

ENGINE

3.0 Liter - Exhaust System, Emission Controls - Engine Code(s): CCBA (Sedan)

EXHAUST SYSTEM, EMISSION CONTROLS

DESCRIPTION AND OPERATION

ALIGN THE TAIL PIPES

Procedure

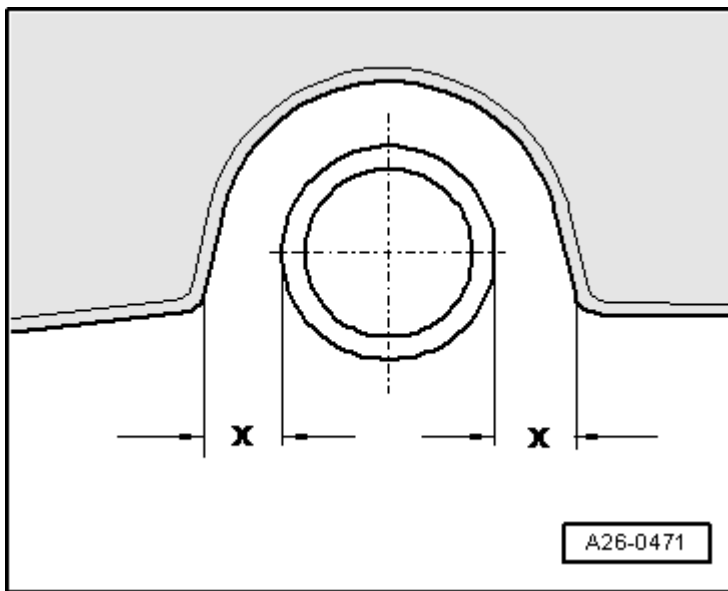


Fig. 1: Checking Distance Of End Pipes At Left/Right To Bumper
Courtesy of AUDI OF AMERICA, LLC

- Tightening specification, refer to MUFFLER OVERVIEW.

-- Check distance of left and right tail pipes to bumper:

- Dimension -x- left = dimension -x- right.

Correct dimension "x" as follows if necessary:

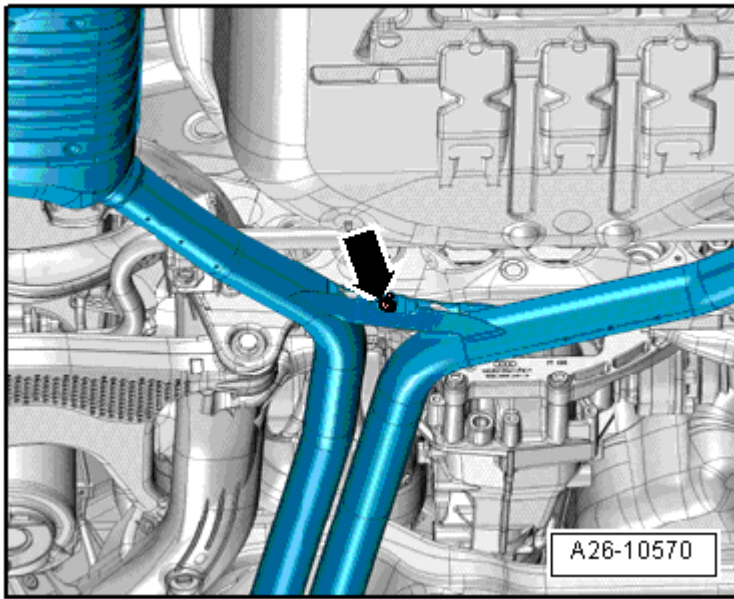


Fig. 2: Loosening Brace Threaded Connection
Courtesy of AUDI OF AMERICA, LLC

- Loosen the brace threaded connection -arrow- between the exhaust pipes.
- Adjust the distance of the rear mufflers to each other.

EXHAUST MANIFOLD

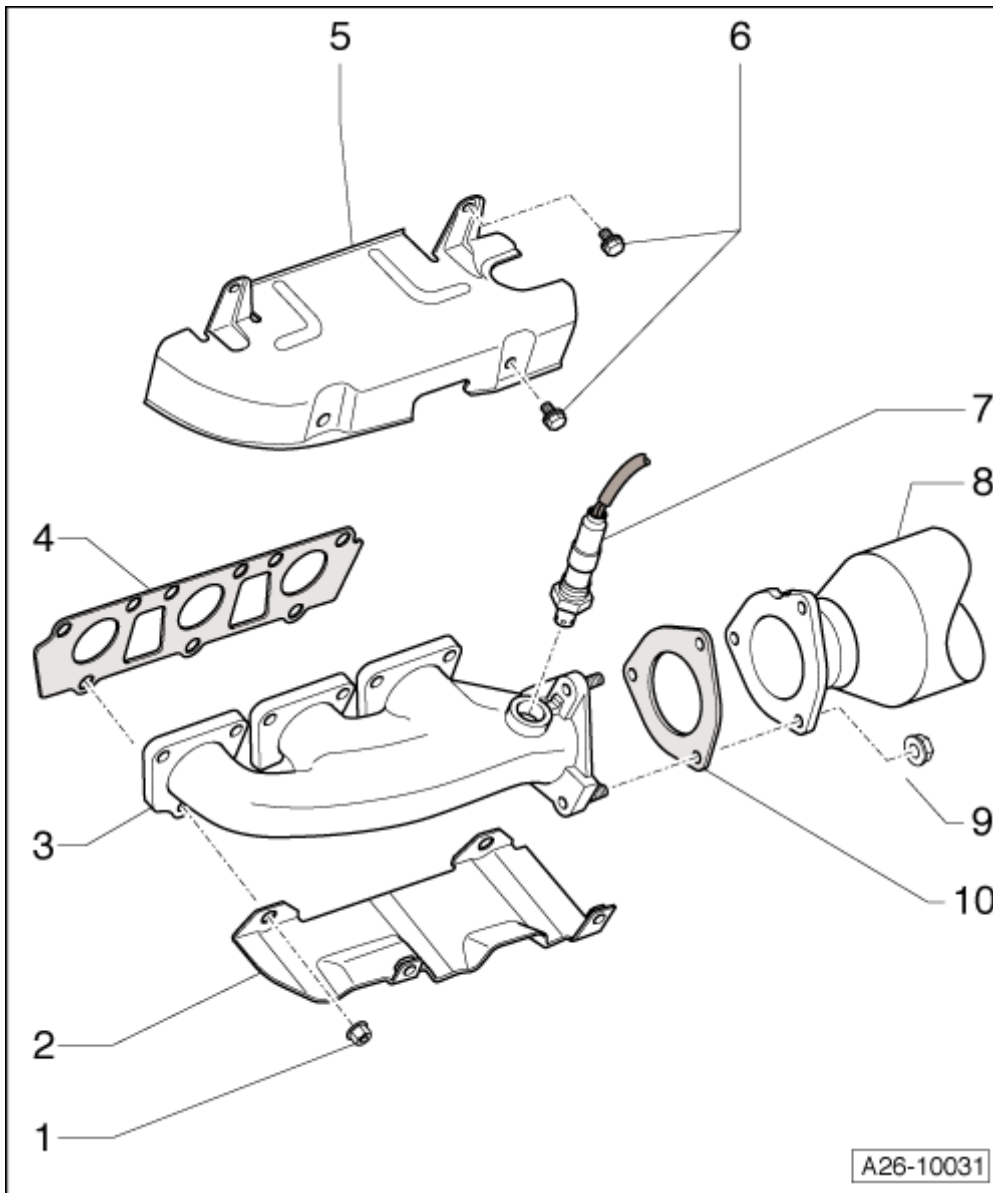


Fig. 3: Identifying Exhaust Manifold, Component Overview

Courtesy of AUDI OF AMERICA, LLC

1. Nut
 - Replace
 - Coat the thread with hot bolt paste.
 - Tightening specifications and sequence: Left, refer to **Fig. 4**, right, refer to **Fig. 5**
2. Heat Shield Bracket
3. Exhaust Manifold
 - Removing and installing: Left, refer to **LEFT EXHAUST MANIFOLD**, right, refer to **RIGHT EXHAUST MANIFOLD**
4. Gasket

- Replace
- 5. Heat Shield
- 6. Bolt
 - 10 Nm
- 7. Oxygen Sensor
 - Before catalytic converter
 - Removing and installing, refer to **Removal and Installation**
- 8. Catalytic Converter
 - Overview, refer to **MUFFLER OVERVIEW**
- 9. Nut
 - 23 Nm
 - Replace
 - Coat the thread with hot bolt paste.
- 10. Gasket
 - Replace

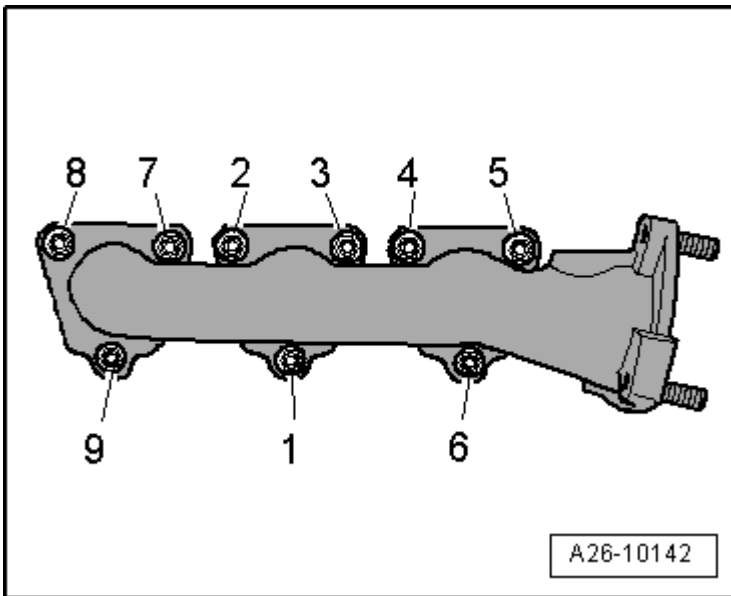


Fig. 4: Identifying Exhaust Manifold Tightening Sequence
 Courtesy of AUDI OF AMERICA, LLC

NOTE:

- Replace the nuts.
- Coat the thread on the nut with hot bolt paste.

-- Tighten the nuts in 3 steps according to the tightening sequence:

Stage	Nuts	Tightening Specifications
-------	------	---------------------------

2012 Audi S4

ENGINE 3.0 Liter - Exhaust System, Emission Controls - Engine Code(s): CCBA (Sedan)

1.	-1 through 9-	Install all the way in by hand.
2.	-1 through 9-	15 Nm
3.	-1 through 9-	25 Nm

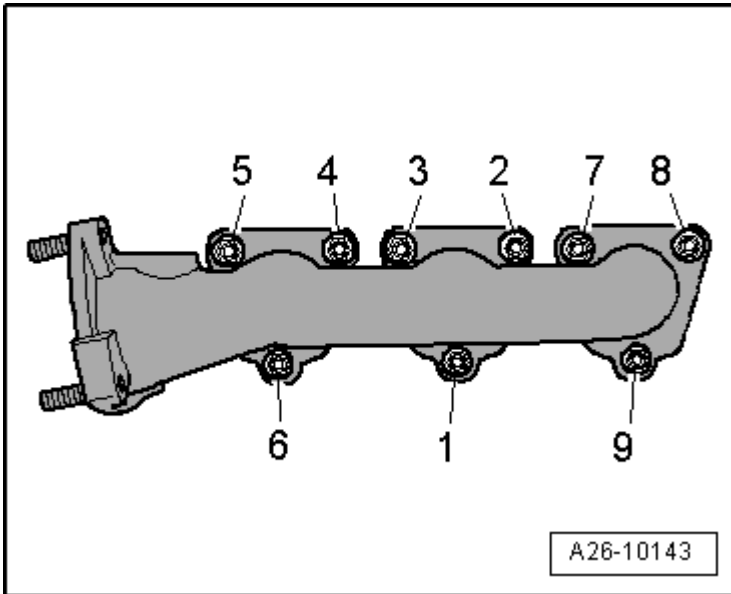


Fig. 5: Identifying Exhaust Manifold Tightening Sequence
Courtesy of AUDI OF AMERICA, LLC

NOTE:

- Replace the nuts.
- Coat the thread on the nut with hot bolt paste.

-- Tighten the nuts in 3 steps according to the tightening sequence:

Stage	Nuts	Tightening Specifications
1.	-1 through 9-	Install all the way in by hand.
2.	-1 through 9-	15 Nm
3.	-1 through 9-	25 Nm

MUFFLER OVERVIEW

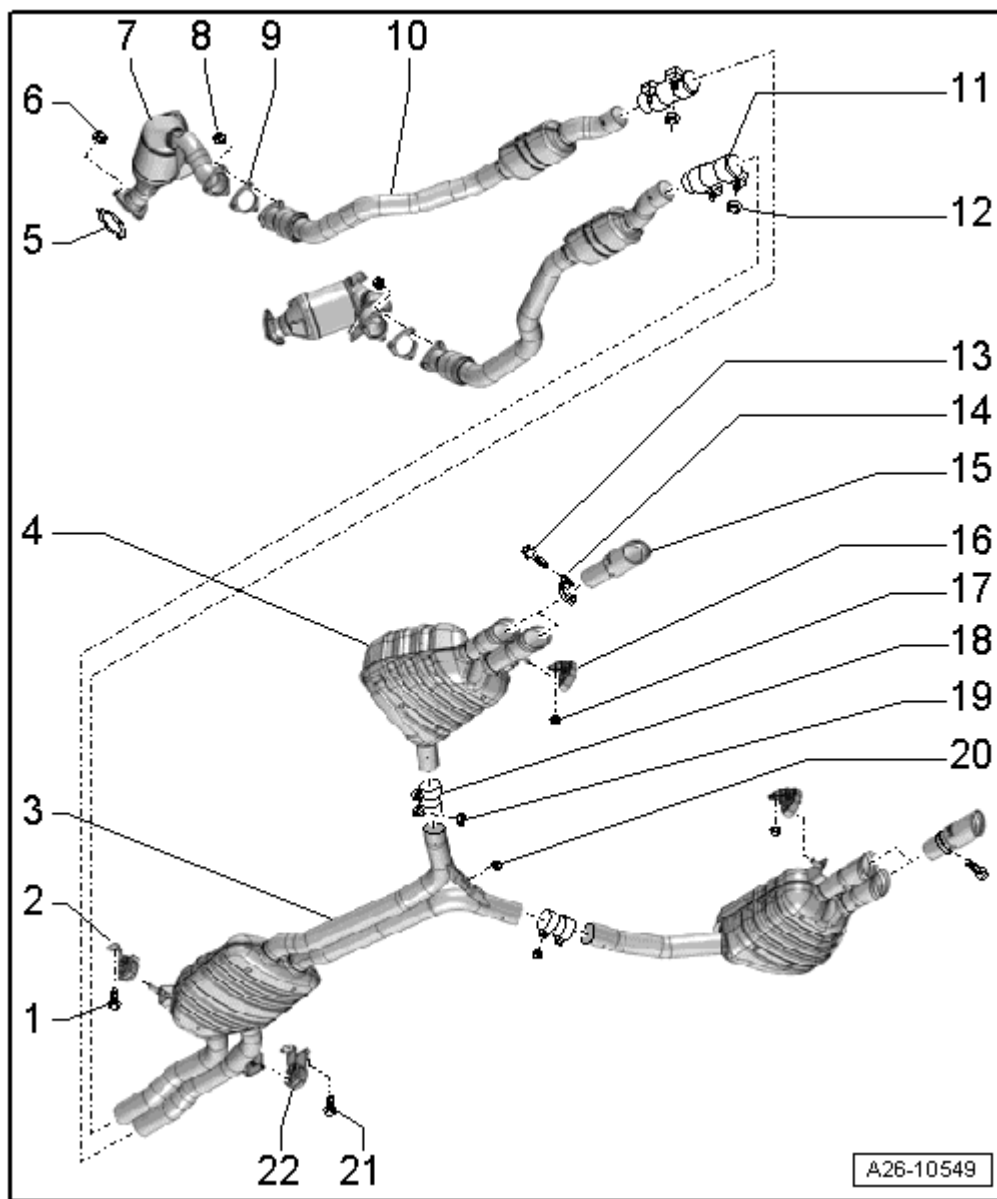


Fig. 6: Identifying Muffler Assembly Overview

Courtesy of AUDI OF AMERICA, LLC

1. Bolt
 - 23 Nm
2. Suspended Mount
 - Replace if damaged
 - Check pretension, refer to **EXHAUST SYSTEM, INSTALLING**
3. Center Muffler
 - Original equipment as one unit with rear mufflers. For repairs, replace each separately.
 - To remove on the Audi A5 Cabriolet, remove the diagonal braces, refer to **Fig. 10**
 - Separating point, refer to **CENTER MUFFLER AND REAR MUFFLER, SEPARATING**

- Install exhaust system free of stress, refer to **EXHAUST SYSTEM, INSTALLING**
4. Rear Muffler
 - Original equipment as one unit with center muffler and tailpipe
 - in case of repairs, center muffler end muffler and tailpipe should be replaced individually
 - To remove on the Audi A5 Cabriolet, remove the diagonal braces, refer to **Fig. 10**
 - Separating point between center and rear muffler, refer to **CENTER MUFFLER AND REAR MUFFLER, SEPARATING**
 - Separating point between the rear muffler and the tailpipe, refer to **TAIL PIPE**
 - Install exhaust system free of stress, refer to **EXHAUST SYSTEM, INSTALLING**
 5. Gasket
 - Replace
 6. Nut
 - 23 Nm
 7. Catalytic Converter
 - Protect from shocks and impact stress
 - Removing and installing: Left, refer to **LEFT CATALYTIC CONVERTER**, right, refer to **RIGHT CATALYTIC CONVERTER**
 - Individual components of suspension, refer to **Fig. 9**
 8. Nut
 - 23 Nm
 9. Gasket
 - Replace
 10. Front Muffler
 - With decoupling element, decoupling element must not be bent more than 10° - otherwise it may be damaged
 - Removing and installing, refer to **FRONT MUFFLER**
 - Install exhaust system free of stress, refer to **EXHAUST SYSTEM, INSTALLING**
 11. Front Clamping Sleeve
 - Installed position, refer to **Fig. 7**
 - Before tightening, align exhaust system tension-free, refer to **EXHAUST SYSTEM, INSTALLING**
 - Tighten threaded connections evenly.
 12. Nut
 - 23 Nm
 13. Bolt
 - 23 Nm
 14. Clamp
 15. Exhaust Tailpipe

- Original equipment as one unit with rear muffler. For repairs, replace each separately.
- Separating point, refer to **TAIL PIPE**
- Aligning, refer to **ALIGN THE TAIL PIPES**

16. Suspended Mount

- Replace if damaged
- Check pretension, refer to **EXHAUST SYSTEM, INSTALLING**

17. Nut

- 20 Nm
- Replace

18. Rear Clamping Sleeve

- For individual replacement of center and rear mufflers
- Installed position **Fig. 8**
- Before tightening, align exhaust system tension-free **EXHAUST SYSTEM, INSTALLING**
- Tighten threaded connections evenly.

