



Intake Manifold (30.15.02)

Special Service Tools



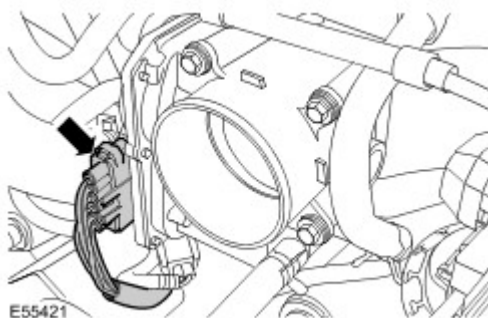
Fuel spring lock decoupling tool
310-044

Removal

NOTE :

Removal of the intake manifold on early vehicles will involve the partial dismantling of the fuel rail and the removal of the purge valve and mounting bracket. Once removed, it will also be necessary to remove some excess material from the intake manifold, see 'installation' steps 1 and 2.

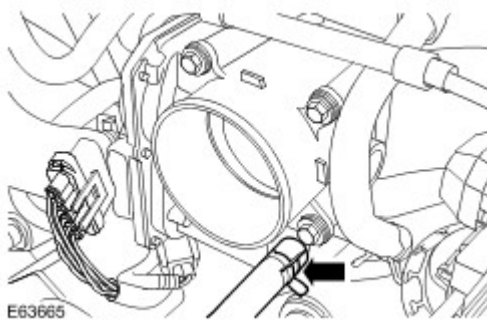
- 1 . Disconnect the battery ground cable. For additional information, refer to [Specifications](#) (Section 414-00 Charging System - General Information)
- 2 . Secure the hood in the service position.
 - ▶ Release the support struts.
- 3 . Remove the engine cover. For additional information, refer to [Engine Cover - 4.0L \(12.30.50\)](#) (Section 501-05 Interior Trim and Ornamentation)
- 4 . Remove the air intake resonator. For additional information, refer to [Intake Air Resonator \(19.70.03\)](#) (Section 303-12A Intake Air Distribution and Filtering - 4.0L)
- 5 . Disconnect the throttle body electrical connector.




- 6 . Disconnect the intake manifold coolant hose.
 - ▶ Clamp the relevant hose, to minimise coolant loss.
 - ▶ Release the clip.

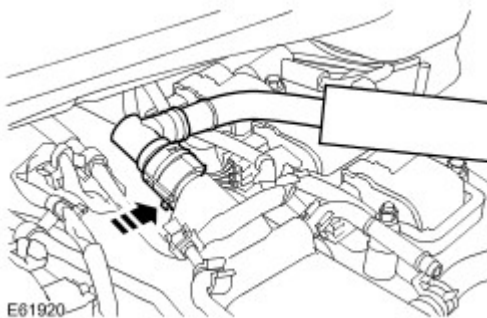


7. Disconnect the throttle body coolant hose.
- ▶ Clamp the hose to minimise coolant loss.
 - ▶ Release the clip.

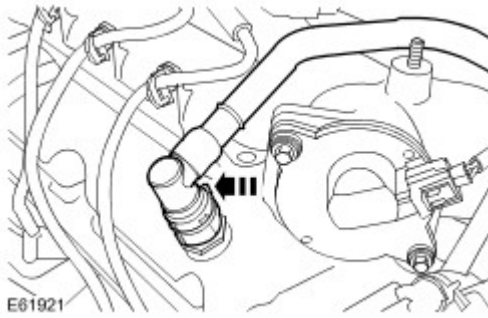


8.  **CAUTION:** Before the disconnection or removal of any components, ensure the area around joint faces and connections are clean. Plug any open connections to prevent contamination.

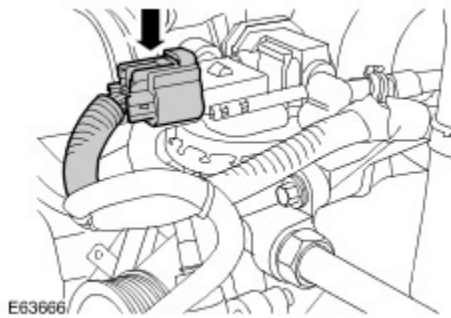
Disconnect the crankcase vent hose.



