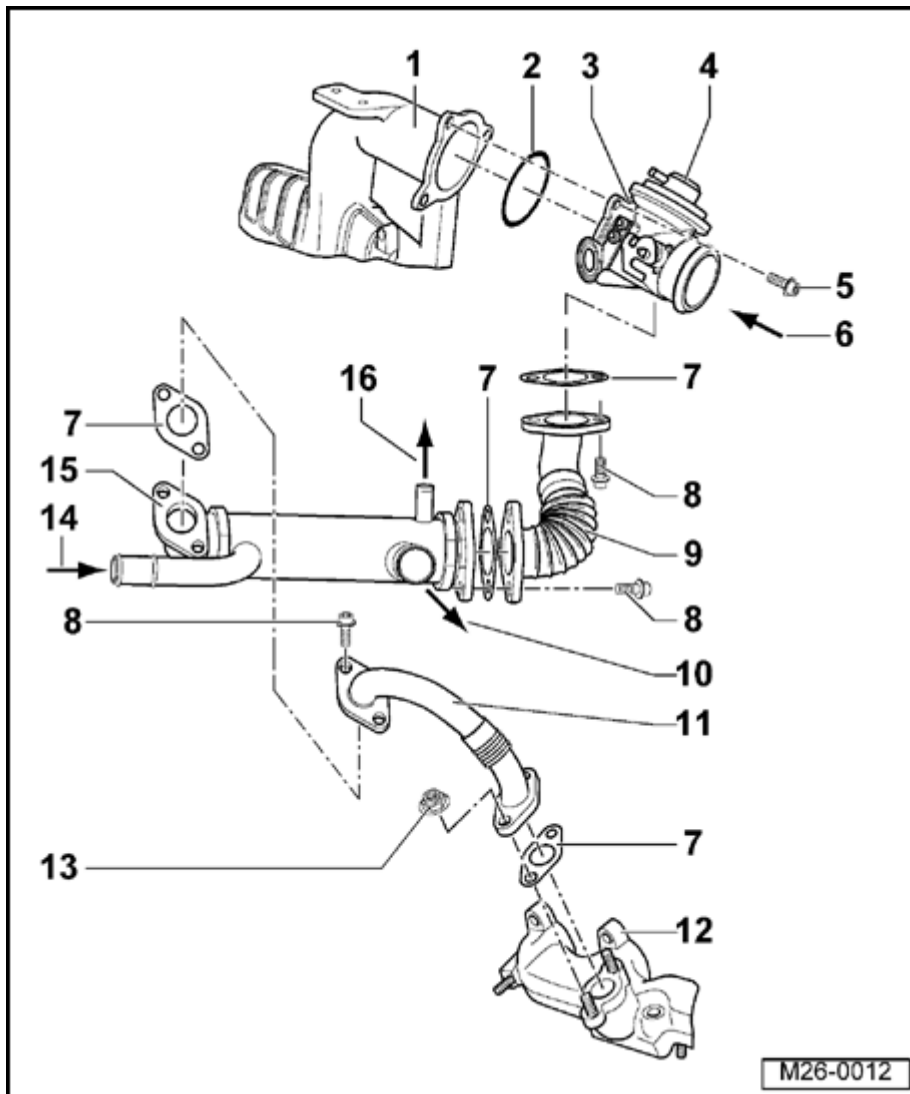


Exhaust Gas Recirculation (EGR) system, overview

Note:

- ◆ *The function/control of the Exhaust Gas Recirculation (EGR) system is managed by the Diesel direct injection system ECM -J248- via the EGR Vacuum Regulator solenoid valve - N18-.*
- ◆ *The cone-shaped plunger in the mechanical EGR valve ensures that various cross sectional openings are possible at different plunger heights.*
- ◆ *Every possible valve position is provided via pulsed control.*
- ◆ *Always replace self-locking nuts.*

Hose connection diagram ⇒ [Page 26-11](#)



