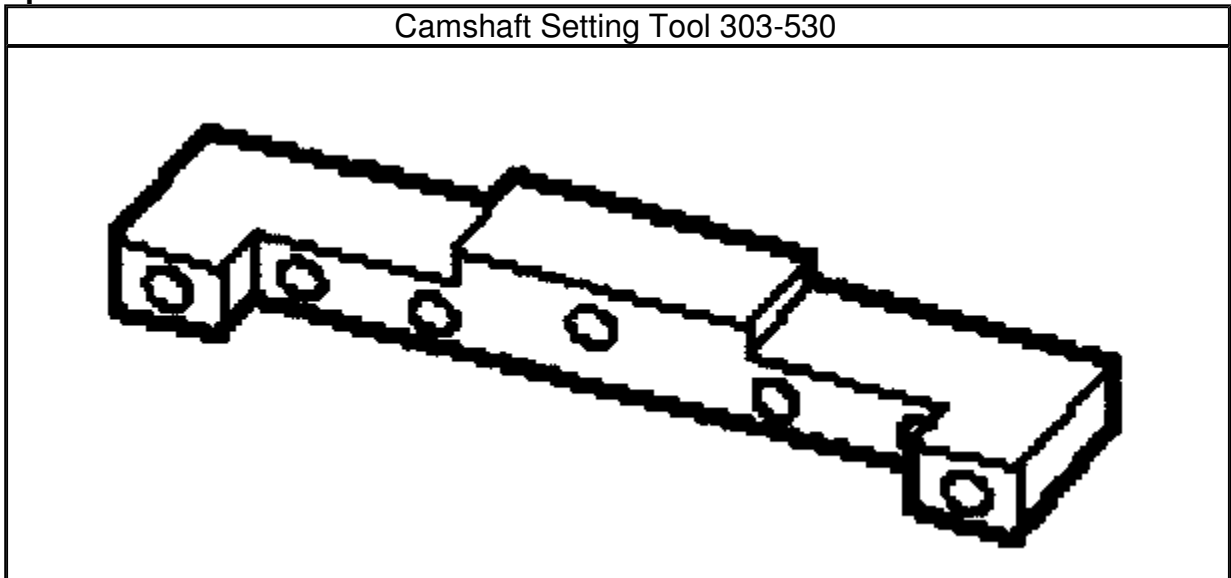


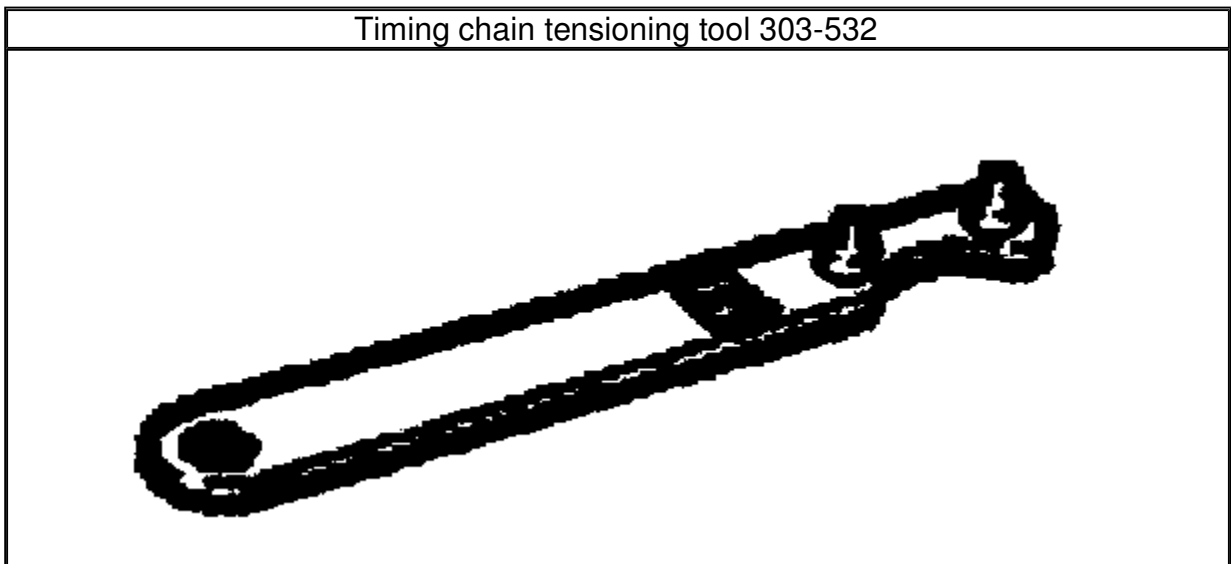
### Primary timing chain LH

#### Special Service tools



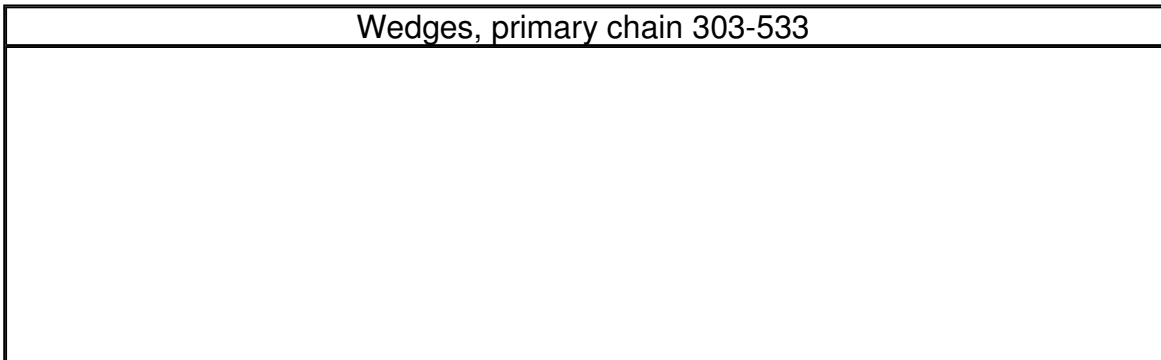
Zoom

