

Fuel Tank and Lines - TD4 2.2L Diesel -

Capacities

Item	Capacity (liters/gallons)
Fuel tank	68.0/14.9

General Specification

Item	Specification
Fuel delivery module	PAG Module
Location	in the RH side of the tank
Maximum output @12.5 volts	160l/hr
Operating pressure	0.2 Bar
Fuel tank sender units	MAGnetic Passive Position Sensor (MAPPS)

Torque Specifications

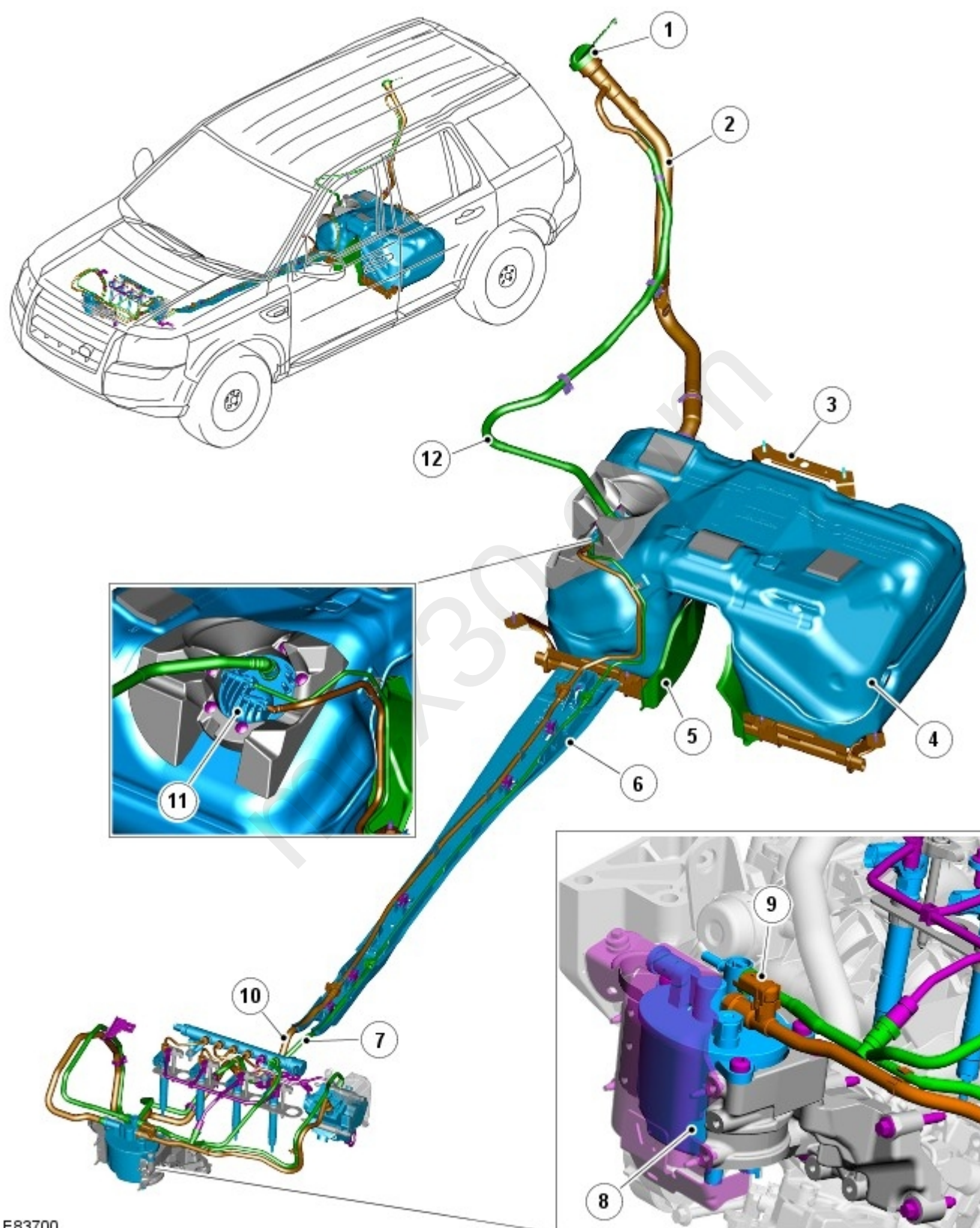
Description	Nm	lb-ft
Degas nipple	15	11
Fuel filter brackets	25	18
Fuel filter cover nuts	9	7
Fuel filter to retaining bracket bolt	9	7
Fuel pressure pipe to block	10	7
Fuel pump bolts	22	16
Fuel tank bolts*	25	18
Fuel tank filler pipe brackets	10	7

* New nuts/bolts must be fitted

Fuel Tank and Lines - TD4 2.2L Diesel - Fuel Tank and Lines

Description and Operation

COMPONENT LOCATION



E83700

Item	Part Number	Description
1	-	Fuel tank filler cap and lanyard
2	-	Fuel tank filler pipe
3	-	Fuel tank support cradle
4	-	Fuel tank

5	-	Exhaust heat shield
6	-	Fuel line underfloor protection tray
7	-	Fuel return line
8	-	Fuel filter assembly
9	-	Fuel temperature sensor
10	-	Fuel supply line
11	-	Fuel delivery module
12	-	Hose - fuel tank breather

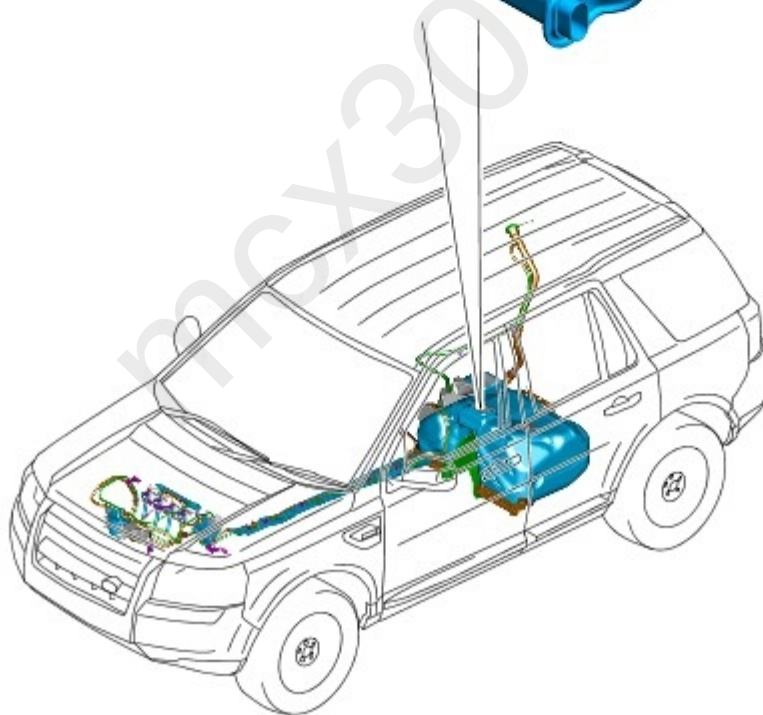
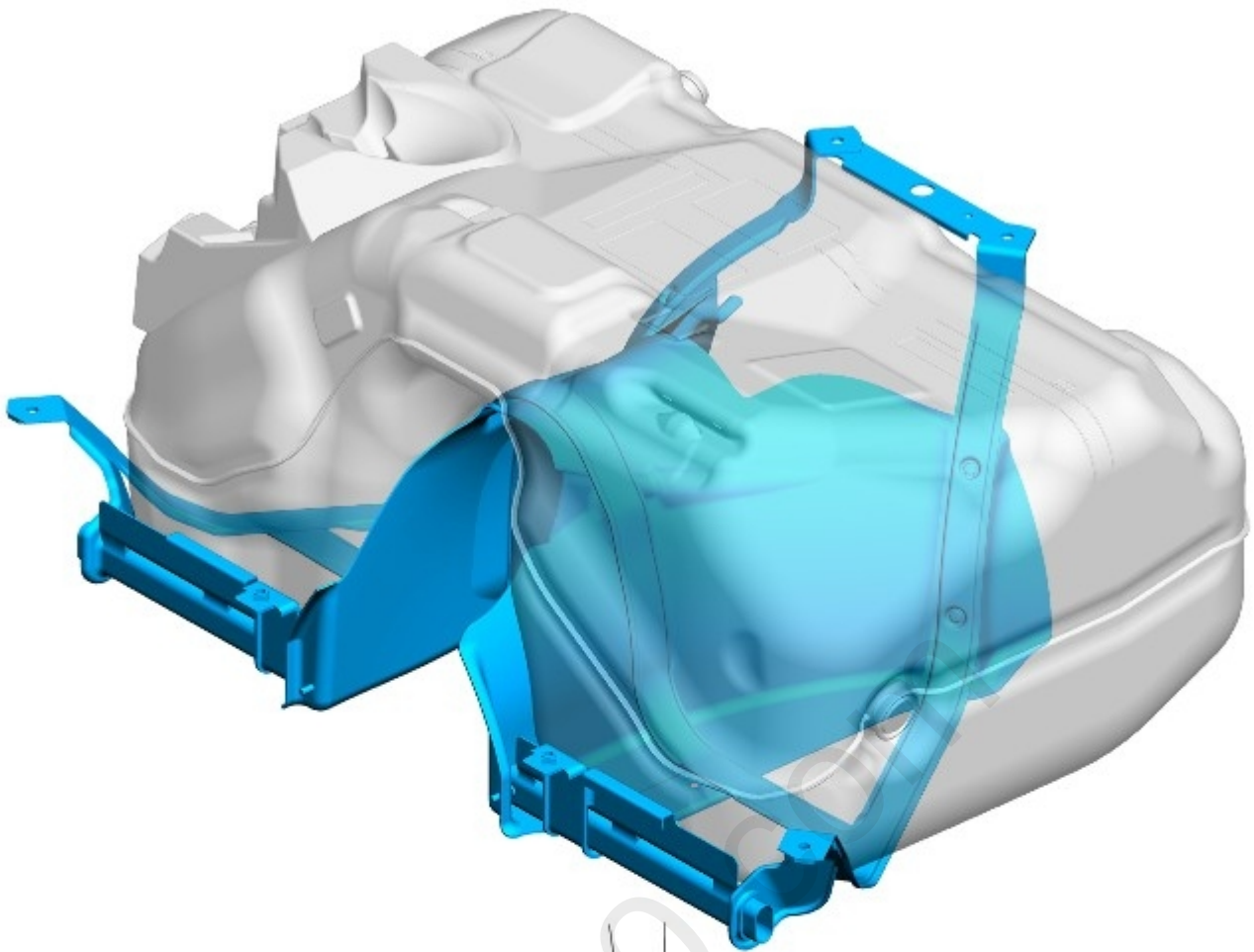
OVERVIEW

The TD4 diesel fuel system incorporates a low and high-pressure (HP) circuit to provide the engine with sufficient fuel for all operating conditions. The low-pressure (LP) system comprises:

- Molded plastic saddle-type fuel tank
 - Fuel delivery module (with integral in-tank pump)
 - Fuel level sensors
 - Fuel supply and return lines
 - Fuel filter assembly.
- NOTE: Fuel is drawn from the fuel tank by the engine mounted lift pump. The in-tank pump does not deliver fuel to the engine, and only delivers fuel through the 2 jet pumps to maintain fuel in the fuel delivery pot.

