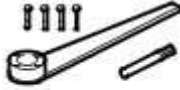


Engine Front Cover - VIN Range: G00442- >G45703 (12.65.01)

Special Service Tools



303-191

Front Pulley Lock

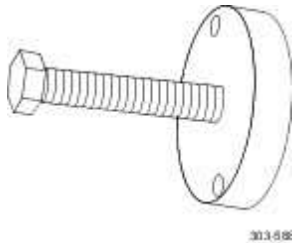
303-191



303-191-02

Front Pulley Lock Adaptor

303-191-02



Remover, Crankshaft Damper

303-588

Removal

All vehicles

- 1 . Remove the cooling fan motor and shroud. <<303-03A>>
- 2 . Remove the left-hand valve cover.
For additional information, refer to
- 3 . Remove the right-hand valve cover.
For additional information, refer to

Vehicles without supercharger

- 4 . Remove the oil cooler.
For additional information, refer to

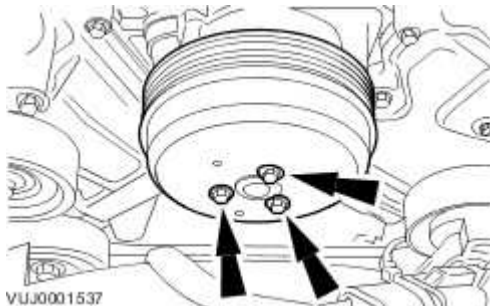
Vehicles with supercharger

- 5 . Remove the supercharger drive belt. <<303-05>>

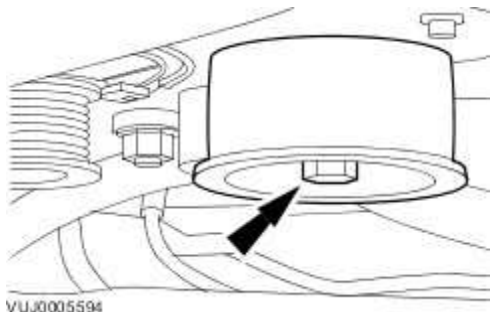
All vehicles

- 6 . Remove power steering pump. <<211-02>>
- 7 . Remove the air conditioning compressor. <<412-03>>

- 8 . Remove the water pump pulley.



- 9 . Remove the accessory drive belt idler pulley.

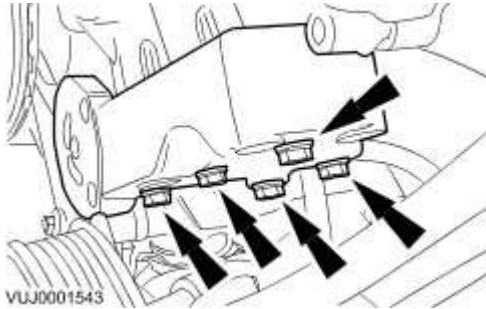


Vehicles with supercharger

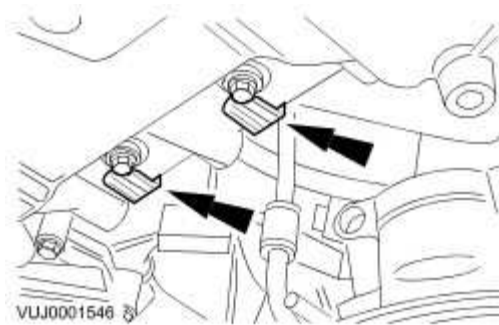
10 . Remove supercharger drive belt tensioner. <<303-05>>

All vehicles

11 . Remove the power steering pump mounting bracket.



12 . Detach the engine harness.



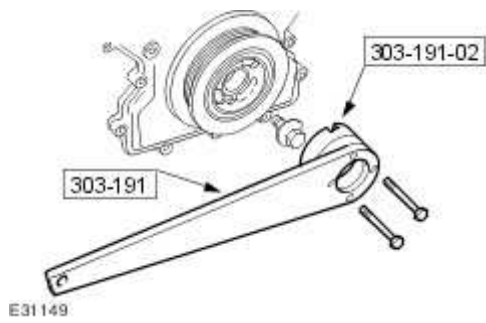
13



- **CAUTION:** Under no circumstances should the crankshaft setting peg 303-645 be used in the following operations to lock the crankshaft.

Using special tools, retain the crankshaft pulley.

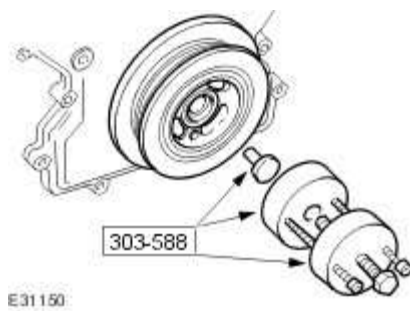
- ▶ Remove and discard the crankshaft pulley bolt.



14 . Remove the special tools.

15 . Using special tools, remove the crankshaft pulley.

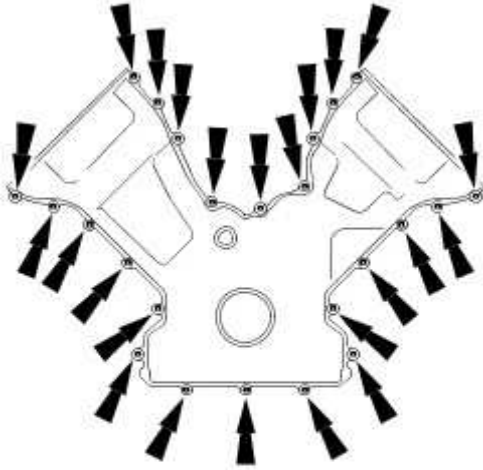
- ▶ Collect the locking ring.
- ▶ Remove and discard the O-ring seal.



16 . Remove the special tools.

17 . Remove the engine front cover.

