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2023 Ford Transit-350 Service and Repair Manual

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Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

WARNING

Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

WARNING

When handling fuel, always observe fuel handling precautions and be prepared in the event of fuel spillage. Spilled fuel may be ignited by hot vehicle components or other ignition sources. Failure to follow these instructions may result in serious personal injury.

WARNING

Clean all fuel residue from the engine compartment. If not removed, fuel residue may ignite when the engine is returned to operation. Failure to follow this instruction may result in serious personal injury.

WARNING

Fuel may remain pressurized in some fuel lines after the Fuel System Pressure Release procedure. Wear safety gloves and a face shield when disconnecting pressure lines to avoid skin and eye contact. Failure to follow this instruction may result in serious personal injury.

NOTE

With the engine running, the FRP PID (parameter identification) value may be 48-70 kPa (7-10 psi) higher than a fuel pressure reading taken with a mechanical gauge.

Refer to Wiring Diagrams Cell 023for schematic and connector information.

Normal Operation and Fault Conditions Refer to the DTC (diagnostic trouble code) Fault Trigger Conditions. **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

PCM (powertrain control module) P018D:00	Fuel Pressure Sensor 'B' Circuit High: No Sub Type Information	Sets when the PCM (powertrain control module) detects the fuel pressure sensor circuit is open or shorted to voltage.
PCM (powertrain control module) P0192:00	Fuel Rail Pressure Sensor Circuit Low (Bank 1): No Sub Type Information	Sets when the PCM (powertrain control module) detects the FRP (fuel rail pressure) circuit is shorted to SIGRTN or ground. A FRP (fuel rail pressure) sensor PID (parameter identification) value during ignition ON, engine OFF, or ignition ON, engine running, less than 0.3 volt indicates a concern is present.
PCM (powertrain control module) P0193:00	Fuel Rail Pressure Sensor Circuit High (Bank 1): No Sub Type Information	Sets when the PCM (powertrain control module) detects the FRP (fuel rail pressure) circuit is open or shorted to voltage.

Possible Sources

- FRP (fuel rail pressure) sensor circuitry concern
- Low fuel level
- Fuel filter
- Fuel supply line
- Fuel pump module
- Fuel injection pump
- Low ambient temperature operation
- Fuel pressure sensor (9F972)
- FRP (fuel rail pressure) sensor (6B288)
- FRP (fuel rail pressure) temperature sensor (9G756)
- PCM (powertrain control module) (12A650)

Pinpoint Test Steps available in the on-line Workshop Manual.

PCM (powertrain control module)	P00C6:00	Fuel Rail Pressure Too Low - Engine Cranking (Bank 1): No Sub Type Information	GO to Pinpoint Test HP
PCM (powertrain control module)	P053F:00	Cold Start Fuel Pressure Performance Bank 1: No Sub Type Information	GO to Pinpoint Test HP

Global Customer Symptom Code (GCSC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: Diagnostic Methods

(100-00 General Information, Description and Operation).

Global Customer Symptom Code Chart

Customer Symptom	Action
Start/Run/Move > Running > Smoke From Exhaust > Black	GO to Pinpoint Test HP
Driving Performance > Stalls/Quits > At Idle > Always	GO to Pinpoint Test HP
Driving Performance > Poor Fuel Economy > Combined > Unloaded	GO to Pinpoint Test HP

Pinpoint Tests

PINPOINT TEST HP : HIGH PRESSURE FUEL DELIVERY SYSTEM

NOTICE

Do not apply battery voltage across the fuel injection pump circuits. Damage to the fuel volume regulator solenoid may result.

Refer to Wiring Diagrams Cell 023for schematic and connector information.

Normal Operation and Fault Conditions Refer to the DTC (diagnostic trouble code) Fault Trigger Conditions. **DTC Fault Trigger Conditions**

