Workshop Manual
Audi A2 2001 ➢

Radio, telephone and navigation system, self-diagnosis

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List of Workshop Manual Repair Groups

Repair Group

01 - Self-diagnosis

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

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01 – Self-diagnosis

1 Radio system self-diagnosis

1.1 General information and safety measures

1.1.1 General

AUDI radio systems (including radio section with NAV II D) feature comprehensive self-diagnosis.

All radio units have a fault memory. Faults occurring in monitored components/wiring are stored in the fault memory together with an indication of the type of fault.

1.1.2 Safety measures

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

WARNING

Proceed as follows to avoid risk of accident during measurement and test drives:

- *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
- *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
- *Reactivate passenger's airbag on completion of work.*

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

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1.2 Starting self-diagnosis

1.2.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Technical Service Handbook
- Parts List

Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- connected up ⇒ page 165
- Ignition on

1.2.2 Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

Radio address word: 56

– Press keys 5 and 6.

Indicated on display:

```
Rapid data transfer                       Q
56 - Radio
```

– Confirm entry by pressing Q key.

“DIAG” appears on radio display during self-diagnosis.

Up to MY 01:

Following display appears after approx. 5 seconds:

```
4B0035186D       Radio       D01       ->
Code 00201                 WSC XXXXX
```

Radio display	
4B0035186D	Part number
Radio	Control unit designation
D01	Software version
Code 00201	Control unit encoding
WSC XXXXX	Workshop code

As of MY 02:

Following display appears after approx. 5 seconds:

```
8E0035195B  symphony II  NP2  0004    ->
Code 00737                WSC XXXXX
```

Radio display	
8E0035195B	Part number
symphony II NP 2	Control unit designation
0004	Software version
Code 00737	Control unit encoding
WSC XXXXX	Workshop code

All vehicles:

– Press → key.

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Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

List of diagnosis functions:

Diagnosis functions	Page
01 - Interrogating control unit version	⇒ page 3
02 - Interrogating fault memory	⇒ page 3
03 - Final control diagnosis	⇒ page 9
05 - Erasing fault memory	⇒ page 8
06 - End of output	⇒ page 9

Diagnosis functions	Page
07 - Encoding control unit	⇒ page 10
08 - Reading measured value block	⇒ page 13
10 - Adaption	⇒ page 18

1.3 Interrogating control unit version

Procedure

– Start radio self-diagnosis ⇒ page 1 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 1 (“Interrogating control unit version”).

Indicated on display:

```
Rapid data transfer                   Q
01 - Interrogating control unit version
```

– Confirm entry by pressing Q key.

Up to MY 01:

Following display appears after approx. 5 seconds:

```
4B0035186D       Radio       D01      ->
Code 00201                 WSC XXXXX
```

Radio control unit version	
4B0035186D	Part number
Radio	Control unit designation
D01	Software version
Code 00201	Control unit encoding
WSC XXXXX	Workshop code

As of MY 02:

Following display appears after approx. 5 seconds:

```
8E0035195B  symphony II  NP2  0004    ->
Code 00737                WSC XXXXX
```

Radio control unit version	
8E0035195B	Part number
symphony II NP 2	Control unit designation
0004	Software version
Code 00737	Control unit encoding
WSC XXXXX	Workshop code

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All vehicles:

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

1.4 Interrogating fault memory

Procedure

– Start radio self-diagnosis ⇒ page 1 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 2 (“Interrogating fault memory”).

Indicated on display:

```
Rapid data transfer                    Q
02 - Interrogating fault memory
```

– Confirm entry by pressing Q key.

The number of stored faults appears on the display.

```
X fault(s) detected
```

The stored faults are displayed and printed out consecutively.

– Check fault printout against fault table ⇒ page 4 and eliminate fault.

If “No fault detected” is displayed, tester returns to initial setting after pressing → key.

Indicated on display:

```
No fault detected                    ->
```

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

If any other display appears, refer to ⇒ Fault reader operating instructions .

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

1.5 Fault table

Note

- *The following table lists all faults which can be detected by the system and printed out on fault reader -V.A.G 1551- in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and “/SP” appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 40 on/off cycles are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00668 Vehicle voltage terminal 30 ♦ Signal too low	♦ Starter operated for more than 10 sec. ♦ Battery flat/defective ♦ Short circuit in vehicle electrical system ♦ Battery voltage less than 9.5V ♦ Alternator defective	– Repair short circuit in vehicle electrical system – Check battery ⇒ Electrical system; Rep. Gr. 27 – Check alternator ⇒ Electrical system; Rep. Gr. 27
00849 S-contact on ign. starter switch -D- ♦ Open circuit	♦ Open circuit in wiring ♦ Ignition/starter switch -D- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace ignition/starter switch -D- ⇒ Electrical system; Rep. Gr. 94
00850 Ctrl output active ampli. on radio ♦ Short to earth	♦ Wiring damage ♦ Open circuit in wiring/short circuit ♦ Amplifier defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring/ short circuit – Replace amplifier ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00852 Front loudspeaker ♦ Short circuit ♦ Open circuit	♦ Wiring damage ♦ Open circuit in wiring/short circuit ♦ Front loudspeaker defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace loudspeaker ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00853 Rear loudspeaker ♦ Short circuit ♦ Open circuit	♦ Wiring damage ♦ Open circuit in wiring/short circuit ♦ Rear loudspeaker defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace loudspeaker ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00854 Output radio display dash panel insert ♦ No communication Whether or not a fault is still present following fault elimination cannot be detected during self-diagnosis. For this reason, operation of second display must always be checked and fault memory then interrogated again after eliminating a fault and erasing fault memory.	♦ Open circuit in wiring ♦ Dash panel insert defective ♦ Radio -R- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90 – Replace radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00855 Connection to CD changer ♦ No communication	♦ Open circuit in wiring ♦ Open circuit in CD changer -R41- power supply ♦ CD changer -R41- defective ♦ Radio -R- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Use current flow diagram to check CD changer -R41- power supply – Replace CD changer -R41- ⇒ Radio, telephone and navigation system; Rep. Gr. 91 – Replace radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00856 Aerial on the radio ♦ Short circuit ♦ Open circuit	♦ Open circuit in wiring ♦ Short circuit in aerial wire ♦ Aerial wire disconnected	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Check aerial wire – Check aerial ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00857 CD changer -R41- ♦ No communication ♦ Defective	♦ Open circuit in wiring ♦ Open circuit in CD changer -R41- power supply ♦ CD changer -R41- defective ♦ Radio -R- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Check wiring between CD changer -R41- and radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91 – Use current flow diagram to check CD changer -R41- power supply – Replace CD changer -R41- ⇒ Radio, telephone and navigation system; Rep. Gr. 91 – Replace radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00858 Connect. radio midrange outp., aerial amp. ♦ Short circuit ♦ Open circuit	♦ Wiring damage ♦ Open circuit in wiring/short circuit ♦ Aerial selection control unit -J515- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring/ short circuit – Replace aerial selection control unit -J515- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00878 Connections to FL loudspeakers ♦ Short circuit ♦ Open circuit	♦ Wiring damage ♦ Open circuit in wiring/short circuit ♦ Front left loudspeaker defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace front left loudspeaker ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00879 Connections to FR loudspeakers ♦ Short circuit ♦ Open circuit	♦ Wiring damage ♦ Open circuit in wiring/short circuit ♦ Front right loudspeaker defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace front right loudspeaker ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01042 Control unit ♦ not coded	♦ Radio -R- not encoded to match configuration in vehicle	– Encode radio -R- accordingly ⇒ page 10
01044 Control unit ♦ incorrectly coded	♦ Radio -R- not encoded to match configuration in vehicle	– Encode radio -R- accordingly ⇒ page 10
01300 Nav. with CD drive control unit -J401- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Wiring damage ♦ Navigation system with CD drive control unit -J401- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in navigation system with CD drive control unit -J401- ⇒ page 89 – Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01303 Telephone transmitter/receiver unit -R36- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Telephone transmitter and receiver unit -R36- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in telephone transmitter and receiver unit -R36- ⇒ page 26 – Replace telephone transmitter and receiver unit -R36- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01305 Data bus display ♦ Defective	♦ CAN bus fault ♦ Open circuit in wiring	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01317 Control unit in dash panel insert -J285- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Dash panel insert defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in dash panel insert ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90
01326 Multi-func. steering wheel ctrl. unit -J453- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Multi-function steering wheel control unit -J453- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in multi-function steering wheel control unit -J453- ⇒ page 135 – Replace multi-function steering wheel control unit -J453- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
02218 Satellite radio -R146- ♦ No communication link on TP channel	♦ Open circuit in wiring ♦ Satellite radio -R146- not connected ♦ Satellite radio -R146- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Read out fault memory in satellite radio -R146- – Check satellite radio -R146-
02230 Digital radio (DAB) -R147- ♦ No communication link on TP channel	♦ Open circuit in wiring ♦ Digital radio (DAB) -R147- not connected ♦ Digital radio (DAB) -R147- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Read out digital radio (DAB) -R147- fault memory – Check digital radio (DAB) -R147-
65535 Control unit ♦ Defective	♦ Radio -R- defective	– Replace radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

1.6 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

- Fault memory interrogated ⇒ page 3
- All faults rectified

On completion of fault memory interrogation:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5 (“Erasing fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 Erasing fault memory
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory erased
```

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Fault memory has now been erased.

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If however the following message appears:

Indicated on display:

```
Attention:                              -
>
Fault memory not interrogated
```

Test procedure not OK

Adhere exactly to test sequence: First interrogate fault memory, eliminate any faults and then erase memory.

1.7 End of output

Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                       Q
06 - End of output
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

1.8 Final control diagnosis

- Final control diagnosis can only be performed with vehicle stationary and engine not running.
- If final control diagnosis detects a fault, locate and eliminate cause of trouble if necessary.

Procedure

– Start radio self-diagnosis ⇒ page 1 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 3 (“Final control diagnosis”).

Indicated on display:

```
Rapid data transfer                       Q
03 - Final control diagnosis
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Final control diagnosis                ->
Loudspeaker
```

All loudspeakers are briefly energised (scarcely audible).

– Press → key.

Up to MY 01:

Indicated on display:

```
Final control diagnosis                ->
Dash panel insert radio display output
```

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Dash panel insert displays the following test pattern:

DISPLAY TEST

Note

On vehicles with Nav II-D, the display changes between normal and inverse every 4 seconds.

– Press → key.

As of MY 02:

Indicated on display:

```
Final control diagnosis                ->
Segment test
```

All pixels light up on radio display.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
Segment test
```

A light block measuring 4x4 pixels appears in centre of radio display. “Diagnosis” display is blanked out.

Note

Pixel faults are not stored in fault memory.

– Press → key.

All vehicles:

Indicated on display:

```
Final control diagnosis                ->
End
```

– Press → key.

– This returns tester to basic function.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

1.9 Encoding control unit

This function can be used to encode radio as follows:

- Radio configuration
- Sound system
- Number of passive loudspeakers
- Country identification

The code must always correspond to vehicle equipment.

Radio section of Nav II-D is encoded in line with encoding table for MY 01.

Procedure

– Start radio self-diagnosis ⇒ page 1 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 7 (“Encoding control unit”).

Indicated on display:

```
Rapid data transfer                       Q
07 - Encoding control unit
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Encoding control unit
Enter code number  XXXXX     (0-32000)
```

– Enter code number in line with encoding table, up to MY 01 ⇒ page 11 ; as of MY 02 ⇒ page 12 .

Encoding up to MY 01: 00201

- Country identification: 0 = standard
- Sound matching: 0 = standard
- Number of passive loudspeakers: 2 = 2 passive loudspeakers at front and 2 active loudspeakers at rear
- Sound system: 0 = standard (no BOSE sound system)
- Radio configuration: 1 = remotely powered aerial

For Nav II-D and BOSE sound, “0” is always to be encoded for number of passive loudspeakers (3rd position).

Encoding as of MY 02: 00737

- Radio configuration 5: 0 = standard
- Radio configuration 4: 0 = A2
- Radio configuration 3: 7 = fader off; with BOSE and active amplifier deactivation during telephone call
- Radio configuration 2: 3 = with navigation system and telephone
- Radio configuration 1: 7 = with diversity, CD changer and multi-function steering wheel

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Control unit identification and code entered (00201) appear on display.

```
4B0035186D      Radio       D01      ->
Code 00201                 WSC XXXXX
```

– Terminate encoding by pressing → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

1.9.1 Encoding table up to MY 01:

5	4	3	2	1	← Decimal places of byte encoding on tester display			
				1	Radio configuration			
						Remotely powered aerial	CD changer	Second display
					1	X	-	-

5	4	3	2	1	← Decimal places of byte encoding on tester display			
					3	X	X	-
					5	X	-	X
					7	X	X	X
					X = Component fitted		- = not fitted	
			0		Sound system correction			
						Type of correction		
					0	Standard (not BOSE sound system)		
					1	BOSE sound system		
		2			Number of passive loudspeakers			
						Number and location		
					0	No passive loudspeakers (BOSE sound system)		
					1	1 passive loudspeaker, front left (BOSE with telephone)		
					2	2 passive loudspeakers at front and 2 active loudspeakers at rear		
					5	2 passive loudspeakers at front and no active loudspeakers at rear		
	0				Sound matching			
					0	Standard		
0					Country identification			
						Country		
					0	Standard		

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1.9.2 Encoding table as of MY 02:

5	4	3	2	1	← Decimal places of byte encoding on tester display			
				7	Radio configuration 1 optional extra			
						Diversity box	CD changer	Multi-function steering wheel
					0	-	-	-
					1	X	-	-
					2	-	X	-
					3	X	X	-
					4	-	-	X
					5	X	-	X
					6	-	X	X
					7	X	X	X
					X = Component fitted		- = not fitted	
			3		Radio configuration 2 optional extra			
						Navigation	Telephone	VCS
					0	-	-	-
					1	X	-	-
					2	-	X	-
					3	X	X	-

5	4	3	2	1	← Decimal places of byte encoding on tester display			
					4	-	-	X
					5	X	-	X
					6	-	X	X
					7	X	X	X
					X = Component fitted		- = not fitted	
		7			Radio configuration 3 vehicle adaption			
						Fader OFF	BOSE display ON	Active amplifier de-activation during telephone call
					0	-	-	-
					1	X	-	-
					2	-	X	-
					3	X	X	-
					4	-	-	X
					5	X	-	X
					6	-	X	X
					7	X	X	X
					X = Component fitted		- = not fitted	
	5				Radio configuration 4 sound curves			
					0	A8 (D2)/A2 (W10)		
					1	A4 (B6)		
					2	A6 (C5)		
					3	A4 (B6) Cabrio		
					4	TT		
					5	A3 (AB)		
0					5. position = 0			

1.10 Reading measured value block

Procedure

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– Start radio self-diagnosis ⇒ page 1 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 8 (“Reading measured value block”).

Indicated on display:

```
Rapid data transfer                   Q
08 - Reading measured value block
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Reading measured value block
Enter display group number XXX
```

– Enter desired display group number (list of display groups ⇒ page 14 up to MY 01; ⇒ page 14 as of MY 02).

– Confirm entry by pressing Q key.

1.10.1 List of display groups up to MY 01

Display group number	Indicated on display
001	1 = GALA (vehicle speed signal) level 2 = Voltage terminal 30 3 = Illumination dimming 4 = S-contact status
002	1 = Front loudspeaker 2 = Front loudspeaker status 3 = Rear loudspeaker 4 = Rear loudspeaker status
003	1 = Type of aerial 2 = Aerial 3 = Aerial status
004	1 = Active amplifier control output 3 = Telephone 4 = Telephone mute input status
005	1 = CD link 2 = CD link status
006	1 = Ext. display (dash panel insert) 2 = Status of ext. display

1.10.2 List of display groups as of MY 02

Display group number	Indicated on display
001	1 = Voltage terminal 30 2 = Active amplifier control output 3 = Telephone 4 = Telephone mute input status
002	1 = Front loudspeaker 2 = Front loudspeaker status
003	1 = Type of aerial 2 = Aerial 3 = Aerial status
004	1 = CD link 2 = CD link status
005	1 = IF output 2 = IF output status

1.10.3 Measured value block 001 up to MY 01

Reading measured value block → 1				Indicated on display
0	12.3V	60%	On	

Status of S-contact input
- Ignition key removed = “Off”
- Ignition key inserted = “On”

Illumination dimming (only with lighting “On”)
- 0 ... 99%

Voltage terminal 30

GALA (vehicle speed signal) level
- 0 = Low level
- 1 = High level

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1.10.4 Measured value block 001 as of MY 02

Reading measured value block 1 →				Indicated on display
12.3V	OK	Tele-phone	OFF	
			Telephone mute input status • Telephone in use = “ON” • Telephone switched off = “OFF”	
		Telephone		
	Active amplifier control output status • “OK” • “Short circuit”			
Voltage terminal 30				

1.10.5 Measured value block 002 up to MY 01

Reading measured value block 2 →				Indicated on display
Front loud-speaker	OK	Rear loud-speaker	OK	
			Rear loudspeaker status • OK • Short circuit • Open circuit	
		Rear loudspeaker (display with passive loudspeakers only)		
	Front loudspeaker status • OK • Short circuit • Open circuit			
Front loudspeaker				

1.10.6 Measured value block 002 as of MY 02

Reading measured value block 2 →		Indicated on display
Front loud-speaker	OK	

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Front loudspeaker status
- OK
- Short circuit
- Open circuit

Front loudspeaker
(no display with BOSE sound system)

1.10.7 Measured value block 003

Reading measured value block 3 →	Indicated on display
Active Aerial OK	

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Aerial status
- OK
- Short circuit
- Open circuit

Aerial

Type of aerial
- Passive
- Active

1.10.8 Measured value block 004 up to MY 01

Reading measured value block 4 →	Indicated on display
0 Tele-phone ON	

Telephone mute input status
- Telephone in use = “ON”
- Telephone switched off = “OFF”

Telephone

Active amplifier control output status
- 0 = Status OK
- 1 = Short to earth

1.10.9 Measured value block 004 as of MY 02

Reading measured value block 4 →	Indicated on display
CD link OK	

		CD link status • OK • Not OK (also if not fitted)
	CD link	

1.10.10 Measured value block 005 up to MY 01

Reading measured value block → 5 CD link OK		Indicated on display
		CD link status • OK • Not OK (also if not fitted)
	CD link	

1.10.11 Measured value block 005 as of MY 02

Reading measured value block → 5 IF output OK		Indicated on display
		IF output status • OK • Short circuit
	IF output	

1.10.12 Measured value block 006 up to MY 01

Reading measured value block → 6 Ext. dis-play OK		Indicated on display
		External display status • OK • Not OK (also if not fitted)
	External display (dash panel insert)	

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1.11 Adaption

The "Adaption" function as of MY 02 can be used to make and store the following changes:

- Adaption of external tuner

Appropriate radio adaption is required in the event of additional connection of DAB or SDARS tuner (digital radio).

SDARS tuners are only used in North America.

- Deactivating/activating GALA function

Speed-dependent volume control (GALA) can be activated or de-activated.

GALA function is activated at factory.

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- Deactivating/activating vehicle speed display

Vehicle speed display in radio display can be activated for driving school vehicles.

To obtain display of vehicle speed in radio display, MENU key must be pressed whilst switching on radio.

- Activating/deactivating “long wave” band

Long wave reception can be activated for certain countries and on customer request.

- Deactivating/activating transportation mode

Radio cannot be switched on if transportation mode is active.

Transportation mode may be active in new vehicles on delivery.

The individual functions are called up by way of the appropriate adaption channel number (adaption table ⇒ page 18).

Procedure

– Start radio self-diagnosis ⇒ page 1 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 1 and 0 (“Adaption”).

Indicated on display:

```
Rapid data transfer                     Q
10 - Adaption
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Enter required adaption channel (adaption table ⇒ page 18).

– Confirm entry by pressing Q key.

Note

After altering adaption value or exiting from adaption channel, function “10 - Adaption” must be implemented again to select a different adaption channel.

1.11.1 Adaption table

Adaption channel	Adaption function
55	External tuner adaption ⇒ page 19

Adaption channel	Adaption function
66	Deactivating/activating GALA function ⇒ page 20
77	Deactivating/activating vehicle speed display ⇒ page 20
88	Long wave activation ⇒ page 21
99	Deactivating/activating transportation mode ⇒ page 22

1.11.2 External tuner adaption (digital radio) - Adaption channel 55

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [5] and [5] (“Channel 55”).

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 55     Adaption      0        ->
                                <-1 3->
```

Channel selected and relevant configuration are displayed on top line (0 = No external tuner, 1 = SDARS tuner (USA), 2 = DAB tuner).

– Press [→] key.

Indicated on display:

```
Channel 55     Adaption      0        ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00002).

00000 = No external tuner

00001 = SDARS tuner (USA)

00002 = DAB tuner

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 55     Adaption      2        ->
                                <-1 3->
```

– Press [→] key.

Indicated on display:

```
Channel 55     Adaption      2        Q
Store altered value?
```

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– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 55     Adaption      2        ->
Altered value stored
```

– Press [→] key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys [0] and [6] (“End of output”).

– Confirm entry by pressing [Q] key.

1.11.3 Deactivating/activating GALA function - Adaption channel 66

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 6 and 6 (“Channel 66”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 66     Adaption      0          ->
                          <-1 3->
```

Channel selected and relevant configuration are displayed on top line (0 = GALA function on, 1 = GALA function off).

– Press → key.

Indicated on display:

```
Channel 66     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00001 = GALA function off

00000 = GALA function on

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 66     Adaption      1          ->
                          <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 66     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 66     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

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– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

1.11.4 Deactivating/activating vehicle speed display - Adaption channel 77

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 7 and 7 (“Channel 77”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 77     Adaption      0          ->
                                <-1 3->
```

Channel selected and relevant configuration are displayed on top line (0 = vehicle speed display off, 1 = vehicle speed display on).

– Press [→] key.

Indicated on display:

```
Channel 77     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00001 = Vehicle speed display on

00000 = Vehicle speed display off

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 77     Adaption      1          ->
                                <-1 3->
```

– Press [→] key.

Indicated on display:

```
Channel 77     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 77     Adaption      1          ->
Altered value stored
```

– Press [→] key.

Indicated on display:

```
Rapid data transfer                     HELP
Select function XX
```

– Press keys [0] and [6] (“End of output”).

– Confirm entry by pressing [Q] key.

1.11.5 Activating/deactivating long wave reception - Adaption channel 88

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Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [8] and [8] (“Channel 88”).

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 88     Adaption      0          ->
                                <-1 3->
```

Channel selected and relevant configuration are displayed on top line (0 = long wave reception on, 1 = long wave reception off).

– Press [→] key.

Indicated on display:

```
Channel 88     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00001 = Long wave off

00000 = Long wave on

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 88     Adaption      1          ->
                           <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 88     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 88     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

1.11.6 Activating/deactivating transportation mode - Adaption channel 99

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 9 and 9 (“Channel 99”).

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Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 99     Adaption      0          ->
                           <-1 3->
```

Channel selected and relevant configuration are displayed on top line (0 = Transportation mode off, 1 = Transportation mode on).

– Press → key.

Indicated on display:

```
Channel 99     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00001 = Transportation mode on

00000 = Transportation mode off

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 99     Adaption      1          ->
                           <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 99     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 99     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).
– Confirm entry by pressing Q key.

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2 Telephone self-diagnosis

2.1 General information and safety measures

2.1.1 General

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The new permanently installed telephone features extensive self-diagnosis.

The permanently installed telephone has a fault memory. Faults occurring in monitored components/wiring are stored in the fault memory together with an indication of the type of fault.

