

## Workshop Manual Audi A4 1995 ➤

### Electrical system, self-diagnosis

Edition 12.2005



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## List of Workshop Manual Repair Groups

### 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.

## Contents

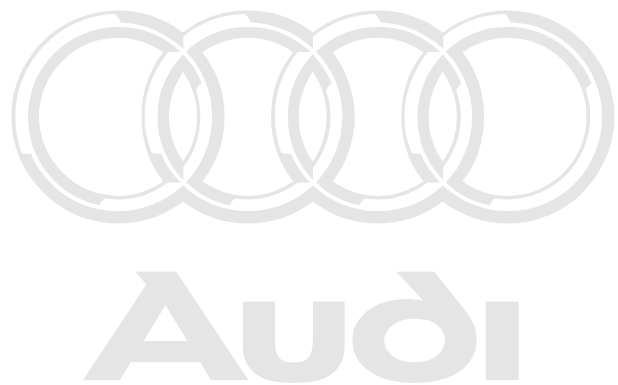
|                                                                                                   |            |
|---------------------------------------------------------------------------------------------------|------------|
| <b>01 - Self-diagnosis</b>                                                                        | <b>1</b>   |
| <b>1 Connecting vehicle diagnostic, testing and information system VAS 5051B</b>                  | <b>1</b>   |
| 1.1 Safety precautions                                                                            | 1          |
| <b>2 Dash panel insert self-diagnosis up to Model Year 1999</b>                                   | <b>4</b>   |
| 2.1 General information                                                                           | 4          |
| 2.2 Starting dash panel insert self-diagnosis                                                     | 5          |
| 2.3 Interrogating fault memory                                                                    | 7          |
| 2.4 Fault tables                                                                                  | 8          |
| 2.5 Final control diagnosis                                                                       | 9          |
| 2.6 Erasing fault memory                                                                          | 12         |
| 2.7 End of output                                                                                 | 13         |
| 2.8 Encoding control unit                                                                         | 14         |
| 2.9 Reading measured value block                                                                  | 16         |
| 2.10 Adaption                                                                                     | 18         |
| 2.11 Adaption channels 01 ... 09                                                                  | 21         |
| 2.12 Adaption channels 10 ... 30                                                                  | 34         |
| 2.13 Input values on dash panel insert replacement                                                | 39         |
| 2.14 Service interval display reset on completion of service without VAS 5051B                    | 40         |
| <b>3 Self-diagnosis of dash panel insert with extended service interval as of Model Year 2000</b> | <b>41</b>  |
| 3.1 General information                                                                           | 41         |
| 3.2 Starting dash panel insert self-diagnosis                                                     | 42         |
| 3.3 Interrogating fault memory                                                                    | 43         |
| 3.4 Fault tables                                                                                  | 45         |
| 3.5 Final control diagnosis                                                                       | 49         |
| 3.6 Erasing fault memory                                                                          | 52         |
| 3.7 End of output                                                                                 | 53         |
| 3.8 Encoding control unit                                                                         | 53         |
| 3.9 Reading measured value block                                                                  | 55         |
| 3.10 Adaption                                                                                     | 60         |
| 3.11 Adaption channels 02 ... 09                                                                  | 64         |
| 3.12 Adaption channels 18 ... 35                                                                  | 70         |
| 3.13 Adaption channels 40 ... 48                                                                  | 74         |
| 3.14 Adaption channels 60 ... 62                                                                  | 84         |
| 3.15 Input values on dash panel insert replacement                                                | 86         |
| 3.16 Service interval display reset on completion of service without VAS 5051B                    | 87         |
| <b>4 Immobilizer self-diagnosis - "Immobilizer I"</b>                                             | <b>89</b>  |
| 4.1 General information                                                                           | 90         |
| 4.2 Starting immobilizer self-diagnosis                                                           | 91         |
| 4.3 Interrogating fault memory                                                                    | 93         |
| 4.4 Fault tables                                                                                  | 94         |
| 4.5 Erasing fault memory                                                                          | 96         |
| 4.6 End of output                                                                                 | 97         |
| 4.7 Reading measured value block                                                                  | 97         |
| 4.8 Adaption                                                                                      | 99         |
| 4.9 Establishing PIN                                                                              | 100        |
| 4.10 Matching of vehicle keys                                                                     | 100        |
| 4.11 Procedure in the event of loss of key                                                        | 105        |
| 4.12 Matching following replacement of immobilizer control unit J362 or dash panel insert         | 105        |
| 4.13 Matching following replacement of engine control unit                                        | 106        |
| 4.14 Emergency starting function with VAS 5051B                                                   | 109        |
| <b>5 Immobilizer self-diagnosis - "Immobilizer II" (as of week 27/1999)</b>                       | <b>113</b> |

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|          |                                                                             |            |
|----------|-----------------------------------------------------------------------------|------------|
| 5.1      | General information                                                         | 114        |
| 5.2      | Starting immobilizer self-diagnosis                                         | 115        |
| 5.3      | Interrogating fault memory                                                  | 116        |
| 5.4      | Fault tables                                                                | 118        |
| 5.5      | Erasing fault memory                                                        | 119        |
| 5.6      | End of output                                                               | 120        |
| 5.7      | Reading measured value block                                                | 121        |
| 5.8      | Adaption                                                                    | 123        |
| 5.9      | Establishing PIN                                                            | 123        |
| 5.10     | Matching of vehicle keys                                                    | 124        |
| 5.11     | Procedure in the event of loss of key                                       | 129        |
| 5.12     | Matching following replacement of dash panel insert                         | 129        |
| 5.13     | Matching following replacement of engine control unit                       | 129        |
| 5.14     | Emergency starting function with VAS 5051B                                  | 133        |
| <b>6</b> | <b>Immobilizer self-diagnosis - "Immobilizer III" as of week 18/2000</b>    | <b>136</b> |
| 6.1      | General information                                                         | 137        |
| 6.2      | Starting immobilizer self-diagnosis                                         | 138        |
| 6.3      | Interrogating fault memory                                                  | 139        |
| 6.4      | Fault tables                                                                | 141        |
| 6.5      | Erasing fault memory                                                        | 142        |
| 6.6      | End of output                                                               | 143        |
| 6.7      | Reading measured value block                                                | 144        |
| 6.8      | Adaption                                                                    | 146        |
| 6.9      | Establishing PIN                                                            | 146        |
| 6.10     | Matching of vehicle keys                                                    | 147        |
| 6.11     | Procedure in the event of loss of key                                       | 152        |
| 6.12     | Matching following replacement of dash panel insert                         | 152        |
| 6.13     | Matching following replacement of engine control unit                       | 157        |
| 6.14     | Matching following replacement of dash panel insert and engine control unit | 161        |
| 6.15     | Control unit release                                                        | 164        |
| <b>7</b> | <b>Cruise control system (CCS) self-diagnosis</b>                           | <b>168</b> |
| 7.1      | Checking cruise control system - petrol engines with electronic throttle    | 168        |
| 7.2      | Checking cruise control system - TDI engines                                | 171        |
| 7.3      | Activating/deactivating cruise control system                               | 173        |
| <b>8</b> | <b>Acoustic Parking System (APS) self-diagnosis</b>                         | <b>175</b> |
| 8.1      | General information                                                         | 175        |
| 8.2      | Starting parking system self-diagnosis                                      | 175        |
| 8.3      | Interrogating fault memory                                                  | 177        |
| 8.4      | Fault tables                                                                | 178        |
| 8.5      | Erasing fault memory                                                        | 180        |
| 8.6      | End of output                                                               | 181        |
| 8.7      | Encoding control unit                                                       | 182        |
| 8.8      | Reading measured value block                                                | 183        |
| 8.9      | Adaption                                                                    | 185        |
| <b>9</b> | <b>Automatic headlight range control self-diagnosis</b>                     | <b>191</b> |
| 9.1      | General information                                                         | 191        |
| 9.2      | Starting automatic headlight range control self-diagnosis                   | 191        |
| 9.3      | Interrogating fault memory                                                  | 193        |
| 9.4      | Fault tables                                                                | 194        |
| 9.5      | Final control diagnosis                                                     | 195        |
| 9.6      | Basic setting                                                               | 196        |
| 9.7      | Erasing fault memory                                                        | 198        |
| 9.8      | End of output                                                               | 199        |
| 9.9      | Encoding control unit                                                       | 200        |
| 9.10     | Reading measured value block                                                | 201        |

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|           |                                                     |            |
|-----------|-----------------------------------------------------|------------|
| <b>10</b> | <b>Checking data exchange between control units</b> | <b>203</b> |
| 10.1      | Checking "two-wire bus system"                      | 203        |



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## 01 – Self-diagnosis

### 1 Connecting vehicle diagnostic, testing and information system -VAS 5051B-

#### 1.1 Safety precautions

**Note the following if testers and measuring instruments have to be used during a test drive:**



#### WARNING

- ◆ *Always attach the testers and measuring instruments to the rear seat and have them operated from there by a second person.*
- ◆ *If testers and measuring instruments were to be operated from the front passenger's seat, the person sitting there could be injured by triggering of the front passenger's air-bag in an accident.*

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

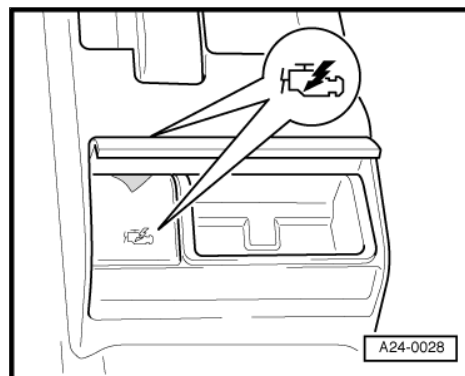
- ◆ Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- ◆ Certain tests may lead to a fault being detected by the control unit and stored. The fault memory should therefore be interrogated and (if necessary) erased after completing all tests and performing any repair work.
- ◆ Always switch off the ignition before connecting or disconnecting the battery, as otherwise electronic control units could be damaged.

#### Conditions:

- Vehicle power supply OK
- Corresponding system fuses OK ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Battery earth strap and, if fitted, earth strap between battery and gearbox OK
- Battery voltage min. 12.5 V
- Vehicles with automatic gearbox: Selector lever set to "P" or "N" and handbrake applied
- Check earth connections for corrosion and damage and repair if necessary ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

## Sequence of operations

- Open the rear ashtray and remove the cover for the diagnostic connector.



- Connect up the vehicle diagnostic, testing and information system -VAS 5051B- with the diagnostic wire -VAS 5051/1-, touch the vehicle self-diagnosis key and select vehicle system "01 - Engine electronics". The engine must be idling when doing so.



### WARNING

Heed safety precautions ⇒ [page 1](#).



### Note

If a fault message appears on the display, refer to ⇒ Operating instructions of vehicle diagnostic, testing and information system -VAS 5051B-.

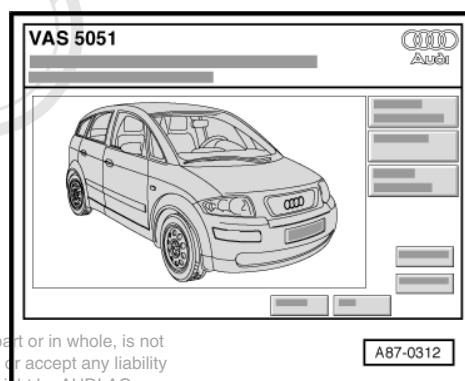
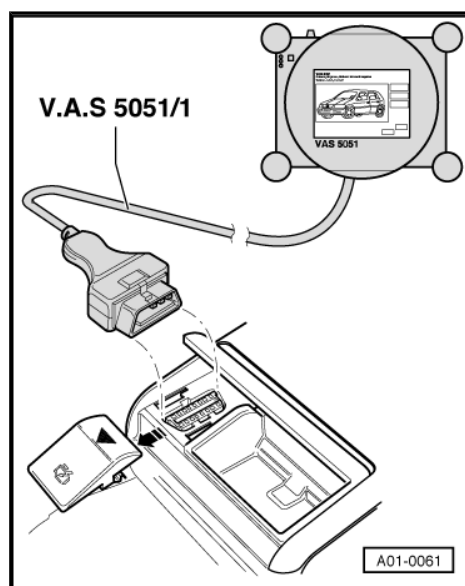
- Switch on ignition.

Or

- Start engine.

Display on -VAS 5051B- :

- Touch vehicle self-diagnosis key.



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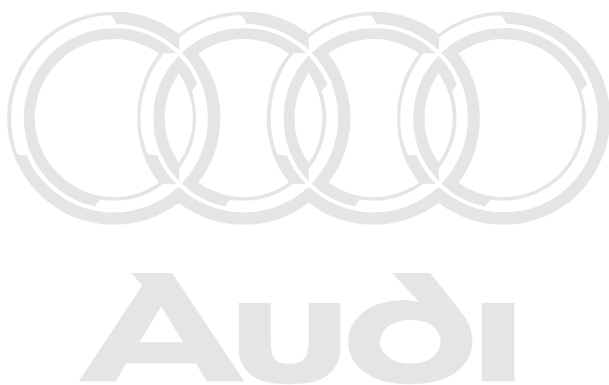
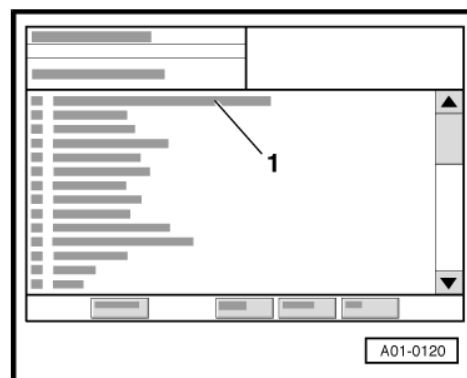
Display on -VAS 5051B- :



#### Note

*Touching the function "00 - Interrogating fault memory - Overall system" in the list -1- implements the automatic test sequence, i.e. the fault memories of all systems with self-diagnosis capability in the vehicle are interrogated.*

- In the list -1-, touch the required vehicle system, e.g. "17 - Dash panel insert".



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

### 2.1 General information

#### Technical features of dash panel insert

- ◆ Two different dash panel inserts are fitted:
  - Midline: With Minicheck system
  - Highline: With driver information system (DIS)
- ◆ The speedometer contains an LCD display for the mileage counter, trip recorder and service interval display.
- ◆ The warning lamps are integrated into the speedometer and rev counter.
- ◆ The dash panel insert is controlled by a microprocessor and is provided with comprehensive self-diagnosis. Any faults occurring at system components cause fault codes to be stored in the dash panel insert fault memory. The faults can be established by way of the vehicle diagnostic, testing and information system -VAS 5051B- .
- ◆ Adaption functions can also be implemented.

#### "dEF" display in trip recorder

"dEF" appears on the trip recorder display if the control unit in the dash panel insert detects a fault at the read-only memory. If "dEF" is displayed:

- Replace the dash panel insert ⇒ Rep. Gr. 90 .

#### Dash panel insert replacement

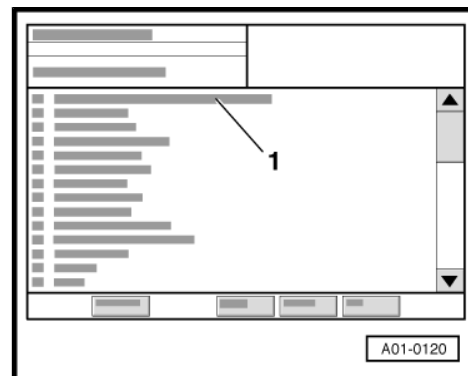
- ◆ The dash panel insert is not to be dismantled.
- ◆ Warning lamps in the form of bulbs can be replaced separately ⇒ Rep. Gr. 90 .
- ◆ If necessary, the dash panel insert is to be replaced as part of the exchange system.
- ◆ Complete the damage report and return it together with the dash panel insert.
- ◆ Always use the original packaging when returning the unit.
- ◆ On dash panel insert replacement, mileage counter and service interval display adaption can be performed using the vehicle diagnostic, testing and information system -VAS 5051B- ⇒ [page 18](#) .

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## 2.2 Starting dash panel insert self-diagnosis

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Ignition on
  - From list -1- select vehicle system “17 - Dash panel insert”.
  - Wait until next display appears.



### Vehicles up to Model Year 1997:

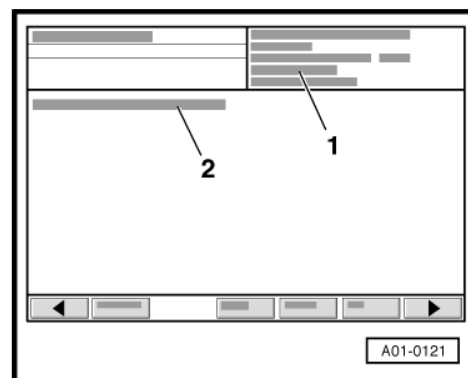
Display on -VAS 5051B- :

- 1 - Control unit identification of dash panel insert



#### Note

-Item 2- can be ignored.



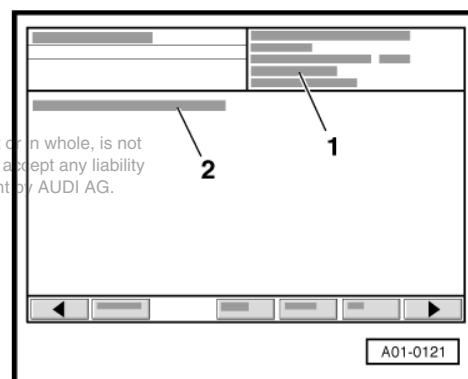
| Dash panel insert control unit identification (example) |                                                                     |
|---------------------------------------------------------|---------------------------------------------------------------------|
| 17 - Dash panel insert                                  | Vehicle system                                                      |
| 8D0919033..                                             | Part no.; assignment ⇒ Parts catalogue                              |
| B5 DASH PANEL INSERT                                    | Component designation                                               |
| D..                                                     | Data level (software version) of control unit                       |
| Code 42                                                 | Control unit encoding (checking ⇒ <a href="#">page 14</a> )         |
| Workshop code 12345                                     | Workshop code of -VAS 5051B- with which encoding was last performed |

### Vehicles as of Model Year 1998:

Display on -VAS 5051B- :

- 1 - Control unit identification of dash panel insert
- 2 - Control unit identification of immobilizer

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| Dash panel insert control unit identification (example) |                                        |
|---------------------------------------------------------|----------------------------------------|
| 17 - Dash panel insert                                  | Vehicle system                         |
| 8D0919880..                                             | Part no.; assignment ⇒ Parts catalogue |
| B5 DASH PANEL INSERT                                    | Component designation                  |

| Dash panel insert control unit identification (example) |                                                                     |
|---------------------------------------------------------|---------------------------------------------------------------------|
| UN4                                                     | Manufacturer's code<br>◆ UN4 = Nippon Seiki<br>◆ VDO = VDO          |
| D..                                                     | Data level (software version) of control unit                       |
| Code 42                                                 | Control unit encoding (checking ⇒ <a href="#">page 14</a> )         |
| Workshop code 12345                                     | Workshop code of -VAS 5051B- with which encoding was last performed |

| Immobilizer control unit identification (example) |                                               |
|---------------------------------------------------|-----------------------------------------------|
| IMMO IDENT NO.<br>AUZ7Z0T0033877                  | 14-position immobilizer identification number |

### All vehicles (continued):

- Touch  key.

Display on -VAS 5051B- :

The following functions shown in the display -1- are available:

| Functions                         | Page                      |
|-----------------------------------|---------------------------|
| 02 Interrogating fault memory     | ⇒ <a href="#">page 7</a>  |
| 03 Final control diagnosis        | ⇒ <a href="#">page 9</a>  |
| 05 Erasing fault memory           | ⇒ <a href="#">page 12</a> |
| 06 End of output                  | ⇒ <a href="#">page 13</a> |
| 07 Encoding control unit          | ⇒ <a href="#">page 14</a> |
| 08 Reading measured value block   | ⇒ <a href="#">page 16</a> |
| 10 Adaption                       | ⇒ <a href="#">page 18</a> |
| 11 Login procedure or encoding II | ⇒ <a href="#">page 31</a> |



All other functions displayed cannot be selected or can be ignored in this case.

### Fault messages on -VAS 5051B-

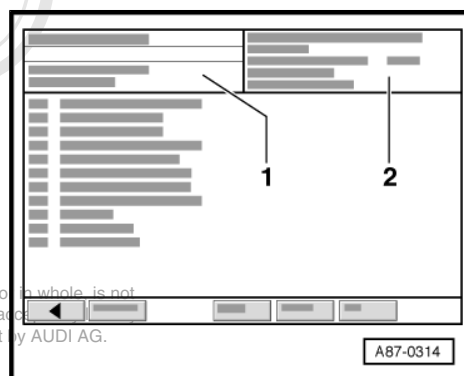
If a fault message appears on the display, refer to ⇒ Operating instructions of vehicle diagnostic, testing and information system -VAS 5051B- .

If display zone -1- shows the fault message "Vehicle system not available":

- Check:

- ◆ Power supply to diagnostic connection ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ◆ Wiring between diagnostic connection and dash panel insert ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

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## 2.3 Interrogating fault memory

### Sequence of operations

- Start dash panel insert self-diagnosis ⇒ [page 5](#) .
- Display on -VAS 5051B- :
  - From list -1-, select function “02 - Interrogating fault memory”.

Display on -VAS 5051B- :

- |                             |                                               |
|-----------------------------|-----------------------------------------------|
| -1- Content of fault memory | 0 faults detected<br>or<br>X faults detected  |
| -2- Fault                   | Fault code<br>Fault location<br>Type of fault |

#### A - Faults detected:

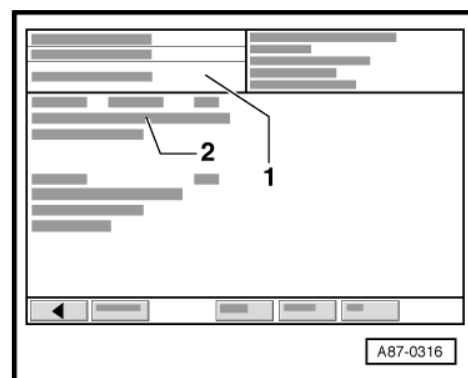
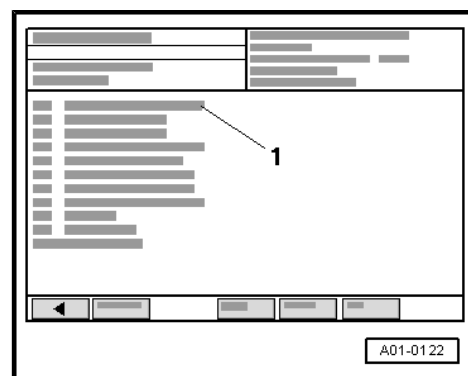
- Print out information on screen or self-diagnosis log.
- Terminate function “02 - Interrogating fault memory” by touching  key.

Display on -VAS 5051B- :

- Eliminate fault(s) in line with fault tables ⇒ [page 8](#) .
- From list -1-, select function “02 - Interrogating fault memory” again and erase fault memory ⇒ [page 12](#) .
- Select function “06 - End of output” from list ⇒ [page 13](#) .

#### B - No fault detected:

- Terminate function “02 - Interrogating fault memory” by touching  key.
- From list -1-, select “06 - End of output” ⇒ [page 13](#) .



## 2.4 Fault tables



### Note

- ◆ *Faults occurring in monitored sensors or components are stored in the fault memory together with an indication of the type of fault.*
- ◆ *The fault tables are arranged according to the 5-digit fault codes in the left-hand column.*
- ◆ *All static and sporadic faults are stored in the fault memory: A fault is identified as being static if it persists 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. Sporadic faults (temporary faults) are marked "sporadic" on the display. "Sporadic" means isolated or occasional occurrence.*
- ◆ *After switching on the ignition, all faults present are set to "sporadic" and only stored as being static if they are still present after checking.*
- ◆ *Sporadic faults which do not re-occur in the course of 50 driving cycles (ignition switched on for at least 5 minutes, vehicle speed greater than 30 km/h) are erased.*
- ◆ *Components indicated as being faulty by the -VAS 5051B- are not to be immediately replaced, but rather: Start by using the current flow diagram to check the wiring and connectors to these components. The earth connections are also to be checked on the basis of the current flow diagram. This is particularly important in the case of "sporadic" faults.*
- ◆ *On eliminating an open circuit in the wiring in the event of a CAN bus fault, make sure the two signal wires of the relevant system form a twisted pair so as to avoid electromagnetic interference.*
- ◆ *Re-interrogate and erase the fault memory on completion of repair work and after checking system operation.*

| Output on -VAS 5051B-                                                                       | Possible cause of trouble                                                                                       | Remedy                                                    |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| 00667<br>Ambient temperature signal<br>◆ Open circuit/short to positive<br>◆ Short to earth | ◆ Open circuit or short to earth/positive in wiring to ambient temperature sensor -G17-                         | – Use current flow diagram to check wiring and connectors |
|                                                                                             | ◆ Ambient temperature sensor -G17- defective                                                                    | – Replace ambient temperature sensor -G17- ⇒ Rep. Gr. 87  |
|                                                                                             | ◆ Vehicles with air conditioner: Air conditioning system/Climatronic operating and display unit -E87- defective | – Interrogate air conditioner fault memory ⇒ Rep. Gr. 01  |

| Output on -VAS 5051B-                                                                  | Possible cause of trouble                                                                                                                                             | Remedy                                                    |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| 00771<br>Fuel gauge sender -G-<br>◆ Open circuit/short to positive<br>◆ Short to earth | ◆ Open circuit or short to earth/positive in wiring to component; on four-wheel drive vehicles possibly also fuel gauge sender 2 -G169- or fuel gauge sender 3 -G237- | – Use current flow diagram to check wiring and connectors |

| Output on -VAS 5051B- | Possible cause of trouble                                                                                                              | Remedy                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | ♦ Fuel gauge sender -G- defective; on four-wheel drive vehicles possibly also fuel gauge sender 2 -G169- or fuel gauge sender 3 -G237- | – Check fuel gauge sender -G- ; on four-wheel drive vehicles possibly also fuel gauge sender 2 -G169- or fuel gauge sender 3 -G237- ⇒ Rep. Gr. 20 |

| Output on -VAS 5051B-                                                                           | Possible cause of trouble                                                                                                                     | Remedy                                                                                                                    |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 00779<br>Ambient temperature sensor<br>♦ Open circuit/short to positive<br><br>♦ Short to earth | ♦ Open circuit or short to earth/ positive in wiring to ambient temperature sensor -G17-<br><br>♦ Ambient temperature sensor - G17- defective | – Use current flow diagram to check wiring and connectors<br><br>– Replace ambient temperature sensor -G17- ⇒ Rep. Gr. 87 |

| Output on -VAS 5051B-                                                                                | Possible cause of trouble                                                                                             | Remedy                                                                                                                                    |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 01039<br>Coolant temperature sender -G2-<br>♦ Open circuit/short to positive<br><br>♦ Short to earth | ♦ Open circuit or short to earth/ positive in wiring to component<br><br>♦ Coolant temperature sender - G2- defective | – Use current flow diagram to check wiring and connectors<br><br>– Replace coolant temperature sender -G2- ⇒ Rep. Gr. 23 or ⇒ Rep. Gr. 24 |

| Output on -VAS 5051B-                                 | Possible cause of trouble                                                                                                                                                                                 | Remedy                                                                                                                  |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 01402<br>Navigation signal wire<br>Implausible signal | ♦ Open circuit on clock, enable or signal wire<br><br>♦ Fault in interface between navigation unit and dash panel insert<br>♦ Fault caused by electromagnetic interference inside and outside the vehicle | – Use current flow diagram to check wiring and connectors of signal wires<br><br>– Check causes of faults ⇒ Rep. Gr. 91 |

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| Output on -VAS 5051B-           | Possible cause of trouble     | Remedy                                    |
|---------------------------------|-------------------------------|-------------------------------------------|
| 65535<br>Control unit defective | ♦ Dash panel insert defective | – Replace dash panel insert ⇒ Rep. Gr. 90 |

## 2.5 Final control diagnosis



### Note

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

## Actuation sequence

All the dash panel insert control elements fitted and encoded are consecutively actuated in function "03 - Final control diagnosis":

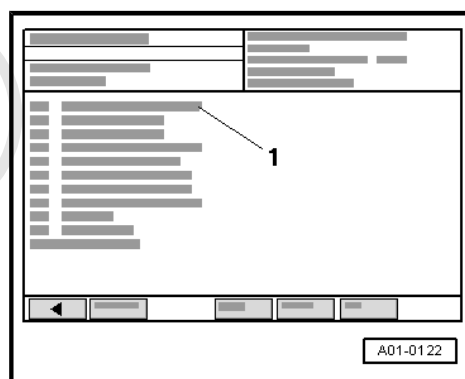
1. Analog displays
2. Minicheck warning lamps - vehicles with no driver information system (DIS)
3. Seat belt warning system warning lamp -K19-
4. Gong
5. Segment test
6. Illumination/switches and instruments
7. Coolant excess temperature test

## Sequence of operations

- Switch on side lights.
- Start dash panel insert self-diagnosis ⇒ [page 5](#) .

Display on -VAS 5051B- :

- In list -1- select function "03 - Final control diagnosis".



## Analog display actuation

Display on -VAS 5051B-

A - 1. control element in test

1 - Analog displays

The following checks are simultaneously implemented:

- Sweep of coolant temperature needle over entire display range
- Sweep of rev counter needle over entire display range
- Sweep of speedometer needle over entire display range
- Sweep of fuel gauge needle over entire display range

The following fixed values are displayed on completion of this process:

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



### Minicheck warning lamp actuation - vehicles with no driver information system (DIS)

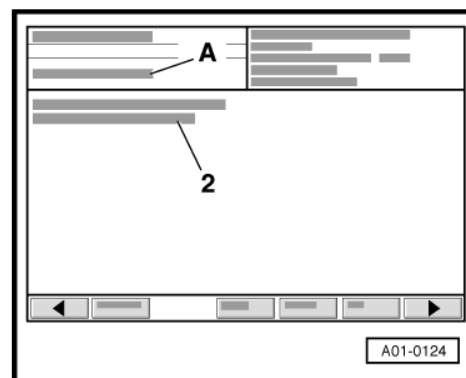
- Touch  key.

Display on -VAS 5051B- :

A - 2. control element in test

2 - Minicheck warning lamps

- The Minicheck warning lamps are actuated.



### Actuation of seat belt warning system warning lamp

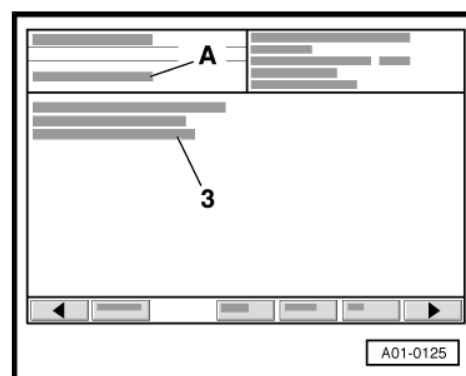
- Touch  key.

Display on -VAS 5051B- :

A - 3. control element in test

3 - Seat belt warning system warning lamp -K19-

- The seat belt warning system warning lamp is actuated (lights).



Note

◆ *The seat belt warning system warning lamp is only activated if the dash panel insert is accordingly encoded.*

◆ *If the seat belt warning system warning lamp is not called up during final control diagnosis, the warning lamp is not active.*

### Gong actuation

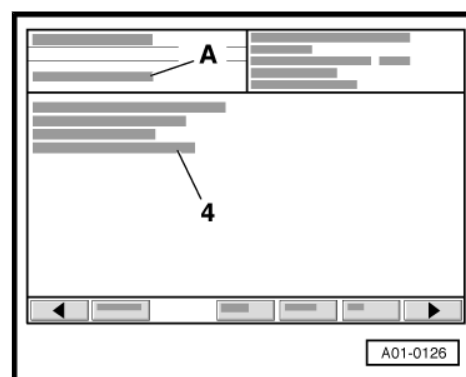
- Touch  key.

Display on -VAS 5051B- :

A - 4. control element in test

4 - Gong

- The gong sounds intermittently.



### Segment test actuation

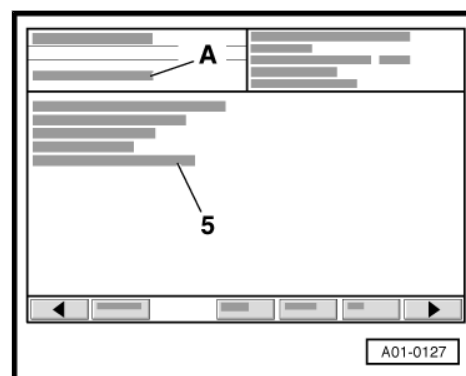
- Touch  key.

Display on -VAS 5051B- :

A - 5. control element in test

5 - Segment test

- All elements of the multi-function display, the time/date display and the mileage counter and trip recorder light.
- All multi-function display segments light and one bar remains blank.



## Actuation of illumination/switches and instruments

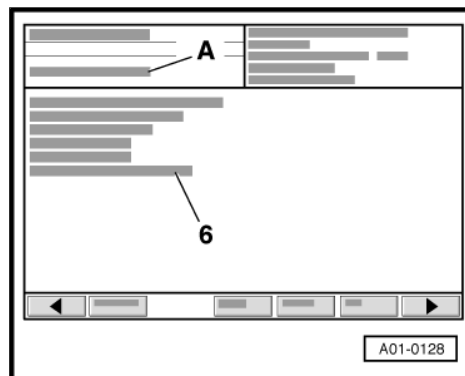
- Touch  key.

Display on -VAS 5051B- :

A - 6. control element in test

6 - Illumination/switches and instruments

- The dash panel insert illumination is dimmed, then brightened and dimmed again and finally returns to the original brightness level.



## Actuation of coolant excess temperature test

- Touch  key.

Display on -VAS 5051B- :

A - 7. control element in test

7 - Coolant excess temperature test



### Note

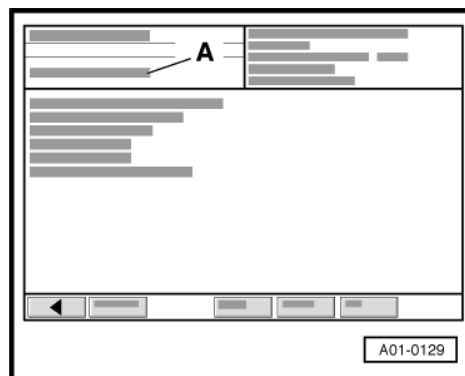
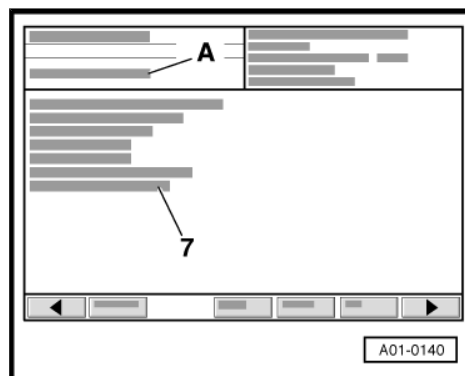
*Control element can be ignored.*

- Touch  key.

Display on -VAS 5051B- :

A - Control element test over

- Terminate function “03 - Final control diagnosis” by touching  key.



## 2.6 Erasing fault memory



### Note

*If the fault memory cannot be erased, interrogate it again and rectify fault.*



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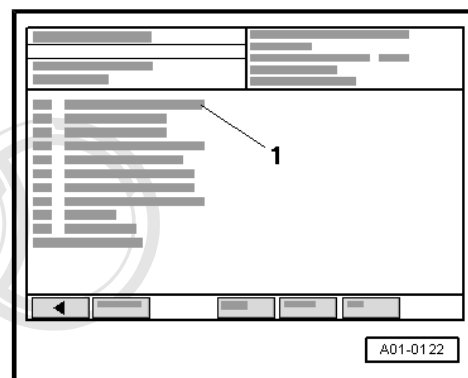
## Sequence of operations

- Fault memory interrogated ⇒ [page 7](#)
- All faults eliminated

After fault memory interrogation:

Display on -VAS 5051B- :

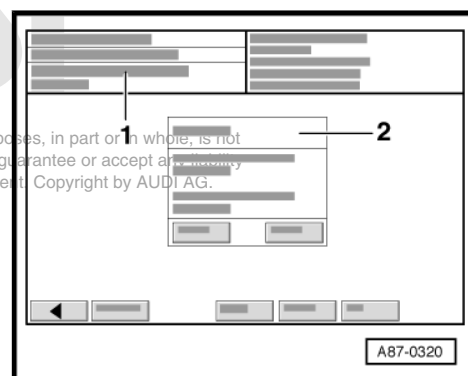
- From list -1-, select function “05 - Erasing fault memory”.



Display on -VAS 5051B- :

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 indicates failure to comply exactly with the sequence of operations. The fault memory can only be erased after it has been interrogated.*

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

- Touch **[OK]** key in display -2-.
- Interrogate fault memory again on completion of repair work.



### Note

*This erases faults stored during fault rectification, e.g. as a result of unplugging connectors.*

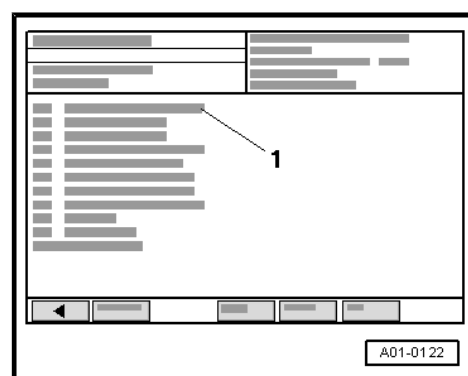
- Terminate function “05 - Erasing fault memory” by touching **[ ]** key.

## 2.7 End of output

### Sequence of operations

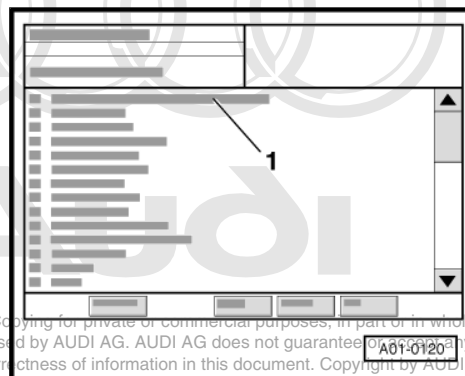
Display on -VAS 5051B- :

- From list -1-, select function “06 - End of output”.



Display on -VAS 5051B- :

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



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## 2.8 Encoding control unit



### Note

Encoding sets the dash panel insert to the specific vehicle equipment.

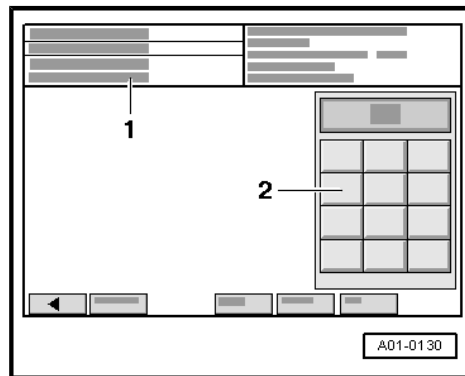
### Sequence of operations

- Start dash panel insert self-diagnosis ⇒ [page 5](#) .
- Display on -VAS 5051B- :
- From list -1-, select function “07 - Encoding control unit”.



Display on -VAS 5051B- :

1 - Enter code word



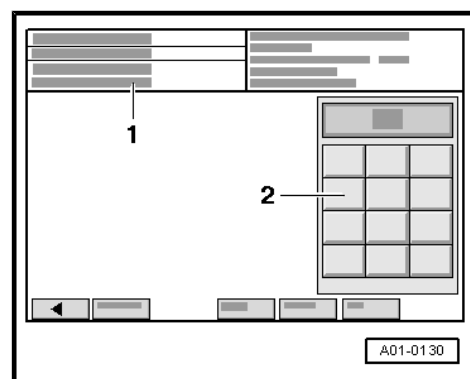
| Encoding table                                                                                                                       |    |                                    |
|--------------------------------------------------------------------------------------------------------------------------------------|----|------------------------------------|
| Optional extras                                                                                                                      | 0  | No optional extras                 |
|                                                                                                                                      | 1  | Brake lining wear indicator active |
|                                                                                                                                      | 2  | Seat belt warning system active    |
|                                                                                                                                      | 4  | Washer fluid warning system active |
|                                                                                                                                      | 16 | Navigation system                  |
| If the vehicle is fitted with several encodable optional extras, add up the numbers of the individual optional extra codes. Example: |    |                                    |
| • Brake lining wear indicator active, washer fluid warning system active: 1 + 4 = 5.                                                 |    |                                    |
| Country version                                                                                                                      | 0  | Germany (D)                        |
|                                                                                                                                      | 1  | Europe (EU)                        |

| Encoding table      |   |                    |
|---------------------|---|--------------------|
|                     | 2 | USA (USA)          |
|                     | 3 | Canada (CDN)       |
|                     | 4 | Great Britain (GB) |
|                     | 5 | Japan (J)          |
|                     | 6 | Saudi Arabia (SA)  |
|                     | 7 | Australia (AUS)    |
| Number of cylinders | 4 | 4-cylinder         |
|                     | 6 | 6-cylinder         |
| Engine version      | 0 | TDI engine         |
|                     | 2 | Petrol engine      |

Display on -VAS 5051B- :

- Use keypad -2- to enter the control unit code as per encoding table.

|          |   |   |   |                                                                                   |
|----------|---|---|---|-----------------------------------------------------------------------------------|
| Example: |   |   |   |                                                                                   |
| 5        | 0 | 4 | 0 | ← Keypad entry (max. 5-digit)                                                     |
|          |   |   |   | TDI engine: 0                                                                     |
|          |   |   |   | 4-cylinder: 4                                                                     |
|          |   |   |   | Germany (D): 0                                                                    |
|          |   |   |   | Brake lining wear indicator active, washer fluid warning system active: 1 + 4 = 5 |



- Confirm entry by touching  key.

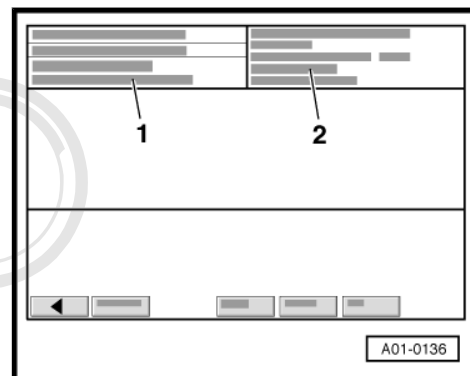
Display on -VAS 5051B- :

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

Display on -VAS 5051B- :

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

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

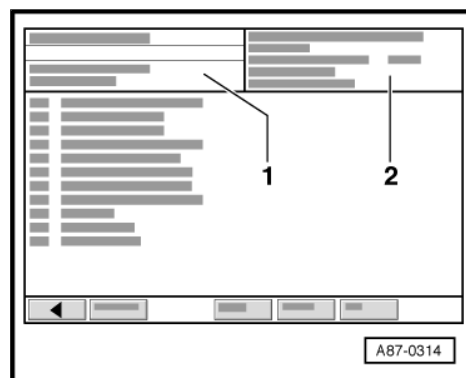


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## Fault messages on -VAS 5051B-

If display zone -1- shows the fault message "Function unknown or cannot be implemented at present":

- Check whether the correct dash panel insert has been fitted  
⇒ Parts catalogue . Or a non-released code has been entered.  
Repeat the encoding procedure if necessary.



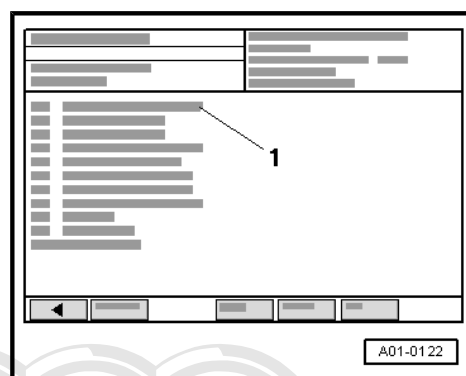
## 2.9 Reading measured value block

### Sequence of operations

- Start dash panel insert self-diagnosis ⇒ [page 5](#) .

Display on -VAS 5051B- :

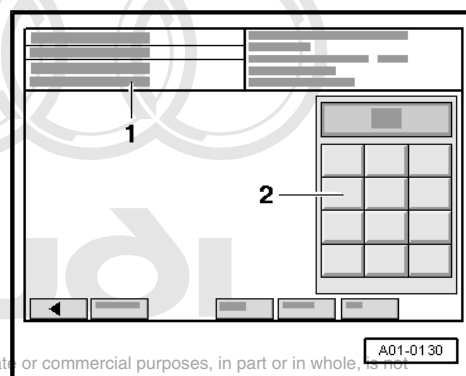
- From list -1-, select function "08 - Reading measured value block".



Display on -VAS 5051B- :

1 - Enter display group

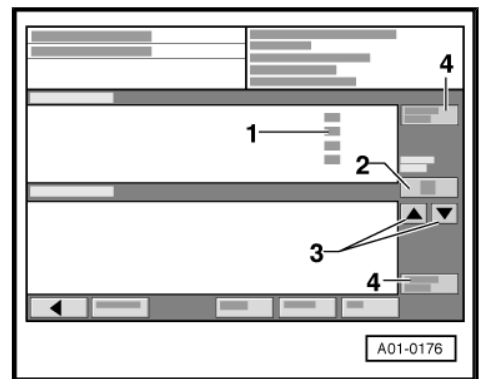
- Use keypad -2- to enter the desired "display group number" ⇒ [page 17](#) and confirm the entry by touching the **Q** key.



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Display on -VAS 5051B- :

- 1 - Display zones 1 ... 4. If a display zone is not assigned, there is no display on this line.
- 2 - The display group selected is shown here
- 3 - Touching these keys permits switching to a different display group.
- 4 - Touching these keys permits switching to a different function (e.g. from "Reading measured value block" to "Basic setting" and vice versa).



#### Note

- ◆ *The display always shows the actual sender and sensor values. The values displayed on the dash panel insert may differ due to filtering.*
- ◆ *If the actual coolant temperature is between 80 and 100 °C, the display on the dash panel insert is always 90 °C.*
- Terminate function "08 - Reading measured value block" by touching  key.

#### List of display groups

| Display group 001 |            |                                                                                                                  |
|-------------------|------------|------------------------------------------------------------------------------------------------------------------|
| Display zones     |            | Explanatory notes                                                                                                |
| 1                 | ... km/h   | Vehicle speed                                                                                                    |
| 2                 | ... rpm    | Engine speed                                                                                                     |
| 3                 | Oil p.2... | Oil pressure switch 2 <ul style="list-style-type: none"> <li>• Oil p.2 &lt; min</li> <li>• Oil p.2 OK</li> </ul> |
| 4                 |            | Not used                                                                                                         |

| Display group 002 |        |                                                                                                                          |
|-------------------|--------|--------------------------------------------------------------------------------------------------------------------------|
| Display zones     |        | Explanatory notes                                                                                                        |
| 1                 | ... km | Mileage counter                                                                                                          |
| 2                 | ... l  | Fuel gauge                                                                                                               |
| 3                 |        | Not used                                                                                                                 |
| 4                 | ... °C | Ambient temperature (Highline dash panel insert only) <ul style="list-style-type: none"> <li>• -40 ... +70 °C</li> </ul> |

| Display group 003 |        |                                                                                       |
|-------------------|--------|---------------------------------------------------------------------------------------|
| Display zones     |        | Explanatory notes                                                                     |
| 1                 | ... °C | Coolant temperature <ul style="list-style-type: none"> <li>• 50 ... 130 °C</li> </ul> |
| 2                 |        | Not used                                                                              |
| 3                 |        | Not used                                                                              |
| 4                 |        | Not used                                                                              |

## 2.10 Adaption

The individual functions are called up by way of the appropriate adaption channel number.

### Adaption table

| Adaption channel | Function                                                                                                          |
|------------------|-------------------------------------------------------------------------------------------------------------------|
| 01 <sup>1)</sup> | Correction of fuel gauge sender characteristic curve ⇒ <a href="#">page 21</a>                                    |
| 02               | Service interval display reset on completion of service ⇒ <a href="#">page 23</a>                                 |
| 03               | Correction of fuel consumption indicator characteristic curve ⇒ <a href="#">page 24</a>                           |
| 04               | Language version of driver information system (DIS) ⇒ <a href="#">page 25</a>                                     |
| 05               | Maximum mileage interval prior to "Oil change service" ⇒ <a href="#">page 26</a>                                  |
| 06               | Maximum mileage interval prior to "Inspection service" ⇒ <a href="#">page 28</a>                                  |
| 07               | Maximum time interval prior to "Inspection service" ⇒ <a href="#">page 29</a>                                     |
| 08 <sup>1)</sup> | Maximum time interval prior to "Inspection service 2" ⇒ <a href="#">page 30</a>                                   |
| 09               | Mileage counter reading following dash panel insert replacement ⇒ <a href="#">page 31</a>                         |
| 10 <sup>2)</sup> | Remaining mileage prior to "Oil change service" following dash panel insert replacement ⇒ <a href="#">page 34</a> |
| 11 <sup>2)</sup> | Remaining mileage prior to "Inspection service" following dash panel insert replacement ⇒ <a href="#">page 35</a> |
| 12 <sup>2)</sup> | Remaining time prior to "Inspection service" following dash panel insert replacement ⇒ <a href="#">page 37</a>    |
| 30 <sup>2)</sup> | Correction of fuel gauge sender characteristic curve ⇒ <a href="#">page 38</a>                                    |

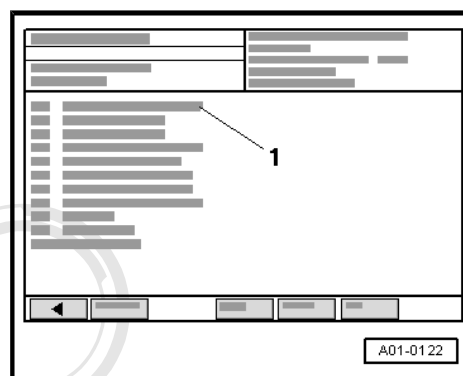
- <sup>1)</sup> Vehicles up to Model Year 1997 only.
- <sup>2)</sup> Vehicles as of Model Year 1998 only.

### Implementing function "10 - Adaption"

- Start dash panel insert self-diagnosis ⇒ [page 5](#) .

Display on -VAS 5051B- :

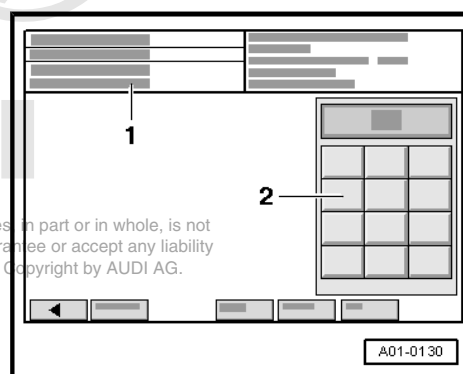
- From list -1- select function "10 - Adaption".



Display on -VAS 5051B- :

- 1 - Enter channel number

- Enter desired adaption channel on keypad -2- ⇒ [page 18](#) and confirm entry by touching key.



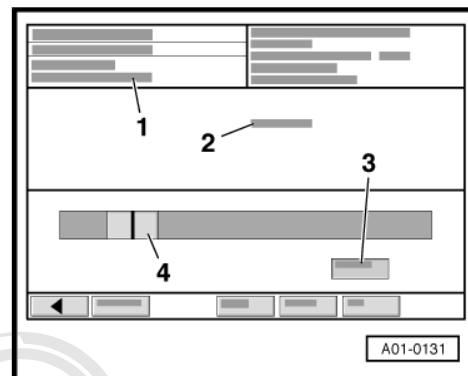
### Note

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*After altering an adaption value or exiting from an adaption channel, function "10 - Adaption" must be selected again to choose a different adaption channel.*

Display on -VAS 5051B- :

- 1 - Channel X reading and testing
- 2 - Text display for channel selected or no display
- 4 - Bar set to current adaption value



#### A - Altering adaption value by way of bar

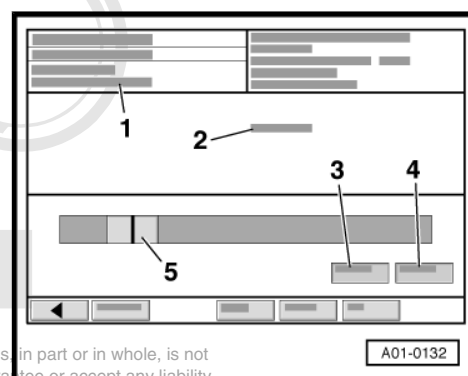
Display on -VAS 5051B- :

- Move the bar -5- in the required direction or touch the panel next to the bar, thus causing it to move in the desired direction.
- Touch the **Save** key -4-.



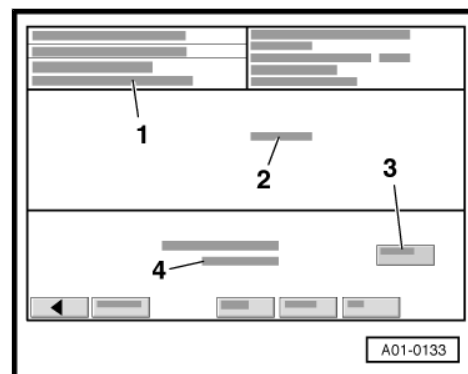
#### Note

*If the **Save** key does not appear on the display, entries can only be made directly by way of the keypad ⇒ page 20*



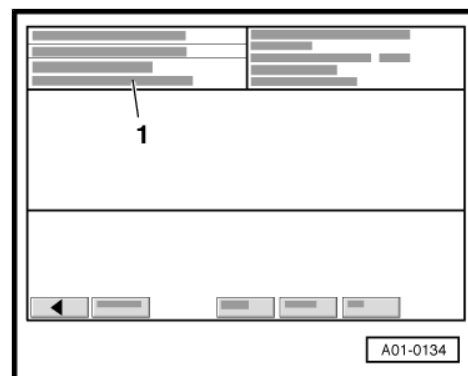
Display on -VAS 5051B- :

- 1 - Store channel X
- 2 - Text display for channel selected or no display
- 4 - Original value X new value X
- Confirm the new adaption value by touching the **Accept** key -3-.



Display on -VAS 5051B- :

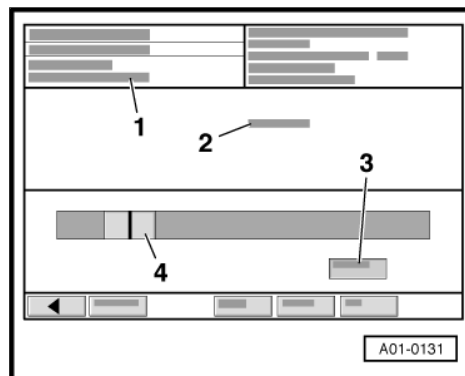
- 1 - Channel X value X stored
- Terminate function "10 - Adaption" by touching **Exit** key.



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

Display on -VAS 5051B- :

- Touch **keypad** key -Item 3-.



Display on -VAS 5051B- :

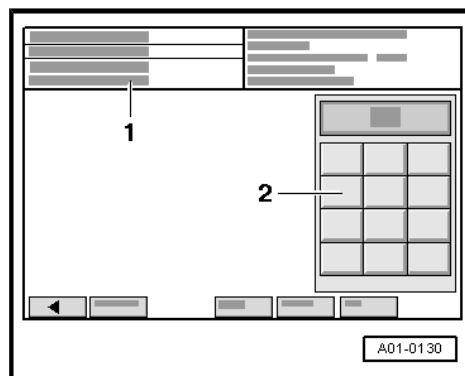
- 1 - Enter adaption value

- Enter the required adaption value on the keypad -2-.

Example: Required input value = "1"

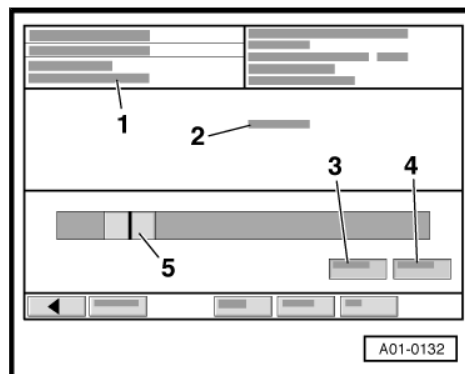
Keypad entry **1**

- Confirm entry by touching **Q** key.



Display on -VAS 5051B- :

- Touch the **Save** key -4-.



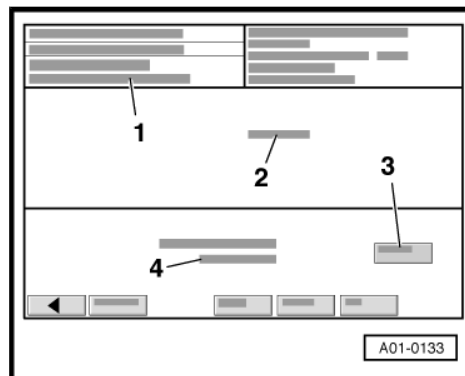
Display on -VAS 5051B- :

- 1 - Store channel X

- 2 - Text display for channel selected or no display

- 4 - Original value X new value X

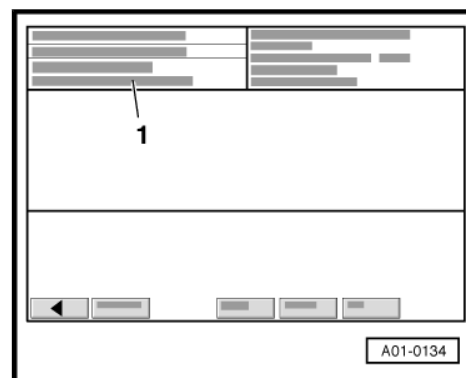
- Confirm the new adaption value by touching the **Accept** key -3-.



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Display on -VAS 5051B- :

- 1 - Channel X value X stored
- Terminate function "10 - Adaption" by touching  key.



## 2.11 Adaption channels 01 ... 09

### Adaption channel 01 - Correction of fuel gauge sender characteristic curve

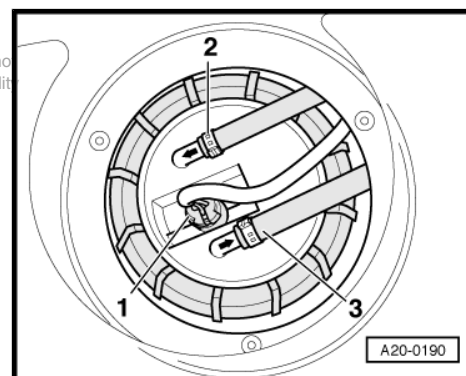
This function can be used to correct the resistance characteristic curve of the fuel gauge sender if the display in the dash panel insert does not correspond to the actual tank content.

- Switch off ignition.
- Remove the luggage compartment lining.
- Unscrew the sealing flange cover.
- Release and unplug the connector -1-.

