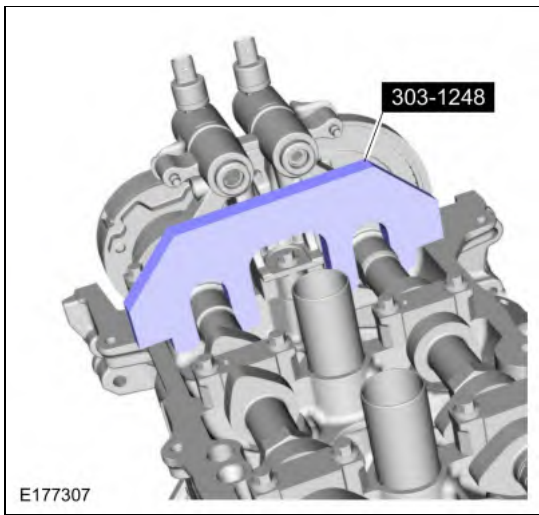
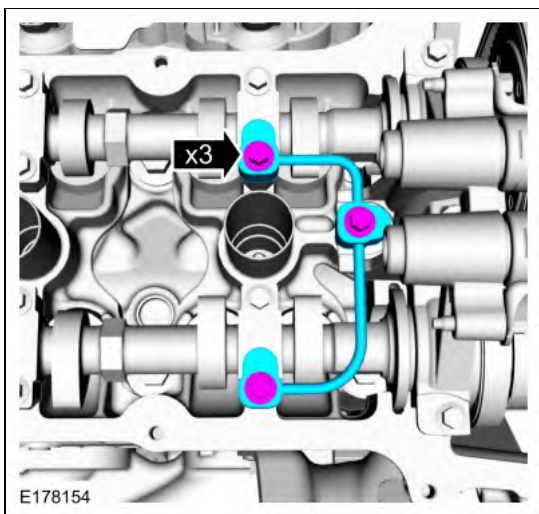


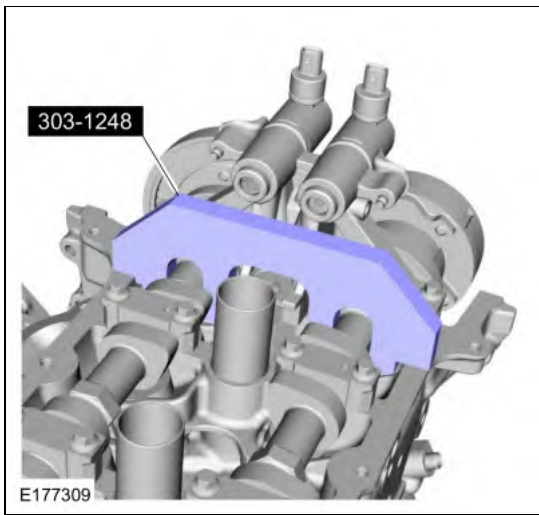


6. Remove the bolts and the RH oil tube.



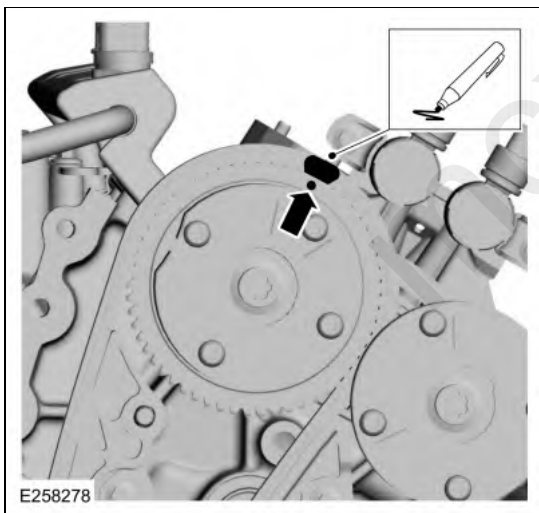
7. **NOTE:** The Camshaft Holding Tool will hold the camshafts in the TDC position.

Install Special Service Tool: 303-1248 Camshaft holding tools.

