

Workshop Manual Audi A2 2001 ➤

5-speed Manual Gearbox 085 DS Self-diagnosis

Edition 03.2004



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 Groups

Repair Group

01 - Self-diagnosis, electrical checks



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. Audi AG and Audi AG subsidiaries accept no responsibility 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.**

Copyright © 2015 Audi AG, Ingolstadt

A0058098920

Contents

01 - Self-diagnosis, electrical checks	1
1 Self-diagnosis	1
1.1 Self-diagnosis function	1
1.2 Technical data of self-diagnosis	2
2 Notes on tow-starting and towing	3
3 Electrical/electronic components and fitting locations	4
3.1 Electric/electronic components in the vehicle	4
3.2 Electric/electronic gearbox components	8
3.3 Electric/electronic components on hydraulic control unit	11
4 Performing self-diagnosis	12
4.1 Safety precautions	12
4.2 Connecting vehicle diagnostic, testing and information system VAS 5051 A and selecting functions	12
4.3 List of selectable functions	14
5 Interrogating fault memory	15
5.1 Interrogating fault memory	15
5.2 Fault tables	16
6 Final control diagnosis	27
7 Basic setting	29
7.1 Performing basic setting	29
7.2 Programming the creep point	36
8 Erasing fault memory	38
9 End of output	39
10 Measured value block	40
10.1 Reading measured value block	40
10.2 List of selectable display groups	40
10.3 Test table	42
11 CAN bus	55
11.1 Testing a "two-line bus system"	55
12 Electrical test	58
12.1 Performing electrical test	58
12.2 Connect test box V.A.G 1598/18 to electronic manual gearbox control unit J514	59
12.3 Test table	61
13 Fault analysis, complaints and fault remedy	70
13.1 System leaking	70
13.2 Poor shifting quality	73
13.3 Voltage value of the clutch travel sender G162 cannot be adjusted	73
13.4 Basic setting cannot be performed	76
13.5 Vehicle does not start	76



Audi

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, electrical checks

1 Self-diagnosis

1.1 Self-diagnosis function

Basic features

- ◆ The 5-speed manual gearbox 085 DS is controlled electronically/hydraulically.
- ◆ The clutch and the gear selector mechanism in the gearbox are also operated electronically/hydraulically. For this reason, a mechanical connection between gear lever and gearbox is not necessary.
- ◆ The term “self-diagnosis” refers specifically to the electronic/electric control.

Functions of gearbox control unit

- ◆ Mode of operation of this gearbox ⇒ Self-study programme No. 221 ; The electronic manual gearbox . ¹⁾
- ◆ The electronic manual gearbox control unit -J514- receives information on components and other control units and conveys this information to the gear actuator and the hydraulic clutch mechanism.
- ◆ Gear changes are controlled, for example, in this way according to data recorded by the engine control unit such as engine speed, vehicle speed, engine load etc.
- ◆ Conversely, the engine control unit processes data from the gearbox control unit, e.g. dethrottling when the clutch is disengaged.
- ◆ In manual shifting mode, gear changes can be selected by the driver. In this case, the gearbox control unit also performs the gear changes. This prevents the engine being over-revved during inappropriate shifting into a lower gear.
- ◆ When the vehicle is stopped, first gear is selected automatically.

1) Function of ECO mode ⇒ Audi A2 Owner's Manual; “ECO Mode” or “ECO Operation” or “START-STOP System” .

Gearbox control unit fault recognition

- ◆ The control unit recognises faults during vehicle operation and stores them in a fault memory
⇒ “5.2 Fault tables”, page 16 .
- ◆ It is always necessary to initiate self-diagnosis and interrogate the stored faults at the start of the fault-finding procedure. The vehicle diagnostic, testing and information system -VAS 5051 A- or the vehicle diagnostic and service information system -VAS 5052- can be used for interrogating.



Note

Self-diagnosis with the vehicle diagnostic, testing and information system -VAS 5051 A- is described in this workshop manual.

- ◆ After evaluating the information, the control unit differentiates between sporadic (occasional) and currently present (static) faults and stores them.

- ◆ If a fault exists, it is stored as being static (present). If the fault no longer occurs for a specific period of time or distance, the fault becomes a sporadic fault.
- ◆ Sporadic faults are indicated during the fault memory interrogation as "sporadic".
- ◆ A fault also becomes sporadic if the ignition is switched off and on during interrogation or if the fault memory was not erased after repair.
- ◆ Sporadic faults are deleted automatically if they have not re-occurred within 1000 km or 20 hours of driving.
- ◆ The control unit can recognise missing signals in the CAN bus. Defective CAN bus wiring, such as open circuits, cannot be directly recognised. Only after the fault memory of every control unit has been interrogated, can conclusions be drawn as to where the CAN bus wiring is defective.

Safety functions of gearbox control unit

If faults occur during the journey, the control unit can activate substitute functions. They may affect the function and quality of the gear changes. Emergency running programs are not provided.

Replacing control units

If control units are replaced, the system must be returned to the basic setting ⇒ ["7 Basic setting", page 29](#).

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.

1.2 Technical data of self-diagnosis

Memory	
Permanent memory	Yes
Data output, rapid data transfer	Yes
CAN bus	Yes
Final control diagnosis	No ²⁾
Basic setting	Yes
Encoding control unit	No
Read measured value block	Yes
Electrical/electronic components and fitting locations	⇒ page 4

2) Currently, it is only possible to perform a final control diagnosis using the vehicle diagnostic, testing and information system -VAS 5051 A- in "Guided fault-finding". Using the -VAS 5051 A- actual values are compared with specified values in specific gearbox states, with the mechanic having to perform a few steps.

2 Notes on tow-starting and towing



Caution

When vehicle is being towed, selector lever must be set to position "N" and vehicle must not be towed for more than 50 km or at a speed in excess of 50 km/h, as gearbox would otherwise be destroyed.



Note

It is not possible to start the engine by means of tow-starting, for instance in the case of insufficient battery charge or if starter is not working.



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.

3 Electrical/electronic components and fitting locations

3.1 Electric/electronic components in the vehicle

1 - Relays

- ☐ Gearbox hydraulic pump relay -J510- on the 6+6-part relay carrier at the front left of the footwell ⇒ [page 6](#)
- ☐ Load shutoff relay - J511- on the 9-part relay carrier, fuse holder in the dash panel on the driver's side ⇒ [page 6](#)
- ☐ Starter inhibitor and reversing light relay - J226- on the 6+6-part relay carrier at the front left of the footwell ⇒ [page 6](#)
- ☐ Ignition key removal lock control unit -J557- on the 6+6-part relay carrier at the front left of the footwell ⇒ [page 6](#)
- ☐ The relays are checked by self-diagnosis
- ☐ Removing and installing relays ⇒ Electrical system; Rep. Gr. 97

2 - Control unit for handbrake warning lamp -J534-

- ☐ Fitting location ⇒ [page 6](#)
- ☐ Removing and installing ⇒ [page 8](#)

3 - Solenoid valve for ignition key removal lock -N334-

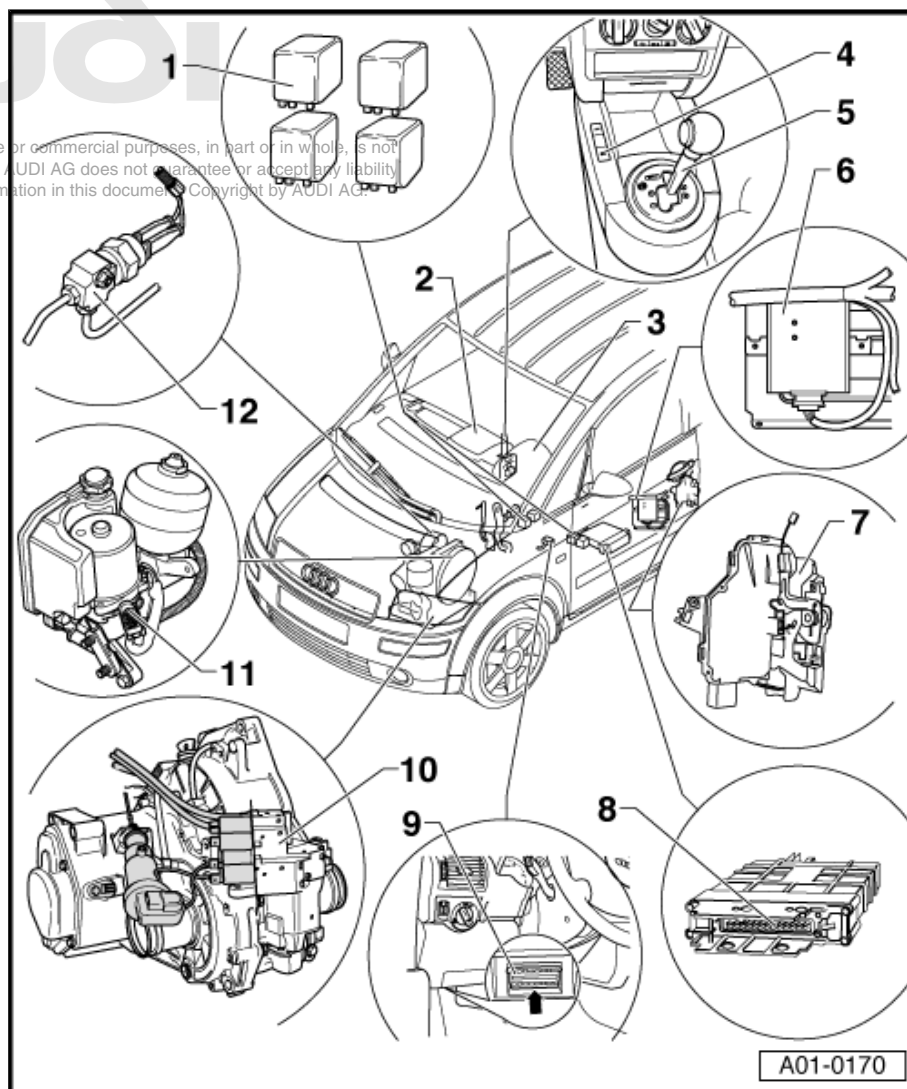
- ☐ Fitting location: at the ignition/starter switch
- ☐ Can be checked via the electrical test ⇒ [page 58](#)
- ☐ Removing and installing ⇒ Electrical system; Rep. Gr. 94

4 - Switch for Start/Stop mode -E262- (ECO mode)

- ☐ Fitting location: in the centre console
- ☐ Can be checked via the electrical test ⇒ [page 58](#)

5 - Selector lever and gear selector mechanism

- ☐ With switch for selector lever gate recognition -F257-
- ☐ With switch for selector lever N-recognition -F258-
- ☐ With switch for selector lever Stop-recognition -F259-
- ☐ With lockout switch for diesel engine -F207-
- ☐ With selector lever lock solenoid -N110-



- ☐ With potentiometer for selector lever, forwards/backwards -G272-
- ☐ Fitting location, and removing and installing these components ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34
- ☐ All components are checked by self-diagnosis and can be checked with the electrical test ⇒ [page 58](#)

6 - Voltage regulator -J532- and voltage regulator 2 -J570-

- ☐ Fitting location ⇒ [page 7](#)
- ☐ Removing and installing ⇒ [page 8](#)

7 - Door lock with contact switch

- ☐ Fitting location: in the door
- ☐ The door contact switch signal is transmitted from the central control unit for convenience system -J393- to the electronic manual gearbox control unit -J514-
- ☐ Can be checked via reading measured value block ⇒ [page 40](#)
- ☐ Removing and installing ⇒ General Body Assembly, Exterior; Rep. Gr. 57

8 - Electronic manual gearbox control unit -J514-

- ☐ Fitting location ⇒ [page 5](#)
- ☐ Removing and installing ⇒ [page 7](#)
- ☐ Checked via self-diagnosis
⇒ ["4.2 Connecting vehicle diagnostic, testing and information system VAS 5051 A and selecting functions"](#), [page 12](#)

9 - Diagnostic connector

- ☐ Fitting location ⇒ [page 6](#)

10 - Gearbox

- ☐ Electrical/electronic components on gearbox ⇒ [page 8](#)

11 - Hydraulic control unit

- ☐ Electric/electronic components on hydraulic control unit ⇒ [page 11](#)

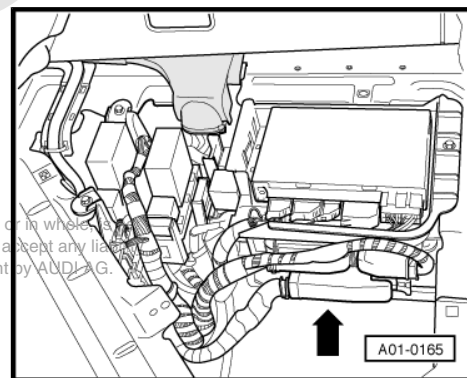
12 - Brake pressure switch -F270-

- ☐ Fitting location: on right, next to hydraulic control unit
- ☐ Can be checked electrically ⇒ [page 58](#) and via reading measured value block ⇒ [page 40](#)

Fitting location of electronic manual gearbox control unit -J514-

- ◆ The control unit -arrow- is located in the control unit carrier under the false floor beneath the front seat on the left.

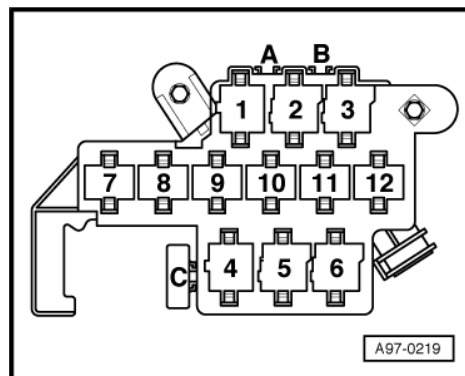
Removing and installing electronic manual gearbox control unit -J514- ⇒ [page 7](#) .



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.

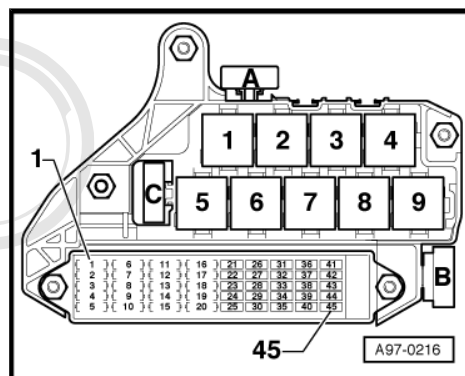
Fitting locations in the 6+6-part relay carrier at the front left of the footwell

- 1 - Starter inhibitor and reversing light relay -J226-
- 4 - Gearbox hydraulic pump relay -J510-
- 5 - Ignition key removal lock control unit -J557-
- 6 - Ignition key removal lock control unit -J557-
- A - Hydraulic pump relay fuse -S279-



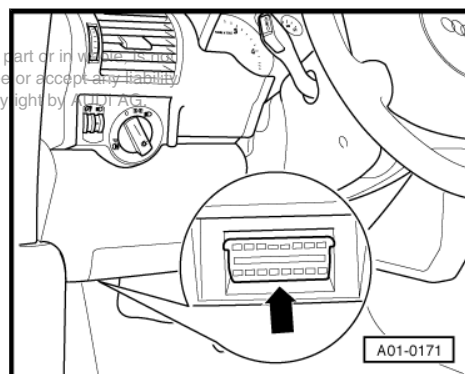
Fitting locations in the 9-part relay carrier, fuse holder in the dash panel on the driver's side

- 1 - Load shutoff relay -J511-



Fitting location of diagnostic connector

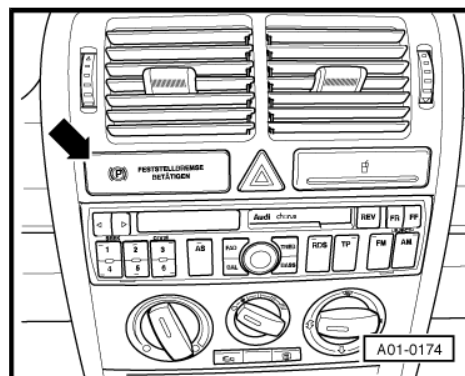
- ◆ The diagnostic connector is located in the driver's storage compartment -arrow-



Fitting location of handbrake warning lamp control unit -J534-

- ◆ The handbrake warning lamp control unit -J534- together with the warning lamp is located in frame of centre dash panel vent -arrow- .

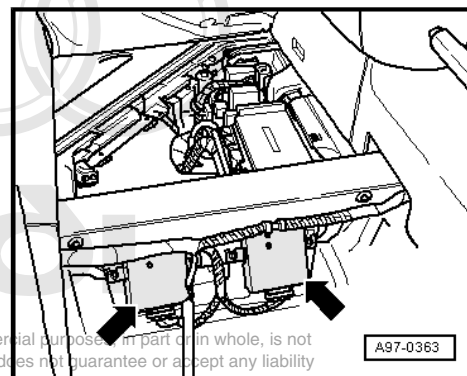
Removing and installing handbrake warning lamp control unit - J534- ⇒ [page 8](#) .



Fitting location of voltage regulators

- ◆ The voltage regulator -J532- and the voltage regulator 2 -J570- -arrows- are located at the back of and underneath the left front seat.

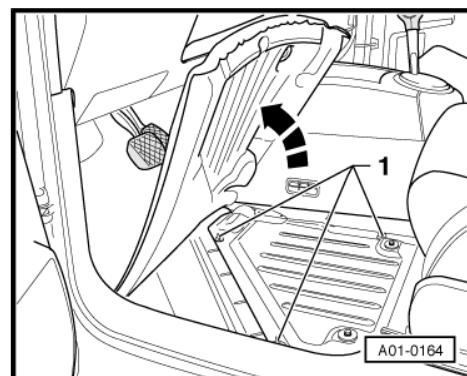
Removing and installing voltage regulators ⇒ [page 8](#) .



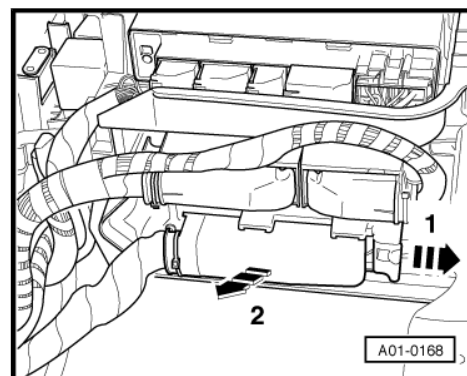
3.1.1 Removing and installing electronic manual gearbox control unit -J514-

Removing

- Switch off ignition.
- Lift up floor mat in left side footwell.
- Turn the lock mechanisms -1- anticlockwise and remove the cover plate.



- Release multiple connector -arrow 1- and unplug from the control unit -arrow 2- .

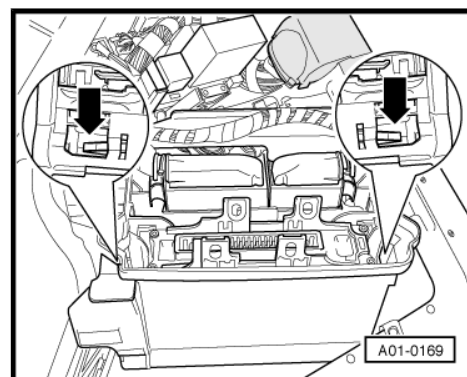


- Press both retaining clips -arrows- downwards and remove control unit carefully.

Installing

Installation is carried out in reverse sequence; note the following:

- Interrogate fault memory ⇒ [page 15](#) .
- Perform basic setting ⇒ [page 29](#) .



3.1.2 Removing and installing voltage regulators

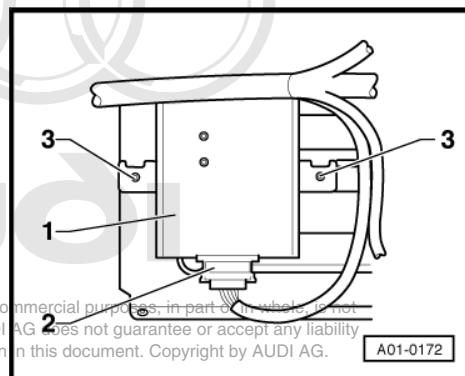
Removing

- Remove rear floor mat ⇒ General Body Assembly, Interior; Rep. Gr. 70 .
- Detach electrical connector -2- .
- Unscrew screws -3- and remove voltage regulator -1- .

Installing

Installation is carried out in reverse sequence; note the following:

- Tighten screws -3- to 3 Nm.



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.

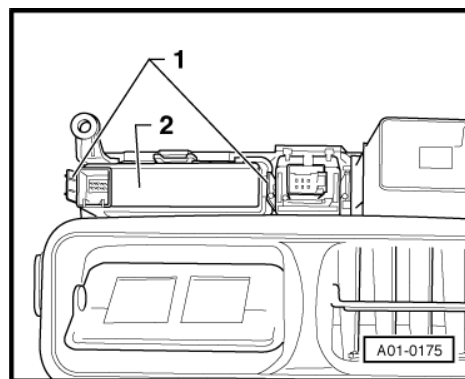
3.1.3 Removing and installing handbrake warning lamp control unit -J534-

Removing

- Remove radio ⇒ Radio, Telephone and Navigation System; Rep. Gr. 91 .
- Remove centre dash panel vent ⇒ General Body Assembly, Interior; Rep. Gr. 70 .
- Unplug connector from control unit.
- Press retainer tabs -1- outwards and remove control unit -2- .

