

Exhaust system components, removing and installing

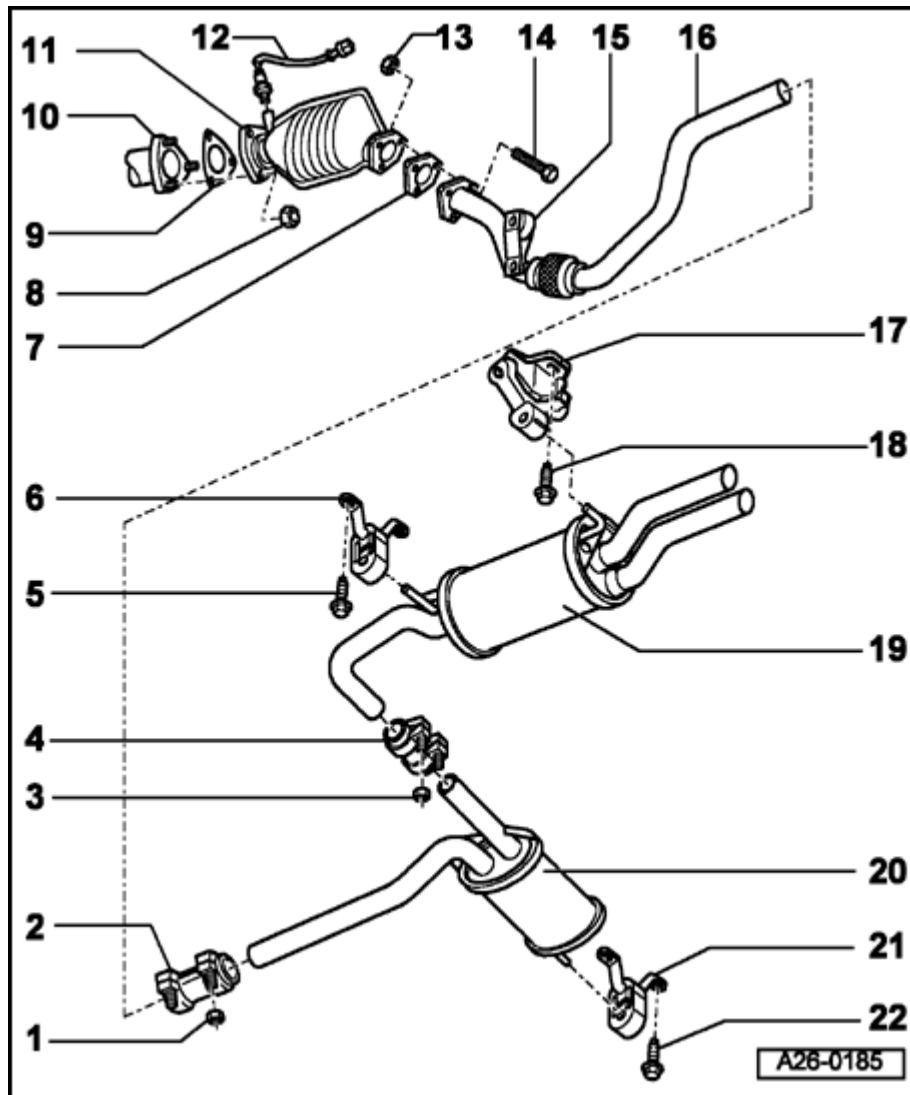
WARNING!

- ◆ ***Do not re-use any fasteners that are worn or deformed in normal use.***
- ◆ ***Some fasteners are designed to be used only once, and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual-replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.***

Note:

- ◆ *Always replace gaskets and self-locking nuts.*
- ◆ *After exhaust system repairs, make sure exhaust system is not under stress and that it has sufficient clearance from the bodywork. If necessary, loosen double clamps and align muffler and exhaust pipe so that sufficient clearance is maintained to the bodywork and the support rings are evenly loaded.*

- ◆ *The exhaust flexpipe must not be bent more than 10° , otherwise it may be damaged.*



Front-wheel-drive vehicles

1 - Nut

- ◆ 40 Nm (30 ft b)

2 - Double clamp

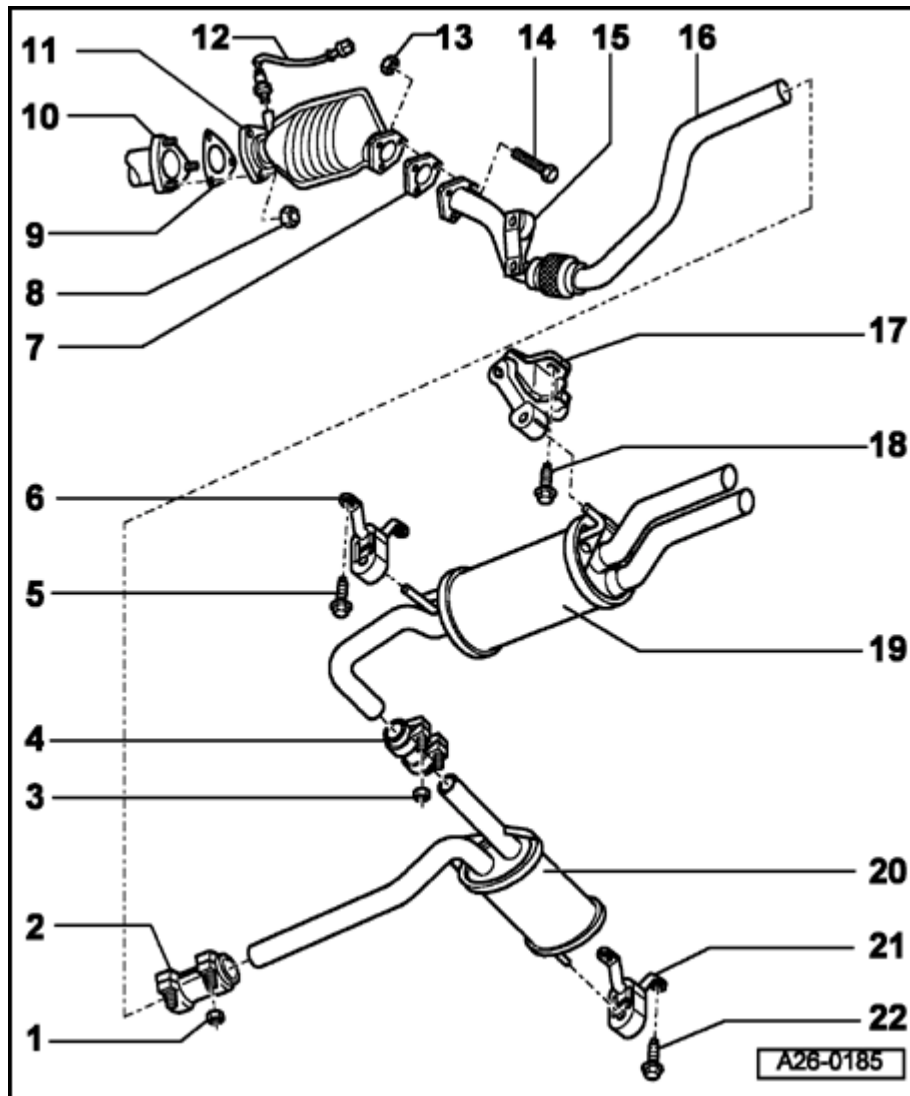
- ◆ Before tightening, ensure exhaust system is free of stress ⇒ [Page 26-24](#)
- ◆ Installation position: bolt ends point toward left
- ◆ Installation position of bolt ends ⇒ [Page 26-13](#) , Fig. ⇒ [3](#)
- ◆ Tighten bolts evenly

3 - Nut

- ◆ 40 Nm (30 ft b)

4 - Double clamp

- ◆ Used when front or rear muffler is replaced separately
- ◆ Before tightening, ensure exhaust system is free of stress ⇒ [Page 26-24](#)
- ◆ Installation position: bolt ends point toward rear
- ◆ Installation position of bolt ends ⇒ [Page 26-13](#) , Fig. ⇒ [3](#)
- ◆ Tighten bolts evenly

**5 - Bolt**

- ◆ 25 Nm (18 ft lb)

