

26 - EXHAUST SYSTEM, EMISSION CONTROLS

EXHAUST SYSTEM, REMOVING AND INSTALLING

Exhaust System, Removing and Installing

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--> [Exhaust System, AWD, Component Overview](#)

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--> [Tail Pipe, Replacing](#)

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NOTE:

- After exhaust system repairs, make sure exhaust system is not under stress and is far enough from the body. If necessary, loosen clamping sleeves and align mufflers and exhaust pipes so that there is adequate distance to vehicle body, and weight is evenly distributed among the exhaust hangers.

Exhaust System, FWD, Component Overview

Exhaust System, FWD, Component Overview

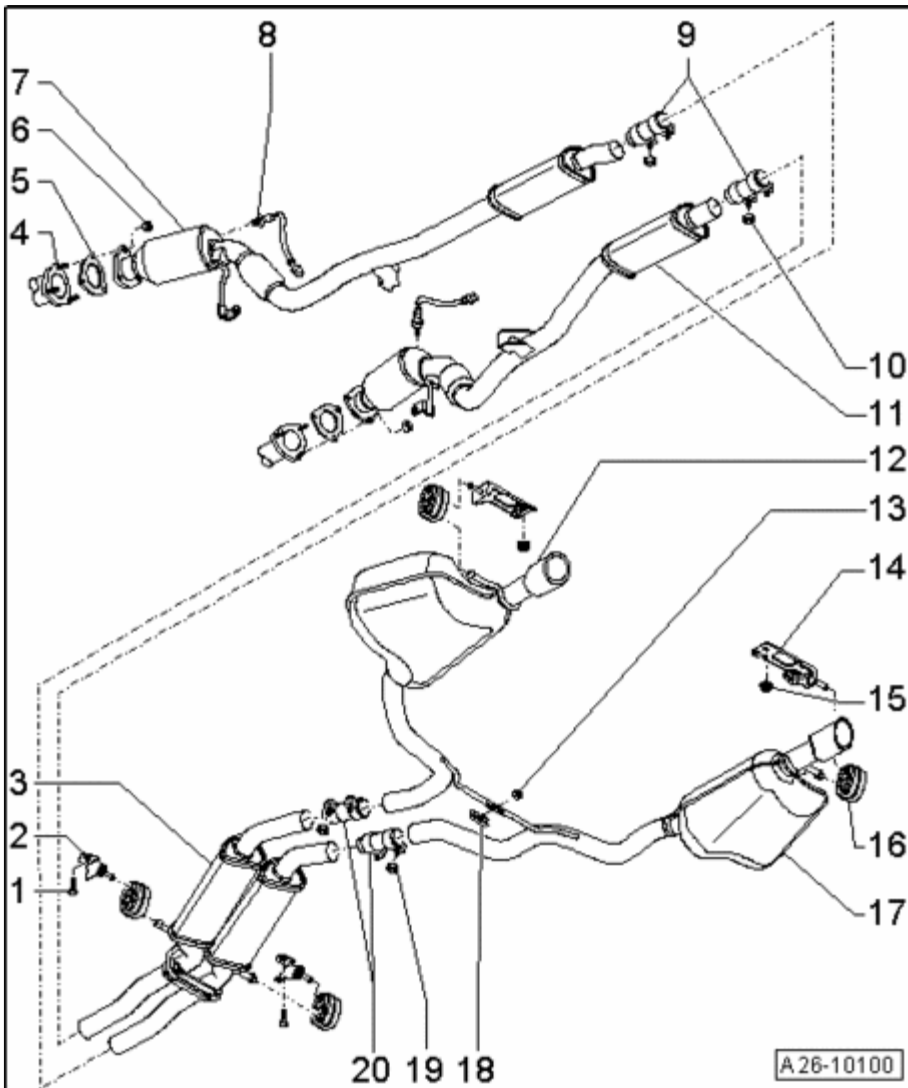


Fig. 555: Exhaust System, FWD, Component Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - 23 Nm

2 - Suspended mount

- Replace if damaged

3 - Center muffler

- Original equipment as one unit with rear muffler. For repairs, replace each separately.
- Separating point --> *Separate exhaust pipes at a right angle at separating point arrow using chain pipe cutter VAS 6254.* under **Center Muffler and Rear Muffler, Separating**
- Install exhaust system free of stress --> **Exhaust System, Installing**

4 - Exhaust Manifold

- Removing and installing: Left --> **Left Exhaust Manifold, Removing and Installing** , right --> **Right Exhaust Manifold, Removing and Installing**

5 - Gasket

- Replace

6 - 23 Nm

- Replace

7 - Front exhaust pipe with catalytic converter and front muffler

- For cylinder bank 2 (left)
- With decoupling element; the decoupling element must not be bent more than 10 otherwise it may be damaged
- Protect from shocks and impact stress
- Removing and installing --> **Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing**
- Individual components of mounting: Vehicles with multitronic transmission --> **Individual left mounting components - vehicles with Multitronic transmission**
- Install exhaust system free of stress --> **Exhaust System, Installing**

8 - Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)

- The threads of new oxygen sensors are coated with assembly paste; the paste must not get into slots of oxygen sensor body
- When re-using the old oxygen sensor, grease the threads with hot bolt paste; the paste must not get into slots of oxygen sensor body; hot bolt paste
- Removing and installing --> **24 - FUEL INJECTION SYSTEM**
- Tighten to 55 Nm.

9 - Front clamping sleeves

- Installed location --> **Installed position of front double clamps**
- Before tightening, align exhaust system so that it is tension-free --> **Exhaust System, Installing**
- Tighten threaded connections evenly.

10 - 23 Nm

11 - Front exhaust pipe with catalytic converter and front muffler

- For cylinder bank 1 (right)
- With decoupling element; the decoupling element must not be bent more than 10 otherwise it may be damaged
- Protect from shocks and impact stress
- Removing and installing --> **Right Exhaust Pipe with Catalytic Converter, Removing and Installing**
- Individual components of mounting: Vehicles with multitronic transmission --> **Individual right mounting components - vehicles with Multitronic transmission**
- Install exhaust system free of stress --> **Exhaust System, Installing**

12 - Rear muffler with tailpipe

- Left side of vehicle
- Original equipment as one unit with center muffler
- In case of repairs, center muffler end muffler and tailpipe should be replaced individually
- Separating point center muffler/rear muffler --> *Separate exhaust pipes at a right angle at separating point arrow using chain pipe cutter VAS 6254.* under **Center Muffler and Rear Muffler, Separating**
- Rear muffler/tailpipe separating point --> **Tail Pipe, Replacing**
- Install exhaust system free of stress --> **Exhaust System, Installing**

13 - 23 Nm

- Replace

14 - Suspended mount

15 - 23 Nm

16 - Suspended mount

- Replace if damaged

17 - Rear muffler with tailpipe

- Right side of vehicle
- Original equipment as one unit with center muffler
- In case of repairs, center muffler end muffler and tailpipe should be replaced individually
- Separating point center muffler/rear muffler --> *Separate exhaust pipes at a right angle at separating point arrow using chain pipe cutter VAS 6254.* under **Center Muffler and Rear Muffler, Separating**
- Rear muffler/tailpipe separating point --> **Tail Pipe, Replacing**
- Install exhaust system free of stress --> **Exhaust System, Installing**

18 - Bracket

19 - 23 Nm

20 - Rear clamping sleeves

- For individual replacement of center and rear mufflers
- Position clamping sleeve centrally to separation point
- Installed location --> **Installed position of rear double clamps**
- Before tightening, align exhaust system so that it is tension-free --> **Exhaust System, Installing**
- Tighten threaded connections evenly.

Installed position of front double clamps

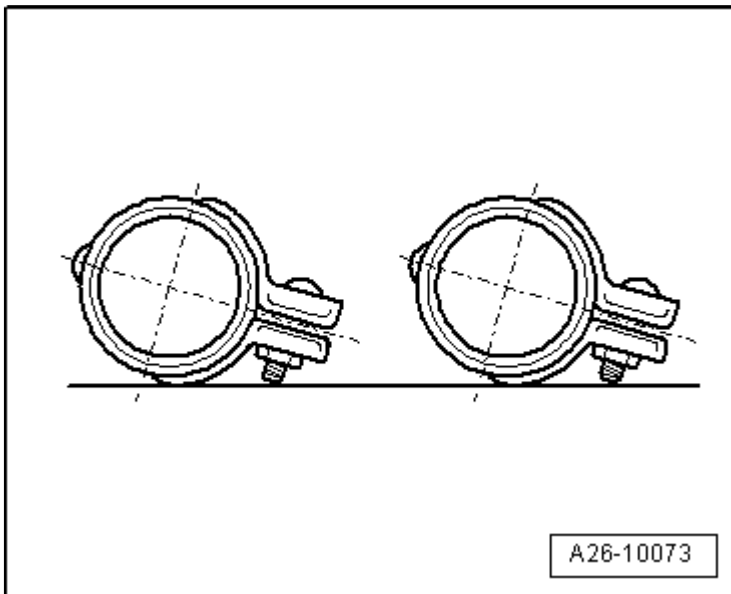


Fig. 556: Installed Position Of Front Double Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install double clamps so that the bolt ends do not project over lower edge of double clamp.
- Threaded connections point toward the right.

Installed position of rear double clamps

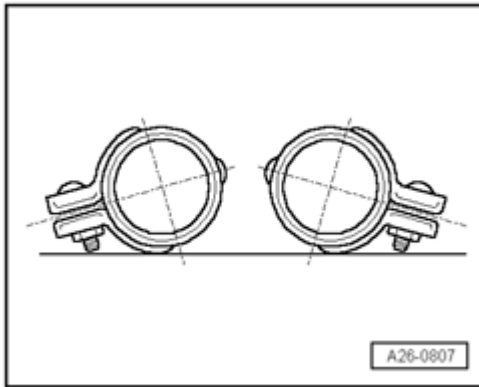


Fig. 557: Installing Double Clamps So That Bolt Ends Do Not Project Over Lower Edge Of Double Clamp
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install double clamps so that the bolt ends do not project over lower edge of double clamp.
- Threaded connections point toward outside.

Individual left mounting components - vehicles with Multitronic transmission

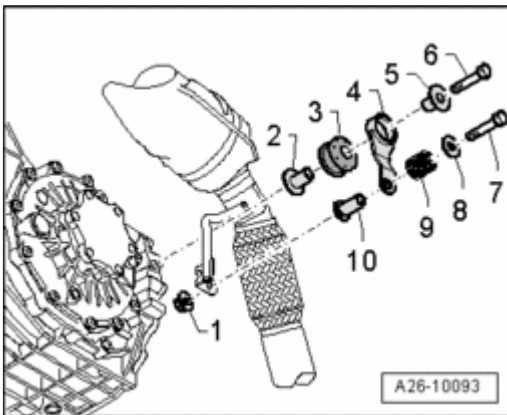


Fig. 558: Individual Left Mounting Components - Vehicles With Multitronic Transmission
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1. Nut - 23 Nm
2. Spacing sleeve
3. Buffer
4. Spacing sleeve
5. Bolt
6. Bolt - 23 Nm
7. Bolt
8. Washer
9. Spring

10. Spacing sleeve

Individual right mounting components - vehicles with Multitronic transmission

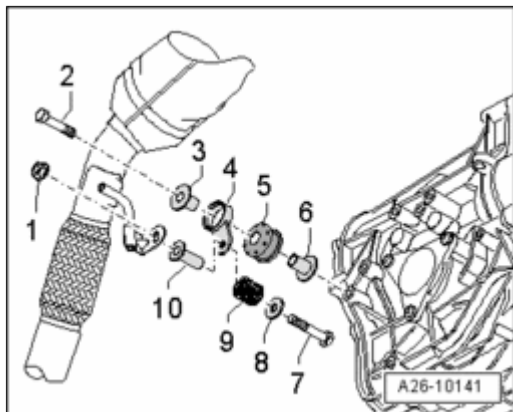


Fig. 559: Individual Right Mounting Components - Vehicles With Multitronic Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 1. Nut - 23 Nm
- 2. Bolt - 23 Nm
- 3. Spacing sleeve
- 4. Tab
- 5. Buffer
- 6. Spacing sleeve
- 7. Bolt
- 8. Washer
- 9. Spring
- 10. Spacing sleeve

