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2020.0 DEFENDER (LE), 303-01C

ENGINE – INGENIUM I6 3.0L PETROL

CONTINUOUS VARIABLE VALVE LIFT (G2344496)

mcx30.com

SPECIAL TOOL(S)



E206101

JLR-303-1639

CVVL brake unit reset tool



E206102

JLR-303-1647

CVVL Locating Pins

GENERAL EQUIPMENT

EQUIPMENT NAME

Jaguar Land Rover approved diagnostic equipment

PART(S)

STEP	PART NAME	QUANTITY
Installation Step 1	Continuous Variable Valve Lift (CVVL) Assembly Gasket	1
Installation Step 8	High pressure fuel pump outlet pipe	1

REMOVAL

CAUTION:

Make sure that the area around the component is clean and free of foreign material.

NOTE:

- This procedure contains some variation in the illustrations depending on the vehicle specification, but the essential information is always correct.
- This procedure contains illustrations showing certain components removed to provide extra clarity.

1. Release the pressure in the fuel system.

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

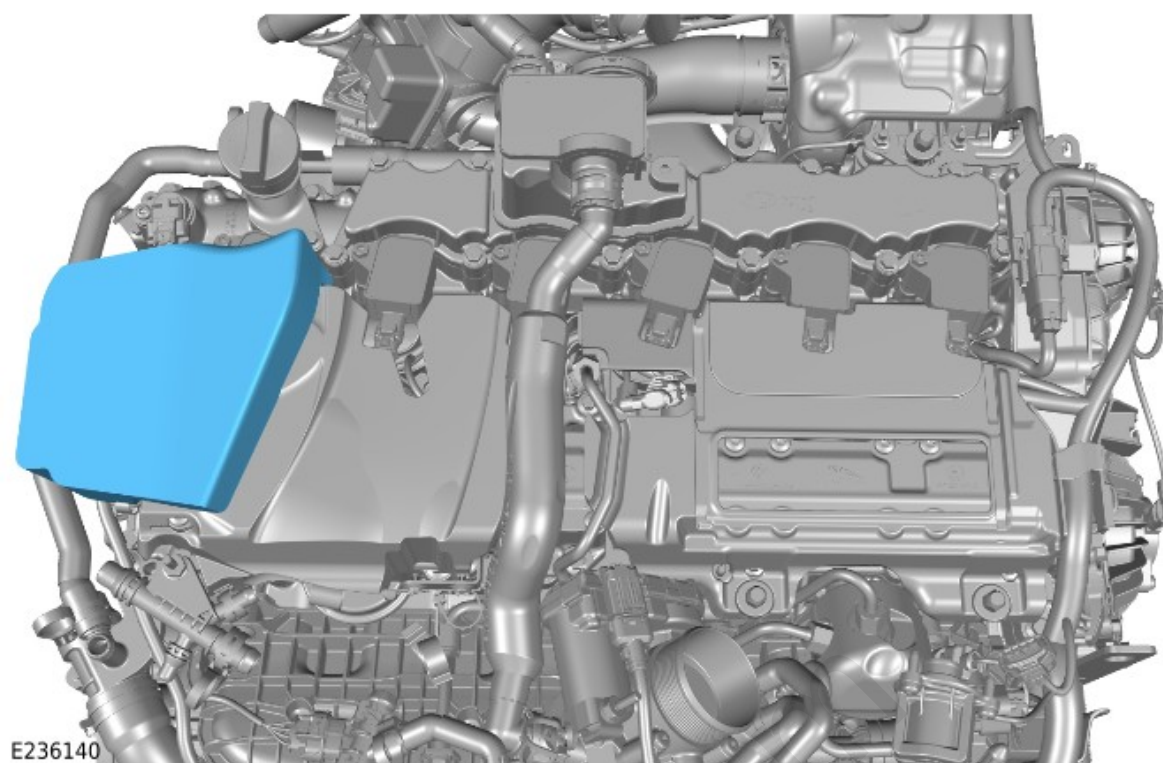
2. Remove the air filter outlet pipe.

Refer to: [Air Filter Outlet Pipe](#) (303-12C Intake Air Distribution and Filtering - INGENIUM I6 3.0L Petrol, Removal and Installation).

3. Position the charge air cooler in the service position.

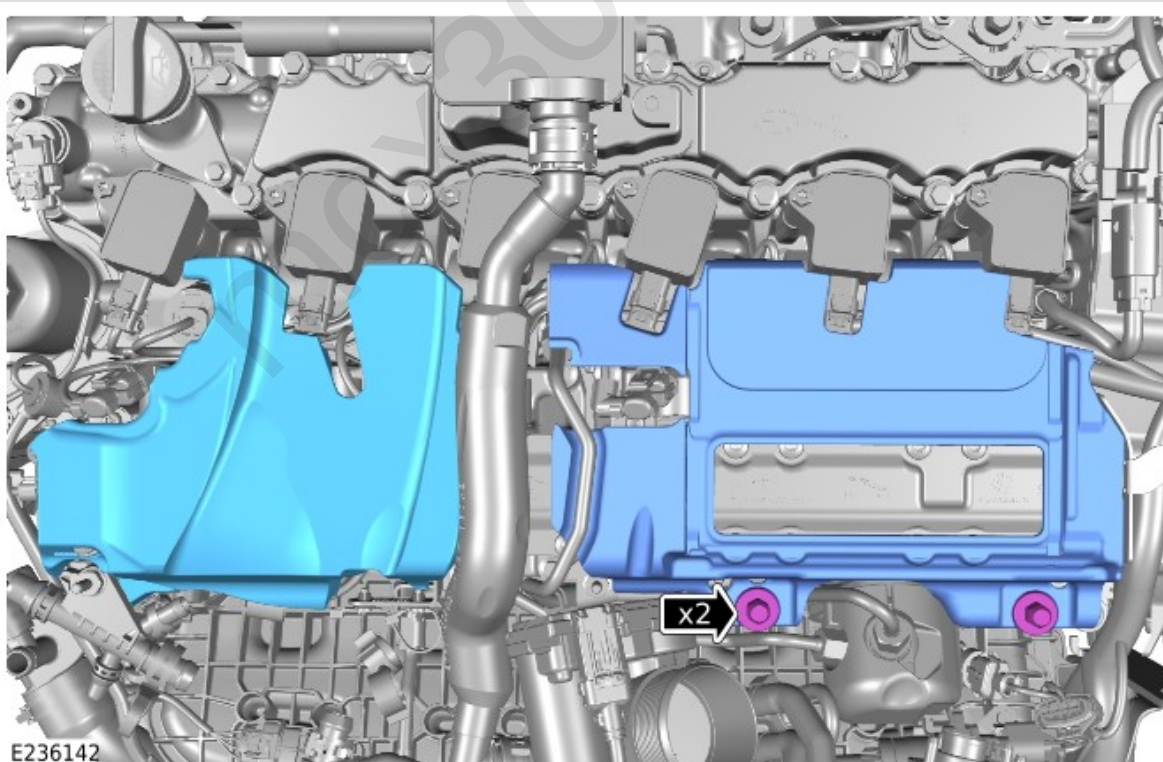
Refer to: [Charge Air Cooler Service Position](#) (303-12C Intake Air Distribution and Filtering - INGENIUM I6 3.0L Petrol, General Procedures).