- ▶ Remove and discard all the seals.



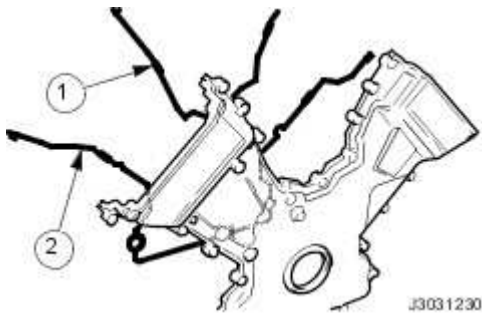
VUJ0002018

Installation

All vehicles

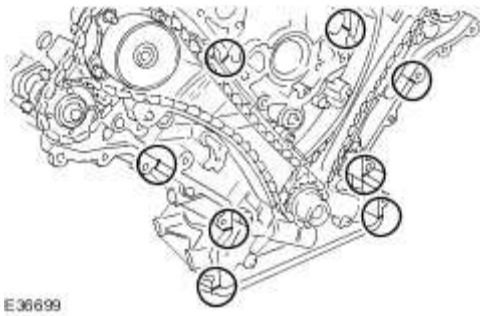
1 . Install new seals to the timing cover.

- 1) Install the new seal to the inner groove on the face of the timing cover.
- 2) Install the new seal to the outer groove on the face of the timing cover.



2 Apply sealant to the eight joints on the engine face.

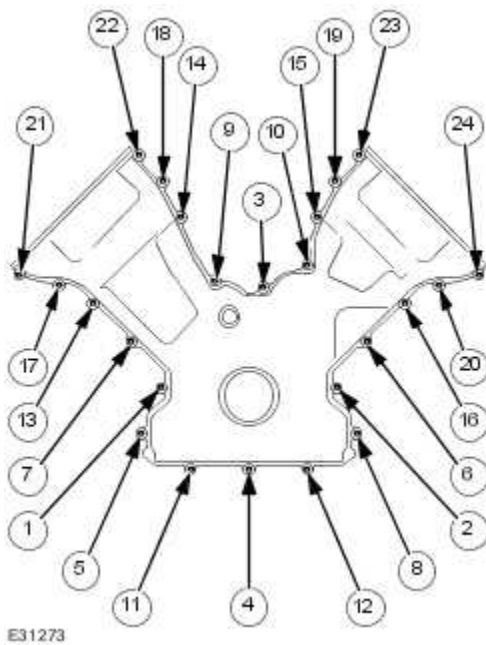
- ▶ Sealant beads to be 3mm diameter and 12mm long. Cut the nozzle of the sealant tube to produce a 3 mm (0.12 in) bead. (Install and tighten the securing bolts within twenty minutes of sealant application).



3 . Install the timing cover.

▶ Tighten in the sequence shown.

▶ Tighten to 13 Nm.



4 . **NOTE:**

Check crankshaft pulley and locking ring for damage.

Clean all crankshaft pulley mating faces.



E31151

5



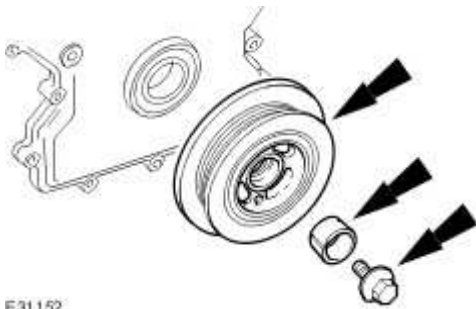
CAUTION: The screw thread in the crankshaft must be cleaned out before a new crankshaft pulley bolt is installed.



CAUTION: A new crankshaft pulley bolt must be used.

Install, but do not tighten, a new crankshaft pulley retaining bolt.

▶ Install the crankshaft pulley and locking ring to the crankshaft.



E31152

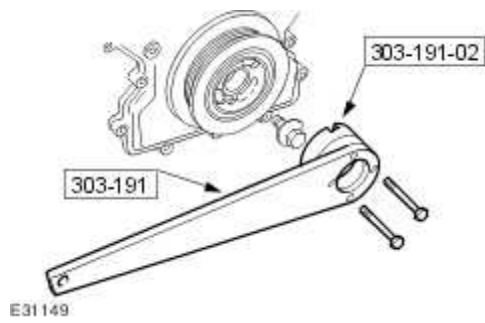
6



CAUTION: Under no circumstances should the crankshaft setting peg 303-645 be used in the following operations to lock the crankshaft.

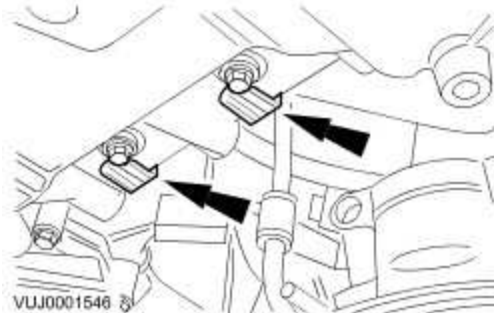
Using special tools, retain the crankshaft pulley.

▶ Tighten the crankshaft pulley retaining bolt to 375 Nm.



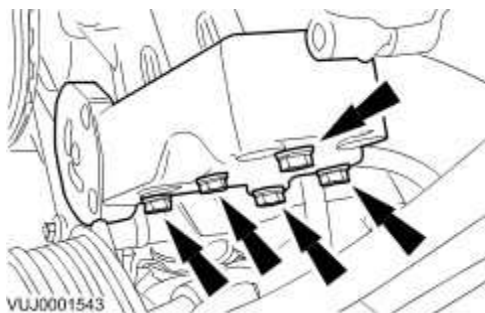
7 . Remove the special tools.

8 . Attach the engine harness.