19. Nut

- 23 Nm

20. Nut

- Replace
- 23 Nm

21. Bolt

- 23 Nm

22. Suspended Mount

- Replace if damaged
- Check pretension, refer to **EXHAUST SYSTEM, INSTALLING**

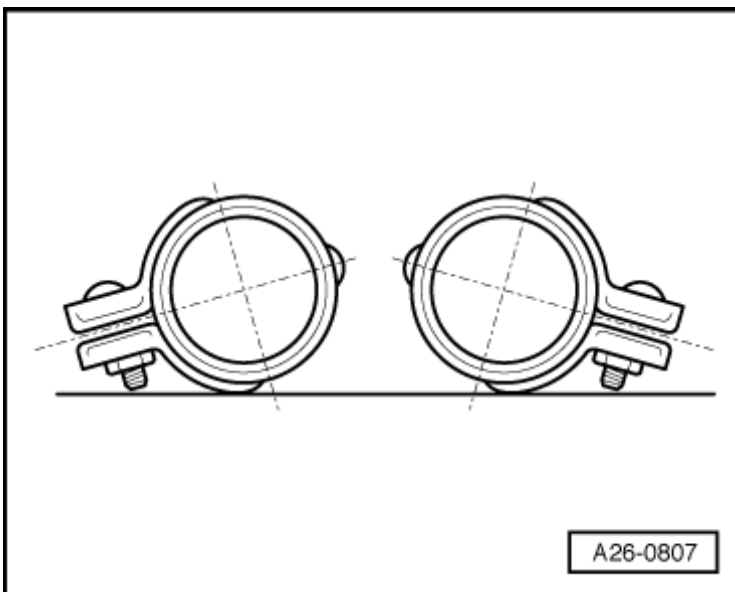


Fig. 7: Adjusting Front Double Clamps So Bolt Ends Do Not Project Over Lower Edges Of Double Clamps

Courtesy of AUDI OF AMERICA, LLC

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

- Installed position: Threaded connections point toward outside.

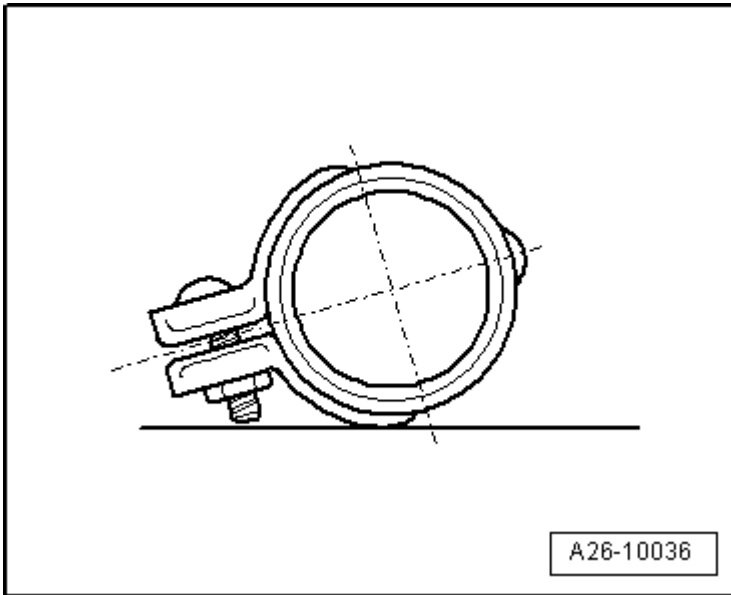


Fig. 8: Installed Position Of Rear Double Clamps

Courtesy of AUDI OF AMERICA, LLC

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

- Installed position: Threaded connections point forward.

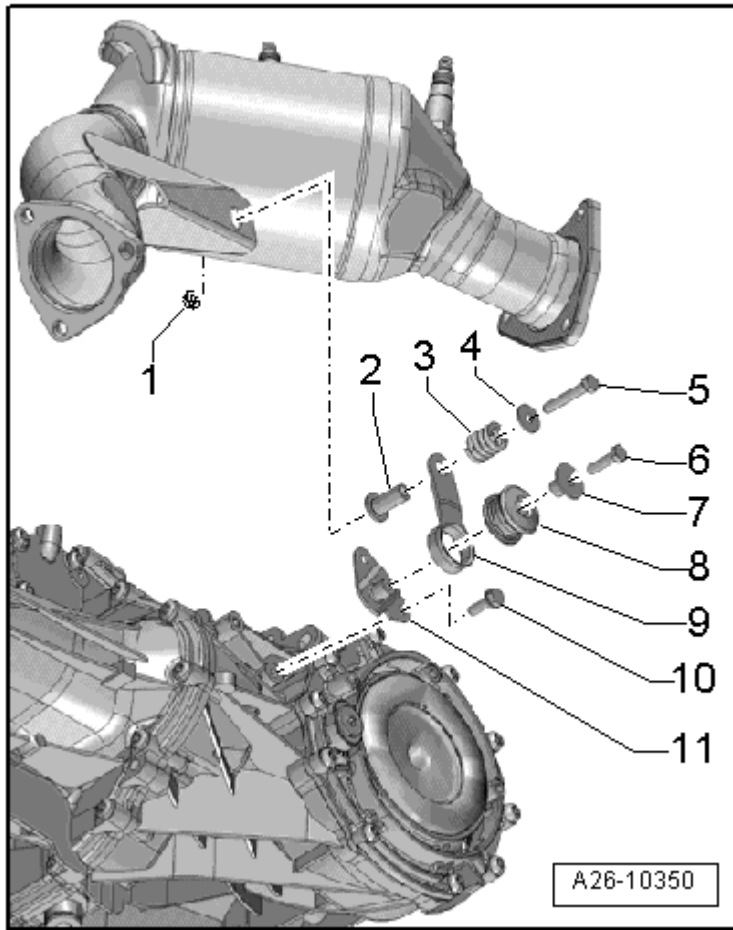


Fig. 9: Identifying Individual Catalytic Converter Mounting Components
 Courtesy of AUDI OF AMERICA, LLC

1. Nut - 23 Nm
2. Spacer sleeve
3. Pressure spring
4. Washer
5. Bolt
6. Bolt - 23 Nm
7. Spacer sleeve
8. Adjusting buffer
9. Tab
10. Bolt - 23 Nm
11. Bracket

NOTE: The right suspended mount is shown in the illustration. The left suspended mount is identical.

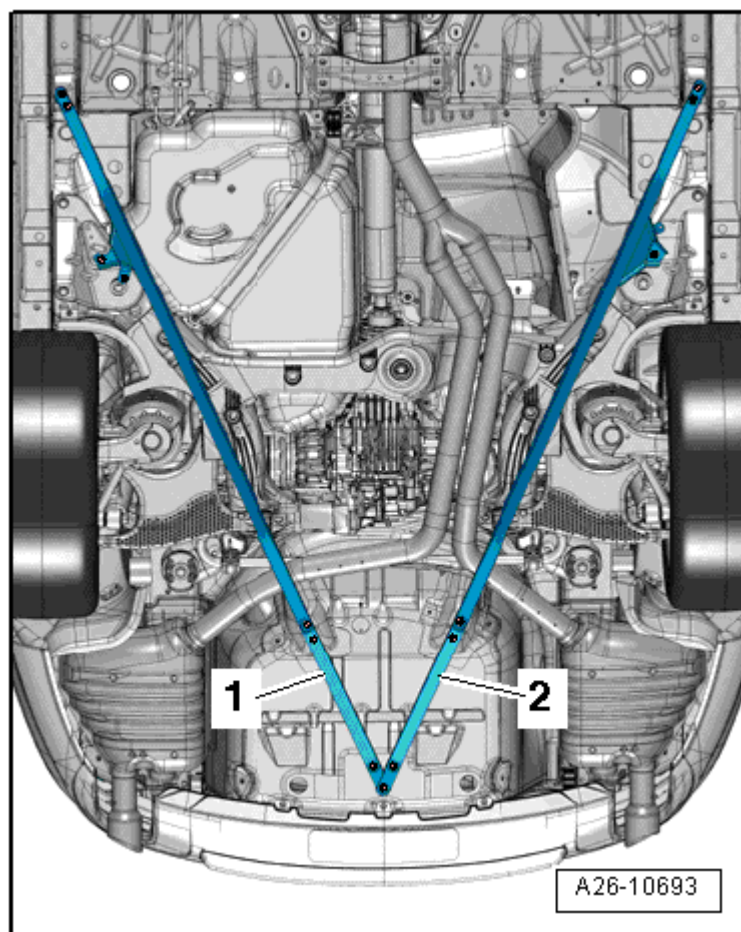


Fig. 10: Identifying Diagonal Braces In A5 Cabriolet
Courtesy of AUDI OF AMERICA, LLC

- Remove the Y-pipe and the diagonal braces for the rear muffler -1 and 2-.
- Install diagonal braces. Refer to **Removal and Installation** .

SECONDARY AIR INJECTION SYSTEM OVERVIEW

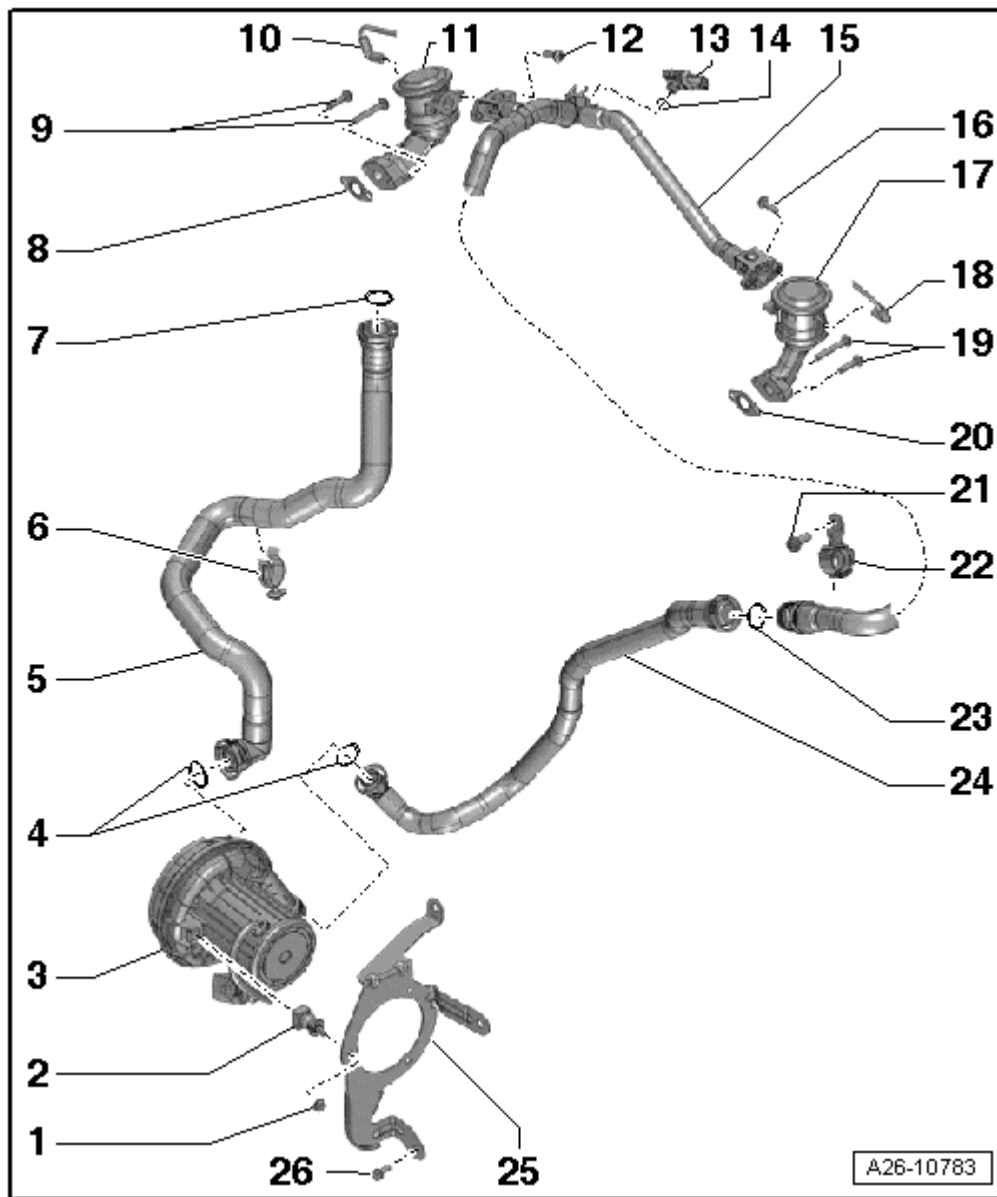


Fig. 11: Identifying Air System Version 2 Assembly Overview

Courtesy of AUDI OF AMERICA, LLC

1. Nut
 - 9 Nm
2. Bonded Rubber Bushing
3. Secondary Air Injection (AIR) Pump Motor -V101-
 - Removing and installing, refer to **Secondary Air Injection Pump Motor -V101-**
 - Attach the connector to the bracket
 - Checking in **Guided Functions** using the vehicle diagnostic tester
4. O-ring
 - Replace

5. Secondary Air Hose
6. Retaining Clip
7. O-ring
 - Replace
8. Gasket
 - Replace
9. Bolts
 - 9 Nm
10. Vacuum Hose
11. Right Secondary Air Injection (AIR) Combination Valve
 - Checking, refer to **SECONDARY AIR INJECTION COMBINATION VALVES, CHECKING FOR FUNCTION AND LEAKS**
 - Removing and installing, refer to **SECONDARY AIR INJECTION RIGHT COMBINATION VALVE**
12. Bolt
 - 9 Nm
13. Secondary Air Injection (AIR) Sensor 1 -G609-
 - Removing and installing, refer to **Secondary Air Injection Sensor 1 -G609-**
14. O-ring
 - Replace
15. Secondary Air Hose
16. Bolt
 - 9 Nm
17. Left Secondary Air Injection (AIR) Combination Valve
 - Checking, refer to **SECONDARY AIR INJECTION COMBINATION VALVES, CHECKING FOR FUNCTION AND LEAKS**
 - Removing and installing, refer to **SECONDARY AIR INJECTION LEFT COMBINATION VALVE**
18. Vacuum Hose
19. Bolts
 - 9 Nm
20. Gasket
 - Replace
21. Bolt
 - 9 Nm
22. Bracket
 - For the AIR hose
23. O-ring

- Replace
- 24. Secondary Air Hose
- 25. Bracket
 - For AIR pump motor
- 26. Bolt
 - 9 Nm

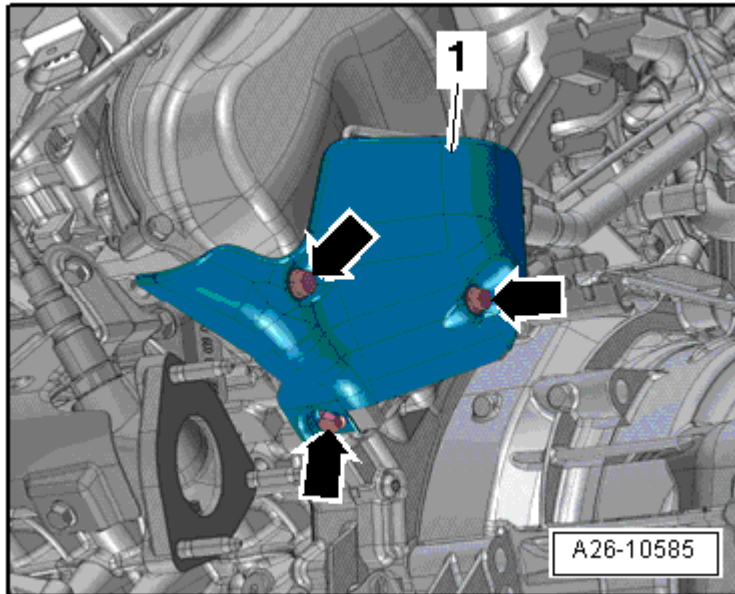


Fig. 12: Identifying Left Secondary Air Combination Valve Heat Shield - Tightening Specification
 Courtesy of AUDI OF AMERICA, LLC

-- Tighten the heat shield bolts -arrows- -1- to 9 Nm.

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Component	Fastener Size	Nm
Bracket for Secondary Air Injection (AIR) Pump Motor, Nut and Bolt	-	9
Bracket for the Secondary Air Injection Hose	-	9
Catalytic Converter, Nut ^{1, 4}	-	23
Center Muffler, Nut ¹	-	23
Front Clamping Sleeve, Nut	-	23
Heat Shield	-	10
Left Secondary Air Injection (AIR) Combination Valve	-	9
Rear Clamping Sleeve, Nut	-	23

2012 Audi S4

ENGINE 3.0 Liter - Exhaust System, Emission Controls - Engine Code(s): CCBA (Sedan)

Right Secondary Air Injection (AIR) Combination Valve	-	9
Secondary Air Hose	-	9
Suspended Mount ²	-	23
Suspended Mount ^{1, 3}	-	20
¹ Always replace ² For bolt tightening clarification, refer to MUFFLER OVERVIEW and see items -2 and 22- ³ For bolt tightening clarification, refer to MUFFLER OVERVIEW and see items -16- ⁴ Coat the thread with hot bolt paste		

Left Exhaust Manifold, Tightening Specifications and Sequence

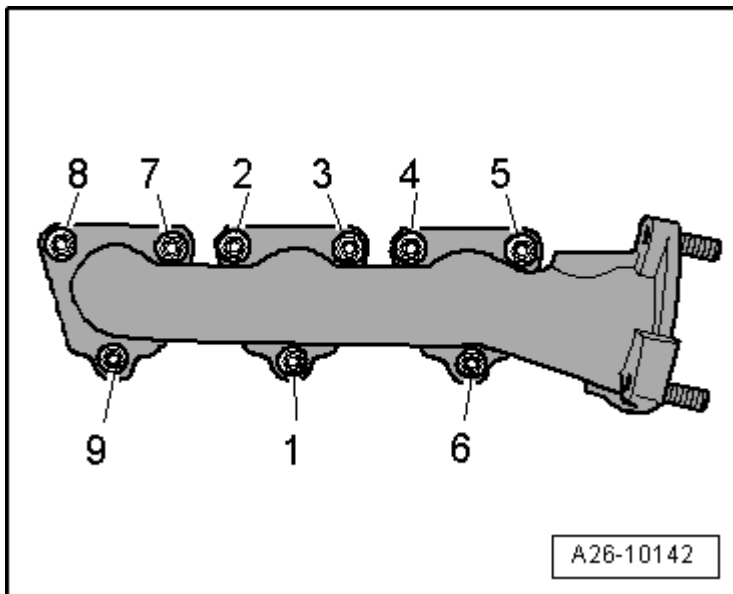


Fig. 13: Identifying Exhaust Manifold Tightening Sequence
Courtesy of AUDI OF AMERICA, LLC

NOTE:

- Replace the nuts.
- Coat the thread on the nut with hot bolt paste.