4.



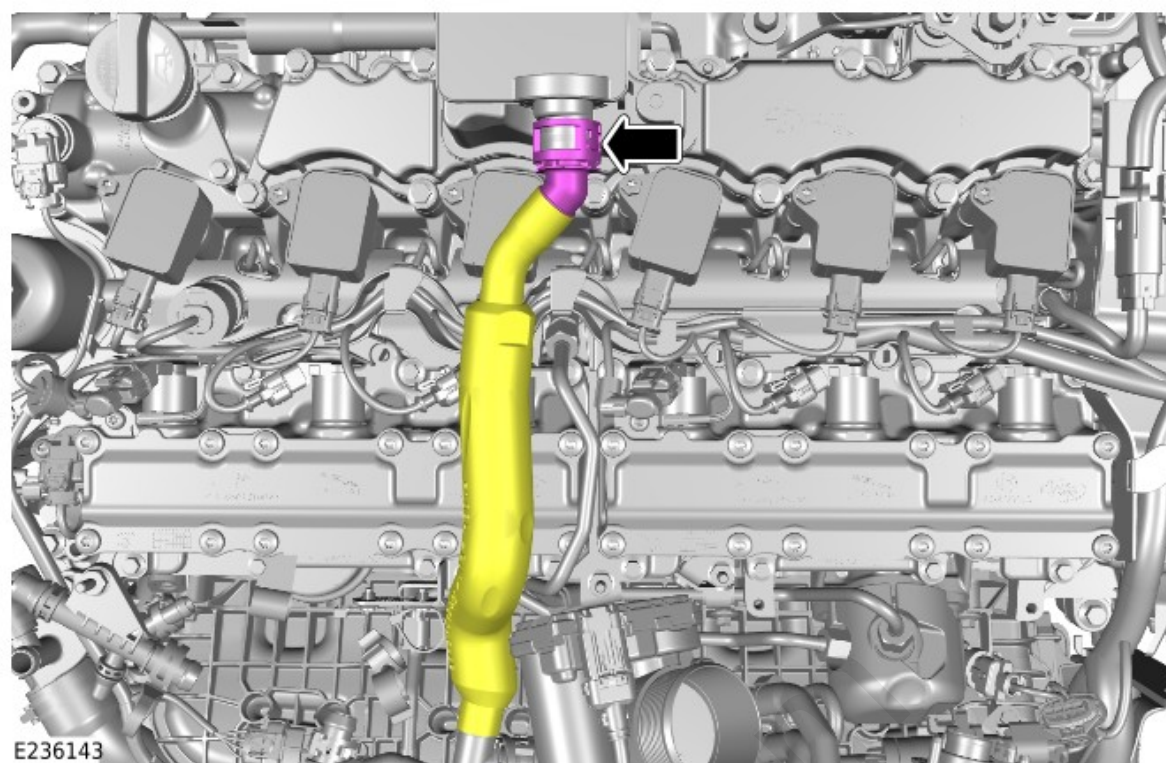
Remove the Noise, Vibration and Harshness Noise, Vibration and Harshness (NVH) material.

5.



