

Audi 80 1992 ➤

Automatic gearbox 097, Self-diagnosis									
Gearbox ID	AEH	ARC	ATT	AZZ	CBT	CBV	CBW	CEB	CFR
	CFS	CFU	CFV	CFY	CFW				

Edition 03.1998

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

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Automatic gearbox 097, Self-diagnosis

Repair Group

01 - Self-diagnosis, Electrical check



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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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Audi 80 1992 ➤

Audi Automatic gearbox 097, Self-diagnosis - Edition 03.1998



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01 - Self-diagnosis, Electrical check

1 - Function of self-diagnosis

1.1 - Function of self-diagnosis

Control of automatic gearbox is electronic/hydraulic.

The control unit -J217 for automatic gearbox contains information about components which are influential when changing gear. Based on this information the control unit controls the corresponding solenoid valves in the valve body. The solenoid valves transfer the fluid pressure produced by the ATF pump to the clutches and brakes to be closed.

Fault recognition of gear control unit

The term "self-diagnosis" refers to the electric/electronic part of the control.

When an electric/electronic component fails or open wiring is detected the control unit is equipped with a fault memory in order to detect the fault quickly.

Faults are recognised by electric signals. Any faults occurring in the monitored sensors/components are stored in the fault memory together with an indication of the type and location of fault.

The control unit for automatic gearbox -J217 diagnoses and stores certain types of fault under varying conditions. After evaluation of information, it differentiates between sporadic and static (always present) faults and stores these. Interrogate fault memory=>Page 13.

If a fault occurs more than once it is stored as a static fault. If the fault does not occur anymore after a certain period of time it is converted to a sporadic fault (SP). This will be erased automatically after a certain period.

Faults which are stored as sporadic faults in the fault memory are displayed as "sporadic faults" during the fault interrogation with V.A.G 1551 (or V.A.G 1552). "/SP" appears on the right of the display. Provided printer is switched on "Sporadic faults" will be printed out after fault interrogation.

The self-diagnosis possibilities can only be used with the fault reader V.A.G 1551 (or V.A.G 1552), operation mode 1 "Rapid data transfer".

Functions which can be read with the fault reader V.A.G 1551 (or V.A.G 1552) => Overview of selectable functions, Page 13.

Safety functions of engine control unit

If critical faults occur while driving gearbox is run on by emergency running mode If the fault occurs with selector lever set on "D", "3" or "2", the emergency running mode will activate 3rd gear While in emergency running mode driving is also possible in gears "1", "2", "3" and "R"

After starting again while in emergency running mode and the fault occurs with selector lever in "D", "3" or "2", 2nd or 3rd gear will be activated hydraulically until fault is rectified.

If a fault activates emergency running mode, then transmission remains in emergency running mode until ignition is switched off.

Faults that can activate the emergency running mode:

Open circuit, short to earth, defective electrical or hydraulic components (refer to table).



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 faulty

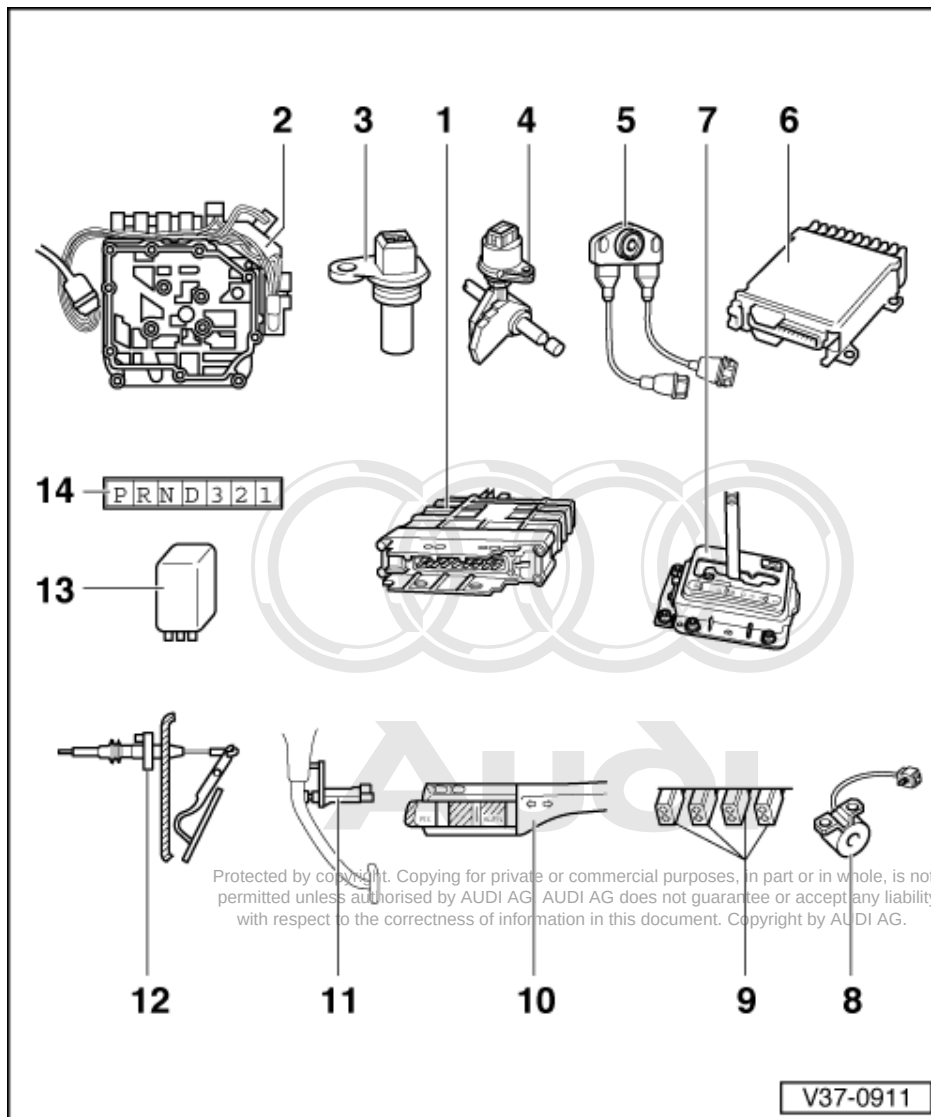
1.2 - Technical self-diagnosis data

Memory	
-Permanent memory	Yes
- Non-permanent 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 installation locations	=> Page 3

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2 - Electric/electronic components and installation locations

2.1 - Electric/electronic components and installation locations

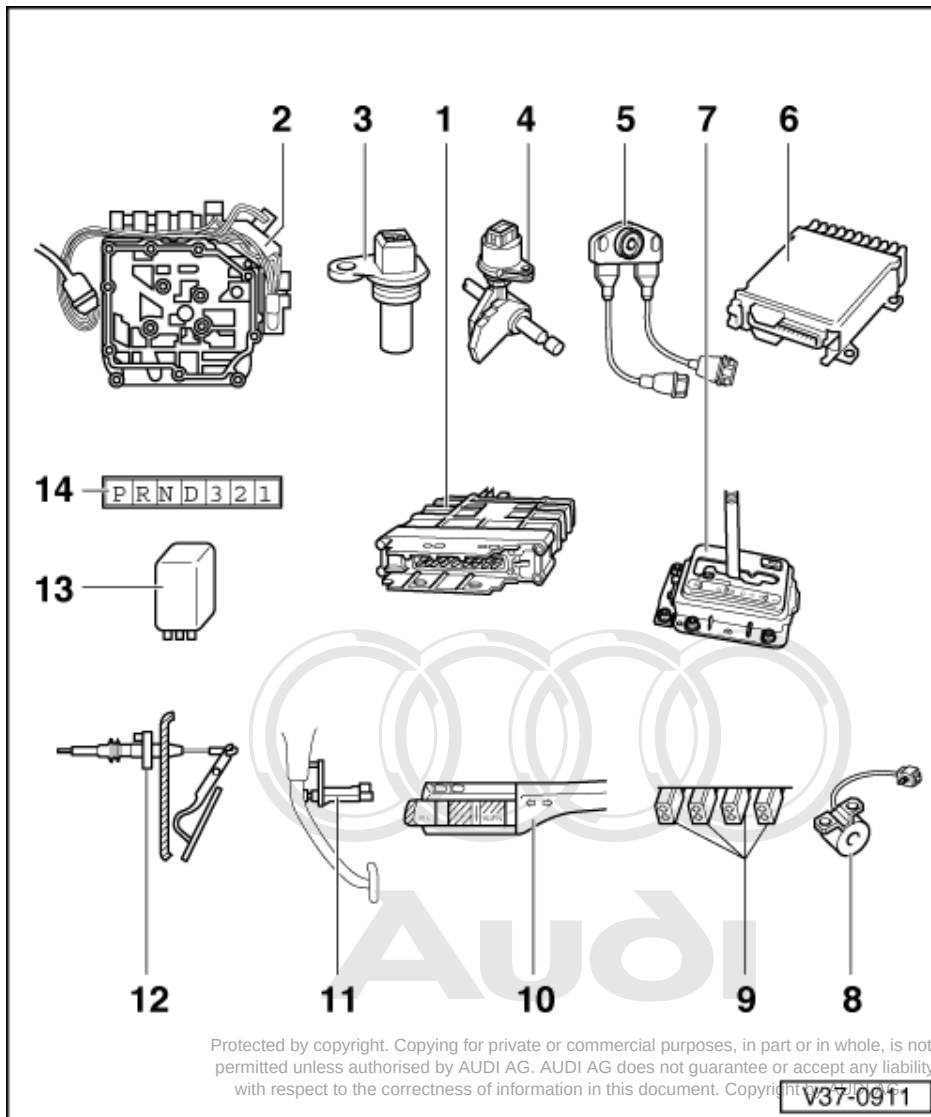


Warning

After replacing control unit or carrying out repairs on throttle valve potentiometer, system must be brought to basic setting => Page

