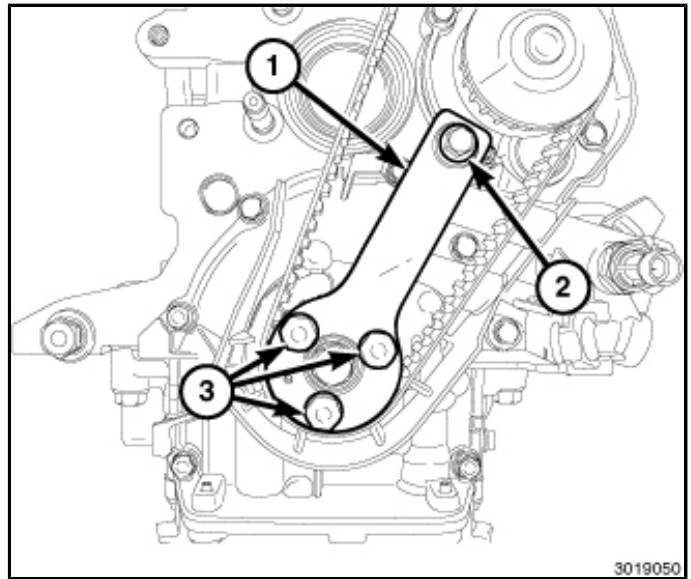
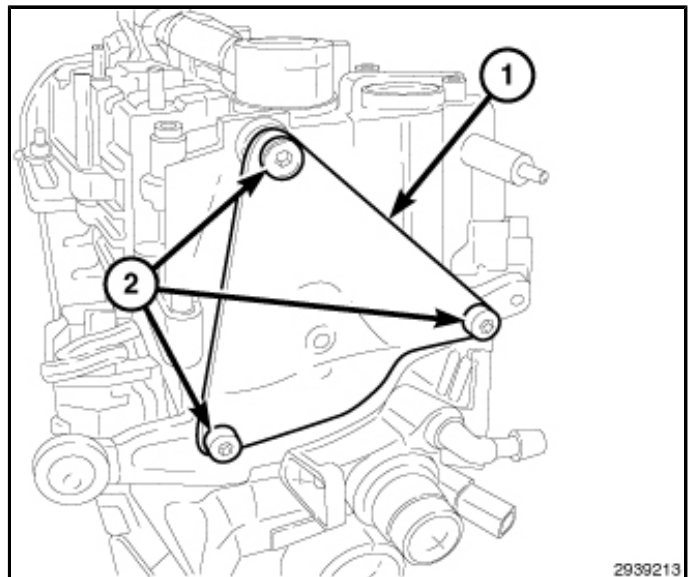


INSTALLATION

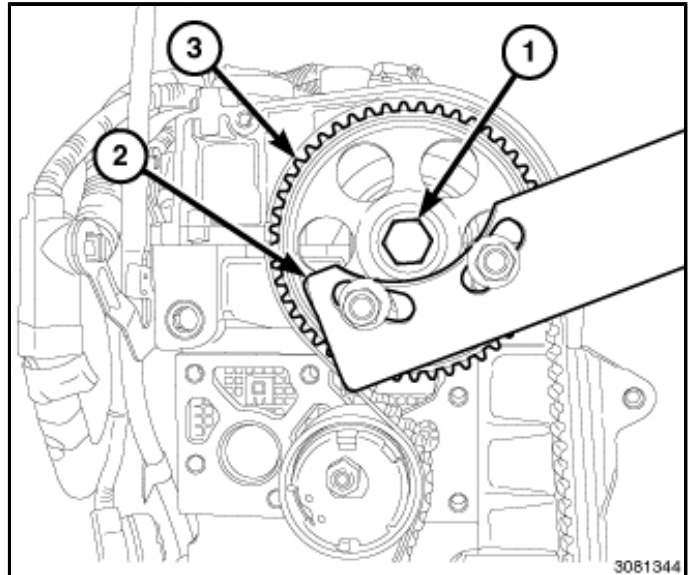
1. If removed, install the [Tool, Crankshaft Timing Locking 10276](#) (1) with three bolts (3) tightened to 25 N·m (18 ft. lbs.) and one bolt (2) tightened to 9 N·m (80 in. lbs.).



2. If removed, install the [Tool, Camshaft Timing Locking 10277](#) (1) to the rear of the camshaft. Install three bolts (2) and tighten to 20 N·m (15 ft. lbs.).

