

Exhaust system components, removing and installing

Note:

Align exhaust system length-wise to maintain dimension -a-.

1 - Heat shield

◆ Removing:

- First remove pipe between EGR valve and exhaust manifold. ⇒ [Page 26-10](#) (item 13)

2 - Exhaust manifold

◆ 2 piece

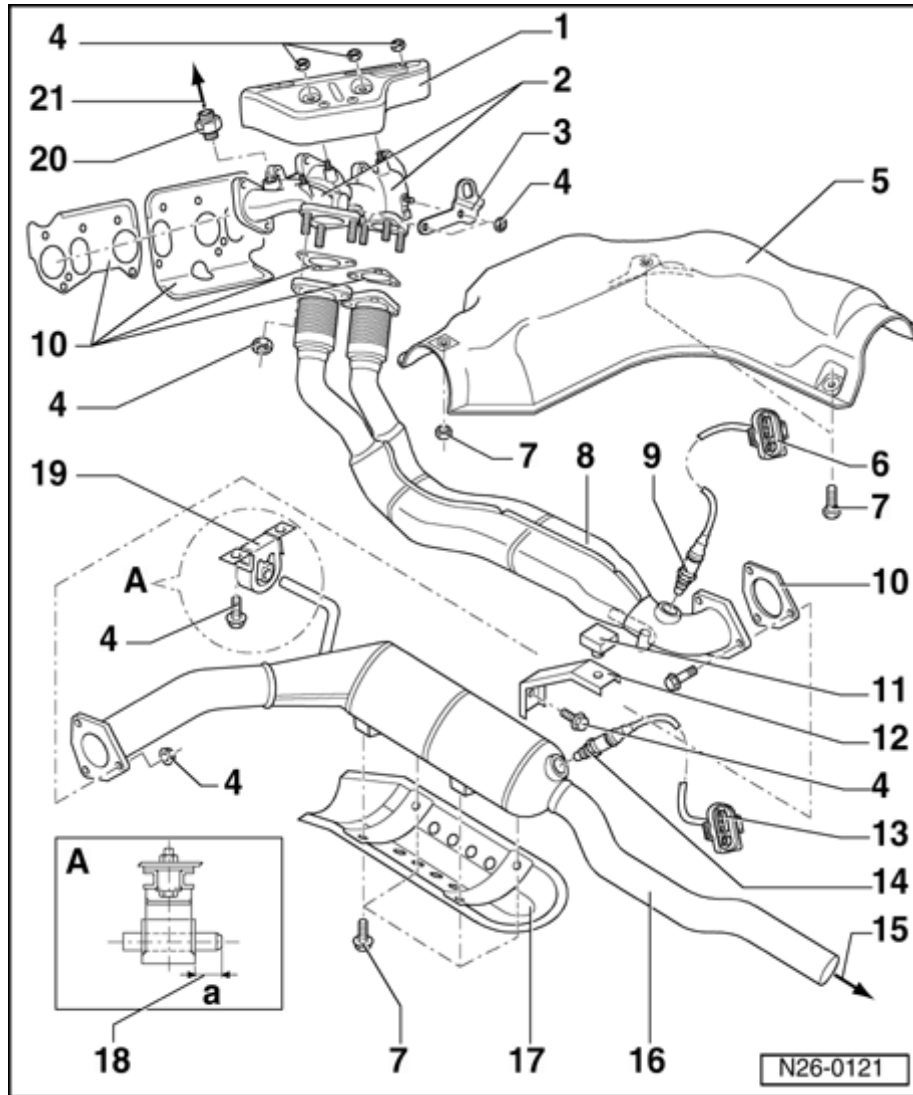
3 - Lifting eye

4 - M8 - 25 Nm (18 ft lb) M10 - 40 Nm (30 ft lb)

- Replace

5 - Heat shield

◆ For Three-Way Catalytic Converter (TWC)



6 - 4-pin connector

- ◆ Black
- ◆ Mounted to sub-frame
- ◆ For Oxygen sensor and Oxygen sensor heating

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 24](#)

7 - 10 Nm (7 ft lb)

8 - Front exhaust pipe

9 - Heated Oxygen sensor (HO2S) -G39-

- ◆ 50 Nm (37 ft lb)
- ◆ Only grease threads using G5. Do not allow G5 to enter sensor slots.
- ◆ Checking:

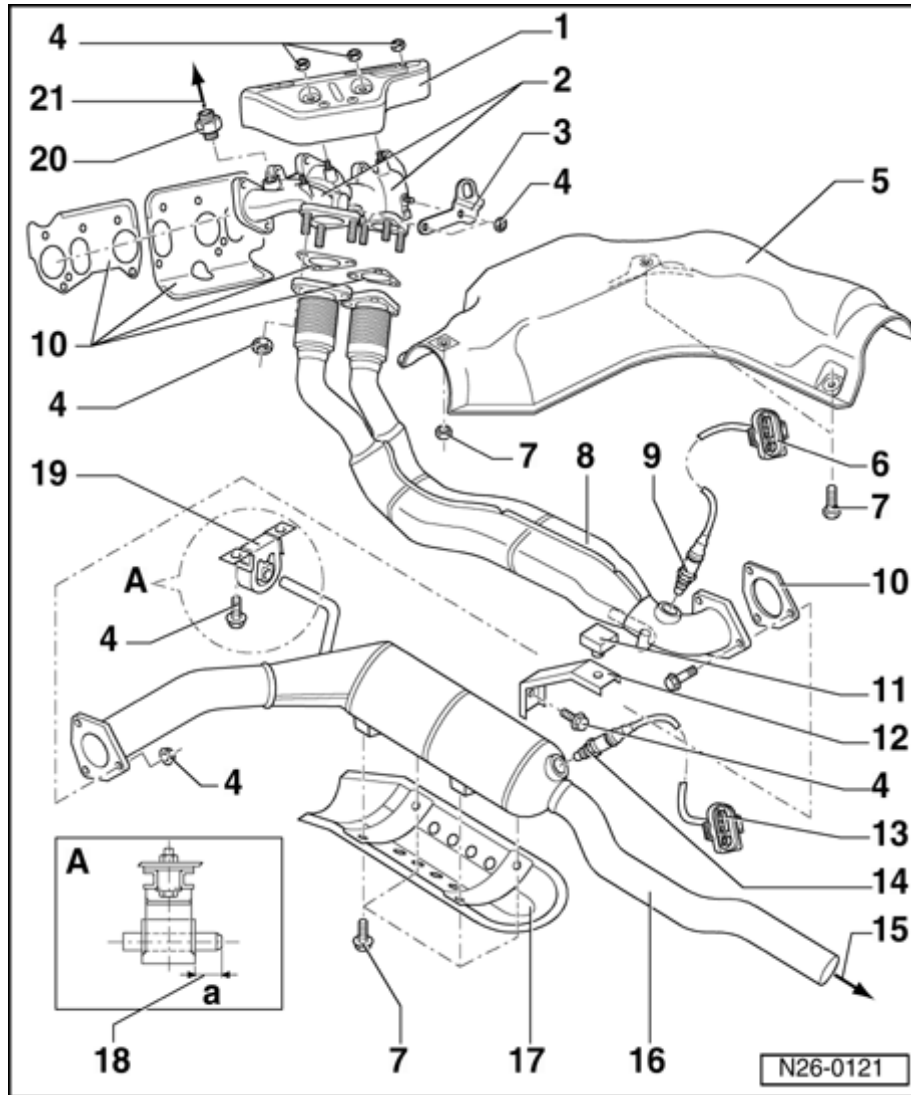
⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 01](#)

- ◆ Oxygen sensor and sensor control, checking:

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 24](#)

- ◆ Oxygen sensor heating, checking:

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 24](#)



10 - Gasket

- ◆ Replace

11 - Rubber damper

- ◆ For front exhaust pipe (item 8)