-- Tighten the nuts in 3 steps according to the tightening sequence:

Stage	Nuts	Tightening Specifications
1.	-1 through 9-	Install all the way in by hand.
2.	-1 through 9-	15 Nm
3.	-1 through 9-	25 Nm

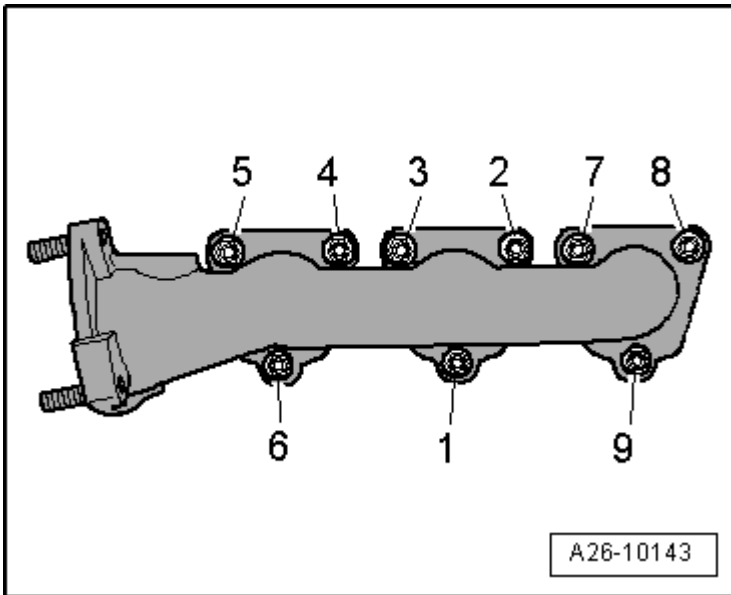
Right Exhaust Manifold, Tightening Specifications and Sequence

Fig. 14: Identifying Exhaust Manifold Tightening Sequence
 Courtesy of AUDI OF AMERICA, LLC

NOTE:

- Replace the nuts.
- Coat the thread on the nut with hot bolt paste.

-- Tighten the nuts in 3 steps according to the tightening sequence:

Stage	Nuts	Tightening Specifications
1.	-1 through 9-	Install all the way in by hand.
2.	-1 through 9-	15 Nm
3.	-1 through 9-	25 Nm

Secondary Air Combination Valve Heat Shield - Tightening Specification

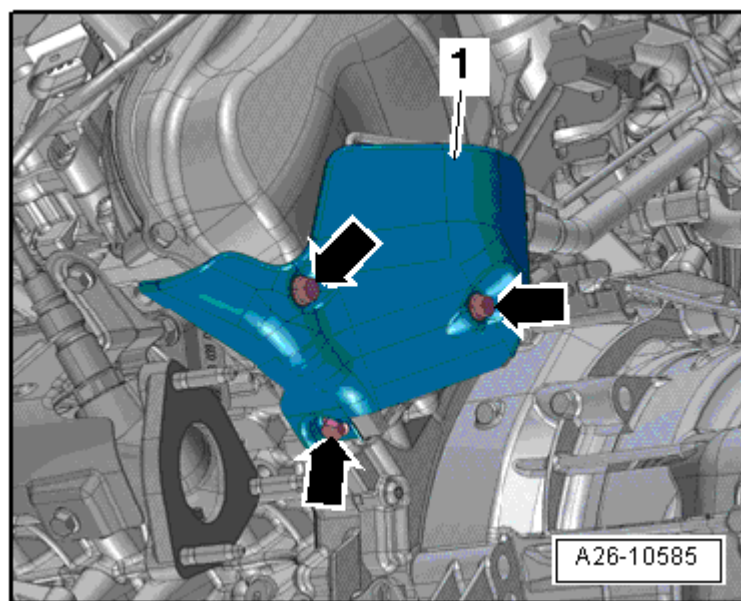


Fig. 15: Identifying Left Secondary Air Combination Valve Heat Shield - Tightening Specification
Courtesy of AUDI OF AMERICA, LLC

-- Tighten the heat shield bolts -arrows- -1- to 9 Nm.

Individual Catalytic Converter Mounting Components

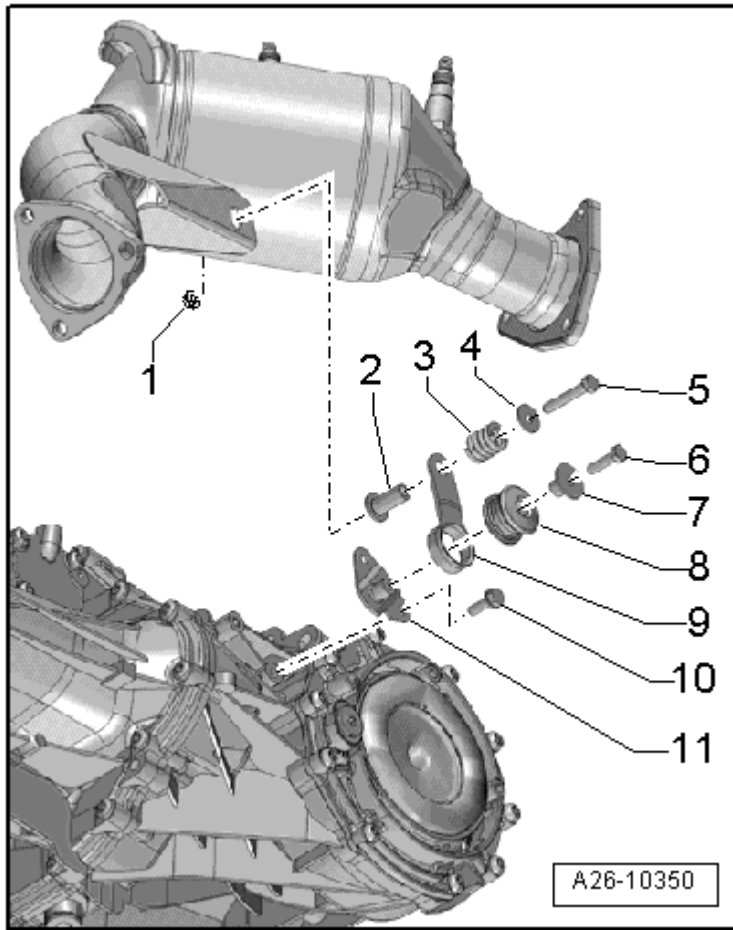


Fig. 16: Identifying Individual Catalytic Converter Mounting Components
 Courtesy of AUDI OF AMERICA, LLC

1. Nut - 23 Nm
2. Spacer sleeve
3. Pressure spring
4. Washer
5. Bolt
6. Bolt - 23 Nm
7. Spacer sleeve
8. Adjusting buffer
9. Tab
10. Bolt - 23 Nm
11. Bracket

DIAGNOSIS AND TESTING

EXHAUST SYSTEM, CHECKING FOR LEAKS

- Start the engine and let it run at idle.
- Seal the tail pipes with cloths or plugs during the leakage test.
- Check for leaks by listening at connection areas at cylinder head and exhaust manifold, exhaust manifold and front exhaust pipe, etc.
- Repair detected leaks.

SECONDARY AIR INJECTION COMBINATION VALVES, CHECKING FOR FUNCTION AND LEAKS**Special tools and workshop equipment required**

- Hand Vacuum Pump VAS 6213

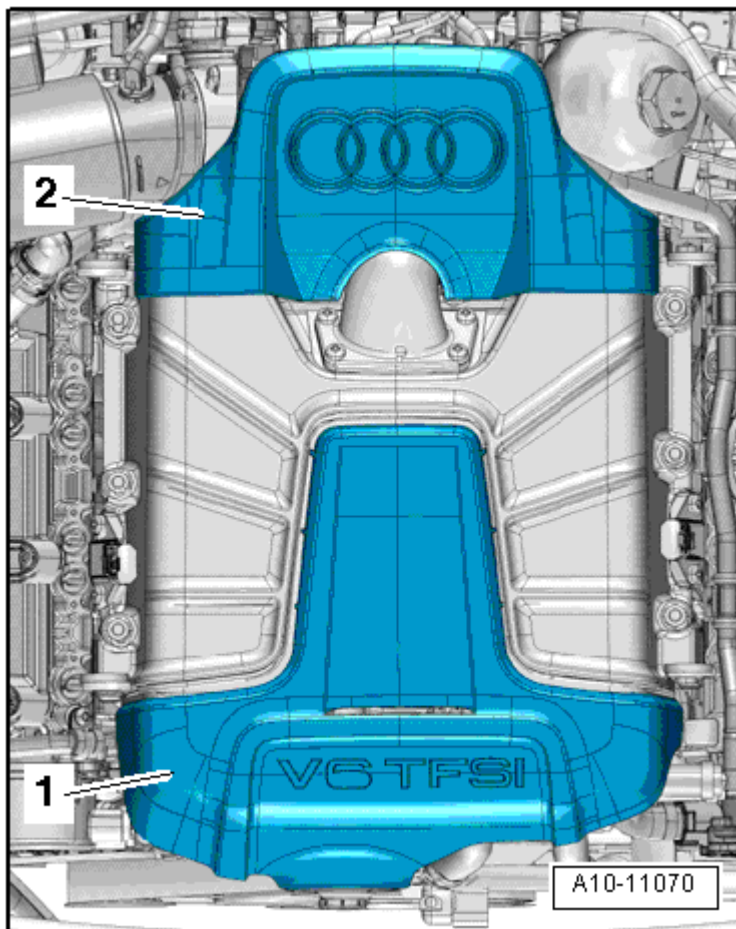
Procedure

Fig. 17: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

- Vacuum lines and hose connections free of leaks.

2012 Audi S4

ENGINE 3.0 Liter - Exhaust System, Emission Controls - Engine Code(s): CCBA (Sedan)

- Vacuum lines not plugged.

-- Remove the engine covers -1 and 2- upward.

-- Remove the vacuum hose -1- or -2- on the combination valve being checked.

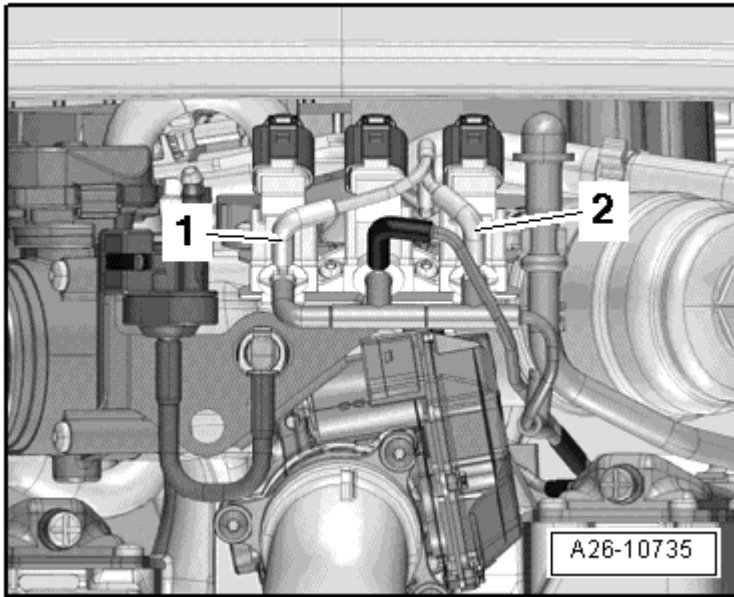


Fig. 18: Identifying Vacuum Hose -2-
Courtesy of AUDI OF AMERICA, LLC

-- Connect the VAS 6213 to the vacuum hose for the combination valve to be checked.

-- Remove the front secondary air hose -arrow- from its bracket and disconnect it; do to this press the release buttons.

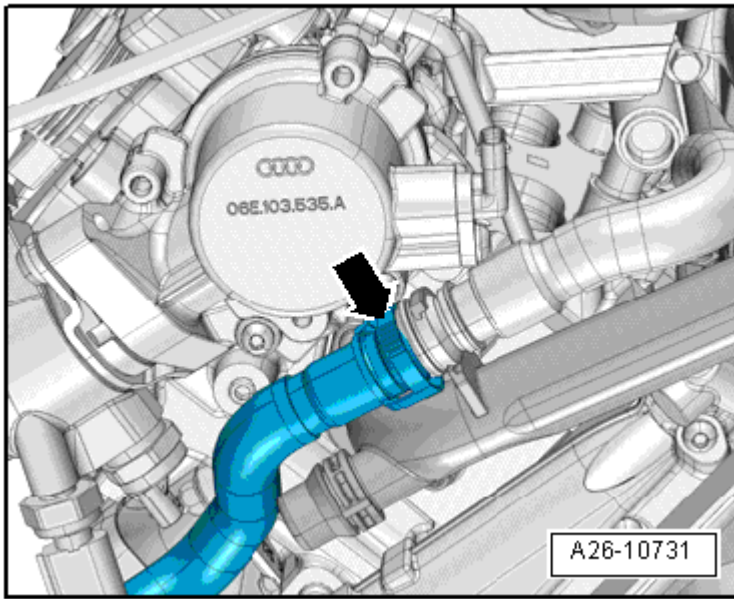


Fig. 19: Identifying Front Air Hose -Arrow-
Courtesy of AUDI OF AMERICA, LLC

-- Blow into the Secondary Air Injection (AIR) hose using light pressure (do not use pressurized air).

- The AIR combination valves must be closed. It must not be possible to blow through.

-- Operate hand vacuum pump.

- The relevant combination valve must open, it must not be possible to blow through

-- If the secondary air combination valve does not open, replace: Left, refer to **SECONDARY AIR INJECTION LEFT COMBINATION VALVE**, right, refer to **SECONDARY AIR INJECTION RIGHT COMBINATION VALVE**.

Assembling

Assemble in reverse order of disassembling. Note the following:

NOTE: **Replace the O-ring.**

REMOVAL AND INSTALLATION

CENTER MUFFLER AND REAR MUFFLER, SEPARATING

- A separating point has been provided in the connecting pipe for individual replacement of the center or rear muffler
- The separating point is marked by a depression around the circumference of the exhaust pipe.

Special tools and workshop equipment required

- Chain Pipe Cutter VAS 6254

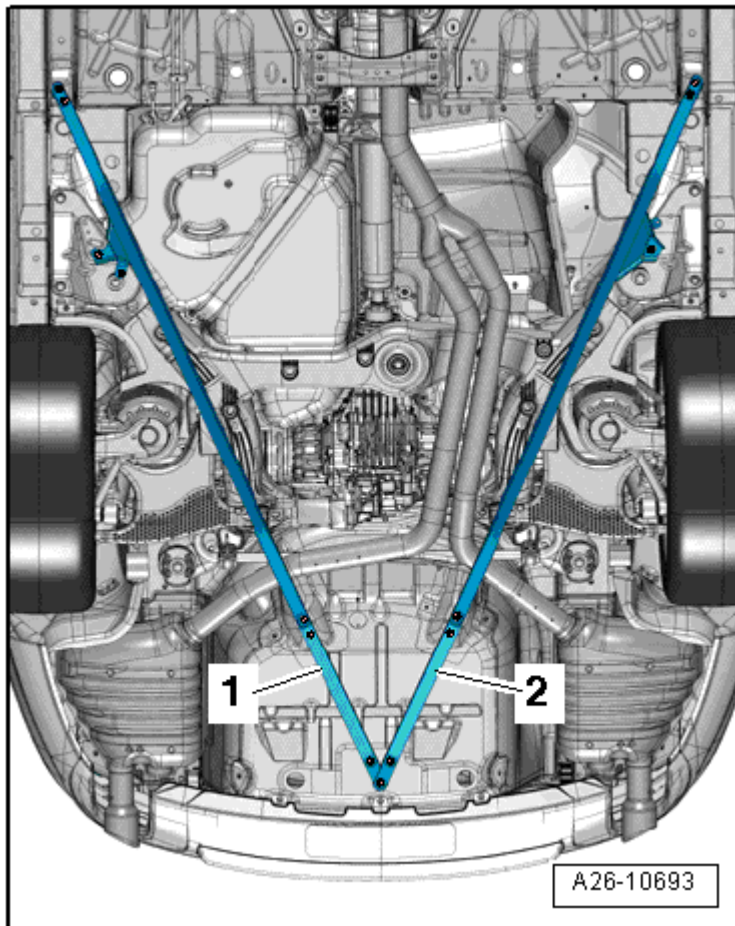
Procedure

Fig. 20: Identifying Diagonal Braces In A5 Cabriolet
Courtesy of AUDI OF AMERICA, LLC

- Tightening specifications, refer to **MUFFLER OVERVIEW**.

Audi A5 Cabriolet

-- Remove diagonal braces. Refer to **Removal and Installation** .