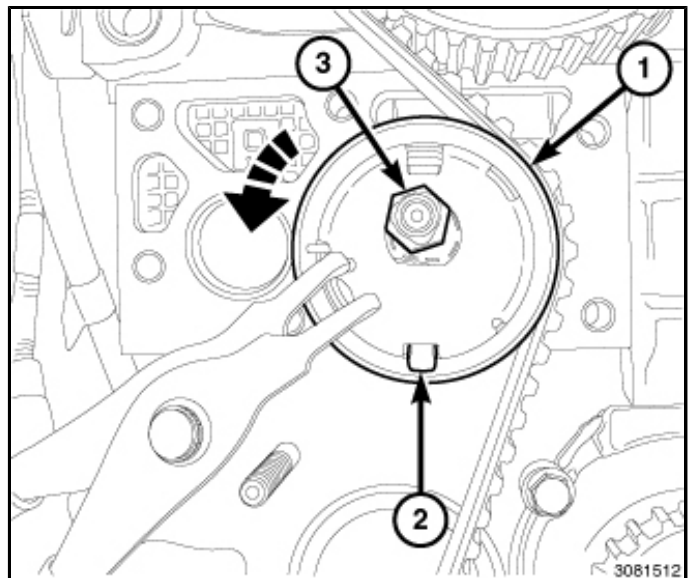


- Use the [Holder, Camshaft Sprocket 6847](#) (2) to hold the camshaft sprocket (3) and loosen the bolt (1). The camshaft sprocket (3) should now be free to rotate on the camshaft.

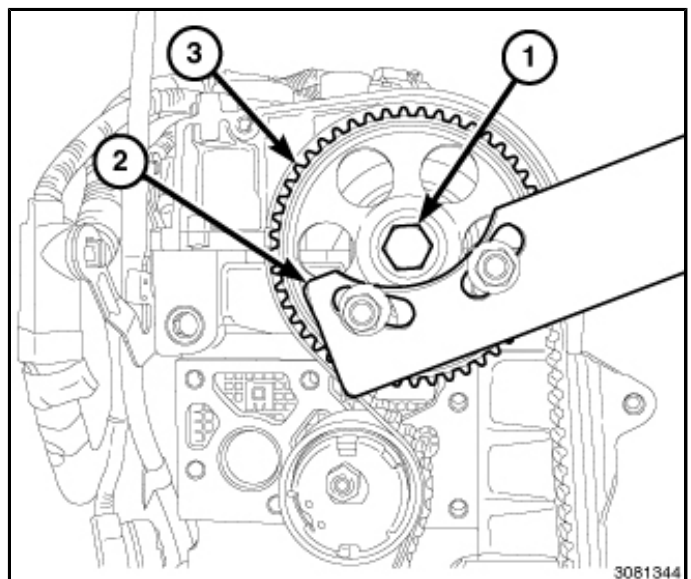


NOTE: If the original timing belt (1) is being reused, install the belt so that it maintains the same direction of rotation as when it was removed.

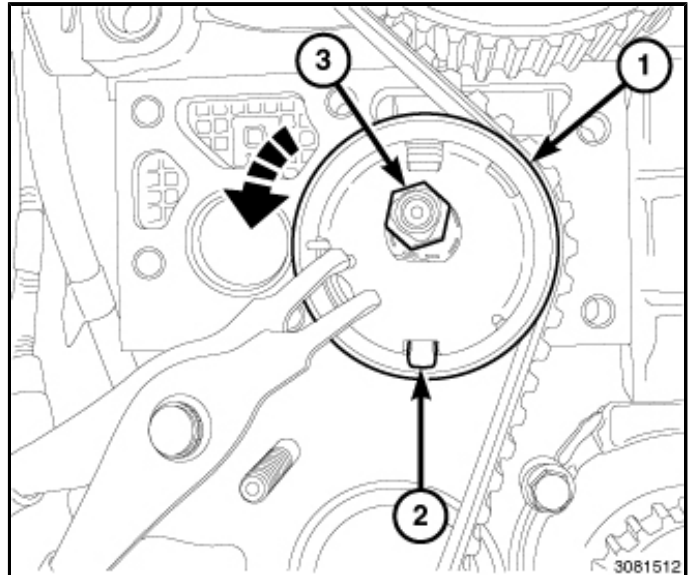
- Install the timing belt starting with the crankshaft sprocket, then the water pump sprocket, finishing with the camshaft sprocket. Install the timing belt starting with the crankshaft sprocket, then the water pump sprocket, finishing with the camshaft sprocket.
- Rotate and adjust the timing tensioner (1) so that the silver tab (2) is centered in the middle of the window. Tighten the lock nut (3) to 28 N·m (21 ft. lbs.).