2.1.2 Safety measures

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

WARNING

Proceed as follows to avoid risk of accident during measurement and test drives:

- *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
- *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
- *Reactivate passenger's airbag on completion of work.*

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

2.2 Starting self-diagnosis

2.2.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Technical Service Handbook
- Parts List
- SSP 236 Audi telematics +

Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- connected up ⇒ page 165
- Ignition on

2.2.2 Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

Address word for telephone: 77

– Press keys 7 and 7.

Indicated on display:

```
Rapid data transfer                       Q
77 - Telephone
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4D0035192E   Telephone Nokia 3   0001   -
>
Code 0014123                  WSC XXXXX
```

Telephone display	
4D0035192E	Part number
Telephone Nokia 3	Control unit designation
0001	Software version
Code 0014123	Control unit encoding
WSC XXXXX	Workshop code

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

List of diagnosis functions:

Diagnosis functions	Page
01 - Interrogating control unit version	⇒ page 25
02 - Interrogating fault memory	⇒ page 26
03 - Final control diagnosis	⇒ page 30
05 - Erasing fault memory	⇒ page 29
06 - End of output	⇒ page 30
07 - Encoding control unit	⇒ page 31
08 - Reading measured value block	⇒ page 32
10 - Adaption	⇒ page 35

2.3 Interrogating control unit version

Procedure

– Start telephone self-diagnosis ⇒ page 24 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

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– Press keys 0 and 1 (“Interrogating control unit version”).

Indicated on display:

```
Rapid data transfer                    Q
01 - Interrogating control unit version
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4D0035192E   Telephone Nokia 3   0001   -
>
Code 0014123                 WSC XXXXX
```

Telephone control unit version	
4D0035192E	Part number
Telephone Nokia 3	Control unit designation
0001	Software version
Code 0014123	Control unit encoding
WSC XXXXX	Workshop code

– Press → key.

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

2.4 Interrogating fault memory

Procedure

– Start telephone self-diagnosis ⇒ page 24 .

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

– Press keys 0 and 2 (“Interrogating fault memory”).

Indicated on display:

```
Rapid data transfer                    Q
02 - Interrogating fault memory
```

– Confirm entry by pressing Q key.

The number of stored faults appears on the display.

```
X fault(s) detected
```

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The stored faults are displayed and printed out consecutively.

– Check fault printout against fault table ⇒ page 27 and eliminate fault.

If “No fault detected” is displayed, tester returns to initial setting after pressing → key.

Indicated on display:

```
No fault detected                      ->
```

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

If any other display appears, refer to ⇒ Fault reader operating instructions .

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

2.5 Fault table

Note

- *The following table lists all faults which can be detected by the system and printed out on fault reader -V.A.G 1551- in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and "/SP" appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 40 on/off cycles are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00003 Control unit ♦ Defective	♦ Telephone transmitter and receiver unit -R36- defective	– Replace telephone transmitter and receiver unit -R36- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00469 Display data bus in one-wire mode ♦ Electrical fault in circuit	♦ CAN bus fault ♦ Open circuit in wiring ♦ Wiring damage	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
00851 Loudspeaker This fault is stored if a fault occurs during final control diagnosis (loudspeaker).	♦ Mutual short circuit in wires to hands-free loudspeaker	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace hands-free loudspeaker ⇒ Radio, telephone and navigation system; Rep. Gr. 91

Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01300 Nav. with CD drive control unit -J401- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Wiring damage ♦ Navigation system with CD drive control unit -J401- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in navigation system with CD drive control unit -J401- ⇒ page 89 – Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01304 Radio -R- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Open circuit in radio -R- power supply ♦ Radio -R- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Use current flow diagram to check radio -R- power supply – Read out radio -R- fault memory ⇒ page 3 – Replace radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01305 Data bus display ♦ Defective	♦ CAN bus fault ♦ Open circuit in wiring	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring
01317 Control unit in dash panel insert -J285- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Dash panel insert defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in dash panel insert ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90
01326 Multi-func. steering wheel ctrl. unit -J453- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Multi-function steering wheel control unit -J453- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in multi-function steering wheel control unit -J453- ⇒ page 135 – Replace multi-function steering wheel control unit -J453- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01522 Telephone handset -R37- ♦ No communication	♦ Open circuit in wiring ♦ Telephone handset -R37- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace telephone handset -R37- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01523 Telephone microphone -R38- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in wiring ♦ Short circuit ♦ Telephone microphone -R38- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace telephone microphone -R38- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01524 Telephone aerial -R65- ♦ No signal	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Telephone aerial -R65- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace aerial wire of telephone aerial -R65- ⇒ Radio, telephone and navigation system; Rep. Gr. 91 – Replace telephone aerial -R65- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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2.6 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

- Fault memory interrogated ⇒ page 26
- All faults rectified

On completion of fault memory interrogation:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5 (“Erasing fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 - Erasing fault memory
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                     ->
Fault memory erased
```

Fault memory has now been erased.

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If however the following message appears:

Indicated on display:

```
Attention:                              -
>
Fault memory not interrogated
```

Test procedure not OK

Adhere exactly to test sequence: First interrogate fault memory, eliminate any faults and then erase memory.

2.7 End of output

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Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                     Q
06 - End of output
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

2.8 Final control diagnosis

- Final control diagnosis can only be performed with vehicle stationary and engine not running.
- If final control diagnosis detects a fault, locate and eliminate cause of trouble if necessary.

Procedure

– Start telephone self-diagnosis ⇒ page 24 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 3 (“Final control diagnosis”).

Indicated on display:

```
Rapid data transfer                     Q
03 - Final control diagnosis
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Final control diagnosis                 ->
Loudspeaker
```

Test tone can be heard via loudspeaker.

– Press → key.

Indicated on display:

```
Final control diagnosis                 ->
End
```

– Press → key.

– This returns tester to basic function.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

2.9 Encoding control unit

This function can be used to encode the telephone as follows.

- Data bus
- Vehicle model
- Voice control/multi-function steering wheel
- Navigation system
- Radio configuration

Note

In contrast to the codes of other control units, the telephone code displayed has 7 digits.

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Procedure

– Start telephone self-diagnosis ⇒ page 24 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 7 (“Encoding control unit”).

Indicated on display:

```
Rapid data transfer                   Q
07 - Encoding control unit
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Encoding control unit
Enter code number  XXXXX     (0-32000)
```

– Enter code number in line with encoding table ⇒ page 32 .

Code 04123

- Data bus 0 = with CAN bus
- Vehicle model: 4 = A2
- Voice control/multi-function steering wheel: 1 = without voice control and with multi-function steering wheel
- Navigation system: 2 = with Nav II-D
- Radio system: 3 = radio system with CAN bus and BOSE

Control unit identification and code entered (0014123) appear on display.

```
4D0035192E   Telephone Nokia 3   0001   -
>
Code 0004123                  WSC XXXXX
```

– Terminate encoding by pressing → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

2.9.1 Encoding table

6 - 7	5	4	3	2	1	← Decimal places of byte encoding on tester display
						Radio [1]: 1: No radio 2: With radio (with CAN) (Symphony I CAN, Symphony II, Chorus II, Concert II) 3: With radio (with CAN) (Symphony I CAN, Symphony II, Chorus II, Concert II) with BOSE 4: With radio (no CAN) (Chorus I, Concert I, Symphony I) or RNS-D 5: With radio (no CAN) (Chorus I, Concert I, Symphony I) or RNS-D with BOSE
						Navigation: 0: without Nav 1: with Nav III 2: with Nav II-D 3: with Nav IV
						Voice control/multi-function steering wheel (VCS/MFS): 0: No VCS, no MFS 1: No VCS, with MFS 3: With VCS, with MFS
						Vehicle model: 0: A3(AB) 1: A4 (B5) 2: A6(C5) 3: A8 (D2) 4: A2 (W10) 5: A4 (B6)
						0: With data bus 1: No data bus
						00: Columns reserved for subsequent encoding

1) A distinction is made between the various radio types as radios without CAN functions may also be fitted.

2.10 Reading measured value block

Procedure

– Start telephone self-diagnosis ⇒ page 24 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 8 (“Reading measured value block”).

Indicated on display:

```
Rapid data transfer                       Q
08 - Reading measured value block
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Reading measured value block
Enter display group number XXX
```

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– Enter desired display group number (list of display groups ⇒ page 32).

– Confirm entry by pressing Q key.

2.10.1 List of display groups

Display group number	Indicated on display
001	1 = Telephone 2 = Registered/not registered 3 = Field strength 4 = 0...010
002	3 = Dimming 4 = 0...100%
005	1 = Unit number

Display group number	Indicated on display
080	1 = Hardware version, prod. date
081	1 = Software version
125	1 = Dash panel insert on CAN bus 2 = Steering wheel on CAN bus 3 = Radio on CAN bus 4 = Navigation system on CAN bus

2.10.2 Measured value block 001

Reading measured value block 1 →				Indicated on display
Telephone	Registered	Field strength	5	
				Field strength • 0...10
				Field strength of telephone network
				Telephone registration • Registered • Not registered
				Permanently installed telephone

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2.10.3 Measured value block 002

Reading measured value block 2 →		Indicated on display
Dimming	0%	
		Dimming value • 0...100%
		Dimming (only with lights “ON”)

2.10.4 Measured value block 005

Reading measured value block 5 →	Indicated on display
IMEI: 493005100454423	
	Unit number

2.10.5 Measured value block 080

Reading measured value block → 80 KEY ID: 0000000000 CP3.07 12/99	Indicated on display

Display of key ID with hardware version and production date

2.10.6 Measured value block 081

Reading measured value block → 81 4BYN009461 6.510 26-05-00 AC84	Indicated on display

Display of chassis number with software version and date

2.10.7 Measured value block 125

Reading measured value block → 125 Dash 1 Steering wheel 1 Radio 1 Navigat 1	Indicated on display

Navigation unit
- “1” = On CAN bus
- “0” = Not on CAN bus (transmission problem)
- “ ” = Not connected to CAN bus

Radio
- “1” = On CAN bus
- “0” = Not on CAN bus (transmission problem)
- “ ” = Not connected to CAN bus

Multi-function steering wheel control unit
- “1” = On CAN bus
- “0” = Not on CAN bus (transmission problem)
- “ ” = Not connected to CAN bus

Dash panel insert
- “1” = On CAN bus
- “0” = Not on CAN bus (transmission problem)
- “ ” = Not connected to CAN bus

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2.11 Adaption

The "Adaption" function can be used to select the GSM aerial test.

At present the GSM aerial test cannot be activated.

Procedure

– Start telephone self-diagnosis ⇒ page 24 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 1 and 0 (“Adaption”).

Indicated on display:

```
Rapid data transfer                 Q
10 - Adaption
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Enter required adaption channel (adaption table ⇒ page 35).

– Confirm entry by pressing Q key.

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Note

After altering adaption value or exiting from adaption channel, function “10 - Adaption” must be implemented again to select a different adaption channel.

2.11.1 Adaption table

Adaption channel	Adaption function
05	Aerial test selection ⇒ page 35

2.11.2 Aerial test selection - Adaption channel 05

At present the GSM aerial cannot be tested. “0 = No test” must therefore be set.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 5 (“Channel 5”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption     1        ->
Test On
```

Channel selected and aerial test currently stored are displayed on top line.

0 = No test

1 = Testing of GSM aerial (cannot be used)

– Press → key.

Indicated on display:

```
Channel 5     Adaption      1          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00000) if value currently stored is not “00000”.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      0          Q
Test Off
```

– Press → key.

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Indicated on display:

```
Channel 5     Adaption      0          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      0          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

3 Self-diagnosis of pre-fitted components for mobile phone installation

3.1 General information and safety measures

3.1.1 General

The new pre-fitted components for mobile phone installation can be used in all vehicle models and are provided with both an integrated voice control system and a Bluetooth aerial.

The pre-fitted components for mobile phone installation feature extensive self-diagnosis.

A fault memory is provided for these components. Faults occurring in monitored components/wiring are stored in the fault memory together with an indication of the type of fault.

3.1.2 Safety measures

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

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WARNING

Proceed as follows to avoid risk of accident during measurement and test drives:

- *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
- *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
- *Reactivate passenger's airbag on completion of work.*

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

3.2 Starting self-diagnosis

3.2.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

- Technical Service Handbook
- Parts List

Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Vehicle diagnostic, testing and information system -VAS 5051- or vehicle diagnostic and service information system -VAS 5052- connected up and switched on ⇒ page 165
- Ignition on

3.2.2 Procedure

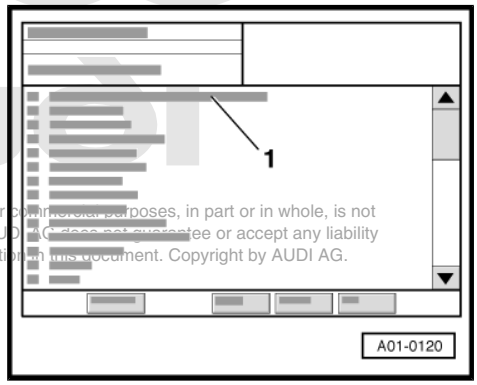
– Touch “Self-diagnosis” panel on tester display.

Address word for pre-fitted components for mobile phone installation: “77-Telephone”

– Touch “77-Telephone” panel on tester display.

Indicated on VAS 5051:

– Wait until next display appears.



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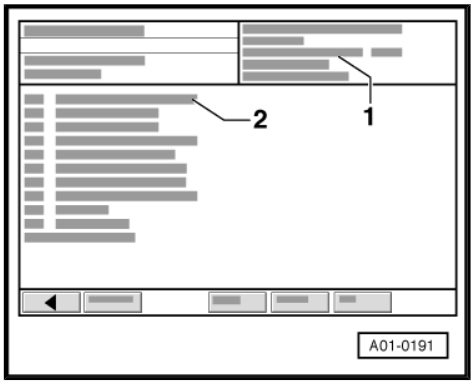
Indicated on VAS 5051:



1 - Control unit identification of pre-fitted components for mobile phone installation ⇒ page 39

2 - List of diagnosis functions ⇒ page 39

Control unit identification of pre-fitted components for mobile phone installation	
77 - Telephone	Vehicle system
8P0862335	Part number
Mob. phone pre-fitt. comp.2	Control unit designation
H10 0090	Software version
Code 411	Control unit encoding
Workshop code 00000	Workshop identification

List of diagnosis functions:

Diagnosis functions	Page
02 - Interrogating fault memory	⇒ page 39
03 - Final control diagnosis	⇒ page 44
05 - Erasing fault memory	⇒ page 42
06 - End of output	⇒ page 43
07 - Encoding control unit	⇒ page 45
08 - Reading measured value block	⇒ page 48
10 - Adaption	⇒ page 52

3.3 Interrogating fault memory

Indicated on VAS 5051:

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

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Indicated on VAS 5051:

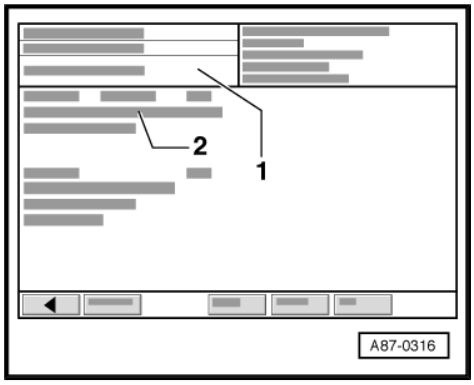
1 - Content of fault memory

Either: 0 faults detected

Or: X fault(s) detected

2 - Fault list

According to: Fault code, fault location, type of fault



A - If faults detected:

– Print out screen display or self-diagnosis log.

– Terminate function “02 - Interrogating fault memory” by touching ↵ key.

– Rectify fault(s) in line with fault table ⇒ page 40 .

– Select diagnosis function “02 - Interrogating fault memory” again from list and erase fault memory ⇒ page 42 .

– Select diagnosis function “06 - End of output” from list.

B - No faults detected:

– Select diagnosis function “06 - End of output” from list.

3.4 Fault table

Note

- *The following table lists all faults which can be detected by the system in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and “/SP” appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 50 drive cycles are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

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Output on -VAS 5051-	Possible cause of trouble	Fault remedy
00003 Control unit ♦ Defective	♦ Control unit/pre-fitted components for mobile phone installation defective	– Replace control unit/pre-fitted components ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00446 Restricted operation due to undervoltage	♦ Battery voltage less than 8.5 V ♦ Battery flat	– Evaluate measured value block 001 ⇒ page 49 – Charge/replace battery ⇒ Electrical system; Rep. Gr. 27

Output on -VAS 5051-	Possible cause of trouble	Fault remedy
00447 Restricted operation due to overvoltage	♦ Battery voltage in excess of 26.5 V ♦ Voltage regulator in alternator defective	– Evaluate measured value block 001 ⇒ page 49 – Check alternator ⇒ Electrical system; Rep. Gr. 27
00466 Steering column electronics control unit -J527- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Steering column electronics control unit -J527- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in steering column electronics control unit -J527- ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 – Replace steering column electronics control unit -J527- ⇒ Electrical system; Rep. Gr. 90
00532 Supply voltage ♦ Upper limit value exceeded ♦ Lower limit value not reached	♦ Battery voltage in excess of 15.5 V ♦ Voltage regulator in alternator defective ♦ Battery voltage less than 6.5 V ♦ Battery flat	– Evaluate measured value block 001 ⇒ page 49 – Check alternator ⇒ Electrical system; Rep. Gr. 27 – Charge/replace battery ⇒ Electrical system; Rep. Gr. 27
01024 Control unit not encoded	♦ Pre-fitted components for mobile phone installation not encoded	– Encode control unit ⇒ page 45
01304 Radio -R- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Open circuit in radio -R- power supply ♦ Radio -R- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out radio -R- fault memory ⇒ page 3 – Use current flow diagram to check radio -R- power supply – Replace radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01305 Data bus display ♦ Defective	♦ CAN bus fault ♦ Open circuit in wiring	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring

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Output on -VAS 5051-	Possible cause of trouble	Fault remedy
01317 Control unit in dash panel insert -J285- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Dash panel insert defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in dash panel insert ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90
01523 Telephone microphone -R38- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in wiring ♦ Short circuit ♦ Telephone microphone -R38- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace telephone microphone -R38- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01524 Telephone aerial -R65- ♦ Open circuit ♦ Short to earth	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Telephone aerial -R65- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace aerial wire of telephone aerial -R65- – Replace telephone aerial -R65- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
2503 Output wire to radio ♦ Short to positive ♦ Short to earth ♦ Electrical fault in circuit	♦ No audible output from loudspeakers during telephone call ♦ Short circuit or open circuit in wiring from control unit to radio -R- or navigation system	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Read out radio -R- fault memory ⇒ page 3 – Read out navigation system fault memory ⇒ page 89

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3.5 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

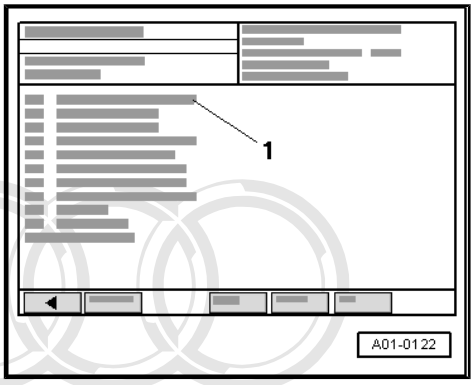
- Fault memory interrogated ⇒ page 39
- All faults rectified

Procedure

On completion of fault memory interrogation:

Indicated on VAS 5051:

– Select diagnosis function “05 - Erasing fault memory”.



Indicated on VAS 5051:

If the following message appears in display zone -1-: “Fault memory not yet interrogated”, procedure has not been correctly implemented. Fault memory must be interrogated before it can be erased.

Indicated in display zone -1-:

- No display: Not yet erased
- Fault memory erased: Erasing completed

Indicated in display zone -2-:

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

– Touch OK key in display -2-.

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

– Interrogate fault memory again on completion of repair work.

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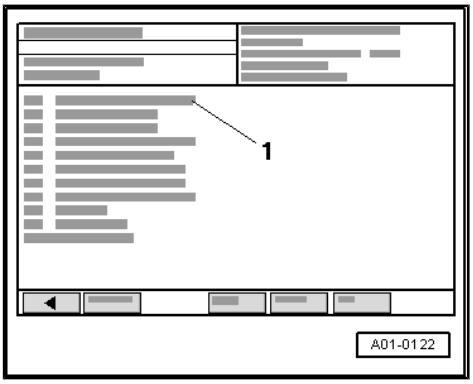
3.6 End of output

Procedure

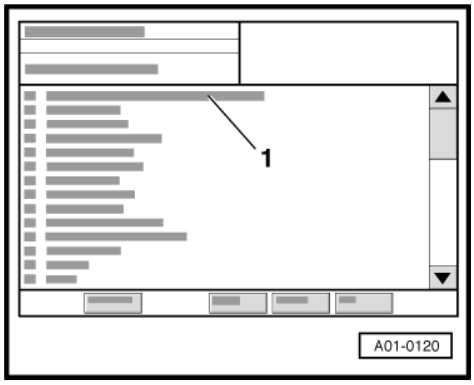
Indicated on VAS 5051:

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



Indicated on VAS 5051:

– When this display appears, switch off ignition and unplug diagnostic connector.



3.7 Final control diagnosis

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

The following control elements for pre-fitted components for mobile phone installation are actuated consecutively in final control diagnosis routine:

Number	Control element
1	Loudspeaker/microphone
2	Radio muting
3	Telephone on signal
4	Audio wire adapter set (factory only)
5	Communication wire to adapter set

Test requirement

Radio switched on and set to radio channel

Procedure

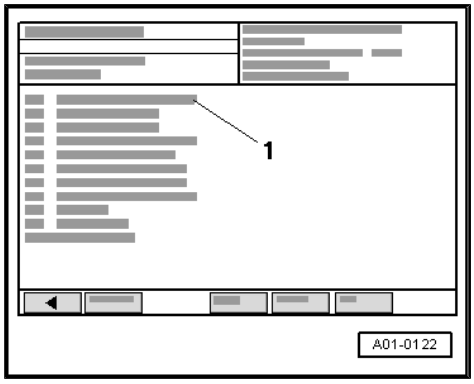
– Start self-diagnosis of pre-fitted components for mobile phone installation ⇒ page 37 .

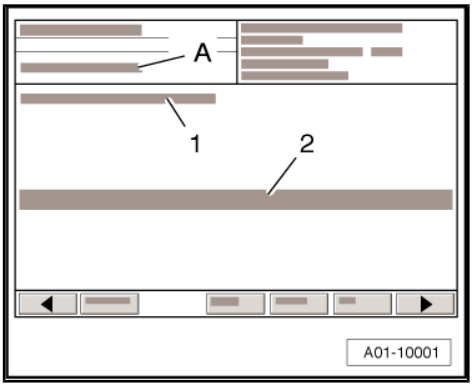
Indicated on VAS 5051:

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

First control element is actuated.

Loudspeaker/microphone:





Indicated on VAS 5051:

A: - “Control element test in progress” “Selection of next step permitted”

1: - “Loudspeaker”

2: - “Loudspeaker measured values”

Test tone is audible through radio loudspeakers. Instantaneous voltage at microphone input is simultaneously displayed at position -2-.

- Specification: approx. 4V
- Open circuit: approx. 8V
- Short circuit: approx. 2V

– Touch → key.

2nd control element is actuated.

Radio muting:

There is no audible tone through radio loudspeakers (no measured values are displayed).

– Touch → key.

3rd control element is actuated.

Telephone on signal:

Aerial amplifier, mobile telephone -R86- receives “Telephone ON” signal (approx. battery voltage).