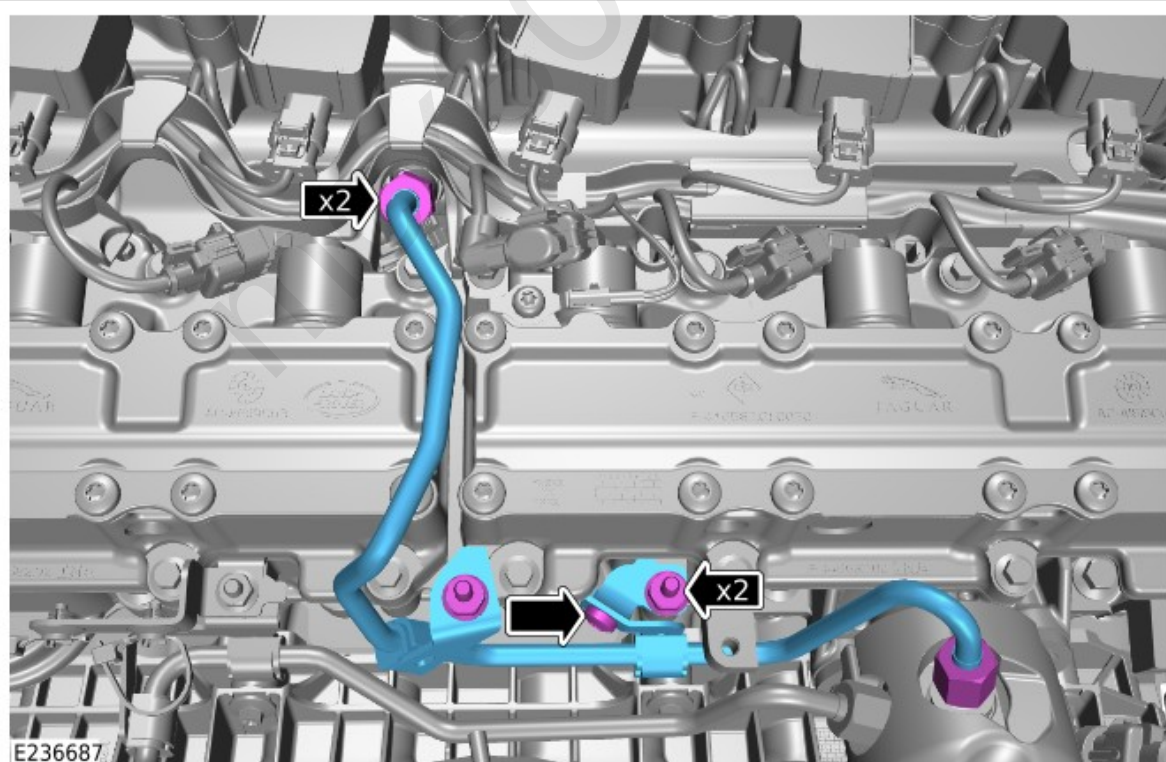
- Remove the 2 bolts.
- Remove the 2 NVH components.

6.



Disconnect the breather.

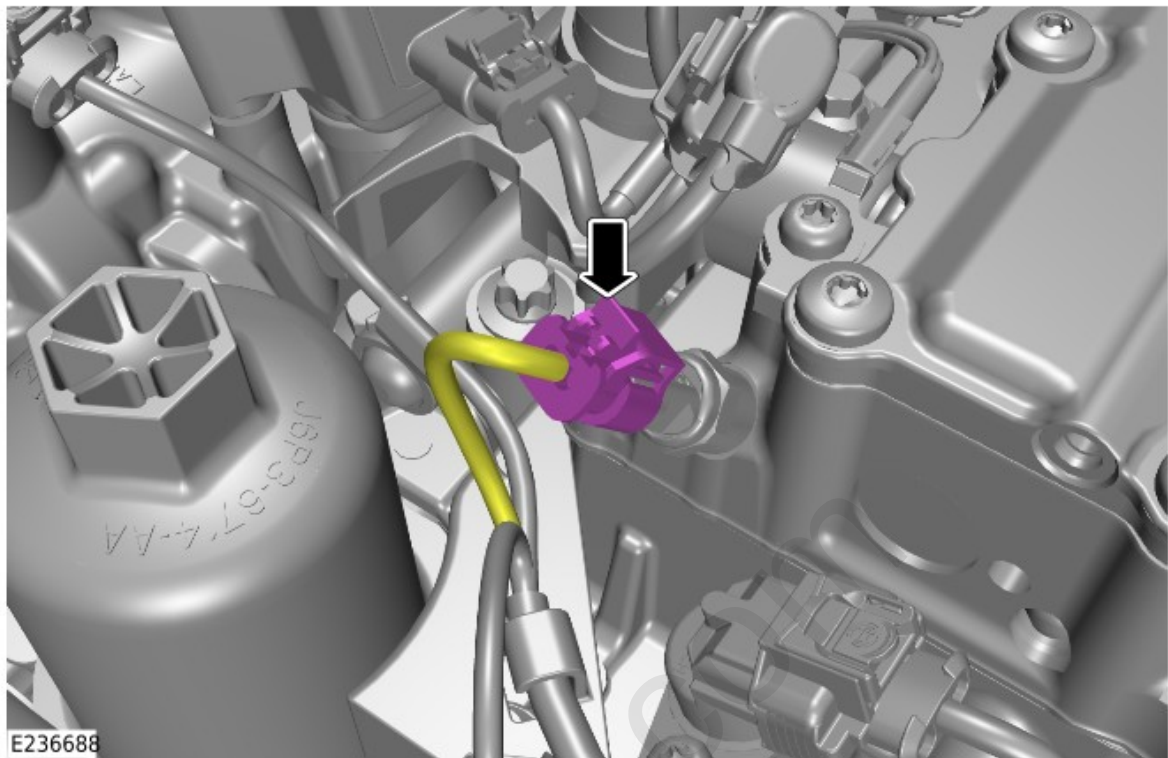
7.



- Loosen the 2 fuel line unions.
- Loosen the M6 Torx bolt.
- Remove the 2 M6 Hex bolts.

