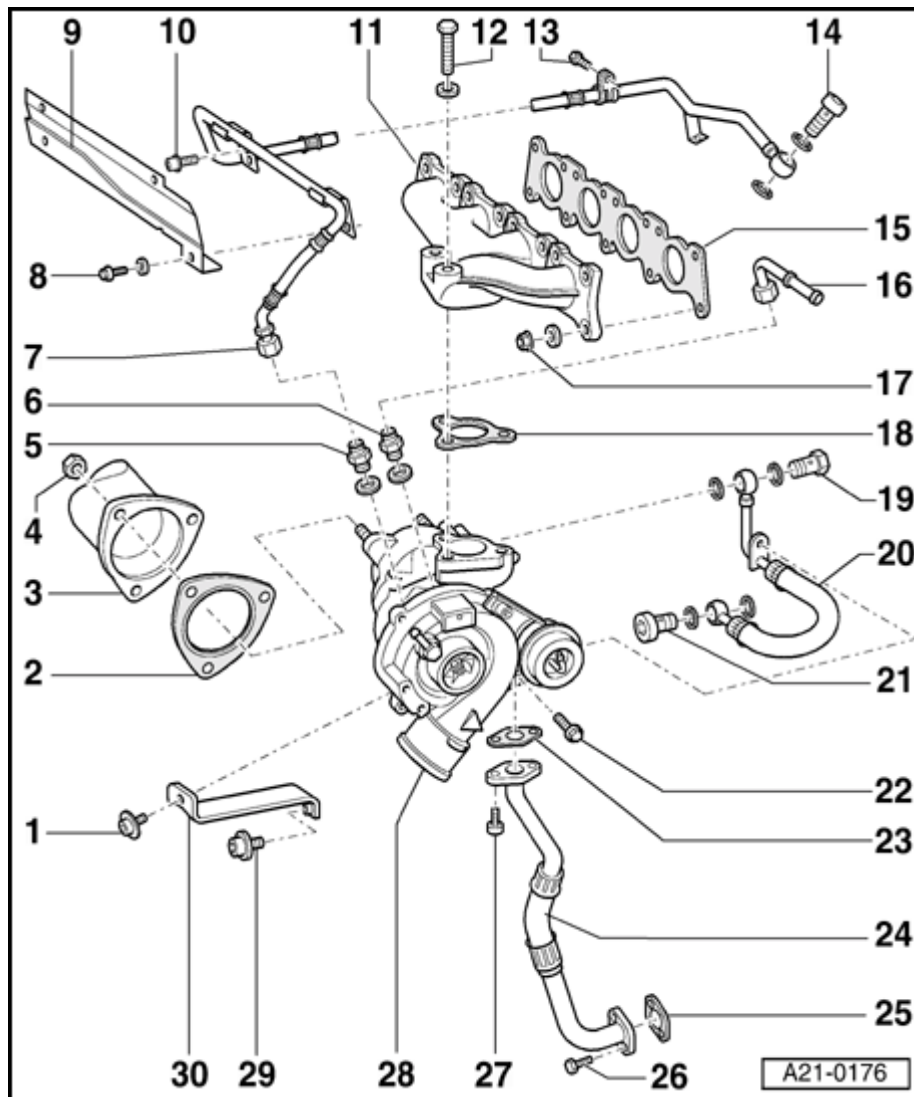


## Charge pressure system with exhaust turbocharger, servicing

### 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 removed parts on a clean surface and cover. Use lint-free cloths.
- ◆ Carefully cover or seal open components if repairs cannot be carried out immediately.
- ◆ Only install clean components: Only remove replacement parts from packaging 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.



