

## Audi A8 1994 ➤

### Electrical system Self-diagnosis 02.99 ➤

Edition 05.2002



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

**Audi A8 1994 ➤**

**Electrical system Self-diagnosis 02.99 ➤**

## Repair Group

01 - Self-diagnosis



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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.

**All rights reserved.  
No reproduction without prior agreement from publisher.**

## Contents

|  |            |
|--|------------|
| <b>01 - Self-diagnosis</b>   | <b>1</b>   |
| <b>1 Dash panel insert self-diagnosis with service interval extension</b>          | <b>1</b>   |
| 1.1 Dash panel insert self-diagnosis with service interval extension               | 1          |
| 1.2 General information  | 1          |
| 1.3 Starting dash panel insert self-diagnosis                                      | 2          |
| 1.4 Interrogate fault memory   | 4          |
| 1.5 Fault table  | 5          |
| 1.6 Final control diagnosis  | 12         |
| 1.7 Erase fault memory   | 15         |
| 1.8 End output   | 17         |
| 1.9 Code control unit  | 17         |
| 1.10 Read measured value block   | 20         |
| 1.11 Adaption  | 28         |
| 1.12 Adaption channels 02 to 09  | 34         |
| 1.13 Adaption channels 18 to 33  | 42         |
| 1.14 Adaption channels 40 to 48  | 48         |
| 1.15 Adaption channels 60 to 62  | 62         |
| 1.16 Input values on dash panel insert replacement                                 | 67         |
| 1.17 Resetting service display on completion of service work (without VAS 5051)    | 68         |
| 1.18 Checking data exchange between control units                                  | 69         |
| <b>2 Immobilizer self-diagnosis - immobilizer III</b>                              | <b>72</b>  |
| 2.1 Immobilizer self-diagnosis - immobilizer III                                   | 72         |
| 2.2 General information  | 72         |
| 2.3 Starting immobilizer self-diagnosis  | 74         |
| 2.4 Interrogate fault memory   | 76         |
| 2.5 Fault table  | 77         |
| 2.6 Erase fault memory   | 78         |
| 2.7 End output   | 80         |
| 2.8 Read measured value block  | 80         |
| 2.9 Adaption   | 84         |
| 2.10 Matching of vehicle keys  | 84         |
| 2.11 Procedure in the event of loss of keys  | 90         |
| 2.12 Adaption following replacement of dash panel insert                           | 91         |
| 2.13 Adaption following replacement of engine control unit                         | 96         |
| 2.14 Adaption following replacement of dash panel insert and engine control unit   | 100        |
| 2.15 Control unit release  | 104        |
| <b>3 Cruise control system (CCS) self-diagnosis</b>                                | <b>107</b> |
| 3.1 Cruise control system (CCS) self-diagnosis                                     | 107        |
| 3.2 General information  | 107        |
| 3.3 Checking cruise control system (CCS) - petrol engines with electronic throttle | 107        |
| 3.4 Checking cruise control system (CCS) - diesel engines                          | 112        |
| 3.5 Wiring and component check using test box V.A.G 1598/31                        | 115        |
| 3.6 Activating/deactivating cruise control system                                  | 116        |
| <b>4 Acoustic Parking System (APS) self-diagnosis</b>                              | <b>118</b> |
| 4.1 Acoustic Parking System (APS) self-diagnosis                                   | 118        |
| 4.2 General information  | 118        |
| 4.3 Starting automatic parking system self-diagnosis                               | 118        |
| 4.4 Interrogate fault memory   | 120        |
| 4.5 Fault table  | 121        |
| 4.6 Final control diagnosis  | 126        |
| 4.7 Erase fault memory   | 128        |
| 4.8 End output   | 129        |
| 4.9 Code control unit  | 130        |
| 4.10 Read measured value block   | 132        |



|          |   |            |
|----------|---|------------|
| 4.11     | Adaption .....  | 136        |
| <b>5</b> | <b>Automatic headlight range control self-diagnosis .....</b>                       | <b>145</b> |
| 5.1      | Automatic headlight range control self-diagnosis .....                              | 145        |
| 5.2      | General information .....   | 145        |
| 5.3      | Starting automatic headlight range control self-diagnosis .....                     | 146        |
| 5.4      | Interrogate fault memory .....  | 147        |
| 5.5      | Fault table .....   | 149        |
| 5.6      | Final control diagnosis .....   | 151        |
| 5.7      | Basic setting .....   | 153        |
| 5.8      | Erase fault memory .....  | 155        |
| 5.9      | End output .....  | 156        |
| 5.10     | Code control unit .....   | 157        |
| 5.11     | Read measured value block .....   | 159        |
| <b>6</b> | <b>Connecting vehicle diagnostic, testing and information system VAS 5051 .....</b> | <b>162</b> |
| 6.1      | Connecting vehicle diagnostic, testing and information system VAS 5051 .....        | 162        |
| 6.2      | Safety precautions .....  | 162        |



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

# 01 - Self-diagnosis

## 1 - Dash panel insert self-diagnosis with service interval extension

### 1.1 - Dash panel insert self-diagnosis with service interval extension

#### 1.2 - General information

##### Technical features of dash panel insert

The dash panel insert is equipped with a service interval extension facility. The dash panel insert evaluates the service requirement for the vehicle concerned on the basis of various input variables, such as driving style or oil consumption.

The conventional service indicator (with fixed intervals) indicated a due service at 15000 km or 12 months.

By means of suitable limit value programming, the service interval extension function is capable of simulating the behaviour of the conventional service display.

For this purpose, the limit values are designed to be flexible.

Provision is also made for evaluation of the oil temperature sender. The service indication can then be displayed later (max. 30000 km or 730 days) by means of appropriate adaption channels in the self-diagnostic function.

Two different dash panel inserts are fitted:

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

The speedometer features a mileage counter and trip recorder LCD.

The rev counter features a clock/date LCD.

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

The centre display presents a selection menu and the service indicator.

The menu is controlled from a function selector switch in the centre console.

For detailed information on the dash panel insert and the selection menu

=> Audi A8 Owner's Manual

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

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

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

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

=> Electrical System; Repair Group 90; Dash panel insert Dash panel insert

##### Notes on dash panel insert replacement

- ◆ Dash panel insert is not to be dismantled.
- ◆ If necessary, dash panel insert is to be replaced as part of exchange program.

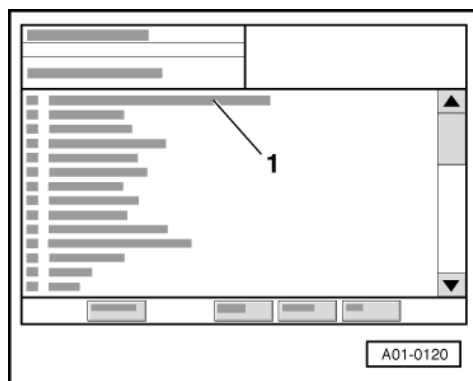


- ♦ Complete damage report sheet and return together with dash panel insert.
- ♦ Original packaging must be used for return shipment.

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

#### *Requirements:*

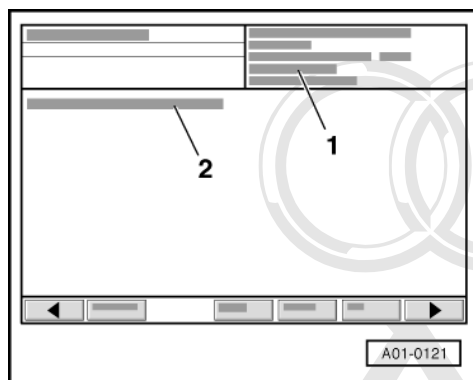
- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Ignition on



#### **Sequence of operations**

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. Copyright by AUDI AG. AUDI AG does not guarantee or accept any liability for errors or omissions. Copyright by AUDI AG.
- 1 - Dash panel insert identification
  - 2 - Immobilizer control unit identification => Page 3

#### **Control unit identification (example)**

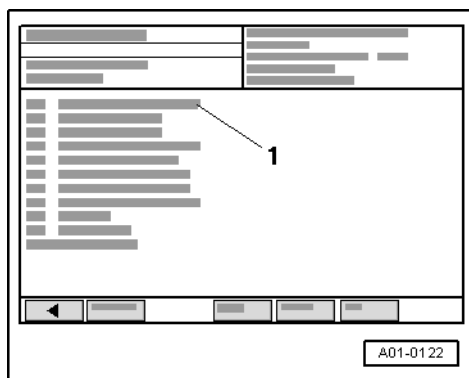
| Dash panel insert control unit identification (example) |                |
|---|----------------|
| 17 - Dash panel insert                                  | Vehicle system |

| Dash panel insert control unit identification (example) |  |
|---|--|
| 8L0919860A  | Part No.; Assignment<br>=> Parts List  |
| DASH PANEL INSERT+IMMOBILIZER 1) VDO 2) D.. 3)          | 1) Component designation<br>2) Manufacturer designation<br>3) (M73 = Magneti Marelli; VDO = VDO)<br>Data level |
| Code 00142  | Control unit coding (checking => Page 17 )   |
| Dealership number 12345                                 | Workshop code of VAS 5051 with which coding was last performed   |

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

| Immobilizer control unit identification (example) |   |
|---|---|
| WAUZZZ4DZYN000126 1) AUZ7Z0W0801181 2)            | 1) 17-digit ident no. (chassis number) of vehicle (display as 2) of immobilizer III => Page 74 )<br>14-digit immobilizer identification no. |

- Touch ▶ key.



-> Readout on VAS 5051:

- 1 - List of diagnostic functions:

| Diagnostic functions              | Page |
|-----------------------------------|------|
| 02 Interrogate fault memory       | 4    |
| 03 Final control diagnosis        | 12   |
| 04 Basic setting                  | -    |
| 05 Erase fault memory             | 15   |
| 06 End output                     | 17   |
| 07 Code control unit              | 17   |
| 08 Read measured value block      | 20   |
| 09 Read individual measured value | -    |
| 10 Adaption                       | 28   |
| 11 Login procedure                | -    |
| Vehicle ident. no. transfer       | -    |
| Release (PIN)                     | -    |
| Channel 50 adaption (PIN)         | -    |



## 1.4 - Interrogate fault memory



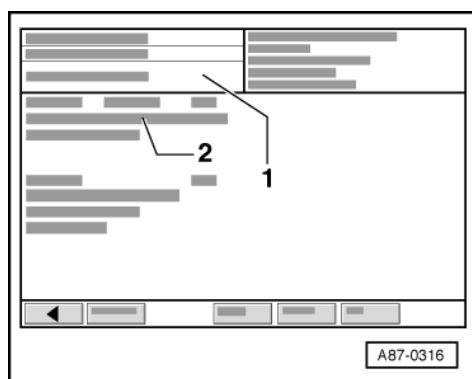
### Sequence of operations

- Start dash panel insert self-diagnosis => Page 2 .

-> Readout on VAS 5051:

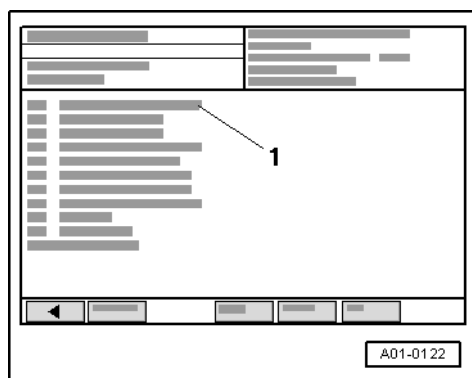
- From list -1- select diagnostic function "02 - Interrogate fault memory".

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Readout on VAS 5051:

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





#### A - Faults detected:

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

-> Readout on VAS 5051:

- Eliminate fault(s) in line with fault table => Page 5 .
- Select diagnostic function "02 - Interrogate fault memory" again in list and erase fault memory => Page 15 .
- Select diagnostic function "06 - End output" in list => Page 17 .

#### B - No fault detected:

- Select diagnostic function "06 - End output" in list => Page 17 .

### 1.5 - Fault table

#### Notes:

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

| Readout on VAS 5051  | Possible cause of trouble                           | Remedy   |
|--|---|--|
| 00562<br>Oil level/temperature sender<br>-G266<br>- Open circuit/short to positive<br>- Short to earth | - Open circuit in wiring or short                   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
| - Implausible signal   | - Oil level/oil temperature sender - G266 defective | - Replace -G266<br>=> Electrical System; Repair Group 90; Dash panel insert Dash panel insert  |
| 00667<br>Ambient temperature signal<br>- Open circuit/short to positive<br>- Short to earth            | - Open circuit in wiring or short                   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |



| Readout on VAS 5051     | Possible cause of trouble   | Remedy   |
|-------------------------|---|--|
| - Implausible signal 1) | - Operating and display unit for air conditioner/Climatronic -E87 defective | - Interrogate air conditioner fault memory                     |
|                         | - Sender defective  | => Air conditioner; Repair Group 01; Interrogate fault memory- |

1) Incorrect display; can be ignored

| Readout on VAS 5051  | Possible cause of trouble   | Remedy   |
|--|---|--|
| 00668<br>Vehicle voltage terminal 30<br>- Signal too low*<br>*This fault may also be stored if starter has been operated for more than 10 seconds. | - Battery discharged/defective<br>- Short in vehicle electrical system<br>- Battery voltage less than 9.5 V<br>- Alternator defective | - Charge/replace battery<br>=> Electrical System; Repair Group 27; Battery Removing and installing alternator<br>Repair short in vehicle electrical system |

| Readout on VAS 5051   | Possible cause of trouble  | Remedy  |
|---|--|---|
| 00771<br>Fuel gauge sender -G<br>- Open circuit/short to positive<br>- Short to earth | - Open circuit in wiring or short between dash panel insert and fuel gauge sender -G or (4WD vehicles) fuel gauge sender -2- -G169 or fuel gauge sender -3- -G237<br>- Fuel gauge sender -G or (4WD vehicles) fuel gauge sender -2- -G169 or fuel gauge sender -3- -G237 defective | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder<br>- Replace -G or -G169 or -G237<br>=> Fuel Supply System - Petrol Engines; Repair Group 20 |

| Readout on VAS 5051  | Possible cause of trouble  | Remedy  |
|--|--|---|
| 00779<br>Ambient temperature sensor -G17<br>- Open circuit/short to positive<br>- Short to earth | - Open circuit in wiring or short<br>- Vehicles with no air conditioner:<br>- Ambient temperature sensor - G17 defective | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder<br>- Replace -G17<br>=> Air conditioner; Repair Group 87; Air conditioner control components<br>Air conditioner control components |
| 00849<br>S-contact at ignition/starter switch -D<br>- Open circuit                               | - Open circuit in wiring   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |

| Readout on VAS 5051 | Possible cause of trouble              | Remedy   |
|---------------------|--|--|
|                     | - Ignition/starter switch -D defective | - Replace ignition/starter switch -D<br>=> Electrical System; Repair Group 94; Servicing lock cylinder and ignition/starter switch Servicing lock cylinder and ignition/starter switch |

| Readout on VAS 5051   | Possible cause of trouble                   | Remedy   |
|---|---|--|
| 01039<br>Coolant temperature gauge sender -G2<br>- Open circuit/short to positive<br>- Short to earth | - Open circuit in wiring or short           | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
|   | - Coolant temperature sender - G2 defective | - Replace -G2<br>=> Petrol engines; Repair Group 24  |

| Readout on VAS 5051  | Possible cause of trouble  | Remedy  |
|--|--|---|
| 01300<br>Control unit for navigation system with CD drive - J401<br>- No communication | - CAN bus fault<br>- Open circuit in wiring<br>- Wiring damage   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder<br>Eliminate open circuit in wiring  |
|  | - "1" not displayed in measured value block => Page 28 for navigation system with CD drive control unit<br>- -J401<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 62 and enter correct adaption value => Page 65  |
|  | - Control unit for navigation system with CD drive -J401 defective   | - Replace navigation system control unit<br>=> Radio, Telephone and Navigation System; Repair Group 91; Navigation system III (route navigation) (from Wk 27/99 onwards); Removing and installing control unit for navigation system with CD drive -J401 Navigation system III (route navigation) (from Wk 27/99 onwards); Removing and installing control unit for navigation system with CD drive -J401 |

| Readout on VAS 5051              | Possible cause of trouble | Remedy |
|----------------------------------|---------------------------|--------|
| 01302<br>Telematics control unit |                           |        |



| Readout on VAS 5051 | Possible cause of trouble   | Remedy  |
|---------------------|---|---|
| - No communication  | - CAN bus fault<br>- Open circuit in wiring<br>- Wiring damage  | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder<br>Eliminate open circuit in wiring  |
|                     | - "1" not displayed in measured value block 140 for control unit=>Page 28<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 62 and enter correct adaption value => Page 65  |
|                     | - Telematics control unit -J526 defective   | - Replace control unit<br>=> Radio, Telephone and Navigation System; Repair Group 91; Telematics; Removing and installing telephone/telematics control unit -J526 Telematics; Removing and installing telephone/telematics control unit -J526 |

| Readout on VAS 5051  | Possible cause of trouble   | Remedy   |
|--|---|--|
| 01303<br>Telephone transmitter/receiver unit<br>- No communication | - CAN bus fault<br>- Open circuit in wiring<br>- Voltage supply to telephone transmitter/receiver unit interrupted                | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder<br>Eliminate open circuit in wiring   |
|  | - "1" not displayed in measured value block 140 for control unit=>Page 28<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 62 and enter correct adaption value => Page 65   |
|  | - Telephone transmitter/receiver unit defective   | - Replace telephone transmitter/receiver unit<br>=> Radio, Telephone and Navigation System; Repair Group 91; Telematics; Removing and installing telephone/telematics control unit -J526 Telematics; Removing and installing telephone/telematics control unit -J526 |

| Readout on VAS 5051                  | Possible cause of trouble   | Remedy   |
|--------------------------------------|---|--|
| 01304<br>Radio<br>- No communication | - CAN bus fault<br>- Open circuit in wiring<br>- Wiring damage  | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder<br>Eliminate open circuit in wiring |
|                                      | - "1" not displayed in measured value block 140 for radio =>Page 28<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 62 and enter correct adaption value => Page 65   |

| Readout on VAS 5051 | Possible cause of trouble | Remedy  |
|---------------------|---------------------------|---|
|                     | - Radio defective         | - Replace radio<br>=> Radio, Telephone and Navigation Systems; Repair Group 91; Radio system; Removing and installing radio Radio system; Removing and installing radio |

| Readout on VAS 5051                          | Possible cause of trouble  | Remedy   |
|--|--|--|
| 01311<br>Data bus information<br>- Defective | - CAN bus fault<br>- Open circuit in wiring or short at control unit in information (display) data bus   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder                                     |
|  | - "1" not displayed in measured value block 140 for control unit with CAN capability =>Page 28<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 62 and enter correct adaption value => Page 65   |
|  | - In one-wire operating mode - Data bus working only on one wire   | - Check data exchange => Page 69<br>- Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |

| Readout on VAS 5051                          | Possible cause of trouble   | Remedy   |
|--|---|--|
| 01312<br>Drive train data bus<br>- Defective | - CAN bus fault<br>- Open circuit in wiring or short at control unit in drive train data bus  | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
|  | - "1" not displayed in measured value block 125 for control unit with CAN capability =>Page 27<br>- The dash panel insert was not correctly adapted | - Select adaption channel 60 and enter correct adaption value => Page 62   |

| Readout on VAS 5051                                | Possible cause of trouble   | Remedy   |
|--|---|--|
| 01314<br>Engine control unit<br>- No communication | - CAN bus fault<br>- Open circuit in wiring or short<br>- Wiring damage   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
|  | - "1" not displayed in measured value block 125 for engine control unit =>Page 27<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 60 and enter correct adaption value => Page 62   |
|  | - Engine control unit defective   | - Replacing engine control unit<br>=> Repair Group 23; of relevant engine code   |



| Readout on VAS 5051                                 | Possible cause of trouble   | Remedy   |
|---|---|--|
| 01315<br>Gearbox control unit<br>- No communication | - CAN bus fault<br>- Open circuit in wiring or short<br>- Wiring damage   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
|   | - "1" not displayed in measured value block 125 for engine control unit =>Page 27<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 60 and enter correct adaption value => Page 62   |
|   | - Gearbox control unit defective  | - Replace gearbox control unit<br>=> Repair Group 01; of relevant gearbox code   |

| Readout on VAS 5051   | Possible cause of trouble  | Remedy   |
|---|--|--|
| 01320<br>Climatronic control unit -J255<br>- No communication | - CAN bus fault<br>- Open circuit in wiring or short<br>- Wiring damage  | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
|   | - "1" not displayed in measured value block 131 for air conditioner control unit =>Page 27<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 61 and enter correct adaption value => Page 62   |
|   | - Control unit defective   | - Replace Climatronic control unit<br>=> Air Conditioner; Repair Group 87  |

| Readout on VAS 5051   | Possible cause of trouble   | Remedy   |
|---|---|--|
| 01325<br>Tyre pressure monitor control unit<br>- No communication | - CAN bus fault<br>- Open circuit in wiring or short<br>- Wiring damage   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
|   | - "1" not displayed in measured value block 130 for control unit=>Page 27<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 66 and enter correct adaption value => Page 62   |
|   | - Control unit defective  | - Replace tyre pressure monitor control unit<br>=> Running Gear, Front-wheel Drive and Four-wheel Drive; Repair Group 44               |

| Readout on VAS 5051                            | Possible cause of trouble | Remedy |
|--|---------------------------|--------|
| 01327<br>Automatic parking system control unit |                           |        |

| Readout on VAS 5051 | Possible cause of trouble   | Remedy  |
|---------------------|---|---|
| - No communication  | - CAN bus fault<br>- Open circuit in wiring or short<br>- Wiring damage   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |
|                     | - "1" not displayed in measured value block 125 for engine control unit =>Page 27<br>- Dash panel insert adaption not performed correctly | - Select adaption channel 60 and enter correct adaption value<br>=>Page 62  |
|                     | - Automatic parking system control unit -J446 defective   | - Replace automatic parking system control unit<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system control unit -J446 |

| Readout on VAS 5051                                       | Possible cause of trouble   | Remedy   |
|---|---|--|
| 01336<br>Group convenience system data bus<br>- Defective | - CAN bus fault<br>- Open circuit in wiring or short at control unit in convenience system data bus   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder                                   |
|   | - "1" not displayed in measured value blocks 125 to 131 for control unit with CAN capability =>Page 27<br>- Adaption to dash panel insert not performed correctly | - Select adaption channel 61 and enter correct adaption value => Page 63   |
|   | - In one-wire operating mode<br>- Data bus working only on one wire   | - Check data exchange => Page 69<br>Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |

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



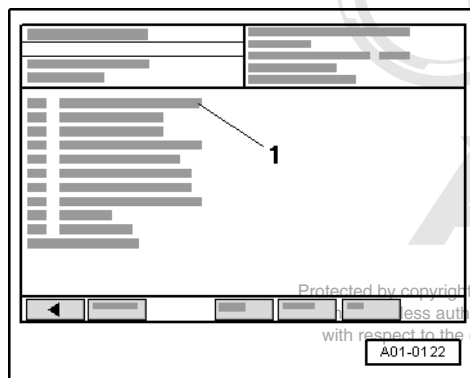
## 1.6 - Final control diagnosis

### Notes:

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

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

| Actuation sequence                           |
|--|
| 1 Analog displays                            |
| 2 Dash panel insert warning lamp test        |
| 3 Seat belt warning system warning lamp -K19 |
| 4 Gong                                       |
| 5 Segment test                               |
| 6 Illumination/switches and instruments      |

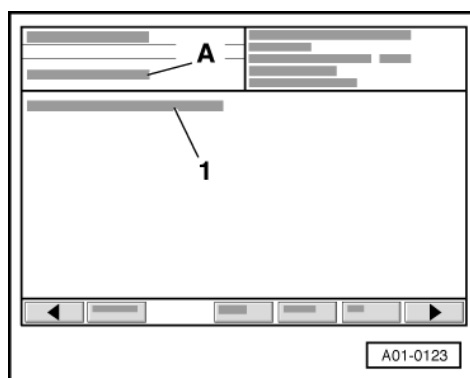


### Test requirement:

- Illumination on

### Sequence of operations

- Start dash panel insert self-diagnosis => Page 2 .
- > Readout on VAS 5051:
- From list -1- select diagnostic function "03 - Final control diagnosis".





### Actuation of analog displays

-> Readout on VAS 5051:

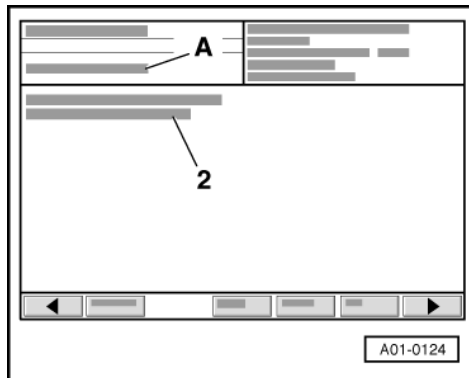
- A - 1st control element in test
- 1 - Analog displays

The following tests are implemented simultaneously:

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

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

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



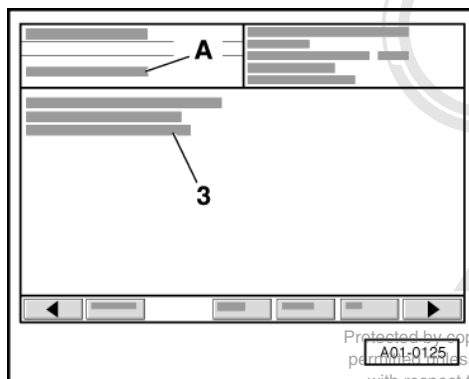
### Actuation of warning lamp test for dash panel insert

- Touch ▶ key.

-> Readout on VAS 5051:

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

- ◆ Warning lamps in dash panel insert are actuated



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express authorisation by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



### Actuation of seat belt warning system warning lamp

- Touch ▶ key.

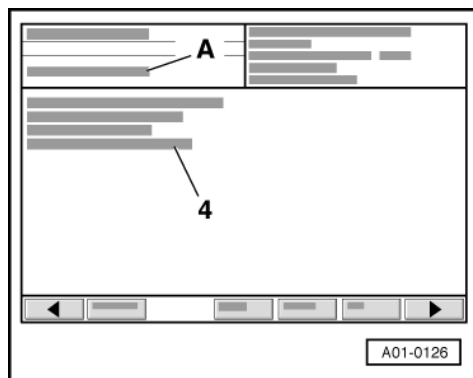
-> Readout on VAS 5051:

- A - 3rd control element in test
- 3 - Seat belt warning system warning lamp -K19

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

#### Notes:

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



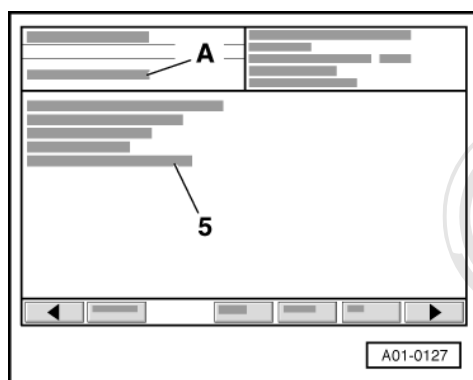
### Actuation of gong

- Touch ▶ key.

-> Readout on VAS 5051:

- A - 4th control element in test
- 4 - Gong

- ♦ Gong sounds intermittently



### Actuation of segment test

- Touch ▶ key.

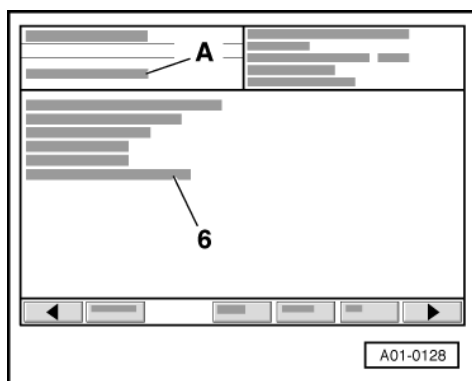
-> Readout on VAS 5051:

- A - 5th control element in test

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## 5 - Segment test

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



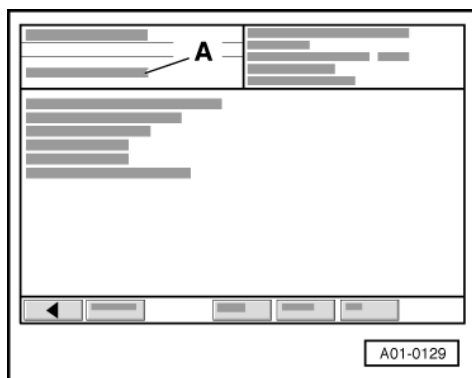
### Actuation of illumination/switches and instruments

- Touch ▶ key.

-> Readout on VAS 5051:

- A - 6th control element in test
- 6 - Illumination/switches and instruments

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



- Touch ▶ key.

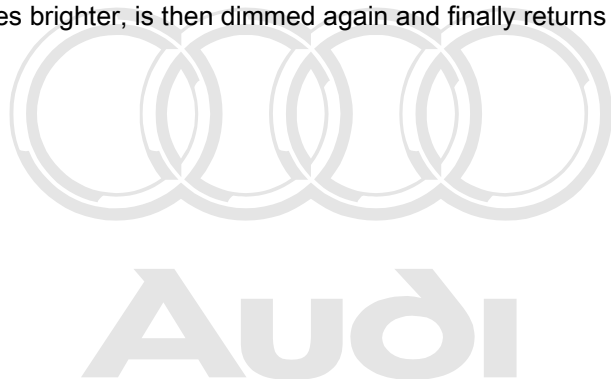
-> Readout on VAS 5051:

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

## 1.7 - Erase fault memory

### **Note:**

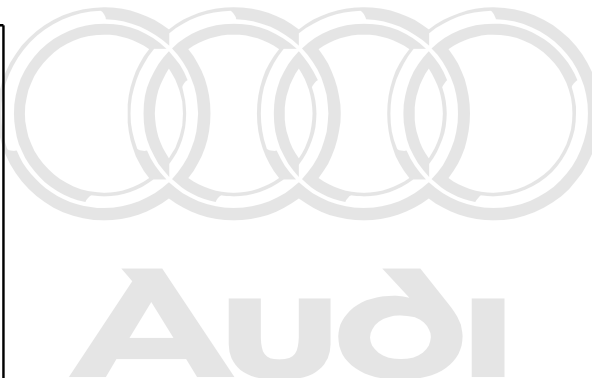
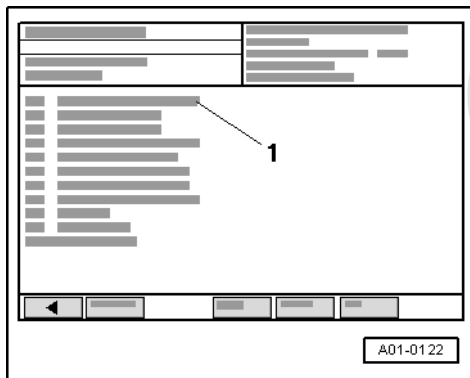
*If fault memory cannot be erased, interrogate fault memory again and eliminate fault.*



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

**Requirements:**

- Fault memory interrogated => Page 4
- All faults eliminated

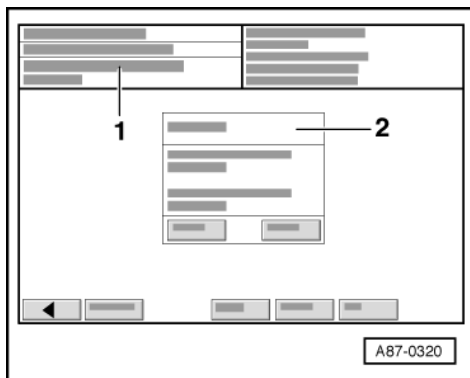
**Sequence of operations**

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

After fault memory interrogation:

-> Readout on VAS 5051:

- From list -1- select diagnostic function "05 - Erase fault memory".



-> Readout on VAS 5051:

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

**Note:**

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

2 - Note:

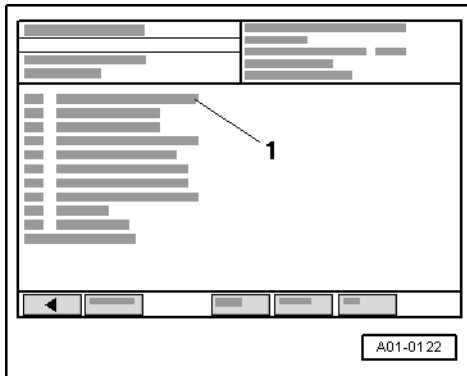
Is function to be implemented?  
Note: Data will be erased!

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

**Note:**

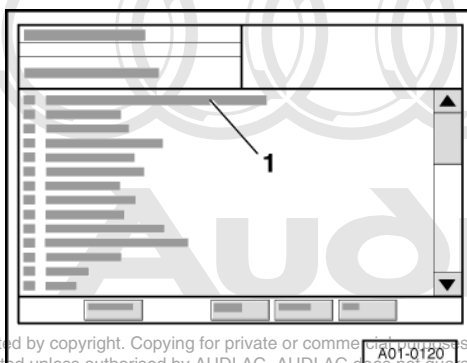
*This erases faults stored during fault elimination e.g. on account of connectors being unplugged.*

## 1.8 - End output



-> Readout on VAS 5051:

- From list -1- select diagnostic function "06 - End output".



Protected by copyright. Copying for private or commercial purposes in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

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

## 1.9 - Code control unit

**Notes:**

- ◆ Coding sets the various driver information system combination alternatives depending on equipment, country version and engine.
- ◆ The coding table only lists the possible combinations applying to the Audi A8.

### Explanatory notes on coding

|    |   |                  |
|----|---|------------------|
| XX |   | Optional extra   |
|    | X | Country version  |
|    | X | No. of cylinders |

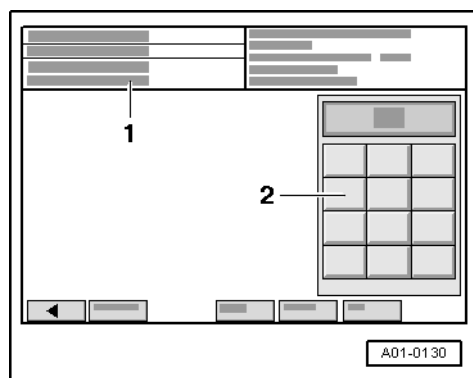


|  |   |                |
|--|---|----------------|
|  | X | Engine version |
|--|---|----------------|



### Sequence of operations

- Start dash panel insert self-diagnosis => Page 2 .
- > Readout on VAS 5051:
- From list -1- select diagnostic function "07 - Code control unit".



-> Readout on VAS 5051:

- 1 - Enter code word
- Use keypad -2- to enter 7-position control unit code as per coding table => Page 18 .

### Coding table

|                 |    |  |
|-----------------|----|--|
| Optional extra  | 00 | No optional extra<br>All 8-cylinders with 90 litre tank and all 6-cylinders with 80 litre tank |
|                 | 01 | Larger 90 litre fuel tank capacity for 6-cylinders   |
|                 | 02 | Seat belt warning system active  |
| Country version | 0  | Germany (D)  |
|                 | 1  | Row/Left-hand drive  |
|                 | 2  | USA (US)   |
|                 | 3  | Canada (CDN)   |
|                 | 4  | Great Britain (GB)   |
|                 | 5  | Japan/left-hand drive (JP)   |

|                         |   |                             |
|-------------------------|---|-----------------------------|
|                         | 6 | Saudi Arabia (SA)           |
|                         | 7 | Australia (AUS)             |
|                         | 8 | RoW/Right-hand drive        |
|                         | 9 | Japan/right-hand drive (JP) |
| <b>No. of cylinders</b> | 4 | 6-cylinder and 12-cylinder  |
|                         | 8 | 8-cylinder                  |

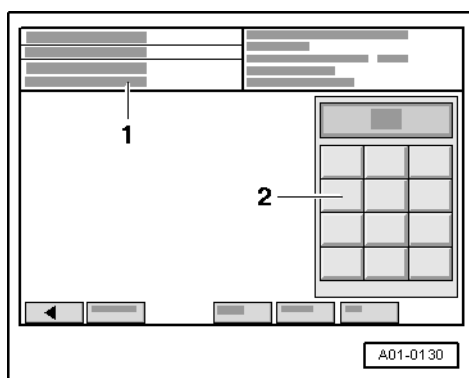
|                       |   |                          |
|-----------------------|---|--------------------------|
| <b>Engine version</b> | 0 | TDI engine               |
|                       | 2 | 6-cylinder petrol engine |
|                       | 3 | 8-cylinder petrol engine |
|                       | 4 | Turbo engine             |
|                       | 5 | 12-cylinder              |

### Coding options for optional extras

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

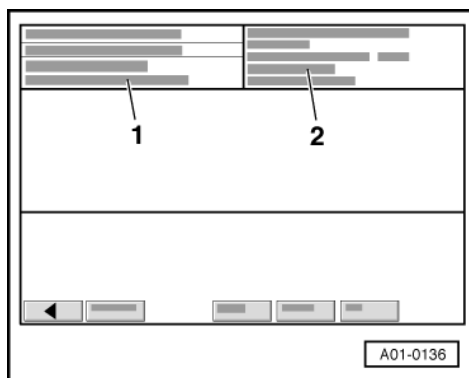
#### Example:

- Seat belt warning system RoW and V8 TDI = 02180
- Confirm entry by touching Q key.



