



Audi 100 1991 ➤

Automatic gearbox 097 Self-diagnosis

Gearbox ID	AEK	AEM	ANZ	APA	AZB	CBU	CEA	CFT	CFX
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Edition 04.1998

List of Workshop Manual Repair GroupsList of Workshop Manual Repair GroupsList of Workshop Manual Repair Groups Audi 100 1991 ➤

Automatic gearbox 097 Self-diagnosis

Repair Group

01 - Self-diagnosis, Electrical test



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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Contents

01 - Self-diagnosis, Electrical test	1
1 Self-diagnosis function	1
1.1 Self-diagnosis function	1
1.2 Technical data of self-diagnosis	2
2 Locations of electrical/	3
2.1 Locations of electrical/	3
2.2 Locations of electrical/ electronic components	3
3 Performing self-diagnosis	10
3.1 Performing self-diagnosis	10
3.2 Connecting fault reader V.A.G 1551 and selecting functions	10
3.3 List of selectable functions	13
3.4 Interrogating fault memory	13
3.5 Fault table	13
3.6 Erasing fault memory	20
3.7 Initiating basic setting	21
3.8 Read measured value block	22
3.9 Test table	23
4 Electrical test	31
4.1 Electrical test	31
4.2 Test table	33

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Audi 100 1991 ➤

Audi Automatic gearbox 097 Self-diagnosis - Edition 04.1998



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01 - Self-diagnosis, Electrical test

1 - Self-diagnosis function

1.1 - Self-diagnosis function

The automatic gearbox is controlled electro-hydraulically.

The control unit for the automatic gearbox -J217 is supplied with information from components which influence gear selection, and generates signals to control the relevant solenoid valves in the valve body. The solenoid valves direct the fluid pressure produced by the ATF pump to close the appropriate clutches or brakes in the gearbox.

Gearbox control unit fault recognition

The term "self-diagnosis" relates to the electronic and electrical components of the control system.

The control unit is equipped with a fault memory so that the fault can be found quickly in the event of an electronic/electrical component failure or an open circuit in the wiring.

Faults are detected via electrical signals. If faults occur in the monitored sensors or components, these are stored in the memory together with an indication of the location and the nature of the fault.

Automatic gearbox control unit -J217 will diagnose and store particular types of fault under various conditions. After processing the available information, it will distinguish between sporadic faults and static (i.e. continuously present) faults and store them accordingly. Interrogating fault memory =>Page 13.

When a fault occurs for the first time it is stored as a static fault. If the fault does not occur again after a certain time, it is classified as a sporadic fault (SP). This fault will be erased automatically after a certain time.

Faults which are stored as sporadic faults in the fault memory are displayed as such when the fault memory is interrogated with V.A.G 1551 (or V.A.G 1552). In this case, "/SP" appears on the right of the display. If the printer is switched on it will print out "sporadic fault" after the fault is identified.

The self-diagnosis functions are only available with the fault reader V.A.G 1551 (or V.A.G 1552) in operating mode 1 "Rapid data transfer".

For details of functions that can be performed with fault reader V.A.G 1551 (or V.A.G 1552) => List of selectable functions, Page 13.

Safety functions of gearbox control unit

If critical faults occur when driving, the gearbox will continue to operate in a back-up mode ("emergency running" program). If the fault occurs with the selector lever in "D", "3" or "2", the emergency running program will engage 3rd gear. In the emergency running program it is also possible to drive the vehicle with gears "1", "2", "3" and "R".

If the fault persists in the emergency running mode when the engine is restarted, 2nd or 3rd gear will be activated hydraulically if the selector lever is in position "D", "3" or "2". This applies until the fault is rectified.

If the emergency running mode has been activated when a fault has occurred, the gearbox will remain in the emergency running mode until the ignition is switched off.

**Faults which may lead to emergency running:**

Open circuit in wiring, short-circuit, electrical or hydraulic components defective (see table below).

Fault code	
00258	Solenoid valve 1 -N88
00260	Solenoid valve 2 -N89
00262	Solenoid valve 3 -N90
00264	Solenoid valve 4 -N91
00266	Solenoid valve 5 -N92
00268	Solenoid valve 6 -N93
00270	Solenoid valve 7 -N94
00281	Road speed sender -G68
00529	Speed information missing
00545	Engine/gearbox electrical connection
65535	Control unit defective

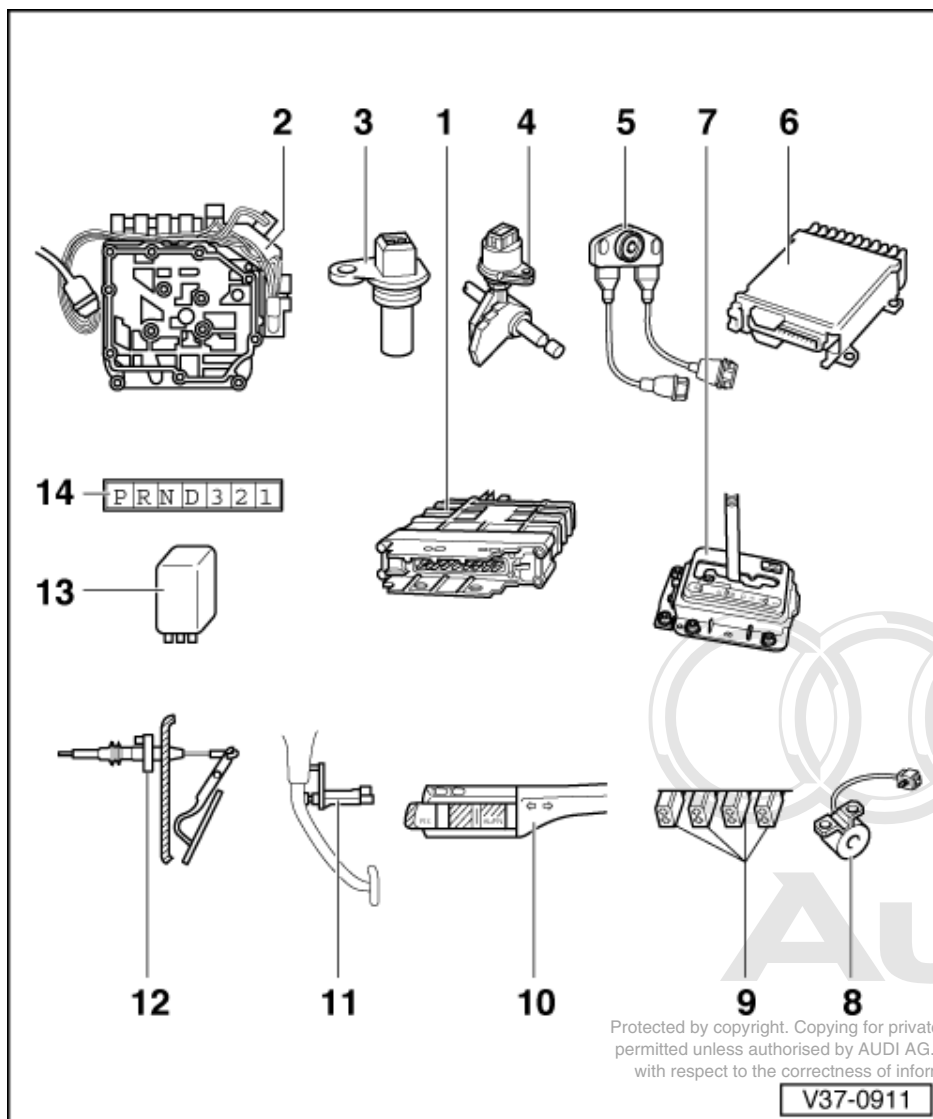
1.2 - Technical data of self-diagnosis

Memory	
-Permanent memory	yes
- Volatile memory	no
Data output	
- Rapid data transfer	yes
- Flash code output	no
Final control diagnosis	no
Basic setting	yes
Coding control unit	no
Reading measured value block	yes
Electric/electronic components and fitting locations	=> Page 3

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2 - Locations of electrical/

2.1 - Locations of electrical/



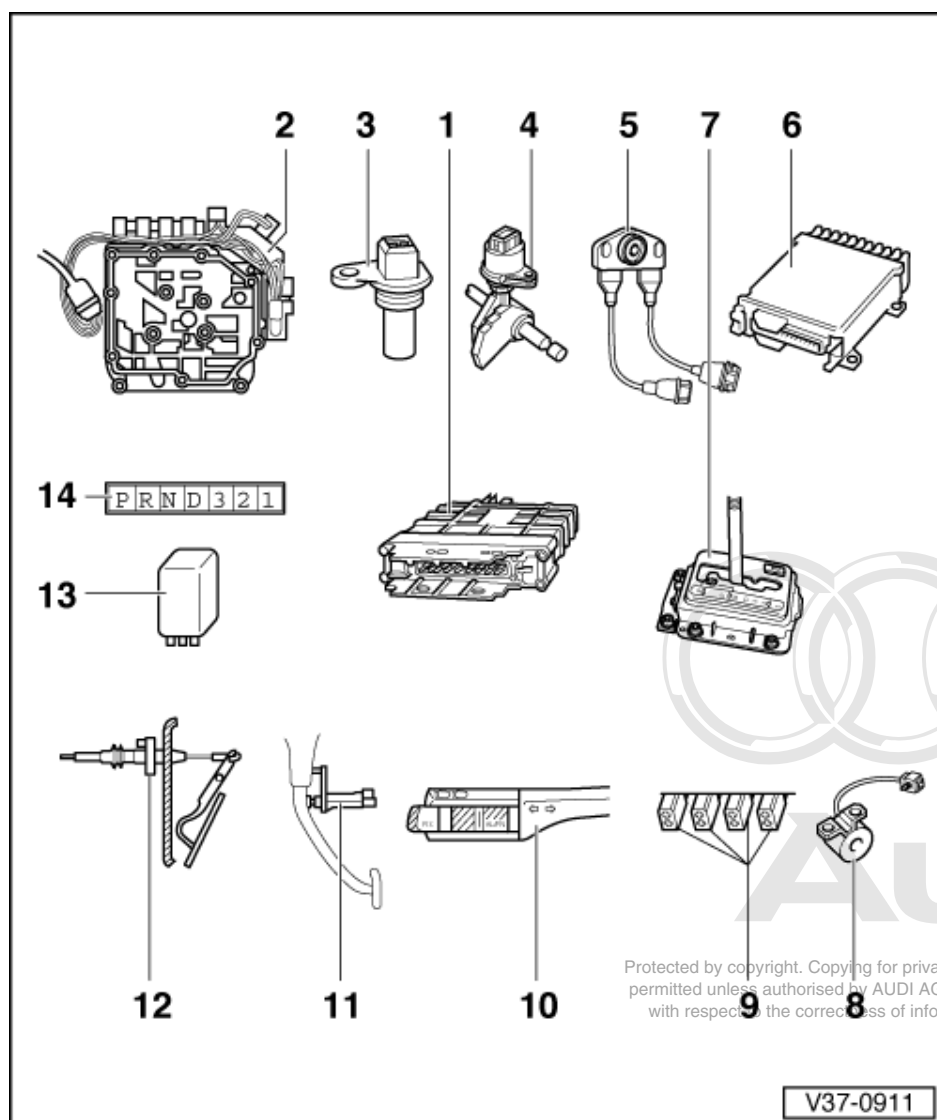
2.2 - Locations of electrical/ electronic components

