

Charge air pressure system with turbocharger

Turbocharger with attachments,
removing and installing

WARNING!

When doing any repair work, especially in the engine compartment, due to the cramped conditions, pay attention to the following:

- ◆ *Route all sorts of lines (e.g. for fuel, hydraulics, activated charcoal filter system, coolant, refrigerant, brake fluid and vacuum lines and hoses) and electrical wiring so that the original positions are restored.*
- ◆ *Make sure sufficient clearance to all moving or hot components.*

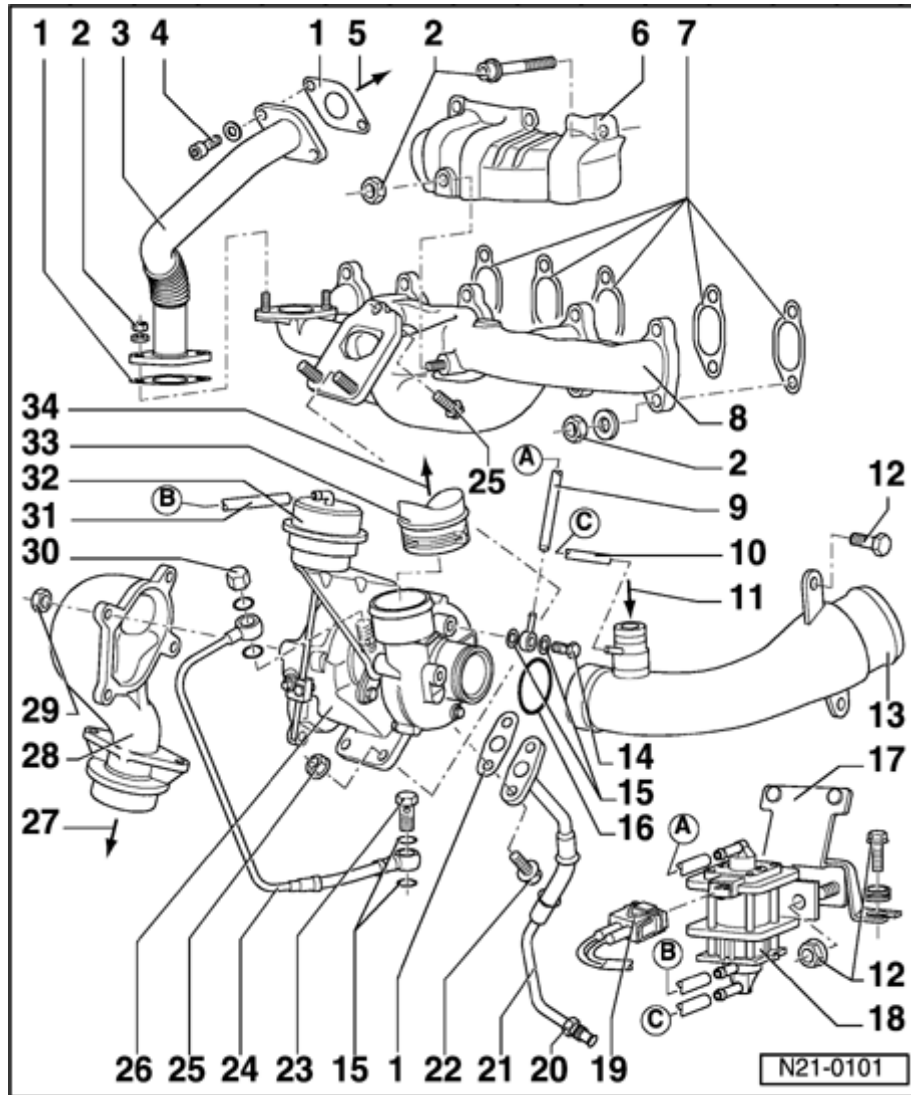
Observe rules for cleanliness ⇒ [Page 21-10](#) .

Engine code ACV ⇒ [Page 21-2](#)

Note:

- ◆ *All hose connections are secured with clips.*

- ◆ *Charge air pressure system must be free of leaks.*
- ◆ *Replace self-locking nuts.*
- ◆ *VAG 1921 pliers are recommended when installing spring-type clips.*



Engine code ACV

1 - Gasket

- ◆ Always replace

2 - 25 Nm

3 - Connecting line

- ◆ When installing, just snug all bolts (parts must be just free to move), then tighten stress free