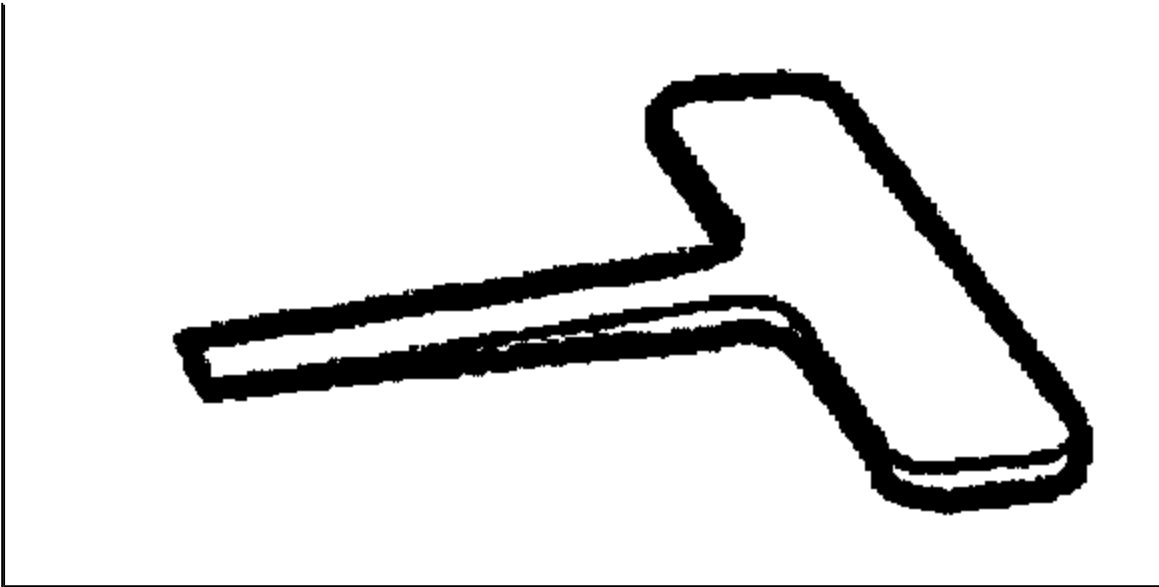
Sized for Print



Zoom

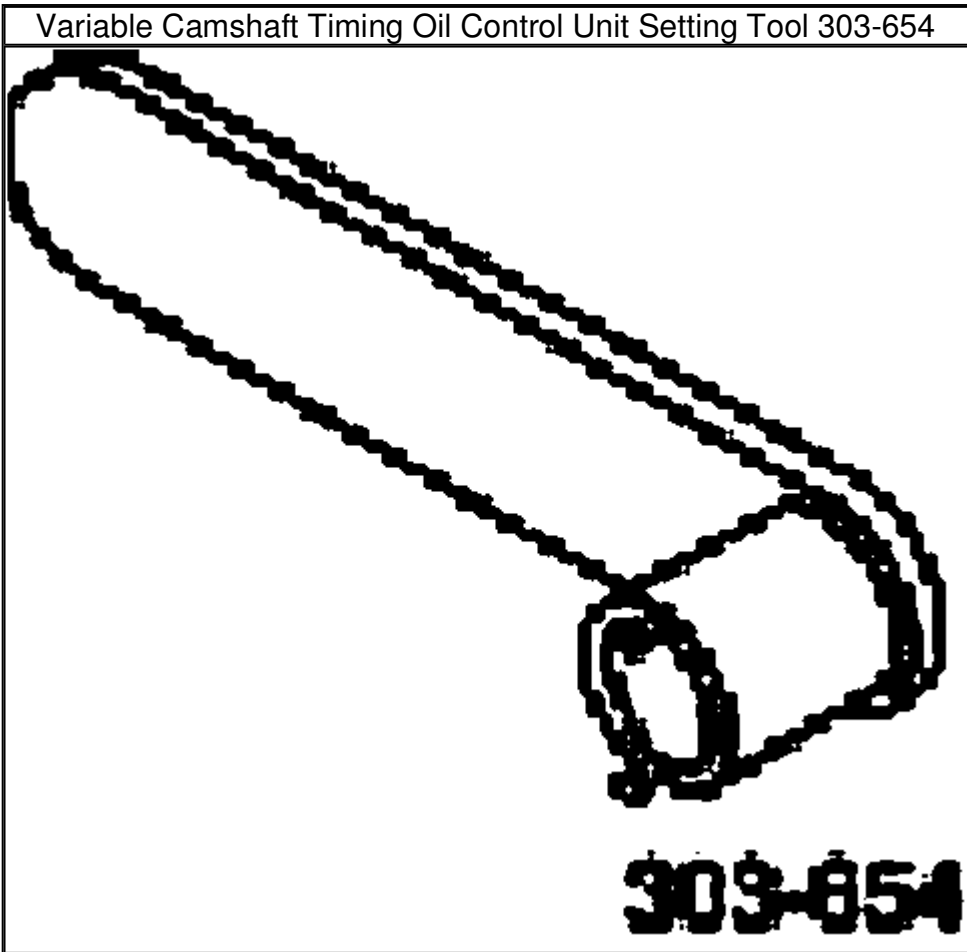
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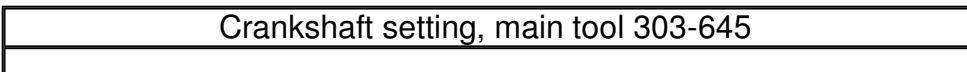
Zoom

