

Audi 100 1991 ➤

Automatic gearbox 01N Self-diagnosis								
Geartype	01N							

Edition 01.1998



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

Automatic gearbox 01N 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 Automatic gearbox 01N Self-diagnosis - Edition 01.1998



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01 - Self-diagnosis, Electrical check

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.

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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 in the event of an electronic/electrical component failure or an open circuit the cause of the fault can be determined quickly. Faults are detected via electrical signals and are stored in the fault memory.

After processing the available information, the automatic gearbox control unit distinguishes between sporadic (intermittent) faults and static (continuously present) faults and stores them accordingly
=> Fault table from Page **20**.

If faults occur in the monitored sensors or components, these are stored in the fault memory together with an indication of the nature of the fault.

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 or after the vehicle is driven a certain distance, it is classified as a sporadic fault.

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.

Faults which are stored in the memory as sporadic faults are automatically erased after 40 gearbox cold starts (followed by gearbox warm-up).

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 **19**.

Safety functions of gearbox control unit

If critical faults occur when driving, the gearbox will continue to operate in a back-up mode, or "emergency running" program. If the fault occurs with the selector lever in "D", "3" or "2", the emergency running program will engage 3rd gear.

If engine speed and road speed signals are missing and the 4 ⇒ 3 kick-down speed has been exceeded once, the gearbox will switch to "N".

If the fault occurs in "1", "P", "N" or "R", the emergency running program will retain whichever gear is engaged.



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.

If the engine is started again with the gearbox in emergency running mode and the fault still occurs, 3rd gear will be activated hydraulically (when the selector lever is in position "D", "3" or "2") until the fault is rectified.

Faults which may lead to emergency running:

Open circuit in wiring, short-circuit, electrical or hydraulic components defective (=> 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
00297	Gearbox speed sender -G38
00529	Speed information missing
00545	Engine/gearbox electrical connection
00652	Gear monitoring
65535	Control unit defective

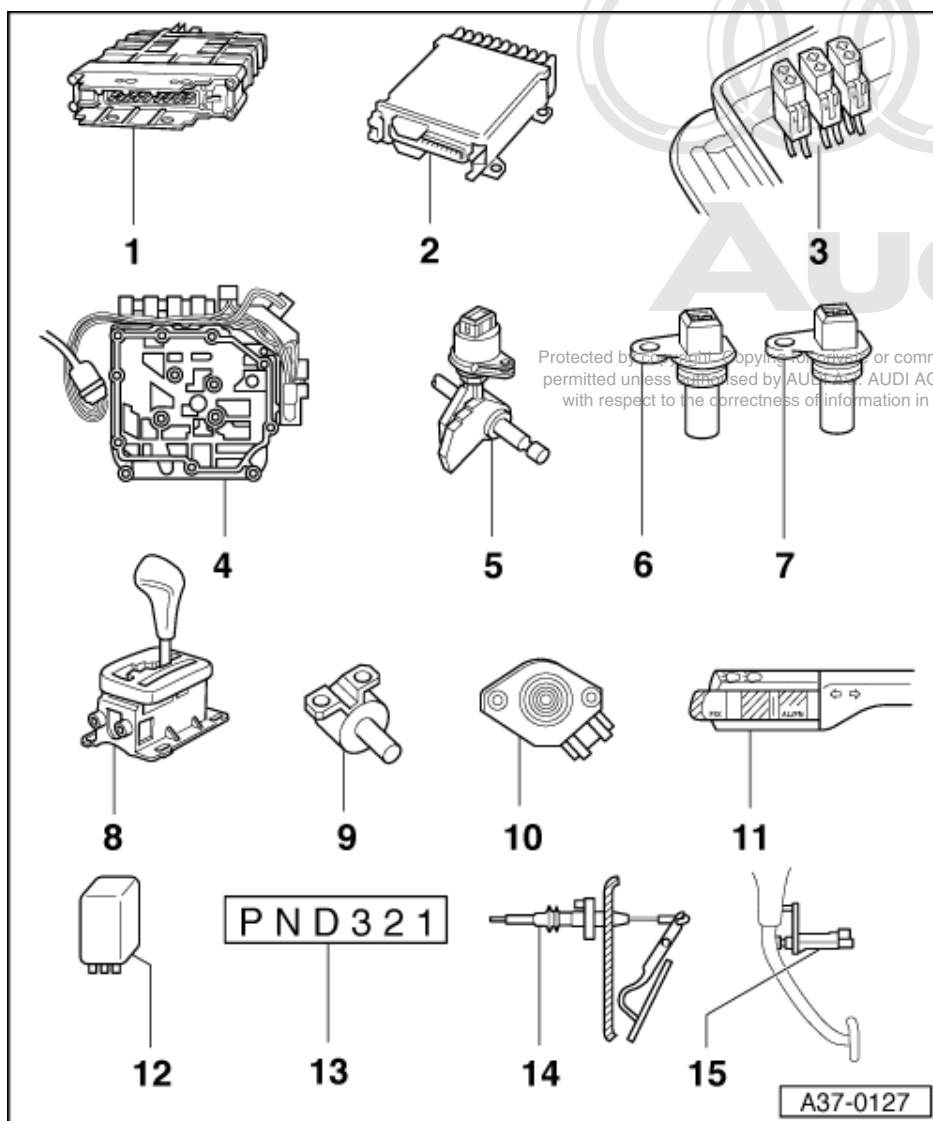
1.2 - Technical data of self-diagnosis

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/electronic components

2.1 - Locations of electrical/electronic components



1 Automatic gearbox control unit -J217-

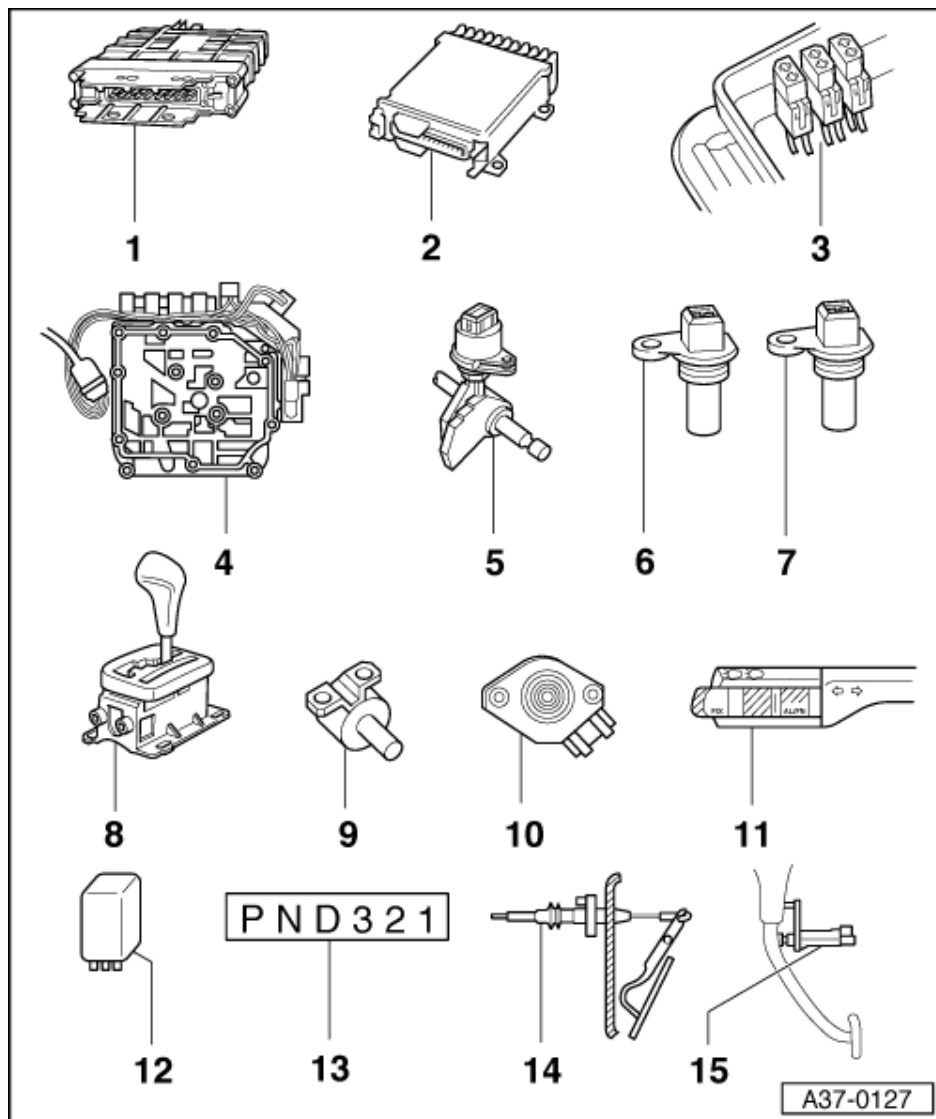
- ◆ Location
=> Fig. 11
- ◆ Removing
=> Fig. 11
- ◆ Installing
=> Fig. 12
- ◆ Is tested by self-diagnosis
=> Performing self-diagnosis,
page 17

2 Engine control unit

- ◆ Location
=> Fig. 12

Note:

If engine or gearbox control units are replaced, the system must be brought to basic setting => page 31, Initiating basic setting.



3 Diagnosis connection

- ◆ Location: in auxiliary relay carrier I, in plenum chamber, left
- ◆ Connect fault reader V.A.G 1551 (or V.A.G 1552) and select functions
=> page 17

4 Valve body

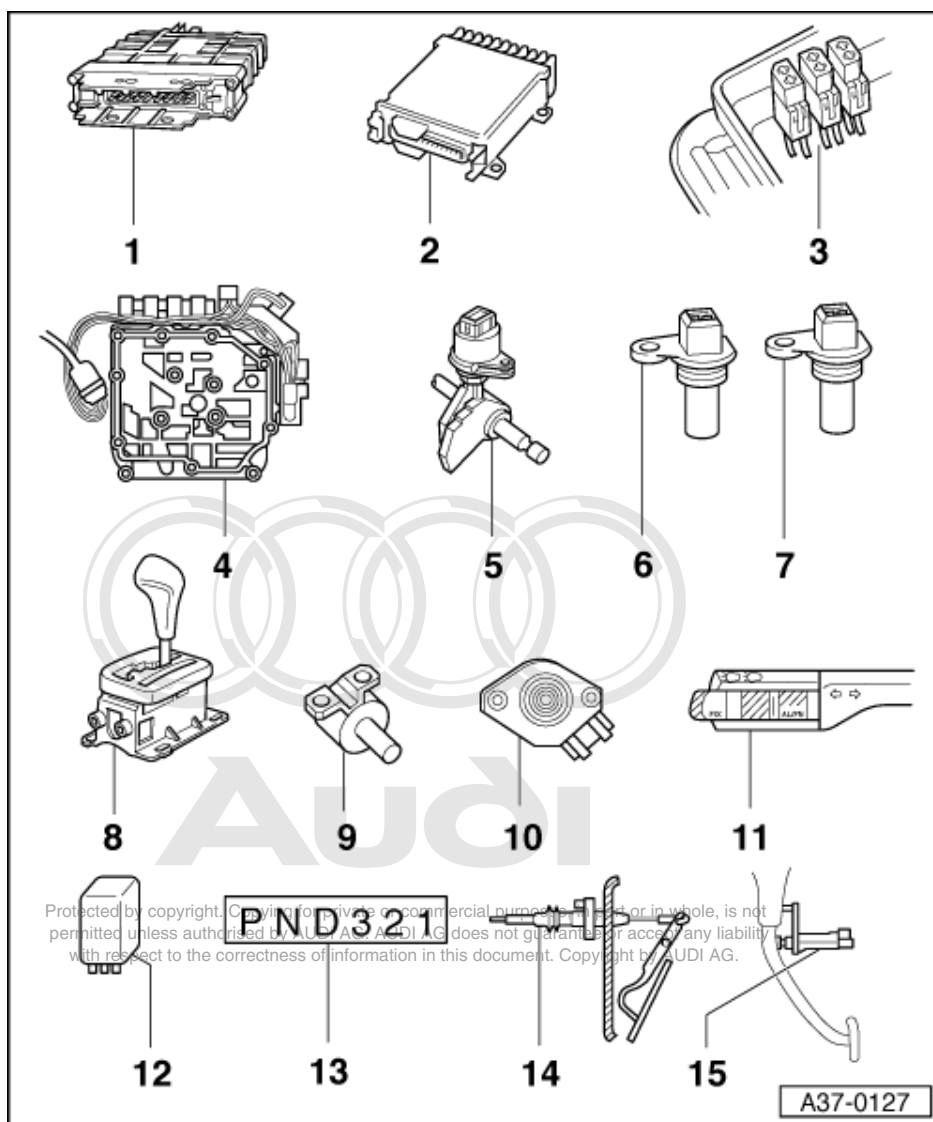
- ◆ Location => Fig. 13
- ◆ The solenoid valves -N88-, -N89-, -N90-, -N91-, -N92-, -N93- and -N94- are attached to the valve body.
- ◆ The gearbox oil temperature sender (ATF) -G93- is integrated in the conductor strip (to solenoid valves); removing and installing

=> Automatic gearbox 01N; Repair group 38; Removing and installing valve body Removing and installing valve body