Installing

Installation is carried out in reverse sequence.



3.2 Electric/electronic gearbox components

1 - Clutch travel sender -G162-

- ☐ Fitting location: on the clutch slave cylinder
- ☐ Can be checked electrically ⇒ [page 58](#) and via reading measured value block ⇒ [page 40](#)
- ☐ Removing and installing ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30

2 - Gearbox speed sender -G38-

- ☐ Fitting location: at top of gearbox housing
- ☐ Can be checked electrically ⇒ [page 58](#) and via reading measured value block ⇒ [page 40](#)
- ☐ Removing and installing ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30

3 - Potentiometer 2 for gear recognition -G240-

- ☐ Recognises the gate (similar to "gear stick to left/right")
- ☐ Fitting location ⇒ [page 10](#)
- ☐ Can be checked via reading measured value block ⇒ [page 40](#)
- ☐ Removing and installing ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

4 - Potentiometer 1 for gear recognition -G239-

- ☐ Recognises the gear position (similar to "gear stick to front/rear")
- ☐ Fitting location ⇒ [page 10](#)
- ☐ Can be checked via reading measured value block ⇒ [page 40](#)
- ☐ Removing and installing ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

5 - Gear selector valve 1 -N284-

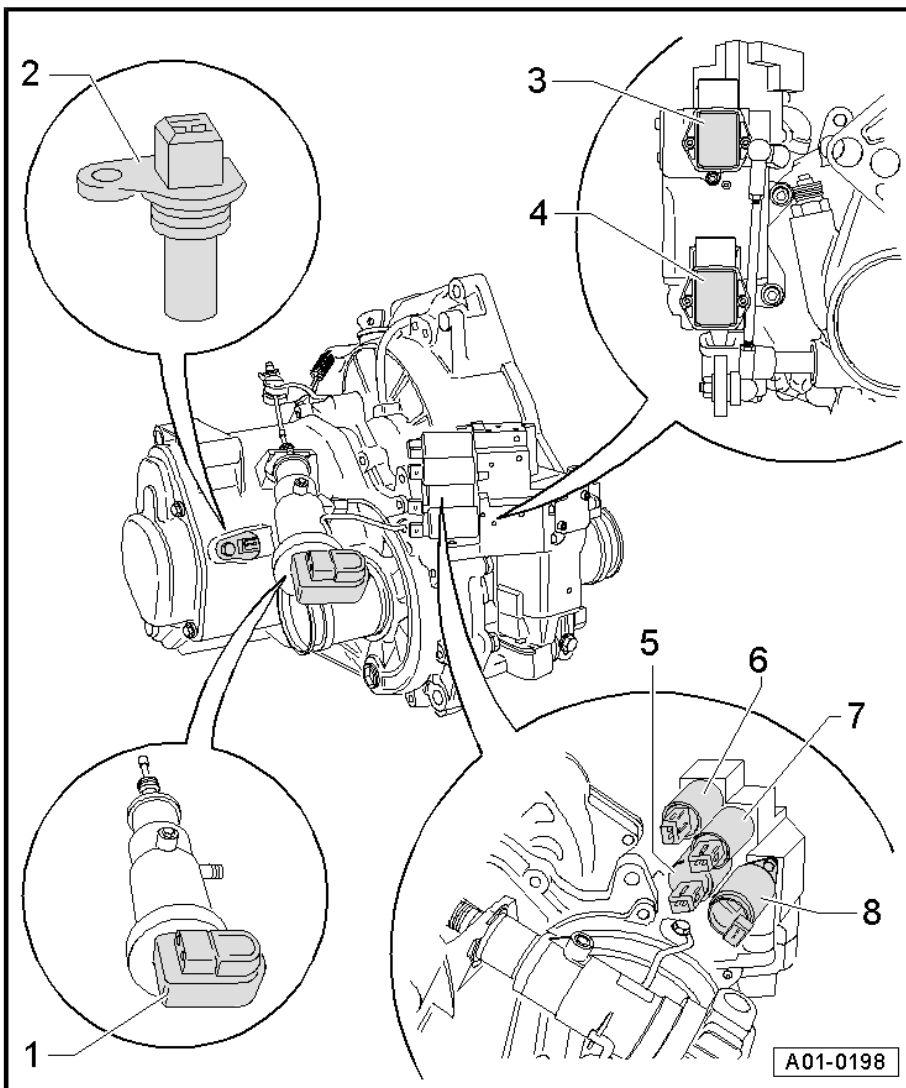
- ☐ For gear selection
- ☐ Fitting location ⇒ [page 10](#)
- ☐ Can be checked electrically ⇒ [page 58](#) and via reading measured value block ⇒ [page 40](#)
- ☐ Removing and installing ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

6 - Gear selector valve 4 -N287-

- ☐ For gate selection
- ☐ Fitting location ⇒ [page 10](#)
- ☐ Can be checked via reading measured value block ⇒ [page 40](#)
- ☐ Removing and installing ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

7 - Gear selector valve 3 -N286-

- ☐ For gate selection
- ☐ Fitting location ⇒ [page 10](#)



Printed in Germany. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without prior written permission from Audi AG. Audi AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ❑ Can be checked electrically ⇒ [page 58](#) and via reading measured value block ⇒ [page 40](#)
- ❑ Removing and installing ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

8 - Gear selector valve 2 -N285-

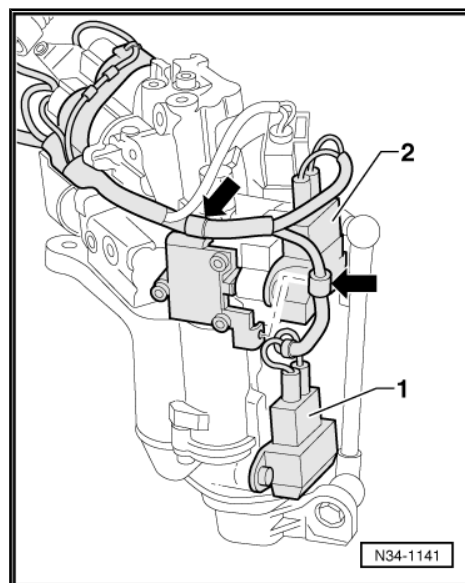
- ❑ For gear selection
- ❑ Fitting location ⇒ [page 10](#)
- ❑ Can be checked via reading measured value block ⇒ [page 40](#)
- ❑ Removing and installing ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fitting location for potentiometer for gear recognition at gear actuator

– Note the different lengths of the wiring:

- 1 - Potentiometer 1 for gear recognition -G239- ; long wire.
- 2 - Potentiometer 2 for gear recognition -G240- ; short wire.

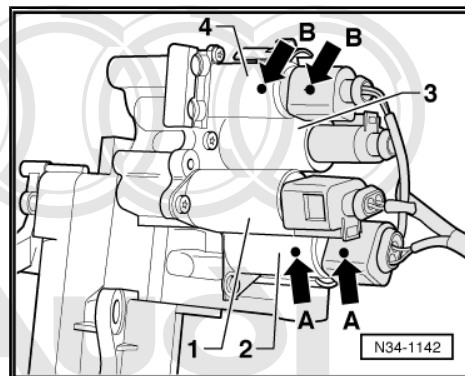
The -arrows- indicate the attachment of the wiring harness on the gear actuator.



Fitting location of valves 1 to 4 for gear selection

– Please note different electrical connectors for gear selector valves.

- 1 - Gear selector valve 1 -N284- ; large connector, no colour marking
- 2 - Gear selector valve 2 -N285- ; large connector, colour marking -arrows A-
- 3 - Gear selector valve 3 -N286- ; small connector, no colour marking
- 4 - Gear selector valve 4 -N287- ; small connector, colour marking -arrows B-



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.

3.3 Electric/electronic components on hydraulic control unit

1 - Hydraulic pump for clutch actuator -V180-

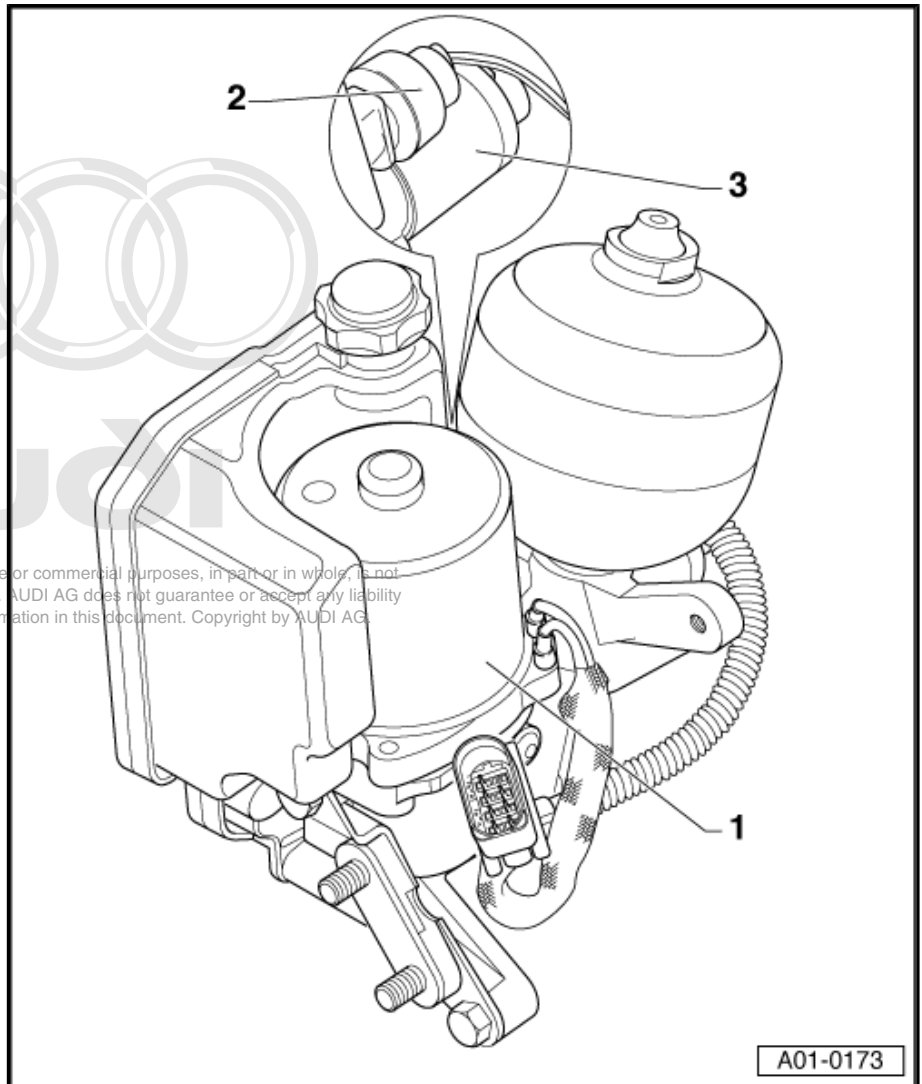
- ☐ Can be checked via the electrical test
⇒ [page 58](#)
- ☐ Removing and installing
⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

2 - Sender for gearbox hydraulic pressure -G270-

- ☐ Can be checked electrically ⇒ [page 58](#) and via reading measured value block
⇒ [page 40](#)
- ☐ Removing and installing
⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

3 - Valve for clutch actuator - N255- (clutch slave cylinder)

- ☐ Can be checked electrically ⇒ [page 58](#) and via reading measured value block
⇒ [page 40](#)
- ☐ Can only be replaced jointly with the hydraulic control unit



A01-0173

4 Performing self-diagnosis

4.1 Safety precautions

Observe the following precautions if test and measuring instruments are required during a test drive:



WARNING

- ◆ *Test equipment must always be secured on the rear seat and operated from that position by a second person.*
- ◆ *If test and measuring instruments are operated from the front passenger's seat and the vehicle is involved in an accident, there is a possibility that the person sitting in this seat may suffer serious injuries when the airbag is triggered.*

4.2 Connecting vehicle diagnostic, testing and information system -VAS 5051 A- and selecting functions

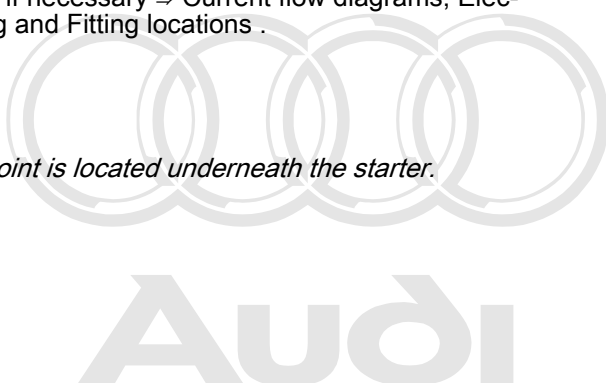
Requirements:

- Selector lever in position "N" and handbrake applied.
- Supply voltage of vehicle electrical system OK
- Fuses OK ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Earth connections for gearbox OK
- Check earth connections for corrosion and damaged connections and repair, if necessary ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .



Note

Earth attachment point is located underneath the starter.



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.

Procedure

- Connect the vehicle diagnostic, testing and information system -VAS 5051 A- with diagnostic cable -VAS 5051 A/1- to the diagnostic connector with the ignition switched off.



WARNING

Observe the safety precautions ⇒ [page 12](#).



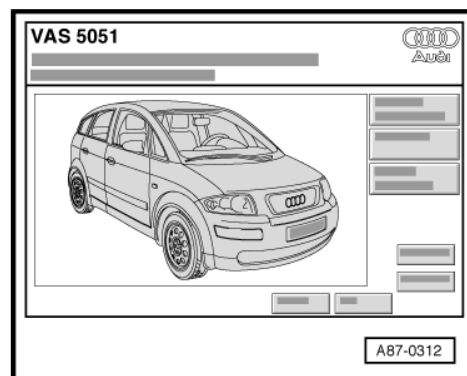
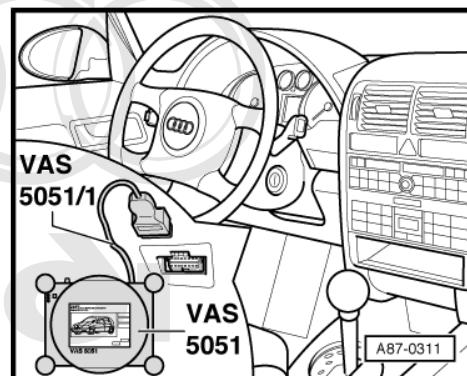
Note

If a fault message appears in the display ⇒ [Operating instructions of vehicle diagnostic, testing and information system -VAS 5051 A-](#).

- Switch on ignition.
- or
- Start engine.

Display on -VAS 5051 A- :

- Touch “Vehicle self-diagnosis” key.



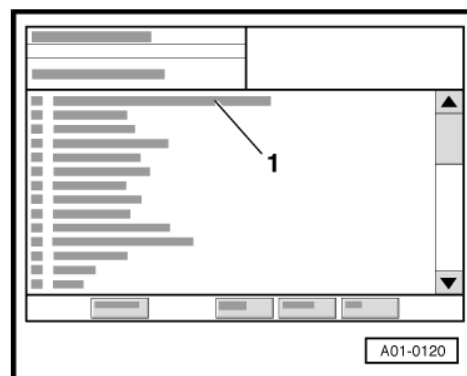
Display on -VAS 5051 A- :



Note

Touching the diagnostic function “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.

- From list -1- select vehicle system “02 - Gearbox electronics”.
- Wait until next readout appears.



Display on -VAS 5051 A- :

2 - Gearbox control unit identification.

Gearbox control unit identification (example)	
02 - Gearbox electronics	Vehicle system
6N0927735..	Part No.; For correct allocation refer to ⇒ Parts catalogue
DS085 Gear-box A..	Direct manual gearbox 085
Code 0	Control unit code, ignore display

If readout "Vehicle system not available" appears in display zone -1- :

– Check:

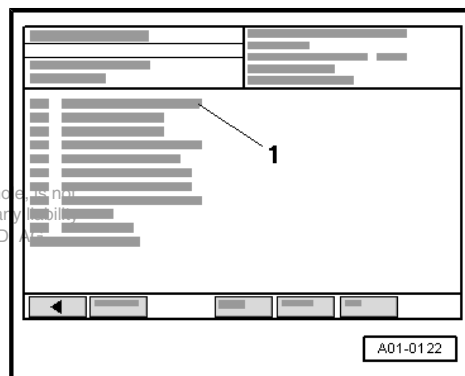
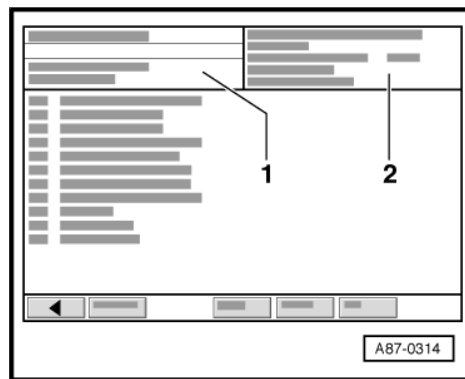
- ◆ The voltage supply to the diagnostic connector ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .
- ◆ Wiring connections from diagnostic connector to electronic manual gearbox control unit -J514- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .

4.3 List of selectable functions

– The following diagnostic functions depicted in display -1- are available:

Diagnostic functions	Page
02 Interrogate fault memory	⇒ page 15
04 Basic setting	⇒ page 29
05 Erase fault memory	⇒ page 38
06 End output	⇒ page 39
08 Read measured value block	⇒ page 40

None of the other diagnostic functions displayed can be selected or they do not need to be discussed here.



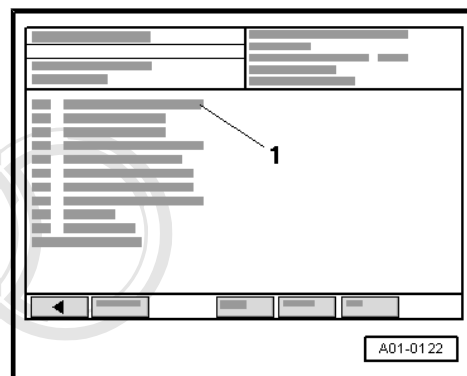
5 Interrogating fault memory

5.1 Interrogating fault memory

- Connect the vehicle diagnostic, testing and information system -VAS 5051 A- ⇒ [page 12](#) and select the vehicle system “02 - Gearbox electronics”. Ignition must be on.

Display on -VAS 5051 A- :

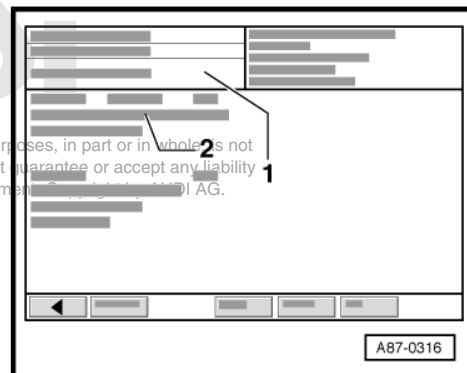
- From list -1- select diagnostic function “02 - Interrogate fault memory” .



Display on -VAS 5051 A- :

- 1- Content of fault memory 0 fault recognised
or
X fault recognised
- 2- Fault Fault code
 Fault location
 Fault type

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



A - if faults were recognised:

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

Display on -VAS 5051 A- :

- Eliminate fault(s) in line with fault tables ⇒ [page 16](#) .
- Select diagnostic function “02 - Interrogate fault memory” again in list -1- and erase fault memory ⇒ [page 38](#) .
- From list -1- select diagnostic function “06 - End output” ⇒ [page 39](#) .

B - if no fault was recognised:

- Terminate function “02 - Interrogate fault memory” by touching  key.
- From the list select diagnostic function “06 - End output” ⇒ [page 39](#) .



5.2 Fault tables



Note

- ◆ Listed below are all possible faults that are recognised by the electronic manual gearbox control unit -J514- and displayed on the -VAS 5051 A- when the fault memory content is interrogated.
- ◆ The content of the fault memory is retained until the next erase operation, erase fault memory ⇒ [page 38](#).
- ◆ The fault table is sorted according to the 5-digit fault code on the left.
- ◆ Sporadic faults are marked "sporadic" on the display. "Sporadic" faults are faults which only occur occasionally.
- ◆ Do not immediately replace the components indicated to you by -VAS 5051 A- as faulty, instead : first check the wiring and connectors to these components according to current flow diagram. Also check the earth connections according to current flow diagram. This is particularly relevant for faults recorded as "sporadic".

