



## Fuel Rail Pressure (FRP) Sensor (19.22.29)

### Removal



**WARNING:** Wait at least 30 seconds after the engine stops before commencing any repair to the high-pressure fuel injection system. Failure to follow this instruction may result in personal injury.



**WARNING:** Do not smoke or carry lighted tobacco or open flame of any type when working on or near any fuel related components. Highly flammable vapors are always present and may ignite. Failure to follow these instructions may result in personal injury.



**WARNING:** This procedure involves fuel handling. Be prepared for fuel spillage at all times and always observe fuel handling precautions. Failure to follow these instructions may result in personal injury.



**WARNING:** Do not carry out any repairs to the fuel system with the engine running. The fuel pressure within the system can be as high as 1650 bar (23,931 lb-sq-in). Failure to follow this instruction may result in personal injury.



**CAUTION:** Make sure the workshop area in which the vehicle is being worked on is as clean and as dust free as possible. Foreign matter from work on clutches, brakes or from machining or welding operations can contaminate the fuel system and may result in later malfunction.



**CAUTION:** Always carry out the cleaning process before carrying out any repairs to the fuel injection system components. Failure to follow this instruction may result in foreign matter ingress to the fuel injection system.



**CAUTION:** Diesel fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is therefore essential that absolute cleanliness is observed when working with these components. Always install blanking plugs to any open orifices or lines. Failure to follow this instruction may result in foreign matter ingress to the fuel injection system.



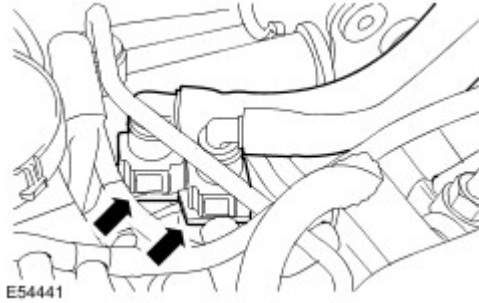
**CAUTION:** Do not remove the FRP sensor from the fuel injection diverter rail.

#### NOTE :

If a new fuel rail pressure sensor is to be installed, a new FRP sensor and fuel injection diverter rail must be installed as an assembly.

- 1 . Disconnect the battery ground cable. For additional information, refer to [Specifications](#) (Section 414-00 Charging System - General Information)
- 2 . Remove the engine cover. For additional information, refer to [Engine Cover - 2.7L Diesel \(12.30.50\)](#) (Section 501-05 Interior Trim and Ornamentation)

3. Disconnect the low-pressure fuel lines.  
▶ Install blanking caps to the exposed ports.




4. Disconnect both exhaust gas recirculation (EGR) coolant cross-over pipe hoses.  
▶ Clamp the EGR coolant hoses to minimize coolant loss.



5. Remove the EGR coolant cross-over pipe.  
▶ Remove the two retaining bolts.



6. **NOTE :**  
Left-hand shown, right-hand similar.  
Release the RH and LH high-pressure fuel supply lines.  
▶ Remove the retaining bolt.

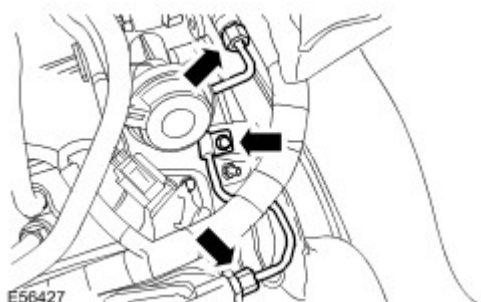
7.  **CAUTION:** Make sure that the high-pressure fuel supply line remains in contact with the fuel injection supply manifold and the fuel injection diverter rail until both unions have been detached and cleaned. Failure to follow this instruction may result in foreign matter ingress to the fuel injection system.

**NOTE :**

Left-hand shown, right-hand similar.

Remove and discard the RH and LH high-pressure fuel supply lines.

- ▶ Install blanking caps to the exposed ports.



8 .



**CAUTION:** Make sure that the high-pressure fuel supply line remains in contact with the fuel pump and fuel injection diverter rail until both unions have been detached and cleaned. Failure to follow this instruction may result in foreign matter ingress to the fuel injection system.

**NOTE :**

Crankcase vent oil separator shown removed for clarity.

