

Performing self-diagnosis

Fault table

- ◆ All the possible faults which can be recognised by the automatic gearbox control unit -J217- and displayed on the V.A.G 1551 with the printer switched on when the fault memory is interrogated are listed below, grouped according to the fault code number.
- ◆ If faults occur only occasionally, or if the fault memory was not erased after rectifying the faults, these faults will be displayed as "sporadic faults" for a stipulated period of time=>Gearbox control unit fault recognition, Page [01-2](#).
- ◆ If components are indicated as being defective during interrogation of the fault memory, test also the wiring to the components for short circuit and open circuit according to current flow diagram

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

- ◆ The fault code is printed out in the "rapid data transfer" mode only when the printer of V.A.G 1551 is switched on.
Example: Fault code (5-digit) 65535

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 or short to earth Solenoid valve 1 -N88- defective	- Check wiring and connections according to CFD2) - Read measured value block =>Page 01-68 ; display group number 004 - Perform electrical tests =>from Page 01-100
00260 Solenoid valve 2 -N89- Open circuit 1) Short to earth 1)	Open circuit or short to earth Solenoid valve 2 -N89- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 01-68 ; display group number 004 - Perform electrical tests =>from Page 01-100

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 loom.

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 or short to earth Solenoid valve 3 -N90- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 01-68 ; display group number 004 - Perform electrical tests =>from Page 01-100
00264 Solenoid valve 4 -N91- Open circuit 1) Short to earth 1)	Open circuit or short to earth Solenoid valve 4 -N91- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 01-68 ; display group number 004 - Perform electrical tests =>from Page 01-100

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 loom.

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 or short to earth Solenoid valve 5 -N92- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 01-68 ; display group number 004 - Perform electrical tests =>from Page 01-100
00268 Solenoid valve 6 -N93- Open circuit 1) Short to earth 1)	Open circuit or short to earth Solenoid valve 6 -N93- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 01-68 ; display group number 002 - Perform electrical tests =>from Page 01-100

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 loom.

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 or short to earth Solenoid valve 7 -N94- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 01-68 ; display group number 004 - Perform electrical tests =>from Page 01-100

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 loom.

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	- Check wiring and connections according to current flow diagram 1) - Read measured value block =>Page 01-24 , Fig. 10

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
00293 Multi-function switch -F125- Undefined switch condition	Open circuit in wiring Multi-function switch -F125- defective Selector shaft not secured in axial direction (e.g. after dismantling parking lock)	- Check wiring and connections according to CFD 1) - Read measured value block =>Page 01-68 ; display group number 001 - Perform electrical tests =>from Page 01-23 , Fig. 8 Check for axial movement 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	Open circuit in wiring	- Check wiring and connections according to current flow diagram

Gearbox speed sender -G38- No signal	Gearbox speed sender -G38- dirty or defective	- Perform electrical tests =>from Page 01-24 , Fig.9
00300 Gearbox oil temperature sender -G93-1) No fault type recognised	Open circuit in wiring Gearbox oil temperature sender (ATF) -G93- defective	- Check wiring and connections according to CFD 2) - Read measured value block =>Page 01-68 ; display group number 005 - Perform electrical tests =>from Page 01-22 , Fig. 7

- 1) This indicates a faulty gearbox oil (ATF) temperature sender
- 2) 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
00518 Throttle valve potentiometer -G69 1) 2) Signal outside tolerance	Open circuit or short in wiring Signal range of throttle valve potentiometer -G69 or throttle valve control part -J338 has shifted continued ▼	- If fault code 00638 is also displayed, rectify fault 00638 first Check wiring and plug connectors according to current flow diagram - Read measured value block =>Page 01-68 ; 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 engine: accelerator position sender -G79-; a fault relating to the accelerator pedal position is therefore only stored in the engine control unit.

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 3) Throttle valve control part -J338 defective continued ▼	- Bring system to basic setting after renewing throttle valve control part =>Page 01-66

- 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 engine: 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 signals from/to automatic gearbox: Testing signal for accelerator pedal position](#)

- 3) Throttle valve potentiometer -G69- is incorporated in throttle valve control part -J338-. Throttle valve control part -J338- must therefore be renewed if throttle valve potentiometer -G69- is defective.

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
00518	(Fault 00518 continued)	Test engine control unit and renew if

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 - Check torque converter identification - Check control unit identification => Page 01-32 - Rectify fault as described for fault code 00264
--	---	---

Output on printer V.A.G 1551	Possible cause of fault	Rectifying fault
01236 Selector lever lock solenoid -N110 Open circuit 1) Short to earth 1)	Open circuit in wiring Selector lever lock solenoid - N110 defective	- Check wiring and plug connectors according to current flow diagram - Read measured value block =>Page 01-68 , display group number 005, and if necessary renew selector lever lock solenoid -N110- => Automatic Gearbox 01N; Repair Group 37; 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 01-7 - Bring system into basic setting =>Page 01-66

The control unit -J217- should not be renewed =>Page [01-66](#) until the possible cause of the fault has been determined and the following faults have been rectified:

- ◆ mechanical faults
- ◆ hydraulic faults
- ◆ all affected electrical/electronic components and wiring connections.

