



Audi A3 1997 ➤

Automatic gearbox 09A, Self-diagnosis

Geartype	09A								
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List of Workshop Manual Repair GroupsList of Workshop Manual
Repair GroupsList of Workshop Manual Repair Groups

Audi A3 1997 ➤

Automatic gearbox 09A, Self-diagnosis

Repair Group

01 - Self-diagnosis, Electrical check



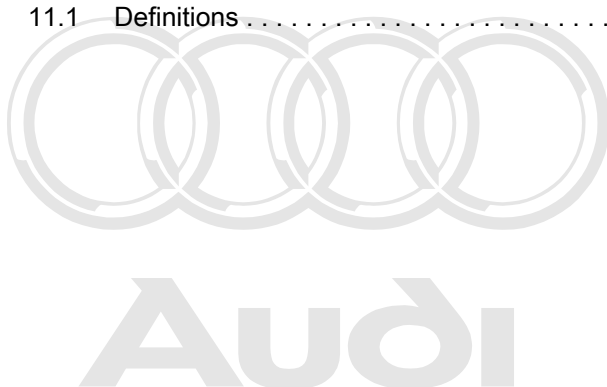
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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions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

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01 - Self-diagnosis, Electrical check

1 - Self-diagnosis function

1.1 - Self-diagnosis function

The automatic gearbox is controlled electro-hydraulically.

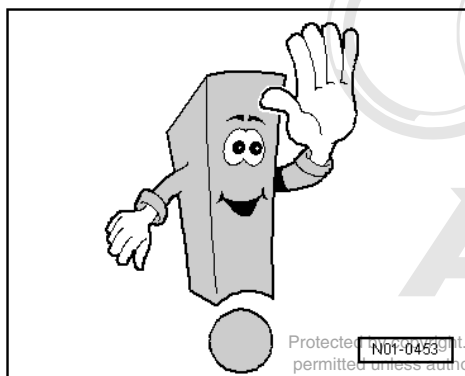
The term "self-diagnosis" relates specifically to the electrical and electronic components of the control system.

Always perform a self-diagnosis before commencing fault-finding

Additional information

- ♦ Workshop Manual Audi A31997 ä Automatic gearbox 09A
- ♦ Current flow diagrams, Electrical fault finding and Fitting locations
- ♦ Self-study programmes 232, 186.

1.2 - Data bus



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Comprehensive information on the "data bus" is given in self study programme No. 186.

Advantages:

- Rapid data transfer between the control units
- Less wiring in vehicle

The automatic gearbox control unit sends signals into the data bus and uses signals from it. It exchanges signals (information) with other control units.

Examples of signals from data bus (sent by engine control unit)

- ♦ Accelerator pedal position (throttle valve position)
- ♦ Kickdown
- ♦ Engine speed
- ♦ Engine torque

Examples of signals into data bus (used by engine control unit)

- ♦ Cruise control system



♦ Ignition timing influences

Not only does the engine control unit exchange data with other control units, the other control units exchange data with each other via the data bus, as in this example.

It is often the case that other systems can be coded. If they are incorrectly coded, faults often occur which do not have their origin in the automatic gearbox although a fault is stored in the fault memory of the automatic gearbox control unit.

If the automatic gearbox control unit detects that signals are missing or faulty, the data bus itself, another system or a component of another system may be defective.

Therefore, always perform self-diagnosis of affected control units.

When using the current flow diagram to check the routing of wiring, please ensure that the data bus wiring is okay.

Functions of gearbox control unit

The automatic control unit -J217- receives information from components that effect selection of gears and passes the information on to solenoid valves that control the valves in the valve body.

Control unit -J217- with variable gearshift points according to situation (fuzzy logic)

The gearbox control unit automatically detects the driving situation and driving resistance and varies the shift points accordingly.

Advantages:

- Gear changes will be consumption-orientated
- Maximum engine power is always available
- Individual adaption of gear change points in all driving situations
- Gear change points are infinitely variable

Hill program - gear change point variations for gradients

An additional gear change map automatically selects gear changes for gradients dependent upon accelerator pedal position and driving speed.

- Gear change map for extreme uphill stretches is matched to engine output
- Gear change map for extreme downhill stretches is matched to the braking effect of the engine

Vehicles with diesel engine (stationary de-coupling)

To increase comfort in these vehicles, the control unit selects neutral when "D" or "R" is selected while the vehicle is stationary with the engine idling and the brake pedal depressed.

Gearbox control unit fault recognition

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 fault can be determined quickly. Faults are recognized by electrical signals and stored in the fault memory.

The control unit recognizes faults during vehicle operation and stores them in a fault memory => Fault tables, from page **20**.

After analysing the information the control unit distinguishes between sporadic faults and faults present at this moment (static) and stores these.

If the fault is not present for a predetermined time or after driving a certain distance, it is no longer recognized and becomes a sporadic fault.

A fault is also changed to a sporadic fault when the fault memory is not erased after repairs.

Faults which are stored in the memory as sporadically occurring faults, will be displayed as "sporadic faults" when retrieved by fault reader V.A.G 1551. "SP" appears on the right of the display in such cases. If the printer is switched on, "sporadic faults" are printed out after the fault is addressed.

If the sporadic fault is not present for a predetermined time or after driving a certain distance, the fault is erased in the fault memory.

Safety functions of gearbox control unit

If faults occur whilst driving, the control unit can activate supplementary functions or an emergency running programme. They can affect the quality and function of the gear changes.

Depending on the seriousness of the fault, the engine control unit can react by:

shifting only according to engine speed
shifting with increased pressure (apparent to the driver because the gearshifts are less smooth)
or selects 4th gear with torque converter slip (4H).

The gearbox will remain in emergency running mode until the fault is rectified or no longer detected by the control unit over a predetermined period.

Faults which may lead to emergency running:

Open circuit in wiring, short-circuit, electrical or hydraulic components defective.

Wiring open circuit and/or data bus wiring short circuit.

Renewing control units

If the engine or gearbox control units are renewed, the system must be put into the basic setting => Page 27 , Initiating basic setting.

Vehicle diagnostic, testing and information system VAS 5051 and fault reader V.A.G 1551

Electrical faults that affect vehicle performance can be traced with these testers.

Fault reader V.A.G 1551

- ♦ From July 1997 a further number on the right next to the fault code will be displayed/printed-out when interrogating the fault memory (up-to-date programme card version of V.A.G 1551). This number indicates the type of fault, which is also given again in words under the affected component.

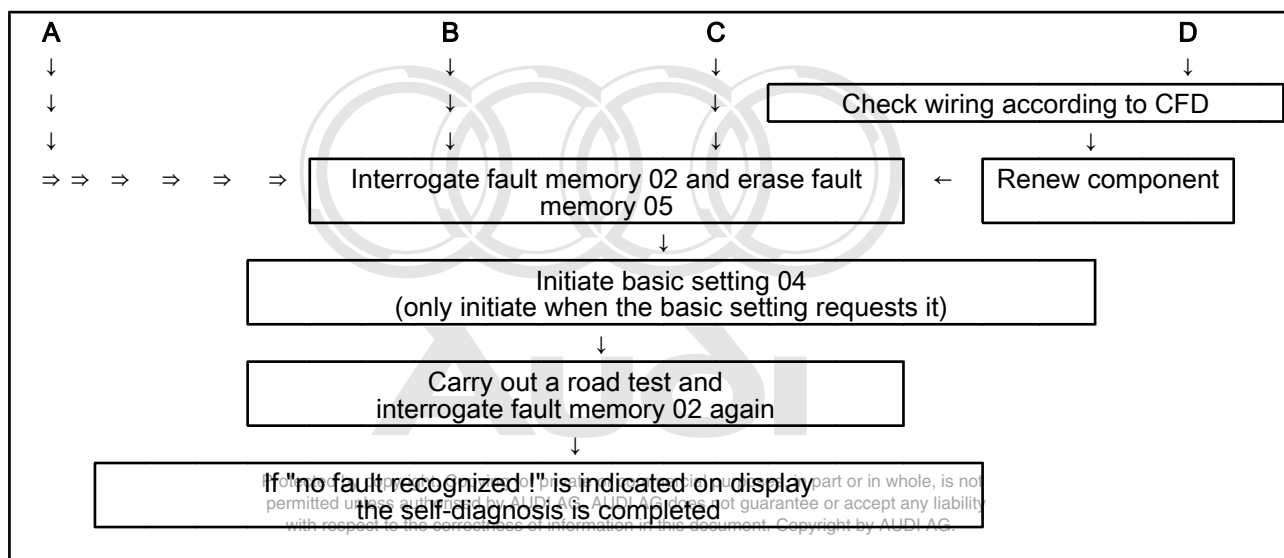
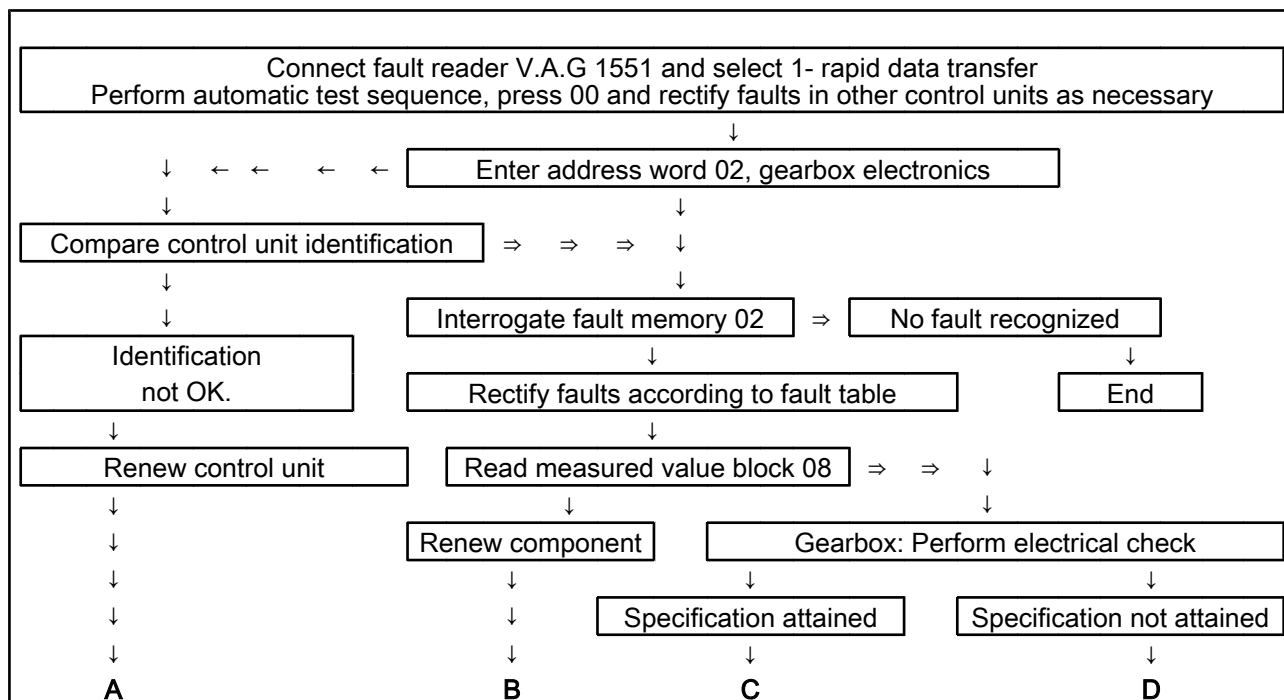
1.3 - Technical data of self-diagnosis

Memory	
-Permanent memory	yes
Data output	yes
- Rapid data transfer	
Data transfer between the control units via:	yes
- Data bus	
Final control diagnosis	no
Basic setting	yes
Coding control unit	no
Reading measured value block	yes