6 - Mount**7 - Gasket**

- ◆ Always replace

8 - Nut

- ◆ Always replace
- ◆ 30 Nm (22 ft lb)

9 - Gasket

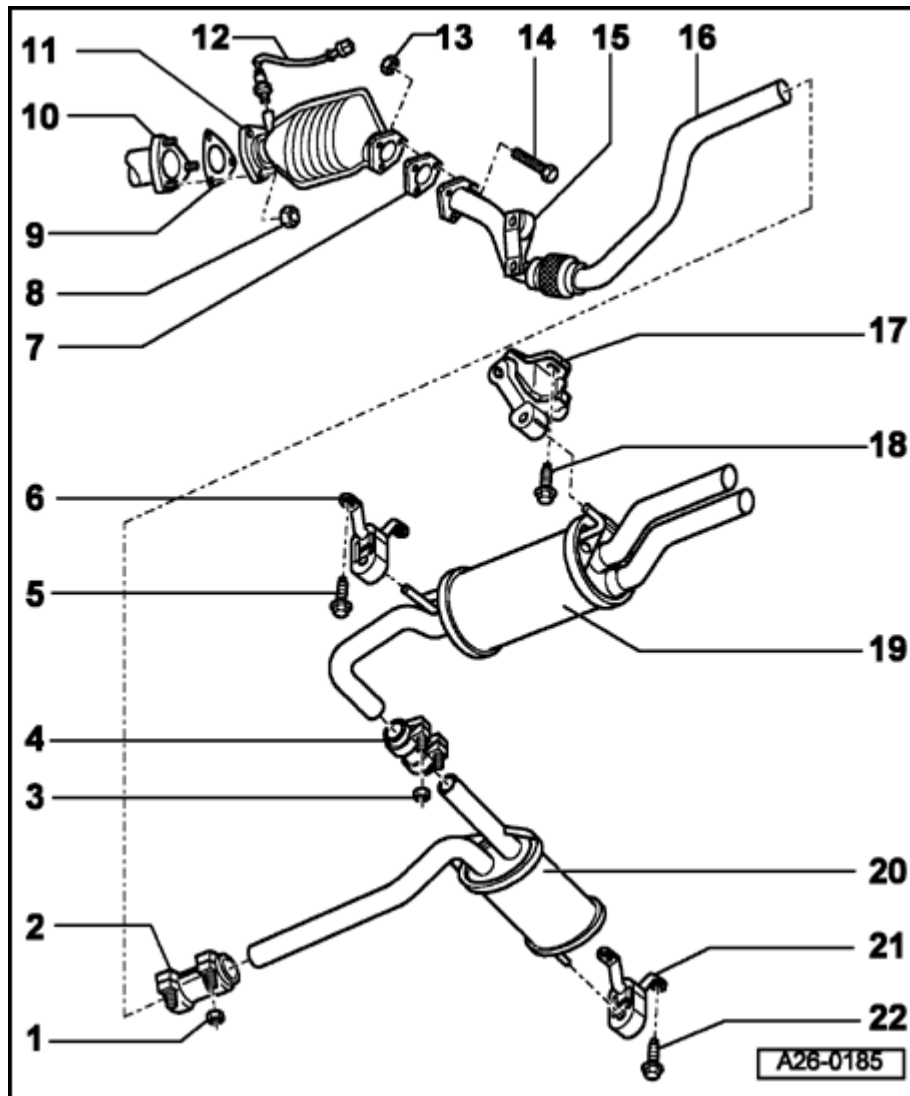
- ◆ Always replace

10 - Turbocharger

- ◆ Removing and installing ⇒ [Page 21-30](#)

11 - Three Way Catalytic Converter (TWC)

- ◆ Protect from damage
- ◆ Removing and installing ⇒ [Page 26-21](#)
- ◆ Disconnect Heated Oxygen Sensor (HO2S) harness connector ⇒ [Page 26-21](#)



12 - Heated Oxygen Sensor (HO2S)

- ◆ 50 Nm (37 ft lb)
- ◆ Only grease threads with "G 052 112 A3."
Do NOT allow grease to get into slots on sensor body

CAUTION!

Part numbers are listed here for reference only. Always check with your Parts department for the latest information.

- ◆ Checking Repair Manual, 1.8 Liter 4-Cyl. 5V Turbo Fuel Injection & Ignition, Repair Group 24

13 - Nut

- ◆ Always replace
- ◆ 25 Nm (18 ft lb)

14 - Bolt

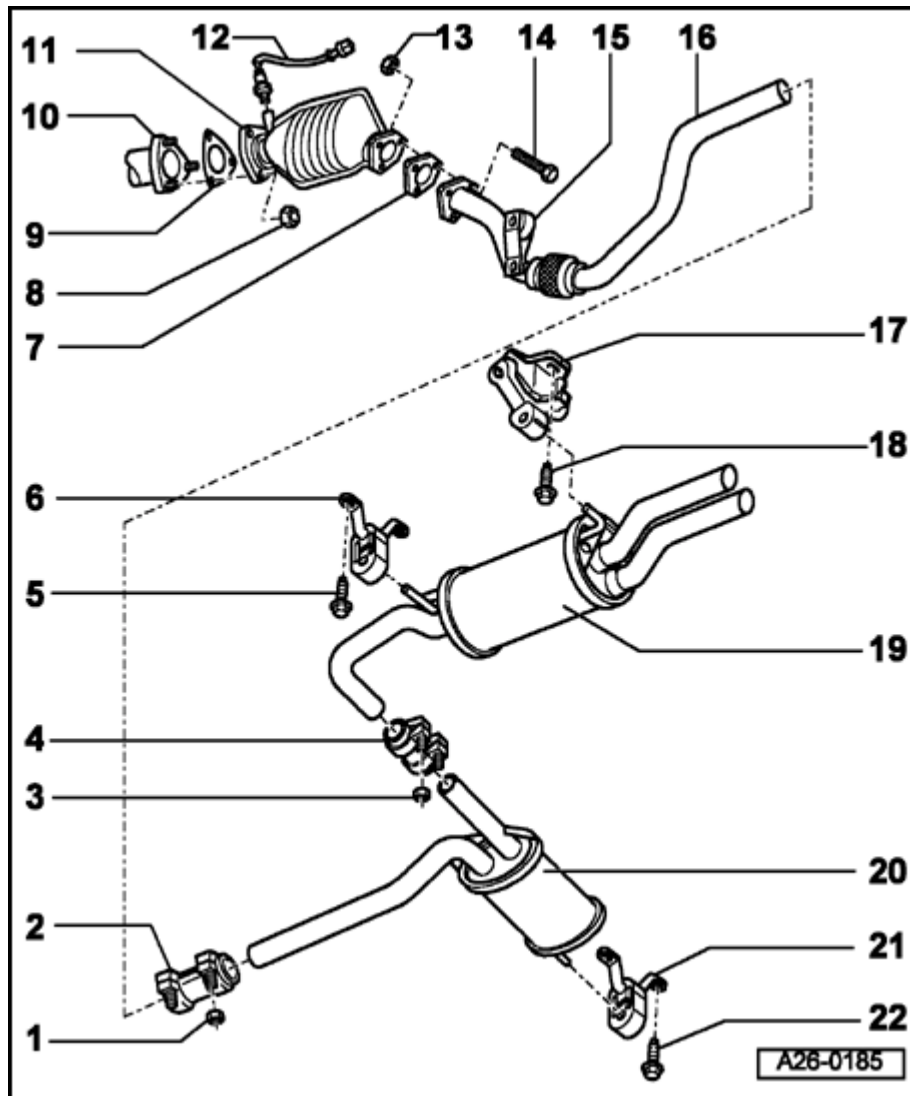
- ◆ 25 Nm (18 ft lb)

15 - 16 Mount

Different versions for manual and automatic transmissions

- ◆ Manual transmission ⇒ [Page 26-12](#) , Fig. ⇒ [1](#)
- ◆ Automatic transmission ⇒ [Page 26-13](#) ,

Fig. ⇒ [2](#)

**17 - Front exhaust pipe**

- ◆ With flexpipe
- ◆ Flexpipe must not be bent more than 10° , otherwise it may be damaged
- ◆ To remove, unbolt floor crossmember (20 Nm/15 ft lb)
- ◆ Align exhaust system free of stress ⇒ [Page 26-24](#)