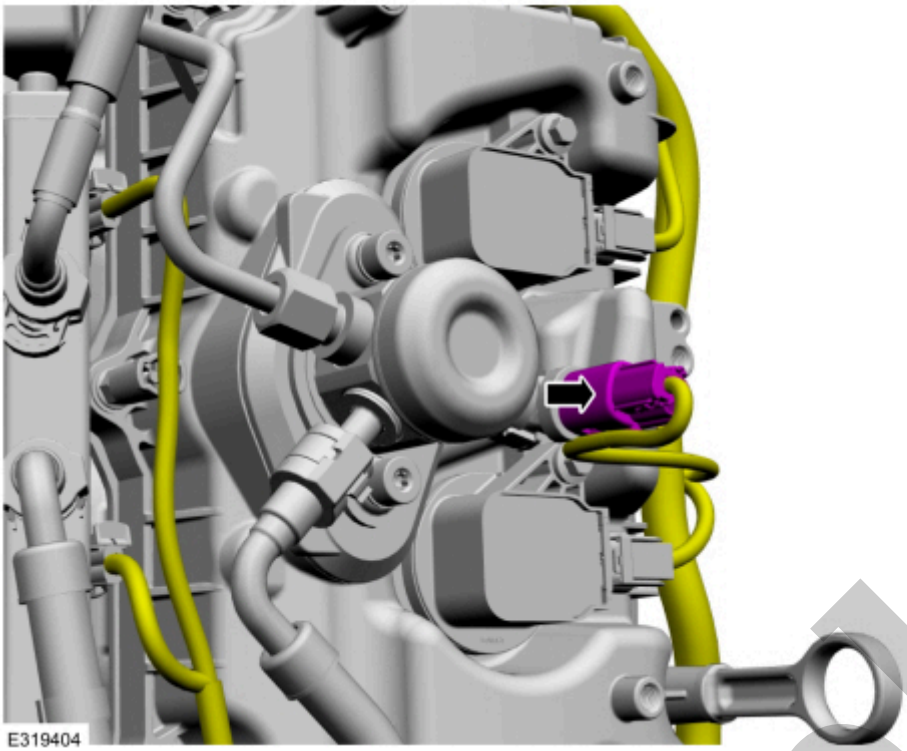
DTC (diagnostic trouble code)	Description	Fault Trigger Condition

		Diagnose any FRP (fuel rail pressure) and fuel volume regulator (FVR) circuit Diagnostic Trouble Codes (DTCs) first.
PCM (powertrain control module) P053F:00	Cold Start Fuel Pressure Performance Bank 1: No Sub Type Information	Sets when the PCM (powertrain control module) detects the fuel rail pressure falls outside a calibrated threshold limit for controlling split injection during a cold start. The PCM (powertrain control module) monitors fuel rail pressure to control split injection. Diagnose any FRP (fuel rail pressure) and fuel volume regulator (FVR) circuit Diagnostic Trouble Codes (DTCs) first. Various engine driveability symptoms, including no start, hard start, rough idle, and backfiring may occur as a result of this DTC (diagnostic trouble code) setting. This DTC (diagnostic trouble code) may be accompanied by other Diagnostic Trouble Codes (DTCs), particularly P0087, P0088, or P00C6. Freeze frame data is not applicable to the cold start emission reduction monitor. For additional information, refer to the Cold Start Emission Reduction Monitor description.

Possible Sources

- Fuel injection pump circuitry concern
- Low fuel level
- Fuel filter
- FRP (fuel rail pressure) sensor
- Fuel pump module
- Fuel injection pump (9350)
- PCM (powertrain control module) (12A650)

Pinpoint Test Steps available in the on-line Workshop Manual.



Click here to learn about symbols, color coding, and icons used in this manual.

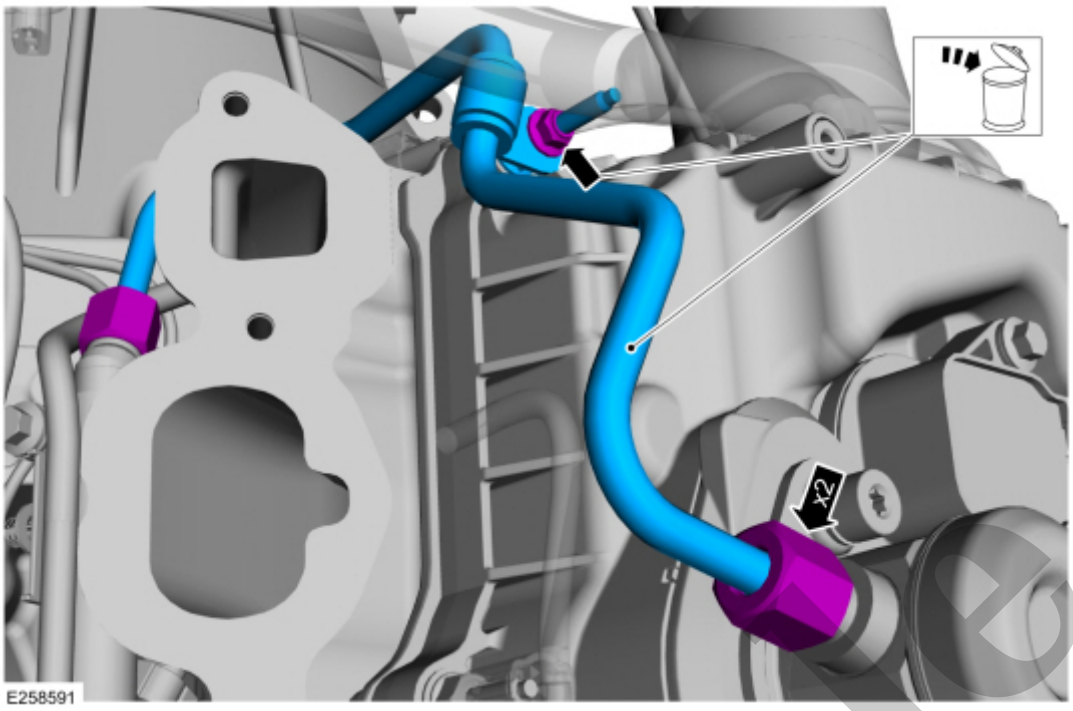
2. Remove the lower intake manifold.