## Turbocharger, removing and installing - Overview

### Part I

**1 - 30 Nm**

◆ Only use original bolt

⇒ *Parts Catalog*

**2 - Gasket**

◆ Always replace

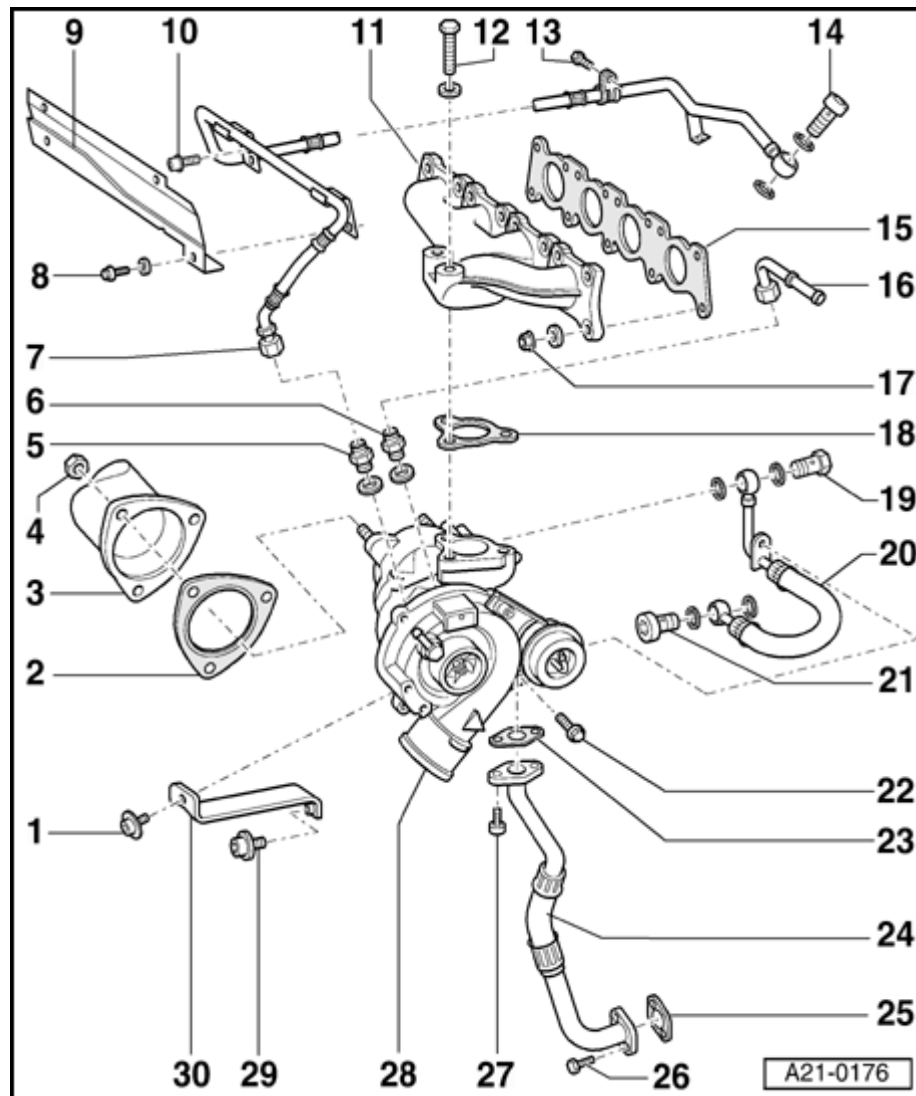
**3 - Catalytic converter**

**4 - 30 Nm**

◆ Always replace

**5 - 30 Nm**

**6 - 35 Nm**

**7 - Oil supply line**

- ◆ Tighten union nut to 23 Nm
- ◆ From oil filter bracket ⇒ -Item 24 -, ⇒ [Page 17-10](#)

**8 - 3.5 Nm****9 - Heat shield****10 - 23 Nm****11 - Exhaust manifold**

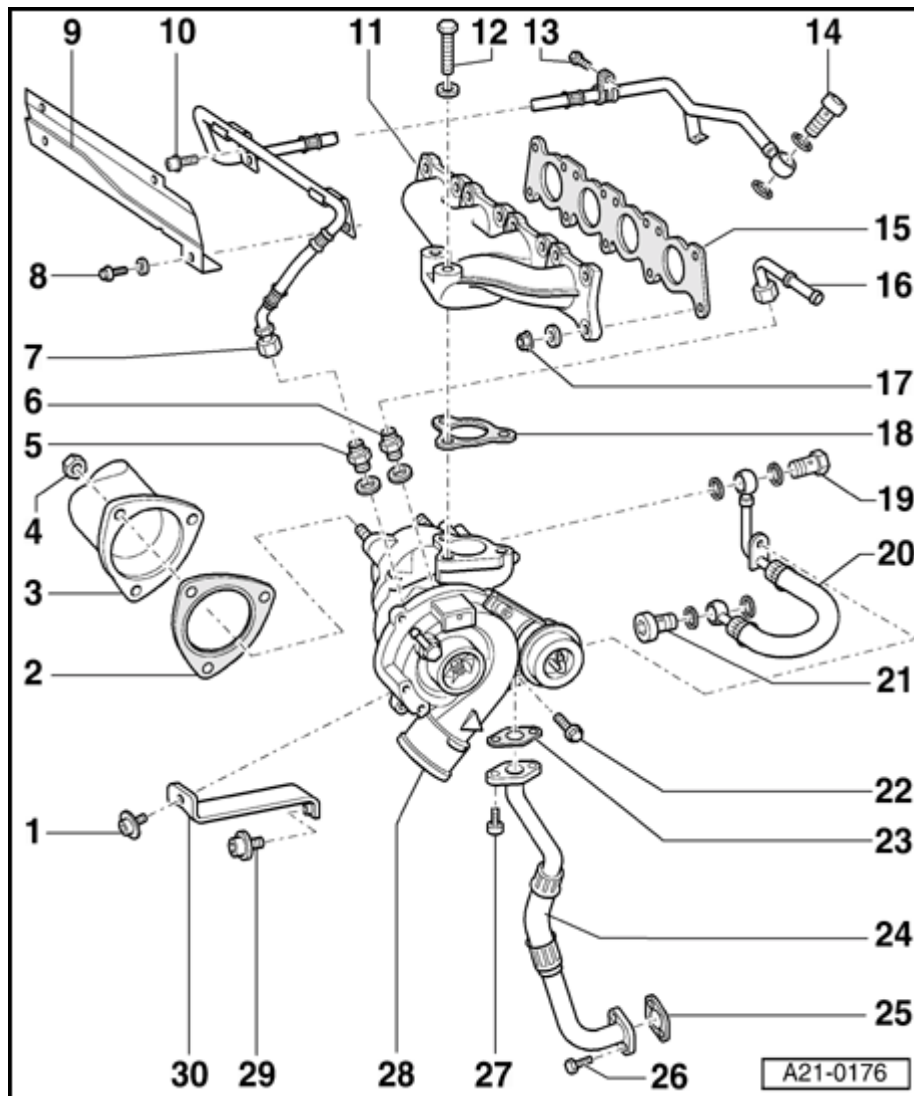
- ◆ Removing and installing ⇒ [Page 26-21](#)

**12 - 35 Nm**

- ◆ Always replace
- ◆ Coat thread and head attachment area with high temperature lubricant G 052 112 A3