18 - Mount**19 - Bolt**

- ◆ 25 Nm (18 ft lb)

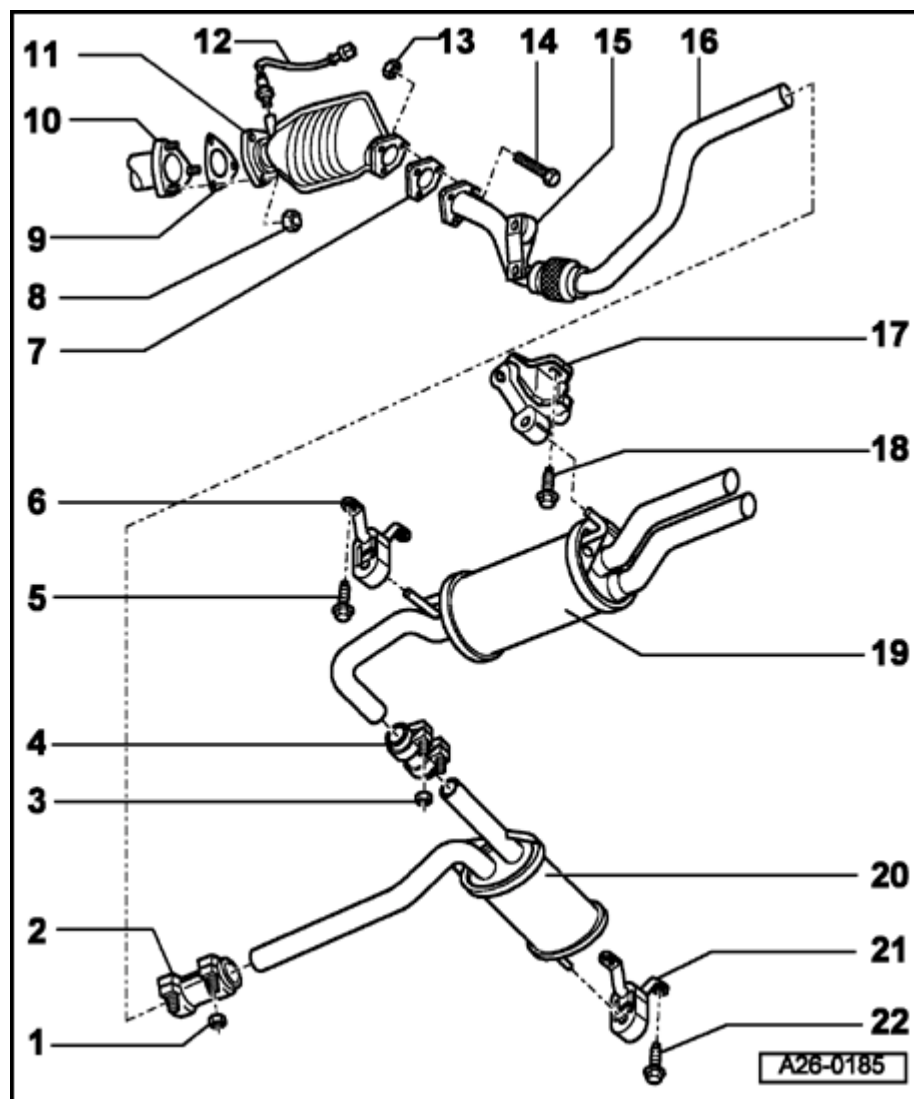
20 - Rear muffler

- ◆ Factory-installed with front muffler as one unit. If repair is necessary, replace separately
- ◆ Separating point ⇒ [Page 26-14](#)
- ◆ Align exhaust system free of stress ⇒ [Page 26-24](#)

21 - Front muffler

- ◆ Factory-installed with rear muffler as one unit. If repair is necessary, replace separately
- ◆ Separating point ⇒ [Page 26-14](#)

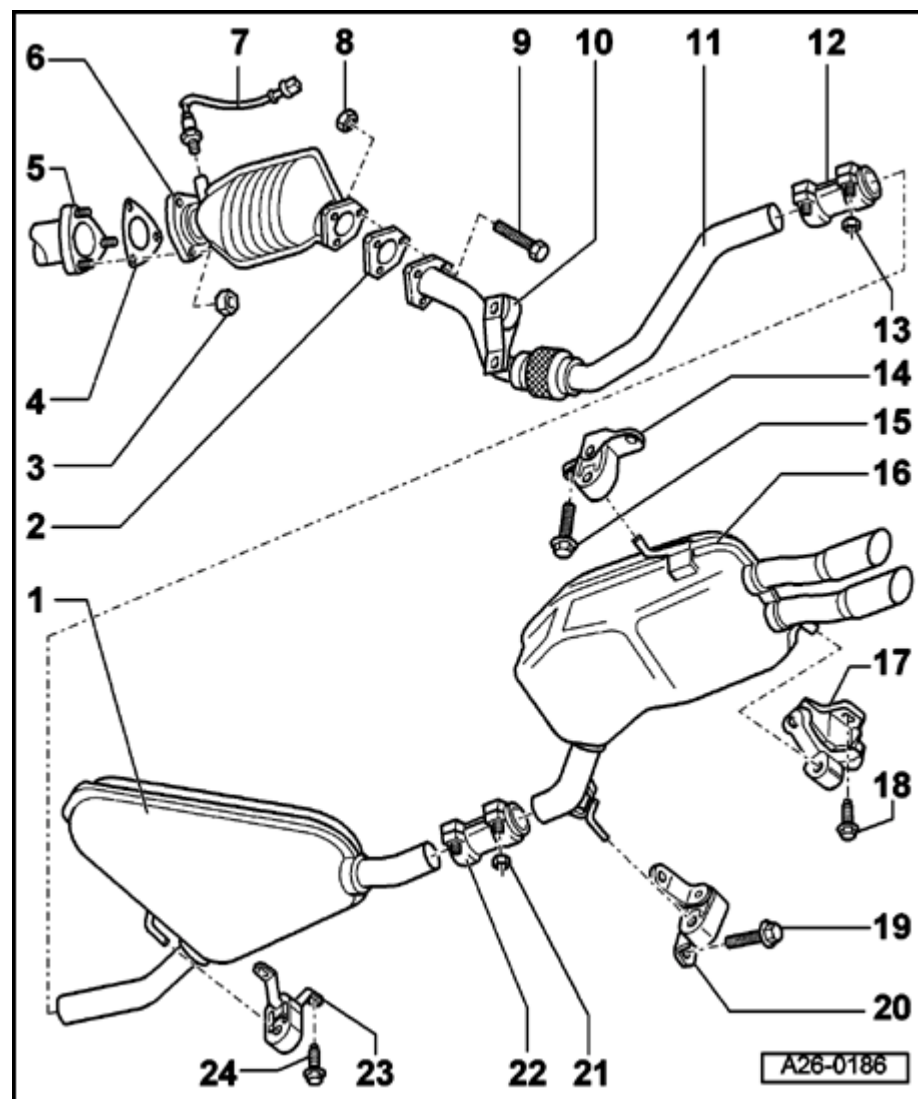
- ◆ Align exhaust system free of stress ⇒
[Page 26-24](#)



22 - Support ring

23 - Bolt

◆ 25 Nm (18 ft lb)



All-wheel-drive vehicles

1 - Front muffler

- ◆ Factory-installed with rear muffler as one unit. If repair is necessary, replace separately
- ◆ Separating point ⇒ [Page 26-16](#)
- ◆ Align exhaust system free of stress ⇒ [Page 26-24](#)

2 - Gasket

- ◆ Always replace

3 - Nut

- ◆ Always replace
- ◆ 30 Nm (22 ft lb)

