

Fuel Tank and Lines - TDV6 2.7L Diesel -

Capacity

Fuel tank	84.0 litres (18.5 gallons) (22.19 US gallons)
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General Specification

Item	Specification
System type	Mechanical - returnless
Fuel delivery module	Located in the fuel tank
High pressure fuel pump:	
Location	Located at rear of engine between the cylinder heads, belt driven from the camshafts
Maximum operating pressure	165000 kPa (1650 bar) (23925 lb/in ²)
Advance delivery fuel pump:	
Location	Located in the fuel tank
Operating pressure	50 kPa (0.5 bar) (7.35 lb/in ²)
Maximum output @12.3 volts	70 litres/hour (15.4 gallons/hour) (18.4 US gallons/hour)
Fuel pressure regulator:	
Type/location	In-line, within fuel tank
Operating pressure	50 kPa (0.5 bar) (7.25) lb/in ²
Fuel filter	Remotely mounted on the inside of the longitudinal member - fitted with a renewable element and having a 178 cc (6 fl-oz) water separation capacity
Fuel tank sender units	Two - Front and rear - Front unit is mounted remotely within the fuel tank, rear is mounted on the body of the advance delivery fuel pump

Torque Specifications

Description	Nm	lb-ft
Fuel tank bracket bolts	10	7
Fuel pump module access flange clamp screw	4	3
Fuel tank bolts	45	33
Fuel tank heat shield, bolts	5	4
Fuel tank heat shield, nuts	3	2
Fuel filter to retaining bracket bolt	10	7
Transmission undershield bolts	10	7

Fuel Tank and Lines - TDV6 2.7L Diesel - Fuel Tank and Lines

Diagnosis and Testing

Principle of Operation

For a detailed description of the fuel tank and lines system and operation, refer to the relevant Description and Operation section of the workshop manual. REFER to: [Fuel Tank and Lines](#) (310-01A Fuel Tank and Lines - TDV6 2.7L Diesel, Description and Operation).

Inspection and Verification

• WARNINGS:



Do **NOT** carry out any work on the fuel system with the engine running. The fuel pressure within the system can be as high as 1600 bar (23,206 lb/in²). Failure to follow this instruction may result in personal injury.



Eye protection must be worn at all times when working on or near any fuel related components. Failure to follow this instruction may result in personal injury.



This procedure involves fuel handling. Be prepared for fuel spillage at all times and always observe fuel handling precautions. Failure to follow this instruction may result in personal injury.



After carrying out repairs, the fuel system must be checked visually for leaks. This should be done after the engine has been run, but with the engine switched **OFF**. Failure to follow this instruction may result in personal injury.



If taken internally, **DO NOT** induce vomiting. Seek immediate medical attention. Failure to follow this instruction may result in personal injury.



If fuel contacts the eyes, flush the eyes with cold water or eyewash solution and seek medical attention. Failure to follow this instruction may result in personal injury.



Wash hands thoroughly after handling, as prolonged contact may cause irritation. Should irritation develop, seek medical attention. Failure to follow this instruction may result in personal injury.

• CAUTIONS:



Before disconnecting any part of the system, it is imperative that all dust, dirt and debris is removed from around components to prevent ingress of foreign matter into the fuel system. Failure to follow this instruction may result in damage to the vehicle.



The fuel pipes between the injectors and the rail must be discarded after each use, and new pipes installed. Failure to follow this instruction may result in damage to the vehicle.



It is 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 damage to the vehicle.



Make sure that the workshop area in which the vehicle is being worked on is as clean and dust-free as possible. Areas in which work on clutches, brakes or where welding or machining are carried out are not suitable in view of the risk of contamination to the fuel system. Failure to follow this instruction may result in damage to the vehicle.



Make sure that any protective clothing worn is clean and made from lint-free non-flocking material. Failure to follow this instruction may result in damage to the vehicle.



Make sure that any protective gloves worn are new and are of the non-powdered latex type. Failure to follow this instruction may result in damage to the vehicle.



Make sure that clean, non-plated tools are used. Clean tools using a new brush that will not lose it's bristles and fresh cleaning fluid prior to starting work on the vehicle. Failure to follow this instruction may result in damage to the vehicle.



Use a steel-topped work bench and cover it with clean, lint-free, non-flocking material. Failure to follow this instruction may result in damage to the vehicle.



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 checked and/or the donor

vehicle.

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

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

Visual Inspection

Mechanical	Electrical
- Fuel level - Contaminated fuel - Fuel supply line(s) - Fuel return line(s) - High-pressure fuel supply line(s) - Fuel tank filler pipe - Fuel leak(s) - Fuel tank - Fuel filler cap - Fuel filter - Push connect fittings - Fuel rail - Fuel injection pump - Exhaust Gas Recirculation (EGR) system	- Battery charge and condition - Fuse(s) - Inertia fuel shutoff (IFS) switch - Fuel pump module relay - Fuel pump module - Electrical connector(s) - Damaged or corroded wiring harness - Fuel Volume Control Valve (FVCV) - Fuel Pressure Control Valve (FPCV) - Engine Control Module (ECM)

3. **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. **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 Causes	Action
Engine cranks, but does not start	- Inertia fuel shutoff switch - Low/Contaminated fuel - Air leakage - Low-pressure fuel system fault - Fuel pump module (lift pump) fault - Blocked fuel filter - Fuel volume regulator blocked/contaminated - Fuel pressure control valve blocked/contaminated - Fuel pump fault - Crankshaft position (CKP) sensor	Check that the inertia switch has not tripped. Check the fuel level and condition. Draw off approximately 1 ltr (2.11 pints) of fuel and allow to stand for 1 minute. Check to make sure there is no separation of the fuel indicating water or other liquid in the fuel. Check the intake air system for leaks. Check the lift pump operation, check the low-pressure fuel system for leaks/damage. Check the fuel filter, check for DTCs indicating a fuel volume or pressure control valve fault. Check the fuel pump. Check the CKP sensor circuits. Refer to the electrical guides.
Difficult to start	- Glow plug system fault (very cold conditions) - Low/Contaminated fuel - Air leakage - Fuel pump module (lift pump) fault - Low-pressure fuel system fault - Blocked fuel filter - Fuel volume control valve blocked/contaminated - Fuel pressure control valve blocked/contaminated - Exhaust gas recirculation (EGR) valve(s) fault	Check the glow plug circuits. Refer to the electrical guides. Check the fuel level/condition. Draw off approximately 1 ltr (2.11 pints) of fuel and allow to stand for 1 minute. Check to make sure there is no separation of the fuel indicating water or other liquid in the fuel. Check the intake air system for leaks. Check the lift pump operation, check the low-pressure fuel system for leaks/damage. Check the fuel filter, check for DTCs indicating a fuel volume or pressure control valve fault. Check the EGR system.
Rough idle	- Intake air system fault - Low/Contaminated fuel - Low-pressure fuel system fault - Blocked fuel filter - Fuel volume control valve blocked/contaminated - Fuel pressure control valve blocked/contaminated - Exhaust gas recirculation (EGR)	Check the intake air system for leaks. Check the fuel level/condition. Draw off approximately 1 ltr (2.11 pints) of fuel and allow to stand for 1 minute. Check to make sure there is no separation of the fuel indicating water or other liquid in the fuel. Check the low-pressure fuel system for leaks/damage. Check the fuel filter, check for DTCs indicating a fuel volume or pressure control valve fault. Check the EGR system.

