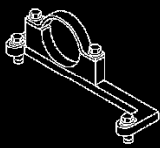

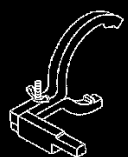
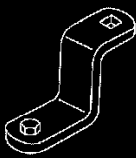
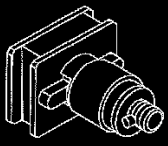
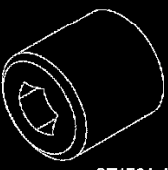


Timing Components: Procedures

Camshaft Timing

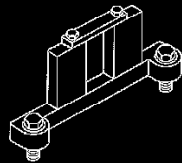
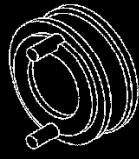
Camshaft Timing

Special Tool(s)	
 ST1777-A	Holding Tool, Camshaft Sprocket 303-564 (T97T-6256-B)
 ST1774-A	Tensioner, Timing Chain 303-571 (T97T-6K254-A)
 ST1775-A	Timing Tool, Crankshaft TDC 303-573 (T97T-6303-A)
 ST1780-A	Extension, Torque Wrench 303-575 (T97T-6256-F)
 ST1779-A	Adapter for 303-577 303-576 (T97T-6256-D)
 ST1781-A	Socket, Camshaft Sprocket Nut 303-565 (T97T-6256-G) or equivalent

(Continued)

Special Tool(s)

Special Tool(s)

 ST1778-A	Holding Tool, Camshaft 303-577 (1971-6303-C)
 ST1776-A	Adapter for 303-564 303-578 (T97T-6256-C)

Special Tool(s)**Material**

Item	Specification
Motorcraft SAE 5W-30 Premium Synthetic Blend Motor Oil XO-5W30-QSP (US); Motorcraft SAE 5W-30 Super Premium Motor Oil CXO-5W30-LSP12 (Canada); or equivalent	WSS-M2C929-A

Material

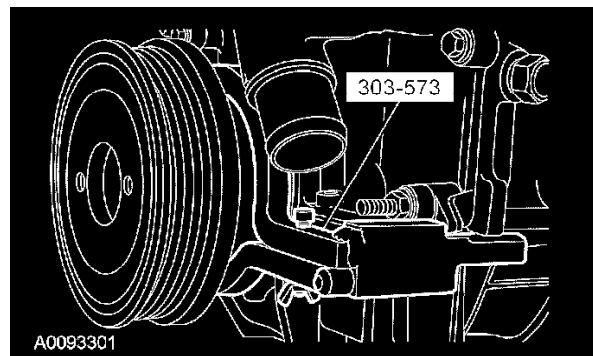
1. Remove the camshaft roller followers.
2. Remove the generator.
3. Remove the engine coolant temperature (ECT) sensor.
4. **NOTE:** The LH and RH camshafts must be retimed when either camshaft is disturbed.

Turn the crankshaft clockwise to position the No. 1 cylinder at top dead center (TDC).

5. **CAUTION:** Do not rotate the engine counterclockwise. Rotating the engine counterclockwise will result in incorrect timing of the engine.

NOTE: The special tool must be installed on the damper and should contact the engine block, this positions the engine at TDC.

Install the special tool.

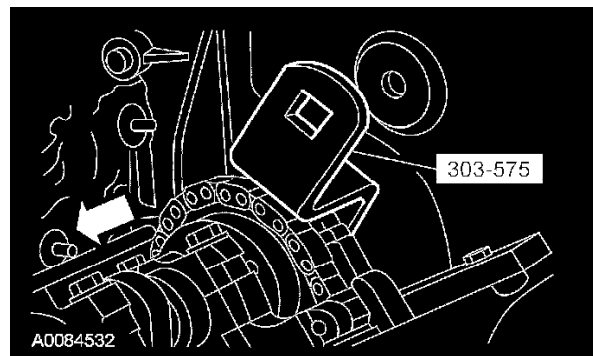


6. Install the special tools to the RH cylinder head and tighten the 2 top clamp bolts.
 - Tighten to **10 Nm (89 inch lbs.)**.

