

Accessory Drive - TDV6 3.0L Diesel -

Torque Specification

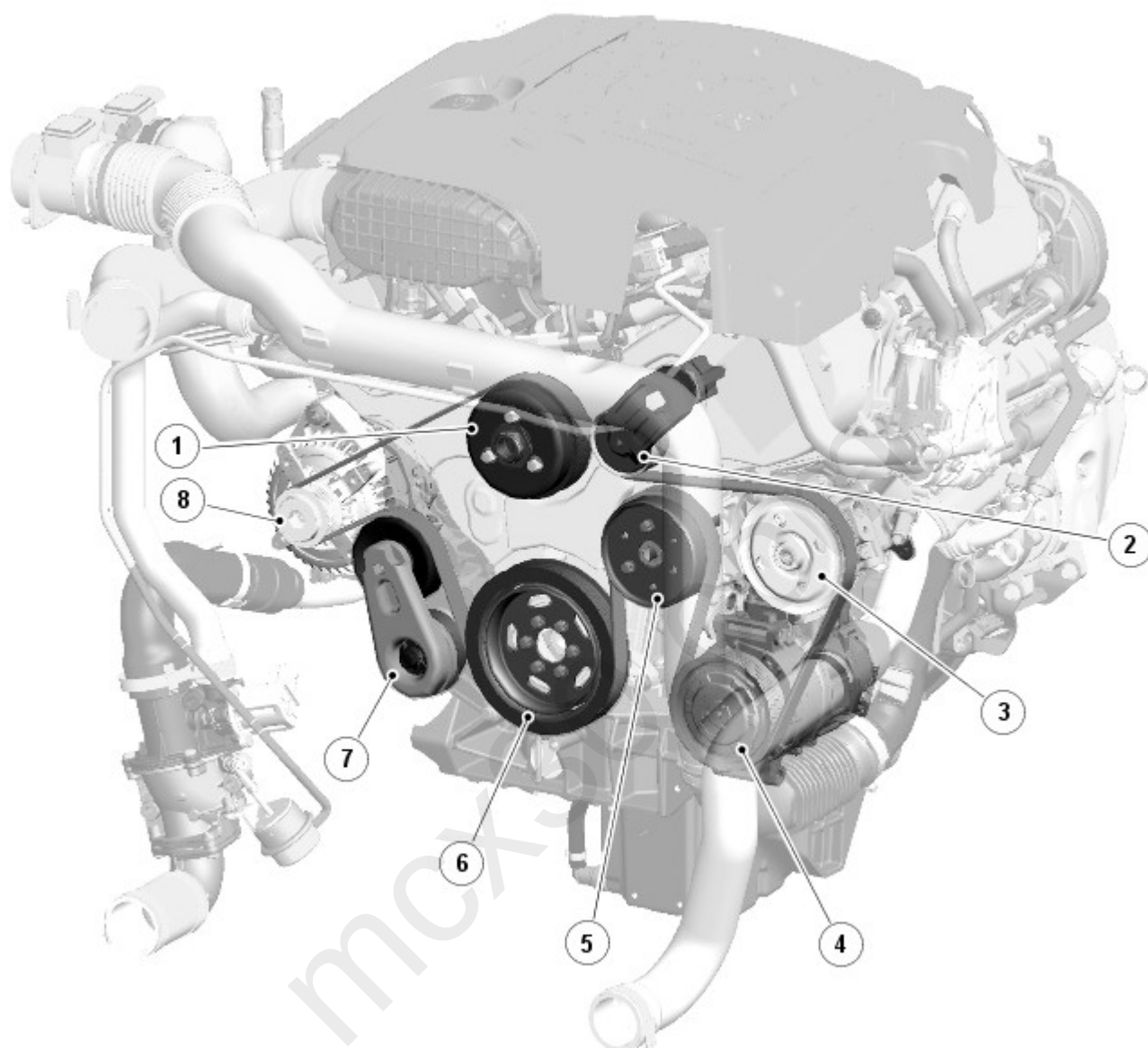
- NOTE: A = refer to procedure for correct torque sequence

Description	Nm	lb-ft	lb-in
Accessory drive belt tensioner retaining bolt	47	35	-
Accessory drive belt idler pulley retaining bolt	50	37	-
Fuel injection pump sprocket retaining nut	A	-	-
Camshaft rear hub bolt	Stage 1 - 80 Stage 2 - 80 degrees	Stage 1 - 59 Stage 2 - 80 degrees	-
Camshaft rear pulley retaining bolts	23	17	-
Rear end accessory drive belt (READ) belt tensioner retaining bolt	23	17	-

mcx30.com

Accessory Drive - TDV6 3.0L Diesel - Accessory Drive - Component Location

Description and Operation



E107566

ItemDescription

1	Viscous fan pulley
2	Idler
3	Power steering pump
4	A/C (air conditioning) compressor
5	Coolant pump
6	Crankshaft pulley
7	Belt tensioner
8	Generator

Accessory Drive - TDV6 3.0L Diesel - Accessory Drive - Overview

Description and Operation

OVERVIEW

The crankshaft pulley drives a six ribbed poly V belt which in turn drives all of the engine mounted accessories.

mcx30.com

Accessory Drive - TDV6 3.0L Diesel - Accessory Drive - System Operation and Component Description

Description and Operation

System Operation

OPERATION

The crankshaft pulley is attached to and rotates with the crankshaft. The pulley provides the drive for the accessory drive vee belt which in turn provides rotational power for the front mounted accessories such as the generator, power steering pump, coolant pump and the [A/C \(air conditioning\)](#) compressor.

The crankshaft pulley is a combined pulley and torsional vibration damper.

Component Description

DESCRIPTION

The accessory drive belt, which is a maintenance free poly-V type belt, is automatically pre-loaded by the belt tensioner and routed over idlers in order to maintain sufficient friction around the drive wheels. This ensures slip-free drive of the accessory components.

The torsional vibration damper incorporates compressed rubber between its inner and outer diameters to reduce peak levels of torsional vibration within the crankshaft.