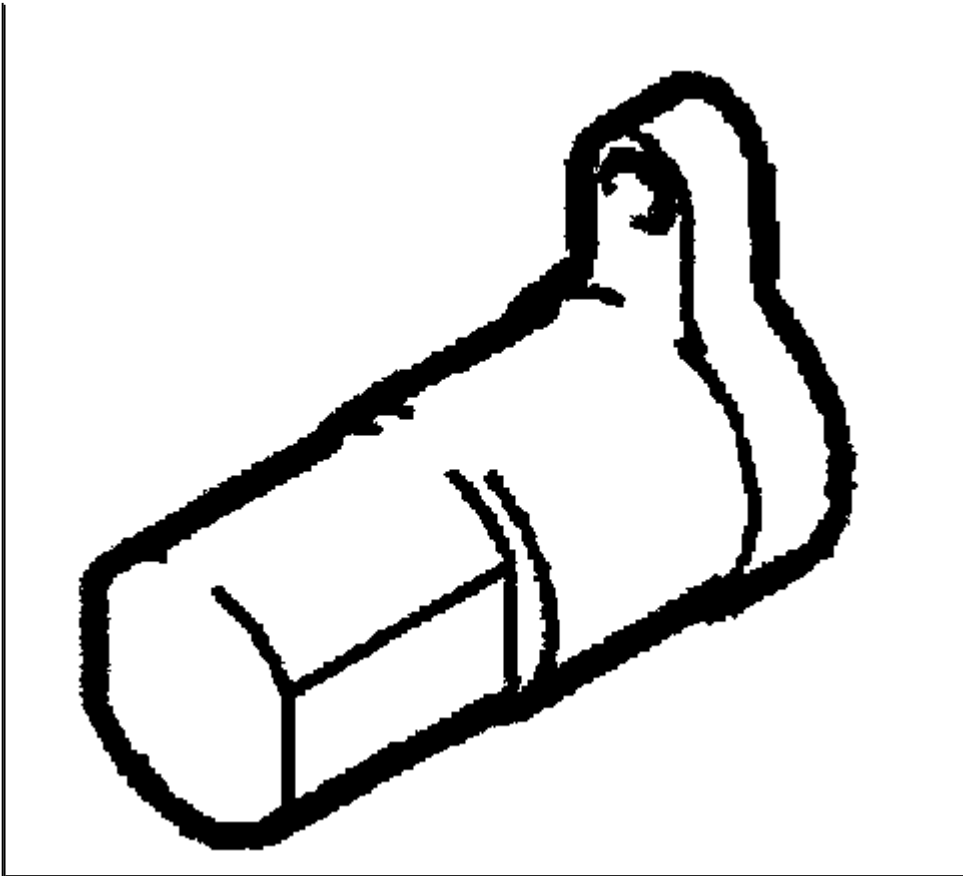
Sized for Print



Zoom

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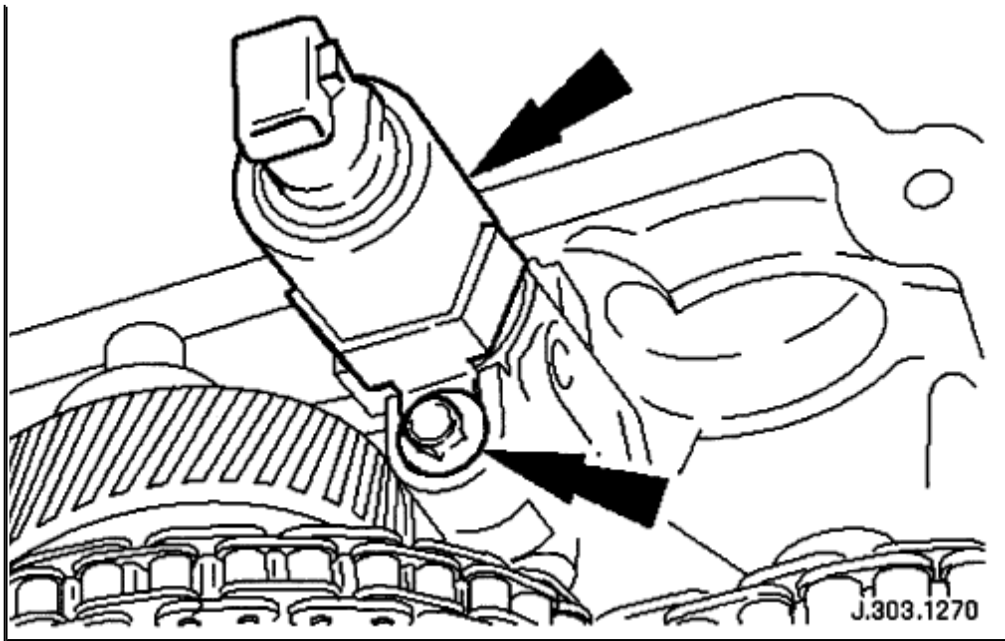


[Zoom](#)[Sized for Print](#)

