

Timing Belt: Service and Repair Installation

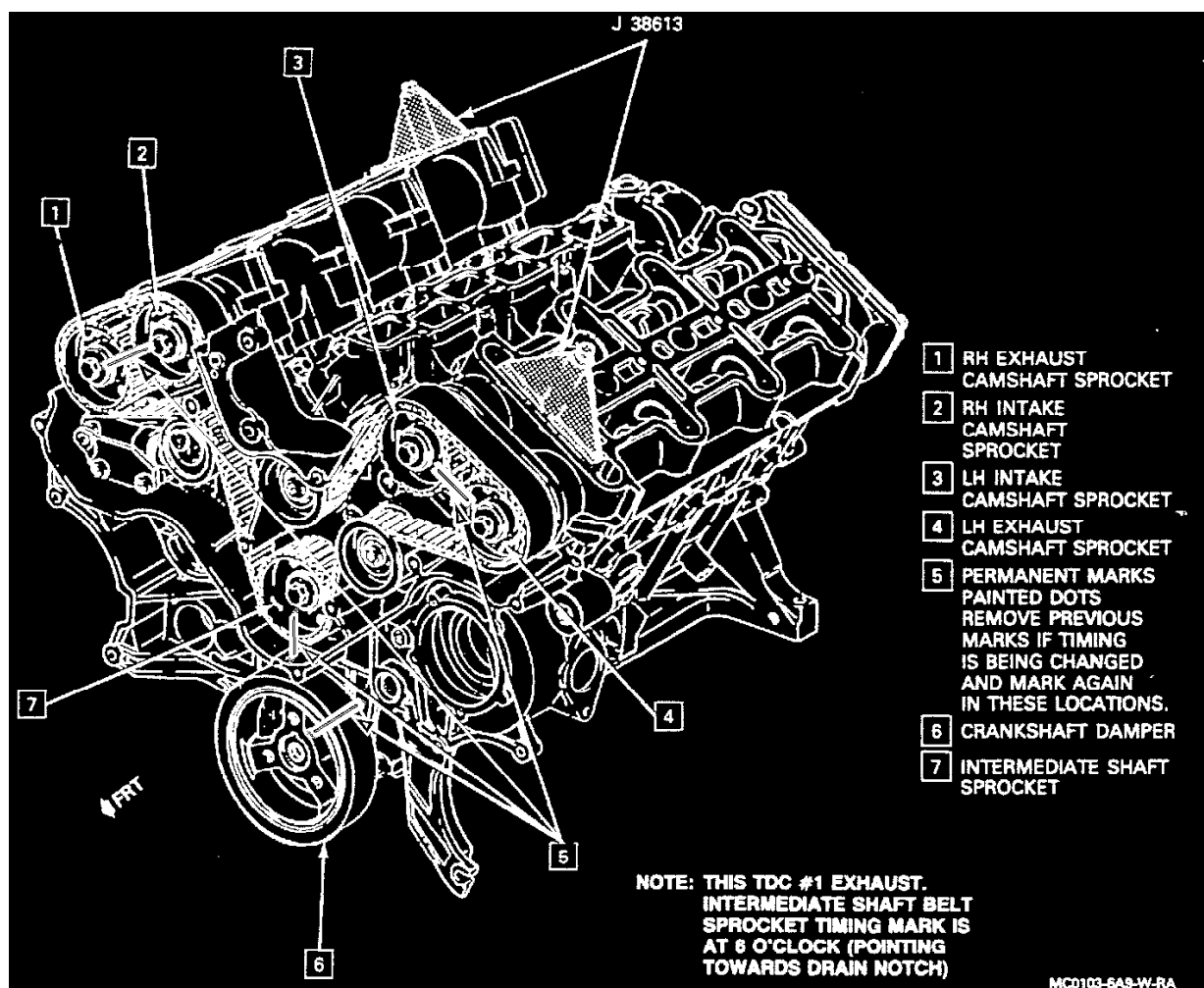


Figure 19. Timing Marks

NOTE: GM does not provide a timing mark diagram for belt installation without using the special tool(s) listed below.