Exhaust gas recirculation system components, removing and installing

1 - Intake manifold

2 - O-ring

◆ Always replace

3 - Intake air connector

◆ With EGR valve and control flap

4 - Exhaust Gas Recirculation valve

◆ Component of intake air connector

◆ Can only be replaced with intake air connector

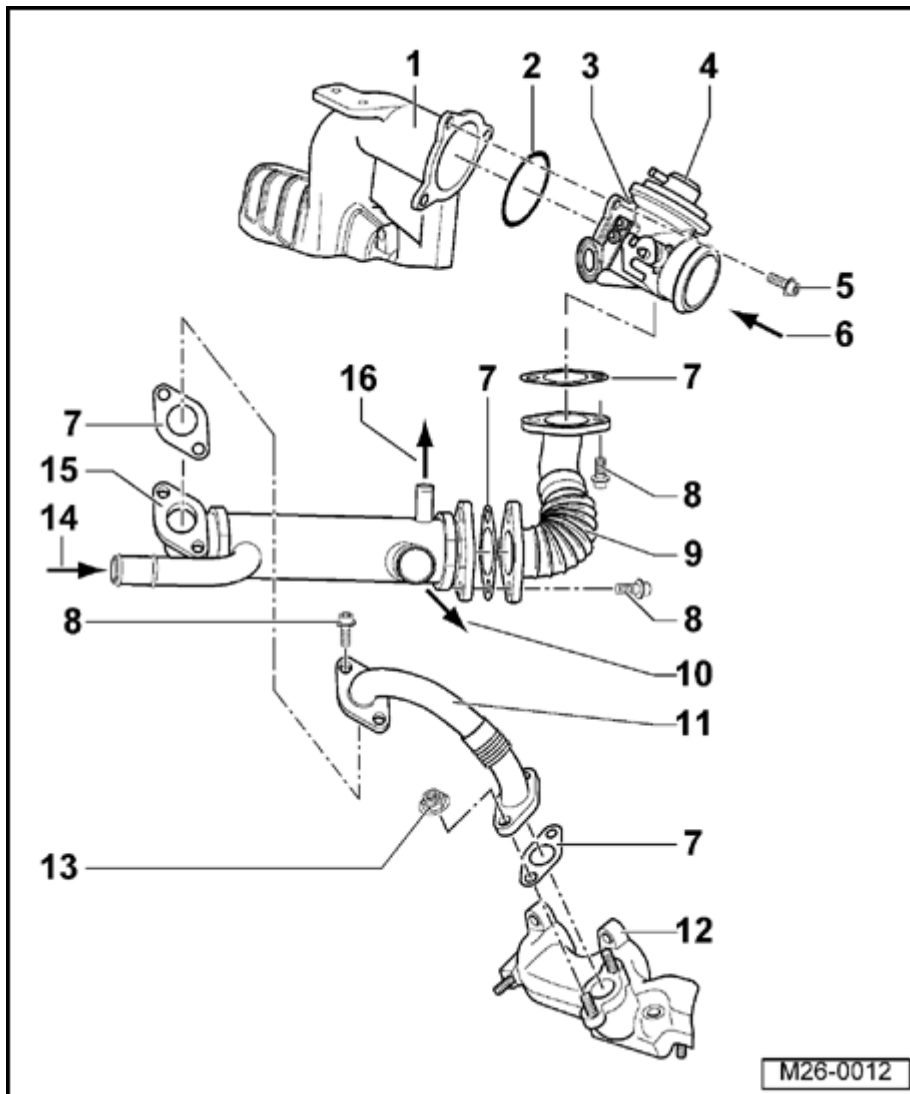
◆ Checking ⇒ [Page 26-13](#)

◆ Control, checking:

⇒ [Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH, Repair Group 01](#)

5 - 10 Nm (7 ft lb)

6 - From charge air cooler



7 - Gasket

- ◆ Always replace

8 - 25 Nm (18 ft lb)

9 - Connecting pipe

10 - To heater core

- ◆ Coolant hose connections diagram ⇒ [Page 19-11](#)

