

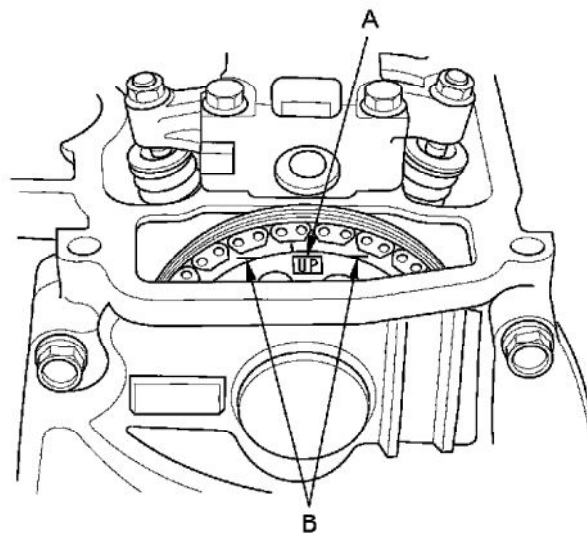
Timing Chain: Service and Repair

Cam Chain Removal

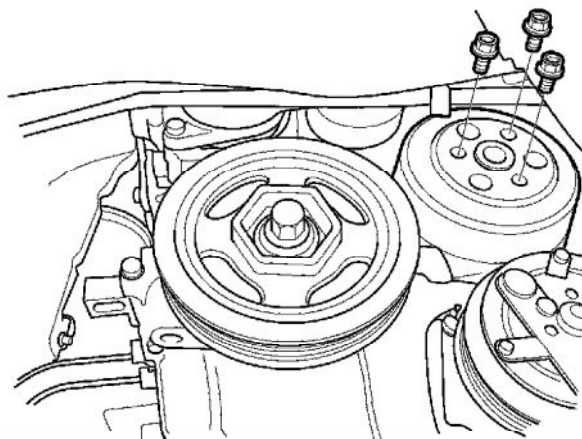
Cam Chain Removal

NOTE: Keep the cam chain away from magnetic fields.

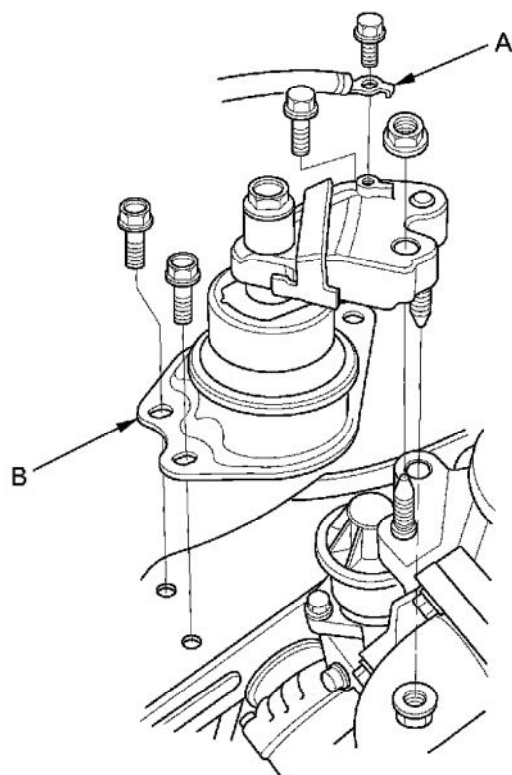
1. Remove the cylinder head cover See: Cylinder Head Assembly/Valve Cover/Service and Repair/Cylinder Head Cover Removal.
2. Set the No. 1 piston at top dead center (TDC). The "UP" mark (A) on the camshaft sprocket should be at the top, and the TDC grooves (B) on the camshaft sprocket should line up with the top edge of the head.



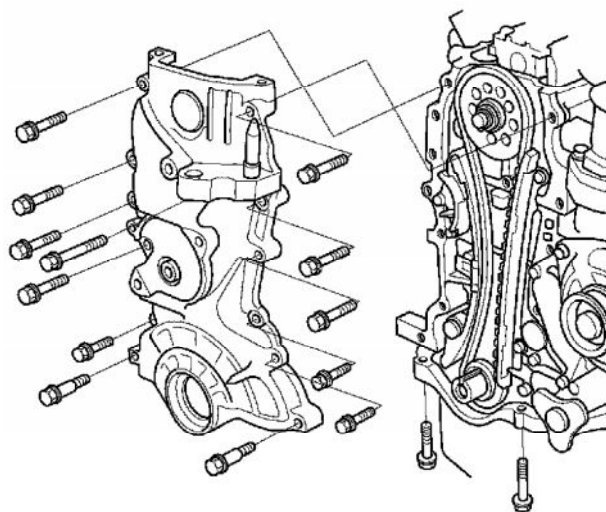
3. Remove the right front wheel.
4. Remove the splash shield.
5. Loosen the water pump pulley mounting bolts.
6. Remove the drive belt See: Drive Belts, Mounts, Brackets and Accessories/Drive Belt/Service and Repair.
7. Remove the water pump pulley.