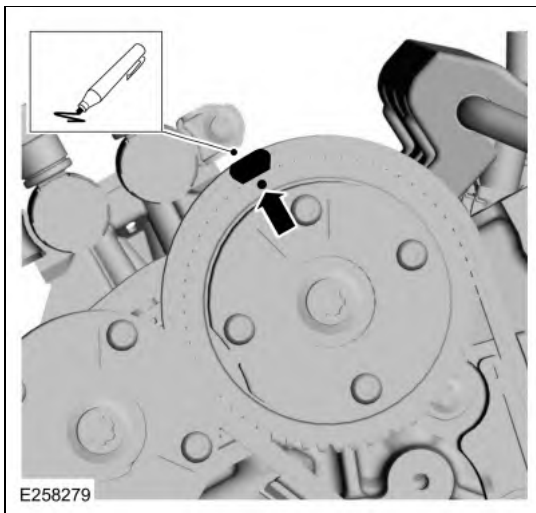


NOTE: *The following 3 steps are for primary timing chains that the colored links are not visible.*

8. Mark the timing chain link that aligns with the timing mark on the LH intake VCT unit as shown.

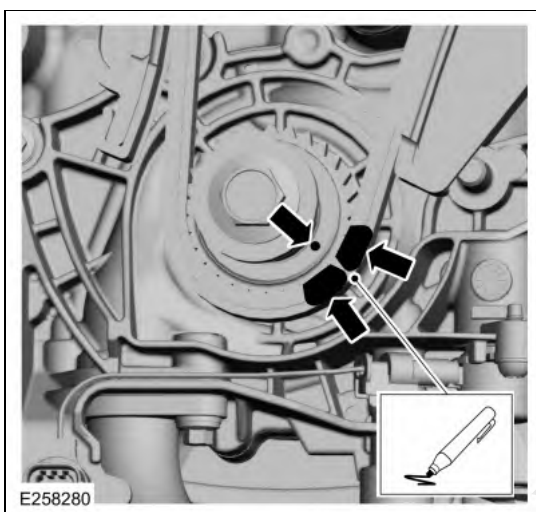


9. Mark the timing chain link that aligns with the timing mark on the RH intake VCT unit as shown.

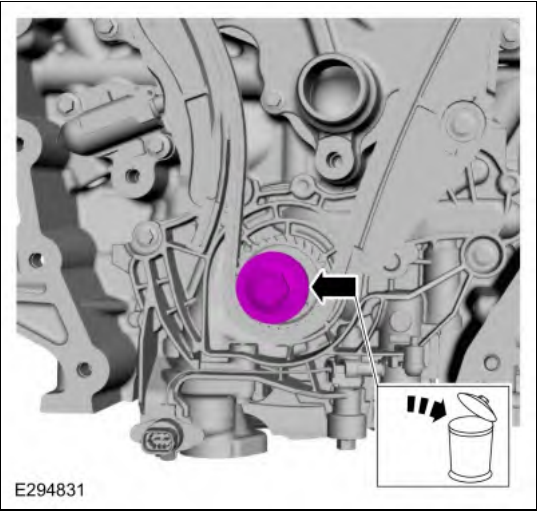


10. **NOTE:** The crankshaft sprocket timing mark should be between the 2 colored links.

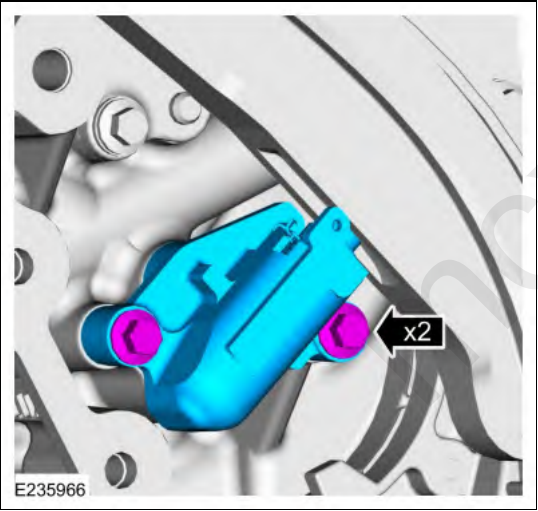
Mark the timing chain links that aligns with the timing mark on the crankshaft sprocket as shown.