- ◆ Location => Fig. 13
- ◆ Components are checked by self-diagnosis



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5 Multi-function switch -F125-

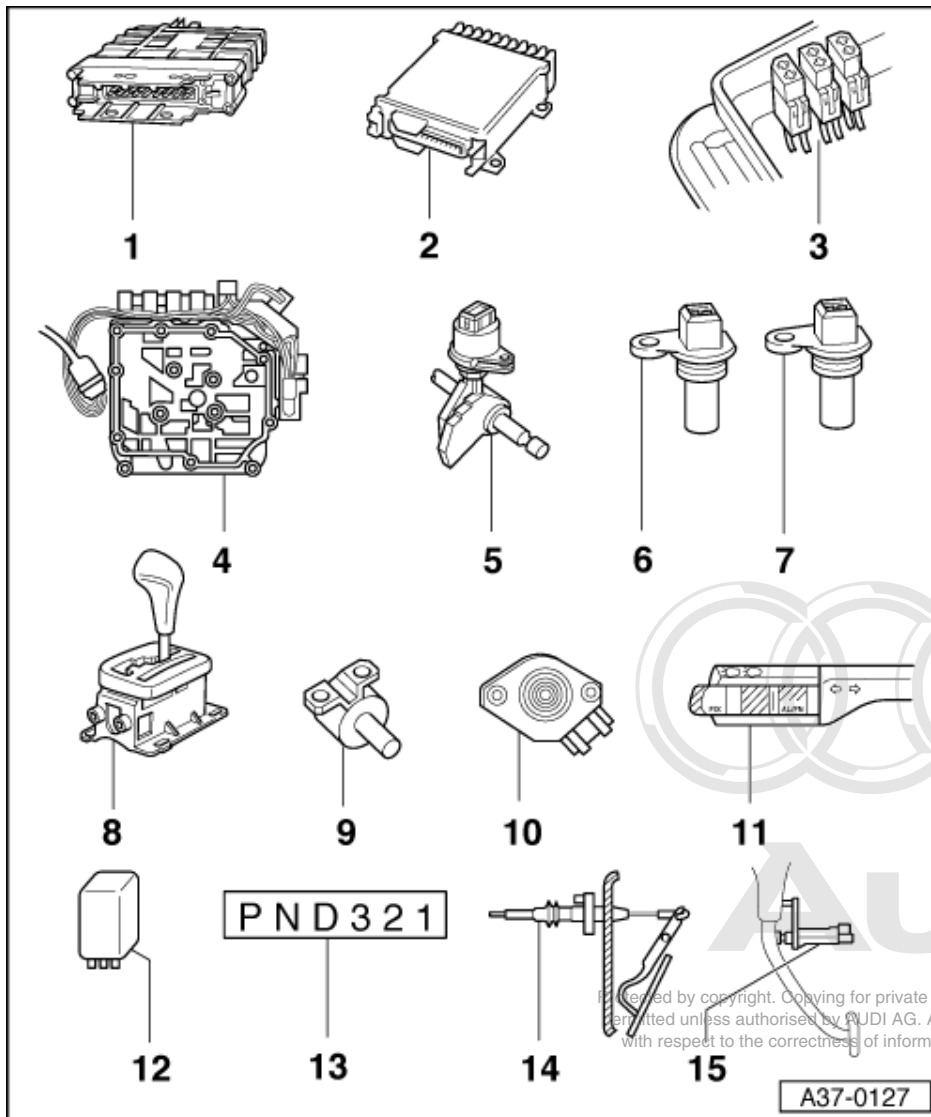
- ◆ Location and removing and installing =>Fig. 14
- ◆ Checked by self-diagnosis

6 Road speed sender -G68-

- ◆ Location and removing and installing =>Fig. 15
- ◆ Checked by self-diagnosis
- ◆ Functioning is impaired by dirt; clean if necessary

7 Gearbox speed sender -G38-

- ◆ Location and removing and installing =>Fig. 14
- ◆ Checked by self-diagnosis
- ◆ Functioning is impaired by dirt; clean if necessary



8 Shift mechanism

- ♦ Repairing shift mechanism

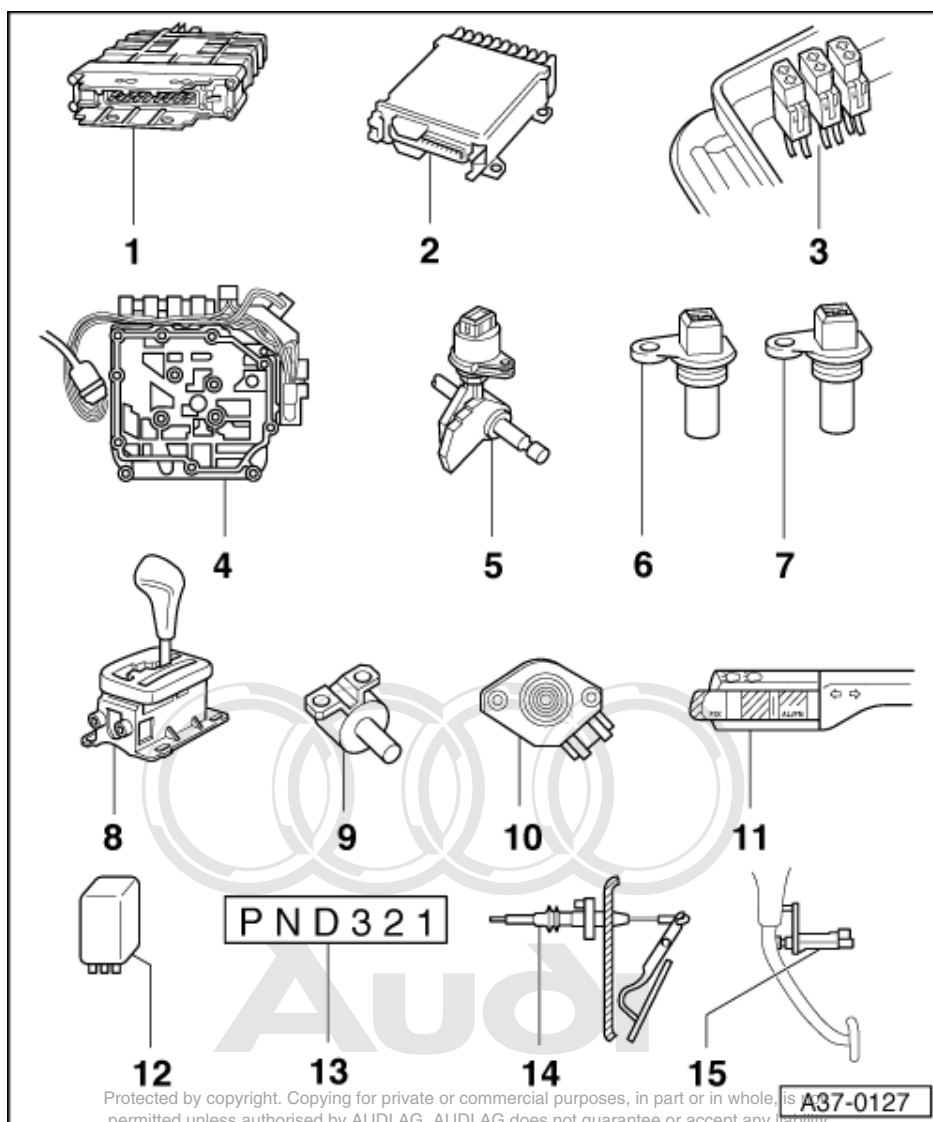
=> Automatic Gearbox 01N; Repair Group 37; Repairing shift mechanism Repairing shift mechanism

9 Solenoid for selector lever lock -N110-

- ♦ Location: at front of shift mechanism
- ♦ Removing and installing

=> Automatic Gearbox 01N; Repair Group 37; Repairing shift mechanism Repairing shift mechanism

- ♦ Testing in measured value block => from page 48



10 Throttle valve potentiometer -G69-

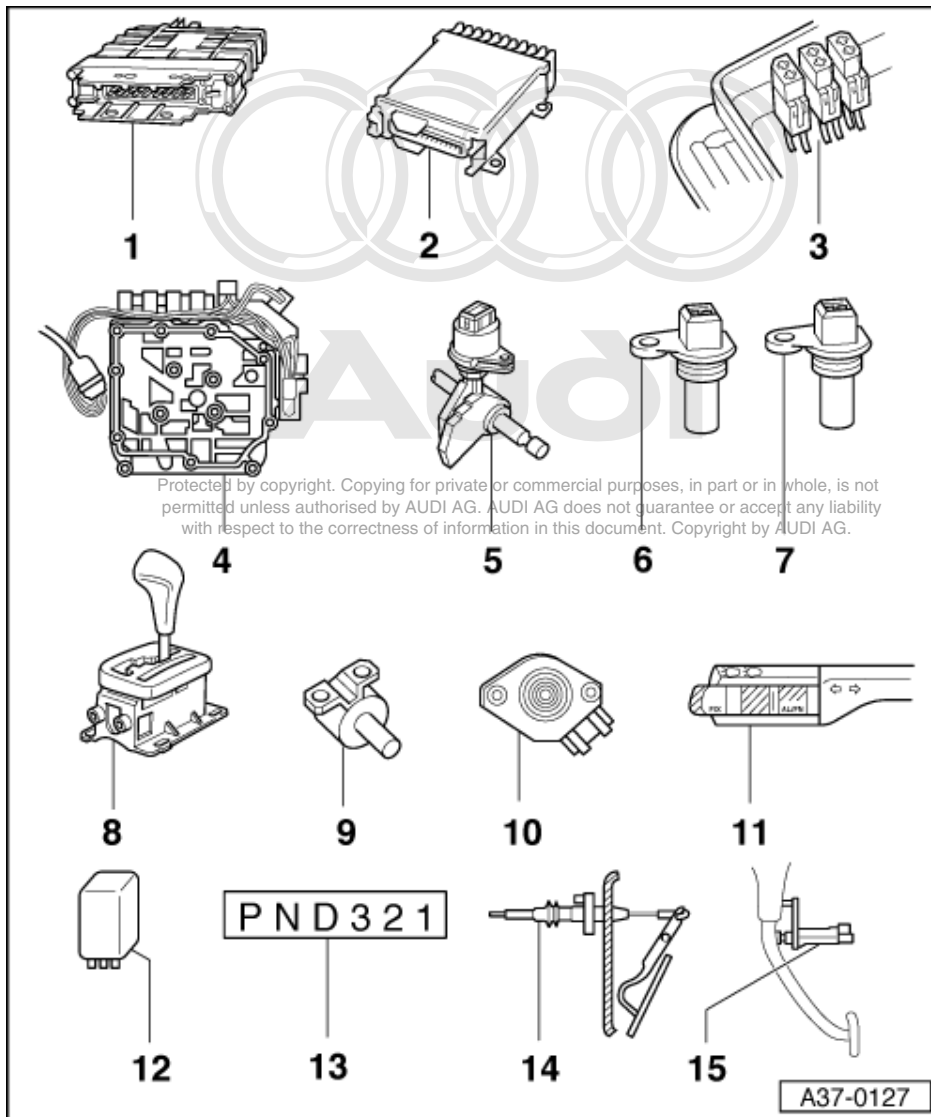
- ◆ Location (2.0 litre - 85 kW): on throttle valve housing
- ◆ Location (1.8 litre - 92 kW): integrated in throttle valve control part -J338
- ◆ Removing and installing, adjusting

=> Injection and ignition system; Repair group 24

- ◆ TDI engines: accelerator position sender -G79-
- ◆ Removing and installing, adjusting

=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23

- ◆ Signal is checked by self-diagnosis
- ◆ The signal is transmitted from the throttle valve control part to the gearbox control unit via the engine control unit. The signal can only be checked in the measured value block => page 32



- ♦ If self-diagnosis indicates that the throttle valve potentiometer or the throttle valve control part is the cause of the fault, always perform self-diagnosis of the engine control unit.