**13 - 10 Nm**

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**14 - Banjo bolt - 30 Nm**

**15 - Gasket**

- ◆ Always replace
- ◆ Note installation position

**16 - Coolant return line**

- ◆ Tighten union nut to 30 Nm

**17 - 30 Nm**

- ◆ Always replace

**18 - Gasket**

- ◆ Always replace
- ◆ Note installation position

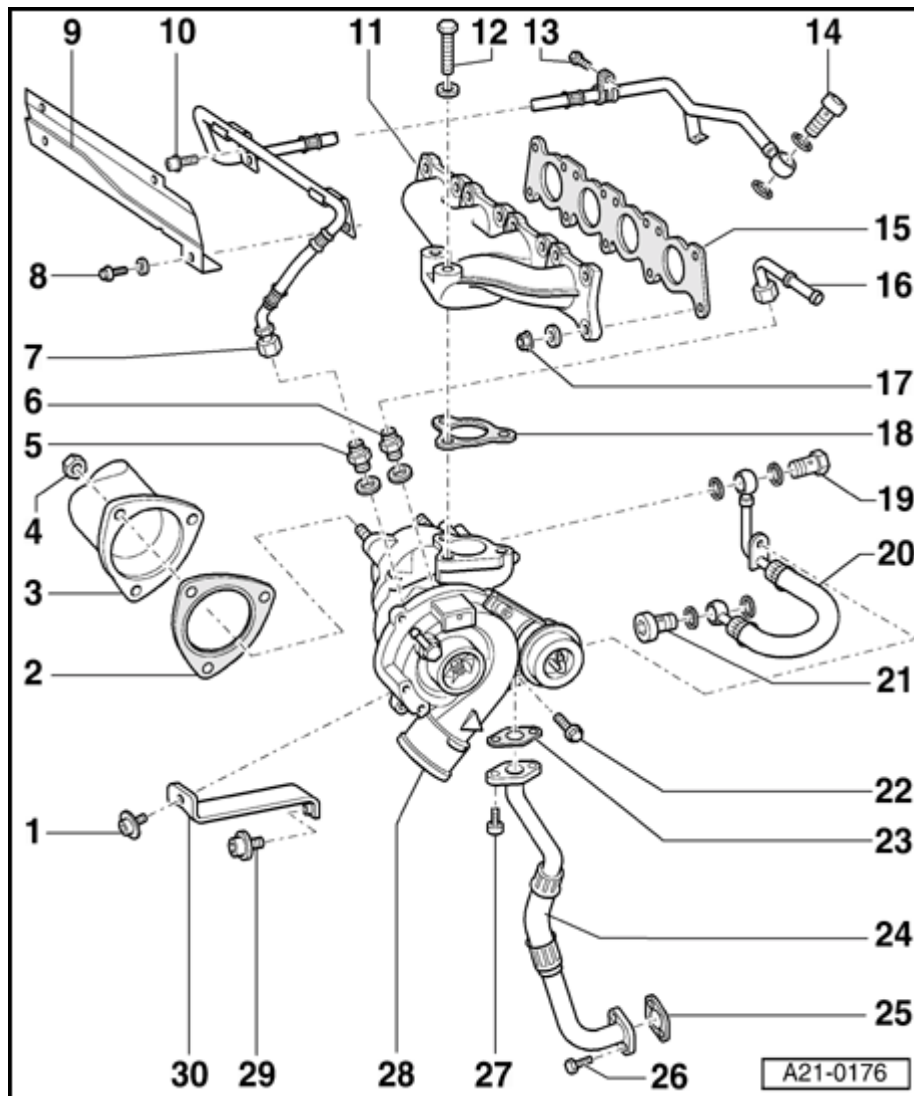
**19 - Banjo bolt - 35 Nm**

**20 - Coolant supply hose/line**

**21 - Banjo bolt - 35 Nm**

- ◆ Apply D 000 600 when installing

21-48

**22 - 10 Nm**

♦ Apply D 000 600 when installing

**23 - Gasket**

♦ Always replace

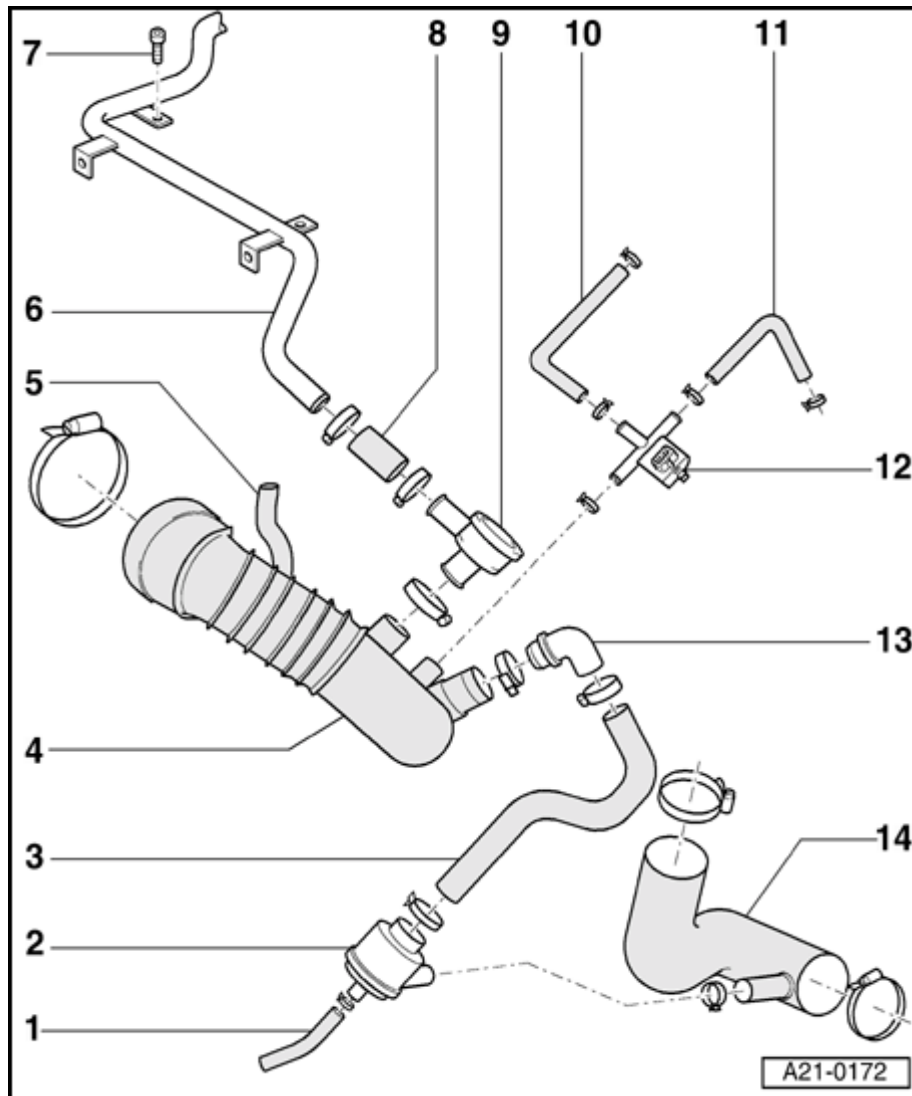
**24 - Oil return line**

♦ To oil pan

**25 - Gasket**

♦ Always replace

**26 - 10 Nm****27 - 10 Nm****28 - Turbocharger**♦ Checking ⇒ [Page 21-8](#)**29 - 25 Nm****30 - Bracket**



## Part II

### 1 - Vacuum hose

- ◆ To Recirculating valve for turbocharger - N249-

### 2 - Recirculating valve

- ◆ Checking ⇒ [Page 21-24](#)

