

**32.** Disconnect the battery ground cable.

Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).

# ENGINE - TDV6 3.0L DIESEL

## RIGHT CYLINDER HEAD [G1671814]

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### REMOVAL

- Removal steps in this procedure may contain installation details.
- Some variation in the illustrations may occur, but the essential information is always correct.

1. Disconnect the battery ground cable

Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).

2.

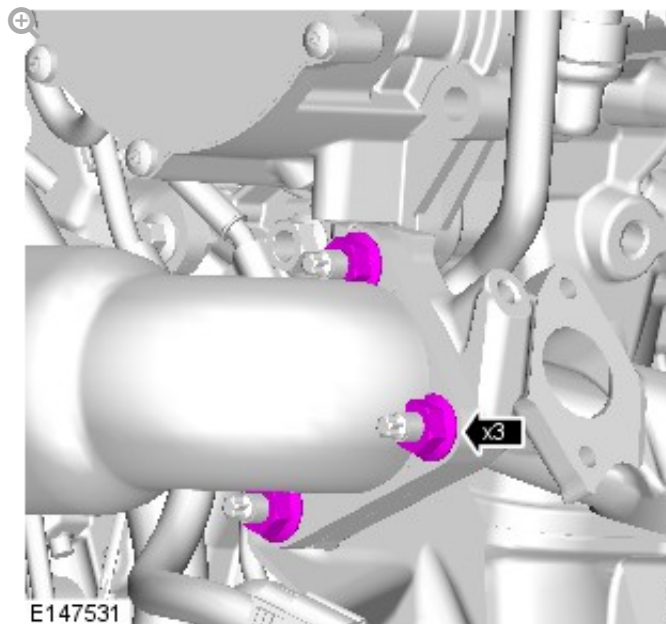
Make sure to support the vehicle with axle stands.

Raise and support the vehicle.

3. Refer to: [Right Turbocharger](#) (303-04B Fuel Charging and Controls - Turbocharger - TDV6 3.0L Diesel, Removal and Installation).

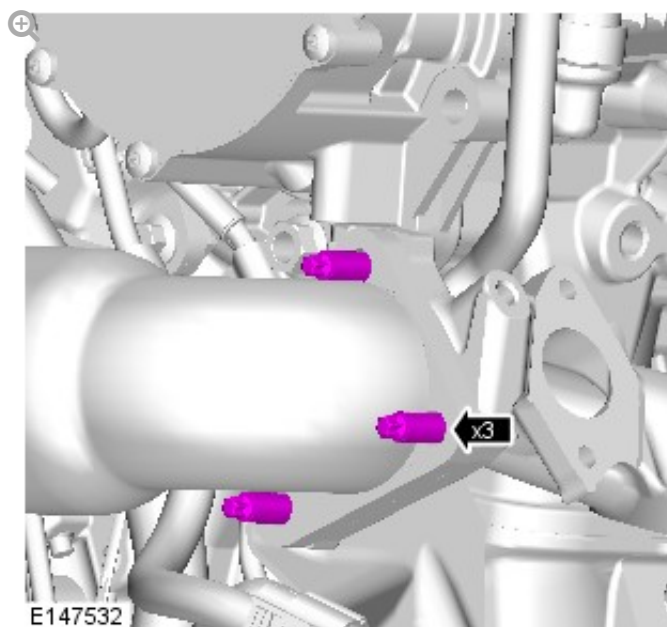
4.

Discard the nuts.



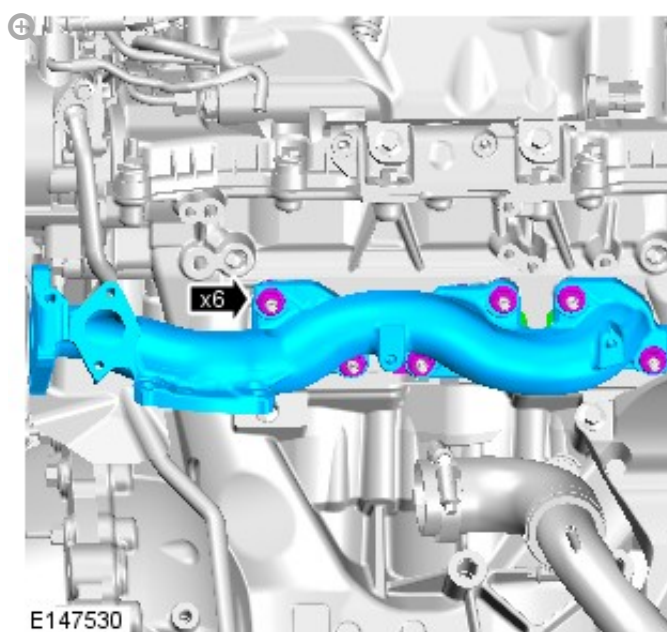
5.

Discard the studs.

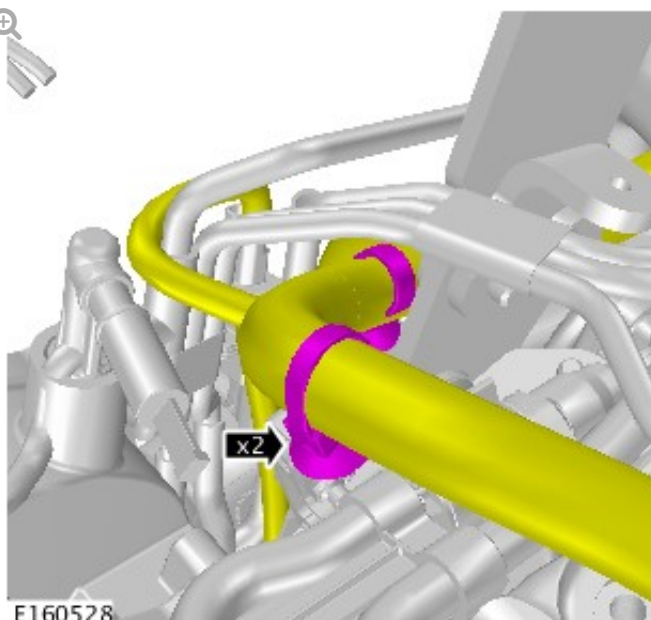


6.

Discard the gasket.

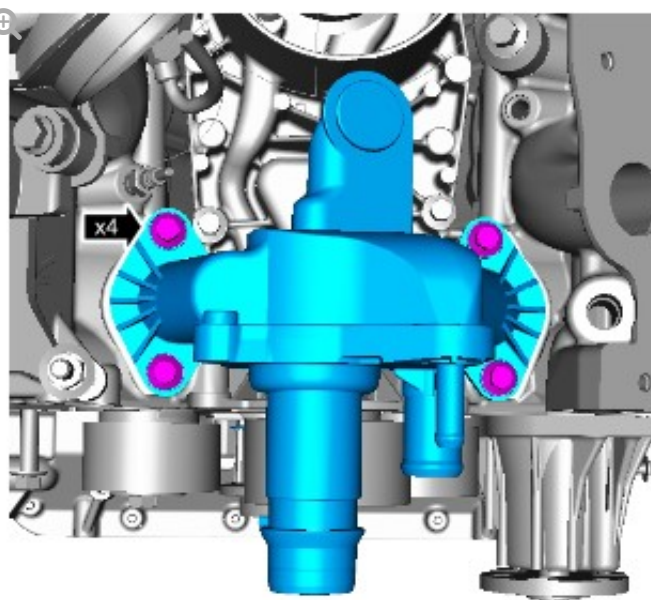


7.



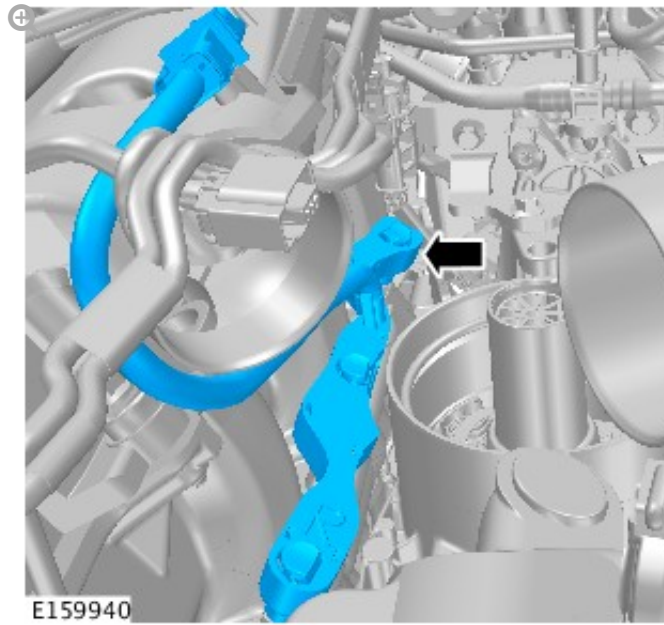
E160528

8.

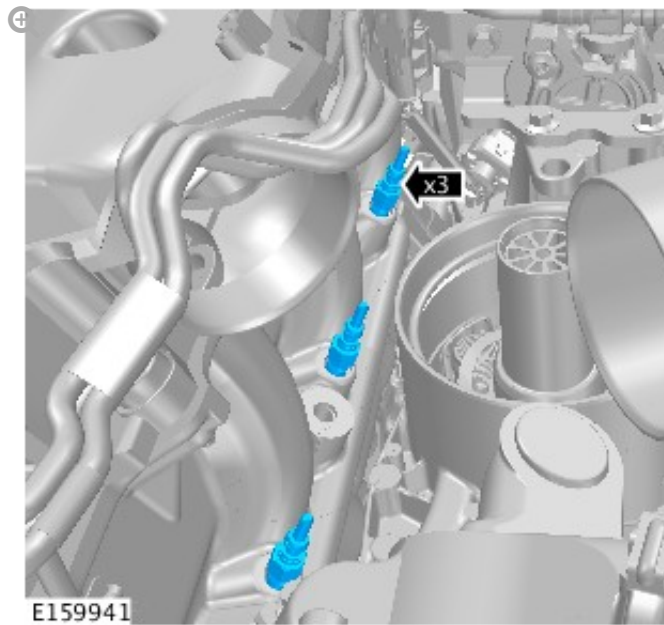


E116917

9.

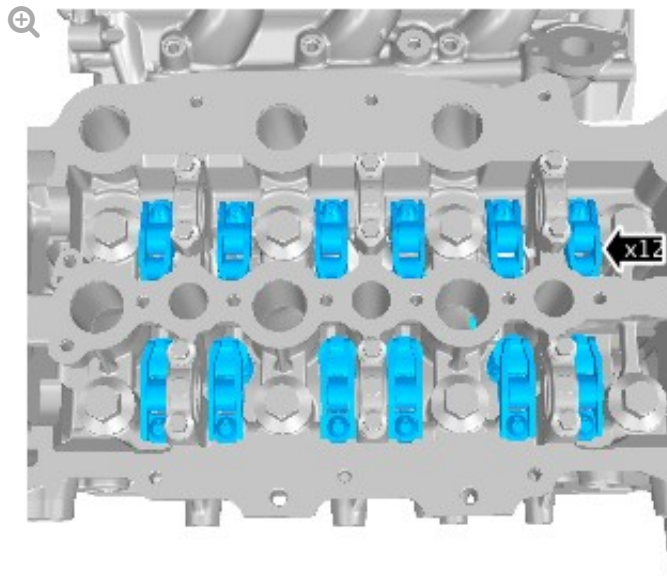


10.



11. Refer to: [Right Camshaft](#) (303-01A Engine - TDV6 3.0L Diesel, Removal and Installation).

12.