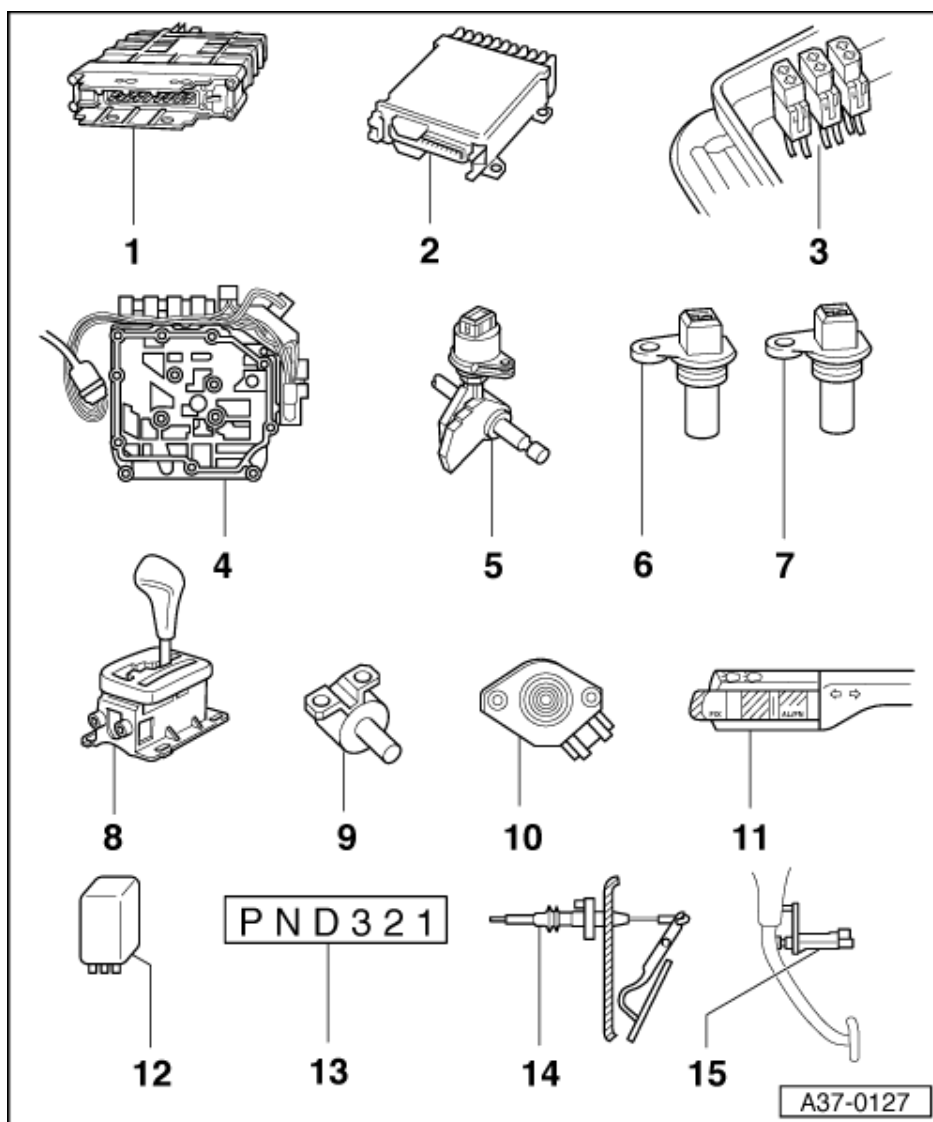
=> Injection and ignition system; Repair group 01

=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 01

- ♦ Initiate basic setting after completing repairs or after replacing -G69 or -J338=>page 31

11 Cruise control switch -E45-

- ♦ Location => Fig. 15
- ♦ Can be tested in measured value block => page 32



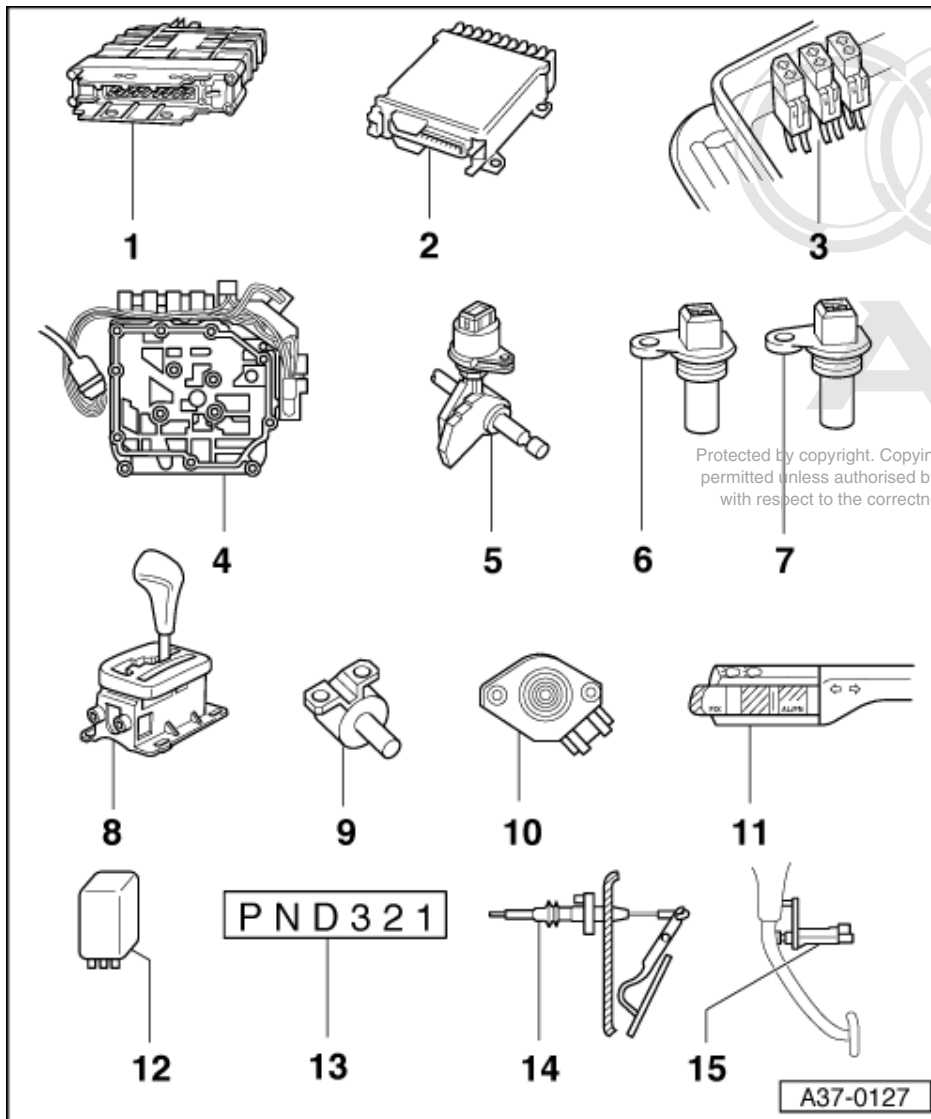
12 Starter inhibitor and reversing light relay -J226-

- ◆ Location: in central electrics, under dash panel

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

13 Selector lever position indicator -Y6

- ◆ Location: in dash panel insert
- ◆ If selector lever position indicator does not light up, this indicates that gearbox is in mechanical emergency running mode
- ◆ If all segments of selector lever position indicator light up together, this indicates that gearbox is in electrical emergency running mode

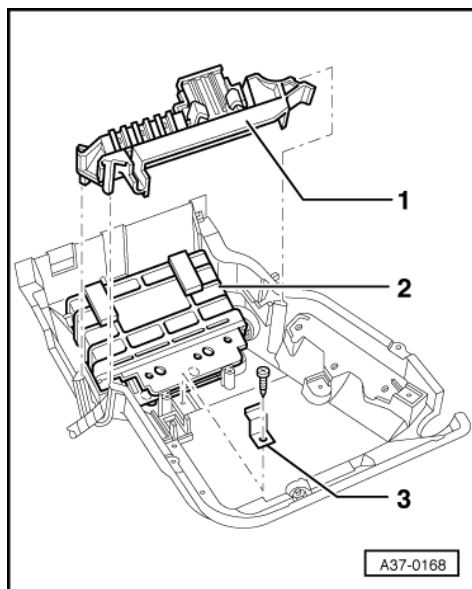


14 Kickdown switch -F8-

- ◆ Location => Fig. 16
- ◆ Testing in measured value block => from page 48

15 Brake light switch -F-

- ◆ Location: => Fig. 15
- ◆ Testing in measured value block => from page 48



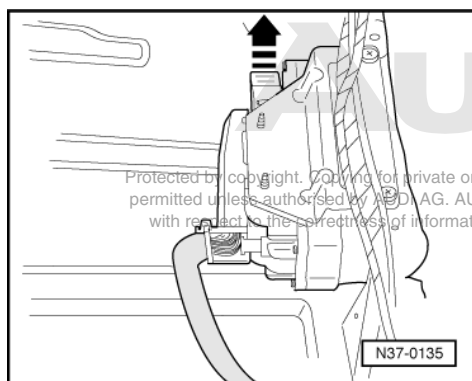
-> Fig.1 Automatic gearbox control unit -J217

Location: the control unit -2- is located in the electronics box in the front passenger's footwell

- Remove lower section of right-hand A-pillar trim and also right-hand sill panel trim around front door

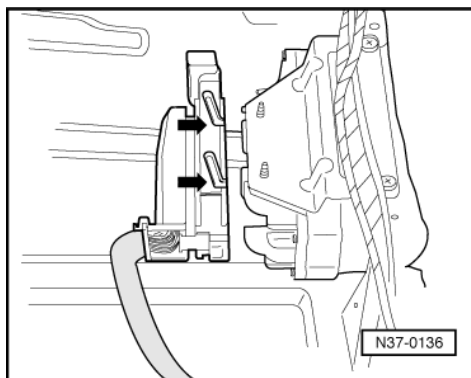
=> General body repairs; Repair group 70; Trims; Removing and installing A-pillar trim and Removing and installing inner sill panel trim Trims Removing and installing A-pillar trim and Removing and installing inner sill panel trim

- Pull back floor covering at front of right-hand footwell. (If necessary, cut open the perforated seam on the left with a knife.)
- Unscrew bolts for electronics box cover.
- Carefully detach upper section of cover.
- Detach carrier -1- and unscrew retaining clip -3-.



-> Fig.2 Removing automatic gearbox control unit -J217 with 68-pin connector

- Switch ignition off, release multi-pin connector in direction of arrow, and pull connector off control unit.



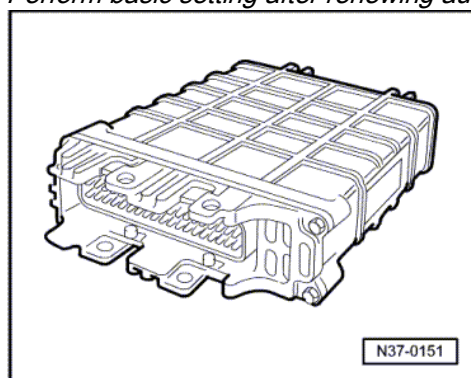
-> Fig.3 Installing automatic gearbox control unit -J217 with 68-pin connector

- Fit 68-pin connector onto pins -arrows- on control unit -J217 and then lock retainer on connector.

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Note:

Perform basic setting after renewing automatic gearbox control unit -J217=>Page 31.



-> Fig.4 Engine control unit

Location: the control unit is located in the electronics box in the front passenger's footwell.

- Removing and installing control unit:

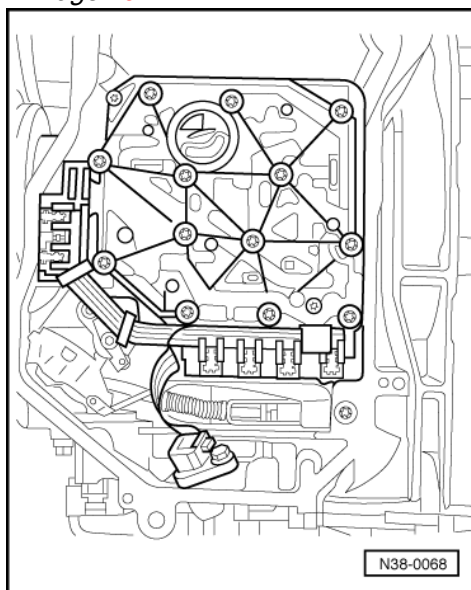
=> Injection and ignition system; Repair group 24

=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23

Note:

Perform basic setting after renewing engine control unit

=>Page 31.

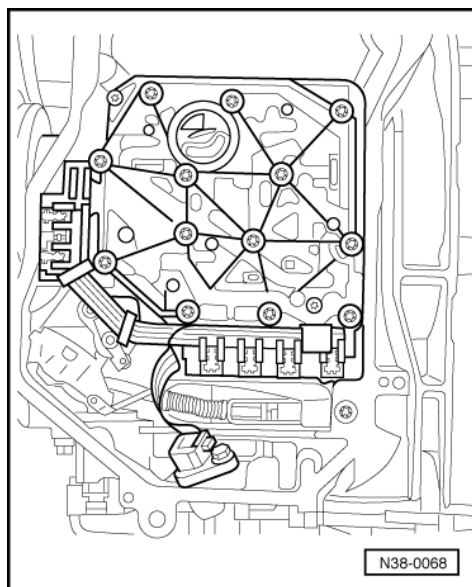


-> Fig.5 Valve body

Location: The valve body is bolted to the underside of gearbox housing inside the oil pan.

- Removing and installing valve body:

=> Automatic Gearbox 01N; Repair Group 38; Removing and installing valve body Removing and installing valve body



-> Fig. 6 Conductor strip with integrated gearbox oil temperature sender (ATF) -G93-

Location: The conductor strip is located in the oil pan on the valve body.

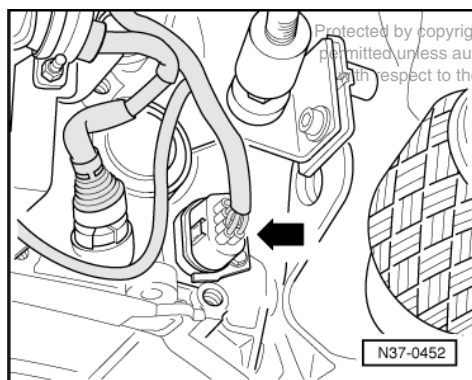
The conductor strip can be changed with gearbox installed without removing the valve body.

If the gearbox oil temperature sender (ATF) -G93 is defective, the conductor strip must be renewed at the same time since the sender is integral with the conductor strip and cannot be replaced separately.