Fault 00263

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00263 Gearbox implausible signal	◆ If this fault has been stored, a type of emergency program is triggered. The clutch is disengaged and the vehicle is no longer driven. In most cases it is possible to continue driving after switching off the ignition and restarting the engine. However, the vehicle should be taken to a workshop as quickly as possible to remedy the causes of the fault	– Process and eliminate all other fault entries for the gearbox control unit – Fault 00263 can only be deleted if all other faults in the fault memory have been eliminated
00263 Gearbox Fault in basic setting	◆ A fault occurred during the "basic setting" function ◆ "Basic setting" function was not carried out or was carried out incorrectly ◆ Connectors for potentiometer 1 for gear recognition -G239- and potentiometer 2 for gear recognition -G240- were mixed up after a repair	– Process and eliminate all other fault entries for the gearbox control unit before performing the basic setting again – Perform basic setting ⇒ page 29 – Read measured value block, display group 015 ⇒ page 49 and 016 ⇒ page 51 – Only swap the connectors when you have checked this first in the "Read measured value block" function. Fitting location for potentiometer ⇒ page 10

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
	◆ Potentiometer for gear recognition potentiometer 1 for gear recognition -G239- and potentiometer 2 for gear recognition -G240- or wiring or connectors defective	– Read measured value block, display group 015 ⇒ page 49 and 016 ⇒ page 51 – Check wiring according to current flow diagram

Fault 00297

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00297 Gearbox speed sender -G38- no signal		
• This fault is stored if one of the points below is detected: Clutch is engaged, no shifting and speed is greater than 30 km/h. The vehicle speed signal from speedometer sender (Hall sender, on gearbox) -G22- , which is sent to the dash panel insert, is compared with the gearbox speed from gearbox speed sender -G38- (gearbox transmission ratio). In addition, the calculated gearbox speed is compared with the gearbox speed from -G38- . The fault is stored if there is a difference of more than 120 rpm	◆ Gearbox speed sender -G38- defective ◆ Wiring to component defective ◆ Clutch worn or defective ◆ Clutch travel sender -G162- ³⁾ defective ◆ Metal shavings at the gearbox speed sender -G38-	– Perform final control diagnosis in the “Guided fault finding” ⇒ page 27 – Read measured value block 001 ⇒ page 42 and 002 ⇒ page 43 – Perform electrical test ⇒ page 58 – Remove gearbox speed sender -G38- ⇒ Item 2 (page 9) and check, clean if necessary – Drain gearbox oil if necessary and check for increased concentration of metal shavings. If there are a lot of metal shavings, the gearbox is defective and must be replaced
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 fault is stored if the voltage value of the signal from the clutch travel sender -G162- is outside the tolerance. In this case, it is not possible to delete fault 00297 either		

3) The clutch travel sender -G162- is integrated into the slave cylinder.

Fault 00625

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00625 Vehicle speed signal implausible signal		
• The vehicle speed signal from the speedometer sender (Hall sender, on gearbox) -G22- , which is sent to the dash panel insert, is compared with the signals of the ABS sensors. If one of the two signals is missing or if a difference of greater than 16 km/h is determined, the fault is stored	◆ The signal from the ABS/ESP control unit or from the engine control unit is missing	– Interrogate ABS/ESP control unit fault memory – Interrogate engine control unit fault memory

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
If the vehicle speed signal from the speedometer sender (Hall sender, on gearbox) -G22- is missing, the signals from the ABS sensors are used as substitute signals to enable the driver to continue driving.	- Open or short circuit to earth or positive between electronic manual gearbox control unit -J514- (pin 21) and control unit with display unit in dash panel insert -J285- (speed signal) - Wiring to the speedometer sender (Hall sender, on gearbox) -G22- defective - Speedometer sender (Hall sender, on gearbox) -G22- defective - Control unit with display unit in dash panel insert -J285- defective	- Check wiring according to current flow diagram - Read measured value block 007 ⇒ page 48 - Interrogate dash-panel insert fault memory

Fault 00668

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00668 Vehicle electrical system voltage for terminal 30 open circuit		
- The fault is stored if no starting procedure occurs and the fault exists for longer than 0.5 seconds - The voltage value of terminal 30 has dropped below the voltage value of terminal 15 by 2 V for 0.5 seconds (terminal 30 < terminal 15)	Open circuit in wiring	- Test wiring and connections according to current flow diagram - Read measured value block 020 ⇒ page 53 - Perform electrical test ⇒ page 58

Fault 00789

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00789 Reversing switch -F41- ⁴⁾ implausible signal		
- The fault is not stored until 10 faulty (implausible) shifts to "R" have occurred - At very low temperatures, the gearbox oil is viscous and the reversing switch -F41- may deliver implausible signals	- Reversing light switch -F4- defective - Wiring to component defective - Potentiometer 1 for gear recognition -G239- or potentiometer 2 for gear recognition -G240- defective, fitting location of potentiometers ⇒ page 10	- Check wiring and switches according to current flow diagram - Read measured value block, display group 004 ⇒ page 45, 015 ⇒ page 49 and 016 ⇒ page 51

4) The reversing switch -F41- is identical to the reversing light switch -F4- .

Fault 00811

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00811 System is not ready for interrogation		
	◆ After erasing the fault memory, the fault memory was interrogated again immediately (too quickly)	– Erase fault memory again ⇒ page 38 . Now wait at least 30 seconds before interrogating the fault memory again

Fault 00836

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00836 Gear selector valve 1 -N284-		
• The fault is stored when the measured current is consistently too low for 80 ms and the battery voltage is greater than 8.5 V	◆ Voltage at valve too low or too high	– Read measured value block 017 ⇒ page 52
	◆ Wiring to valve defective	– Perform electrical test ⇒ page 58
	◆ Valve defective	

Fault 00837

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00837 Gear selector valve 2 -N285-		
• The fault is stored when the measured current is consistently too low for 80 ms and the battery voltage is greater than 8.5 V	◆ Voltage at valve too low or too high	– Read measured value block 017 ⇒ page 52
	◆ Wiring to valve defective	– Perform electrical test ⇒ page 58
	◆ Valve defective	

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 a complete liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Fault 00838

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00838 Gear selector valve 3 -N286-		
• The fault is stored when the measured current is consistently too low for 80 ms and the battery voltage is greater than 8.5 V	◆ Voltage at valve too low or too high	– Read measured value block 004 ⇒ page 45
	◆ Wiring to valve defective	– Perform electrical test ⇒ page 58
	◆ Valve defective	

Fault 00839

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00839 Gear selector valve 4 -N287-		
• The fault is stored when the measured current is consistent-	◆ Voltage at valve too low or too high	– Read measured value block 004 ⇒ page 45



Output on -VAS 5051 A-	Possible cause of trouble	Remedy
ly too low for 80 ms and the battery voltage is greater than 8.5 V	◆ Wiring to valve defective ◆ Valve defective	– Perform electrical test ⇒ page 58

Fault 00840

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00840 Gearbox hydraulic pump relay -J510-		
• If fault 00840 is only stored as a "sporadic" fault, it is necessary to perform the final control diagnosis in the "Guided fault-finding" ⇒ page 27	◆ Wiring to component defective	– Read measured value block 004 ⇒ page 45 – Check wiring according to current flow diagram
	◆ Relay defective	– Replace relay

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.

Fault 00841

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00841 Sender for gearbox hydraulic pressure -G270-		
• The fault is stored when the voltage at the sender is detected to be less than 0.2 V or greater than 4.7 V for longer than 2 seconds • If fault 00841 is only stored as a "sporadic" fault, it is necessary to perform the final control diagnosis in the "Guided fault-finding" ⇒ page 27	◆ Wiring to component defective	– Read measured value block 020 ⇒ page 53 – Check wiring according to current flow diagram
	◆ Sender defective	– Replace sender ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fault 00843

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00843 Potentiometer for selector lever, forwards/backwards -G272-		
• The fault is stored when the voltage at the potentiometer is detected to be outside the tolerance for longer than 0.3 seconds	◆ Wiring to component defective	– Read measured value block 022 ⇒ page 54 – Check wiring according to current flow diagram
	◆ Potentiometer defective	– Replace potentiometer ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fault 00844

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00844 Switch for selector lever gate recognition -F257-		

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
	◆ Wiring to component defective	– Read measured value block 022 ⇒ page 54 – Perform electrical test ⇒ page 58 – Check wiring according to current flow diagram
	• Switch defective	– Replace switch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fault 0845

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00845 Switch for selector lever N-recognition -F258-		
	◆ Wiring to component defective	– Read measured value block 022 ⇒ page 54 – Perform electrical test ⇒ page 58 – Check wiring according to current flow diagram
	• Switch defective	– Replace switch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fault 00846

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00846 Switch for selector lever Stop-recognition -F259-		
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.	◆ Wiring to component defective	– Read measured value block 022 ⇒ page 54 – Perform electrical test ⇒ page 58 – Check wiring according to current flow diagram
	• Switch defective	– Replace switch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fault 00847

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
00847 Load shutoff relay -J511-		
• The load shutoff relay is only active in ECO mode (green warning lamp in dash panel insert lights up). The relay shuts off the rear window heater and seat heaters in STOP mode if the engine is switched off, e.g. when	◆ Wiring to component defective	– Check wiring according to current flow diagram



Output on -VAS 5051 A-	Possible cause of trouble	Remedy
stopped at traffic lights. This is a safety precaution to ensure that there is sufficient battery voltage to automatically start the engine This load shutoff is not activated when the engine is started normally using the ignition key	◆ Relay defective	– Replace relay

Fault 01070

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01070 Relay for starter -J53-		
	◆ Wiring to component defective	– Read measured value block 004 ⇒ page 45 – Check wiring according to current flow diagram
	◆ Relay defective	– Replace relay

Fault 01071

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01071 Clutch travel sender -G162- signal outside tolerance		
	◆ Wiring to component defective	– Perform final control diagnosis in the "Guided fault finding" ⇒ page 27 – Read measured value block 002 ⇒ page 43 – Perform basic setting ⇒ page 29 – Perform electrical test ⇒ page 58 – Check wiring according to current flow diagram
	◆ Sender defective	– Replace clutch slave cylinder ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30

Fault 01073

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01073 Clutch pressure system		

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
The fault is stored when the hydraulic control unit has run for longer than 4 minutes and 20 seconds and the shutoff pressure of approx. 50 bar has not been reached. The condition is that it was not the first engine start	Oil level in the system not correct	Check oil level in reservoir for clutch mechanism and gear selector mechanism ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34
	Hose/pipe assembly leaking	Renew defective O ring and wiring
	Sender for gearbox hydraulic pressure -G270- defective	Read measured value block 020 ⇒ page 53
	Hydraulic control unit defective	- Perform the final control diagnosis of the hydraulic control unit ⇒ page 27 - Replace or repair hydraulic control unit ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fault 01126

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01126 Engine speed signal implausible signal		
The fault is stored when it is present for longer than 1.5 seconds	Open or short circuit to earth or positive between electronic manual gearbox control unit - J514- (pin 19) and engine control unit	- Interrogate engine control unit fault memory - Check wiring according to current flow diagram
	Engine speed sender -G28- defective	Read measured value block 001 ⇒ page 42

Fault 01155

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01155 Clutch speed difference too great		
The fault is stored when the difference between the engine speed and the gearbox speed is greater than 240 rpm for at least 2.9 seconds. Condition: The clutch must be engaged	Clutch slips	- Read measured value block 003 ⇒ page 44 - Repair clutch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30
01155 Clutch control deviation		
The fault is stored when the difference between the engine speed and the gearbox speed is greater than 240 rpm for at least 2.9 seconds. Condition: The clutch must be engaged	Clutch defective	- Read measured value block 003 ⇒ page 44 - Repair clutch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30

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

**Fault 01312**

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01312 Data bus drive defective		
	♦ Fault in ABS/ESP control unit	– Interrogate ABS/ESP control unit fault memory
	♦ Fault in engine control unit	– Interrogate engine control unit fault memory
	♦ Fault in dash panel insert	– Interrogate dash-panel insert fault memory
	♦ CAN bus wiring defective	– Perform electrical test ⇒ page 58
	♦ Electronic manual gearbox control unit -J514- defective	– Check wiring according to current flow diagram
		– Check CAN bus ⇒ page 55

Fault 01314

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01314 Engine control unit no communication		
	♦ Fault in engine control unit	– Interrogate engine control unit fault memory
	♦ CAN bus wiring defective	– Check wiring according to current flow diagram
		– Perform electrical test ⇒ page 58
		– Check CAN bus ⇒ page 55

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.

Fault 01316

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01316 Brake control unit no communication		
	♦ Fault in ABS/ESP control unit	– Interrogate ABS/ESP control unit fault memory
	♦ CAN bus wiring defective	– Check wiring according to current flow diagram
		– Perform electrical test ⇒ page 58
		– Check CAN bus ⇒ page 55

Fault 01604

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01604 Potentiometer 1 for gear recognition -G239-		

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
	◆ Connectors at the potentiometers for gear recognition potentiometer 1 for gear recognition -G239- and potentiometer 2 for gear recognition -G240- were mixed up after a repair	– Read measured value block, display group 015 ⇒ page 49 and 016 ⇒ page 51 – Only swap the connectors when you have checked this first in the “Read measured value block ” function. Fitting location for potentiometer ⇒ page 10
	◆ Wiring to component defective ◆ Water penetration into connector, corrosion	– Read measured value block, display group 015 ⇒ page 49 and 016 ⇒ page 51 – Check wiring according to current flow diagram
	◆ Potentiometer defective	– Replace potentiometer ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fault 01605

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01605 Potentiometer 2 for gear recognition -G240-		
	◆ Connectors at the potentiometers for gear recognition potentiometer 1 for gear recognition -G239- and potentiometer 2 for gear recognition -G240- were mixed up after a repair	– Read measured value block, display group 015 ⇒ page 49 and 016 ⇒ page 51 – Only swap the connectors when you have checked this first in the “Read measured value block ” function. Fitting location for potentiometer ⇒ page 10
	◆ Wiring to component defective ◆ Water penetration into connector, corrosion	– Read measured value block, display group 015 ⇒ page 49 and 016 ⇒ page 51 – Check wiring according to current flow diagram
	◆ Potentiometer defective	– Replace potentiometer ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fault 01612

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
01612 Valve for clutch actuator -N255- open circuit		
	◆ Wiring to component defective	– Read measured value block 005 ⇒ page 47 – Check wiring according to current flow diagram
	◆ Valve defective	– Replace hydraulic control unit ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

**Fault 65535**

Output on -VAS 5051 A-	Possible cause of trouble	Remedy
65535 Control unit defective		
Only when the possible cause of trouble has been determined and mechanical faults, hydraulic faults or faults affecting electric/electronic components as well as wiring connections have been eliminated, should the control unit -J514- and the system be returned to the basic setting	♦ Electronic manual gearbox control unit -J514- defective	– Replace control unit ⇒ page 4 – Perform basic setting ⇒ page 29

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.

6 Final control diagnosis



Note

In contrast to other gearboxes, final control diagnosis cannot be initiated in the control unit in the vehicle self-diagnosis. With this gearbox, final control diagnosis must be performed in the "Guided fault-finding" function with the vehicle diagnostic, testing and information system -VAS 5051 A- .

Requirement

- The vehicle electrical system voltage must be above 11.3 V.

Important!

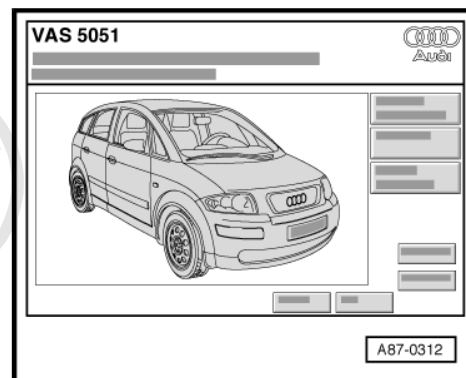
If you want to carry out a final control diagnosis in the "Guided fault-finding" function using the vehicle diagnostic, testing and information system -VAS 5051 A- , this must always be performed prior to the basic setting, otherwise any existing faults are not detected or erroneously detected.

Procedure

- Apply handbrake fully.
- Connect the vehicle diagnostic, testing and information system -VAS 5051 A- [⇒ page 12](#)
- Switch on ignition.

Display on -VAS 5051 A- :

- Touch the "Guided fault-finding" key.



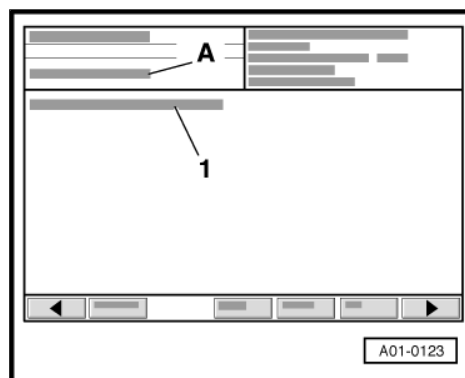
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Display on -VAS 5051 A- :

- Enter the vehicle identification by touching the applicable line of text -1- bearing in mind the selection prompt -A- .

The vehicle diagnostic, testing and information system -VAS 5051 A- then switches to the next selection stage:

Selection prompt	Line of text to be selected
Select brand	"Audi"
Select model	"Audi A2 2001>"
Select model year	Model year corresponding to the vehicle identification number, e.g. "2003 (3)"
Select variant	"Saloon"
Select engine codes	"ANY 1.2 TDI / 45 kW"

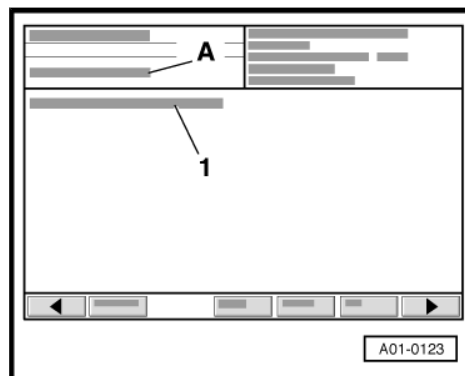


As soon as the vehicle identification is complete, the vehicle diagnostic, testing and information system -VAS 5051 A- interrogates the fault memories of all the vehicle systems with self-diagnosis capability.

- Wait until "Control units have been interrogated" appears in display zone -A- . The corresponding vehicle systems are displayed with a black background in the display.
- Touch  key.
- Enter the function/component selection by branching to the electronic manual gearbox control unit -J514- corresponding to the selection prompt -A- .
- Touch the applicable line of text -1- and the  key.

The vehicle diagnostic, testing and information system -VAS 5051 A- then switches to the next selection stage:

Line of text to be selected
" + Drive (Repair group 10–39)"
" + 5-speed manual gearbox 085 DS"
" + 01 - Self-diagnosis"
" + 02 - Gearbox electronics"
" + J514 - Control unit for electronic manual gearbox"



The electronic manual gearbox control unit -J514- now provides a number of functions to choose from:

- ◆ Hydraulic control unit final control diagnosis
- ◆ Gear actuator final control diagnosis
- Continue following the instructions on the display of the vehicle diagnostic, testing and information system -VAS 5051 A- .

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.

7 Basic setting

The basic setting should be initiated after performing the following repairs:

- ◆ Every 30,000 km ⇒ Maintenance ; Booklet 49
- ◆ Removing and installing or replacing the gearbox
- ◆ Removing and installing or replacing the engine
- ◆ Replacing the engine control unit
- ◆ Replacing the electronic manual gearbox control unit
- ◆ Removing and installing or replacing the clutch, adjustment and assembly operations on the clutch or on the clutch actuator
- ◆ Removing and installing or replacing the gear selector mechanism or gear actuator, adjustment and assembly operations on the gear selector mechanism or gear actuator
- ◆ Removing and installing or replacing the selector lever, adjustment and assembly operations on the selector lever or its electronic components

7.1 Performing basic setting

Requirements

- The oil level in reservoir for clutch mechanism and gear selector mechanism is correct ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34 .
- There must be no faults in the fault memory, if necessary these must be remedied first.
- The vehicle electrical system voltage must be above 12.4 V.

Important!

If you want to carry out a final control diagnosis via the guided fault-finding using the vehicle diagnostic, testing and information system -VAS 5051 A- , this must always be performed prior to the basic setting, otherwise any existing faults are not detected or erroneously detected.

Procedure

- Apply handbrake fully.
- Connect the vehicle diagnostic, testing and information system -VAS 5051 A- ⇒ [page 12](#) and select the vehicle system “02 - Gearbox electronics” . Ignition must be on.

Important!

- Press the selector lever into the tiptronic gate.

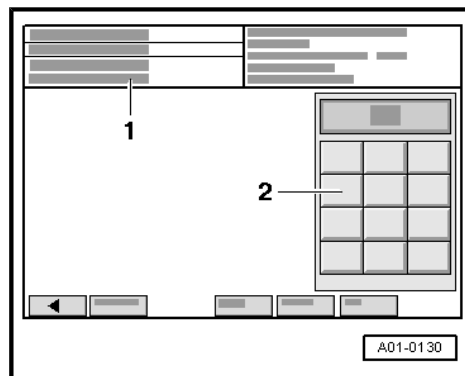
Display on -VAS 5051 A- :

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



Display on -VAS 5051 A- :

- 1 - Enter display group (max. input value = 255)
- Use keypad -2- to enter "2" for "Display group 002" and confirm by touching key.



Display on -VAS 5051 A- :

- In the display zone -2- check the voltage value of the clutch travel sender -G162- .