Important

If control units are renewed or if the throttle valve potentiometer has to be repaired, the system must be brought into basic setting => Page

1 Automatic gearbox control unit -J217-

- ◆ Location: behind cover panel at front right of front passenger's footwell
- ◆ Before removing, pull back floor covering and remove cover panel
- ◆ To remove, loosen engine control unit mountings and move clear to the side (do not disconnect multi-pin connector).
- ◆ Is checked by self-diagnosis
=> Performing self-diagnosis,

**2 Valve body**

- ◆ Location: the valve body is located under the oil pan
- ◆ The solenoid valves -N88-, -N89-, -N90-, -N91-, -N92-, -N93- and -N94- are attached to the valve body
- ◆ The valves are checked by self-diagnosis
- ◆ Removing and installing valve body

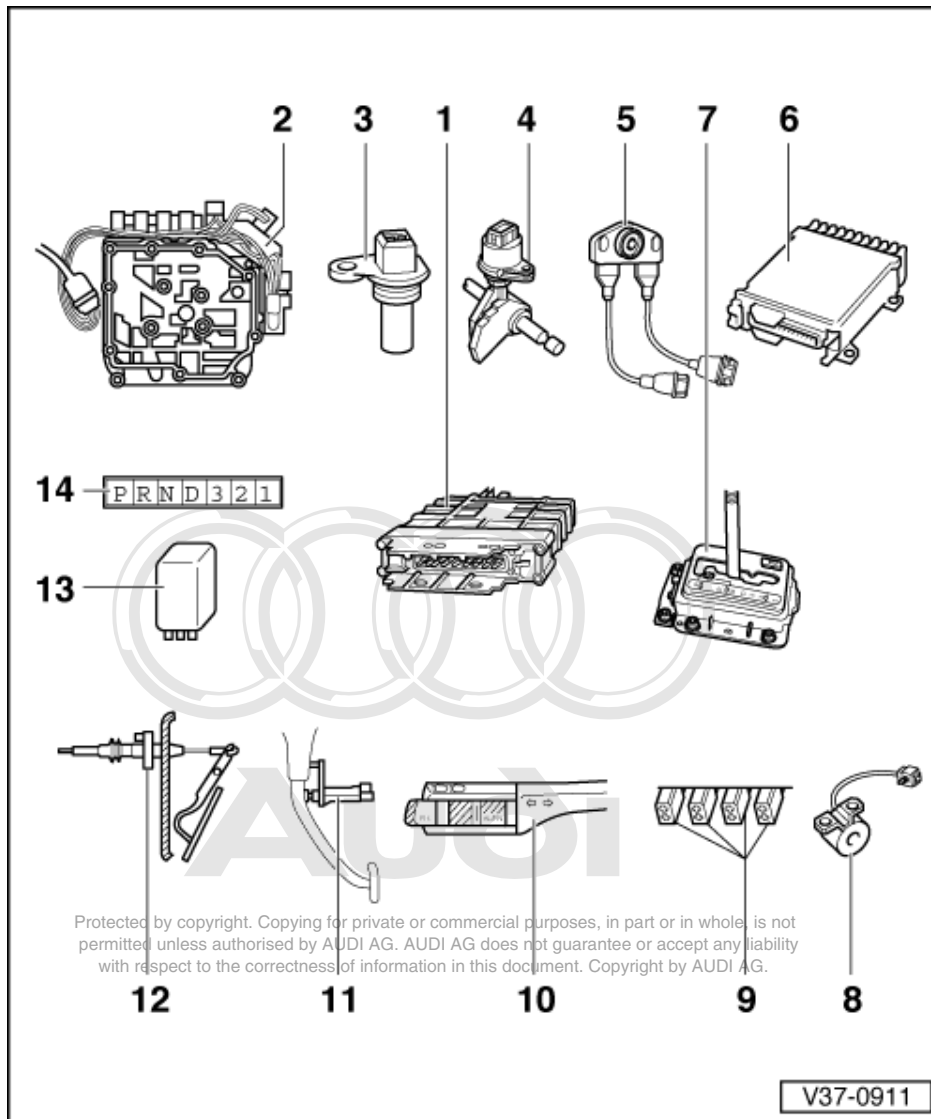
=> Automatic gearbox 097; Repair group 38; Removing and installing valve body Removing and installing valve body

3 Road speed sender -G68-

- ◆ Location: on gearbox housing

=> Automatic gearbox 097; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock

- ◆ Checked by self-diagnosis



4 Multi-function switch -F125-

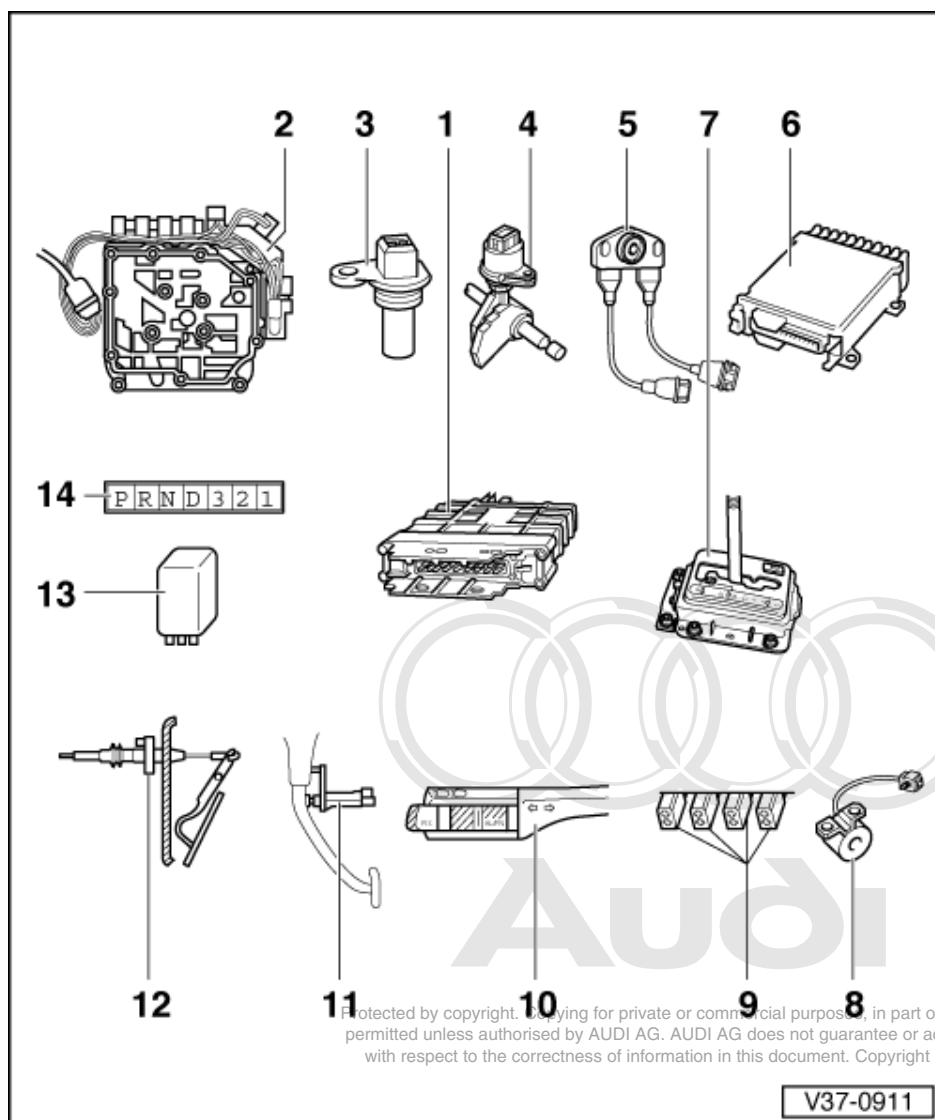
- ◆ Location: on rear of gearbox housing

=> Automatic gearbox 097; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock

