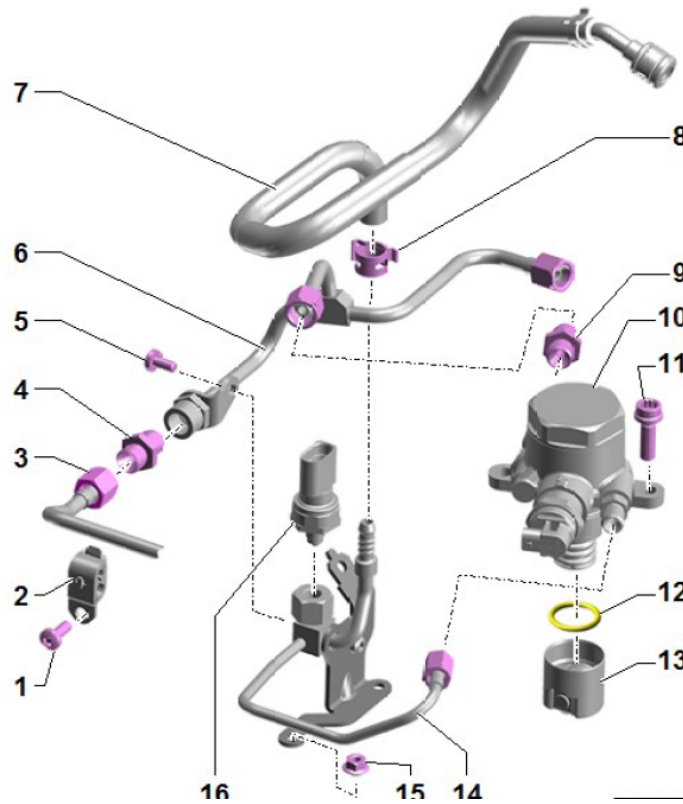


Overview - High Pressure Pump

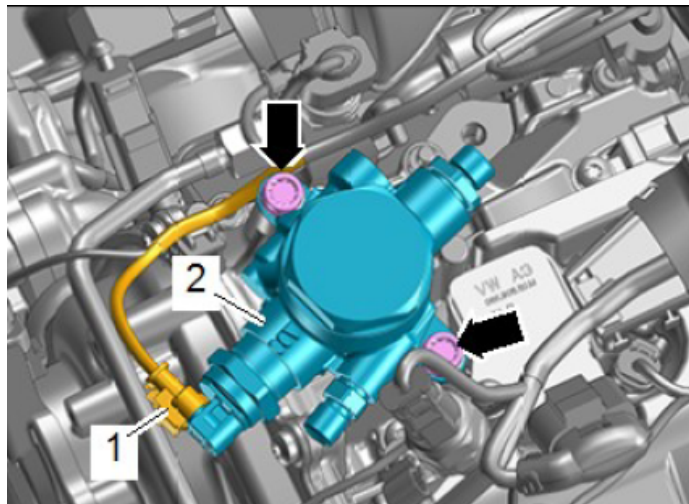


- 1 - Bolt
 - Tightening specification and sequence. Refer to → Fig. "Rear High Pressure Pipe - Tightening Specification and Sequence".
 - Always replace after removing.
- 2 - Clamp
- 3 - Rear High Pressure Pipe
 - Tightening Specifications and Sequence. Refer to → Fig. "Rear High Pressure Pipe - Tightening Specification and Sequence".
 - Counterhold the connection when loosening the high pressure pipe
 - Removing and installing. Refer to → Chapter "High Pressure Pipe, Removing and Installing".
 - Do not change the bending shape.
 - Check for damage before reinstalling
 - Coat the thread on the union nut with clean engine oil.
- 4 - Connection
 - Tightening specification for new connections: 65 Nm
 - Replace damaged or loose connections
 - Counterhold the connection when loosening the high pressure pipe
 - Check for secure fit before installing the high pressure pipe (40 Nm)

