

Cylinder Head LH

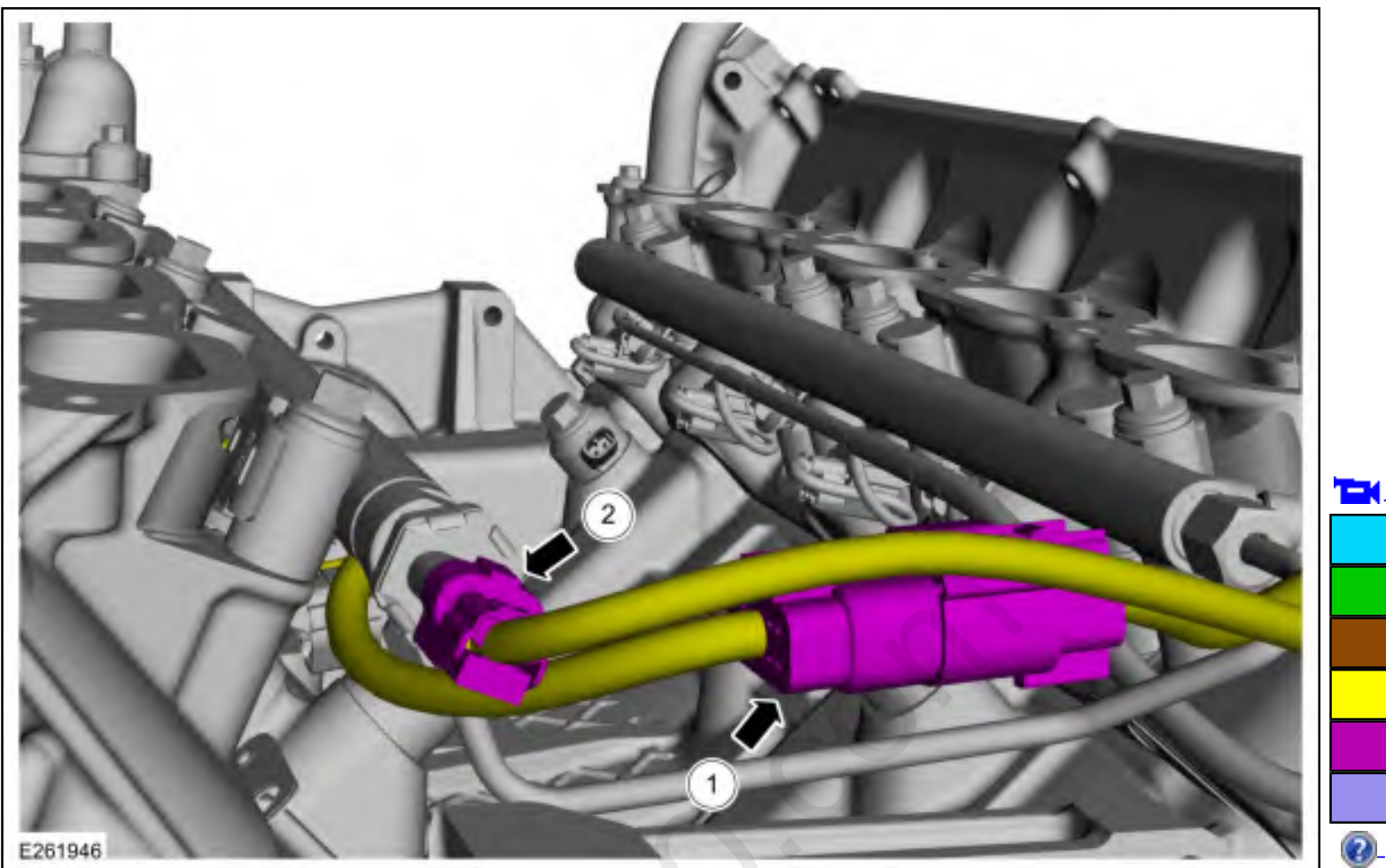
Special Tool(s) / General Equipment

Oil Drain Equipment

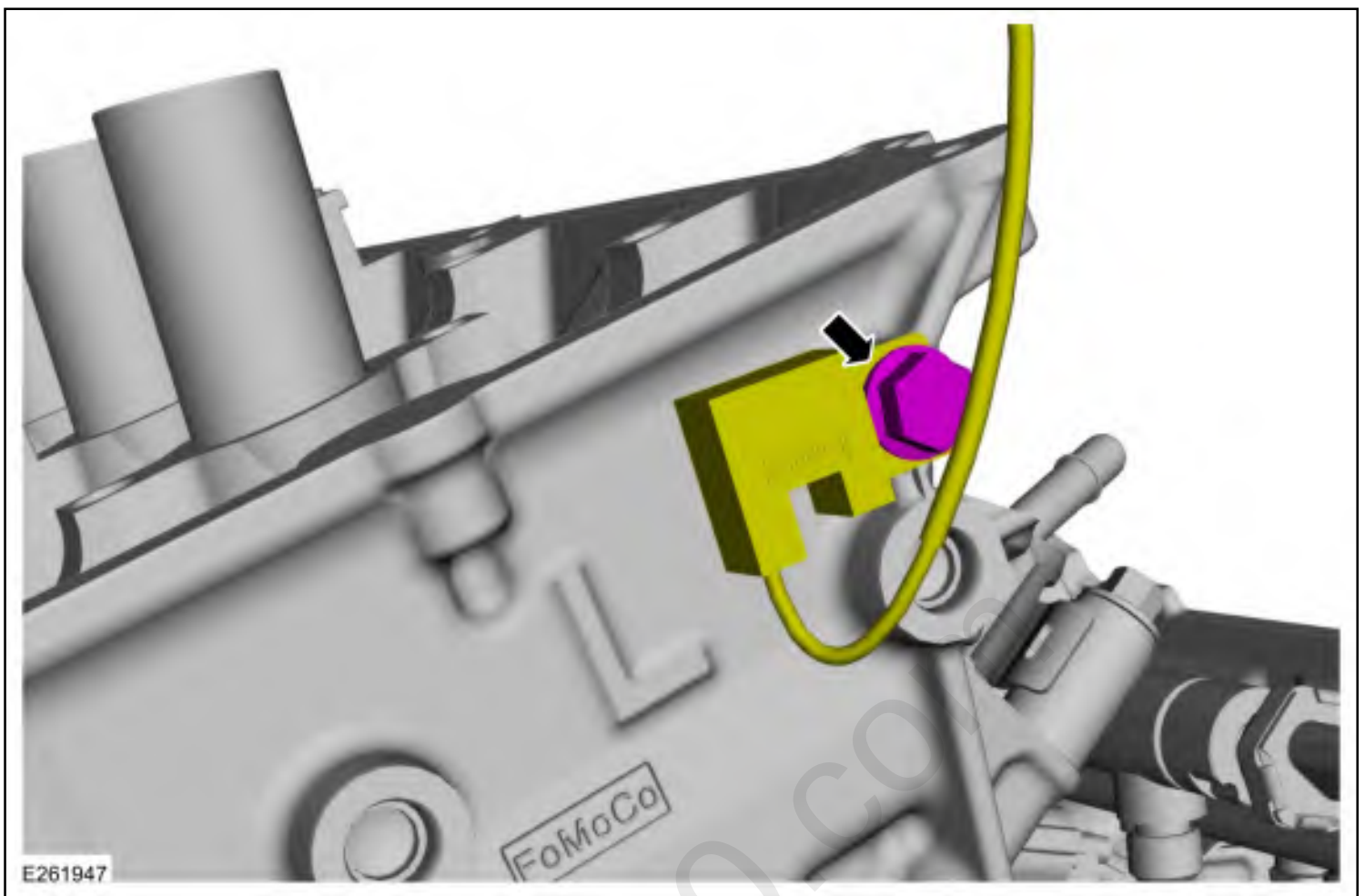
Removal

NOTICE: During engine repair procedures, cleanliness is extremely important. Any foreign material, including any material created while cleaning gasket surfaces, that enters the oil passages, coolant passages or the oil pan, can cause engine failure.