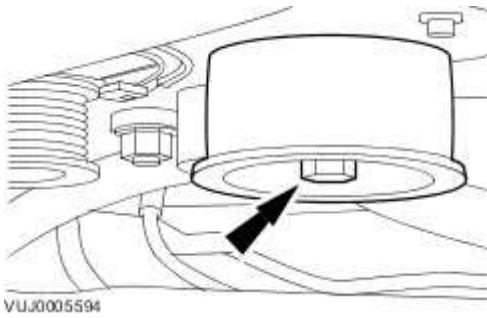
9 . Install the power steering pump mounting bracket.

▶ Tighten to 25 Nm.



10 . Install the accessory drive belt idler pulley.

▶ Tighten to 25 Nm.



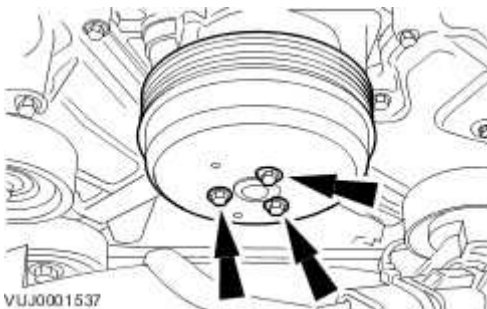
Vehicles with supercharger

- 11 . Install the supercharger drive belt tensioner. <<303-05>>

All vehicles

- 12 . Install the water pump pulley.

▶ Tighten to 10 Nm + 45°.



- 13 . Install the air conditioning compressor. <<412-03>>

- 14 . Install power steering pump. <<211-02>>

Vehicles with supercharger

- 15 . Install the supercharger drive belt. <<303-05>>

Vehicles without supercharger

- 16 . Install the oil cooler.
For additional information, refer to

All vehicles

- 17 . Install the left-hand valve cover.
For additional information, refer to

- 18 . Install the right-hand valve cover.
For additional information, refer to

- 19 . Install the cooling fan motor and shroud. <<303-03A>>

Engine Front Cover - VIN Range: G45704->G99999 (12.65.01)

Removal

All vehicles

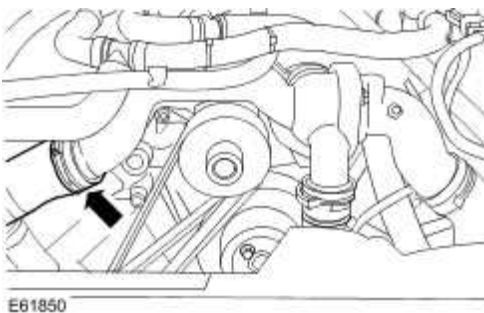
- 1 . Remove the left-hand valve cover.
For additional information, refer to Valve Cover LH - VIN Range: G45704->G99999 (12.29.43)
- 2 . Remove the right-hand valve cover.
For additional information, refer to Valve Cover RH - VIN Range: G45704->G99999 (12.29.44)
- 3 . Remove the crankshaft pulley.
For additional information, refer to Crankshaft Pulley (12.21.09)

Vehicles without supercharger

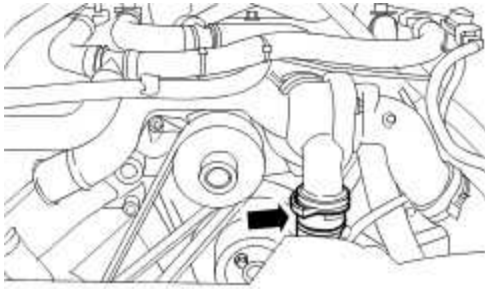
- 4 . Remove the oil cooler.
For additional information, refer to Oil Cooler - Vehicles Without: Supercharger (12.60.68)

Vehicles with supercharger

- 5 . Disconnect the coolant hose.

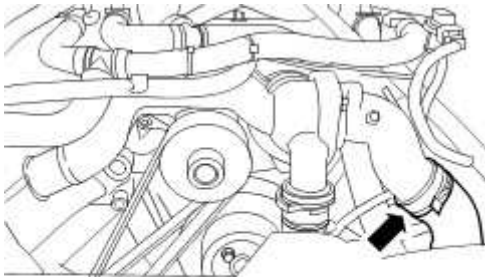


- 6 . Disconnect the coolant hose.



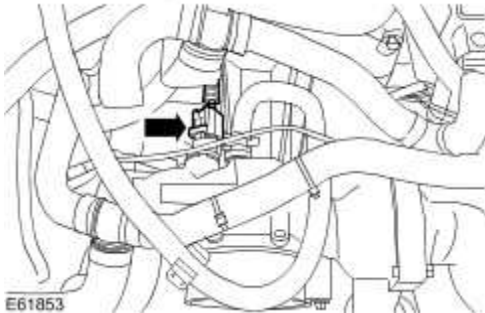
E61851

7 . Disconnect the coolant hose.



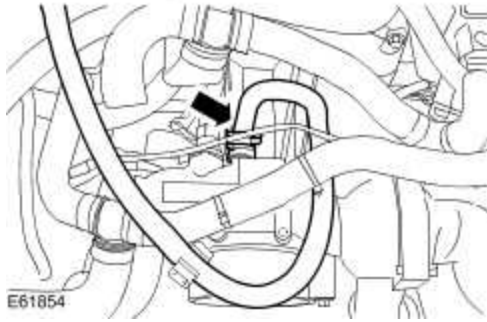
E61852

8 . Disconnect the engine coolant temperature (ECT) sensor electrical connector.



E61853

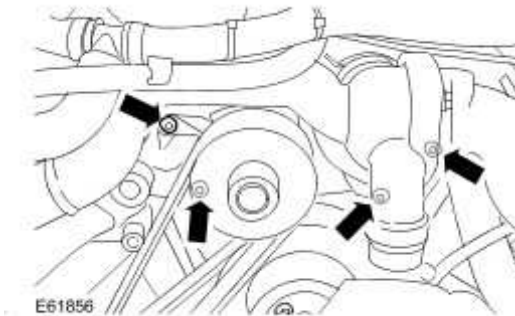
9 . Disconnect the coolant hose.