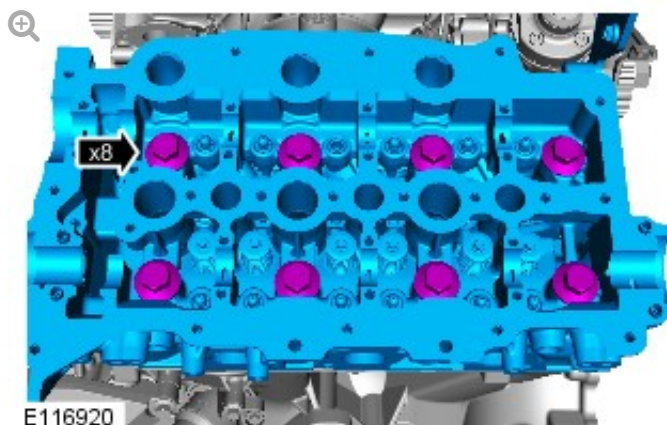


E159939

13.

Discard the bolts.

Discard the gasket.



E116920

1.

Make sure that the mating faces are clean and free of foreign material.

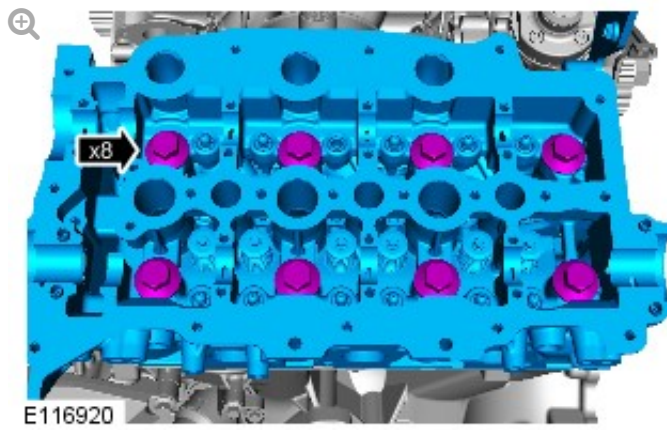
Clean and inspect the cylinder head and cylinder block.

2.

- Only tighten the bolts finger-tight at this stage.
- Make sure that new bolts are installed.
- Use care when installing the cylinder head. Damage to the cylinder block, cylinder head or cylinder head gasket may result.
- The head gasket must be installed over the cylinder block dowels.

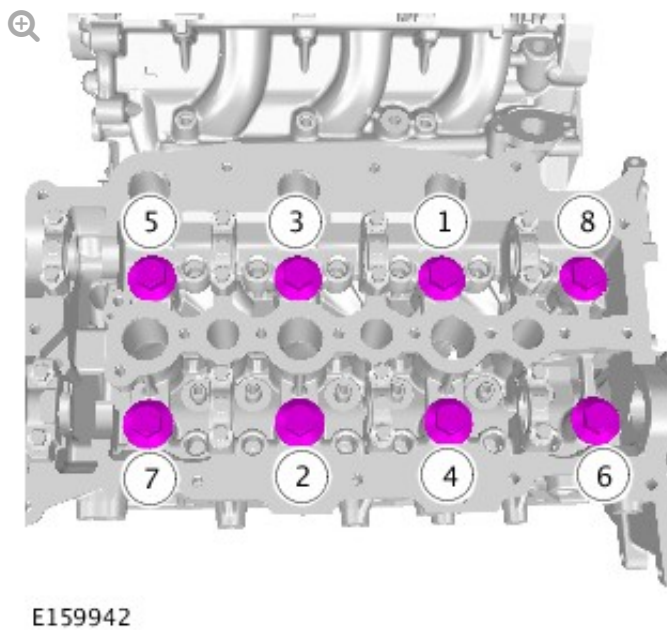
- Install a new gasket.
- No additional lubrication to the cylinder head bolts is required.





3.

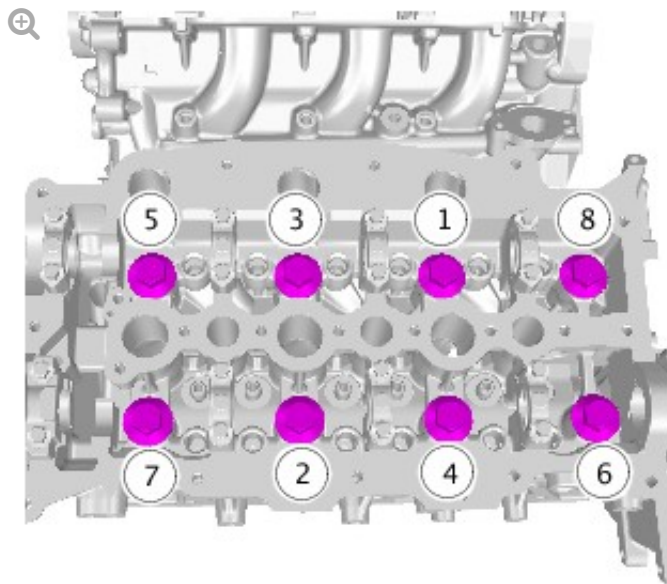
Tighten the bolts in the indicated sequence.



- *Torque:* **80 Nm**

4.

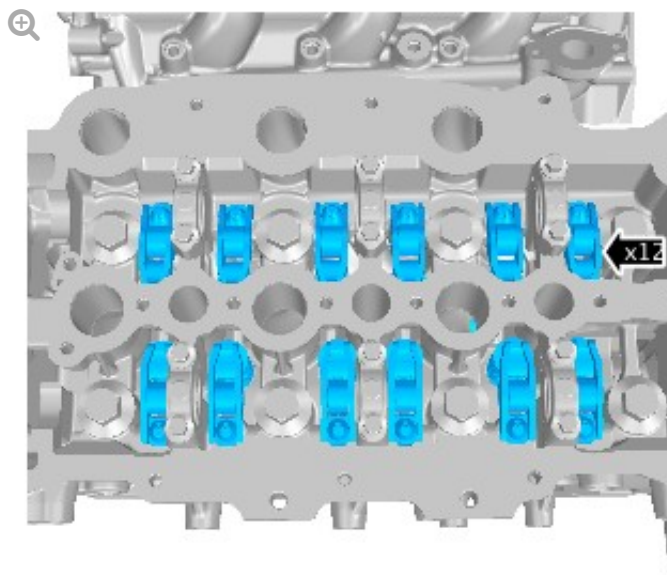
Tighten the bolts in the indicated sequence.



E159942

- *Torque: 180°*

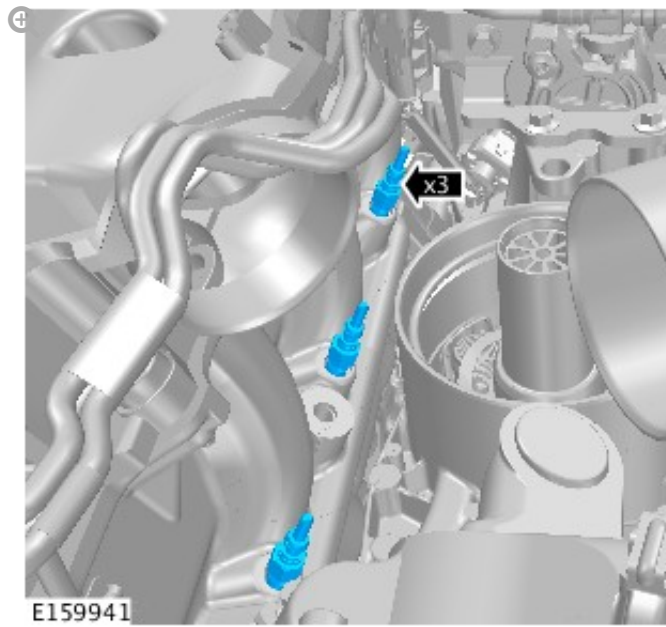
5.



E159939

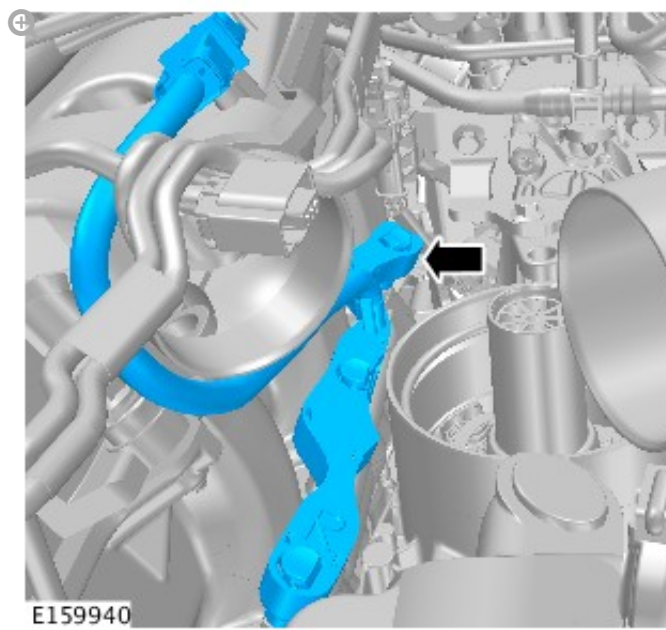
- 6. Refer to: [Right Camshaft](#) (303-01A Engine - TDV6 3.0L Diesel, Removal and Installation).

7.

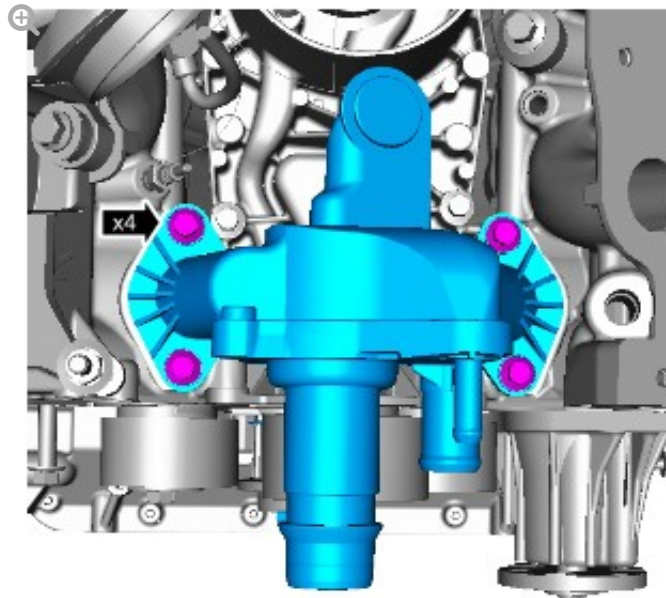


*Torque: 10 Nm*

8.



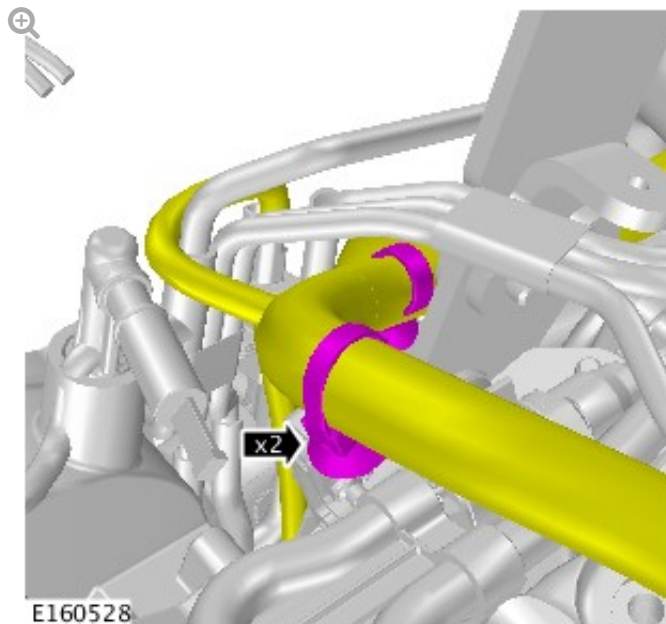
9.



E116917

*Torque: 10 Nm*

10.