- Use the [Holder, Camshaft Sprocket 6847](#) (2) to hold the camshaft sprocket (3) and tighten the camshaft sprocket bolt (1) to 120 N·m (88 ft. lbs.).

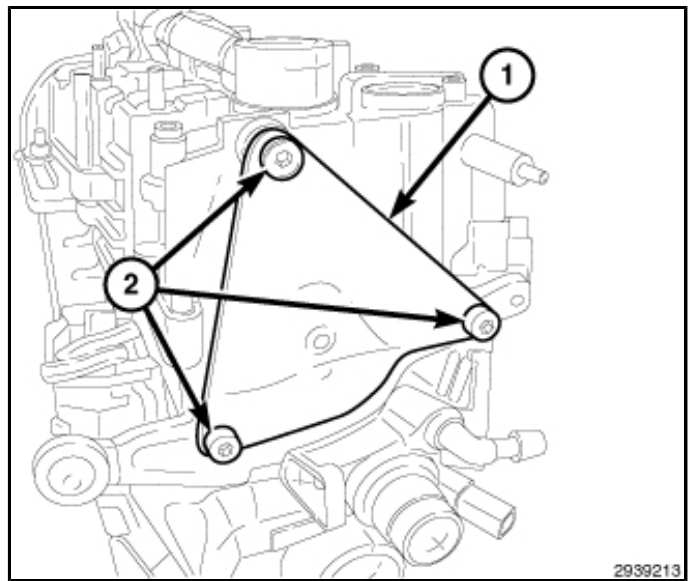


7. Remove the Remove the [Tool, Camshaft Timing Locking 10277](#) and the [Tool, Crankshaft Timing Locking 10276](#) .
8. Rotate the crankshaft clockwise at least two complete revolutions to center the timing belt on the sprockets. Rotate the crankshaft clockwise at least two complete revolutions to center the timing belt on the sprockets.
9. Verify that the silver tab (2) is still centered in the middle of the window. If required, loosen the tensioner lock nut (3), readjust the timing belt tensioner (2) and tighten the lock nut (3) to 28 N·m (21 ft. lbs.).



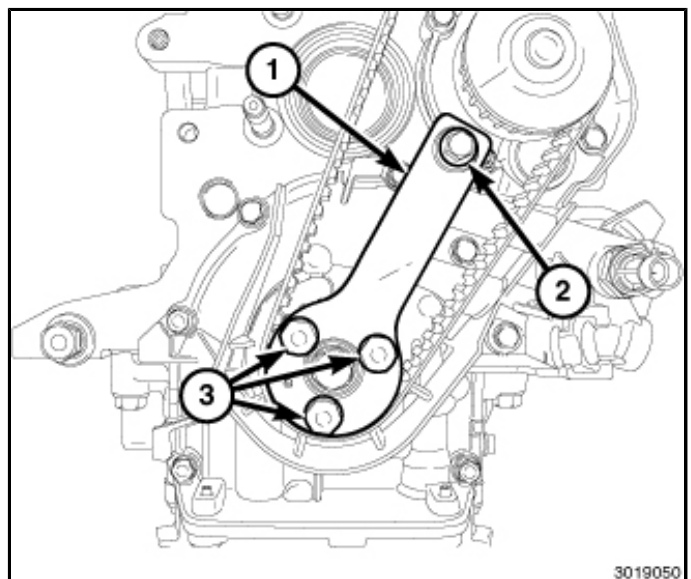
NOTE: Reinstall the timing locking tools to verify correct camshaft timing.

10. Install the [Tool, Camshaft Timing Locking 10277](#) (1) to the rear of the camshaft. Install three bolts (2) and tighten to 20 N·m (15 ft. lbs.).