Performing self-diagnosis

Initiating basic setting

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

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

Requirements

- Supply voltage OK and all electrical equipment switched off
 - Accelerator cable correctly adjusted
 - Fault memory has been interrogated, any faults rectified and fault memory erased.
- Connect fault reader V.A.G 1551 and enter address word "02 Gearbox electronics" and advance until "Select function XX" appears in the display => from Page [01-29](#).

→ Indicated on display:

Rapid data transfer HELP
Select function XX

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

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, 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

Performing self-diagnosis

Read measured value block

Additional information

- ◆ "Current flow diagrams, Electrical fault finding and Fitting locations" binder
- Connect fault reader V.A.G 1551 and enter address word "02 Gearbox electronics" and advance until "Select function XX" is indicated on display => from Page [01-29](#).

→ 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 [01-69](#).
- Confirm entry with key Q.

→ Four display zones (arrows) are always shown in the measured value block (in physical units where applicable). For detailed information on the individual values in display zones 1 to 4 => Test table, Page [01-72](#).

```
Read measured value block  1  =>
1
```

List of selectable display group numbers

Indicated on display (example)			
Display zones: 1 2 3 4 n n n n	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 orthrottle 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 ⇒	003	1 2	Speed Engine speed Gear selected

0 km/h 900 rpm 0 0 %		3 4	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 □ □ □ □	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

Performing self-diagnosis

Test table

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
001	1	Selector lever position - Multi-function switch - F125-	Stationary P	P	- Check multi-function switch -F125- =>electrical tests from Page 01-100
			Selector lever in	R	
				N	
				D	
				3	
				2	
continued ▼				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	Idling (min.) Idling (max.)	0.156 V 0.8 V 1)	Voltage increases continuously from idling to full throttle - Check throttle valve potentiometer -G69- and renew if necessary 2)
				Full throttle (min.) Full throttle (max.)	3.5 V 4.68 V	
	continued ▼					

1) Coolant temperature at least 80°C.

2) Throttle valve potentiometer -G69- is incorporated in throttle valve control part -J338-. If throttle valve potentiometer -G69- is defective, throttle valve control part -J338- must be renewed.

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	Idling (min.) Idling (max.)	0.156 V 0.8 V 1)	- Check throttle valve control part - J338- and renew if necessary
						- After

continued ▼			Full throttle (min.) Full throttle (max.)	3.5 V 4.68 V	renewing throttle valve potentiometer or throttle valve control part, bring system into basic setting =>Page 01-66
----------------	--	--	--	-----------------	---

1) Coolant temperature at least 80°C.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification	
001	3	Accelerator pedal value	Stationary Idling	0...1 %	When accelerating from idling to full throttle, % figure increases continuously - Bring system into basic setting =>Page 01-66	
			Full throttle	99...100 %		
	continued ▼	4	Switch positions 1) Brake light switch - F- Display 1	Brake Operated	1	- Check brake light switch -F- => Perform electrical tests, from Page 01-100
				Not operated	0	
continued ▼	4	Traction control system (ASR) 2	Activated	1	- Check wiring according to CFD if necessary => "Current flow diagrams, Electrical fault finding and Fitting locations" binder	
			Not activated	0		

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

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification	
001	4	3	Can be disregarded			
			Kickdown switch -F8- Display 4	Kickdown Operated	1	- Check kickdown switch -F8- => Perform electrical tests, from Page 01-100
	Not operated	0				
	continued ▼	5	Multi-function switch -F125- Contact 632)	Selector lever in R, N, D, 3, 2	1	- Check multi-function switch -F125- => Perform electrical tests, from Page 01-100 Adjust selector lever cable 1) => Automatic Gearbox 01N: Repair Group 37: Repairing shift mechanism: Removing, installing and adjusting selector lever cable - Pull out starter inhibitor and reversing light relay -J226- and check readout again
				P, 1	0	
		6	Selector lever in Contact 40 2)	P, R, 2, 1	1	
N, D, 3				0		

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-.

				Specified	Rectifying fault if
--	--	--	--	-----------	---------------------

Display group No.	Display zone	Designation	Test conditions	readout on V.A.G 1551	readout does not match specification	
001	4	Multi-function switch	Display 7	Selector lever in P, R, N, D	1	<p>- Check multi-function switch -F125- => Perform electrical tests, from Page 01-100 Adjust selector lever cable 1)</p> <p>=> Automatic Gearbox 01N; Repair Group 37: Repairing shift mechanism: Removing, installing and adjusting selector lever cable</p> <p>- Pull out starter inhibitor and reversing light relay - J226- and check readout again</p> <p>- Check wiring and components as necessary according to CFD</p>
		-F125-	Contact 622)	3, 2, 1	0	
		8	Selector lever in P, R, N	1		
		Contact 182)	D, 3, 2, 1	0		

- 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 No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
002	1	Solenoid valve 6 -N93- actual current	<ul style="list-style-type: none"> ▪ Selector lever in "N" ▪ Stationary Full throttle	0.0 A	<p>Note when fault finding: the difference between actual current and specified current must not be more than 0.050 A</p> <p>The specifications shown here are the maximum values.</p>
			Idling max.	1.1 A	
	2	Solenoid valve 6 -N93-	<ul style="list-style-type: none"> ▪ Selector lever in "N" ▪ Stationary 		

con- tinued ▼	specified current	Full throttle	0.0 A	setting =>Page 01-66 - Check solenoid valve -N93- => Perform electrical tests, from Page 01-100
		Idling max.	1.1 A	