Symptom	Possible Causes	Action
	valve(s) fault	
Lack of power when accelerating	● Intake air system fault ● Restricted exhaust system ● Low fuel pressure ● Exhaust gas recirculation (EGR) valve(s) fault ● Turbocharger actuator fault	Check the intake air system for leakage or restriction. Check for a blockage/restriction in the exhaust system, install new components as necessary. Check for DTCs indicating a fuel pressure fault. Check the EGR system. Check turbocharger actuator.
Engine stops/stalls	● Air leakage ● Low/Contaminated fuel ● Low-pressure fuel system fault ● High pressure fuel leak ● Fuel volume control valve blocked/contaminated ● Fuel pressure control valve blocked/contaminated ● Exhaust gas recirculation (EGR) valve fault	Check the intake air system for leaks. Check the fuel level/condition. Draw off approximately 1 ltr (2.11 pints) of fuel and allow to stand for 1 minute. Check to make sure there is no separation of the fuel indicating water or other liquid in the fuel. Check the fuel system for leaks/damage: Check for DTCs indicating a fuel volume or pressure control valve fault. Check the EGR system.
Engine judders	● Low/Contaminated fuel ● Air ingress ● Low-pressure fuel system fault ● Fuel metering valve blocked/contaminated ● Fuel volume control valve blocked/contaminated ● Fuel pressure control valve blocked/contaminated ● High pressure fuel leak ● Fuel pump fault	Check the fuel level/condition. Draw off approximately 1 ltr (2.11 pints) of fuel and allow to stand for 1 minute. Check to make sure there is no separation of the fuel indicating water or other liquid in the fuel. Check the intake air system for leaks. Check the low-pressure fuel system for leaks/damage. Check the high pressure fuel system for leaks, check for DTCs indicating a fuel volume or pressure control valve fault. Check the fuel pump.
Excessive fuel consumption	● Low-pressure fuel system fault ● Fuel volume control valve blocked/contaminated ● Fuel pressure control valve blocked/contaminated ● Fuel temperature sensor leak ● High pressure fuel leak ● Injector(s) fault ● Exhaust gas recirculation (EGR) valve(s) fault	Check the low-pressure fuel system for leaks/damage. Check for DTCs indicating a fuel volume or pressure control valve fault. Check the fuel temperature sensor, fuel pump, etc for leaks. Check for injector DTCs. Check the EGR system.

Fuel Gauge Diagnosis

1. Using the manufacturer approved diagnostic system monitor, "active fuel level sensor(A)" and "passive fuel level sensor(B)" data logger signals located within the body control module subsection.

Customer Complaint	Possible Concern	Fuel Pressure	Active Fuel Level Sensor Voltage Reading A	Passive Fuel Level Sensor Voltage Reading B	Action
Fuel gauge switches on and off intermittently and / or fuel gauge indicates empty whilst there is fuel still available in the fuel tank	Open circuit	Yes	>3.6v	>3.6v	● Refer to the electrical circuit diagrams and check for backed out terminals and circuit faults between, ● C0390-18 and C0114-1 ● If no fault is evident then check C0376-18 to C0586R-8, ● If no fault is evident with the above, remove the fuel pump module and two fuel senders from the fuel tank and check for backed out terminals and circuit faults. Refer to the warranty policy and procedures manual if a module/component is suspect

Customer Complaint	Possible Concern	Fuel Pressure	Active Fuel Level Sensor Voltage Reading A	Passive Fuel Level Sensor Voltage Reading B	Action
Fuel gauge switches on and off intermittently and / or fuel gauge indicates empty whilst there is fuel still available in the fuel tank	Open circuit	Yes	<3.0v	>3.6v	- Refer to the electrical circuit diagrams and check for backed out terminals and circuit faults between, - C0390-2 and C0114-6, - If no fault is evident then check C0376-2 to C0586R-20 - If no fault is evident with the above, remove the fuel sender B (front) from the fuel tank and check for backed out terminals and circuit faults
Fuel gauge switches on and off intermittently and / or fuel gauge indicates empty whilst there is fuel still available in the fuel tank	Open circuit	Yes	>3.6v	<3.0v	- Refer to the electrical circuit diagrams and check for backed out terminals and circuit faults between, - C0390-3 and C0114-2 - If no fault is evident then check C0376-3 to C0586R-21 - If no fault can be found with the above check then the active fuel sender A (rear) will need to be removed and the wiring carefully inspected
Fuel gauge switches on and off intermittently and / or fuel gauge indicates empty whilst there is fuel still available in the fuel tank	Electric parkbrake fault (EPB)	Yes	0.35v to 3.06v	0.35v to 3.06v	- NOTE: Check for correct EPB operation prior to carrying out the following checks. - NOTE: The EPB module is calibrated to allow fuel gauge correction for varying gradients (via CAN Bus). - Refer to the electrical circuit diagrams and check for backed out terminals and circuit faults at connectors, - C2178-31, C2178-32 - C2178-9, - C2178-10, - C2178-15 and C2178-16 - Check Earth Point (LH D Post) C2570S (Discovery 4/LR4) C2570T (Range Rover Sport)
Fuel gauge indicating fuel present	No fuel present inside tank	No	0.35v to 3.06v	0.35v	Check active sender A (rear) for potential hang up/fouling inside of the fuel tank
Fuel gauge indicating fuel present	No fuel present inside tank	No	0.35v	0.35v to 3.06v	Check passive sender B (front) for potential hang up/fouling inside of the fuel tank
Fuel gauge indicating fuel present	No fuel present inside tank	No	>1.0v	0.35v to 0.54v	Remove from the fuel tank and check all active sender A (rear) blue wires for backed out pin/defective wire
Fuel gauge indicating fuel present	No fuel present inside tank	No	0.35v to 0.44v	>1.0v	Remove from the fuel tank and check all passive sender B (front) blue circuit wires for backed out pin/defective wire
Fuel gauge indicating fuel present	No fuel present inside tank	No	>0.55v and within 0.6v of B	>0.55v and within 0.6v of A	Remove fuel pump module and both senders from the fuel tank and check all black wires on the circuit for backed out pin/defective wire
Fuel gauge indicating fuel present	No fuel present inside tank	No	>3.2v but <3.6v	0.35v to 0.54v	Active sender A (rear) internal fault. No repair possible, replace the sender. Refer to the warranty policy and procedures manual if a module/component is suspect
Fuel gauge indicating fuel present	No fuel present inside tank	No	0.35v to 0.44v	>3.2v but <3.6v	Passive sender B (front) internal fault. No repair possible, replace the sender. Refer to the warranty policy and procedures manual if a module/component is suspect
Fuel gauge indicating fuel present	Fuel present inside the fuel tank	No	0.35v to 3.06v	0.35v to 3.06v	Check the pressure relief valve inside fuel tank. Check Internal fuel feed pipe is connected to flange
Fuel gauge indicating fuel present	Fuel present inside the fuel tank	Yes	0.35v to 3.06v	0.35v to 3.06v	Check terminals are correctly latched / installed to the fuel pump module

Customer Complaint	Possible Concern	Fuel Pressure	Active Fuel Level Sensor Voltage Reading A	Passive Fuel Level Sensor Voltage Reading B	Action
Fuel gauge indicating fuel present but reading an incorrect fuel level	Fuel present inside the fuel tank	Yes	0.35v to 3.06v	0.35v to 3.06v	Check the bayonet fitting on the fuel pump module. Check both the active and passive fuel senders are securely located in their brackets
Fuel gauge indicating fuel present but reading an incorrect fuel level	Fuel tank - out of shape / sucking in (diesel only)	Yes	0.35v to 3.06v	0.35v to 3.06v	Incorrect filler cap installed. Install the correct fuel filler cap (applies to diesel variants only). Refer to the warranty policy and procedures manual if a module/component is suspect

DTC Index

For a list of Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00.

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Fuel Tank and Lines - TDV6 2.7L Diesel - Fuel Pump Module

Removal and Installation

Removal

• WARNINGS:



Place the vehicle in a well ventilated, quarantined area and arrange 'No Smoking/Petrol Fumes' signs about the vehicle.



Do not carry or operate cellular phones 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.



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.



The spilling of fuel is unavoidable during this operation. Ensure that all necessary precautions are taken to prevent fire and explosion.

• NOTE: The fuel pump module comprises of a rear fuel level sender and a fuel pressure regulator. These components cannot be serviced separately.

1. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

2.  **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.

3. Remove the fuel tank.
For additional information, refer to: [Fuel Tank](#) (310-01A Fuel Tank and Lines - TDV6 2.7L Diesel, Removal and Installation).