The HP system features a Bosch Generation 3 common rail injection system.
For additional information, refer to: [Fuel Charging and Controls](#) (303-04B Fuel Charging and Controls - TD4 2.2L Diesel, Description and Operation).

FUEL TANK CONSTRUCTION



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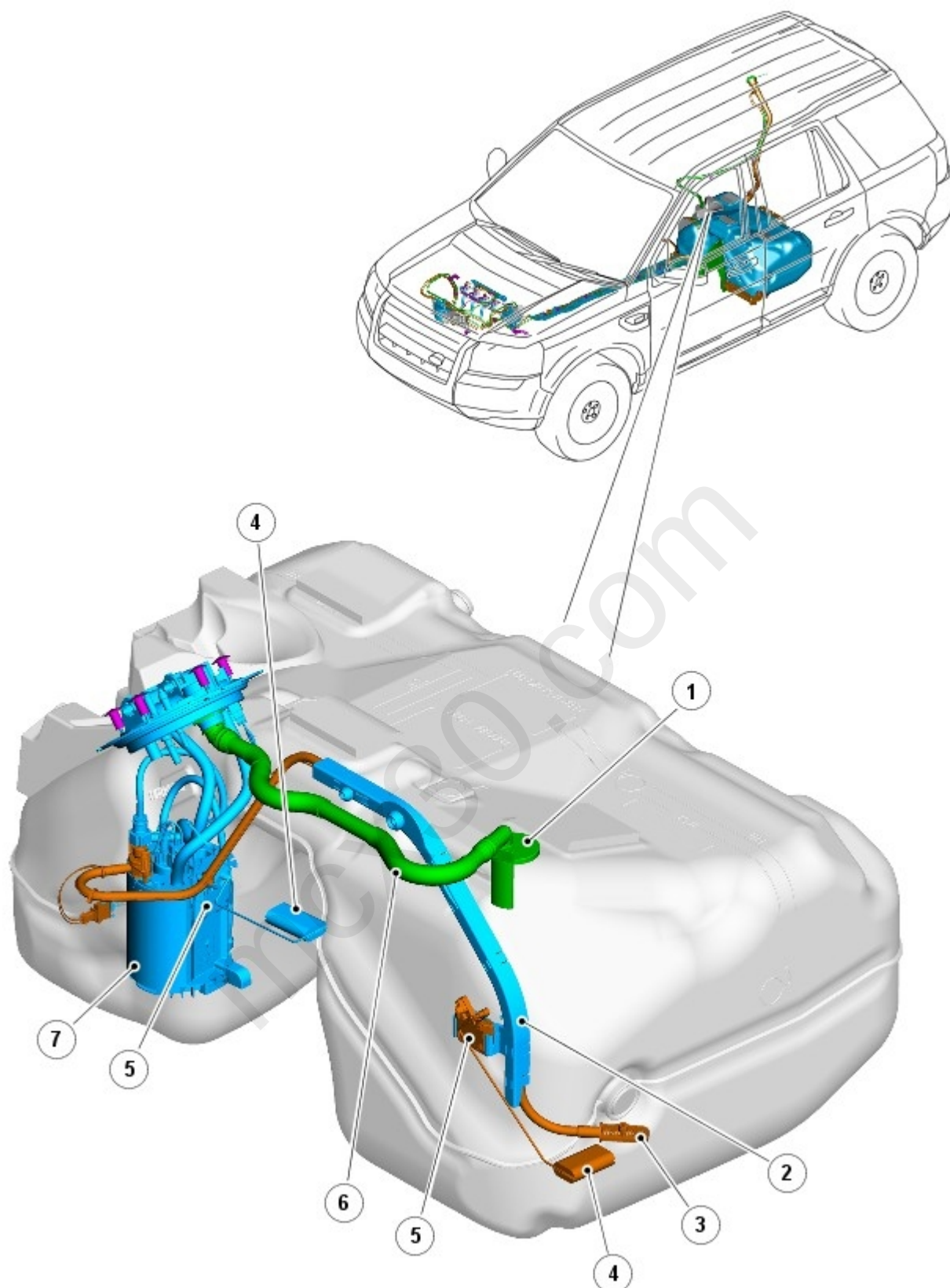
The fuel tank has a useable capacity of 68.0 liters (18.0 US gallons) and is designed with a run dry strategy to prevent air entering the HP fuel system. The tank is formed from a 6-layer laminated blow-molded plastic to provide high mechanical strength and complete emissions integrity. The tank is a sealed unit with internal access being via the fuel delivery module aperture located on the Right-Hand (RH) side of the tank.

The fuel tank is located centrally below the rear seat position and is formed to straddle the driveshaft and exhaust system.

A mounting cradle and 6 bolts secure the fuel tank to the vehicle. When the cradle is attached to the chassis, the tank is positively secured via foam pads that bear against the underfloor. The cradle is manufactured from steel and incorporates large diameter steel tubing to protect the fuel tank leading edge from underbody damage. The cradle also provides the location for the parking brake cable brackets.

A saddle shaped heat shield is attached to the cradle to protect the fuel tank from exhaust system temperature.

FUEL TANK INTERNAL COMPONENTS



E83023

Item	Part Number	Description
1	-	Fuel tank breather valve
2	-	Crossover tube
3	-	Coarse filter
4	-	Fuel sender unit float (2 off)
5	-	MAGnetic PASSive Position Sensor (MAPPS) fuel sender unit (2 off)
6	-	Fuel tank breather hose
7	-	Fuel delivery module

The fuel tank comprises the following internal components:

- Internal mounting bracket
- Fuel delivery module and crossover tube
- 2 MAPPS type fuel sender units
- Breather valve.

Internal Mounting Bracket

The internal mounting bracket is molded into the tank casing and provides the location for the breather valve, and crossover tube assembly.

Fuel Delivery Module



E83024

Item	Part Number	Description
1	-	In-tank pump supply to jet pump
2	-	Fuel supply to engine fuel filter
3	-	In-tank pump
4	-	In-tank pump supply to jet pump
5	-	Jet pump (usable side of tank)
6	-	Inlet from usable side of tank
7	-	Return fuel from engine fuel filter
8	-	Crossover tube (from unusable side of tank)
9	-	Jet pump (unusable side of tank)

The fuel delivery module is located in the RH side of the tank, and is secured to the bottom of the tank with a welded bayonet-type lock ring. The top flange of the fuel delivery module assembly provides the internal and external interface for the tank electrical and fuel connections. The flange is formed with a 6-pin external electrical connector that is connected to the 2 MAPPS fuel level sensors, and the in-tank pump.

The fuel delivery module flange is sealed to the tank with an O-ring and secured with a locking ring.

The lower part of the fuel delivery module forms the fuel delivery pot, and provides the location for the in-tank pump and the 2 jet pumps. The delivery pot provides a constant reservoir of fuel for the engine drawn fuel supply. The engine fuel supply and return lines are immersed in the delivery pot.

The delivery pot is maintained full by the 2 jet pumps. The in-tank pump draws fuel from within the fuel delivery pot and forces the fuel through the 2 jet pumps. The flow of fuel through each jet pump creates a venturi effect that draws fuel from both sides of the fuel tank into the fuel delivery pot. Surplus fuel entering the fuel delivery pot overflows into the usable side of the fuel tank.

A valve is located in the lower (usable tank side) jet pump supply orifice. The valve is open when the in-tank pump is energized and the lower jet pump is supplying fuel into the fuel delivery pot. The valve will close when the in-tank pump is de-energized to prevent fuel draining from the fuel delivery pot.

The in-tank pump is energized by the fuel pump relay located in the Central Junction Box (CJB). The Engine Control Module (ECM) energizes the fuel pump relay at all times when the ignition is in power modes 4 (Accessory) to 9 (Engine crank). For additional information, refer to: Electronic Engine Controls - 2.2L Diesel (303-14 Electronic Engine Controls - 2.2L Diesel, Description and Operation).

A modified fuel delivery module is installed for cold climate market vehicles that feature a fuel fired booster heater and auxiliary fuel pump. The modified fuel delivery module incorporates a separate fuel supply line that connects to an auxiliary fuel pump, mounted on the exterior RH side of the tank. An additional fuel line connects the auxiliary fuel pump to the fuel fired booster heater.

For additional information, refer to: [Fuel Fired Booster Heater](#) (412-02B Auxiliary Climate Control, Description and Operation).

Fuel Sender Units

The 2 MAPPS fuel sender units are located on either side of the saddle shaped tank, and connect to the internal electrical connections on the fuel delivery module flange. Each sensor provides an electrical signal to the CJB that is proportionate to the fuel level in each side of the tank.

The actual fuel level in the tank is calculated by the CJB and transmitted via the medium speed Controller Area Network (CAN) bus to the instrument cluster.

A warning lamp is incorporated in the instrument cluster and will illuminate when the fuel level is at, or below a predetermined level. On vehicles with a high-line instrument cluster, a message is displayed and a chime is sounded to inform the driver to refuel.