11 - Connecting pipe

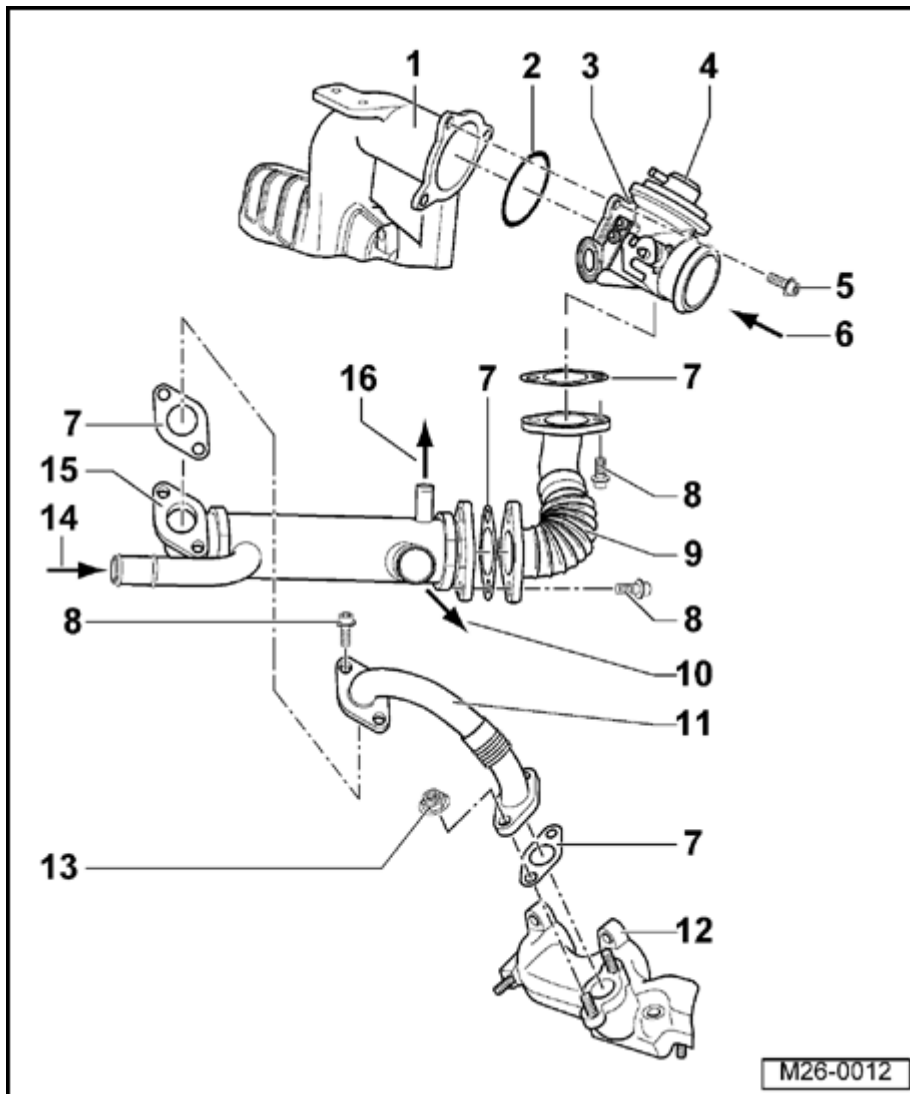
12 - Exhaust manifold

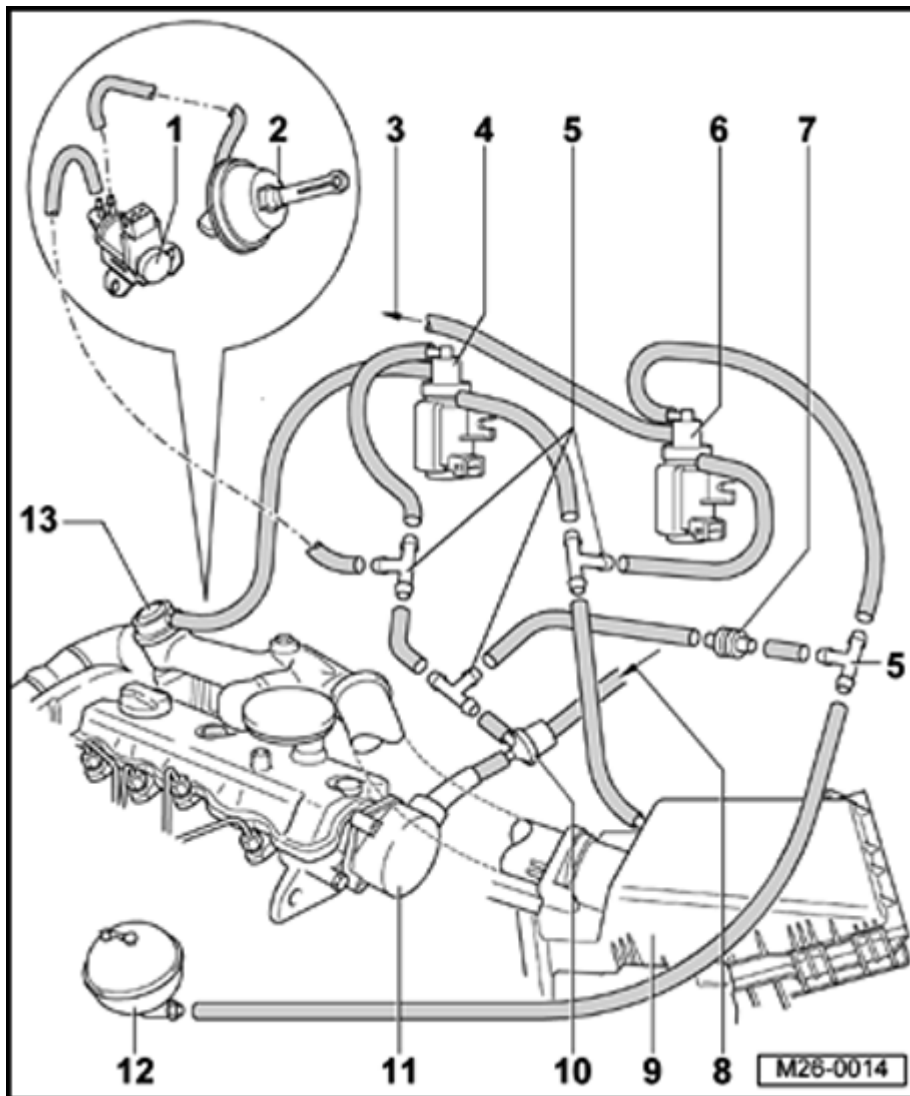
- ◆ Part of turbocharger