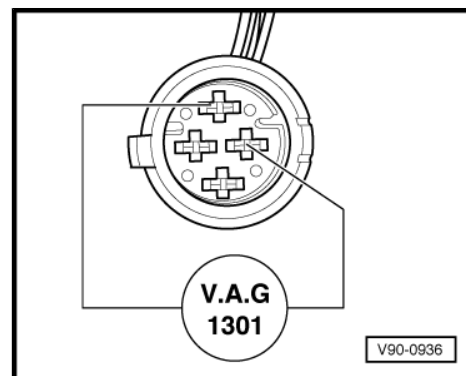


#### Note

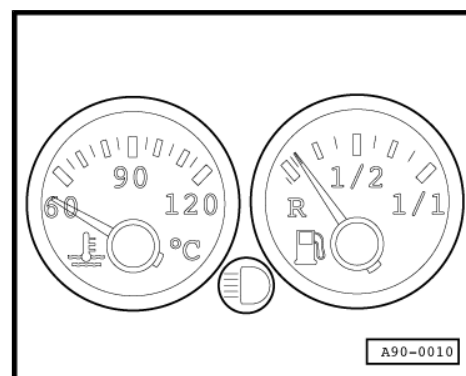
*-Item 2- and -Item 3- can be ignored.*



- Connect the indicating instrument tester -V.A.G 1301- with test leads from the adapter set -V.A.G 1594C- to the fuel gauge sender -G- as shown.
- Set the indicating instrument tester -V.A.G 1301- to the value "470".
- Wait approx. 4 minutes (refuelling detection) before switching on the ignition and then observe the fuel gauge.



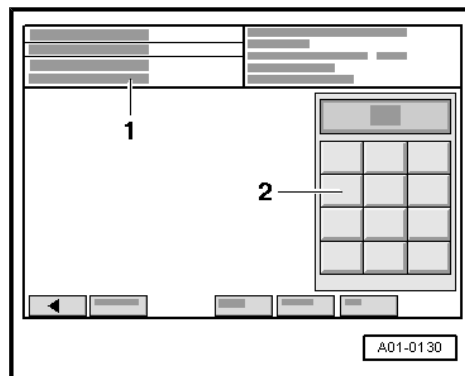
The fuel gauge is OK if the pointer is on the red mark on the right (reserve) as shown.



Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch key **1** for “Adaption channel 01” and confirm the entry by touching the **Q** key.



Display on -VAS 5051B- :

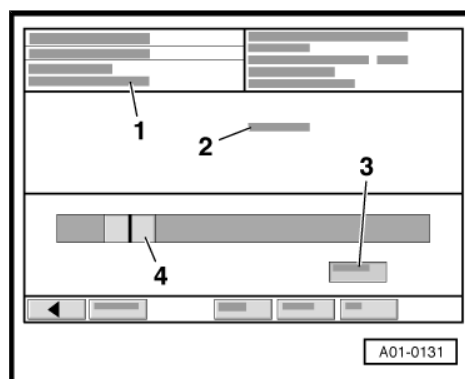
1 - Channel 1 reading and testing

4 - Bar set to current adaption value

- Use the bar to alter the adaption value ⇒ “A - Altering adaption value by way of bar” ⇒ [page 19](#) .

Or

- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 20](#) .
- Enter the adaption value.



#### Note

- ◆ The resistance characteristic curve of the fuel gauge sender can be altered in the range 0 ... 255.
- ◆ On dash panel insert replacement ⇒ [page 39](#) .

Exam- Resistance characteristic curve of fuel gauge sender  
ple: “215”

Keypad entry **2** **1** **5**



#### Note

Entering a value higher than “255” terminates function “10 - Adaption”.

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Display on -VAS 5051B- following successful adaption. Example:

1 - Channel 30 value 215 stored

- Terminate function “10 - Adaption” by touching  key.

**Adaption channel 02 - Service interval display reset on completion of service**



#### Note

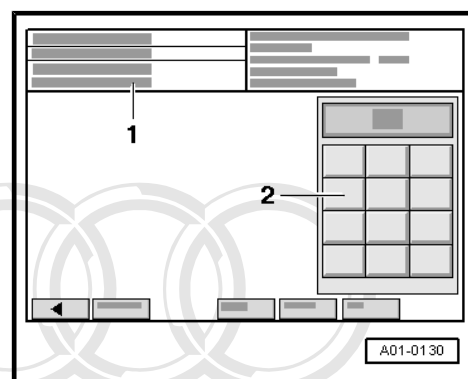
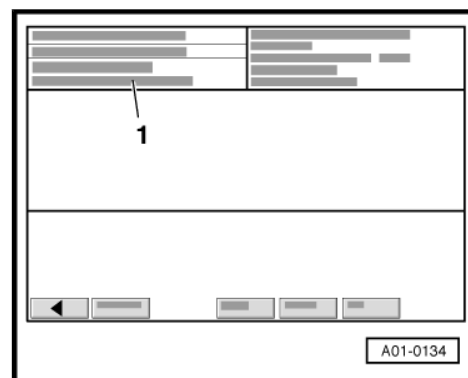
*Use can only be made of “adaption channel 02” with dash panel inserts as of data level “D05”.*

- ◆ The service interval display is designed to remind drivers that service is due. The display appears on the trip recorder.
- ◆ When the ignition is switched on, the next service due is flashed up for a few seconds instead of the trip recorder display.
- ◆ The service prompt appears as of 10 days or 1000 km before service is due. Example: On vehicles as of Model Year 1998 “Oil change service” is displayed after a total mileage of 14000 km.
- ◆ If service is due, the corresponding message is flashed up on the trip recorder display for 60 seconds after switching on the ignition.
- ◆ Applicable specifications ⇒ Maintenance ; Booklet 802 .
- ◆ The service interval display can also be reset without the vehicle diagnostic, testing and information system -VAS 5051B- ⇒ [page 40](#) .

Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch key  for “Adaption channel 02” and confirm the entry by touching the  key.



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Display on -VAS 5051B- :

1 - Channel 2 reading and testing

4 - Bar set to current adaption value

| Type of service |                                               |
|-----------------|-----------------------------------------------|
| 00              | Service not due                               |
| 01              | Oil change service due                        |
| 10              | Inspection service due                        |
| 11              | Oil change service and inspection service due |

Service is reset by means of the following adaption values:

| Erasing service |                                                 |
|-----------------|-------------------------------------------------|
| 00              | Erase oil change service and inspection service |
| 10              | Erase oil change service                        |
| 01              | Erase inspection service                        |

- Use the bar to alter the adaption value ⇒ “A - Altering adaption value by way of bar” ⇒ [page 19](#) .

Or

- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 20](#) .

Display on -VAS 5051B- following successful adaption:

1 - Channel 2 value 0 stored



**Note**

“0” indicates that the display “Oil change service” or “Inspection service” has been reset.

- Terminate function “10 - Adaption” by touching key.

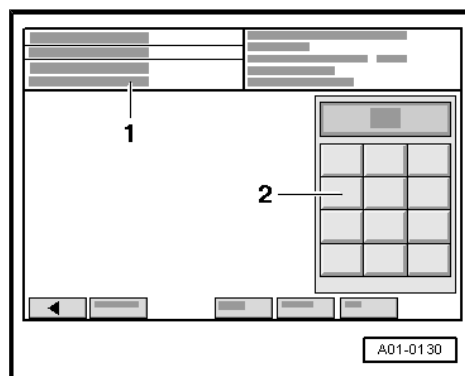
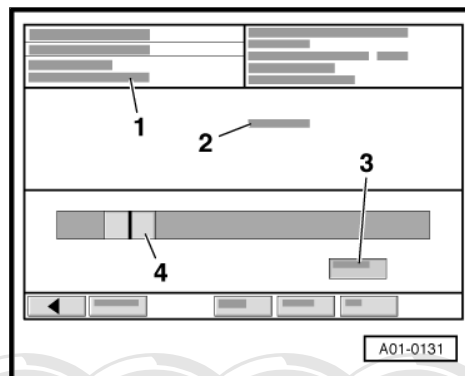
### Adaption channel 03 - Correction of fuel consumption indicator characteristic curve

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

Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch key for “Adaption channel 03” and confirm the entry by touching the key.



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Display on -VAS 5051B- :

- 1 - Channel 3 reading and testing
- 2 - Fuel consumption indicator
- 4 - Bar set to current adaption value



#### Note

- ◆ The value "100" is the factory-set mean characteristic curve of the fuel consumption indicator.
- ◆ The characteristic curve can be altered in the range 85 ... 115 %; entries must be made in 5 % steps.
- ◆ On dash panel insert replacement ⇒ [page 39](#).
- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 19](#).

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 20](#).
- Enter the adaption value.

Example: Characteristic curve of fuel consumption indicator "90 %"

Keypad entry **[9][0]**



#### Note

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

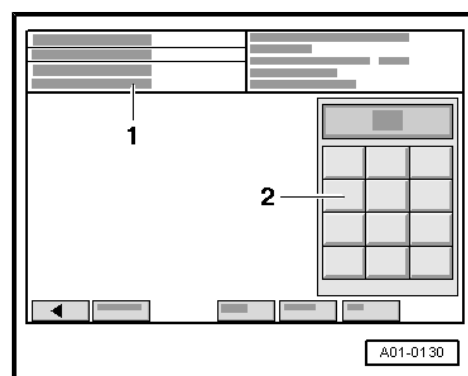
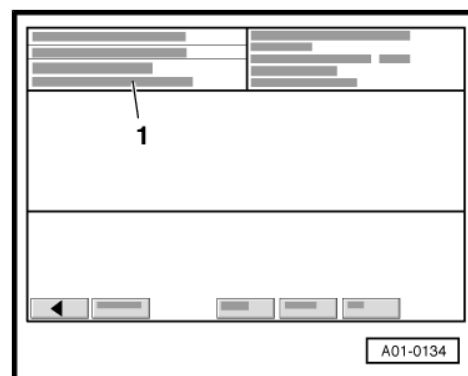
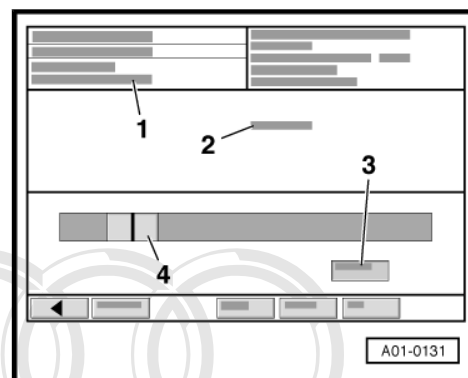
Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 3 value 90 stored
- Terminate function "10 - Adaption" by touching **[←]** key.

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

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key **[4]** for "Adaption channel 04" and confirm the entry by touching the **[Q]** key.



Display on -VAS 5051B- :

1 - Channel 4 reading and testing

2 - Language

4 - Bar set to current adaption value

The language version is adapted by means of the following input values:

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

- Use the bar to alter the adaption value ⇒ “A - Altering adaption value by way of bar” ⇒ [page 19](#) .

Or

- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 20](#) .

- Enter the adaption value.

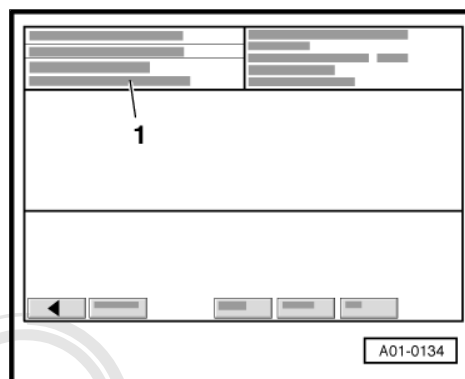
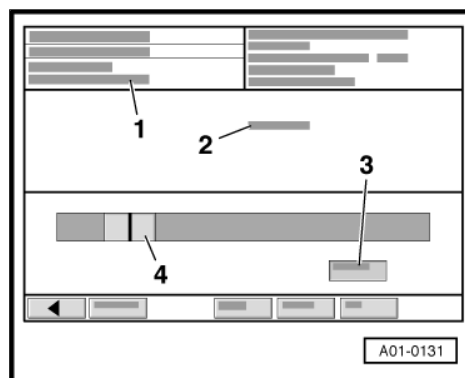
Example- Language version German = “1”

Keypad entry

Display on -VAS 5051B- following successful adaption. Example:

1 - Channel 4 value 1 stored

- Terminate function “10 - Adaption” by touching  key.



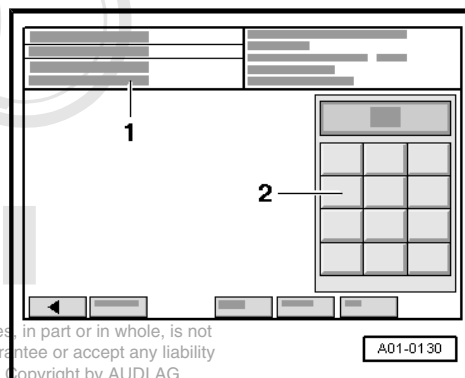
### Adaption channel 05 - Maximum mileage interval for “Oil change service”

This function can be used to adapt the mileage interval for the “Oil change service”, e.g. to suit country-specific requirements. Applicable specifications ⇒ Maintenance ; Booklet 802 .

Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch key  for “Adaption channel 05” and confirm the entry by touching the  key.



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Display on -VAS 5051B- :

- 1 - Channel 5 reading and testing
- 4 - Bar set to current adaption value

 **Note**

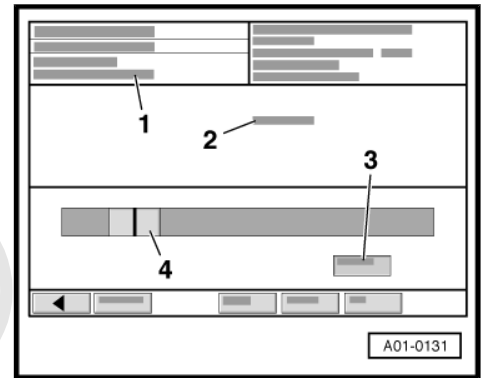
- ◆ The value "15" is the factory-set maximum mileage interval of 15000 km for the "Oil change service".
- ◆ Entries can only be made in 1000 km steps; the display is also given in units of 1000 km.
- ◆ Adaption must be performed in kilometres even in countries with speedometer display in miles. This involves converting the adaption value from miles to kilometres.
- ◆ On dash panel insert replacement ➔ [page 39](#) .

- Use the bar to alter the adaption value ➔ "A - Altering adaption value by way of bar" ➔ [page 19](#) .

Or

- Alter the adaption value by means of direct entry ➔ "B - Altering adaption value by means of direct entry" ➔ [page 20](#) .
- Enter the adaption value.

Exam- Maximum mileage interval for oil change service  
ple: "12000 km"  
Keypad entry  

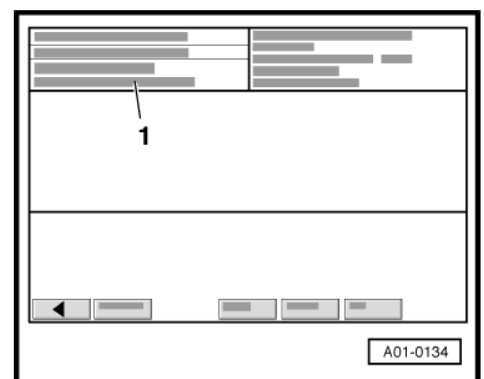


 **Note**

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

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 5 value 12 stored
- Terminate function "10 - Adaption" by touching  key.



## Adaption channel 06 - Maximum mileage interval for "Inspection service"

This function can be used to adapt the mileage interval for the "Inspection service", e.g. to suit country-specific requirements. Applicable specifications ⇒ Maintenance ; Booklet 802 .

Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch key **6** for "Adaption channel 06" and confirm the entry by touching the **Q** key.

Display on -VAS 5051B- :

1 - Channel 6 reading and testing

4 - Bar set to current adaption value



### Note

- The value "30" is the factory-set maximum mileage interval of 30000 km for the "Inspection service".
- Entries can only be made in 1000 km steps; the display is also given in units of 1000 km.
- Adaption must be performed in kilometres even in countries with speedometer display in miles. This involves converting the adaption value from miles to kilometres.
- On dash panel insert replacement ⇒ [page 39](#) .
- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 19](#) .

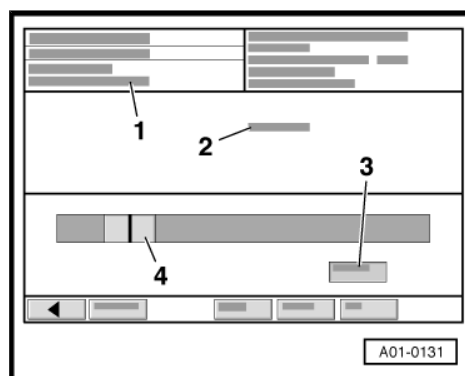
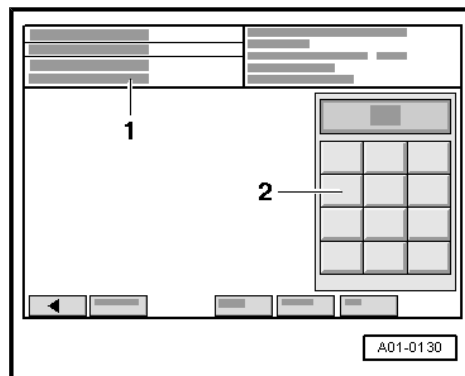
Or

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- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 20](#) .
- Enter the adaption value.

Example: Maximum mileage interval for inspection service  
"24000 km"

Keypad entry **2** **4**

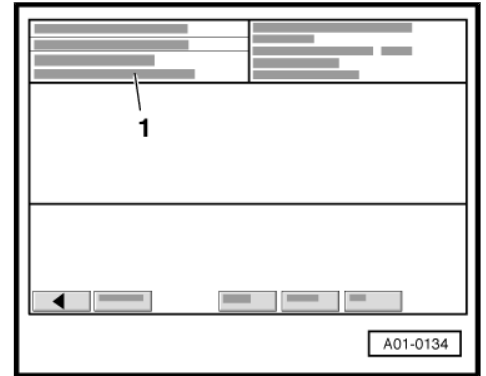


### Note

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

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 6 value 24 stored
- Terminate function “10 - Adaption” by touching  key.



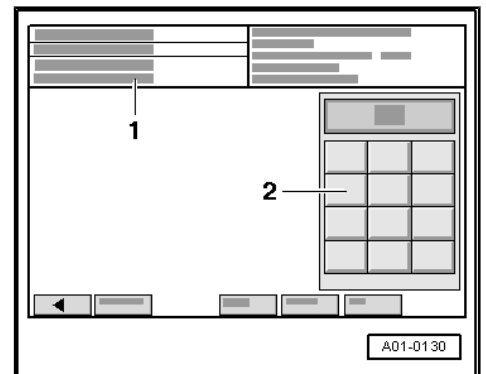
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### Adaption channel 07 - Maximum time interval for “Inspection service”

This function can be used to adapt the time interval for the “Inspection service”, e.g. to suit country-specific requirements. Applicable specifications ➔ Maintenance ; Booklet 802 .

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key  for “Adaption channel 07” and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Channel 7 reading and testing
- 4 - Bar set to current adaption value



#### Note

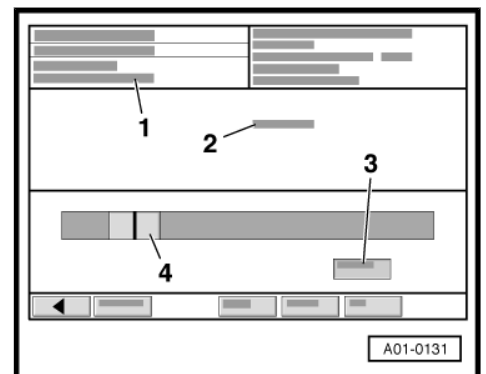
- ◆ The value “36” is the factory-set maximum time interval of 360 days for the “Inspection service”.
- ◆ Entries can only be made in 10 day steps; the display is also given in units of 10 days.
- ◆ On dash panel insert replacement ➔ [page 39](#) .

- Use the bar to alter the adaption value ➔ “A - Altering adaption value by way of bar” ➔ [page 19](#) .

Or

- Alter the adaption value by means of direct entry ➔ “B - Altering adaption value by means of direct entry” ➔ [page 20](#) .
- Enter the adaption value.

Example: Maximum time interval for inspection service “230 days”  
Keypad entry  

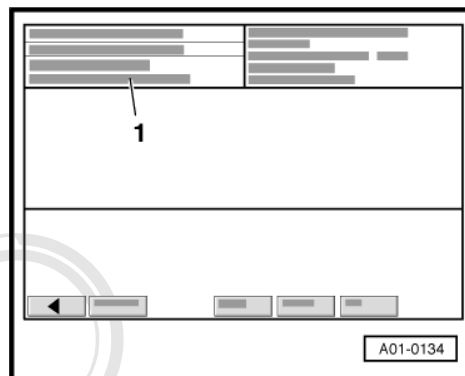


#### Note

The fault message “Function unknown or cannot be implemented at present” appears if an implausible value is entered.

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 7 value 23 stored
- Terminate function "10 - Adaption" by touching key.

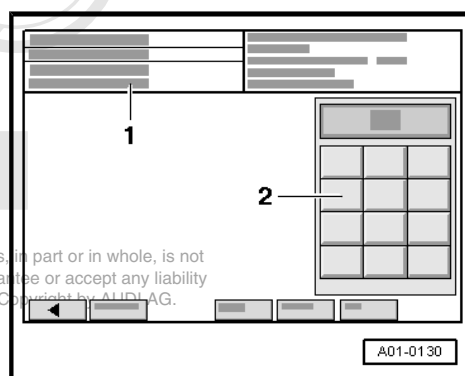


### Adaption channel 08 - Maximum time interval for "Inspection service 2"

This function can be used to adapt the time interval for the "Inspection service 2", e.g. to suit country-specific requirements. Applicable specifications ⇒ Maintenance ; Booklet 802 .

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key for "Adaption channel 08" and confirm the entry by touching the key.



Display on -VAS 5051B- :

- 1 - Channel 8 reading and testing
- 4 - Bar set to current adaption value

### Note

- ◆ The value "72" is the factory-set maximum time interval of 720 days for the "Inspection service".
- ◆ Entries can only be made in 10 day steps; the display is also given in units of 10 days.
- ◆ On dash panel insert replacement ⇒ [page 39](#) .

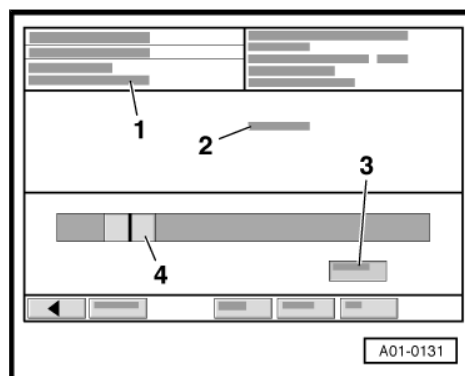
- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 19](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 20](#) .
- Enter the adaption value.

Example: Maximum time interval for inspection service "600 days"

Keypad entry



### Note

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

Display on -VAS 5051B- following successful adaption. Example:

1 - Channel 8 value 60 stored

- Terminate function “10 - Adaption” by touching  key.

### Adaption channel 09 - Mileage counter reading

This function is used to adapt the mileage counter reading on replacing the dash panel insert.



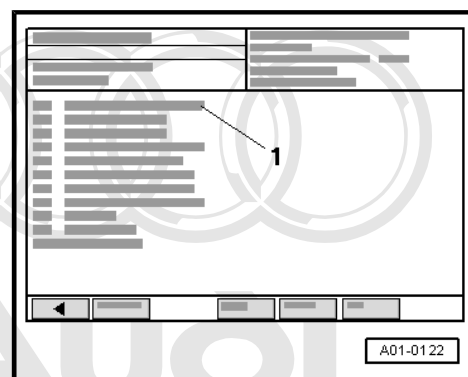
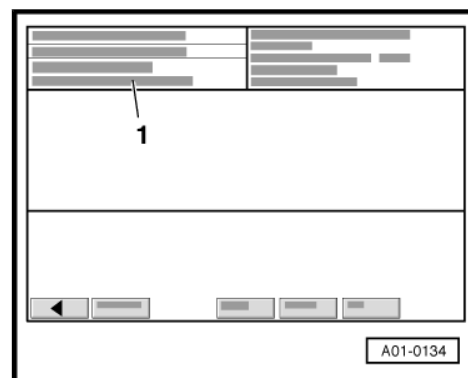
#### Note

- ◆ *Adaption is only possible for dash panel inserts with a mileage reading 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.*
- ◆ *Once confirmed, incorrect entries cannot be corrected. The dash panel insert must then be replaced.*
- ◆ *Adaption must be performed in kilometres even in countries with speedometer display in miles. This involves converting the adaption value from miles to kilometres.*

- Start dash panel insert self-diagnosis ➔ [page 5](#) .

Display on -VAS 5051B- :

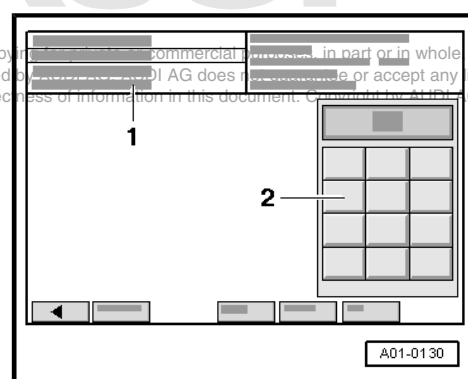
- From the list -1-, select function “11 - Login procedure” or “11 - Encoding II”.



Display on -VAS 5051B- :

1 - Enter code word

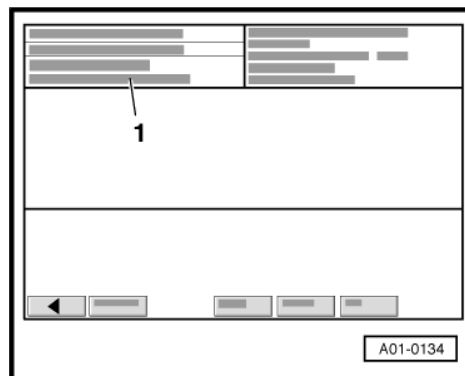
- Use the keypad -2- to enter the code number **1 3 8 6 1**.
- Confirm entry by touching  key.



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Display on -VAS 5051B- :

- 1 - Function successfully implemented
- Touch  key.



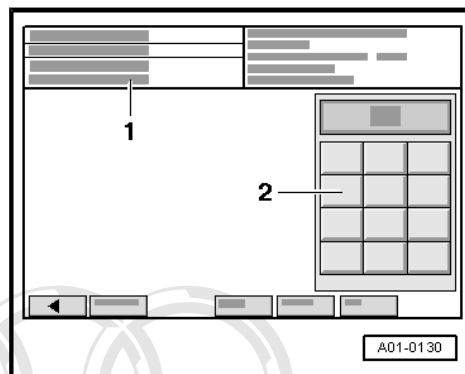
Display on -VAS 5051B- :

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



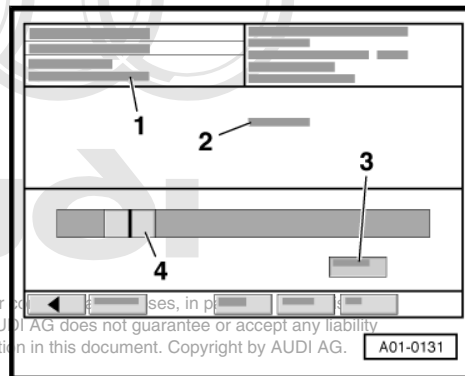
Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key  for "Adaption channel 09" and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Channel 9 reading and testing
- 2 - Kilometre reading in units of 10 km
- 4 - Bar set to current adaption value
- Touch  key -Item 3-.



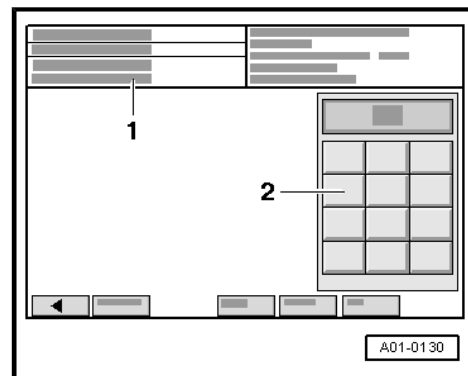
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Display on -VAS 5051B- :

1 - Enter adaption value

- Enter the adaption value on the keypad -2- (take reading from old dash panel insert or from "Measured value block 002" => [page 17](#) ).

|   |                                         |
|---|-----------------------------------------|
| 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 next ten             |



Example: Mileage counter reading "89627 km"

Keypad entry **8 9 6 3**

- Confirm entry by touching **Q** key.

Display on -VAS 5051B- :

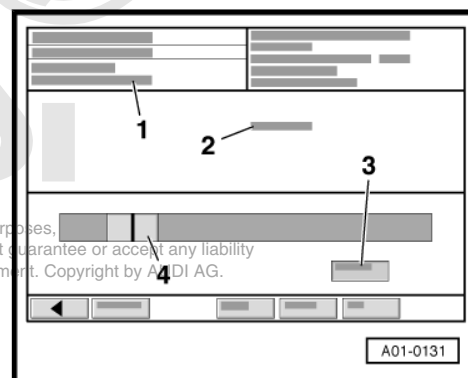
1 - Store channel 9

2 - Kilometre reading in units of 10 km

4 - Original value 0 new value 8963

- Confirm the new adaption value by touching the **Accept** key -3-.

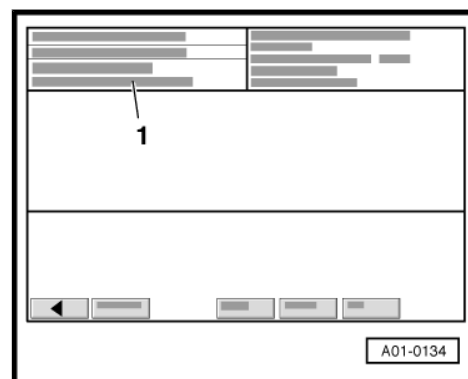
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Display on -VAS 5051B- following successful adaption. Example:

1 - Channel 9 value 8963 stored

- Terminate function "10 - Adaption" by touching **Q** key.



## 2.12 Adaption channels 10 ... 30

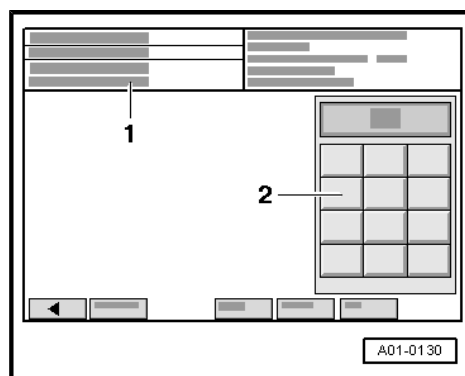
### Adaption channel 10 - Remaining mileage prior to "Oil change service"

This function is used to adapt the remaining mileage prior to the next "Oil change service" on replacing the dash panel insert.

Display on -VAS 5051B- :

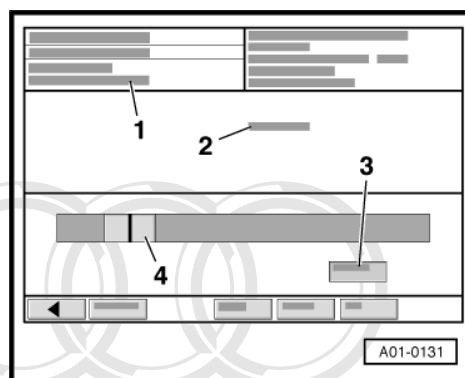
1 - Enter channel number

- On the keypad -2-, touch keys **1** **0** for "Adaption channel 10" and confirm the entry by touching the **Q** key.



Display on -VAS 5051B- :

- 1 - Channel 10 reading and testing
- 4 - Bar set to current adaption value



#### Note

- The value "15" is the factory-set maximum mileage of 15000 km for the "Oil change service".
- Entries can only be made in 1000 km steps; the display is also given in units of 1000 km.
- The value to be entered is decremented to 0 km.
- Adaption must be performed in kilometres even in countries with speedometer display in miles. This involves converting the adaption value from miles to kilometres.

- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 19](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 20](#) .
- Enter the adaption value.

Exam- Remaining mileage prior to next oil change service  
ple: "8000 km"

Keypad entry **8**



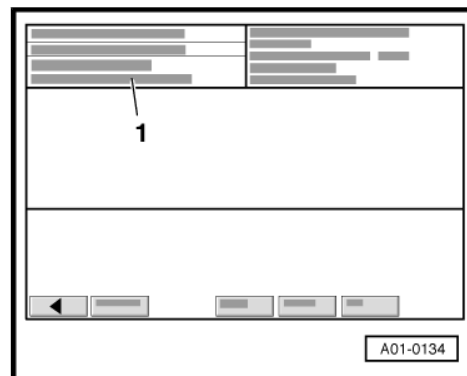
#### Note

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

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Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 10 value 8 stored
- Terminate function "10 - Adaption" by touching  key.

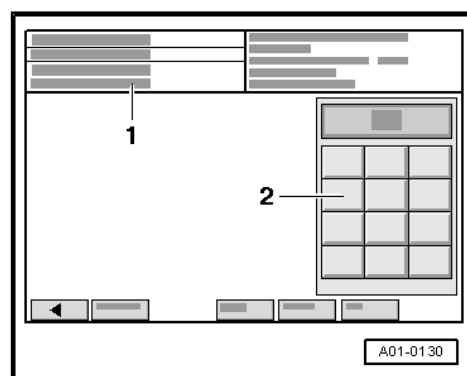


#### Adaption channel 11 - Remaining mileage prior to "Inspection service"

This function is used to adapt the remaining mileage prior to the next "Inspection service" on replacing the dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys   for "Adaption channel 11" and confirm the entry by touching the  key.



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Display on -VAS 5051B- :

- 1 - Channel 11 reading and testing
- 4 - Bar set to current adaption value



#### Note

- ◆ The value "30" is the factory-set maximum mileage of 30000 km for the "Inspection service".
- ◆ Entries can only be made in 1000 km steps; the display is also given in units of 1000 km.
- ◆ The value to be entered is decremented to 0 km.
- ◆ Adaption must be performed in kilometres even in countries with speedometer display in miles. This involves converting the adaption value from miles to kilometres.

- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 19](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 20](#) .
- Enter the adaption value.

Exam- Remaining mileage prior to next inspection service  
ple: "14000 km"  
Keypad entry



#### Note

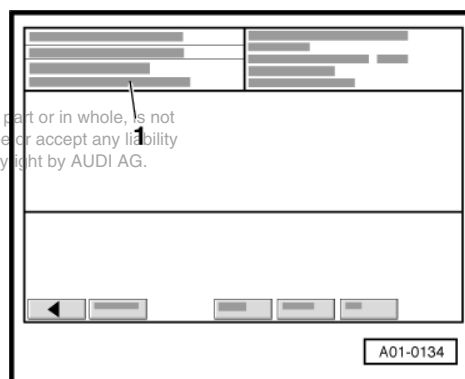
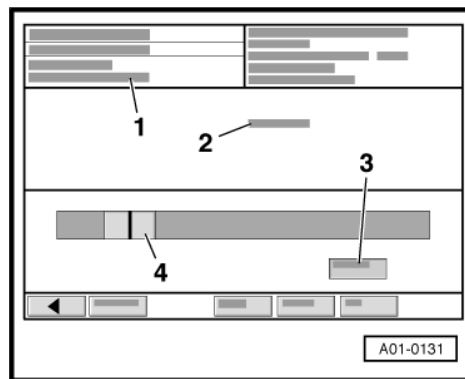
The fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 11 value 14 stored

- Terminate function "10 - Adaption" by touching  key

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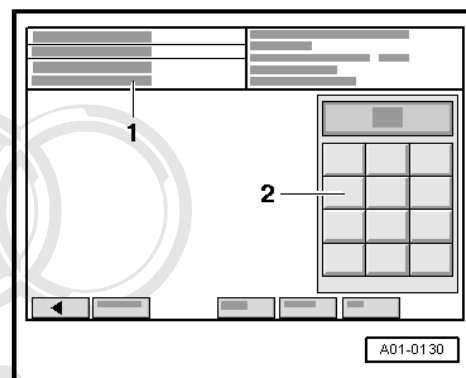
## Adaption channel 12 - Remaining time prior to "Inspection service"

This function is used to adapt the remaining time prior to the next "Inspection service" on replacing the dash panel insert.

Display on -VAS 5051B- :

1 - Enter channel number

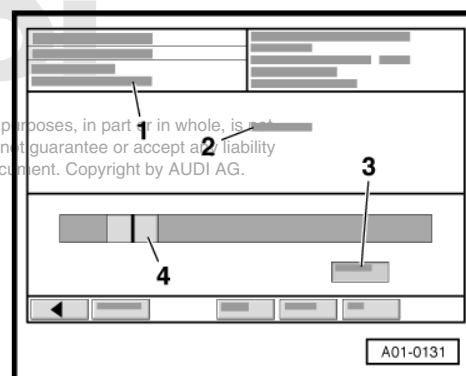
- On the keypad -2-, touch keys **1** **2** for "Adaption channel 12" and confirm the entry by touching the **Q** key.



Display on -VAS 5051B- :

1 - Channel 12 reading and testing

4 - Bar set to current adaption value



### Note

- The value "37" is the factory-set maximum time interval of 370 days for the "Inspection service".
- Entries can only be made in 10 day steps; the display is also given in units of 10 days.
- The value to be entered is decremented to 0 days.

- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 19](#).

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 20](#).
- Enter the adaption value.

Example: Remaining time for inspection service "170 days"

Keypad entry **1** **7**



### Note

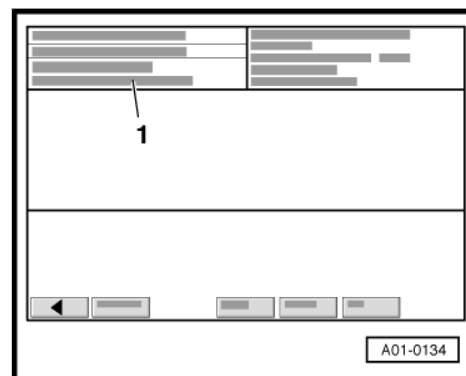
The fault message "Function unknown or cannot be implemented at present" appears if an implausible value is entered.

Display on -VAS 5051B- following successful adaption. Example:

Example:

1 - Channel 12 value 17 stored

- Terminate function "10 - Adaption" by touching **Q** key.



## Adaption channel 30 - Correction of fuel gauge sender characteristic curve

This function can be used to correct the resistance characteristic curve of the fuel gauge sender if the display in the dash panel insert does not correspond to the actual tank content.

Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch keys **[3] [0]** for “Adaption channel 30” and confirm the entry by touching the **[Q]** key.

Display on -VAS 5051B- :

1 - Channel 30 reading and testing

2 - Fuel gauge sender

4 - Bar set to current adaption value



### Note

- ◆ The value “128” is the factory-set mean resistance characteristic curve of the fuel gauge sender.
- ◆ The resistance characteristic curve of the fuel gauge sender can be altered in the range 120 ... 136  $\Omega$ .
- ◆ On dash panel insert replacement ⇒ [page 39](#).

- Use the bar to alter the adaption value ⇒ “A - Altering adaption value by way of bar” ⇒ [page 19](#).

Or

- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 20](#).
- Enter the adaption value.

Exam- Resistance characteristic curve of fuel gauge sender  
ple: “132 $\Omega$ ”

Keypad entry **[1] [3] [2]**



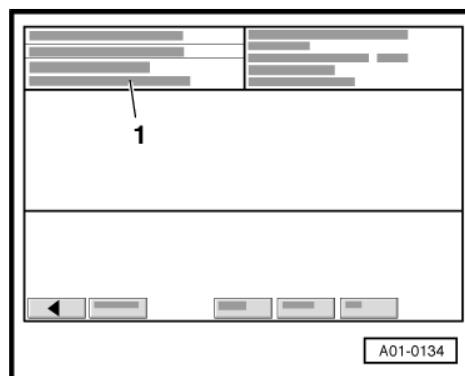
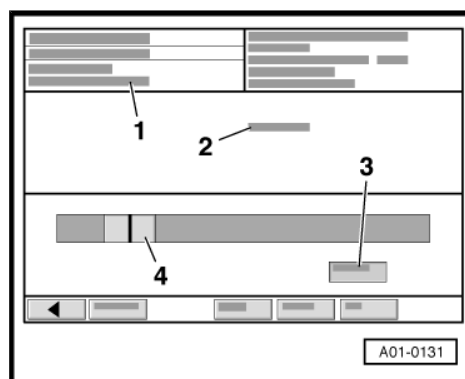
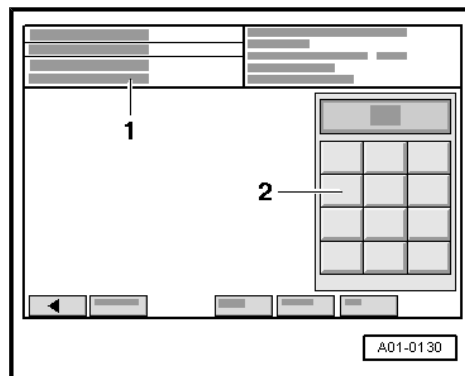
### Note

**The fault message “Function unknown or cannot be implemented at present” appears if an implausible value is entered.** Copying for private or commercial purposes, in part or in whole, is not permitted without the prior written permission of 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.

Display on -VAS 5051B- following successful adaption. Example:

1 - Channel 30 value 132 stored

- Terminate function “10 - Adaption” by touching **[Q]** key.



## 2.13 Input values on dash panel insert replacement

It is essential to observe the following on dash panel insert replacement:

**Take the following action before replacing the dash panel insert:**

- If possible, read out the following values from the old dash panel insert and make a printout:
  - ◆ Values of all service interval display adaption channels.
  - ◆ Mileage counter reading in "Measured value block 002" (display zone 1).
- If applicable, read off and note down the mileage counter reading.



### Note

- ◆ *Service interval display and mileage counter adaption must be performed in kilometres even in countries with speedometer display in miles. This involves converting the adaption values from miles to kilometres or entering the adaption values previously noted down.*
- ◆ *Since Model Year 1998, the immobilizer control unit has been integrated into the dash panel insert. Immobilizer adaption must therefore be performed after replacing the dash panel insert.*

**Take the following action after replacing the dash panel insert:**

- Encode the dash panel insert ➔ [page 14](#) .
- and
- Adapt the mileage counter reading ➔ [page 31](#) .
- Adapt the language version of the driver information system (DIS) ➔ [page 25](#) .
- Correct the characteristic curve of the fuel consumption indicator ➔ [page 24](#) (only if characteristic curve has been altered).
- Correct the characteristic curve of the fuel gauge sender ➔ [page 38](#) (only if characteristic curve has been altered).
- Reset the service interval display on completion of service ➔ [page 23](#) .

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### Note

*"Adaption channels 05, 06, 07" can be used to adapt the service interval display mileage and time intervals, e.g. to comply with country-specific requirements. Applicable specifications ➔ Maintenance ; Booklet 802 .*

**Vehicles as of Model Year 1998:**

- Adapt remaining mileage prior to "Oil change service" ➔ [page 34](#) .
- Adapt remaining mileage prior to "Inspection service" ➔ [page 35](#) .
- Adapt remaining time prior to "Inspection service" ➔ [page 37](#) .

and

- Perform adaption of immobilizer following dash panel insert replacement: Immobilizer I ⇒ [page 105](#) , Immobilizer II ⇒ [page 129](#) .
- Perform vehicle key matching: Immobilizer I ⇒ [page 100](#) , immobilizer II ⇒ [page 124](#) .

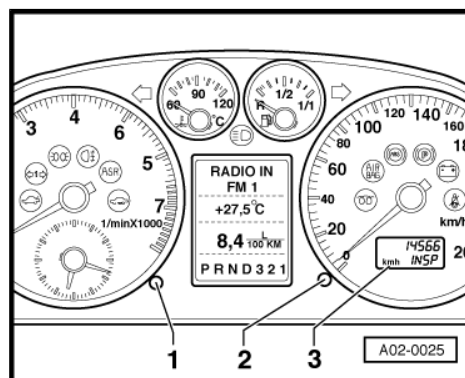
## 2.14 Service interval display reset on completion of service without -VAS 5051B-

- ◆ The corresponding service message must be reset on completion of service.
- ◆ The service interval display can be reset with the vehicle diagnostic, testing and information system -VAS 5051B- using the “Adaption” function ⇒ [page 18](#) .
- ◆ The service interval display can also be reset by implementing the following procedure:

### Sequence of operations

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

Up to Model Year 1997, the trip recorder displays “Oil change” and as of Model Year 1998 “Oil change service”.



- Keep pulling the time setting knob -1- in the dash panel insert until the display is reset.

The display -3- indicates “- - -”.

- The next service is accessed by pressing the trip recorder reset button -2- again.

Up to Model Year 1997, the display -3- indicates “In1” and as of Model Year 1998 “Inspection service”.

- Keep pulling the time setting knob -1- in the dash panel insert until the display is reset.

The display -3- indicates “- - -”.

### Up to Model Year 1997:

- The next service is accessed by pressing the trip recorder reset button -2- again.

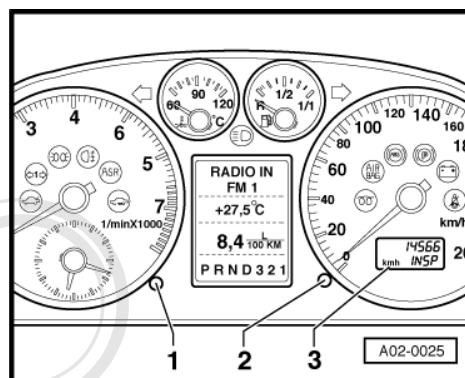
The display -3- indicates “In2”.

- Keep pulling the time setting knob -1- in the dash panel insert until the display is reset.

The display -3- indicates “- - -”.

### All models:

- Switch off ignition.



### 3 Self-diagnosis of dash panel insert with extended service interval as of Model Year 2000

#### 3.1 General information

##### Extended service interval

The dash panel insert as of Model Year 2000 is fitted with a service interval display which can process flexible data. The dash panel insert calculates the vehicle-specific service requirement from various input quantities such as number of cold starts, performance, fuel consumption and oil temperature.

##### Technical features of dash panel insert

- ◆ Two different dash panel inserts are fitted:  
Midline: With small centre display  
Highline: With large centre display with driver information system (DIS)
- ◆ The speedometer contains an LCD display for the mileage counter and trip recorder.
- ◆ The centre display presents the service messages and, in conjunction with certain optional extras, a selection menu controlled by way of a function selection switch in the centre console.
- ◆ The warning lamps are integrated into the speedometer and rev counter.
- ◆ The dash panel insert is controlled by a microprocessor and is provided with comprehensive self-diagnosis. Any faults occurring at system components cause fault codes to be stored in the dash panel insert fault memory. The faults can be established by way of the vehicle diagnostic, testing and information system -VAS 5051B-.

##### "dEF" display in trip recorder

"dEF" appears on the trip recorder display if the control unit in the dash panel insert detects a fault at the read-only memory. If "dEF" is displayed:

- Replace the dash panel insert ⇒ Rep. Gr. 90.

##### Dash panel insert replacement

- ◆ The dash panel insert is not to be dismantled.
- ◆ If necessary, the dash panel insert is to be replaced as part of the exchange system.
- ◆ Complete the damage report and return it together with the dash panel insert.
- ◆ Always use the original packaging when returning the unit.
- ◆ On dash panel insert replacement, mileage counter and service interval display adaption can be performed using the vehicle diagnostic, testing and information system -VAS 5051B- ⇒ [page 60](#).

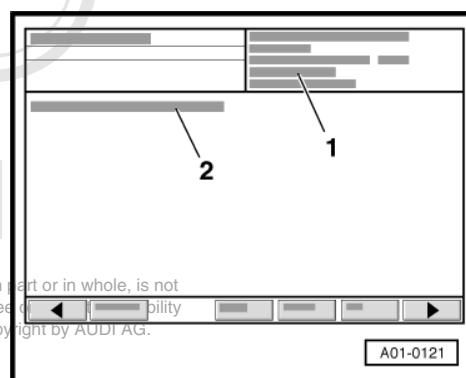
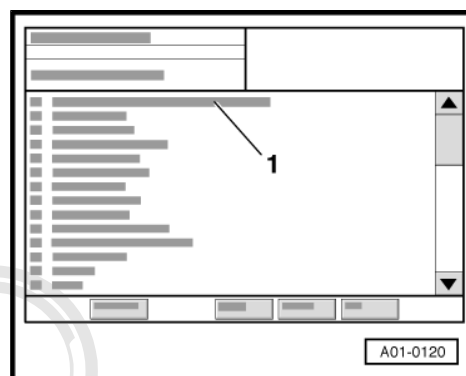
## 3.2 Starting dash panel insert self-diagnosis

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Ignition on
- From list -1- select vehicle system “17 - Dash panel insert”.
- Wait until next display appears.

Display on -VAS 5051B- :

- 1 - Control unit identification of dash panel insert
- 2 - Control unit identification of immobilizer



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| Dash panel insert control unit identification (example) |                                                                     |
|---------------------------------------------------------|---------------------------------------------------------------------|
| 17 - Dash panel insert                                  | Vehicle system                                                      |
| 8D0920830..                                             | Part no.; assignment ⇒ Parts catalogue                              |
| DASH PANEL INSERT+IM-MOBILIZER                          | Component designation                                               |
| VDO                                                     | Manufacturer's code<br>♦ M73 = Magneti Marelli<br>♦ VDO = VDO       |
| D..                                                     | Data level (software version) of control unit                       |
| Code 42                                                 | Control unit encoding (checking ⇒ <a href="#">page 53</a> )         |
| Workshop code 12345                                     | Workshop code of -VAS 5051B- with which encoding was last performed |

| Immobilizer control unit identification (example) |                                                                                                                |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| WAUZZZ8DZYA019321                                 | 17-position vehicle ident. no. (chassis number) (display as of immobilizer III<br>⇒ <a href="#">page 138</a> ) |
| IMMO IDENT NO.<br>AUZ7Z0X1137197                  | 14-position immobilizer identification number                                                                  |

- Touch  key.

Display on -VAS 5051B- :

The following functions shown in the display -1- are available:

| Functions                         | Page                      |
|-----------------------------------|---------------------------|
| 02 Interrogating fault memory     | ⇒ <a href="#">page 43</a> |
| 03 Final control diagnosis        | ⇒ <a href="#">page 49</a> |
| 05 Erasing fault memory           | ⇒ <a href="#">page 52</a> |
| 06 End of output                  | ⇒ <a href="#">page 53</a> |
| 07 Encoding control unit          | ⇒ <a href="#">page 53</a> |
| 08 Reading measured value block   | ⇒ <a href="#">page 55</a> |
| 10 Adaption                       | ⇒ <a href="#">page 60</a> |
| 11 Login procedure or encoding II | ⇒ <a href="#">page 68</a> |



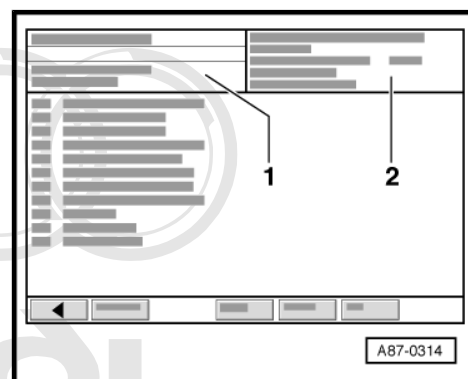
All other functions displayed cannot be selected or can be ignored in this case.

### Fault messages on -VAS 5051B-

If a fault message appears on the display, refer to ⇒ Operating instructions of vehicle diagnostic, testing and information system -VAS 5051B- .

If display zone -1- shows the fault message “Vehicle system not available”:

- Check:
  - ◆ Power supply to diagnostic connection ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
  - ◆ Wiring between diagnostic connection and dash panel insert ⇒ Current flow diagrams, Electrical fault finding and Fitting locations



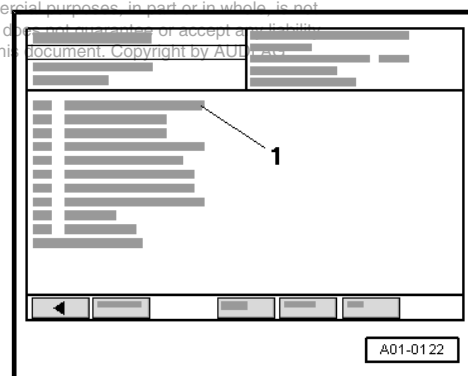
## 3.3 Interrogating fault memory

### Sequence of operations

- Start dash panel insert self-diagnosis ⇒ [page 42](#) .

Display on -VAS 5051B- :

- From list -1-, select function “02 - Interrogating fault memory”.



Display on -VAS 5051B- :

- |                             |                                               |
|-----------------------------|-----------------------------------------------|
| -1- Content of fault memory | 0 faults detected<br>or<br>X faults detected  |
| -2- Fault                   | Fault code<br>Fault location<br>Type of fault |

#### A - Faults detected:

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

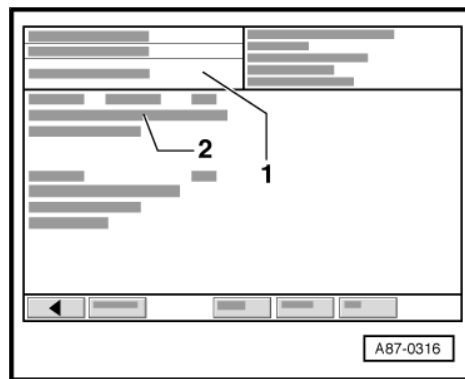
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Display on -VAS 5051B- :

- Eliminate fault(s) in line with fault tables ⇒ [page 45](#) .
- From list -1-, select function “02 - Interrogating fault memory” again and erase fault memory ⇒ [page 52](#) .
- From list -1-, select function “06 - End of output” ⇒ [page 53](#) .

#### B - No fault detected:

- Terminate function “02 - Interrogating fault memory” by touching  key.
- Select “06 - End of output” from list ⇒ [page 53](#) .