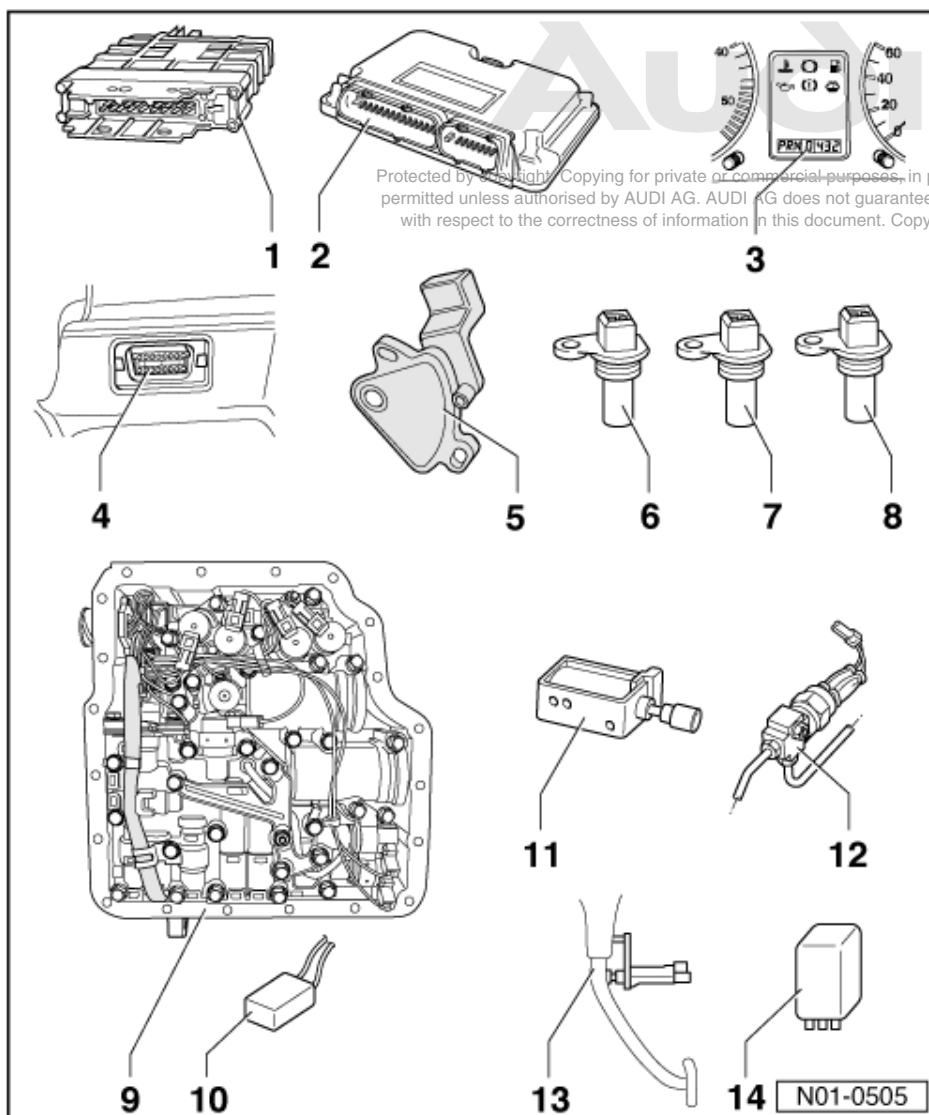
1.4 - Self-diagnosis - Guide

Fault finding with fault reader V.A.G 1551 on Automatic gearbox



2 - Locations of electrical/electronic components

2.1 - Locations of electrical/electronic components



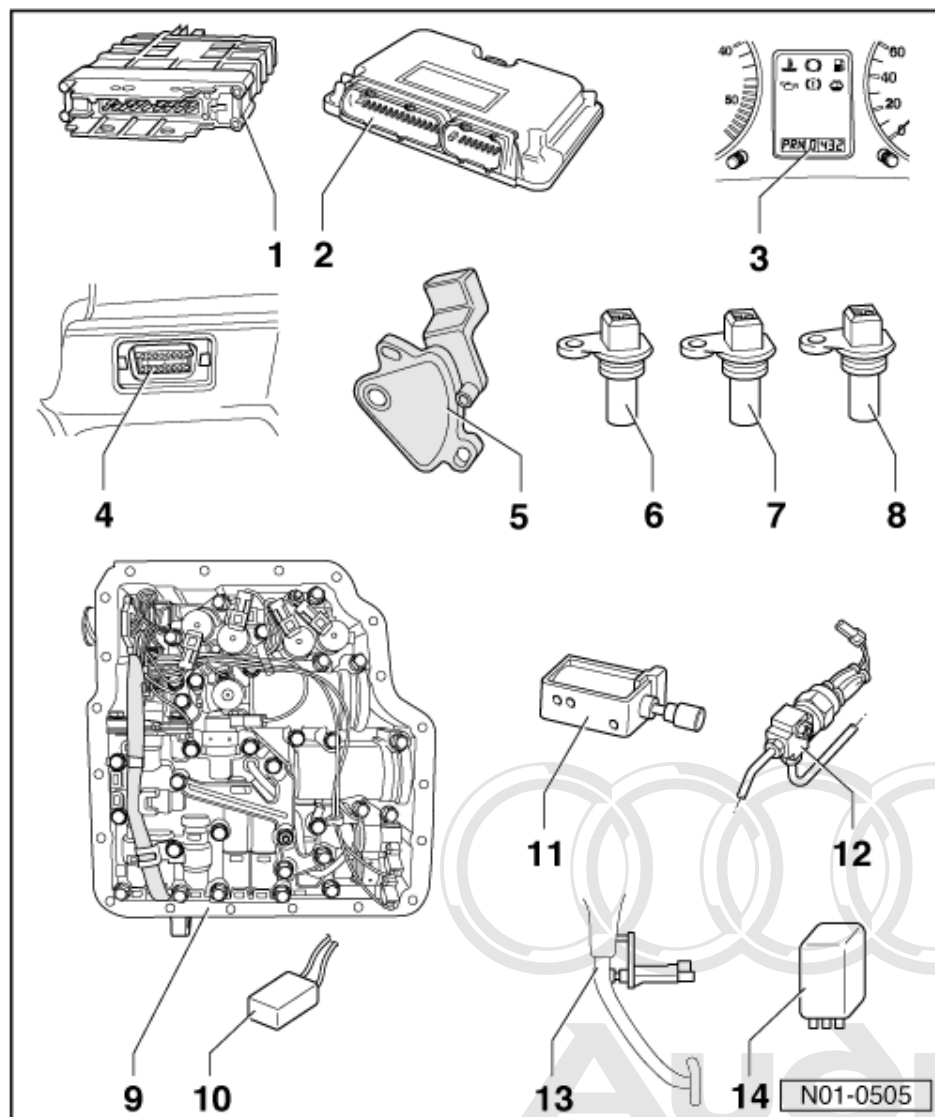
1 Automatic gearbox control unit -J217-

- ◆ Location; removing and installing =>Page 13
- ◆ Checked by self-diagnosis => Carrying out self-diagnosis, Page 17
- ◆ Control unit sends and receives data from data bus => 1

2 Engine control unit

- ◆ Location and removing and installing =>Fig. 1
- ◆ Control unit sends and receives data from data bus => 1

If engine or gearbox control units are replaced, the system must be brought to basic setting => page 27, Initiating basic setting.

**3 Dash panel insert with data bus diagnosis interface -J533-**

- ◆ With selector lever position display

=> Electrical system; Repair group 01; Self-diagnosis of dash panel insert Self-diagnosis of dash panel insert

- ◆ Control unit sends and receives data from data bus => **1**

4 Diagnostic connection

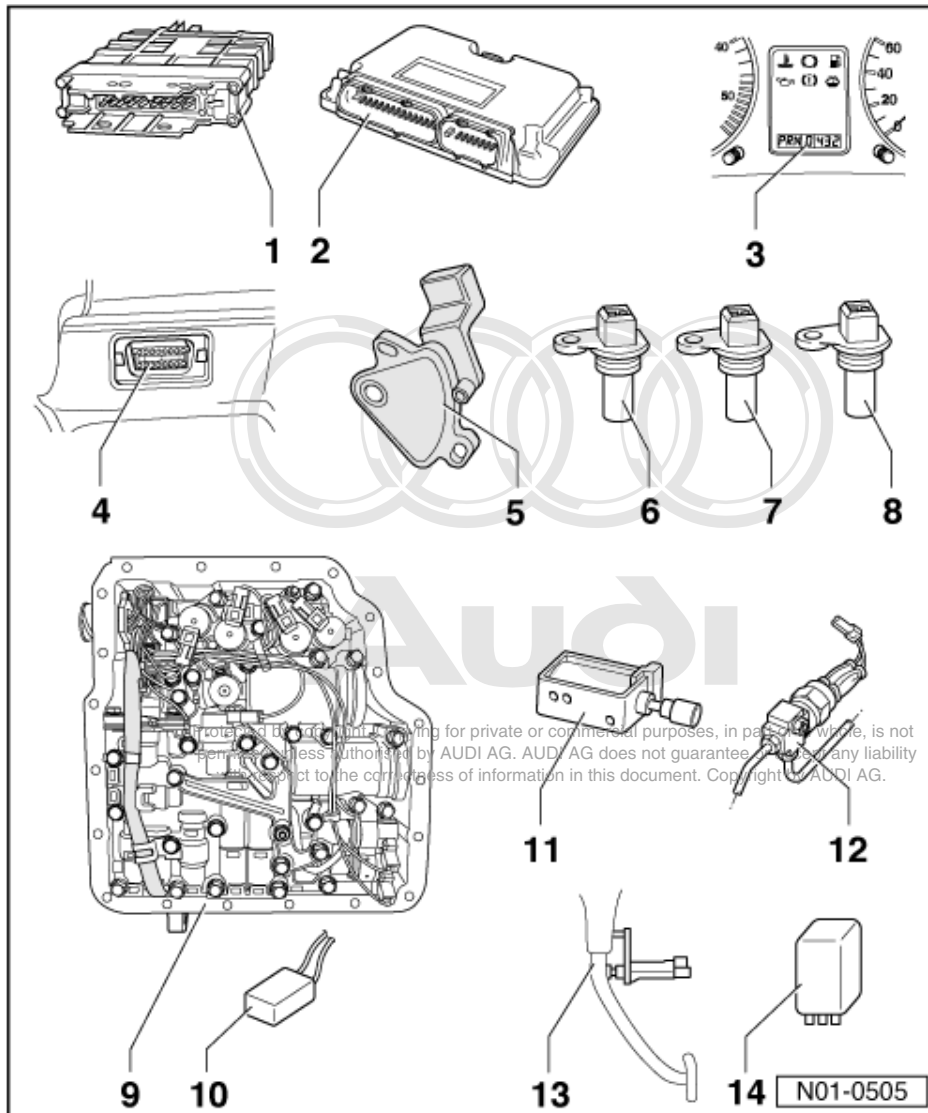
- ◆ Location => Fig. **2**

5 Multi-function switch -F125-

- ◆ Removing, installing and adjusting

=> Automatic gearbox 09A; Repair group 38; Removing, installing and adjusting multi-function switch -F125
Removing, installing and adjusting multi-function switch -F125