## Removal

1. Remove the right-hand bank primary timing chain. [See: Right-Hand](#)

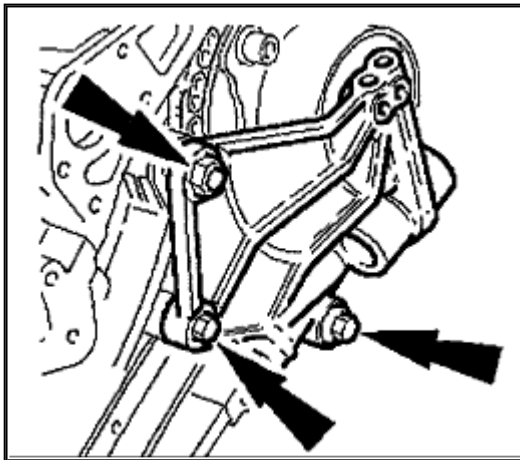




Zoom

Sized for Print

2. Remove the VVT solenoid.

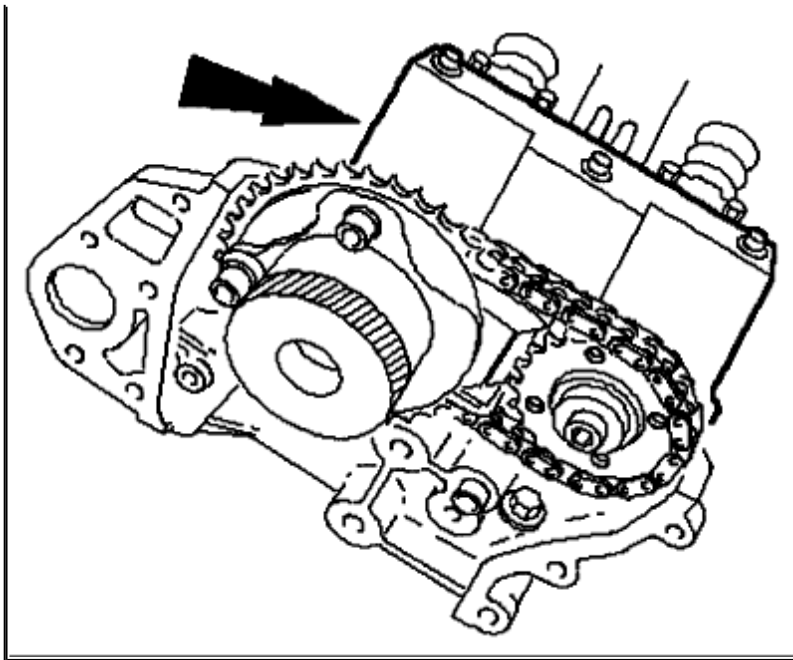


Zoom

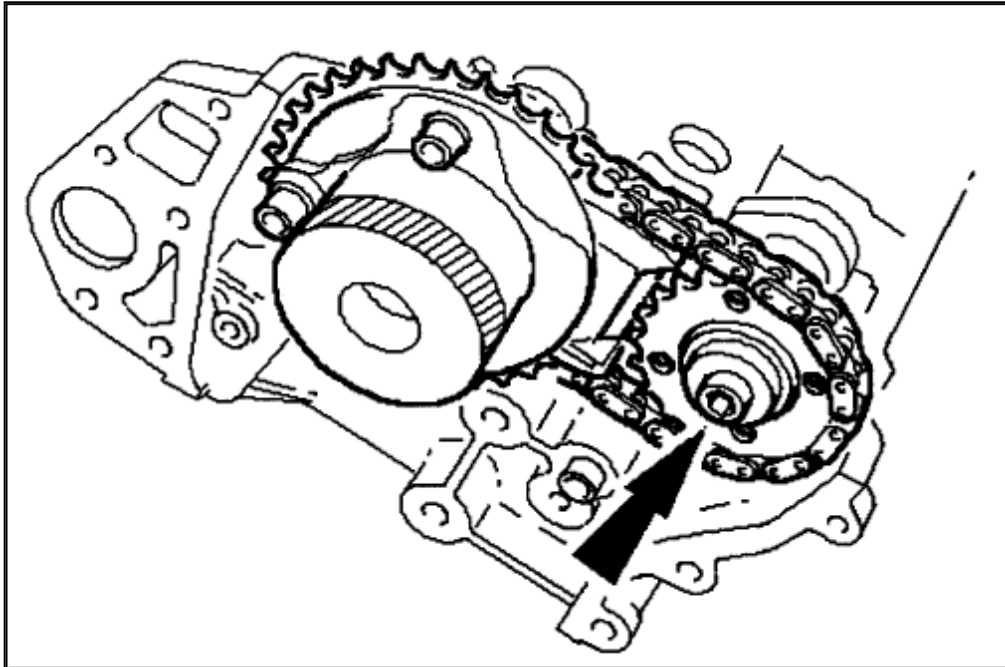
Sized for Print

3. Remove the VVT bush carrier.

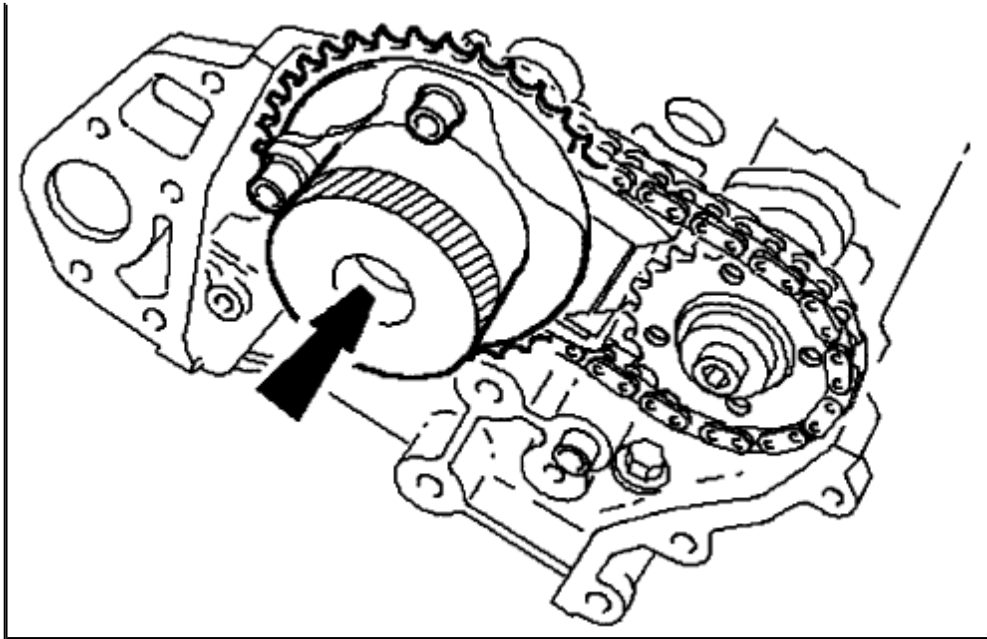


[Zoom](#)[Sized for Print](#)