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

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
002	3	Battery voltage	Stationary min.	10.8 V	- Check battery, renew if necessary Check voltage supply to control unit - J217- => Perform electrical tests, from Page 01-100 - Renew gearbox control unit -J217- =>Page 01-66
			max.	16.0 V	
	4	Road speed sender -G68-	Stationary min.	2.20 V	- Check road speed sender -G68- =>Perform electrical tests, from Page 01-100
			max.	2.52 V	

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
003	1	Vehicle speed	Driving1)	... km/h	Speedometer reading and readout on V.A.G 1551 may differ slightly.
	2	Engine speed	With engine running	... rpm	- Rectify engine fault if necessary
con- tinued ▼					

1) When driving, a second mechanic is needed to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
con- tinued	3	Gear selected	Driving1) Neutral	0	- Check solenoid valves => Perform electrical tests, from Page 01-100
			Reverse	R	
			1 hydraulic	1H	
			1 mechanical	1M	
			2 hydraulic	2H	
			2 mechanical	2M	
			3 hydraulic	3H	
			3 mechanical	3M	
			4 hydraulic	4H	

1) When driving, a second mechanic is needed to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
003	4	Accelerator pedal value	Driving1) Idling	0...1 %	When accelerating from idling to full throttle, the % figure increases constantly - Bring system to basic setting =>Page 01-66
			Full throttle	99...100 %	

1) When driving, a second mechanic is needed to check the readouts.

Checking solenoid valves with vehicle moving

- ◆ The solenoid valves can be checked with the vehicle moving 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 modulation valve for the 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 display zones 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	Display zone 1:					
	Display 1	Display 2	Display 3	Display 4	Display 5	Display 6
1551	Solenoid valve 1	Solenoid valve 2	Solenoid valve 3	Solenoid valve 4	Solenoid valve 5	Solenoid valve 7
	-N88-	-N89-	-N90-	-N91-	-N92-	-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 [01-35](#).

Checking solenoid valves with vehicle moving

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
004	1	Solenoid valves/indicated on V.A.G 1551 display: -N88- Display 1 -N89- Display 2 -N90- Display 3	Selector lever in:		Solenoid valves are selected according to driving condition - Perform electrical tests =>from Page 01-100 - Continue fault finding according to fault finding programme
			P	1 0 1 0 0 0	
			R 1)	1 0 1 0 0 0	
			R 2)	0 0 1 0 0 0	
			N	1 0 1 0 0 0	
			D1) 1H	0 0 1 0 X 0	
1M	0 0 1 0 X 0				
2H	0 1 1 0 0 0				

con- tinued ▼	-N91- Display 4	2M	0 1 1 0 0 0	=> "Fault finding. Power transmission"
	-N92- Display 5	3H	0 0 0 0 0 1	
	-N94- Display 6	3M	0 0 0 0 0 1	
	X =	4H	1 1 0 0 0 1	
	variable (1 or 0)	4M	1 1 0 0 0 1	

- When driving with gear selected and speed not less than 10 km/h, a second mechanic is required to check the readouts.
- Road speed below 10 km/h

Display group No.	Display zone	Designation	Test conditions Selector lever in:	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
004 con- tinued ▼	1	Solenoid valves/indicated on V.A.G 1551: -N88- Display 1 -N89- Display 2 -N90- Display 3 -N91- Display 4 -N92- Display 5 -N94- Display 6 X =	31) 1H	0 0 1 0 X0	Solenoid valves are selected according to driving condition - Perform electrical tests =>from Page 01-100 - Continue fault finding according to fault finding programme => "Fault finding, Power transmission"
			1M	0 0 1 0 X0	
			2H	0 1 1 0 0 0	
			2M	0 1 1 0 0 0	
			3H	0 0 0 0 0 1	
			3M	0 0 0 0 0 1	
			21) 1H	0 0 1 0 X0	
			1M	0 0 1 0 X0	
			2H	0 1 1 0 0 0	
			2M	0 1 1 0 0 0	
			11) 1H	0 0 1 0 X0	
			variable (1 or 0)	1M	

- When driving with gears selected, a second mechanic is required to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
004 continued ▼	2	Gear selected	Driving 1)		- Check solenoid valves => Perform electrical tests, from Page 01-100
			Neutral	0	
			Reverse	R	
			1 hydraulic	1H	
			1 mechanical	1M	
			2 hydraulic	2H	
			2 mechanical	2M	
			3 hydraulic	3H	
			3 mechanical	3M	
			4 hydraulic	4H	
4 mechanical	4M				

- When driving, a second mechanic is needed to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
					- Check

004	3	Selector lever position	Driving 1)	P	P	multi-function switch connection for contact corrosion, renew if necessary - Check wiring according to current flow diagram - Check multi-function switch -F125- => Perform electrical tests, from Page 01-100
				R	R	
				N	N	
				D	D	
				3	3	
				2	2	
continued ▼				1	1	