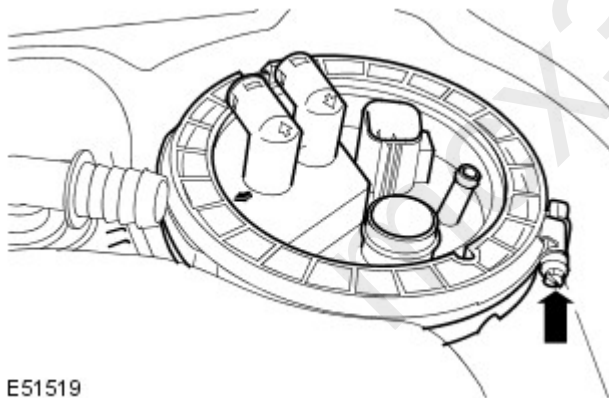


4. **CAUTION:** Before disconnecting or removing the components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

• NOTE: Note the fitted position.

Release the fuel pump module access flange.

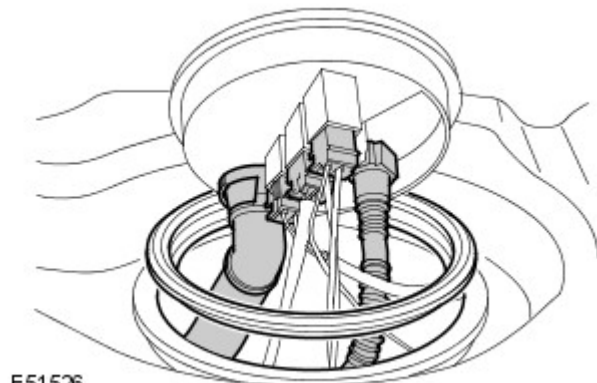
- Loosen the screw.
- Remove the clamp.



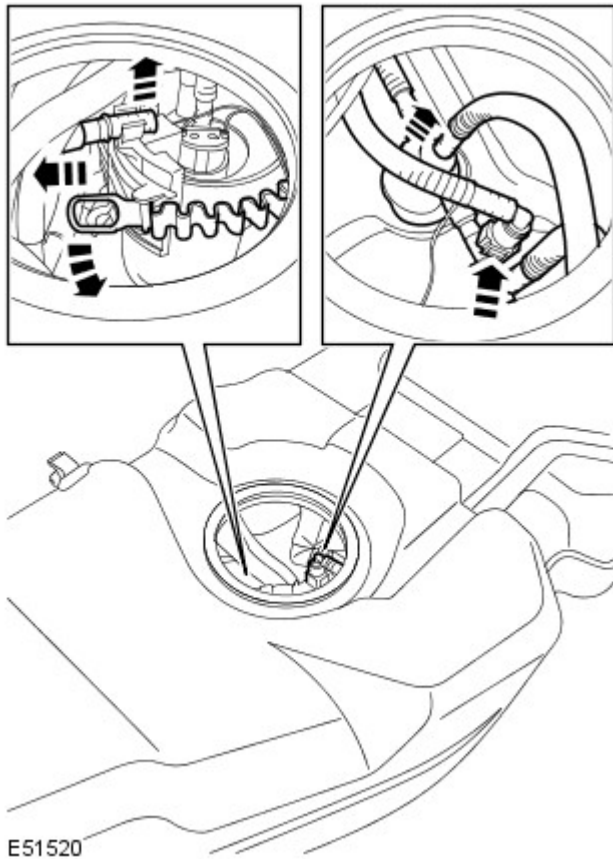
E51519

5. Remove the fuel pump module access flange.

- Disconnect the vent line.
- Disconnect the fuel supply line.
- Disconnect the 3 electrical connectors.
- Remove and discard the seal.



E51526



6. Remove the fuel pump module.

- Release the strap.
- Release the fuel pressure regulator.
- Disconnect the 2 fuel lines.

Installation

1. Install the fuel pump module.

- Connect the fuel lines.
- Secure with the strap.
- Secure the fuel pressure regulator.

2. Install the fuel pump module access flange.

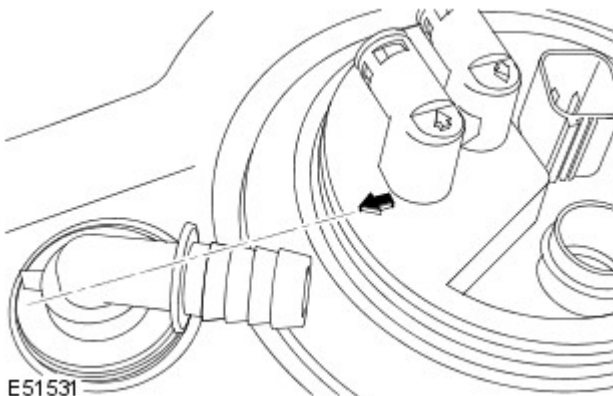
- Clean the component mating faces.
- Install a new seal.
- Connect the 3 electrical connectors.
- Connect the fuel supply line.
- Connect the vent line.

3. CAUTION: Make sure the seal is correctly fitted.

- **NOTE:** Align to the position noted on removal.

Secure the fuel pump module access flange.

- Install the clamp.
- Tighten the screw to 4 Nm (3 lb.ft).



4. Install the fuel tank.

For additional information, refer to: [Fuel Tank](#) (310-01A Fuel Tank and Lines - TDV6 2.7L Diesel, Removal and Installation).

5. Connect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

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Fuel Tank and Lines - TDV6 2.7L Diesel - Fuel Tank

Removal and Installation

Removal

• WARNINGS:



Place the vehicle in a well ventilated, quarantined area and arrange 'No Smoking/Petrol Fumes' signs about the vehicle.



Do not carry or operate cellular phones 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.



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.



The spilling of fuel is unavoidable during this operation. Ensure that all necessary precautions are taken to prevent fire and explosion.



CAUTION: Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

All vehicles

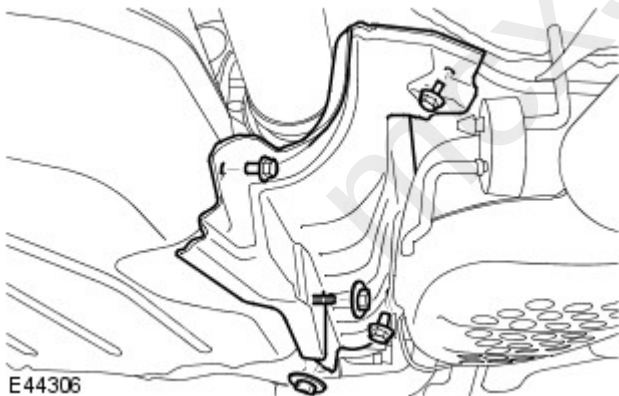
1. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
2. Drain the fuel tank.
For additional information, refer to: [Fuel Tank Draining](#) (310-00 Fuel System - General Information, General Procedures).

3. **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.

4. Remove the fuel tank heat shield.

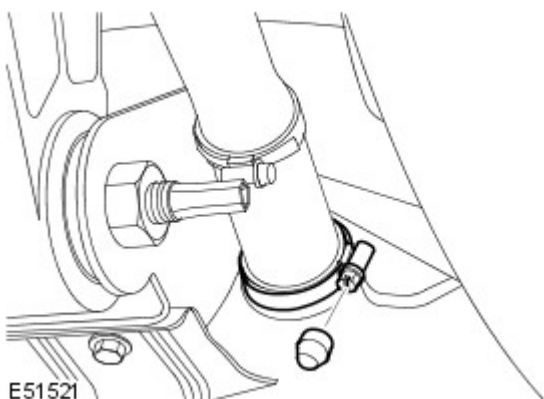
- Remove the 3 bolts and 2 nuts.

