

Workshop Manual OCTAVIA

**1.9-ltr./81 kW (TDI) Engine,
Mechanical Components**

List of Supplements to Workshop Manual OCTAVIA

Edition: 11.99

1.9-ltr./81 kW (TDI) Engine, Mechanical Components

Replaces List of Supplements - Edition: 05.98

Supplement	Edition	Subject	Article Number
	05.98	Basic Edition	S00.5121.50.20
1	11.99	Supplement to Basic Edition	S00.5121.51.20
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* See 1.9-ltr./66 kW (TDI) Engine, Mechanical Components; (engine from 08.97)

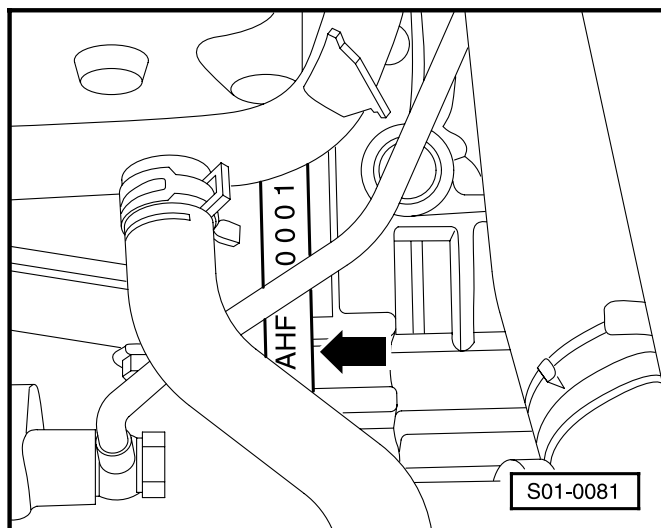
Technical data

Engine number

- ◀ The engine number („engine code letters“ and „serial number“) is located at the front at the joint between engine and gearbox.

In addition, a sticker with „engine code letters“ and „serial number“ is affixed to the toothed belt guard.

The engine code letters are also listed on the vehicle data stickers.



Engine characteristics

Code letters		AHF	ASV
Manufactured from		08.97 ➤	09.99 ➤
Displacement	ltr.	1.896	1.896
Power output	kW at rpm	81/4150	81/4150
Torque	Nm at rpm	235/1900	235/1900
Bore	Ø mm	79.5	79.5
Stroke	mm	95.5	95.5
Compression ratio		19.5 : 1	19.5 : 1
min. CN		49	49
Firing order		1-3-4-2	1-3-4-2
Catalytic converter		yes	yes
Exhaust gas recirculation		yes	yes
Air charging		yes	yes
Charge air cooling		yes	yes
Emission limits conforming to		EU2	EU3

