

17 - ENGINE - LUBRICATION

LUBRICATION SYSTEM COMPONENTS, REMOVING AND INSTALLING

Lubrication system components, removing and installing

NOTE:

- If large quantities of metal shavings or abraded material are found in the engine oil while servicing the engine, the oil passages must be carefully cleaned to prevent resulting damage and the oil cooler must be replaced.
- The oil level must not be above the max. mark - danger of damage to catalytic converter!
- Oil quantities, oil specifications and viscosity classes Fluid Capacity Chart located in ServiceNet.

Oil pump, lower section of oil pan, component overview

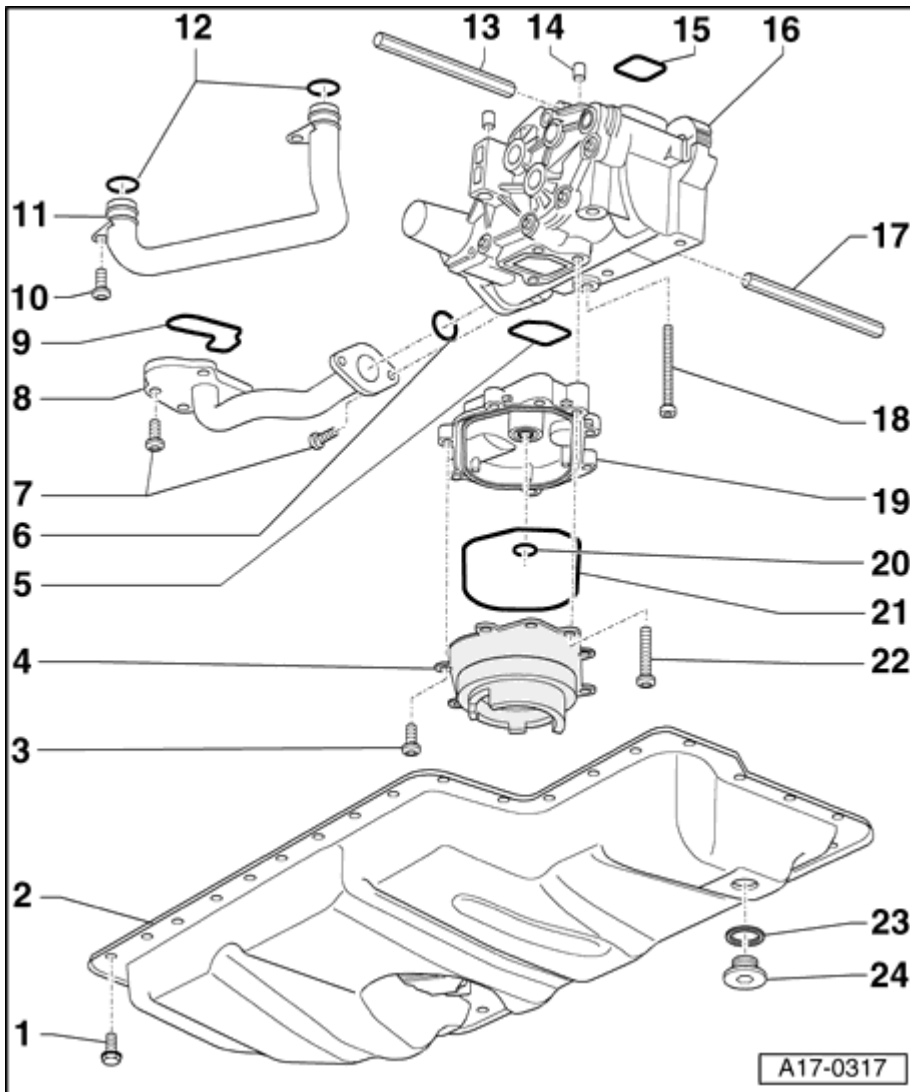


Fig. 377: Oil Pump, Lower Section Of Oil Pan, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - 10 Nm

2 - Oil pan (lower section)

- Removing and installing --> **Oil pan (lower part), removing and installing**
- With Oil Level Thermal Sensor G266
- Oil Level Thermal Sensor G266 , removing and installing --> **Oil Level Thermal Sensor G266 , removing and installing**

3 - 10 Nm

4 - Intake tube

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ENGINE 4.2 Liter V8 4V Engine Mechanical, Engine Code(s): BAT, BNK

- With oil strainer

5 - Seal

- Replace

6 - O-ring

- Replace

7 - 10 Nm

8 - Oil pipe

9 - Seal

- Replace

10 - 10 Nm

11 - Oil pipe

12 - O-rings

- Replace

13 - Input shaft

- For coolant pump

14 - Fitting sleeves

- 2 pieces

15 - Seal

- Replace

16 - Oil pump

- Do not disassemble
- With relief valve approx. 4 bar
- Removing and installing --> **Oil pump, removing and installing**

17 - Input shaft

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ENGINE 4.2 Liter V8 4V Engine Mechanical, Engine Code(s): BAT, BNK

- For oil pump

18 - 10 Nm

19 - Housing for intake tube

20 - O-ring

- Replace

21 - Seal

- Replace

22 - 10 Nm

23 - Seal

- Replace

24 - Oil drain plug - 50 Nm

Oil Level Thermal Sensor G266 , removing and installing

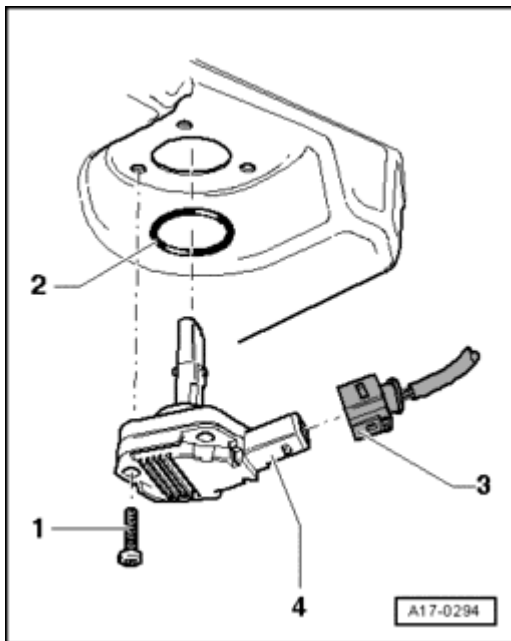


Fig. 378: Oil Level Thermal Sensor G266 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1. Bolt - 10 Nm; self-locking, replace

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ENGINE 4.2 Liter V8 4V Engine Mechanical, Engine Code(s): BAT, BNK

2. Sealing ring; replace
3. Electrical harness connector
4. Oil Level Thermal Sensor G266

Oil pan (lower part), removing and installing

Special tools, testers and auxiliary items required

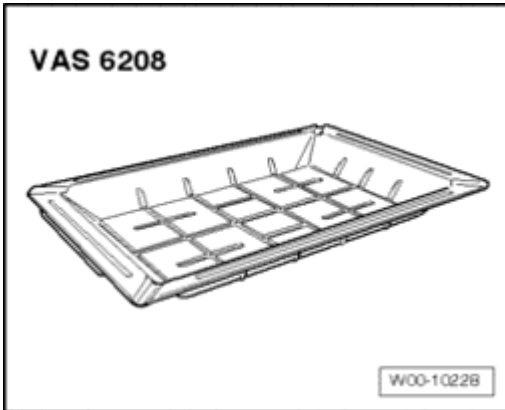


Fig. 379: Drip Tray For Workshop Crane VAS 6208
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drip tray for workshop crane VAS 6208

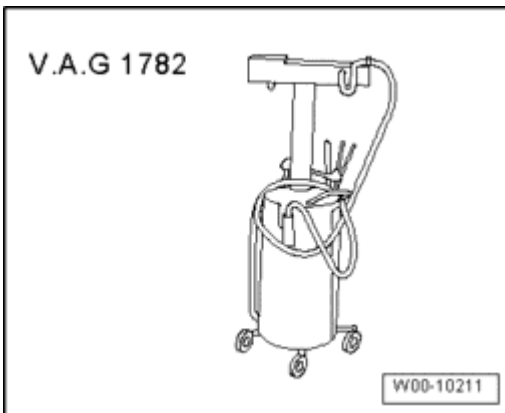


Fig. 380: Identifying Old Oil Collecting And Extracting Device V.A.G 1782
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Old oil collecting and extracting device V.A.G 1782
- Hand drill with plastic brush attachment
- Protective glasses
- Sealant

Removing

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- Drain coolant --> **Cooling system, draining and filling.**
- Drain engine oil --> **01 - MAINTENANCE** .
- Bring lock carrier into service position --> **50 - BODY - FRONT** .

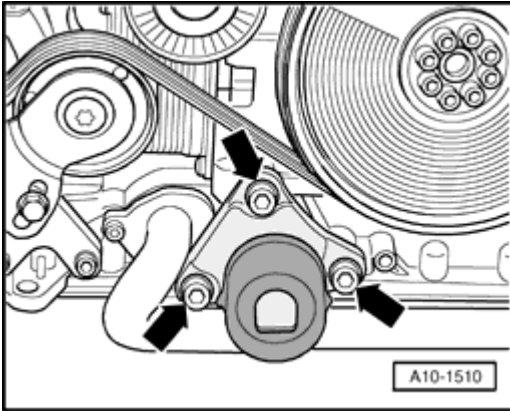


Fig. 381: Removing Bolts And Torque Support From Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove torque support from engine.

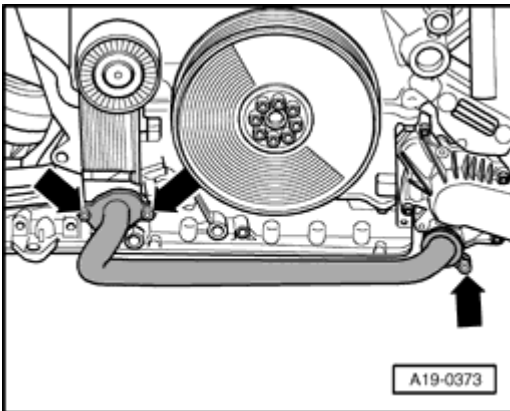


Fig. 382: Removing Front Coolant Pipe On Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place drip tray VAS 6208 under engine.
- Remove front coolant pipe on engine - **arrows** -.

