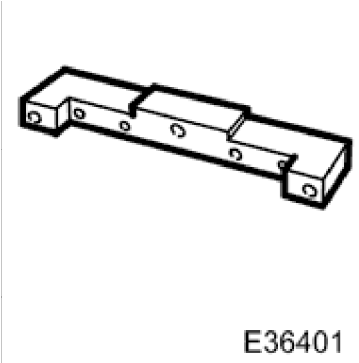


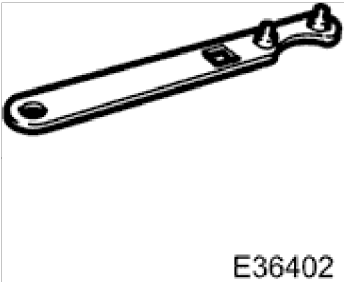
2000 XK RANGE - Engine - 303-01

Secondary Timing Chain LH 12.65.69

Special Service tools



Camshaft setting
303-530

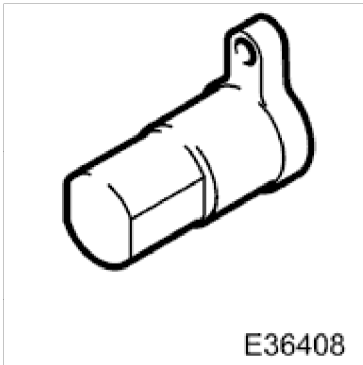


Timing chain tensioning
303-532

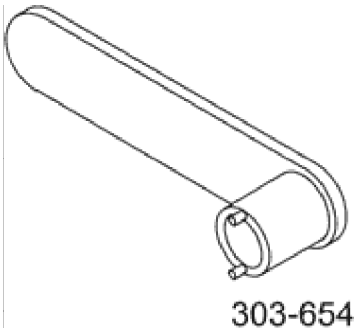


Wedges, primary chain
303-533

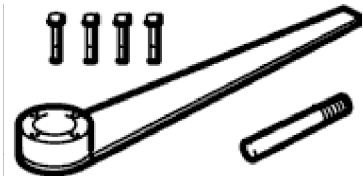
2000 XK RANGE - Engine - 303-01



Crankshaft setting
303-531

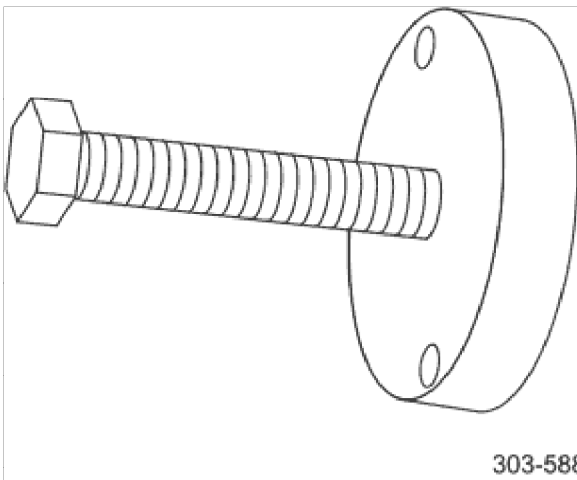


Variable camshaft timing oil control unit setting tool
303-654



303-191
Locking tool, crankshaft pulley
303-191

2000 XK RANGE - Engine - 303-01



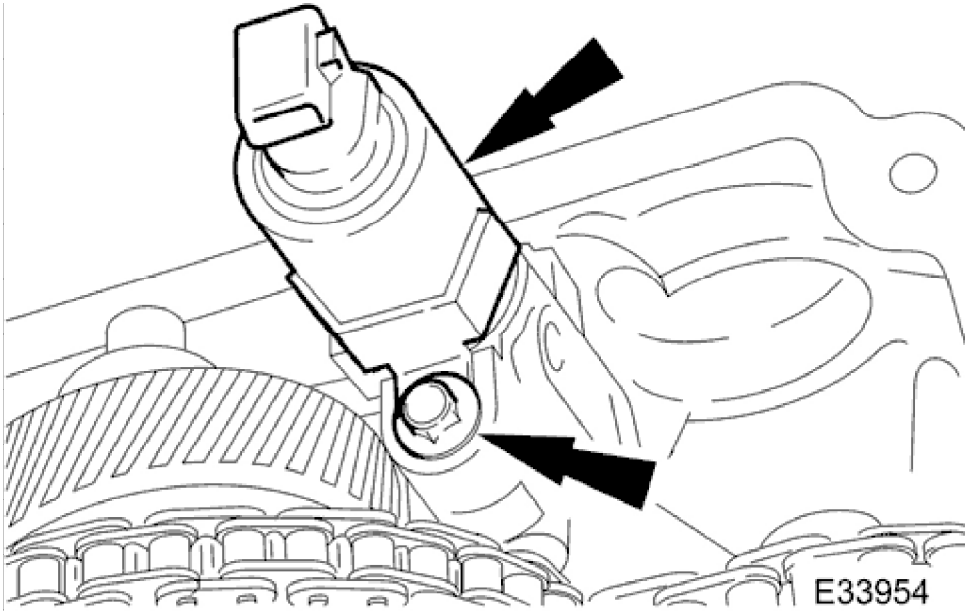
Remover, crankshaft pulley
303-588

Removal

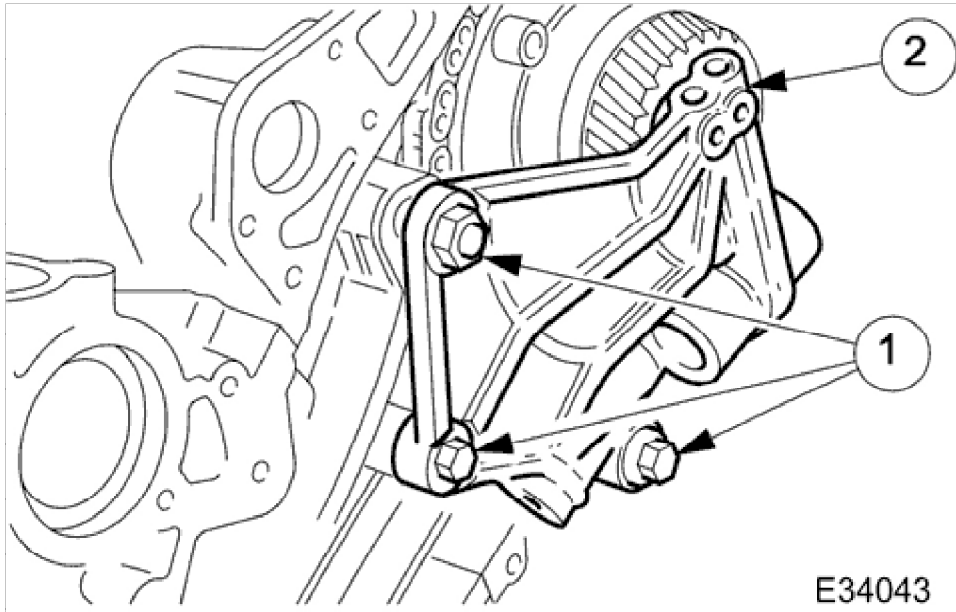
All vehicles

1. Remove the engine front Cover. <<Engine Front Cover>>

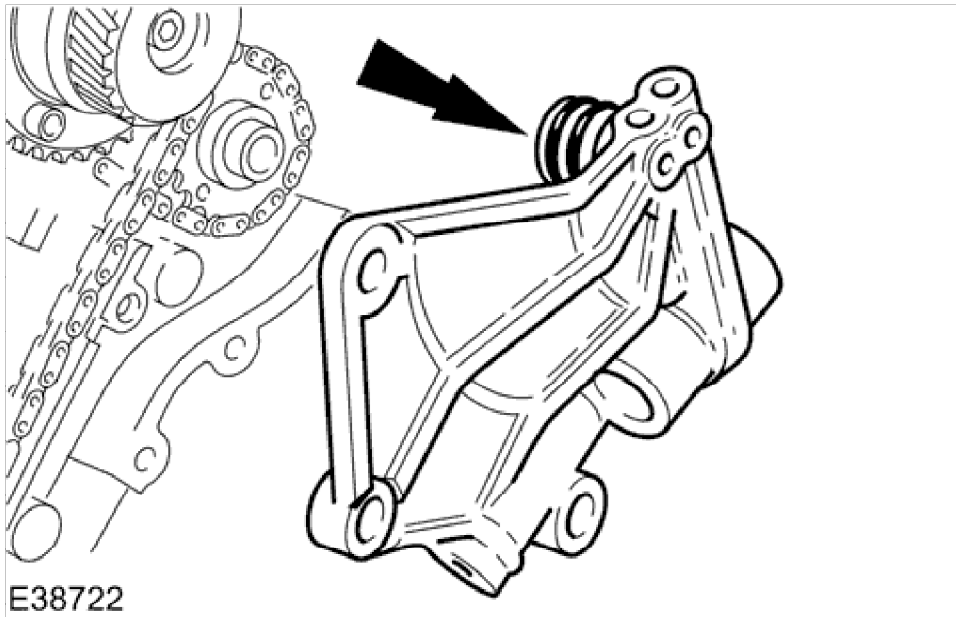
Vehicles without supercharger



2. Remove the variable camshaft timing oil control solenoid.



3. Remove variable camshaft timing oil control unit housing.
 1. Remove variable camshaft timing oil control unit housing retaining bolts.
 2. Remove variable camshaft timing oil control unit housing.