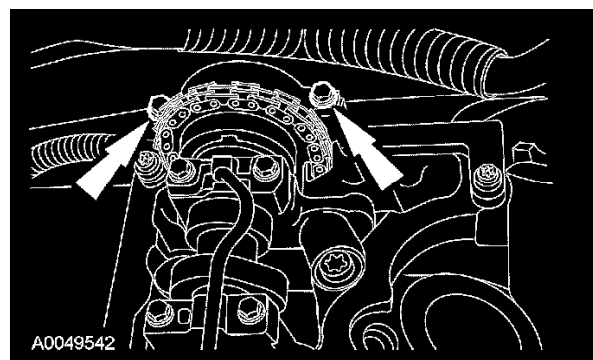


7. **CAUTION:** The RH camshaft sprocket bolt is a LH-threaded bolt.

Using the special tool with the Camshaft Sprocket Nut Socket 303-565, loosen the RH camshaft sprocket bolt.

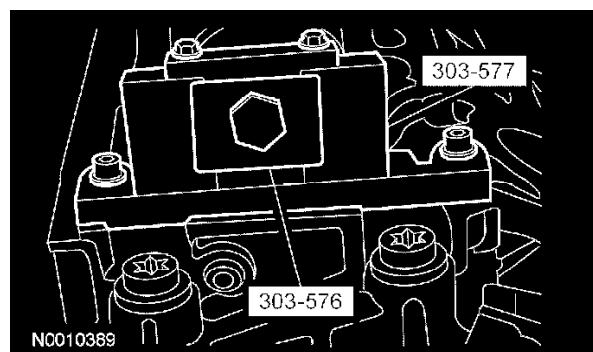


8. Loosen the top 2 special tool clamp bolts.

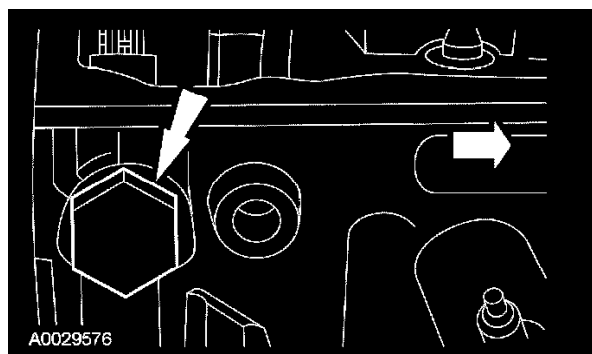


9. **NOTE:** The camshaft timing slots are off-center.

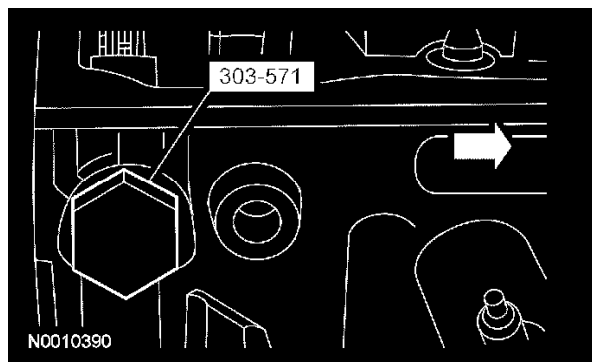
Position the camshaft timing slots below the centerline of the camshaft to correctly fit the special tools and install the special tools on the front of the RH cylinder head.



10. Remove the RH camshaft tensioner.



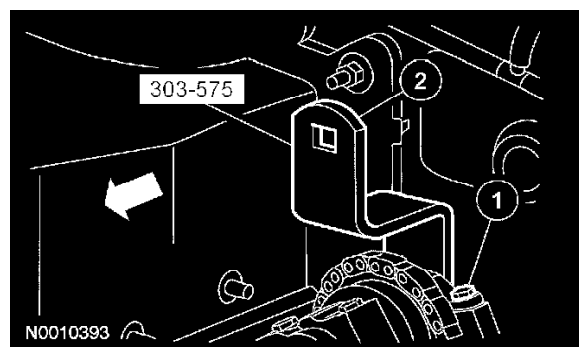
11. Install the special tool.



12. **CAUTION:** The RH camshaft sprocket bolt is a LH-threaded bolt.

Tighten the bolts.

1. Tighten the special tool top 2 clamp bolts to **10 Nm (89 inch lbs.)**.
2. Using the special tool with the Camshaft Sprocket Nut Socket 303-565, tighten the camshaft bolt.