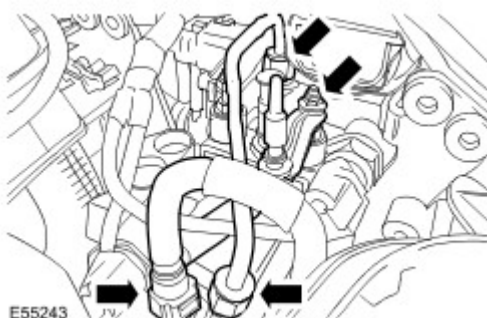
Remove and discard the high-pressure fuel supply line.

- ▶ Install blanking caps to the exposed ports.

9 .

Release the low-pressure fuel line.

- ▶ Disconnect the low-pressure fuel line.
- ▶ Install blanking caps to the exposed ports.



10 .

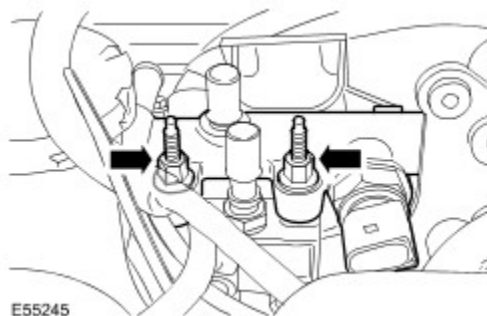
Disconnect the fuel rail pressure (FRP) sensor electrical connector.

- ▶ Release the fuel charging wiring harness.



11. Remove the FRP sensor and fuel injection diverter rail assembly.

➤ Remove the 2 studs.



## Installation

1. Install the FRP sensor and fuel injection diverter rail assembly.
  - Install the fuel injection diverter rail retaining studs, but do not fully tighten at this stage.
2. Connect the FRP sensor electrical connector.
  - Attach the fuel charging wiring harness.
3. Install the new high-pressure fuel supply line.
  - Remove the blanking caps from the ports.
  - Loosely install the new high-pressure fuel supply line.
  - Tighten the fuel injection diverter rail retaining studs to 23 Nm (17 lb.ft).
  - Stage 1: Tighten the high-pressure fuel supply line union at the fuel pump to 15 Nm (11 lb.ft).
  - Stage 2: Tighten the high-pressure fuel supply line union at the fuel injection diverter rail to 15 Nm (11 lb.ft).
  - Stage 3: Tighten the high-pressure fuel supply line union at the fuel pump to 30 Nm (22 lb.ft).
  - Stage 4: Tighten the high-pressure fuel supply line union at the fuel injection diverter rail to 30 Nm (22 lb.ft).
4. Attach the low-pressure fuel line.
  - Remove the blanking caps from the ports.
  - Connect the low-pressure fuel line.

- 5 . Install the new RH and LH high-pressure fuel supply lines.
  - Remove the blanking caps from the ports.
  - Loosely install the new high-pressure fuel supply lines.
  - Stage 1: Tighten the high-pressure fuel supply line union at the fuel injection supply manifold to 15 Nm (11 lb.ft).
  - Stage 2: Tighten the high-pressure fuel supply line union at the fuel injection diverter rail to 15 Nm (11 lb.ft).
  - Stage 3: Tighten the high-pressure fuel supply line union at the fuel injection supply manifold to 30 Nm (22 lb.ft).
  - Stage 4: Tighten the high-pressure fuel supply line union at the fuel injection diverter rail to 30 Nm (22 lb.ft).
- 6 . Secure the high-pressure fuel supply lines.
  - Tighten the two retaining bolts to 10 Nm (7 lb.ft).
- 7 . Install the EGR coolant cross-over pipe.
  - Install the two EGR coolant cross-over pipe retaining bolts.
  - Tighten to 13 Nm (10 lb.ft).
- 8 . Connect both EGR coolant cross-over pipe hoses.
  - Remove the EGR coolant hose clamps.
- 9 . Connect the low-pressure fuel lines.
  - Remove the blanking caps from the ports.
- 10 . Install the engine cover. For additional information, refer to [Engine Cover - 2.7L Diesel \(12.30.50\)](#) (Section 501-05 Interior Trim and Ornamentation)
- 11 . Connect the battery ground cable. For additional information, refer to [Specifications](#) (Section 414-00 Charging System - General Information)
- 12 . Bleed the fuel system.
- 13 . Check and top-up the coolant.