10 . Disconnect the coolant hose.

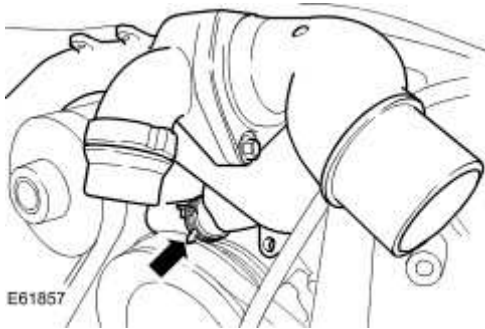


11 . Detach the coolant assembly.



12 . Remove the coolant assembly.

- ▶ Disconnect the coolant hose.
- ▶ Remove and discard the O-ring seals.



All vehicles

13 . Remove the water pump pulley.

▶ Using a suitable tool, retain the water pump pulley.



14 Remove the air conditioning (A/C) compressor.

- For additional information, refer to Air Conditioning (A/C) Compressor - 3.5L/4.2L, VIN Range: G45704->G99999 (82.10.20)

15



- **CAUTION:** Cap the power steering line to prevent loss of fluid and prevent dirt ingress.

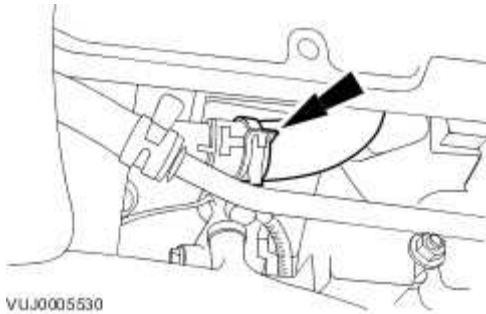


CAUTION: If power steering fluid comes into contact with the paintwork, the affected area must be immediately washed down with cold water.

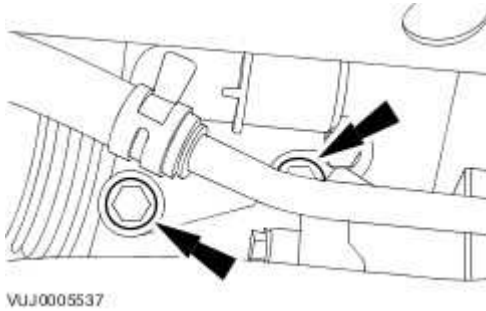
NOTE:

Drain the fluid into a suitable container.

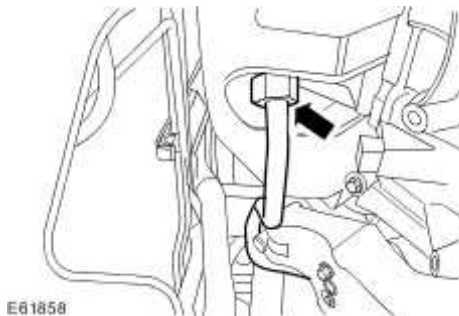
Disconnect the power steering reservoir to power steering pump supply line.



16 . Remove the power steering pump lower retaining bolts.



17 . Disconnect the secondary air injection (AIR) control valve to exhaust manifold tube.



18 . Lower the vehicle.

19



· **CAUTION:** Cap the power steering lines to prevent loss of fluid and prevent dirt ingress.

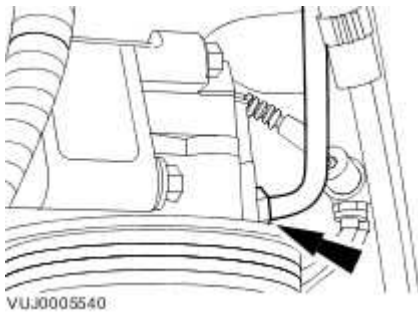


CAUTION: If power steering fluid comes into contact with the paintwork, the affected area must be immediately washed down with cold water.

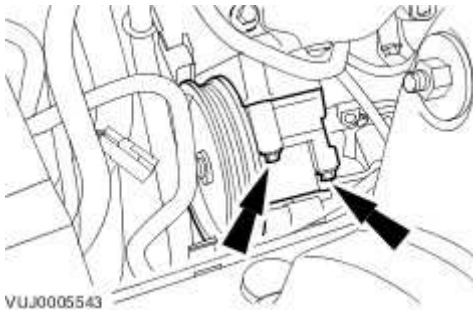
NOTE:

Drain the fluid into a suitable container.

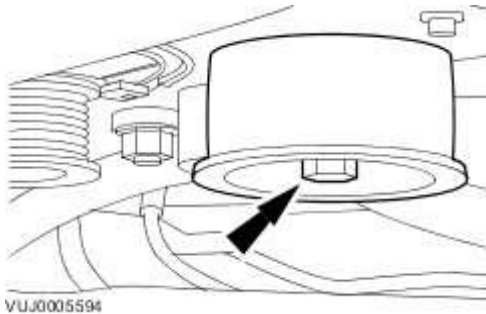
Disconnect the power steering pump to steering gear high-pressure line.



20 . Remove the power steering pump.

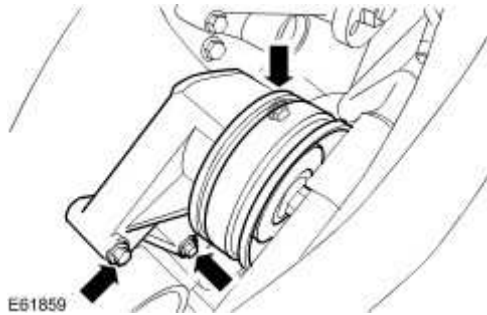


21 . Remove the accessory drive belt idler pulley.