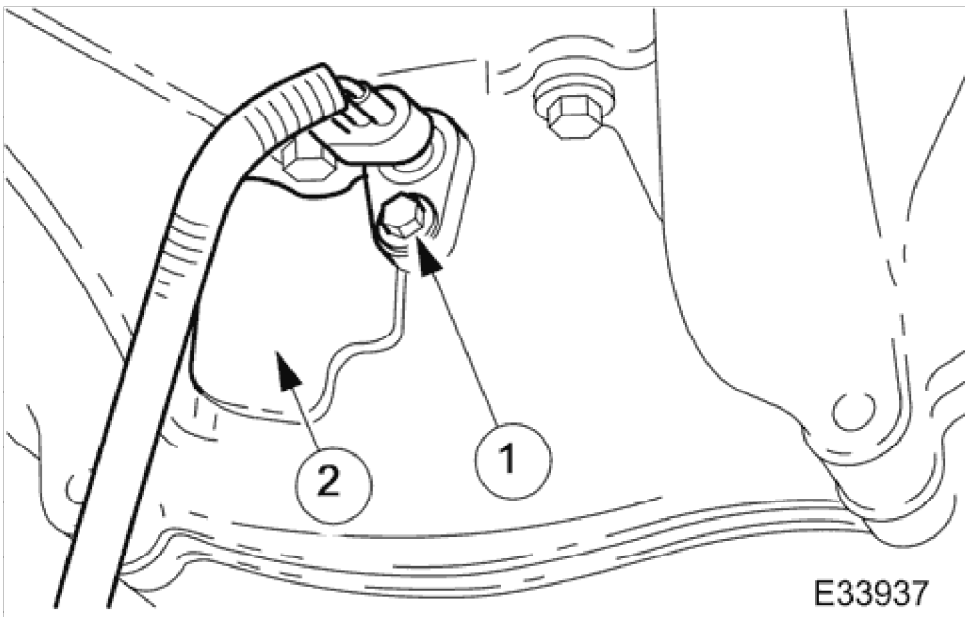
4. Remove and discard the variable camshaft timing oil control unit housing O-ring seals.
 1. Remove the sealing rings from the variable camshaft timing oil control unit housing.

All vehicles

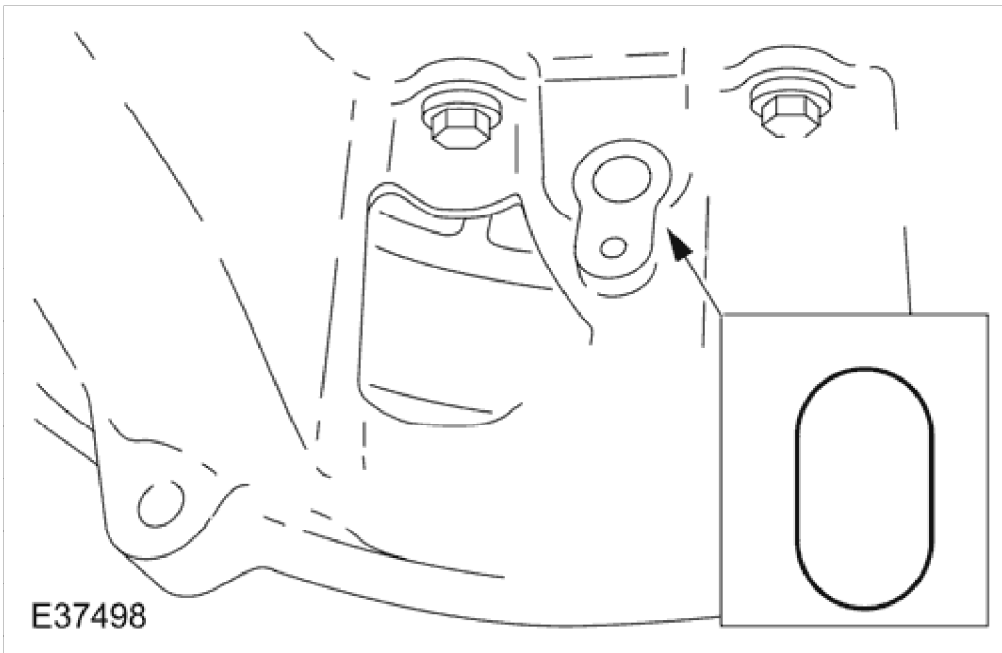
NOTE:

Vehicles without supercharger shown, vehicles with supercharger similar.

5. Temporarily install the crankshaft pulley and retaining bolt, hand-tight only.
6. Raise the vehicle on a ramp.



- 7. Remove the crankshaft position sensor.
 - 1. Remove the bolt which secures the crankshaft position sensor to the flywheel housing.
 - Remove the sensor and allow it to hang free under the engine.
 - 2. Remove the access grommet (for torque converter bolts) from the housing.



- 8.  **CAUTION:**
Do not rotate the crankshaft counterclockwise. The timing chains may bind causing engine damage.

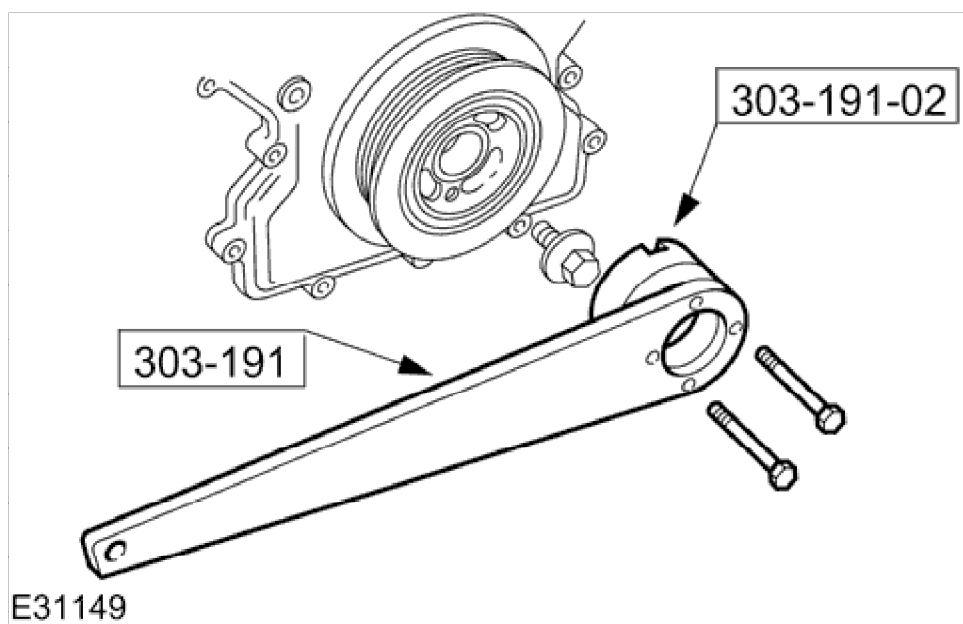
Position the crankshaft so the timing slot on the drive plate is visible through the CKP sensor location.



9. Install the crankshaft setting tool 303-531.

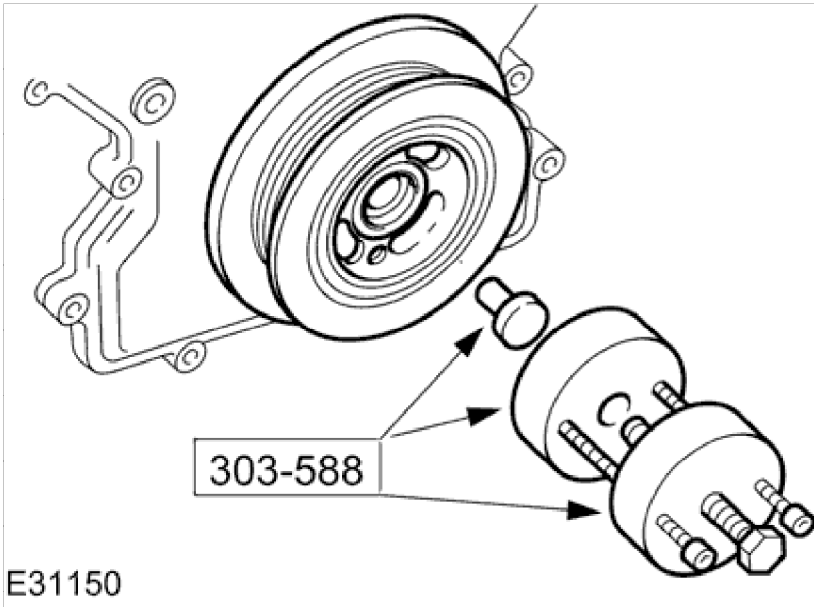
- Position the crankshaft so the special tool fully engages into the timing slot on the drive plate.

10. Lower the vehicle on the ramp.



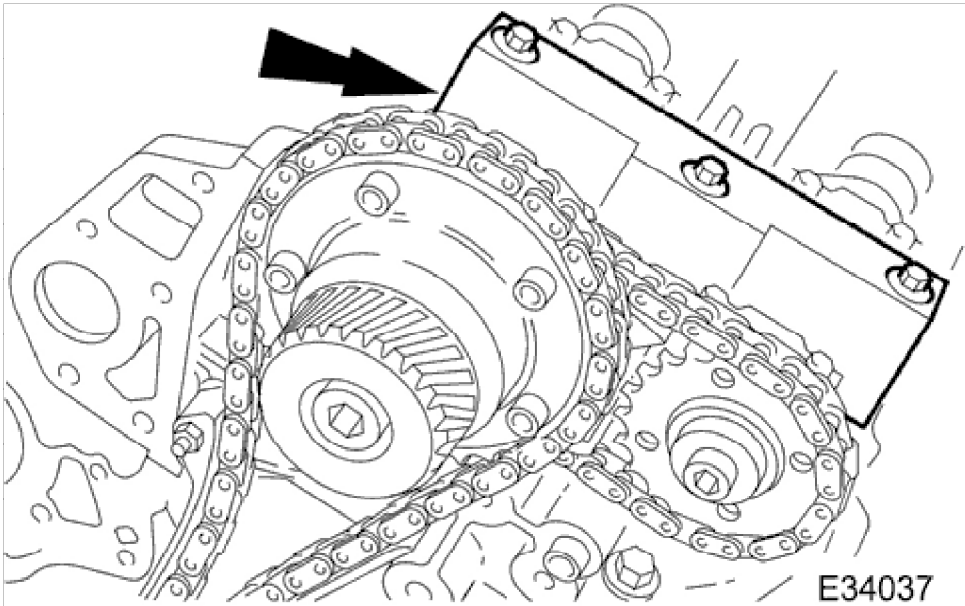
11.  **CAUTION:**
Under no circumstances should the crankshaft setting peg 303-531 be used in the following operation to lock the crankshaft.

