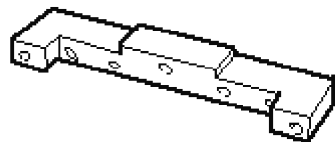


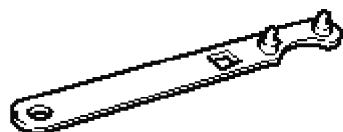
1999 XK RANGE - Basic Engine - 303-01

Timing Chain (Primary) 3.2L/SC - Bank 2 12.65.67

Special Service tools



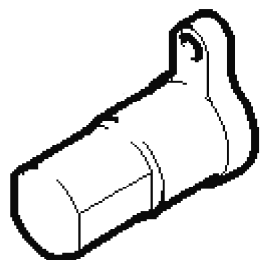
D.WST.017
Camshaft setting
303-530



D.WST.021
Timing chain tensioning
303-532



D.WST.031
Wedges, primary chain
303-533



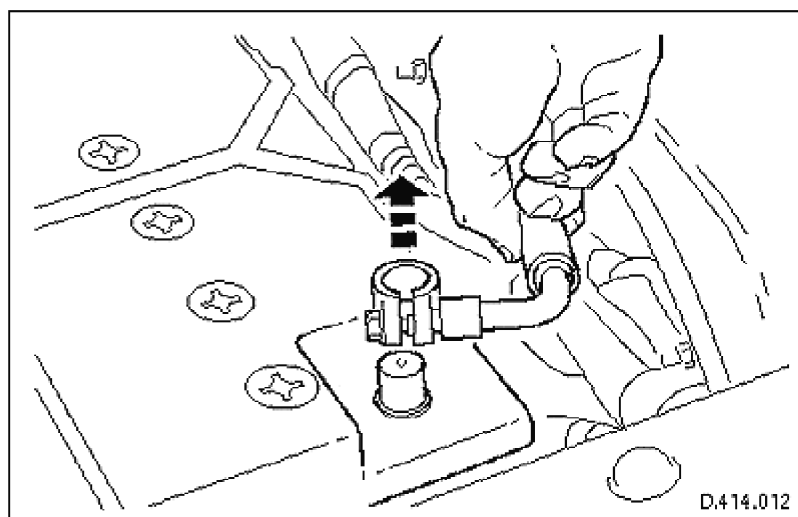
D.WST.032

1999 XK RANGE - Basic Engine - 303-01

Crankshaft setting
303-531

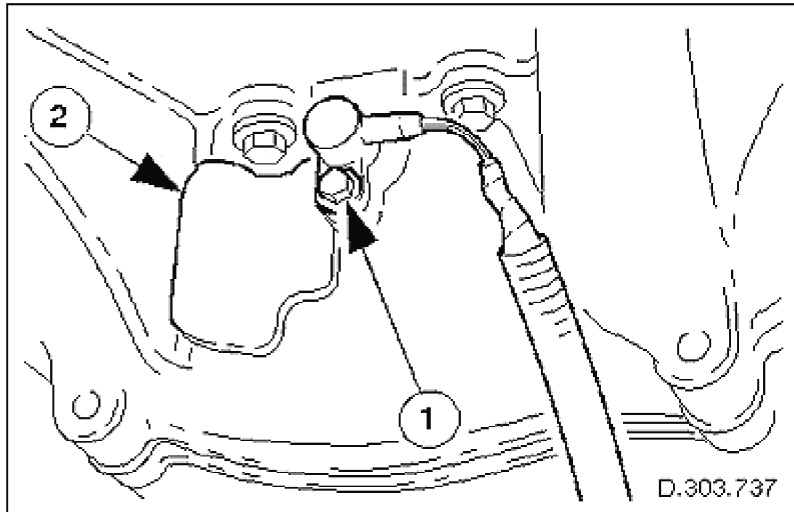
Removal

1. Open the engine compartment and fit paintwork protection sheets.
2. Set the engine compartment cover to the service access position.
3. Open the driver's door, or both doors if necessary, to allow the side glass to drop. Ensure that the doors remain open until after the battery has been disconnected.



4. Disconnect the battery ground cable.
 - Remove the battery cover.
5. Remove the Timing Cover. Refer to Operation <<12.65.01>>.
6. Raise the vehicle on a ramp.

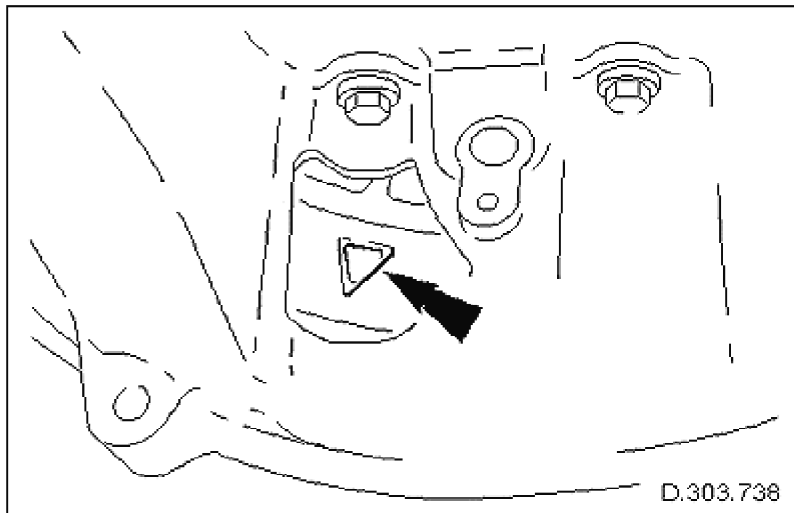
1999 XK RANGE - Basic Engine - 303-01



7. Remove the crankshaft position sensor.

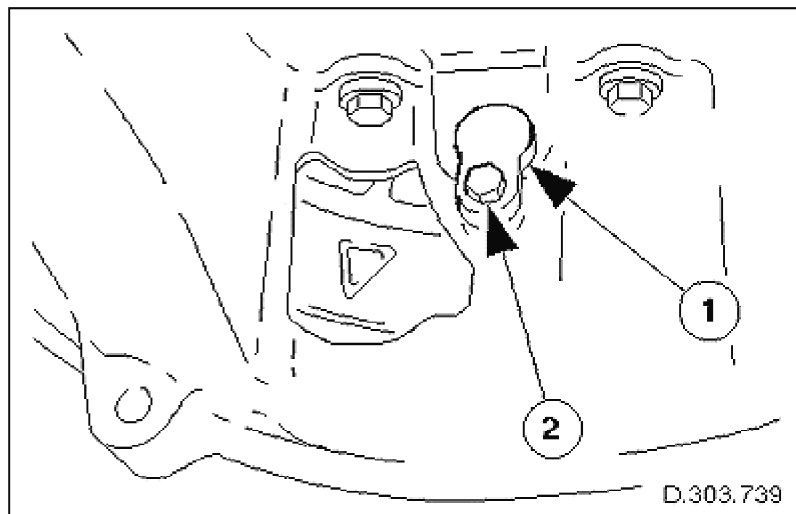
1. Remove the bolt which secures the crankshaft position sensor to the flywheel housing.
 - Remove the sensor and allow it to hang free under the engine.
2. Remove the access grommet (for torque converter bolts) from the housing.

8. Install the damper securing bolt (old one) to the crankshaft, hand-tight only.



9. Rotate the crankshaft until the triangular arrow indent on the drive plate is visible through the access hole; confirm that the timing flat on each camshaft is uppermost.