1 Control unit for automatic gearbox -J217

- ♦ Fitting location=>Fig. 10
- ♦ Checked by self-diagnosis => Carry out self-diagnosis, Page 10

**2 Valve body**

- ♦ Fitting location: Valve body is located below sump
- ♦ Solenoid valves -N88, -N89, -N90, -N91, -N92, -N93 and -N94 are attached to valve body.
- ♦ Valves are checked by self-diagnosis
- ♦ Removing and installing valve body

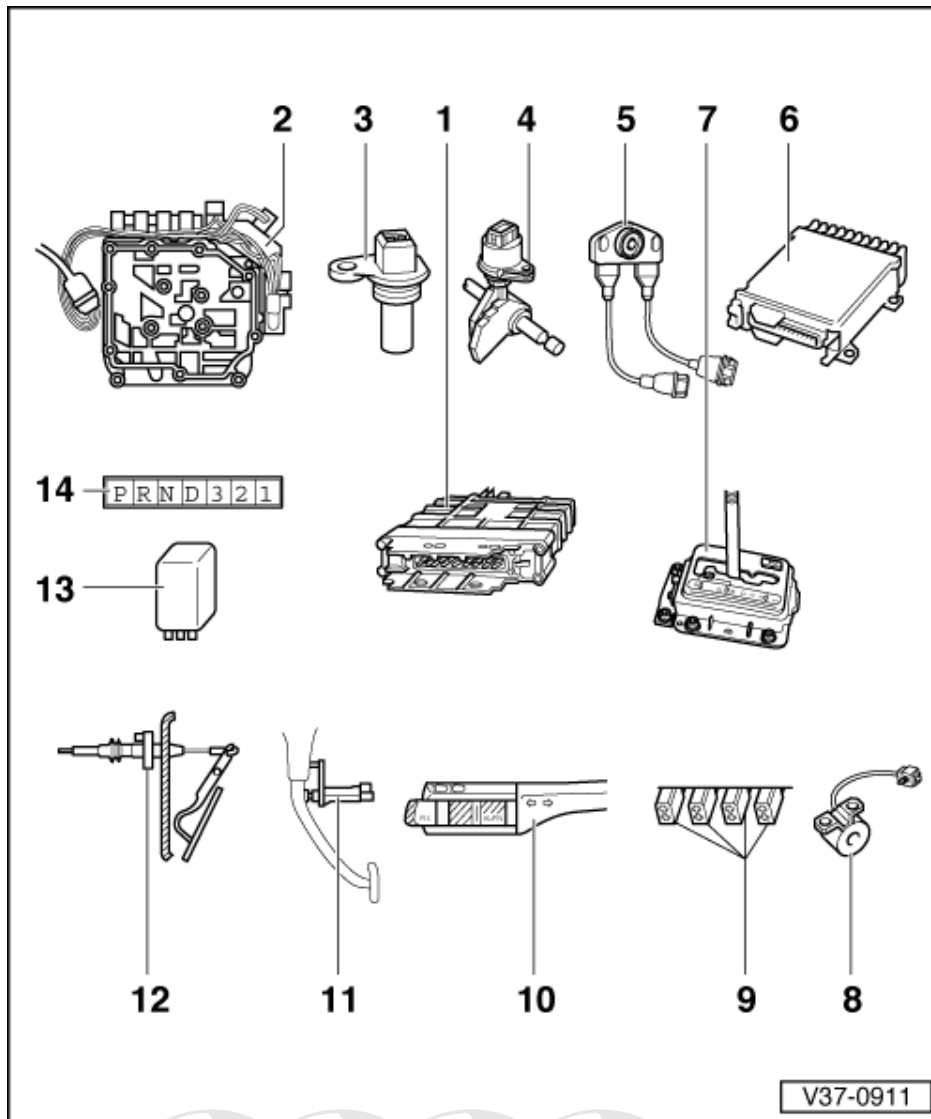
=> Automatic gearbox 097; Repair group 38; Removing and installing valve body Removing and installing valve body

3 Road speed sender -G68

- ♦ Fitting location: On gearbox housing

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

- ♦ Tested by self-diagnosis



4 Multi-function switch -F125

- ♦ Fitting location: On rear of gearbox housing

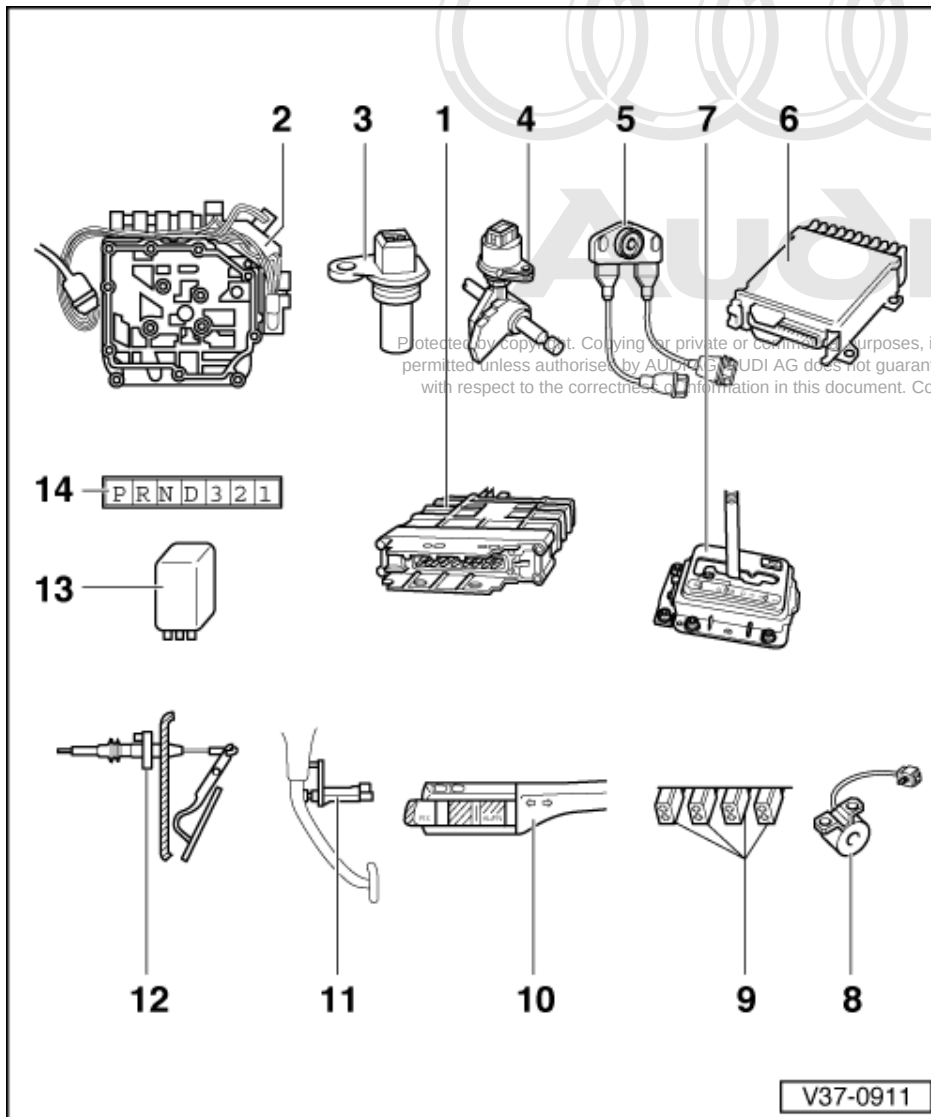
=> Automatic gearbox 097; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock

- ♦ Tested by self-diagnosis

5 Throttle valve potentiometer -G69

- ♦ Fitting location: On throttle valve connection (engine)
- ♦ Throttle valve potentiometers may differ in design according to engine specification
- ♦ Removing and installing
- => Repair group 24 or 25 of respective engine workshop manual
- ♦ Signal is tested by self-diagnosis