4 - Gasket

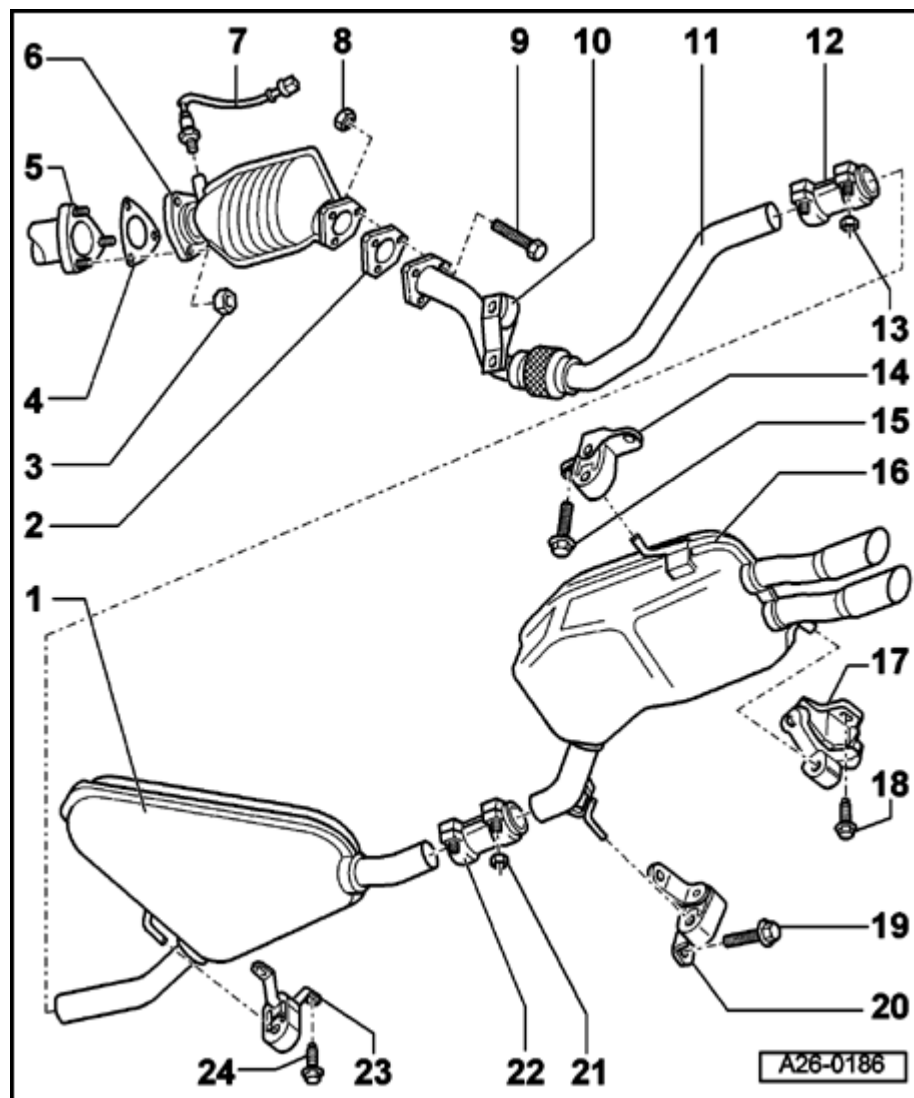
- ◆ Always replace

5 - Turbocharger

- ◆ Removing and installing ⇒ [Page 21-30](#)

6 - Three Way Catalytic Converter (TWC)

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



7 - Heated Oxygen Sensor (HO2S)

- ◆ 50 Nm (37 ft lb)
- ◆ Only grease threads with "G 052 112 A3." Do NOT allow grease to get into slots on sensor body
- ◆ Checking Repair Manual, 1.8 Liter 4-Cyl. 5V Turbo Fuel Injection & Ignition, Repair Group 24
- ◆ Disconnect Heated Oxygen Sensor (HO2S) harness connector ⇒ [Page 26-21](#)

8 - Nut

- ◆ Always replace
- ◆ 25 Nm (18 ft lb)

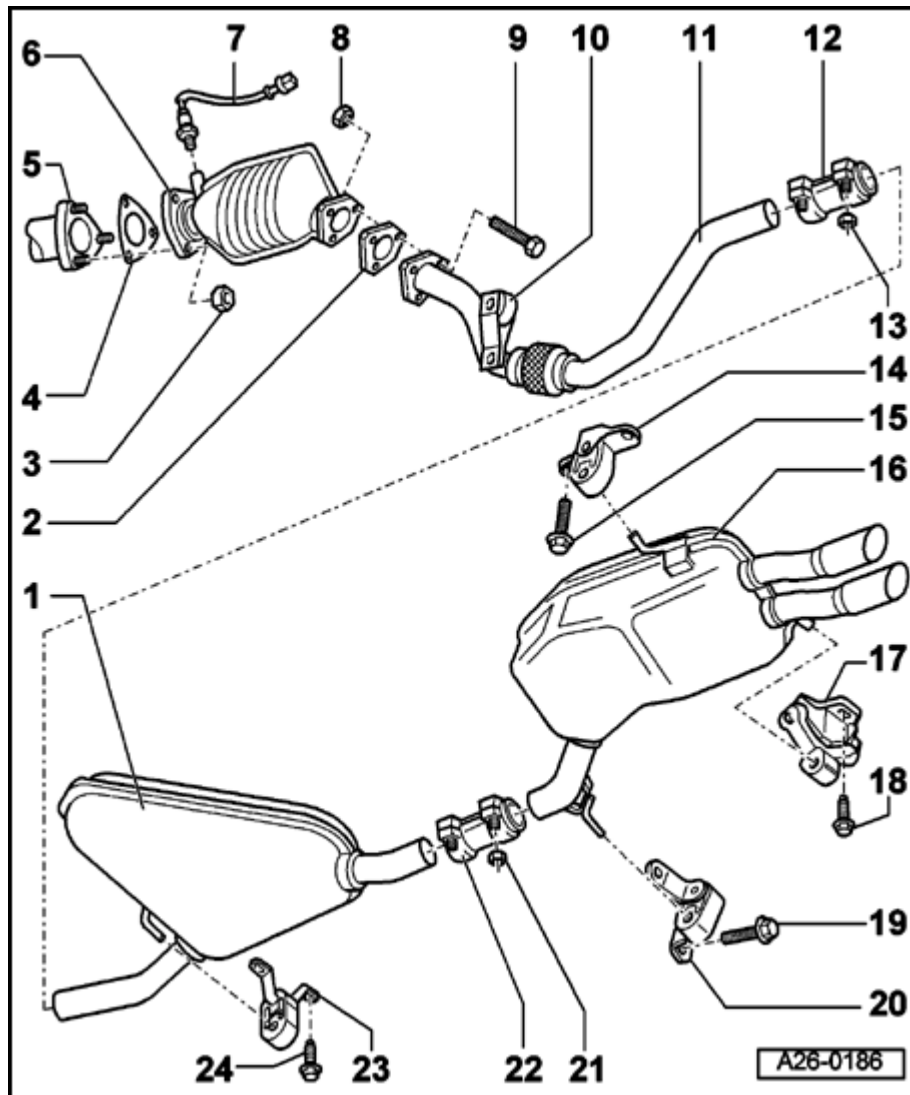
9 - Bolt

- ◆ 25 Nm (18 ft lb)

10 - Mount

Different versions for manual and automatic transmissions

- ◆ Manual transmission ⇒ [Page 26-12](#) , Fig. ⇒ [1](#)
- ◆ Automatic transmission ⇒ [Page 26-13](#) , Fig. ⇒ [2](#)



11 - Front exhaust pipe

- ◆ With flexpipe

CAUTION!

Flexpipe must not be bent more than 10° , otherwise it may be damaged.

