

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

ENGINE

3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

13 CRANKSHAFT, CYLINDER BLOCK

DESCRIPTION AND OPERATION

CRANKSHAFT OVERVIEW

NOTE: For assembly work, secure the engine on the engine and transmission holder VAS 6095. Refer to ENGINE, SECURING TO ENGINE AND TRANSMISSION HOLDER .

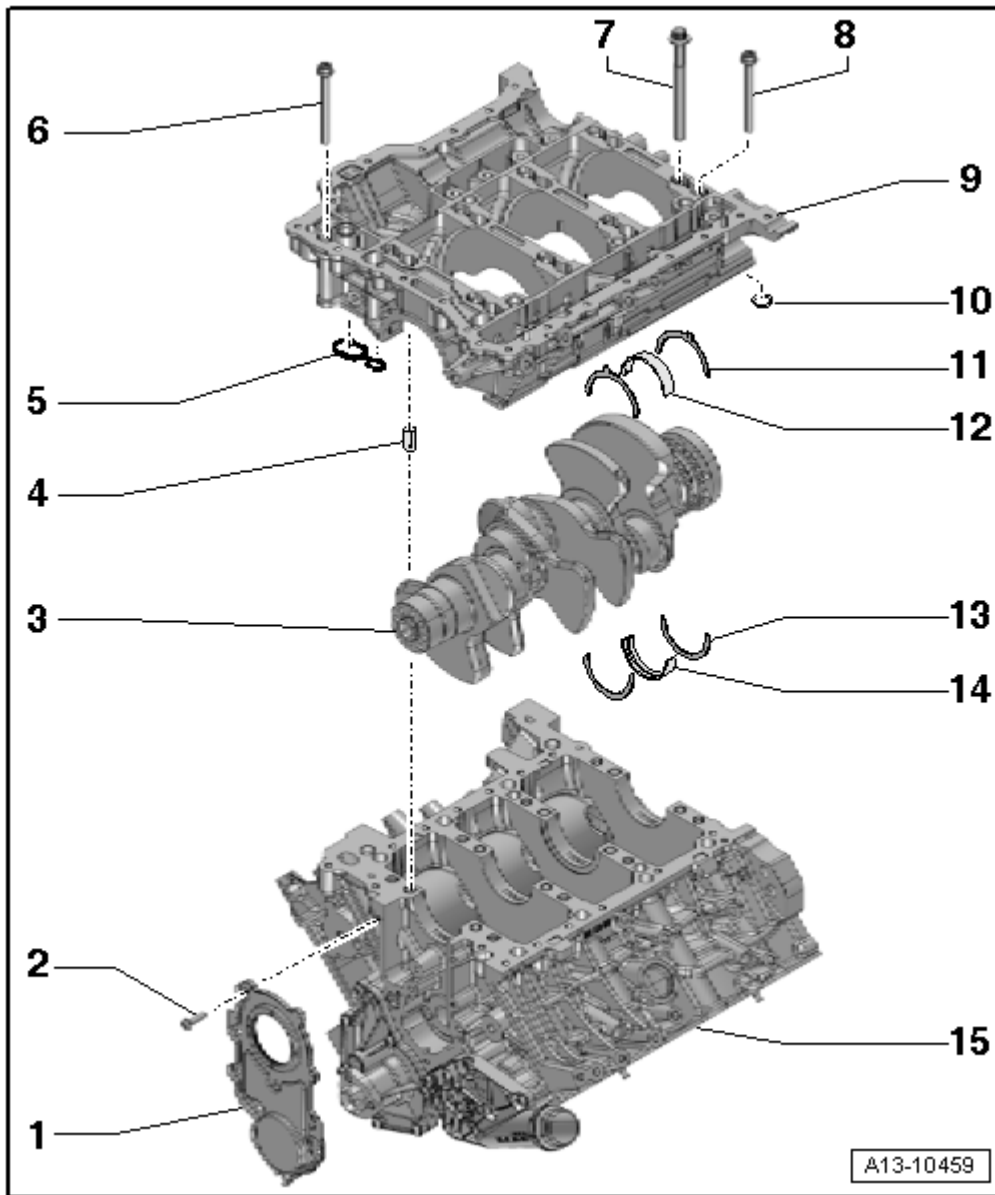


Fig. 1: Identifying Crankshaft Overview

Courtesy of AUDI OF AMERICA, LLC

1. Sealing Flange (belt pulley side)
 - Removing and installing, refer to **SEALING FLANGE WITH CRANKSHAFT SEAL, BELT PULLEY SIDE**
2. Bolt
 - Tightening specification and sequence, refer to **Fig. 16**
3. Crankshaft
 - Axial play, measuring, refer to **CRANKSHAFT, MEASURING AXIAL PLAY**
 - Radial clearance, measuring, refer to **CRANKSHAFT, MEASURING RADIAL PLAY**
 - Crankshaft dimensions, refer to **CRANKSHAFT DIMENSIONS**

4. Alignment Bushing
 - Quantity: 4
 - Insert into guide frame, refer to **Fig. 4**
5. Gasket
 - Replace
6. Bolt
 - For guide frame to cylinder block sealing surfaces
 - There are different bolt lengths and bolt heads
 - Tightening specification and sequence, refer to **Fig. 5**
7. Long Bolt, Large Shoulder
 - For inner row of guide frame
 - Replace
 - Tightening specification and sequence, refer to **Fig. 5**
8. Short Bolt, Small Shoulder
 - For outer row of guide frame
 - Tightening specification and sequence, refer to **Fig. 5**
9. Guide Frame
 - With oil pressure regulation valve -N428-, refer to **Fig. 3**
 - To remove, remove timing chain guide rail item 1: **TIMING MECHANISM DRIVE CHAIN OVERVIEW**
 - Sealant application, refer to **Fig. 4**
 - Oil Pressure Regulation Valve -N428-, removing and installing, refer to **Oil Pressure Regulation Valve -N428-**
10. Seal
 - Replace
11. Thrust Washer
 - Crankshaft bearing 3 only
 - Installed position: the oil groove faces outside
 - Note locating point in guide frame
12. Bearing Shell
 - For guide frame without lubricating groove
 - Replace any worn bearing shells
 - Pay attention to the installed position
 - Insert new bearing shells for guide frame with proper color marking, refer to **Fig. 7**
13. Thrust Washer
 - Crankshaft bearing 3 only
 - Installed position: the oil groove faces outward
 - Note locating point in guide frame

14. Bearing Shell

- For cylinder block with oil groove
- Replace any worn bearing shells
- Pay attention to the installed position
- Insert new bearing shells for cylinder block with proper color marking, refer to **Fig. 6**

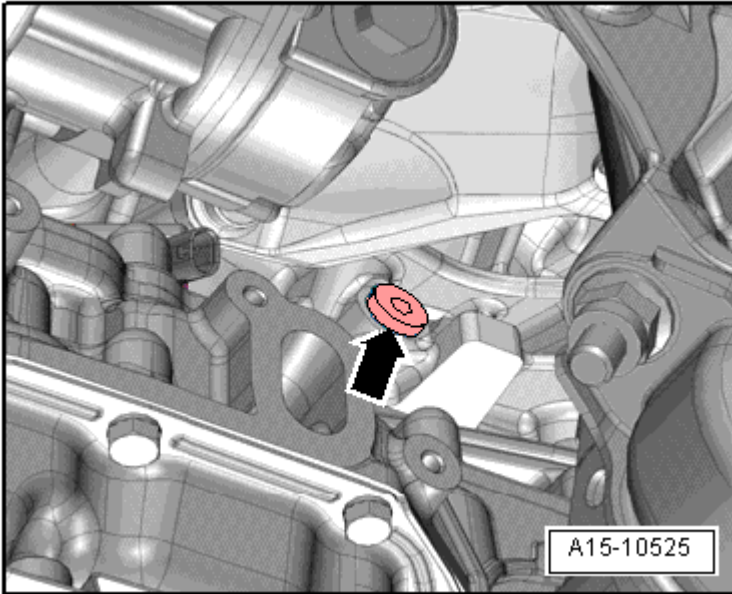
15. Cylinder Block

Fig. 2: Locating Locking Bolt For Top Dead Center (TDC) Mark On Crankshaft
Courtesy of AUDI OF AMERICA, LLC

NOTE: Replace the O-ring.

-- Tighten the locking bolt -arrow- to 14 Nm.

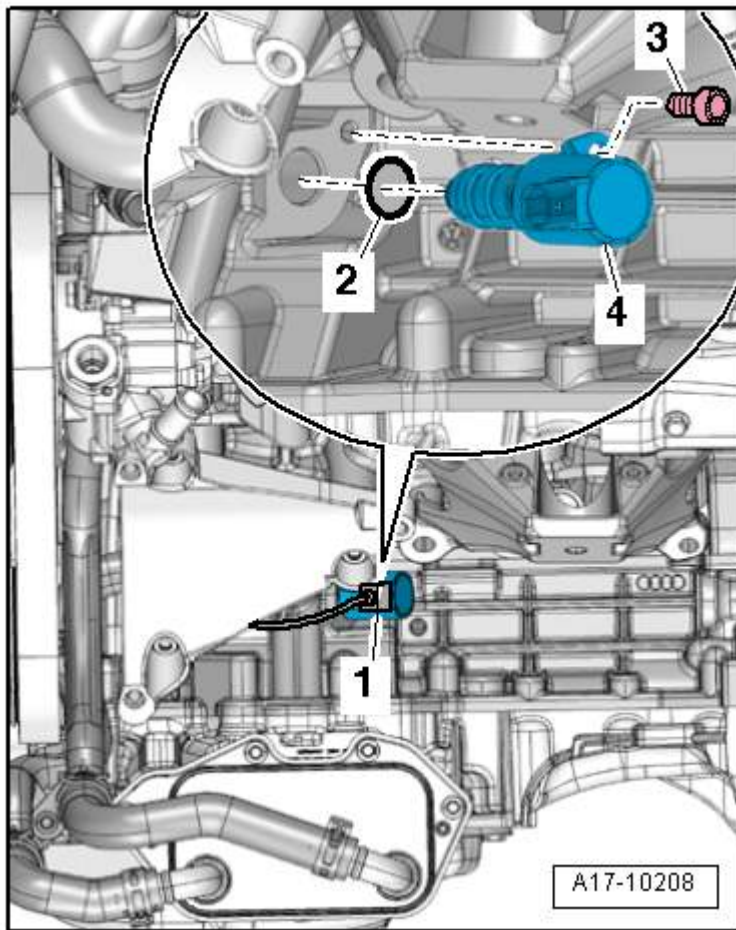


Fig. 3: Identifying Oil Pressure Regulation Valve -N428-
Courtesy of AUDI OF AMERICA, LLC

1. Electrical harness connector
2. O-ring - replace
3. Bolt, 9 Nm
4. Oil pressure regulation valve -N428-

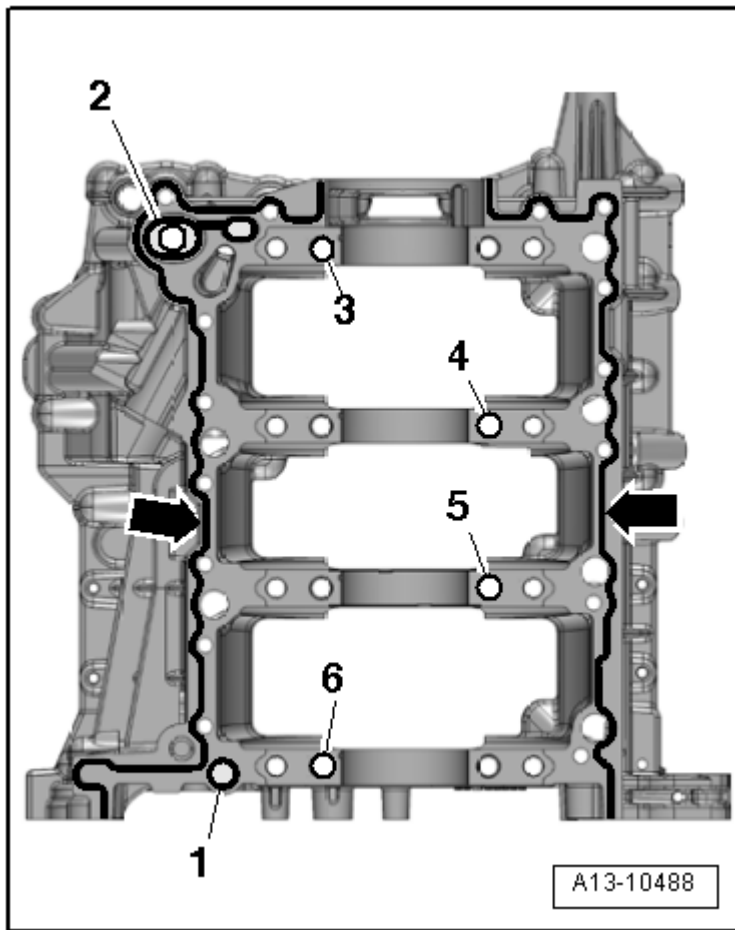


Fig. 4: Identifying Sealant Application For Guide Frame, Position Of Alignment Bushings
 Courtesy of AUDI OF AMERICA, LLC

-- Clean any oil or grease off the sealing surfaces.

-- Apply sealant beads -arrows- to the clean sealing surfaces on the guide frame as shown in the illustration.

- The groove of sealing surface must be completely filled with sealant.
- The sealant beads must be 1.5 to 2.0 mm above the sealing surface.

-- Position seals -1 and 2-.

-- Check if alignment bushings -3 through 6- are inserted at the locations in the guide frame as shown in the illustration.

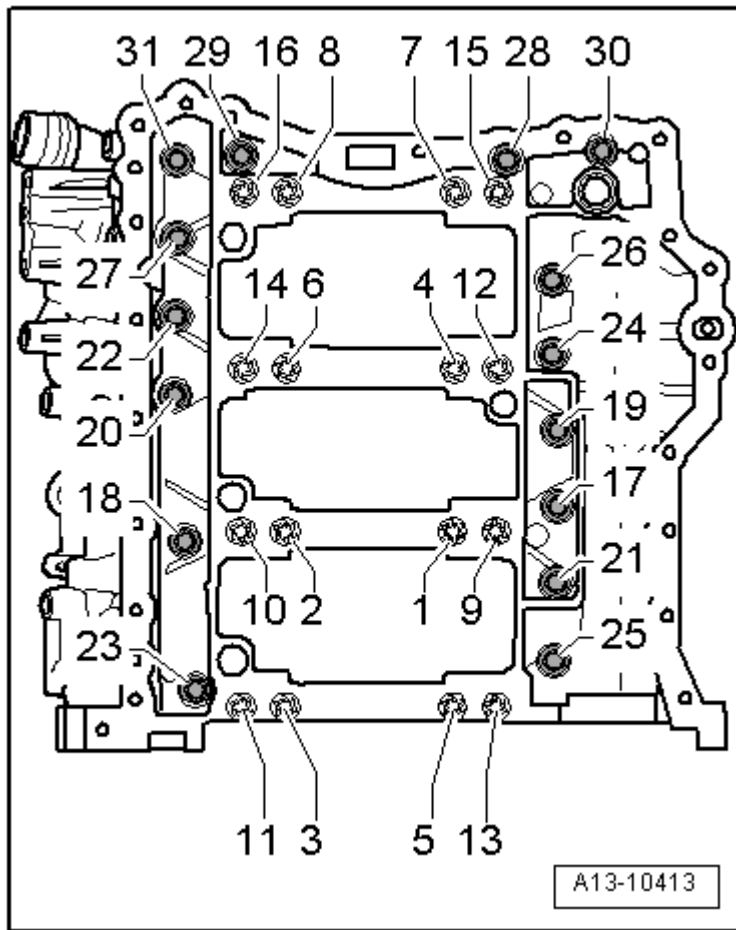


Fig. 5: Identifying Guide Frame Bolts Tightening Sequence
 Courtesy of AUDI OF AMERICA, LLC

NOTE: Replace bolts that are tightened to the specification.

-- Insert the long bolts in the inner row of the guide frame.

-- Tighten the bolts in 3 steps in the sequence shown:

Stage	Bolts	Tightening Specification/Additional Turn
1.	-1 through 16-	50 Nm
2.	-1 through 16-	Tighten 90° further
3.	-17 through 31-	23 Nm

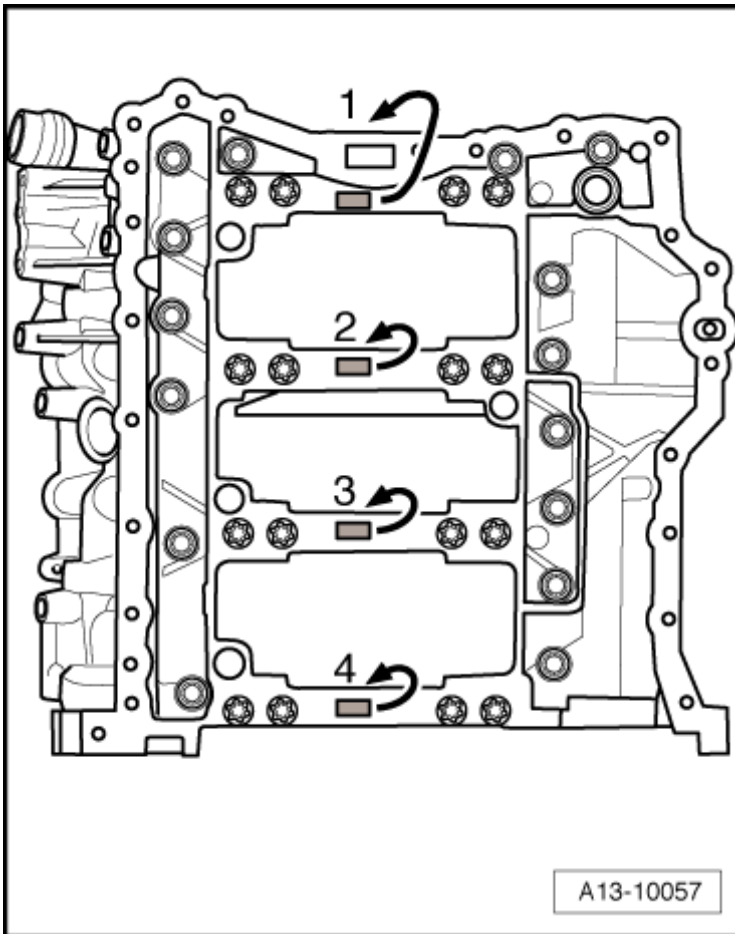


Fig. 6: Allocation Of Crankshaft Bearing Shells For Cylinder Block
 Courtesy of AUDI OF AMERICA, LLC

- Bearing shells with the correct thickness are allocated to the cylinder block in the factory. Colored dots on sides of bearing shells serve for identifying bearing shell thickness.
- Allocation of bearing shells to cylinder block is marked by a letter on the respective bearing on guide frame

Letter on Guide Frame	Color of Bearing
R=	Red
G=	Yellow
B=	Blue
S=	Black

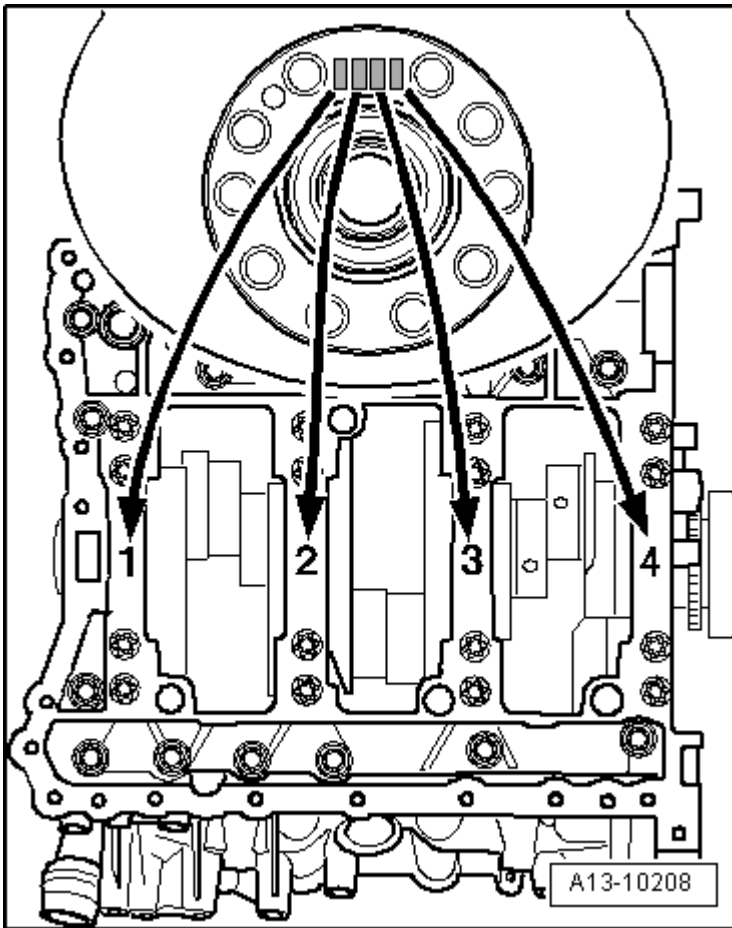


Fig. 7: Allocation Of Crankshaft Bearing Shells For Guide Frame
 Courtesy of AUDI OF AMERICA, LLC

- Bearing shells with the correct thickness are allocated to the guide frame in the factory. Colored dots on sides of bearing shells serve for identifying bearing shell thickness.
- The allocation of the bearing shells for the guide frame is identified by a series of letters on the crankshaft flywheel flange. The first letter of the row of letters represents bearing "1", the second letter is for bearing "2", etc.

Letter on Crankshaft	Color of Bearing
R=	Red
G=	Yellow
B=	Blue
S=	Black

DRIVE PLATE OVERVIEW

NOTE: For assembly work, secure the engine on the engine and transmission holder

VAS 6095. Refer to ENGINE, SECURING TO ENGINE AND TRANSMISSION HOLDER .

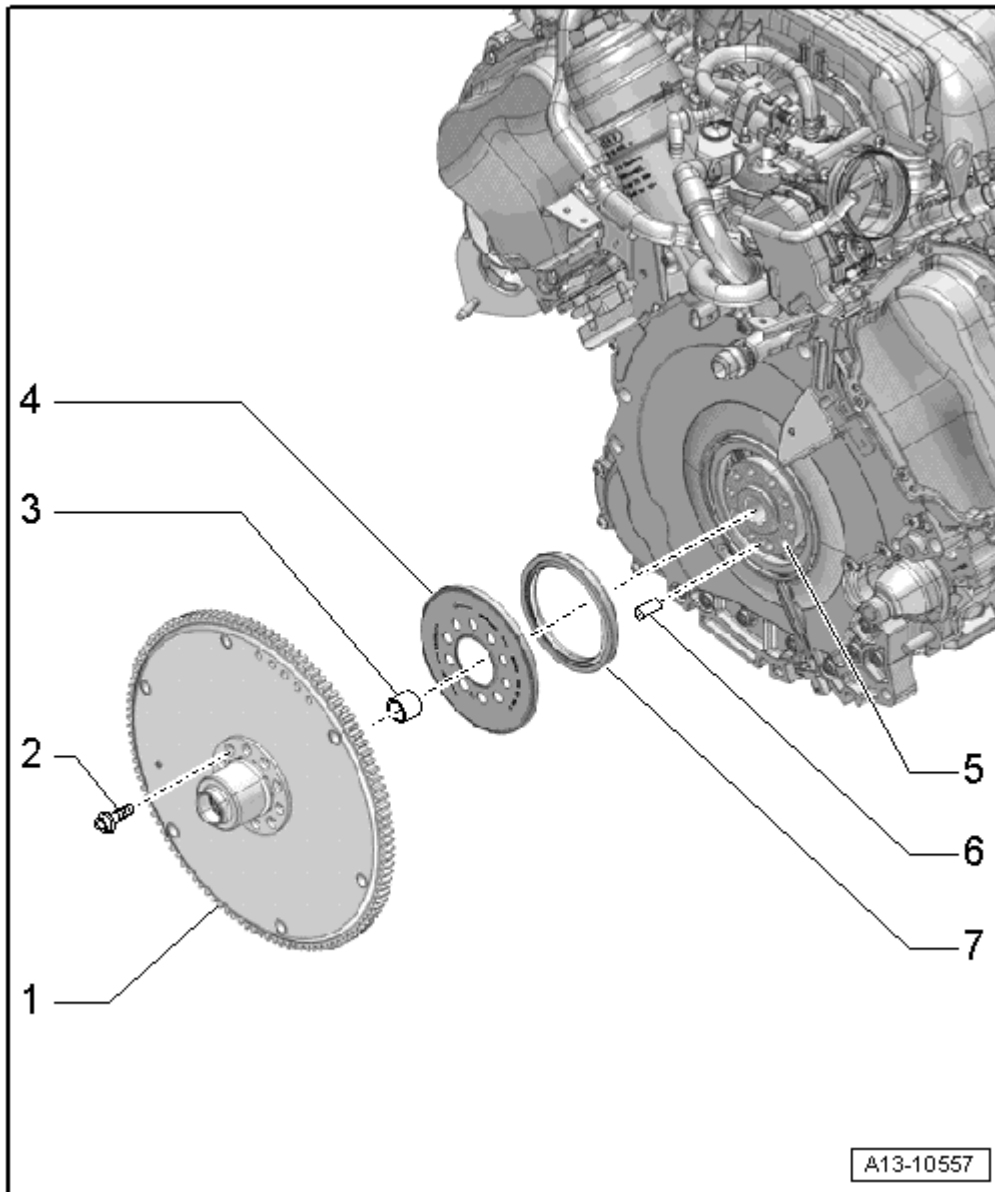


Fig. 8: Identifying Drive Plate Overview
Courtesy of AUDI OF AMERICA, LLC

1. Drive Plate
 - With the bearing flange
 - Check the running surfaces on the bearing flange and the clutch module holes for cracks and signs of wear.
 - Removing and installing, refer to **DRIVE PLATE**
2. Bolt

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- 60 Nm plus an additional 90° turn
 - Replace
3. Needle Bearing
 - Installed position: Closed side faces the engine
 - Removing and installing, refer to **NEEDLE BEARING ON DRIVE PLATE**
 4. Sensor Wheel
 - For the Engine Speed (RPM) sensor -G28-
 5. Crankshaft
 6. Fitting Pin
 7. Crankshaft Shaft Seal, Transmission Side
 - Removing and installing, refer to **CRANKSHAFT SEAL, TRANSMISSION SIDE**

PISTONS AND CONNECTING ROD OVERVIEW

NOTE: **Lubricate all bearings and running surfaces.**

Oil injector jet for piston cooling, refer to Fig. 13.