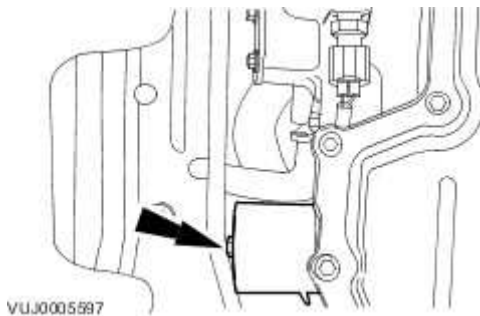


Vehicles with supercharger

22 . Remove the supercharger belt idler pulley and bracket assembly.



23 . Remove the supercharger belt tensioner.

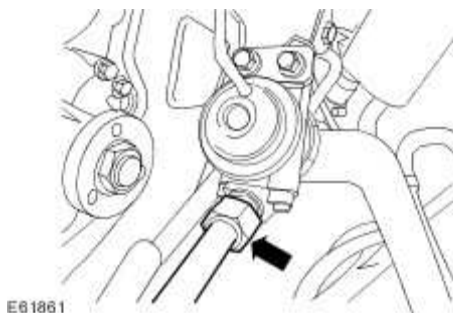


All vehicles

24 . **NOTE:**

Vehicles with supercharger shown, vehicles without supercharger similar.

Disconnect the AIR control valve to exhaust manifold tube.

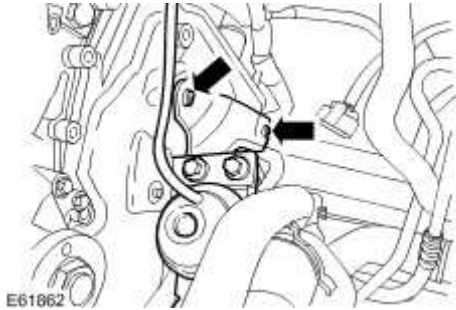


25 . **NOTE:**

Vehicles with supercharger shown, vehicles without supercharger similar.

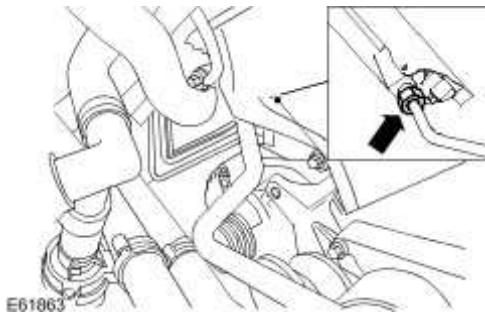
Reposition the AIR control valve and bracket assembly.

▶ Remove the retaining bolts.

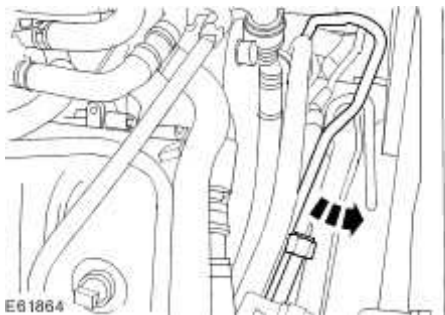


Vehicles with supercharger

26 . Disconnect the AIR control valve to exhaust manifold tube.

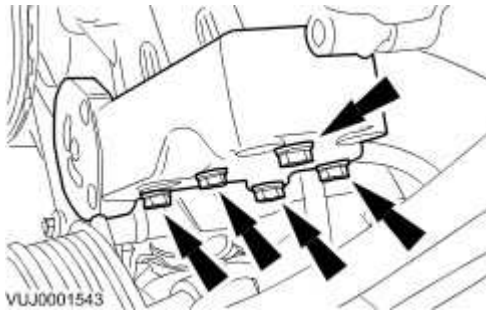


27 . Remove the AIR control valve to exhaust manifold tube.

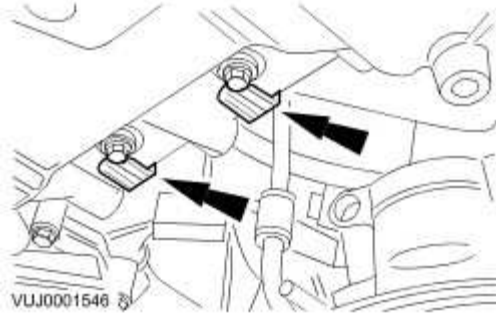


All vehicles

28 . Remove the power steering pump mounting bracket.

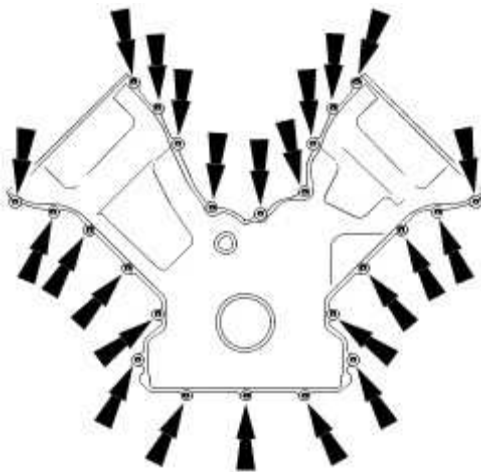


29 . Detach the engine harness.



30 . Remove the engine front cover.

▶ Remove and discard all the seals.



VUJ0002018

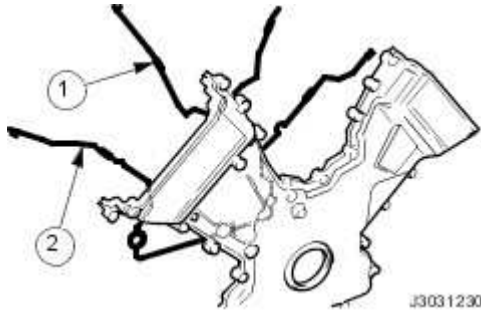
Installation

All vehicles

1 . Install new seals to the timing cover.