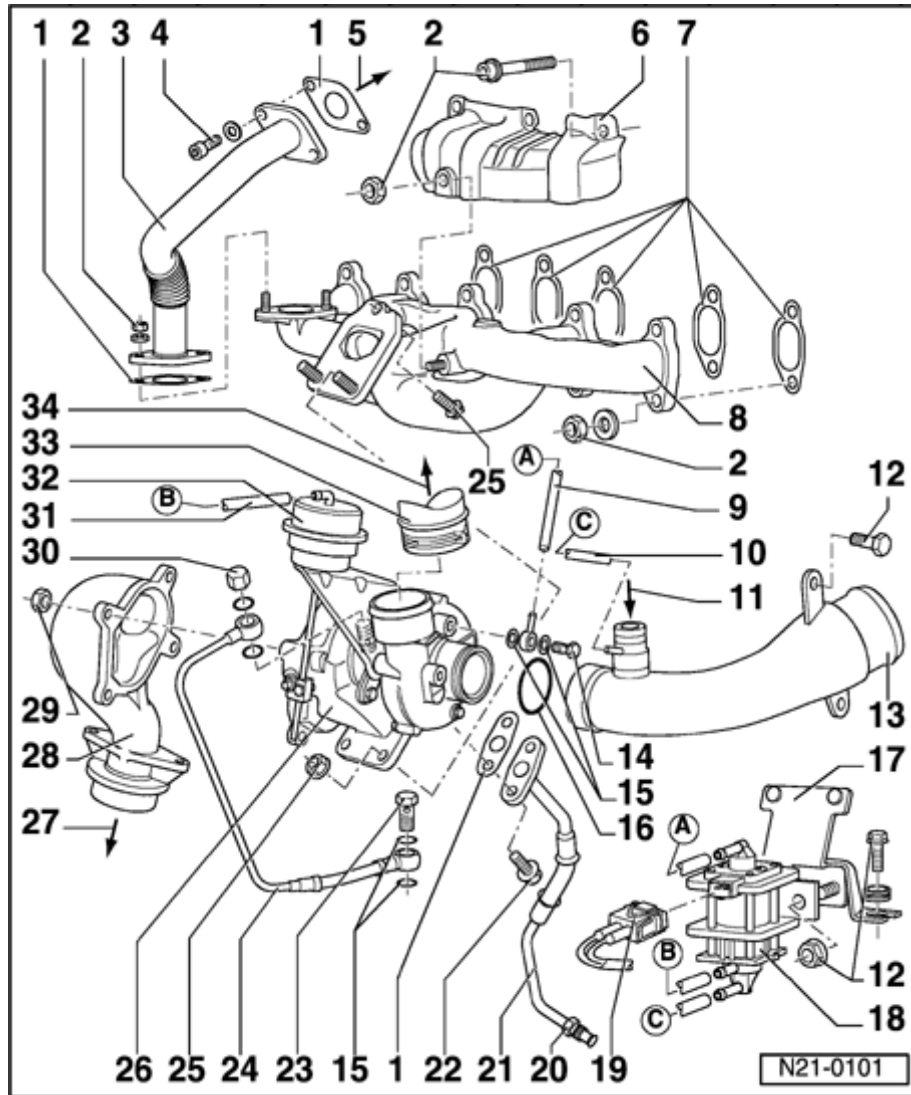
4 - 15 Nm

5 - To exhaust gas recirculation valve

- ◆ ⇒ [Page 26-14](#) , item 1

6 - Heat shield

- ◆ For intake line



7 - Gasket

- ◆ Always replace
- ◆ Note installation position

8 - Exhaust manifold

9 - Vacuum hose

- ◆ Red

10 - Vacuum hose

- ◆ Black

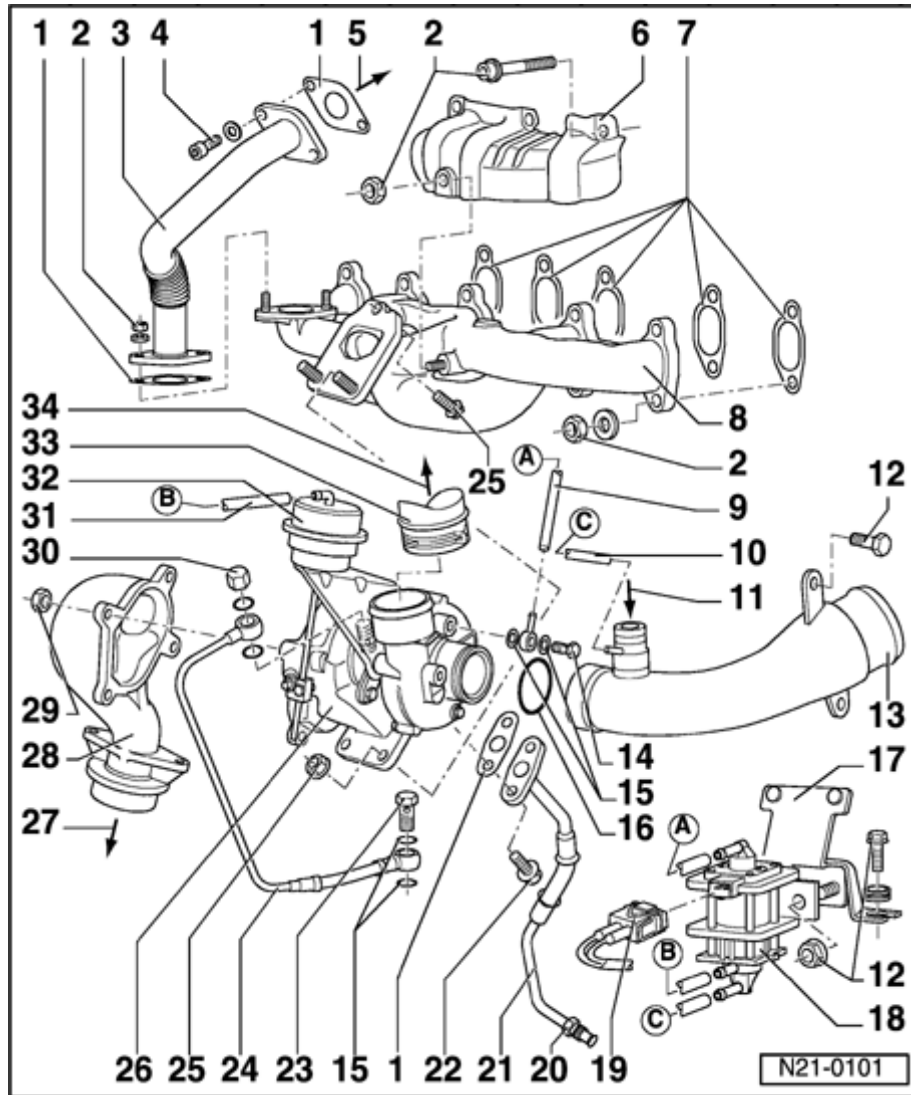
11 - From crankcase breather valve

12 - 10 Nm

13 - Connecting line