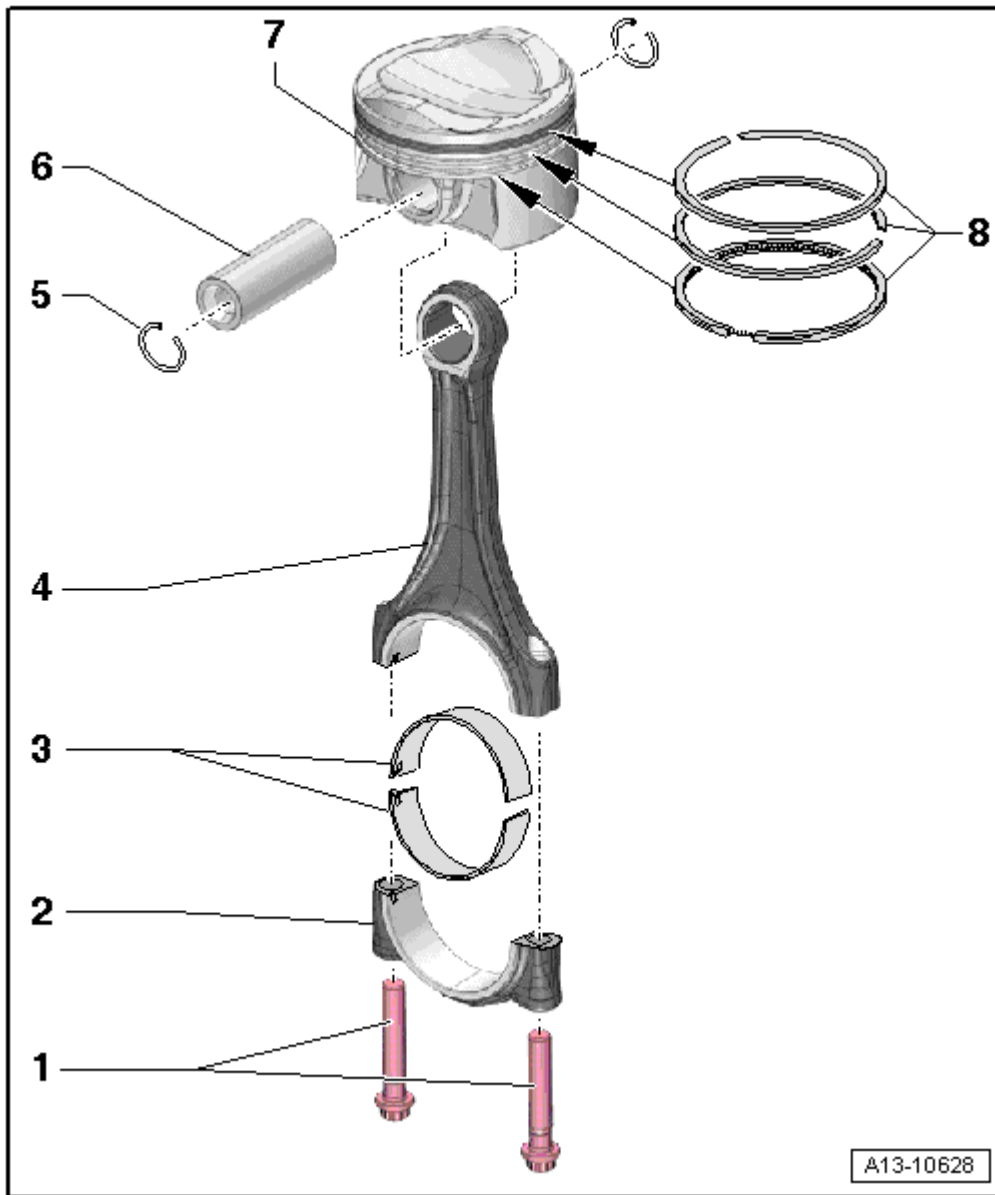


Fig. 9: Identifying Pistons And Connecting Rod Overview
 Courtesy of AUDI OF AMERICA, LLC

1. Bolts
 - 50 Nm + 90° additional turn
 - Replace
 - Lubricate the thread and contact surface
2. Connecting Rod Bearing Cap
 - Mark for installation later
 - Use color to identify the cylinder and connecting rod to which it belongs, refer to **Fig. 11**
 - Installation position of connecting rod pairs, refer to **Fig. 12**
3. Bearing Shells

- Make sure the tabs are tight
- Replace any worn bearing shells
- Oversized bearings are available for reworked crankshaft connecting rod journals.
- The connecting rod tabs are above each other

4. Connecting Rod

- Always replace as a set
- Use color to identify the cylinder and connecting rod bearing cap to which it belongs, refer to **Fig. 11**
- Installation position of connecting rod pairs, refer to **Fig. 12**
- Axial play for each new connecting rod pair: 0.20 to 0.45 mm
- Radial clearance, measuring, refer to **CONNECTING ROD, MEASURING RADIAL CLEARANCE**

5. Locking Ring

- Replace

6. Piston Pin

- Removing and installing, refer to **PISTON**

7. Piston

- Mark the installation position and cylinder allocation, refer to **Fig. 10**
- Removing and installing, refer to **PISTON**
- Replace the piston if there are cracks on the piston head or piston shaft
- Piston and cylinder bore, checking, refer to **PISTON AND CYLINDER BORE, CHECKING**

8. Piston Rings

- Gap, measuring, refer to **Fig. 24**
- Measuring side clearance, refer to **Fig. 25**
- Use piston ring pliers (commercially available) for removing and installing
- Installed position: The "TOP" marking or side with writing faces the piston crown.
- Offset gaps by 120°

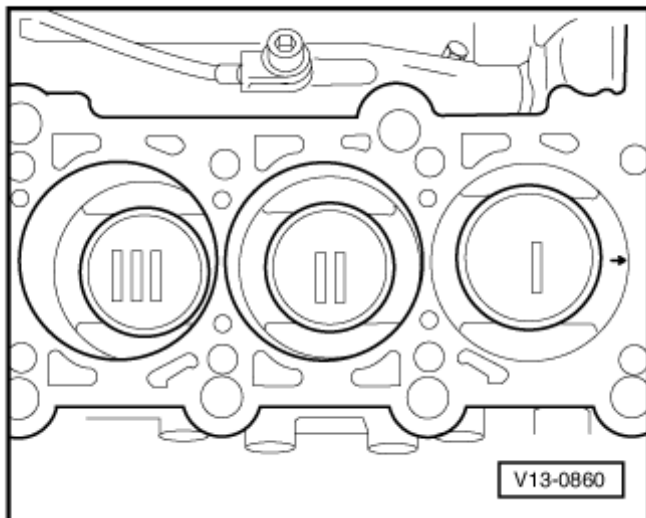


Fig. 10: Identifying Installed Position Of Piston And Piston/Cylinder Allocation
Courtesy of AUDI OF AMERICA, LLC

CAUTION: The coating on the piston crown could be destroyed.

- Mark the allocation to the cylinder on the piston crown with paint to install used pistons. Do not mark the piston head with a punch, notch or something similar.

Installed position:

- The arrows on the piston heads point to the belt pulley side.

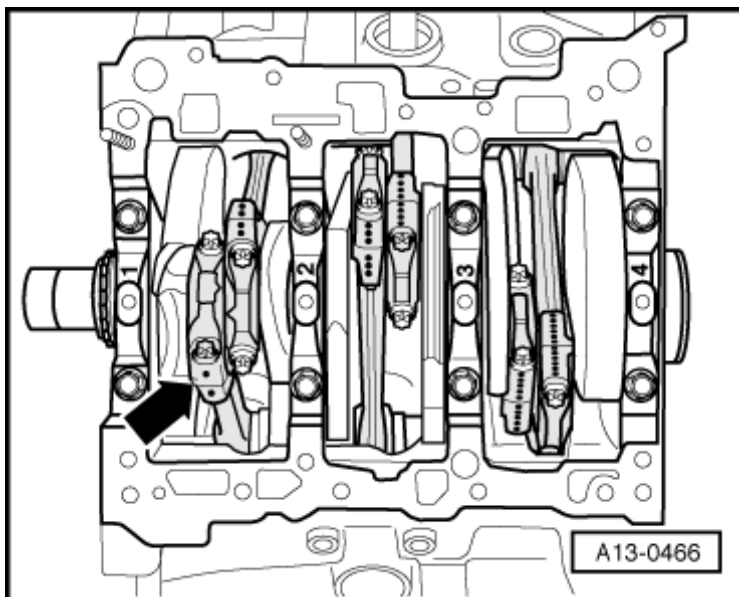


Fig. 11: Marking Connecting Rod
Courtesy of AUDI OF AMERICA, LLC

NOTE: Only replace the connecting rods as a set.

-- Mark the connecting rod and connector rod bearing caps to each other and to the cylinder -arrow- with paint for installation.

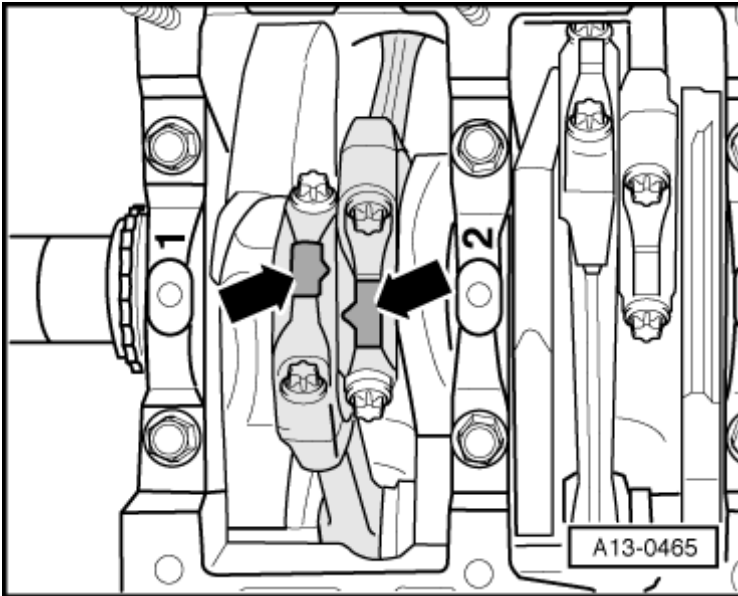


Fig. 12: Connecting Rod, Installed Location
Courtesy of AUDI OF AMERICA, LLC

- The molded tabs -arrows- on the beveled surfaces of the connecting rod pairs "1 and 2", "3 and 4" and "5 and 6" must face each other.

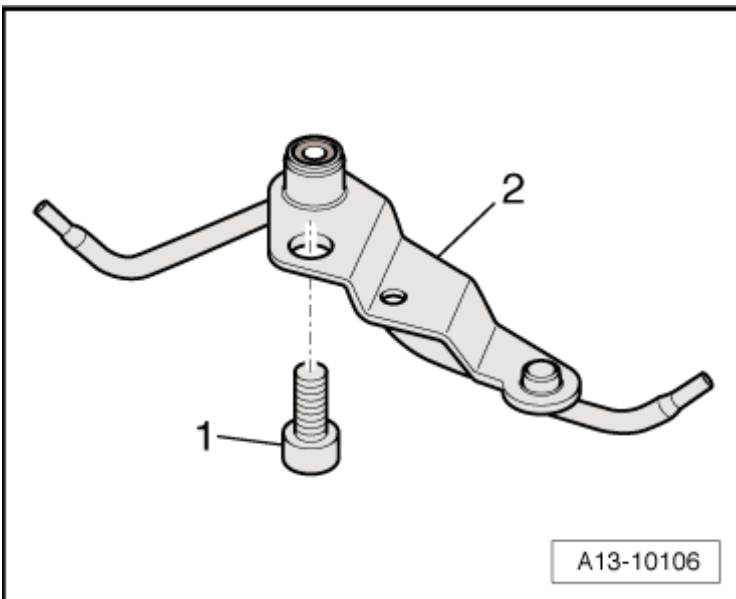


Fig. 13: Identifying Oil Spray Jet For Piston Cooling
Courtesy of AUDI OF AMERICA, LLC

1. Insert the bolt with locking compound and tighten to 9 Nm; locking compound.
2. Oil spray jet with spray nozzle valve (opening pressure 2 to 2.4 bar)

CAUTION: The oil spray jets could get damaged.

- Do not bend the oil injector jets.
- Bent oil injector jets must be replaced.

RIBBED BELT DRIVE, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING OVERVIEW

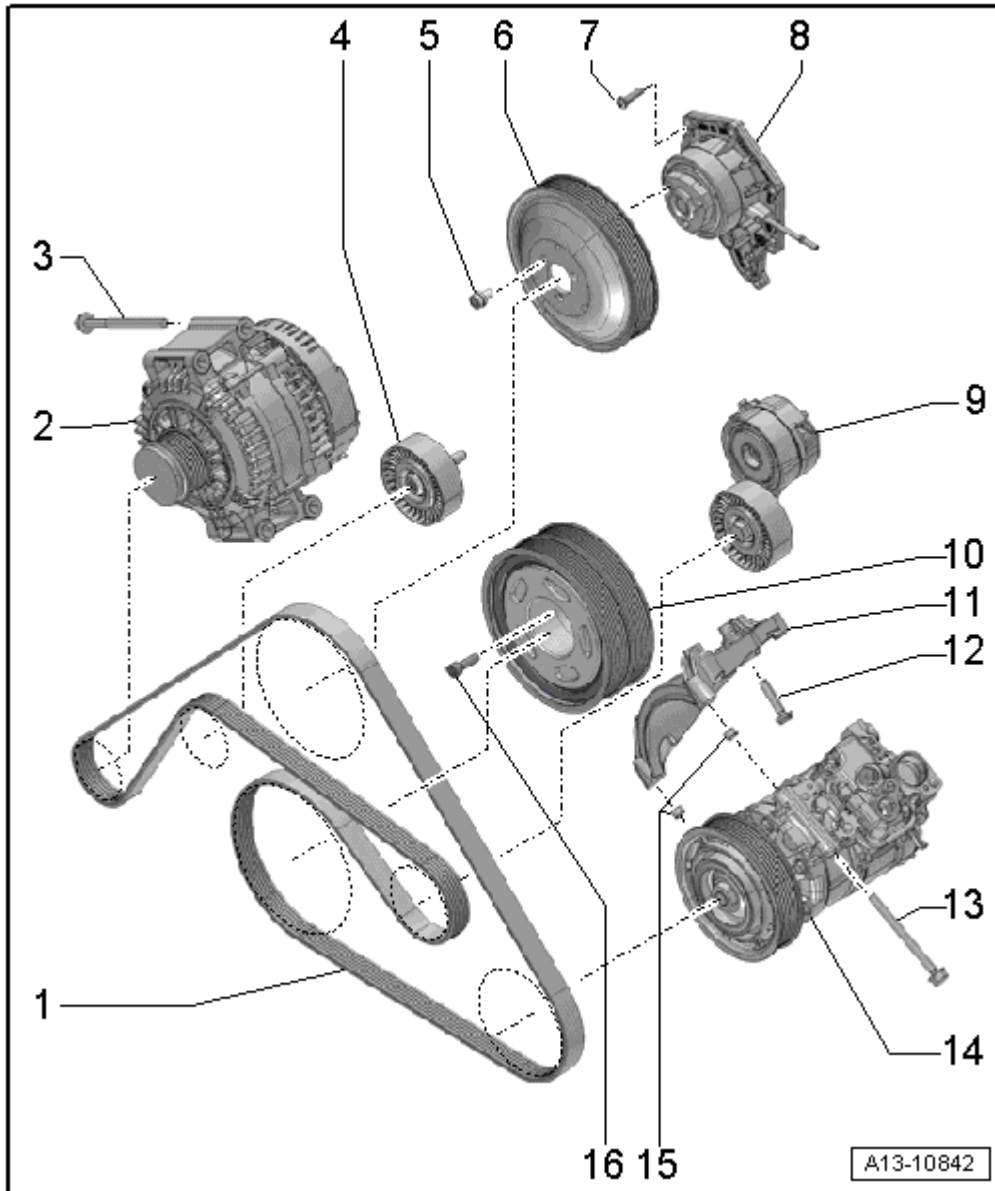


Fig. 14: Identifying Ribbed Belt Drive, Vehicles With Electro-Mechanical Power Steering Overview
 Courtesy of AUDI OF AMERICA, LLC

1. Ribbed Belt
 - Check for wear
 - Before removing, mark direction of rotation using chalk or felt-tip marker
 - Removing and installing, refer to **RIBBED BELT, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING**
 - Do not kink
 - When installing, make sure it is seated correctly on the ribbed belt pulleys
2. Generator
 - Removing and installing, refer to **Removal and Installation**
3. Bolt
 - For the correct tightening specification, refer to **Specifications**
4. Idler Roller
 - 40 Nm
 - For the ribbed belt
5. Bolt
 - Tightening specification, refer to item 2: **COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW**
6. Ribbed Belt Pulley
 - For coolant pump
 - Removing and installing, refer to **COOLANT PUMP**
7. Bolt
 - Tightening specification, refer to item 1: **COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW**
8. Coolant Pump
 - Removing and installing, refer to **COOLANT PUMP**
9. Tensioning Element
 - 40 Nm
 - For the ribbed belt
 - Removing and installing, refer to **RIBBED BELT TENSIONING DAMPER, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING**
10. Vibration Damper
 - With ribbed belt pulley
 - Installation is only possible in one position because of the offset holes
 - Removing and installing, refer to **VIBRATION DAMPER**
11. Bracket
 - For Air Conditioning (A/C) compressor
 - Removing and installing, refer to **Removal and Installation**
12. Bolt

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- Tightening specification, refer to **Specifications**
- 13. Bolt
 - Tightening specification, refer to **Specifications**
- 14. A/C Compressor
 - Do not unfasten/separate refrigerant lines
 - Removing and installing, refer to **Removal and Installation**
- 15. Alignment Bushing
 - Quantity: 2
- 16. Bolt
 - Tightening specification **RIBBED BELT DRIVE, VEHICLES WITH HYDRAULIC POWER STEERING OVERVIEW**

RIBBED BELT DRIVE, VEHICLES WITH HYDRAULIC POWER STEERING OVERVIEW

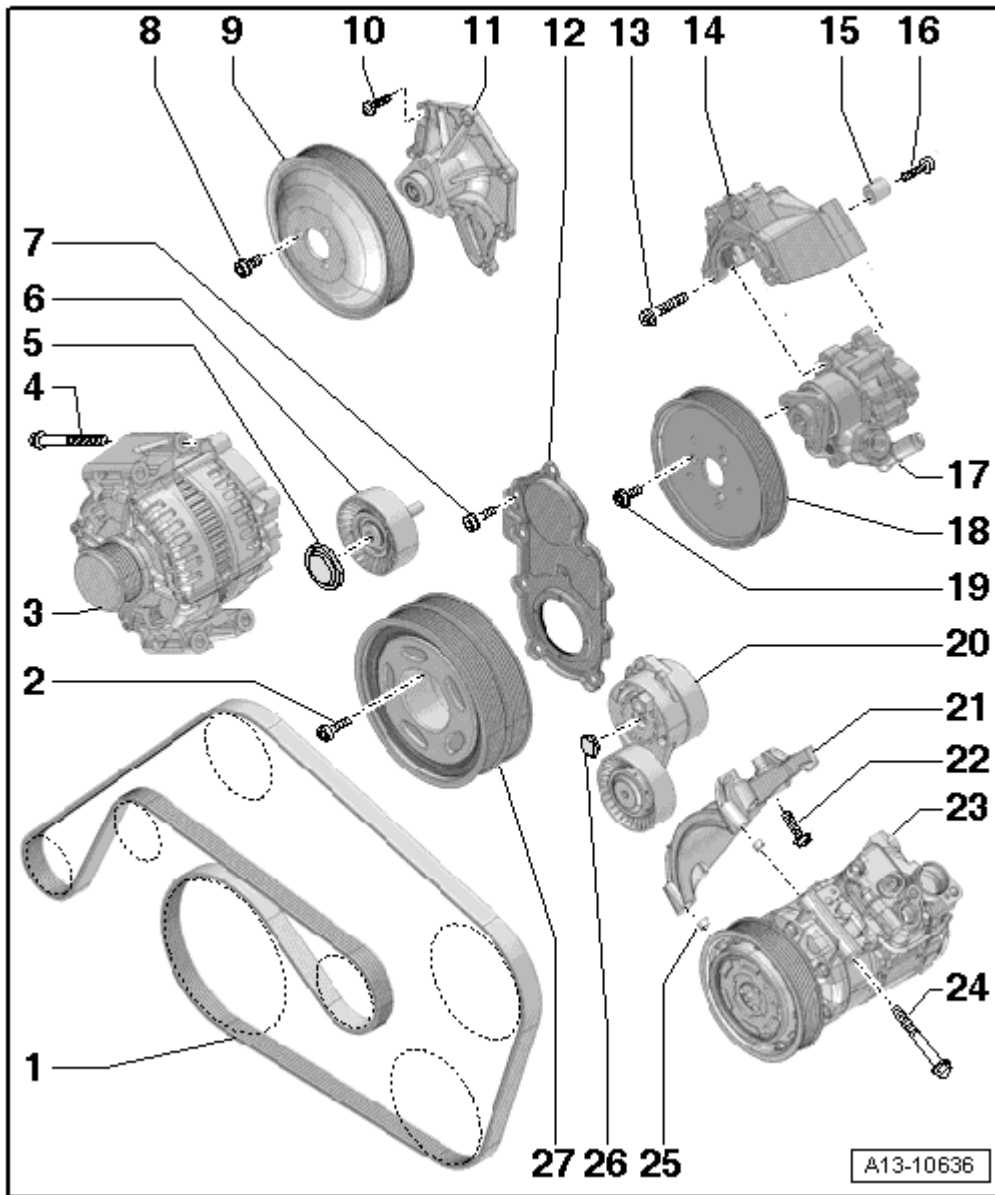


Fig. 15: Identifying Ribbed Belt Drive, Vehicles With Hydraulic Power Steering Overview
 Courtesy of AUDI OF AMERICA, LLC

1. Ribbed Belt

- Check for wear
- Before removing, mark direction of rotation using chalk or felt-tip marker
- Removing and installing, refer to **RIBBED BELT, VEHICLES WITH HYDRAULIC POWER STEERING**
- Do not kink
- When installing, make sure it is seated correctly on the ribbed belt pulleys

2. Bolt

- 20 Nm plus an additional 90° turn

- Replace
- 3. Generator
 - Removing and installing, refer to **Removal and Installation**
- 4. Bolt
 - For the correct tightening specification, refer to **Specifications**
- 5. Idler Roller Cover
- 6. Idler Roller for Ribbed Belt
 - 40 Nm
- 7. Bolt
 - Tightening specification and sequence, refer to **Fig. 16**
- 8. Bolt
 - Tightening specification, refer to 2: **COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW**
- 9. Ribbed Belt Pulley for Coolant Pump
 - Removing and installing, refer to **COOLANT PUMP**
- 10. Bolt
 - Tightening specification, refer to item 1: **COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW**
- 11. Coolant Pump
 - Removing and installing, refer to **COOLANT PUMP**
- 12. Sealing Flange (belt pulley side)
 - Removing and installing, refer to **SEALING FLANGE WITH CRANKSHAFT SEAL, BELT PULLEY SIDE**
- 13. Bolt
 - Tightening specification, refer to **Specifications**
- 14. Power Steering Pump Bracket
- 15. Slide Bushing
- 16. Bolt
 - Tightening specification, refer to **Specifications**
- 17. Power Steering Pump
 - Removing and installing, refer to **Removal and Installation**
- 18. Power Steering Pump Belt Pulley
 - Removing and installing, refer to **Removal and Installation**
- 19. Bolt
 - Tightening specification, refer to **Specifications**
- 20. Ribbed Belt Tensioning Damper
 - 40 Nm
 - Removing and installing, refer to **RIBBED BELT TENSIONING DAMPER, VEHICLES**

WITH HYDRAULIC POWER STEERING

21. Bracket for Air Conditioning Compressor
 - Removing and installing, refer to **Removal and Installation**
22. Bolt
 - Tightening specification, refer to **Specifications**
23. A/C Compressor
 - Do not unfasten/separate refrigerant lines
 - Removing and installing, refer to **Specifications**
24. Bolt
 - Tightening specification, refer to **Specifications**
25. Alignment Bushing
 - Quantity: 2
26. Tensioner Cover
27. Vibration Damper
 - With double ribbed belt pulley
 - Removing and installing, refer to **VIBRATION DAMPER**

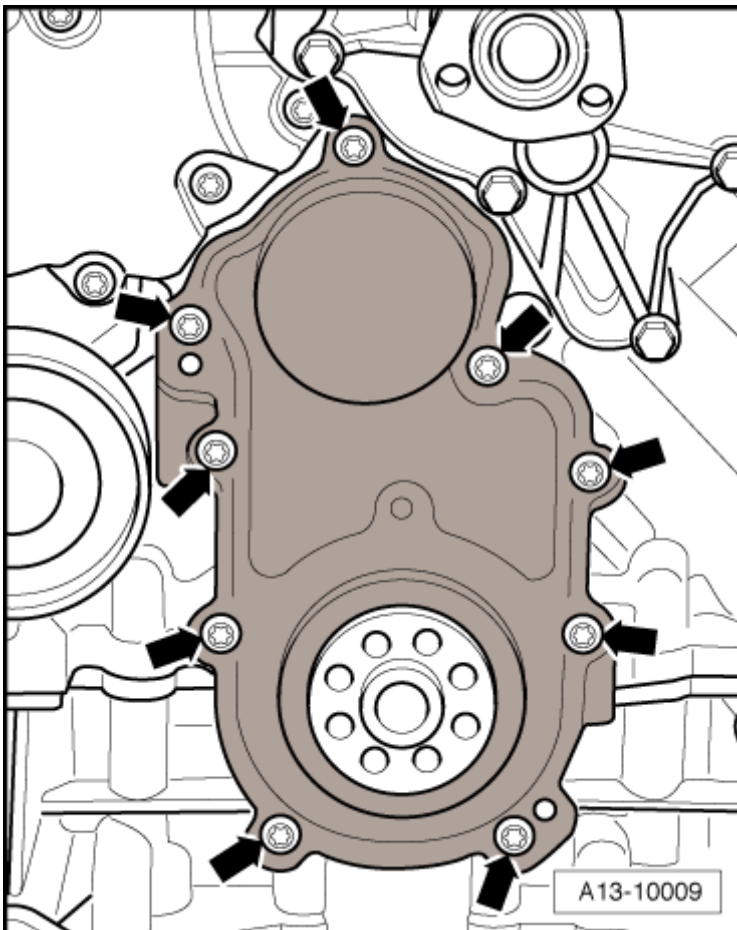


Fig. 16: Identifying Front Sealing Flange Bolts -Arrows-
Courtesy of AUDI OF AMERICA, LLC

-- Tighten the bolts -arrows- in a diagonal sequence in stages to 9 Nm.