- ◆ To remove, unbolt floor crossmember (20 Nm/15 ft lb)

- ◆ Align exhaust system free of stress ⇒ [Page 26-24](#)

12 - Double clamp

- ◆ Before tightening, ensure exhaust system is free of stress ⇒ [Page 26-24](#)
- ◆ Installation position: bolt ends point toward left
- ◆ Installation position of bolt ends ⇒ [Page 26-13](#) , Fig. ⇒ [3](#)
- ◆ Tighten bolts evenly

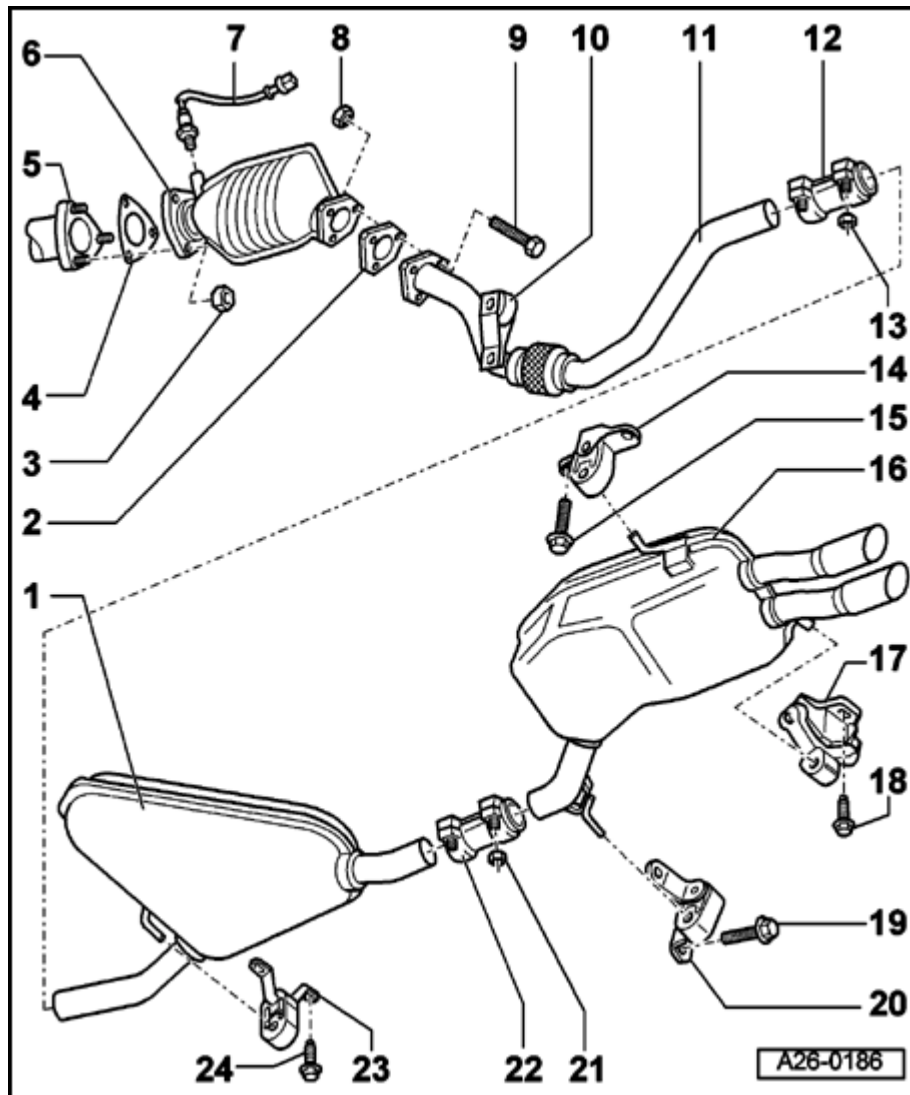
13 - Nut

- ◆ 40 Nm (30 ft lb)

14 - Mount

15 - Bolt

◆ 25 Nm (18 ft lb)

**16 - Rear muffler**

- ◆ Factory-installed with front muffler as one unit. If repair is necessary, replace separately
- ◆ Separating point ⇒ [Page 26-16](#)
- ◆ Align exhaust system free of stress ⇒ [Page 26-24](#)

17 - Mount**18 - Bolt**

- ◆ 25 Nm (18 ft lb)

19 - Bolt

- ◆ 25 Nm (18 ft lb)

20 - Mount**21 - Nut**

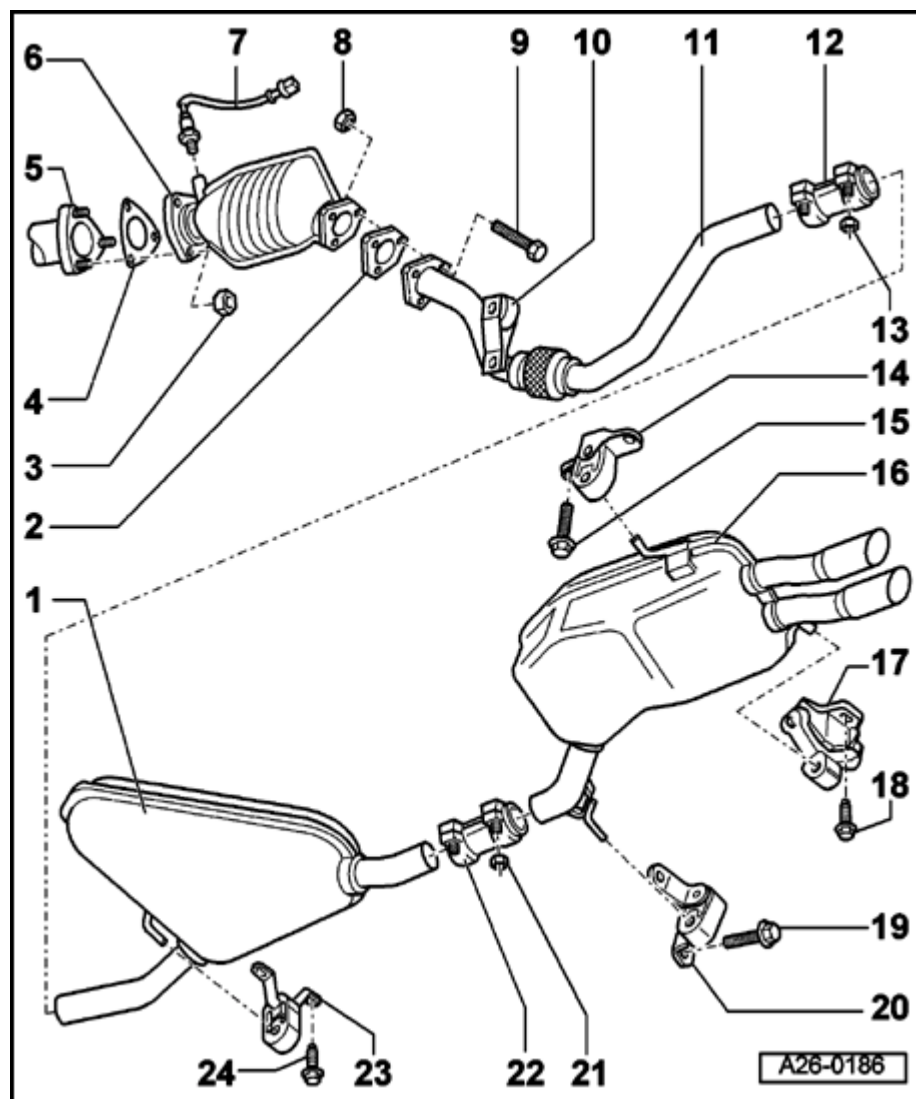
- ◆ 40 Nm (30 ft lb)

22 - Double clamp

- ◆ Used when front or rear muffler is replaced separately.
- ◆ Before tightening, ensure exhaust system is free of stress ⇒ [Page 26-24](#)
- ◆ Installation position: bolt ends point toward left

- ◆ Installation position of bolt ends ⇒ [Page 26-13](#) , Fig. ⇒ [3](#)
- ◆ Tighten bolts evenly

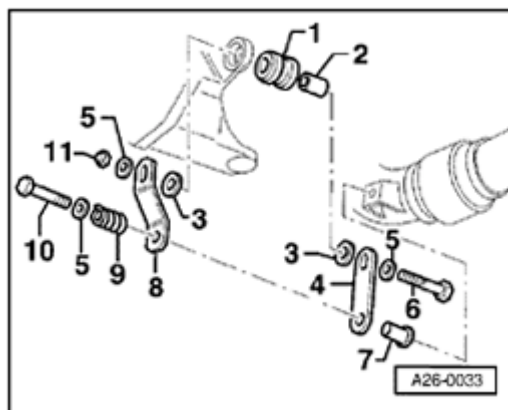
26-11



23 - Support ring

24 - Bolt

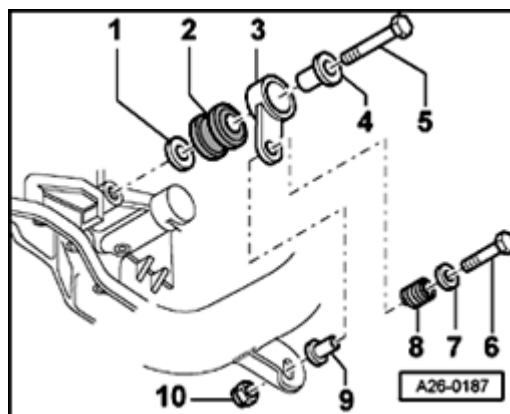
◆ 25 Nm (18 ft lb)