## 3.4 Fault tables



### Note

- ◆ *Faults occurring in monitored sensors or components are stored in the fault memory together with an indication of the type of fault.*
- ◆ *The fault tables are arranged according to the 5-digit fault codes in the left-hand column.*
- ◆ *All static and sporadic faults are stored in the fault memory: A fault is identified as being static if it persists 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. Sporadic faults (temporary faults) are marked "sporadic" on the display. "Sporadic" means isolated or occasional occurrence.*
- ◆ *After switching on the ignition, all faults present are set to "sporadic" and only stored as being static if they are still present after checking.*
- ◆ *Sporadic faults which do not re-occur in the course of 50 driving cycles (ignition switched on for at least 5 minutes, vehicle speed greater than 30 km/h) are erased.*
- ◆ *Components indicated as being faulty by the -VAS 5051B- are not to be immediately replaced, but rather: Start by using the current flow diagram to check the wiring and connectors to these components. The earth connections are also to be checked on the basis of the current flow diagram. This is particularly important in the case of "sporadic" faults.*
- ◆ *On eliminating an open circuit in the wiring in the event of a CAN bus fault, make sure the two signal wires of the relevant system form a twisted pair so as to avoid electromagnetic interference.*
- ◆ *Re-interrogate and erase the fault memory on completion of repair work and after checking system operation.*

| Output on -VAS 5051B-             | Possible cause of trouble                                                                      | Remedy                                                          |
|-----------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 00562<br>Thermal oil level sender | ◆ Open circuit or short to earth/positive in wiring to oil level/oil temperature sender -G266- | – Use current flow diagram to check wiring and connectors       |
| ◆ Open circuit/short to positive  |                                                                                                |                                                                 |
| ◆ Short to earth                  |                                                                                                |                                                                 |
| ◆ Implausible signal              | ◆ Oil level/oil temperature sender -G266- defective                                            | – Replace oil level/oil temperature sender -G266- → Rep. Gr. 17 |

| Output on -VAS 5051B-               | Possible cause of trouble                                                               | Remedy                                                    |
|-------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------|
| 00667<br>Ambient temperature signal | ◆ Open circuit or short to earth/positive in wiring to ambient temperature sensor -G17- | – Use current flow diagram to check wiring and connectors |
| ◆ Open circuit/short to positive    |                                                                                         |                                                           |
| ◆ Short to earth                    |                                                                                         |                                                           |
| ◆ Implausible signal                | ◆ Ambient temperature sensor -G17- defective                                            | – Replace ambient temperature sensor -G17- → Rep. Gr. 87  |

| Output on -VAS 5051B- | Possible cause of trouble                                                                                       | Remedy                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
|                       | ♦ Vehicles with air conditioner: Air conditioning system/Climatronic operating and display unit -E87- defective | – Interrogate air conditioner fault memory ⇒ Rep. Gr. 01 |

| Output on -VAS 5051B-                                               | Possible cause of trouble                    | Remedy                                                                                                                                                                                                                            |
|---------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 00668<br>Electrical system voltage term. 30<br>Power supply too low | ♦ Battery discharged/defective               | – Charge/replace battery ⇒ Rep. Gr. 27                                                                                                                                                                                            |
|                                                                     | ♦ Battery voltage less than 9.5 V            | – Check alternator ⇒ Rep. Gr. 27                                                                                                                                                                                                  |
|                                                                     | ♦ Alternator defective                       |                                                                                                                                                                                                                                   |
|                                                                     | ♦ Short circuit in vehicle electrical system | – Implement function “00 - Automatic test sequence” to determine the control unit responsible for the fault message; check power supply of defective control unit<br><br>– Erase fault memory and continue to monitor the vehicle |

| Output on -VAS 5051B-                                                                  | Possible cause of trouble                                                                                                                                              | Remedy                                                                                                                                         |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 00771<br>Fuel gauge sender -G-<br>♦ Open circuit/short to positive<br>♦ Short to earth | ♦ Open circuit or short to earth/ positive in wiring to component; on four-wheel drive vehicles possibly also fuel gauge sender 2 -G169- or fuel gauge sender 3 -G237- | – Use current flow diagram to check wiring and connectors                                                                                      |
|                                                                                        | ♦ Fuel gauge sender -G- defective; on four-wheel drive vehicles possibly also fuel gauge sender 2 -G169- or fuel gauge sender 3 -G237-                                 | – Check fuel gauge sender; on four-wheel drive vehicles possibly also fuel gauge sender 2 - G169- or fuel gauge sender 3 - G237- ⇒ Rep. Gr. 20 |

| Output on -VAS 5051B-                                                                       | Possible cause of trouble                                                                | Remedy                                                    |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| 00779<br>Ambient temperature sensor<br>♦ Open circuit/short to positive<br>♦ Short to earth | ♦ Open circuit or short to earth/ positive in wiring to ambient temperature sensor -G17- | – Use current flow diagram to check wiring and connectors |
|                                                                                             | ♦ Ambient temperature sensor - G17- defective                                            | – Replace ambient temperature sensor -G17- ⇒ Rep. Gr. 87  |

| Output on -VAS 5051B-                                                                            | Possible cause of trouble                                         | Remedy                                                                   |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------|
| 01039<br>Coolant temperature sender -G2-<br>♦ Open circuit/short to positive<br>♦ Short to earth | ♦ Open circuit or short to earth/ positive in wiring to component | – Use current flow diagram to check wiring and connectors                |
|                                                                                                  | ♦ Coolant temperature sender -G2- defective                       | – Replace coolant temperature sender -G2- ⇒ Rep. Gr. 23 or ⇒ Rep. Gr. 24 |

| Output on -VAS 5051B-                                       | Possible cause of trouble                                                                                                | Remedy                                                                                                                 |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 01300<br>Navigation system control unit<br>No communication | ◆ Open circuit or short to earth/<br>positive in CAN bus wiring                                                          | – Read “measured value block<br>140” ➔ <a href="#">page 59</a><br>– Check CAN bus wiring<br>➔ <a href="#">page 203</a> |
|                                                             | ◆ Display in “measured value<br>block 140” for navigation system<br>control unit is not “1”<br>➔ <a href="#">page 59</a> | – Select “adaption channel 62”<br>and enter correct adaption value<br>➔ <a href="#">page 85</a>                        |
|                                                             | ◆ Adaption for dash panel insert<br>not implemented properly                                                             |                                                                                                                        |
|                                                             | ◆ Navigation system with CD drive<br>control unit -J401- defective                                                       | – Replace navigation system with<br>CD drive control unit -J401- ➔<br>Rep. Gr. 91                                      |

| Output on -VAS 5051B-                                | Possible cause of trouble                                                                                      | Remedy                                                                                                                 |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 01302<br>Telematics control unit<br>No communication | ◆ Open circuit or short to earth/<br>positive in CAN bus wiring                                                | – Read “measured value block<br>140” ➔ <a href="#">page 59</a><br>– Check CAN bus wiring<br>➔ <a href="#">page 203</a> |
|                                                      | ◆ Display in “measured value<br>block 140” for telematics control<br>unit is not “1” ➔ <a href="#">page 59</a> | – Select adaption channel 62<br>and enter correct adaption value<br>➔ <a href="#">page 85</a>                          |
|                                                      | ◆ Adaption for dash panel insert<br>not implemented properly                                                   |                                                                                                                        |
|                                                      | ◆ Telematics control unit defective                                                                            | – Replace telematics control unit<br>➔ Rep. Gr. 91                                                                     |

| Output on -VAS 5051B-                  | Possible cause of trouble                                                                                                           | Remedy                                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 01303<br>Telephone<br>No communication | ◆ Open circuit or short to earth/<br>positive in CAN bus wiring                                                                     | – Read “measured value block<br>140” ➔ <a href="#">page 59</a><br>– Check CAN bus wiring<br>➔ <a href="#">page 203</a> |
|                                        | ◆ Open circuit in power supply of<br>telephone transmitter and re-<br>ceiver unit                                                   | – Use current flow diagram to<br>check wiring and connectors                                                           |
|                                        | ◆ Display in “measured value<br>block 140” for telephone trans-<br>mitter and receiver unit is not “1”<br>➔ <a href="#">page 59</a> | – Select “adaption channel 62”<br>and enter correct adaption value<br>➔ <a href="#">page 85</a>                        |
|                                        | ◆ Adaption for dash panel insert<br>not implemented properly                                                                        |                                                                                                                        |
|                                        | ◆ Telephone transmitter and re-<br>ceiver unit defective                                                                            | – Replace telephone transmitter<br>and receiver unit ➔ Rep. Gr. 91                                                     |

| Output on -VAS 5051B-              | Possible cause of trouble                                                                  | Remedy                                                                                                           |
|------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 01304<br>Radio<br>No communication | ◆ Open circuit or short to earth/positive in CAN bus wiring                                | – Read “measured value block 140” ⇒ <a href="#">page 59</a><br>– Check CAN bus wiring ⇒ <a href="#">page 203</a> |
|                                    | ◆ Open circuit in power supply for telephone transmitter and receiver unit                 | – Use current flow diagram to check wiring and connectors                                                        |
|                                    | ◆ Display in “measured value block 140” for radio is not “1” ⇒ <a href="#">page 59</a>     | – Select “adaption channel 62” and enter correct adaption value ⇒ <a href="#">page 85</a>                        |
|                                    | ◆ Radio has no CAN capability<br>◆ Adaption for dash panel insert not implemented properly |                                                                                                                  |
|                                    | ◆ Radio defective                                                                          | – Replace radio ⇒ Rep. Gr. 91                                                                                    |

| Output on -VAS 5051B-                        | Possible cause of trouble                                                                                                                                                      | Remedy                                                                                    |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 01311<br>Information data bus<br>◆ Defective | ◆ Open circuit or short to earth/positive in CAN bus wiring at one control unit in information data bus (display)                                                              | – Check CAN bus wiring ⇒ <a href="#">page 203</a>                                         |
|                                              | ◆ Display in “measured value block 140” for control unit with CAN capability is not “1” ⇒ <a href="#">page 59</a><br>◆ Adaption for dash panel insert not implemented properly | – Select “adaption channel 62” and enter correct adaption value ⇒ <a href="#">page 85</a> |
|                                              | ◆ In one-wire operation<br>◆ CAN bus only operating on one wire                                                                                                                | – Check CAN bus wiring ⇒ <a href="#">page 203</a>                                         |

| Output on -VAS 5051B-                    | Possible cause of trouble                                                                                                                                                      | Remedy                                                                                    |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 01312<br>Drive system data bus defective | ◆ Open circuit or short to earth/positive in CAN bus wiring at one control unit in drive system data bus                                                                       | – Check CAN bus wiring ⇒ <a href="#">page 203</a>                                         |
|                                          | ◆ Display in “measured value block 125” for control unit with CAN capability is not “1” ⇒ <a href="#">page 59</a><br>◆ Adaption for dash panel insert not implemented properly | – Select “adaption channel 60” and enter correct adaption value ⇒ <a href="#">page 84</a> |

| Output on -VAS 5051B-                            | Possible cause of trouble                                   | Remedy                                            |
|--------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------|
| 01314<br>Engine control unit<br>No communication | ◆ Open circuit or short to earth/positive in CAN bus wiring | – Check CAN bus wiring ⇒ <a href="#">page 203</a> |

| Output on -VAS 5051B- | Possible cause of trouble                                                                                                                                                                                                 | Remedy                                                                                                                                      |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <ul style="list-style-type: none"> <li>◆ Display in "measured value block 125" for engine control unit is not "1" ⇒ <a href="#">page 59</a></li> <li>◆ Adaption for dash panel insert not implemented properly</li> </ul> | <ul style="list-style-type: none"> <li>– Select "adaption channel 60" and enter correct adaption value ⇒ <a href="#">page 84</a></li> </ul> |
|                       | <ul style="list-style-type: none"> <li>◆ Engine control unit defective</li> </ul>                                                                                                                                         | <ul style="list-style-type: none"> <li>– Replace engine control unit ⇒ Rep. Gr. 23 or ⇒ Rep. Gr. 24</li> </ul>                              |

| Output on -VAS 5051B-                             | Possible cause of trouble                                                                                                                                                                                                            | Remedy                                                                                                                                      |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 01315<br>Gearbox control unit<br>No communication | <ul style="list-style-type: none"> <li>◆ Open circuit or short to earth/positive in CAN bus wiring</li> </ul>                                                                                                                        | <ul style="list-style-type: none"> <li>– Check CAN bus wiring ⇒ <a href="#">page 203</a></li> </ul>                                         |
|                                                   | <ul style="list-style-type: none"> <li>◆ Display in "measured value block 125" for automatic gearbox control unit is not "1" ⇒ <a href="#">page 59</a></li> <li>◆ Adaption for dash panel insert not implemented properly</li> </ul> | <ul style="list-style-type: none"> <li>– Select "adaption channel 60" and enter correct adaption value ⇒ <a href="#">page 84</a></li> </ul> |
|                                                   | <ul style="list-style-type: none"> <li>◆ Automatic gearbox control unit defective</li> </ul>                                                                                                                                         | <ul style="list-style-type: none"> <li>– Replace automatic gearbox control unit ⇒ Rep. Gr. 01 or ⇒ Rep. Gr. 38</li> </ul>                   |
|                                                   |                                                                                                                                                                                                                                      |                                                                                                                                             |

| Output on -VAS 5051B-                                 | Possible cause of trouble                                                                                                       | Remedy                                                                                                                      |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 01402<br>Navigation signal wire<br>Implausible signal | <ul style="list-style-type: none"> <li>◆ Open circuit on clock, enable or signal wire</li> </ul>                                | <ul style="list-style-type: none"> <li>– Use current flow diagram to check wiring and connectors of signal wires</li> </ul> |
|                                                       | <ul style="list-style-type: none"> <li>◆ Fault in interface between navigation unit and dash panel insert</li> </ul>            | <ul style="list-style-type: none"> <li>– Check causes of faults ⇒ Rep. Gr. 91</li> </ul>                                    |
|                                                       | <ul style="list-style-type: none"> <li>◆ Fault caused by electromagnetic interference inside and outside the vehicle</li> </ul> |                                                                                                                             |

| Output on -VAS 5051B-           | Possible cause of trouble                                                       | Remedy                                                                                      |
|---------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 65535<br>Control unit defective | <ul style="list-style-type: none"> <li>◆ Dash panel insert defective</li> </ul> | <ul style="list-style-type: none"> <li>– Replace dash panel insert ⇒ Rep. Gr. 90</li> </ul> |

### 3.5 Final control diagnosis



#### Note

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

#### Actuation sequence

All the dash panel insert control elements fitted and encoded are consecutively actuated in function "03 - Final control diagnosis":

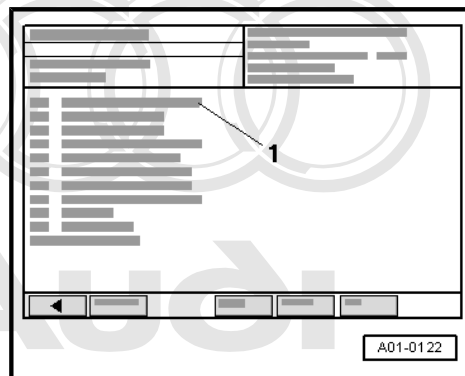
1. Analog displays
2. Minicheck warning lamps - vehicles with no driver information system (DIS)
3. Seat belt warning system warning lamp -K19-
4. Gong
5. Segment test
6. Illumination/switches and instruments

### Sequence of operations

- Switch on side lights.
- Start dash panel insert self-diagnosis ⇒ [page 42](#) .

Display on -VAS 5051B- :

- In list -1- select function “03 - Final control diagnosis”.



### Analog display actuation

Display on -VAS 5051B- :

A - 1. control element in test

1 - Analog displays

The following checks are simultaneously implemented:

- Sweep of coolant temperature needle over entire display range
- Sweep of rev counter needle over entire display range
- Sweep of speedometer needle over entire display range
- Sweep of fuel gauge needle over entire display range

The following fixed values are displayed on completion of this process:

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



### Actuation of dash panel insert warning lamp test

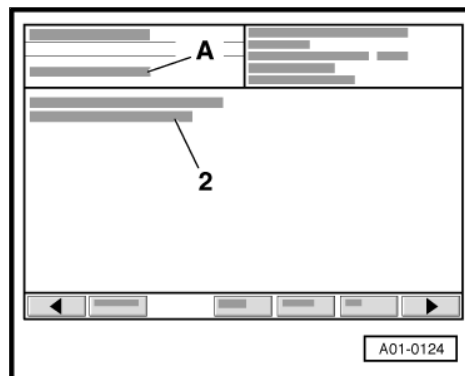
- Touch  key.

Display on -VAS 5051B- :

A - 2. control element in test

2 - Dash panel insert warning lamp test

- The Minicheck warning lamps are actuated.



### Actuation of seat belt warning system warning lamp

- Touch  key.

Display on -VAS 5051B- :

A - 3. control element in test

3 - Seat belt warning system warning lamp -K19-

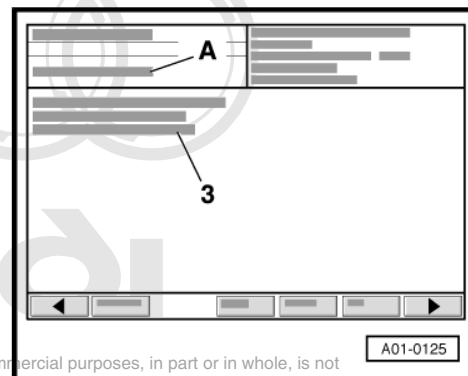
- The seat belt warning system warning lamp is actuated (lights).



#### Note

- ◆ *The seat belt warning system warning lamp is only activated if the dash panel insert is accordingly encoded.*
- ◆ *If the seat belt warning system warning lamp is not called up during final control diagnosis, the warning lamp is not active.*

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### Gong actuation

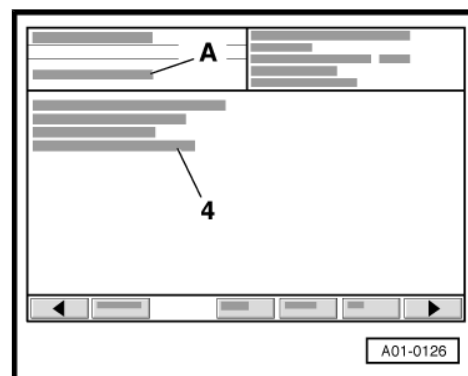
- Touch  key.

Display on -VAS 5051B- :

A - 4. control element in test

4 - Gong

- The gong sounds intermittently.



### Segment test actuation

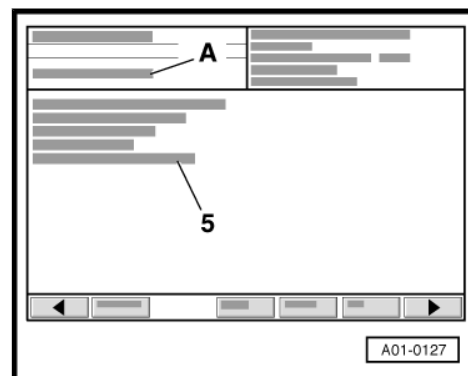
- Touch  key.

Display on -VAS 5051B- :

A - 5. control element in test

5 - Segment test

- All elements of the multi-function display, the time/date display and the mileage counter and trip recorder light.



### Actuation of illumination/switches and instruments

- Touch  key.

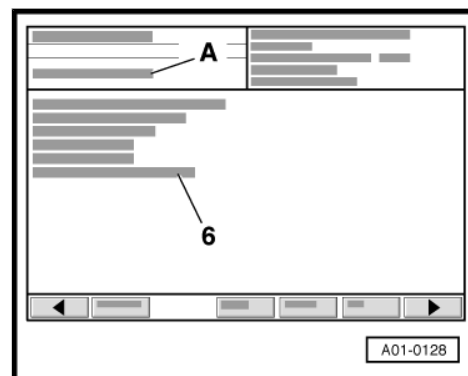
Display on -VAS 5051B- :

A - 6. control element in test

6 - Illumination/switches and instruments

- The dash panel insert illumination is dimmed, then brightened and dimmed again and finally returns to the original brightness level.

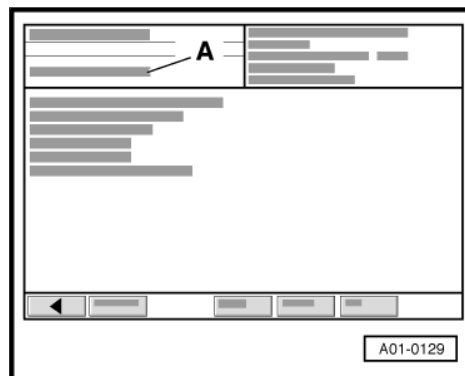
- Touch  key.



Display on -VAS 5051B- :

A - Control element test over

- Terminate function “03 - Final control diagnosis” by touching  key.



### 3.6 Erasing fault memory



Note

*If the fault memory cannot be erased, interrogate it again and rectify fault.*

#### Sequence of operations

- Fault memory interrogated ⇒ [page 43](#)
- All faults eliminated

After fault memory interrogation:

Display on -VAS 5051B- :

- From list -1-, select function “05 - Erasing fault memory”.



Display on -VAS 5051B- :

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

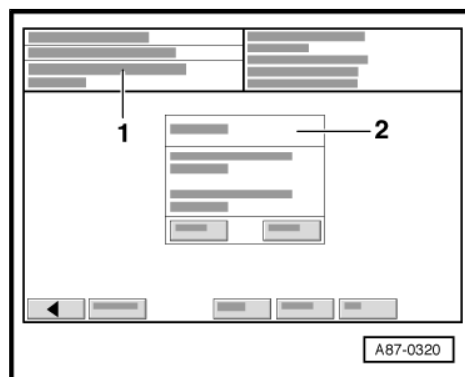


Note

*If the following message appears in display zone -1-: “Fault memory not yet interrogated”, this indicates failure to comply exactly with the sequence of operations. The fault memory can only be erased after it has been interrogated.*

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

- Touch  key in display -2-.
- Interrogate fault memory again on completion of repair work.



Note

*This erases faults stored during fault rectification, e.g. as a result of unplugging connectors.*

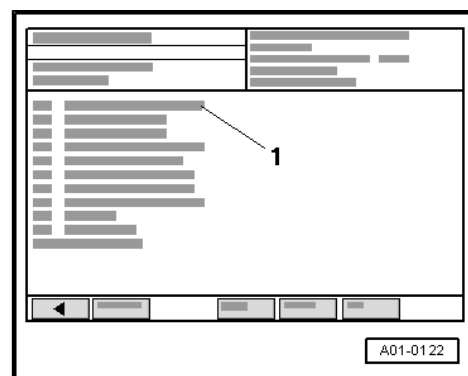
- Terminate function “05 - Erasing fault memory” by touching  key.

### 3.7 End of output

#### Sequence of operations

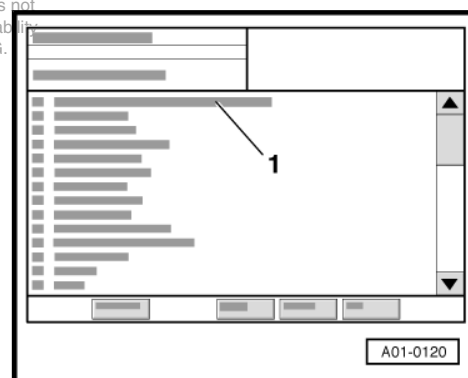
Display on -VAS 5051B- :

- From list -1-, select function “06 - End of output”.



Display on -VAS 5051B- :

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



### 3.8 Encoding control unit



#### Note

*Encoding sets the dash panel insert to the specific vehicle equipment.*

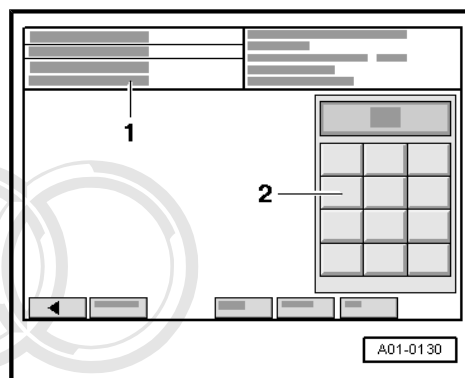
#### Sequence of operations

- Start dash panel insert self-diagnosis ⇒ [page 42](#) .
- Display on -VAS 5051B- :
- From list -1-, select function “07 - Encoding control unit”.



Display on -VAS 5051B- :

1 - Enter code word



| Encoding table                                                                                                                                                                                                                                                |    |                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------------------------------------------------------------------------|
| Optional extras                                                                                                                                                                                                                                               | 0  | No optional extras, navigation system III as of week 29.1999 <sup>1)</sup> |
|                                                                                                                                                                                                                                                               | 2  | Seat belt warning system active                                            |
|                                                                                                                                                                                                                                                               | 16 | Navigation system I or II                                                  |
| <p>If the vehicle is fitted with several encodable optional extras, add up the numbers of the individual optional extra codes. Example:</p> <ul style="list-style-type: none"> <li>• Seat belt warning system and navigation system I: 2 + 16 = 18</li> </ul> |    |                                                                            |
| Country version                                                                                                                                                                                                                                               | 0  | Germany (D)                                                                |
|                                                                                                                                                                                                                                                               | 1  | Left-hand drive, Rest of World (RoW)                                       |
|                                                                                                                                                                                                                                                               | 2  | USA (USA)                                                                  |
|                                                                                                                                                                                                                                                               | 3  | Canada (CDN)                                                               |
|                                                                                                                                                                                                                                                               | 4  | Great Britain (GB)                                                         |
|                                                                                                                                                                                                                                                               | 5  | Left-hand drive, Japan (J)                                                 |
|                                                                                                                                                                                                                                                               | 6  | Saudi Arabia (SA)                                                          |
|                                                                                                                                                                                                                                                               | 7  | Australia (AUS) / New Zealand (NZ)                                         |
|                                                                                                                                                                                                                                                               | 8  | Right-hand drive, Rest of World (RoW)                                      |
|                                                                                                                                                                                                                                                               | 9  | Right-hand drive, Japan (J)                                                |
| Number of cylinders                                                                                                                                                                                                                                           | 4  | 4-cylinder                                                                 |
|                                                                                                                                                                                                                                                               | 6  | 6-cylinder                                                                 |
| Engine version                                                                                                                                                                                                                                                | 0  | TDI engine                                                                 |
|                                                                                                                                                                                                                                                               | 2  | Petrol engine                                                              |
|                                                                                                                                                                                                                                                               | 4  | Turbo engine                                                               |
| <ul style="list-style-type: none"> <li>• <sup>1)</sup> Navigation system III is entered in "Adaption channel 62".</li> </ul>                                                                                                                                  |    |                                                                            |

Display on -VAS 5051B- :

- Use keypad -2- to enter the control unit code as per encoding table.

|          |   |   |   |   |                               |
|----------|---|---|---|---|-------------------------------|
| Example: |   |   |   |   |                               |
| 1        | 6 | 0 | 6 | 4 | ← Keypad entry (max. 5-digit) |
|          |   |   |   |   | Turbo engine: 4               |
|          |   |   |   |   | 6-cylinder: 6                 |
|          |   |   |   |   | Germany (D): 0                |
|          |   |   |   |   | Navigation system II: 16      |

- Confirm entry by touching  key.

Display on -VAS 5051B- :

1 - Encoding in progress

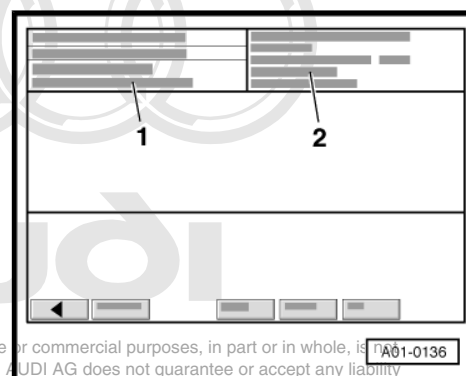
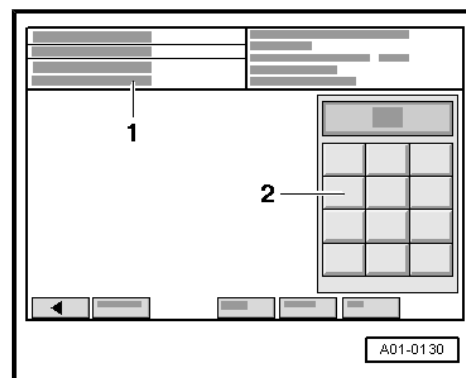
- Wait until next display appears.

Display on -VAS 5051B- :

1 - Vehicle system encoding completed

2 - Control unit identification with new code (old code in parentheses)

- Terminate function “07 - Encoding control unit” by touching  key.



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### Fault messages on -VAS 5051B-

If display zone -1- shows the fault message “Function unknown or cannot be implemented at present”:

- Check whether the correct dash panel insert has been fitted  
⇒ Parts catalogue . Or a non-released code has been entered.  
Repeat the encoding procedure if necessary.



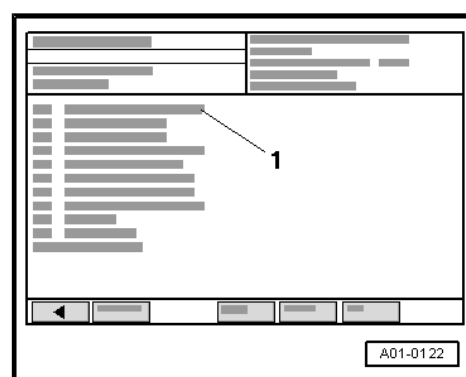
## 3.9 Reading measured value block

### Sequence of operations

- Start dash panel insert self-diagnosis ⇒ [page 42](#) .

Display on -VAS 5051B- :

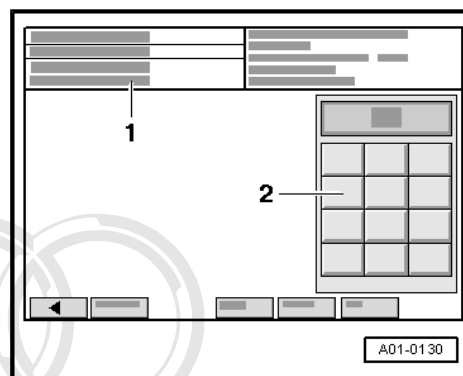
- From list -1-, select function “08 - Reading measured value block”.



Display on -VAS 5051B- :

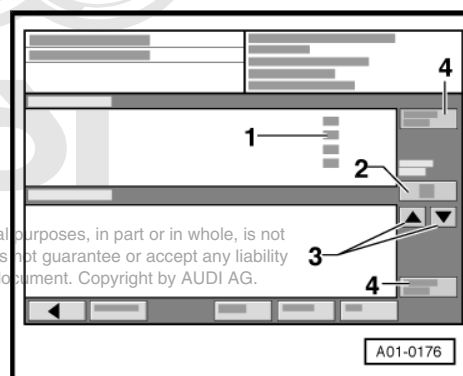
1 - Enter display group

- Use keypad -2- to enter the desired “display group number”  
⇒ [page 56](#) and confirm the entry by touching the [Q] key.



Display on -VAS 5051B- :

- 1 - Display zones 1 ... 4. If a display zone is not assigned, there is no display on this line.
- 2 - The display group selected is shown here
- 3 - Touching these keys permits switching to a different display group.
- 4 - Touching these keys permits switching to a different function (e.g. from “Reading measured value block” to “Basic setting” and vice versa).



#### Note

- ♦ The display always shows the actual sender and sensor values. The values displayed on the dash panel insert may differ due to filtering.
  - ♦ If the actual coolant temperature is between 80 and 100 °C, the display on the dash panel insert is always 90 °C.
  - ♦ If possible when replacing the dash panel insert, read out the data (“measured value blocks 010 ... 140”) from the old dash panel insert which are to be transferred to the new dash panel insert and make a printout.
- Terminate function “08 - Reading measured value block” by touching [Q] key.

#### List of display groups

| Display group 001 |            |                                                                                                                  |
|-------------------|------------|------------------------------------------------------------------------------------------------------------------|
| Display zones     |            | Explanatory notes                                                                                                |
| 1                 | ... km/h   | Vehicle speed                                                                                                    |
| 2                 | ... rpm    | Engine speed                                                                                                     |
| 3                 | Oil p.2... | Oil pressure switch 2 <ul style="list-style-type: none"> <li>• Oil p.2 &lt; min</li> <li>• Oil p.2 OK</li> </ul> |
| 4                 | .. : .. h  | Time                                                                                                             |

| Display group 002 |        |                   |
|-------------------|--------|-------------------|
| Display zones     |        | Explanatory notes |
| 1                 | ... km | Mileage counter   |
| 2                 | ... l  | Fuel gauge        |

| Display group 002 |          |                                                                            |
|-------------------|----------|----------------------------------------------------------------------------|
| Display zones     |          | Explanatory notes                                                          |
| 3                 | ... ohms | Fuel gauge sender<br>• approx. 40 ohms (empty) ... approx. 280 ohms (full) |
| 4                 | ... °C   | Ambient temperature<br>• -40 ... +70 °C                                    |

| Display group 003 |        |                                        |
|-------------------|--------|----------------------------------------|
| Display zones     |        | Explanatory notes                      |
| 1                 | ... °C | Coolant temperature<br>• 50 ... 130 °C |
| 2                 |        | Not used                               |
| 3                 |        | Not used                               |
| 4                 |        | Not used                               |

| Display group 010 |            |                                                                                                                                                                                  |
|-------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |            | Explanatory notes                                                                                                                                                                |
| 1                 | Channel 30 | Adaption channel for characteristic curve of fuel gauge sender                                                                                                                   |
| 2                 | ...        | Factory-set adaption value:<br>• 128<br><br>If the value has been altered on account of a customer complaint, the altered value must be adopted on dash panel insert replacement |
| 3                 | Channel 9  | Adaption channel for mileage counter                                                                                                                                             |
| 4                 | ... km     | Input value for mileage counter adaption on dash panel insert replacement                                                                                                        |

| Display group 011 |           |                                                                                                                                                                                  |
|-------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |           | Explanatory notes                                                                                                                                                                |
| 1                 | Channel 4 | Adaption channel for language version of driver information system (DIS)                                                                                                         |
| 2                 | ...       | Language selected<br>• 1 = German; 2 = English; 3 = French; 4 = Italian; 5 = Spanish; 6 = Portuguese; 8 = Chinese                                                                |
| 3                 | Channel 3 | Adaption channel for characteristic curve of fuel consumption indicator                                                                                                          |
| 4                 | ...       | Factory-set adaption value:<br>• 100<br><br>If the value has been altered on account of a customer complaint, the altered value must be adopted on dash panel insert replacement |

| Display group 012 |            |                                                 |
|-------------------|------------|-------------------------------------------------|
| Display zones     |            | Explanatory notes                               |
| 1                 | Channel 40 | Adaption channel for mileage since last service |
| 2                 | ...        | Mileage since last service<br>• 51 = 5100 km    |



| Display group 012 |            |                                              |
|-------------------|------------|----------------------------------------------|
| Display zones     |            | Explanatory notes                            |
| 3                 | Channel 41 | Adaption channel for time since last service |
| 4                 | ...        | Time since last service<br>• 103 = 103 days  |

| Display group 013                                                       |            |                                                                |
|-------------------------------------------------------------------------|------------|----------------------------------------------------------------|
| Display zones                                                           |            | Explanatory notes                                              |
| 1                                                                       | Channel 42 | Adaption channel for minimum mileage interval prior to service |
| 2                                                                       | ...        | Minimum mileage interval<br>• 15 = 15000 km <sup>1)</sup>      |
| 3                                                                       | Channel 43 | Adaption channel for maximum mileage interval prior to service |
| 4                                                                       | ...        | Maximum mileage interval<br>• 30 = 30000 km <sup>1)</sup>      |
| • <sup>1)</sup> Applicable specifications ⇒ Maintenance ; Booklet 802 . |            |                                                                |

| Display group 014                                                       |            |                                                                   |
|-------------------------------------------------------------------------|------------|-------------------------------------------------------------------|
| Display zones                                                           |            | Explanatory notes                                                 |
| 1                                                                       | Channel 44 | Adaption channel for maximum time interval prior to service       |
| 2                                                                       | ...        | Maximum time interval<br>• 730 = 730 days / 2 years <sup>1)</sup> |
| 3                                                                       |            | Not used                                                          |
| 4                                                                       |            | Not used                                                          |
| • <sup>1)</sup> Applicable specifications ⇒ Maintenance ; Booklet 802 . |            |                                                                   |

| Display group 015                                                       |            |                                                                   |
|-------------------------------------------------------------------------|------------|-------------------------------------------------------------------|
| Display zones                                                           |            | Explanatory notes                                                 |
| 1                                                                       | Channel 45 | Adaption channel for oil quality                                  |
| 2                                                                       | ...        | Oil quality<br>• Entry from 1 to 4 possible <sup>1)2)</sup>       |
| 3                                                                       | Channel 46 | Adaption channel for total fuel consumption (petrol engines only) |
| 4                                                                       | ...        | Arithmetic value for total fuel consumption                       |
| • <sup>1)</sup> Applicable specifications ⇒ Maintenance ; Booklet 802 . |            |                                                                   |
| • <sup>2)</sup> Adaption to oil quality must be checked after service.  |            |                                                                   |

| Display group 016 |            |                                                                    |
|-------------------|------------|--------------------------------------------------------------------|
| Display zones     |            | Explanatory notes                                                  |
| 1                 | Channel 47 | Adaption channel for soot content of engine oil (TDI engines only) |
| 2                 | ...        | Arithmetic value for soot content of engine oil                    |

| Display group 016 |            |                                                      |
|-------------------|------------|------------------------------------------------------|
| Display zones     |            | Explanatory notes                                    |
| 3                 | Channel 48 | Adaption channel for thermal load (TDI engines only) |
| 4                 | ...        | Arithmetic value for thermal load                    |

| Display group 125 |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |           | Explanatory notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1                 | Engine 1  | <p>Communication with engine control unit - interface with drive system data bus</p> <ul style="list-style-type: none"> <li>Information being received from engine control unit via CAN bus</li> </ul>                                                                                                                                                                                                                                                                                                                      |
|                   | Engine 0  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                   |           | <ul style="list-style-type: none"> <li>No information being received from engine control unit via CAN bus</li> </ul> <p>If "0" is displayed and there is no fault entered in the fault memory:</p> <ul style="list-style-type: none"> <li>Check on the basis of engine control unit identification whether the correct control unit with CAN capability has been fitted; assignment ⇒ Parts catalogue . Or control unit defective</li> <li>Check CAN bus wiring ⇒ <a href="#">page 203</a></li> </ul>                       |
| 2                 | Gearbox 1 | <p>Communication with automatic gearbox control unit - interface with drive system data bus</p> <ul style="list-style-type: none"> <li>Information being received from automatic gearbox control unit via CAN bus</li> </ul>                                                                                                                                                                                                                                                                                                |
|                   | Gearbox 0 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                   |           | <ul style="list-style-type: none"> <li>No information being received from automatic gearbox control unit via CAN bus</li> </ul> <p>If "0" is displayed and there is no fault entered in the fault memory:</p> <ul style="list-style-type: none"> <li>Check on the basis of automatic gearbox control unit identification whether the correct control unit with CAN capability has been fitted; assignment ⇒ Parts catalogue . Or control unit defective</li> <li>Check CAN bus wiring ⇒ <a href="#">page 203</a></li> </ul> |
| 3                 |           | Not used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 4                 |           | Not used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Display group 140 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |             | Explanatory notes                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1                 | Radio 1     | <p>Highline dash panel insert only: Communication with Symphony radio CAN as of Model Year 2001 - interface with information data bus (display)</p> <ul style="list-style-type: none"> <li>Information being received from radio via CAN bus</li> </ul>                                                                                                                                                                                                                  |
|                   | Radio 0     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                   |             | <ul style="list-style-type: none"> <li>No information being received from radio via CAN bus</li> </ul> <p>If "0" is displayed and there is no fault entered in the fault memory:</p> <ul style="list-style-type: none"> <li>Check on the basis of radio control unit identification whether the correct radio with CAN capability has been fitted; assignment ⇒ Parts catalogue . Or radio defective</li> <li>Check CAN bus wiring ⇒ <a href="#">page 203</a></li> </ul> |
| 2                 | Telephone 1 | <p>Highline dash panel insert only: Communication with telephone control unit - interface with information data bus (display)</p> <ul style="list-style-type: none"> <li>Information being received from telephone control unit via CAN bus</li> </ul>                                                                                                                                                                                                                   |
|                   | Telephone 0 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                   |             | <ul style="list-style-type: none"> <li>No information being received from telephone control unit via CAN bus</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |

| Display group 140 |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |           | Explanatory notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                   |           | <p>If "0" is displayed and there is no fault entered in the fault memory:</p> <ul style="list-style-type: none"> <li>– Check on the basis of telephone control unit identification whether the correct telephone control unit has been fitted; assignment ⇒ Parts catalogue . Or telephone control unit defective</li> <li>– Check CAN bus wiring ⇒ <a href="#">page 203</a></li> </ul>                                                                                                                                                   |
| 3                 | Navigat 1 | <p>Highline dash panel insert only: Communication with navigation system control unit - interface with information data bus (display)</p> <ul style="list-style-type: none"> <li>• Information being received from navigation system control unit via CAN bus</li> </ul>                                                                                                                                                                                                                                                                  |
|                   | Navigat 0 | <ul style="list-style-type: none"> <li>• No information being received from navigation system control unit via CAN bus</li> </ul> <p>If "0" is displayed and there is no fault entered in the fault memory:</p> <ul style="list-style-type: none"> <li>– Check on the basis of navigation system control unit identification whether the correct telephone control unit has been fitted; assignment ⇒ Parts catalogue . Or navigation system control unit defective</li> <li>– Check CAN bus wiring ⇒ <a href="#">page 203</a></li> </ul> |
| 4                 | Telemat 1 | <p>Highline dash panel insert only: Communication with telematics control unit - interface with information data bus (display)</p> <ul style="list-style-type: none"> <li>• Information being received from telematics control unit via CAN bus</li> </ul>                                                                                                                                                                                                                                                                                |
|                   | Telemat 0 | <ul style="list-style-type: none"> <li>• No information being received from telematics control unit via CAN bus</li> </ul> <p>If "0" is displayed and there is no fault entered in the fault memory:</p> <ul style="list-style-type: none"> <li>– Check on the basis of telematics control unit identification whether the correct telematics control unit has been fitted; assignment ⇒ Parts catalogue . Or telematics control unit defective</li> <li>– Check CAN bus wiring ⇒ <a href="#">page 203</a></li> </ul>                     |

### 3.10 Adaption

The individual functions are called up by way of the appropriate adaption channel number.

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

| Adaption channel | Measured value block          |
|------------------|-------------------------------|
| 03               | 011 ⇒ <a href="#">page 57</a> |
| 30               | 010 ⇒ <a href="#">page 57</a> |
| 40 and 41        | 012 ⇒ <a href="#">page 57</a> |
| 42 and 43        | 013 ⇒ <a href="#">page 58</a> |
| 44               | 014 ⇒ <a href="#">page 58</a> |
| 45 and 46        | 015 ⇒ <a href="#">page 58</a> |
| 47 and 48        | 016 ⇒ <a href="#">page 58</a> |



#### Note

*"Adaption channels 03" and "30" are only required if the factory-set adaption value has been altered on account of a customer complaint.*

Following successful adaption, the control units using the corresponding data bus are displayed in "measured value blocks 125" and "140".

| Adaption channel | Measured value block          |
|------------------|-------------------------------|
| 60               | 125 ➤ <a href="#">page 59</a> |
| 62               | 140 ➤ <a href="#">page 59</a> |

#### Adaption table

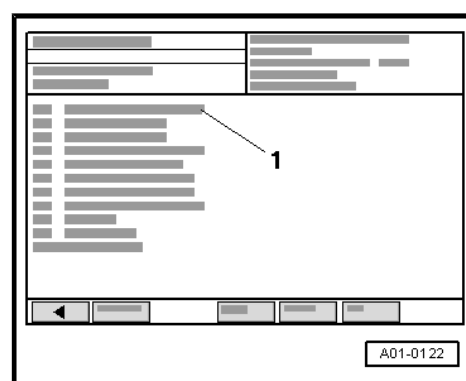
| Adaption channel | Function                                                                                  |
|------------------|-------------------------------------------------------------------------------------------|
| 02               | Service interval display reset on completion of service ➤ <a href="#">page 64</a>         |
| 03               | Correction of fuel consumption indicator characteristic curve ➤ <a href="#">page 65</a>   |
| 04               | Language version of driver information system (DIS) ➤ <a href="#">page 66</a>             |
| 09               | Mileage counter reading following dash panel insert replacement ➤ <a href="#">page 67</a> |
| 18               | Adaption of auxiliary heater ➤ <a href="#">page 70</a>                                    |
| 19               | Radio controlled clock ➤ <a href="#">page 71</a>                                          |
| 30               | Correction of fuel gauge sender characteristic curve ➤ <a href="#">page 72</a>            |
| 35               | Correction of speed threshold for dynamic oil pressure warning ➤ <a href="#">page 73</a>  |
| 40               | Mileage since service ➤ <a href="#">page 74</a>                                           |
| 41               | Days since service ➤ <a href="#">page 75</a>                                              |
| 42               | Minimum mileage interval prior to service ➤ <a href="#">page 76</a>                       |
| 43               | Maximum mileage interval prior to service ➤ <a href="#">page 77</a>                       |
| 44               | Maximum time interval prior to service ➤ <a href="#">page 78</a>                          |
| 45               | Oil quality ➤ <a href="#">page 80</a>                                                     |
| 46               | Total fuel consumption (petrol engines only) ➤ <a href="#">page 81</a>                    |
| 47               | Soot content of engine oil (TDI engines only) ➤ <a href="#">page 82</a>                   |
| 48               | Thermal load (TDI engines only) ➤ <a href="#">page 83</a>                                 |
| 60               | Control units using drive system data bus ➤ <a href="#">page 84</a>                       |
| 62               | Control units using information data bus (display) ➤ <a href="#">page 85</a>              |

#### Adaption procedure

- Start dash panel insert self-diagnosis ➤ [page 42](#) .

Display on -VAS 5051B- :

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



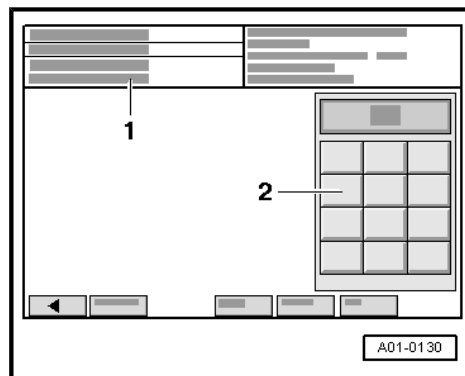
Display on -VAS 5051B- :

- 1 - Enter channel number
- Enter desired adaption channel on keypad -2- ⇒ [page 61](#) and confirm entry by touching **Q** key.



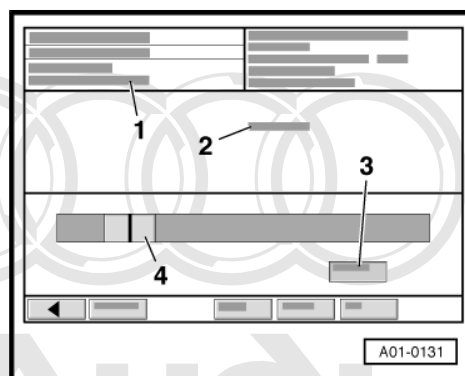
#### Note

*After altering an adaption value or exiting from an adaption channel, function "10 - Adaption" must be selected again to choose a different adaption channel.*



Display on -VAS 5051B- :

- 1 - Channel X reading and testing
- 2 - Text display for channel selected or no display
- 4 - Bar set to current adaption value



#### A - Altering adaption value by way of bar

Display on -VAS 5051B- :

- Move the bar -5- in the required direction or touch the panel next to the bar, thus causing it to move in the desired direction.
- Touch the **Save** key -4-.



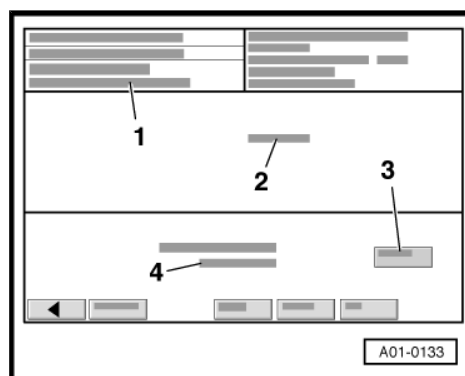
#### Note

*If the **Save** key does not appear on the display, entries can only be made directly by way of the keypad ⇒ [page 63](#) .*



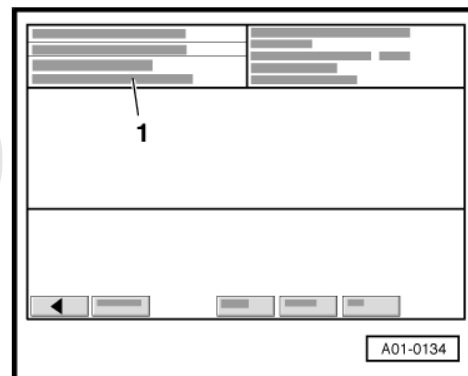
Display on -VAS 5051B- :

- 1 - Store channel X
- 2 - Text display for channel selected or no display
- 4 - Original value X new value X
- Confirm the new adaption value by touching the **Accept** key -3-.



Display on -VAS 5051B- :

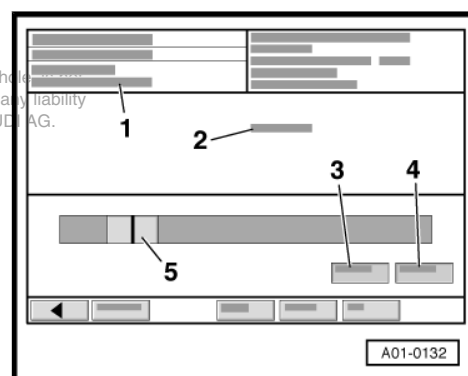
- 1 - Channel X value X stored
- Terminate function "10 - Adaption" by touching  key.



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

Display on -VAS 5051B- :

- Touch  key - Item 3.



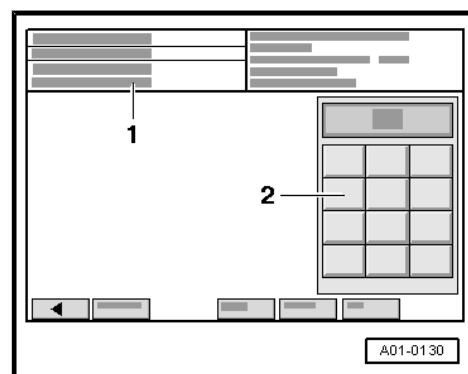
Display on -VAS 5051B- :

- 1 - Enter adaption value
- Enter the required adaption value on the keypad -2-.

Example: Required input value = "1"

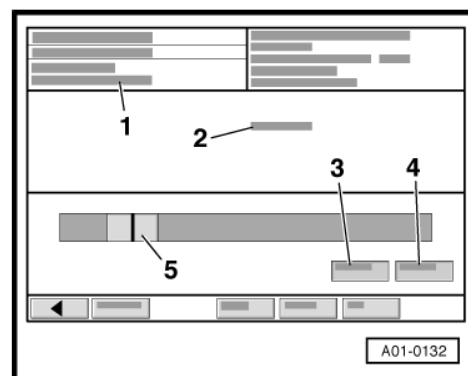
Keypad entry 

- Confirm entry by touching  key.



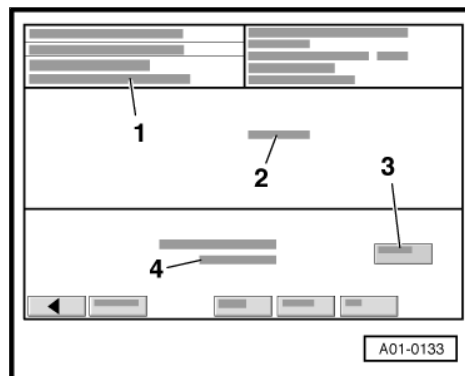
Display on -VAS 5051B- :

- Touch the  key -4-.



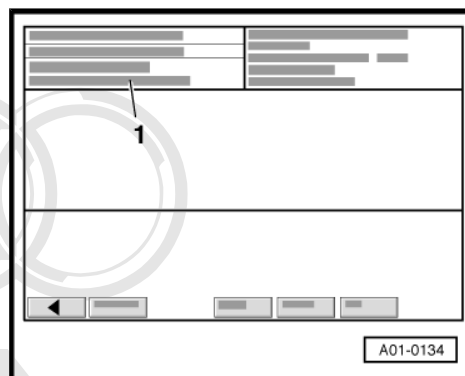
Display on -VAS 5051B- :

- 1 - Store channel X
  - 2 - Text display for channel selected or no display
  - 4 - Original value X new value X
- Confirm the new adaption value by touching the **Accept** key -3-.



Display on -VAS 5051B- :

- 1 - Channel X value X stored
- Terminate function "10 - Adaption" by touching **0** key.



### 3.11 Adaption channels 02 ... 09

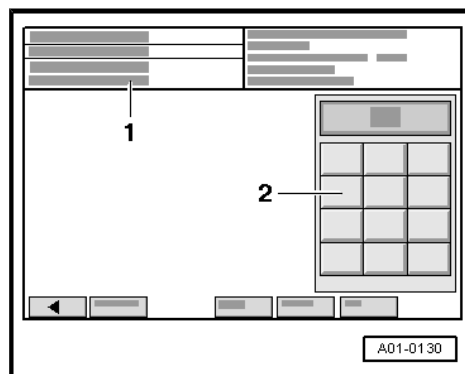
#### Adaption channel 02 - Service interval display reset on completion of service

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- ◆ The service interval display is designed to remind drivers that service is due. The messages appear on the centre display.
- ◆ The service prompt appears as of 1 month or 2000 km before service is due. Example: "SERVICE IN 2000 KM" is displayed after a total mileage of 13000 km.
- ◆ The remaining mileage prior to service can be interrogated by way of the menu in the centre display by pressing the time setting button once.
- ◆ If service is due, the corresponding message appears in the centre display for 5 seconds after switching on the ignition. It appears after the automatic gearbox information and any navigation system destination input. Display: "SERVICE!".
- ◆ Applicable specifications ⇒ Maintenance ; Booklet 802 .
- ◆ The "adaption channels 40, 41, 46, 47, 48" used to display the dynamic service values are automatically set to "0".

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key **2** for "Adaption channel 02" and confirm the entry by touching the **0** key.



Display on -VAS 5051B- :

- 1 - Channel 2 reading and testing
- 4 - Bar set to current adaption value

| Type of service |                 |
|-----------------|-----------------|
| 0               | Service not due |
| 1               | Service due     |

Service is reset by means of the following adaption values:

| Erasing service |               |
|-----------------|---------------|
| 0               | Erase service |

- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 62](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .

Display on -VAS 5051B- following successful adaption:

- 1 - Channel 2 value 0 stored



#### Note

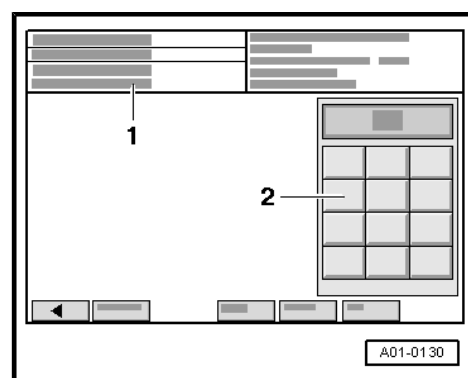
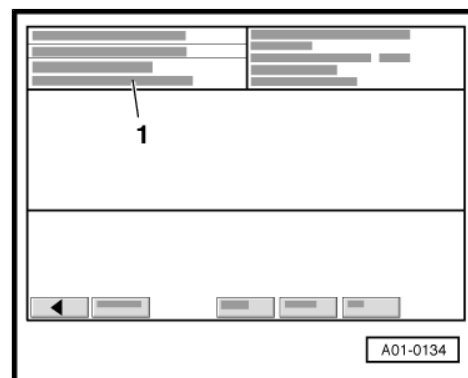
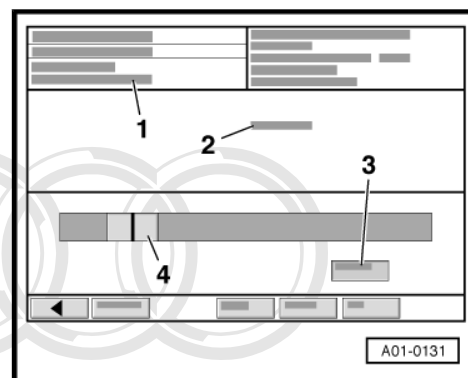
- ◆ "SERVICE IN 15000 KM" is displayed in the dash panel insert.
- ◆ 15000 km is the starting value for the service interval display. Conversion to higher mileage (e.g. 30000 km for petrol engines) only takes place when the vehicle is driven.
- Check the service specifications in "measured value blocks 013 ... 016" ⇒ [page 58](#) .

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

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

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key **[3]** for "Adaption channel 03" and confirm the entry by touching the **[Q]** key.



Display on -VAS 5051B- :

- 1 - Channel 3 reading and testing
- 2 - Fuel consumption indicator
- 4 - Bar set to current adaption value



### Note

- ◆ The value "100" is the factory-set mean characteristic curve of the fuel consumption indicator.
- ◆ The characteristic curve can be altered in the range 85 ... 115 %; entries must be made in 5 % steps.
- ◆ On dash panel insert replacement ⇒ [page 86](#) .
- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 62](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

Example: Characteristic curve of fuel consumption indicator "90 %"

Keypad entry



### Note

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

Display on -VAS 5051B- following successful adaption. Example:

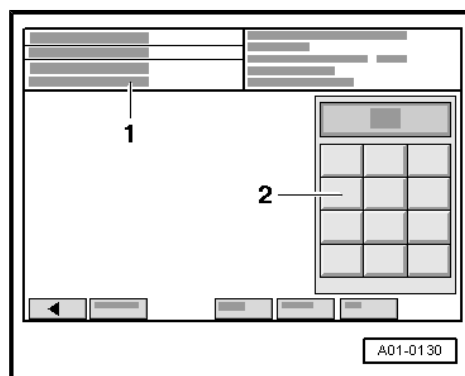
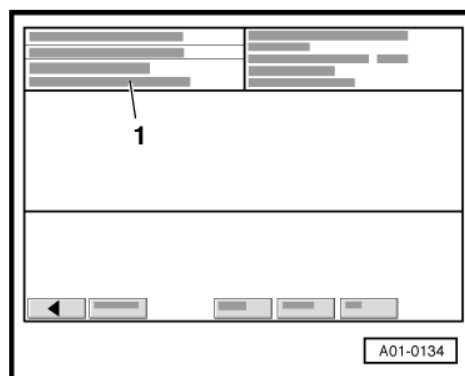
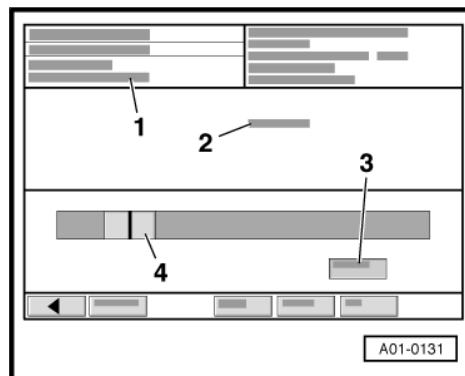
- 1 - Channel 3 value 90 stored
- Terminate function "10 - Adaption" by touching key.

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

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key for "Adaption channel 04" and confirm the entry by touching the key.

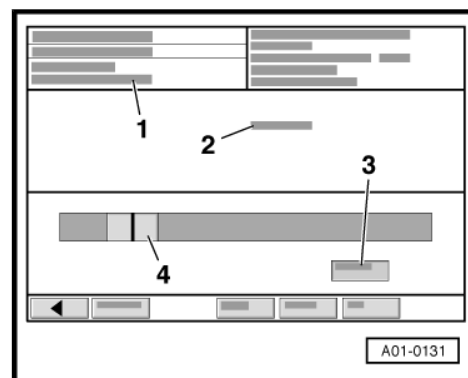


Display on -VAS 5051B- :

- 1 - Channel 4 reading and testing
- 2 - Language
- 4 - Bar set to current adaption value

The language version is adapted by means of the following input values:

| Language version |            |
|------------------|------------|
| 1                | German     |
| 2                | English    |
| 3                | French     |
| 4                | Italian    |
| 5                | Spanish    |
| 6                | Portuguese |
| 8                | Chinese    |



- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 62](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

Example: Language version German = "1"

Keypad entry

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 4 value 1 stored
- Terminate function "10 - Adaption" by touching  key.

#### Adaption channel 09 - Mileage counter reading

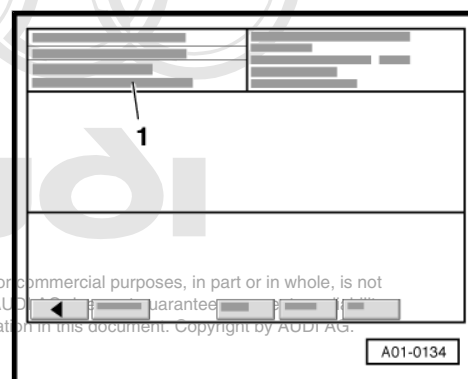
This function is used to adapt the mileage counter reading on replacing the dash panel insert.



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- ◆ *Adaption is only possible for dash panel inserts with a mileage reading 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 (above 100 km).*
- ◆ *Up to Model Year 2001: Once confirmed, incorrect entries cannot be corrected. The dash panel insert must then be re-placed.*
- ◆ *As of Model Year 2002: Incorrect entries can be corrected until a distance of 5 km has been covered once following the first change.*
- ◆ *Adaption is performed in miles in countries with a speedometer display in miles.*



- Start dash panel insert self-diagnosis ⇒ [page 42](#) .

Display on -VAS 5051B- :

- From the list -1-, select function “11 - Login procedure” or “11 - Encoding II”.

Display on -VAS 5051B- :

1 - Enter code word

- Use the keypad -2- to enter the code number **1 3 8 6 1**.
- Confirm entry by touching **Q** key.

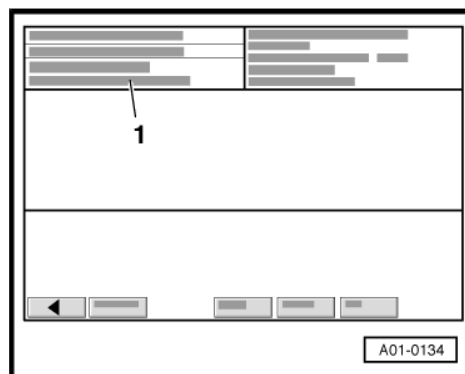
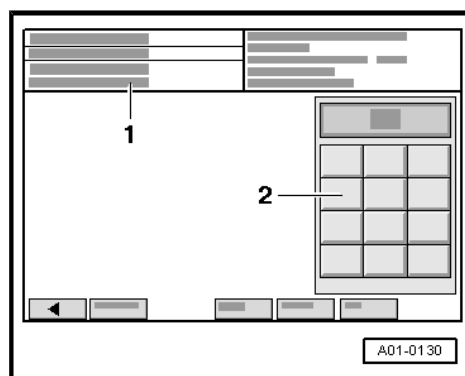
Display on -VAS 5051B- :

1 - Function successfully implemented

- Touch **Q** key.

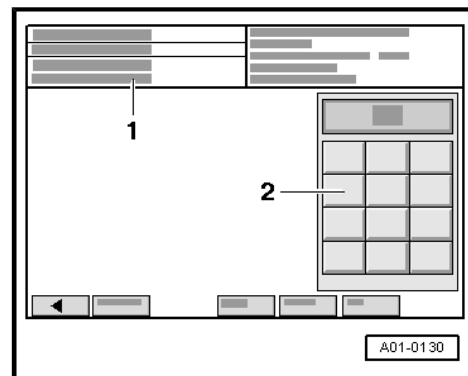
Display on -VAS 5051B- :

- From list -1- select function “10 - Adaption”.



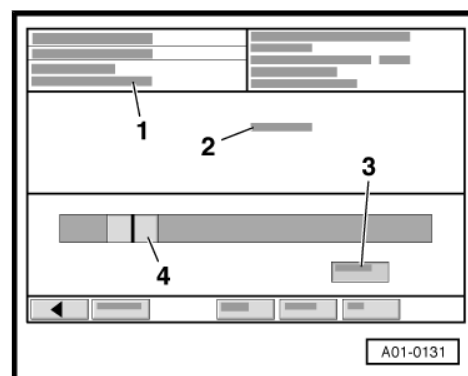
Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key **[9]** for "Adaption channel 09" and confirm the entry by touching the **[Q]** key.