- ◆ Can only be replaced with turbocharger

13 - 25 Nm (18 ft lb)

14 - From connector

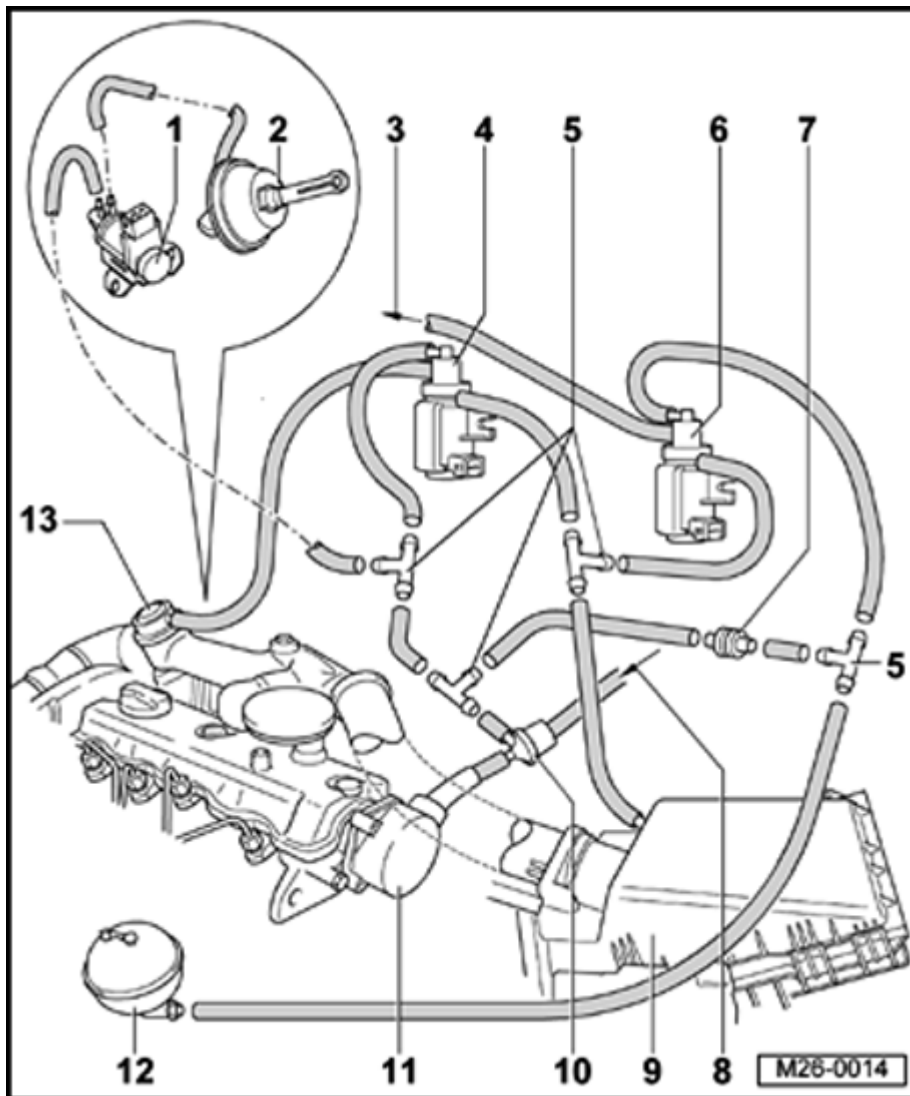
- ◆ Coolant hose connections diagram ⇒ [Page 19-11](#)