SUPERCHARGER RIBBED BELT DRIVE OVERVIEW

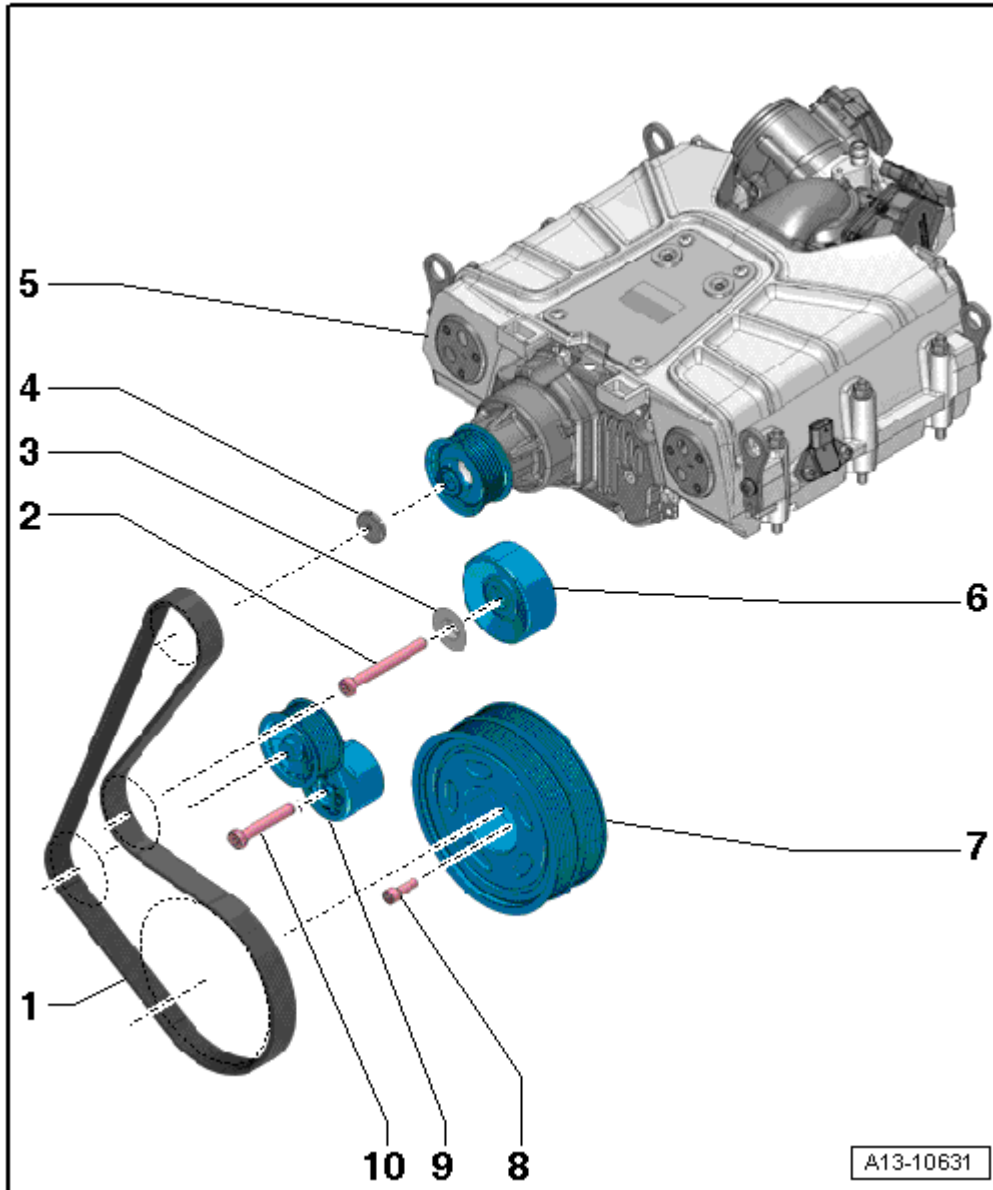


Fig. 17: Identifying Supercharger Drive Belt Overview
Courtesy of AUDI OF AMERICA, LLC

1. Supercharger Ribbed Belt
 - Check for wear
 - Removing and installing, refer to **SUPERCHARGER RIBBED BELT**

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- When installing, make sure it is seated correctly on the ribbed belt pulleys
- 2. Bolt
 - 42 Nm
- 3. Washer
- 4. Cover
- 5. Supercharger
 - Overview, refer to **SUPERCHARGER OVERVIEW**
- 6. Idler Roller for Ribbed Belt
- 7. Vibration Damper
 - With double ribbed belt pulley
 - Installation is only possible in one position because of the offset holes
 - Removing and installing, refer to **VIBRATION DAMPER**
- 8. Bolt
 - Tightening specification **RIBBED BELT DRIVE, VEHICLES WITH HYDRAULIC POWER STEERING OVERVIEW**
- 9. Ribbed Belt Tensioning Damper
 - Removing and installing, refer to **SUPERCHARGER RIBBED BELT TENSIONER**
- 10. Bolt
 - 40 Nm

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Component	Fastener Size	Nm
Connecting Rod ⁽¹⁾	-	50 + 90°
Drive Plate ⁽¹⁾	-	60 + 90°
Idler Roller for Ribbed Belt ⁽³⁾	-	42
Idler Roller for Ribbed Belt ⁽²⁾	-	40
Oil Spray Jet for Piston Cooling ⁽⁴⁾	-	9
Oil Pressure Regulation Valve	-	9
Ribbed Belt Tensioning Damper	-	40
Vibration Damper ⁽¹⁾	-	20 + 90°

(1) Always replace

(2) For bolt tightening clarification, refer to **RIBBED BELT DRIVE, VEHICLES WITH HYDRAULIC POWER STEERING OVERVIEW** and see item -6-

(3) For bolt tightening clarification, refer to **SUPERCHARGER RIBBED BELT DRIVE OVERVIEW** and see item -2-

(4) Insert bolt with locking compound

"TDC" Marking Locking Bolt - Tightening Specification

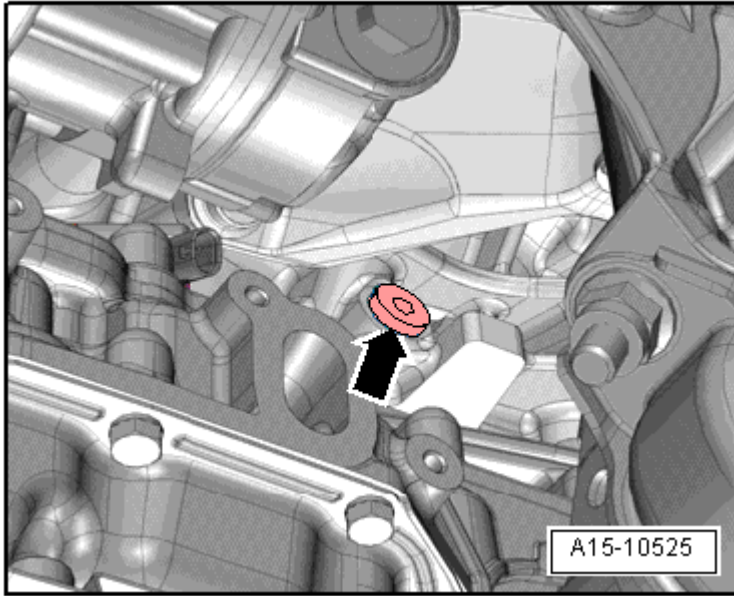


Fig. 18: Locating Locking Bolt For Top Dead Center (TDC) Mark On Crankshaft
Courtesy of AUDI OF AMERICA, LLC

NOTE: Replace the O-ring.

-- Tighten the locking bolt -arrow- to 14 Nm.

Guide Frame

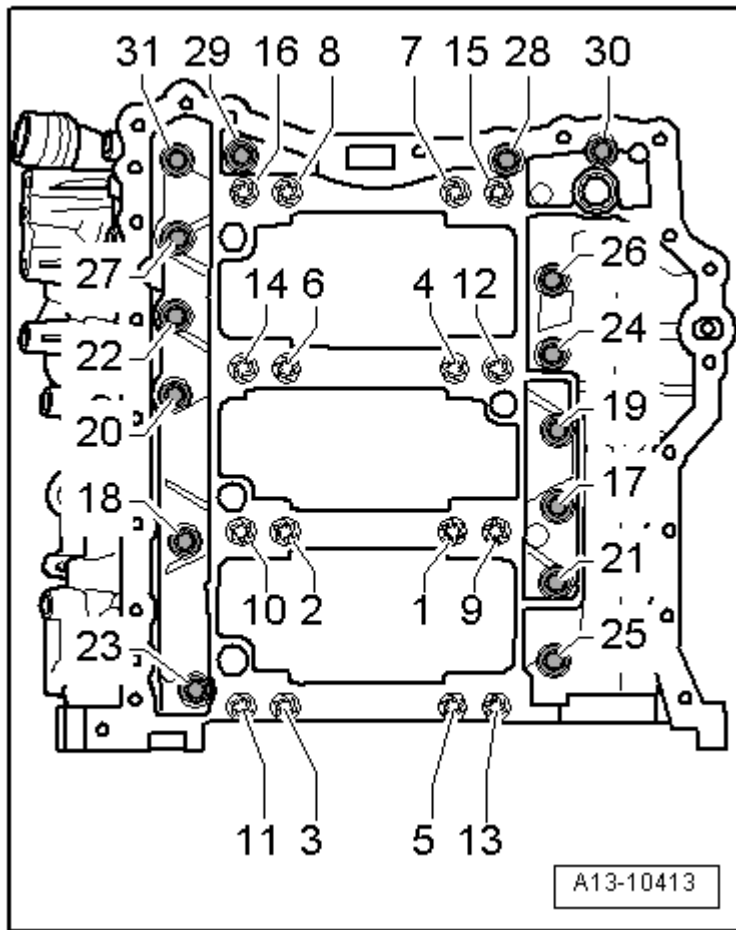


Fig. 19: Identifying Guide Frame Bolts Tightening Sequence
 Courtesy of AUDI OF AMERICA, LLC

NOTE: Replace bolts that are tightened to the specification.

-- Insert the long bolts in the inner row of the guide frame.

-- Tighten the bolts in 3 steps in the sequence shown:

Stage	Bolts	Tightening Specification/Additional Turn
1.	-1 through 16-	50 Nm
2.	-1 through 16-	Tighten 90° further
3.	-17 through 31-	23 Nm

Ribbed Belt Pulley Side Sealing Flange - Tightening Specifications and Sequence

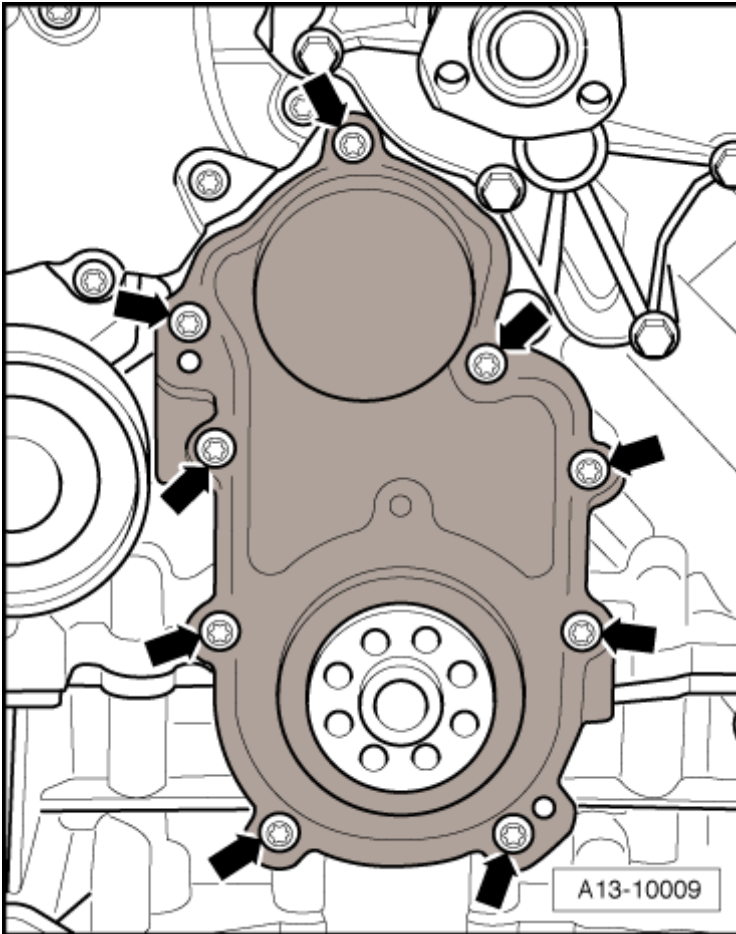


Fig. 20: Identifying Front Sealing Flange Bolts -Arrows-
 Courtesy of AUDI OF AMERICA, LLC

-- Tighten the bolts -arrows- in a diagonal sequence in stages to 9 Nm.

CRANKSHAFT DIMENSIONS

Honing Dimension	Crankshaft Bearing Pin Diameter mm	Crankshaft Connecting Rod Journal Diameter mm
Basic dimension	65.000 - 0.022 - 0.042	56.000 - 0.022 - 0.042

DIAGNOSIS AND TESTING

CRANKSHAFT, MEASURING AXIAL PLAY

Special tools and workshop equipment required

- Dial Gauge Holder VW 387
- Dial Gauge 0-10 mm VAS 6079

Procedure

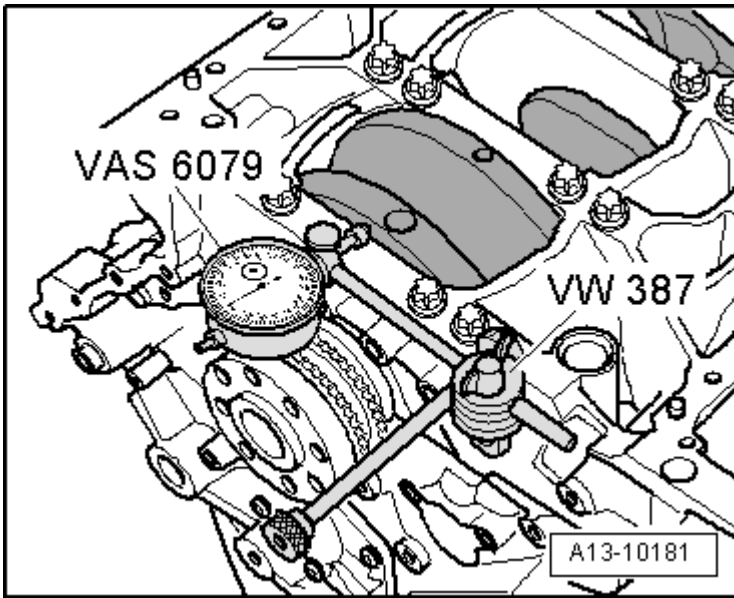


Fig. 21: Attaching VAS 6079 And VW 387 To Cylinder Block
Courtesy of AUDI OF AMERICA, LLC

- Install the VAS 6079 with the VW 387 on the cylinder block as shown in the illustration.
- Place the dial gauge against the crankshaft counterweight.
- Press the crankshaft against the dial gauge by hand and set the gauge to "0".
- Press the crankshaft off the dial gauge and read the measurement.
 - Axial clearance: 0.15 to 0.25 mm.

CRANKSHAFT, MEASURING RADIAL PLAY

Special tools and workshop equipment required

- Plastigage

Procedure

- Remove the guide frame and clean the bearing journals.
- Place the Plastigage over the entire width of the bearing journal or into the bearing shells.
 - Plastigage must rest in center of bearing shell.
- Position the guide frame and tighten it to 50 Nm without tightening it further; do not turn the crankshaft.
- Install the guide frame.

-- Compare width of Plastigage with calibrated scale.

Radial clearance:

- New: 0.015 to 0.055 mm.
- Wear limit: 0.080 mm.

CONNECTING ROD, MEASURING RADIAL CLEARANCE

Special tools and workshop equipment required

- Plastigage

Procedure

- Remove the connecting rod bearing cap.
- Clean the bearing cap and journal.
- Place the Plastigage over the entire width of the bearing journal or into the bearing shells.
- Mount the connecting rod bearing cap and tighten the old bolts to 50 Nm without tightening further. Do not turn crankshaft.
- Install the connecting rod bearing cap.
- Compare width of Plastigage with calibrated scale.

Radial clearance:

- New: 0.010 to 0.052 mm.
- Wear limit: 0.120 mm.

- Replace connecting rod bolts.

PISTON AND CYLINDER BORE, CHECKING

Special tools and workshop equipment required

- Cylinder Gauge VAS 6078 or Inside Micrometer Set 18-100 mm US1033/S

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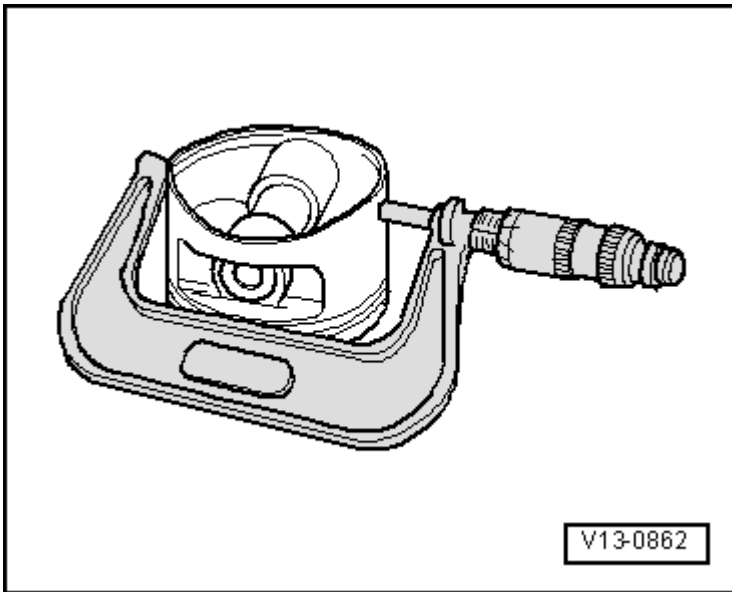


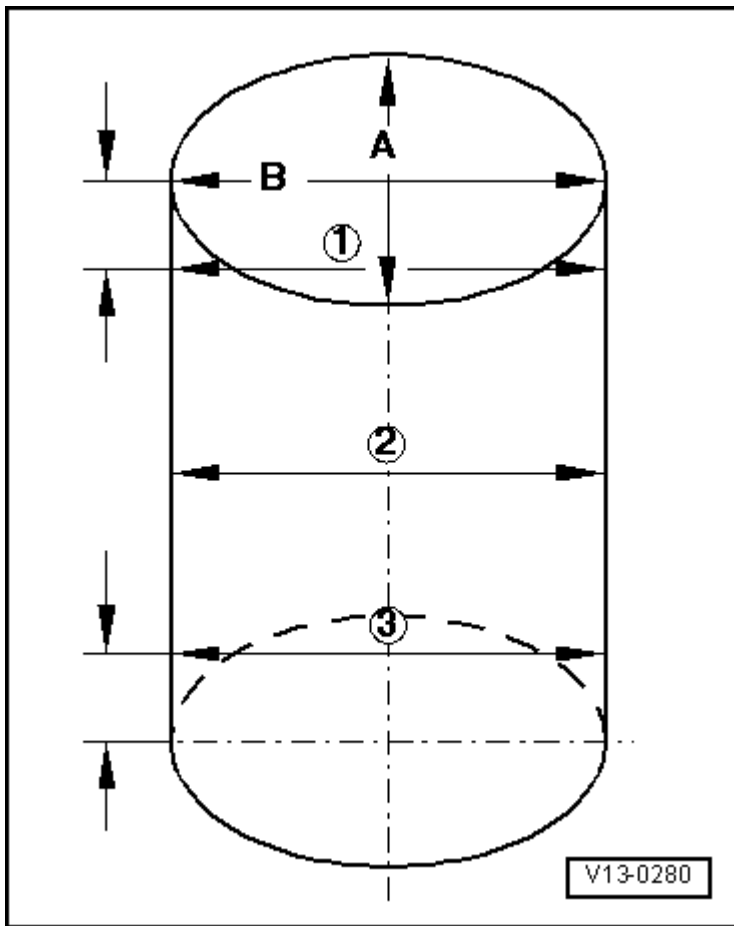
Fig. 22: Checking Piston

Courtesy of AUDI OF AMERICA, LLC

-- Measure approximately 15 mm from the lower edge at a 90° angle to the piston pin axis using a 75 to 100 mm external micrometer.

- Maximum deviation from nominal dimension: 0.03 mm.

Piston Diameter mm	
Nominal dimension	84.49 ⁽¹⁾
(1) Measurement with coating (thickness = 0.02 mm). The coating wears off.	

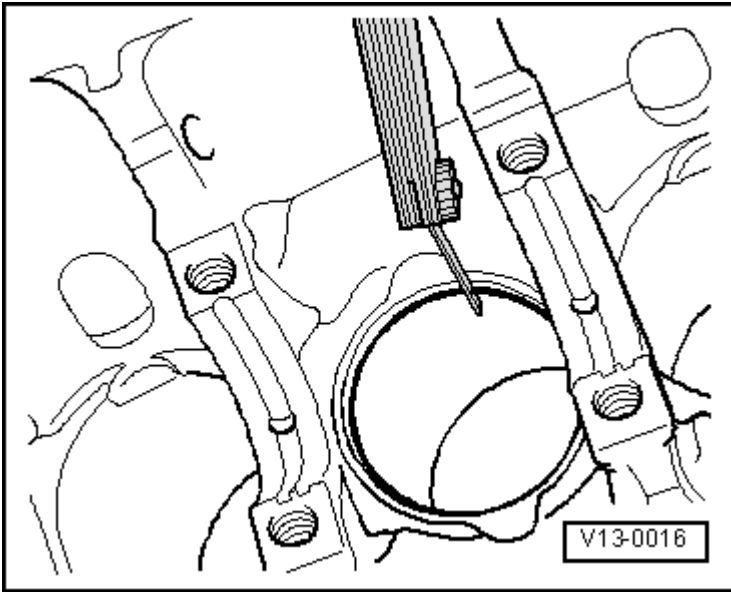
**Fig. 23: Checking Cylinder Bores**

Courtesy of AUDI OF AMERICA, LLC

-- Measure in a diagonal sequence at 3 positions transversely -A- and longitudinally -B- using a VAS 6078 or US1033/S.

- Maximum deviation from nominal dimension: 0.08 mm.

Cylinder Bore Diameter mm	
Nominal dimension	84.51 ¹⁾
• ¹⁾ Measure 50 mm inside the cylinder bore.	

**Fig. 24: Checking Piston Ring Gap**

Courtesy of AUDI OF AMERICA, LLC

- Push the piston ring squarely from above down to approximately 15 mm from the bottom end of the cylinder.
- Use a piston without a piston ring for sliding in.

Piston Ring	New mm	Wear Limit mm
1st Compression ring	0.20 to 0.30	0.80
2nd Compression ring	0.50 to 0.70	0.80
Oil scraping ring	0.25 to 0.50	_ 1)

- 1) Not determined yet.