Display on -VAS 5051B- :

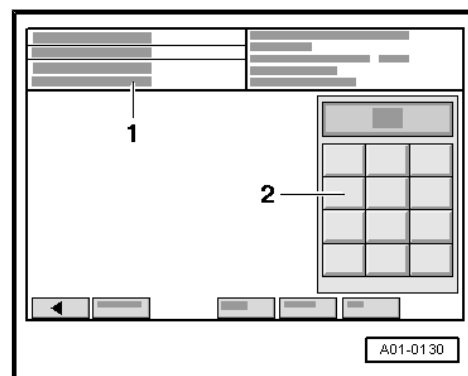
- 1 - Channel 9 reading and testing
  - 2 - Kilometre reading in units of 10 km
  - 4 - Bar set to current adaption value
- Touch **[keypad]** key -Item 3-.



Display on -VAS 5051B- :

- 1 - Enter adaption value
- Enter the adaption value on the keypad -2- (take reading from old dash panel insert or from "Measured value block 002" => [page 56](#) ).

|   |                                         |
|---|-----------------------------------------|
| 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 next ten             |



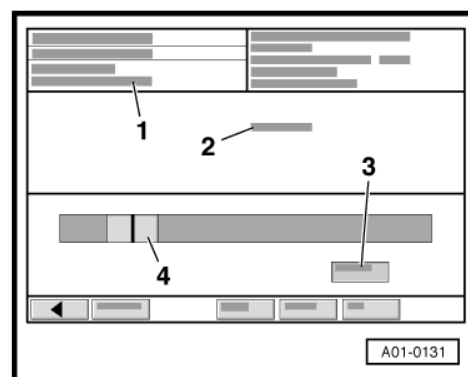
Example: Mileage counter reading "89627 km"

Keypad entry **[8][9][6][3]**

- Confirm entry by touching **[Q]** key.

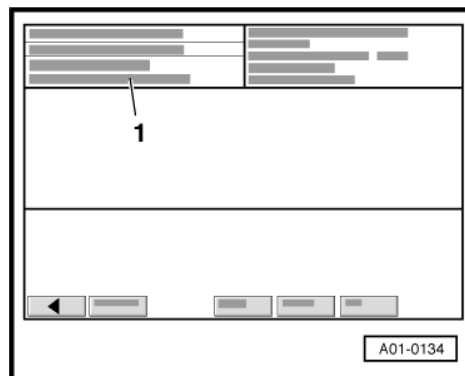
Display on -VAS 5051B- :

- 1 - Store channel 9
  - 2 - Kilometre reading in units of 10 km
  - 4 - Original value 0 new value 8963
- Confirm the new adaption value by touching the **[Accept]** key -3-.



Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 9 value 8963 stored
- Terminate function “10 - Adaption” by touching key.



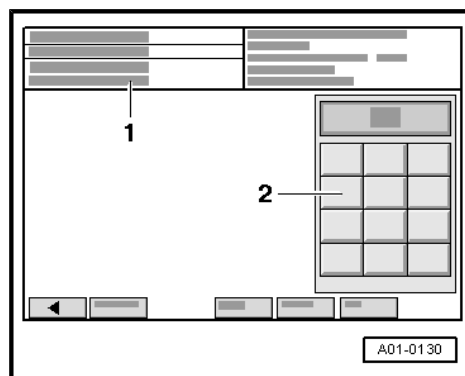
### 3.12 Adaption channels 18 ... 35

#### Adaption channel 18 - Adaption of auxiliary heater

This function is used to adapt the auxiliary heater fitted and controlled by way of the menu of the Highline dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys for “Adaption channel 18” and confirm the entry by touching the key.



Display on -VAS 5051B- :

- 1 - Channel 18 reading and testing
- 4 - Bar set to current adaption value

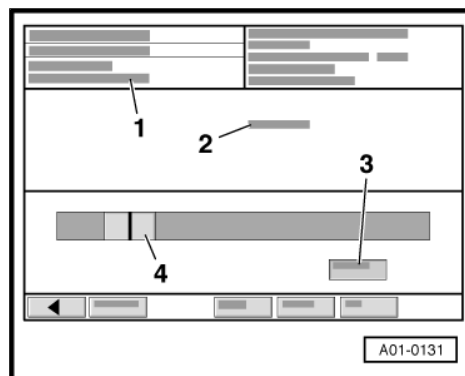
The auxiliary heater is adapted by means of the following input values:

| Auxiliary heater |                                                                   |
|------------------|-------------------------------------------------------------------|
| 0                | No auxiliary heater                                               |
| 1                | With auxiliary heater                                             |
| 2                | With auxiliary heater; auxiliary heater “off” with “ignition off” |

- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 63](#) .
- Enter the adaption value.

Exam- With auxiliary heater = “1”  
ple:

Keypad entry

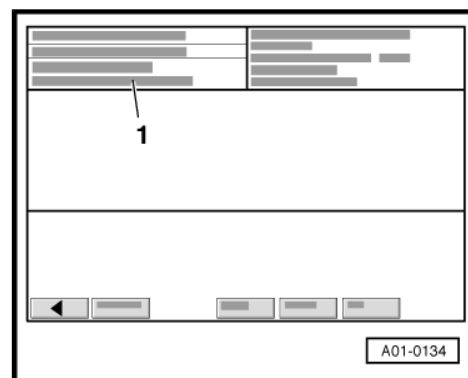


#### Note

The fault message “Function unknown or cannot be implemented at present” appears if an implausible value is entered.

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 18
- Value 1 stored
- Terminate function "10 - Adaption" by touching  key.

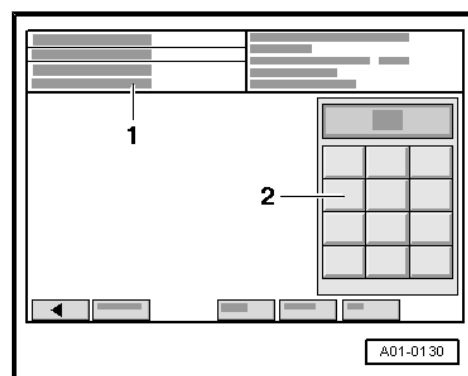


### Adaption channel 19 - Radio controlled clock

This function is used to adapt the radio controlled clock on replacing the dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys   for "Adaption channel 19" and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Channel 19 reading and testing
- 4 - Bar set to current adaption value



#### Note

On dash panel insert replacement ⇒ [page 86](#) .

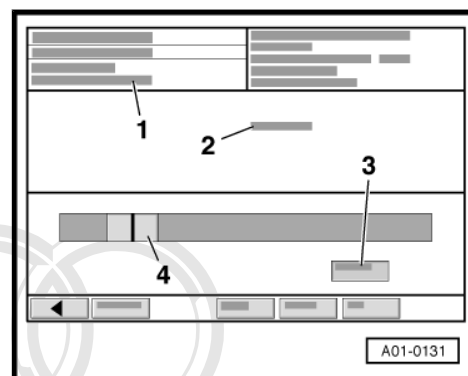
The radio controlled clock display is adapted by means of the following input values:

| Radio controlled clock |                             |
|------------------------|-----------------------------|
| 0                      | No radio controlled clock   |
| 1                      | With radio controlled clock |

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

Example: With radio controlled clock = "1"

Keypad entry 

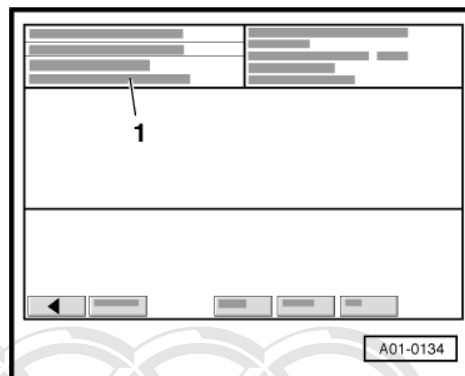


#### Note

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

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 19 value 1 stored
- Terminate function “10 - Adaption” by touching key.

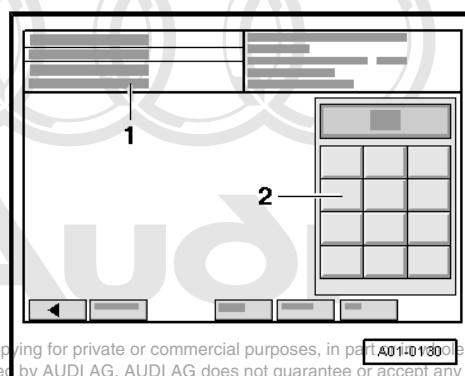


### Adaption channel 30 - Correction of fuel gauge sender characteristic curve

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

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys for “Adaption channel 30” and confirm the entry by touching the .



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Display on -VAS 5051B- :

- 1 - Channel 30 reading and testing
- 2 - Fuel gauge sender
- 4 - Bar set to current adaption value

### Note

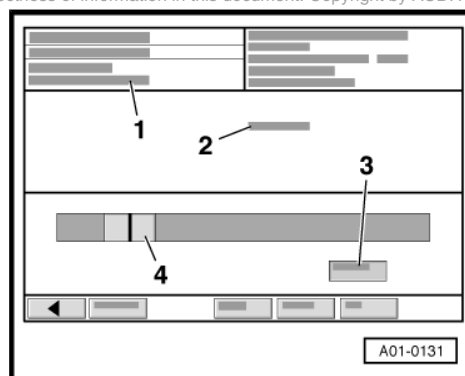
- ◆ The value “128” is the factory-set mean resistance characteristic curve of the fuel gauge sender.
- ◆ The resistance characteristic curve of the fuel gauge sender can be altered in the range 120 ... 136  $\Omega$ .
- ◆ On dash panel insert replacement [⇒ page 86](#) .

- Use the bar to alter the adaption value  $\Rightarrow$  “A - Altering adaption value by way of bar” [⇒ page 62](#) .

Or

- Alter the adaption value by means of direct entry  $\Rightarrow$  “B - Altering adaption value by means of direct entry” [⇒ page 63](#) .
- Enter the adaption value.

Exam- Resistance characteristic curve of fuel gauge sender  
ple: “132 $\Omega$ ”  
Keypad entry

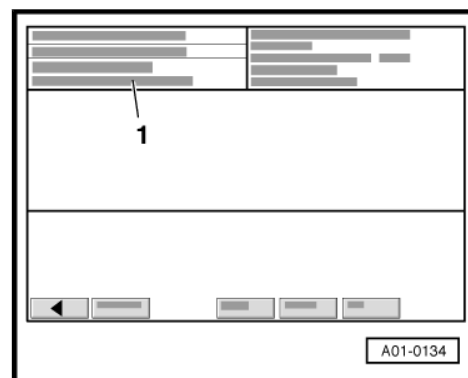


### Note

The fault message “Function unknown or cannot be implemented at present” appears if an implausible value is entered.

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 30 value 132 stored
- Terminate function "10 - Adaption" by touching  key.

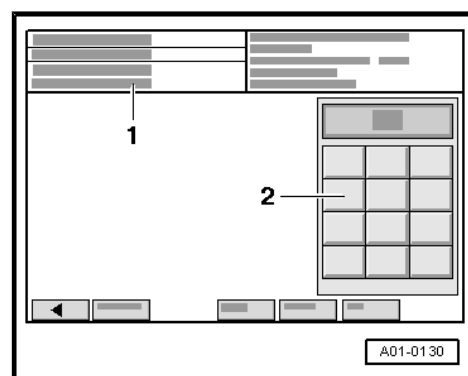


### Adaption channel 35 - Correction of speed threshold for dynamic oil pressure warning

This function can be used to influence the offset value for the speed threshold for the dynamic oil pressure warning.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys   for "Adaption channel 35" and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Channel 35 reading and testing
- 4 - Bar set to current adaption value



#### Note

- ◆ The value "0" is the factory-set oil pressure warning if the oil pressure drops below 1.2 bar at a speed of 1500 rpm.
- ◆ The speed threshold can be increased by up to 1000 rpm; entries must be made in 250 rpm steps.
- ◆ On dash panel insert replacement ⇒ [page 86](#) .

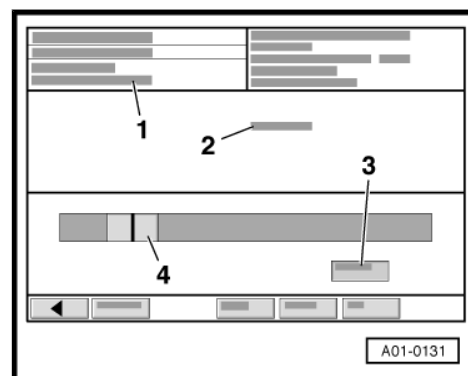
- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 62](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

Example: "250 rpm" increase in speed threshold for dynamic oil pressure warning

Keypad entry   



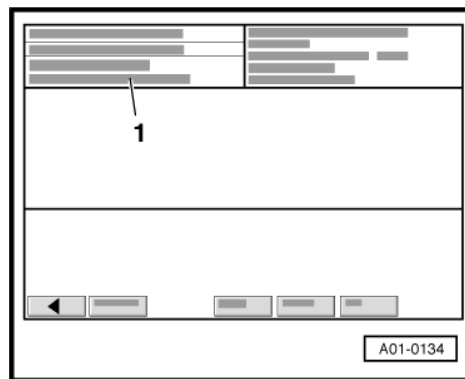
#### Note

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

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Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 35 value 250 stored
- Terminate function “10 - Adaption” by touching key.



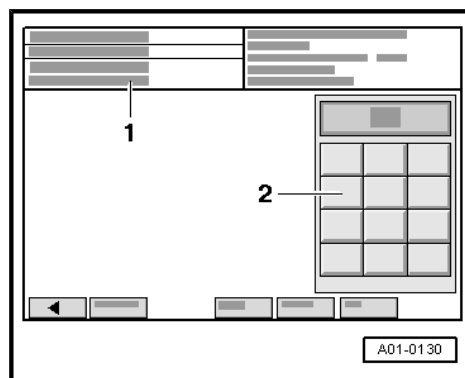
### 3.13 Adaption channels 40 ... 48

#### Adaption channel 40 - Mileage since service

This function is used to adapt the mileage since the last service on replacing the dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys for “Adaption channel 40” and confirm the entry by touching the key.



Display on -VAS 5051B- :

- 1 - Channel 40 reading and testing
- 4 - Bar set to current adaption value

#### Note

- ◆ Entries can only be made in 100 km steps; the display is also given in units of 100 km.
- ◆ Adaption is performed in miles in countries with a speedometer display in miles.

- Use the bar to alter the adaption value ⇒ “A - Altering adaption value by way of bar” ⇒ [page 62](#) .

Or

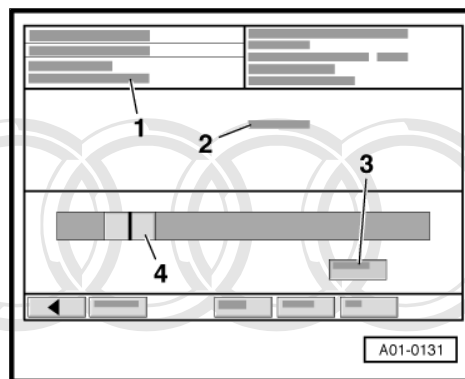
- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 63](#) .
- Enter the adaption value.

Example: Mileage since last service “3500 km”

Keypad entry

#### Note

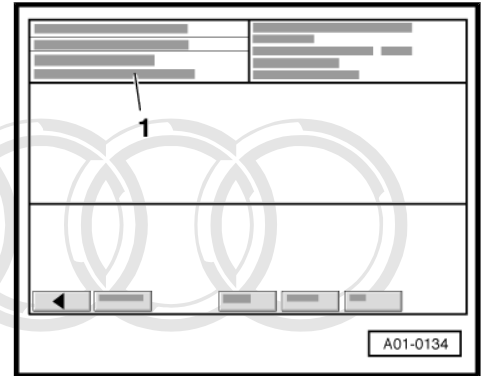
The fault message “Function unknown or cannot be implemented at present” appears if an implausible value is entered.



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Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 40 value 35 stored
- Terminate function "10 - Adaption" by touching  key.

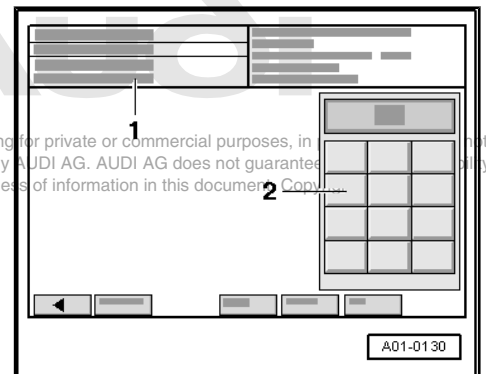


### Adaption channel 41 - Time since service

This function is used to adapt the time since the last service on replacing the dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys   for "Adaption channel 41" and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Channel 41 reading and testing
- 4 - Bar set to current adaption value



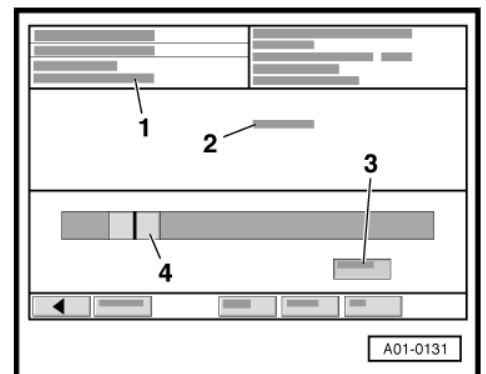
#### Note

*Entries can only be made in days; the display is also given in days.*

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

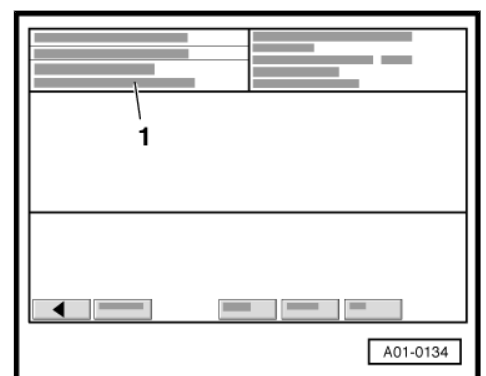
Example: Time since last service "172 days"

Keypad entry   



Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 41 value 172 stored
- Terminate function "10 - Adaption" by touching  key.



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

This function is used to adapt the minimum mileage interval prior to the next service.



### Note

*The mileage interval can be reduced to a minimum level of 5000 km, e.g. under extreme vehicle useage conditions. For this purpose the oil quality in "Adaption channel 45" must be set to the value "1".*

Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch keys **[4]** **[2]** for "Adaption channel 42" and confirm the entry by touching the **[Q]** key.

Display on -VAS 5051B- :

1 - Channel 42 reading and testing

4 - Bar set to current adaption value



### Note

- ♦ *Entries can only be made in 1000 km steps; the display is also given in units of 1000 km.*
- ♦ *Adaption is performed in miles in countries with a speedometer display in miles.*
- ♦ *Applicable specifications ⇒ Maintenance ; Booklet 802 .*

The country version is adapted by means of the following input values:

| Country version |                                               |
|-----------------|-----------------------------------------------|
| 15000 km        | Rest of World countries with km speedometer   |
| 9000 MLS        | Rest of World countries with mile speedometer |
| 10000 MLS       | USA                                           |
| 15000 km        | Canada and Australia                          |

- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 62](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

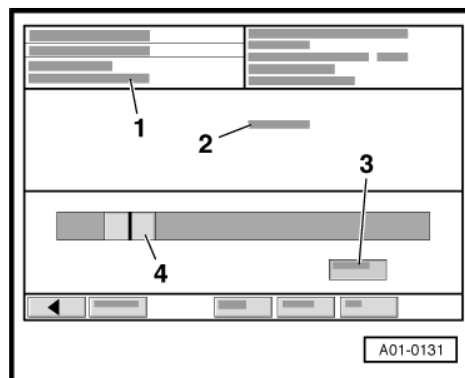
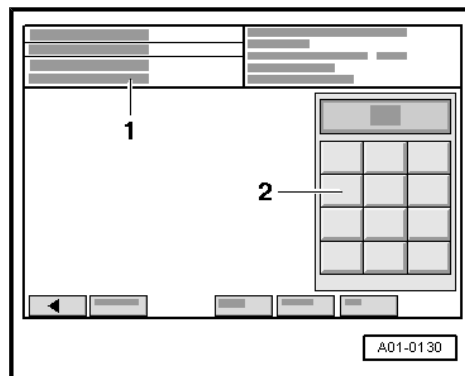
Example: Minimum mileage interval prior to next service "15000 km"

Keypad entry **[1]** **[5]**



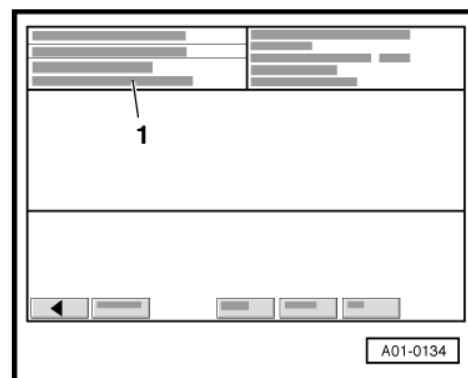
### Note

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



Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 42 value 15 stored
- Terminate function "10 - Adaption" by touching  key.

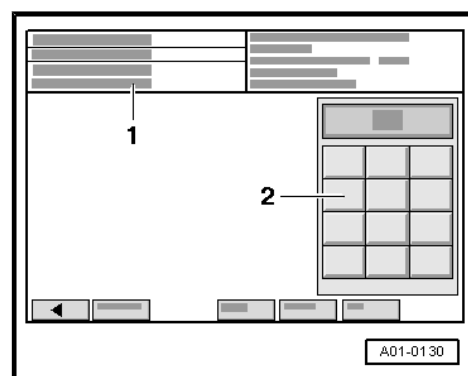


### Adaption channel 43 - Maximum mileage interval prior to service

This function is used to adapt the maximum mileage interval prior to the next service.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys   for "Adaption channel 43" and confirm the entry by touching the  key.



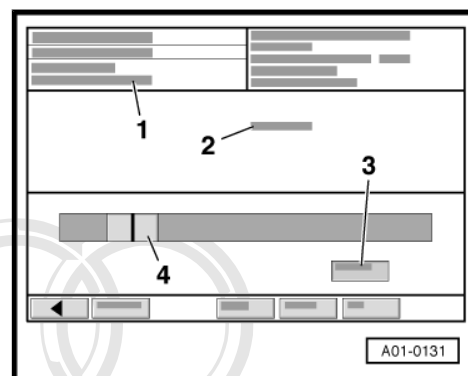
Display on -VAS 5051B- :

- 1 - Channel 43 reading and testing
- 4 - Bar set to current adaption value



#### Note

- ◆ Entries can only be made in 1000 km steps; the display is also given in units of 1000 km.
- ◆ Adaption is performed in miles in countries with a speedometer display in miles.
- ◆ Applicable specifications ⇒ Maintenance ; Booklet 802 .



Engine and country version are adapted by way of the following input values:

|           | Engine             | Country version                               |
|-----------|--------------------|-----------------------------------------------|
| 30000 km  | Petrol engines     | Rest of World countries with km speedometer   |
| 19000 MLS |                    | Rest of World countries with mile speedometer |
| 50000 km  | 4-cyl. TDI engines | Rest of World countries with km speedometer   |
| 31000 MLS |                    | Rest of World countries with mile speedometer |
| 35000 km  | 6-cyl. TDI engines | Rest of World countries with km speedometer   |
| 22000 MLS |                    | Rest of World countries with mile speedometer |
| 10000 MLS | All models         | USA                                           |
| 15000 km  | All models         | Canada and Australia                          |

- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 62](#) .

Or

- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 63](#) .
- Enter the adaption value.

Example: Maximum mileage interval prior to next service  
 “30000 km”  
 Keypad entry **3 0**



### Note

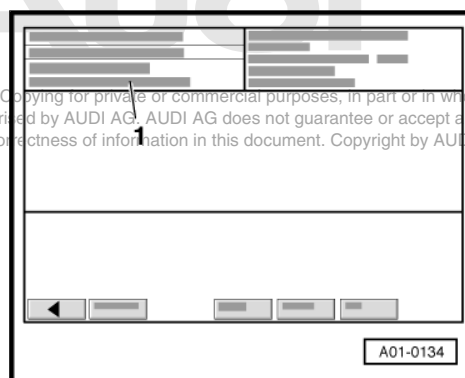
*The fault message “Function unknown or cannot be implemented at present” appears if an implausible value is entered.*

Display on -VAS 5051B- following successful adaption. Example:

1 - Channel 43 value 30 stored

- Terminate function “10 - Adaption” by touching **key**

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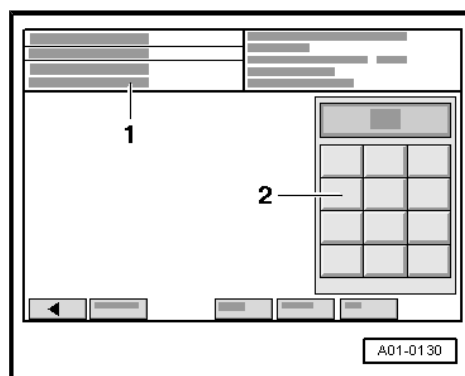
### Adaption channel 44 - Maximum time interval prior to service

This function is used to adapt the maximum time interval prior to the next service.

Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch keys **4 4** for “Adaption channel 44” and confirm the entry by touching the **Q** key.

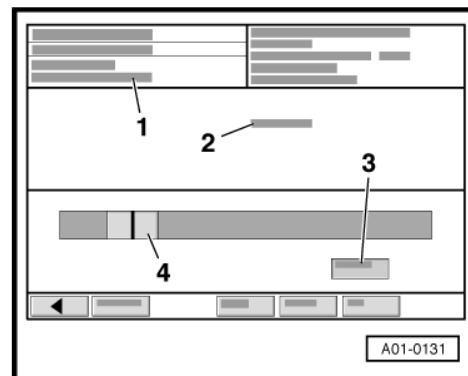


Display on -VAS 5051B- :

- 1 - Channel 44 reading and testing
- 4 - Bar set to current adaption value

**i Note**

- ◆ Entries can only be made in days; the display is also given in days.
- ◆ For applicable specifications, refer to ⇒ Maintenance ; Booklet 802 .



The country version is adapted by means of the following input values:

| Country version |                           |
|-----------------|---------------------------|
| 730 days        | Rest of World countries   |
| 365 days        | USA, Canada and Australia |

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

Exam- Maximum time interval prior to next service "730  
ple: days"

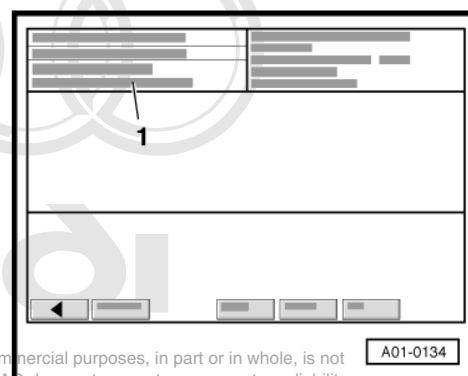
Keypad entry

**i Note**

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

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 44 value 730 stored
- Terminate function "10 - Adaption" by touching  key.



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## Adaption channel 45 - Oil quality



### Note

- ♦ The oil quality must be re-adapted following manual service reset.
- ♦ The adaption value can be set to 1 ... 4. Each value from 1 ... 4 is linked to a maximum mileage (channel 43) and a maximum time (channel 44).

Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch keys **[4]** **[5]** for "Adaption channel 45" and confirm the entry by touching the **[Q]** key.

Display on -VAS 5051B- :

1 - Channel 45 reading and testing

4 - Bar set to current adaption value

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### Note

Applicable specifications ⇒ Maintenance ; Booklet 802 .

Engine and country version are adapted by way of the following input values:

|   | Engine             | Country version           |
|---|--------------------|---------------------------|
| 2 | Petrol engines     | Rest of World countries   |
| 4 | 4-cyl. TDI engines | Rest of World countries   |
| 3 | 6-cyl. TDI engines | Rest of World countries   |
| 1 | All models         | USA, Canada and Australia |

- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 62](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

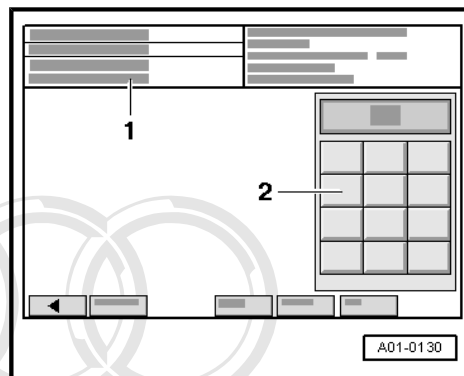
Example: Oil quality for petrol engines in Rest of World countries = "2"

Keypad entry **[2]**



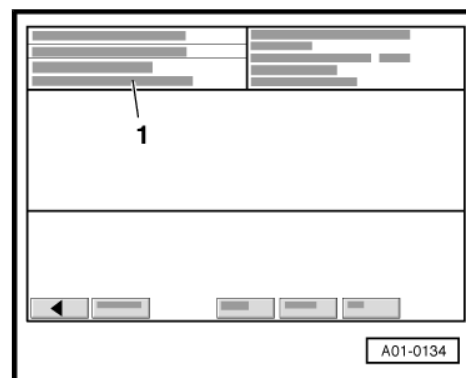
### Note

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



Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 45 value 2 stored
- Terminate function "10 - Adaption" by touching  key.



#### Adaption channel 46 - Total fuel consumption



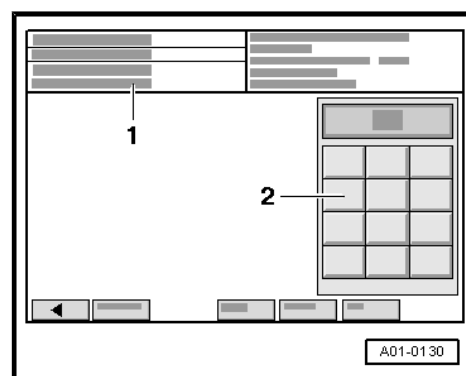
#### Note

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

This function is used to adapt the total fuel consumption since the last service on replacing the dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys   for "Adaption channel 46" and confirm the entry by touching the  key.



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- 1 - Channel 46 reading and testing
- 4 - Bar set to current adaption value

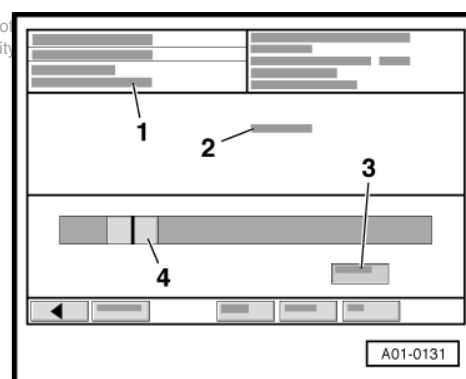


#### Note

- ◆ *This value does not represent the actual consumption, but rather an arithmetic value for the service interval display.*
- ◆ *On dash panel insert replacement ⇒ [page 86](#) .*
- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#) .
- Enter the adaption value.

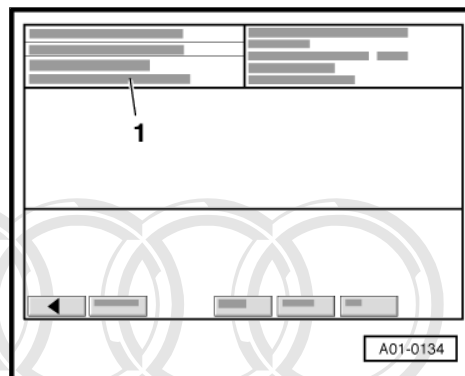
Exam- Total fuel consumption = "936"  
ple:

Keypad entry   



Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 46 value 936 stored
- Terminate function “10 - Adaption” by touching key.



## Adaption channel 47 - Soot content of engine oil



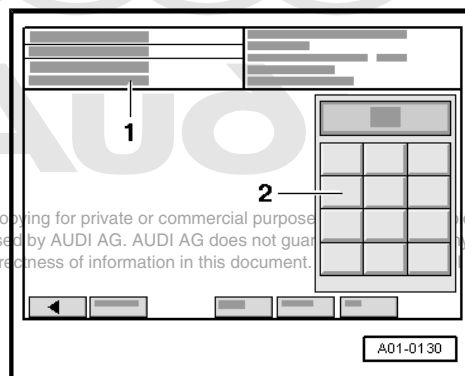
### Note

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

This function is used to adapt the soot content of the engine oil since the last service on replacing the dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys for “Adaption channel 47” and confirm the entry by touching the key.



Display on -VAS 5051B- :

- 1 - Channel 47 reading and testing
- 4 - Bar set to current adaption value

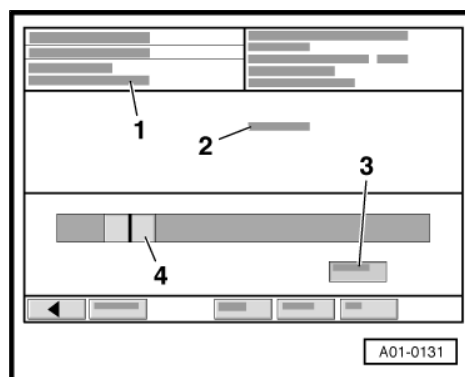


### Note

- ◆ *The value indicated is a reference value (0 ... 600) for the service interval display.*
  - ◆ *The value displayed is an arithmetic value for the soot content of the engine oil referenced to a distance of 100 km.*
  - ◆ *On dash panel insert replacement ⇒ [page 86](#) .*
- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 63](#) .
  - Enter the adaption value.

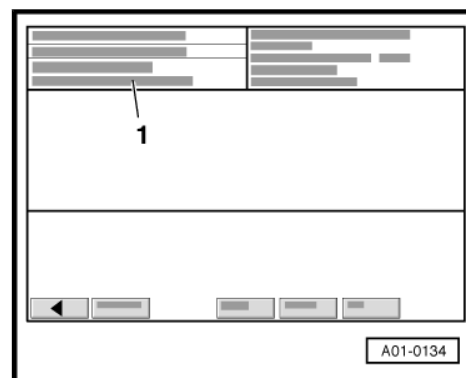
Exam- Soot content of engine oil = “372”  
ple:

Keypad entry



Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 47 value 372 stored
- Terminate function "10 - Adaption" by touching  key.



### Adaption channel 48 - Thermal load

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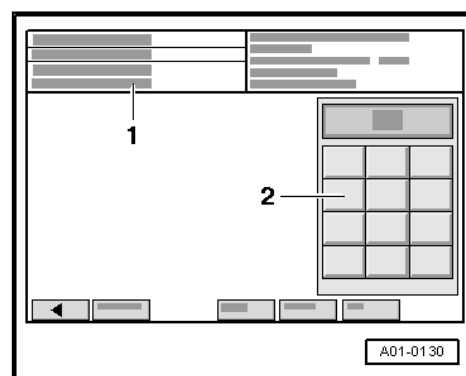
#### Note

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

This function is used to adapt the thermal load since the last service on replacing the dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys   for "Adaption channel 48" and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Channel 48 reading and testing
- 4 - Bar set to current adaption value

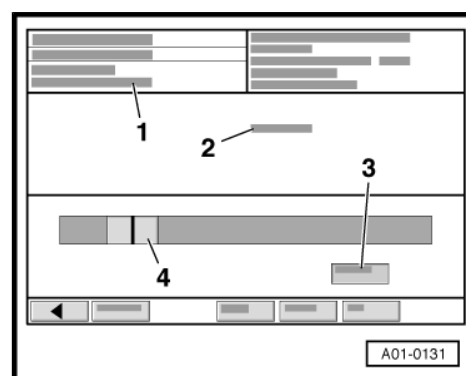
#### Note

- ◆ *The value indicated is a reference value (0 ... 600) for the service interval display.*
- ◆ *The value displayed is an arithmetic value for the thermal load referenced to a distance of 100 km.*
- ◆ *On dash panel insert replacement ⇒ [page 86](#).*

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#).
- Enter the adaption value.

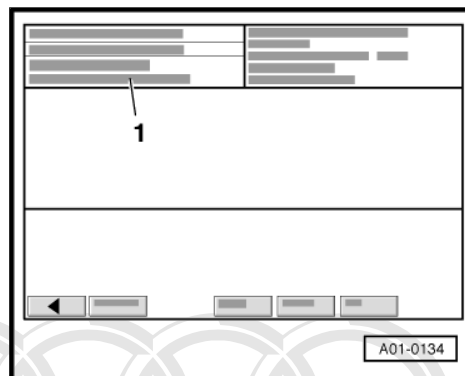
Exam- Soot content of engine oil = "498"  
ple:

Keypad entry   



Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 48 value 498 stored
- Terminate function "10 - Adaption" by touching key.



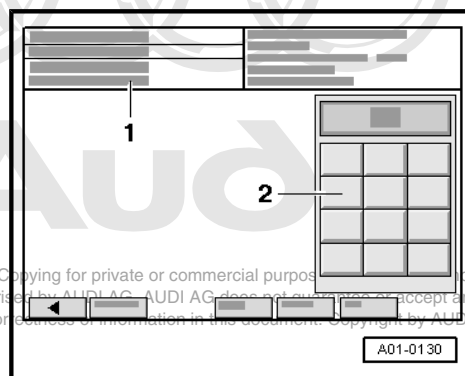
### 3.14 Adaption channels 60 ... 62

#### Adaption channel 60 - Control units using drive system data bus

This function can be used to adapt the control units using the drive system data bus on replacing the dash panel insert.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch keys for "Adaption channel 60" and confirm the entry by touching the key.



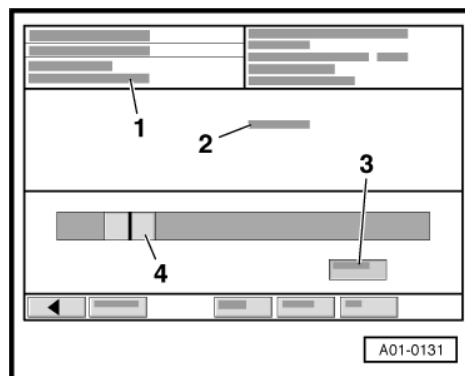
Display on -VAS 5051B- :

- 1 - Channel 60 reading and testing
- 4 - Bar set to current adaption value



#### Note

- ◆ Following successful adaption, the control units using the drive system data bus are displayed in "measured value block 125" ⇒ [page 59](#). The dash panel insert is not displayed in "measured value block 125".
- ◆ On dash panel insert replacement ⇒ [page 86](#).



The control units using the drive system data bus are adapted by way of the following input values:

| Control units using drive system data bus |                                                                                      |
|-------------------------------------------|--------------------------------------------------------------------------------------|
| 0                                         | Engine control unit and dash panel insert with immobilizer II                        |
| 1025                                      | Engine control unit and dash panel insert with immobilizer III                       |
| 1027                                      | Engine control unit, gearbox control unit and dash panel insert with immobilizer III |

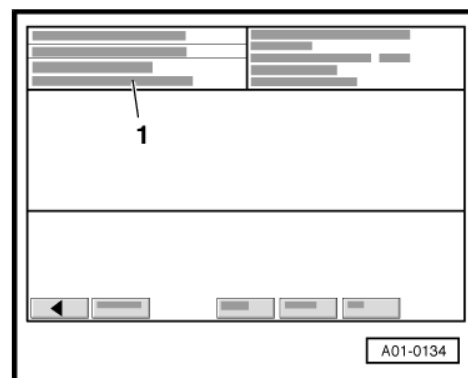
- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 63](#).
- Enter the adaption value.

Example: Engine control unit and dash panel insert with immobilizer III = "1025"

Keypad entry

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 60 value 1025 stored
- Terminate function "10 - Adaption" by touching  key.

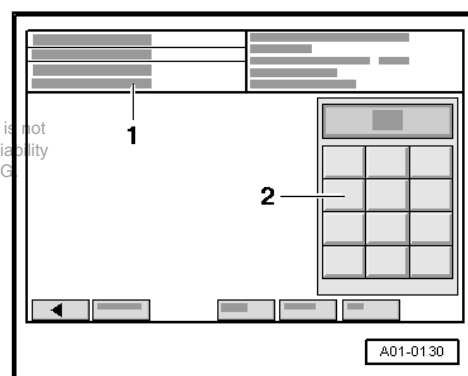


### Adaption channel 62 - Control units using display data bus

This function can be used to adapt the control units using the display data bus on replacing the dash panel insert.

Display on -VAS 5051B-:

- 1 - Enter channel number
- On the keypad -2-, touch keys   for "Adaption channel 62" and confirm the entry by touching the  key.



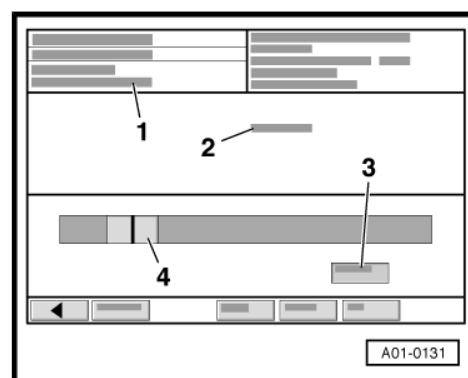
Display on -VAS 5051B- :

- 1 - Channel 62 reading and testing
- 4 - Bar set to current adaption value



#### Note

- ◆ The adaption value for a new dash panel insert is "0".
- ◆ Following successful adaption, the control units using the communication data bus are displayed in "measured value block 140" ➔ [page 59](#). The dash panel insert is not displayed in "measured value block 140".
- ◆ On dash panel insert replacement ➔ [page 86](#).



The control units using the display data bus are adapted by way of the following input values:

| Control units using display data bus |                                                                                                                                                                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                                    | Dash panel insert and Symphony radio as of Model Year 2001                                                                                                                                                                                 |
| 2                                    | <ul style="list-style-type: none"> <li>◆ Dash panel insert and permanently installed telephone with multi-function steering wheel</li> <li>◆ Dash panel insert and USA telematics without or with multi-function steering wheel</li> </ul> |
| 3                                    | Dash panel insert, Symphony radio as of Model Year 2001 and permanently installed telephone with multi-function steering wheel                                                                                                             |
| 4                                    | Dash panel insert and navigation system NS-Low                                                                                                                                                                                             |
| 5                                    | Dash panel insert and navigation system RNS-D                                                                                                                                                                                              |
| 6                                    | Dash panel insert, navigation system NS-Low and permanently installed telephone with multi-function steering wheel                                                                                                                         |

| Control units using display data bus |                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7                                    | <ul style="list-style-type: none"> <li>◆ Dash panel insert, Symphony radio as of Model Year 2001, navigation system NS-Low and permanently installed telephone with multi-function steering wheel</li> <li>◆ Dash panel insert, navigation system RNS-D and permanently installed telephone with multi-function steering wheel</li> </ul> |
| 8                                    | Dash panel insert and telematics without multi-function steering wheel                                                                                                                                                                                                                                                                    |
| 9                                    | Dash panel insert, Symphony radio as of Model Year 2001 and telematics without multi-function steering wheel                                                                                                                                                                                                                              |
| 10                                   | Dash panel insert and telematics with multi-function steering wheel                                                                                                                                                                                                                                                                       |
| 11                                   | Dash panel insert, Symphony radio as of Model Year 2001 and telematics with multi-function steering wheel                                                                                                                                                                                                                                 |
| 12                                   | Dash panel insert, navigation system NS-Low and telematics without multi-function steering wheel                                                                                                                                                                                                                                          |
| 13                                   | Dash panel insert, navigation system RNS-D and telematics without multi-function steering wheel                                                                                                                                                                                                                                           |
| 14                                   | Dash panel insert, navigation system NS-Low and telematics with multi-function steering wheel                                                                                                                                                                                                                                             |
| 15                                   | <ul style="list-style-type: none"> <li>◆ Dash panel insert, Symphony radio as of Model Year 2001, navigation system NS-Low and telematics with multi-function steering wheel</li> <li>◆ Dash panel insert, navigation system RNS-D and telematics with multi-function steering wheel</li> </ul>                                           |

- Alter the adaption value by means of direct entry ⇒ “B - Altering adaption value by means of direct entry” ⇒ [page 63](#).
- Enter the adaption value.

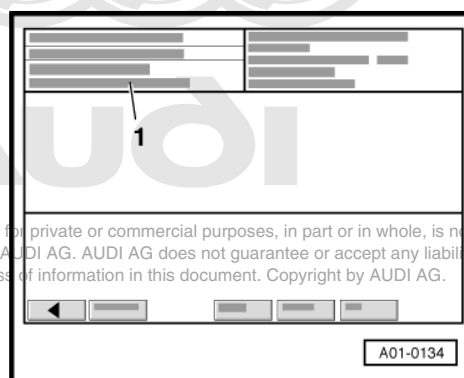
Example: Dash panel insert and navigation system RNS-D = “5”

Keypad entry

Display on -VAS 5051B- following successful adaption. Example:

1 - Channel 62 value 5 stored

- Terminate function “10 - Adaption” by touching  key.



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### 3.15 Input values on dash panel insert replacement

It is essential to observe the following on dash panel insert replacement:

**Take the following action before replacing the dash panel insert:**

- If possible, read out the data (“measured value blocks 010 ... 016, 125, 140”) from the old dash panel insert which are to be transferred to the new dash panel insert and make a printout.
- If applicable, read off and note down the mileage counter reading.

 **Note**

*Service interval display and mileage counter adaption are performed in miles in countries with speedometer display in miles.*

**Take the following action after replacing the dash panel insert:**

- Encode the dash panel insert ⇒ [page 53](#) .
- and
- Adapt the mileage counter reading ⇒ [page 67](#) .
- Adapt the language version of the driver information system (DIS) ⇒ [page 66](#) .
- Correct the characteristic curve of the fuel consumption indicator ⇒ [page 65](#) (only if characteristic curve has been altered).
- Correct the characteristic curve of the fuel gauge sender ⇒ [page 72](#) (only if characteristic curve has been altered).
- Correct the speed threshold for the dynamic oil pressure warning ⇒ [page 73](#) (only if speed threshold has been altered).
- Perform auxiliary heater adaption ⇒ [page 70](#) .
- Perform oil quality adaption ⇒ [page 80](#) .
- Adapt mileage since service ⇒ [page 74](#) .
- Adapt days since service ⇒ [page 75](#) .
- Adapt maximum mileage interval for service ⇒ [page 77](#) .
- Adapt maximum time interval for service ⇒ [page 78](#) .
- Adapt total fuel consumption (petrol engines only) ⇒ [page 81](#) .
- Adapt soot content of engine oil (TDI engines only) ⇒ [page 82](#) .
- Adapt thermal load (TDI engines only) ⇒ [page 83](#) .
- Perform radio controlled clock adaption ⇒ [page 71](#) .
- Perform adaption for control units using drive system data bus ⇒ [page 84](#) .
- Perform adaption for control units using information data bus (display) ⇒ [page 85](#) .

and

- Perform adaption of immobilizer following dash panel insert replacement ⇒ [page 105](#) .
- Perform vehicle key matching ⇒ [page 124](#) .

### 3.16 Service interval display reset on completion of service without -VAS 5051B-

- ◆ The service prompt must be reset on completion of service.
- ◆ The service interval display should only be reset with the vehicle diagnostic, testing and information system -VAS 5051B- using the “Adaption” function ⇒ [page 64](#) .



### Caution

*If resetting is performed without -VAS 5051B-, service is automatically set to a fixed interval value.*

If use is not made of -VAS 5051B-, the service interval display can be reset by implementing the following procedure:

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

“SERVICE!” appears on the display after releasing the trip recorder button.

- Press the time setting knob in the dash panel insert within 5 seconds until the message is reset to “SERVICE IN 15000 KM”.
- Switch off ignition.



### Note

*The “adaption channels 40, 41, 46, 47, 48” used to display the dynamic service values are automatically set to “0”.*

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If resetting is performed without -VAS 5051B-, service is automatically set to a fixed interval:

| Channel 42                        | Channel 43                        | Channel 44                     | Channel 45       |
|-----------------------------------|-----------------------------------|--------------------------------|------------------|
| Min. mileage interval<br>15000 km | Max. mileage interval<br>15000 km | Max. time interval<br>365 days | Oil quality<br>1 |

## 4 Immobilizer self-diagnosis - “Immobilizer I”



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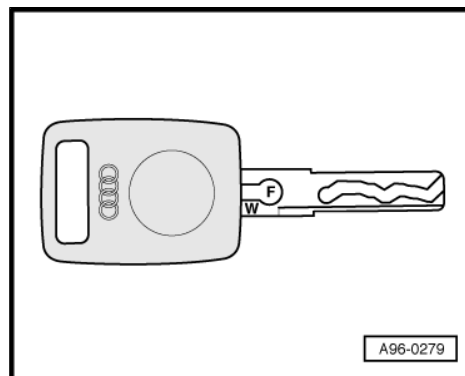
## 4.1 General information

With "immobilizer I" the keys were originally not marked. Since the introduction of newer versions the keys have been marked with a -W- and an -F-.

### Function

Components of the electronic immobilizer:

- 1 - Up to Model Year 1997: Immobilizer control unit -J362- ; as of Model Year 1998, immobilizer control unit integrated into dash panel insert
  - 2 - Immobilizer warning lamp -K117- in dash panel insert
  - 3 - Reader coil at ignition lock
  - 4 - Matched ignition keys with electronics (transponder)
- ◆ The immobilizer control unit -J362- can be replaced separately. The immobilizer control unit integrated into the dash panel insert can only be replaced together with the dash panel insert.
  - ◆ The immobilizer acts on the engine management system by way of a matched engine control unit.
  - ◆ The immobilizer reader coil reads out the transponder response code each time the ignition is switched on.
  - ◆ The immobilizer warning lamp -K117- lights briefly if use is being made of an authorised vehicle key.
  - ◆ If use is made of an unauthorised vehicle key or if there is a fault in the system, the immobilizer warning lamp -K117- flashes continuously with the ignition switched on.



### Note

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

### Immobilizer PIN

- ◆ For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits. It must be obtained by way of the appropriate regional sales centre/importer on the basis of the 14-digit immobilizer/engine control unit identification number  
⇒ [page 100](#).
- ◆ The PIN can only be used in combination with the vehicle diagnostic, testing and information system -VAS 5051B-.



### Note

- ◆ *Check the data of your vehicle diagnostic, testing and information system -VAS 5051B- with regard to the sales centre/importer and workshop code, as well as date and time.*
- ◆ *Immobilizer adaption cannot be implemented if the data are incorrect.*

### Notes on using/matching vehicle keys

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

- ◆ The matching procedure ⇒ [page 100](#) involves matching all vehicle keys, including spare and emergency keys, to the immobilizer.
- ◆ If new or additional vehicle keys are required, all vehicle keys must again be matched to the immobilizer.
- ◆ If for some reason matching cannot be performed for all vehicle keys, e.g. due to loss of keys on a journey, customers are to be informed that subsequent matching of all vehicle keys is required.
- ◆ Re-matching of the remaining vehicle keys is particularly important if a key has been lost, as the lost vehicle key is then no longer authorised to start the vehicle.

## 4.2 Starting immobilizer self-diagnosis

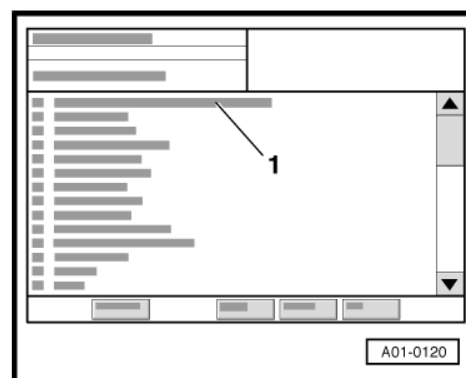
### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected ⇒ [page 1](#)
- Ignition switched off for approx. 30 seconds and then switched on again

### Vehicles up to Model Year 1997:

Display on -VAS 5051B- :

- From list -1- select vehicle system “25 - Immobilizer”.
- Wait until next display appears.



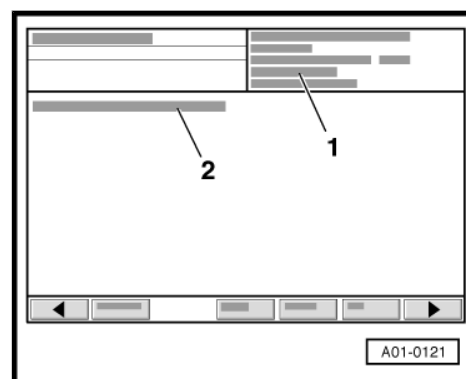
Display on -VAS 5051B- :

1 - Control unit identification of immobilizer



**Note**

*-Item 2- can be ignored.*



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| Immobilizer control unit identification (example) |                                               |
|---------------------------------------------------|-----------------------------------------------|
| 25 - Immobilizer                                  | Vehicle system                                |
| 4A0953234..                                       | Part no.; assignment ⇒ Parts catalogue        |
| IMMO                                              | Component designation                         |
| AUZ9Z0R3002047                                    | 14-position immobilizer identification number |
| D..                                               | Data level (software version) of control unit |
| Code 0                                            | Ignore                                        |
| Workshop code 12345                               | Ignore                                        |

## Vehicles as of Model Year 1998:

Display on -VAS 5051B- :

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



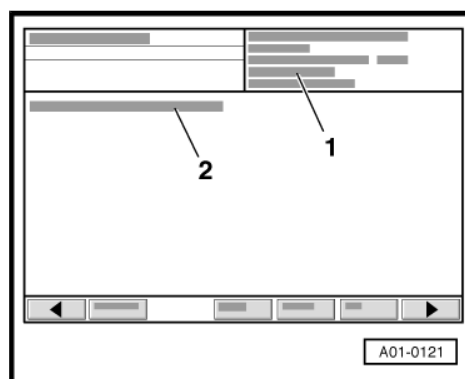
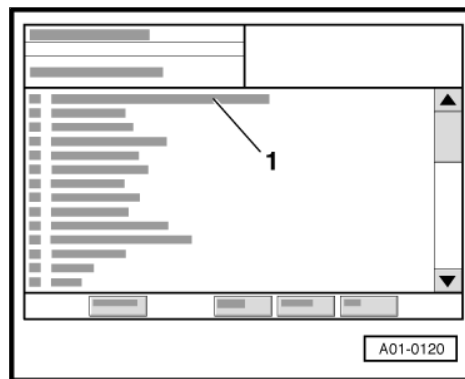
### Note

As the immobilizer is integrated into the dash panel insert as of Model Year 1998, vehicle system “17 - Dash panel insert” must be selected.

- Wait until next display appears.

Display on -VAS 5051B- :

- 1 - Control unit identification of dash panel insert ⇒ [page 5](#)
- 2 - Control unit identification of immobilizer



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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Immobilizer control unit identification (example)                                                                                                                                                                                                                                                                                             |                                               |
| IMMO IDENT NO.<br>AUZ7Z0T0033877                                                                                                                                                                                                                                                                                                              | 14-position immobilizer identification number |

## All vehicles (continued):

- Touch key.

Display on -VAS 5051B- :

The following functions shown in the display -1- are available:

| Functions                       | Page                                                       |
|---------------------------------|------------------------------------------------------------|
| 02 Interrogating fault memory   | ⇒ <a href="#">page 93</a>                                  |
| 05 Erasing fault memory         | ⇒ <a href="#">page 96</a>                                  |
| 06 End of output                | ⇒ <a href="#">page 97</a>                                  |
| 08 Reading measured value block | ⇒ <a href="#">page 97</a>                                  |
| 10 Adaption                     | ⇒ <a href="#">page 99</a>                                  |
| Release (PIN)                   | ⇒ <a href="#">page 100</a> ,<br>⇒ <a href="#">page 106</a> |



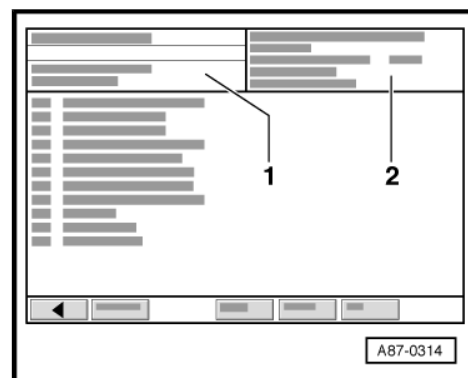
All other functions displayed cannot be selected or can be ignored in this case.

## Fault messages on -VAS 5051B-

If a fault message appears on the display, refer to ⇒ Operating instructions of vehicle diagnostic, testing and information system -VAS 5051B- .

If display zone -1- shows the fault message "Vehicle system not available":

- Check:
- ◆ Power supply to diagnostic connection ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ◆ Wiring between diagnostic connection and dash panel insert ⇒ Current flow diagrams, Electrical fault finding and Fitting locations



## 4.3 Interrogating fault memory



### Note

*The fault information displayed is not constantly updated, but rather only on starting self-diagnosis or using function "05 - Erasing fault memory".*

### Sequence of operations

- Start immobilizer self-diagnosis ⇒ [page 91](#) .

Display on -VAS 5051B- :

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

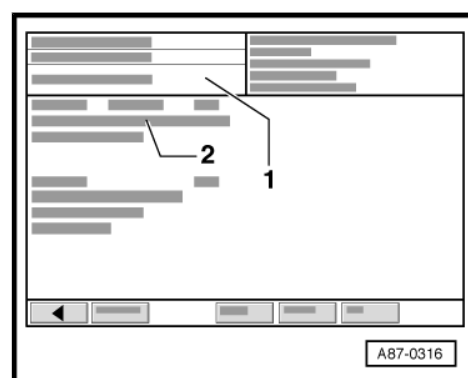


Display on -VAS 5051B- :

- |                             |                                               |
|-----------------------------|-----------------------------------------------|
| -1- Content of fault memory | 0 faults detected<br>or<br>X faults detected  |
| -2- Fault                   | Fault code<br>Fault location<br>Type of fault |

### A - Faults detected:

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



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Display on -VAS 5051B- :

- Eliminate fault(s) in line with fault tables ⇒ [page 94](#) .
- From list -1-, select function "02 - Interrogating fault memory" again and erase fault memory ⇒ [page 96](#) .
- Select function "06 - End of output" from list ⇒ [page 97](#) .

#### B - No fault detected:

- Terminate function "02 - Interrogating fault memory" by touching  key.
- From list -1-, select function "06 - End of output" ⇒ [page 97](#) .