Voltage can be measured at aerial amplifier, mobile telephone -R86- .

– Touch → key.

4th control element is actuated.

Audio wire adapter set:

This test can only be performed at the factory with a special test adapter set.

Value “Not OK” is thus displayed under “Measured values for audio wire adapter set”.

– Touch → key.

5th control element is actuated.

Communication wire adapter set:

Control unit outputs command to adapter set. If control unit receives response from adapter set, “OK” is displayed under “Measured values for communication wire adapter set”. “Not OK” is displayed if there is no response.

– Touch → key.

Indicated on VAS 5051:

A: - “Control element test over”

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

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3.8 Encoding control unit

This function can be used to encode pre-fitted components for mobile phone installation as follows:

- Voice control language

The pre-fitted components for mobile phone installation feature integrated voice control. The relevant language must be encoded accordingly.

- Dash panel insert display language
- Fitting list

The fitting list indicates the various equipment levels.

- Type of steering wheel

A distinction is made between the following:

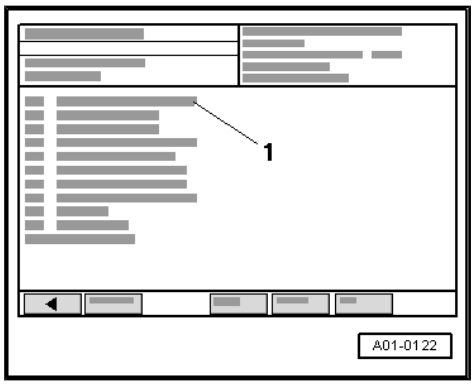
- No multi-function steering wheel
- Standard steering wheel: Multi-function steering wheel with 6 buttons: Series production
- Modular steering wheel: Multi-function steering wheel with “thumb wheels and buttons”: Refer to A8 as of MY 2003 and A6 as of MY 2004. Standard for all vehicles with CAN bus as of week 22/2004.
- Vehicle model

Procedure

– Start self-diagnosis of pre-fitted components for mobile phone installation ⇒ page 37 .

Indicated on VAS 5051:

– From list -1- select diagnosis function “07 - Encoding control unit”.

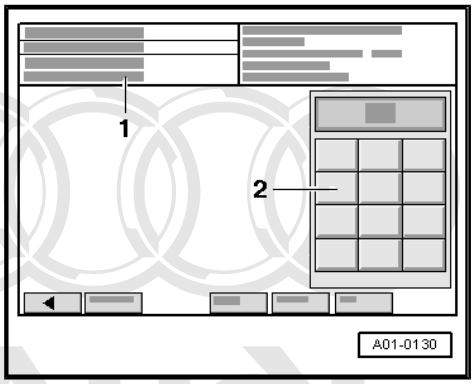


Indicated on VAS 5051:

1 - “Enter code word”

1. Enter 5-digit control unit code as per encoding table on key-pad -2- ⇒ page 47 .

Encoding example: 01211



- Vehicle model: 0 = CAN vehicle A2
- Type of steering wheel: 1 = Standard steering wheel
- Fitting list: 2 = With multi-function steering wheel
- Voice control language: 1 = German
- Display language: 1 = German

– Confirm entry by touching Q key.

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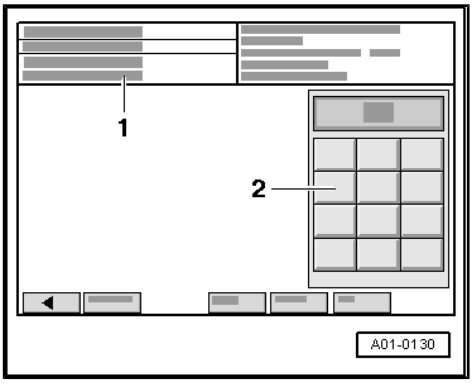
Indicated on VAS 5051:

1 - “Encoding in progress”

– Wait until next display appears.

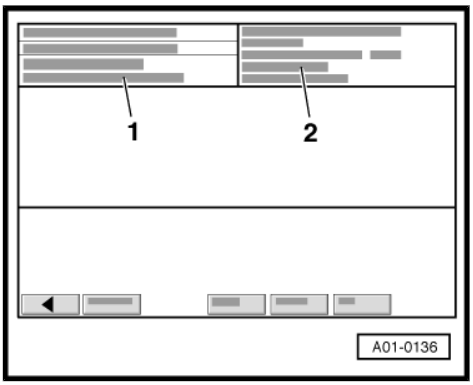


Indicated on VAS 5051:

1 - “Vehicle system encoding completed”

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

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



3.8.1 Encoding table

5	4	3	2	1	← Decimal places of byte encoding on tester display			
				1	Dash panel insert display language			
					0	No display in dash panel insert		
					1	German		
					2	English (UK)		
					3	French		
					4	Italian		
					5	Spanish		
					7	English (US)		
			1		Voice control language			
					0	Voice control off		
					1	German		
					2	English (UK)		
					3	French		
					4	Italian		
					5	Spanish		
					7	English (US)		
					8	External unit voice control (e.g.: RNS-E)		
					9	Personalised language selection		
		2			Fitting list			
						Multi-function steering wheel	HU (RNS-D or RNS-E)	K-wire (diagnosis)
					1	-	-	-
					2	X	-	-
					3	-	X	-
					4	X	X	-

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5	4	3	2	1	← Decimal places of byte encoding on tester display			
					5	-	-	X
					6	X	-	X
					7	-	X	X
					8	X	X	X
					X = Component fitted		- = not fitted	
	1				Type of steering wheel			
					0	No multi-function steering wheel		
					1	Standard steering wheel		
					2	Modular steering wheel		
0					Vehicle model			
					0	Vehicles with CAN BUS (TT, A3, A2)		
					1	D3/C6 High system		
					2	C6 Standard system		

3.9 Reading measured value block

Procedure

– Place mobile phone in holder and switch it on.

– Start self-diagnosis of pre-fitted components for mobile phone installation ⇒ page 37 .

Indicated on VAS 5051:

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

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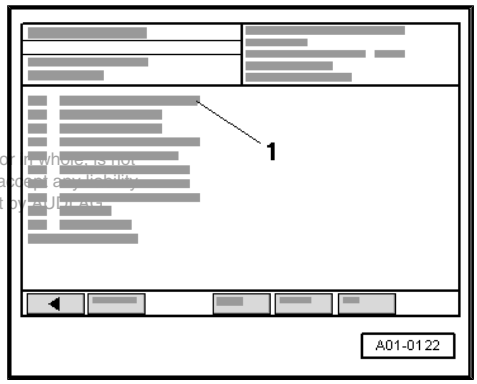
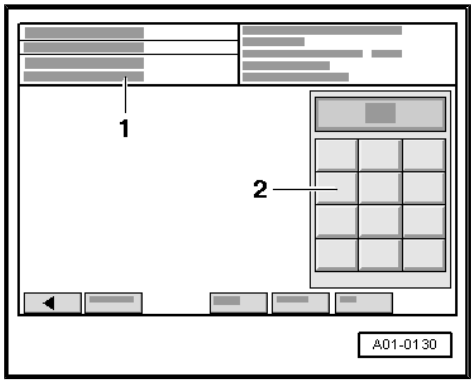


Indicated on VAS 5051:

1 - “Enter display group number”

– Enter desired 3-digit display group number on keypad -2- and confirm entry by touching Q key. List of display groups ⇒ page 49

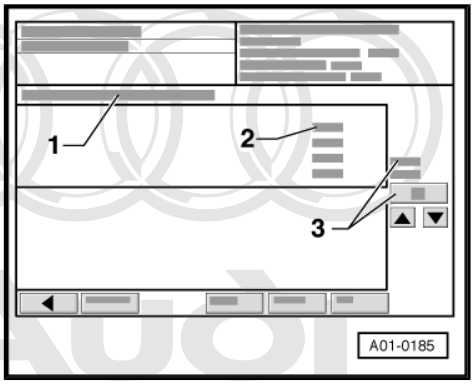


Indicated on VAS 5051:

1 - “Reading measured value block”

2 - Display zones 1 to 4 in vertical arrangement

3 - Display group X



3.9.1 List of display groups

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Display group number	Indicated on display
001	1 = Voltage terminal 30
005	1 = Input signals
010	1 = Field strength 2 = Mobile phone reception field strength
011	1 = Main aerial 2 = Main aerial status Factory only
014	1 = Bluetooth units 2 = Number of units incorporated
019	1 = Voltage at microphone input 2 = Microphone current input
020	1 = Field strength of active Bluetooth link
080	1 = Manufacturer code
081	1 = Control unit serial number
082	1 = Control unit software number

3.9.2 Measured value block 001

Reading measured value block → 1 12.3V	Indicated on display
Voltage terminal 30	

3.9.3 Measured value block 005

Reading measured value block → 5 0000	Indicated on display

Input signals 0 = PTT button pressed 1 = Mobile phone in holder 2 = Mobile phone on 3 = Communication with mobile phone active If function is active, “1” appears instead of “0”

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3.9.4 Measured value block 010

Reading measured value block 10 →	Indicated on display
Field strength 0	
Reception field strength –113.....33dBm -128 = No mobile phone in holder or no communication with mobile phone	
Field strength	

3.9.5 Measured value block 011

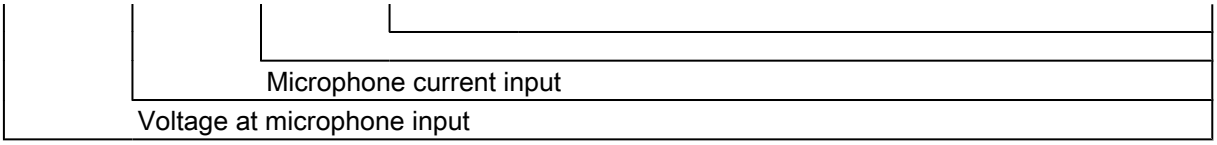
Reading measured value block 11 →	Indicated on display
Main aerial Not possible	
Telephone aerial status not possible = For factory only with special adapter set	
Main aerial (telephone aerial)	

3.9.6 Measured value block 014

Reading measured value block 14 →	Indicated on display
User Bluetoo 0	
Number of incorporated Bluetooth units (max. 10)	
Bluetooth units	

3.9.7 Measured value block 019

Reading measured value block 19 →	Indicated on display
3.9V 0.007A	



3.9.8 Measured value block 020

Reading measured value block → 20 10dBm	Indicated on display

Reception field strength of active Bluetooth link
Output if no Bluetooth link active:
XXXXXXXXXXXXXXXXXXXXXXX

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3.9.9 Measured value block 080

Reading measured value block → 80 000-03 24.03.03 00000001 0001 0023	Indicated on display

Manufacturer code

3.9.10 Measured value block 081

Reading measured value block → 81 00000000001682	Indicated on display

Serial number

3.9.11 Measured value block 082

Reading measured value block → 82 0378366698765 17.07.03	Indicated on display

Software number

3.10 Adaption

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

- Adaption of basic volume

Basic volume (level in dB) of output to radio can be adjusted.

- Setting of run-on time

On customer request, time can be set for which mobile phone in holder remains active after switching off ignition.

- Setting of delay time/reference channel

Depending on vehicle equipment, various delay times must be set to provide compensation for delay times of audio components (e.g. radio, amplifier) and acoustic propagation times in vehicle.

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- Setting of microphone sensitivity

Microphone sensitivity can be increased or reduced.

- Activating/deactivating Bluetooth module

Bluetooth module in control unit can be activated/deactivated. Bluetooth module is not to be activated, for example, during transportation by air.

- Bluetooth hands-free function without/with mobile phone in holder

Setting can be made such that Bluetooth hands-free function is only active with mobile phone in holder.

- Setting of Bluetooth pass key

On delivery, Bluetooth pass key is set to “1234”. This adaption channel can be used to set it to any 4-digit value as required by customer.

- Setting of beep delay value

This adaption channel is used to set voice prompt tone delay following mute signal.

Factory settings are adopted if there are no special customer requests. Pre-fitted components for mobile phone installation do not therefore have to be specially adapted.

Adaption procedure:

– Start self-diagnosis of pre-fitted components for mobile phone installation ⇒ page 37 .

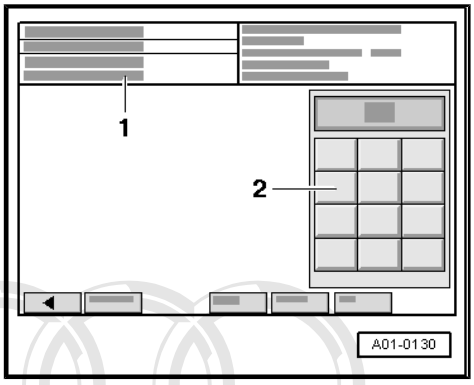
Indicated on VAS 5051:

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

Indicated on VAS 5051:

1 - “Enter channel number”

– Enter desired adaption channel on keypad -2- and confirm entry by touching Q key (adaption table ⇒ page 55).



Note

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

Indicated on VAS 5051:

1 - “Channel X reading and testing”

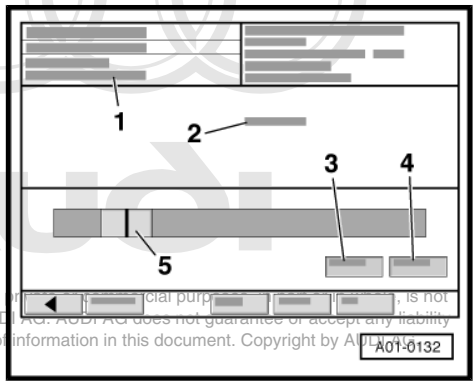
2 - No display

3 - Tastatur key

4 - Speichern key

5 - Bar set to current adaption value

Altering adaption value with bar



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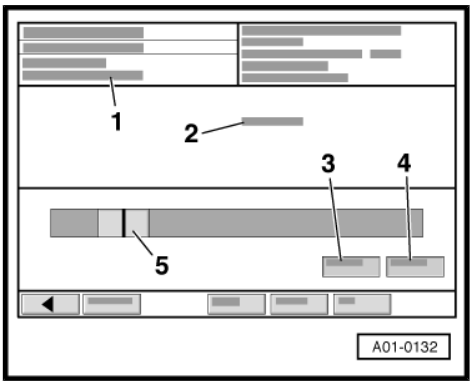
Indicated on VAS 5051:

– Move bar -5- in required direction or touch panel next to bar, thus causing it to move in desired direction.

– Touch Speichern key -4-.



Indicated on VAS 5051:

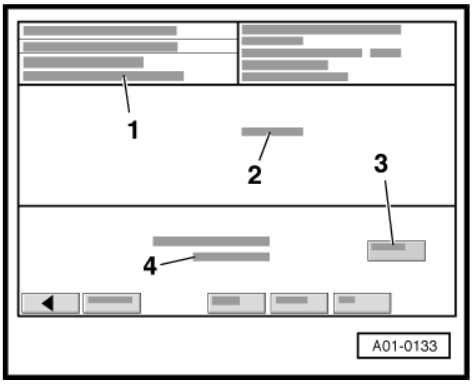
1 - “Store channel X”

2 - No display

3 - Übernehmen key

4 - Original value X, new value X

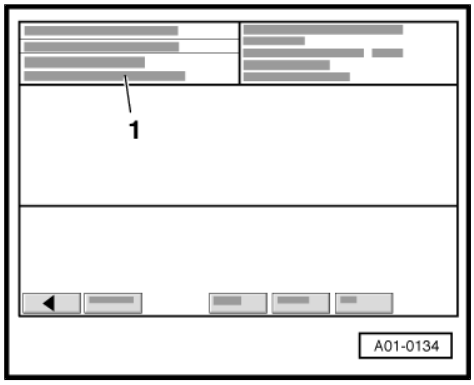
– Confirm new adaption value by touching Übernehmen key -3-.



Indicated on VAS 5051:

1 - “Channel X value X stored”

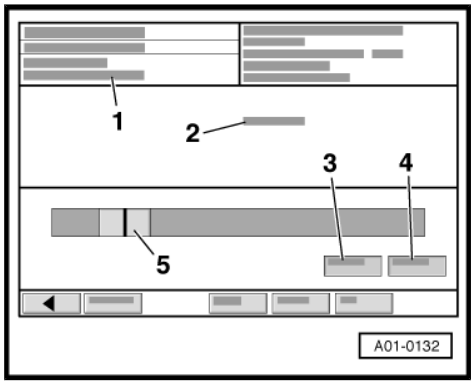
– Terminate diagnosis function “10 - Adaption” by touching ← key.



Altering adaption value by means of direct entry

Indicated on VAS 5051:

– Touch Tastatur key -3-.



Indicated on VAS 5051:

1 - “Enter adaption value”

2 - Keypad

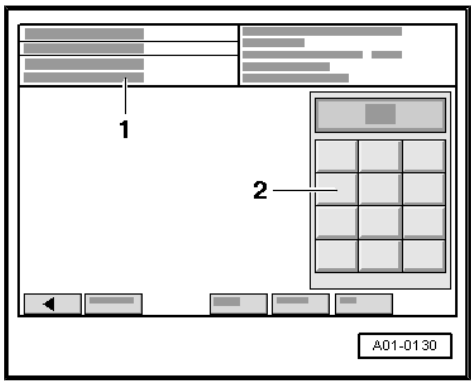
– Enter required 5-digit adaption value on keypad -2-. Enter “0” to fill empty positions.

Example:

Required input: 1

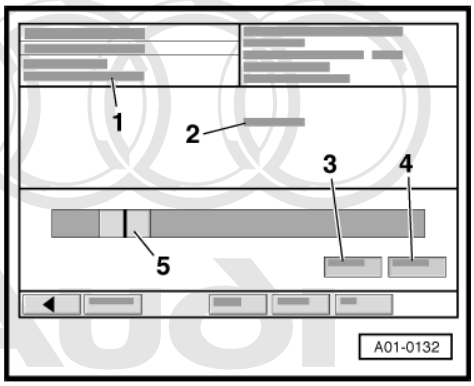
Keypad entry: 00001

– Confirm entry by touching Q key.



Indicated on VAS 5051:

– Touch Speichern key -4-.



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Indicated on VAS 5051:

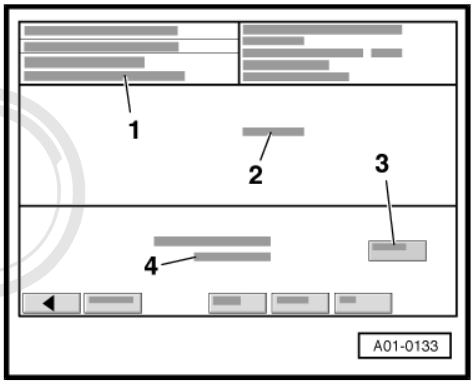
1 - “Store channel X”

2 - No display

3 - Übernehmen key

4 - Original value X, new value X

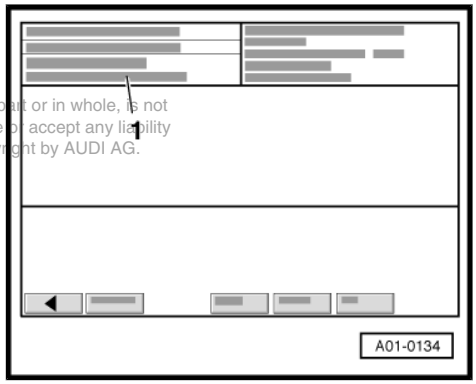
– Confirm new adaption value by touching Übernehmen key -3-.



Indicated on VAS 5051:

1 - “Channel X value X stored”

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



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3.10.1 Adaption table

Adaption channel	Adaption function
128	Setting of basic volume ⇒ page 55
129	Setting of run-on time ⇒ page 56
130	Setting of delay time/reference channel ⇒ page 57
131	Setting of microphone sensitivity ⇒ page 57
133	Activating/deactivating Bluetooth module ⇒ page 58
134	Bluetooth hands-free function without/with mobile phone in holder ⇒ page 59
135	Setting of Bluetooth pass key ⇒ page 59
136	Setting of beep delay value ⇒ page 60

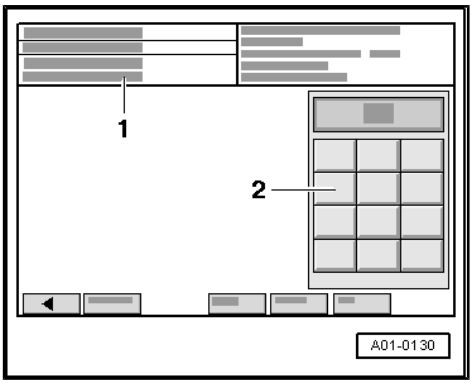
3.10.2 Setting of basic volume - Adaption channel 128

Basic volume (level in dB) of output to radio can be adjusted.

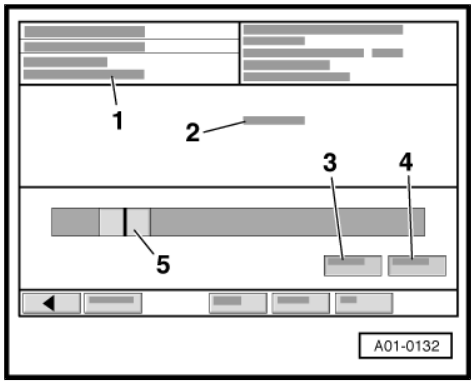
Indicated on VAS 5051:

1 - Enter channel number

– Use keypad -2- to enter “128” for channel 128 and confirm by touching Q key.



Indicated on VAS 5051:



1 - Channel 128 reading and testing

5 - Bar set to current adaption value (e.g.: 128)

0 = 0dB neither reduction nor increase

1 = +1dB increase

3 = +3dB increase

6 = +6dB increase

128 = -1dB reduction

130 = -3dB reduction

133 = -6dB reduction

– Alter adaption value with bar ⇒ page 53 .

Or

– Alter adaption value by way of direct entry ⇒ page 54 .

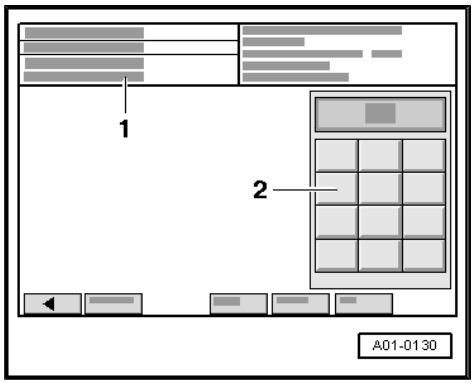
Display on completion of adaption:

1 - Channel 128 value X stored

3.10.3 Setting of run-on time - Adaption channel 129

On customer request, time can be set for which mobile phone in holder remains active after switching off ignition.

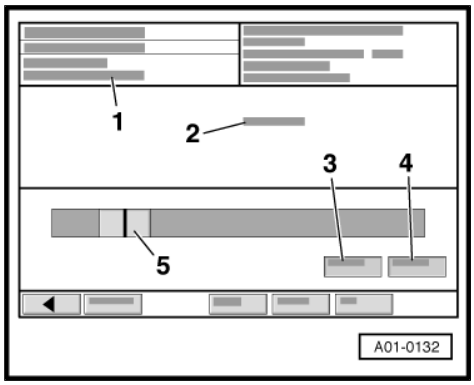
Indicated on VAS 5051:



1 - Enter channel number

– Use keypad -2- to enter “129” for channel 129 and confirm by touching Q key.

Indicated on VAS 5051:



1 - Channel 129 reading and testing

5 - Bar set to current adaption value (e.g.: 6)

0 = 30 sec. run-on time

1 = 5 min. run-on time

2 = 10 min. run-on time

240 = 20 h run-on time

– Alter adaption value with bar ⇒ page 53 .