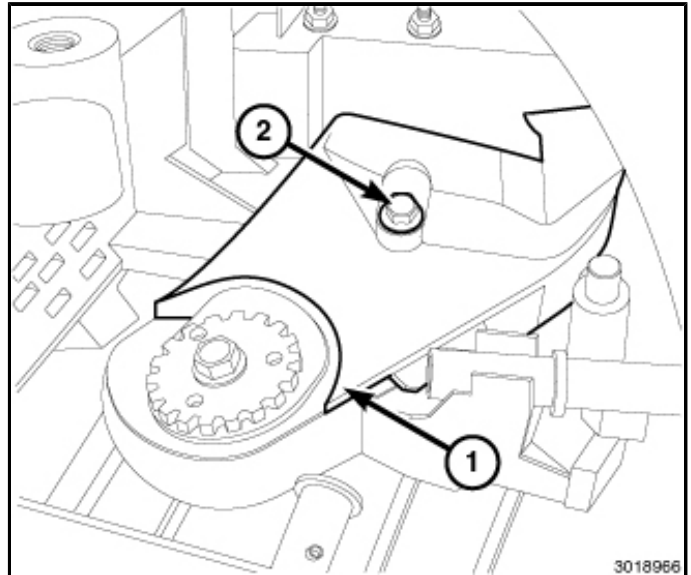


11. Install the [Tool, Crankshaft Timing Locking 10276](#) (1) with three bolts (3) tightened to 25 N·m (18 ft. lbs.) and one bolt (2) tightened to 9 N·m (80 in. lbs.).

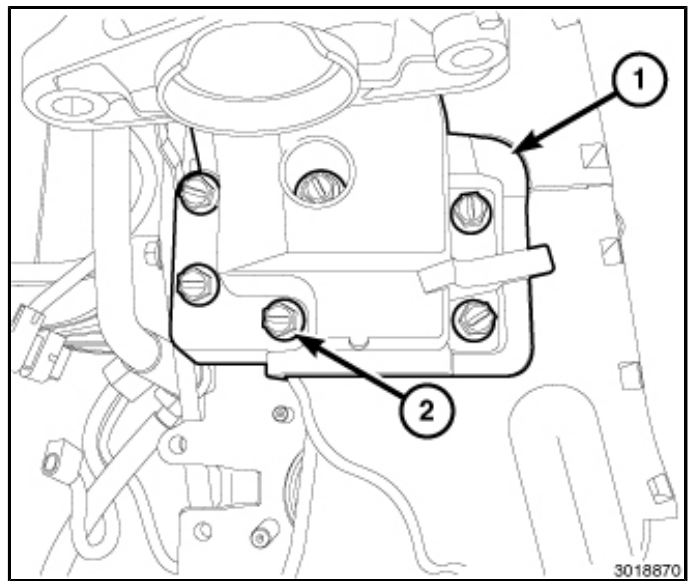
NOTE: If the bolt (2) does not align with the lower timing belt cover mounting boss, the camshaft timing is not correct. Loosen the tensioner lock nut and the camshaft sprocket bolt and repeat this procedure.



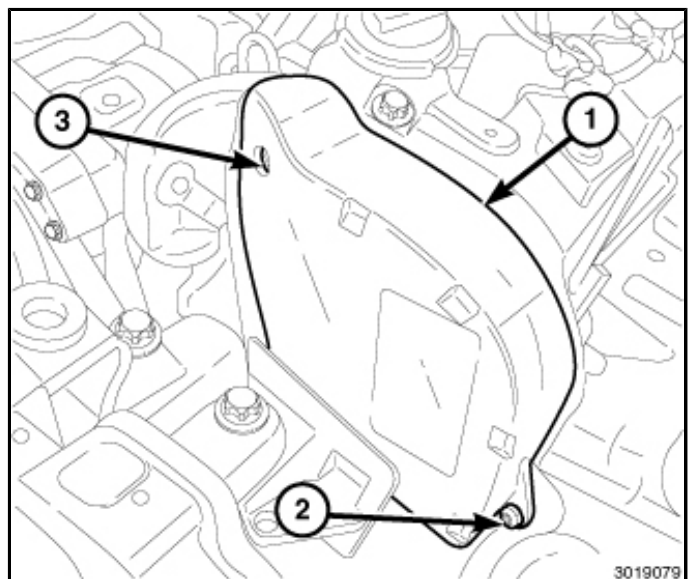
12. Remove the Remove the [Tool, Camshaft Timing Locking 10277](#) and the [Tool, Crankshaft Timing Locking 10276](#) .
13. Install the lower timing belt cover (1) with bolt (2) tightened to 9 N·m (80 in. lbs.).