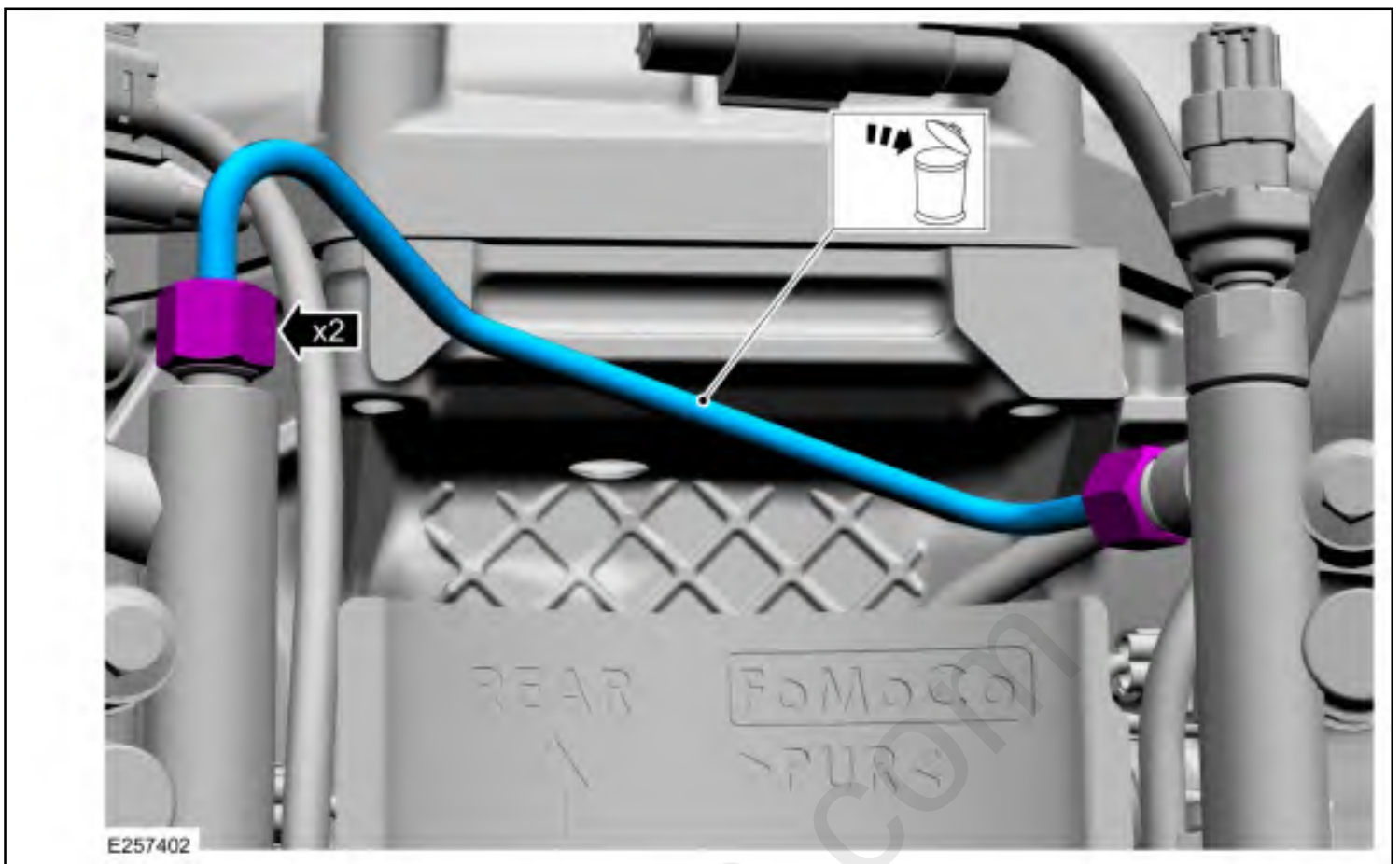
1. With the vehicle in NEUTRAL, position it on a hoist.
Refer to: [Jacking and Lifting - Overview](#) (100-02 Jacking and Lifting, Description and Operation).
2. Release the fuel system pressure.
Refer to: [Fuel System Pressure Release](#) (310-00D Fuel System - General Information - 5.0L 32V Ti-VCT, General Procedures).
3. Disconnect the battery ground cable.
Refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables) .
4. Drain the engine cooling system.
Refer to: Cooling System Draining, Vacuum Filling and Bleeding (303-03 Engine Cooling - 5.0L 32V Ti-VCT) .
5. Remove the following items:
 1. Refer to: Camshaft LH (303-01 Engine - 5.0L 32V Ti-VCT) .
 2. Refer to: Exhaust Manifold LH (303-01 Engine - 5.0L 32V Ti-VCT) .
 1. Disconnect the fuel rail electrical connector.
 2. Disconnect the fuel sensor electrical connector.



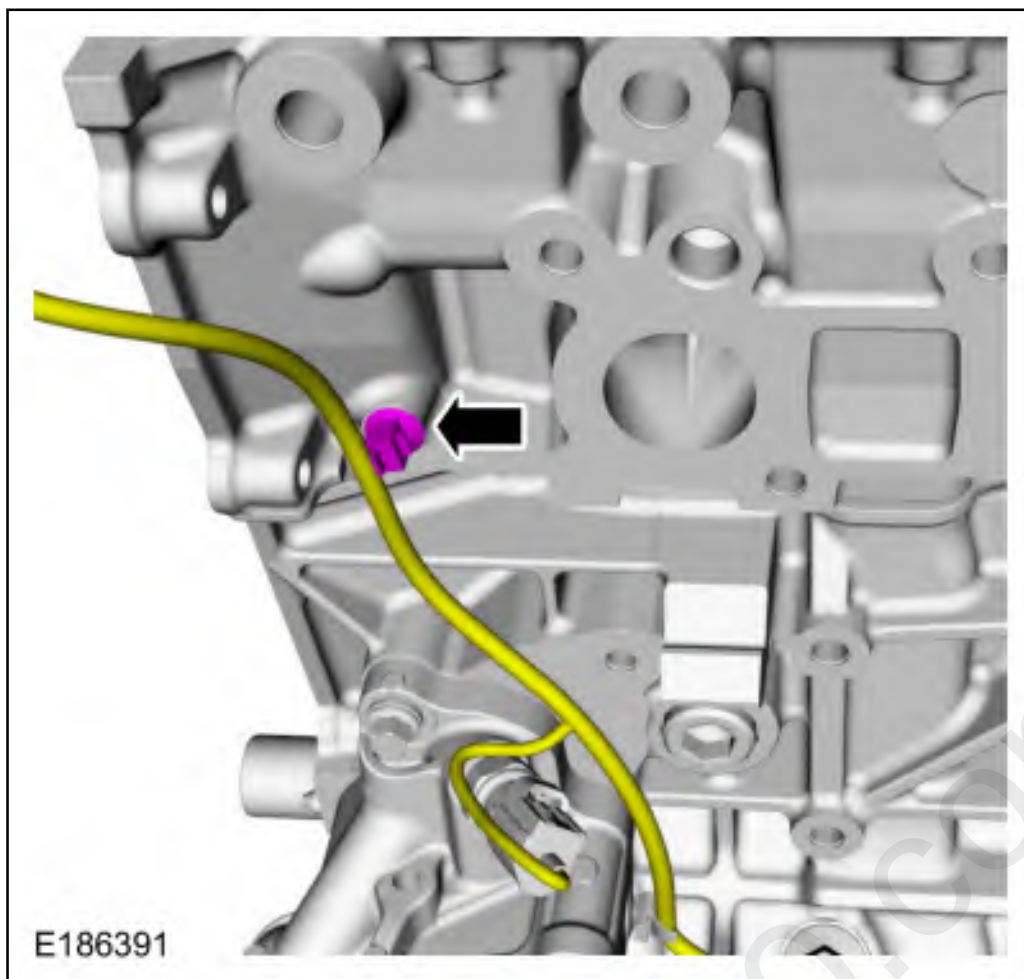
7. Remove the bolt and the capacitor.