### 3 - Hose

- ◆ To recirculating valve

### 4 - Air duct hose

- ◆ To connection on turbocharger

### 5 - Hose

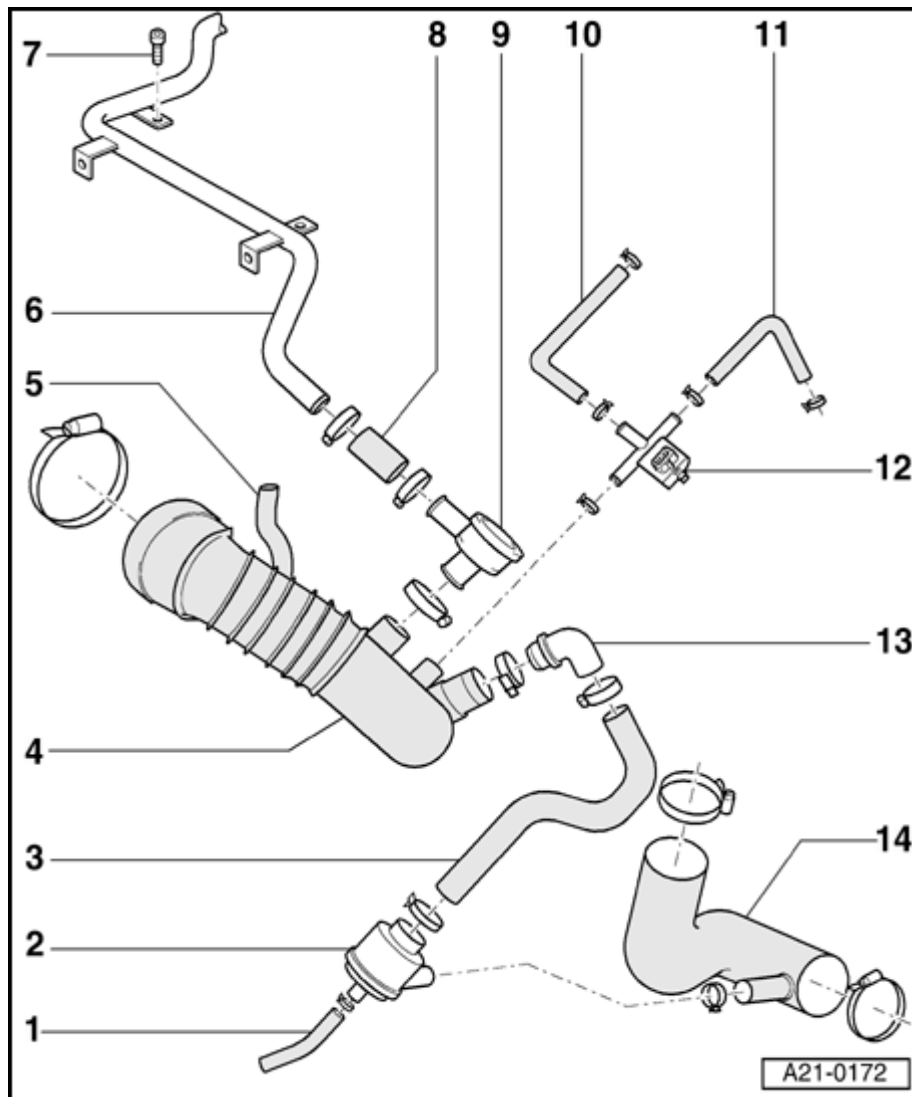
- ◆ To ACF valve

### 6 - line

- ◆ To crankcase vent

### 7 - 10 Nm

21-50

**8 - Hose**

- ◆ To crankcase breather line

**9 - Pressure regulating valve**

- ◆ For crankcase breather

**10 - Hose**

- ◆ To turbocharger

**11 - Hose**

- ◆ To vacuum unit for charge pressure regulating valve

**12 - Wastegate Bypass Regulator valve -N75-****13 - Angled connector****14 - Hose**

- ◆ To turbocharger

21-51

## Turbocharger, removing and installing

### Special tools and equipment

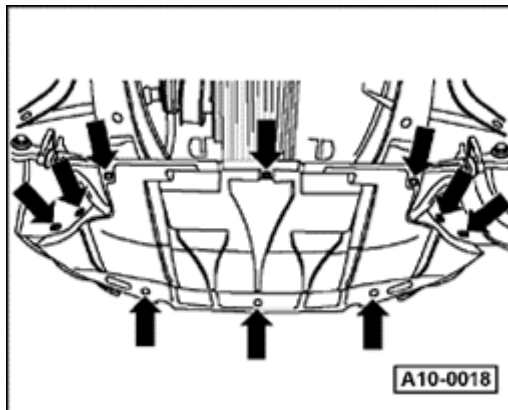
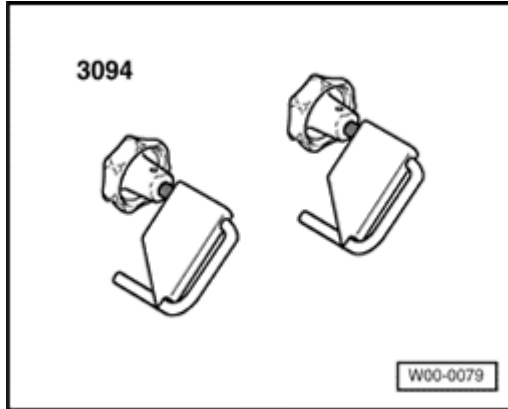