For additional information, refer to:

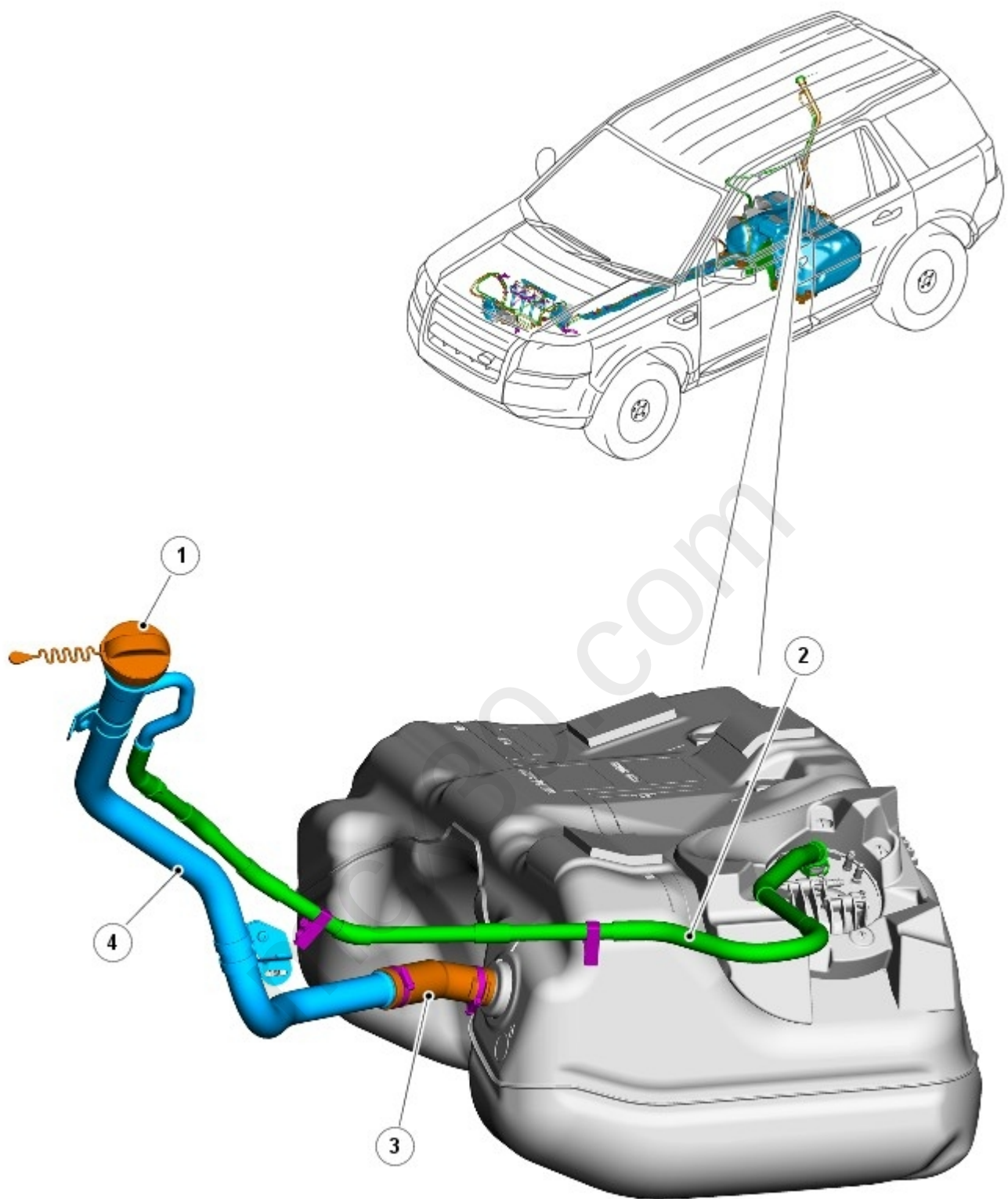
[Instrument Cluster](#) (413-01 Instrument Cluster, Description and Operation),

[Information and Message Center](#) (413-08 Information and Message Center, Description and Operation).

Fuel Tank Breather Valve

The breather valve is located in the fuel tank and is connected to the fuel delivery module flange via an internal breather hose. The breather valve allows air to escape and enter the fuel tank to compensate for the changing volume within the tank.

FUEL TANK FILLER



E83025

Item	Part Number	Description
1	-	Filler cap and lanyard
2	-	Tank external breather hose
3	-	Filler pipe stub hose
4	-	Filler pipe

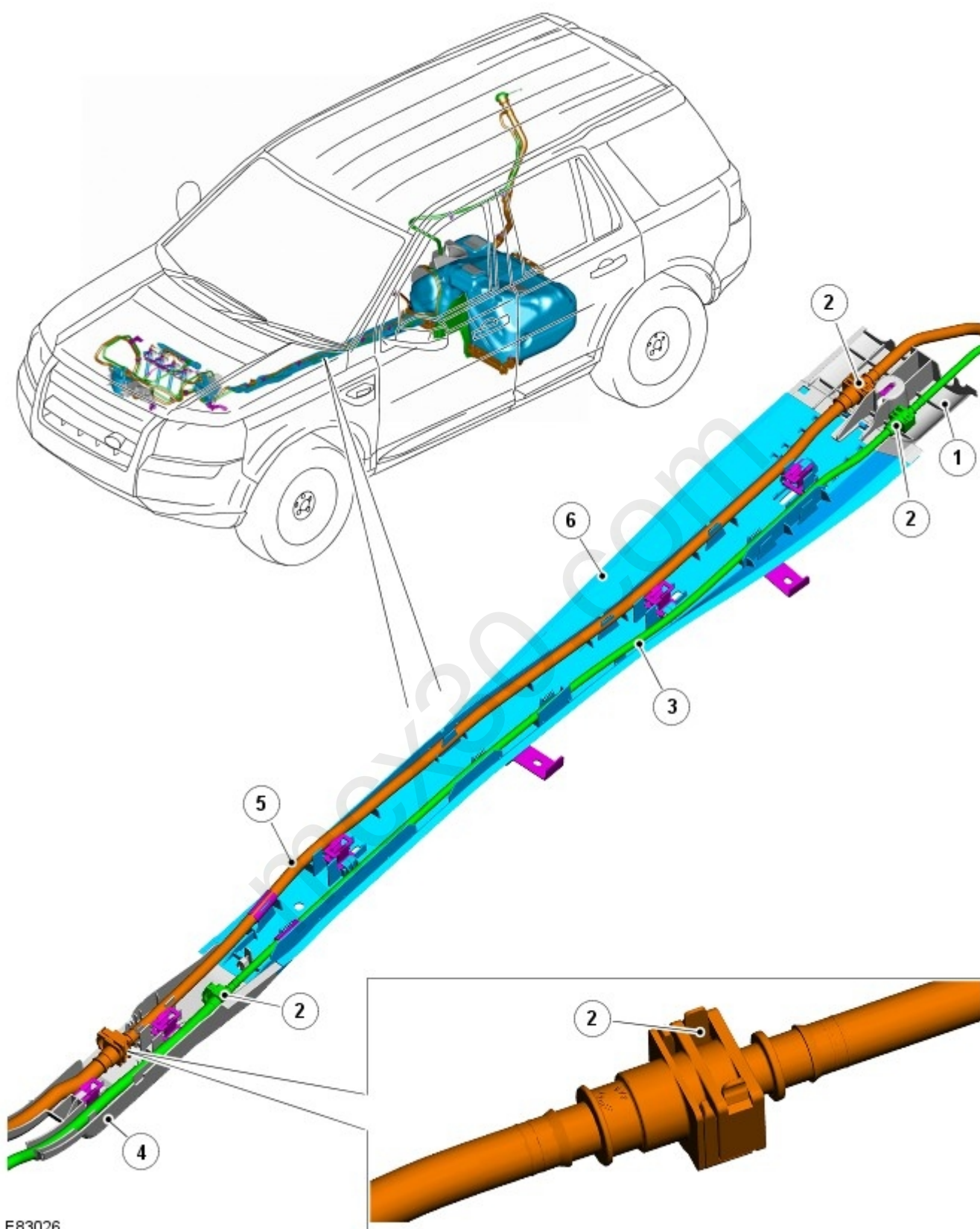
The fuel tank is filled through an aluminum filler pipe that is connected via a molded rubber stub hose to the rear RH side of the tank. A screw cap is installed to seal the filler pipe opening.

An inline check valve is mounted inside the filler pipe stub hose at the tank, and is retained in the closed position by a spring. The check valve is only opened when the vehicle is refueled. The check valve minimizes fuel spillage in the event that the filler pipe is damaged during an accident.

A breather hose is routed from the fuel filler pipe to the fuel delivery module flange. The breather hose connects to the

breather pipe on the fuel delivery module flange.

FUEL LINES



E83026

Item	Part Number	Description
1	-	Rear access cover
2	-	Quick-fit type connector (4 off)
3	-	Fuel return line
4	-	Front access cover
5	-	Fuel supply line
6	-	Underfloor protection tray

The fuel supply and return lines are routed along the vehicle underfloor, and housed within a plastic protection tray. The

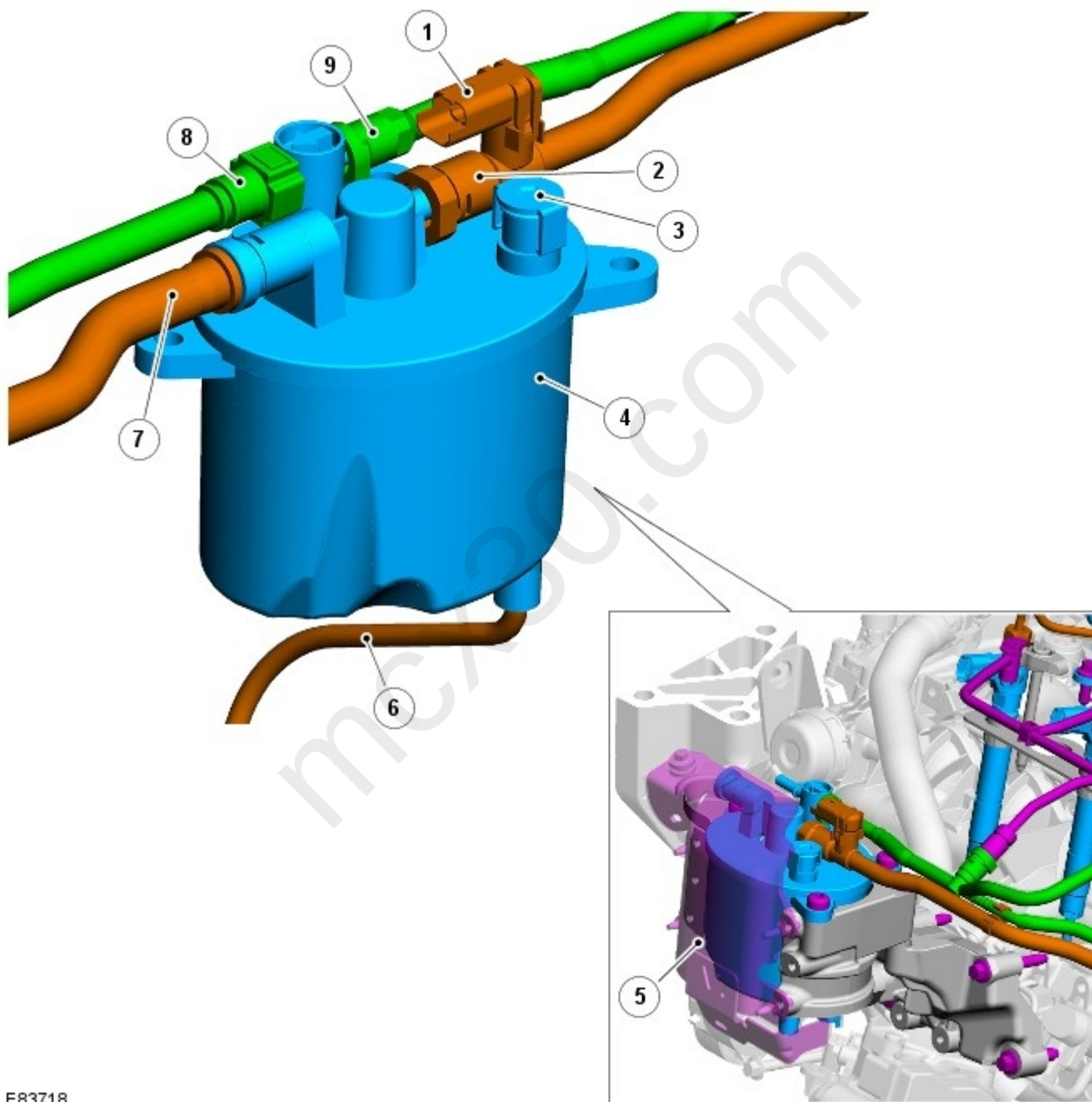
protection tray is secured with integral clips on the inside of the tray to studs along the underfloor.