The belt tensioner is calibrated to provide the correct amount of tension to the belt for a given drive system. Unless a spring within the tensioner assembly breaks, or some other mechanical part of the tensioner fails, there is no need to check the tensioner for correct tension.

The accessory drive belt should be inspected at every routine service for excessive wear and damage.

The belt tensioner consists of an idler pulley, which is free to rotate on a bearing located at the end of a spring-loaded pivot arm.

Accessory Drive - TDV6 3.0L 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: (303-05B Accessory Drive - TDV6 3.0L Diesel)

[Accessory Drive](#) (Description and Operation),

[Accessory Drive](#) (Description and Operation),

[Accessory Drive](#) (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 • 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

Symptom	Possible Causes	Action
		trouble codes (DTCs) indicating a pump malfunction.
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.

Accessory Drive - TDV6 3.0L Diesel - Accessory Drive Belt

Removal and Installation

Removal

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

1. Disconnect the battery ground cable.

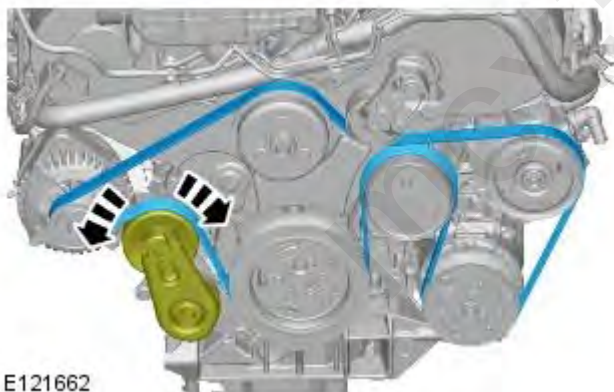
Refer to: [Specifications](#) (414-00 Battery and Charging System - General Information, Specifications).

2. Refer to: [Cooling Fan](#) (303-03B Engine Cooling - TDV6 3.0L Diesel, Removal and Installation).



3. **3. NOTE:** Note the fitted position of the accessory drive belt.

Installation



1. **1. CAUTIONS:**



Make sure that the accessory drive belt is correctly located on each pulley.



Clean and inspect the accessory drive belt pulleys for damage.

- NOTE: Engine shown removed for clarity.

To install, reverse the removal procedure.

Accessory Drive - TDV6 3.0L Diesel - Accessory Drive Belt Idler Pulley

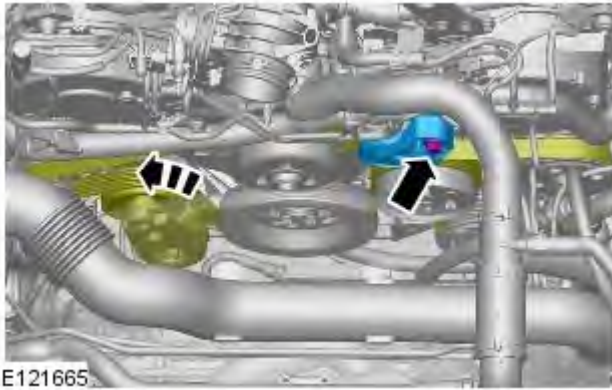
Removal and Installation

Removal

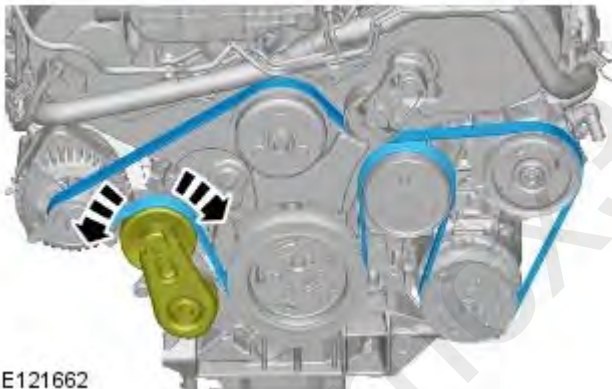
- NOTE: Removal steps in this procedure may contain installation details.

1. Refer to: [Cooling Fan](#) (303-03B Engine Cooling - TDV6 3.0L Diesel, Removal and Installation).

2. Torque: 50 Nm



Installation



1. 1. CAUTIONS:



Clean and inspect the accessory drive belt pulleys for damage.



Make sure that the accessory drive belt is correctly located on each pulley.

- NOTE: Engine shown removed for clarity.

To install, reverse the removal procedure.

Accessory Drive - TDV6 3.0L Diesel - Accessory Drive Belt Tensioner

Removal and Installation

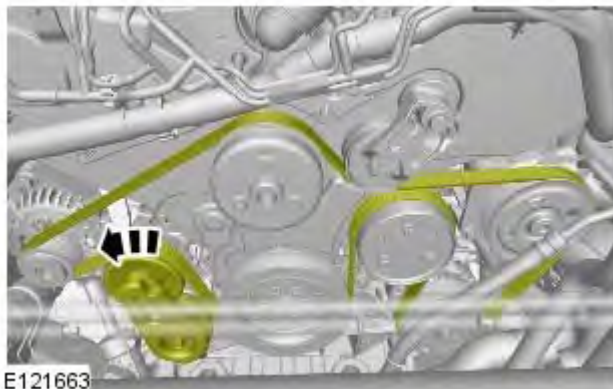
Removal

- 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. Refer to: [Cooling Fan](#) (303-03B Engine Cooling - TDV6 3.0L Diesel, Removal and Installation).

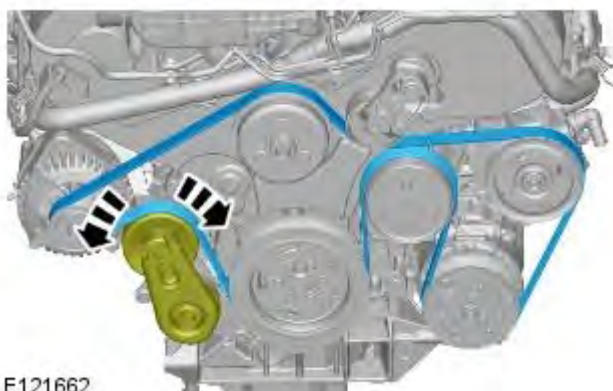


3. **NOTE:** Note the fitted position of the accessory drive belt.