Or

– Alter adaption value by way of direct entry ⇒ page 54 .

Display on completion of adaption:

1 - Channel 129 value X stored

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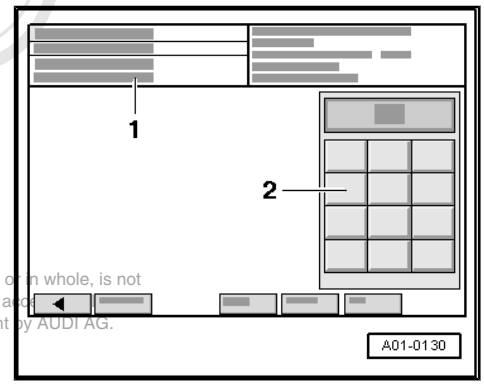
3.10.4 Setting of delay time/reference channel - Adaption channel 130

Depending on vehicle equipment, various delay times must be set to provide compensation for delay times of audio components (e.g. radio, amplifier) and acoustic propagation times in vehicle.

Indicated on VAS 5051:

1 - Enter channel number

– Use keypad -2- to enter “130” for channel 130 and confirm by touching Q key.



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Indicated on VAS 5051:

1 - Channel 130 reading and testing

5 - Bar set to current adaption value (e.g.: 3)

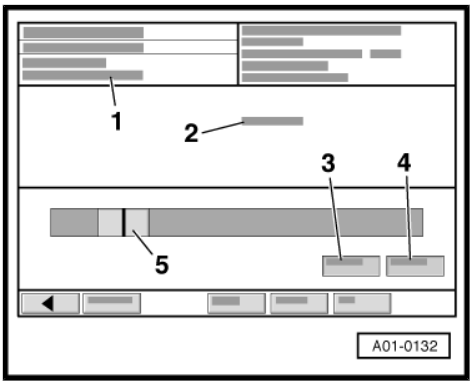
0 = 0 ms delay time

1 = 1 ms delay time

2 = 2 ms delay time

Up to:

12 = 12 ms delay time



– Alter adaption value with bar ⇒ page 53 .

Or

– Alter adaption value by way of direct entry ⇒ page 54 .

Display on completion of adaption:

1 - Channel 130 value X stored

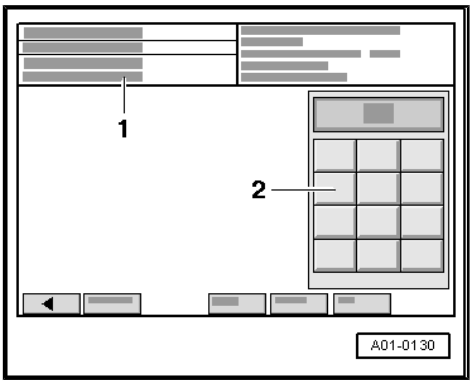
3.10.5 Setting of microphone sensitivity - Adaption channel 131

Microphone sensitivity can be increased or reduced.

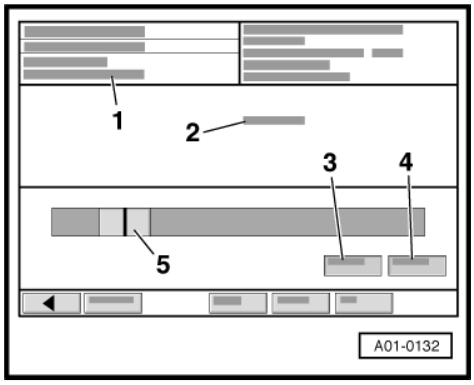
Indicated on VAS 5051:

1 - Enter channel number

– Use keypad -2- to enter “131” for channel 131 and confirm by touching Q key.



Indicated on VAS 5051:



1 - Channel 131 reading and testing

5 - Bar set to current adaption value (e.g.: 3)

0 = 0dB neither reduction nor increase

1 = +1dB increase

2 = +2dB increase

3 = +3dB increase

4 = +4dB increase

5 = +5dB increase

6 = +6dB increase

128 = -1dB reduction

129 = -2dB reduction

130 = -3dB reduction

131 = -4dB reduction

132 = -5dB reduction

133 = -6dB reduction

– Alter adaption value with bar ⇒ page 53 .

Or

– Alter adaption value by way of direct entry ⇒ page 54 .

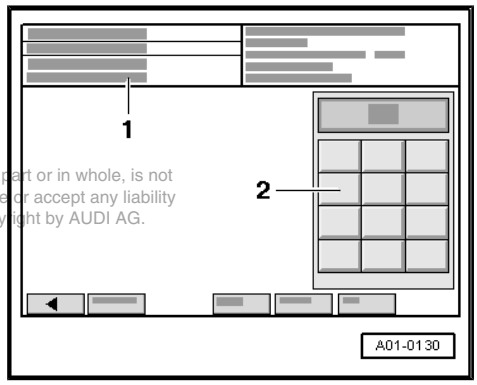
Display on completion of adaption:

1 - Channel 131 value X stored

3.10.6 Activating/deactivating Bluetooth module - Adaption channel 133

Bluetooth module in control unit can be activated/deactivated.

Indicated on VAS 5051:



1 - Enter channel number

– Use keypad -2- to enter “133” for channel 133 and confirm by touching Q key.

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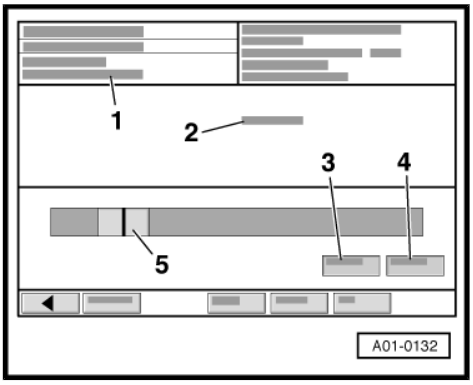
Indicated on VAS 5051:



1 - Channel 133 reading and testing

5 - Bar set to current adaption value (e.g.: 1)

1 = Bluetooth on

0 = Bluetooth off

– Alter adaption value with bar ⇒ page 53 .

Or

– Alter adaption value by way of direct entry ⇒ page 54 .

Display on completion of adaption:

1 - Channel 133 value X stored

3.10.7 Bluetooth hands-free function without/ with mobile phone in holder - Adaption channel 134

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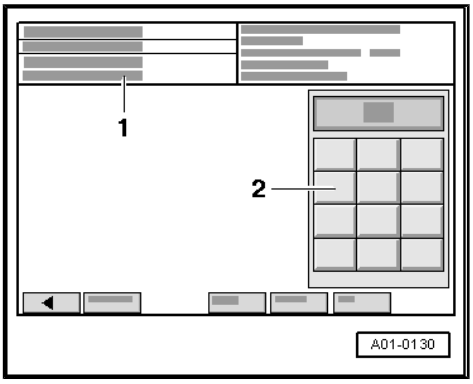
Setting can be made such that Bluetooth hands-free function is only active with mobile phone in holder.

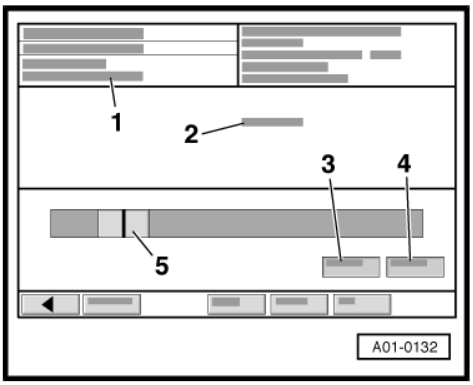
Indicated on VAS 5051:



1 - Enter channel number

– Use keypad -2- to enter “134” for channel 134 and confirm by touching Q key.

Indicated on VAS 5051:



1 - Channel 134 reading and testing

5 - Bar set to current adaption value (e.g.: 1)

0 = Bluetooth function without mobile phone in holder

1 = Bluetooth function with mobile phone in holder only (factory setting)

– Alter adaption value with bar ⇒ page 53 .

Or

– Alter adaption value by way of direct entry ⇒ page 54 .

Display on completion of adaption:

1 - Channel 134 value X stored

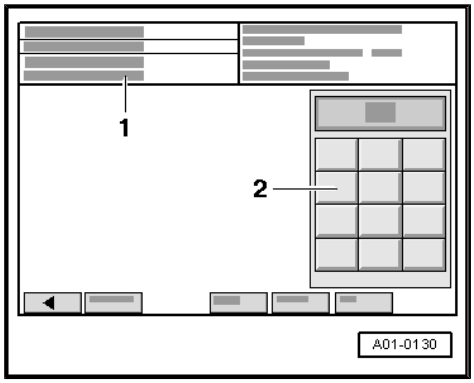
3.10.8 Setting of Bluetooth pass key - Adaption channel 135

On delivery, Bluetooth pass key is set to “1234”. This adaption channel can be used to set it to any 4-digit value as required by customer.

Indicated on VAS 5051:

1 - Enter channel number

– Use keypad -2- to enter “135” for channel 135 and confirm by touching Q key.



Indicated on VAS 5051:

1 - Channel 135 reading and testing

5 - Bar set to current adaption value (e.g.: 1234)

New adaption value (e.g. 09876)

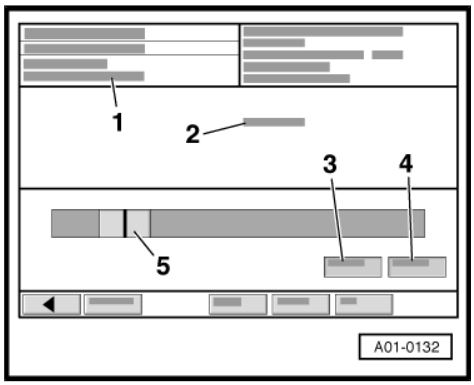
– Alter adaption value with bar ⇒ page 53 .

Or

– Alter adaption value by way of direct entry ⇒ page 54 .

Display on completion of adaption:

1 - Channel 135 value X stored



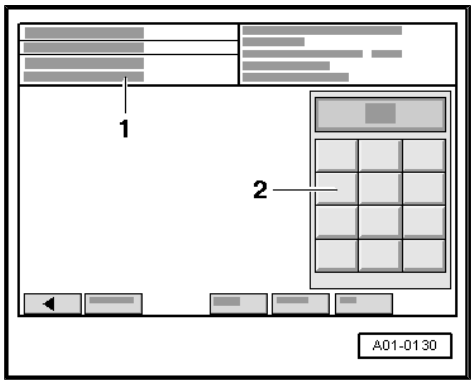
3.10.9 Setting of beep delay value - Adaption channel 136

This adaption channel is used to set voice prompt tone delay following mute signal.

Indicated on VAS 5051:

1 - Enter channel number

– Use keypad -2- to enter “136” for channel 136 and confirm by touching Q key.



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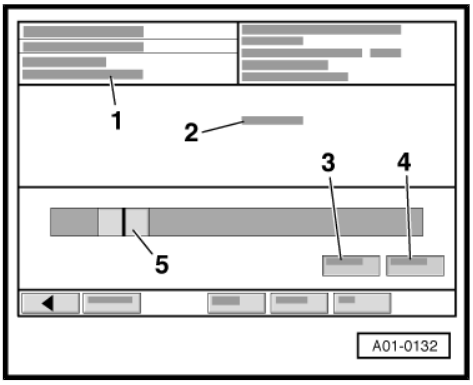

Indicated on VAS 5051:

1 - Channel 136 reading and testing

5 - Bar set to current adaption value (e.g.: 5)

1 = 0.1sec.

2 = 0.2sec.

Up to:

25 = 2.5sec

81 = 0.1sec. + 1.5sec.

82 = 0.2sec. + 1.5sec.

Up to:

105 = 2.5sec + 1.5sec.

– Alter adaption value with bar ⇒ page 53 .

Or

– Alter adaption value by way of direct entry ⇒ page 54 .

Display on completion of adaption:

1 - Channel 136 value X stored

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4 Self-diagnosis of navigation system II-D

4.1 General information and safety measures

4.1.1 General

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Navigation System Plus RNS 4.1 is an enhanced version of the familiar navigation system II. Key innovations include aerial selection control unit, extended self-diagnosis, CAN bus link (infotainment) and dynamic navigation.

Features

- Retention of features from navigation system II
- Dynamic navigation
- Link with telematics system
- Option of link with electronic logbook

As of week 45/01 (version RNS 4.2):

- Entry of destinations via chip card for electronic logbook
- Operator service for telematics system
- Display of current road/street location in dash panel insert
- Entry of intermediate destination and selective speller
- Voice control

4.1.2 Safety measures

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

> **WARNING**
>
> *Proceed as follows to avoid risk of accident during measurement and test drives:*
>
> - *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
> - *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
> - *Reactivate passenger's airbag on completion of work.*

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

4.2 Fault messages on navigation system display

Indicated on display of navigation system II-D:

RDS TMC tuner: Problem with RDS TMC tuner link or link could not be established

This fault message occurs in the following situations:

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- No CAN bus communication/CAN bus communication problems between operating electronics control unit, navigation -J402- and navigation interface -R94- (open circuit in wiring or wiring not connected)
- Navigation interface -R94- defective

If this fault occurs, TMC traffic information cannot be received via the radio and the “Settings” menu of the traffic jam function cannot be called up.

No radio or navigation information is shown in dash panel insert display.

Indicated on display of navigation system II-D:

Dynamic navigation: No telephone response; dynamic function only with ignition switched on

This fault message occurs in the following situations:

- No CAN bus communication/CAN bus communication problems between operating electronics control unit, navigation -J402- and telephone/telematics control unit -J526- (open circuit in wiring or wiring not connected)
- Telephone/telematics control unit -J256- defective
- Terminal 15 OFF (ignition switched off)

If this fault occurs, TMC traffic information cannot be received via telephone. Dynamic navigation is not possible.

Indicated on display of navigation system II-D:

Problem with logbook link Journeys not stored Record journeys manually Confirm with RETURN

This fault message occurs in the following situations:

- No CAN bus communication or problems with CAN bus communication between operating electronics control unit, navigation -J402- and electronic logbook
- Electronic logbook not connected or defective

If this fault occurs, data from electronic logbook can neither be read into navigation system nor recorded on chip card.

No fault is entered in fault memory.

Indicated on display of navigation system II-D:

LOGBOOK Logbook not active Activate on PC Record journeys manually

This message occurs in the following situations:

- Chip card for electronic log book not yet activated on PC following delivery of vehicle
- This message on navigation system display does not indicate a fault

– Inform customer accordingly.

Indicated on display of navigation system II-D:

Unsuitable CD Insert CD-ROM for TravelPilot DX

This message occurs in the following situations:

- No version DX navigation CD inserted

– Insert navigation CD with DX logo.

Inform customer accordingly.

Fault messages are displayed until fault has been eliminated or acknowledged by pressing RETURN key.

4.3 Starting self-diagnosis

4.3.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Technical Service Handbook
- Parts List

Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- connected up ⇒ page 165
- Ignition on

4.3.2 Procedure

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Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

Address word for navigation system: 37

– Press keys 3 and 7.

Indicated on display:

```
Rapid data transfer                       Q
37 - Navigation
```

– Confirm entry by pressing 0 key.

Up to week 36/00:

Following display appears after approx. 5 seconds:

```
4B0035192F  Navigation    BNO   0004  ->
Code 00000                WSC XXXXX
```

Navigation system display	
4B0035192F	Part number

Navigation system display	
Navigation BNO	Control unit designation
0004	Software version
Code 00000	Control unit encoding
WSC XXXXX	Workshop code

As of week 37/00:

Following display appears after approx. 5 seconds:

```
4D0035192K    RNS 4.1 H05 BNO  0017   ->
Code 00000                  WSC XXXXX
```

Navigation system display	
4D0035192K	Part number
RNS 4.1 H05 BNO	Control unit designation
0017	Software version
Code 00000	Control unit encoding
WSC XXXXX	Workshop code

All vehicles:

Indicated on display of navigation system II-D:

DIAG

Indicated on display of dash panel insert:

DIAG

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

List of diagnosis functions:

Diagnosis functions	Page
01 - Interrogating control unit version	⇒ page 65
02 - Interrogating fault memory	⇒ page 66
03 - Final control diagnosis	⇒ page 70
05 - Erasing fault memory	⇒ page 69
06 - End of output	⇒ page 70
08 - Reading measured value block	⇒ page 71
10 - Adaption	⇒ page 74

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4.4 Interrogating control unit version

Procedure

– Start self-diagnosis of Nav II-D ⇒ page 64 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 1 (“Interrogating control unit version”).

Indicated on display:

```
Rapid data transfer                  Q
01 - Interrogating control unit version
```

– Confirm entry by pressing Q key.

Up to week 36/00:

Following display appears after approx. 5 seconds:

```
4B0035192F  Navigation     BNO   0004  ->
Code 00000                 WSC XXXXX
```

Navigation system control unit version	
4B0035192F	Part number
Navigation BNO	Control unit designation
0004	Software version
Code 00000	Control unit encoding
WSC XXXXX	Workshop code

As of week 37/00:

Following display appears after approx. 5 seconds:

```
4D0035192K    RNS 4.1 H05 BNO  0017   ->
Code 00000                     WSC XXXXX
```

Navigation system control unit version	
4D0035192K	Part number
RNS 4.1 H05 BNO	Control unit designation
0017	Software version
Code 00000	Control unit encoding
WSC XXXXX	Workshop code

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All vehicles:

– Press [→] key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

4.5 Interrogating fault memory

Procedure

– Start self-diagnosis of Nav II-D ⇒ page 64 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys [0] and [2] (“Interrogating fault memory”).

Indicated on display:

```
Rapid data transfer                   Q
02 - Interrogating fault memory
```

– Confirm entry by pressing [Q] key.

The number of stored faults appears on the display.

```
X fault(s) detected
```

The stored faults are displayed and printed out consecutively.

– Check fault printout against fault table ⇒ page 67 and eliminate fault.

If “No fault detected” is displayed, tester returns to initial setting after pressing [→] key.

Indicated on display:

```
No fault detected                  ->
```

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

If any other display appears, refer to ⇒ Fault reader operating instructions .

– Press keys [0] and [6] (“End of output”).

– Confirm entry by pressing [Q] key.

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

4.6 Fault table

Note

- *The following table lists all faults which can be detected by the system and printed out on fault reader -V.A.G 1551- in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and "/SP" appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 40 on/off cycles are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

Output on printer of -V.A.G 1551-	Possible cause of trouble	Fault remedy
00625 Speed signal ♦ No signal GALA speed and GPS speed are constantly compared in the navigation unit. This fault is stored if GPS signal is > 40 km/h for 100 sec. but there is no GALA signal.	♦ Open circuit in wiring ♦ Dash panel insert defective ♦ Operating electronics control unit, navigation -J402- defective	– Eliminate open circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90 – Replace operating electronics control unit, navigation -J402- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00668 Vehicle voltage terminal 30 ♦ Signal too low	♦ Starter operated for more than 10 sec. ♦ Battery flat/defective ♦ Short circuit in vehicle electrical system ♦ Battery voltage less than 9.5 V ♦ Alternator defective	– Evaluate measured value block 001 ⇒ page 71 – Repair short circuit in vehicle electrical system – Charge/replace battery ⇒ Electrical system; Rep. Gr. 27 – Check alternator ⇒ Electrical system; Rep. Gr. 27

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00854 Output radio display dash panel insert ♦ No communication Whether or not a fault is still present following fault elimination cannot be detected during self-diagnosis. For this reason, operation of dash panel insert must always be checked (up to vehicle speed ≤ 15 km/h) and fault memory then interrogated again after eliminating a fault and erasing fault memory.	♦ Open circuit in wiring ♦ Dash panel insert defective ♦ Operating electronics control unit, navigation -J402- defective ♦ Navigation interface -R94- defective	– Eliminate open circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90 – Replace operating electronics control unit, navigation -J402- ⇒ Radio, telephone and navigation system; Rep. Gr. 91 – Replace navigation interface -R94- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00862 Navigation aerial (GPS) - R50/R52 ♦ Open circuit ♦ Short circuit If an aerial filter (GPS splitter) is fitted in conjunction with the telematics system, the navigation aerial remote power supply and the aerial itself are only tested as far as the aerial filter. The wiring from the aerial filter to the GPS aerial and the aerial itself are tested by the telematics system. If fault 00862 occurs, the number of satellites received must first be checked. At least 4 satellites must be received in the open air. Call up “Settings” menu on navigation unit and press MODE button to select “GPS viewer” menu.	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Navigation aerial (GPS) defective ♦ Aerial filter -R87- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace GPS aerial wire – Replace navigation aerial (GPS) ⇒ Radio, telephone and navigation system; Rep. Gr. 91 – Replace aerial filter -R87- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00867 Connection to ABS control unit ♦ No signal	♦ Wiring damage ♦ Open circuit in wiring ♦ ABS wheel sensors defective ♦ ABS control unit defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Perform ABS self-diagnosis ⇒ Running gear, self-diagnosis for ABS, ESP; Rep. Gr. 01
01300 Nav. with CD drive control unit -J401- ♦ Defective	The navigation system control unit contains the central unit and the navigation unit, which are interconnected via a CAN bus. ♦ Internal short circuit or short to earth in bus wire between central unit and navigation unit in navigation system control unit	– Navigation system control unit need not be replaced if system is still functional (control unit then switches to one-wire mode). – Control unit must be replaced if system is no longer functional.