9. Remove the RH crankcase vent hose.



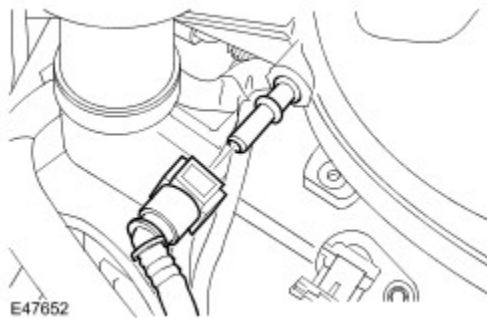
10. Disconnect the EGR valve electrical connector.



11. Disconnect the EGR valve feed pipe.
- Loosen the EGR valve feed pipe union nut, at the exhaust manifold.
 - Disconnect the union nut, securing the EGR pipe to the valve.



12. Disconnect the intake manifold vacuum pipe assembly.

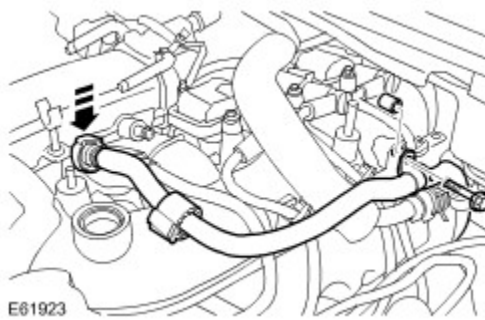


13. Disconnect the intake manifold tuning valve electrical connector.



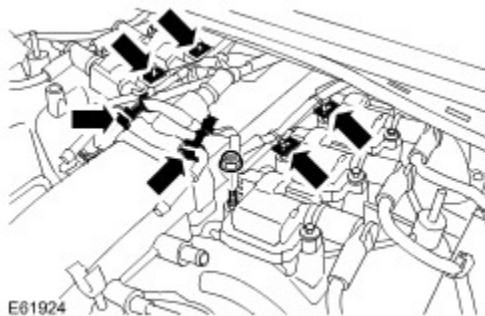
14. Release the purge line from the intake manifold.

- Remove the clip retaining bolt.
- Collect the spacer.



15. Release the coil wiring harness.

- Release the 6 clips.
- Remove the 2 coil harness ground nuts.



16. Disconnect the 6 coil electrical connectors.

17. **NOTE :**

Note the fitted position of the fasteners.

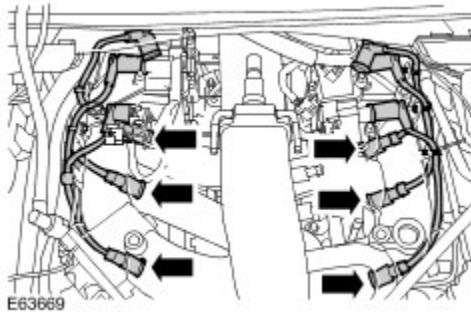
Remove the 2 rear ignition coils.

- Disconnect the sparking plug lead elbows at the coils.
- Remove the 2 bolts and 2 studs.
- Discard the fastener O-rings to aid installation.

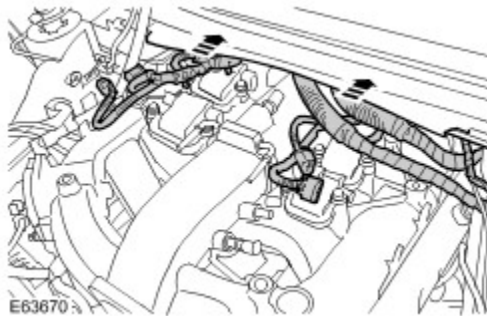


18. Disconnect the HT leads at the sparking plugs.

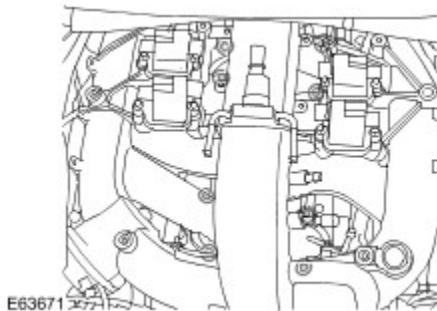
▶ Position the leads aside.



