

Radio, On Board Diagnostic (OBD) (m.y. 1998 ➤)

General information

Technical features of radio systems

The new generation of the Audi radio system has extensive On Board Diagnostic (OBD) capability.

All radio units have a Diagnostic Trouble Code (DTC) memory. If a malfunction occurs in one of the components or wires which is monitored by the system, a record of the type of malfunction is stored in DTC memory.

Radio On Board Diagnostic (OBD), initiating program

Test requirements

- Fuse OK per wiring diagram

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- VAG1551 Scan Tool (ST) connected ⇒ [page 01-108](#)
- Ignition switched on

Notes:

- ◆ *If the display remains blank, check the voltage supply of the VAG1551 Scan Tool (ST) according to the wiring diagram.*
- ◆ *Additional operating instructions can be printed out by pressing the HELP button.*
- ◆ *The → button is used to advance through the program sequence.*

- ◆ *If an incorrect entry is made, press the -C- button to escape.*

- ◆ *In "Rapid data transfer" operating mode 1 the "Automatic Test Sequence" function 00 can be carried out. This checks DTC memory of all vehicle control modules (with OBD capability) automatically.*

- Switch ignition on.
- Switch printer on by pressing PRINT button (indicator lamp in button lights up).
- Press button -1- to select "Rapid data transfer" operating mode 1.

Rapid data transfer HELP
Insert address word XX

↖ Indicated on display

Address word for radio: 56

- Press buttons -5- and -6- to insert "Radio" address word 56.

Rapid data transfer Q
56 - Radio

↖ Indicated on display

- Press -Q- button to confirm input.

Note:

While the On Board Diagnostic (OBD) program is running "DIAG" will appear on the radio unit display.

4B0035186A	Radio	D01	→
Coding 00017		WSC 06812	



Indicated on display (after about 5 seconds):

- ◆ 4B0035186A: Part No. for radio (⇒ parts catalog)
- ◆ Radio: component designation
- ◆ D01: software version installed in radio
- ◆ Coding 00017: radio coding
- ◆ WSC 06812: dealership number

Note:

Check coding against coding table ⇒ [page 01-22](#) .

- Press → button.

Rapid data transfer HELP
Control module does not answer



- If display shows one of the following messages, carry out troubleshooting procedure as described in troubleshooting program for diagnostic wiring.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

Rapid data transfer HELP
Error in communication link

Rapid data transfer HELP
K wire not switching to Ground

Rapid data transfer HELP
K wire not switching to B+

Rapid data transfer

HELP

Select function XX



Indicated on display

After the HELP button is pressed, a list of the possible functions is printed out.

- Press → button to advance through program sequence.

On Board Diagnostic (OBD) functions

The following functions are possible:

02 - Check DTC Memory ⇒ [page 01-7](#)

03 - Output Diagnostic Test Mode (DTM) ⇒ [page 01-14](#)

05 - Erase DTC Memory ⇒ [page 01-16](#)

06 - End Output ⇒ [page 01-18](#)

07 - Code Control Module ⇒ [page 01-19](#)

08 - Read Measuring Value Block ⇒ [page 01-25](#)

Check DTC Memory (scan tool function 02)

Note:

The displayed malfunction is only updated when the On Board Diagnostic (OBD) program is initiated or when "Erase DTC Memory" function 05 is used.

- Switch on printer by pressing PRINT button (indicator lamp in button lights up).

Rapid data transfer HELP
Select function XX



Indicated on display

- Press buttons -0- and -2- to select "Check DTC Memory" function 02.

Rapid data transfer Q
02 - Check DTC Memory



Indicated on display

- Press -Q- button to confirm input.

X DTC recognized!



Indicated on display (the number of stored DTCs)

Stored DTCs are displayed and printed out one after the other.

- Check printout against DTC table and repair all malfunctions as necessary ⇒ [page 01-9](#) .

No DTC recognized! →

⚡ If "No DTC recognized" is displayed the program will return to the starting point ("Select function XX" prompt) after the → button is pressed.

Rapid data transfer HELP
Select function XX

⚡ Indicated on display

If anything else is displayed:

⇒ *Scan Tool operating instructions*

- End output (function 06) ⇒ [page 01-18](#) .
- Switch ignition off and disconnect connections from Data Link Connector (DLC).

