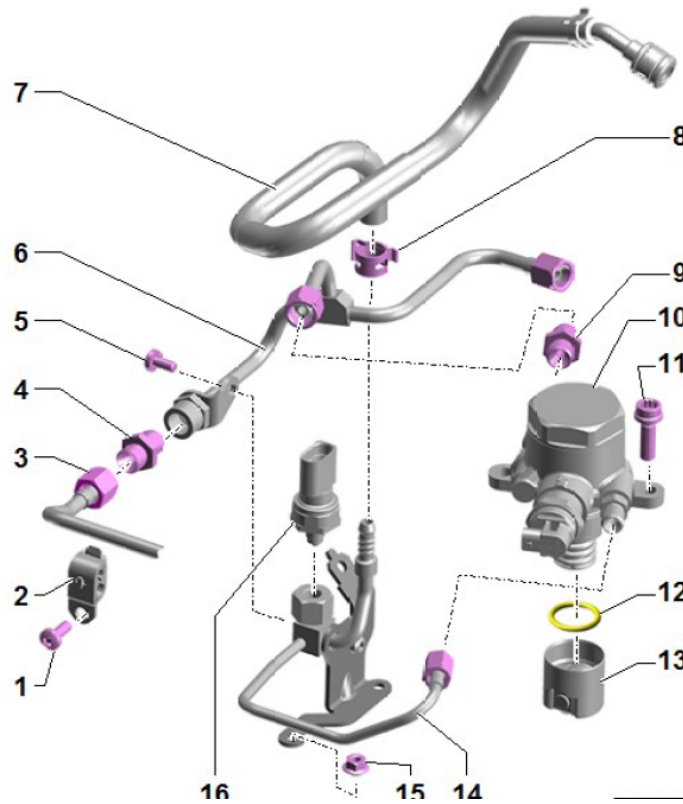


## Overview - High Pressure Pump

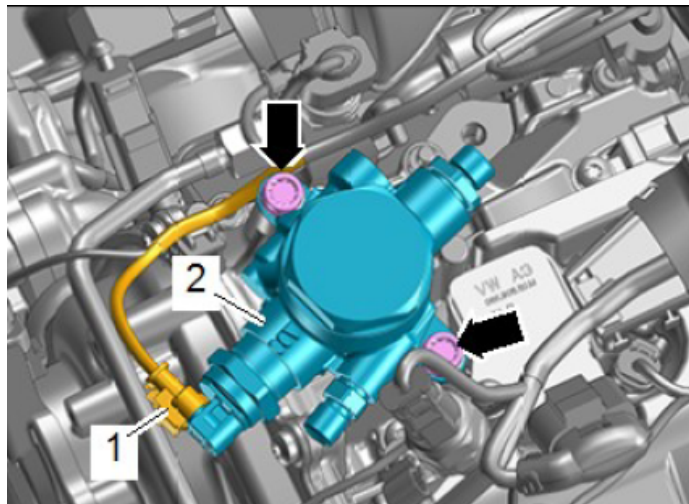


- 1 - Bolt
  - Tightening specification and sequence. Refer to → Fig. "Rear High Pressure Pipe - Tightening Specification and Sequence".
  - Always replace after removing.
- 2 - Clamp
- 3 - Rear High Pressure Pipe
  - Tightening Specifications and Sequence. Refer to → Fig. "Rear High Pressure Pipe - 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

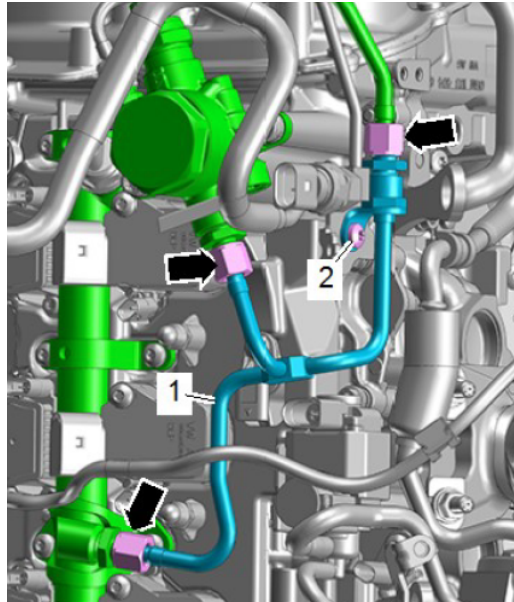
- Counterhold the connecting pieces when loosening and tightening high pressure lines
- Coat the thread on the union nut with clean engine oil.
- 15 - Nut
  - Tightening specification and sequence. Refer to → Fig. "Low Pressure Side Fuel Pipe - Tightening Specification and Sequence".
- 16 - Low Fuel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