- ◆ Hose clamps 3094

### Removing

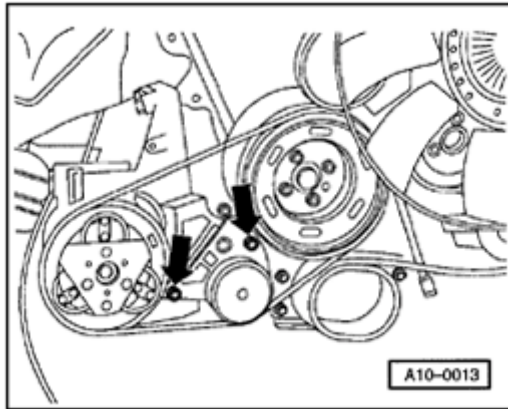


- Remove sound insulation -arrows-.





21-52



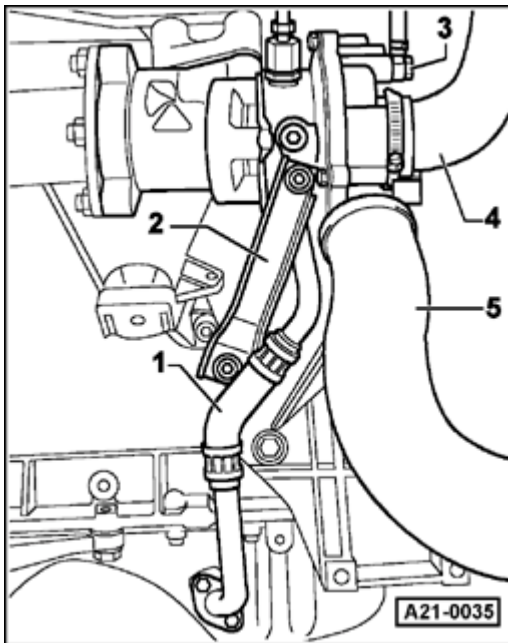
A

- Loosen bolts securing ribbed belt tensioning roller for A/C compressor - arrows-. Loosen belt and remove.

**CAUTION!**

***The air conditioner refrigerant circuit must not be opened.***

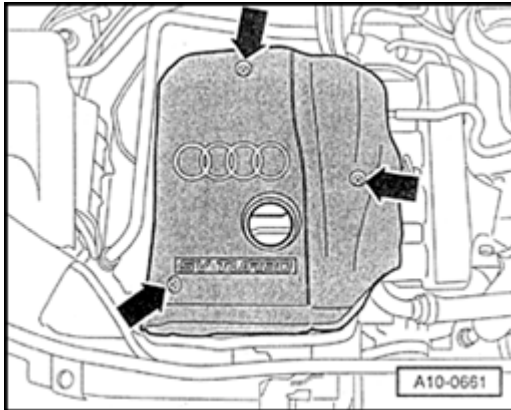
- Disconnect A/C compressor from bracket and secure to body with wire.



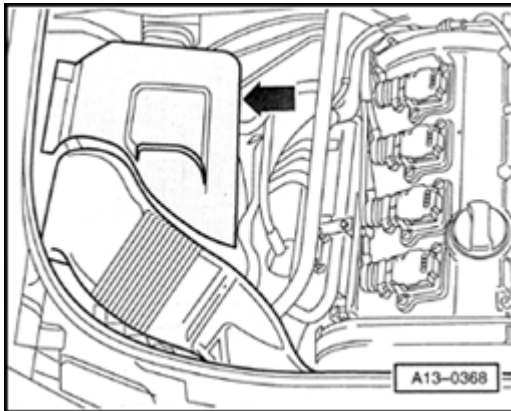
A

- Remove bracket for exhaust turbocharger -2-.
- Unscrew oil return line -1- from exhaust turbocharger and set aside.
- Loosen air duct hoses -4- and -5- on exhaust turbocharger.
- Remove banjo bolt -3- for pressure line.