12 - Support bracket

- ◆ For rubber damper
- ◆ Mounted to sub-frame

13 - 4-pin connector

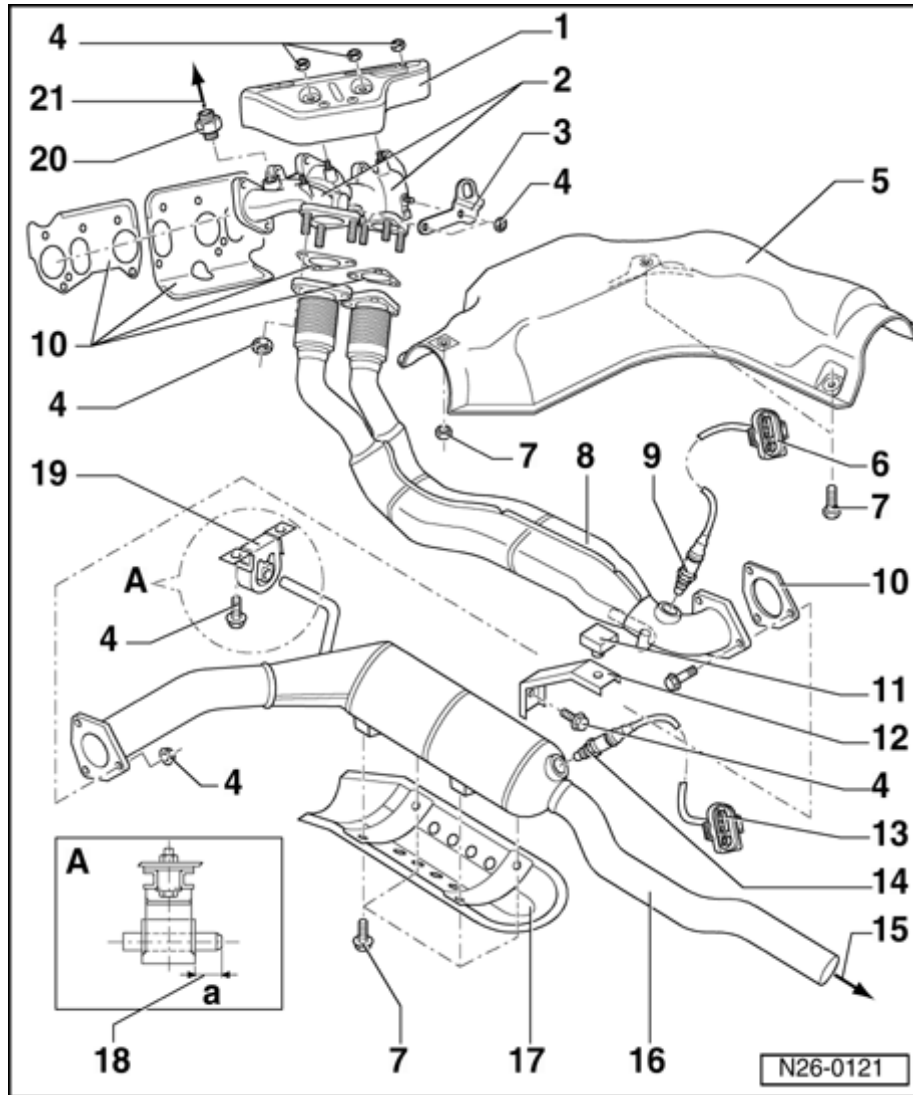
- ◆ Brown
- ◆ For Oxygen sensor and sensor heating after Three-Way Catalytic Converter
- ◆ Mounted to sub-frame

14 - Heated Oxygen sensor (HO2S) 2 -G108-

- ◆ 50 Nm (37 ft lb)
- ◆ Installation location: in Three-Way Catalytic Converter
- ◆ Only grease threads using G5. Do not allow G5 to enter sensor slots

15 - To front muffler

◆ ⇒ [Page 26-7](#) (item 11)