- 5 - Bolt
 - 9 Nm
- 6 - Right High Pressure Pipe
 - Tightening Specifications and Sequence. Refer to → Fig. "Right High Pressure Pipe - Tightening Specification and Sequence".
 - Removing and installing. Refer to → Chapter "Remove the Right High Pressure Pipe".
 - Do not change the bending shape.
 - Check for damage before reinstalling
 - Counterhold the connecting pieces when loosening and tightening high pressure lines
 - Coat the thread on the union nut with clean engine oil.
- 7 - Low Pressure Side Fuel Hose
 - Replace, when it is removed from the low pressure side fuel pipe -14- → Item
- 8 - Spring Clamp
 - Always replace after removing.
- 9 - Connection
 - Tightening specification for new connections: 65 Nm
 - Counterhold the connection when loosening the high pressure pipe
 - Check for secure fit before installing the high pressure pipe (40 Nm)
 - Replace damaged or loose connections
- 10 - High Pressure Pump
 - With Fuel Metering Valve -N290-
 - Do not disassemble
 - Removing and installing. Refer to → Chapter "High Pressure Pump, Removing and Installing".
- 11 - Bolt
 - Tightening Specifications and Sequence. Refer to → Fig. "High Pressure Pump - Tightening Specifications and Sequence".
 - Always replace after removing.
- 12 - O-Ring
 - Always replace after removing.
 - Coat with clean engine oil before installing
- 13 - Roller Tappet
 - Can only be installed in one position
 - Coat with clean engine oil before installing
- 14 - Low Pressure Side Fuel Pipe
 - Tightening Specifications and Sequence. Refer to → Fig. "Low Pressure Side Fuel Pipe - Tightening Specification and Sequence".
 - Do not change the bending shape.
 - Check for damage before reinstalling

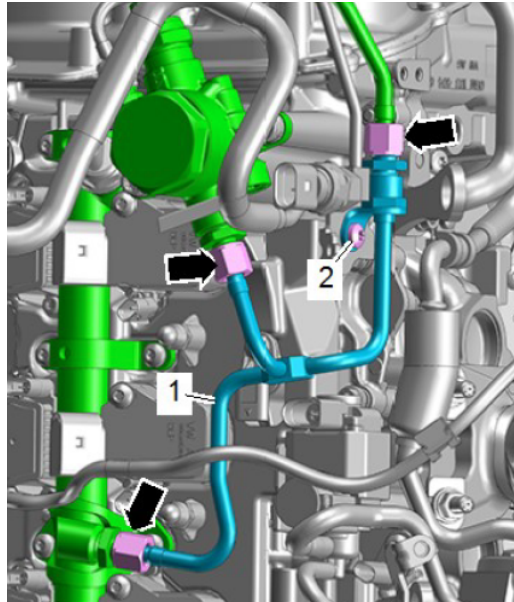
- Counterhold the connecting pieces when loosening and tightening high pressure lines
- Coat the thread on the union nut with clean engine oil.
- 15 - Nut
 - Tightening specification and sequence. Refer to → Fig. "Low Pressure Side Fuel Pipe - Tightening Specification and Sequence".
- 16 - Low Fuel Pressure Sensor -G410-
 - 15 Nm
 - Removing and installing. Refer to → Chapter "Low Fuel Pressure Sensor -G410-, Removing and Installing".

High Pressure Pump - Tightening Specifications and Sequence



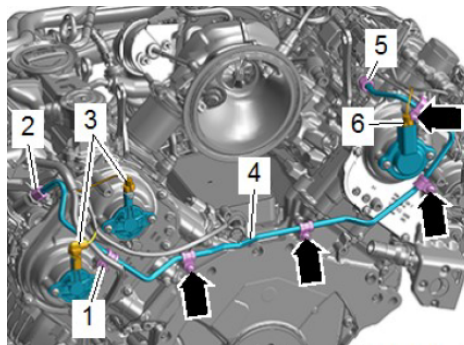
- Replace the bolts that were tightened with an additional turn after removing them.
- Tighten the bolts -arrows- in steps as follows to prevent the high pressure pump flange from becoming deformed when installing:
 1. Install by hand all the way
 2. Tighten one turn alternating from side to side until the high pressure pump flange touches the camshaft housing
 3. 5 Nm
 4. 20 Nm
 5. 45° additional turn