Do not kink or damage the conductor strip.

- Removing and installing conductor strip:

=> Automatic Gearbox 01N; Repair Group 38; Removing and installing valve body Removing and installing valve body



-> Fig.7 Multi-function switch -F125-

Location: the multi-function switch (arrow) is located on the rear of the gearbox (right side).

Removing

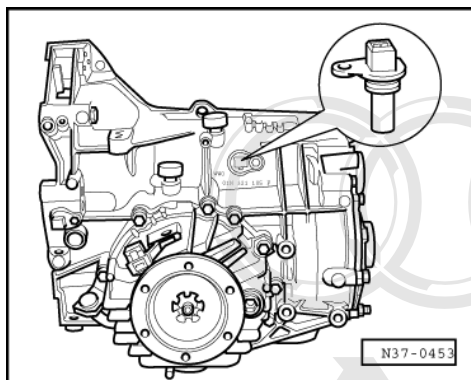
- Pull connector off multi-function switch.
- Remove bolt and retainer.
- Remove multi-function switch.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Renew seal.
- Tighten bolt to 10 Nm.
- Check ATF level and top-up.

=> Automatic gearbox 01N; Repair group 37; Checking and topping up ATF level; checking ATF level Checking and topping up ATF level checking ATF level

**-> Fig.8 Gearbox speed sender -G38-**

Location: The gearbox speed sender is located left on top of gearbox.

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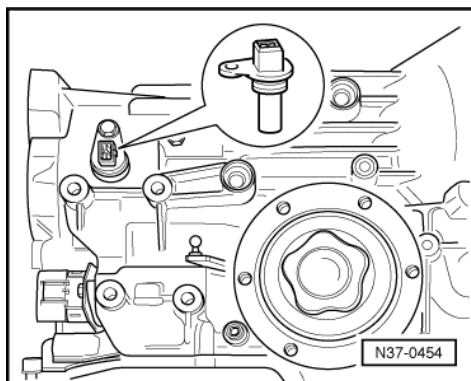
Removing

- Pull connector off sender.
- Remove bolt and pull sender out.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Renew seal.
- Tighten bolt to 10 Nm.



-> Fig.9 Road speed sender -G68-

Location: The road speed sender is located right on top of gearbox.

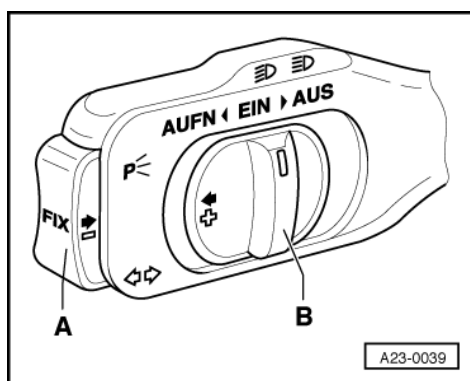
Removing

- Pull connector off sender.
- Remove bolt and pull sender out.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Renew seal.
- Tighten bolt to 10 Nm.

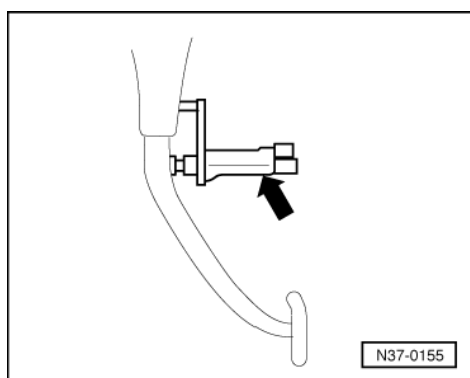


-> Fig.10 Cruise control system switch -E45-

Location: Cruise control switch is located on steering column switch.

- Removing and installing cruise control 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

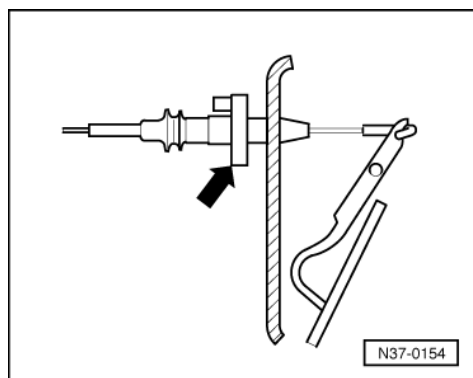


-> Fig.11 Brake light switch -F-

Location: Brake light switch (arrow) is located on pedal cluster.

- Removing and installing brake light switch:

=> Running gear front-wheel drive; Repair group 46; Servicing pedal cluster Servicing pedal cluster



-> Fig.12 Kickdown switch -F8-

Location in vehicles with petrol engines: integral with throttle cable, in plenum chamber behind bulkhead

- Removing and installing kickdown switch:

=> 4-cylinder fuel injection engine (2-valve), Mechanics; Repair group 20

=> 4-cylinder engine (5-valve), Mechanics; Repair group 20

- Adjusting kickdown switch => Page 16 .

Location in vehicles with TDI engine: integral with accelerator position sender -G79-.

- Removing and installing kickdown switch:

=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23

2.2 - Adjusting kickdown switch -F8

Vehicles with petrol engine

Note:

Location: the kickdown switch is integral with the throttle cable.

- To adjust kickdown switch, adjust throttle cable

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=> 4-cylinder fuel injection engine (2-valve), Mechanics; Repair group 20

=> 4-cylinder engine (5-valve), Mechanics; Repair group 20

Checking adjustment

- Pull 2-pin connector off kick-down switch (F8) in engine compartment (on the bulkhead).
- Connect hand-held multimeter V.A.G 1526 A (resistance measurement range) to connector on kickdown switch, using test leads from V.A.G 1594 A.
 - Specification: $\infty \Omega$
- Slowly move accelerator pedal in direction of full throttle.
 - The reading must drop to 0 Ω shortly after resistance to movement is felt at kick-down point.
 - At this point the accelerator pedal should be just short of the end stop.

3 - Performing self-diagnosis

3.1 - Performing self-diagnosis

3.2 - Safety notes

Note the following points if test equipment has to be used during a road test:

Warning

- ◆ Test equipment must always be secured on the rear seat and operated by a second person.
- ◆ If test equipment is operated from the front passenger seat, the occupant could be injured by the passenger's airbag in an accident.

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3.3 - Connecting fault reader V.A.G 1551 (or V.A.G 1552) and selecting functions

Test conditions:

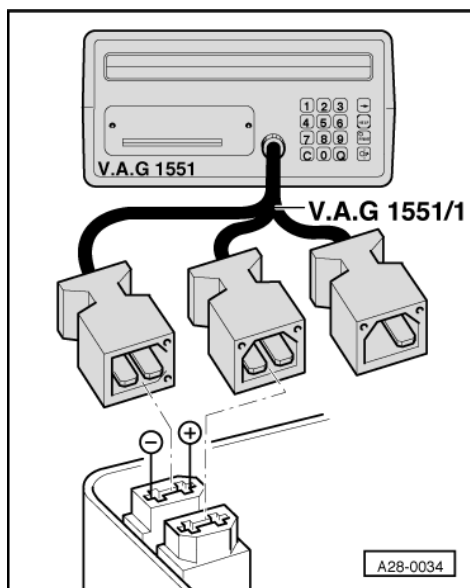
- Selector lever in position "P" and handbrake applied.
- Vehicle voltage supply in order.
- Fuses in order

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

- Earth connections and earthing point for gearbox in order

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

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



- Remove cover from auxiliary relay carrier I in plenum chamber, left.



- -> Connect fault reader V.A.G 1551 or vehicle system tester V.A.G 1552 to diagnostic connectors on relay panel as follows using cable V.A.G 1551/1:

- Fit black cable connector to black diagnostic connector.

-> Indicated in display

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

- 1) appears alternately

Note:

If the display remains blank, test the voltage supply and wiring using the current flow diagram.

- Fit white cable connector to white diagnostic connector. (The blue connector is not used.)

Depending on the function required, => List of "selectable functions", Page 19 :

- Switch on ignition.

or

- Start the engine.
- Switch on printer with the Print key (indicator lamp in key lights up).
- Press key 1 for "Rapid data transfer".

-> 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.

-> The display on fault reader V.A.G 1551 will show the control unit identification (example):

01N927733XX	AG4 Gearbox 01N	2754
Coding XXXXX	WSC XXXXX	

Control unit identification (example)

- 01N927733 XX	Part No.; Allocation => Parts catalogue
- AG4 Gearbox 01 N	4-speed automatic gearbox 01N
- 2754	Software version (program level) of control unit
- Coding XXXXX:	Is not required at present
- WSC XXXXX:	Dealership number of V.A.G 1551 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 press keys 0 and 2 for "gearbox electronics" and confirm entry with the Q key.

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

Control unit does not answer!	HELP
-------------------------------	------

Check control unit voltage supply.

- Perform test step 1 => Test table, Page 52 .
- Check wiring connections to diagnostic connectors

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

- => Fault table, page 20 under fault code 65535 control unit faulty!
- 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.

3.4 - List of selectable functions

	Page
01 - Interrogate control unit version => Performing self-diagnosis	17
02 - Interrogate fault memory	19
04 - Initiate basic setting	31
05 - Erase fault memory	30
06 - End output	
08 - Read measured value block	32

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	

3.5 - 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 17 .

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-> 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.

Note:

If the printer is switched off, press the ➡ key to display the next fault.

- After the last fault has been displayed and printed out, the faults should be rectified as described in the fault table => from page 20 .
- Press ➡ key.

-> Indicated on display:

Rapid data transfer HELP
Select function XX

- Press keys 0 and 6 for the function "End output" and confirm entry with Q key.

-> Indicated on display:

Rapid data transfer HELP
Insert address word XX

- Switch off ignition and unplug the diagnostic connector.

Note:

After interrogating the fault memory and rectifying the faults: Erase fault memory => Page 30 .

3.6 - Fault table

- ♦ This table lists all possible faults which can be recognised by automatic gearbox control unit -J217 and displayed on V.A.G 1551 or V.A.G 1552 when the fault memory is interrogated. The faults are grouped according to the fault code number.
- ♦ The fault code number is printed out in the operating mode "Rapid data transfer" only when the printer of V.A.G 1551 is switched on. Example: fault code number (5-digit) 65535.
- ♦ 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

- ♦ If the fault table refers to "Read measured value block" or "Electrical test", perform only the test step listed for the relevant component.

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

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00258 Solenoid valve 1 -N88 Open circuit 1) Short to earth 1)	Open circuit in wiring or short circuit to earth Solenoid valve 1 -N88 defective	- Test wiring and connections according to current flow diagram 2) - Read measured value block =>Page 32 ; Display group 004 - Perform electrical test =>from Page 48
00260 Solenoid valve 2 -N89 Open circuit 1) Short to earth 1)	Open circuit in wiring or short circuit to earth Solenoid valve 2 -N89 defective	- Test wiring and connections according to current flow diagram 2) - Read measured value block=>Page 32 ; Display group 004 - Perform electrical test =>from Page 48

- 1) One of these displays appears in addition to relevant component.
- 2) First check connections for contact corrosion or water ingress and renew if necessary. If solenoid faults are displayed then especially check the 10 pin connector on gearbox between valve body/conductor strip and wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00262 Solenoid valve 3 -N90 Open circuit 1) Short to earth 1)	Open circuit in wiring or short circuit to earth Solenoid valve 3 -N90 defective	- Test wiring and connections according to current flow diagram 2) - Read measured value block =>Page 32 ; Display group 004 - Perform electrical test =>from Page 48
00264 Solenoid valve 4 -N91 Open circuit 1) Short to earth 1)	Open circuit in wiring or short circuit to earth Solenoid valve 4 -N91 defective	- Test wiring and connections according to current flow diagram 2) - Read measured value block => Page 32 ; Display group 004 - Perform electrical test =>from Page 48

- 1) One of these displays appears in addition to relevant component.
- 2) First check connections for contact corrosion or water ingress and renew if necessary. If solenoid faults are displayed then especially check the 10 pin connector on gearbox between valve body/conductor strip and wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00266 Solenoid valve 5 -N92 Open circuit 1) Short to earth 1)	Open circuit in wiring or short circuit to earth Solenoid valve 5 -N92 defective	- Test wiring and connections according to current flow diagram 2) - Read measured value block =>Page 32 ; Display group 004 - Perform electrical test =>from Page 48
00268 Solenoid valve 6 -N93	Open circuit in wiring or short circuit to earth Solenoid valve 6 -N93 defective	- Test wiring and connections according to current flow diagram 2) - Read measured value block =>Page 32 ; Display group 002



Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
Open circuit 1) Short to earth 1)		- Perform electrical test =>from Page 48

- 1) One of these displays appears in addition to relevant component.
- 2) First check connections for contact corrosion or water ingress and renew if necessary. If solenoid faults are displayed then especially check the 10 pin connector on gearbox between valve body/conductor strip and wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00270 Solenoid valve 7 -N94 Open circuit 1) Short to earth 1)	Open circuit in wiring or short circuit to earth Solenoid valve 7 -N94 defective	- Test wiring and connections according to current flow diagram 2) - Read measured value block =>Page 32 ; Display group 004 - Perform electrical test =>from Page 48

- 1) One of these displays appears in addition to relevant component.
- 2) First check connections for contact corrosion or water ingress and renew if necessary. If solenoid faults are displayed then especially check the 10 pin connector on gearbox between valve body/conductor strip and wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00281 Road speed sender -G68 No signal	Open circuit in wiring Road speed sender -G68 defective	- Test wiring and connections according to current flow diagram 1) - Read measured value block =>Page 32 ; Display group 002 - Perform electrical test =>from Page 48 Renew road speed sender -G68 => Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock

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

Note on fault code 00281:

A voltage drop in the road speed sender will be tested by the self-diagnosis function.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00293 Multi-function switch -F125 Undefined switch condition	Open circuit in wiring Multi-function switch -F125 defective	- Test wiring and connections according to current flow diagram 1) - Read measured value block =>Page 32 ; Display group 001 - Perform electrical test =>from Page 48 Renew multi-function switch -F125 => Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
	Selector shaft not secured in axial direction (e.g. after dismantling parking lock)	- Check for axial movement of selector shaft at selector shaft lever (multi-function switch -F125 removed)

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

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00297 Gearbox speed sender -G38 No signal	Open circuit in wiring Gearbox speed sender -G38 dirty or defective	- Test wiring and connections according to current flow diagram 1) - Perform electrical test =>from Page 48 - Clean gearbox speed sender -G38, or renew if necessary => Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock

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

Note on fault code 00297:

The self-diagnosis function will only test for a voltage drop in the gearbox speed sender.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00300 Gearbox oil temperature sender -G93 2) No fault type recognised	Open circuit in wiring Gearbox oil temperature sender (ATF) -G93 defective	- Test wiring and connections according to current flow diagram 1) - Read measured value block =>Page 32 ; Display group 005 - Perform electrical test =>from Page 48 ; If necessary, renew gearbox oil temperature sender (ATF) -G93 => Automatic gearbox 01N; Repair group 38; Removing and installing valve body

- 1) First check connectors for contact corrosion or water ingress and renew if necessary.
- 2) This indicates a faulty gearbox oil temperature sender (ATF).