14. Install the right engine mount bracket (1) with six bolts (2) tightened to 25 N·m (18 ft. lbs.).

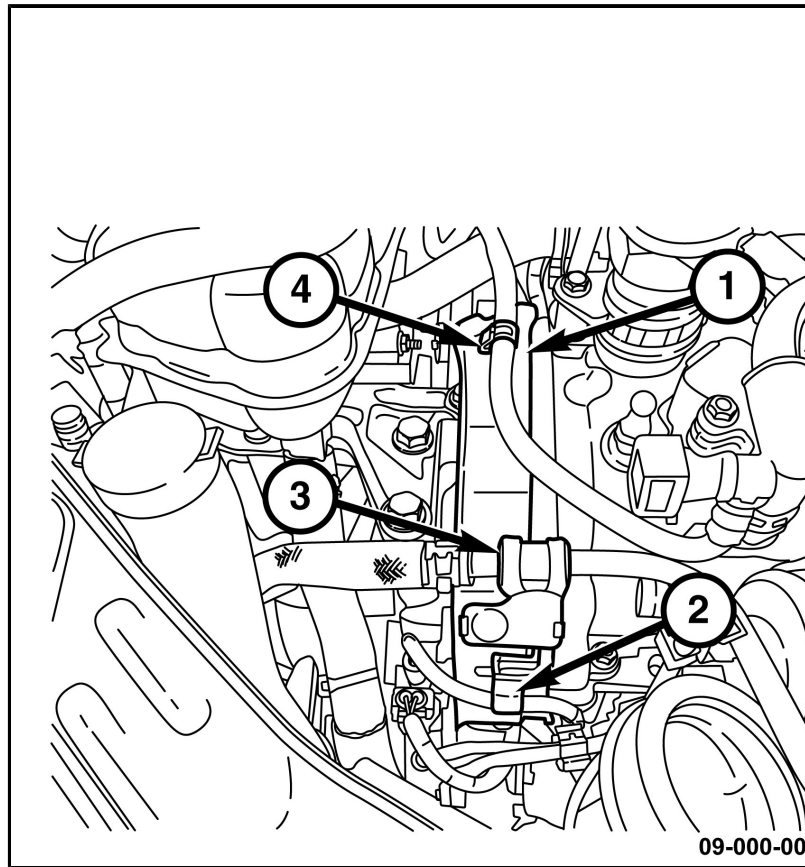


15. Install the upper timing belt cover (1) with two bolts (2 and 3) tightened to 9 N·m (80 in. lbs.).

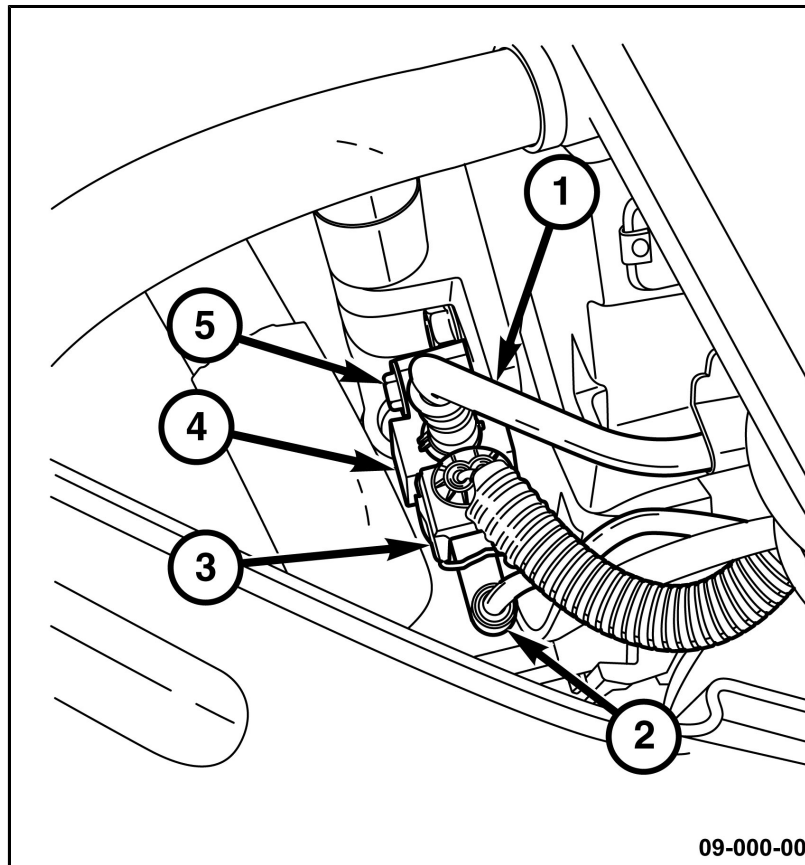


16. Engage the following retainers to the upper timing belt cover (1):

