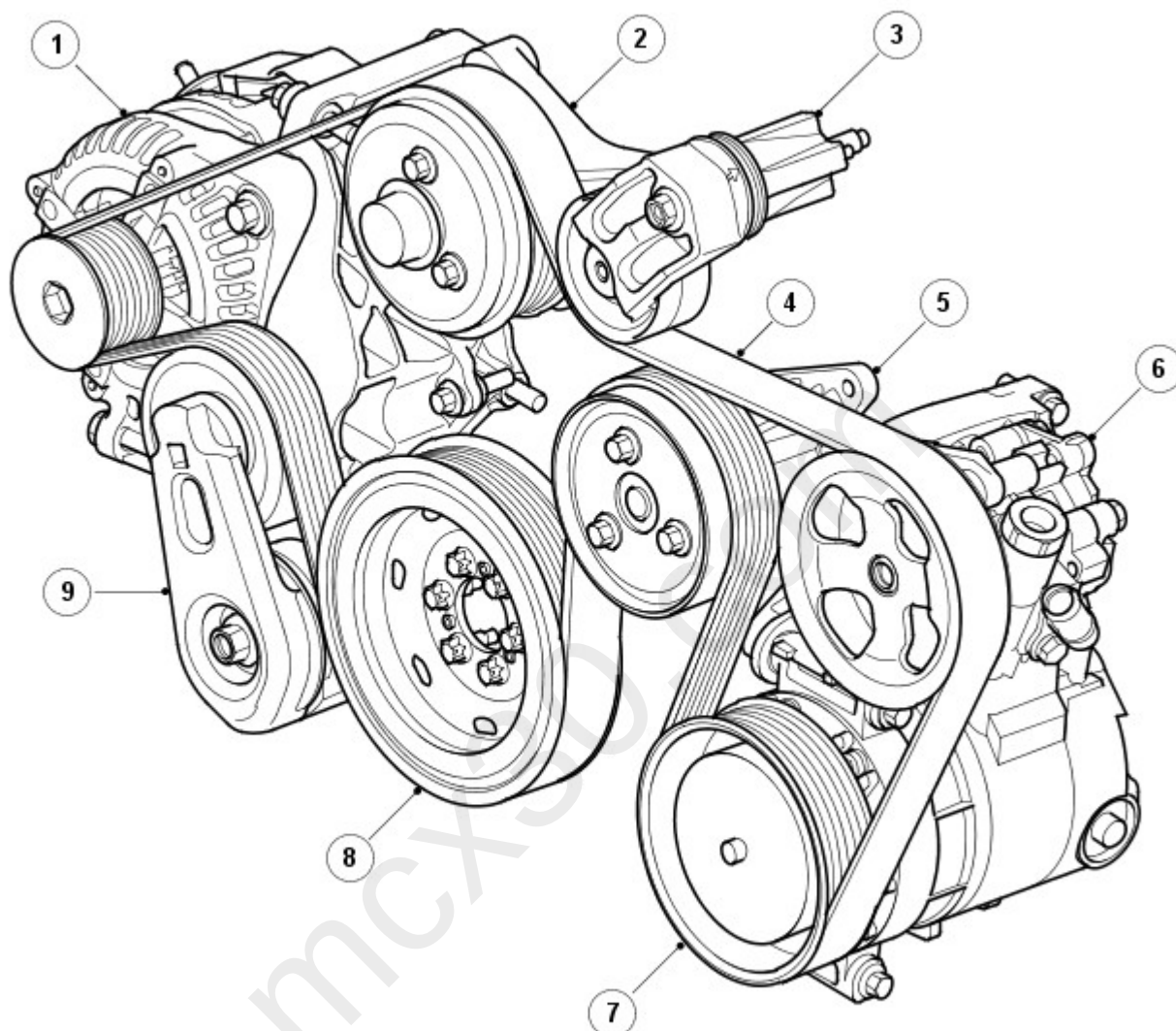


Accessory Drive - TDV6 2.7L Diesel -**Torque Specifications**

Description	Nm	lb-ft
Accessory drive belt tensioner pulley Torx bolt	25	18
Accessory drive belt tensioner retaining bolt	45	33
Accessory drive belt idler retaining bolt	45	33
Fuel injection high pressure pump drive belt tensioner	25	18
EGR coolant cross over pipe	22	16

Accessory Drive - TDV6 2.7L Diesel - Accessory Drive

Description and Operation



E50593

Item	Part Number	Description
1	-	Generator
2	-	Engine cooling fan
3	-	Tensioner assembly
4	-	Accessory drive belt
5	-	Engine coolant pump
6	-	Power steering pump
7	-	A/C compressor
8	-	Torsional vibration damper
9	-	Tensioner assembly

The engine crankshaft pulley drives the accessory components, which comprise the torsional vibration damper, generator, power steering pump, A/C compressor and coolant pump, via the accessory drive belt.

The belt, which is maintenance free poly-V type belts, are automatically pre-loaded by the tensioning rollers and are routed over deflection pulleys in order to maintain sufficient adhesion about the drive wheels. This ensures slip-free drive of the accessory components.

Accessory Drive - TDV6 2.7L Diesel - Accessory Drive

Diagnosis and Testing

Principles of Operation

For a detailed description of the accessory drive system and operation, refer to the relevant Description and Operation section of the workshop manual.