16 - Three-Way Catalytic Converter

17 - Heat shield

18 - Dimension -a-

- ◆ -a- = 10 mm minimum

19 - Mount

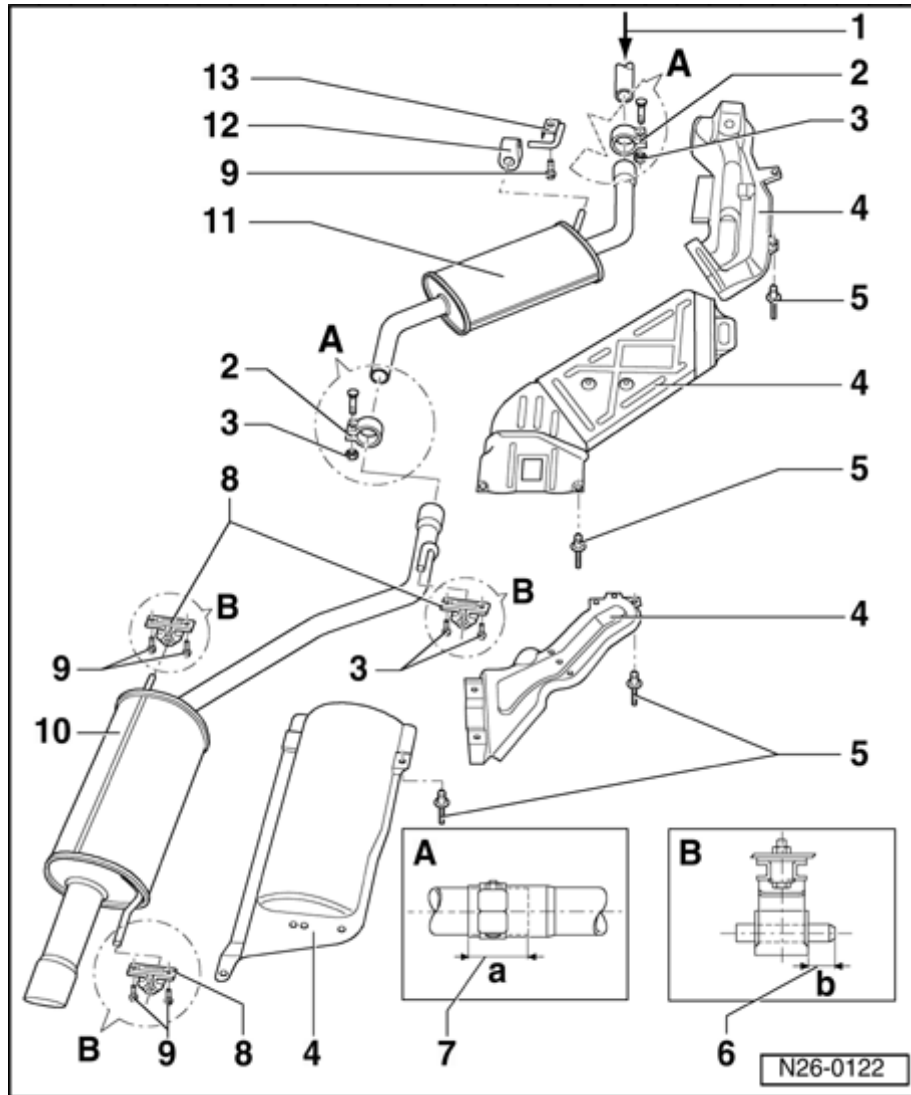
- ◆ Replace if damaged.
- ◆ Note installed position.

20 - Connection

- ◆ 35 Nm (26 ft lb)
- ◆ For pipe between EGR valve and exhaust manifold

21 - To pipe

- ◆ For exhaust gas outlet ⇒ [Page 26-10](#) (item 13)



Exhaust system and attachments, removing and installing

Note:

Align exhaust system length-wise to maintain dimensions -a- and -b-.

1 - From Three-Way Catalytic Converter

◆ ⇒ [Page 26-5](#) (item 16)

2 - Clamp

3 - 40 Nm (30 ft lb)