- ◆ Checked by self-diagnosis

5 Throttle valve potentiometer -G69-

- ◆ Location: on throttle valve housing (engine)
- ◆ Different types of throttle valve potentiometer are used depending on the engine version
- ◆ Removing and installing
=>Repair group 24 or 25 of the relevant engine Workshop Manual
- ◆ Signal is checked by self-diagnosis

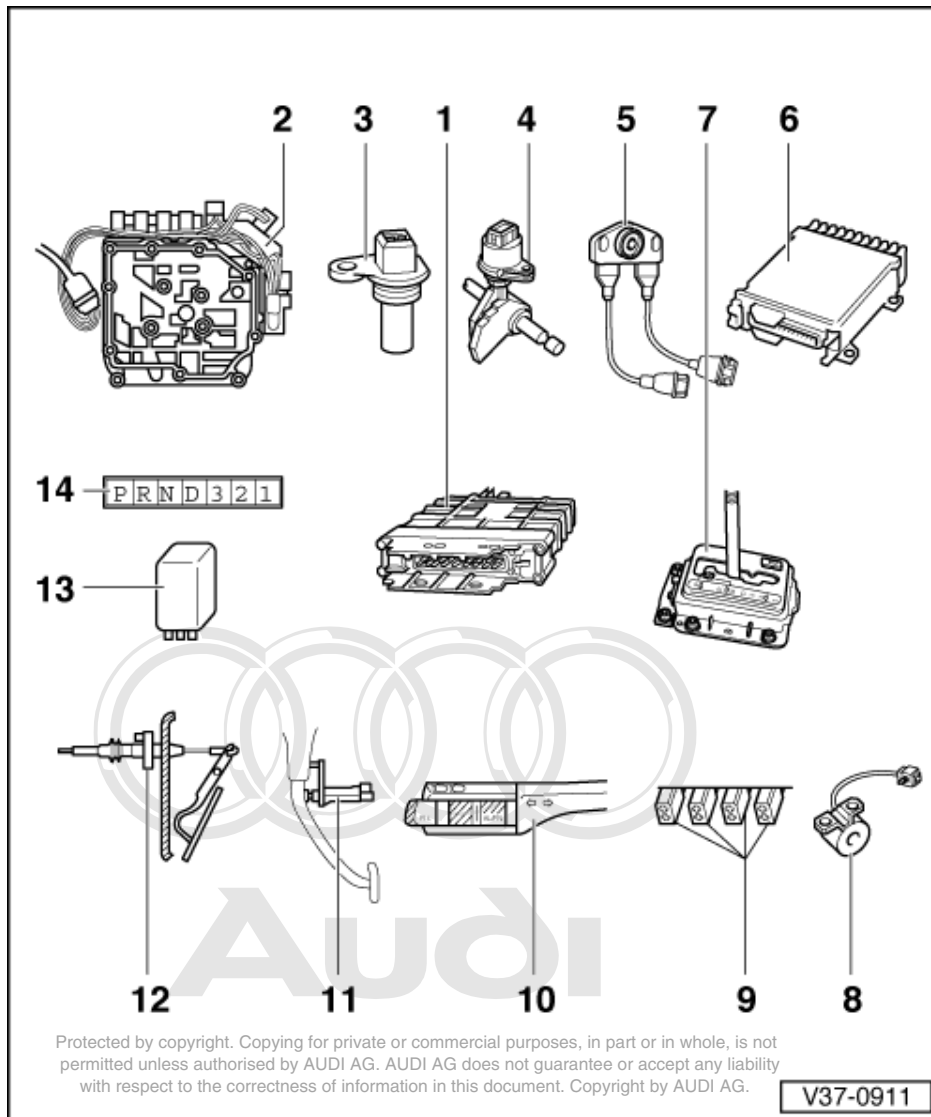
**6 Engine control unit**

- ◆ Location: in front of automatic gearbox control unit -J217 (Item **1**)
- ◆ Removing and installing
=>Repair group 24 or 25 of the relevant engine Workshop Manual

7 Programme switch -E122

- ◆ Location: the programme switch with light is located on centre console in selector lever housing (shift gate) with selector lever position indicator

=> Automatic gearbox 097; Repair group 37; Servicing shift mechanism Servicing shift mechanism



8 Solenoid for selector lever lock -N110-

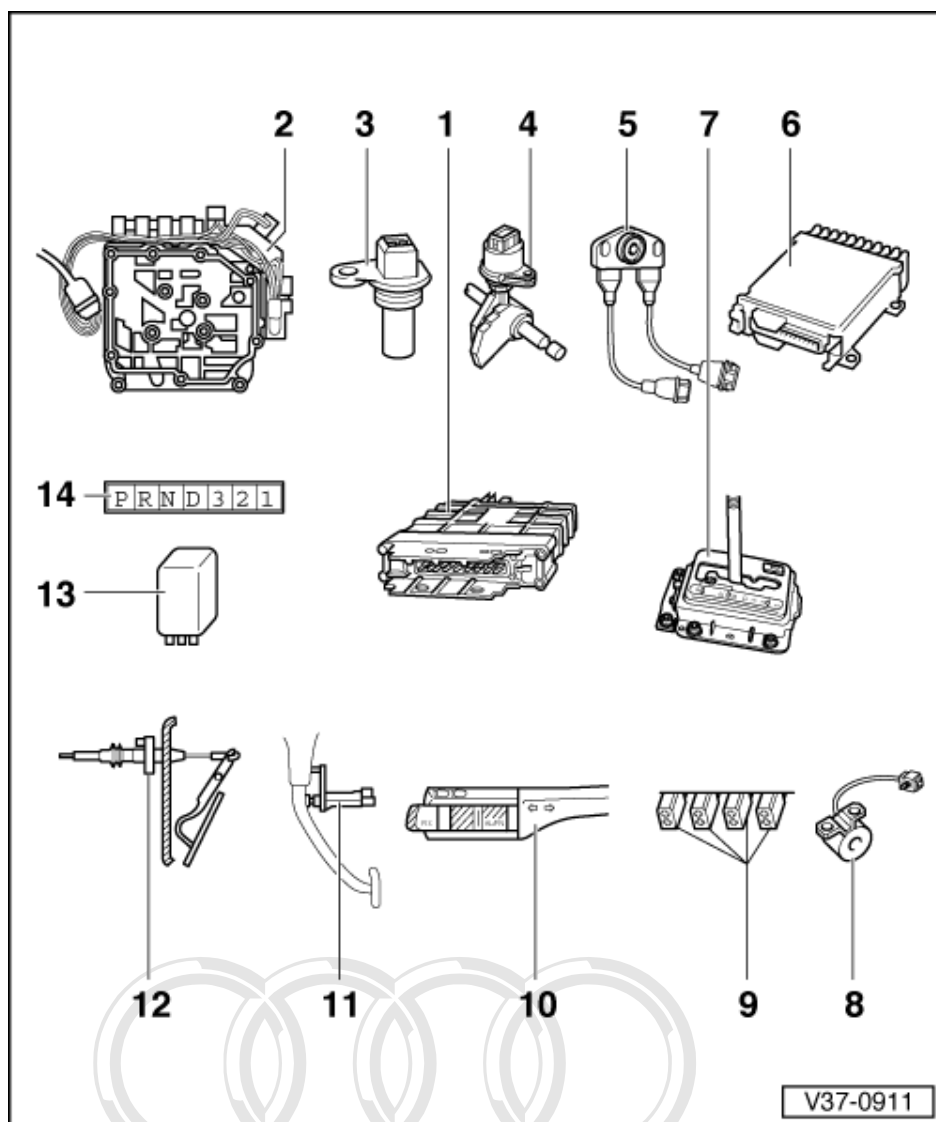
- ◆ Location: the solenoid is located at front of mounting bracket for shift mechanism

=> Automatic gearbox 097; Repair group 37; Servicing shift mechanism Servicing shift mechanism

- ◆ The solenoid is checked by self-diagnosis

9 Diagnosis connection

- ◆ Location: the diagnosis connection is located in relay point I in plenum chamber, left
- ◆ Connect fault reader V.A.G 1551 (or V.A.G 1552) and select functions
=> page 10

**10 Cruise control switch -E45-**

- ◆ Location: steering column switch

=> Electrical System; Repair Group 94; Servicing steering column switches; Removing and installing steering column switches Servicing steering column switches Removing and installing steering column switches