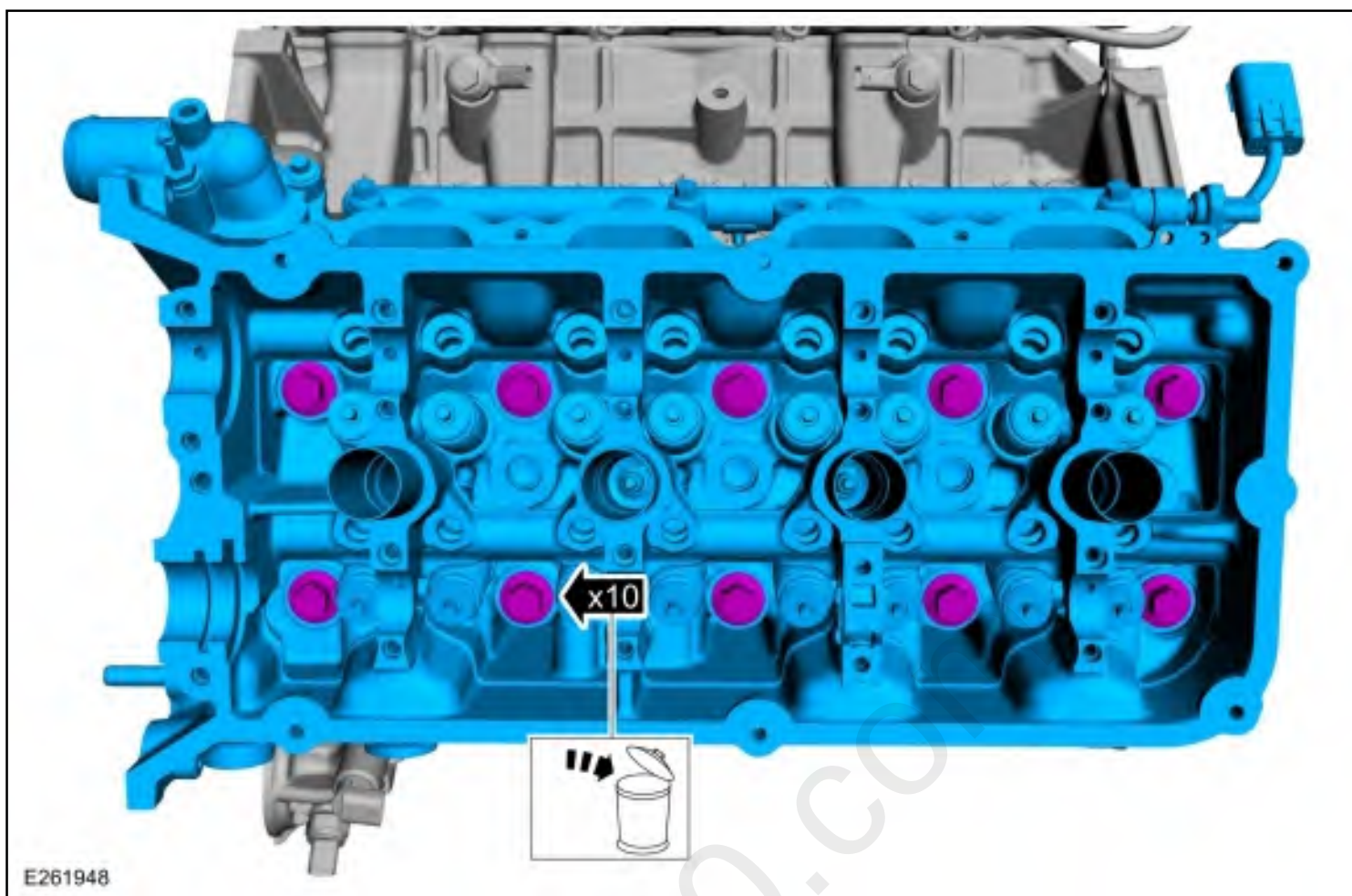
8. Disconnect the high-pressure fuel tube flare nuts, then remove and discard the high-pressure fuel tube.



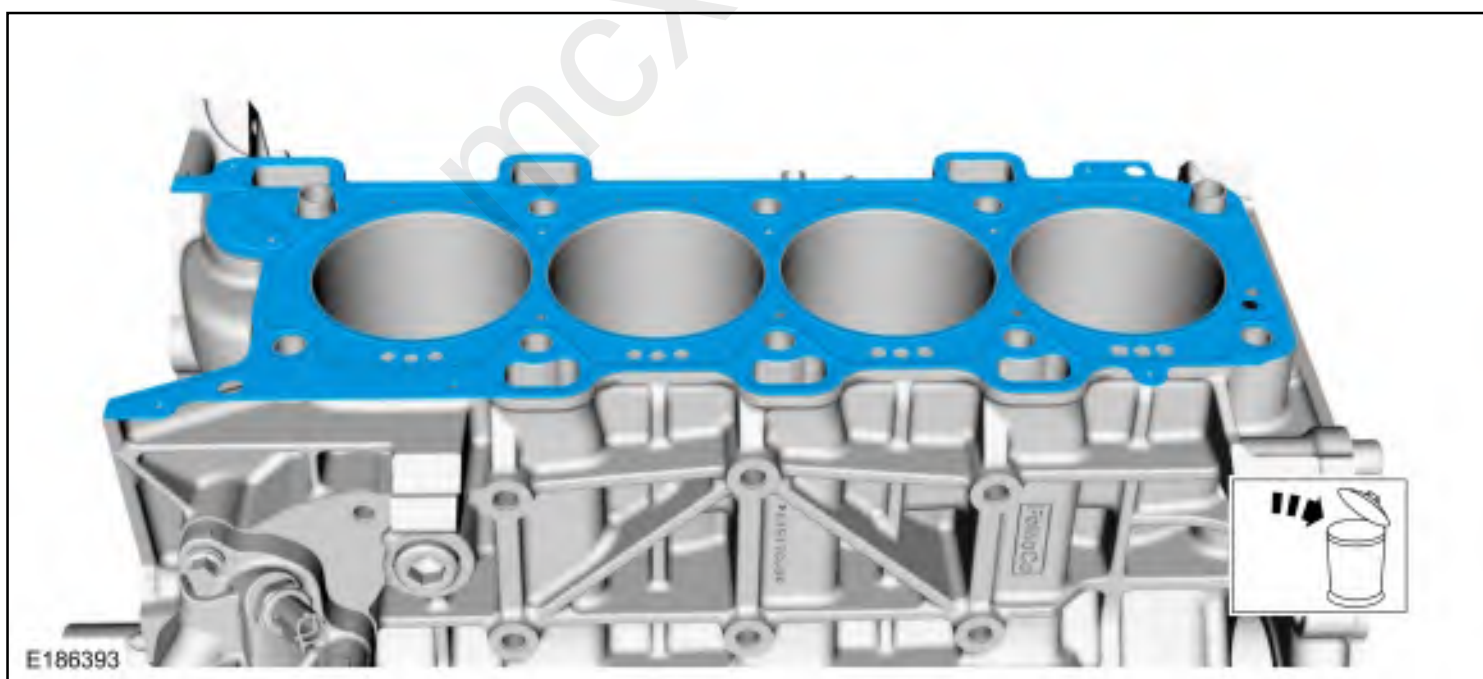
9. Detach the wiring harness retainer from the cylinder head.



- Remove and discard the bolts.
- Remove the cylinder head.