⚠ CAUTION: The fuel line quick-fit type connector is a new design connector installed to the TD4 vehicle. During maintenance procedures the quick-fit type connector must be released and connected correctly to prevent fuel leakage. Use the correct method detailed in the relevant section of the Service Repair Manual (SRP) to release and connect the connector. Incorrect operation of the quick-fit type connector will result in damage to the connector and cause fuel leakage.

The quick-fit type fuel connector is not a self sealing connector, and will not prevent fuel flow when disconnected.

The fuel supply and return lines are connected at each end with a quick-fit type connector. The connector is not self-sealing and will not prevent fuel flow when the fuel line is separated.

FUEL FILTER ASSEMBLY



E83718

Item	Part Number	Description
1	-	Fuel temperature sensor
2	-	Fuel supply to HP pump
3	-	Water drain screw
4	-	Fuel filter canister
5	-	Fuel canister crash shield
6	-	Water drain point
7	-	Fuel supply from tank
8	-	Fuel return to tank
9	-	Fuel return from HP fuel system

The fuel filter canister is located at the front RH side of the engine compartment, and mounted within an engine support

bracket. A crash shield is installed to protect the filter canister in the event of a frontal impact. The filter canister is manufactured from heat resistant and flame-proof durable plastic, and contains a paper type filter element.

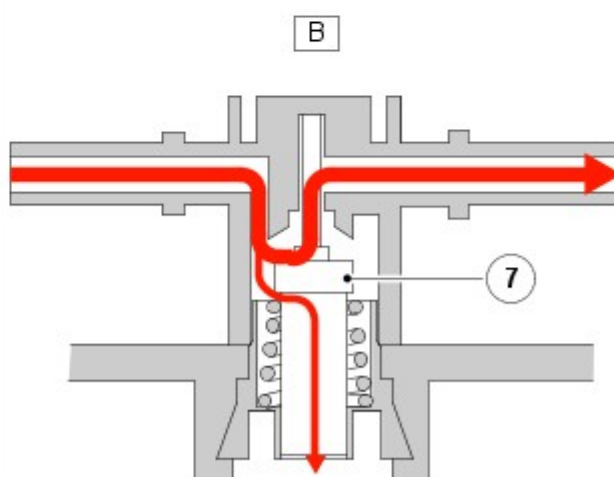
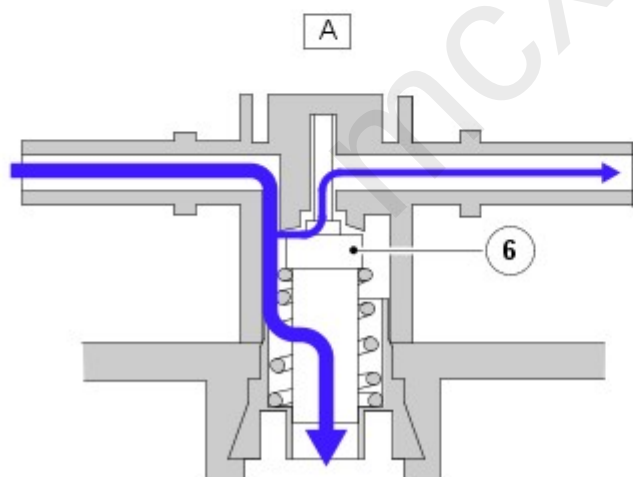
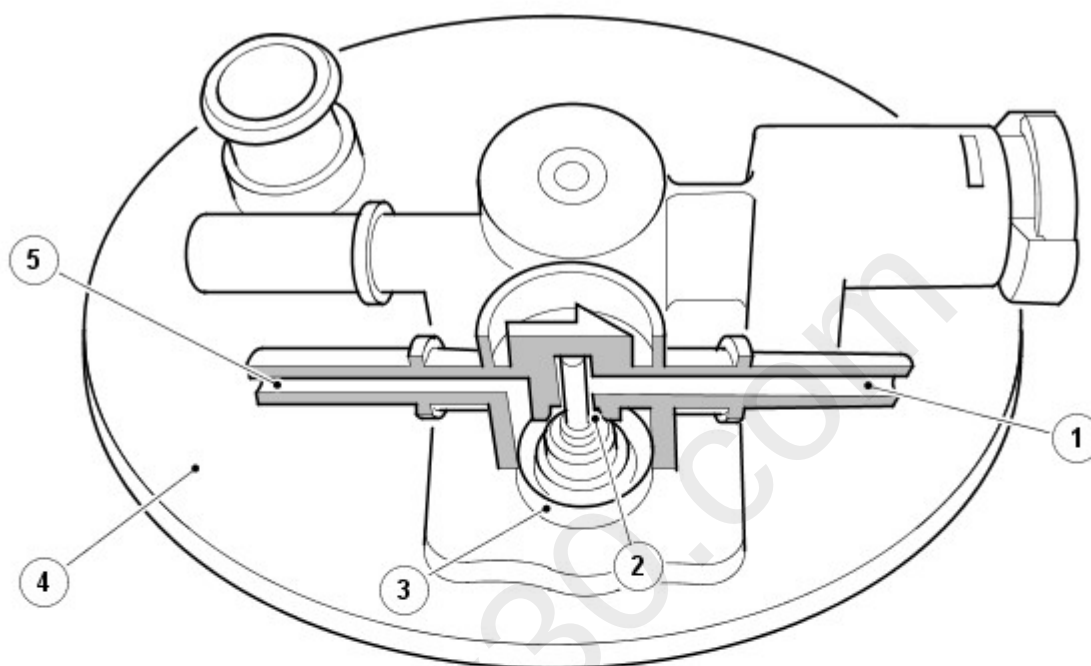
The fuel temperature sensor is incorporated within the fuel supply line connection on the fuel filter canister. The sensor provides the ECM with a signal voltage that is proportional to the actual fuel temperature. The signal is used by the ECM in conjunction with other vehicle sensors, to calculate the actual fuel pressure required in the HP fuel rail.

For additional information, refer to: Electronic Engine Controls - 2.2L Diesel (303-14 Electronic Engine Controls - 2.2L Diesel, Description and Operation).

A bleed screw and drain point are located on the filter canister. The bleed screw allows water content in the fuel to be drained off during service intervals.

Fuel Filter Pre-Heat Function

The fuel filter features a fuel pre-heat function that operates when the return fuel temperature is below 10°C (50°F). The pre-heat function recirculates a quantity of return fuel from the HP fuel system through the filter canister to prevent fuel waxing, and improve the engine performance during cold running.



E85383

Item	Part Number	Description
A	-	Return fuel temperature less than 10°C (50°F)
B	-	Return fuel temperature greater than 20°C (68°F)
1	-	Fuel return to tank
2	-	Fuel return passage outlet
3	-	Fuel return passage by-pass port
4	-	Fuel filter head
5	-	Fuel return from HP fuel system
6	-	Wax-type thermostatic valve (by-pass open)

7	-	Wax-type thermostatic valve (by-pass closed)
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The fuel filter canister head incorporates a wax-type thermostatic valve and spring, located in the fuel return passage between the HP fuel system and fuel tank return connections. The thermostatic valve is seated in a by-pass port that connects the fuel return passage to the fuel filter canister chamber.

The thermostatic valve is operated by the temperature of the fuel in the fuel return passage, felt at the upper side of the thermostatic valve; and the temperature of the supply fuel in the canister chamber, felt at the under side of the thermostatic valve.

The quantity of return fuel recirculated through the filter canister chamber is proportional to the temperature of the return fuel, and the position of the thermostatic valve.

Return Fuel Temperature	Percentage Return Fuel to Tank	Percentage Recirculated Fuel
Less than 10°C (50°F)	5 - 10%	90 - 95%
Greater than 20°C (68°F)	95 - 100%	0 - 5%

Fuel Temperature Less Than 10°C (50°F)

The thermostatic valve is in the contracted position and held off the by-pass port seat. The upper side of the thermostatic valve almost closes off the fuel return passage outlet due to the position of the thermostatic valve, and the light pressure applied by the spring.

A large proportion of returned fuel to the filter passes through the open by-pass port and is recirculated in the fuel filter canister chamber. A small proportion of the return fuel is allowed to pass across the thermostatic valve and is directed through the fuel return passage outlet to the fuel tank.

Fuel passing through the fuel return passage outlet also provides the lubrication for the thermostatic valve stem.

Fuel Temperature Greater Than 20°C (68°F)

The thermostatic valve expands against spring pressure to almost close off the fuel return passage by-pass port, and opens the fuel return passage outlet.

A small proportion of return fuel to the filter passes through the partially open by-pass port and is recirculated in the fuel filter canister chamber. A large proportion of the return fuel passes across the thermostatic valve and is directed through the open fuel return passage outlet to the fuel tank.

Fuel Tank and Lines - TD4 2.2L Diesel - Fuel Tank and Lines

Diagnosis and Testing

Principles of Operation

For a detailed description of the fuel tank and lines systems, refer to the relevant Description and Operation section in the workshop manual.

REFER to: [Fuel Tank and Lines](#) (310-01B Fuel Tank and Lines - TD4 2.2L Diesel, Description and Operation).

