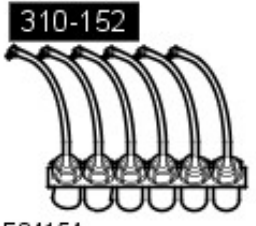



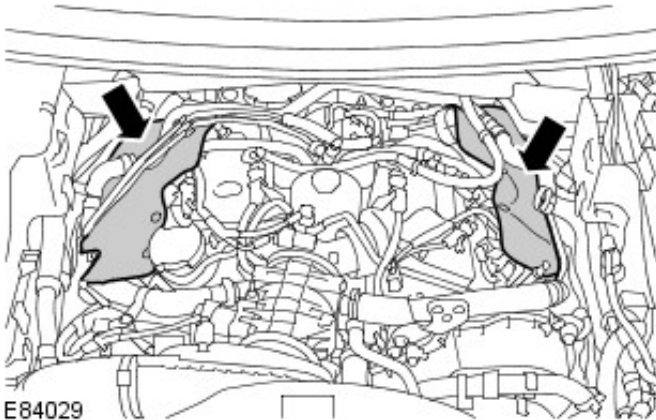
Fuel Charging and Controls - TDV6 2.7L Diesel - Fuel Injector Balance and Spill Check

General Procedures

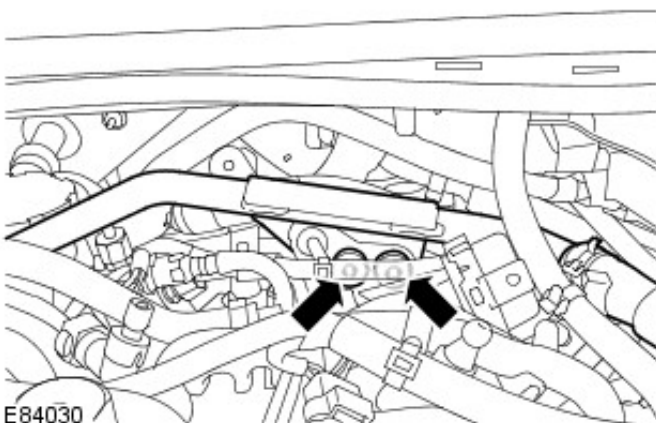
Special Tool(s)

 <p>310-152</p> <p>E84154</p>	<p>Fuel Injector Spill Test Kit 310-152</p>
 <p>310-152-02</p> <p>E84153</p>	<p>Fuel Return Blanking Caps 310-152-02</p>

1. Disconnect the battery ground cable.
For additional information, refer to: Specifications (414-00 Charging System - General Information, Specifications).
2. Remove the engine cover.
For additional information, refer to: Engine Cover - 2.7L Diesel (501-05 Interior Trim and Ornamentation, Removal and Installation).
3. Remove the injector sound proofing.

