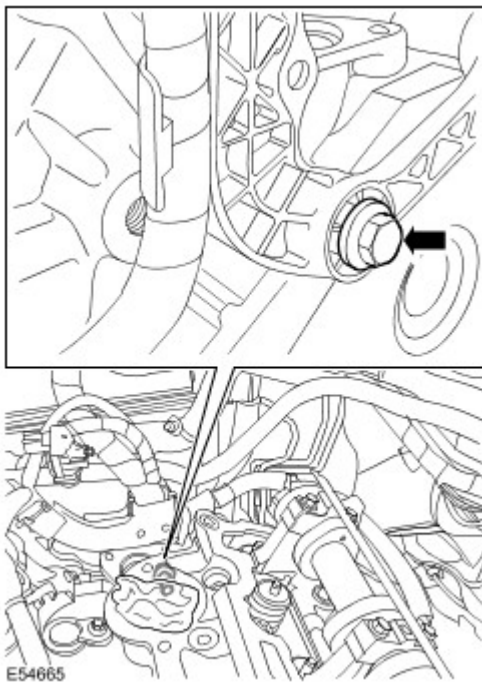




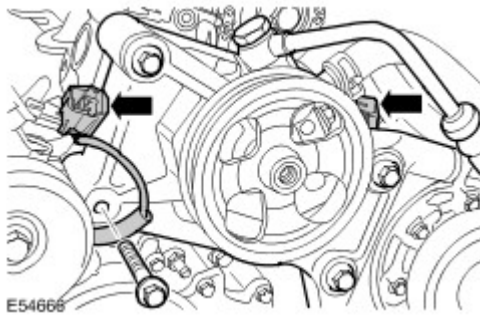
Cylinder Head LH (12.29.04)

Removal

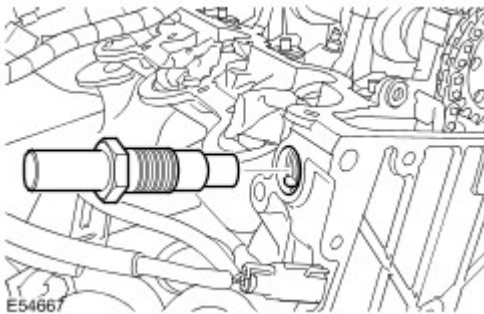
1. Disconnect the battery ground cable. For additional information, refer to [Specifications](#) (Section 414-00)
2. Drain the coolant. For additional information, refer to [Cooling System Draining, Filling and Bleeding \(26.10.01\)](#) (Section 303-03)
3. Refer to camshaft timing. For additional information, refer to (Section 303-01)
4. Remove the exhaust manifold. For additional information, refer to [Exhaust Manifold LH \(30.15.10\)](#) (Section 303-01)
5. Release the harness bridge for access.
 - Remove the bolt.



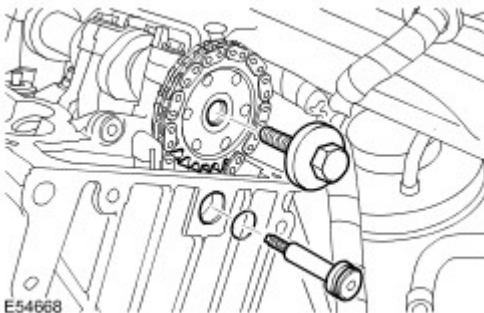
6. Position the A/C compressor mounting bracket assembly aside.
 - Remove the 4 bolts.
 - Release the knock sensor electrical connector retaining clips.
 - Tie the bracket aside.




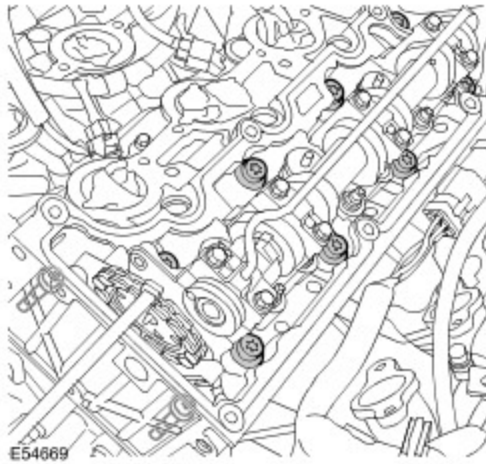
7. Remove the LH hydraulic timing chain tensioner.
▶ Clean the component mating faces.



8. Remove the Torx bolt retaining the chain guide.
▶ Remove and discard the O-ring seal.
9. Remove the camshaft sprocket bolt.
▶ Remove the camshaft sprocket.
▶ Secure the chain to the guide with a cable tie.