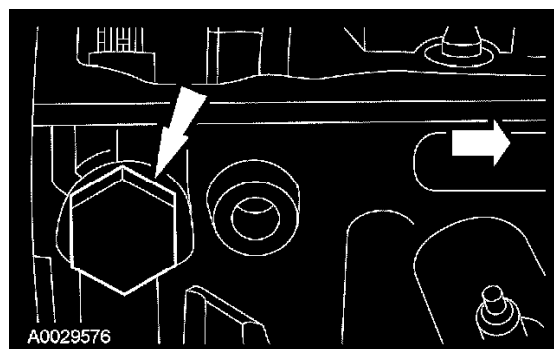
13. Remove the special tool.



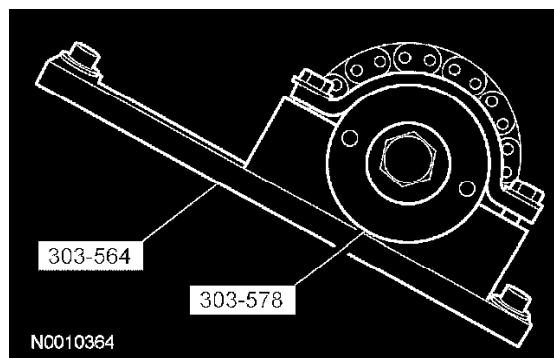
14. **NOTE:** Install a new O-ring seal on the tensioner and lubricate with clean engine oil.

Install the RH camshaft tensioner.

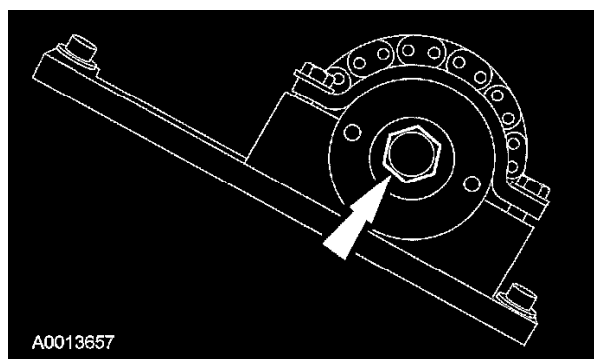
- Tighten to **44 Nm (32 ft. lbs.)**.



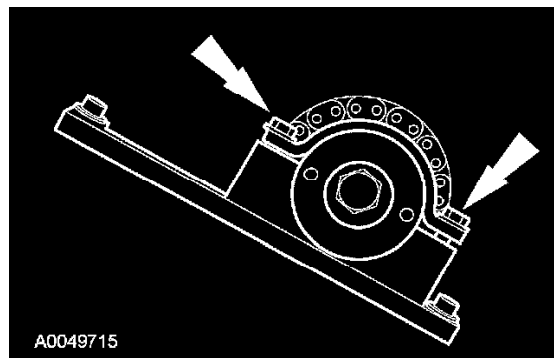
15. Remove the special tools from the RH cylinder head.
16. Install the special tools on the front of the LH cylinder head and tighten the top 2 clamp bolts.
 - Tighten to **10 Nm (89 inch lbs.)**.



17. Loosen the LH camshaft sprocket bolt.

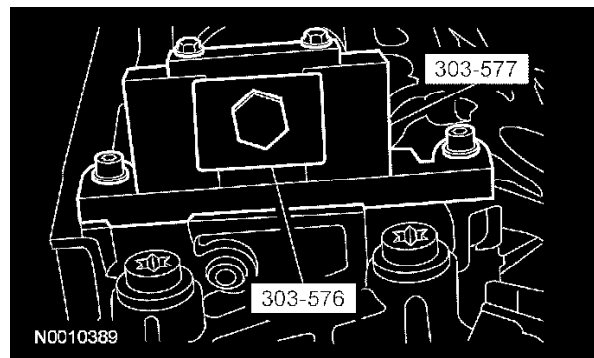


18. Loosen the top 2 clamp bolts on the special tool to allow the camshaft sprocket to rotate freely.

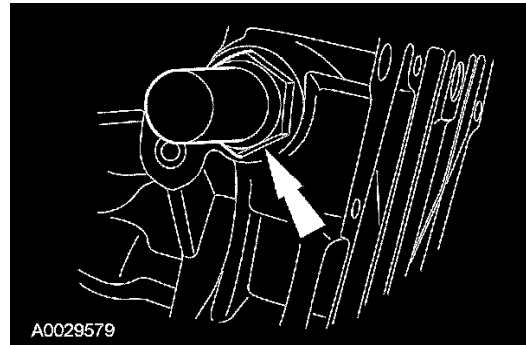


19. **NOTE:** The camshaft timing slots are off-center.