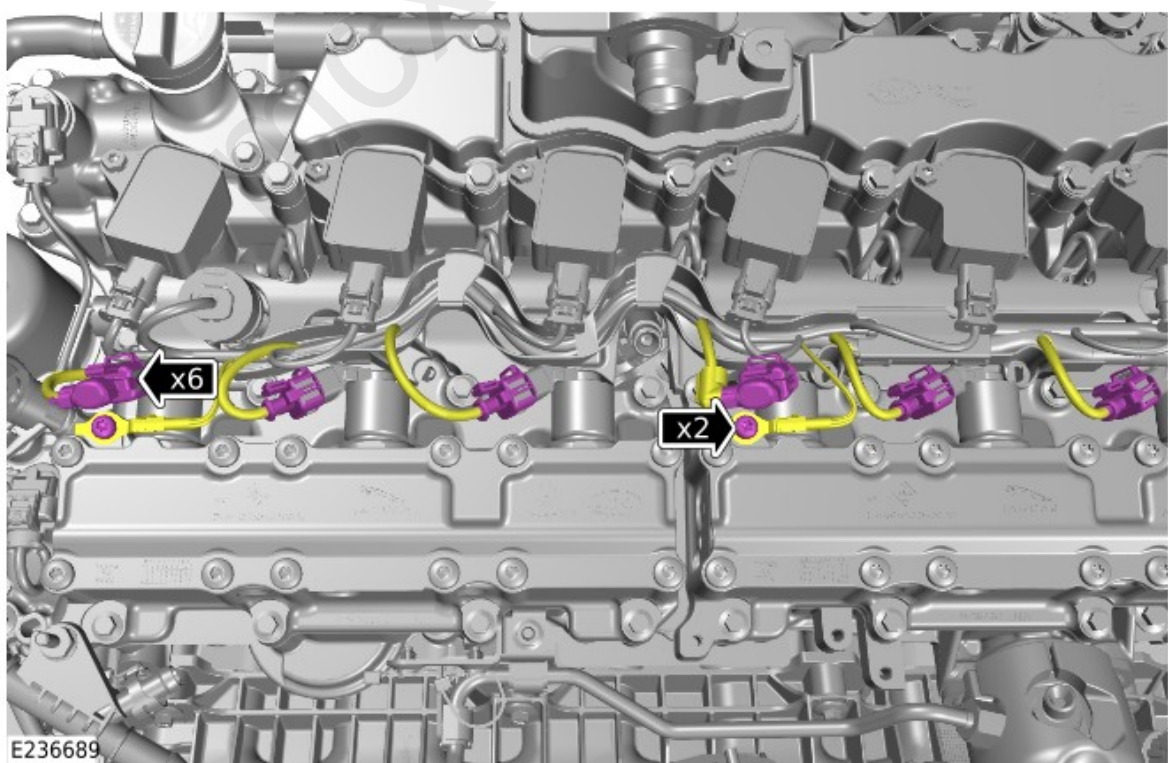
- Remove the High Pressure (HP) fuel pump outlet pipe assembly.
- Discard the HP fuel pump outlet pipe assembly.

8.



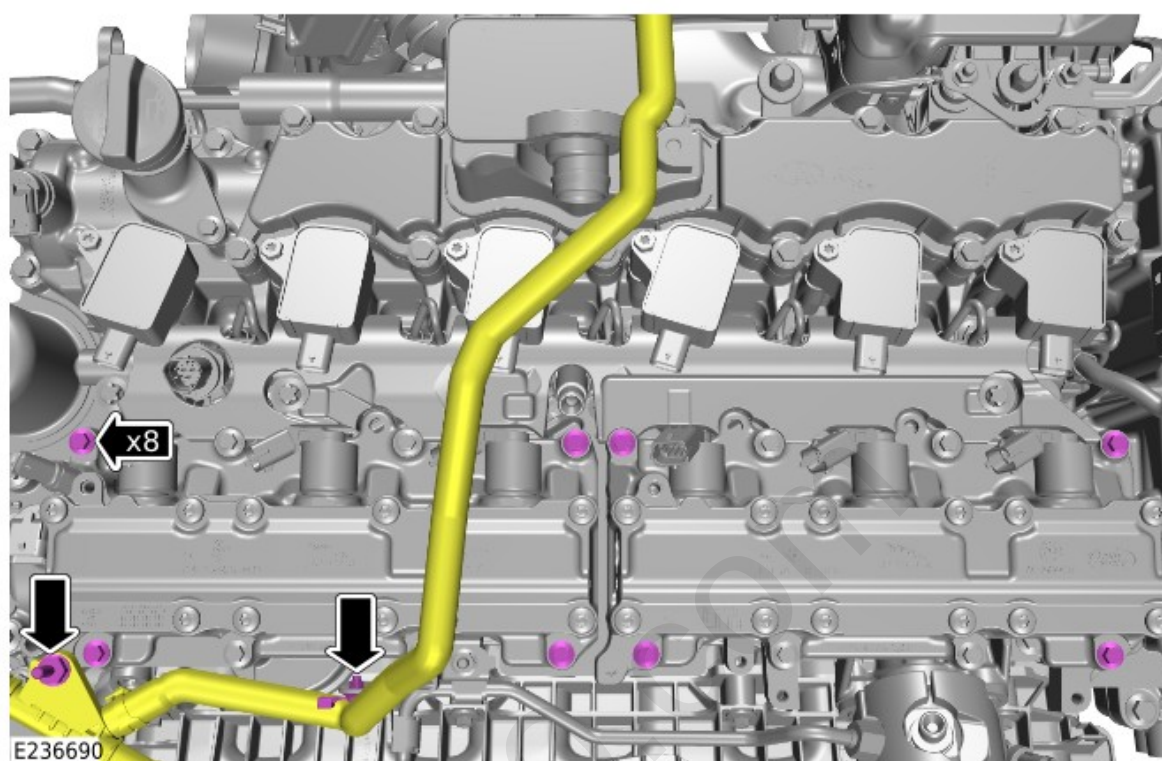
Disconnect the electrical connector from the Continuous Variable Valve Lift (CVVL) oil temperature sensor.

9.



- Disconnect the 6 electrical connectors from the CVVL assembly.
- Remove the 2 bolts.
- Reposition the wiring harness.

