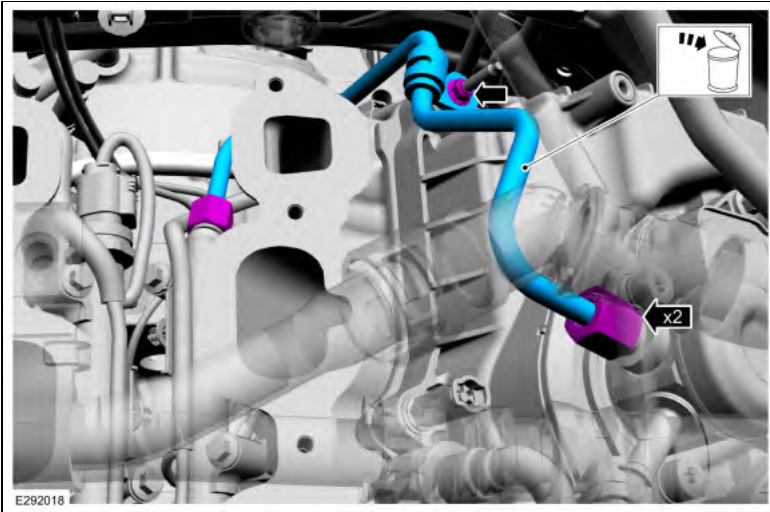
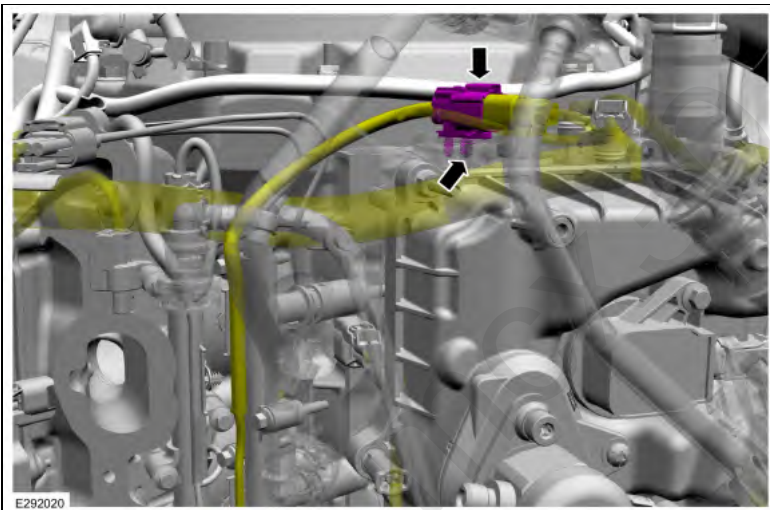
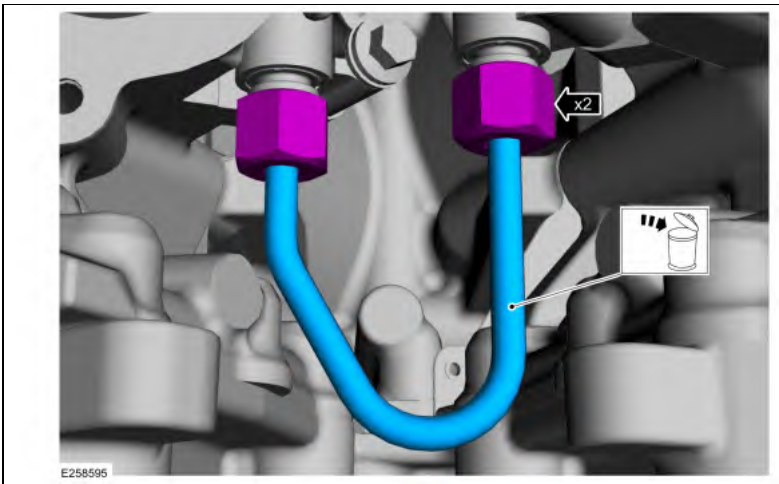




7. Disconnect the fuel injector main harness electrical connector. Release the electrical connector retainer from the cylinder head.



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



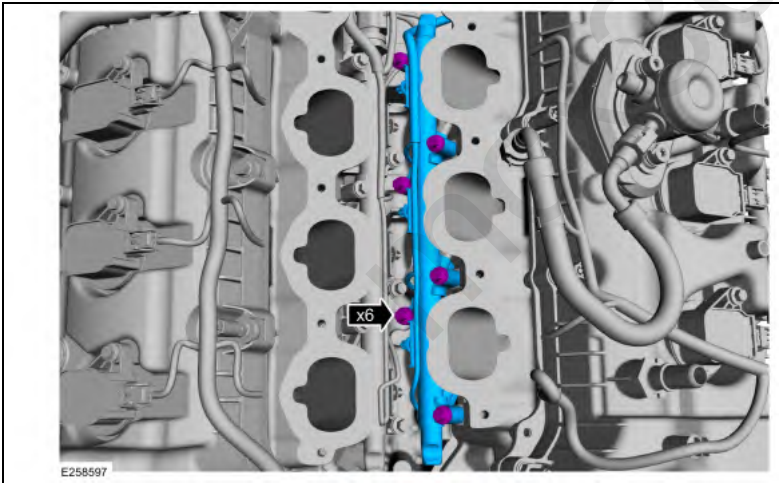
9. **NOTICE:** Pull out the fuel rails in the direction of the fuel injector axis or damage may occur to the fuel injectors.