   Refer to: Lower Intake Manifold(303-01B Engine - 3.3L Duratec-V6, Removal and Installation).

3. Remove the left front fender splash shield.

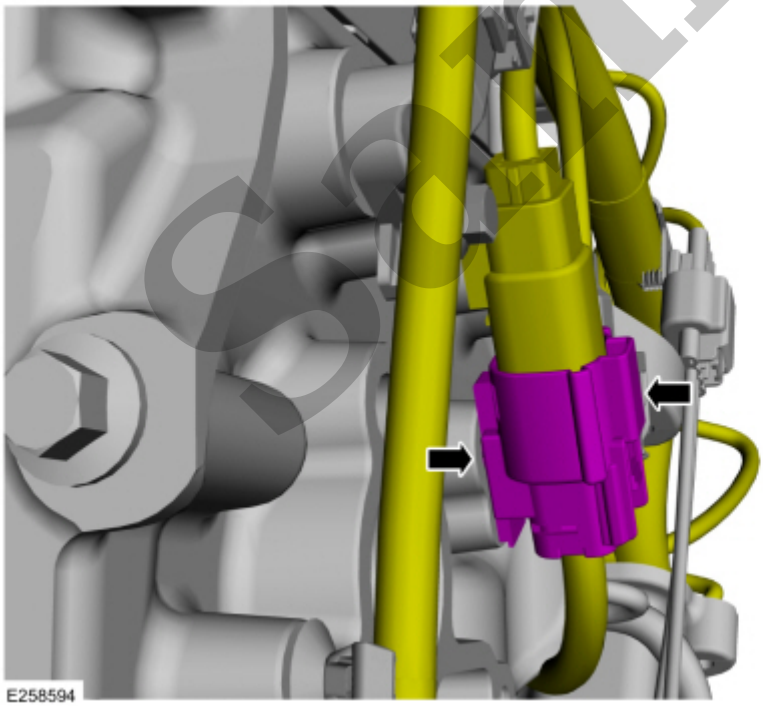
   Refer to: Fender Splash Shield(501-02 Front End Body Panels, Removal and Installation).