-> Readout on VAS 5051:

- 1 - Coding in progress
- Wait until next readout appears.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

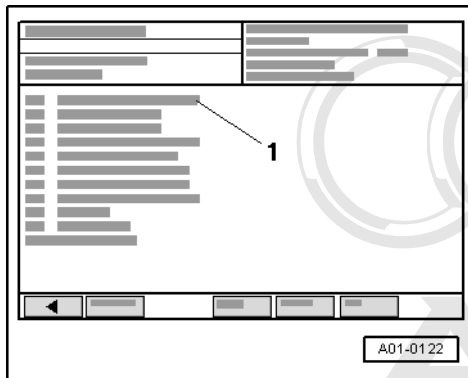


-> Readout on VAS 5051:

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

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

## 1.10 - Read measured value block



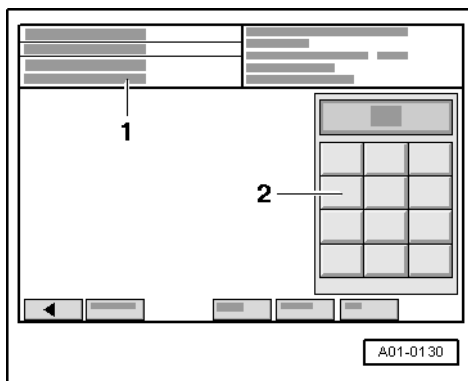
### Sequence of operations

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for errors or omissions in this document. Copyright by AUDI AG.

- Start dash panel insert self-diagnosis => Page 2.

-> Readout on VAS 5051:

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

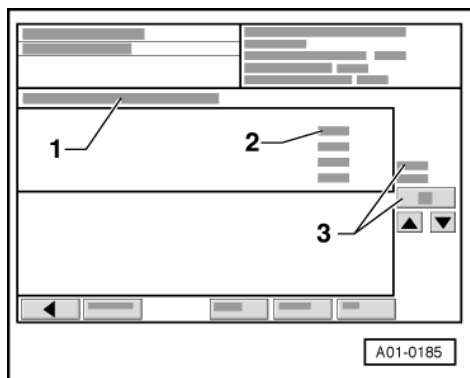


-> Readout on VAS 5051:

- 1 - Enter display group

- Use keypad -2- to enter required three-digit display group number  
=>List of display groups, Page 21 and confirm entry by touching Q key.





-> Readout on VAS 5051:

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

#### List of display groups

| Display group number | Indicated on display  |
|----------------------|---|
| 001                  | 1 = Vehicle speed<br>2 = Engine speed<br>3 = Oil pressure switch 2<br>4 = Time h          |
| 002                  | 1 = Mileage counter<br>2 = Fuel gauge<br>3 = Fuel gauge sender<br>4 = Ambient temperature |
| 003                  | 1 = Coolant temperature   |
| 010                  | 1 = Channel 30<br>2 = Fuel gauge sender adaption<br>3 = Channel 9<br>4 = Mileage counter  |

| Display group number | Indicated on display   |
|----------------------|--|
| 011                  | 1 = Channel 4<br>2 = Language version<br>3 = Channel 3<br>4 = Fuel consumption indicator |
| 012                  | 1 = Channel 40<br>2 = Mileage since service<br>3 = Channel 41<br>4 = Time since service  |
| 013                  | 1 = Channel 42<br>2 = Min. mileage<br>3 = Channel 43<br>4 = Max. mileage                 |
| 014                  | 1 = Channel 44<br>2 = Max. time interval   |
| 015                  | 1 = Channel 45<br>2 = Oil grade<br>3 = Channel 46<br>4 = Total consumption               |



| Display group number | Indicated on display   |
|----------------------|--|
| 016                  | 1 = Channel 47<br>2 = Soot index<br>3 = Channel 48<br>4 = Thermal load |

| Display group number | Indicated on display   |
|----------------------|--|
| 017 1)               | 1 = Channel 60<br>2 = Drive train data bus<br>3 = Channel 61<br>4 = Convenience system data bus        |
| 018 1)               | 1 = Channel 62<br>2 = Display data bus   |
| 019 1)               | 1 = Channel 18<br>2 = Auxiliary heater<br>3 = Channel 19<br>4 = Radio clock/illumination configuration |
| 050                  | 1 = Mileage counter<br>2 = Engine speed<br>3 = Oil temperature<br>4 = Coolant temperature              |
| 125                  | 1 = Engine<br>2 = Gearbox  |

1) As of model year 2002

| Display group number | Indicated on display   |
|----------------------|--|
| 130                  | 1 = Tyre pressure  |
| 131                  | 3 = Air conditioner<br>4 = Convenience system data bus mode    |
| 140                  | 1 = Radio<br>2 = Telephone<br>3 = Navigation<br>4 = Telematics |
| 141                  | 4 = Display data bus mode                                      |

#### Notes:

- ♦ Display always indicates actual sender and sensor values. The values displayed in the dash panel insert are filtered and may deviate.
- ♦ If the actual coolant temperature is between 80 °C and 100 °C, dash panel insert always displays 90 °C.
- ♦ Display remains blank if a display zone is not used.
- ♦ Data from display groups 010...019 must be printed out on replacing dash panel insert.
- ♦ Measured value block 125 indicates drive train data bus users.
- ♦ Measured value block 130 indicates group convenience system data bus users.
- ♦ Measured value block 140 indicates display data bus users.
- ♦ Proceed as follows to switch to a different display group:

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

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

### Measured value block 001

|                             |          |        |          |                       |                        |
|-----------------------------|----------|--------|----------|-----------------------|------------------------|
| Read measured value block 1 |          |        |          | ⇒                     | ◀ Indicated on display |
| XXX km/h                    | XXXX rpm | Oeld2X | XX: XX h |                       |                        |
|                             |          |        |          | Time                  |                        |
|                             |          |        |          | Oil pressure switch 2 |                        |
|                             |          |        |          | ▪ Oil p.2 < min       |                        |
|                             |          |        |          | ▪ Oil p.2 OK          |                        |
|                             |          |        |          | Engine speed          |                        |
|                             |          |        |          | ▪ 0 ... 9990 rpm      |                        |
|                             |          |        |          | Vehicle speed         |                        |
|                             |          |        |          | ▪ 0 ... 300 km/h      |                        |

### Measured value block 002

|                             |       |         |       |   |                        |
|-----------------------------|-------|---------|-------|---|------------------------|
| Read measured value block 2 |       |         |       | ⇒   | ◀ Indicated on display |
| XXXX km                     | XXX l | XXX Ohm | XX °C |   |                        |
|                             |       |         |       | Ambient temperature                                   |                        |
|                             |       |         |       | -40 ... +70 °C  |                        |
|                             |       |         |       | Fuel gauge sender                                     |                        |
|                             |       |         |       | ▪ approx. 70 ohms (empty) ... approx. 270 ohms (full) |                        |
|                             |       |         |       | Fuel gauge  |                        |
|                             |       |         |       | ▪ 0 ... 100 l   |                        |
|                             |       |         |       | Mileage counter display value                         |                        |

### Measured value block 003

|                             |  |  |  |                     |                        |
|-----------------------------|--|--|--|---------------------|------------------------|
| Read measured value block 3 |  |  |  | ⇒                   | ◀ Indicated on display |
| XXX °C                      |  |  |  |                     |                        |
|                             |  |  |  |                     |                        |
|                             |  |  |  |                     |                        |
|                             |  |  |  | Coolant temperature |                        |
|                             |  |  |  | ▪ 50 ... 130 °C     |                        |

### Measured value block 010

|                              |     |           |        |  |                        |
|------------------------------|-----|-----------|--------|--|------------------------|
| Read measured value block 10 |     |           |        | ⇒  | ◀ Indicated on display |
| Channel 30                   | 128 | Channel 9 | XXX km |  |                        |
|                              |     |           |        | Input value for mileage counter adaption |                        |
|                              |     |           |        | Adaption channel for mileage counter     |                        |



|  |   |
|--|---|
|  | Factory-set adaption value                            |
|  | Adaption channel of fuel tank sender resistance range |

**Note:**

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

**Measured value block 011**

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

**Note:**

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

**Measured value block 012**

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

|                              |   |            |    |  |
|------------------------------|---|------------|----|--|
| Read measured value block 12 |   |            | ⇒  | ◀ Indicated on display                     |
| Channel 40                   | X | Channel 41 | XX |  |
|                              |   |            |    | Elapsed time                               |
|                              |   |            |    | ▪ e.g. 10 = 10 days                        |
|                              |   |            |    | Adaption channel for time since service    |
|                              |   |            |    | Miles driven                               |
|                              |   |            |    | ▪ 8 signifies 800 km                       |
|                              |   |            |    | Adaption channel for mileage since service |

**Measured value block 013**

|                              |    |            |    |  |
|------------------------------|----|------------|----|--|
| Read measured value block 13 |    |            | ⇒  | ◀ Indicated on display                                   |
| Channel 42                   | XX | Channel 43 | XX |  |
|                              |    |            |    | Maximum kilometers                                       |
|                              |    |            |    | ▪ 30 = 30,000 km 1)                                      |
|                              |    |            |    | Adaption channel for maximum kilometers prior to service |
|                              |    |            |    | Minimum kilometers                                       |
|                              |    |            |    | ▪ 15 = 15000 km 1)                                       |
|                              |    |            |    | Adaption channel for minimum kilometers prior to service |

1) Valid specifications can be found in "Maintenance" booklet.

=> Maintenance

#### Measured value block 014

|   |     |  |                        |
|---|-----|--|------------------------|
| Read measured value block 14                                |     | ⇒  | ◀ Indicated on display |
| Channel 44  | 730 |  |                        |
|   |     |  |                        |
|   |     | Max. time interval<br>▪ 730 = 730 days/1 year 1) |                        |
| Adaption channel for maximum time interval prior to service |     |  |                        |

1) Valid specifications can be found in "Maintenance" booklet.

=> Maintenance

#### Measured value block 015

|                                |   |  |                        |
|--------------------------------|---|--|------------------------|
| Read measured value block 15   |   | ⇒  | ◀ Indicated on display |
| Channel 45                     | X | Channel 46   | XXX                    |
|                                |   | Arithmetic value for total consumption                       |                        |
|                                |   | Adaption channel for total consumption (petrol engines only) |                        |
|                                |   | Oil grade<br>▪ Entries between 1 and 4 are possible 1)       |                        |
| Adaption channel for oil grade |   |  |                        |

1) Valid specifications can be found in "Maintenance" booklet.

=> Maintenance

#### Note:

*Adaption to oil grade must be carried out after every service.*

#### Measured value block 016

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

|   |     |   |                        |
|---|-----|---|------------------------|
| Display group 16                                  |     | ⇒   | ◀ Indicated on display |
| 47  | XXX | 48  | XXX                    |
|   |     | Arithmetic value for thermal load                       |                        |
|   |     | Adaption channel for thermal load (diesel engines only) |                        |
| Arithmetic value for amount of soot in engine oil |     |   |                        |



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

### Measured value block 017

|                  |     |    |     |  |
|------------------|-----|----|-----|--|
| Display group 17 |     | ▢  |     | ▸ Indicated on display                                 |
| 60               | XXX | 61 | XXX |  |
|                  |     |    |     | Adaption value for convenience system data bus users   |
|                  |     |    |     | Adaption channel for convenience system data bus users |
|                  |     |    |     | Adaption value for drive train data bus users          |
|                  |     |    |     | Adaption channel for drive train data bus users        |

### Measured value block 018

|                  |     |   |   |   |
|------------------|-----|---|---|---|
| Display group 18 |     | ▢ |   | ▸ Indicated on display                      |
| 62               | XXX | - | - |   |
|                  |     |   |   | Adaption value for display data bus users   |
|                  |     |   |   | Adaption channel for display data bus users |

### Measured value block 019

|                  |       |    |       |   |
|------------------|-------|----|-------|---|
| Display group 19 |       | ▢  |       | ▸ Indicated on display  |
| 18               | XXXXX | 19 | XXXXX |   |
|                  |       |    |       | Adaption value for radio clock/dash panel insert illumination                 |
|                  |       |    |       | Adaption channel for radio clock/dash panel insert illumination configuration |
|                  |       |    |       | Adaption value for auxiliary heater   |
|                  |       |    |       | Adaption channel for auxiliary heater configuration                           |

### Measured value block 050

|                              |          |        |        |  |
|------------------------------|----------|--------|--------|--|
| Read measured value block 50 |          | ⇒      |        | ▸ Indicated on display                 |
| XXXX km                      | XXXX rpm | XXX °C | XXX °C |  |
|                              |          |        |        | Coolant temperature<br>▸ 50 ... 130 °C |
|                              |          |        |        | Oil temperature                        |
|                              |          |        |        | Engine speed<br>▸ 0 ... 9990 rpm       |
|                              |          |        |        | Mileage counter display value          |

### Measured value block 125

|  |           |   |                        |
|--|-----------|---|------------------------|
| Read measured value block 125  |           | ⇒ | ◀ Indicated on display |
| Engine 1   | Gearbox 1 | - | -                      |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>  |           |   |                        |
| <p>Automatic gearbox control unit - drive train data bus interface</p> <ul style="list-style-type: none"> <li>▪ 1 - Control unit is drive train data bus user</li> <li>▪ 0 - Control unit with CAN capability is not drive train data bus user</li> <li>▪ No readout - no control unit CAN capability</li> </ul> |           |   |                        |
| <p>Engine control unit - drive train data bus interface</p> <ul style="list-style-type: none"> <li>▪ 1 - Control unit is drive train data bus user</li> <li>▪ 0 - Control unit with CAN capability is not drive train data bus user</li> <li>▪ No readout - no control unit CAN capability</li> </ul>            |           |   |                        |

### Measured value block 130

|   |  |   |                        |
|---|--|---|------------------------|
| Read measured value block 130   |  | ⇒ | ◀ Indicated on display |
| Tyre pr. 1  | <small>protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</small> |   |                        |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>   |  |   |                        |
| <p>Tyre pressure display zone for Group convenience system data bus interface</p> <ul style="list-style-type: none"> <li>▪ 1 - Signifies that the tyre pressure control unit is a Group convenience system data bus user</li> <li>▪ Empty display zone signifies that tyre pressure control unit is not a Group convenience system data bus user</li> </ul> |  |   |                        |

### Measured value block 131

|  |      |   |                        |
|--|------|---|------------------------|
| Read measured value block 131  |      | ⇒ | ◀ Indicated on display |
| AC 1   | Text |   |                        |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>  |      |   |                        |
| <p>Convenience system data bus mode-</p> <p>Air conditioner display zone for Group convenience system data bus interface</p> <ul style="list-style-type: none"> <li>▪ 1 - Signifies that the air conditioner control unit is a Group convenience system data bus user</li> <li>▪ Empty display zone signifies that air conditioner control unit is not a Group convenience system data bus user</li> </ul> |      |   |                        |



## Measured value block 140

|                                 |             |   |
|---------------------------------|-------------|---|
| Read measured value block 140 ➔ |             | Indicated on display  |
| Radio 1                         | Telephone 1 | Navigat 1 Telemat 1   |
|                                 |             | Telematics display zone for display data bus interface <ul style="list-style-type: none"><li>▪ 1 - Signifies that telematics control unit is a display data bus user</li><li>▪ Empty display zone signifies that telematics control unit is not a display data bus user</li></ul> |
|                                 |             | Navigation display zone for display data bus interface <ul style="list-style-type: none"><li>▪ 1 - Signifies that navigation control unit is a display data bus user</li><li>▪ Empty display zone signifies that navigation control unit is not a display data bus user</li></ul> |
|                                 |             | Telephone display zone for display data bus interface <ul style="list-style-type: none"><li>▪ 1 - Signifies that telephone control unit is a display data bus user</li><li>▪ Empty display zone signifies that telephone control unit is not a display data bus user</li></ul>    |
|                                 |             | Radio display zone for display data bus interface <ul style="list-style-type: none"><li>▪ 1 - Signifies that radio control unit is a display data bus user</li><li>▪ Empty display zone signifies that radio control unit is not a display data bus user</li></ul>                |

## Measured value block 141

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

|                                 |  |                       |
|---------------------------------|--|-----------------------|
| Read measured value block 141 ➔ |  | Indicated on display  |
|                                 |  | Text                  |
|                                 |  | Display data bus mode |
|                                 |  |                       |
|                                 |  |                       |

## 1.11 - Adaption

The individual functions are called up by way of the appropriate adaption channel number (=> Adaption table, Page 29 ).

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

| Adaption channel | Measured value block |
|------------------|----------------------|
| 03               | 011, Page 24         |
| 19               | 019, Page 26         |
| 30               | 010, Page 23         |
| 40 and 41        | 012, Page 24         |
| 42 and 43        | 013, Page 24         |
| 44               | 014, Page 25         |
| 45 and 46        | 015, Page 25         |



| Adaption channel | Measured value block |
|------------------|----------------------|
| 47 and 48        | 016, Page 25         |

**Note:**

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

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

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

| Adaption channel | Measured value block |
|------------------|----------------------|
| 60, 61           | 017, Page 26         |
| 62               | 018, Page 26         |

After adaption, the control units in the respective bus system are displayed in the following measured value blocks:

| Adaption channel | Measured value block |
|------------------|----------------------|
| 60               | 125, Page 27         |
| 61               | 130, Page 27         |
| 62               | 140, Page 28         |

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

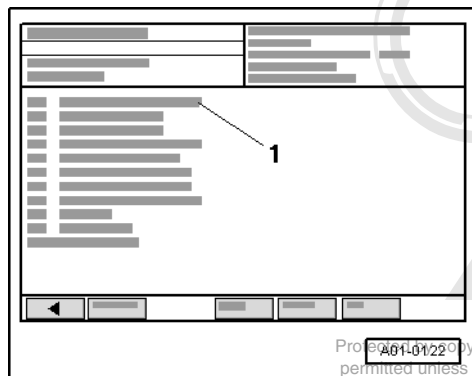
**Adaption table**

| Adaption channel | Adaption function   |
|------------------|---|
| 02               | Resetting of service display following service => Page 34   |
| 03               | Correction of fuel consumption indicator => Page 36         |
| 04               | Driver information system language variants => Page 37      |
| 09               | Mileage indicator => Page 38 -                              |
| 18               | Adaption of auxiliary heater => Page 42                     |
| 19               | Radio clock/dash panel insert illumination => Page 43 -     |
| 30               | Correction of fuel gauge sender resistance range => Page 45 |
| 33               | Correction of fuel gauge "Full" indicator => Page 46        |
| 40               | Mileage since service => Page 48                            |
| 41               | Days since service => Page 49                               |
| 42               | Minimum mileage prior to service => Page 51                 |
| 43               | Maximum mileage prior to service => Page 52                 |
| 44               | Maximum time interval prior to service => Page 54           |
| 45               | Oil grade => Page 56  |
| 46               | Total consumption (petrol engines only) => Page 58          |

| Adaption channel | Adaption function   |
|------------------|---|
| 47               | Amount of soot in engine oil (diesel engines only) => Page 59 |
| 48               | Thermal load (diesel engines only) => Page 60                 |
| 60               | Control units using drive train data bus => Page 62           |
| 61               | Control units using information data bus => Page 63           |



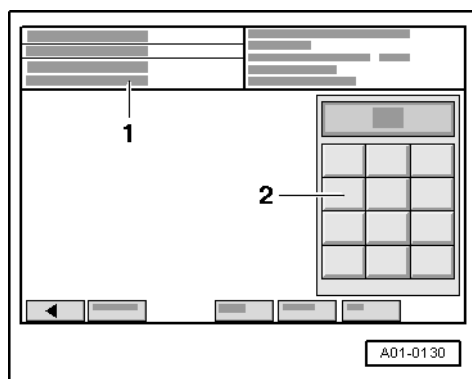
| Adaption channel | Adaption function                               |
|------------------|---|
| 62               | Control units using display data bus => Page 65 |



Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Performing function "10 - Adaption"

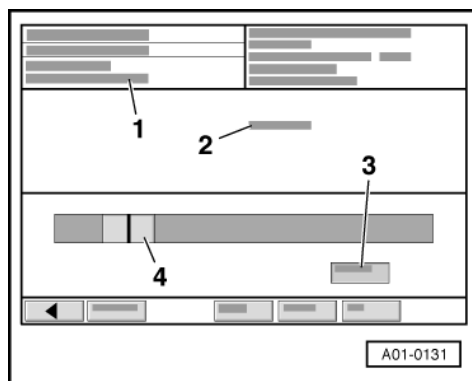
- Start dash panel insert self-diagnosis => Page 2 .
- > Readout on VAS 5051:
- From list -1- select diagnostic function "10 - Adaption".



- > Readout on VAS 5051:
- 1 - Enter channel number
- Use keypad -2- to enter desired adaption channel =>Adaption table, Page 29 .
- Confirm entry by touching Q key.

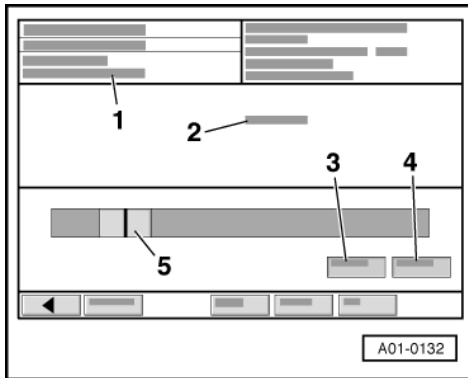
### Note:

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



-> Readout on VAS 5051:

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



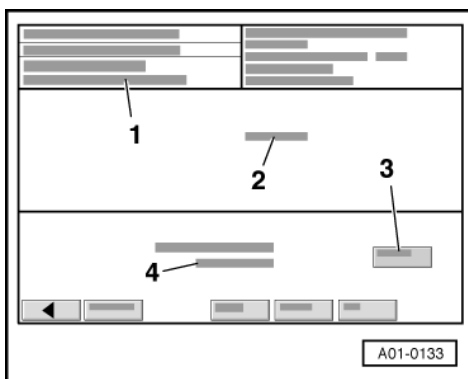
#### A - Altering adaption value by means of slide bar

-> Readout on VAS 5051:

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

#### **Note:**

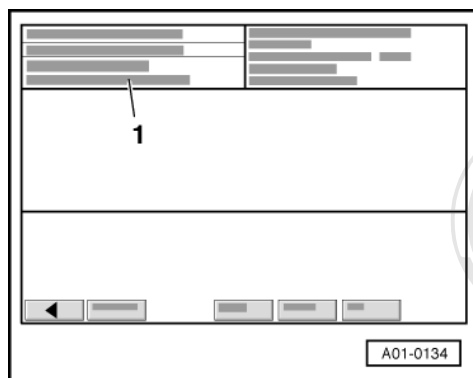
*If "Save" key is not displayed, keypad must be used to make direct entry=> Page 32.*



-> Readout on VAS 5051:

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

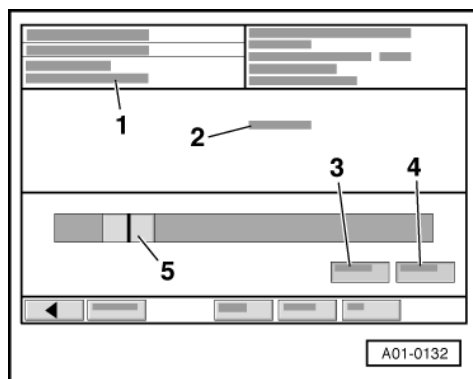
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Readout on VAS 5051:

1 - Channel X  
Value X saved

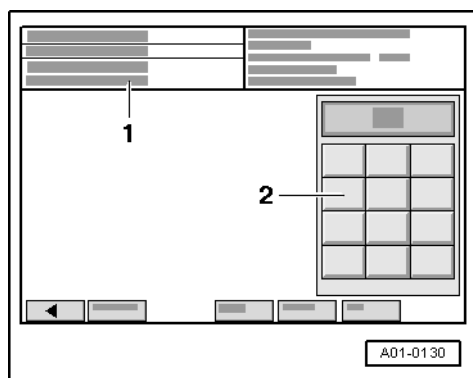
- Terminate function "10 - Adaption" by touching **key**.



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

-> Readout on VAS 5051:

- Touch "Keypad" key -3-.



-> Readout on VAS 5051:

1 - Enter adaption value

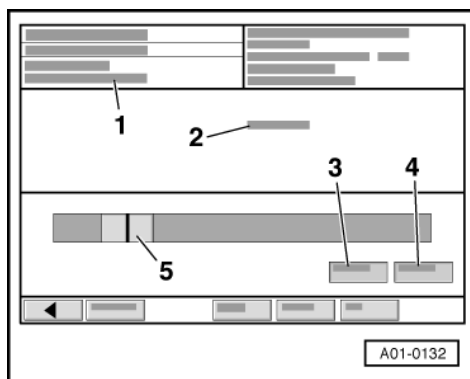
- Use keypad -2- to enter desired 5-digit adaption value. Use "0" to fill up blanks.

Example:

Desired input: 1

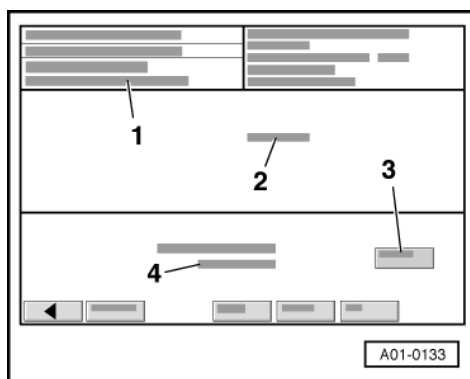
Keypad entry: 00001

- Confirm entry by touching Q key.



-> Readout on VAS 5051:

- Touch "Save" key -4-.



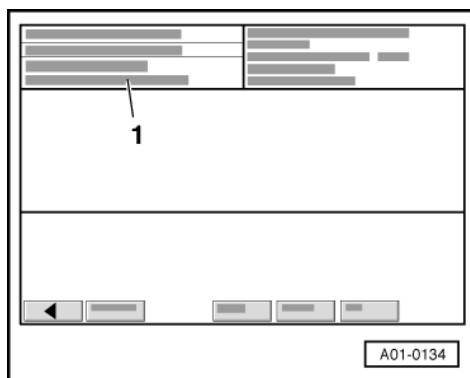
-> Readout on VAS 5051:

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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





-> Readout on VAS 5051:

1 - Channel X  
Value X saved

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

## 1.12 - Adaption channels 02 to 09

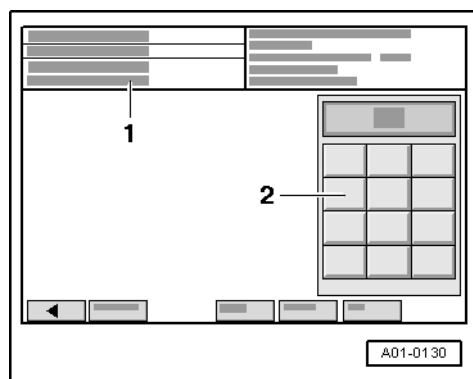
### Adaption channel 02 - Resetting service display following service

#### *Notes:*

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

=> Maintenance

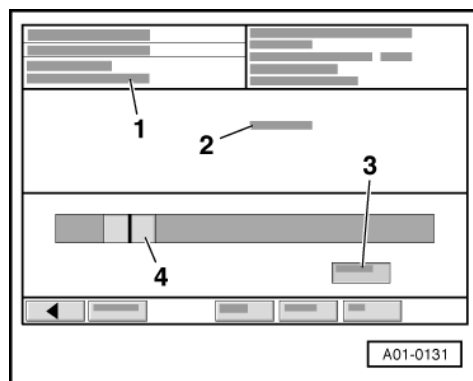
- ♦ Channels 40, 41, 46, 47 and 48, which display dynamic service values, are set automatically to "0".



-> Readout on VAS 5051:

1 - Enter channel number

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

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

| Display | Significance    |
|---------|-----------------|
| 0       | Service not due |
| 1       | Service due     |

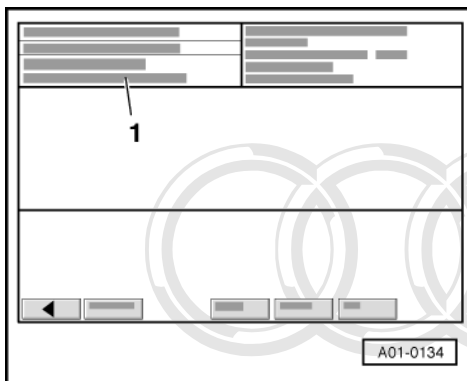
Service status is reset by way of the following adaption value:

| Adaption value | Service status |
|----------------|----------------|
| 00000          | Cancel service |

- Use slide bar to change adaption value => "A - Changing adaption value with slide bar", Page 31 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .



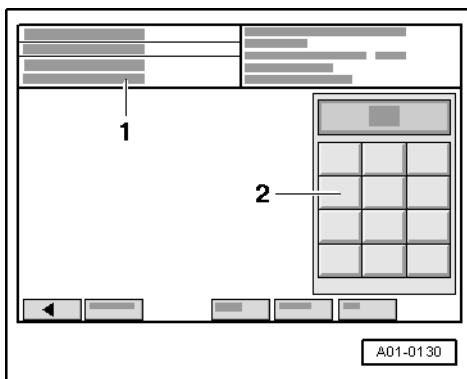
-> Readout on VAS 5051 following adaption:

- 1 - Channel 2
- Value 0 saved

**Notes:** Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for errors or omissions.

- ♦ "SERVICE IN 15000 KM" is displayed in dash panel insert.
- ♦ 15000 km is the initial value for the service display. Conversion to higher mileage (e.g. 30000 km for petrol engines) is performed during vehicle operation.

- Check service specifications in measured value blocks 013...016  
=> Page 24 onwards.

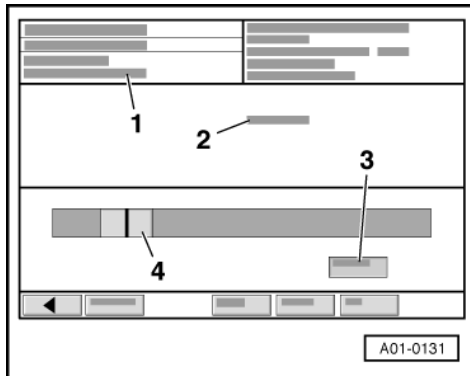


**Adaption channel 03 - Correction of fuel consumption indicator**

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

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

- 1 - Channel 3
- Read and test
- 2 - Consumption indicator
- 4 - Slide bar positioned on current adaption value 100

**Notes:**

- ♦ The adaption value 100 represents the factory-set mean fuel consumption indicator resistance range.
- ♦ It is only possible to make entries between 85% and 115%.
- ♦ Entries must be made in 5% steps.
- ♦ Dash panel insert replacement => Page 67 .

- Use slide bar to change adaption value => "A - Changing adaption value with slide bar", Page 31 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

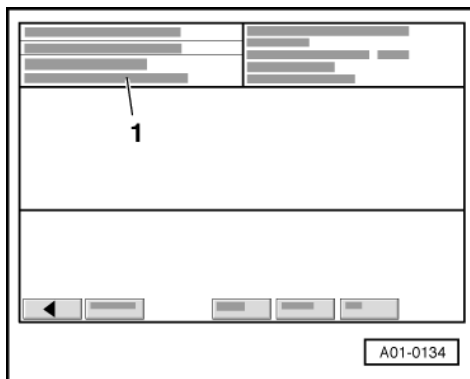
Example:

Desired input: 90%

Keypad entry: 00090

**Note:** 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

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



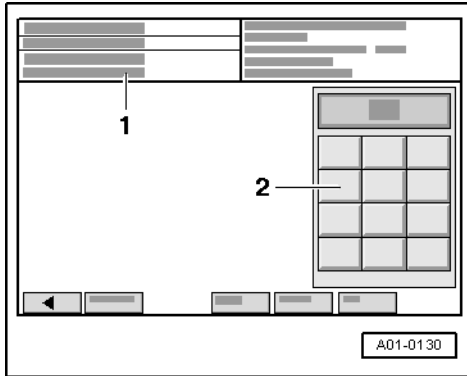


-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 3  
 Value 90 saved

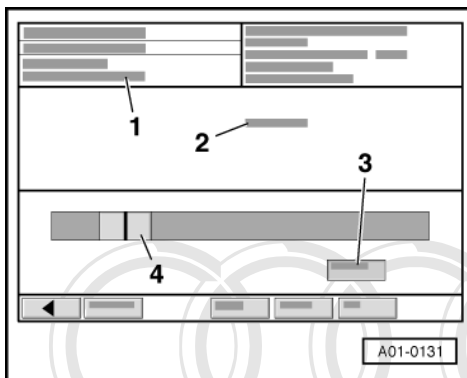
- Terminate function "10 - Adaption" by touching ◀ key.



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

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

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

Language version is adapted by entering the following values:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized 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.

| Language version | Code |
|------------------|------|
| German           | 1    |
| English          | 2    |
| French           | 3    |
| Italian          | 4    |



| Language version | Code |
|------------------|------|
| Spanish          | 5    |
| Portuguese       | 6    |
| Chinese          | 8    |

- Use slide bar to change adaption value => "A - Changing adaption value with slide bar", Page 31 .

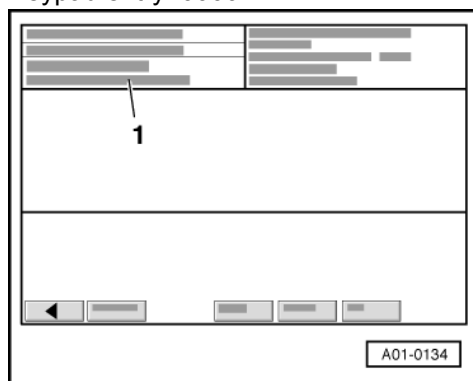
Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32
- Enter 5-digit adaption value. Use "0" to fill up blanks.

Example:

Code: 1 (German)

Keypad entry: 00001



-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 4  
Value 1 saved

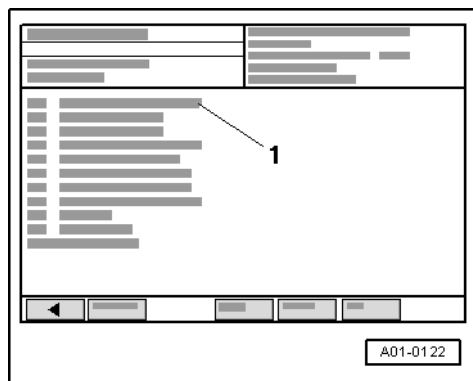
- Terminate function "10 - Adaption" by touching ◀ key.

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

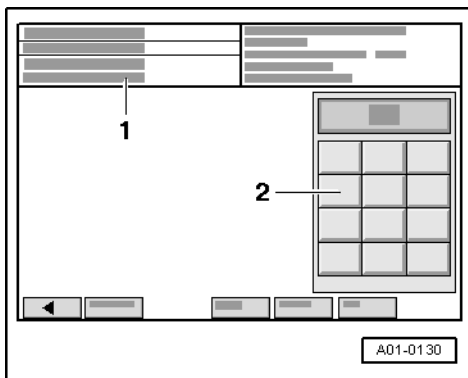
This function can be used to enter mileage count on dash panel insert replacement.

#### Notes:

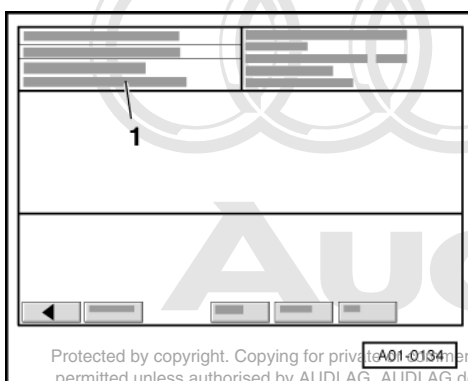
- ♦ Adaption is only possible for dash panel inserts with a mileage of up to max. 100 km.
- ♦ Adaption can only be performed once for a given dash panel insert.
- ♦ It is only possible to enter a higher adaption value (greater than 100 km).
- ♦ Up to model year 2001: Confirmed incorrect entries cannot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



- Start dash panel insert self-diagnosis => Page **2**.
- > Readout on VAS 5051:
- From list -1- select diagnostic function "11 - Login procedure".