NOTE: Use compressed air and remove any dirt or foreign material from the cylinder head, the engine block and the general surrounding area of the fuel rail and the fuel injectors.

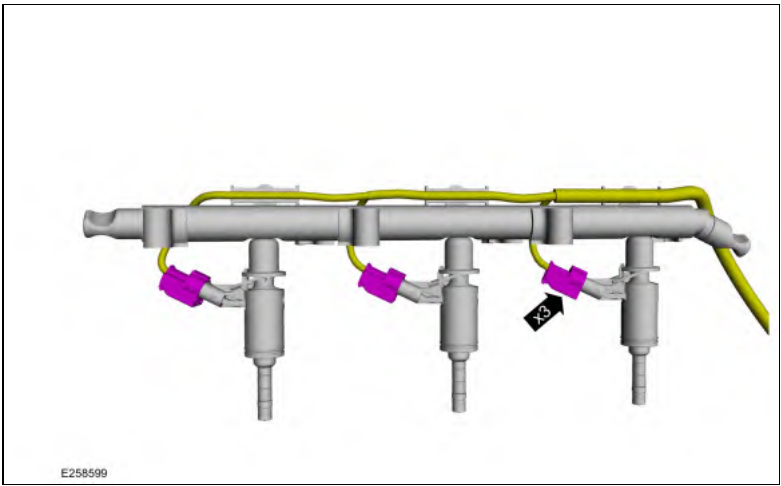
NOTE: When removing the fuel rails, the fuel injectors may remain in the cylinder heads and require the use of a Fuel Injector Remover tool to extract.

NOTE: Should any of the fuel injectors remain in the head, then the fuel injector electrical connectors will need to be disconnected as the fuel rail is being removed.

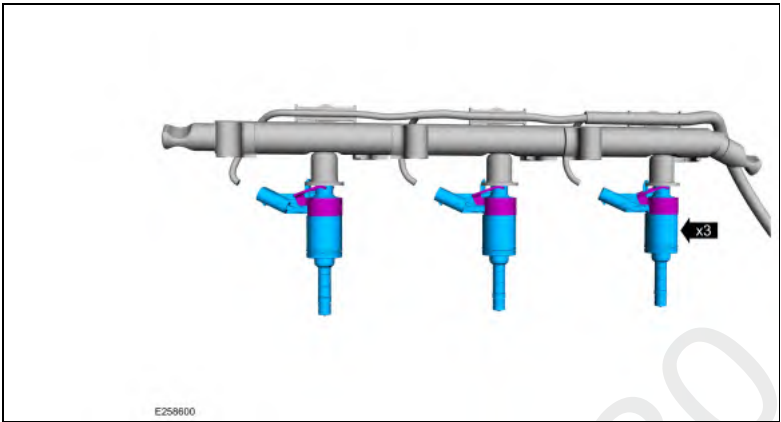
Remove the fuel rail bolts, then remove the fuel rail.



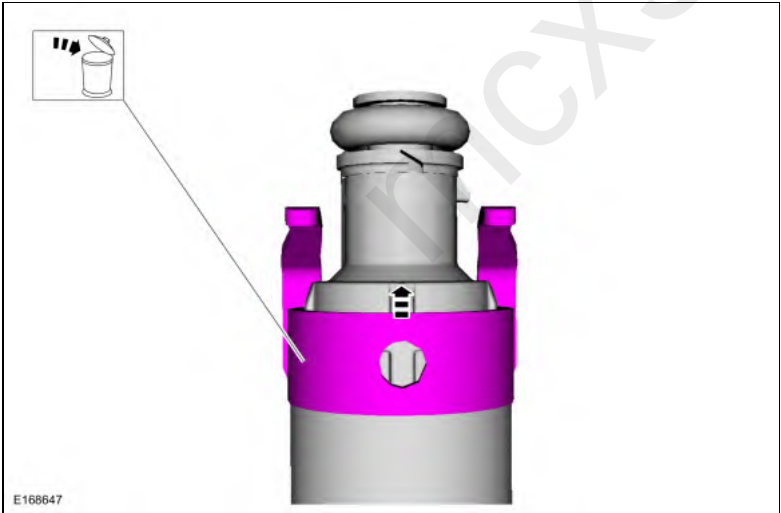
10. Disconnect the fuel injector electrical connectors.