◆ Replace

4 - Heat shield

5 - Pop rivet

6 - Dimension -b-

◆ -b- = 10 mm minimum

7 - Dimension -a-

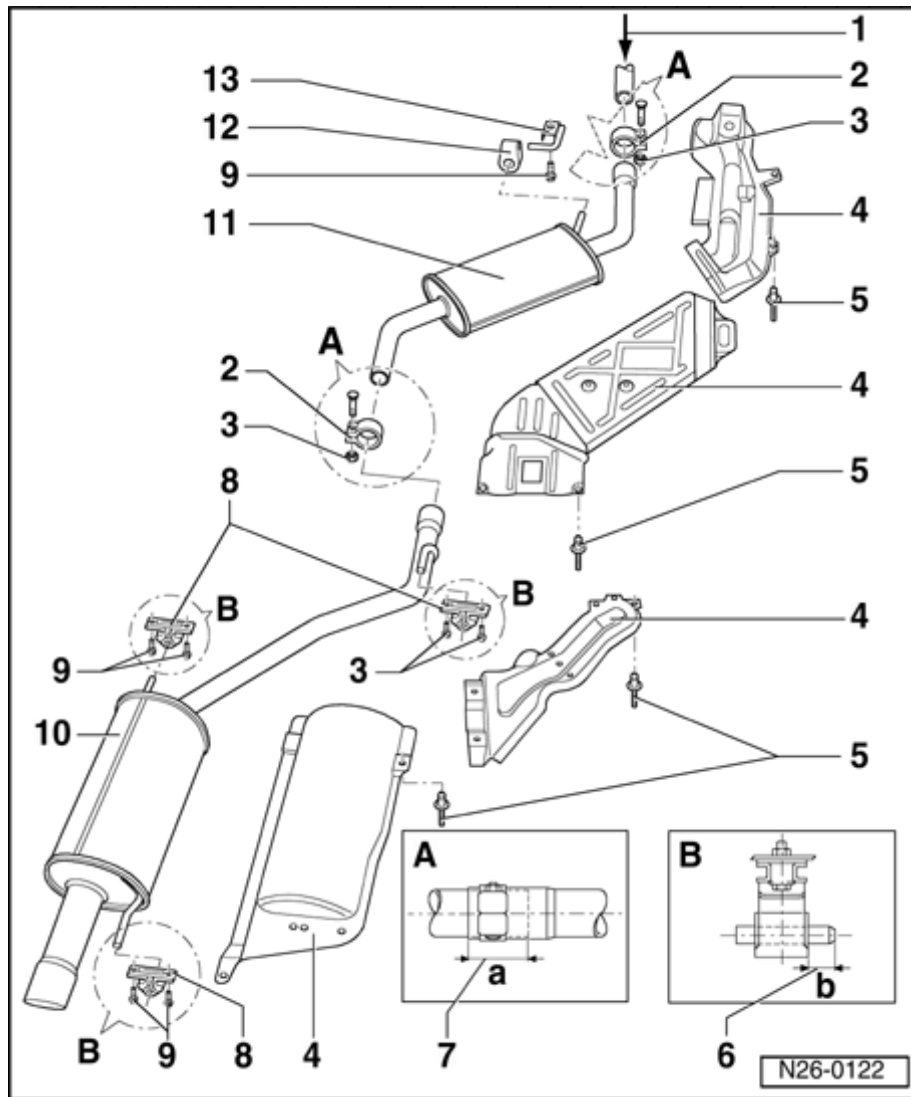
◆ -a- = 50 ± 5 mm (2 ± 0.2 in.)

8 - Mount

◆ Replace if damaged

◆ Note installed position

9 - 25 Nm (18 ft lb)