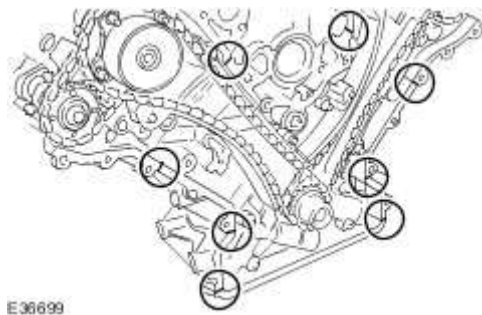
1) Install the new seal to the inner groove on the face of the timing cover.

2) Install the new seal to the outer groove on the face of the timing cover.



2 Apply sealant to the eight joints on the engine face.

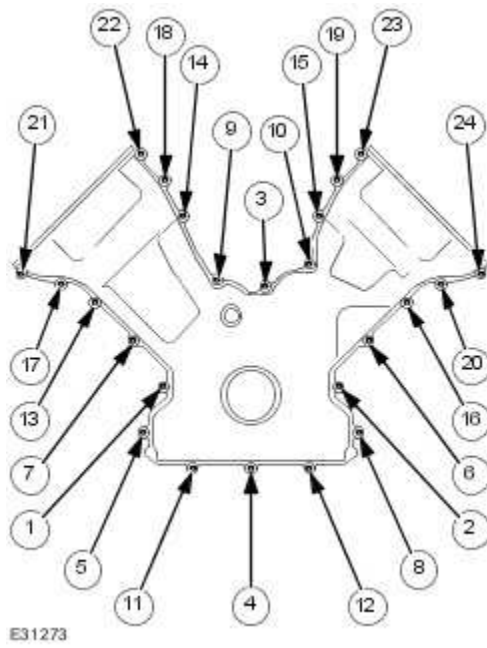
- ▶ Sealant beads to be 3mm diameter and 12mm long. Cut the nozzle of the sealant tube to produce a 3 mm (0.12 in) bead. (Install and tighten the securing bolts within twenty minutes of sealant application).



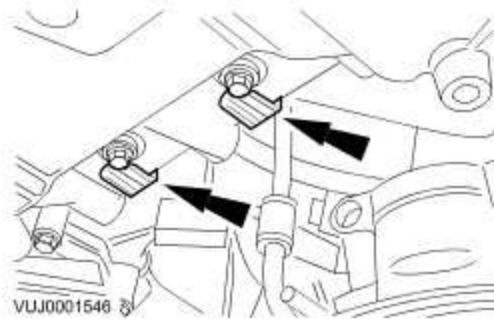
3 . Install the timing cover.

▶ Tighten in the sequence shown.

▶ Tighten to 12 Nm.

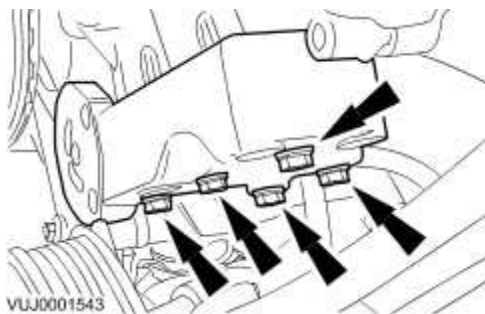


4 . Attach the engine harness.



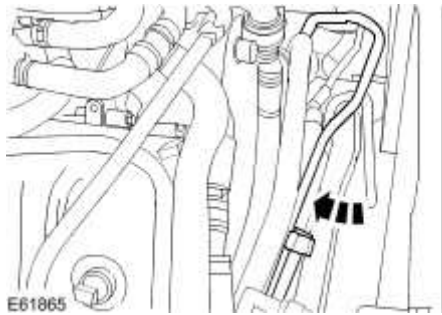
5 . Install the power steering pump mounting bracket.

▶ Tighten to 25 Nm.



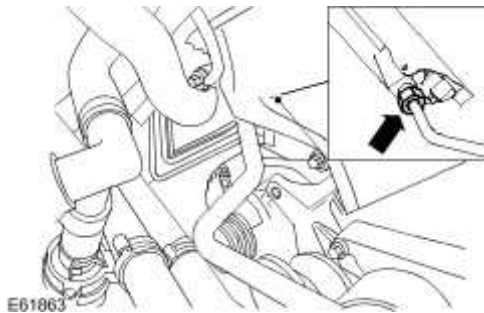
Vehicles with supercharger

- 6 . Install the AIR control valve to exhaust manifold tube.



- 7 . Connect the AIR control valve to exhaust manifold tube.

▶ Tighten to 35 Nm.



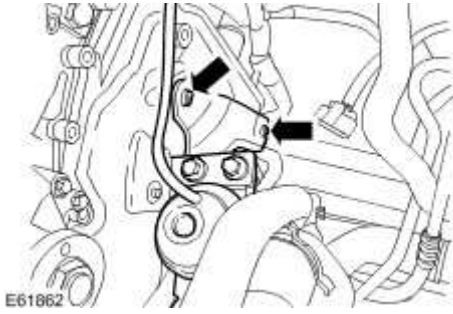
All vehicles

- 8 . **NOTE:**

Vehicles with supercharger shown, vehicles without supercharger similar.

Reposition the AIR control valve and bracket assembly.

▶ Tighten to 8 Nm.

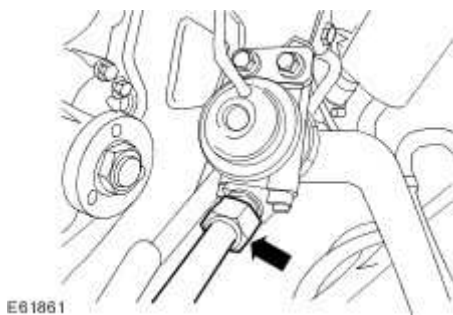


9 . NOTE:

Vehicles with supercharger shown, vehicles without supercharger similar.