1999 XK RANGE - Basic Engine - 303-01



10. Install the crankshaft setting peg 303-531 to the crankshaft position sensor location.

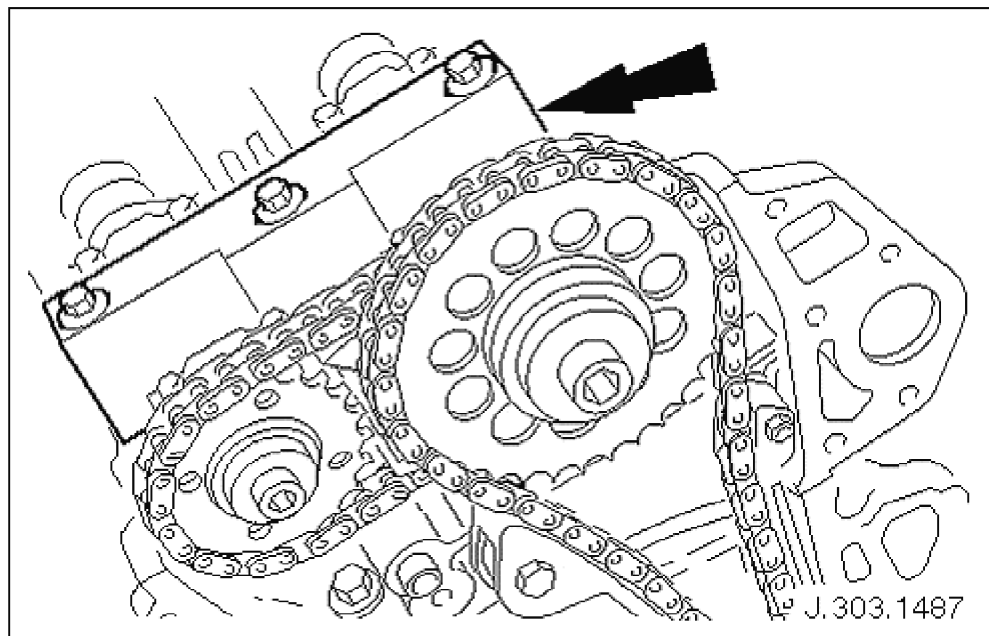
1. Install the crankshaft setting peg 303-531.

- Position the crankshaft so that the setting peg engages fully into the timing slot.

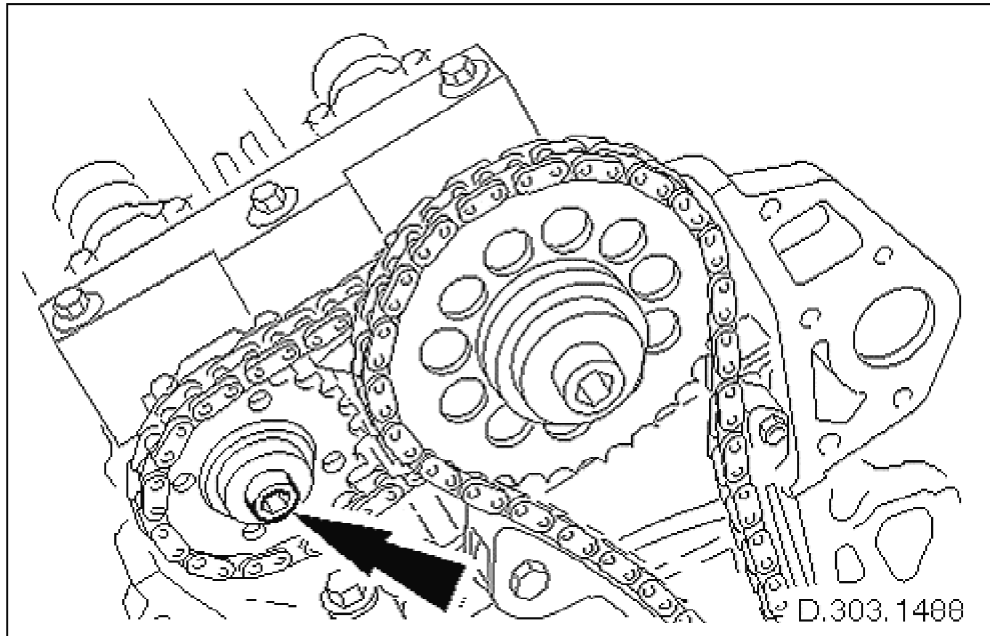
2. Install and tighten the bolt to secure the setting peg.

11. Remove the damper securing bolt from the crankshaft.

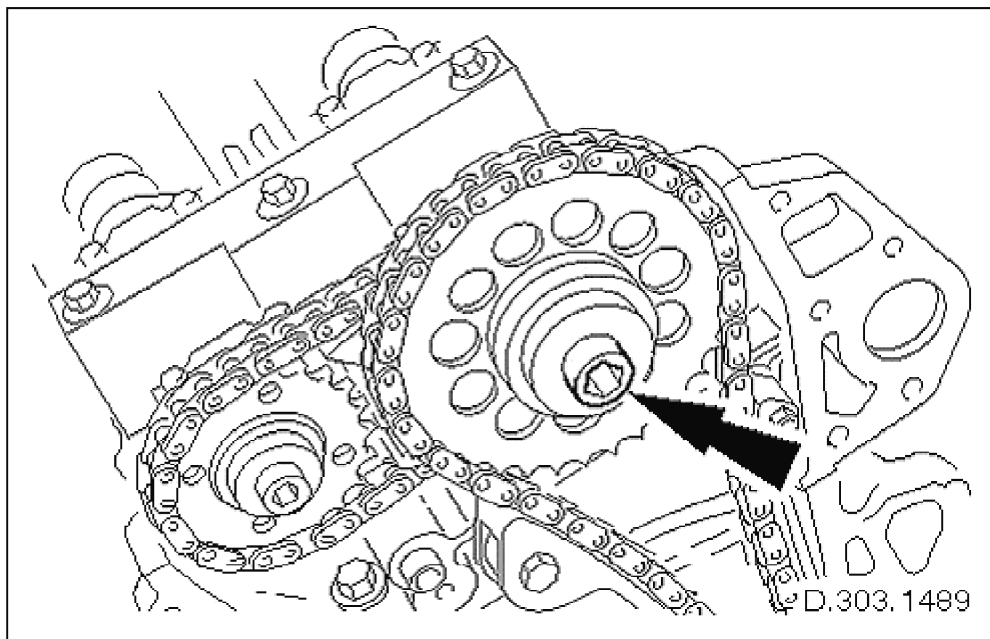
12. Lower the vehicle on the ramp.



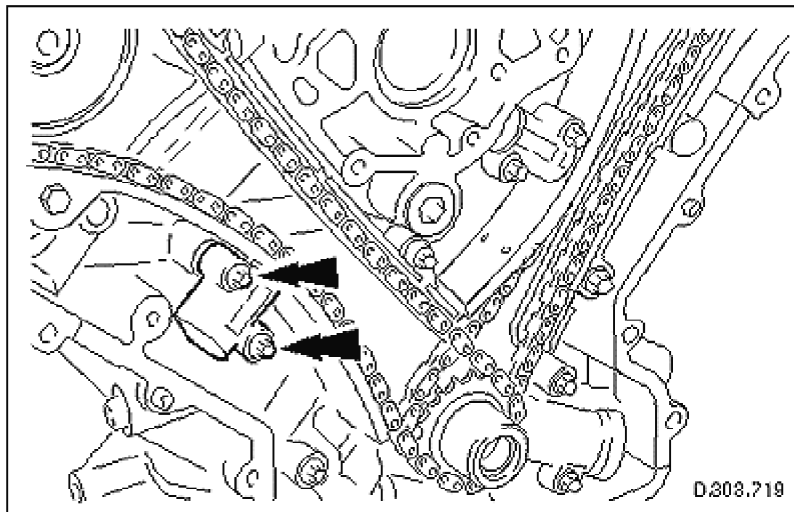
13. Install the camshaft locking tool 303-530 to Bank 1 camshafts, aligning the shafts slightly as necessary.