Using the special tools, remove the crankshaft pulley retaining bolt.



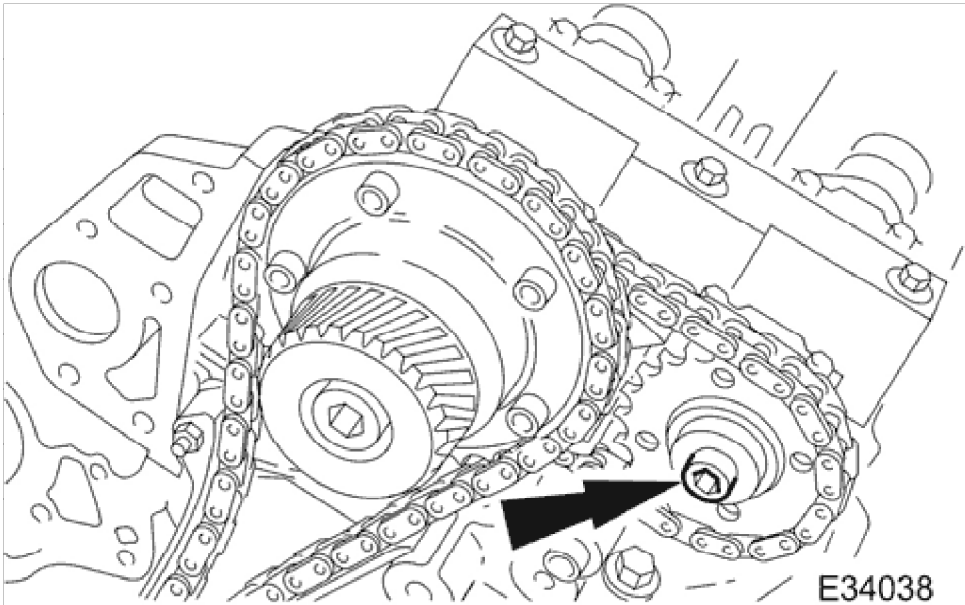
E31150

12. Using the special tools remove the crankshaft pulley.



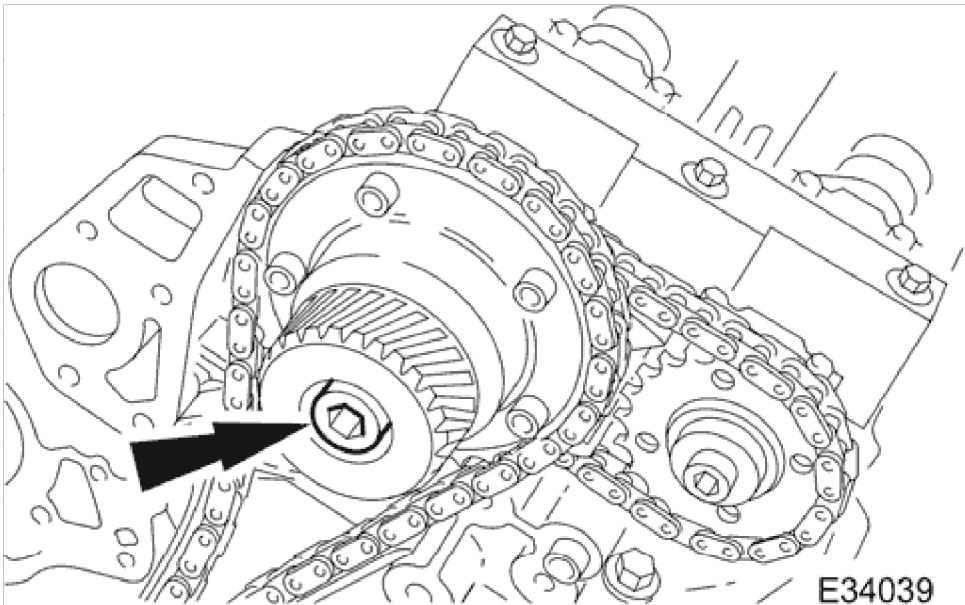
E34037

13. Install the camshaft locking tool 303-530 to the left-hand camshafts, aligning the camshafts as necessary.



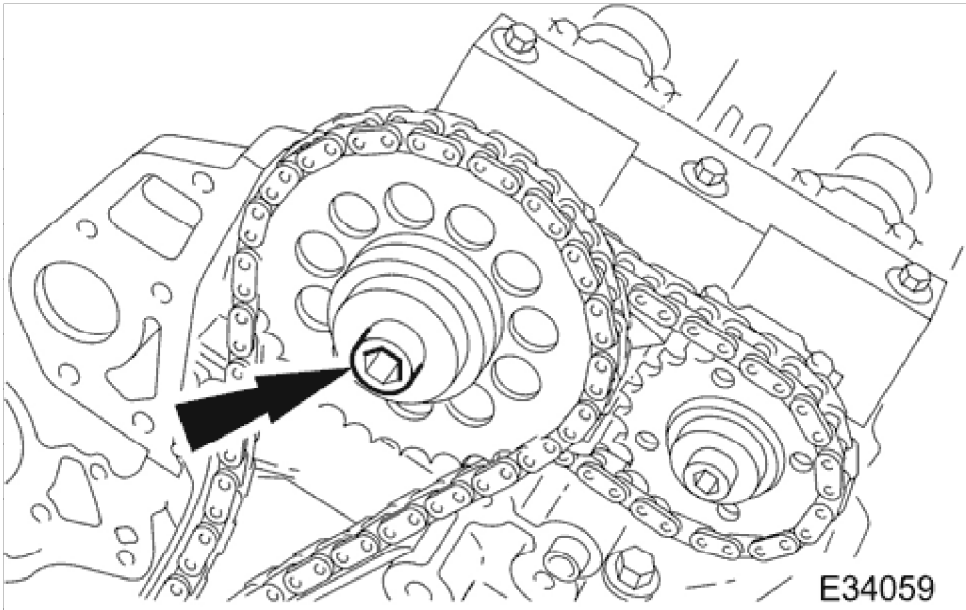
14. Loosen the exhaust camshaft sprocket retaining bolt.

Vehicles without supercharger



15. Loosen the variable camshaft timing oil control unit retaining bolt.

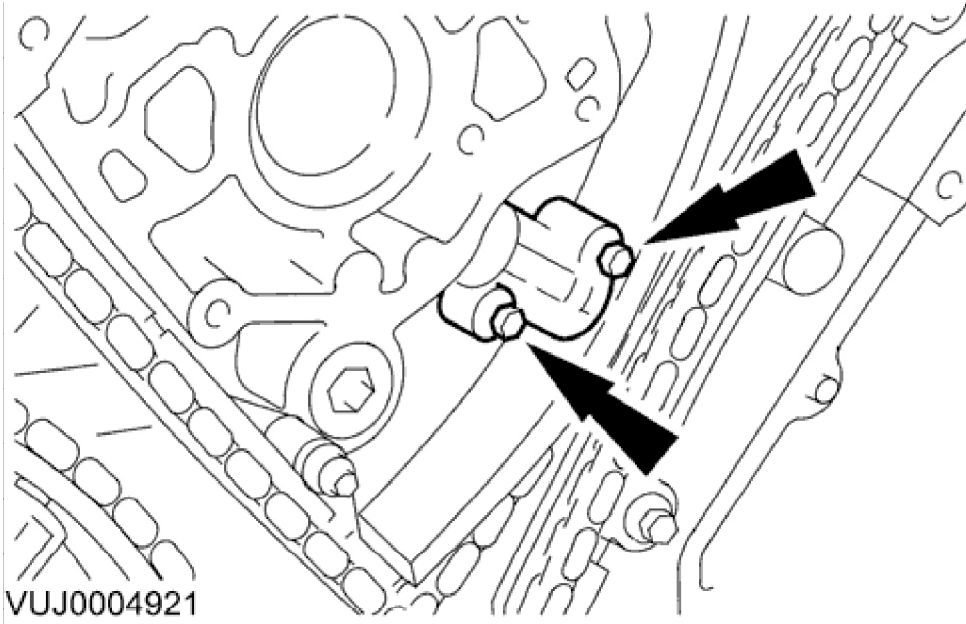
Vehicles with supercharger



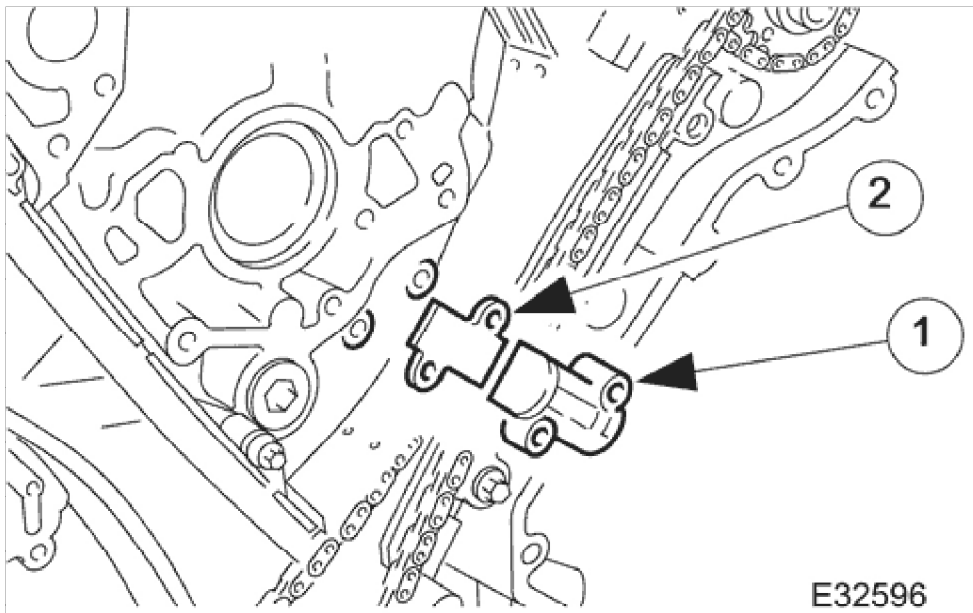
16. Loosen the intake camshaft sprocket retaining bolt.