11. Remove the fuel injectors from the fuel rail.



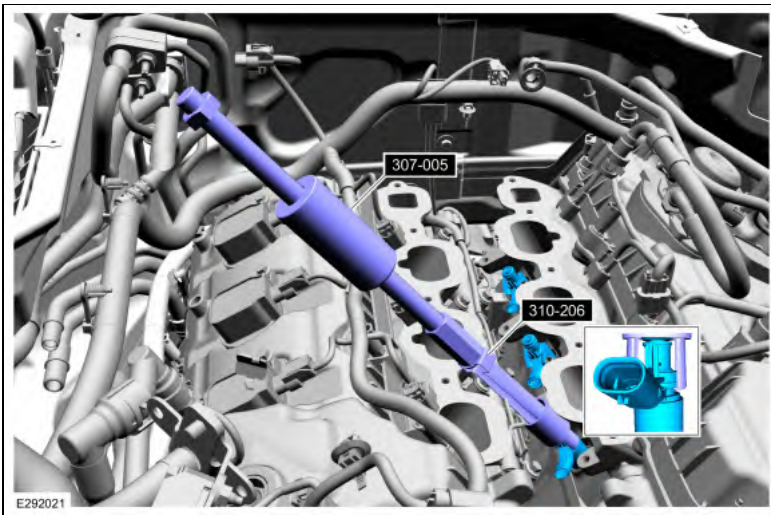
12. Remove and discard the fuel injector clips.



13. **NOTICE:** Use minimal force to remove the fuel injectors that remained in the cylinder head with the Fuel Injector Remover tool or damage to the fuel injector assembly may occur. Wiggling the injector by hand to break it loose may allow the injector to be removed by hand.

NOTE: Commercially available OTC 5028 8-1/2" long slide hammer may be substituted for 307-005 where there are clearance concerns.

Using the special tools, remove any of the fuel injectors that remained in the cylinder head.
 Use Special Service Tool: 307-005 (T59L-100-B) Slide Hammer. , 310-206 Remover, Fuel Injector.

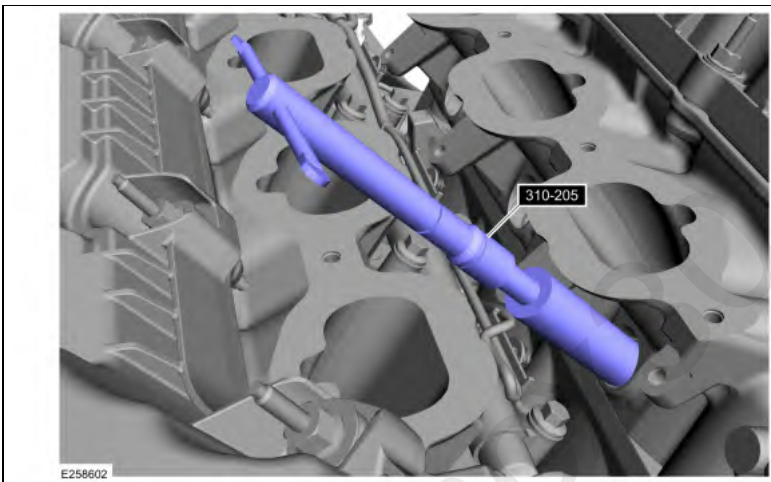


14. **NOTICE:** Make sure to thoroughly clean any residual fuel or foreign material from the cylinder head, the engine block and the general surrounding area of the fuel rails and the fuel injectors.

NOTICE: Do not use compressed air to clean the tip of the fuel injector.

NOTICE: Do not use a brush to clean the tip of the fuel injector.

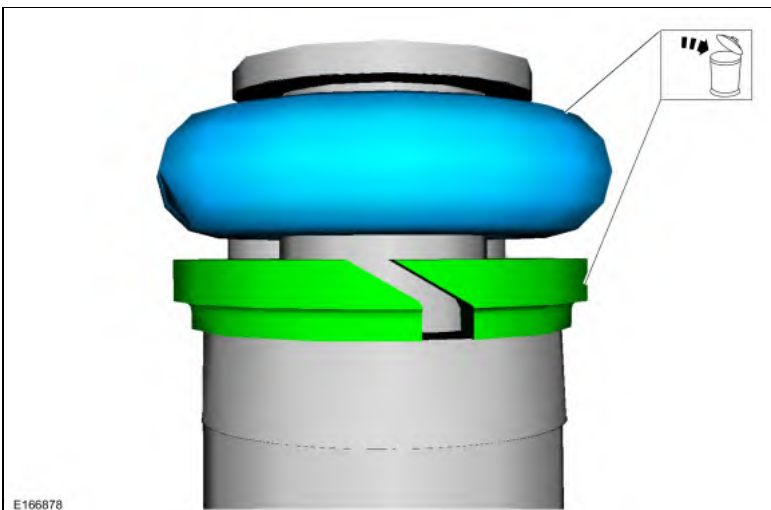
Using the special tool, clean the cylinder head fuel injector bores.
Use Special Service Tool: 310-205 Fuel Injector Brush.



Installation

1. **NOTE:** Note the correct orientation of the fuel injector support rings, to insure the correct installation of the new fuel injector support rings.