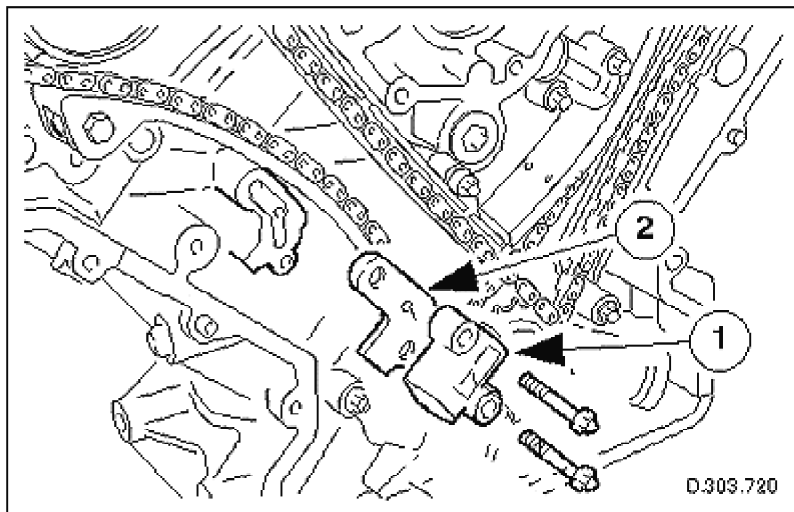
14. Loosen the bolt which secures the sprocket to the exhaust camshaft.



15. Loosen the bolt which secures the sprocket to the intake camshaft.



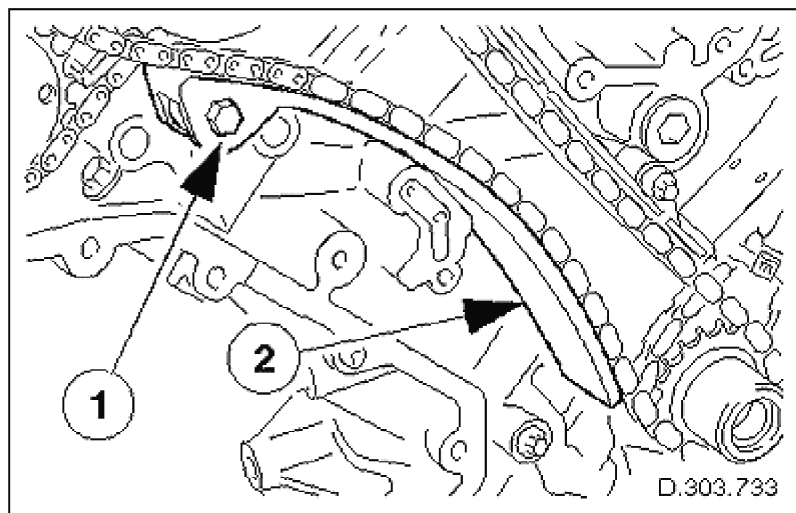
16. Remove the primary chain tensioner bolts.



17. Remove the tensioner assembly.

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

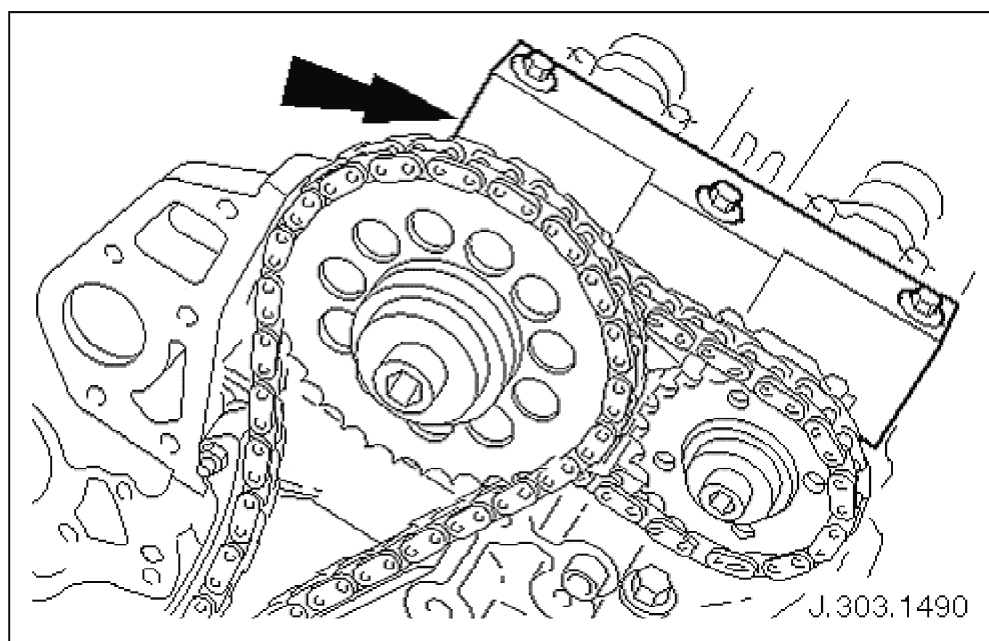
1999 XK RANGE - Basic Engine - 303-01



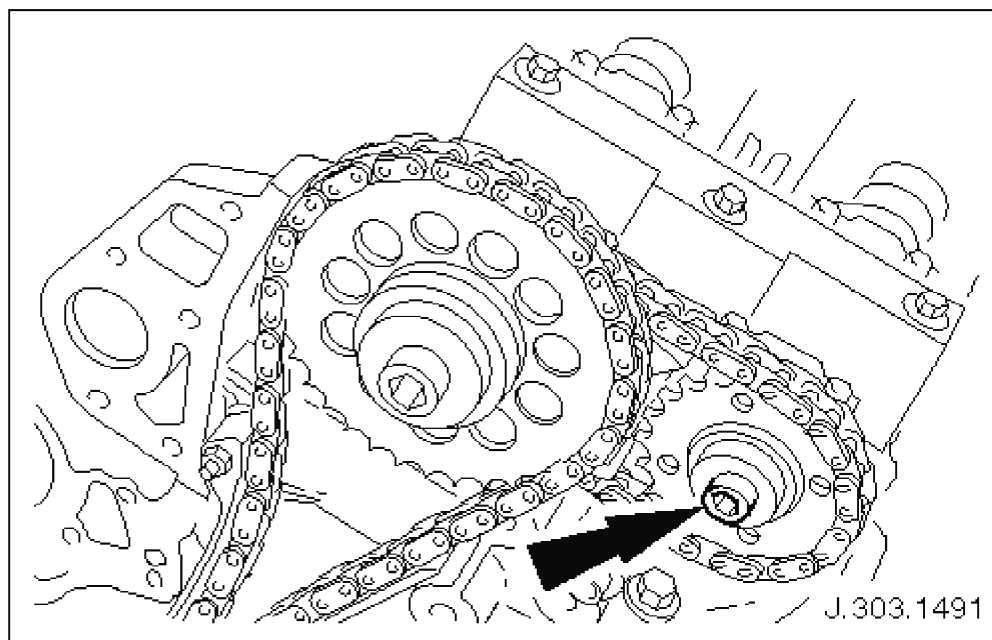
18. Remove the chain tensioner blade.