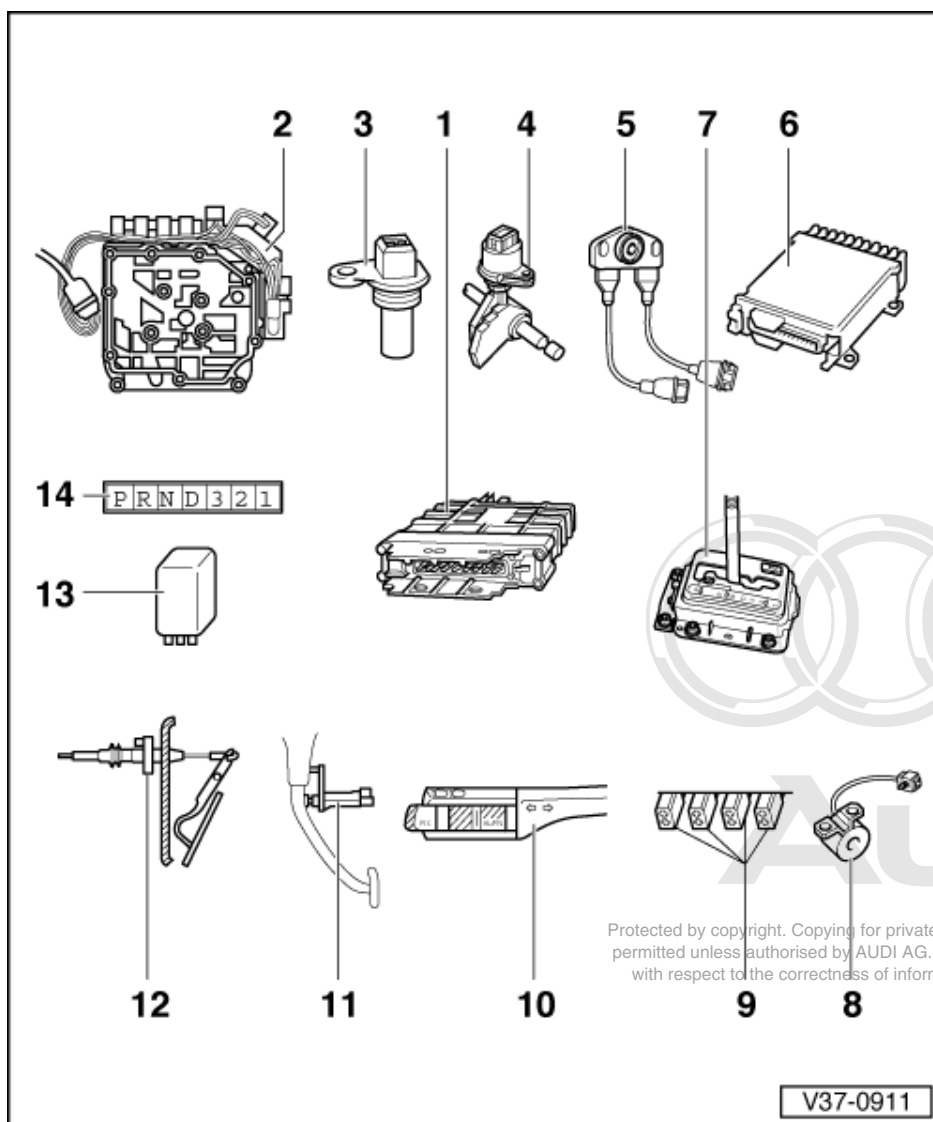
11 Brake light switch -F-

- ◆ Location: the brake light switch is located on the pedal cluster

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=> Running gear; Repair group 47; Assembly overview: pedal cluster, brake pedal Assembly overview: pedal cluster, brake pedal

- ◆ Can be checked electrically => Page 31
- ◆ -F is checked by self-diagnosis



12 Kickdown switch -F8-

- ◆ Location: in vehicles with 6-cylinder engines: on throttle valve unit
- ◆ Location: the kickdown switch is integrated in throttle cable and is located in front of front bulkhead in engine compartment
=> Repair group 20 of the relevant engine Workshop Manual
- ◆ -F8 is checked by self-diagnosis

13 Starter inhibitor and reversing light relay -J226-

- ◆ Location: on relay carrier

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

14 Selector lever position display -Y5

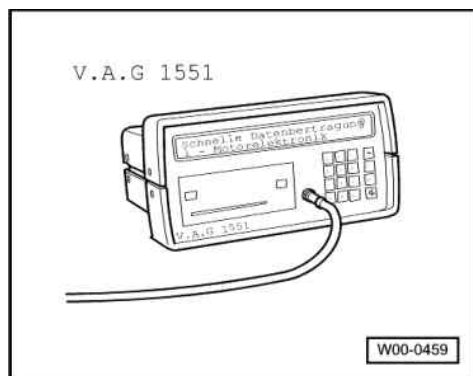
- ◆ Location: in dash panel insert
- ◆ Removing and installing

=> Electrical system; Repair group 90; Dash panel; Removing and installing dash panel insert Dash panel
Removing and installing dash panel insert



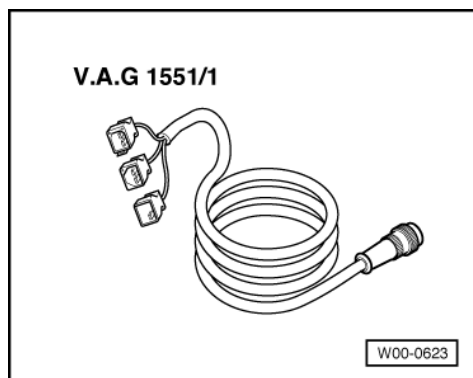
3 - Performing self-diagnosis

3.1 - Performing self-diagnosis



Special tools, testers and auxiliary items

- ♦ -> V.A.G 1551 Fault reader



- ♦ V.A.G 1551/1 Diagnosis cable

Additional information

- ♦ Workshop Manual Audi 100 1991 ä, Automatic gearbox 097
- ♦ Current flow diagrams, Electrical fault finding and Fitting locations Audi 100 1991 ä
- ♦ Technical service handbook
- ♦ Parts catalogue

3.2 - Connecting fault reader V.A.G 1551 and selecting functions

Safety rules

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

- ♦ Test and measuring instruments must be secured to rear seat and operated by a 2nd person from this location.

If test and measuring instruments are operated from front passenger's seat and the vehicle is involved in an accident, there is a possibility that the person sitting in this seat may receive serious injuries when the airbag is triggered.



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Test conditions:

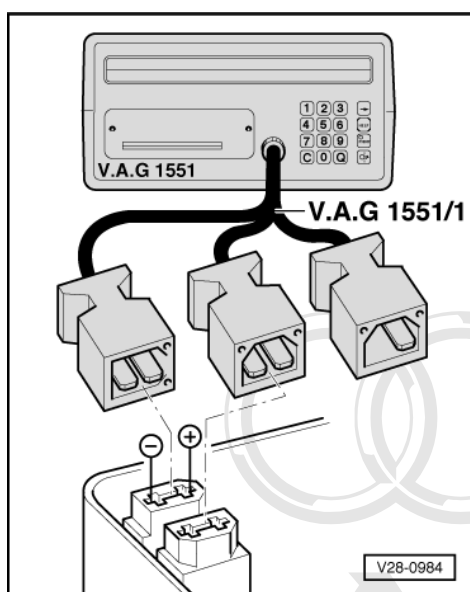
- Vehicle voltage supply in order.
- Fuses No. 9, 14 and 20 in order.

=> Current flow diagrams, Electrical fault finding and Fitting locations

- Earth connections for gearbox in order.

=> Current flow diagrams, Electrical fault finding and Fitting locations

- Selector lever in position "P" and handbrake applied.
- Check earth connections for corrosion and poor contact; repair if necessary.



The earth securing point is located on the cylinder block

=> Current flow diagrams, Electrical fault finding and Fitting locations

- Check battery earth strap and earth strap between battery and gearbox
- Detach cover from relay point I in plenum chamber, left.
- -> With ignition switched off, connect fault reader with diagnosis cable V.A.G 1551/1 to diagnostic connectors in relay point I as follows:
 - Connect black connector to black diagnostic connector.
 - Connect white connector to white diagnostic connector.
 - The blue connector is not used.

-> Indicated on display:

```
V.A.G - SELF-DIAGNOSIS    HELP
1 - Rapid data transfer1)
2 - Flash code output1)
```

1) appears alternately

- ◆ Additional operating instructions can be retrieved by pressing the HELP key of V.A.G 1551.
- ◆ The ➡ key is used for advancing within the programme sequence.
- ◆ An automatic check (keys 00) can be carried out in the operating mode 1 "Rapid data transfer". Then all vehicle control units will be interrogated automatically.

=> Fault reader V.A.G 1551 operating instructions.

- Switch on ignition.
- Switch on printer with the Print key (indicator lamp in key lights up).



- Press key 1 for "Rapid data transfer" mode.

-> Indicated on display:

Rapid data transfer HELP
Enter address word XX

- Press keys 0 and 2. (Enter the address word "gearbox electronics" with 02.)

-> Indicated on display:

Rapid data transfer Q
02 Gearbox electronics

- Confirm entry with key Q.

Example:

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-> Indicated on display:

097927731 M DIGIMAT 0569
Coding 00127 WSC 131071

The control unit identification, the coding and the dealership number of the V.A.G 1551 are displayed:

Control unit identification

Depending upon the software version (programme status) the control unit can indicate a different control unit identification to that shown in the example. For correct control unit version, refer to

=> Parts catalogue

- ♦ 097927731 M: Part No.
- ♦ DIGIMAT 0569: 3-speed automatic gearbox 097
- ♦ Coding 00127: is not required at present.
- ♦ WSC 131071: V.A.G 1551 dealership number with which the last coding was performed.

-> Indicated on display:

Control unit does not answer! HELP

- By pressing the HELP key, a list of possible fault causes is printed out.
- After eliminating the possible causes of faults, again enter the address word 02 for "gearbox electronics" and confirm.

If "Control unit does not answer!" again appears:

-> Indicated on display:

Control unit does not answer! HELP

Check control unit voltage supply.

- Perform test step 1 => Page 31, Electrical test.
- Check wiring connections to diagnostic sockets

=> Current flow diagrams, Electrical fault finding and Fitting locations

- => Fault table, page 13 under fault code 65535: control unit defective
- Press => key.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

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

3.3 - List of selectable functions

	Page
01 - Interrogate control unit version =>Performing self-diagnosis	10
02 - Interrogate fault memory	13
04 - Initiate basic setting	21
05 - Erase fault memory	20
06 - End output	
08 - Read measured value block	22

Further functions, which can be printed out by pressing the HELP key, need not be considered.

- After interrogating a function the V.A.G 1551 returns to the following start position:

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

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3.4 - Interrogating fault memory

- Connect fault reader V.A.G 1551 and enter address word "02 Gearbox electronics" and advance until "Select function XX" appears in the display => from page 10.

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

- Press keys 0 and 2. (The function "Interrogate fault memory" is selected with 02).

-> Indicated on display:

Rapid data transfer	Q
02 - Interrogate fault memory	

- Confirm entry with key Q.

-> The number of stored faults or "No fault recognised" appears in the display.

X Faults recognised!