11. Discard the cylinder head gasket.

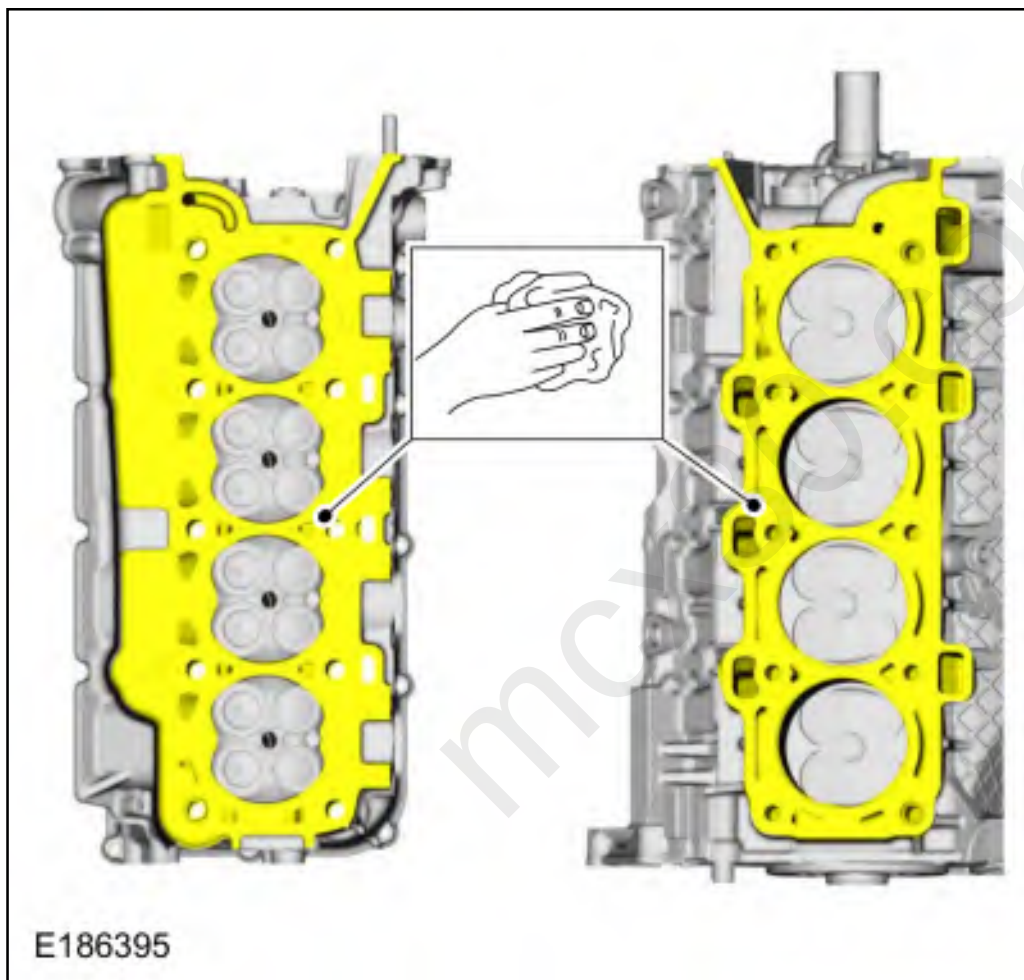


12. **NOTICE:** Do not use metal scrapers, wire brushes, power abrasive discs or other abrasive means to clean the sealing surfaces. These tools cause scratches and gouges which make leak

paths.

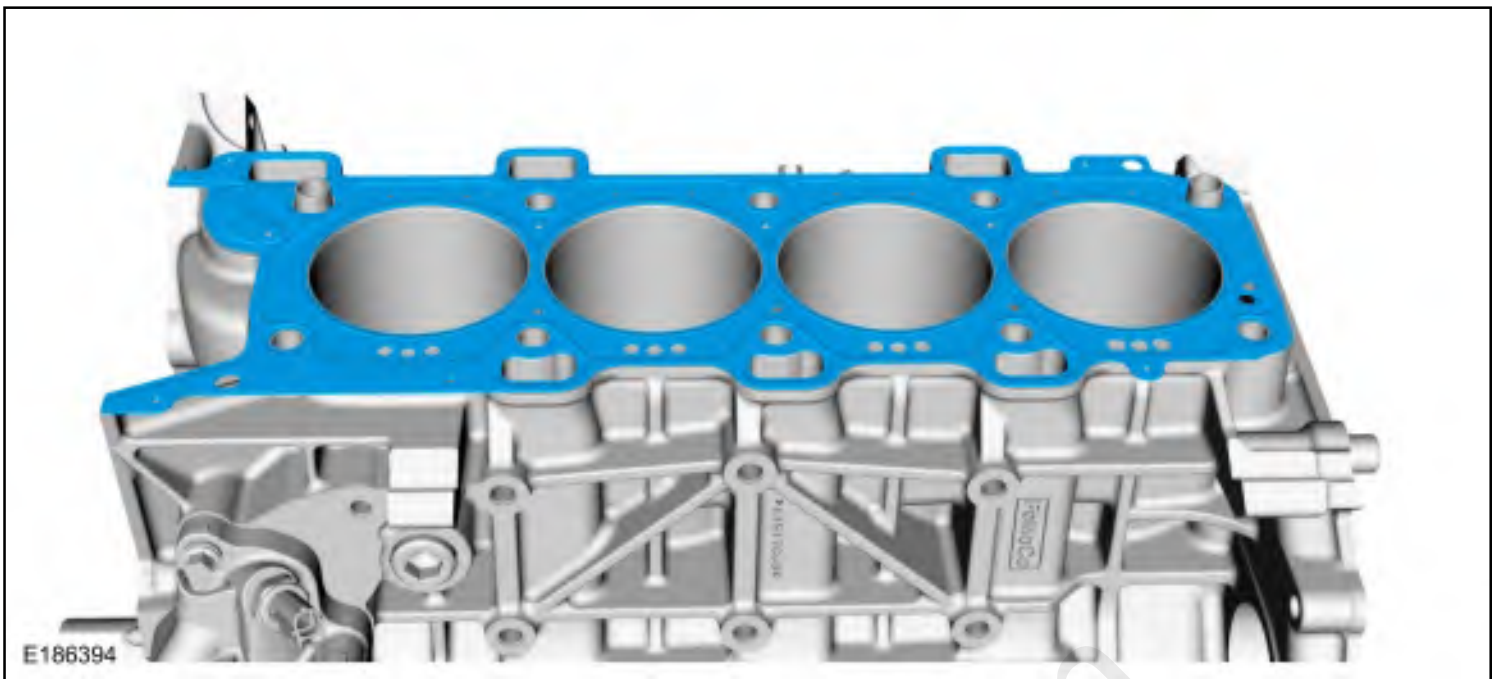
NOTE: Clean the cylinder head bolt holes in the cylinder block using compressed air. Make sure all coolant, oil or other foreign material is removed.

- Clean and inspect the cylinder head-to-cylinder block mating surfaces of both the cylinder head and the cylinder block
- Refer to: [Cylinder Head Distortion](#) (303-00 Engine System - General Information, General Procedures).
- Refer to: [Cylinder Block Distortion](#) (303-00 Engine System - General Information, General Procedures).



Installation

1. Install the cylinder head gasket.



2. **NOTE:** *The cylinder head bolts are torque-to-yield and must not be reused. New cylinder head bolts must be installed.*

1. Install the cylinder head and the new bolts.

Torque:

Stage 1: Bolts 1-10 in sequence: 18 lb.ft (25 Nm)

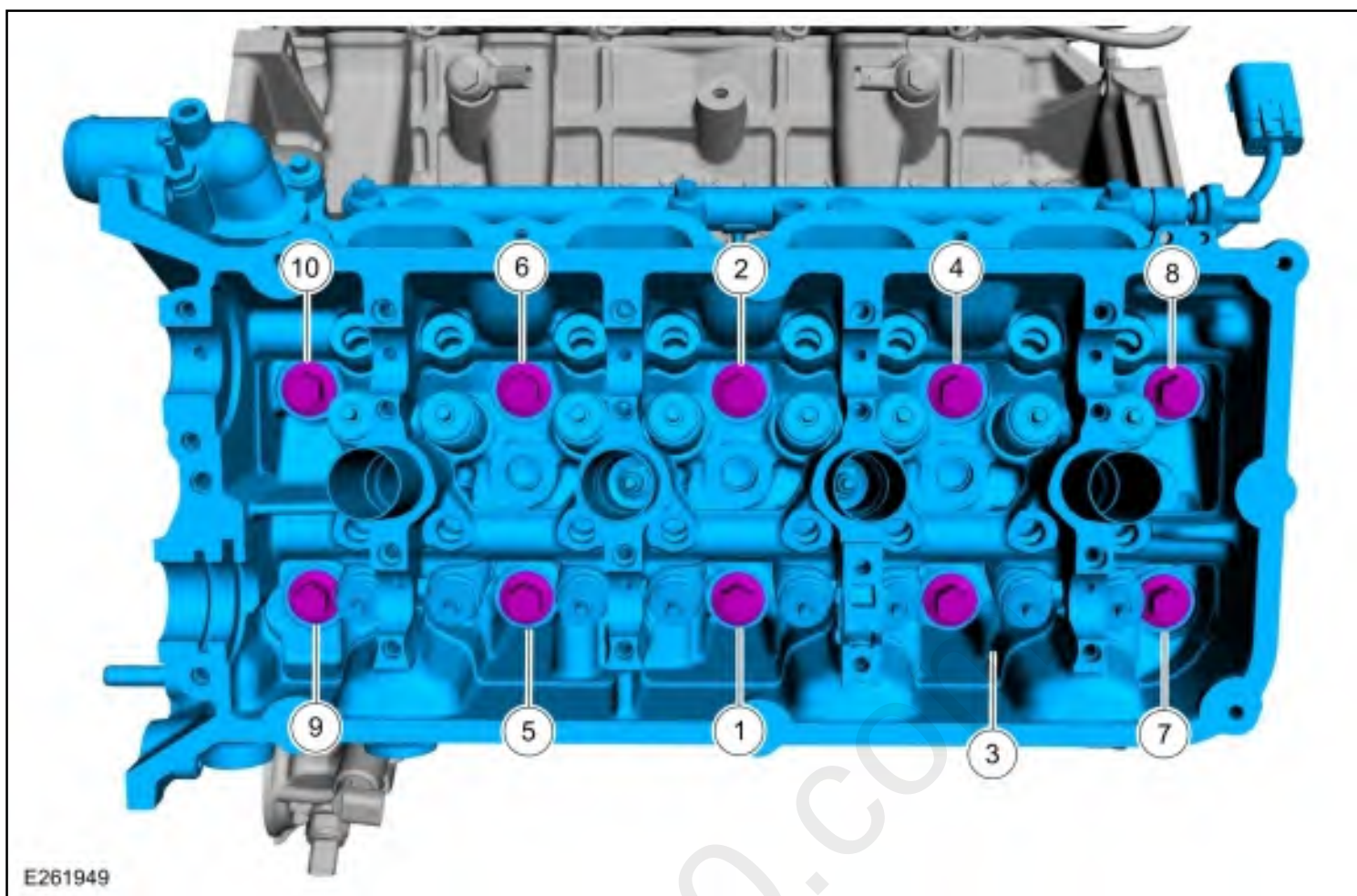
Stage 2: Bolts 1-10 in sequence: 55 lb.ft (75 Nm)