1) When driving, a second mechanic is required to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
004	4	Vehicle speed	Speed at which vehicle is driven 1)	...km/h	The speedometer reading and readout on V.A.G 1551 may differ slightly
005 continued ▼	1	ATF temperature; ATF level is checked at approx. 35°C - 45°C	Stationary with engine running. The exact temperature is displayed from approx. 30°C	...°C	- Check gearbox oil temperature sender -G93- => Perform electrical tests, from Page 01-100

1) When driving, a second mechanic is required to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Selector outputs Display 1 2)	Driving1) Ignition timing modulation3) is		- Check wiring according to current flow diagram Renew engine control unit => Motronic Injection and Ignition System (4-cylinder); Repair Group 24; Servicing

			switched on	1	Motronic Injection System; Renewing engine control unit => Diesel Direct-Injection and Glow Plug System (TDI 4-cylinder); Repair Group 23; Servicing diesel direct-injection system; Renewing engine control unit - Renew gearbox control unit - J217- => Page 01-7 - Bring system into basic setting =>Page 01-66
			is switched off	0	
	con-	2 2)	switched on	1	
	tinued ▼		switched off	0	

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

Display group No.	Display zone	Designation	Test conditions	Specified read out V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Selector outputs	Selector lever lock solenoid - N110-		- Check wiring according to current flow diagram - Check selector lever lock solenoid -N110- => Perform electrical tests, from Page 01-100
			Display 3	is switched on	
			is switched off	0	
	4	switched on	1		
	continued ▼		switched off	0	

Display group No.	Display zone	Designation	Test conditions	Specified read out V.A.G 1551	Rectifying fault if readout does not match specification
005	2		Cruise control system		- Check wiring according to current flow diagram

		Display 5	switched on	1	- Check cruise control system => "Current flow diagrams, Electrical fault finding and Fitting locations" binder
continued ▼			switched off	0	

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
005	2	Selector outputs Display 6	Air conditioner is switched off	1	Check wiring according to current flow diagram - Check air conditioner
			is not switched off	0	
continued ▼		7	Park/Neutral signal Selector lever in		- Check wiring according to current flow diagram
			P, N	1	
			R	0	
			D, 3, 2, 1	X 1)	Selector lever positions D, 3, 2 and 1 can be disregarded

1) X = variable readout: 1 or 0

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification	
005	3	Gear to select	Driving 1)	Neutral	0	- Check solenoid valves => Perform electrical tests, from Page 01-100 - If gearshifts do not occur, a clutch or brake may be defective => "Fault finding" binder, Power transmission - Renew gearbox control unit - J217- => Page 01-7
				Reverse	R	
				1 hydraulic	1H	
				1 mechanical	1M	
				2 hydraulic	2H	
				2 mechanical	2M	
				3 hydraulic	3H	
				3 mechanical	3M	
				4 hydraulic	4H	
				4 mechanical	4M	
con- tinued ▼						

1) When driving, a second mechanic is required to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
005	4	Engine speed	Driving 1) with engine running	... rpm	- Rectify engine fault if necessary

1) When driving, a second mechanic is required to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
006			Can be disregarded		

007	1	Gear selected 1)	Neutral	0	<ul style="list-style-type: none"> - Check solenoid valves => Perform electrical tests, from Page 01-100 - If gearshifts do not occur, a clutch or brake may be defective => "Fault finding" binder, Power transmission - Renew gearbox control unit - J217- => Page 01-7 - Bring system into basic setting =>Page 01-66
			Reverse	R	
			1 hydraulic	1H+/-	
			1 mechanical	1M+/-	
			2 hydraulic	2H +/-	
			2 mechanical	2M +/-	
con-	tinued	▼			

1) When driving, a second mechanic is required to check the readouts.

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
007	1	Gear selected 1)	3 hydraulic	3 H +/-	<ul style="list-style-type: none"> - Check solenoid valves => Perform electrical tests, from Page 01-100 - If gearshifts do not occur, a clutch or brake may be defective => "Fault finding" binder, Power transmission - Renew gearbox control unit - J217- => Page 01-66
			3 mechanical	3M +/-	
			4 hydraulic	4H +/-	
			4 mechanical	4M +/-	
continued	▼				

1) When driving, a second mechanic is required to check the readouts.

Display group number	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
					- Check ATF

007	2	Torque converter slip 2)	Driving 1) with engine running	Torque converter lock-up clutch open	0 rpm up to stall speed	level Check wiring according to current flow diagram Rectify fault as described in fault table for fault codes 00529 and 00281 =>from Page 01-37 Clutch or brake defective4) Check solenoid valves 4) =>electrical tests, Page 01-100 Torque converter defective, or incorrect torque converter fitted (see code letters)
			Torque converter clutch closed 3)			
continued ▼				maximum engine speed	0 ... 15 rpm	

Note:

Refer to footnotes for display zone 2 in display group number 007=>Page [01-98](#).