4.
 - Torque: 47 Nm

Installation



1. **CAUTIONS:**



Make sure that the accessory drive belt is correctly located on each pulley.



Clean and inspect the accessory drive belt pulleys for damage.

- NOTE: Engine shown removed for clarity.

To install, reverse the removal procedure.

Accessory Drive - TDV6 3.0L Diesel - Fuel Injection Pump Pulley

Removal and Installation

Removal

1. Refer to: [Fuel Injection Pump](#) (303-04C Fuel Charging and Controls - TDV6 3.0L Diesel, Removal and Installation).

Installation

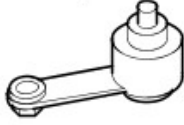
1. To install, reverse the removal procedure.

mcx30.com

Accessory Drive - TDV6 3.0L Diesel - Rear End Accessory Drive (READ)

Removal and Installation

Special Tool(s)

 E54540	303-1117 Timing Peg, Automatic Transmission
 E116926	310-212 Rear End Accessory Drive (READ) belt Timing Tool

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.

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

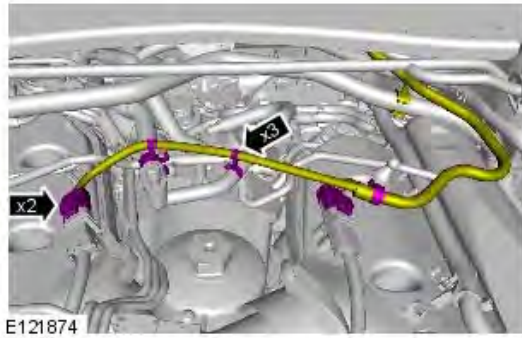
2. Refer to: [Engine Cover - TDV6 3.0L Diesel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

3.  **WARNING:** Make sure to support the vehicle with axle stands.
Raise and support the vehicle.

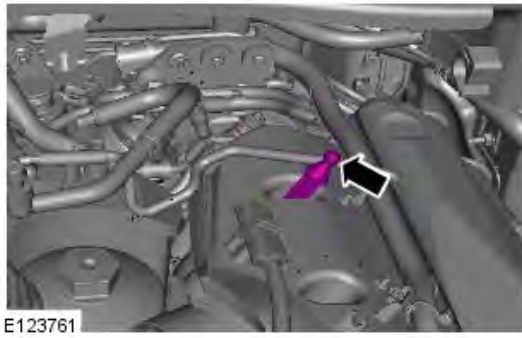
4. Refer to: [Starter Motor](#) (303-06B Starting System - TDV6 3.0L Diesel, Removal and Installation).

5. Lower the vehicle.

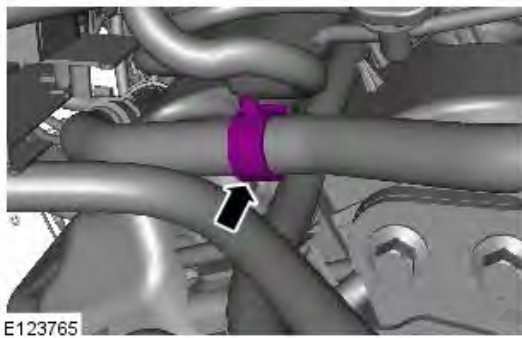
6.



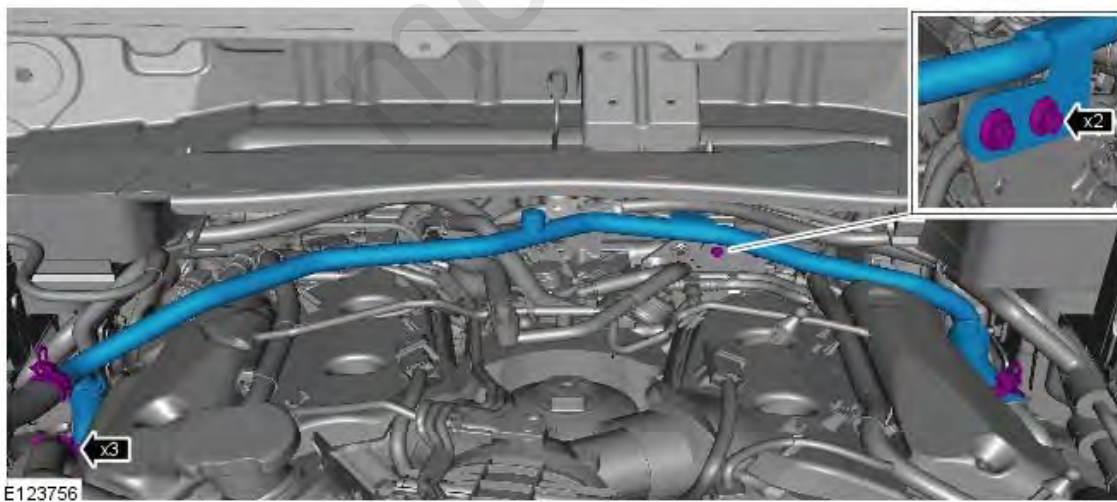
7.

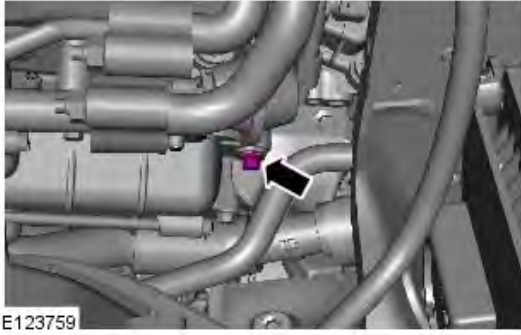


8. **8.** NOTE: Engine shown removed for clarity.