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



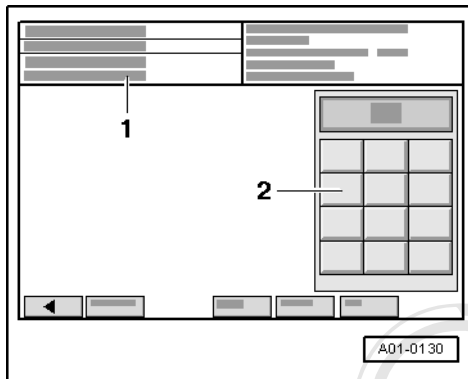
- > Readout on VAS 5051:
- 1 - Function successfully implemented
- Touch ◀ key.





-> Readout on VAS 5051:

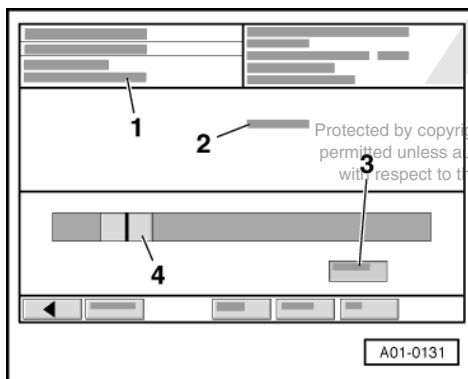
- From list -1- select diagnostic function "10 - Adaption".



-> Readout on VAS 5051:

- 1 - Enter channel number

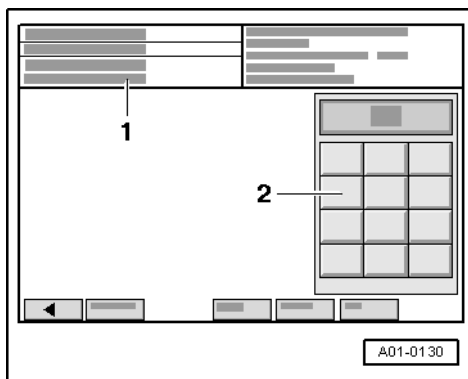
- Use keypad -2- to enter "09" for "Adaption channel 09" and confirm by touching Q key.



-> Readout on VAS 5051:

- 1 - Channel 9
- Read and test
- 2 - Kilometer count in 10 km units
- 4 - Slide bar positioned on current adaption value

- Touch "Keypad" key -3-.



-> Readout on VAS 5051:

- 1 - Enter adaption value
- Use keypad -2- to enter 5-digit adaption value (=> Measured value block 002, Page 23 ).

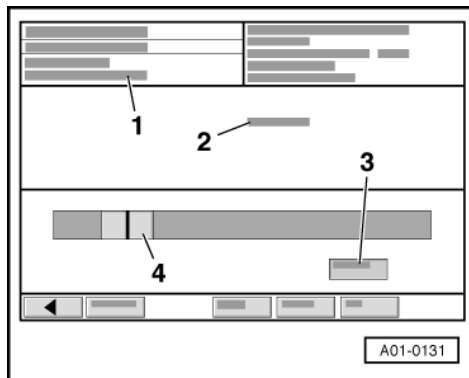
|   |   |   |   |  |
|---|---|---|---|--|
| X |   |   |   | Hundred thousands: 100000 ... 655,350 km |
|   | X |   |   | Ten thousands: 10000 ... 90,000 km       |
|   |   | X |   | Thousands: 1000 ... 9,000 km             |
|   |   |   | X | Hundreds: 100 ... 900 km                 |
|   |   |   | X | Tens: 10 ... 90 km                       |
|   |   |   |   | Units: Round up to nearest ten           |

**Example:**

*Mileage = 89627*

**Keypad entry: 08963**

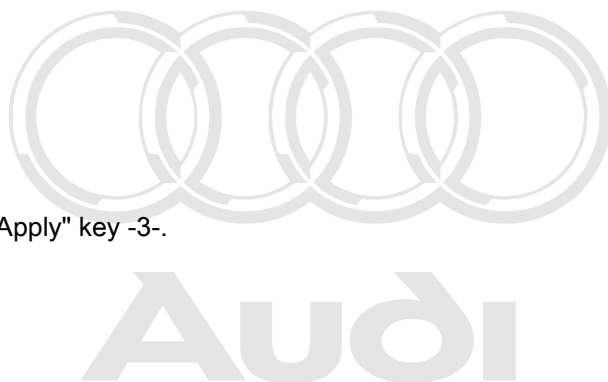
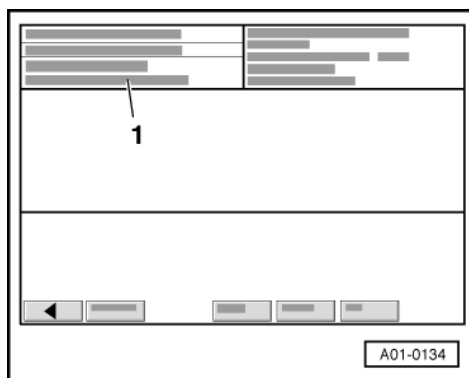
- Confirm entry by touching Q key.



-> Readout on VAS 5051:

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

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

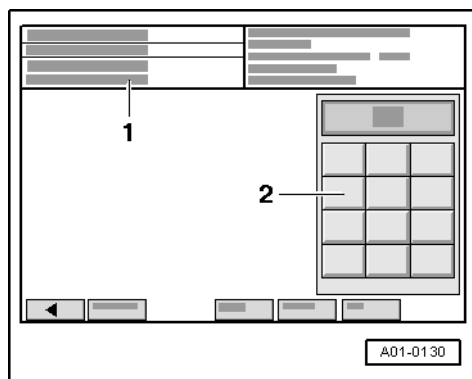


-> Readout on VAS 5051 following adaption:

1 - Channel 9  
Value 8963 saved

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

### 1.13 - Adaption channels 18 to 33



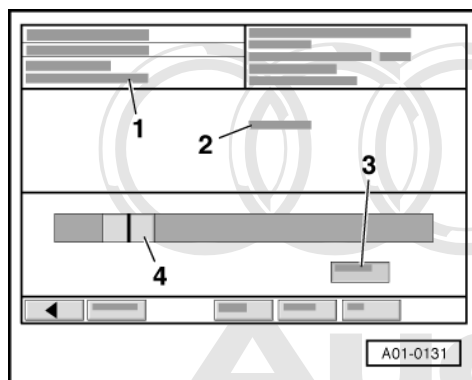
#### Adaption channel 18 - adaption of auxiliary heater

With this function the fitted auxiliary heater, which is controlled from the dash panel insert menu, is adapted.

-> Readout on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "18" for "Adaption channel 18" and confirm by touching Q key.



1 - Channel 18

Read and test

4 - Slide bar positioned on current adaption value

Protected by Patent. Reproduction, distribution and use of this document, in whole or in part, 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.

| Version  | Code  |
|--|-------|
| without auxiliary heater                               | 00000 |
| with auxiliary heater                                  | 00001 |
| with auxiliary heater "off",<br>with terminal 15 "off" | 00002 |

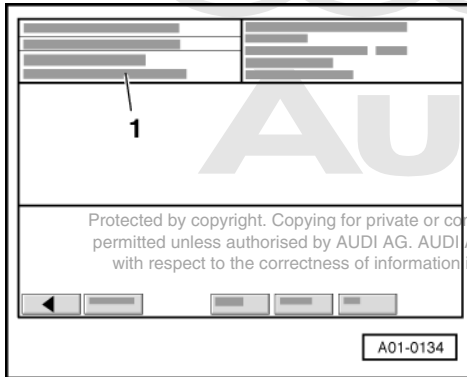
Example:

Desired input: 00001 for version with auxiliary heater

Keypad entry: 00001

**Note:**

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

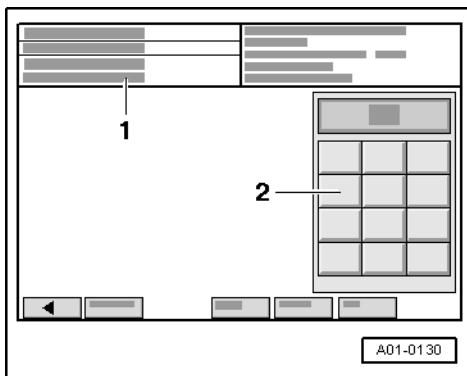


-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 18  
 Value 00001 saved

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



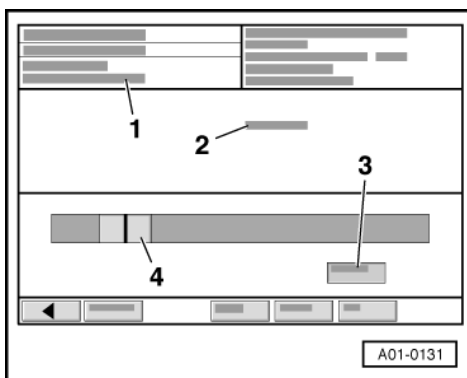
#### Adaption channel 19 - radio clock/dash panel insert illumination

This function permits adaption of radio clock and instrument illumination on dash panel insert replacement.

-> Readout on VAS 5051:

1 - Enter channel number

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





-> Readout on VAS 5051:

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

**Notes:**

- ♦ Current adaption value for channel 19 can be read out as of model year 2002 in measured value block 019 => Page 26 .
- ♦ Dash panel insert replacement => Page 67 .

The radio clock display is adapted by the following input:

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express written authorisation by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Instrument illumination function can be adapted as of model year 2002 by entering the following values:

| Instrument illumination |   |   |   |   |   |
|-------------------------|---|---|---|---|---|
| 0                       | X | X | X | X | Pointers and scales light with dipped beam "on"                       |
| 1                       | X | X | X | X | Pointers light with ignition "on", scales light with dipped beam "on" |
| 2                       | X | X | X | X | Scales light with ignition "on", pointers light with dipped beam "on" |
| 3                       | X | X | X | X | Pointers and scales light with ignition "on"                          |

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

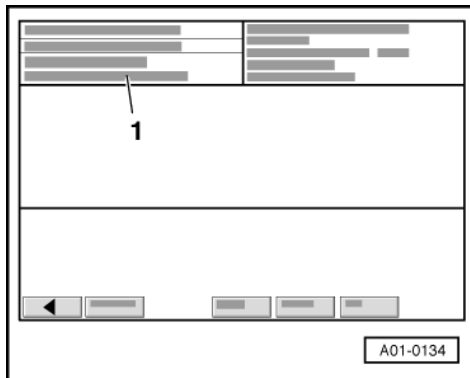
Example:

Desired input: 10001 for instrument illumination and radio clock

Keypad entry: 10001

**Note:**

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



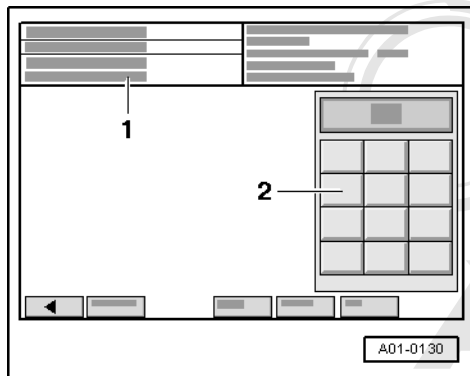
-> Readout on VAS 5051 following adaption:



Example:

1 - Channel 19  
 Value 10001 saved

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



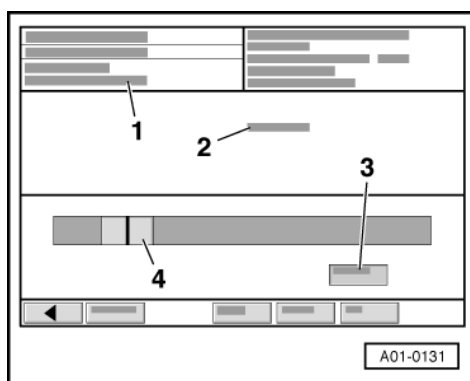
### Adaption channel 30 - Correction of fuel gauge sender resistance range

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the prior written consent of Audi AG. Audi AG does not accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

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

#### Notes:

- ◆ The adaption value 128 represents the factory-set mean fuel gauge sender resistance range.
- ◆ The fuel gauge sender resistance can be changed by  $\pm 8$  ohms to an adaption value of 120 ... 136.
- ◆ Dash panel insert replacement => Page 67 .

- Use slide bar to change adaption value => "A - Changing adaption value with slide bar", Page 31 .



Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32.
- Enter 5-digit adaption value. Use "0" to fill up blanks.

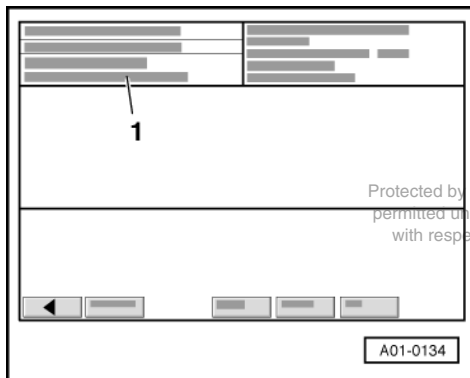
Example:

Desired input: 132

Keypad entry: 00132

**Note:**

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



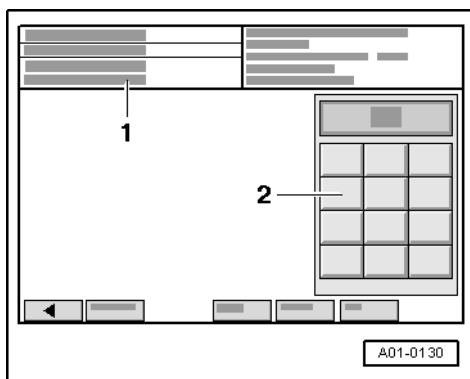
-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 30  
Value 132 saved

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

**Adaption channel 33 - Correction of fuel tank "full" indicator**

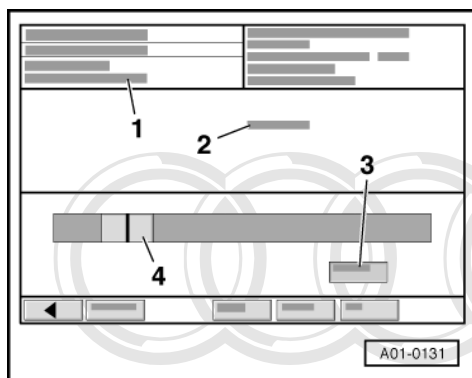


With this function, from MY 02 the fuel tank "Full" indicator can be corrected if the readout does not correctly show "Full" when the tank is in fact full.

-> Readout on VAS 5051:

1 - Enter channel number

- Use keypad -2- to enter "33" for "Adaption channel 33" and confirm by touching Q key.



-> Readout on VAS 5051:

- 1 - Channel 33
- Read and test
- 4 - Slide bar positioned on current adaption value 128

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 respect to the correctness of information in this document. Copyright by AUDI AG.

**Notes:**

- ◆ The adaption value 128 corresponds to the factory-set value.
- ◆ The adaption can be changed between 112 ... 144.
- ◆ Dash panel insert replacement => Page 67 .

- Use slide bar to change adaption value => "A - Changing adaption value with slide bar", Page 31 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

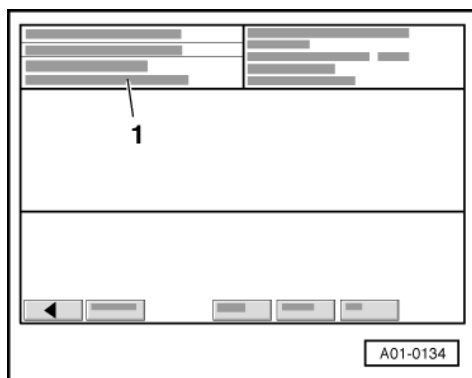
Example:

Desired input: 134

Keypad entry: 00134

**Note:**

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



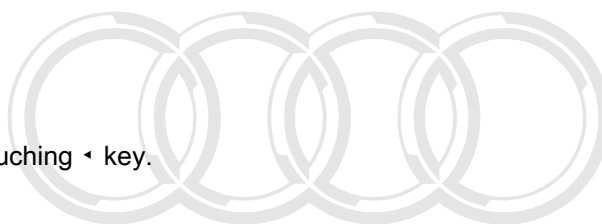


-> Readout on VAS 5051 following adaption:

Example:

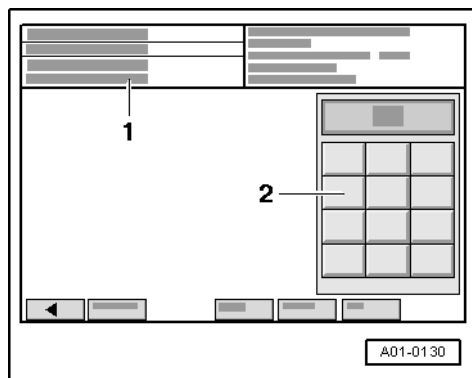
1 - Channel 33  
Value 134 saved

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



## 1.14 - Adaption channels 40 to 48

### Adaption channel 40 - mileage since service



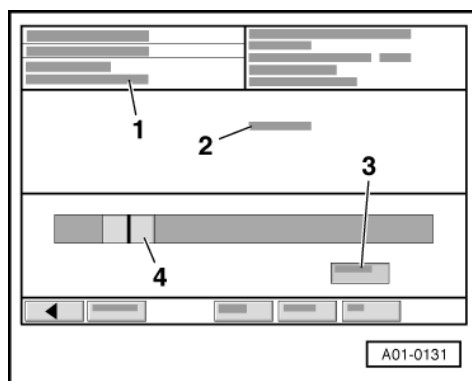
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

-> Readout on VAS 5051:

1 - Enter channel number

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



-> Readout on VAS 5051:

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

#### Notes:

- ♦ The respective specification can only be entered in steps of 100 km; the display is thus also in 100 km.

- ♦ Adaption is implemented in miles in countries where distances are measured in miles.
- Use slide bar to change adaption value => "A - Changing adaption value with slide bar", Page 31 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

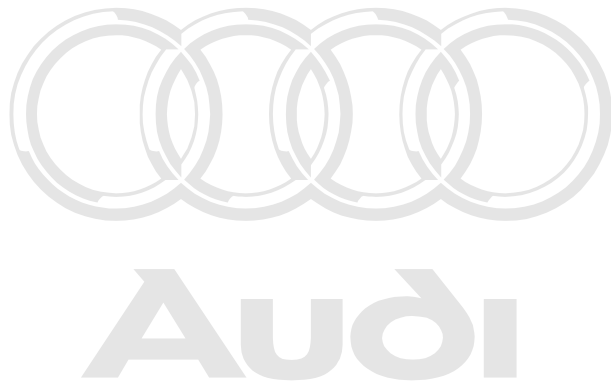
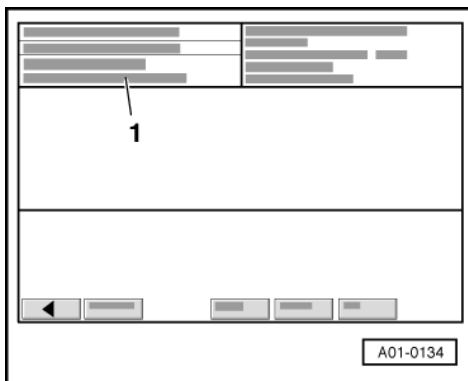
Example:

Desired input: 1,000 km

Keypad entry: 00010

**Note:**

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



-> Readout on VAS 5051 following adaption:

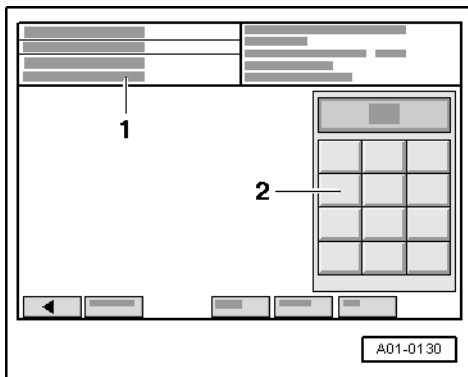
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Example:

1 - Channel 40  
Value 10 saved

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

**Adaption channel 41 - days since service**

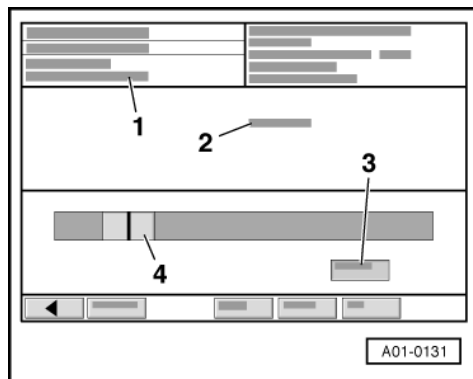


This function can be used to enter time in days since last service on dash panel insert replacement.



-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

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

**Note:**

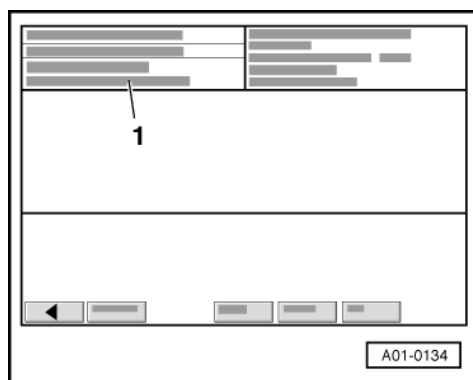
*The respective specification can only be entered in one-day steps; the display is thus also in days.*

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32.
- Enter 5-digit adaption value. Use "0" to fill up blanks.

Example:

Desired input: 200 days

Keypad entry: 00200



-> Readout on VAS 5051 following adaption:

Example:

- 1 - Channel 41

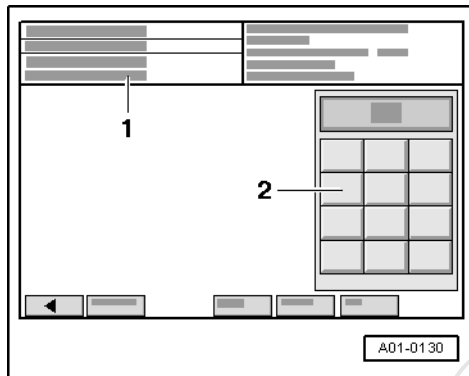


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Value 200 saved

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

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



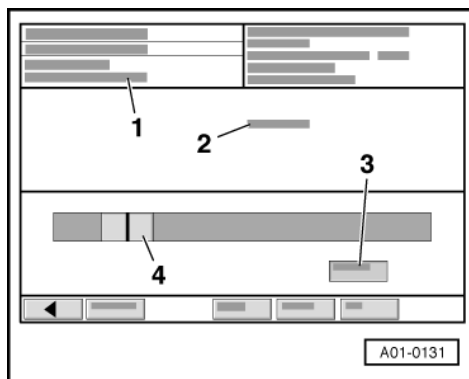
This function can be used to specify a minimum mileage for the service display in the dash panel insert.

#### **Note:**

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

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

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

#### **Notes:**

- ◆ Information on applicable specifications:

=> Maintenance

- ◆ The respective specification can only be entered in steps of 1000 km; the display is thus also in 1000 km.



- ♦ Adaption is implemented in miles in countries where distances are measured in miles.

| Version                        | Adaption value        |
|--------------------------------|-----------------------|
| Petrol engines<br>RoW and GB   | 15,000 km<br>9000 MLS |
| 4-cyl. diesel/PD<br>RoW and GB | 15,000 km<br>9000 MLS |
| 6-cyl. diesel<br>RoW and GB    | 15,000 km<br>9000 MLS |
| USA                            | 10000 MLS             |
| Canada and Australia           | 15,000 km             |

- Use slide bar to change adaption value => "A - Changing adaption value with slide bar", Page 31 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

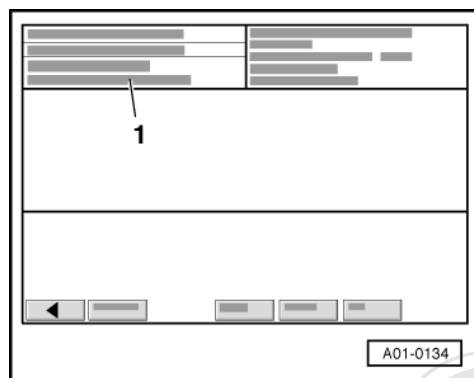
Example:

Specification: 15,000 km

Keypad entry: 00015

**Note:**

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



-> Readout on VAS 5051 following adaption:

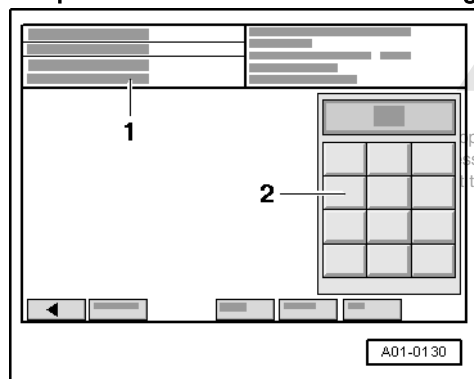
Example:

1 - Channel 42

Value 15 saved

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

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



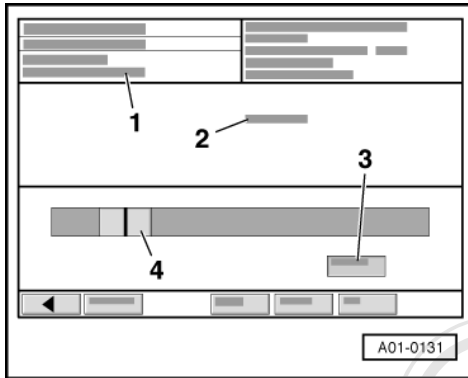
Copyright. Copying for private or commercial purposes, in part or in whole, is not authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the correctness of information in this document. Copyright by AUDI AG.



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

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

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

**Notes:**

- ◆ Information on applicable specifications:

=> Maintenance

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

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

| Version                        | Adaption value         |
|--------------------------------|------------------------|
| Petrol engines<br>RoW and GB   | 30,000 km<br>19000 MLS |
| 4-cyl. diesel/PD<br>RoW and GB | 50,000 km<br>31000 MLS |
| 6-cyl. diesel<br>RoW and GB    | 35,000 km<br>22000 MLS |
| USA                            | 10000 MLS              |
| Canada and Australia           | 15,000 km              |

- Use slide bar to change adaption value => "A - Changing adaption value with slide bar", Page 31 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

Example:

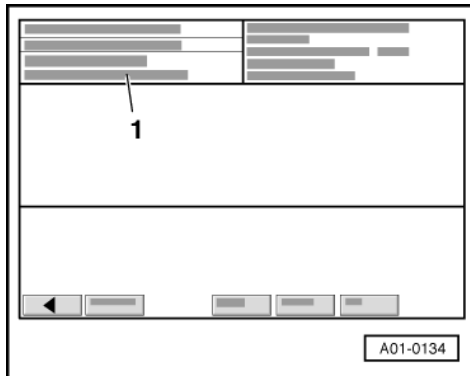
Specification: 30,000 km



Keypad entry: 00030

**Note:**

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

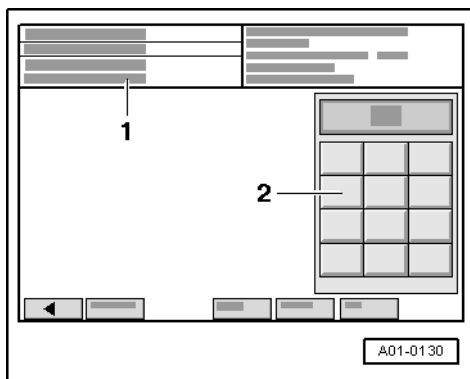


-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 43  
Value 30 saved

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



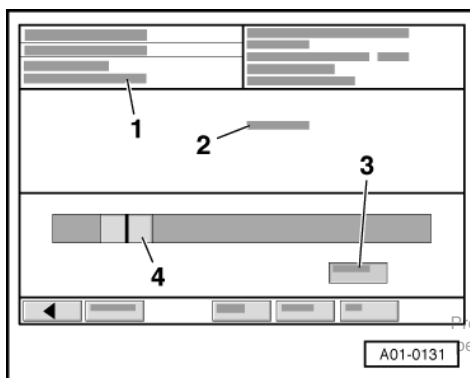
**Adaption channel 44 - Maximum time interval prior to service**

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

-> Readout on VAS 5051:

1 - Enter channel number

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

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

**Notes:**

- ◆ Information on applicable specifications:

=> Maintenance

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

| Version                        | Adaption value |
|--------------------------------|----------------|
| Petrol engines<br>RoW and GB   | 730 days       |
| 4-cyl. diesel/PD<br>RoW and GB | 730 days       |
| 6-cyl. diesel<br>RoW and GB    | 730 days       |
| USA                            | 365 days       |
| Canada and Australia           | 365 days       |

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32.
- Enter 5-digit adaption value. Use "0" to fill up blanks.

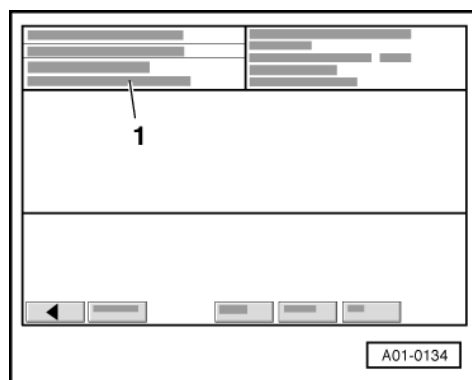
Example:

Specification: 730 days

Keypad entry: 00730

**Note:**

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

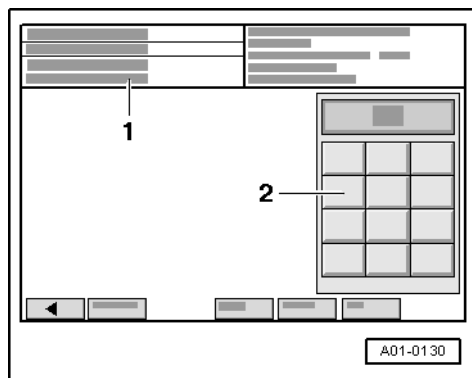


-> Readout on VAS 5051 following adaption:

Example:

- 1 - Channel 44
- Value 730 saved

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



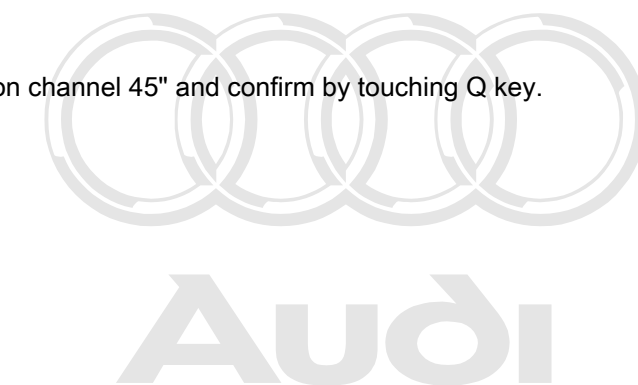
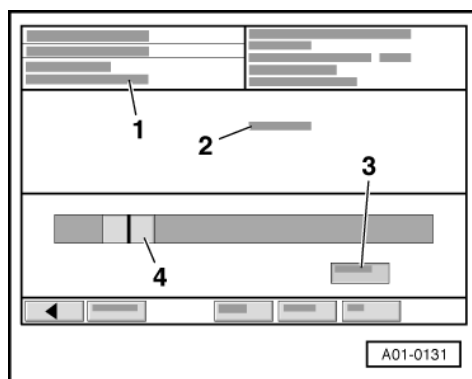
### Adaption channel 45 - oil grade

#### Notes:

- ♦ Oil used must be re-adapted following manual service reset.
- ♦ Adaption value can be set from 1 to 4. Each value 1...4 is linked to a max. mileage (channel 43) and a max. time (channel 44).

-> Readout on VAS 5051:

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

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

#### Notes:

- ♦ Information on applicable specifications:

=> Maintenance

| Version                        | Adaption value |
|--------------------------------|----------------|
| Petrol engines<br>RoW and GB   | 2              |
| 4-cyl. diesel/PD<br>RoW and GB | 4              |

| Version                     | Adaption value |
|-----------------------------|----------------|
| 6-cyl. diesel<br>RoW and GB | 3              |
| USA                         | 1              |
| Canada and Australia        | 1              |

- Use slide bar to change adaption value =>"A - Changing adaption value with slide bar", Page 31 .

Or

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

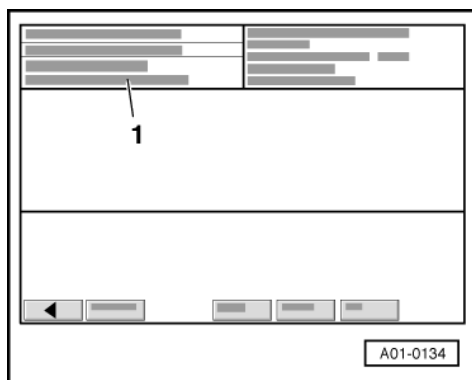
Example:

Specification: 2

Keypad entry: 00002

**Note:**

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

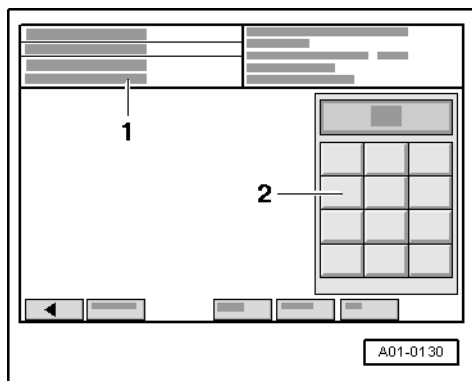


-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 45  
Value 2 saved

- Terminate function "10 - Adaption" by touching **1** key.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



## Adaption channel 46 - total consumption

### *Note:*

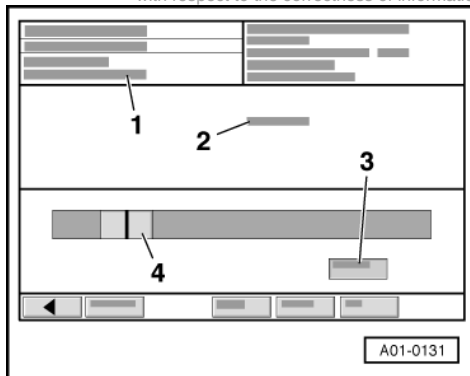
*This adaption channel is only used for vehicles with petrol engine.*

-> Readout on VAS 5051:

1 - Enter channel number

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Readout on VAS 5051:

1 - Channel 46

Read and test

4 - Slide bar positioned on current adaption value

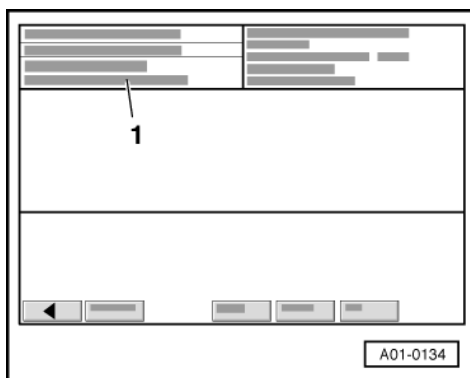
### *Notes:*

- ♦ The value does not represent the actual consumption, but is rather an arithmetic value for the service display.
- ♦ Dash panel insert replacement => Page 67 .
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

Example:

Desired input: 936

Keypad entry: 00936

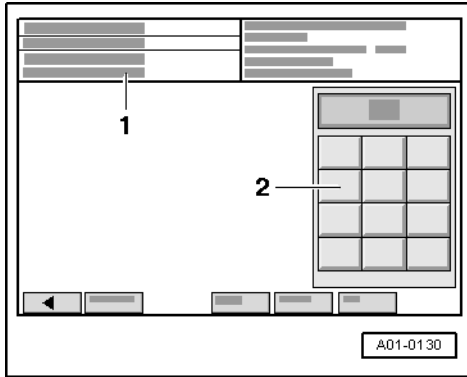


-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 46  
Value 936 saved

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



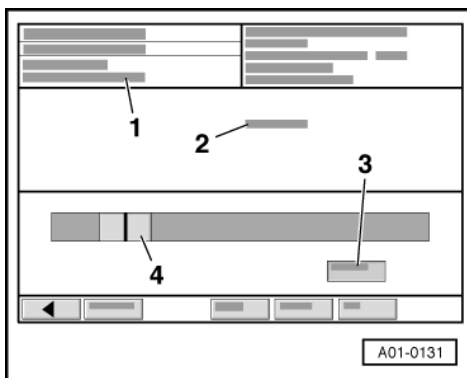
#### Adaption channel 47 - amount of soot in engine oil

##### **Note:**

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

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

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

##### **Notes:**

- ◆ Value given represents a comparison value (0 - 600) for the service display.
- ◆ The value displayed is an arithmetic value for the amount of soot in the engine oil referenced to a distance of 100 km.

Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

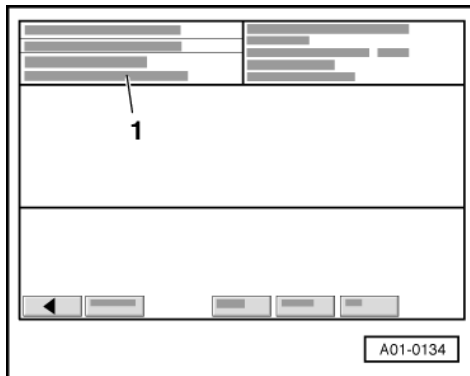


- ♦ Dash panel insert replacement => Page 67 .
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

Example:

Desired input: 400

Keypad entry: 00400

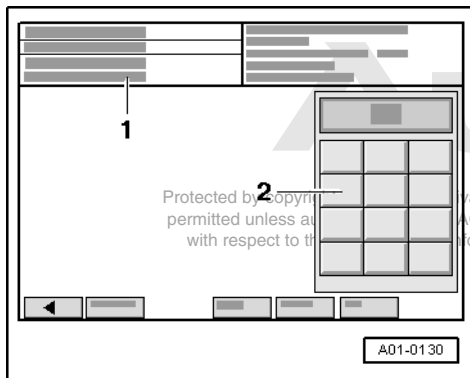


-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 47  
Value 400 saved

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



### Adaption channel 48 - thermal load

#### **Note:**

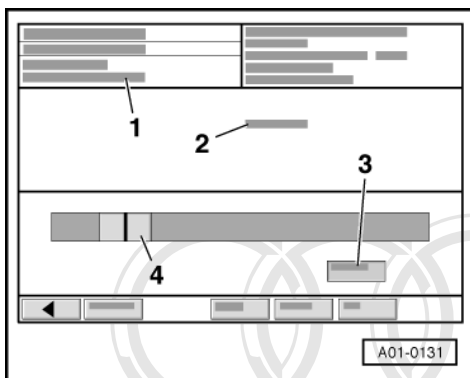
*This adaption channel is only used for vehicles with diesel engine.*

-> Readout on VAS 5051:

1 - Enter channel number

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





-> Readout on VAS 5051:

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

**Notes:**

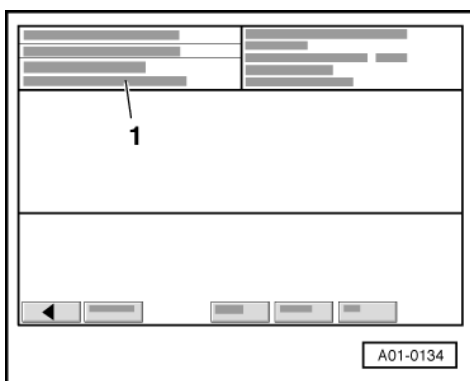
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee, accept any liability with respect to its correctness or information on this document. Copyright by AUDI AG.

- ◆ Value given represents a comparison value (0 - 600) for the service display.
- ◆ The value displayed is an arithmetic value for the thermal loading of the engine oil referenced to a distance of 100 km.
- ◆ Dash panel insert replacement => Page 67 .
- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

Example:

Desired input: 500

Keypad entry: 00500



-> Readout on VAS 5051 following adaption:

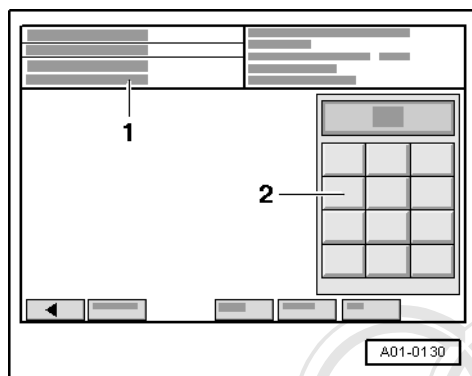
Example:

- 1 - Channel 48
- Value 500 saved
- Terminate function "10 - Adaption" by touching ◀ key.



## 1.15 - Adaption channels 60 to 62

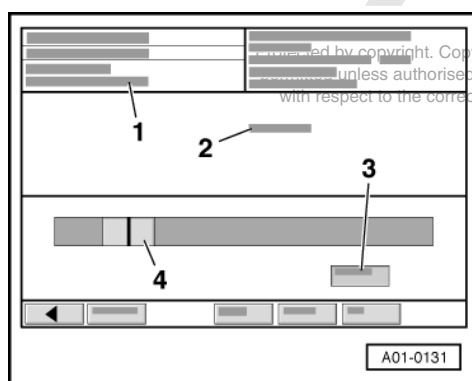
### Adaption channel 60 - control units using drive train data bus



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

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

- 1 - Channel 60
- Read and test
- 4 - Slide bar positioned on current adaption value

#### Notes:

- ♦ Current adaption value for channel 60 can be read out as of model year 2002 in measured value block 017 => Page 26 .
- ♦ Following adaption, control units using drive train data bus are displayed in measured value block 125 =>Page 27 .- Dash panel insert is not displayed in measured value block 125.
- ♦ Dash panel insert replacement => Page 67 .

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

| Drive train data bus control units               | Adaption value |
|--|----------------|
| Engine and dash panel insert with immobilizer II | 0              |

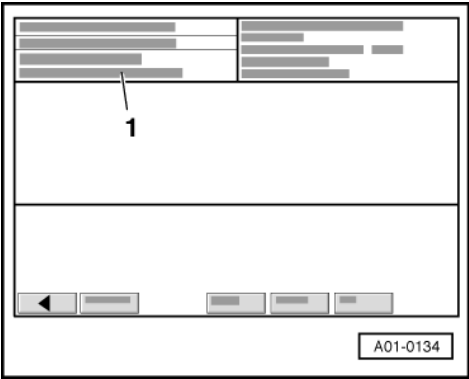
| Drive train data bus control units  | Adaption value |
|---|----------------|
| Engine and dash panel insert with immobilizer III                                     | 1025           |
| Engine, air conditioner and dash panel insert with immobilizer III                    | 1033           |
| Engine, automatic gearbox, air conditioner and dash panel insert with immobilizer III | 1035           |

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32 .
- Enter 5-digit adaption value. Use "0" to fill up blanks.

Example:

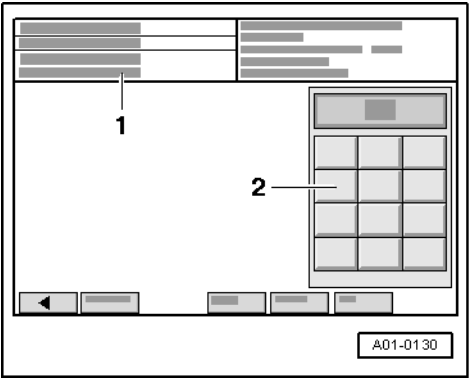
Desired input: 1025 with immobilizer III

Keypad entry: 01025



- > Readout on VAS 5051 following adaption:
- Example:
- 1 - Channel 60
  - Value 1025 saved
- Terminate function "10 - Adaption" by touching ◀ key.

**Adaption channel 61 - control units using convenience system data bus**

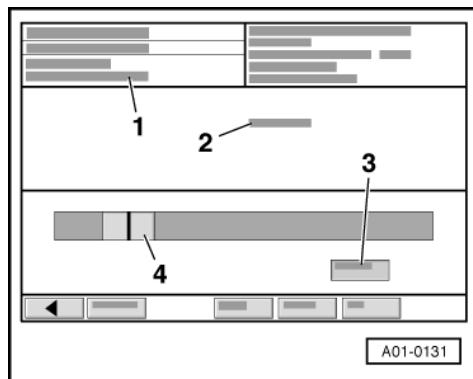


This function can be used to enter control units using convenience system data bus on dash panel insert replacement.



-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

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

#### Notes:

- ♦ New dash panel insert is adapted to value "0".
- ♦ As of model year 2002 current adaption value for channel 61 can be read in measured value block 018 => Page 26 .
- ♦ Following adaption, control units using convenience system data bus are displayed in measured value block 140 =>Page 28 .- Dash panel insert is not displayed in measured value block 140.
- ♦ Dash panel insert replacement => Page 67 .

#### Vehicles up to model year 2001:

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

| Convenience system data bus control units   | Adaption value |
|---|----------------|
| Dash panel insert   | 256            |
| Dash panel insert and tyre pressure monitor   | 768            |
| Dash panel insert, tyre pressure monitor and automatic parking system                   | 17152          |
| Dash panel insert, tyre pressure monitor, automatic parking system and auxiliary heater | 49920          |

#### Vehicles as of model year 2002:

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

| Convenience system data bus control units   | Adaption value |
|---|----------------|
| Dash panel insert and tyre pressure monitor | 768            |

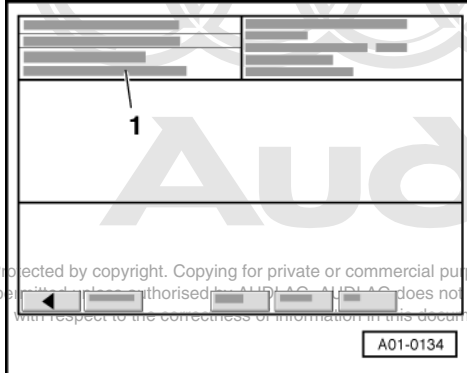
**All models:**

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32.
- Enter 5-digit adaption value. Use "0" to fill up blanks.

**Example:**

Desired input: 768 with dash panel insert and tyre pressure monitor

Keypad entry: 00768



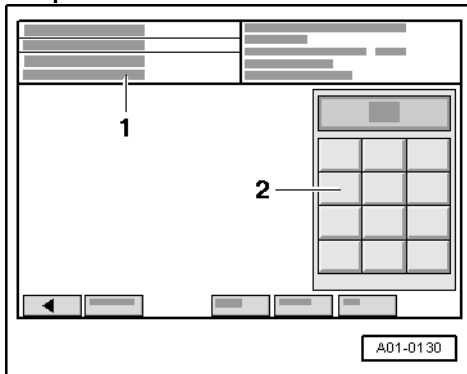
-> Readout on VAS 5051 following adaption:

**Example:**

1 - Channel 61  
 Value 768 saved

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

**Adaption channel 62 - control units using display data bus**

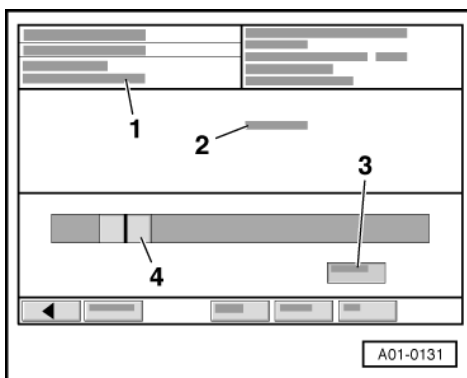


This function can be used to enter control units using the display data bus on dash panel insert replacement.

-> Readout on VAS 5051:

1 - Enter channel number

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





-> Readout on VAS 5051:

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

**Notes:**

- ♦ New dash panel insert is adapted to value "0".
- ♦ As of model year 2002 current adaption value for channel 62 can be read in measured value block 018 => Page 26 .
- ♦ Following adaption, control units using communication data bus are displayed in measured value block 140 =>Page 28 .- Dash panel insert is not displayed in measured value block 140.
- ♦ Dash panel insert replacement => Page 67 .

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

| Display data bus control units   | Adaption value |
|--|----------------|
| Dash panel insert and radio  | 1              |
| Dash panel insert and permanently installed telephone with multi-function steering wheel   | 2              |
| Dash panel insert, radio and permanently installed telephone with multi-function steering wheel                                    | 3              |
| Dash panel insert and navigation system NS-Low   | 4              |
| Dash panel insert and navigation system RNS-D  | 5              |
| Dash panel insert, navigation system NS-Low and permanently installed telephone with multi-function steering wheel                 | 6              |
| Dash panel insert, radio, navigation system RNS-D or NS-Low and permanently installed telephone with multi-function steering wheel | 7              |
| Dash panel insert and telematics without multi-function steering wheel   | 8              |
| Dash panel insert, radio and telematics without multi-function steering wheel  | 9              |

| Display data bus control units-  | Adaption value |
|--|----------------|
| Dash panel insert and telematics with multi-function steering wheel                              | 10             |
| Dash panel insert, radio and telematics with multi-function steering wheel                       | 11             |
| Dash panel insert, navigation system NS-Low and telematics without multi-function steering wheel | 12             |
| Dash panel insert, navigation system RNS-D and telematics without multi-function steering wheel  | 13             |
| Dash panel insert, navigation system NS-Low and telematics with multi-function steering wheel    | 14             |

This document is not intended for commercial purposes, in part or in whole, is not a contract and does not constitute an offer. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

| Display data bus control units-  | Adaption value |
|--|----------------|
| Dash panel insert, navigation system RNS-D and telematics with multi-function steering wheel | 15             |

- Change adaption value by means of direct entry => "B - Changing adaption value by means of direct entry", Page 32.
- Enter 5-digit adaption value. Use "0" to fill up blanks.

Example:

Desired input: 5  
Dash panel insert, radio and navigation

Keypad entry: 00005



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051 following adaption:

Example:

1 - Channel 62  
Value 5 saved

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

## 1.16 - Input values on dash panel insert replacement

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

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

- Use measured value blocks 010...140 to read out values in old dash panel insert which have to be transferred to new dash panel insert.
- Before replacing, note down mileage count/mileage display value in measured value block 010 (display zone 4) => Page 23 and enter when prompted.

**Note:**

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

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

- Code dash panel insert => Page 17

and



- Enter mileage => Page 38
- Enter language version for driver information system (DIS)  
=> Page 37
- Correct fuel consumption indicator => Page 36 (only if fixed value changed)
- Correct fuel gauge sender resistance range => Page 45  
(only if fixed value changed)
- Auxiliary heater adaption=> Page 42
- Enter oil grade => Page 56
- Enter mileage since service => Page 48
- Enter days since service => Page 49
- Enter maximum mileage prior to service => Page 52
- Enter maximum time interval prior to service => Page 54
  
- Enter total consumption (petrol engines only) => Page 58
- Enter amount of soot in engine oil (diesel engines only)  
=> Page 59
- Enter thermal load (diesel engines only) => Page 60
- Configure radio clock/dash panel insert illumination => Page 43 .
- Enter control units using drive train data bus => Page 62
- Enter control units using convenience system data bus  
=> Page 63
- Enter control units using display data bus => Page 65 -

and

- Perform immobilizer adaption after replacing dash panel insert  
=> Page 91
- Perform matching of vehicle keys => Page 01-180

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

### Attention:

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

Service prompt must be reset after performing service.

Service display should only be reset using "Adaption" function of vehicle diagnostic, testing and information system VAS 5051=>Page 34 .

The service display can also be reset as follows:

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

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

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

### Notes:

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

|  |           |
|--|-----------|
| Channel 42 (min. mileage)                        | 15,000 km |
| Channel 43 (max. mileage)                        | 15,000 km |
| Channel 44 (max. time interval prior to service) | 365 days  |



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

## 1.18 - Checking data exchange between control units

### Notes:

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

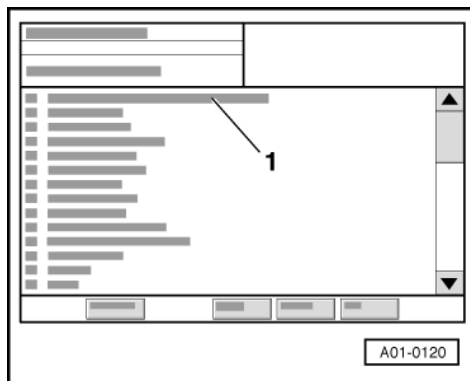
### Checking bus system

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

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

### Test requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Ignition on



### Sequence of operations

-> Readout on VAS 5051:

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

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

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

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

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

If correct control units have been fitted:

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

If multi-pin connectors are properly attached:



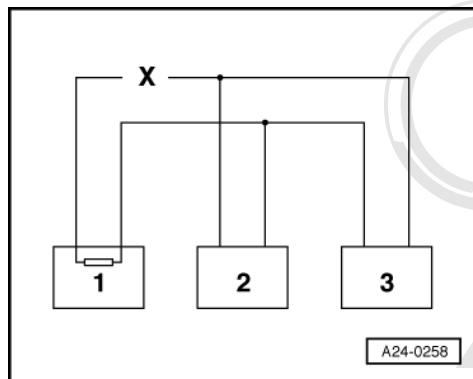
- Check data bus system.

### Testing "two-wire bus system"

- Assess faults stored in control units.

#### **Note:**

*Assessment helps to localise wiring fault.*



#### **Example 1:**

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

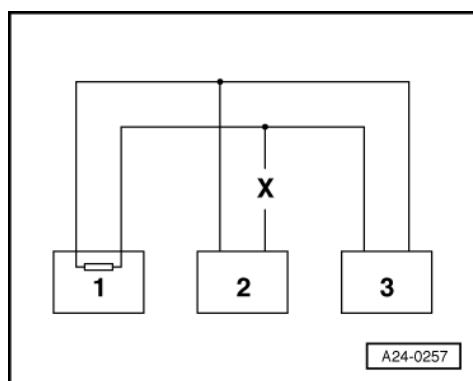
| Control unit | Faults entered in fault memory                                       |
|--------------|--|
| 1            | - No message from control unit 2<br>- No message from control unit 3 |
| 2            | - No message from control unit 1                                     |
| 3            | - No message from control unit 1                                     |

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

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

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

#### **Example 2:**



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

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

| Control unit | Faults entered in fault memory                                       |
|--------------|--|
| 2            | - No message from control unit 1<br>- No message from control unit 3 |
| 3            | - No message from control unit 2                                     |

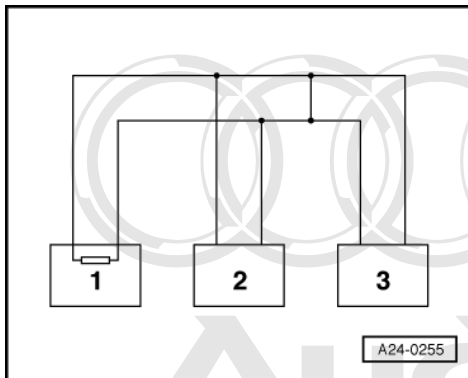
- Switch off ignition.
- Disconnect control units linked by bus wires and examine bus wires for open circuit.

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

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

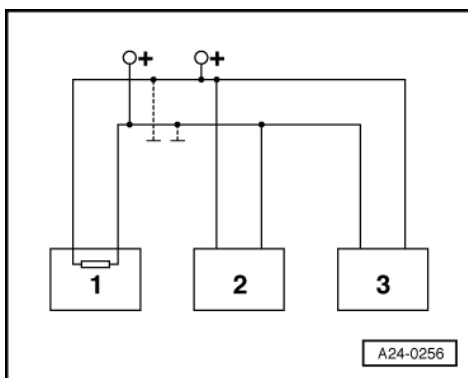
### Example 3:

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



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

- Switch off ignition.
- -> Disconnect control units linked by bus wires and examine bus wires for mutual shorting.



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

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

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



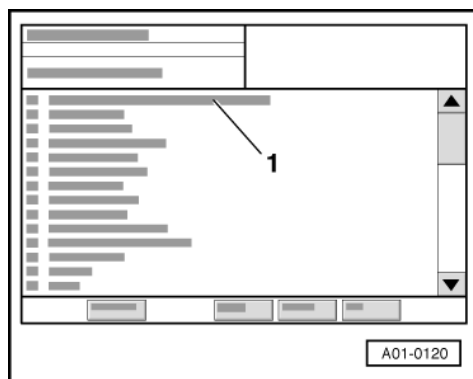
If cause of "Drive train data bus defective" fault, for example, is not found in bus wires, check whether one of the control units is responsible for the problem.

**Test requirement:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162

All control units using data bus for communication still disconnected; Ignition off

- Connect one of the control units.



-> Readout on VAS 5051:

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

## 2 - Immobilizer self-diagnosis - Immobilizer III

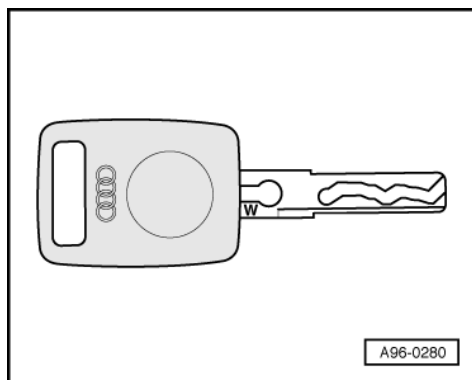
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### 2.1 - Immobilizer self-diagnosis - immobilizer III

### 2.2 - General information

**Note:**

*As from 02.99 the Audi A8 is fitted with immobilizer III. Immobilizer III is the successor to the existing immobilizer II (variable code immobilizer).- The main difference to the previous immobilizer II is that the engine control unit is actively incorporated into the evaluation and monitoring process. Also, the immobilizer control unit is now integrated into the dash panel insert. The mechanical servicing of the immobilizer is identical to that for the previous version, and is carried out as set out in the Workshop Manual.*



-> In the new immobilizer III, as in the immobilizer II (variable code immobilizer), the keys are embossed with a "W", indicating that the code is made up of a fixed portion and a variable portion.

Measures for eliminating current, model-specific faults

=> Technical Service Handbook

### Function

Immobilizer III comprises:

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

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

=> Electrical System; Repair Group 90

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

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

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

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

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

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

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



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

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

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

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

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

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

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

### Attention:

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

## Notes on use/matching of vehicle keys

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

Vehicle key matching => Page 01-180 involves matching all vehicle keys, i.e. including spare and emergency keys, to the immobilizer.

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

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

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

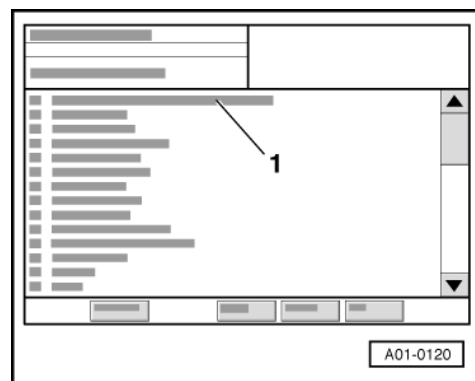
## 2.3 - Starting immobilizer self-diagnosis

### Test requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Ignition on

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Sequence of operations



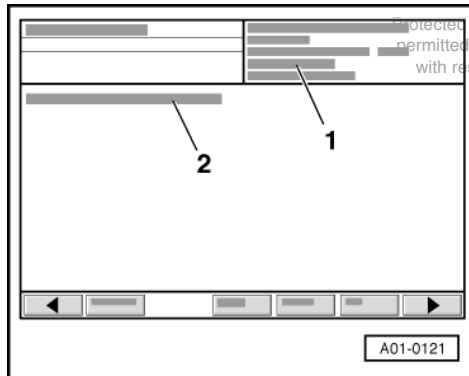
-> Readout on VAS 5051:

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

**Note:**

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

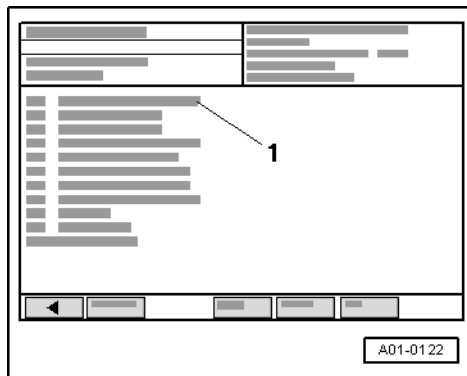
- Wait until next readout appears.



-> Readout on VAS 5051:

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

| Immobilizer control unit identification (example) |   |
|---|---|
| WAUZZZ4DZYN00126 1) AUZ7Z0W0801181 2)             | 1) 17-digit vehicle identification no. (chassis number)<br>2) 14-digit immobilizer identification no. |



- Touch ▶ key.

-> Readout on VAS 5051:

- 1 - List of diagnostic functions:

| Diagnostic functions         | Page |
|------------------------------|------|
| 02 Interrogate fault memory  | 76   |
| 05 Erase fault memory        | 78   |
| 06 End output                | 80   |
| 08 Read measured value block | 80   |



|                             |        |
|-----------------------------|--------|
| 10 Adaption                 | 84     |
| Vehicle ident. no. transfer | 100    |
| Release (PIN)               | 01-180 |
| Channel 50 adaption (PIN)   | 96     |

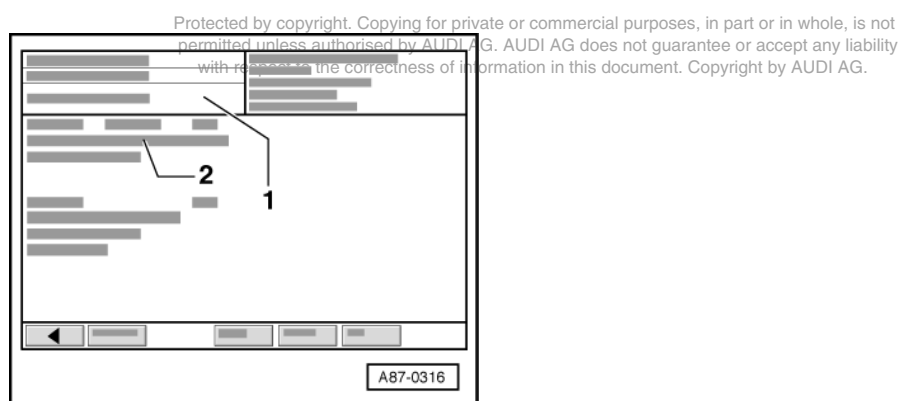
## 2.4 - Interrogate fault memory

### Note:



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

- Start immobilizer self-diagnosis => Page 74 .
- > Readout on VAS 5051:
- From list -1- select diagnostic function "02 - Interrogate fault memory".



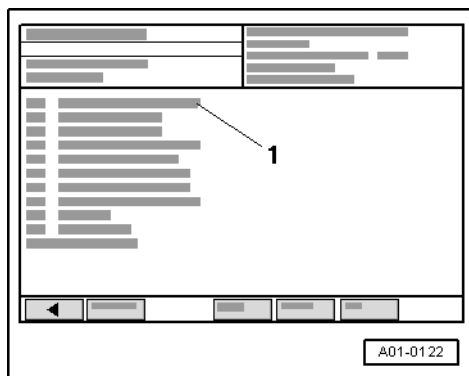
-> Readout on VAS 5051:

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



#### A - Faults detected:

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



-> Readout on VAS 5051:

- Eliminate fault(s) in line with fault table => Page 77 .
- Select diagnostic function "02 - Interrogate fault memory" again in list and erase fault memory => Page 78 .
- Select diagnostic function "06 - End output" in list => Page 80 .

#### B - No fault detected:

- Select diagnostic function "06 - End output" in list => Page 80 .

## 2.5 - Fault table

#### Notes:

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

#### Attention:

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

| Readout on VAS 5051 | Possible cause of trouble | Remedy |
|---------------------|---------------------------|--------|
| 01128               |                           |        |



|                             |   |  |
|-----------------------------|---|--|
| Immobilizer reader coil -D2 | - Connector not attached or fault in reader coil and wiring | - Check connector and reader coil as well as wiring (visual inspection) and replace reader coil if necessary<br>=> Electrical System; Repair Group 96; Servicing immobilizer Servicing immobilizer |
|                             | - Immobilizer control unit defective                        | - Erase fault memory and interrogate it again => Page 78 ; replace dash panel insert if necessary.<br>=> Electrical System; Repair Group 90; Dash panel insert Dash panel insert                   |

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

| Readout on VAS 5051            | Possible cause of trouble   | Remedy   |
|--------------------------------|---|--|
| 01176<br>Key<br>Signal too low | - Reader coil or wire defective                                   | - Check reader coil as well as wiring and connector (visual inspection) and replace reader coil if necessary<br>=> Electrical System; Repair Group 96; Servicing immobilizer Servicing immobilizer |
|                                | - No electronics in ignition key (transponder) or not functioning | - Replace ignition key, re-match all ignition keys and check operation => Page 01-180  |
| Not authorized                 | - Mechanically suitable ignition key not matched                  | - Re-match all ignition keys and check operation => Page 01-180  |

| Readout on VAS 5051                            | Possible cause of trouble            | Remedy   |
|--|--------------------------------------|--|
| 01177<br>Engine control unit<br>Not authorized | - Engine control unit not adapted    | - Adapt engine control unit<br>=>Page 96   |
| 01179<br>Incorrect key programming             | - Ignition keys not properly matched | - Re-match all ignition keys with entry of PIN and check operation=>Page 01-180                            |
| 65535<br>Control unit<br>Defective             | - Dash panel insert defective        | - Replace dash panel insert.<br>=> Electrical System; Repair Group 90; Dash panel insert Dash panel insert |

## 2.6 - Erase fault memory

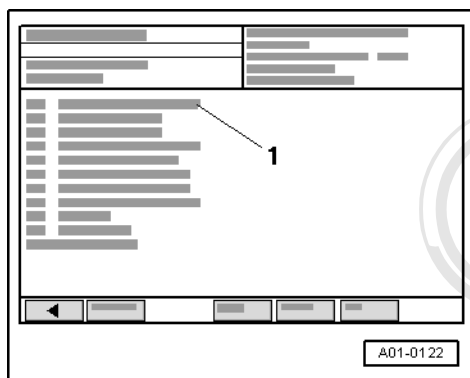
### Notes:

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

### Requirements:

- Fault memory interrogated => Page 76
- All faults eliminated

## Sequence of operations

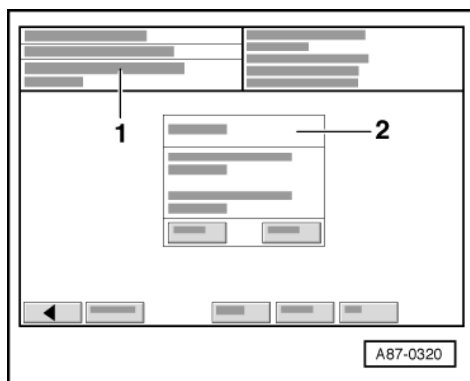


After fault memory interrogation:

-> Readout on VAS 5051:

- From list -1- select diagnostic function "05 - Erase fault memory"

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Readout on VAS 5051:

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

### **Note:**

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

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

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

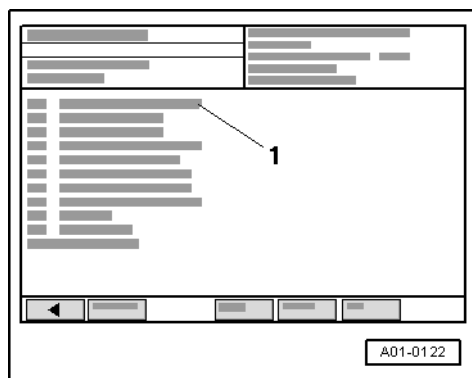
### **Note:**

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



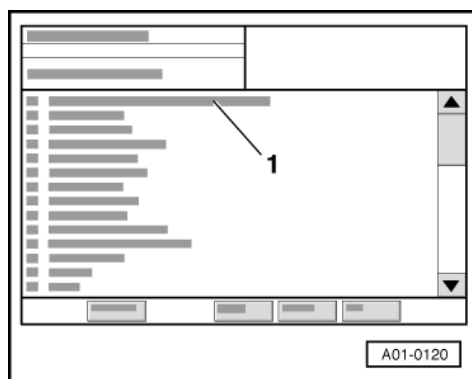
## 2.7 - End output

### Sequence of operations



-> Readout on VAS 5051:

- From list -1- select diagnostic function "06 - End output".

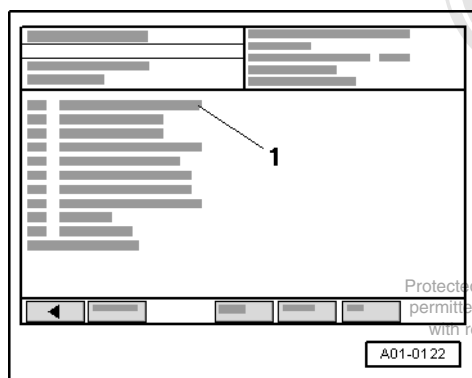


-> Readout on VAS 5051:

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

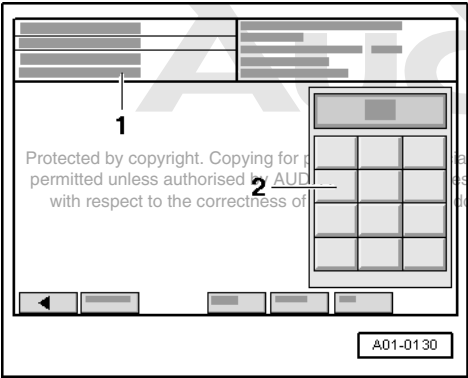
## 2.8 - Read measured value block

### Sequence of operations

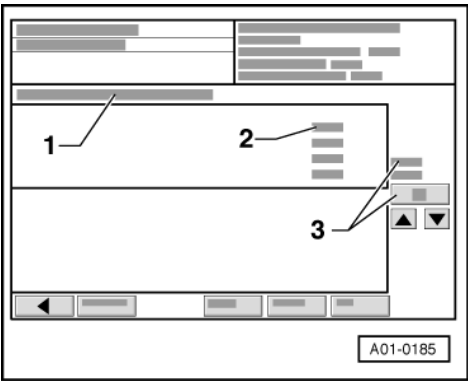


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Start immobilizer self-diagnosis => Page 74 .
- > Readout on VAS 5051:
- From list -1- select diagnostic function "08 - Read measured value block".



- > Readout on VAS 5051:
- 1 - Enter display group
- Use keypad -2- to enter required three-digit display group number=>List of display groups, Page 82 and confirm entry by touching Q key.



- > Readout on VAS 5051:
- 1 - Read measured value block
- 2 - Display zone 1
- Display zone 2
- Display zone 3
- Display zone 4
- 3 - Display group X

**Notes:**

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

| Display group | VAS 5051    |
|---------------|-------------|
| Up            | Press ▲ key |



|               |             |
|---------------|-------------|
| Display group | VAS 5051    |
| Down          | Press ▼ key |

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

#### List of display groups:

| Display group number | Indicated on display  |
|----------------------|---|
| 022                  | 1 = Start<br>2 = Engine control unit<br>3 = Key status<br>4 = Number of matched keys  |
| 023                  | 1 = Variable code authorized<br>2 = Key status<br>3 = Fixed code authorized<br>4 = Immobilizer status   |
| 024                  | 1 = Dash panel insert disabled time<br>2 = Engine control unit disabled time<br>3 = Emergency release disabled time<br>4 = Transponder identification disabled time |
| 025                  | 1 = CAN communication   |

#### Measured value block 022

|                              |  |  |   |  |
|------------------------------|--|--|---|--|
| Read measured value block 22 |  |  | ⇒ | ◀ Indicated on display   |
| 1                            | <p>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p> |  |   |  |
|                              |  |  |   | Number of matched keys<br>▪ Up to max. 8 keys  |
|                              |  |  |   | Key status OK<br>▪ 1 = Yes, i.e. possible to read formally correct transponder fixed code (regardless of whether authorised or not)<br>▪ 0 = No, i.e. not possible to read formally correct transponder fixed code |
|                              |  |  |   | Engine control unit response<br>▪ 1 = Yes (regardless of whether engine control unit authorized or not)<br>▪ 0 = No, i.e. engine control unit in run-on mode 1)  |
|                              |  |  |   | Starting authorized<br>▪ 1 = Yes<br>▪ 0 = No, i.e. vehicle key not/incorrectly matched or engine control unit incorrectly coded/defective  |

1) Depending on engine control unit, measured value block is set for 10 ... 30 s after switching off engine and ignition to "0 = Engine control unit response no", i.e. engine control unit released and no fault present. Start self-diagnosis again as a check => Page 74.