REFER to: [Accessory Drive](#) (303-05A Accessory Drive - TDV6 2.7L 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 checked and/or the donor vehicle.

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

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

Visual Inspection

Mechanical	
• Drive belt condition (cracking/damage/contamination) • Idler assembly • Generator • Engine cooling fan • Tensioner assembly • Engine coolant pump • Power steering pump • Air Conditioning (A/C) compressor • Torsional vibration damper • Dynamic response pump • Tensioner assembly • Accessory drive belt • Security/Correct installation of the fuel injection pump cover • Fuel injection pump belt condition (cracking/damage/contamination) • Fuel injection pump belt tensioner assembly • Fuel injection pump • Fuel injection pump belt	

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.



CAUTION: If the engine is run without the accessory drive belts connected to eliminate driven components, diagnostic trouble codes, (DTCs) may be set which must be cleared before the vehicle is returned to the owner. The engine should not be run for more than 2-3 minutes with the belts disconnected. Failure to follow this instruction may result in damage to the vehicle.

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 (accessory drive belt)

Symptom	Possible Causes	Action
Noise	• Belt condition • Belt tension • Pulleys misaligned • Driven components (including tensioners)	Check the belt condition (see visual inspection). Check the tensioner function. Check the pulley alignment. Check the driven components for excessive resistance to rotation. Rectify as necessary.
Drive belt does not hold tension	• Belt condition • Tensioner fault	Check the belt condition (see visual inspection). Check the tensioner function. Rectify as necessary.

Symptom Chart (fuel injection pump belt)

Symptom	Possible Causes	Action
Noise	• Belt condition • Belt fouling cover • Tensioner bearing failure • Fuel injection pump failure	Check the belt condition (see visual inspection). Check the belt cover for indications of fouling (this may indicate a pump misalignment), refer to the relevant workshop manual section. The belt tensioner must be renewed if the belt is removed, making a check of the bearing impractical. Remove the belt, check the fuel injection pump pulley for security. Check the fuel injection pump for excessive resistance to rotation (excessive resistance in the pump will cause the pulley securing nut to loosen as a design feature). Check for diagnostic trouble codes (DTCs) indicating a pump malfunction.

Symptom	Possible Causes	Action
Drive belt does not hold tension	● Belt condition ● Tensioner fault	Check the belt condition (see visual inspection). Check the tensioner function. Rectify as necessary.
Loss of drive (with no drive to the fuel injection pump, the engine will not run)	● Belt broken/stripped teeth ● Drive pulleys loose	Investigate the cause of the belt breakage/damage (a belt broken at a 45 degree angle normally indicates a shear, a break straight across the belt normally indicates that the belt has been crimped). Check the fuel injection pump for excessive resistance to rotation (excessive resistance in the pump will cause the pulley securing nut to loosen as a design feature). Check for DTCs indicating a pump malfunction.

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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Accessory Drive - TDV6 2.7L Diesel - Fuel Injection Pump Belt VIN Range:**SALLA000304->END OF 06 MY**

Removal and Installation

Removal

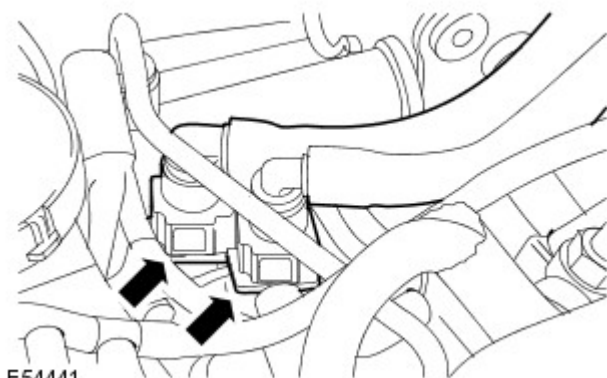
1. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
2. Remove the engine cover.
For additional information, refer to: [Engine Cover - TDV6 3.0L Diesel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).



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

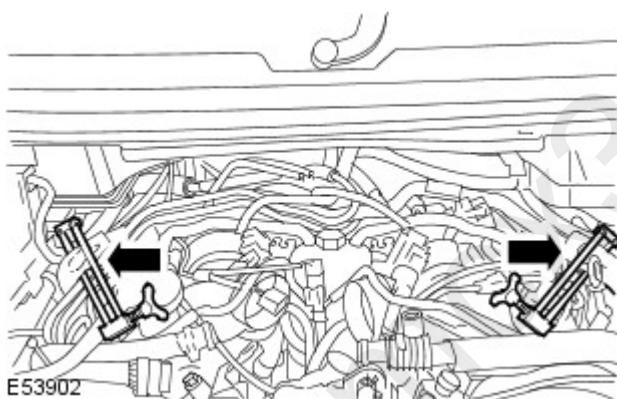
Disconnect the two fuel lines.

- Install blanking caps to the exposed ports.