Stage 3: Bolt 1: Loosen: 180°

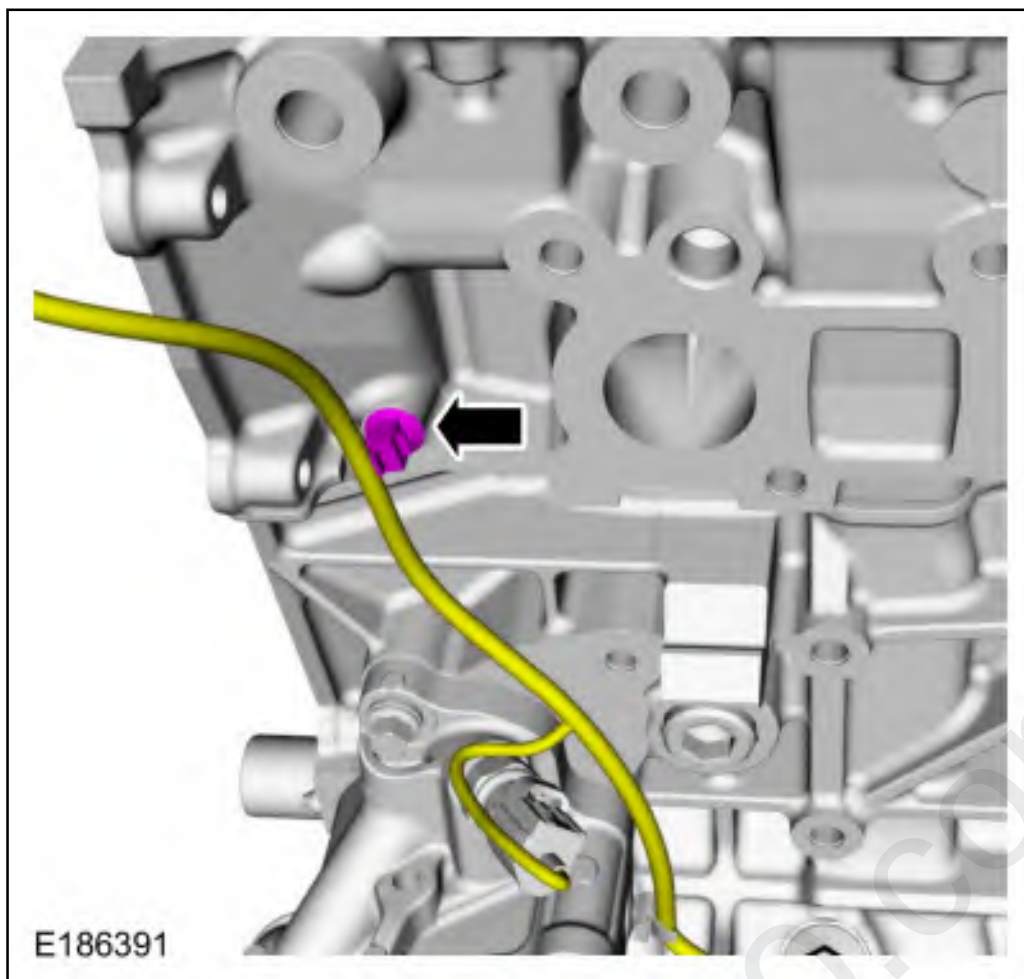
Stage 4: Bolt 1: 37 lb.ft (50 Nm)

Stage 5: Bolt 1: 240°

2. Perform stages 3, 4 and 5 on bolts 2 through 10 (complete all three stages to each bolt before moving on to the next bolt in sequence).



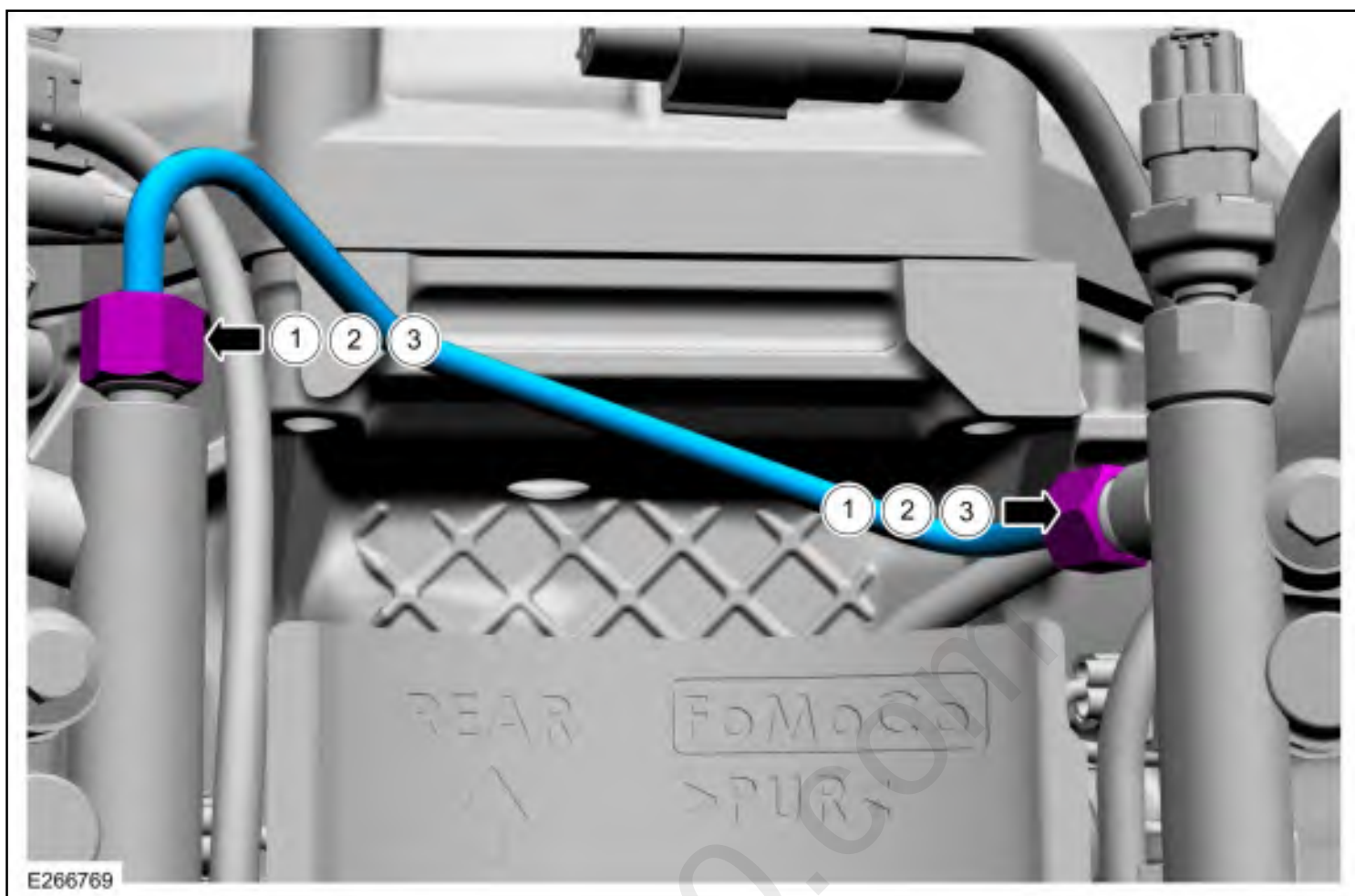
3. Attach the wiring harness retainer to the cylinder head.