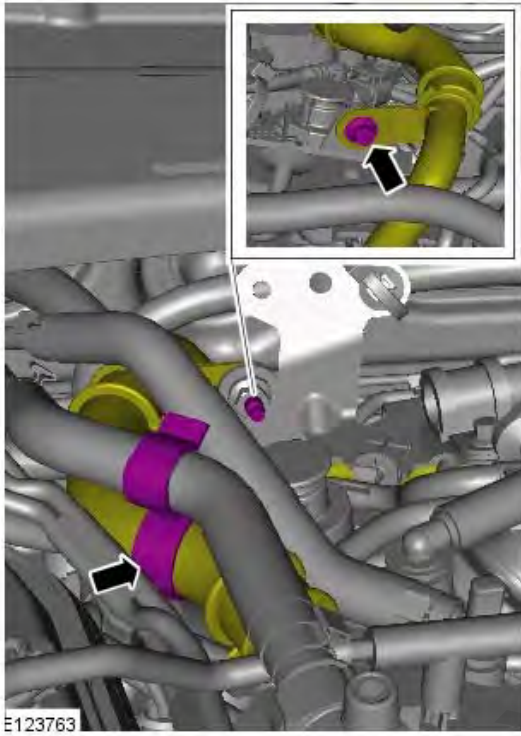


9.

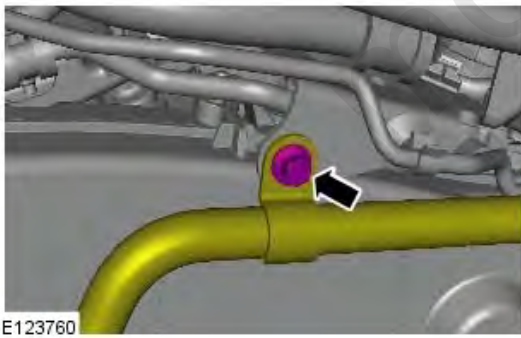




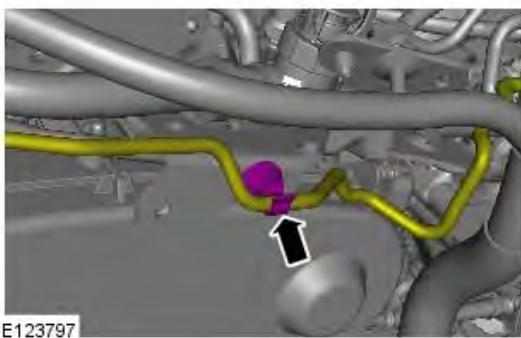
10.



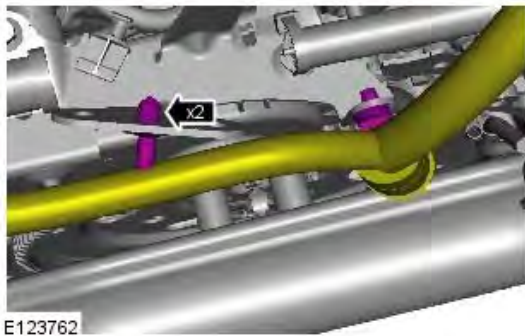
11.



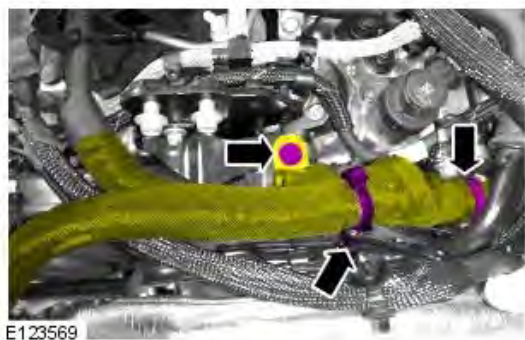
12. **12.** NOTE: Engine shown removed for clarity.



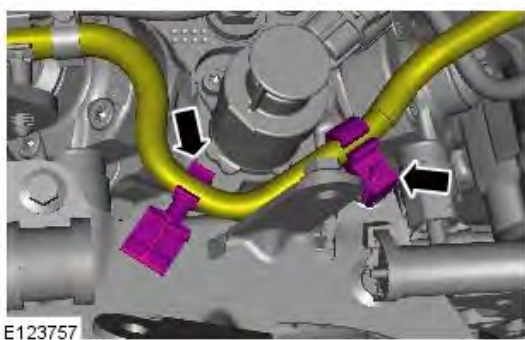
13. **13.** NOTE: Engine shown removed for clarity.



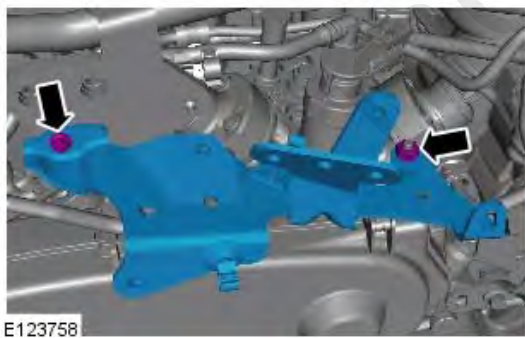
14. **14.** NOTE: Engine shown removed for clarity.



15. **15.** NOTE: Engine shown removed for clarity.

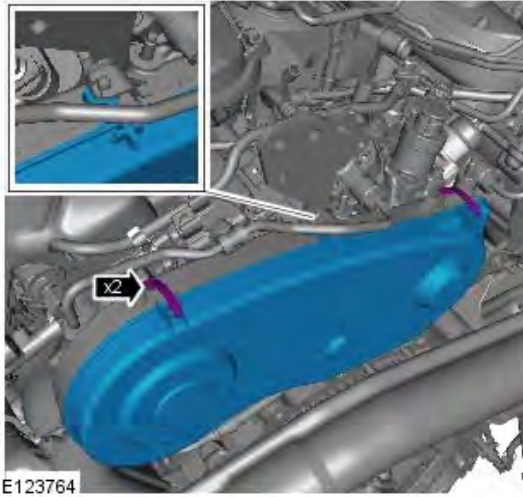


16. **16.** NOTE: Engine shown removed for clarity.