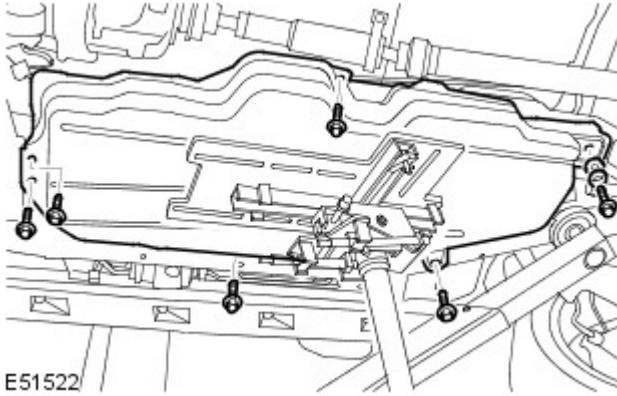


5. **CAUTION:** Before the disconnection or removal of any components, ensure the area around joint faces and connections are clean. Plug any open connections to prevent contamination.

Disconnect the fuel filler neck from the fuel tank.

- Remove the tamper proof cover.
- Remove and discard the hose clip.





6.  **WARNING:** Secure the component to the transmission jack.

Using a transmission jack, lower the fuel tank.

- Remove the 5 bolts.

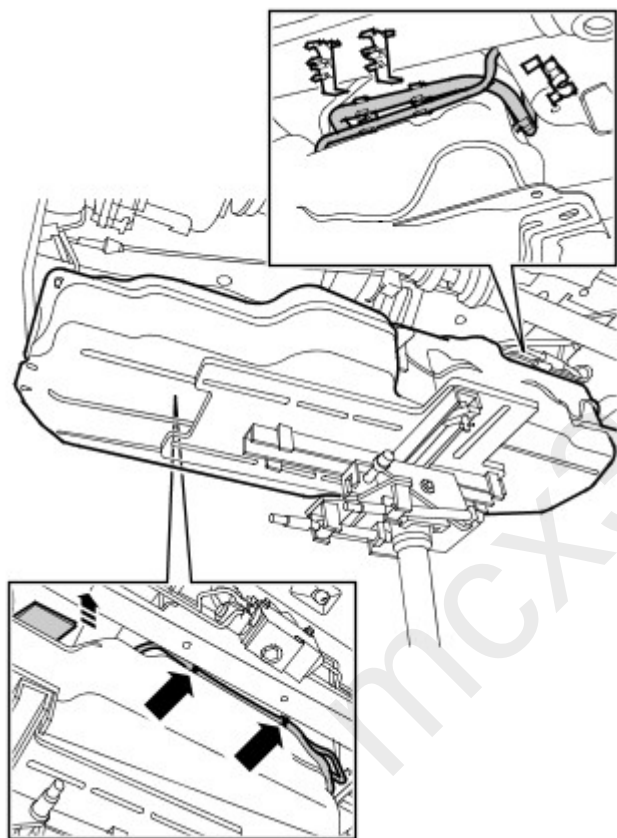
7. Release the parking brake emergency release cable.

- Release it from the 4 clips

8. **NOTE:** Note the fitted position.

Release the fuel tank vent and fuel lines.

- Remove the retainers.
- Release from the clips.
- Remove the adhesive pad.



E51523

9.  **CAUTION:** Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

Disconnect the 2 fuel tank vent lines.

- Release the clip.

Vehicles with fuel fired heater

10.  **CAUTION:** Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

Disconnect the fuel fired booster heater fuel line.

- Release the clip.

All vehicles

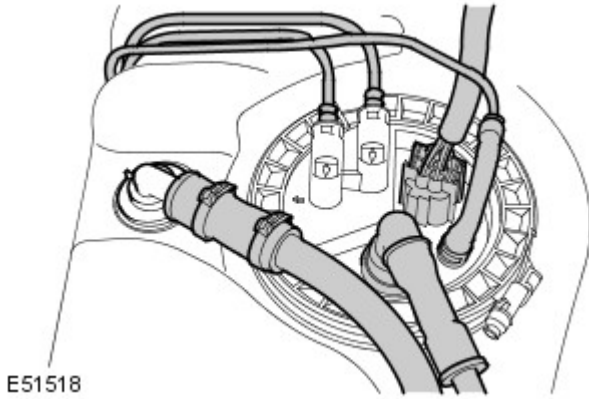
11.  **CAUTION:** Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

Disconnect the 2 fuel lines.

- Release the 2 clips.

12. Disconnect the fuel pump module electrical connector.

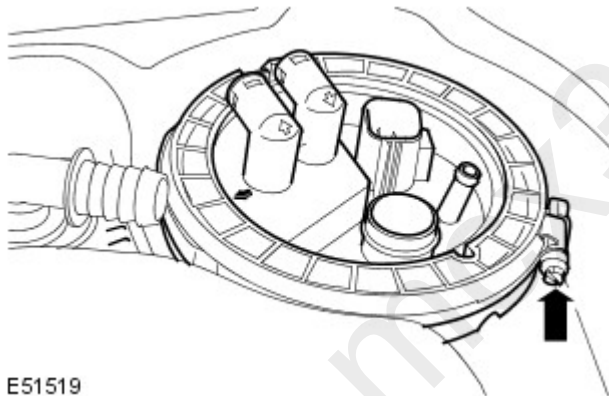
13. Remove the fuel tank.



E51518

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

With assistance, remove the fuel tank from the transmission jack.



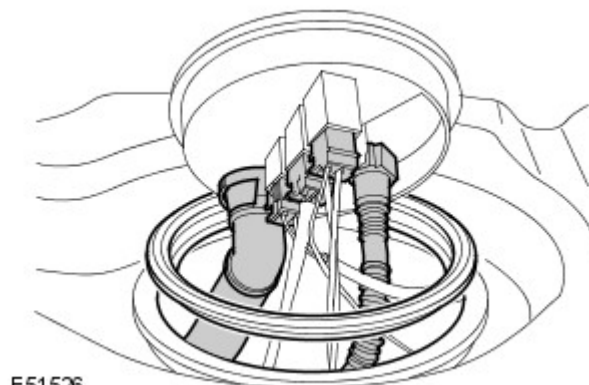
E51519

15.  **CAUTION:** Before disconnecting or removing the components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

- **NOTE:** Note the fitted position.

Release the fuel pump module access flange.

- Loosen the screw.
- Remove the clamp.

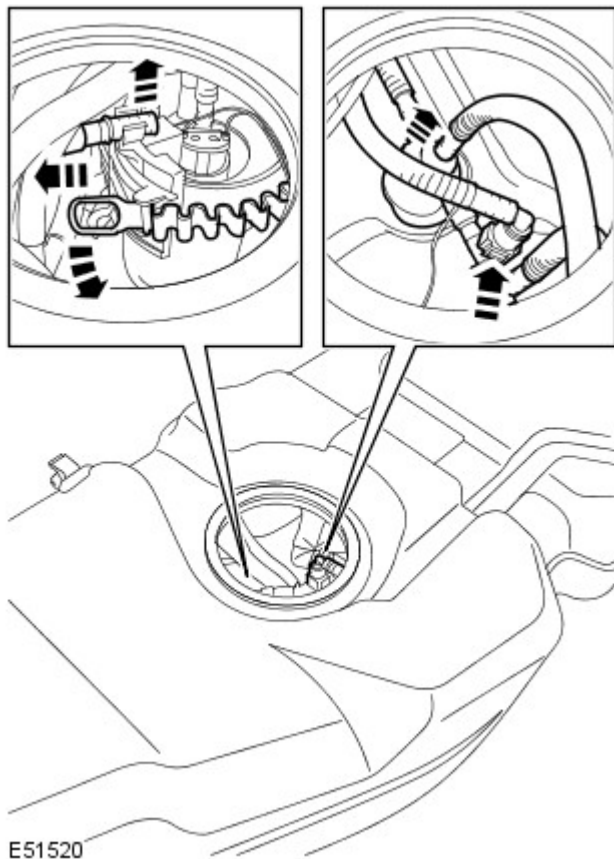


E51526

16.  **CAUTION:** Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

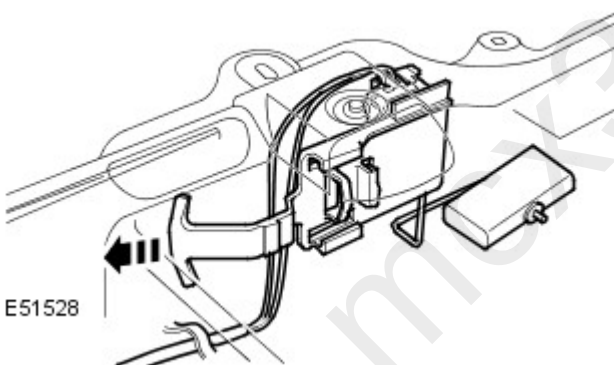
Remove the fuel pump module access flange.

