



## Charge air pressure system, checking

### Charge air pressure regulation, checking

#### Special tools and equipment

- ◆ VAG 1551 Scan tool (or VAG 1552 Mobile scan tool) with VAG 1551/3 Cable

#### Test requirements

- No leaks on intake or exhaust side.
- Engine oil temperature at least 80 °C

#### Test sequence

- Connect VAG 1551 Scan tool (or VAG 1552). Start engine and select the Engine Control Module (ECM) using address word 01. Connecting scan tool and selecting Engine Control Module (ECM):

⇒ [Repair Manual, 1.8 Liter 4-Cyl. 5V Turbo Fuel](#)

[Injection & Ignition, Engine Code\(s\): ATW, AUG, AWM, Repair Group 01; General information for On Board Diagnostic \(OBD\); connecting Scan Tool \(ST\)](#)

Rapid data transfer

HELP

Select function XX



Indicated on display:

- Press buttons -0- and -8- to select "Read measuring value block" function 08. Press -Q- button to confirm input.

Read measuring value block

Enter display group number XXX



Indicated on display:



- Press buttons -1-, -1- and -4- to select "display group number 114" and then press -Q- button to confirm input.

Read measuring value block 114 →

1      2      3      4

↖ Indicated on display

- Check duty cycle of wastegate bypass regulator valve during a road test or on a chassis dynamometer (at Wide Open Throttle between 1800 and 2300 RPM) in display field 4.

Specification: 5 to 95 %

If specified value is obtained:

- Press -C- button.
- Press buttons -1-, -1- and -5- to select "display group number 115" and then press -Q- button to confirm input.

Read measuring value block 115 →

1      2      3      4

↖ Indicated on display

- Check actual charge pressure value in display field 4 at Wide Open Throttle (WOT):

### On dynamometer

In 3rd gear or in 2nd drive mode

### While driving

Vehicles with manual transmission

- Accelerate vehicle at Wide Open Throttle (WOT) in 2nd gear



#### Vehicles with automatic transmission

- Manually (Tiptronic) place vehicle in 4th gear and accelerate vehicle from low speed at Wide Open Throttle (without kick down, transmission does not downshift any more).
- Press print button between 1800 and 2300 RPM and check actual charge air pressure value in display field 4.

Specification: 1350 to 1750 mbar

- Compare actual charge air pressure with specification in display field 3.

Difference: max. 100 mbar

**Note:**

*Repeat measurement if charge air pressure was not fully charged or if the difference between actual and specified values was too large.*

If charge air pressure is exceeded:

- Check charge air pressure sensor -G31- ⇒ [Page 21-23](#)

- Check wastegate bypass regulator valve -N75-.  
(Throughput in hose from turbocharger via valve to vacuum diaphragm with connector disconnected)
- Check for proper seating of vacuum diaphragm for wastegate bypass regulator valve -N75- at turbocharger.
- Check vacuum diaphragm ⇒ [Page 21-20](#)



- Check bearing for shaft of wastegate bypass regulator valve in turbocharger for ease of movement. If rusted solid, replace turbocharger.

If charge air pressure is not reached:

- Check charge air pressure sensor -G31- ⇒ [Page 21-23](#)
- Check wastegate bypass regulator valve - N75-.
- Check bearing for shaft of wastegate bypass regulator valve -N75- in turbocharger for ease of movement. If rusted solid, replace turbocharger.
- Turbocharger faulty, replace.



## Wastegate bypass regulator valve -N75-, checking

### Special tools and equipment

- ◆ VAG 1526 Multimeter or VAG 1715 Multimeter
  
- ◆ VAG 1594 Connector test kit

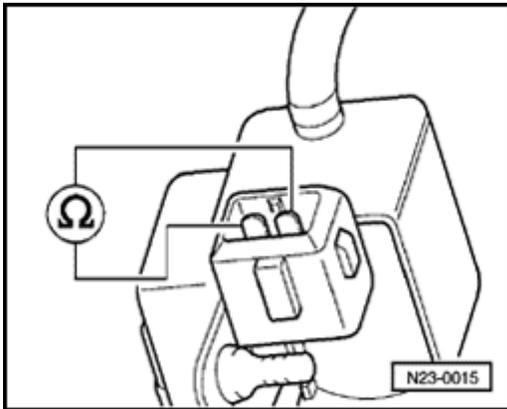
### Test requirement

- Output Diagnostic Test Mode (DTM) performed

⇒ [Repair Manual, 1.8 Liter 4-Cyl. 5V Turbo Fuel Injection & Ignition, Engine Code\(s\): ATW, AUG, AWM, Repair Group 01; Output Diagnostic Test Mode \(DTM\); Performing output Diagnostic Test Mode \(DTM\)](#)

### Test sequence

- Switch ignition off.
  
- Disconnect connector at solenoid valve for



charge air pressure regulation.

