control position set)

	Rear level sender voltage value ▪ 0.5 ... 4.5 V
	Front level sender voltage value ▪ 0.5 ... 4.5 V



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