- Specified value: 1.85 ... 1.95 V

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 voltage is approx. 5 V, the clutch disengages immediately after switching on the ignition, without the brake pedal being pressed. The basic setting cannot be performed in this case. To remedy the fault
⇒ "13.5 Vehicle does not start", page 76 .*
- ◆ *If the value is just outside the specified value range, adjust the voltage value for the clutch travel sender -G162-
⇒ page 34 .*

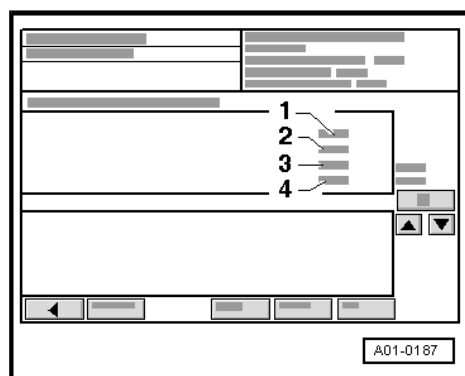
- End function "08 - Read measured value block" by touching key.

In the further course of the basic setting various operations must now be performed. Note the work instructions shown on the display.

- Sit on the driver's seat and move the -VAS 5051 A- beside you to within reach.
- Press the selector lever into the tiptronic gate.

Display on -VAS 5051 A- :

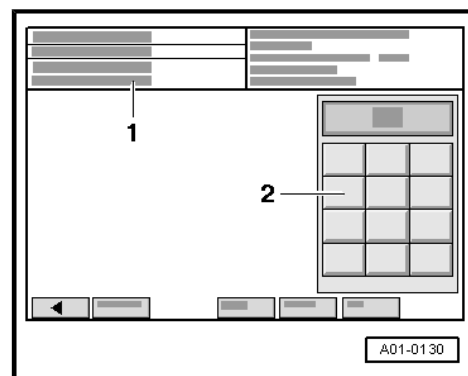
- From list -1- select diagnostic function "04 - Basic setting" .



Display on -VAS 5051 A- :

1 - Enter display group

- Use keypad -2- to enter "14" for "Display group 14" and confirm by touching  key.
- The selector lever must be located in the tiptronic gate.



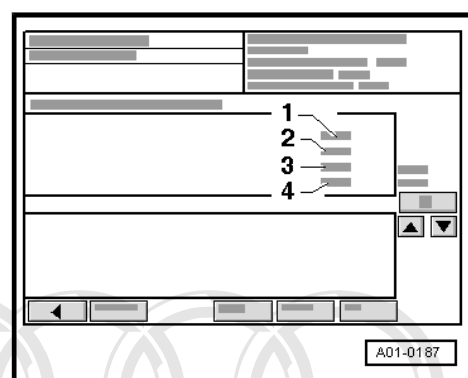
Display on -VAS 5051 A- :

- The text in display zone -1- determines what you must do. Adhere to the instructions in the following tables with regard to the various texts. Otherwise the basic setting will be aborted by the system.



Note

- ◆ Procedure in the event that the basic setting is aborted, the text "RTFM!" is displayed or the basic setting is not continued ⇒ *"7.1.2 If during the basic setting the connection is interrupted/breaks off", page 35*.
- ◆ "IGN.OFF!" may appear briefly. In this case, wait until the -VAS 5051 A- switches to the next display. If the display of "IGN.OFF!" does not switch to the next display, you must interrogate the fault memory and remedy any faults. Then erase fault memory. Perform basic setting once more from the beginning.



Indicated on display:

Display zones		Explanations
1	WAIT!	Do nothing while this is displayed. Wait until the -VAS 5051 A- switches to the next display
2		Ignore display zones
3		
4		

Next readout on display:

Display zones		Explanations
1	ADJUST! ⁵⁾	- Adjust gear actuator ⇒ page 32
2		Ignore display zones
3		
4		

5) The gear actuator is now in neutral, i.e. it is in the idling gate between the 1st and 2nd gear.

Adjusting gear actuator

- Hose/pipe assembly, potentiometer for gear recognition and valves for gear selection connected.
- If the gear actuator has been replaced, the screw -arrow- serving as a transport lock must be removed.



Note

This screw is only fitted for new gear actuators for transport. It must always be removed when the gear actuator is installed in the vehicle.

- If fitted, remove the noise insulation under engine/gearbox.
- The selector lever must be located in the tiptronic gate.
- Carry out the following steps carefully as described:
- Release nut -arrow- until ball head moves freely in selector finger -1- .



Note

Do not unscrew nut, just release it.

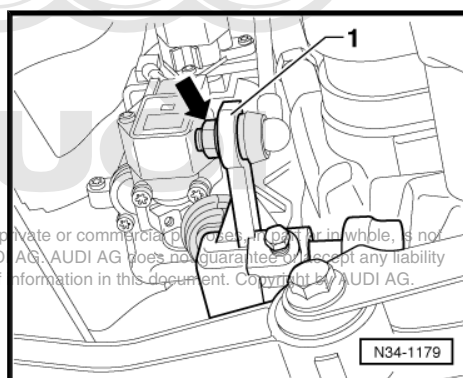
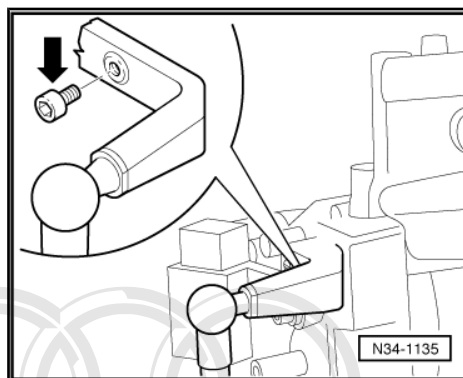
- Ball head in selector finger -1- is now automatically moved into position by gear actuator.
- Tighten nut -arrow- in this position to 20 Nm. Do not change position of ball head.



Note

When tightening the nut, it must be ensured that the position of the selector finger for the selector rod is not changed to ensure that the adjustment remains free of stress.

- To continue the basic setting, shift the selector lever to position “D” and then back to the tiptronic gate.



Protected by copyright. Copying for private or commercial purposes, 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.

Next readout on display:

Display zones	Explanations
1 WAIT!	Do nothing while this is displayed. Do not press brake pedal. Do not touch selector lever. The control unit shifts through a few gears and outputs various codes in the process. Please wait!
2 0	Gearbox position: Possible values are: 0 ... 28; for display value 28 the -VAS 5051 A- switches to the next display. Ignore this display zone
3 0	Ignore display zones
4 1.99 V	

Next readout on display:

Display zones	Explanations
1 (-)!	– Pull selector lever in the tiptronic gate into position “–” and hold there until the -VAS 5051 A- switches to the next display

Display zones		Explanations
2	28	Ignore display zones
3	0	
4	4.00 V	

Next readout on display:

Display zones		Explanations
1	STOP!	– Press brake pedal – Shift selector lever to position "STOP" – Release brake pedal
2	28	Ignore display zones
3	0	
4	4.00 V	

Next readout on display:

Display zones		Explanations
1	KickDown!	– Depress accelerator pedal fully and hold until -VAS 5051 A- switches to next display
2	28	Ignore display zones
3	0	
4	4.00 V	

Next readout on display:

Display zones		Explanations
1	N!	– Release accelerator pedal – Press brake pedal – Shift selector lever into position "N" – Release brake pedal
2	28	Ignore display zones
3	0	
4	4.00 V	

Next readout on display:

Display zones		Explanations
1	StartMot! ⁶⁾	– Start engine with ignition key
2	28	Ignore display zones
3	0	
4	4.00 V	

6) After the prompt "StartMot!" the connection between control unit and -VAS 5051- may be interrupted/break off. Continued procedure
⇒ [page 35](#).

Next readout on display:

Display zones	Explanations
1 SEARCHNG!	Do nothing while this is displayed. Do not press brake pedal. Do not touch selector lever. Allow engine to continue running. The control unit is independently searching for the clutch's slip point
2 28	Ignore display zones
3 0	
4 4.00 V	

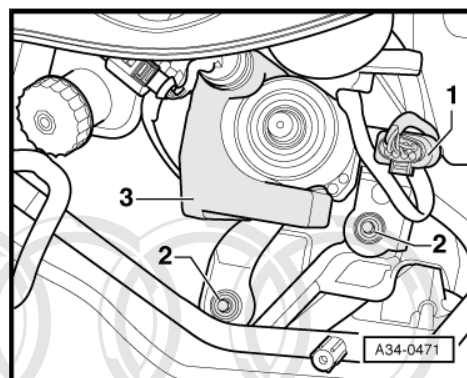
Next readout on display:

Display zones	Explanations
1 IGN.OFF!	- Shift selector lever into position "STOP" - Switch off ignition. Communication between control unit and -VAS 5051 A- is aborted - Switch ignition on again after no less than 10 seconds - Program the creep point ⇒ page 36 ⁷⁾
2 28	Ignore display zones.
3 0	
4 4.00 V	

7) The basic setting is not ended until the creep point has been successfully programmed.

7.1.1 If the voltage value for the clutch travel sender -G162- is outside the tolerance

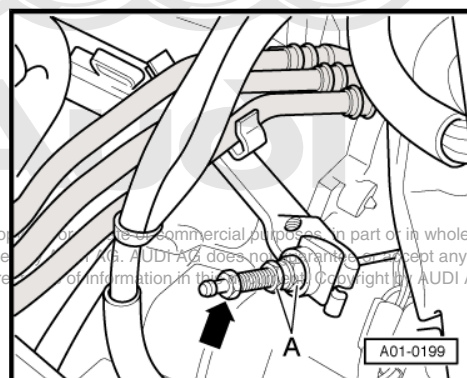
- Disconnect the connector -1- at the hydraulic control unit because the hydraulic pump is able to start up even with the ignition off.
- Remove hydraulic control unit (3 nuts) ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34 , place to one side and secure with wire. Do not disconnect battery, do not disconnect pipes.



Note

This step is necessary to make the adjusting nut -arrow- for the slave cylinder accessible.

- Release the lock nuts -A- on the cable of the slave cylinder.
- Twist the adjusting nut -arrow- and check the voltage value in the display of the -VAS 5051 A- .



Display on -VAS 5051 A- :

- Specified value in display zone -2- : 1.85 ... 1.95 V.

If reading matches specification:

- Press the brake pedal as far as possible twice for approx. 5 seconds and release it again.

If the voltage is now no longer in the specified value range, you must repeat the adjustment.

If the specified value remains constant:

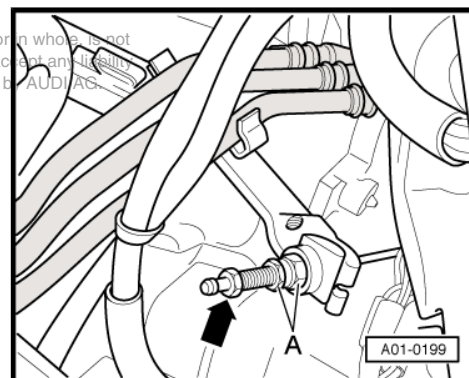
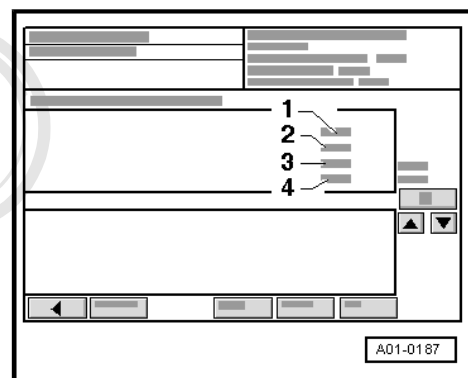
- Counter both nuts -A- , without changing the adjustment.
- The adjusting nut -arrow- must not turn any more and the voltage value must be in the specified range.
- Install hydraulic control unit, ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34 .
- Continue basic setting ⇒ [page 30](#) .



Note

If the voltage value cannot be adjusted

⇒ **"13.3 Voltage value of the clutch travel sender G162 cannot be adjusted", page 73** .



7.1.2 If during the basic setting the connection is interrupted/breaks off

Occasionally, the connection between control unit and -VAS 5051 A- – particularly after the prompt "StartMot!" – may be interrupted/ break off. In that case:

- under no circumstances switch off the ignition.

The control unit "notes" the place at which the connection was aborted. Therefore it is only necessary to reselect the display group.

If the ignition has not been switched off, the basic setting is continued exactly at that "place" .

- Select the vehicle system "02 - Gearbox electronics" again, then the diagnostic function "04 - Basic setting" .
- Use keypad to enter "14" for "Display group 14" and confirm by touching  key.

7.1.3 If faults occur during basic setting

If faults occur during basic setting, these are also shown on the display. The faults are not displayed consecutively, instead only the first fault to occur is displayed. At the end of the basic setting, an entry is also made in the fault memory.

Faults are displayed as follows:

Display zones		Explanations
1	RTFM !	Basic setting aborted.
2		
3	7	Possible fault displays and their meaning:

Display zones	Explanations
	◆ 7 - Potentiometer 2 for gear recognition -G240- ◆ 8 - Potentiometer 1 for gear recognition -G239- ◆ 9 - Reversing light switch -F4- Remedy: – Check switches and wiring in the measured value blocks and according to current flow diagram ◆ 10 - Potentiometer values not stable during measurement ◆ 11 - Potentiometer values Remedy – Check the corresponding potentiometers in measured value blocks 015 to 018 ⇒ page 40 – Interrogate fault memory and eliminate faults in line with fault tables ⇒ page 16 – Initiate basic setting again after repair ⇒ page 29 ◆ 12 - Gear actuator is not adjusted correctly or the measured values are outside the tolerances Remedy – Check potentiometer, valves and selector finger at the ball heads for correct assembly and seating – Initiate basic setting again after adjusting the gear actuator ⇒ page 29 Further notes ⇒ “13.4 Basic setting cannot be performed”, page 76
4	

7.2 Programming the creep point

Requirements

- Engine is at operating temperature.
- Selector lever in position “STOP” .

Procedure

- Apply handbrake fully.
- Start engine.
- Connect the vehicle diagnostic, testing and information system -VAS 5051 A- ⇒ [page 12](#) and select the vehicle system “02 - Gearbox electronics” .

Display on -VAS 5051 A- :

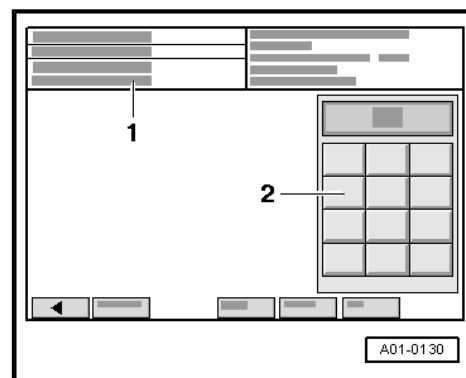
- From list -1- select diagnostic function “08 - Read measured value block” .

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.



Display on -VAS 5051 A- :

- 1 - Enter display group (max. input value = 255)
- Use keypad -2- to enter "25" for "Display group 025" and confirm by touching  key.



Display on -VAS 5051 A- :

- In the display zone -3- check the value for the programming of the creep point.
- Specified value: 0



Note

If the value e.g. is at "4", the creep point must be programmed at least another 4 times.

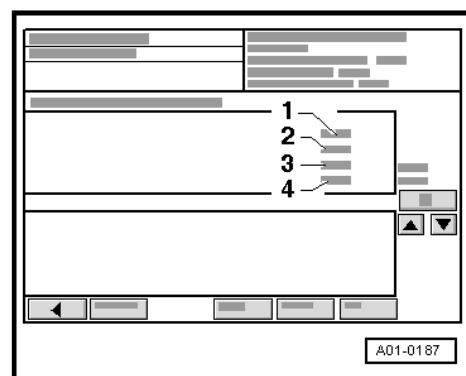
- To do this, shift selector lever to position "D" .
- Press the brake pedal and hold it down for at least 3 seconds.
- Release the brake pedal for at least 3 seconds.
- Repeat this process until the value in display zone -3- is at "0" .

When the value is at "0" , the creep point is adjusted correctly.

- End diagnostic function "08 - Read measured value block" by touching  key.
- From list -1- select diagnostic function "06 - End output" .

Display on -VAS 5051 A- :

If the value "0" has not been reached after programming the creep point several times, the fault memory of the engine control unit must be interrogated.



Protected by copyright. Copying for private or commercial purposes, in particular for reproduction, 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.

8 Erasing fault memory



Note

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

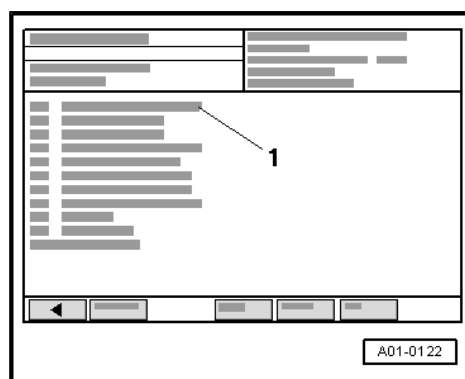
Requirements

- Fault memory interrogated ⇒ [page 15](#) .
- All faults eliminated.

After fault memory interrogation:

Display on -VAS 5051 A- :

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



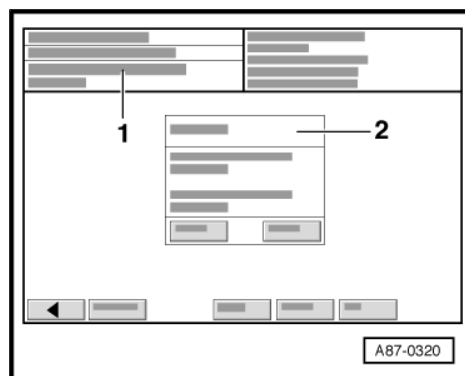
Display on -VAS 5051 A- :

- 1- No display (before deleting)
or
Fault memory erased



Note

If in display zone -1- the message: "Fault memory has not been interrogated yet" appears, the procedure has not been followed exactly. Fault memory cannot be erased until it has been interrogated.



- 2- Note: Is function to be implemented? Note: Data will be erased!
- Touch ☐ key in display -2- .
- End diagnostic function "05 - Erase fault memory" by touching ☐ key.

9 End of output

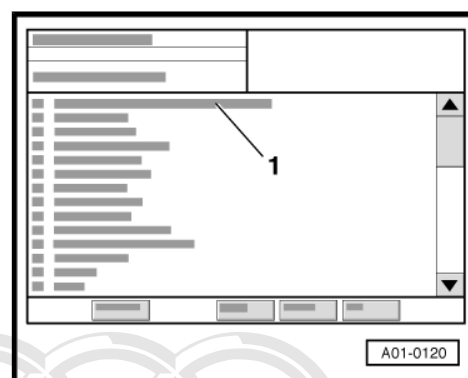
Display on -VAS 5051 A- :

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



Display on -VAS 5051 A- :

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

10 Measured value block

10.1 Reading measured value block

- Connect the vehicle diagnostic, testing and information system -VAS 5051 A- ⇒ [page 12](#) and select the vehicle system “02 - Gearbox electronics”. Ignition must be on or the engine must be running.

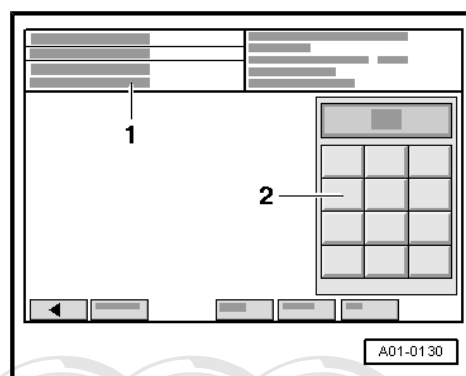
Display on -VAS 5051 A- :

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



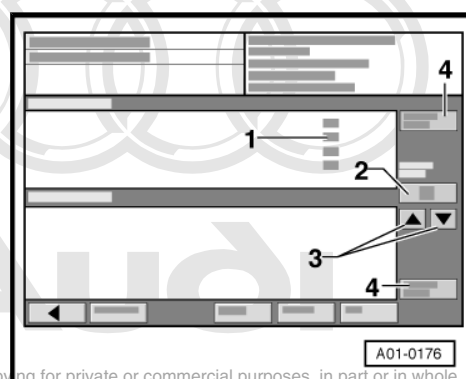
Display on -VAS 5051 A- :

- 1 - Enter display group (max. input value = 255)
- Use keypad to enter -2- for the required “display group number” ⇒ [page 40](#) and confirm by touching key.



Display on -VAS 5051 A- :

- 1 - Display zones 1 ... 4. If a display zone is vacant, nothing is displayed in this line.
- 2 - The selected display group is indicated here
- 3 - Change to a different display group by pressing these keys
- 4 - Change to a different function by pressing these keys (e.g. from “Read measured value block” to “Basic setting” and vice versa).
- End diagnostic function “08 - Read measured value block” by touching 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.