A

- Measure resistance between terminals of valve.

Specification: 25 to 35  $\Omega$

If specified value is not obtained:

- Replace wastegate bypass regulator valve -N75-.



## Vacuum diaphragm for wastegate bypass regulator valve -N75-, checking

### Special tools and equipment

- ◆ VAG 1551 Scan tool (or VAG 1552 Mobile scan tool) with VAG1551/3 Cable

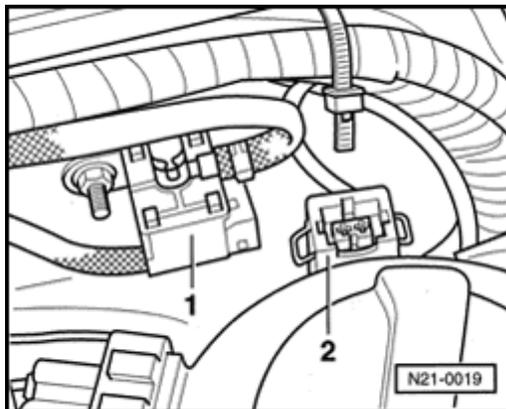
### Test requirement

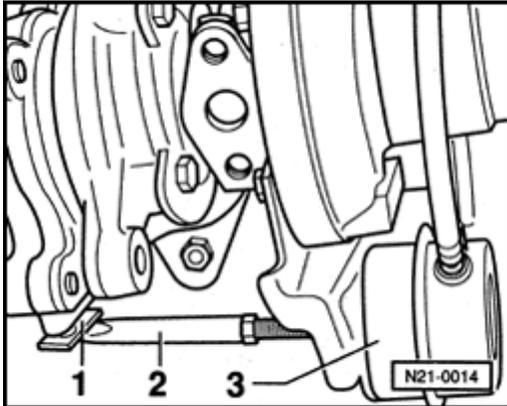
- Engine oil temperature at least 80 °C

### Test sequence

A

- Disconnect connector -2- at wastegate bypass regulator valve -N75-.





A

- Bring engine to maximum RPM by depressing accelerator pedal suddenly. Operating rod -2- for wastegate bypass regulator valve -N75- must move.

If operating rod does not move:

- Check lever for wastegate bypass regulator valve -N75- -1- for ease of movement. If rusted solid, replace turbocharger.

If operating rod does not move despite freely moving lever:

- Check wastegate bypass regulator valve -N75-. (Throughput in hose from turbocharger via valve to vacuum diaphragm with connector disconnected)

If solenoid valve is OK:

- Replace turbocharger ⇒ [Page 21-4](#) , item no. 28



## Deceleration shut-off valve, checking

### Special tools and equipment

- ◆ VAG 1390 Hand vacuum pump

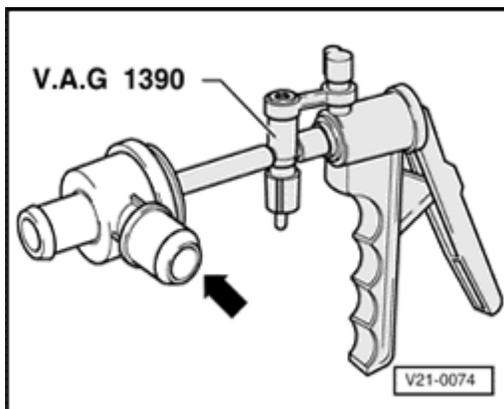
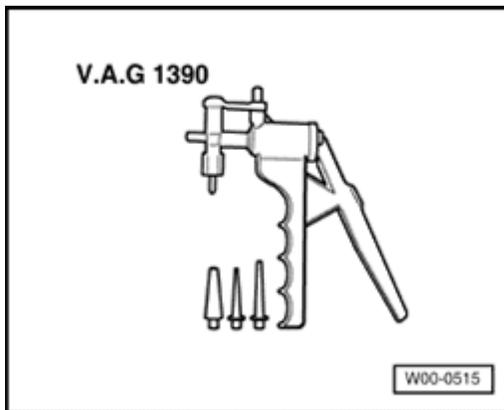
### Test requirement

- Performance deficiency or tip-in shocks

### Test sequence

#### Note:

*The deceleration shut-off valve is located in front of the turbocharger. It is opened by vacuum during deceleration and at idle.*