17. **17.** NOTE: Engine shown removed for clarity.

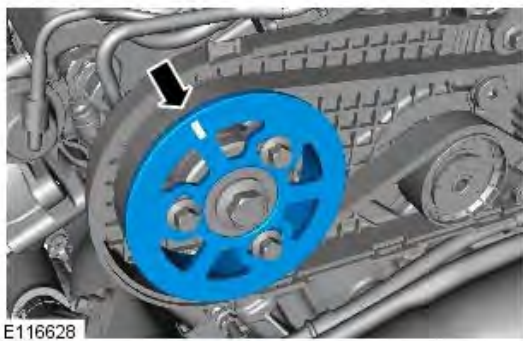
18.



19. **19.**  **CAUTION:** Only rotate the crankshaft clockwise.

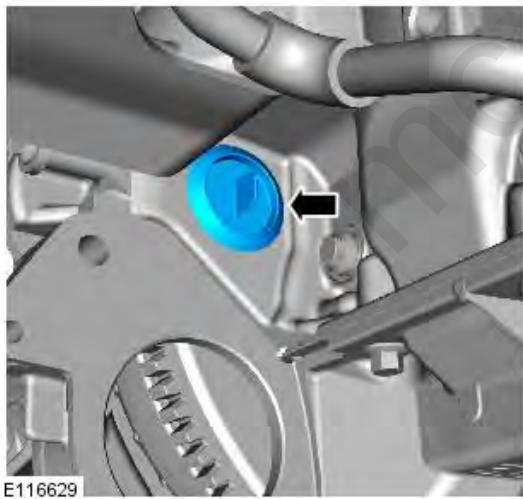
- NOTE: This step requires the aid of another technician.
- NOTE: Engine shown removed for clarity.

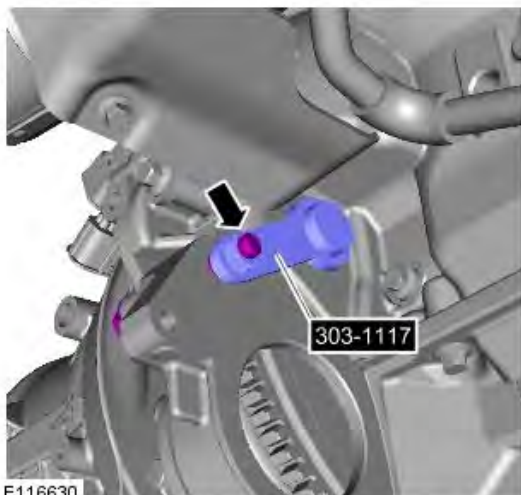
Rotate the crankshaft until the mark on the rear camshaft pulley is in the illustrated position.



20. **20.**  **WARNING:** Make sure to support the vehicle with axle stands.
Raise and support the vehicle.

21.

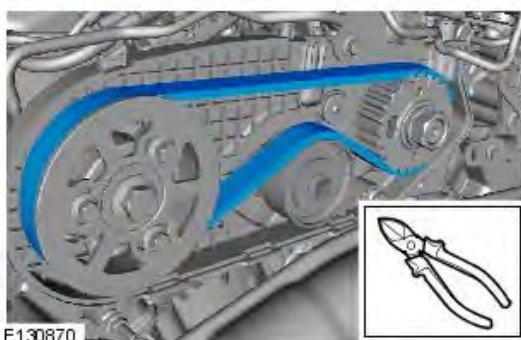




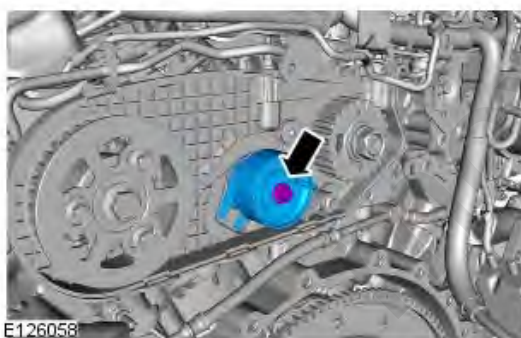
22.

- Install the special tool.
- *Special Tool(s):* [303-1117](#)

23. Lower the vehicle.

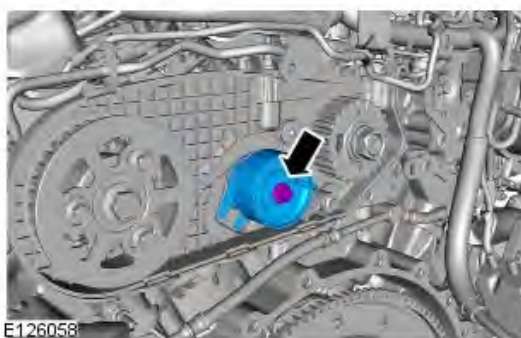


24. **24.** NOTE: Engine shown removed for clarity.

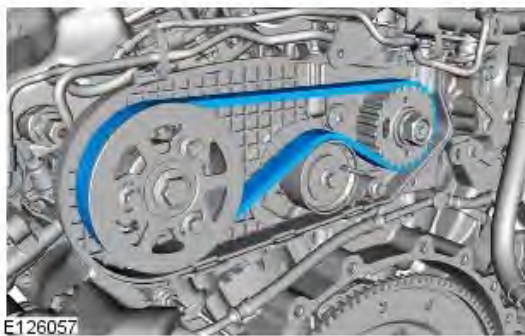


25. **25.** NOTE: Engine shown removed for clarity.