## 4.4 Fault tables



### Note

- ◆ *Faults occurring in monitored sensors or components are stored in the fault memory together with an indication of the type of fault.*
- ◆ *The fault tables are arranged according to the 5-digit fault codes in the left-hand column.*
- ◆ *Faults relating to the dash panel insert may also be displayed, as the immobilizer is integrated into the dash panel insert.*
- ◆ *All static and sporadic faults are stored in the fault memory: A fault is identified as being static if it persists for at least 2 seconds. If a fault is then no longer present, it is stored as being "sporadic". "Sporadic" additionally appears on the display.*
- ◆ *After switching on the ignition, all faults present are set to "sporadic" and only stored as being static if they are still present after checking.*
- ◆ *Sporadic faults which do not re-occur in the course of 50 driving cycles (ignition switched on for at least 5 minutes; vehicle speed greater than 30 km/h) are erased.*
- ◆ *Components indicated as being faulty by the -VAS 5051B- are not to be immediately replaced, but rather: Start by using the current flow diagram to check the wiring and connectors to these components. The earth connections are also to be checked on the basis of the current flow diagram. This is particularly important in the case of "sporadic" faults.*
- ◆ *On completion of repair work, interrogate fault memory again and erase.*
- ◆ *After performing repairs, additionally interrogate the fault memory of the engine control unit and erase the entry "Engine control unit disabled". Check and if necessary eliminate any other faults stored.*

| Output on -VAS 5051B-         | Possible cause of trouble                           | Remedy                                                    |
|-------------------------------|-----------------------------------------------------|-----------------------------------------------------------|
| 00750<br>Fault lamp           | ◆ Open circuit or short to earth/positive in wiring | - Use current flow diagram to check wiring and connectors |
| ◆ Short to earth/open circuit | ◆ Immobilizer warning lamp - K117- defective        | - Replace immobilizer warning lamp -K117- ⇒ Rep. Gr. 90   |
| ◆ Short to positive           |                                                     |                                                           |

| Output on -VAS 5051B-                  | Possible cause of trouble                                                                       | Remedy                                                                                                            |
|----------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 01128<br>Immobilizer reading coil -D2- | ◆ Connector not plugged in or fault in reading coil/wiring                                      | – Check (visually inspect) connector and reading coil/wiring and replace reading coil if necessary ⇒ Rep. Gr. 96  |
|                                        | ◆ Up to Model Year 1997: Immobilizer control unit -J362- defective                              | – Erase fault memory ⇒ <a href="#">page 96</a> and interrogate again ⇒ <a href="#">page 93</a>                    |
|                                        | ◆ As of Model Year 1998: Immobilizer control unit (integrated into dash panel insert) defective | – If applicable, replace immobilizer control unit -J362- ⇒ Rep. Gr. 96 or replace dash panel insert ⇒ Rep. Gr. 90 |

| Output on -VAS 5051B-          | Possible cause of trouble                                            | Remedy                                                                                                           |
|--------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 01176<br>Key<br>Signal too low | ◆ Fault in reading coil or wiring (contact resistance/loose contact) | – Check (visually inspect) reading coil/wiring and connector and replace reading coil if necessary ⇒ Rep. Gr. 96 |
|                                | ◆ No or defective electronics in ignition key (transponder)          | – Replace ignition key, re-match all ignition keys and check function ⇒ <a href="#">page 100</a>                 |
| 01176<br>Key<br>Not authorised | ◆ Mechanically correct ignition key not matched                      | – Re-match all ignition keys and check function ⇒ <a href="#">page 100</a>                                       |

| Output on -VAS 5051B-                          | Possible cause of trouble                           | Remedy                                                    |
|------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------|
| 01177<br>Engine control unit<br>Not authorised | ◆ Engine control unit not matched                   | – Match engine control unit ⇒ <a href="#">page 106</a>    |
|                                                | ◆ Open circuit or short to earth/positive in W-wire | – Use current flow diagram to check wiring and connectors |

| Output on -VAS 5051B-           | Possible cause of trouble      | Remedy                                                                     |
|---------------------------------|--------------------------------|----------------------------------------------------------------------------|
| 01179<br>Key programming not OK | ◆ Ignition key matching not OK | – Re-match all ignition keys and check function ⇒ <a href="#">page 100</a> |

| Output on -VAS 5051B-           | Possible cause of trouble                                                   | Remedy                                                  |
|---------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------|
| 65535<br>Control unit defective | ◆ Vehicles up to Model Year 1997: Immobilizer control unit -J362- defective | – Replace immobilizer control unit -J362- ⇒ Rep. Gr. 96 |
|                                 | ◆ Vehicles as of Model Year 1998: Dash panel insert defective               | – Replace dash panel insert ⇒ Rep. Gr. 90               |

## 4.5 Erasing fault memory



### Note

*If the fault memory cannot be erased, interrogate it again and rectify fault.*

### Sequence of operations

- Fault memory interrogated ⇒ [page 93](#)
- All faults eliminated

After fault memory interrogation:

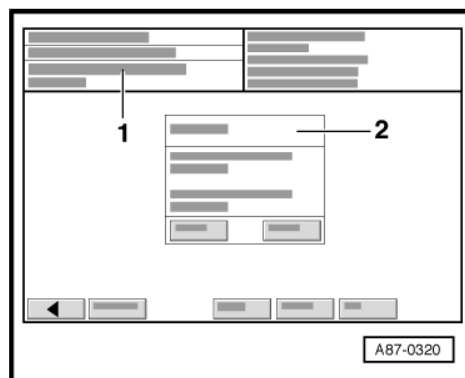
Display on -VAS 5051B- :

- From list -1-, select function “05 - Erasing fault memory”.



Display on -VAS 5051B- :

- 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 indicates failure to comply exactly with the sequence of operations. The fault memory can only be erased after it has been interrogated.*

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

- Touch ☐ key in display -2-.
- Interrogate fault memory again on completion of repair work.



### Note

*This erases faults stored during fault rectification, e.g. as a result of unplugging connectors.*

- Terminate function “05 - Erasing fault memory” by touching ☐ key.

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## 4.6 End of output

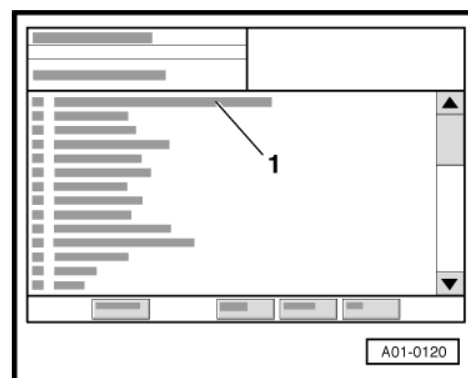
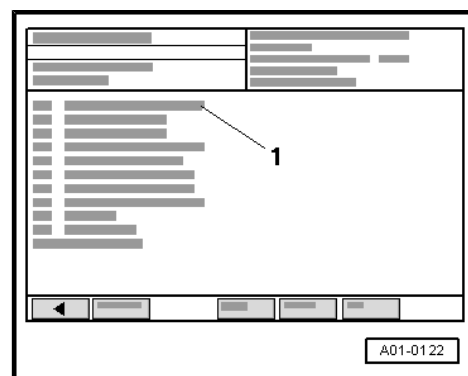
### Sequence of operations

Display on -VAS 5051B- :

- From list -1-, select function “06 - End of output”.

Display on -VAS 5051B- :

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



## 4.7 Reading measured value block

### Sequence of operations

- Start immobilizer self-diagnosis ⇒ [page 91](#).

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- From list -1-, select function “08 - Reading measured value block”.

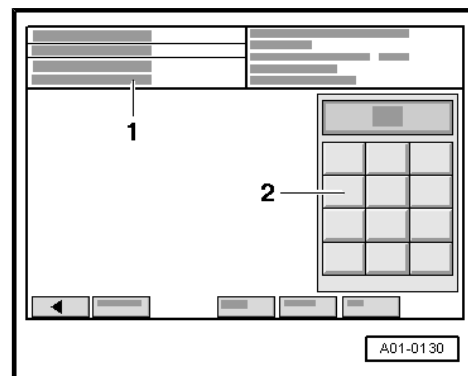
Display on -VAS 5051B- :

1 - Enter display group

- Use keypad -2- to enter the desired “display group number” and confirm the entry by touching the  key.

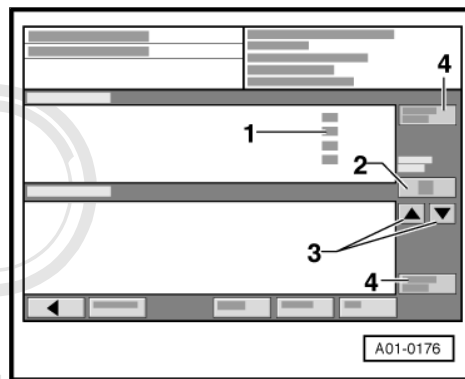
◆ Vehicles up to Model Year 1997 ⇒ [page 98](#)

◆ Vehicles as of Model Year 1998 ⇒ [page 98](#)



### Display on -VAS 5051B- :

- 1 - Display zones 1 ... 4. If a display zone is not assigned, there is no display on this line.
  - 2 - The display group selected is shown here
  - 3 - Touching these keys permits switching to a different display group.
  - 4 - Touching these keys permits switching to a different function (e.g. from "Reading measured value block" to "Basic setting" and vice versa).
- Terminate function "08 - Reading measured value block" by touching key.



### List of display groups for vehicles up to Model Year 1997

| Display group 001 |     | 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 regard to the information in this document. Copyright by AUDI AG.                                                                                                                                                                                                                                                                    |
|-------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |     | Explanatory notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1                 | ... | Starting authorised <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. vehicle key not/incorrectly matched or engine control unit incorrectly encoded/defective</li> </ul>                                                                                                                                                                                                                                                                                                                                     |
| 2                 | ... | Engine control unit responds <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. either engine control unit is in "Run-on mode" or there is a fault in the engine control unit or wiring</li> </ul> <p>Depending on engine control unit, the display is "0 = Engine control unit responds No" for 10 ... 30 seconds after switching off the engine and ignition, i.e. the engine control unit has been released and there are no faults. Start self-diagnosis again to be certain ⇒ <a href="#">page 91</a></p> |
| 3                 | ... | Key status OK <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. vehicle key not/incorrectly matched or transponder defective</li> </ul>                                                                                                                                                                                                                                                                                                                                                                       |
| 4                 |     | Not used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

### List of display groups for vehicles as of Model Year 1998

| Display group 020 |    |                                                |
|-------------------|----|------------------------------------------------|
| Display zones     |    | Explanatory notes                              |
| 1                 | AU | 1st and 2nd positions of identification number |
| 2                 | Z7 | 3rd and 4th positions of identification number |
| 3                 | Z0 | 5th and 6th positions of identification number |
| 4                 | T0 | 7th and 8th positions of identification number |



#### Note

Example of 14-position immobilizer identification number:  
AUZ7Z0T0033877

| Display group 021 |    |                                                  |
|-------------------|----|--------------------------------------------------|
| Display zones     |    | Explanatory notes                                |
| 1                 | 03 | 9th and 10th positions of identification number  |
| 2                 | 38 | 11th and 12th positions of identification number |
| 3                 | 77 | 13th and 14th positions of identification number |
| 4                 |    | Not used                                         |



#### Note

Example of 14-position immobilizer identification number:  
AUZ7Z0T0033877

| Display group 022 |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |     | Explanatory notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1                 | ... | Starting authorised <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. vehicle key not/incorrectly matched or engine control unit incorrectly encoded/defective</li> </ul>                                                                                                                                                                                                                                                                                                                              |
| 2                 | ... | Engine control unit responds <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. either engine control unit is in "Run-on mode" or there is a fault in the engine control unit or wiring</li> </ul> Depending on engine control unit, the display is "0 = Engine control unit responds No" for 10 ... 30 seconds after switching off the engine and ignition, i.e. the engine control unit has been released and there are no faults. Start self-diagnosis again to be certain ⇒ <a href="#">page 91</a> |
| 3                 | ... | Key status OK <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. vehicle key not/incorrectly matched or transponder defective</li> </ul>                                                                                                                                                                                                                                                                                                                                                                |
| 4                 |     | Not used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 4.8 Adaption



#### Note

The immobilizer PIN must be obtained before the adaption function can be implemented ⇒ ["4.9 Establishing PIN", page 100](#).

The "Adaption" function can be used to make and store the following changes:

- ◆ Matching of vehicle keys ⇒ [page 100](#).
- ◆ Matching following replacement of engine control unit  
⇒ [page 106](#).
- ◆ Matching following replacement of immobilizer control unit - J362- (up to Model Year 1997) or dash panel insert (as of Model Year 1998) ⇒ [page 105](#).

## 4.9 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 in combination with the vehicle diagnostic, testing and information system -VAS 5051B- .
- ◆ The 7-digit PIN must be obtained by way of the appropriate regional sales centre/importer on the basis of the 14-digit 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 request procedure has been switched to the 7-digit PIN.

## 4.10 Matching of vehicle keys



### Note

- ◆ *If new or additional ignition keys are required, they must be matched to the immobilizer.*
- ◆ *All ignition keys, including those already authorised, must always be re-matched.*
- ◆ *Re-matching of the remaining vehicle keys is particularly important if a key has been lost, as the lost vehicle key is then no longer authorised to start the vehicle.*
- ◆ *If it is not possible to match all keys, e.g. during a journey, customers must have this done at a later date at their local Audi dealership.*
- ◆ *The number of keys already matched is displayed after selecting function "10 - Adaption" in "Channel 21".*

### Sequence of operations

- All ignition keys available. If there is no old ignition key available  
⇒ **"4.11 Procedure in the event of loss of key", page 105** .
- Insert the first key in the ignition lock and switch on the ignition.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis ⇒ **page 91** .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.

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### 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 5051B- :

- From list -1- select function “Release (PIN)”.



Display on -VAS 5051B-

|                                                                                                                                                                                                                                                                        |                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Vehicle self-diagnosis                                                                                                                                                                                                                                                 | 17 - Dash panel insert<br>8D0919880 |
| Functional test                                                                                                                                                                                                                                                        | B5 DASH PANEL INSERT UN4 D15        |
| Release (PIN)                                                                                                                                                                                                                                                          | Code 42<br>Workshop code 12345      |
| <div> <div> <p>Information</p> <p>The PIN is used to release key matching or adaption in the vehicle system.</p> <p>The PIN obtained for the immobilizer identification number is only valid on the day it is requested</p> </div> <div> <p>Finished</p> </div> </div> |                                     |
| <div> <div>←</div> <div>Measurement</div> <div>Go to</div> <div>Print</div> <div>Help</div> </div>                                                                                                                                                                     |                                     |

- Touch the **Finished** key.

Display on -VAS 5051B-

|                                                                                                                                                                                                |                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Vehicle self-diagnosis                                                                                                                                                                         | 17 - Dash panel insert<br>8D0919880 |
| Functional test                                                                                                                                                                                | B5 DASH PANEL INSERT UN4 D15        |
| Release (PIN)                                                                                                                                                                                  | Code 5042<br>Workshop code 12345    |
| <div> <div> <p>PIN entry</p> <p>Enter PIN obtained with the displayed keypad.</p> <p>Confirm PIN entered with Continue key (↵ key)</p> <p>Press here to display entry keypad</p> </div> </div> |                                     |
| <div> <div>←</div> <div>Measurement</div> <div>Go to</div> <div>Print</div> <div>Help</div> <div>→</div> </div>                                                                                |                                     |

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

Display on -VAS 5051B-

|                        |                                     |
|------------------------|-------------------------------------|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8D0919880 |
| Functional test        | B5 DASH PANEL INSERT UN4 D15        |
| Release (PIN)          | Code 42<br>Workshop code 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 |   |   |

|   |             |       |       |      |   |
|---|-------------|-------|-------|------|---|
| ← | Measurement | Go to | Print | Help | → |
|---|-------------|-------|-------|------|---|

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

Display on -VAS 5051B-

|                        |                                     |
|------------------------|-------------------------------------|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8D0919880 |
| Functional test        | B5 DASH PANEL INSERT UN4 D15        |
| Release (PIN)          | Code 42<br>Workshop code 12345      |

|                              |                                    |
|------------------------------|------------------------------------|
| PIN entry                    |                                    |
| PIN XXXXXXX entered correct? | <input type="button" value="Yes"/> |
|                              | <input type="button" value="No"/>  |

|   |             |       |       |      |
|---|-------------|-------|-------|------|
| ← | Measurement | Go to | Print | Help |
|---|-------------|-------|-------|------|

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- Check entry and then touch  key.
- Incorrect PIN entry can be corrected by touching  key.

Display on -VAS 5051B-

|                        |                                     |
|------------------------|-------------------------------------|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8D0919880 |
| Functional test        | B5 DASH PANEL INSERT UN4 D15        |
| Release (PIN)          | Code 42<br>Workshop code 12345      |

|                                                         |                                         |
|---------------------------------------------------------|-----------------------------------------|
| Transfer PIN                                            |                                         |
| PIN valid!<br>Key matching/adaption can<br>be performed | <input type="button" value="Finished"/> |

|   |             |       |       |      |
|---|-------------|-------|-------|------|
| ← | Measurement | Go to | Print | Help |
|---|-------------|-------|-------|------|

- Touch the  key.

When this display appears, the immobilizer warning lamp -K117- in the dash panel insert lights and the immobilizer has been released.

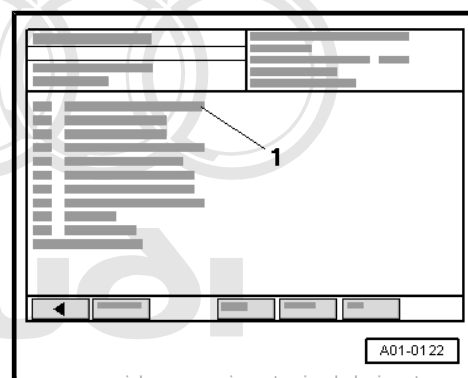
**i Note**

- ◆ Heed the instructions given on the display if a fault message appears.
- ◆ 3 attempts at entering a correct PIN are immediately possible. The next 3 attempts can only be made after waiting at least 10 minutes. To do so, the ignition must be left switched on and function "06 - End of output" must be selected from list -1- to exit from self-diagnosis.
- ◆ The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.

Once immobilizer has been released:

Display on -VAS 5051B- :

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

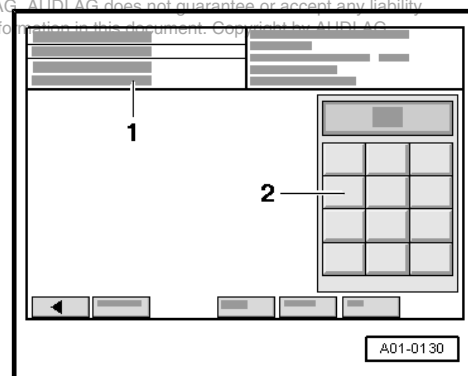


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Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch keys **2 1** for "Adaption channel 21" and confirm the entry by touching the **Q** key.

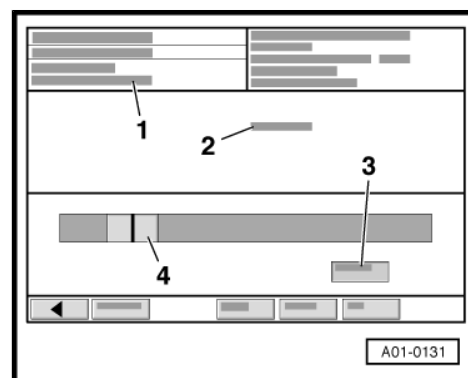


Display on -VAS 5051B- :

1 - Channel 21 reading and testing

2 - New number of keys:

4 - Bar set to current adaption value, e.g. "2". The display shows the number of ignition keys (in this case "2") matched to the system.



Display on -VAS 5051B- :

- Enter the number of keys to be matched.

Example: 4 keys including the one in the ignition lock



#### Note

A maximum of 8 keys can be matched.

- Move the bar -5- to the right or touch the panel to the right of the bar until the bar is positioned under the number “4” (example).



#### Note

It is also possible to touch the keypad key -Item 3-, then the key 4 and confirm the entry by touching the 0 key.

- Touch the **Save** key -4-.

Display on -VAS 5051B- :

1 - Channel 21 reading and testing

2 - New number of keys:

4 - Original value “2” new value “4” (example)

- Confirm the new adaption value by touching the **Accept** key -3-.

Matching is then implemented.

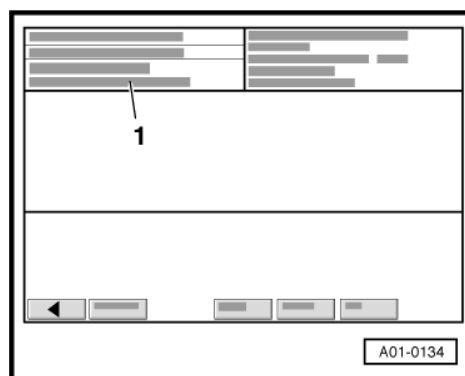
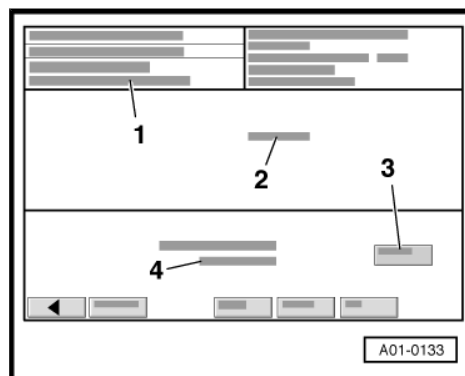
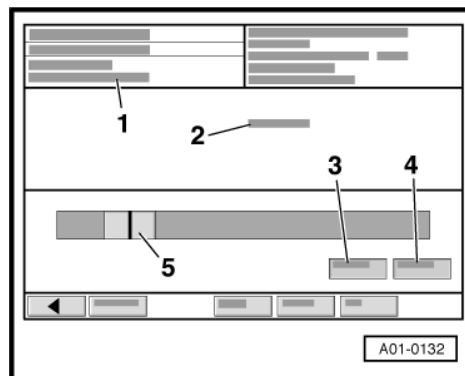
- The matching time per key must not exceed 30 seconds. Otherwise the immobilizer warning lamp -K117- in the dash panel insert starts to flash and the release (PIN) procedure must be repeated in full.

Display on -VAS 5051B- following successful adaption:

1 - Channel 21 value “4” stored

The immobilizer warning lamp -K117- in the dash panel insert goes out; the key in the ignition lock has been matched.

- Terminate function “10 - Adaption” by touching **0** key.



Display on -VAS 5051B- :

- From list -1-, select function "06 - End of output".
- Switch off ignition.
- Insert the next key in the ignition lock and switch on the ignition.
- Repeat the procedure until all keys have been matched.

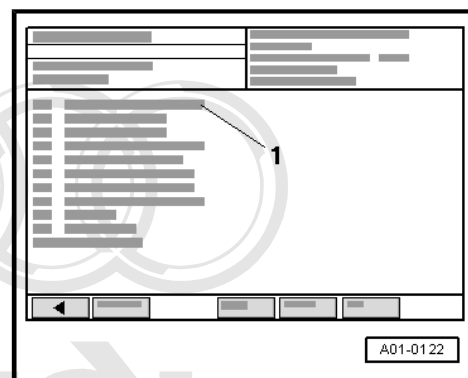
The vehicle key matching procedure matches the fixed code of the key concerned (transponder) to the immobilizer.

- Interrogate the fault memory on completion of key matching  
⇒ [page 93](#) .

If no fault has been stored, the "Key matching" function has been successfully completed.

Ignition key matching is terminated automatically under the following conditions:

- ◆ On reaching the number of keys to be matched.
- ◆ If the ignition is switched on again with an already matched key and left switched on for more than 1 second (fault is stored).
- ◆ If the permitted matching time of 30 seconds per key after switching on the ignition is exceeded (fault is stored).
- ◆ If a fault is stored during the key matching procedure.



## 4.11 Procedure in the event of loss of key

- Make/order a replacement ignition key on the basis of the lock number.
- Match all vehicle keys ⇒ [page 100](#) .
- On vehicles with remote control function, match all keys to the remote control unit ⇒ Body self-diagnosis; Rep. Gr. 01 , "Remote control key matching" function.

## 4.12 Matching following replacement of immobilizer control unit -J362- or dash panel insert

The immobilizer control unit -J362- or dash panel insert (with integrated immobilizer) is matched to the engine control unit. Following replacement, the immobilizer control unit -J362- or dash panel insert must be adapted to the engine control unit.

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Insert the old (authorised) ignition key in the ignition lock and switch on the ignition.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis ⇒ [page 91](#) .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.



## 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 100](#) .

## 4.13 Matching following replacement of engine control unit

- ◆ The engine control unit is matched to the immobilizer control unit -J362- or dash panel insert (with integrated immobilizer). On replacement, the engine control unit must be adapted to the immobilizer.
- ◆ If there is no authorised ignition key available, all keys must be replaced ⇒ [page 105](#) .

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected ⇒ [page 1](#)
- Insert the old (authorised) ignition key in the ignition lock.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis ⇒ [page 91](#) .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.



## 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.

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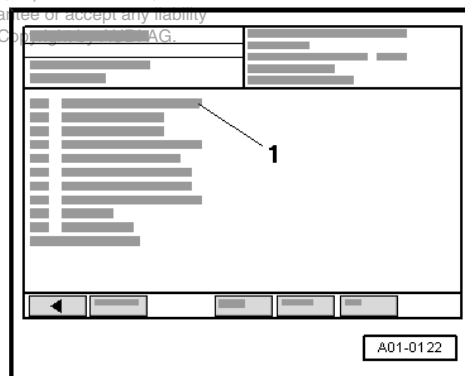
Display on -VAS 5051B- :

- From list -1- select function “Release (PIN)”.



## Note

Vehicle system “17 - Dash panel insert” has been selected by way of example in the following displays.



Display on -VAS 5051B-

|                                                                           |                                     |
|---------------------------------------------------------------------------|-------------------------------------|
| Vehicle self-diagnosis                                                    | 17 - Dash panel insert<br>8D0919880 |
| Functional test                                                           | B5 DASH PANEL INSERT UN4 D15        |
| Release (PIN)                                                             | Code 42<br>Workshop code 12345      |
| Information                                                               |                                     |
| The PIN is used to release key matching or adaption in the vehicle system |                                     |
| Finished                                                                  |                                     |

|                                                                                                     |             |  |       |       |      |
|-----------------------------------------------------------------------------------------------------|-------------|--|-------|-------|------|
| The PIN obtained for the immobilizer identification number is only valid on the day it is requested |             |  |       |       |      |
| ←                                                                                                   | Measurement |  | Go to | Print | Help |

- Touch the Finished key.

Display on -VAS 5051B-

|                                                                                                                                                                                                                                                                                  |                                     |  |       |       |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--|-------|-------|-------------|
| Vehicle self-diagnosis                                                                                                                                                                                                                                                           | 17 - Dash panel insert<br>8D0919880 |  |       |       |             |
| Functional test                                                                                                                                                                                                                                                                  | B5 DASH PANEL INSERT UN4 D15        |  |       |       |             |
| Release (PIN)                                                                                                                                                                                                                                                                    | Code 42<br>Workshop code 12345      |  |       |       |             |
| PIN entry                                                                                                                                                                                                                                                                        |                                     |  |       |       |             |
| Enter PIN obtained with the displayed keypad.                                                                                                                                                                                                                                    |                                     |  |       |       |             |
| Confirm PIN entered with Continue key ( <span style="border: 1px solid black; padding: 0 2px;">→</span> key)                                                                                                                                                                     |                                     |  |       |       |             |
| Press here to display<br>entry keypad                                                                                                                                                                                                                                            |                                     |  |       |       |             |
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| ←                                                                                                                                                                                                                                                                                | Measurement                         |  | Go to | Print | Help      → |

- Touch key Press here to display entry keypad.

Display on -VAS 5051B-

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |                                     |   |   |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|-------------------------------------|---|---|---|
| Vehicle self-diagnosis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |   |   | 17 - Dash panel insert<br>8D0919880 |   |   |   |
| Functional test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   | B5 DASH PANEL INSERT UN4 D15        |   |   |   |
| Release (PIN)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |   |   | Code 42<br>Workshop code 12345      |   |   |   |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2 | 3 | + | A                                   | B | C | D |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5 | 6 | - | E                                   | F | G | H |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 8 | 9 | . | I                                   | J | K | L |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0 | Q |   | M                                   | N | O | P |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   | Q                                   | R | S | T |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   | U                                   | V | W | X |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   | Y                                   | Z |   |   |
| <div style="display: flex; justify-content: space-between; align-items: center;"> <span style="width: 10%; text-align: center; padding: 5px;">←</span> <span style="width: 20%; text-align: center; padding: 5px;">Measurement</span> <span style="width: 20%;"></span> <span style="width: 10%; text-align: center; padding: 5px;">Go to</span> <span style="width: 10%; text-align: center; padding: 5px;">Print</span> <span style="width: 30%; text-align: center; padding: 5px;">Help      →</span> </div> |   |   |   |                                     |   |   |   |

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

Display on -VAS 5051B-

|                        |                                     |
|------------------------|-------------------------------------|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8D0919880 |
| Functional test        | B5 DASH PANEL INSERT UN4 D15        |

|                                  |                                            |                                      |                                                                          |
|----------------------------------|--------------------------------------------|--------------------------------------|--------------------------------------------------------------------------|
| Release (PIN)                    |                                            | Code 42<br>Workshop code 12345       |                                                                          |
| PIN entry                        |                                            |                                      |                                                                          |
| PIN XXXXXXXX entered correct?    |                                            | <input type="button" value="Yes"/>   |                                                                          |
|                                  |                                            | <input type="button" value="No"/>    |                                                                          |
| <input type="button" value="←"/> | <input type="button" value="Measurement"/> | <input type="button" value="Go to"/> | <input type="button" value="Print"/> <input type="button" value="Help"/> |

- Check entry and then touch  key.
- Incorrect PIN entry can be corrected by touching  key.

Display on -VAS 5051B-

|                                                      |                                                                                                                                                          |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vehicle self-diagnosis                               | 17 - Dash panel insert<br>8D0919880                                                                                                                      |
| Functional test                                      | B5 DASH PANEL INSERT UN4 D15                                                                                                                             |
| Release (PIN)                                        | Code 42<br>Workshop code 12345                                                                                                                           |
| Transfer PIN                                         |                                                                                                                                                          |
| PIN valid!<br>Key matching/adaption can be performed |                                                                                                                                                          |
| <input type="button" value="Finished"/>              |                                                                                                                                                          |
| <input type="button" value="←"/>                     | <input type="button" value="Measurement"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/> |

- Touch the  key.

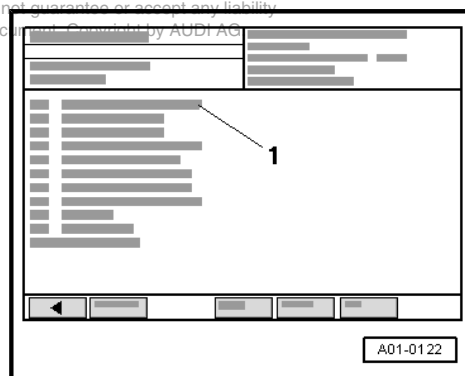
When this display appears, the immobilizer warning lamp -K117- in the dash panel insert lights and the immobilizer has been released.

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### Note

- ◆ Heed the instructions given on the display if a fault message appears.
- ◆ 3 attempts at entering a correct PIN are immediately possible. The next 3 attempts can only be made after waiting at least 10 minutes. To do so, the ignition must be left switched on and function "06 - End of output" must be selected from list -1- to exit from self-diagnosis.
- ◆ The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.



Once immobilizer has been released:

Display on -VAS 5051B- :

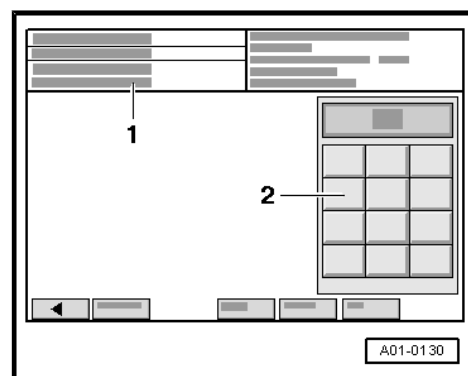
- From list -1- select function "10 - Adaption".



Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch key  for "Adaption channel 00" and confirm the entry by touching the  key.



Display on -VAS 5051B- :

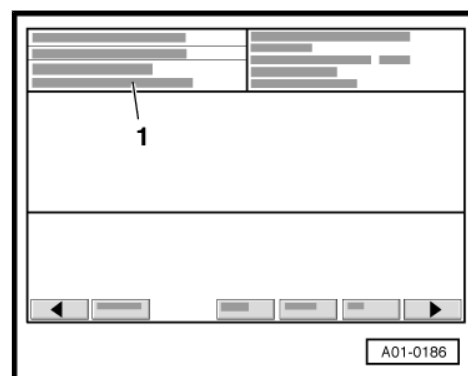
1 - Channel 0 Erase adaption values?

- Touch  key.

Display on -VAS 5051B- :

1 - Channel 0 Adaption values erased

The engine control unit identifier is stored in the immobilizer and the engine can be started.



#### 4.14 Emergency starting function with - VAS 5051B-

The emergency starting function can be used to release a vehicle with disabled immobilizer to drive it to the nearest Audi dealership.

##### Sequence of operations

- The customer must furnish proof of authorisation to use the vehicle or ownership by showing the vehicle documents and personal identification.
- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected [⇒ page 1](#)
- Establish the immobilizer identification number by starting immobilizer self-diagnosis [⇒ page 91](#) .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.

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**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 5051B- :

- From list -1- select function “Release (PIN)”.



Display on -VAS 5051B-

|                                                                                                                                                                                                                                                                                                              |             |                                     |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------|-------|
| Vehicle self-diagnosis<br><small>Protected by copyright. Copying for private or commercial purposes without the written permission of Audi AG 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.</small> |             | 17 - Dash panel insert<br>8D0919880 |       |
| Functional test                                                                                                                                                                                                                                                                                              |             | B5 DASH PANEL INSERT UN4 D15        |       |
| Release (PIN)                                                                                                                                                                                                                                                                                                |             | Code 42<br>Workshop code 12345      |       |
| Information                                                                                                                                                                                                                                                                                                  |             |                                     |       |
| The PIN is used to release<br>key matching or adaption in the vehicle system<br>The PIN obtained for the<br>immobilizer identification number<br>is only valid on the day it is requested                                                                                                                    |             | <b>Finished</b>                     |       |
| ←                                                                                                                                                                                                                                                                                                            | Measurement | Go to                               | Print |
|                                                                                                                                                                                                                                                                                                              |             | Help                                |       |

- Touch the **Finished** key.

Display on -VAS 5051B-

|                                                                                                   |             |                                     |       |
|---------------------------------------------------------------------------------------------------|-------------|-------------------------------------|-------|
| Vehicle self-diagnosis                                                                            |             | 17 - Dash panel insert<br>8D0919880 |       |
| Functional test                                                                                   |             | B5 DASH PANEL INSERT UN4 D15        |       |
| Release (PIN)                                                                                     |             | Code 42<br>Workshop code 12345      |       |
| PIN entry                                                                                         |             |                                     |       |
| Enter PIN obtained with the displayed<br>keypad.<br>Confirm PIN entered with Continue key (⏏ key) |             |                                     |       |
| Press here to display<br>entry keypad                                                             |             |                                     |       |
| ←                                                                                                 | Measurement | Go to                               | Print |
|                                                                                                   |             | Help                                | →     |

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

Display on -VAS 5051B-

|                        |             |   |   |                                     |       |      |   |
|------------------------|-------------|---|---|-------------------------------------|-------|------|---|
| Vehicle self-diagnosis |             |   |   | 17 - Dash panel insert<br>8D0919880 |       |      |   |
| Functional test        |             |   |   | B5 DASH PANEL INSERT UN4 D15        |       |      |   |
| Release (PIN)          |             |   |   | Code 42<br>Workshop code 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     |      |   |
|                        |             |   |   |                                     |       |      |   |
| ←                      | Measurement |   |   | Go to                               | Print | Help | → |

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

Display on -VAS 5051B-

|                                                                                                                                                                                                                                                                                                  |             |                                     |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------|------|
| Vehicle self-diagnosis                                                                                                                                                                                                                                                                           |             | 17 - Dash panel insert<br>8D0919880 |      |
| Functional test                                                                                                                                                                                                                                                                                  |             | B5 DASH PANEL INSERT UN4 D15        |      |
| Release (PIN)                                                                                                                                                                                                                                                                                    |             | Code 42<br>Workshop code 12345      |      |
| <div style="display: flex; justify-content: space-between; align-items: center;"> <div> <b>PIN entry</b><br/> PIN XXXXXXX entered correct? </div> <div> <input type="button" value="Yes"/><br/><br/> <input type="button" value="No"/> </div> </div>                                             |             |                                     |      |
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| ←                                                                                                                                                                                                                                                                                                | Measurement |                                     |      |
|                                                                                                                                                                                                                                                                                                  | Go to       | Print                               | Help |

- Check entry and then touch  key.
- Incorrect PIN entry can be corrected by touching  key.

Display on -VAS 5051B-

|                                                                                                                                                                                                                                                 |             |                                     |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------|------|
| Vehicle self-diagnosis                                                                                                                                                                                                                          |             | 17 - Dash panel insert<br>8D0919880 |      |
| Functional test                                                                                                                                                                                                                                 |             | B5 DASH PANEL INSERT UN4 D15        |      |
| Release (PIN)                                                                                                                                                                                                                                   |             | Code 42<br>Workshop code 12345      |      |
| <div style="display: flex; justify-content: space-between; align-items: center;"> <div> <b>Transfer PIN</b><br/> PIN valid!<br/> Key matching/adaption can<br/> be performed </div> <div> <input type="button" value="Finished"/> </div> </div> |             |                                     |      |
| ←                                                                                                                                                                                                                                               | Measurement |                                     |      |
|                                                                                                                                                                                                                                                 | Go to       | Print                               | Help |

- Touch the **Finished** key.

Once the release (PIN) procedure has been successfully completed, the immobilizer warning lamp -K117- lights constantly and the immobilizer is released as follows:

- ◆ For as long as the engine runs and the ignition key is left in position.
- ◆ For 45 minutes, as long as the ignition key is left in position (engine not running).
- ◆ For 10 minutes if the ignition key is removed.

Display on -VAS 5051B- :

- From list -1-, select function “06 - End of output”.
- Switch off ignition and then start engine.



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## 5 Immobilizer self-diagnosis - "Immobilizer II" (as of week 27/1999)



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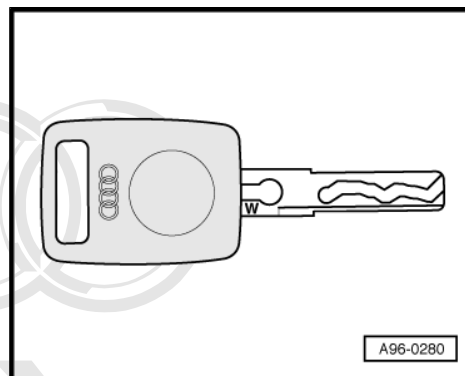
## 5.1 General information

With the "immobilizer II", the keys are marked with a -W-.

### Function

Components of the electronic immobilizer:

- 1 - Immobilizer control unit
  - 2 - Immobilizer warning lamp -K115- in dash panel insert
  - 3 - Reader coil at ignition lock
  - 4 - Matched ignition keys with electronics (transponder)
- ◆ The immobilizer control unit is integrated into the dash panel insert, i.e. the dash panel insert must be replaced if the control unit is defective.
  - ◆ The immobilizer is a system designed to release/disable the engine control unit by way of the W-wire.
  - ◆ The transponder code consists of a fixed code and an additional variable code. This changes each time the engine is started and thus prevents copying of the transponder.
  - ◆ There is a different arithmetic rule for the variable code of each immobilizer. This remains the same over the entire service life. When matching the vehicle keys, the immobilizer writes this arithmetic rule into the key transponder and at the same time learns the corresponding transponder fixed code.
  - ◆ The fixed code identifies each individual key, thus making it possible to disable a lost key. Each time the ignition is switched on, the immobilizer reader coil reads out the transponder fixed code of the key and then the variable code and checks whether the key concerned is authorised to start the vehicle.
  - ◆ The immobilizer warning lamp -K115- lights briefly (max. 3 seconds) and then goes out if an authorised vehicle key is being used.
  - ◆ If use is made of an unauthorised vehicle key or if there is a fault in the system, the immobilizer warning lamp -K115- flashes continuously with the ignition switched on.



### Note

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

### Immobilizer PIN

- ◆ For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits. It must be obtained by way of the appropriate regional sales centre/importer on the basis of the 14-digit immobilizer/engine control unit identification number  
⇒ [page 123](#).
- ◆ The PIN can only be used in combination with the vehicle diagnostic, testing and information system -VAS 5051B-.

 **Note**

- ◆ Check the data of your vehicle diagnostic, testing and information system -VAS 5051B- with regard to the sales centre/ importer and workshop code, as well as date and time.
- ◆ Immobilizer adaption cannot be implemented if the data are incorrect.

**Notes on using/matching vehicle keys**

- ◆ The engine will only start if use is made of an authorised vehicle key, i.e. a vehicle key matched to the immobilizer.
- ◆ The matching procedure ⇒ [page 124](#) involves matching all vehicle keys, including spare and emergency keys, to the immobilizer.
- ◆ If new or additional vehicle keys are required, all vehicle keys must again be matched to the immobilizer.
- ◆ If for some reason matching cannot be performed for all vehicle keys, e.g. due to loss of keys on a journey, customers are to be informed that subsequent matching of all vehicle keys is required.
- ◆ Re-matching of the remaining vehicle keys is particularly important if a key has been lost, as the lost vehicle key is then no longer authorised to start the vehicle.

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## 5.2 Starting immobilizer self-diagnosis

**Sequence of operations**

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected ⇒ [page 1](#)
- Ignition on

Display on -VAS 5051B- :

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

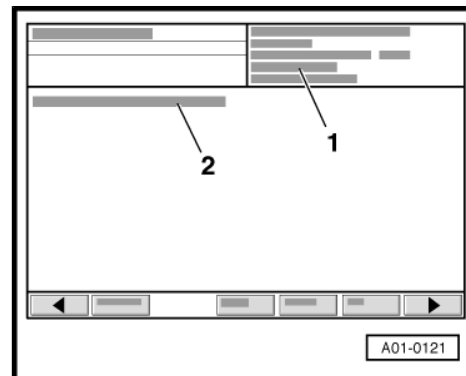
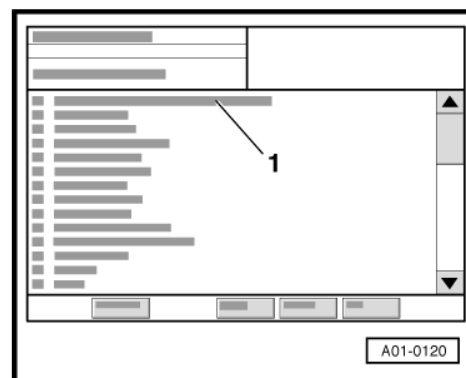
 **Note**

*As the immobilizer is integrated into the dash panel insert, vehicle system “17 - Dash panel insert” must be used.*

- Wait until next display appears.

Display on -VAS 5051B- :

- 1 - Control unit identification of dash panel insert ⇒ [page 5](#) (up to Model Year 1999) or ⇒ [page 42](#) (as of Model Year 2000)
- 2 - Control unit identification of immobilizer



**Immobilizer control unit identification (example)**

|                                          |                                               |
|------------------------------------------|-----------------------------------------------|
| Immobilizer ident. no.<br>AUZ5Z0X1162041 | 14-position immobilizer identification number |
|------------------------------------------|-----------------------------------------------|

- Touch key.

Display on -VAS 5051B- :

**1 - Selection of functions:**

| Functions                       | Page                                                       |
|---------------------------------|------------------------------------------------------------|
| 02 Interrogating fault memory   | ⇒ <a href="#">page 116</a>                                 |
| 05 Erasing fault memory         | ⇒ <a href="#">page 119</a>                                 |
| 06 End of output                | ⇒ <a href="#">page 120</a>                                 |
| 08 Reading measured value block | ⇒ <a href="#">page 121</a>                                 |
| 10 Adaption                     | ⇒ <a href="#">page 123</a>                                 |
| Release (PIN)                   | ⇒ <a href="#">page 124</a> ,<br>⇒ <a href="#">page 129</a> |

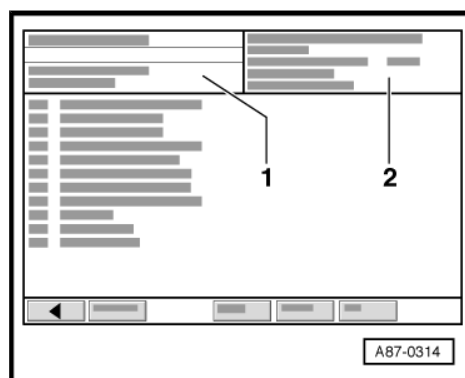
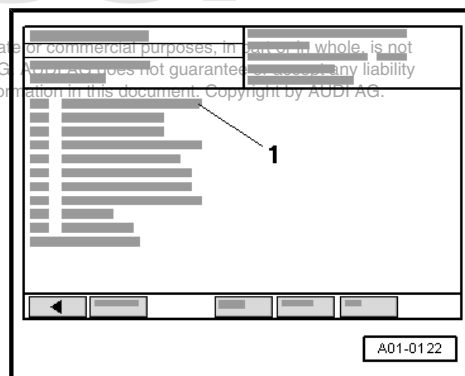
All other functions displayed cannot be selected or can be ignored in this case.

**Fault messages on -VAS 5051B-**

If a fault message appears on the display, refer to ⇒ Operating instructions of vehicle diagnostic, testing and information system -VAS 5051B- .

If display zone -1- shows the fault message “Vehicle system not available”:

- Check:
  - ◆ Power supply to diagnostic connection ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
  - ◆ Wiring between diagnostic connection and dash panel insert ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

**5.3 Interrogating fault memory****Note**

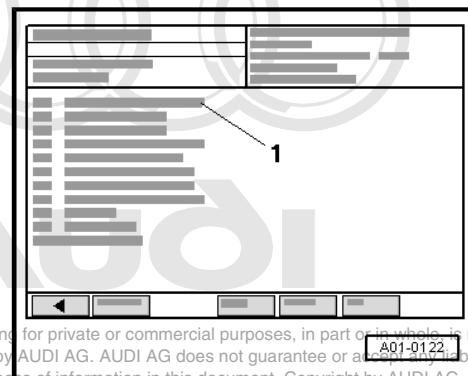
*The fault information displayed is not constantly updated, but rather only on starting self-diagnosis or using function “05 - Erasing fault memory”.*

### Sequence of operations

- Start immobilizer self-diagnosis ⇒ [page 115](#) .

Display on -VAS 5051B- :

- From list -1-, select function “02 - Interrogating fault memory”.



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Display on -VAS 5051B- :

- |                             |                                               |
|-----------------------------|-----------------------------------------------|
| -1- Content of fault memory | 0 faults detected<br>or<br>X faults detected  |
| -2- Fault                   | Fault code<br>Fault location<br>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 5051B- :

- Eliminate fault(s) in line with fault tables ⇒ [page 118](#) .
- From list -1-, select function “02 - Interrogating fault memory” again and erase fault memory ⇒ [page 119](#) .
- Select function “06 - End of output” from list ⇒ [page 120](#) .

### B - No fault detected:

- Terminate function “02 - Interrogating fault memory” by touching  key.
- From list -1-, select function “06 - End of output” ⇒ [page 120](#) .



## 5.4 Fault tables



### Note

- ◆ *Faults occurring in monitored sensors or components are stored in the fault memory together with an indication of the type of fault.*
- ◆ *The fault tables are arranged according to the 5-digit fault codes in the left-hand column.*
- ◆ *Faults relating to the dash panel insert may also be displayed, as the immobilizer is integrated into the dash panel insert.*
- ◆ *All static and sporadic faults are stored in the fault memory: A fault is identified as being static if it persists for at least 2 seconds. If a fault is then no longer present, it is stored as being "sporadic". "Sporadic" additionally appears on the display.*
- ◆ *After switching on the ignition, all faults present are set to "sporadic" and only stored as being static if they are still present after checking.*
- ◆ *Sporadic faults which do not re-occur in the course of 50 driving cycles (ignition switched on for at least 5 minutes, vehicle speed greater than 30 km/h) are erased.*
- ◆ *Components indicated as being faulty by the -VAS 5051B- are not to be immediately replaced, but rather: Start by using the current flow diagram to check the wiring and connectors to these components. The earth connections are also to be checked on the basis of the current flow diagram. This is particularly important in the case of "sporadic" faults.*
- ◆ *On completion of repair work, interrogate fault memory again and erase.*
- ◆ *After performing repairs, additionally interrogate the fault memory of the engine control unit and erase the entry "Engine control unit disabled". Check and if necessary eliminate any other faults stored.*

| Output on -VAS 5051B-                  | Possible cause of trouble                                                | Remedy                                                                                                                                                  |
|----------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01128<br>Immobilizer reading coil -D2- | ◆ Connector not plugged in or fault in reading coil/wiring               | – Check (visually inspect) connector and reading coil/wiring and replace reading coil if necessary ⇒ Rep. Gr. 96                                        |
|                                        | ◆ Immobilizer control unit (integrated into dash panel insert) defective | – Erase fault memory ⇒ <a href="#">page 119</a> and interrogate again ⇒ <a href="#">page 116</a> , replace dash panel insert if necessary ⇒ Rep. Gr. 90 |

| Output on -VAS 5051B-            | Possible cause of trouble                                            | Remedy                                                                                                           |
|----------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 01176<br>Key<br>◆ Signal too low | ◆ Fault in reading coil or wiring (contact resistance/loose contact) | – Check (visually inspect) reading coil/wiring and connector and replace reading coil if necessary ⇒ Rep. Gr. 96 |
|                                  | ◆ No or defective electronics in ignition key (transponder)          | – Replace ignition key, re-match all ignition keys and check function ⇒ <a href="#">page 124</a>                 |
|                                  | ◆ Not authorised                                                     | – Re-match all ignition keys and check function ⇒ <a href="#">page 124</a>                                       |

| Output on -VAS 5051B-                          | Possible cause of trouble                               | Remedy                                                       |
|------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------|
| 01177<br>Engine control unit<br>Not authorised | ◆ Engine control unit not matched                       | – Match engine control unit<br>⇒ <a href="#">page 129</a>    |
|                                                | ◆ Open circuit or short to earth/<br>positive in W-wire | – Use current flow diagram to<br>check wiring and connectors |

| Output on -VAS 5051B-           | Possible cause of trouble      | Remedy                                                                        |
|---------------------------------|--------------------------------|-------------------------------------------------------------------------------|
| 01179<br>Key programming not OK | ◆ Ignition key matching not OK | – Re-match all ignition keys and<br>check function ⇒ <a href="#">page 124</a> |

| Output on -VAS 5051B-           | Possible cause of trouble     | Remedy                                       |
|---------------------------------|-------------------------------|----------------------------------------------|
| 65535<br>Control unit defective | ◆ Dash panel insert defective | – Replace dash panel insert ⇒<br>Rep. Gr. 90 |

## 5.5 Erasing fault memory



### Note

- ◆ *If the fault memory cannot be erased, interrogate it again and rectify fault.*
- ◆ *After erasing fault memory, faults are not updated until ignition has been switched off and on again.*

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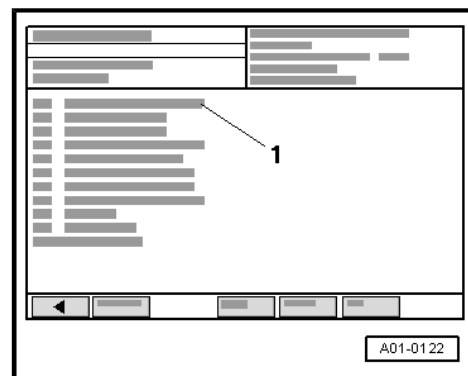
### Sequence of operations

- Fault memory interrogated ⇒ [page 116](#)
- All faults eliminated

After fault memory interrogation:

Display on -VAS 5051B- :

- From list -1-, select function “05 - Erasing fault memory”.



Display on -VAS 5051B- :

- 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 indicates failure to comply exactly with the sequence of operations. The fault memory can only be erased after it has been interrogated.*

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

- Touch **OK** key in display -2-.
- Interrogate fault memory again on completion of repair work.



### Note

*This erases faults stored during fault rectification, e.g. as a result of unplugging connectors.*

- Terminate function "05 - Erasing fault memory" by touching **ESC** key.

## 5.6 End of output

### Sequence of operations

Display on -VAS 5051B- :

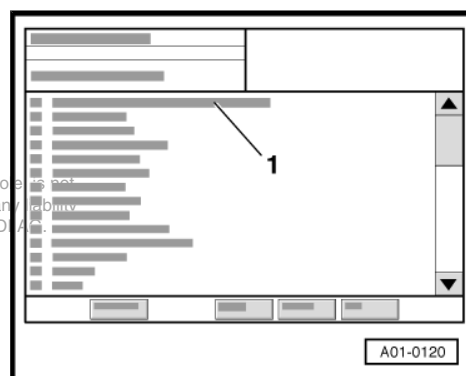
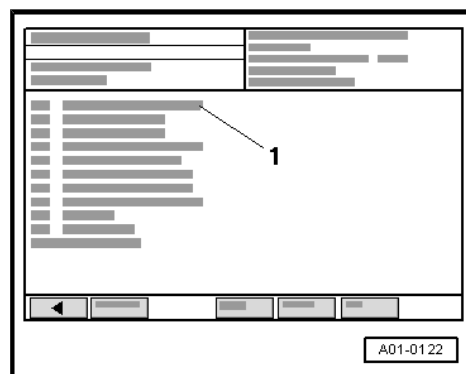
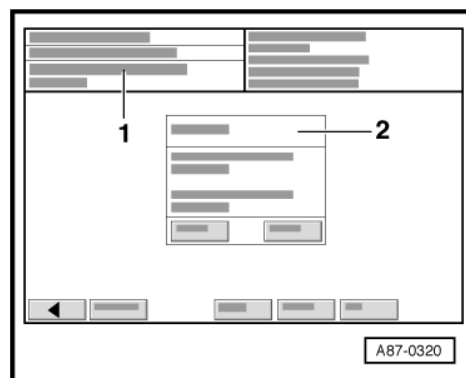
- From list -1-, select function "06 - End of output".



Display on -VAS 5051B- :

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

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## 5.7 Reading measured value block

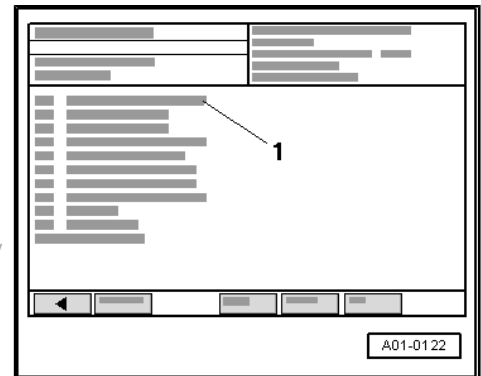
### Sequence of operations

- Start immobilizer self-diagnosis ⇒ [page 115](#).

Display on -VAS 5051B- :

- From list -1-, select function “08 - Reading measured value block”.

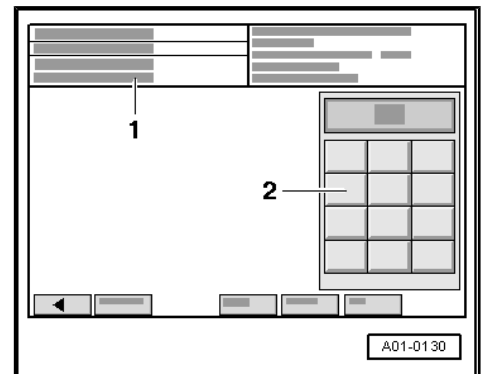
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Display on -VAS 5051B- :

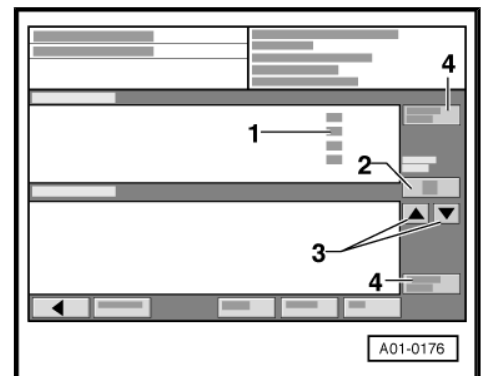
1 - Enter display group

- Use keypad -2- to enter the desired “display group number” ⇒ [page 121](#) and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Display zones 1 ... 4. If a display zone is not assigned, there is no display on this line.
  - 2 - The display group selected is shown here
  - 3 - Touching these keys permits switching to a different display group.
  - 4 - Touching these keys permits switching to a different function (e.g. from “Reading measured value block” to “Basic setting” and vice versa).
- Terminate function “08 - Reading measured value block” by touching  key.



### List of display groups

| Display group 020 |    |                                                |
|-------------------|----|------------------------------------------------|
| Display zones     |    | Explanatory notes                              |
| 1                 | AU | 1st and 2nd positions of identification number |
| 2                 | Z5 | 3rd and 4th positions of identification number |
| 3                 | Z0 | 5th and 6th positions of identification number |
| 4                 | X1 | 7th and 8th positions of identification number |



#### Note

- ◆ Example of 14-position immobilizer identification number:  
AUZ5Z0X1162041
- ◆ This display group is no longer used with newer versions.

| Display group 021 |    |                                                  |
|-------------------|----|--------------------------------------------------|
| Display zones     |    | Explanatory notes                                |
| 1                 | 16 | 9th and 10th positions of identification number  |
| 2                 | 20 | 11th and 12th positions of identification number |
| 3                 | 41 | 13th and 14th positions of identification number |
| 4                 |    | Not used                                         |



### Note

- ◆ Example of 14-position immobilizer identification number:  
AUZ5Z0X1162041
- ◆ This display group is no longer used with newer versions.

| Display group 022 |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |     | Explanatory notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1                 | ... | Starting authorised <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. vehicle key not/incorrectly matched or engine control unit incorrectly encoded/defective</li> </ul>                                                                                                                                                                                                                                                                                                                                      |
| 2                 | ... | Engine control unit responds <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. either engine control unit is in "Run-on mode" or there is a fault in the engine control unit or wiring</li> </ul> <p>Depending on engine control unit, the display is "0 = Engine control unit responds No" for 10 ... 30 seconds after switching off the engine and ignition, i.e. the engine control unit has been released and there are no faults. Start self-diagnosis again to be certain ⇒ <a href="#">page 115</a></p> |
| 3                 | ... | Key status OK <ul style="list-style-type: none"> <li>• 1 = Correct transponder fixed code read (whether authorised or not)</li> <li>• 0 = Fault, i.e. key or coil defective</li> </ul>                                                                                                                                                                                                                                                                                                                                                |
| 4                 | ... | Number of matched keys <ul style="list-style-type: none"> <li>• Max. 8 keys</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| Display group 023 |     |                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |     | Explanatory notes                                                                                                                                                                                                                                                                                                                                |
| 1                 | ... | Variable code authorised <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. variable code not authorised (arithmetic rule for variable code in key is not the same as that in the dash panel insert).</li> </ul>                                                                                                           |
| 2                 | ... | Key status <ul style="list-style-type: none"> <li>• 1 = Transponder in key is interlocked, i.e. arithmetic rule in key can no longer be overwritten. Key can no longer be matched to a different immobilizer system</li> <li>• 0 = Transponder in key not interlocked, i.e. transponder has not yet been matched to dash panel insert</li> </ul> |

| Display group 023 |                   |                                                                                                                                                        |
|-------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     | Explanatory notes |                                                                                                                                                        |
| 3                 | ...               | Fixed code authorised <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. transponder fixed code of key not authorised</li> </ul> |
| 4                 |                   | Not used                                                                                                                                               |

## 5.8 Adaption



### Note

The immobilizer PIN must be obtained before the adaption function can be implemented ⇒ ["5.9 Establishing PIN", page 123](#).