1. Remove the pivot bolt which secures the tensioner blade.
2. Remove the tensioner blade.

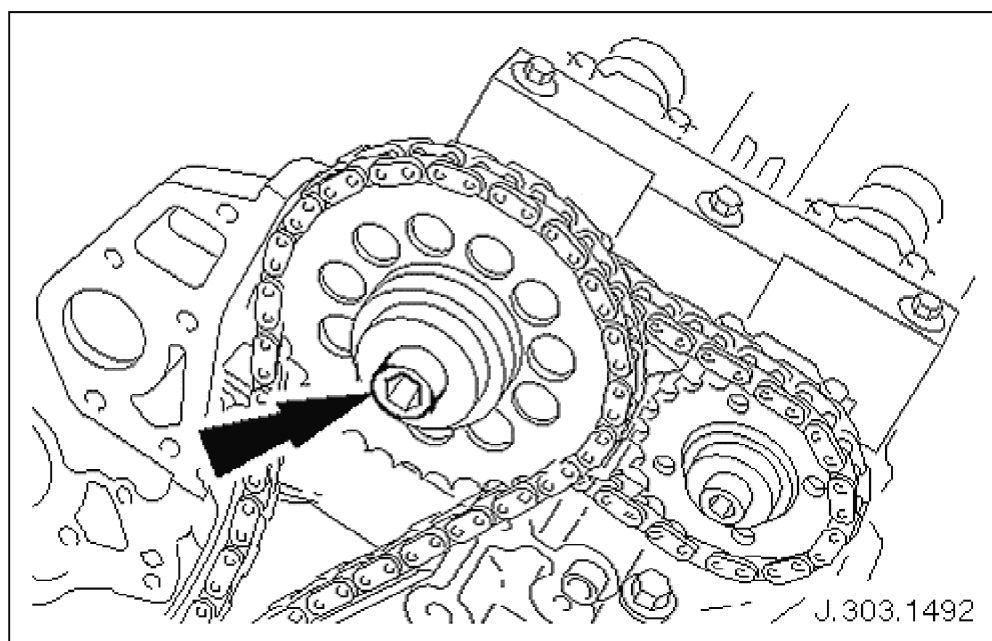
19. Remove the chain from the camshaft sprocket and from the crankshaft sprocket.



20. Remove the camshaft locking tool 303-530 and transfer it to Bank 2 camshafts, aligning the shafts slightly as necessary..

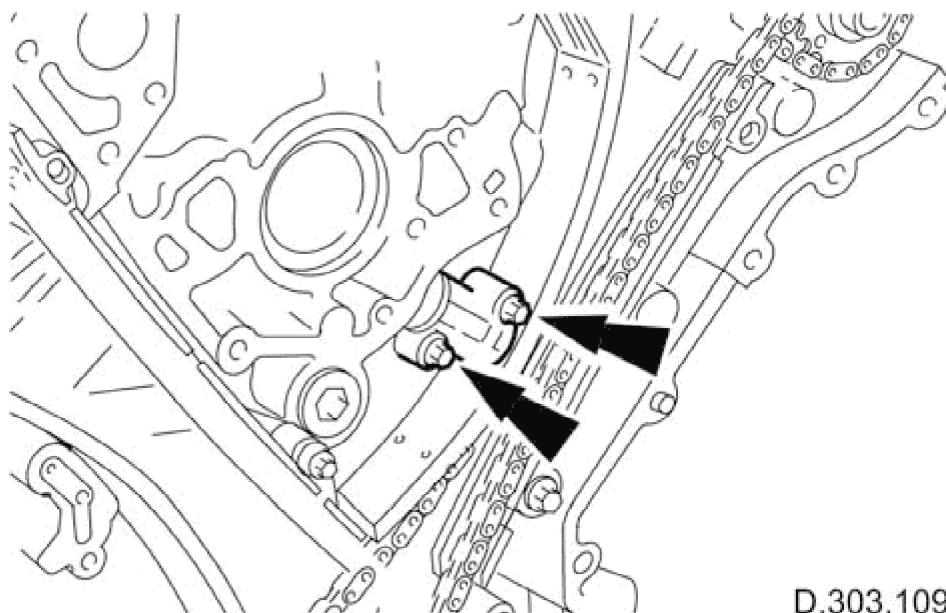


21. Loosen the bolt which secures the sprocket to the exhaust camshaft.



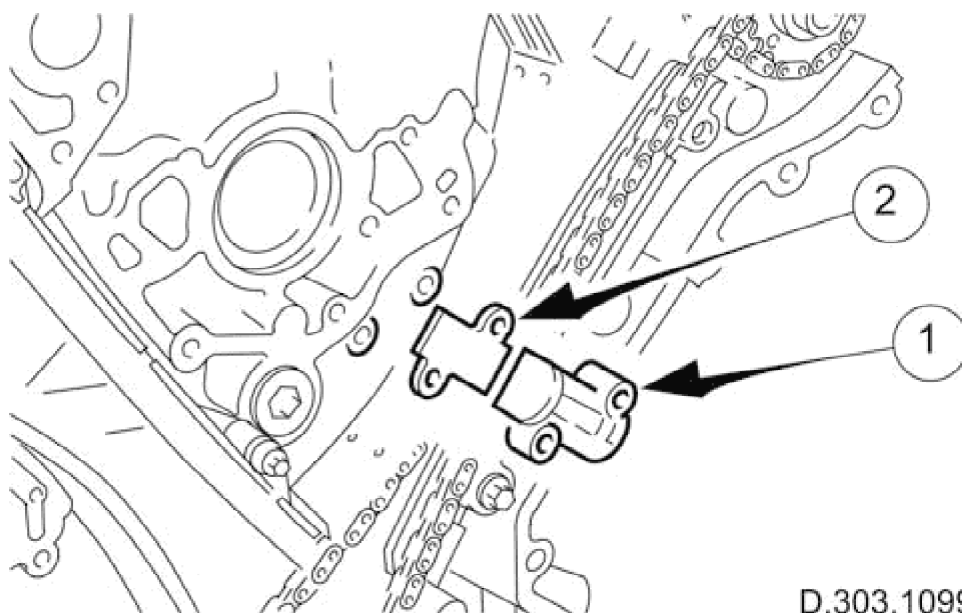
22. Loosen the bolt which secures the sprocket to the intake camshaft.

1999 XK RANGE - Basic Engine - 303-01



D.303.1098

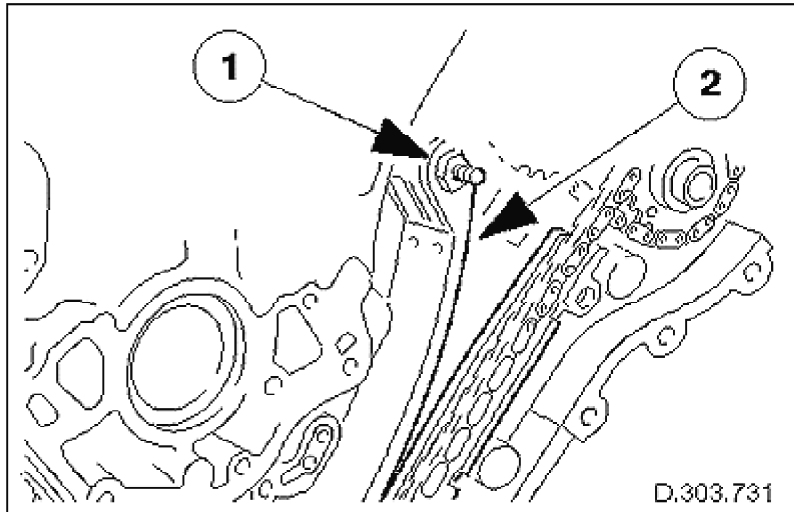
23. Remove the primary chain tensioner bolts.