Right High Pressure Pipe - Tightening Specification and Sequence



- Coat the thread on the union nut with clean engine oil.
- To tighten the union nuts -arrows-, counterhold on the connection.
- Tighten the bolts and union nuts in steps as follows:
 1. -arrows- 5 Nm
 2. -2- Install by hand all the way
 3. -arrows- 27 Nm
 4. -2- 9 Nm
 5. -arrows- 27 Nm

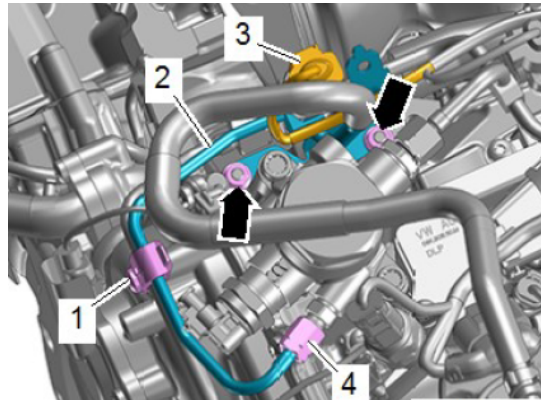
Rear High Pressure Pipe - Tightening Specification and Sequence



- Replace the bolts that were tightened with an additional turn after removing them.
- Coat the thread on the union nut with clean engine oil.
- To tighten the union nuts, counterhold on the connection.
- Tighten the bolts and union nuts in steps as follows:

1. -2 and 5- 5 Nm
2. -1 and arrows- Install by hand all the way
3. -2 and 5- 25 Nm
4. -1 and arrows- 8 Nm
5. -1 and arrows- 45° additional turn

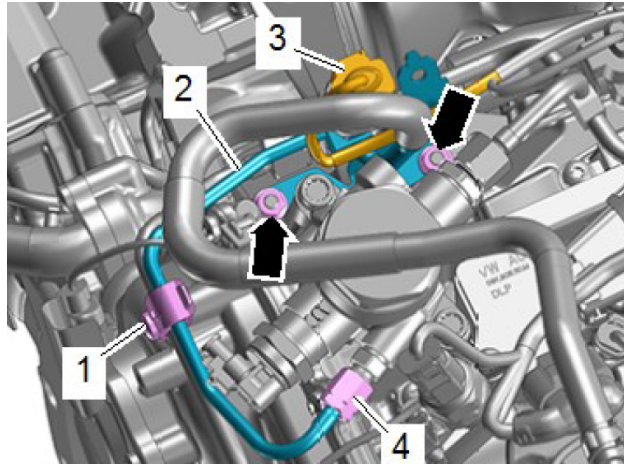
Low Pressure Side Fuel Pipe - Tightening Specification and Sequence



(Shown on a 3.0L engine).

- Coat the thread on the union nut with clean engine oil.
- Tighten the nuts and union nuts in steps as follows:
 1. -4- 5 Nm
 2. -1 and arrows- Install by hand all the way
 3. -4- 22 Nm
 4. -1- 8 Nm
 5. -1- 45° additional turn
 6. -arrows- 9 Nm

High Pressure Pump, Removing and Installing Special tools and workshop equipment required