Inspection and Verification



CAUTION: Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault, and may also cause additional faults in the vehicle being tested and/or the donor vehicle.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection

Mechanical	Electrical
- Fuel leaks - Damaged fuel lines - Damaged push connect fittings - Fuel level - Fuel contamination/grade/quality - Damaged fuel tank filler pipe cap - Damaged fuel tank filler pipe	- Fuses - Loose or corroded electrical connectors - Harnesses - Fuel Pump Driver Module (FPDM) - Central Junction Box (CJB) - Fuel pump relay - Engine Control Module (ECM)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart, alternatively, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

Symptom Chart

Symptom	Possible Cause	Action
Engine cranks, but does not fire	- Low/contaminated fuel - Intake air leakage - Fuel system leak, blocked/restricted - Electronic engine controls	- Check for low/contaminated fuel - Check integrity of intake air system - Check fuel system for leaks and blockage/restriction. Read DTCs and refer to relevant DTC Index - For electronic engine control tests. REFER to: Electronic Engine Controls (303-14, Diagnosis and Testing).
Difficult to start	- Glowplug fault - Low/contaminated fuel - Check engine coolant level/anti-freeze content - Battery - Intake air system leak - Electronic engine controls - Injector leak - Fuel system leak, blocked/restricted	- Check integrity of glowplug system - Check for low/contaminated fuel - Check the engine coolant level and condition. REFER to: Specifications (303-03B Engine Cooling - TD4 2.2L Diesel, Specifications). - Ensure the battery is in a fully charged and serviceable condition - Check intake air system for leaks - For electronic engine control tests. REFER to: Electronic Engine Controls (303-14, Diagnosis and Testing). - Carry out injector leak tests, install new injectors as necessary. REFER to: Fuel Injector (303-04B Fuel Charging and Controls - TD4 2.2L Diesel, Removal and Installation). - Check fuel system for leaks and blockage/restriction. Read DTCs and refer to relevant DTC Index
Rough idle	- Intake air system leak - Low/contaminated fuel - Fuel system leak, blocked/restricted - EGR valve fault	- Check intake air system for leaks - Check for low/contaminated fuel - Check fuel system for leaks and blockage/restriction. Read DTCs and refer to relevant DTC Index - Check EGR system for failure. REFER to: Engine Emission Control (303-08B Engine Emission Control - TD4 2.2L Diesel, Diagnosis and Testing).

Symptom	Possible Cause	Action
Engine hesitates/poor acceleration	- Intake air system leak - Restricted exhaust system - Fuel system leak, blocked/restricted - EGR valve fault - Turbocharger actuator fault	- Check intake air system for leaks - Check exhaust system for blockage/restriction - Check fuel system for leaks and blockage/restriction. Read DTCs and refer to relevant DTC Index - Check EGR system for failure. REFER to: Engine Emission Control (303-08B Engine Emission Control - TD4 2.2L Diesel, Diagnosis and Testing). - Check for turbocharger actuator fault. Read DTCs and refer to relevant DTC Index
Engine stops/stalls	- Breather system disconnected/restricted - Intake air system leak/restricted - Electronic engine controls - Fuel system leak, blocked/restricted - EGR valve fault	- Ensure the engine breather system is free from restriction and is correctly installed - Check intake air system for leaks/restriction - For electronic engine control tests. REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - TD4 2.2L Diesel, Diagnosis and Testing). - Check fuel system for leaks and blockage/restriction. Read DTCs and refer to relevant DTC Index - Check EGR system for failure. REFER to: Engine Emission Control (303-08B Engine Emission Control - TD4 2.2L Diesel, Diagnosis and Testing).
Excessive fuel consumption	- Fuel pressure, fuel pump, fuel lines blocked/contaminated, leaking - Injector leak - Electronic engine controls - EGR valve fault	- Check fuel lines for leakage, blockage/restriction. For fuel pump tests, check DTCs and refer to relevant DTC Index - Carry out fuel injector leak tests, install new injectors as necessary. REFER to: Fuel Injector (303-04B Fuel Charging and Controls - TD4 2.2L Diesel, Removal and Installation). - For electronic engine control tests. REFER to: Electronic Engine Controls (303-14, Diagnosis and Testing). - Check EGR system for failure. REFER to: Engine Emission Control (303-08B Engine Emission Control - TD4 2.2L Diesel, Diagnosis and Testing).

DTC Index

• NOTE: If a module or component is suspect, and the vehicle remains under the Manufacturers warranty, refer to the Warranty Policy and Procedure manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.

• NOTE: Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give extra information read by the manufacturer-approved diagnostic system).

• NOTE: When performing electrical voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places, and with an up-to-date calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.

• NOTE: Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

• NOTE: If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

DTC	Description	Possible Cause	Action
P008821	Fuel Rail/System Pressure - Too High	- Pressure control valve circuit - short to power - Pressure control valve stuck closed	Check for pressure control valve DTCs and refer to relevant DTC Index
P008822	Fuel Rail/System Pressure - Too High	- Leaking fuel system - Volume control valve circuit - short to ground, open circuit - Volume control valve stuck open	Check for fuel leaks. Refer to electrical circuit diagrams and check volume control valve circuit for short to ground, open circuit. Install a new high pressure fuel pump as required
P008824	Fuel Rail/System Pressure - Too High	- Leaking fuel system - Pressure control valve stuck - Pressure control valve circuit - short to ground, power, open circuit	Check for fuel leaks. Refer to electrical circuit diagrams and check pressure control valve circuit for short to ground, power, open circuit. Install a new pressure control valve as required

DTC	Description	Possible Cause	Action
P008827	Fuel Rail/System Pressure - Too High	● Leak in high pressure section ● Injector nozzle stuck open/worn ● Worn high pressure pump, filter blocked ● Leaking pressure control valve ● Low pressure section pressure low (leak in system, pump output low)	Check for fuel leaks in high and low pressure systems, check for additional DTCs and refer to DTC Index
P009B00	Fuel Pressure Relief Control Circuit/Open	● Pressure control valve control circuit - open load	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P009C00	Fuel Pressure Relief Control Circuit Low	● Pressure control valve control circuit - short to ground	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P009D00	Fuel Pressure Relief Control Circuit High	● Pressure control valve control circuit - short to power	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P009E00	Fuel Pressure Relief Control Performance/Stuck Off	● Pressure control valve power stage excess temperature	Refer to electrical circuit diagrams and check pressure control valve circuit for high resistance, if no fault identified install new ECM. Refer to the new module/component installation note at the top of the DTC Index
P031300	Misfire Detected With Low Fuel	● Low fuel - misfire induced by ECM to warn driver before shut off	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P115A68	Low Fuel Level - Forced Limited Power (event information DTC only)	● Low fuel - second warning after cluster warning lamp illuminated	Check for additional related DTCs and refer to relevant DTC Index
P115B68	Low Fuel Level - Forced Engine Shutdown (event information DTC only)	● Low fuel - first warning after cluster warning lamp illuminated ● Low fuel - fuel empty, engine shut off	Check fuel level. Check for additional related DTCs and refer to relevant DTC Index
P226600	Water in Fuel Sensor Circuit Low	● Fuel Filter Water In Fuel switch short circuit to ground	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P226700	Water in Fuel Sensor Circuit High	● Fuel Filter Water In Fuel switch short circuit to battery	Carry out the pinpoint tests associated with this DTC using the manufacturer approved diagnostic system
P228800	Injector Control Pressure Too High	● Leaking fuel system ● Fuel high pressure pump circuit - short to ground, open circuit ● Fuel high pressure pump failure	Check for fuel leaks. Refer to the electrical circuit diagrams and check fuel high pressure pump circuit for short to ground, open circuit. Install a new high pressure pump as required

Fuel Tank and Lines - TD4 2.2L Diesel - Fuel Tank

Removal and Installation

Special Tool(s)

	310-123 Locking Ring, Fuel Tank
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General Equipment

Powertrain Jack

Removal

• WARNINGS:



Fuel may still be present in the fuel tank after draining.



Avoid flames, sparks or lighted substances.

• CAUTIONS:



Extreme cleanliness must be exercised when handling these components.



Make sure that all openings are sealed. Use new blanking caps.

- NOTE: Some variation in the illustrations may occur, but the essential information is always correct.

All vehicles

1. Disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

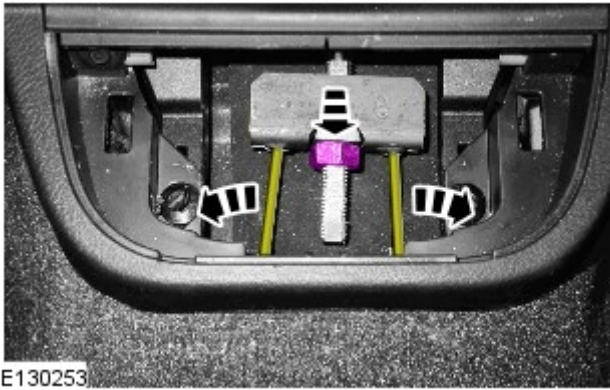
2. Drain the fuel tank.

Refer to: [Fuel Tank Draining](#) (310-00 Fuel System - General Information, General Procedures).

3. Remove the coin tray.



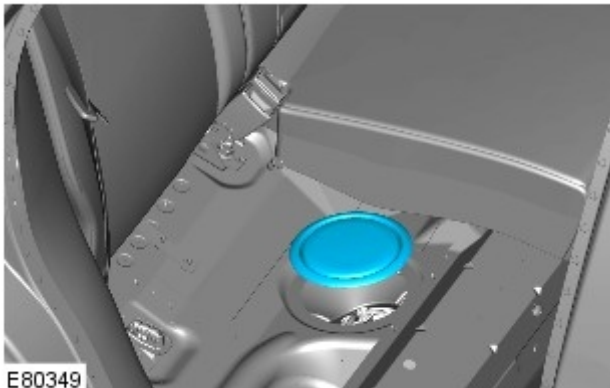
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4. Release the adjusting nut and disconnect the parking brake cables from the compensator.

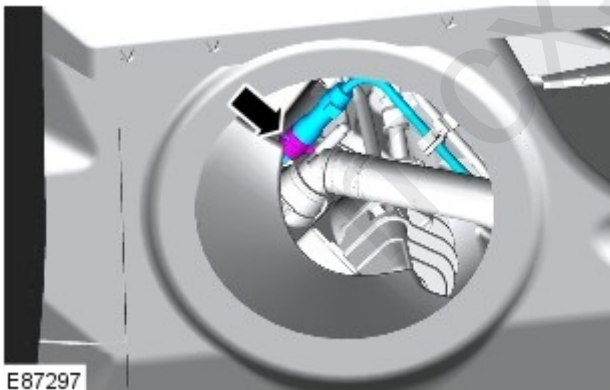
5. Fold the RH rear seat cushion forwards.



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6. Release the carpet and remove the grommet.

Vehicles with fuel fired heater



E87297

7. **7. CAUTIONS:**

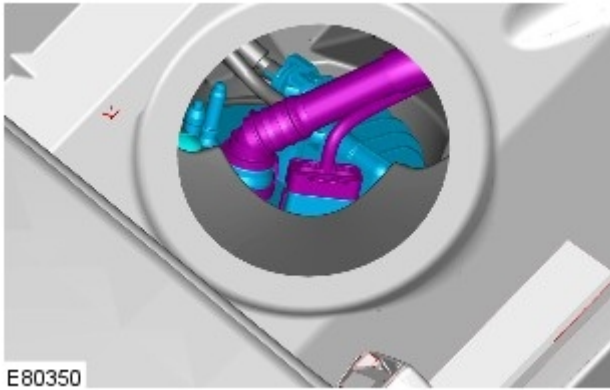


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All vehicles



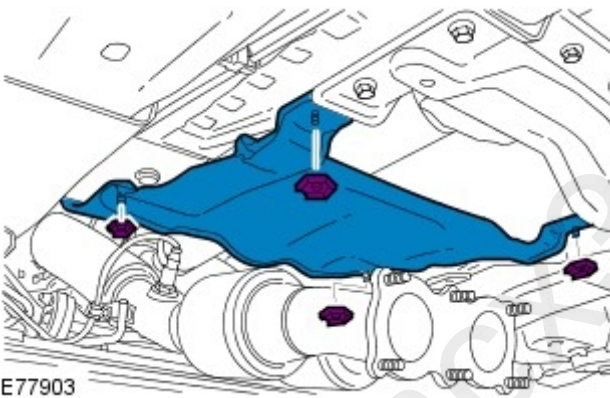
8. Disconnect the electrical connector and the breather hose.