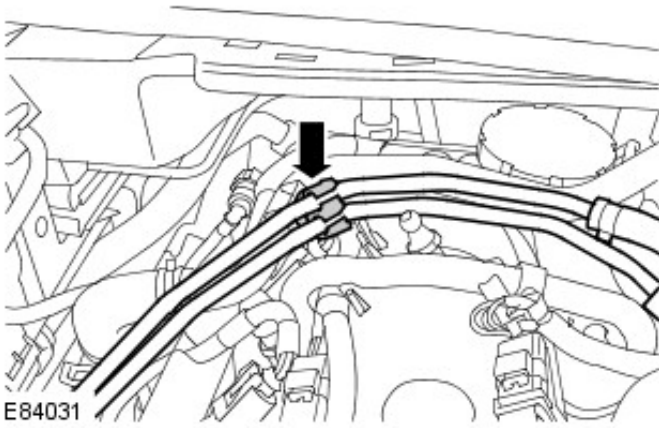


4. Release the EGR coolant cross-over pipe.
 - Remove the 2 bolts.

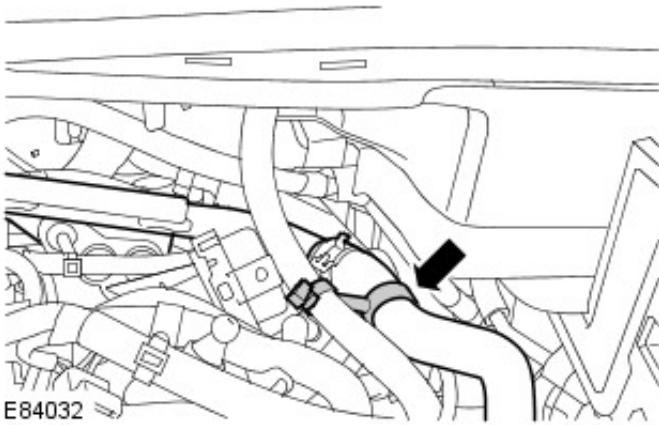


5. Release the fuel supply and fuel return clips from the

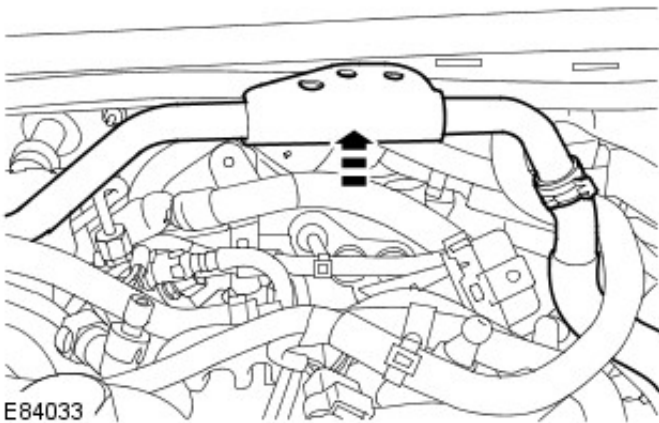
heater hose.



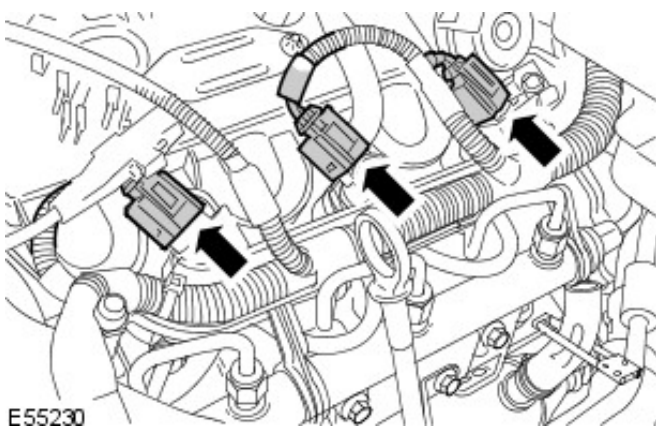
6. Release the engine harness and heater hose from clip.



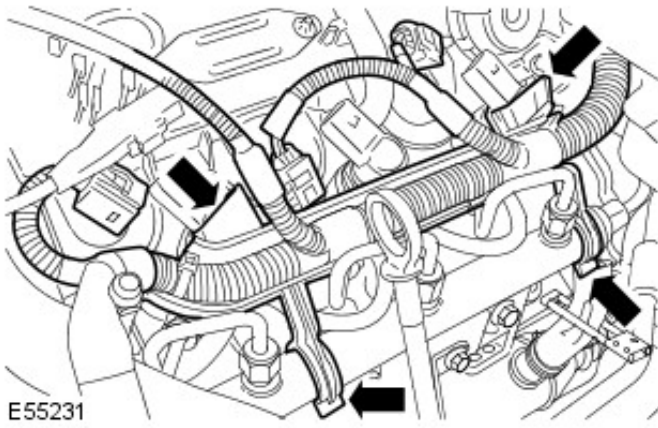
7. Release the coolant pipe on bulkhead and position aside. Do not disconnect the coolant pipe.