Individual components of center bracket mounting for front exhaust pipe

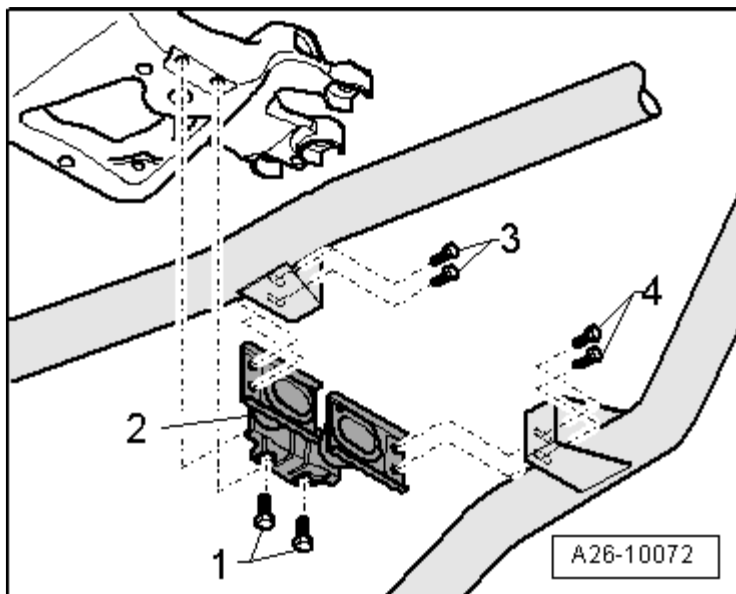


Fig. 560: Individual Components Of Center Bracket Mounting For Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1. 23 Nm
2. Bracket
3. 23 Nm
4. 23 Nm

Exhaust System, AWD, Component Overview

Exhaust System, AWD, Component Overview

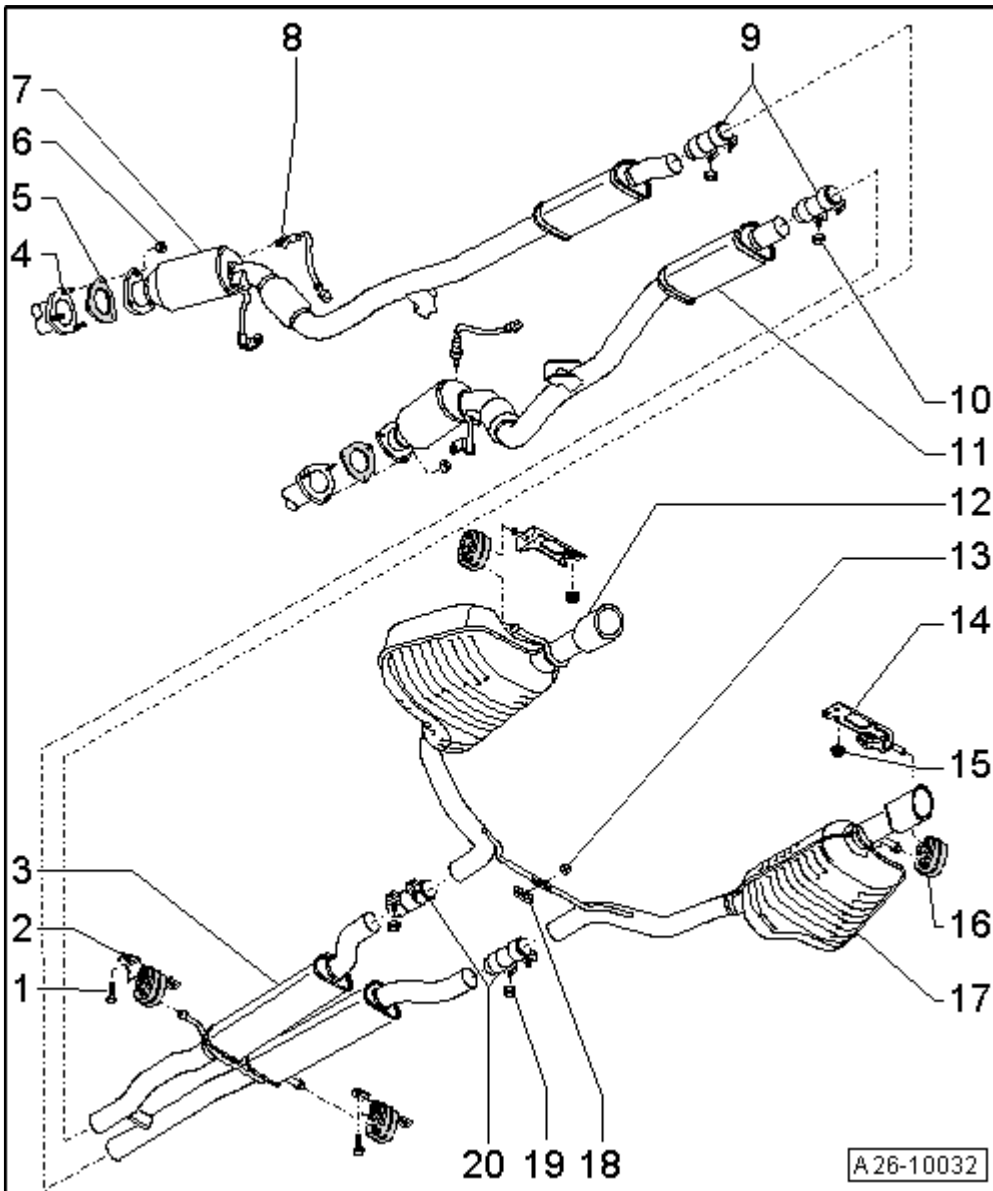


Fig. 561: Exhaust System, AWD, Component Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - 23 Nm

2 - Suspended mount

- Replace if damaged

3 - Center muffler

- Original equipment as one unit with rear muffler. For repairs, replace each separately.
- Separating point --> *Separate exhaust pipes at a right angle at separating point arrow using chain pipe*

cutter VAS 6254. under **Center Muffler and Rear Muffler, Separating**

- Install exhaust system free of stress --> **Exhaust System, Installing**

4 - Exhaust Manifold

- Removing and installing: Left --> **Left Exhaust Manifold, Removing and Installing** , right --> **Right Exhaust Manifold, Removing and Installing**

5 - Gasket

- Replace

6 - 23 Nm

- Replace

7 - Front exhaust pipe with catalytic converter and front muffler

- For cylinder bank 2 (left)
- With decoupling element; the decoupling element must not be bent more than 10 otherwise it may be damaged
- Protect from shocks and impact stress
- Removing and installing --> **Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing**
- Individual components of suspension --> **Individual left mounting components - vehicles with manual transmission and automatic transmission 09L**
- Install exhaust system free of stress --> **Exhaust System, Installing**

8 - Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC)

- The threads of new oxygen sensors are coated with assembly paste; the paste must not get into slots of oxygen sensor body
- When re-using the old oxygen sensor, grease the threads with hot bolt paste; the paste must not get into slots of oxygen sensor body; hot bolt paste
- Removing and installing --> **24 - FUEL INJECTION SYSTEM**
- Tighten to 55 Nm.

9 - Front clamping sleeves

- Installed location --> **Installed position of front double clamps**
- Before tightening, align exhaust system so that it is tension-free --> **Exhaust System, Installing**
- Tighten threaded connections evenly.

10 - 23 Nm

11 - Front exhaust pipe with catalytic converter and front muffler

- For cylinder bank 1 (right)
- With decoupling element; the decoupling element must not be bent more than 10 otherwise it may be damaged
- Protect from shocks and impact stress
- Removing and installing --> **Right Exhaust Pipe with Catalytic Converter, Removing and Installing**
- Individual components of suspension.
- Install exhaust system free of stress --> **Exhaust System, Installing**

12 - Rear muffler with tailpipe

- Left side of vehicle
- Original equipment as one unit with center muffler
- In case of repairs, center muffler end muffler and tailpipe should be replaced individually
- Separating point center muffler/rear muffler --> *Separate exhaust pipes at a right angle at separating point arrow using chain pipe cutter VAS 6254.* under **Center Muffler and Rear Muffler, Separating**
- Rear muffler/tailpipe separating point --> **Tail Pipe, Replacing**
- Install exhaust system free of stress --> **Exhaust System, Installing**

13 - 23 Nm

- Replace

14 - Suspended mount

15 - 23 Nm

16 - Suspended mount

- Replace if damaged

17 - Rear muffler with tailpipe

- Right side of vehicle
- Original equipment as one unit with center muffler
- In case of repairs, center muffler end muffler and tailpipe should be replaced individually
- Separating point center muffler/rear muffler --> *Separate exhaust pipes at a right angle at separating point arrow using chain pipe cutter VAS 6254.* under **Center Muffler and Rear Muffler, Separating**

- Rear muffler/tailpipe separating point --> **Tail Pipe, Replacing**
- Install exhaust system free of stress --> **Exhaust System, Installing**

18 - Bracket

19 - 23 Nm

20 - Rear clamping sleeves

- For individual replacement of center and rear mufflers
- Position clamping sleeve centrally to separation point
- Installed location --> **Installed position of rear double clamps**
- Before tightening, align exhaust system so that it is tension-free --> **Exhaust System, Installing**
- Tighten threaded connections evenly.

Installed position of front double clamps

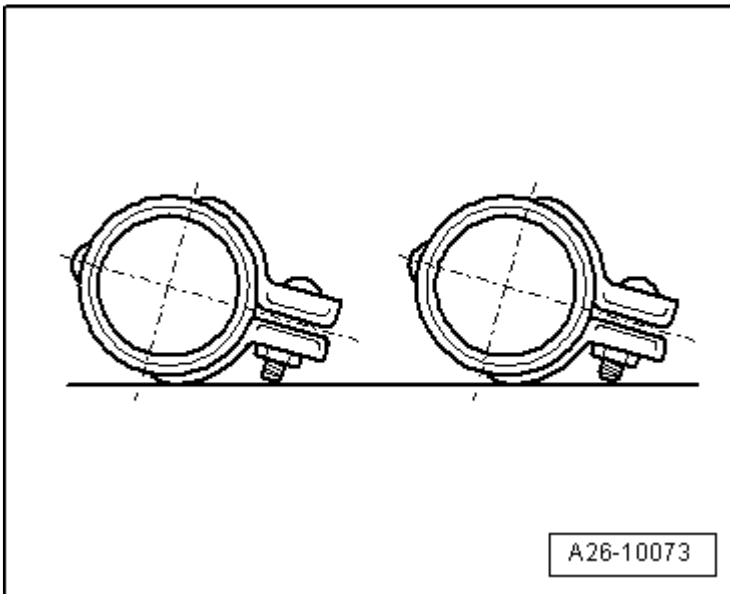


Fig. 562: Installed Position Of Front Double Clamps
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install double clamps so that the bolt ends do not project over lower edge of double clamp.
- Threaded connections point toward the right.

Installed position of rear double clamps

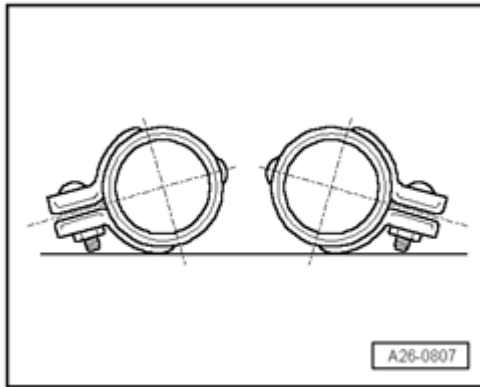


Fig. 563: Installing Double Clamps So That Bolt Ends Do Not Project Over Lower Edge Of Double Clamp
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install double clamps so that the bolt ends do not project over lower edge of double clamp.
- Threaded connections point toward outside.