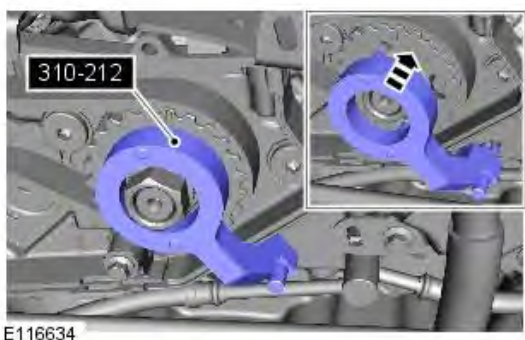
Installation



1.  CAUTION: Make sure that the READ belt tensioner tang is correctly located to the READ belt rear cover. Failure to follow this instruction may result in damage to the engine.
 - NOTE: Make sure that the rear end accessory drive (READ) belt tensioner locking pin is not removed until the READ belt tensioner is fully installed.
 - Torque: 23 Nm



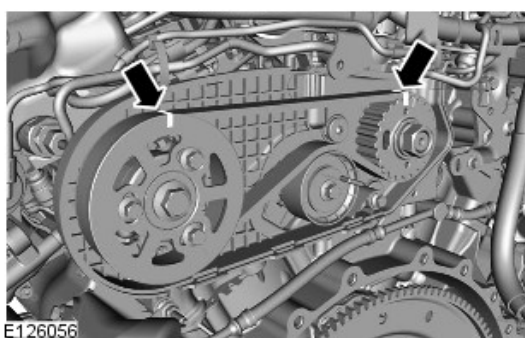
2. **⚠ CAUTION:** Do not install the new READ belt to the pulleys with the READ belt tensioner installed. Failure to follow this instruction may result in damage to the READ belt.
 - **NOTE:** The READ rotates in a counter-clockwise direction when viewed from the rear of the engine.
 - **NOTE:** Make sure the new READ belt is correctly seated onto the camshaft and fuel pump pulleys.



3. **NOTE:** Engine shown removed for clarity.

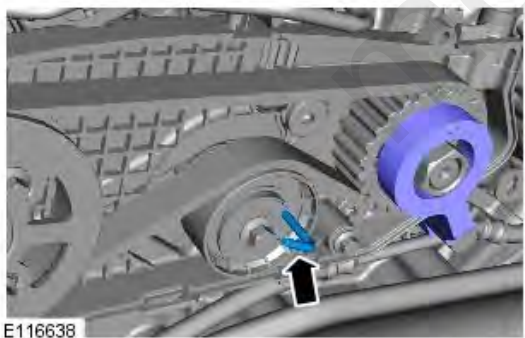
Install the special tool.

Special Tool(s): [310-212](#)

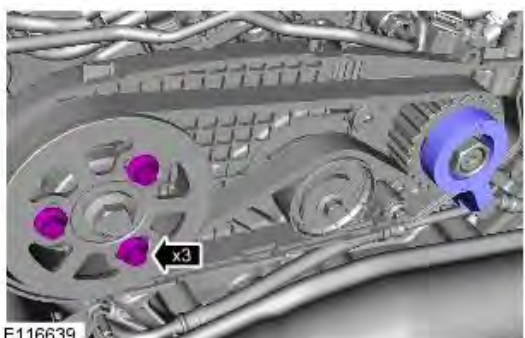


4. **NOTE:** Make sure that the READ belt tensioner locking pin is not removed until the READ belt tensioner is fully installed.

Make sure that the READ belt is aligned with the marks on the rear camshaft pulley and READ pulley as illustrated.

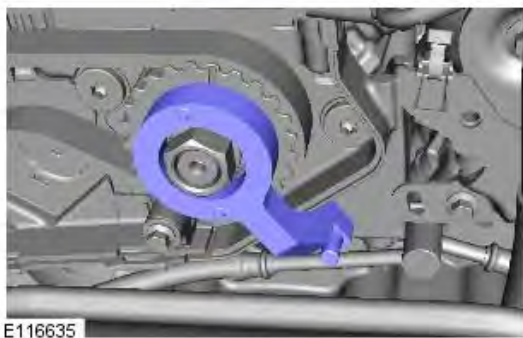


5. **NOTE:** Engine shown removed for clarity.



6. **NOTE:** Engine shown removed for clarity.

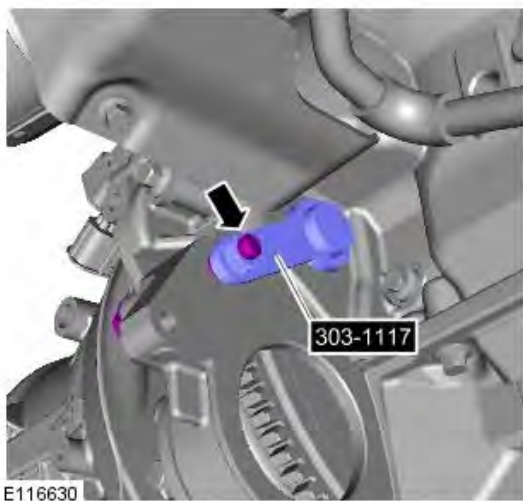
Torque: 23 Nm



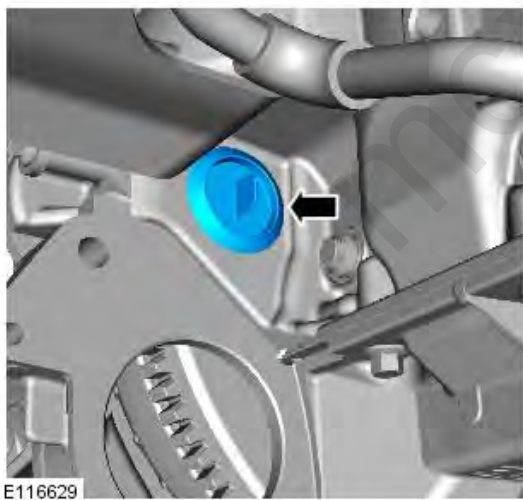
7. **7.** NOTE: Engine shown removed for clarity.