Vacuum hose connections, diagram

- 1 - Change-over Valve for Intake Manifold Flap -N239-
- 2 - Vacuum actuator
 - ◆ Do not bend control rod
- 3 - Vacuum hose
 - ◆ To vacuum unit for boost regulation on turbocharger
- 4 - EGR Vacuum Regulator Solenoid Valve -N18-
- 5 - T-connector
- 6 - Wastegate Bypass Regulator Valve -N75-



7 - Check valve

- ◆ Observe installation position: White connection points toward T-connector wastegate regulator valve and vacuum reservoir.

8 - from brake booster

9 - Air cleaner

10 - Check valve

- ◆ Observe installation position

11 - Vacuum pump

- ◆ for brake booster

12 - Vacuum reservoir

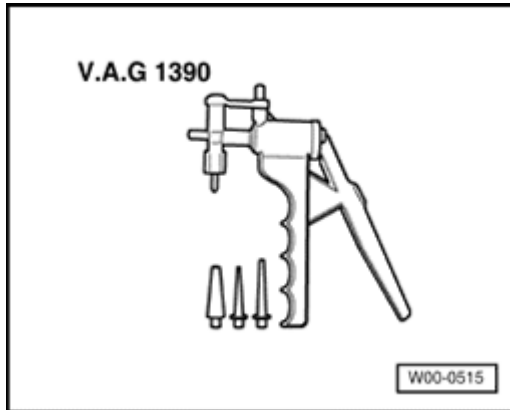
- ◆ Mounted with bracket to oil pan