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01311 Data bus information ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring or short circuit between data bus wires ♦ Operating electronics control unit, navigation -J402- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace operating electronics control unit, navigation -J402- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01317 Control unit in dash panel insert -J285- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Dash panel insert defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90
65535 Control unit ♦ Defective	♦ Operating electronics control unit, navigation -J402- defective	– Replace operating electronics control unit, navigation -J402- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

4.7 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

- Fault memory interrogated ⇒ page 66
- All faults rectified

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On completion of fault memory interrogation:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5 (“Erasing fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 Erasing fault memory
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory erased
```

Fault memory has now been erased.

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If however the following message appears:

Indicated on display:

```
Attention:                               -
>
Fault memory not interrogated
```

Test procedure not OK

Adhere exactly to test sequence: First interrogate fault memory, eliminate any faults and then erase memory.

4.8 End of output

Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                       Q
06 - End of output
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

4.9 Final control diagnosis

- Final control diagnosis can only be performed with vehicle stationary and engine not running.
- Navigation system must be active.
- If final control diagnosis detects a fault, locate and eliminate cause of trouble if necessary.

Procedure

– Start self-diagnosis of Nav II-D ⇒ page 64 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 3 (“Final control diagnosis”).

Indicated on display:

```
Rapid data transfer                       Q
03 - Final control diagnosis
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Final control diagnosis                ->
Telephone/
navigation systems loudspeaker R39
```

A high-pitched tone is emitted at loudspeaker output for approx. three seconds.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
Dash panel insert radio display output
```

Dash panel insert displays the following test pattern:

DISPLAY TEST

Display switches between normal and inverse every 4 seconds.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
End
```

– Press → key.

– This returns tester to basic function.

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Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

4.10 Reading measured value block

Procedure

– Start self-diagnosis of Nav II-D ⇒ page 64 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 8 (“Reading measured value block”).

Indicated on display:

```
Rapid data transfer                       Q
08 - Reading measured value block
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Reading measured value block
Enter display group number XXX
```

– Enter desired display group number (list of display groups ⇒ page 71).

4.10.1 List of display groups

Display group number	Indicated on display
001	1 = GALA (vehicle speed signal) level 2 = Voltage terminal 30 3 = Illumination dimming 4 = S-contact status
002	1 = Reversing light switch input status 2 = Terminal 15 input status
003	1 = GPS aerial 2 = GPS aerial remote power supply status
004	1 = External display 2 = Function: Communication with external display
005	1 = Data bus 2 = Function: Information data bus communication
006	1 = Pulse generator (ABS), left (rear wheel) 2 = Vehicle speed, left
007	1 = Content of function status register

4.10.2 Measured value block 001

Reading measured value block → 1 0 14.1V 99% On	Indicated on display
	Status of S-contact input • Remove ignition key = “Off” • Ignition key inserted = “On”
	Illumination dimming (only with lighting “ON”) • 0 ... 99%
	Voltage terminal 30

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GALA (vehicle speed signal) level
- 0 = Low level
- 1 = High level

4.10.3 Measured value block 002

Reading measured value block 2 →	Indicated on display
Reverse off Term.15 ON	

Terminal 15 input status
- Term. 15 active (ignition on) = Display “ON”
- Term. 15 inactive (ignition off) = Display “OFF”

Status of reversing light switch input
- Reversing light switch active (reverse gear engaged) = Display “ON”
- Reversing light switch inactive (reverse gear not engaged) = Display “OFF”

4.10.4 Measured value block 003

Reading measured value block 3 →	Indicated on display
GPS aer-ial OK	

GPS aerial remote power supply status [2]
- OK
- Short circuit
- Open circuit

GPS aerial

2) If an aerial filter (GPS splitter) is fitted in conjunction with the telematics system, the navigation aerial remote power supply and the aerial itself are only tested as far as the aerial filter. The wiring from the aerial filter to the GPS aerial and the aerial itself are tested by the telematics system ⇒ page 146 .

If fault 00862 occurs, the number of satellites received must first be checked. At least 4 satellites must be received in the open air. Call up “Settings” menu on navigation unit and press MODE button to select “GPS viewer” menu.

4.10.5 Measured value block 004

Reading measured value block 4 →	Indicated on display
Ext. dis-play OK	

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Function: Communication with external display
- OK
- Not OK

External display (dash panel insert)

4.10.6 Measured value block 005

Reading measured value block 5 →	Indicated on display
Data bus OK	

Communication: Data bus information
- OK
- Not OK

Data bus

4.10.7 Measured value block 006

Reading measured value block 6 →	Indicated on display
Left 86 km/h	

Vehicle speed calculated as a function of ABS signal with allowance for programmed tyre circumference and number of pulses per wheel revolution

Pulse generator (ABS), left

4.10.8 Measured value block 007

Reading measured value block 7 →	Indicated on display
255	

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Content of function status register ⇒ page 74 comprises: 3)

- Wheel circumference adaption performed = 128
- Adaption of number of pulses per wheel revolution performed = 64
- Pulses detected at least once = 32
- CAN communication with dash panel insert OK = 16
- Signal from reversing light switch detected = 8
- Term. 15 (ignition ON) detected = 4
- Current input of GPS aerial OK (10 to 30 mA) = 2
- CAN communication with navigation unit (internal) OK = 1

3) If all eight items listed are OK, the numerical values indicated above are added together and a value of 255 appears in the function status register (measured value block 7). If, for example, ABS pulses were not detected, the value for ABS pulses (32) is subtracted from the value of 255 and the value displayed in the function status register is then 223 (255 - 32 = 223). Proceed as follows if 244 for example is displayed in function status register: 255 - 244 = 11; 11 is made up of 8 (signal from reversing light switch not detected), 2 (current input of GPS aerial not OK) and 1 (CAN communication with navigation unit not OK).

4.11 Function status register

4.11.1 Description of operation

Production diagnosis (function status register) is a special mode for checking the wiring and correct functioning of the navigation system. It involves automatic checking of the individual fault locations, filing of the result in the so-called function status register (measured value block 007) and permanent storage.

Production diagnosis can be disabled/enabled by way of "Adaption" (channel number 03) ⇒ page 77 .

Production diagnosis is also disabled when a navigation CD is inserted.

The “Erasing fault memory” function also resets the function status register.

Test requirements:

- ♦ No navigation CD inserted
- ♦ Navigation system switched on
- ♦ Tyre circumference adapted ⇒ page 76
- ♦ Adaption of number of pulses per wheel revolution performed ⇒ page 77
- ♦ Erase fault memory ⇒ page 69
- ♦ Drive vehicle at a speed of at least 10 km/h
- ♦ With vehicle stationary, engage reverse gear for at least 2 seconds

Value 255 will be displayed in measured value block 007 (function status register) if production diagnosis has been implemented correctly (all test requirements met) and navigation system is OK.

4.12 Adaption

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

- ♦ Change of tyre size

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- Change to number of pulses per wheel revolution
- Disabling/enabling of production diagnosis
- Colour or black-and-white dash panel insert display
- Change in country identification
- Setting telematics system
- Setting electronic logbook

Additional features as of week 45/01 (version RNS 4.2):

- Setting of CAN bus users (fitting list)
- Change to front passive loudspeaker diagnosis

Change to diagnosis does not have to be implemented. Make sure that “0” is set in channel 9.

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- Deactivating/activating transportation mode

If transportation mode is active, unit is switched off 10 seconds after being switched on. “TRANSPORTATION MODE” appears on display.

Transportation mode may be active in new vehicles on delivery.

The individual functions are called up by way of the appropriate adaption channel number (adaption table ⇒ page 75).

Procedure

– Start self-diagnosis of Nav II-D ⇒ page 64 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 1 and 0 (“Adaption”).

Indicated on display:

```
Rapid data transfer                       Q
10 - Adaption
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Enter required adaption channel (adaption table ⇒ page 75).

– Confirm entry by pressing Q key.

Note

After altering adaption value or exiting from adaption channel, function “10 - Adaption” must be implemented again to select a different adaption channel.

4.12.1 Adaption table

Adaption channel	Adaption function
01	Change of tyre size ⇒ page 76
02	Change to number of pulses per wheel revolution ⇒ page 77
03	Disabling/enabling production diagnosis ⇒ page 77
04	Setting of dash panel insert display ⇒ page 78
05	Setting of country identification ⇒ page 79
06	Setting of telematics system ⇒ page 80

Adaption channel	Adaption function
07	Setting of electronic logbook ⇒ page 81

As of week 45/01 (version RNS 4.2):

07	Adaption of CAN bus users ⇒ page 81
09	Front passive loudspeaker diagnosis ⇒ page 83
99	Deactivating/activating transportation mode ⇒ page 84

4.12.2 Change of tyre size - Adaption channel 01

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [0] and [1] (“Channel 1”).

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 1     Adaption      1795        -
>
                           <-1 3->
```

Channel selected and currently stored tyre circumference in mm are displayed on top line.

– Press [→] key.

Indicated on display:

```
Channel 1     Adaption      1795        -
>
Enter adaption value XXXXX
```

– Enter new tyre circumference (e.g. 01806), tyre table ⇒ page 100 .

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 1     Adaption      1806        -
>
                            <-1 3->
```

– Press [→] key.

Indicated on display:

```
Channel 1     Adaption      1806        Q
Store altered value?
```

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 1     Adaption      1806        -
>
Altered value stored
```

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– Press [→] key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys [0] and [6] (“End of output”).

– Confirm entry by pressing [Q] key.

4.12.3 Change to number of pulses per wheel revolution - Adaption channel 02

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 2 (“Channel 2”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      42          ->
                                <-1 3->
```

Channel selected and currently stored number of ABS wheel sensor pulses are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 2     Adaption      42          Q
Enter adaption value XXXXX
```

– Enter new number of pulses (e.g.: 43).

The following applies to A2 with navigation system II-D:

Vehicle	Number of pulses
1.2 Eco	39
All others	43

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      43          ->
                                <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 2     Adaption      43          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      43          ->
Altered value stored
```

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– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

4.12.4 Disabling/enabling production diagnosis - Adaption channel 03

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 3 (“Channel 3”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      0          ->
                          <-1 3->
```

Channel selected and production diagnosis status (0 = disabled, 1 = active) are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 3     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = Production diagnosis disabled

00001 = Production diagnosis active

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      1          Q
                          <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 3     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

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4.12.5 Setting dash panel insert display - Adaption channel 04

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 4 (“Channel 4”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 4     Adaption      0          ->
                          <-1 3->
```

Channel selected and type of display (0 = black and white display, 1 = colour display) are indicated on top line.

– Press → key.

Indicated on display:

```
Channel 4     Adaption      0         ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

Up to week 44/01:

00000 = Black-and-white display

00001 = Colour display

As of week 45/01 (version RNS 4.2):

00000 = Black-and-white display (up to MY 01)

00001 = Black-and-white display (as of MY 02)

No adaption with colour display as of MY 02

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 4     Adaption      1         ->
                                    <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 4     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 4     Adaption      1         ->
Altered value stored
```

– Press → key.

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Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

4.12.6 Setting country identification - Adaption channel 05

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 5 (“Channel 5”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      0         ->
                                  <-1 3->
```

Channel selected and country identification (0 = Europe, 1 = USA) are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 5     Adaption      0         ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = Europe

00001 = USA

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      1          ->
                                    <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 5     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

4.12.7 Setting telematics system - Adaption channel 06

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 6 (“Channel 6”).

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Note

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– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 6     Adaption      1          ->
                                 <-1 3->
```

Channel selected and relevant configuration (1 = without telematics, 3 = with telematics) are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 6     Adaption      1          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00003).

00001 = Without telematics

00003 = With telematics

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 6     Adaption      3          ->
                                    <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 6     Adaption      3          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 6     Adaption      3          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

4.12.8 Setting electronic logbook - Adaption channel 07

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 7 (“Channel 7”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 7     Adaption      0        ->
                          <-1 3->
```

Channel selected and relevant configuration (0 = without electronic logbook, 1 = with electronic logbook) are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 7     Adaption      0        ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00001 = With electronic logbook

00000 = Without electronic logbook

– Confirm entry by pressing Q key.

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Indicated on display:

```
Channel 7     Adaption      1        ->
                          <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 7     Adaption      1         Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 7     Adaption      1        ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

4.12.9 Adapting CAN bus users - Adaption channel 07

Control units fitted must be set in adaption channel 07. The navigation system control unit monitors CAN bus communication.

CAN bus communication status can also be indicated on navigation system display by simultaneously pressing [AS] and [V] keys.

Indicated on display of navigation system II-D:

FM1	Aerial	TP
Card reader	:	Not encoded
TV tuner	:	Ok
Gateway	:	No link
Telematics system	:	Ok
Multi-function steering wheel	:	Ok
VCS	:	Not encoded
Dash panel insert	:	Ok
Communication status		Back to RETURN

- Not encoded: Unit not fitted or fitted but not encoded
- No link: Unit encoded but not fitted
- Terminal 15 ON: Unit encoded but no terminal 15 signal (ignition not switched on)

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [0] and [7] (“Channel 7”).

Note

An incorrect entry can be corrected after pressing [C] key.

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– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 7     Adaption      15          ->
                                <-1 3->
```

Channel selected and relevant configuration are displayed on top line (fitting list ⇒ page 83).

– Press [→] key.

Indicated on display:

```
Channel 7     Adaption      15          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00006) (fitting list ⇒ page 83).

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 7     Adaption      6           ->
                                <-1 3->
```

– Press [→] key.

Indicated on display:

```
Channel 7     Adaption      6           Q
Store altered value?
```

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 7     Adaption      6           ->
Altered value stored
```

– Press [→] key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys [0] and [6] (“End of output”).

– Confirm entry by pressing [Q] key.

Fitting list:

Adaption value	Electronic logbook	Multi-function steering wheel	TV tuner	Voice control system
0				
1	x			
2		x		
3	x	x		
4			x	
5	x		x	
6		x	x	
7	x	x	x	
8				x
9	x			x
10		x		x
11	x	x		x
12			x	x
13	x		x	x
14		x	x	x
15	x	x	x	x

x = Control unit fitted

e.g.: 6 = With multi-function steering wheel and TV tuner

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4.12.10 Front passive loudspeaker diagnosis - Adaption channel 09

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [0] and [9] (“Channel 9”).

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 9     Adaption      1          ->
                                <-1 3->
```

Channel selected and relevant configuration (0 = with fault memory entry, 1 = without fault memory entry) are displayed on top line.

– Press [→] key.

Indicated on display:

```
Channel 9     Adaption      1          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00000).

For A2 the value is always “0”.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 9     Adaption      0        ->
                                <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 9     Adaption      0         Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 9     Adaption      0        ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

4.12.11 Deactivating/activating transportation mode - Adaption channel 99

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 9 and 9 (“Channel 99”).

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Note

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– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 99     Adaption      0        ->
                          <-1 3->
```

Channel selected and relevant configuration are displayed on top line (0 = Transportation mode off, 1 = Transportation mode on).

– Press → key.

Indicated on display:

```
Channel 99     Adaption      0        ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00001 = Transportation mode on

00000 = Transportation mode off

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 99     Adaption      1        ->
                          <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 99     Adaption      1         Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 99     Adaption      1        ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).
– Confirm entry by pressing Q key.

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5 Self-diagnosis of navigation system III

5.1 General information and safety measures

5.1.1 General

Navigation system III is designed to replace navigation system I and features self-diagnosis capability.

Features

- Dead reckoning and use of satellite navigation data
- User prompting for destination input and function selection via display in dash panel insert
- Active navigation with recommendations in the form of arrow symbols on dash panel insert display
- Voice recommendations
- Display of current road/street name
- Display of distance of current location from destination
- Arrival time display

Description of operation

The Audi navigation system III processes signals from the world-wide satellite navigation system GPS (Global Positioning System).

Following start-up, the vehicle location is established with the aid of signals from the GPS satellite navigation system.

If the vehicle is located in an area (country, town or road) which is not stored on the navigation CD, the message “OFF-ROAD” or “OFF MAP” appears on the dash panel insert display. In such cases only the direct straight line distance and the direction of the destination are indicated, as the navigation system cannot compare the GPS signals and the vehicle measured values with the information stored.

Route recommendations are given in both acoustic form (spoken directions) and visual form (arrows, turn-off points) on the dash panel insert centre display.

The navigation system has a fault memory. Faults occurring in monitored components/wiring are stored in the fault memory together with an indication of the type of fault.

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5.1.2 Safety measures

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

WARNING

Proceed as follows to avoid risk of accident during measurement and test drives:

- *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
- *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
- *Reactivate passenger's airbag on completion of work.*

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

5.2 Starting self-diagnosis

5.2.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Technical Service Handbook
- Parts List

Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- connected up ⇒ page 165
- Ignition on

5.2.2 Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

Address word for navigation system: 37

– Press keys 3 and 7.

Indicated on display:

```
Rapid data transfer                       Q
37 - Navigation
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4B0919887B     Navigation     0001    ->
Code 00000                  WSC XXXXX
```

Navigation system display	
4B0919887B	Part number
Navigation	Control unit designation
0001	Software version
Code 00000	Control unit encoding
WSC XXXXX	Workshop code

Indicated on display of dash panel insert:

DIAG

– Press → key.

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Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

List of diagnosis functions:

Diagnosis functions	Page
01 - Interrogating control unit version	⇒ page 88
02 - Interrogating fault memory	⇒ page 89
03 - Final control diagnosis	⇒ page 92
05 - Erasing fault memory	⇒ page 91
06 - End of output	⇒ page 92
08 - Reading measured value block	⇒ page 93
10 - Adaption	⇒ page 98

5.3 Interrogating control unit version

Procedure

– Start Nav III self-diagnosis ⇒ page 87 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 1 (“Interrogating control unit version”).

Indicated on display:

```
Rapid data transfer                   Q
01 - Interrogating control unit version
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4B0919887B     Navigation     0001    ->
Code 00000                  WSC XXXXX
```

Navigation system control unit version	
4B0919887B	Part number
Navigation	Control unit designation
0001	Software version
Code 00000	Control unit encoding
WSC XXXXX	Workshop code

– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

5.4 Interrogating fault memory

Procedure

– Start Nav III self-diagnosis ⇒ page 87 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 2 (“Interrogating fault memory”).

Indicated on display:

```
Rapid data transfer                   Q
02 - Interrogating fault memory
```

– Confirm entry by pressing Q key.

The number of stored faults appears on the display.

```
X fault(s) detected
```

The stored faults are displayed and printed out consecutively.

– Check fault printout against fault table ⇒ page 90 and eliminate fault.

If “No fault detected” is displayed, tester returns to initial setting after pressing → key.

Indicated on display:

```
No fault detected                  ->
```

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

If any other display appears, refer to ⇒ Fault reader operating instructions .

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

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5.5 Fault table

Note

- *The following table lists all faults which can be detected by the system and printed out on fault reader -V.A.G 1551- in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and "/SP" appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 40 on/off operations are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

Output on printer of -V.A.G 1551-	Possible cause of trouble	Fault remedy
00576 Terminal 15 ♦ Open circuit	♦ Open circuit in wiring	– Eliminate open circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
00625 Speed signal ♦ No signal GALA speed and GPS speed are constantly compared in the navigation unit. This fault is stored if GPS signal is > 40 km/h for 100 sec. but there is no GALA signal.	♦ Open circuit in wiring ♦ Dash panel insert defective ♦ Navigation system with CD drive control unit -J401- defective	– Eliminate open circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90 – Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00668 Vehicle voltage terminal 30 ♦ Signal too low	♦ Starter operated for more than 10 sec. ♦ Battery flat/defective ♦ Short circuit in vehicle electrical system ♦ Battery voltage less than 9.5 V ♦ Alternator defective	– Evaluate measured value block 001 ⇒ page 94 – Repair short circuit in vehicle electrical system – Charge/replace battery ⇒ Electrical system; Rep. Gr. 27 – Check alternator ⇒ Electrical system; Rep. Gr. 27

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00851 Loudspeaker This fault is stored if a fault occurs during final control diagnosis (loudspeaker).	♦ Mutual short circuit in wires to hands-free loudspeaker	– Rectify short circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
00852 Front loudspeaker ♦ Short circuit ♦ Open circuit	♦ Short to earth in wire to hands-free loudspeaker ♦ Open circuit in wire to hands-free loudspeaker ♦ Hands-free loudspeaker defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace hands-free loudspeaker ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00854 Output radio display dash panel insert ♦ No communication Whether or not a fault is still present following fault elimination cannot be detected during self-diagnosis. For this reason, operation of second display must always be checked and fault memory then interrogated again after eliminating a fault and erasing fault memory.	♦ Open circuit in wiring ♦ Dash panel insert defective ♦ Navigation system with CD drive control unit -J401- defective	– Eliminate open circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90 – Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00862 Navigation aerial (GPS) - R50/R52 ♦ Open circuit ♦ Short circuit	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Navigation aerial (GPS) defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace GPS aerial wire – Replace navigation aerial (GPS) ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01311 Data bus information ♦ No communication	The navigation system with CD drive control unit -J401- contains the central unit and the navigation unit, which are interconnected via a CAN bus. ♦ Internal short circuit or short to earth in bus wire between central unit and navigation unit in navigation system with CD drive control unit -J401-	– Navigation system with CD drive control unit -J401- need not be replaced if system is still functional (control unit then switches to one-wire mode). – Navigation system with CD drive control unit -J401- must be replaced if system is no longer functional.
65535 Control unit ♦ Defective	♦ Navigation system with CD drive control unit -J401- defective	– Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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5.6 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

- Fault memory interrogated ⇒ page 89
- All faults rectified

On completion of fault memory interrogation:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5 (“Erasing fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 - Erasing fault memory
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory erased
```

Fault memory has now been erased.

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

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If however the following message appears:

Indicated on display:

```
Attention:                               -
>
Fault memory not interrogated
```

Test procedure not OK

Adhere exactly to test sequence: First interrogate fault memory, eliminate any faults and then erase memory.

5.7 End of output

Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                       Q
06 - End of output
```

– Confirm entry by pressing Q key.

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

5.8 Final control diagnosis

Note

- *Final control diagnosis can only be performed with vehicle stationary and engine not running.*
- *Navigation system must be active.*
- *If final control diagnosis detects a fault, locate and eliminate cause of trouble if necessary.*
- *Final control diagnosis can only be performed once. Ignition must be switched off and on again if final control diagnosis is to be repeated.*

Procedure

– Start Nav III self-diagnosis ⇒ page 87 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 3 (“Final control diagnosis”).

Indicated on display:

```
Rapid data transfer                 Q
03 - Final control diagnosis
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Final control diagnosis             ->
Loudspeaker
```

Loudspeaker is briefly energised (not audible).

– Press → key.

Indicated on display:

```
Final control diagnosis             ->
Telephone/
navigation systems loudspeaker R39
```

Sound can be heard at loudspeaker for approx. three seconds.

– Press → key.

Indicated on display:

```
Final control diagnosis             ->
Dash panel insert radio display output
```

Dash panel insert displays the following test pattern:

DISPLAY TEST

Display switches between normal and inverse every 4 seconds.

– Press → key.

Indicated on display:

```
Final control diagnosis             ->
End
```

– Press → key.

– This returns tester to basic function.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

5.9 Reading measured value block

Procedure

– Start Nav III self-diagnosis ⇒ page 87 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 8 (“Reading measured value block”).

Indicated on display:

```
Rapid data transfer                 Q
08 - Reading measured value block
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Reading measured value block
Enter display group number XXX
```

– Enter desired display group number (list of display groups ⇒ page 94).

– Confirm entry by pressing Q key.

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5.9.1 List of display groups

Display group number	Indicated on display
001	1 = GALA (vehicle speed signal) level 2 = Voltage terminal 30
002	1 = Reversing light switch input status 2 = Terminal 15 input status
003	1 = GPS aerial 2 = GPS aerial remote power supply status
004	1 = External display 2 = Status of communication with external display
005	1 = Data bus 2 = Function: Information data bus communication
006	1 = Left 2 = Vehicle speed (GALA)
007	1 = Content of function status register
008	1 = Front loudspeaker 2 = Front loudspeaker status
010	1 = Telephone 2 = Telephone mute input status 3 = Telephone 4 = Telephone mute output status

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5.9.2 Measured value block 001

Reading measured value block → 1 0 14.1V	Indicated on display

Voltage terminal 30

GALA (vehicle speed signal) level
- 0 = Low level
- 1 = High level

5.9.3 Measured value block 002

Reading measured value block → 2 Reverse off Term.15 ON	Indicated on display

Terminal 15 input status
- Term. 15 active (ignition on) = Display “ON”
- Term. 15 inactive (ignition off) = Display “OFF”

	Status of reversing light switch input • Reversing light switch active (reverse gear engaged) = Display “ON” • Reversing light switch inactive (reverse gear not engaged) = Display “OFF”

5.9.4 Measured value block 003

Reading measured value block 3 →	Indicated on display
GPS aerial OK	
	GPS aerial remote power supply status • OK • Short circuit • Open circuit
GPS aerial	

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5.9.5 Measured value block 004

Reading measured value block 4 →	Indicated on display
Ext. display OK	
	Status of communication with external display • OK • Not OK
External display (dash panel insert)	

5.9.6 Measured value block 005

Reading measured value block 5 →	Indicated on display
Data bus OK	
	Information data bus communication (internal data bus) • OK • Not OK
Data bus	

5.9.7 Measured value block 006

Reading measured value block 6 →	Indicated on display
Left 86 km/h	
	Vehicle speed calculated as a function of GALA signal with allowance for programmed tyre circumference and number of pulses per wheel revolution
	Left vehicle speed sender

5.9.8 Measured value block 007

Reading measured value block 7 →	Indicated on display
255	
	Content of function status register ⇒ page 97 comprises: 4) • Wheel circumference adaption performed = 128 • Adaption of number of pulses per wheel revolution performed = 64 • GALA pulses detected at least once = 32 • CAN communication with dash panel insert OK = 16 • Signal from reversing light switch detected = 8 • Term. 15 (ignition ON) detected = 4 • Current input of GPS aerial OK (10 to 30 mA) = 2 • CAN communication with navigation unit OK = 1

4) If all eight items listed are OK, the numerical values indicated above are added together and a value of 255 appears in the function status register (measured value block 7). If, for example, GALA pulses were not detected, the value for GALA pulses (32) is subtracted from the value of 255 and the value displayed in the function status register is then 223 (255 - 32 = 223). Proceed as follows if 244 for example is displayed in function status register: 255 - 244 = 11; 11 is made up of 8 (signal from reversing light switch not detected), 2 (current input of GPS aerial not OK) and 1 (CAN communication with navigation unit not OK).