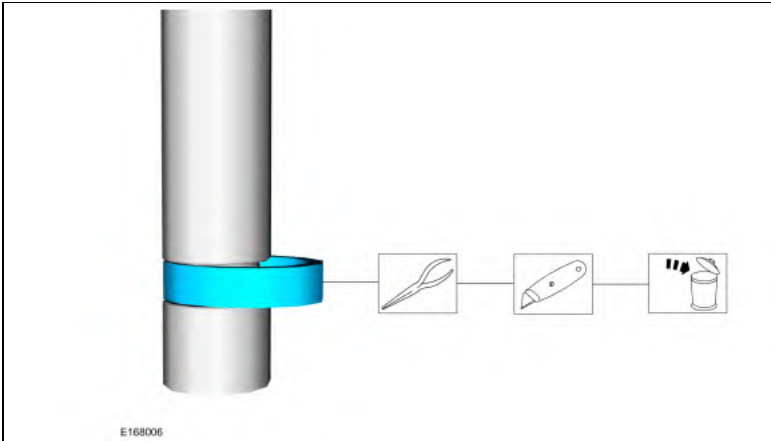
- Remove and discard the fuel injector O-rings.
- Remove and discard the fuel injector support rings.



2. **NOTICE:** Use care when removing the lower Teflon® seals, not to scratch, nick or gouge the fuel injector.

NOTICE: Do not attempt to cut the lower Teflon® seal without first pulling it away from the fuel injector or damage to the injector may occur.

1. Pull the lower Teflon® seal away from the injector.
2. Carefully cut and discard the lower fuel injector Teflon® seal.



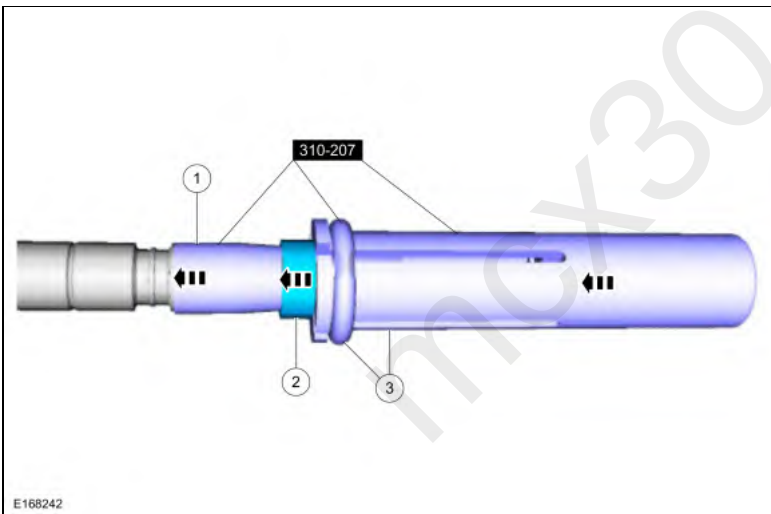
3. NOTICE: Do not lubricate the new lower Teflon® fuel injector seals.

1. Install the Teflon® Seal Guide onto the fuel injector tip.
Use Special Service Tool: 310-207 Installer, Fuel Injector Seal Assembly.
2. **NOTICE: Once the Teflon® seal is installed on the Teflon® Seal Guide, it should immediately be installed onto the fuel injector to avoid excessive expansion of the Teflon® seal.**

NOTE: Make sure that new lower fuel injector Teflon® seals are installed.

Install the new Teflon® seals onto the Teflon® Seal Guide, using the Pusher Tool, slide the Teflon® seals along the Teflon® Seal Guide.

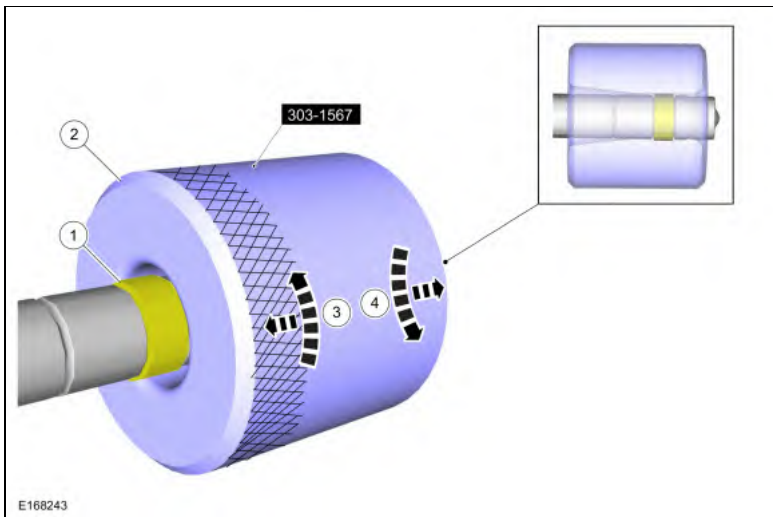
3. Using the Pusher Tool, slide the Teflon® seals off of the Teflon® Seal Guide and into the groove on the fuel injectors.
Use Special Service Tool: 310-207 Installer, Fuel Injector Seal Assembly.
4. Remove the special tools.



4. NOTE: Make sure the Teflon® seal is fully seated in the groove on the fuel injector before sizing the Teflon® seal.

NOTE: The beveled opening of the Teflon® seal sizer tool goes away from the seal.