21-53

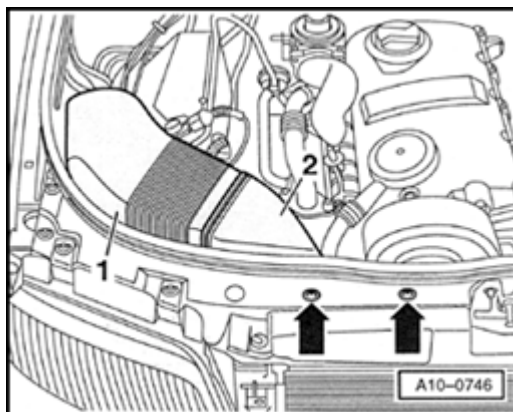


A - Remove engine cover -arrows-.



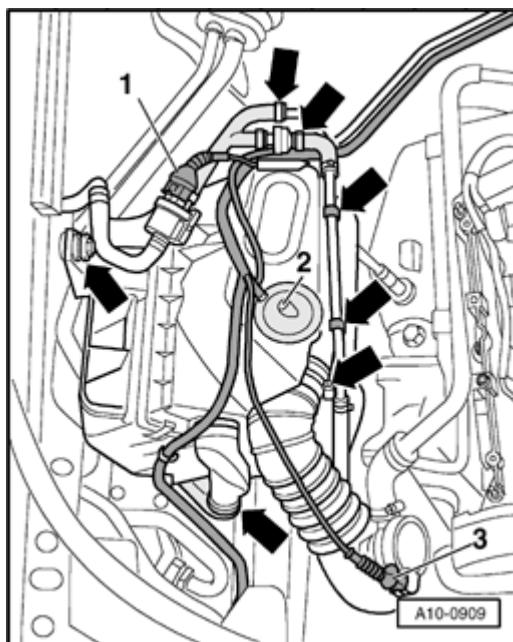
A - Remove air filter cover -arrow-.

21-54



A

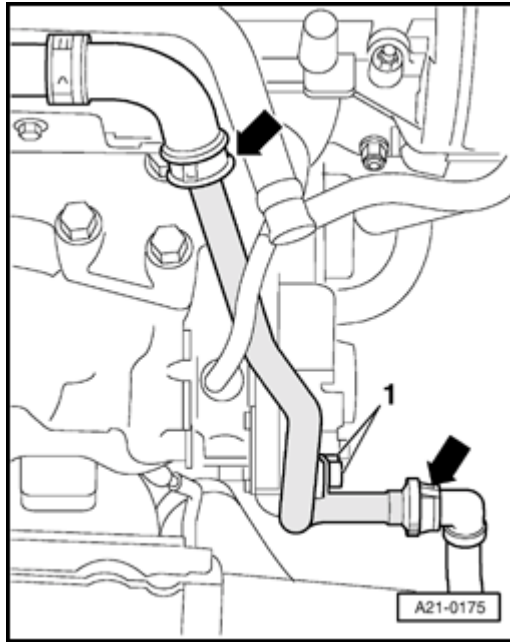
- Remove bolts -arrows-.
- Remove air duct -1- and -2-.



A

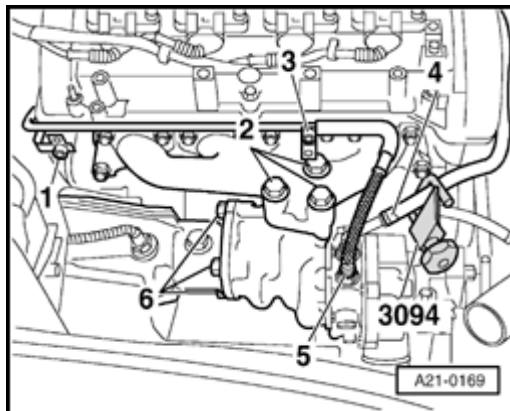
- Disconnect wiring connectors as follows:
  - 1 - on ACF valve (in addition, remove ACF valve from air filter housing)
  - 2 - on mass air flow sensor
  - 3 - on Wastegate Bypass Regulator valve -N75-
- Move wiring aside and remove air filter housing -arrows-.

21-55



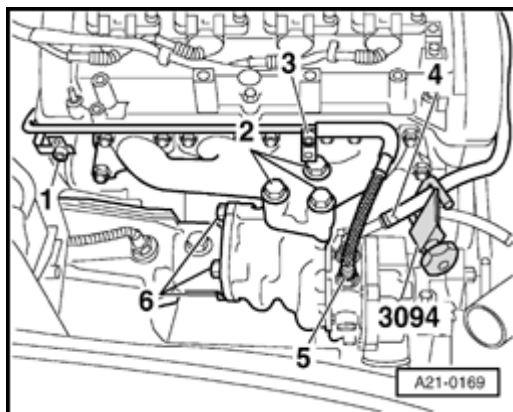
A

- Remove secondary air inlet line by disconnecting hoses -arrows- and removing bolts -1-.
- Remove right-hand heat shield on cylinder head.
- Remove hose of vacuum unit for wastegate bypass regulator valve - N75- on exhaust turbocharger.
- Unbutton sleeve on coolant return hose.



A

- Clamp coolant return hose to exhaust turbocharger with hose clamp 3094.
- Loosen hose clamp -4- and remove coolant return hose from exhaust turbocharger line.



A

- Loosen bolts -1- and -3- of oil feed line.
- Remove oil feed line -5- at exhaust turbocharger.

**Note:**

*The isolating element in the exhaust system must not be bent more than 10° or it may be damaged.*

- Remove catalytic converter from exhaust turbocharger -6-.
- Remove exhaust turbocharger from exhaust manifold -2-.
- Swivel exhaust turbocharger to side, loosen mounting angle and banjo bolt of coolant feed line on exhaust turbocharger.
- Remove exhaust turbocharger.