#### Measured value block 023

|                              |   |   |   |                        |
|------------------------------|---|---|---|------------------------|
| Read measured value block 23 |   |   | ⇒ | ◀ Indicated on display |
| 1                            | 1 | 1 | 6 |                        |

|  |  |  |  |
|--|--|--|--|
|  |  |  | <p>Immobilizer status</p> <ul style="list-style-type: none"> <li>▪ 4: Service new; service as-delivered condition (replacement dash panel insert)</li> <li>▪ 5: Service blocked; service adaption data programmed</li> <li>▪ 6: Immobilizer adapted; normal function status</li> <li>▪ 7: Key matching active; key matching via tester</li> </ul>              |
|  |  |  | <p>Fixed code authorized</p> <ul style="list-style-type: none"> <li>▪ 1 = Yes</li> <li>▪ 0 = No, i.e. transponder fixed code of key not authorized</li> </ul>  |
|  |  |  | <p>Key status (transponder)</p> <ul style="list-style-type: none"> <li>▪ 1 = Transponder in key blocked, i.e. arithmetic rule in key can no longer be overwritten; key cannot be matched to any other immobilizer system</li> <li>▪ 0 = Transponder in key not blocked, i.e. transponder not yet matched to dash panel insert (new replacement key)</li> </ul> |
|  |  |  | <p>Variable code authorized</p> <ul style="list-style-type: none"> <li>▪ 1 = Yes</li> <li>▪ 0 = No, i.e. variable code not authorized (arithmetic rule for variable code in key not the same as in dash panel insert)</li> </ul>   |

#### Measured value block 024

| Read measured value block 24 |   |   |    | ⇒ | ◀ Indicated on display  |
|------------------------------|---|---|----|---|---|
| 10                           | 0 | 0 | 10 |   |   |
|                              |   |   |    |   | <p>The transponder identification disabled time indicates the period after which transponder identification is again possible; this disable function is activated if the transponder of a non-authorized key has been read out on 20 consecutive occasions</p> <ul style="list-style-type: none"> <li>▪ 0 ... 10 min</li> </ul>   |
|                              |   |   |    |   | <p>The emergency release disabled time indicates the period after which PIN can be entered again via menu function in dash panel insert (emergency starting function without VAG 1551); control unit is disabled for 10* minutes if PIN number is entered incorrectly three times</p> <ul style="list-style-type: none"> <li>▪ 0 ... 255 min</li> </ul>                           |
|                              |   |   |    |   | <p>The engine control unit disabled time indicates the period after which adaption function can be implemented again by engine control unit; control unit is disabled for 10* minutes if PIN number is entered incorrectly three times during channel 50 adaption</p> <ul style="list-style-type: none"> <li>▪ 0 ... 255 min</li> </ul>   |
|                              |   |   |    |   | <p>The dash panel insert disabled time indicates the period after which login procedure can be implemented again at dash panel insert; control unit is disabled for 10* minutes if PIN number is entered incorrectly three times during login procedure (matching of vehicle keys or old dash panel insert)</p> <ul style="list-style-type: none"> <li>▪ 0 ... 255 min</li> </ul> |

\*) Time is doubled up to max. 255 minutes after every 3 further incorrect attempts



## 2.9 - Adaption

### *Note:*

*Adaption function can only be implemented after establishing immobilizer PIN.*

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

- ♦ Matching of vehicle keys => Page 01-180
- ♦ Adaption following replacement of dash panel insert => Page 91
- ♦ Adaption following replacement of engine control unit=>Page 96
- ♦ Adaption following replacement of dash panel insert and engine control unit => Page 100

## 2.10 - Matching of vehicle keys

### *Notes:*

- ♦ If new or additional ignition keys are required, they have to be matched to the immobilizer.
- ♦ All keys - including the existing authorized ones - have to be re-matched.
- ♦ It is particularly important to re-match all the remaining vehicle keys if any have been lost to ensure that the lost key is no longer authorized to start the vehicle.
- ♦ If matching cannot be performed for all keys, for example when matching is required en route, customers are to be informed of the necessity of subsequent re-matching at their local Audi Dealership.
- ♦ The number of keys already matched is displayed following selection of adaption function (channel 21) and in measured value block 022.
- ♦ Once a key has been matched, it is blocked and cannot be matched to any other immobilizer system.

### Requirements

All ignition keys available. If no old ignition key is available, refer to "Procedure in the event of loss of keys" => Page 90 .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Sequence of operations

- Insert first key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 74 .
- On the basis of the 14-digit immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.





**Note:**

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

-> Readout on VAS 5051:

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

|  |                                       |
|--|---------------------------------------|
| t Readout on VAS 5051  |                                       |
| <b>Vehicle self-diagnosis</b>  | 17 - Dash panel insert<br>8L0919860A  |
| Function test  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Release (PIN)  | Code 00142<br>Dealership number 12345 |
| <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 65%;"> <p><b>Information</b></p> <p>PIN is used for release of key matching/adaption in Vehicle system</p> <p>PIN provided on the basis of immobilizer identification number is only valid for one day</p> </div> <div style="width: 30%; text-align: right;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">Done</div> </div> </div> <p style="font-size: small; text-align: center; margin-top: 10px;">Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</p> |                                       |
| <div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Test instruments</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div>   |                                       |

- Touch "Done" key.

|   |                                       |
|---|---------------------------------------|
| t Readout on VAS 5051   |                                       |
| <b>Vehicle self-diagnosis</b>   | 17 - Dash panel insert<br>8L0919860A  |
| Function test   | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Release (PIN)   | Code 00142<br>Dealership number 12345 |
| <p><b>PIN entry</b></p> <p>Enter PIN provided using displayed keypad</p> <p>Confirm PIN entry with Continue key (▶ key)</p> <div style="border: 1px solid black; padding: 10px; text-align: center; margin-top: 20px;">             Press here to display entry keypad         </div> |                                       |
| <div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Test instruments</span> <span>Skip</span> <span>Print</span> <span>Help</span> <span>▶</span> </div>   |                                       |

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

|                       |
|-----------------------|
| t Readout on VAS 5051 |
|-----------------------|



|                               |                  |   |      |                                       |       |   |        |
|-------------------------------|------------------|---|------|---------------------------------------|-------|---|--------|
| <b>Vehicle self-diagnosis</b> |                  |   |      | 17 - Dash panel insert<br>8L0919860A  |       |   |        |
| Function test                 |                  |   |      | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |   |        |
| Release (PIN)                 |                  |   |      | Code 00142<br>Dealership number 12345 |       |   |        |
| 1                             | 2                | 3 | +    | A                                     | B     | C | D      |
|                               |                  |   |      | E                                     | F     | G | H      |
| 4                             | 5                | 6 | -    | I                                     | J     | K | L      |
|                               |                  |   |      | M                                     | N     | O | P      |
| 7                             | 8                | 9 | .    | Q                                     | R     | S | T      |
|                               |                  |   |      | U                                     | V     | W | X      |
| C                             | 0                | Q |      | Y                                     | Z     |   |        |
|                               |                  |   |      |                                       |       |   |        |
|                               |                  |   |      |                                       |       |   |        |
| ◀                             | Test instruments |   | Skip |                                       | Print |   | Help ▶ |

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

t Readout on VAS 5051

|                               |                  |                                       |      |
|-------------------------------|------------------|---------------------------------------|------|
| <b>Vehicle self-diagnosis</b> |                  | 17 - Dash panel insert<br>8L0919860A  |      |
| Function test                 |                  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |      |
| Release (PIN)                 |                  | Code 00142<br>Dealership number 12345 |      |
| PIN entry                     |                  |                                       |      |
| Entered PIN XXXXXXXX correct? |                  | <input type="button" value="Yes"/>    |      |
|                               |                  | <input type="button" value="No"/>     |      |
|                               |                  |                                       |      |
| ◀                             | Test instruments |                                       | Skip |
|                               | Print            |                                       | Help |

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

t Readout on VAS 5051

|                               |  |                                       |  |
|-------------------------------|--|---------------------------------------|--|
| <b>Vehicle self-diagnosis</b> |  | 17 - Dash panel insert<br>8L0919860A  |  |
| Function test                 |  | DASH PANEL INSERT+IMMOBILIZER M73 D06 |  |
| Release (PIN)                 |  | Code 00142<br>Dealership number 12345 |  |
| PIN transfer                  |  |                                       |  |
| PIN valid                     |  | Done                                  |  |
| Key matching/adaption can     |  |                                       |  |

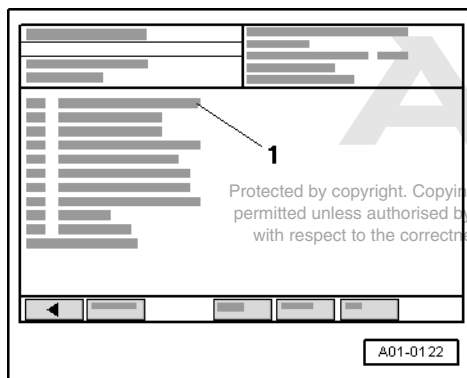
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

|                |                  |      |       |      |  |
|----------------|------------------|------|-------|------|--|
| be implemented |                  |      |       |      |  |
| ◀              | Test instruments | Skip | Print | Help |  |

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

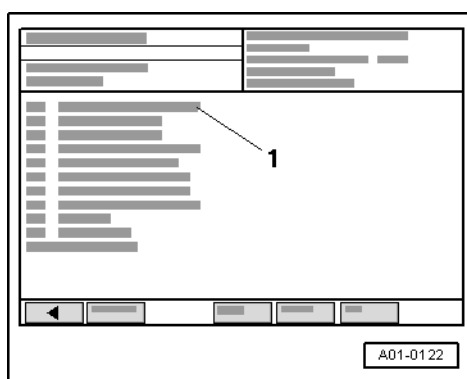
**Notes:**

- ◆ Follow instructions on display if fault message appears.



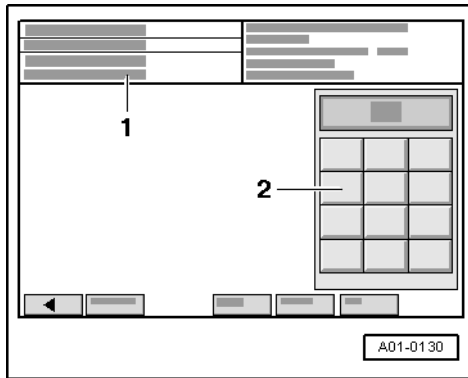
- ◆ -> 3 attempts at entering correct PIN can be made without a waiting period. The next 3 attempts are only possible after at least 10 minutes. For this, leave ignition on and exit from self-diagnosis by touching diagnostic function "06 - End output" in list -1-.
- ◆ The waiting time is doubled up to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

Once immobilizer has been released:



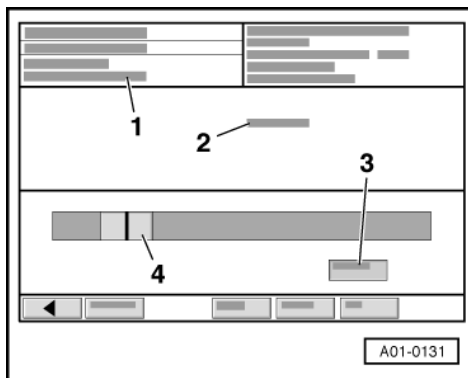
-> Readout on VAS 5051:

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



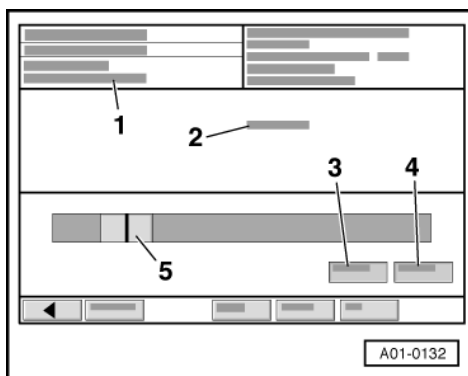
-> Readout on VAS 5051:

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



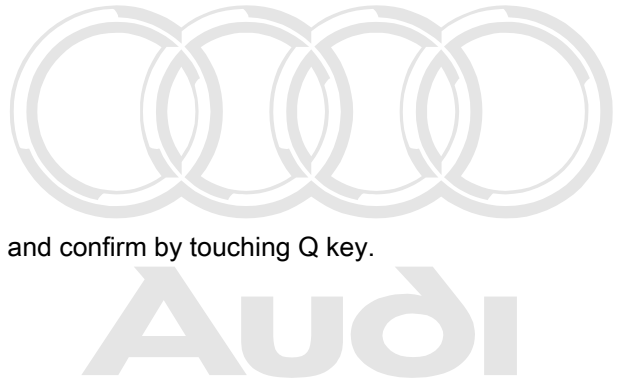
-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

- Enter number of keys to be matched.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Example: 4 keys including key inserted in ignition lock

**Note:**

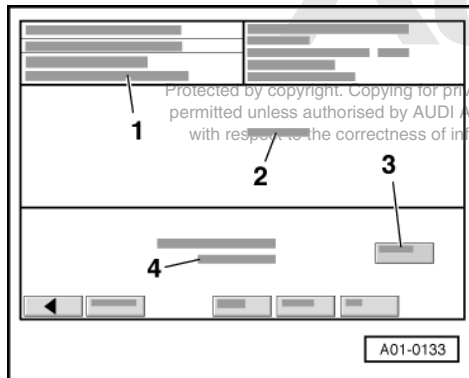
*A maximum of 8 keys can be matched.*

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

**Note:**

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

- Touch "Save" key -4-.



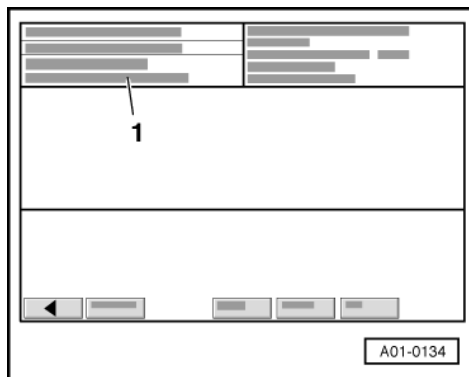
-> Readout on VAS 5051:

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

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

**Note:**

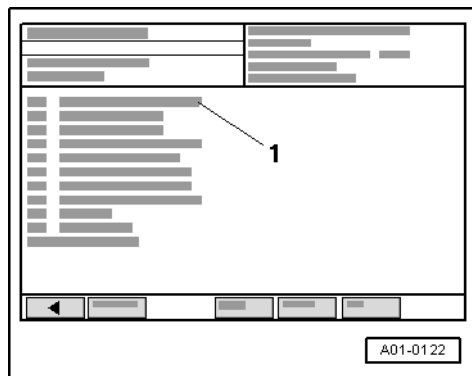
*The adaption period for each key must not exceed 30 seconds, as otherwise fault lamp in dash panel insert starts to flash and entire release procedure (PIN) must be repeated.*



-> Readout on VAS 5051 following adaption:



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



-> Readout on VAS 5051:

- From list -1- select diagnostic function "06 - End output".
- Switch off ignition.
- Insert next key in ignition lock and switch on ignition. Fault lamp lights when ignition is switched on and goes out after approx. 1 second, indicating that this key has also been matched.
- Repeat procedure until all keys have been matched. With the last key, the fault lamp goes out approx. 2 s following successful matching and a brief confirmation signal is given (lamp off for 0.5 s, lamp on for 0.5 s, lamp off).
- On vehicle key matching, the fixed code of the respective key (transponder) is matched to the immobilizer. Furthermore, the arithmetic rule for the variable code is written into each key and blocked. Accordingly, with immobilizer III, keys can only be matched if they have the correct arithmetic rule for the variable code (key already matched to system) or if they have still to be blocked (replacement key). Once they have been matched, vehicle keys cannot be used with a different immobilizer system.
- Following key matching, interrogate fault memory => Page 76 .

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

Ignition key matching is terminated automatically:

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

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

- Make/order replacement ignition keys on the basis of the lock number.
- Match all vehicle keys => Page 84 .
- On the appropriate vehicles, match all remote control keys to central locking control unit.

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

## 2.12 - Adaption following replacement of dash panel insert

### Notes:

- ◆ The dash panel insert (with integrated immobilizer) is adapted to the engine control unit. Adaption to the engine control unit must be performed if the dash panel insert is replaced.
- ◆ After adapting dash panel insert to engine control unit, vehicle key matching is required => Page 01-180.
- ◆ If there is no authorized ignition key available, engine control unit and all keys must also be replaced=> Page 100 .

### Requirement:

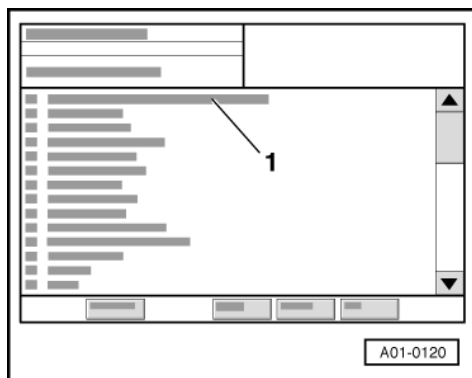
- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162

### Sequence of operations

- Insert old (authorized) ignition key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis at old dash panel insert => Page 74 .

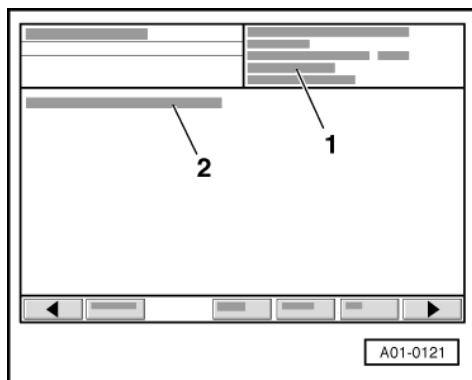
If this is not possible:

- Establish immobilizer identification number by starting engine control unit self-diagnosis.



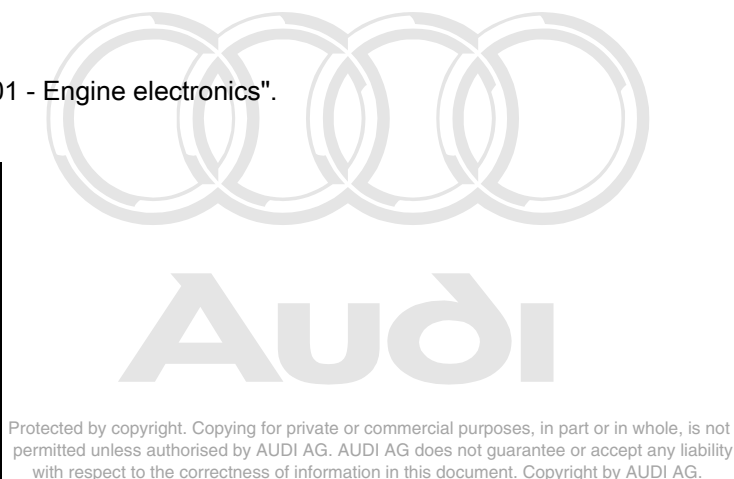
-> Readout on VAS 5051:

- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next readout appears.



-> Readout on VAS 5051:

- 1 - Engine control unit identification





## 2 - Immobilizer control unit identification

### **Note:**

*With certain engine control units, it is also possible to read out immobilizer control unit identification in measured value block 081.*

| Immobilizer control unit identification (example) |   |
|---|---|
| WAUZZZ4DZYN00126 1) AUZ7Z0W0801181 2)             | 1) 17-digit vehicle identification no. (chassis number)<br>2) 14-digit immobilizer identification no. |

- On the basis of the 14-digit immobilizer/engine control unit identification number, request 7-digit PIN from appropriate Sales Centre/importer.

### **Note:**

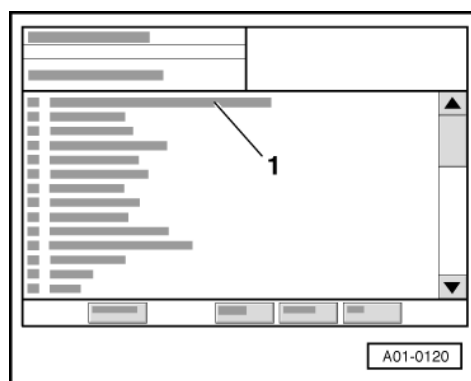
*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*



- Touch ▶ key.

-> Readout on VAS 5051:

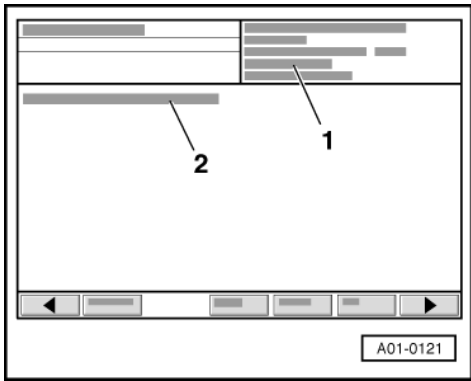
- From list -1- select diagnostic function "06 - End output".



-> Readout on VAS 5051:

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





- > Readout on VAS 5051:
- 1 - Dash panel insert identification
  - 2 - Immobilizer control unit identification

| Immobilizer control unit identification (example) |  |
|---|--|
| XXXXXXXXXXXXXXXXX AUZ7Z0W0801181 1)               | 1) 14-digit immobilizer identification no. |

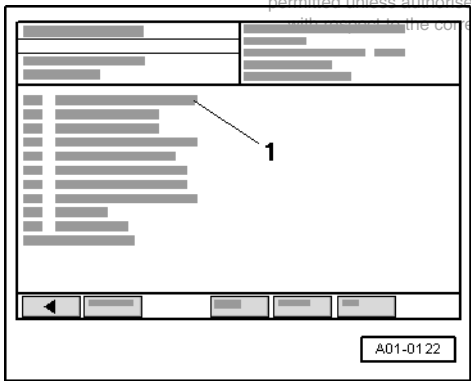
Replacement dash panel inserts already have a 14-digit identification number (required if dash panel insert and engine control unit are replaced at the same time). This is however overwritten on adapting dash panel insert to engine control unit.

- Touch ▶ key.
- Release dash panel insert => Page 104 .

**Note:**

*New/old dash panel inserts must always be released. Then proceed as follows:*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the correctness of information in this document. Copyright by AUDI AG.



- > Readout on VAS 5051:
- From list -1- select vehicle system "Channel 50 adaption".

| ▼ Readout on VAS 5051  |                                       |
|------------------------|---------------------------------------|
| Vehicle self-diagnosis | 17 - Dash panel insert<br>8L0919860A  |
| Function test          | DASH PANEL INSERT+IMMOBILIZER VDO D06 |



|   |                  |                                       |       |
|---|------------------|---------------------------------------|-------|
| Channel 50 adaption (PIN)   |                  | Code 00142<br>Dealership number 12345 |       |
| Information   |                  | <div>Done</div>                       |       |
| PIN is used for release of<br>key matching/adaption in<br>Vehicle system                          |                  |                                       |       |
| PIN provided on the basis of<br>immobilizer identification number<br>is only valid<br>for one day |                  |                                       |       |
| ◀   | Test instruments | Skip                                  | Print |
|   |                  |                                       | Help  |

- Touch "Done" key.

|  |                  |                                       |        |
|--|------------------|---------------------------------------|--------|
| ▼ Readout on VAS 5051                        |                  |                                       |        |
| <b>Vehicle self-diagnosis</b>                |                  | 17 - Dash panel insert<br>8L0919860A  |        |
| Function test                                |                  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |        |
| Channel 50 adaption (PIN)                    |                  | Code 00142<br>Dealership number 12345 |        |
| PIN entry                                    |                  |                                       |        |
| Enter PIN provided using displayed<br>keypad |                  |                                       |        |
| Confirm PIN entry with Continue key (▶ key)  |                  |                                       |        |
| Press here to display<br>entry keypad        |                  |                                       |        |
| ◀  | Test instruments | Skip                                  | Print  |
|  |                  |                                       | Help ▶ |

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

|                               |   |                                       |   |
|-------------------------------|---|---------------------------------------|---|
| ▼ Readout on VAS 5051         |   |                                       |   |
| <b>Vehicle self-diagnosis</b> |   | 17 - Dash panel insert<br>8L0919860A  |   |
| Function test                 |   | DASH PANEL INSERT+IMMOBILIZER VDO D06 |   |
| Channel 50 adaption (PIN)     |   | Code 00142<br>Dealership number 12345 |   |
| 1                             | 2 | 3                                     | + |
| 4                             | 5 | 6                                     | - |
| 7                             | 8 | 9                                     | . |
| C                             | 0 | Q                                     |   |
| A                             | B | C                                     | D |
| E                             | F | G                                     | H |
| I                             | J | K                                     | L |
| M                             | N | O                                     | P |
| Q                             | R | S                                     | T |
| U                             | V | W                                     | X |
| Y                             | Z |                                       |   |

|   |                  |      |       |      |   |  |
|---|------------------|------|-------|------|---|--|
|   |                  |      |       |      |   |  |
|   |                  |      |       |      |   |  |
|   |                  |      |       |      |   |  |
| ◀ | Test instruments | Skip | Print | Help | ▶ |  |

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

▼ Readout on VAS 5051

|                               |                                       |
|-------------------------------|---------------------------------------|
| <b>Vehicle self-diagnosis</b> | 17 - Dash panel insert<br>8L0919860A  |
| Function test                 | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Channel 50 adaption (PIN)     | Code 00142<br>Dealership number 12345 |

**PIN entry**

Entered PIN XXXXXXXX correct?

Yes

No

|   |                  |      |       |      |
|---|------------------|------|-------|------|
| ◀ | Test instruments | Skip | Print | Help |
|---|------------------|------|-------|------|

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

▼ Readout on VAS 5051

|                               |                                       |
|-------------------------------|---------------------------------------|
| <b>Vehicle self-diagnosis</b> | 17 - Dash panel insert<br>8L0919860A  |
| Function test                 | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Channel 50 adaption (PIN)     | Code 00142<br>Dealership number 12345 |

**PIN transfer**

PIN valid  
Key matching/adaption can  
be implemented

Done

|   |                  |      |       |      |
|---|------------------|------|-------|------|
| ◀ | Test instruments | Skip | Print | Help |
|---|------------------|------|-------|------|

- Touch "Done" key.

**Notes:**

- ♦ Follow instructions on display if fault message appears.



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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized 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.

Once dash panel insert has been successfully matched to engine control unit:

- Match all vehicle keys => Page 01-180.

## 2.13 - Adaption following replacement of engine control unit

**Notes:**

- ♦ The engine control unit is matched to the dash panel insert (with integrated immobilizer). Adaption to the immobilizer must be performed if the engine control unit is replaced.
- ♦ If there is no authorized ignition key available, dash panel insert and all keys must also be replaced=> Page 100 .

**Requirement:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162

**Sequence of operations**

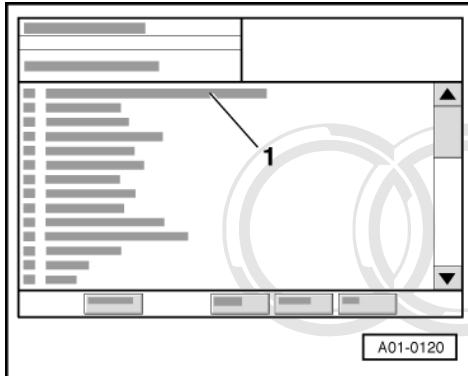
- Insert old (authorized) ignition key in ignition lock and switch on ignition.
- Establish immobilizer identification number by starting immobilizer self-diagnosis => Page 74 .
- On the basis of the 14-digit immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

**Note:**

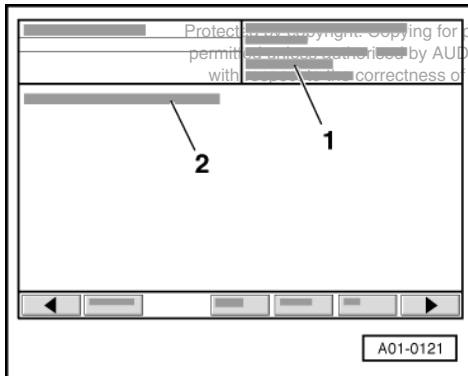
*The PIN is only valid for one day, after which a new number has to be requested. The PIN is of no use to the customer or other dealerships.*



- Touch ▶ key.
- > Readout on VAS 5051:
- From list -1- select diagnostic function "06 - End output".



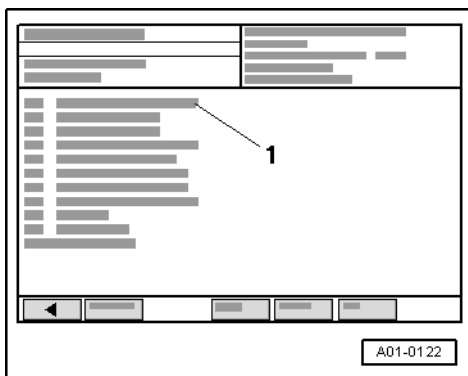
- > Readout on VAS 5051:
- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next readout appears.



- > Readout on VAS 5051:
- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification

| Immobilizer control unit identification |                      |
|---|----------------------|
| XXXXXXXXXXXXXXXXXXXX                    | XXXXXXXXXXXXXXXXXXXX |

- Note:**  
*An old engine control unit must be released => Page 104 . Then proceed as follows:*
- Touch ▶ key.





-> Readout on VAS 5051:

- From list -1- select vehicle system "Channel 50 adaption".

▼ Readout on VAS 5051

|  |                                       |
|--|---------------------------------------|
| <b>Vehicle self-diagnosis</b>  | 01 - Engine electronics<br>4D0907558  |
| Function test  | 4.2l V8/5V G D003                     |
| Channel 50 adaption (PIN)  | Code 07753<br>Dealership number 12345 |
| <b>Information</b><br>PIN is used for release of<br>key matching/adaption in<br>Vehicle system<br><br>PIN provided on the basis of<br>immobilizer identification number<br>is only valid<br>for one day    |                                       |
| <input type="button" value="Done"/>  |                                       |
| <div> <input type="button" value="◀"/> <input type="button" value="Test instruments"/> <input type="button" value="Skip"/> <input type="button" value="Print"/> <input type="button" value="Help"/> </div> |                                       |

- Touch "Done" key.

▼ Readout on VAS 5051

|   |                                       |
|---|---------------------------------------|
| <b>Vehicle self-diagnosis</b>   | 01 - Engine electronics<br>4D0907558  |
| Function test   | 4.2l V8/5V G D003                     |
| Channel 50 adaption (PIN)   | Code 07753<br>Dealership number 12345 |
| <b>PIN entry</b><br>Enter PIN provided using displayed<br>keypad<br><br>Confirm PIN entry with Continue key (▶ key)<br><br><div> <input type="button" value="Press here to display&lt;br/&gt;entry keypad"/> </div>                         |                                       |
| <div> <input type="button" value="◀"/> <input type="button" value="Test instruments"/> <input type="button" value="Skip"/> <input type="button" value="Print"/> <input type="button" value="Help"/> <input type="button" value="▶"/> </div> |                                       |

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

▼ Readout on VAS 5051

|                               |                                      |
|-------------------------------|--------------------------------------|
| <b>Vehicle self-diagnosis</b> | 01 - Engine electronics<br>4D0907558 |
| Function test                 | 4.2l V8/5V G D003                    |

|                           |                  |   |   |      |                                       |      |   |  |
|---------------------------|------------------|---|---|------|---------------------------------------|------|---|--|
| Channel 50 adaption (PIN) |                  |   |   |      | Code 07753<br>Dealership number 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                                     |      |   |  |
|                           |                  |   |   |      |                                       |      |   |  |
|                           |                  |   |   |      |                                       |      |   |  |
| ◀                         | Test instruments |   |   | Skip | Print                                 | Help | ▶ |  |

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

▼ Readout on VAS 5051

|                               |                                       |
|-------------------------------|---------------------------------------|
| <b>Vehicle self-diagnosis</b> | 01 - Engine electronics<br>4D0907558  |
| Function test                 | 4.2l V8/5V G D003                     |
| Channel 50 adaption (PIN)     | Code 07753<br>Dealership number 12345 |

**PIN entry**

Entered PIN XXXXXXXX correct?

◀
Test instruments
Skip
Print
Help
▶

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

▼ Readout on VAS 5051

|                               |                                       |
|-------------------------------|---------------------------------------|
| <b>Vehicle self-diagnosis</b> | 01 - Engine electronics<br>4D0907558  |
| Function test                 | 4.2l V8/5V G D003                     |
| Channel 50 adaption (PIN)     | Code 07753<br>Dealership number 12345 |

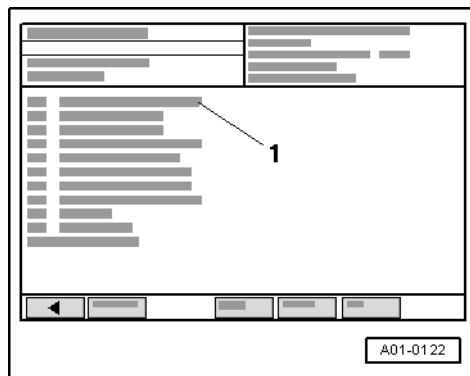
**PIN transfer**

PIN valid  
Key matching/adaption can be implemented



|   |                  |      |       |      |  |  |  |
|---|------------------|------|-------|------|--|--|--|
|   |                  |      |       |      |  |  |  |
|   |                  |      |       |      |  |  |  |
| ◀ | Test instruments | Skip | Print | Help |  |  |  |

- Touch "Done" key.
- This concludes adaption of engine control unit to immobilizer and vehicle can be started.

**Notes:**

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

**2.14 - Adaption following replacement of dash panel insert and engine control unit**

In the event of simultaneous destruction of dash panel insert and engine control unit (caused for example by overvoltage) and if immobilizer identification number can no longer be read out, all vehicle keys must additionally be changed on replacing dash panel insert and engine control unit.

Reason: The old keys are blocked following adaption to immobilizer and cannot be matched to any other immobilizer.

The immobilizer in the new dash panel insert contains a different arithmetic rule for the variable code. This new rule is written on adaption into the engine control unit and at the same time into the transponder of the new vehicle keys. The keys are then blocked.

**Note:**

*Replacement of all vehicle keys is not necessary if immobilizer identification number can still be read out of one of the control units to be replaced. Control units are then to be replaced consecutively.*

**Requirements:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Ignition on

**Sequence of operations**

- Start immobilizer self-diagnosis => Page 74 .