4. Detach the harness retainer.



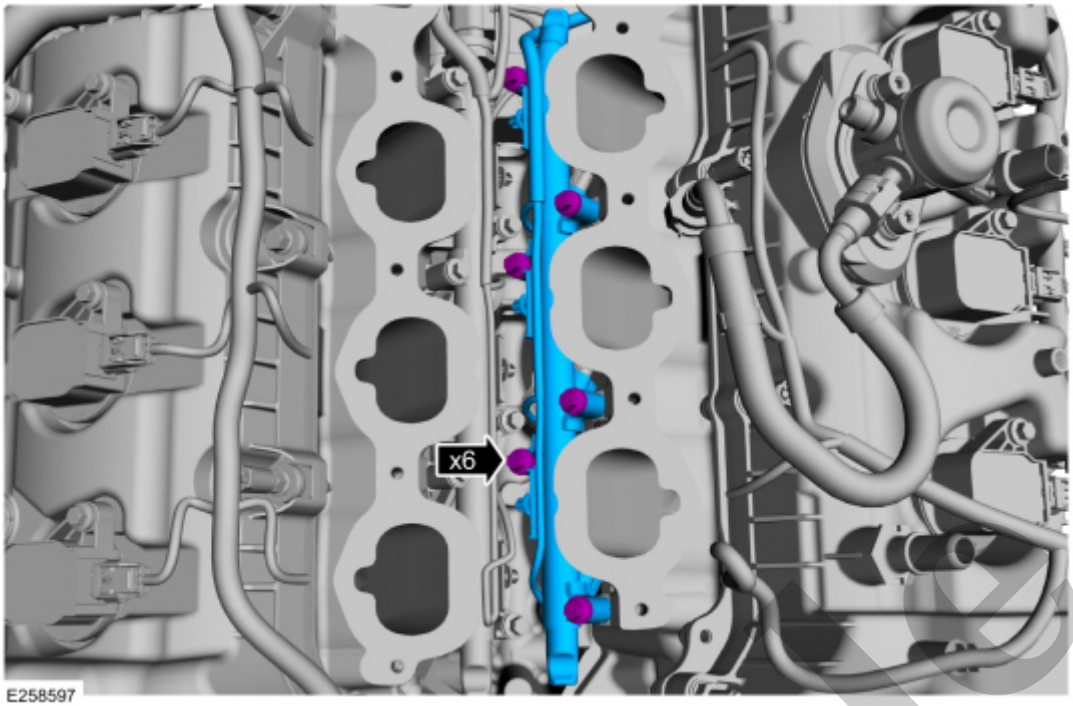
Click here to learn about symbols, color coding, and icons used in this manual.

6. Release the left electrical connector retainer from the rear of the left cylinder head. Disconnect the left fuel injector main harness electrical connector.



Click here to learn about symbols, color coding, and icons used in this manual.

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



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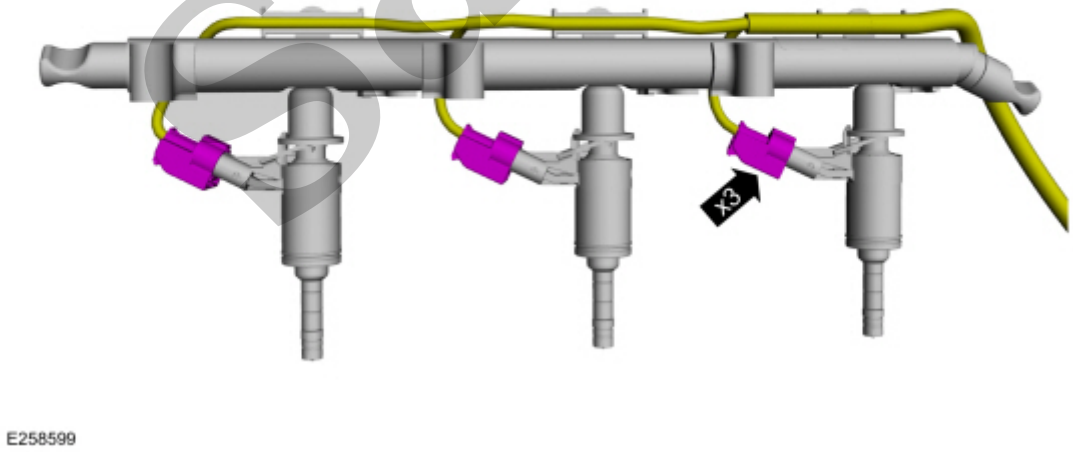
9. Disconnect the fuel injector electrical connectors.



Click here to learn about symbols, color coding, and icons used in this manual.