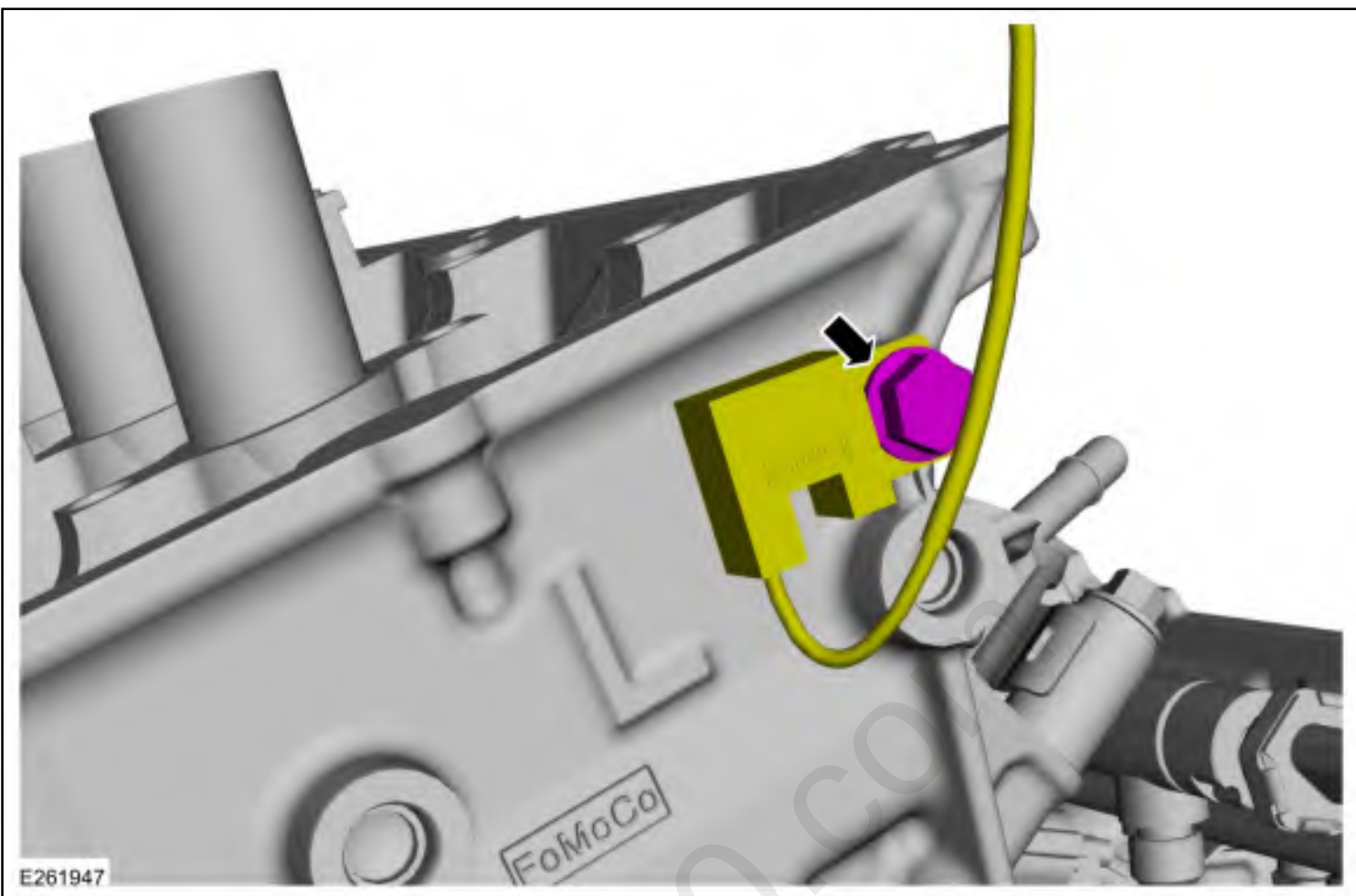
4. **NOTICE:** In stage 3, if the torque required to tighten any flare nut on the new high-pressure fuel tube reaches or exceeds 55 lb.ft (50 Nm), then that high pressure fuel tube must be discarded and replaced with another new high-pressure fuel tube.

Torque:

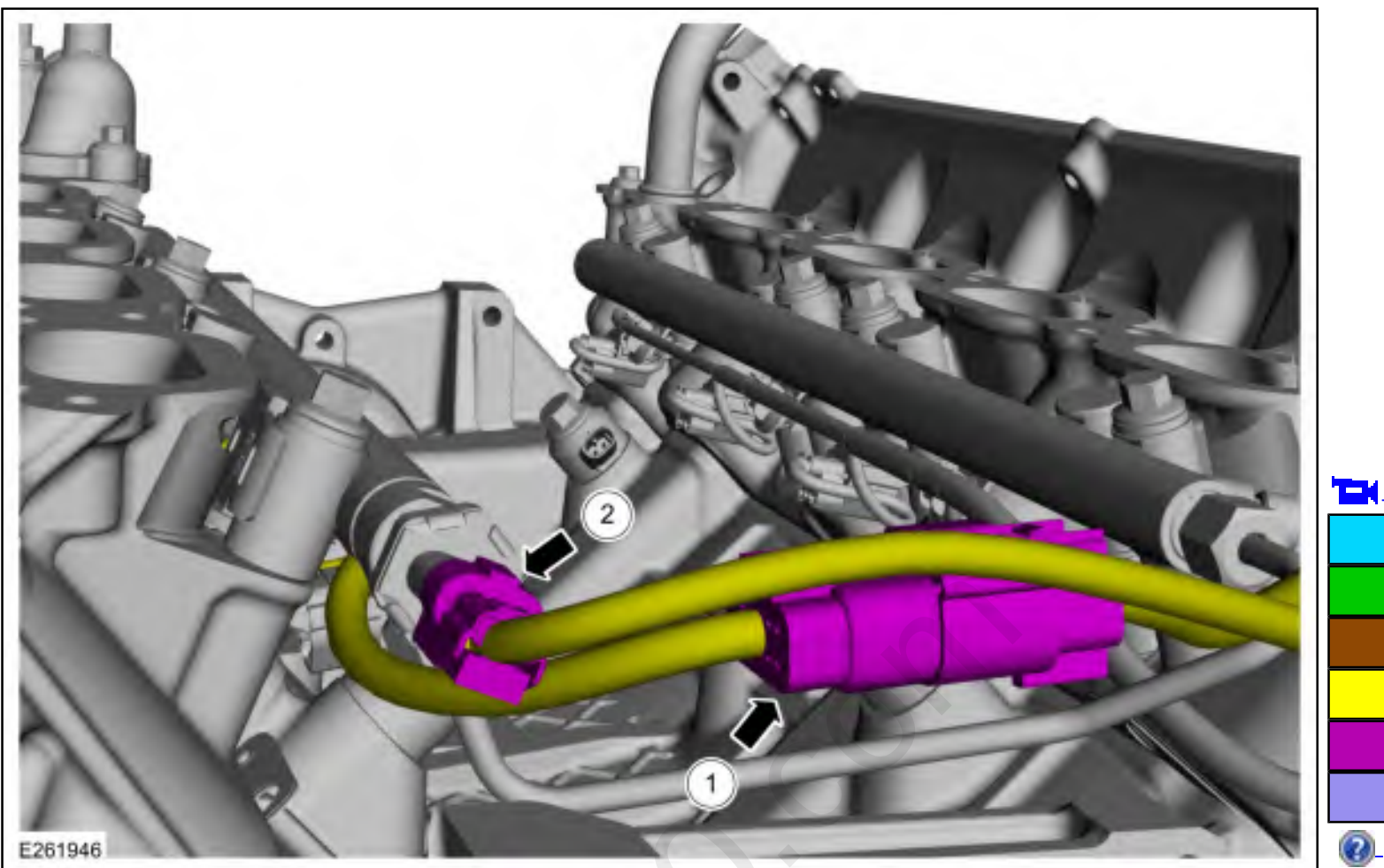
- Stage 1: Tighten the high-pressure fuel tube flare nuts to : 71 lb.in (8 Nm)
- Stage 2: Tighten the high-pressure fuel tube flare nuts to : 89 lb.in (10 Nm)
- Stage 3: Tighten the high-pressure fuel tube flare nuts an additional : 25°