➔ Readout on VAS 5051:

- From list -1- select diagnostic function "Vehicle ident. no."

|  |                                       |
|--|---------------------------------------|
| ▼ Readout on VAS 5051  |                                       |
| <b>Vehicle self-diagnosis</b>  | 17 - Dash panel insert<br>8L0919860A  |
| Function test  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Vehicle ident. no. transfer  | Code 00142<br>Dealership number 12345 |
| Vehicle ident. no. entry<br>Vehicle ident. no. entry<br>Max. 17 characters<br><br>Press Continue key (➤ key) to confirm entry<br><br><div style="text-align: center; border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;">           Press here to display entry keypad         </div> |                                       |
| <div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Test instruments</span> <span>Skip</span> <span>Print</span> <span>Help</span> <span>▶</span> </div>  |                                       |

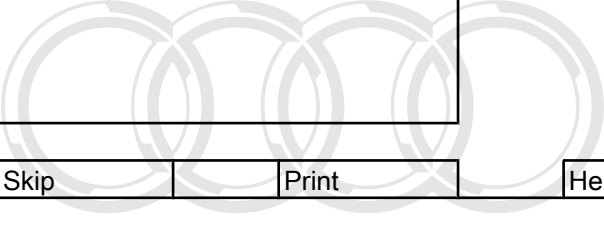
- Touch key "Press here to display entry keypad".

|                               |   |   |   |  |   |                                       |   |   |  |  |  |
|-------------------------------|---|---|---|--|---|---------------------------------------|---|---|--|--|--|
| ▼ Readout on VAS 5051         |   |   |   |  |   |                                       |   |   |  |  |  |
| <b>Vehicle self-diagnosis</b> |   |   |   |  |   | 17 - Dash panel insert<br>8L0919860A  |   |   |  |  |  |
| Function test                 |   |   |   |  |   | DASH PANEL INSERT+IMMOBILIZER VDO D06 |   |   |  |  |  |
| Vehicle ident. no. transfer   |   |   |   |  |   | Code 00142<br>Dealership number 12345 |   |   |  |  |  |
| 1                             | 2 | 3 | + |  | A | B                                     | C | D |  |  |  |
|                               |   |   |   |  | E | F                                     | G | H |  |  |  |
| 4                             | 5 | 6 | - |  | I | J                                     | K | L |  |  |  |
|                               |   |   |   |  | M | N                                     | O | P |  |  |  |
| 7                             | 8 | 9 | . |  | Q | R                                     | S | T |  |  |  |
|                               |   |   |   |  | U | V                                     | W | X |  |  |  |
| C                             | 0 | Q |   |  | Y | Z                                     |   |   |  |  |  |




|   |                  |      |       |      |   |
|---|------------------|------|-------|------|---|
|   |                  |      |       |      |   |
| ◀ | Test instruments | Skip | Print | Help | ▶ |

- Use keypad to enter 17-digit vehicle identification number.
- Touch ▶ key.

|   |                  |                                       |       |      |  |
|---|------------------|---------------------------------------|-------|------|--|
| ▼ Readout on VAS 5051   |                  |                                       |       |      |  |
| <b>Vehicle self-diagnosis</b>   |                  | 17 - Dash panel insert<br>8L0919860A  |       |      |  |
| Function test   |                  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |      |  |
| Vehicle ident. no. transfer   |                  | Code 00142<br>Dealership number 12345 |       |      |  |
| Character conversion  |                  |                                       |       |      |  |
| Checking characters entered   |                  |                                       |       |      |  |
| Please wait   |                  |                                       |       |      |  |
|  |                  |                                       |       |      |  |
| ◀   | Test instruments | Skip                                  | Print | Help |  |

- Wait until next readout appears or (in the event of incorrect characters) Follow instructions regarding correct entry.

|  |                  |                                       |       |      |  |
|--|------------------|---------------------------------------|-------|------|--|
| ▼ Readout on VAS 5051  |                  |                                       |       |      |  |
| <b>Vehicle self-diagnosis</b>  |                  | 17 - Dash panel insert<br>8L0919860A  |       |      |  |
| Function test  |                  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |       |      |  |
| Vehicle ident. no. transfer  |                  | Code 00142<br>Dealership number 12345 |       |      |  |
| Vehicle ident. no. transfer  |                  |                                       |       |      |  |
| Transfer of character X to vehicle system  |                  |                                       |       |      |  |
|  |                  |                                       |       |      |  |
| ◀  | Test instruments | Skip                                  | Print | Help |  |

- The 17 positions in the vehicle identification number are transferred one at a time to the vehicle system. Wait for completion of this program stage.

|  |                                       |  |  |  |  |
|--|---------------------------------------|--|--|--|--|
| ▼ Readout on VAS 5051  |                                       |  |  |  |  |
| <b>Vehicle self-diagnosis</b>  | 17 - Dash panel insert<br>8L0919860A  |  |  |  |  |
| Function test  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |  |  |  |  |
| Vehicle ident. no. transfer  | Code 00142<br>Dealership number 12345 |  |  |  |  |
| Vehicle ident. no. display   |                                       |  |  |  |  |
| Is entered and transferred vehicle ident. no. XXXXXXXXX to be saved?   |                                       |  |  |  | Yes <input type="button" value="Yes"/> |
| Vehicle ident. no. forms the first 17 positions in the identification. Once saved, vehicle ident. number can no longer be changed  |                                       |  |  |  | No <input type="button" value="No"/>   |
| <div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Test instruments</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div> |                                       |  |  |  |  |

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

|  |                                       |  |  |  |  |
|--|---------------------------------------|--|--|--|--|
| ▼ Readout on VAS 5051  |                                       |  |  |  |  |
| <b>Vehicle self-diagnosis</b>  | 17 - Dash panel insert<br>8L0919860A  |  |  |  |  |
| Function test  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |  |  |  |  |
| Vehicle ident. no. transfer  | Code 00142<br>Dealership number 12345 |  |  |  |  |
| Saving of vehicle ident. no.   |                                       |  |  |  |  |
| Transfer successfully completed  |                                       |  |  |  | Done <input type="button" value="Done"/> |
| Conclude function with Done key  |                                       |  |  |  |  |
| <div style="display: flex; justify-content: space-between; align-items: center;"> <span>◀</span> <span>Test instruments</span> <span>Skip</span> <span>Print</span> <span>Help</span> </div> |                                       |  |  |  |  |

- Touch "Done" key.
- Then perform matching for all vehicle keys => Page 01-180.

This completes adaption/matching of dash panel insert, engine control unit and vehicle keys and vehicle can be started.



## 2.15 - Control unit release

### **Note:**

*New/old dash panel inserts or old engine control unit must always be released.*

### **Requirements:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Ignition on

### **Sequence of operations**

- Establish immobilizer identification number by starting self-diagnosis for appropriate control unit (engine or immobilizer).
- On the basis of the 14-digit immobilizer identification number, request 7-digit PIN from appropriate Sales Centre/importer.

Copyright © 2002 Audi AG. All rights reserved. Audi and Audi AG are registered trademarks 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.

### **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.*



-> Readout on VAS 5051:

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

|   |                                       |
|---|---------------------------------------|
| ▼ Readout on VAS 5051   |                                       |
| Vehicle self-diagnosis  | 17 - Dash panel insert<br>8L0919860A  |
| Function test   | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Channel 50 adaption (PIN)   | Code 00142<br>Dealership number 12345 |
| Information   |                                       |
| PIN is used for release of<br>key matching/adaption in<br>Vehicle system                          |                                       |
| PIN provided on the basis of<br>immobilizer identification number<br>is only valid<br>for one day |                                       |
| <div>Done</div>   |                                       |

|   |                  |      |       |      |  |
|---|------------------|------|-------|------|--|
| ◀ | Test instruments | Skip | Print | Help |  |
|---|------------------|------|-------|------|--|

- Touch "Done" key.

▼ Readout on VAS 5051

|                               |                                       |
|-------------------------------|---------------------------------------|
| <b>Vehicle self-diagnosis</b> | 17 - Dash panel insert<br>8L0919860A  |
| Function test                 | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Channel 50 adaption (PIN)     | Code 00142<br>Dealership number 12345 |

**PIN entry**

Enter PIN provided using displayed keypad

Confirm PIN entry with Continue key (▶ key)

Press here to display  
entry keypad

Protected by copyright. Copying for non-commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

|   |                  |      |       |      |   |
|---|------------------|------|-------|------|---|
| ◀ | Test instruments | Skip | Print | Help | ▶ |
|---|------------------|------|-------|------|---|

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

▼ Readout on VAS 5051

|                               |                                       |
|-------------------------------|---------------------------------------|
| <b>Vehicle self-diagnosis</b> | 17 - Dash panel insert<br>8L0919860A  |
| Function test                 | DASH PANEL INSERT+IMMOBILIZER VDO D06 |
| Channel 50 adaption (PIN)     | Code 00142<br>Dealership number 12345 |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | + | A | B | C | D |
|   |   |   |   | E | F | G | H |
| 4 | 5 | 6 | - | I | J | K | L |
|   |   |   |   | M | N | O | P |
| 7 | 8 | 9 | . | Q | R | S | T |
|   |   |   |   | U | V | W | X |
| C | 0 | Q |   | Y | Z |   |   |

|   |                  |      |       |      |   |
|---|------------------|------|-------|------|---|
| ◀ | Test instruments | Skip | Print | Help | ▶ |
|---|------------------|------|-------|------|---|

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

▼ Readout on VAS 5051



|  |                                       |      |  |
|--|---------------------------------------|------|--|
| Vehicle self-diagnosis   | 17 - Dash panel insert<br>8L0919860A  |      |  |
| Function test  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |      |  |
| Channel 50 adaption (PIN)  | Code 00142<br>Dealership number 12345 |      |  |
| PIN entry  |                                       |      |  |
| Entered PIN XXXXXXXX correct?  |                                       |      | <input type="button" value="Yes"/>                                       |
|  |                                       |      | <input type="button" value="No"/>  |
| <small>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © 2001 AUDI AG.</small> |                                       |      |  |
| ◀  | Test instruments                      | Skip | <input type="button" value="Print"/> <input type="button" value="Help"/> |

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

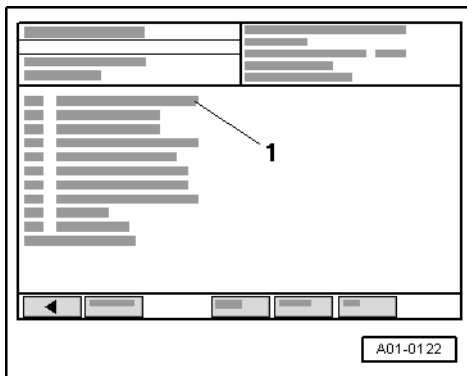
▼ Readout on VAS 5051

|  |                                       |      |  |
|--|---------------------------------------|------|--|
| Vehicle self-diagnosis   | 17 - Dash panel insert<br>8L0919860A  |      |  |
| Function test  | DASH PANEL INSERT+IMMOBILIZER VDO D06 |      |  |
| Channel 50 adaption (PIN)  | Code 00142<br>Dealership number 12345 |      |  |
| PIN transfer   |                                       |      |  |
| PIN valid<br>Key matching/adaption can<br>be implemented   |                                       |      | <input type="button" value="Done"/>                                      |
| <small>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © 2001 AUDI AG.</small> |                                       |      |  |
| ◀  | Test instruments                      | Skip | <input type="button" value="Print"/> <input type="button" value="Help"/> |

- Touch "Done" key.

**Notes:**

- ♦ Follow instructions on display if fault message appears.



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

Proceed in a similar manner for engine control unit release.

Once dash panel insert/engine control unit release has been successfully completed:

- Continue with adaption.
  - Adaption following replacement of dash panel insert  
=> Page 93
  - Adaption following replacement of engine control unit  
=> Page 97

## 3 - Cruise control system (CCS) self-diagnosis

### 3.1 - Cruise control system (CCS) self-diagnosis

#### 3.2 - General information

On vehicles with petrol engines and electronic engine output control (electronic throttle) as well as with diesel engines, there are no components specific to the cruise control system with the exception of the operating switch. All functions are executed by the engine control unit.

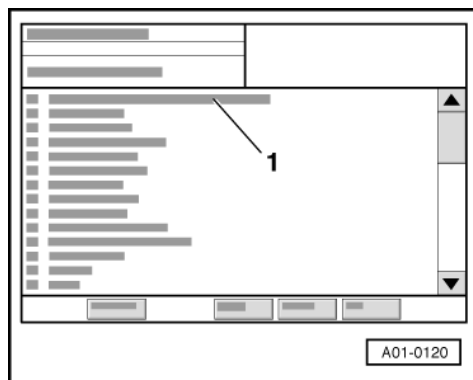
#### 3.3 - Checking cruise control system (CCS) - petrol engines with electronic throttle

##### **Requirements:**

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted, unless expressly permitted by Audi AG. Audi AG does not accept any liability with respect to the correctness of information in this document. Copyright by Audi AG.

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Engine idling

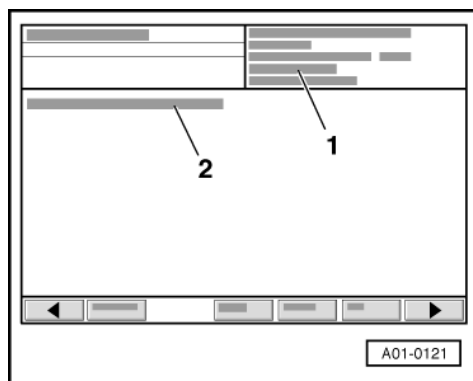
Attention:  
Follow safety precautions => Page 162 .



### Sequence of operations

-> Readout on VAS 5051:

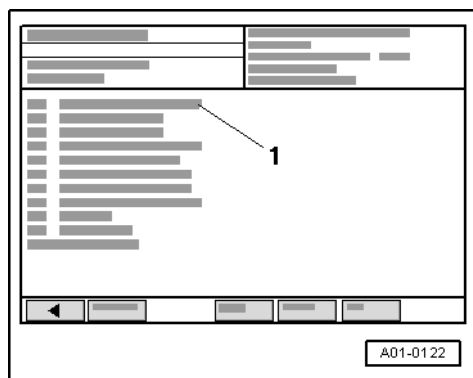
- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next readout appears.



-> Readout on VAS 5051:

- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification

- Touch ▶ key.



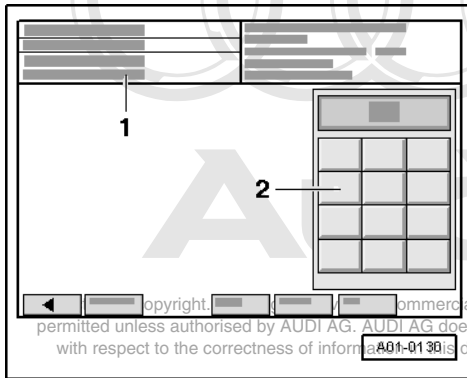
-> Readout on VAS 5051:

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.





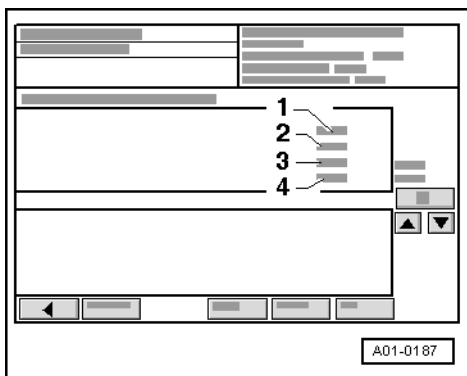
-> Readout on VAS 5051:

- Use keypad -2- to enter "066" for "Display group number 066" and confirm by touching Q key.

**Note:**

*On vehicles with automatic gearbox, cruise control system switch is only supplied with power at speeds in excess of 30 km/h and with selector lever set to 2, 3 or D. Power supply is then maintained even at idle, provided that gear (other than 1 or R) is engaged.*

- Perform test drive, exceeding a speed of 30 km/h once. Then leave engine running and selector lever set to 2, 3 or D.



- Apply parking brake.

-> Readout on VAS 5051:

- Check display in zones -2- and -4-.

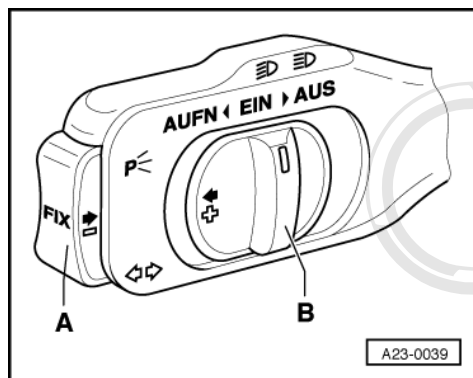
**4-digit display in zones 2 and 4:**

- Check display in zone 2.

| Test condition       | Display zone 2 |   |   |   |
|----------------------|----------------|---|---|---|
| CCS released1)       | 1              | 0 | 0 | 0 |
| Brake pedal pressed  | 1              | 0 | 1 | 1 |
| Clutch pedal pressed | 1              | 1 | 0 | 0 |

1) If 0 is displayed: Activate cruise control system  
=> Page 116

- Check display in zone 4.



| Test condition  | Display zone 4 |
|---|----------------|
| Switch B set to "OFF", engaged                                | 0 0 0 0        |
| Switch B set to "ON"  | 0 0 1 1        |
| Switch A pressed "FIX"  | 0 1 1 1        |
| Switch B set to "ACTIV"                                       | 1 0 1 1        |
| Switch B set to "OFF", before engagement point (deceleration) | 0 0 0 1        |

If readings do not match specifications:

- Check wiring =>Page 111 .

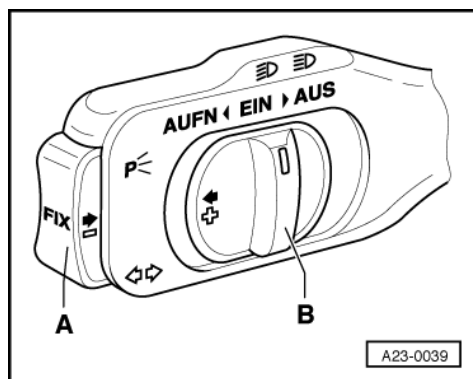
#### 8-digit display in zones 2 and 4:

- Check display in zone 2.

| Test condition       | Display zone 2  |
|----------------------|-----------------|
| CCS released1)       | 0 0 0 0 1 0 1 1 |
| Brake pedal pressed  | 0 0 0 0 1 0 1 1 |
| Clutch pedal pressed | 0 0 0 0 1 1 0 0 |

- 1) If 0 is displayed: Activate cruise control system  
=> Page 116

- Check display in zone 4.



| Test condition                 | Display zone 4  |
|--------------------------------|-----------------|
| Switch B set to "OFF", engaged | 0 0 0 0 0 0 0 0 |
| Switch B set to "ON"           | 0 0 0 0 0 0 1 1 |
| Switch A pressed "FIX"         | 0 0 0 0 0 1 1 1 |
| Switch B set to "ACTIV"        | 0 0 0 0 1 0 1 1 |

| Test condition  | Display zone 4 |
|---|----------------|
| Switch B set to "OFF", before engagement point (deceleration) | 0 0 0 0 0 0 1  |

If readings do not match specifications:

- Check wiring =>Page **111** .

#### Checking wiring

- Unplug connector at CCS switch.

=> General Body Repairs, Interior; Repair Group 70; Dash Panel Dash Panel

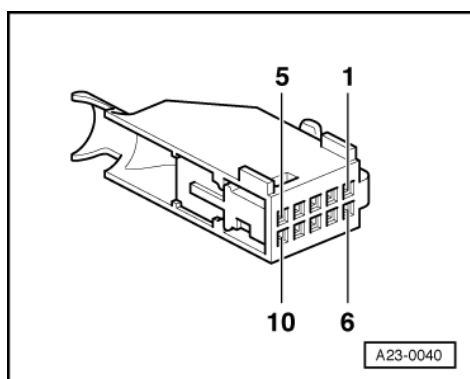
- Connect test box V.A.G 1598/31 to unplugged connectors of engine control unit =>Page **115** .

#### Notes:

- ♦ For connection of measuring instruments (e.g. voltage tester V.A.G 1527 B, portable multimeter V.A.G 1526 A), always make use of adapter set V.A.G 1594 A.
- ♦ Contact numbers of connector coincide with socket numbers of test box.

#### Attention:

So as not to destroy electronic components, select required measuring range before connecting test leads and observe test conditions.



- -> Check for open circuit and short to earth/positive in the following wiring.

| Connector Contact | Test box V.A.G 1598/31 Bushing   |
|-------------------|--|
| 2                 | 75   |
| 3                 | 57   |
| 4                 | 38   |
| 5                 | 76   |
| 6                 | Equipment and model year dependent to immobilizer and to Automatic gearbox |
| 7                 | 38   |

- If necessary, eliminate open circuit in wiring/short.



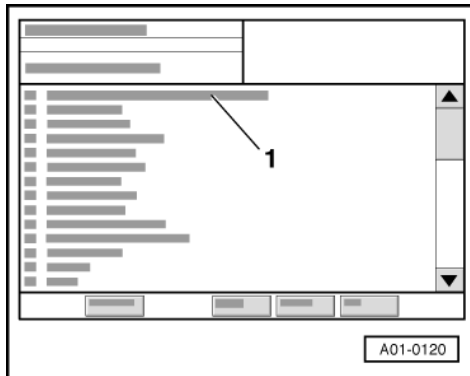
### 3.4 - Checking cruise control system (CCS) - diesel engines

#### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Engine idling

#### Attention:

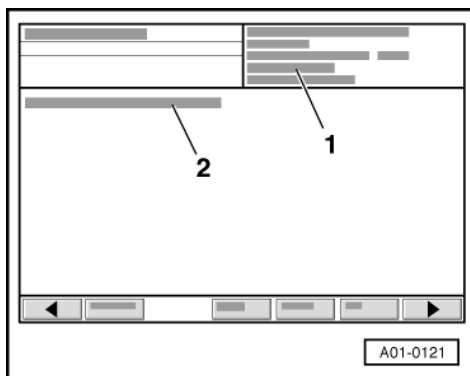
Follow safety precautions => Page 162 .



#### Sequence of operations

-> Readout on VAS 5051:

- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next readout appears.



-> Readout on VAS 5051:

- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification

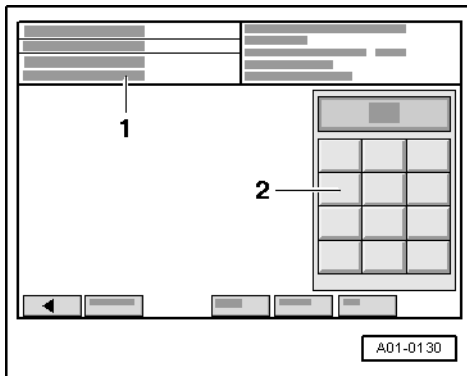
- Touch ▶ key.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

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



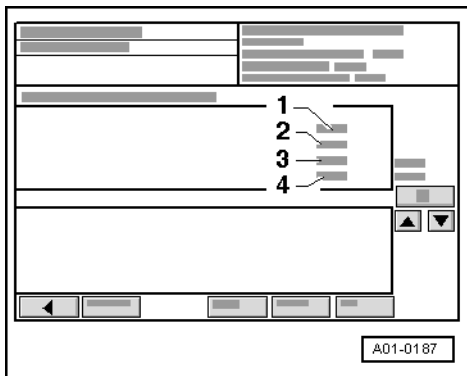
-> Readout on VAS 5051:

- Use keypad -2- to enter "006" for "Display group number 006" and confirm by touching Q key.

**Note:**

*On vehicles with automatic gearbox, cruise control system switch is only supplied with power at speeds in excess of 30 km/h and with selector lever set to 2, 3 or D. Power supply is then maintained even at idle, provided that gear (other than 1 or R) is engaged.*

- Perform test drive, exceeding a speed of 30 km/h once. Then leave engine running and selector lever set to 2, 3 or D.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

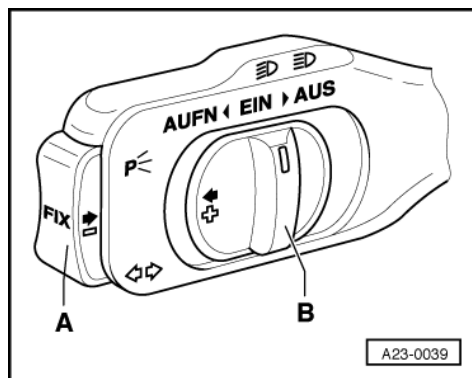
- Apply parking brake.

-> Readout on VAS 5051:

- Check display in zones -3- and -4-.

| Test condition | Display zone 4 |
|----------------|----------------|
| CCS released1) | 0              |
| CCS on         | 1              |

- 1) If 255 is displayed: Activate cruise control system  
 => Page 116



| Test condition  | Display zone 3 |
|---|----------------|
| Switch B set to "OFF", engaged                                | 0 0 0 0 0 0    |
| Switch B set to "ON"  | 0 0 0 0 1 1    |
| Switch A pressed "FIX"  | 0 0 0 1 1 1    |
| Switch B set to "ACTIV"                                       | 0 0 1 0 1 1    |
| Switch B set to "OFF", before engagement point (deceleration) | 0 0 0 0 0 1    |
| Brake pressed   | 0 1 0 0 1 1    |
| Clutch pressed  | 1 0 0 0 1 1    |

If readings do not match specifications:

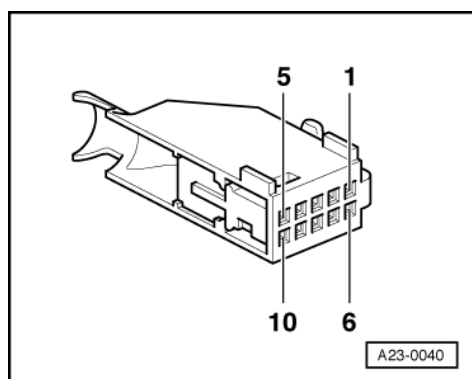
- Check wiring =>Page 114 .

#### Checking wiring

- Unplug connector at CCS switch.

=> General Body Repairs, Interior; Repair Group 70; Dash Panel Dash Panel

- Connect appropriate test box V.A.G 1598.. to unplugged connectors of engine control unit =>Page 115 .



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -> Check for open circuit and short to earth/positive in the following wiring.

| Connector Contact | Test box V.A.G 1598/22 Bushing | Test box V.A.G 1598/30 Bushing | Test box V.A.G 1598/31 Bushing |
|-------------------|--------------------------------|--------------------------------|--------------------------------|
| 2                 | 21                             | 4/40                           | 45                             |
| 3                 | 10                             | 4/1                            | 44                             |
| 4                 | 19                             | 4/25                           | 14                             |
| 5                 | 35                             | 4/2                            | 46                             |

|   |   |      |    |
|---|---|------|----|
| 6 | Equipment- and model year dependent to immobilizer and to automatic gearbox |      |    |
| 7 | 19  | 4/25 | 14 |

- If necessary, eliminate open circuit in wiring/short.

### 3.5 - Wiring and component check using test box V.A.G 1598/31

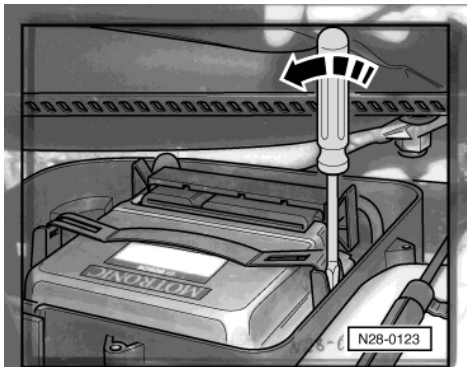
#### Notes:

- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. V.A.G. is a registered trademark of AUDI AG. AUDI AG does not accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- ◆ The test box V.A.G 1598/31 is designed for simultaneous connection to the engine control unit wiring harness and the actual engine control unit.
  - ◆ This has the advantage that the electronic engine management system remains fully operational with the test box connected (e.g. measurement of signals with engine running).
  - ◆ Whether or not the engine control unit is additionally to be connected to the test box is indicated in the appropriate test sequences.
  - ◆ Use portable multimeter V.A.G 1526 or multimeter V.A.G 1715 and diode test lamp V.A.G 1527 for testing.
  - ◆ Always use auxiliary leads from adapter set V.A.G 1594 for connection of testers to test box V.A.G 1598/31.
  - ◆ After reconnecting the engine control unit, adapt it to the throttle valve control part.

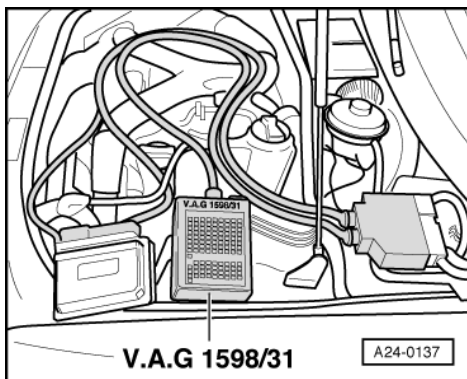
=> Motronic fuel-injection and ignition system; Repair Group 24; Electronic throttle; Adapting throttle valve control part Electronic throttle Adapting throttle valve control part

#### Attention:

So as not to destroy electronic components, select required measuring range before connecting test leads and observe test conditions.



- Switch off ignition.
- Remove the cover of the control unit protective enclosure.
- -> Use screwdriver to carefully prise off securing strap -arrow-.
- Then unlock the control unit connectors and unplug them.





- -> Connect test box V.A.G 1598/31 to wiring harness connector. Connect earth clip on test box (cannot be seen in Fig.) to battery negative. Whether or not the engine control unit is additionally to be connected to the test box is indicated in the appropriate test sequences.
- Perform testing as described in appropriate repair operations.
- Unplug connector at CCS switch.

=> General Body Repairs, Interior; Repair Group 70; Dash Panel Dash Panel

Check for short to positive/negative and open circuit in the wiring.

- Check wiring according to the current flow diagram.

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

If the test is not OK, the wiring must be checked.

- If necessary, eliminate open circuit in wiring/short.

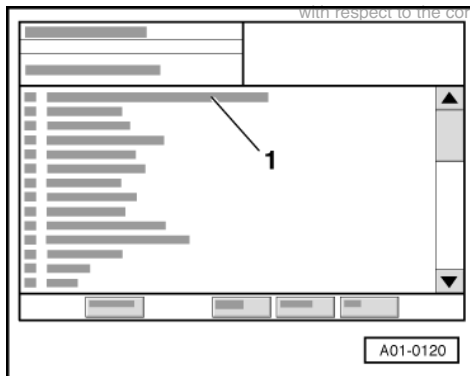
If the wiring is OK, the CCS switch must be replaced.

### 3.6 - Activating/deactivating cruise control system

#### Requirements:

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Ignition on

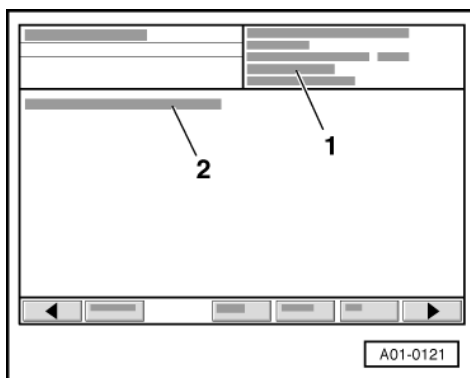
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



#### Sequence of operations

-> Readout on VAS 5051:

- From list -1- select vehicle system "01 - Engine electronics".
- Wait until next readout appears.





-> Readout on VAS 5051:

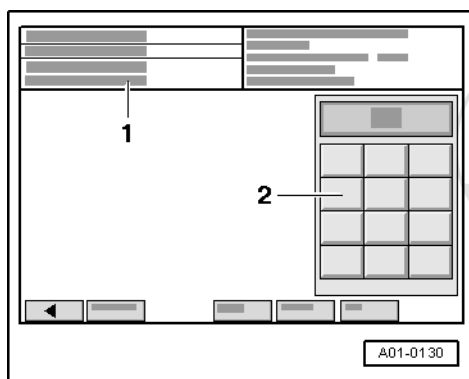
- 1 - Engine control unit identification
- 2 - Immobilizer control unit identification

- Touch ▶ key.



-> Readout on VAS 5051:

- From list -1- select diagnostic function "11 - Login procedure".



-> Readout on VAS 5051:

- 1 - Enter code word

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Activating CCS:

- Use keypad -2- to enter "11463" and confirm entry by touching Q key.

### Deactivating CCS:

- Use keypad -2- to enter "16167" and confirm entry by touching Q key.
- Terminate function "11 - Login procedure" by touching ◀ key.
- Touch "06 - End output".
- Switch off ignition.



## 4 - Acoustic Parking System (APS) self-diagnosis

### 4.1 - Acoustic Parking System (APS) self-diagnosis

#### 4.2 - General information

The acoustic parking system monitors the area around the vehicle by means of four ultra-sonic sensors in the front bumper and four in the rear bumper. The acoustic distance signal is delivered by tone senders in the vehicle interior at the front and rear.

Four ultra-sonic sensors are fitted in the rear and front bumpers respectively. The sensors are actuated both in combined transmit/receive mode and in pure receive mode.

The rear sensors are deactivated if a trailer is hitched up and the trailer socket connected. The front sensors remain active.

Proximity warning distance when reversing or driving forward (automatic parking system active):

- ♦ Less than approx. 60 cm for all side sensors
- ♦ Less than approx. 120 cm for front centre sensors
- ♦ Less than approx. 150 cm for rear centre sensors

The automatic parking system consists of the following:

- ♦ Automatic parking system control unit -J446
- ♦ Automatic parking system sender, rear left -G203
- ♦ Automatic parking system sender, rear left, centre -G204
- ♦ Automatic parking system sender, rear right, centre -G205
- ♦ Automatic parking system sender, rear right -G206
- ♦ Automatic parking system warning buzzer, rear -H15
- ♦ Automatic parking system sender, front left -G255
- ♦ Automatic parking system sender, front right -G252
- ♦ Automatic parking system sender, front right, centre -G253
- ♦ Automatic parking system sender, front left, centre -G254
- ♦ Automatic parking system warning buzzer, front -H22
- ♦ Automatic parking system button

**Function:** Copyright by Audi AG. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

A self-test lasting less than one second is performed after switching on the ignition. The control unit is then permanently active, though the distance monitoring is only activated when reverse gear is engaged, or can be activated and deactivated with the automatic parking system button.

When the automatic parking system is ready, a short signal tone sounds and the function indicator lamp in the switch lights up. If a fault is detected in the system, a 5 second continuous tone sounds and the function indicator lamp in the automatic parking system button flashes.

The intervals between the acoustic pulses become shorter as a function of the decreasing gap. When the gap is less than 30 cm the pulses become a continuous tone.

Special case: Driving along a wall: no warning

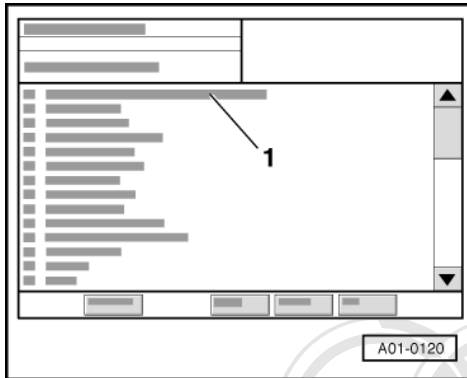
### 4.3 - Starting automatic parking system self-diagnosis

#### **Requirements:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162

- Ignition on

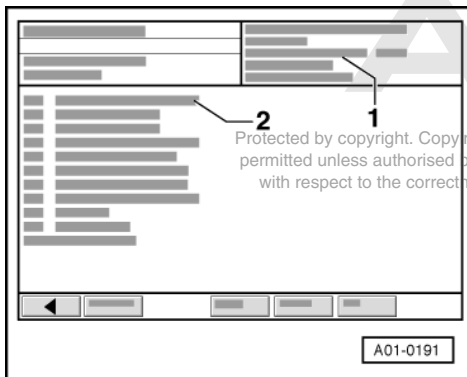
Attention:  
Follow safety precautions => Page **162** .



### Sequence of operations

-> Readout on VAS 5051:

- From list -1- select vehicle system "76 - Automatic parking system".
- Wait until next readout appears.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

- 1 - Automatic parking system control unit identification
- 2 - List of diagnostic functions => Page **119**

| Automatic parking system control unit identification (example) |  |
|--|--|
| 76 - Automatic parking system                                  | Vehicle system   |
| 4D091983   | Part No.; Assignment<br>=> Parts List  |
| Parking system1)A8 RoW2)D183)                                  | 1) Component designation<br>2) Model/country version<br>3) Data level (software version) of control unit |
| Code 01108   | Control unit coding (checking => Page <b>130</b> )   |
| Dealership number 12345  | Workshop code of VAS 5051 with which coding was last performed   |

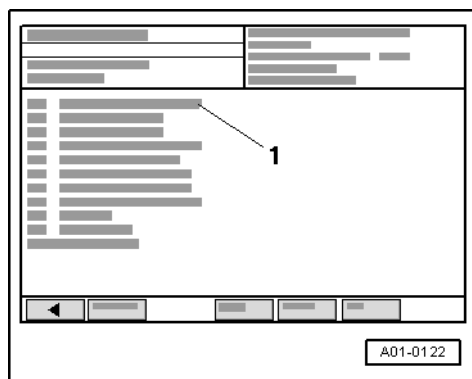
| Diagnostic functions        | Page       |
|-----------------------------|------------|
| 02 Interrogate fault memory | <b>120</b> |



|                                   |     |
|-----------------------------------|-----|
| 03 Final control diagnosis        | 126 |
| 04 Basic setting                  | -   |
| 05 Erase fault memory             | 128 |
| 06 End output                     | 129 |
| 07 Code control unit              | 130 |
| 08 Read measured value block      | 132 |
| 09 Read individual measured value | -   |
| 10 Adaption                       | 136 |
| 11 Login procedure                | -   |

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

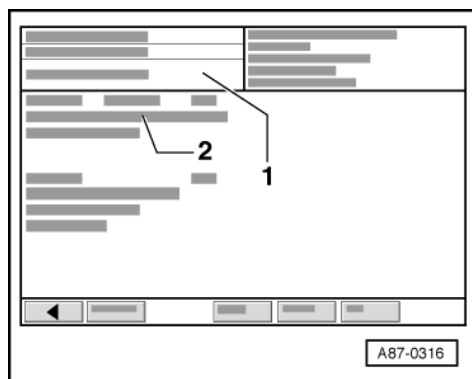
#### 4.4 - Interrogate fault memory



##### Note:

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

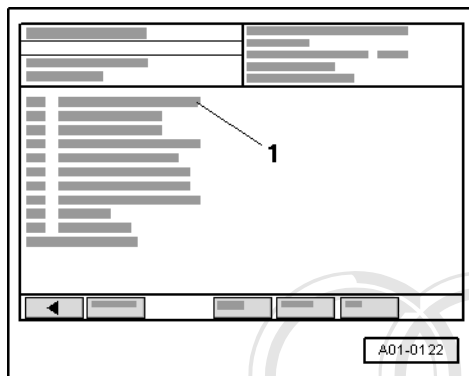
- Start automatic parking system self-diagnosis => Page 118 .
- > Readout on VAS 5051:
- From list -1- select diagnostic function "02 - Interrogate fault memory".



-> Readout on VAS 5051:

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

- Fault code
- Fault location
- Type of fault



#### A - Faults detected:

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

-> Readout on VAS 5051:

- Eliminate fault(s) in line with fault table => Page **121**.
- Select diagnostic function "02 - Interrogate fault memory" again in list and erase fault memory => Page **128**.
- Select diagnostic function "06 - End output" in list => Page **129**.

Copyright in the Audi logo and the Audi name, and the Audi logo and the Audi name, 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 - No fault detected:

- Select diagnostic function "06 - End output" in list => Page **129**.