5.9.9 Measured value block 008

Reading measured value block 8 →	Indicated on display
Front loud-speaker OK	
	Front loudspeaker status • OK • Short circuit • Open circuit
	Front loudspeaker

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5.9.10 Measured value block 010

Reading measured value block 10 →				Indicated on display
Tele-phone	Off	Tele-phone	Off	
				Telephone mute output status • Telephone in use = “On” • Telephone switched off = “Off”
				Telephone (mobile phone)
				Telephone mute input status • Telephone in use = “On” • Telephone switched off = “Off”
				Telephone (mobile phone)

5.10 Function status register

5.10.1 Description of operation

Production diagnosis is a special mode for checking the wiring and correct functioning of the navigation system. It involves automatic checking of the individual fault locations, filing of the result in the so-called function status register (measured value block 007) and permanent storage.

Production diagnosis can be disabled/enabled by way of "Adaption" (channel number 03) ⇒ page 100 .

Production diagnosis is also disabled when a navigation CD is inserted.

The “Erasing fault memory” function also resets the function status register.

Test requirements:

- No navigation CD inserted
- Navigation system switched on
- Tyre circumference adapted ⇒ page 98
- Adaption of number of pulses per wheel revolution performed ⇒ page 99
- Erase fault memory ⇒ page 91
- Drive vehicle at a speed of at least 10 km/h
- With vehicle stationary, engage reverse gear for at least 2 seconds

Value 255 will be displayed in measured value block 007 (function status register) if production diagnosis has been implemented correctly (all test requirements met) and navigation system is OK.

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5.11 Adaption

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

- Changes to tyre size
- Change to number of pulses per wheel revolution
- Disabling/enabling of production diagnosis
- Connection of separate or external loudspeakers

Use is made of radio loudspeakers if a radio is fitted. If there is no radio fitted, a separate hands-free loudspeaker is installed with the navigation system.

- Setting of country identification

The individual functions are called up by way of the appropriate adaption channel number (adaption table ⇒ page 98).

Procedure

– Start Nav III self-diagnosis ⇒ page 87 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 1 and 0 (“Adaption”).

Indicated on display:

```
Rapid data transfer                 Q
10 Adaption
```

– Confirm entry by pressing 0 key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Enter required adaption channel (adaption table ⇒ page 98).

– Confirm entry by pressing 0 key.

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Note

After altering adaption value or exiting from adaption channel, function “10 - Adaption” must be implemented again to select a different adaption channel.

5.11.1 Adaption table

Adaption channel	Adaption function
01	Change of tyre size ⇒ page 98
02	Change to number of pulses per wheel revolution ⇒ page 99
03	Disabling/enabling production diagnosis ⇒ page 100
04	Setting loudspeaker connection ⇒ page 101
05	Setting of country identification ⇒ page 102

5.11.2 Change of tyre size - Adaption channel 01

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 1 (“Channel 1”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption      1795        -
>
                          <-1 3->
```

Channel selected and currently stored tyre circumference in mm are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 1     Adaption      1795        -
>
Enter adaption value XXXXX
```

– Enter new tyre circumference (e.g. 01806), tyre table ⇒ page 100 .

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption      1806        -
>
                                  <-1 3->
```

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– Press → key.

Indicated on display:

```
Channel 1     Adaption      1806        Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption      1806        -
>
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                 HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

5.11.3 Change to number of pulses per wheel revolution - Adaption channel 02

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 2 (“Channel 2”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption       4         ->
                          <-1 3->
```

Channel selected and number of pulses currently stored are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 2     Adaption      4        ->
Enter adaption value XXXXX
```

– Enter new number of pulses (e.g.: 00008).

The number of pulses is always 8 for A2 with navigation system III.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      8        ->
                                <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 2     Adaption      8         Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      8        ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

5.11.4 Tyre table for Audi A2:

	Tyre size	Circumference (mm)
Summer tyres	145/80 R14	1790
Summer tyres	165/65 R15	1815
Summer tyres	175/60 R15	1803
Summer tyres	185/50 R16	1806
Summer tyres	205/40 ZR17	1818
Winter tyres	155/65 R15	1775

5.11.5 Disabling/enabling production diagnosis - Adaption channel 03

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 3 (“Channel 3”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      0        ->
                          <-1 3->
```

Channel selected and production diagnosis status (0 = disabled, 1 = enabled) are displayed on top line.

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– Press → key.

Indicated on display:

```
Channel 3     Adaption      0        ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = Production diagnosis disabled

00001 = Production diagnosis enabled

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      1        ->
                                <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 3     Adaption      1         Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      1        ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

5.11.6 Setting loudspeaker connection - Adaption channel 004

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Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 4 (“Channel 4”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 4     Adaption      0        ->
                                <-1 3->
```

Channel selected and type of loudspeaker connection (0 = external radio, 1 = separate loudspeaker) are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 4     Adaption      0        ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = External radio

00001 = Separate loudspeaker

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 4     Adaption      1        ->
                                <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 4     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 4     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

5.11.7 Setting country identification - Adaption channel 005

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 5 (“Channel 5”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

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Indicated on display:

```
Channel 5     Adaption      0          ->
                                      <-1 3->
```

Channel selected and country identification (0 = Europe, 1 = USA) are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 5     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = Europe

00001 = USA

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      1          ->
                                      <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 5     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

6 Self-diagnosis of navigation system Nav IV (BNS 4.0)

6.1 General information and safety measures

6.1.1 General

Navigation system IV is an enhanced version of the familiar navigation system III.

Features

- Retention of features from navigation system III
- Dynamic navigation
- Provision of telematics link

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Description of operation

Navigation system BNS 4.0 (Nav IV) is an enhanced version of the familiar navigation system III.

Key innovations include a link with the CAN bus (infotainment) and dynamic navigation.

The system obtains dynamic navigation information from the radio TMC function or via the telephone.

6.1.2 Safety measures

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

WARNING

Proceed as follows to avoid risk of accident during measurement and test drives:

- *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
- *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
- *Reactivate passenger's airbag on completion of work.*

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

6.2 Starting self-diagnosis

6.2.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Technical Service Handbook
- Parts List

Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- connected up ⇒ page 165
- Ignition on

6.2.2 Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

Address word for navigation system: 37

– Press keys 3 and 7.

Indicated on display:

```
Rapid data transfer                       Q
37 - Navigation
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4B0919887A      BNS 4.0      0001      ->
Code 00000                   WSC XXXXX
```

Navigation system display	
4B0919887A	Part number
BNS 4.0	Control unit designation
0001	Software version
Code 00000	Control unit encoding
WSC XXXXX	Workshop code

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Indicated on display of dash panel insert:

DIAG

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

List of diagnosis functions:

Diagnosis functions	Page
01 - Interrogating control unit version	⇒ page 105
02 - Interrogating fault memory	⇒ page 105
03 - Final control diagnosis	⇒ page 109
05 - Erasing fault memory	⇒ page 108
06 - End of output	⇒ page 109

Diagnosis functions	Page
08 - Reading measured value block	⇒ page 110
10 - Adaption	⇒ page 114

6.3 Interrogating control unit version

Procedure

– Start Nav IV self-diagnosis ⇒ page 104 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 1 (“Interrogating control unit version”).

Indicated on display:

```
Rapid data transfer                   Q
01 - Interrogating control unit version
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4B0919887A      BNS 4.0      0001     ->
Code 00000                 WSC XXXXX
```

Navigation system control unit version	
4B0919887A	Part number
BNS 4.0	Control unit designation
0001	Software version
Code 00000	Control unit encoding
WSC XXXXX	Workshop code

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– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

6.4 Interrogating fault memory

Procedure

– Start Nav IV self-diagnosis ⇒ page 104 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 2 (“Interrogating fault memory”).

Indicated on display:

```
Rapid data transfer                   Q
02 - Interrogating fault memory
```

– Confirm entry by pressing Q key.

The number of stored faults appears on the display.

```
X fault(s) detected
```

The stored faults are displayed and printed out consecutively.

– Check fault printout against fault table ⇒ page 106 and eliminate fault.

If “No fault detected” is displayed, tester returns to initial setting after pressing → key.

Indicated on display:

```
No fault detected                  ->
```

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

If any other display appears, refer to ⇒ Fault reader operating instructions .

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

6.5 Fault table

Note

- *The following table lists all faults which can be detected by the system and printed out on fault reader -V.A.G 1551- in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and “/SP” appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 40 on/off cycles are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

Output on printer of -V.A.G 1551-	Possible cause of trouble	Fault remedy
00576 Terminal 15 ♦ Open circuit	♦ Open circuit in wiring	– Eliminate open circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
00625 Speed signal ♦ No signal GALA speed and GPS speed are constantly compared in the navigation unit. This fault is stored if GPS signal is > 40 km/h for 100 sec. but there is no GALA signal.	♦ Open circuit in wiring ♦ Dash panel insert defective ♦ Navigation system control unit defective	– Eliminate open circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90 – Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00668 Vehicle voltage terminal 30 ♦ Signal too low	♦ Starter operated for more than 10 sec. ♦ Battery flat/defective ♦ Short circuit in vehicle electrical system ♦ Battery voltage less than 9.5 V ♦ Alternator defective	– Evaluate measured value block 001 ⇒ page 110 – Repair short circuit in vehicle electrical system – Charge/replace battery ⇒ Electrical system; Rep. Gr. 27 – Check alternator ⇒ Electrical system; Rep. Gr. 27
00851 Loudspeaker This fault is stored if a fault occurs during final control diagnosis (loudspeaker).	♦ Mutual short circuit in wires to hands-free loudspeaker	– Rectify mutual short circuit in wiring – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
00852 Front loudspeaker ♦ Short circuit ♦ Open circuit	♦ Short to earth in wire to hands-free loudspeaker ♦ Open circuit in wire to hands-free loudspeaker ♦ Hands-free loudspeaker defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace hands-free loudspeaker ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00862 Navigation aerial (GPS) - R50/R52 ♦ Open circuit ♦ Short circuit If an aerial filter (GPS splitter) is fitted in conjunction with the telematics system, the navigation aerial remote power supply and the aerial itself are only tested as far as the aerial filter. The wiring from the aerial filter to the GPS aerial and the aerial itself are tested by the telematics system. If fault 00862 occurs, the number of satellites received must first be checked. It must be possible to receive signals from at least 4 satellites in the open air. Call up “Settings” menu on navigation unit and press MODE button to select “GPS viewer” menu.	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Navigation aerial (GPS) defective ♦ Aerial filter -R87- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace GPS aerial wire – Replace navigation aerial (GPS) ⇒ Radio, telephone and navigation system; Rep. Gr. 91 – Replace aerial filter -R87- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01300 Nav. with CD drive control unit -J401- ♦ Defective	♦ Navigation system with CD drive control unit -J401- defective	– Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01317 Control unit in dash panel insert -J285- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Dash panel insert defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in dash panel insert ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90
65535 Control unit ♦ Defective	♦ Navigation system with CD drive control unit -J401- defective	– Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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6.6 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

- Fault memory interrogated ⇒ page 105
- All faults rectified

On completion of fault memory interrogation:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5 (“Erasing fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 - Erasing fault memory
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory erased
```

Fault memory has now been erased.

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If however the following message appears:

Indicated on display:

```
Attention:                                -
>
Fault memory not interrogated
```

Test procedure not OK

Adhere exactly to test sequence: First interrogate fault memory, eliminate any faults and then erase memory.

6.7 End of output

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                   Q
06 - End of output
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                HELP
Enter address word XX
```

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– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

6.8 Final control diagnosis

Note

- *Final control diagnosis can only be performed with vehicle stationary and engine not running.*
- *Navigation system must be active.*
- *If final control diagnosis detects a fault, locate and eliminate cause of trouble if necessary.*

Procedure

– Start Nav IV self-diagnosis ⇒ page 104 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 3 (“Final control diagnosis”).

Indicated on display:

```
Rapid data transfer                   Q
03 - Final control diagnosis
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Final control diagnosis               ->
Loudspeaker
```

Loudspeaker is briefly energised (not audible).

– Press → key.

Indicated on display:

```
Final control diagnosis               ->
Telephone/ navigation systems loudspeake
r R39
```

Sound can be heard at loudspeaker for approx. three seconds.

– Press → key.

Indicated on display:

```
Final control diagnosis               ->
Output Radio display/dash panel insert
```

Dash panel insert displays the following test pattern:

DISPLAY TEST

Display switches between normal and inverse every 4 seconds.

– Press → key.

Indicated on display:

```
Final control diagnosis                    ->
End
```

– Press → key.

– This returns tester to basic function.

Indicated on display:

```
Rapid data transfer                        HELP
Select function XX
```

6.9 Reading measured value block

Procedure

– Start Nav IV self-diagnosis ⇒ page 104 .

Indicated on display:

```
Rapid data transfer                        HELP
Select function XX
```

– Press keys 0 and 8 (“Reading measured value block”).

Indicated on display:

```
Rapid data transfer                           Q
08 - Reading measured value block
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Reading measured value block
Enter display group number XXX
```

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– Enter desired display group number (list of display groups ⇒ page 110).

– Confirm entry by pressing Q key.

6.9.1 List of display groups

Display group number	Indicated on display
001	1 = GALA (vehicle speed signal) level 2 = Voltage terminal 30
002	1 = Reversing light switch input status 2 = Terminal 15 input status
003	1 = GPS aerial 2 = GPS aerial remote power supply status
004	1 = External display 2 = Status of communication with external display
005	1 = Data bus 2 = Status of information data bus communication
006	1 = Left 2 = Vehicle speed
007	1 = Content of function status register
008	1 = Front loudspeaker 2 = Front loudspeaker status
010	1 = Telephone 2 = Telephone mute input status

6.9.2 Measured value block 001

Reading measured value block →	Indicated on display
1 0 14.1V	

	Voltage terminal 30
	GALA (vehicle speed signal) level • 0 = Low level • 1 = High level

6.9.3 Measured value block 002

Reading measured value block 2 →	Indicated on display
Reverse off Term.15 ON	
	Terminal 15 input status • Term. 15 active (ignition on) = Display “ON” • Term. 15 inactive (ignition off) = Display “OFF”
	Status of reversing light switch input • Reversing light switch active (reverse gear engaged) = Display “ON” • Reversing light switch inactive (reverse gear not engaged) = Display “OFF”

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6.9.4 Measured value block 003

Reading measured value block 3 →	Indicated on display
GPS aerial OK	
	GPS aerial remote power supply status [5] • OK • Short circuit • Open circuit
	GPS aerial

5) If an aerial filter (GPS splitter) is fitted in conjunction with the telematics system, the navigation aerial remote power supply and the aerial itself are only tested as far as the aerial filter. The wiring from the aerial filter to the GPS aerial and the aerial itself are tested by the telematics system ⇒ page 146 .

If fault 00862 occurs, the number of satellites received must first be checked. At least 4 satellites must be received in the open air. Call up “Settings” menu on navigation unit and press MODE button to select “GPS viewer” menu.

6.9.5 Measured value block 004

Reading measured value block 4 →	Indicated on display

Ext. display	OK	

Status of communication with external display
- OK
- Not OK

External display (dash panel insert)

6.9.6 Measured value block 005

Reading measured value block 5	→	Indicated on display
Data bus	OK	

Status of data bus communication (internal data bus)
- OK
- Not OK

Data bus

6.9.7 Measured value block 006

Reading measured value block 6	→	Indicated on display
Left	86 km/h	

Vehicle speed calculated as a function of GALA signal with allowance for programmed tyre circumference and number of pulses per wheel revolution

Left

6.9.8 Measured value block 007

Reading measured value block 7	→	Indicated on display
255		

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Content of function status register ⇒ page 114 comprises: 6)
- Wheel circumference adaption performed = 128
- Adaption of number of pulses per wheel revolution performed = 64
- GALA pulses detected at least once = 32
- CAN communication with dash panel insert OK = 16
- Signal from reversing light switch detected = 8
- Term. 15 (ignition ON) detected = 4
- Current input of GPS aerial OK (10 to 30 mA) = 2
- CAN communication with navigation unit OK = 1

6) If all eight items listed are OK, the numerical values indicated above are added together and a value of 255 appears in the function status register (measured value block 7). If, for example, GALA pulses were not detected, the value for GALA pulses (32) is subtracted from the value of 255 and the value displayed in the function status register is then 223 (255 - 32 = 223). Proceed as follows if 244 for example is displayed in function status register: 255 - 244 = 11; 11 is made up of 8 (signal from reversing light switch not detected), 2 (current input of GPS aerial not OK) and 1 (CAN communication with navigation unit not OK).

6.9.9 Measured value block 008

Reading measured value block 8 →	Indicated on display
Front loud-speaker OK	

Front loudspeaker status
- OK
- Short circuit
- Open circuit

Front loudspeaker

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6.9.10 Measured value block 010

Reading measured value block 10 →	Indicated on display
Tele-phone Off	

Status of telephone mute input (from telephone)
- Telephone in use = “On”
- Telephone switched off = “Off”

Telephone

6.10 Function status register

6.10.1 Description of operation

Production diagnosis (function status register) is a special mode for checking the wiring and correct functioning of the navigation system. It involves automatic checking of the individual fault locations, filing of the result in the so-called function status register (measured value block 007) and permanent storage.

Production diagnosis can be disabled/enabled by way of "Adaption" (channel number 03) ⇒ page 117 .

Production diagnosis is also disabled when a navigation CD is inserted.

The “Erasing fault memory” function also resets the function status register.

Test requirements:

- No navigation CD inserted
- Navigation system switched on
- Tyre circumference adapted ⇒ page 115
- Adaption of number of pulses per wheel revolution performed ⇒ page 116
- Erase fault memory ⇒ page 108
- Drive vehicle at a speed of at least 10 km/h
- With vehicle stationary, engage reverse gear for at least 2 seconds

Value 255 will be displayed in measured value block 007 (function status register) if production diagnosis has been implemented correctly (all test requirements met) and navigation system is OK.

6.11 Adaption

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

- Change of tyre size
- Change to number of pulses per wheel revolution
- Disabling/enabling of production diagnosis
- Connection of separate or external loudspeakers
- Change in country identification
- Adaption of dynamic navigation
- Setting of electronic logbook
- Deactivating/activating GALA function

The navigation system control unit must be adapted with regard to whether or not dynamic navigation is to be set and, if so, via which unit the associated information is to be supplied: RDS radio with TMC and/or telephone.

Use is made of radio loudspeakers if a radio is fitted. If there is no radio fitted, a separate hands-free loudspeaker is installed with the navigation system.

The individual functions are called up by way of the appropriate adaption channel number (adaption table ⇒ page 115).

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Procedure

– Start Nav IV self-diagnosis ⇒ page 104 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 1 and 0 (“Adaption”).

Indicated on display:

```
Rapid data transfer                 Q
10 - Adaption
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Enter required adaption channel (adaption table ⇒ page 115).

– Confirm entry by pressing Q key.

Note

After altering adaption value or exiting from adaption channel, function “10 - Adaption” must be implemented again to select a different adaption channel.

6.11.1 Adaption table

Adaption channel	Adaption function
01	Change of tyre size ⇒ page 115
02	Change to number of pulses per wheel revolution ⇒ page 116
03	Disabling/enabling production diagnosis ⇒ page 117
04	Setting loudspeaker connection ⇒ page 118
05	Setting of country identification ⇒ page 118
06	Setting dynamic navigation ⇒ page 119
07	Setting of electronic logbook ⇒ page 120
77	Deactivating/activating GALA function ⇒ page 121

6.11.2 Change of tyre size - Adaption channel 01

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 1 (“Channel 1”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption     1795      -
>                                  <-1 3->
```

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Channel selected and currently stored tyre circumference in mm are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 1     Adaption      1795        -
>
Enter adaption value XXXXX
```

– Enter new tyre circumference (e.g. 01806), tyre table ⇒ page 100 .

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption      1806        -
>
                                  <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 1     Adaption      1806        Q
Store altered value?
```

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– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption      1806        Q
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

6.11.3 Change to number of pulses per wheel revolution - Adaption channel 02

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 2 (“Channel 2”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      4           ->
                                  <-1 3->
```

Channel selected and number of pulses currently stored are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 2     Adaption      4           ->
Enter adaption value XXXXX
```

– Enter new number of pulses (e.g.: 00008).

The number of pulses is always 8 for A2 with navigation system IV.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      8           ->
                                  <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 2     Adaption      8          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      8          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

6.11.4 Disabling/enabling production diagnosis - Adaption channel 03

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 3 (“Channel 3”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      0          ->
                                <-1 3->
```

Channel selected and production diagnosis status (0 = disabled, 1 = enabled) are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 3     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = Production diagnosis disabled

00001 = Production diagnosis enabled

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      1          ->
                                    <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 3     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 3     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

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6.11.5 Setting loudspeaker connection - Adaption channel 04

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [0] and [4] (“Channel 4”).

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 4     Adaption      0          ->
                         <-1 3->
```

Channel selected and type of loudspeaker connection (0 = external radio, 1 = separate loudspeaker) are displayed on top line.

– Press [→] key.

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Indicated on display:

```
Channel 4     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = External radio

00001 = Separate loudspeaker

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 4     Adaption      1          ->
                                     <-1 3->
```

– Press [→] key.

Indicated on display:

```
Channel 4     Adaption      1           Q
Store altered value?
```

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 4     Adaption      1          ->
Altered value stored
```

– Press [→] key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys [0] and [6] (“End of output”).

– Confirm entry by pressing [Q] key.

6.11.6 Setting country identification - Adaption channel 05

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [0] and [5] (“Channel 5”).

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 5     Adaption      0          ->
                                <-1 3->
```

Channel selected and country identification (0 = Europe, 1 = USA) are displayed on top line.

– Press [→] key.

Indicated on display:

```
Channel 5     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = Europe

00001 = USA

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 5     Adaption      1          ->
                                 <-1 3->
```

– Press [→] key.

Indicated on display:

```
Channel 5     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 5     Adaption      1          ->
Altered value stored
```

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– Press [→] key.

Indicated on display:

```
Rapid data transfer                 HELP
Select function XX
```

– Press keys [0] and [6] (“End of output”).

– Confirm entry by pressing [Q] key.

6.11.7 Setting dynamic navigation - Adaption channel 06

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [0] and [6] (“Channel 6”).

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 6     Adaption      0          ->
                                <-1 3->
```

Channel selected and relevant configuration are displayed on top line.

0 = Without dynamic function

1 = Dynamic function via Symphony II radio

2 = Dynamic function via Telematics II

3 = Dynamic function via Symphony II radio and Telematics II

– Press [→] key.

Indicated on display:

```
Channel 6     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

0 = Without dynamic function

1 = Dynamic function via Symphony II radio

2 = Dynamic function via Telematics II

3 = Dynamic function via Symphony II radio and Telematics II

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 6     Adaption      1          ->
                           <-1 3->
```

– Press → key.