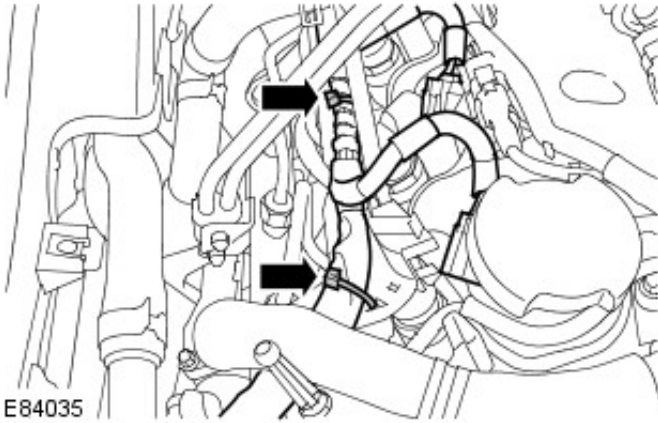
8. Disconnect the fuel injector electrical connectors.



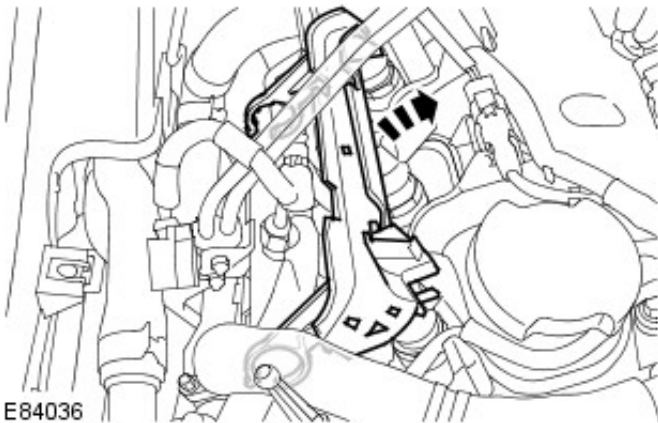
9. Detach the fuel injection wiring harness.



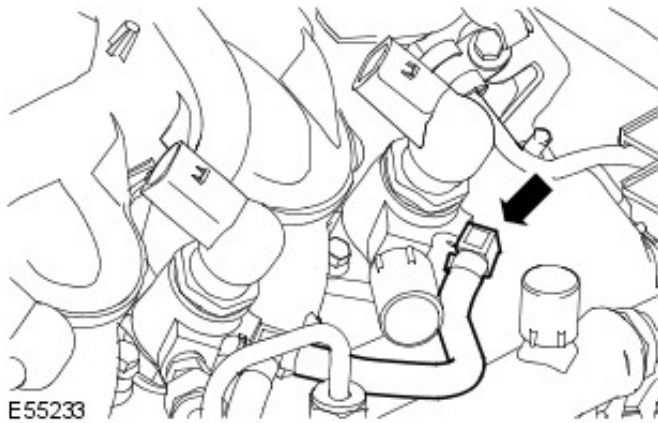
10. Cut and remove cable ties securing harness to support tray.



11. Release the harness bracket clips and remove the support trays.



12. Disconnect the fuel return line from the fuel injectors.

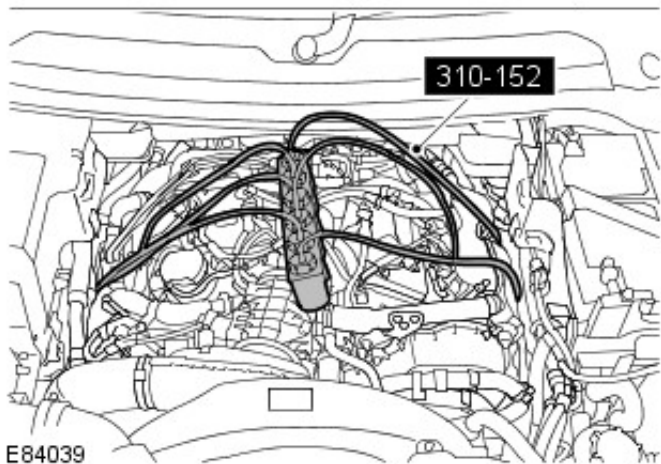
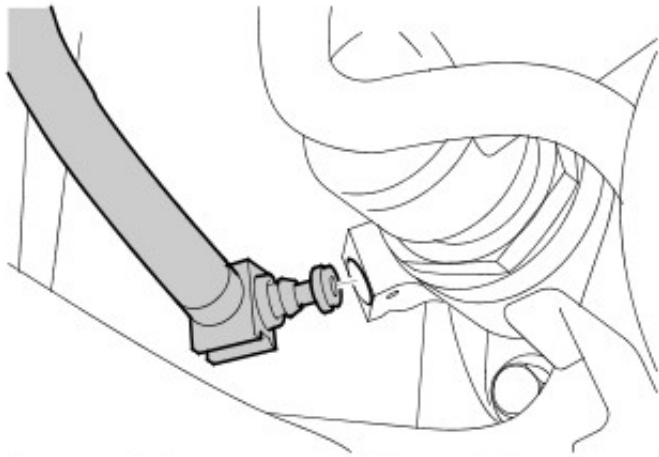