- ◆ -F125- is checked by self-diagnosis



6 Intermediate shaft speed sender -G265-

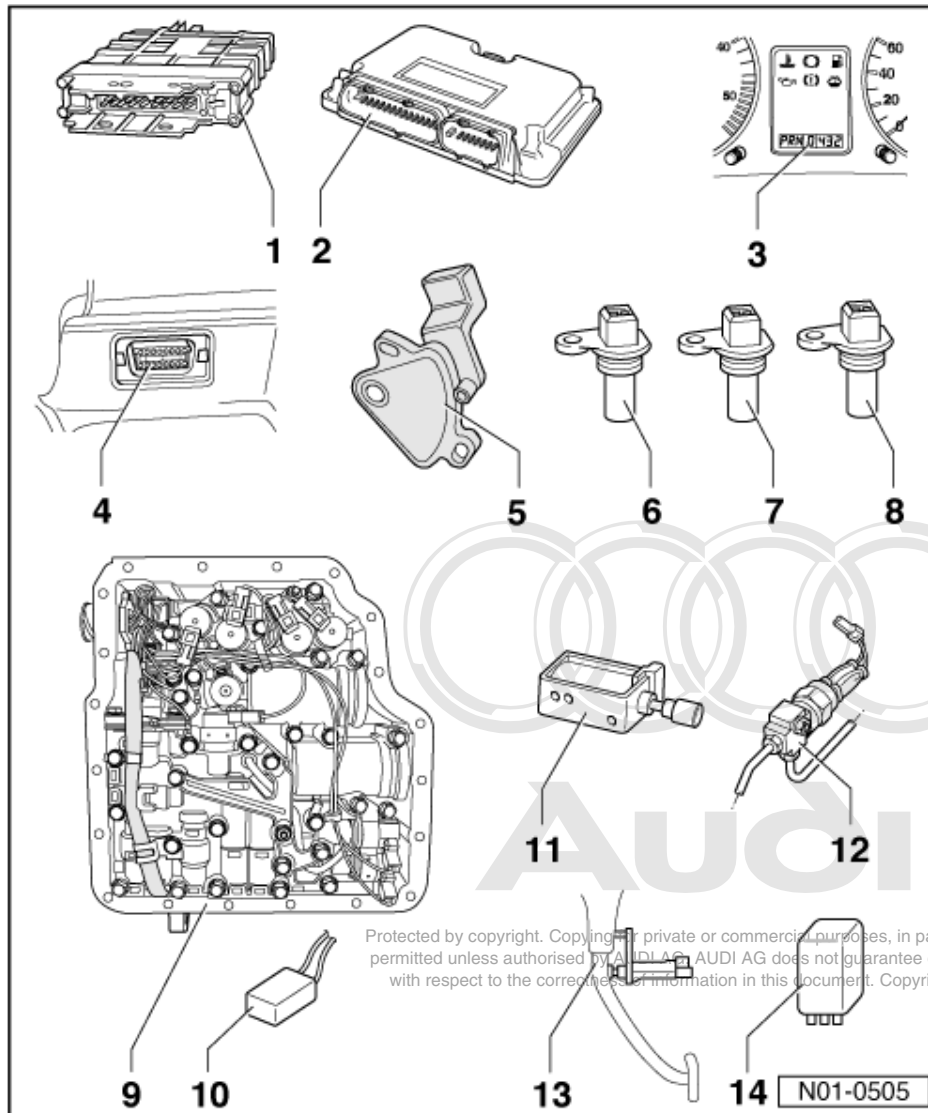
- ◆ Picks up signal on spur gear A
- ◆ Location: in gearbox
- ◆ -G265- is checked by self-diagnosis

7 Road speed sender -G68-

- ◆ Picks up gearbox output speed (road speed)
- ◆ Location: in gearbox
- ◆ -G68- is checked by self-diagnosis

8 Gearbox input speed sender -G182-

- ◆ Picks up gearbox input speed (turbine shaft)
- ◆ Location: in gearbox
- ◆ Checked by self-diagnosis



9 Valve chest

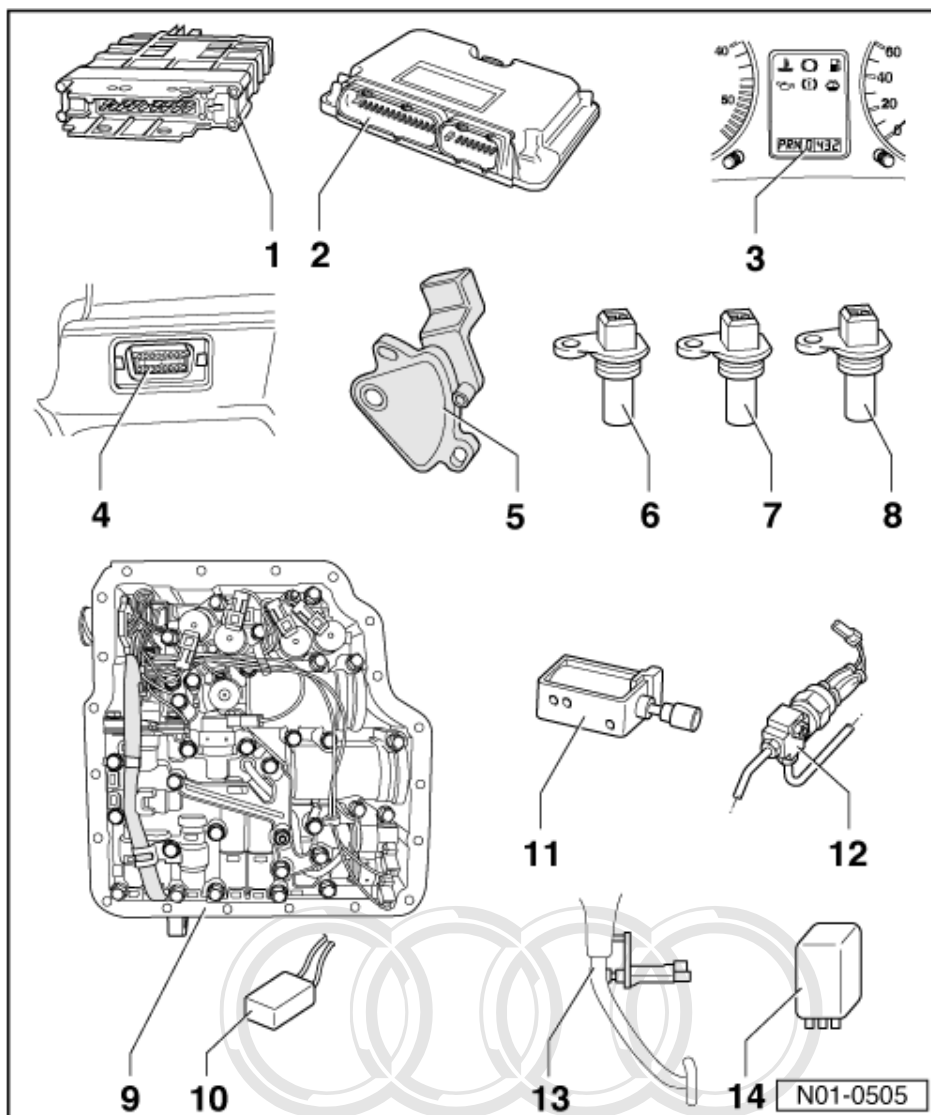
- ◆ Location: in gearbox

=> 5-speed automatic gearbox 09A; Repair group 38; Removing and installing valve chest Removing and installing valve chest

- ◆ The solenoid valves -N88-, -N89-, -N90-, -N91-, -N92-, -N93-, -N281-, -N282- and -N283- are attached to the valve chest
- ◆ The valves are checked by self-diagnosis

10 Oil temperature sender (ATF) -G93-

- ◆ Location: in gearbox



11 Solenoid for selector lever lock -N110-

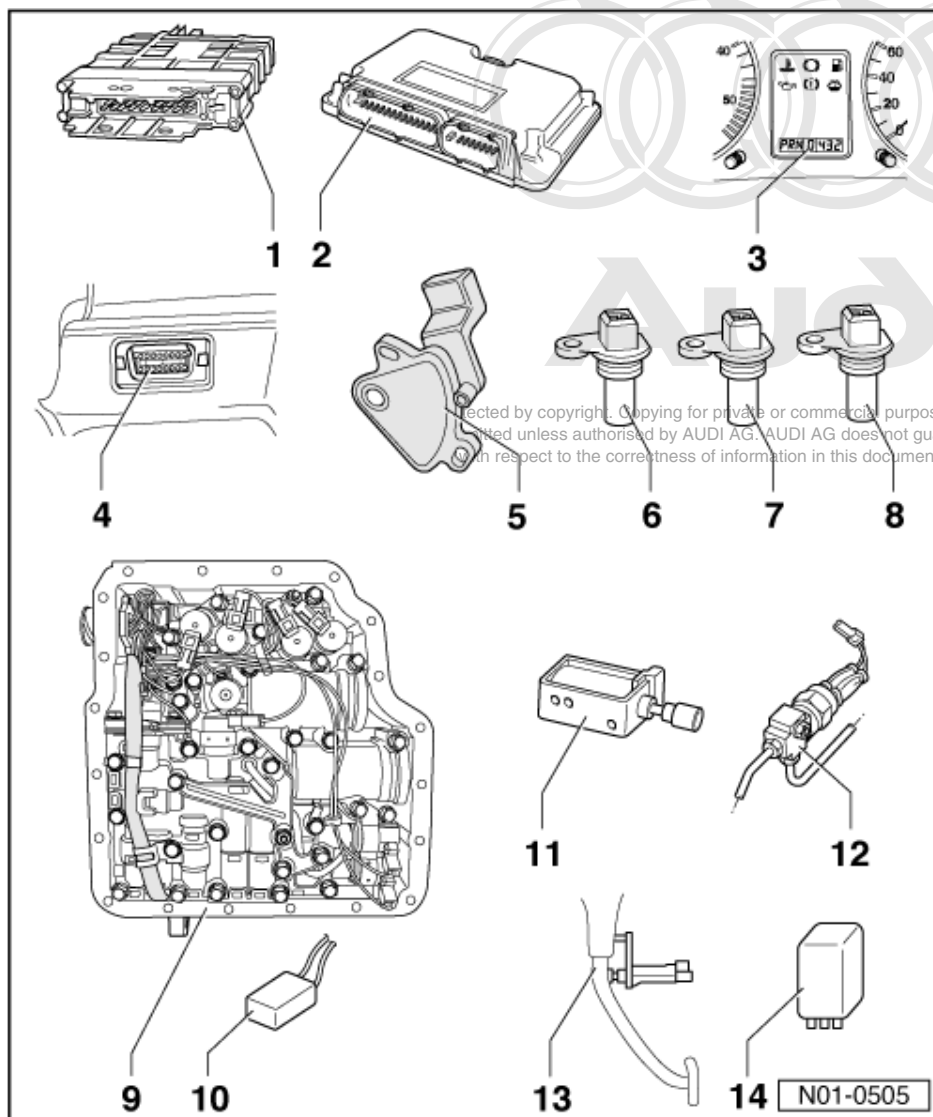
- ♦ Location and removing and installing

=> Automatic gearbox 09A; Repair group 37; Removing and installing solenoid for selector lever lock -N110-
Removing and installing solenoid for selector lever lock -N110-

- ♦ The solenoid is checked by self-diagnosis
- ♦ Can be checked in measured value block => page 41

12 Brake pressure switch -F270-

- ♦ Signal can be checked in measured value block => Page 28 .
- ♦ Location: switch is located on bulkhead in brake pipe to front right-hand wheel



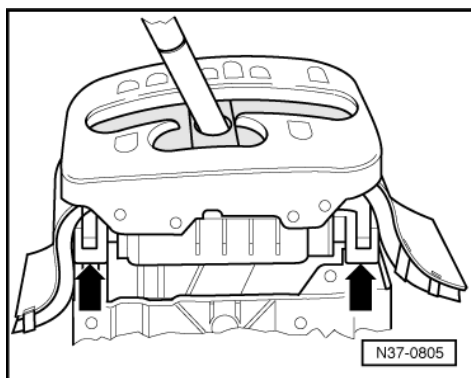
13 Brake light switch -F-

- ♦ Location and removing and installing =>Fig. 3
- ♦ Can be checked electrically => page 28