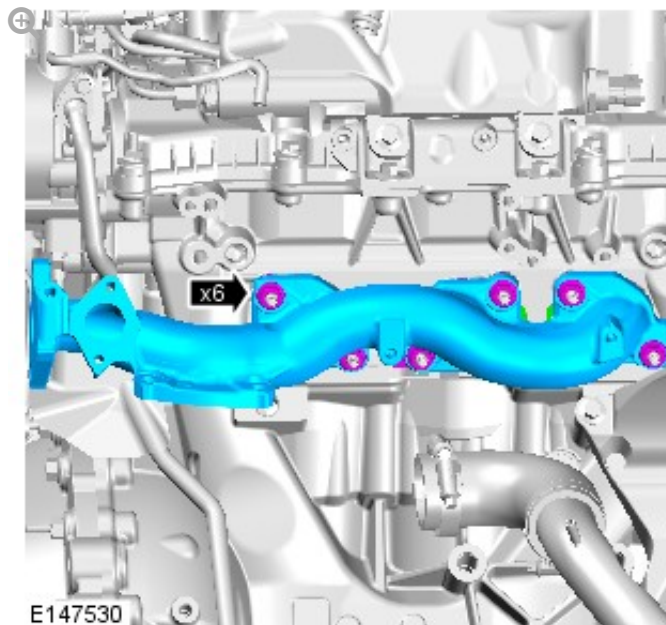
E160528

11.

Make sure that new nuts are installed.

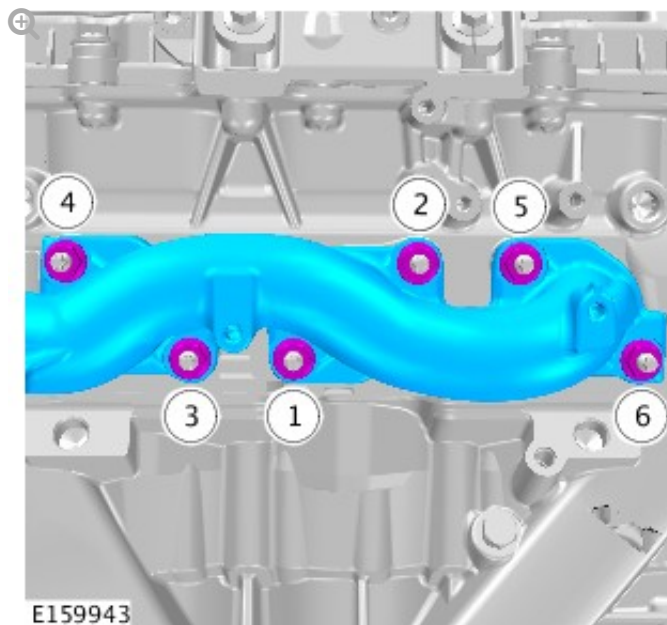
Install the nuts finger tight before final tightening.

Install a new gasket.



12.

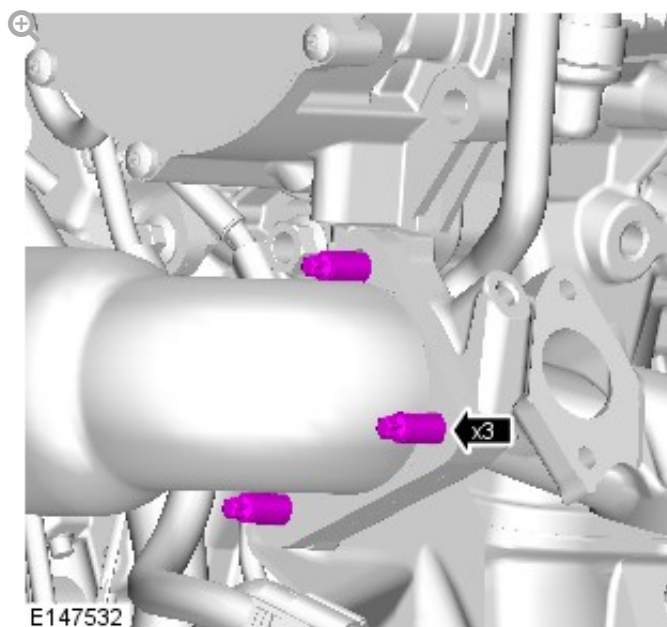
Tighten the bolts in the indicated sequence.



*Torque:* **28 Nm**

13.

Install new studs.

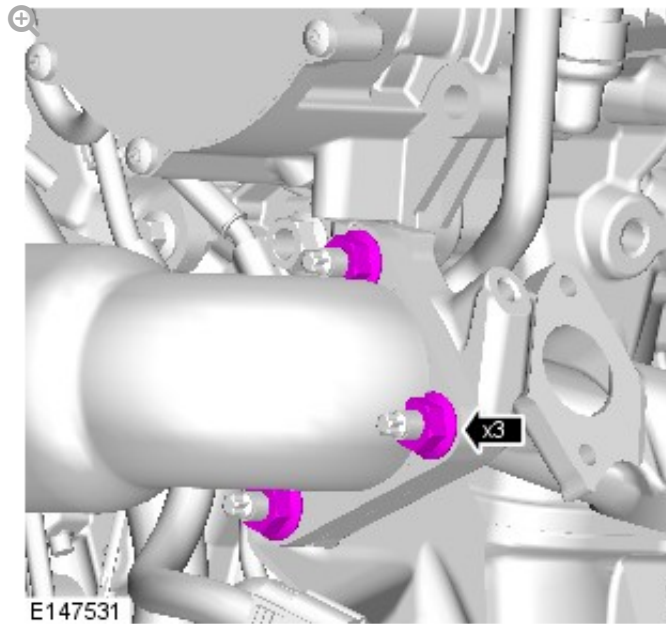


*Torque:* **13 Nm**



14.

Make sure that new nuts are installed.



*Torque:* **24 Nm**

15. Refer to: [Right Turbocharger](#) (303-04B Fuel Charging and Controls - Turbocharger - TDV6 3.0L Diesel, Removal and Installation).
16. Reconnect the battery ground cable  
Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).

# ENGINE - TDV6 3.0L DIESEL

## RIGHT ENGINE MOUNT [G1272045]

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### REMOVAL

Removal steps in this procedure may contain installation details.

1.

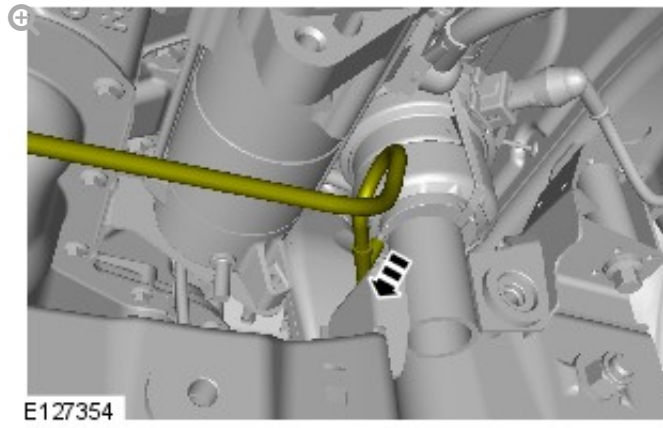
Make sure to support the vehicle with axle stands.

Raise and support the vehicle.

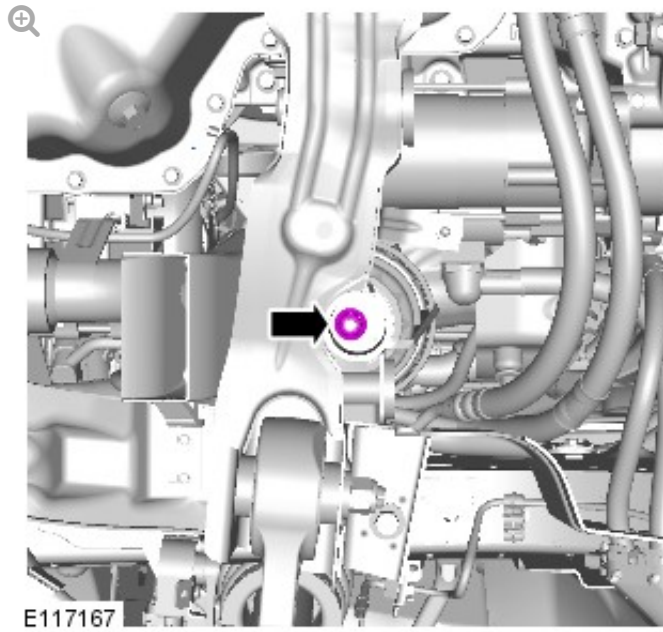
2. Refer to: [Right Turbocharger](#) (303-04B Fuel Charging and Controls - Turbocharger - TDV6 3.0L Diesel, Removal and Installation).
- Refer to: [Right Turbocharger](#) (303-04B Fuel Charging and Controls - Turbocharger - TDV6 3.0L Diesel, Removal and Installation).



3.



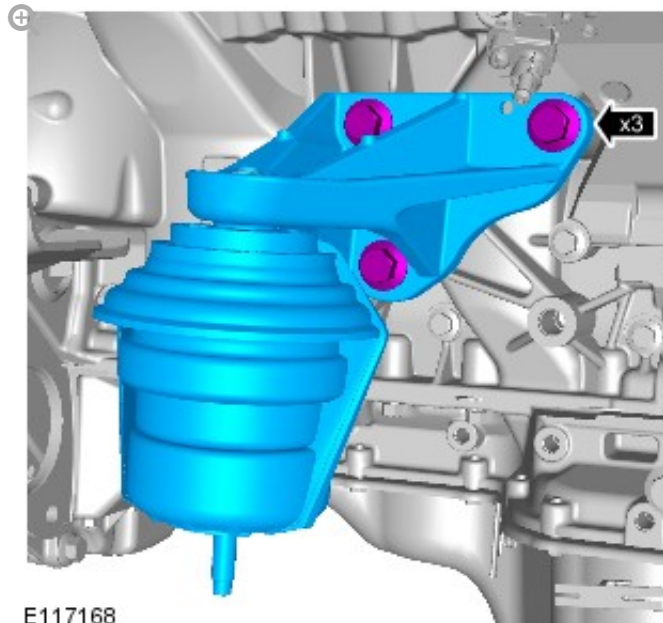
4.



*Torque: **63 Nm***

5. Using a suitable hydraulic jack, raise and support the engine.

6.



E117168

*Torque:* **90 Nm**

7.

Note the fitted position of the component prior to removal.

- Position and secure component in a bench vice fitted with soft jaws.
- Do not disassemble further if the component is removed for access only.



E117169

*Torque:* **48 Nm**

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## INSTALLATION

1. To install, reverse the removal procedure.

# ENGINE - TDV6 3.0L DIESEL

## RIGHT EXHAUST MANIFOLD

[G1672071]



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### REMOVAL

1.

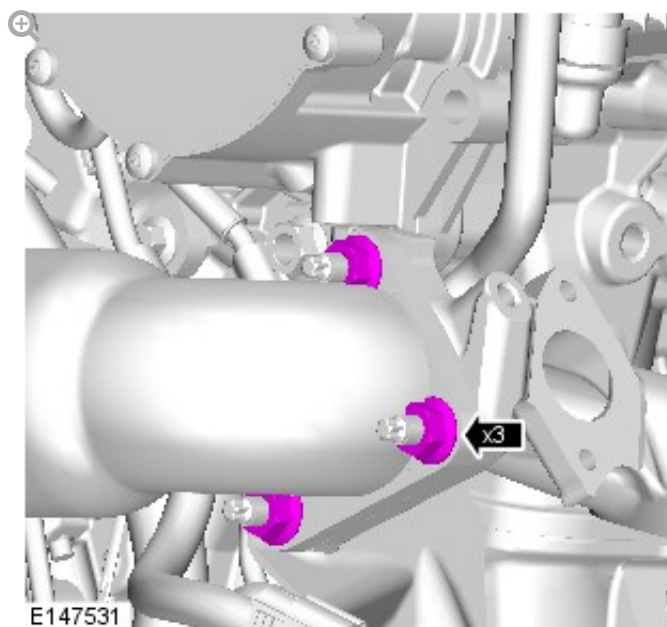
Make sure to support the vehicle with axle stands.

Raise and support the vehicle.

2. Refer to: [Right Turbocharger](#) (303-04B Fuel Charging and Controls - Turbocharger - TDV6 3.0L Diesel, Removal and Installation).