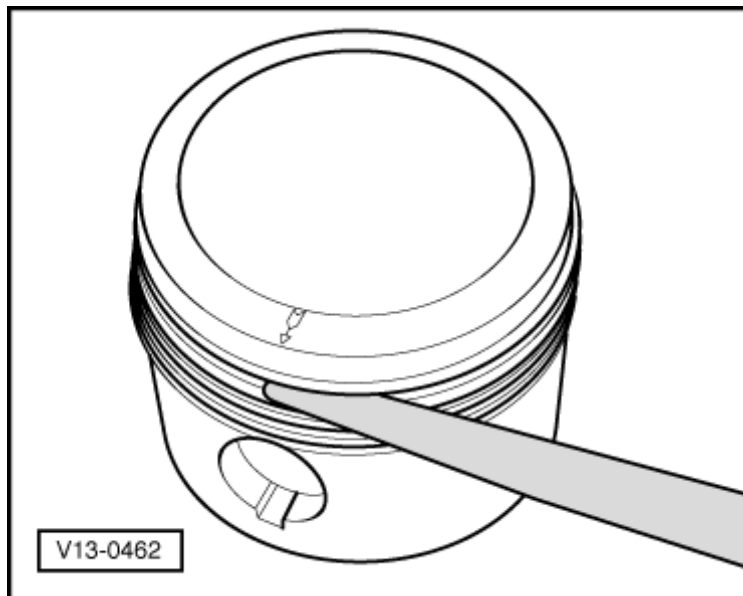


Fig. 25: Checking Piston Ring Side Clearance
 Courtesy of AUDI OF AMERICA, LLC

-- Clean the piston ring groove before checking.

Piston ring	New mm	Wear Limit mm
1st Compression ring	0.04 to 0.08	0.20
2nd Compression ring	0.03 to 0.07	0.20
Oil scraping ring	0.02 to 0.06	0.15

REMOVAL AND INSTALLATION

CRANKSHAFT SEAL, TRANSMISSION SIDE

Special tools and workshop equipment required

- Assembly Tool T10122
- Pulling Hook T20143/2
- Assembly Device T10122/1
- Pull Sleeve T10122/2

Procedure

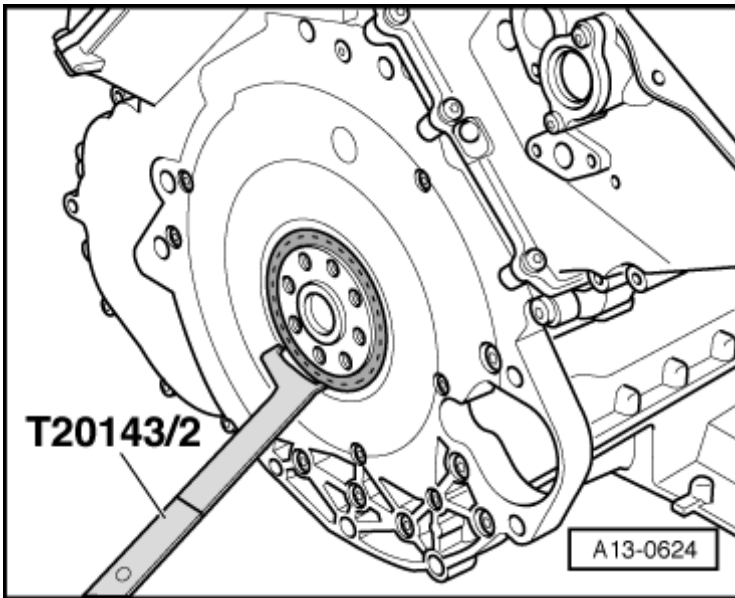


Fig. 26: Prying Out Sealing Ring Using Extractor Lever T20143/2
Courtesy of AUDI OF AMERICA, LLC

- The transmission is removed. Refer to [Removal and Installation] or Removal and Installation .
- Remove the drive plate. Refer to DRIVE PLATE.
- Pry out the with a T20143/2.
- Clean the running and sealing surface.
- Place the T10122/1 on the T10122/2 and slide the shaft seal -A- onto the pull sleeve.

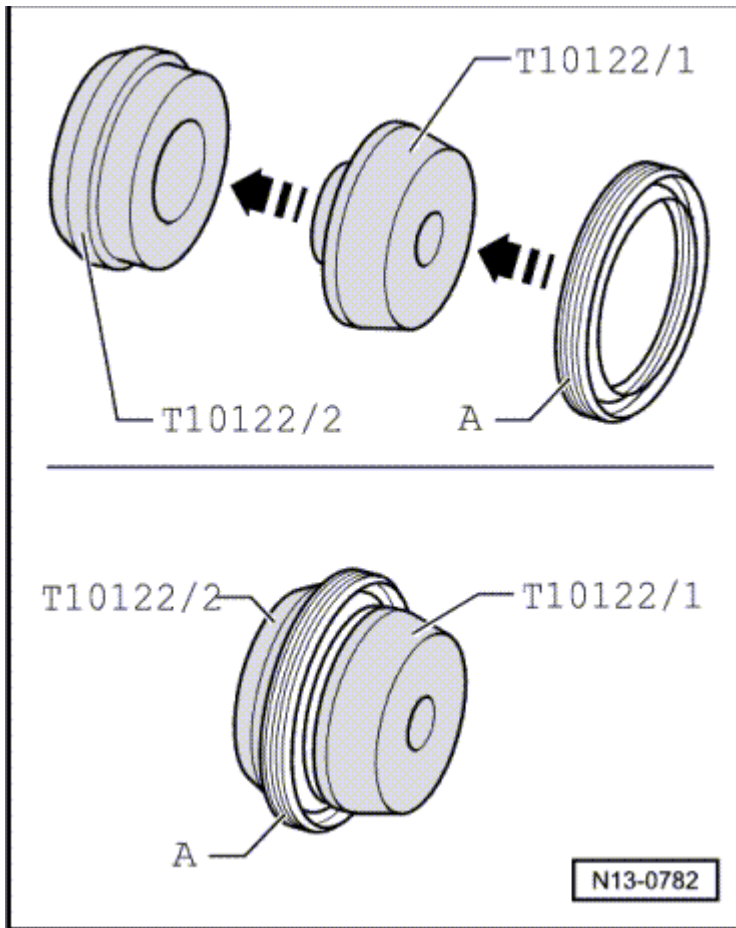


Fig. 27: Identifying Seal, Sleeve T10122/1 And Assembly Tool T10122/2
Courtesy of AUDI OF AMERICA, LLC

- Remove the assembly device.
- Position the T10122/2 with shaft seal -1- on the crankshaft.

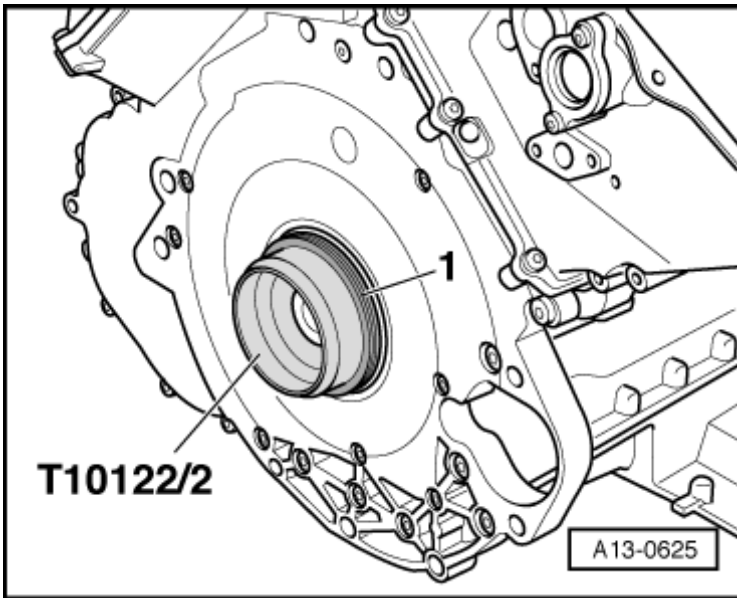


Fig. 28: Identifying Pull Sleeve T10122/2 With Sealing Ring Onto Crankshaft, Installation
Courtesy of AUDI OF AMERICA, LLC

-- Press the shaft seal in evenly all around with the thrust piece T10122/3 until flush.

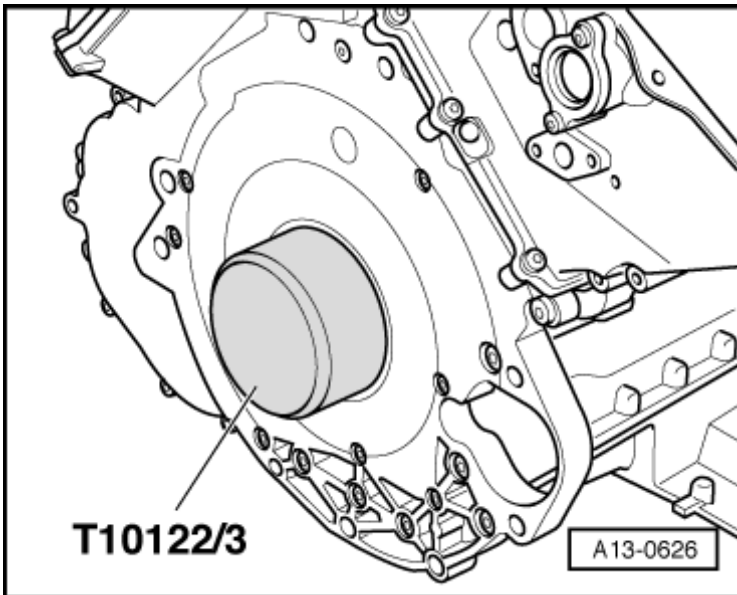


Fig. 29: Pressing In Seal Evenly All Around Until It Reaches Stop Using T10122/3
Courtesy of AUDI OF AMERICA, LLC

-- Install the drive plate. Refer to **DRIVE PLATE**.

DRIVE PLATE

Special tools and workshop equipment required

- Counter Hold Tool 10 - 201

Removing

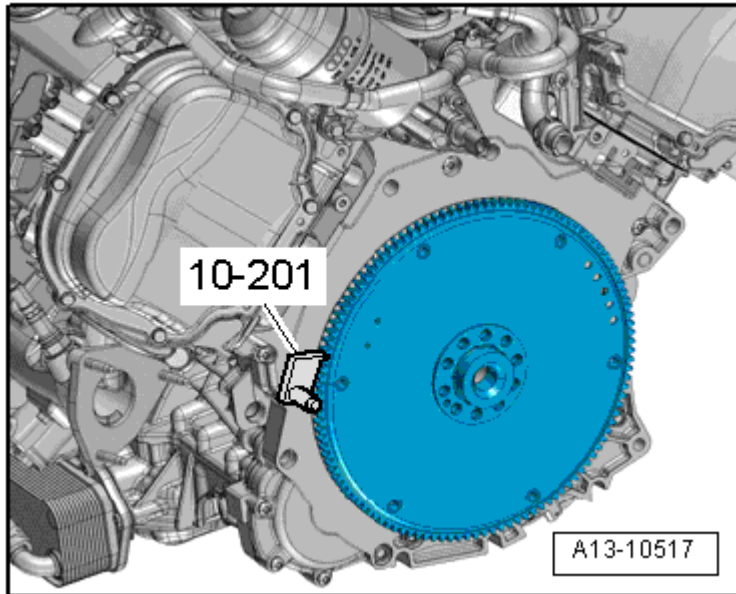


Fig. 30: Identifying Drive Plate Overview
Courtesy of AUDI OF AMERICA, LLC

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

-- Insert the 10 - 201 to loosen the bolts.

CAUTION: The outer surface of the bearing flange at the drive plate could be damaged.

- Use a multipoint socket wrench with a shaft at least 40 mm long to loosen and tighten the drive plate bolts.

-- Remove the bolts, drive plate and sensor wheel.

Installing

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **DRIVE PLATE OVERVIEW**.

NOTE: Replace bolts that are tightened to the specification.

There is a needled bearing in the drive plate. Check if the needle bearing is inserted before installing. Needle bearing, removing from and installing on drive

plate, refer to **NEEDLE BEARING ON DRIVE PLATE**.

-- Be careful of the alignment bushings during installation.

-- Reposition the 10 - 201 to tighten the bolts.

NEEDLE BEARING ON DRIVE PLATE

Special tools and workshop equipment required

- Thrust Plate VW 402
- Tube 31.5 mm Dia.VW 418 A
- Tube 28 mm Dia. 100 mm VW 421
- Sleeve 40 - 103

Procedure

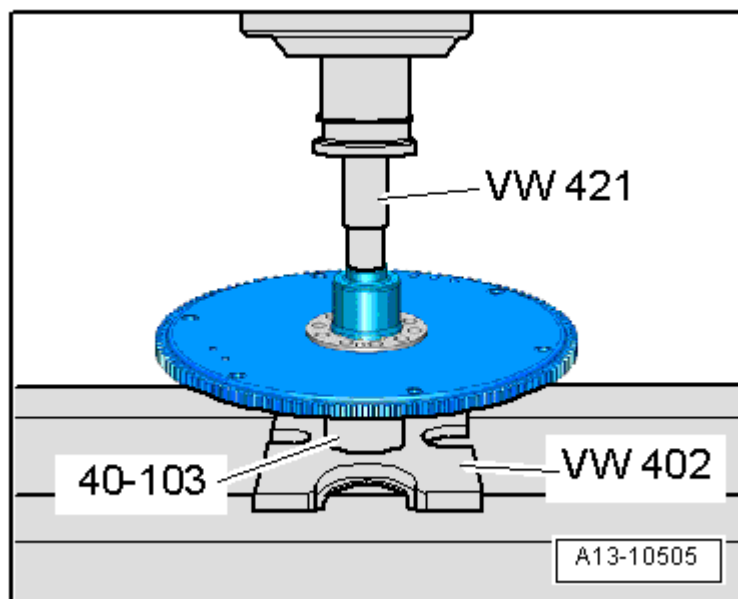


Fig. 31: Identifying Drive Plate, Removal
Courtesy of AUDI OF AMERICA, LLC

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

-- Remove the drive plate. Refer to **DRIVE PLATE**.

-- Place the 40 - 103 under the drive plate to remove and install.

-- Press the bearing sleeve out using the VW 421 and shop press.

- The smaller diameter of the VW 421 faces the drive plate.

-- Carefully press the needle bearing in as far as the stop using the VW 418 A and shop press.

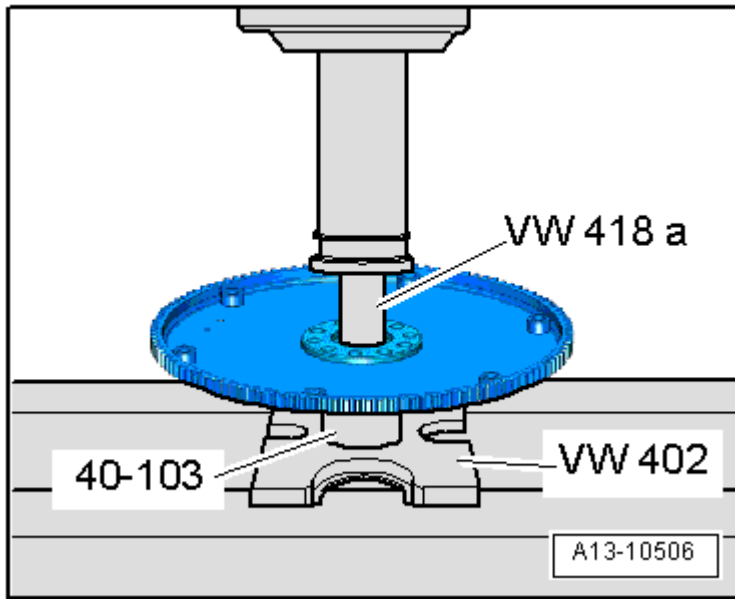


Fig. 32: Identifying Drive Plate, Removal
Courtesy of AUDI OF AMERICA, LLC

- Installed position: the closed side of the needle bearing faces the engine.

-- Installing drive plate. Refer to **DRIVE PLATE**.

PISTON

Special tools and workshop equipment required

- Pilot Drift VW 222 A
- Engine and Transmission Holder VAS 6095
- Piston ring compressor, commercially available

Removing

- Engine secured to VAS 6095. Refer to **ENGINE, SECURING TO ENGINE AND TRANSMISSION HOLDER**

-- Cylinder head, removing, refer to **CYLINDER HEADS** .

-- Remove the upper oil pan. Refer to **UPPER OIL PAN** .

-- Mark the installed position to which the connecting rod bearing cap, cylinder and the connecting rod it belongs for installing again later. Refer to **Fig. 11**.

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

- Remove the connecting rod bearing cap.
- Remove the piston and connecting rod upward.

NOTE: Warm the piston to approximately 60 °C (140 °F) if it is difficult to move the piston pin.

- Remove the locking ring from the eye of the piston bolt.
- Remove the piston pin using VW 222 A.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **PISTONS AND CONNECTING ROD OVERVIEW**.

NOTE: Replace bolts that are tightened to the specification.

- Coat the contact surfaces on the bearing shells with oil.
- Install the piston using a commercially available piston ring compressor.

Installed position:

- Piston, refer to **Fig. 10**.
 - Connecting rod, refer to **Fig. 12**.
- Install the connecting rod bearing cap according to the marking.
 - Install the upper oil pan. Refer to **UPPER OIL PAN** .
 - Installing cylinder head. Refer to **CYLINDER HEADS** .

RIBBED BELT, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING

Special tools and workshop equipment required

- Locking Pin T10060 A

Removing

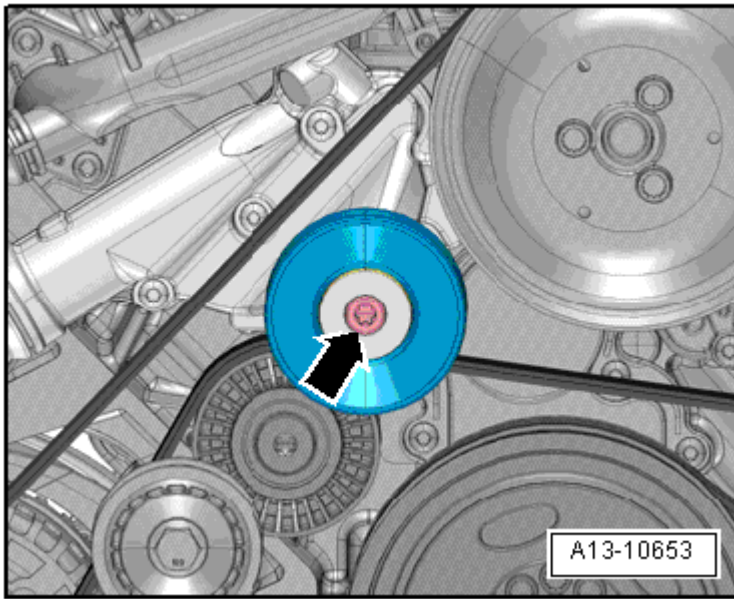


Fig. 33: Identifying Idler Roller Bolt -Arrow-
Courtesy of AUDI OF AMERICA, LLC

- Remove the Air Conditioning (A/C) compressor ribbed belt. Refer to **SUPERCHARGER RIBBED BELT**.
- Remove the bolt -arrow-.
- Push the idler roller back onto the bolt just a little and remove it together with the bolt.
- Remove the bolt -2- on the left front coolant pipe.

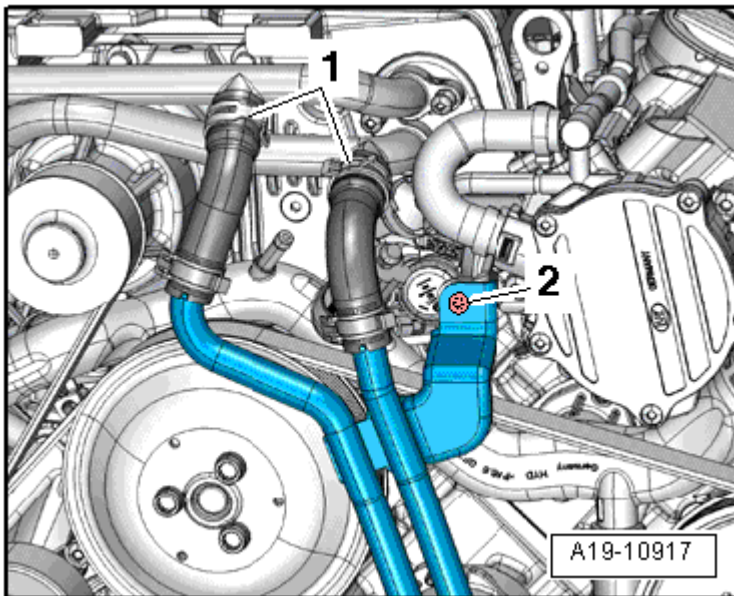


Fig. 34: Identifying Coolant Pipes
Courtesy of AUDI OF AMERICA, LLC

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

NOTE: The installed position is shown in the illustration with the engine removed.

Ignore -1-.

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

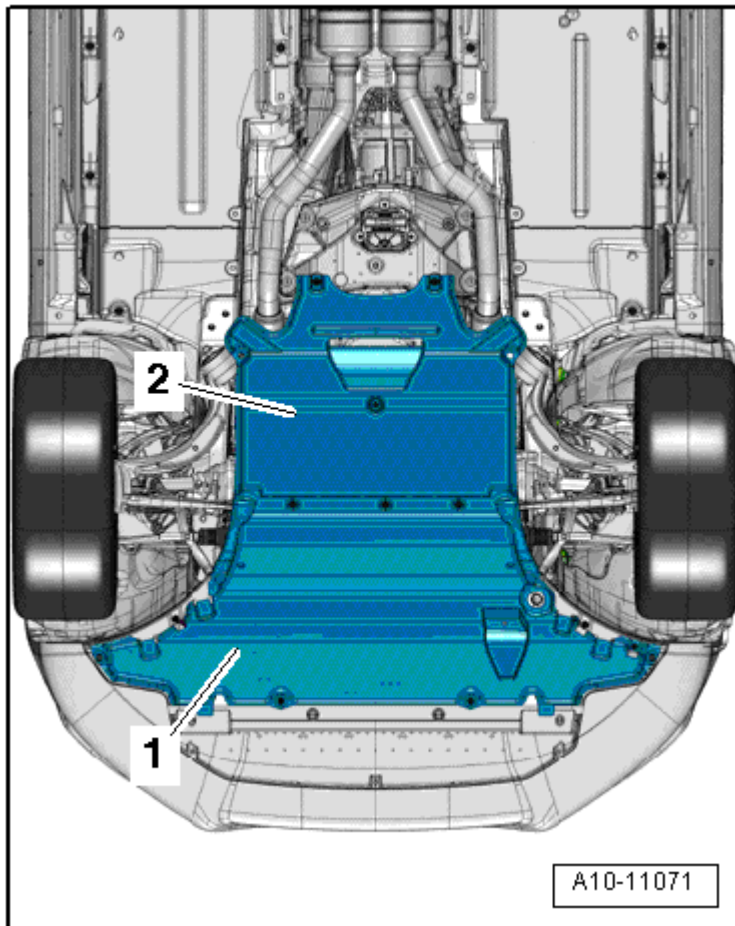


Fig. 35: Identifying Noise Insulation, Removal
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolt -1- on the left front coolant pipes.

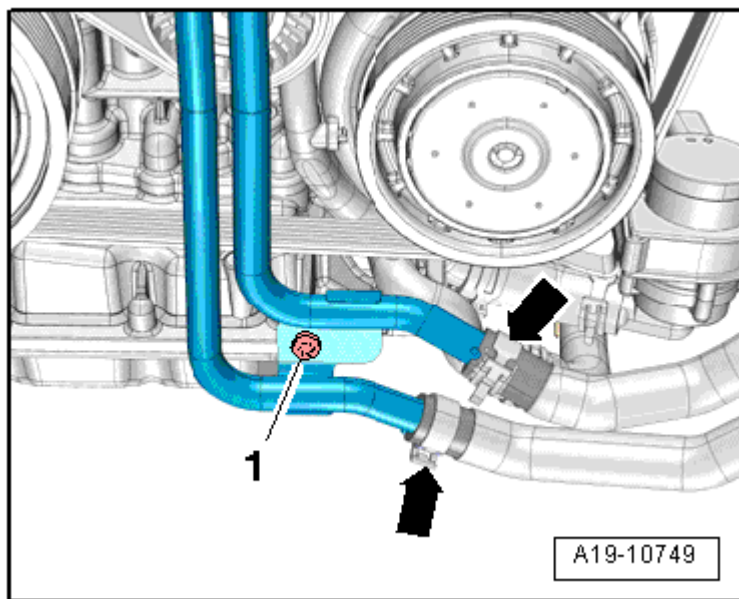


Fig. 36: Locating Lower Coolant Pipe Bolt
 Courtesy of AUDI OF AMERICA, LLC

NOTE: The installed position is shown in the illustration with the engine removed.
 Ignore -arrows-.

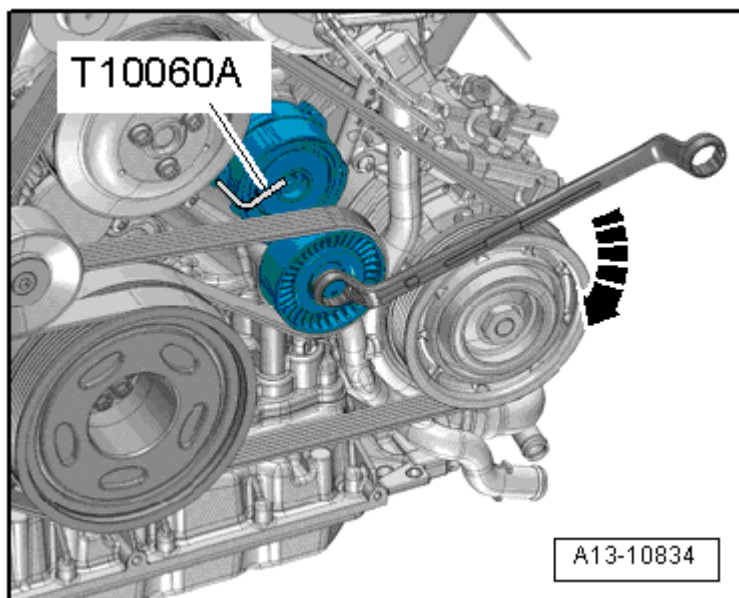


Fig. 37: Pivoting Tensioner Clockwise To Release Tension On Ribbed Belt
 Courtesy of AUDI OF AMERICA, LLC

CAUTION: Risk of destroying due to reversed running direction on a used ribbed belt.