8. Remove the crankshaft pulley See: Cylinder Block Assembly/Harmonic Balancer - Crankshaft Pulley/Service and Repair.
9. Remove the drive belt auto-tensioner See: Drive Belts, Mounts, Brackets and Accessories/Drive Belt Tensioner/Service and Repair/Drive Belt Auto-Tensioner Removal/Installation.
10. Support the engine with a jack and a wood block under the oil pan.
11. Remove the ground cable (A), then remove the side engine mount/bracket assembly (B).



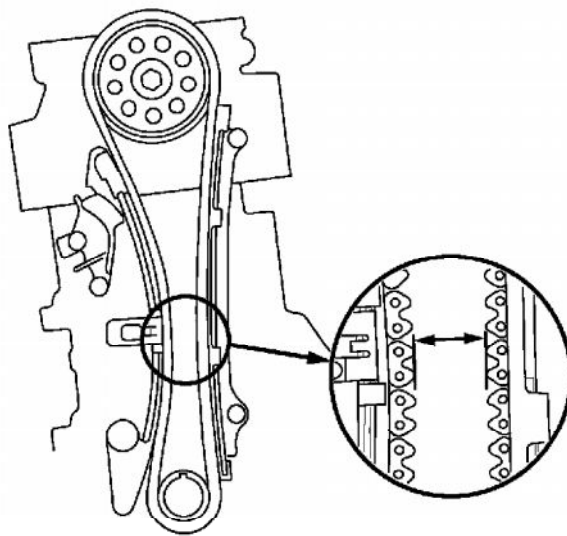
12. Remove the chain case.



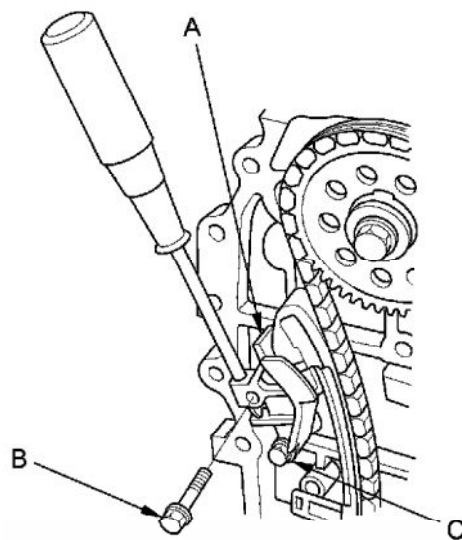
13. Measure the cam chain separation. If the distance is less than the service limit, replace the cam chain and cam chain tensioner.

Standard Distance: 19 mm (0.75 in)

Service Limit: 15 mm (0.59 in)