E54441

4. Clamp the exhaust gas recirculation (EGR) coolant hoses to minimize coolant loss.



E53902

5. Disconnect the coolant hoses.

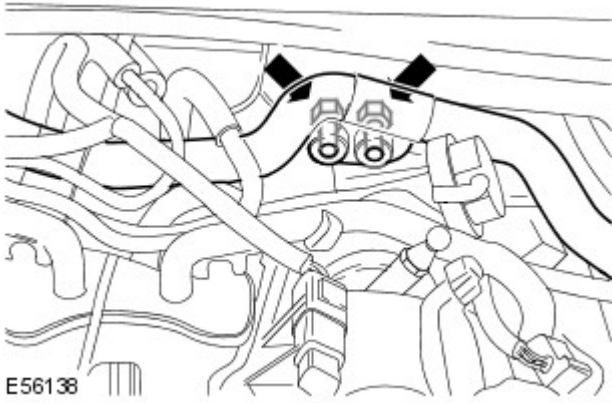
- Release the clips.



E53903

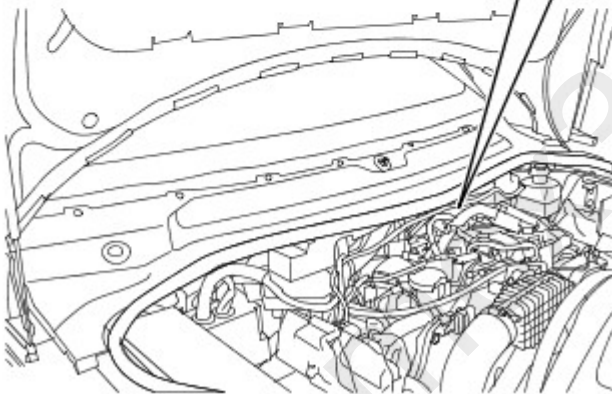
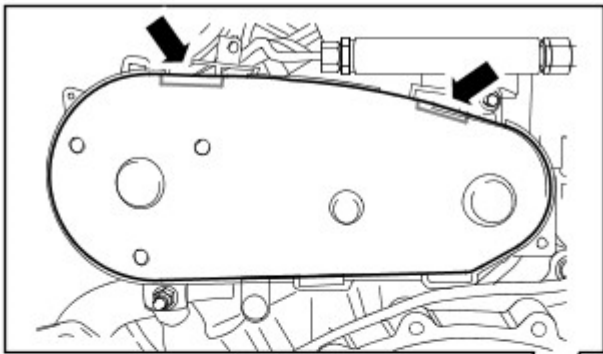
6. Remove the EGR coolant cross-over pipe.

- Remove the two retaining bolts.

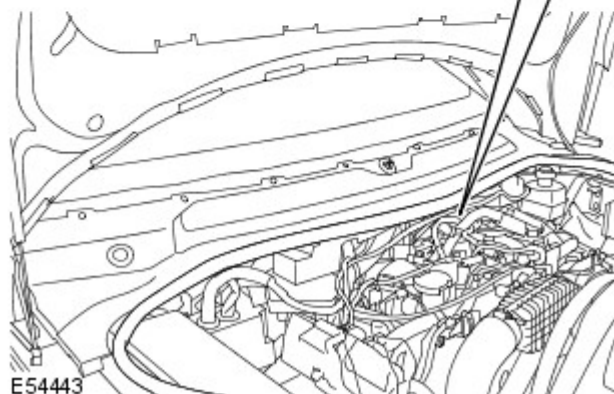
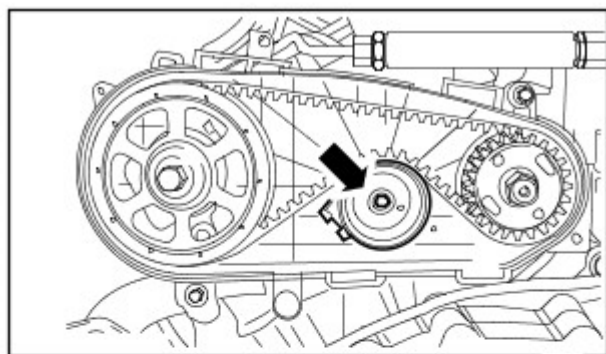


7. Remove the fuel injection pump belt cover.

- Reposition the fuel charging wiring harness to allow access to the fuel injection pump belt cover.



E54442

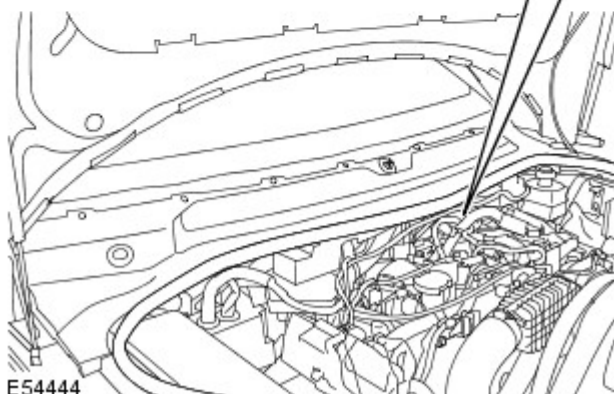
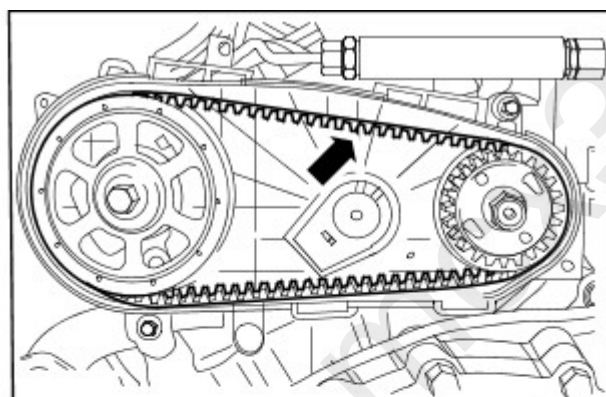


E54443

8. NOTE: The fuel injection pump belt is not timed to the engine.

Remove and discard the fuel injection pump belt tensioner.