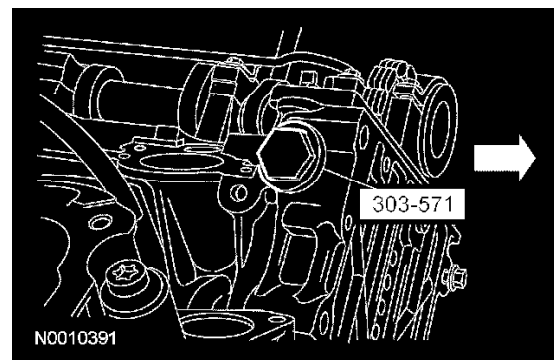
Position the camshaft timing slots below the centerline of the camshaft to correctly fit the special tools, and install the special tools on the rear of the LH cylinder head.



20. Remove the LH camshaft tensioner.

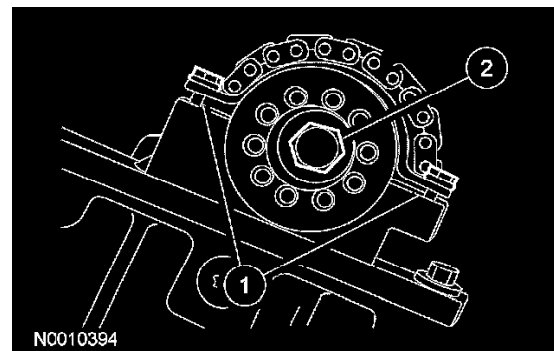


21. Install the special tool.

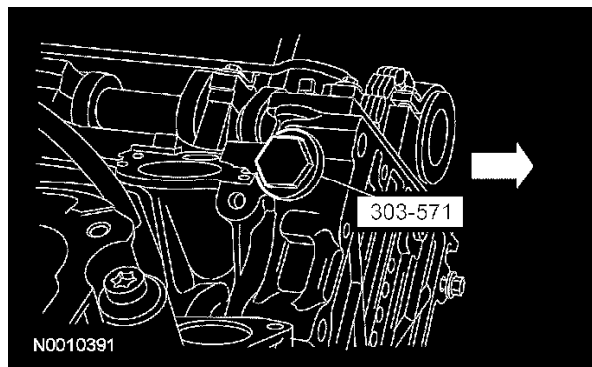


22. Tighten the bolts.

1. Tighten the special tool top 2 clamp bolts to **10 Nm (89 inch lbs.)**.
2. Tighten the LH camshaft bolt to **85 Nm (63 ft. lbs.)**.



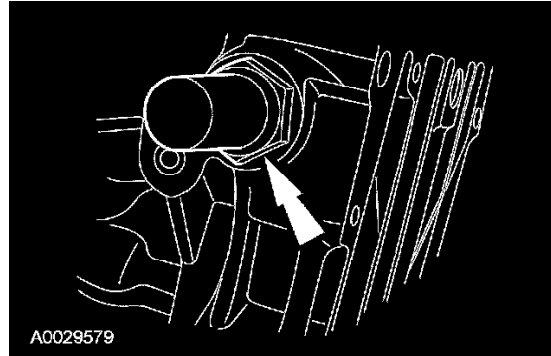
23. Remove the special tool.



24. **NOTE:** Install a new O-ring seal on the tensioner and lubricate with clean engine oil.

Install the LH camshaft tensioner.

- Tighten to **44 Nm (32 ft. lbs.)**.



25. Remove the special tools from the LH cylinder head.
26. Install the engine coolant temperature (ECT) sensor.
27. Install the generator.
28. Install the camshaft roller followers.