- For installing the ribbed belt again, mark the running direction with chalk or a felt tip pen.

-- To release the tension on the ribbed belt, swivel the tensioner clockwise -arrow- and then lock the tensioner using a T10060 A.

-- Remove ribbed belt.

Installing

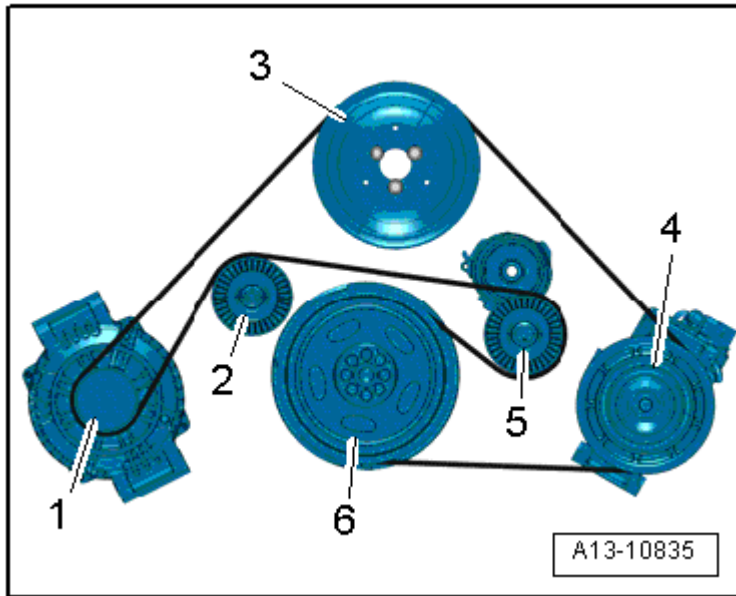


Fig. 38: Identifying Ribbed Belt Routing Through Items -1 To 6-
Courtesy of AUDI OF AMERICA, LLC

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **SUPERCHARGER RIBBED BELT DRIVE OVERVIEW**.

-- Place the ribbed belt over the pulley as illustrated.

1. Generator
2. Idler roller
3. Coolant pump
4. A/C Compressor
5. Ribbed belt tensioning damper
6. Vibration damper

NOTE: When installing the ribbed belt, make sure it is seated correctly on the pulleys.

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ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

- Install the left front coolant pipes **LEFT FRONT COOLANT PIPES** .
- Start the engine and check the belt routing.
- Install the compressor ribbed belt **SUPERCHARGER RIBBED BELT**.

RIBBED BELT, VEHICLES WITH HYDRAULIC POWER STEERING

Removing

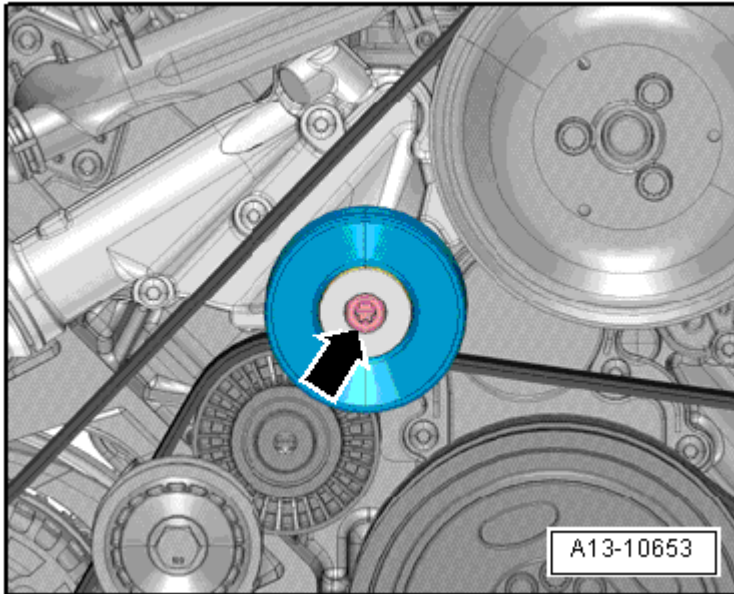


Fig. 39: Identifying Idler Roller Bolt -Arrow-
Courtesy of AUDI OF AMERICA, LLC

- Remove the Air Conditioning (A/C) compressor ribbed belt. Refer to **SUPERCHARGER RIBBED BELT**.
- Remove the bolt -arrow- and remove the idler roller.

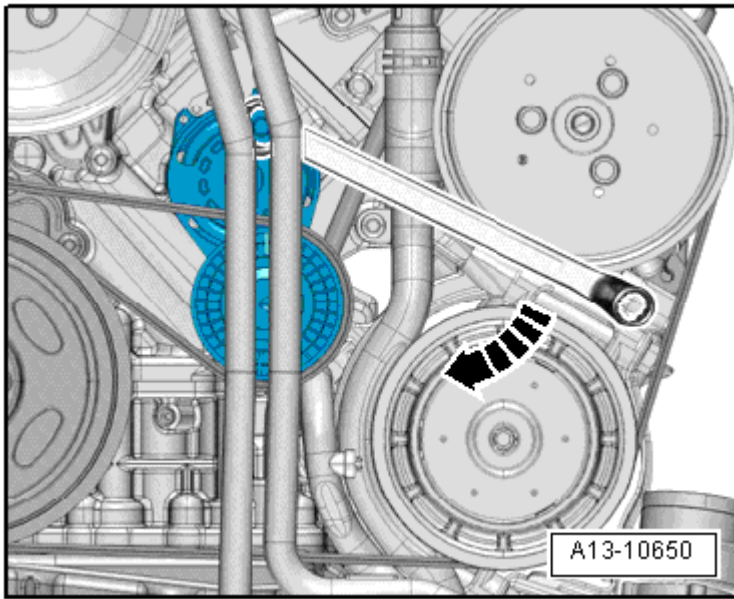


Fig. 40: Releasing Belt Tension

Courtesy of AUDI OF AMERICA, LLC

CAUTION: Risk of destroying due to reversed running direction on a used ribbed belt.

- For installing the ribbed belt again, mark the running direction with chalk or a felt tip pen.

-- Pivot the tensioner clockwise -arrow- to release the tension on the ribbed belt.

-- Remove the ribbed belt and release the tension on the tensioning element.

Installing

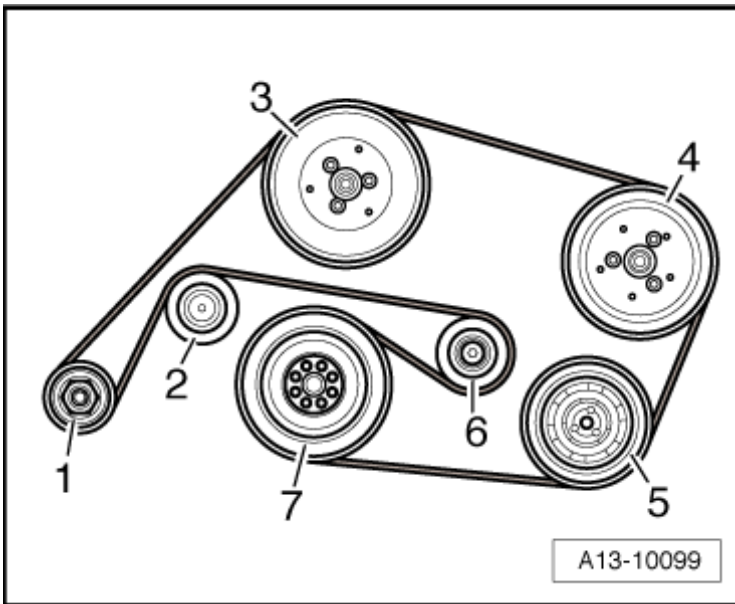


Fig. 41: Placing Ribbed Belt Over Belt Pulley
Courtesy of AUDI OF AMERICA, LLC

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **RIBBED BELT DRIVE, VEHICLES WITH HYDRAULIC POWER STEERING OVERVIEW.**

-- Place the ribbed belt over the pulley as illustrated.

1. Generator
2. Idler roller
3. Coolant pump
4. Power steering pump
5. A/C Compressor
6. Ribbed belt tensioning damper
7. Vibration damper

NOTE: When installing the ribbed belt, make sure it is seated correctly on the pulleys.

-- Start the engine and check the belt routing.

-- Install the compressor ribbed belt. Refer to **SUPERCHARGER RIBBED BELT.**

RIBBED BELT TENSIONING DAMPER, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING

Removing

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

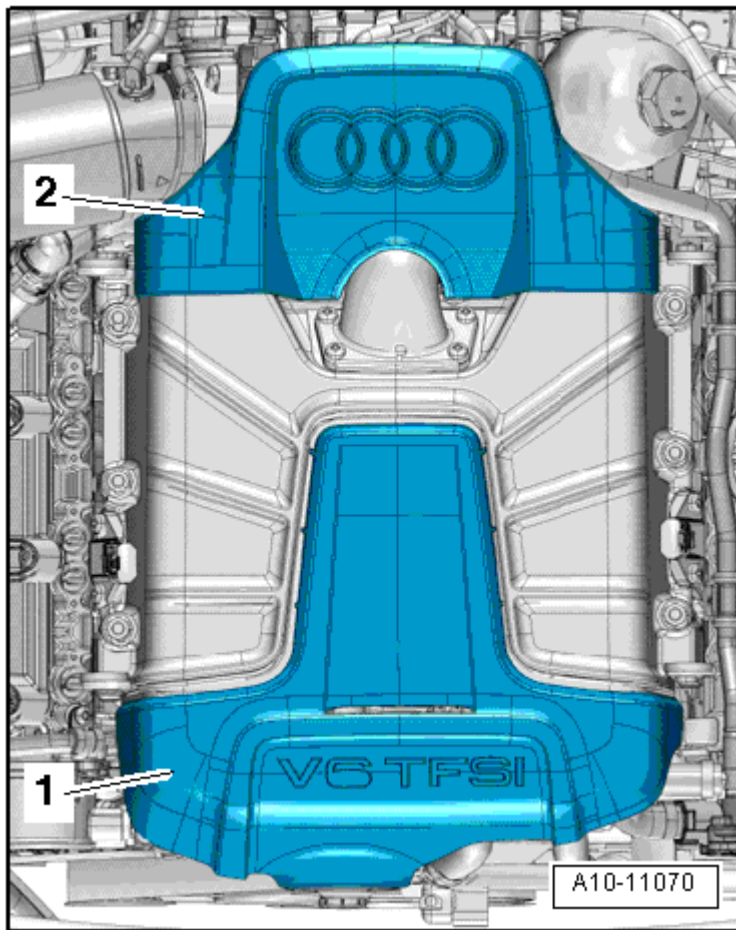


Fig. 42: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

WARNING: Risk of injury through fan turning on automatically.

- The radiator fan can come on even when the ignition is turned off, for example, caused by the heat still in the engine compartment.

- Remove the front engine cover -1- upward.
- Remove the bolt -2- on the left front coolant pipe.

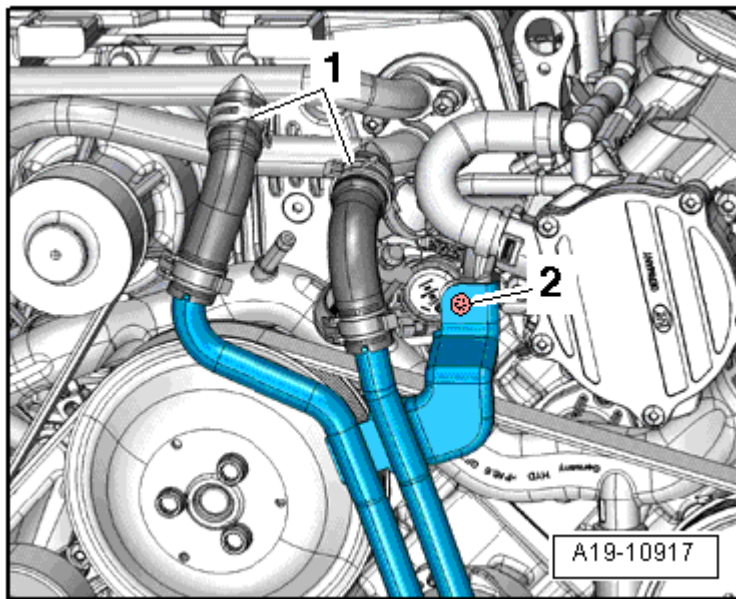


Fig. 43: Identifying Coolant Pipes

Courtesy of AUDI OF AMERICA, LLC

NOTE: The installed position is shown in the illustration with the engine removed.

Ignore -1-.

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

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

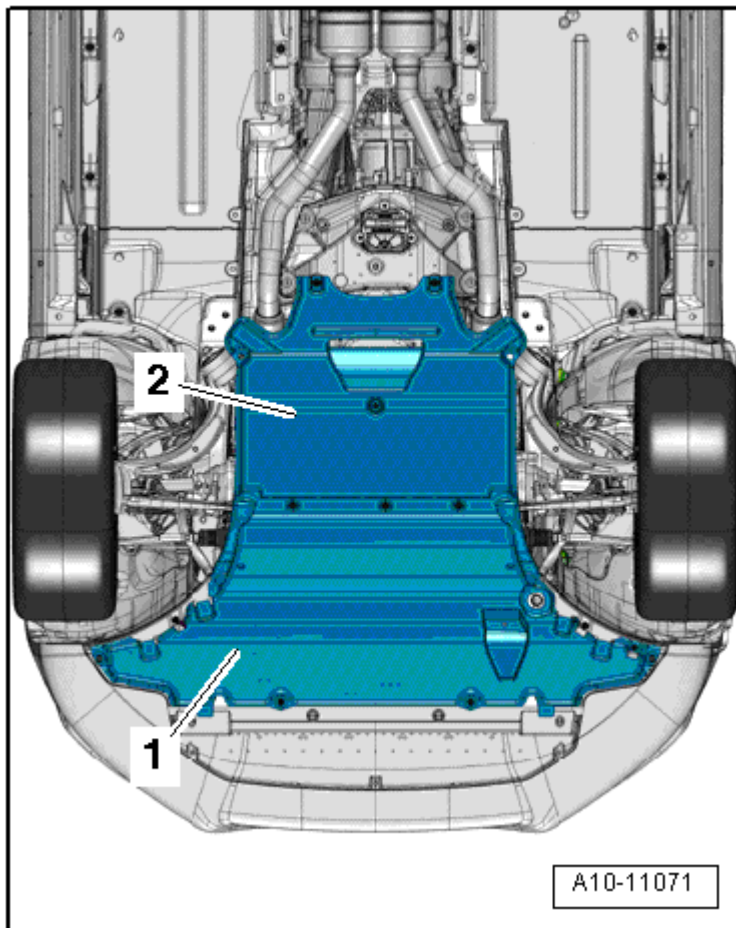


Fig. 44: Identifying Noise Insulation, Removal
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolt -1- on the left front coolant pipes.

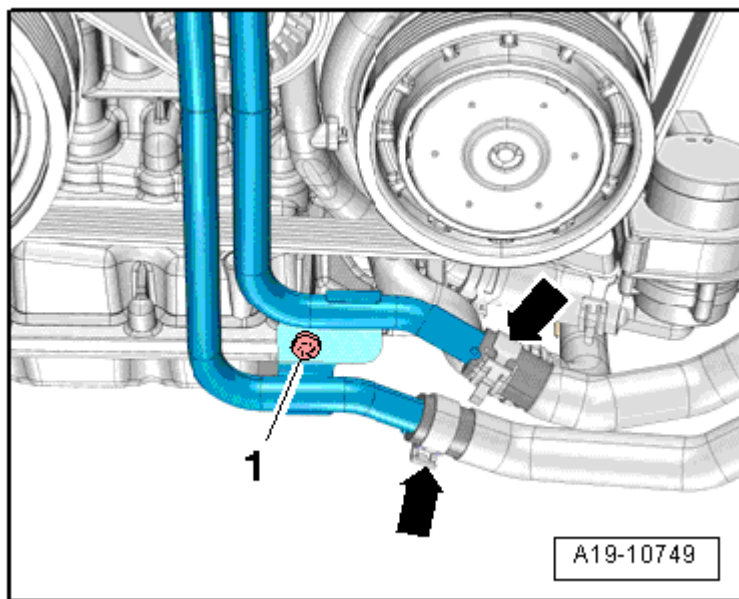


Fig. 45: Locating Lower Coolant Pipe Bolt
Courtesy of AUDI OF AMERICA, LLC

NOTE: The installed position is shown in the illustration with the engine removed.
Ignore -arrows-.

-- Remove the cylinder head coolant valve -N489- -arrow- from the bracket and move it to the side.

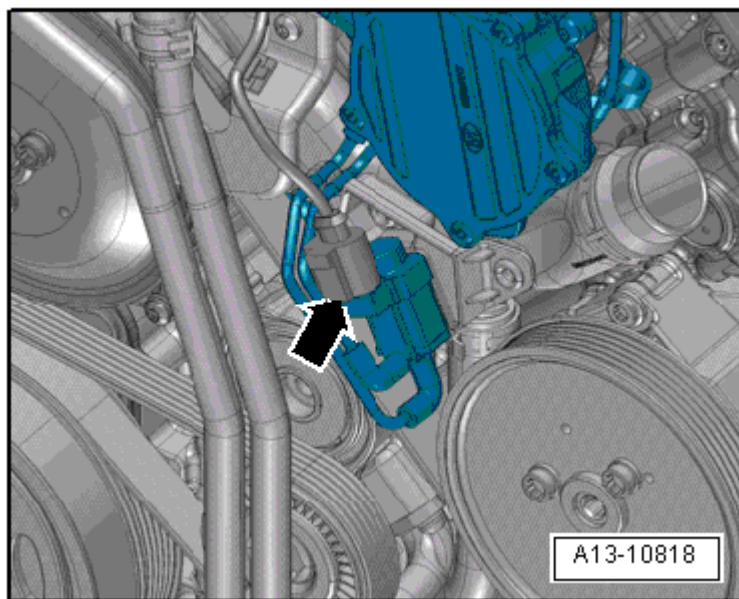


Fig. 46: Identifying Cylinder Head Coolant Valve And Bracket
Courtesy of AUDI OF AMERICA, LLC

-- Pivot the tensioner clockwise -arrow- to release the tension on the ribbed belt.

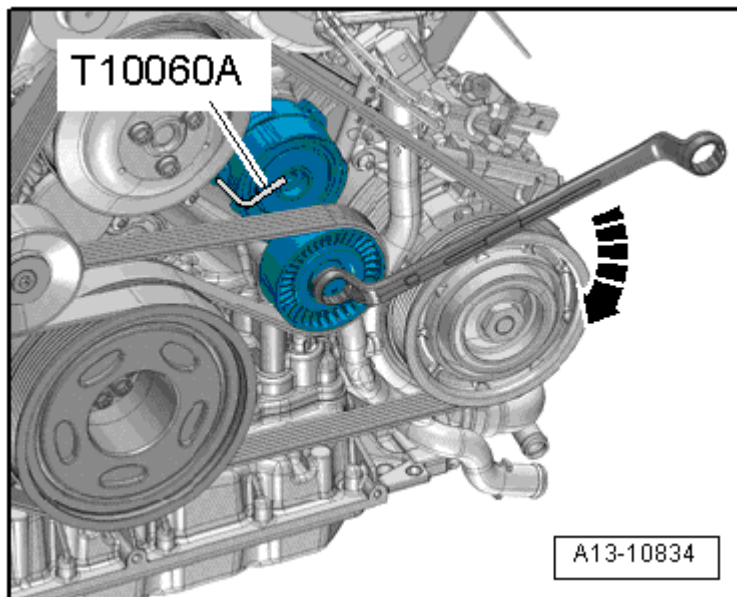


Fig. 47: Pivoting Tensioner Clockwise To Release Tension On Ribbed Belt
 Courtesy of AUDI OF AMERICA, LLC

-- Remove the ribbed belt from the tensioning element and release the tension on the tensioning element.

NOTE: Ignore T10060 A.

-- Remove the cover from the tensioner.

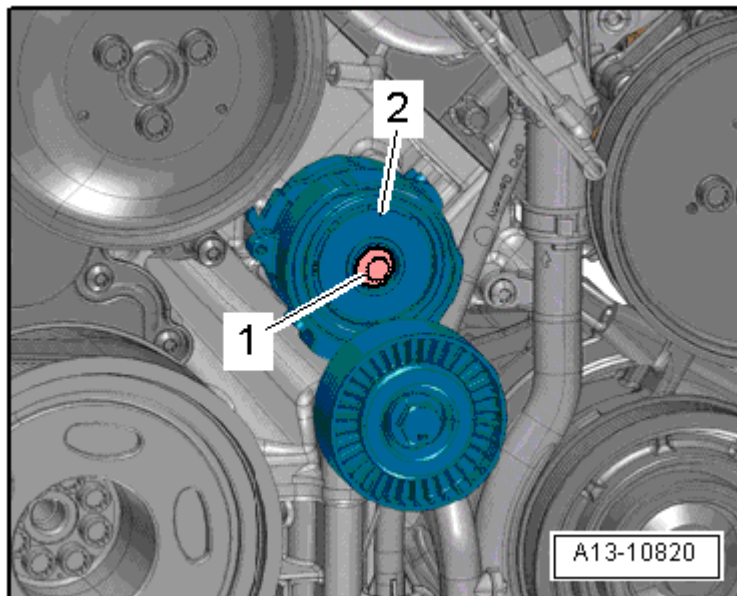


Fig. 48: Identifying Ribbed Belt Tensioning Damper -2 And Bolt - 1

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolt -1- and then remove the ribbed belt tensioning damper -2- from the cylinder block.

Installing

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **RIBBED BELT DRIVE, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING OVERVIEW.**

-- Install the ribbed belt. Refer to **RIBBED BELT, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING.**

-- Install the left front coolant pipes. Refer to **LEFT FRONT COOLANT PIPES .**

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

RIBBED BELT TENSIONING DAMPER, VEHICLES WITH HYDRAULIC POWER STEERING

Removing

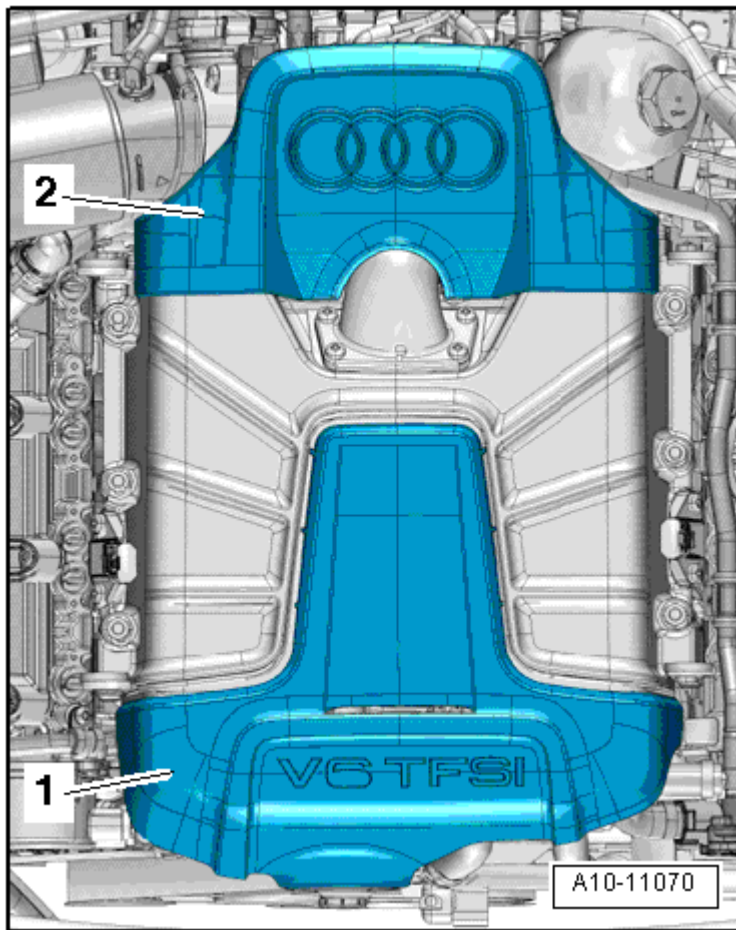


Fig. 49: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

- Remove the front engine cover -1- upward.
- Remove the bolt -2- on the left front coolant pipe.

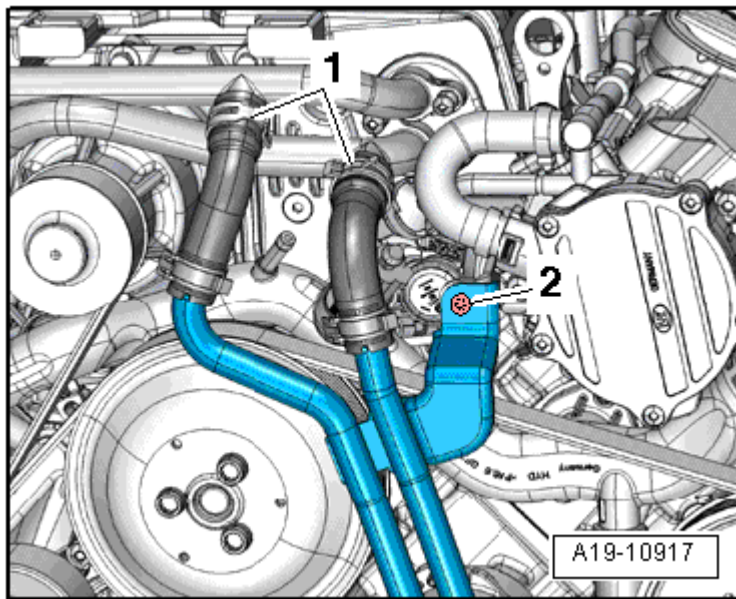


Fig. 50: Identifying Coolant Pipes

Courtesy of AUDI OF AMERICA, LLC

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

Ignore -1-.