All vehicles

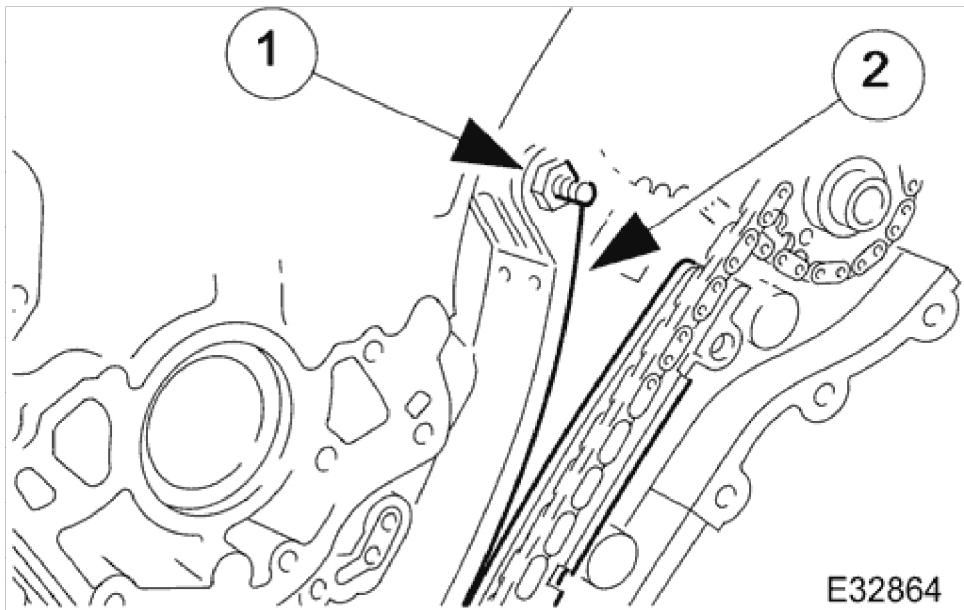
NOTE:
Vehicles without supercharger shown, vehicles with supercharger similar.



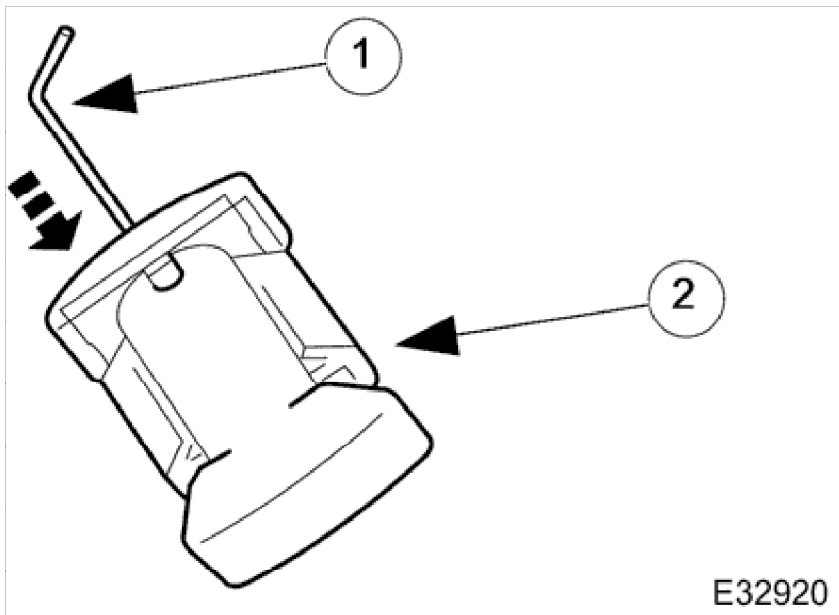
17. Remove the primary chain tensioner retaining bolts.



18. Remove the tensioner assembly.
1. Remove the tensioner.
2. Remove the tensioner back-plate.

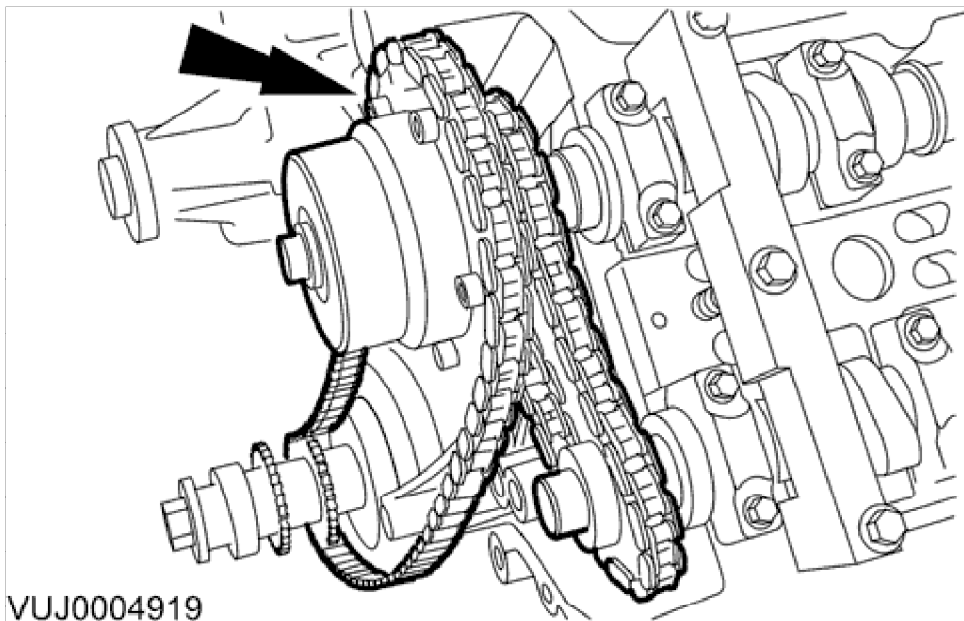


19. Remove the primary chain tensioner blade.
1. Remove the pivot bolt which secures the tensioner blade.
2. Remove the tensioner blade.

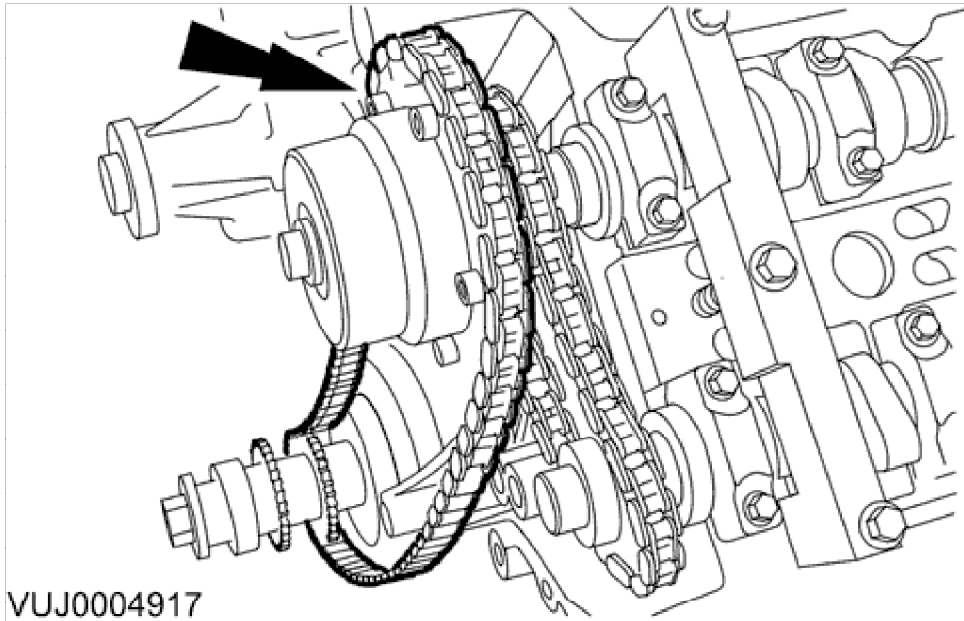


20. Push the tensioner piston (secondary chain) into the body to to release the tension on the left-hand secondary timing chain.

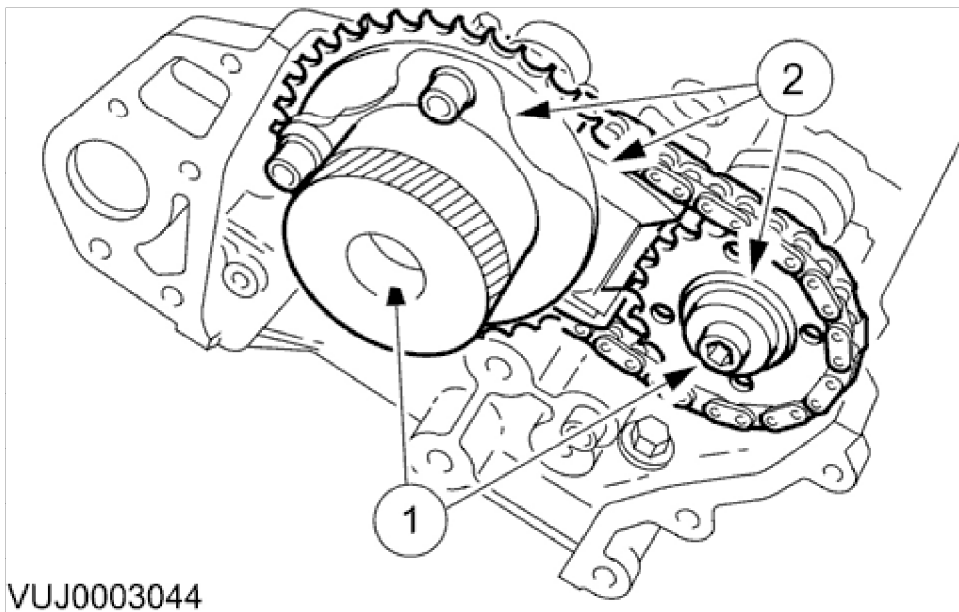
- Insert a thin rigid wire through the hole in the end of the tensioner piston to displace the ball from the non-return valve seat.
- With the wire in position, press the piston fully into the tensioner body.
- Remove the wire.