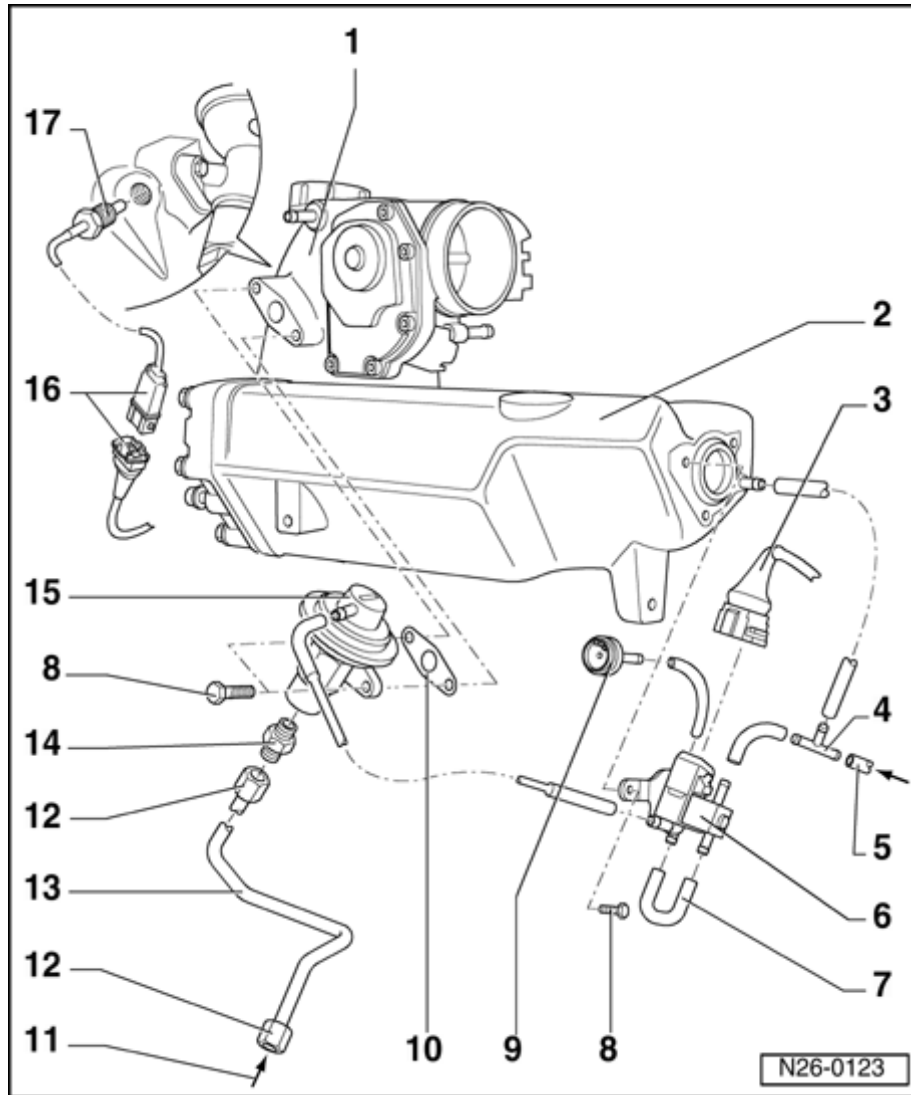
10 - Rear muffler

11 - Front muffler

12 - Retainer

◆ Replace if damaged.

13 - Bracket



Exhaust Gas Recirculation (EGR) system, overview

Note:

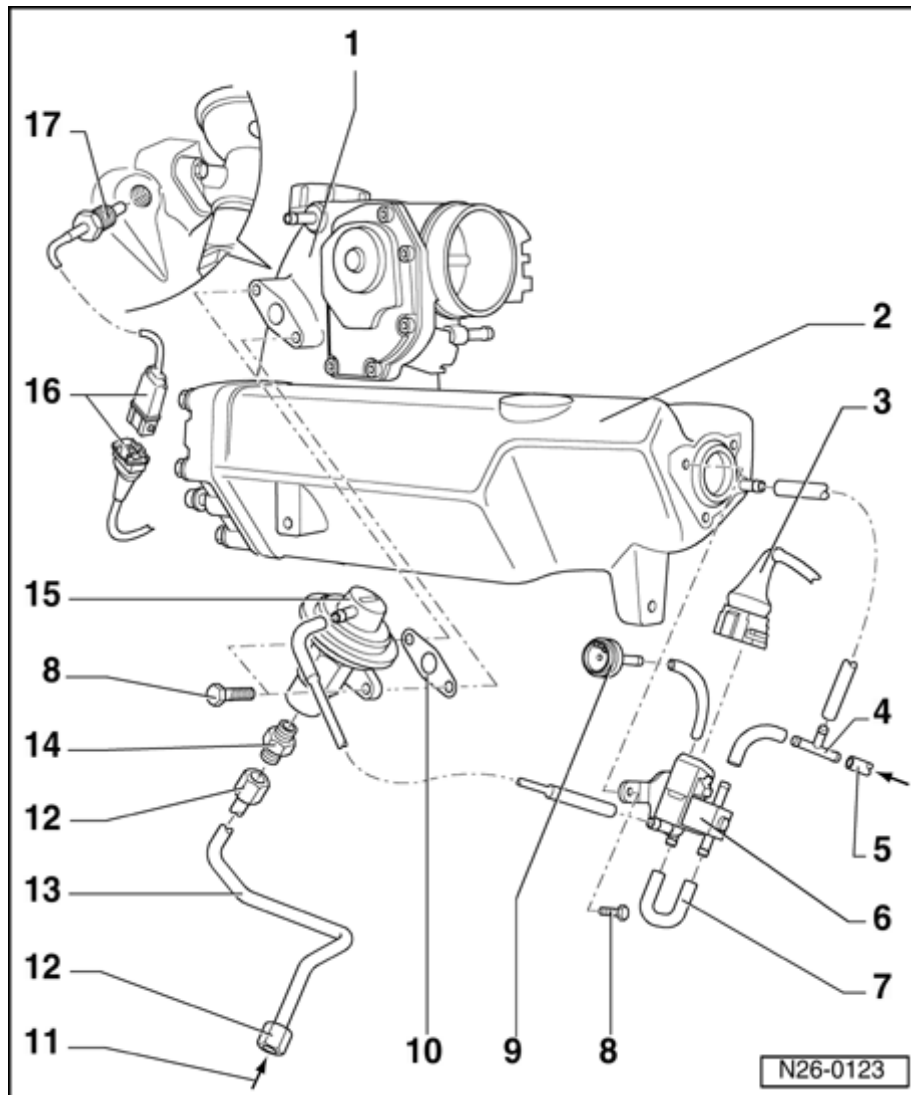
- ◆ Function and control of EGR system is checked via Motronic On Board Diagnostic (OBD) system.
- ◆ Components marked with an * are checked via On Board Diagnostic.