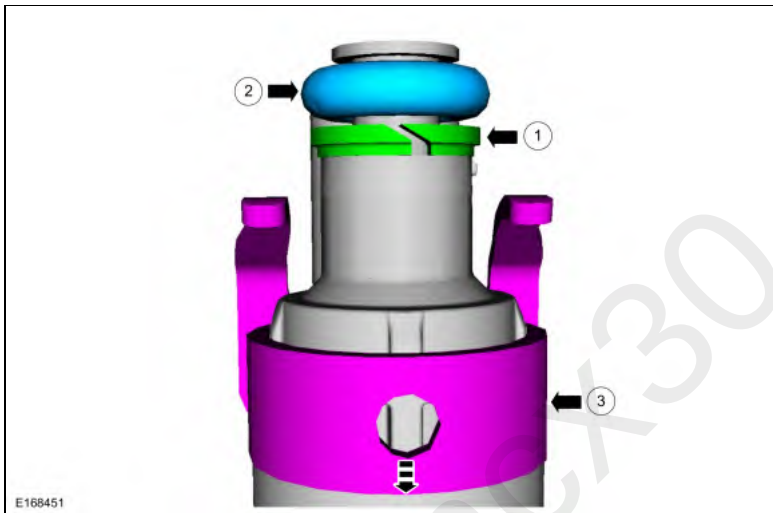
1. Massage and warm the Teflon® seal with your fingers before the Teflon® seal sizer tool is installed. This will aid in installing the Teflon® seal sizer tool.
2. Position the Teflon® seal sizer tool with the larger opening towards the Teflon® seal. Push while turning the Teflon® seal sizer tool 180 degrees.
Use Special Service Tool: 303-1567 Sizer, Teflon Seal.
3. Once the Teflon® seal sizer tool is installed, check and make sure the Teflon® seal is in the sizing portion of the Teflon® seal sizer tool.
4. After one minute, turn the Teflon® seal sizer tool back 180 degrees and remove.



5. **NOTE:** Make sure that new fuel injector support rings and new fuel injector O-ring seals are installed.

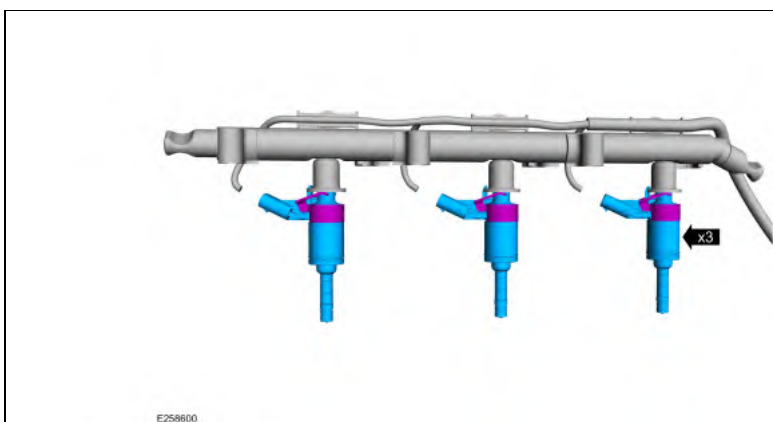
1. **NOTICE:** The new the fuel injector support rings must be installed in the correct orientation with the wide surface area facing up against the fuel injector O-ring seals. Improperly installed support rings may cause the fuel system to leak.

- Install the new the fuel injector support rings.
2. Install the new fuel injector O-ring seals.
3. Install the new the fuel injector clips.

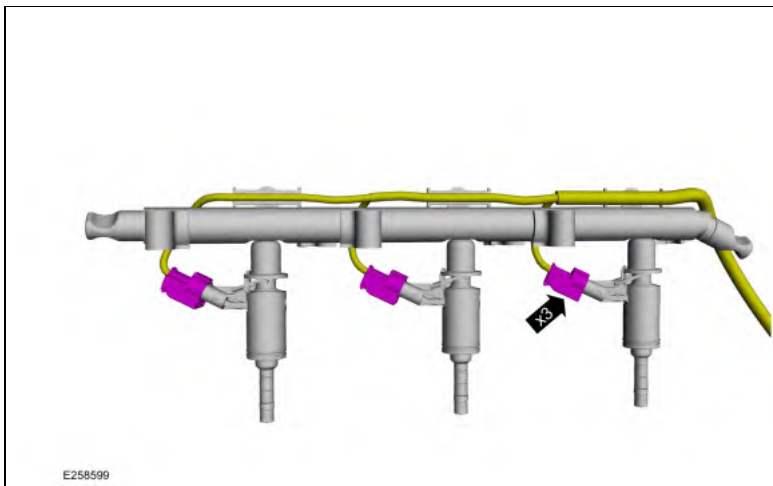


6. **NOTE:** The anti-rotation finger of the fuel injector must slip into the groove of the fuel rail cup.

Install the fuel injectors to the fuel rail.