14 Relay for starter lock-out and reversing light -J226-

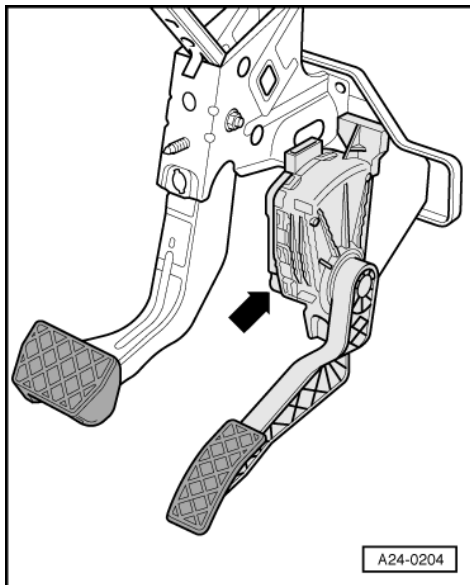
- ♦ Fitting location: in central electrics

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



-> 15 - Tiptronic switch -F189-

- ◆ Fitting location: the switch is on the printed circuit of the symbol insert, which is located in the selector mechanism cover.
- ◆ The switch can be checked in the measured value block => page 41
- ◆ If faults occur in the switch, the symbol insert must be renewed with the printed circuit



=> Automatic gearbox 09A; Repair group 37; Servicing shift mechanism; Dismantling and assembling shift mechanism Servicing shift mechanism Dismantling and assembling shift mechanism

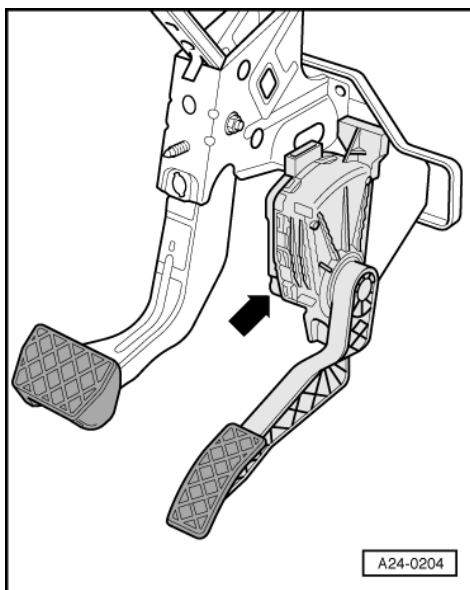
-> 16 - Kickdown switch -F8

Fitting location: integrated in accelerator position sender -G79.

If kickdown switch -F8 is renewed, the kickdown function must be "re-learned". The required adaption procedure is described in the relevant engine Workshop Manual, Repair group 23 or 24.

Removing and installing kickdown switch; checking kickdown switch

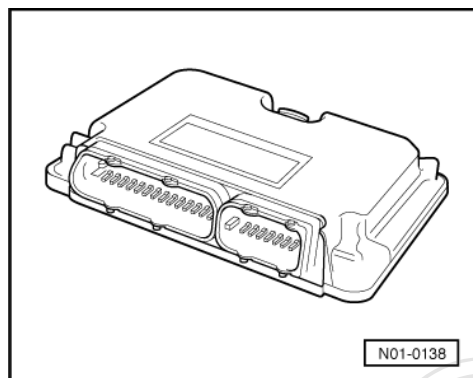
=> Fuel supply system - Petrol engines; Repair group 20; Servicing throttle mechanism - front-wheel drive and four-wheel drive Servicing throttle mechanism - front-wheel drive and four-wheel drive





=> Fuel supply system - Diesel engines; Repair group 20; Servicing throttle mechanism - front-wheel drive and four-wheel drive Servicing throttle mechanism - front-wheel drive and four-wheel drive

- ♦ The switch can be checked in the measured value block => page 41



-> Fig.1 Engine control unit

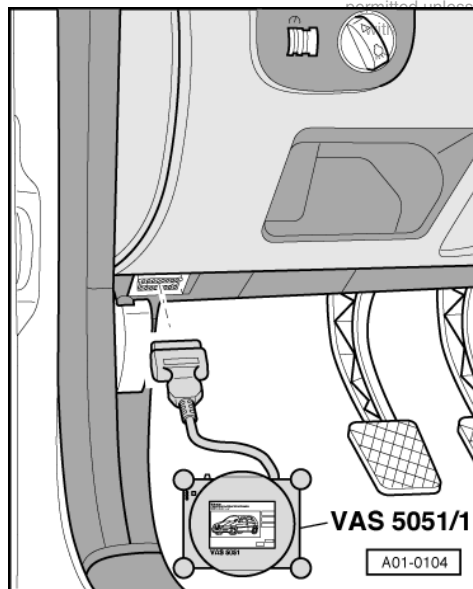
Location: the control unit is located in plenum chamber.

Removing and installing control unit

The procedure for removing and installing the control unit is described in the relevant engine Workshop Manual, Repair group 01, 23 or 24.

If the engine control unit or the gearbox control unit is renewed, the basic setting must be performed for the system=>Page 27, Initiating basic setting.

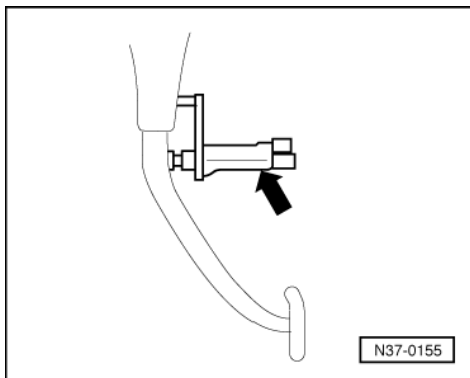
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If the engine control unit is renewed, the kickdown function must be "re-learned". The required adaption procedure is described in the relevant engine Workshop Manual, Repair group 23 or 24.

-> Fig.2 Diagnosis connection

Location: the diagnosis connection is in the front knee padding (left side).



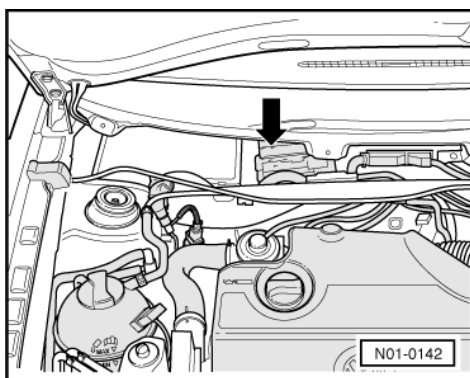
-> Fig.3 Brake light switch -F-

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

Removing and installing brake light switch

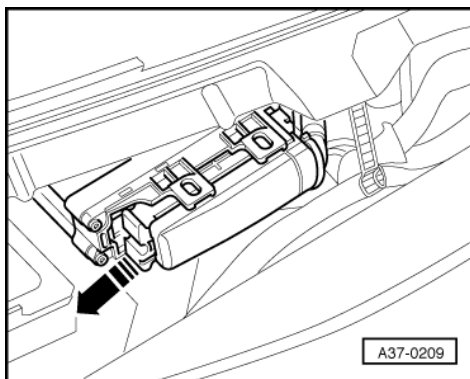
=> Running gear, Self-diagnosis; Repair group 01; Electrical/electronic components and fitting Locations Electrical/electronic components and fitting Locations

- ♦ The switch can be checked in the measured value block => page 41



Location of control unit for automatic gearbox -J217-

-> The control unit -arrow- is located in plenum chamber centre/right.



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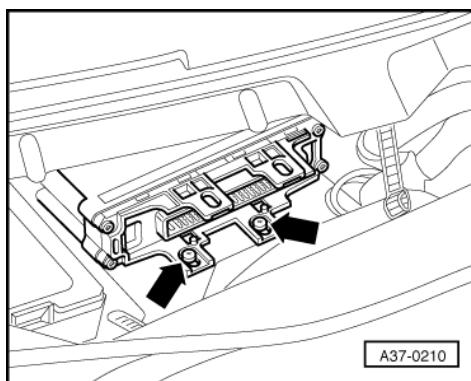


Removing

- Open the bonnet.
- Remove wiper arms

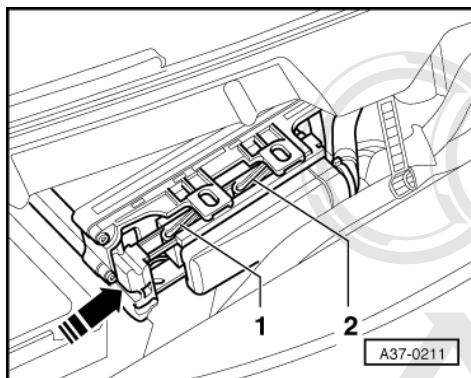
=> Electrical system; Repair group 92; Windscreen wiper system Windscreen wiper system

- Remove cover for plenum chamber.
- -> Switch off ignition, release catch on multi-pin connector in direction of arrow and unplug from control unit.



- -> Slacken screws -arrows- and pull off control unit.

Installing



- Secure control unit.
- -> Fit guides -1- and -2- on the multi-pin connector onto the pins on the control unit. Then secure catch on connector in direction of arrow.
- Performing self-diagnosis => Page 14.
- If control unit is renewed, initiate basic setting => Page 27.

3 - Performing self-diagnosis

3.1 - Performing self-diagnosis

3.2 - Safety precautions

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

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

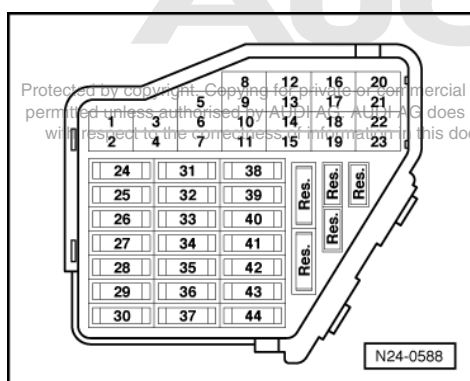
If test and measuring instruments are operated from front passenger's seat and the vehicle is involved in an accident, there is a possibility that the person sitting in this seat may receive serious injuries when the airbag is triggered.

Note!

- ♦ **You must always secure testing and measuring equipment on the rear seat.**
- ♦ **When vehicle is being driven, only a passenger can operate this equipment.**

Test conditions:

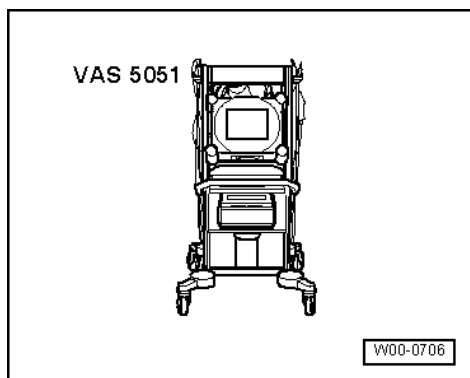
- Selector lever in position "P" and handbrake applied.



- Vehicle voltage supply in order.
- Fuses in main fuse box OK.
- Fuses 7, 11, 13, 15 and 31 OK.
- Check earth connections for gearbox:
 - Check earth connections for corrosion and poor contact; repair if necessary.
 - Earth connection point is located in engine compartment, left below battery.
 - Check battery earth strap and earth strap between battery and gearbox.