4. Install the [camshaft](#) locking tool 303-530 to the left-hand bank camshafts, aligning the shafts as necessary.

[Zoom](#)[Sized for Print](#)

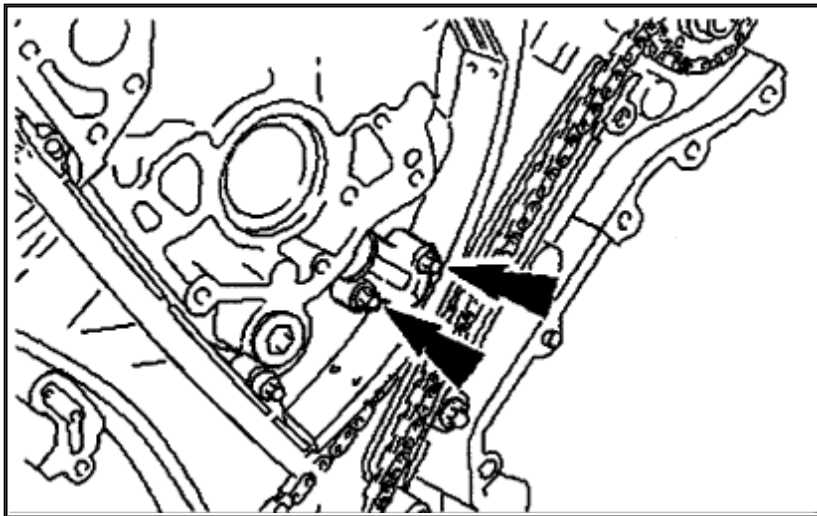
5. Loosen the exhaust camshaft sprocket bolt.



Zoom

Sized for Print

6. Loosen the intake [camshaft](#) VVT unit bolt.

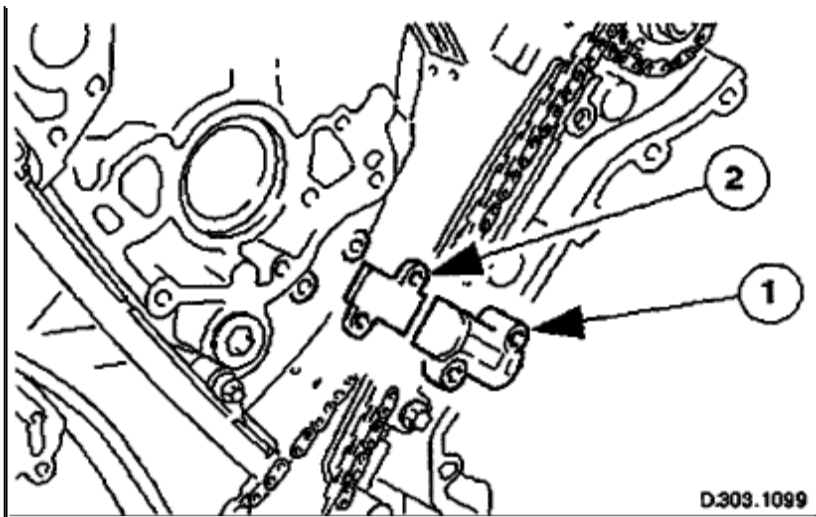


Zoom

Sized for Print

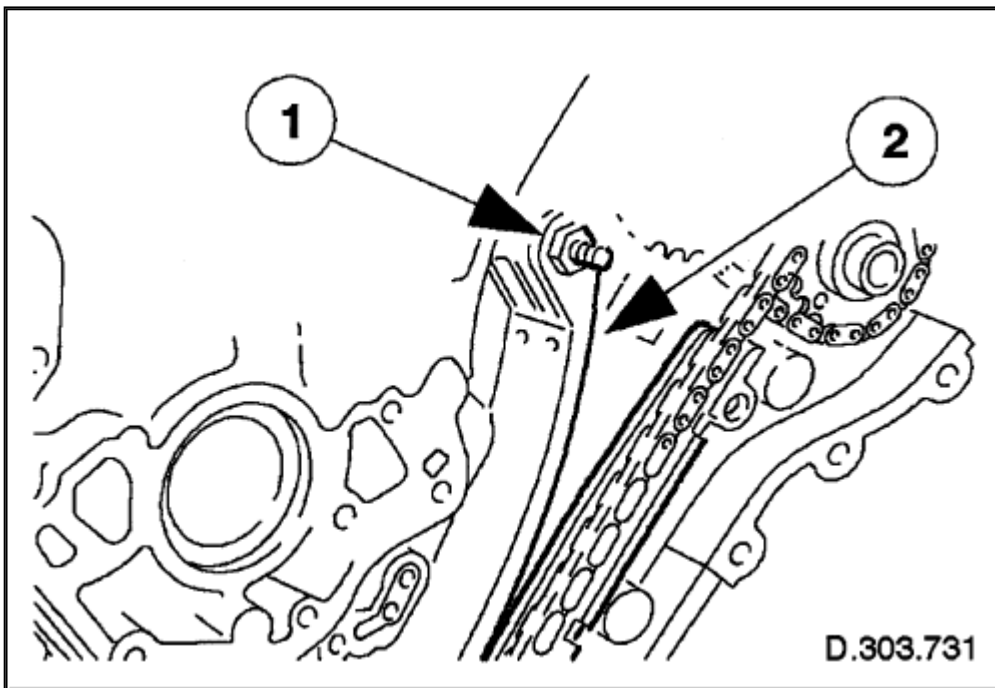
7. Remove the primary chain tensioner bolts.