10.2 List of selectable display groups

Display group	Display zone	Description	Explanation
001	1	Engine speed	⇒ page 42
	2	Gearbox speed	
	3	Accelerator pedal position (CAN bus signal from engine control unit)	
	4	Gear engaged in gearbox	
002	1	Load signal (CAN bus signal from engine control unit)	⇒ page 43
	2	Signal from clutch travel sender -G162-	

Display group	Display zone	Description	Explanation
	3	Voltage of terminal 15	
	4	Coolant temperature (CAN bus signal from engine control unit)	
003	1	Engine speed	⇒ page 44
	2	Gearbox speed	
	3	Actual clutch position	
	4	Specified clutch position	
004	1	Input information 1	⇒ page 45
	2	Input information 2	
	3	Output information 1	
	4	Output information 2	
005	1	Engine speed	⇒ page 47
	2	Voltage of terminal 15	
	3	Selector lever position	
	4	Valve for clutch actuator -N255- (clutch slave cylinder)	
006		Ignore	
007	1	Engine speed	⇒ page 48
	2	Gearbox speed	
	3	Calculated gearbox speed	
	4	Vehicle speed signal	
008	1	Actual clutch position	⇒ page 48
	2	Gear engaged in gearbox	
	3	Engine speed	
	4	Gearbox speed	
009		Ignore	
010		Ignore	
011		Ignore	
012		Ignore	
013	1	Voltage of terminal 15	⇒ page 48
	2	Valve for clutch actuator -N255- (clutch slave cylinder)	
	3	Actual clutch position	
	4	Specified clutch position	
014	1	Text output for basic setting	
	2	This display group is required only in conjunction with the basic setting	
	3		
	4		
015	1	Potentiometer for selector lever, forwards/backwards - G272-	⇒ page 49
	2	Ignore	
	3	Potentiometer 1 for gear recognition -G239-	
	4	Potentiometer 2 for gear recognition -G240-	
016	1	Specified voltage of potentiometer for selector lever, forwards/backwards -G272-	⇒ page 51
	2	Ignore	
	3	Actual voltage of potentiometer 1 for gear recognition - G239- in %	
	4	Actual voltage of potentiometer 2 for gear recognition - G240- in %	
017	1	Voltage of terminal 15	⇒ page 52

Display group	Display zone	Description	Explanation
018	2	Valve for clutch actuator -N255- (clutch slave cylinder)	
	3	Current for gear selector valve 1 -N284-	
	4	Current for gear selector valve 2 -N285-	
019	1	Gear engaged in gearbox	⇒ page 52
	2	Not used	
	3	Actual voltage of potentiometer 1 for gear recognition - G239-	
	4	Actual voltage of potentiometer 2 for gear recognition - G240-	
020	1	Gear to be engaged	⇒ page 52
	2	Gear engaged in gearbox	
	3	Accelerator pedal position	
	4	Vehicle speed signal	
021	1	Voltage of terminal 15	⇒ page 53
	2	Battery voltage of terminal 30	
	3	Supply voltage of gearbox sensors	
	4	Voltage of sender for gearbox hydraulic pressure -G270-	
022	1	Gradient	⇒ page 54
	2	Hill factor	
	3	Sport factor	
	4	Accelerator pedal position	
023	1	Selector lever position	⇒ page 54
	2	Specified voltage of potentiometer for selector lever, forwards/backwards -G272-	
	3	Specified position of potentiometer for selector lever, forwards/backwards -G272- in %	
	4	Ignore	
024		Ignore	
025		Ignore	
025	1	Creep point	⇒ page 54
	2	Slip point	
	3	Number of remaining creep point adaptations	
	4	Engine torque (filtered, effective torque)	

10.3 Test table

Display group 001

Display zones	Explanations
1 ... rpm ^{8) 9)}	Engine speed (from the TD signal -pin 19- directly from the engine control unit). A second mechanic is required to read the values whilst driving ⇒ "4.1 Safety precautions", page 12 Minimum value = 90 rpm If the ignition is switched on (engine off) a value of 90 rpm is displayed. This is not a fault If no value is displayed: – Interrogate engine control unit fault memory

Display zones		Explanations
2	... rpm ^{8) 9)}	Gearbox speed (from gearbox speed sender -G38-). A second mechanic is required to read the values whilst driving ⇒ "4.1 Safety precautions", page 12 - Minimum value = 60 rpm If the ignition is switched on (engine off) or vehicle is stationary with engine running, a value of 60 rpm is displayed. This is not a fault If no value is displayed: - Check sender, to do this perform electrical test ⇒ page 58
3	... %	Accelerator pedal position (CAN bus signal from engine control unit) - Specified value if accelerator pedal is not pressed: Less than 4% - Specified value if accelerator pedal is fully pressed: greater than 96% When accelerating from idling to full throttle the % value is continually increased If the values are not reached: - Interrogate engine control unit fault memory if necessary If the value remains at 0 % when accelerating, but after releasing the accelerator pedal and pressing again it increases in steps (e.g. 30, 60, 90 ...), this points to a faulty brake light switch -F- : - Check brake light switch -F- in measured value block 004, display zone 2 ⇒ page 45
4	1st GEAR ... 5th GEAR	Gear engaged in gearbox whilst driving. A second mechanic is required to read the values ⇒ "4.1 Safety precautions", page 12 1st GEAR ... 5th GEAR = display changes with a change in gear - R-GEAR = reverse gear is engaged - LG 1-2 = idling gate 1-2 gear (in gearbox) - LG 3-4 = idling gate 3-4 gear (in gearbox) - SYNC = during synchronisation phase - FAULT = invalid position If readings do not match specifications or with the display "FAULT" : - Check potentiometer 1 for gear recognition -G239- , potentiometer 2 for gear recognition -G240- and potentiometer for selector lever, forwards/backwards -G272- in measured value block 015 ⇒ page 49 and 016 ⇒ page 51
	R-GEAR	
	LG 1-2	
	LG 3-4	
	SYNC	
	FAULT	

8) Check non-positive connection of clutch: To check, the vehicle must not be in ECO mode while driving. This is the only way to ensure that the clutch is engaged at the end of a gear shift. Engine and gearbox speed must not then differ by more than 120 rpm from one other while driving. If the difference is greater than this, the clutch is slipping and will have to be replaced.

9) The vehicle is always in ECO mode after the engine is started (green warning lamp in dash panel insert lights up). If ECO mode has to be switched off for a test, press the switch for Start/Stop mode -E262- in the centre console, the green warning lamp in the dash panel insert goes out.

Display group 002

Display zones		Explanations
1	... V	Load signal (CAN bus signal from engine control unit) - Specified value when idling: approx. 0.00 V - Specified value for full throttle: approx. 5.00 V

Display zones	Explanations
2 ... V	Signal from clutch travel sender -G162- - Switch on ignition, selector lever in "STOP" or do not press brake pedal and selector lever in "R", "N", "D" or tiptronic gate (condition for engaged clutch): - Specified value for engaged clutch: 1.85 ... 1.95 V - Switch on ignition, press brake pedal and selector lever in "R", "N", "D" or tiptronic gate (condition for disengaged clutch): - Specified value for disengaged clutch: 3.7 ... 4.1 V - The difference between the two values for engaged and disengaged clutch must be greater than 2 V If reading does not match specification: - Perform basic setting ⇒ page 29
3 ... V	Voltage of terminal 15 - A minimum voltage of 11.3 V is required to perform the final control diagnosis of the hydraulic control unit and the final control diagnosis of the gear actuator in the "Guided fault-finding" - A minimum voltage of 12.4 V is required to perform the basic setting If reading does not match specification: - Check battery, renew if necessary - Check supply voltage of electronic manual gearbox control unit -J514-, to do this perform electrical test ⇒ page 58
4 ... °C	Coolant temperature (CAN bus signal from engine control unit) Measured value may differ from measured value of engine control unit by up to 5 °C

Display group 003

Display zones	Explanations
1 ... rpm	Engine speed ⇒ page 42 , measured value block 001, display zone 1
2 ... rpm	Gearbox speed ⇒ page 42 , measured value block 001, display zone 2
3 ... % ¹⁰⁾	Actual clutch position. The voltage values from the clutch travel sender -G162- (⇒ page 43, measured value block 002, display zone 2) are converted in the control unit and output as %-values - Switch on ignition, selector lever in "STOP" or do not press brake pedal and selector lever in "R", "N", "D" or tiptronic gate (condition for engaged clutch): - Specified value for engaged clutch: 0 ... 1 % - Switch on ignition, press brake pedal and selector lever in "R", "N", "D" or tiptronic gate (condition for disengaged clutch): - Specified value for disengaged clutch: 99 ... 100 %
4 0 ... 100 % ¹⁰⁾	Specified clutch position - Switch on ignition and do not press brake pedal (condition for engaged clutch): - Specified value for engaged clutch: 0 % - Switch on ignition and do not press brake pedal (condition for disengaged clutch): - Specified value for disengaged clutch: 99 ... 100 %

10) In all clutch control procedures, values must not differ from each other by more than 5 % for longer than 1 second. With greater deviations: Perform basic setting ⇒ [page 29](#) and check clutch travel sender -G162-, to do this perform electrical test ⇒ [page 58](#).

Display group 004

Display zones		Explanations
1	XXXXXXXX	Input information 1, 8-digit display (e.g. 00101101), description ➔ page 45
2	XXXXXXXX	Input information 2, 8-digit display (e.g. 00010010), description ➔ page 45
3	XXXXXXXX	Output information 1, 8-digit display (e.g. 01111110), description ➔ page 46
4	XXXXXXXX	Output information 2, 8-digit display (e.g. 11111101), description ➔ page 47

Input information 1 in display zone 1 of display group 004

Display zone 1								Explanations
1	2	3	4	5	6	7	8	
0								Display is always "0"
	0							Display is always "0"
		X						"0" = driver's door open "1" = driver's door closed Protected by 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 with respect to the correctness of information in this document. Copyright by AUDI AG. With deviations: - Interrogate convenience system fault memory - Check wiring between electronic manual gearbox control unit -J514- (pin 16) and central control unit for convenience system -J393-
			1					Display is always "1"
				X				"0" = no starting procedure "1" = start prompt by ignition lock
					X			"0" = selector lever in "STOP", "R", "N" or "D" "1" = selector lever into tiptronic gate With deviations: - Check selector lever position in measured value block 005, display zone 3 ➔ page 47
						X		"0" = gearbox hydraulic pump relay -J510- actuated by sender for gearbox hydraulic pressure -G270-, hydraulic pump running (audible) "1" = gearbox hydraulic pump relay -J510- not actuated by sender for gearbox hydraulic pressure -G270-, hydraulic pump not running
							X	"0" = switch for Start/Stop mode -E262- in the centre console pressed and held "1" = switch for Start/Stop mode -E262- not pressed

Input information 2 in display zone 2 of display group 004

Display zone 2								Explanations
1	2	3	4	5	6	7	8	
0								Ignore
	0							Ignore
		0						Ignore
			1					Ignore
				0				Ignore

Display zone 2								Explanations
1	2	3	4	5	6	7	8	
					0			• "0" = reverse gear not engaged • "1" = reverse gear engaged In selector lever position "STOP" the reverse gear may also be indicated as engaged if this was the last gear engaged. With deviations: – Check selector lever position in measured value block 005, display zone 3 ⇒ page 47
						1		• "1" = voltage from terminal 30 is applied This display must always be "1". With deviations: – Check voltage supply in measured value block 020, display zone 2 ⇒ page 53
							X	• "0" = brake pedal not operated • "1" = brake pedal operated Signal is required for starting the engine ¹¹⁾. With deviations: – Interrogate engine control unit fault memory, if necessary check brake light switch -F- / brake pedal switch -F47-

11) The signal of the brake light switch -F- / brake pedal switch -F47- is depicted here (CAN bus signal from engine control unit). For the Start/Stop mode function, however, the signal of the brake pressure switch -F270- is required; this can be checked in the electrical test
⇒ [page 58](#).

Output information 1 in display zone 3 of display group 004

Display zone 3								Explanations
1	2	3	4	5	6	7	8	
0								Ignore
	0							Ignore
		0						Ignore
			0					• "0" = engine is shut off in ECO mode ¹²⁾, e.g. when stopping at traffic lights • "1" = ECO mode is switched off or engine is not shut off in ECO mode (running) In ECO mode, the switching from "0" to "1" and vice versa takes place in some cases very slowly and is displayed by the tester after a long time delay when shutting off and starting the engine
				X				Ignore
					X			• "0" = gearbox hydraulic pump relay -J510- is actuated • "1" = gearbox hydraulic pump relay -J510- is not actuated Display must respond in the same way as for the 7th item in display zone 1 (in some cases with a slight time delay)
						X		• "0" = starter inhibitor and reversing light relay -J226- is actuated ¹³⁾ • "1" = starter inhibitor and reversing light relay -J226- is not actuated Display must be "0" when starting normally with the ignition key and when starting in ECO mode ¹²⁾ by releasing the brake pedal
							0	Ignore

12) The vehicle is always in ECO mode after the engine is started (green warning lamp in dash panel insert lights up). If ECO mode has to be switched off for a test, press the switch for Start/Stop mode -E262- in the centre console, the green warning lamp in the dash panel insert goes out.

13) Terminal 30 is switched through via the relay downstream of terminal 50, this supplies power to the starter which must start the engine.

Output information 2 in display zone 4 of display group 004

Display zone 4								Explanations
1	2	3	4	5	6	7	8	
X								Switching status of gear selector valve 3 -N286- . This display must always be the same as the display at item 5 – Operate the selector lever when the vehicle is stationary with the ignition on and brake pedal pressed. – Selector lever in tiptronic and 3rd or 4th / 5th gear ¹⁴⁾ selected: • “0” = gear selector valve 3 -N286- is on (energised) – Selector lever in “R” or selector lever in tiptronic and 1st / 2nd gear ¹⁴⁾ selected: • “1” = gear selector valve 3 -N286- is off (disconnected from voltage) With deviations: – Perform electrical test ⇒ page 58
	0							Ignore
		0						Ignore
			0					Ignore
				X				This display must always be the same as the display at item 1
					X			Switching status of gear selector valve 4 -N287- . This display must always be the same as the display at item 8 – Operate the selector lever when the vehicle is stationary with the ignition on and brake pedal pressed. – Selector lever in “R” ; selector lever in tiptronic and 3rd / 4th gear ¹⁴⁾ selected: • “0” = gear selector valve 4 -N287- is on (energised) – Selector lever in tiptronic and 1st or 2nd / 5th gear ¹⁴⁾ selected: • “1” = gear selector valve 4 -N287- is off (disconnected from voltage) With deviations: – Perform electrical test ⇒ page 58
						1		Ignore
							X	This display must always be the same as the display at item 6

14) The display in the dash panel insert indicates the gear currently engaged.

Display group 005

Display zones		Explanations
1	... rpm	Engine speed ⇒ page 42 , measured value block 001, display zone 1
2	... V	Voltage of terminal 15 ⇒ page 43 , measured value block 002, display zone 3
3	A-STOP	Selector lever position • A-STOP = automatic operation gate Stop position
	A-R	• A-R = automatic operation gate R position
	A-N	• A-N = automatic operation gate N position
	A-E	• A-E = automatic operation gate D position (is identical to E position)
	T-0	• T-0 = tiptronic gate Middle position
	T-MI	• T-MI = tiptronic gate Minus position

Display zones		Explanations
	T-PL	T-PL = tiptronic gate Plus position
	???	
		??? = fault, invalid position With deviations and with display “???” : - Check values in measured value block 022 ⇒ page 54 - Perform basic setting ⇒ page 29
4	... A	Valve for clutch actuator -N255- (in small tolerance range a changing, “jumping” display is not a fault) - Switch on ignition and do not press brake pedal (condition for engaged clutch): - Specified value for engaged clutch: 0.030 ... 0.730 A - Switch on ignition and do not press brake pedal (condition for disengaged clutch): - Specified value for disengaged clutch: 0.800 ... 0.900 A With deviations: - Check valve for clutch actuator -N255- , to do this perform electrical test ⇒ page 58

Display group 007

Display zones		Explanations
1	... rpm	Engine speed ⇒ page 42 , measured value block 001, display zone 1
2	... rpm	Gearbox speed ⇒ page 42 , measured value block 001, display zone 2
3	... rpm	Calculated gearbox speed calculated from vehicle speed and engaged gear Minimum value = 60 rpm If the ignition is switched on (engine off) or vehicle is stationary with engine running, a value of 60 rpm is displayed. This is not a fault.
4	... km/h	Vehicle speed signal from dash panel insert - Minimum value = 3 km/h Can be up to 7 km/h below the display on the speedometer in the dash panel insert. If the ignition is switched on (engine off) or vehicle is stationary with engine running, a value of 3 km/h is displayed. This is not a fault With deviations: - Interrogate dash-panel insert fault memory - Check speedometer and wiring according to current flow diagram

Display group 008

Display zones		Explanations
1	... %	Actual clutch position ⇒ page 44 , measured value block 003, display zone 3
2	...	Gear engaged in gearbox ⇒ page 42 , measured value block 001, display zone 4
3	... rpm	Engine speed ⇒ page 42 , measured value block 001, display zone 1
4	... rpm	Gearbox speed ⇒ page 42 , measured value block 001, display zone 2

Display group 013

Display zones		Explanations
1	... V	Voltage of terminal 15 ⇒ page 43 , measured value block 002, display zone 3

Display zones	Explanations
2 ... A	Valve for clutch actuator -N255- ➔ page 47 , measured value block 005, display zone 4
3 ... %	Actual clutch position ➔ page 44 , measured value block 003, display zone 3
4 ... %	Specified clutch position ➔ page 44 , measured value block 003, display zone 4

Display group 015

Display zones	Explanations
1 ... V	Specified voltage of potentiometer for selector lever, forwards/backwards -G272- - Selector lever in "STOP" : • Specified value: approx. 4.10 V - Selector lever in "R" : • Specified value: approx. 3.14 V - Selector lever in "N" : • Specified value: approx. 2.75 V - Selector lever to tiptronic "+" : • Specified value: approx. 2.50 V - Selector lever in "D" : • Specified value: approx. 2.20 V - Selector lever to tiptronic "-" : • Specified value: approx. 1.70 V Deviations of up to 0.4 V are possible. It is not the absolute voltage value that is decisive, but rather the fact that in "STOP" the highest and in tiptronic "-" the lowest voltage is displayed. With deviations: - Check values in measured value block 022 ➔ page 54 - Perform basic setting ➔ page 29 - Perform electrical test ➔ page 58
2 ... V	Not used
3 ... V	Actual voltage of the potentiometer 1 for gear recognition -G239- by shifting the selector lever ¹⁵⁾ when the vehicle is stationary with ignition on - Selector lever in "R" or selector lever in tiptronic and 1st / 3rd or 5th gear selected: • Specified value: 3.8 ± 0.4 V - Selector lever in tiptronic and 2nd / 4th gear selected: • Specified value: 1.6 ± 0.4 V With deviations: - Check values in measured value block 022 ➔ page 54 - Perform basic setting ➔ page 29

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 © 2004 Audi AG

Display zones	Explanations
4 ... V	Actual voltage of the potentiometer 2 for gear recognition -G240- (gate recognition) by shifting the selector lever ¹⁵⁾ when the vehicle is stationary with ignition on – Selector lever in “R” : • Specified value: 3.8 ± 0.4 V – Selector lever in tiptronic and 1st / 2nd gear selected: • Specified value: 3.0 ± 0.4 V – Selector lever in tiptronic and 3rd / 4th gear selected: • Specified value: 2.0 ± 0.4 V – Selector lever in tiptronic and 5th gear selected: • Specified value: 1.2 ± 0.4 V With deviations: – Check values in measured value block 022 ⇒ page 54 – Perform basic setting ⇒ page 29

15) The display in the dash panel insert indicates the gear currently engaged.



Note

The voltage must remain constant whilst driving with every gear engaged (not while shifting). If the voltage value changes (increase or decrease), at the same time check the voltage value of the sender for gearbox hydraulic pressure -G270- in measured value block 020 ⇒ [page 53](#). If the voltage value there drops continuously, check the system for leaks (oil loss), if necessary seal the system.

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 016

Display zones	Explanations
1 ... %	Specified position of potentiometer for selector lever, forwards/backwards - G272- , converted into % – Selector lever in “STOP” : • Specified value: approx. 100 % – Selector lever in “R” : • Specified value: approx. 77 % – Selector lever in “N” : • Specified value: approx. 55 % – Selector lever to tiptronic “+” : • Specified value: approx. 39 % – Selector lever in “D” : • Specified value: approx. 19 % – Selector lever to tiptronic “-” : • Specified value: approx. 0 % Deviations of up to 10 % are possible. It is not the absolute percentage value that is decisive, but rather the fact that in “STOP” the highest and in tiptronic “-” the lowest percentage value is displayed. With deviations: – Check values in measured value block 022 ➤ page 54 – Perform basic setting ➤ page 29
2	Not used
3 ... %	Actual position of potentiometer 1 for gear recognition -G239- , converted into % ¹⁶⁾ – Selector lever in “R” or selector lever in tiptronic and 1st / 3rd or 5th gear selected: • Specified value: 0 ... 10 % – Selector lever in tiptronic and 2nd / 4th gear selected: • Specified value: 90 ... 100 % With deviations: – Check values in measured value block 022 ➤ page 54 – Perform basic setting ➤ page 29

Display zones	Explanations
4 ... %	Actual position of potentiometer 2 for gear recognition -G240- , converted into % ¹⁶⁾ – Selector lever in “R” : • Specified value: 90 ... 100 % – Selector lever in tiptronic and 1st / 2nd gear selected: • Specified value: 60 ... 65 % – Selector lever in tiptronic and 3rd / 4th gear selected: • Specified value: 30 ... 35 % – Selector lever in tiptronic and 5th gear selected: • Specified value: 0 ... 10 % With deviations: – Check values in measured value block 022 ⇒ page 54 – Perform basic setting ⇒ page 29

16) The display in the dash panel insert indicates the gear currently engaged. 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.