Diagnostic Trouble Code (DTC) table for radio system

Notes:

- ◆ *The following table lists all the malfunctions (stored as Diagnostic Trouble Codes, or DTCs) that can be recognized by the radio system and printed out by the VAG1551 Scan Tool (ST). The DTCs are listed in order according to their 5-digit numbers.*
- ◆ *The DTCs only appear on the print-out from the scan tool.*
- ◆ *Before replacing a component shown as faulty, check the wiring and connections to the component as well as Ground (GND) connections according to the wiring diagram.*
- ◆ *When a repair has been carried out, the DTC memory must always be checked again and then erased using the VAG1551 scan tool.*
- ◆ *Static and sporadic malfunctions are stored as DTCs in the DTC memory. If a malfunction occurs and persists for at least 2 seconds, it is identified as a static malfunction. If the malfunction does not occur again it is registered as a sporadic malfunction and "/SP" will appear at the right of the display.*
- ◆ *When the ignition is switched on, all existing malfunctions are automatically re-classified as sporadic malfunctions and will only be registered as static malfunctions if they still occur after testing.*
- ◆ *Sporadic malfunctions which no longer occur after 50 driving cycles (ignition on for at least 5 minutes, road speed of more than 30 km/h or 19 mph) are erased automatically.*

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DTC VAG1551 Scan Tool display	Possible cause	Corrective action
00668 Battery Positive Voltage (B+) Term. 30 ♦ Signal too low	♦ Battery discharged or faulty ♦ Short circuit in vehicle electrical system	- Charge or replace battery. - Repair short circuit in vehicle electrical system.
00849 S Contact on Ignition Starter Switch ♦ Open circuit	♦ Ignition/starter switch -D- faulty ♦ Open circuit in wiring	- Replace ignition/starter switch -D-. - Trace malfunction using wiring diagram. ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations</i>
00850 Control Output Active, Radio Amplifier ♦ Short circuit to Ground	♦ Wiring damaged ♦ Active amplifier faulty	- Trace malfunction using wiring diagram. ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations</i> - Replace active amplifier.

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DTC VAG1551 Scan Tool display	Possible cause	Corrective action
00852 Loudspeaker front ◆ Short circuit ◆ Open circuit	◆ Wiring damaged ◆ Front loudspeaker faulty ◆ Open circuit in wiring	- Trace malfunction using wiring diagram. ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations</i> - Replace faulty loudspeaker. - Repair open circuit.
00853 Loudspeaker rear ◆ Short circuit ◆ Open circuit	◆ Wiring damaged ◆ Rear loudspeaker faulty ◆ Open circuit in wiring	- Trace malfunction using wiring diagram. ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations</i> - Replace faulty loudspeaker. - Repair open circuit.

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DTC VAG1551 Scan Tool display	Possible cause	Corrective action
00854 Output Radio Display Dash Panel Insert ♦ No signal	♦ Open circuit in wiring ♦ Instrument cluster combination processor faulty	- Trace malfunction using wiring diagram. ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations</i> - Replace faulty instrument cluster. ⇒ Repair Manual, Electrical Equipment, Repair Group 90; removing and installing instrument cluster
00855 Connection to CD Changer ♦ No signal	♦ Open circuit in wiring ♦ Voltage supply to CD changer unit interrupted ♦ CD changer unit -R41- faulty	- Trace malfunction using wiring diagram. ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations</i> - Check voltage supply to CD changer unit using wiring diagram. - Replace CD changer unit.

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DTC VAG1551 Scan Tool display	Possible cause	Corrective action
00856 Radio Antenna ◆ Short circuit ◆ Open circuit	◆ Open circuit in wiring ◆ Short circuit in antenna wire	- Trace malfunction using wiring diagram. ⇒ <i>Electrical Wiring Diagrams, Troubleshooting & Component Locations</i> - Check antenna wire.
01044 Control Module incorrectly coded	◆ Radio not coded to match configuration in vehicle	- Code radio according to vehicle.
65535 Control Module Malfunctioning	◆ Radio faulty	- Replace radio.

Output Diagnostic Test Mode (scan tool function 03)

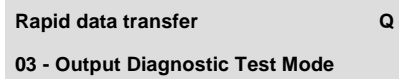
Notes:

- ◆ *The output Diagnostic Test Mode (DTM) may only be carried out with the vehicle stationary and the engine not running.*
- ◆ *Any malfunctions identified by the output Diagnostic Test Mode (DTM) must be traced and eliminated.*

The output DTM is used to test the loudspeaker wiring and the secondary display.

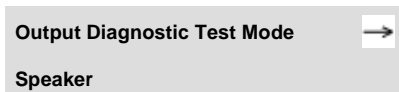
Carrying out output DTM

- Press buttons -0- and -3- to select "Output Diagnostic Test Mode" function 03.