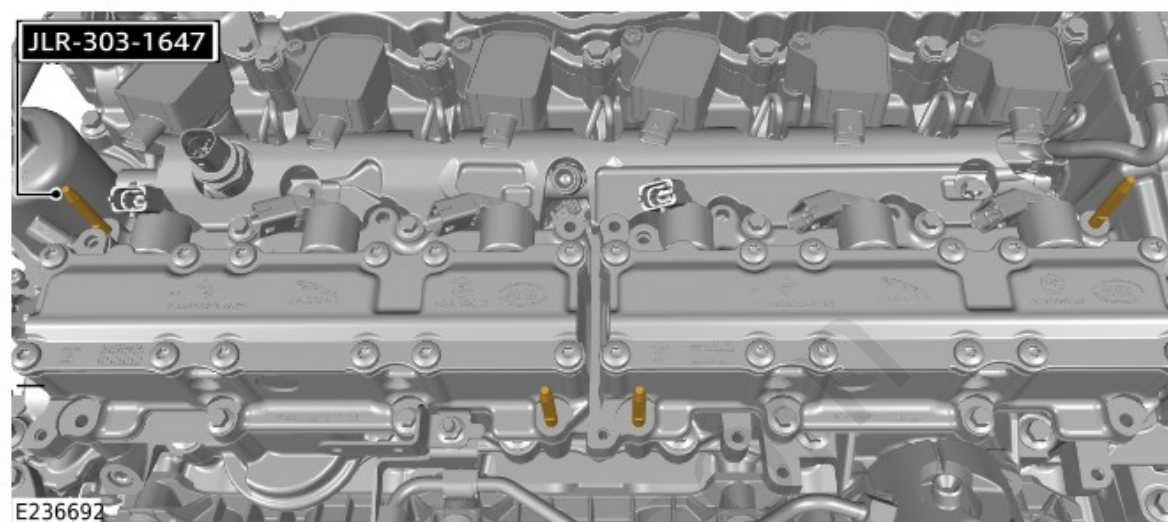
10.



- Remove the bolt.
- Release the clip.
- Reposition the coolant hose.
- Remove the 8 bolts.

 NOTE:

- If a new camshaft carrier is installed, use the unthreaded Continuous Variable Valve Lift (CVVL) locating pins.
- If the original camshaft carrier is installed, use the threaded Continuous Variable Valve Lift (CVVL) locating pins.



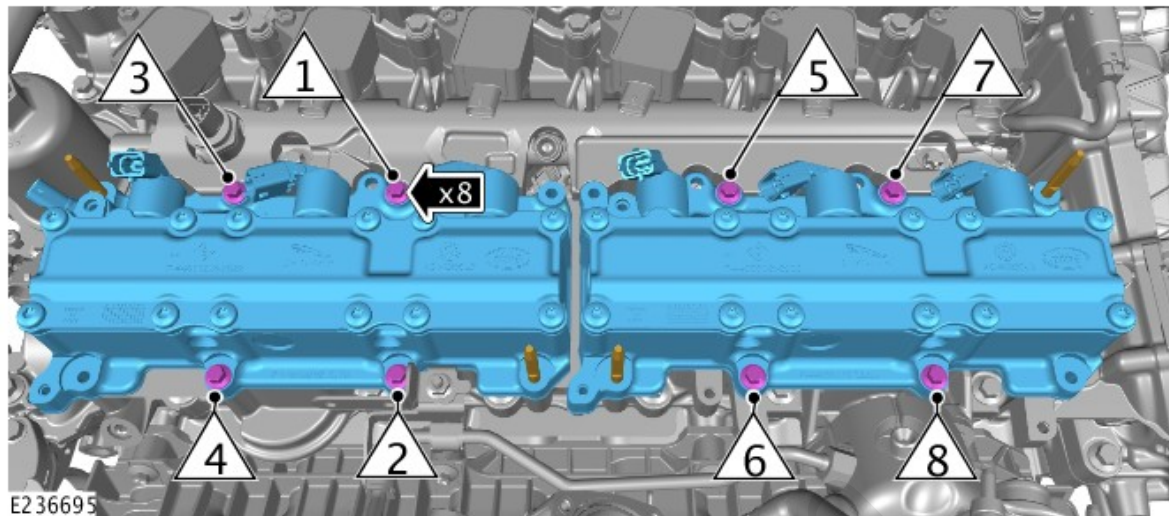
Install the special tools.

Special Tool(s): [JLR-303-1647](#)

12.

⚠ CAUTION:

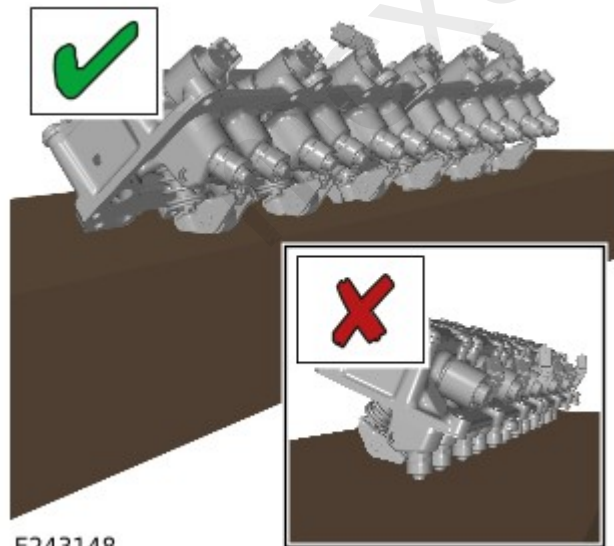
Make sure the CVVL assembly is not inverted.



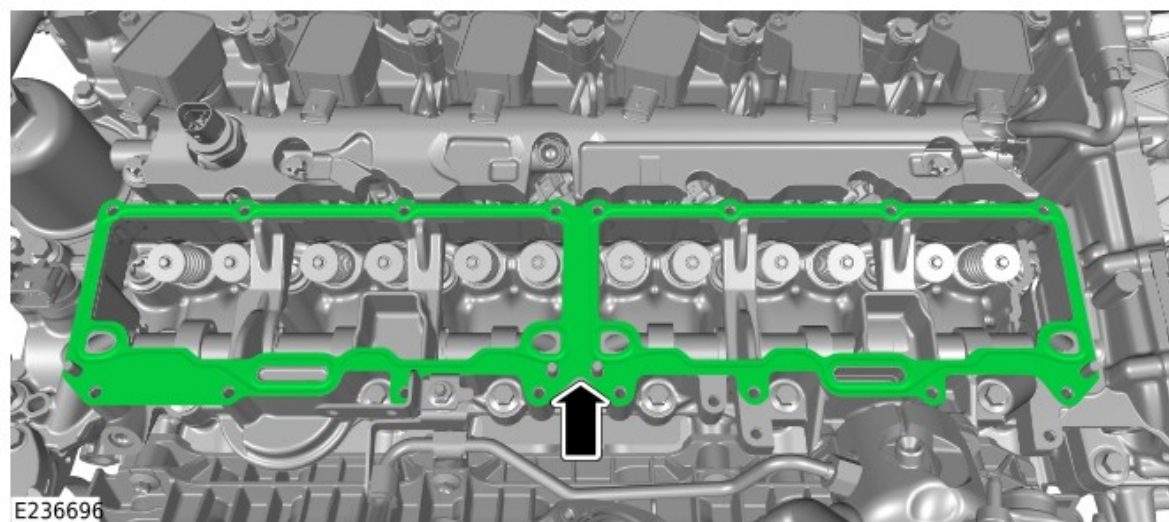
- Remove the 8 bolts in the illustrated sequence.
- Remove the 2 CVVL assemblies.
- Remove the special tools.