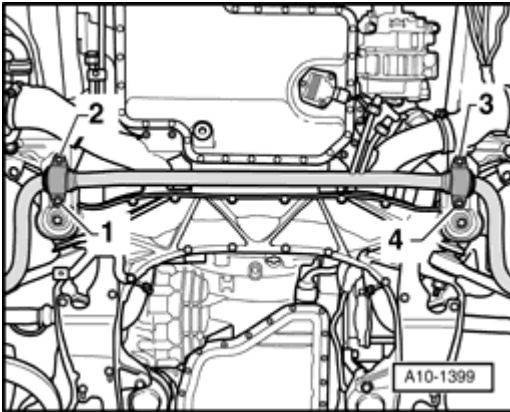


Fig. 383: Removing Nuts For Left/Right Stabilizer Mounts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **1 to 4** - for left and right stabilizer mounts.

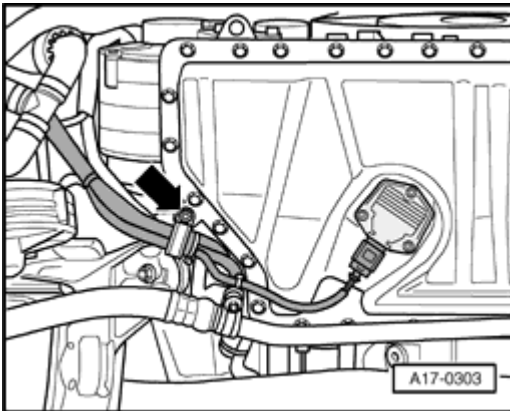


Fig. 384: Removing Guide On Lower Section Of Oil Pan
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove guide - **arrow** - on lower section of oil pan.

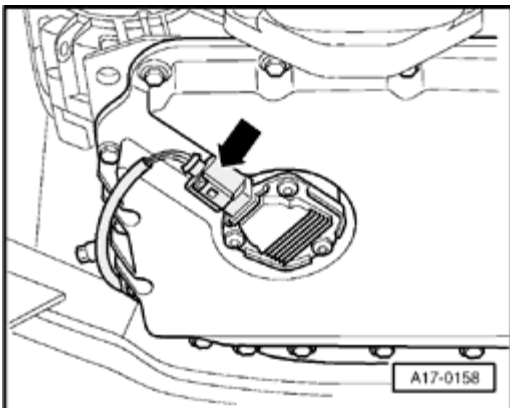


Fig. 385: Disconnecting Electrical Connector On Oil Level Thermal Sensor G266
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector on Oil Level Thermal Sensor G266 - **arrow** - and free up wire.

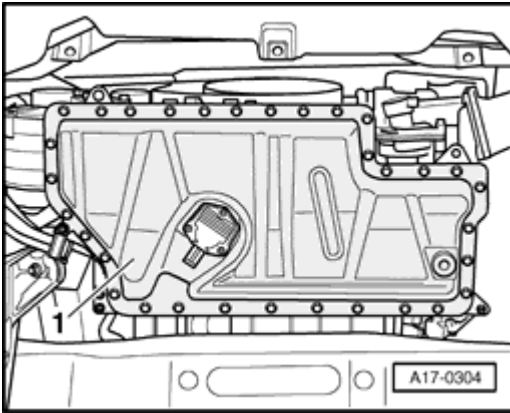


Fig. 386: Removing Oil Pan (Lower Part)

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place old oil collecting and extracting device V.A.G 1782 under engine.
- Remove oil pan (lower part) - 1 - and pry out carefully.

NOTE: • There is still a residual amount of oil in lower section of oil pan.

Installing

NOTE: • Replace seals.

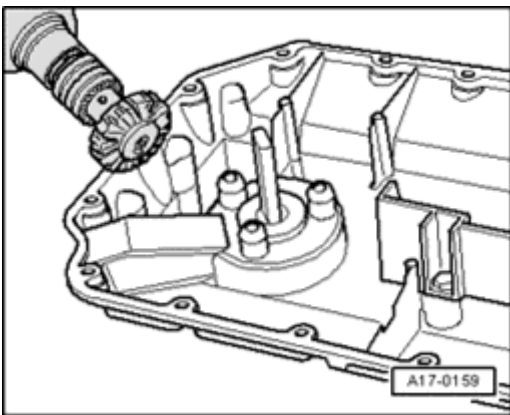


Fig. 387: Using Rotating Plastic Brush To Remove Any Remaining Sealant From Oil Pan (Lower Part) And At Upper Part

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using rotating plastic brush, remove any remaining sealant from lower part of oil pan and upper part.

CAUTION: Wear safety glasses.

- Clean sealing surfaces, must be free of oil and grease.

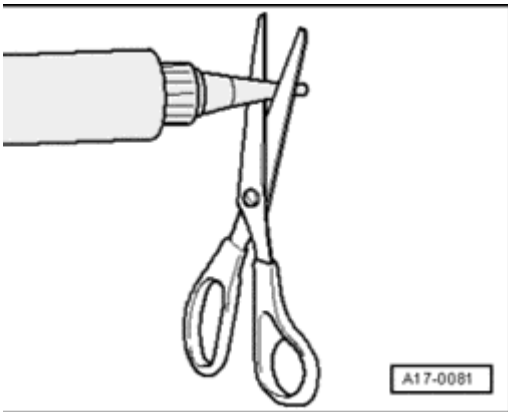


Fig. 388: Cutting Tube Nozzle At Front Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Cut tube nozzle at front marking (dia. approx. 1 mm).

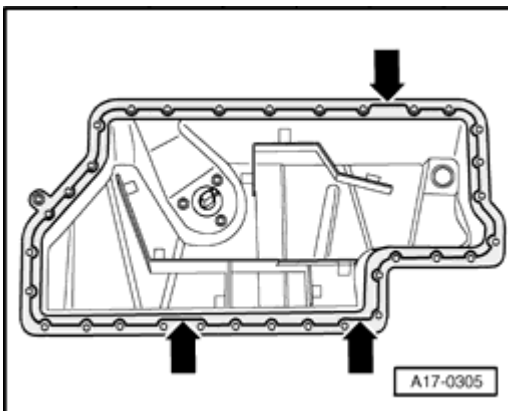


Fig. 389: Applying Sealant Bead On Clean Sealing Surface Of Lower Section Of Oil Pan
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Apply sealant bead to clean sealing surfaces of oil pan (lower part) as shown in illustration.
- Thickness of sealant bead: 1.5 to 2.0 mm

NOTE:

- Observe the position of the sealant bead at areas indicated with - arrows -.
- The oil pan (lower part) must be installed within 5 minutes after application of sealant.
- Sealant bead must not be thicker than specified, otherwise excess sealant may get into lower section of oil pan and clog strainer in intake tube.

- Set lower part of oil pan in place and fasten all bolts in diagonal sequence to 5 Nm.

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- Fasten bolts for lower part of oil pan in a diagonal sequence to 10 Nm.

Further installation is in reverse order of removal, note the following:

- Install stabilizer bar --> **40 - FRONT SUSPENSION** .
- Install front coolant pipe --> **Front coolant line, removing and installing**.
- Install lock carrier with attachments --> **50 - BODY - FRONT** .

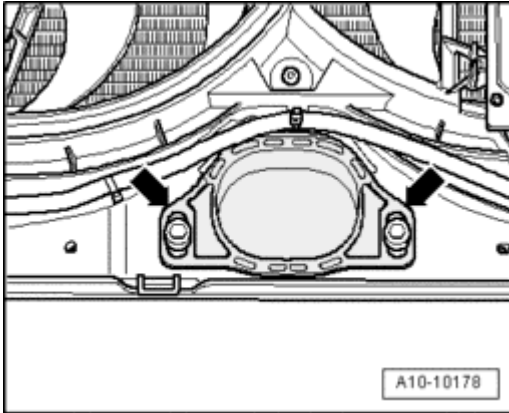


Fig. 390: Placing Torque Support On Rubber Buffer For Torque Support And Tightening Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place torque support on rubber buffer for torque support and tighten bolts - **arrows** -.
- Install front bumper --> **63 - BUMPERS** .
- Add engine oil and check oil level --> **01 - MAINTENANCE** .
- Fill with coolant --> **Cooling system, draining and filling** .
- Adjust headlights --> **01 - MAINTENANCE** .