19. Position the engine wiring harness aside for access.

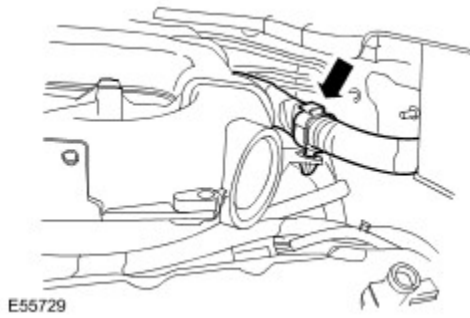


20. Remove the 8 intake manifold bolts.



21. **NOTE :**

The type of clip may vary depending on the hand of drive.
Release the intake manifold wiring harness clip.



22 .



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



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



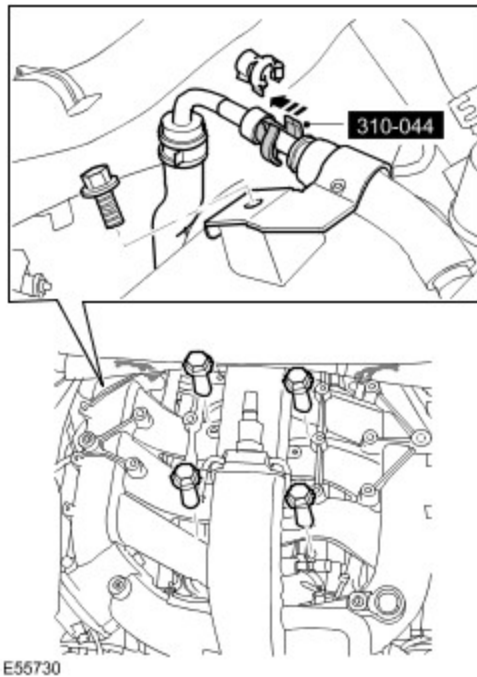
WARNING: Wait at least 30 seconds after the engine stops before commencing any repair to the high-pressure fuel injection system. Failure to follow this instruction may result in personal injury.



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

Using the special tool, disconnect the fuel line.

- Remove the security clip.
- Early vehicles only: Remove 4 bolts and release the fuel rail and injectors.
- Early vehicles only: Disconnect the LH and RH cylinder head, rear fuel injector electrical connectors.
- Early vehicles only: Remove the bolt and release the valve cover fuel line clip.
- Early vehicles only: Cable tie the purge valve to the wiring harness.



23 .



CAUTION: Early vehicles only: The purge valve and mounting bracket are bolted to the rear of the intake manifold and foul the fuel rail crossover link. Damage will occur if force is used when attempting to remove the intake manifold. If this occurs, remove the LH side, battery tray inner wall and base, for access to the purge valve bolt.



CAUTION: Care must be taken to avoid damaging the purge valve assembly during removal of the intake manifold.

NOTE :

Due to the lack of access it may be necessary to break the engine and transmission wiring harness clips, care must be taken not to damage the wiring harnesses.

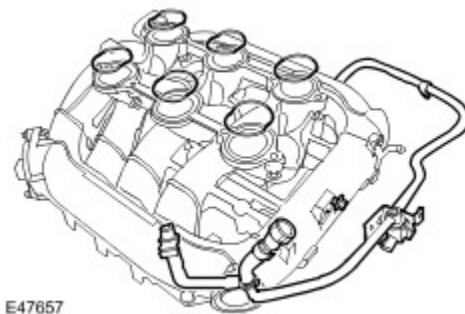
Release and then remove the intake manifold.



Discard the gaskets.



Install blanking caps to the exposed ports.



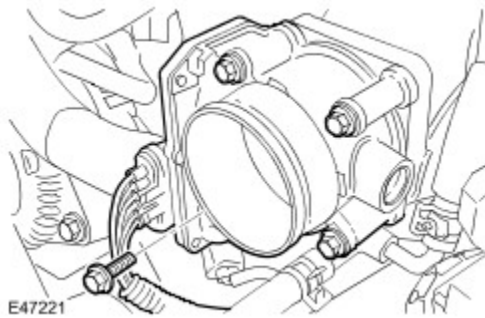
24 .

NOTE :

Do not disassemble further if the component is removed for access only.