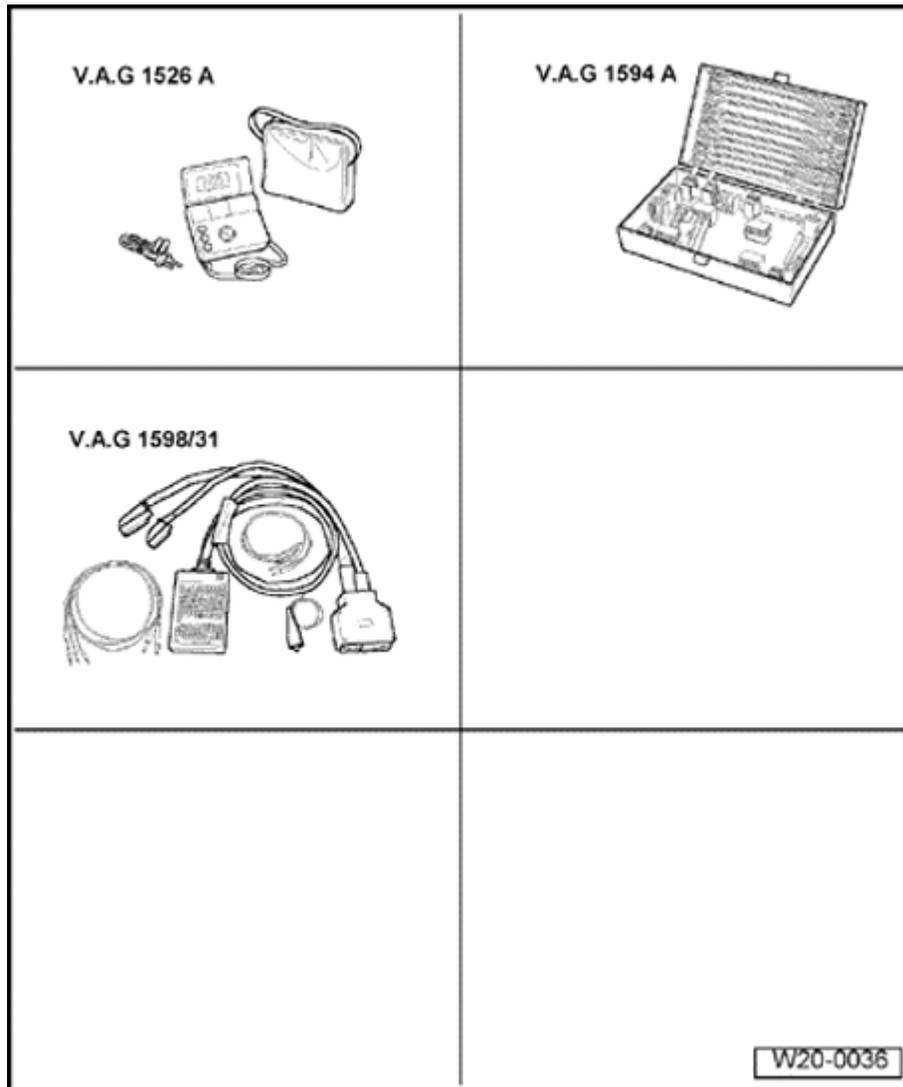


- Connect VAG 1390 Hand vacuum pump to vacuum connection for deceleration shut-off valve.
- Operate hand vacuum pump. Deceleration shut-off valve must open (arrow).
- Operate ventilation valve at vacuum pump. Deceleration shut-off valve must close (arrow)

If deceleration shut-off valve does not open or does not close, replace valve.

#### Note:

*Secure connections of deceleration valve using screw-type clamps.*



## Charge air pressure sensor, checking

### Test requirement

- On Board Diagnostic (OBD) recognized a malfunction and stored a DTC in DTC memory.

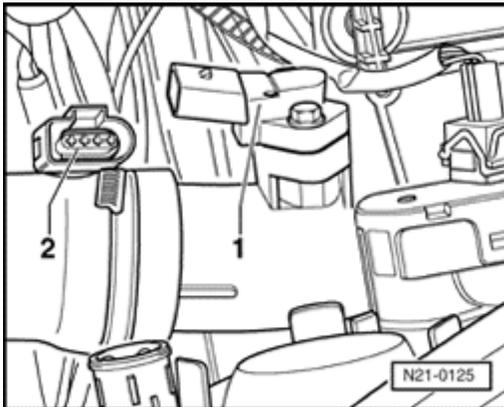
### Special tools and equipment

- ◆ VAG 1526A Multimeter
- ◆ VAG 1594A Connector test kit
- ◆ VAG 1598/31 Test box
- ◆ Wiring diagram



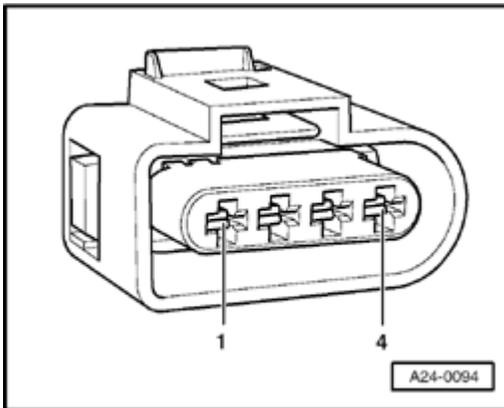
### Checking voltage supply and wiring to control module

- Switch ignition off.