Display group 017

Display zones	Explanations
1 ... V	Voltage of terminal 15 ⇒ page 43 , measured value block 002, display zone 3
2 ... A	Valve for clutch actuator -N255- ⇒ page 47 , measured value block 005, display zone 4
3 ... A	Current through gear selector valve 1 -N284- • Specified value: 0.000 ... 2.500 A The value of the current varies depending on the switching status of the valve (regulating valve)
4 ... A	Current through gear selector valve 2 -N285- • Specified value: 0.000 ... 2.500 A The value of the current varies depending on the switching status of the valve (regulating valve)

Display group 018

Display zones	Explanations
1 ...	Gear engaged in gearbox ⇒ page 42 , measured value block 001, display zone 4
2	Not used
3 ... V	Actual voltage of potentiometer 1 for gear recognition -G239- ⇒ page 49 , measured value block 015, display zone 3
4 ... V	Actual voltage of potentiometer 2 for gear recognition -G240- ⇒ page 49 , measured value block 015, display zone 4

Display group 019

Display zones	Explanations
1 0	Gear to be engaged (specified gear) • 0 = idling gate

Display zones		Explanations
	1 ... 5	• 1 = 1. gear, 2 = 2nd gear, 3 = 3rd gear, 4 = 4th gear, 5 = 5th gear
	6	• 6 = reverse gear
	251	• 251 = idling gate 1-2
	252	• 252 = idling gate reverse gear
	253	• 253 = idling gate 5th gear
	254	• 254 = idling gate 3-4
	255	• 255 = transition between two positions
		At the latest after 1 second, these displays must be the same as the display in display zone 2. With deviations: – Check values in measured value block 022 ⇒ page 54
2	Engaged gear (actual gear)	At the latest after 1 second, these displays must be the same as the display in display zone 1. With deviations: – Check values in measured value block 022 ⇒ page 54
3	... %	Accelerator pedal position ⇒ page 42 , measured value block 001, display zone 3
4	... km/h	Vehicle speed signal ⇒ page 48 , measured value block 007, display zone 4

Display group 020

Display zones		Explanations
1	... V	Voltage of terminal 15 ⇒ page 43 , measured value block 002, display zone 3
2	... V	Voltage of terminal 30 • A minimum voltage of 11.3 V is required to perform the final control diagnosis of the hydraulic control unit and the final control diagnosis of the gear actuator in the "Guided fault-finding" • A minimum voltage of 12.4 V is required to perform the basic setting If reading does not match specification: – Check battery, renew if necessary – Check supply voltage of electronic manual gearbox control unit -J514- , to do this perform electrical test ⇒ page 58
3	... V	Supply voltage of gearbox sensors (internal) • Specified value: approx. 5 V
4	... V	Voltage of sender for gearbox hydraulic pressure -G270- • Specified value with ignition on (engine off): 2.7 ... 3.2 V • Specified value with engine running: 2.9 ... 4.4 V The specified values may be checked by alternately pressing and releasing the brake pedal or moving the selector lever repeatedly between "STOP" and "N" : The voltage value drops. On reaching the lower specified value, the hydraulic pump starts to operate. If the brake pedal is now no longer pressed, the voltage increases until it reaches the upper specified value. 4 V corresponds to approx. 48 bar in the pressure system, 3 V corresponds to approx. 36 bar. With deviations: – Perform final control diagnosis of the hydraulic control unit in the "Guided fault finding" ⇒ page 27

Display group 021

Display zones	Explanations
1	... °C Slope °C here does not mean the temperature, but the upward or downward slope in per cent (%). This is a calculated value within the control unit
2	... % Hill factor (calculated value within the control unit)
3	... % Sport factor (calculated value within the control unit)
4	... % Accelerator pedal position ⇒ page 42 , measured value block 001, display zone 3

Display group 022

Display zones	Explanations
1	Selector lever position ⇒ page 47 , measured value block 005, display zone 3
2	... V Specified voltage of potentiometer for selector lever, forwards/backwards -G272- ⇒ page 49 , measured value block 015, display zone 1
3	... % Specified position of potentiometer for selector lever, forwards/backwards - G272- , converted into % ⇒ page 51 , measured value block 016, display zone 1
4	... Ignore

Display group 025

Display zones	Explanations
1	... % Creep point ¹⁷⁾ The creep point is the torque at which the vehicle starts to move or tries to move (handbrake applied) - Specified value range: 55 ... 65 % - The creep point value must be less than or equal to the slip point in display zone 2 With deviations: – Perform basic setting ⇒ page 29
2	... % Slip point ¹⁷⁾ The slip point is the torque at which the clutch begins to slip. - Specified value range: approx. 55 ... 85 % - The slip point value must be greater than or equal to the creep point in display zone 1 With deviations: – Perform basic setting ⇒ page 29
3	... Number of remaining creep point adaptations Specified value: 0 The programming (adapting) of the creep point is performed at the end of the basic setting. It must be repeated until the value is at "0" . With deviations: – Perform basic setting ⇒ page 29
4	... Engine torque (filtered, effective torque) Specified value: 0 ... 255

17) The creep point and the slip point are acquired and adjusted in the basic setting. Whilst driving, these two points are continuously re-acquired and improved. At 0 %, the clutch is fully engaged, at 100 % it is disengaged.

11 CAN bus

Bus:

Bus is used to describe a system that transports and distributes data.

CAN:

Controller Area Network is a bus system that operates using two wires. These are called bus lines. The bus lines transmit data signals in serial form (one after the other) to the control units connected into the system.

These control units communicate with the aid of the CAN bus, i.e. they exchange data with the aid of the CAN bus.

To prevent electromagnetic interference and interference emissions, the two CAN bus lines are twisted together.

11.1 Testing a "two-line bus system"

It was advised in the fault table to check the bus:

- Determine with the aid of the appropriate current flow diagram how many control units are connected to each other via the bus.
- Connect the vehicle diagnostic, testing and information system -VAS 5051 A- → [page 12](#) and select the function "00 - Automatic test sequence". Ignition must be on.
- Ensure that there is no function fault in any of the control units connected to the bus before examining the bus lines. A function fault disrupts the communication with other control units.

Is there a function fault?

- Repair it first.
- Print out the fault list and delete the fault memories of all control units, see "Interrogate fault memory" and "Erase fault memory" for the corresponding control unit.
- Tap the diagnostic function "06 - End output".
- Rectify the faults as described in the fault table in the relevant Workshop Manual.

Are all faults eliminated?

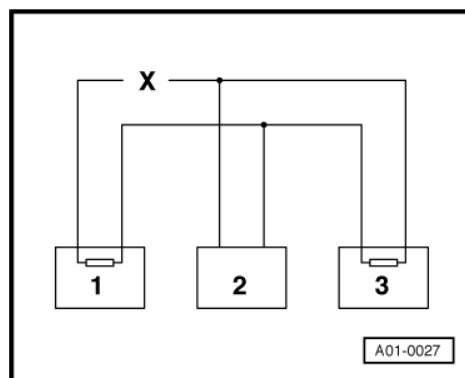
- If the communication between the control units is still disrupted the bus lines must be examined.
- Evaluate the faults stored in the control units.

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:

From the faults present in the fault memories, you can see that control unit -1- has no connection to control units -2- and -3- .

Control unit	Faults stored in fault memory
-1-	◆ Missing message from control unit -2- ◆ Missing message from control unit -3-
-2-	◆ Missing message from control unit -1-
-3-	◆ Missing message from control unit -1-

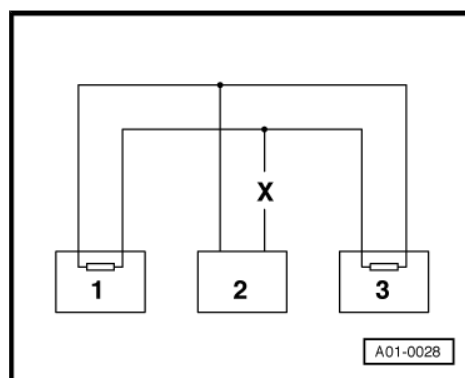


- Switch off ignition.
- Disconnect the connectors at the control units connected by bus lines and investigate whether there is an open circuit in one of the bus lines ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .

Example 2:

From the faults in the fault memories, you can see that control unit -2- has no connection to control units -1- and -3- .

Control unit	Faults stored in fault memory
-1-	◆ Missing message from control unit -2-
-2-	◆ Missing message from control unit -1- ◆ Missing message from control unit -3-
-3-	◆ Missing message from control unit -2-

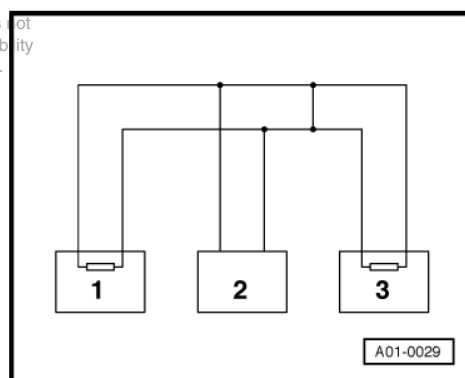


- Switch off ignition.
- Disconnect the connectors at the control units connected by bus lines and investigate whether there is an open circuit in one of the bus lines ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .

Example 3:

From the faults stored in the fault memories you can see that none of the control units are able to transmit or receive signals.

Control unit	Faults stored in fault memory
-1-	◆ Hardware defective
-2-	◆ Hardware defective
-3-	◆ Hardware defective



- Switch off ignition.
- Disconnect the connectors at the control units connected by bus lines and investigate whether there is a short circuit among the bus lines ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .

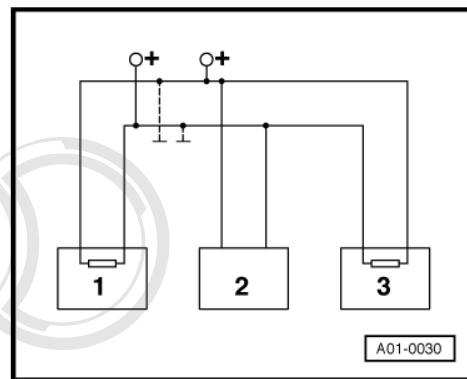
- Examine the bus lines for short to positive/earth.
- If cause of "Hardware defective" fault is not found in the bus lines, check whether one of the control units is responsible for this fault.
- Connectors unplugged at all control units that use the CAN bus for communication.
- Ignition off.
- Connect one of the control units.
- Connect the vehicle diagnostic, testing and information system -VAS 5051 A- => [page 12](#) .
- Switch on ignition and select the affected vehicle system.
- Interrogate the fault memory of the control unit just connected and erase the fault memory.
- End diagnostic function "05 - Erase fault memory" by touching  key.
- Tap the diagnostic function "06 - End output"
- Switch the ignition off and then on again.
- Leave the ignition on for 10 seconds. Then interrogate the fault memory of the control unit that has just been connected.

If the fault "Hardware defective" is displayed:

- Replace the control unit just connected.

If the fault "Hardware defective" is not displayed:

- Connect the next control unit and repeat the sequence.



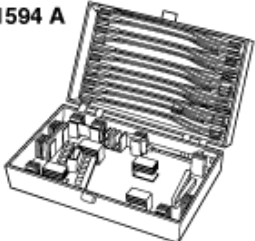
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the completeness and correctness of information in this document. Copyright by AUDI AG.

12 Electrical test

12.1 Performing electrical test

Special tools and workshop equipment required

- ◆ Portable multimeter - V.A.G 1526 B- or vehicle diagnostic, testing and information system - VAS 5051 A- with diagnosis leads -VAS 5051 A/7-
- ◆ -V.A.G 1594 C-
- ◆ Test box -V.A.G 1598/18-

V.A.G 1526 A 	V.A.G 1594 A 
V.A.G 1598/18 	
	W37-0010

The test steps only apply to:

- ◆ Vehicles whose self-diagnosis does not point out the fault source. Then the complete electrical test must be performed.
- ◆ Vehicles whose self-diagnosis directly points out the fault source. Then perform only test steps recommended in the fault table (targeted approach).

Requirements

- Selector lever in position "N" and handbrake applied.
- Supply voltage of vehicle electrical system OK
- Fuses OK
- Current flow diagrams
- Electrical fault finding and fitting locations
- Earth connections for gearbox OK

- Check earth connections for corrosion and damaged connections and repair, if necessary ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .



Note

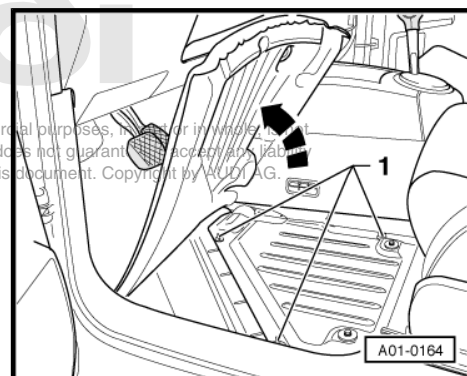
Earth attachment point is located underneath the starter.

12.2 Connect test box -V.A.G 1598/18- to electronic manual gearbox control unit - J514-

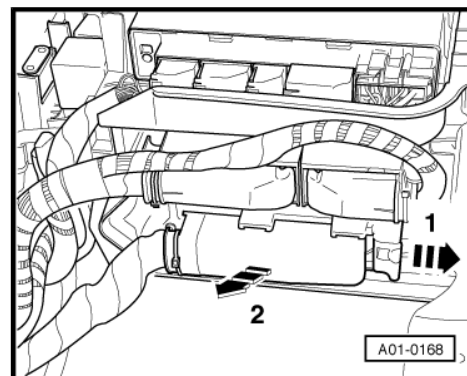
Using test box -V.A.G 1598/18- the wiring can be checked according to current flow diagram.

- Switch off ignition.
- Lift up floor mat in left side footwell.
- Turn the lock mechanisms -1- anticlockwise and remove the cover plate.

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



- Release multiple connector -arrow 1- and unplug from the control unit -arrow 2- .



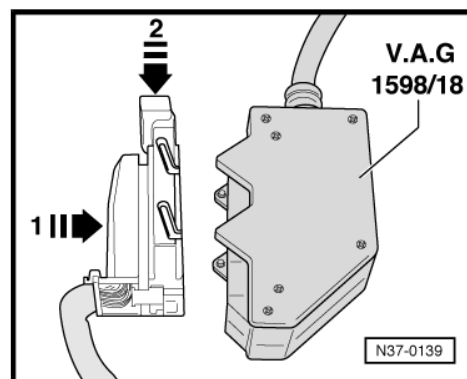
- Connect test box -V.A.G 1598/18- to the multiple connector -arrow 1- and lock -arrow 2- .



Caution

To prevent damage to the electronic components, the appropriate measuring range must be selected before connecting the diagnosis leads and observe the test requirements.

- Carry out all measures listed in the column “Measures if read-out does not match specification” .
- Only carry out test steps recommended in the fault table (targeted approach).



After the electrical test:

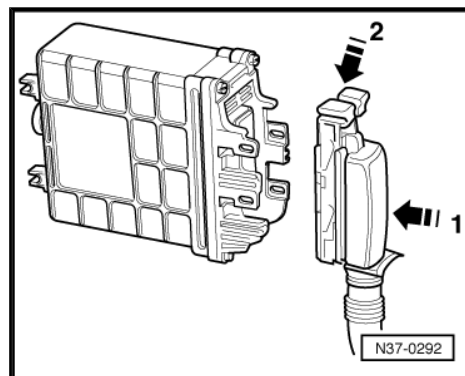
- Connect multiple connector to the pins of the electronic manual gearbox control unit -J514- -arrow 1- and then lock -arrow 2- .

When installing, ensure that the guides are positioned on the pins of the control unit.



Note

- ◆ For testing, use the portable multimeter -V.A.G 1526 B- with auxiliary wires from -V.A.G 1594 C- or the vehicle diagnostic, testing and information system -VAS 5051 A- with diagnosis leads -VAS 5051 A/7- .
- ◆ The socket designations of the test box -V.A.G 1598/18- are identical to the contact designations of the electronic manual gearbox control unit -J514- in the current flow diagram.
- ◆ Damage may be caused to the system by testing incorrectly. Apart from the connectors listed in the test table, no other bridges may be connected.
- ◆ The specified values are valid for an ambient temperature from 0°... 40° C.
- ◆ If the readings obtained differ from the specified values, determine fault on the basis of the current flow diagram.
- ◆ If the measured values deviate only slightly from the specified values, clean sockets and connectors of the testers and diagnosis leads and repeat test.
- ◆ Before replacing components, their lines and connectors must be tested. Especially with specified values under 10 Ω the resistance measurement at the component should be repeated.



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 for errors or omissions in this document. Copyright by AUDI AG.

Check 68-part multiple connector of electronic manual gearbox control unit -J514- (sockets on the test box -V.A.G 1598/18-)

1 - Earth (terminal 31)	37 - Potentiometer 1 for gear recognition -G239- signal
2 - Earth (terminal 31)	38 - Potentiometer 2 for gear recognition -G240- signal
3 - CAN low signal	39 - Switch for selector lever gate recognition - F257-
4 - Potentiometer for selector lever, forwards/backwards -G272- (supply voltage 5 V)	40 - Lockout switch for diesel engine -F207-
5 - Clutch travel sender -G162- signal	41 - Switch for selector lever Stop recognition - F259-
6 - Not used	42 - Not used
7 - Not used	43 - Gearbox speed sender -G38- (screening)
8 - Not used	44 - Earth for:
9 - Load shutoff relay -J511-	◆ Sender for gearbox hydraulic pressure - G270-
10 - Not used	◆ Potentiometer 1 for gear recognition -G239-
11 - Not used	◆ Potentiometer 2 for gear recognition -G240-
12 - Starter inhibitor and reversing light relay -J226-	45 - Supply voltage of terminal 30
13 - Not used	46 - Gear selector valve 2 -N285-
14 - Sender for gearbox hydraulic pressure -G270- signal	47 - Supply voltage of terminal 15

15 - Brake pressure switch -F270-	48 - Gear selector valve 4 -N287-
16 - Door contact switch signal	49 - Potentiometer for selector lever, forwards/backwards -G272- signal
17 - Supply voltage 5 V (bridge to pin 30) for:	50 - Supply voltage 5 V for clutch travel sender - G162-
♦ Sender for gearbox hydraulic pressure - G270-	51 - Engine cycle (monitoring signal for kick-down)
♦ Potentiometer 1 for gear recognition -G239-	52 - Not used
♦ Potentiometer 2 for gear recognition -G240-	53 - Gear selector valve 3 -N286-
18 - Start prompt from ignition/starter switch (terminal 50)	54 - Gearbox hydraulic pump relay -J510-
19 - TD-(speed) signal	53 - Not used
20 - Gearbox speed sender -G38- signal	54 - Not used
21 - Vehicle speed signal	55 - Not used
22 - Gear selector valve 1 -N284-	56 - Not used
23 - Supply voltage for terminal 15 (bridge to pin 47)	57 - Not used
24 - K-wires of diagnosis	58 - Valve for clutch actuator -N255-
25 - CAN high signal	59 - Reversing light switch -F4-
26 - Not used	60 - Not used
27 - Potentiometer for selector lever, forwards/backwards -G272- earth	61 - Not used
28 - Clutch travel sender -G162- earth	62 - Switch for selector lever N-recognition -F258-
29 - Selector lever lock solenoid -N110-	63 - Switch for Start/Stop mode -E262-
30 - Jumper to pin 17	64 - Not used
31 - Not used	65 - Gearbox speed sender -G38-
32 - Valve for clutch actuator -N255-	66 - Not used
33 - Gear selector valve 2 -N285-	67 - Supply voltage for:
34 - Gear selector valve 1 -N284-	
35 - Not used	♦ Gear selector valve 3 -N286-
36 - Not used	♦ Gear selector valve 4 -N287-
	68 - Supply voltage of terminal 30

12.3 Test table

List of test steps

Component to be tested	Test step
Voltage supply and earth connection of electronic manual gearbox control unit -J514-	– Perform test step 1 ⇒ page 62
Selector lever lock solenoid -N110-	– Perform test step 2 ⇒ page 63
Switch for selector lever N-recognition -F258-	– Perform test step 3 ⇒ page 63
Switch for selector lever gate recognition -F257-	– Perform test step 4 ⇒ page 63
Switch for Stop recognition -F259-	– Perform test step 5 ⇒ page 64
Gearbox speed sender -G38-	– Perform test step 6 ⇒ page 64
Clutch travel sender -G162-	– Perform test step 7 ⇒ page 64
Gear selector valves -N284-, -N285-, -N286- and -N287-	– Perform test step 8.1 ... 8.4 ⇒ page 65
Brake pressure switch -F270-	– Perform test step 9 ⇒ page 65

Component to be tested	Test step
Potentiometer for selector lever, forwards/backwards -G272-	– Perform test step 10 ⇒ page 66
Lockout switch for diesel engine -F207-	– Perform test step 11 ⇒ page 66
Switch for Start/Stop mode -E262- (ECO mode)	– Perform test step 12 ⇒ page 67
Solenoid valve for ignition key removal lock -N334-	– Perform test step 13 ⇒ page 67
Hydraulic pump for clutch actuator -V180-	– Perform test step 14 ⇒ page 68
Valve for clutch actuator -N255-	– Perform test step 15 ⇒ page 68
Sender for gearbox hydraulic pressure -G270- , potentiometer 1 for gear recognition -G239- and potentiometer 2 for gear recognition -G240-	– Perform test step 16 ⇒ page 68
CAN bus wiring	– Perform test step 17 ⇒ page 69

Test step 1

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
1 + 2	Earth connection of electronic manual gearbox control unit -J514-	- Ignition off – Switch on measuring range: Resistance measurement	0,0 Ω	– Check wiring according to current flow diagram – Check wiring from contact 1 + 2 to earth – Check earth connections of battery, renew if necessary
45 + 1 68 + 1 68 + 2 45 + 2	Voltage supply for terminal 30 of electronic manual gearbox control unit -J514-	- Ignition off – Switch on measuring range: Voltage measurement	approx. battery voltage	– Check wiring according to current flow diagram – Check wiring from contact 1 + 2 to earth – Check wiring from contact 45 + 68 to terminal 30 – Check battery, renew if necessary – If necessary replace electronic manual gearbox control unit -J514-
23 + 1 47 + 2 47 + 1 23 + 2	Voltage supply for terminal 15 of electronic manual gearbox control unit -J514-	– Switch on measuring range: Voltage measurement – Switch on ignition	approx. battery voltage	– Check wiring according to current flow diagram – Check wiring from contact 1 + 2 to earth – Check wiring from contact 23 to terminal 15 – Check battery, renew if necessary – If necessary replace electronic manual gearbox control unit -J514-

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 the correctness of the information in this document.