↖ Indicated on display

- Press -Q- button to confirm input.



↖ Indicated on display

All loudspeakers will receive a brief electrical pulse (inaudible).

Note:

Any malfunctions (e.g. short circuits) that occur will be recorded as DTCs in DTC memory.

- Press → button.

Output Diagnostic Test Mode →
Outlet Radio display instrument panel insert

← Indicated on display

"DISPLAY ... TEST" will appear on the secondary display in the instrument cluster.

- Press → button.

Output Diagnostic Test Mode →
End

← Indicated on display

- Press → button (returns scan tool to "Select function XX" prompt).

Rapid data transfer HELP
Select function XX

← Indicated on display

Erase DTC Memory (scan tool function 05)

Note:

DTC memory can be erased only after it has been checked (⇒ [page 01-7](#)). If DTC memory cannot be erased, again check DTC memory and repair any malfunctions.

Requirements

- DTC memory checked ⇒ [page 01-7](#)
- All malfunctions repaired

When DTC memory has been checked:



Indicated on display

- Press buttons -0- and -5- to select "Erase DTC Memory" function 05.

Rapid data transfer

HELP

Select function XX

Rapid data transfer Q
05 - Erase DTC Memory

← Indicated on display
- Press -Q- button to confirm input.

Rapid data transfer →
DTC Memory is erased!

← Indicated on display
DTC memory is now erased.
- Press → button.

Rapid data transfer HELP
Select function XX

← Indicated on display

Notes:

Attention! →
DTC Memory is not interrogated

← ♦ *This message indicates an error in the test sequence.*

Rapid data transfer →
DTC Memory is not interrogated

← ♦ *This message indicates an error in the test sequence.*
♦ *Adhere exactly to the test sequence: first check DTC memory, repair malfunctions as necessary, then erase DTC memory.*

End Output (scan tool function 06)

- Press buttons -0- and -6- to select "End Output" function 06.

Rapid data transfer Q
06 - End Output



Indicated on display

- Press -Q- button to confirm input.

Rapid data transfer HELP
Insert address word XX



Indicated on display

- Switch ignition off.
- Disconnect VAG1551 Scan Tool (ST) from Data Link Connector (DLC).

Code Control Module (scan tool function 07)

This function is used to code the radio for the following:

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

Notes:

- ◆ *The coding procedure is used to set the various radio configuration options.*
- ◆ *The coding table only gives the combinations that are available for the Audi A4.*
- ◆ *The term "antenna with remote power supply" refers to active antennas (e.g. rear window antennas) which are powered via the HF cable.*
- ◆ *The coding must always correspond to the equipment installed in the vehicle.*

Rapid data transfer	HELP
Select function XX	

↖ Indicated on display

- Press buttons -0- and -7- to select "Code Control Module" function 07.

Rapid data transfer	Q
07 - Code Control Module	

↖ Indicated on display

- Press -Q- button to confirm input.

Code Control Module	Q
Input code number XXXXX	06812

↖ Indicated on display

- Input code number per coding table ⇒ [page 01-22](#) .

Coding: 00017 (example)

- ◆ Country identification: 0 = standard
 - ◆ Sound coordination: 0 = standard
 - ◆ Number of passive loudspeakers: 0 = no passive loudspeakers (BOSE sound system)
 - ◆ Sound system: 1 = BOSE sound system
 - ◆ Radio configuration: 7 = radio system with CD changer unit and secondary display
- Press -Q- button to confirm input.

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4B0035186A Radio D01 →
Coding 00017 WSC 06812

↖ Indicated on display (the control module identification and the coding that was input)

- Press → button to end coding.

Rapid data transfer HELP
Select function XX

↖ Indicated on display

- Press buttons -0- and -6- to select "End Output" function 06.

Rapid data transfer Q
06 - End Output

↖ Indicated on display

- Press -Q- button to confirm input.