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00518 Throttle valve potentiometer -G69 1) 2)	Open circuit or short in wiring	- If fault code 00638 is also displayed, rectify fault 00638 first Test wiring and connections according to current flow diagram



Signal outside tolerance	Signal range of throttle valve potentiometer -G69 or throttle valve control part -J338 has shifted continued ▼	- Read measured value block =>Page 32 ; Display group numbers 001 and 003
--------------------------	--	---

1) Petrol engines: the signal is transmitted from throttle valve potentiometer -G69- or throttle valve control part -J338- to the gearbox control unit via the engine control unit. For this reason, always read out fault memory of engine control unit as well as gearbox control unit if this fault is displayed.

2) TDI engines: accelerator position sender -G79; a fault relating to the accelerator pedal position is therefore only stored in the engine control unit.

=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23; Testing control unit input signals; Testing accelerator position sender -G79 Testing control unit input signals Testing accelerator position sender -G79

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00518 Throttle valve potentiometer -G69 1) 2) Signal outside tolerance	(Fault 00518 continued) Throttle valve potentiometer -G69 defective Throttle valve control part -J338 defective continued ▼	- Test throttle valve potentiometer -G69 or throttle valve control part -J338, renew if necessary => Digifant injection and ignition system (4-cylinder); Repair group 24; Testing throttle valve potentiometer -G69 Testing throttle valve control part - Bring system into basic setting after renewing throttle valve potentiometer or throttle valve control part =>Page 31

1) Petrol engines: the signal is transmitted from throttle valve potentiometer -G69- or throttle valve control part -J338- to the gearbox control unit via the engine control unit. For this reason, always read out fault memory of engine control unit as well as gearbox control unit if this fault is displayed.

2) TDI engines: accelerator position sender -G79; a fault relating to the accelerator pedal position is therefore only stored in the engine control unit.

=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23; Testing control unit input signals; Testing accelerator position sender -G79 Testing control unit input signals Testing accelerator position sender -G79

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00518 Throttle valve potentiometer -G69 1) 2)	(Fault 00518 continued) Engine control unit defective	- Test engine control unit, renew if necessary => Digifant injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis Self-diagnosis of Motronic system

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
Signal outside tolerance		- Bring system into basic setting after renewing engine control unit =>Page 31

1) Petrol engines: the signal is transmitted from throttle valve potentiometer -G69- or throttle valve control part -J338- to the gearbox control unit via the engine control unit. For this reason, always read out fault memory of engine control unit as well as gearbox control unit if this fault is displayed.

2) TDI engines: accelerator position sender -G79; a fault relating to the accelerator pedal position is therefore only stored in the engine control unit.

=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23; Testing control unit input signals; Testing accelerator position sender -G79 Testing control unit input signals Testing accelerator position sender -G79

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00529 Speed information missing	Open circuit or short in wiring between engine control unit and gearbox control unit Rpm signal from engine speed sender -G28 is not present or incorrect (implausible) continued ▼	- Test wiring and connections according to current flow diagram - Read measured value block =>Page 32 ; Display group 003 Test engine speed signal => Digifant injection and ignition system (4-cylinder); Repair group 24; Testing auxiliary signals; Testing rpm signal => Motronic injection and ignition system (4-cylinder); Repair group 24; Testing auxiliary signals; Testing rpm signal Testing control unit input signals; Testing engine speed sender -G28

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Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00529 Speed information missing	(Fault 00529 continued) Rpm signal from engine speed sender -G28 is not present or incorrect (implausible) Engine speed sender -G28 defective	- Test engine control unit and sender -G28 => Digifant injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis; Interrogating and erasing fault memory => Motronic injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis of Motronic system; Interrogating and erasing fault memory Self-diagnosis; Interrogating and erasing fault memory - Renew engine speed sender -G28 - Perform electrical test =>from Page 48

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00532	Power supply defective	- Test power supply => Electrical system; Repair group 27; Battery Battery



Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
Supply voltage	Supply voltage to solenoid valves insufficient	- Read measured value block =>Page 48

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00545 Engine/gearbox electrical connection Open circuit 1) Short circuit to earth 1)	Open circuit or short in wiring No connection between engine/gearbox control units The signal for modulating ignition timing is not being transmitted between engine and gearbox control units, or is being transmitted incorrectly continued▼	- Test wiring and connections according to current flow diagram - Read measured value block =>Page 32 ; Display group 005 - Test signals from engine to gearbox => Digifant injection and ignition system (4-cylinder); Repair group 24; Testing auxiliary signals Testing control unit input signals

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

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00545 Engine/gearbox electrical connection Open circuit 1) Short circuit to earth 1)	(Fault 00545 continued) The signal for modulating ignition timing is not being transmitted between engine and gearbox control units, or is being transmitted incorrectly	- Test engine control unit, renew if necessary => Digifant injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis; Interrogating and erasing fault memory Self-diagnosis; Interrogating and erasing fault memory => Motronic injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis of Motronic system => Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 01; Self-diagnosis; Interrogating and erasing fault memory 31

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

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00596 Short circuit between valve wires	10-pin connector between conductor strip/valve body and wiring harness Conductor strip on valve body defective	- Test wiring and connections according to current flow diagram - Perform electrical test => from Page 48 Renew conductor strip => Automatic gearbox 01N; Repair group 38; Removing and installing valve body Removing and installing valve body

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00638 Engine/gearbox electrical connection 2 No signal	Open circuit in wiring or short circuit to earth No connection between engine control unit and gearbox control unit Throttle valve signal not being transmitted to gearbox control unit continued▼	- Test wiring and connections according to current flow diagram - Read measured value block =>Page 32 ; Display group 005 - Test signals from engine to gearbox => Digifant injection and ignition system (4-cylinder); Repair group 24; Testing auxiliary signals Testing auxiliary signals; => Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23; Testing control unit input signals Testing control unit input signals

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00638 Engine/gearbox electrical connection 2 No signal	permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG. (Fault 00638 continued) No connection between engine control unit and gearbox control unit Throttle valve signal not being transmitted to gearbox control unit	- Test signals from engine to gearbox => Digifant injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis; Interrogating and erasing fault memory Self-diagnosis; Interrogating and erasing fault memory => Motronic injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis of Motronic system => Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 01; Self-diagnosis; Interrogating and erasing fault memory 31

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00641 ATF temperature Signal too great	ATF level not OK Gearbox is overheating: not more than 148° C. If ATF is too hot gearbox will shift down to next gear Trailer load too heavy Gearbox oil temperature sender (ATF) -G93 defective	- Check ATF level => Automatic gearbox 01N; Repair Group 37; Checking and topping up ATF level; Checking ATF level Checking and topping up ATF level; Checking ATF level - Read measured value block =>Page 32 ; Display group 005; Read off ATF temperature - Read measured value block =>Page 48 Renew conductor strip if necessary => Automatic gearbox 01N; Repair group 38; Removing and installing valve body Removing and installing valve body



Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00652 Gear monitoring 1) 2)	Incorrect signal for gearbox speed or gearbox output speed Road speed sender -G68 dirty or defective	- Rectify fault as described for fault codes 00281 and 00293 - Clean road speed sender -G68 and renew if necessary => Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock
Implausible signal	Gearbox speed sender -G38 dirty or defective Electrical or hydraulic fault Clutch or valve body defective continued ▼	- Clean gearbox speed sender -G38 and renew if necessary => Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock - Read measured value block =>Page 32 ; Display group 007 and test with vehicle moving to establish in which gear the fault occurs

1) Fault recognition: the ratio of engine speed to gearbox output speed is implausible for the gear which is currently engaged. Slip rpm is higher than stall speed with the torque converter lock-up clutch open.

2) Do not renew clutch or valve body until all possible faults listed have been rectified.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00652 Gear monitoring 1) 2)	(Fault 00652 continued) ATF level not OK	- Check ATF level => Automatic gearbox 01N; Repair group 37; Checking and topping up ATF level; Checking ATF level Checking and topping up ATF level; Checking ATF level
Implausible signal	Engine speed sender -G28 transmitting incorrect signal Drive gear for road speed sender -G68 or gearbox speed sender -G38 dirty or moved out of position continued ▼	- Rectify fault as described for fault code 00529 - Check drive gear => Automatic gearbox 01N; Repair group 39; Dismantling and assembling final drive Dismantling and assembling planetary gearbox

1) Fault recognition: the ratio of engine speed to gearbox output speed is implausible for the gear which is currently engaged. Slip rpm is higher than stall speed with the torque converter lock-up clutch open.

2) Do not renew clutch or valve body until all possible faults listed have been rectified.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00652 Gear monitoring 1) 2)	(Fault 00652 continued) Selector lever cable incorrectly adjusted	- Adjust selector lever cable => Automatic gearbox 01N; Repair group 37; Servicing shift mechanism; Removing, installing and adjusting selector lever cable Servicing shift mechanism; Removing, installing and adjusting selector lever cable

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
Implausible signal	Multi-function switch -F125 defective	- Rectify fault as described for fault code 00293

- 1) Fault recognition: the ratio of engine speed to gearbox output speed is implausible for the gear which is currently engaged. Slip rpm is higher than stall speed with the torque converter lock-up clutch open.
- 2) Do not renew clutch or valve body until all possible faults listed have been rectified.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00660 Kickdown switch/throttle valve potentiometer 1) Implausible signal	Open circuit in wiring Throttle valve potentiometer - G69 or throttle valve control part -J338 defective Kickdown switch -F8 defective	- Test wiring and connections according to current flow diagram - Rectify fault as described for fault code 00518 - Read measured value block =>Page 16 - Adjust throttle cable or renew if necessary => 4-cylinder engine, Mechanics; Repair group 20; Servicing throttle mechanism Servicing diesel direct injection system; Installing and adjusting accelerator pedal position sender -G79

- 1) Fault 00660 can only be recognised by control unit when vehicle is driven.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
01192 Torque converter lock-up clutch Speed difference too great	ATF level not OK Torque converter defective or incorrect torque converter fitted Mechanical fault in solenoid valve 4 -N91 ATF supply to solenoid valve 4 -N91 not working properly Incorrect control unit fitted Electrical activation of solenoid valve 4 -N91 not OK	- Check ATF level => Automatic gearbox 01N; Repair group 37; Checking and topping up ATF level; checking ATF level Checking and topping up ATF level; checking ATF level - Check torque converter identification Read measured value block =>Page 32 ; Display group 007 Check valve body => Automatic gearbox 01N; Repair group 38; Checking valve body Checking valve body - Check control unit identification => Page 18 - Rectify fault as described for fault code 00264

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Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
01236 Selector lever lock solenoid -N110	Open circuit in wiring Selector lever lock solenoid -N110 defective	- Test wiring and connections according to current flow diagram - Read measured value block =>Page 32 , Display group 005, and if necessary renew selector lever lock solenoid -N110



Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
Open circuit 1) Short to earth 1)		=> Automatic gearbox 01N; Repair group 37; Servicing shift mechanism; Dismantling and assembling shift mechanism Servicing shift mechanism; Dismantling and assembling 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 31

Notes for fault code 65535:

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The automatic gearbox control unit -J217 should only be renewed after 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 wiring connections.

3.7 - Erasing fault memory

Requirement:

- Fault memory interrogated => page 19 .

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.

-> If this display appears:

Attention!
Fault memory is not interrogated

The procedure has not been followed exactly as described. The fault memory must first be interrogated.