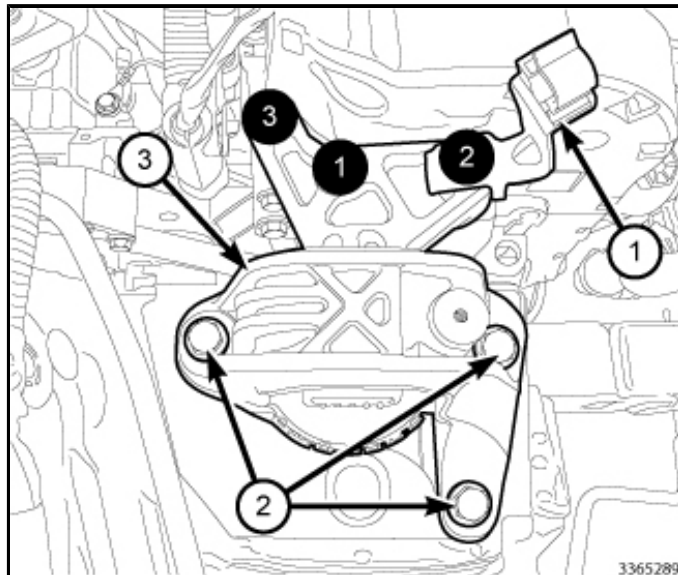
- Wastegate solenoid pressure inlet hose (2).
- After run coolant pump return hose (3).
- Evaporative emissions purge hose (4).



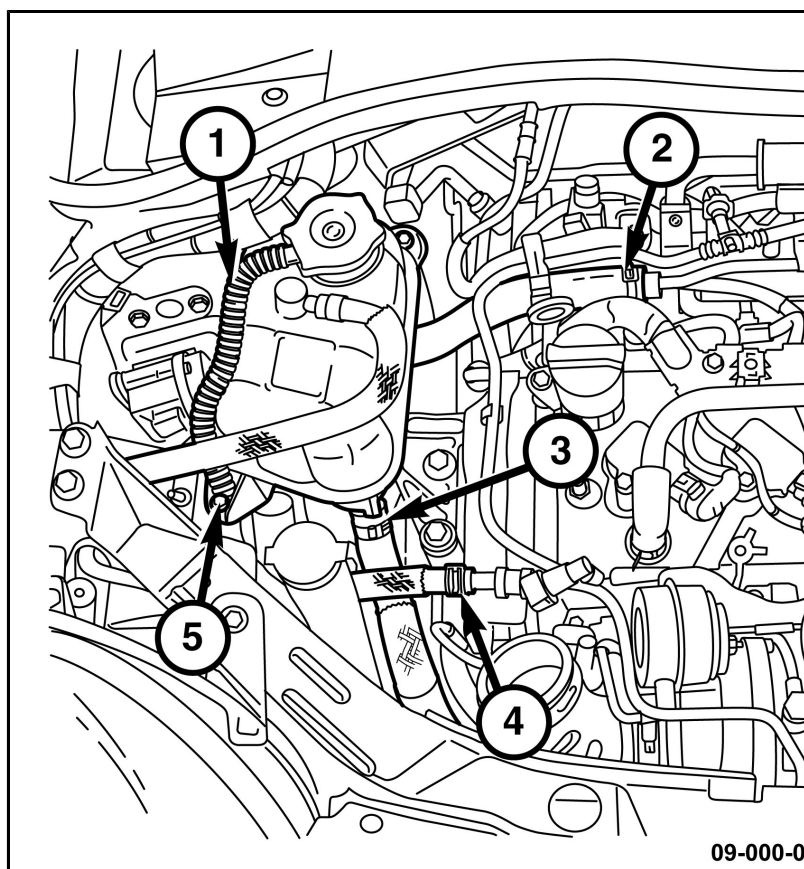
17. Position the turbocharger wastegate solenoid (4). Install the bolt (5) and tighten to 9 N·m (80 in. lbs.).