All functions which could previously be performed with V.A.G 1551/1552 can also be performed with the new tester VAS 5051 in the operating mode vehicle self-diagnosis:

3.3 - Connecting vehicle diagnosis, testing and information system VAS 5051

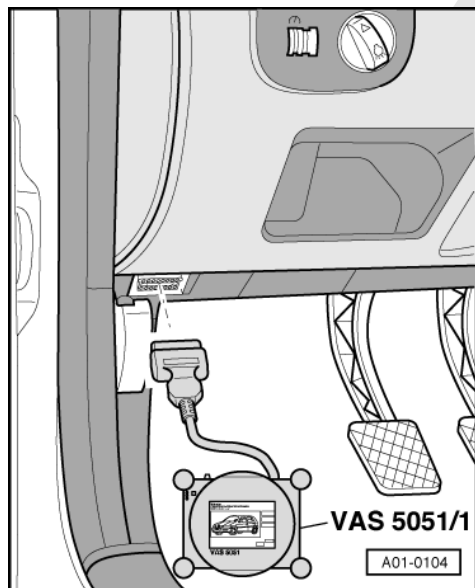




Special tools, workshop equipment, testers, measuring instruments and auxiliary items required

- ♦ VAS 5051 Vehicle diagnosis, testing and information system

Additional information

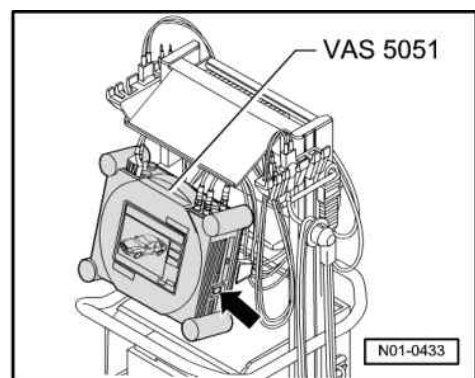


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- ♦ Self-study programme No.202.
- ♦ Workshop Manual Audi A3 1997ä , Automatic gearbox 09A

Note:

- ♦ The diagnosis connection is in the knee padding at the front left.
- -> With ignition switched off, connect diagnosis cable connector VAS 5051/1 or VAS 5051/3 onto diagnosis connection.



- -> Switch on tester -arrow-.

Now the tester requires approx. 5 minutes to run up.

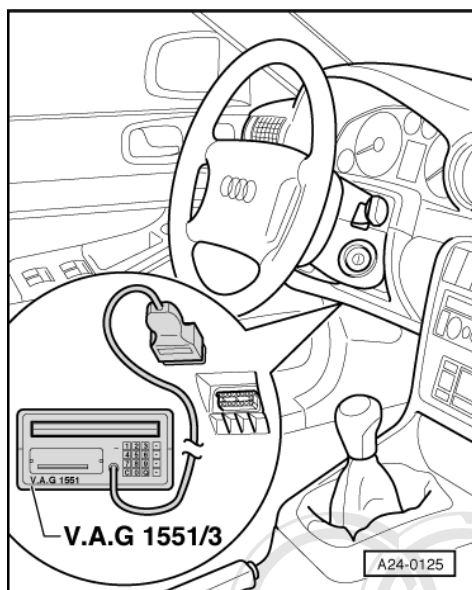
- Switch on ignition.
- Select the zone "Vehicle self-diagnosis" on touch screen.

The display will now guide you further.

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

Additional information

- ◆ Workshop Manual Audi A3 1997ä , Automatic gearbox 09A
- ◆ Current flow diagrams, Electrical fault finding and Fitting locations
- ◆ Technical service handbook
- ◆ Parts catalogue



- Connecting fault reader:

Note:

- ◆ The diagnosis connection is in the knee padding at the front left.
- -> With ignition switched off, connect fault reader V.A.G 1551 using diagnosis cable V.A.G 1551/3.

-> Indicated on display:

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

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1) appears alternately

- ◆ Additional operating instructions can be called up by pressing the HELP key of V.A.G 1551.
- ◆ The ➔ key is used for advancing within the programme sequence.

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

3.5 - Automatic test sequence

The automatic test sequence interrogates all the fault memories of the control units.

- Before selecting the gearbox control unit, perform the automatic test sequence. Faults of other control units can influence the gearbox control unit.



- Switch on ignition.

-> Indicated on display:

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

1) Is displayed alternately

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

-> Indicated on display:

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

- Press key -0- twice; 00 enters the "Automatic test sequence" function.
- Confirm entry with Q key.

Then all control unit identifications, together with entries which may be in fault memory, are displayed.

- After test sequence, the V.A.G 1551 returns to the following start position:

-> Indicated on display:

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

1) appears alternately

Select automatic gearbox control unit

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

-> Indicated on display:

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

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

-> Indicated on display:

```
Rapid data transfer    Q
02 Gearbox electronics
```

- Confirm entry with key Q.

-> Indicated on display:

```
09A927750    AG5    Getriebe    09A
0004
Coding 00000    WSC 00000
```

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

Example for control unit identification

Depending upon the version installed (program level), the control unit can indicate a different control unit identification to that shown in the example. Allocation of control unit => Parts catalogue.

- ♦ 09A927750: Part No.
- ♦ AG5 Getriebe (gearbox) 09A: Automatic gearbox (5-speed) 09A

- ♦ 0004: EPROM (programme level)

The program level can also be read out in a measured value block.

- ♦ Coding 00000: is not required at present.
- ♦ WSC 00000: V.A.G 1551 dealership number with which the last coding was performed.

-> Indicated on display:

Control unit does not answer! HELP

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

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

-> Indicated on display:

Control unit does not answer! HELP

Check control unit voltage supply.

- Perform test step 1 => Page 41, Electrical check.
- Check wiring connections to diagnostic socket

=> 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.

3.6 - List of selectable functions

	Page
01 - Interrogate control unit version => Performing self-diagnosis	17
02 - Interrogate fault memory	20
04 - Initiate basic setting	27
05 - Erase fault memory	26
06 - End output	
08 - Read measured value block	28

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



4 - Interrogating fault memory

4.1 - 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 .

-> 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!

Output on printer V.A.G 1551	
No fault recognised!	If "No fault recognised" appears after completing repair work, the self-diagnosis is complete.

The stored faults are displayed in turn and printed out.

- Press =>key.
- 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	

After interrogating the fault memory and rectifying the faults:

- Erase fault memory => Page 26 .

5 - Fault table

5.1 - Fault table

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00258	Wiring open or short circuit	- Check wiring and connections according to current flow diagram2)
Solenoid valve 1 -N88-	Solenoid valve 1 -N88- defective	- Read measured value block =>page 28 ; display group number 004
Short to earth1) Open circuit/short to earth1)		

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00260 Solenoid valve 2 -N89- Short to earth1) Open circuit/short to earth1)	Wiring open or short circuit Solenoid valve 2 -N89- defective	- Check wiring and connections according to current flow diagram2) - Read measured value block =>page 28 ; display group number 004

- 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 connection on top of gearbox and solenoid valve wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00262 Solenoid valve 3 -N90- Short to earth1) Open circuit/short to earth1)	Wiring open or short circuit Solenoid valve 3 -N90- defective	- Check wiring and connections according to current flow diagram2) - Read measured value block =>page 28 ; display group number 004
00264 Solenoid valve 4 -N91- Short to earth1) Open circuit/short to earth1)	Wiring open or short circuit Solenoid valve 4 -N91- defective	- Check wiring and connections according to current flow diagram2) - Read measured value block =>page 28 ; display group number 003

- 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 connection on top of gearbox and solenoid valve wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00266 Solenoid valve 5 -N92- Short to earth1) Open circuit/short to earth1)	Wiring open or short circuit Solenoid valve 5 -N92- defective	- Check wiring and connections according to current flow diagram2) - Read measured value block =>page 28 ; display group number 004
00268 Solenoid valve 6 -N93- Short to earth1) Open circuit/short to earth1)	Wiring open or short circuit Solenoid valve 6 -N93- defective	- Check wiring and connections according to current flow diagram2) - Read measured value block =>page 28 ; display group number 002

- 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 connection on top of gearbox and solenoid valve wiring harness.



Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00281 Road speed sender -G68- No signal	Wiring open circuit Road speed sender -G68- defective	- Read measured value block =>page 28 ; display group number 001 Check wiring and connections using current flow diagram2)
00293 Multi-function switch -F125- Undefined switch condition	Wiring open circuit Multi-function switch -F125- defective	- First check multi-function switch connector for contact corrosion or water ingress, renew if necessary - Read measured value block =>Page 28 ; display group number 004
00296 Kickdown switch Short to earth1) Implausible signal1)	Signal is continuously sent from EPC although the accelerator pedal is not pressed to stop.	- Read measured value block =>Page 28 ; display group number 004

- 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 connection on top of gearbox and solenoid valve wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00300 Gearbox oil temperature sender -G93-1) Open/short circuit to positive	Wiring open circuit Gearbox oil temperature sender -G93- defective	- Check wiring and connections according to current flow diagram2) - Read measured value block =>page 28 ; Display group number 002 -

- 1) A faulty ATF temperature sender is indicated.
- 2) First check connections for contact corrosion or water ingress and renew if necessary. If solenoid faults are displayed then especially check the connection on top of gearbox and solenoid valve wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00347 Solenoid valve 8 -N281- Short to earth1) Open circuit/short to earth1)	Wiring open or short circuit Solenoid valve 8 -N281- defective	- Check wiring and connections using current flow diagram - Read measured value block =>page 28 ; display group number 004
00348 Solenoid valve 9 -N282-	Wiring open or short circuit Solenoid valve 9 -N282- defective	- Check wiring and connections using current flow diagram2) - Read measured value block =>page 28 ; display group number 004

Short to earth1) Open circuit/short to earth1)		
---	--	--

- 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 connection on top of gearbox and solenoid valve wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00349 Solenoid valve 10 -N283- Short to earth1) Open circuit/short to earth1)	Wiring open or short circuit Solenoid valve 10 -N283- defective	- Check wiring and connections using current flow diagram2) - Read measured value block =>page 28 ; display group number 008
00350 Earth return wire, modulation valve Output does not switch/short to positive	Wiring open circuit Protected by copyright. Copying for private or internal use, or for the private or internal use of specific clients, is not 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. Control unit -J217- defective	- Check wiring and connections using current flow diagram2) - Renew control unit =>Page 27

- 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 connection on top of gearbox and solenoid valve wiring harness.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00351 Intermediate shaft speed sender -G265- No signal	Wiring open or short circuit Intermediate shaft speed sender -G265- defective	- Check wiring and connections using current flow diagram1) - Read measured value block =>Page 28 ; display group number 007
00529 Speed information missing No signal	The engine control unit identifies the signal as faulty and then sends it into the data bus.	If the readout also shows fault codes 01312 or 01314, rectify these faults first Check engine control unit =>see engine Workshop Manual; Repair group 01; Performing self-diagnosis Read measured value block=>page 28 ; Display group No. 001 Check wiring and connections according to Current flow diagram
00532 Supply voltage	Battery defective Insufficient system voltage for valves	- Test battery voltage - Read measured value block =>page 28 ; display group number 002

- 1) First check connections for contact corrosion or water ingress and renew if necessary. Pay particular attention to the connections on the gearbox.



Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00652 Gear monitoring Implausible signal1) Mechanical fault1)	Electrical/hydraulic fault Clutch or valve chest defective	- Read measured value block =>Page 28 ; display group number 001 and establish in which gear the fault occurs by driving
00777 Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not 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. Accelerator pedal position sender -G79- No signal	The engine control unit identifies the signal as faulty and then sends it into the data bus.	- Check engine control unit => see engine Workshop Manual; Repair group 01; Performing self-diagnosis - Read measured value block =>Page 1
01045 Tiptronic switch -F189- Implausible signal	Wiring open circuit Tiptronic switch -F189- defective	- Check wiring and connections using current flow diagram Read measured value block =>Page 28 ; display group 005

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

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
01166 No signal 1) Implausible signal 1) Signal outside tolerance 1)	The engine control unit identifies the signal as faulty and then sends it into the data bus.	- - Perform self-diagnosis of engine control unit => see engine Workshop Manual; Repair group 01; Performing self-diagnosis
01192 Torque converter lock-up clutch Mechanical fault1) Defective1)	Lock-up clutch slips Valve chest defective	- Check torque converter lock-up clutch slip Read measured value block =>Page 28 ; display group number 003
01236 Selector lever lock solenoid -N110- Short to earth1) Open circuit/short to positive1)	Wiring open circuit or short Selector lever lock solenoid -N110- defective	- Read measured value block =>Page 28 ; display group number 004

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

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
01312 Drive train data bus Defective1) No communication1)	Data bus wiring/connectors defective	- Read measured value block => Page 28 ; display group 125
01314 Engine control unit No communication1)	Data bus wiring/connectors defective	- Read measured value block => Page 28 ; display group 125

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

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
17101P0717 Gearbox input speed sender -G182-	Wiring open circuit or short to earth or positive Screening for wiring to gearbox input speed sender -G182- defective Gearbox input speed sender -G182- defective	- Check wiring and connectors using current flow diagram - Read measured value block =>page 41 => Automatic gearbox 09A; Repair group 38; Removing and installing valve chest; Renewing gearbox input speed sender -G182- Removing and installing valve chest; Renewing gearbox input speed sender -G182-
No signal	Engine speed, gearbox speed signal defective Multi-function switch -F125- defective	- Perform fault elimination according to fault codes 00529 or 00293
	ATF level not OK Defective torque converter	- Check ATF level => Automatic gearbox 09A; Repair group 37; Checking ATF level and topping up Checking ATF level and topping up
	Clutches or brakes slipping Sticking solenoid valve	- Read measured value block =>Page 28 ; Display group number 007 and then determine during a test drive which elements are defective or which are not activated

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

- 5.1 - Fault table 25



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

If the control unit is renewed, the system must be returned to its basic setting => Page 27.