Note:

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

-> Indicated on display:

Rapid data transfer
Fault memory is erased!

The fault memory will only be erased approx. 5 seconds after this display appears.

Note:

Wait about 1 minute before again interrogating the fault memory.

-> If this display appears:

System cannot be interrogated.

- Wait for print out with printer switched on.

-> If this fault message appears in the print-out:

1 Fault recognised !
00811 3333
System cannot be interrogated

Gearbox control unit has not been given enough time to recognise faults.

- 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.

-> If this display appears:

No fault recognised

- Interrogation of fault memory has been performed correctly.

3.8 - Initiating basic setting

Note:

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

- ◆ Exchanging engine
- ◆ Replacing engine control unit
- ◆ 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
- Adjustment of accelerator pedal position sender (TDI) OK
- 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 17 .

-> Indicated on display:

Rapid data transfer **HELP**
Select function XX

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

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Note:

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 three times to select Display Group 000 and confirm entry with Q key.

-> 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	

3.9 - Read measured value block

- 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 17 .

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

- 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:

Basic setting	HELP
Enter display group number XXX	

- Enter display group number => List of selectable display group numbers, Page 33 .
- Confirm entry with key Q.

-> Four display zones are always shown in the measured value block (in physical units where applicable). For detailed information on the individual values in display zones 1 ... 4 => Test table, Page 34 .

Read measured value block	1
1 2 3 4	

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 or throttle valve control part 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)			
Display zones: 1 2 3 4 iiii	Display group No.	Display zone	Description
Read measured value block 5⇒ 40°C 0011011 0 900 rpm	005	1 2 3 4	ATF temperature Selector output Gear to be selected Engine speed
Read measured value block 6⇒	006	1 2 3 4	Can be disregarded
Read measured value block 7⇒ 1H+/-200 rpm 900 rpm 0 %	007	1 2 3 4	Gear selected (+ or - sign relates to display zone 2) Lock-up clutch slip Engine speed Accelerator pedal value
Read measured value block 8⇒	008	1 2 3 4	Can be disregarded

Note:

If the printer is switched on, the current display is printed out on the log.

- If the values match the specifications in all display zones of the measured value blocks:
- Press key ⇒.

⇒ Indicated on display:

Rapid data transfer	HELP
Select function XX	



3.10 - Test table

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
001 continued ▼	1	Selector lever position Multi-function switch - F125	Stationary	P	- Check multi-function switch -F125 =>Electrical test from Page 48
			P	P	
			Selector lever in	R	
				N	
				D	
				3	
				2	
				1	

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
001	2	Signal voltage of throttle valve potentiometer -G69 or throttle valve control part -J338	Stationary	0.156 V 0.8 V 1)	Voltage increases continuously from idling to full throttle Perform self-diagnosis of engine control unit => Digifant injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis Self-diagnosis of Motronic system
	continued▼		Idling (min.) Idling (max.)		

1) Coolant temperature at least 80°C

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
001	2	Signal voltage of throttle valve potentiometer -G69 or throttle valve control part -J338	Stationary	3.5 V 4.68 V	- Test throttle valve potentiometer -G69 and renew if necessary => Digifant injection and ignition system (4-cylinder); Repair group 24; Testing throttle valve potentiometer -G69 Testing throttle valve control part
			Full throttle (min.) Full throttle (max.)		

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Display group number continued ▼	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
					- After renewing throttle valve potentiometer or throttle valve control part, bring system into basic setting =>Page 31

Display group number 001	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
	3	Accelerator pedal value	Stationary		When accelerating from idling to full throttle, % figure increases continuously - Bring system into basic setting =>Page 31
			Idling	0...1 %	
	4	Brake light switch -F	Operated	99...100 %	- Check brake light switch -F => Perform electrical test, from Page 48
			Not operated	1	
continued ▼		Display 1		0	
		Display 2	Can be disregarded		

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 number 001	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
	4	Display 3	Can be disregarded		
		Kickdown switch	Operated	1	- Check kickdown switch -F8 => Perform electrical test, from Page 48
		-F8-	Not operated	0	
		Multi-function switch 5 Contact 63 2)	Selector lever in R, N, D, 3, 2	1	- Check multi-function switch -F125 => Perform electrical test, from Page 48 Adjust selector lever cable 1)

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Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
	continued ▼	-F125-	P, 1	0	=> Automatic Gearbox 01N; Repair Group 37; Repairing shift mechanism; Removing, installing and adjusting selector lever cable Repairing shift mechanism; Removing, installing and adjusting selector lever cable
		6	Selector lever in P, R, 2, 1	1	- Pull out starter inhibitor and reversing light relay -J226 and check readout again
		Contact 40 2)	N, D, 3	0	- Test wiring and components as necessary according to current flow diagram

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

2) Designation of signal input contact on gearbox control unit -J217-.

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
001	4	Multi-function Display switch 7	Selector lever in P, R, N, D	1	- Check multi-function switch -F125 => Perform electrical test, from Page 48 Adjust selector lever cable 1)
		-F125- Contact 62 2)	3, 2, 1	0	=> Automatic gearbox 01N; Repair group 37; Repairing shift mechanism; Removing, installing and adjusting selector lever cable Repairing shift mechanism; Removing, installing and adjusting selector lever cable
		8	Selector lever in P, R, N	1	- Pull out starter inhibitor and reversing light relay -J226 and check readout again

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		Contact 18 2)	D, 3, 2, 1	0	- Test wiring and components as necessary according to current flow diagram
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1) This repair measure is only effective if selector lever position does not agree with selector lever position indicator.

2) Designation of signal input contact on gearbox control unit -J217-.

Display group number	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 1) 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	
	2	Solenoid valve 6 - N93 1) specified current	▪ Selector lever in "N" ▪ Stationary Full throttle	0.0 A	Bring system into basic setting => Page 31 - Check solenoid valve -N93 => Perform electrical test, from Page 48
			Idling max.	1.1 A	
continued ▼					

1) Solenoid valve 6 -N93- controls the ATF main pressure.

Display group number	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 48 - Renew gearbox control unit -J217 => Page 31
			max.	16.0 V	
	4	Road speed sender -G68	Stationary min.	2.20 V	- Check road speed sender -G68 => Perform electrical test, from Page 48
			max.	2.52 V	

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
003	1	Vehicle speed	Driving 1)	...km/h	Speedometer reading and readout on V.A.G 1551 may differ slightly.



Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
continued ▼	2	Engine speed	With engine running	... rpm	- Rectify engine fault if necessary => Digifant injection and ignition system (4-cylinder); Repair group 01; Interrogating and erasing fault memory Self-diagnosis; Interrogating and erasing fault memory

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

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
003 continued ▼	3	Gear selected	Driving 1) Neutral	0	- Check solenoid valves - N93 => Perform electrical test, from Page 48
			Reverse	R	
			1 hydraulic	1H	
			1 mechanical	1M	
			2 hydraulic	2H	
			2 mechanical	2M	
			3 hydraulic	3 H	
			3 mechanical	3M	
			4 hydraulic	4H	
			4 mechanical	4M	

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

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
003	4	Accelerator pedal value	Driving 1)		
			Idling	0...1 %	When accelerating from idling to full throttle, the % figure increases constantly
			Full throttle	99...100 %	- Bring system into basic setting => Page 31

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

Checking solenoid valves with vehicle moving

- ♦ The solenoid valves can be checked whilst driving via "Read measured value block 08"; "display group number 004".
- ♦ The table shows which of the solenoid valves -N88-, -N89- and -N90- are activated in each selector lever position. These solenoid valves control the selector valves for the relevant gears.
- ♦ Solenoid valve -N91- controls the selector valve for the torque converter lock-up clutch.
- ♦ Solenoid valves -N92- and -N94- are supplementary valves which are designed to smooth out the gearshift; they are only activated during gear changes and appear in displays 5 and 6.

- ♦ V.A.G 1551 display zone 1 has 6 characters (0000 00) and is read as follows:

Display on V.A.G 1551 in display zone 1					
Display 1	Display 2	Display 3	Display 4	Display 5	Display 6
Solenoid valve 1 -N88	Solenoid valve 2 -N89	Solenoid valve 3 -N90	Solenoid valve 4 -N91	Solenoid valve 5 -N92	Solenoid valve 6 -N94

- ♦ Non-activated solenoid valves display "0" and activated solenoid valves display "1".
- ♦ Solenoid valves with variable switch condition are indicated with "X" in the following tables.
- ♦ All solenoid valves are checked via self-diagnosis => Interrogating fault memory, Page 19.

Checking solenoid valves with vehicle moving

Display group number	Display zone	Designation	Test conditions Selector lever in:	Specified readout on V.A.G 1551	Rectifying fault if read-out does not match specification
004	1	Solenoid valves/indicated on V.A.G 1551 display: -N88 Display 1 -N89 Display 2 -N90 Display 3 -N91 Display 4 -N92 Display 5 -N94 Display 6	P	1 0 1 0 0 0	Solenoid valves are selected according to driving condition. - Perform electrical test => from Page 48 - Continue fault finding according to fault finding programme => "Fault finding. Power transmission"
			R 1)	1 0 1 0 0 0	
			R 2)	0 0 1 0 0 0	
			N	1 0 1 0 0 0	
			D 1) 1H	0 0 1 0 X 0	
			2H	0 1 1 0 0 0	
	continued ▼		X = variable 2M	0 1 1 0 0 0	

- 1) Whilst driving with gears selected a second mechanic is required for reading the specified values.
- 2) Road speed below 10 km/h

Display group number	Display zone	Designation	Test conditions Selector lever in:	Specified readout on V.A.G 1551	Rectifying fault if read-out does not match specification
004	1	Solenoid valves/indicated on V.A.G 1551 display: -N88 Display 1 -N89 Display 2 -N90 Display 3 -N91 Display 4 -N92 Display 5 -N94 Display 6	D 1) 3H	0 0 0 0 0 1	Solenoid valves are selected according to driving condition. - Perform electrical test => from Page 48 - Continue fault finding according to fault finding programme => "Fault finding. Power transmission"
			3M	0 0 0 0 0 1	
			4H	1 1 0 0 0 1	
			X = variable 4M	1 1 0 0 0 1	
	continued ▼				

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

Display group number	Display zone	Designation	Test conditions Selector lever in:	Specified readout on V.A.G 1551	Rectifying fault if read-out does not match specification
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004	1	Solenoid valves/indicated on V.A.G 1551 display: -N88 Display 1 -N89 Display 2 -N90 Display 3 -N91 Display 4 -N92 Display 5 -N94 Display 6	3 1)	1H	0 0 1 0 X0	Solenoid valves are selected according to driving condition. - Perform electrical test =>from Page 48 - Continue fault finding according to fault finding programme => "Fault finding. Power transmission"
				1M	0 0 1 0 X0	
				2H	0 1 1 0 00	
				2M	0 1 1 0 00	
				3H	0 0 0 0 01	
				3M	0 0 0 0 01	
	continued ▼		X = variable			

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

Display group number	Display zone	Designation	Test conditions Selector lever in:		Specified readout on V.A.G 1551	Rectifying fault if read-out does not match specification
004	1	Solenoid valves/indicated on V.A.G 1551 display: -N88 Display 1 -N89 Display 2 -N90 Display 3 -N91 Display 4 -N92 Display 5 -N94 Display 6	2 1)	1H	0 0 1 0 X0	Solenoid valves are selected according to driving condition. - Perform electrical test =>from Page 48 - Continue fault finding according to fault finding programme => "Fault finding. Power transmission"
				1M	0 0 1 0 X0	
			2H	0 1 1 0 00		
				2M	0 1 1 0 00	
			1 1)	0 0 1 0 X0		
1 2) X = variable	0 0 1 0 X0					
continued ▼						

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

2) Road speed below 10 km/h

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
004	2	Gear selected	Driving 1)		- Check solenoid valves => Perform electrical test, from Page 48
			Neutral	0	
			Reverse	R	
			1 hydraulic	1H	
			1 mechanical	1M	
			2 hydraulic	2H	
			2 mechanical	2M	
			3 hydraulic	3 H	
			3 mechanical	3M	
			4 hydraulic	4H	

continued ▼			4 mechanical	4M	
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- 1) When driving, a second mechanic is needed for reading the specified values.

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
004	3	Selector lever position	Driving 1)		- Check multi-function switch connection for corrosion, renew if necessary - Test wiring according to current flow diagram - Check multi-function switch -F125 => Perform electrical test, from Page 48
			P	P	
			R	R	
			N	N	
			D	D	
			3	3	
			2	2	
continued ▼			1	1	

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

Display group number	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 2)	Stationary with engine running. The exact temperature is displayed from approx. 30°C	... °C	- Check gearbox oil temperature sender - G93 => Perform electrical test, from Page 48

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

- 2) The ATF level is checked at a temperature from approx. 35 ° ... 45 °C.