9.  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

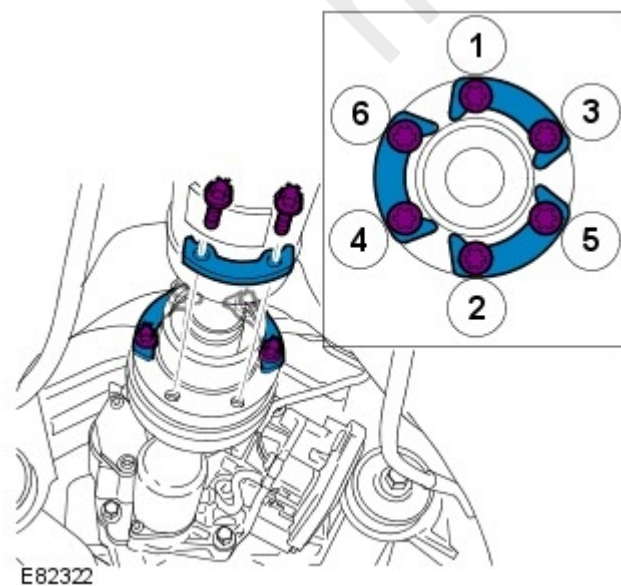
Raise and support the vehicle.

10. Remove the exhaust system.

Refer to: [Exhaust System](#) (309-00A Exhaust System - I6 3.2L Petrol, Removal and Installation).



- 11.



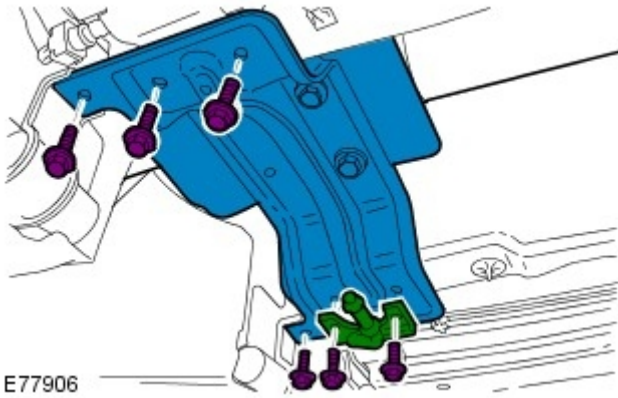
12.  **WARNING:** Do not lever the driveshaft joints to release from the power transfer unit or the rear differential flanges.

• **CAUTIONS:**

 Make sure that the driveshaft is supported with suitable retaining straps.

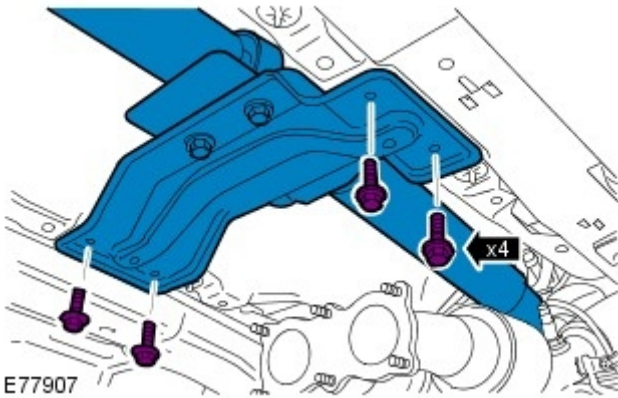
 Make sure that new bolts are installed.

Torque: 40 Nm



13. **13.** NOTE: All vehicles built up to VIN 180237, and all TD4 Automatics built from VIN 180238

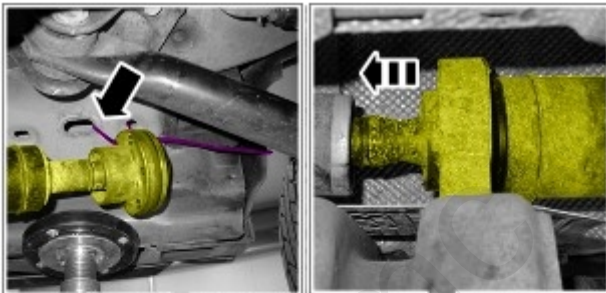
- Torque: 25 Nm



14. **14.** NOTE: All vehicles.

- NOTE: This step requires the aid of another technician.

- Torque: 25 Nm



15. **15.** CAUTIONS:



Make sure that the centre driveshaft joint is compressed. Failure to follow this instruction may result in damage to the component.

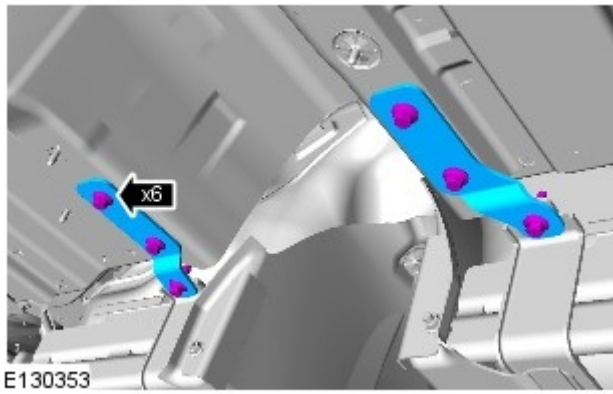


To avoid damage to the joint or gaiter, do not allow the driveshaft to hang.

- NOTE: This step requires the aid of another technician.

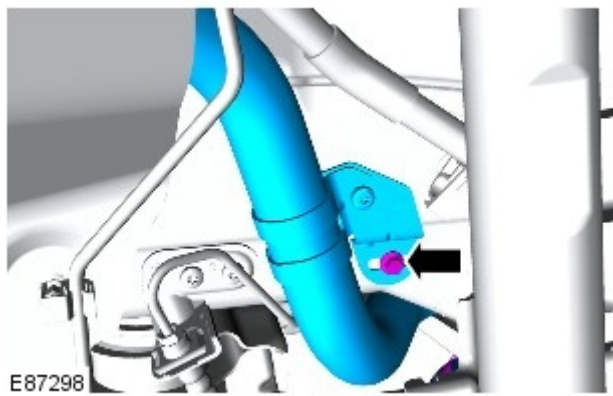
- Compress the propshaft centre joint.
- Tie the propshaft to the right hand side of the vehicle.



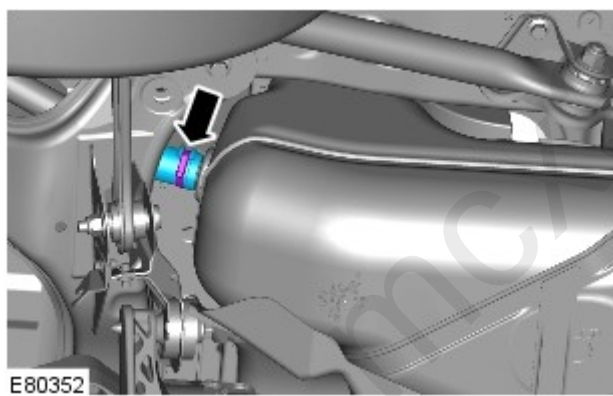


16. **16.** NOTE: TD4 Manual built from VIN 180238

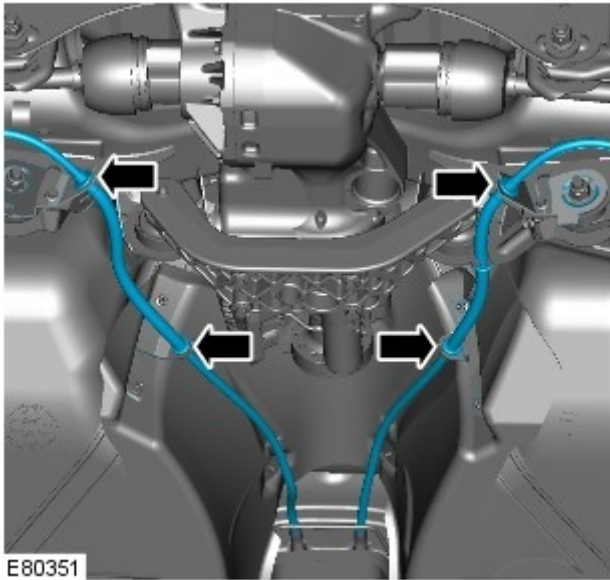
- Torque: 25 Nm



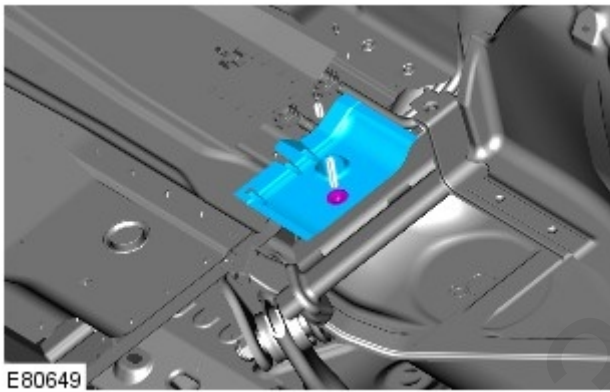
17.



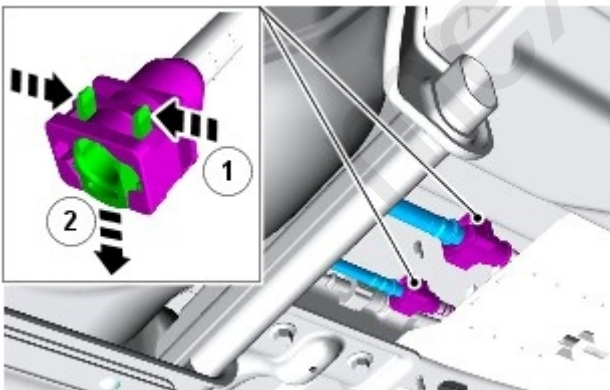
18.