13. Blank-off each spill return with plugs from kit.



14. Connect the fuel injector electrical connectors.

15. Connect spill bottle to each of the injectors.




16. Connect the battery ground cable.

17. Connect Land Rover approved diagnostic equipment to vehicle.

18. Run cylinder balance test from 'live data'.

- Injector balance limits are between 700 and 1.3 k.
- Note any injector that is outside of these figures (a figure below the limit will usually mean a reduction in fuelling, and a figure above will result in an increase to fuelling).

19.  **WARNING:** Before starting engine, ensure all connectors are properly secure.

 **CAUTION:** Do not reject any of the injectors if the spill rates are even but outside of the correct rates shown. The spill rate can be affected by varying fuel rail pressure and fuel temperature. Only suspect a faulty injector(s) if the amount of fuel collected is significantly higher than the others. A faulty injector could fill a

bottle within 2 minutes.

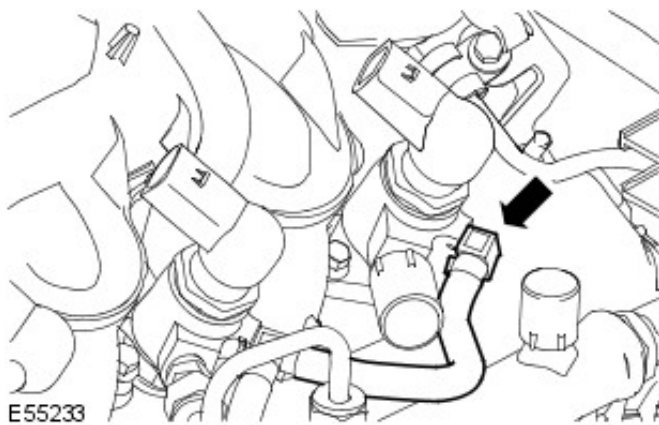



NOTE: The figures shown are to be used as a guide only.

Start the engine and immediately check the spill rate into the bottles. If possible, allow engine to run for 2 minutes. If any bottle is filling at a very fast rate and is likely to fill before 2 minutes is reached, stop engine and note which injector the fuel is coming from.

Time	Flow Rate
1 minute idle	Min rate 10 ml - Max rate 25 ml
4 minute idle	Min rate 15 ml - Max rate 26 ml

20. Disconnect the battery ground cable.
21. Disconnect all spill pipes and bottles. Replace an injector(s) that has either excessive spill or failed the balance check.
22. Remove blank-off plugs from spill return pipes.



23.  CAUTION: Make sure the fuel return line retaining clip is correctly installed to the fuel injector before installing the return line.

Connect the fuel return line to the fuel injector.

- Visually inspect the fuel return line O-ring seals for damage.
- Apply a light coating of petroleum jelly to the fuel return line O-ring seals.

24. Disconnect the injector electrical connectors and release the wiring harness.
25. Install the injector harness support trays and secure with cable ties.
26. Connect and secure the fuel injector wiring harness electrical connectors.
27. Secure the engine harness to heater hose clip.
28. Secure the fuel supply and fuel return to heater hose clips.
29. Refit coolant pipe to mounting at rear of engine.
30. Install the EGR coolant cross-over pipe.
 - Tighten the bolts to 13 Nm (10 lb.ft).
31. Install the injector sound proofing.
32. Install the engine cover.

For additional information, refer to: Engine Cover - 2.7L Diesel (501-05 Interior Trim and Ornamentation, Removal and Installation).
33. Connect the battery ground cable.

For additional information, refer to: Specifications (414-00 Charging System - General Information, Specifications).