21. Reposition the timing chain assembly forward along the camshaft bosses to enable the primary timing chain to clear the cylinder head casting.



22. Detach the left-hand primary timing chain, and allow it rest against the crankshaft sprocket.



23. Remove the secondary timing chain.

1. Remove the variable camshaft timing oil control unit (or intake camshaft sprocket - vehicles fitted with supercharger) and exhaust camshaft sprocket retaining bolts.
 2. Remove the variable camshaft timing oil control unit (or intake camshaft sprocket - vehicles fitted with supercharger), exhaust sprocket and secondary chain as an assembly (release the chain from the tensioner which is still secured to the cylinder head).
- Remove the secondary chain from the variable camshaft timing oil control unit (or intake camshaft sprocket - vehicles fitted with supercharger) and the sprocket.

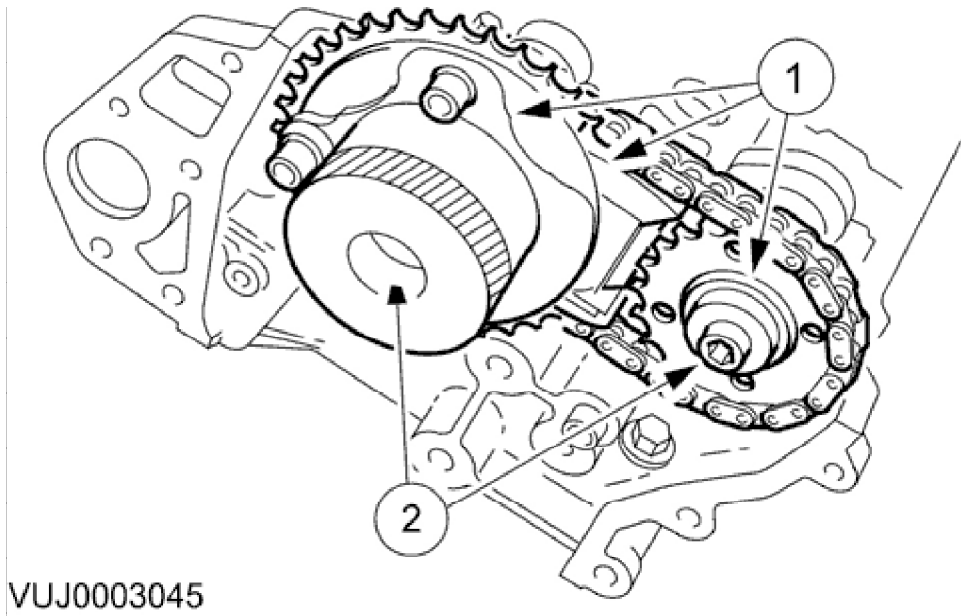
Installation

All vehicles

NOTE:

2000 XK RANGE - Engine - 303-01

Vehicles without supercharger shown, vehicles with supercharger similar.

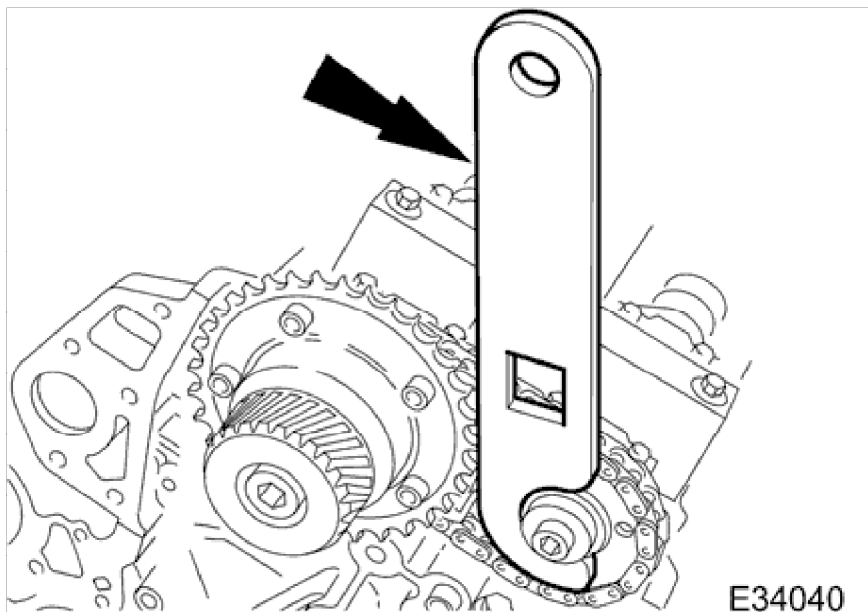


1. Install the secondary timing chain.

NOTE:

Assemble the variable camshaft timing oil control unit (or intake camshaft sprocket - vehicles fitted with supercharger), the exhaust camshaft sprocket and the secondary chain, in preparation for fitting to the engine.

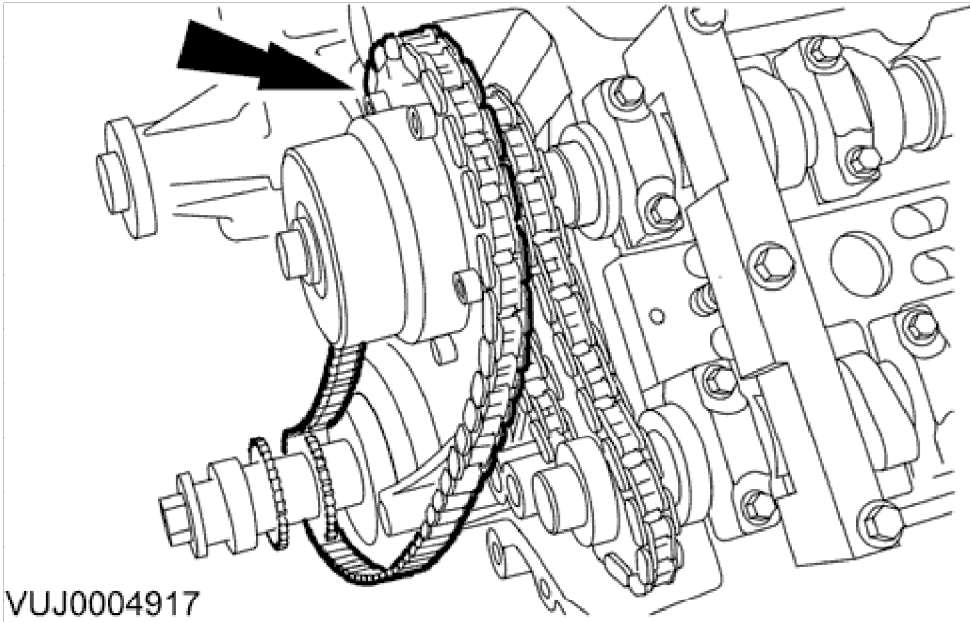
1. Fit the assembly to the camshafts with the chain correctly positioned over the tensioner; variable camshaft timing oil control unit (or intake camshaft sprocket - vehicles fitted with supercharger) to the inlet and the sprocket to the exhaust.
2. Fit, but do not tighten, each bolt which secures the variable camshaft timing oil control unit (or intake camshaft sprocket - vehicles fitted with supercharger) and the exhaust sprocket to the camshafts. Allow the variable camshaft timing oil control unit sufficient space to fit the primary chain, in a later operation.



2. Install the chain tensioning tool 303-532 to the exhaust camshaft sprocket, Bank 2.
 - Reposition the sprocket and the variable camshaft timing oil control unit (or intake camshaft sprocket - vehicles fitted with supercharger) for the most advantageous position for use of the tool.

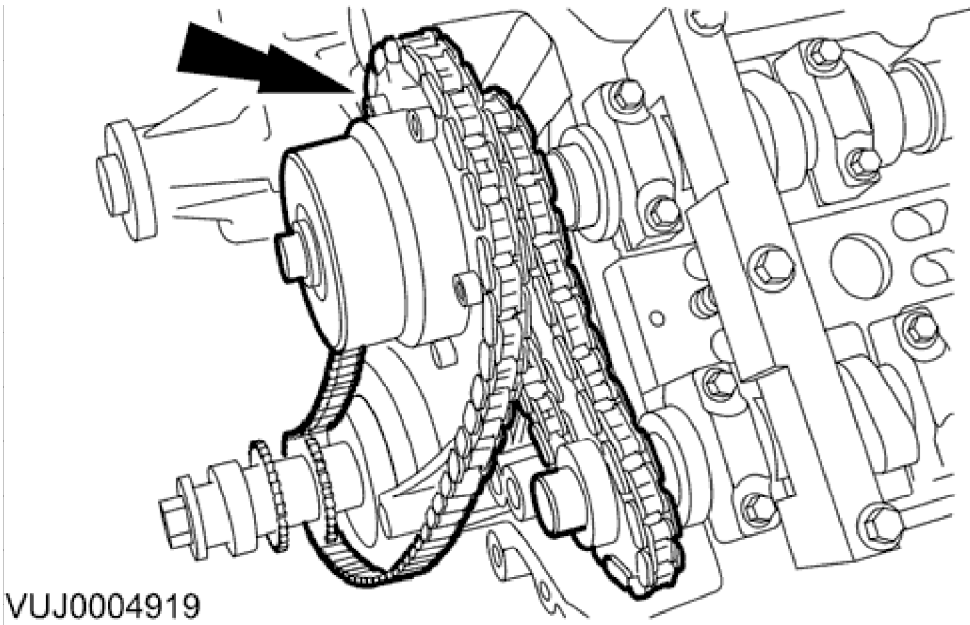
2000 XK RANGE - Engine - 303-01

- Remove the tool.