All Vehicles

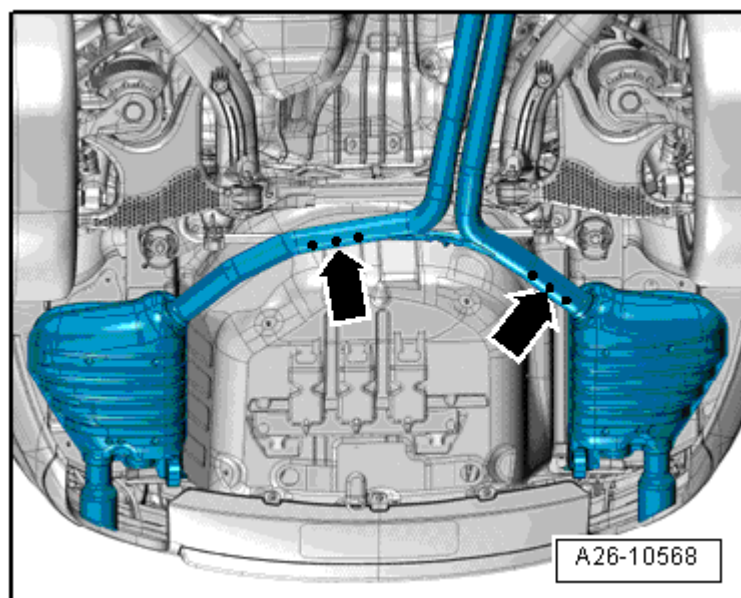


Fig. 21: Separating Exhaust Pipes At Right Angle At Separating Points
Courtesy of AUDI OF AMERICA, LLC

- Separate the exhaust pipes at a right angle at the separating points -arrows- using the VAS 6254.
- When installing, position the clamping sleeves -arrows- on the center of the separating point

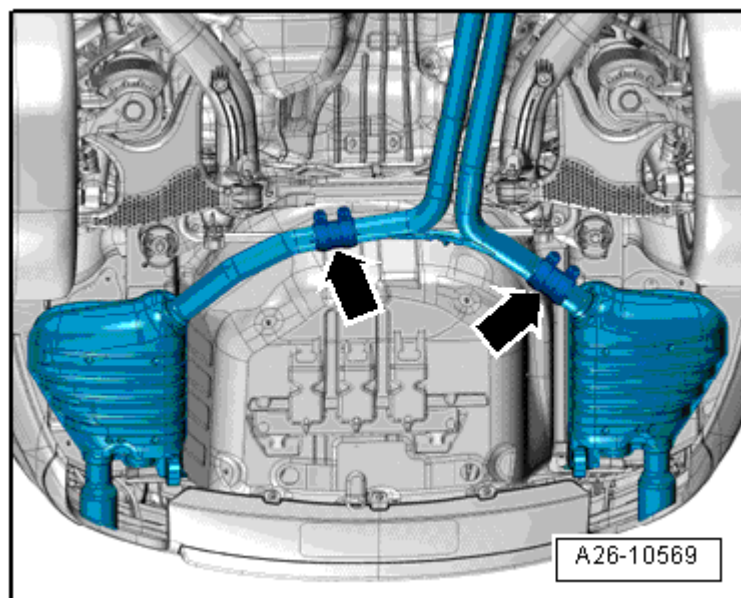


Fig. 22: Identifying Double Clamps And Bolt Ends
Courtesy of AUDI OF AMERICA, LLC

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

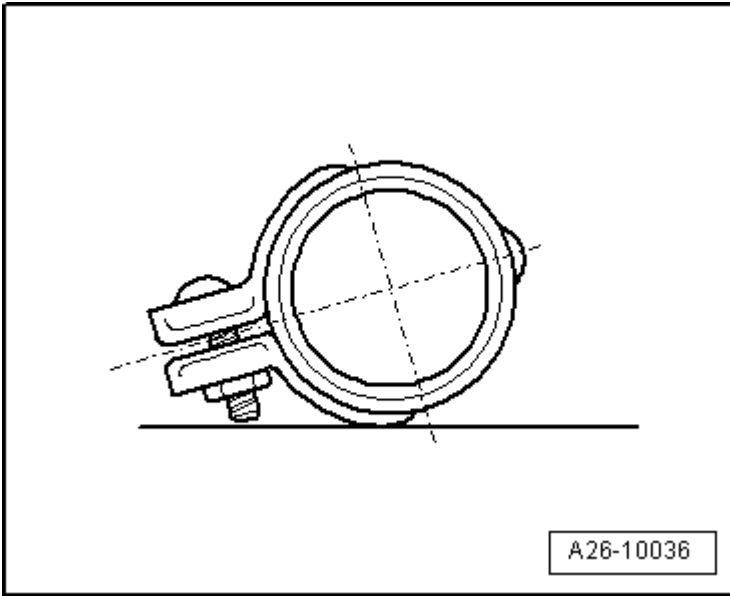


Fig. 23: Installed Position Of Rear Double Clamps
Courtesy of AUDI OF AMERICA, LLC

- Installed position: Threaded connections point forward.

-- Install exhaust system free of stress, refer to **EXHAUST SYSTEM, INSTALLING**.

-- Install diagonal braces. Refer to **Removal and Installation** .

EXHAUST SYSTEM, INSTALLING

Procedure

- Align exhaust system when cold.
- Tightening specification, refer to **MUFFLER OVERVIEW**.

Vehicles without Double Clamps Between Center and Rear Mufflers

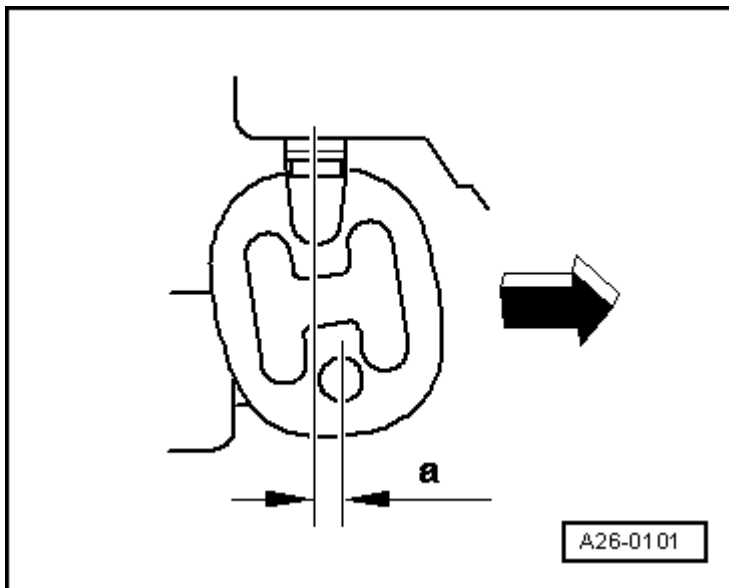


Fig. 24: Pressing Rear Muffler Toward Front
Courtesy of AUDI OF AMERICA, LLC

- Loosen the bolts on the front clamping sleeves.
- Push the exhaust system far enough forward -arrow- until the preload on the retaining loops in front of the center muffler is -a- = 6 to 10 mm.
- Tighten the clamping sleeve threaded connections evenly.
- Align the tail pipes. Refer to **ALIGN THE TAIL PIPES**.

Vehicles with Double Clamps Between Center and Rear Mufflers

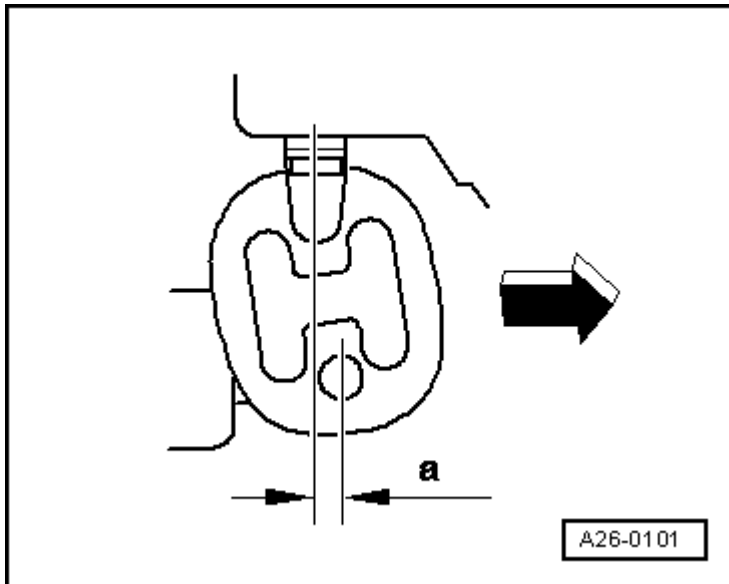
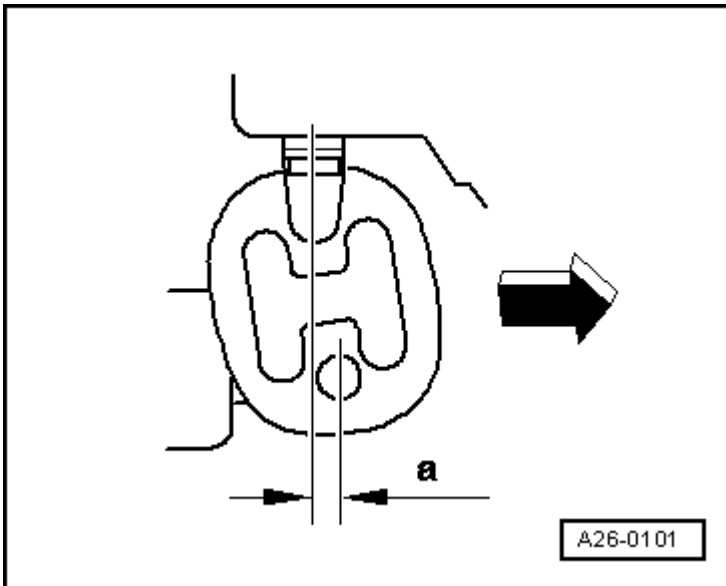


Fig. 25: Pressing Rear Muffler Toward Front

Courtesy of AUDI OF AMERICA, LLC

NOTE: The center muffler also needs to be aligned on vehicles with clamping sleeves between the center and rear mufflers.

- Loosen the bolts on the front and rear clamping sleeves.
- Push the exhaust system far enough forward -arrow- until the preload on the retaining loops in front of the center muffler is -a- = 6 to 10 mm.
- Tighten the front clamping sleeve threaded connections evenly.
- Push rear part of exhaust system far enough forward -arrow- so that the pretension at rear retaining loops of rear mufflers is -a- = 11 to 15 mm.

**Fig. 26: Pressing Rear Muffler Toward Front**

Courtesy of AUDI OF AMERICA, LLC

- Align rear muffler horizontally.
- Tighten the rear clamping sleeve threaded connections evenly.
- Align the tail pipes. Refer to **ALIGN THE TAIL PIPES**.

FRONT MUFFLER**Removing**

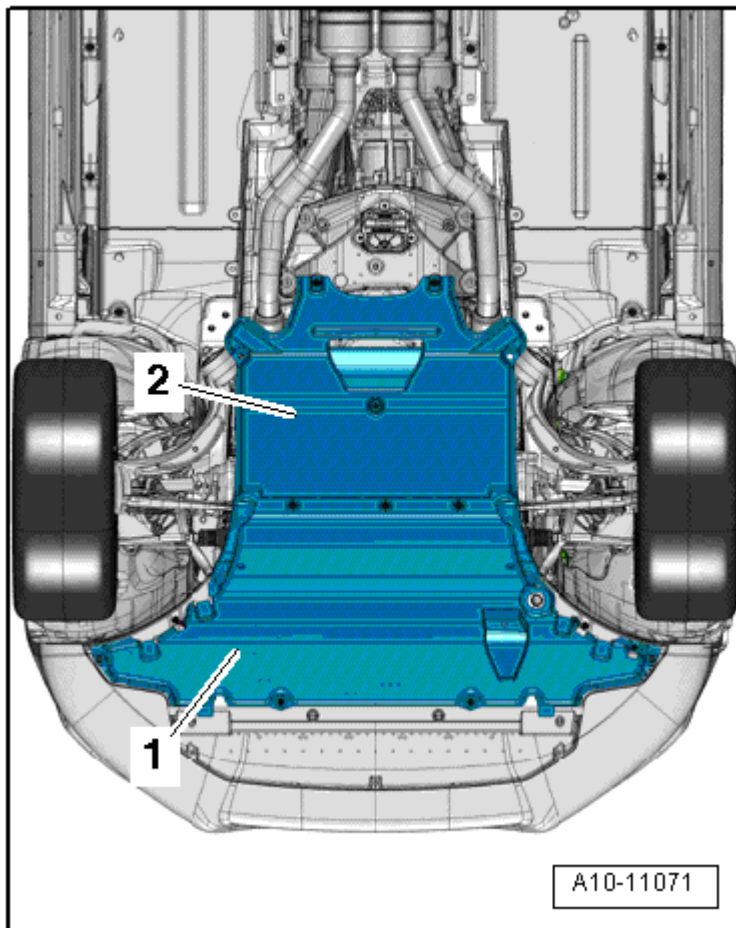


Fig. 27: Identifying Noise Insulation

Courtesy of AUDI OF AMERICA, LLC

- Remove the rear noise insulation -2-. Refer to **Description and Operation** .
- Remove the bolts -arrows- and the front crossmember, if applicable.

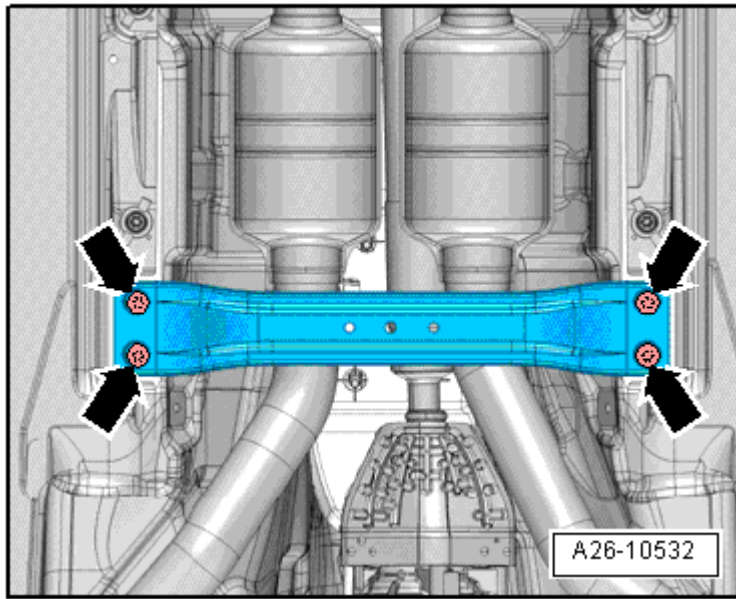


Fig. 28: Identifying Bolts And Front Crossmember
Courtesy of AUDI OF AMERICA, LLC

-- Remove the left front muffler nuts -arrows-.

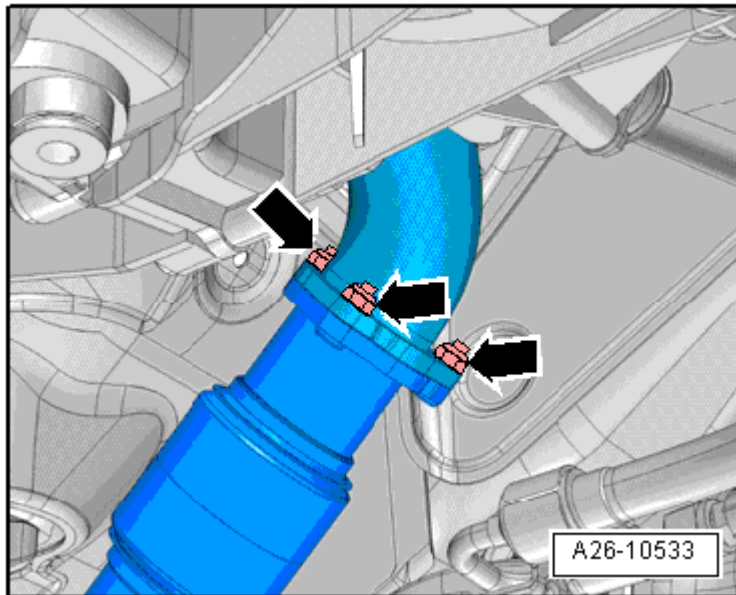


Fig. 29: Identifying Left Front Muffler Nuts
Courtesy of AUDI OF AMERICA, LLC

-- Remove the right front muffler nuts -arrows-.

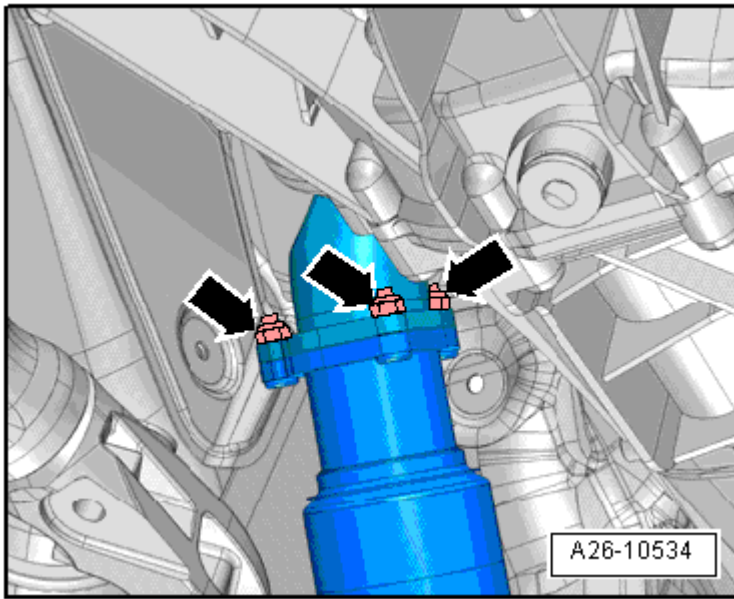


Fig. 30: Identifying Right Front Muffler Nuts
Courtesy of AUDI OF AMERICA, LLC

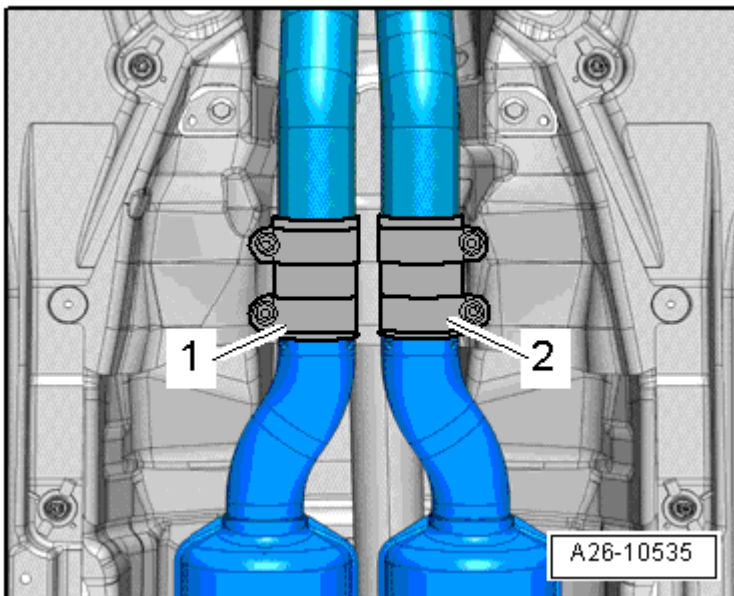


Fig. 31: Loosening Bolts Vehicles With Dual Exhaust System
Courtesy of AUDI OF AMERICA, LLC

CAUTION: The decoupling elements in the front muffler could be damaged.