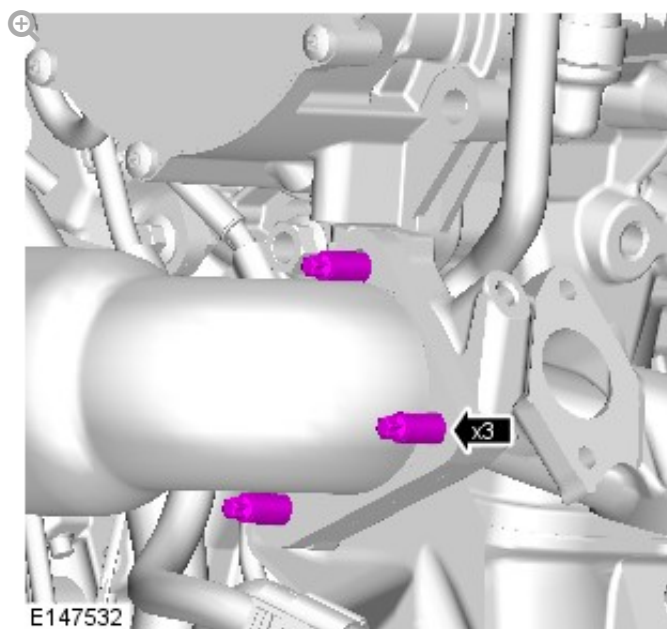
3.

Discard the nuts.



4.

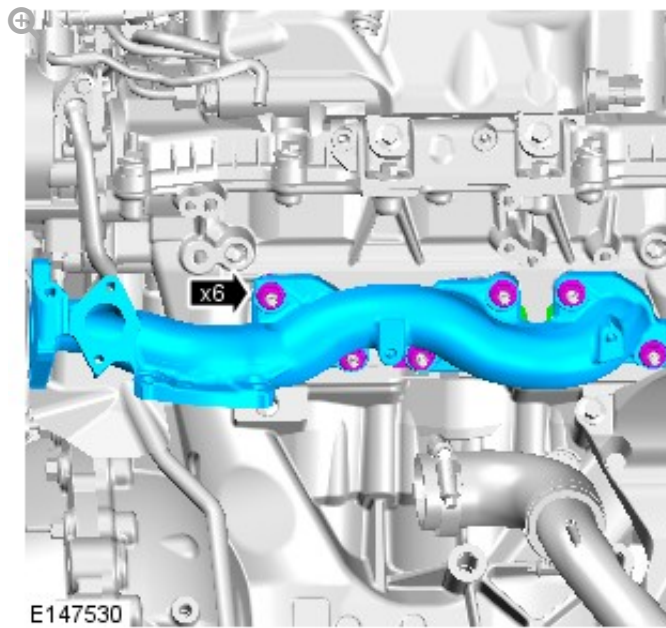
Discard the studs.



5.

Discard the nuts.

Discard the gasket.



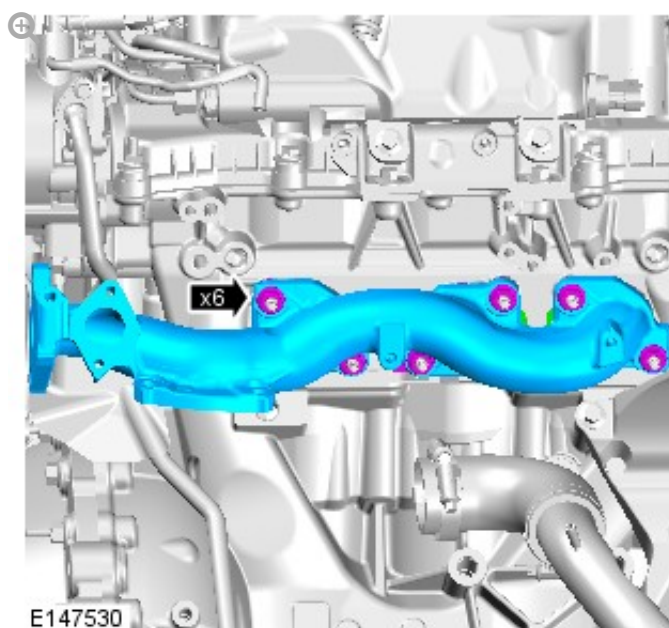
---

## INSTALLATION

1.

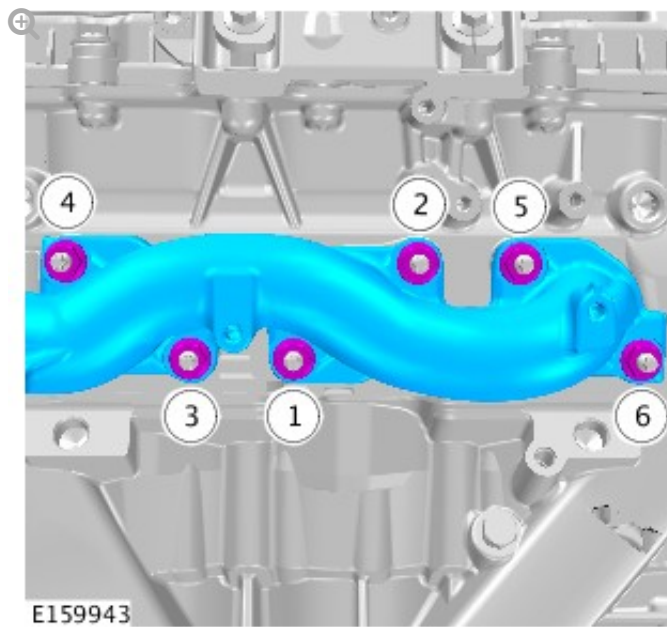
- Make sure that new nuts are installed.
- Install the nuts finger tight before final tightening.

Install a new gasket.



2.

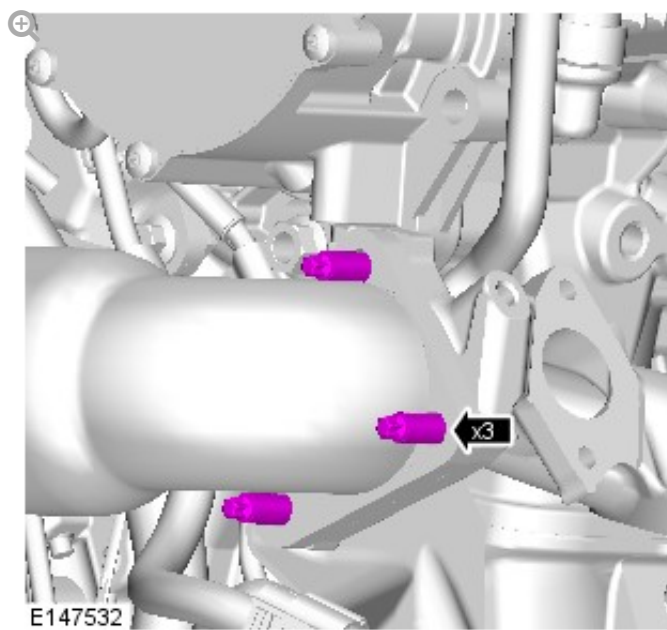
Tighten the bolts in the indicated sequence.



*Torque:* **28 Nm**

3.

Install new studs.

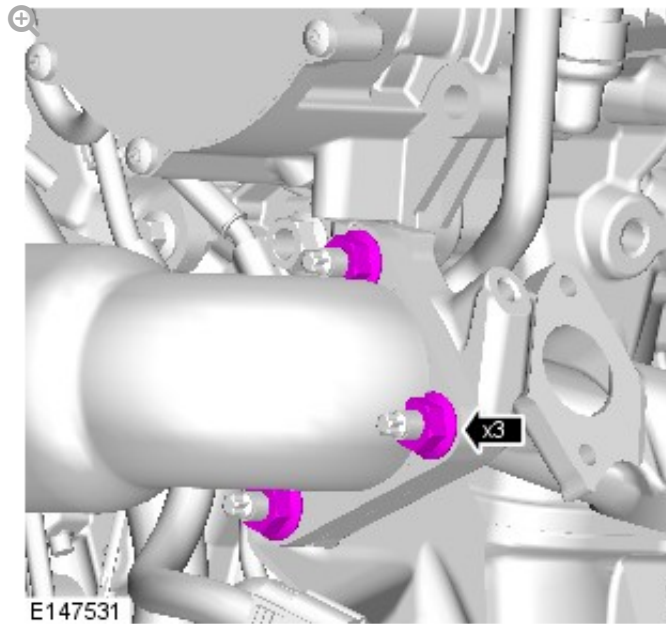


*Torque:* **13 Nm**



4.

Make sure that new nuts are installed.



*Torque:* **28 Nm**

- 5. Refer to: [Right Turbocharger](#) (303-04B Fuel Charging and Controls - Turbocharger - TDV6 3.0L Diesel, Removal and Installation).

# ENGINE - TDV6 3.0L DIESEL

## RIGHT VALVE COVER [G1672072]

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### SPECIAL TOOL[S]



**100-  
012**

Slide Hammer



## 310-213

Fuel Injector  
Removal Adapter

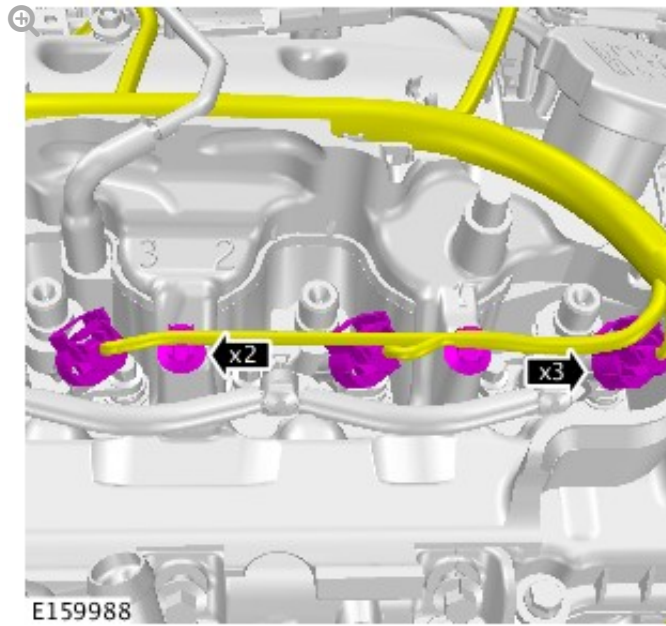
---

### REMOVAL

- Removal steps in this procedure may contain installation details.
- Some variation in the illustrations may occur, but the essential information is always correct.

1. Disconnect the battery ground cable  
Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).
2. Raise and support the vehicle.
3. Refer to: [Timing Cover](#) (303-01A Engine - TDV6 3.0L Diesel, Removal and Installation).
4. Refer to: [Right Fuel Rail](#) (303-04A Fuel Charging and Controls - TDV6 3.0L Diesel, Removal and Installation).
5. Refer to: [Intake Air Shutoff Throttle](#) (303-04A Fuel Charging and

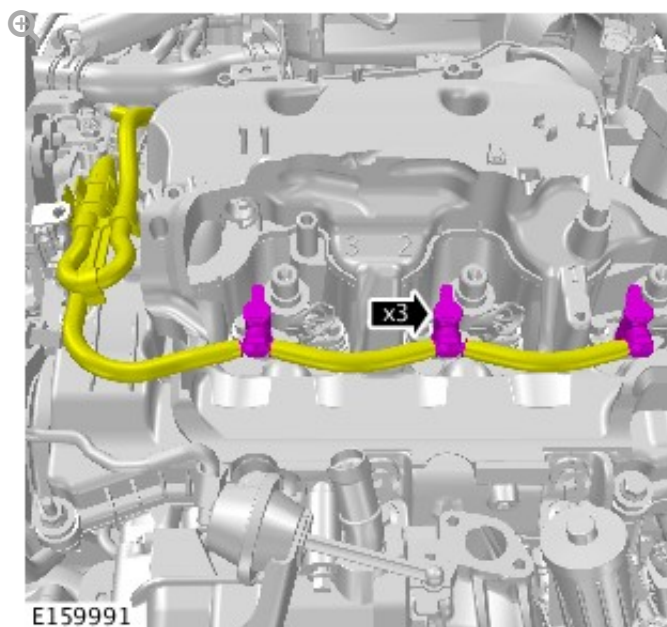
6.