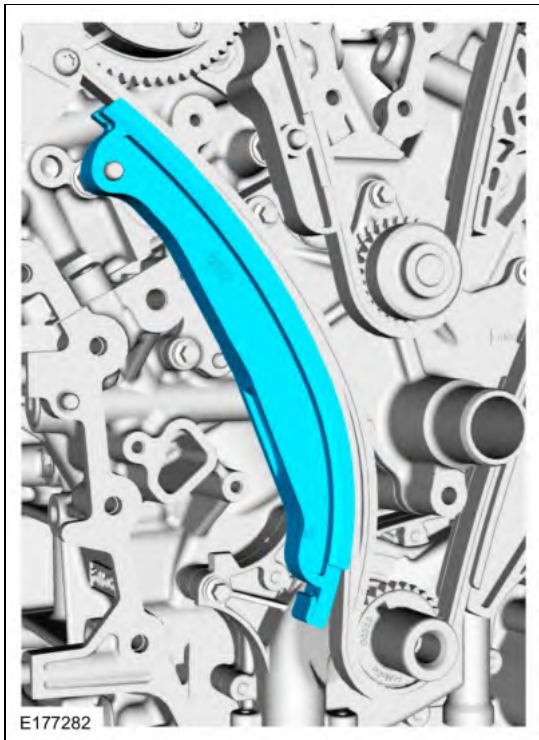
- 11.
- Remove the crankshaft pulley bolt and washer.
 - Discard the bolt.



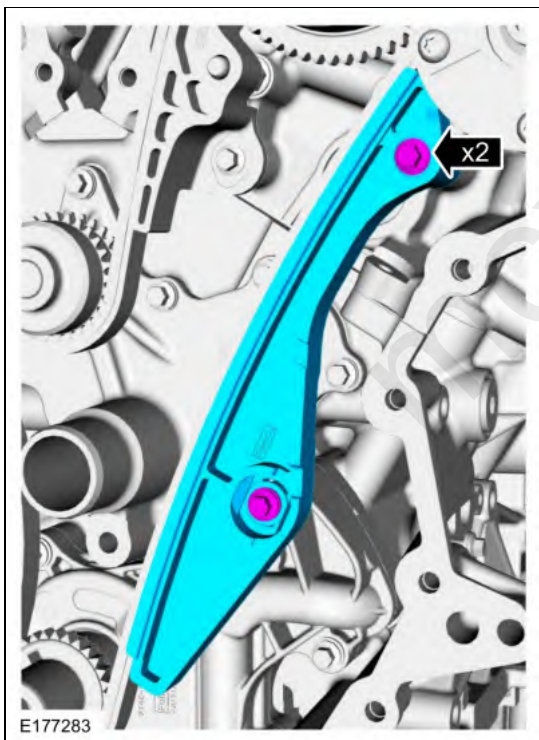
12. Remove the bolts and the timing chain tensioner.



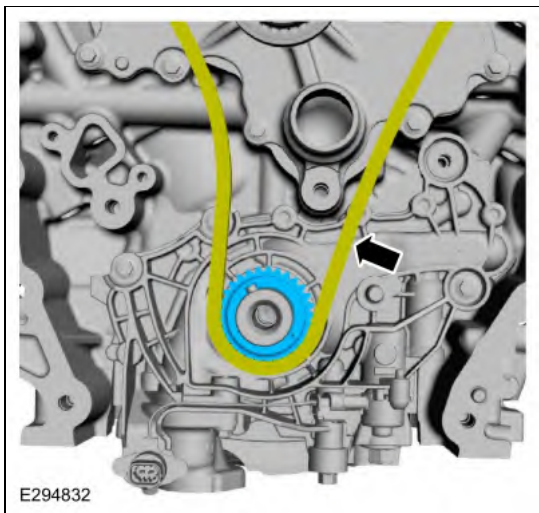
13. Remove the timing chain tensioner arm.