- ◆ Between exhaust turbocharger and mass air flow sensor connecting hose
- ◆ Secured to intake line along with dipstick guide tube

14 - Banjo bolt, 15 Nm



15 - Seal

- ◆ Always replace

16 - O ring

- ◆ Replace if damaged

17 - Retainer

- ◆ For EGR vacuum regulator solenoid valve -N18- and wastegate bypass regulator valve -N75-

18 - Wastegate bypass regulator valve -N75-

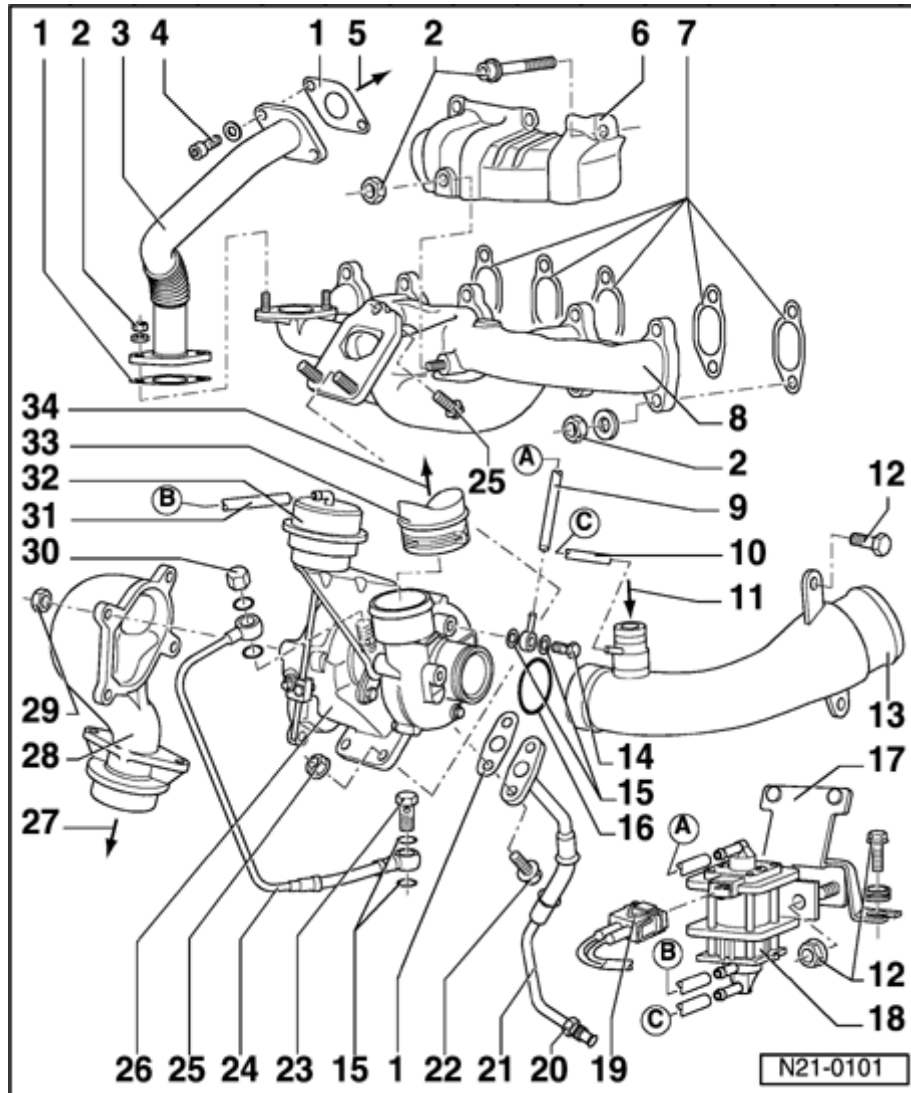
- ◆ Checking control:

⇒ [Repair Manual , 2.4 Liter 5-Cyl. 2V Diesel Fuel Injection & Glow Plug \(Engine Code\(s\): AAB\), Repair Group 23; Servicing Diesel direct injection system; Checking charge air pressure control](#)

19 - Connector

- ◆ 2 pin
- ◆ For wastegate bypass regulator valve -N75-

20 - 40 Nm



21 - Oil return line

- ◆ To connection on dipstick guide tube ⇒ [Page 17-15](#) , item 39

22 - 30 Nm

23 - Banjo bolt, 30 Nm

24 - Oil supply line

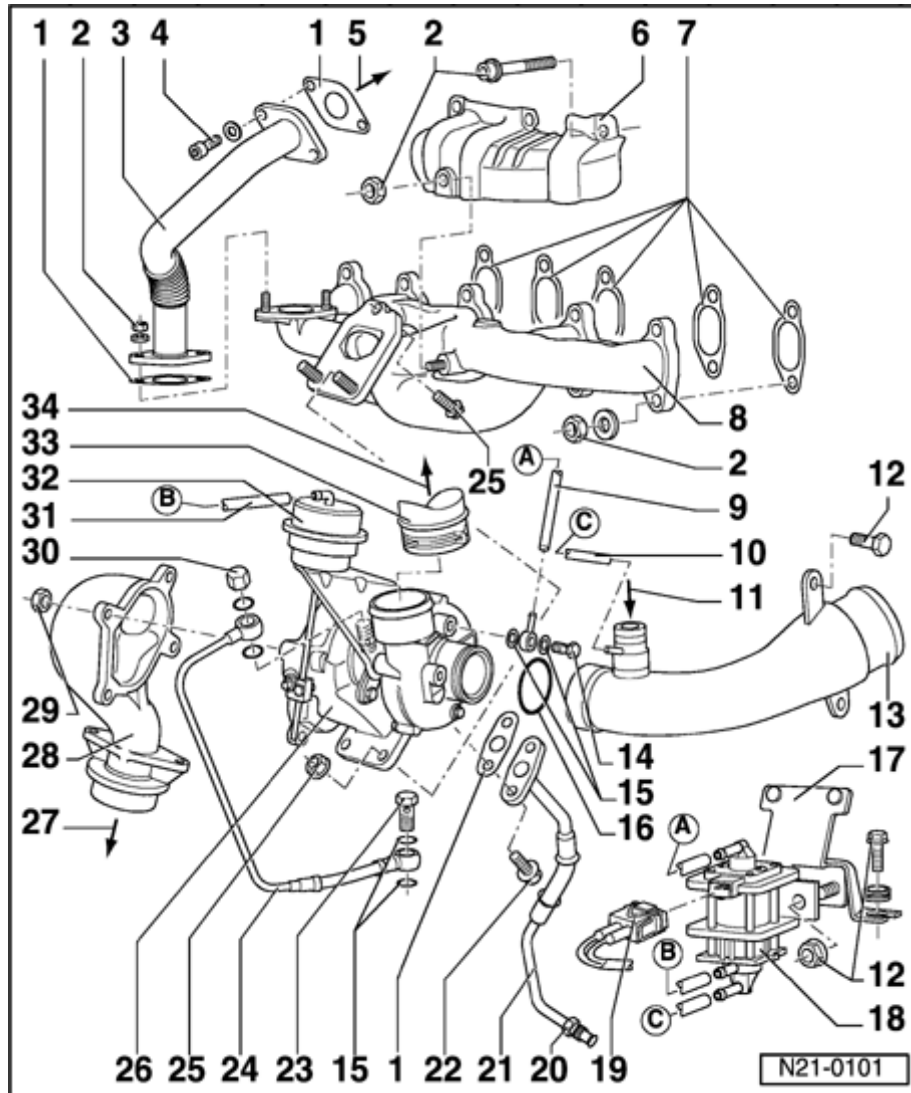
- ◆ Before installing, fill turbocharger with engine oil via oil supply line connection
- ◆ From oil filter bracket ⇒ [Page 17-11](#) , item 11