7. Connect the fuel injector electrical connectors.



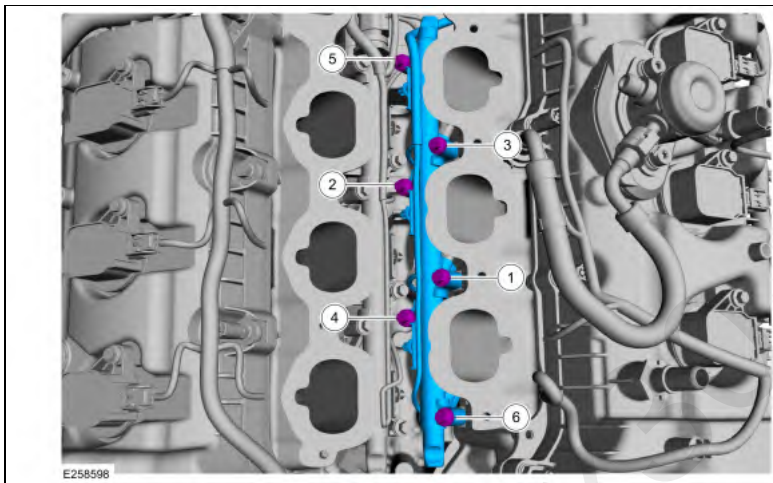
8. **NOTE:** Do not lubricate the new lower Teflon® fuel injector seals.

Install the fuel rail, push down on the fuel rail above the injectors, then tighten the fuel rail bolts in the sequence shown.

Torque:

Stage 1: 89 lb.in (10 Nm)

Stage 2: 45°



9. **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 (75 Nm), then that high pressure fuel tube must be discarded and replaced with another new high-pressure fuel tube.

NOTE: Make sure that a new high-pressure fuel tube is installed.

NOTE: Calculate the correct torque wrench setting for the following torque using the Torque Wrench Adapter Formulas.

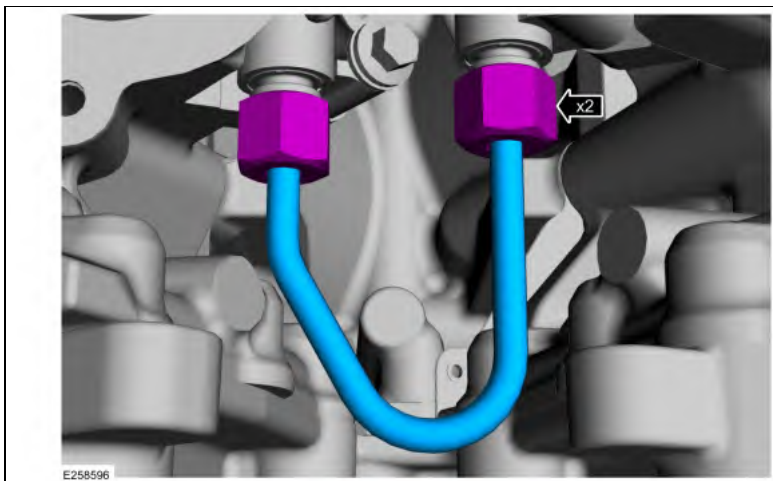
Install the new high-pressure fuel tube, tighten the flare nuts finger tight, then tighten the flare nuts in the following 3 stages.

Torque:

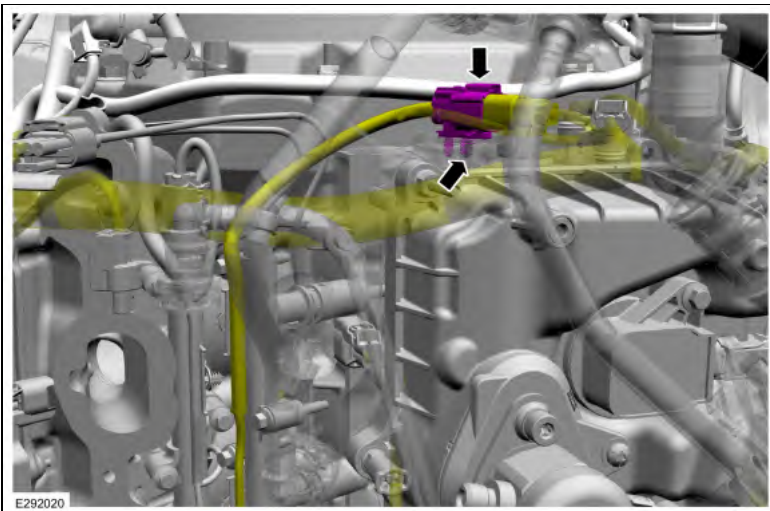
Stage 1: 62 lb.in (7 Nm)

Stage 2: 89 lb.in (10 Nm)

Stage 3: Tighten an additional : 30°



10. Connect the fuel injector main harness electrical connector. Attach the electrical connector retainer to the cylinder head.



A diagram consisting of six horizontal rectangular layers stacked vertically. From top to bottom, the colors are: light blue, green, brown, yellow, purple, and light purple. Each layer is outlined with a thin black border.

11. **NOTE:** Calculate the correct torque wrench setting for the following torque using the Torque Wrench Adapter Formulas.

NOTE: Make sure that a new high-pressure fuel tube and a new retaining nut is installed.

1. Install the new high-pressure fuel tube and tighten the flare nuts finger tight.
2. Install the new high-pressure fuel tube retaining nut finger tight.
3. **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 (75 Nm), then that high pressure fuel tube must be discarded and replaced with another new high-pressure fuel tube.

Tighten the high-pressure fuel tube flare nuts in the following 3 stages.