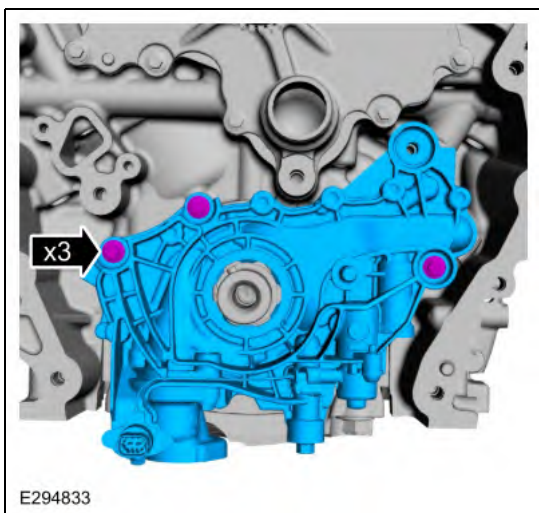
14. Remove the bolts and the lower LH timing chain guide.



15. Position the timing chain aside and remove the crankshaft sprocket.

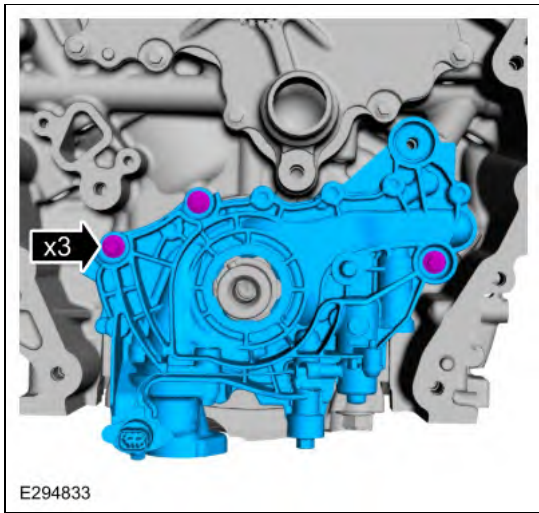


16. Remove the bolts and oil pump.

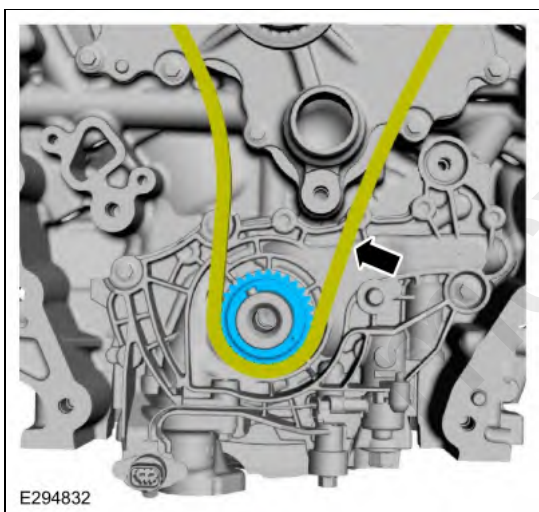


Installation

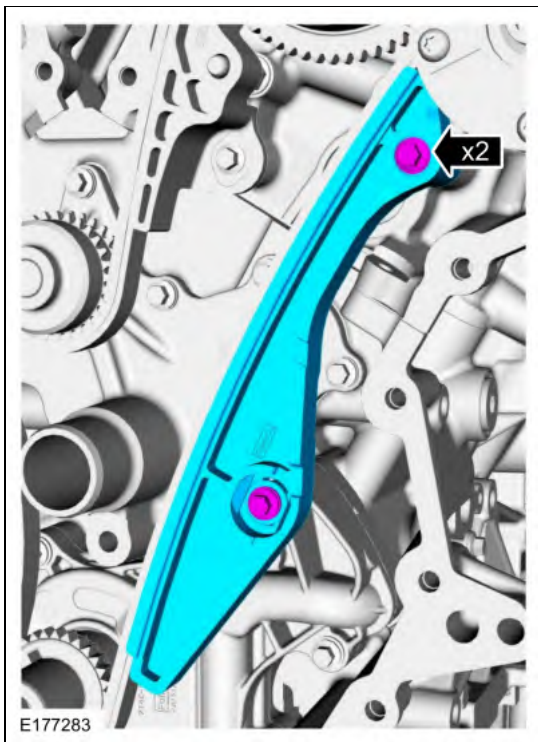
1. Prime the oil pump. Add 2 tablespoons of clean engine oil to the oil pump and rotate the oil pump by hand.
2. Install the oil pump and the bolts.
Torque: 89 lb.in (10 Nm)