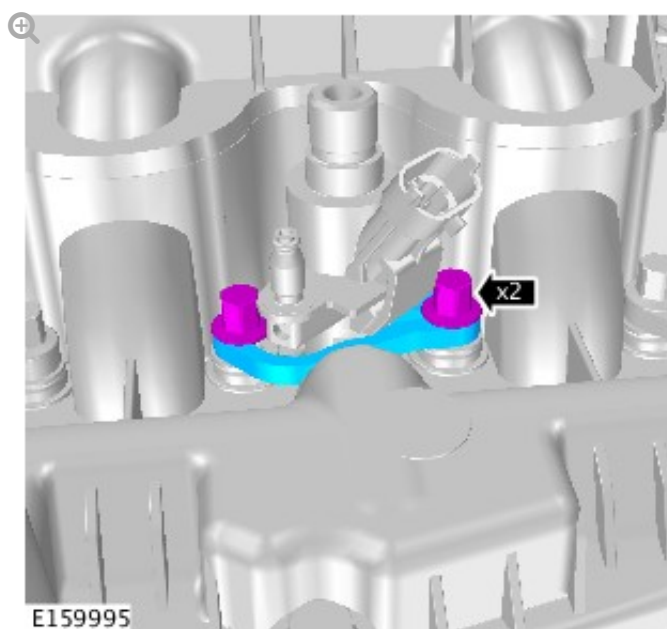
7. Refer to: [Fuel Injection Component Cleaning](#) (303-04A Fuel Charging and Controls - TDV6 3.0L Diesel, General Procedures).

8.

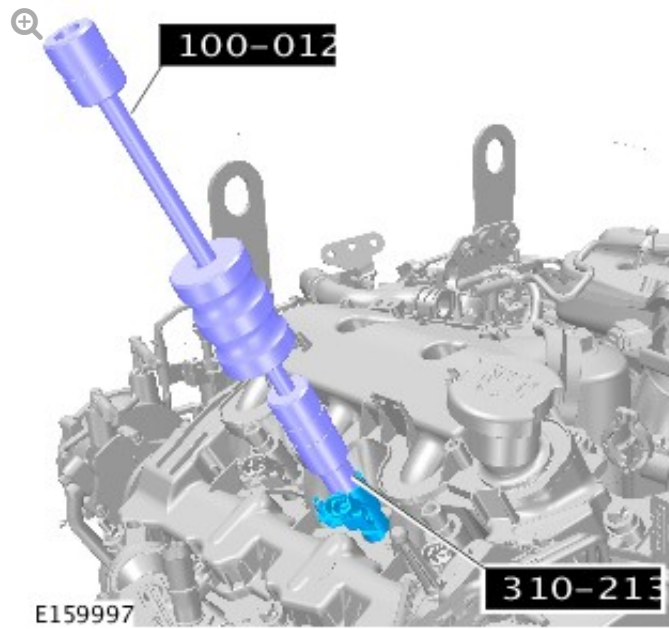
Be prepared to collect escaping fuel.



9.



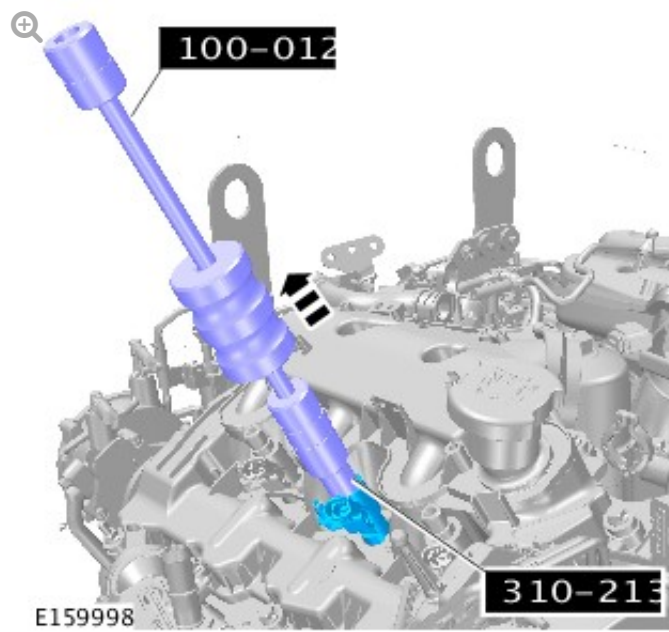
10.



Install the special tool.

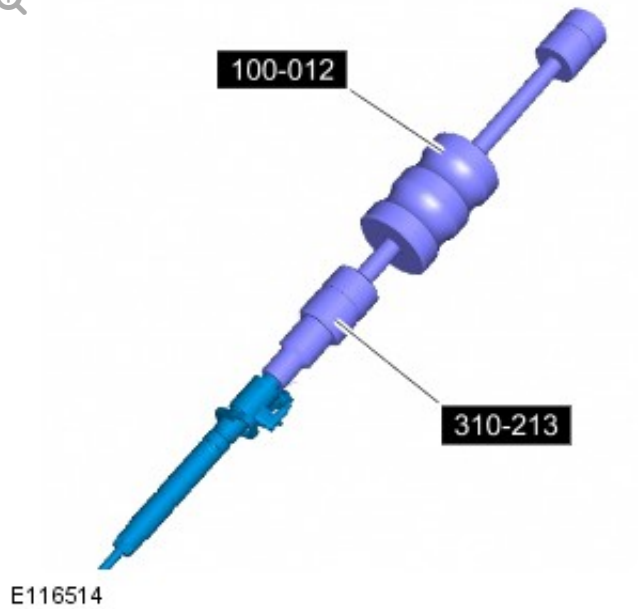
*Special Tool(s):* 100-012, 310-213

11.



*Special Tool(s):* 100-012, 310-213

12.



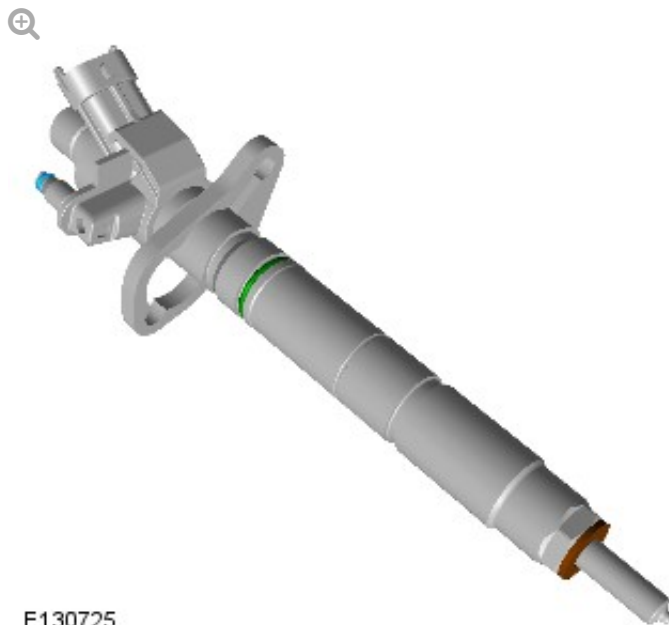
Remove the special tool.

*Special Tool(s):* 100-012, 310-213

13. Remove the 2 remaining fuel injectors.

14.

- This step is only required if new components have not been installed.
- Remove and discard the O-ring seals.
- Discard the sealing washers.
- Repeat this step for each of the fuel injectors.

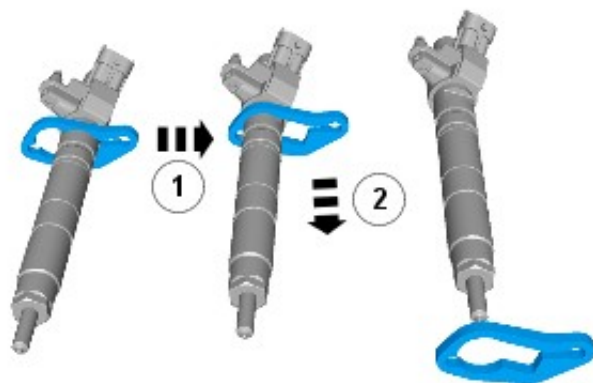


E130725

15.

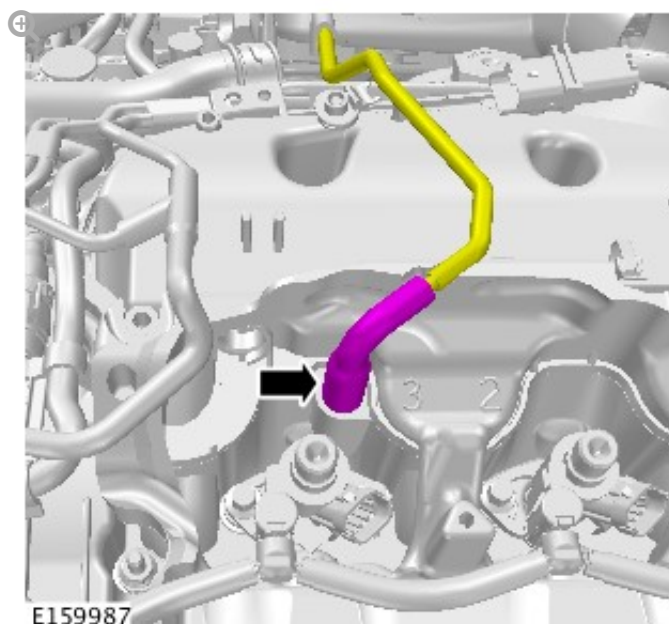
This step is only required if new components have not been installed.





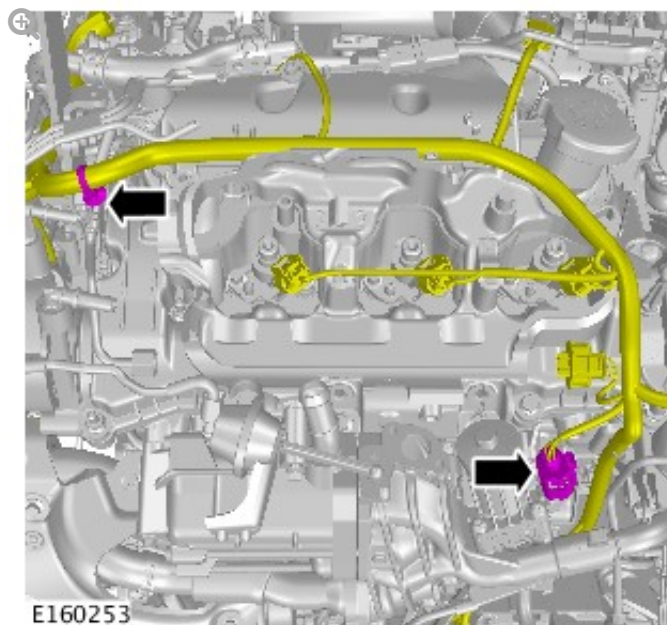
E144699

16.