The stored faults are displayed in turn and printed out.

- After the last fault has been displayed and printed out, the faults should be rectified as described in the fault table => from Page 13.
- Press => key.

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

After interrogating the fault memory and rectifying the faults:

- Erase fault memory => Page 20.

3.5 - Fault table

- ♦ All the possible faults which can be recognised by the automatic gearbox control unit -J217 and displayed on the V.A.G 1551 with the printer switched on when the fault memory is interrogated are listed below, grouped according to the fault code number.



- ♦ If faults occur only occasionally, or if the fault memory was not erased after rectifying the faults, these faults will be displayed as "sporadic faults" for a stipulated period of time => Gearbox control unit fault recognition, Page 1.
- ♦ If components are indicated as being defective during interrogation of the fault memory, test also the wiring to the components for short circuit and open circuit according to current flow diagram

=> Current flow diagrams, Electrical fault finding and Fitting locations

- ♦ The fault code and the type of fault (number codes) are printed out in the "rapid data transfer" mode only when the printer of V.A.G 1551 is switched on.
Example: Fault code (5-digit) 65535 000 (type of fault 3-digit)
- ♦ Following the introduction of the programme card 7.0, another number (000) is printed out after the fault code. This 3-digit number is a code indicating the type of fault, and can be disregarded at present.

Output on printer V.A.G 1551	
No fault recognised!	If "No fault recognised" appears after performing repairs, the self-diagnosis is completed. In the event that the automatic gearbox does not operate properly despite self-diagnosis, carry out repairs as per fault finding programme. => "Fault finding, Power transmission" binder, No. 14

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00258 Solenoid valve 1 -N88- Open circuit 1) Short to earth 1)	Wiring open circuit or short to earth Solenoid valve 1 -N88- defective	- Check wiring and connections according to CFD2) - Read measured value block =>Page 22 ; Display group 004 - Perform electrical tests =>from Page 31
00260 Solenoid valve 2 -N89- Open circuit 1) Short to earth 1)	Wiring open circuit or short to earth Solenoid valve 2 -N89- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 22 ; Display group 004 - Perform electrical tests =>from Page 31

1) One of these displays appears in addition to relevant component.

2) First check the plug connections for moisture or contact corrosion and renew if necessary. If solenoid faults are displayed, check especially the multi-pin connector on the gearbox between valve body and wiring harness.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00262 Solenoid valve 3 -N90- Open circuit 1) Short to earth 1)	Wiring open circuit or short to earth Solenoid valve 3 -N90- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 22 ; Display group 004 - Perform electrical tests =>from Page 31
00263	Electrical or hydraulic fault	- Find out in which gear the fault occurs =>Page 22, Read measured value block

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Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
Gearbox 0107	Clutch or valve body defective	- Renew valve body => Automatic gearbox 097; Repair group 38; Removing and installing valve body Dismantling and assembling planetary gearbox

- 1) One of these displays appears in addition to relevant component.
- 2) First check the plug connections for moisture or contact corrosion and renew if necessary. If solenoid faults are displayed, check especially the multi-pin connector on the gearbox between valve body and wiring harness.

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Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00264 Solenoid valve 4 -N91- Open circuit 1) Short to earth 1)	Wiring open circuit or short to earth Solenoid valve 4 -N91- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 22 ; Display group 004 - Perform electrical tests =>from Page 31
00266 Solenoid valve 5 -N92- Open circuit 1) Short to earth 1)	Wiring open circuit or short to earth Solenoid valve 5 -N92- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 22 ; Display group 004 - Perform electrical tests =>from Page 31

- 1) One of these displays appears in addition to relevant component.
- 2) First check the plug connections for moisture or contact corrosion and renew if necessary. If solenoid faults are displayed, check especially the multi-pin connector on the gearbox between valve body and wiring harness.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00268 Solenoid valve 6 -N93- Open circuit 1) Short to earth 1)	Wiring open circuit or short to earth Solenoid valve 6 -N93- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 22 ; Display group 002 - Perform electrical tests =>from Page 31
00270 Solenoid valve 7 -N94- Open circuit 1) Short to earth 1)	Wiring open circuit or short to earth Solenoid valve 7 -N94- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 22 ; Display group 004 - Perform electrical tests =>from Page 31

- 1) One of these displays appears in addition to relevant component.
- 2) First check the plug connections for moisture or contact corrosion and renew if necessary. If solenoid faults are displayed, check especially the multi-pin connector on the gearbox between valve body and wiring harness.



Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00281 Road speed sender -G68 No signal	Open circuit in wiring Road speed sender -G68 defective	- Check wiring and connections according to current flow diagram 1) - Read measured value block =>Page 31 Renew road speed sender -G68 => Automatic gearbox 097; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock

1) First check connectors for moisture or contact corrosion and renew if necessary.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00293 Multi-function switch -F125- Undefined switch condition	Wiring open circuit Multi-function switch -F125- defective Selector shaft not secured in axial direction (e.g. after dismantling parking lock)	- Check wiring and connections according to CFD 1) - Read measured value block =>Page 22 ; Display group 001 - Perform electrical test =>from Page 31 Renew multi-function switch -F125 => Automatic gearbox 097; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock Check for axial movement of selector shaft at selector shaft lever (multi-function switch -F125 removed)

1) First check connectors for moisture or contact corrosion and renew if necessary.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00296 Kick-down switch -F8	Open circuit in wiring Throttle valve potentiometer defective Kick-down switch -F8 defective	- Test wiring and connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display group 001 - Perform electrical test =>from Page 31 Adjust or renew throttle cable, => Repair group 20 of the relevant engine Workshop Manual
00299 Programme switch -E122 Short to earth	Open circuit in wiring or short to earth Programme switch defective Kick-down switch -F8 defective	- Test wiring and connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display groups 001 and 005 - Perform electrical test =>from Page 31 Renew programme switch => Automatic gearbox 097; Repair group 37; Servicing shift mechanism Servicing shift mechanism

1) First check connectors for moisture or contact corrosion and renew if necessary.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00300 Gearbox oil temperature sender - G93-1) No fault type recognised	Wiring open circuit Gearbox oil temperature sender (ATF) -G93- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 22 ; Display group 005 - Perform electrical test =>from Page 31 ; Renew gearbox oil temperature sender (ATF) -G93 if necessary => Automatic gearbox 097; Repair group 38; Removing and installing valve body Removing and installing valve body

- 1) A faulty ATF temperature sender is indicated.
- 2) First check connectors for moisture or contact corrosion and renew if necessary.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00518 Throttle valve potentiometer -G69 Signal outside tolerance	Open circuit in wiring or short to earth Engine control unit or throttle valve potentiometer -G69 defective	- Test wiring and connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display group 001 - Perform electrical test =>from Page 21

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1) First check connectors for moisture or contact corrosion and renew if necessary.
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Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00526 Brake light switch -F No fault type recognised	Open circuit in wiring Brake light switch -F defective	- Test wiring and connections according to current flow diagram 1) - Perform electrical test =>from Page 31 - Renew brake light switch -F => Running gear; Repair group 47; Assembly overview: pedal cluster, brake pedal Assembly overview: pedal cluster, brake pedal

- 1) First check connectors for moisture or contact corrosion and renew if necessary.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00529 Speed information missing	Open circuit in wiring	- Test wiring and connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display group 003 Test engine control unit, => Repair group 01 of the relevant engine Workshop Manual
00532	Battery defective	- Test battery voltage => Electrical system; Repair group 27;.Battery .Battery



Supply voltage	Supply voltage to solenoid valves insufficient	- Read measured value block =>Page 31
----------------	--	--

- 1) First check connectors for moisture or contact corrosion and renew if necessary.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00545 Engine/gearbox electrical connection Open circuit1) Short circuit to earth1)	Open circuit in wiring or short circuit to earth No connection between engine/gearbox control unit	- Test wiring and connections according to current flow diagram - Read measured value block =>Page 22 ; Display group 005 - Test signals from engine to gearbox, => Repair group 23 or 24 of the relevant engine Workshop Manual Test engine control unit, renew if necessary, => Repair group 24 or 25 of the relevant engine Workshop Manual Bring system into basic setting =>Page 21

- 1) One of these displays appears in addition to relevant component.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00596 Short circuit between valve wires	Open circuit in wiring or short circuit to earth	- Test wiring and connections according to current flow diagram - Perform electrical test =>from Page 31
00638 Engine/gearbox electrical connection 2 Open circuit1) Short circuit to earth1)	Wiring open circuit or short to earth No connection between engine/gearbox control unit	- Check wiring and connections according to CFD - Read measured value block =>Page 22 ; Display group 003 - Test signals from engine to gearbox, => Repair group 23 or 24 of the relevant engine Workshop Manual Bring system into basic setting =>Page 21

- 1) One of these displays appears in addition to relevant component.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00641 ATF temperature	Gearbox is overheating, not more than 148°C. If ATF temperature is too hot gearbox will shift down to next gear. Trailer load too heavy	- Check ATF level => Automatic gearbox 097; Repair group 37; Checking and topping up ATF level Checking and topping up ATF level - Read measured value block =>Page 22 ; Display group 005; Read off ATF temperature

Signal too great ¹⁾ No fault type identified 1)	ATF level not in order Gearbox oil temperature sender (ATF) defective	- Renew wiring harness in gearbox Removing and installing wiring harness => Automatic gearbox 097; Repair group 38; Removing and installing valve body Removing and installing valve body
---	--	--

1) One of these displays appears in addition to relevant component.