The "Adaption" function can be used to make and store the following changes:

- ◆ Matching of vehicle keys ⇒ [page 124](#).
- ◆ Matching following replacement of engine control unit ⇒ [page 129](#).
- ◆ Matching following replacement of dash panel insert ⇒ [page 129](#).

## 5.9 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 in combination with the vehicle diagnostic, testing and information system -VAS 5051B-.
- ◆ The 7-digit PIN must be obtained by way of the appropriate regional sales centre/importer on the basis of the 14-digit 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 request procedure has been switched to the 7-digit PIN.

## 5.10 Matching of vehicle keys



### Note

- ◆ If new or additional ignition keys are required, they must be matched to the immobilizer.
- ◆ All ignition keys, including those already authorised, must always be re-matched.
- ◆ Re-matching of the remaining vehicle keys is particularly important if a key has been lost, as the lost vehicle key is then no longer authorised to start the vehicle.
- ◆ If it is not possible to match all keys, e.g. during a journey, customers must have this done at a later date at their local Audi dealership.
- ◆ The number of keys already matched is displayed after selecting function "10 - Adaption" in "Channel 21" and in "measured value block 022".
- ◆ Once a key has been matched, it is interlocked and can no longer be matched to a different immobilizer system.

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### Sequence of operations

- All ignition keys available. If there is no old ignition key available  
⇒ "5.11 Procedure in the event of loss of key", page 129 .
- Insert the first key in the ignition lock and switch on the ignition.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis ⇒ page 115 .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.



### 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 5051B- :

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



Display on -VAS 5051B- :

|                        |                                       |
|------------------------|---------------------------------------|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8D0920830   |
| Functional test        | DASH PANEL INSERT+IMMOBILIZER VDO D14 |
| Release (PIN)          | Code 62<br>Workshop code 12345        |

|                                                                                                                                                                                           |             |       |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|------------|
| Information                                                                                                                                                                               |             |       |            |
| The PIN is used to release<br>key matching or adaption in the vehicle system<br>The PIN obtained for the<br>immobilizer identification number<br>is only valid on the day it is requested |             |       | Finished   |
| ←                                                                                                                                                                                         | Measurement | Go to | Print Help |

- Touch the **Finished** key.

Display on -VAS 5051B-

|                                               |                                       |
|-----------------------------------------------|---------------------------------------|
| Vehicle self-diagnosis                        | 17 - Dash panel insert<br>8D0920830   |
| Functional test                               | DASH PANEL INSERT+IMMOBILIZER VDO D14 |
| Release (PIN)                                 | Code 62<br>Workshop code 12345        |
| PIN entry                                     |                                       |
| Enter PIN obtained with the displayed keypad. |                                       |
| Confirm PIN entered with Continue key (↵ key) |                                       |
| Press here to display entry keypad            |                                       |
| ←                                             | Measurement Go to Print Help →        |

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

Display on -VAS 5051B-

|                        |             |       |       |                                       |   |   |   |
|------------------------|-------------|-------|-------|---------------------------------------|---|---|---|
| Vehicle self-diagnosis |             |       |       | 17 - Dash panel insert<br>8D0920830   |   |   |   |
| Functional test        |             |       |       | DASH PANEL INSERT+IMMOBILIZER VDO D14 |   |   |   |
| Release (PIN)          |             |       |       | Code 62<br>Workshop code 12345        |   |   |   |
| 1                      | 2           | 3     | +     | A                                     | B | C | D |
| 4                      | 5           | 6     | -     | E                                     | F | G | H |
| 7                      | 8           | 9     | .     | I                                     | J | K | L |
| C                      | 0           | Q     |       | M                                     | N | O | P |
|                        |             |       |       | Q                                     | R | S | T |
|                        |             |       |       | U                                     | V | W | X |
|                        |             |       |       | Y                                     | Z |   |   |
| ←                      | Measurement | Go to | Print | Help                                  | → |   |   |

- Use the keypad to enter the previously established 7-digit PIN.

- Touch **↵** key.

Display on -VAS 5051B-

|                              |                                       |       |       |      |
|------------------------------|---------------------------------------|-------|-------|------|
| Vehicle self-diagnosis       | 17 - Dash panel insert<br>8D0920830   |       |       |      |
| Functional test              | DASH PANEL INSERT+IMMOBILIZER VDO D14 |       |       |      |
| Release (PIN)                | Code 62<br>Workshop code 12345        |       |       |      |
| PIN entry                    |                                       |       |       |      |
| PIN XXXXXXX entered correct? |                                       |       |       | Yes  |
|                              |                                       |       |       | No   |
| ←                            | Measurement                           | Go to | Print | Help |

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

Display on -VAS 5051B-

|                                                         |                                       |       |       |          |
|---------------------------------------------------------|---------------------------------------|-------|-------|----------|
| Vehicle self-diagnosis                                  | 17 - Dash panel insert<br>8D0920830   |       |       |          |
| Functional test                                         | DASH PANEL INSERT+IMMOBILIZER VDO D14 |       |       |          |
| Release (PIN)                                           | Code 62<br>Workshop code 12345        |       |       |          |
| Transfer PIN                                            |                                       |       |       |          |
| PIN valid!<br>Key matching/adaption can<br>be performed |                                       |       |       | Finished |
| ←                                                       | Measurement                           | Go to | Print | Help     |

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- Touch the **Finished** key.

When this display appears, the immobilizer warning lamp -K115- in the dash panel insert lights and the immobilizer has been released.



### Note

- ◆ Heed the instructions given on the display if a fault message appears.
- ◆ 3 attempts at entering a correct PIN are immediately possible. The next 3 attempts can only be made after waiting at least 10 minutes. To do so, the ignition must be left switched on and function "06 - End of output" must be selected from list -1- to exit from self-diagnosis.
- ◆ The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.



Once immobilizer has been released:

Display on -VAS 5051B- :

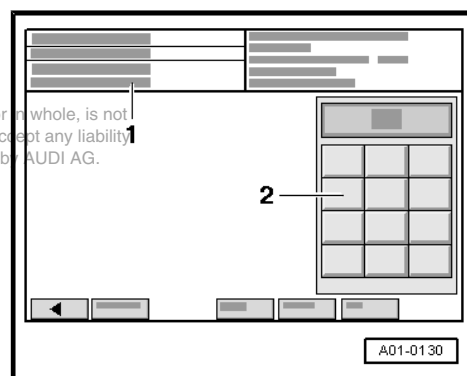
- From list -1- select function “10 - Adaption”.



Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad 2, touch keys   for “Adaption channel 21” and confirm the entry by touching the  key.

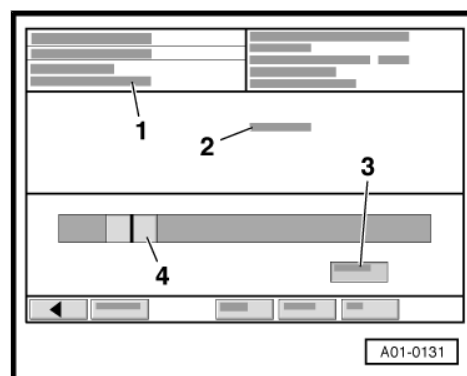


Display on -VAS 5051B- :

1 - Channel 21 reading and testing

2 - New number of keys:

4 - Bar set to current adaption value, e.g. “2”. The display shows the number of ignition keys (in this case “2”) matched to the system.



Display on -VAS 5051B- :

- Enter the number of keys to be matched.

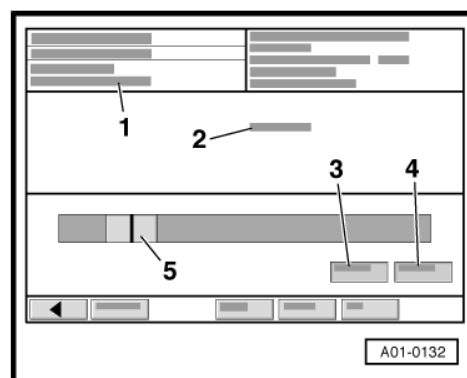
Example: 4 keys including the one in the ignition lock



#### Note

*A maximum of 8 keys can be matched.*

- Move the bar -5- to the right or touch the panel to the right of the bar until the bar is positioned under the number “4” (example).



#### Note

*It is also possible to touch the keypad key -Item 3-, then the key 4 and confirm the entry by touching the Q key.*

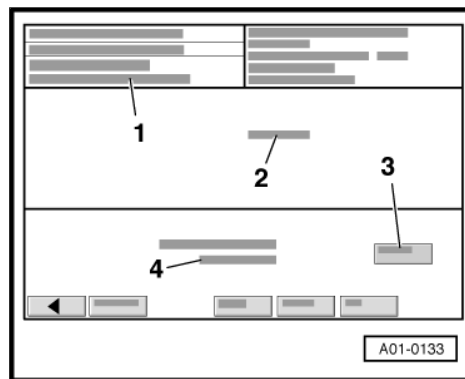
- Touch the Save key -4-.

Display on -VAS 5051B- :

- 1 - Channel 21 reading and testing
  - 2 - New number of keys:
  - 4 - Original value "2" new value "4" (example)
- Confirm the new adaption value by touching the **Accept** key -3-.

Matching is then implemented.

- The matching time per key must not exceed 30 seconds. Otherwise the immobilizer warning lamp -K115- in the dash panel insert starts to flash and the release (PIN) procedure must be repeated in full.

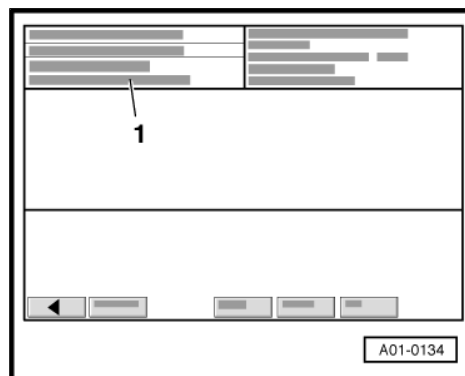


Display on -VAS 5051B- following successful adaption:

- 1 - Channel 21 value "4" stored

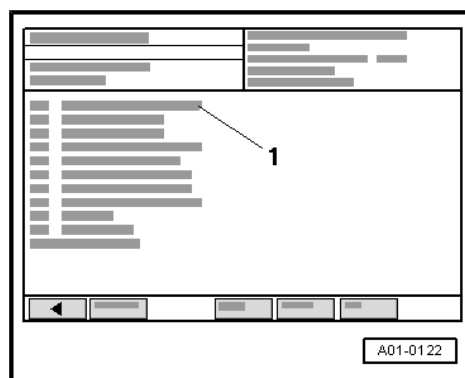
The immobilizer warning lamp -K115- in the dash panel insert goes out; the key in the ignition lock has been matched.

- Terminate function "10 - Adaption" by touching **□** key.



Display on -VAS 5051B- :

- From list -1-, select function "06 - End of output".
- Switch off ignition.
- Insert the next key in the ignition lock and switch on the ignition. The immobilizer warning lamp -K115- lights when the ignition is switched on and goes out after approx. 1 second. This key has now also been matched.
- Repeat the procedure until all keys have been matched. With the last key, the immobilizer warning lamp -K115- goes out approx. 2 seconds after successful matching and a brief confirmation signal is given (warning lamp off for 0.5 seconds, warning lamp on for 0.5 seconds, warning lamp off).
- Interrogate the fault memory on completion of key matching  
⇒ [page 116](#).



If no fault has been stored, the "Key matching" function has been successfully completed.

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- ◆ On reaching the number of keys to be matched.
- ◆ If the ignition is switched on again with an already matched key and left switched on for more than 1 second (fault is stored).
- ◆ If the permitted matching time of 30 seconds per key after switching on the ignition is exceeded (fault is stored).
- ◆ If a fault is stored during the key matching procedure.

## 5.11 Procedure in the event of loss of key

- Make/order a replacement ignition key on the basis of the lock number.
- Match all vehicle keys ⇒ [page 124](#) .
- On vehicles with remote control function, match all keys to the remote control unit ⇒ Body self-diagnosis; Rep. Gr. 01 , “Remote control key matching” function.

## 5.12 Matching following replacement of dash panel insert

The dash panel insert (with integrated immobilizer) is matched to the engine control unit. On replacement, the dash panel insert must be adapted to the engine control unit.

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected ⇒ [page 1](#)
- Insert the old (authorised) ignition key in the ignition lock and switch on the ignition.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis on the new dash panel insert ⇒ [page 115](#) .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.

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### 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](#) .

## 5.13 Matching following replacement of engine control unit

- ◆ The engine control unit is matched to the dash panel insert (with integrated immobilizer). On replacement, the engine control unit must be adapted to the immobilizer.
- ◆ If there is no authorised ignition key available, all keys must be replaced ⇒ [page 129](#) .

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected ⇒ [page 1](#)
- Insert the old (authorised) ignition key in the ignition lock.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis ⇒ [page 115](#) .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.



## 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 5051B- :

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



Display on -VAS 5051B- :

|                                                                                                                                                                                                                |                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vehicle self-diagnosis                                                                                                                                                                                         | 17 - Dash panel insert<br>8D0920830                                                                                                                      |
| Functional test                                                                                                                                                                                                | DASH PANEL INSERT+IMMOBILIZER VDO D14                                                                                                                    |
| Release (PIN)                                                                                                                                                                                                  | Code 62<br>Workshop code 12345                                                                                                                           |
| <p>Information</p> <p>The PIN is used to release key matching or adaption in the vehicle system</p> <p>The PIN obtained for the immobilizer identification number is only valid on the day it is requested</p> |                                                                                                                                                          |
| <input type="button" value="Finished"/>                                                                                                                                                                        |                                                                                                                                                          |
| ←                                                                                                                                                                                                              | <input type="button" value="Measurement"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/> |

- Touch the Finished key.

Display on -VAS 5051B-

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|                                                                                                                                                                                                            |                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vehicle self-diagnosis                                                                                                                                                                                     | 17 - Dash panel insert<br>8D0920830                                                                                                                                                       |
| Functional test                                                                                                                                                                                            | DASH PANEL INSERT+IMMOBILIZER VDO D14                                                                                                                                                     |
| Release (PIN)                                                                                                                                                                                              | Code 62<br>Workshop code 12345                                                                                                                                                            |
| <p>PIN entry</p> <p>Enter PIN obtained with the displayed keypad.</p> <p>Confirm PIN entered with Continue key (<input type="button" value="Continue"/> key)</p> <p>Press here to display entry keypad</p> |                                                                                                                                                                                           |
| ←                                                                                                                                                                                                          | <input type="button" value="Measurement"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/> <input type="button" value="→"/> |

- Touch key Press here to display entry keypad.

Display on -VAS 5051B-

|                        |             |   |   |                                       |       |      |   |
|------------------------|-------------|---|---|---------------------------------------|-------|------|---|
| Vehicle self-diagnosis |             |   |   | 17 - Dash panel insert<br>8D0920830   |       |      |   |
| Functional test        |             |   |   | DASH PANEL INSERT+IMMOBILIZER VDO D14 |       |      |   |
| Release (PIN)          |             |   |   | Code 62<br>Workshop code 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     |      |   |
|                        |             |   |   |                                       |       |      |   |
| ←                      | Measurement |   |   | Go to                                 | Print | Help | → |

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

Display on -VAS 5051B-

|                              |             |                                                                             |      |
|------------------------------|-------------|-----------------------------------------------------------------------------|------|
| Vehicle self-diagnosis       |             | 17 - Dash panel insert<br>8D0920830                                         |      |
| Functional test              |             | DASH PANEL INSERT+IMMOBILIZER VDO D14                                       |      |
| Release (PIN)                |             | Code 62<br>Workshop code 12345                                              |      |
| PIN entry                    |             |                                                                             |      |
| PIN XXXXXXX entered correct? |             | <input type="button" value="Yes"/><br><br><input type="button" value="No"/> |      |
|                              |             |                                                                             |      |
| ←                            | Measurement |                                                                             |      |
|                              | Go to       | Print                                                                       | Help |

- Check entry and then touch  key.
- Incorrect PIN entry can be corrected by touching  key.

Display on -VAS 5051B-

|                                                         |             |                                         |      |
|---------------------------------------------------------|-------------|-----------------------------------------|------|
| Vehicle self-diagnosis                                  |             | 17 - Dash panel insert<br>8D0920830     |      |
| Functional test                                         |             | DASH PANEL INSERT+IMMOBILIZER VDO D14   |      |
| Release (PIN)                                           |             | Code 62<br>Workshop code 12345          |      |
| Transfer PIN                                            |             |                                         |      |
| PIN valid!<br>Key matching/adaption can<br>be performed |             | <input type="button" value="Finished"/> |      |
|                                                         |             |                                         |      |
| ←                                                       | Measurement |                                         |      |
|                                                         | Go to       | Print                                   | Help |

- Touch the **Finished** key.

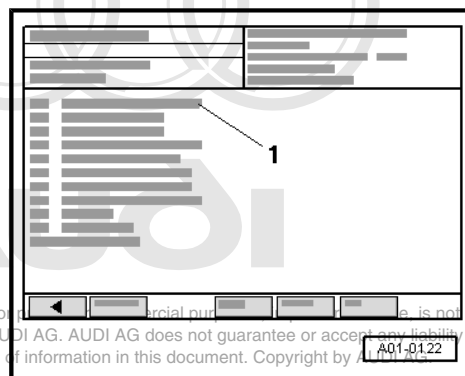
When this display appears, the immobilizer warning lamp -K115- in the dash panel insert lights and the immobilizer has been released.



### Note

- ◆ Heed the instructions given on the display if a fault message appears.
- ◆ 3 attempts at entering a correct PIN are immediately possible. The next 3 attempts can only be made after waiting at least 10 minutes. To do so, the ignition must be left switched on and function "06 - End of output" must be selected from list -1- to exit from self-diagnosis.
- ◆ The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.

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Once immobilizer has been released:

Display on -VAS 5051B- :

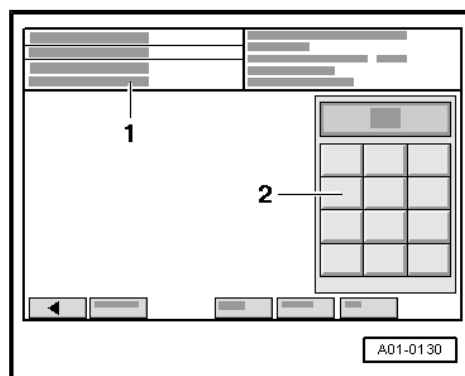
- From list -1- select function "10 - Adaption".



Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch key **00** for "Adaption channel 00" and confirm the entry by touching the **Q** key.



Display on -VAS 5051B- :

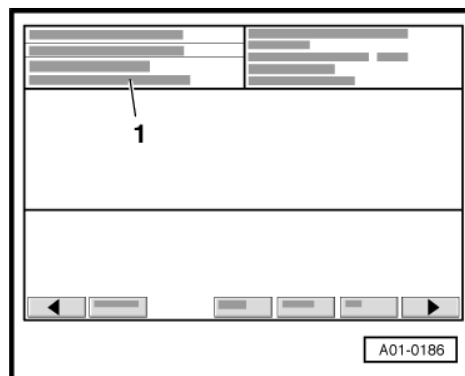
1 - Channel 0 Erase adaption values?

- Touch **Y** key.

Display on -VAS 5051B- :

1 - Channel 0 Adaption values erased

The engine control unit identifier is stored in the immobilizer and the engine can be started.



## 5.14 Emergency starting function with - VAS 5051B-

The emergency starting function can be used to release a vehicle with disabled immobilizer to drive it to the nearest Audi dealership.

### Sequence of operations

- The customer must furnish proof of authorisation to use the vehicle or ownership by showing the vehicle documents and personal identification.
- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Establish the immobilizer identification number by starting immobilizer self-diagnosis ⇒ [page 115](#).
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.

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### 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 5051B- :

- From list -1- select function “Release (PIN)”.



Display on -VAS 5051B- :

|                                                                                                                                                                                                        |                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vehicle self-diagnosis                                                                                                                                                                                 | 17 - Dash panel insert<br>8D0920830                                                                                                                      |
| Functional test                                                                                                                                                                                        | DASH PANEL INSERT+IMMOBILIZER VDO D14                                                                                                                    |
| Release (PIN)                                                                                                                                                                                          | Code 62<br>Workshop code 12345                                                                                                                           |
| <b>Information</b><br>The PIN is used to release key matching or adaption in the vehicle system<br>The PIN obtained for the immobilizer identification number is only valid on the day it is requested |                                                                                                                                                          |
| <div style="text-align: right;"> <input type="button" value="Finished"/> </div>                                                                                                                        |                                                                                                                                                          |
| ←                                                                                                                                                                                                      | <input type="button" value="Measurement"/> <input type="button" value="Go to"/> <input type="button" value="Print"/> <input type="button" value="Help"/> |

- Touch the Finished key.

Display on -VAS 5051B-



|                                                                                                                                |                                       |  |       |       |                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--|-------|-------|------------------------------------------------------------------------------------------|
| Vehicle self-diagnosis                                                                                                         | 17 - Dash panel insert<br>8D0920830   |  |       |       |                                                                                          |
| Functional test                                                                                                                | DASH PANEL INSERT+IMMOBILIZER VDO D14 |  |       |       |                                                                                          |
| Release (PIN)                                                                                                                  | Code 62<br>Workshop code 12345        |  |       |       |                                                                                          |
| PIN entry                                                                                                                      |                                       |  |       |       |                                                                                          |
| Enter PIN obtained with the displayed keypad.                                                                                  |                                       |  |       |       |                                                                                          |
| Confirm PIN entered with Continue key (  key) |                                       |  |       |       |                                                                                          |
| Press here to display entry keypad                                                                                             |                                       |  |       |       |                                                                                          |
|                                                                                                                                |                                       |  |       |       |                                                                                          |
|                                               | Measurement                           |  | Go to | Print | Help  |

– Touch key Press here to display entry keypad.

Display on -VAS 5051B-

|                                                                                     |             |   |       |                                       |      |                                                                                       |   |
|-------------------------------------------------------------------------------------|-------------|---|-------|---------------------------------------|------|---------------------------------------------------------------------------------------|---|
| Vehicle self-diagnosis                                                              |             |   |       | 17 - Dash panel insert<br>8D0920830   |      |                                                                                       |   |
| Functional test                                                                     |             |   |       | DASH PANEL INSERT+IMMOBILIZER VDO D14 |      |                                                                                       |   |
| Release (PIN)                                                                       |             |   |       | Code 62<br>Workshop code 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    |                                                                                       |   |
|                                                                                     |             |   |       |                                       |      |                                                                                       |   |
|  | Measurement |   | Go to | Print                                 | Help |  |   |

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– Use the keypad to enter the **previously established 7-digit PIN**.

– Touch  key.

Display on -VAS 5051B-

|                                                                                     |             |                                       |       |
|-------------------------------------------------------------------------------------|-------------|---------------------------------------|-------|
| Vehicle self-diagnosis                                                              |             | 17 - Dash panel insert<br>8D0920830   |       |
| Functional test                                                                     |             | DASH PANEL INSERT+IMMOBILIZER VDO D14 |       |
| Release (PIN)                                                                       |             | Code 62<br>Workshop code 12345        |       |
| PIN entry                                                                           |             |                                       |       |
| PIN XXXXXXX entered correct?                                                        |             | <input type="button" value="Yes"/>    |       |
|                                                                                     |             | <input type="button" value="No"/>     |       |
|                                                                                     |             |                                       |       |
|  | Measurement | Go to                                 | Print |
|                                                                                     |             | Help                                  |       |

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

Display on -VAS 5051B-

|                                           |                                       |                 |       |
|-------------------------------------------|---------------------------------------|-----------------|-------|
| Vehicle self-diagnosis                    | 17 - Dash panel insert<br>8D0920830   |                 |       |
| Functional test                           | DASH PANEL INSERT+IMMOBILIZER VDO D14 |                 |       |
| Release (PIN)                             | Code 62<br>Workshop code 12345        |                 |       |
| <b>Transfer PIN</b>                       |                                       |                 |       |
| PIN valid!                                |                                       | <b>Finished</b> |       |
| Key matching/adaption can<br>be performed |                                       |                 |       |
| ←                                         | Measurement                           | Go to           | Print |
|                                           |                                       | Help            |       |

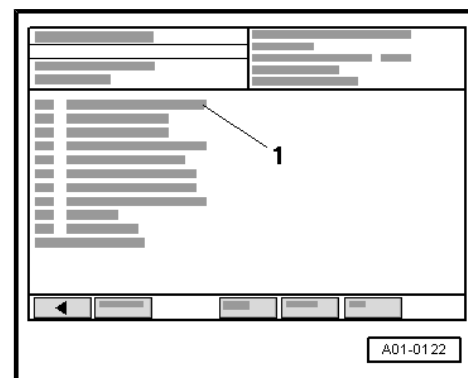
- Touch the **Finished** key.

Once the release (PIN) procedure has been successfully completed, the fault lamp lights constantly and the immobilizer is released as follows:

- ◆ For as long as the engine runs and the ignition key is left in position.
- ◆ For 45 minutes, as long as the ignition key is left in position (engine not running).
- ◆ For 10 minutes if the ignition key is removed.

Display on -VAS 5051B- :

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



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## 6 Immobilizer self-diagnosis - "Immobilizer III" as of week 18/2000



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## 6.1 General information

With the "immobilizer III", the keys are marked with a -W-.

As with the "immobilizer II", the code is made up of a fixed code and a variable code component.

### Function

Components of the "immobilizer III":

- 1 - Matched immobilizer control unit
  - 2 - Immobilizer warning lamp -K115- in dash panel insert
  - 3 - Reader coil at ignition lock
  - 4 - Matched engine control unit
  - 5 - Matched ignition keys with electronics (transponder)
- ◆ The electronic immobilizer control unit is integrated into the dash panel insert, i.e. the dash panel insert must be replaced if the control unit is defective.
  - ◆ The immobilizer is a system designed to release/disable the engine control unit by way of the drive system data bus.
  - ◆ The transponder code consists of a fixed code and a variable code. This changes each time the engine is started and thus prevents copying of the transponder.
  - ◆ There is a different arithmetic rule for the variable code of each immobilizer. This remains the same over the entire service life. When matching the vehicle keys, the immobilizer writes this arithmetic rule into the key transponder and at the same time learns the corresponding transponder fixed code.
  - ◆ The fixed code identifies each individual key, thus making it possible to disable a lost key. Each time the ignition is switched on, the immobilizer reader coil reads out the transponder fixed code of the key and then the variable code and checks whether the key concerned is authorised to start the vehicle.
  - ◆ The immobilizer warning lamp -K115- lights briefly (max. 3 seconds) and then goes out if an authorised vehicle key is being used.
  - ◆ If use is made of an unauthorised vehicle key or if there is a fault in the system, the immobilizer warning lamp -K115- flashes continuously with the ignition switched on.

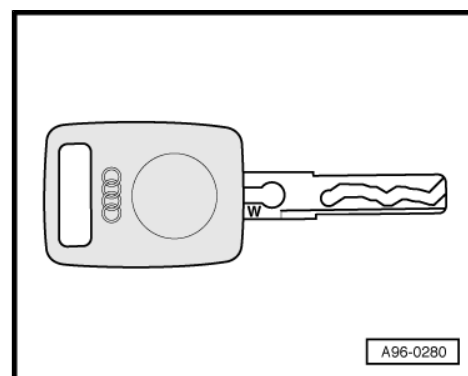


### Note

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

### Immobilizer PIN

- ◆ For security reasons, the immobilizer PIN is encoded. The encoded number (PIN = Personal Identification Number) is made up of 7 digits. It must be obtained by way of the appropriate regional sales centre/importer on the basis of the 14-digit immobilizer/engine control unit identification number  
⇒ [page 146](#).
- ◆ The PIN can only be used in combination with the vehicle diagnostic, testing and information system -VAS 5051B-.





## Note

- ◆ Check the data of your vehicle diagnostic, testing and information system -VAS 5051B- with regard to the sales centre/importer and workshop code, as well as date and time.
- ◆ Immobilizer adaption cannot be implemented if the data are incorrect.

## Notes on using/matching vehicle keys

- ◆ The engine will only start if use is made of an authorised vehicle key, i.e. a vehicle key matched to the immobilizer.
- ◆ The matching procedure ⇒ [page 147](#) involves matching all vehicle keys, including spare and emergency keys, to the immobilizer.
- ◆ If new or additional vehicle keys are required, all vehicle keys must again be matched to the immobilizer.
- ◆ If for some reason matching cannot be performed for all vehicle keys, e.g. due to loss of keys on a journey, customers are to be informed that subsequent matching of all vehicle keys is required.
- ◆ Re-matching of the remaining vehicle keys is particularly important if a key has been lost, as the lost vehicle key is then no longer authorised to start the vehicle.

## 6.2 Starting immobilizer self-diagnosis

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected ⇒ [page 1](#)
- Ignition on

Display on -VAS 5051B- :

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



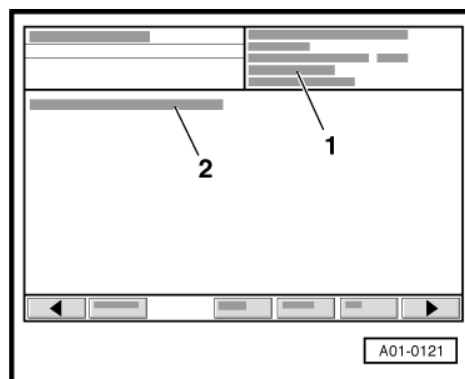
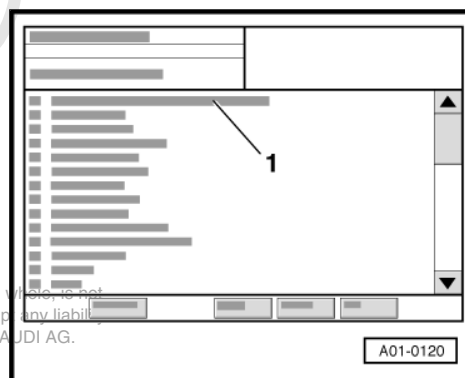
## Note

*As the immobilizer is integrated into the dash panel insert, vehicle system “17 - Dash panel insert” must be used.*

- Wait until next display appears.

Display on -VAS 5051B- :

- 1 - Control unit identification of dash panel insert ⇒ [page 42](#)
- 2 - Control unit identification of immobilizer



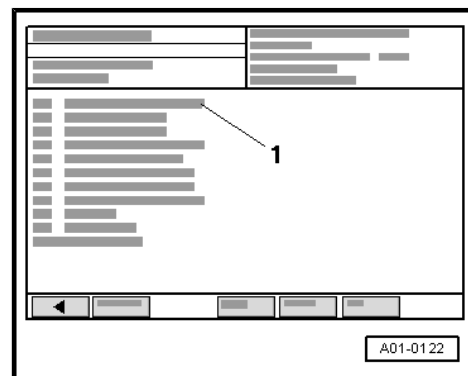
| Immobilizer control unit identification (example) |                                                                                                                |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| WAUZZZ8DZYA004321                                 | 17-position vehicle ident. no. (chassis number) (display as of immobilizer III<br>⇒ <a href="#">page 138</a> ) |
| AUZ7Z0X1137197                                    | 14-position immobilizer identification number                                                                  |

– Touch  key.

Display on -VAS 5051B- :

1 - Selection of functions:

| Functions                       | Page                                                       |
|---------------------------------|------------------------------------------------------------|
| 02 Interrogating fault memory   | ⇒ <a href="#">page 139</a>                                 |
| 05 Erasing fault memory         | ⇒ <a href="#">page 142</a>                                 |
| 06 End of output                | ⇒ <a href="#">page 143</a>                                 |
| 08 Reading measured value block | ⇒ <a href="#">page 144</a>                                 |
| 10 Adaption                     | ⇒ <a href="#">page 146</a>                                 |
| Vehicle ident. number transfer  | ⇒ <a href="#">page 161</a>                                 |
| Release (PIN)                   | ⇒ <a href="#">page 147</a>                                 |
| Channel 50 adaption (PIN)       | ⇒ <a href="#">page 152</a> ,<br>⇒ <a href="#">page 157</a> |



All other functions displayed cannot be selected or can be ignored in this case.

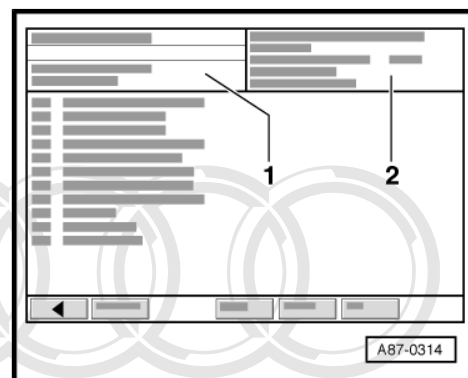
#### Fault messages on -VAS 5051B-

If a fault message appears on the display, refer to ⇒ Operating instructions of vehicle diagnostic, testing and information system -VAS 5051B- .

If display zone -1- shows the fault message “Vehicle system not available”:

– Check:

- ◆ Power supply to diagnostic connection ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ◆ Wiring between diagnostic connection and dash panel insert ⇒ Current flow diagrams, Electrical fault finding and Fitting locations



## 6.3 Interrogating fault memory



Note

*The fault information displayed is not constantly updated, but rather only on starting self-diagnosis or using function “05 Erasing fault memory”.*

## Sequence of operations

- Start immobilizer self-diagnosis ⇒ [page 138](#) .

Display on -VAS 5051B- :

- From list -1-, select function “02 - Interrogating fault memory”.

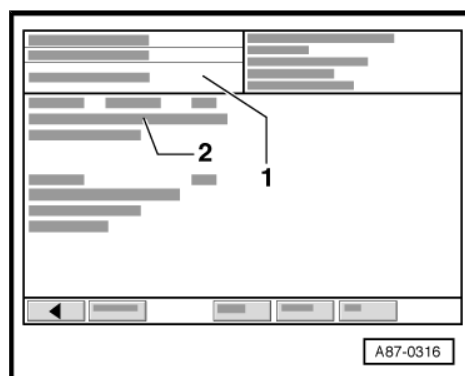


Display on -VAS 5051B- :

- |                             |                                               |
|-----------------------------|-----------------------------------------------|
| -1- Content of fault memory | 0 faults detected<br>or<br>X faults detected  |
| -2- Fault                   | Fault code<br>Fault location<br>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 5051B- :

- Eliminate fault(s) in line with fault tables ⇒ [page 141](#) .
- From list -1-, select function “02 - Interrogating fault memory” again and erase fault memory ⇒ [page 142](#) .
- Select function “06 - End of output” from list ⇒ [page 143](#) .

### B - No fault detected:

- Terminate function “02 - Interrogating fault memory” by touching  key.
- From list -1-, select function “06 - End of output” ⇒ [page 143](#) .



## 6.4 Fault tables



### Note

- ◆ *Faults occurring in monitored sensors or components are stored in the fault memory together with an indication of the type of fault.*
- ◆ *The fault tables are arranged according to the 5-digit fault codes in the left-hand column.*
- ◆ *Faults relating to the dash panel insert may also be displayed, as the immobilizer is integrated into the dash panel insert.*
- ◆ *All static and sporadic faults are stored in the fault memory: A fault is identified as being static if it persists for at least 2 seconds. If a fault is then no longer present, it is stored as being "sporadic". "Sporadic" additionally appears on the display.*
- ◆ *After switching on the ignition, all faults present are set to "sporadic" and only stored as being static if they are still present after checking.*
- ◆ *Sporadic faults which do not re-occur in the course of 50 driving cycles (ignition switched on for at least 5 minutes, vehicle speed greater than 30 km/h) are erased.*
- ◆ *Components indicated as being faulty by the -VAS 5051B- are not to be immediately replaced, but rather: Start by using the current flow diagram to check the wiring and connectors to these components. The earth connections are also to be checked on the basis of the current flow diagram. This is particularly important in the case of "sporadic" faults.*
- ◆ *On completion of repair work, interrogate fault memory again and erase.*
- ◆ *After performing repairs, additionally interrogate the fault memory of the engine control unit and erase the entry "Engine control unit disabled". Check and if necessary eliminate any other faults stored.*

| Output on -VAS 5051B-                  | Possible cause of trouble                                                | Remedy                                                                                                                                                  |
|----------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01128<br>Immobilizer reading coil -D2- | ◆ Connector not plugged in or fault in reading coil/wiring               | Check (visually inspect) connector and reading coil/wiring and replace reading coil if necessary ⇒ Rep. Gr. 96                                          |
|                                        | ◆ Immobilizer control unit (integrated into dash panel insert) defective | – Erase fault memory ⇒ <a href="#">page 139</a> and interrogate again ⇒ <a href="#">page 142</a> , replace dash panel insert if necessary ⇒ Rep. Gr. 90 |

| Output on -VAS 5051B-            | Possible cause of trouble                                            | Remedy                                                                                                           |
|----------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 01176<br>Key<br>◆ Signal too low | ◆ Fault in reading coil or wiring (contact resistance/loose contact) | – Check (visually inspect) reading coil/wiring and connector and replace reading coil if necessary ⇒ Rep. Gr. 96 |
|                                  | ◆ No or defective electronics in ignition key (transponder)          | – Replace ignition key, re-match all ignition keys and check function ⇒ <a href="#">page 147</a>                 |
|                                  | ◆ Mechanically correct ignition key not matched                      | – Re-match all ignition keys and check function ⇒ <a href="#">page 147</a>                                       |
| ◆ Not authorised                 |                                                                      |                                                                                                                  |

| Output on -VAS 5051B-                          | Possible cause of trouble         | Remedy                                                    |
|------------------------------------------------|-----------------------------------|-----------------------------------------------------------|
| 01177<br>Engine control unit<br>Not authorised | ♦ Engine control unit not matched | – Match engine control unit<br>⇒ <a href="#">page 157</a> |

| Output on -VAS 5051B-           | Possible cause of trouble      | Remedy                                                                        |
|---------------------------------|--------------------------------|-------------------------------------------------------------------------------|
| 01179<br>Key programming not OK | ♦ Ignition key matching not OK | – Re-match all ignition keys and<br>check function ⇒ <a href="#">page 147</a> |

| Output on -VAS 5051B-           | Possible cause of trouble     | Remedy                                       |
|---------------------------------|-------------------------------|----------------------------------------------|
| 65535<br>Control unit defective | ♦ Dash panel insert defective | – Replace dash panel insert ⇒<br>Rep. Gr. 90 |

## 6.5 Erasing fault memory



### Note

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

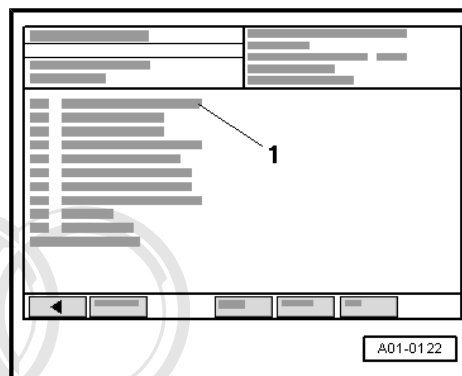
### Sequence of operations

- Fault memory interrogated ⇒ [page 139](#)
- All faults eliminated

After fault memory interrogation:

Display on -VAS 5051B- :

- From list -1-, select function “05 - Erasing fault memory”.



Display on -VAS 5051B- :

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

**i Note**

*If the following message appears in display zone -1-: "Fault memory not yet interrogated", this indicates failure to comply exactly with the sequence of operations. The fault memory can only be erased after it has been interrogated.*

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

- Touch **OK** key in display -2-.
- Interrogate fault memory again on completion of repair work.

**i Note**

*This erases faults stored during fault rectification, e.g. as a result of unplugging connectors.*

- Terminate function "05 - Erasing fault memory" by touching **↵** key.

## 6.6 End of output

### Sequence of operations

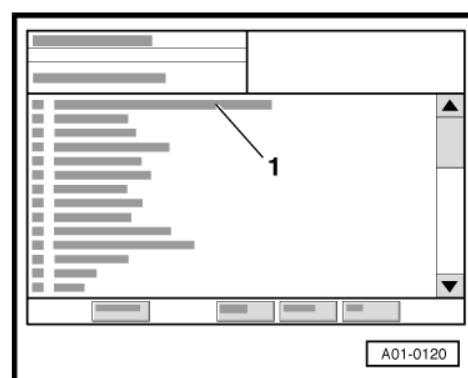
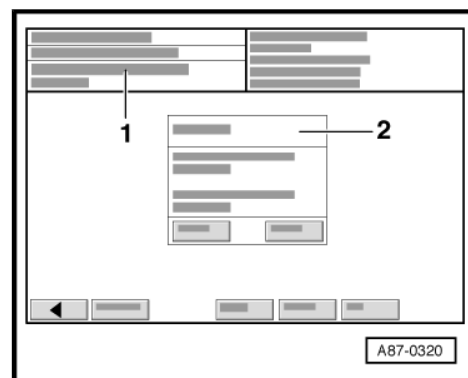
Display on -VAS 5051B- :

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

Display on -VAS 5051B- :

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

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## 6.7 Reading measured value block

### Sequence of operations

- Start immobilizer self-diagnosis ⇒ [page 138](#) .

Display on -VAS 5051B- :

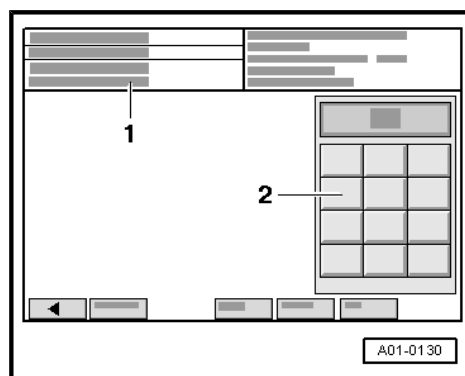
- From list -1-, select function "08 - Reading measured value block".



Display on -VAS 5051B- :

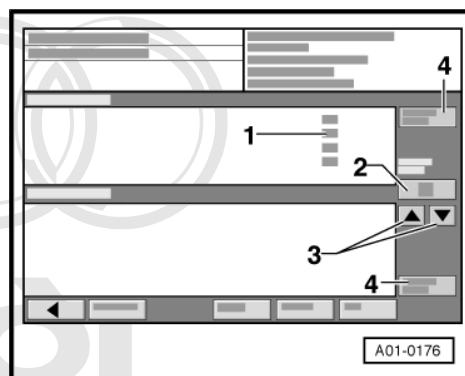
- Enter display group

- Use keypad -2- to enter the desired "display group number" ⇒ [page 144](#) and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- Display zones 1 ... 4. If a display zone is not assigned, there is no display on this line.
  - The display group selected is shown here
  - Touching these keys permits switching to a different display group.
  - Touching these keys permits switching to a different function (e.g. from "Reading measured value block" to "Basic setting" and vice versa).
- Terminate function "08 - Reading measured value block" by touching  key.



### List of display groups

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| Display group 022 |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     | Explanatory notes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 1                 | ...               | Starting authorised <ul style="list-style-type: none"> <li>1 = yes</li> <li>0 = no, i.e. vehicle key not/incorrectly matched or engine control unit incorrectly encoded/defective</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                    |
| 2                 | ...               | Engine control unit responds <ul style="list-style-type: none"> <li>1 = yes (whether engine control unit is authorised or not)</li> <li>0 = no, i.e. either engine control unit is in "Run-on mode" or there is a fault in the engine control unit or wiring</li> </ul> Depending on engine control unit, the display is "0 = Engine control unit responds No" for 10 ... 30 seconds after switching off the engine and ignition, i.e. the engine control unit has been released and there are no faults. Start self-diagnosis again to be certain ⇒ <a href="#">page 138</a> . |

| Display group 022 |     |                                                                                                                                                                                        |
|-------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |     | Explanatory notes                                                                                                                                                                      |
| 3                 | ... | Key status OK <ul style="list-style-type: none"> <li>• 1 = Correct transponder fixed code read (whether authorised or not)</li> <li>• 0 = Fault, i.e. key or coil defective</li> </ul> |
| 4                 | ... | Number of matched keys <ul style="list-style-type: none"> <li>• Max. 8 keys</li> </ul>                                                                                                 |

| Display group 023 |     |                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |     | Explanatory notes                                                                                                                                                                                                                                                                                                                                 |
| 1                 | ... | Variable code authorised <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. variable code not authorised (arithmetic rule for variable code in key is not the same as that in the dash panel insert).</li> </ul>                                                                                                            |
| 2                 | ... | Key status <ul style="list-style-type: none"> <li>• 1 = Transponder in key is interlocked, i.e. arithmetic rule in key can no longer be overwritten. Key can no longer be matched to a different immobilizer system.</li> <li>• 0 = Transponder in key not interlocked, i.e. transponder has not yet been matched to dash panel insert</li> </ul> |
| 3                 | ... | Fixed code authorised <ul style="list-style-type: none"> <li>• 1 = yes</li> <li>• 0 = no, i.e. transponder fixed code of key not authorised</li> </ul>                                                                                                                                                                                            |
| 4                 | ... | Immobilizer status <ul style="list-style-type: none"> <li>• 4: Service as-delivered condition (replacement dash panel insert)</li> <li>• 5: Service matching of dash panel insert</li> <li>• 6: Keys from dash panel insert matched; normal status</li> </ul>                                                                                     |

| Display group 024 |     |                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |     | Explanatory notes                                                                                                                                                                                                                                                                                                                                        |
| 1                 | ... | Dash panel insert disable time <ul style="list-style-type: none"> <li>• 0 ... 255 minutes</li> </ul> <p>This value indicates the time after which login can again be performed on the dash panel insert. If the PIN is entered incorrectly 3 times, the control unit is disabled for 10 minutes <sup>1)</sup>.</p>                                       |
| 2                 | ... | Engine control unit disable time <ul style="list-style-type: none"> <li>• 0 ... 255 minutes</li> </ul> <p>This value indicates the time after which the adaption function can again be implemented by the engine control unit. If the PIN is entered incorrectly three times on adaption, the control unit is disabled for 10 minutes <sup>1)</sup>.</p> |
| 3                 |     | Emergency release disable time - function can no longer be implemented                                                                                                                                                                                                                                                                                   |
| 4                 |     | Transponder recognition disable time                                                                                                                                                                                                                                                                                                                     |

| Display group 024                                                                                                                                                     |     |                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones                                                                                                                                                         |     | Explanatory notes                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                       | ... | <ul style="list-style-type: none"> <li>0 ... 10 minutes</li> </ul> <p>This value indicates the time after which transponder recognition is again possible. This disable function is activated if the transponder of an unauthorised key has been read out 20 times in succession.</p> |
| <ul style="list-style-type: none"> <li>1) The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.</li> </ul> |     |                                                                                                                                                                                                                                                                                       |

| Display group 025 |     |                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |     | Explanatory notes                                                                                                                                                                                                                                                                                                                                                                                   |
| 1                 | ... | <p>CAN communication with engine control unit</p> <ul style="list-style-type: none"> <li>0 = no, i.e. no CAN communication between immobilizer control unit and engine control unit</li> <li>1 = yes, i.e. dash panel insert has recognised "immobilizer III" from engine control unit</li> <li>2 = yes, i.e. dash panel insert has recognised "immobilizer II" from engine control unit</li> </ul> |
| 2                 |     | Not used                                                                                                                                                                                                                                                                                                                                                                                            |
| 3                 |     | Not used                                                                                                                                                                                                                                                                                                                                                                                            |
| 4                 |     | Not used                                                                                                                                                                                                                                                                                                                                                                                            |

## 6.8 Adaption



### Note

The immobilizer PIN must be obtained before the adaption function can be implemented ⇒ *Establishing PIN, Page*  
⇒ *"6.9 Establishing PIN", page 146*.

The "Adaption" function can be used to make and store the following changes:

- ◆ Matching of vehicle keys ⇒ [page 147](#).
- ◆ Matching following replacement of dash panel insert ⇒ [page 152](#).
- ◆ Matching following replacement of engine control unit ⇒ [page 157](#).
- ◆ Matching following replacement of dash panel insert and engine control unit ⇒ [page 161](#).

## 6.9 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 in combination with the vehicle diagnostic, testing and information system -VAS 5051B-.
- ◆ The 7-digit PIN must be obtained by way of the appropriate regional sales centre/importer on the basis of the 14-digit 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 request procedure has been switched to the 7-digit PIN.

## 6.10 Matching of vehicle keys



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- ◆ *If new or additional ignition keys are required, they must be matched to the immobilizer.*
- ◆ *All ignition keys, including those already authorised, must always be re-matched.*
- ◆ *Re-matching of the remaining vehicle keys is particularly important if a key has been lost, as the lost vehicle key is then no longer authorised to start the vehicle.*
- ◆ *If it is not possible to match all keys, e.g. during a journey, customers must have this done at a later date at their local Audi dealership.*
- ◆ *The number of keys already matched is displayed after selecting "Adaption" function in "Channel 21" and in "measured value block 22".*
- ◆ *The number of keys already matched is displayed after selecting the adaption function (channel 21).*
- ◆ *Once a key has been matched, it is interlocked and can no longer be matched to a different immobilizer system.*

### Sequence of operations

- All ignition keys available. If there is no old ignition key available  
⇒ ["6.11 Procedure in the event of loss of key", page 152](#) .
- Insert the first key in the ignition lock and switch on the ignition.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis ⇒ [page 138](#) .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.



### 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 5051B- :

- From list -1- select function “Release (PIN)”.



Display on -VAS 5051B- :

|                                                                                                                                                                                                                |                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Vehicle self-diagnosis                                                                                                                                                                                         | 17 - Dash panel insert<br>8D0920830   |
| Functional test                                                                                                                                                                                                | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Release (PIN)                                                                                                                                                                                                  | Code 62<br>Workshop code 12345        |
| <p>Information</p> <p>The PIN is used to release key matching or adaption in the vehicle system</p> <p>The PIN obtained for the immobilizer identification number is only valid on the day it is requested</p> |                                       |
| <div>Finished</div>                                                                                                                                                                                            |                                       |
| ←                                                                                                                                                                                                              | Measurement                           |
| Go to                                                                                                                                                                                                          | Print                                 |
| Help                                                                                                                                                                                                           |                                       |

- Touch the **Finished** key.

Display on -VAS 5051B-

|                                                                                                                                                                      |                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Vehicle self-diagnosis                                                                                                                                               | 17 - Dash panel insert<br>8D0920830   |
| Functional test                                                                                                                                                      | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Release (PIN)                                                                                                                                                        | Code 62<br>Workshop code 12345        |
| <p>PIN entry</p> <p>Enter PIN obtained with the displayed keypad.</p> <p>Confirm PIN entered with Continue key (⏎ key)</p> <p>Press here to display entry keypad</p> |                                       |
| ←                                                                                                                                                                    | Measurement                           |
| Go to                                                                                                                                                                | Print                                 |
| Help                                                                                                                                                                 |                                       |

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

Display on -VAS 5051B-

|                        |                                       |
|------------------------|---------------------------------------|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8D0920830   |
| Functional test        | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Release (PIN)          | Code 62<br>Workshop code 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 |   |   |

|   |             |       |       |      |   |
|---|-------------|-------|-------|------|---|
| ← | Measurement | Go to | Print | Help | → |
|---|-------------|-------|-------|------|---|

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

Display on -VAS 5051B-

|                              |                                       |       |       |      |
|------------------------------|---------------------------------------|-------|-------|------|
| Vehicle self-diagnosis       | 17 - Dash panel insert<br>8D0920830   |       |       |      |
| Functional test              | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |       |      |
| Release (PIN)                | Code 62<br>Workshop code 12345        |       |       |      |
| PIN entry                    |                                       |       |       |      |
| PIN XXXXXXX entered correct? | <input type="button" value="Yes"/>    |       |       |      |
|                              | <input type="button" value="No"/>     |       |       |      |
| ←                            | Measurement                           | Go to | Print | Help |

- Check entry and then touch  key.
- Incorrect PIN entry can be corrected by touching  key.

Display on -VAS 5051B-

|                                                         |                                         |       |       |      |
|---------------------------------------------------------|-----------------------------------------|-------|-------|------|
| Vehicle self-diagnosis                                  | 17 - Dash panel insert<br>8D0920830     |       |       |      |
| Functional test                                         | DASH PANEL INSERT+IMMOBILIZER VDO D06   |       |       |      |
| Release (PIN)                                           | Code 62<br>Workshop code 12345          |       |       |      |
| Transfer PIN                                            |                                         |       |       |      |
| PIN valid!<br>Key matching/adaption can<br>be performed | <input type="button" value="Finished"/> |       |       |      |
| ←                                                       | Measurement                             | Go to | Print | Help |

- Touch the  key.

When this display appears, the immobilizer warning lamp K115 in the dash panel insert lights and the immobilizer has been released.



## Note

- ◆ Heed the instructions given on the display if a fault message appears.
- ◆ 3 attempts at entering a correct PIN are immediately possible. The next 3 attempts can only be made after waiting at least 10 minutes. To do so, the ignition must be left switched on and function "06 - End of output" must be selected from list -1- to exit from self-diagnosis.
- ◆ The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.

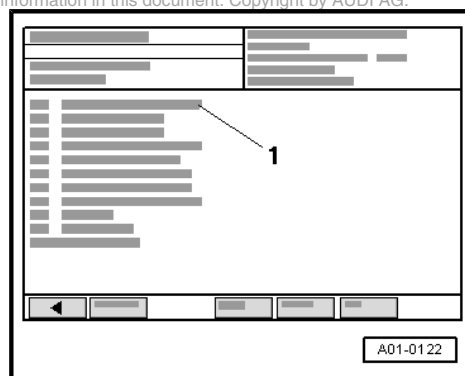


Once immobilizer has been released:

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Display on -VAS 5051B- :

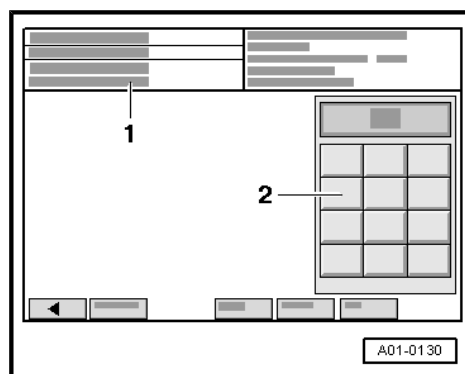
- From list -1- select function "10 - Adaption".



Display on -VAS 5051B- :

1 - Enter channel number

- On the keypad -2-, touch keys **2** **1** for "Adaption channel 21" and confirm the entry by touching the **0** key.

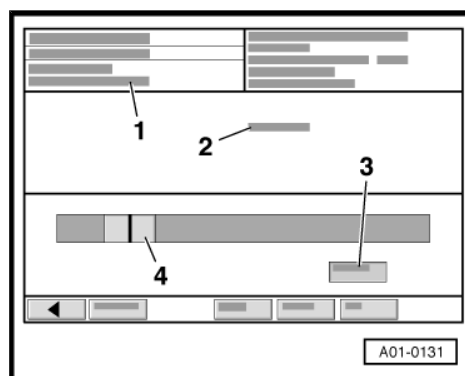


Display on -VAS 5051B- :

1 - Channel 21 reading and testing

2 - New number of keys:

4 - Bar set to current adaption value, e.g. "2". The display shows the number of ignition keys (in this case "2") matched to the system.



Display on -VAS 5051B- :

- Enter the number of keys to be matched.

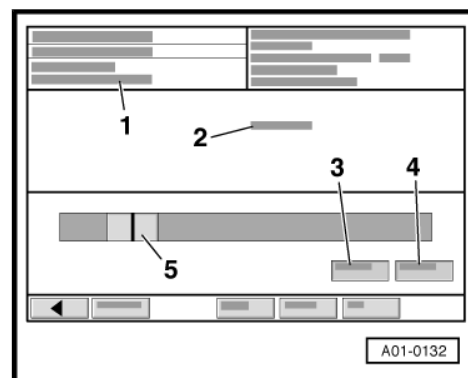
Example: 4 keys including the one in the ignition lock



#### Note

*A maximum of 8 keys can be matched.*

- Move the bar -5- to the right or touch the panel to the right of the bar until the bar is positioned under the number “4” (example).



#### Note

*It is also possible to touch the keypad key -Item 3-, then the key 4 and confirm the entry by touching the 0 key.*

- Touch the Save key -4-.

Display on -VAS 5051B- :

1 - Channel 21 reading and testing

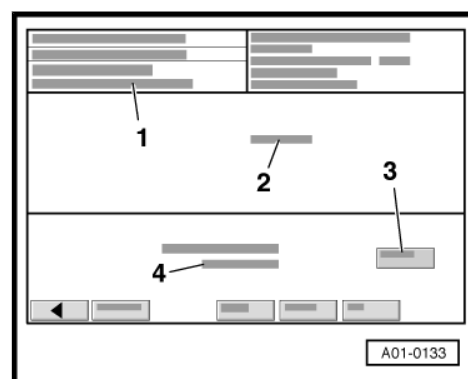
2 - New number of keys:

4 - Original value “2” new value “4” (example)

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

Matching is then implemented.

- The matching time per key must not exceed 30 seconds. Otherwise the immobilizer warning lamp -K115- in the dash panel insert starts to flash and the release (PIN) procedure must be repeated in full.

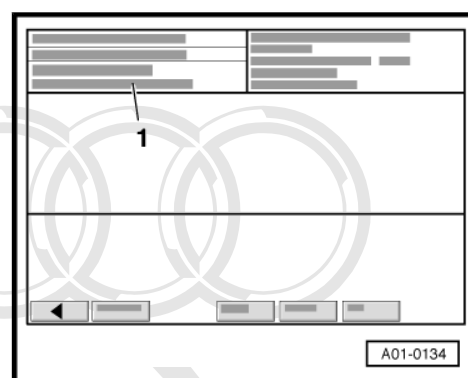


Display on -VAS 5051B- following successful adaption:

1 - Channel 21 value “4” stored

The immobilizer warning lamp -K115- in the dash panel insert goes out; the key in the ignition lock has been matched.

- Terminate function “10 - Adaption” by touching 0 key.



Display on -VAS 5051B- :

- From list -1-, select function "06 - End of output".
- Switch off ignition.
- Insert the next key in the ignition lock and switch on the ignition. The immobilizer warning lamp -K115- lights when the ignition is switched on and goes out after approx. 1 second. This key has now also been matched.
- Repeat the procedure until all keys have been matched. With the last key, the immobilizer warning lamp -K115- goes out approx. 2 seconds after successful matching and a brief confirmation signal is given (warning lamp off for 0.5 seconds, warning lamp on for 0.5 seconds, warning lamp off).
- Interrogate the fault memory on completion of key matching  
⇒ [page 116](#) .

If no fault has been stored, the "Key matching" function has been successfully completed.

Ignition key matching is terminated automatically under the following conditions:

- ◆ On reaching the number of keys to be matched.
- ◆ If the ignition is switched on again with an already matched key and left switched on for more than 1 second (fault is stored).
- ◆ If the permitted matching time of 30 seconds per key after switching on the ignition is exceeded (fault is stored).
- ◆ If a fault is stored during the key matching procedure.

## 6.11 Procedure in the event of loss of key

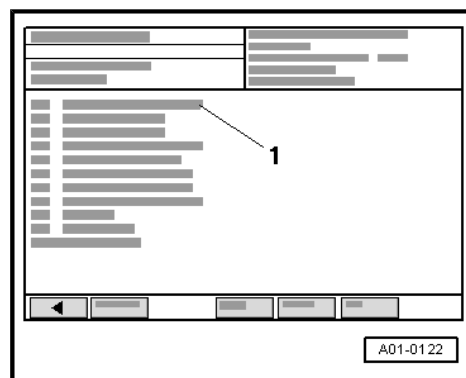
- Make/order a replacement ignition key on the basis of the lock number.
- Match all vehicle keys ⇒ [page 147](#) .
- On vehicles with remote control function, match all keys to the remote control unit ⇒ [Body self-diagnosis; Rep. Gr. 01, "Remote control key matching" function](#).