## 4.5 - Fault table

#### Notes:

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

| Readout on VAS 5051                         | Possible cause of trouble                         | Remedy   |
|---|---|--|
| 00532<br>Supply voltage<br>- Signal too low | - Open circuit in wiring or short in power supply | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |



| Readout on VAS 5051                                   | Possible cause of trouble  | Remedy   |
|---|--|--|
| 00625<br>Vehicle speed signal<br>- Implausible signal | - Fault is set if vehicle speed signal is implausible (e.g. 500 km/h); occurs, for example, in the event of loose contact in wiring. | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |

| Readout on VAS 5051   | Possible cause of trouble                   | Remedy  |
|---|---|---|
| 01317<br>Control unit with display in dash panel insert -J285<br>- No communication | - CAN bus fault<br>- Open circuit in wiring | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder<br>Eliminate open circuit in wiring                      |
|   | - Dash panel insert defective               | - Replace dash panel insert<br>=> Electrical System; Repair Group 90; Dash panel insert; Removing and installing dash panel insert Dash panel insert; Removing and installing dash panel insert |

| Readout on VAS 5051                                       | Possible cause of trouble   | Remedy   |
|---|---|--|
| 01336<br>Group convenience system data bus<br>- Defective | - CAN bus fault<br>- Open circuit in wiring or short at control unit in group convenience system data bus   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
|   | - "1" not displayed in measured value block 130 for control unit with CAN capability =>Page 27<br>- Adaption to dash panel insert not performed correctly | - Select adaption channel 61 and enter correct adaption value => Page 63   |

| Readout on VAS 5051  | Possible cause of trouble  | Remedy   |
|--|--|--|
| 01543<br>Automatic parking system warning buzzer, rear - H15<br>- Short to positive<br>- Open circuit/short to earth | - Open circuit in wiring or short between warning buzzer -H15 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |



|   |   |   |
|---|---|---|
|   | - Warning buzzer -H15 defective   | - Replace warning buzzer - H15<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system, rear -H15 Servicing automatic parking system; Removing and installing automatic parking system, rear - H15 |
| 01544<br>Function indicator<br>- Open circuit/short to positive<br>- Short to earth | - Open circuit or short between control unit and automatic parking system button. | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |

| Readout on VAS 5051  | Possible cause of trouble  | Remedy   |
|--|--|--|
| 01545<br>Automatic parking system sender, rear left -G203<br>- Short to positive<br>- Open circuit/short to earth<br><br>- Defective component<br>- Implausible signal | - Open circuit in wiring or short between sender - G203 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder   |
|  | - Sender -G203 defective   | - Replace sender -G203<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system sender, rear Servicing automatic parking system; Removing and installing automatic parking system sender, rear |
| 01546<br>Automatic parking system sender, rear left, centre -G204<br>- Short to positive<br>- Open circuit/short to earth<br><br>- Implausible signal                  | - Open circuit in wiring or short between sender - G204 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder   |
|  | - Sender -G204 defective   | - Replace sender -G204<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system sender, rear Servicing automatic parking system; Removing and installing automatic parking system sender, rear |

| Readout on VAS 5051  | Possible cause of trouble | Remedy |
|--|---------------------------|--------|
| 01547<br>Automatic parking system sender, rear right, centre -G205 |                           |        |



|   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li>- Short to positive</li> <li>- Open circuit/short to earth</li> <li>- Implausible signal</li> </ul>  | <ul style="list-style-type: none"> <li>- Open circuit in wiring or short between sender - G205 and control unit</li> </ul> | <ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding<br/>=&gt; Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- Sender -G205 defective</li> </ul>   | <ul style="list-style-type: none"> <li>- Replace sender -G205<br/>=&gt; Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system sender, rear Servicing automatic parking system; Removing and installing automatic parking system sender, rear</li> </ul> |
| 01548<br>Automatic parking system sender, rear right - G206<br><br><ul style="list-style-type: none"> <li>- Short to positive</li> <li>- Open circuit/short to earth</li> <li>- Implausible signal</li> </ul> | <ul style="list-style-type: none"> <li>- Open circuit in wiring or short between sender - G206 and control unit</li> </ul> | <ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding<br/>=&gt; Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- Sender -G206 defective</li> </ul>   | <ul style="list-style-type: none"> <li>- Replace sender -G206<br/>=&gt; Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system sender, rear Servicing automatic parking system; Removing and installing automatic parking system sender, rear</li> </ul> |

| Readout on VAS 5051   | Possible cause of trouble   | Remedy   |
|---|---|--|
| 01549<br>Voltage supply for automatic parking system sender<br><ul style="list-style-type: none"> <li>- Short to earth</li> </ul> | <ul style="list-style-type: none"> <li>- Short to earth between automatic parking system sender and control unit</li> </ul> | <ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding<br/>=&gt; Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder</li> </ul> |
| 01550<br>Reverse gear signal<br><ul style="list-style-type: none"> <li>- Short to positive</li> </ul>                             | <ul style="list-style-type: none"> <li>- Short to positive between reversing light switch and control unit</li> </ul>       | <ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding<br/>=&gt; Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder</li> </ul> |

| Readout on VAS 5051   | Possible cause of trouble  | Remedy   |
|---|--|--|
| 01625<br>Automatic parking system warning buzzer, front - H22<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 in wiring or short between warning buzzer -H22 and control unit</li> </ul> | <ul style="list-style-type: none"> <li>- Use current flow diagram to perform fault-finding<br/>=&gt; Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder</li> </ul> |



|   |  |   |
|---|--|---|
|   | - Warning buzzer -H22 defective  | - Replace warning buzzer - H22<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system, front -H22 Servicing automatic parking system; Removing and installing automatic parking system, front - H22 |
| 01626<br>Automatic parking system sender, front right - G252<br><br>- Short to positive<br>- Open circuit/short to earth<br><br>- Defective component<br>- Implausible signal | - Open circuit in wiring or short between sender - G252 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |
|   | - Sender -G252 defective   | - Replace sender -G252<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system sender, front Servicing automatic parking system; Removing and installing automatic parking system sender, front      |

| Readout on VAS 5051  |  |  |
|--|--|--|
|  | Possible cause of trouble  | Remedy   |
| 01627<br>Automatic parking system sender, front right, centre -G253<br><br>- Short to positive<br>- Open circuit/short to earth<br><br>- Defective component<br>- Implausible signal | - Open circuit in wiring or short between sender - G253 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder   |
|  | - Sender -G253 defective   | - Replace sender -G253<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system sender, front Servicing automatic parking system; Removing and installing automatic parking system sender, front |
| 01628<br>Automatic parking system sender, front left, centre -G254<br><br>- Short to positive<br>- Open circuit/short to earth   | - Open circuit in wiring or short between sender - G254 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder   |



|   |                          |  |
|---|--------------------------|--|
| - Defective component<br>- Implausible signal | - Sender -G254 defective | - Replace sender -G254<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system sender, front Servicing automatic parking system; Removing and installing automatic parking system sender, front |
|---|--------------------------|--|

| Readout on VAS 5051   | Possible cause of trouble  | Remedy   |
|---|--|--|
| 01629<br>Automatic parking system sender, front left -G255<br>- Short to positive<br>- Open circuit/short to earth  | - Open circuit in wiring or short between sender - G255 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder   |
| - Defective component<br>- Implausible signal<br><br><small>Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.</small> | - Sender -G255 defective   | - Replace sender -G255<br>=> Electrical System; Repair Group 94; Servicing automatic parking system; Removing and installing automatic parking system sender, front Servicing automatic parking system; Removing and installing automatic parking system sender, front           |
| 65535<br>Control unit defective   | - Automatic parking system control unit -J446 defective                  | - Replace control unit<br>=> Electrical System; Repair Group 94; Servicing automatic headlight range control; Removing and installing headlight range control unit -J431 Servicing automatic headlight range control; Removing and installing headlight range control unit -J431 |

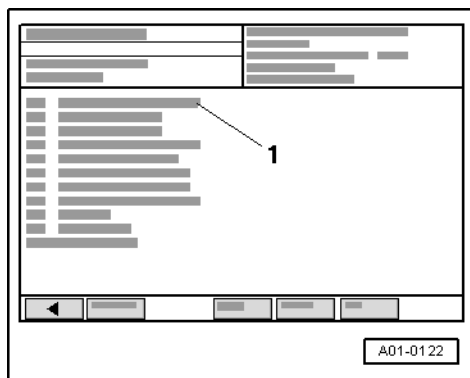
## 4.6 - Final control diagnosis

### Notes:

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

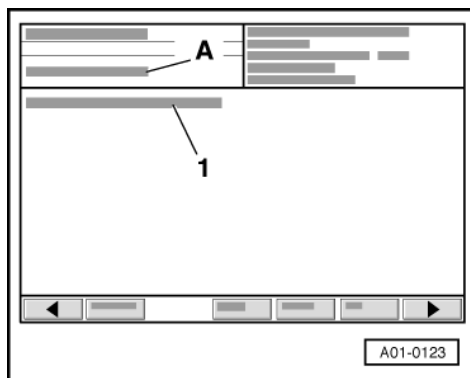
In the "Final control diagnosis" function the front and rear warning buzzers are actuated:

| Actuation sequence     |
|------------------------|
| 1 Front warning buzzer |
| 2 Rear warning buzzer  |



### Sequence of operations

- Start automatic parking system self-diagnosis => Page **118** .
- > Readout on VAS 5051:
- From list -1- select diagnostic function "03 - Final control diagnosis".

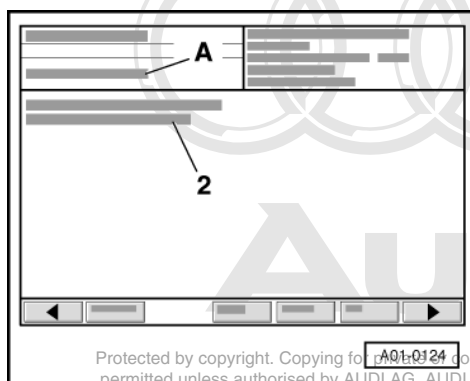


### Actuating front warning buzzer

-> Readout on VAS 5051:

- A - 1st control element in test
- 1 - Automatic parking system warning buzzer, front -H22

- ◆ The front warning buzzer sounds.



Protected by copyright. Copying for commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



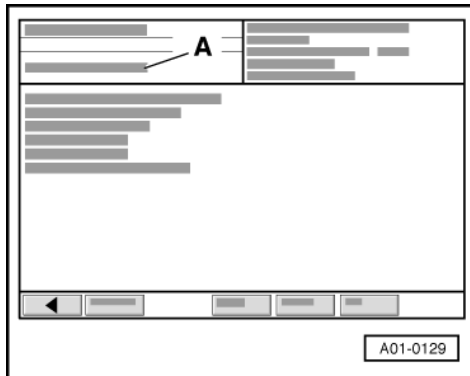
### Actuating rear warning buzzer

- Touch ► key.

-> Readout on VAS 5051:

- A - 2nd control element in test
- 2 - Rear parking system warning buzzer -H15

- ♦ The rear warning buzzer sounds.



- Touch ► key.

-> Readout on VAS 5051:

- A - Control element test over

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

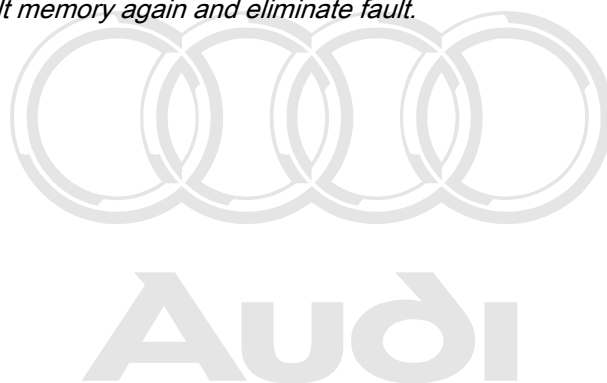
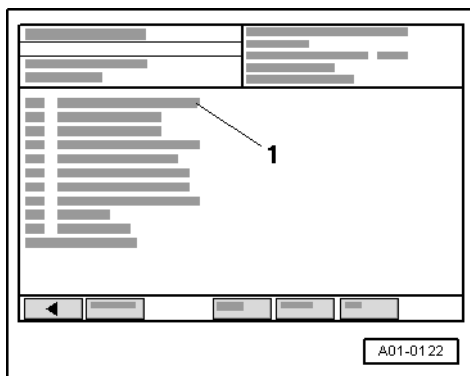
## 4.7 - Erase fault memory

### **Note:**

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

### **Requirements:**

- Fault memory interrogated => Page 120
- All faults eliminated



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

## Sequence of operations

After fault memory interrogation:

-> Readout on VAS 5051:

- From list -1- select diagnostic function "05 - Erase fault memory".



-> Readout on VAS 5051:

1 - - No readout (prior to erasing)

Or

-Fault memory erased

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Note:

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

2 - Note:

Is function to be implemented?

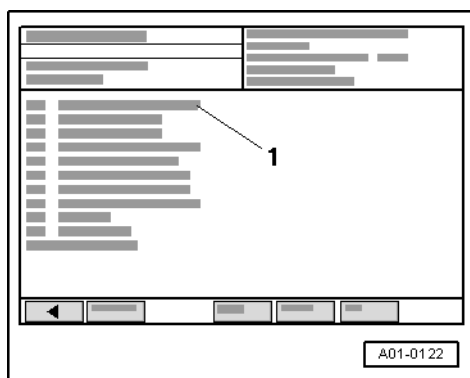
Note: Data will be erased!

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

### Note:

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

## 4.8 - End output

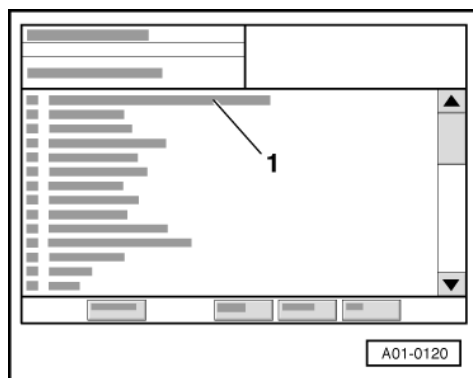




### Sequence of operations

-> Readout on VAS 5051:

- From list -1- select diagnostic function "06 - End output".



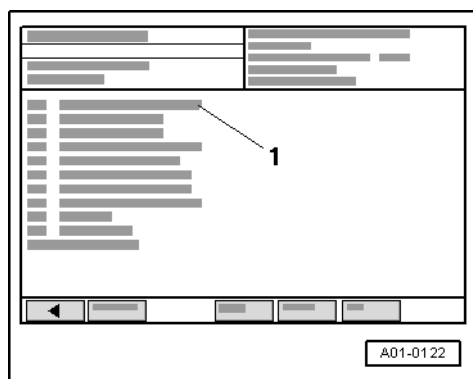
-> Readout on VAS 5051:

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

## 4.9 - Code control unit

### Note:

*The coding adapts the universal automatic parking system control unit -J446 to the particular requirements of the vehicle concerned.*

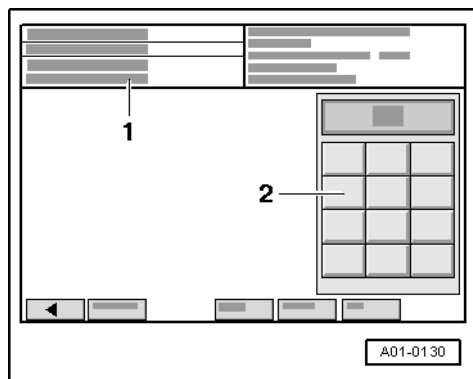


### Sequence of operations

- Start automatic parking system self-diagnosis => Page **118** .

-> Readout on VAS 5051:

- From list -1- select diagnostic function "07 - Code control unit".



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

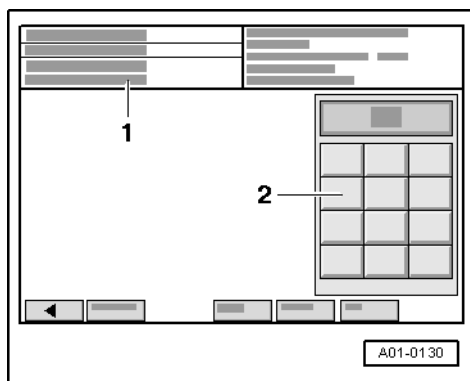
-> Readout on VAS 5051:

- 1 - Enter code word
- Use keypad -2- to enter control unit code as per coding table.

#### Coding table

|   |   |
|---|---|
| 0 | without trailer hitch                       |
| 1 | with trailer hitch                          |
| 0 | Manual gearbox                              |
| 1 | Automatic gearbox                           |
| 0 | No acknowledgement of function              |
| 1 | With acknowledgement of function (ex works) |
| 0 | ROW   |
| 2 | USA   |
| 4 | S-variant ROW                               |
| 6 | S-variant USA                               |
| 8 | A8  |

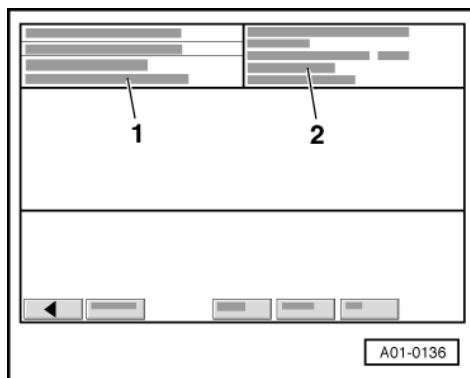
- Confirm entry by touching Q key.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

- 1 - Coding in progress
- Wait until next readout appears.



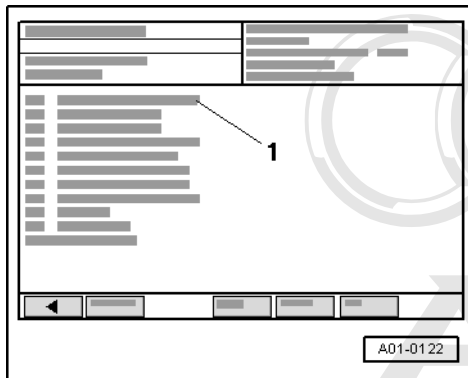


-> Readout on VAS 5051:

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

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

#### 4.10 - Read measured value block



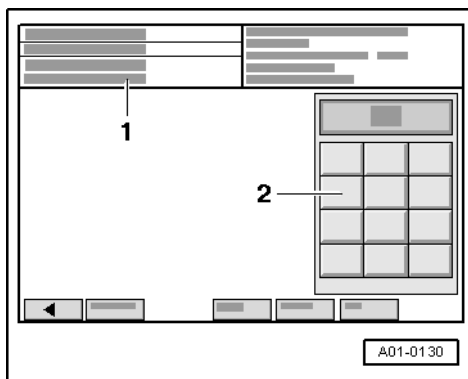
##### Sequence of operations

protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Start automatic parking system self-diagnosis => Page **118** .

-> Readout on VAS 5051:

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

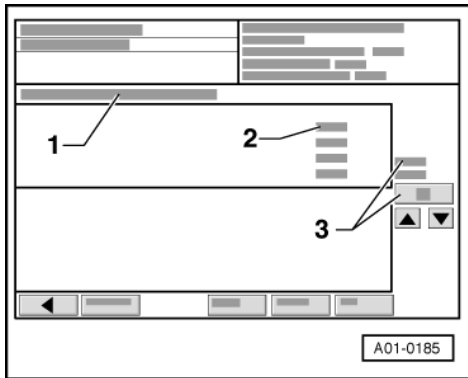


-> Readout on VAS 5051:

- 1 - Enter display group

- Use keypad -2- to enter required three-digit display group number  
=>Page **133** and confirm entry by touching Q key.





➔ Readout on VAS 5051:

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

**Notes:**

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

| Display group | VAS 5051    |
|---------------|-------------|
| Up            | Press ▲ key |
| Down          | Press ▼ key |

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

**List of display groups:**

| Display group number | Indicated on display   |
|----------------------|--|
| 001                  | 1 = Distance from fl sensor in cm<br>2 = Distance from flc sensor in cm<br>3 = Distance from frc sensor in cm<br>4 = Distance from fr sensor in cm |
| 002                  | 1 = Distance from rl sensor in cm<br>2 = Distance from rlc sensor in cm<br>3 = Distance from rrc sensor in cm<br>4 = Distance from rr sensor in cm |
| 003                  | 1 = Minimum distance at front in cm<br>2 = Minimum distance at rear in cm<br>3 = Vehicle speed km/h<br>4 = Supply voltage V                        |
| 004                  | 1 = Warning buzzer<br>2 = Reverse gear recognition<br>3 = Trailer recognition<br>4 = Tailgate  |
| Display group number | Indicated on display   |
| 005                  | 1 = Function button<br>2 = Function lamp   |

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



|     |  |
|-----|--|
| 006 | 1 = fl sensor settling time in ms<br>2 = flc sensor settling time in ms<br>3 = frc sensor settling time in ms<br>4 = fr sensor settling time in ms |
| 007 | 1 = rl sensor settling time in ms<br>2 = rlc sensor settling time in ms<br>3 = rrc sensor settling time in ms<br>4 = rr sensor settling time in ms |

## Measured value block 001

|                             |        |        |        |   |   |
|-----------------------------|--------|--------|--------|---|---|
| Read measured value block 1 |        |        |        | ⇒ | Indicated on display                                      |
| XXX cm                      | XXX cm | XXX cm | XXX cm |   |   |
|                             |        |        |        |   | Distance from front right sensor<br>▪ 0 ... 200 cm        |
|                             |        |        |        |   | Distance from front right centre sensor<br>▪ 0 ... 200 cm |
|                             |        |        |        |   | Distance from front left centre sensor<br>▪ 0 ... 200 cm  |
|                             |        |        |        |   | Distance from front left sensor<br>▪ 0 ... 200 cm         |

## Measured value block 002

|                             |        |        |        |   |  |
|-----------------------------|--------|--------|--------|---|--|
| Read measured value block 2 |        |        |        | ⇒ | Indicated on display                                     |
| XXX cm                      | XXX cm | XXX cm | XXX cm |   |  |
|                             |        |        |        |   | Distance from rear right sensor<br>▪ 0 ... 200 cm        |
|                             |        |        |        |   | Distance from rear right centre sensor<br>▪ 0 ... 200 cm |
|                             |        |        |        |   | Distance from rear left centre sensor<br>▪ 0 ... 200 cm  |
|                             |        |        |        |   | Distance from rear left sensor<br>▪ 0 ... 200 cm         |

## Measured value block 003

|                             |       |          |        |   |  |
|-----------------------------|-------|----------|--------|---|--|
| Read measured value block 3 |       |          |        | ⇒ | Indicated on display   |
| XX cm                       | XX cm | XXX km/h | XX.X V |   |  |
|                             |       |          |        |   | Supply voltage to sensors<br>▪ 0 ... 15 V                                    |
|                             |       |          |        |   | Vehicle speed<br>▪ 0 ... 300 km/h  |
|                             |       |          |        |   | Minimum distance at rear<br>▪ Smallest value of the four measured distances  |
|                             |       |          |        |   | Minimum distance at front<br>▪ Smallest value of the four measured distances |

### Measured value block 004

| Read measured value block 4 |      |      |      | ⇒ | ◀ Indicated on display   |
|-----------------------------|------|------|------|---|--------------------------|
| Text                        | Text | Text | Text |   |                          |
|                             |      |      |      |   | Tailgate recognition     |
|                             |      |      |      |   | ▪ Tailgate closed        |
|                             |      |      |      |   | ▪ Tailgate open          |
|                             |      |      |      |   | Trailer recognition      |
|                             |      |      |      |   | ▪ Trailer yes            |
|                             |      |      |      |   | ▪ Trailer no             |
|                             |      |      |      |   | Reverse gear recognition |
|                             |      |      |      |   | ▪ Reverse yes            |
|                             |      |      |      |   | ▪ Reverse no             |
|                             |      |      |      |   | Warning buzzer           |
|                             |      |      |      |   | ▪ Tone on                |
|                             |      |      |      |   | ▪ Tone off               |

### Measured value block 005

| Read measured value block 5 |      | ⇒ | ◀ Indicated on display                                     |
|-----------------------------|------|---|--|
| Text                        | Text |   |  |
|                             |      |   |  |
|                             |      |   | Function indicator lamp in automatic parking system button |
|                             |      |   | ▪ LED on   |
|                             |      |   | ▪ LED off  |
|                             |      |   | Automatic parking system button                            |
|                             |      |   | ▪ Button on  |
|                             |      |   | ▪ Button off   |

### Measured value block 006

| Read measured value block 6 |        |        |        | ⇒ | ◀ Indicated on display                  |
|-----------------------------|--------|--------|--------|---|---|
| XXX ms                      | XXX ms | XXX ms | XXX ms |   |   |
|                             |        |        |        |   | Front right sensor settling time        |
|                             |        |        |        |   | Front right centre sensor settling time |
|                             |        |        |        |   | Front left centre sensor settling time  |
|                             |        |        |        |   | Front left sensor settling time         |

#### Note:

Values of greater than 4.00 ms with the automatic parking system active are an indication of a defective ultrasonic sensor or an open circuit in the wiring.



## Measured value block 007

| Read measured value block 7 |        |        |        | ⇒ | ◀ Indicated on display                 |
|-----------------------------|--------|--------|--------|---|--|
| XXX ms                      | XXX ms | XXX ms | XXX ms |   |  |
|                             |        |        |        |   | Rear right sensor settling time        |
|                             |        |        |        |   | Rear right centre sensor settling time |
|                             |        |        |        |   | Rear left centre sensor settling time  |
|                             |        |        |        |   | Rear left sensor settling time         |

**Note:**

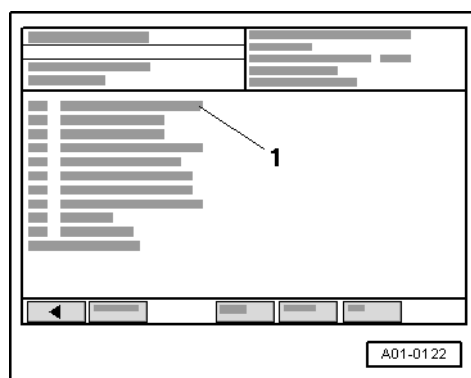
Values of greater than 4.00 ms with the automatic parking system active are an indication of a defective ultrasonic sensor or an open circuit in the wiring.

## 4.11 - Adaption

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

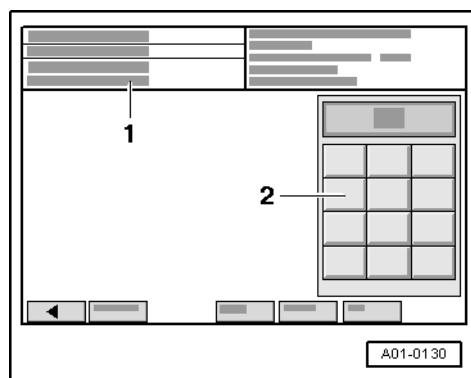
- ♦ Warning buzzer volume (rear and front)
- ♦ Warning buzzer pitch (tone frequency) (rear and front)

**Adaption channel 01 - Volume of warning tone (rear)**

- Start automatic parking system self-diagnosis => Page 118 .

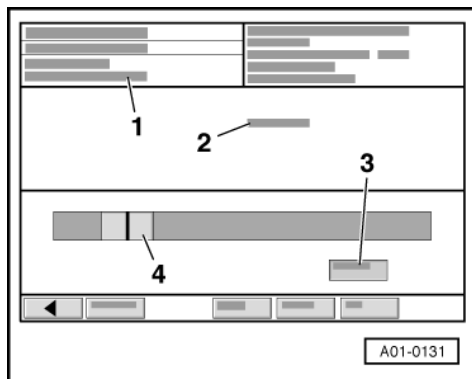
-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

- 1 - Enter channel number
- Use keypad -2- to enter "01" for "Adaption channel 01" and confirm by touching Q key.

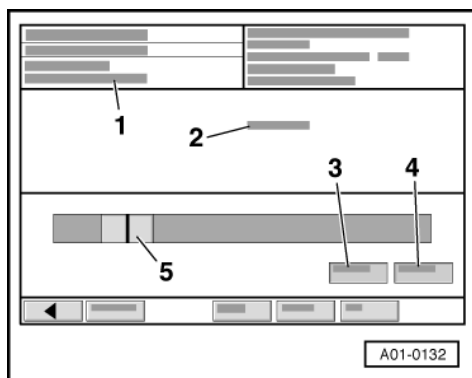


-> Readout on VAS 5051:

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

| Volume         | Low ... High |   |   |   |   |   |  |
|----------------|--------------|---|---|---|---|---|--|
| Adaption value | 2            | 3 | 4 | 5 | 6 | 7 |  |

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Readout on VAS 5051:

- Enter desired volume adaption value.

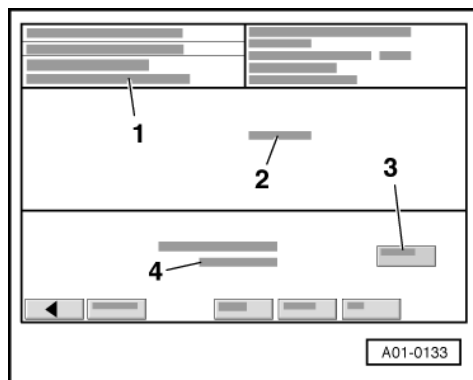
Example: Adaption value 4 for mid volume

- Shift slide bar -5- in required direction or touch area next to bar until it is positioned under number "4" (example).

**Note:**

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

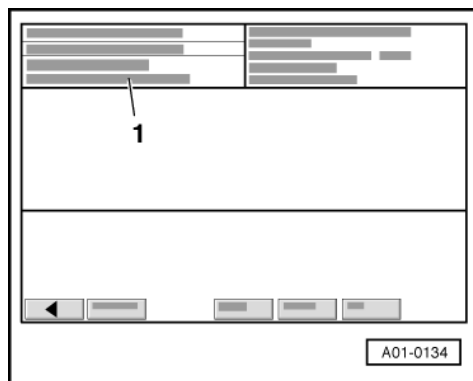
- Touch "Save" key -4-.



-> Readout on VAS 5051:

- 1 - Channel 1
- Read and test
- 4 - Original value "7"
- New value "4" (example)

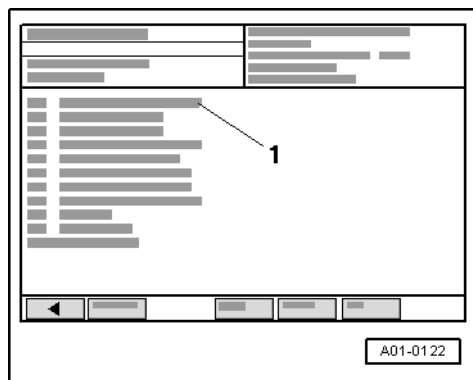
- Confirm new adaption value by touching "Apply" key -3-



-> Readout on VAS 5051 following adaption:

- 1 - Channel 1
- Value "4" saved

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



**Adaption channel 02 - Pitch (audio frequency) of warning tone (rear)**

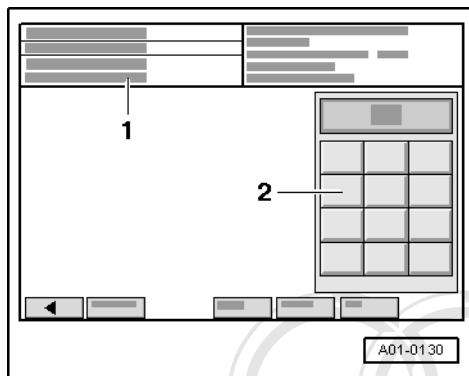
- Start automatic parking system self-diagnosis => Page 118 .



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

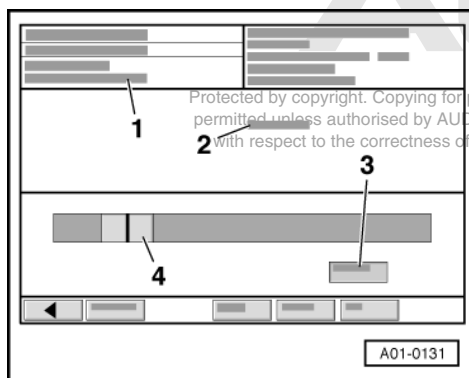
-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

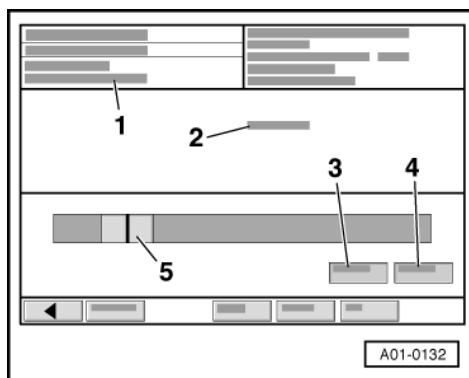
- 1 - Enter channel number
- Use keypad -2- to enter "02" for "Adaption channel 02" and confirm by touching Q key.



-> Readout on VAS 5051:

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

|                       |            |   |            |   |          |
|-----------------------|------------|---|------------|---|----------|
| <b>Pitch kHz</b>      | <b>0.5</b> |   | <b>...</b> |   | <b>2</b> |
| <b>Adaption value</b> | 0          | 1 | 2          | 3 | 4        |





-> Readout on VAS 5051:

- Enter desired pitch adaption value.

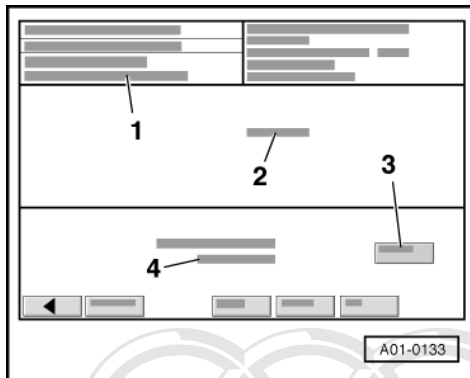
Example: Adaption value 0 for 0.5 kHz

- Shift slide bar -5- in required direction or touch area next to bar until it is positioned under number "0" (example).

**Note:**

*Another alternative is to touch "Keypad" key -3-, enter number "0" on keypad and confirm entry by touching Q key.*

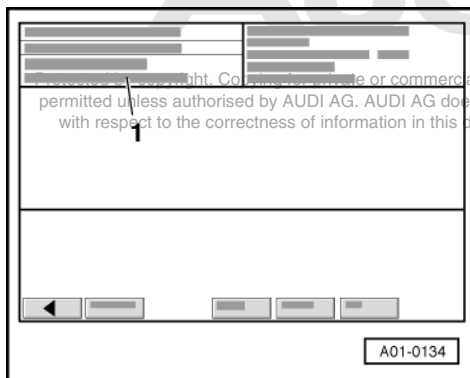
- Touch "Save" key -4-.



-> Readout on VAS 5051:

- 1 - Channel 2
- Read and test
- 4 - Original value "3"
- New value "0" (example)

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

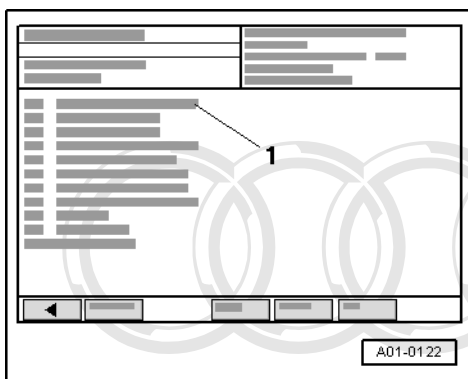


-> Readout on VAS 5051 following adaption:

- 1 - Channel 2
- Value "0" saved

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



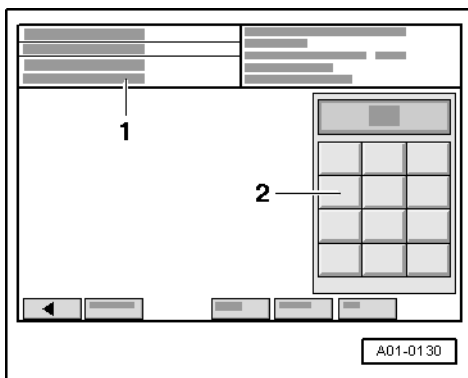


#### Adaption channel 03 - Volume of warning tone (front)

- Start automatic parking system self-diagnosis => Page **118**.