3. Install the crankshaft sprocket and align the timing chain on the sprocket timing marks.



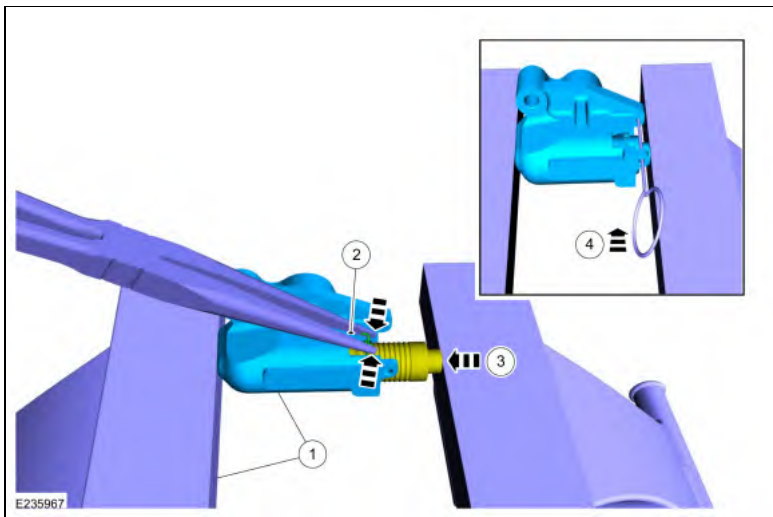
4. Install the lower LH timing chain guide and the bolts.
Torque: 89 lb.in (10 Nm)



5. Install the timing chain tensioner arm.

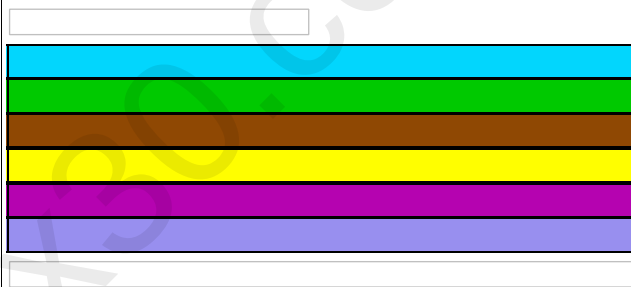
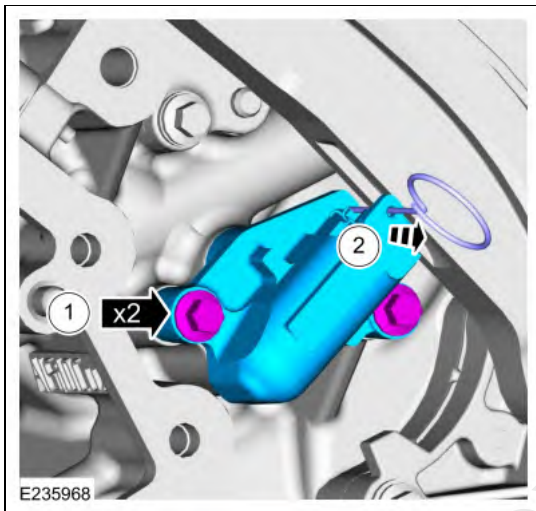


6.
 1. Position the tensioner in a soft-jawed vise.
 2. Using pliers, squeeze the ends of the ratchet wire clip together.
 3. Using the soft-jawed vise, compress the plunger to the reset position.
 4. Install a locking pin in the 2 holes of the tensioner body to hold the plunger in place.