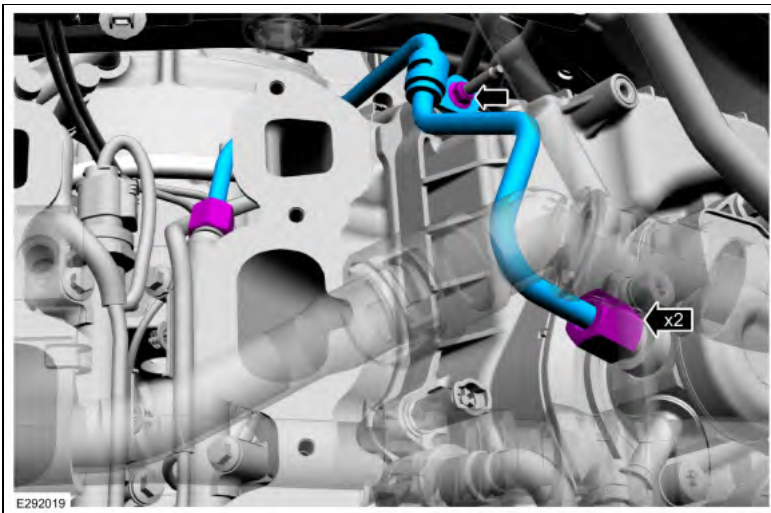
Torque:

Stage 1: 80 lb.in (9 Nm)

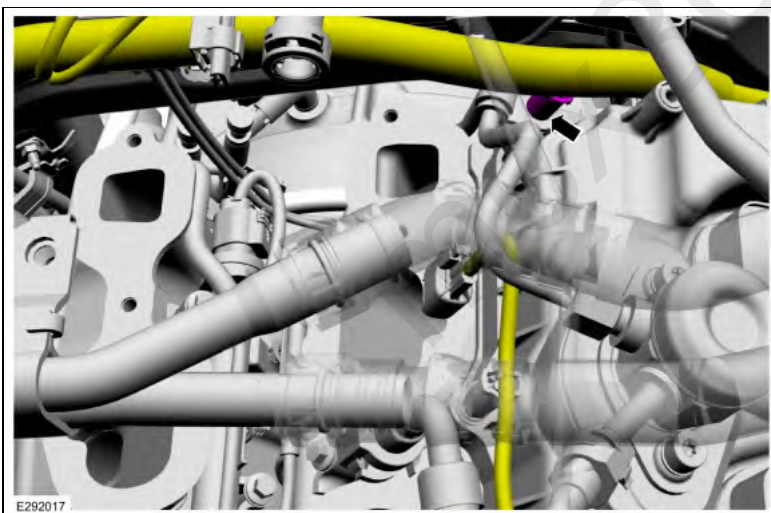
Stage 2: 89 lb.in (10 Nm)

Stage 3: Tighten an additional: : 30°

4. Tighten the high-pressure fuel pump to fuel rail high-pressure fuel tube retaining nut.
Torque: 71 lb.in (8 Nm)



12. Attach the harness retainer.

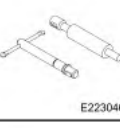
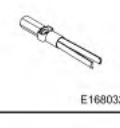


13. Install the cowl panel.
Refer to: Cowl Panel (501-02 Front End Body Panels, Removal and Installation).
14. Install the lower intake manifold.
Refer to: Lower Intake Manifold (303-01C Engine - 3.3L Duratec-V6, Removal and Installation).
15. **NOTE:** *When removing or installing the high-pressure fuel pump noise insulator, spreading the openings will reduce the risk of damage.*
Install the high-pressure fuel pump noise insulator.