[Zoom](#)[Sized for Print](#)

8. Remove the tensioner assembly.

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

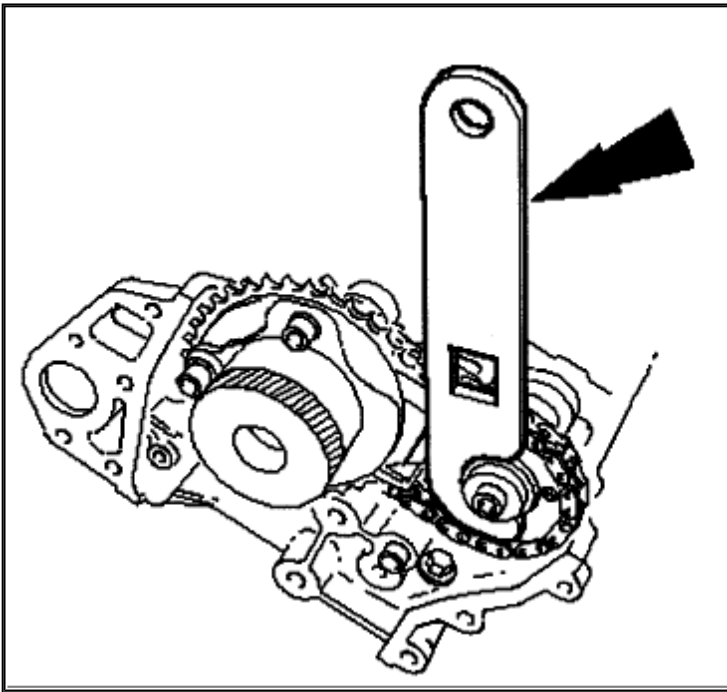
[Zoom](#)[Sized for Print](#)

9. Remove the chain tensioner blade.

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

10. Remove the left-hand bank timing chain.

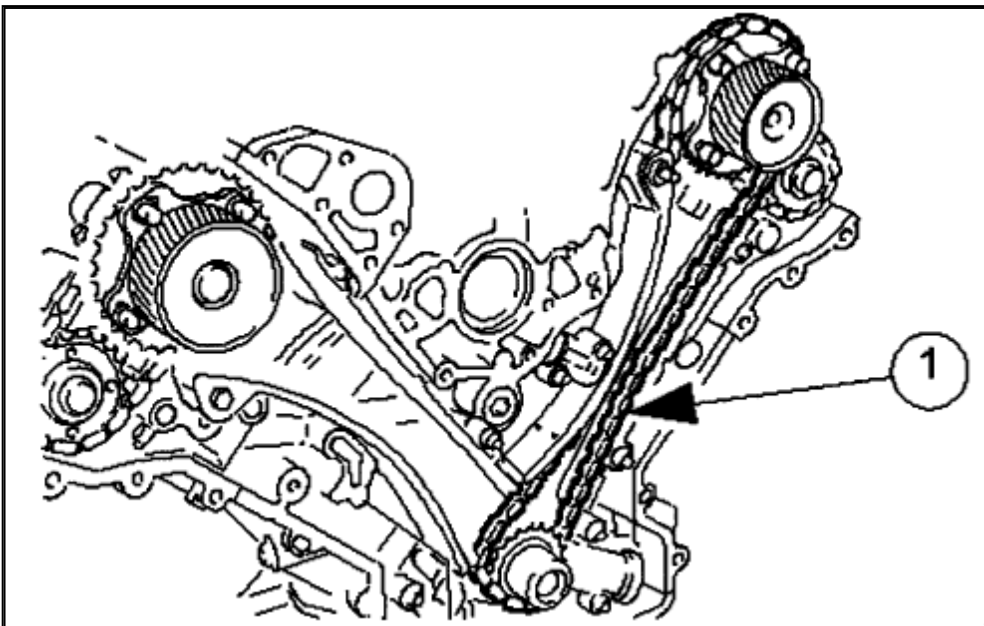
### Installation



Zoom

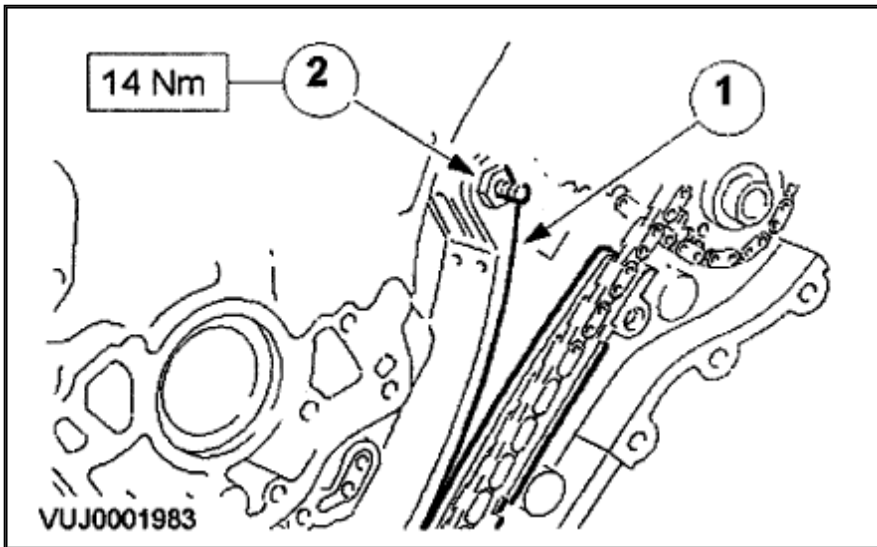
Sized for Print

1. Install the chain tensioning tool 303-532 to the exhaust camshaft sprocket. Reposition the sprocket (and the VVT unit) for the most advantageous position for use of the tool. Remove the tool.