D.303.1099

24. Remove the tensioner assembly.

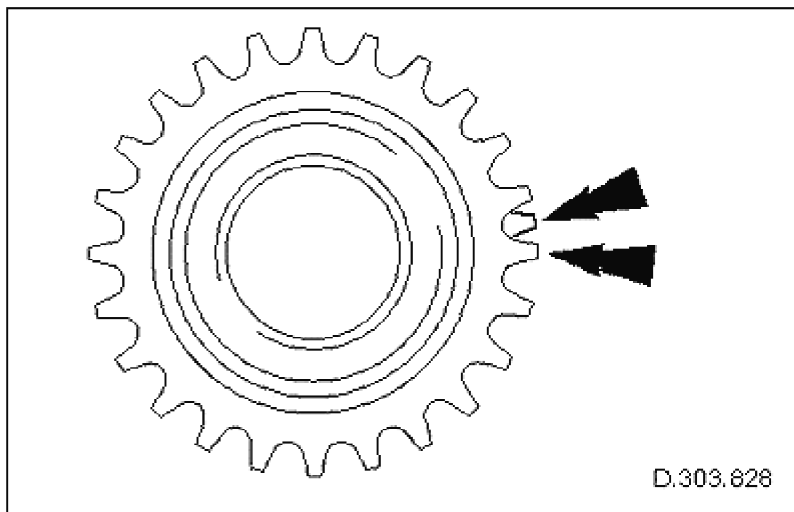
1. Remove the tensioner.
2. Remove the tensioner back-plate.



25. Remove the chain tensioner blade.

1. Remove the pivot bolt which secures the tensioner blade.
2. Remove the tensioner blade.

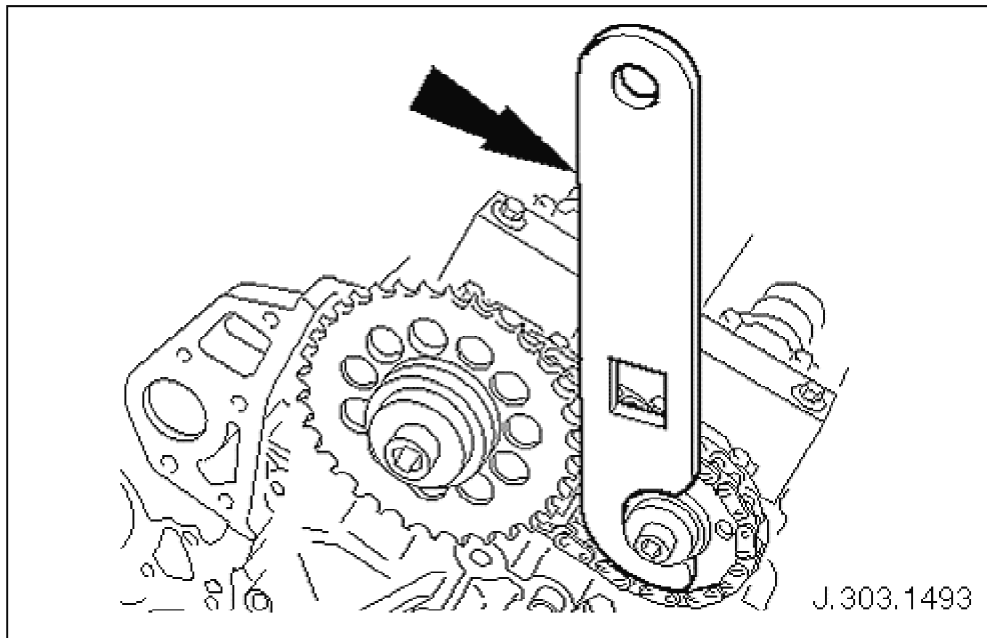
26. Reposition both camshaft sprockets forward along the camshaft bosses and remove the chain from the intake camshaft sprocket and from the crankshaft sprocket.



27. Note the orientation of the sprockets relative to each other (half a tooth out of line).

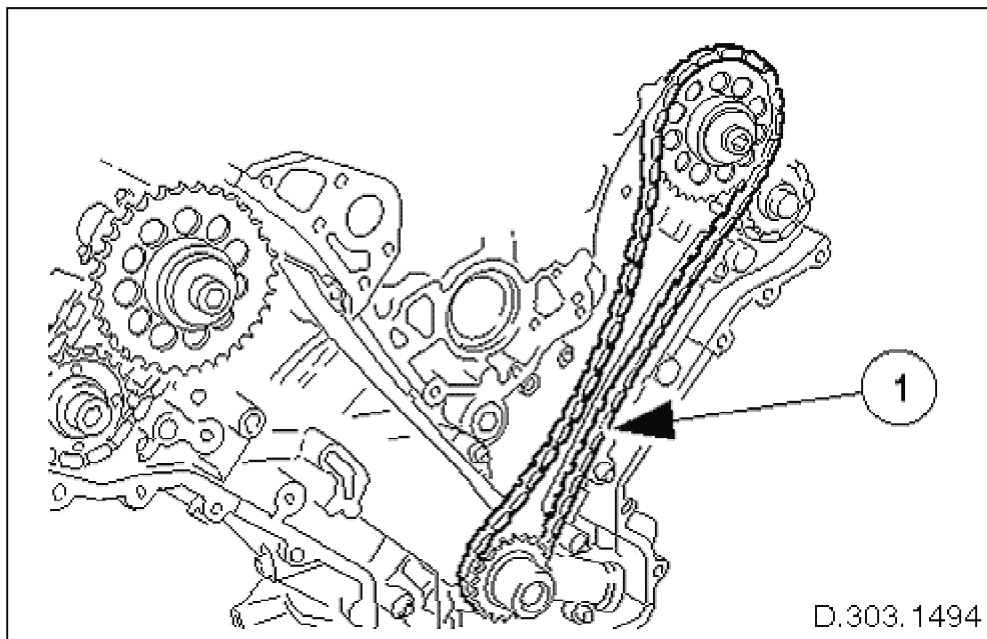
28. Clean and inspect all relevant components.

Installation



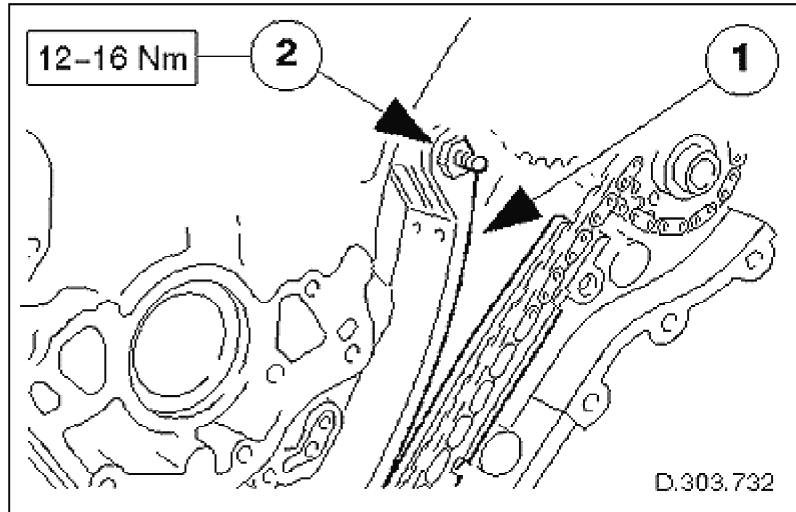
1. Install the chain tensioning tool 303-532 to the exhaust camshaft sprocket, Bank 2.