Individual left mounting components - vehicles with manual transmission and automatic transmission 09L

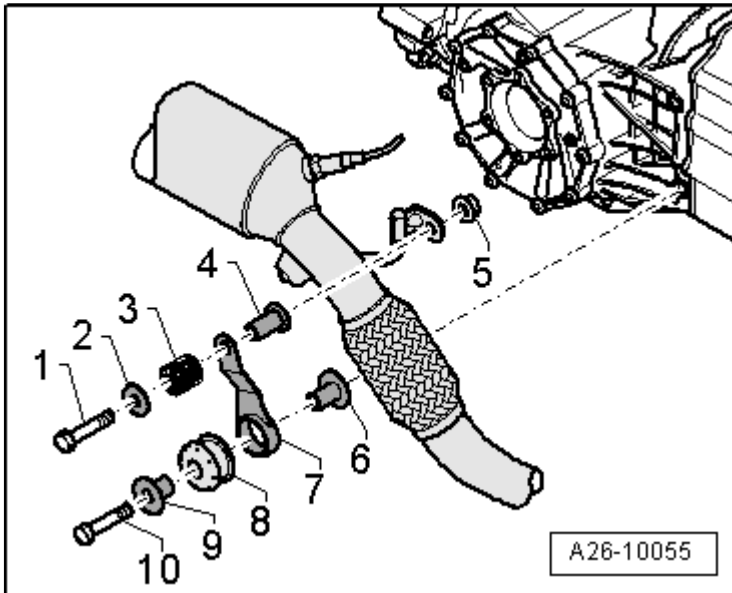


Fig. 564: Removing Bolt At Left Bracket For Front Exhaust Pipe
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1. Bolt
2. Washer
3. Spring
4. Spacing sleeve
5. Nut - 23 Nm

6. Spacing sleeve
7. Tab
8. Buffer
9. Spacing sleeve
10. Bolt - 23 Nm

Individual right mounting components - vehicles with automatic transmission 09L

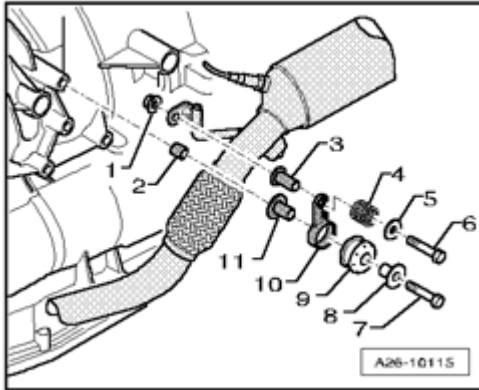


Fig. 565: Removing Bolt At Right Bracket For Front Exhaust Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1. Nut - 23 Nm
2. Sleeve
3. Spacing sleeve
4. Spring
5. Washer
6. Bolt
7. Bolt - 23 Nm
8. Spacing sleeve
9. Buffer
10. Tab
11. Spacing sleeve

Individual components of center bracket mounting for front exhaust pipe

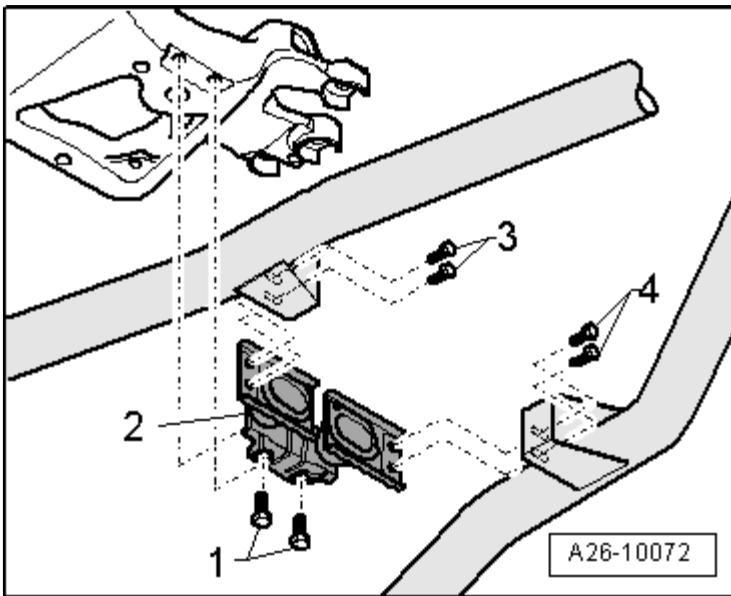


Fig. 566: Individual Components Of Center Bracket Mounting For Front Exhaust Pipe
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1. 23 Nm
2. Bracket
3. 23 Nm
4. 23 Nm

Center Muffler and Rear Muffler, Separating

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 depressions around the circumference of the exhaust pipe.

Special tools, testers and auxiliary items required

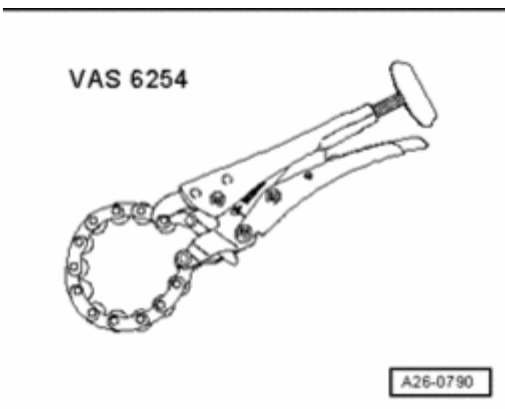


Fig. 567: Chain Pipe Cutter VAS 6254

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Chain pipe cutter VAS 6254

Procedure for vehicles with front wheel drive

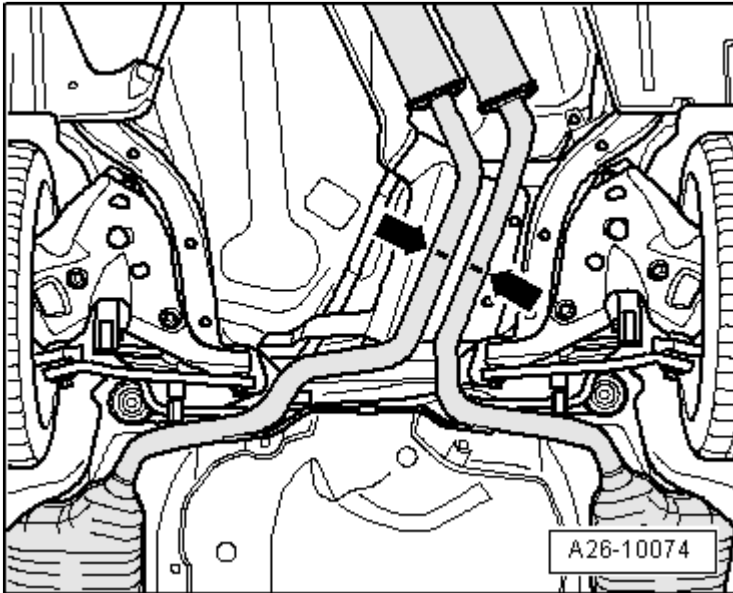


Fig. 568: Separating Exhaust Pipes At A Right Angle At Separating Point Using Chain Pipe Cutter VAS 6254

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate exhaust pipes at a right angle at separating point - **arrow** - using chain pipe cutter VAS 6254.

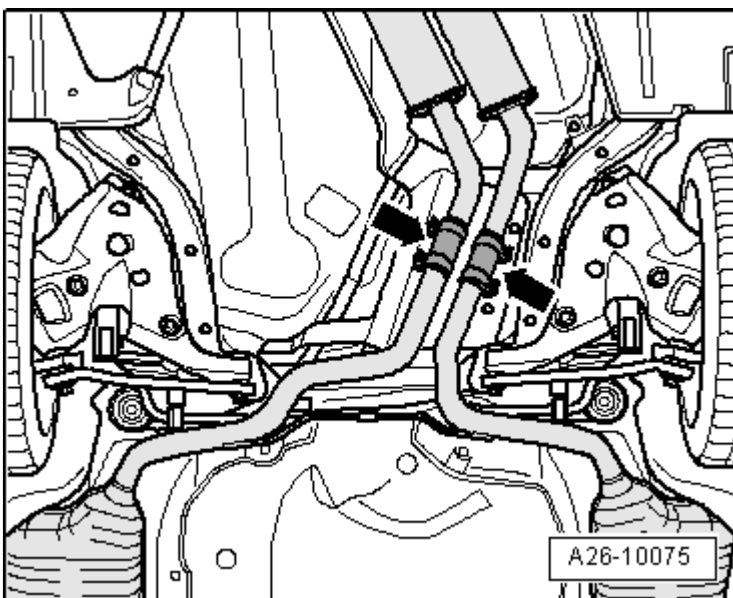


Fig. 569: Positioning Clamping Sleeves Centrally On Separation Point
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When installing, position clamping sleeves - **arrows** - centrally on separation point.

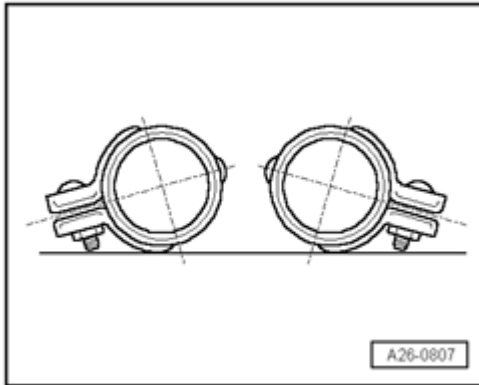


Fig. 570: Installing Double Clamps So That Bolt Ends Do Not Project Over Lower Edge Of Double Clamp
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install double clamps so that the bolt ends do not project over lower edge of double clamp.
- Threaded connections point toward outside.
- Align exhaust system free of tension --> **Exhaust System, Installing.**

Procedure for vehicles with all wheel drive

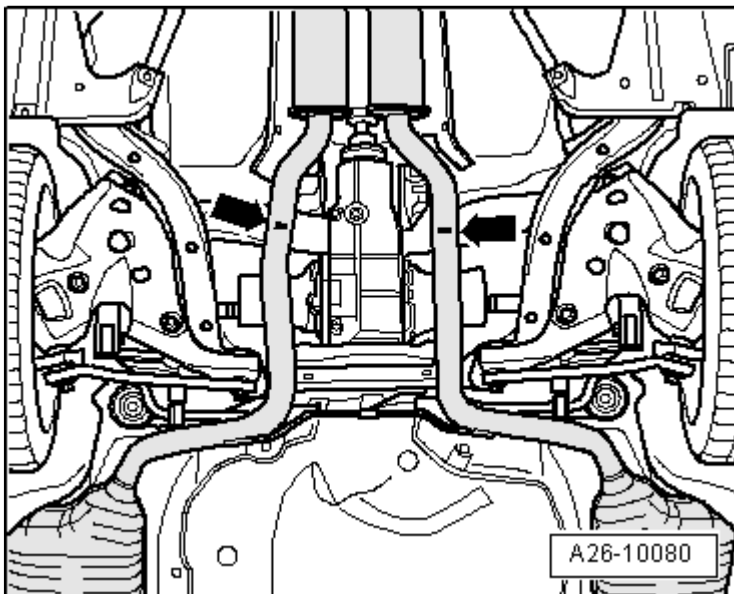


Fig. 571: Separating Exhaust Pipes At Separating Point Using Chain Pipe Cutter VAS 6254 At Right

Angle

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate exhaust pipes at a right angle at separating point - **arrow** - using chain pipe cutter VAS 6254.

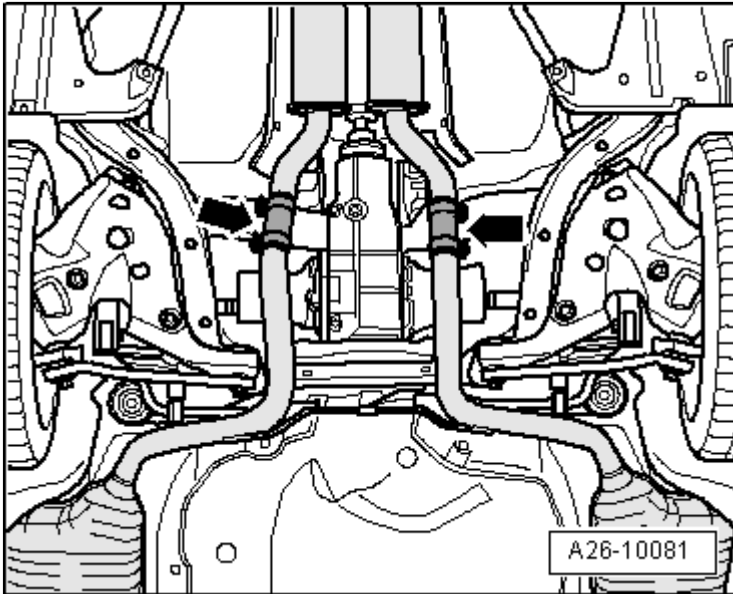


Fig. 572: Positioning Clamping Sleeves At Center Of Separating Cut

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When installing, position clamping sleeves - **arrows** - centrally on separation point.