Torque specifications

Component	Nm
Lower part of oil pan to upper part of oil pan	10
Oil drain plug	50
Torque support stop to lock carrier	40

Oil pump, removing and installing

Special tools, testers and auxiliary items required

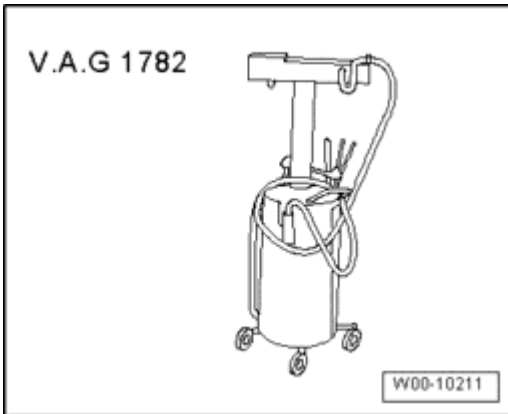


Fig. 391: Identifying Old Oil Collecting And Extracting Device V.A.G 1782
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Old oil collecting and extracting device V.A.G 1782

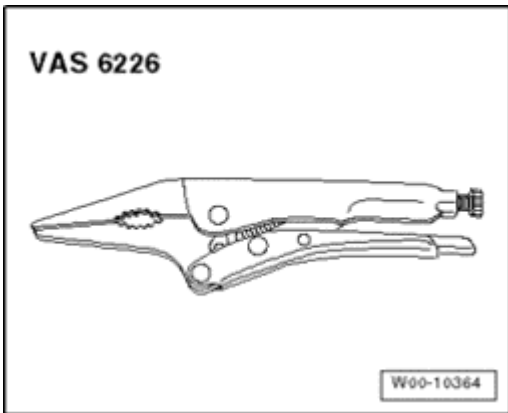


Fig. 392: Long-Nose Gripping Pliers VAS 6226
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Long-nose gripping pliers VAS 6226

Removing

- Remove lower section of oil pan --> **Oil pan (lower part), removing and installing.**

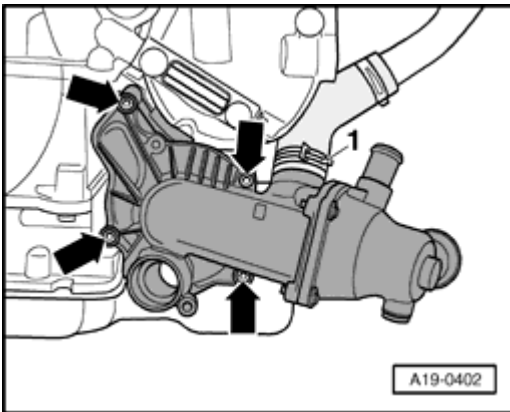


Fig. 393: Disconnecting Coolant Hose & Removing Coolant Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect coolant hose - **1** -.
- Remove coolant pump - **arrows** -.

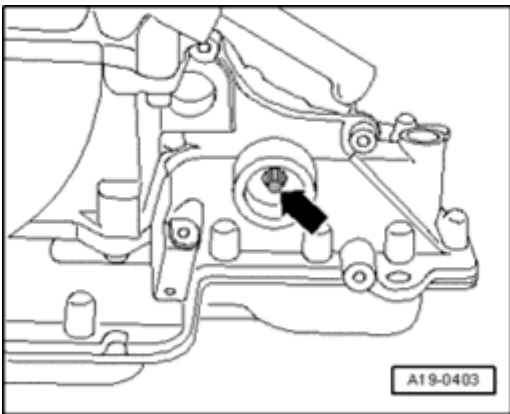


Fig. 394: Removing/Installing Drive Shaft For Coolant Pump From Oil Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove drive shaft - **arrow** - for coolant pump from oil pump.

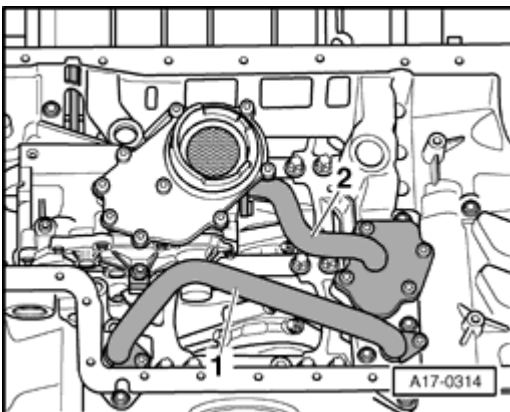


Fig. 395: Removing Bolts And Oil Pines

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place Old oil collecting and extracting device V.A.G 1782 underneath.
- Remove bolts and remove oil pipes - 1 - and - 2 -.

NOTE: • Oil escapes when removing oil pipes.

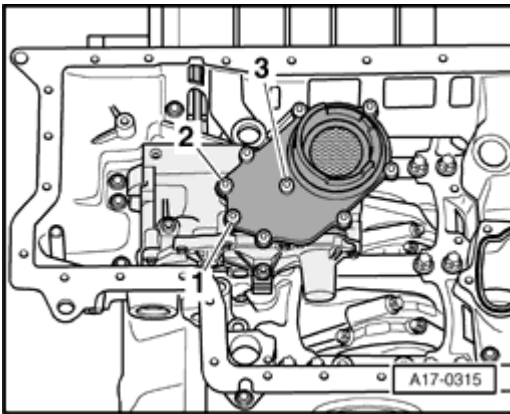


Fig. 396: Removing Bolts And Intake Tube With Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - 1 to 3 - and remove intake tube with housing.

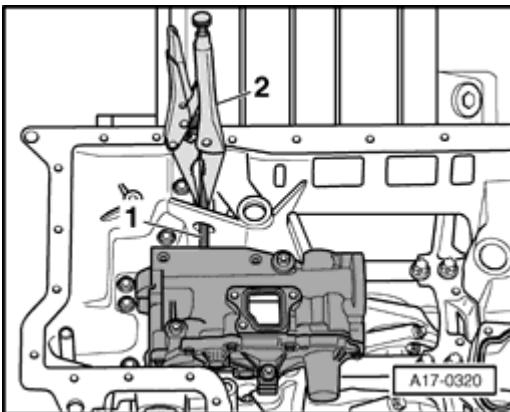


Fig. 397: Unlocking Gripping Pliers And Letting Drive Shaft Glide Into Oil Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press back drive shaft - 1 - for oil pump against spring force and clamp tightly using Long-nose gripping pliers VAS 6226 - 2 -.

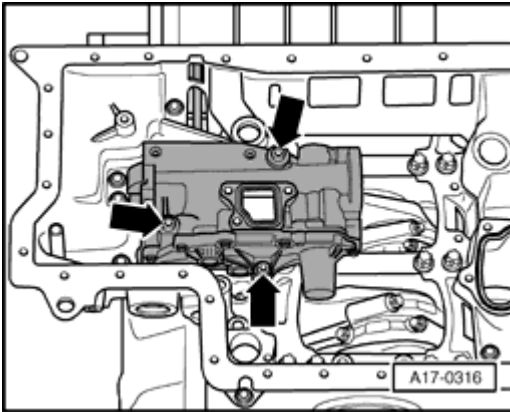


Fig. 398: Removing Bolts And Oil Pump

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove oil pump.

Installing

NOTE:

- **Replace seals and O-rings.**

- Check whether 2 alignment bushings are present in cylinder block, install if necessary.
- Tighten oil pump - **arrows** -.

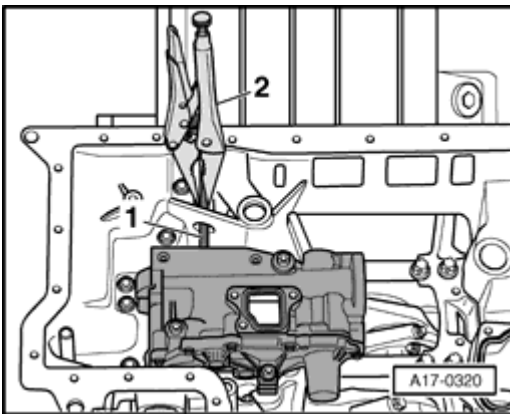


Fig. 399: Unlocking Gripping Pliers And Letting Drive Shaft Glide Into Oil Pump

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unlock gripping pliers - **2** - and let drive shaft - **1** - glide into oil pump.

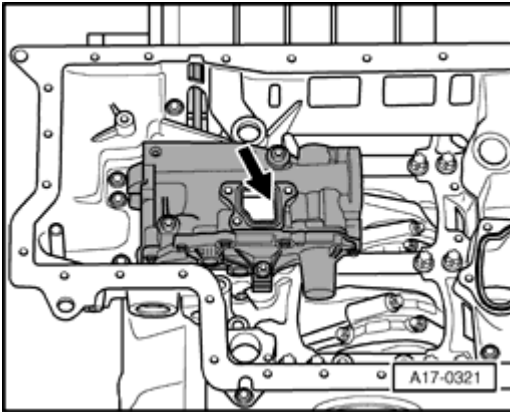


Fig. 400: Checking Whether Drive Shaft Is Friction Locked To Oil Pump
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check whether drive shaft is friction locked to oil pump. To do so, reach into intake opening - **arrow** - of oil pump and try to rotate oil pump gears.
- Toothed gears must not be able to be rotated

Further installation is in reverse order of removal, note the following:

- Install coolant pump --> **Coolant pump, removing and installing.**
- Install oil pan (lower part) --> **Oil pan (lower part), removing and installing.**

Torque specifications

Component	Nm
Oil pump to cylinder block	10
Housing for intake tube to oil pump	10
Oil pipes to upper section of oil pan and oil pump	10