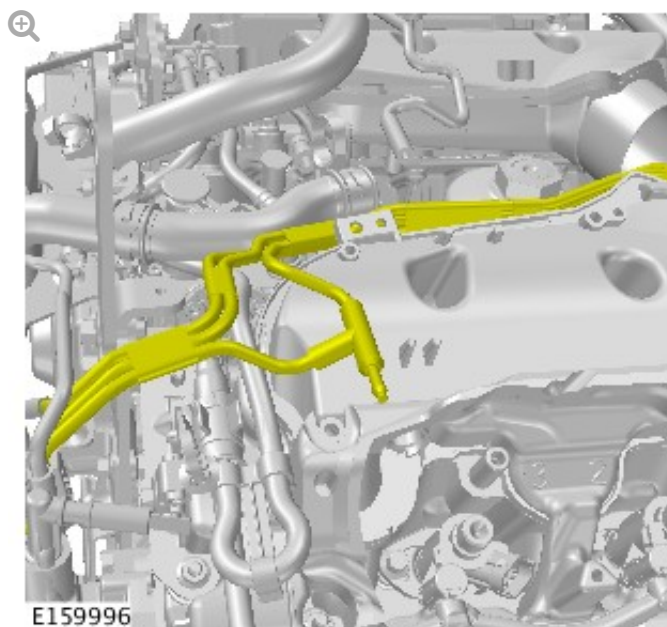


E159987

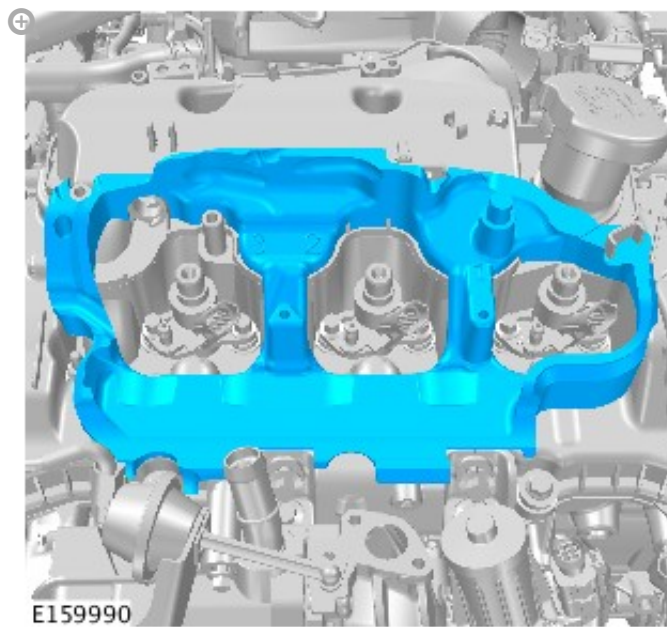
17.



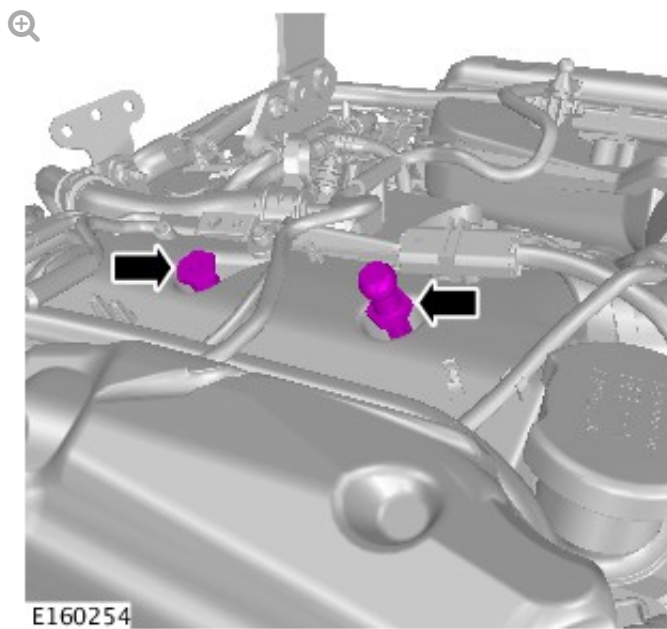
18.



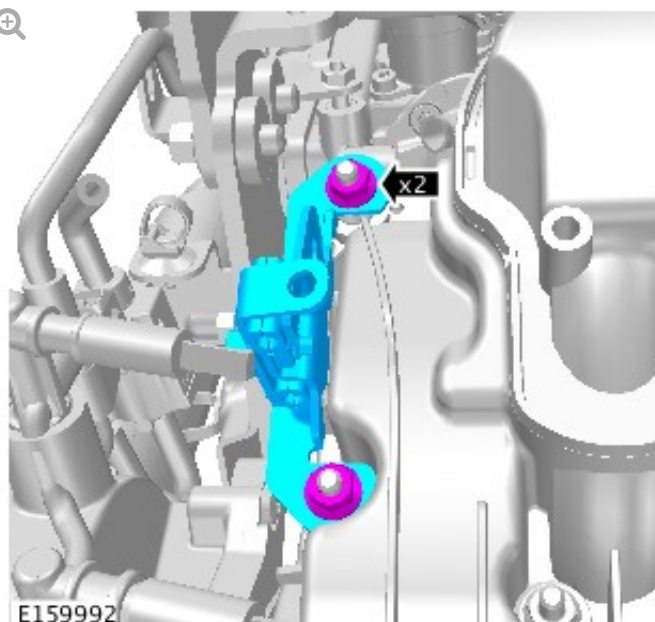
19.



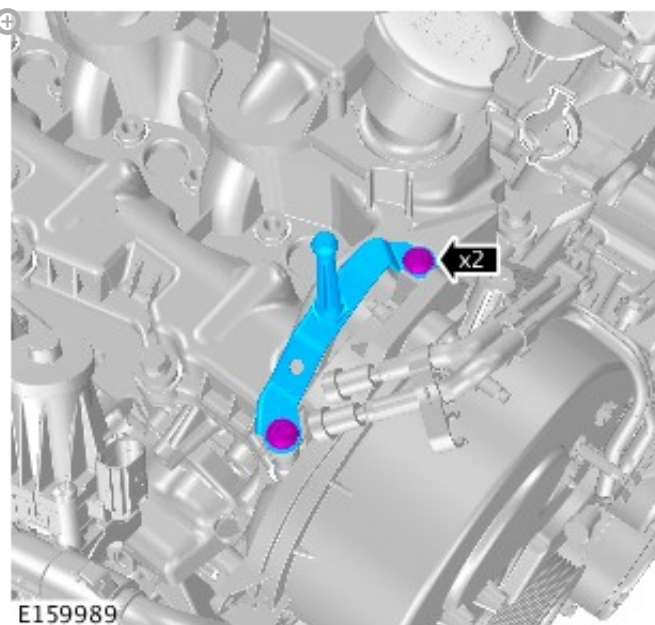
20.



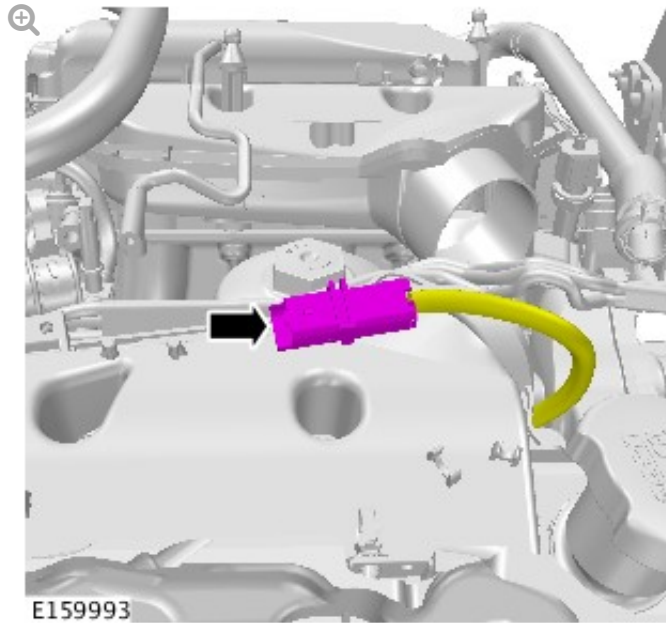
21.



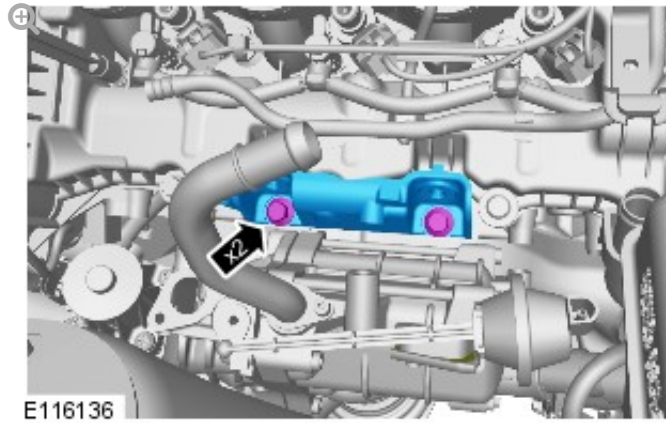
22.



23.



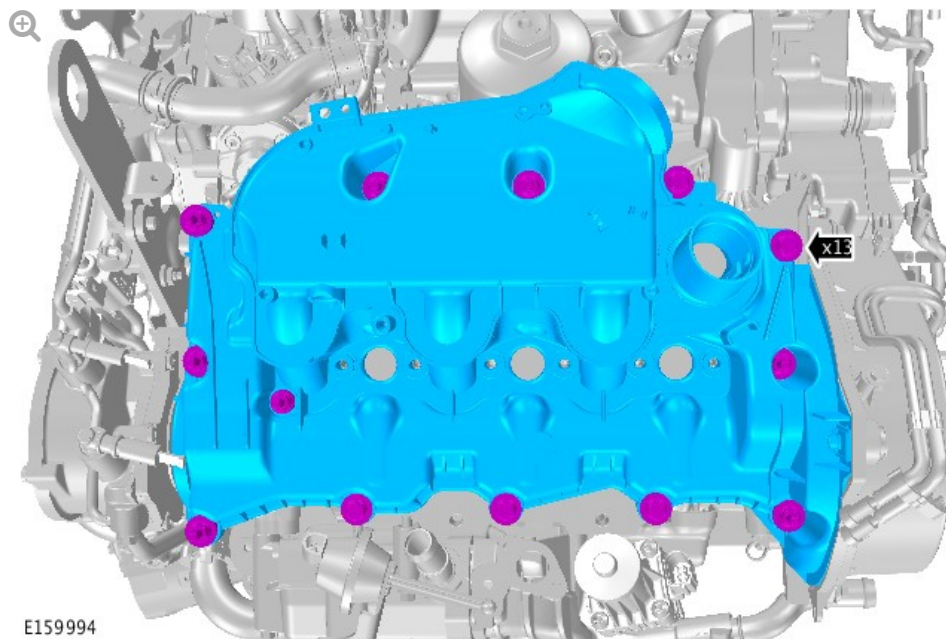
24.



25.

Make sure that the mating faces are clean and free of corrosion and foreign material.

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



---

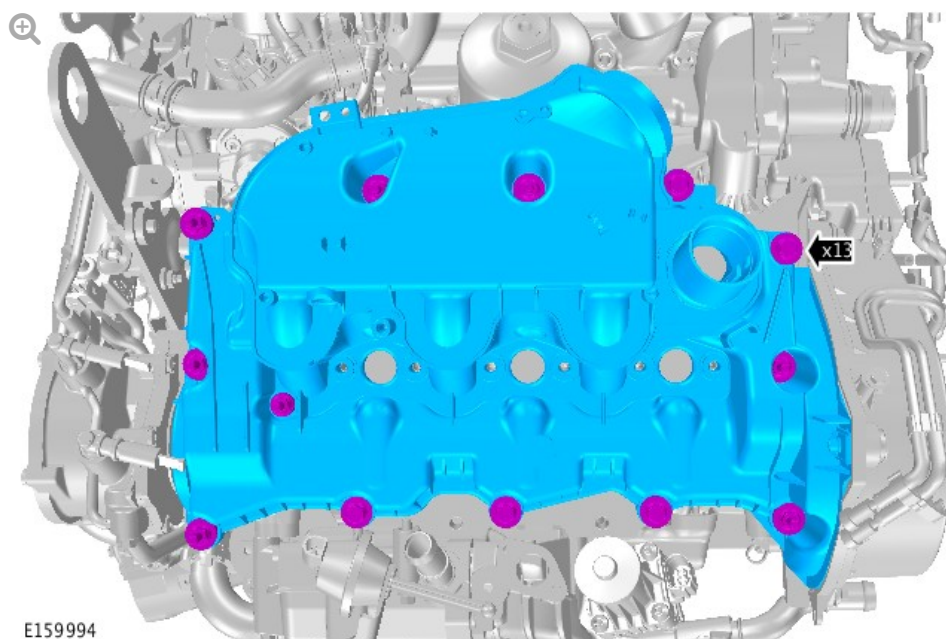
## INSTALLATION

1.