- Reposition the sprocket to the most advantageous position for use of the tool.
- Remove the tool.



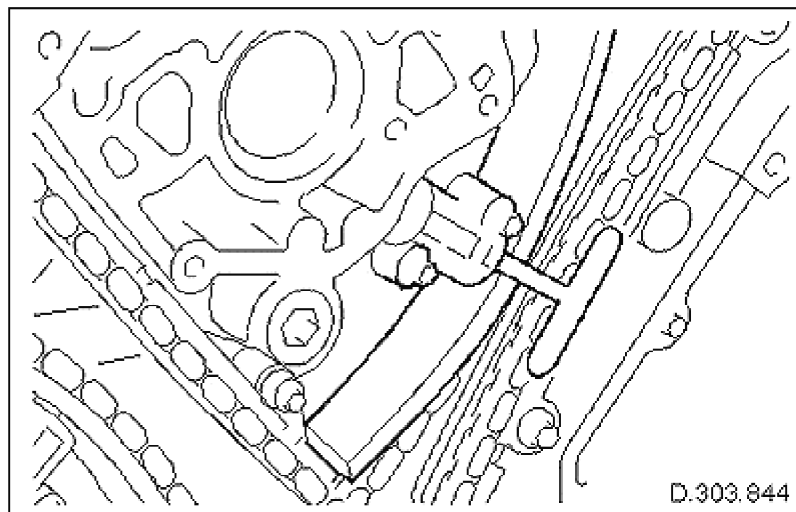
2. Install the primary timing chain, Bank 2.

1. Install the primary chain over the crankshaft sprocket and the intake camshaft sprocket. There must be no slack on the drive side of the primary chain and the sprockets should not be rotated on the camshafts (or the tensioning tool may not fit).
 - Slide the camshaft sprockets fully rearwards onto the respective camshafts.



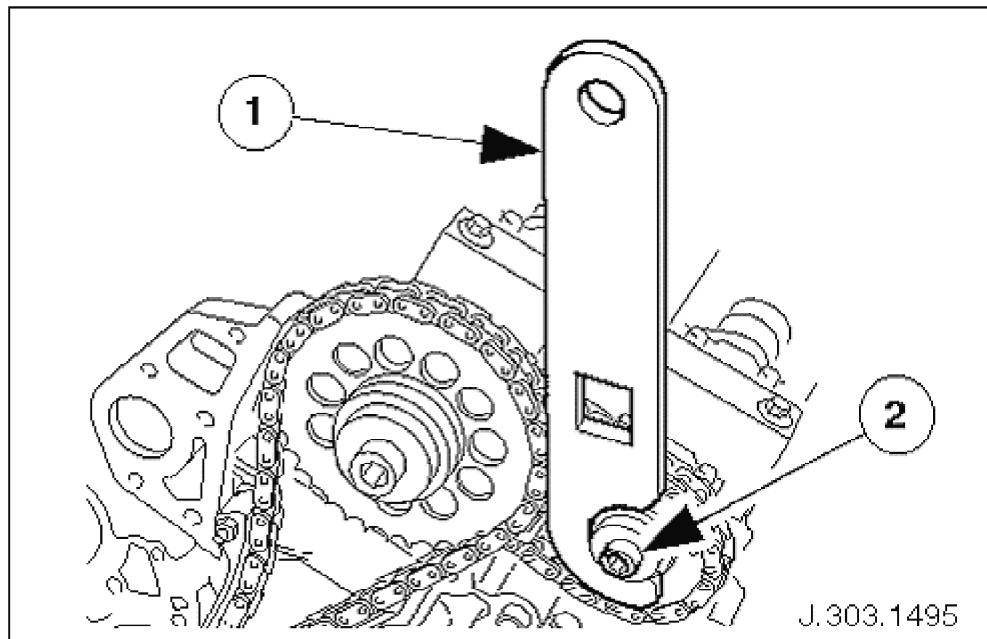
3. Install the primary chain tensioner blade.

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



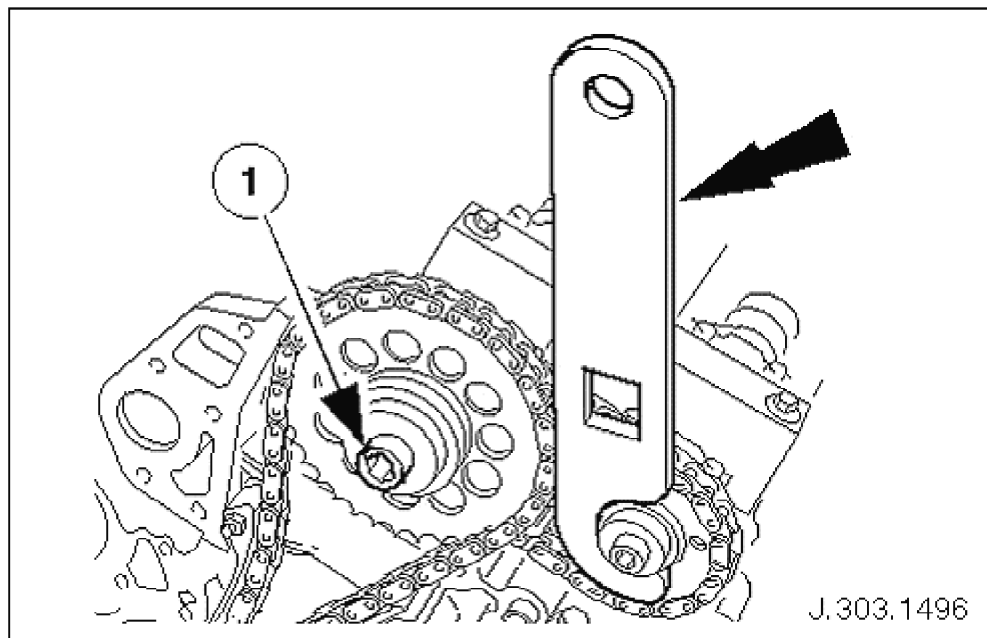
4. Install the primary chain tensioner assembly. Refer to Operation <<12.65.55>>.

- Use a wedge 303-533 (or two if required) between the primary chain tensioner and tensioner blade, to take up the slack in the chain.



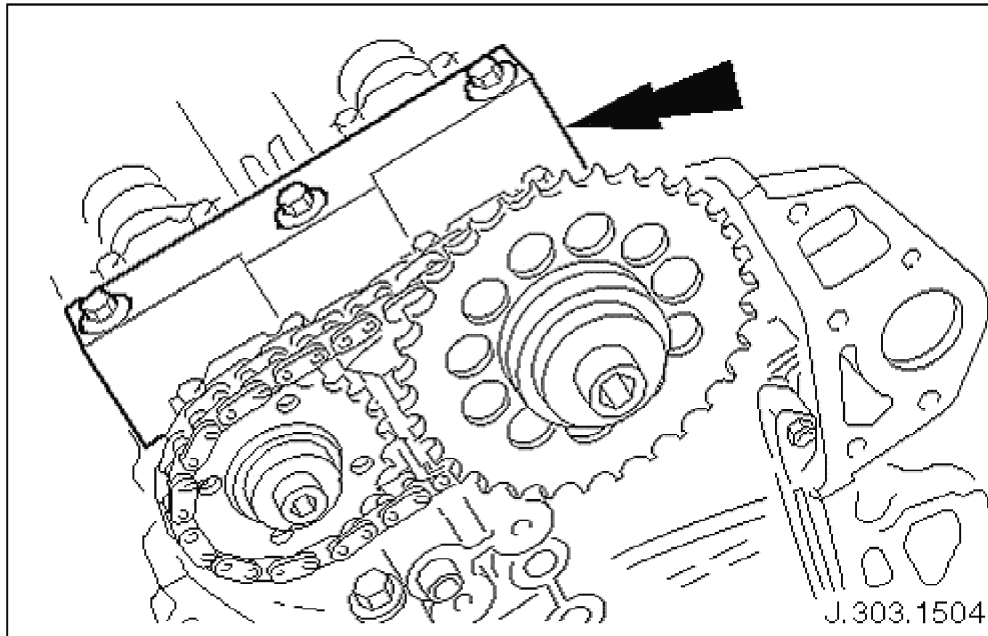
5. Tighten the exhaust camshaft sprocket securing bolt.