13 - EGR Valve

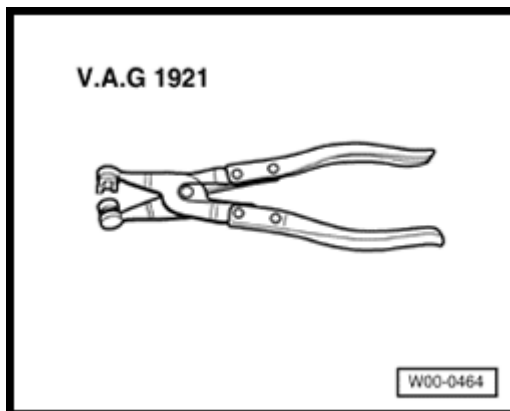


Exhaust Gas Recirculation (EGR) valve, checking

Special tools and equipment



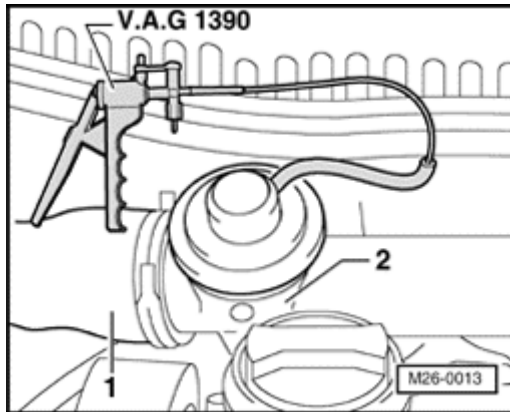
- ◆ VAG 1390 Hand vacuum pump



- ◆ VAG 1921 Spring clamp pliers

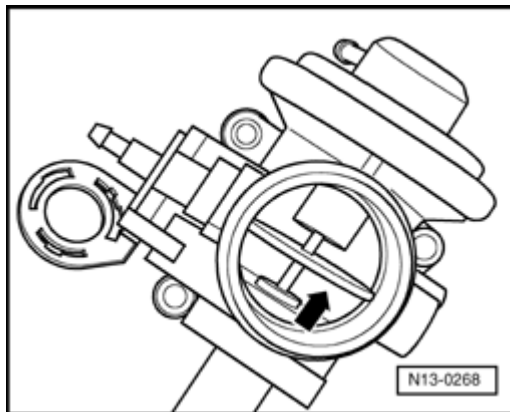


Test sequence



A

- Remove clamp -1- at intake manifold -2- .
- Remove vacuum hose from EGR valve.
- Connect hand vacuum pump V.A.G 1390 to EGR valve.

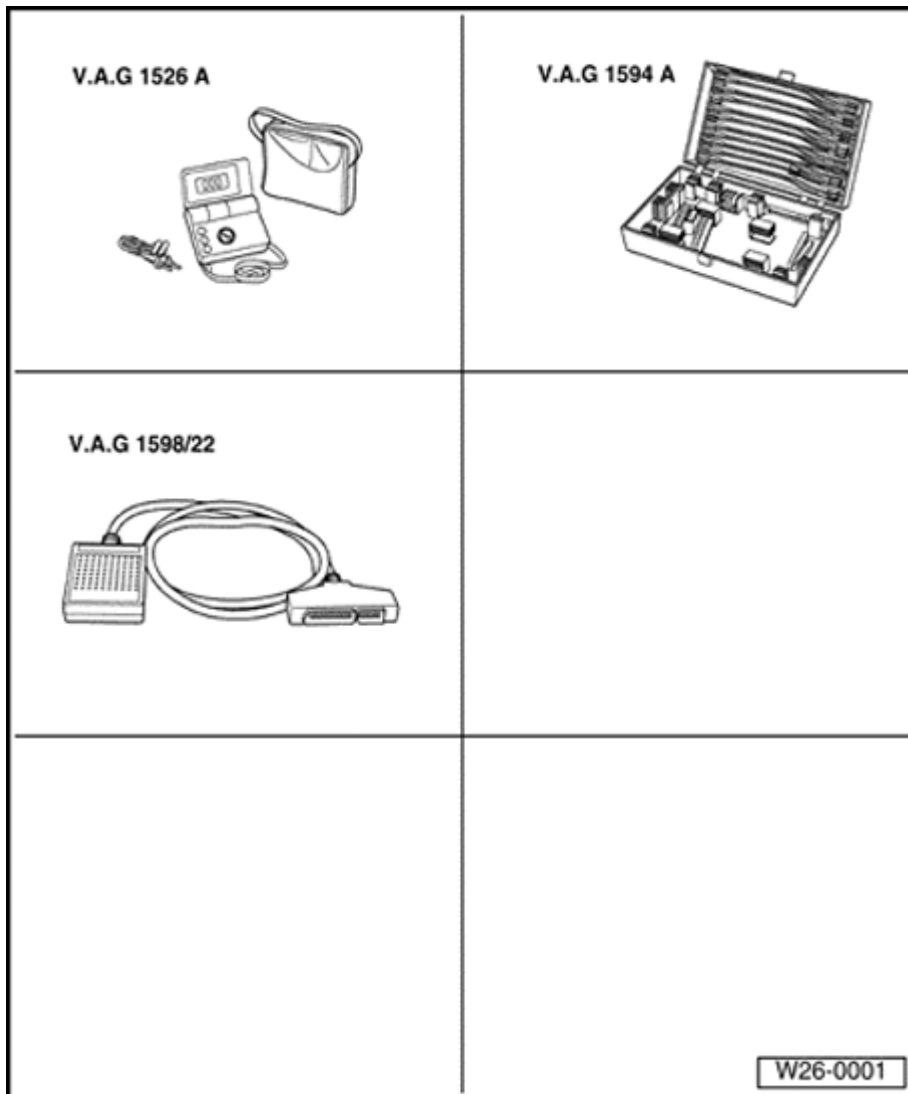


A

- Operate hand pump and observe membrane rod.
 - Membrane rod must move in direction of arrow..
- Disconnect vacuum pump hose from EGR valve.
 - Membrane rod must move back against direction of arrow to its original position.