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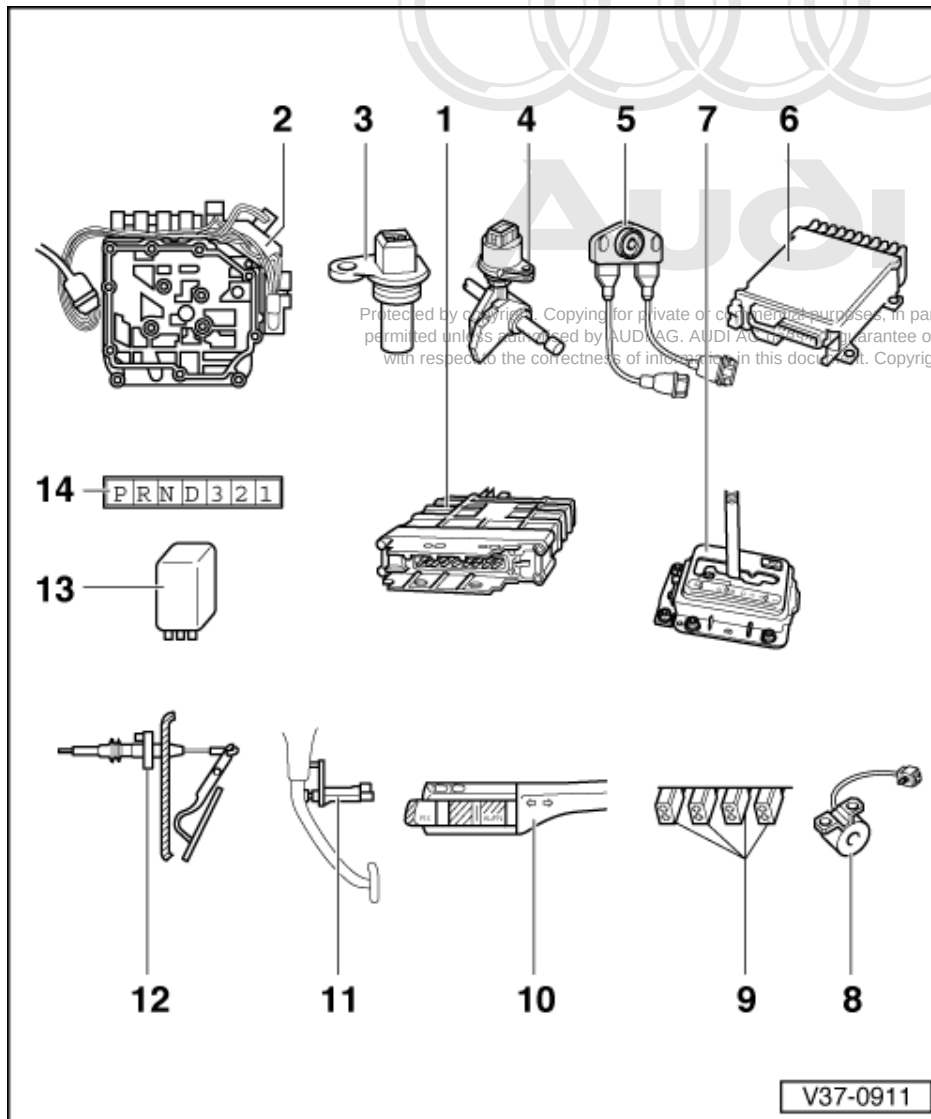
**6 Engine control unit**

- ♦ Fitting location: Between front right cross panel and air channel
- ♦ Removing and installing
=> Repair group 24 or 25 of respective engine workshop manual

7 Program switch -E122

- ♦ Fitting location: Program switch with lamp is located on centre console in selector lever housing (gate) with selector dial

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



8 Solenoid for selector lever lock -N110

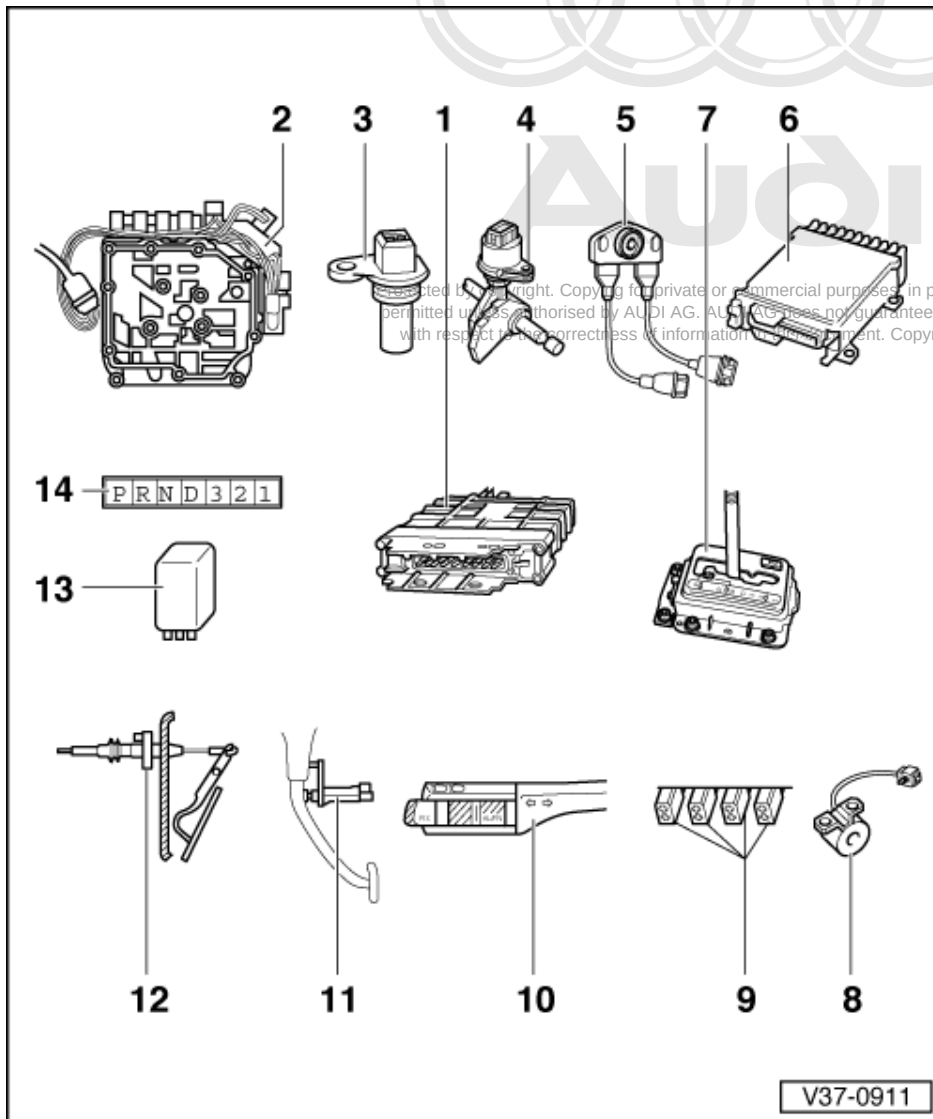
- ♦ Fitting location: Solenoid is located in front mounting bracket for shift mechanism

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

- ♦ Solenoid is tested by self-diagnosis

9 Diagnostic socket

- ♦ Fitting location: Diagnostic socket is located in relay station I at left of plenum chamber
- ♦ Connecting fault reader V.A.G 1551 (or V.A.G 1552) and selecting functions => Page 11

**10 Switch for speed control system -E45**

- ♦ Fitting location: Steering column switch

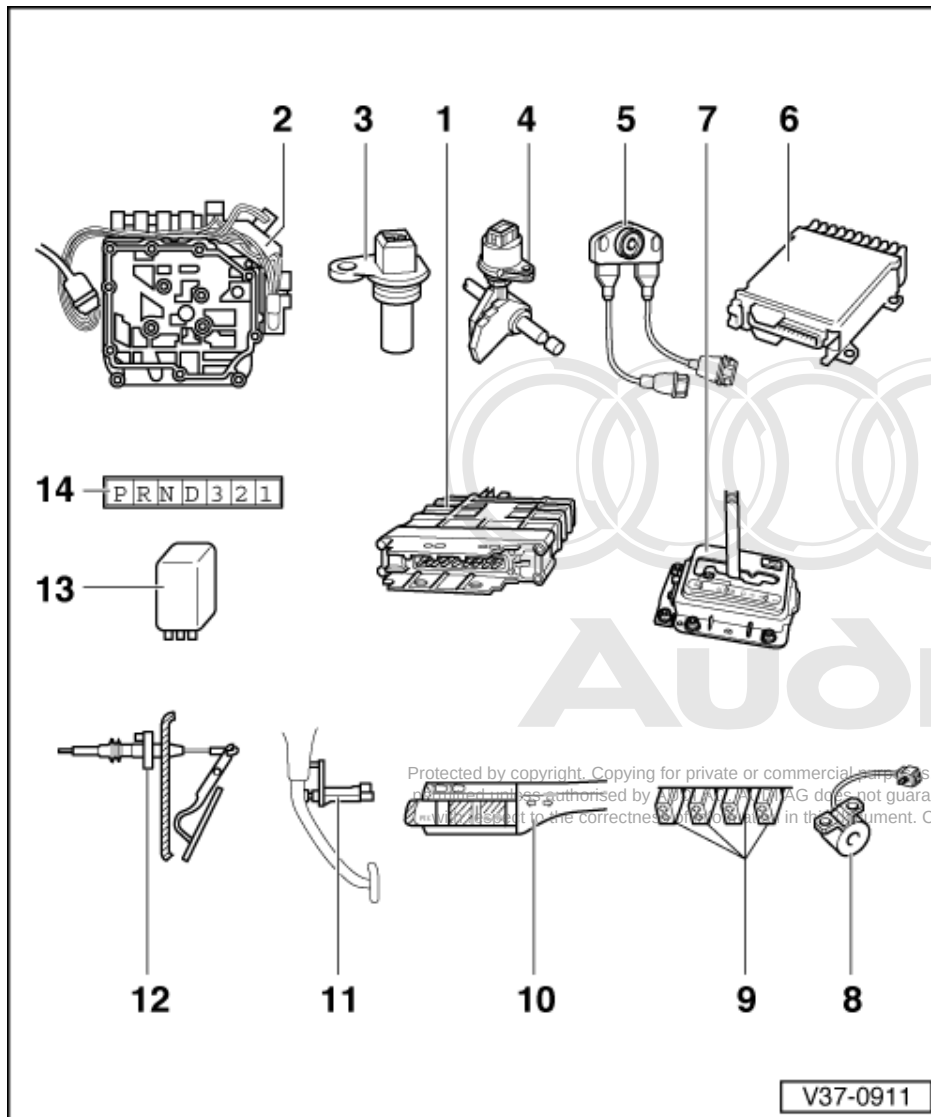
=> Electrical System; Repair Group 94; Servicing steering column switch; Removing and installing steering column switch Servicing steering column switch Removing and installing steering column switch