- Remove the special tool.

8. **8.**  **WARNING:** Make sure to support the vehicle with axle stands.
Raise and support the vehicle.



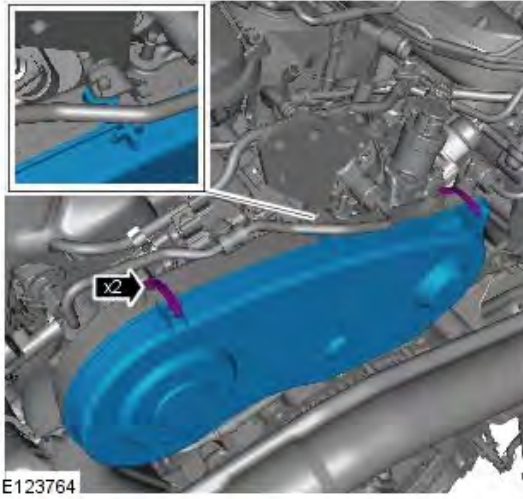
9. Remove the special tool.



10.

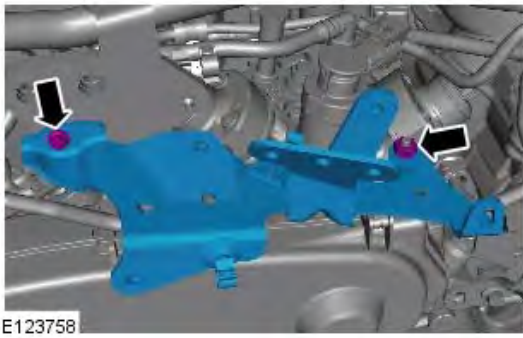
11. Lower the vehicle.

12.

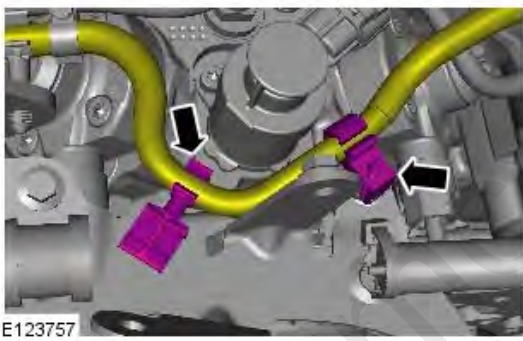


13. **13.** NOTE: Engine shown removed for clarity.

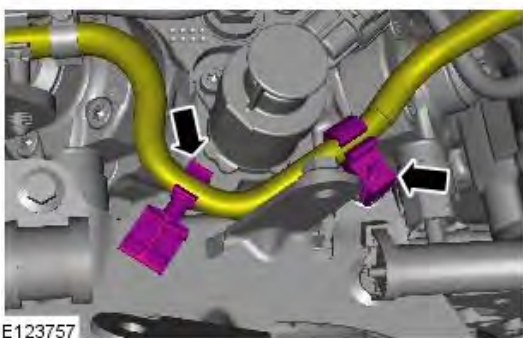
- Torque: 10 Nm

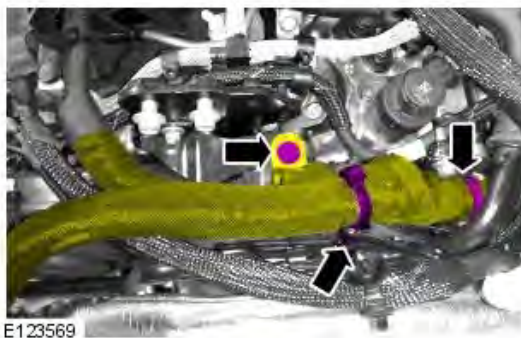


14. **14.** NOTE: Engine shown removed for clarity.



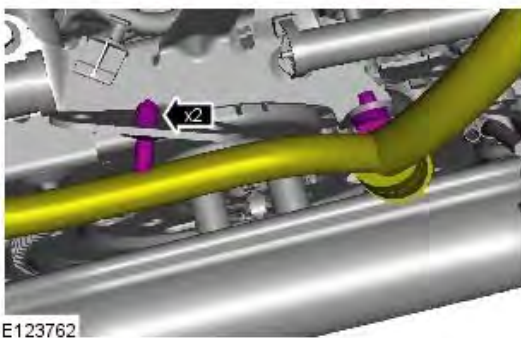
15. **15.** NOTE: Engine shown removed for clarity.



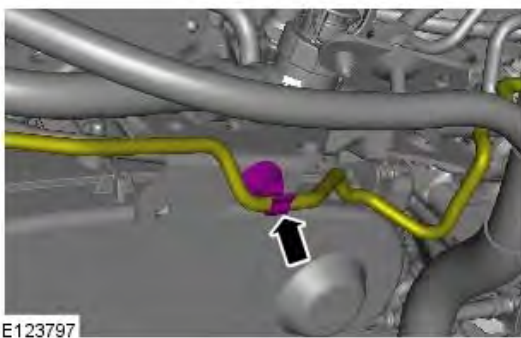


16. **16.** NOTE: Engine shown removed for clarity.

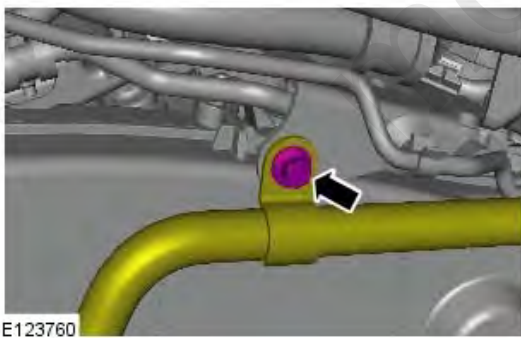
- Torque: 5 Nm



17. **17.** NOTE: Engine shown removed for clarity.



18. **18.** NOTE: Engine shown removed for clarity.