- Make sure that the mating faces are clean and free of corrosion and foreign material.
- Install all the bolts finger tight before final tightening.

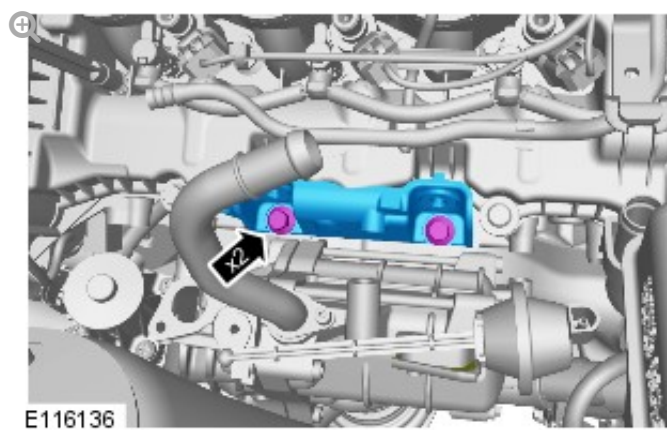
Install a new gasket.





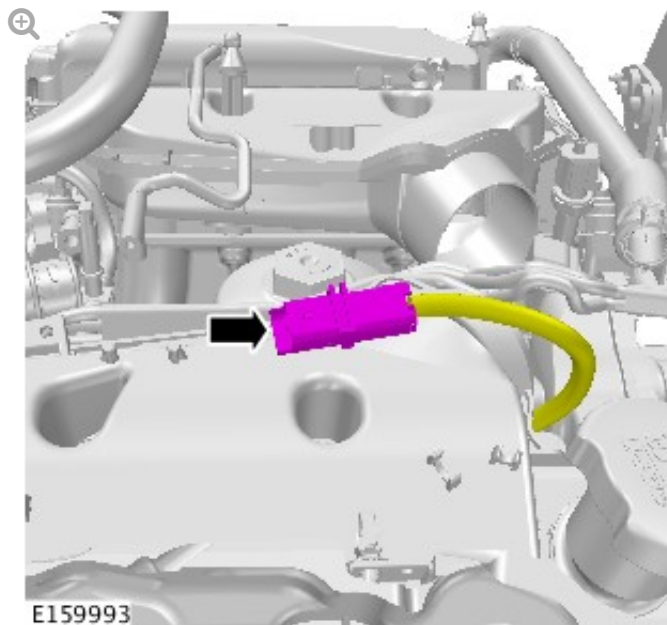
*Torque:* **10 Nm**

2.

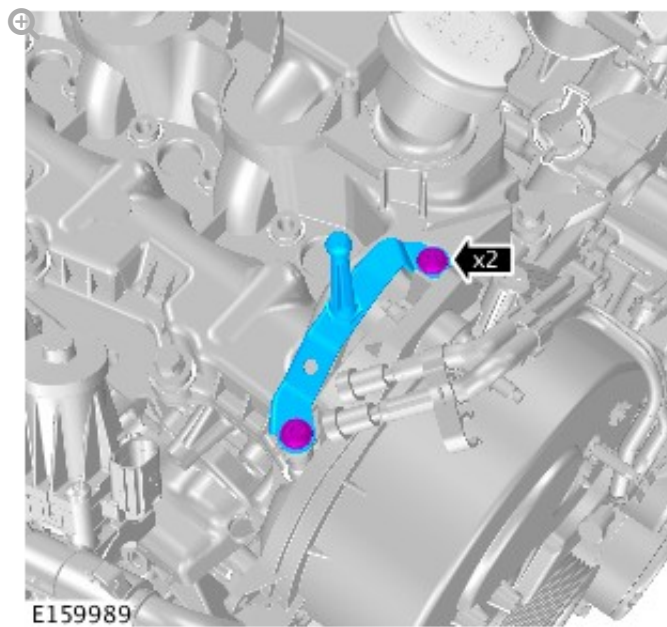


*Torque:* **24 Nm**

3.



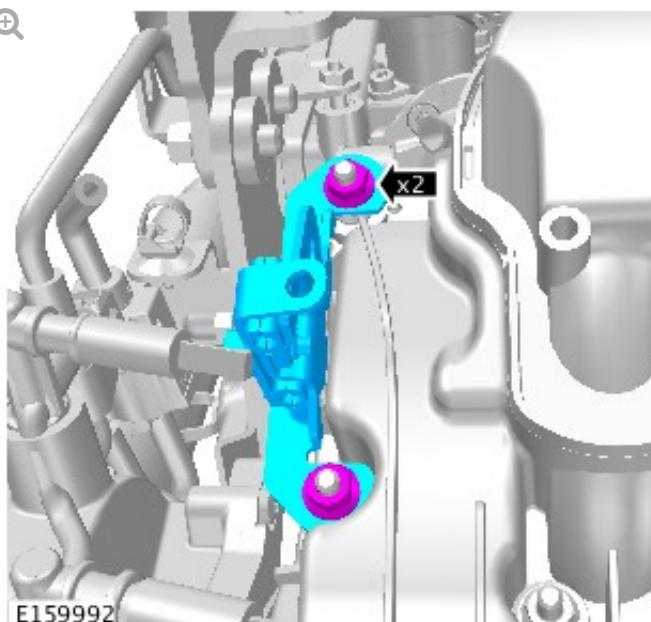
4.



*Torque: 9 Nm*

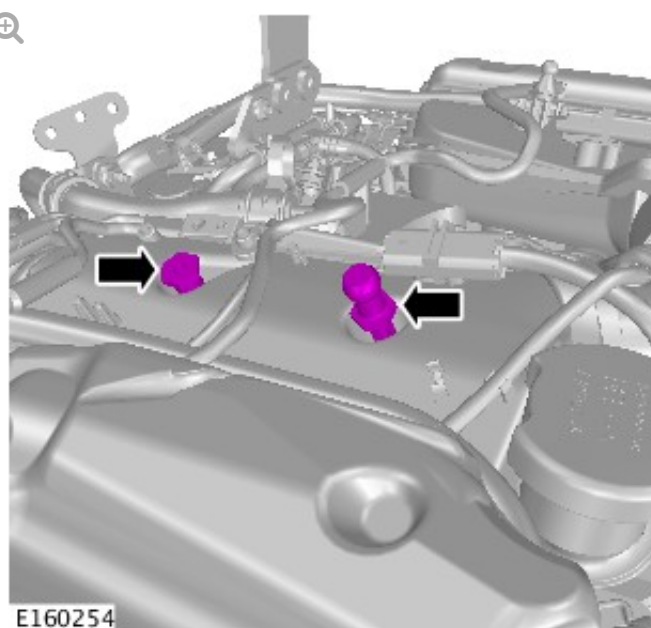


5.

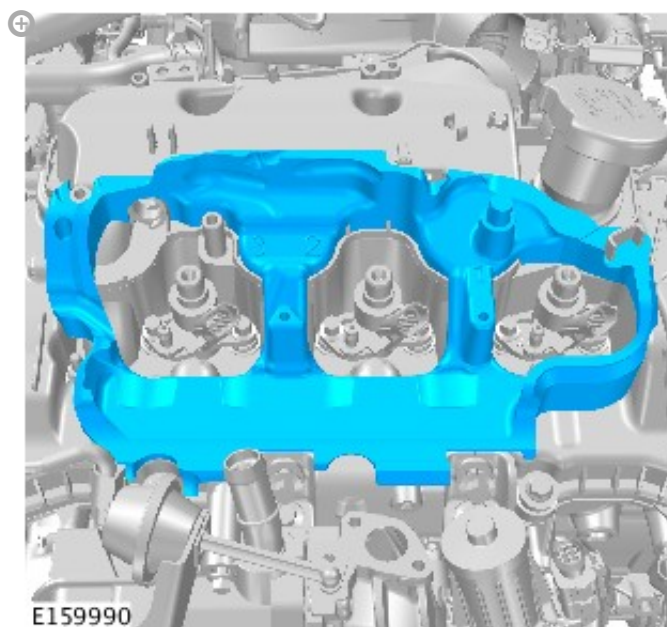


*Torque: 9 Nm*

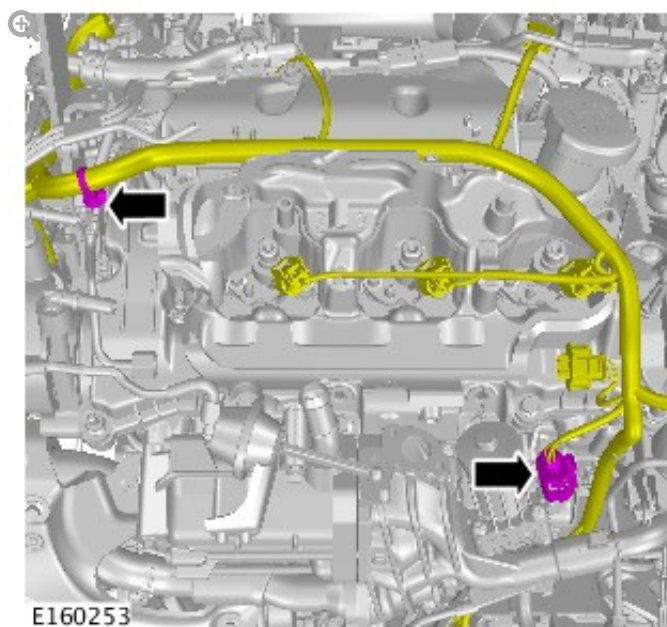
6.



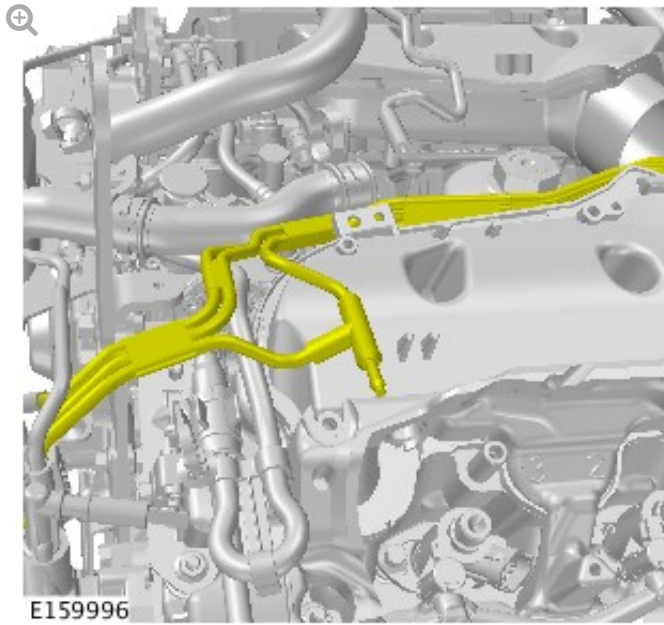
7.



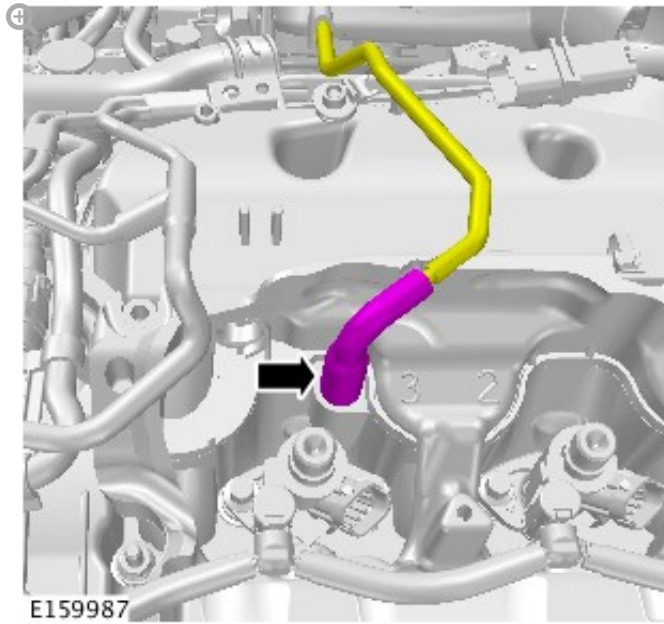
8.