11 Brake light switch -F

- ♦ Fitting location: Brake light switch is located on pedal cluster

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

- ♦ May be checked with electrical test => Page 32
- ♦ -F is tested by self-diagnosis



12 Kickdown switch -F8

- ◆ Fitting location: 6-cyl.-engine on throttle valve unit
- ◆ Fitting location: Kickdown-switch is integrated into accelerator (pedal) and located in front of front cross panel in engine compartment => Repair group 20 of corresponding workshop manual
- ◆ -F8 is tested by self-diagnosis

13 Relay for ignition lock and reverse light -J226

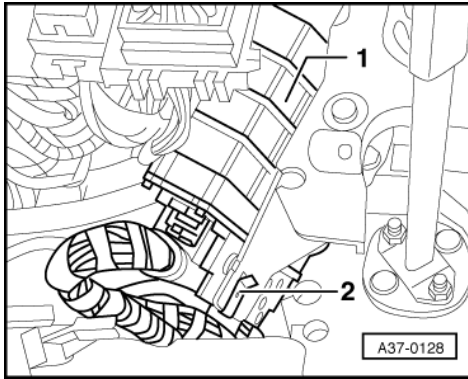
- ◆ Fitting location: Relay carrier

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

14 Selection range display -Y5

- ◆ Fitting location: In the 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



-> Fig.1 Fitting location of control unit for automatic gearbox -J217

Fitting location: Control unit -1- is located on pedal cluster above the brake pedal.

Removing

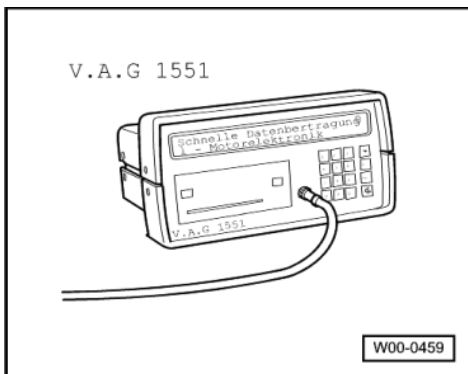
- Release retaining spring -2- and take off control unit.
- Switch ignition off, release multiplug connection and remove from control unit.

Installing

- Connect multiplug connection to connectors of control unit -J217, then lock connection

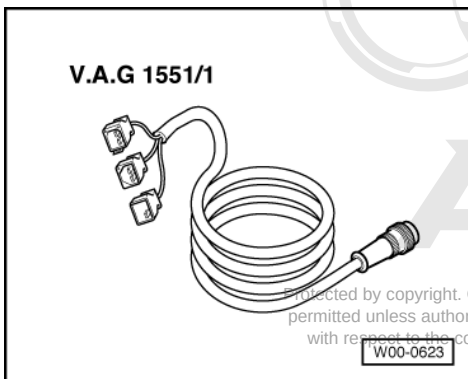
3 - Performing self-diagnosis

3.1 - Performing self-diagnosis



Special tools, testers and auxiliary equipment required

- ♦ -> V.A.G 1551 fault reader



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- ◆ -> V.A.G 1551/1 line

Additionally required information

- ◆ Workshop manual Audi 80 1992 ä, Automatic gearbox 097
- ◆ Binder: "Current flow diagrams, Fault finding electrics and fitting locations Audi 80 1992 ä"
- ◆ Technical Service Manual
- ◆ Replacement part catalogue

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

Safety precautions

Observe the following if testers and measuring instruments have to be used during test drives:

- ◆ Testers and measuring instruments must always be secured to the rear seat and operated by a 2nd person from this location.

Operation of testers and measuring instruments from the front passenger seat could result in injuries to the person sitting there in the event of an accident (activation of passenger's airbag).

Test requirements

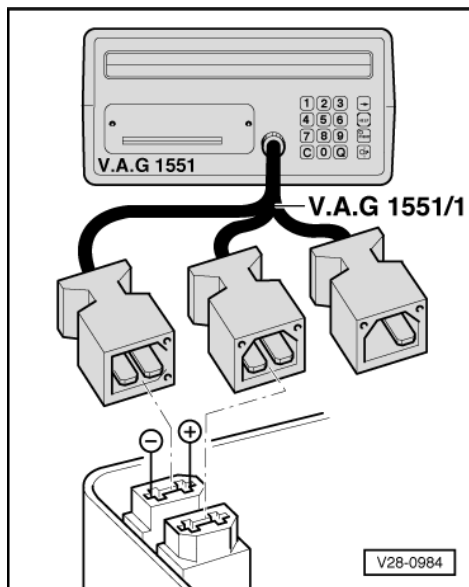
- Supply voltage of vehicle electrical system OK
- Fuses Nos. 4, 12 and 21 OK.

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

- Earth connections for gearbox OK.

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

- Selector lever in position "P" and handbrake applied.
- Check earth connections for corrosion and damaged connections and repair, if necessary.





The earth connection point is on engine block

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

- Check battery earth cable and earth cable between battery and gearbox.
- Remove cover of relay station I at left of plenum chamber.
- -> With ignition switched off, connect fault reader with diagnostic wire V.A.G 1551/1 to diagnostic connector in relay station I as follows:
 - Black connector on black diagnostic connector.
 - White connector on white diagnostic connector.
 - Blue connector is not required.

-> Indicated on display:

V.A.G - SELF DIAGNOSIS HELP
 1 - Rapid data transfer 1)
 2 - Flash code output 1)

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1) appears alternately

- ♦ Additional operating instructions can be called up with the fault reader HELP key of the V.A.G 1551.
- ♦ The ➡ key is used for the continuation of the program sequence.
- ♦ In operating mode 1 "Rapid data transfer" the automatic test sequence (keys 00) is carried out. Then all vehicle control units will be interrogated automatically.

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

- Switch ignition on.
- 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 (02 enters address word "Gearbox electronics").

-> Indicated on display:

Rapid data transfer Q
 02 Gearbox electronics

- Confirm entry with Q key.

Example:

-> Indicated on display:

097927731 L DIGIMAT 0621
 Coding 00127 WSC 131071

Indicated is control unit identification, coding and operating number of V.A.G 1551:

Control unit identification

Depending on model (program status) the control unit may display a different control unit identification than shown in this example. Allocation of control unit:

=> Replacement part catalogue

- ♦ 097927731 L: Part number
- ♦ DIGIMAT 0621: 3-speed automatic gearbox 097
- ♦ Coding 00127: Currently not required.
- ♦ WSC 131071: Workshop Code for the V.A.G 1551 which was used to perform the last encoding

-> Indicated on display:

Control unit does not answer! HELP

- Print a list of possible fault causes by pressing the HELP key.
- After elimination of possible fault causes re enter address word 02 for "Gearbox electronics" and confirm.

If "control unit does not answer" is displayed:

-> Indicated on display:

Control unit does not answer! HELP

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Check voltage supply of control unit:

- Carry out test step 1 => Page 32, Electrical testing.
- Check line connections to diagnostic connection

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

- => Fault table, Page 14 under fault codes 65535 control unit defective.
- Press => key.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

- Press HELP key to obtain a printout of the available functions.

3.3 - Overview of function selection

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

Further functions which are printed out after pressing the HELP key can be ignored.

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

-> Indicated on display:

Rapid data transfer HELP
Select function XX

3.4 - Interrogating fault memory

- Connect fault reader V.A.G 1551, enter address word "02 Gearbox electronics" and switch further until "Select function XX" is displayed => Page 11 onwards.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

- Press keys 0 and 2 (02 selects the function "Interrogate fault memory").



-> Indicated on display:

Rapid data transfer Q
02 - Interrogating fault memory

- Confirm entry with Q key.

-> The display shows the number of stored faults or "No fault detected!".

X faults detected!

The stored faults are displayed and printed out one after another.