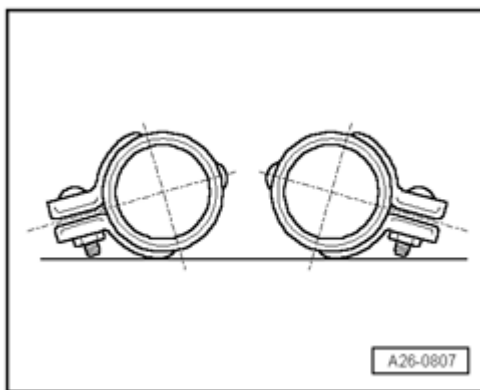


Fig. 573: Installing Double Clamps So That Bolt Ends Do Not Project Over Lower Edge Of Double Clamp

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install double clamps so that the bolt ends do not project over lower edge of double clamp.
- Threaded connections point toward outside.

- Align exhaust system free of tension --> **Exhaust System, Installing.**

Tail Pipe, Replacing

Tail Pipe, Replacing

Special tools, testers and auxiliary items required

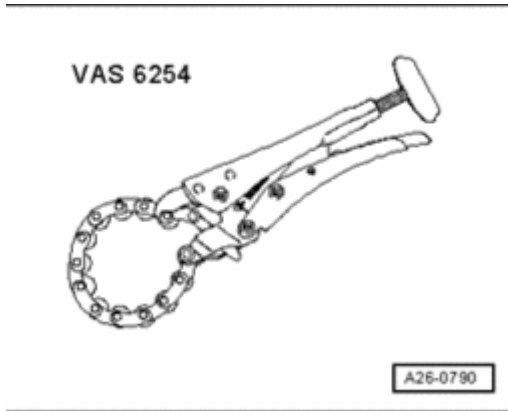


Fig. 574: Chain Pipe Cutter VAS 6254
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Chain pipe cutter VAS 6254

Procedure

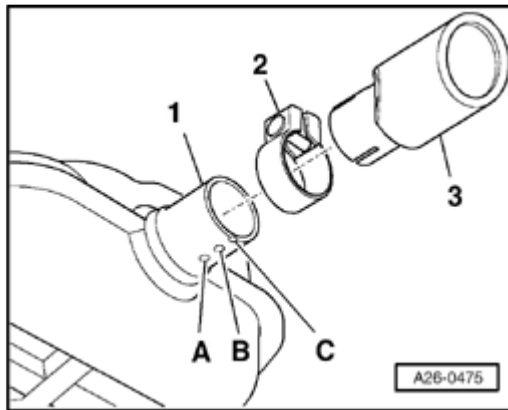


Fig. 575: Replacing Tailpipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate end pipe - **1** - using chain pipe cutter VAS 6254 at right angle at separating point - **C** -.
- Push end pipe - **3** - on up to marking - **A** - while aligning slit in end pipe with marking - **B** - on cover.
- Install clamp - **2** -.

Tightening specifications

Component	Nm
Clamp	25

Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing

Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing

Removing

- NOTE:**
- All cable ties which are opened or cut open when removing, must be replaced in the same position when installing.

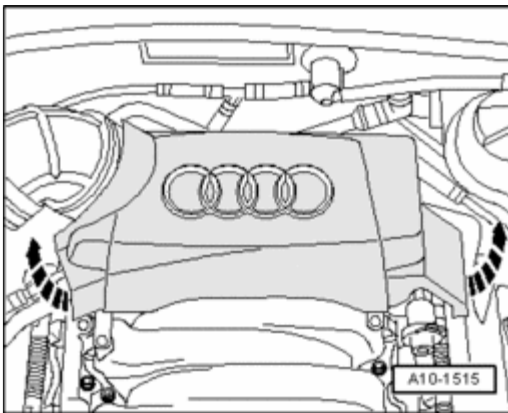


Fig. 576: Removing Rear Engine Cover
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.

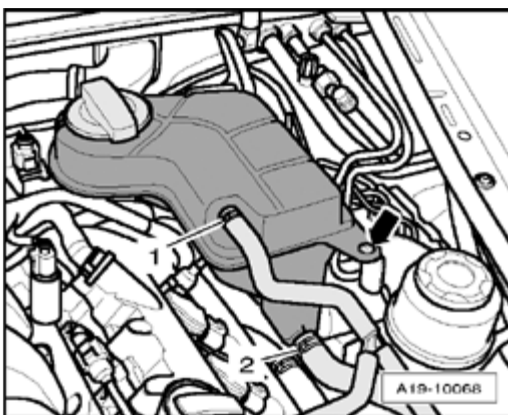


Fig. 577: Removing Coolant Hoses At Coolant Expansion Tank
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant expansion tank - **arrow** -.
- Disconnect electrical connection from Engine Coolant Level (ECL) Warning Switch F66 at bottom of coolant reservoir and set aside coolant reservoir with coolant hoses - **1** - and - **2** - connected.

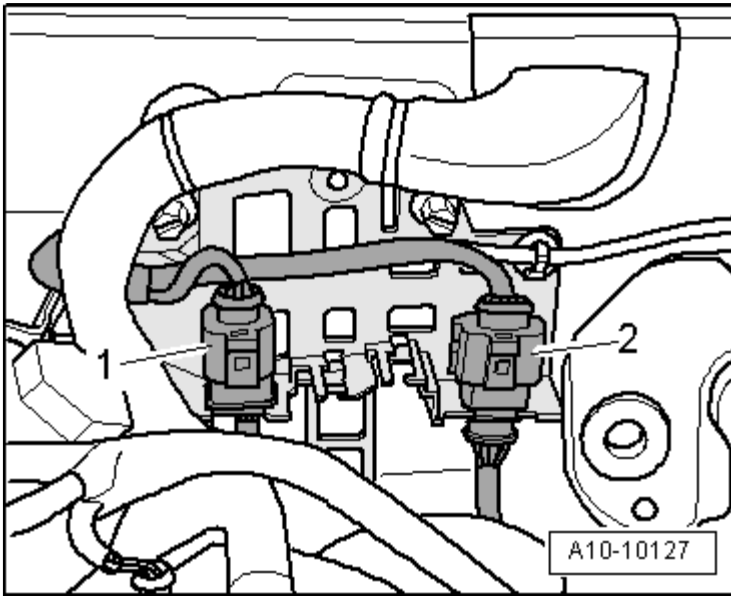


Fig. 578: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 2 - for Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131 and free up the wiring.

NOTE: • Ignore - 1 -.

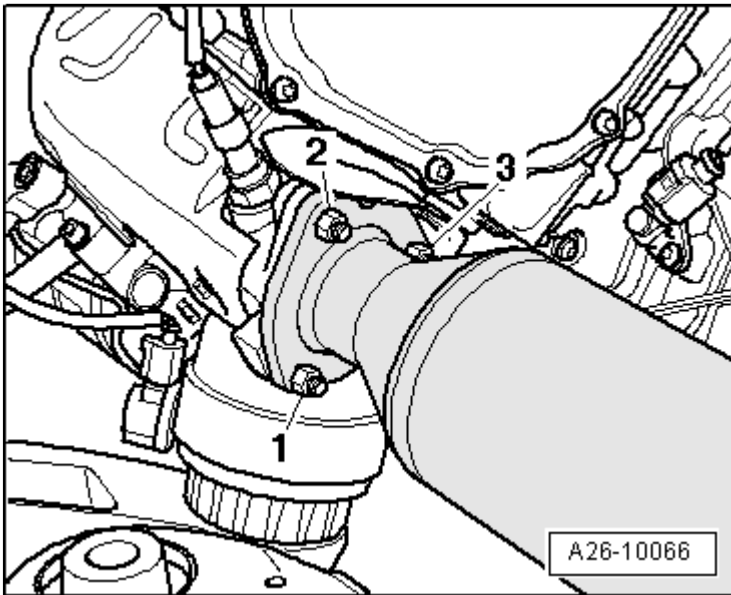


Fig. 579: Removing Nuts & Left Front Exhaust Pipe With Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - 2 - which is accessible from top for front exhaust pipe/exhaust manifold.

NOTE: • To improve clarity, the removed engine is shown from the rear.

- Remove left front wheel.

NOTE: • **Secure brake disc with a wheel bolt.**

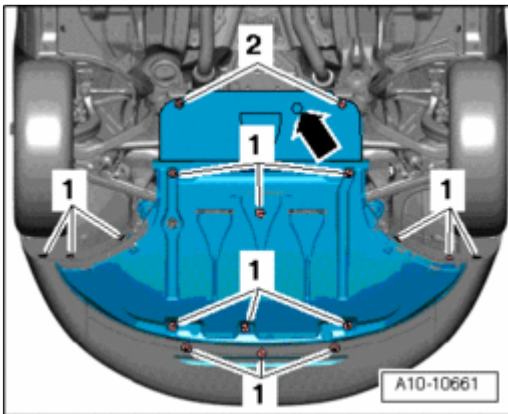


Fig. 580: Identifying Noise Insulation And Mountings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation and mountings - **1, 2** - - **arrow** - where present.

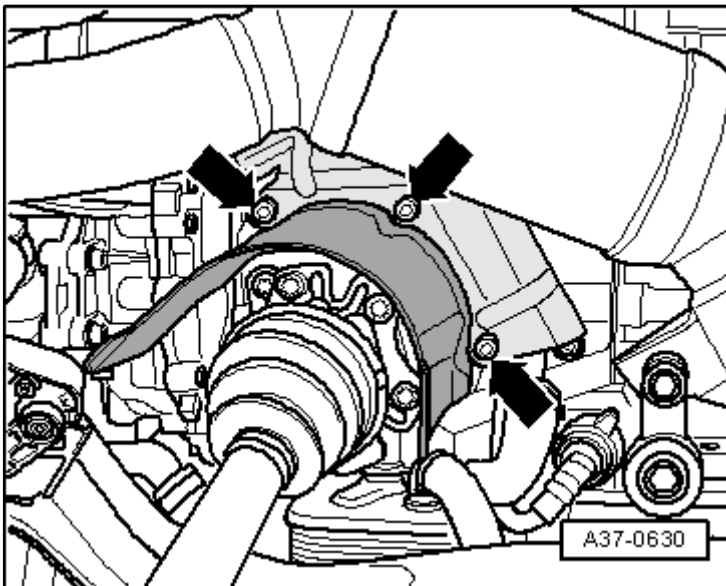


Fig. 581: Removing Heat Shield For Drive Axle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shield - **arrows** - for left drive axle.

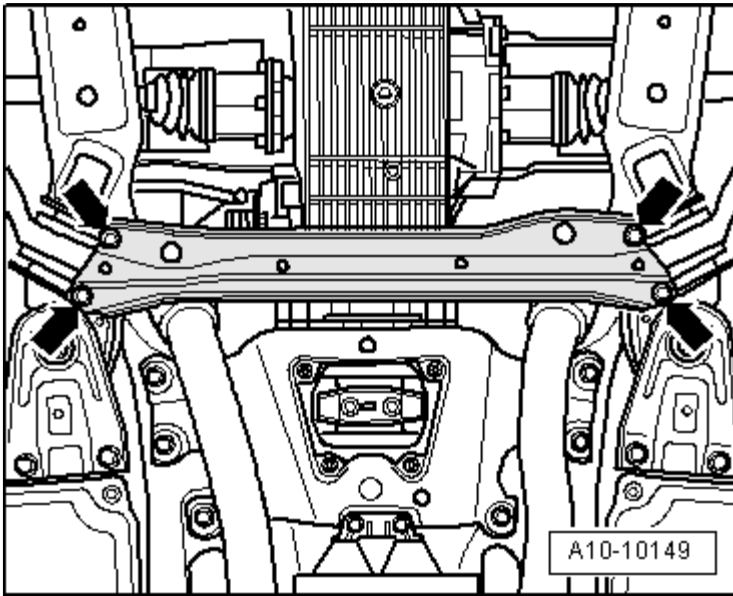


Fig. 582: Removing Subframe Transverse Beam
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove subframe transverse beam - **arrows** -.