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Indicated on display:

```
Channel 6     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 6     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

6.11.8 Setting electronic logbook - Adaption channel 07

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 7 (“Channel 7”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 7     Adaption      0          ->
                          <-1 3->
```

Channel selected and relevant configuration (0 = without electronic logbook, 1 = with electronic logbook) are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 7     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00001 = With electronic logbook

00000 = Without electronic logbook

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 7     Adaption      1          ->
                                <-1 3->
```

– Press [→] key.

Indicated on display:

```
Channel 7     Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 7     Adaption      1          ->
Altered value stored
```

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– Press [→] key.

Indicated on display:

```
Rapid data transfer                 HELP
Select function XX
```

– Press keys [0] and [6] (“End of output”).

– Confirm entry by pressing [Q] key.

6.11.9 Deactivating/activating GALA function - Adaption channel 66

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [6] and [6] (“Channel 66”).

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 66    Adaption      0          ->
                                <-1 3->
```

Channel selected and relevant configuration are displayed on top line (0 = GALA function on, 1 = GALA function off).

– Press [→] key.

Indicated on display:

```
Channel 66    Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00001 = GALA function off

00000 = GALA function on

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 66    Adaption      1          ->
                                <-1 3->
```

– Press [→] key.

Indicated on display:

```
Channel 66    Adaption      1          Q
Store altered value?
```

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 66    Adaption      1          ->
Altered value stored
```

– Press [→] key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).
– Confirm entry by pressing Q key.

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7 Self-diagnosis of TV tuner

7.1 General information and safety measures

7.1.1 General

The new TV tuner features extensive self-diagnosis.

The TV tuner has a fault memory. Faults occurring in monitored components/wiring are stored in the fault memory together with an indication of the type of fault.

7.1.2 Safety measures

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

WARNING

Proceed as follows to avoid risk of accident during measurement and test drives:

- *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
- *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
- *Reactivate passenger's airbag on completion of work.*

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

7.2 Starting self-diagnosis

7.2.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Technical Service Handbook
- Parts List

Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

- Vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- connected up ⇒ page 165
- Ignition on

7.2.2 Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

Address word for TV tuner: 57

– Press keys 5 and 7.

Indicated on display:

```
Rapid data transfer                       Q
57 - TV tuner
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
3B0919142    TV Tuner 17001    0001    ->
Code 00010                  WSC XXXXX
```

TV tuner display	
3B0919142	Part number
TV tuner 17001	Control unit designation
0001	Software version
Code 00010	Control unit encoding
WSC XXXXX	Workshop code

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– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

List of diagnosis functions:

Diagnosis functions	Page
01 - Interrogating control unit version	⇒ page 124
02 - Interrogating fault memory	⇒ page 125
03 - Final control diagnosis	⇒ page 128
05 - Erasing fault memory	⇒ page 127
06 - End of output	⇒ page 128
07 - Encoding control unit	⇒ page 129
08 - Reading measured value block	⇒ page 130

7.3 Interrogating control unit version

Procedure

– Start TV tuner self-diagnosis ⇒ page 123 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 1 (“Interrogating control unit version”).

Indicated on display:

```
Rapid data transfer                       Q
01 - Interrogating control unit version
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
3B0919142    TV Tuner 17001    0001    ->
Code 00010                  WSC XXXXX
```

TV tuner control unit version	
3B0919142	Part number
TV tuner 17001	Control unit designation
0001	Software version
Code 00010	Control unit encoding
WSC XXXXX	Workshop code

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

7.4 Interrogating fault memory

Procedure

– Start TV tuner self-diagnosis ⇒ page 123 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 2 (“Interrogating fault memory”).

Indicated on display:

```
Rapid data transfer                 Q
02 - Interrogating fault memory
```

– Confirm entry by pressing Q key.

The number of stored faults appears on the display.

```
X fault(s) detected
```

The stored faults are displayed and printed out consecutively.

– Check fault printout against fault table ⇒ page 126 and eliminate fault.

If “No fault detected” is displayed, tester returns to initial setting after pressing ↵ key.

Indicated on display:

```
No fault detected                  ->
```

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

If any other display appears, refer to ⇒ Fault reader operating instructions .

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

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7.5 Fault table

Note

- *The following table lists all faults which can be detected by the system and printed out on fault reader -V.A.G 1551- in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and "/SP" appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 40 on/off cycles are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

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Output on printer of -V.A.G 1551-	Possible cause of trouble	Fault remedy
00482 Rear display unit ♦ Open circuit/short to positive ♦ Short to earth	♦ Rear monitor defective	– Replace rear monitor [7]
00861 Connection to computer for navigation ♦ No communication ♦ Open circuit/short to positive ♦ Short to earth	♦ CAN bus fault ♦ Wiring damage ♦ Open circuit in wiring ♦ Navigation system control unit -J402- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in navigation system control unit -J402- ⇒ page 66 – Replace navigation system control unit -J402- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00863 TV aerial 1 -R55- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Amplifier for TV aerial 1 defective	– Replace aerial wire – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace TV aerial amplifier ⇒ Radio, telephone and navigation system; Rep. Gr. 91

Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00864 TV aerial 2 -R56- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Amplifier for TV aerial 2 defective	– Replace aerial wire – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace TV aerial amplifier ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00865 TV aerial 3 -R57- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Amplifier for TV aerial 3 defective	– Replace aerial wire – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace TV aerial amplifier ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00866 TV aerial 4 -R58- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Amplifier for TV aerial 4 defective	– Replace aerial wire – Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace TV aerial amplifier ⇒ Radio, telephone and navigation system; Rep. Gr. 91

7) Rear monitor is not fitted at present.

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7.6 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

- Fault memory interrogated ⇒ page 125
- All faults rectified

On completion of fault memory interrogation:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5 (“Erasing fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 - Erasing fault memory
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory erased
```

Fault memory has now been erased.

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If however the following message appears:

Indicated on display:

```
Attention:                              -
>
Fault memory not interrogated
```

Test procedure not OK

Adhere exactly to test sequence: First interrogate fault memory, eliminate any faults and then erase memory.

7.7 End of output

Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                     Q
06 - End of output
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

7.8 Final control diagnosis

- Final control diagnosis can only be performed with vehicle stationary and engine not running.
- If final control diagnosis detects a fault, locate and eliminate cause of trouble if necessary.

A check is made on reception via the various TV aerials.

Procedure

– Switch radio navigation unit to TV reception.

– Start TV tuner self-diagnosis ⇒ page 123 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

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– Press keys 0 and 3 (“Final control diagnosis”).

Indicated on display:

```
Rapid data transfer                     Q
03 - Final control diagnosis
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Final control diagnosis                 ->
Aerial 1
```

Check reception via aerial 1.

– Press → key.

Indicated on display:

```
Final control diagnosis                 ->
Aerial 2
```

Check reception via aerial 2.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
Aerial 3
```

Check reception via aerial 3.

– Press ↵ key.

Indicated on display:

```
Final control diagnosis                ->
Aerial 4
```

Check reception via aerial 4.

– Press ↵ key.

Indicated on display:

```
Final control diagnosis                ->
End
```

– Press ↵ key.

– This returns tester to basic function.

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

7.9 Encoding control unit

This function can be used to encode the TV tuner as follows.

- Start of diagnosis
- Country code
- Tuner configuration

Procedure

– Start TV tuner self-diagnosis ⇒ page 123 .

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

– Press keys 0 and 7 (“Encoding control unit”).

Indicated on display:

```
Rapid data transfer                     Q
07 - Encoding control unit
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Encoding control unit
Enter code number  XXXXX     (0-32000)
```

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– Enter code number in line with encoding table ⇒ page 130 .

Code: 00010

- 0 = Not used
- 0 = Not used
- Country code: 01 = PAL B/G Central Europe
- Tuner configuration: 0 = No second display

Standard code for Germany is 00010.

Control unit identification and code entered (00010) appear on display.

```
3B0919142    TV Tuner 17001    0001   ->
Code 00010                  WSC XXXXX
```

– Terminate encoding by pressing ↵ key.

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

7.9.1 Encoding table

5	4	3	2	1 ← Decimal places of byte encoding on tester display	
				Tuner configuration second display: 4 - 7: Component fitted 0 - 3: Component not fitted	
		0	0	Country code/video standard	MID EUROPE
		0	1	Not used	ITALY
		0	2	PAL B/G	UK, IRELAND
		0	3	PAL B/G	EAST EUROPE
		0	4	PAL I	FRANCE
		0	5	SECAM D/K	NORTH AMER.
		0	6	SECAM L	AUSTRALIA
		0	7	NTSC M	BRASILIA
		1	0	PAL B/H	ARGENTINA
		1	1	PAL M	NEW ZEALAND
		1	2	PAL N	CHINA
		1	3	PAL B	AFRICA
		1	4	PAL D/K	GREECE, EGYPT
		1	5	PAL I	AFRICA
		1	6	SECAM D/K	JAPAN
		1	7	SECAM K1 NTSC M	
				Start of diagnosis 0: Not used 1: Wake-up via CAN only	2: Wake-up via K-wire only 3: Wake-up via CAN and K-wire
				Not used = 0	

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7.10 Reading measured value block

Procedure

– Start TV tuner self-diagnosis ⇒ page 123 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 8 (“Reading measured value block”).

Indicated on display:

```
Rapid data transfer                       Q
08 - Reading measured value block
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Reading measured value block
Enter display group number XXX
```

– Enter desired display group number (list of display groups ⇒ page 130).

7.10.1 List of display groups

Display group number	Indicated on display
001	1 = Rear monitor link 2 = on/off
002	1 = TV aerial 1 2 = Status of TV aerial 1 3 = TV aerial 2 4 = Status of TV aerial 2
003	1 = TV aerial 3 2 = Status of TV aerial 3 3 = TV aerial 4 4 = Status of TV aerial 4
004	1/2 = Link with navigation unit 3 = Status of link

Display group number	Indicated on display
005	1 = External input AV1 2 = External input AV2

7.10.2 Measured value block 001

Reading measured value block 1 →	Indicated on display
off	
Rear monitor link • Off = No link • On = Activated	

7.10.3 Measured value block 002

Reading measured value block 2 →	Indicated on display
TV aerial 1 OK TV aerial 2 OK	
Status of TV aerial 2 • OK • Short circuit • Open circuit	
TV aerial 2	
Status of TV aerial 1 • OK • Short circuit • Open circuit	
TV aerial 1	

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7.10.4 Measured value block 003

Reading measured value block 3 →	Indicated on display
TV aerial 3 OK TV aerial 4 OK	
Status of TV aerial 4 • OK • Short circuit • Open circuit	
TV aerial 4	

Status of TV aerial 3
- OK
- Short circuit
- Open circuit

TV aerial 3

7.10.5 Measured value block 004

Reading measured value block 4 →	Indicated on display
Navigat. Link OK	

Status of link
- OK
- Short circuit
- Open circuit

Link with navigation unit

Audi
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7.10.6 Measured value block 005

Reading measured value block 5 →	Indicated on display
AV1 open AV2 open	

External input AV2
- Open
- Used

External input AV1
- Open
- Used

8 Multi-function steering wheel self-diagnosis

8.1 General information and safety measures

8.1.1 General

Function buttons are integrated into the steering wheel to facilitate operation of radio and telephone as well as implementation of Tiptronic function with automatic gearbox whilst driving. The multi-function steering wheel is also electrically heated.

The steering wheel electronics are responsible for control of steering wheel heating, relaying of button functions to CAN bus and dimming of function button illumination.

The multi-function steering wheel control unit is responsible for control of radio set, telephone system, dash panel insert, steering wheel heating and Tiptronic function.

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The control unit is provided with a fault memory and features comprehensive self-diagnosis. Faults occurring in monitored components/wiring are stored in the fault memory together with an indication of the type of fault.

The control units are distinguished only by index letters.

Control unit no.	Radio operation only	Radio/telephone operation	CAN bus with Tiptronic	CAN bus without Tiptronic
4B0907487 C		X		X
4B0907487 E	X			
4B0907487 G		X		
4B0907487 H		X	X	
4B0907487 J		X	X	

Control units with index “C”, “G”, “H” and “J” must be encoded.

8.1.2 Safety measures

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

WARNING

Proceed as follows to avoid risk of accident during measurement and test drives:

- *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
- *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
- *Reactivate passenger's airbag on completion of work.*

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

8.2 Starting self-diagnosis

8.2.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Technical Service Handbook
- Parts List

Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- connected up ⇒ page 165
- Ignition on

8.2.2 Procedure

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Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

Steering wheel electronics address word: 16

– Press keys 1 and 6.

Indicated on display:

```
Rapid data transfer                       Q
16 - Steering wheel electron-
ics
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4B0907487A Steering wheel electronics
D01 ->
Code 00001
```

Control unit display	
4B0907487A	Part number
Steering wheel electronics	Control unit designation
D01	Software version
Code 00001	Control unit encoding
WSC XXXXX	Workshop code

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

List of diagnosis functions:

Diagnosis functions	Page
01 - Interrogating control unit version	⇒ page 135
02 - Interrogating fault memory	⇒ page 135
03 - Final control diagnosis	⇒ page 138
05 - Erasing fault memory	⇒ page 137
06 - End of output	⇒ page 138
07 - Encoding control unit	⇒ page 139
08 - Reading measured value block	⇒ page 141

8.3 Interrogating control unit version

Procedure

– Start multi-function steering wheel self-diagnosis ⇒ page 134 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 1 (“Interrogating control unit version”).

Indicated on display:

```
Rapid data transfer                       Q
01 - Interrogating control unit version
```

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– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4B0907487A Steering wheel electronics
D01 ->
Code 00001
```

Multi-function steering wheel control unit version	
4B0907487A	Part number
Steering wheel electronics	Control unit designation
D01	Software version
Code 00001	Control unit encoding
WSC XXXXX	Workshop code

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

8.4 Interrogating fault memory

Procedure

– Start multi-function steering wheel self-diagnosis ⇒ page 134 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 2 (“Interrogating fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
02 - Interrogating fault memory
```

– Confirm entry by pressing Q key.

The number of stored faults appears on the display.

Indicated on display:

```
X fault(s) detected
```

The stored faults are displayed and printed out consecutively.

– Check fault printout against fault table ⇒ page 136 and eliminate fault.

If “No fault detected” is displayed, tester returns to initial setting after pressing → key.

Indicated on display:

```
No fault detected                    ->
```

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

If any other display appears, refer to ⇒ Fault reader operating instructions .

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

8.5 Fault table

Note

- *The following table lists all faults which can be detected by the system and printed out on fault reader -V.A.G 1551- in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and “/SP” appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 40 on/off cycles are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01044 Multi-function steering wheel control unit -J453- ♦ incorrectly coded	♦ Multi-function steering wheel control unit -J453- encoding does not correspond to equipment	– Encode multi-function steering wheel control unit -J453- ⇒ page 139

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01302 Telematics control unit -J499- ♦ No communication	♦ CAN bus fault ♦ Telematics control unit -J499- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Read out telematics control unit -J499- fault memory ⇒ page 146 – Replace telematics control unit -J499- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01304 Radio -R- ♦ No communication	♦ CAN bus fault ♦ Radio -R- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Read out radio -R- fault memory ⇒ page 3 – Replace radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01426 Operating unit in steering wheel -E221- ♦ No communication ♦ Implausible signal	♦ Open circuit in wiring - loss of link between control unit and steering wheel ♦ Incomprehensible messages on data bus (control unit and steerig wheel electronics are linked via CAN bus)	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Check wiring between control unit and steering wheel – Replace buttons in steering wheel ⇒ Radio, telephone and navigation system; Rep. Gr. 91 – Replace steering wheel ⇒ Running gear; Rep. Gr. 48 .
65535 Control unit ♦ Defective	♦ Control unit defective	– Replace control unit ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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8.6 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

- Fault memory interrogated ⇒ page 135
- All faults rectified

On completion of fault memory interrogation:

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 5 (“Erasing fault memory”).

Indicated on display:

```
Rapid data transfer                    Q
05 - Erasing fault memory
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                    ->
Fault memory erased
```

Fault memory has now been erased.

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If however the following message appears:

Indicated on display:

```
Attention:                             -
>Fault memory not interrogated
```

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Test procedure not OK

Adhere exactly to test sequence: First interrogate fault memory, eliminate any faults and then erase memory.

8.7 End of output

Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                    Q
06 - End of output
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

8.8 Final control diagnosis

- Final control diagnosis can only be performed with vehicle stationary and engine not running.
- If final control diagnosis detects a fault, locate and eliminate cause of trouble if necessary.

Procedure

– Switch on ignition.

– Switch off radio and navigation system (telephone not in use).

– Start multi-function steering wheel self-diagnosis ⇒ page 134 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 3 (“Final control diagnosis”).

Indicated on display:

```
Rapid data transfer                    Q
03 - Final control diagnosis
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Final control diagnosis                ->
Segment test
```

"AAAABBBBCCCCDDDD" appears on dash panel insert centre display.

– Switch on radio.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
Radio louder
```

Radio volume becomes noticeably louder.

– Press → key.

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Indicated on display:

```
Final control diagnosis                ->
Radio quieter
```

Radio volume is noticeably turned down.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
Radio station forward search
```

Next station is found and appears on dash panel insert centre display.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
Radio station reverse search
```

Preceding station is reset and appears on dash panel insert centre display.

– Switch off radio and insert workshop telephone card. Switch on telephone and then enter PIN.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
Telephone memory
```

First name stored in telephone memory appears on dash panel insert centre display.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
Next telephone memory
```

Second entry in telephone memory appears on dash panel insert centre display.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
End
```

– Press → key.

– This returns tester to basic function.

Indicated on display:

```
Rapid data transfer                 HELP
Select function XX
```

8.9 Encoding control unit

This function can be used to encode multi-function steering wheel contol unit with index "C", "G", "H" and "J" as follows:

♦ Steering wheel version

♦ Language version

The code must always correspond to vehicle equipment.

Procedure

– Start multi-function steering wheel self-diagnosis ⇒ page 134 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 7 (“Encoding control unit”).

Indicated on display:

```
Rapid data transfer                   Q
07 - Encoding control unit
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Encoding control unit
Enter code number  XXXXX     (0-32000)
```

– Enter code number in line with encoding table ⇒ page 140 .

Code: e.g. 00001

- First position: 0 = standard
- Second position: 0 = standard
- Third position; language version: 0 = German
- Fourth position; Tiptronic: 0 = no Tiptronic
- Fifth position; steering wheel version: 1 = steering wheel for radio/telephone operation

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– Confirm entry by pressing Q key.

– Control unit identification and code entered (00001) appears on display.

```
4B0907487A Steering wheel electronics
D01 ->
Code 00001
```

– Terminate encoding by pressing → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                   Q
06 - End of output
```

– Confirm entry by pressing Q key.

8.9.1 Encoding table for control unit index “A”

X	Standard
0	Always zero
XX	Language version
00	German
01	English
02	French
03	Italian
04	Dutch
05	Spanish
06	Portuguese
07	Danish
08	Swedish
XX	Steering wheel version
01	Radio and telephone operation
02	Radio operation

8.9.2 Encoding table for control unit indices “C”, “H” and “J”

X	X	X	X	X	Encoding
X					Standard
0					Always zero
	X				Radio remote
	0				0 activated (standard) 1 deactivated
		X			Language version
		0			Always zero
			X		Tiptronic
			0		Always 0 (“C”) Always 1 (“H”, “J”)
				X	Steering wheel version
				1	Radio and telephone operation
				2	Radio operation (6-button radio)
				3	Radio/telephone operation and voice control

8.9.3 Encoding table for control unit index “G”

X	X	X	X	X	Encoding
X					Standard
0					Always zero
	X				Standard
	0				Always zero
		X			Language version
		0			German
		1			English
		2			French
		3			Italian
		4			Dutch
		5			Spanish
		6			Portuguese
			X		Tiptronic
			0		No Tiptronic
			1		With Tiptronic
				X	Steering wheel version
				1	Radio and telephone operation
				2	Radio operation (6-button radio)

8.10 Reading measured value block

Procedure

– Start multi-function steering wheel self-diagnosis ⇒ page 134 .

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Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 8 (“Reading measured value block”).

Indicated on display:

```
Rapid data transfer                       Q
08 - Reading measured value block
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Reading measured value block
Enter display group number XXX
```

– Enter desired display group number (list of display groups ⇒ page 142).

8.10.1 List of display groups

Display group number	Indicated on display
001	1 = Leiser button 2 = Lauter button 3 = Memory down button 4 = Memory up button
002	1 = Radio/telephone switching 2 = Telephone transmission

8.10.2 Measured value block 001

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Reading measured value block 1 →				Indicated on display
Quieter >	Louder >	Mem. down >	Mem. up >	
				Memory aufwärts button • Not pressed • Mem. up >
				Memory abwärts button • Not pressed • Mem. down >
				Lauter button (increase volume) • Not pressed • Louder >
				Leiser button (reduce volume) • Not pressed • Quieter >

8.10.3 Measured value block 002

Reading measured value block 2 →		Indicated on display
Pressed	Transmission	
		Telephone transmission • Not pressed • Transmission
		Radio/telephone switching • Not pressed • Pressed

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9 Telematics self-diagnosis

9.1 General information and safety measures

9.1.1 General

The telematics system provides a link between navigation system and mobile phone.

With the aid of an emergency call button and/or in the event of airbag triggering, the telematics system transmits an emergency call which is relayed by the network operator to the police and emergency rescue services. The exact location of the accident is determined by way of the navigation system.

A breakdown button enables breakdown service to be summoned at short notice when necessary without the need for any further action by the driver. It is also possible to call up various services such as current traffic information.

The telematics system has a fault memory. Faults occurring in monitored components/wiring are stored in the fault memory together with an indication of the type of fault.

9.1.2 Safety measures

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

> ⚠ WARNING
>
> ***Proceed as follows to avoid risk of accident during measurement and test drives:***
>
> - ***Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.***
> - ***Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .***
> - ***Reactivate passenger's airbag on completion of work.***

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

- Always switch off ignition before disconnecting and connecting measuring instruments and testers.
- Certain tests may result in fault detection and storage by the control unit. The fault memory is therefore to be interrogated and if necessary erased on completion of all tests and repair work.

9.2 Notes on system release

If the telematics system SIM card is defective, a new one must be requested by fax ⇒ Radio, telephone and navigation system; Rep. Gr. 91 .

Hotline no.: 0800/2 83 47 27

Fax no.: 0800/9 63 96 39

9.3 Starting self-diagnosis

9.3.1 Additional sources of information and test requirements

Additional sources of information:

- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Technical Service Handbook
- Parts List
- SSP 236 Audi telematics +

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Test requirements:

- Corresponding fuses checked ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- connected up ⇒ page 165
- Ignition on

9.3.2 Procedure

Indicated on display:

```
Rapid data transfer                HELP
Enter address word XX
```

Address word for telematics system: 75

– Press keys 7 and 5.

Indicated on display:

```
Rapid data transfer                   Q
75 - Emergency call mod-
ule
```

– Confirm entry by pressing Q key.

Note

- *Emergency call function is deactivated during self-diagnosis.*
- *"Diagnosis activated" appears on dash panel insert centre display during self-diagnosis.*

Following display appears after approx. 5 seconds:

```
4B0035617   Telematics Nokia 1   0001  -
>
Code 0004123                 WSC XXXXX
```

Telematics system display	
4B0035617	Part number
Telematics Nokia 1	Control unit designation
0001	Software version
Code 0004123	Control unit encoding
WSC XXXXX	Workshop code

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

List of diagnosis functions:

Diagnosis functions	Page
01 - Interrogating control unit version	⇒ page 146
02 - Interrogating fault memory	⇒ page 146
03 - Final control diagnosis	⇒ page 152
05 - Erasing fault memory	⇒ page 151
06 - End of output	⇒ page 152
07 - Encoding control unit	⇒ page 153
08 - Reading measured value block	⇒ page 154
10 - Adaption	⇒ page 158

9.4 Interrogating control unit version

Procedure

– Start telematics system self-diagnosis ⇒ page 145 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 1 (“Interrogating control unit version”).