- Remove the retaining bolt.



E54444

9. NOTE: The fuel injection pump rotates in a counter-clockwise direction when viewed from the rear of the engine.

Remove and discard the fuel injection pump belt.

Installation

- 1. ⚠ CAUTION:** Do not install the new fuel injection pump belt to the pulleys with the fuel pump belt tensioner installed. Failure to follow this instruction may result in damage to the fuel pump

belt.

- NOTE: The fuel injection pump rotates in a counter-clockwise direction when viewed from the rear of the engine.

Install the new fuel injection pump belt.

2.  CAUTION: Make sure that the fuel injection pump belt tensioner tang is correctly located to the fuel injection pump belt rear cover. Failure to follow this instruction may result in damage to the engine.

Install a new fuel injection pump belt tensioner.

- Locate the tang on the new fuel injection pump belt tensioner into the fuel injection pump rear cover.
- Tighten to 25 Nm (18 lb.ft).
- Remove and discard the fuel injection pump belt tensioner locking pin.

3. Install the fuel injection pump belt cover.

- Reposition the fuel charging wiring harness back onto the diverter rail.

4. Install the EGR coolant cross-over pipe.

- Install the two retaining bolts.
- Tighten the bolts to 22 Nm (16 lb.ft).

5. Connect the coolant hoses.

- Remove the hose clamps.

6. Attach the fuel lines.

- Connect the two fuel lines.
- Remove the blanking caps from the ports.

7. Install the engine cover.

For additional information, refer to: [Engine Cover - TDV6 3.0L Diesel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

8. Connect the battery ground cable.

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

9. Check and top-up the coolant.

Accessory Drive - TDV6 2.7L Diesel - Fuel Injection Pump Belt VIN Range: 07 MODEL YEAR->CURRENT

Removal and Installation

Removal

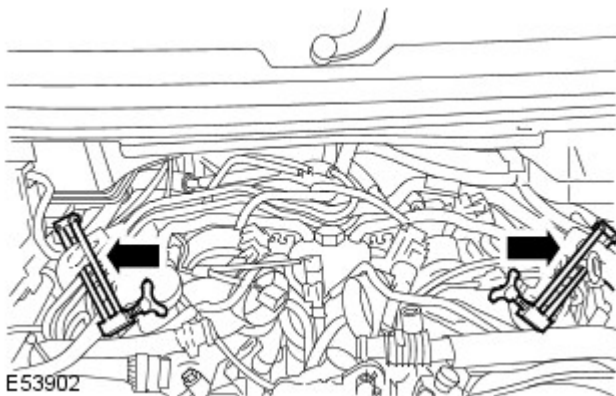
• WARNINGS:

-  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 carry out any repairs to the fuel system with the engine running. The fuel pressure within the system can be as high as 1650 bar (23,931 lb-sq-in). Failure to follow this instruction may result in personal injury.
-  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.

• CAUTIONS:

-  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.
-  Always carry out the cleaning process before carrying out any repairs to the fuel injection system components. Failure to follow this instruction may result in foreign matter ingress to the fuel injection system.
-  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.
-  Do not disassemble or clean inside the fuel pump, even with an ultrasonic cleaner. Always install a new fuel pump when required.

1. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
2. Remove the engine cover.
For additional information, refer to: [Engine Cover - 2.7L V6 - TdV6](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).
3. Clamp the exhaust gas recirculation (EGR) coolant hoses to minimize coolant loss.



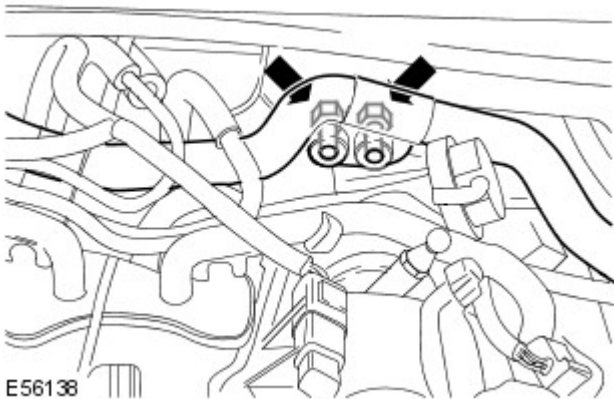
4. Disconnect the coolant hoses.

- Release the clips.