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

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

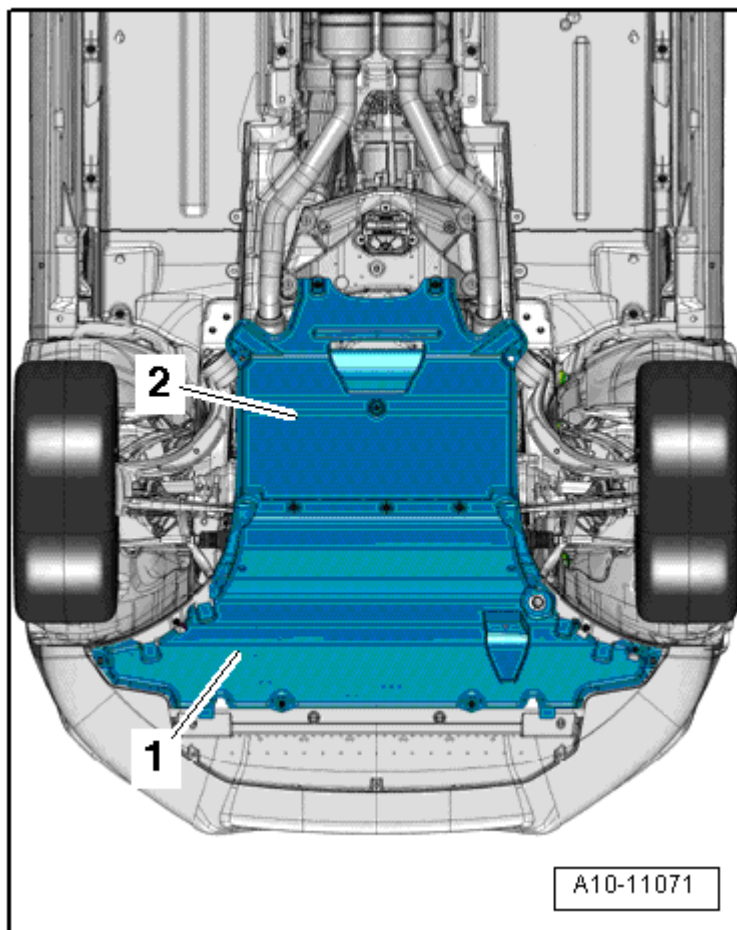


Fig. 51: Identifying Noise Insulation, Removal
Courtesy of AUDI OF AMERICA, LLC

Vehicles with Left Front Coolant Pipes, Version 1

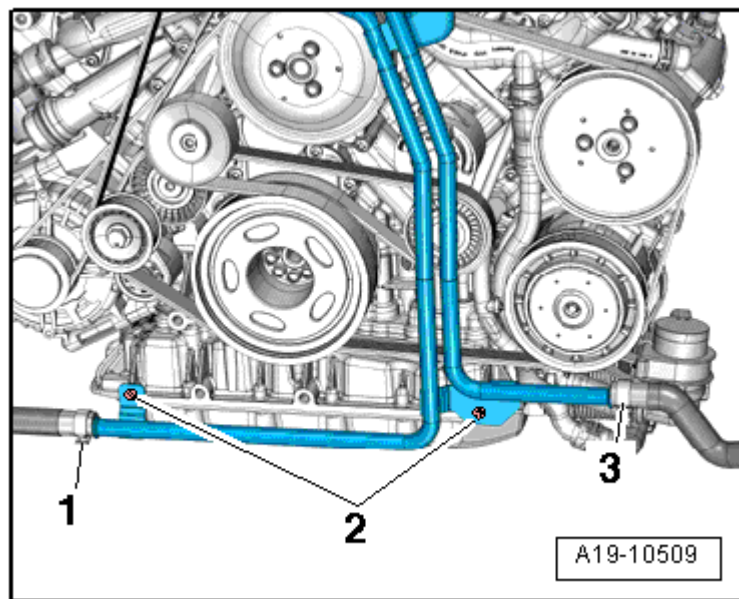


Fig. 52: Identifying Hose Clamps -1 And 3- & Left Front Coolant Hose
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -2- on the left front coolant pipes.

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

Ignore -1 and 3-.

Vehicles with Left Front Coolant Pipes, Version 2

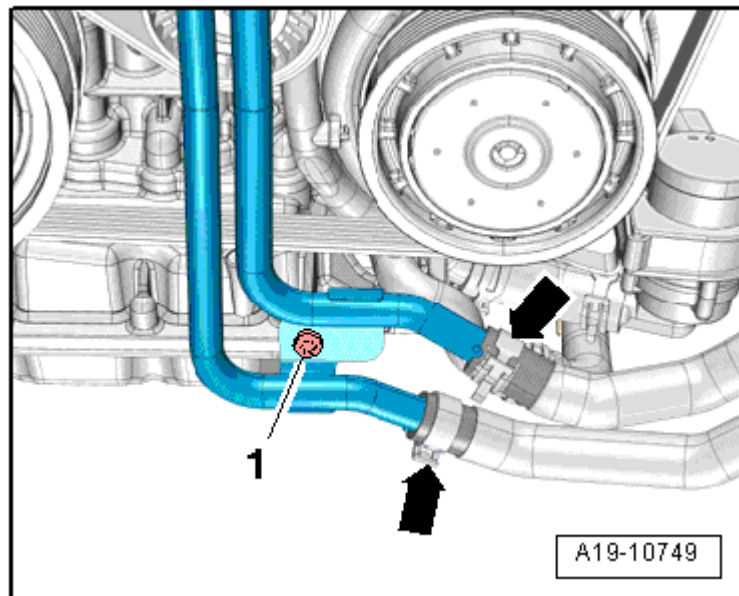


Fig. 53: Locating Lower Coolant Pipe Bolt

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolt -1- on the left front coolant pipes.

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

Ignore -arrows-.

All Vehicles

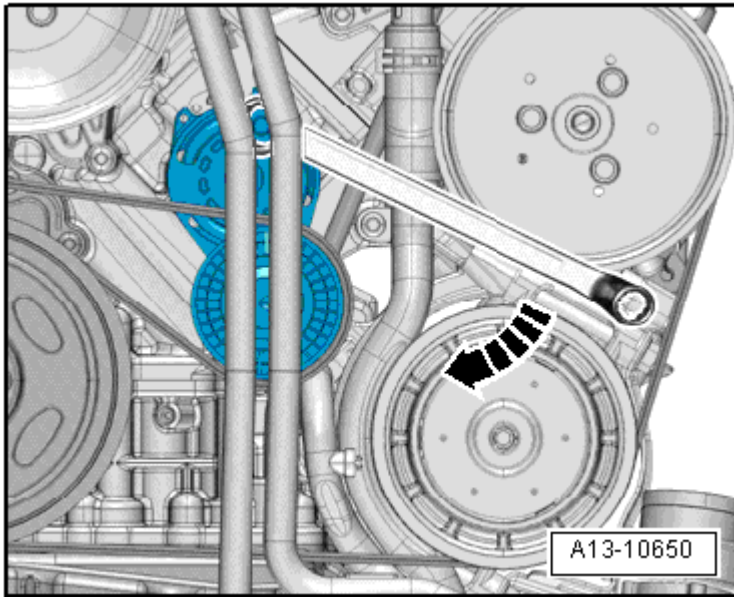
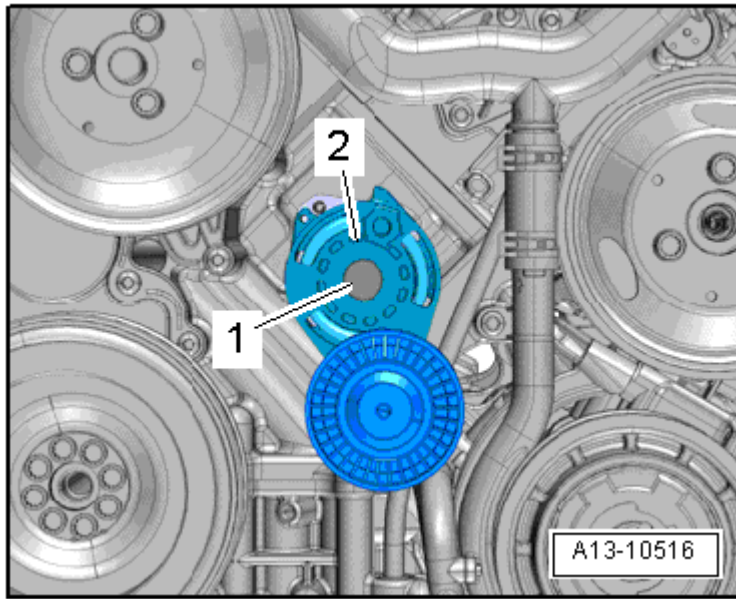


Fig. 54: Releasing Belt Tension

Courtesy of AUDI OF AMERICA, LLC

- Pivot the tensioner clockwise -arrow- to release the tension on the ribbed belt.
- Remove the ribbed belt from the tensioning element and release the tension on the tensioning element.
- Remove the cover -1- and the bolt below it.



**Fig. 55: Identifying Cover -1- And Ribbed Belt Tensioner -2-
Courtesy of AUDI OF AMERICA, LLC**

-- Remove the ribbed belt tensioner -2- from the cylinder block.

Installing

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **RIBBED BELT DRIVE, VEHICLES WITH HYDRAULIC POWER STEERING OVERVIEW.**

-- Install the ribbed belt. Refer to **RIBBED BELT, VEHICLES WITH HYDRAULIC POWER STEERING.**

-- Install the left front coolant pipes. Refer to **LEFT FRONT COOLANT PIPES .**

SEALING FLANGE WITH CRANKSHAFT SEAL, BELT PULLEY SIDE

Special tools and workshop equipment required

- Spanner Wrench 3212
- Assembling Device T40048
- Assembly Device T40048/1
- Pull Sleeve T40048/2
- Hand drill with plastic brush attachment
- Protective goggles
- Sealant.

Procedure

- Tightening specification, refer to **Fig. 16**.

-- Remove vibration damper. Refer to **VIBRATION DAMPER**.

-- Remove the bolts for the coolant pump ribbed belt pulley, using a 3212 to counter hold.

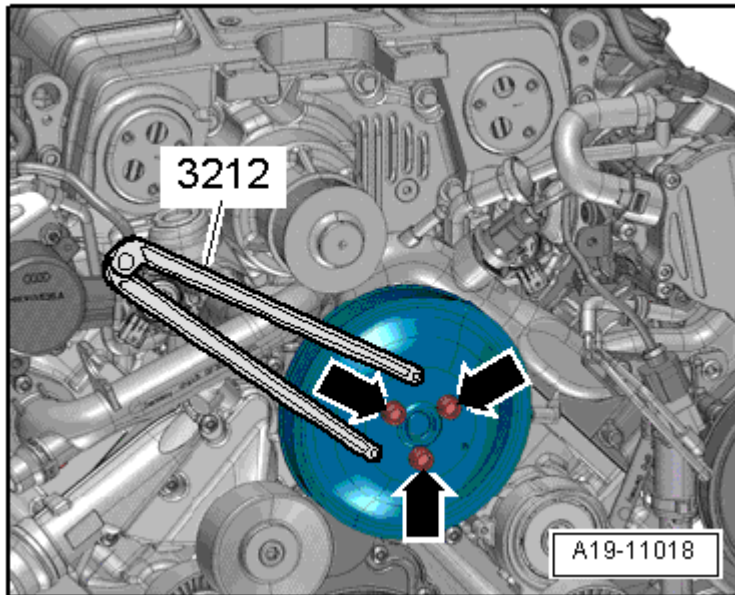


Fig. 56: Identifying Coolant Pump Ribbed Belt Pulley Bolts Using 3212 To Counterhold For Removal
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows-.

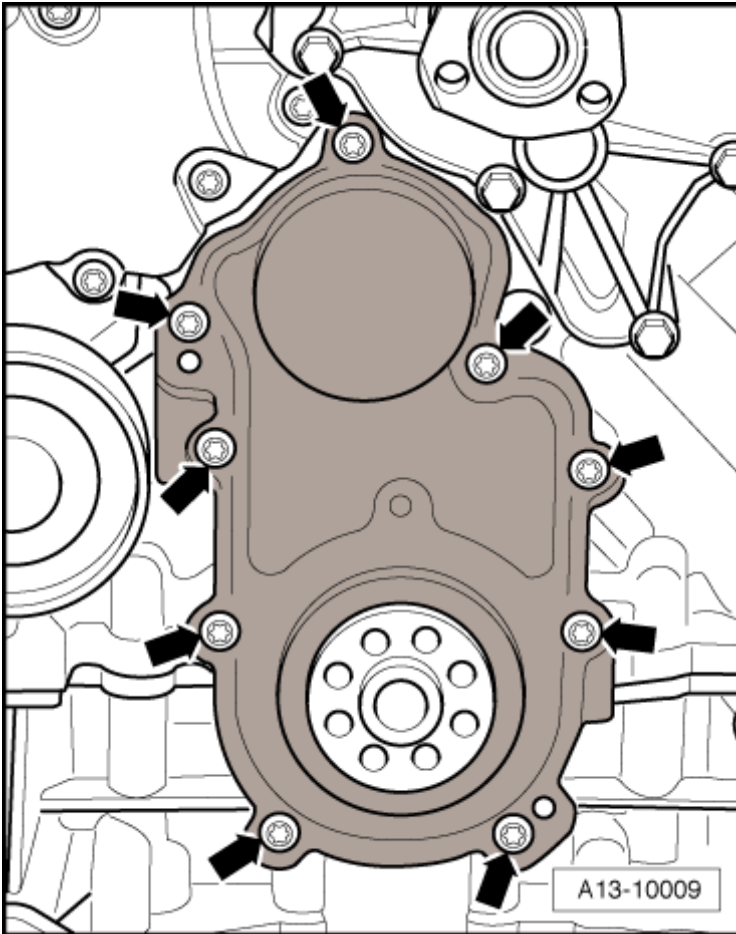


Fig. 57: Identifying Front Sealing Flange Bolts -Arrows-
Courtesy of AUDI OF AMERICA, LLC

-- Loosen the sealing flange on the ribbed belt side from the bond and then remove it.

NOTE: **Replace the ribbed belt side sealing flange.**

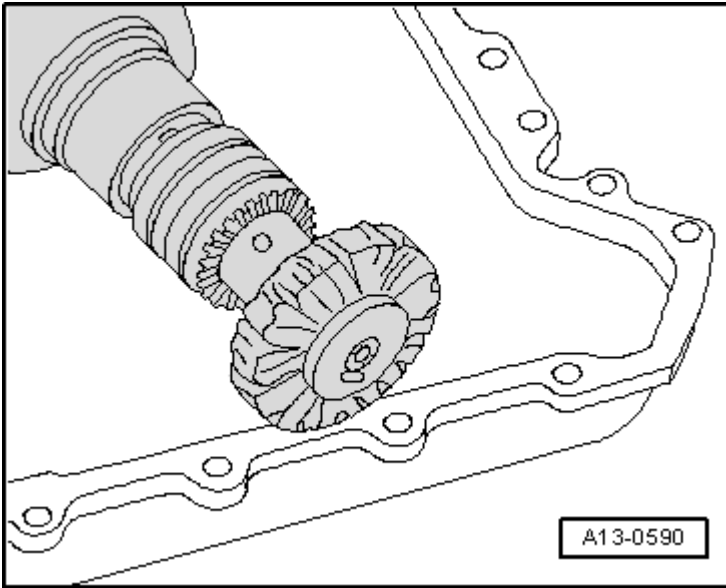


Fig. 58: Identifying Rotating Plastic Brush To Remove Sealant Residue From Sealing Flange, Cylinder Block And Upper Part Of Oil Pan

Courtesy of AUDI OF AMERICA, LLC

CAUTION: Risk of contaminating lubricating system.

- Cover open parts of engine.

WARNING: Danger of eye injury.

- Wear protective goggles.

-- Remove the sealant residue on the cylinder block and the upper section of the oil pan, for example using a rotating plastic brush.

-- Clean any oil or grease off the sealing surfaces.

NOTE: Note the expiration date of the sealing compound.

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ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

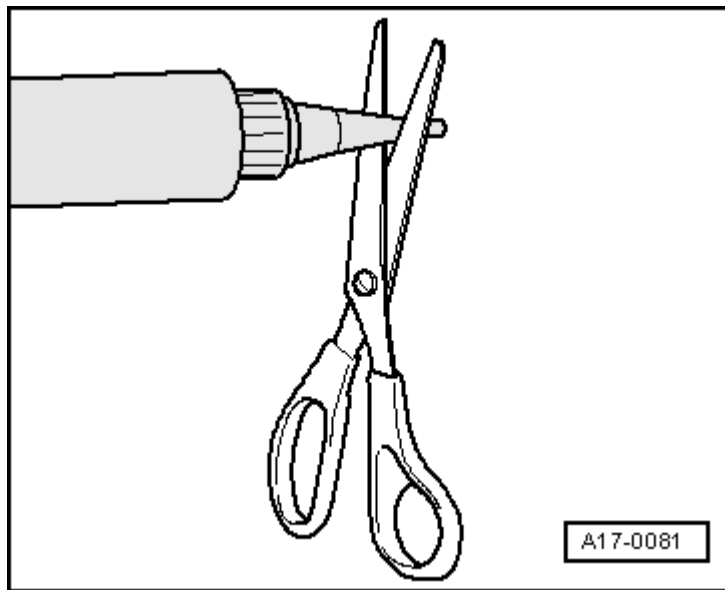


Fig. 59: Cutting Tube Nozzle At Front Marking (Nozzle Diameter Approx. 1.5 mm)
Courtesy of AUDI OF AMERICA, LLC

-- Cut the tube nozzle at the front marking (nozzle diameter approximately 1.5 mm).

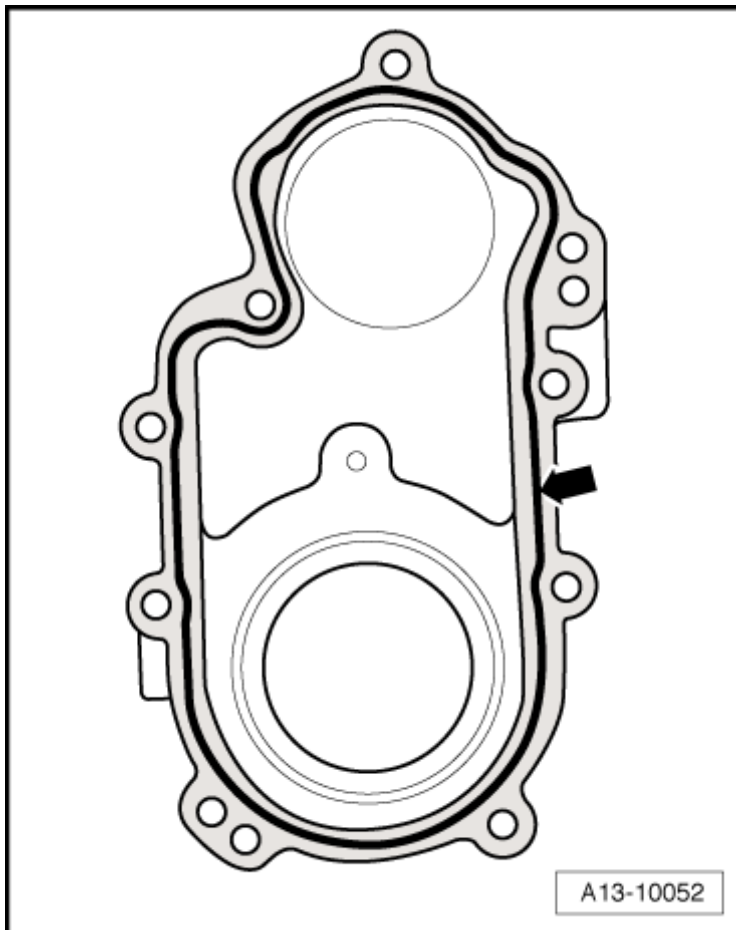


Fig. 60: Applying Bead Of Sealant To Clean Sealing Surface Of Sealing Flange

Courtesy of AUDI OF AMERICA, LLC

CAUTION: The lubrication system could be plugged with excess sealant.

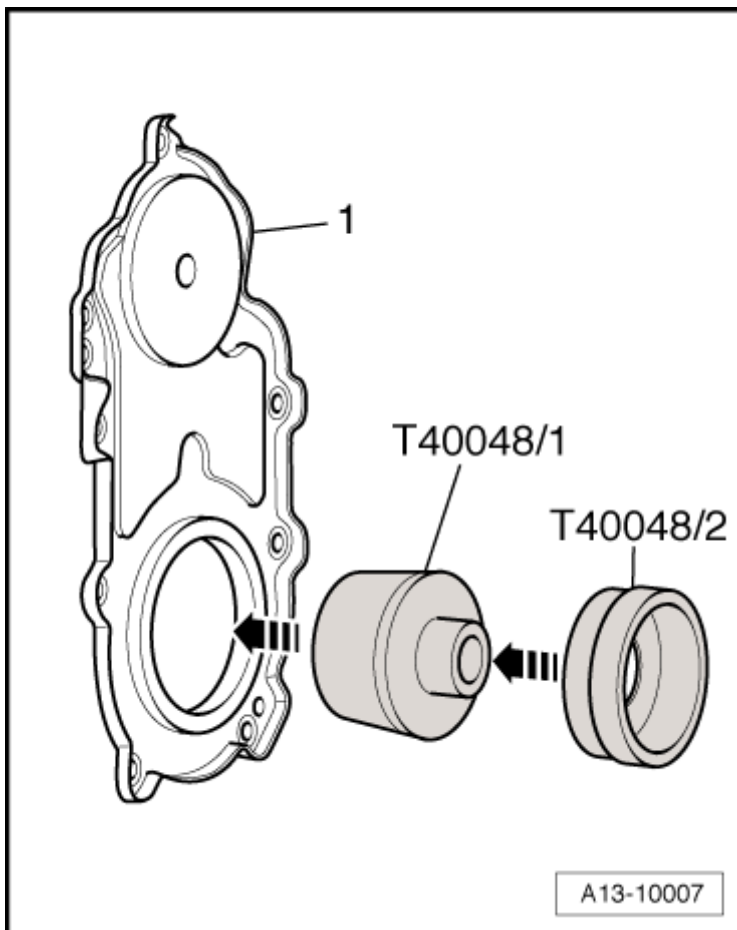
- Do not apply sealant bead thicker than indicated.

-- Apply the sealant bead -arrow- to the clean sealing surface on the ribbed belt side sealing flange as shown in the illustration.

- The groove of sealing surface must be completely filled with sealant.
- The sealant bead must be 1.5 to 2.0 mm above the sealing surface.

NOTE: The ribbed belt side sealing flange must be installed within 5 minutes of applying the sealant.

-- Place the T40048/1 on the T40048/2 and slide the sealing flange -1- onto the pull sleeve.

**Fig. 61: Inserting Assembly Device T40048/1 Onto Pull Sleeve T40048/2 And Sliding Sealing Flange Onto Pull Sleeve**

Courtesy of AUDI OF AMERICA, LLC

-- Remove the assembly device.

-- Then position the sealing flange with the T40048/2 installed on the crankshaft.

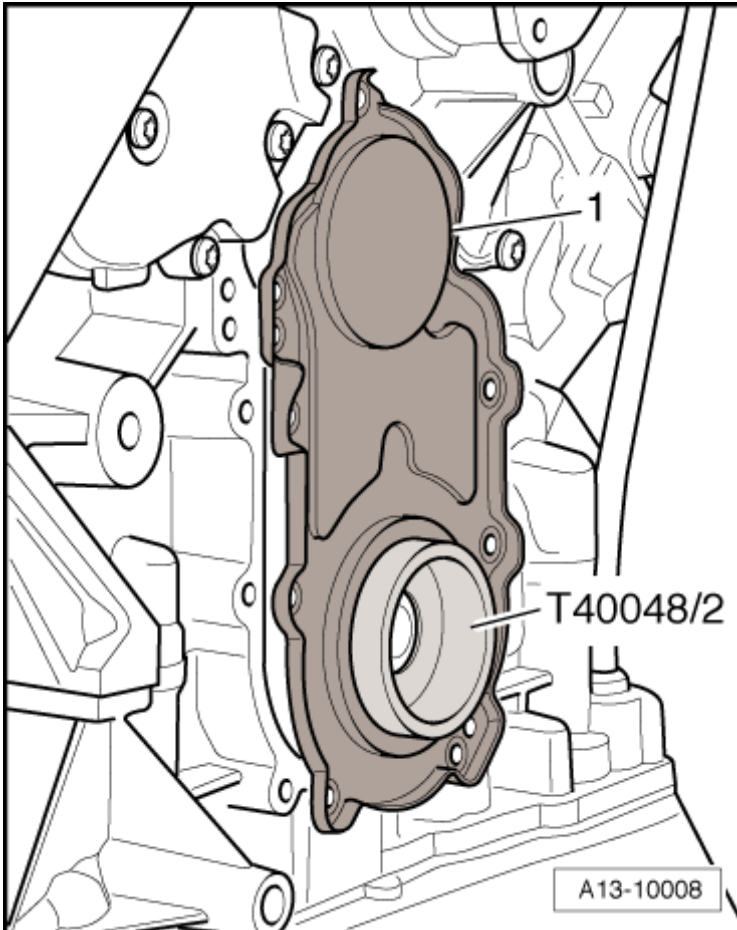


Fig. 62: Placing Sealing Flange With Inserted Pull Sleeve T40048/2 Onto Crankshaft
Courtesy of AUDI OF AMERICA, LLC

-- Without tipping, push the sealing flange onto the engine sealing surface and fasten. Refer to **Fig. 16**.