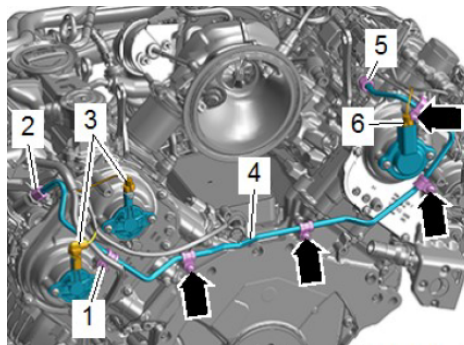
- Replace the bolts that were tightened with an additional turn after removing them.
- Tighten the bolts -arrows- in steps as follows to prevent the high pressure pump flange from becoming deformed when installing:
  1. Install by hand all the way
  2. Tighten one turn alternating from side to side until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

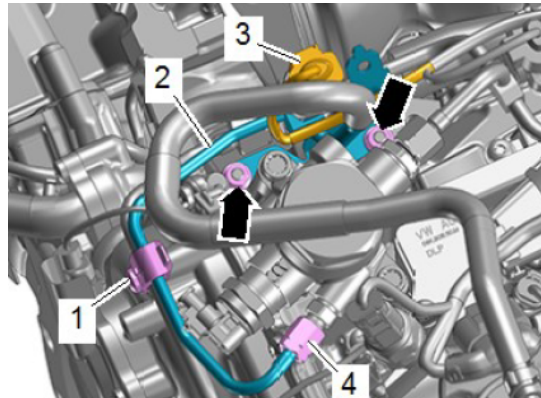
### Rear High Pressure Pipe - Tightening Specification and Sequence



- 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

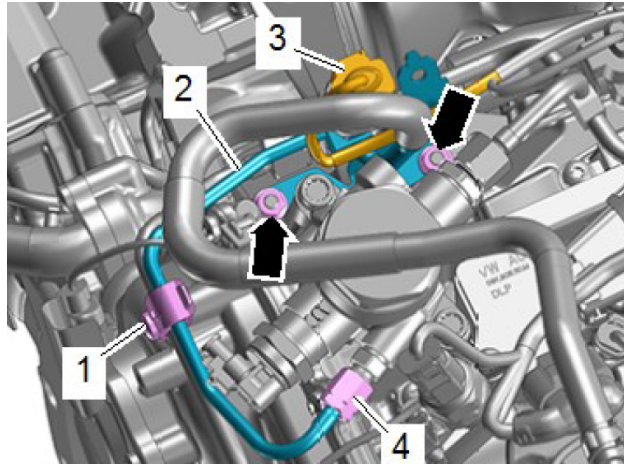


(Shown on a 3.0L engine).

- 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-

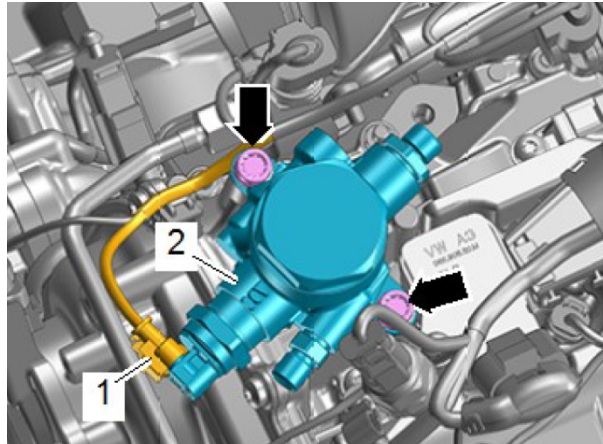
#### Removing

- 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.

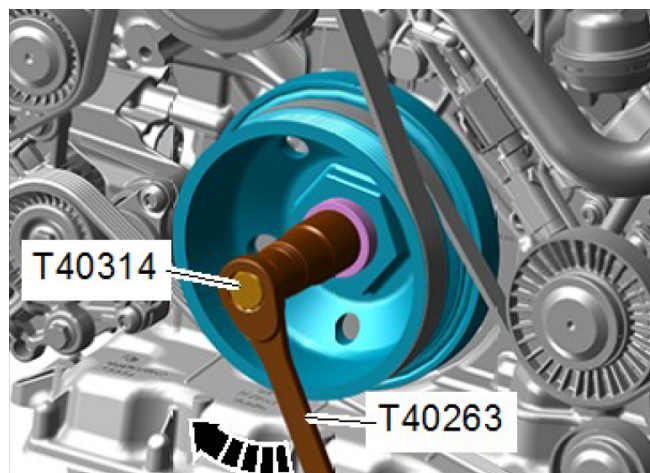
#### Installing



- 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**

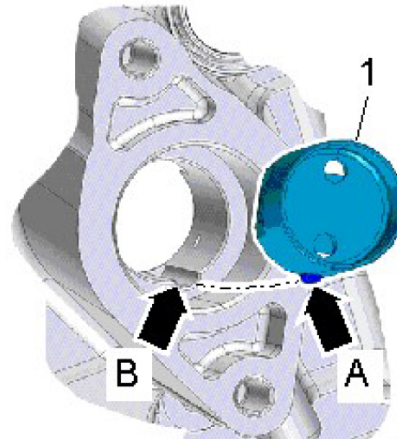
- Risk of damaging the engine by the timing mechanism skipping.
- Only let the engine turn in the direction of engine rotation.



- 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"