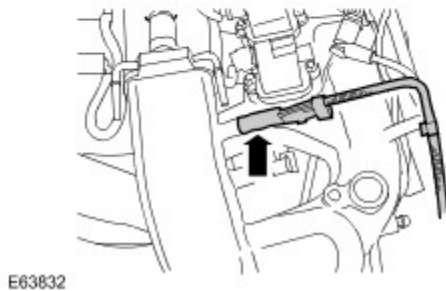
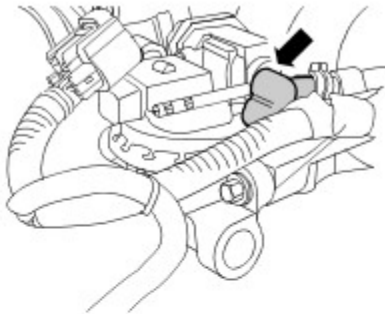
Remove the throttle body.

- Remove the 4 bolts.
- Remove and discard the throttle body gasket.
- Disconnect the coolant hose.



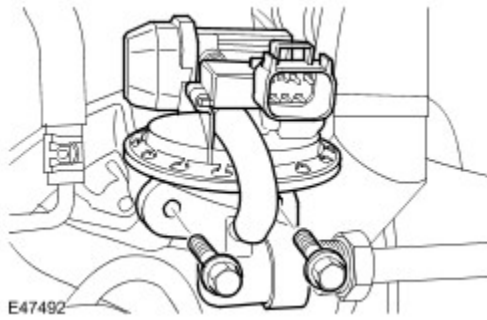
- 25 . Disconnect the EGR valve vacuum hose.

- Disconnect and remove the vacuum hose at the intake manifold.

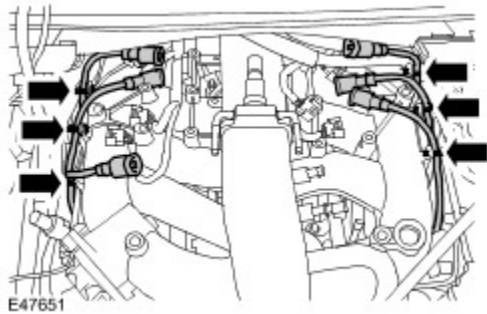


- 26 . Remove the EGR valve.

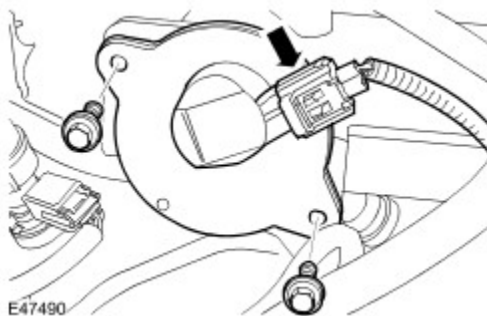
- Remove the 2 bolts.
- Collect and discard the gasket.



27. Remove the remaining ignition coils.
- Disconnect the sparking plug lead elbows at the coils.
 - Remove the bolts and studs. Remove and discard the seals.
28. Remove the HT leads.
- Release the 6 plug lead clips.



29. Remove the intake manifold tuning valve.
- Remove the 2 bolts.
 - Discard the O-ring seal.



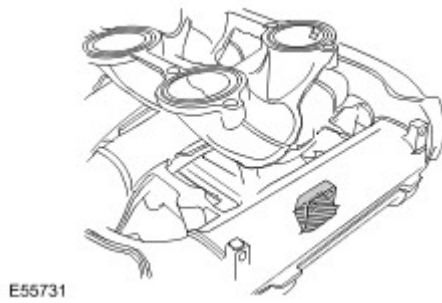
Installation

1.

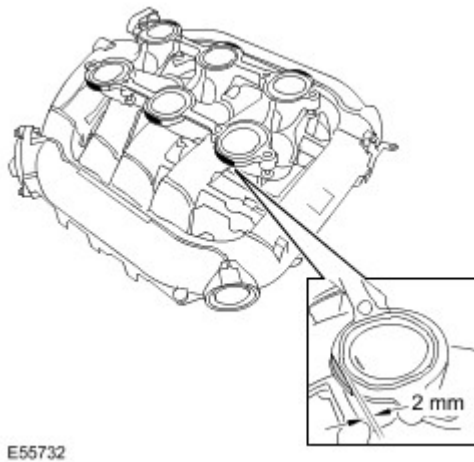


WARNING: Make sure there are no sharp edges after removing material.

Early vehicles only: Remove the center casting lug.