Footnotes for display zone 2 in display group number 007

- 1) When driving, a second mechanic is required to check the readouts.
- 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](#)

Display group No.	Display zone	Designation	Test conditions	Specified readout on V.A.G 1551	Rectifying fault if readout does not match specification
007	3	Engine speed	With engine running	... rpm	- If necessary adjust engine settings
	4	Accelerator pedal value	Idling	0...1 %	When accelerating from idling to full throttle the percentage

				Full throttle	99...100 %	value constantly increases - Bring system into basic setting =>Page 01-66
008	Can be disregarded					

Electrical test

Test table

Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
1	23 + 1	Supply voltage from control unit -J217-	▪ Ignition switched on	approx. battery voltage	- Check wiring according to current flow diagram Check wiring from contact 1 to earth Check wiring from contact 23 to terminal 15, central electrics
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 <u>- Renew selector lever lock solenoid</u>
			- Brake pedal depressed	0.2 V	

Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
3	15 + 1	Brake light switch -F-	▪ Ignition switched on ▪ Brake pedal not depressed	0 V	- Check wiring according to current flow diagram Renew and adjust brake light switch - F- <u>=> Running Gear, Front-Wheel Drive ; Repair Group 46; Brake mechanics, Servicing pedal cluster</u>
			- Brake pedal depressed	approx. battery voltage	
4	60 + 1	Supply voltage for cruise control system	▪ Ignition switched on	approx. battery voltage	- Check wiring according to current flow diagram Check wire from contact 1 to earth Check wire from contact 60 to terminal 15 on relay plate Check fuse for cruise control system => Current flow diagrams, Electrical fault finding and Fitting locations

Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
5	63 + 1 63 + 23 40 + 1 40 + 23 62 + 1 62 + 23 18 + 1 18 + 23	Multi-function switch -F125	▪ Ignition switched off ▪ Multi-function switch - F125 and starter inhibitor and reversing light relay - J226 disconnected ▪ Fuse for power supply of multi-function switch -F125 disconnected	infinite ω	- Check plug connector on multi-function switch -F125 for contact corrosion; renew if necessary Check wiring according to current flow diagram If test readings match specifications in this electrical test, but the display readout in the corresponding measured value block does not match the specification: - Renew multi-function switch - F125 => Page 01-23 , Fig. 8
continued ▼	63 + 1 1) 40 + 2 1) 62 + 6 1) 18 + 5 1)			$\leq 1.5 \omega$	

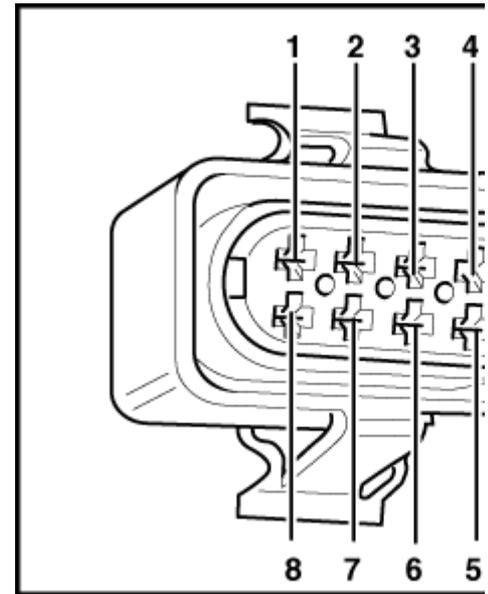
1) Contact on connector for multi-function switch -F125. For contact assignment=>see Fig.[01-111](#).

Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
5	29 + 1 1 + 7 1)	Multi-function switch - F125	▪ Ignition switched on	approx. battery voltage	- Check plug connector on multi-function switch -F125 for contact corrosion; renew if necessary Check wiring according to current flow diagram If test readings match specifications in this electrical test, but the display readout in the corresponding measured value block does not match the specification: Renew multi-function switch -F125 => Page 01-23 , Fig. 8

1) Contact on connector for multi-function switch -F125. For contact assignment=>see Fig.[01-111](#).

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)=>Page [01-23](#); Fig. [8](#)



Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
6	55 + 67	Solenoid valve 1 - N88-	▪ Ignition switched off	55 to 65 ω	- Check wiring according to current flow diagram - Renew conductor strip => Page 01-22 , Fig. 7 or - Renew valve body =>Page 01-21 , Fig. 6
	55 + 1			infinite ω	
7	54 + 67	Solenoid valve 2 - N89-	▪ Ignition switched off	55 to 65 ω	
	54 + 1			infinite ω	
8	9 + 67	Solenoid valve 3 - N90-	▪ Ignition switched off	55 to 65 ω	
	9 + 1			infinite ω	
9	47 + 67	Solenoid valve 4 - N91 -	▪ Ignition switched off	4.5 to 6.5 ω	
	47 + 1			infinite ω	

Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
10	56 + 67	Solenoid valve 5 - N92-	▪ Ignition switched off	55 to 65 ω	- Check wiring according to current flow diagram
	56 + 1			infinite	

				ω	
11	58 + 22	Solenoid valve 6 - N93-	▪ Ignition switched off	4.5 to 6.5 ω	- Renew conductor strip => Page 01-22 , Fig. 7 or
	58 + 1			infinite	
	22 + 1			ω	
12	10 + 67	Solenoid valve 7 - N94-	▪ Ignition switched off	55 to 65 ω	- Renew valve body => Page 01-21 , Fig. 6
	10 + 1			infinite ω	

Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
13	23 + 29	Selector lever lock solenoid - N110-	▪ Ignition switched off	14 to 25 ω	- Check wiring according to current flow diagram
14	1 + 16	Kickdown switch -F8-	▪ Ignition switched off	infinite ω	- Check wiring according to current flow diagram - Adjust or renew accelerator cable => 4-cylinder Diesel Direct-Injection Engine (TDI), Mechanics: Repair Group 20
			▪ Accelerator pedal not depressed		
			- Depress accelerator as far as kickdown	less than 1.5 ω	

Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
15	20 + 65	Road speed sender - G68-	▪ Ignition switched off		- Check wiring according to current flow diagram - Renew road speed sender - G68- =>Page 01-24 , Fig. 10
			min.	0.75 K ω	
			max.	1.0 K ω	
16	1 + 43 45 + 43	Screening for -G68	▪ Ignition switched off ▪ Ignition switched on	infinite ω	- Check wiring according to current flow diagram
17	21 + 66	Gearbox speed sender - G38-	▪ Ignition switched off		- Check wiring according to current flow diagram - Renew

			min.	0.75 K ω	gearbox speed sender -G38- =>Page 01-24 , Fig. 9
			max.	1.0 K ω	
18	1 + 44 45 + 44	Screening for -G38	<ul style="list-style-type: none"> ▪ Ignition switched off ▪ Ignition switched on 	infinite ω	- Check wiring according to current flow diagram

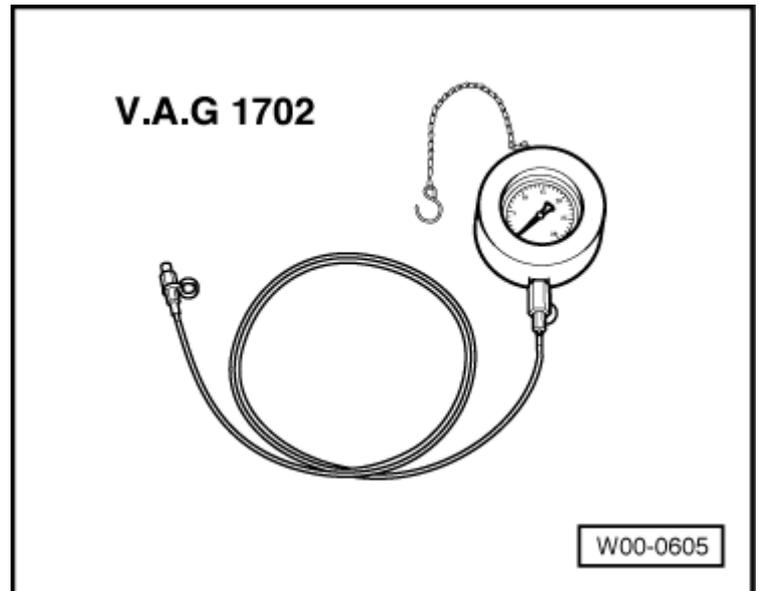
Test step	V.A.G 1598/18 sockets	Component tested	▪ Test conditions - Additional steps	Specification	Fault rectification if readout does not match specification
19	6 + 67	Gearbox oil temperature sender -G93- (ATF)	<ul style="list-style-type: none"> ▪ Ignition switched off ▪ ATF temperature approx. 20 ° C approx. 60° C approx. 120° C 	0.247 M ω 48.8 K ω 7.4 K ω	- Check wiring according to current flow diagram Renew conductor strip with integral gearbox oil temperature sender => Page 01-22 , Fig. 7

Checking gearbox

Checking main pressure

Special tools and workshop equipment required

- ◆ Pressure tester V.A.G 1702



- ◆ VAS 5051 with VAS 5051/1 and VAS 5051/2
- ◆ Drip tray

Main pressure should be tested on a rolling road whenever possible.

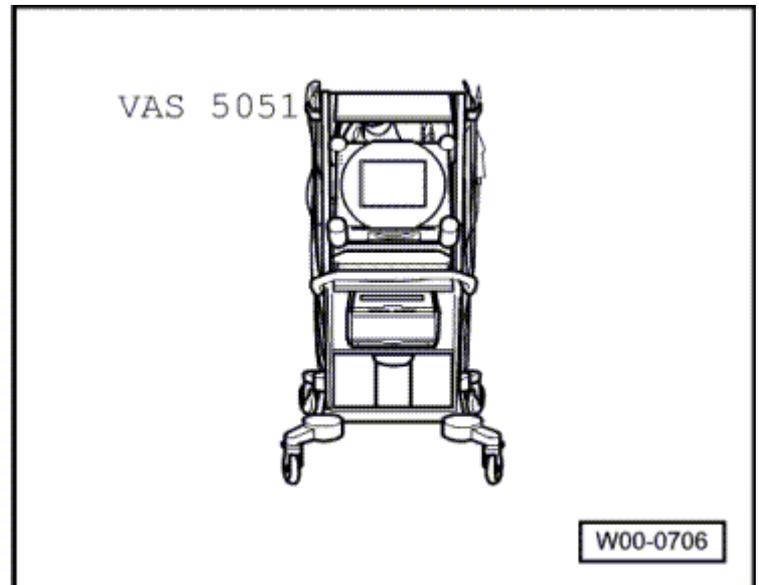
Requirement for test:

- Vehicle diagnostic, testing and information system VAS 5051 connected, vehicle self-diagnosis mode activated and vehicle system "02 - gearbox electronics" selected.