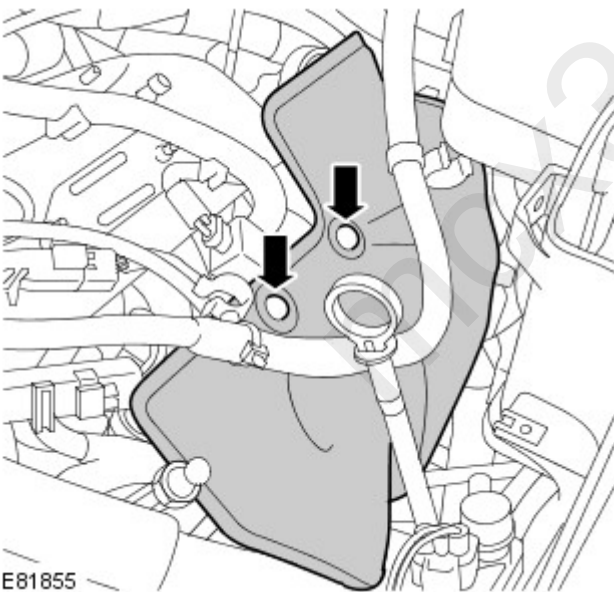
5. Remove the EGR coolant cross-over pipe.

- Remove the two retaining bolts.



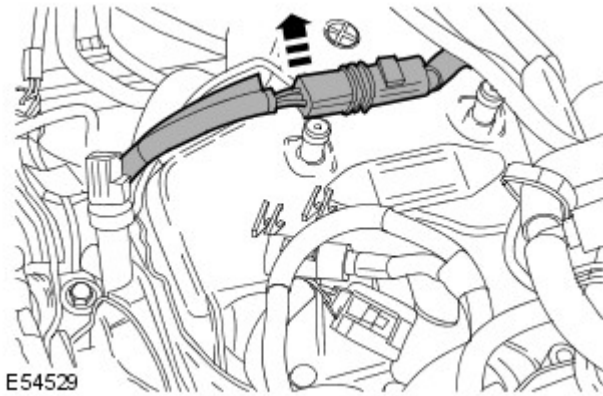
6. Remove the injector sound proofing.

- Remove the 2 clips.

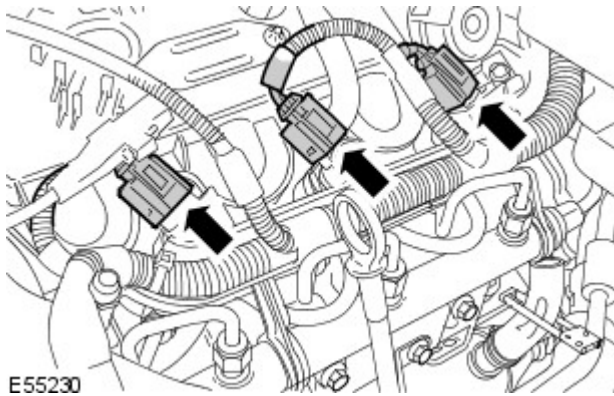


7. Release the knock sensor (KS) harness from the valve cover.

8. Release the glow plug harness from the valve cover.

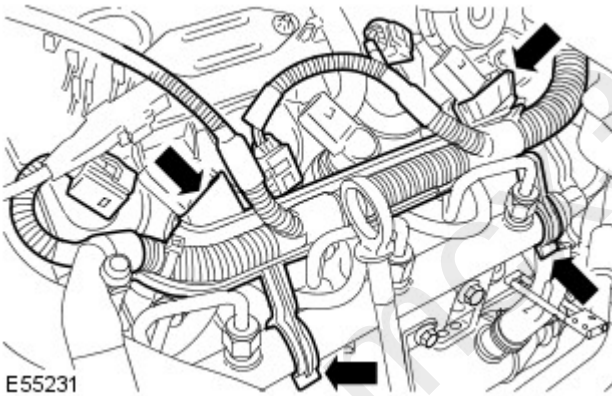


9. Disconnect the fuel injector electrical connectors.



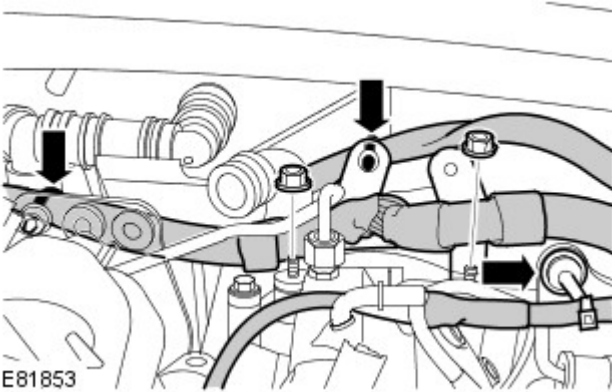
10. Release the engine wiring harness.

- Release the four clips.



11. Release the fuel charging wiring harness.

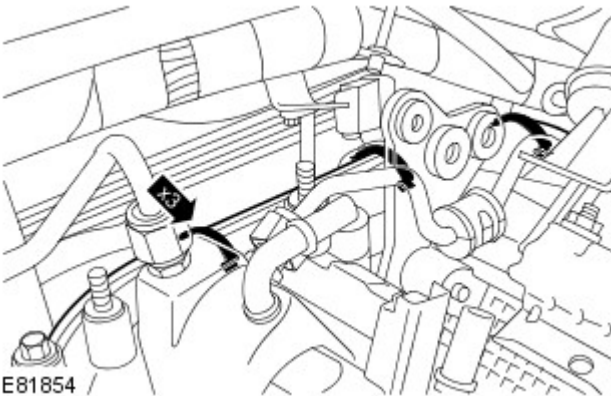
- Release the 3 clips.
- Remove the 2 nuts.