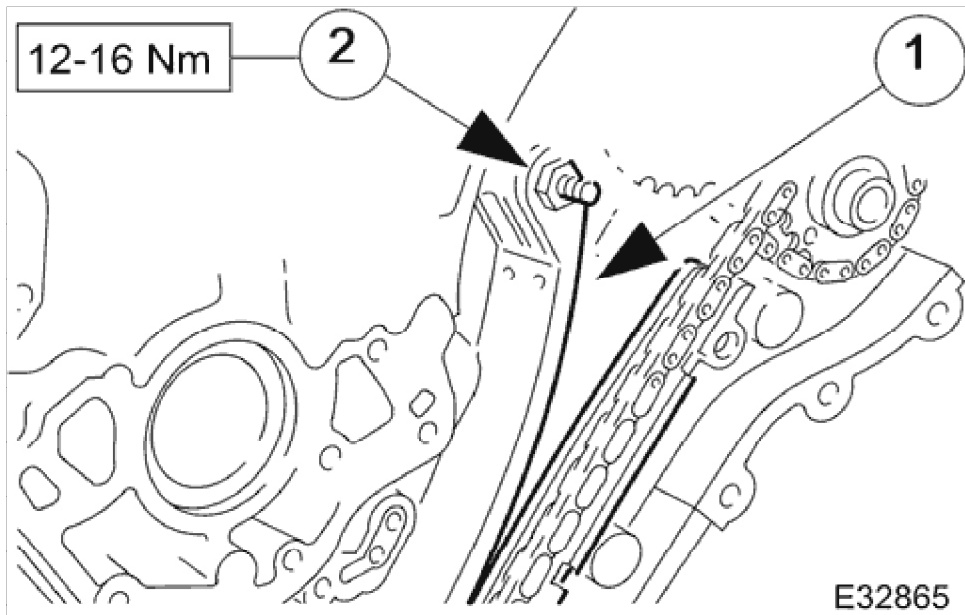


3. Attach the primary timing chain.

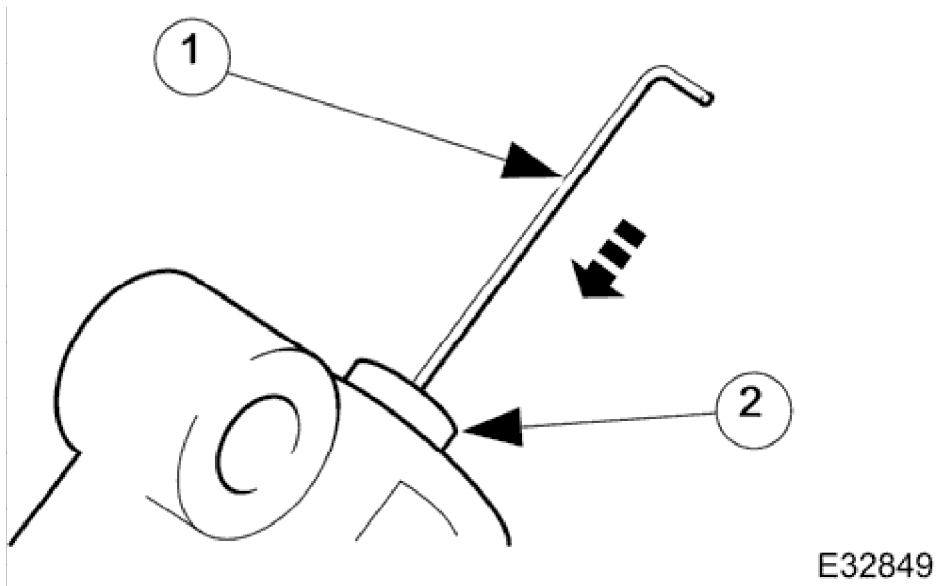
- Attach the primary chain over the variable camshaft timing oil control unit (or intake camshaft sprocket - vehicles fitted with supercharger). There must be no slack on the drive side of the primary chain and the variable camshaft timing oil control unit must not be rotated on the camshaft (or the tensioning tool may not fit).



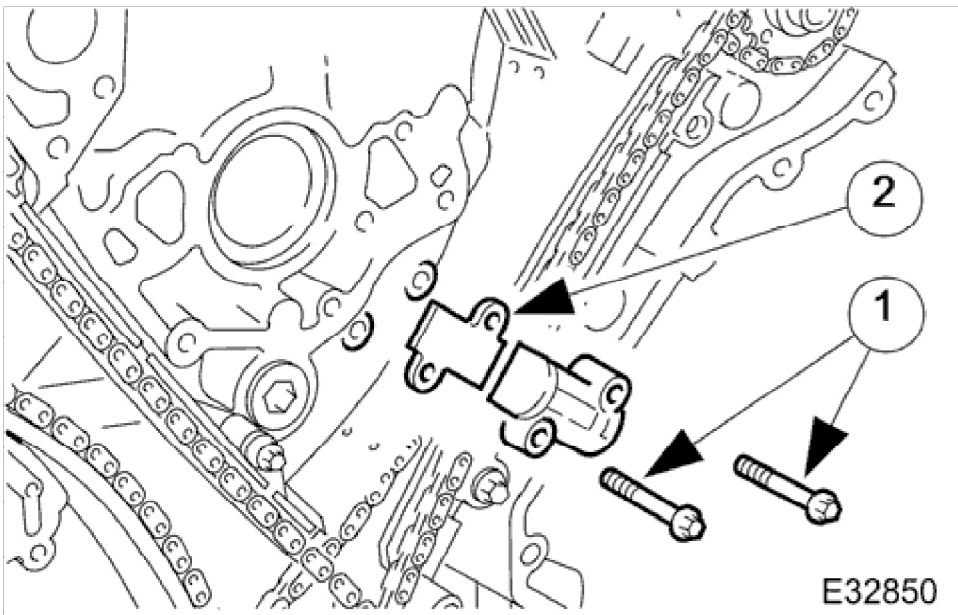
4. Reposition the timing chain assembly along the intake camshaft.



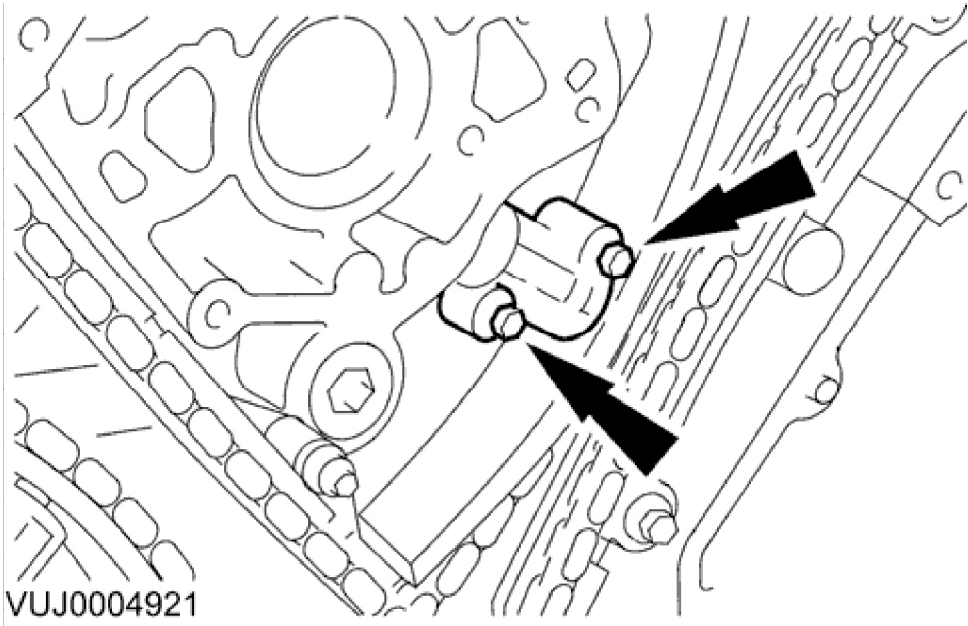
5. Install the primary chain tensioner blade.
1. Position the tensioner blade to the cylinder block.
 2. Install the retaining / pivot bolt and tighten it to 12-16 Nm.



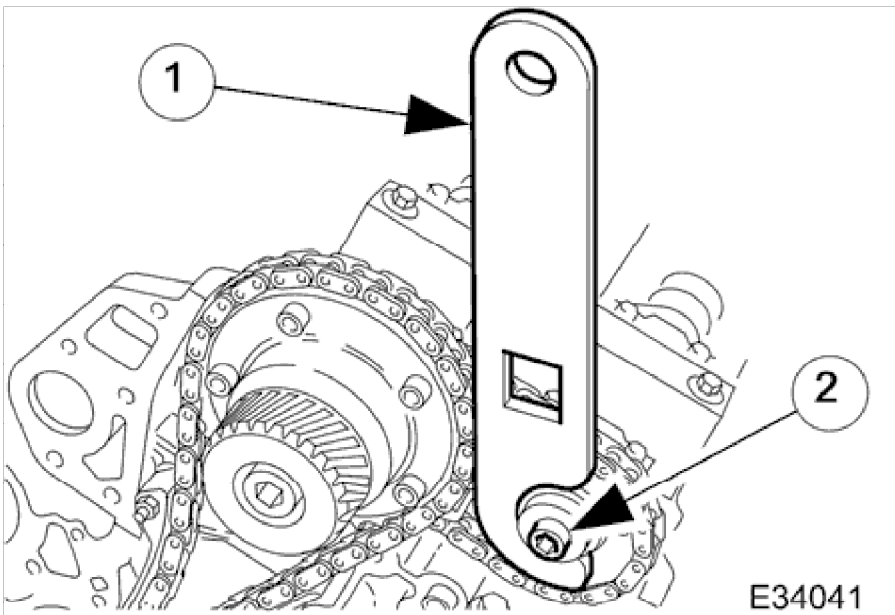
6. Push the tensioner piston into the body to provide clearance for fitting.
1. Install a thin rigid wire through the hole in the end of the tensioner piston to displace the ball from the non-return valve seat.
 2. With the wire in position, press the piston fully into the tensioner body.
- Remove the wire.