If the membrane rod does not move:

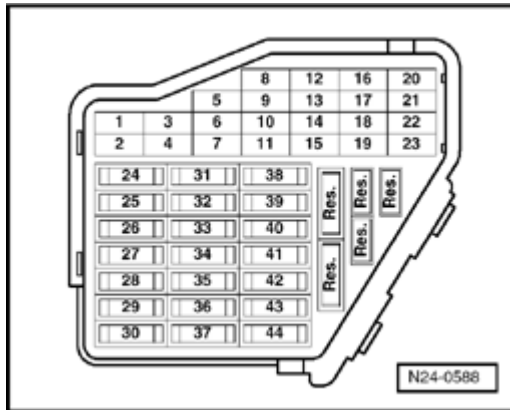
- Replace EGR valve and control flap ⇒ [Page 26-8](#) , item 3



Exhaust Gas Recirculation, checking

Special tools and equipment

- ◆ Fluke 83 multimeter
- ◆ VW 1594 Adaptor kit
- ◆ VAG 1598/22 Test Box
- ◆ VAG 1551/1552 Scan Tool with VAG 1551/3 adaptor cable
- ◆ Wiring diagram



Requirements

A

- Fuse No. 34 OK.
- ◆ Battery voltage must be at least 11.5 V
- ◆ No leaks in intake and exhaust system.
- ◆ No malfunctions in the engine or fuel injection system such as start of injection, injectors, compression pressures.
- ◆ The engine coolant temperature must be at least 85 ° C (185 ° F) ⇒ Display group 02, display field 4.

Test sequence

Testing the EGR system is done in function 04 (Basic setting). This procedure activates the EGR valve every 10 seconds to make it possible to read the extreme values for EGR (Mass Air Flow MAF Sensor) in display field 3.

- Connect VAG 1551/1552 Scan Tool and select engine control module, address word 01. Engine must run at idle.

⇒ [Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH Repair Group 01](#)



Rapid data transfer HELP
Select function XX



Indicated on display

- Press buttons -0- and -4- to select "Basic setting" function 04.
- Press -Q- button to confirm input

Basic setting HELP
Input display group number XXX



Indicated on display

- Press buttons -0-, -0- and -3- to select "Display group 3".
- Press -Q- button to confirm input

System in basic setting 3 →
900/rpm EGR n.aktiv 490 mg / H 3%



Indicated on display: (1 to 4 = Display fields)

- ◆ Display in field 2 must fluctuate every 10 seconds between EGR active or EGR inactive (n.aktiv).

The displays in display fields 3 and 4 must fluctuate within the following control range:

Note:

If a constant value of 550 mg/H is indicated in display field 3, check Mass Air Flow (MAF) sensor, ⇒ [Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code \(s\): ALH, Repair Group 23](#)



System in basic setting 3 →
900/rpm EGR n.aktiv 490 mg / H 3%

- If EGR NOT active:
- ↖ Specified value in display field 3: 420 to 560 mg/stroke
 - Specification in display zone 4: 0 to 5%

System in basic setting 3 →
900/rpm EGR aktiv 225 mg / H 99%

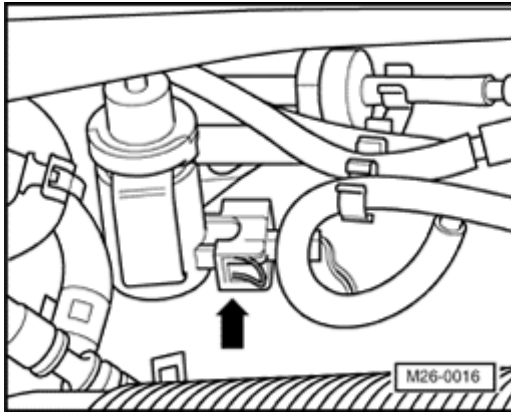
- If EGR active
- ↖ Specified value in display field 3: 170 to 340 mg/stroke
 - Specification display zone 4: 95 to 100%
- Press → button.
 - Press buttons -0- and -6- for to select "End output" function 06.
 - Press -Q- button to confirm input.
 - Switch ignition off.