A

Fig. 1 Individual mounting components for vehicles with manual transmission

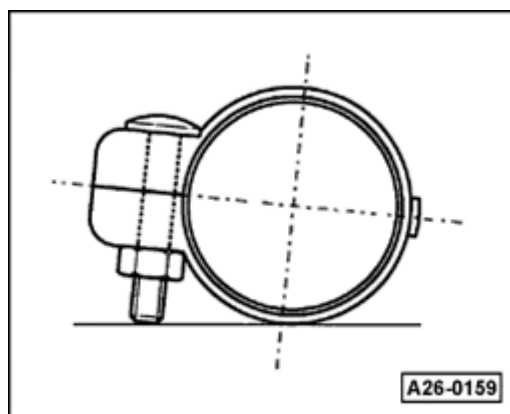
- 1 - Buffer
- 2 - Spacer sleeve
- 3 - Washer
- 4 - Strap, right
- 5 - Washer
- 6 - Bolt (25 Nm/18 ft lb)
- 7 - Spacer sleeve
- 8 - Strap, left
- 9 - Compression spring
- 10 - Bolt (25 Nm/18 ft lb)
- 11 - Self-locking nut (25 Nm/18 ft lb)



A

Fig. 2 Individual mounting components for vehicles with automatic transmission

- 1 - Washer
- 2 - Buffer
- 3 - Strap
- 4 - Spacer sleeve
- 5 - Bolt (25 Nm/18 ft lb)
- 6 - Bolt
- 7 - Washer
- 8 - Compression spring
- 9 - Spacer sleeve
- 10 - Self-locking nut (25 Nm/18 ft lb)



A

Fig. 3 Double clamp installation position

- Install double clamp so bolt ends do not project over lower edge of double clamp.

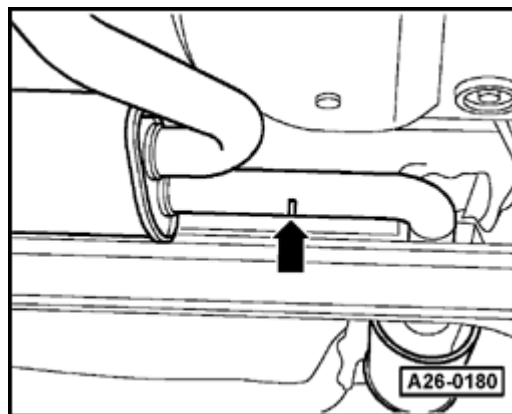
Front and rear muffler, separating

- ◆ Connecting pipe has a designated separating point on connecting pipe for separate replacement of front and/or rear muffler.
- ◆ Separating point is marked by a depression in the pipe.

Special tools and equipment

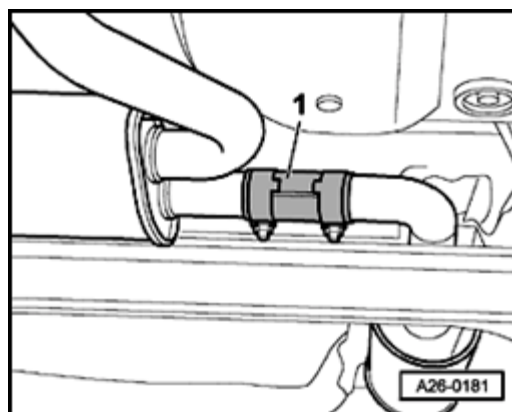
VAG1523 saw

Front-wheel-drive vehicles



A

- Using VAG1523 saw, cut exhaust pipe at separating point (arrow) at right angle.

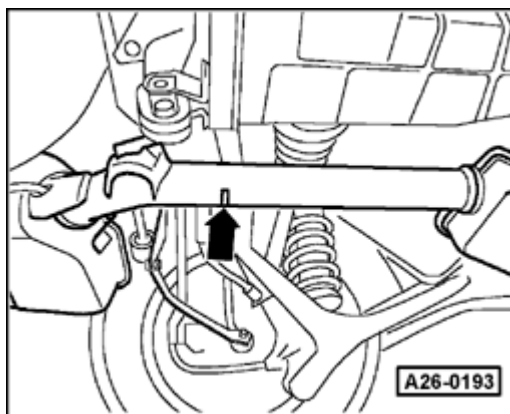


- When installing, center double clamp over separating point.

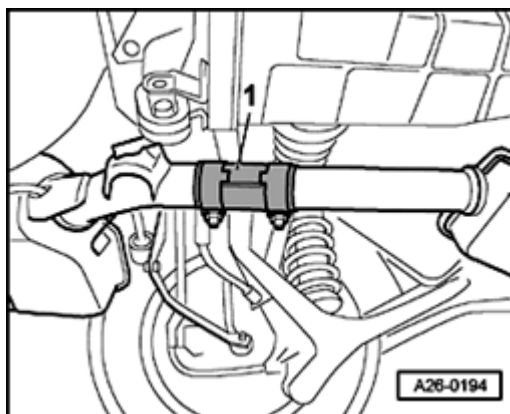
A

- ◆ Double clamp -1- installation position: level, bolt ends pointing downward
- ◆ Install double clamp so that bolt ends don't project over lower edge of double clamp ⇒ [Page 26-13](#) , Fig. ⇒ [3](#)
- Install exhaust system free of stress ⇒ [Page 26-24](#) .
- Tighten double clamp bolts evenly to 40 Nm (30 ft lb).

All-wheel-drive vehicles



- A
- Using VAG1523 saw, cut exhaust pipe at separating point (arrow) at right angle.
 - When installing, center double clamp over separating point.



- A
- Double clamp installation position: level with bolts in clamp -1- pointing toward left-rear wheel
- Install double clamp so that bolts don't project over lower edge of double clamp ⇒ [Page 26-13](#) , Fig. ⇒ [3](#) .
 - Align exhaust system free of stress ⇒ [Page 26-24](#) .
 - Tighten double clamp bolts evenly to 40 Nm (30 ft lb).

Exhaust manifold, removing and installing

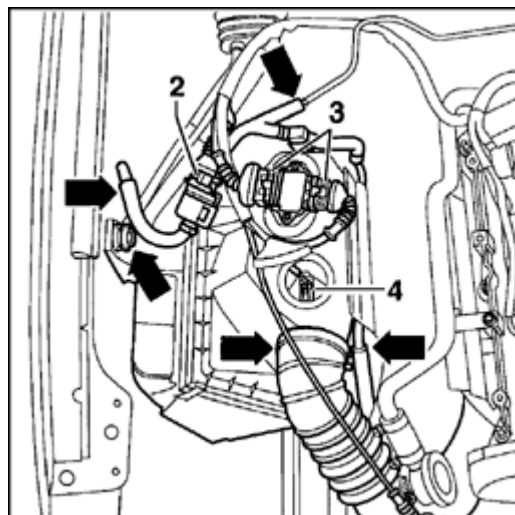
Removing

Note:

- ◆ *Replace gaskets and self-locking nuts.*
- ◆ *Flexpipe in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.*

- Remove air guide duct between cowl and air cleaner housing.

- Remove air cleaner housing cover.



