



Oil Cooler (12.60.68)

Removal



WARNING: 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.



WARNING: 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.



WARNING: 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.



WARNING: 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.



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.



CAUTION: Before disconnecting or removing components, ensure the area around the joint faces and connections are clean. Plug open connections to prevent contamination.



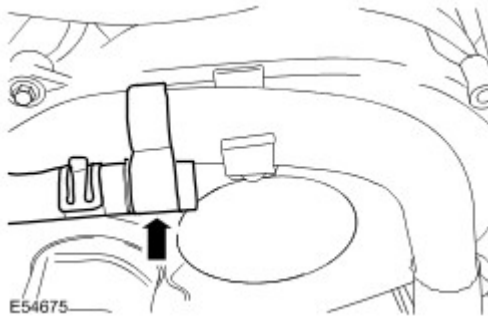
CAUTION: Diesel fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is therefore essential that absolute cleanliness is observed when working with these components. Always install blanking plugs to any open orifices or lines. Failure to follow this instruction may result in foreign matter ingress to the fuel injection system.



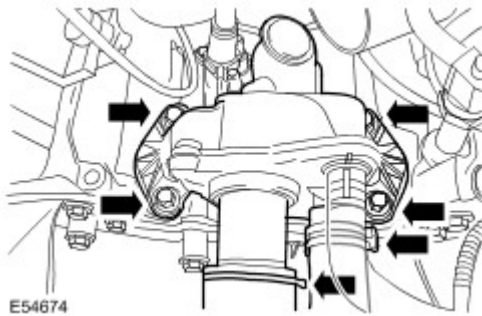
CAUTION: Make sure the workshop area in which the vehicle is being worked on is as clean and as dust free as possible. Foreign matter from work on clutches, brakes or from machining or welding operations can contaminate the fuel system and may result in later malfunction.

1. Disconnect the battery ground cable. For additional information, refer to [Specifications](#) (Section 414-00)
2. Drain the cooling system. For additional information, refer to [Cooling System Draining, Filling and Bleeding \(26.10.01\)](#) (Section 303-03)
3. Remove the crankcase vent oil separator. For additional information, refer to [Crankcase Vent Oil Separator \(17.10.04\)](#) (Section 303-08)

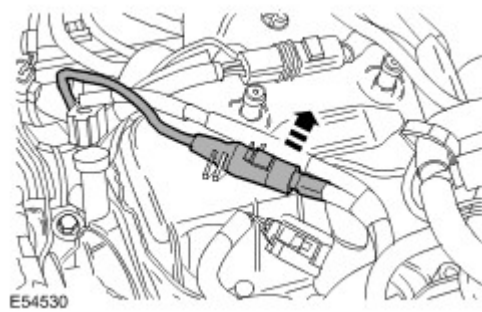
- 4 . Release the coolant bleed hose from the LH exhaust gas recirculation (EGR) coolant inlet hose.
- ▶ Release the retaining clip.



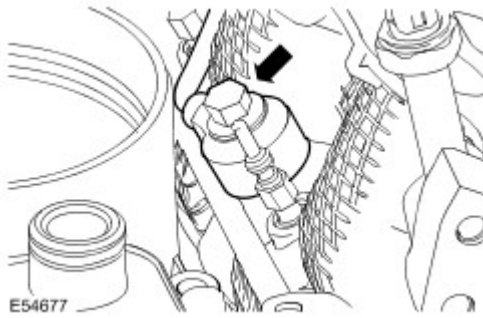
- 5 . Remove the cylinder head coolant elbow.
- ▶ Release the two retaining clips and disconnect the hoses.
 - ▶ Remove the four retaining bolts.
 - ▶ Remove and discard the O-ring seals.



- 6 . Disconnect the knock sensors (KS) electrical connector.
- ▶ Release the KS harness from the valve cover.



- 7 . Remove the LH KS.
- ▶ Remove the retaining bolt.



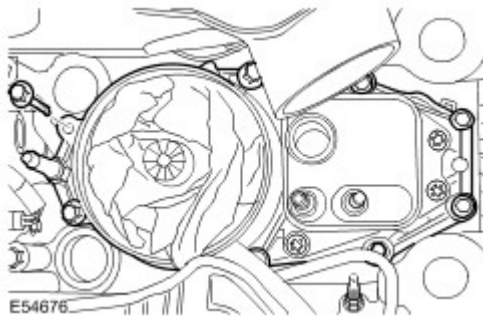
8.

NOTE :

Some fluid spillage is inevitable during this operation.

Remove the oil cooler.

- Remove the eight retaining bolts.
- Remove and discard the gasket.
- Remove and discard the O-ring seal.



Installation

1.



CAUTION: Make sure the gasket is installed correctly.

NOTE :

Make sure all component mating faces are clean.

Install the oil cooler.

- Install a new gasket.
- Install a new O-ring seal.
- Install the eight retaining bolts and tighten to 10 Nm (7 lb.ft).

2.



Install the LH KS.

- Install the retaining bolt and tighten to 20 Nm (15 lb.ft).
- Connect the knock sensor electrical connector.
- Attach the KS harness to the valve cover.

3.

Install the cylinder head coolant outlet elbow.

- Install new O-ring seals.

-  Install the four retaining bolts and tighten to 10 Nm (7 lb.ft).
-  Connect the hoses and secure with the clips.

- 4 . Secure the coolant bleed hose to the EGR coolant inlet hose.
- 5 . Install the crankcase vent oil separator. For additional information, refer to [Crankcase Vent Oil Separator \(17.10.04\)](#) (Section 303-08)
- 6 . Connect the battery ground cable. For additional information, refer to [Specifications](#) (Section 414-00)
- 7 . Refill and bleed the cooling system. For additional information, refer to [Cooling System Draining, Filling and Bleeding \(26.10.01\)](#) (Section 303-03)
- 8 . Check and top-up the engine oil.