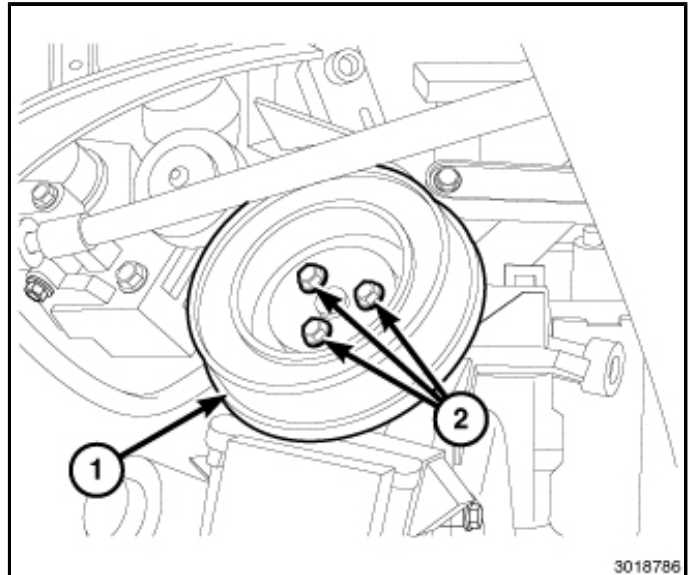
18. Install the right engine mount isolator (3) to the engine mount bracket with three bolts. Tighten the isolator to engine bracket bolts in the sequence shown to 60 N·m (44 ft. lbs.).
19. Install the right engine mount isolator (3) to the body with three bolts (2). Tighten the isolator to body bolts (2) to 60 N·m (44 ft. lbs.). Install the right engine mount isolator (3) to the body with three bolts (2). Tighten the isolator to body bolts (2) to 60 N·m (44 ft. lbs.).
20. Remove the floor jack supporting the engine.



21. Install the pressurized coolant bottle (1). Tighten bolts (5) to 8 N·m (71 in. lbs.). Install the pressurized coolant bottle (1). Tighten bolts (5) to 8 N·m (71 in. lbs.).
22. Connect the coolant hose (3) to the pressurized coolant bottle (1).

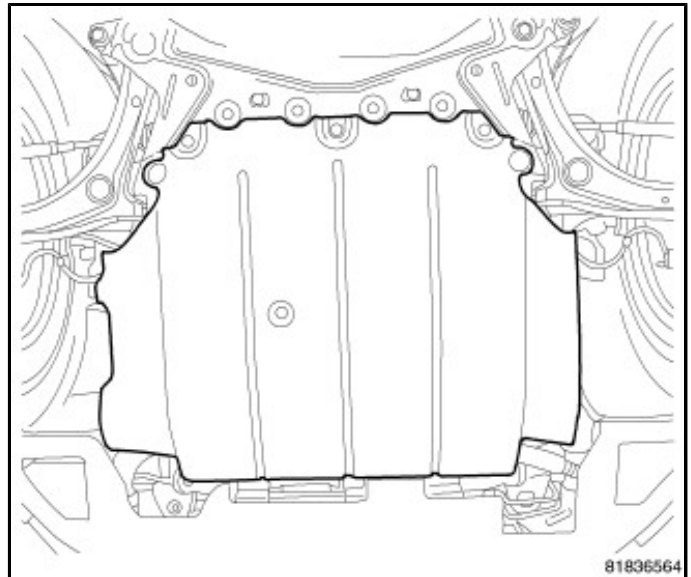


23. Raise and support the vehicle Raise and support the vehicle (Refer to 04 - Vehicle Quick Reference/ Hoisting - Standard Procedure).
24. Install the vibration damper (1) (Refer to 09 - Engine/ Engine Block/DAMPER, Vibration - Installation).

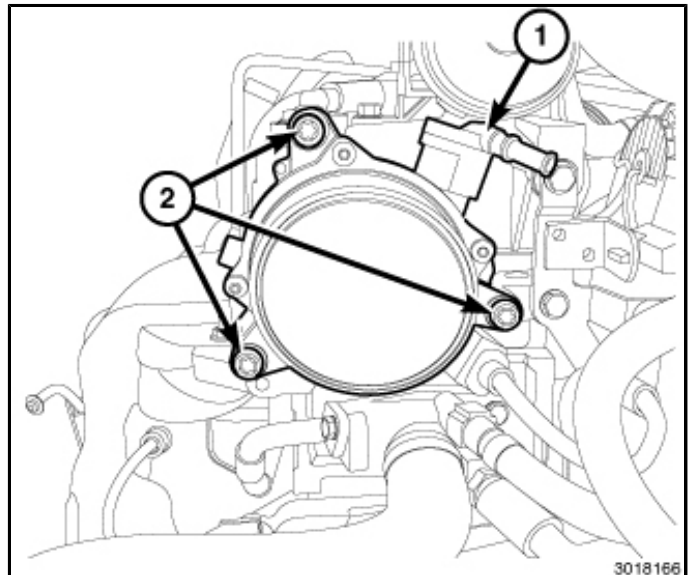


25. Raise and support the vehicle (Refer to 04 - Vehicle Quick Reference/ Hoisting - Standard Procedure).
26. Install the belly pan Install the belly pan (Refer to 13 - Frame and Bumpers/Under Body Protection/BELLY PAN - Installation).
27. Lower the vehicle.