Test step 2

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
29 + 1	Selector lever lock solenoid - N110-	- Ignition off - Switch on measuring range: Voltage measurement	0 V	Check wiring according to current flow diagram
29 + 1		- Switch on ignition - Measuring instruments disconnected - Connect bridge with auxiliary wires from - V.A.G 1594 C- between sockets 29 + 1 - Switch on ignition	approx. battery voltage	
			Solenoid must click audibly, "Press brake" symbol lights up	Replace selector lever lock solenoid -N110- ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Test step 3

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
Bridge between 29 + 1	Switch for selector lever N-recognition -F258-	Connect bridge between sockets 29 + 1¹⁸⁾		Check wiring according to current flow diagram
45 + 62		- Switch on measuring range: Voltage measurement - Switch on ignition - Shift selector lever to "N" - Shift selector lever out of "N"	approx. battery voltage	
			0 V	Replace switch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

18) Before the test, the bridge must be connected using auxiliary wires from -V.A.G 1594 C- between sockets 29 + 1 to be able to move the selector lever. This cancels the locking of the selector lever by the selector lever lock solenoid -N110- .

Test step 4

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
Bridge between 29 + 1	Switch for selector lever gate recognition -F257-	Connect bridge between sockets 29 + 1¹⁹⁾		
45 + 39		- Switch on measuring range: Voltage measurement - Switch on ignition		

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
		Shift selector lever in- to tiptronic gate	0 V	Check wiring according to current flow diagram
		Shift selector lever out of tiptronic gate	approx. battery voltage	Replace switch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

19) Before the test, the bridge must be connected using auxiliary wires from -V.A.G 1594 C- between sockets 29 + 1 to be able to move the selector lever. This cancels the locking of the selector lever by the selector lever lock solenoid -N110-.

Test step 5

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
Bridge between 29 + 1	Switch for Stop recognition - F259-	Connect bridge between sockets 29 + 1		
45 + 41		- Switch on measuring range: Voltage measurement - Switch on ignition - Shift selector lever to "STOP" - Shift selector lever out of "STOP"	approx. battery voltage	- Check wiring according to current flow diagram - Replace switch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34
			0 V	

20) Before the test, the bridge must be connected using auxiliary wires from -V.A.G 1594 C- between sockets 29 + 1 to be able to move the selector lever. This cancels the locking of the selector lever by the selector lever lock solenoid -N110-.

Test step 6

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
65 + 20	Gearbox speed sender -G38-	- Ignition off - Switch on measuring range: Resistance measurement	min. 0.7 kΩ max. 0.9 kΩ	- Check wiring according to current flow diagram - Replace sender -G38- ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Test step 7

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
50 + 28	Clutch travel sender -G162-	Ignition off		

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
		– Switch on measuring range: Resistance measurement	min. 4.5 kΩ	– Check wiring according to current flow diagram
			max. 6.0 kΩ	– Check wiring from socket 5 to sender (signal wiring)
				– Replace sender ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30

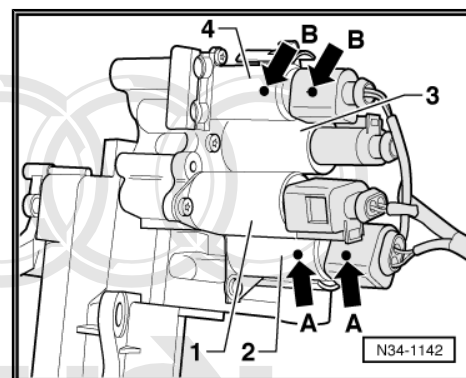
Test steps 8.1 ... 8.4

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
22 + 34	Gear selector valve 1 -N284-	• Ignition off • Valve temperature: approx. 20° C – Switch on measuring range: Resistance measurement	approx. 3 Ω ²¹⁾	– Check wiring according to current flow diagram
33 + 46	Gear selector valve 2 -N285-		approx. 3 Ω ²¹⁾	– Check connectors at the valves; fitting location of valves ⇒ page 65
53 + 67	Gear selector valve 3 -N286-		min. 13 Ω ²¹⁾	– Replace gear actuator ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34
48 + 67	Gear selector valve 4 -N287-		max. 14 Ω	
			min. 13 Ω ²¹⁾	
			max. 14 Ω	

21) The specification refers to a temperature of approx. 20°C. If the valve temperature is above 20°C (gearbox hot), the resistance value of the valves increases.

Fitting location of valves 1 to 4 for gear selection

- Please note different electrical connectors for gear selector valves.
- 1 - Gear selector valve 1 -N284- ; large connector, no colour marking
- 2 - Gear selector valve 2 -N285- ; large connector, colour marking -arrows A-
- 3 - Gear selector valve 3 -N286- ; small connector, no colour marking
- 4 - Gear selector valve 4 -N287- ; small connector, colour marking -arrows B-



Test step 9

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
15 + 1	Brake pressure switch -F270-	• Ignition off – Switch on measuring range: Resistance measurement – Do not press brake pedal – Press brake pedal	$\infty \Omega$ ²²⁾ max. 2 Ω	– Check wiring according to current flow diagram – Replace brake pressure switch

22) Switch portable multimeter -V.A.G 1526 B- to largest Ω range.

Test step 10

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
27 + 49	Potentiometer for selector lever, forwards/backwards -G272-	- Ignition off - Switch on measuring range: Resistance measurement - Selector lever in position		- Check wiring according to current flow diagram - Replace potentiometer ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34
		STOP	approx. 2.72 kΩ	
		R	approx. 2.45 kΩ	
		N	approx. 2.19 kΩ	
		D or tiptronic gate	approx. 1.77 kΩ	
		Tiptronic to "+"	approx. 2.01 kΩ	
		Tiptronic to "-"	approx. 1.54 kΩ	
4 + 49		STOP	approx. 1.45 kΩ	
		R	approx. 1.72 kΩ	
		N	approx. 1.98 kΩ	
		D or tiptronic gate	approx. 2.42 kΩ	
		Tiptronic to "+"	approx. 2.17 kΩ	
		Tiptronic to "-"	approx. 2.65 kΩ	

Test step 11

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
Bridge between 29 + 1	Lockout switch for diesel engine - F207-	- Ignition off - Connect bridge between sockets 29 + 1		- Check wiring according to current flow diagram - Replace switch ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34
45 + 40		- Switch on measuring range: Voltage measurement - Selector lever in "D"	approx. battery voltage	
		Selector lever in all positions except "D"	0 V	

23) Before the test, the bridge must be connected using auxiliary wires from -V.A.G 1594 C- between sockets 29 + 1 to be able to move the selector lever. This cancels the locking of the selector lever by the selector lever lock solenoid -N110- .

Test step 12

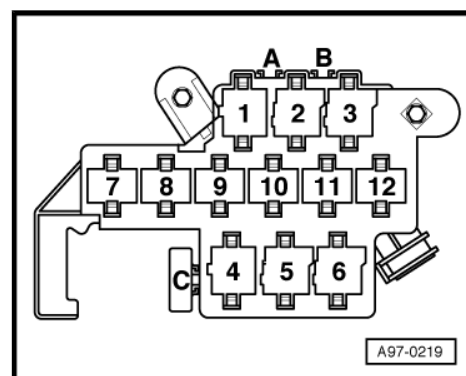
-V.A.G 1598/18-Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
45 + 63	Switch for Start/ Stop mode - E262-	- Ignition off - Switch on measuring range: Voltage measurement - Do not operate key - Key pressed once	0 V approx. battery voltage	- Check wiring according to current flow diagram - Replace switch ⇒ Electrical System; Rep. Gr. 96

Test step 13

-V.A.G 1598/18-Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
	Solenoid valve for ignition key removal lock - N334-	- Ignition off - Control unit for ignition key removal lock - J557- removed. Fitting location ⇒ page 67 - Connect bridge with auxiliary wires from - V.A.G 1594 C- between contacts 13 + 4 in relay plug	Solenoid in ignition lock must click audibly	- Check wiring according to current flow diagram - Replace ignition/starter switch ⇒ Electrical System; Rep. Gr. 94
68 + contact 13 in relay plug		- Ignition off - Control unit for ignition key removal lock -J557- removed. Fitting location ⇒ page 67 - Switch on measuring range: Resistance measurement	approx. 8 Ω	

Fitting location of control unit for ignition key removal lock -J557-

- ◆ in the 6+6-part relay carrier at the front left of the footwell at slots -5- and -6- .

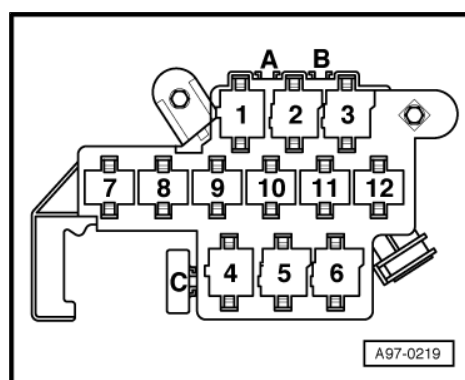


Test step 14

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
	Hydraulic pump for clutch actuator -V180-	– Pull out gearbox hydraulic pump relay -J510-. Fitting location ⇒ page 68 – Connect bridge with auxiliary wires (from -V.A.G 1594 C-) between contacts 8 +2 in relay plug	Pump starts up	– Check wiring according to current flow diagram – Replace pump ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34

Fitting location of gearbox hydraulic pump relay -J510-

- ◆ In the 6+6-part relay carrier at the front left of the footwell at slot -4- .



Test step 15

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
32 + 58	Valve for clutch actuator -N255-	• Ignition off – Switch on measuring range: Resistance measurement	approx. 6.5 Ω	– Check wiring according to current flow diagram

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 published. Copyright by AUDI AG.

Test step 16

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
17 + 30	Connection of sender for gearbox hydraulic pressure -G270-, potentiometer 1 for gear recognition -G239- and potentiometer 2 for gear recognition -G240-	• Ignition off – Switch on measuring range: Resistance measurement	approx. 1 Ω	– Check wiring according to current flow diagram
17 + 44	Sender for gearbox hydraulic pressure -G270- and potentiometer 1 for gear recognition -G239-		approx. 290 Ω	Sender for gearbox hydraulic pressure -G270-, potentiometer 1 for gear recognition -G239- and potentiometer 2 for gear recognition -G240- are connected in parallel

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
30 + 44	Potentiometer 2 for gear recogni- tion -G240-		approx. 290 Ω	– If readout does not match spec- ification, all 3 components must be checked according to current flow diagram

Test step 17

-V.A.G 1598/18- Sockets	Test of	Test requirements and operations	Specified value	Measures if readout does not match specification
3 + 1 3 + 2 25 + 1 25 + 2 3 + 47 25 + 47	CAN bus wiring	- Ignition off – Switch on measuring range: Resistance measurement	∞ Ω ²⁴⁾	– Check wiring according to cur- rent flow diagram Further description of CAN bus wir- ing ⇒ page 55

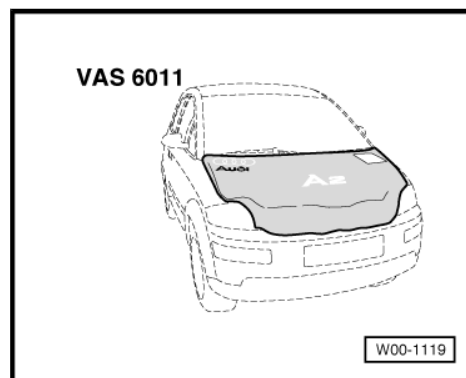
24) Switch portable multimeter -V.A.G 1526 B- to largest Ω range.

13 Fault analysis, complaints and fault remedy

13.1 System leaking

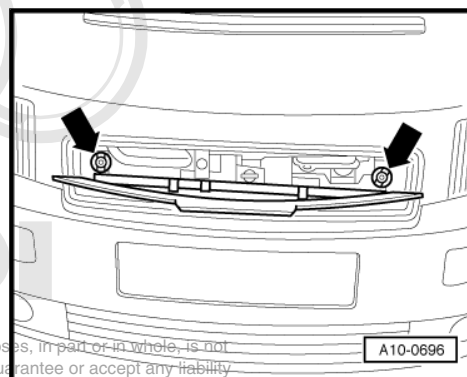
Special tools and workshop equipment required

- ◆ Protective cover -VAS 6011-



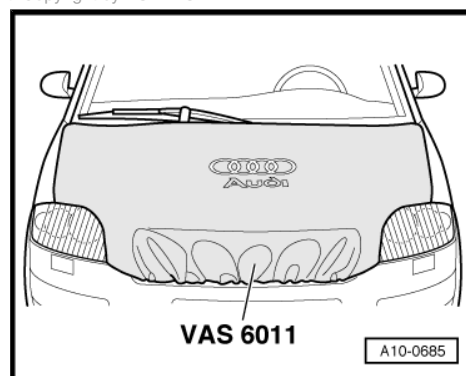
Test sequence

- Wash and polish outside of bonnet with a chamois leather.
- Release the service flap from inside.
- Release bonnet -arrows- and pull it forwards slightly.



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.

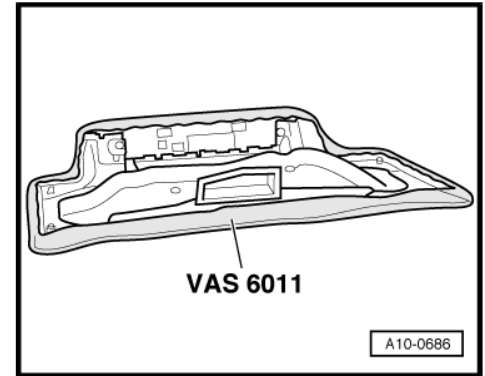
- Clamp the protective cover -VAS 6011- over the bonnet.



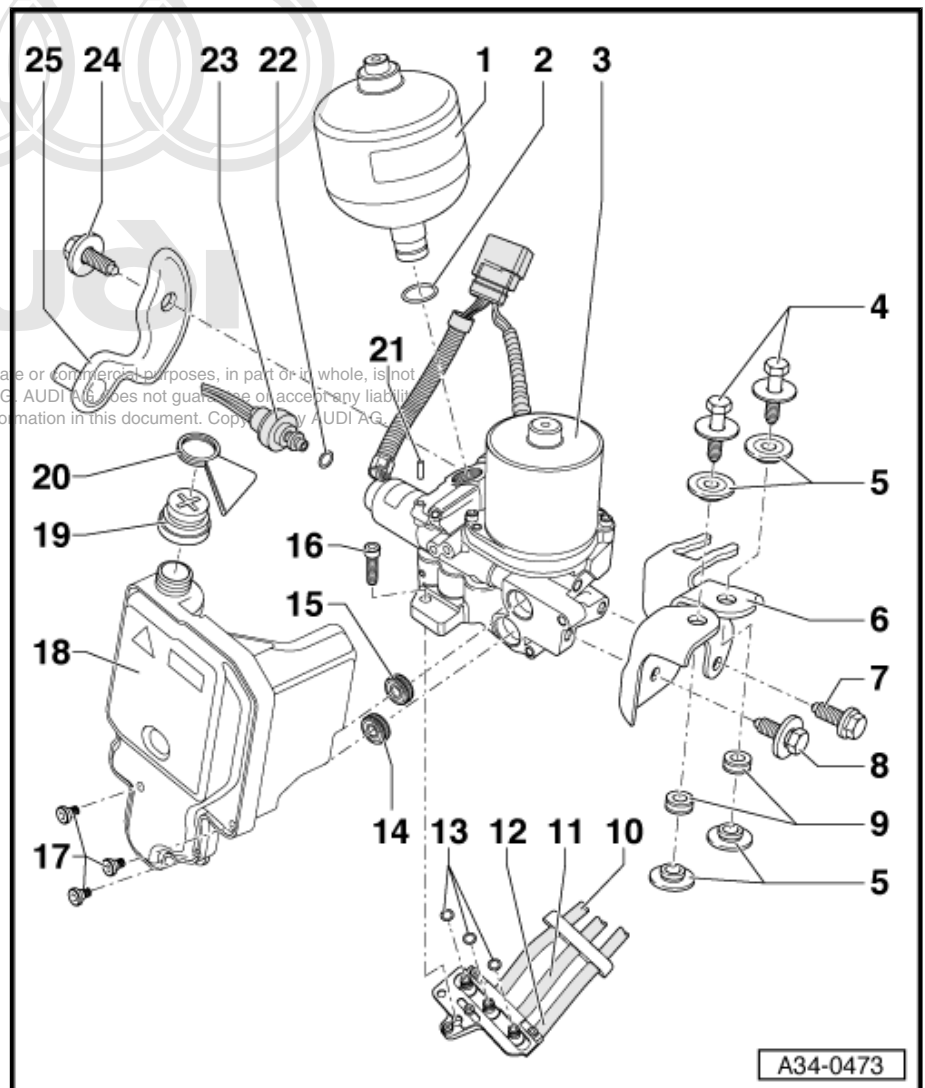
- Remove the bonnet and lay it down on the side of the protective cover of the -VAS 6011-.

 Note

Do not set the bonnet down on the points.

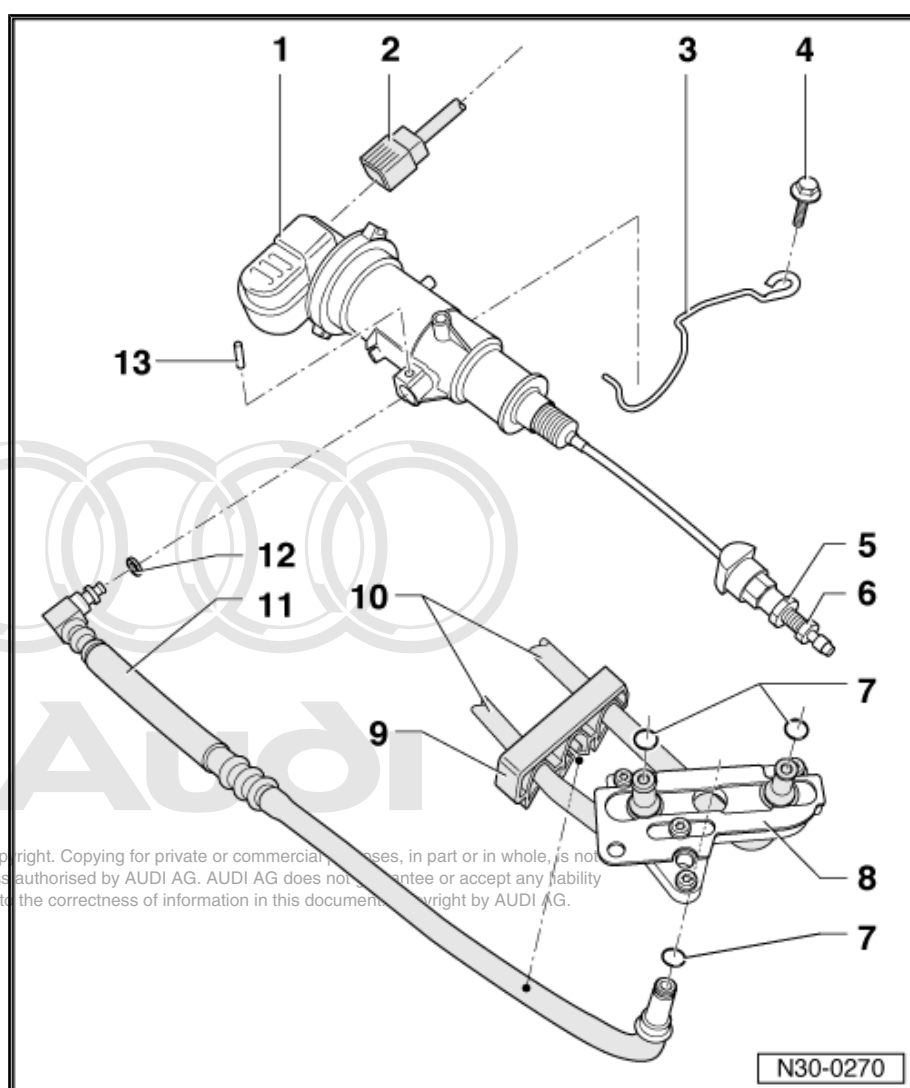
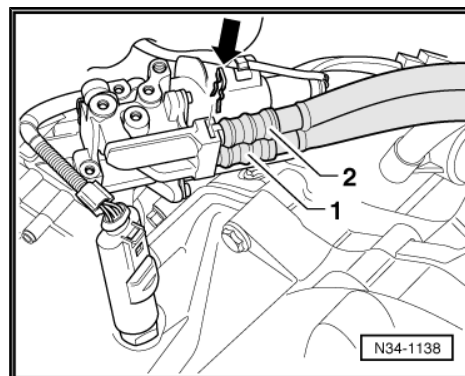


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright © AUDI AG.