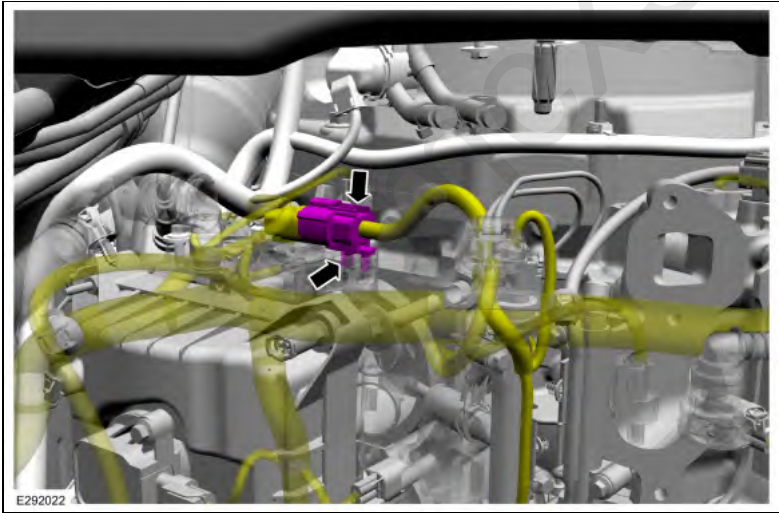
Direct Injection Fuel Rail RH

Special Tool(s) / General Equipment

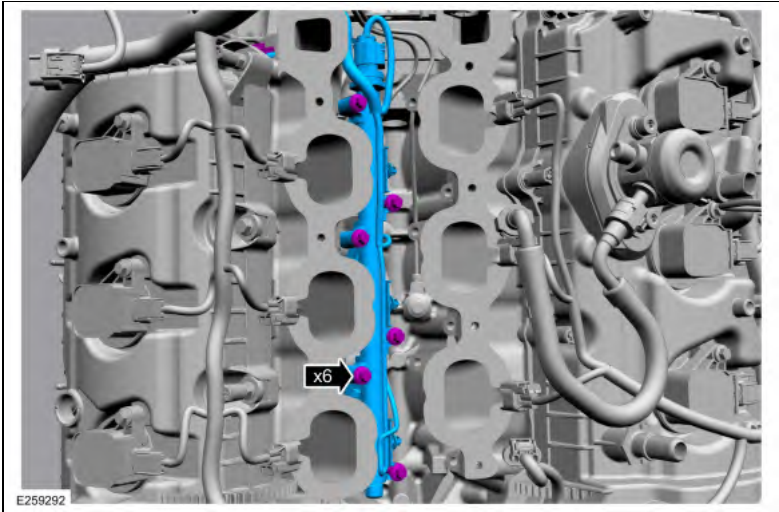
 E222987	303-1567 Sizer, Teflon Seal TKIT-2010C-FLM
 E222982	307-005 (T59L-100-B) Slide Hammer
 E223046	310-205 Fuel Injector Brush
 E168032	310-206 Remover, Fuel Injector TKIT-2009A-FLM
 E223047	310-207 Installer, Fuel Injector Seal Assembly TKIT-2009A-FLM

Removal

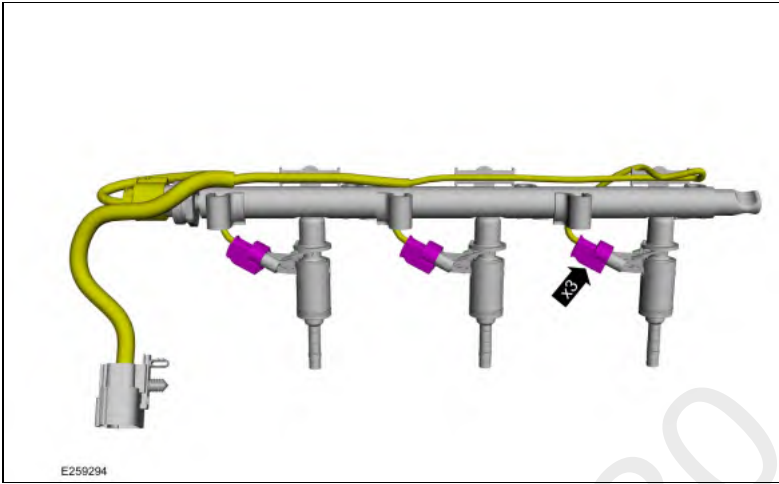
1. Remove the direct injection fuel rail LH.
Refer to: Direct Injection Fuel Rail LH (303-04C Fuel Charging and Controls - 3.3L Duratec-V6/3.3L Duratec-V6 â€“ Hybrid (BP), Removal and Installation).
2. Disconnect the fuel injector main harness electrical connector. Release the electrical connector retainer from the cylinder head.



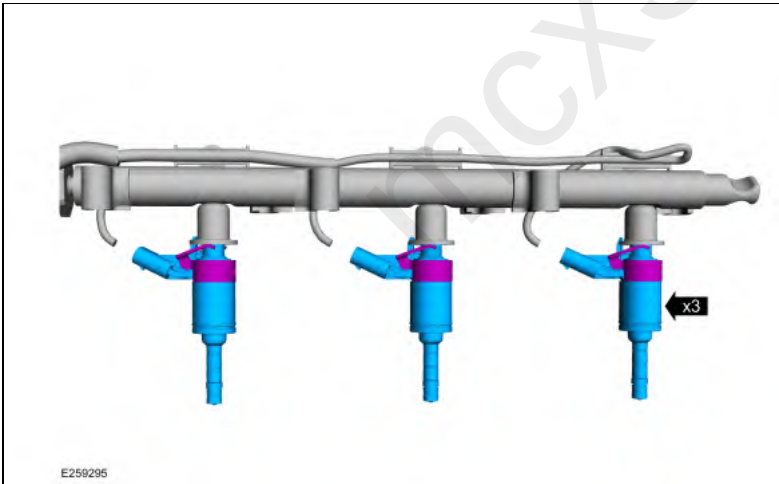
3. **NOTICE:** Pull out the fuel rails in the direction of the fuel injector axis or damage may occur to the fuel injectors.
- NOTE:** Use compressed air to remove any dirt or foreign material from the cylinder head, the engine block and the general surrounding area of the fuel rail and the fuel injectors.
- NOTE:** When removing the fuel rails, the fuel injectors may remain in the cylinder heads and require the use of a Fuel Injector Remover tool to extract.
- NOTE:** Should any of the fuel injectors remain in the head, then the fuel injector electrical connectors will need to be disconnected as the fuel rail is being removed.
- Remove the fuel rail bolts, then remove the fuel rail.



4. Disconnect the fuel injector electrical connectors.



5. Remove the fuel injectors from the fuel rail.



6. Remove and discard the fuel injector clips.