If specifications are not obtained:

- Check mechanical EGR valve ⇒ [Page 26-13](#)
- Check vacuum hoses ⇒ [Page 26-11](#)

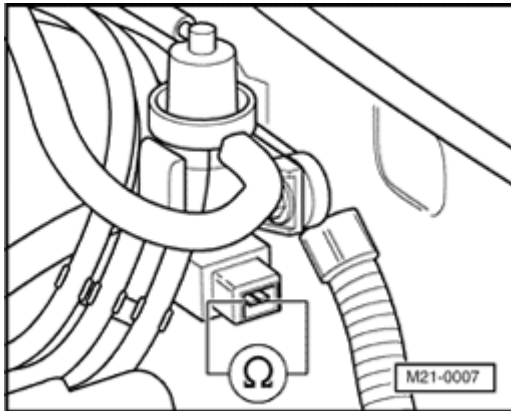


EGR Vacuum Regulator solenoid valve, checking



- A**
- Disconnect 2-pin electrical connector from EGR valve (arrow).

Resistance, measuring



- A**
- Measure resistance between contact terminals of -N18- EGR Vacuum Regulator Solenoid Valve.
 - Specification: 14.0 to 20.0 Ω

Note:

At room temperature resistance is in the lower tolerance range. At operating temperature resistance is in the upper tolerance range.

If specification not obtained:

- Replace EGR Vacuum Regulator solenoid valve -N18-.
- Check DTC memory.



⇒ [Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH, Repair Group 01](#)



- Read readiness code.

⇒ [*Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH, Repair Group 01*](#)

If the DTC memory was erased or the engine control module is subject to low voltage with the ignition ON, reset the readiness code again.

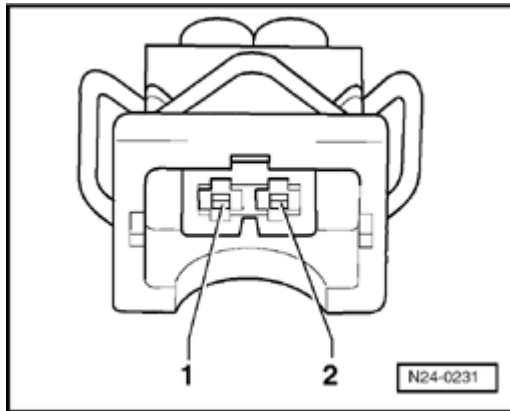
⇒ [*Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH, Repair Group 01*](#)

If the specification was obtained:

- Check voltage supply of EGR valve ⇒ [Page 26-22](#)



Voltage supply, checking



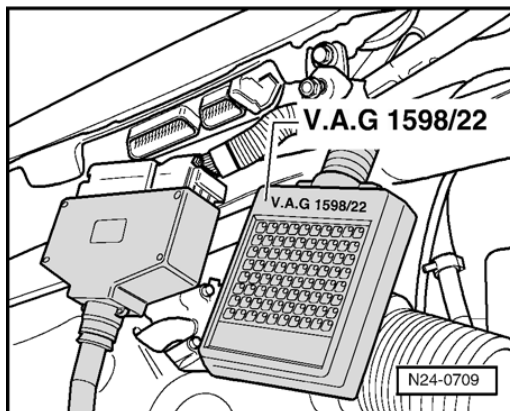
A

- Connect multimeter using jumper wire from VAG test kit between terminal 1 and engine Ground (GND).
- Switch ignition ON.
 - Specification: at least 11.5 V

If the specification was not obtained:

- Switch ignition off.
- Remove windshield wiper arms and plenum cover.

⇒ [Repair Manual, Electrical Equipment, Repair Group 92.](#)



A

- Connect VAG 1598/22 Test Box to harness connector of control module.
- Check wiring for short circuit between Test Box sockets.

Socket no.	Test box socket no.	
	Through MY 1999	From MY 2000
1	2	1
1	28	2
2	29	61

- Resistance: 1.5 Ω maximum



- Check wires for short circuit one against another, to vehicle ground and to battery B+.

- Wiring resistance: $\infty \Omega$

If no malfunction and if voltage between terminal 1 and ground:

- Replace Diesel Direct Fuel Injection (DFI) Engine Control Module -J248-.

⇒ [Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH, Repair Group 23](#)

- Check DTC memory.

⇒ [Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH, Repair Group 01](#)

- Read readiness code.

⇒ [Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH, Repair Group 01](#)

If the DTC memory was erased or the constant voltage supply to the engine control module was interrupted, the readiness code must be initiated again.

⇒ [Repair Manual, 1.9 Liter 4-Cyl. 2V TDI Fuel Injection & Glow Plug, Engine Code\(s\): ALH, Repair Group 01](#)