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00652 Gear monitoring Implausible signal	Electrical/hydraulic fault Clutch or valve body defective	- Read measured value block =>Page 22; Display group 004 and establish by driving in which gear the fault occurs - Renew valve body => Automatic gearbox 097; Repair group 38; Removing and installing valve body Dismantling and assembling planetary gearbox

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
00660 Kick-down switch/throttle valve potentiometer Implausible signal	Open circuit in wiring Throttle valve potentiometer - G69 defective Kick-down switch -F8 defective	- Check wiring and connections according to CFD - Read measured value block =>Page 22; Display group 001 - Perform electrical test =>from Page 31 Adjust or renew throttle cable, => Repair group 20 of the relevant engine Workshop Manual

Output on printer V.A.G 1551 (=> Page 13)	Possible cause of fault	Rectifying fault
01236 Selector lever lock solenoid -N110 Open circuit 1) Short circuit to earth 1)	Open circuit in wiring or short circuit to earth Selector lever lock solenoid - N110 defective	- Test wiring, connections and magnetic coil according to current flow diagram - Perform electrical test =>from Page 31 - Renew selector lever lock solenoid -N110 => Automatic gearbox 097; Repair group 37; Servicing shift mechanism Servicing shift mechanism

1) One of these displays appears in addition to relevant component.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
65535 Control unit defective	Control unit -J217 defective	- Renew control unit => Page 3 Bring system into basic setting =>Page 21



*The control unit -J217- should not be renewed =>page **21** until the possible cause of the fault has been determined and the following faults have been rectified:*

- ♦ mechanical faults
- ♦ hydraulic faults
- ♦ all affected electrical/electronic components and cable connections.

3.6 - Erasing fault memory

Requirement:

- Fault memory interrogated => page **13** .

After fault memory has been interrogated:

-> Indicated on display:

Rapid data transfer HELP
Select function XX

- Press keys 0 and 5. (The function "Erase fault memory" is entered with 05.)

-> Indicated on display:

Rapid data transfer Q
05 Erase fault memory

- Confirm entry with key Q.

-> Readout in display:

Attention!
Fault memory was not interrogated.

If the ignition was switched off e.g. between interrogating the fault memory and erasing fault memory, the fault memory is then not erased.

- Adhere strictly to the sequence of operations, i.e. first of all interrogate fault memory.

-> Indicated on display:

Rapid data transfer
Fault memory is erased!

(The fault memory will be erased approx. 5 secs. after the display appears.)

The fault memory is now erased.

Wait about 1 minute before again interrogating the fault memory.

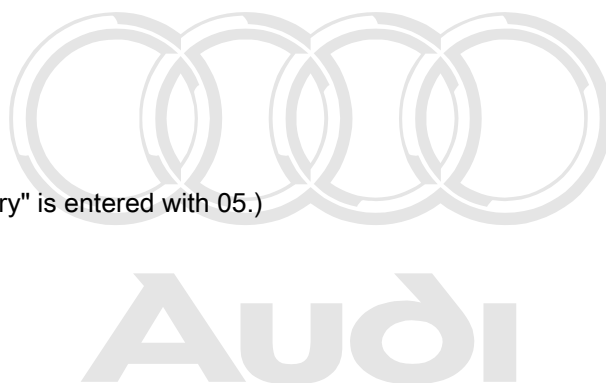
-> Indicated on display:

System cannot be interrogated!

-> Print out with printer switched on:

1 Fault recognized !
00811 3333
System cannot be interrogated

Control unit -J217 has not had time to identify the fault.



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- Wait about 1 minute before again interrogating the fault memory.
- After interrogating and erasing the fault memory, carry out a test drive and again interrogate the fault memory.

When the fault memory is interrogated, the following display should appear:

"No fault recognized!"

3.7 - Initiating basic setting

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

- ◆ Exchanging engine
- ◆ Replacing engine control unit
- ◆ Adjusting throttle valve (setting idling speed).
- ◆ Replacing throttle valve potentiometer -G69- or throttle valve control part -J338-
- ◆ Altering throttle valve potentiometer -G69 setting e.g. when adjusting idling switch (engine)
- ◆ Replacing automatic gearbox control unit -J217-

Requirements

- Supply voltage OK and all electrical equipment switched off
- Accelerator cable correctly adjusted
- Fault memory has been interrogated, any faults rectified and fault memory erased.
- Connect fault reader V.A.G 1551 and enter address word "02 Gearbox electronics" and advance until "Select function XX" appears in the display => from page 10.

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

- Press keys 0 and 4. (The function "Initiating basic setting" is selected with 04)

Accelerator pedal must remain in idling position.

-> Indicated on display:

Rapid data transfer	Q
04 Basic setting	

- Confirm entry with key Q.

-> Indicated on display:

Basic setting	HELP
Enter display group number XXX	

- Press key 0, 0 and 0.
- Confirm entry with key Q.

-> Indicated on display:

System in basic setting	0
-------------------------	---

The system is now in the basic setting.

- Depress accelerator pedal as far as kickdown and hold in this position for 3 seconds.
- Press key =>.

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	



3.8 - Read measured value block

Additional information required

- ♦ Current flow diagrams, Electrical fault finding and Fitting locations Audi 100 1991 ä
- Connect fault reader V.A.G 1551 and enter address word "02 Gearbox electronics" and advance until "Select function XX" indicated on display => from page 10 .

-> Indicated on display:

Rapid data transfer
Select function XX

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- Press keys 0 and 8. (The function "Read measured value block" is selected with 08.)

-> Indicated on display:

Rapid data transfer Q
08 - Read measured value block

- Confirm entry with key Q.

-> Indicated on display:

Read measured value block
Enter display group number XXX

- Enter display group number => List of selectable display group numbers, Page 22 .
- Confirm entry with key Q.

Read measured value block 1
□ 1 □ 2 3 □ 4

-> There are always 4 display zones (-arrows-) in the measured value block (in physical units where applicable). Decoding the individual values in display zones 1 to 4 => Test table Page 23 .

List of selectable display group numbers

Indicated on display (example)			
Display zones: 1 2 3 4 iiii	Display group No.	Display zone	Description
Read measured value block 1→ P 0.8 V 0 % 00000111	001	1 2 3 4	Selector lever position Voltage at throttle valve potentiometer Accelerator pedal value Switch positions
Read measured value block 2→ 0.983 A 0.985 A 12.76 V 2.50 V	002	1 2 3 4	Solenoid valve 6 -N93 actual current Solenoid valve 6 -N93 specified current Battery voltage Voltage at road speed sender -G68
Read measured value block 3→ 0 km/h 900 rpm 0 0 %	003	1 2 3 4	Speed Engine speed Gear selected Accelerator pedal value
Read measured value block 4→ 1000 00 0 P 0 km/h	004	1 2 3 4	Solenoid valves Gear selected Selector lever position Speed

Indicated on display (example)			
Read measured value block 5⇒ 400C 0011011 0 900 rpm	005	1 2 3 4	ATF temperature Switch outputs Gear to be selected Engine speed

- ◆ If the printer is switched on, the current display is printed out on the log.
- ◆ If the specified values are obtained in all the display zones:

- Press key ⇒.

→ Indicated on display:

Rapid data transfer Select function XX	HELP
---	------

3.9 - Test table

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Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if read-out does not match specification
001	1	Selector lever position - Multi-function switch - F125	Stationary P	P	- Check and adjust selector lever cable ⇒ Automatic gearbox 097; Repair group 37 Check multi-function switch ⇒ Perform electrical test, from Page 31
			Selector R	R	
			lever N	N	
			in	D	
				3	
				2	
				1	
continued ▼					

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if read-out does not match specification
001	2	Signal voltage of throttle valve potentiometer -G69 1)	Idling min. Idling max. ▪ Engine switched off ▪ Ignition switched on	0.156 V 0.8 V	When accelerating from idling to full throttle, voltage reading increases constantly Initiate basic setting ⇒ Page 21 Perform self-diagnosis for relevant engine



Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
continued ▼			Full throttle min. max.	3.5 V 4.680 V	- Adjust throttle valve potentiometer and renew if necessary, => Repair group 24 or 25 of the relevant engine Workshop Manual Initiate basic setting =>Page 21

1) If the readout for the throttle valve potentiometer does not match the specification, bring system into basic setting first =>Page 21 .

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
001	3	Accelerator pedal value	Stationary Idling	0...1 %	When accelerating from idling to full throttle, % figure increases continuously - Initiate basic setting =>Page 21
			Full throttle	99...100 %	
	4	Switch positions 1) Brake light switch -F Display 1	Brake Operated	1	- Test brake light switch -F =>Perform electrical test, from Page 31
			Not operated	0	
		Traction control system 2	Activated	1	- Check wiring according to CFD if necessary => Current flow diagrams, Electrical fault finding and Fitting locations binder
			Not activated	0	
continued ▼					

1) The readout on V.A.G 1551 in display zone 4 comprises 8 digits, e.g. 10000111. The first digit from the left (display 1) refers to brake light switch -F-. The second digit from the left (display 2) refers to the traction control system (ASR), and so on.

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
001	4	Programme switch -E122 Display 3	Operated	1	- Perform electrical test =>from Page 31
			Not operated	0	
		Kickdown switch -F8 4	Kickdown Operated	1	- Check kick-down switch -F8 =>Perform electrical test, from Page 31

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
	continued ▼		Not operated	0	- Test wiring and connections according to current flow diagram => Current flow diagrams, => Electrical fault finding and => Fitting locations binder

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
001	4	Multi-function switch	Display 5	P, R, N, D, 3, 2	- Check multi-function switch -F125 => Perform electrical test, from Page 31 Adjust selector lever cable 1)
		-F125		P, 1	
					=> Automatic gearbox 097; Repair group 37; Servicing shift mechanism; Removing, installing and adjusting selector lever cable Servicing shift mechanism; Removing, installing and adjusting selector lever cable
			6	P, R, 2, 1	
				N, D, 3	
			7	P, R, N, D	
				3, 2, 1	
			8	P, R, N, D, 3, 2, 1	
					- Test wiring and components as necessary according to current flow diagram => Current flow diagrams, Electrical fault finding and Fitting locations binder

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1) This repair measure is only effective if selector lever position does not agree with selector lever position indicator.