9.

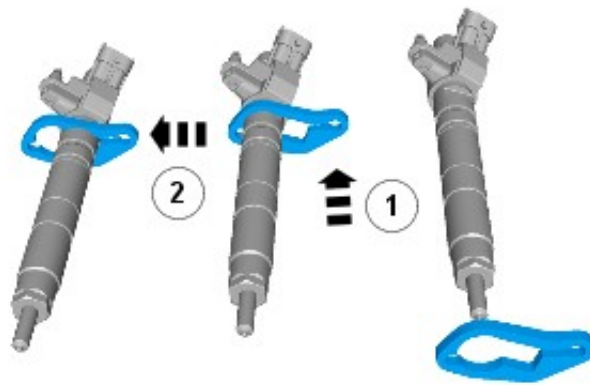


10.



11.

This step is only required if previously removed.

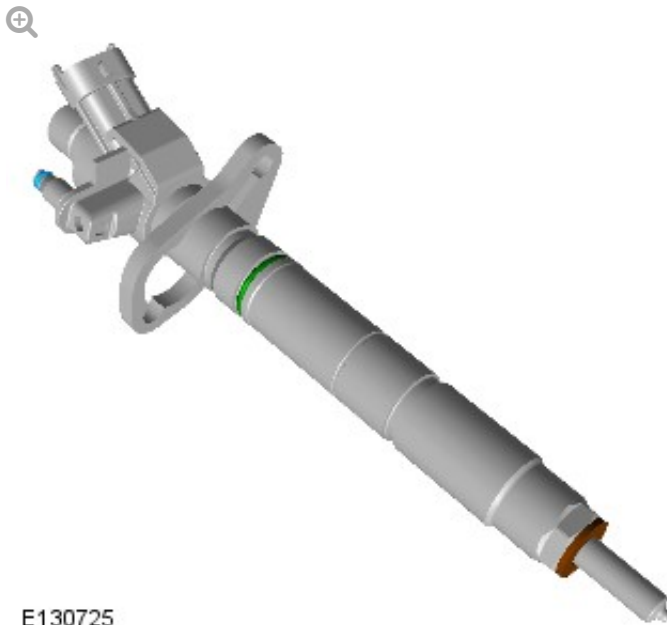


E144700

12.

Make sure that new sealing washers are installed.

- This step is only required if new components are not installed.
- Install new O-ring seals.
- Repeat this step for each of the fuel injectors.
-

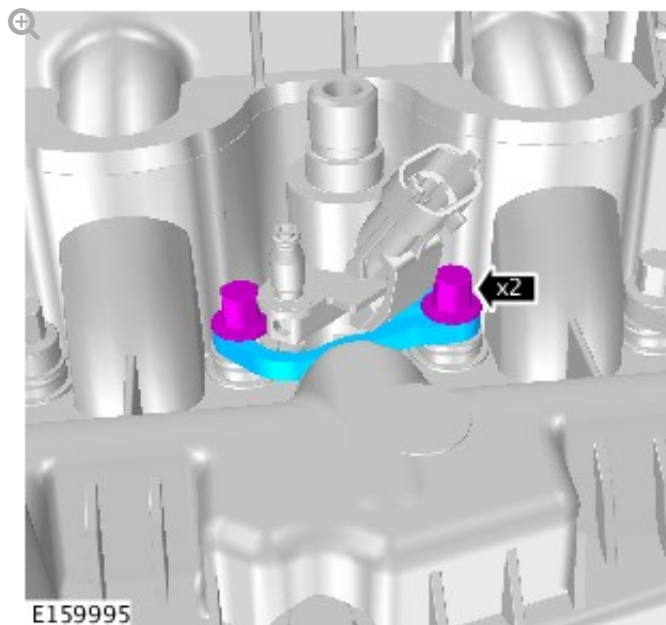


E130725

13.

Make sure that the area around the open fuel injector ports are clean and free of foreign material and lubricant prior to installing the fuel injector.

Tighten the retaining bolts evenly and progressively.

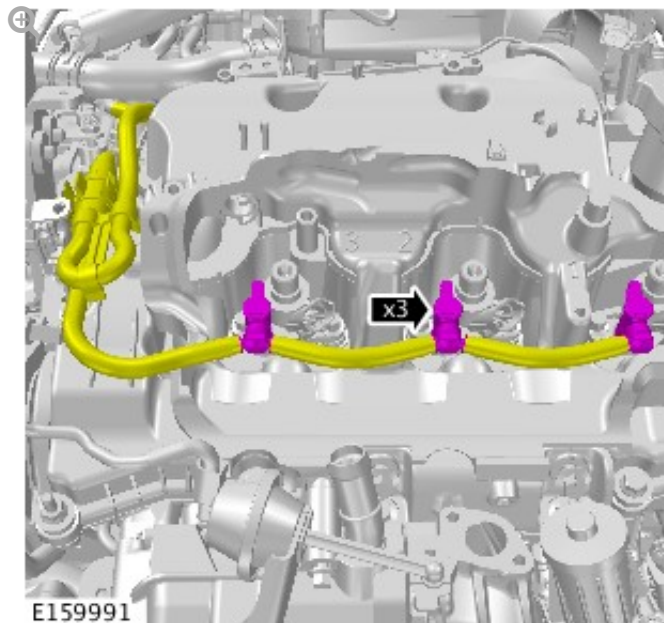


*Torque:* **9 Nm**

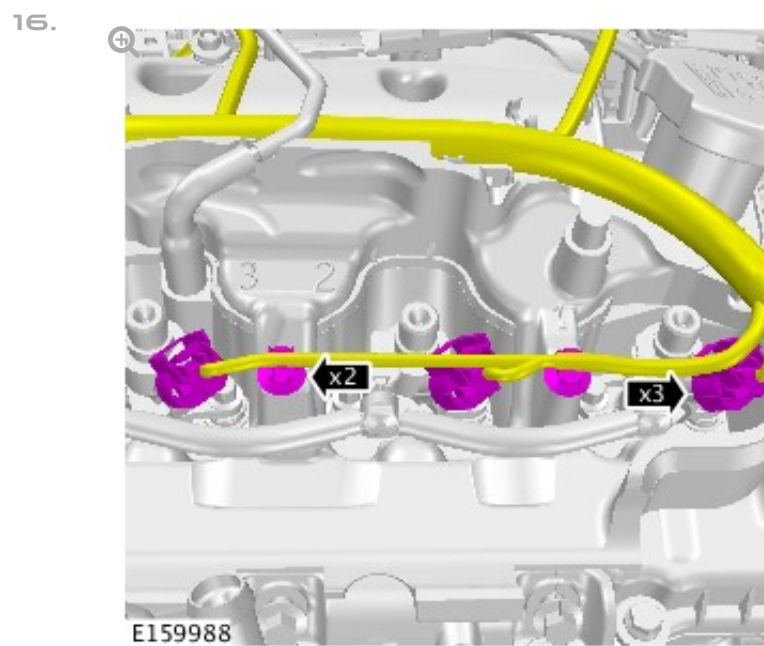
14.

Be prepared to collect escaping fuel.

Make sure that the fuel injector return line has a maximum of 8 uses.



15. Install the 2 remaining fuel injectors.



17. Refer to: [Intake Air Shutoff Throttle](#) (303-04A Fuel Charging and Controls - TDV6 3.0L Diesel, Removal and Installation).
18. Refer to: [Right Fuel Rail](#) (303-04A Fuel Charging and Controls - TDV6 3.0L Diesel, Removal and Installation).

19. Refer to: [Timing Cover](#) (303-01A Engine - TDV6 3.0L Diesel, Removal and Installation).
20. Reconnect the battery ground cable  
Refer to: [Battery Disconnect and Connect](#) (414-01 Battery, Mounting and Cables, General Procedures).



**ENGINE - TDV6 3.0L DIESEL**

# **ENGINE - SYSTEM OPERATION AND COMPONENT DESCRIPTION**

[G1245355]

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## **SYSTEM OPERATION**

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### **OPERATION**

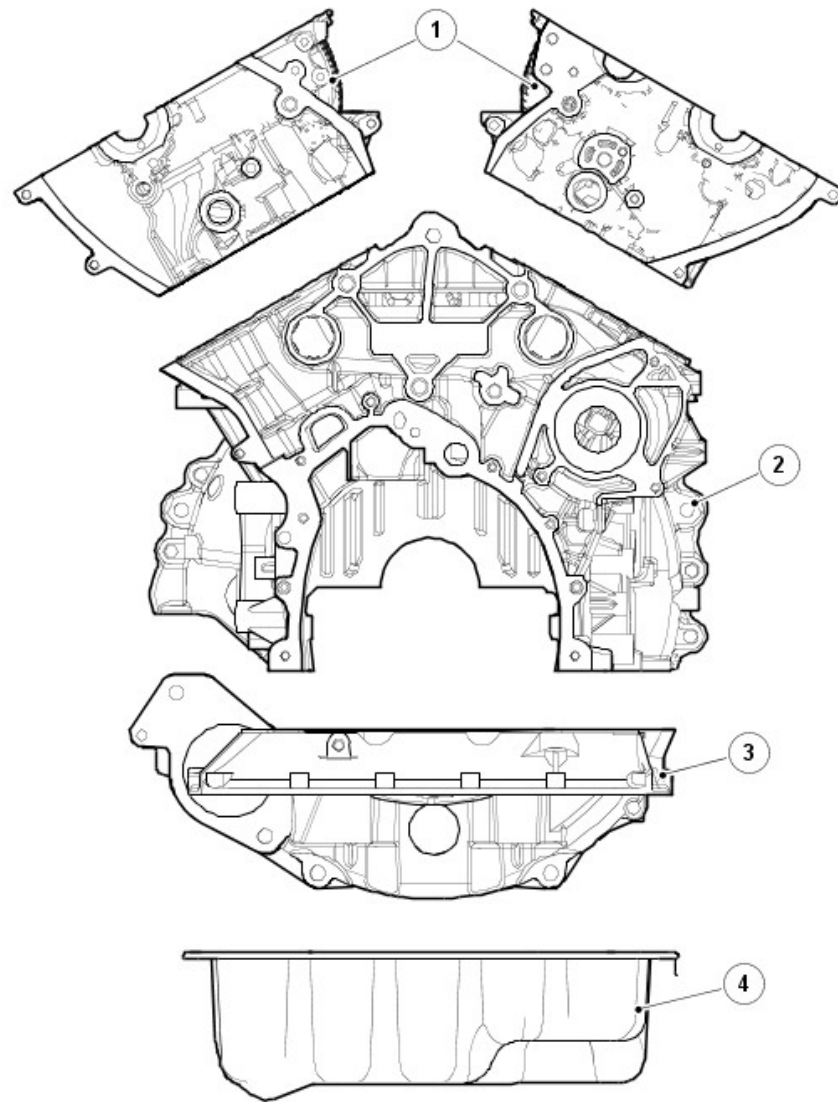
Operation of the engine is controlled by the ECM (engine control module). For additional information refer to 303-14A Electronic Engine Controls.

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## **COMPONENT DESCRIPTION**

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### **ENGINE STRUCTURE**



E94880

1	Cylinder heads
2	Cylinder block
3	Stiffening frame
4	Oil pan

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## CYLINDER BLOCK COMPONENTS

The cylinder block is a single cast construction with a hollow beam structure, cast from compact graphite iron. This type of construction provides outstanding strength and durability and uses less material than a conventional cast iron block, therefore reducing engine weight and length.