Indicated on display:

```
Rapid data transfer                   Q
01 - Interrogating control unit version
```

– Confirm entry by pressing Q key.

Following display appears after approx. 5 seconds:

```
4B0035617   Telematics Nokia 1   0001  -
>
Code 0004123                 WSC XXXXX
```

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Telematics system control unit version	
4B0035617	Part number
Telematics Nokia 1	Control unit designation
0001	Software version
Code 0004123	Control unit encoding
WSC XXXXX	Workshop code

– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

9.5 Interrogating fault memory

Procedure

– Start telematics system self-diagnosis ⇒ page 145 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 2 (“Interrogating fault memory”).

Indicated on display:

```
Rapid data transfer                   Q
02 - Interrogating fault memory
```

– Confirm entry by pressing Q key.

The number of stored faults appears on the display.

```
X fault(s) detected
```

The stored faults are displayed and printed out consecutively.

– Check fault printout against fault table ⇒ page 147 and eliminate fault.

If “No fault detected” is displayed, tester returns to initial setting after pressing → key.

Indicated on display:

```
No fault detected                    ->
```

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

If any other display appears, refer to ⇒ Fault reader operating instructions .

– Press keys 0 and 6 (“End of output”).
– Confirm entry by pressing Q key.
– Switch off ignition.
– Unplug connectors to fault reader -V.A.G 1551- .

9.6 Fault table

Note

- *The following table lists all faults which can be detected by the system and printed out on fault reader -V.A.G 1551- in ascending order of 5-digit fault codes.*
- *Before replacing components found to be defective, use current flow diagram to check wiring and connectors to these components as well as earth connections.*
- *On completion of repair work and after checking system operation, fault memory is always to be interrogated again and erased.*
- *All static and sporadic faults are stored in the fault memory. Faults persisting for at least 2 seconds are identified as being static faults. If a fault is then no longer present, it is stored as being sporadic and “/SP” appears on the right of the display.*
- *After switching on ignition, all faults present are set to sporadic and only stored as being static if they are still present after checking.*
- *Sporadic faults which do not re-occur during 40 on/off cycles are erased.*
- *On eliminating open circuit in wiring in the event of a data bus fault, make sure the two data bus wires of the relevant CAN bus system form a twisted pair so as to avoid interference.*

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Output on printer of -V.A.G 1551-	Possible cause of trouble	Fault remedy
00003 Control unit ♦ Defective	♦ Telephone/telematics control unit -J526- defective	– Replace telephone/telematics control unit -J526- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00469 Display data bus in one-wire mode ♦ Electrical fault in circuit	♦ CAN bus fault ♦ Open circuit in wiring ♦ Wiring damage	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
00851 Loudspeaker This fault is stored if a fault occurs during final control diagnosis (loudspeaker).	♦ Mutual short circuit in wires to hands-free loudspeaker	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace hands-free loudspeaker ⇒ Radio, telephone and navigation system; Rep. Gr. 91
00862 Navigation aerial (GPS) - R50/R52 ♦ Open circuit ♦ Short circuit	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Navigation aerial (GPS) defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace GPS aerial wire – Replace navigation aerial (GPS) ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01300 Nav. with CD drive control unit -J401- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Wiring damage ♦ Navigation system with CD drive control unit -J401- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in navigation system with CD drive control unit -J401- ⇒ page 105 – Replace navigation system with CD drive control unit -J401- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01304 Radio -R- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Open circuit in radio -R- power supply ♦ Radio -R- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Use current flow diagram to check radio -R- power supply – Read out radio -R- fault memory ⇒ page 3 – Replace radio -R- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01305 Data bus display ♦ Defective	♦ CAN bus fault ♦ Open circuit in wiring	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01317 Control unit in dash panel insert -J285- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Dash panel insert defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in dash panel insert ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 – Replace dash panel insert ⇒ Electrical system; Rep. Gr. 90
01326 Multi-function steering wheel control unit -J453- ♦ No communication	♦ CAN bus fault ♦ Open circuit in wiring ♦ Multi-function steering wheel control unit -J453- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Read out fault memory in multi-function steering wheel control unit -J453- ⇒ page 135 – Replace multi-function steering wheel control unit -J453- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01522 Telephone handset -R37- ♦ No communication	♦ Open circuit in wiring ♦ Telephone handset -R37- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace telephone handset -R37- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01523 Telephone microphone -R38- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in wiring ♦ Short circuit ♦ Telephone microphone -R38- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring – Replace telephone microphone -R38- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01524 Telephone aerial -R65- ♦ No signal	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Telephone aerial -R65- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace aerial wire of telephone aerial -R65- – Replace telephone aerial -R65- ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01526 Emergency call button -E276- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in wiring ♦ Short circuit ♦ Emergency call button -E276- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring/ short circuit – Replace emergency call button -E276- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01527 Breakdown help button -E275- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in wiring ♦ Short circuit ♦ Breakdown help button -E275- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring/ short circuit – Replace breakdown help button -E275- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01528 Additional aerial for telematics -R90- ♦ No signal	♦ Open circuit in aerial wire ♦ Short circuit in aerial wire ♦ Additional aerial for telematics -R90- (emergency aerial) defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Replace wire of additional aerial for telematics -R90- – Replace additional aerial for telematics -R90- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01529 Additional loudspeaker for telematics -R91- ♦ Open circuit/short to positive ♦ Short to earth	♦ Open circuit in wiring ♦ Short circuit ♦ Additional loudspeaker for telematics -R91- defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring/ short circuit – Replace additional loudspeaker for telematics -R91- ⇒ Radio, telephone and navigation system; Rep. Gr. 91
01531 Emergency battery ♦ No signal	♦ Open circuit in wiring ♦ Short circuit ♦ Emergency battery defective/flat	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring/ short circuit – Replace emergency battery ⇒ Radio, telephone and navigation system; Rep. Gr. 91

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Output on printer of - V.A.G 1551-	Possible cause of trouble	Fault remedy
01656 Crash signal ♦ No signal	♦ Open circuit in wiring ♦ Short circuit ♦ Airbag control unit defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring/ short circuit – Check airbag control unit ⇒ General body repairs, self-diagnosis; Rep. Gr. 01
01796 Telematics SIM card ♦ No signal	♦ Open circuit in wiring ♦ Short circuit ♦ Telematics SIM card defective	– Fault-finding in line with current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations – Eliminate open circuit in wiring/ short circuit – Replace telematics SIM card ⇒ Radio, telephone and navigation system; Rep. Gr. 91

9.7 Erasing fault memory

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

After erasing fault memory, faults are not updated until ignition has been switched off and on again.

Requirements:

- Fault memory interrogated ⇒ page 146
- All faults rectified

On completion of fault memory interrogation:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5 (“Erasing fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 - Erasing fault memory
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory erased
```

Fault memory has now been erased.

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If however the following message appears:

Indicated on display:

```
Attention:                               -
>
Fault memory not interrogated
```

Test procedure not OK

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Adhere exactly to test sequence: First interrogate fault memory, eliminate any faults and then erase memory.

9.8 End of output

Procedure

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

Indicated on display:

```
Rapid data transfer                       Q
06 - End of output
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word XX
```

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– Switch off ignition.

– Unplug connectors to fault reader -V.A.G 1551- .

9.9 Final control diagnosis

- Final control diagnosis can only be performed with vehicle stationary and engine not running.
- If final control diagnosis detects a fault, locate and eliminate cause of trouble if necessary.

Procedure

– Start telematics system self-diagnosis ⇒ page 145 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 3 (“Final control diagnosis”).

Indicated on display:

```
Rapid data transfer                       Q
03 - Final control diagnosis
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Final control diagnosis                   ->
Loudspeaker
```

Test tone can be heard via hands-free loudspeaker.

– Press → key.

Indicated on display:

```
Final control diagnosis                   ->
Additional loudspeaker for telematics R9
1
```

Test tone can be heard via additional loudspeaker (emergency loudspeaker).

– Press → key.

Indicated on display:

```
Final control diagnosis                   ->
Emergency call button E276
```

Emergency call button starts to flash.

– Press → key.

Indicated on display:

```
Final control diagnosis                   ->
Breakdown help button E275
```

Breakdown help button starts to flash.

– Press → key.

Indicated on display:

```
Final control diagnosis                ->
End
```

– Press ↵ key.

– This returns tester to basic function.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

9.10 Encoding control unit

This function can be used to encode telematics system as follows:

- Vehicle model
- Voice control/multi-function steering wheel
- Navigation system
- Radio configuration

Note

In contrast to the codes of other control units, the telematics control unit code displayed has 7 digits.

Procedure

– Start telematics system self-diagnosis ⇒ page 145 .

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 7 (“Encoding control unit”).

Indicated on display:

```
Rapid data transfer                      Q
07 - Encoding control unit
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Encoding control unit
Enter code number  XXXXX     (0-32000)
```

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– Enter code number in line with encoding table ⇒ page 154 .

Code 04123

- 0 = Not used, always 0
- Vehicle model: 4 = A2
- Voice control/multi-function steering wheel: 1 = without voice control and with multi-function steering wheel
- Navigation system: 2 = Nav II-D
- Radio system: 3 = radio system with CAN bus and BOSE

Control unit identification and code entered (0004123) appear on display.

```
4B0035617   Telematics Nokia 1   0001  -
>
Code 0004123                 WSC XXXXX
```

– Terminate encoding by pressing ↵ key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

9.10.1 Encoding table

5 - 7	4	3	2	1	← Decimal places of byte encoding on tester display
					Radio: 1: No radio 2: With radio (with CAN) (Symphony I CAN, Symphony II, Chorus II, Concert II) 3: With radio (with CAN) (Symphony I CAN, Symphony II, Chorus II, Concert II) with BOSE 4: With radio (no CAN) (Chorus I, Concert I, Symphony I) or Nav II-D 5: With radio (no CAN) (Chorus I, Concert I, Symphony I) or Nav II-D with BOSE
					Navigation: 0: No Nav 1: With Nav III 2: With Nav II-D 3: With Nav IV 4: With Nav II-D (as of week 45/01) 5: With Nav IV (as of week 45/01)
					Voice control/multi-function steering wheel (VCS/MFS): 0: No VCS, no MFS 1: No VCS, with MFS 3: With VCS, with MFS
					Vehicle model: 3: A8 (D2) 0: A3(AB) 4: A2 (W10) 1: A4 (B5) 5: A4 (B6) 2: A6(C5)
					000: Columns reserved for subsequent encoding = 0

9.11 Reading measured value block

Procedure

– Start telematics system self-diagnosis ⇒ page 145 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 8 (“Reading measured value block”).

Indicated on display:

```
Rapid data transfer                     Q
08 - Reading measured value block
```

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– Confirm entry by pressing Q key.

Indicated on display:

```
Reading measured value block
Enter display group number XXX
```

– Enter desired display group number (list of display groups ⇒ page 154).

– Confirm entry by pressing Q key.

9.11.1 List of display groups

Display group number	Indicated on display
001	1 = Telephone 2 = Registered/not registered 3 = Field strength 4 = 0...010
002	1 = Emergency battery 2 = Full/low/flat 3 = Dimming 4 = 0...100%

Display group number	Indicated on display
003	1 = Vehicle speed signal 2 = xxx km/h 3 = Direction of travel
004	1 = Notruf button 2 = Pressed/not pressed 3 = Pannen button 4 = Pressed/not pressed
005	1 = Unit number
006	1 = SIM card number
080	1 = Key ID
081	1 = Chassis number
125	1 = CAN bus link with dash panel insert 2 = CAN bus link with steering wheel 3 = CAN bus link with radio 4 = CAN bus link with navigation system

9.11.2 Measured value block 001

Reading measured value block 1 →				Indicated on display
Telephone	Registered	Field strength	5	

- Field strength
  - 0...10
- Field strength of telephone network
- Telephone registration
  - Registered
  - Not registered
- Permanently installed telephone

9.11.3 Measured value block 002

Reading measured value block 2 →				Indicated on display
Emergency battery	Full	Dimming	0%	

- Dimming value
  - 0...100%
- Dimming (only with lights “ON”)
- Status of emergency battery
  - Full
  - Low
  - Flat
- Telematics system emergency battery

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9.11.4 Measured value block 003

Reading measured value block 3 →	Indicated on display
Vehicle speed signal: 0 km/h Forwards	

Direction of travel
- Forwards
- Reverse

Vehicle speed
- 0...XXX km/h

Vehicle speed signal

9.11.5 Measured value block 004

Reading measured value block 4 →	Indicated on display
Emergency call button: Not pressed; Breakdown help button: Not pressed	

Breakdown help button
- Pressed
- Not pressed

Breakdown help button

Emergency call button
- Pressed
- Not pressed

Emergency call button

9.11.6 Measured value block 005

Reading measured value block 5 →	Indicated on display
IMEI: 493005100454423	

Unit number

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9.11.7 Measured value block 006

Reading measured value block 6 →	Indicated on display
ICC-ID: 89492084298279009023	

SIM card number
- Display of number with telematics SIM inserted
- “Not fitted” = Telematics SIM not inserted
- “Not active” = Another SIM card in telephone handset

9.11.8 Measured value block 080

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Reading measured value block 80 →	Indicated on display
KEY ID: 3762H CP3.07 12/99	

Display of key ID with hardware version and production date

9.11.9 Measured value block 081

Reading measured value block 81 →	Indicated on display
WVW ZZZ1 JZW W123456 6.510 26-05-00 221	

Display of chassis number with software version and date

9.11.10 Measured value block 125

Reading measured value block 125 →				Indicated on display
Dash 1	Steering wheel 1	Radio 1	Navigat 1	
				Navigation unit • “1” = On data bus • “0” = Not on data bus (transmission problem) • “ ” = not connected to data bus

Radio
- “1” = On data bus
- “0” = Not on data bus (transmission problem)
- “ ” = not connected to data bus

Multi-function steering wheel control unit
- “1” = On data bus
- “0” = Not on data bus (transmission problem)
- “ ” = not connected to data bus

Dash panel insert
- “1” = On data bus
- “0” = Not on data bus (transmission problem)
- “ ” = not connected to data bus

9.12 Adaption

Channels can be used for adaption of several functions:

- ♦ Change of tyre size
- ♦ Change to number of pulses per wheel revolution
- ♦ Deactivating/activating service mode

Service mode must be activated before disconnecting vehicle battery and deactivated following re-connection.

Control unit does not switch to emergency battery if service mode is active. Emergency battery in control unit is then not subjected to load.

- ♦ GSM aerial test selection

It is possible to determine which GSM aerial is to be monitored by the control unit. At present only the emergency aerial can be tested.

- ♦ GSM aerial selection

For test purposes, it is possible to switch to main aerial or emergency aerial and to use a telephone link to check for correct aerial operation. Automatic selection is to be used for normal operation.

- ♦ System selection

This channel can be used to suppress system fault messages on dash panel insert display and telephone handset. This is necessary if telematics control unit is to be operated as a permanently installed telephone following expiry of telematics service contract.

The individual functions are called up by way of the appropriate adaption channel number (adaption table ⇒ page 159).

Procedure

– Start telematics system self-diagnosis ⇒ page 145.

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Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 1 and 0 (“Adaption”).

Indicated on display:

```
Rapid data transfer                     Q
10 - Adaption
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Enter required adaption channel (adaption table ⇒ page 159).

– Confirm entry by pressing Q key.

Note

After altering adaption value or exiting from adaption channel, function “10 - Adaption” must be implemented again to select a different adaption channel.

9.12.1 Adaption table

Adaption channel	Adaption function
01	Change of tyre size ⇒ page 159
02	Change to number of pulses per wheel revolution ⇒ page 160
03	Deactivating/activating service mode ⇒ page 161
05	Aerial test selection ⇒ page 162
06	Aerial selection ⇒ page 162
07	System selection ⇒ page 163

9.12.2 Change of tyre size - Adaption channel 01

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 1 (“Channel 1”).

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Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption      1795        -
>
                                <-1 3->
```

Channel selected and currently stored tyre circumference in mm are displayed on top line.

– Press → key.

Indicated on display:

```
Channel 1     Adaption      1795        -
>
Enter adaption value XXXXX
```

– Enter new tyre circumference (e.g. 01806), tyre table ⇒ page 100 .

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption      1806        -
>
                                <-1 3->
```

– Press → key.

Indicated on display:

```
Channel 1     Adaption      1806          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 1     Adaption      1806          -
>
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

9.12.3 Change to number of pulses per wheel revolution - Adaption channel 02

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 2 (“Channel 2”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      4          ->
                                    <-1 3->
```

Channel selected and number of pulses currently stored are displayed on top line.

– Press → key.

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Indicated on display:

```
Channel 2     Adaption      4          ->
Enter adaption value XXXXX
```

– Enter new number of pulses (e.g.: 00008).

The number of pulses is always 8 for A2 with telematics system.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      8          ->
Pulses per revolution            <-1 3-
>
```

– Press → key.

Indicated on display:

```
Channel 2     Adaption      8          Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 2     Adaption      8          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

9.12.4 Deactivating/activating service mode - Adaption channel 03

Control unit switches immediately to emergency battery after disconnecting vehicle battery. If emergency battery is used for a lengthy period, it becomes discharged and must be replaced (fault code: 01531).

Control unit does not switch to emergency battery if service mode is active. Service mode must be deactivated again on completion of service work.

Service mode can also be activated and deactivated by entering "#4616#" on handset.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys [0] and [3] ("Channel 3").

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 3     Adaption      0        ->
Service mode off
```

Channel selected and service mode status currently stored are displayed on top line.

0 = Service mode off

1 = Service mode on

– Press [→] key.

Indicated on display:

```
Channel 3     Adaption      0        ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001).

00000 = Service mode off

00001 = Service mode on

– Confirm entry by pressing [Q] key.

Indicated on display:

```
Channel 3     Adaption      1        ->
Service mode on
```

– Press [→] key.

Indicated on display:

```
Channel 3     Adaption      1        Q
Store altered value?
```

– Confirm entry by pressing [Q] key.

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Indicated on display:

```
Channel 3     Adaption      1        ->
Altered value stored
```

– Press [→] key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys [0] and [6] ("End of output").

– Confirm entry by pressing [Q] key.

9.12.5 Aerial test selection - Adaption channel 05

It is possible to determine which GSM aerial is to be monitored by the control unit. A fault is entered if there is no function.

At present only the emergency aerial can be tested. “2 = Testing GSM emergency aerial” must therefore be set.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 5 (“Channel 5”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      0        ->
Test OFF
```

Channel selected and aerial test currently stored are displayed on top line.

0 = No test

1 = Testing of GSM main aerial

2 = Testing of GSM emergency aerial

3 = Testing of both GSM aerials

– Press → key.

Indicated on display:

```
Channel 5     Adaption      0        ->
Enter adaption value XXXXX
```

– Enter new adaption value (00002) if GSM emergency aerial is to be tested.

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– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      2        ->
Test ON Emergency aer-
ial
```

– Press → key.

Indicated on display:

```
Channel 5     Adaption      2         Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 5     Adaption      2        ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

9.12.6 Aerial selection - Adaption channel 06

It is possible to determine which GSM aerial is to be used to establish the telephone link.

“0 = automatic selection” applies to normal operation.

For test purposes, it is possible to switch to emergency or main aerial and to use a telephone link to check aerial operation.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 6 (“Channel 6”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 6     Adaption      0        ->
autom.
```

Channel selected and aerial selection currently stored are displayed on top line.

0 = Automatic selection

1 = GSM main aerial selected

2 = GSM emergency aerial selected

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– Press → key.

Indicated on display:

```
Channel 6     Adaption      0        ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001) if GSM main aerial is to be selected.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 6     Adaption      1        ->
Main aerial
```

– Press → key.

Indicated on display:

```
Channel 6     Adaption      1         Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 6     Adaption      1        ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                 HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

9.12.7 System selection - Adaption channel 07

Following expiry of telematics service contract, telematics control unit can be used as a permanently installed telephone (with new SIM card). Telematics system fault messages can be suppressed in channel 7.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 7 (“Channel 7”).

Note

An incorrect entry can be corrected after pressing C key.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 7     Adaption      1          ->
```

Channel selected and status currently stored are displayed on top line.

0 = Normal operation

1 = Fault messages suppressed

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– Press → key.

Indicated on display:

```
Channel 7     Adaption      0          ->
Enter adaption value XXXXX
```

– Enter new adaption value (e.g. 00001) if telematics system fault messages are to be suppressed.

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 7     Adaption      1          ->
Telephone only, no telematics faults
```

– Press → key.

Indicated on display:

```
Channel 7     Adaption      1           Q
Store altered value?
```

– Confirm entry by pressing Q key.

Indicated on display:

```
Channel 7     Adaption      1          ->
Altered value stored
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6 (“End of output”).

– Confirm entry by pressing Q key.

10 Connecting up vehicle diagnostic, testing and information system - VAS 5051- or fault reader - V.A.G 1551-

10.1 Test conditions

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- Battery voltage at least 11 V
- Earth connections to battery, engine and gearbox OK
- Fuse OK ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

WARNING

Proceed as follows to avoid risk of accident during measurement and test drives:

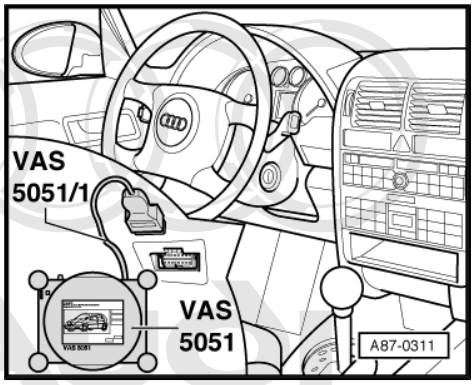
- *Exclusive use is to be made for measured value block readout of vehicle diagnostic, testing and information system -VAS 5051- or fault reader -V.A.G 1551- . Unit is always to be attached to rear seat and operated from there by a second person.*
- *Deactivate passenger's airbag by way of key switch in glove box or via self-diagnosis: ⇒ Body, self-diagnosis; Rep. Gr. 01 .*
- *Reactivate passenger's airbag on completion of work.*

10.2 Procedure

– Switch off ignition.

– Connect up vehicle diagnostic, testing and information system -VAS 5051- using diagnostic wire -VAS 5051/1- . Alternatively, connect up fault reader -V.A.G 1551- with diagnostic wire -VAG 1551/3- .

– Switch on ignition.



The following sequence relates to the fault reader -V.A.G 1551- .

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
1 - Rapid data transfer
```

Or

```
V.A.G - SELF-DIAGNOSIS                HELP
2 - Flash code output
```

Display alternates between “1...” and “2...”.

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If display remains blank, refer to ⇒ Fault reader operating instructions .

– Use [Print] key to switch on printer (lamp in key lights).

– Press key [1] for “Rapid data transfer”.

Indicated on display:

```
Rapid data transfer                   HELP
Enter address word XX
```

Address word “00 - Automatic test sequence” can now be used to automatically interrogate all vehicle control units.

For further procedure refer to self-diagnosis of relevant control units.

Note

- *Additional operating instructions can be called up by pressing [HELP] key.*
- *Next step in program sequence can be selected by pressing [→] key.*
- *Incorrect entry can be cancelled with [C] key.*

If one of the following messages appears on the display, perform fault-finding in line with fault-finding program for diagnostic wire ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

```
Rapid data transfer                   HELP
No control unit response
```

```
Rapid data transfer                   HELP
Communication problem
```

```
Rapid data transfer                   HELP
K-wire not switched to earth
```

```
Rapid data transfer                   HELP
K-wire not switched to positive
```