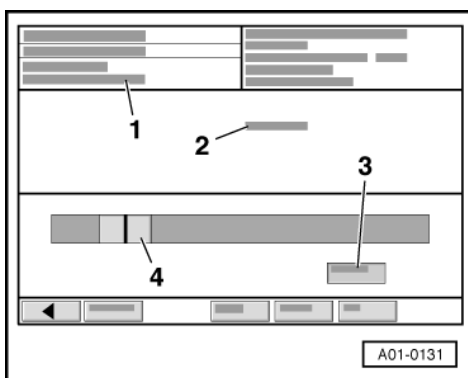
-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

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



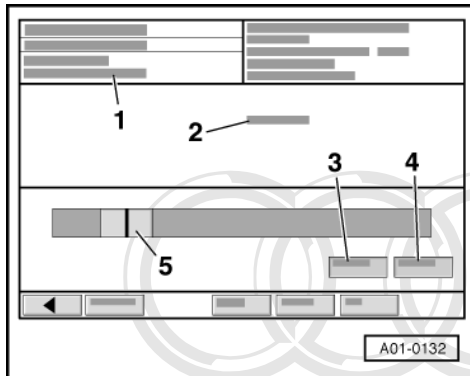
-> Readout on VAS 5051:

- 1 - Channel 3  
Read and test



4 - Slide bar positioned on current adaption value

| Volume         | Low |   | ... |   | High |   |
|----------------|-----|---|-----|---|------|---|
| Adaption value | 2   | 3 | 4   | 5 | 6    | 7 |



-> Readout on VAS 5051:

- Enter desired volume adaption value.

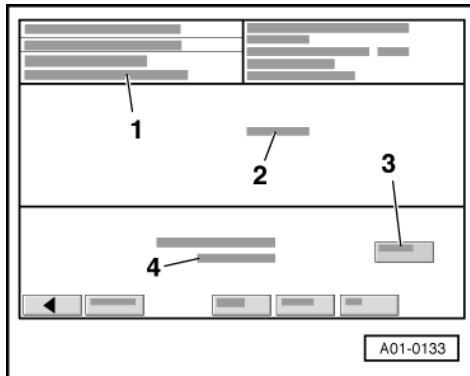
Example: Adaption value 4 for mid volume

- Shift slide bar -5- in required direction or touch area next to bar until it is positioned under number "4" (example).

**Note:**

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

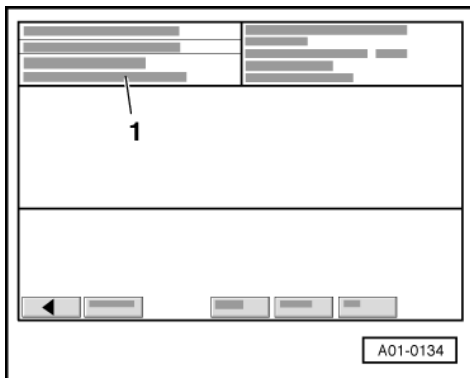
- Touch "Save" key -4-.



-> Readout on VAS 5051:

- 1 - Channel 3
- Read and test
- 4 - Original value "7"
- New value "4" (example)

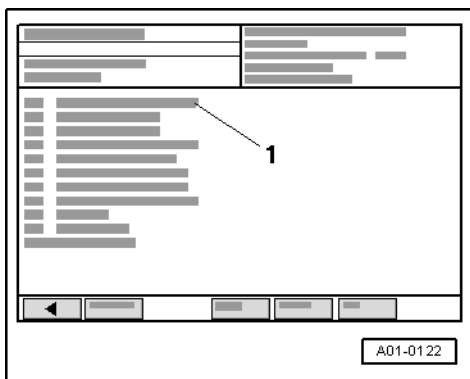
- Confirm new adaption value by touching "Apply" key -3-.



-> Readout on VAS 5051 following adaption:

1 - Channel 3  
 Value "4" saved

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

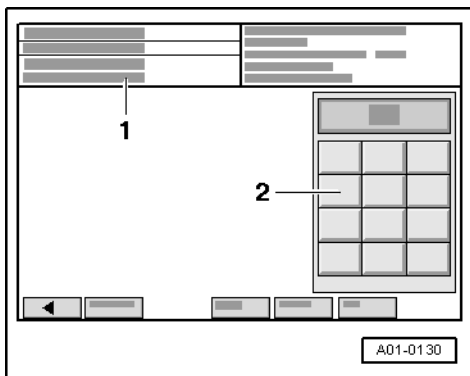


#### Adaption channel 04 - Pitch (audio frequency) of warning tone (front)

- Start automatic parking system self-diagnosis => Page **118**.

-> Readout on VAS 5051:

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



-> Readout on VAS 5051:

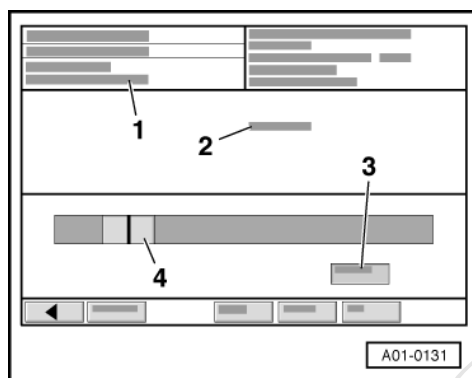
1 - Enter channel number



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



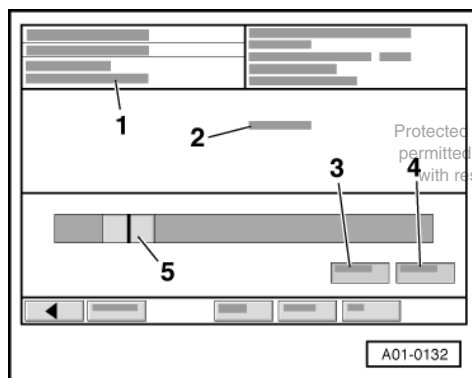
- Use keypad -2- to enter "04" for "Adaption channel 04" and confirm by touching Q key.



-> Readout on VAS 5051:

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

| Pitch kHz      | 0.5 ... 2 |   |   |   |   |
|----------------|-----------|---|---|---|---|
| Adaption value | 0         | 1 | 2 | 3 | 4 |



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

- Enter desired pitch adaption value.

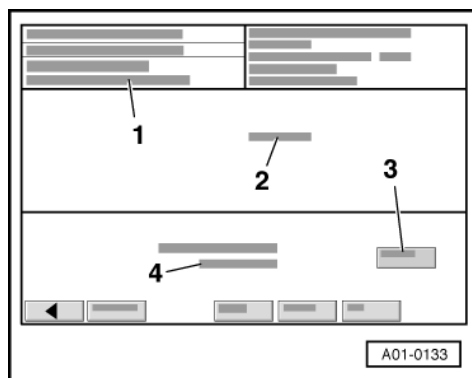
Example: Adaption value 0 for 0.5 kHz

- Shift slide bar -5- in required direction or touch area next to bar until it is positioned under number "0" (example).

**Note:**

Another alternative is to touch "Keypad" key -3-, enter number "0" on keypad and confirm entry by touching Q key.

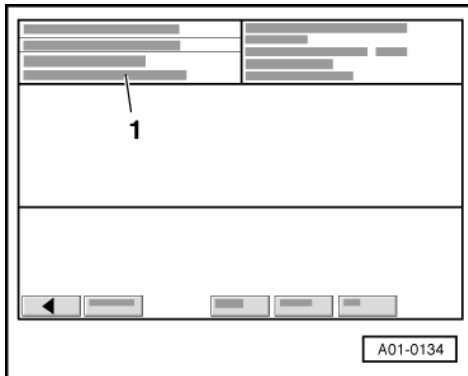
- Touch "Save" key -4-.



-> Readout on VAS 5051:

- 1 - Channel 4
- Read and test
- 4 - Original value "3"
- New value "0" (example)

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



-> Readout on VAS 5051 following adaption:

- 1 - Channel 4
- Value "0" saved
- Terminate function "10 - Adaption" by touching ◀ key.

## 5 - Automatic headlight range control self-diagnosis

### 5.1 - Automatic headlight range control self-diagnosis

### 5.2 - General information

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Differing automatic headlight range control systems are fitted in the Audi A8:

- ◆ Static automatic headlight range control on all vehicles with gas-discharge headlights up to MY 00:
- ◆ Automatic dynamic headlight range control as from MY 01.

#### Function

Static automatic headlight range control corrects the angle of the dipped beam only at the start of a journey/ with the vehicle stationary.

Dynamic automatic headlight range control additionally keeps the dipped beam angle constant when the vehicle tilt varies as a result of acceleration or deceleration.-

One level sender each at the front and rear axles signals the compression of the vehicle suspension in both headlight range control systems. A signal proportional to the running speed is additionally processed.

The control unit evaluates these signals and actuates the headlight range controller when the lights are on.

Both headlight range control systems comprise:

- ◆ Headlight range control unit -J431
- ◆ Rear left vehicle level sender -G76
- ◆ Front left vehicle level sender -G78



- ♦ Headlight range control positioning motor, left -V48
- ♦ Headlight range control positioning motor, right -V49

**Note:**

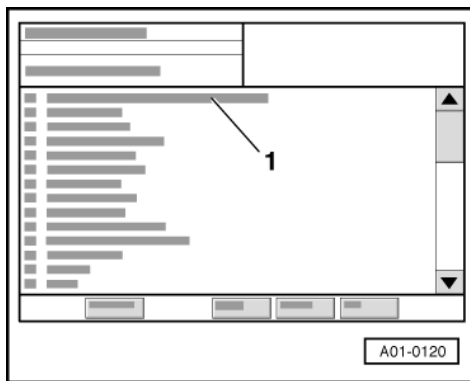
- ♦ If faults occur in the system, the driver is informed accordingly by a warning symbol in the dash panel insert centre display.

### 5.3 - Starting automatic headlight range control self-diagnosis

**Requirements:**

- Vehicle diagnostic, testing and information system VAS 5051 connected up and vehicle self-diagnosis selected => Page 162
- Ignition on

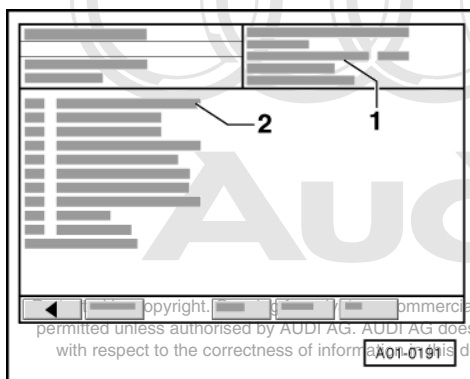
Attention:  
Follow safety precautions => Page 162 .



**Sequence of operations**

-> Readout on VAS 5051:

- From list -1- select vehicle system "55 - Headlight range control".
- Wait until next readout appears.



-> Readout on VAS 5051:

- 1 - Headlight range control unit identification

2 - List of diagnostic functions => Page **147**

|   |  |
|---|--|
| Headlight range control unit identification (example) |  |
| 55 - Headlight range control                          | Vehicle system   |
| 4B0907357A  | Part No.; Assignment<br>=> Parts List                          |
| Dynamic headlight range control1)D0042)               | 1) Component designation<br>2) Data level (software version)   |
| Code 00001  | Control unit coding (checking => Page <b>157</b> )             |
| Dealership number 12345                               | Workshop code of VAS 5051 with which coding was last performed |

| Diagnostic functions              | Page       |
|-----------------------------------|------------|
| 02 Interrogate fault memory       | <b>147</b> |
| 03 Final control diagnosis        | <b>151</b> |
| 04 Basic setting                  | <b>153</b> |
| 05 Erase fault memory             | <b>155</b> |
| 06 End output                     | <b>156</b> |
| 07 Code control unit              | <b>157</b> |
| 08 Read measured value block      | <b>159</b> |
| 09 Read individual measured value | -          |
| 10 Adaption                       | -          |
| 11 Login procedure                | -          |

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for errors or omissions in this document. Copyright by AUDI AG.

## 5.4 - Interrogate fault memory



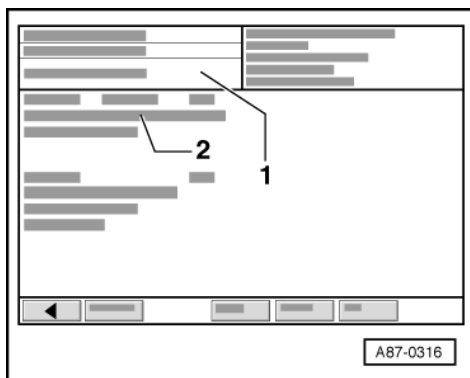
### Note:

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

- Start automatic headlight range control self-diagnosis  
=> Page **146** .

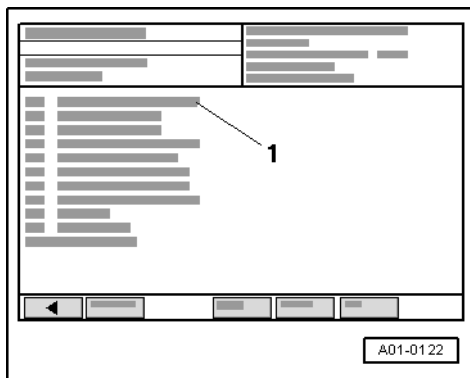
-> Readout on VAS 5051:

- From list -1- select diagnostic function "02 - Interrogate fault memory".



-> Readout on VAS 5051:

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



#### A - Faults detected:

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

-> Readout on VAS 5051:

- Eliminate fault(s) in line with fault table => Page **149**
- Select diagnostic function "02 - Interrogate fault memory" again in list and erase fault memory => Page **155**.
- Select diagnostic function "06 - End output" in list => Page **156**.

#### B - No fault detected:

- Select diagnostic function "06 - End output" in list => Page **156**.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the content of this document.



## 5.5 - Fault table

### Notes:

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

| Readout on VAS 5051                                   | Possible cause of trouble   | Remedy   |
|---|---|--|
| 00532<br>Supply voltage<br>- Signal too low           | - Open circuit in wiring or short in power supply   | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
| 00625<br>Vehicle speed signal<br>- Implausible signal | - Open circuit in wiring or short between ABS control unit -J104 and headlight range control unit -J431 | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder |
|   | - ABS control unit -J104 defective  | - Replace ABS control unit -J104<br>=> Brake System; Repair Group 45   |

| Readout on VAS 5051   | Possible cause of trouble  | Remedy   |
|---|--|--|
| 00774<br>Rear left vehicle level sender -G76<br>- Short to positive<br>- Open circuit/short to earth  | - Open circuit in wiring or short between sender -G76 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder                   |
|   | - Sender -G76 defective  | - Replace sender -G76<br>=> Running Gear, Front-wheel Drive and Four-wheel Drive; Repair Group 42; Rear axle component layout Rear axle component layout |
| 00776<br>Front left vehicle level sender -G78<br>- Short to positive<br>- Open circuit/short to earth | - Open circuit in wiring or short between sender -G78 and control unit | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder                   |



| Readout on VAS 5051 | Possible cause of trouble | Remedy  |
|---------------------|---------------------------|---|
|                     | - Sender -G78 defective   | - Replace sender -G78<br>=> Running gear, Front-wheel drive and four-wheel drive; Repair Group 40; Removing and installing track control link<br>Removing and installing track control link |

| Readout on VAS 5051  | Possible cause of trouble   | Remedy  |
|--|---|---|
| 01532<br>Dash panel insert signal wire<br>- Short to positive<br>- Open circuit/short to earth | - Open circuit in wiring or short between headlight range control unit -J431 and dash panel insert      | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |
|  | - Dash panel insert defective   | - Replace dash panel insert<br>=> Electrical System; Repair Group 90; Dash panel insert; Removing and installing dash panel insert<br>Removing and installing dash panel insert |
| 01533<br>Terminal 56 (headlight)<br>- Open circuit in wiring                                   | - Open circuit in wiring/terminal 56 between lighting switch -E1 and headlight range control unit -J431 | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |

| Readout on VAS 5051  | Possible cause of trouble   | Remedy  |
|--|---|---|
| 01534<br>Headlight range control positioning motor, left - V48<br>- Open circuit/short to earth<br>- Short to positive | - Open circuit in wiring or short to positive/earth between positioning motor -V48 and control unit -J431 | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |
|  | - Positioning motor -V48 defective  | - Replace positioning motor -V48<br>=> Electrical System; Repair Group 94; Servicing headlights; Removing and installing headlight range control positioning motor<br>Servicing headlights; Removing and installing headlight range control positioning motor |

| Readout on VAS 5051   | Possible cause of trouble | Remedy |
|---|---------------------------|--------|
| 01535<br>Headlight range control positioning motor, right - V49 |                           |        |

| Readout on VAS 5051  | Possible cause of trouble  | Remedy  |
|--|--|---|
| - Open circuit/short to earth<br>- Short to positive   | - Open circuit in wiring or short to positive/earth between positioning motor - V49 and control unit -J431 | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |
|  | - Positioning motor -V49 defective   | - Replace positioning motor - V49<br>=> Electrical System; Repair Group 94; Servicing headlights; Removing and installing headlight range control positioning motor Servicing headlights; Removing and installing headlight range control positioning motor |
| 01537<br>Vehicle level sender - supply voltage<br>- Short to positive<br>- Open circuit/short to earth | - Open circuit in wiring or short to positive/earth between control unit and vehicle level sender          | - Use current flow diagram to perform fault-finding<br>=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder  |

| Readout on VAS 5051                    | Possible cause of trouble  | Remedy   |
|--|--|--|
| 01539<br>Headlights not set            | - Basic setting 2 not performed  | - Perform full basic setting => Page 153   |
|  | - Vehicle level sender outside adjustment range  | - Replace holder for vehicle level sender<br>=> Running gear, Front-wheel drive and four-wheel drive; Repair Group 40; Removing and installing track control link Removing and installing track control link   |
| 01577<br>Switch-off due to overheating | - Overheating in electronics of headlight range control unit (headlight range control positioning motor/headlight mechanical system stiff) | - Replace headlight range control positioning motor/headlight<br>=> Electrical System; Repair Group 94; Servicing headlights Servicing headlights  |
| 65535<br>Control unit defective        | - Headlight range control unit -J431 defective   | - Replace control unit<br>=> Electrical System; Repair Group 94; Servicing automatic headlight range control; Removing and installing headlight range control unit -J431 Servicing automatic headlight range control; Removing and installing headlight range control unit -J431 |

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

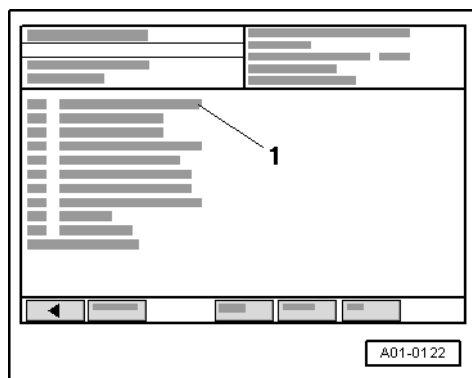
## 5.6 - Final control diagnosis

### Notes:

- ♦ Final control diagnosis can only be performed with engine stopped and ignition switched on.



- ♦ If final control diagnosis detects a fault, locate and eliminate cause of problem.

**Test requirement:**

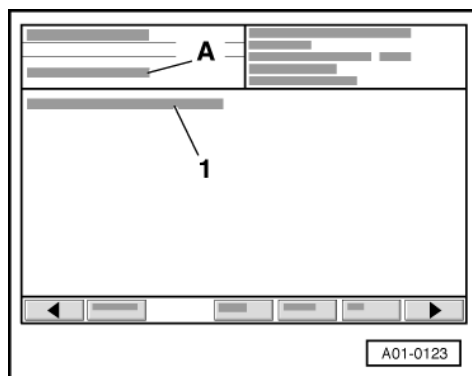
- Dipped beam on

**Sequence of operations**

- Start automatic headlight range control self-diagnosis  
=> Page 146 .

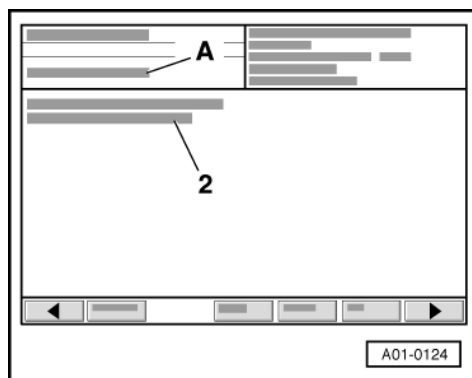
-> Readout on VAS 5051:

- From list -1- select diagnostic function "03 - Final control diagnosis".

**Actuation of headlight lowering**

- A - 1st control element in test
- 1 - Headlights are lowered

- ♦ Headlights are lowered until upper end position is reached



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

### Actuation of headlight raising

- Touch ▶ key.

-> Readout on VAS 5051:

- A - 2nd control element in test
- 2 - Headlights are raised

- ◆ Headlights are raised until upper end position is reached



- Touch ▶ key.

-> Readout on VAS 5051:

- A - Control element test over

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

## 5.7 - Basic setting

Basic setting must be performed following replacement of headlight, vehicle level sender or control unit. Heed the following:

### Notes:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ◆ Vehicle must be in a precisely defined load status.
- ◆ For information on specifications and load requirements:

=> Maintenance

### Sequence of operations

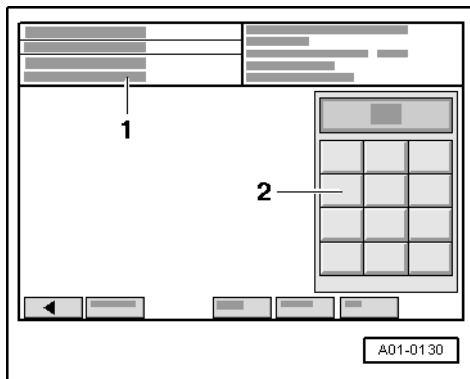
- Achieve uniform extension of suspension by moving body up and down several times at each wheel and allowing vehicle to settle.
- Start automatic headlight range control self-diagnosis  
=> Page 146 .





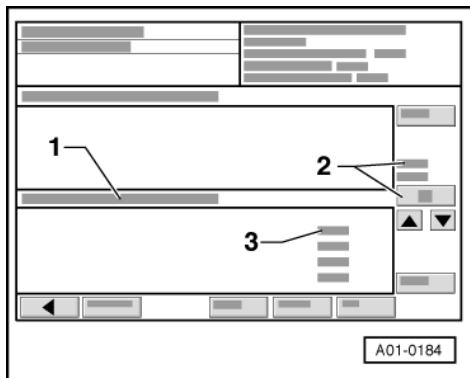
-> Readout on VAS 5051:

- From list -1- select diagnostic function "04 - Basic setting".



-> Readout on VAS 5051:

- Use keypad -2- to enter "001" for "Display group number 001" and confirm by touching Q key.



-> Readout on VAS 5051:

- 1 - Basic setting
- 2 - Display group 1
- 3 - Wait

- ◆ Headlights are moved to adjustment position
- Wait until next readout appears.
  - 3 - Adjust headlights
- ◆ Headlights are now in adjustment position
- Set headlights with headlight aiming device VAS 5046.

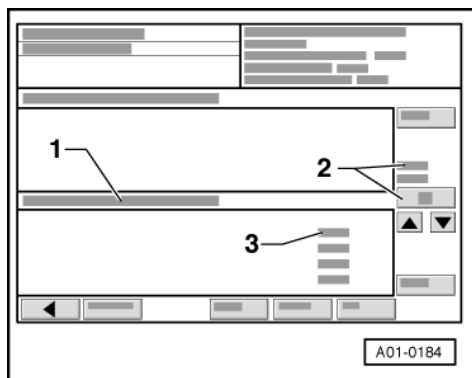
**Note:**

*Basic setting 1 deactivates control mode and "Headlights not adjusted" is entered in fault memory.*

- Touch s key to switch to display group 002.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Readout on VAS 5051:

- 1 - Basic setting
- 2 - Display group 2
- 3 - Default position learned
- Control unit now recognises this position as being the default position

**Note:**

*Entry in fault memory ("Headlights not adjusted") is erased and control mode re-activated.*

- Terminate function "04 - Basic setting" by touching ◀ key.

## 5.8 - Erase fault memory

**Note:**

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

**Requirements:**

- Fault memory interrogated => Page 147
- All faults eliminated



### Sequence of operations

After fault memory interrogation:

-> Readout on VAS 5051:

- From list -1- select diagnostic function "05 - Erase fault memory".



-> Readout on VAS 5051:

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

**Note:**

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

2 - Note:

Is function to be implemented?

Note: Data will be erased!

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

**Note:**

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

## 5.9 - End output

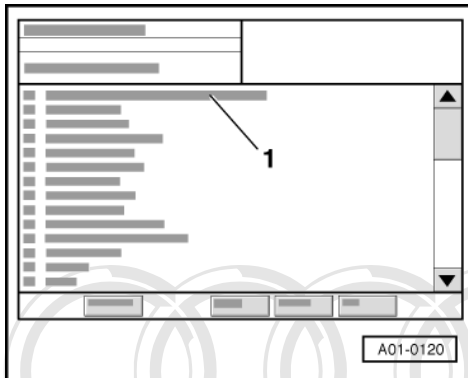


### Sequence of operations

-> Readout on VAS 5051:

- From list -1- select diagnostic function "06 - End output".





-> Readout on VAS 5051:

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

## 5.10 - Code control unit

### **Note:**

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with regard to the correctness of information in this document. Copyright by AUDI AG.

*The coding adapts the universal headlight range control unit to the particular requirements of the vehicle concerned.*

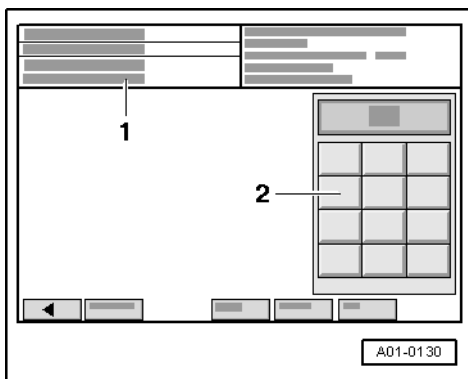


### Sequence of operations

- Start automatic headlight range control self-diagnosis  
=> Page **146**.

-> Readout on VAS 5051:

- From list -1- select diagnostic function "07 - Code control unit".





-> Readout on VAS 5051:

1 - Enter code word

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

**Coding table for vehicles with static automatic headlight range control**

| Code  | Model/drive type       |
|-------|------------------------|
| 00007 | A8 front-wheel drive   |
| 00008 | A8/S8 four-wheel drive |

**Coding table for vehicles with dynamic automatic headlight range control**

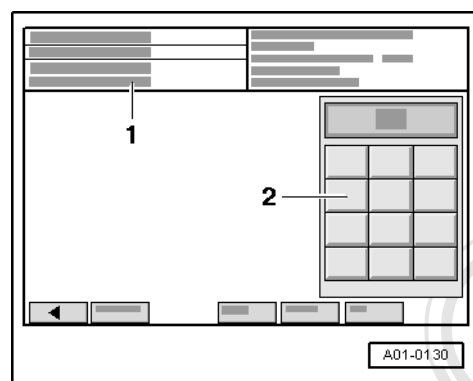
| Code  | Model/drive type |
|-------|------------------|
| 00001 | All vehicles     |

Example:

Desired input: 7

Keypad entry: 00007

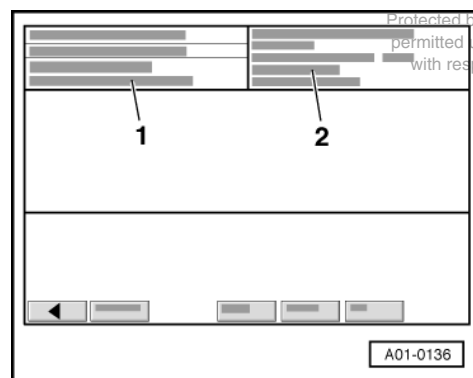
- Confirm entry by touching Q key.



-> Readout on VAS 5051:

1 - Coding in progress

- Wait until next readout appears.

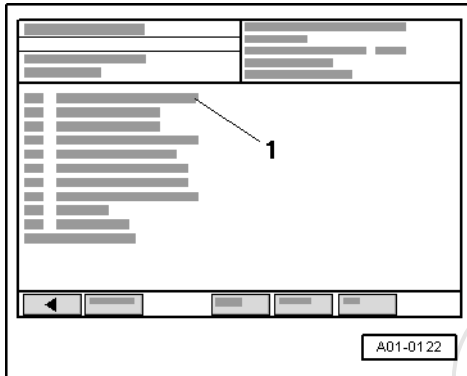


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

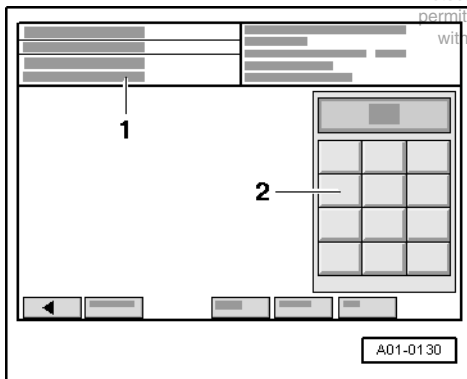
- 1 - Vehicle system coding completed
- 2 - Control unit identification with new code  
(old code in brackets)
- Terminate function "07 - Coding control unit" by touching ◀ key.

### 5.11 - Read measured value block



#### Sequence of operations

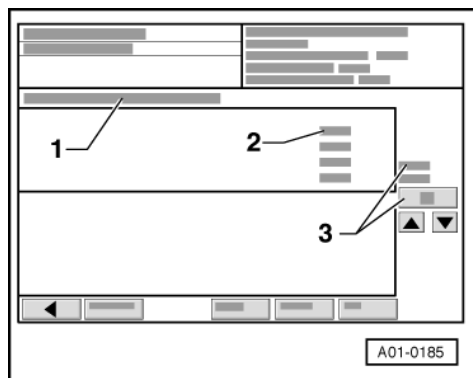
- Start automatic headlight range control self-diagnosis  
=> Page 146 .
- > Readout on VAS 5051:
- From list -1- select diagnostic function "08 - Read measured value block".



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Readout on VAS 5051:

- 1 - Enter display group
- Use keypad -2- to enter required three-digit display group number=>List of display groups, Page 160 and confirm entry by touching Q key.



-> Readout on VAS 5051:

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

**Notes:**

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

| Display group | VAS 5051    |
|---------------|-------------|
| Up            | Press ▲ key |
| Down          | Press ▼ key |

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

**List of display groups:**

**Vehicles with static automatic headlight range control**

| Display group number | Indicated on display  |
|----------------------|---|
| 001                  | 1 = Voltage supply term. 15<br>2 = Dipped beam voltage term.<br>3 56b<br>Vehicle speed km/h |
| 002                  | 1 = Front level sender<br>2 = Rear level sender<br>3 = Positioning motor actuation          |

Protected by copyright. A copyright for private or commercial purposes, in part or in whole, is not permitted unless authorized 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.

**Vehicles with dynamic automatic headlight range control**

| Display group number | Indicated on display   |
|----------------------|--|
| 001                  | 1 = Voltage supply term. 15<br>2 = Light switch status<br>3 = Vehicle speed km/h<br>4 = Acceleration in m/s <sup>2</sup> |

| Display group number | Indicated on display  |
|----------------------|---|
| 002                  | 1 = Front level sender<br>2 = Rear level sender<br>3 = Positioning motor specification in %<br>4 = Time constant in s |

Vehicles with static automatic headlight range control

Display group 001

| Read measured value block 1 |         |          | ⇒ | Indicated on display                              |
|-----------------------------|---------|----------|---|---|
| X.XXX V                     | X.XXX V | XXX km/h |   |   |
|                             |         |          |   | Vacant  |
|                             |         |          |   | Vehicle speed<br>▪ 0 ... 300 km/h                 |
|                             |         |          |   | Dipped beam voltage via term. 56b<br>▪ 0 ... 15 V |
|                             |         |          |   | Voltage supply term. 15<br>▪ 0 ... 15 V           |

Display group 002

| Read measured value block 2 |         |        | ⇒ | Indicated on display  |
|-----------------------------|---------|--------|---|---|
| X.XXX V                     | X.XXX V | ADP OK |   |   |
|                             |         |        |   | Vacant  |
|                             |         |        |   | Positioning motor actuation<br>▪ ADP. in progress (positioning motor actuation provides compensation for deviation)<br>▪ ADP. OK (default position set) |
|                             |         |        |   | Rear level sender voltage value<br>▪ 0.5 ... 4.5 V  |
|                             |         |        |   | Front level sender voltage value<br>▪ 0.5 ... 4.5 V   |

Vehicles with dynamic automatic headlight range control

Display group 001

| Read measured value block 1 |   |          |  | ⇒                     | Indicated on display                                |
|-----------------------------|---|----------|--|-----------------------|---|
| X.XXX V                     | X | XXX km/h |  | X.XX m/s <sup>2</sup> |   |
|                             |   |          |  |                       | Acceleration<br>▪ 0 ... 7.00 m/s <sup>2</sup>       |
|                             |   |          |  |                       | Vehicle speed<br>▪ 0 ... 300 km/h                   |
|                             |   |          |  |                       | Light switch<br>▪ 0 = Lights off<br>▪ 1 = Lights on |



Voltage supply term. 15  
▪ 0 ... 15 V

## Display group 002

| Read measured value block 2 |         |      | ⇒      | • Indicated on display  |
|-----------------------------|---------|------|--------|---|
| X.XXX V                     | X.XXX V | XXX% | X.XX s |   |
|                             |         |      |        | Time constant in s (indicates the time after which the headlights have reached 63 % of their adjustment.)<br>▪ 0 ... 2 s  |
|                             |         |      |        | Positioning motor specification (indicates by what percentage the headlight range control positioning motor spindle is extended at the zero position.)<br>▪ 0 ... 100 % |
|                             |         |      |        | Rear level sender voltage with vehicle at standstill<br>▪ 0.5 ... 4.5 V   |
|                             |         |      |        | Front level sender voltage with vehicle at standstill<br>▪ 1.56 ... 3.45 V  |

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

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

### 6.2 - Safety precautions

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

#### Attention:

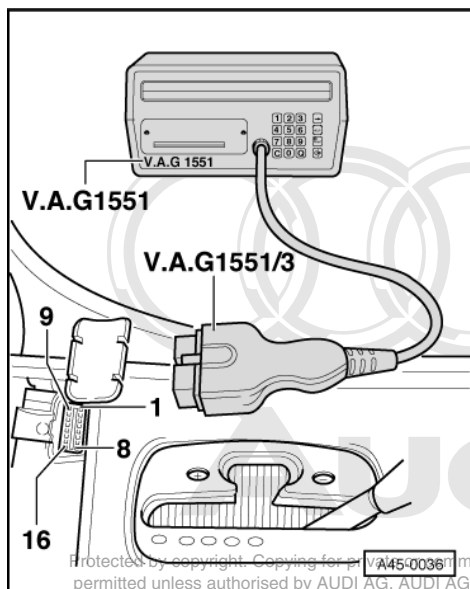
- ◆ Proceed as follows during measurement and test drives so as to avoid the risk of accident:
- ◆ Exclusive use is to be made of VAS 5051 or V.A.G 1551 for reading the measured value blocks. The devices must be attached to the rear seat and operated from there by a second person.

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

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

#### Test requirements:

- Battery voltage at least 12.7 V
- Earth connections to engine and gearbox OK
- Battery earthing strap, if fitted, and earthing strap between battery and gearbox OK



- Fuses of corresponding system OK

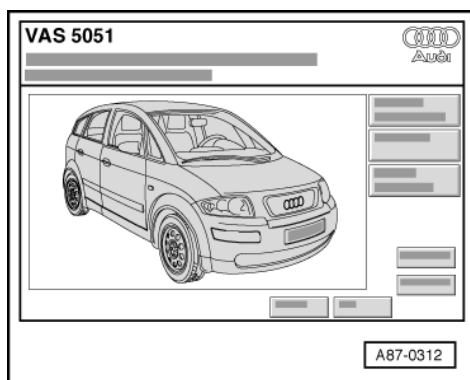
=> Current Flow Diagrams, Electrical Fault-finding and Fitting Locations binder

- Switch off ignition.
- -> Use diagnostic lead VAS 5051/1 to connect up vehicle diagnostic, testing and information system VAS 5051.

**Attention:**  
 Follow safety precautions => Page **162** .

**Note:**

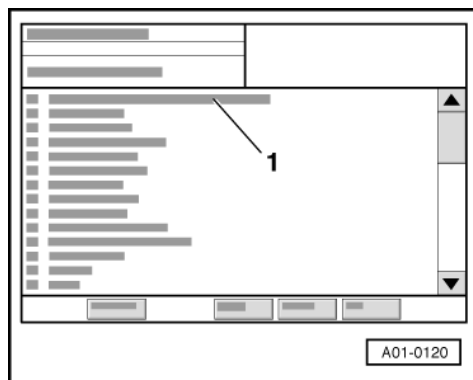
*If fault message appears on display:*



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

-> Readout on VAS 5051:

- Touch "Vehicle self-diagnosis" key.



-> Readout on VAS 5051:

**Note:**

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.