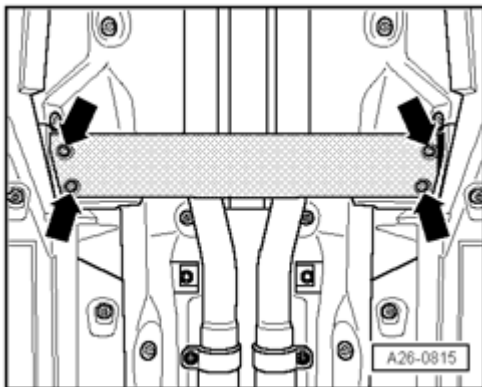


Fig. 583: Removing Front Transverse Beam
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front transverse beam - **arrows** -.

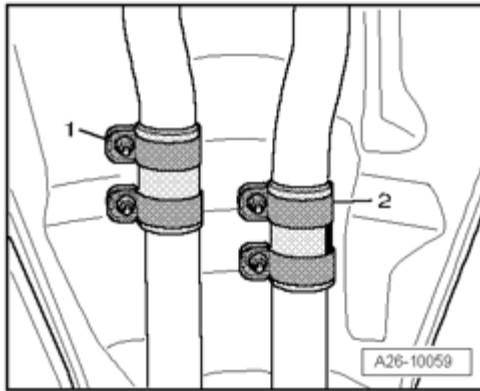


Fig. 584: Loosening Clamping Sleeves
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Separate exhaust system at left clamping sleeve - 2 -.

NOTE: • Ignore - 1 -.

NOTE: • Do not bend the flex joint in front of the exhaust pipe more than 10 or it could be damaged.

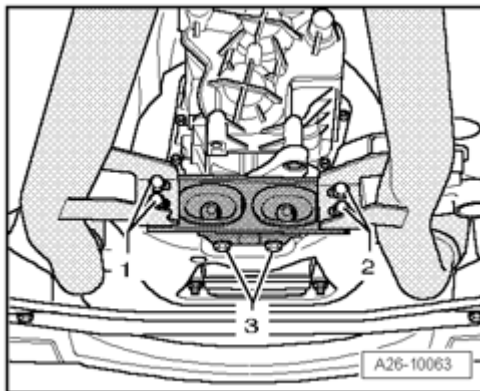


Fig. 585: Removing/Installing Mounting Bolts For Front Exhaust Pipes
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

○ Remove bolts - 1 - at rear bracket for front exhaust pipe.

NOTE: • Ignore - 2 - and - 3 -.

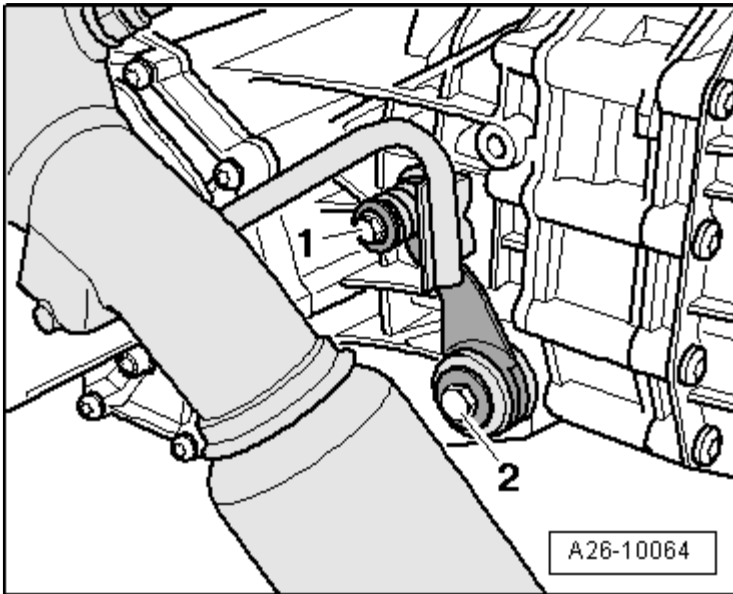


Fig. 586: Removing Bolt At Left Bracket For Front Exhaust Pipe
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with automatic transmission 09L:

- Remove bolt - 1 - at left bracket for front exhaust pipe.

NOTE:

- Shown in illustration on a vehicle with manual transmission.
- Ignore - 2 -.

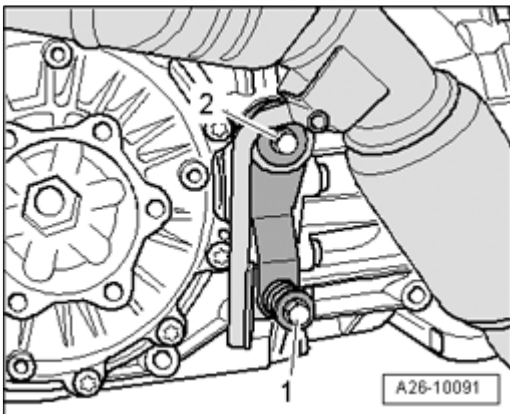


Fig. 587: Removing Bolt At Left Bracket For Front Exhaust Pipe
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with multitronic transmission:

- Remove bolts - 1 - and - 2 -.
- Remove left bracket for front exhaust pipe.

All:

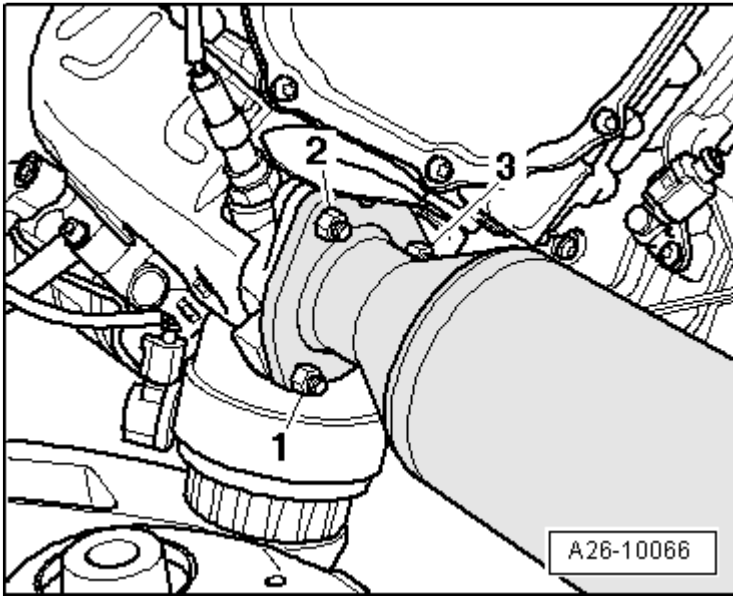


Fig. 588: Removing Nuts & Left Front Exhaust Pipe With Catalytic Converter
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - 1 - and - 3 - which are accessible from bottom for front exhaust pipe/exhaust manifold.

NOTE: ● To improve clarity, removed engine is shown.

- Remove front exhaust pipe with catalytic converter.

Installing

Installation is in reverse order of removal, noting the following:

NOTE:

- Replace gaskets and self-locking nuts.
- During installation, all cable ties must be re-installed at the same location.
- Electrical wire of oxygen sensor must always be secured in the same position when installing so that contact with the exhaust pipe is avoided.

- Install subframe cross member --> **40 - FRONT SUSPENSION** .
- Install front cross member --> **50 - BODY - FRONT** .
- Align exhaust system free of tension --> **Exhaust System, Installing**.

NOTE:

- Individual components of exhaust system mounting: Vehicles with multitronic transmission --> **Individual left mounting components - vehicles with Multitronic transmission** , vehicles with automatic

transmission 09L --> Individual left mounting components - vehicles with manual transmission and automatic transmission 09L

Tightening specifications

Component	Nm
Front exhaust pipe with catalytic converter to exhaust manifold	23 1)2)
Mounting strap to	Front exhaust pipe
	Transmission
Front exhaust pipe to center bracket	23
Heat shield for drive shaft to transmission	23
1) Replace nuts. 2) Grease with hot bolt paste; Hot bolt paste .	

Right Exhaust Pipe with Catalytic Converter, Removing and Installing

Right Exhaust Pipe with Catalytic Converter, Removing and Installing

Removing

NOTE:

- All cable ties which are opened or cut open when removing, must be replaced in the same position when installing.

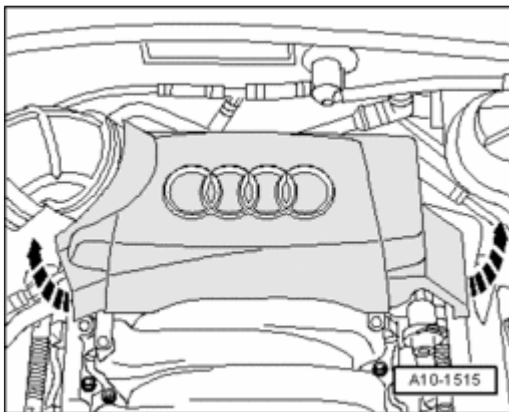


Fig. 589: Removing Rear Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.

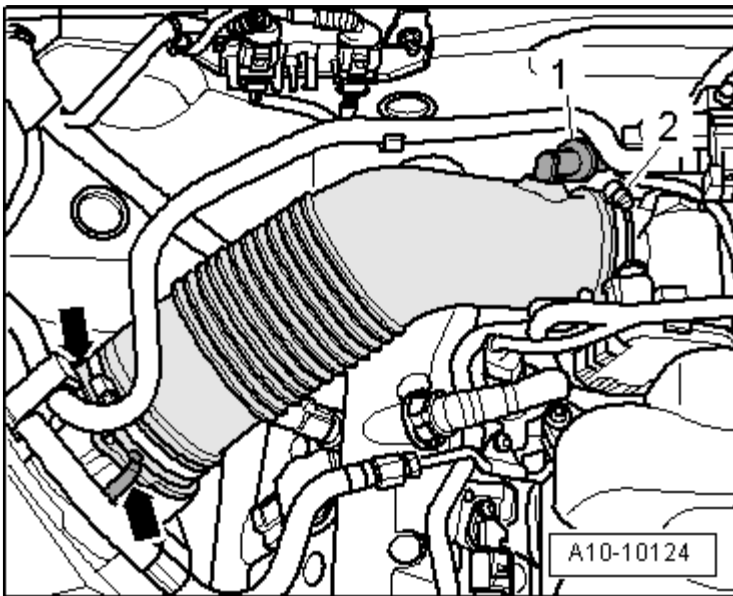


Fig. 590: Disconnecting Check Valve From Connection At Air Duct Hose & Removing Air Duct Hose
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect check valve - 1 - from connection at air duct hose.
- Remove air duct hose, thereby loosening the hose clamp - 2 - and opening clips - **arrows** -.

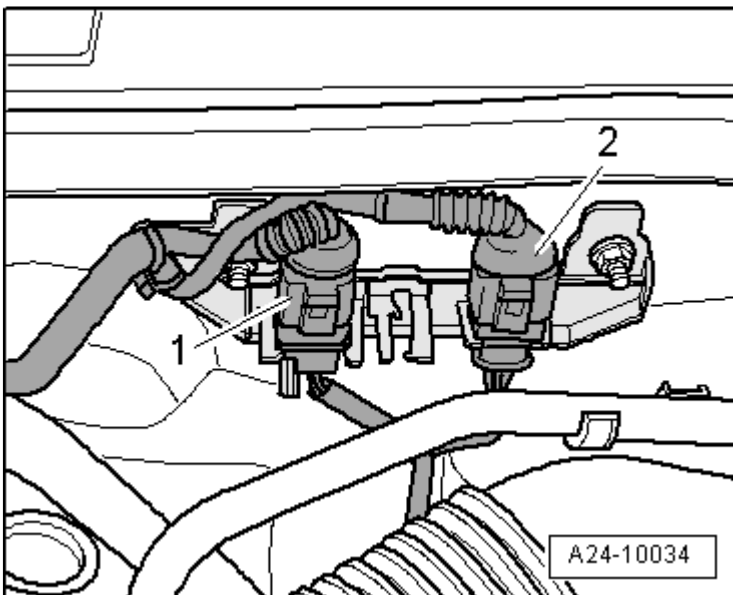


Fig. 591: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC) G130
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 2 - for Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC) G130 and free up the wiring.