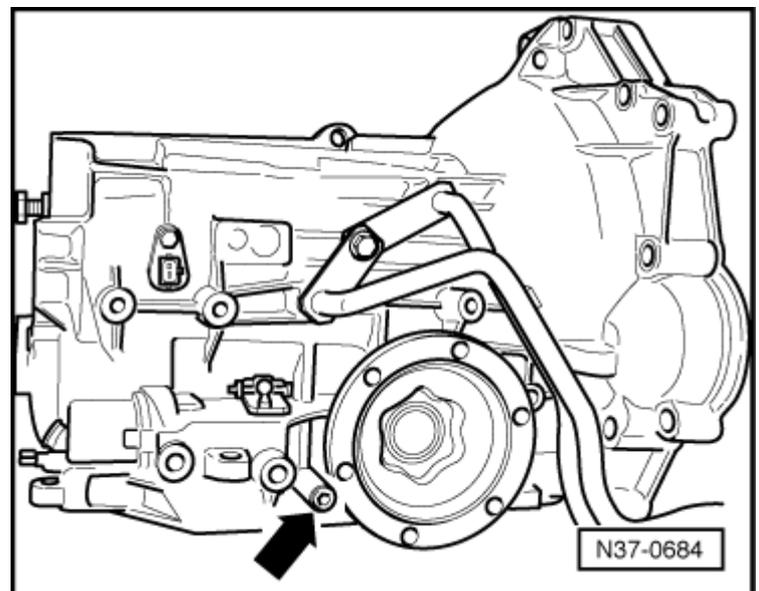
[=> Automatic gearbox 01N, Self-diagnosis; Repair group 01; Performing self-diagnosis](#)

- No faults stored in fault memory

[=> Automatic gearbox 01N, Self-diagnosis; Repair group 01; Performing self-diagnosis](#)

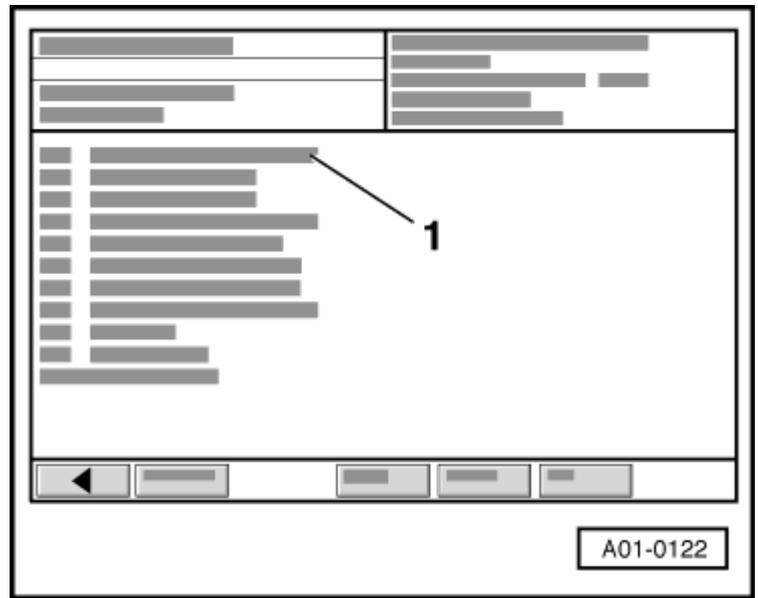


- Remove bolt -arrow- for main pressure drilling. Always renew bolt.
- Connect pressure tester V.A.G 1702 and tighten thumb screw.
- Start engine and run at idling speed.
- Bleed pressure tester V.A.G 1702. To do this, loosen thumb screw and tighten when bleeding is complete.



→ Display on VAS 5051:

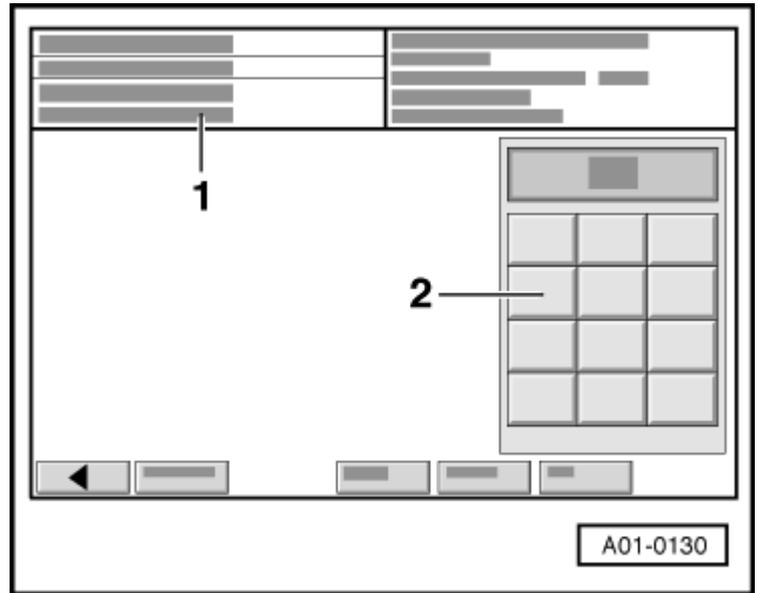
- Select diagnosis function "08 - Read data block" from the menu -1-.