- Disconnect the vent line.
- Disconnect the fuel supply line.
- Disconnect the 3 electrical connectors.
- Remove and discard the seal.



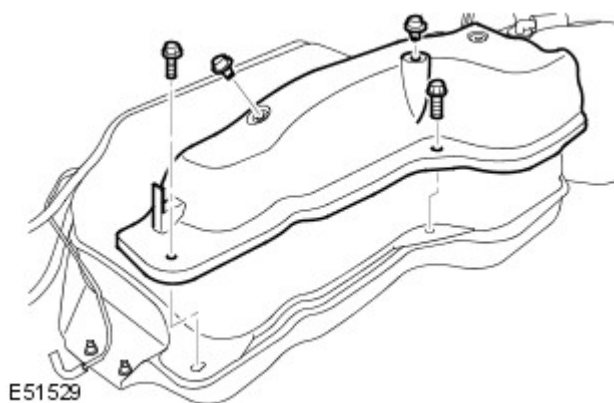
17. Remove the fuel pump module.

- Release the strap.
- Release the fuel pressure regulator.
- Disconnect the 2 fuel lines.



18. Remove the fuel tank front fuel level sender unit.

- Release the lead.
- Release the clip.



19. Remove the fuel tank bracket.

- Remove the 2 clips.
- Remove the 2 bolts.
- Remove the retaining plate.

Installation

All vehicles

1. Install the fuel tank bracket.

- Install the retaining plate.
- Install the clips.
- Tighten the bolts to 10 Nm (7 lb.ft).

2. Install the fuel tank front fuel level sender unit.

- Secure the clip.
- Secure the lead.

3. Install the fuel pump module.

- Connect the fuel lines.
- Secure with the strap.
- Secure the fuel pressure regulator.

4. Install the fuel pump module access flange.

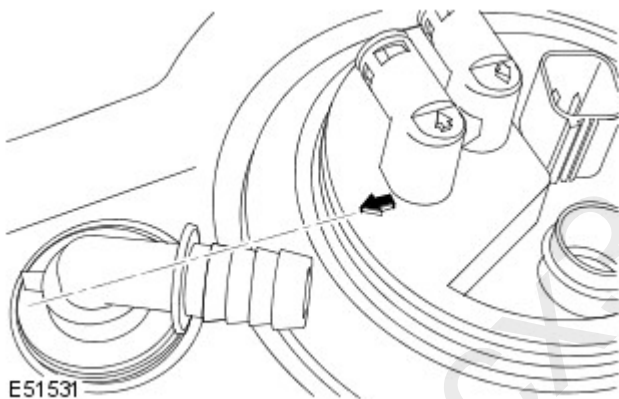
- Clean the component mating faces.
- Install a new seal.
- Connect the 3 electrical connectors.
- Connect the fuel supply line.
- Connect the vent line.

5. CAUTION: Make sure the seal is installed correctly.

- **NOTE:** Align to the position noted on removal.

Secure the fuel pump module access flange.

- Install the clamp.
- Tighten the screw to 4 Nm (3 lb.ft).



6. With assistance, install the fuel tank to the transmission jack.

7. Position the fuel tank to the vehicle.

8. Connect the fuel lines.

- Secure with the clip.

Vehicles with fuel fired heater

9. Connect the fuel fired booster heater fuel line.

- Secure with the clip.

All vehicles

10. Connect the vent lines.

- Secure with the clip.

11. Connect the electrical connector.

12. Secure the fuel and vent lines.

- Secure in the clips.
- Install the retainers.
- Install the adhesive pad.

13. Secure the parking brake emergency release cable.

- Secure in the 4 clips.

14. Install the fuel tank.

- Tighten the bolts to 45 Nm (33 lb.ft).

15. **CAUTION:** Tighten the new tamper proof clip until the hexagon shears.

Connect the fuel filler neck.

- Install a new retaining clip.

16. Install the fuel tank heat shield.

- Tighten the bolts to 5 Nm (4 lb.ft).
- Tighten the nuts to 3 Nm (2 lb.ft).

17. Refill the fuel tank.

For additional information, refer to: [Fuel Tank Draining](#) (310-00 Fuel System - General Information, General Procedures).

18. Bleed the fuel system.

For additional information, refer to: [Low-Pressure Fuel System Bleeding](#) (310-00 Fuel System - General Information, General Procedures).

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Fuel Tank and Lines - TDV6 2.7L Diesel - Fuel Tank Filler Pipe

Removal and Installation

Removal

- WARNINGS:



The spilling of fuel is unavoidable during this operation. Ensure that all necessary precautions are taken to prevent fire and explosion.



After carrying out repairs, the fuel system must be checked visually for leaks. Failure to follow these instructions may result in personal injury.



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.

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

1. Remove 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.

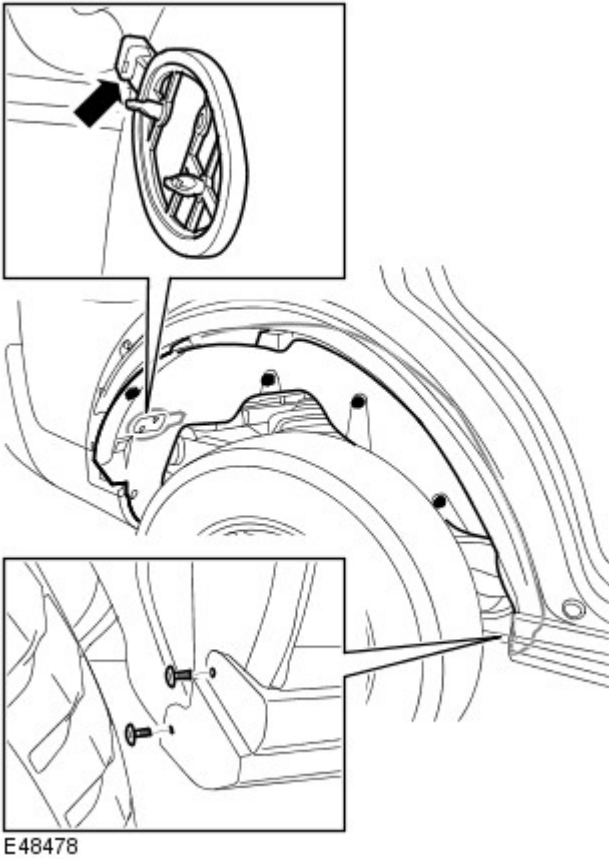
3. Refer to: [Fuel Tank Draining](#) (310-00 Fuel System - General Information, General Procedures).

4. Refer to: [Fuel Filler Door Assembly](#) (501-03 Body Closures, Removal and Installation).

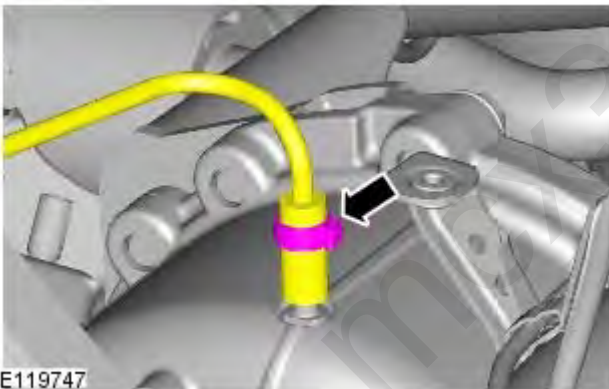
5. Remove the RH rear wheel and tire.