2. Early vehicles only: Remove excess material from the outside edges of the 6 intake manifold flange faces; file to within 2 mm of the gasket edge.



3. Early vehicles only: Install the fuel rail and injectors.
- Clean the component mating faces.
 - Tighten the bolts to 25 Nm (18 lb.ft).
 - Connect the fuel injector electrical connectors.
 - Tighten the M6 bolt to 10 Nm (7 lb.ft).
4. Install the intake manifold tuning valve.
- Clean the component mating faces.
 - Install a new O-ring seal.
 - Tighten the bolts to 10 Nm (7 lb.ft).
5. Secure the HT leads to the intake manifold with clips.
6. **NOTE :**
Note the fitted position of the fasteners.
Install the 4 ignition coils.
- Tighten the bolts to 6 Nm (4 lb.ft).
 - Tighten the studs to 6 Nm (4 lb.ft).
 - Connect the HT electrical connections.

- 7 . Install the EGR valve.
 - Clean the component mating faces.
 - Install a new gasket.
 - Tighten the bolts to 25 Nm (18 lb.ft).
- 8 . Connect the vacuum hose to the EGR valve.
- 9 . Connect the EGR vacuum hose to the intake manifold.
 - Clean the component mating faces.
 - Connect the vacuum hose to the EGR valve.
- 10 . Install the throttle body.
 - Clean the component mating faces.
 - Install a new gasket.
 - Tighten the 4 bolts to 10 Nm (7 lb.ft).
- 11 . Install the throttle body coolant hose.
 - Secure the clip.
 - Remove the hose clamp.
- 12 . Secure the wiring harness to the intake manifold.
 - Secure the wiring harness clip.

- 13 .  **CAUTION: Care must be taken prior to tightening the intake manifold bolts. Make sure the electrical harness, vacuum and purge valve lines are not trapped.**

NOTE :

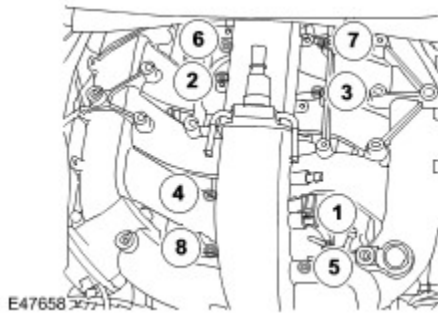
To aid installation: Position a Torx drive and extension, to the rear LH bank intake manifold Torx bolt, prior to installing the intake manifold. Retain with tape.

NOTE :

The ignition coils are removed from the illustration for clarity.

Install the intake manifold.

- Clean the component mating faces.
- Install the gaskets.
- Evenly and progressively tighten the bolts in the sequence shown to 10 Nm (7 lb.ft).



- 14 . Install the remaining ignition coils.
 - Tighten the bolts to 6 Nm (4 lb.ft).
 - Tighten the studs to 6 Nm (4 lb.ft).
 - Connect the HT electrical connections.
- 15 . Connect the ignition coil electrical connectors.
- 16 . Connect the fuel line to the fuel rail.
 - Clean the component mating faces.
 - Install the clip.
- 17 . Secure the coil wiring harness.
 - Connect the coil harness ground cables.
 - Tighten the nuts to 6 Nm (4 lb.ft).
 - Position and secure the clips.
- 18 . Connect the intake manifold tuning valve electrical connector.
- 19 . Connect the vacuum pipe to the inlet manifold.
- 20 . Secure the purge line to the intake manifold.
 - Install the spacer.
 - Install the bolt.
 - Tighten the bolt to 6 Nm (4 lb.ft).
- 21 . Connect the crankcase vent hose.
 - Clean the component mating faces.
- 22 . Connect the intake manifold coolant hose.
 - Secure the clip.
 - Remove the hose clamp.
- 23 . Install the air intake resonator. For additional information, refer to [Intake Air Resonator \(19.70.03\)](#) (Section 303-12A Intake Air Distribution and Filtering - 4.0L)

- 24 . Install the engine cover. For additional information, refer to [Engine Cover - 4.0L \(12.30.50\)](#) (Section 501-05 Interior Trim and Ornamentation)
- 25 . Connect the hood support struts.
- 26 . Connect the battery ground cable. For additional information, refer to [Specifications](#) (Section 414-00 Charging System - General Information)
- 27 . Check and top-up the coolant.