Special Tool(s): [JLR-303-1647](#)

13.



Do not allow the CVVL assembly to be rested on the brake units.



Remove and discard the CVVL gasket.

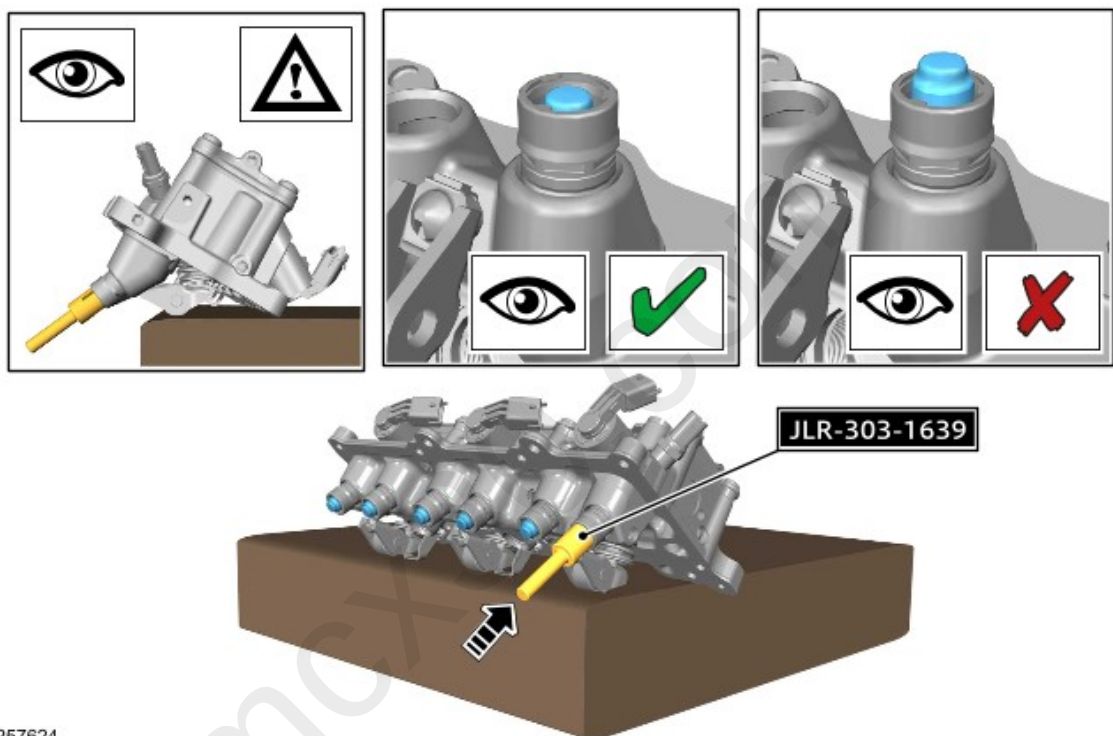
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⚠ CAUTIONS:

- Take extra care when handling the component.
- Make sure all the CVVL brakes are fully reset.

⚠ NOTES:

- Repeat this step for the other CVVL assembly.
- This step is only required if the CVVL is removed for access, and not being replaced with a new CVVL assembly.



- Make sure the CVVL assembly is placed on the edge of a workbench, as illustrated.
- Using the special tool press back all 12 CVVL brakes to make sure that they are all in the fully reset position.

Special Tool(s): [JLR-303-1639](#)

INSTALLATION

1.

⚠ CAUTION:

Make sure that the mating surfaces are clean and free from debris and foreign material.

Install a new Continuous Variable Valve Lift (CVVL) gasket.

Renew Part: [Continuous Variable Valve Lift \(CVVL\) Assembly Gasket](#) Quantity: 1.

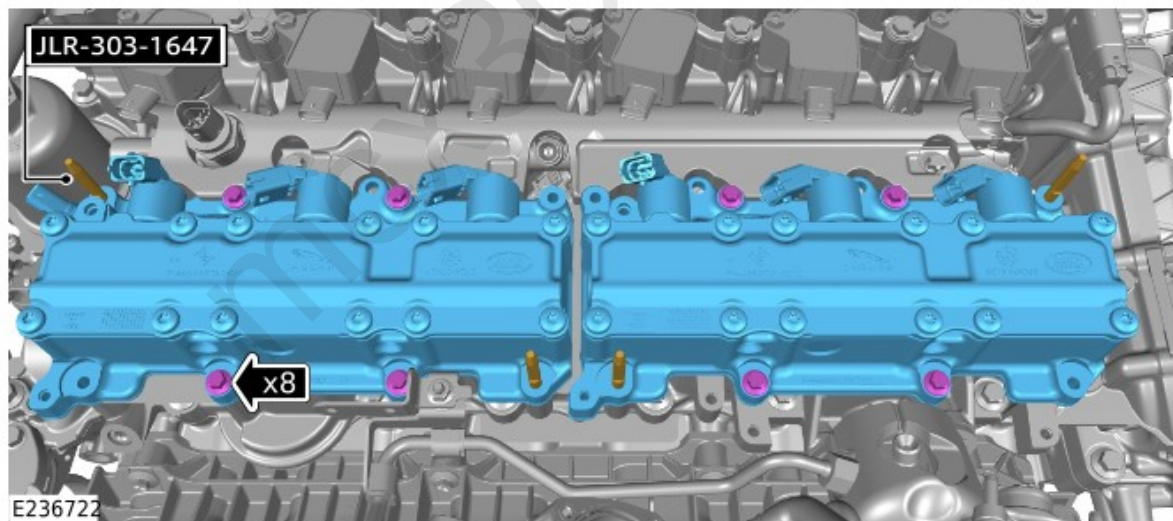
2.