- Do not bend decoupling element in front muffler more than 10°.

-- Loosen the clamping sleeve -1 or 2-, slide it back and remove the corresponding front muffler.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to MUFFLER OVERVIEW.

NOTE: Replace the seals and self-locking nuts.

-- Install exhaust system free of stress, refer to EXHAUST SYSTEM, INSTALLING.

-- Install the front crossmember and noise insulation. Refer to Description and Operation.

LEFT CATALYTIC CONVERTER

Removing

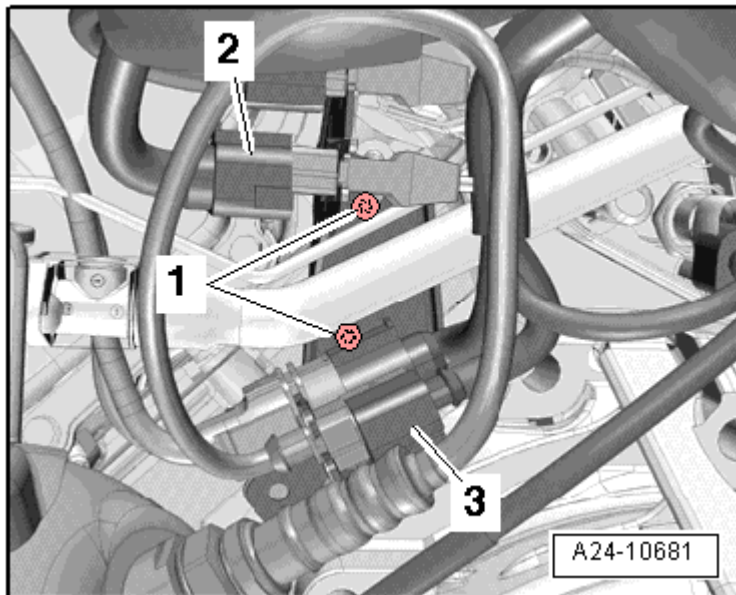


Fig. 32: Disconnecting Connector To Fuel Injectors (Left Cylinder Head)

Courtesy of AUDI OF AMERICA, LLC

- The transmission is removed. Refer to Removal and Installation or Removal and Installation.

NOTE: When installing, bring all cable ties back to same positions.

-- Remove the -3- Oxygen Sensor (O2S) 2 after catalytic converter -G131- connector from the bracket, disconnect it and free up the wire.

NOTE: Ignore -1 and 2-.

-- Remove the nuts -arrows- and the left catalytic converter.

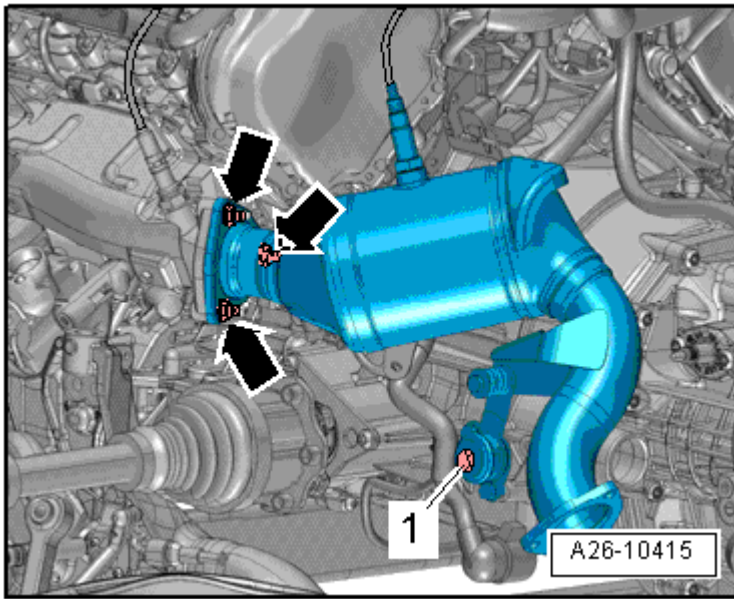


Fig. 33: Identifying Nuts, Bolt And Left Catalytic Converter From Exhaust
Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -1-.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to MUFFLER OVERVIEW.

NOTE: Replace the seals and self-locking nuts.

LEFT EXHAUST MANIFOLD

Removing

2012 Audi S4

ENGINE 3.0 Liter - Exhaust System, Emission Controls - Engine Code(s): CCBA (Sedan)

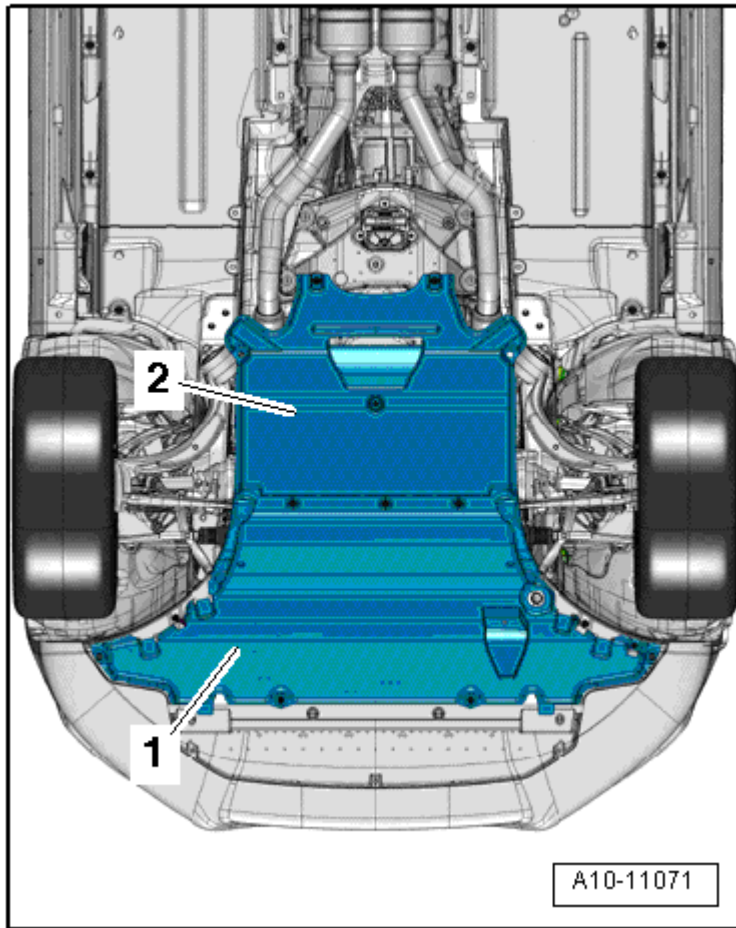


Fig. 34: Identifying Noise Insulation

Courtesy of AUDI OF AMERICA, LLC

NOTE: When installing, bring all cable ties back to same positions.

- Remove the plenum chamber bulkhead. Refer to Description and Operation .
- Remove the noise insulation -1 and 2-. Refer to Description and Operation .
- Remove the left front muffler. Refer to FRONT MUFFLER.
- Remove the -3- Oxygen Sensor (O2S) 2 after catalytic converter -G131- connector from the bracket, disconnect it and free up the wire.

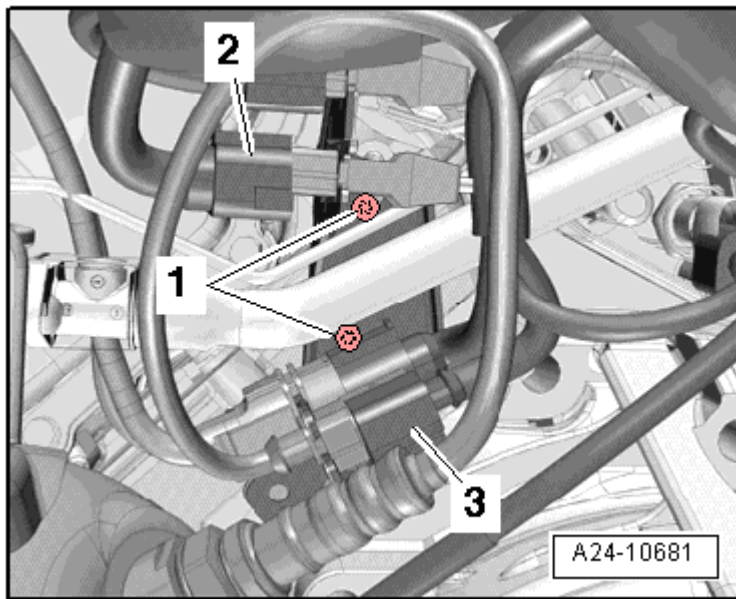


Fig. 35: Disconnecting Connector To Fuel Injectors (Left Cylinder Head)
Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -1 and 2-.

-- Remove the bolt -1- and nuts -arrows-. Then remove the left catalytic converter from the exhaust manifold.

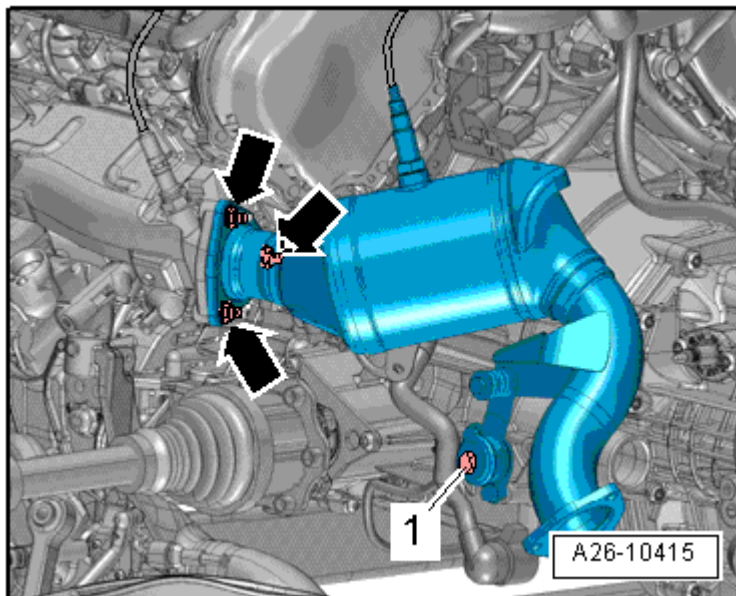


Fig. 36: Identifying Nuts, Bolt And Left Catalytic Converter From Exhaust
Courtesy of AUDI OF AMERICA, LLC

-- Remove the left engine mount. Refer to **LEFT ENGINE MOUNT** .

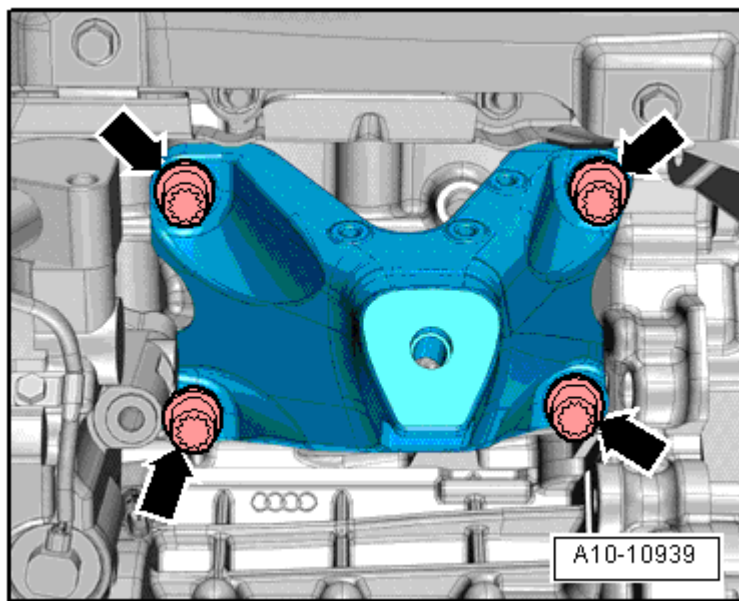


Fig. 37: Identifying Bolts

Courtesy of AUDI OF AMERICA, LLC

- Remove the bolts -arrows- and the left engine support.
- Remove the bolts -1 through 4- and remove the heat shield.

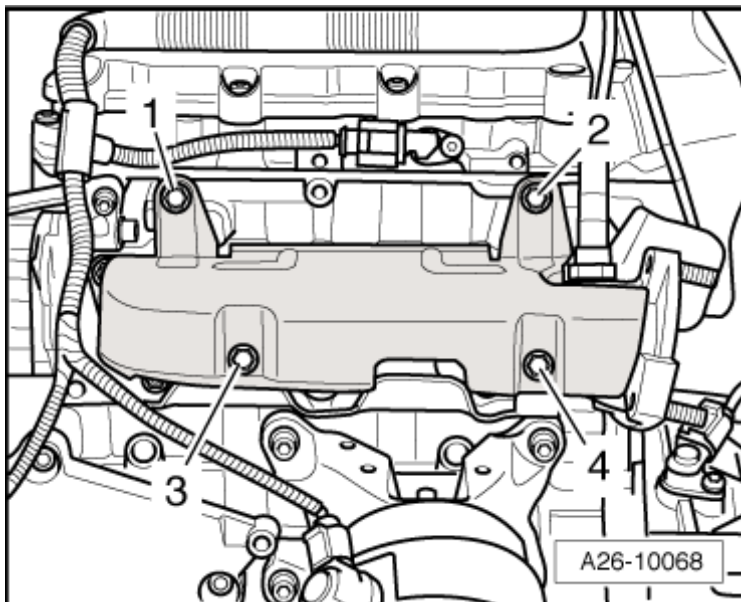


Fig. 38: Identifying Bolts And Heat Shield

Courtesy of AUDI OF AMERICA, LLC

- Remove the nuts -1 and 8- and the heat shield bracket.

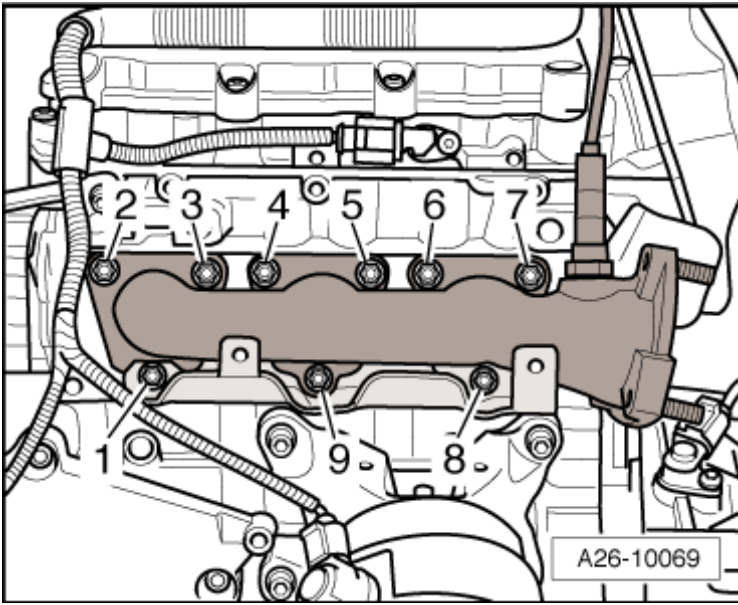


Fig. 39: Identifying Nuts, Bracket For Heat Shield & Exhaust Manifold
Courtesy of AUDI OF AMERICA, LLC

-- Remove nuts -2 through 7- and -9- and remove the exhaust manifold.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **Fig. 4**.

NOTE: **Replace the seal and self-locking nuts.**

-- Position the exhaust manifold with the catalytic converter seal and tighten the nuts. Refer to **Fig. 4**.

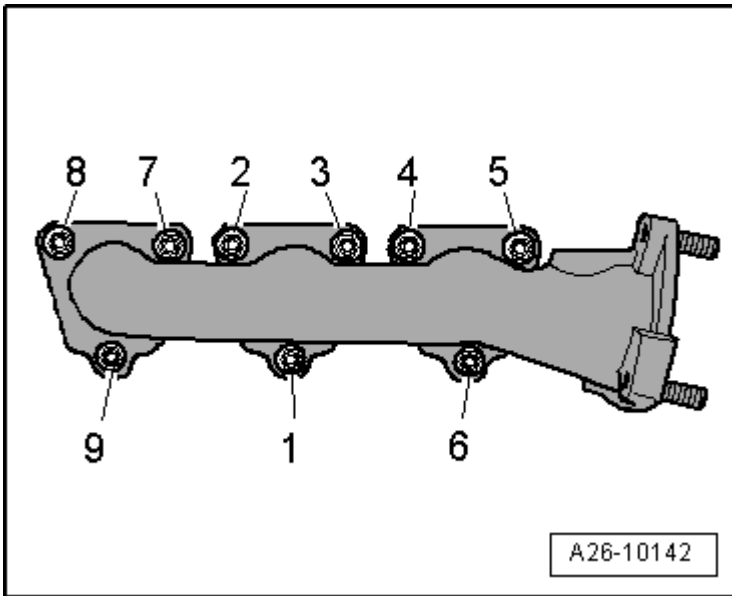


Fig. 40: Identifying Exhaust Manifold Tightening Sequence
Courtesy of AUDI OF AMERICA, LLC

- Install the engine supports with the left engine mount. Refer to **LEFT ENGINE MOUNT** .
- Install the left catalytic converter. Refer to **LEFT CATALYTIC CONVERTER**.
- Install the front muffler. Refer to **FRONT MUFFLER**.
- Install the noise insulation. Refer to **Description and Operation** .
- Install the plenum chamber bulkhead. Refer to **Description and Operation** .