Torque: 140 Nm

6. Remove the fender splash shield.

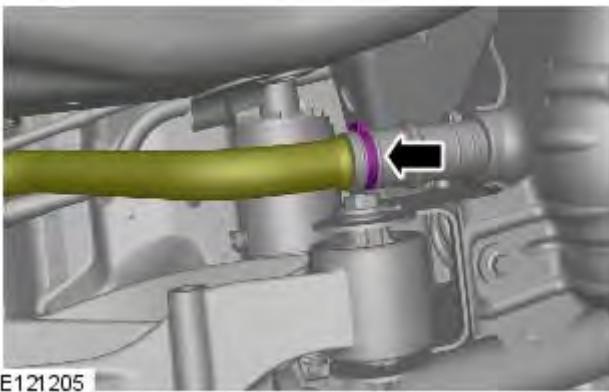


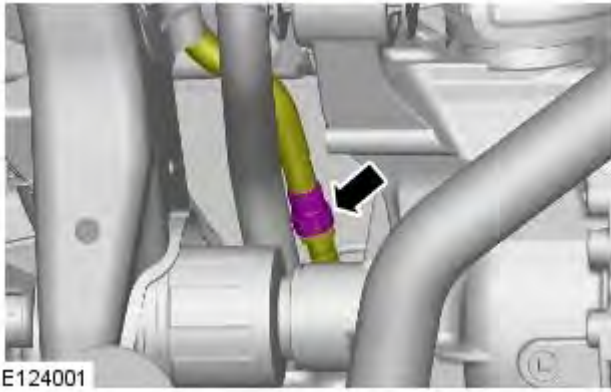
7.



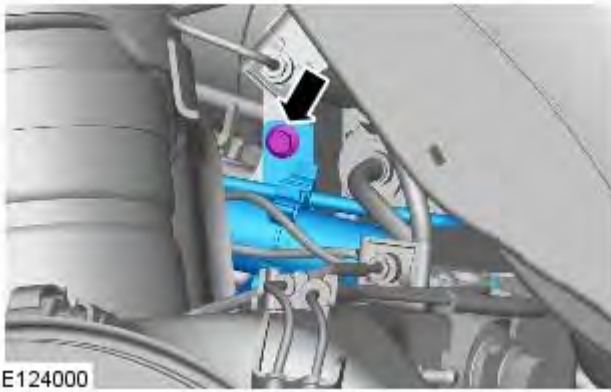
8. **8. NOTE: Discard the retaining clip.**

Remove the tamper proof cover from the fuel tank filler pipe hose clip.

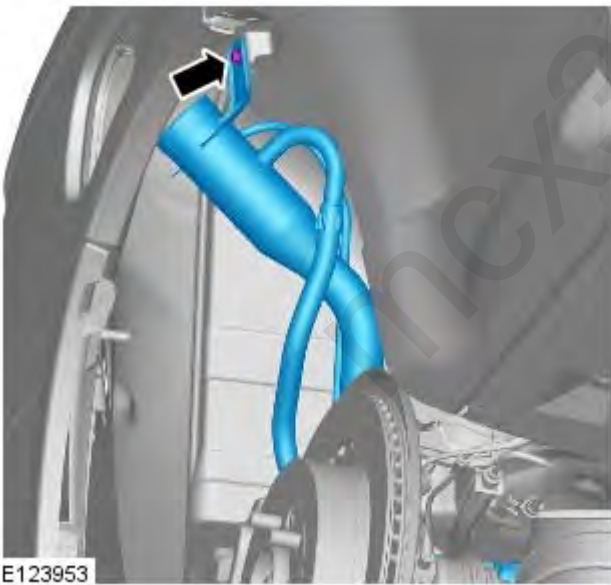




9.  **CAUTION:** Make sure that all openings are sealed. Use new blanking caps.



10. Torque: 4 Nm



11. Torque: 4 Nm

Installation

1. To install, reverse the removal procedure.

Fuel Tank and Lines - TDV6 2.7L Diesel - Fuel Filter ElementVIN Range:**SALLA000304->END OF 06MY**

Removal and Installation

Removal• **WARNINGS:**

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.



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.



Do not carry or operate cellular phones 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.



The spilling of fuel is unavoidable during this operation. Ensure that all necessary precautions are taken to prevent fire and explosion.



If fuel contacts the eyes, flush the eyes with cold water or eyewash solution and seek immediate medical attention.



If taken internally, do not induce vomiting, seek immediate medical attention. Failure to follow these instructions may result in personal injury.



Wash hands thoroughly after fuel handling, as prolonged contact may cause irritation. Should irritation develop, seek medical attention.

• **CAUTIONS:**

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.



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.



Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.



Make sure the fuel lines are connected to the correct fuel line connector on the fuel filter. Failure to follow these instructions may result in damage to the engine or fuel injection system.

- **NOTE:** Before disconnecting the battery, make sure all text and cautions in the battery disconnect section are observed.

1. Disconnect the battery ground cable.

For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

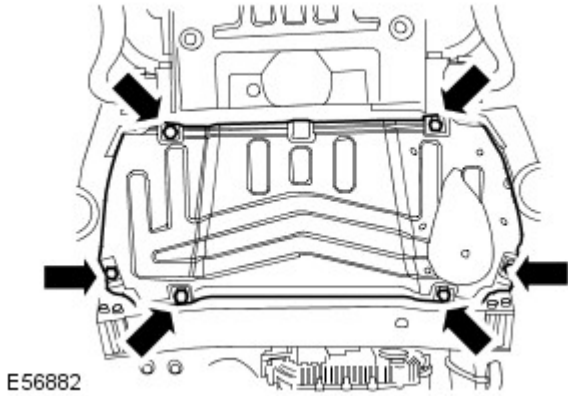


2. **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

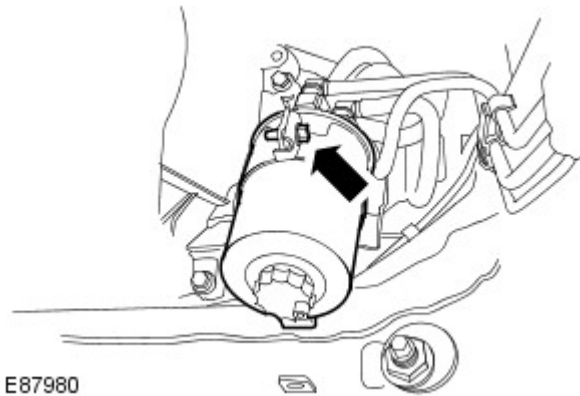
3. Remove the transmission undershield.

- Remove the 6 bolts.



4. Release the fuel filter from its bracket.

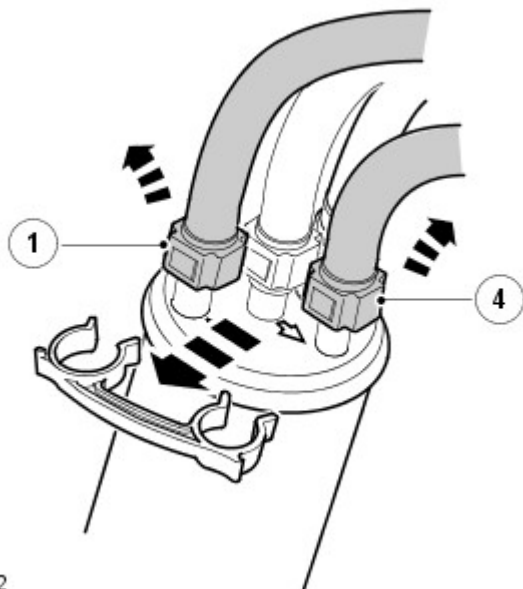
- Remove the bolt.



5. Remove the fuel filter bracket.

- Remove the 2 bolts.