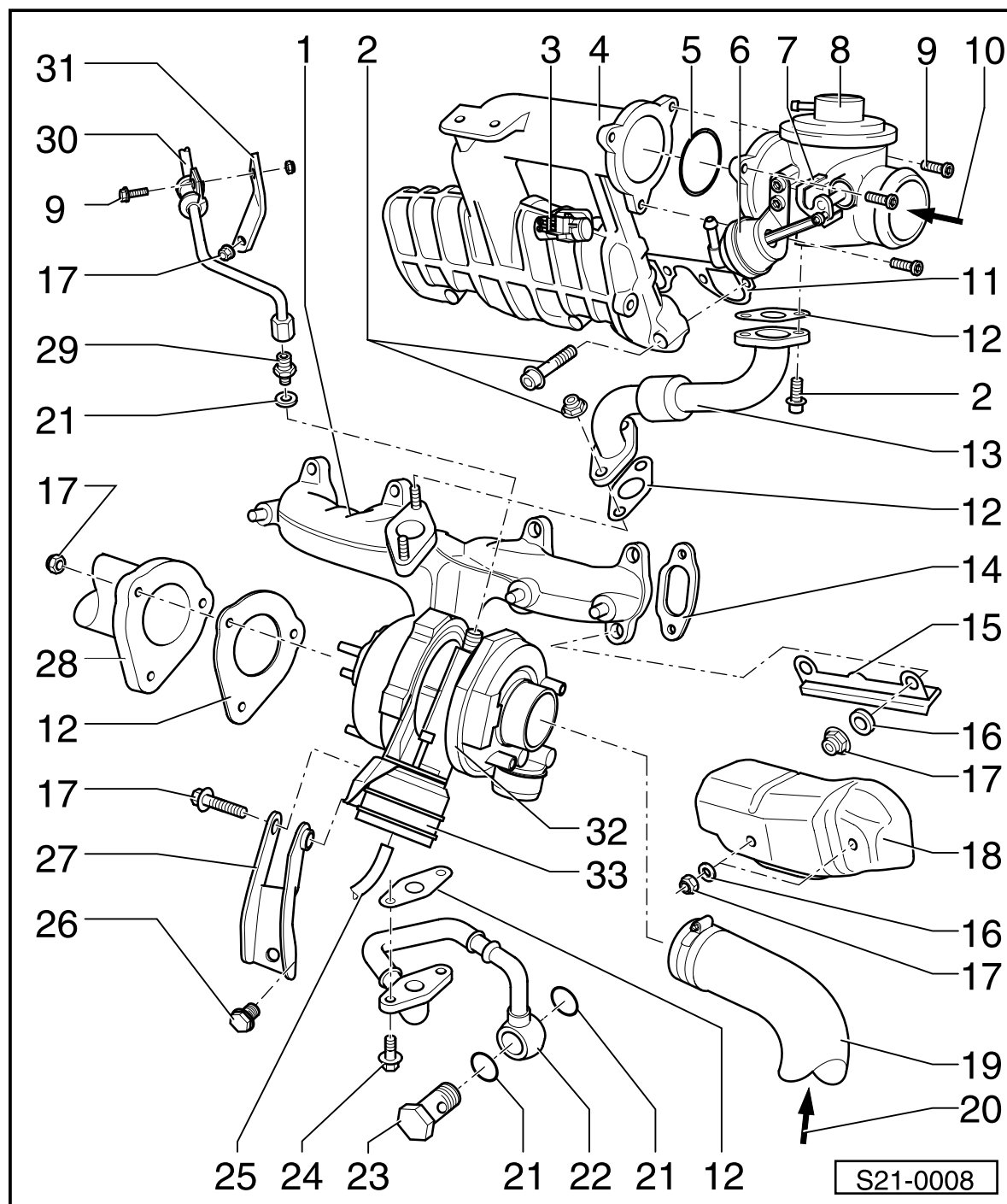
Charge air system with turbo-charger

Rules for cleanliness

Pay careful attention to the following „5 rules“ for cleanliness when carrying out work on the turbocharger:

- ◆ Thoroughly clean connection points and the surrounding area before disconnecting.
- ◆ Place removed parts down on a clean surface and cover over. Do not use fluffing cloths!
- ◆ Carefully cover over or seal opened components if repairs are not carried out immediately.
- ◆ Install only clean parts:
Do not remove replacement parts from their wrapping until just before installing.
Do not use parts which have been stored unwrapped (e.g. in tool boxes etc.).
- ◆ If the system is open:
Avoid working with compressed air, if possible.

Removing and installing turbocharger with attached parts



Notes:

- ♦ Pay attention to rules for cleanliness
⇒ page 21-1.
- ♦ Connection diagram for charge pressure control ⇒ page 21-4.
- ♦ All hose connections are secured by clips.
- ♦ Charge air system should be free of leaks.
- ♦ Always replace self-locking nuts.

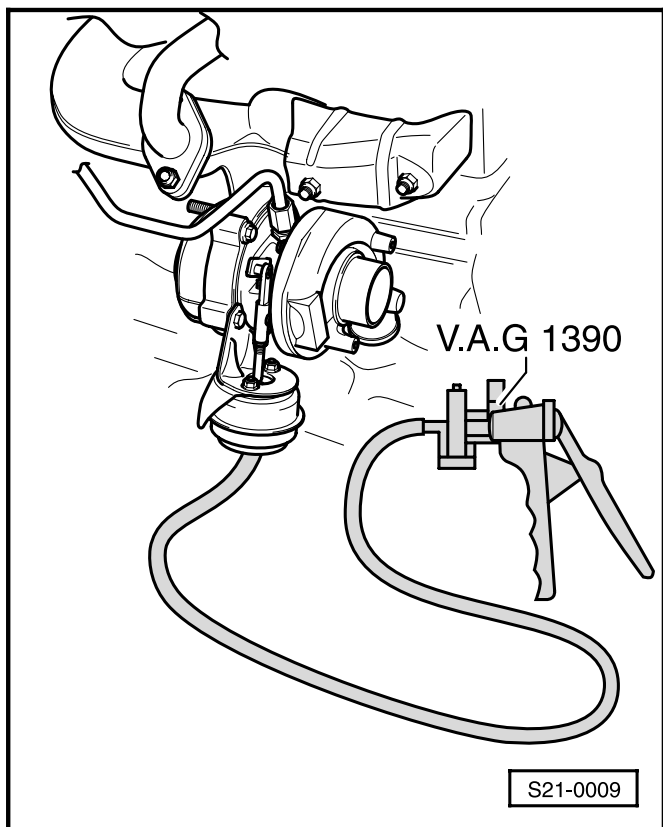
- ♦ Testing turbocharger
⇒ 1.9-ltr./66 kW (TDI) Engine, Fuel Injection
Glow Plug System; Repair Group 23; Check-
ing charge pressure control