19. Release the parking brake cables from the fuel tank cradle.



20. Remove the fuel line cover.



21. **21. CAUTIONS:**



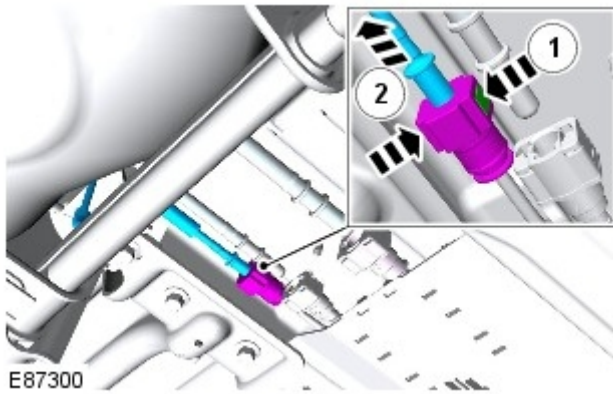
Extreme cleanliness must be exercised when handling these components.



Make sure that all openings are sealed. Use new blanking caps.

Disconnect the 2 fuel lines.

Vehicles with fuel fired heater



22. **22. CAUTIONS:**

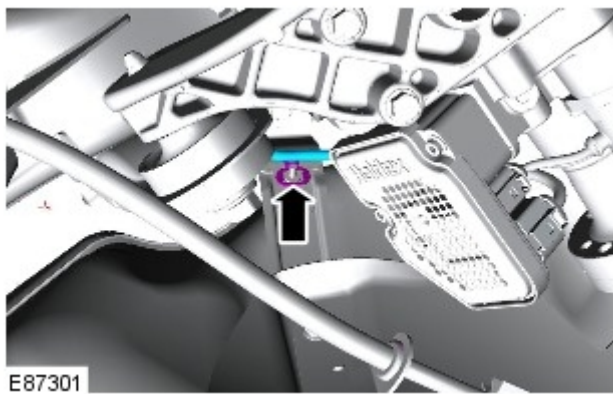


Extreme cleanliness must be exercised when handling these components.

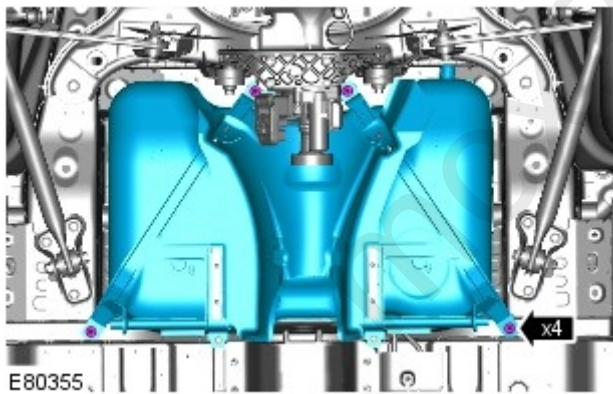


Make sure that all openings are sealed. Use new blanking caps.

All vehicles



23.



24. **24. ⚠ WARNING:** This step requires the aid of another technician.



CAUTION: Make sure that new bolts are installed.

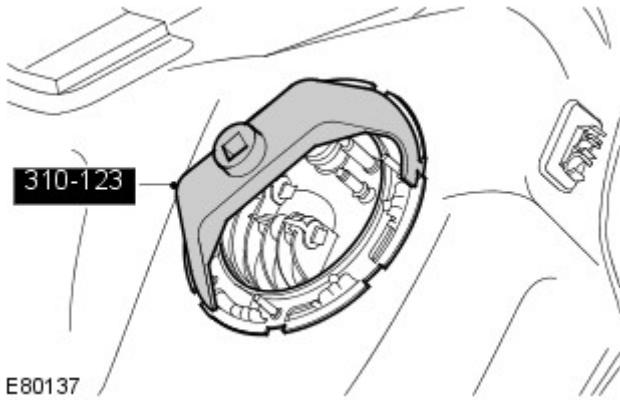
Remove the fuel tank.

General Equipment: [Powertrain Jack](#)
Torque: 25 Nm

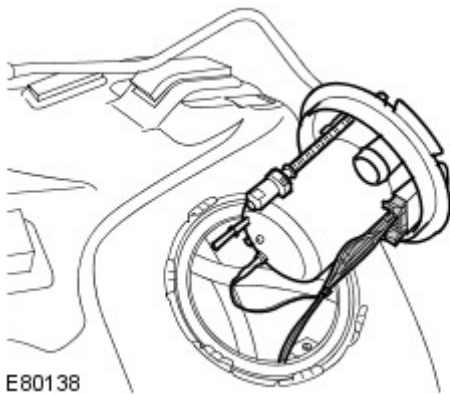


25. **25. NOTE:** Do not disassemble further if the component is removed for access only.

Remove the fuel tank pad.

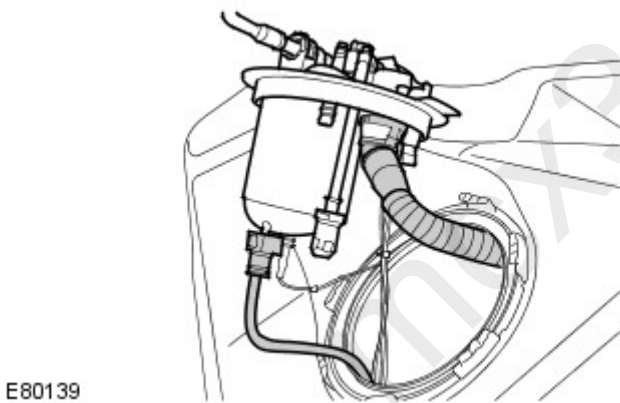


26. **26.**  **CAUTION:** Extreme cleanliness must be exercised when handling these components.
- Remove the fuel pump module locking ring.
- Special Tool(s):* [310-123](#)
- *Torque:* 200 Nm

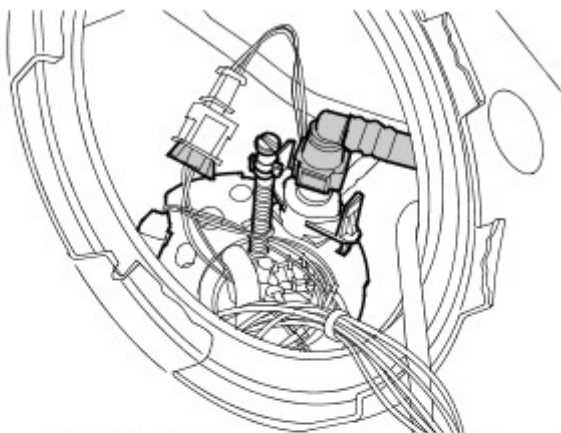


27. **27.**  **CAUTION:** A new O-ring seal is to be installed.

Release the fuel filter.

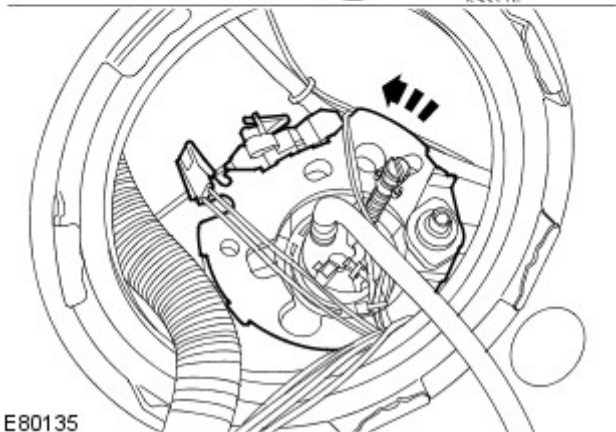


28. **28.** **NOTE:** Petrol illustration shown, diesel similar.
- Remove the fuel filter.

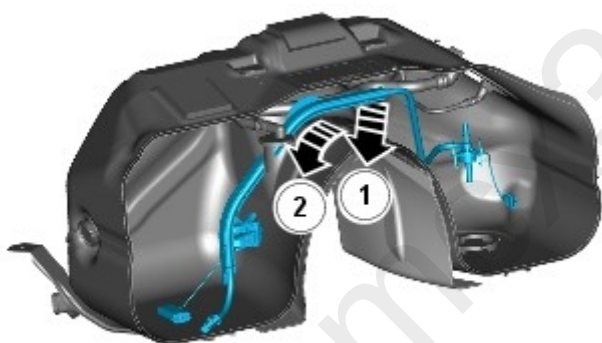


29. **29.** NOTE: Petrol illustration shown, diesel similar.

Remove the fuel pump module.



E80135



E80145

30.

- Push down to release the fuel sender from clip.
- Slide fuel sender assembly forward to release from the bracket.
- Manoeuvre fuel sender out of the tank.



E80354

31. Remove the fuel tank cradle.

Installation

1. To install, reverse the removal procedure.

2. Refill the fuel tank.

3. Adjust the parking brake.

Refer to: [Parking Brake Cable Adjustment](#) (206-05 Parking Brake and Actuation, General Procedures).

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Fuel Tank and Lines - TD4 2.2L Diesel - Fuel Level Sender

Removal and Installation

Removal

- NOTE: Removal steps in this procedure may contain installation details.

1. Disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

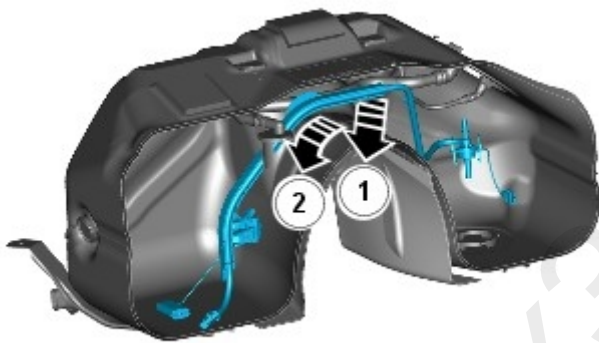
2.  **WARNING:** Make sure to support the vehicle with axle stands.

Raise and support the vehicle.

3. Remove the fuel pump and sender unit.

Refer to: [Fuel Pump and Sender Unit](#) (310-01B Fuel Tank and Lines - TD4 2.2L Diesel, Removal and Installation).

4. Remove the LH fuel level sender.



E80145

Installation

1. To install, reverse the removal procedure.

Fuel Tank and Lines - TD4 2.2L Diesel - Fuel Tank Filler Pipe

Removal and Installation

Removal

- NOTE: Removal steps in this procedure may contain installation details.