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Radio coding table

5	4	3	2	1	← Decimal places of byte coding on scan tool display			
				7	Radio configuration			
						Antenna with remote power supply	CD changer unit	Secondary display
					1	X	-	-
					3	X	X	-
					5	X	-	X
					7	X	X	X
					X = component installed - = not installed			

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Radio coding table (cont'd)

5	4	3	2	1	← Decimal places of byte coding on scan tool display
			1		Sound system adjustment
					Type of adjustment
			0		Standard (no BOSE sound system)
			1		BOSE sound system
		0			Number of passive loudspeakers
					Number and locations
			0		No passive loudspeakers (BOSE sound system)
			1		1 passive loudspeaker, front-left (BOSE with telephone)
			2		2 passive loudspeakers (front) and 2 active loudspeakers (rear)
			5		2 passive loudspeakers (front) and no active loudspeakers (rear)

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Radio coding table (cont'd)

5	4	3	2	1	← Decimal places of byte coding on scan tool display
	0				Sound matching
			0	Standard	
0					Country identification
				Country	
			0	Standard	

Read Measuring Value Block (scan tool function 08)

Carrying out "Read Measuring Value Block" function 08

Rapid data transfer HELP
Select function XX

↖ Indicated on display

- Press buttons -0- and -8- to select "Read Measuring Value Block" function 08.

Rapid data transfer Q
08 - Read Measuring Value Block

↖ Indicated on display

- Press -Q- button to confirm input.

Read Measuring Value Block HELP
Input display group number XXX

↖ Indicated on display

- Input display group number (from table ⇒ [page 01-26](#)) and press -Q- button to confirm input.

The measuring value block which has been selected will appear in the standard format.

Summary of display groups

Display group No.	Indicated on display
001	1 = Speed signal from speedometer 2 = Battery Positive Voltage (B+), terminal 30 3 = Radio illumination dimming in % 4 = S-contact status
002	1 = Front loudspeakers 2 = Front loudspeakers status 3 = Rear loudspeakers 4 = Rear loudspeakers status
003	1 = Type of antenna 2 = Antenna 3 = Antenna status
004	1 = Active speaker control output 3 = Telephone

	4 = Telephone mute input status
005	1 = CD connection 2 = CD connection status
006	1 = Secondary display (in instrument cluster) 2 = Secondary display status

Display group 001

Read Measuring Value Block 1 → ◀ Indicated on display

0 12.3 V 60 % ON

S-contact status

- Can be checked while measuring values are being displayed
- Ignition key withdrawn: display reads "OFF"
- S-contact reactivated: display reads "ON"

Dimming level of radio illumination in percent (only with light "ON")

- 0-99%

Battery Positive Voltage (B+), terminal 30

(measurement taken after electrical filter)

Vehicle speed signal from speedometer

- 0 or 1 (4 impulses per wheel revolution)

Display group 002

Read Measuring Value Block 2 → ◀ Indicated on display

Front speaker OK Rear speaker OK

Rear loudspeaker status

- OK
- Short circuit
- Open circuit

Rear loudspeakers

Front loudspeakers status

- OK
- Short circuit
- Open circuit

Front loudspeakers

Display group 003

Read Measuring Value Block 3 → ◀ Indicated on display

active

Antenna

OK

Antenna status

- OK
- Short circuit
- Open circuit

Antenna

Antenna type

- Passive
- Active (e.g. rear window antenna)

Display group 004

Read Measuring Value Block 4 → ◀ Indicated on display

0

Telephone

ON

Telephone mute input status

- Telephone in use = "ON"
- Telephone switched off = "OFF"

Telephone

Active amplifier control output status

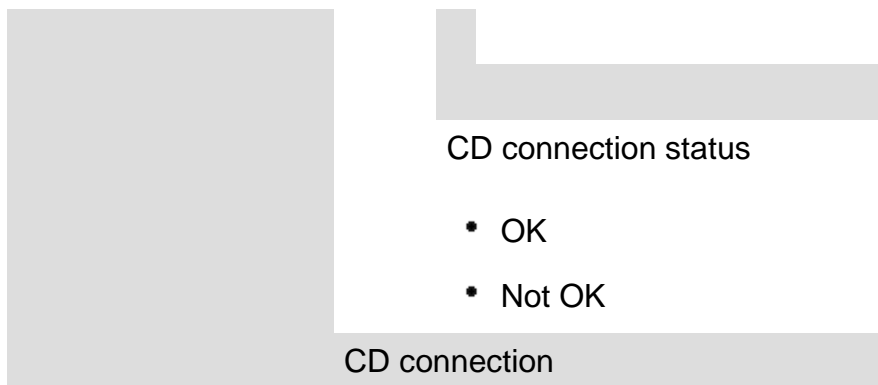
- 0 = Status OK
- 1 = Short circuit to Ground (GND)

Display group 005

Read Measuring Value Block 5 → ◀ Indicated on display

CD connection

OK



Display group 006

Read Measuring Value Block 6 → ◀ Indicated on display

Ext. Displ.

OK



Condition of secondary display

- OK
- Not OK

Secondary display (in instrument cluster)