## Installing

Installation is carried out in the reverse order of removal; note the following:

### **Note:**

- ◆ *All cable ties which are released or cut open when removing must be installed in the same position when installing.*
- ◆ *Secure all hose connections with the correct hose clips (same as original equipment):*

### ⇒ *Parts Catalog*

- ◆ *The hose connectors and hoses must be free of oil and grease before assembling.*
- ◆ *Always replace seals, gaskets and self-locking nuts.*
- Perform following operating steps before tightening exhaust turbocharger:
  - Fasten coolant feed line loosely to bracket on vacuum unit for wastegate bypass regulator

valve.

- Tighten banjo bolt to 35 Nm and then tighten securing bolt of bracket to 10 Nm.

**Note:**

*Fill the exhaust turbocharger with engine oil via the oil supply connection.*

- Install ribbed belt for A/C compressor ⇒ [Page 13-20](#) .
- Top up coolant ⇒ [Page 19-7](#) .
- Check oil level ⇒ [Page 17-35](#) .

**Note:**

*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.*

**Tightening torques**

Component	Nm
Coolant feed line to exhaust turbocharger	35
Bracket for coolant feed line to exhaust turbocharger	10
Turbocharger to exhaust manifold	



	35 <sup>1)</sup> 2)
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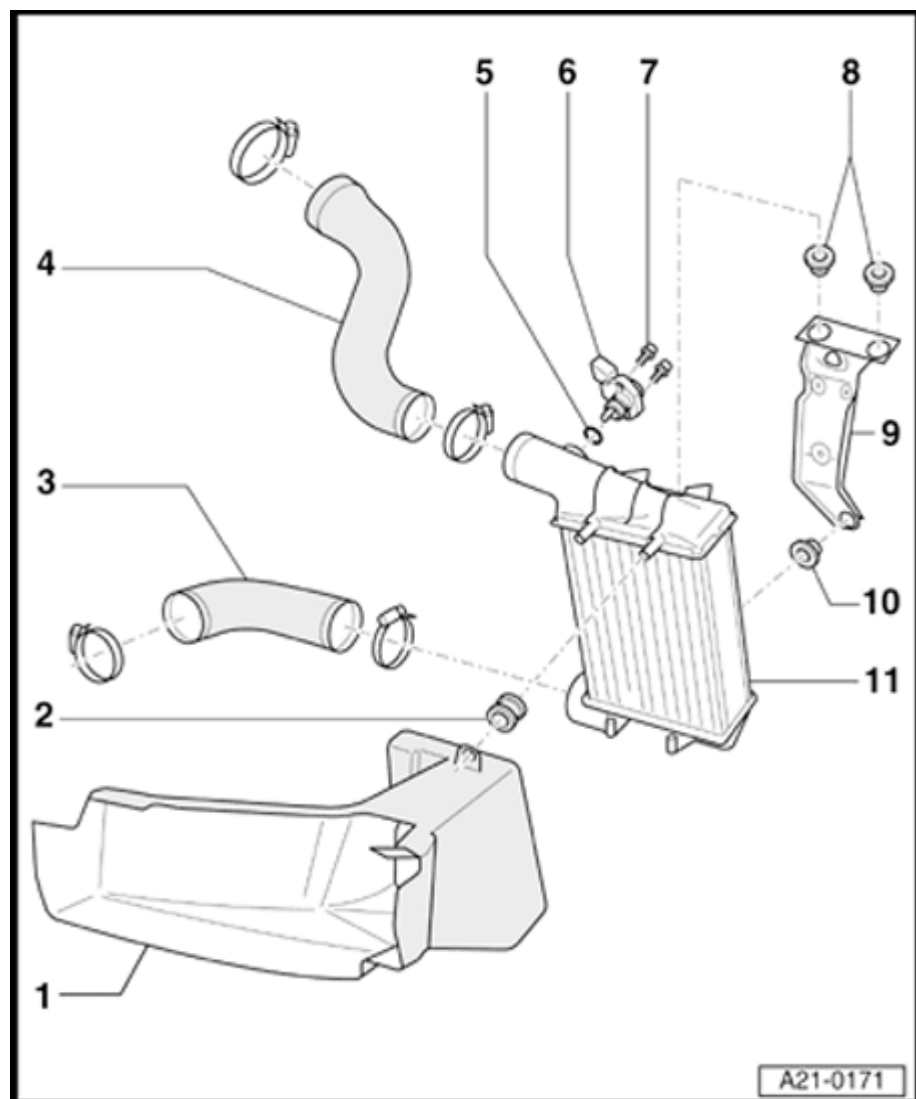
1) Replace bolts

2) Coat thread and head attachment area with  
high temperature lubricant G 052 112 A3

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Component	Nm
Turbocharger bracket to cylinder block	25
Turbocharger bracket to turbocharger	30
Catalytic converter to exhaust turbocharger	30
Oil return line to turbocharger	10
Oil supply line to turbocharger	23
Bracket for oil feed line to cylinder head	23
Heat shield to line for secondary air inlet	3.5
Hose clamps for coolant hoses	2
Hose clamps for air duct hoses	3.5



## Charge air cooling system components, removing and installing

### **Note:**

- ◆ *Secure all hose connections with the correct hose clips (same as original equipment):*

⇒ *Parts Catalog*

- ◆ *Before a check or repair all hoses and lines must be checked for correct seating and leaks.*