- Wrench - 21mm -T40263-
- Adapter -T40314-

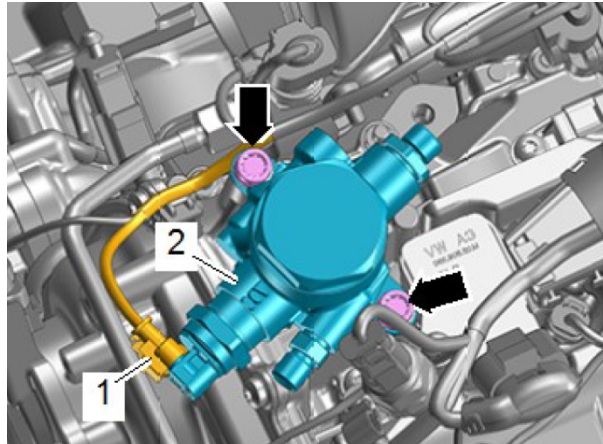
Removing

- Follow the guidelines for clean working conditions. Refer to → Chapter “Guidelines for Clean Working Conditions”.
- Remove the right high pressure pipe. Refer to → Chapter “Remove the Right High Pressure Pipe”.
- Disconnect the connector -3- for the Low Fuel Pressure Sensor -G410-.
- Remove the bolt -1- and the nuts -arrows-.

CAUTION

- Risk of destroying the high pressure lines by bending.
- Line break of the high pressure lines is possible.
- Never change the shape of the high pressure lines.
- Remove the union nut -4- while counterholding on the connection. Move the fuel line -2- to the side.
- Disconnect the connector -1-.
- Remove the bolts -arrows-.
- Carefully remove the high pressure pump -2-. The roller tappet remains in the camshaft housing.

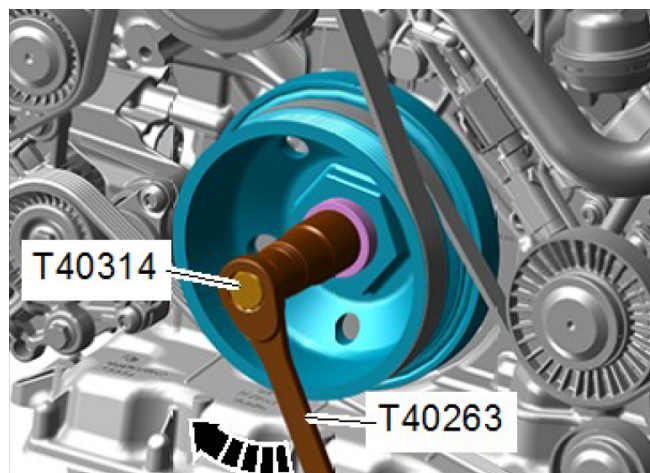
Installing



- Replace the O-ring after removing.
- Replace the bolts that were tightened with an additional turn after removing them.
- The high pressure line connections must not show any signs of damage.
- The help of a second technician is necessary for the following step.

CAUTION

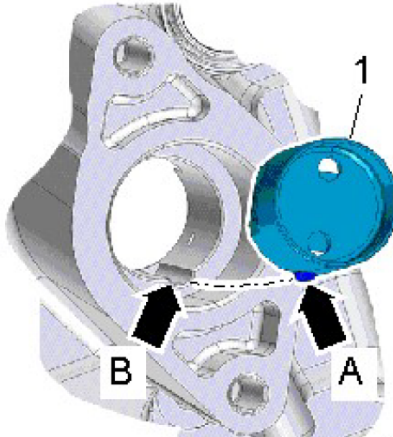
- Risk of damaging the engine by the timing mechanism skipping.
- Only let the engine turn in the direction of engine rotation.



- Have a second technician turn the crankshaft using the -T40263- and -T40314- in the direction of engine rotation in direction of -arrow- until the roller tappet is at the lowest point (shown on a 3.0L engine).
- Check the roller tappet -1- for damage and replace it if necessary.
- Coat the roller tappet with oil and insert it with the tab -arrow A- into the guide -arrow B-.

- Tighten the bolts alternating from side to side without tilting the high pressure pump. Refer to → Fig. "High Pressure Pump - Tightening Specifications and Sequence".
- Further installation is performed in reverse order of removal, while noting the following:
- Install the right high pressure pipe. Refer to → Chapter "Remove the Right High Pressure Pipe".

Tightening Specifications



- Refer to → Chapter "Overview - High Pressure Pump"
- Refer to → Fig. "High Pressure Pump - Tightening Specifications and Sequence"
- Refer to → Fig. "Low Pressure Side Fuel Pipe - Tightening Specification and Sequence"