A

- Disconnect 4-pin connector -2- from charge air pressure sensor -G31- -2-.



A

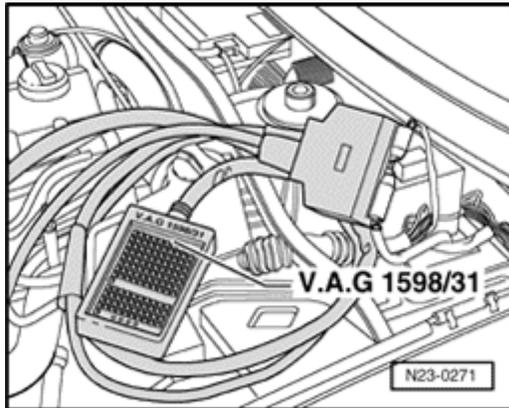
- Use adapter cables from VAG 1594 to connect multimeter to terminals 1 + 3 of connector for voltage measurement.

- Switch ignition on.

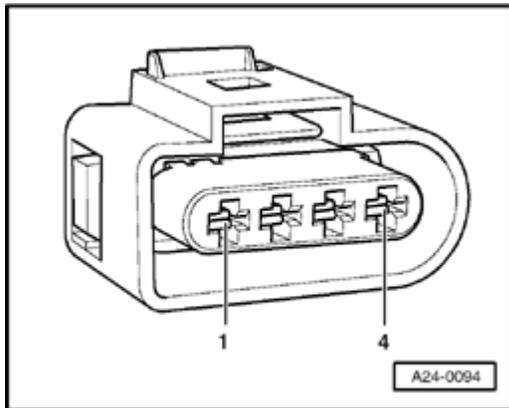
Specification: at least 4.5 V

- Switch ignition off.

If specified value is not obtained:



- A - Connect VAG 1598/31 Test box to control module wiring harness. Engine Control Module (ECM) is not connected.



- A - Check for open circuits in wires between test box and connector according to wiring diagram.

Terminal 1 + socket 108

Terminal 2 + socket 98

Terminal 4 + socket 101

Wire resistance: max: 1.5  $\Omega$

- Check wires for shorts among one another.

If no malfunctions are found in the wires and there was voltage between terminals 1 + 3:

- Check function  $\Rightarrow$  [Page 21-26](#)

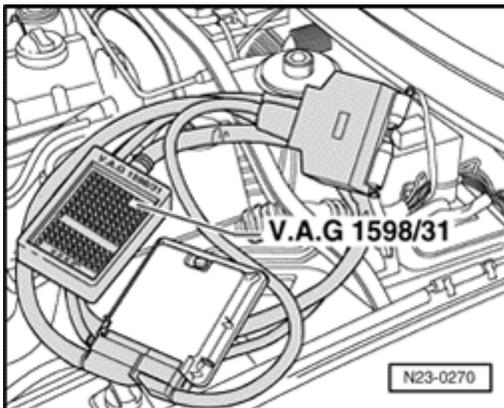
If no errors are found in wires and there was no voltage between terminals 1 + 3:



- Replace Engine Control Module (ECM):

⇒ [Repair Manual, 1.8 Liter 4-Cyl. 5V Turbo Fuel Injection & Ignition, Engine Code\(s\): ATW, AUG, AWM, Repair Group 24; Engine Control Module \(ECM\), replacing](#)

### Checking function



A

- Connect VAG 1598/31 Test box to control module wiring harness and to control module.
- Re-connect connector at charge air pressure sensor -G31-.
- Connect multimeter to socket 101 and socket 108 for voltage measurement.
- Start engine and measure voltage.
  - Specification: 1.80 to 2.00 volts
- Bring engine to RPM by depressing accelerator pedal suddenly.
  - Specification: 2.00 to 3.00 volts

If specified values are not obtained:

- Replace the charge air pressure sensor -G31-.



## Recirculating valve for turbocharger, checking

Valve opens between connection to intake manifold and connection to deceleration shut-off valve with no voltage Connection to vacuum reservoir is closed.

### Test requirement

#### Not for engine code AUG

- Output Diagnostic Test Mode (DTM) performed

⇒ [Repair Manual, 1.8 Liter 4-Cyl. 5V Turbo Fuel Injection & Ignition, Engine Code\(s\): ATW, AUG, AWM, Repair Group 01; Output Diagnostic Test Mode \(DTM\); Performing output Diagnostic Test Mode \(DTM\)](#)

### Test sequence

- Switch ignition off.
- Disconnect connector from recirculating valve for turbocharger -N249-.





- Measure resistance between terminals of valve.

Specification: 25 to 35  $\Omega$

If specified value is not obtained:

- Replace recirculating valve for turbocharger -N249-.