1 - Exhaust manifold

- ♦ Always replace complete together with turbocharger

2 - 20 Nm

-
- | | |
|---|---|
| <p>3 - Intake manifold flap changeover valve (N239)</p> <p>4 - Intake manifold</p> <p>5 - O-ring
♦ Replace</p> <p>6 - Vacuum positioning element
♦ For intake manifold flap</p> <p>7 - Intake manifold flap</p> <p>8 - Intake pipe
♦ With EGR valve</p> <p>9 - 10 Nm</p> <p>10 - From intercooler</p> <p>11 - Gasket
♦ Replace
♦ Installation position: Part No. faces toward cylinder block</p> <p>12 - Gasket
♦ Replace</p> <p>13 - Exhaust gas recirculation pipe</p> <p>14 - Gasket
♦ Pay attention to installation position</p> <p>15 - Bracket</p> <p>16 - Washer</p> <p>17 - 25 Nm</p> <p>18 - Shield</p> <p>19 - Intake hose</p> | <p>20 - From air filter</p> <p>21 - Seal
♦ Replace</p> <p>22 - Oil return-flow line
♦ To cylinder block</p> <p>23 - Banjo bolt, 40 Nm</p> <p>24 - 15 Nm</p> <p>25 - Vacuum hose
♦ From charge pressure control solenoid valve (N75)</p> <p>26 - 40 Nm</p> <p>27 - Turbocharger support</p> <p>28 - Front exhaust pipe</p> <p>29 - Screw-in fitting, 20 Nm</p> <p>30 - Oil feed line
♦ From oil filter bracket</p> <p>31 - Oil feed line bracket</p> <p>32 - Turbocharger
♦ Always replace complete with exhaust manifold
♦ Removing and installing
⇒ page 21-4
♦ Testing charge pressure control
⇒ 1.9-ltr./81 kW (TDI) Engine, Fuel Injection Glow Plug System; Repair Group 23</p> <p>33 - Vacuum unit
♦ For charge pressure control
♦ Part of turbocharger; cannot be replaced
♦ Testing vacuum unit ⇒ page 21-4</p> |
|---|---|



Connection diagram for charge pressure control

⇒ page 26-2, Connection diagram for exhaust gas recirculation.

Testing vacuum unit for charge pressure control

Testing charge pressure control

⇒ 1.9-ltr./81 kW (TDI) Engine, Fuel Injection Glow Plug System; Repair Group 23.

Test procedure

- Take off engine trim panel.
- Detach vacuum hose from the vacuum unit.
- ◀ - Connect manually-operated vacuum pump (e.g. V.A.G 1390) to the vacuum unit.
- Operate vacuum pump and check to see whether the operating rod for the charge pressure control valve moves.

If the operating rod for the charge pressure control valve does not move, replace turbocharger ⇒ page 21-4.