Install in reverse order of removal paying attention to the following:

-- Install the coolant pump ribbed belt pulley. Refer to **COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW**.

-- Install vibration damper. Refer to **VIBRATION DAMPER**.

SUPERCHARGER RIBBED BELT

Special tools and workshop equipment required

- Locking Pin T10060 A

Removing

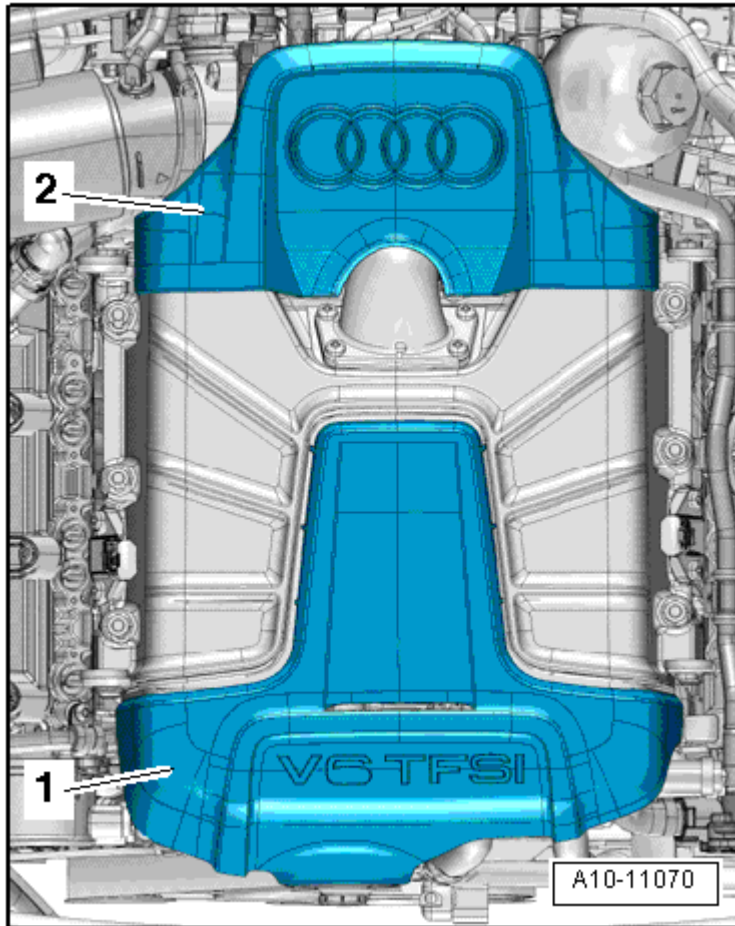


Fig. 63: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

- Remove the front engine cover -1- upward.
- Remove the front noise insulation -1-. Refer to **Description and Operation** .

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

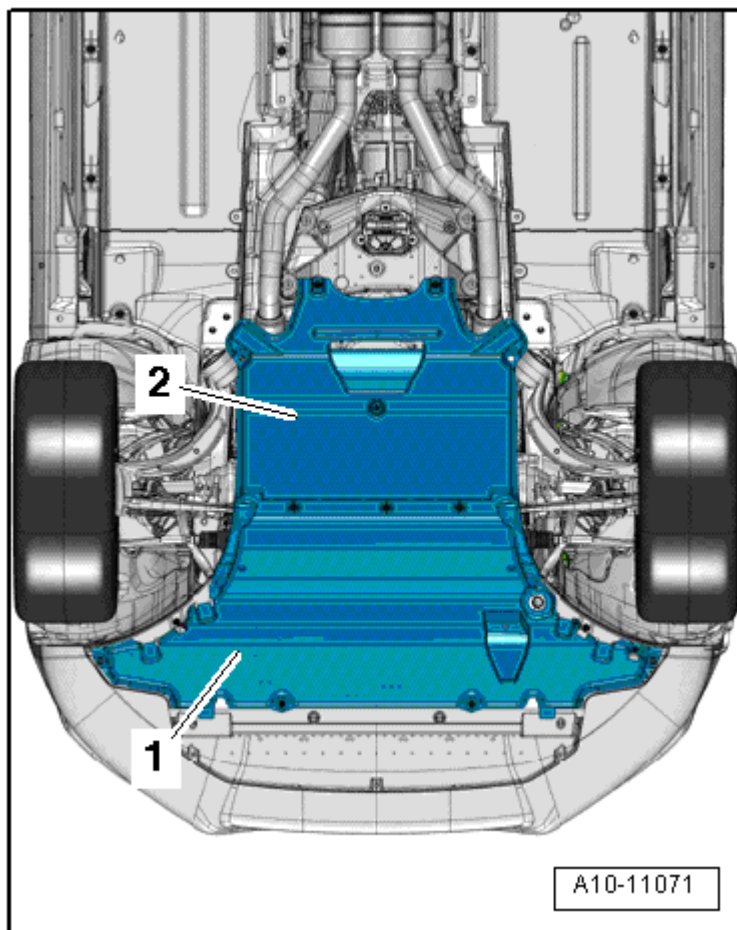


Fig. 64: Identifying Noise Insulation, Removal
Courtesy of AUDI OF AMERICA, LLC

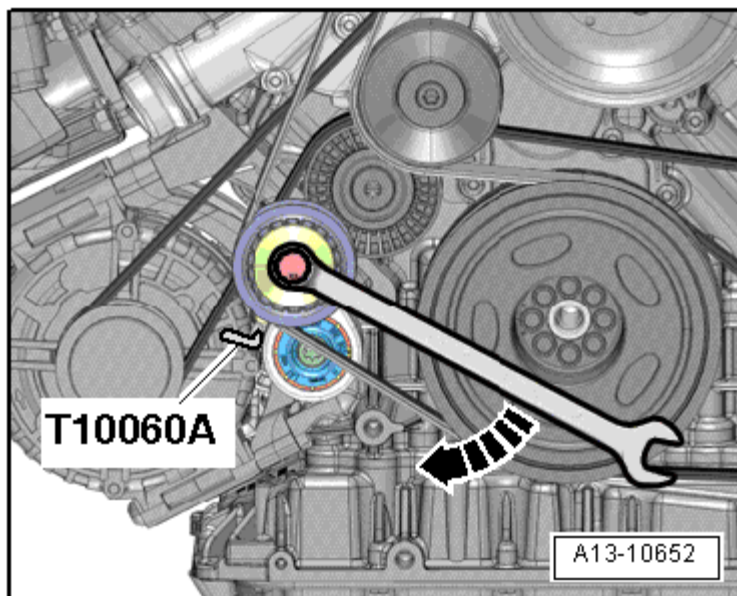


Fig. 65: Securing Tensioning Element With T10060A To Remove Ribbed Belt
Courtesy of AUDI OF AMERICA, LLC

CAUTION: Risk of destroying due to reversed running direction on a used ribbed belt.

- Before removing the ribbed belt, marking running direction with chalk or felt-tip pen for reinstallation later.

-- Pivot the tensioner clockwise -arrow- to release the tension on the ribbed belt.

-- Remove the ribbed belt and secure the tensioning element with T10060 A.

Installing

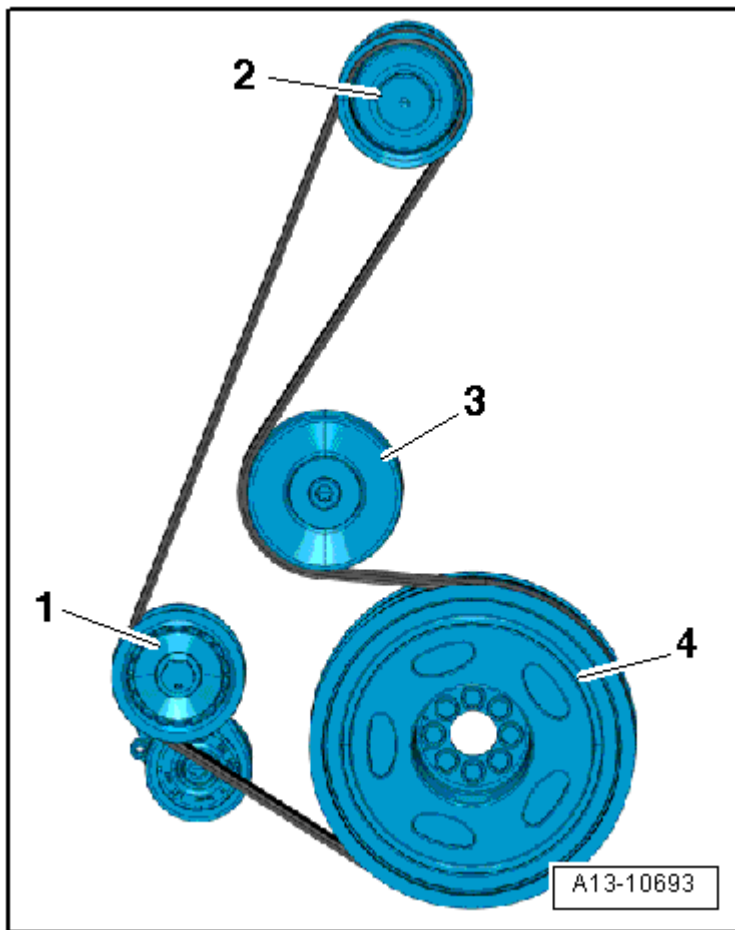


Fig. 66: Identifying Correct Belt Installation
Courtesy of AUDI OF AMERICA, LLC

Install in reverse order of removal. Note the following:

-- Place the ribbed belt over the pulley as illustrated:

1. Tensioning element
2. Supercharger
3. Idler roller
4. Vibration damper

NOTE: When installing the ribbed belt, make sure it is seated correctly on the pulleys.

-- Start the engine and check the belt routing.

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

SUPERCHARGER RIBBED BELT TENSIONER

Removing

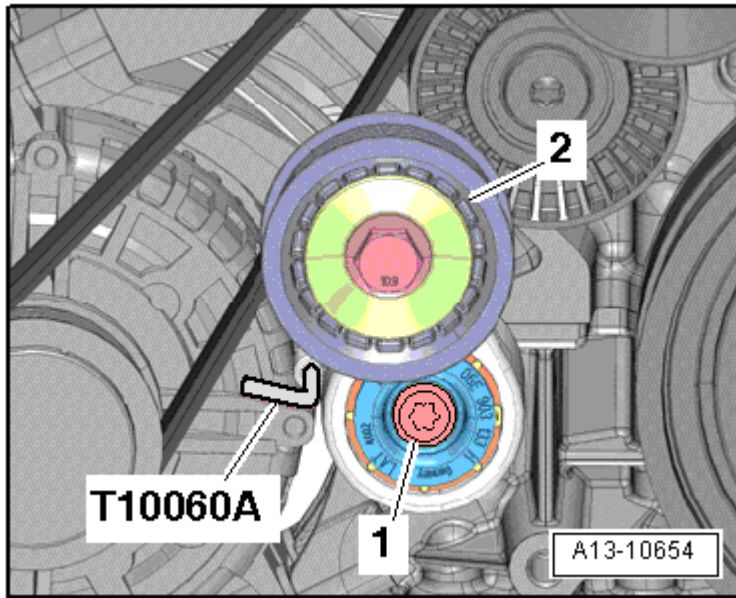


Fig. 67: Identifying Ribbed Belt Tensioner -2- And Bolt -1-
Courtesy of AUDI OF AMERICA, LLC

-- Remove the Air Conditioning (A/C) compressor ribbed belt. Refer to SUPERCHARGER RIBBED BELT.

-- Remove the bolt -1- and remove the ribbed belt tensioner -2-.

Installing

Install in reverse order of removal. Note the following:

- Tightening specification, refer to SUPERCHARGER RIBBED BELT DRIVE OVERVIEW.

-- Install the compressor ribbed belt. Refer to SUPERCHARGER RIBBED BELT.

VIBRATION DAMPER

Special tools and workshop equipment required

- Retainer 3036

Removing

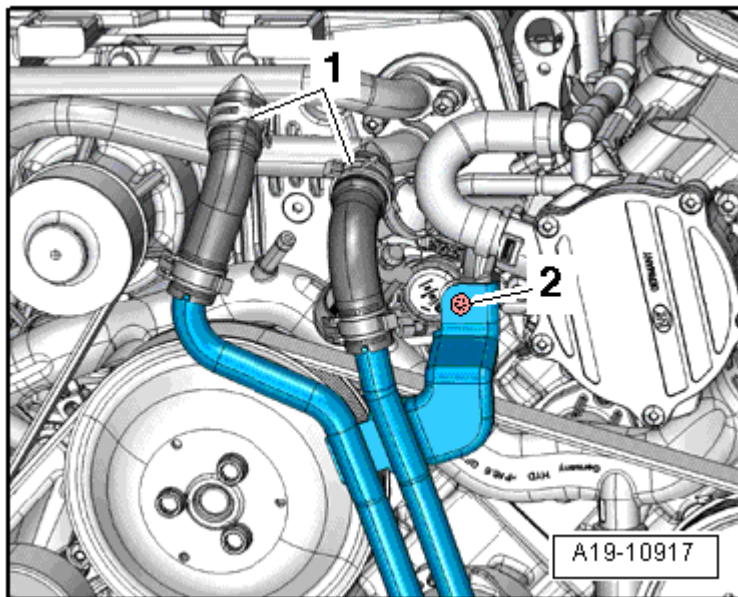


Fig. 68: Identifying Coolant Pipes
Courtesy of AUDI OF AMERICA, LLC

-- Remove the Air Conditioning (A/C) compressor ribbed belt. Refer to **SUPERCHARGER RIBBED BELT**.

NOTE: The engine is not shown in the following illustrations.

-- Remove the bolt -2- on the left front coolant pipes.

NOTE: Ignore -1-.

NOTE: The engine is not shown in the following illustrations.

Vehicles with Left Front Coolant Pipes, Version 1

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

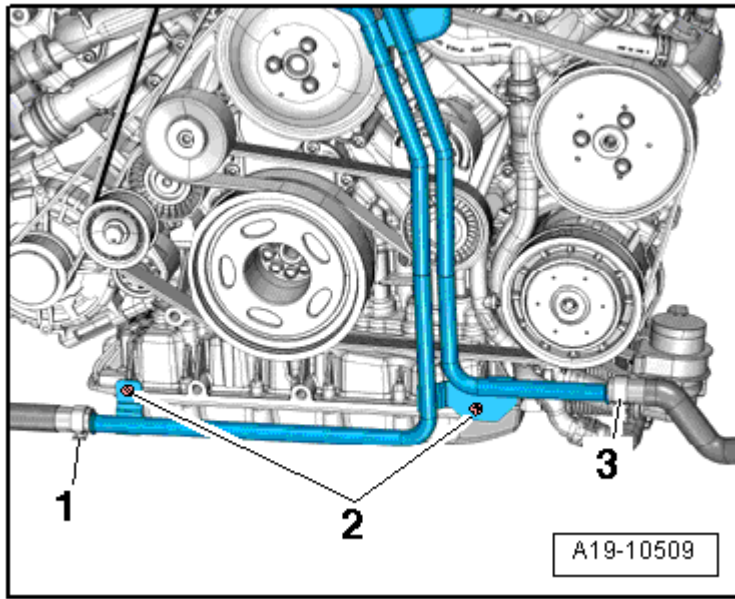


Fig. 69: Identifying Hose Clamps -1 And 3- & Left Front Coolant Hose
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -2- on the left front coolant pipes.

NOTE: Ignore -1 and 3-.

Vehicles with Left Front Coolant Pipes, Version 2

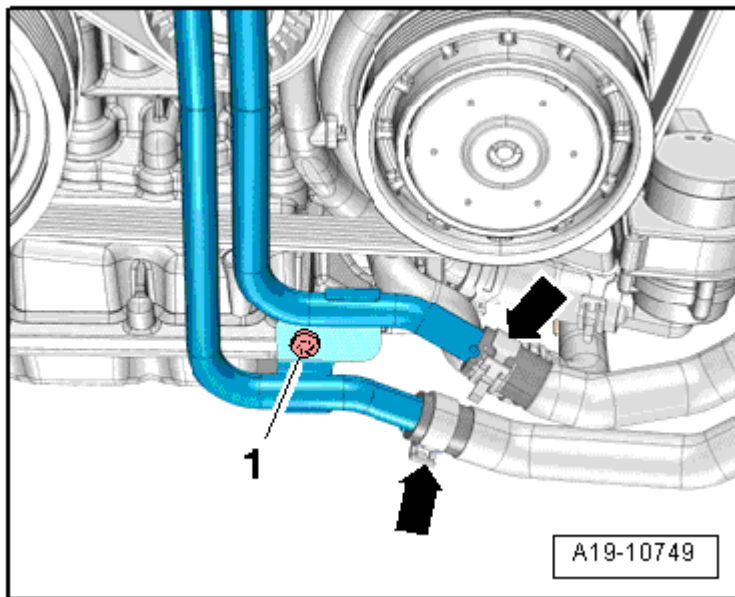


Fig. 70: Locating Lower Coolant Pipe Bolt
Courtesy of AUDI OF AMERICA, LLC

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

-- Remove the bolt -1- on the left front coolant pipes.

NOTE: Ignore -arrows-.

All Vehicles

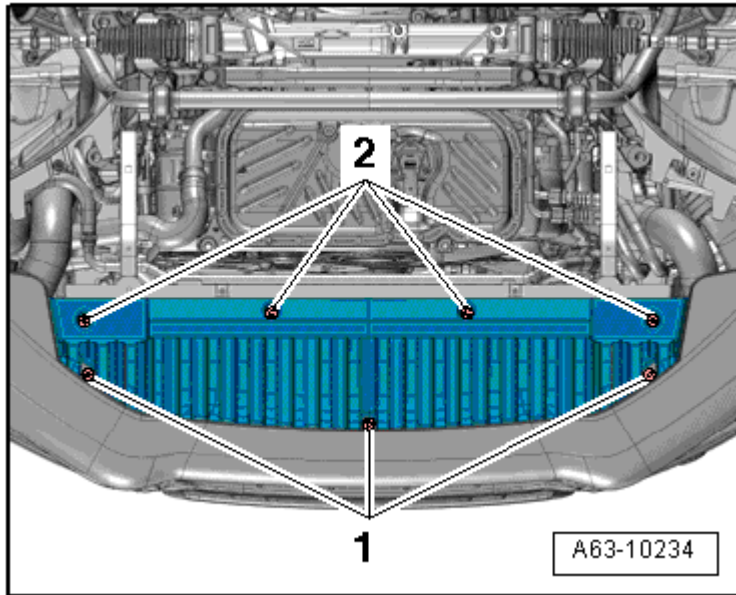


Fig. 71: Identifying Bolts And Remove Bumper Cover End Panel Toward Rear
Courtesy of AUDI OF AMERICA, LLC

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

-- Remove the left and right bolts -1- and remove the radiator bracket with the radiator from the lock carrier - arrow-.

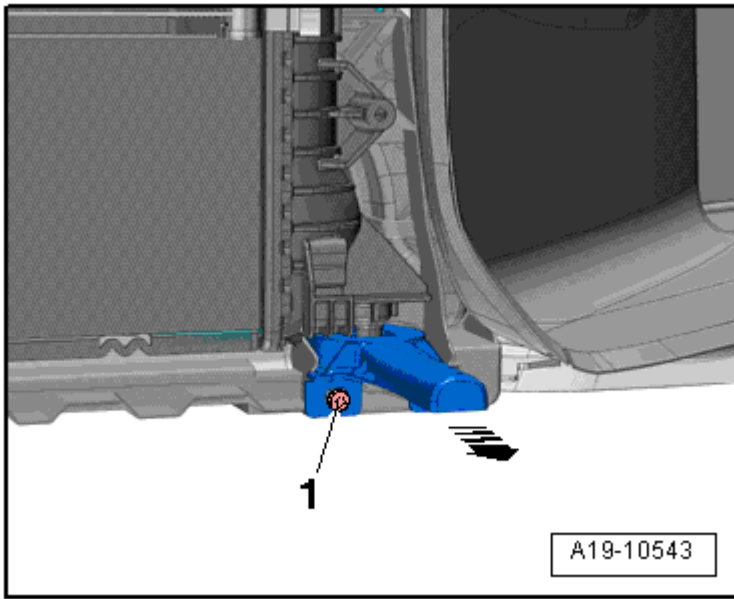


Fig. 72: Identifying Radiator Lock Carrier
Courtesy of AUDI OF AMERICA, LLC

-- Free up the wiring harness.

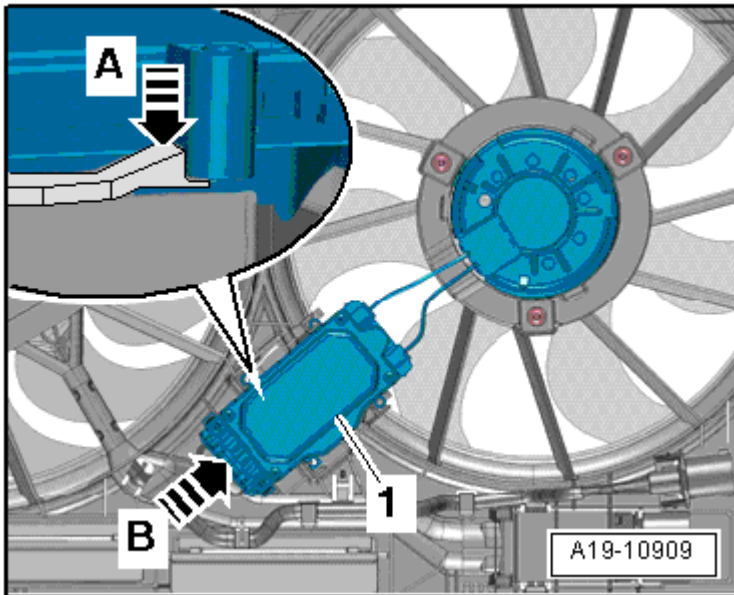


Fig. 73: Opening Retainer A Then Remove Coolant Fan Control Module
Courtesy of AUDI OF AMERICA, LLC

-- Open the retainer -arrow A- then remove the coolant fan control module 2 -J671- -1- from the fan shroud -B- and move it to the side.

Vehicles with Hydraulic Power Steering

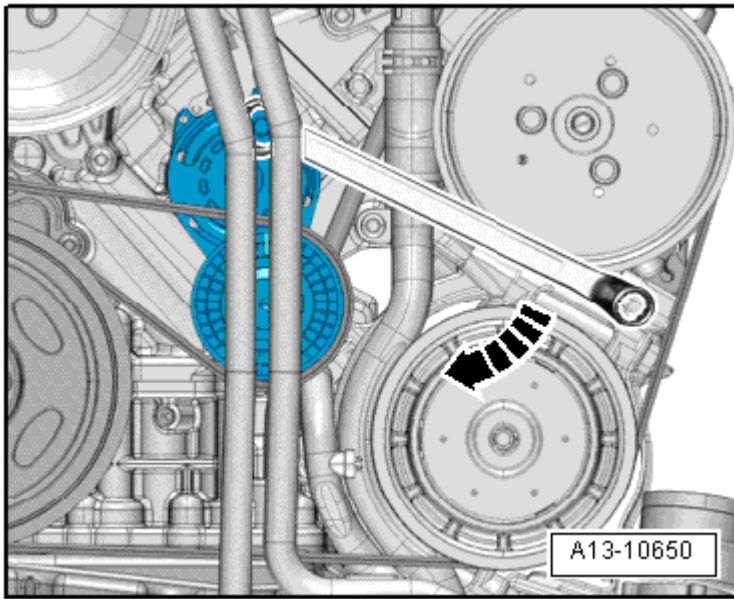


Fig. 74: Releasing Belt Tension

Courtesy of AUDI OF AMERICA, LLC

- Pivot the tensioner clockwise -arrow- to release the tension on the ribbed belt.
- Remove the ribbed belt from the vibration damper and release the tension on the tensioning element.

Vehicles with Electro-Mechanical Power Steering

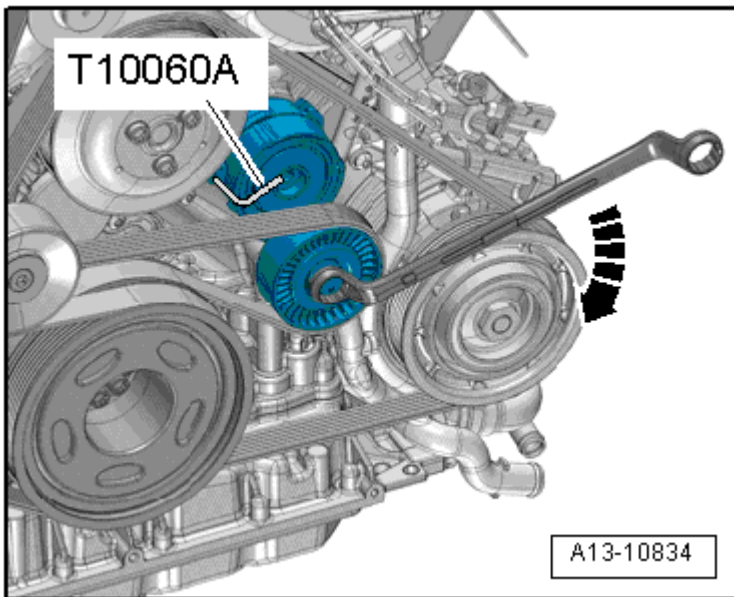


Fig. 75: Pivoting Tensioner Clockwise To Release Tension On Ribbed Belt

Courtesy of AUDI OF AMERICA, LLC

- Pivot the tensioner clockwise -arrow- to release the tension on the ribbed belt.