- 7. Assemble the tensioner.
 - 1. Fit the two mounting bolts to the tensioner.
 - 2. Locate the tensioner back-plate to the two bolts.

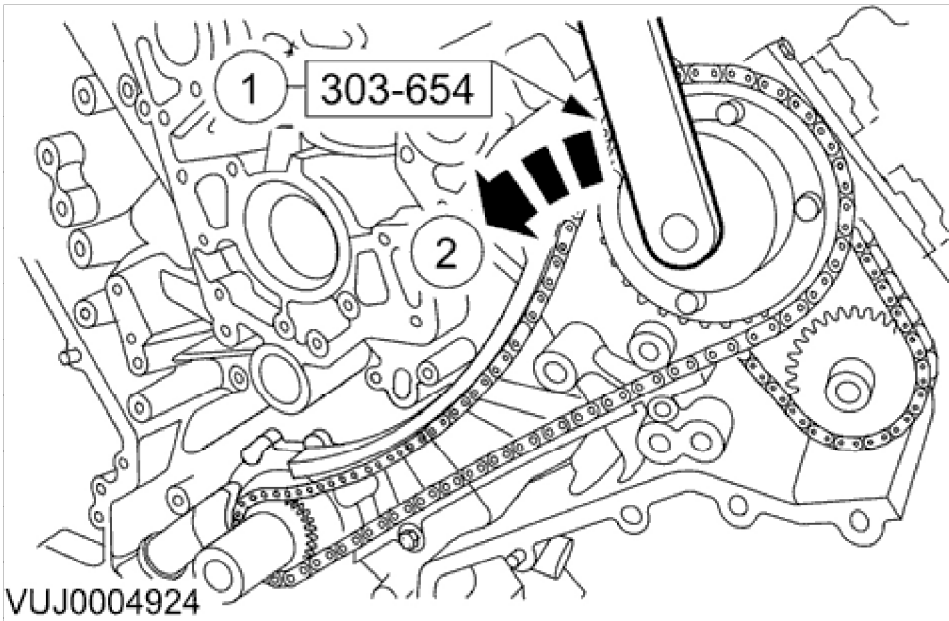


- 8. Install the primary chain tensioner retaining bolts.
 - Tighten to 12 Nm.

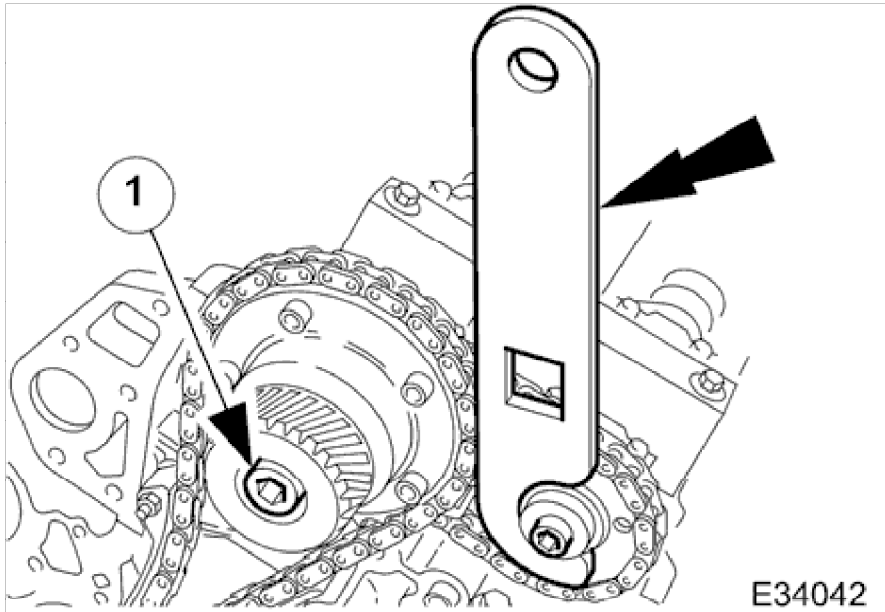


9. Tighten the exhaust camshaft sprocket retaining bolt.
1. Install the chain tensioner tool 303-532 to the sprocket holes.
 - Apply force to the tool in an anti-clockwise direction to tension the chain on its drive side.
 2. Whilst applying the opposing force to the sprocket and chain, tighten the sprocket retaining bolt to 115-125 Nm.

Vehicles without supercharger



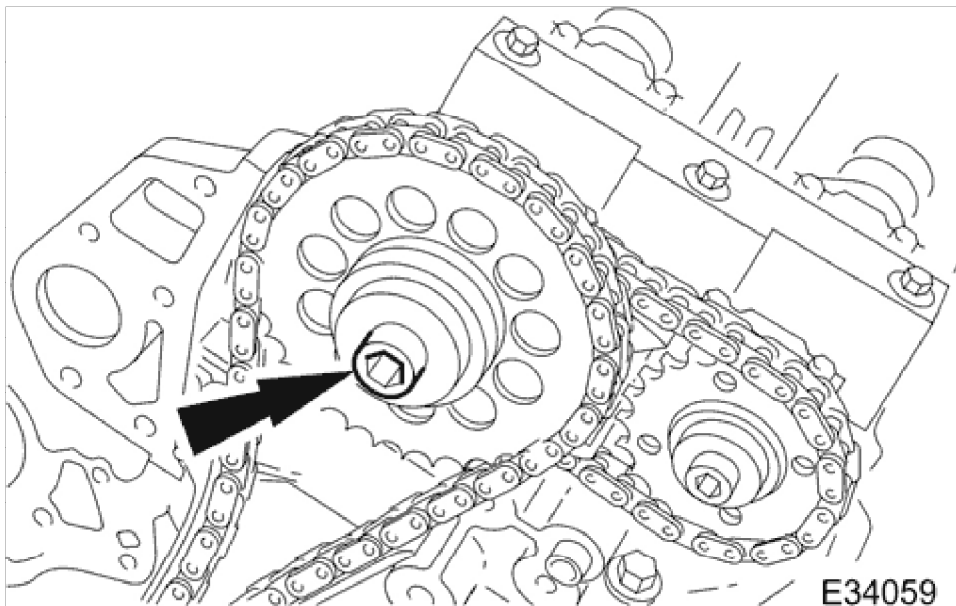
10. Rotate the variable camshaft timing oil control unit fully counter-clockwise to the fully retarded position.
1. Install the variable camshaft timing oil control unit setting tool 303-654.
 2. Rotate the variable camshaft timing oil control unit fully anti-clockwise to the fully retarded position.



11. Tighten the variable camshaft timing oil control unit retaining bolt.

1. Whilst still applying the opposing force to the sprocket and chain (using 303 - 532), check that the wedges are still in place, carry out the variable camshaft timing oil control unit retaining bolt tightening sequence.
 - Tighten to 40 Nm + 90°.
 - Remove the chain tensioning tool and the wedge(s).

Vehicles with supercharger



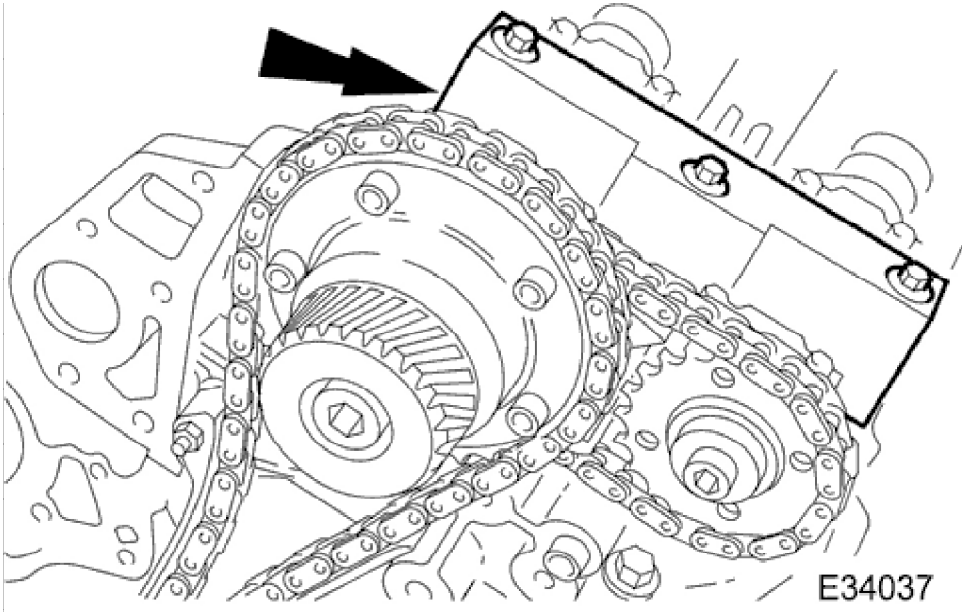
12. Tighten the intake camshaft retaining bolt.

1. Whilst still applying the opposing force to the sprocket and chain (using 303 - 532), check that the wedges are still in place, carry out the intake camshaft retaining bolt tightening sequence.
 - Tighten to 40 Nm + 90°.
 - Remove the chain tensioning tool and the wedge(s).

All vehicles

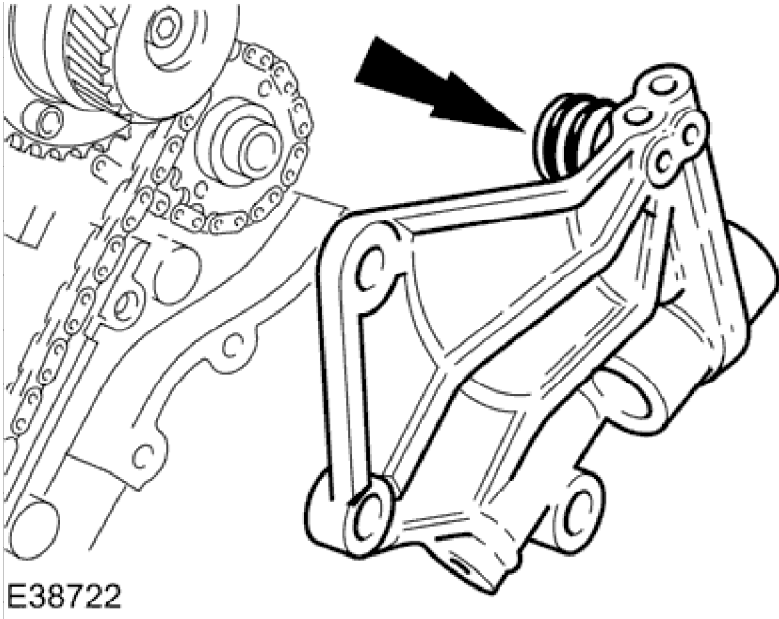
2000 XK RANGE - Engine - 303-01

NOTE:
Vehicles without supercharger shown, vehicles with supercharger similar.