5. Install the capacitor and the bolt.
Torque: 89 lb.in (10 Nm)



1. Connect the fuel rail electrical connector.
2. Connect the fuel sensor electrical connector.



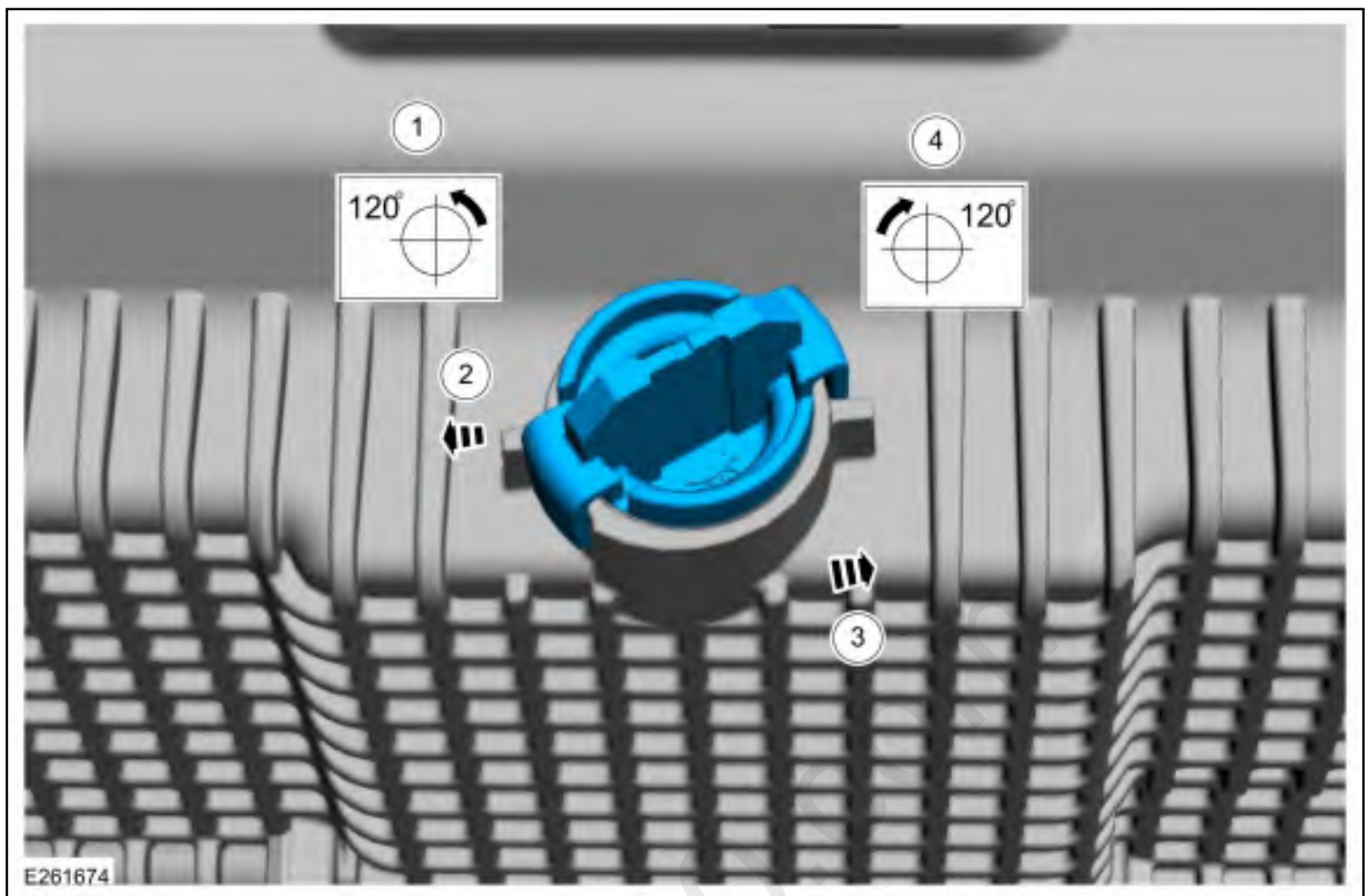
7. Install the following items:

1. Refer to: Exhaust Manifold LH (303-01 Engine - 5.0L 32V Ti-VCT) .
2. Refer to: Camshaft LH (303-01 Engine - 5.0L 32V Ti-VCT) .

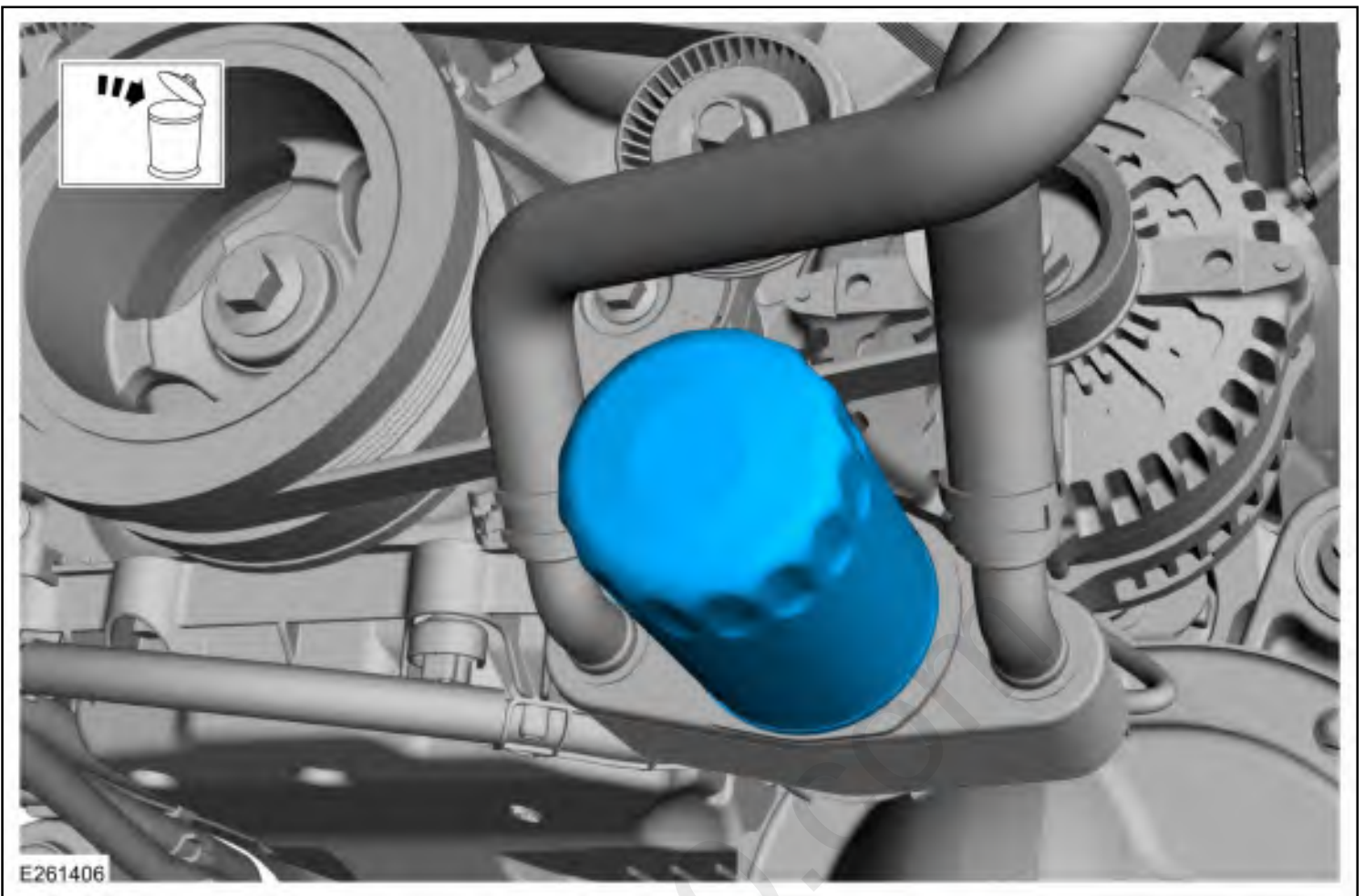
8. **NOTE:** *The drain plug should be removed and installed by hand, do not use tools.*

1. Turn the oil drain plug by hand counterclockwise 120 degrees.
Use the General Equipment: Oil Drain Equipment
2. Pull the oil drain plug out of the oil pan.
3. After the oil has drained, push the oil drain plug into the oil pan.
4. **NOTICE: Overtightening will damage the oil drain plug and possibly the oil pan.**

Turn the oil drain plug by hand clockwise 120 degrees.