- After display and print out of the last fault the faults must be erased according to fault table => Page 14 onwards.
- Press => key.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

Interrogate according to fault memory and eliminate fault:

- Erasing fault memory => Page 20

3.5 - Fault table

- ♦ All possible faults which are recognised by the control unit for automatic gearbox -J217 and are displayed on V.A.G 1551 during interrogation of fault memory content are listed according to fault code with printer switched on.
- ♦ If faults occur only sporadically or the fault memory was not erased after fault elimination these faults are displayed as "sporadically occurring faults" for a fixed period of time => Fault recognition of gearbox control unit, Page 1.
- ♦ If defective components are detected when the fault memory is read out, also use the current flow diagram to check the wiring to the components for short circuits and open wiring.

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

- ♦ In the "Rapid Data Transfer" mode, the fault code and fault type as numerical value is only printed out if the V.A.G 1551 printer is switched on.
Example: Fault code (5 digit) 65535 000 (Fault type 3 digit)
- ♦ When using program card 7.0, a further number (000) is printed out on right next to fault code. The 3-figure numbers which appear next to the fault codes are system codes and can be ignored.

V.A.G 1551 print-out	
No fault detected!	If "No fault detected!" appears on display after repair self-diagnosis is completed. If the automatic gearbox does not function properly despite self-diagnosis, resume fault finding according to fault finding program. => Binder "Fault recognition. Transmission"; No. 14

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00258 Solenoid valve 1 -N88 Open circuit1) Short to earth 1)	Open circuit or short to earth Solenoid valve 1 -N88 defective	- Check lines and plug-in connections according to current flow diagram 2) - Read measured value block =>Page 22 ; Display group number 004 - Carry out electrical test => Page 32 onwards
00260	Open circuit or short to earth	- Check lines and plug-in connections according to current flow diagram 2)

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
Solenoid valve 2 -N89 Open circuit1) Short to earth 1)	Solenoid valve 2 -N89 defective	- Read measured value block =>Page 22 ; Display group number 004 - Carry out electrical test => Page 32 on- wards

- 1) One of these displays appears in addition to component concerned.
- 2) First check plug-in connections for contact corrosion or water damage and if necessary, replace. When faults are displayed pay special attention to the multiplug in connection at the gearbox between valve body and cable loom.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00262 Solenoid valve 3 -N90 Open circuit1) Short to earth 1)	Open circuit or short to earth Solenoid valve 3 -N90 defective	- Check lines and plug-in connections accord- ing to current flow diagram 2) - Read measured value block =>Page 22 ; Display group number 004 - Carry out electrical test => Page 32 on- wards
00263 Gearbox 0107	Electrical/hydraulic fault Clutch or valve body defective	- Determine gear in which fault occurs =>Page 22 , Read measured value block - Replace valve body => Automatic Gearbox 097; Repair group 38; Removing and installing valve body Dismant- ling and assembling planetary gearbox

- 1) One of these displays appears in addition to component concerned.
- 2) First check plug-in connections for contact corrosion or water damage and if necessary, replace. When faults are displayed pay special attention to the multiplug in connection at the gearbox between valve body and cable loom.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00264 Solenoid valve 4 -N91 Open circuit1) Short to earth 1)	Open circuit or short to earth Solenoid valve 4 -N91 defective	- Check lines and plug-in connections accord- ing to current flow diagram 2) - Read measured value block =>Page 22 ; Display group number 004 - Carry out electrical test => Page 32 on- wards
00266 Solenoid valve 5 -N92 Open circuit1) Short to earth 1)	Open circuit or short to earth Solenoid valve 5 -N92 defective	- Check lines and plug-in connections accord- ing to current flow diagram 2) - Read measured value block =>Page 22 ; Display group number 004 - Carry out electrical test => Page 32 on- wards

- 1) One of these displays appears in addition to component concerned.
- 2) First check plug-in connections for contact corrosion or water damage and if necessary, replace. When faults are displayed pay special attention to the multiplug in connection at the gearbox between valve body and cable loom.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
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00268 Solenoid valve 6 -N93 Open circuit1) Short to earth 1)	Open circuit or short to earth Solenoid valve 6 -N93 defective	- Check lines and plug-in connections according to current flow diagram 2) - Read measured value block =>Page 22 ; Display group number 002 - Carry out electrical test => Page 32 onwards
00270 Solenoid valve 7 -N94 Open circuit1) Short to earth 1)	Open circuit or short to earth Solenoid valve 7 -N94 defective	- Check lines and plug-in connections according to current flow diagram 2) - Read measured value block =>Page 22 ; Display group number 004 - Carry out electrical test => Page 32 onwards

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

2) First check plug-in connections for contact corrosion or water damage and if necessary, replace. When faults are displayed pay special attention to the multiplug in connection at the gearbox between valve body and cable loom.

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V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00281 Road speed sender -G68 No signal	Open circuit Road speed sender -G68 defective	- Check lines and plug-in connections according to current flow diagram 1) - Read measured value block =>Page 32 onwards Replace road speed sender -G68 => Automatic Gearbox 097; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock

1) First check plug-in connections for contact corrosion and water damage and replace, if necessary.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00293 Multi-function switch -F125 Undefined switch position	Open circuit Multi-function switch -F125 defective Selector shaft not secured in axial direction (e.g. after dismantling of parking lock)	- Check lines and plug-in connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display group number 001 - Carry out electrical test => Page 32 onwards Replace multi-function switch -F125 => Automatic Gearbox 097; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock Check axial play of selector shaft at selector shaft lever (multi-function switch - F125 dismantled)

1) First check plug-in connections for contact corrosion and water damage and replace, if necessary.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00296 Kickdown switch -F8	Open circuit Throttle valve potentiometer defective	- Check lines and plug-in connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display group number 001

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
	Kickdown switch -F8 defective	- Carry out electrical test => Page 32 onwards Adjusting/replacing throttle cable => Repair group 20 of respective engine workshop manual
00299 Program switch -E122 Short circuit to earth	Open circuit or short to earth Program switch defective Kickdown switch -F8 defective	- Check lines and plug-in connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display group number 001 and 005 - Carry out electrical test => Page 32 onwards Replace Program switch => Automatic Gearbox 097; Repair group 38; Servicing shift mechanism Servicing shift mechanism

- 1) First check plug-in connections for contact corrosion and water damage and replace, if necessary.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00300 Sender for gearbox oil temperature -G93 1) No fault type identified	Open circuit Sender for gearbox oil temperature (ATF) -G93 defective	- Check lines and plug-in connections according to current flow diagram 2) - Read measured value block =>Page 22 ; Display group number 005 - Carry out electrical test =>Page 32 onwards; Replace sender for gearbox oil temperature (ATF) -G93 if necessary => Automatic Gearbox 097; Repair group 38; Removing and installing valve body Removing and installing valve body

- 1) A defective ATF temperature sender is displayed.
2) First check plug-in connections for contact corrosion and water damage and replace, if necessary.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00518 Throttle valve potentiometer -G69 Signal outside tolerance	Open circuit or short to earth Engine control unit or throttle valve potentiometer -G69 defective	- Check lines and plug-in connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display group number 001 - Carry out electrical test => Page 21

- 1) First check plug-in connections for contact corrosion and water damage and replace, if necessary.

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V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00526 Brake light switch -F	Open circuit Brake light switch -F defective	- Check lines and plug-in connections according to current flow diagram 1) - Carry out electrical test => Page 32 onwards



No fault type identified		- Replace brake light switch -F => Running gear; Repair group 47; Assembly overview: Pedal cluster, brake pedal Assembly overview: Pedal cluster, brake pedal
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- 1) First check plug-in connections for contact corrosion and water damage and replace, if necessary.

V.A.G 1551 print-out	Possible causes of fault	Fault remedy
00529 Speed information missing	Open circuit	- Check lines and plug-in connections according to current flow diagram 1) - Read measured value block =>Page 22 ; Display group number 003 Check engine control unit => Repair group 01 of respective engine workshop manual
00532 Supply voltage	Battery defective Supply voltage for solenoid valves too low	- Check battery voltage => Electrical system; Repair group 27; Battery Battery - Read measured value block =>Page 32 onwards

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- 1) First check plug-in connections for contact corrosion and water damage and replace, if necessary.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00545 Engine/gearbox electrical connection Open circuit1) Short to earth 1)	Open circuit or short to earth No connection between engine/gearbox control unit	- Check lines and plug-in connections according to current flow diagram - Read measured value block =>Page 22 ; Display group number 005 - Check signals from engine to gearbox, => Repair group 23 or 24 of respective engine workshop manual Check engine control unit, replace if necessary, => Repair group 24 or 25 of respective engine workshop manual Bring system to basic setting =>Page 21

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

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00596 Short circuit between valve wires	Open circuit or short to earth	- Check lines and plug-in connections according to current flow diagram - Carry out electrical test => Page 32 onwards
00638 Engine/gearbox electrical connection 2	Open circuit or short to earth No connection between engine/gearbox control unit	- Check lines and plug-in connections according to current flow diagram - Read measured value block =>Page 22 ; Display group number 003

Open circuit1) Short to earth 1)		- Check signals from engine to gearbox, => Repair group 23 or 24 of respective engine workshop manual Bring system to basic setting =>Page 21
-------------------------------------	--	---

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

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00641 ATF temperature Signal too great1) No fault identified1)	Gearbox is too hot, max. 148 oC. Gearbox switches down to next gear if ATF temperature is too high. Vehicle trailer load too high ATF-level not OK Sender for gearbox oil temperature (ATF) defective	- Checking 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 number 005; Read out ATF temperature - Replace cable loom in gearbox Removing and installing cable loom => 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 component concerned.