E87982

6. **CAUTION:** Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

• **NOTE:** Note the fitted position of the fuel lines to the fuel filter connections.

Release and disconnect the fuel supply line from the tank, (yellow connector number 1) and the fuel tank vent line, (small blue connector number 4) from the fuel filter.

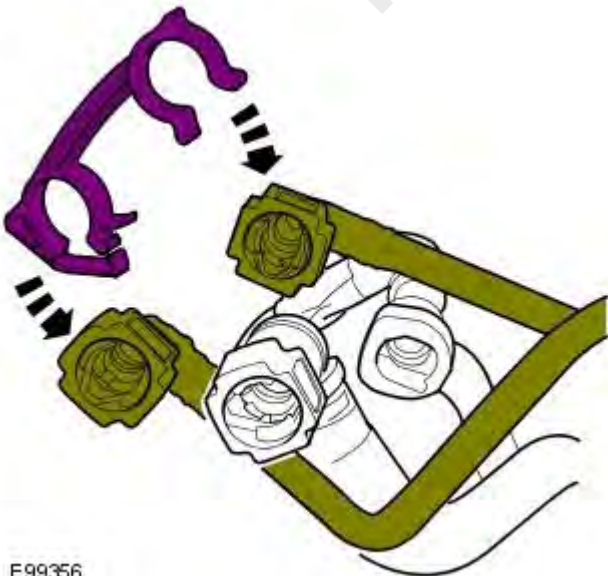
- Position a container to collect the fuel spillage.

7. Remove and discard the clip.



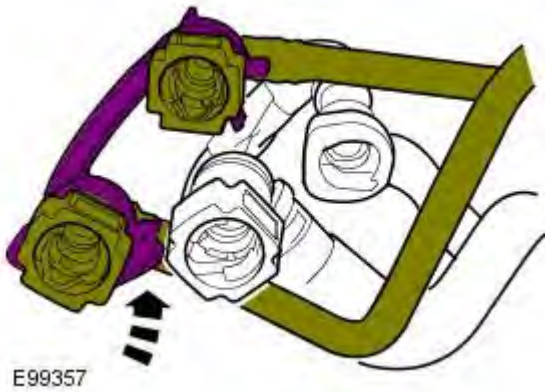
E99355

8. Install the new clip to fuel lines 1 and 4.



E99356

9. Secure the clip.

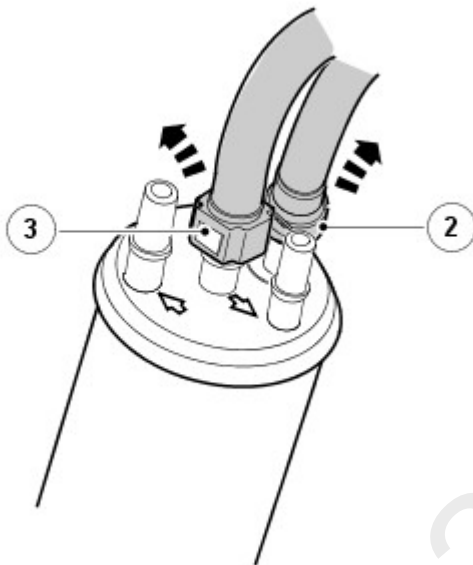


10.  **CAUTION:** Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.

• **NOTE:** Note the fitted position of the fuel lines to the fuel filter connections.

Remove the fuel filter.

- Release and disconnect the high-pressure fuel pump supply line. (Large blue connector number 3).
- Release and disconnect the fuel cooler return line. (White connector number 2).

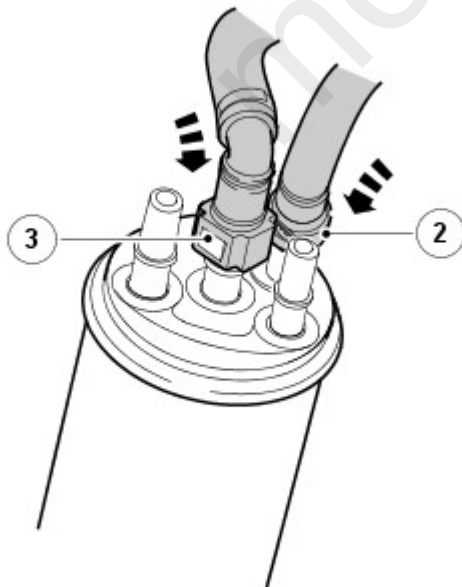


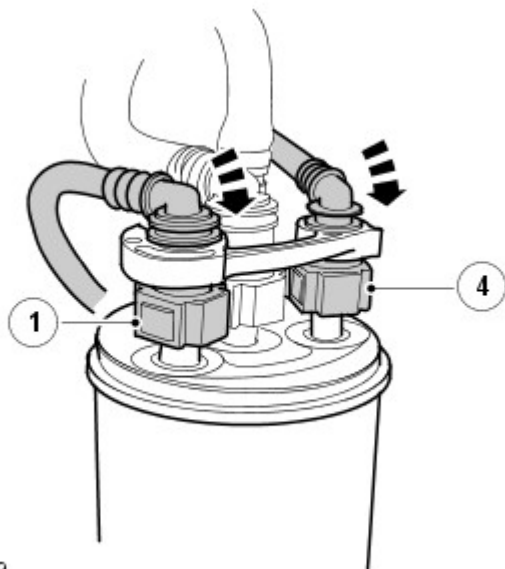
Installation

1.  **CAUTION:** Make sure that the colors of the connectors match the colors on the disc supplied with the new fuel filter.

Install the fuel filter.

- Connect the fuel cooler return line. (White connector number 2).
- Connect the high-pressure fuel pump supply line. (Large blue connector number 3).





E99539

2. CAUTIONS:



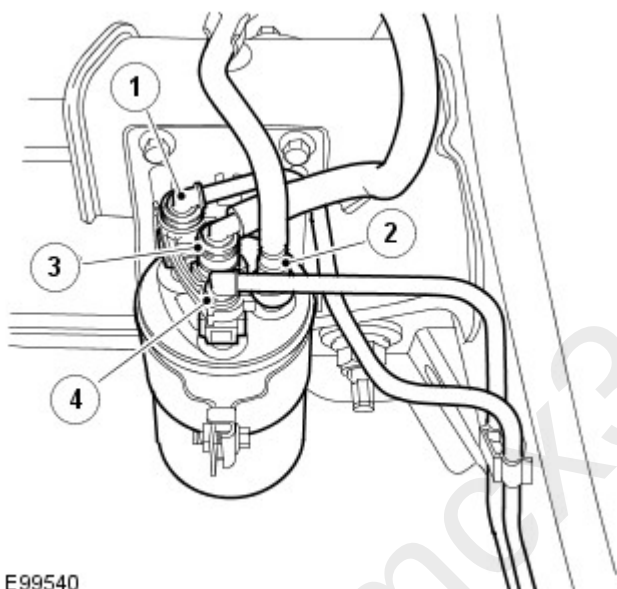
Make sure that the colors of the connectors match the colors on the disc supplied with the new fuel filter.



Make sure that the clip is correctly fitted.

Connect the 2 remaining lines to the fuel filter.

- Connect the fuel supply line from the fuel tank. (Yellow connector number 1).
- Connect the vent line from the fuel tank. (Small blue connector number 4).