25 - 45 Nm

- ◆ Always replace
- ◆ Coat threads and bolt head contact surface with grease G 000 500

26 - Exhaust turbocharger

- ◆ Removing and installing ⇒ [Page 21-11](#)
- ◆ Checking charge air pressure ⇒ [Page 21-17](#) ,
Checking exhaust turbocharger



27 - To front exhaust pipe

◆ ⇒ [Page 26-6](#) , item 9

28 - Pipe elbow

29 - Nut or hex socket head bolt, 25 Nm

30 - Cap nut, 15 Nm

31 - Control line

◆ Blue

32 - Charge air pressure regulating valve

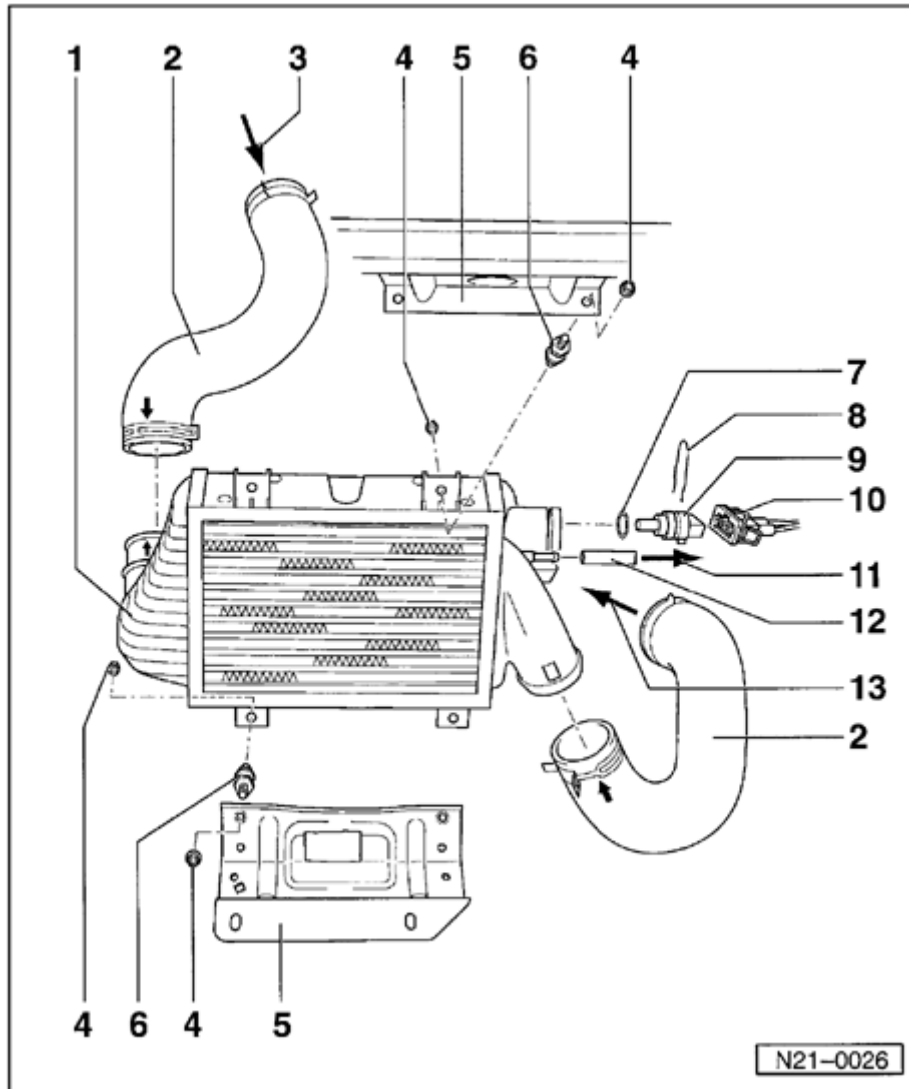
◆ Integral part of turbocharger cannot be replaced

◆ Checking charge air pressure ⇒ [Page 21-17](#) ,
Checking exhaust turbocharger

33 - Air hose

34 - To charge air cooler or intake line

N21-0101



Air cooling parts, removing and installing

Engine code ACV

Note:

- ◆ All hose connections secured by clips.
- ◆ Charge air system must be free of leaks.