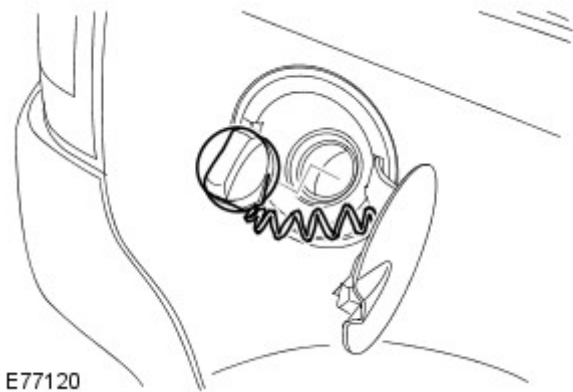
1.  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

2. Remove the rear wheel.

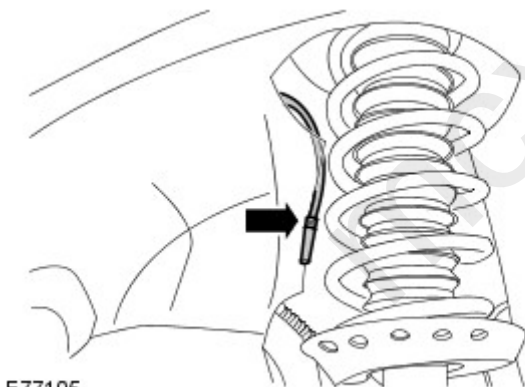
Refer to: [Wheel and Tire](#) (204-04 Wheels and Tires, Removal and Installation).

3.



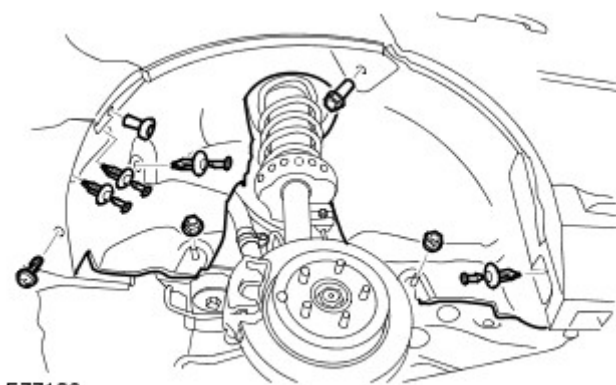
E77120

4.

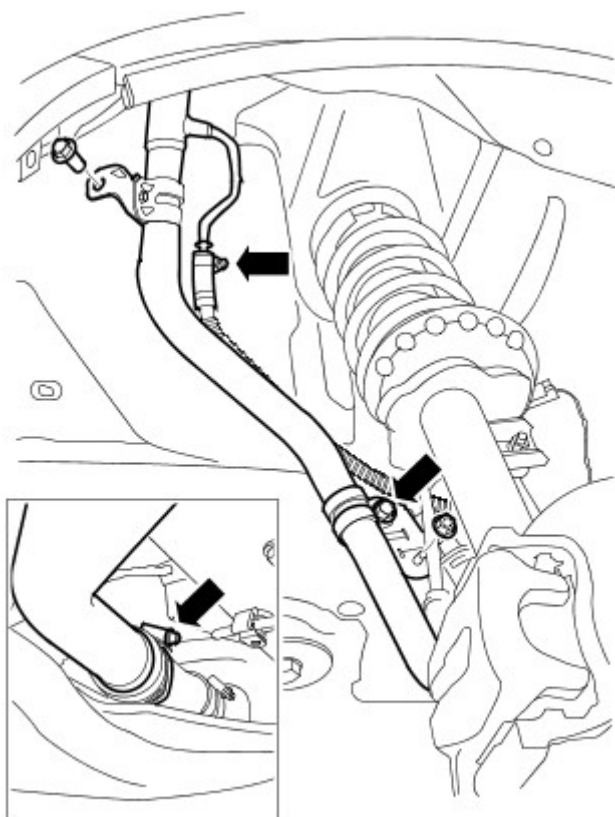


E77105

5.



E77106



E77107

6.

- Remove the nut and bolt securing the fuel tank filler pipe to the body.

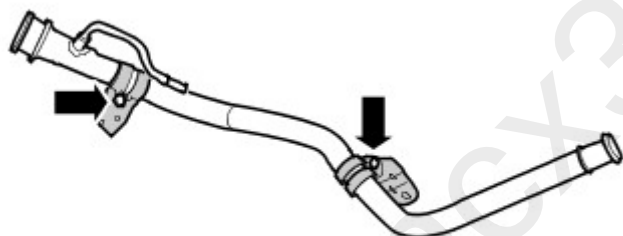
Torque: 10 Nm

- Loosen the fuel tank filler pipe lower bracket.

Torque: 10 Nm

- Loosen the clip and disconnect the fuel filler hose from the fuel tank.
- Loosen the clip and disconnect fuel filler pipe vent hose.

7. *Torque: 10 Nm*



E77108

Installation

1. To install, reverse the removal procedure.

Fuel Tank and Lines - TD4 2.2L Diesel - Fuel Filter

Removal and Installation

Removal

• WARNINGS:



Wait for a minimum of 1 minute after the engine has stopped before carrying out any repair to the fuel injection system.



Avoid flames, sparks or lighted substances.



Be prepared to collect escaping fuel.

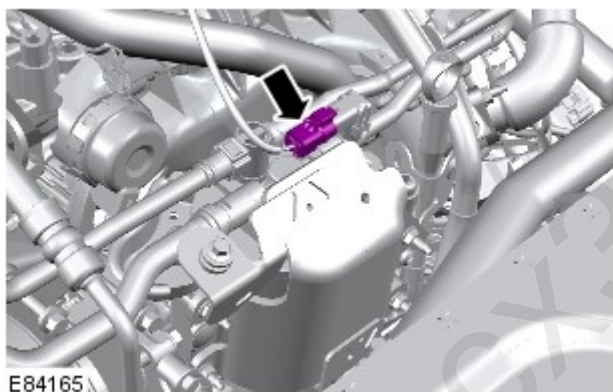
1. Disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

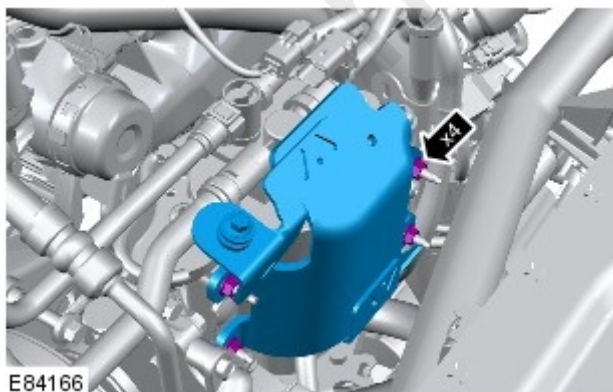
2. Remove the engine cover.

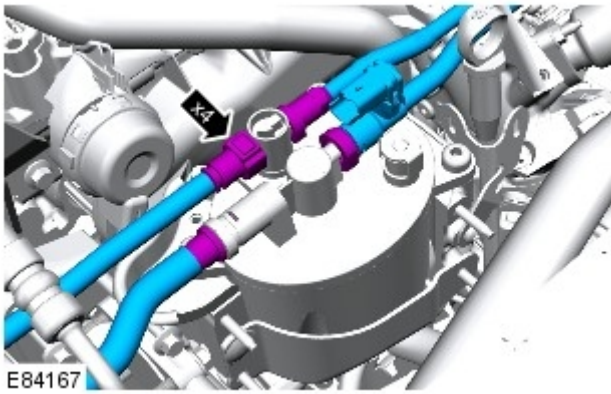
Refer to: [Engine Cover - TD4 2.2L Diesel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

- 3.



4. Torque: 9 Nm





5. **5. CAUTIONS:**



Make sure that no strain is placed on the fuel lines and wiring harnesses.



Make sure that the fuel pressure has dropped to zero and that the fuel temperature is at ambient temperature.



Be prepared to collect escaping fuel.

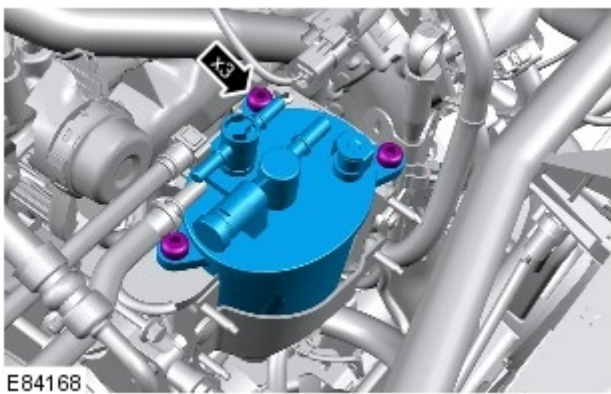


Make sure that all openings are sealed. Use new blanking caps.



Extreme cleanliness must be exercised when handling this component.

6. *Torque:* 9 Nm



7.



Installation

1. To install, reverse the removal procedure.
2. Bleed the fuel system.

Refer to: [Fuel System Bleeding - TD4 2.2L Diesel](#) (310-00 Fuel System - General Information, General Procedures).

Fuel Tank and Lines - TD4 2.2L Diesel - Fuel Pump and Sender Unit

Removal and Installation

Removal

- NOTE: Removal steps in this procedure may contain installation details.

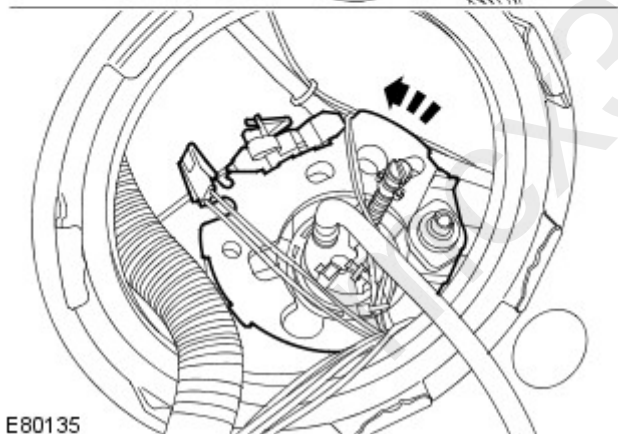
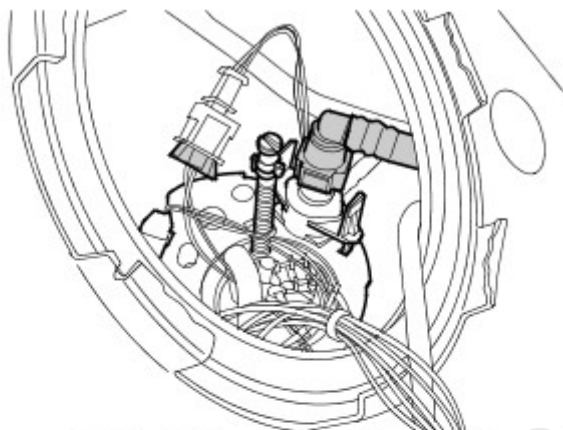
1. Disconnect the battery ground cable.

Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

2. Remove the fuel filter.

Refer to: [Fuel Filter](#) (310-01B Fuel Tank and Lines - TD4 2.2L Diesel, Removal and Installation).

3.  CAUTION: Extreme cleanliness must be exercised when handling these components.



E80135

Installation

1. To install, reverse the removal procedure.