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00652 Gear monitoring Implausible signal	Electrical/hydraulic fault Clutch or valve body defective	- Read measured value block =>Page 22 ; Display group number 004 and during driving, determine in which gear fault occurs - Replace valve body => Automatic Gearbox 097; Repair group 38; Removing and installing valve body Dismantling and assembling planetary gearbox

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
00660 Kickdown switch/throttle valve potentiometer Implausible signal	Open circuit -G69 throttle valve potentiometer defective Kickdown switch -F8 defective	- Check lines and plug-in connections according to current flow diagram - Read measured value block =>Page 22 ; Display group number 001 - Carry out electrical test => Page 32 onwards Adjusting/replacing throttle cable => Repair group 20 of respective engine workshop manual

V.A.G 1551 print-out (=> Page 14)	Possible causes of fault	Fault remedy
01236 Solenoid for selector lever lock -N110	Open circuit or short to earth Solenoid for selector lever lock -N110 defective	- Check lines, plug-in connections and solenoid according to current flow diagram - Carry out electrical test => Page 32 onwards



Open circuit1) Short to earth 1)		- Replace solenoid for selector lever lock -N110 => Automatic gearbox 097; Repair group 37; Servicing selector mechanism Servicing selector mechanism
-------------------------------------	--	--

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

Output on printer of V.A.G 1551	Possible causes of fault	Fault remedy
65535 Control unit faulty	Control unit -J217 defective	- Replace control unit =>Page 3 - Bring system to basic setting =>Page 21

After recognition of possible fault cause and elimination of following faults:

- ♦ Mechanical fault
- ♦ Hydraulic fault
- ♦ or electrical/electronic component concerned as well as wiring connections

If control unit -J217 is replaced => Page 21 .

3.6 - Erasing fault memory

Prerequisite:

- Fault memory interrogated => Page 13 .

After fault memory has been successfully interrogated:

-> Indicated on display:

Rapid data transfer HELP
Select function XX

- Press keys 0 and 5 (05 selects the function "Erasing fault memory".)

-> Indicated on display:

Rapid data transfer Q
05 - Erasing fault memory

- Confirm entry with Q key.

-> Shown on display:

Warning
Fault memory not interrogated

If, for example, the ignition was switched on between interrogating and erasing fault memory the fault memory was not erased.

- Adhere strictly to operating sequence i.e. first interrogate fault memory.

-> Indicated on display:

Rapid data transfer
Fault memory is erased.

(After this display appears the fault memory is erased only after approx. 5 seconds).

The fault memory is now erased.

Before interrogating the fault memory again, wait approx. 1 minute.

-> Shown on display:

System is not ready for interrogation.

-> Print out with printer switched on:

1 No fault detected!
00811 3333
System is not ready for interrogation.

Control unit -J217 did not have time to recognise fault.

- Before interrogating the fault memory again, wait approx. 1 minute.
- After interrogating and erasing of fault memory carry out test drive and interrogate fault memory again.

The following must be displayed when interrogating fault memory:

"No fault recognised!"

3.7 - Initiating basic setting

Basic setting is to be carried out after the following repairs:

- ◆ Replacing engine
- ◆ Replacing engine control unit
- ◆ Adjusting throttle valve (idling position)
- ◆ Replacing throttle valve potentiometer -G69 or throttle valve control part -J338
- ◆ Adjusting throttle valve potentiometer -G69 e.g. when adjusting idling switch (engine)
- ◆ Replacing control unit for automatic transmission -J217

Prerequisites:

- Voltage supply in order and all electrical consumers switched off.
- Adjustment of throttle cable OK.
- Fault memory interrogated, possible fault remedied and fault memory erased.
- Connect fault reader V.A.G 1551, enter address word "02 Gearbox electronics" and switch further until "Select function XX" is displayed => Page 11 onwards.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

- Press keys 0 and 4 (04 is used to select the function "Initiating Basic Setting")

Accelerator pedal must be in idling position.

-> Indicated on display:

Rapid data transfer Q
04 - Basic setting

- Confirm entry with Q key.

-> Indicated on display:



Default setting HELP
Enter display group number XXX

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

-> Indicated on display:

System in basic setting 0

System is now in basic setting.

- Depress accelerator pedal to kickdown and hold in this position for 3 seconds.
- Press ➡ key.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

3.8 - Reading measured value block

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Additionally required information

- ♦ Binder: "Current flow diagrams, Fault finding electrics and fitting locations Audi 80 1992 ä"
- Connect fault reader V.A.G 1551, enter address word "02 Gearbox electronics" and switch further until "Select function XX" is displayed => Page **11** onwards.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

- Press keys 0 and 8. (08 selects function "Read measured value block").

-> Indicated on display:

Rapid data transfer Q
08 - Reading measured value block

- Confirm entry with Q key.

-> Indicated on display:

Reading measured value block
Enter display group number XXX

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

Reading measured value block 1
☐ 1 ☐ 2 ☐ 3 ☐ 4

-> The measured value block always contains 4 display fields -arrows- (if necessary, in physical values).
Decoding of values 1 to 4 in the individual display fields => Test table, Page **23**.

List of Display Group numbers for selection

Indicated on display (example)			
Display zones: 1 2 3 4 iiii	Display group no.	Display zone	Designation

Indicated on display (example)			
Reading measured value block 1→ P 0.8 V 0 % 00000111	001	1 2 3 4	Selector lever position Throttle valve potentiometer voltage Accelerator pedal value Switch settings
Reading measured value block 2→ 0.983 A 0.985 A 12.76 V 2.50 V	002	1 2 3 4	Actual voltage of solenoid valve 6 -N93 Specified voltage of solenoid valve 6 - N93 Battery voltage Voltage at road speed sender -G68
Reading measured value block 3→ 0 km/h 900 rpm 0 0 %	003	1 2 3 4	Road speed Engine speed Selected gear Accelerator pedal value
Reading measured value block 4→ 1000 00 0 P 0 km/h	004	1 2 3 4	Solenoid valves Selected gear Selector lever position Road speed
Reading measured value block 5→ 40oC 0011011 0 900 rpm	005	1 2 3 4	ATF temperature Switch outputs Gear to be engaged Engine speed

- ◆ If the printer is switched on, the current display will be printed out on the record slip.
- ◆ If all the display zones show the specified values:

- Press ⇒ key.

→ Indicated on display:

Rapid data transfer	HELP
Select function XX	

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3.9 - Test table

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
001 (cont.) ▼	1	Selector lever position - Multi-function switch - F125	Stationary P	P	- Checking and adjusting selector cable ⇒ Automatic gearbox 097; Repair group 37 Check multi-function switch ⇒ Carry out electrical test, Page 32 on-wards
			Selector R	R	
			lever N	N	
			in D	D	
			3	3	
			2	2	
			1	1	



Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
001	2	Signal voltage of throttle valve potentiometers -G69 1)	Idling min. max. ▪ Engine shut off ▪ Ignition switched on	0.156 V 0.8 V	When accelerating from idling to full throttle the voltage value is continually increased Initiate basic setting =>Page 21 Carry out self-diagnosis of engine
(cont.) ▼			Full throttle min. max.	3.5 V 4.680 V	- Adjust or replace throttle valve potentiometer, => Repair group 24 or 25 of respective engine workshop manual Initiate basic setting =>Page 21

1) If specified values of throttle valve potentiometer are not reached, system must first be brought to basic setting =>Page 21 .

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
001	3	Accelerator pedal value	Stationary Idling	0...1 %	When accelerating from idling to full throttle the % value is continually increased - Initiate basic setting =>Page 21
			Full throttle	99...100 %	
	4	Switch settings 1) Brake light switch -F	Brake operated	1	- Check brake light switch -F => Carry out electrical, Page 32 onwards
		Display 1	not operated	0	
		Traction- 2	activated	1	- Or check lines according to current flow diagram => Binder: "Current flow diagrams, Fault finding electrics and fitting locations"
(cont.) ▼		Traction control	not activated	0	

1) Display on V.A.G 1551 in display zone 4 contains 8-digits, e.g. 10000111. The first position from left (display 1) is related to brake light switch -F. The second position from left (display 2) is related to traction control system, etc.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
001	4	Program switch -E122 Display 3	operated	1	- Carry out electrical test => Page 32 onwards

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
			not operated	0	
	(cont.) ▼	Kickdown switch -F8	Kickdown operated	1	- Check kickdown switch F8 => Carry out electrical test, Page 32 onwards - Check lines and plug-in connections according to current flow diagram => Binder: "Current flow diagrams, Fault finding electrics and fitting locations"
			not operated	0	

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value	
001	4	Check multi-function switch	Display 5	Selector lever in P, R, N, D, 3, 2	1	- Check multi-function switch -F => Carry out electrical, Page 32 onwards Adjust selector lever cable1) => Automatic Gearbox 097; Repair Group 37; Servicing selector mechanism; Removing, installing and adjusting selector lever cable Servicing selector mechanism; Removing, installing and adjusting selector lever cable
				P, 1	0	
		-F125		P, R, 2, 1	1	
				N, D, 3	0	
		7		P, R, N, D	1	
				3, 2, 1	0	
		8		P, R, N,	1	
				D, 3, 2, 1	0	

1) Measure only efficient if selector lever position does not agree with selector lever position display.



Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
002	1	Actual voltage of solenoid valve 6 -N93	▪ Selector lever in "N"	0.0 A	Pay attention to the following points troubleshooting: Actual and specified current must not differ from each other by more than 0.050 A.
			▪ Stationary Full throttle		
		Idling max.	1.1 A	The specified values given here are maximum values.	
	2	Specified voltage of solenoid valve 6 -N93	▪ Selector lever in "N"	0.0 A	Bring system to basic setting =>Page 21
▪ Stationary Full throttle					
			Idling max.	1.1 A	- Check solenoid valve -N93 => Carry out electrical test, Page 32 onwards

(cont.)

▼

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
002	3	Battery voltage	Stationary min.	10.8 V	- Check or replace battery. Check voltage supply to control unit -J217 => Carry out electrical test, Page 32 onwards
				max. 16.0 V	
	4	Road speed sender - G68	Stationary min.	2.20 V	- Check road speed sender -G68 => Carry out electrical test, Page 32 onwards
				max. 2.52 V	

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
003	1	Road speed	During driving1)	...km/h	Display of speedometer and values at V.A.G 1551 can differ slightly.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
(cont.) ▼	2	Engine speed	With engine running	... rpm	- Eliminate engine fault if necessary =>Repair group 01 of respective engine workshop manual Carry out self-diagnosis of engine Check lines and plug-in connections according to current flow diagram

1) During driving: A second mechanic is required to read specified values.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
003 (cont.) ▼	3	Selected gear	During driving 1)	Neutral	- Check solenoid valves => Carry out electrical test, Page 32 onwards
				Reverse	
				1 Hydraulic	
				2 Hydraulic	
				3 Hydraulic	
				3 Mechanical	
				4 Mechanical	

1) During driving: A second mechanic is required to read specified values.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
003	4	Accelerator pedal value	During driving 1)	Idling	When accelerating from idling to full throttle the % value is continually increased - Check throttle valve potentiometer, =>Repair group 24 or 25 of respective engine workshop manual Initiate basic setting =>Page 21
				Full throttle	

1) During driving: A second mechanic is required to read specified values.

Checking solenoid valves during driving

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
			Selector lever in:		



004 (cont.) ▼	1	Solenoid valves / indicated on display of V.A.G 1551: Display 1 2 3 4 5 6	During driving1)		Solenoid valves are switched depending on vehicle status. - Electrical test Carry out =>Page 32 onwards - Troubleshooting after fault- Continue search program => Binder "Fault finding Transmission"; No. 14
			-N88 switched	1	
			not switched	0	
			-N89 switched	1	
			not switched	0	
			-N90 switched	1	
			not switched	0	
			-N91 switched	1	
			not switched	0	
			-N92 switched	1	
			not switched	0	
			-N94 switched	1	
			not shifted	0	

1) During driving with selected gear: A second mechanic is required to read specified values.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
004 (cont.) ▼	2	Selected gear	During driving1)	Neutral	Check solenoid valves => Carry out electrical test, Page 32 onwards
				Reverse	
				1 Hydraulic	
				2 Hydraulic	
				3 Hydraulic	
				3 Mechanical	
				4 Mechanical	

1) During driving: A second mechanic is required to read specified values.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
004	3	Selector lever position	During driving1)	P	- Checking and adjusting selector cable => Automatic gearbox 097; Repair group 37 - Check multi-function switch -F125 =>Carry out electrical test, Page 32 onwards
			Selector lever in: P		
			R	R	
			N	N	
			D	D	

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
(cont.) ▼			3	3	
			2	2	
			1	1	

- 1) During driving: A second mechanic is required to read specified values.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
004	4	Road speed	Speed driven during driving 1)	...km/h	Display of speedometer and values at V.A.G 1551 can differ slightly.
005 (cont.) ▼	1	ATF temperature At a temperature of approx. 50 °C - 70 °C, ATF-level is checked	Stationary with engine running. Exact temperature display only takes place from approx. 50 °C	...°C	- Check gearbox oil temperature sender - G93 => Carry out electrical test, Page 32 onwards

- 1) During driving: A second mechanic is required to read specified values.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
005	2	Switch outputs	During driving 1) Ignition point influence 3)	1	- Check wiring according to current flow diagram. Carry out self-diagnosis of engine => Repair group 01 of respective engine workshop manual
			is switched on		
	cont.- limitation ▼	2 2)	is switched off	0	- Replace control unit for engine if necessary =>Repair group 24 or 25 of respective engine workshop manual
			switched on	1	- Replace gearbox control unit -J217 => Page 3
			switched off	0	- Bring system to basic setting =>Page 21

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- 1) During driving: A second mechanic is required to read specified values.
- 2) In display 1 and 2, "1" or "0" must be displayed on V.A.G 1551 at the same time.
- 3) Ignition point influence is only activated during a switching procedure.



Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
005	2	Switch outputs Display 3	Solenoid for selector lever lock -N110 is switched on	1	- Check solenoid for selector lever lock -N110 => Carry out electrical test, Page 32 onwards
			is switched off	0	
	(cont.) ▼	4	switched on	1	
			switched off	0	

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
005	2	Switch outputs Display 5	Cruise control system switched on	1	- Check lines and plug-in connections according to current flow diagram - Test cruise control system => "Current Flow Diagrams, Electrical Fault Finding and Fitting Locations" binder
			switched off	0	
	(cont.) ▼				

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
005	2	Switch outputs Display 6	Air conditioner is switched off	1	Check wiring according to current flow diagram.
			is not switched off	0	
		7	Lamp in Program switch		- Testing air conditioner => Heating/air conditioner; Repair group 01; Self-diagnosis Self-diagnosis
			switched on	1	
(cont.) ▼			switched off	0	- Check wiring according to current flow diagram.

Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
005	3	Gear to be engaged	During driving 1) Neutral	0	- Check solenoid valves => Carry out electrical test, Page 32 onwards - If shifting does not take place, a clutch or brake may be defective => Binder "Fault recognition. Transmission"; No. 14 - Replace gearbox control unit -J217 => Page 3
			Reverse	R	
			1 Hydraulic	1	
			2 Hydraulic	2	
			3 Hydraulic	3H	
			3 Mechanical	3M	
(cont.) ▼			4 Mechanical	4	

1) During driving: A second mechanic is required to read specified values.

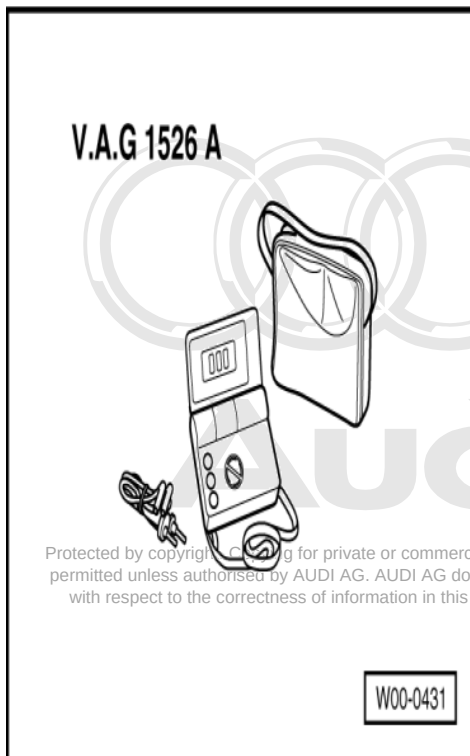
Display group no.	Display zone	Designation	Test conditions	Display at V.A.G 1551 specified value	Action in the event of deviation from specified value
005	4	Engine speed	During driving 1) With engine running	... rpm	- Eliminate engine fault if necessary => Repair group 01 of respective engine workshop manual Check lines and plug-in connections according to current flow diagram

1) During driving: A second mechanic is required to read specified values.



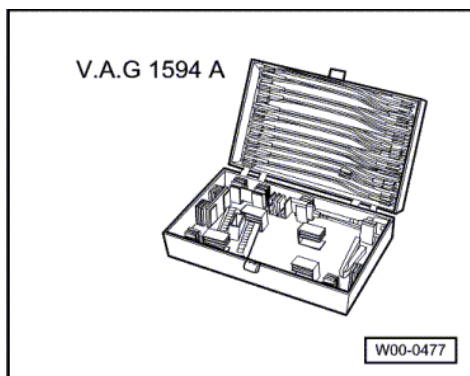
4 - Electrical test

4.1 - Electrical test



Special tools, testers and auxiliary equipment required

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



- ♦ -> Adapter cable set V.A.G 1594 A

Additionally required information

- ♦ Workshop manual Audi 80 1992 ä, Automatic gearbox 097
- ♦ Binder: "Current flow diagrams, Fault finding electrics and fitting locations Audi 80 1992 ä"

Test requirements

- Battery voltage OK.

- Fuse No. 4, 12 and 21 OK.

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

- Fuses of the component to be tested OK.
- Earth connections and earth point for gearbox OK.