Removing and installing turbo-charger

Removing

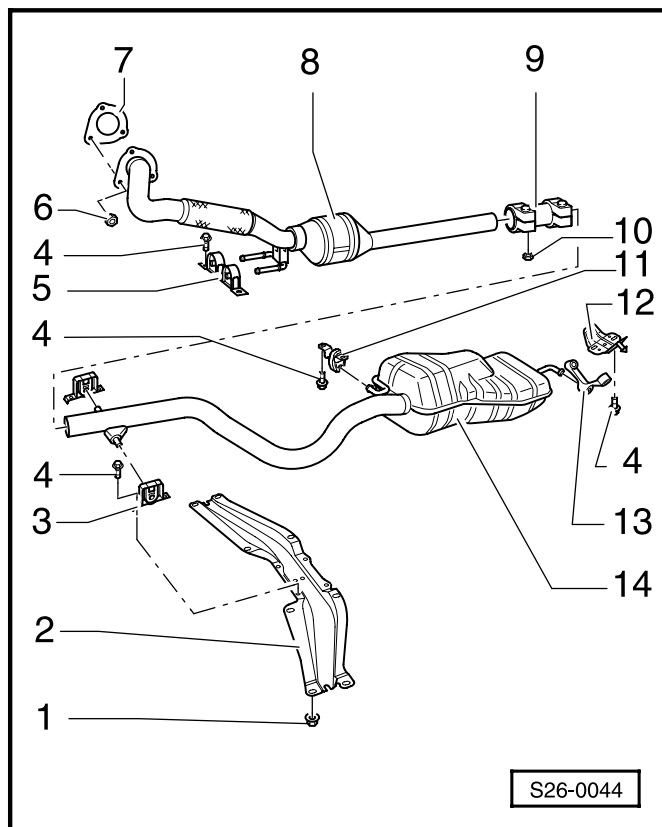
- Remove right-hand drive shaft
⇒ Running Gear; Repair Group 40; Removing and installing drive shaft.
- Take off engine trim panel.
- Unscrew the bolts attaching front exhaust pipe to turbocharger and detach exhaust pipe from turbocharger.
- Take off oil return-flow line from turbocharger to cylinder block and oil feed line from oil filter bracket ⇒ page 21-3, items 22 and 30.

- Detach intake hose and vacuum hose from turbocharger ⇒ page 21-3, items 19 and 25.
- Take off turbocharger support ⇒ page 21-3, item 27.
- Remove the line from the air filter to the turbocharger (unclip vacuum hoses and line for removing from the fixtures).
- Take off shield at exhaust manifold ⇒ page 21-3, item 18.
- Take off exhaust gas recirculation pipe ⇒ page 21-3, item 13.
- Remove oil feed line bracket ⇒ page 21-3, item 31.
- Slacken the bolts attaching the exhaust manifold ⇒ page 21-2, item 1 and take exhaust manifold and turbocharger down and out.

Installation

Install in the reverse order.

Removing and installing parts of the exhaust system



Notes:

- ◆ Removing and installing exhaust manifold
⇒ page 21-2, Removing and installing turbocharger with attached parts.
- ◆ After carrying out removal and installation work on the exhaust system, ensure that the exhaust system is not twisted and has adequate clearance to the body. If necessary, slacken clamping sleeve and align silencer and exhaust pipe so that adequate clearance exists at all points to the body and the weight of the exhaust system is evenly distributed over the hangers.
- ◆ Always replace self-locking nuts.

1 - 20 Nm

2 - Tunnel bridge

- ◆ With hole for aligning exhaust system
- ⇒ 1.9-ltr./66 kW (TDI) Engine, Mechanical Components, Aligning exhaust system free of stress

3 - Hanger

- ◆ Fitting location
- ⇒ 1.9-ltr./66 kW (TDI) Engine, Mechanical Components, Removing and installing parts of exhaust system

4 - 25 Nm

5 - Hanger

6 - 25 Nm

- ◆ Replace
- ◆ Coat with hot bolt paste G 052 112 A3

7 - Gasket

- ◆ Replace

8 - Front exhaust pipe

- ◆ With oxidation catalytic converter
- ◆ With decoupling element
- ◆ Protect against shocks and bumps
- ◆ Avoid large deflection, max. deflection 10°

9 - Clamping sleeve

- ◆ Before tightening, align exhaust system free of stress
- ⇒ 1.9-ltr./66 kW (TDI) Engine, Mechanical Components, Aligning exhaust system free of stress
- ◆ Fitting location: parallel to vehicle floor, bolted connection pointing to the left
- ◆ Tighten bolted connections evenly