RIGHT CATALYTIC CONVERTER

Removing

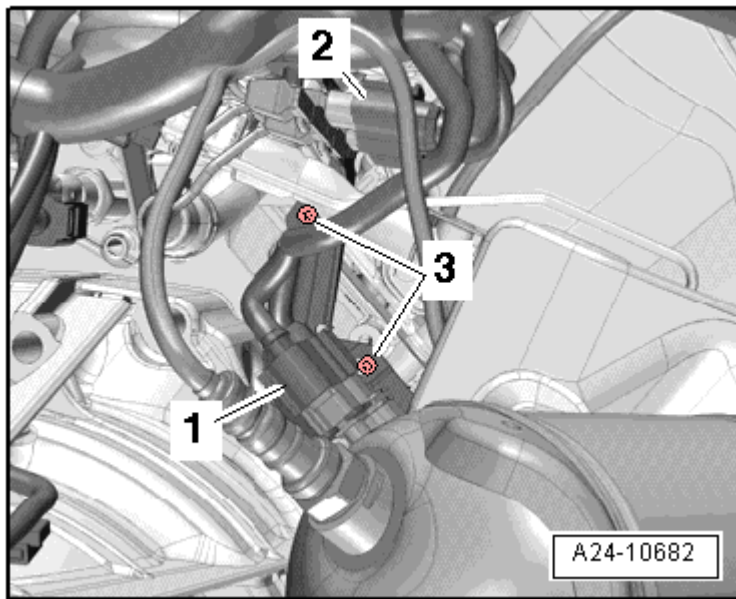


Fig. 41: Disconnecting Connector To Fuel Injectors (Right Cylinder Head)
Courtesy of AUDI OF AMERICA, LLC

- The transmission is removed. Refer to Removal and Installation or Removal and Installation.

NOTE: When installing, bring all cable ties back to same positions.

-- Remove the -1- Oxygen Sensor (O2S) after Three Way Catalytic Converter (TWC) -G130- connector from the bracket, disconnect it and free up the wire.

NOTE: Ignore -2 and 3-.

-- Remove the right catalytic converter.

NOTE: The right catalytic converter is already removed for removing the transmission.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to MUFFLER OVERVIEW.

NOTE: Replace the seals and self-locking nuts.

RIGHT EXHAUST MANIFOLD

Removing

2012 Audi S4

ENGINE 3.0 Liter - Exhaust System, Emission Controls - Engine Code(s): CCBA (Sedan)

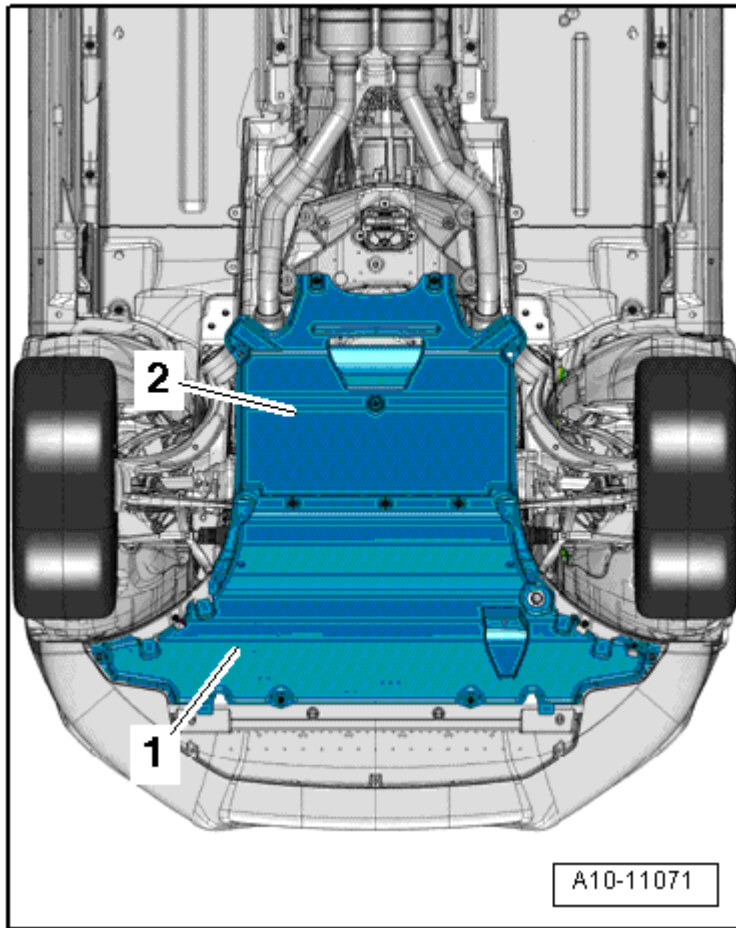


Fig. 42: Identifying Noise Insulation

Courtesy of AUDI OF AMERICA, LLC

NOTE: When installing, bring all cable ties back to same positions.

-- Remove the noise insulation -1 and 2-. Refer to **Description and Operation** .

-- Free up the fuel hose -1- and the EVAP canister hose -2- on the air duct pipe.

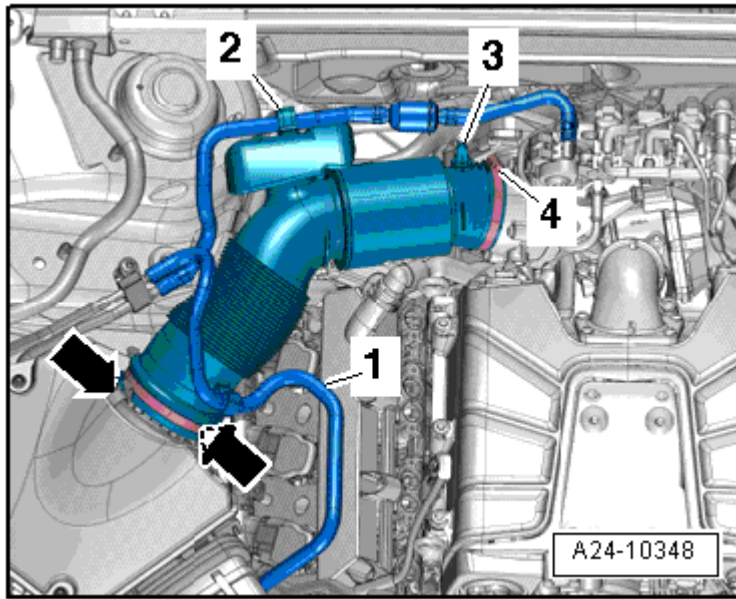


Fig. 43: Identifying Air Guide Pipe

Courtesy of AUDI OF AMERICA, LLC

- Remove the vacuum hose -3- from the air guide pipe connection.
- Remove the air guide pipe by loosening the hose clamp -4- and opening the clips -arrows-.
- Remove the plenum chamber bulkhead. Refer to **Description and Operation** .
- Remove the -1- Oxygen Sensor (O2S) after Three Way Catalytic Converter (TWC) -G130- connector from the bracket, disconnect it and free up the wire.

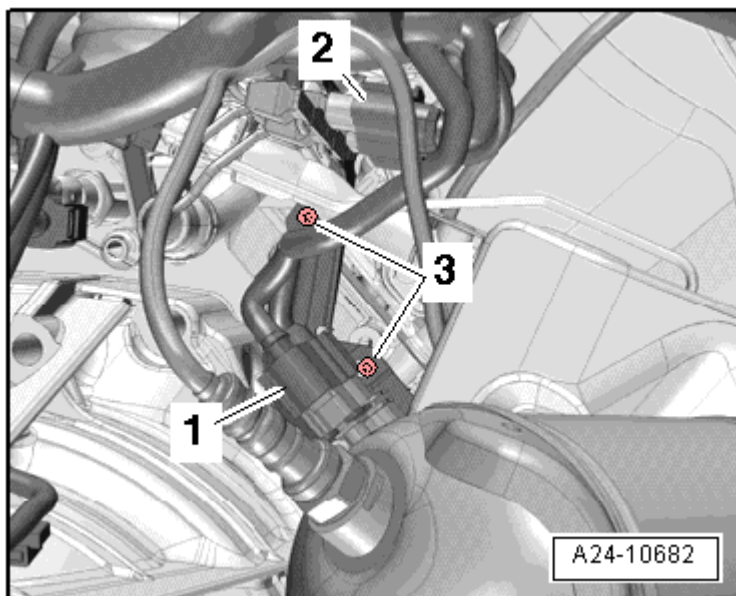


Fig. 44: Disconnecting Connector To Fuel Injectors (Right Cylinder Head)

Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2 and 3-.

- Remove the right front muffler. Refer to **FRONT MUFFLER**.
- Remove the bolt -1- and nuts -arrows- and then push the catalytic converter to the right.

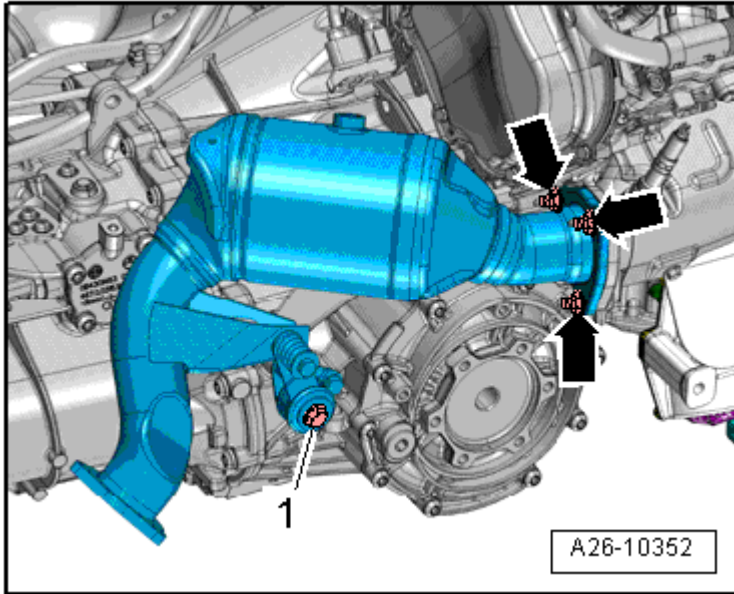


Fig. 45: Identifying Nuts, Bolts And Right Catalytic Converter At Exhaust
Courtesy of AUDI OF AMERICA, LLC

NOTE: The installation location is shown with the engine removed.

- Remove the right front wheel. Refer to **Removal and Installation** .
- Remove the right front wheel housing liner. Refer to **Removal and Installation** .
- Remove the nut -1- and the bolt -2- and press the coolant pipe to the side.
- Remove the bolts -1 through 4- and remove the heat shield.

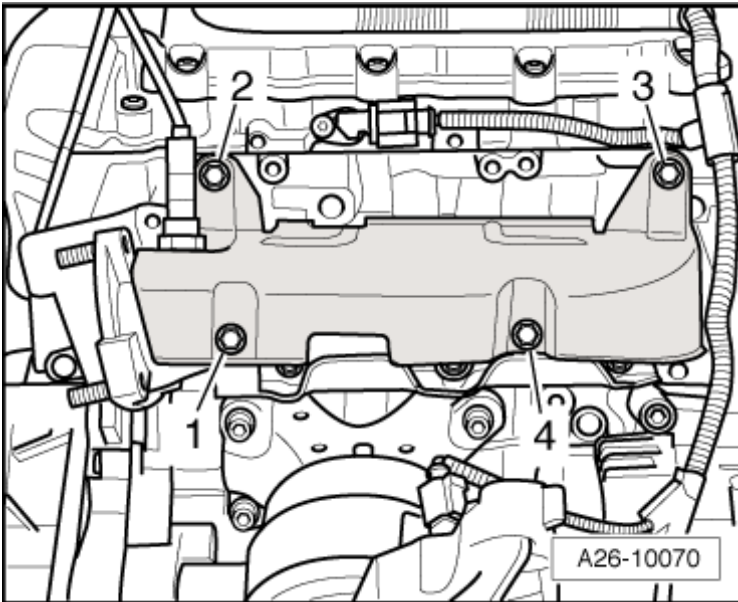


Fig. 46: Identifying Bolts And Heat Shield
Courtesy of AUDI OF AMERICA, LLC

-- Remove the nuts -7 and 9- and the heat shield bracket.

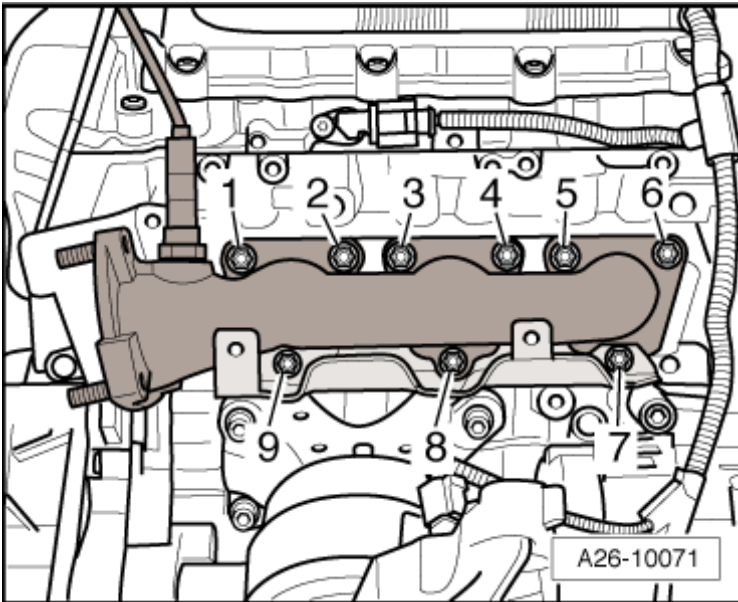


Fig. 47: Identifying Nuts, Bracket For Heat Shield & Exhaust Manifold
Courtesy of AUDI OF AMERICA, LLC

-- Remove nuts -1 through 6- and -8- and the exhaust manifold.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **Fig. 5**.

NOTE:

- Replace the seals and self-locking nuts.
- The hose connections as well as the air guide pipes and hoses must be free of oil and grease before installing.
- Secure all hose connections with hose clamps of the same type as those equipped by the factory.
- To mount the air guide hoses on their connectors securely, spray the bolts on the used clamps with rust remover before installing.

-- Position the exhaust manifold with the catalytic converter seal and tighten the nuts. Refer to **Fig. 5**.

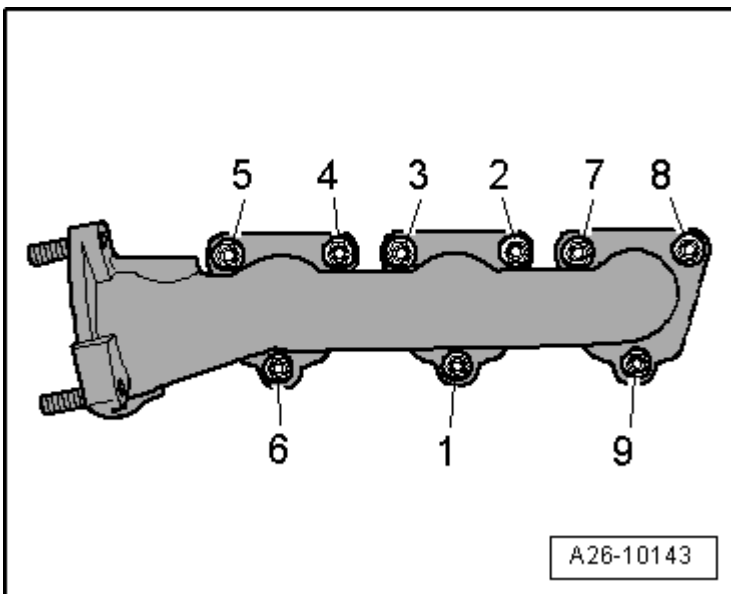


Fig. 48: Identifying Exhaust Manifold Tightening Sequence
Courtesy of AUDI OF AMERICA, LLC

- Install the front wheel housing liner. Refer to **Removal and Installation** .
- Install the front wheel. Refer to **Wheels, Tires and Vehicle Alignment** .
- Install the right catalytic converter. Refer to **RIGHT CATALYTIC CONVERTER**
- Install the front muffler. Refer to **FRONT MUFFLER**.
- Install the plenum chamber bulkhead. Refer to **Description and Operation** .
- Install the noise insulation. Refer to **Description and Operation** .

SECONDARY AIR INJECTION LEFT COMBINATION VALVE

Removing

NOTE: When installing, bring all cable ties back to same positions.

- Remove the left front muffler. Refer to **FRONT MUFFLER**.
- Remove the plenum chamber bulkhead. Refer to **Description and Operation**.
- Remove the -3- Oxygen Sensor (O2S) 2 after catalytic converter -G131- connector from the bracket, disconnect it and free up the wire.

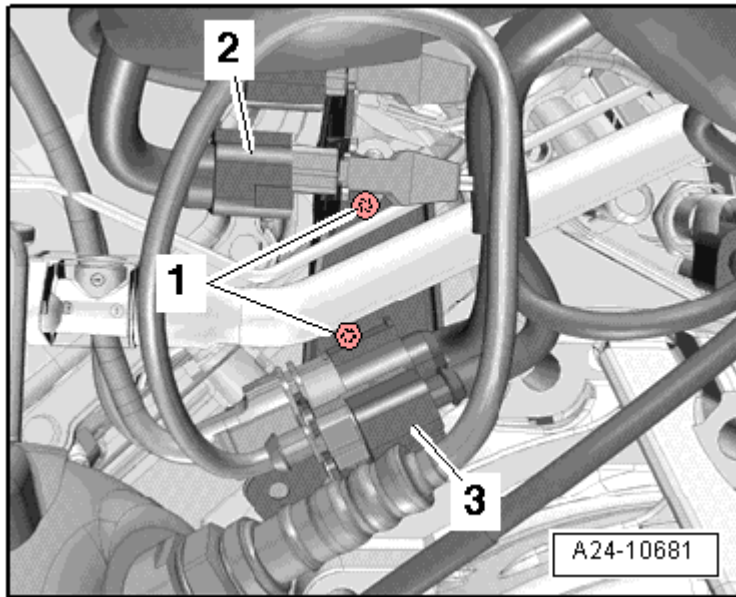


Fig. 49: Disconnecting Connector To Fuel Injectors (Left Cylinder Head)

Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -1 and 2-.

- Remove the bolt -1- and nuts -arrows-. Then remove the left catalytic converter from the exhaust manifold.