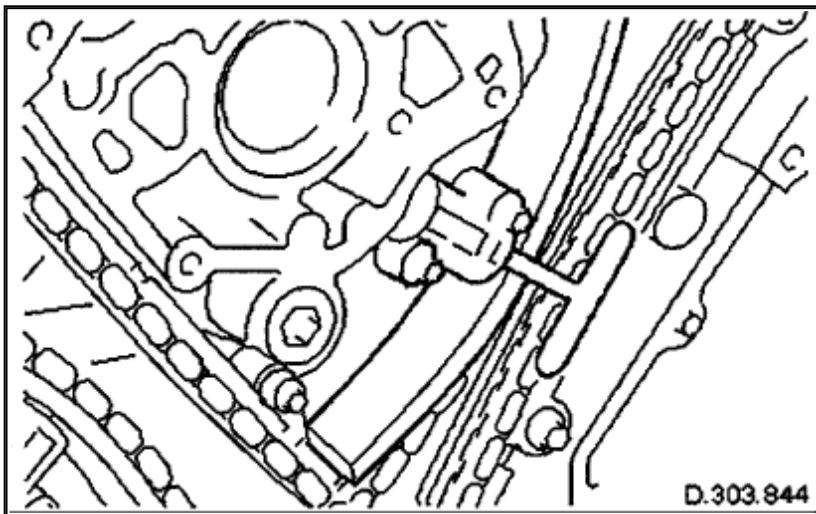


[Zoom](#)[Sized for Print](#)

2. Install the primary timing chain.
1. Install the primary chain over the crankshaft sprocket and the VVT unit sprocket. There must be no slack on the drive side of the primary chain and the VVT unit must not be rotated on the [camshaft](#).

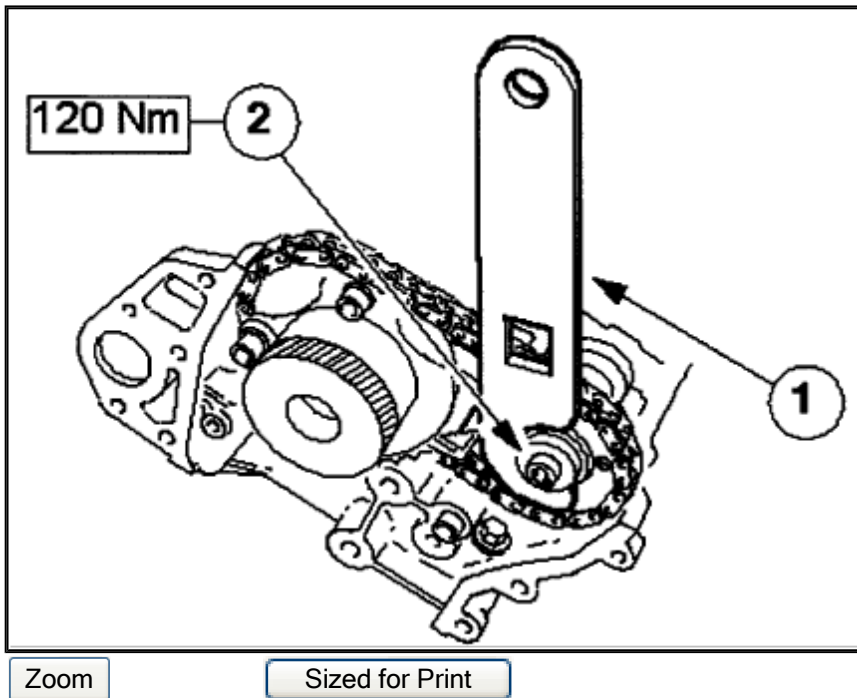
[Zoom](#)[Sized for Print](#)

3. Install the primary chain tensioner blade.

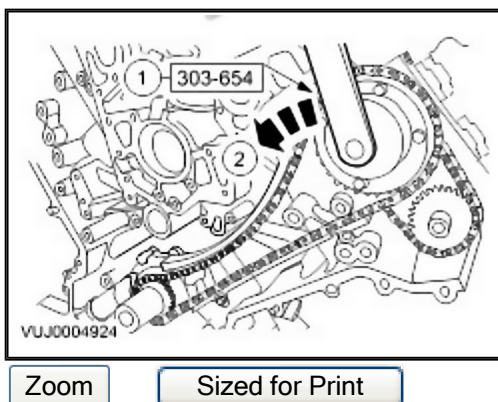
[Zoom](#)[Sized for Print](#)

4. Install the primary chain tensioner assembly.

1. 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.

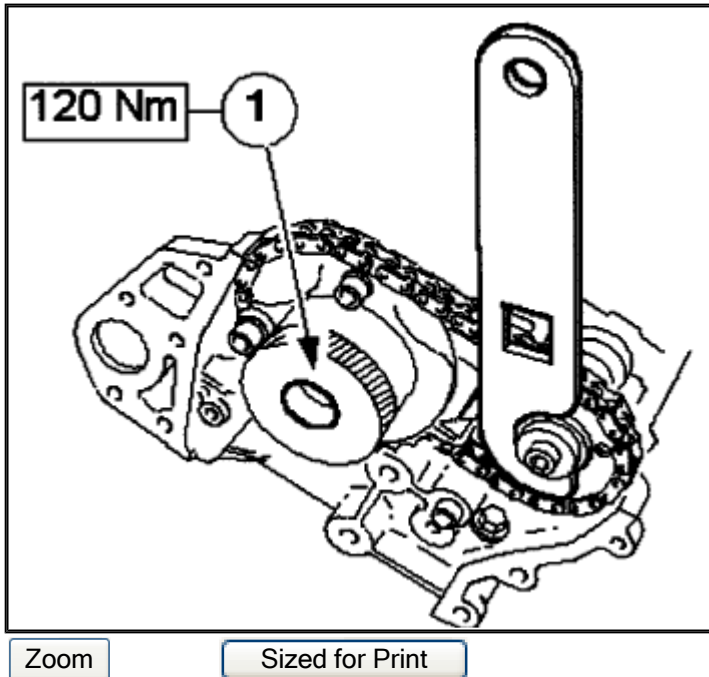


5. Tighten the exhaust camshaft sprocket securing bolt.
  1. Install the chain tensioner tool 303-532 to the sprocket holes. Apply force to the tool in an anticlockwise direction to tension the chain on its drive side.
  2. While applying the opposing force to sprocket and chain, tighten the sprocket bolt to 120Nm