## 6.12 Matching following replacement of dash panel insert

- ◆ The dash panel insert (with integrated immobilizer) is matched to the engine control unit. On replacement, the dash panel insert must be adapted to the engine control unit.
- ◆ Following adaption of the dash panel insert to the engine control unit, the vehicle key matching procedure must be implemented ⇒ [page 147](#) .
- ◆ If there is no authorised ignition key available, the engine control unit and all keys must be replaced ⇒ [page 161](#) .

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Insert the old (authorised) ignition key in the ignition lock and switch on the ignition.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis on the new dash panel insert  
⇒ [page 138](#) .



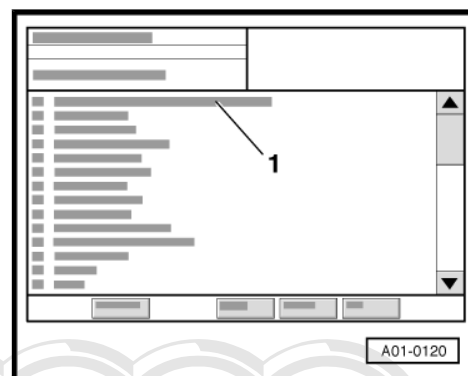
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.

If this is not possible:

- Establish the immobilizer identification number by starting engine control unit self-diagnosis .

Display on -VAS 5051B- :

- From list -1- select vehicle system “01 - Engine electronics”.
- Wait until next display appears.



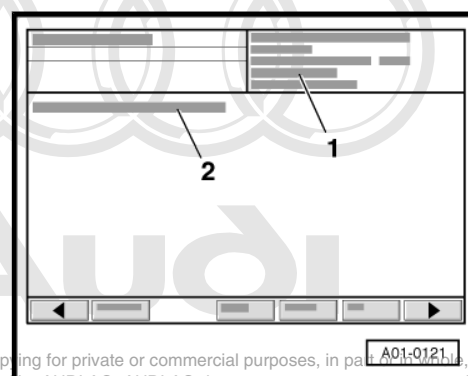
Display on -VAS 5051B- :

- 1 - Identification of engine control unit
- 2 - Control unit identification of immobilizer



#### Note

*With certain engine control units, the immobilizer control unit identification can also be read out in “measured value block 081”.*



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| Immobilizer control unit identification (example) |                                                                                                                |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| WAUZZZ8DZYA004321                                 | 17-position vehicle ident. no. (chassis number) (display as of immobilizer III<br>⇒ <a href="#">page 138</a> ) |
| AUZ7Z0X1137197                                    | 14-position immobilizer identification number                                                                  |

- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer or engine control unit identification number.



#### 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.

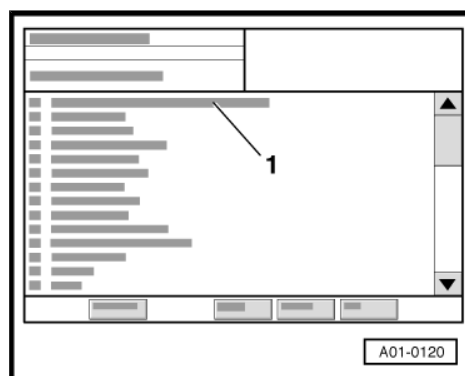
Display on -VAS 5051B- :

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



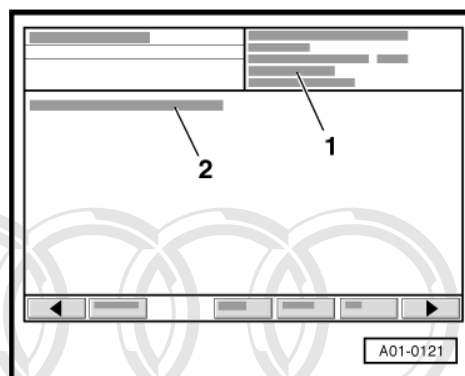
Display on -VAS 5051B- :

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



Display on -VAS 5051B- :

- 1 - Identification of engine control unit
- 2 - Control unit identification of immobilizer



| Immobilizer control unit identification (example) |                                                           |
|---------------------------------------------------|-----------------------------------------------------------|
| XXXXXXXXXXXXXXXXXXXX                              | The 17-position vehicle ident. no. will appear here later |
| AUZ5Z0X1162041                                    | 14-position immobilizer identification number             |



#### Note

*Replacement dash panel inserts already have a 14-position identification number (this is required for simultaneous replacement of dash panel insert and engine control unit). This number is however overwritten on matching the dash panel insert to the engine control unit.*

- Touch  key.
- Release the dash panel insert ⇒ [page 164](#) .

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**Note**

*All new or used dash panel inserts must first be released. Continue as follows after successful release:*

Display on -VAS 5051B- :

- From list -1- select vehicle system “Channel 50 adaption”.



Display on -VAS 5051B- :

|                                                                                                                                                                                                        |                                       |       |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------|-----------------|
| Vehicle self-diagnosis                                                                                                                                                                                 | 17 - Dash panel insert<br>8D0920830   |       |                 |
| Functional test                                                                                                                                                                                        | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |                 |
| Channel 50 adaption (PIN)                                                                                                                                                                              | Code 62<br>Workshop code 12345        |       |                 |
| <b>Information</b><br>The PIN is used to release key matching or adaption in the vehicle system<br>The PIN obtained for the immobilizer identification number is only valid on the day it is requested |                                       |       |                 |
|                                                                                                                                                                                                        |                                       |       | <b>Finished</b> |
| ←                                                                                                                                                                                                      | Measurement                           | Go to | Print Help      |

- Touch the **Finished** key.

Display on -VAS 5051B-

|                                                                                                                    |                                       |       |              |
|--------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------|--------------|
| Vehicle self-diagnosis                                                                                             | 17 - Dash panel insert<br>8D0920830   |       |              |
| Functional test                                                                                                    | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |              |
| Channel 50 adaption (PIN)                                                                                          | Code 62<br>Workshop code 12345        |       |              |
| <b>PIN entry</b><br>Enter PIN obtained with the displayed keypad.<br>Confirm PIN entered with Continue key (↵ key) |                                       |       |              |
| Press here to display entry keypad                                                                                 |                                       |       |              |
| ←                                                                                                                  | Measurement                           | Go to | Print Help → |

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



Display on -VAS 5051B-

|                           |   |   |   |                                       |       |      |   |
|---------------------------|---|---|---|---------------------------------------|-------|------|---|
| Vehicle self-diagnosis    |   |   |   | 17 - Dash panel insert<br>8D0920830   |       |      |   |
| Functional test           |   |   |   | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |      |   |
| Channel 50 adaption (PIN) |   |   |   | Code 62<br>Workshop code 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     |      |   |
|                           |   |   |   |                                       |       |      |   |
| ← Measurement             |   |   |   | Go to                                 | Print | Help | → |

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

Display on -VAS 5051B-

|                                                                                                                                                                                                                                                                                                 |  |                                                                         |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------|------------|
| Vehicle self-diagnosis                                                                                                                                                                                                                                                                          |  | 17 - Dash panel insert<br>8D0920830                                     |            |
| Functional test                                                                                                                                                                                                                                                                                 |  | DASH PANEL INSERT+IMMOBILIZER VDO D06                                   |            |
| Channel 50 adaption (PIN)                                                                                                                                                                                                                                                                       |  | Code 62<br>Workshop code 12345                                          |            |
| PIN entry                                                                                                                                                                                                                                                                                       |  |                                                                         |            |
| PIN XXXXXXX entered correct?                                                                                                                                                                                                                                                                    |  | <input type="button" value="Yes"/><br><input type="button" value="No"/> |            |
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| ← Measurement                                                                                                                                                                                                                                                                                   |  | Go to                                                                   | Print Help |

- Check entry and then touch  key.
- Incorrect PIN entry can be corrected by touching  key.

Display on -VAS 5051B-

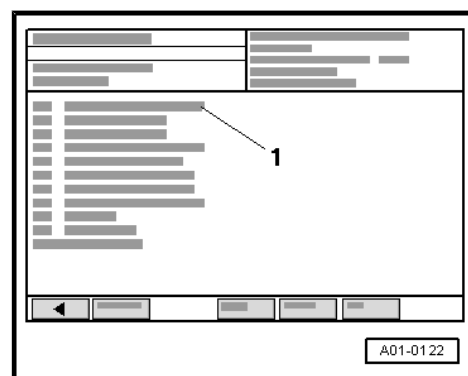
|                                                         |  |                                         |            |
|---------------------------------------------------------|--|-----------------------------------------|------------|
| Vehicle self-diagnosis                                  |  | 17 - Dash panel insert<br>8D0920830     |            |
| Functional test                                         |  | DASH PANEL INSERT+IMMOBILIZER VDO D06   |            |
| Channel 50 adaption (PIN)                               |  | Code 62<br>Workshop code 12345          |            |
| Transfer PIN                                            |  |                                         |            |
| PIN valid!<br>Key matching/adaption can<br>be performed |  | <input type="button" value="Finished"/> |            |
| ← Measurement                                           |  | Go to                                   | Print Help |

- Touch the **Finished** key.



#### Note

- ◆ *Heed the instructions given on the display if a fault message appears.*
- ◆ *3 attempts at entering a correct PIN are immediately possible. The next 3 attempts can only be made after waiting at least 10 minutes. To do so, the ignition must be left switched on and function "06 - End of output" must be selected from list -1- to exit from self-diagnosis.*
- ◆ *The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.*



Once the dash panel insert has been successfully matched to the engine control unit:

- Match all vehicle keys ➔ [page 147](#) .

## 6.13 Matching following replacement of engine control unit

- ◆ The engine control unit is matched to the dash panel insert (with integrated immobilizer). On replacement, the engine control unit must be adapted to the immobilizer.
- ◆ If there is no authorised ignition key available, the dash panel insert and all keys must be replaced ➔ [page 161](#) .

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and **vehicle self-diagnosis** selected ➔ [page 1](#)
- Insert the old (authorised) ignition key in the ignition lock.
- Establish the immobilizer identification number by starting immobilizer self-diagnosis ➔ [page 138](#) .
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.



#### 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 **OK** key.

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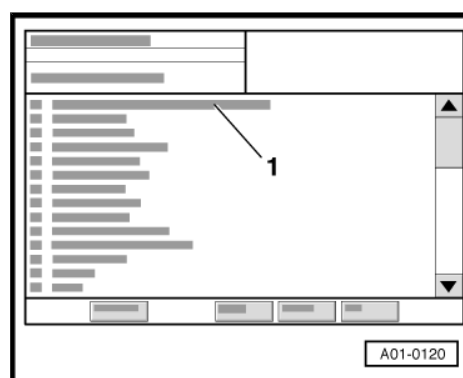
Display on -VAS 5051B- :

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



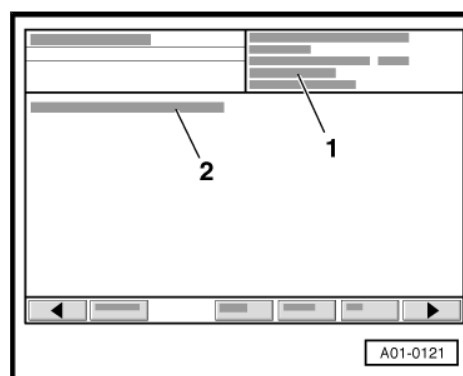
Display on -VAS 5051B- :

- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next display appears.



Display on -VAS 5051B- :

- 1 - Identification of engine control unit
- 2 - Control unit identification of immobilizer



| Immobilizer control unit identification (example) |                                                                          |
|---------------------------------------------------|--------------------------------------------------------------------------|
| XXXXXXXXXXXXXXXXXXXX                              | The 17-position vehicle ident. no. will appear here later                |
| XXXXXXXXXXXXXXXXXXXX                              | The 14-position immobilizer identification number will appear here later |



#### Note

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**A used engine control unit must first be released -> page 164**  
**Continue as follows after successful release:**

- Touch  key.

Display on -VAS 5051B- :

- From list -1- select vehicle system "Channel 50 adaption".



Display on -VAS 5051B- :

|                                                                                                                                                                                                        |                                      |       |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------|-----------------|
| Vehicle self-diagnosis                                                                                                                                                                                 | 01 - Engine electronics<br>06A906018 |       |                 |
| Functional test                                                                                                                                                                                        | 1.8L R4/5VT G 0003                   |       |                 |
| Channel 50 adaption (PIN)                                                                                                                                                                              | Code 10710<br>Workshop code 12345    |       |                 |
| <b>Information</b><br>The PIN is used to release key matching or adaption in the vehicle system<br>The PIN obtained for the immobilizer identification number is only valid on the day it is requested |                                      |       |                 |
|                                                                                                                                                                                                        |                                      |       | <b>Finished</b> |
| ←                                                                                                                                                                                                      | Measurement                          | Go to | Print Help      |

- Touch the **Finished** key.

Display on -VAS 5051B-

|                                                                                                                    |                                      |       |              |
|--------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------|--------------|
| Vehicle self-diagnosis                                                                                             | 01 - Engine electronics<br>06A906018 |       |              |
| Functional test                                                                                                    | 1.8L R4/5VT G 0003                   |       |              |
| Channel 50 adaption (PIN)                                                                                          | Code 10710<br>Workshop code 12345    |       |              |
| <b>PIN entry</b><br>Enter PIN obtained with the displayed keypad.<br>Confirm PIN entered with Continue key (↵ key) |                                      |       |              |
| Press here to display entry keypad                                                                                 |                                      |       |              |
| ←                                                                                                                  | Measurement                          | Go to | Print Help → |

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

Display on -VAS 5051B-

|                           |                                      |  |  |
|---------------------------|--------------------------------------|--|--|
| Vehicle self-diagnosis    | 01 - Engine electronics<br>06A906018 |  |  |
| Functional test           | 1.8L R4/5VT G 0003                   |  |  |
| Channel 50 adaption (PIN) | Code 10710<br>Workshop code 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 |   |   |

|   |             |       |       |      |   |
|---|-------------|-------|-------|------|---|
| ← | Measurement | Go to | Print | Help | → |
|---|-------------|-------|-------|------|---|

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

Display on -VAS 5051B-

|                           |                                      |
|---------------------------|--------------------------------------|
| Vehicle self-diagnosis    | 01 - Engine electronics<br>06A906018 |
| Functional test           | 1.8L R4/5VT G 0003                   |
| Channel 50 adaption (PIN) | Code 10710<br>Workshop code 12345    |

|                              |                                                                         |
|------------------------------|-------------------------------------------------------------------------|
| PIN entry                    |                                                                         |
| PIN XXXXXXX entered correct? | <input type="button" value="Yes"/><br><input type="button" value="No"/> |

|   |             |       |       |      |
|---|-------------|-------|-------|------|
| ← | Measurement | Go to | Print | Help |
|---|-------------|-------|-------|------|

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- Check entry and then touch  key.
- Incorrect PIN entry can be corrected by touching  key.

Display on -VAS 5051B-

|                           |                                      |
|---------------------------|--------------------------------------|
| Vehicle self-diagnosis    | 01 - Engine electronics<br>06A906018 |
| Functional test           | 1.8L R4/5VT G 0003                   |
| Channel 50 adaption (PIN) | Code 10710<br>Workshop code 12345    |

|                                                         |                                         |
|---------------------------------------------------------|-----------------------------------------|
| Transfer PIN                                            |                                         |
| PIN valid!<br>Key matching/adaption can<br>be performed | <input type="button" value="Finished"/> |

|   |             |       |       |      |
|---|-------------|-------|-------|------|
| ← | Measurement | Go to | Print | Help |
|---|-------------|-------|-------|------|

- Touch the  key.

This completes matching of the engine control unit to the immobilizer and the vehicle can be started.

**i Note**

- ◆ Heed the instructions given on the display if a fault message appears.
- ◆ 3 attempts at entering a correct PIN are immediately possible. The next 3 attempts can only be made after waiting at least 10 minutes. To do so, the ignition must be left switched on and function "06 - End of output" must be selected from list -1- to exit from self-diagnosis.
- ◆ The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.



## 6.14 Matching following replacement of dash panel insert and engine control unit

- ◆ If the dash panel insert and the engine control unit have been simultaneously destroyed by overvoltage for example, and if the immobilizer identification number can no longer be read out, all vehicle keys must additionally be replaced on replacing the dash panel insert and engine control unit.
- ◆ Reason: Following matching to the immobilizer, the old keys are interlocked and can no longer be matched to a different immobilizer.
- ◆ The immobilizer in the new dash panel insert has a different arithmetic rule for the variable code. On matching, this new arithmetic rule is written into the engine control unit and simultaneously into the transponder of the new vehicle keys. The keys are then interlocked.

**i Note**

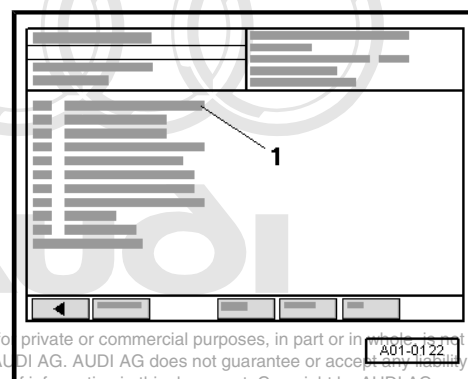
The replacement of all vehicle keys is not necessary if the immobilizer identification number can still be read out from one of the two control units to be replaced. In this case the control units are to be replaced consecutively.

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected ⇒ [page 1](#)
- Start immobilizer self-diagnosis ⇒ [page 138](#).

Display on -VAS 5051B- :

- From list -1- select function "Enter vehicle ident. no."



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Display on -VAS 5051B-

|                        |                                       |
|------------------------|---------------------------------------|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8D0920830   |
| Functional test        | DASH PANEL INSERT+IMMOBILIZER VDO D06 |



|                                                                                                                                                |             |                                |       |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------|-------|
| Vehicle ident. number transfer                                                                                                                 |             | Code 62<br>Workshop code 12345 |       |
| Enter vehicle ident. no.<br>Enter vehicle ident. no.<br>The entry may have max. 17 characters<br>Press Continue key (⏏ key)<br>to accept entry |             |                                |       |
| Press here to display<br>entry keypad                                                                                                          |             |                                |       |
| ←                                                                                                                                              | Measurement | Go to                          | Print |
|                                                                                                                                                |             | Help                           | →     |

– Touch key Press here to display entry keypad.

Display on -VAS 5051B-

|                                |             |   |   |                                       |       |      |   |
|--------------------------------|-------------|---|---|---------------------------------------|-------|------|---|
| Vehicle self-diagnosis         |             |   |   | 17 - Dash panel insert<br>8D0920830   |       |      |   |
| Functional test                |             |   |   | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |      |   |
| Vehicle ident. number transfer |             |   |   | Code 62<br>Workshop code 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     |      |   |
|                                |             |   |   |                                       |       |      |   |
| ←                              | Measurement |   |   | Go to                                 | Print | Help | → |

– Use the keypad to enter the 17-position vehicle ident. no.

– Touch ⏏ key.

Display on -VAS 5051B-

|                                             |             |                                       |       |
|---------------------------------------------|-------------|---------------------------------------|-------|
| Vehicle self-diagnosis                      |             | 17 - Dash panel insert<br>8D0920830   |       |
| Functional test                             |             | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |
| Vehicle ident. number transfer              |             | Code 62<br>Workshop code 12345        |       |
| Character conversion                        |             |                                       |       |
| Check of characters entered<br>Please wait! |             |                                       |       |
| ←                                           | Measurement | Go to                                 | Print |
|                                             |             | Help                                  |       |

– Wait until the next display appears or (in the case of incorrect characters) follow the instructions on correct entry procedure.

Display on -VAS 5051B-

|                                                                                                                                                                                   |                                       |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--|--|
| Vehicle self-diagnosis                                                                                                                                                            | 17 - Dash panel insert<br>8D0920830   |  |  |
| Functional test                                                                                                                                                                   | DASH PANEL INSERT+IMMOBILIZER VDO D06 |  |  |
| Vehicle ident. number transfer                                                                                                                                                    | Code 62<br>Workshop code 12345        |  |  |
| Vehicle ident. number transfer                                                                                                                                                    |                                       |  |  |
| The Xth character is transferred to the vehicle system                                                                                                                            |                                       |  |  |
| <div style="display: flex; justify-content: space-between; padding: 5px;"> <span>←</span> <span>Measurement</span> <span>Go to</span> <span>Print</span> <span>Help</span> </div> |                                       |  |  |



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*The 17 positions of the vehicle ident. no. are transferred separately to the vehicle system.*

- Wait for completion of this section of the program.

Display on -VAS 5051B-

|                                                                                                                                                                                                                                               |                                       |  |                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vehicle self-diagnosis                                                                                                                                                                                                                        | 17 - Dash panel insert<br>8D0920830   |  |                                                                                                                                                                                             |
| Functional test                                                                                                                                                                                                                               | DASH PANEL INSERT+IMMOBILIZER VDO D06 |  |                                                                                                                                                                                             |
| Vehicle ident. number transfer                                                                                                                                                                                                                | Code 62<br>Workshop code 12345        |  |                                                                                                                                                                                             |
| Vehicle ident. number display                                                                                                                                                                                                                 |                                       |  |                                                                                                                                                                                             |
| Save vehicle ident. number entered and transferred to the<br>XXXXXXXXXX<br>vehicle?<br><br>The vehicle ident. no. forms the first 17 positions of the identification<br>After being saved, the vehicle ident. number can no longer be altered |                                       |  | <div style="margin-bottom: 10px;"><span style="border: 1px solid black; padding: 2px 10px;">Yes</span></div> <div><span style="border: 1px solid black; padding: 2px 10px;">No</span></div> |
| <div style="display: flex; justify-content: space-between; padding: 5px;"> <span>←</span> <span>Measurement</span> <span>Go to</span> <span>Print</span> <span>Help</span> </div>                                                             |                                       |  |                                                                                                                                                                                             |

- Check entry and then touch Yes key.
- Incorrect vehicle ident. number can be corrected by touching No key.

Display on -VAS 5051B-

|                                                                                                                                                            |                                       |  |                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--|--------------------------------------------------------------------------------------------------------|
| Vehicle self-diagnosis                                                                                                                                     | 17 - Dash panel insert<br>8D0920830   |  |                                                                                                        |
| Functional test                                                                                                                                            | DASH PANEL INSERT+IMMOBILIZER VDO D06 |  |                                                                                                        |
| Vehicle ident. number transfer                                                                                                                             | Code 62<br>Workshop code 12345        |  |                                                                                                        |
| Save vehicle ident. number                                                                                                                                 |                                       |  |                                                                                                        |
| Transfer has been successfully completed<br>The function is terminated with the <span style="border: 1px solid black; padding: 0 2px;">Finished</span> key |                                       |  | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Finished</div> |

|   |             |  |       |       |  |      |  |
|---|-------------|--|-------|-------|--|------|--|
| ← | Measurement |  | Go to | Print |  | Help |  |
|---|-------------|--|-------|-------|--|------|--|

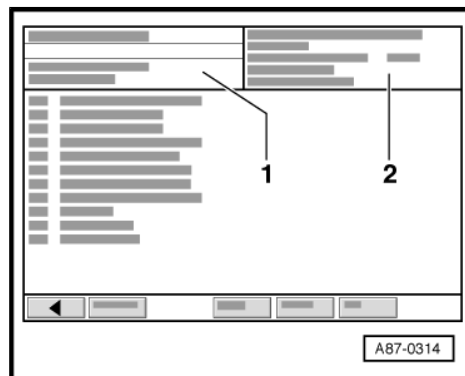
- Touch the **Finished** key.
- Then match all vehicle keys ⇒ [page 147](#) .

The dash panel insert, engine control unit and vehicle keys have now been matched and the vehicle can be started.

#### Fault messages on -VAS 5051B-

If display zone -1- indicates the fault message “System not OK” on transfer of the vehicle ident. number, the tuning protection category of the engine control unit to be matched is not correct. A distinction is made between 3 classes:

- 1 - Petrol, TDI and turbo engines without tuning protection
  - 2 - Petrol, TDI and turbo engines with tuning protection
  - 3 - Special turbo engines
- Check whether the correct engine control unit has been fitted  
⇒ Parts catalogue .



## 6.15 Control unit release

All new or used dash panel inserts or a used engine control unit must first be released.

#### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and **vehicle self-diagnosis** selected  
⇒ [page 1](#)
- Ignition on
- Establish the immobilizer identification number by starting self-diagnosis for the relevant control unit (engine or immobilizer).
- Obtain the 7-digit PIN from the applicable regional sales centre/importer on the basis of the 14-position immobilizer identification number.



#### 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 5051B- :

- From list -1- select function “Release (PIN)”.

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Display on -VAS 5051B- :

|                                                                                                                                                                                           |                                       |       |       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------|-------|----------|
| Vehicle self-diagnosis                                                                                                                                                                    | 17 - Dash panel insert<br>8D0920830   |       |       |          |
| Functional test                                                                                                                                                                           | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |       |          |
| Release (PIN)                                                                                                                                                                             | Code 62<br>Workshop code 12345        |       |       |          |
| Information                                                                                                                                                                               |                                       |       |       |          |
| The PIN is used to release<br>key matching or adaption in the vehicle system<br>The PIN obtained for the<br>immobilizer identification number<br>is only valid on the day it is requested |                                       |       |       | Finished |
| ←                                                                                                                                                                                         | Measurement                           | Go to | Print | Help     |

– Touch the **Finished** key.

Display on -VAS 5051B-

|                                               |                                       |       |       |        |
|-----------------------------------------------|---------------------------------------|-------|-------|--------|
| Vehicle self-diagnosis                        | 17 - Dash panel insert<br>8D0920830   |       |       |        |
| Functional test                               | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |       |        |
| Release (PIN)                                 | Code 62<br>Workshop code 12345        |       |       |        |
| PIN entry                                     |                                       |       |       |        |
| Enter PIN obtained with the displayed keypad  |                                       |       |       |        |
| Confirm PIN entered with Continue key (→ key) |                                       |       |       |        |
| Press here to display entry keypad            |                                       |       |       |        |
| ←                                             | Measurement                           | Go to | Print | Help → |

– Touch key **Press here to display entry keypad**.

Display on -VAS 5051B-

|                        |                                       |       |       |      |   |   |   |
|------------------------|---------------------------------------|-------|-------|------|---|---|---|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8D0920830   |       |       |      |   |   |   |
| Functional test        | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |       |      |   |   |   |
| Release (PIN)          | Code 62<br>Workshop code 12345        |       |       |      |   |   |   |
| 1                      | 2                                     | 3     | +     | A    | B | C | D |
| 4                      | 5                                     | 6     | -     | E    | F | G | H |
| 7                      | 8                                     | 9     | .     | I    | J | K | L |
| C                      | 0                                     | Q     |       | M    | N | O | P |
|                        |                                       |       |       | Q    | R | S | T |
|                        |                                       |       |       | U    | V | W | X |
|                        |                                       |       |       | Y    | Z |   |   |
| ←                      | Measurement                           | Go to | Print | Help | → |   |   |



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

Display on -VAS 5051B-

|                                  |                                            |                                      |                                      |                                     |
|----------------------------------|--------------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|
| Vehicle self-diagnosis           | 17 - Dash panel insert<br>8D0920830        |                                      |                                      |                                     |
| Functional test                  | DASH PANEL INSERT+IMMOBILIZER VDO D06      |                                      |                                      |                                     |
| Release (PIN)                    | Code 62<br>Workshop code 12345             |                                      |                                      |                                     |
| PIN entry                        |                                            |                                      |                                      |                                     |
| PIN XXXXXXX entered correct?     |                                            |                                      |                                      | <input type="button" value="Yes"/>  |
|                                  |                                            |                                      |                                      | <input type="button" value="No"/>   |
| <input type="button" value="←"/> | <input type="button" value="Measurement"/> | <input type="button" value="Go to"/> | <input type="button" value="Print"/> | <input type="button" value="Help"/> |

- Check entry and then touch  key.
- Incorrect PIN entry can be corrected by touching  key.

Display on -VAS 5051B-

|                                                         |                                            |                                      |                                      |                                         |
|---------------------------------------------------------|--------------------------------------------|--------------------------------------|--------------------------------------|-----------------------------------------|
| Vehicle self-diagnosis                                  | 17 - Dash panel insert<br>8D0920830        |                                      |                                      |                                         |
| Functional test                                         | DASH PANEL INSERT+IMMOBILIZER VDO D06      |                                      |                                      |                                         |
| Release (PIN)                                           | Code 62<br>Workshop code 12345             |                                      |                                      |                                         |
| Transfer PIN                                            |                                            |                                      |                                      |                                         |
| PIN valid!<br>Key matching/adaption can<br>be performed |                                            |                                      |                                      | <input type="button" value="Finished"/> |
| <input type="button" value="←"/>                        | <input type="button" value="Measurement"/> | <input type="button" value="Go to"/> | <input type="button" value="Print"/> | <input type="button" value="Help"/>     |

- Touch the  key.



## Note

- ◆ *Heed the instructions given on the display if a fault message appears.*
- ◆ *3 attempts at entering a correct PIN are immediately possible. The next 3 attempts can only be made after waiting at least 10 minutes. To do so, the ignition must be left switched on and function "06 - End of output" must be selected from list -1- to exit from self-diagnosis.*
- ◆ *The waiting time after every 3 further incorrect entries is doubled in each case up to a maximum of 255 minutes.*



Proceed in a similar manner to release the engine control unit.

Once the dash panel insert or engine control unit has been successfully released:

- Continue with adaption.
- ◆ Matching following replacement of dash panel insert  
⇒ [page 155](#) .
- ◆ Matching following replacement of engine control unit  
⇒ [page 158](#) .



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## 7 Cruise control system (CCS) self-diagnosis

On vehicles with petrol engines and electronic engine output control (electronic throttle) and with TDI engines, there are no separate cruise control system components other than the control switch. All functions are implemented by the engine control unit.

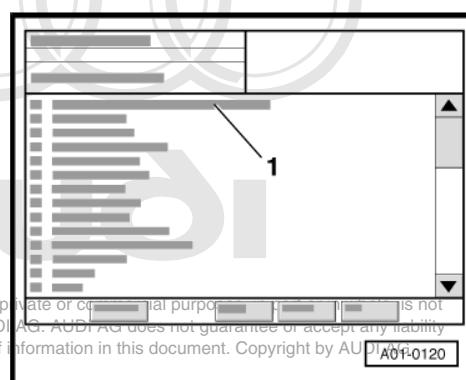
### 7.1 Checking cruise control system - petrol engines with electronic throttle

#### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Engine idling.

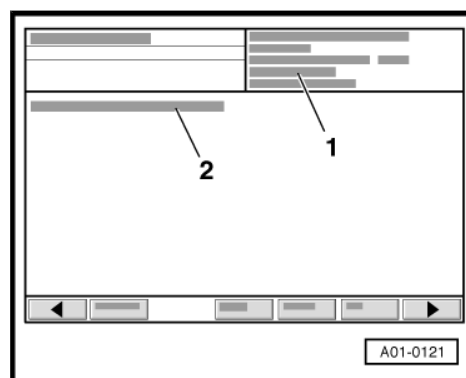
Display on -VAS 5051B- :

- From list -1- select vehicle system “01 - Engine electronics”.
- Wait until next display appears.



Display on -VAS 5051B- :

- 1 - Identification of engine control unit
  - 2 - Control unit identification of immobilizer
- Touch  key.



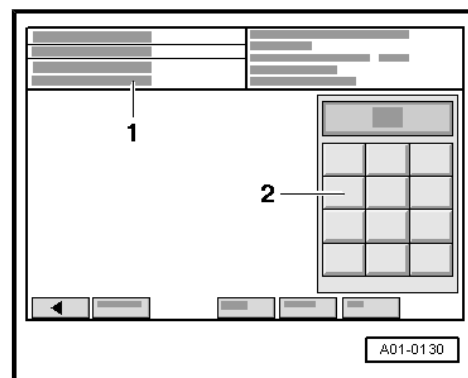
Display on -VAS 5051B- :

- From list -1-, select function “08 - Reading measured value block”.



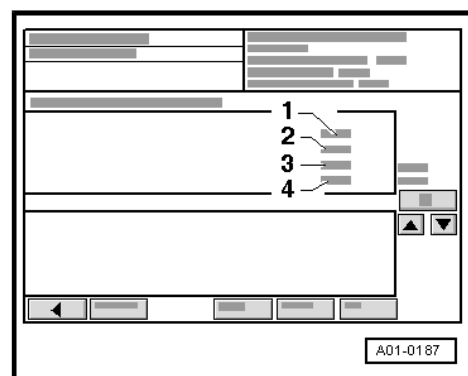
Display on -VAS 5051B- :

- On the keypad -2-, touch keys **6 6** for “Display group 066” and confirm the entry by touching the **Q** key.



Display on -VAS 5051B- :

- Check display in zone -2-.

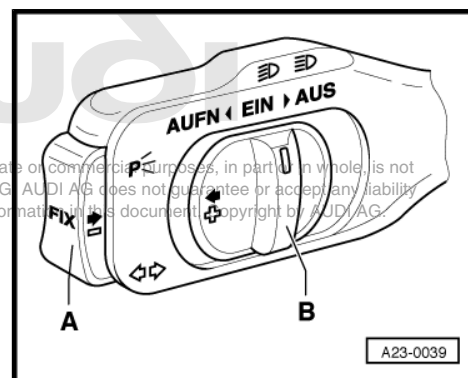


| Test condition                                                                                         | Display zone 2 with 4-digit display |     |     |     |
|--------------------------------------------------------------------------------------------------------|-------------------------------------|-----|-----|-----|
| CCS released <sup>1)</sup>                                                                             | “1”                                 | 0   | 0   | 0   |
| Brake pedal pressed                                                                                    | 1                                   | 0   | “1” | “1” |
| Clutch pedal pressed                                                                                   | 1                                   | “1” | 0   | 0   |
| • <sup>1)</sup> If value “0” is displayed: Activate cruise control system ➔ <a href="#">page 173</a> . |                                     |     |     |     |

| Test condition                                                                                         | Display zone 2 with 8-digit display |   |   |   |     |     |     |     |
|--------------------------------------------------------------------------------------------------------|-------------------------------------|---|---|---|-----|-----|-----|-----|
| CCS released <sup>1)</sup>                                                                             | 0                                   | 0 | 0 | 0 | “1” | 0   | 0   | 0   |
| Brake pedal pressed                                                                                    | 0                                   | 0 | 0 | 0 | 1   | 0   | “1” | “1” |
| Clutch pedal pressed                                                                                   | 0                                   | 0 | 0 | 0 | 1   | “1” | 0   | 0   |
| • <sup>1)</sup> If value “0” is displayed: Activate cruise control system ➔ <a href="#">page 173</a> . |                                     |   |   |   |     |     |     |     |

- Check display in zone -4-.

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| Test condition                   | Display zone 4 with 4-digit display |   |   |   |
|----------------------------------|-------------------------------------|---|---|---|
| Switch -B- set to “OFF”, latched | 0                                   | 0 | 0 | 0 |

| Test condition                                                | Display zone 4 with 4-digit display |     |     |     |
|---------------------------------------------------------------|-------------------------------------|-----|-----|-----|
| Switch -B- set to "ON"                                        | 0                                   | 0   | "1" | "1" |
| Switch -A- pressed "FIX"                                      | 0                                   | "1" | 1   | 1   |
| Switch -B- set to "ACTIVATION"                                | "1"                                 | 0   | 1   | 1   |
| Switch -B- set to "OFF", before latching point (deceleration) | 0                                   | 0   | "0" | 1   |

| Test condition                                                | Display zone 4 with 8-digit display |   |   |   |     |     |     |     |
|---------------------------------------------------------------|-------------------------------------|---|---|---|-----|-----|-----|-----|
| Switch -B- set to "OFF", latched                              | 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 "ACTIVATION"                                | 0                                   | 0 | 0 | 0 | "1" | 0   | 1   | 1   |
| Switch -B- set to "OFF", before latching point (deceleration) | 0                                   | 0 | 0 | 0 | 0   | 0   | "0" | 1   |

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

If readings do not match specifications:

#### Checking wiring

- Unplug the connector at the cruise control system switch ⇒ Rep. Gr. 94 .
- Connect the 121-pin adapter cable -V.A.G 1598/31- (test box) to the unplugged multi-pin connectors of the engine control unit ⇒ Rep. Gr. 24 .



#### Note

- ♦ *Use is always to be made for connecting measuring instruments (e.g. voltage tester -V.A.G 1527B- , portable multimeter -V.A.G 1526C- ) of the adapter set -V.A.G 1594C- .*
- ♦ *The contact numbers of the multi-pin connectors coincide with the socket numbers of the adapter cable -V.A.G 1598/31- (test box).*



#### Caution

***To avoid damaging electronic components, select the appropriate measuring range before connecting the test leads and heed the test conditions.***

- Check for open circuit and short to earth or positive in the wiring ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Repair wiring if necessary.

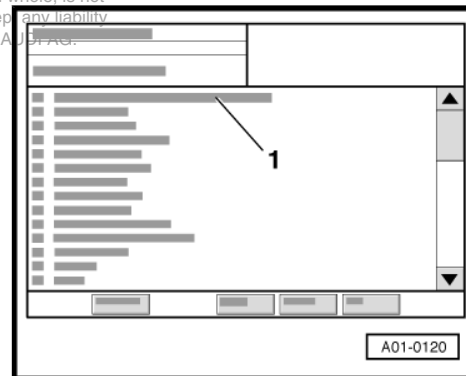
## 7.2 Checking cruise control system - TDI engines

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Engine idling.

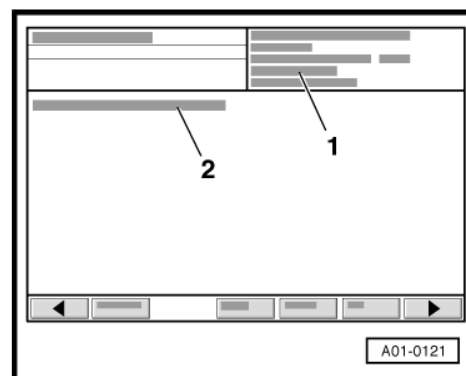
Display on -VAS 5051B- :

- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next display appears.



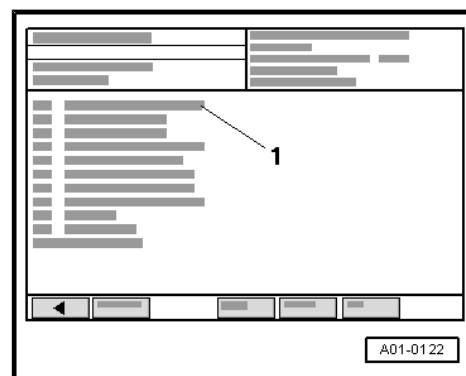
Display on -VAS 5051B- :

- 1 - Identification of engine control unit
  - 2 - Control unit identification of immobilizer
- Touch  key.



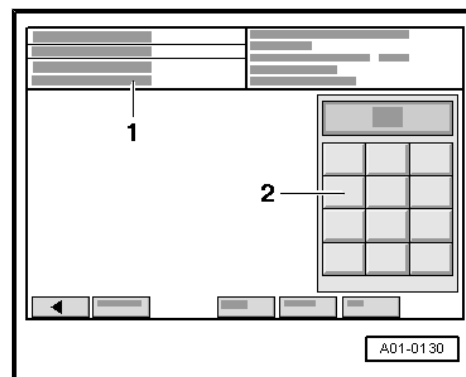
Display on -VAS 5051B- :

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



Display on -VAS 5051B- :

- On the keypad -2-, touch key  for "Display group 006" and confirm the entry by touching the  key.



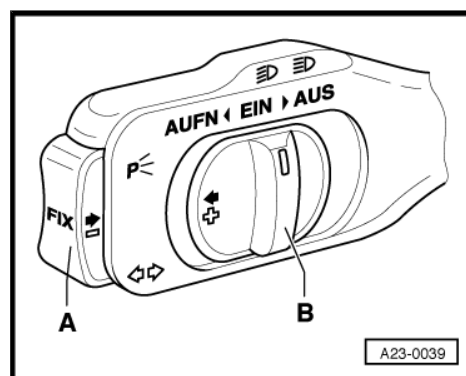
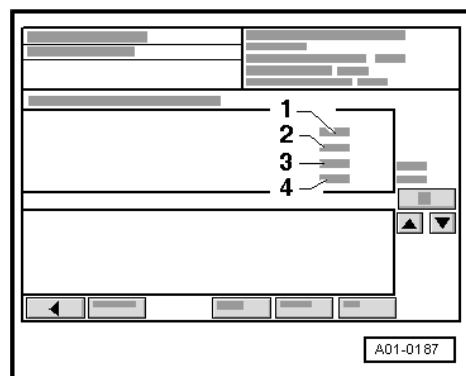
Display on -VAS 5051B- :

- Check display in zone -4-.

| Test condition                                                                                                                                             | Display zone 4 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| CCS released <sup>1)</sup>                                                                                                                                 | "0"            |
| <ul style="list-style-type: none"> <li>• <sup>1)</sup> If value "255" is displayed: Activate cruise control system ⇒ <a href="#">page 173</a> .</li> </ul> |                |

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- Check the display in zone -3-.



| Test condition                                                | Display zone 3 |     |     |     |     |     |
|---------------------------------------------------------------|----------------|-----|-----|-----|-----|-----|
| Switch -B- set to "OFF", latched                              | 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 "ACTIVATION"                                | 0              | 0   | "1" | 0   | 1   | 1   |
| Switch -B- set to "OFF", before latching point (deceleration) | 0              | 0   | 0   | 0   | "0" | 1   |
| Brake pedal pressed                                           | 0              | "1" | 0   | 0   | 1   | 1   |
| Clutch pedal pressed                                          | "1"            | 0   | 0   | 0   | 1   | 1   |

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

If readings do not match specifications:

### Checking wiring

- Unplug the connector at the cruise control system switch ⇒ Rep. Gr. 94 .
- Connect the adapter -V.A.G 1598/22- (test box), - V.A.G 1598/30- or -V.A.G 1598/31- to the unplugged multi-pin connectors of the engine control unit ⇒ Rep. Gr. 23 .



### Note

- ◆ Use is always to be made for connecting measuring instruments (e.g. voltage tester -V.A.G 1527B-, portable multimeter -V.A.G 1526C-) of the adapter set -V.A.G 1594C- .
- ◆ The contact numbers of the multi-pin connectors coincide with the socket numbers of the adapter cable (test box).



### Caution

*To avoid damaging electronic components, select the appropriate measuring range before connecting the test leads and heed the test conditions.*

- Check for open circuit and short to earth or positive in the wiring ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Repair wiring if necessary.

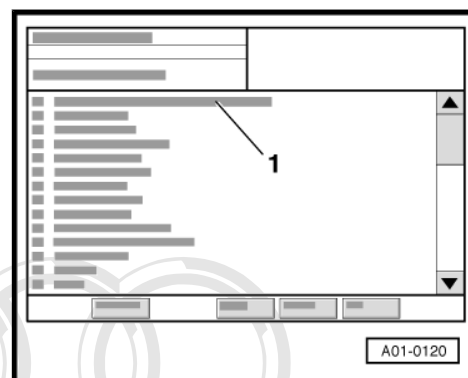
## 7.3 Activating/deactivating cruise control system

### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected ⇒ [page 1](#)
- Ignition on

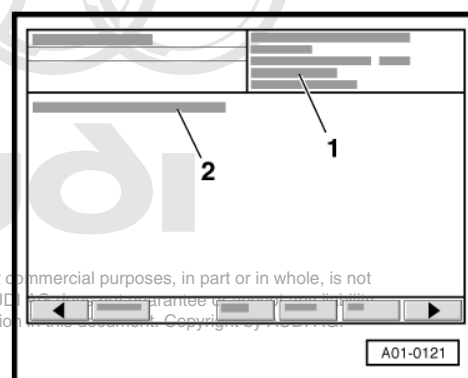
Display on -VAS 5051B- :

- From list -1- select vehicle system “01 - Engine electronics”.
- Wait until next display appears.



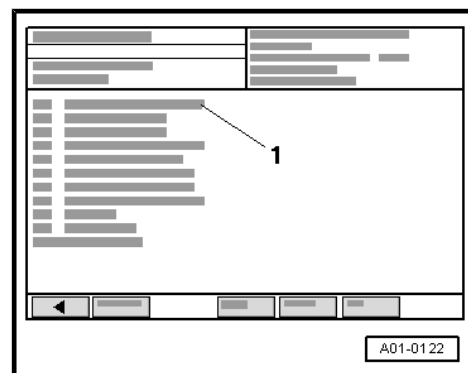
Display on -VAS 5051B- :

- 1 - Identification of engine control unit
- 2 - Control unit identification of immobilizer
- Touch key.



Display on -VAS 5051B- :

- From the list -1-, select function “11 - Login procedure” or “11 - Encoding II”.



Display on -VAS 5051B- :

1 - Enter code word

**Activating CCS:**

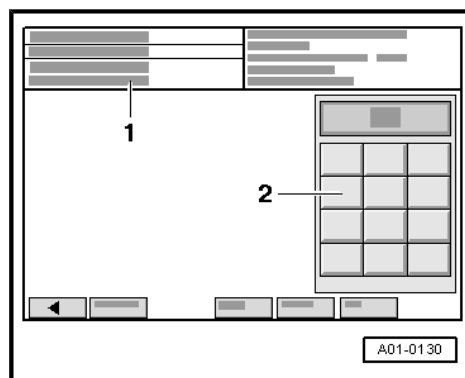
- On the keypad -2-, touch keys **1 1 4 6 3** and confirm the entry by touching the **Q** key.

**Deactivating CCS:**

- On the keypad -2-, touch keys **1 6 1 6 7** and confirm the entry by touching the **Q** key.

**Continued:**

- Terminate function “11 - Login procedure” or “11 - Encoding II” by touching **□** key.
- Touch “06 - End output”.
- Switch off ignition and unplug diagnostic connector.



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## 8 Acoustic Parking System (APS) self-diagnosis

### 8.1 General information

The parking system monitors the area around the vehicle by means of ultrasonic sensors in the rear bumper. Proximity warnings are given by way of an acoustic signal in the passenger compartment.

The rear sensors are deactivated if a trailer is attached to the vehicle and the trailer socket is connected.

On reversing (parking system active), proximity warnings are given as of a distance of less than approx. 150 cm.

Parking system components:

- 1 - Parking aid control unit -J446-
- 2 - Rear left parking aid sender -G203-
- 3 - Rear centre left parking aid sender -G204-
- 4 - Rear centre right parking aid sender -G205-
- 5 - Rear right parking aid sender -G206-
- 6 - Rear parking aid warning buzzer -H15-

#### Function

- ◆ After switching on the ignition, a self-test is implemented and completed in less than 1 second. The control unit is in operation, however proximity sensing is only activated on engaging reverse gear.
- ◆ If the parking system is ready for operation, a brief acoustic signal sounds (delay of 1 second on vehicles with automatic gearbox on account of P-D shift).
- ◆ An acoustic signal sounds for 5 seconds if a system fault is detected.
- ◆ The intervals between the acoustic pulses become shorter as the distance becomes less. The acoustic pulses sound continuously at distances of less than 30 cm.

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- ◆ No warning is given when driving alongside a wall.

### 8.2 Starting parking system self-diagnosis

#### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Ignition on

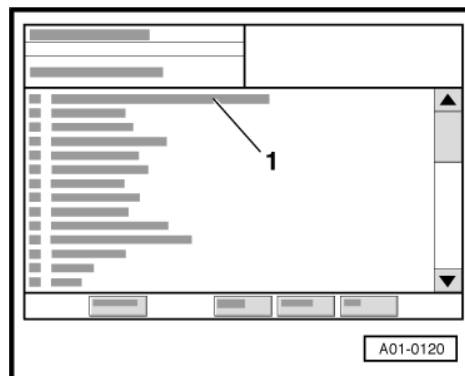


#### WARNING

*Heed safety precautions ⇒ [page 1](#).*

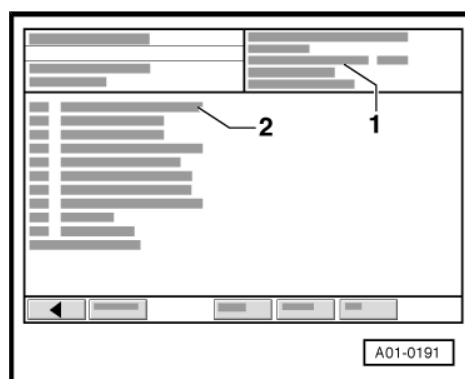
Display on -VAS 5051B- :

- From list -1- select vehicle system "76 - Parking system".
- Wait until next display appears.



Display on -VAS 5051B- :

- 1 - Control unit identification of parking system
- 2 - Selection of functions → [page 176](#)

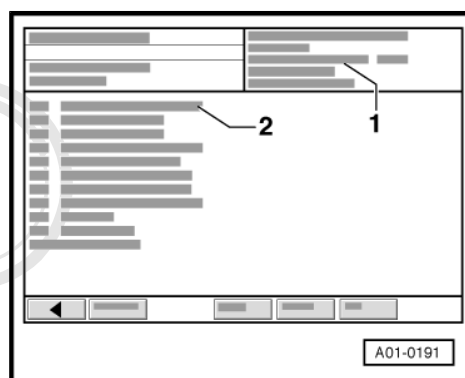


| Parking system control unit identification (example) |                                                                     |
|------------------------------------------------------|---------------------------------------------------------------------|
| 76 - Parking system                                  | Vehicle system                                                      |
| 4B0919283..                                          | Part no.; assignment ⇒ Parts catalogue                              |
| Parking system                                       | Component designation                                               |
| A4 ROW                                               | Model/country version                                               |
| D..                                                  | Data level (software version) of control unit                       |
| Code 104                                             | Control unit encoding (checking ⇒ <a href="#">page 182</a> )        |
| Workshop code 12345                                  | Workshop code of -VAS 5051B- with which encoding was last performed |

Display on -VAS 5051B- :

The following functions shown in the display -2- are available:

| Functions                       | Page                       |
|---------------------------------|----------------------------|
| 02 Interrogating fault memory   | ⇒ <a href="#">page 177</a> |
| 05 Erasing fault memory         | ⇒ <a href="#">page 180</a> |
| 06 End of output                | ⇒ <a href="#">page 181</a> |
| 07 Encoding control unit        | ⇒ <a href="#">page 182</a> |
| 08 Reading measured value block | ⇒ <a href="#">page 183</a> |
| 10 Adaption                     | ⇒ <a href="#">page 185</a> |



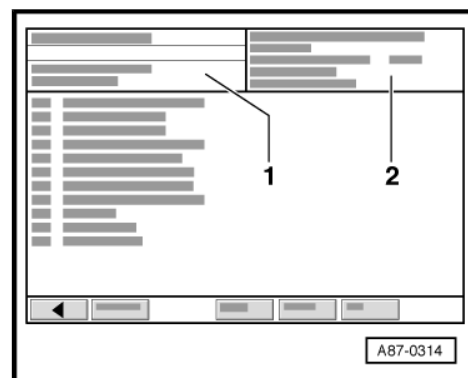
All other functions displayed cannot be selected or can be ignored in this case.

### Fault messages on -VAS 5051B-

If a fault message appears on the display, refer to → Operating instructions of vehicle diagnostic, testing and information system -VAS 5051B- .

If display zone -1- shows the fault message "Vehicle system not available":

- Check:
- ◆ Power supply to diagnostic connection ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ◆ Wiring between diagnostic connection and dash panel insert ⇒ Current flow diagrams, Electrical fault finding and Fitting locations



### 8.3 Interrogating fault memory



#### Note

The fault information displayed is not constantly updated, but rather only on starting self-diagnosis or using function "05 - Erasing fault memory".

#### Sequence of operations

- Start parking system self-diagnosis ⇒ [page 175](#).

Display on -VAS 5051B- :

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



Display on -VAS 5051B- :

- |                             |                                               |
|-----------------------------|-----------------------------------------------|
| -1- Content of fault memory | 0 faults detected<br>or<br>X faults detected  |
| -2- Fault                   | Fault code<br>Fault location<br>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 5051B- :

- Eliminate fault(s) in line with fault tables ⇒ [page 178](#) .
- From list -1-, select function "02 - Interrogating fault memory" again and erase fault memory ⇒ [page 180](#) .
- Select function "06 - End of output" from list ⇒ [page 181](#) .

#### B - No fault detected:

- Terminate function "02 - Interrogating fault memory" by touching key.
- From list -1-, select "06 - End of output" ⇒ [page 181](#) .



## 8.4 Fault tables



### Note

- ◆ *Faults occurring in monitored sensors or components are stored in the fault memory together with an indication of the type of fault.*
- ◆ *The fault tables are arranged according to the 5-digit fault codes in the left-hand column.*
- ◆ *All static and sporadic faults are stored in the fault memory: A fault is identified as being static if it persists for at least 2 seconds. If a fault is then no longer present, it is stored as being "sporadic". "Sporadic" additionally appears on the display.*
- ◆ *After switching on the ignition, all faults present are set to "sporadic" and only stored as being static if they are still present after checking.*
- ◆ *Sporadic faults which do not re-occur in the course of 50 driving cycles (ignition switched on for at least 5 minutes, vehicle speed greater than 30 km/h) are erased.*
- ◆ *Components indicated as being faulty by the -VAS 5051B- are not to be immediately replaced, but rather: Start by using the current flow diagram to check the wiring and connectors to these components. The earth connections are also to be checked on the basis of the current flow diagram. This is particularly important in the case of "sporadic" faults.*
- ◆ *On completion of repair work, interrogate fault memory again and erase.*

| Output on -VAS 5051B-                     | Possible cause of trouble                               | Remedy                                                       |
|-------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------|
| 00532<br>Supply voltage<br>Signal too low | ◆ Open circuit or short to earth/<br>positive in wiring | - Use current flow diagram to<br>check wiring and connectors |

| Output on -VAS 5051B-                               | Possible cause of trouble | Remedy                                                       |
|-----------------------------------------------------|---------------------------|--------------------------------------------------------------|
| 00625<br>Vehicle speed signal<br>Implausible signal | ◆ Loose contact in wire   | - Use current flow diagram to<br>check wiring and connectors |

| Output on -VAS 5051B-                              | Possible cause of trouble                                            | Remedy                                                       |
|----------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------|
| 01543<br>Rear parking aid warning buzzer -<br>H15- | ◆ Open circuit or short to earth/<br>positive in wiring to component | - Use current flow diagram to<br>check wiring and connectors |

| Output on -VAS 5051B-                                                                                        | Possible cause of trouble                                                                           | Remedy                                                                                                          |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>◆ Short to positive</li> <li>◆ Open circuit/short to earth</li> </ul> | <ul style="list-style-type: none"> <li>◆ Rear parking aid warning buzzer -H15- defective</li> </ul> | <ul style="list-style-type: none"> <li>– Replace rear parking aid warning buzzer -H15- ⇒ Rep. Gr. 94</li> </ul> |

| Output on -VAS 5051B-                                                                                                                       | Possible cause of trouble                                                                                                                                                    | Remedy                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 01544<br>Function indicator<br><ul style="list-style-type: none"> <li>◆ Open circuit/short to positive</li> <li>◆ Short to earth</li> </ul> | <ul style="list-style-type: none"> <li>◆ Open circuit or short to earth/ positive in wiring between parking aid control unit -J446- and parking aid button -E266-</li> </ul> | <ul style="list-style-type: none"> <li>– Use current flow diagram to check wiring and connectors</li> </ul> |

| Output on -VAS 5051B-                                                                                                                                        | Possible cause of trouble                                                                                           | Remedy                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 01545<br>Rear left parking aid sender -G203-<br><ul style="list-style-type: none"> <li>◆ Short to positive</li> <li>◆ Open circuit/short to earth</li> </ul> | <ul style="list-style-type: none"> <li>◆ Open circuit or short to earth/ positive in wiring to component</li> </ul> | <ul style="list-style-type: none"> <li>– Use current flow diagram to check wiring and connectors</li> </ul>   |
| <ul style="list-style-type: none"> <li>◆ Defective component</li> <li>◆ Implausible signal</li> </ul>                                                        | <ul style="list-style-type: none"> <li>◆ Rear left parking aid sender - G203- defective</li> </ul>                  | <ul style="list-style-type: none"> <li>– Replace rear left parking aid sender -G203- ⇒ Rep. Gr. 94</li> </ul> |

| Output on -VAS 5051B-                                                                                                                                               | Possible cause of trouble                                                                                           | Remedy                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 01546<br>Rear centre left parking aid sender -G204-<br><ul style="list-style-type: none"> <li>◆ Short to positive</li> <li>◆ Open circuit/short to earth</li> </ul> | <ul style="list-style-type: none"> <li>◆ Open circuit or short to earth/ positive in wiring to component</li> </ul> | <ul style="list-style-type: none"> <li>– Use current flow diagram to check wiring and connectors</li> </ul>          |
| <ul style="list-style-type: none"> <li>◆ Defective component</li> <li>◆ Implausible signal</li> </ul>                                                               | <ul style="list-style-type: none"> <li>◆ Rear centre left parking aid sender -G204- defective</li> </ul>            | <ul style="list-style-type: none"> <li>– Replace rear centre left parking aid sender -G204- ⇒ Rep. Gr. 94</li> </ul> |

| Output on -VAS 5051B-                                                                                                                                                | Possible cause of trouble                                                                                           | Remedy                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 01547<br>Rear centre right parking aid sender -G205-<br><ul style="list-style-type: none"> <li>◆ Short to positive</li> <li>◆ Open circuit/short to earth</li> </ul> | <ul style="list-style-type: none"> <li>◆ Open circuit or short to earth/ positive in wiring to component</li> </ul> | <ul style="list-style-type: none"> <li>– Use current flow diagram to check wiring and connectors</li> </ul>           |
| <ul style="list-style-type: none"> <li>◆ Defective component</li> <li>◆ Implausible signal</li> </ul>                                                                | <ul style="list-style-type: none"> <li>◆ Rear centre right parking aid sender -G205- defective</li> </ul>           | <ul style="list-style-type: none"> <li>– Replace rear centre right parking aid sender -G205- ⇒ Rep. Gr. 94</li> </ul> |

| Output on -VAS 5051B-                                                                                                                                   | Possible cause of trouble                                                                                                  | Remedy                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 01548<br>Rear right parking aid sender - G206-<br>♦ Short to positive<br>♦ Open circuit/short to earth<br>♦ Defective component<br>♦ Implausible signal | ♦ Open circuit or short to earth/ positive in wiring to component<br><br>♦ Rear right parking aid sender - G206- defective | – Use current flow diagram to check wiring and connectors<br><br>– Replace rear right parking aid sender -G206- ⇒ Rep. Gr. 94 |

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| Output on -VAS 5051B-                                      | Possible cause of trouble  | Remedy                                                    |
|------------------------------------------------------------|----------------------------|-----------------------------------------------------------|
| 01549<br>Parking aid sender power supply<br>Short to earth | ♦ Short to earth in wiring | – Use current flow diagram to check wiring and connectors |

| Output on -VAS 5051B-                             | Possible cause of trouble                                    | Remedy                                                    |
|---------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------|
| 01550<br>Reverse gear signal<br>Short to positive | ♦ Short to positive in wiring to reversing light switch -F4- | – Use current flow diagram to check wiring and connectors |

| Output on -VAS 5051B-           | Explanatory notes                           | Remedy                                                  |
|---------------------------------|---------------------------------------------|---------------------------------------------------------|
| 65535<br>Control unit defective | ♦ Parking aid control unit -J446- defective | – Replace parking aid control unit -J446- ⇒ Rep. Gr. 94 |

## 8.5 Erasing fault memory



### Note

*If the fault memory cannot be erased, interrogate it again and rectify fault.*

### Sequence of operations

- Fault memory interrogated ⇒ [page 177](#)
- All faults eliminated

After fault memory interrogation:

Display on -VAS 5051B- :

- From list -1-, select function “05 - Erasing fault memory”.