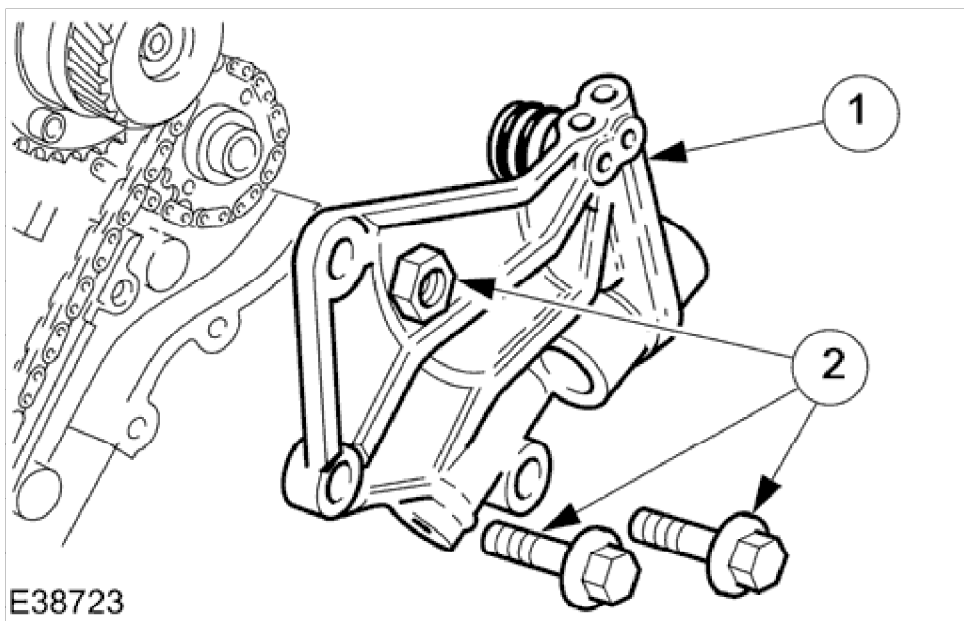


13. Remove the camshaft locking tool 303-530.

Vehicles without supercharger



14. Install new seals to the variable camshaft timing oil control unit housing.

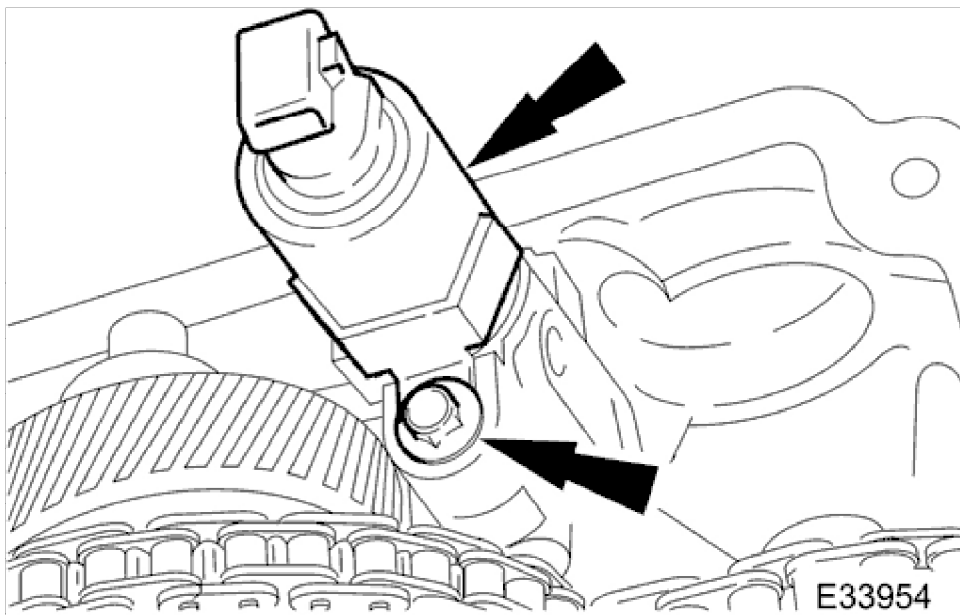


15.  **WARNING:**
CHECK THAT THE RING DOWELS ARE ENGAGED SQUARELY. FULLY LOCATE THE ASSEMBLY AS MUCH AS POSSIBLE BY HAND PRESSURE. FAILURE TO FOLLOW THIS PROCEDURE MAY RESULT IN DAMAGE TO THE VEHICLE.

NOTE:
Lubricate the seals and the bush.

Install the variable camshaft timing oil control unit housing to the cylinder block.

1. Install the variable camshaft timing oil control unit housing.
2. Install the two retaining bolts and one nut. Tighten to 19-23 Nm.

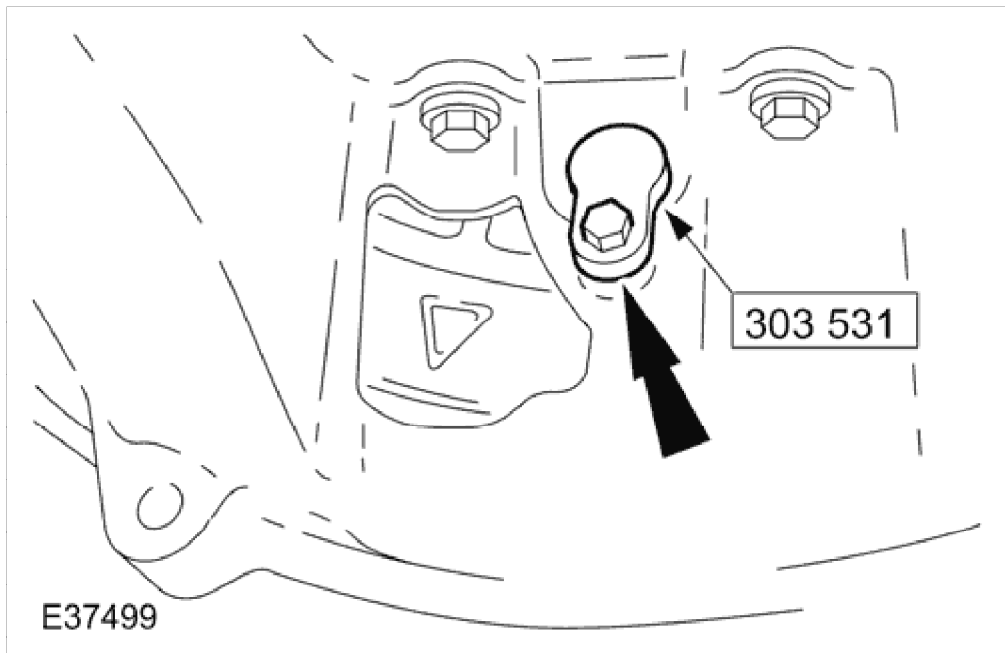


16. Install the variable camshaft timing oil control solenoid.
- Check the seal areas and locate the solenoid to the bush carrier.
 - Install the securing bolt. Tighten to 8-10 Nm.

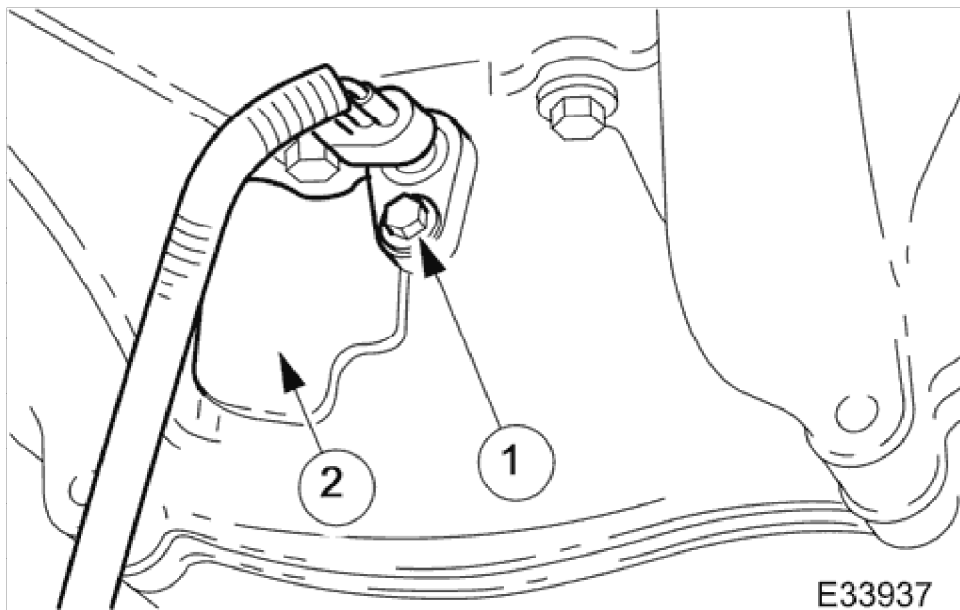
All vehicles

2000 XK RANGE - Engine - 303-01

17. Raise the vehicle on the ramp.



18. Remove the crankshaft setting tool 303-531.



19. Install the crankshaft position sensor.

1. Install the sensor to the flywheel housing and fit the securing bolt. Tighten to 8 - 12 Nm.
2. Install the access grommet to the housing.

20. Lower the ramp.

21. Refit the engine front Cover. <<Engine Front Cover>>