NOTE: • Ignore - 1 -.

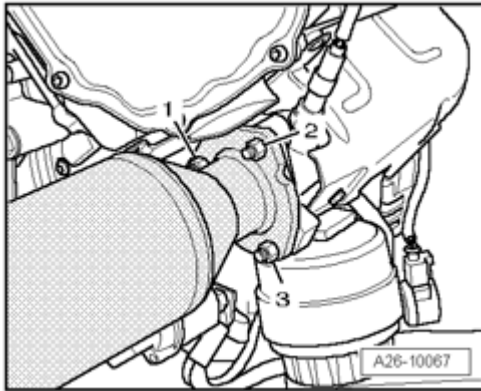


Fig. 592: Removing Nuts & Right Front Exhaust Pipe With Catalytic Converter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - 2 - which is accessible from top for front exhaust pipe/exhaust manifold.

NOTE: • To improve clarity, the removed engine is shown from the rear.

- Remove right front wheel.

NOTE: • Secure brake disc with a wheel bolt.

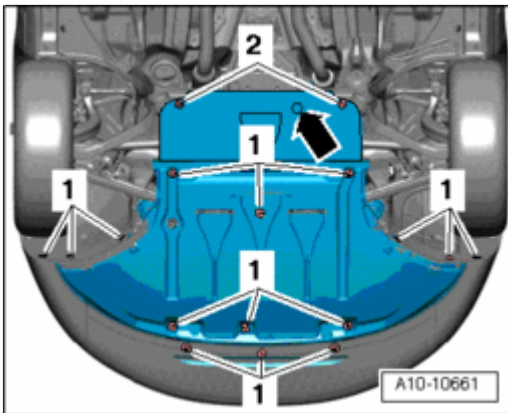


Fig. 593: Identifying Noise Insulation And Mountings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation and mountings - 1, 2 - - **arrow** - where present.

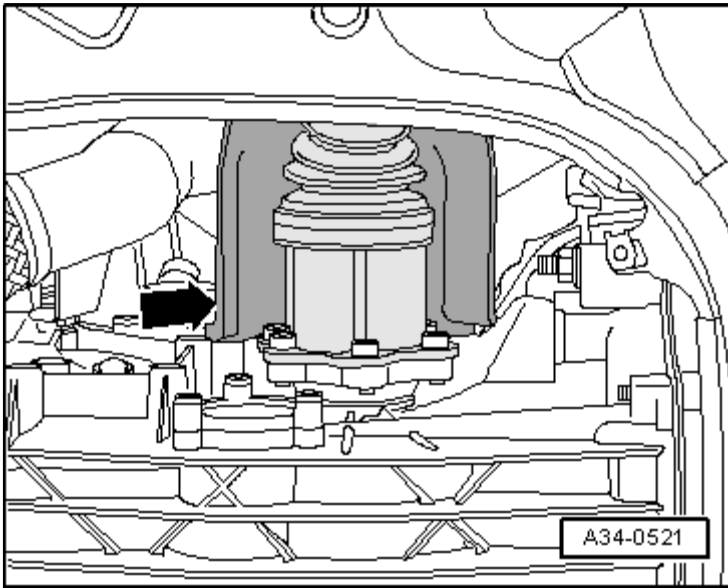


Fig. 594: Removing Heat Shield For Right Drive Axle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- o Remove heat shield - **arrow** - for right drive axle.

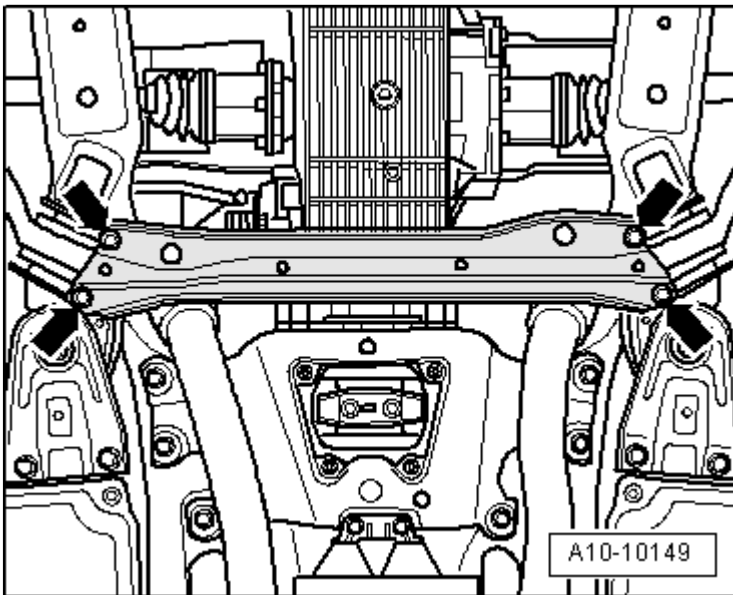


Fig. 595: Removing Subframe Transverse Beam
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- o Remove subframe transverse beam - **arrows** -.

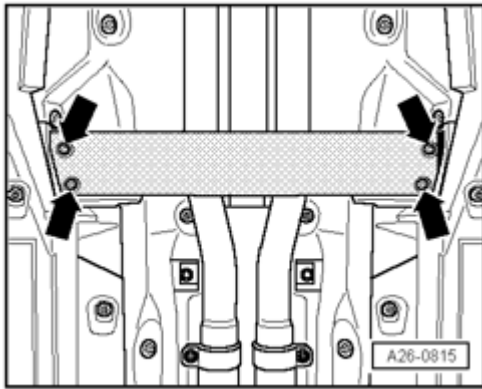


Fig. 596: Removing Front Transverse Beam
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt front transverse beam - **arrows** -.

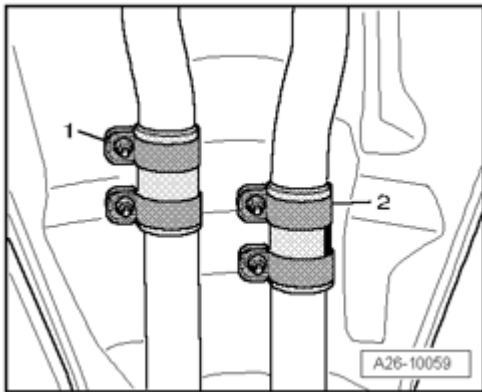


Fig. 597: Loosening Clamping Sleeves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Separate exhaust system at right clamping sleeve - **1** -.

NOTE: • Ignore - **2** -.

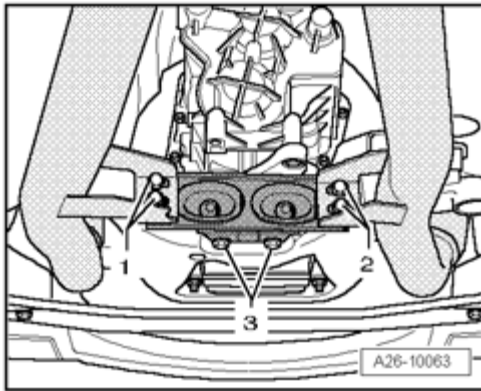


Fig. 598: Removing/Installing Mounting Bolts For Front Exhaust Pipes
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- Flex joint in front exhaust pipe must not be bent more than 10 otherwise it may be damaged.

- Remove bolts - 2 - at rear bracket for front exhaust pipe.

NOTE:

- Ignore - 1 - and - 3 -.

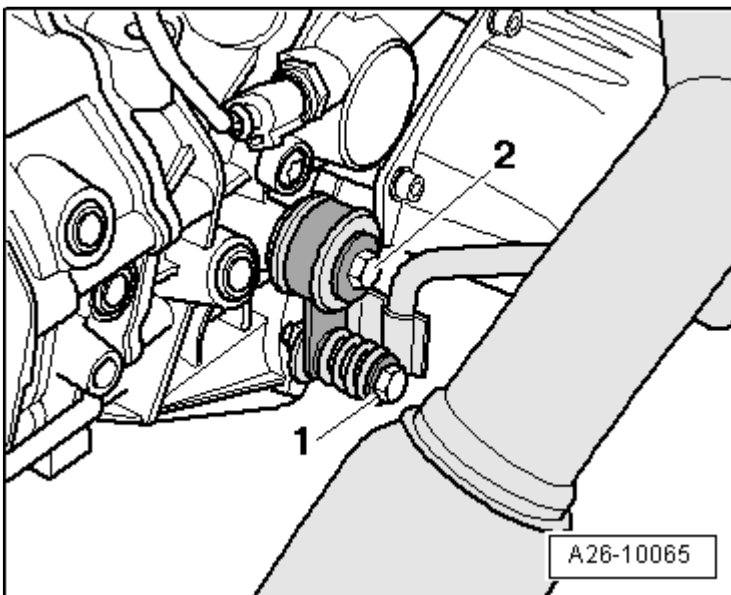


Fig. 599: Removing Bolt At Right Bracket For Front Exhaust Pipe
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with automatic transmission 09L:

- Remove bolt - 1 - at right bracket for front exhaust pipe.

- NOTE:**
- Shown in illustration on a vehicle with manual transmission.
 - Ignore - 2 -.

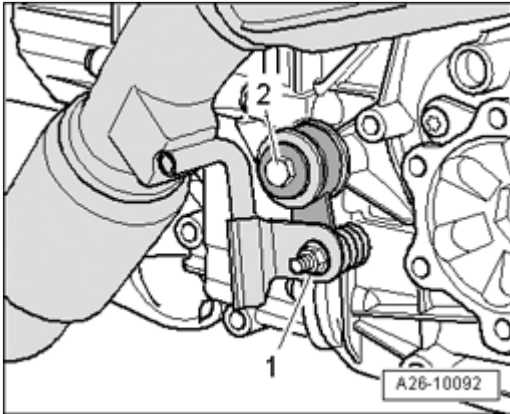


Fig. 600: Removing Bolt At Right Bracket For Front Exhaust Pipe
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Vehicles with multitronic transmission:

- Remove nuts - 1 - and bolts - 2 -.
- Remove right bracket for front exhaust pipe.

All:

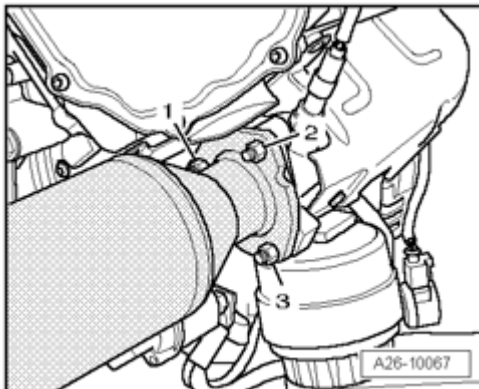


Fig. 601: Removing Nuts & Right Front Exhaust Pipe With Catalytic Converter
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - 1 - and - 3 - which are accessible from bottom for front exhaust pipe/exhaust manifold.

- NOTE:**
- To improve clarity, the removed engine is shown.
 - Remove front exhaust pipe with catalytic converter.

Installing

Installation is in reverse order of removal, noting the following:

NOTE:

- **Replace gaskets, O-rings and self-locking nuts.**
- **Secure all hose connections with hose clamps appropriate for the model .**
- **During installation, all cable ties must be re-installed at the same location.**
- **Electrical wire of oxygen sensor must always be secured in the same position when installing so that contact with the exhaust pipe is avoided.**

- Install subframe cross member --> **40 - FRONT SUSPENSION** .
- Install front cross member --> **50 - BODY - FRONT** .
- Align exhaust system free of tension --> **Exhaust System, Installing**.

NOTE:

- **Individual components of exhaust system mounting: Vehicles with multitronic transmission --> Individual right mounting components - vehicles with Multitronic transmission , vehicles with automatic transmission 09L --> Individual right mounting components - vehicles with automatic transmission 09L**

Tightening Specifications

Component		Nm
Front exhaust pipe with catalytic converter to exhaust manifold		23 1)2)
Mounting strap to front exhaust pipe		23
Front exhaust pipe to	Transmission	23
	Center bracket	23
Heat shield for drive shaft to transmission		23
Hose clamps 9 mm wide		3
1) Replace nuts. 2) Grease with hot bolt paste; Hot bolt paste .		