6 - Erasing fault memory

6.1 - Erasing fault memory

Requirement:

- Fault memory interrogated => page 20.
- Vehicle stationary.
- Engine speed not above 960 rpm.

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.

-> Indicated on display:

Warning!
Fault memory was not interrogated.

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

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

-> Indicated on display:

Fault memory is not erased

If one or more faults are present.

- Interrogate fault memory => Page 20.

-> Indicated on display:

Rapid data transfer
Fault memory is erased!

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

The fault memory is now erased.

- Press keys 0 and 6. (The function "End output" is entered with 06.)
- Switch off ignition.

Wait about 1 minute before again interrogating the fault memory.

-> Indicated on display:

System cannot be interrogated!

-> Print out with printer switched on:

1 Fault recognized !
00811 3333
System cannot be interrogated

Control unit -J217- was not given sufficient time to recognize 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.

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

"No fault recognized!"

7 - Initiating basic setting

7.1 - Initiating basic setting

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

- ◆ Exchanging engine
- ◆ Replacing or coding engine control unit
- ◆ Removing and installing gearbox
- ◆ Removing and installing "electronic accelerator"
- ◆ Replacing automatic gearbox control unit -J217-
- 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).

Accelerator pedal must remain in idling position.

-> Indicated on display:

Rapid data transfer Q
04 - Basic setting

- Confirm entry with key Q.

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-> Indicated on display:

Basic setting HELP
Enter display group number XXX

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

-> Indicated on display:

System in basic setting 0

The system is now in the basic setting.



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

-> Indicated on display:

Rapid data transfer HELP
Select function XX

8 - Read measured value block (data block)

8.1 - Read measured value block (data block)

Additional information

- ♦ Workshop Manual Audi A3 1997 ä Automatic gearbox 09A
- 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 HELP
08 - Read measured value block

- Confirm entry with key Q.

-> Indicated on display:

Read measured value block
Enter display group number XXX

- Enter display group number => List of selectable display group numbers, Page 28 .
- Confirm entry with key Q.

Read measured value block 1
1

-> There are always 4 display zones in the measured value block (if necessary in physical quantities).
Decoding the individual values in display zones 1 to 4 => Test table page 30 .

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➔ 28 km/h 1730/min 1790/min 2H	001	1 = 2 = 3 = 4 =	Speed Gearbox output speed sender -G182- (turbine speed) Engine speed Selected driving range

Indicated on display (example)			
Read measured value block 2⇒ 0 % 34 % 30.0°C 14.1V	002	1 = 2 = 3 = 4 =	Accelerator pedal value (engine control unit) Solenoid valve 6 -N93- (main pressure control in %) ATF temperature Battery voltage
Read measured value block 3⇒ 0 km/h 0 % 1 4 %	003	1 = 2 = 3 = 4 =	Road speed Accelerator pedal value (engine CU signal) Selected gear Solenoid valve 4 -N91- (lock-up clutch control in %)
Read measured value block 4⇒ D 00000100 01000000 00000110	004	1 = 2 = 3 = 4 =	Selector lever position Multi-function switch (8 character display) Switch position (8 character display) Switch output (8 character display)
ÿ ÿ ÿ ÿ 1 2 3 4 Display zones			

Indicated on display (example)			
Display zones: 1 2 3 4 ÿ ÿ ÿ ÿ	Display group No.	Display zone	Description
Read measured value block 5⇒ D TIP M 3M 010 0110	005	1 = 2 = 3 = 4 =	Selector lever position Tiptronic status (actual) Selected gear Switch positions (4th digit blank) 1st - 3rd digits: Tiptronic switch 5th - 8th digits: multifunction switch
Read measured value block 6⇒ +/-08% 008% 008% 030%	006	1 = 2 = 3 = 4 =	Can be disregarded
Read measured value block 7⇒ 1790/min 1730/min 0/min 20 km/h	007	1 = 2 = 3 = 4 =	Engine speed Gearbox input speed sender -G182- (turbine speed) Intermediate -G265- Road speed sender -G68-
ÿ ÿ ÿ ÿ 1 2 3 4 Display zones			

Indicated on display (example)			
Read measured value block 8⇒ 0 % 34 % 90 % 2H	008	1 = 2 = 3 = 4 =	Accelerator pedal value (engine control unit signal) Solenoid valve 6 -N93- (main pressure control in %) Solenoid valve 10 -N283- (pressure regulation, 2-4 gear brake in %) Selected driving range
Display group No.	080	can be disregarded	
Read measured value block 125⇒ Engine 1 ABS 1	125	1 = 2 = 3 = 4 =	Engine control unit on data bus ABS control unit on data bus



Indicated on display (example)

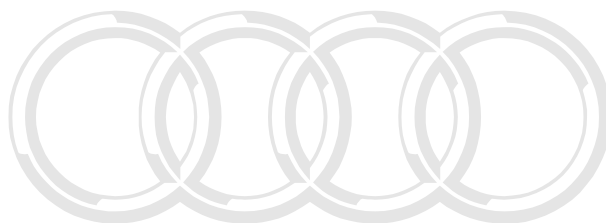
---- 1 2 3 4 Display zones	
--	--

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

- Press key =>.

-> Indicated on display:

Rapid data transfer HELP
Select function XX



8.2 - Test table

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
001	1	Road speed	Driving1)	...km/h	Speedometer reading and readout on V.A.G 1551 may differ slightly. Check road speed sender -G68- => Perform electrical check, from page 41
Cont'd	2	Gearbox input speed sender - G182- (turbine rpm)	Driving1) with engine running	rpm	- Check gearbox input speed sensor -G182- => Perform electrical check, from page 41

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
001 Cont'd	3	Engine speed	With engine running	... rpm	Rev counter reading and readout on V.A.G 1551 may differ slightly Perform engine control unit self-diagnosis => see relevant engine Workshop Manual; Repair group 01 Check wiring and connections using current flow diagram Refer to notes on data bus => page 1.

Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
001	4	Gear selected Selector lever in "D" or "R"	Driving ¹⁾ Neutral (Brakes applied)	1	- Check solenoid valves => Perform electrical check, from page 41
			Reverse (up to approx. 10 km/h)	1	
			1 hydraulic	1H	
			2 hydraulic	2H	
			2 mechanical	2M	
			3 hydraulic	3H	
			3 mechanical	3M	
			4 hydraulic	4H	
			4 mechanical	4M	
			5 hydraulic	5H	
			5 mechanical	5M	

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

Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
002 Cont'd	1	Accelerator pedal value (signal from data bus)	Stationary Idling	0...1 %	During acceleration from idling to full throttle, % figure continuously increases - Bring system into basic setting =>Page 27 Perform engine control unit self-diagnosis => see relevant engine Workshop Manual; Repair group 01 - Check wiring and connections using current flow diagram Observe notes on data bus on =>Page 1
			Full throttle	90 %	
			Kickdown	99 %	

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Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
002	2	Solenoid valve 6 - N93- Main pressure (regulation in %)	Stationary Full throttle	88...100 %	- Check solenoid valve 6 -N93- => Performing electrical tests, from page 41
			Idling	0...25 %	



Cont'd	3	ATF temperature ATF level is checked at approx. 35°C - 45°C	Stationary with engine running. The exact tem- perature is first dis- played above approx. 30°C	...°C	- Check gearbox oil temperature sender - G93- => Perform elec- trical tests, from page 41 If minus 55 °C is dis- played at every operat- ing temperature: Wir- ing open circuit or sender defective
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Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
002	4	Battery voltage	Stationary min.	10.8 V	- Check battery voltage in meas- ured value block of any vehicle control unit and compare values
			max.	16.0 V	- Check supply voltage to control unit -J217- => Perform electrical checks, from page 41
003 Cont'd	1	Road speed	Driving1)	...km/h	Speedometer reading and read- out on V.A.G 1551 may differ slightly Check road speed sender -G68- => Perform electrical check, from page 41

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

Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
003 Cont'd	2	Accelerator pedal value	Stationary Idling	0...1 %	When accelerating from idle to full throttle, % fig- ure continually increa- ses
			Full throttle	90 %	- Bring system into ba- sic setting =>Page 27 Perform engine control unit self-diagnosis => see relevant engine Workshop Manual; Re- pair group 01
			Kickdown	99 %	- Check wiring using current flow diagram. Observe notes on =>page 1

Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
003	3	Gear selected Selector lever in "D" or "R"	Driving1) Neutral (Brakes ap- plied)	1	- Check solenoid valves => Perform electrical check, from page 41
			Reverse (up to approx. 10 km/h)	1	
			1 hydraulic	1H	

Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
Cont'd			2 hydraulic	2H	
			2 mechanical	2M	
			3 hydraulic	3H	
			3 mechanical	3M	
			4 hydraulic	4H	
			4 mechanical	4M	
			5 hydraulic	5H	
			5 mechanical	5M	

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
003	4	Solenoid valve 4 -N91- (Control in %)	Driving1) hydraulic gear	4 - 6 %	- Check solenoid valve -N91- => Perform electrical tests, from page 41
			mechanical gear	94 -96 %	
004	1	Multi-function switch - F125-	Selector lever in P	P	- Check multi-function switch -F125- => Perform electrical tests, from page 41
			R	R	
			N	N	
			D	D	
			4	4	
			3	3	
			2	2	
Continued					

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
004	1	Multi-function switch -F125-	Selector lever in Tiptronic gate	T	- Perform tests for Display group number 005
Continued			Tiptronic change-up switch actuated (move lever to "+" and hold)	T+	
			Tiptronic change-down switch actuated (move lever to "-" and hold)	T-	



Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
004	2	Multi-function switch -F125-	Selector lever in P	00001010	- Check multi-function switch -F125- => perform Electrical check, page 41
			R	00000010	
			N	00000110	
			D	00000100	
			Tiptronic gate	01000100	
			- Move lever to "+" (change-up switch)	01100100	
			- Move lever to "-" (change-down switch)	11000100	
			4	00000101	
			3	00000001	
Cont'd			1	00001001	

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
004	3	Switch output 1st position	Driving1) Influence on timing and quantity injected for reducing engine torque (switched on only during shift process) is switched off	1	- Check wiring and connections using current flow diagram Observe notes on data bus on => page 1
				0	
		2nd position	Air conditioning is switched off (during kick-down)	1	- Check wiring using current flow diagram Check air conditioning => Heating, air conditioner; Repair group 01; Self-diagnosis; Interrogating fault memory Self-diagnosis; Interrogating fault memory
			is not switched off	0	
Continued					

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
004	3	Kickdown 3rd position (signal from data bus)	- Press accelerator all the way down	1	- Perform self-diagnosis of engine control unit => see relevant engine Workshop Manual; Repair group 01 Check wiring and connections according to Current flow diagram Refer to notes on data bus=>page 1