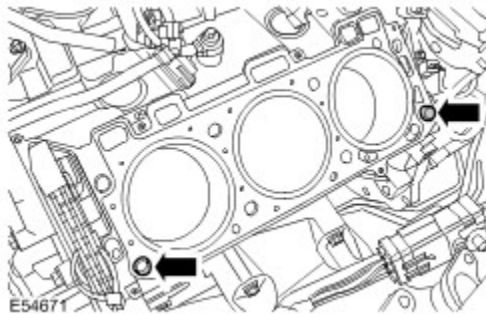
10.  **CAUTION: Working in a diagonal sequence, progressively loosen the bolts.**
Remove the 10 cylinder head bolts.
▶ Discard the bolts.



11. Remove the cylinder head LH assembly.
- Release the KS electrical harness clip.
 - Remove the bolt.



12. Remove and discard the cylinder head gasket.
- Clean the cylinder head locating dowels.
 - Clean and inspect the cylinder head and cylinder block.



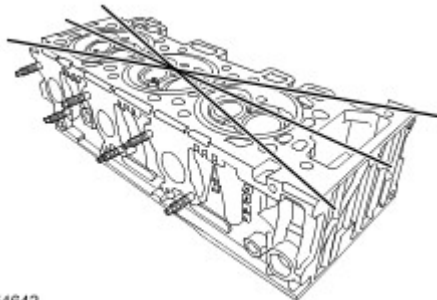
13. **NOTE :**
Remove the camshaft bearing caps evenly and in stages.
- NOTE :**
Note the fitted position.
- NOTE :**
Do not disassemble further if the component is removed for access only.
Remove the camshaft bearing caps.


- Remove the 8 bolts.
- Collect the camshaft oil supply line.

14 . Remove the camshaft.

Installation

- 1 . Install the camshaft.
 - Clean the component mating faces.
 - Lubricate the components with clean engine oil.
- 2 . **NOTE :**
Note the fitted position.
Install the camshaft bearing caps.
 - Clean the component mating faces.
 - Lubricate the components with clean engine oil.
- 3 . **NOTE :**
After installing the bolts check the camshaft is free to rotate.
Install the camshaft oil supply line.
 - Thoroughly clean and inspect the oil supply line.
 - Prime the oil supply line with clean engine oil.
 - Tighten the bolts evenly in 2 stages to the sequence shown.
 - Tighten the bolts to 6 Nm (4 lb.ft).
 - Tighten the bolts to 16 Nm (12 lb.ft).
- 4 . Clean the component mating faces.
- 5 . Check cylinder head face for distortion, across the center and from corner to corner. For additional information, refer to [Specifications](#) (Section 303-01)




- 6 .  **CAUTION: The head gasket must be installed over the cylinder block dowels.**
Install a new cylinder head gasket.

- 7 . Install the cylinder head LH assembly.
- Install the knock sensor bracket.
 - Tighten the bolt to 10 Nm (7 lb.ft).
- 8 . **NOTE :**
Tighten the bolts 1 to 8 in the sequence shown. The M12 bolts are tightened in 3 stages.
Install the cylinder head bolts.
- Lubricate the new cylinder head bolt threads with clean engine oil.
 - Tighten the M12 bolts to 30 Nm (22 lb.ft), then a further 80 degrees.
 - Tighten the M12 bolts a further 80 degrees.
 - Tighten the M8 bolts to 35 Nm (26 lb.ft).



- 9 . Install the exhaust manifold. For additional information, refer to [Exhaust Manifold LH \(30.15.10\)](#) (Section 303-01)
- 10 . Install the Torx bolt retaining the chain guide.
- Install a new O-ring seal.
 - Tighten the bolt to 10 Nm (7 lb.ft).
 - Clean the component mating faces.
- 11 . Install the A/C compressor mounting bracket assembly.
- Clean the component mating faces.
 - Tighten the bolts to 45 Nm (33 lb.ft).
 - Secure the wiring harness.
 - Tighten the KS clip retaining bolt to 10 Nm (7 lb.ft).
- 12 . Install the LH hydraulic timing chain tensioner.
- 13 . Adjust the valve timing. For additional information, refer to (Section 303-01)
- 14 . Install the electrical harness bridge.

 Tighten the bolt to 45 Nm (33 lb.ft).

- 15 . Connect the battery ground cable. For additional information, refer to [Specifications](#) (Section 414-00)
- 16 . Refill and bleed the cooling system. For additional information, refer to [Cooling System Draining, Filling and Bleeding \(26.10.01\)](#) (Section 303-03)