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Selector outputs	Driving 1)	1	- Test wiring according to current flow diagram - Renew engine control unit => Digifant injection and ignition system (4-cylinder); Repair group 24
		Display 1 2)	Ignition timing modulation 3) is switched on		



Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
	continued ▼		is switched off	0	=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23 Renew gearbox control unit -J217 => Page 31

- 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 number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Selector outputs	Driving1) Ignition timing modulation3) is switched on	1	- Test wiring according to current flow diagram - Renew engine control unit => Digifant injection and ignition system (4-cylinder); Repair group 24
	continued ▼	Display2 2)	is switched off	0	=> Diesel direct injection and glow plug system (TDI 4-cylinder); Repair group 23 Renew gearbox control unit -J217 => Page 31

- 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 number	Display zone	Designation	Test conditions	Specified readout V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Selector outputs	Selector lever lock solenoid -N110-		- Check wiring according to current flow diagram
		Display 3	is switched on 1)	1	- Test wiring according to current flow diagram
			is switched off 2)	0	- Check selector lever lock solenoid -N110 => Perform electrical test, from Page 48
		Display 4	is switched on 1)	1	- Check brake light switch -F =>Electrical test, Test step 3, Page 53

	continued ▼		is switched off 2)	0	
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- 1) Brake pedal not applied.
2) Brake pedal applied.

Display group number	Display zone	Designation	Test conditions	Specified read out V.A.G 1551	Rectifying fault if read-out does not match specification
005	2	Selector outputs Display 5	Cruise control system is switched on	1	- Test wiring according to current flow diagram Check cruise control system => "Current flow diagrams, Electrical fault finding and Fitting locations" binder
			is switched off	0	
		Display 6	Air conditioner is switched off	1	- Test wiring according to current flow diagram - Check air conditioner => Heating, air conditioner; Repair group 01; Self-diagnosis Self-diagnosis => Heating, air conditioner; Repair group 87
			is not switched off	0	
	continued ▼				

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Selector outputs Display 7	Park/Neutral signal Selector lever in P, N	1	- Test wiring according to current flow diagram
			R	0	
			X = variable D, 3, 2, 1	X	Selector lever positions D, 3, 2 and 1 can be disregarded
	continued ▼				

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
005	3	Gear to select	Driving 1) Neutral	0	- Check solenoid valves => Perform electrical test, from Page 48 - If gearshifts do not occur, a clutch or brake may be defective => "Fault finding" binder. Power transmission; No. 14 - Renew gearbox control unit -J217 => Page 3
			Reverse	R	
			1 hydraulic	1H	
			1 mechanical	1M	



Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
			2 hydraulic	2H	- Bring system into basic setting => Page 31
	continued ▼		2 mechanical	2M	

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

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
005	3	Gear to select	Driving 1) 3 hydraulic	3 H	- Check solenoid valves => Perform electrical test, from Page 48 If gearshifts do not occur, a clutch or brake may be defective => "Fault finding" binder. Power transmission; No. 14 - Renew gearbox control unit -J217 => Page 31
continued ▼			3 mechanical	3M	
			4 hydraulic	4H	
			4 mechanical	4M	

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

Display group number	Display zone	Designation	Test conditions	Specified read-out 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 => Digifant injection and ignition system (4-cylinder); Repair group 01; Interrogating and erasing fault memory Self-diagnosis; Interrogating and erasing fault memory

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

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
006	1	Uphill or downhill gradient 2)	Driving 1) Downhill max.	 - 32%	- Rectify fault according to self-diagnosis of engine and/or gearbox control unit - Rectify engine fault if necessary

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if read-out does not match specification
continued ▼			Uphill max.	+31.75%	=> Digifant injection and ignition system (4-cylinder); Repair group 01; Interrogating and erasing fault memory => Motronic injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis of Motronic system; Interrogating and erasing fault memory Self-diagnosis; Interrogating and erasing fault memory

- 1) When driving, a second mechanic is needed for reading the specified values.
- 2) Towing a trailer or increased payload also causes the readouts on V.A.G. 1551 to rise because of the increase in load.

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
006	2	Gradient factor 2)	Driving 1)	0 ... 100%	- Rectify fault according to self-diagnosis of engine and/or gearbox control unit - Rectify engine fault if necessary
continued ▼	3	"Sport" factor 3)		0 ... 100%	=> Digifant injection and ignition system (4-cylinder); Repair group 01; Interrogating and erasing fault memory => Motronic injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis of Motronic system; Interrogating and erasing fault memory Self-diagnosis; Interrogating and erasing fault memory

- 1) When driving, a second mechanic is needed for reading the specified values.
- 2) Towing a trailer or increased payload also causes the readouts on V.A.G. 1551 to rise because of the increase in load.
- 3) High values for the "sport" factor cause the gearshifts to occur at higher engine speeds.

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
006	4	Accelerator pedal value	Driving 1)		



			Idling	0 ... 1%	When accelerating from idling to full throttle the percentage value constantly increases - Bring system into basic setting =>Page 31
			Full throttle	99 ... 100%	
007	1	Gear selected	Driving 1) Neutral	0	- Check solenoid valves => Perform electrical test, from Page 48 - If gearshifts do not occur, a clutch or a brake may be defective
	continued ▼		Reverse	R	

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

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
007	1	Gear selected	Driving 1)		=> "Fault finding" binder, Power transmission - Renew gearbox control unit -J217 => Page 3 - Bring system into basic setting =>Page 31
			1 hydraulic	1H+/-	
			1 mechanical	1M +/-	
			2 hydraulic	2H +/-	
			2 mechanical	2M +/-	
	continued ▼				

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

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
007	1	Gear selected	Driving 1) 3 hydraulic	3 H +/-	- Check solenoid valves => Perform electrical test, from Page 48 - If gearshifts do not occur, a clutch or brake may be defective
			3 mechanical	3M +/-	
			4 hydraulic	4H +/-	=> "Fault finding" binder, Power transmission - Renew gearbox control unit -J217 => Page 31
			4 mechanical	4M +/-	
continued ▼					

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

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
007	2	Torque converter slip 2)	Driving 1)		

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continued ▼			Torque converter lock-up clutch open	0 rpm up to stall speed 5)	- Test wiring according to current flow diagram Check ATF level => Automatic gearbox 01N; Repair group 37; Checking and topping up ATF level 20
			Torque converter lock-up clutch closed 3) Engine speed 2000 ... 3000 rpm	0 ... 130 rpm	Clutch or brake defective 4) - Check solenoid valves 4) => Electrical test, Page 48
			maximum engine speed	0 ... 15 rpm	Torque converter defective or incorrect torque converter fitted => Code letters => Automatic gearbox 01N; Repair group 00; Identification of gearbox Identification of gearbox

Note:

*Refer to footnotes for display zone 2 in display group number 007 => Page **47**.*

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Footnotes for display zone 2 in display group number 007

- 1) When driving, a second mechanic is needed for reading the specified values.
- 2) The torque converter lock-up clutch must be open. When the lock-up clutch is open, the torque converter slip may increase up to the stall speed. The lock-up clutch is open when "H" = hydraulic with slip is displayed in display zone 1 for the gear which is currently selected. Additionally the character "+" is displayed. "+" signifies that the engine speed (pump speed) is greater than the turbine speed, and "-" signifies that the engine speed is less than the turbine speed.

=> "Fault-finding" binder, Power transmission
- 3) Test conditions: the gearshift must be completed, the torque converter lock-up clutch must be closed and the accelerator pedal value must be constant.
- 4) If the torque converter slip speed shown on the display is too high, this may also indicate a slipping clutch or brake. Determine in which gear and in which selector element the fault occurs.

=> Automatic gearbox 01N; Repair Group 37; Gearbox with selector elements Gearbox with selector elements
- 5) At present, the readout is limited to a maximum of 1900 rpm only by reason of the initialising of gearbox control unit -J217.

Display group number	Display zone	Designation	Test conditions	Specified read-out on V.A.G 1551	Rectifying fault if readout does not match specification
007	3	Engine speed	Driving 1)		- Rectify engine fault if necessary



continued ▼			With engine running	... 1 rpm	=> Digifant injection and ignition system (4-cylinder); Repair group 01; Interrogating and erasing fault memory => Motronic injection and ignition system (4-cylinder); Repair group 01; Self-diagnosis of Motronic system; Interrogating and erasing fault memory Self-diagnosis; Interrogating and erasing fault memory
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1) When driving, a second mechanic is needed for reading the specified values.

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
007	4	Accelerator pedal value	Driving 1)		
			Idling	0 ... 1 %	When accelerating from idling to full throttle the percentage value constantly increases
			Full throttle	99 ... 100 %	Bring system into basic setting =>Page 31
008	Can be disregarded				

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

- ♦ Test box V.A.G 1598/18
- ♦ Adapter set V.A.G 1594 A
- ♦ Hand-held multimeter V.A.G 1526 A

Test requirements:

- Battery voltage in order.
- Fuses in order

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

- Earth connections and gearbox earthing point in order

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

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

Warning!

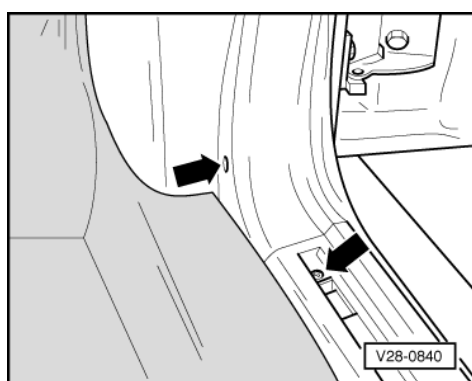
Select the appropriate measuring range at the tester before connecting the test leads to avoid damaging the electronic components.

Notes:

- ◆ The specified values are applicable 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.

Performing electrical test

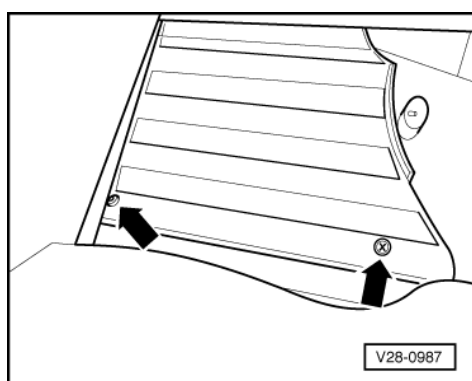
Location: the control unit -2- is located in the electronics box in the front passenger's footwell



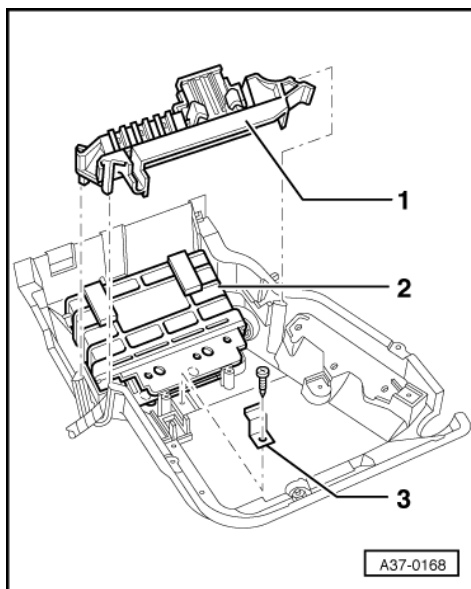
- -> Remove lower section of right-hand A-pillar trim and also right-hand sill panel trim around front door.

=> General body repairs; Repair group 70; Trims; Removing and installing A-pillar trim and Removing and installing inner sill panel trim Trims Removing and installing A-pillar trim and Removing and installing inner sill panel trim

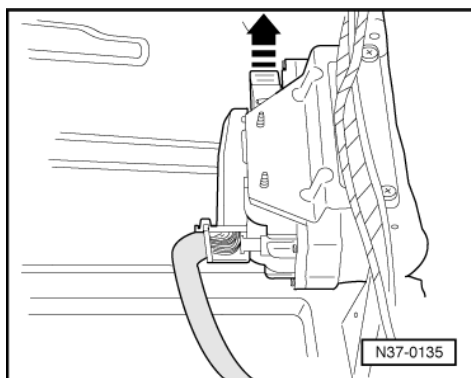
- Pull back floor covering at front of right-hand footwell. (If necessary, cut open the perforated seam on the left with a knife.)



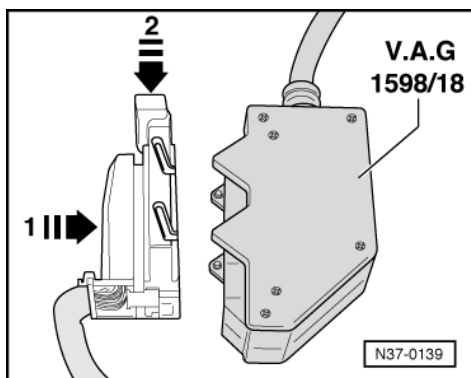
- -> Remove screws on cover for electronics box -arrows-.
- Carefully detach upper and lower sections of cover.



- -> Detach carrier -1- and unscrew retaining clip -3-.

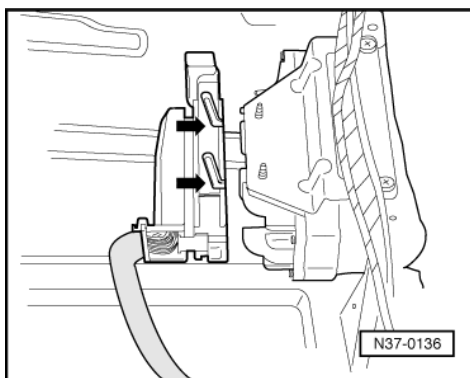


- -> Switch ignition off, release multi-pin connector in direction of arrow, and pull off control unit.