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

- Check earth connections for corrosion and damaged connections and repair, if necessary.
- Check battery earth cable and earth cable between battery and gearbox.

Warning

In order to avoid destroying the electronic components the corresponding measuring range must be switched on at the measuring unit before connecting the test lines.

Notes:

- ♦ Testing is to be carried out with the hand-held multimeter V.A.G 1526 A or V.A.G 1715. For previous versions of the hand-held multimeter V.A.G 1526 A, the current measuring ranges are given which must be set before respective measurements.
- ♦ The specified values given are valid for an ambient temperature of 0 °C to 40 °C.
- ♦ If the measured values deviate from the specified values find fault according to current flow diagram.
- ♦ If the measured values deviate only slightly from the nominal values clean bushings and connectors of the control units and test lines and repeat test. Before replacing the corresponding components their lines and connectors must be tested. Especially with specified values under 10 Ω the resistance measurement at the component must be repeated.
- ♦ To connect test devices use test box V.A.G 1598/9.
- ♦ The terminal numbers of the connectors and bushing numbers of the test box V.A.G 1598/9 match => Page 33.
- ♦ Switch ignition off for all tests, disconnect multiplug connection (connector plug) from control unit for automatic gearbox -J217- (control unit is in front left footwell above foot brake pedal bracket).
- ♦ Connect test box V.A.G. 1598 with adapter V.A.G 1598/9 to connector plug of wiring loom.

Voltage measurement:

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

Resistance measurement:

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

- If the measured values deviate from the specified values carry out measures for the deviation from specified value in the right part of the test table=>Page 34.
- Carry out all measures listed in the column "Measures for deviation from nominal value".
- Only carry out test steps recommended in the fault table (targeted approach).

Contact assignment of 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- Not assigned	23- Solenoid valve 2 -N89
5- Bulb for program switch -E122	24- Solenoid valve 5 -N92
6- K-wires of diagnosis	25- Solenoid valve 6 -N93
7- Traction control system (ABS/EDS)	26- Brake light switch -F, signal voltage
8- Kickdown for air conditioner	27- TD-signal



9- Throttle valve potentiometer -G69 Signal voltage	28- Ignition point influence
10- Throttle valve potentiometer -G69 5 Volt supply voltage	29- Throttle valve potentiometer -G69, earth
11- Not assigned	30- Sender for gearbox oil temperature -G93 (ATF)
12- Selection range display -Y5	31- Not assigned
13- Road speed sender -G68, screening	32- Road speed sender -G68
14- Not assigned	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- Kickdown switch -F8	36- Program switch -E122
18- Supply voltage for solenoid valves	37- -F60 idling switch
19- Supply voltage (Terminal 15)	38- Cruise control system

Overview of test steps

Only carry out test steps listed according to component in the fault table and the measured value block.

Component tested		Component tested	
Supply voltage from 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
Solenoid for selector lever lock -N110	- Carry out 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	Kickdown 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	Program switch -E122	- Perform test step 16
Solenoid valve 3 -N90	- Perform test step 8	Sender for gearbox oil temperature -G93 (ATF)	- Perform test step 17

4.2 - Test table

Switch on measuring range: Voltage measurement 20 V					
Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
1	19 + 1	Supply voltage from control unit -J217	▪ Ignition switched on	approx. battery voltage	- Check wiring according to current flow diagram. Check wiring from contact 1 to earth. Check wiring from contact 19 to terminal 15 (central electrics).

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Switch on measuring range: Voltage measurement 20 V

Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value	
2 1)	10 + 29	Throttle valve potentiometer - G69	▪ Ignition switched on Pull connector off throttle valve potentiometer.	4.6 to 5 V	- Check wiring according to current flow diagram. Replace gearbox control unit -J217 => Page 21	
	9 + 29		▪ Ignition switched on	4.6 to 5 V	When accelerating from idling to full throttle the voltage value is continually increased	
				Idling min. Idling max.	0.156 V 0.8 V	- Adjust or replace throttle valve potentiometer, => Repair group 24 or 25 of respective engine workshop manual
				Idling min. Idling max.	3.5 V 4.68 V	- Bring system to basic setting =>Page 21

1) Cannot be tested on vehicles with 6-cylinder injection engine as of engine control unit component no. 8A0 906 266B (approx. June 1991). Setting of throttle valve is transmitted from engine control unit to gearbox control unit.

Switch on measuring range: Voltage measurement 20 V					
Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
3	19 + 20	Solenoid for selector lever lock -N110	▪ Ignition switched on ▪ Selector lever in position P or N	approx. battery voltage	- Check wiring according to current flow diagram. Replace gearbox control unit -J217 => Page 21
			▪ With brake actuated	Less than 1 V	- Perform test step 4, if necessary replace gearbox control unit -J217 => Page 21
4	26 + 1	Signal from brake light switch -F	▪ Ignition switched on Brake pedal not pressed	Less than 1 V	- Check wiring according to current flow diagram. Replace brake light switch -F and adjust
			- Press brake pedal	approx. battery voltage	

Switch on measuring range: Voltage measurement 20 V



Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
5	34 + 1	Multi-function switch -F125	▪ Ignition switched on Selector lever position N, D, 3 and 2	4.5 to 5 V	- Check wiring according to current flow diagram. - Replace multi-function switch - Replace multi-function switch => Automatic gearbox 097 Repair group 38; Dismantling and assembling parking lock
			- Selector lever position P and 1	0 to 0.8 V	
			- Selector lever position R	approx. battery voltage	
	15 + 1		- Selector lever position P, R, 2 and 1	4.5 to 5 V	
			- Selector lever position N, D and 3	0 to 0.8 V	
	35 + 1		- 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 on measuring range: Resistance measurement 200 ω					
Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
6	22 + 18	Solenoid valve 1 -N88	▪ Ignition switched off ▪ Control unit -J217 disconnected	55 to 65 ω	- Check wiring according to current flow diagram. - Replace 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 -N91	▪ Ignition switched off ▪ Control unit -J217 disconnected	55 to 65 ω	
	2 + 1			infinite ω 1)	

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1) Switch V.A.G 1526 A to highest ω -range

Switch on measuring range: Resistance measurement 200 ω

Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
10	24 + 18	Solenoid valve 5 -N92	▪ Ignition switched off ▪ Control unit -J217 disconnected	55 to 65 ω	- Check wiring according to current flow diagram. - Replace valve body => Automatic gearbox 097 Repair group 38; Removing and installing valve body
	24 + 1			infinite ω 1)	
11	25 + 18	Solenoid valve 6 -N93	▪ Ignition switched off ▪ Control unit -J217 disconnected	4.5 to 6.5 ω	
	25 + 1			infinite ω 1)	
12	21 + 18	Solenoid valve 7 -N94	▪ Ignition switched off ▪ Control unit -J217 disconnected	55 to 65 ω	
	21 + 1			infinite ω 1)	

1) Switch V.A.G 1526 A to highest ω -range

Switch on measuring range: Resistance measurement 200 ω					
Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
13	19 + 20	Solenoid for selector lever lock -N110	▪ Ignition switched off ▪ Control unit -J217 disconnected	14 to 25 ω	- Check wiring according to current flow diagram. Replace solenoid for selector lever lock -N110 => Automatic gearbox 097; Repair group 37; Servicing selector mechanism
14	1 + 17	Kickdown switch -F8	▪ Ignition switched off ▪ Control unit -J217 disconnected ▪ Accelerator pedal not pressed down	infinite ω 1)	- Check wiring according to current flow diagram. Adjust or replace accelerator cable
			▪ Accelerator pedal depressed to kickdown	Less than 1.5 ω	=>Repair group 20 of respective engine workshop manual

1) Switch V.A.G 1526 A to highest ω -range

Switch on measuring range: Resistance measurement 20 kw					
Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
15	32 + 33	Road speed sender -G68	▪ Ignition switched off ▪ Control unit -J217 disconnected		- Check wiring according to current flow diagram.



			min.	0.8 kw	- Replace road speed sender => Automatic gearbox 097 Repair group 38; Dismantling and assembling parking lock
			max.	0.9 kw	

Switch on measuring range: Resistance measurement 200 ω					
Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
16	36 + 1	Program switch -E122	▪ Ignition switched off ▪ Control unit -J217 disconnected ▪ Program switch not actuated	infinite ω 1)	- Check wiring according to current flow diagram. Replace Program switch => Automatic gearbox 097; Repair group 37; Servicing selector mechanism Servicing selector mechanism
			▪ Program switch actuated	Less than 1.5 ω	

1) Switch V.A.G 1526 A to highest ω -range

Switch on measuring range: Resistance measurement 2 Mw					
Test step	V.A.G 1598/18 socket	Testing of	▪ Test conditions - Additional operations	Specification	Action in the event of deviation from specified value
17	30 + 18	Sender for gearbox oil temperature -G93 (ATF)	▪ Ignition switched off ▪ Control unit -J217 disconnected ▪ ATF temperature approx. 20 oC - Switch hand-held multimeter V.A.G 1526 to 200 kw approx. 60 oC approx. 120 oC	0.247 Mw 48.8 kw 7.4 kw	- Check wiring according to current flow diagram. - Replace valve body => Automatic gearbox 097 Repair group 38; Removing and installing valve body