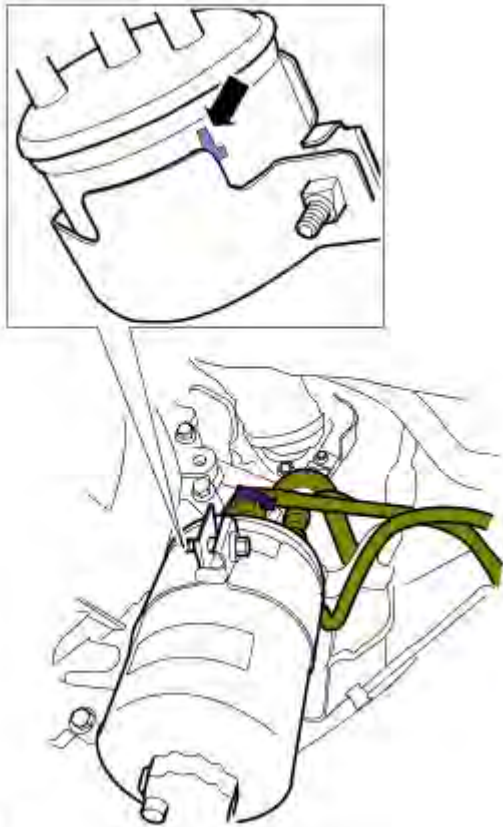
E99540

3. Correct connector and line installation shown.

4. Install the fuel filter bracket.

- Install the 2 bolts and tighten to 10 Nm (7 lb.ft).

6



E99358

5. Secure the fuel filter in its bracket.

- Align the fuel filter to the bracket.
- Install the bolt and tighten to 10 Nm (7 lb.ft).
- Remove the container.

6. Install the transmission undershield.

- Install the 6 bolts and tighten to 10 Nm (7 lb.ft).

7. Connect the battery ground cable.

For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

8. Bleed the fuel system.

For additional information, refer to: [Low-Pressure Fuel System Bleeding](#) (310-00 Fuel System - General Information, General Procedures).

Fuel Tank and Lines - TDV6 2.7L Diesel - Fuel Filter Element VIN Range: 07 MODEL YEAR->CURRENT

Removal and Installation

Removal

• WARNINGS:

 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.

 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.

 Do not carry or operate cellular phones 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.

 If fuel contacts the eyes, flush the eyes with cold water or eyewash solution and seek immediate medical attention.

 If taken internally, do not induce vomiting, seek immediate medical attention. Failure to follow these instructions may result in personal injury.

 Wash hands thoroughly after fuel handling, as prolonged contact may cause irritation. Should irritation develop, seek medical attention.

 The spilling of fuel is unavoidable during this operation. Make sure that all necessary precautions are taken to prevent fire and explosion.

• CAUTIONS:

 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.

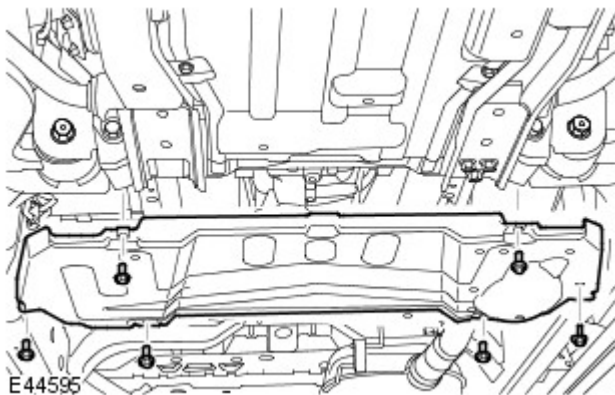
 Make sure the workshop area in which the vehicle is being worked on is as clean and as dust free as possible. Foreign matter from work on clutches, brakes or from machining or welding operations can contaminate the fuel system and may result in later malfunction.

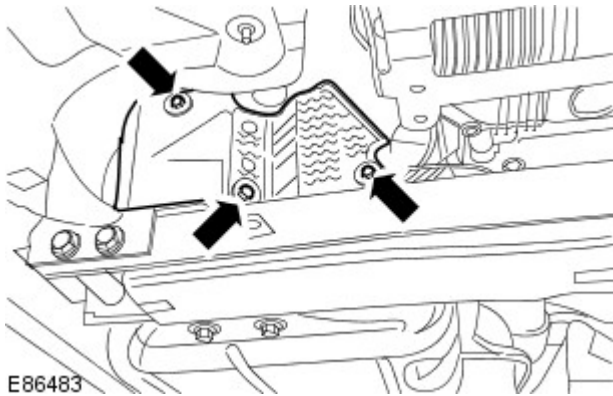
1.  **WARNING:** Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.

Raise and support the vehicle.

2. Remove the transmission undershield.

- Remove the 6 bolts.





3.  **WARNING:** Observe due care when working near a hot exhaust system.

Remove the fuel filter heat shield.

- Remove the 3 bolts.



4.  **CAUTION:** Make sure the water-in-fuel sensor remains in the aligned position.

Drain the fuel filter element.

- Position a container to collect the fluid spillage.
- Loosen the nut.
- Attach a suitable drain tube to the water-in-fuel sensor drain port.
- Remove the drain tube.
- Tighten the nut.



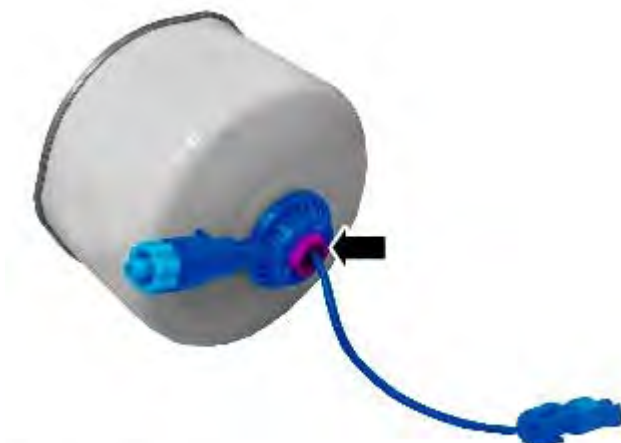
5.  **CAUTION:** Make sure that the area around the component is clean and free of foreign material.

Remove the fuel filter element.

- Disconnect the water-in-fuel sensor electrical connector.

6. Remove the water-in-fuel sensor.

- Discard the fuel filter element.



7. Remove and discard the O ring seals.



E138941

Installation

1. Install new O ring seals.



E138940



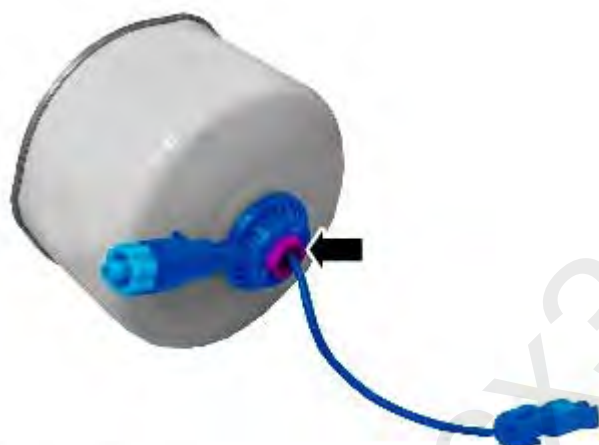
E138603

2.  **CAUTION:** Make sure that the mating faces are clean and free of foreign material.

• **NOTE:** Make sure that the water-in-fuel sensor is aligned with the drain arrow.

Install the water-in-fuel sensor.

- Remove and discard the water-in-fuel drain plug from the new fuel filter element.



E138939

3.  **CAUTION:** Make sure the water-in-fuel sensor remains in the aligned position.

Tighten the plastic nut to 1.6 Nm.

4. NOTE: Make sure that the fuel filter element is correctly aligned. Failure to follow this instruction may result in damage to the vehicle.

Install the fuel filter element.

1. Insert the fuel filter with the the lock symbol arrow aligned with the inlet pipe on the fuel filter housing.



5. NOTE: Make sure that the fuel filter element is correctly aligned. Failure to follow this instruction may result in damage to the vehicle.

Rotate to tighten and seal the fuel filter element.

1. When tightened correctly, the lock symbol arrow should be aligned with the arrow symbol on the fuel filter housing.

- Connect the water-in-fuel sensor electrical connector.
- Remove the container.



6. Install the fuel filter heat shield.

- Tighten the bolts to 6 Nm.

7. Install the transmission undershield.

- Tighten the bolts to 10 Nm.

8. Carry out the low-pressure fuel system bleeding.