- -> Connect test box V.A.G 1598/18 onto multi-pin connector (1) and lock, in direction of arrow (2).

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



- -> After completing electrical test, fit multi-pin connector on control unit -J217 and lock.

Note:

When fitting ensure that the guides (arrows) are engaged on control unit pins.

Multi-pin connector (68 pin) on control unit -J217- (sockets on V.A.G 1598/18)

1- Earth (terminal 31)	20- Road speed sender -G68-
2- Vacant	21- Gearbox speed sender -G38-
3- Vacant	22- Solenoid valve 6 -N93- supply voltage
4- Vacant	23- Supply voltage (terminal 15)
5- Vacant	24- Diagnosis K-wire
6- Gearbox oil temperature sender -G93 (ATF)	25- Vacant
7- Vacant	26- Vacant
8- Vacant	27- Vacant
9- Solenoid valve 3 -N90-	28- Vacant
10- Solenoid valve 7 -N94-	29- Selector lever lock solenoid -N110-
11- Park/neutral signal	30- Vacant
12- Kickdown for air conditioner	31- Fan activation (diesel engine)
13- Ignition timing influence	32- Vacant
14- Vacant	33- Vacant
15- Brake light switch -F- signal voltage	34- Vacant
16- Kickdown switch -F8-	35- Vacant
17- Vacant	36- Vacant
18- Multi-function switch -F125-	37- Vacant
19- TD (revolution) signal	38- Vacant

39- Vacant	54- Solenoid valve 2 - N89-
40- Multi-function switch - F125-	55- Solenoid valve 1 - N88-
41- Engine load signal (throttle valve value) from engine control unit 1)	56- Solenoid valve 5 - N92-
42- Vacant	57- Selector lever position display
43- Road speed sender - G68- (screening)	58- Solenoid valve 6 - N93-

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44- Gearbox speed sender -G38- (screening)	59- Vacant
45- Supply voltage (terminal 30)	60- Cruise control system (input terminal15)
46- Vacant	61- Cruise control system (output)
47- Solenoid valve 4 -N91-	62- Multi-function switch - F125-
48- Vacant	63- Multi-function switch - F125-
49- Vacant	64- Vacant
50- Vacant	65- Road speed sender - G68-
51- Vacant	66- Gearbox speed sender -G38-
52- Vacant	67- Solenoid valves voltage supply
53- Vacant	68- Vacant

1) Signal (contact 41) directed via engine control unit to gearbox control unit and can only be checked in "Reading measured value block" => Page 32

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List of test steps (multi-pin connector with 68 pins)

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

Component to be tested		Component to be tested	
Supply voltage for control unit -J217	- Perform test step 1	Solenoid valve 5 -N92	- Perform test step 10
Selector lever lock solenoid -N110	- Perform test steps 2 and 13	Solenoid valve 6 -N93	- Perform test step 11
Brake light switch -F	- Perform test step 3	Solenoid valve 7 -N94	- Perform test step 12
Supply voltage for cruise control system	- Perform test step 4	Kick-down switch -F8	- Perform test step 14
Multi-function switch -F125	- Perform test step 5	Road speed sender -G68	- Perform test step 15
Solenoid valve 1 -N88	- Perform test step 6	Screening for -G68	- Perform test step 16
Solenoid valve 2 -N89	- Perform test step 7	Gearbox speed sender -G38	- Perform test step 17
Solenoid valve 3 -N90	- Perform test step 8	Screening for -G38	- Perform test step 18
Solenoid valve 4 -N91	- Perform test step 9	Gearbox oil temperature sender -G93 (ATF)	- Perform test step 19

4.2 - Test table

Switch to voltage measuring range V =					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if readout differs from specification

1	23 + 1	Supply voltage from 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 23 to terminal 15 on relay plate
2	29 + 15	Selector lever lock solenoid - N110-	▪ Ignition switched on ▪ Brake pedal not depressed	approx. battery voltage	- Check wiring according to current flow diagram
			- Brake pedal depressed	0.2 V	- Renew selector lever lock solenoid => Automatic Gearbox 01N; Repair Group 37; Servicing shift mechanism Servicing shift mechanism

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Switch to voltage measuring range V =					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if read-out differs from specification
3	15 + 1	Brake light switch -F	▪ Ignition switched on ▪ Brake pedal not depressed	0 V	- Test wiring according to current flow diagram Renew and adjust brake light switch -F
			- Brake pedal depressed	approx. battery voltage	=> Running gear, Front-wheel drive; Repair group 46; Servicing pedal cluster Servicing pedal cluster
4	60 + 1	Supply voltage for cruise control system	▪ Ignition switched on	approx. battery voltage	- Test wiring according to current flow diagram Test wiring from contact 1 to earth Test wiring from contact 60 to terminal 15 on relay plate Check fuse for cruise control system => "Current flow diagrams, Electrical fault finding and Fitting locations" binder



Switch to resistance measuring range ω					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if readout differs from specifica- tion
5	63 + 1 1)	Multi-function switch -F125 2) (095 919 823 B)	▪ Ignition switched off Selector lever position R, N, D, 3 and 2	$\infty \omega$	- Test wiring ac- cording to cur- rent flow diagram Check connector on multifunction switch -F125 for contact corro- sion, renew if necessary
			- Selector lever position P and 1	$\leq 1.5 \omega$	- Renew multi- function switch - F125
	40 + 1		- Selector lever position P, R, 2 and 1	$\infty \omega 1)$	=> Automatic gearbox 01N; Repair group 38; Dismantling and assembling park- ing lock
			- Selector lever position N, D and 3	$\leq 1.5 \omega$	
continued ▼					

1) Contact on connector for multi-function switch -F125. For contact assignment=>see Fig. 57 .

2) Either of the following types of multi-function switch -F125 may be fitted:

- mechanical switch, Part No. 095 919 823 B or.

- electronic switch, Part No. 095 919 823 F (phased in from gearbox code 29 11 5 onwards).

Identification: Part No. is on top of switch housing. If necessary, remove switch.

If fitting a new switch either type may be installed.

=> Automatic gearbox 01N; Repair group 00

Switch to resistance measuring range ω					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if readout differs from specifica- tion
5	62 + 1	Multi-function switch -F125 2)	- Selector lever position P, R, N and D	$\infty \omega$	- Test wiring ac- cording to cur- rent flow dia- gram
		(095 919 823 B)	- Selector lever position 3, 2 and 1	$\leq 1.5 \omega$	- Check connec- tor on multifunc- tion switch - F125 for contact corrosion, re- new if necessary
Switch to voltage measuring range V=					
5	18 + 1		▪ Ignition switched on	approx. battery voltage	- Renew multi- function switch - F125

continued ▼			- Selector lever position P, R, and N		=> Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock
			- Selector lever position D, 3, 2 and 1	≤ 1 V	

2) Either of the following types of multi-function switch -F125 may be fitted:

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- mechanical switch, Part No. 095 919 823 B or

- electronic switch, Part No. 095 919 823 F (phased in from gearbox code 29 11 5 onwards).

Identification: Part No. is on top of switch housing. If necessary, remove switch.

If fitting a new switch either type may be installed.

=> Automatic gearbox 01N; Repair group 00

Switch to voltage measuring range V =					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if read- out differs from specification
5	29 + 1 1 + 7 1)	Multi-function switch -F125 2) (095 919 823 F)	▪ Ignition switched on	approx. battery voltage	- Check connector on multifunction switch -F125 for contact corrosion, renew if necessary Test wiring accord- ing to current flow diagram If test readings agree with the specification in this electrical test, but the display readout in the correspond- ing measured value block does not match the specifi- cation; Renew multi-func- tion switch -F125 => Automatic gear- box 01N; Repair group 38; Disman- tling and assem- bling parking lock Dismantling and assembling parking lock

1) Contact on connector for multi-function switch -F125. For contact assignment => see Fig. 57 .

2) Either of the following types of multi-function switch -F125 may be fitted:

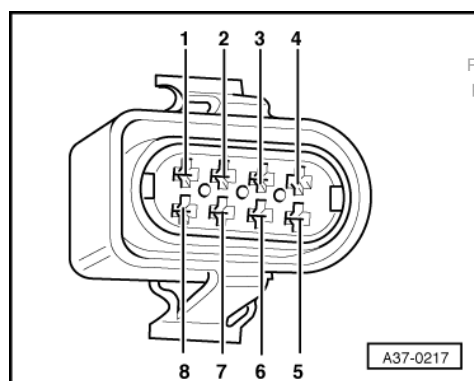
- mechanical switch, Part No. 095 919 823 B or.

- electronic switch, Part No. 095 919 823 F (phased in from gearbox code 29 11 5 onwards).

Identification: Part No. is on top of switch housing. If necessary, remove switch.

If fitting a new switch either type may be installed.

=> Automatic gearbox 01N; Repair group 00



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-> Fig. 1 Contact assignment on connector for multi-function switch -F125

Multi-function switch -F125 is located at the rear of the gearbox (right side)

=> Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock Dismantling and assembling parking lock

Switch to resistance measuring range ω					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if read-out differs from specification
6	55 + 67	Solenoid valve 1 - N88	▪ Ignition switched off	55 ... 65 ω	- Test wiring according to current flow diagram
	55 + 1			$\infty \omega$	- Renew conductor strip or valve body
7	54 + 67	Solenoid valve 2 - N89		55 ... 65 ω	=> Automatic gearbox 01N; Repair group 38; Removing and installing valve body
	54 + 1			$\infty \omega$	
8	9 + 67	Solenoid valve 3 - N90		55 ... 65 ω	
	9 + 1			$\infty \omega$	
9	47 + 67	Solenoid valve 4 - N91		4 ... 6.5 ω	
	47 + 1			$\infty \omega$	

Switch to resistance measuring range ω					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if read-out differs from specification
10	56 + 67	Solenoid valve 5 - N92	▪ Ignition switched off	55 ... 65 ω	- Test wiring according to current flow diagram - Renew conductor strip or valve body => Automatic gearbox 01N; Repair group 38; Removing and installing valve body
	56 + 1			∞ ω	
11	58 + 22	Solenoid valve 6 - N93		4 ... 6 ω	
	58 + 1			∞ ω	
	22 + 1				
12	10 + 67	Solenoid valve 7 - N94		55 ... 65 ω	
	10 + 1			∞ ω	



Switch to resistance measuring range ω					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if readout differs from specifica- tion
13	23 + 29	Selector lever lock solenoid - N110	▪ Ignition switched off	14 ... 25 ω	- Test wiring ac- cording to cur- rent flow diagram Renew selector lever lock sole- noid -N110 => Automatic gearbox 01N; Repair group 37; Servicing shift mechanism Servicing shift mechanism
14	1 + 16 continued ▼	Kickdown switch -F8 (Vehicles with petrol engines)	▪ Ignition switched off	$\infty \omega$	- Test wiring ac- cording to cur- rent flow diagram - Adjust or renew throttle cable
			▪ Accelerator pedal not de- pressed - Depress accelerator pedal down to kickdown	$\leq 1.5 \omega$	=> 4-cylinder en- gine, Mechanics; Repair group 20; Servicing throttle mechanism

Switch to voltage measuring range V =					
Test step	V.A.G 1598/18 Sockets	Test of	▪ Test conditions - Additional operations	Specification	Measures if readout differs from specifica- tion
14	1 + 16	Kickdown switch -F8	▪ Ignition switched on	approx. battery voltage	- Test wiring ac- cording to cur- rent flow dia- gram
		(Vehicles with TDI engines)	▪ Accelerator pedal not de- pressed		- Adjust or renew accelerator po- sition sender
			- Depress accelerator pedal down to kickdown	≤ 3 V	=> Diesel direct injection and glow plug sys- tem (TDI 4-cylin- der); Repair group 23; Serv- icing diesel di- rect injection system; Instal- ling and adjust- ing accelerator position sender - G79
Switch to resistance measuring range ω					
15	20 + 65	Road speed sender -G68	▪ Ignition switched off		- Test wiring ac- cording to cur- rent flow dia- gram

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			min.	0.75 kw	- Renew road speed sender - G68
			max.	1 kw	=> Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock

Switch to resistance measuring range ω					
Test step	V.A.G 1598/18 Sockets	Test of	Test conditions - Additional operations	Specification	Measures if read-out differs from specification
16	1 + 43	Screening of -G68	- Ignition switched off - Ignition switched on	$\infty \omega$	- Test wiring according to current flow diagram
17	21 + 66	Gearbox speed sender -G38	Ignition switched off	min. 0.75 kw max. 1 kw	- Test wiring according to current flow diagram - Renew gearbox speed sender - G38 => Automatic gearbox 01N; Repair group 38; Dismantling and assembling parking lock
18	1 + 44	Screening of -G38	- Ignition switched off - Ignition switched on	$\infty \omega$	- Test wiring according to current flow diagram

Switch to resistance measuring range ω					
Test step	V.A.G 1598/18 Sockets	Test of	Test conditions - Additional operations	Specification	Measures if read-out differs from specification
19	6 + 67	Gearbox oil temperature sender - G93 (ATF)	- Ignition switched off - ATF temperature approx. 20°C - approx. 60°C - approx. 120°C	0.250 Mω 48.8 kw 7.4 kw	- Test wiring according to current flow diagram Renew conductor strip => Automatic gearbox 01N; => Repair group 38; Removing and installing valve body