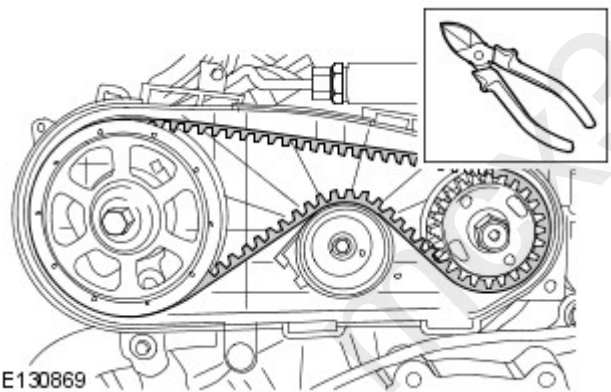
12. Disconnect the breather line.

- Release the clip.



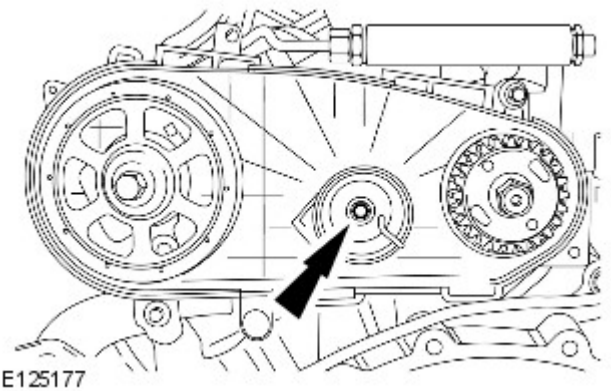
13. Remove the fuel injection pump belt cover.

- Reposition the engine wiring harness to allow access to the fuel injection pump belt cover.
- Release the 3 clips.



14. NOTE: The fuel injection pump rotates in a counter-clockwise direction when viewed from the rear of the engine.

Cut off and discard the fuel injection pump belt.

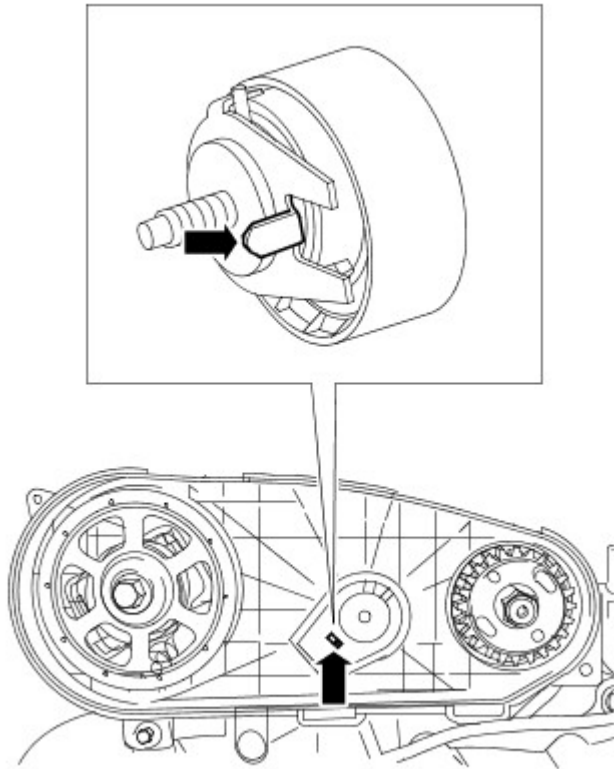


15. NOTE: The fuel injection pump belt is not timed to the engine.

Remove and discard the fuel injection pump belt tensioner.

- Remove and discard the bolt.

Installation



E81861

1.  **CAUTION:** Make sure that the fuel injection pump belt tensioner tang is correctly located to the fuel injection pump belt rear cover. Failure to follow this instruction may result in damage to the engine.

• **NOTE:** Do not remove the fuel injection pump belt tensioner locking pin at this stage.

Install a new fuel injection pump belt tensioner.

- Clean the components mating faces.
- Locate the tang on the new fuel injection pump belt tensioner into the fuel injection pump rear cover.
- Tighten the bolt to 25 Nm (18 lb.ft).