→ Display on VAS 5051:

1 - Enter display group

- Using the keypad -2-, enter "005" to select Display group 005 and confirm entry with Q button.



→ Display on VAS 5051:

- Check ATF temperature in display zone 1.
- Allow ATF temperature to rise to 60 °C.
- Press the □ button to exit from the function "08 - Read data block".

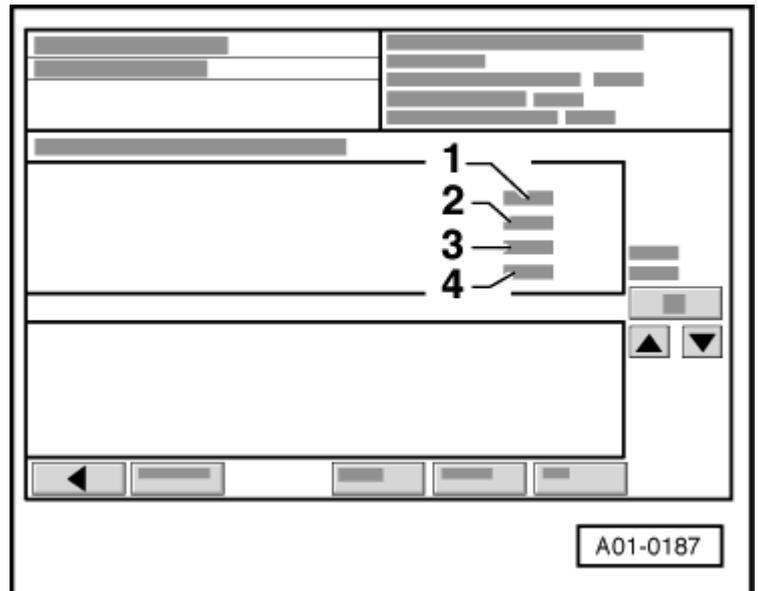
Main pressure specifications at idle

	Selector lever positions	
	D Idle	R Idle
Pressure in bar	3.4 ... 3.8	5 ... 6

If specification not attained or exceeded:

Possible causes	Remedy
Idling speed too high	Adjust engine
ATF pump defective	Check ATF pump and renew if necessary
Sticking valves in valve body	Renew valve body

- Switch off ignition.



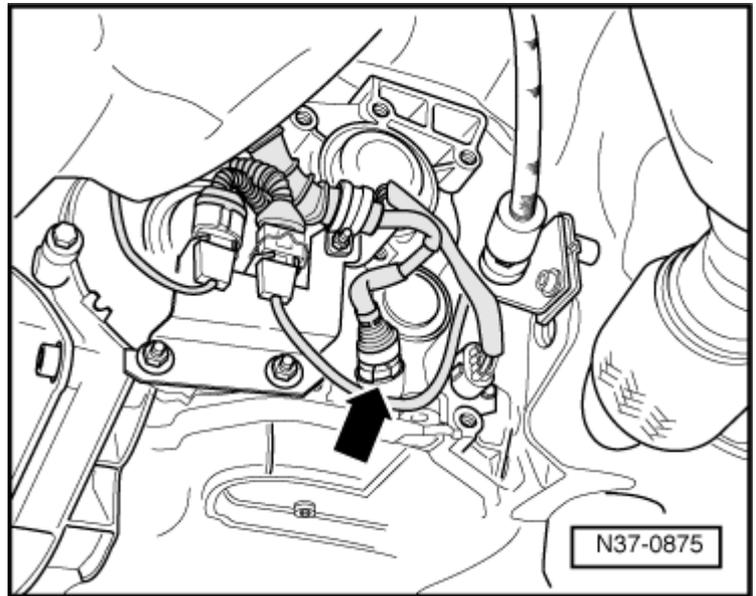
- Disconnect connector -arrow- for solenoid valves.
- Start the engine.

Main pressure specifications at 2000 rpm

	Selector lever positions and test conditions	
	D Engine speed approx. 2000 rpm	R Engine speed approx. 2000 rpm
Pressure in bar	12.4 ... 13.2	23.0 ... 24.0

If specification not attained or exceeded:

Possible causes	Remedy
ATF pump defective	Check ATF pump and renew if necessary
Sticking valves in valve body	Renew valve body



After test:

- Disconnect pressure tester V.A.G 1702.
- Install new bolt for main pressure drilling and tighten to 12 Nm.

- Plug in electrical connector.
- Interrogate fault memory:

[=> Automatic gearbox 01N, Self-diagnosis: Repair group 01: Performing self-diagnosis](#)

Note:

Faults will have been recorded in the fault memory because the connector has been unplugged. Interrogate and, if necessary, erase fault memory after completing the test.

- Select diagnosis function "06 - End output".
- Switch off ignition and unplug the diagnostic connector.