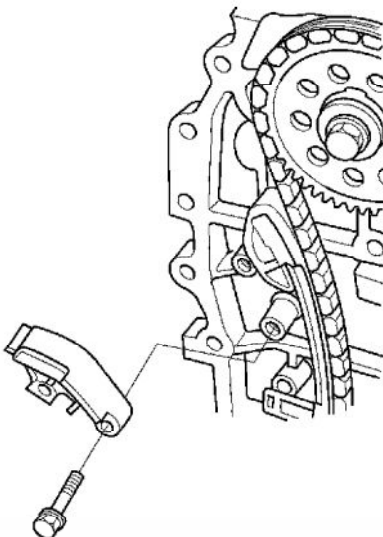


14. Apply new engine oil to the sliding surface of the cam chain tensioner slider (A).

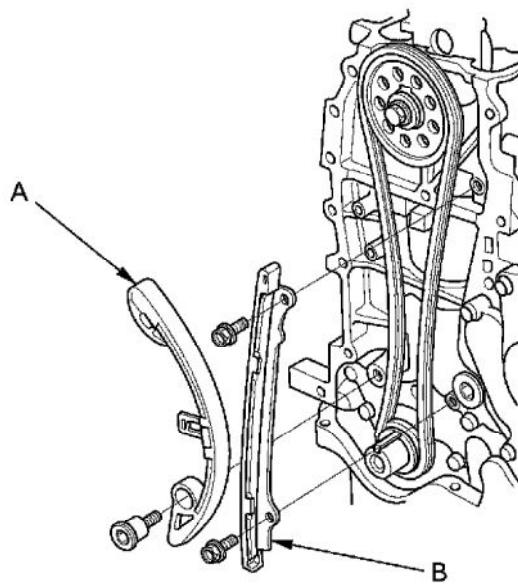


15. Hold the cam chain tensioner slider with the screwdriver, then remove the bolt (B), and loosen the bolt (C).

16. Remove the cam chain tensioner slider.



17. Remove the cam chain tensioner (A) and the cam chain guide (B).



18. Remove the cam chain.

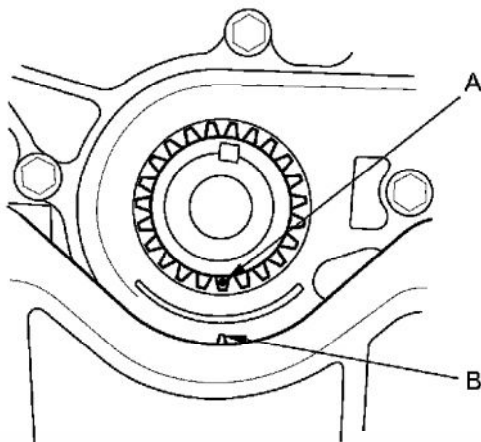
Timing Chain: Service and Repair

Cam Chain Installation

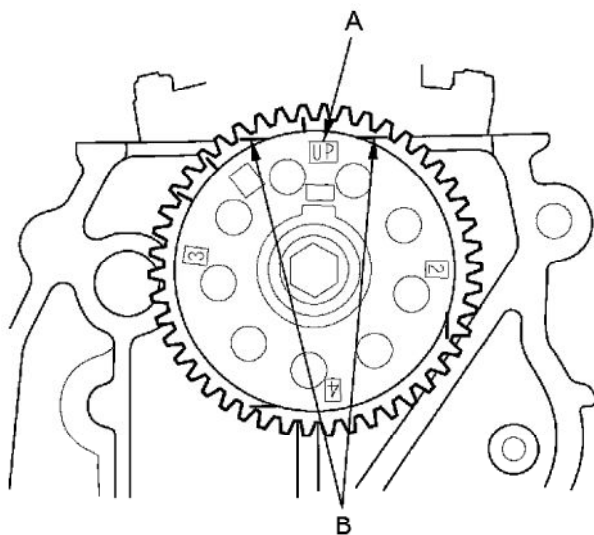
Cam Chain Installation

NOTE: Keep the cam chain away from magnetic fields.

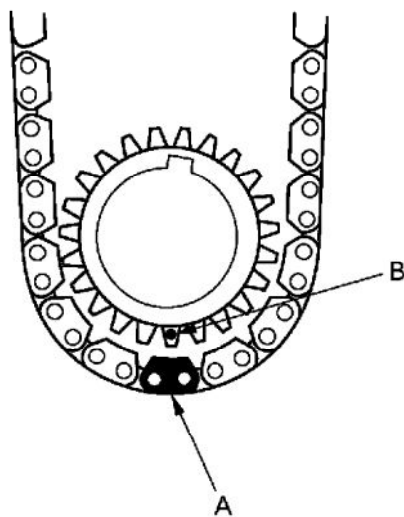
1. Set the crankshaft to top dead center (TDC). Align the TDC mark (A) on the crankshaft sprocket with the pointer (B) on the oil pump.



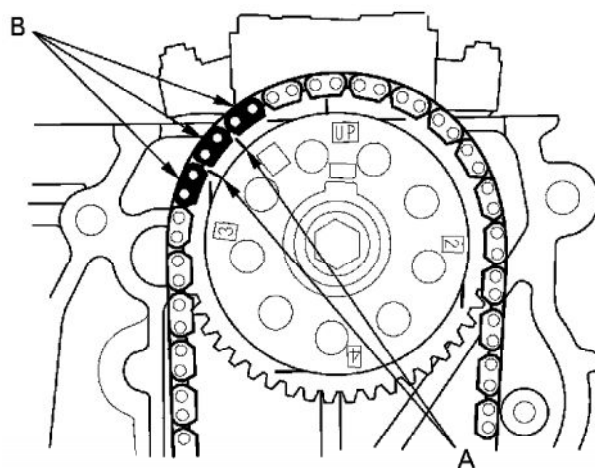
2. Remove the crankshaft sprocket.
3. Set the camshaft to TDC. The "UP" mark (A) on the camshaft sprocket should be at the top, and the TDC grooves (B) on the camshaft sprocket should line up with the top edge of the head.