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 01](#)

- ◆ Components marked with ** are checked via Output Diagnostic Test Mode.

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 01](#)

- ◆ Always replace sealing rings and gaskets when assembling.
- ◆ Vacuum lines and hose connections must be leak-tight.
- ◆ Vacuum lines must not be blocked or kinked.



1 - Connector

- ◆ Between intake manifold and Throttle Valve Control Module -J338-

2 - Intake manifold

3 - 2-pin connector

- ◆ Brown
- ◆ For EGR valve -N18-

4 - Junction piece

5 - Vacuum line

- ◆ From Positive Crankcase Ventilation valve

⇒ *Repair Manual, 2.8 Liter VR6 OBD II Fuel Injection & Ignition, Repair Group 24*

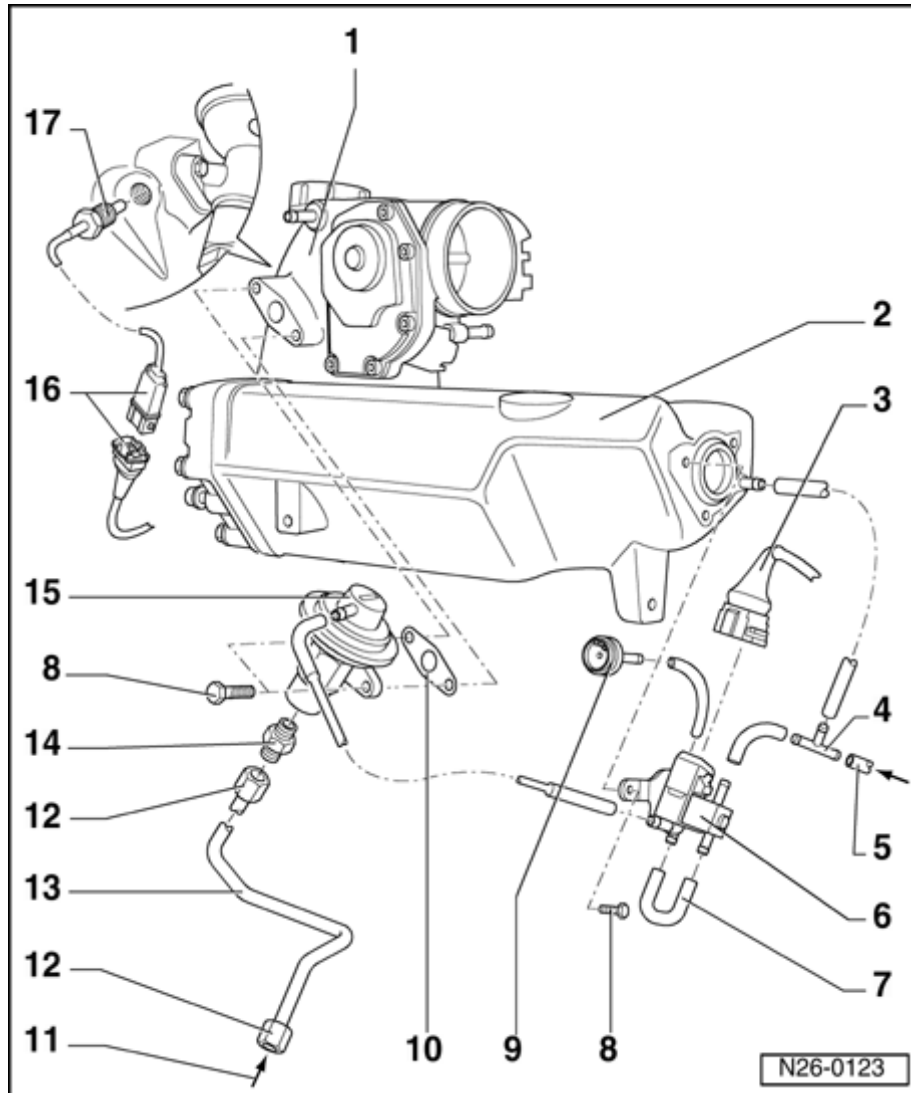
6 - Exhaust Gas Recirculation valve -N18-*/**