Connect the AIR control valve to exhaust manifold tube.

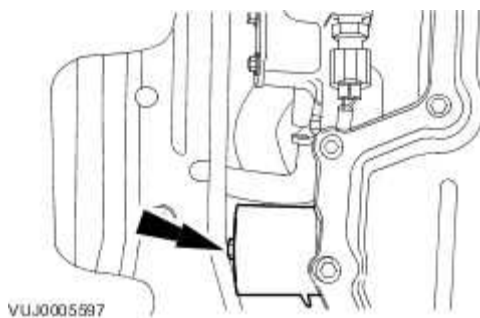
▶ Tighten to 35 Nm.



Vehicles with supercharger

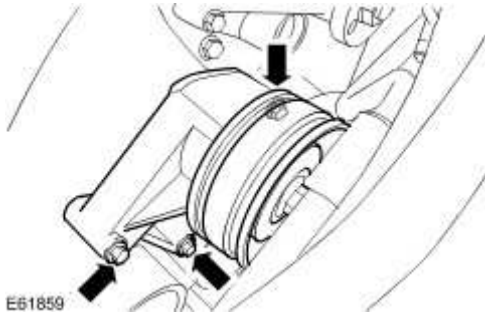
10 . Install the supercharger belt tensioner.

▶ Tighten to 40 Nm.



11 . Install the supercharger belt idler pulley and bracket assembly.

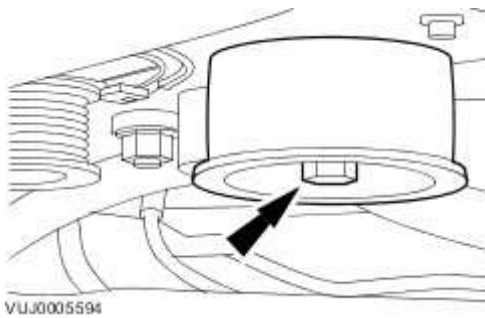
▶ Tighten to 9 Nm.



All vehicles

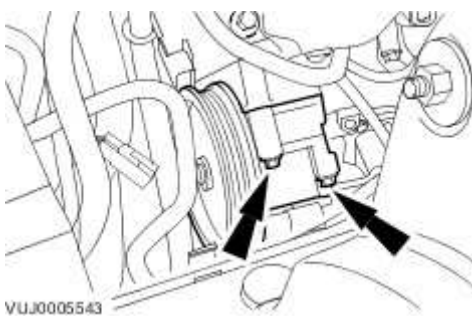
12 . Install the accessory drive belt idler pulley.

▶ Tighten to 61 Nm.



13 . Install the power steering pump.

▶ Tighten to 25 Nm.



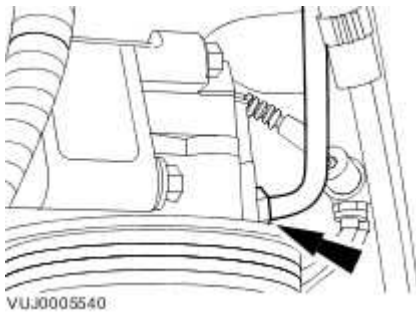
14 . **NOTE:**

Remove the blanking caps.

Connect the power steering pump to steering gear high-pressure line.

▶ Install a new O-ring seal.

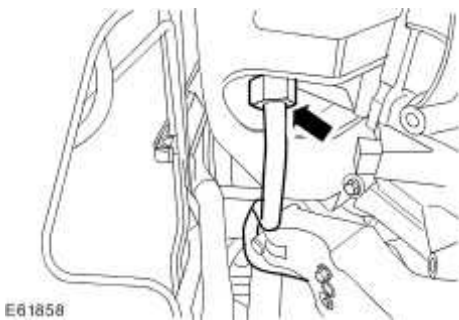
▶ Tighten to 25 Nm.



15 . Raise the vehicle.

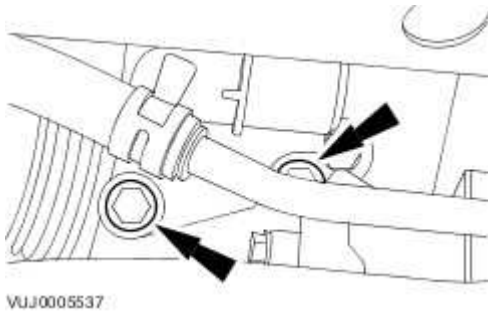
16 . Connect the AIR control valve to exhaust manifold tube.

▶ Tighten to 35 Nm.



17 . Install the power steering pump lower retaining bolts.

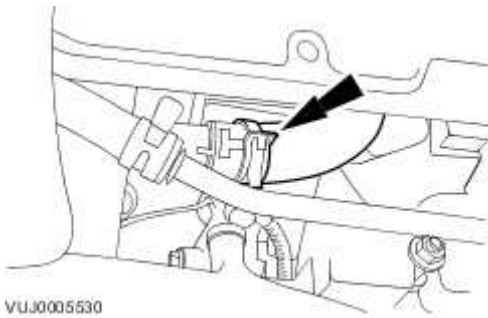
▶ Tighten to 25 Nm.



18 . **NOTE:**

Remove the blanking caps.

Connect the power steering reservoir to power steering pump supply line.