10. Remove the fuel injectors from the fuel rail.

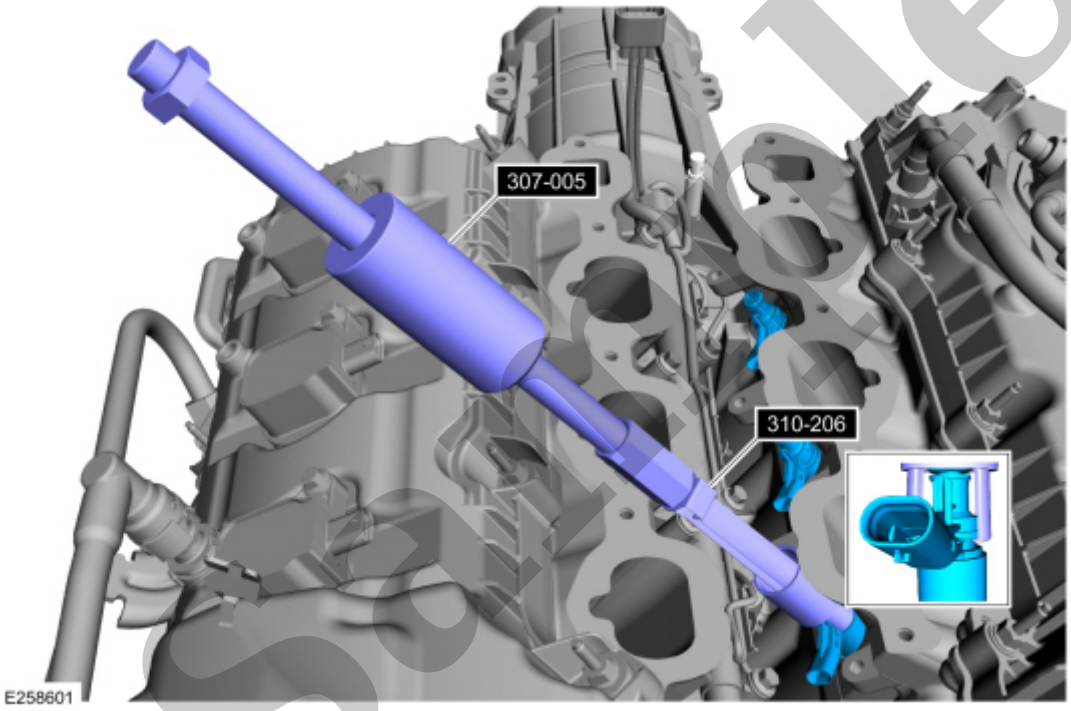
Use minimal force to remove the fuel injectors that remained in the cylinder head with the Fuel Injector Remover tool or damage to the fuel injector assembly may occur. Wiggling the injector by hand to break it loose may allow the injector to be removed by hand.

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



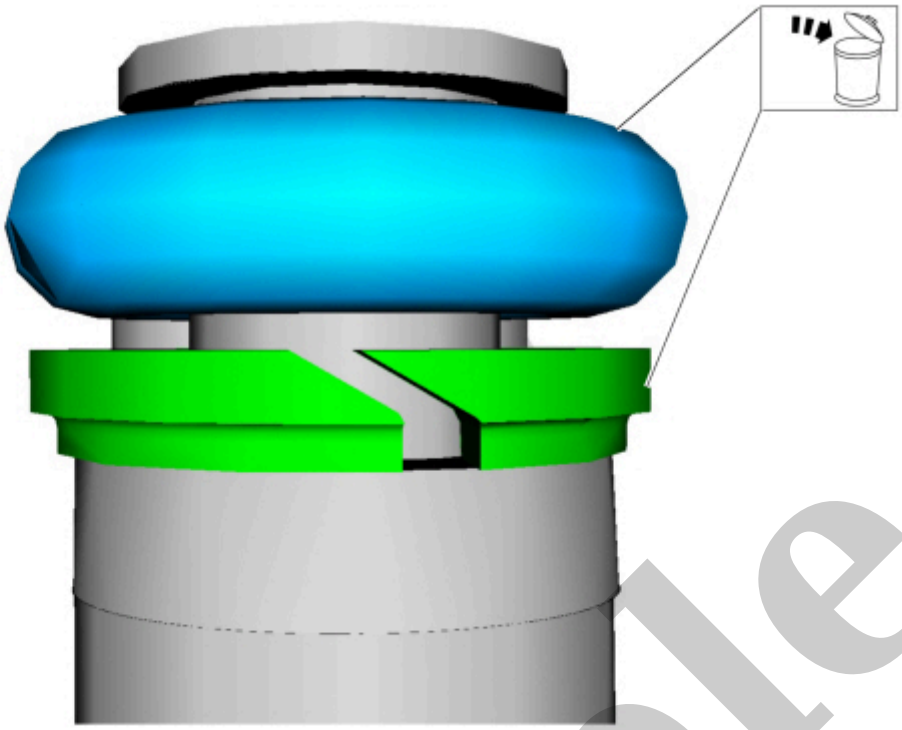
Click here to learn about symbols, color coding, and icons used in this manual.

13. **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.



Click here to learn about symbols, color coding, and icons used in this manual.

15. **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.