10 - 40 Nm

11 - Hanger

- ◆ Pay attention to fitting location

12 - Hanger

- ◆ In combination with item -13-

13 - Hanger

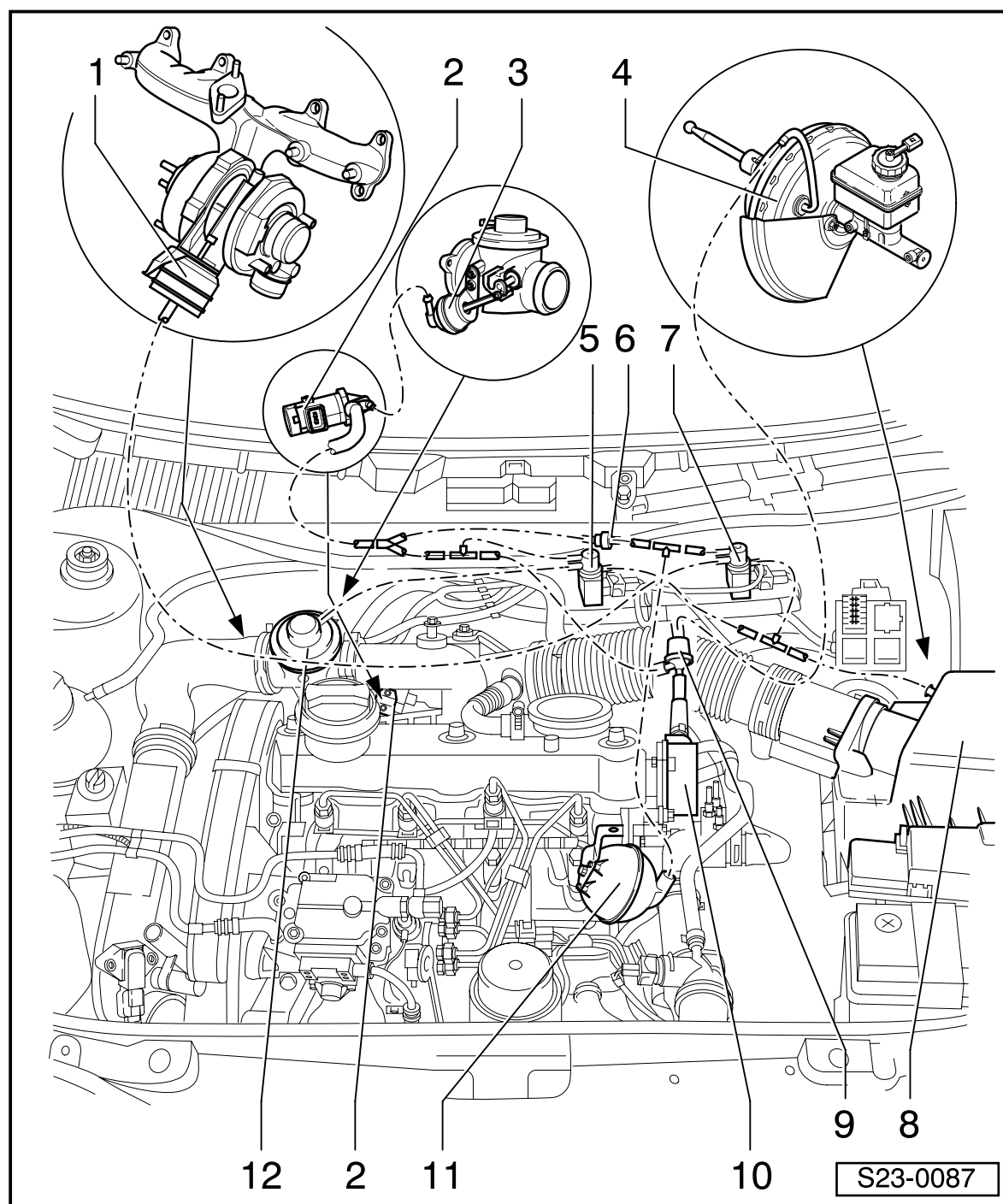
- ◆ In combination with item -12-

14 - Rear silencer

- ◆ Exhaust pipe with separation point for replacing rear silencer
- ⇒ 1.9-ltr./66 kW (TDI) Engine, Mechanical Components, Removing and installing parts of exhaust system
- ◆ Aligning exhaust system free of stress
- ⇒ 1.9-ltr./66 kW (TDI) Engine, Mechanical Components, Aligning exhaust system free of stress