A

- Remove the following lines/harness connectors:

1 - At wastegate bypass regulator valve -N75-

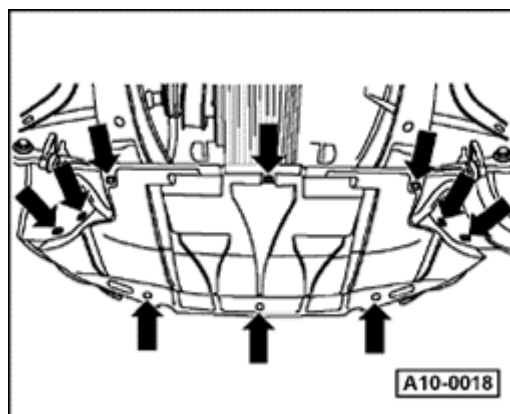
2 - At Evaporative Emissions (EVAP) purge regulator valve -N80-

3 - At power output stage -N122-

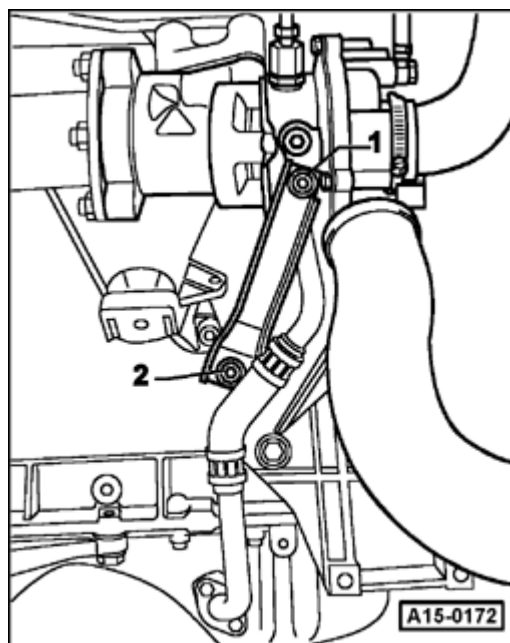
4 - At Mass Air Flow (MAF) sensor -G70-

- Pull off hose connections and remove air cleaner housing (arrows).

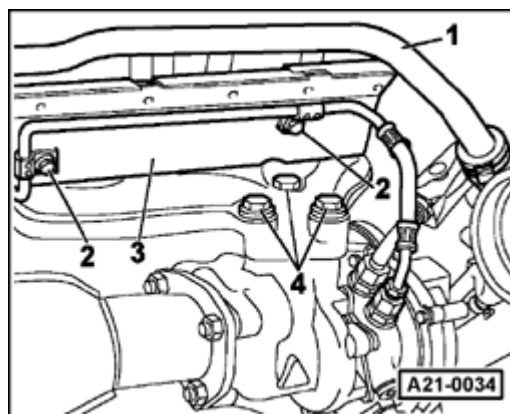
26-18



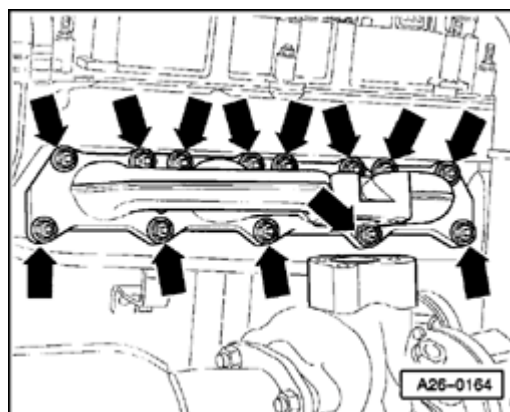
- A** - Remove noise insulation panel (arrows).



- A** - Unthread bolts -1- and -2- several turns.



- A
- Remove engine covers.
 - Unbolt crankcase ventilation hose -1- at cylinder head cover and heat shield.
 - Unbolt both oil supply line bolts -2-.
 - Remove heat shield -3-.
 - Remove bolts -4-.
 - Remove seal between turbocharger and exhaust manifold.
 - Seal opening in turbocharger using clean cloth.



- A
- Remove all nuts (arrows) from exhaust manifold.
 - Remove washers and exhaust manifold.

Installing

Installation is the reverse of removal, noting the following:

- Install in sequential order as follows:
 - ◆ Exhaust manifold to cylinder head
 - ◆ Turbocharger to exhaust manifold
 - ◆ Turbocharger bracket to cylinder block

Tightening torques

Component	Tightening torques
Turbocharger bracket to turbocharger (bolt and washer assembly M8)	40 Nm (30 ft lb)
Turbocharger bracket to cylinder block	45 Nm (33 ft lb)
Turbocharger to exhaust manifold	35 Nm (26 ft lb)
Exhaust manifold to cylinder head	25 Nm (18 ft lb)
Oil supply line to cylinder head	20 Nm (15 ft lb)

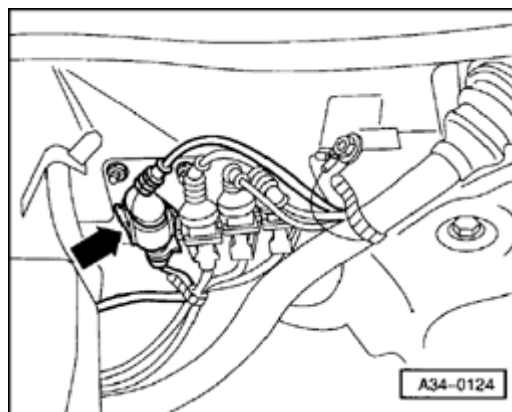
	lb)
Crankcase ventilation line to cylinder head	10 Nm (7 ft lb)

Three Way Catalytic Converter (TWC), removing and installing

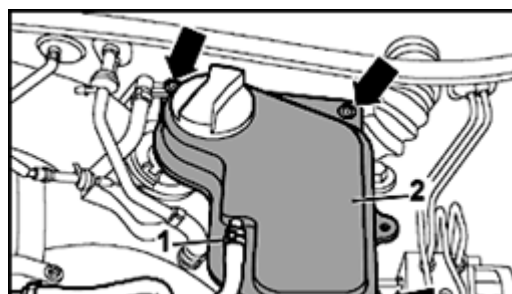
Removing

Note:

- ◆ *Replace gaskets and self-locking nuts.*
- ◆ *Flexpipe in front exhaust pipe must not be bent more than 10°, otherwise it may be damaged.*



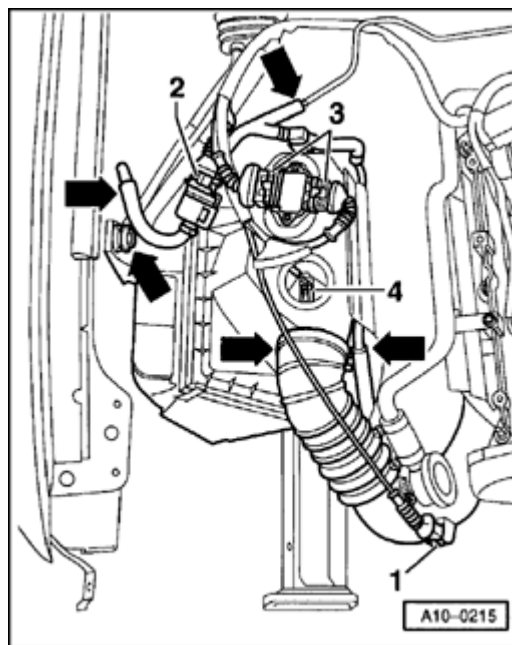
- A**
- Disconnect harness connector for heated oxygen sensor (arrow) and set aside.



- A**
- Remove coolant expansion tank -2- (arrows)
 - Remove wiring from Engine Coolant Level (ECL) warning switch -F66- and lay coolant expansion tank to side.

Note:

Coolant hoses -1- and -3- remain connected.



A

- Remove air guide duct between cowl and air cleaner housing.
- Remove air cleaner housing cover.
- Remove the following lines/harness connectors:
 - 1 - At wastegate bypass regulator valve -N75-
 - 2 - At Evaporative Emissions (EVAP) purge regulator valve -N80-
 - 3 - At power output stage -N122-
 - 4 - At Mass Air Flow (MAF) sensor -G70-
- Pull off hose connections and remove air cleaner housing (arrows).
- Remove Heated Oxygen Sensor (HO2S) from Three Way Catalytic Converter (TWC).
- Remove bolts between front exhaust pipe and Three Way Catalytic Converter (TWC).
- Unbolt transmission mount for exhaust system at exhaust system.
- Remove bolts between three Three Way Catalytic Converter (TWC) and turbocharger.
- Remove Three Way Catalytic Converter (TWC) toward top.

Installing

Installation is the reverse of removal, noting the following:

- ◆ Only grease threads of oxygen sensor with "G 052 112 A3." Do NOT allow grease to get into slots on sensor body.
- ◆ Align exhaust system free of stress ⇒ [Page 26-24](#) .