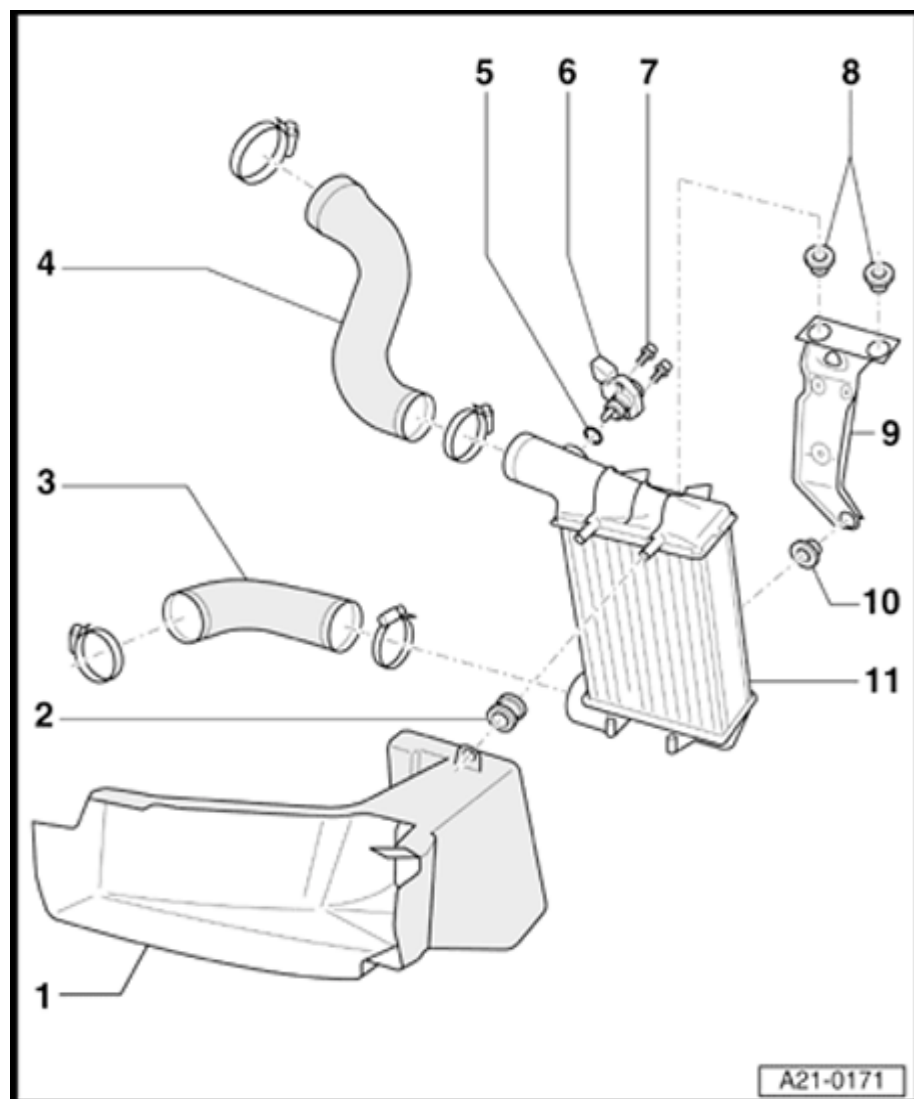
### **1 - Air duct**

### **2 - Rubber grommet**

### **3 - Hose**

- ◆ *Between charge air cooler and air ducting in front apron*

21-61

**4 - Air duct hose**

- ◆ Between intake manifold and charge air cooler (intercooler)

**5 - O-ring**

- ◆ Replace, if damaged

**6 - Charge Air Pressure sensor -G31-****7 - 3 Nm****8 - Rubber grommet****9 - Bracket**

- ◆ Riveted to body

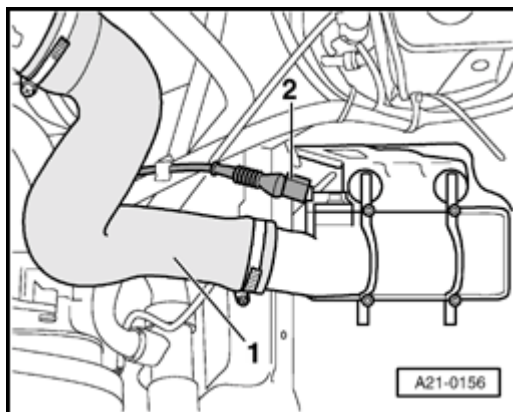
**10 - Rubber grommet****11 - Charge air cooler**

- ◆ Removing and installing ⇒ [Page 21-62](#)

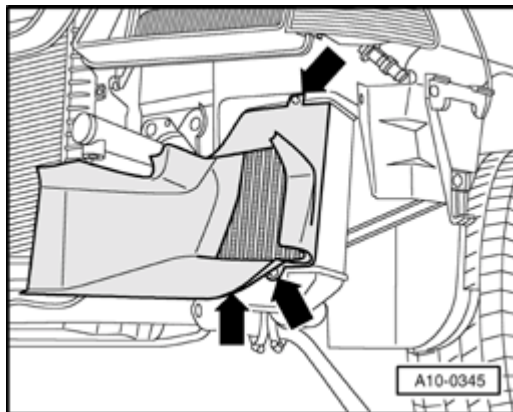
## Charge air cooler (intercooler), removing and installing

### Removing

- Lock carrier must be in service position ⇒ [Page 13-1](#) .



- Remove air duct hose -1-.
- Disconnect connector -2- at Charge Air Pressure sensor -G31-.



- Remove air cowl in front of charge air cooler -arrows-.

- Remove lower air duct hose to charge air cooler.
- Take out charge air cooler from underneath.

### Installing

Installation is carried out in the reverse order of removal; note the following:

- Install lock carrier ⇒ [Page 13-1](#) .

### Tightening torque

Component	Nm
Hose clamps for air duct hoses	3.5