1 - Charge air cooler

2 - Air hose

- ◆ Note installation position

3 - From exhaust turbocharger

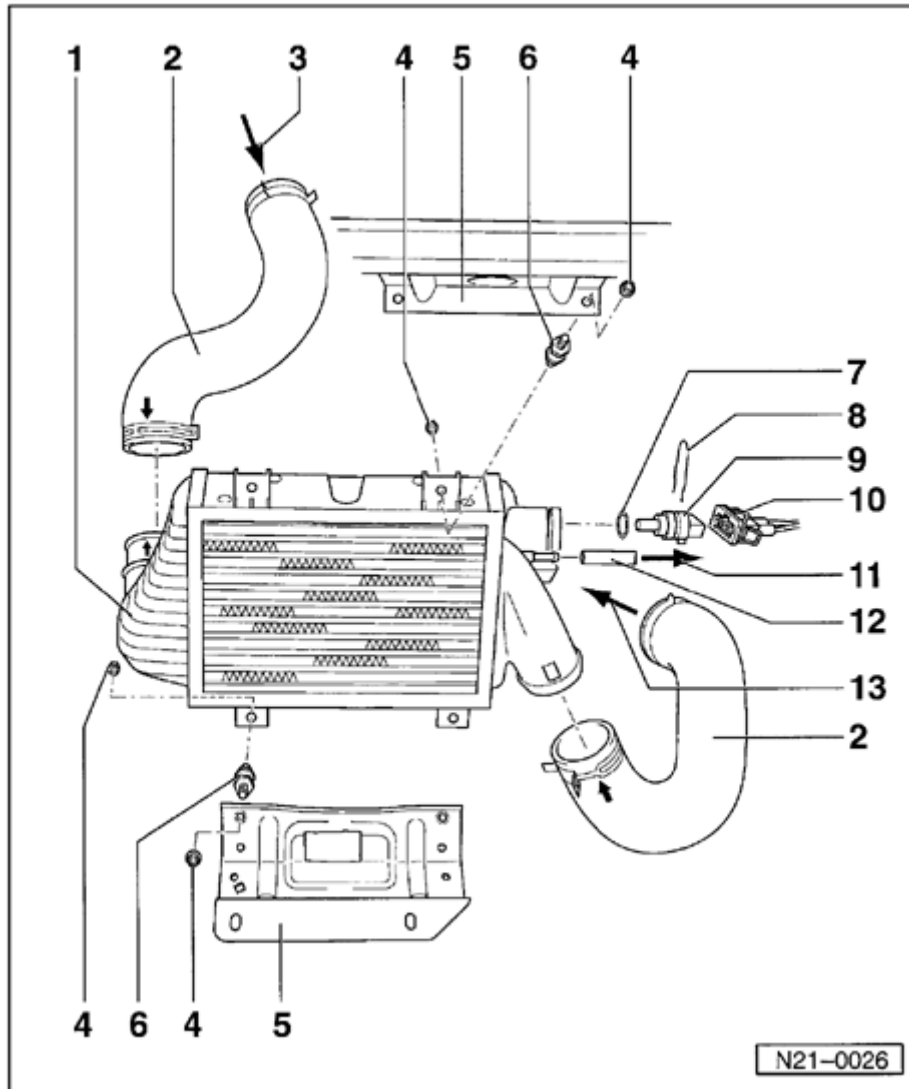
- ◆ ⇒ [Page 21-5](#) , item 26

4 - 10 Nm

5 - Retainer

- ◆ For charge air cooler

6 - Bonded rubber mounting



7 - O ring

- ◆ Replace if damaged

8 - Retaining clip

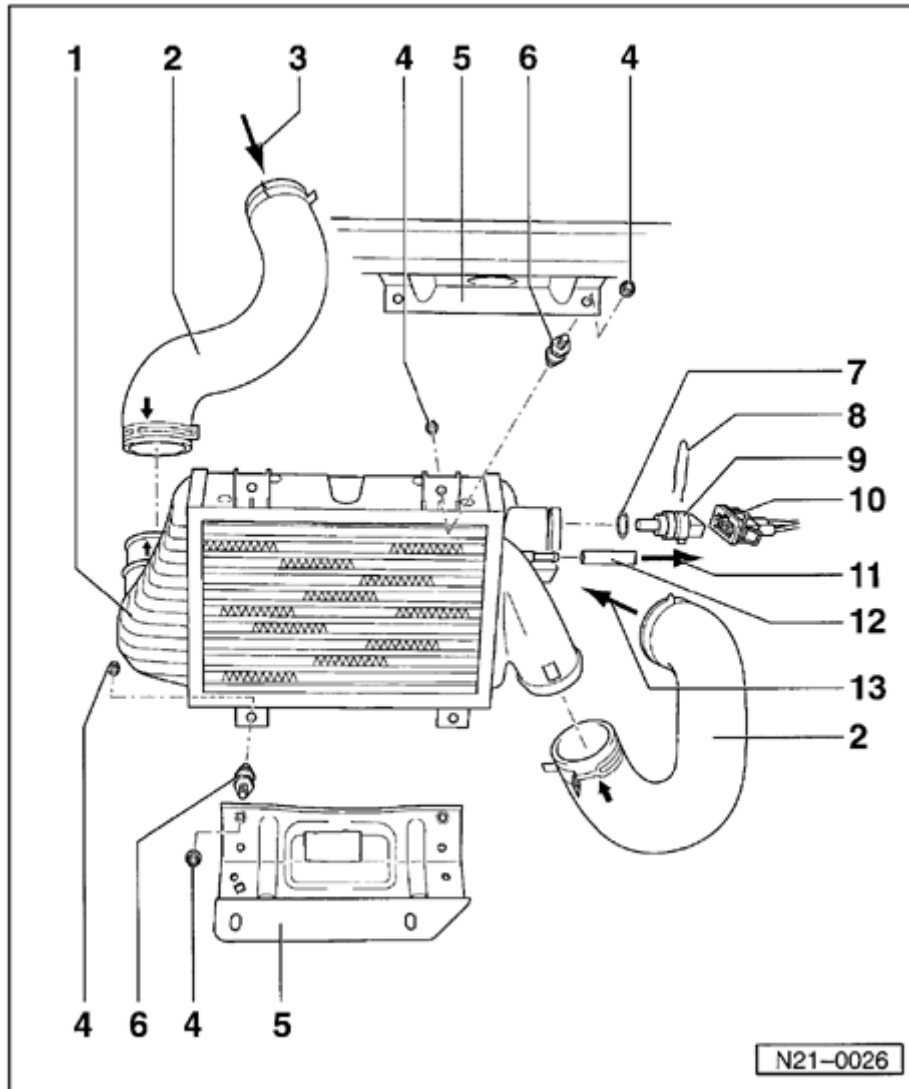
- ◆ Check seated securely

9 - Sensor

- ◆ ➤04.99 for intake air temperature (IAT) sensor - G72-

10 - Connector

- ◆ ➤04.99 2-pin
- ◆ For intake air temperature (IAT) sensor -G72-
- ◆ 05.99 ➤4-pin
- ◆ For manifold absolute pressure (MAP) Sensor -G71- with intake manifold temperature (IAT) sensor -G72-



11 - To diesel direct fuel injection (dfi) engine control module (ECM) -J248-

◆ ➤ 04.99

12 - Pressure hose

◆ Black

13 - To exhaust gas recirculation valve

◆ ⇒ [Page 26-14](#) , item 1



Rules for cleanliness

When working on the exhaust gas turbocharger, pay careful attention to the following "5 rules":