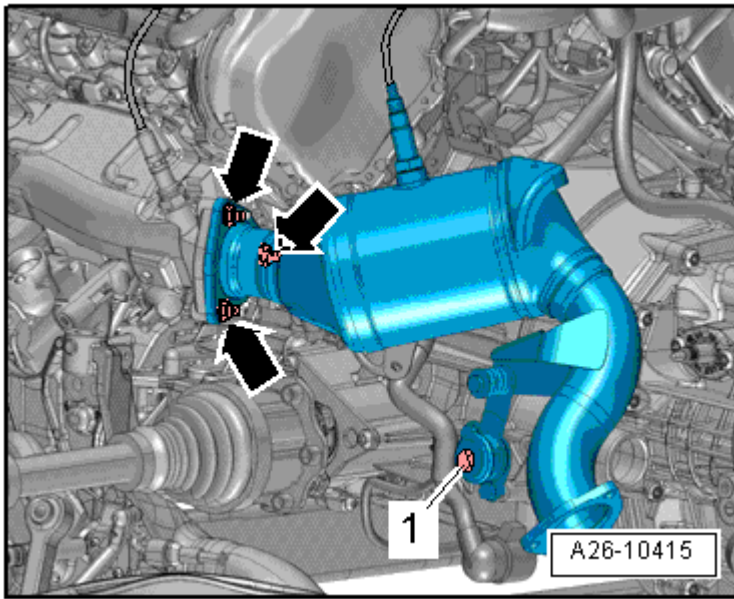


Fig. 50: Identifying Nuts, Bolt And Left Catalytic Converter From Exhaust
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows- and the heat shield -1-.

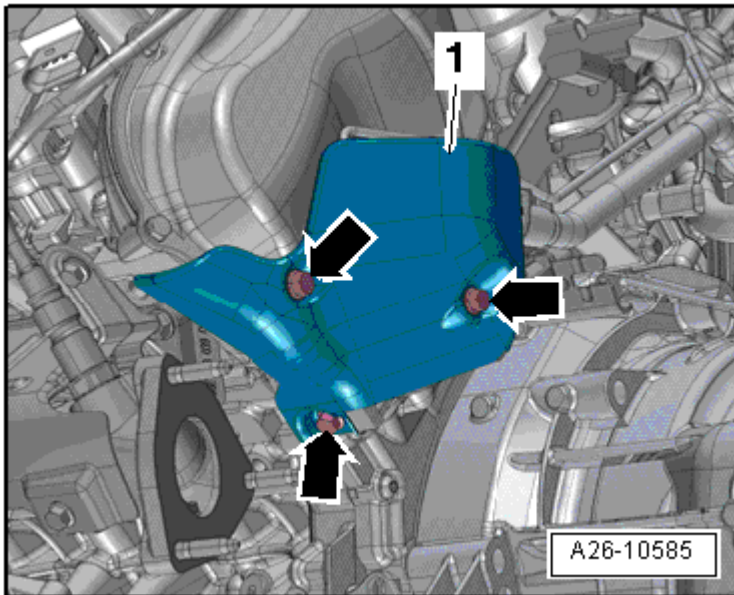


Fig. 51: Identifying Left Secondary Air Combination Valve Heat Shield - Tightening Specification
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -3- for the secondary air hose.

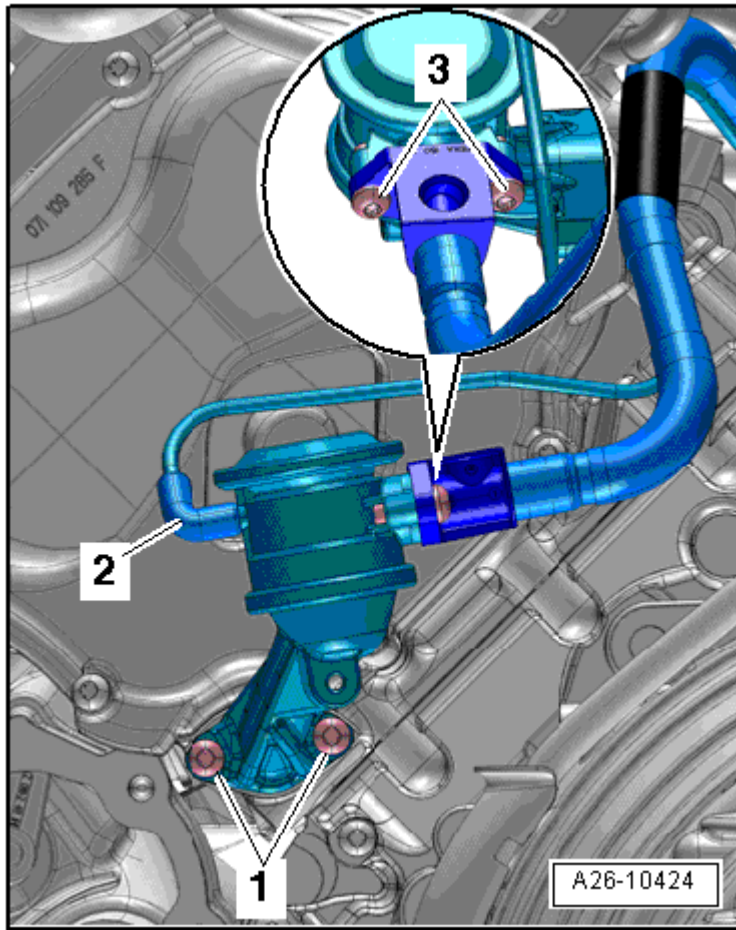


Fig. 52: Identifying Vacuum Line -2- To Secondary Air Injection (Air) Combination Valve
Courtesy of AUDI OF AMERICA, LLC

- Remove the vacuum line -2- from the Secondary Air Injection (AIR) combination valve.
- Remove the bolts -1- and remove (AIR combination valve).

Installing

Install in reverse order of removal. Note the following:

Tightening specifications:

- **SECONDARY AIR INJECTION SYSTEM OVERVIEW**
- **Fig. 12**

NOTE: **Replace the gasket.**

- Install the left catalytic converter. Refer to **LEFT CATALYTIC CONVERTER**.

-- Install the plenum chamber bulkhead. Refer to Description and Operation .

-- Install the front muffler. Refer to FRONT MUFFLER.

SECONDARY AIR INJECTION PUMP MOTOR -V101-

Removing

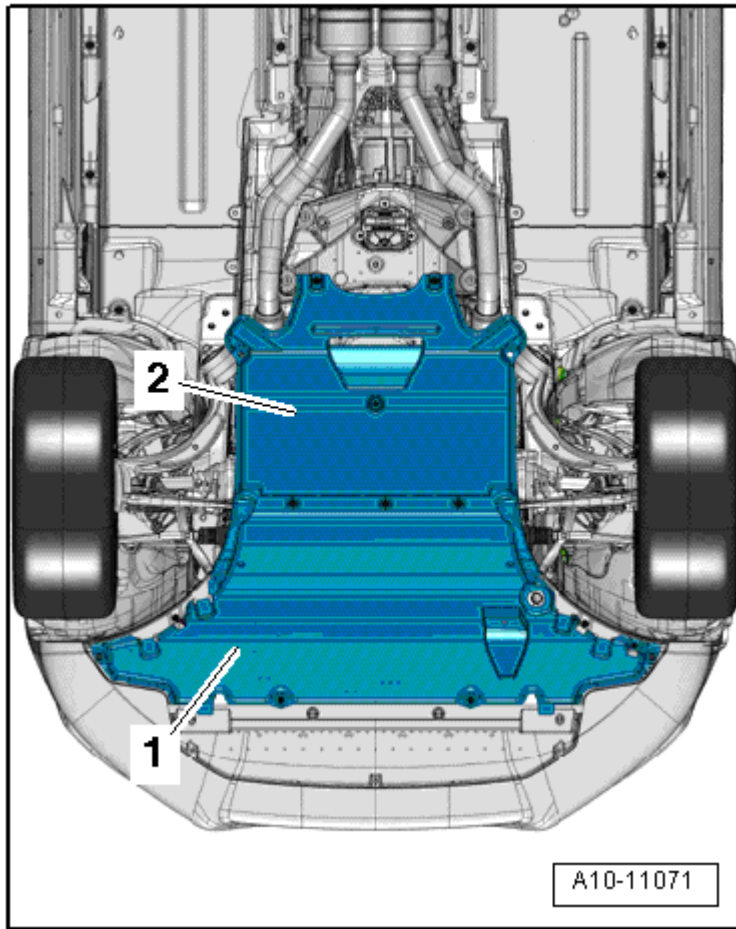


Fig. 53: Identifying Noise Insulation

Courtesy of AUDI OF AMERICA, LLC

NOTE: When installing, bring all cable ties back to same positions.

-- Remove the front noise insulation -1-. Refer to Description and Operation .

Vehicles with Secondary Air Injection (AIR) Pump Motor -V101-, Version 1

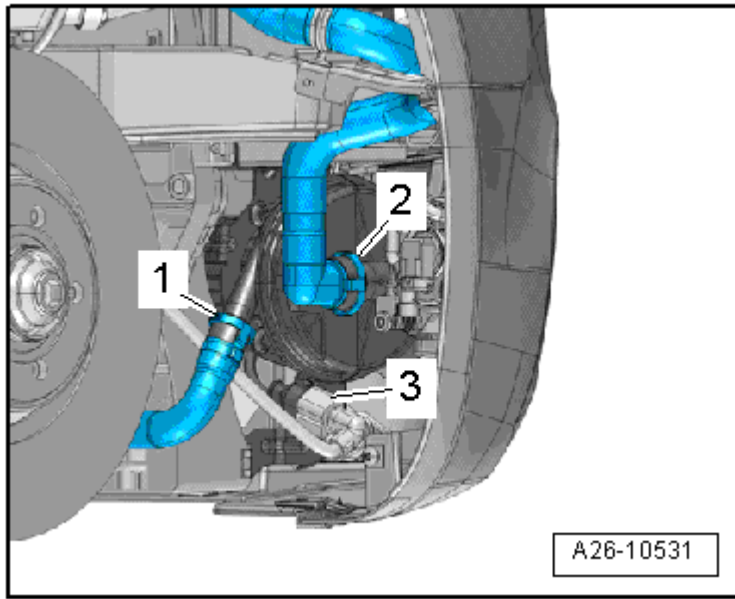


Fig. 54: Component Location of Secondary Air Injection (AIR) Pump Motor -V101-
Courtesy of AUDI OF AMERICA, LLC

- Disconnect the connector -3- on the AIR pump motor.
- Press the release buttons and remove the secondary air hoses -1 and 2-.

NOTE: The installation location is shown with the wheel housing lining removed.

Vehicles with Secondary Air Injection (AIR) Pump Motor -V101-, Version 2

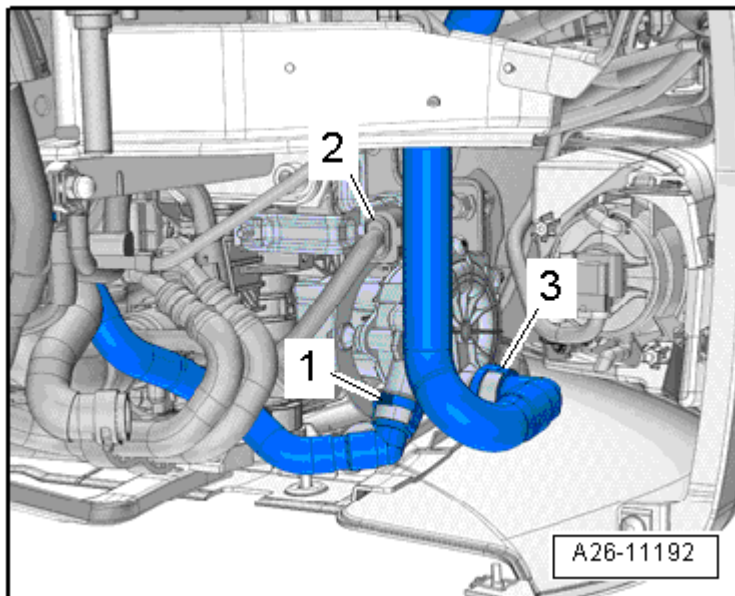


Fig. 55: Identifying Secondary Air Injection (AIR) Pump Motor Components

Courtesy of AUDI OF AMERICA, LLC

- Disconnect the connector -2- on the AIR pump motor.
- Press the release buttons and remove the secondary air hoses -1- and -3-.

All Vehicles

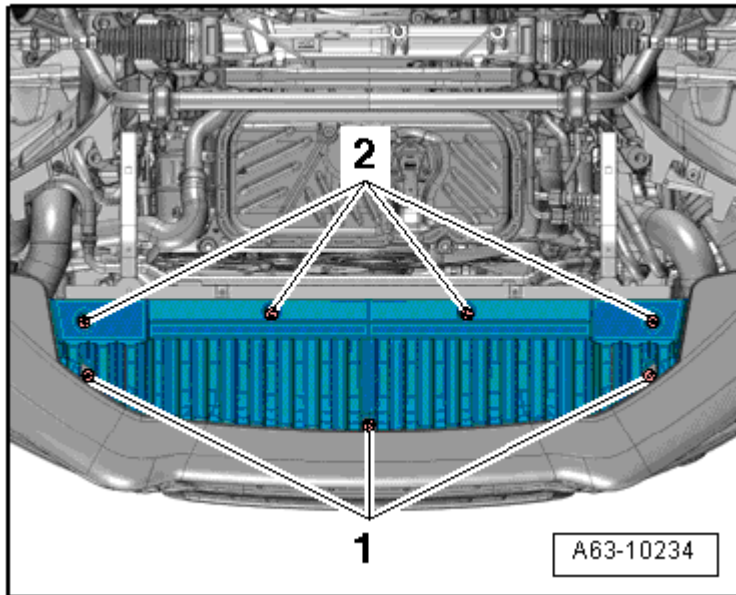


Fig. 56: Identifying Bolts And Bumper Cover End Panel
Courtesy of AUDI OF AMERICA, LLC

- Remove the bumper cover end plate. Refer to "Front Bumper" in **Removal and Installation** .
- Remove the left and right air intake grille -1-. Refer to "Front Bumper" in **Removal and Installation** .

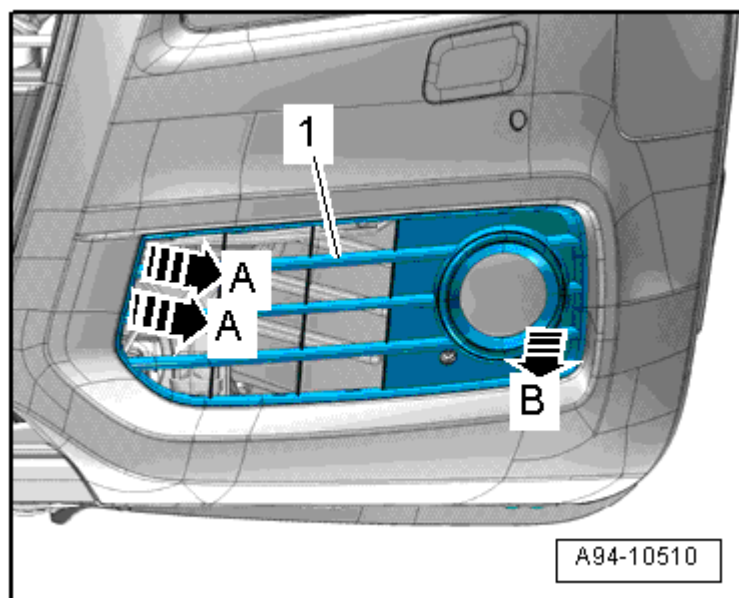


Fig. 57: Releasing Clamps And Air Intake Grille
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows- and remove the secondary air pump.

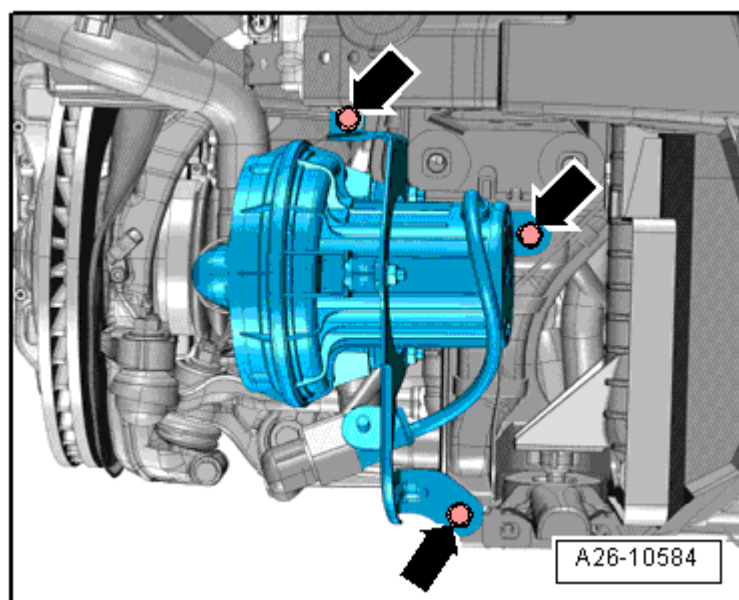


Fig. 58: Identifying Bolts And Secondary Air Pump
Courtesy of AUDI OF AMERICA, LLC

NOTE: The installation location is shown with the bumper cover removed.

Installing

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **SECONDARY AIR INJECTION SYSTEM OVERVIEW**.

NOTE: **Replace the O-rings.**

-- Install the bumper cover end plate. Refer to "Front Bumper" in **Removal and Installation** .

-- Install the noise insulation. Refer to **Description and Operation** .

SECONDARY AIR INJECTION RIGHT COMBINATION VALVE

Removing

NOTE: **When installing, bring all cable ties back to same positions.**

-- Remove the right front muffler. Refer to **FRONT MUFFLER**.

-- Remove the plenum chamber bulkhead. Refer to **Description and Operation** .

-- Remove the -1- Oxygen Sensor (O2S) after Three Way Catalytic Converter (TWC) -G130- connector from the bracket, disconnect it and free up the wire.

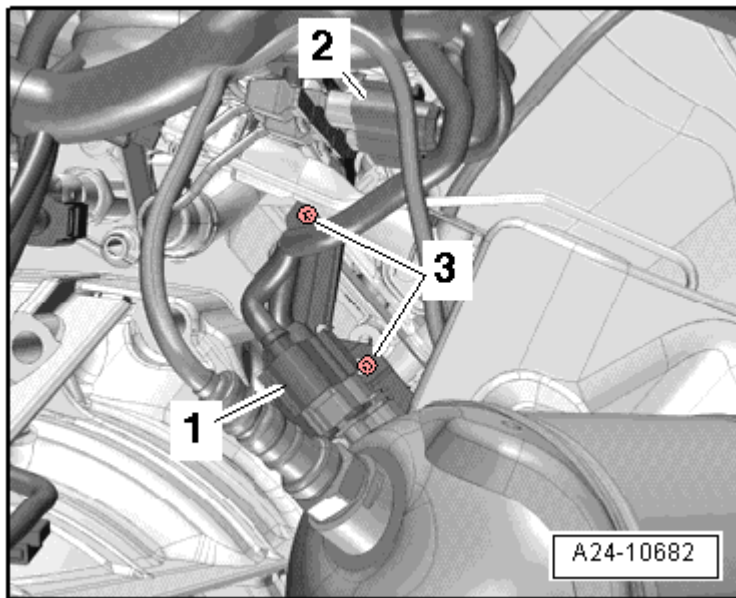


Fig. 59: Disconnecting Connector To Fuel Injectors (Right Cylinder Head)

Courtesy of AUDI OF AMERICA, LLC

NOTE: **Ignore -2 and 3-.**

-- Remove the bolt -1- and nuts -arrows-. Then remove the right catalytic converter from the exhaust manifold.