Tightening torques

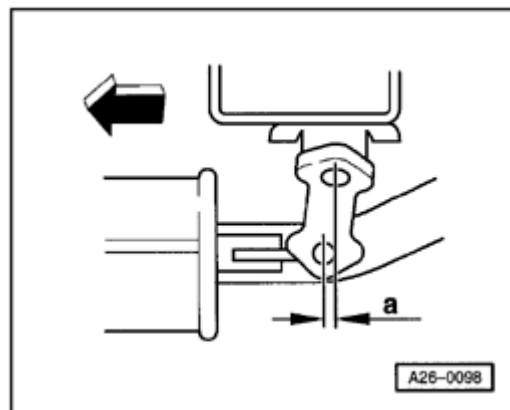
Components	Tightening torques
Front exhaust pipe to three way catalytic converter	25 Nm (18 ft lb)
Front exhaust pipe to transmission mount	25 Nm (18 ft lb)
Three way catalytic converter to turbocharger	30 Nm (22 ft lb)
Heated oxygen sensor to three way catalytic converter	50 Nm (37 ft lb)

Exhaust system, aligning free of stress

- Align exhaust system when cold

Front-wheel-drive vehicles

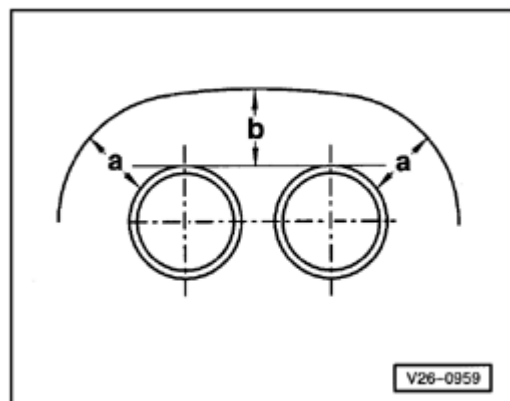
- Remove double clamp bolts ⇒ [Page 26-2](#) , item 2 .



A

- Push exhaust system forward (arrow) until tension on rear mount equals dimension -a-.
- Dimension -a- = 7-9 mm (0.275-0.354 in.)
- Tighten double clamp bolts evenly to 40 Nm (30 ft lb).

Aligning tailpipes:

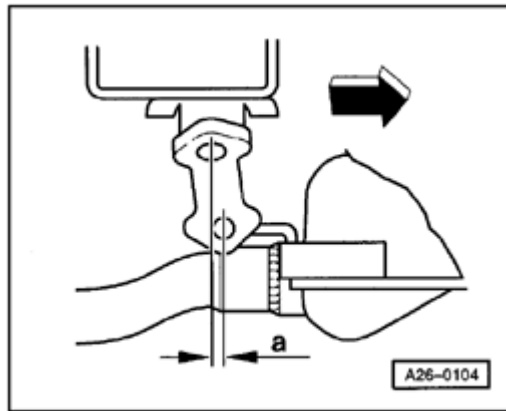


A

- Align tailpipes so distance -a- on left and right side is equal.
- Distance -b- between bumper cutout and tailpipes must equal specification.
- Distance -b- = 40-46 mm (1.57-1.81 in.)

All-wheel-drive vehicles without double clamp between front and rear mufflers

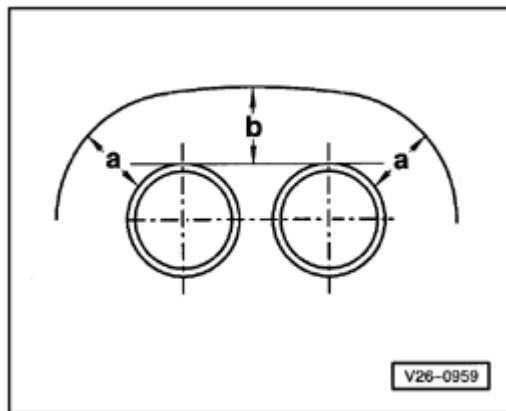
- Remove double clamp bolts ⇒ [Page 26-9](#) , item - 12 -.



A

- Push exhaust system forward (arrow) until initial preload on right rear mount equals dimension -a-.
- Dimension -a- = 7-11 mm (0.275-0.433 in.)
- Tighten double clamp bolts evenly to 40 Nm (30 ft lb).

Aligning tailpipes:



A

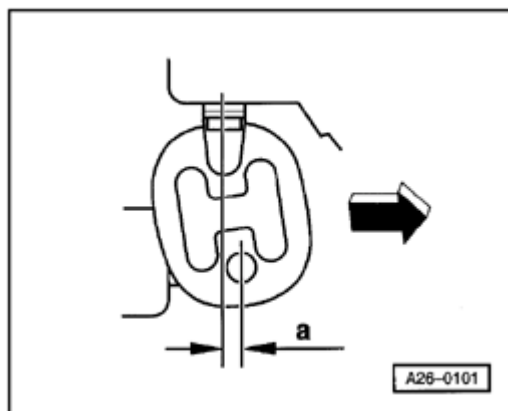
- Align tailpipes so distance -a- on left and right-sides is equal.
- Distance -b- between bumper cutout and tailpipes must equal specification.
- Distance -b- = 41-47 mm (1.614-1.850 in.)

All-wheel-drive vehicles with double clamp between front and rear mufflers

Note:

Only for vehicles with double clamp between front and rear mufflers: also align front muffler.

- Remove double clamp bolts ⇒ [Page 26-9](#) , item - 12 - and ⇒ [Page 26-10](#) , item - 22 -.



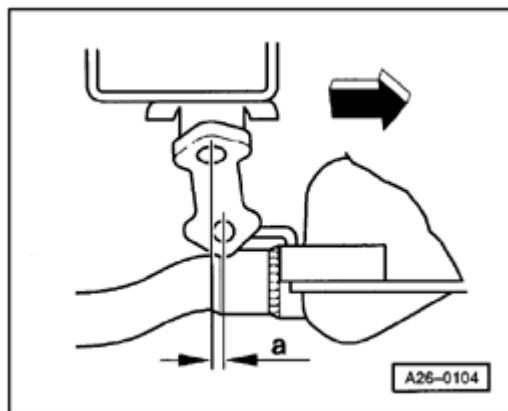
A

- Push exhaust system forward (arrow) until initial preload on left rear mount equals dimension -a-.

Dimension -a- = 7-9 mm (0.275-0.354 in.)

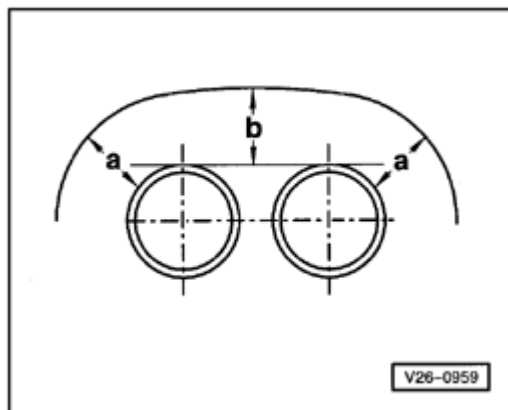
- Tighten front double clamp bolts evenly to 40 Nm (30 ft lb) ⇒ [Page 26-9](#) , item - 12 -.

26-27



- A**
- Push exhaust system forward (arrow) until initial preload on right-rear mount equals dimension -a-.
- Dimension -a- = 7-11 mm (0.275-0.433 in.)
- Tighten rear double clamp bolts evenly to 40 Nm (30 ft lb) ⇒ [Page 26-10](#), item - 22 -.

Aligning tailpipes:



- A**
- Align tailpipes so distance -a- on left and right side is equal.

Distance -b- between bumper cutout and tailpipes must equal specification.

Specification:

Distance -b- = 41-47 mm (1.614-1.850 in.)

Exhaust system, checking for leaks

- Start engine and run at idle.

- Seal tailpipes with cloths or equivalent for duration of leak test.

- Listen for leaks at following connections:
cylinder head/exhaust manifold, exhaust manifold/turbocharger, turbocharger/Three Way Catalytic Converter (TWC), etc.

- Repair leaks.