- ◆ Thoroughly clean all unions and the adjacent areas before disconnecting.
- ◆ Place parts that have been removed on a clean surface and cover. Do not use fluffy cloths!
- ◆ Carefully cover opened components or seal, if the repair cannot be carried out immediately.
- ◆ Only install clean components:

Only unpack replacement parts immediately prior to installation.

Do not use parts that have been stored loose (e.g. in tool boxes etc.).

- ◆ When the system is open:

Do not work with compressed air if this can be

avoided.

Do not move vehicle unless absolutely necessary.



Exhaust turbocharger, removing and installing

Engine codes ACV

Special tools and equipment required

- ◆ VAG 1331 Torque wrench (5 - 50 Nm)
- ◆ Grease G 000 500

Removing

- With ignition switched off disconnect battery Ground (GND) strap.

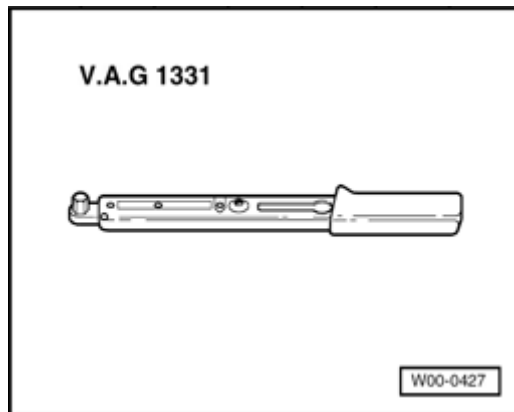
Note:

Obtain the anti-theft coding for the radio prior to battery disconnect.