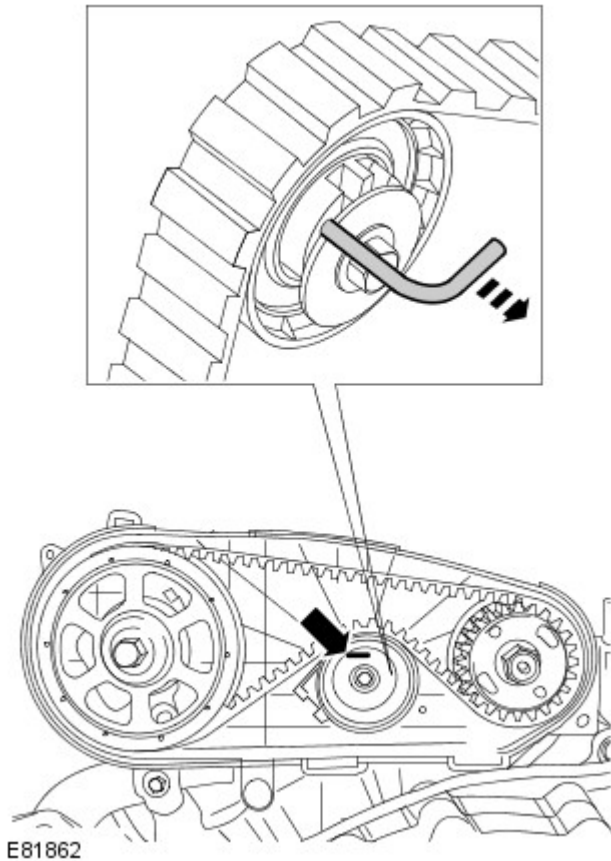
2.  **CAUTION:** Do not install the new fuel injection pump belt to the pulleys with the fuel pump belt tensioner locking pin removed. Failure to follow this instruction may result in damage to the fuel pump belt.

• **NOTE:** The fuel injection pump rotates in a counter-clockwise direction when viewed from the rear of the engine.

Install the new fuel injection pump belt.

- Make sure the components are clean and dry.

3. Remove and discard the fuel injection pump belt tensioner locking pin.



4. Install the fuel injection pump belt cover.
- Secure with the 3 clips.
 - Reposition the engine wiring harness to allow access to the fuel injection pump belt cover.
5. Attach the fuel charging wiring harness.
- Secure with the 3 clips.
 - Tighten the nuts to 10 Nm (7 lb.ft).
6. Secure the engine wiring harness.
7. Connect the fuel injector electrical connectors.
8. Secure the glow plug wiring harness.
9. Secure the KS wiring harness.
10. Install the injector sound proofing.
- Secure with the 2 clips.
11. Connect the breather line.
- Secure with the clip.
12. Install the EGR coolant cross-over pipe.
- Install the two retaining bolts.
 - Tighten to 13 Nm (10 lb.ft).
13. Connect both EGR coolant cross-over pipe hoses.
- Remove the EGR coolant hose clamps.
14. Connect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
15. Check and top-up the coolant.

Accessory Drive - TDV6 2.7L Diesel - Accessory Drive Belt

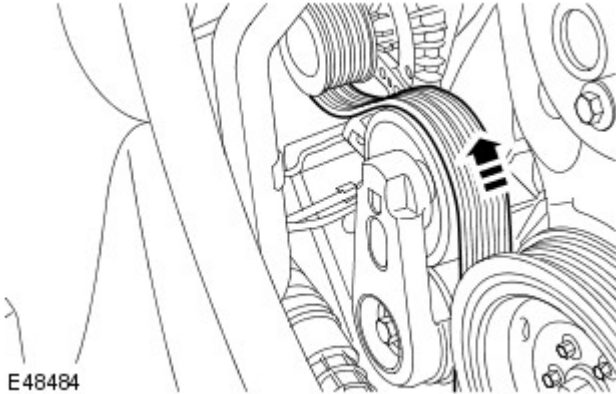
Removal and Installation

Removal

1. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
2. Remove the cooling fan.
For additional information, refer to: [Cooling Fan](#) (303-03A Engine Cooling - TDV6 2.7L Diesel, Removal and Installation).
3. **NOTE:** Using a 3/8 square drive wrench, rotate the tensioner counter clockwise.

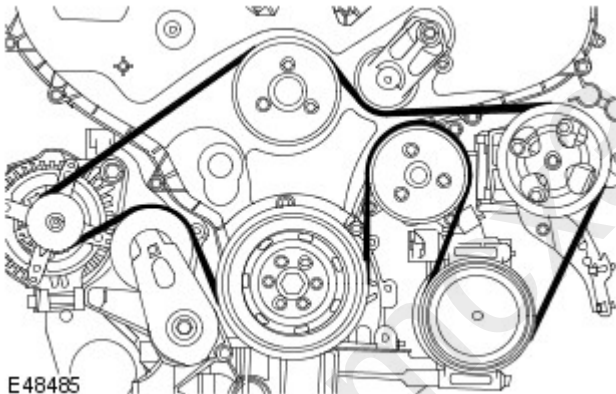
Remove the accessory drive belt.

- Release the tension from the belt.