Upper section of oil pan, component overview

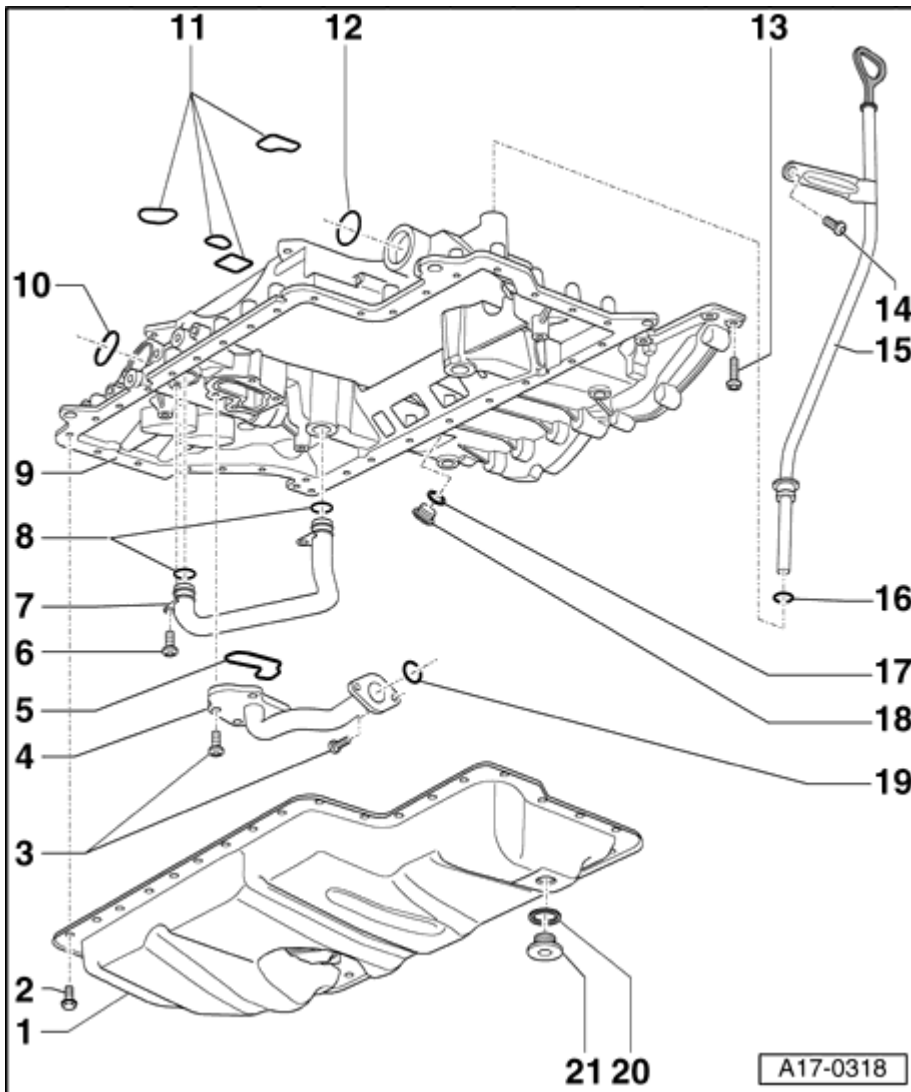


Fig. 401: Upper Section Of Oil Pan, Component Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Oil pan (lower section)

- Removing and installing --> **Oil pan (lower part), removing and installing**
- With Oil Level Thermal Sensor G266
- Oil Level Thermal Sensor G266 , removing and installing --> **Oil Level Thermal Sensor G266 , removing and installing**

2 - 10 Nm

3 - 10 Nm

4 - Oil pipe

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5 - Gasket

- Replace

6 - 10 Nm

7 - Oil pipe

8 - O-rings

- Replace

9 - Oil pan (upper section)

- Removing and installing --> **Oil pan (upper part), removing and installing**

10 - Seal

- Replace

11 - Gasket

- Replace

12 - O-ring

- Replace

13 - 15 Nm

14 - 10 Nm

15 - Guide tube for oil dipstick

16 - O-ring

- Replace

17 - Seal

- Replace

18 - Locking bolt - 35 Nm

19 - O-ring

20 - Seal

- Replace

21 - Oil drain plug - 50 Nm

Oil pan (upper part), removing and installing

Special tools, testers and auxiliary items required

- Protective glasses
- Hand drill with plastic brush attachment
- Sealant

Removing

- Drain engine oil --> **01 - MAINTENANCE** .
- Remove engine --> **Engine, removing and installing**.
- Separate engine/transmission unit --> **Engine and transmission, separating**.
- Remove covers for timing chains --> **Timing chain covers, removing and installing**.

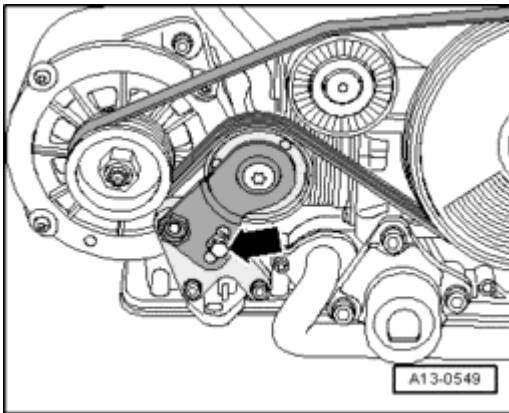


Fig. 402: Loosening Tensioning Bolt And Ribbed Belt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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.
- Loosen tensioning bolt - **arrow** - and remove ribbed belt.

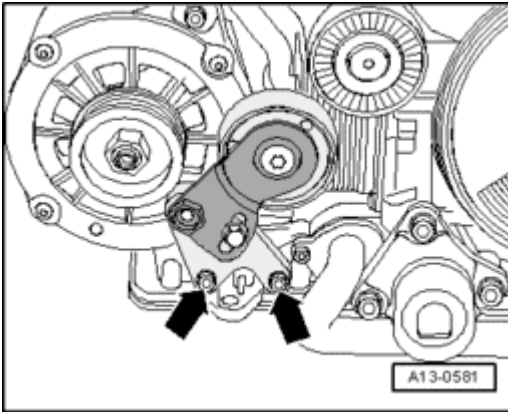


Fig. 403: Removing Tensioning Roller

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove tensioning roller - **arrows** -.

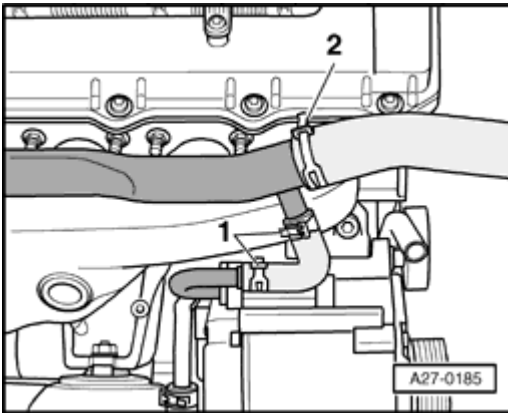


Fig. 404: Removing Hose Clamps And Disconnect Coolant Hose

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove hose clamps - **1** - and disconnect coolant hose.

NOTE:

- Ignore - **2** -.

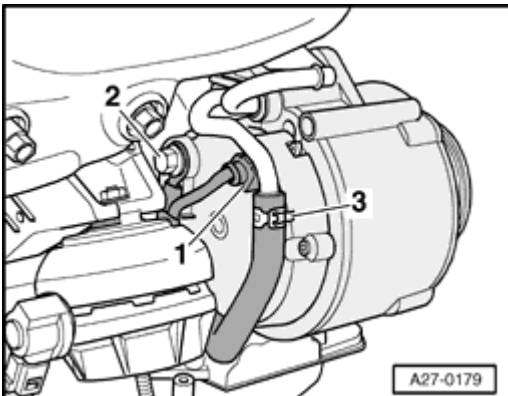


Fig. 405: Disconnecting Coolant Hose On Generator, Electrical Connector & Removing Electrical Wire On Generator

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect coolant hose - 3 - on generator.
- Disconnect electrical connector - 1 -.
- Remove electrical wire - 2 - on generator.

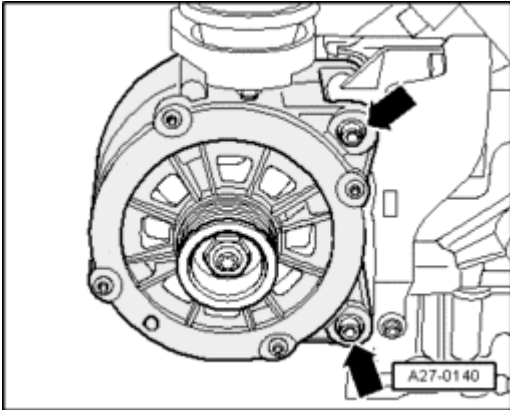


Fig. 406: Removing Generator Bolts

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - arrows -.

NOTE:

- If generator is stuck in its bracket, install mounting bolt again up to 2 rotations.
- Carefully strike on bolt heads using flat side of hammer - doing this loosens threaded sleeves of generator mount.

- Remove generator.

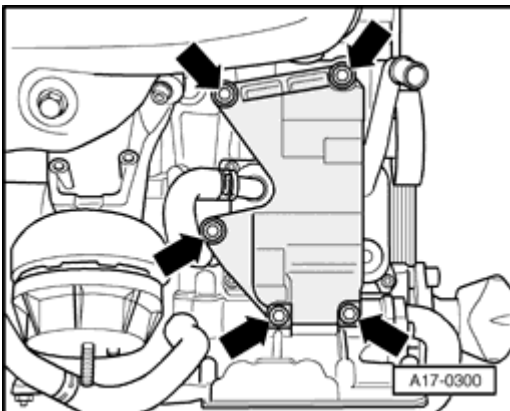


Fig. 407: Removing Bolts & Bracket For Generator

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- Remove bolts - **arrows** -.
- Remove bracket for generator.

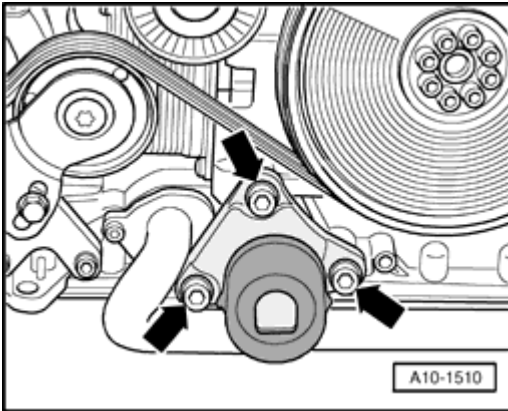


Fig. 408: Removing Bolts And Torque Support From Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove torque support from engine.

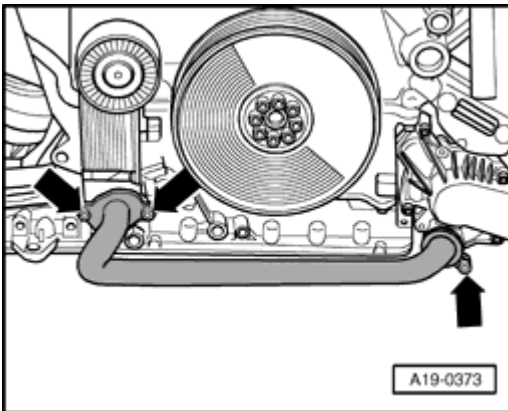


Fig. 409: Removing Front Coolant Pipe On Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove front coolant pipe on engine - **arrows** -.