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
002	1	Solenoid valve 6 - N93- actual current	▪ Selector lever in "N" ▪ Stationary Full throttle	0.0 A	Note when fault finding: the difference between actual current and specified current must not be more than 0.050 A The specifications shown here are the maximum values.
			Idling max.	1.1 A	



Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
continued ▼	2	Solenoid valve 6 - N93- specified current	▪ Selector lever in "N" ▪ Stationary Full throttle	0.0 A	Bring system into basic setting =>Page 21
			Idling max.	1.1 A	- Check solenoid valve -N93- => Perform electrical tests, from Page 31

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
002	3	Battery voltage	Stationary min.	10.8 V	- Check battery, renew if necessary. - Check voltage supply to control unit J217- => Perform electrical tests, from Page 31 - Renew gearbox control unit -J217- => Page 21
			max.	16.0 V	
	4	Road speed sender -G68-	Stationary min.	2.20 V	- Check road speed sender -G68- =>Perform electrical tests, from Page 31
			max.	2.52 V	

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
003 continued ▼	1	Vehicle speed	Driving1)	...km/h	Speedometer reading and readout on V.A.G 1551 may differ slightly.
	2	Engine speed	With engine running	... rpm	- Rectify engine fault if necessary, => Repair group 01 of the relevant engine Workshop Manual Perform self-diagnosis of engine Test wiring and connections according to current flow diagram

1) When driving, a second mechanic is needed for reading the specified values.

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
003	3	Gear selected	Driving1) Neutral	0	- Check solenoid valves => Perform electrical test, from page 31
			Reverse	R	
			1 hydraulic	1	
			2 hydraulic	2	
			3 hydraulic	3H	

1) When driving, a second mechanic is needed for reading the specified values.

1) When driving, a second mechanic is needed for reading the specified values.

1) Whilst driving with gears selected a second mechanic is required for reading the specified values.



Display Group No.	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if read-out does not match specification
004	2	Gear selected	Driving1) Neutral	0	- Check solenoid valves => Perform electrical test, from page 31
			Reverse	R	
			1 hydraulic	1	
			2 hydraulic	2	
			3 hydraulic	3H	
			3 mechanical	3M	
			4 mechanical	4	
continued ▼					

1) When driving, a second mechanic is needed for reading the specified values.

Display Group No.	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
004	3	Selector lever position	Driving1) Selector lever in: P	P	- Check and adjust selector lever cable => Automatic gearbox 097; => Repair group 37 - Check multi-function switch -F125 => Perform electrical test, from Page 31
			R	R	
			N	N	
			D	D	
			3	3	
			2	2	
			1	1	
continued ▼					

1) When driving, a second mechanic is needed for reading the specified values.

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
004	4	Vehicle speed	Speed at which vehicle is driven 1)	...km/h	The speedometer reading and readout on V.A.G 1551 may differ slightly
005 continued ▼	1	ATF temperature ATF level is checked at a temperature of approx. 50°C - 70°C	Stationary with engine running. The exact temperature is only displayed from about 50°C upwards	...°C	- Check gearbox oil (ATF) temperature sender -G93 => Perform electrical test, from Page 31

1) When driving, a second mechanic is needed for reading the specified values.

Display Group No.	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Switch outputs Display 1 2)	Driving 1) Ignition timing modulation 3) is switched on	1	- Test wiring according to current flow diagram Perform self-diagnosis of engine => Repair group 01 of the relevant engine Workshop Manual
			is switched off	0	
	continued ▼	2 2)	switched on	1	- Renew engine control unit if necessary => Repair group 24 or 25 of the relevant engine Workshop Manual
			switched off	0	- Renew gearbox control unit -J217- => Page 3 - Bring system into basic setting => Page 21

- 1) When driving, a second mechanic is needed for reading the specified values.
- 2) V.A.G 1551 must always show the same number "1" or "0" in displays 1 and 2.
- 3) Ignition timing modulation is only activated during a gearshift.

Display Group No.	Display zone	Designation	Test conditions	Specified read-out V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Switch outputs Display 3	Selector lever lock solenoid -N110 is switched on	1	- Check selector lever lock solenoid -N110- => Perform electrical test, from Page 31
			is switched off	0	
	continued ▼	4	switched on	1	
			switched off	0	

Display Group No.	Display zone	Designation	Test conditions	Specified readout V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Switch outputs Display 5	Cruise control system switched on	1	- Test wiring and connections according to current flow diagram - Check cruise control system => "Current flow diagrams, Electrical fault finding and Fitting locations" binder
			switched off	0	



Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Shift outputs Display 6	Air conditioner was switched off	1	Check wiring according to current flow diagram
			is not switched off	0	- Check air conditioner => Heating, Air Conditioner; Repair Group 01; Self-diagnosis Self-diagnosis
		7	Light in programme switch		- Test wiring according to current flow diagram
			switched on switched off	1 0	
continued ▼					

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Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
005	3	Gear to be selected	Driving 1) Neutral	0	- Check solenoid valves => Perform electrical test, from page 31
			Reverse	R	- If gearshifts do not occur, a clutch or brake may be defective
			1 hydraulic	1	=> "Fault finding, Power transmission" binder, No. 14
			2 hydraulic	2	- Renew gearbox control unit -J217 => Page 3
			3 hydraulic	3H	
			3 mechanical	3M	
			4 mechanical	4	
continued ▼					

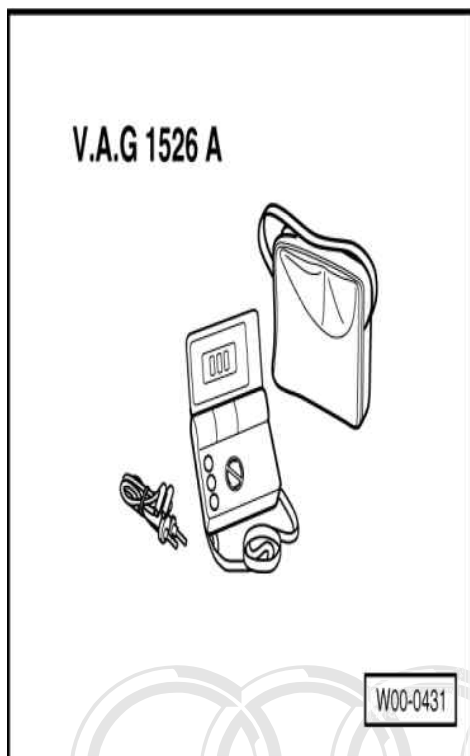
1) When driving, a second mechanic is needed for reading the specified values.

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
005	4	Engine speed	Driving 1) With engine running	rpm	- Rectify engine fault if necessary => Repair group 01 of the relevant engine Workshop Manual Test wiring and connections according to current flow diagram

1) When driving, a second mechanic is needed for reading the specified values.

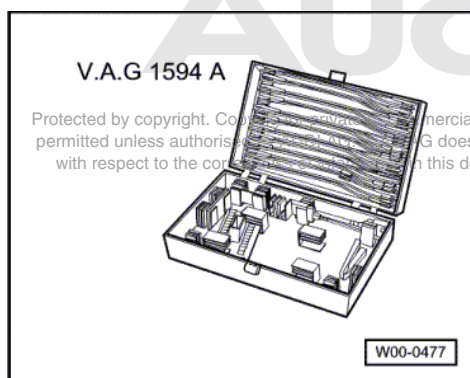
4 - Electrical test

4.1 - Electrical test



Special tools, testers and auxiliary items

- ◆ -> Hand-held multimeter V.A.G 1526 or V.A.G 1526 A
- ◆ Test box (basic unit) V.A.G 1598/14 with adapter V.A.G 1598/9



- ◆ -> V.A.G 1594 measuring appliance set

Additional information

- ◆ Workshop Manual Audi 100 1991 ä, Automatic gearbox 097
- ◆ Current flow diagrams, Electrical fault finding and Fitting locations Audi 100 1991 ä

Test requirements:

- Battery voltage in order.



- Fuses No. 9, 14 and 20 in order.

=> "Current flow diagrams, Electrical fault finding and Fitting locations" binder

- Fuses for relevant component in order
- Earth connections and gearbox earthing point in order

=> "Current flow diagrams, Electrical fault finding and Fitting locations" binder

- Check earth connections for corrosion and poor contact; repair if necessary.
- Check battery earth strap and earth strap between battery and gearbox.

Warning!

Select the appropriate measuring range at the tester before connecting the test leads to avoid damaging the electronic components.

Notes:

- ♦ Use hand-held multimeter V.A.G 1526 A or V.A.G 1715 for testing. For earlier versions of hand-held multimeter V.A.G 1526 A the test ranges to be selected before performing the various tests are indicated in each case.
- ♦ The specified values are valid for an ambient temperature from 0°C...40°C.
- ♦ If the readings obtained differ from the specified values, determine fault on the basis of the current flow diagram.
- ♦ If the readings obtained differ only slightly from the specified values, clean sockets and connectors of the testers and test leads and repeat test. Before replacing the particular components, test wiring and connections and, particularly if specified values are below 10 ω , repeat resistance measurement on component.
- ♦ Use test box V.A.G 1598/9 for connecting test equipment.
- ♦ The contact numbers of the connector are identical with the socket numbers of test box V.A.G 1598/9 => Page 32.
- ♦ For all test steps, switch off the ignition and unplug the multi-pin connector from automatic gearbox control unit -J217. (The control unit is located behind the cover panel at the front right of the front passenger's footwell).
- ♦ Connect test box V.A.G 1598 with adapter V.A.G 1598/9 to connector on wiring harness.