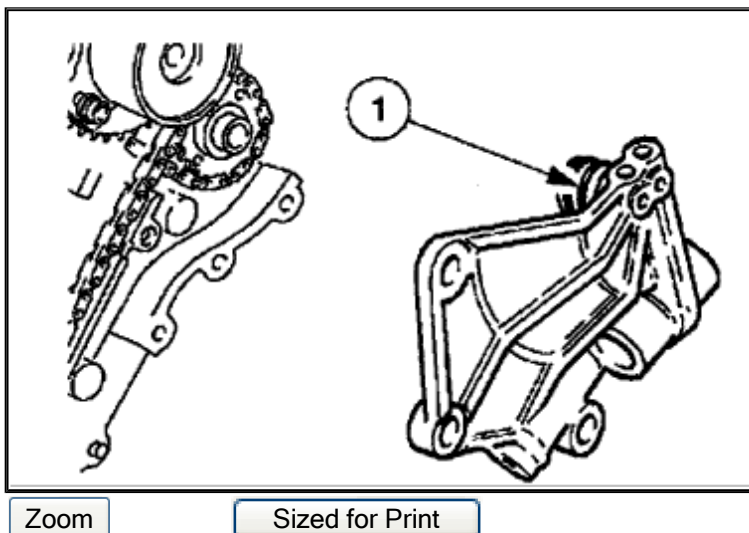


6. Rotate the variable [camshaft](#) timing oil control unit fully anticlockwise to the fully retarded position
  1. Install the variable [camshaft](#) timing oil control unit setting tool 303-654.

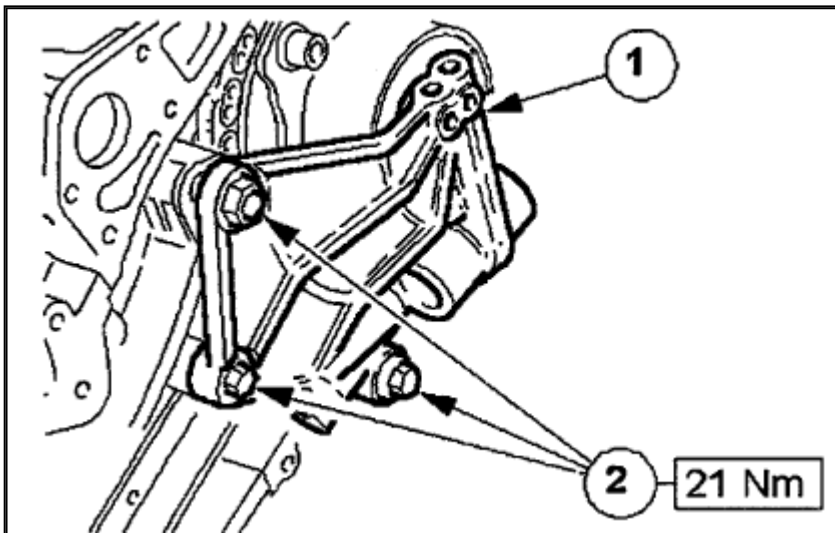
2. Rotate the variable [camshaft](#) timing oil control unit fully anti-clockwise to the fully retarded position.



7. Tighten the VVT unit bolt.
  1. While 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.
  2. Tighten to **40 Nm + 90°**.
  3. Remove the chain tensioning tool and the wedge(s).
8. Remove the [camshaft](#) locking tool 303-530.



9. Install new seals to the VVT bush carrier.



Zoom

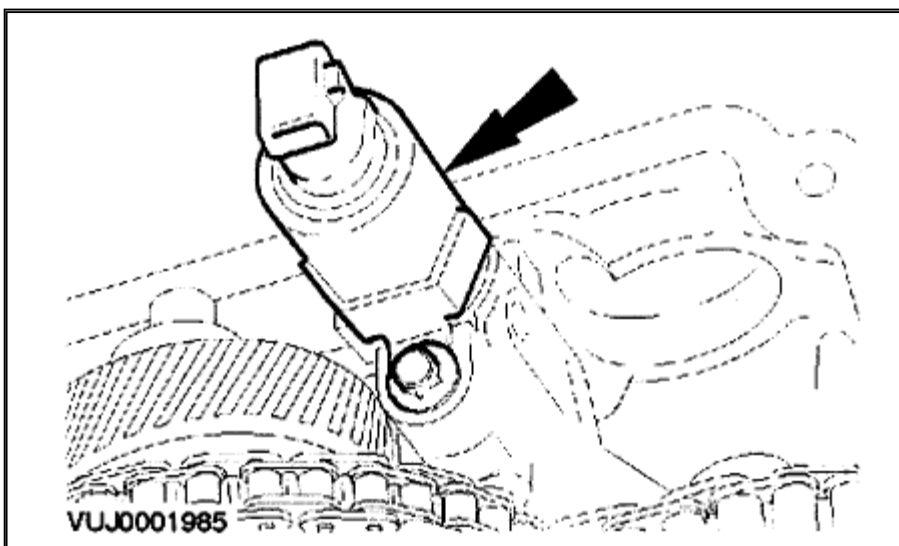
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10. **Note:** Make sure the bush carrier oil inlet filter screen is clean Install the VVT bush carrier to the cylinder block.

1. Install the bush carrier assembly.

- Lubricate the seals and the bush.
- Check that the ring dowels are engaged squarely. Fully locate the assembly as much as possible by hand pressure.

2. Install the VVT bush carrier bolts.



[Zoom](#)[Sized for Print](#)

11. Install the VVT solenoid.
12. Install the right-hand bank primary timing chain.