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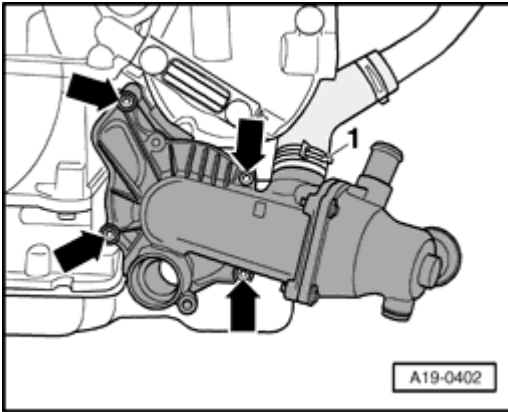


Fig. 410: Disconnecting Coolant Hose & Removing Coolant Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect coolant hose - **1** -.
- Remove coolant pump - **arrows** -.

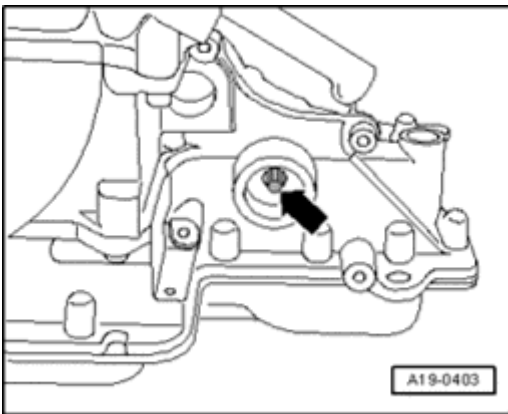


Fig. 411: Removing/Installing Drive Shaft For Coolant Pump From Oil Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove drive shaft - **arrow** - for coolant pump from oil pump.

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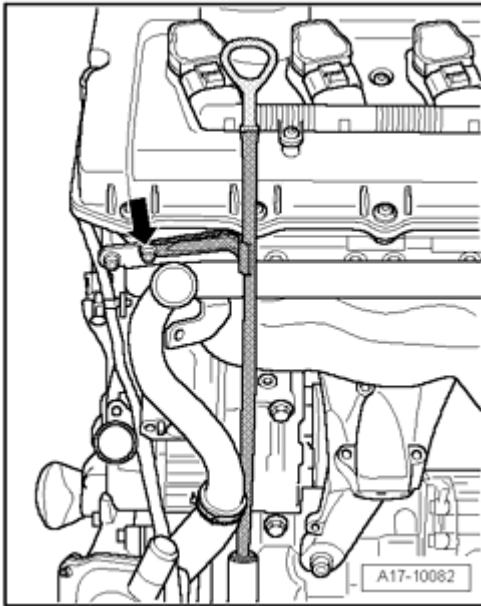


Fig. 412: Removing Guide Pipe For Oil Dipstick At Cylinder Head
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove guide pipe for oil dipstick at cylinder head - **arrow** - , pull up and remove.

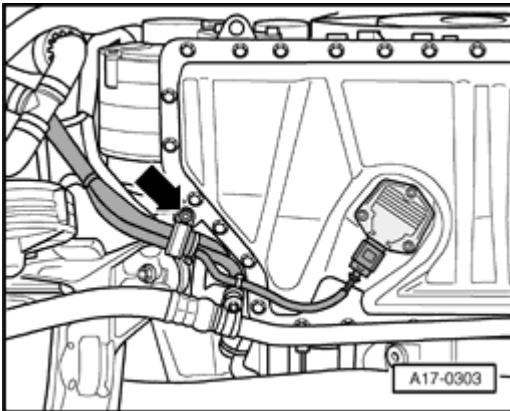


Fig. 413: Removing Guide On Lower Section Of Oil Pan
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove guide - **arrow** - on lower section of oil pan.

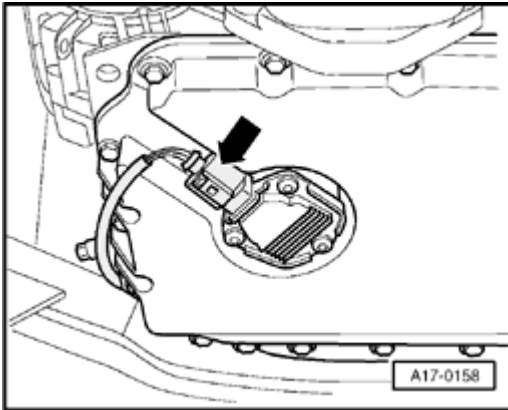


Fig. 414: Disconnecting Electrical Connector On Oil Level Thermal Sensor G266
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector on Oil Level Thermal Sensor G266 - **arrow** - and free up wire.

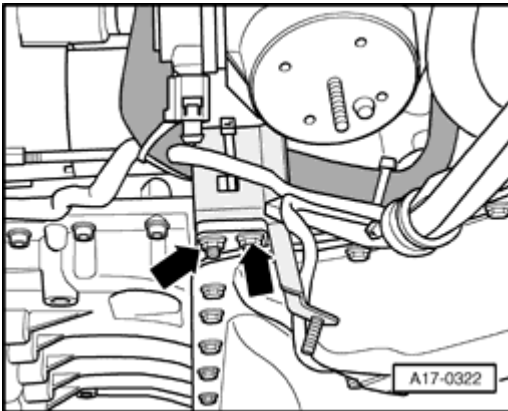


Fig. 415: Removing Wiring Harness Bracket On Lower Section Of Oil Pan
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove wiring harness bracket - **arrow** - on lower section of oil pan.

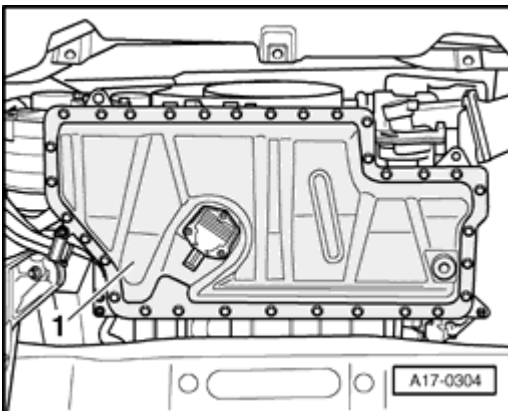


Fig. 416: Removing Oil Pan (Lower Part)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove oil pan (lower part) - 1 - pry out carefully.

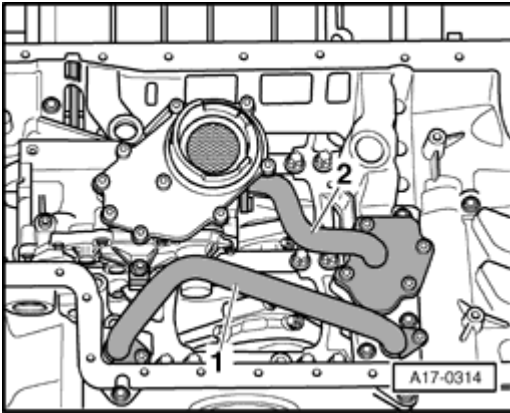


Fig. 417: Removing Bolts And Oil Pipes

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts and remove oil pipes - 1 - and - 2 -.

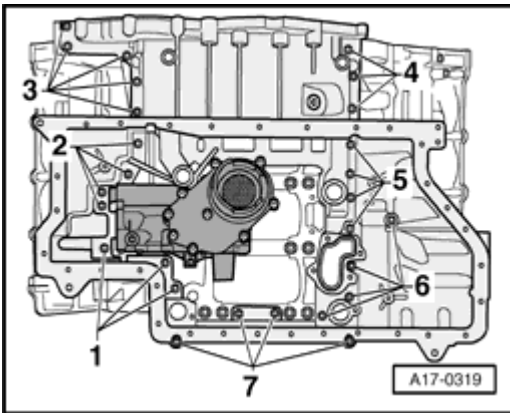


Fig. 418: Removing/Installing Bolts For Upper Section Of Oil Pan

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - 1 to 7 - for upper section of oil pan.
- Press upper part of oil pan from alignment pins of cylinder block.

Installing

- NOTE:**
- Replace seals and O-rings.

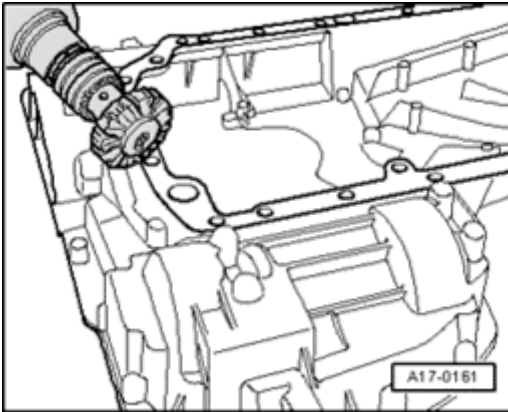


Fig. 419: Using Rotating Plastic Brush To Remove Any Remaining Sealant From Upper Part Of Oil Pan And Cylinder Block

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using rotating plastic brush, remove any remaining sealant from upper part of oil pan and cylinder block.

CAUTION: Wear safety glasses.

- Clean sealing surfaces, must be free of oil and grease.

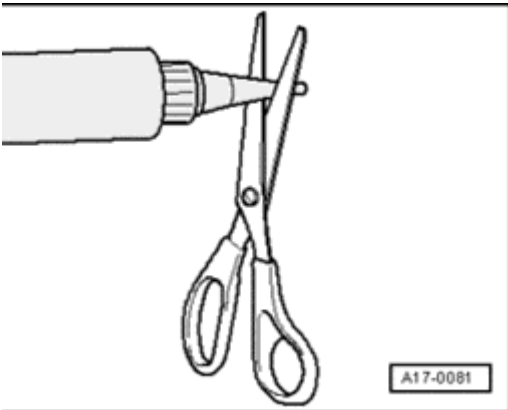


Fig. 420: Cutting Tube Nozzle At Front Marking

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Cut tube nozzle at front marking (dia. approx. 1 mm).