Exhaust gas recirculation system

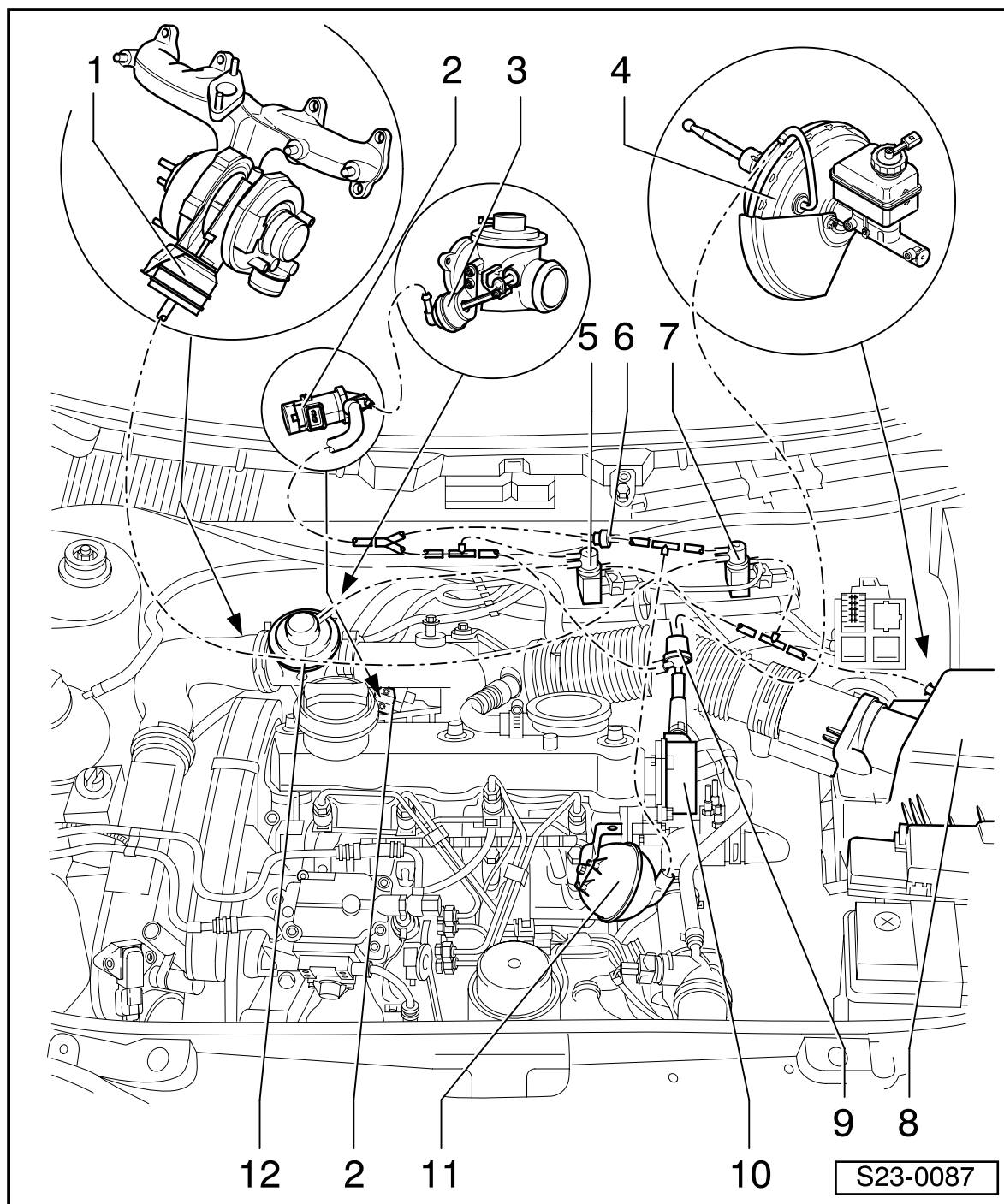
Connection diagram for exhaust gas recirculation



Notes:

- ◆ The exhaust gas recirculation system is operated by the diesel direct injection system control unit -J248 through the EGR valve -N18 to the mechanical exhaust gas recirculation valve.
- ◆ Testing EGR solenoid valve -N18:
⇒ 1.9-ltr./66 kW (TDI) Engine, Fuel Injection and Glow Plug System; Final Control Diagnosis
- ◆ Mechanical exhaust gas recirculation valve with cone-shaped valve plunger permits different opening cross-sections at different valve lift.
- ◆ Any desired valve position is possible as a result of the pulsed operation.
- ◆ Always replace self-locking nuts.

1 - Vacuum position element for turbo-charger



**2 - Intake manifold flap changeover valve
-N239**

**3 - Vacuum positioning element for intake
manifold flap**

4 - Brake servo unit

5 - EGR valve -N18

6 - Non-return valve
♦ White connection points toward
charge pressure control solenoid
valve -N75

**7 - Charge pressure control solenoid
valve -N75**

8 - Air filter

9 - Non-return valve
♦ Pay attention to fitting location

10 - Vacuum pump

11 - Vacuum reservoir

**12 - Mechanical exhaust gas recirculation
valve**
♦ Testing
⇒ 1.9-ltr./66 kW (TDI) Engine, Mechanical
Components, Testing mechanical exhaust
gas recirculation valve