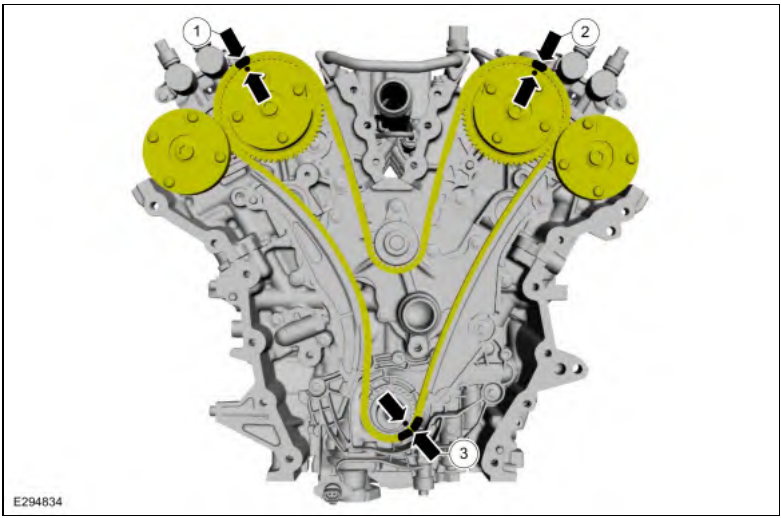


7. **NOTE:** It may be necessary to rotate the camshafts slightly to remove slack from the timing chain to install the tensioner.

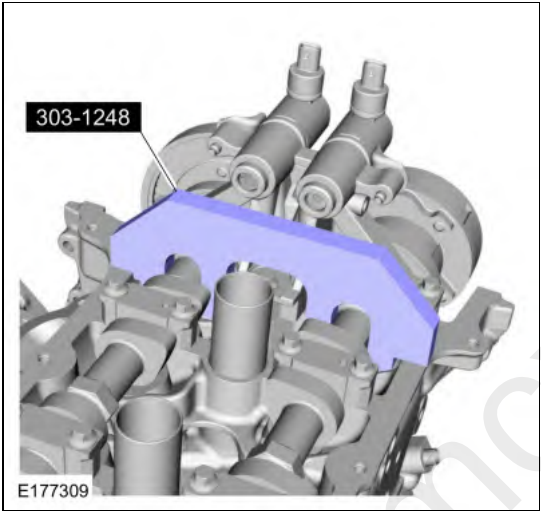
1. Install the timing chain tensioner and the bolts.
Torque: 89 lb.in (10 Nm)
2. Remove the lockpin.



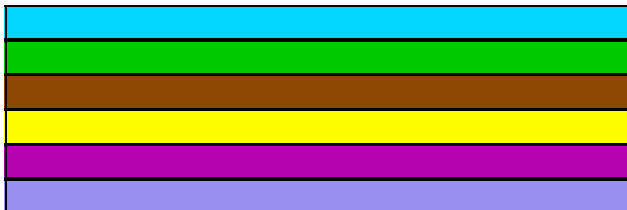
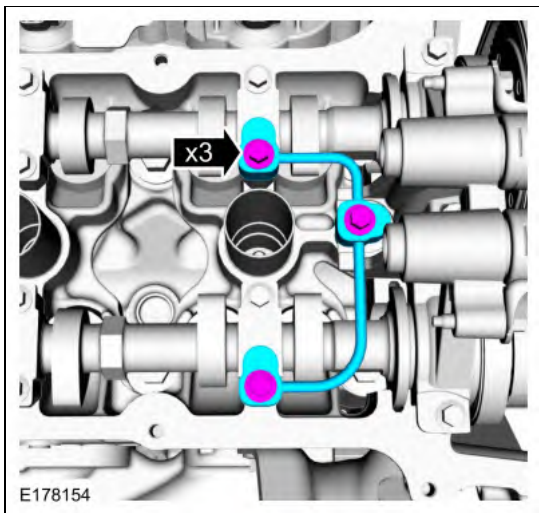
8.
 - As a post-check, verify correct alignment of all timing marks.
 - There are 48 links in between the RH intake VCT unit colored link (1) and the LH intake VCT unit colored link (2).
 - There are 35 links in between LH intake VCT unit colored link (2) and the 2 crankshaft sprocket links (3).