9. Remove and discard the engine oil filter.



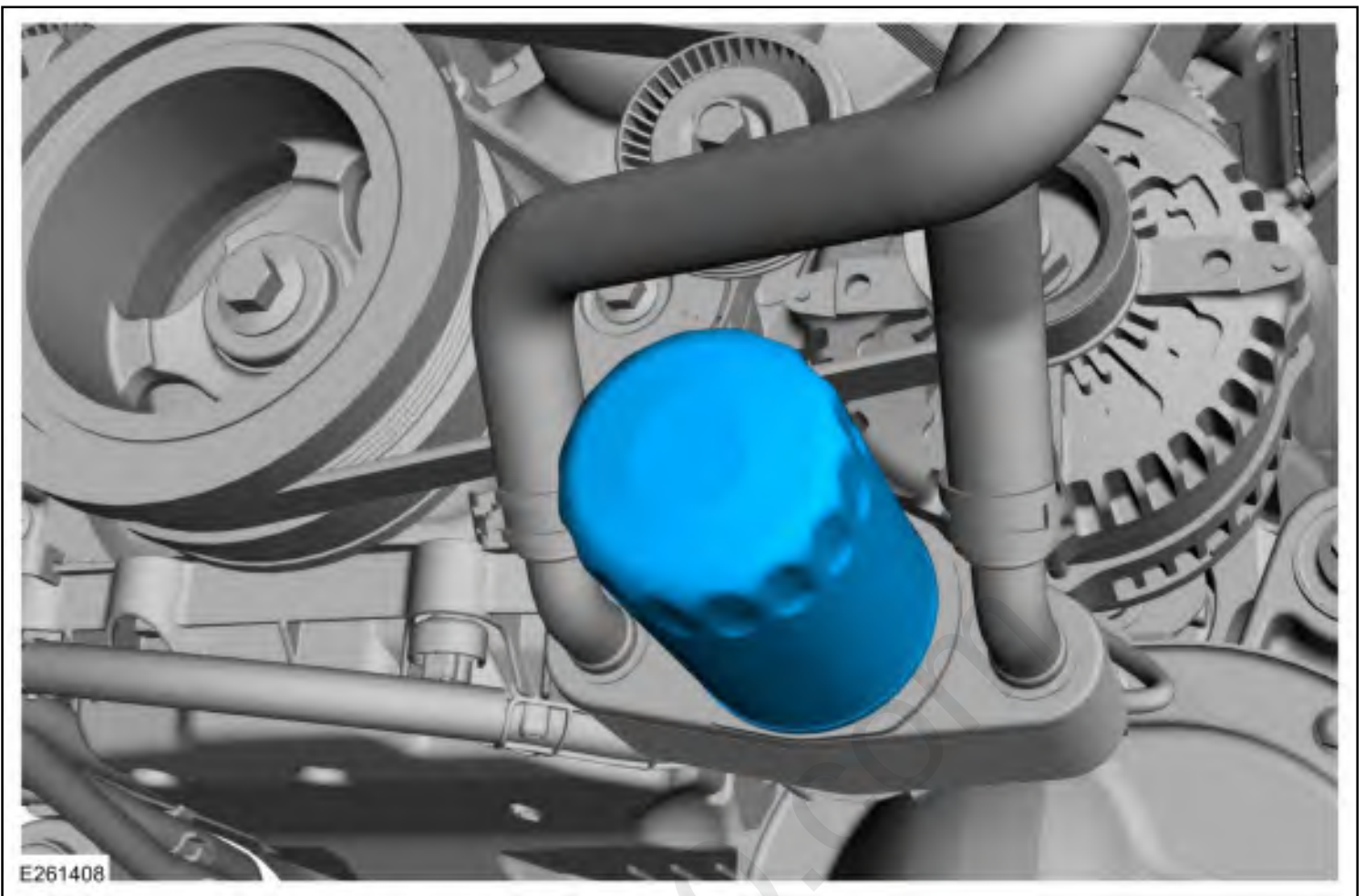
10. **NOTE:** *Do not lubricate the O-ring seal.*

Install a new oil filter.

Torque:

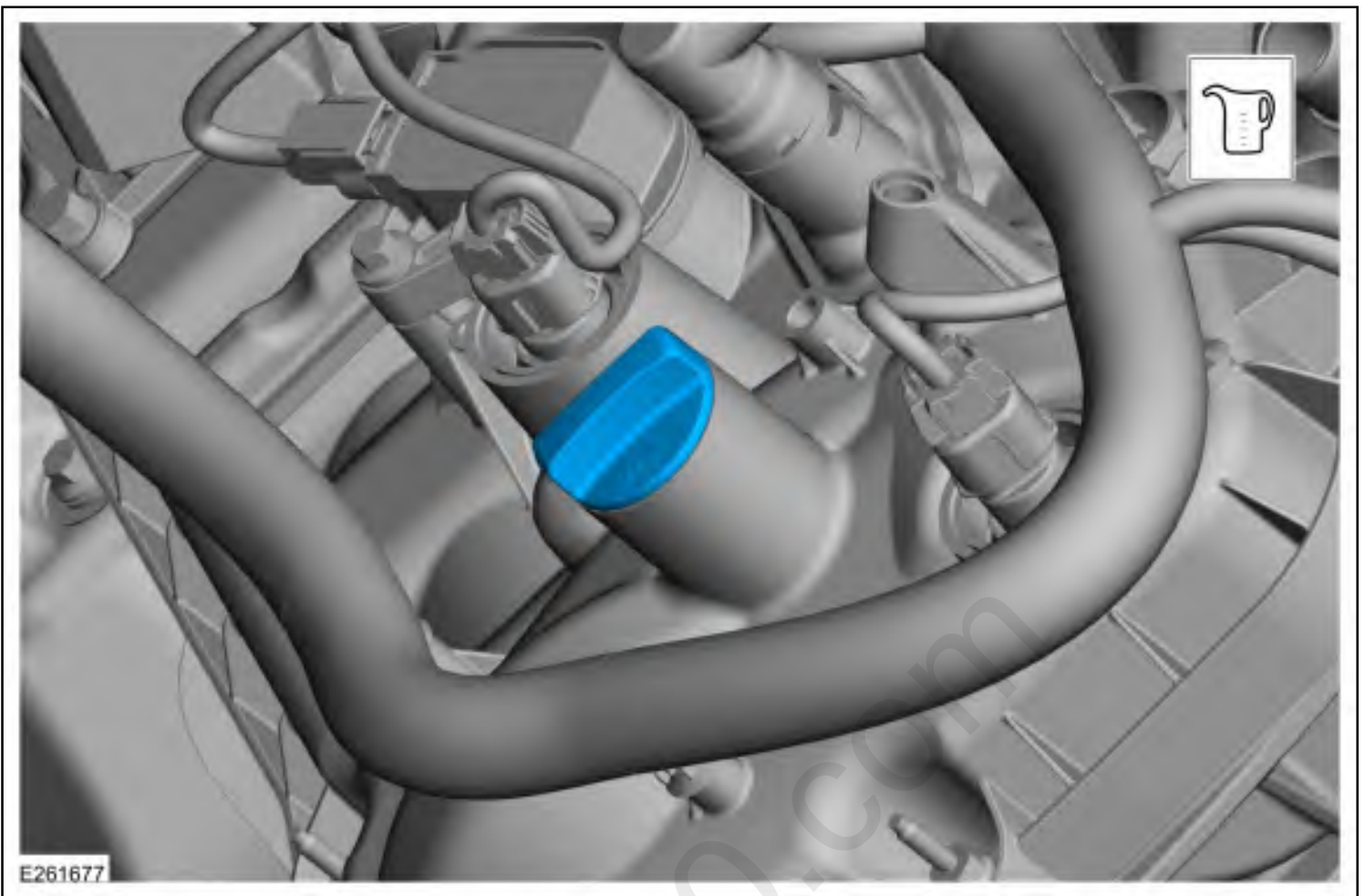
Stage 1: 44 lb.in (5 Nm)

Stage 2: 180°



11. Fill the engine with clean engine oil.

Refer to: [Specifications](#) (303-01D Engine - 5.0L 32V Ti-VCT, Specifications).



12. Connect the battery ground cable.
Refer to: Battery Disconnect and Connect (414-01 Battery, Mounting and Cables) .
13. Fill and bleed the engine cooling system.
Refer to: Cooling System Draining, Vacuum Filling and Bleeding (303-03 Engine Cooling - 5.0L 32V Ti-VCT) .