Exhaust Manifold, Component Overview

Exhaust Manifold, Component Overview

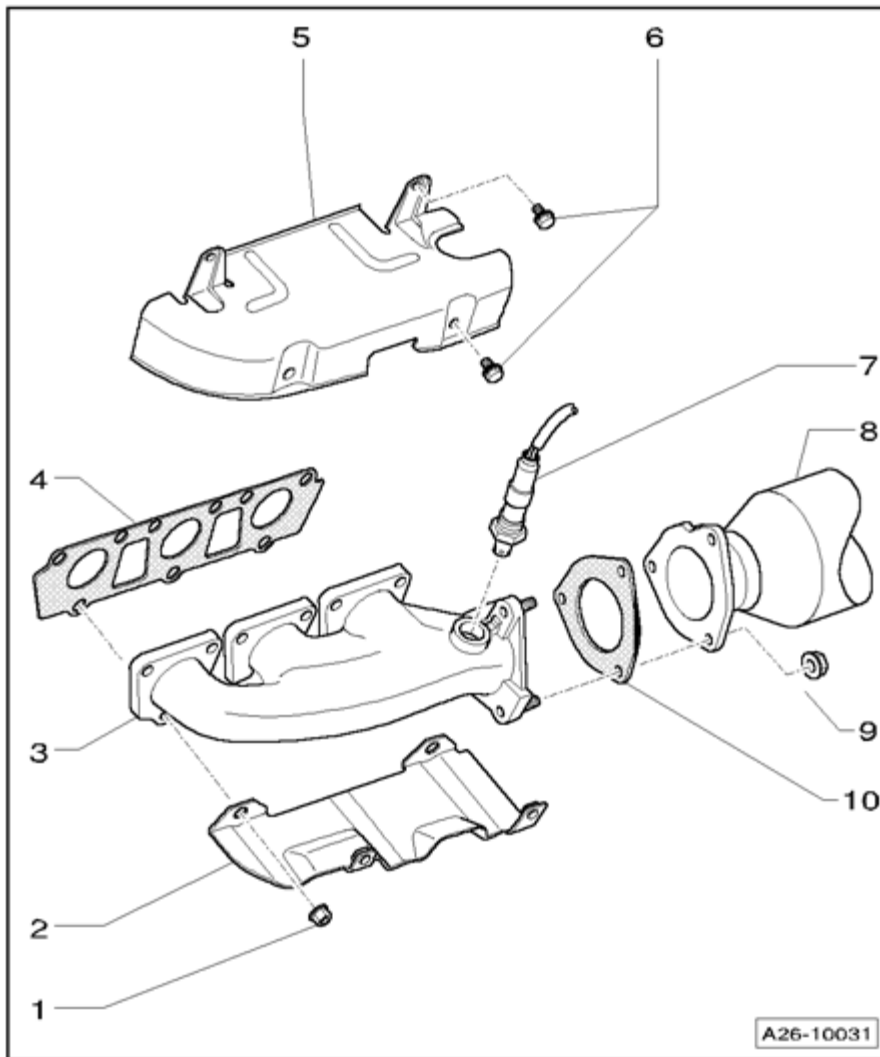


Fig. 602: Exhaust Manifold, Component Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - 25 Nm

- Replace
- Grease with hot bolt paste; Hot bolt paste
- Follow tightening sequence --> **Individual right mounting components - vehicles with automatic transmission 09L** or --> **Individual right mounting components - vehicles with automatic transmission 09L**

2 - Bracket for heat shield

3 - Exhaust Manifold

- Removing and installing: Left --> **Left Exhaust Manifold, Removing and Installing** , right --> **Right**

Exhaust Manifold, Removing and Installing

4 - Gasket

- Replace

5 - Heat shield

6 - 10 Nm

7 - Oxygen sensor - 55 Nm

- Before catalytic converter
- The threads of new oxygen sensors are coated with assembly paste; the paste must not get into slots of oxygen sensor body
- When re-using the old oxygen sensor, grease the threads with hot bolt paste; the paste must not get into slots of oxygen sensor body. Hot bolt paste

8 - Front exhaust pipe

- For cylinder bank 2 (left)
- With decoupling element; the decoupling element must not be bent more than 10 otherwise it may be damaged
- Protect from shocks and impact stress
- Removing and installing --> **Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing**
- Individual components of suspension --> **Individual left mounting components - vehicles with manual transmission and automatic transmission 09L**
- Install exhaust system free of stress --> **Exhaust System, Installing**

9 - 23 Nm

- Replace
- Grease with hot bolt paste; Hot bolt paste

10 - Gasket

- Replace

Left Exhaust Manifold, Removing and Installing

Left Exhaust Manifold, Removing and Installing

Removing

- Remove left front exhaust pipe with catalytic converter --> **Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing** .

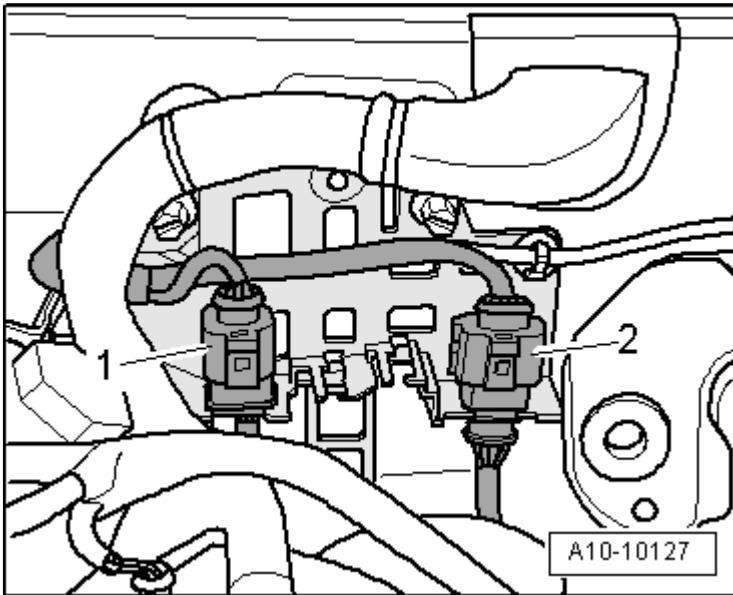


Fig. 603: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) 2 Behind Three Way Catalytic Converter (TWC) G131

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 1 - for Heated Oxygen Sensor (HO2S) 2 G108 and free up wire.

NOTE:

- Ignore - 2 - .

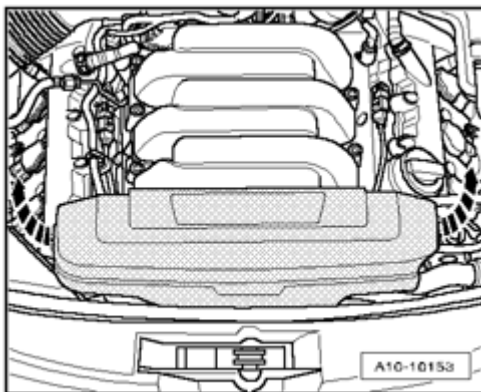


Fig. 604: Identifying Front Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front engine cover - **arrows** - .

NOTE:

- Before removing ribbed belt, mark the turning direction on it with chalk or

a felt tip pen. A reversed direction of rotation can cause damage to the belt under operating conditions.

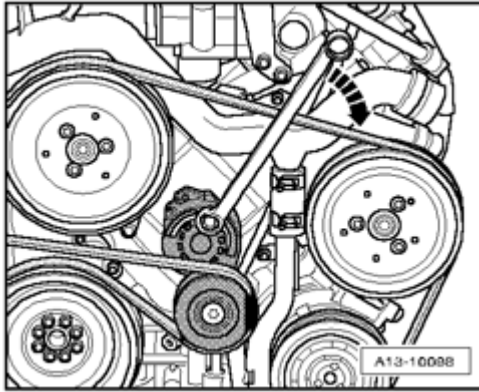


Fig. 605: Pivoting Tensioning Device To Relieve Tension On Ribbed Belt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pivot tensioning device in direction of - **arrow** - to relieve tension on ribbed belt.
- Remove ribbed belt from air conditioning compressor pulley.
- Release tensioner unit

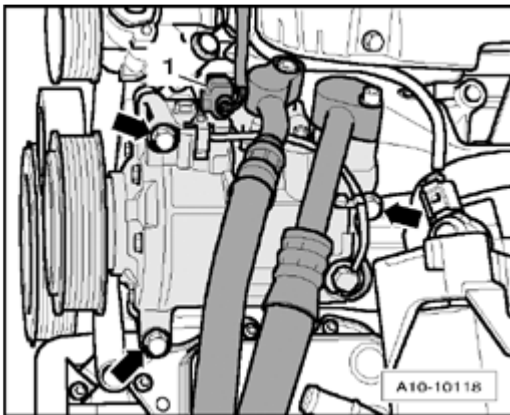


Fig. 606: Disconnecting Connector For Wiring To Air Conditioning Compressor Clutch Solenoid
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate connector - **1** - for wiring to air conditioning compressor clutch solenoid.

CAUTION: The air conditioning refrigerant circuit must not be opened.

- Remove air conditioning compressor from bracket - **arrows** -.

NOTE:

- To prevent damage to the refrigerant lines/hoses, ensure that the lines and

hoses are not stretched, kinked or bent.

- Hang up air conditioning compressor with attached lines on left side of vehicle.

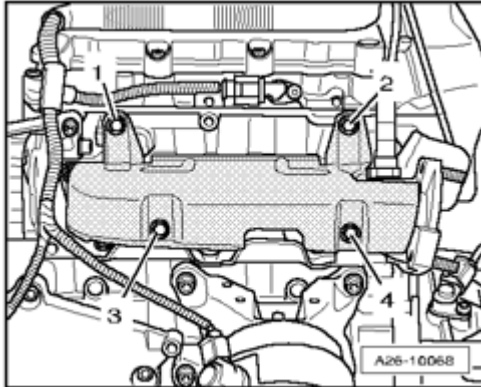


Fig. 607: Removing Bolts And Heat Shield
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 4** - and remove heat shield.

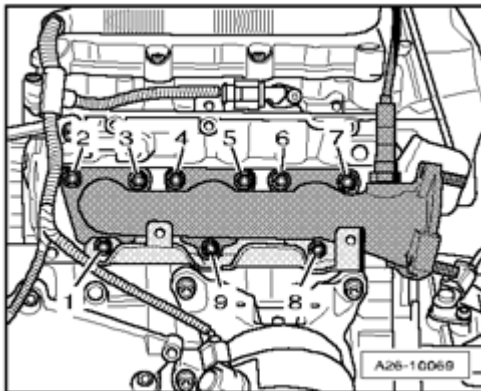


Fig. 608: Removing Nuts, Bracket For Heat Shield & Exhaust Manifold
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **1** - and - **8** - and remove bracket for heat shield.
- Remove nuts - **2 through 7** - and - **9** - and remove exhaust manifold.

Installing

Installation is in reverse order of removal, noting the following:

- NOTE:**
- **Replace gaskets and self-locking nuts.**

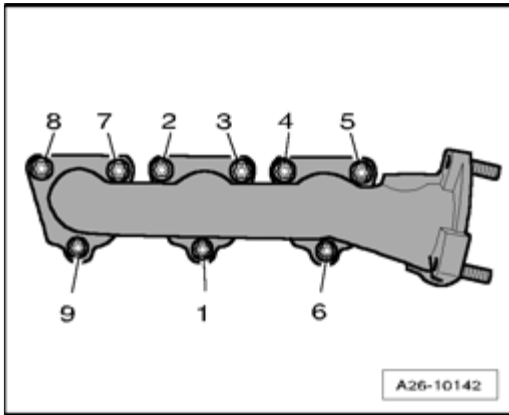


Fig. 609: Exhaust Manifold Tightening Sequence
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten exhaust manifold in 2 stages in sequence indicated as follows:
- Pre-tighten to 15 Nm.
- Tighten to 25 Nm.
- Install left front exhaust pipe with catalytic converter --> **Left Front Exhaust Pipe with Catalytic Converter, Removing and Installing** .
- Align exhaust system free of tension --> **Exhaust System, Installing**.
- Install A/C compressor --> **87 - AIR CONDITIONING** .
- Install ribbed belt --> **Ribbed Belt, Removing and Installing** .