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Display Group No.	Display zone	Designation		Test conditions	Specified readout on V.A.G 1551	Rectifying fault
				not recognised	0	
		Stationary decoupling	4th position	Gearbox decoupled	1	Only for vehicles with stationary decoupling
				Not decoupled	0	
		Brake pressure switch - F270-	5th position	Brake system without pressure	0	Only present on vehicles with stationary decoupling Check wiring and connections using current flow diagram
Cont'd.				- Apply brake	1	

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

Display Group No.	Display zone	Designation		Test conditions	Specified readout on V.A.G 1551	Rectifying fault
004	3	Traction control system	6th position	active	1	Disregard
				not active	0	
		Brake test switch	7th position		0	- Perform self-diagnosis of engine control unit => see relevant engine Workshop Manual; Repair group 01 Check wiring and connections according to Current flow diagram
		(Signal from data bus)		- Apply brake	1	
		Brake light switch -F-	8th position	Brake Operated	1	- Check brake light switch -F- => Perform electrical tests, from page 41
				Not operated	0	

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
004	4	1st position Solenoid valve 4 -N91-	Driving1) hydraulic gear	0	- Perform measures as in display group number 003, display zone 4
			mechanical gear	1	
		2nd position Selector lever lock solenoid -N110-	switched on2)	1	- Test selector lever lock solenoid -N110- => perform electrical tests, page 41 onwards
			not switched on	0	



Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
Cont'd.		3rd position Solenoid valve 9 - N282-	Driving1) switched on	1	- Check solenoid valve 9 -N282- => Perform electrical tests, from page 41
		(-B2- and stationary decoupling)	not switched on	0	

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

2) Only possible with selector lever at P or N

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Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
004 Cont'd.	4	4th position Solenoid valve 8 - N281-	Driving1) switched on	1	- Check solenoid valve 8 -N281- => Perform electrical tests, from page 41
		(1st-4th and reverse gear and -B3-)	not switched on	0	
		5th position Solenoid valve 3 -N90-	Driving1) switched on	1	- Check solenoid valve 3 -N90- => Perform electrical tests, from page 41
		(-K1- and reverse gear lock)	not switched on	0	
		6th position Solenoid valve 5 -N92-	Driving1) switched on	1	- Check solenoid valve 5 -N92- => Perform electrical tests, from page 41
		(1st, 4th, 5th and reverse gears)	not switched on	0	

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
004	4	Solenoid valve 2 -N89- 7th position	Driving1) switched on	1	- Check solenoid valve 2 -N89- => Perform electrical tests, from page 41
		(1st - 3rd and reverse gears)	not switched on	0	
		Solenoid valve 1 -N88- 8th position	Driving1) switched on	1	- Check solenoid valve 1 -N88- => Perform electrical tests, from page 41
		(1st, 2nd, 5th and reverse gears)	not switched on	0	

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
005	1	Selector lever position	Selector lever in P	P	- Check multi-function switch -F125- => Perform electrical tests, from page 41
			R	R	
			N	N	
			D	D	
			Tiptronic gate	T	
			4	4	
			3	3	
Cont'd			2	2	

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
005	2	Tiptronic status (actual) ¹⁾ Tiptronic switch - F189-	Selector lever in Tiptronic gate	TIP M	- Check adjustment of multi-function switch => Automatic gearbox 09A; Repair group 38; Removing, installing and adjusting multi-function switch -F125- Removing, installing and adjusting multi-function switch - F125- - Check wiring and connections using current flow diagram - Renew Tiptronic switch -F189-
			- Move selector lever to "+"	TIP +	
			- Press selector lever to "-"	TIP -	
			Multi-function switch -F125- is OK If necessary, check multi-function switch first (adjustment)	TIP ERR	

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

Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
005	3	Selected gear	Selector lever in P or N	0	- Check solenoid valves => perform electrical tests, page 41 onwards - Check multi-function switch - F125- => perform electrical tests, page 41 onwards
			Driving 1) R	R	
			D	0	
			1 hydraulic	1H	
			2 hydraulic	2H	
			2 mechanical	2M	
			3 hydraulic	3H	
			3 mechanical	3M	



Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
Cont'd			4 hydraulic	4H	
			4 mechanical	4M	
			5 hydraulic	5H	
			5 mechanical	5M	

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
005	4	Tiptronic switch -F189- (1st, 2nd and 3rd positions) and Multi-function switch - F125- (4th-7th positions)		010 0110	Disregard
006	Can be disregarded				
Cont'd.	1	Engine speed	With engine running	...rpm	- Perform measures as in display group number 001, display zone 3
	2	Gearbox input speed sender -G182- (Turbine speed)	Driving1) With engine running	...rpm	- Perform measures as in display group number 001, display zone 2
	3	Intermediate shaft speed sender -G265-	Driving1) With engine running	...rpm	- Check sender => Perform electrical tests from page 41

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
007	4	Road speed	Driving1)	...km/h	Speedometer reading and readout on V.A.G 1551 may differ slightly. Check road speed sender - G68- => Perform electrical tests, from page 41

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
008	1	Accelerator pedal value	Stationary Idling	0...1 %	During acceleration from idling to full throttle, % figure continuously increases - Perform measures as in display group number 002, display zone 1
			Full throttle	90 %	

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
			Kickdown	99 %	- Check wiring using current flow diagram. Observe notes on =>page 1
	2	Solenoid valve 6 - N93- Main pressure	Stationary Full throttle	88...100 %	- Perform measures as in display group number 002, display zone 2
		(Control in %)	Idling	0...25 %	
	3	Solenoid valve 10 - N283- Brake pressure -B2-	Stationary Full throttle	88...100 %	- Check solenoid valve 10 -N283- =>Perform electrical tests, from page 41
		(Control in %)	Idling	0...30 %	

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Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
008	4	Selected driving range	Driving1) 2 Hydraulic (see further note at right)	2H	- Perform measures as in display group number 001, display zone 4
080	Disregard				

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

Display Group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault
125	1	Engine control unit	Participating in data bus communication	Engine 1	OK; observe notes on =>page 1
			No data transmission	Engine 0	- Perform self-diagnosis of engine control unit => see relevant engine Workshop Manual; Repair group 01 Check wiring and connections, including data bus wiring, according to Current flow diagram
	2	ABS control unit	Participating in data bus communication	ABS 1	System OK; refer to notes on =>page 1
			No data transmission	ABS 0	- Test control unit Check wiring and connections, including data bus wiring, according to Current flow diagram



9 - End output

9.1 - End output

- Press keys -0- and -6-, this ends the output.

-> Indicated on display:

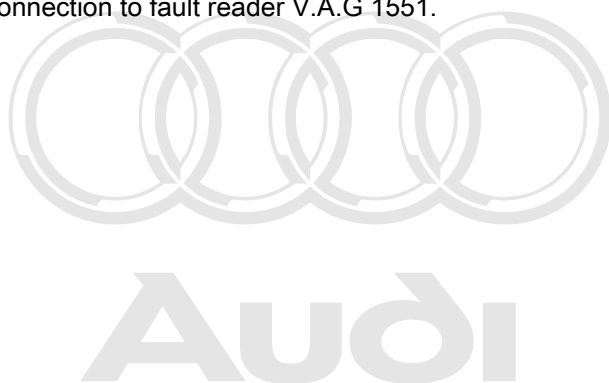
Rapid data transfer	Q
06 End output	

- Confirm input with Q key.

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

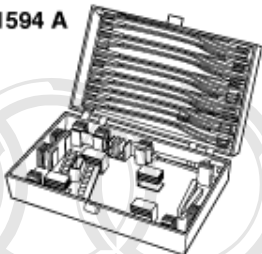
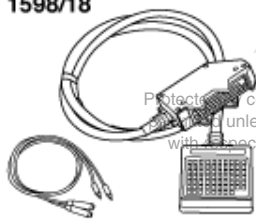
- Switch off ignition.
- Disconnect connection to fault reader V.A.G 1551.



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10 - Electrical check

10.1 - Electrical check

V.A.G 1526 A 	V.A.G 1594 A 
V.A.G 1598/18 	Audi
	W37-0010

Special tools and workshop equipment required

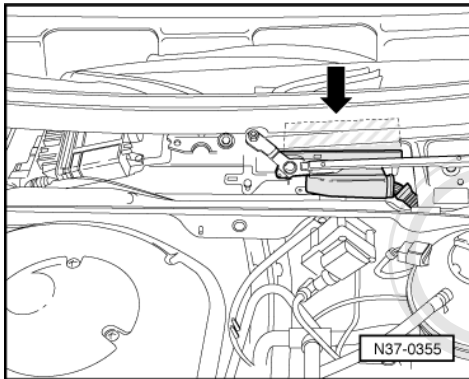
- ♦ V.A.G 1526 A Hand multimeter
- ♦ V.A.G 1594 A Adapter set
- ♦ V.A.G 1598/18 Test box

Additional information required

- ♦ Workshop Manual Audi A3 1997 ä, Automatic gearbox 09A
- ♦ Binder: "Current flow diagrams, Electrical fault finding and Fitting locations"



Test requirements:

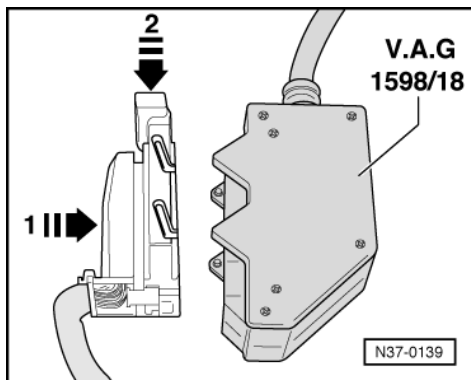


- Battery voltage in order.
- Vehicle voltage supply in order.
- Fuses in main fuse box OK.
- Fuses 7, 11, 13, 15 and 31 OK.
- Check earth connections for gearbox:

-> The gearbox control unit (arrow) is located in the plenum chamber.

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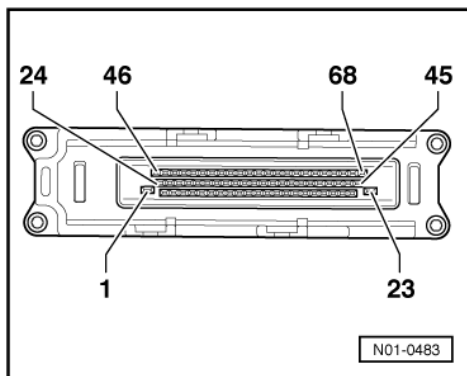
- Check earth connections for corrosion and poor contact; repair if necessary.



- Earth connection point is located under battery.
- Check battery earth strap and earth strap between battery and gearbox.
- Switch ignition off, release multi-pin connector and pull off control unit.
- -> Fit 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.

- Select the correct measuring range on tester before connecting the test leads. Otherwise the electronic components can be seriously damaged.
- ♦ Use hand multimeter V.A.G 1526 A with test leads from V.A.G 1594 for testing.
- ♦ The specified values are valid for an ambient temperature from 0 °C...40 °C.
- ♦ If the readings obtained differ from the specified values, determine fault on the basis of the current flow diagram.
- ♦ If the readings obtained differ only slightly from the specified values, clean sockets and connectors of the testers and test leads and repeat test. Before replacing the particular components, test wiring and connections and, particularly if specified values are below 10 ω , repeat resistance measurement on component.