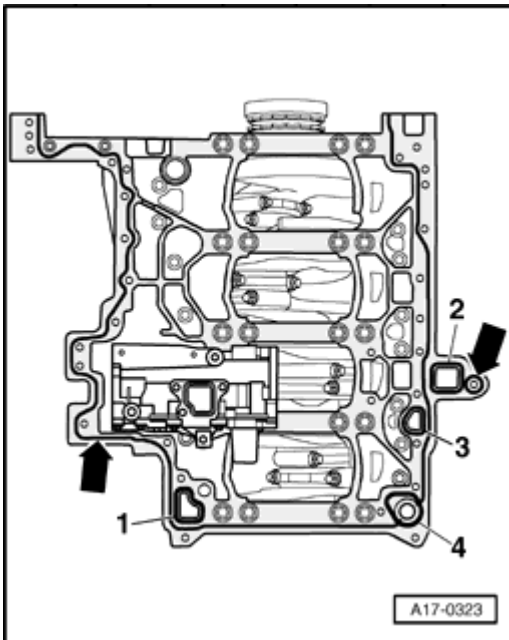


Fig. 421: Inserting New Seals Into Grooves On Cylinder Block
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert new seals - **1 to 4** - into grooves on cylinder block.
- Apply sealant beads - **arrows** - to clean sealing surface of cylinder block as depicted in illustration.
- Thickness of sealant bead: 1.5 to 2.0 mm.

NOTE:

- The oil pan (upper part) must be installed within 5 minutes after application of sealant.
- Sealant bead must not be thicker than specified, otherwise sealant could get into oil pan and clog the strainer on intake tube.

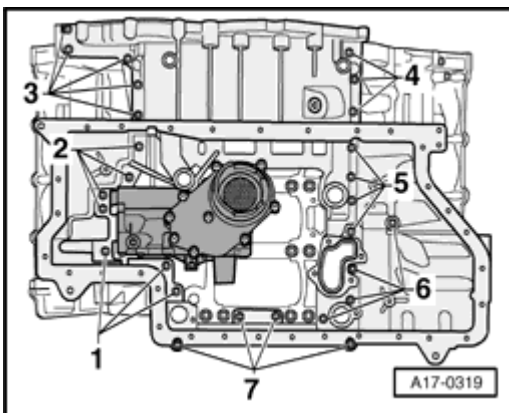


Fig. 422: Removing/Installing Bolts For Upper Section Of Oil Pan
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- With a second technician, position upper section of oil pan and pre-tighten bolts - **1 to 7** - to 5 Nm in diagonal sequence.
- Tighten bolts - **1 to 7** - diagonally to 15 Nm.

Further installation is in reverse order of removal, note the following:

- Install oil pan (lower part).
- Replace O-ring at guide tube for oil dipstick and insert guide tube into hole in oil pan (upper part).
- Bolt transmission to engine and install engine/transmission unit --> **Engine, installing.**
- When installing generator bracket, note two alignment bushings.
- Install ribbed belt --> **Ribbed belt, removing and installing.**
- Add engine oil and check oil level --> **01 - MAINTENANCE** .

Torque specifications

Component					Nm
Oil pipes to upper section of oil pan					10
Coolant pump housing to upper section of oil pan					10
Oil dip stick guide tube to cylinder head					10
Coolant line	Coolant pump				10
front to	Oil pan (upper section)				10
Torque bracket to upper part of oil pan					42
Generator bracket				M8	22
to engine				M10	45
Generator to generator bracket					23
Terminal 30/B+ to generator					16

Oil check valves and spray nozzle valve, component overview

NOTE:

- If irregular valve noise occurs repeatedly during short journeys and disappears after extended driving, the oil check valves must be replaced.

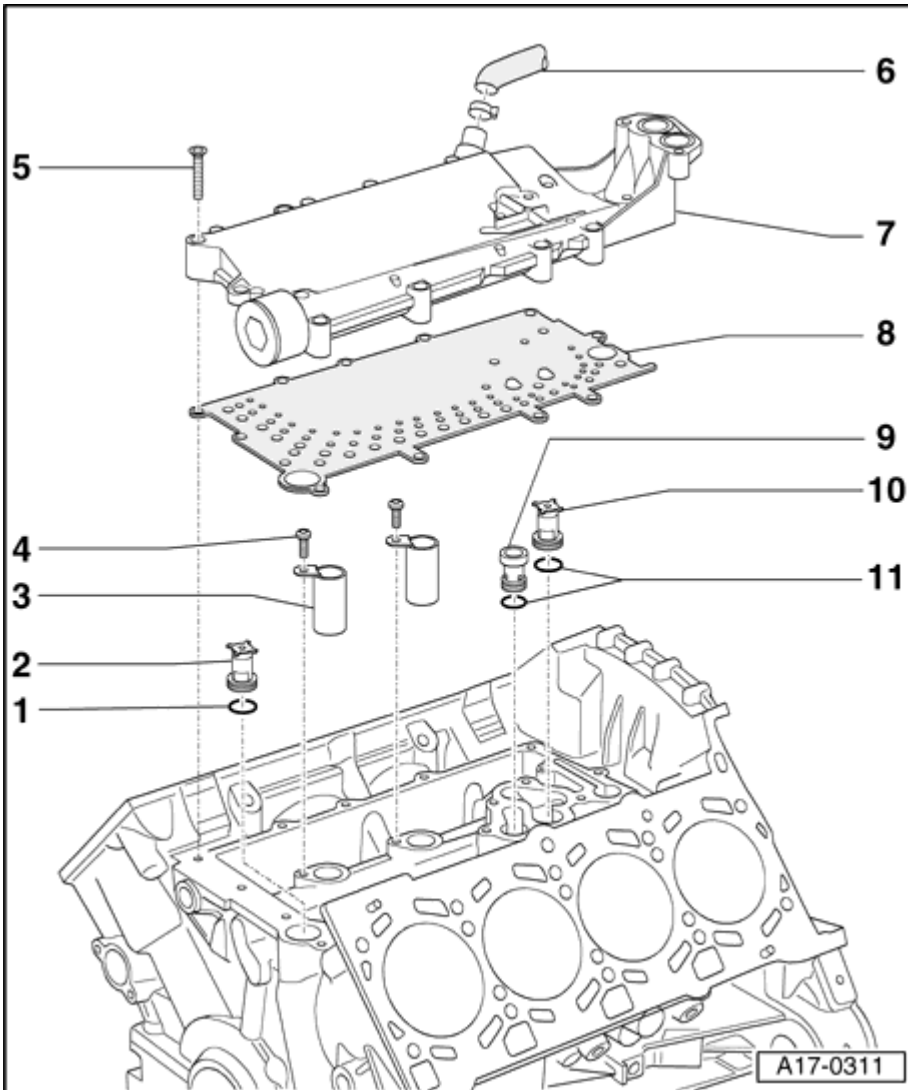


Fig. 423: Oil Check Valves And Spray Nozzle Valve, Component Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - O-ring

- Replace

2 - Oil check valve

- Removing and installing --> **Oil check valves and spray nozzle valve, removing and installing**

3 - Ventilation pipe

4 - 10 Nm

- Insert with locking fluid

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- Locking fluid

5 - 10 Nm

6 - Hose

- To pressure regulating valve for crankshaft housing ventilation

7 - Cover

8 - Gasket

- Replace

9 - Spray nozzle valve

- Removing and installing --> **Oil check valves and spray nozzle valve, removing and installing**

10 - Oil check valve

- Removing and installing --> **Oil check valves and spray nozzle valve, removing and installing**

11 - O-rings

- Replace

Oil check valves and spray nozzle valve, removing and installing

NOTE:

- If irregular valve noise occurs repeatedly during short journeys and disappears after extended driving, the oil check valves must be replaced.

Removing

- Remove intake manifold --> **Intake manifold, removing and installing.**
- Remove oil filter housing --> **Oil filter housing, removing and installing.**

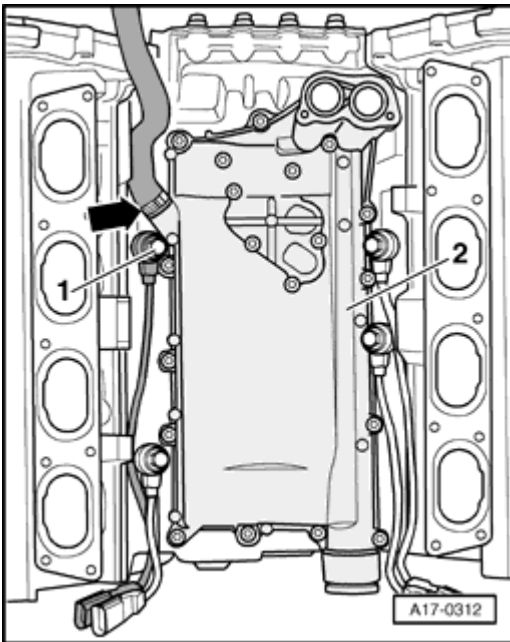


Fig. 424: Identifying Right Rear Knock Sensor Bolt, Crankshaft Housing Ventilation & Oil Check Valves Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear knock sensor, remove bolt - 1 - to do so.
- Remove hose of crankshaft housing ventilation - **arrow** -.
- Remove cover - 2 - for oil check valves.
- Remove seal.