Installation

1. To install, reverse the removal procedure.
 - Clean and inspect the drive pulleys for damage.

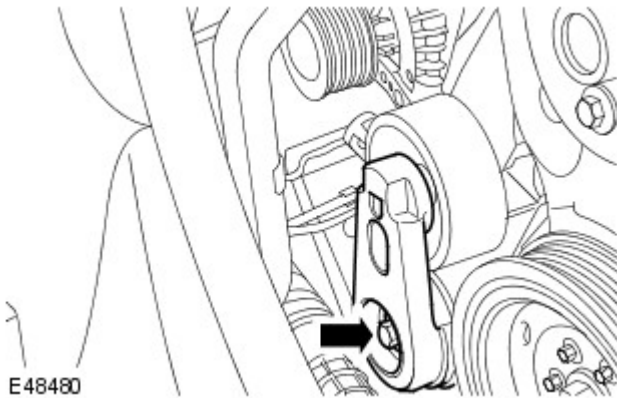


Accessory Drive - TDV6 2.7L Diesel - Accessory Drive Belt Tensioner

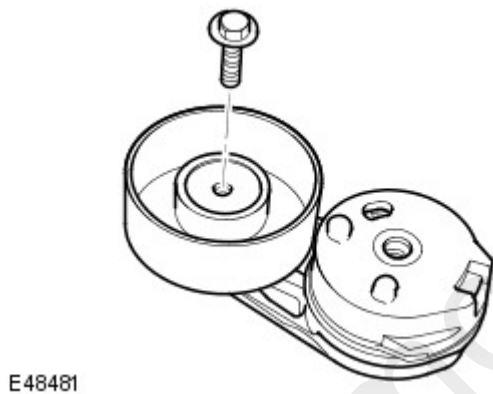
Removal and Installation

Removal

1. Disconnect the battery ground cable.
For additional information, refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).
2. Remove the accessory drive belt.
For additional information, refer to: [Accessory Drive Belt](#) (303-05A Accessory Drive - TDV6 2.7L Diesel, Removal and Installation).
3. Remove the accessory drive belt tensioner.
 - Remove the bolt.



4. Remove the accessory drive belt tensioner pulley.
 - Remove the Torx bolt.



Installation

1. Install the accessory drive belt tensioner pulley.
 - Clean the components.
 - Tighten the bolt to 25 Nm (18 lb.ft).
2. Install the accessory drive belt tensioner.
 - Clean the components.
 - Tighten the bolt to 45 Nm (33 lb.ft).
3. Install the accessory drive belt.
For additional information, refer to: [Accessory Drive Belt](#) (303-05A Accessory Drive - TDV6 2.7L Diesel, Removal and Installation).

Accessory Drive - TDV6 2.7L Diesel - Accessory Drive Belt Idler Pulley

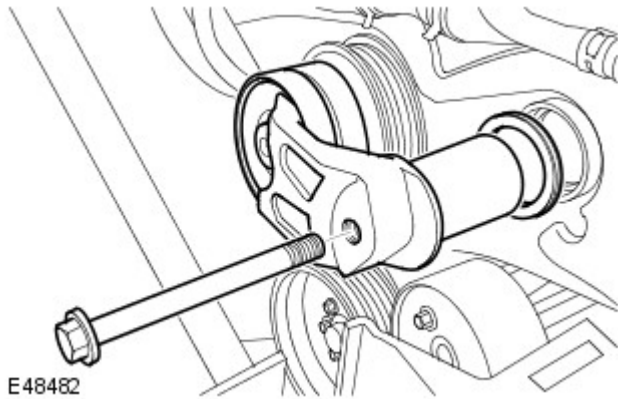
Removal and Installation

Removal

1. Disconnect the battery ground cable.
2. Remove the accessory drive belt.
For additional information, refer to: [Accessory Drive Belt](#) (303-05A Accessory Drive - TDV6 2.7L Diesel, Removal and Installation).

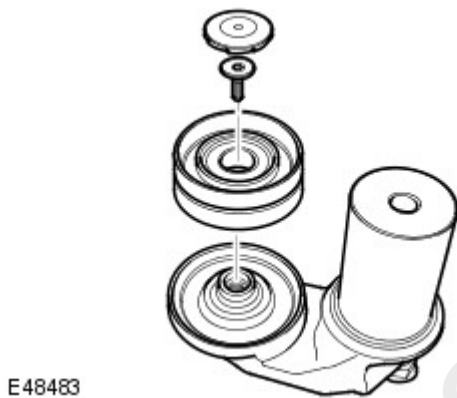
3. Remove the accessory drive belt idler.

- Remove the bolt.
- Remove and discard the seal.



4. Remove the accessory drive belt idler pulley.

- Remove the bolt cover.
- Remove the Torx bolt.



Installation

1. Install the accessory drive belt idler pulley.
 - Clean the components.
 - Tighten the Torx bolt to 25 Nm (18 lb.ft).
 - Install the bolt cover.

2. Install the accessory drive belt idler.

- Clean the components.
- Install a new seal.
- Tighten the bolt to 45 Nm (33 lb.ft).

3. Install the accessory drive belt.

For additional information, refer to: [Accessory Drive Belt](#) (303-05A Accessory Drive - TDV6 2.7L Diesel, Removal and Installation).

Accessory Drive - TDV6 2.7L Diesel - Fuel Injection Pump Pulley

Removal and Installation

Removal

1. Refer to Fuel Pump.

For additional information, refer to: [Fuel Pump - VIN Range: SALLA000304->END OF 06MY](#) (303-04A Fuel Charging and Controls - TDV6 2.7L Diesel, Removal and Installation).

Installation

1. Refer to Fuel Pump.

For additional information, refer to: [Fuel Pump - VIN Range: SALLA000304->END OF 06MY](#) (303-04A Fuel Charging and Controls - TDV6 2.7L Diesel, Removal and Installation).

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