Tightening Specifications

Component	Nm
Exhaust manifold to cylinder head	25 1)2)
Heat shield to heat shield bracket	10
1) Replace nuts. 2) Grease with hot bolt paste; Hot bolt paste .	

Right Exhaust Manifold, Removing and Installing

Right Exhaust Manifold, Removing and Installing

Removing

- Remove right front exhaust pipe with catalytic converter --> **Right Exhaust Pipe with Catalytic Converter, Removing and Installing** .

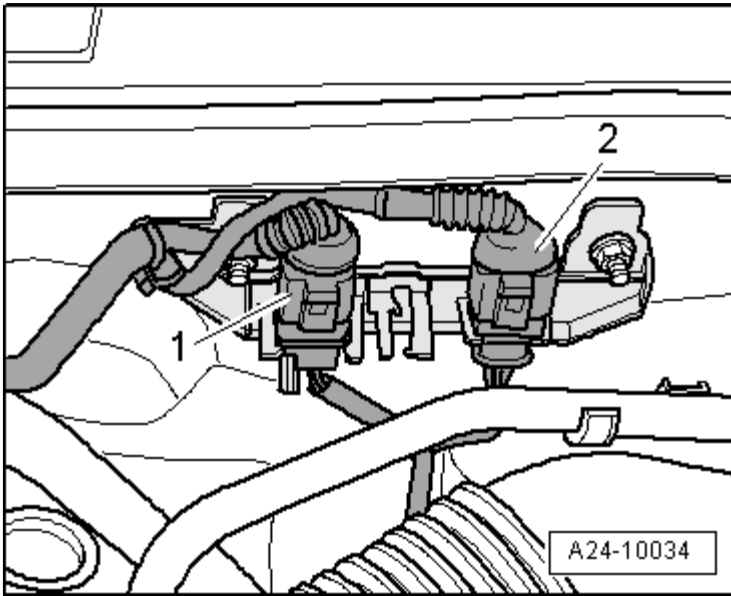


Fig. 610: Disconnecting Electrical Harness Connector For Oxygen Sensor (O2S) Behind Three Way Catalytic Converter (TWC) G130
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 1 - for Heated Oxygen Sensor (HO2S) G39 and free up wire.

NOTE:

- Ignore - 2 -.

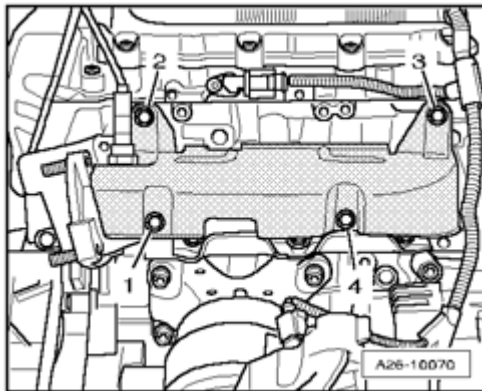


Fig. 611: Removing Bolts And Heat Shield
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - 1 through 4 - and remove heat shield.

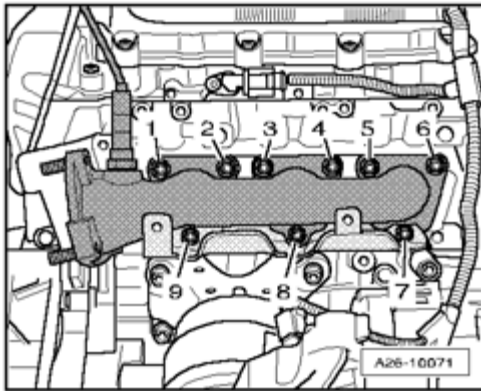


Fig. 612: Removing Nuts, Bracket For Heat Shield & Exhaust Manifold
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - 7 - and - 9 - and remove bracket for heat shield.
- Remove nuts - 1 through 6 - and - 8 - and remove exhaust manifold.

Installing

Installation is in reverse order of removal, noting the following:

- NOTE:**
- Replace gaskets and self-locking nuts.

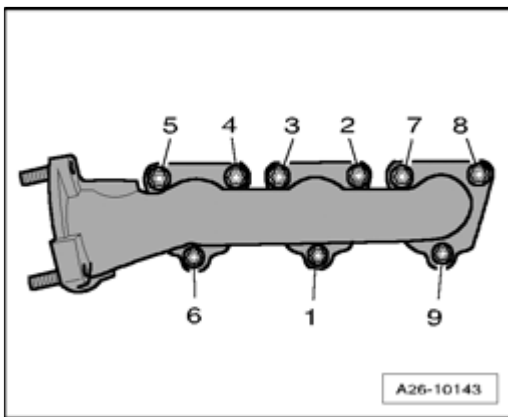


Fig. 613: Exhaust Manifold Tightening Sequence
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten exhaust manifold in 2 stages in sequence indicated as follows:
 - Pre-tighten nuts to 15 Nm.
 - Tighten nuts to 25 Nm.
 - Install right front exhaust pipe with catalytic converter --> **Right Exhaust Pipe with Catalytic Converter, Removing and Installing** .
 - Align exhaust system free of tension --> **Exhaust System, Installing**.

Tightening Specifications

Component	Nm
Exhaust manifold to cylinder head	25 1)2)
Heat shield to heat shield bracket	10
1) Replace nuts. 2) Grease with hot bolt paste; Hot bolt paste .	

Exhaust System, Installing

Exhaust System, Installing

NOTE: • **Align exhaust system when cold.**

Vehicles without double clamps between center and rear muffler

- Loosen bolts of clamping sleeves.

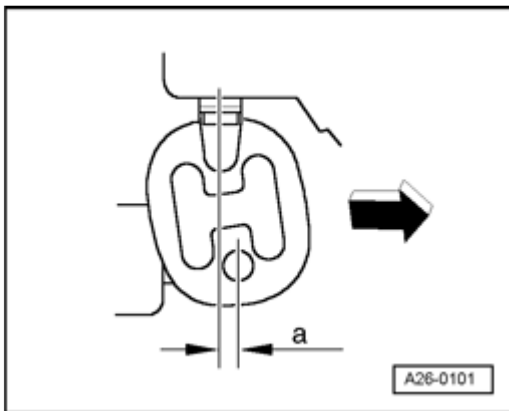


Fig. 614: Pushing Exhaust System Toward Front Of Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push exhaust system far enough forward - **arrow** - until pre-load on retaining loops at right on rear mufflers is - **a** - = 5 to 9 mm.
- Tighten clamping sleeve connections evenly to 23 Nm.
- Align end pipes --> **Tail Pipes, Aligning.**

Vehicles with double clamps between center and rear muffler

NOTE: • **Only for vehicles with clamping sleeves between center and rear mufflers, the center muffler must also be aligned.**

- Loosen bolts of clamping sleeves and.

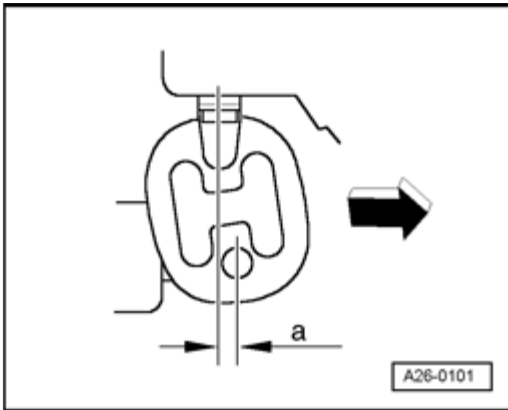


Fig. 615: Pushing Exhaust System Toward Front Of Vehicle
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push front section of exhaust system far enough forward - **arrow** - until pre-load on retaining loops at center muffler - **a** - = 5 to 9 mm.
- Tighten from clamping sleeve connections evenly to 23 Nm.

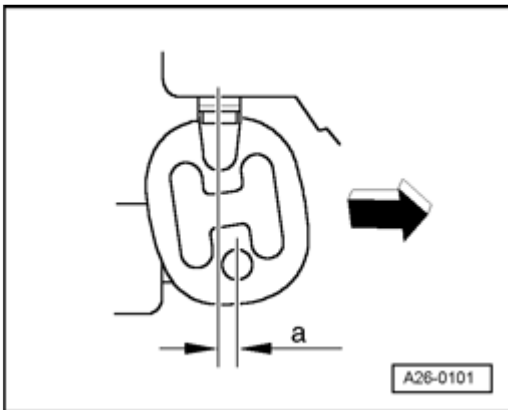


Fig. 616: Pushing Exhaust System Toward Front Of Vehicle
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push rear part of exhaust system far enough forward - **arrow** - so that the pre-tension at rear retaining loops of rear mufflers is - **a** - = 5 to 9 mm.
- Align rear muffler horizontally.
- Tighten bolts for rear clamping sleeve uniformly to 23 Nm.
- Align end pipes --> **Tail Pipes, Aligning**.

Tail Pipes, Aligning

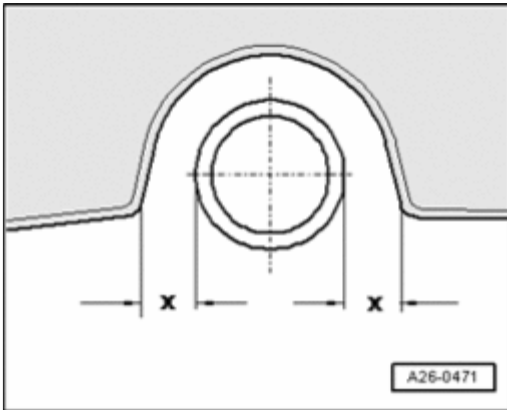


Fig. 617: Checking Distance Of End Pipes At Left/Right To Bumper
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check distance of end pipes at left and right to bumper:
- Dimension - x - left = dimension - x - right.

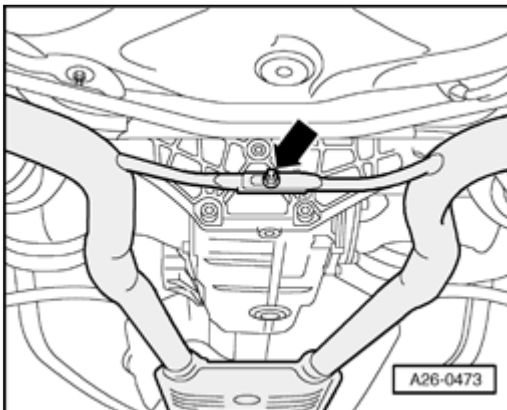


Fig. 618: Loosening Nut Of Brace Between Exhaust Pipes
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

If necessary, correct dimension "x" as follows:

- Loosen threaded connections - **arrow** - of brace between exhaust pipes.
- Adjust distance between rear mufflers.
- Tighten threaded fastener to 25 Nm.

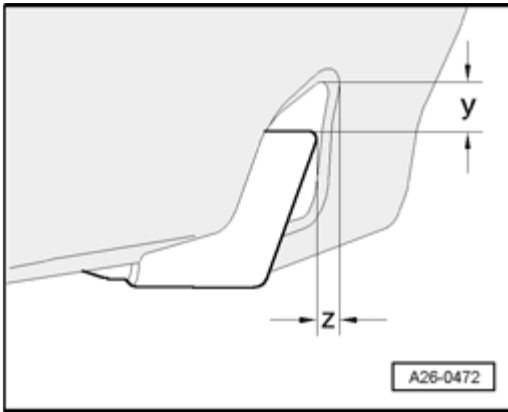


Fig. 619: Checking Distances Of End Pipes To Bumper
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check distances - **y** - and - **z** - of end pipes to bumper:
 - Dimension - **y** - = 17 to 19 mm.
 - Dimension - **z** - = 0 2 mm.
- If necessary, check whether exhaust system is aligned --> **Exhaust System, Installing.**

Exhaust System, Checking for Leaks

Exhaust System, Checking for Leaks

- Start engine and let run at idle.
- Seal tailpipes with cloths or plug for the duration of the leak test.
- Check for leaks by listening at connection areas of cylinder head/exhaust manifold, exhaust manifold/front exhaust pipe etc.
- Repair leaks detected.