Measuring voltage:

Control unit must be connected to adapter V.A.G 1598/9.

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Control unit must be disconnected from adapter V.A.G 1598/9.

- If the readouts do not match the specifications, perform the steps indicated in the right-hand column of the test table ("Measures if readout differs from specification")=>Page 33.
- Perform all the steps listed in the right-hand column.
- Perform only the test steps recommended in the test table to trace a specific fault.

Contact assignment on control unit -J217

1- Earth (terminal 31)	20- Park/neutral signal
2- Solenoid valve 4 -N91	21- Solenoid valve 7 -N94
3- Solenoid valve 3 -N90	22- Solenoid valve 1 -N88
4- Vacant	23- Solenoid valve 2 -N89
5- Light for programme switch -E122	24- Solenoid valve 5 -N92
6- Diagnosis K-wire	25- Solenoid valve 6 -N93
7- Traction control system (ABS/EDL)	26- Brake light switch -F signal voltage
8- Kick-down for air conditioner	27- TD (revolution) signal

9- Throttle valve potentiometer -G69 signal voltage	28- Ignition timing modulation
10- Throttle valve potentiometer -G69 supply voltage 5 V	29- Throttle valve potentiometer -G69 earth
11- Vacant	30- Gearbox oil temperature sender -G93 (ATF)
12- Selector lever position display -Y5	31- Vacant
13- Road speed sender -G68 (screening)	32- Road speed sender -G68
14- Vacant	33- Road speed sender -G68
15- Multi-function switch -F125 pin 2	34- Multi-function switch -F125 pin 1
16- Multi-function switch -F125 pin 7	35- Multi-function switch -F125 pin 6
17- Kick-down switch -F8	36- Programme switch -E122
18- Solenoid valves supply voltage	37- Idling speed switch -F60
19- Supply voltage (terminal 15)	38- Cruise control system

List of test steps

Only perform test steps for the relevant component as listed in fault finding table and read measured value block.

Component checked		Component checked	
Supply voltage for control unit - J217	- Perform test step 1	Solenoid valve 4 -N91	- Perform test step 9
Throttle valve potentiometer - G69	- Perform test step 2	Solenoid valve 5 -N92	- Perform test step 10
Selector lever lock solenoid - N110	- Perform test steps 3 and 13	Solenoid valve 6 -N93	- Perform test step 11
Brake light switch -F	- Perform test step 4	Solenoid valve 7 -N94	- Perform test step 12
Multi-function switch -F125	- Perform test step 5	Kick-down switch -F8	- Perform test step 14
Solenoid valve 1 -N88	- Perform test step 6	Road speed sender -G68	- Perform test step 15
Solenoid valve 2 -N89	- Perform test step 7	Programme switch -E122	- Perform test step 16
Solenoid valve 3 -N90	- Perform test step 8	Gearbox oil temperature sender -G93 (ATF)	- Perform test step 17

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4.2 - Test table

Switch to voltage measuring range 20 V					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
1	19 + 1	Supply voltage for control unit - J217	▪ Ignition switched on	approx. battery voltage	- Test wiring according to current flow diagram Test wiring from contact 1 to earth Test wiring from contact 19 to terminal 15 (central electrics)



Switch to voltage measuring range 20 V					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
2 1)	10 + 29	Throttle valve potentiometer - G69	▪ Ignition switched on Unplug connector from throttle valve potentiometer	4.6 to 5 V	- Test wiring according to current flow diagram Renew gearbox control unit -J217 => Page 21
	9 + 29		▪ Ignition switched on	4.6 to 5 V	When accelerating from idling to full throttle, voltage reading increases constantly
			Idling, min. Idling, max.	0.156 V 0.8 V	- Adjust throttle valve potentiometer and renew if necessary => Repair group 24 or 25 of the relevant engine Workshop Manual
			Full throttle, min. Full throttle, max.	3.5 V 4.68 V	- Bring system into basic setting =>Page 21

1) Cannot be tested on vehicles with 6-cylinder injection engines with engine control unit from Part No. 8A0 906 266B onwards (about June 1991). The throttle valve position is transmitted from the engine control unit to the gearbox control unit.

Switch to voltage measuring range 20 V					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
3	19 + 20	Selector lever lock solenoid - N110	▪ Ignition switched on ▪ Selector lever in P or N	approx. battery voltage	- Test wiring according to current flow diagram Renew gearbox control unit -J217 => Page 21
			▪ Brake pedal depressed	less than 1 V	- Perform test step 4, renew gearbox control unit -J217 if necessary => Page 21
4	26 + 1	Signal from brake light switch -F	▪ Ignition switched on ▪ Brake pedal not depressed	less than 1 V	- Test wiring according to current flow diagram Renew and adjust brake light switch -F

			- Brake pedal depressed	approx. battery voltage	
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Switch to voltage measuring range 20 V					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
5	34 + 1	Multi-function switch -F125	▪ Ignition switched on Selector lever position N, D, 3 and 2	4.5 to 5 V	- Test wiring according to current flow diagram
			- Selector lever position P and 1	0 to 0.8 V	- Renew multi-function switch
			- Selector lever position R	approx. battery voltage	- Renew multi-function switch
	15 + 1		- Selector lever position P, R, 2 and 1	4.5 to 5 V	=> Automatic gearbox 097; => Repair group 38; Dismantling and assembling parking lock
	35 + 1		- Selector lever position N, D and 3	0 to 0.8 V	
			- Selector lever position P, R, N and D	4.5 to 5 V	
			- Selector lever position 3, 2 and 1	0 to 0.8 V	
	16 + 1		- Selector lever position P, R, and N	approx. battery voltage	
			- Selector lever position D, 3, 2 and 1	0 to 0.8 V	

Switch to resistance measuring range 200 ω					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
6	22 + 18	Solenoid valve 1 -N88	▪ Ignition switched off ▪ Control unit -J217 ▪ disconnected	55 to 65 ω	- Test wiring according to current flow diagram - Renew valve body => Automatic gearbox 097; => Repair group 38; Removing and installing valve body
	22 + 1			infinite ω 1)	
7	23 + 18	Solenoid valve 2 -N89	▪ Ignition switched off ▪ Control unit -J217 ▪ disconnected	55 to 65 ω	
	23 + 1			infinite ω 1)	
8	3 + 18	Solenoid valve 3 -N90	▪ Ignition switched off ▪ Control unit -J217 ▪ disconnected	55 to 65 ω	
	3 + 1			infinite ω 1)	
9	2 + 18	Solenoid valve 4	▪ Ignition switched off	55 to 65 ω	



	2 + 1	-N91	- Control unit -J217 - disconnected	infinite ω1)	
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1) Switch V.A.G 1526 A to highest wrange

Switch to resistance measuring range 200 ω					
Test step	V.A.G 1598/18 sockets	Test of	- Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
10	24 + 18	Solenoid valve 5	- Ignition switched off - Control unit -J217 - disconnected	55 to 65 ω	- Test wiring according to current flow diagram - Renew valve body => Automatic gearbox 097; => Repair group 38; Removing and installing valve body
	24 + 1	-N92		infinite ω1)	
11	25 + 18	Solenoid valve 6	- Ignition switched off - Control unit -J217 - disconnected	4.5 to 6.5 ω	
	25 + 1	-N93		infinite ω1)	
12	21 + 18	Solenoid valve 7	- Ignition switched off - Control unit -J217 - disconnected	55 to 65 ω	
	21 + 1	-N94		infinite ω1)	

1) Switch V.A.G 1526 A to highest wrange

Switch to resistance measuring range 200 ω					
Test step	V.A.G 1598/18 sockets	Test of	- Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
13	19 + 20	Selector lever lock solenoid - N110	- Ignition switched off - Control unit -J217 - disconnected	14 to 25 ω	- Test wiring according to current flow diagram - Renew selector lever lock solenoid -N110 => Automatic gearbox 097; - Repair group 37; - Servicing shift mechanism - Servicing shift mechanism
14	1 + 17	Kick-down switch -F8	- Ignition switched off - Control unit -J217 - disconnected - Accelerator pedal not depressed	infinite ω1)	- Test wiring according to current flow diagram - Adjust or renew throttle cable

			▪ Depress accelerator pedal down to kick-down	less than 1.5 ω	=> Repair group 20 of the relevant engine Workshop Manual
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1) Switch V.A.G 1526 A to highest wrange

Switch to resistance measuring range 20 kw					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
15	32 + 33	Road speed sender -G68	▪ Ignition switched off ▪ Control unit -J217 ▪ disconnected min.	0.8 kw	- Test wiring according to current flow diagram - Renew road speed sender => Automatic gearbox 097; => Repair group 38; Dismantling and assembling parking lock
			max.	0.9 kw	

Switch to resistance measuring range 200 ω					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
16	36 + 1	Programme switch -E122	▪ Ignition switched off ▪ Control unit -J217 ▪ disconnected ▪ Programme switch not operated	infinite ω 1)	- Test wiring according to current flow diagram Renew programme switch => Automatic gearbox 097; Repair group 37; Servicing shift mechanism Servicing shift mechanism
			▪ Programme switch operated	less than 1.5 ω	

1) Switch V.A.G 1526 A to highest wrange

Switch to resistance measuring range 2 Mw					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault if readout does not match specification
17	30 + 18	Gearbox oil temperature sender -G93 (ATF)	▪ Ignition switched off ▪ Control unit -J217 disconnected ▪ ATF temperature		- Test wiring according to current flow diagram - Renew valve body



			approx. 20 °C - Switch over hand-held multimeter V.A.G 1526 to 200 kW approx. 60 °C approx. 120 °C	0.247 Mw 48.8 kW 7.4 kW	=> Automatic gearbox 097; => Repair group 38; Removing and installing valve body
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