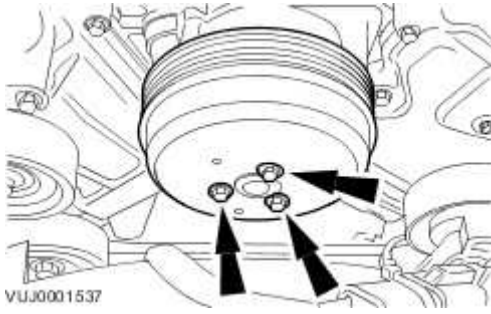


19 Install the A/C compressor.

- For additional information, refer to Air Conditioning (A/C) Compressor - 3.5L/4.2L, VIN Range: G45704->G99999 (82.10.20)

20 . Install the water pump pulley.

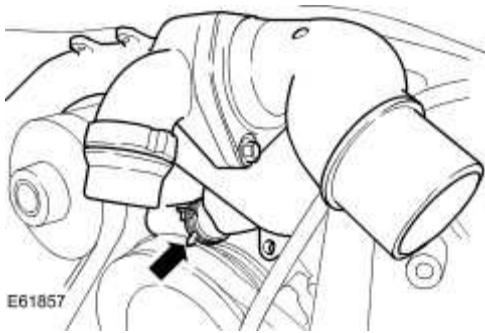
- ▶ Using a suitable tool, retain the water pump pulley.
- ▶ Tighten to 10 Nm + 45°.



Vehicles with supercharger

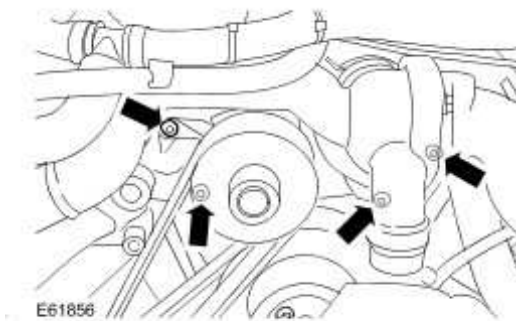
21 . Install the coolant assembly.

- ▶ Install new O-ring seals.
- ▶ Connect the coolant hose.

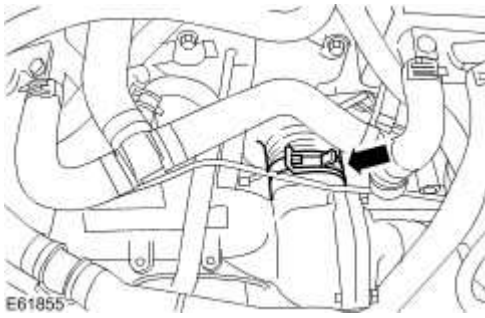


22 . Attach the coolant assembly.

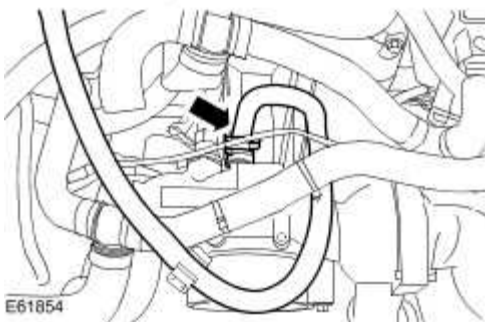
- ▶ Tighten to 9 Nm.



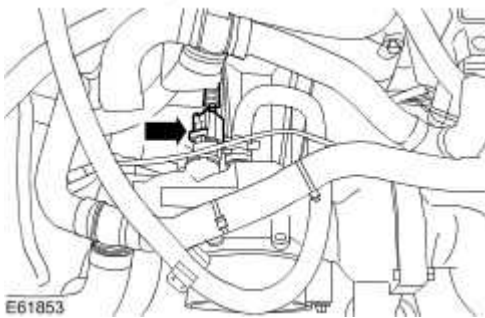
23 . Connect the coolant hose.



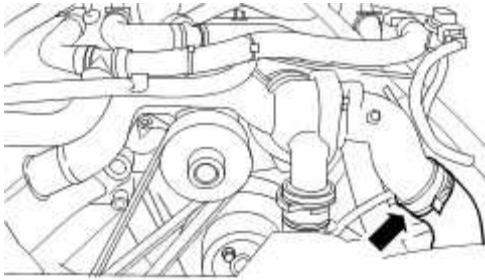
24 . Connect the coolant hose.



25 . Connect the ECT sensor electrical connector.

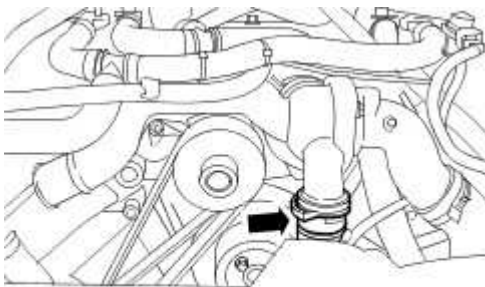


26 . Connect the coolant hose.



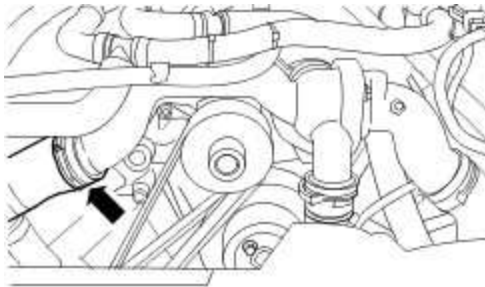
E61852

27 . Connect the coolant hose.



E61851

28 . Connect the coolant hose.



E61850

Vehicles without supercharger

29 . Install the oil cooler.

For additional information, refer to Oil Cooler - Vehicles Without: Supercharger (12.60.68)

All vehicles

30 . Install the crankshaft pulley.

For additional information, refer to Crankshaft Pulley (12.21.09)

31 Install the right-hand valve cover.

- . For additional information, refer to Valve Cover RH - VIN Range: G45704->G99999 (12.29.44)

32 . Install the left-hand valve cover.

For additional information, refer to Valve Cover LH - VIN Range: G45704->G99999 (12.29.43)