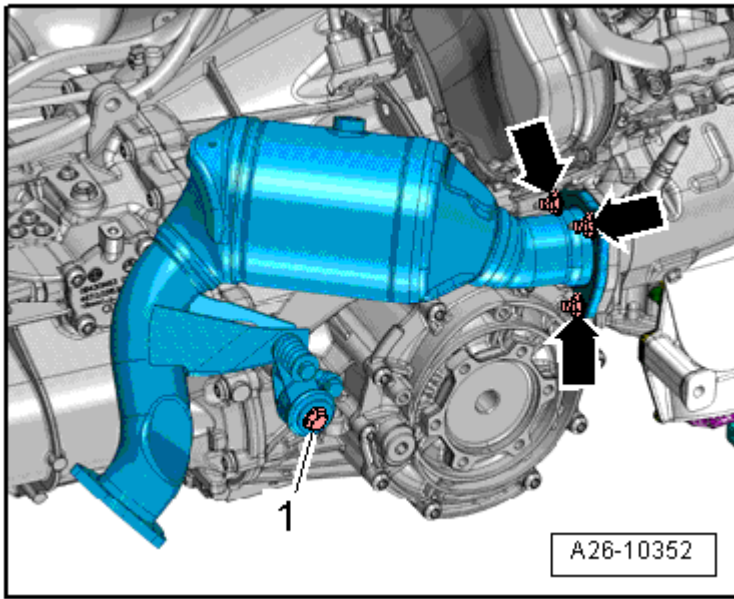


Fig. 60: Identifying Nuts, Bolts And Right Catalytic Converter At Exhaust
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows- and the heat shield -1-.

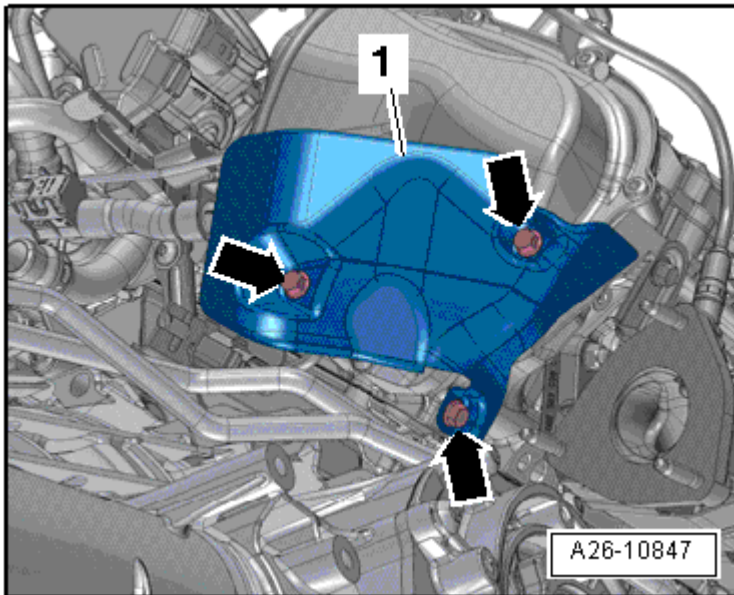


Fig. 61: Identifying Right Secondary Air Combination Valve Heat Shield - Tightening Specification
Courtesy of AUDI OF AMERICA, LLC

-- Remove the vacuum line -2- from the Secondary Air Injection (AIR) combination valve.

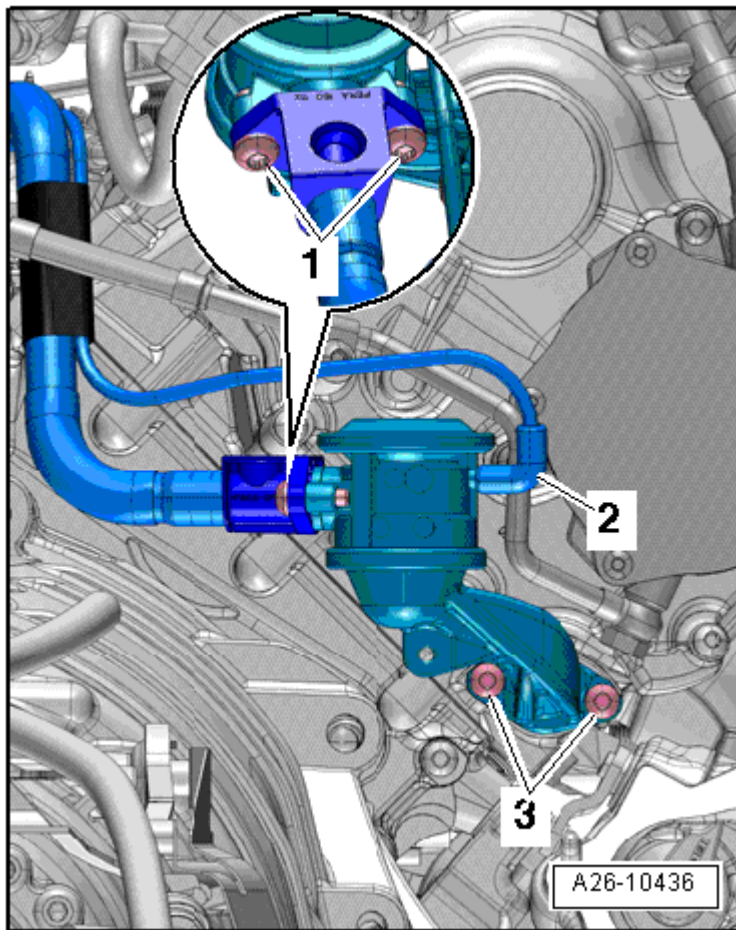


Fig. 62: Identifying Combination Valve Bolts, AIR Pipe Bolts
 Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -3-, remove the right AIR combination valve and remove the screws -1- for the AIR hose.

Installing

Install in reverse order of removal. Note the following:

Tightening specifications

- **SECONDARY AIR INJECTION SYSTEM OVERVIEW**
- **Fig. 12**

NOTE:

- Replace the gasket.
- The hose connections as well as the air guide pipes and hoses must be free of oil and grease before installing.
- Secure all hose connections with hose clamps of the same type as those equipped by the factory.

- To mount the air guide hoses on their connectors securely, spray the bolts on the used clamps with rust remover before installing.

-- Install the right catalytic converter. Refer to **RIGHT CATALYTIC CONVERTER**

-- Install the plenum chamber bulkhead. Refer to **Description and Operation** .

-- Install the front muffler. Refer to **FRONT MUFFLER**.

SECONDARY AIR INJECTION SENSOR 1 -G609-

Removing

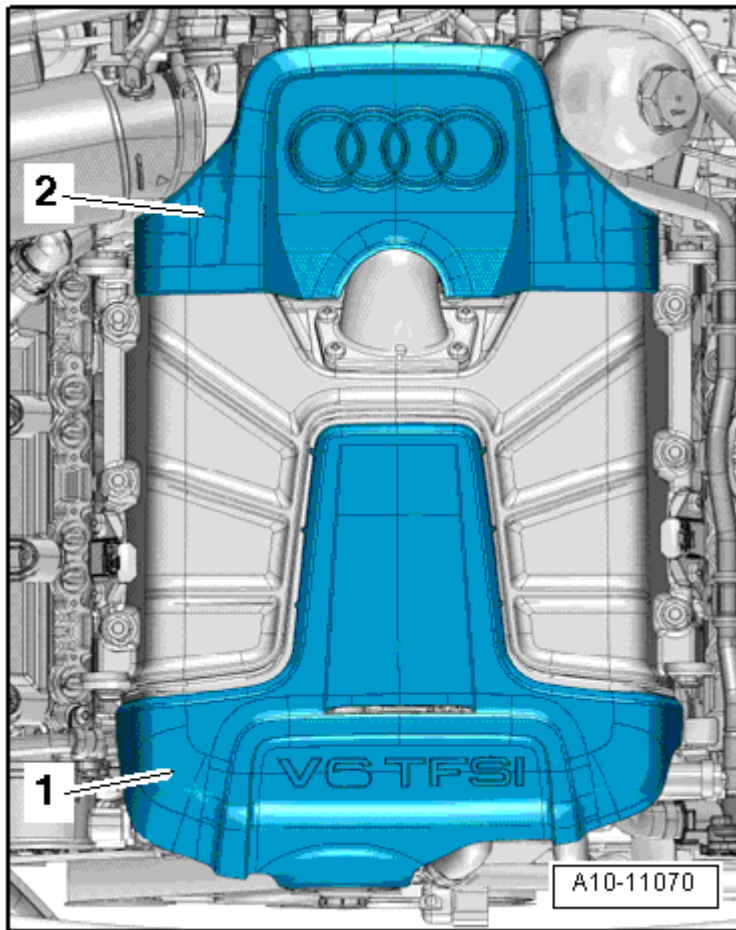


Fig. 63: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

-- Remove the rear engine cover -2- upward.

-- Free up the fuel hose -1- and the EVAP canister hose -2- on the air duct pipe.

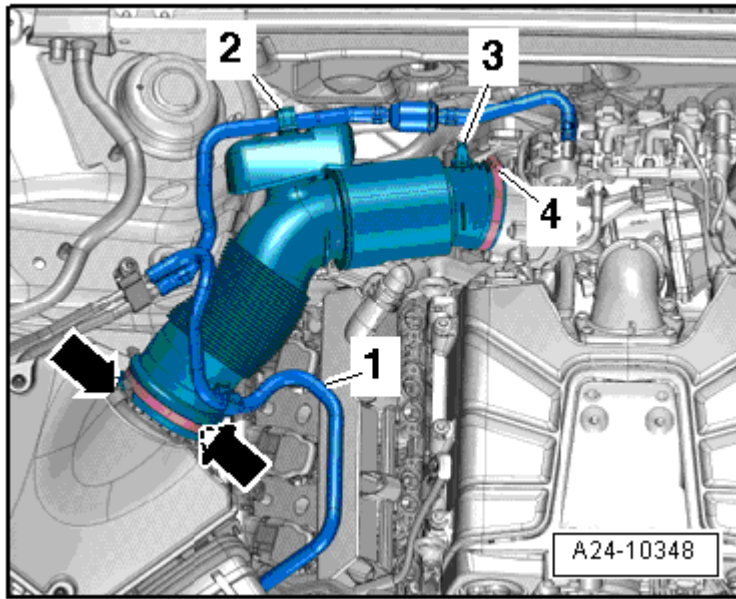


Fig. 64: Identifying Air Guide Pipe

Courtesy of AUDI OF AMERICA, LLC

- Remove the vacuum hose -3- from the air guide pipe connection.
- Remove the air guide pipe by loosening the hose clamp -4- and opening the clips -arrows-.
- Disconnect the connector -1-.

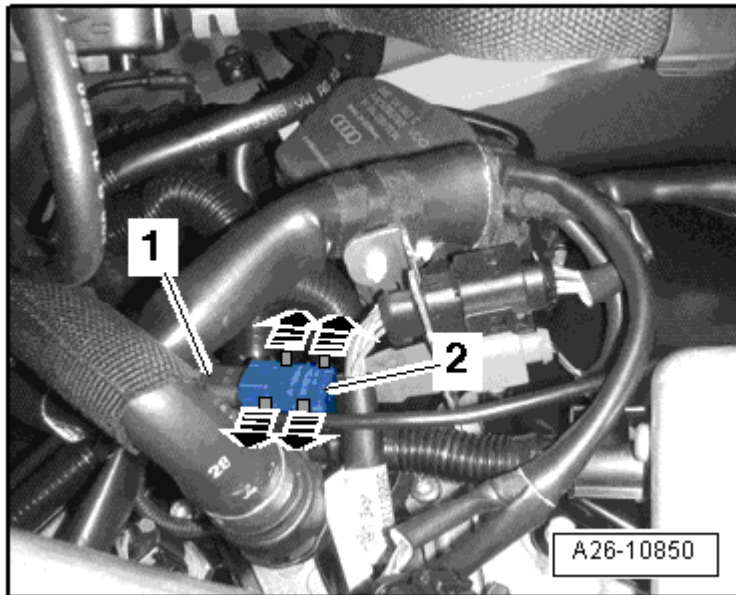


Fig. 65: Installed Location: AIR Sensor 1 -G609-

Courtesy of AUDI OF AMERICA, LLC

- Open the locking mechanisms -arrows- and Secondary Air Injection (AIR) Sensor 1 -G609- -2-.

Installing

Install in reverse order of removal. Note the following:

NOTE:

- Replace the O-ring.
- The hose connections as well as the air guide pipes and hoses must be free of oil and grease before installing.
- Secure all hose connections with hose clamps of the same type as those equipped by the factory.
- In order to be able to securely mount the air guide hoses on their connectors, spray the screws on the previously used clamps with a rust remover.

TAIL PIPE

Special tools and workshop equipment required

- Chain Pipe Cutter VAS 6254

Procedure

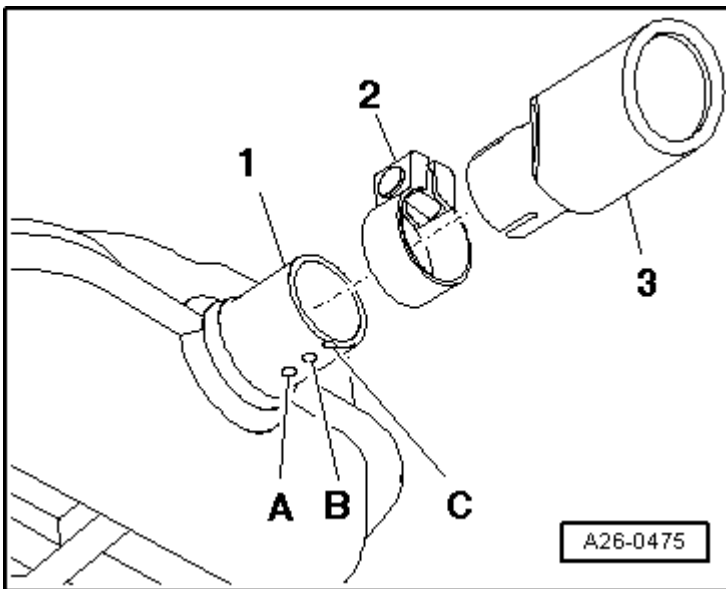


Fig. 66: Replacing End Pipe

Courtesy of AUDI OF AMERICA, LLC

- Tightening specifications, refer to MUFFLER OVERVIEW.

-- Separate the tailpipe -1- at the separating point -C- using VAS 6254.

-- Mount the tail pipe -3- up to the marking -A-. Align the slot in the tail pipe with the marking -B-.

-- Tighten clamping sleeve nut -2-.

SPECIAL TOOLS

Special tools and workshop equipment required

- Hand Vacuum Pump VAS 6213

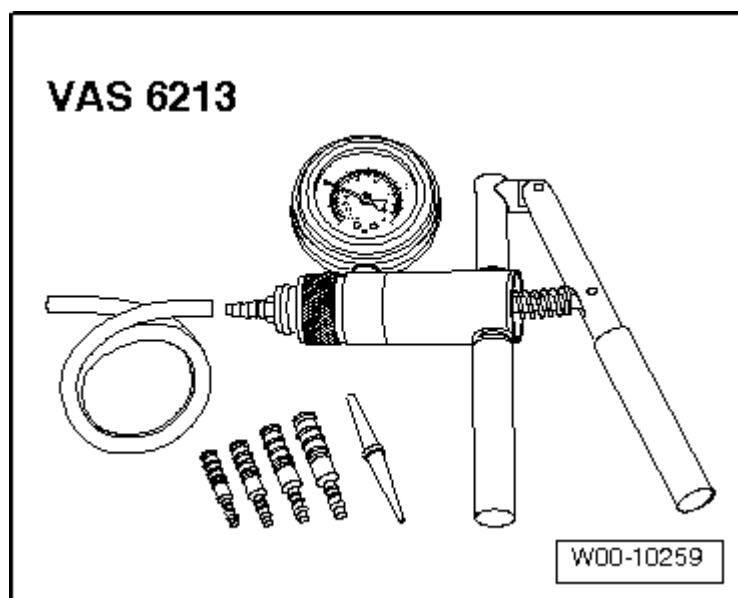


Fig. 67: Identifying Hand Vacuum Pump VAS 6213
Courtesy of AUDI OF AMERICA, LLC

- Chain Pipe Cutter VAS 6254

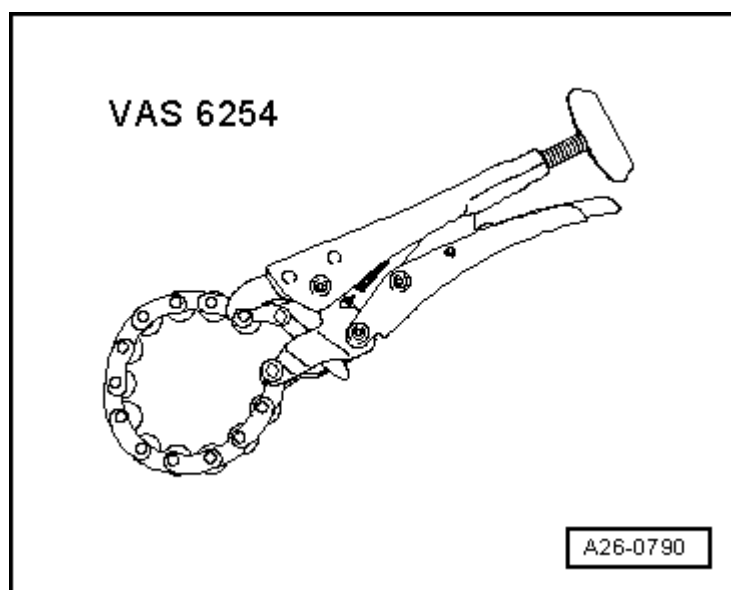


Fig. 68: Identifying Chain Pipe Cutter VAS 6254

2012 Audi S4
ENGINE 3.0 Liter - Exhaust System, Emission Controls - Engine Code(s): CCBA (Sedan)

Courtesy of AUDI OF AMERICA, LLC