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 securing bolt to 115-125 Nm.

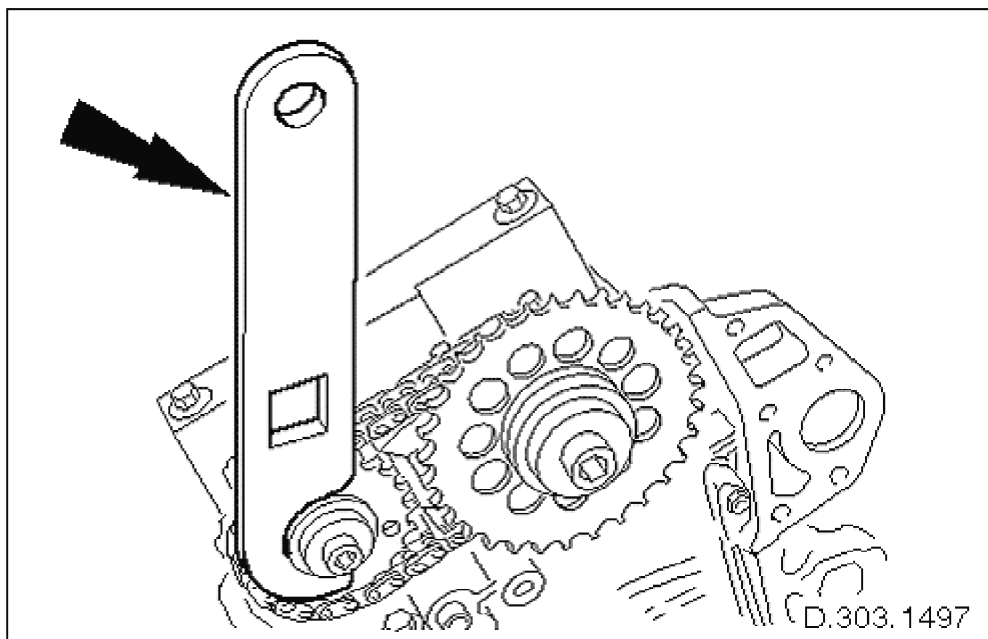


6. Tighten the intake camshaft sprocket securing bolt.

1. Whilst still applying the opposing force to the sprocket and chain (using 303-532), check that the wedges are still in place, tighten the securing bolt to 115-125 Nm.
 - Remove the chain tensioning tool and the wedge(s).

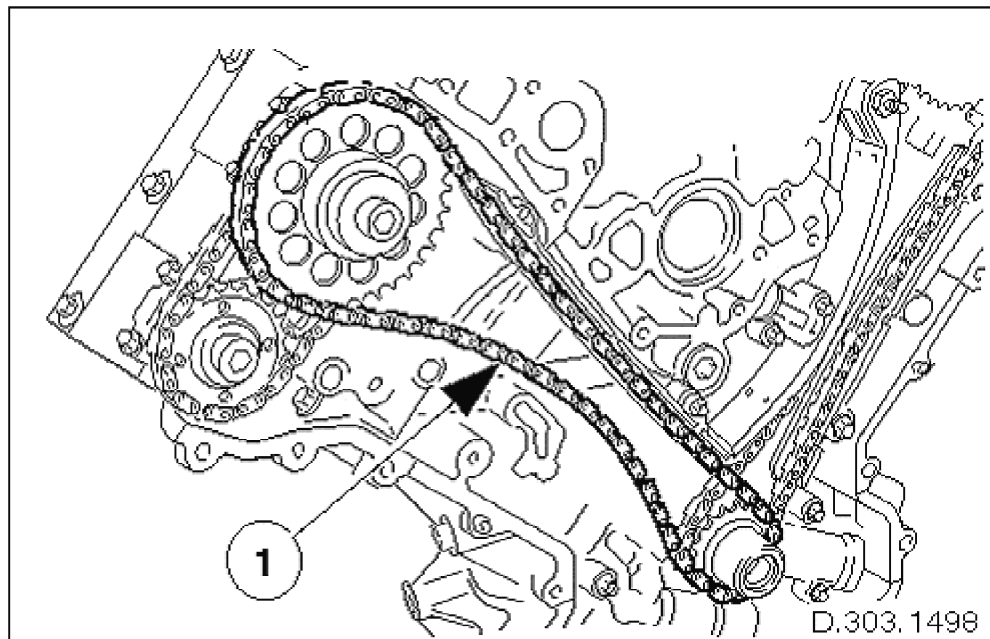


7. Remove the camshaft locking tool 303-530 and transfer it to Bank 1 camshafts, aligning the shafts slightly as necessary.



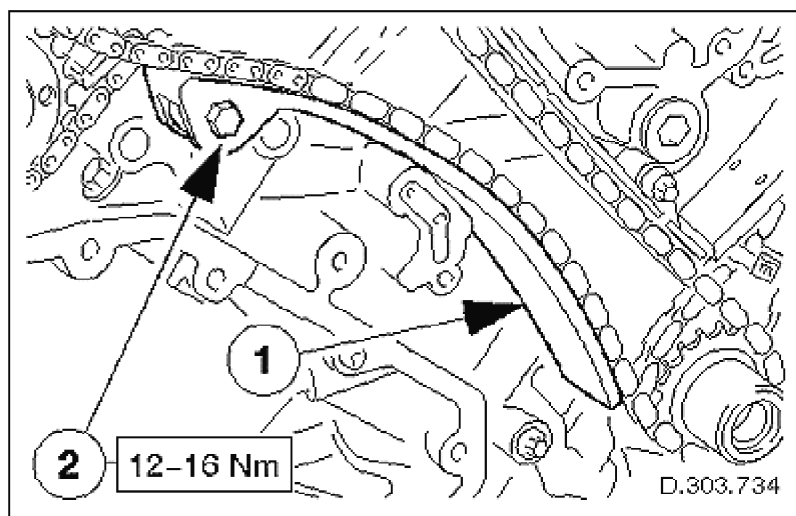
8. Install the chain tensing tool 303-532 to the exhaust camshaft sprocket, Bank 1.

- Reposition the sprockets to the most advantageous position for use of the tool.
- Remove the tool.



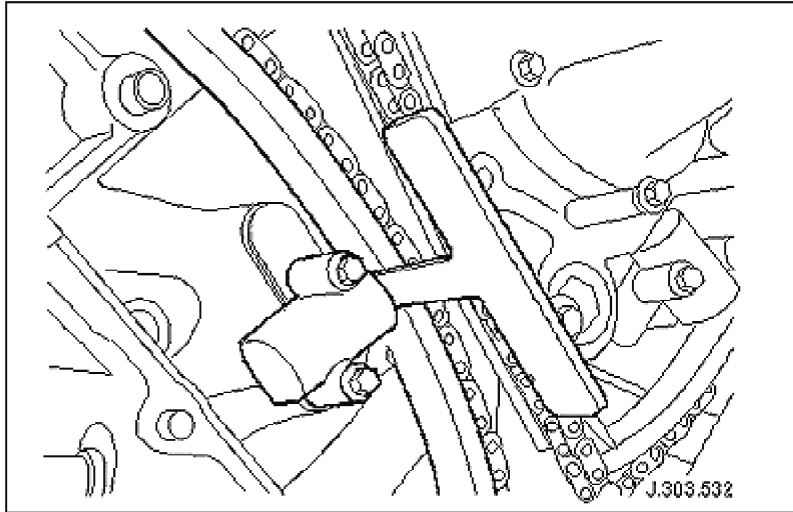
9. Install the primary timing chain, Bank 1.