This article has been revised according to the information included in bulletin No: 47-61-34.

CAMSHAFT TIMING - REVISED SERVICE PROCEDURE

INSTALL OR CONNECT

- Camshaft sprockets.
 - ^ 1991-93 camshaft sprockets with washers and new locks finger tight
 - ^ 1994-95 camshaft sprockets with taper lock rings finger tight
- Timing belt in a counterclockwise direction around the sprockets.

IMPORTANT: Make sure timing belt teeth are fully engaged with all sprockets.

- Timing belt tensioner pulley. Tighten: Tensioner pulley bolt to **50 Nm (37 lb ft)**.
- If actuator oil has been lost, fill the actuator with SAE 5W30 Mobile 1 (or equivalent) synthetic engine oil through the end hole. Fill to bottom of plug hole ONLY when actuator is fully retracted and pin is installed.
- Rubber end plug to rear of the actuator assembly. Push until flush and snapped into place. Make sure the end plug has sealed against the case.
- Actuator bushing into side plate.
- Inspect: Bushings and appropriate holes to make sure they are clean. DO NOT lubricate.
- Timing belt actuator and actuator side plate.
 - Tighten: Side plate bolt to **27 Nm (20 lb ft)**.

IMPORTANT: Rotate pulley assembly into belt a maximum of 15 Nm to allow engagement of the actuator shaft into the pulley arm socket.

8. Pull the lock pin and discard. Retorque pulley assembly **15 Nm** counterclockwise to seat pulley into belt.
Tighten: Both right hand (rear bank) camshaft sprocket bolts to **130 Nm (96 lb ft)**.
9. Remove J 38613-A from right hand (rear bank) camshaft carrier.
10. Rotate crankshaft 360 degrees clockwise while looking at front of engine and align crankshaft reference marks.
Inspect: Make sure both right hand (rear bank) camshaft flats are down.
Tighten: Both left hand (front bank) camshaft sprocket bolts to **130 Nm (96 lb ft)**.
11. Remove J 38613-A from left hand (front bank) camshaft carrier.
12. Rotate crankshaft 720 degrees clockwise while looking at front of engine to seat timing belt and verify correct timing.
Inspect: Make sure both camshaft flat-spots are up on one bank and down on the opposing bank.
13. Camshaft carrier covers and bolts.
Tighten: Bolts to **11 Nm (97 lb in)**.
14. Breather hose from rear camshaft cover and crankcase vent from breather manifold.
15. Timing belt covers and bolts.
Tighten: Bolts to **10 Nm (89 lb in)**.
16. Fuel line bracket and bolt.
Tighten: Bolt to **7 Nm (62 lb in)**.
17. Wiring harness cover at right strut tower.
18. Spark plug wires.
19. PCM electrical connectors.
20. Power steering lines to pump.
21. Serpentine belt.
22. Serpentine belt tensioner.
Tighten: Serpentine belt tensioner bolt to **45 Nm (33 lb ft)**.
23. Coolant recovery tank.
24. Upper intake manifold, bolts, and nuts.
Tighten: Bolts and nuts to **27 Nm (22 lb ft)**.
25. Power brake vacuum hose.
26. Wiring loom bracket for rear spark plug wires.
27. Vacuum lines to upper intake manifold tee.
28. Electrical connections to canister purge solenoid and MAP sensor.
29. EGR valve and bolts.
Tighten: Bolts to **25 Nm (18 lb ft)**.
30. Electrical connectors from EGR.
31. PCV valve and vacuum line to throttle body.
32. Heater hose and bracket to lower intake manifold.
33. Fuel mounting bracket and bolt.
34. Fuel lines to fuel rail.
35. Fuel rail cover.
36. Accelerator and cruise control cables to throttle-body.
37. Air cleaner assembly.
38. Refill cooling system.
39. Refill power steering system.
40. Negative battery cable.