- Check the area around the sender for gearbox hydraulic pressure -G270- item 23- for leaks.
- If necessary, replace sender or the sealing ring -22- → 5-speed Manual Gearbox 085 DS; Rep. Gr. 34 .
- Check the area around the hose/pipe assembly -10 ... 12- at the hydraulic control unit for leaks.

- If necessary, replace a leaking hose/pipe assembly or the corresponding O-ring -13- ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34 .
- Check the area around the hose/pipe assembly -1- and -2- at the gear actuator for leaks.
- If necessary, replace a leaking hose/pipe assembly or the corresponding O-ring ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34 .

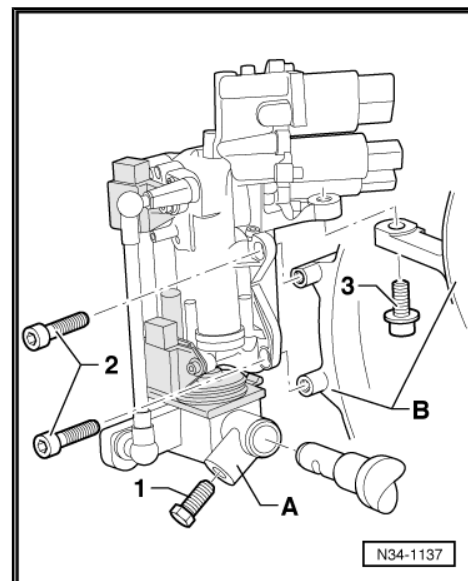


- Check the area around the clutch slave cylinder -1- (with clutch travel sender -G162-) for leaks.
- If necessary, replace a leaking hose/pipe assembly -11- or the corresponding O-ring -12- ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 34 .

- Check the area around the selector shaft (inserted into selector finger -A- and secured using screw -1-) for leaks.
- Eliminate any leaks at the selector shaft of the gear actuator.

If no leaks are found:

- Perform the final control diagnosis of the hydraulic control unit ⇒ [page 27](#) .
- Perform the gear actuator final control diagnosis ⇒ [page 27](#) .

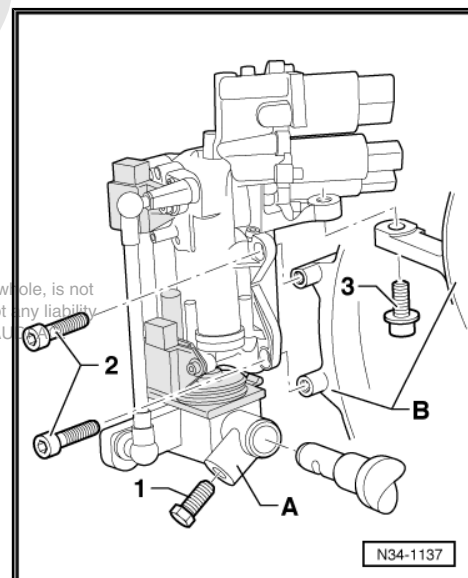


13.2 Poor shifting quality

- Check the system for leaks ⇒ [page 70](#) .
- Perform the final control diagnosis of the hydraulic control unit ⇒ [page 27](#) .
- Perform the gear actuator final control diagnosis ⇒ [page 27](#) .
- Check the bolted connection -1- of the selector shaft and the screwed connections of the selector rod between gear actuator and selector finger -A- .
- Perform basic setting ⇒ [page 29](#) .

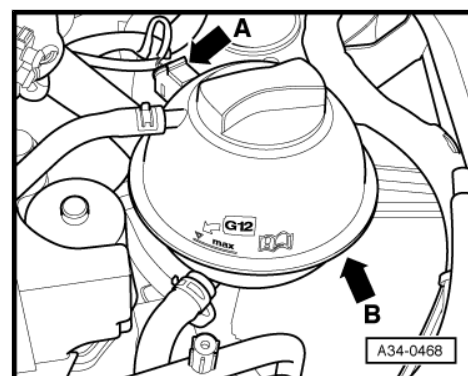
If the shifting quality is still poor:

- Contact Audi AG via the hotline or the importer.

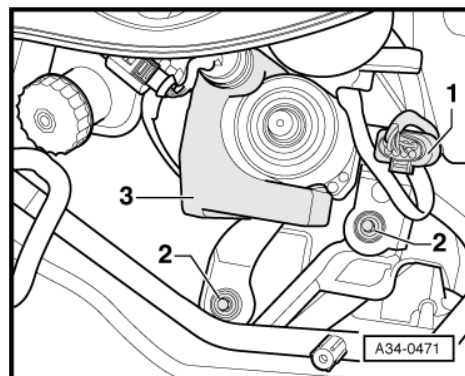


13.3 Voltage value of the clutch travel sender -G162- cannot be adjusted

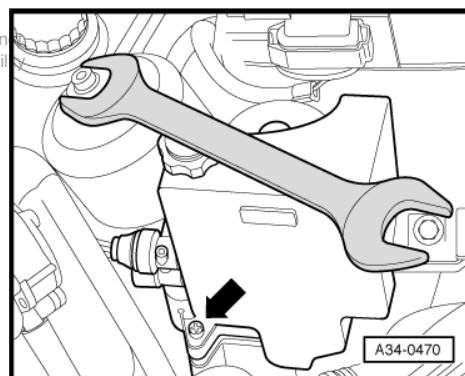
- Switch off ignition.
- Remove the coolant expansion tank -arrow A- and -arrow B- and place it to one side.



- Disconnect the connector -1- at the hydraulic control unit because the hydraulic pump is able to start up even with the ignition off.



- Loosen the pressure accumulator $1/2$ turn.
- The hydraulic fluid level in the reservoir increases and the clutch engages.
- Tighten the pressure accumulator again as soon as the hydraulic fluid level stops increasing.
- Adjust the voltage value of the clutch travel sender -G162- [⇒ page 34](#).

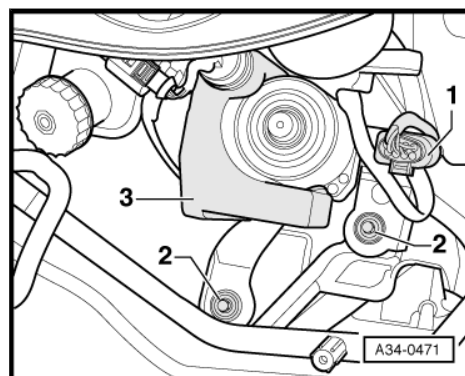


If the voltage value cannot be adjusted:

- Connect the connector -1- to the hydraulic control unit.
- Interrogate fault memory [⇒ page 15](#), eliminate any faults displayed and erase fault memory [⇒ page 38](#).
- Perform basic setting [⇒ page 29](#).

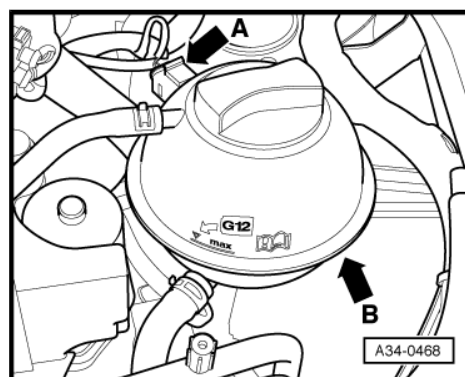
If basic setting is aborted:

- Repeat the test, or check the clutch travel sender -G162- [⇒ page 74](#) "Check clutch travel sender G162".
- Perform test [⇒ "13.4 Basic setting cannot be performed", page 76](#).

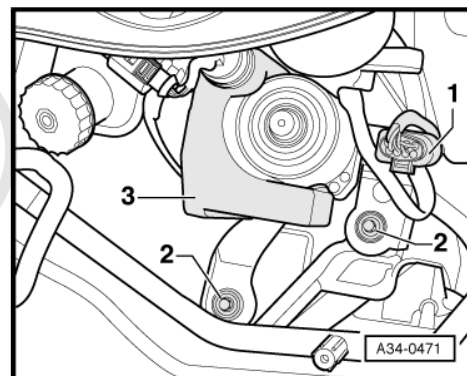


Checking clutch travel sender -G162-

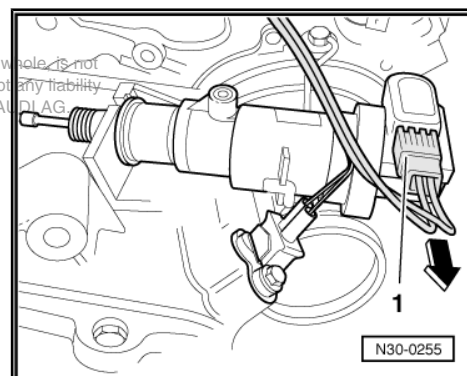
- Switch off ignition.
- Remove the coolant expansion tank -arrow A- and -arrow B- and place it to one side.



- Disconnect the connector -1- at the hydraulic control unit because the hydraulic pump is able to start up even with the ignition off.



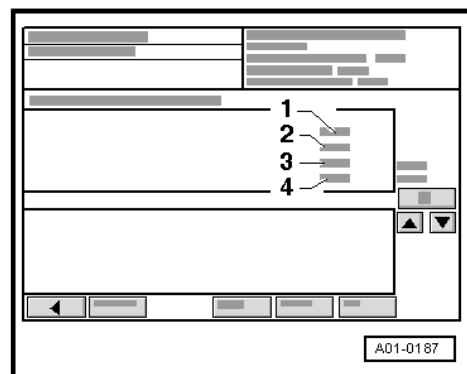
- Remove the clutch slave cylinder with clutch travel sender - G162- ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30 .
- Reconnect the connector -1- to the clutch travel sender - G162- .



- Switch on ignition.
- Read measured value block 002 ⇒ [page 40](#) .

Display on -VAS 5051 A- :

- Move the cable of the slave cylinder and check display in display zone -2- .
- Cable of slave cylinder pulled out completely: 0 ... 1.5 V.
- Cable of slave cylinder pushed in completely: 4.4 ... 5.0 V.
- The value must change in each case in a range from 1.5 ... 4.5 V.



If specified values are attained:

- Install the clutch slave cylinder with clutch travel sender - G162- ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30 .
- Adjust the voltage value for the clutch travel sender -G162- ⇒ [page 34](#) .

If specified values are not attained:

- Check the electrical connectors and the wiring ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .

If no fault is found:

- Replace the clutch slave cylinder with clutch travel sender - G162- ⇒ 5-speed Manual Gearbox 085 DS; Rep. Gr. 30 .
- Adjust the voltage value for the clutch travel sender -G162- ⇒ [page 34](#) .

If the voltage value still cannot be adjusted:

- Contact Audi AG via the hotline or the importer.

13.4 Basic setting cannot be performed

- Switch on ignition.
- Read measured value block 020 ⇒ [page 40](#) .

Display on -VAS 5051 A- :

- Check display in display zones -1- and -2- .
- Specified value in each case: at least 12.4 V

If specified values are not attained:

- Check the earth connection and voltage supply of the electronic manual gearbox control unit -J514- ⇒ [page 62](#) or perform the basic setting with a charger connected.

If the voltage value of the clutch travel sender -G162- cannot be adjusted:

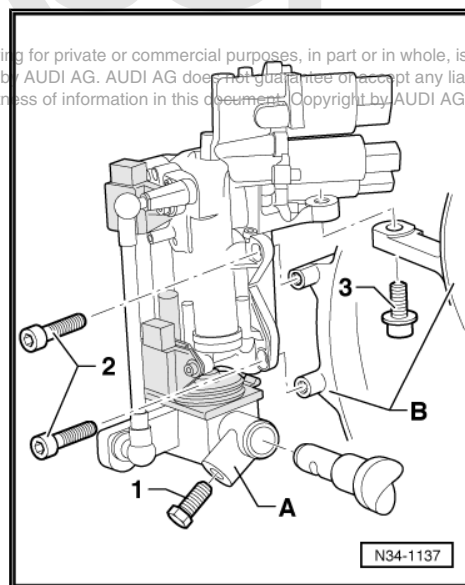
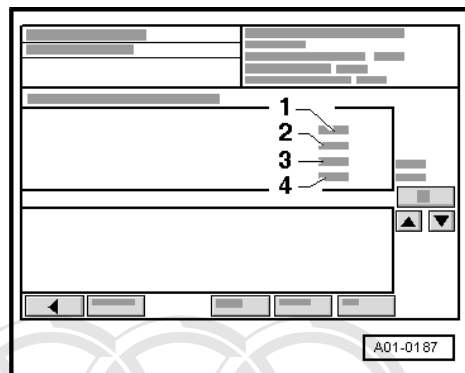
- Perform test
⇒ ["13.3 Voltage value of the clutch travel sender G162 cannot be adjusted", page 73](#) .

If the basic setting is aborted despite the correct voltage value for clutch travel sender -G162- :

- Perform test ⇒ ["13.1 System leaking", page 70](#) .
- Check the bolted connection -1- of the selector shaft and the screwed connections of the selector rod between gear actuator and selector finger -A- .
- Perform basic setting again ⇒ [page 29](#) .

If basic setting is aborted again:

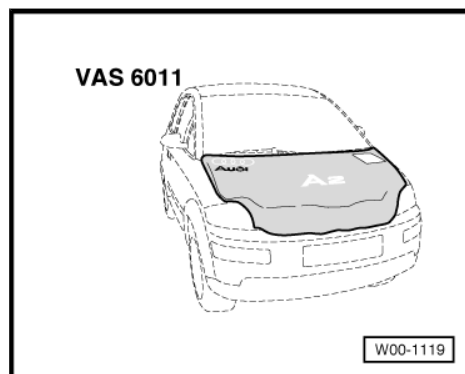
- Read measured value block 023 ⇒ [page 40](#) and Contact Audi AG via the hotline or the importer with the data read out.



13.5 Vehicle does not start

Special tools and workshop equipment required

- ◆ Protective cover -VAS 6011-



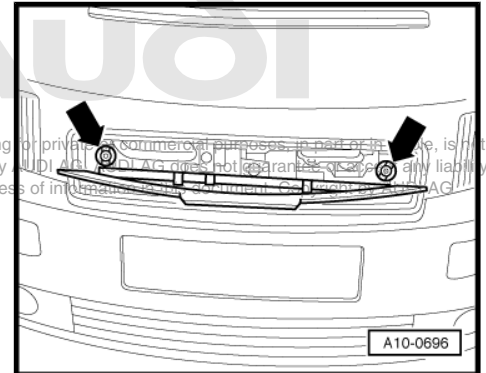
Test sequence

- Interrogate fault memory ⇒ [page 15](#) , eliminate any faults displayed and erase fault memory ⇒ [page 38](#) .
- Try again to start the vehicle.

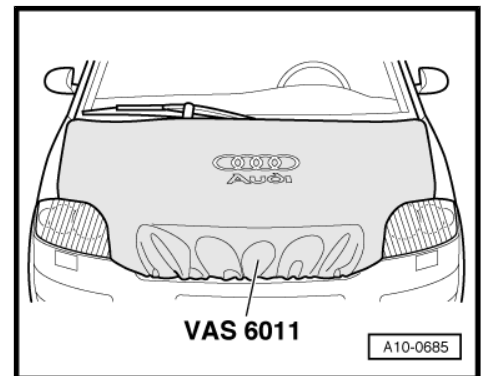
If there are no faults in the fault memory, but the vehicle does not start:

- Wash and polish outside of bonnet with a chamois leather.
- Release the service flap from inside.
- Release bonnet -arrows- and pull it forwards slightly.

Protected by copyright. Copying or 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.



- Clamp the protective cover -VAS 6011- over the bonnet.



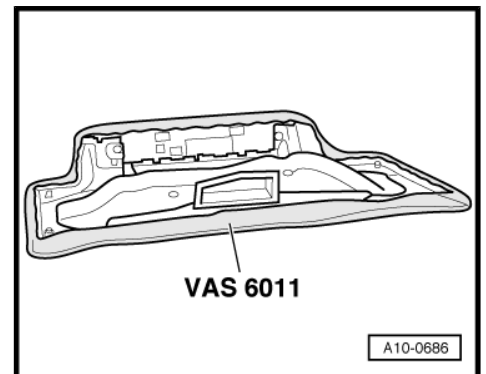
- Remove the bonnet and lay it down on the side of the protective cover of the -VAS 6011- .



Note

Do not set the bonnet down on the points.

- Apply handbrake.
- Switch on ignition.



- Shift selector lever to position “STOP” and release the brake pedal.
- With ignition on, selector lever in “STOP” and brake pedal not pressed, the clutch must be engaged.
- Read measured value block 002 ⇒ [page 40](#) .

Display on -VAS 5051 A- :

- Check display in zone -2- .
- Specified value: Less than 3.5 V.

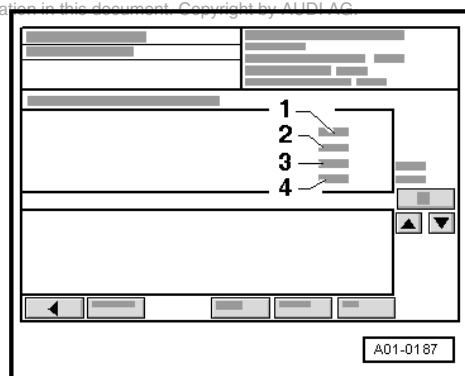
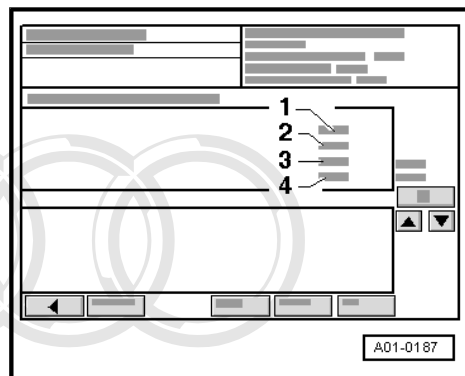
If the specified value is exceeded, the clutch is disengaged and the electronic manual gearbox control unit -J514- is in emergency running mode.

- Perform test
⇒ [“13.3 Voltage value of the clutch travel sender G162 cannot be adjusted”, page 73](#) .

If reading matches specification:

- By pressing the key twice, switch to measured value block 004 ⇒ [page 45](#) .
- Check the last digit (on the far right) of the display in display zone -2- .
- Press the brake pedal.
- Specified value: Display “XXXXXXX1” = brake pedal operated.
- Release the brake pedal.
- Specified value: Display “XXXXXXX0” = brake pedal not operated.

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

Ignore the digits represented by “X”.

If readout is not as described:

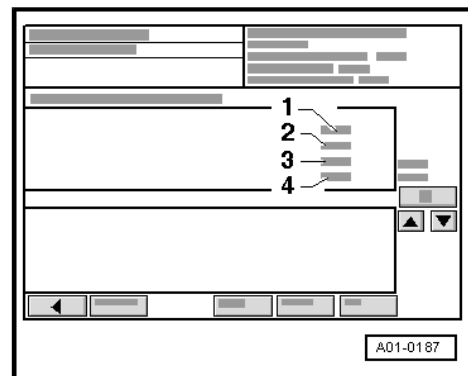
- Interrogate fault memory of engine control unit.
- If necessary, check brake light switch -F- / brake pedal switch -F47- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .
- Check the brake pressure switch -F270- in the electrical test, test step 9 ⇒ [page 65](#) .

If the vehicle still does not start:

- Check the system for leaks ⇒ [page 70](#) .

If the vehicle still does not start:

- Read measured value block 004, display zone -3-
⇒ [page 46](#) .
- Check the second to last digit (on the right) of the display in display zone -3- .
- Turn ignition key to "Start engine" position.
- Specified value: Display "XXXXXX0X" = starter inhibitor and reversing light relay -J226- is actuated.
- Release ignition key from "Start engine" position.
- Specified value: Display "XXXXXX1X" = starter inhibitor and reversing light relay -J226- is not actuated.



Note

Ignore the digits represented by "X".

If readout is not as described:

- Check the starter inhibitor and reversing light relay -J226-
⇒ Current flow diagrams, Electrical fault finding and Fitting locations .
- Check the electrical connectors and the wiring ⇒ Current flow diagrams, Electrical fault finding and Fitting locations .
- Check the starter power supply of terminal 50.

If the vehicle still does not start:

- Perform the final control diagnosis of the "hydraulic control unit" ⇒ [page 27](#) .
- Perform the "gear actuator" final control diagnosis
⇒ [page 27](#) .



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.