Display on -VAS 5051B- :

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

**i Note**

*If the following message appears in display zone -1-: "Fault memory not yet interrogated", this indicates failure to comply exactly with the sequence of operations. The fault memory can only be erased after it has been interrogated.*

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

- Touch **OK** key in display -2-.
- Interrogate fault memory again on completion of repair work.

**i Note**

*This erases faults stored during fault rectification, e.g. as a result of unplugging connectors.*

- Terminate function "05 - Erasing fault memory" by touching **ESC** key.

## 8.6 End of output

### Sequence of operations

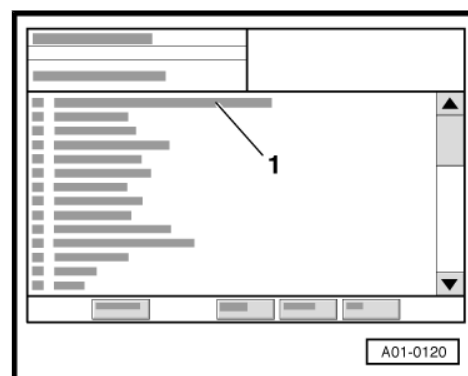
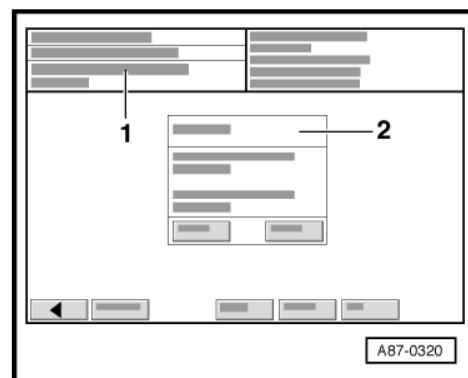
Display on -VAS 5051B- :

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

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Display on -VAS 5051B- :

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



## 8.7 Encoding control unit



### Note

Encoding sets the parking aid control unit -J446- to the specific vehicle equipment.

### Sequence of operations

- Start parking system self-diagnosis ⇒ [page 175](#).

Display on -VAS 5051B- :

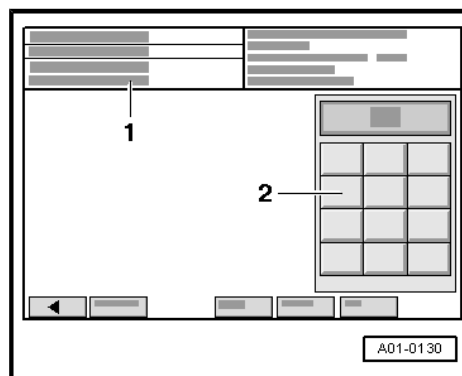
- From list -1-, select function "07 - Encoding control unit".



Display on -VAS 5051B- :

1 - Enter code word

| Encoding table |                                          |
|----------------|------------------------------------------|
| 0              | Manual gearbox                           |
| 1              | Automatic gearbox                        |
| 0              | No confirmation of function              |
| 1              | With confirmation of function (ex works) |
| 0              | Saloon Rest of World                     |
| 1              | Avant Rest of World                      |
| 4              | Audi A4                                  |



Display on -VAS 5051B- :

- Use keypad -2- to enter the control unit code as per encoding table.

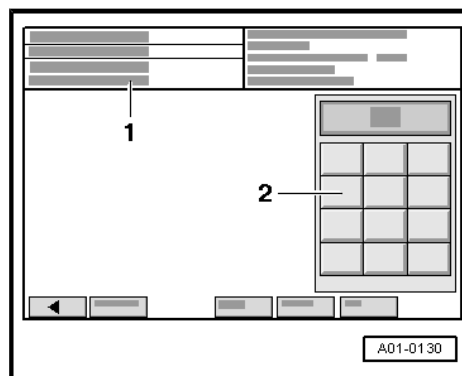
|          |                                             |
|----------|---------------------------------------------|
| Example: |                                             |
| 1        | ← Keypad entry (max. 4-digit)               |
| 1        | Audi A4                                     |
| 0        | Saloon Rest of World: 0                     |
| 1        | With confirmation of function (ex works): 1 |
| 4        | Automatic gearbox: 1                        |

- Confirm entry by touching [Q] key.

Display on -VAS 5051B- :

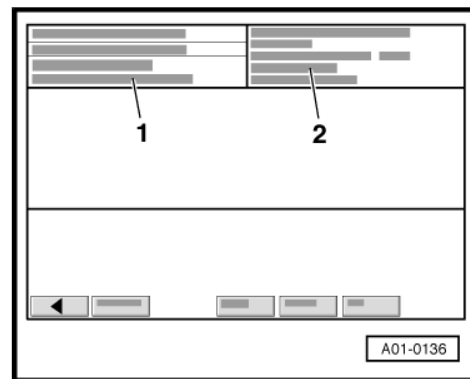
1 - Encoding in progress

- Wait until next display appears.



Display on -VAS 5051B- :

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



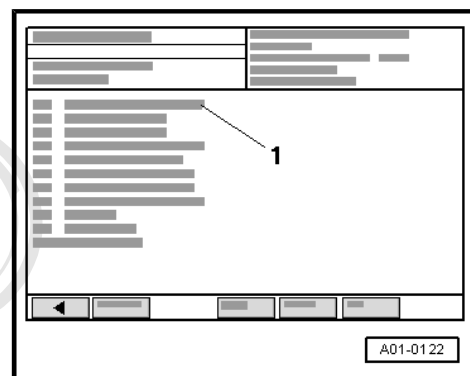
## 8.8 Reading measured value block

### Sequence of operations

- Start parking system self-diagnosis ➔ [page 175](#) .

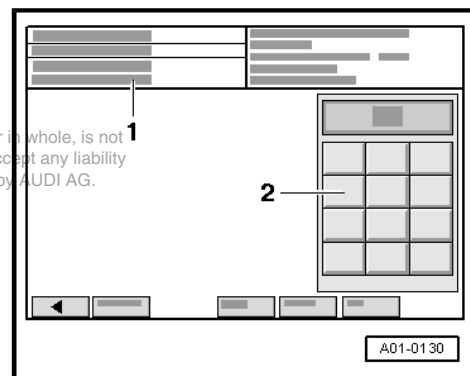
Display on -VAS 5051B- :

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



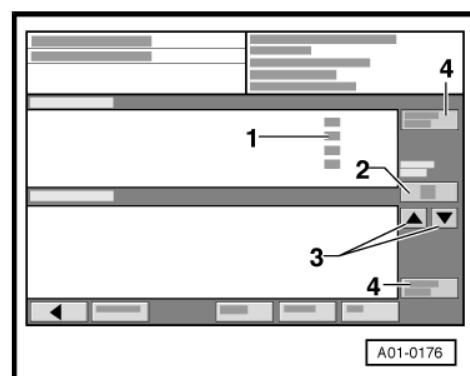
Display on -VAS 5051B- :

- 1 - Enter display group
- Use keypad -2- to enter the desired "display group number" ➔ [page 183](#) and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Display zones 1 ... 4. If a display zone is not assigned, there is no display on this line.
  - 2 - The display group selected is shown here
  - 3 - Touching these keys permits switching to a different display group.
  - 4 - Touching these keys permits switching to a different function (e.g. from "Reading measured value block" to "Basic setting" and vice versa).
- Terminate function "08 - Reading measured value block" by touching  key.



### List of display groups

| Display group 001 |                                              |  |
|-------------------|----------------------------------------------|--|
| Display zones     | Explanatory notes                            |  |
| 1                 | Rear left parking aid sender -G203- distance |  |

| Display group 001 |        |                                                                                                                     |
|-------------------|--------|---------------------------------------------------------------------------------------------------------------------|
| Display zones     |        | Explanatory notes                                                                                                   |
|                   | ... cm | <ul style="list-style-type: none"> <li>0 ... 200 cm</li> </ul>                                                      |
| 2                 | ... cm | Rear centre left parking aid sender -G204- distance <ul style="list-style-type: none"> <li>0 ... 200 cm</li> </ul>  |
| 3                 | ... cm | Rear centre right parking aid sender -G205- distance <ul style="list-style-type: none"> <li>0 ... 200 cm</li> </ul> |
| 4                 | ... cm | Rear right parking aid sender -G206- distance <ul style="list-style-type: none"> <li>0 ... 200 cm</li> </ul>        |

| Display group 002 |                                                                                                                                                                                                                                                                                     |                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Display zones     |                                                                                                                                                                                                                                                                                     | Explanatory notes                                                                                                       |
| 1                 | ... cm                                                                                                                                                                                                                                                                              | Shortest distance of the 4 measured values                                                                              |
| 2                 | ... km/h                                                                                                                                                                                                                                                                            | Vehicle speed                                                                                                           |
| 3                 | Protected by copyright. Copying or reproduction for special 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. | <b>Warning buzzer</b> <ul style="list-style-type: none"> <li>Acoustic signal on</li> <li>Acoustic signal off</li> </ul> |
| 4                 |                                                                                                                                                                                                                                                                                     | Not used                                                                                                                |

| Display group 003 |       |                                                                                                            |
|-------------------|-------|------------------------------------------------------------------------------------------------------------|
| Display zones     |       | Explanatory notes                                                                                          |
| 1                 | ... V | Parking aid sender power supply                                                                            |
| 2                 | ...   | Reverse gear recognition <ul style="list-style-type: none"> <li>Reverse yes</li> <li>Reverse no</li> </ul> |
| 3                 | ...   | Trailer recognition <ul style="list-style-type: none"> <li>Trailer yes</li> <li>Trailer no</li> </ul>      |
| 4                 |       | Not used                                                                                                   |

| Display group 004 |        |                                                                                                                                  |
|-------------------|--------|----------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |        | Explanatory notes                                                                                                                |
| 1                 | ... ms | Rear left parking aid sender -G203- decay time <ul style="list-style-type: none"> <li>max. 4 ms <sup>1)</sup></li> </ul>         |
| 2                 | ... ms | Rear centre left parking aid sender -G204- decay time <ul style="list-style-type: none"> <li>max. 4 ms <sup>1)</sup></li> </ul>  |
| 3                 | ... ms | Rear centre right parking aid sender -G205- decay time <ul style="list-style-type: none"> <li>max. 4 ms <sup>1)</sup></li> </ul> |
| 4                 |        | Rear right parking aid sender -G206- decay time                                                                                  |

|                                                                                                                                                                         |        |                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------|
| Display group 004                                                                                                                                                       |        |                           |
| Display zones                                                                                                                                                           |        | Explanatory notes         |
|                                                                                                                                                                         | ... ms | • max. 4 ms <sup>1)</sup> |
| • <sup>1)</sup> If the decay time with reverse gear engaged is more than 4.00 ms, either the parking aid sender is defective or there is an open circuit in the wiring. |        |                           |

## 8.9 Adaption

The individual functions are called up by way of the appropriate adaption channel number.

### Adaption table

| Adaption channel | Function                                                   |
|------------------|------------------------------------------------------------|
| 01               | Volume of alarm tone ⇒ <a href="#">page 188</a>            |
| 02               | Pitch (frequency) of alarm tone ⇒ <a href="#">page 189</a> |

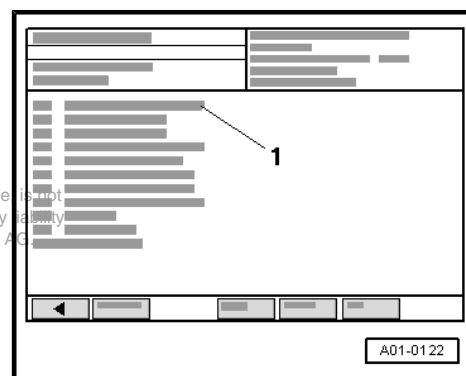
### Implementing function "10 - Adaption"

- Start parking system self-diagnosis ⇒ [page 175](#).

Display on -VAS 5051B- :

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

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Display on -VAS 5051B- :

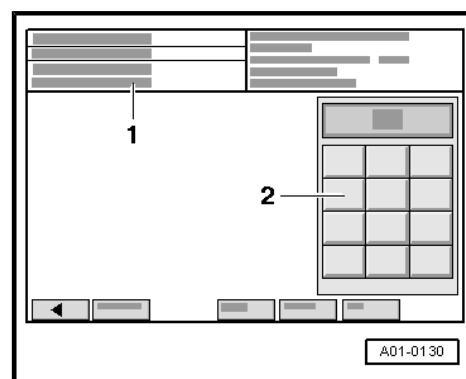
1 - Enter channel number

- Enter desired adaption channel on keypad -2- ⇒ [page 185](#) and confirm entry by touching key.



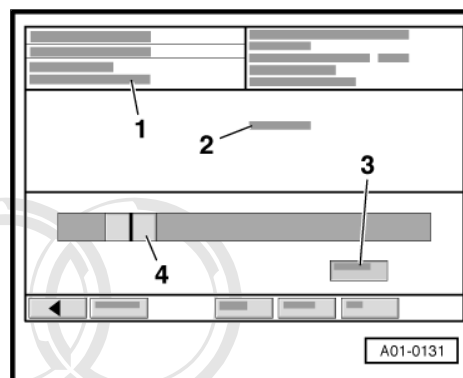
### Note

*After altering an adaption value or exiting from an adaption channel, function "10 - Adaption" must be selected again to choose a different adaption channel.*



Display on -VAS 5051B- :

- 1 - Channel X reading and testing
- 2 - Text display for channel selected or no display
- 4 - Bar set to current adaption value



#### A - Altering adaption value by way of bar

Display on -VAS 5051B- :

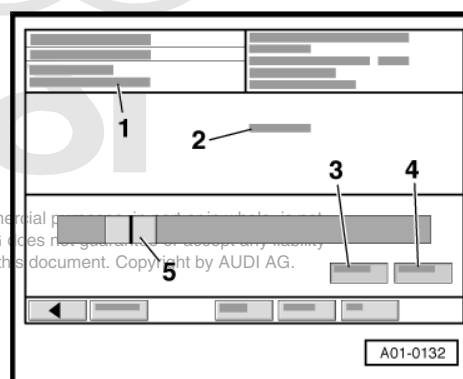
- Move the bar -5- in the required direction or touch the panel next to the bar, thus causing it to move in the desired direction.
- Touch the **Save** key -4-.



#### Note

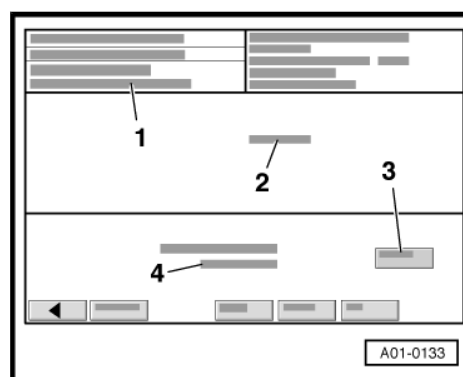
If the **Save** key does not appear on the display, entries can only be made directly by way of the keypad ⇒ [page 187](#) .

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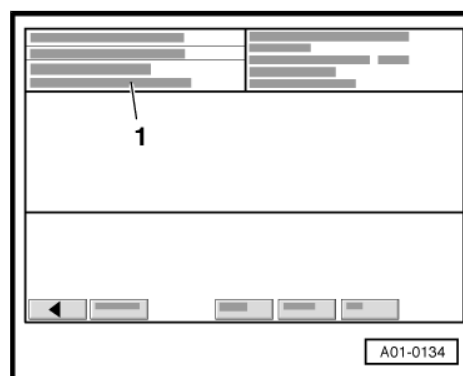
Display on -VAS 5051B- :

- 1 - Store channel X
- 2 - Text display for channel selected or no display
- 4 - Original value X new value X
- Confirm the new adaption value by touching the **Accept** key -3-.



Display on -VAS 5051B- :

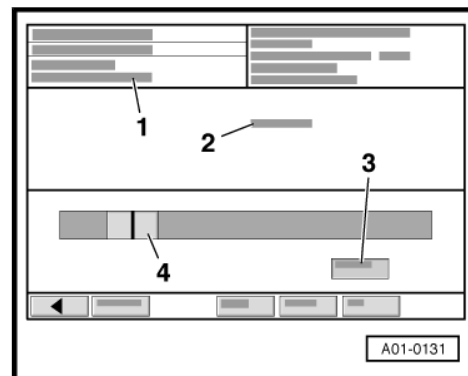
- 1 - Channel X value X stored
- Terminate function "10 - Adaption" by touching **□** key.



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

Display on -VAS 5051B- :

- Touch **keypad** key -Item 3-.



Display on -VAS 5051B- :

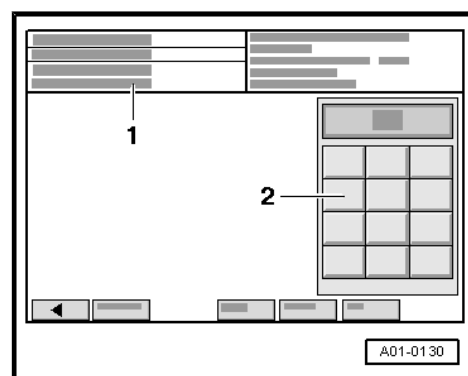
1 - Enter adaption value

- Enter the required adaption value on the keypad -2-.

Example: Required input value = "1"

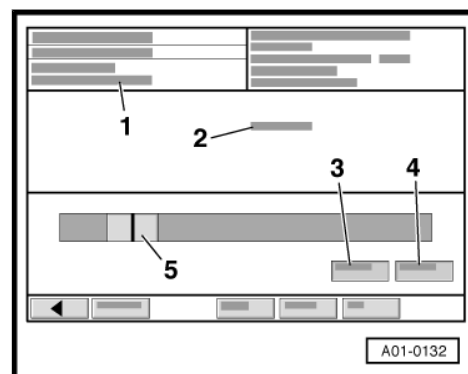
Keypad entry **1**

- Confirm entry by touching **0** key.



Display on -VAS 5051B- :

- Touch the **Save** key -4-.



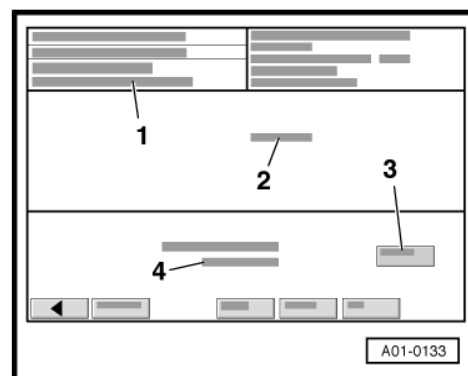
Display on -VAS 5051B- :

1 - Store channel X

2 - Text display for channel selected or no display

4 - Original value X new value X

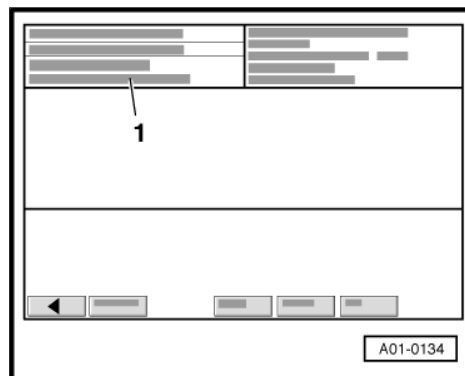
- Confirm the new adaption value by touching the **Accept** key -3-.



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Display on -VAS 5051B- :

- 1 - Channel X value X stored
- Terminate function "10 - Adaption" by touching key.

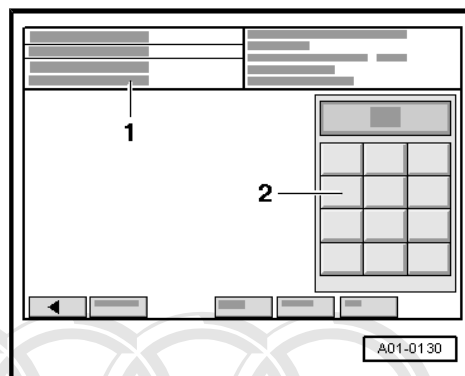


### Adaption channel 01 - Volume of alarm tone

This function is used to adapt the volume of the alarm tone.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key for "Adaption channel 01" and confirm the entry by touching the key.



Display on -VAS 5051B- :

- 1 - Channel 1 reading and testing
- 4 - Bar set to current adaption value

| Volume         | Low ... High |   |   |   |   |   |
|----------------|--------------|---|---|---|---|---|
| Adaption value | 2            | 3 | 4 | 5 | 6 | 7 |

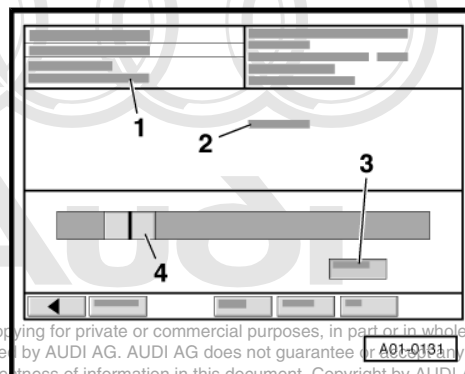
- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 186](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 187](#) .
- Enter the adaption value.

Exam- Medium volume = "4"  
ple:

Keypad entry 4



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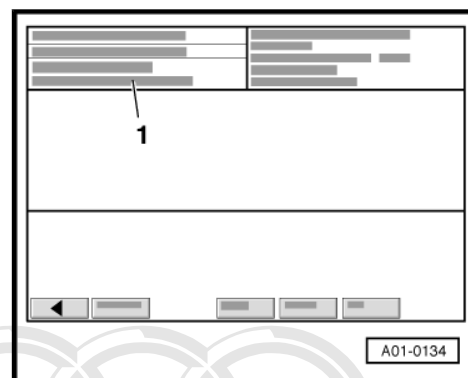


### Note

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

Display on -VAS 5051B- following successful adaption. Example:

- 1 - Channel 1 value 4 stored
- Terminate function "10 - Adaption" by touching  key.

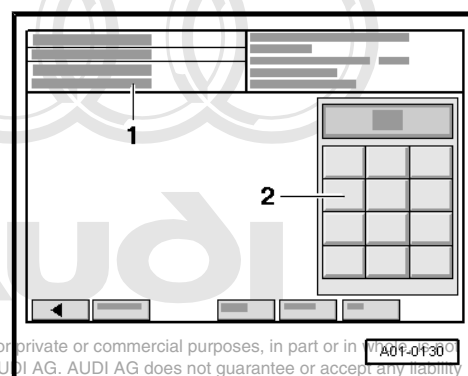


### Adaption channel 02 - Pitch (frequency) of alarm tone

This function is used to adapt the pitch (frequency) of the alarm tone.

Display on -VAS 5051B- :

- 1 - Enter channel number
- On the keypad -2-, touch key  for "Adaption channel 02" and confirm the entry by touching the  key.



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Display on -VAS 5051B- :

- 1 - Channel 2 reading and testing
- 4 - Bar set to current adaption value

| Pitch          | 0,5      ...      2 kHz |   |   |   |   |
|----------------|-------------------------|---|---|---|---|
| Adaption value | 0                       | 1 | 2 | 3 | 4 |

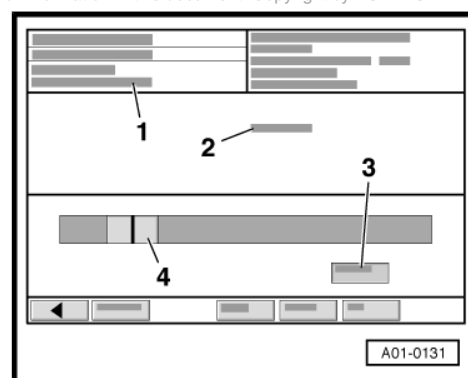
- Use the bar to alter the adaption value ⇒ "A - Altering adaption value by way of bar" ⇒ [page 186](#) .

Or

- Alter the adaption value by means of direct entry ⇒ "B - Altering adaption value by means of direct entry" ⇒ [page 187](#) .
- Enter the adaption value.

Exam- Pitch 1 kHz = "2"  
ple:

Keypad entry 



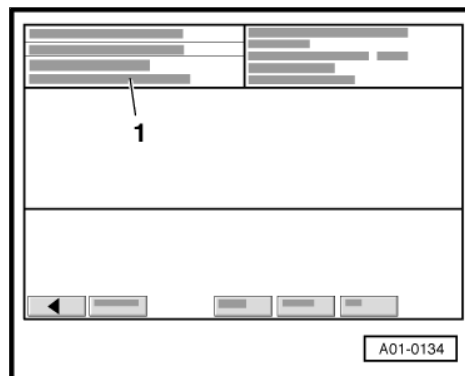
### Note

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

Display on -VAS 5051B- following successful adaption. Example:

1 - Channel 2 value 2 stored

– Terminate function “10 - Adaption” by touching  key.



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## 9 Automatic headlight range control self-diagnosis

### 9.1 General information

#### Function

- ◆ The automatic static headlight range control function corrects the angle of the dipped beam at the start of a journey or with the vehicle stationary.
- ◆ One level sender each at the front and rear axle signals the suspension compression status of the vehicle. A signal proportional to the vehicle speed is also processed.
- ◆ The control unit evaluates these signals and actuates the headlight range control motors with dipped beam switched on.
- ◆ If, on interrupting a journey, a load is detected (passengers entering the vehicle) from a change in the compression status of the suspension, the headlights are adjusted automatically to the load condition.
- ◆ Drivers are made aware of system faults by way of a warning symbol in the centre display of the dash panel insert.

Components of automatic headlight range control system:

- 1 - Headlight range control unit -J431-
- 2 - Rear left vehicle level sender -G76-
- 3 - Front left vehicle level sender -G78-
- 4 - Left headlight range control motor -V48-
- 5 - Right headlight range control motor -V49-

### 9.2 Starting automatic headlight range control self-diagnosis

#### Sequence of operations

- Vehicle diagnostic, testing and information system -VAS 5051B- connected and vehicle self-diagnosis selected  
⇒ [page 1](#)
- Ignition on

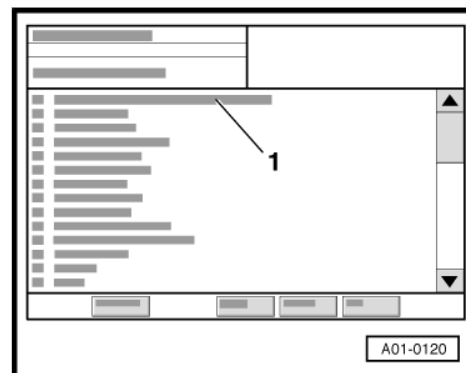


#### WARNING

Heed safety precautions ⇒ [page 1](#).

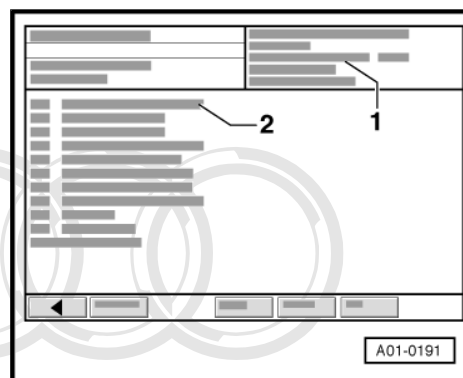
Display on -VAS 5051B- :

- From list -1- select vehicle system "55 - Headlight range control".
- Wait until next display appears.



Display on -VAS 5051B- :

- 1 - Headlight range control unit identification
- 2 - Selection of functions ⇒ [page 192](#)

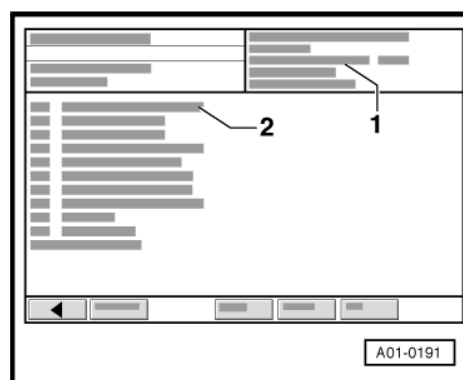


| Headlight range control unit identification (example) |                                                                     |
|-------------------------------------------------------|---------------------------------------------------------------------|
| 55 - Headlight range control                          | Vehicle system                                                      |
| 4B0907357..                                           | Part no.; assignment ⇒ Parts catalogue                              |
| Headlight range control system                        | Component designation                                               |
| D..                                                   | Data level (software version) of control unit                       |
| Code 3                                                | Control unit encoding (checking ⇒ <a href="#">page 200</a> )        |
| Workshop code 12345                                   | Workshop code of -VAS 5051B- with which encoding was last performed |

Display on -VAS 5051B- :

The following functions shown in the display -2- are available:

| Functions                       | Page                       |
|---------------------------------|----------------------------|
| 02 Interrogating fault memory   | ⇒ <a href="#">page 193</a> |
| 03 Final control diagnosis      | ⇒ <a href="#">page 195</a> |
| 04 Basic setting                | ⇒ <a href="#">page 196</a> |
| 05 Erasing fault memory         | ⇒ <a href="#">page 198</a> |
| 06 End of output                | ⇒ <a href="#">page 199</a> |
| 07 Encoding control unit        | ⇒ <a href="#">page 200</a> |
| 08 Reading measured value block | ⇒ <a href="#">page 201</a> |



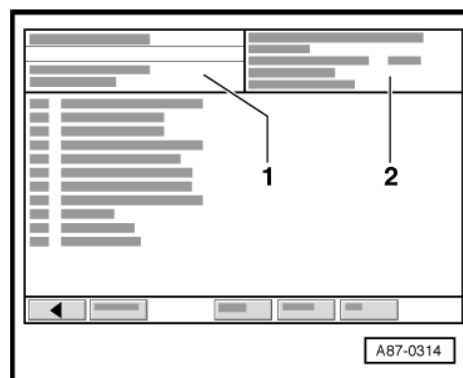
All other functions displayed cannot be selected or can be ignored in this case.

### Fault messages on -VAS 5051B-

If a fault message appears on the display, refer to ⇒ Operating instructions of vehicle diagnostic, testing and information system -VAS 5051B- .

If display zone -1- shows the fault message "Vehicle system not available":

- Check:
- ◆ Power supply to diagnostic connection ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ◆ Wiring between diagnostic connection and dash panel insert ⇒ Current flow diagrams, Electrical fault finding and Fitting locations



## 9.3 Interrogating fault memory



### Note

*The fault information displayed is not constantly updated, but rather only on starting self-diagnosis or using function "05 - Erasing fault memory".*

### Sequence of operations

- Start automatic headlight range control self-diagnosis  
⇒ [page 191](#).

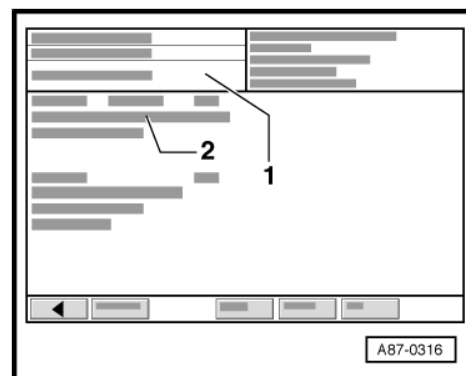
Display on -VAS 5051B- :

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



Display on -VAS 5051B- :

- |                             |                                               |
|-----------------------------|-----------------------------------------------|
| -1- Content of fault memory | 0 faults detected<br>or<br>X faults detected  |
| -2- Fault                   | Fault code<br>Fault location<br>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 5051B- :

- Eliminate fault(s) in line with fault tables ⇒ [page 194](#).
- From list -1-, select function "02 - Interrogating fault memory" again and erase fault memory ⇒ [page 198](#).
- Select function "06 - End of output" from list ⇒ [page 199](#).

### B - No fault detected:

- Terminate function "02 - Interrogating fault memory" by touching  key.
- From list -1-, select "06 - End of output" ⇒ [page 199](#).



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## 9.4 Fault tables



### Note

- ◆ *Faults occurring in monitored sensors or components are stored in the fault memory together with an indication of the type of fault.*
- ◆ *The fault tables are arranged according to the 5-digit fault codes in the left-hand column.*
- ◆ *All static and sporadic faults are stored in the fault memory: A fault is identified as being static if it persists for at least 2 seconds. If a fault is then no longer present, it is stored as being "sporadic". "Sporadic" additionally appears on the display.*
- ◆ *After switching on the ignition, all faults present are set to "sporadic" and only stored as being static if they are still present after checking.*
- ◆ *Sporadic faults which do not re-occur in the course of 50 driving cycles (ignition switched on for at least 5 minutes, vehicle speed greater than 30 km/h) are erased.*
- ◆ *Components indicated as being faulty by the -VAS 5051B- are not to be immediately replaced, but rather: Start by using the current flow diagram to check the wiring and connectors to these components. The earth connections are also to be checked on the basis of the current flow diagram. This is particularly important in the case of "sporadic" faults.*
- ◆ *On completion of repair work, interrogate fault memory again and erase.*

| Output on -VAS 5051B-                     | Possible cause of trouble                               | Remedy                                                       |
|-------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------|
| 00532<br>Supply voltage<br>Signal too low | ◆ Open circuit or short to earth/<br>positive in wiring | – Use current flow diagram to<br>check wiring and connectors |

| Output on -VAS 5051B-                               | Possible cause of trouble                                                           | Remedy                                                       |
|-----------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 00625<br>Vehicle speed signal<br>Implausible signal | Open circuit or short to earth/positive<br>in wiring to ABS control unit -<br>J104- | – Use current flow diagram to<br>check wiring and connectors |
|                                                     | ◆ ABS control unit -J104- defective                                                 | – Replace ABS control unit -J104-<br>⇒ Rep. Gr. 45           |

| Output on -VAS 5051B-                                                          | Possible cause of trouble                                            | Remedy                                                          |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------|
| 00774<br>Rear left vehicle level sender -G76-<br>◆ Open circuit/short to earth | ◆ Open circuit or short to earth/<br>positive in wiring to component | – Use current flow diagram to<br>check wiring and connectors    |
| ◆ Short to positive                                                            | ◆ Rear left vehicle level sender -<br>G76- defective                 | – Replace rear left vehicle level<br>sender -G76- ⇒ Rep. Gr. 42 |

| Output on -VAS 5051B-                                                           | Possible cause of trouble                                            | Remedy                                                       |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------|
| 00776<br>Front left vehicle level sender -G78-<br>◆ Open circuit/short to earth | ◆ Open circuit or short to earth/<br>positive in wiring to component | – Use current flow diagram to<br>check wiring and connectors |

| Output on -VAS 5051B- | Possible cause of trouble                          | Remedy                                                        |
|-----------------------|----------------------------------------------------|---------------------------------------------------------------|
| ♦ Short to positive   | ♦ Front left vehicle level sender - G78- defective | – Replace front left vehicle level sender -G78- ⇒ Rep. Gr. 40 |

| Output on -VAS 5051B-                                                                              | Possible cause of trouble                                         | Remedy                                                    |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------|
| 01537<br>Vehicle level sender power supply<br>♦ Open circuit/short to earth<br>♦ Short to positive | ♦ Open circuit or short to earth/ positive in wiring to component | – Use current flow diagram to check wiring and connectors |

| Output on -VAS 5051B-            | Possible cause of trouble                      | Remedy                                                              |
|----------------------------------|------------------------------------------------|---------------------------------------------------------------------|
| 01539<br>Headlights not adjusted | ♦ “Basic setting 2” not performed              | – Perform entire basic setting procedure ⇒ <a href="#">page 196</a> |
|                                  | ♦ Vehicle level sender not in adjustment range | – Replace holder for vehicle level sender ⇒ Rep. Gr. 40             |

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| Output on -VAS 5051B-           | Possible cause of trouble                        | Remedy                                                      |
|---------------------------------|--------------------------------------------------|-------------------------------------------------------------|
| 65535<br>Control unit defective | ♦ Headlight range control unit - J431- defective | – Replace headlight range control unit -J431- ⇒ Rep. Gr. 94 |

## 9.5 Final control diagnosis



### Note

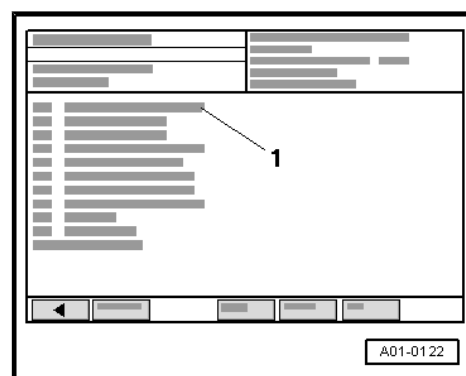
- ♦ *Final control diagnosis can only be performed with engine stopped and ignition on.*
- ♦ *If final control diagnosis detects a fault, locate and eliminate cause of trouble.*

### Sequence of operations

- Start automatic headlight range control self-diagnosis ⇒ [page 191](#).

Display on -VAS 5051B- :

- In list -1- select function “03 - Final control diagnosis”.

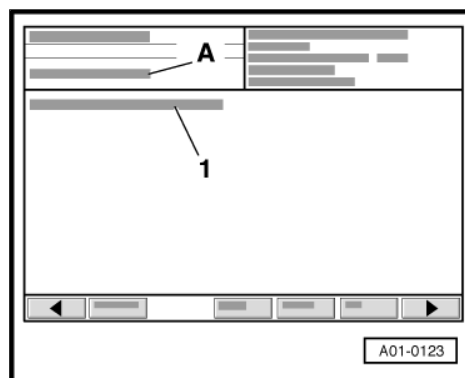


Display on -VAS 5051B- :

A - 1. control element in test

1 - Lowering of headlights

- Headlights are lowered as far as lower end position.



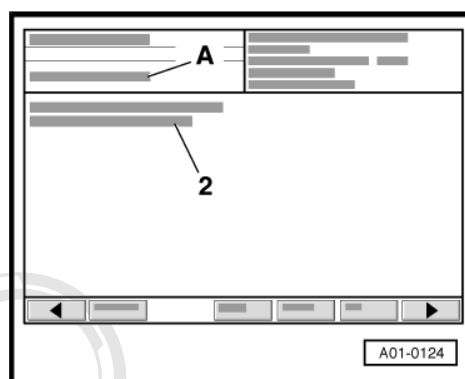
- Touch  key.

Display on -VAS 5051B- :

A - 2. control element in test

2 - Raising of headlights

- Headlights are raised as far as upper end position.

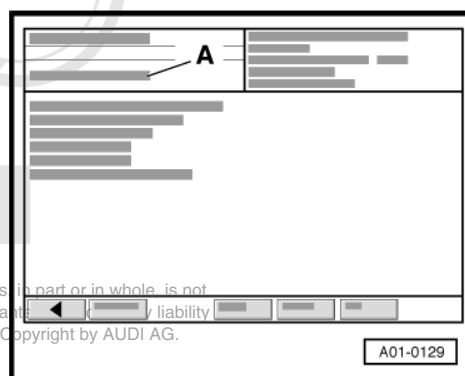


- Touch  key.

Display on -VAS 5051B- :

A - Control element test over

- Terminate function “03 - Final control diagnosis” by touching  key.



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## 9.6 Basic setting

Basic setting must be performed after replacing a headlight, a vehicle level sender or the control unit.

### Sequence of operations

- The vehicle must be in a precisely defined load status.
- For applicable specifications and input values for load status, refer to ⇒ Maintenance ; Booklet 802 .
- Set the vehicle to a uniform suspension extension status by moving the body up and down several times at each wheel and allowing the vehicle to come to rest.

- Start automatic headlight range control self-diagnosis  
⇒ [page 191](#) .

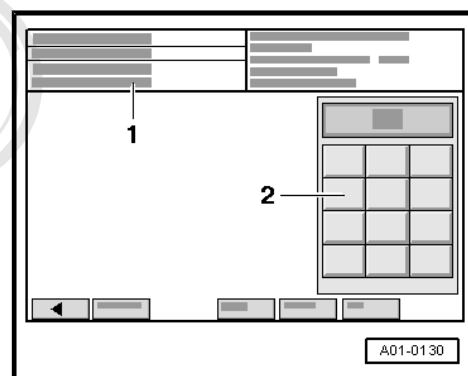
Display on -VAS 5051B- :

- From list -1- select function “04 - Basic setting”.



Display on -VAS 5051B- :

- On the keypad -2-, touch key **[1]** for “Display group 001” and confirm the entry by touching the **[Q]** key.



Display on -VAS 5051B-

1 - Basic setting

2 - Display group 1

3 - Wait

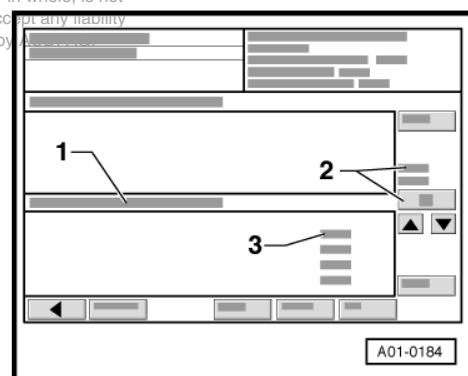
- Headlights are moved to adjustment position.

- Wait until next display appears.

3 - Headlight adjustment

- Headlights are now in adjustment position.

- Adjust the headlights with the headlight aiming device -  
VAS 5046- ⇒ Maintenance ; Booklet 802 .



#### Note

“Basic setting 1” deactivates control mode and “Headlights not adjusted” is entered in the fault memory.

- To switch to “display group 002”, touch  key.

Display on -VAS 5051B- :

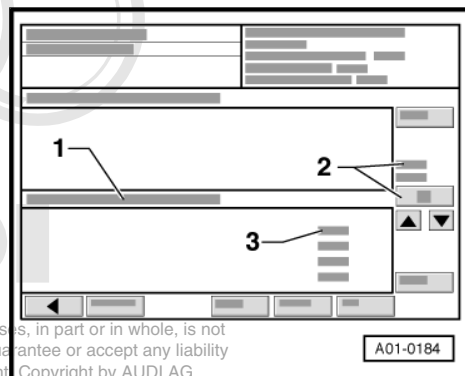
- 1 - Basic setting
  - 2 - Display group 2
  - 3 - Control position learnt
- Control unit has now learnt this position as control position.



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*Entry in fault memory “Headlights not adjusted” is erased and control mode re-assumed.*



- Terminate function “04 - Basic setting” by touching  key.

## 9.7 Erasing fault memory



#### Note

*If the fault memory cannot be erased, interrogate it again and rectify fault.*

#### Sequence of operations

- Fault memory interrogated ⇒ [page 193](#)
- All faults eliminated

After fault memory interrogation:

Display on -VAS 5051B- :

- From list -1-, select function “05 - Erasing fault memory”.



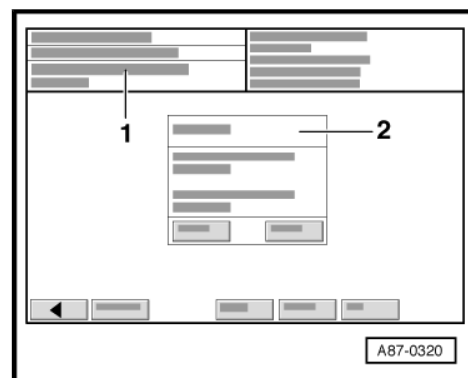
Display on -VAS 5051B- :

- 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 indicates failure to comply exactly with the sequence of operations. The fault memory can only be erased after it has been interrogated.*



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

- Touch **OK** key in display -2-.
- Interrogate fault memory again on completion of repair work.



#### Note

*This erases faults stored during fault rectification, e.g. as a result of unplugging connectors.*

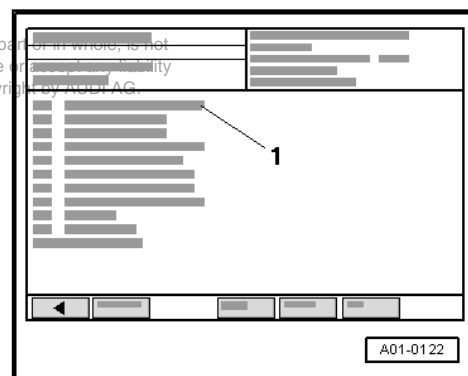
- Terminate function "05 - Erasing fault memory" by touching **ESC** key.

## 9.8 End of output

### Sequence of operations

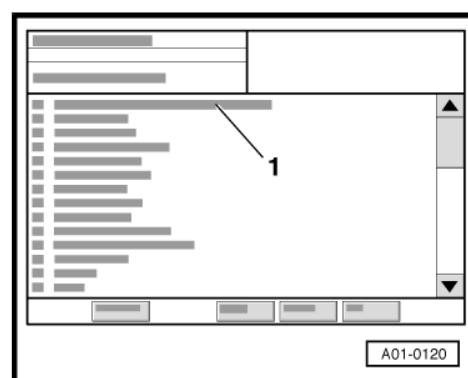
Display on -VAS 5051B- :

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



Display on -VAS 5051B- :

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



## 9.9 Encoding control unit



### Note

Encoding sets the headlight range control unit -J431- to the relevant type of vehicle.

### Sequence of operations

- Start automatic headlight range control self-diagnosis  
⇒ [page 191](#).

Display on -VAS 5051B- :

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

Display on -VAS 5051B- :

1 - Enter code word

| Encoding table |                                        |
|----------------|----------------------------------------|
| 3              | A4 Saloon/Avant with front-wheel drive |
| 4              | A4 Saloon/Avant with four-wheel drive  |

Display on -VAS 5051B- :

- Use keypad -2- to enter the control unit code as per encoding table.

Example: A4 Saloon/Avant with front-wheel drive = "3"

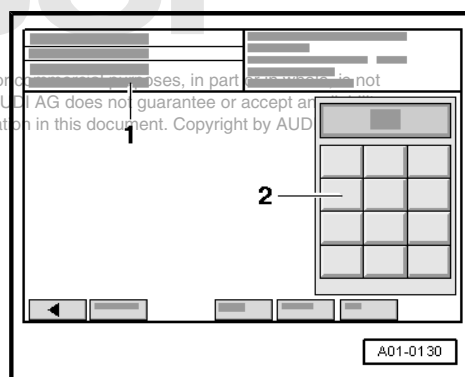
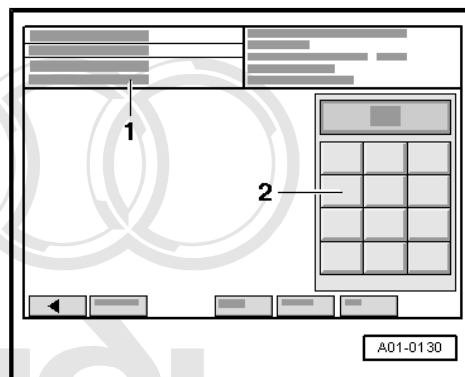
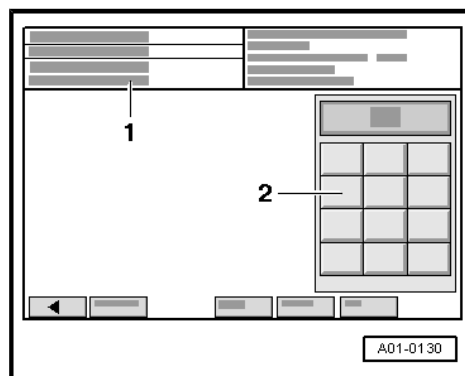
Keypad entry 

- Confirm entry by touching  key.

Display on -VAS 5051B- :

1 - Encoding in progress

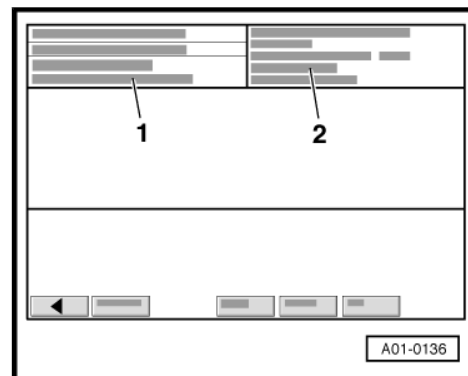
- Wait until next display appears.



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Display on -VAS 5051B- :

- 1 - Vehicle system encoding completed
  - 2 - Control unit identification with new code (old code in parentheses)
- Terminate function "07 - Encoding control unit" by touching  key.
  - The implement basic setting ➔ [page 196](#) .



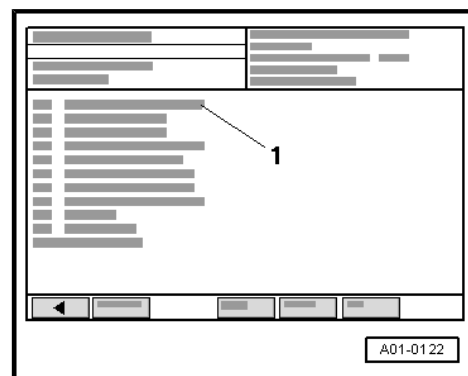
## 9.10 Reading measured value block

### Sequence of operations

- Start automatic headlight range control self-diagnosis  
➔ [page 191](#) .

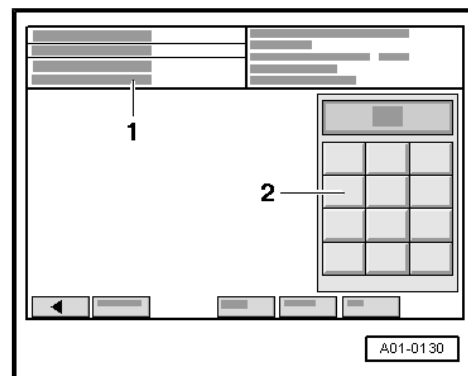
Display on -VAS 5051B- :

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



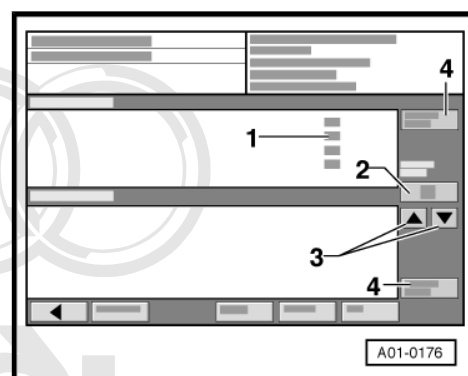
Display on -VAS 5051B- :

- 1 - Enter display group
- Use keypad -2- to enter the desired "display group number"  
➔ [page 201](#) and confirm the entry by touching the  key.



Display on -VAS 5051B- :

- 1 - Display zones 1 ... 4. If a display zone is not assigned, there is no display on this line.
  - 2 - The display group selected is shown here
  - 3 - Touching these keys permits switching to a different display group.
  - 4 - Touching these keys permits switching to a different function (e.g. from "Reading measured value block" to "Basic setting" and vice versa).
- Terminate function "08 - Reading measured value block" by touching  key.



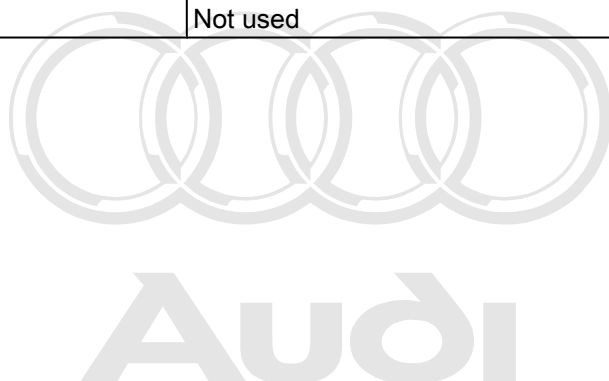
### List of display groups

| Display group 001 |       |                                      |
|-------------------|-------|--------------------------------------|
| Display zones     |       | Explanatory notes                    |
| 1                 | ... V | Power supply (terminal 15)           |
| 2                 | ... V | Dipped beam voltage via terminal 56b |



| Display group 001 |          |                   |
|-------------------|----------|-------------------|
| Display zones     |          | Explanatory notes |
| 3                 | ... km/h | Vehicle speed     |
| 4                 |          | Not used          |

| Display group 002 |       |                                                                                                                                                                 |
|-------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display zones     |       | Explanatory notes                                                                                                                                               |
| 1                 | ... V | Front left vehicle level sender -G78- voltage value<br>• 1.66 ... 3.45 V                                                                                        |
| 2                 | ... V | Rear left vehicle level sender -G76- voltage value<br>• 1.66 ... 3.45 V                                                                                         |
| 3                 | ...   | Control motor actuation<br>• ADP. in progress (compensation for control difference is provided by actuating control motors)<br>• ADP. OK (control position set) |
| 4                 |       | Not used                                                                                                                                                        |



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## 10 Checking data exchange between control units

### Bus:

Bus is the term used to describe a data transfer and distribution system.

### CAN:

The Controller Area Network is a bus system employing two wires. These are referred to as bus wires. Data are transmitted serially via the bus wires to the connected control units.

These control units communicate with one another, i.e. they exchange data with the aid of the CAN bus.

### 10.1 Checking "two-wire bus system"

#### Test sequence

- Use the corresponding current flow diagram to determine how many control units communicate with one another by way of the bus.
- Connect vehicle diagnostic, testing and information system - VAS 5051B- ⇒ [page 1](#) and select function "00 - Automatic test sequence". When doing this, the ignition must be switched on.
- Before examining the bus wires, make sure that there is no malfunction in any of the control units linked to the bus. Malfunctions interfere with communication with other control units.



#### Note

*The term malfunction refers to a fault which does not directly affect the bus system but in some way disrupts the operating sequence of a system. This may be a defective sensor for example. The consequence is that the sensor signal can no longer be conditioned for the bus system data transfer. Such malfunctions have an indirect effect on the bus system. Communication with the other control units requiring the relevant sensor signal is impaired.*

#### Has a malfunction occurred?

- This must first be repaired.
- Print out fault list and erase fault memories of all control units. Refer to "Interrogating fault memory" and "Erasing fault memory" of corresponding control unit.
- Touch function "06 - End output".
- Eliminate the malfunctions on the basis of the fault tables in the relevant workshop manuals.

#### All malfunctions eliminated?

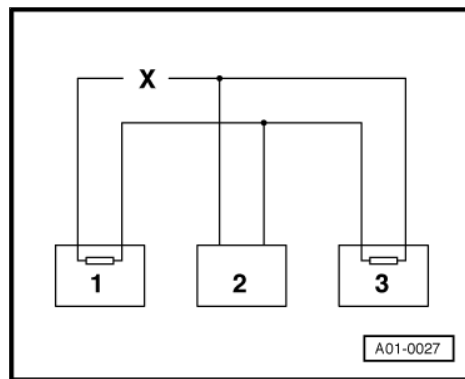
- If there are still problems with control unit communication, the bus wires must be examined.

### Example 1:

The faults stored in the fault memories indicate that there is no connection between control unit -1- and control units -2- and -3-.

| Control unit | Fault stored in fault memory                                                                                                     |
|--------------|----------------------------------------------------------------------------------------------------------------------------------|
| -1-          | <ul style="list-style-type: none"> <li>◆ No message from control unit -2-</li> <li>◆ No message from control unit -3-</li> </ul> |
| -2-          | <ul style="list-style-type: none"> <li>◆ No message from control unit -1-</li> </ul>                                             |
| -3-          | <ul style="list-style-type: none"> <li>◆ No message from control unit -1-</li> </ul>                                             |

- Switch off ignition.
- Unplug connectors at control units linked by bus wires and check for open circuit in one of the bus wires ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

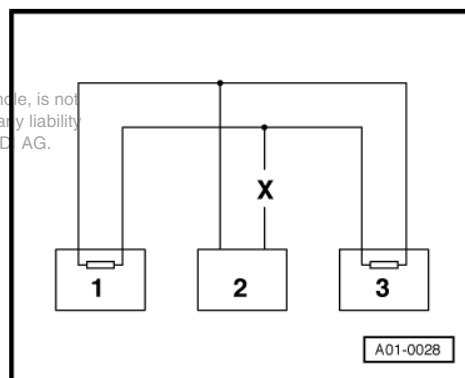


### Example 2:

The faults stored in the fault memories indicate that there is no connection between control unit -2- and control units -1- and -3-.

| Control unit | Fault stored in fault memory                                                                                                     |
|--------------|----------------------------------------------------------------------------------------------------------------------------------|
| -1-          | <ul style="list-style-type: none"> <li>◆ No message from control unit -2-</li> </ul>                                             |
| -2-          | <ul style="list-style-type: none"> <li>◆ No message from control unit -1-</li> <li>◆ No message from control unit -3-</li> </ul> |
| -3-          | <ul style="list-style-type: none"> <li>◆ No message from control unit -2-</li> </ul>                                             |

- Switch off ignition.
- Unplug connectors at control units linked by bus wires and check for open circuit in one of the bus wires ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

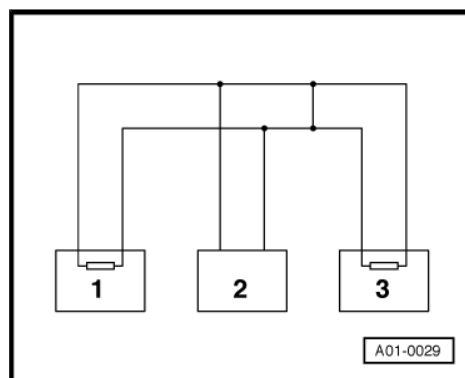


### Example 3:

The faults stored in the fault memories indicate that none of the control units can transmit or receive.

| Control unit | Fault stored in fault memory                                               |
|--------------|----------------------------------------------------------------------------|
| -1-          | <ul style="list-style-type: none"> <li>◆ Control unit defective</li> </ul> |
| -2-          | <ul style="list-style-type: none"> <li>◆ Control unit defective</li> </ul> |
| -3-          | <ul style="list-style-type: none"> <li>◆ Control unit defective</li> </ul> |

- Switch off ignition.
- Unplug connectors at control units linked by bus wires and check for mutual short circuit in bus wires ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.



- Check bus wires for short to positive and earth.
- If the cause of the fault "Control unit defective" cannot be found in the bus wires, check whether one of the control units is responsible for the fault.
- Connectors unplugged at all control units using the CAN bus for communication
- Ignition off
- Connect one of the control units.
- Connect up the vehicle diagnostic system -VAS 5051B- => [page 1](#).
- Switch on ignition and select the relevant vehicle system.
- Interrogate fault memory of control unit just connected and erase fault memory.
- Terminate function "05 - Erasing fault memory" by touching  key.
- Touch function "06 - End output".
- Switch ignition off and on again.
- Leave ignition switched on for 10 seconds. Then read out fault memory of control unit just connected.

If fault "Control unit defective" is displayed:

- Replace control unit just connected.

If fault "Control unit defective" is not displayed:

- Connect next control unit and repeat procedure.