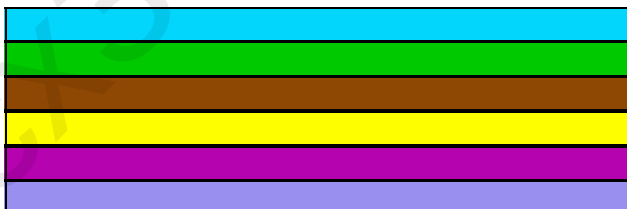
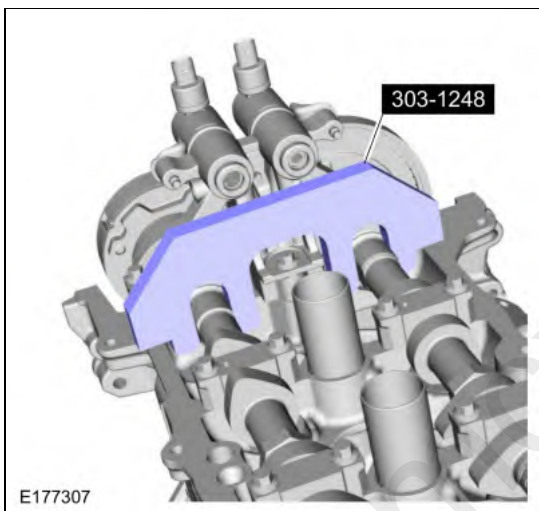
9. Remove Special Service Tool: 303-1248 Camshaft holding tools.



10. Install the RH oil tube and the bolts.
Torque:
Stage 1: 71 lb.in (8 Nm)
Stage 2: 60°



11. Remove Special Service Tool: 303-1248 Camshaft holding tools.

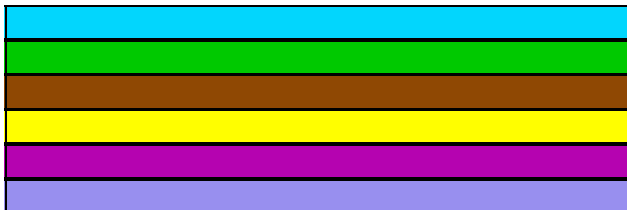
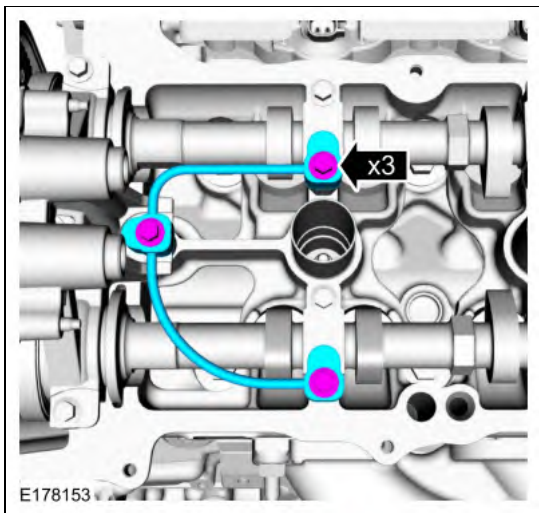


12. Install the LH oil tube and the bolts.

Torque:

Stage 1: 71 lb.in (8 Nm)

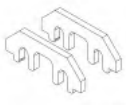
Stage 2: 60Å°



13. Install the oil pan.
Refer to: Oil Pan (303-01D Engine - 3.3L Duratec-V6 $\hat{\text{a}}\text{C}^{\text{+}}$ Hybrid (BP), Removal and Installation).

Timing Chain

Special Tool(s) / General Equipment

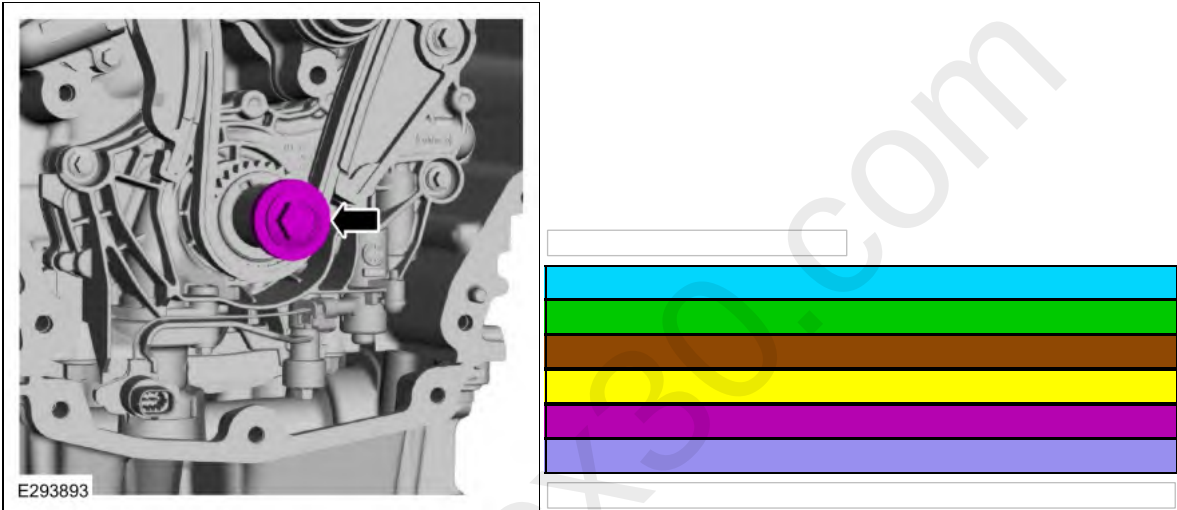
 E216421	303-1248 Camshaft holding tools TKIT-2006UF-FLM TKIT-2006UF-ROW
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Removal