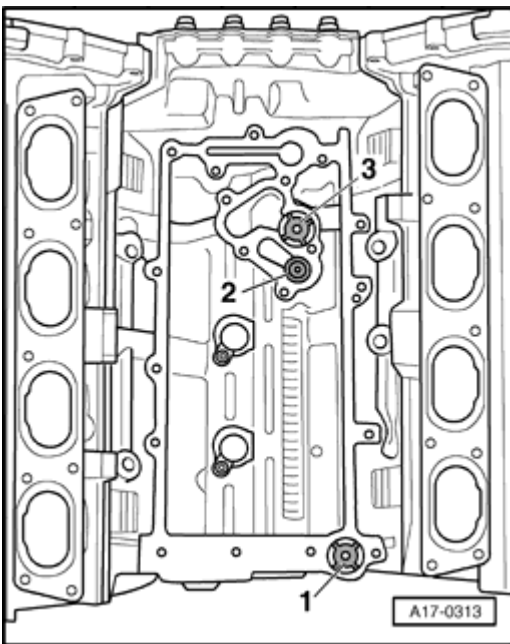


Fig. 425: Removing Oil Check Valves & Spray Nozzle Valve

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove oil check valves - **1** - and - **3** -.
- Remove spray nozzle valve - **2** -.

Installing

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

NOTE:

- **Replace gaskets and O-rings.**
- **Secure all hose connections using hose clamps appropriate for the model type .**

- Install oil filter housing --> **Oil filter housing, removing and installing.**
- Install intake manifold --> **Intake manifold, removing and installing.**

Torque specifications

Component	Nm
Cover for oil check valves to cylinder block	10
Knock sensor to cylinder block	25 * See note

* Do not oil bolt

Oil filter housing, component overview

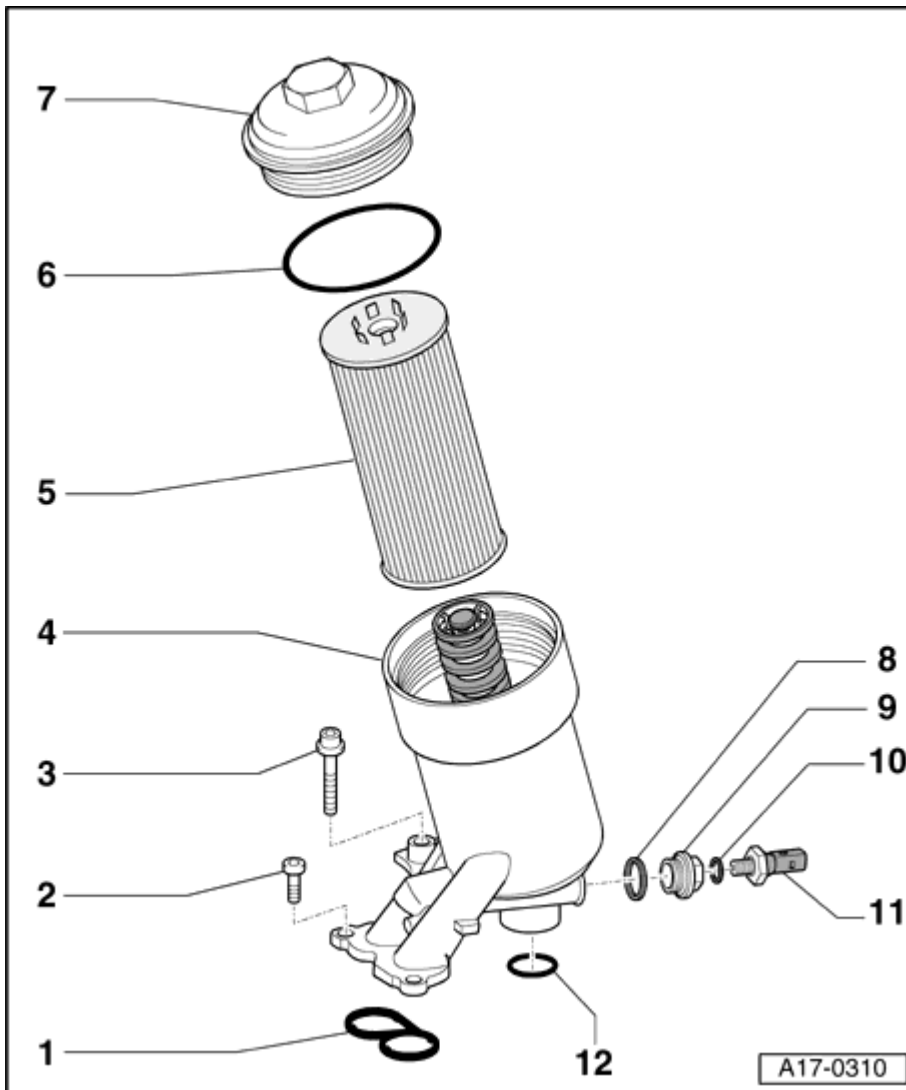


Fig. 426: Oil Filter Housing, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Gasket

- Replace

2 - 10 Nm

3 - 22 Nm

4 - Oil filter housing

5 - Oil filter element

- Note change intervals Maintenance tables

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6 - O-ring

- Replace

7 - Cap - 25 Nm

- Loosen and tighten using socket wrench 36 mm.

8 - Seal

- Replace

9 - Locking bolt - 50 Nm

10 - Seal

- Replace

11 - Oil Pressure Switch F1 , 1.4 bar - 25 Nm

- Black insulation
- Checking --> **Oil pressure and oil pressure switch, checking**

12 - O-ring

- Replace

Oil filter housing, removing and installing

Special tools, testers and auxiliary items required

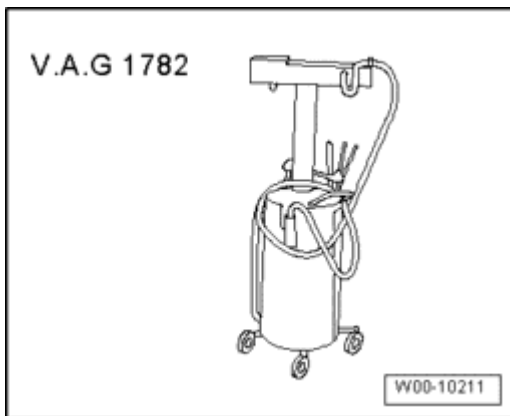


Fig. 427: Identifying Old Oil Collecting And Extracting Device V.A.G 1782
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Old oil collecting and extracting device V A G 1782

Removing

- Remove intake manifold --> **Intake manifold, removing and installing.**

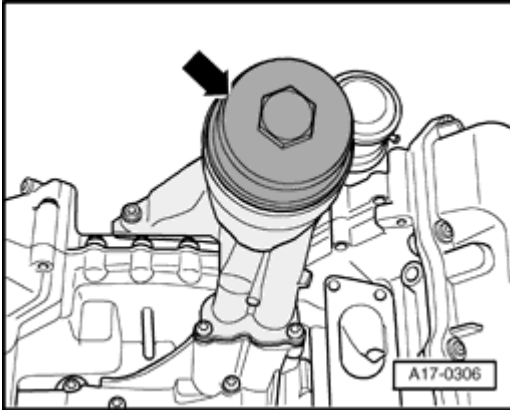


Fig. 428: Removing Cap For Oil Filter Housing

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cap - **arrow** - for oil filter housing.
- Remove oil filter element.
- Extract engine oil using old oil collecting and extracting device V.A.G 1782 from oil filter housing.

NOTE:

- **Place a rag around oil filter housing to catch escaping engine oil.**

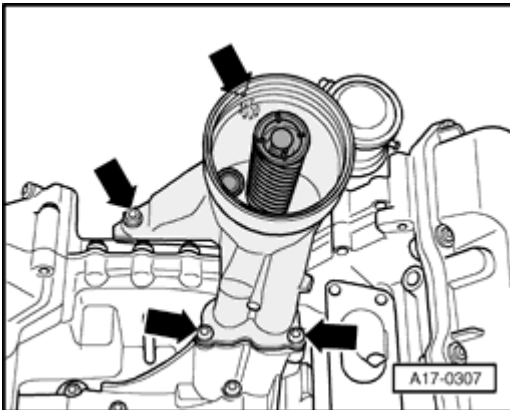


Fig. 429: Removing Bolts & Oil Filter Housing

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Remove oil filter housing.

Installing

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

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NOTE:

- **Replace seals and O-rings.**

- Install intake manifold --> **Intake manifold, removing and installing.**
- Add engine oil and check oil level --> **01 - MAINTENANCE** .

Torque specifications

Component		Nm
Oil filter housing	Cylinder block	10
to	Cover for timing chain	22
Cap to oil filter housing		25

Oil cooler, removing and installing

Special tools, testers and auxiliary items required

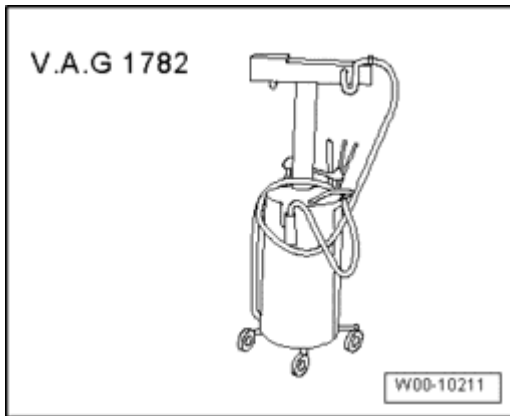


Fig. 430: Identifying Old Oil Collecting And Extracting Device V.A.G 1782
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Old oil collecting and extracting device V.A.G 1782

Removing

- Remove generator --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

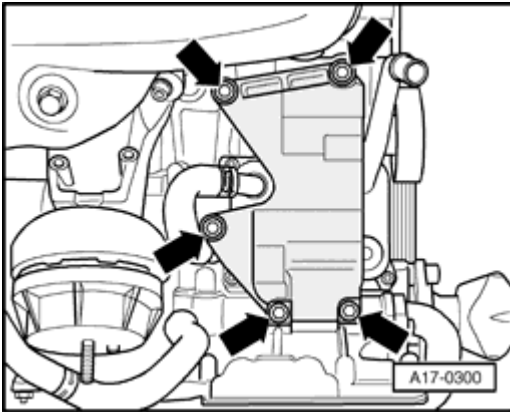


Fig. 431: Removing Bolts & Bracket For Generator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Remove bracket for generator.