⚠ CAUTION:

Make sure that the mating surfaces are clean and free from debris and foreign material.

△ NOTE:

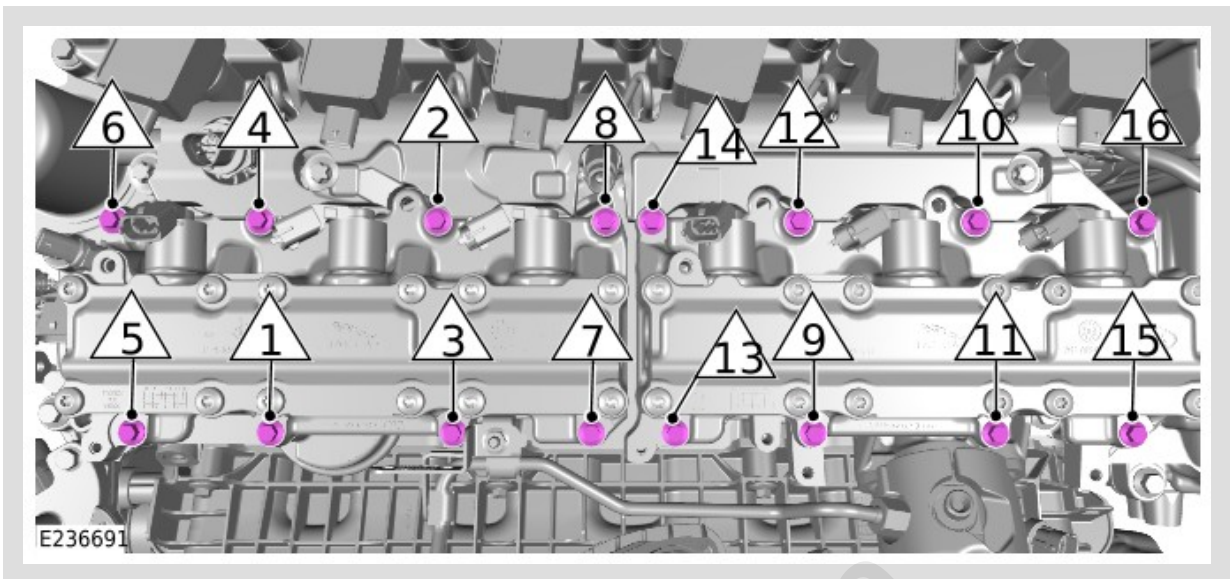
- If a new camshaft carrier is installed, use the unthreaded Continuous Variable Valve Lift (CVVL) locating pins.
- If the original camshaft carrier is installed, use the threaded Continuous Variable Valve Lift (CVVL) locating pins.



- Inspect the 12 CVVL brake units and make sure that they are in the reset position.
- Install the special tools.
Special Tool(s): [JLR-303-1647](#)
- Install the 2 CVVL assemblies.
- Install, but do not fully tighten the 8 bolts.
- Remove the special tools.

3. Install, but do not fully tighten the 8 remaining bolts.

4.



Tighten the 16 bolts in the illustrated sequence.

Torque: 11.5Nm

5.

- Reposition the coolant hose.
- Install the clip.
- Install and tighten the bolt.

Torque: 11Nm

6.

- Connect the 6 electrical connectors to the CVVL assemblies.
- Reposition the wiring harness.
- Install and tighten the 2 bolts.

Torque: 10Nm

7.

Connect the electrical connector to the CVVL oil temperature sensor.

8.

- Install a new HP fuel pump outlet pipe assembly.
Renew Part: [High pressure fuel pump outlet pipe](#) Quantity: 1.
- Tighten the 2 fuel line unions.
*Torque: **6Nm***
- Install and tighten the 2 M6 Hex bolts.
*Torque: **11.5Nm***
- Loosen the 2 fuel line unions.
- Tighten the 2 fuel line unions.
*Torque: **20Nm***
- Wait 30 seconds and recheck final torque.
- Install and tighten the M6 Torx bolt.
*Torque: **11.5Nm***

9.

Connect the breather.

10.

- Install the 2 Noise, Vibration and Harshness NVH components.
- Install and tighten the 2 bolts.
*Torque: **10Nm***

11.

Install the NVH material.

12.

Position the charge air cooler in the correct location.