-> Socket assignment on control unit connector

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

1- Earth (terminal 31)	18- Multi-function switch -F125-
2- Vacant	19- Multi-function switch -F125-
3- Vacant	20- Kickdown switch -F8- (pin is vacant on vehicles with TDI engine and engines with electronic throttle)
4- Vacant	21- Brake light switch -F
5- K-lead of diagnosis	22- Supply voltage (terminal 30)
6- Selector lever lock solenoid -N110-	23- Vacant
7- Intermediate shaft speed sender -G265- (screening)	24- Earth (terminal 31)
8- Vacant	25- Solenoid valve 4 -N91-
9- Gearbox input speed sender -G182-	26- Solenoid valve 3 -N90-
10- Gearbox input speed sender -G182-	27- Vacant
11- Gearbox speed sender -G182- (screening)	28- Intermediate shaft speed sender -G265-
12- Vacant	29- Intermediate shaft speed sender -G265-
13- Vacant	30- Vacant (for A/C kickdown)
14- Vacant	31- Vacant
15- Data bus high input and output signals	32- Vacant
16- Data bus low input and output signals	33- Gearbox oil temperature sender -G93- (ATF)
17- Brake pressure switch (only on vehicles with stationary decoupling)	34- Gearbox oil temperature sender -G93- (ATF)

35- Road speed sender - G68-	52- Vacant
36- Road speed sender - G68-	53- Vacant
37- Road speed sender - G68- (screening)	54- Park/neutral signal to starter inhibitor relay and reversing light - J226-
38- Vacant	55- Vacant
39- Vacant	56- Road speed (output for dash panel insert)
40- Multi-function switch - F125-	57- Vacant



41- Multi-function switch - F125-	58- Vacant
42- Vacant	59- Vacant
43- Vacant	60 Gate switch for Tiptronic gate
44- Vacant	61- Tiptronic change up
45- Supply voltage (terminal 15)	62- Tiptronic change down
46- Solenoid valve 8 - N281-	63- Road speed (engine output)
47- Vacant	64- Earth return wire (to valve diagnosis)
48- Solenoid valve 1 -N88-	65- Solenoid valve 10 - N283-
49- Solenoid valve 2 -N89-	66- Solenoid valve 6 supply voltage -N93-
50- Solenoid valve 5 -N92-	67- Vacant
51- Solenoid valve 9 - N282-	68- Supply voltage (terminal 15)

10.3 - Test table

Switch to voltage measuring range 20 V					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault
1 cont'd	45 + 1 68 + 1	Supply voltage for control unit - J217- (terminal 15)	▪ Ignition switched on	approx. battery voltage	- Check wiring using current flow diagram Check wiring from contact 1 to earth Check wiring from contact 45 + 68 to terminal 15 (central electrics) Check battery, renew if necessary Renew gearbox control unit -J217- if necessary => Page 13

Switch to voltage measuring range 20 V					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault

1	22 + 1 22 + 24	Supply voltage for control unit - J217- (terminal 30)	▪ Ignition switched off	approx. battery voltage	- Check wiring using current flow diagram Check wiring from contact 1 to earth Check wiring from contact 22 to terminal 30 (central electrics) Check battery, renew if necessary Renew gearbox control unit - J217 if necessary => Page 13
2	6 + 1	Selector lever lock solenoid - N110-	▪ Ignition switched off	0 V	- Check wiring using current flow diagram
	Bridge 6 + 1		▪ Ignition switched on - Disconnect test unit V.A.G 1526 ▪ Ignition switched on Connect bridge with cables from V.A.G 1594	approx. battery voltage Solenoid should click audibly	- Renew selector lever lock solenoid -N110- => Automatic gearbox 09A; Repair group 37; Servicing selector mechanism Servicing selector mechanism

Switch to voltage measuring range 20 V					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault
3	21 + 1	Brake light switch -F-	▪ Brake pedal not depressed	0 V	- Check wiring according to current flow diagram Renew brake light switch -F-
			- Brake pedal depressed	approx. battery voltage	=> Running gear, Self-diagnosis; Repair group 01; Electrical/electronic components and locations Electrical/electronic components and locations

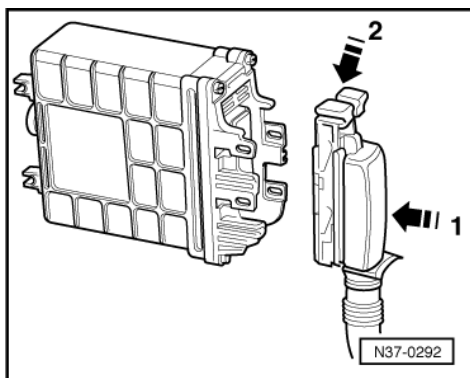
Switch to resistance measuring range 20 k ω					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault
5	35 + 36	Road speed sender -G68-	min.	0.4 k ω	- Check wiring using current flow diagram



			max.	0.6 kW	- Renew road speed sender -G68-
6	9 + 10	Gearbox input speed sender -G182-	min.	0.4 kW	- Check wiring using current flow diagram
			max.	0.6 kW	- Renew gearbox input speed sender -G182-

Switch to resistance measuring range 200 ω					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault
7	48 + 1	Solenoid valve 1 - N88-	▪ Ignition switched off	9 to 24 ω	- Check wiring using current flow diagram and renew wires if necessary
8	49 + 1	Solenoid valve 2 - N89-	▪ Ignition switched off	9 to 24 ω	
9	26 + 1	Solenoid valve 3 - N90-	▪ Ignition switched off	9 to 24 ω	
10	25 + 1	Solenoid valve 4 - N91-	▪ Ignition switched off	9 to 24 ω	
11	50 + 1	Solenoid valve 5 - N92-	▪ Ignition switched off	9 to 24 ω	
12	66 + 1	Solenoid valve 6 - N93-	▪ Ignition switched off	1 to 5 ω	
13	46 + 1	Solenoid valve 8 - N281-	▪ Ignition switched off	9 to 24 ω	
14	51 + 1	Solenoid valve 9 - N282-	▪ Ignition switched off	9 to 24 ω	
15	65 + 1	Solenoid valve 10 - N283-	▪ Ignition switched off	1 to 5 ω	

Switch to resistance measuring range 20 k ω					
Test step	V.A.G 1598/18 sockets	Test of	▪ Test conditions - Additional operations	Specified value	Rectifying fault
16	33 + 34	Gearbox oil temperature sender -G93- (ATF)	▪ ATF temperature approx. 30 °C - Switch hand multimeter V.A.G 1526 to 2 k ω approx. 70 °C approx. 110 °C	2.2 k ω 0.5 k ω 0.2 k ω	- Check wiring using current flow diagram
17	28 +29	Intermediate shaft speed sender -G265-	min.	0.4 kW	- Check wiring using current flow diagram
			max.	0.6 k ω	- Renew intermediate shaft speed sender - G265-



After electrical checks

- -> Fit multi-pin connector onto control unit -J217- pins -1- then lock multi-pin connector -2-.

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

11 - Definitions

11.1 - Definitions

These definitions refer only to this assembly group: Automatic gearbox 09A, Self-diagnosis, and are not always generally applicable.

ABS

Anti-locking brake system. Further information on the ABS can be found in the relevant self-study programmes.

ATF (Automatic Transmission Fluid)

Gearbox oil for automatic gearbox

Data bus

Transportation of data. To do this the electrical signals are brought into a certain format (bus). Further information on this can be found in Self-study programme No. 186.

Data bus low (or high)

The voltage used to transport the data is low (or high). Further information on this can be found in self-study programme No. 186.

Display group number => Read measured value block

Electronic power control (EPC)

Terms like: EPC, electronic accelerator, accelerator module and electric throttle operation all refer to this component. Among other things, senders -G79- and -G185- and a throttle valve positioner are housed within.

EPC is part of the engine control system and thus communicates initially with the engine control unit. When doing this, the signal for the kickdown switch is also generated, for example, so the engine control unit stores the data in the data bus so that other control units have access to it.

Further information on this subject can be found in

- ◆ Self-study programme No. 210.



Emergency running (back-up mode)

"Condition of the control unit" when certain faults are recognised in order to maintain driving safety, to protect the gearbox against damage and at the same time to ensure that driving characteristics are impaired as little as possible.

Fuzzy logic

Monitors the actual driving situation. This item of software in the control unit replaces the previous programme switch. Further information on this can be found in self-study programme No. 172.

Hill program - alters gearshift points on gradients

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The hill program is an item of software in the control unit, which influences the shift points when the vehicle is being driven on uphill and downhill gradients.

Infinity ω

The resistance is infinite, open circuit.

ω = Ohm

Ignition key withdrawal lock

Ensures that the ignition key can only be withdrawn when park position is selected and in addition mechanically locks the selector lever in this position.

Ignition timing control

The engine torque is reduced during the gear change process by changing the ignition timing. Further information on this can be found in self-study programme Nos. 172 and 232.

Influencing the quantity injected

Reduction in engine torque during gear change by adjusting quantity of fuel injected. Further information on this can be found in self-study programme no. 232.

Initiating basic setting

The learnt values in the control unit are set back to the initial values. Further information on this can be found in self-study programme Nos. 172 and 232.

Kickdown switch

The kickdown switch in the accelerator cable has been replaced by a signal from the engine control unit. When the accelerator pedal is depressed fully onto its stop, the gearbox changes down for acceleration. See also "Electronic Power Control (EPC)".

No communication

There is no connection for exchanging information between the control units.

Pendulum support

Designation of a part of the engine/gearbox mounting. Further information on this can be found in self-study programme No. 166.

Performing electrical check

A targeted check of the electronic components by performing certain measurements.

Performing self-diagnosis

Connecting the fault reader to be able to interrogate the fault memory.

Programme card version

Always use the most up-to-date programme card. Further information can be found in the test unit operating instructions.

Read measured value block (or "Read data block")

The control unit can transfer a considerable amount of test data. This test data delivers information on the operational condition of the system and/or sensors connected to it. In many cases the transferred test data supports fault finding and fault rectification. The test data has been summarized into single display groups because all the information cannot be evaluated at the same time. The information can be selected via display group numbers.

(If you can only select a two character display group number, you have an old programme card in your V.A.G 1551 ! Replace the card with a valid version).

Each display group number is displayed on the fault reader as four display zones.

A display zone can be displayed as an eight digit row or as values. These values are sometimes displayed with a measurement symbol.

Road speed sender -G68-

The sender records the speed of the output gear and transmits it to the automatic gearbox control unit (not to the speedometer). Further information on this can be found in self-study programme No. 172.

Selector lever lock magnet -N110-

Located in the selector mechanism close to the selector lever. Prevents movement (involuntary) of the selector lever from positions "P" and "N" as long as the brake pedal is not depressed.

Selector lever position display

Shows in the dash panel insert the position of the selector lever or, with Tiptronic, the gear selected. Further information on this can be found in self-study programme No. 232.

Self-diagnosis

The capability of the control unit:

to detect (or "recognise") faults,

to react to faults,

to store faults,

to register test data and make them available in the measured value block.

Short to earth

Current flows -incorrectly- to earth without supplying a consumer.

Short to positive

Current flows -incorrectly- to a live component without supplying a consumer.

Solenoid valves

Open and close the oil passages to the clutches and brakes.



Sporadic

Happens occasionally (intermittent fault)

Sport programme

The sport programme is an item of software in the control unit and influences the shift points according to driving style.

Spur gear A

Component in planetary gearbox.

Further information is available in self-study programme No. 232.

Static

Present at the moment, continuous

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Stationary de-coupling

The gearbox shifts into neutral hydraulically when the vehicle is stationary.

TCC (Torque converter lock-up clutch)

Transfers the engine torque mechanically to the gearbox.

TDC signal

The signal is used to calculate the engine speed.

Throttle valve potentiometer

An engine component. The "throttle valve signal" originates from here.

Throttle valve control part

An engine component to stabilize the idling speed. The "throttle valve signal" originates from here. Further information on the throttle valve control part can be found in self-study programme No. 173.

Throttle position sender

=> Electronic power control (EPC)

Tiptronic

With an additional selector gate on the right-hand of the normal selector gate, it is now possible to manually shift up a gear by moving the selector lever to plus (+) and manually shift down a gear by moving the selector lever to negative (-).

Further information on this can be found in self-study programme No. 232.

Wiring

Routing of electrical wiring and components in vehicle.