- ◆ Two-way valve
- ◆ Checking:

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 01](#)

7 - Connecting hose

8 - Bolt 10 Nm (7 ft lb)



9 - Air Cleaner

- ◆ Can cause engine running problems if dirty

10 - Gasket

- ◆ Replace

11 - From connection on exhaust manifold

- ◆ For exhaust gas inlet ⇒ [Page 26-5](#) , Item 20

12 - 30 Nm (22 ft lb)

13 - Pipe

- ◆ For exhaust gas intake

14 - Connection

- ◆ 35 Nm (26 ft lb)

15 - EGR valve

- ◆ Checking ⇒ [Page 26-11](#)

16 - 2-pin connector

- ◆ Black
- ◆ For exhaust gas recirculation temperature sensor - G98-

17 - EGR Temperature Sensor -G98-*

- ◆ 20 Nm (15 ft lb)



Exhaust Gas Recirculation (EGR) valve, checking

Special tools and equipment

- ◆ US 8012 Hand vacuum pump
- ◆ VAG 1551 Scan Tool or VAG 1552 Scan Tool with VAG 1551/3 adaptor cable

Requirements

- ◆ Vacuum lines and hose connections tight
- ◆ Vacuum lines not blocked or kinked
- ◆ Engine oil temperature 50 ° C (122 ° F) minimum

Test sequence

- Connect VAG 1551 Scan Tool ((VAG 1552) and select "address word 01" engine electronics with engine idling.

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection](#)

Rapid data transfer
Select function XX

HELP



[& Ignition, Engine Code\(s\): AES, Repair Group
01](#)

Display will appear as shown.

- Press button -0- and -8- to select "Read Measuring Value Block" function 08.



Read measuring value block HELP
Input display group number XX

- Press -Q- button to confirm input.

↖ Display will appear as shown.

- Press -Q- button to confirm input.

Read measuring value block 1 →
1 2 3 4

↖ Display will appear as shown (1 to 4 = display fields)

Only continue with check when:

◆ Engine coolant temperature is above 50 ° C (122 ° F) (display field 2)

- Press -C- button.

- Press button -0-, -5- and -6- to select "Display Group Number 56".

- Press -Q- button to confirm input.

Read measuring value block 056 →
1 2 3 4

↖ Display will appear as shown (1 to 4 = display fields)

- Read off figure shown in display field 4

◆ Specification: EGRn. active (EGR system not active)

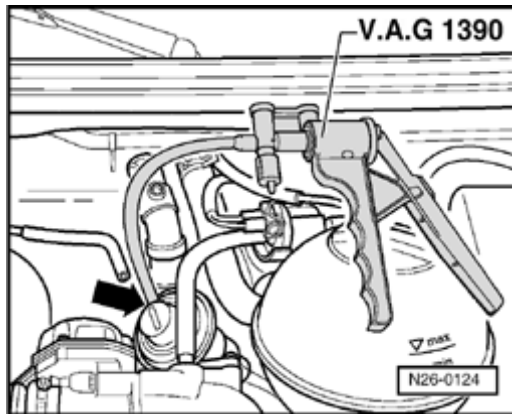
- Increase engine speed.

- Read off figure displayed in display field 4.



◆ Specification: EGR active (EGR system active)

- Disconnect vacuum hose from EGR valve.



- A
- Connect US 8012 hand vacuum pump to valve -arrow- with piece of hose.
 - Press button -0- and -1- to select "Display Group Number 1"
 - Operate hand vacuum pump.
 - ◆ Idle quality must noticeably deteriorate.

If idle does not deteriorate:

- Press → button.
- Press button -0- and -6- to select "End output" function 06.
- Press -Q- button to confirm input.
- Switch OFF ignition.
- Check pipes and connections for blockage, clean if necessary, replace EGR valve if necessary.
- Check EVAP canister purge regulator valve activation.

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 01](#)

- Check DTC memory and erase memory.

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 01](#)