1. Install the primary chain over the crankshaft sprocket and the intake camshaft sprocket. There must be no slack on the drive side of the primary chain and the sprockets should not be rotated on the camshafts (or the tensioning tool may not fit).



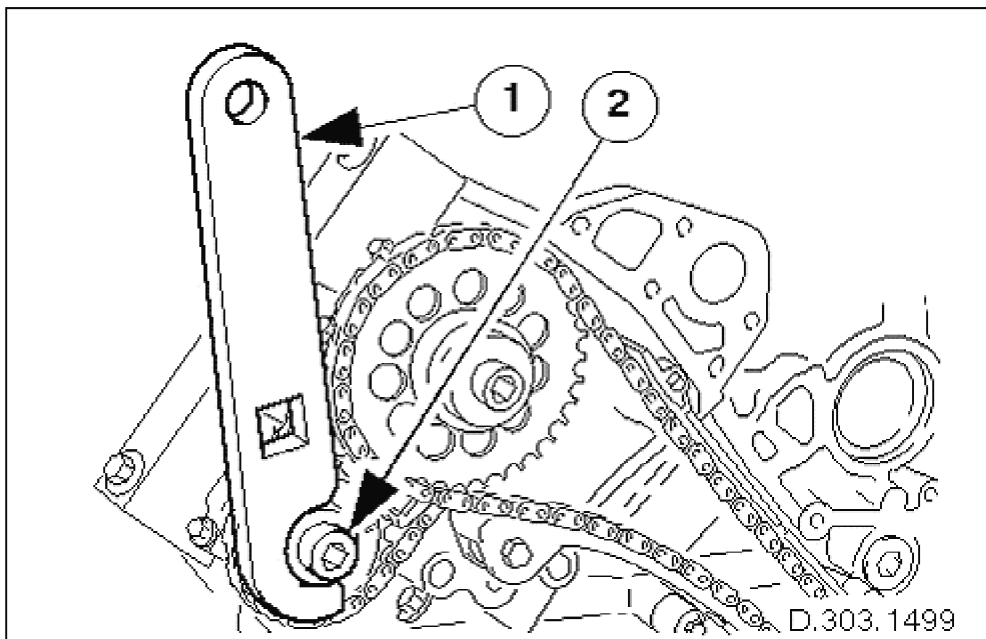
10. Install the primary chain tensioner blade.

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



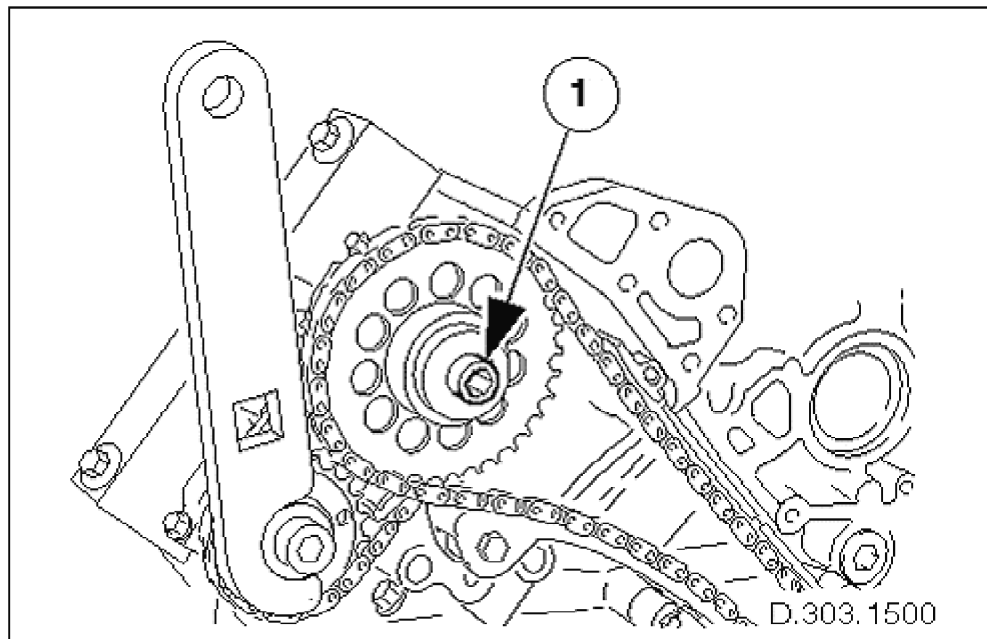
11. Install the primary chain tensioner assembly. Refer to Operation <<12.65.54>>.

- Use a wedge 303-533 (or two if required) between the primary chain tensioner and tensioner blade, to take up the slack in the chain.



12. Tighten the exhaust camshaft sprocket securing 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 securing bolt to 115-125 Nm.



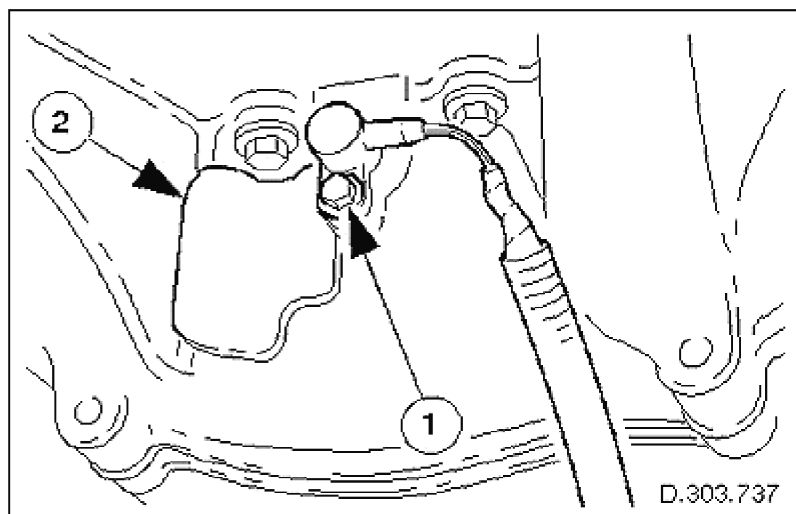
13. Tighten the intake camshaft sprocket securing bolt.

1. Whilst still applying the opposing force to the sprocket and chain (using 303-532), check that the wedges are still in place, tighten the securing bolt to 115-125 Nm.
 - Remove the chain tensioning tool and the wedge(s).

14. Remove the camshaft locking tool 303-530.

15. Raise the vehicle on the ramp.

16. Remove the crankshaft setting tool 303-531.



17. Install the crankshaft position sensor.

1. Install the sensor to the flywheel housing and install the securing bolt. Tighten to 6-8 Nm.
2. Install the access grommet to the housing.

1999 XK RANGE - Basic Engine - 303-01

18. Lower the ramp.

19. Install the Timing Cover. Refer to Operation <<12.65.01>>.

20. Move the engine compartment cover from the service position and connect the gas struts.

21. Remove the paint protection sheets and close the cover.

Connect the battery and install the battery cover.

<<86.15.15>>