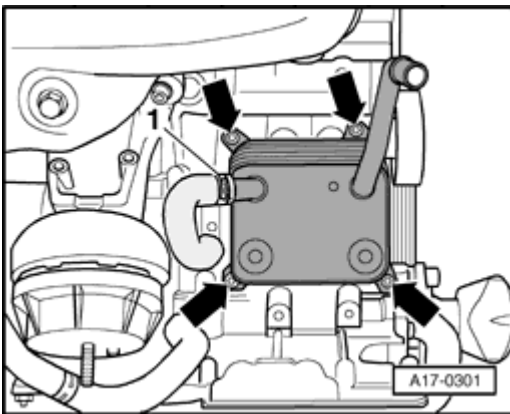


Fig. 432: Disconnecting Coolant Hose From Oil Cooler & Removing Bolts And Oil Cooler
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place Old oil collecting and extracting device V.A.G 1782 underneath.
- Disconnect coolant hose - **1** - from oil cooler.
- Remove bolts - **arrows** - and remove oil cooler.

Installing

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

NOTE:

- **Replace O-rings.**
 - **Secure all hose connections using hose clamps appropriate for the model type .**
- When installing generator bracket, note the two alignment bushings.

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- Install generator --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

Torque specifications

Component		Nm
Oil cooler to cylinder block		10
Generator bracket	M8	22
To engine	M10	45

Oil pressure and oil pressure switch, checking

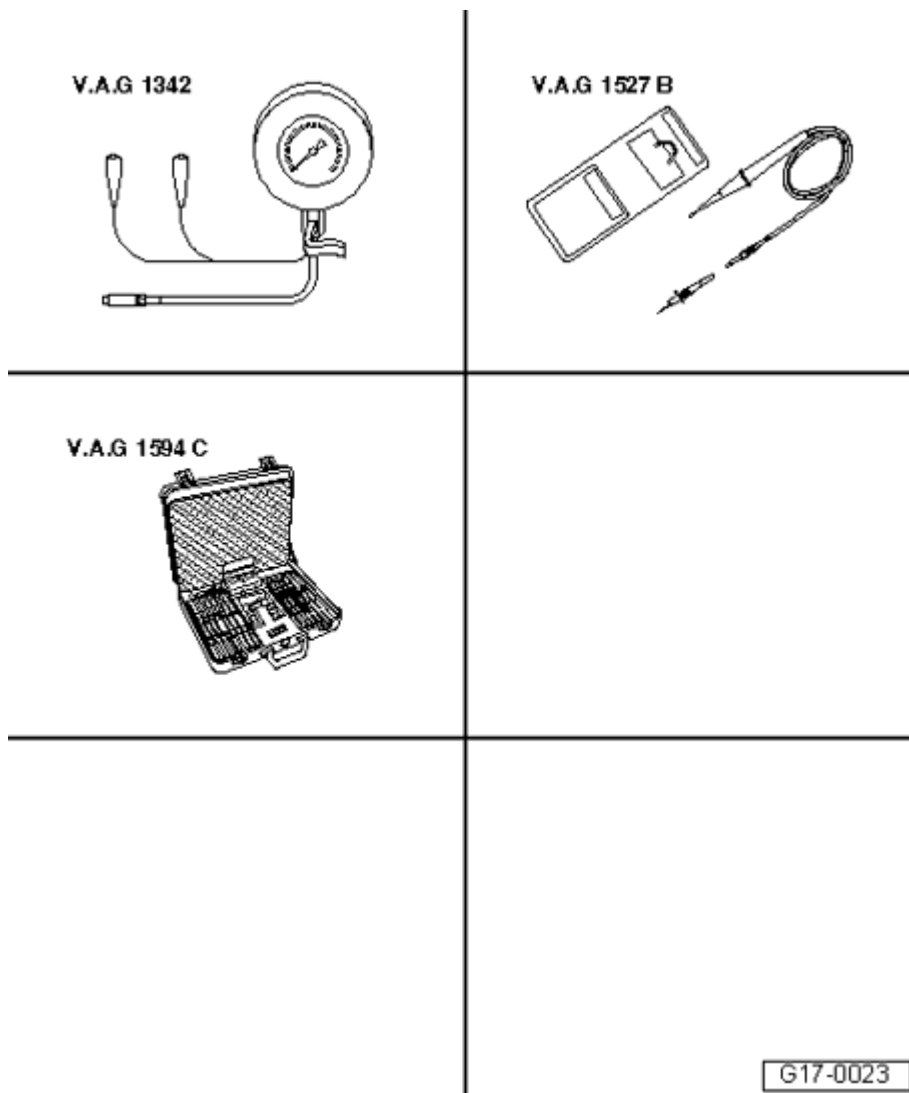


Fig. 433: Identifying Special Tools - Oil Pressure And Oil Pressure Switch, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

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- Oil pressure gauge V.A.G 1342 with adapter V.A.G 1342/14
- Voltage tester V.A.G 1527 B
- Connector test set V.A.G 1594 C

Test conditions

- Oil level OK
- Engine oil temperature approximately 90° C.

Test sequence

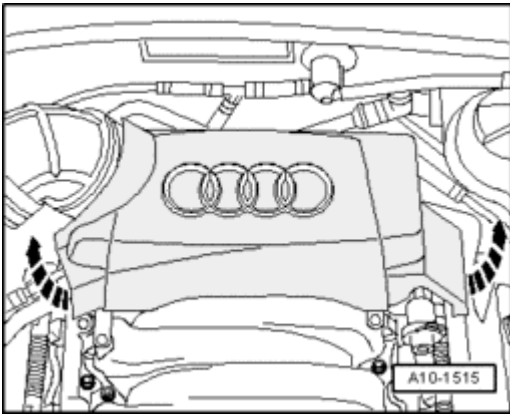


Fig. 434: Removing/Installing Rear Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

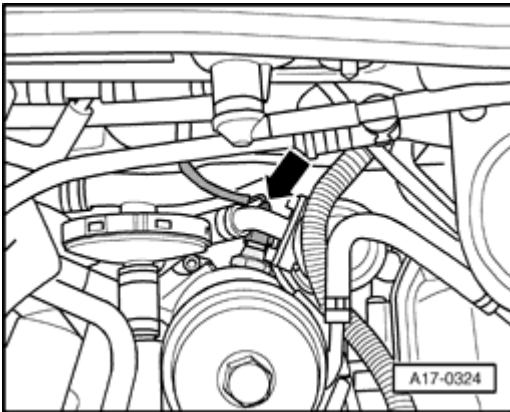


Fig. 435: Disconnecting Electrical Harness Connector From Oil Pressure Switch

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector from oil pressure switch - **arrow** -.
- Remove oil pressure switch.

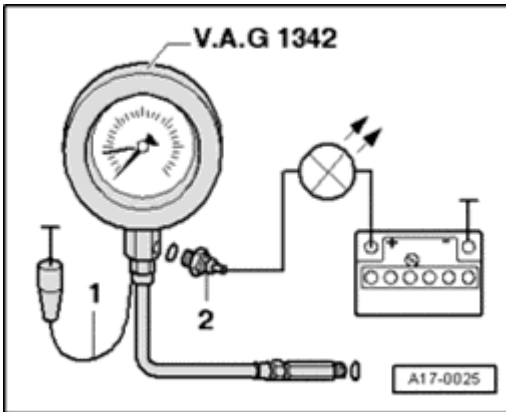


Fig. 436: Connecting Oil Pressure Gauge V.A.G 1342 With Adapter V.A.G 1342/14 To Hole For Oil Pressure Switch

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect oil pressure gauge V.A.G 1342 with adapter V.A.G 1342/14 to hole for oil pressure switch.
- Thread oil pressure switch - 2 - into oil pressure tester V.A.G 1342.

Oil pressure switch, checking

- Connect brown wire - 1 - of tester to Ground (GND).
- Connect voltage tester V.A.G 1527 B using adapter cables from connector test kit V.A.G 1594 C to oil pressure switch and battery plus ("+").
- LED must not light up
- If LED is lit, oil pressure switch must be replaced.
- Start engine.

NOTE:

- While starting engine, watch Pressure Tester and LED as oil pressure switch may open during start.
- At 1.2 to 1.6 bar pressure, LED must light up.

- If LED is not lit, oil pressure switch must be replaced.

Oil pressure, checking

- Start engine (engine oil temperature approximately 90° C).
- Oil pressure at 2000 RPM: min. 2.0 bar.
- Oil pressure at 3500 RPM: min. 3.5 bar.

NOTE:

- Replace sealing ring when installing oil pressure switch.

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Torque specifications

Component	Nm
Oil pressure switch to oil filter housing	25

Engine oil

Oil quantities, oil specifications and viscosity classes Maintenance tables.

Oil level, checking

Test conditions

- Engine oil temperature min. 60° C.
- Vehicle in level position.
- After stopping engine, wait a few minutes to allow oil to flow back into oil pan.

Test sequence

- Pull out oil dipstick, wipe off with a clean cloth and re-insert dipstick again up to stop.
- Withdraw dipstick again and read oil level.

Range of markings on dipstick:

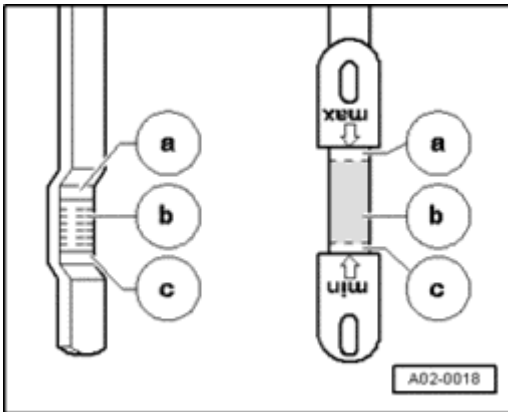


Fig. 437: Range Of Markings On Dipstick:
Courtesy of VOLKSWAGEN UNITED STATES, INC.

a - Oil must not be added.

b - Oil may be topped off.

c - Oil must be added. After topping off, it is sufficient if oil level is somewhere in range - **b** - (shaded area).

NOTE:

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