-- Remove the ribbed belt from the vibration damper and release the tension on the tensioning element.

NOTE: Ignore T10060 A.

All Vehicles

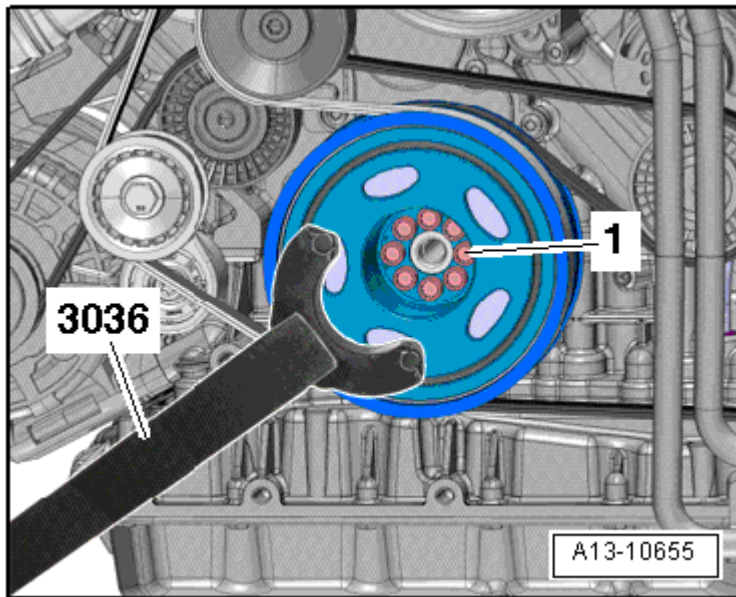


Fig. 76: Identifying Vibration Damper
Courtesy of AUDI OF AMERICA, LLC

-- Remove the vibration damper bolts -1- ; to do this, counter hold it using the 3036.

-- Remove the vibration damper.

Installing

Install in reverse order of removal. Note the following:

Tightening specifications:

- **RIBBED BELT DRIVE, VEHICLES WITH HYDRAULIC POWER STEERING OVERVIEW**
- **RIBBED BELT DRIVE, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING OVERVIEW**

NOTE: Replace bolts that are tightened to the specification.

Installation is only possible in one position because of the offset holes.

-- Install the radiator bracket and radiator. Refer to **RADIATOR AND COOLANT FAN OVERVIEW** .

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

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

-- Install the left front coolant pipes. Refer to **LEFT FRONT COOLANT PIPES** .

-- Installing the ribbed belt:

- **RIBBED BELT, VEHICLES WITH HYDRAULIC POWER STEERING**
- **RIBBED BELT, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING**

SPECIAL TOOLS

Special tools and workshop equipment required

- Counter Hold Tool 10 - 201

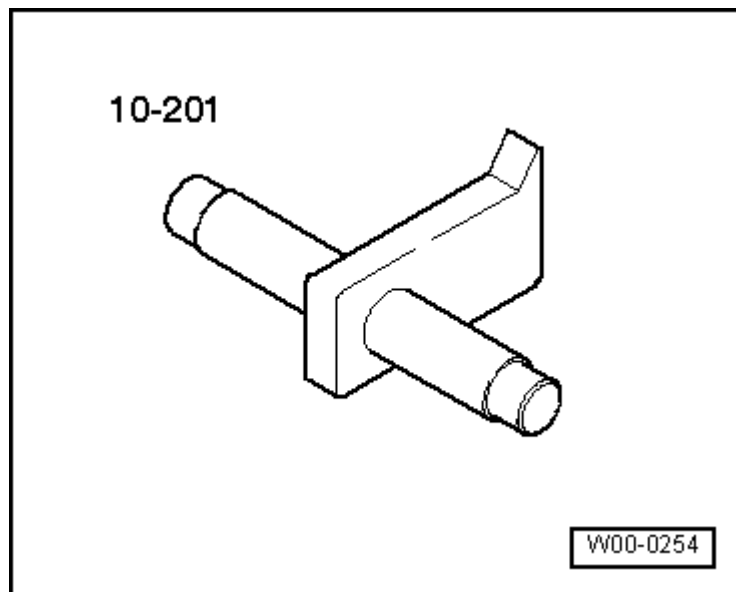


Fig. 77: Identifying Counter-Holder Tool 10 - 201
Courtesy of AUDI OF AMERICA, LLC

- Sleeve 40 - 103

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

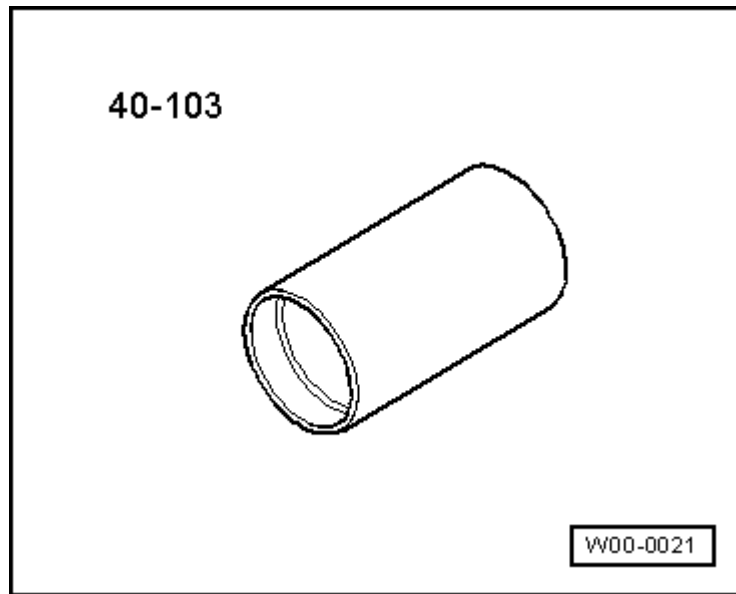


Fig. 78: Identifying Tube VW 40--103
Courtesy of AUDI OF AMERICA, LLC

- Retainer 3036

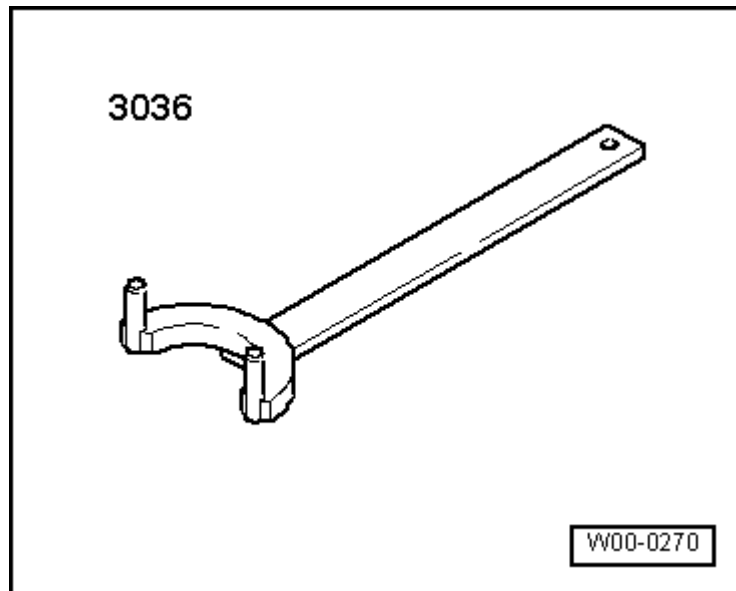


Fig. 79: Identifying Counter-Hold Tool 3036
Courtesy of AUDI OF AMERICA, LLC

- Spanner Wrench 3212

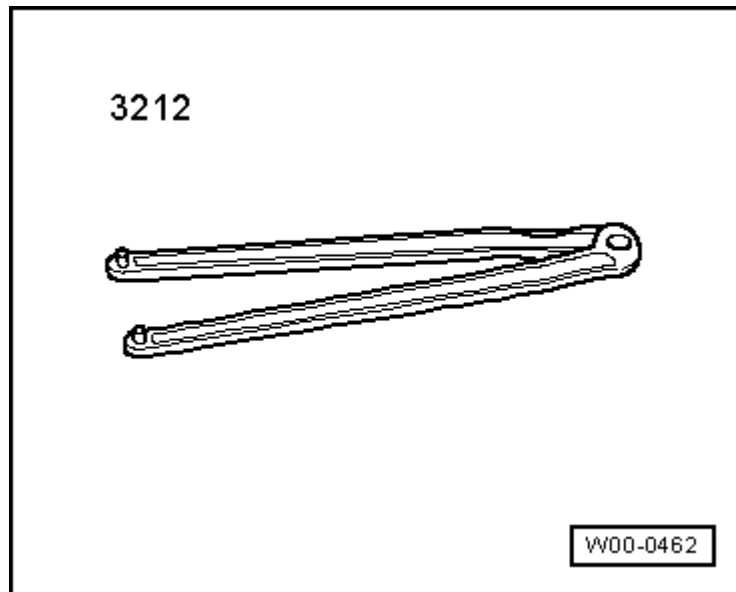


Fig. 80: Identifying Special Tool - Panner Wrench 3212
Courtesy of AUDI OF AMERICA, LLC

- Locking Pin T10060 A

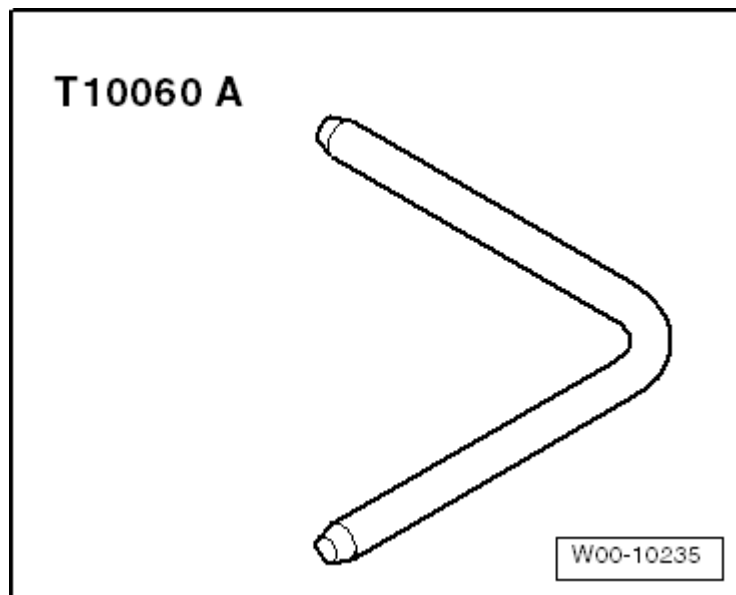


Fig. 81: Identifying Locking Pin T10060 A
Courtesy of AUDI OF AMERICA, LLC

- Assembly Tool T10122

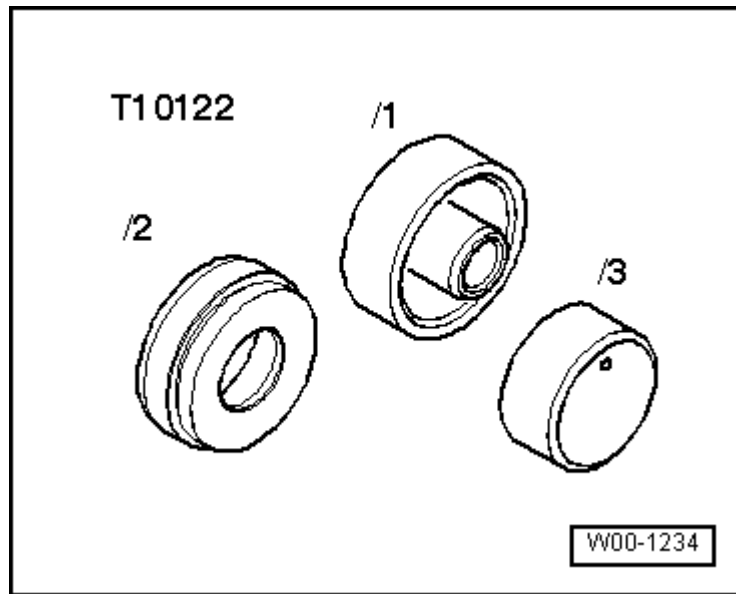


Fig. 82: Identifying Installation Tool T10122
Courtesy of AUDI OF AMERICA, LLC

- Pulling Hook T20143/2

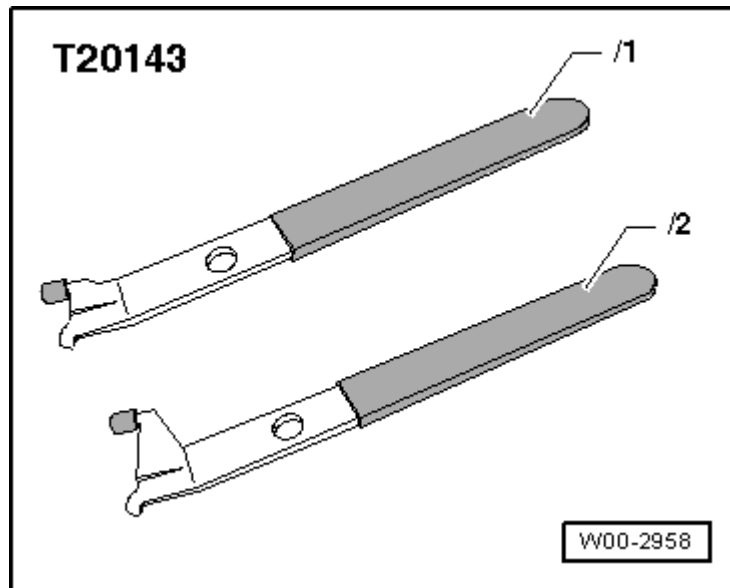


Fig. 83: Identifying Extractor Hook T20143
Courtesy of AUDI OF AMERICA, LLC

- Assembling Device T40048

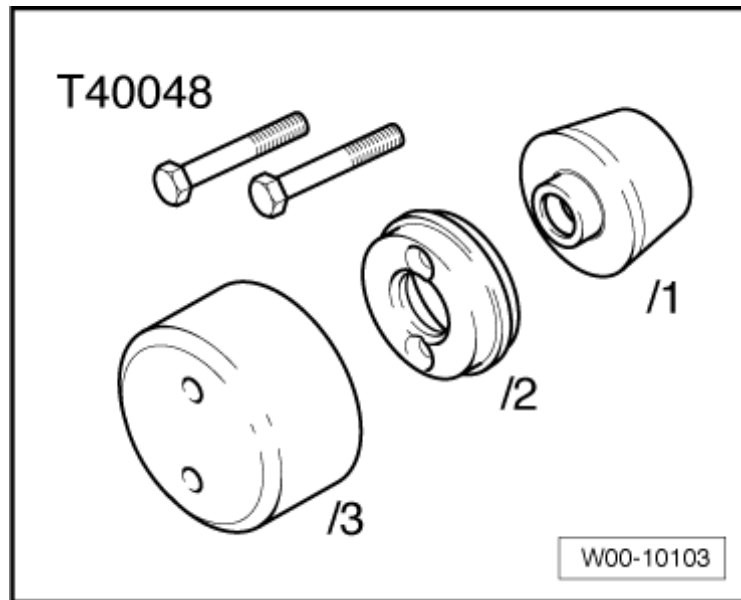


Fig. 84: Identifying Assembly Tool T40048
Courtesy of AUDI OF AMERICA, LLC

- Dial Gauge 0-10 mm VAS 6079

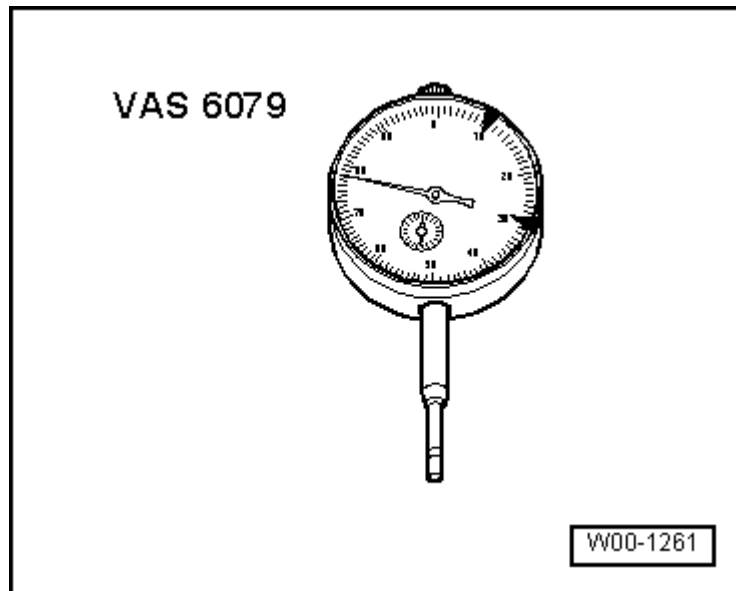


Fig. 85: Identifying Dial Gauge VAS 6079
Courtesy of AUDI OF AMERICA, LLC

- Pilot Drift VW 222 A

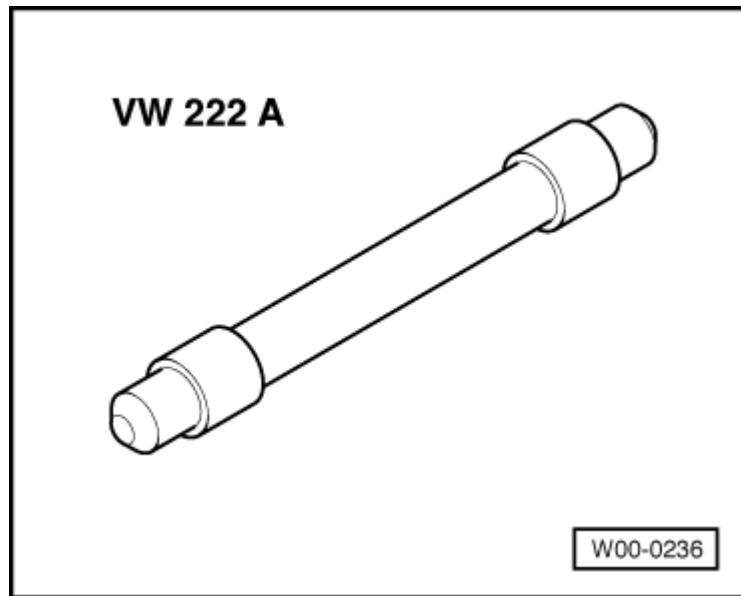


Fig. 86: Identifying Drift VW 222 A
Courtesy of AUDI OF AMERICA, LLC

- Dial Gauge Holder VW 387

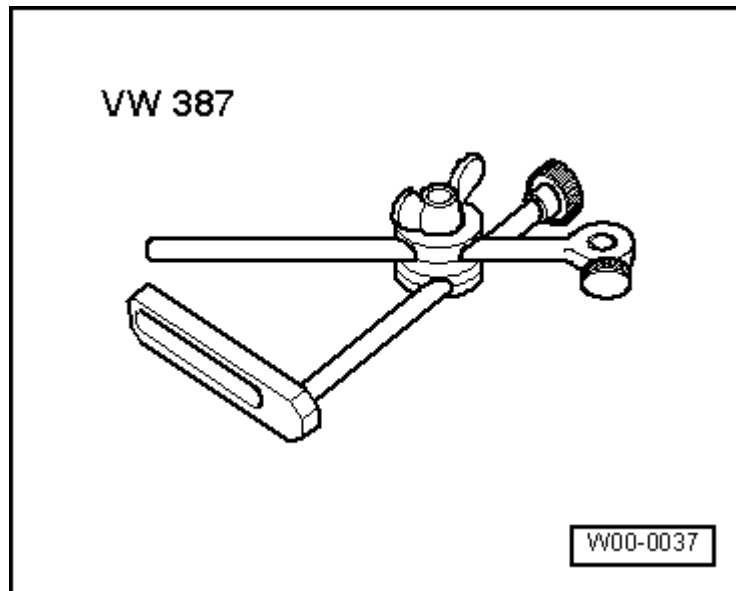


Fig. 87: Identifying Dial Gauge Holder VW 387
Courtesy of AUDI OF AMERICA, LLC

- Thrust Plate VW 402

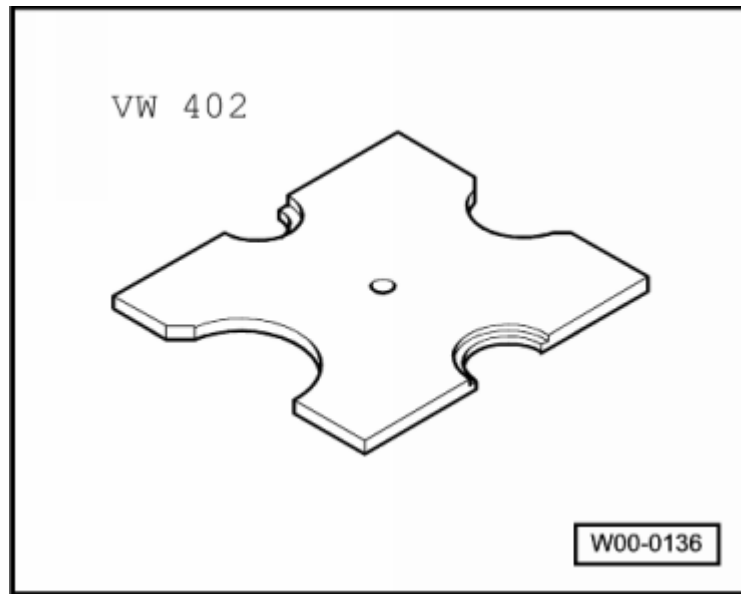


Fig. 88: Identifying Thrust Plate VW 402
Courtesy of AUDI OF AMERICA, LLC

- Tube 31.5 mm Dia.VW 418 A

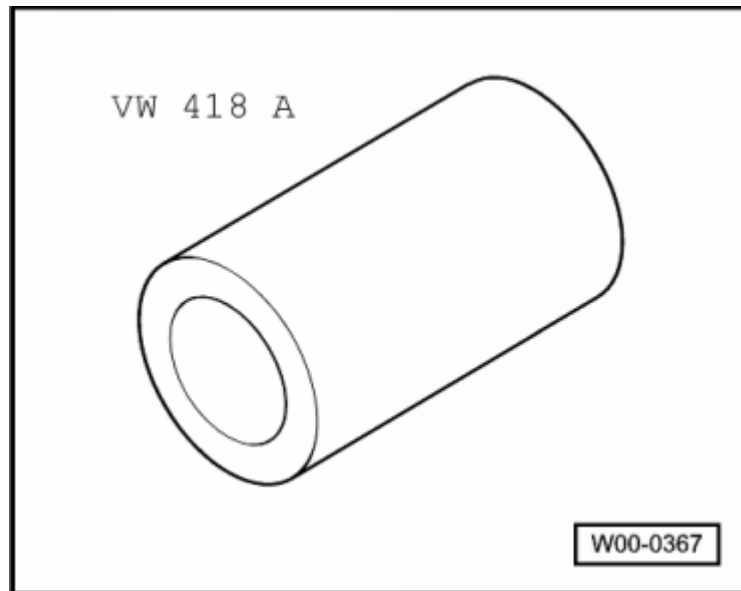


Fig. 89: Identifying Sleeve VW 418 A
Courtesy of AUDI OF AMERICA, LLC

- Tube 28 mm Dia. 100 mm VW 421

2012 Audi S4

ENGINE 3.0 Liter - Crankshaft, Cylinder Block - Engine Code(s): CCBA (Sedan)

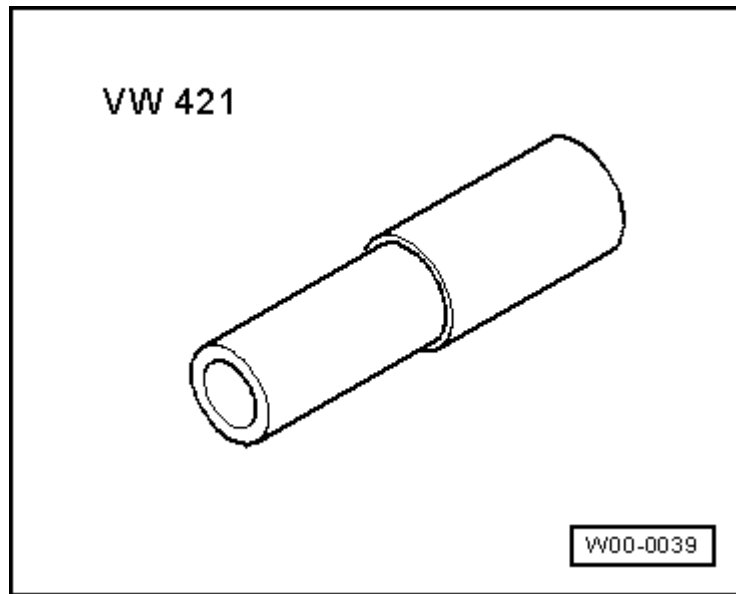


Fig. 90: Identifying Tube VW 421
Courtesy of AUDI OF AMERICA, LLC

- Not illustrated:
- Assembly Device T10122/1
- Pull Sleeve T10122/2
- Assembly Device T40048/1
- Pull Sleeve T40048/2
- Cylinder Gauge VAS 6078 or Inside Micrometer Set 18-100 mm US1033/S
- Engine and Transmission Holder VAS 6095
- Engine and Transmission Holder VAS 6095