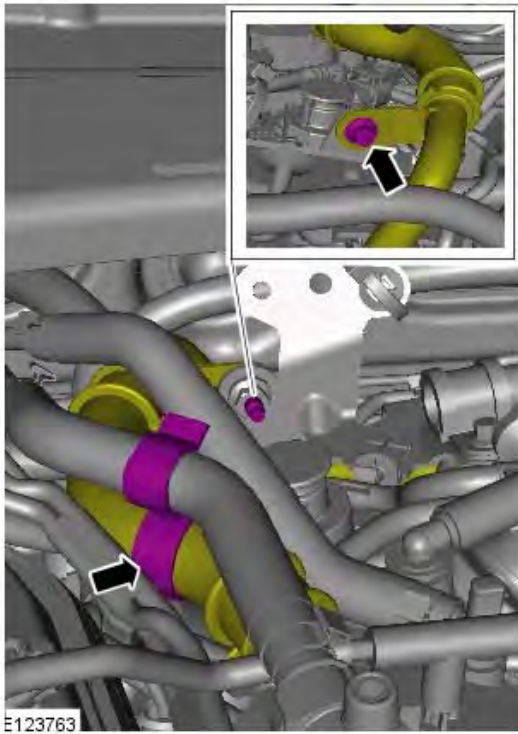


19. **19.** NOTE: Engine shown removed for clarity.

- Torque: 10 Nm

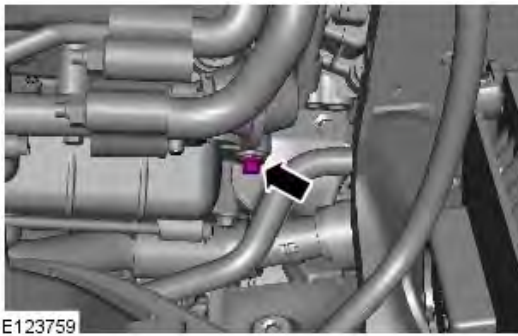
20.

- Torque: 10 Nm



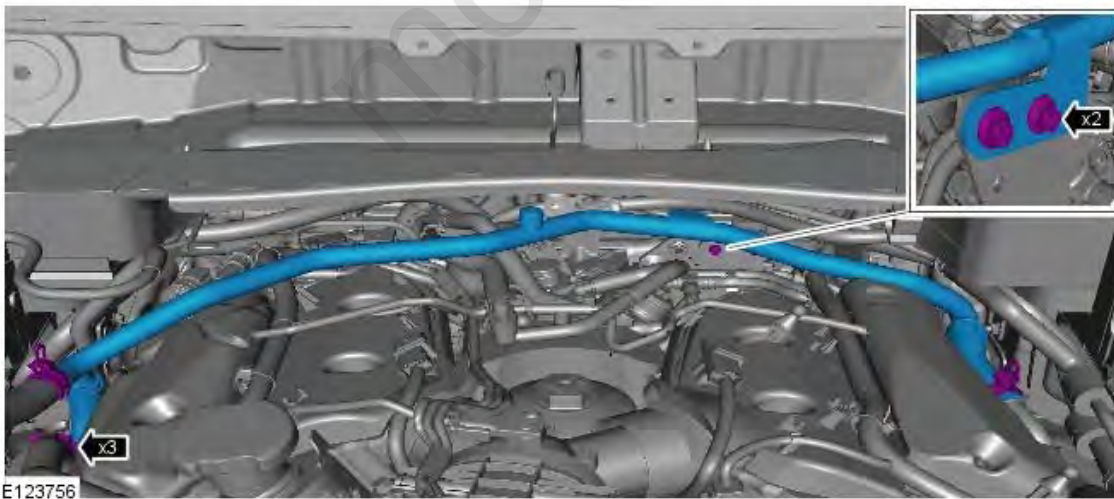
21.

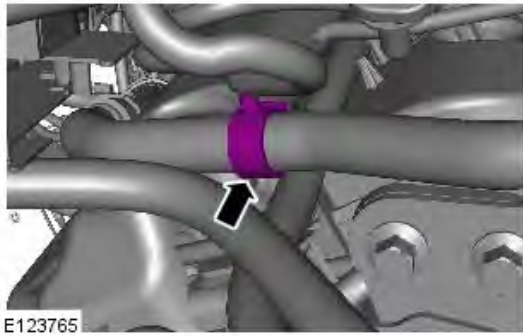
- Torque: 10 Nm



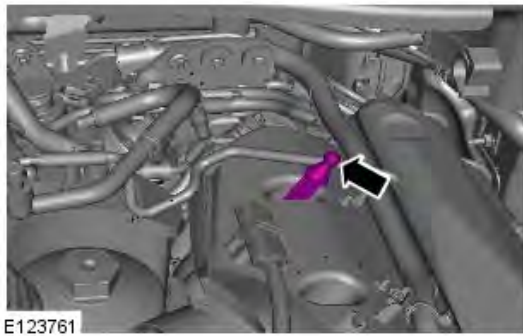
22.

- Torque: 10 Nm



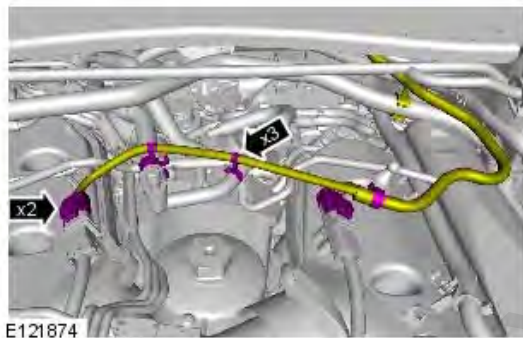


23. **23.** NOTE: Engine shown removed for clarity.



24.

- Torque: 5 Nm



25.

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

Raise and support the vehicle.

27. Refer to: [Starter Motor](#) (303-06B Starting System - TDV6 3.0L Diesel, Removal and Installation).

28. Lower the vehicle.

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

30. Connect the battery ground cable.

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

31. Check and top-up the coolant.