- Removing insulation tray:

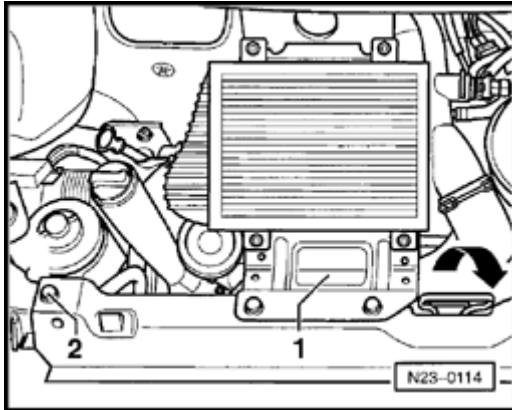
⇒ [Repair Manual , Body Exterior, Repair Group 50; Noise insulation assembly overview.](#)

- Remove front exhaust pipe ⇒ [Page 26-1](#) , Removing and installing parts of exhaust system.
- Removing radiator grille:



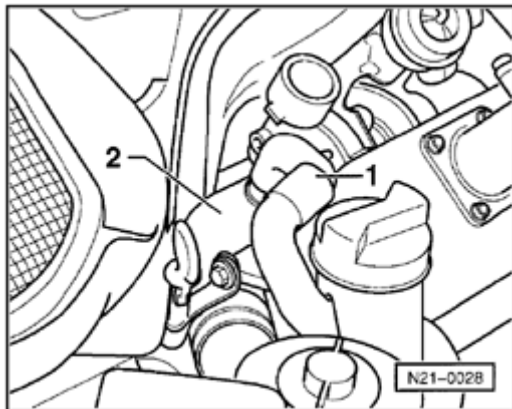
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⇒ [Repair Manual , Body Exterior, Repair Group 66; Trims](#)



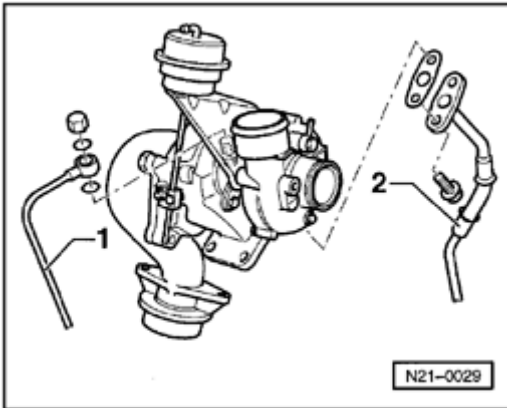
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- Remove charge air cooler bracket -1-.
- Remove left and right hand securing bolts -2-.
- Fold lock carrier and radiator out forward -arrow-.
- Remove charge air cooler with air hoses ⇒ [Page 21-7](#) , Removing and installing parts of charge air cooling system.
- Remove control line on charge air pressure control valve (blue).
- Remove vacuum hoses on connecting line (black), exhaust turbocharger (red) and exhaust gas recirculation valve (black).
- Remove connecting hose between connecting line and mass air flow sensor.

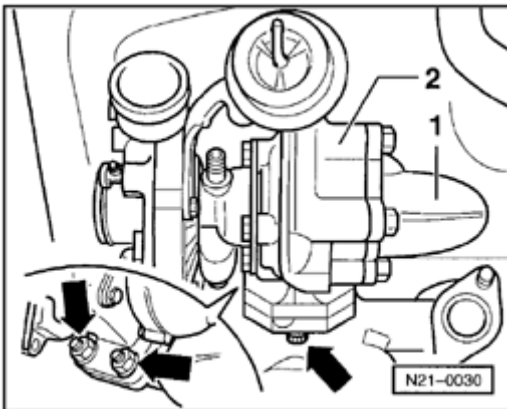


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- Remove breather hose -1- between crankcase breather valve and connecting line.
- Remove connecting line -2-.
- Remove connecting line between exhaust gas recirculation valve and exhaust manifold ⇒ [Page 26-14](#) , Removing and installing parts of exhaust gas recirculation system.
- Remove intake line with heat shield and exhaust gas recirculation valve.

**A**

- Remove oil supply line -1- and oil return line -2- on turbocharger.

**A**

- Remove pipe elbow -1-.
- Remove securing bolts and securing nuts between exhaust manifold and turbocharger.
- Lift turbocharger -2- out, upward.



Installing

Install in reverse order but note following:

- Coat threads and contact surfaces of nuts and bolts which are used between exhaust manifold and turbocharger with grease G 000 500 and tighten to 45 Nm.
- Install pipe elbow to turbocharger and tighten to 25 Nm.
- Install oil return line with new seal and tighten to 30 Nm.
- Fill the turbocharger with engine oil via the oil supply connection.
- Install oil supply line with new seal and tighten cap nut to 25 Nm.
- Install intake line with heat shield and new seal (coating or seal bead points to intake line) and tighten to 25 Nm.
- Install connecting line between exhaust gas

recirculation valve and exhaust manifold ⇒ [Page 26-14](#) , Removing and installing parts of exhaust gas recirculation system.

**Note:**

When installing, just snug all bolts (parts must be just free to move), then tighten stress free.

- Install control hose (blue) to exhaust gas recirculation valve and secure with a hose clamp.
- Install vacuum hose (red) to turbocharger and secure with hose clamp.
- After installing the turbocharger, run engine for approx. 1 minute at idling speed, do not rev. up immediately. This ensures the turbocharger is properly lubricated.