CAUTION: When servicing components near the vacuum pump, avoid contact with the plastic nipple that connects the vacuum pump to the brake booster hose. It is possible to crack the plastic nipple resulting in a brake booster vacuum leak.



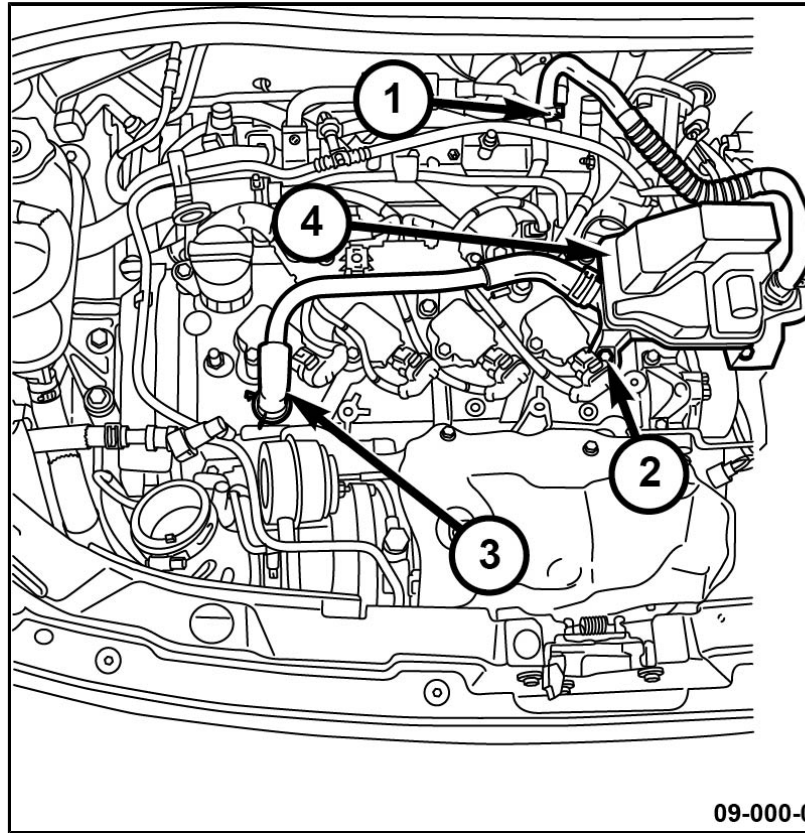
28. Install the vacuum pump (1) (Refer to 09 - Engine/ Cylinder Head/PUMP, Vacuum/Installation).



29. Install the oil separator housing (4) to the cylinder head cover with three bolts (2) tightened to 13 N·m (115 in. lbs.). Install the oil separator housing (4) to the cylinder head cover with three bolts (2) tightened to 13 N·m (115 in. lbs.).

30. Connect the vent hose (3) to the cylinder head cover. Connect the vent hose (3) to the cylinder head cover.

31. Connect the PCV hose (1) to the intake manifold.



32. Install the air cleaner body (1) Install the air cleaner body (1) (Refer to 09 - Engine/Air Intake System/ BODY, Air Cleaner - Installation).

33. Fill cooling system Fill cooling system (Refer to 07 - Cooling/Standard Procedure).

34. Connect the negative battery cable and tighten nut to 5 N·m (45 in. lbs.). Connect the negative battery cable and tighten nut to 5 N·m (45 in. lbs.).

35. Start and run the engine until it reaches normal operating temperature. Check cooling system for correct fluid level Start and run the engine until it reaches normal operating temperature. Check cooling system for correct fluid level (Refer to 07 - Cooling - Standard Procedure).

36. The Cam/Crank Variation Relearn procedure must be performed using the scan tool anytime there has been a repair/replacement made to a powertrain system, for example: flywheel, valvetrain, camshaft and/or crankshaft sensors or components (Refer to 28 - DTC- Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