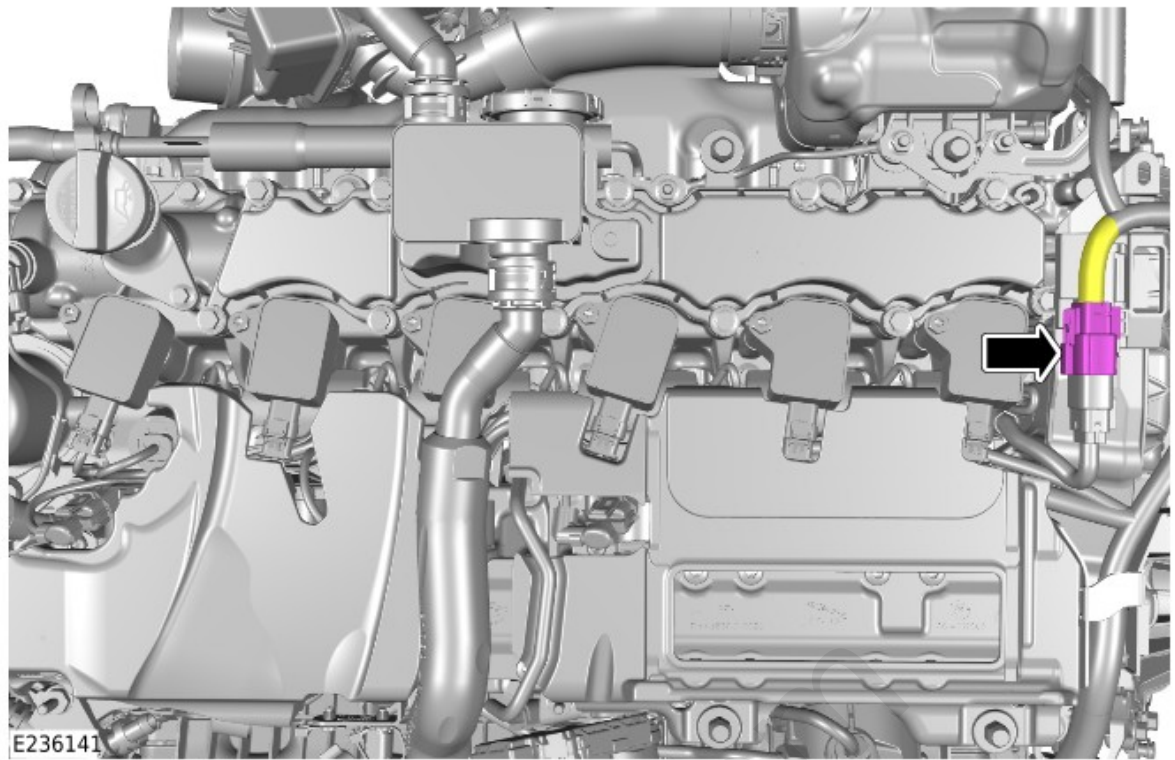
Refer to: [Charge Air Cooler Service Position](#) (303-12C Intake Air Distribution and Filtering - INGENIUM I6 3.0L Petrol, General Procedures).

13.

Install the air filter outlet pipe.

Refer to: [Air Filter Outlet Pipe](#) (303-12C Intake Air Distribution and Filtering - INGENIUM I6 3.0L Petrol, Removal and Installation).

14.

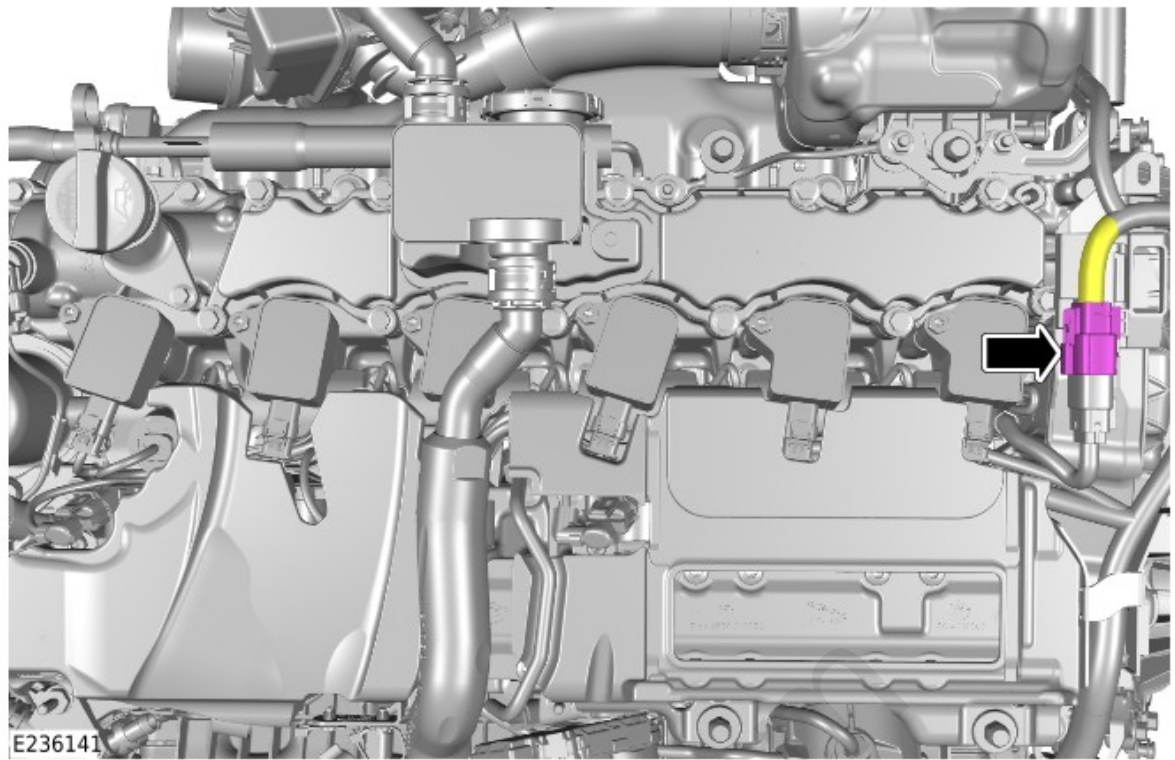


Disconnect the electrical connector from the fuel injector wiring harness.

15.

- Crank the engine for a 10 second interval.
- Allow the starter motor to cool for 5 seconds.
- Repeat this step 4 times until suitable oil pressure is obtained within the CVVL assembly to allow the vehicle to start.

16.



Connect the electrical connector to the fuel injector wiring harness.

17. Connect the Jaguar Land Rover approved diagnostic equipment and configure the CVVL unit using the 'Learn Variable Valve Lift Adaptation' application.

General Equipment: [Jaguar Land Rover approved diagnostic equipment](#)

18. Use the Jaguar Land Rover approved diagnostic equipment to read and clear any Diagnostic Trouble Codes (DTCs).