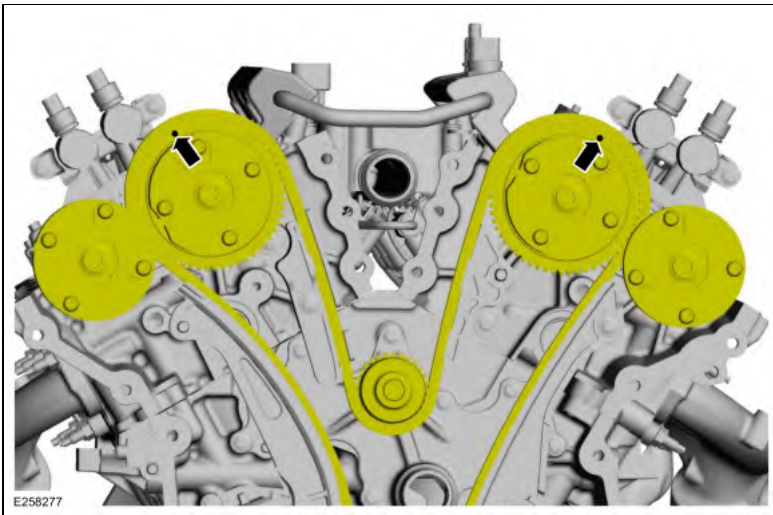
NOTICE: During engine repair procedures, cleanliness is extremely important. Any foreign material, including any material created while cleaning gasket surfaces, that enters the oil passages, coolant passages or the oil pan may cause engine failure.

NOTE: Five or more teeth visible on the timing chain tensioner can be an indication of excessive wear of the timing chain and/or arms and guides.

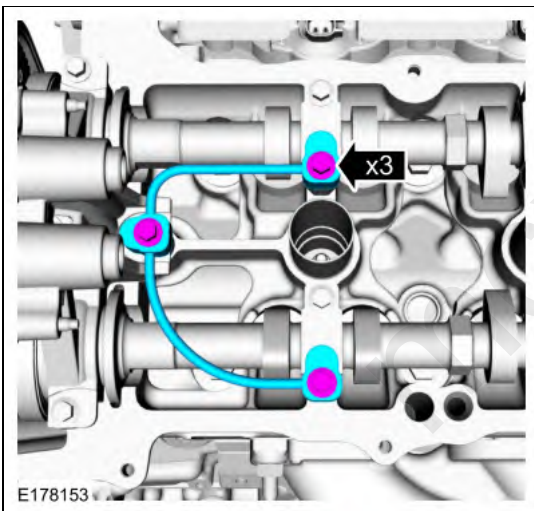
1. Remove the engine front cover.
Refer to: Engine Front Cover (303-01D Engine - 3.3L Duratec-V6 â€“ Hybrid (BP), Removal and Installation).
2. Install the original crankshaft pulley bolt and washer.



3. **NOTE:** Rotate the crankshaft in a clockwise direction only.
Using the crankshaft bolt, align the timing marks.



4. Remove the bolts and the LH oil tube.



5. **NOTE:** The Camshaft Holding Tool will hold the camshafts in the TDC position.

Install Special Service Tool: 303-1248 Camshaft holding tools.