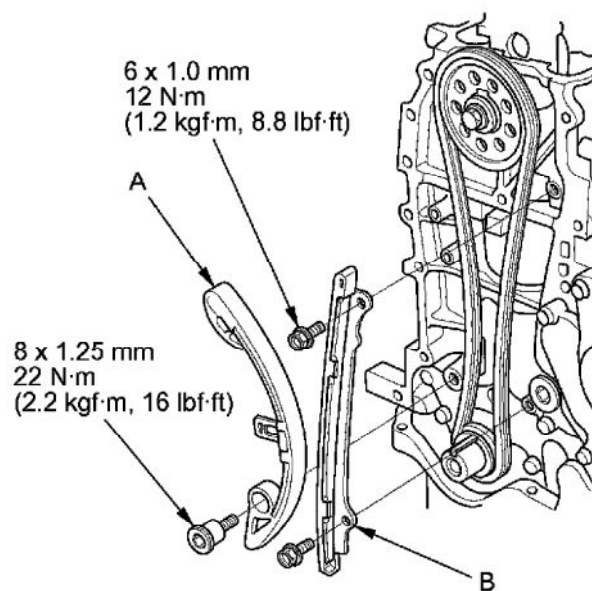
4. Install the cam chain on the crankshaft sprocket with the colored piece (A) aligned with the TDC mark (B) on the crankshaft sprocket, then install the crankshaft sprocket to the crankshaft.



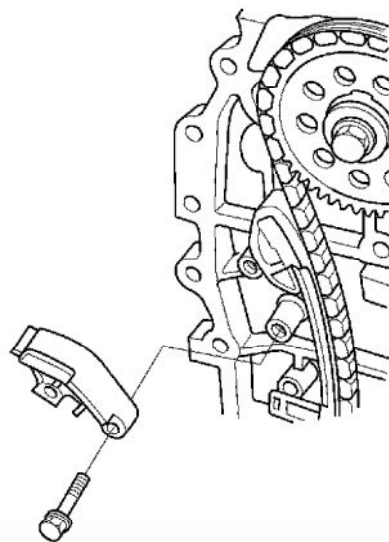
5. Install the cam chain on the camshaft sprocket with the pointers (A) aligned with the three colored pieces (B) as shown.



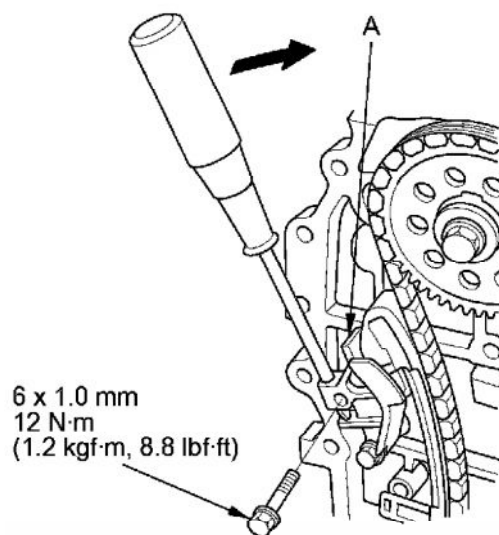
6. Install the cam chain tensioner (A) and the cam chain guide (B).



7. Install the cam chain tensioner slider, and loosely tighten the bolt.



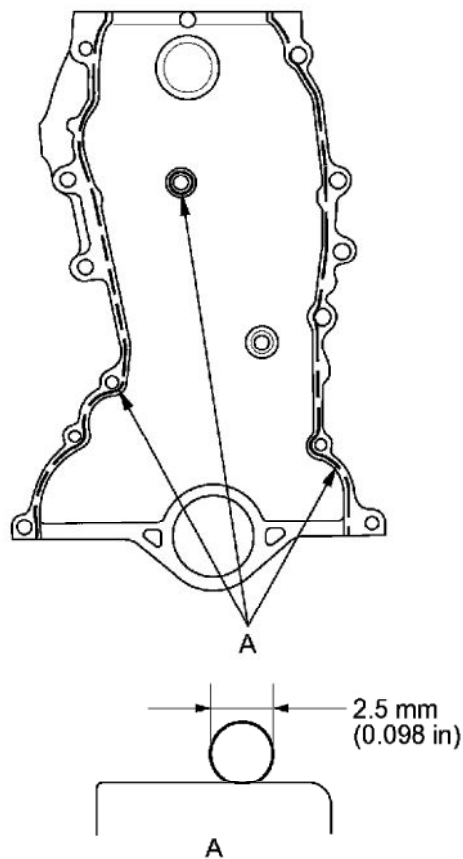
8. Apply new engine oil to the sliding surface of the cam chain tensioner slider (A).



9. Rotate the cam chain tensioner slider clockwise to compress the cam chain tensioner, and install the remaining bolt, then tighten the bolts.
10. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal See: Seals and Gaskets/Front Crankshaft Seal/Service and Repair.
11. Remove the all of the old liquid gasket from the chain case mating surfaces, the bolts, and the bolt holes.
12. Clean and dry the chain case mating surfaces.
13. Apply liquid gasket (P/N 08717-0004, 08718-0003, or 08718-0009) to the cylinder head and the engine block mating surfaces of the cam chain case and to the inside edge of the bolt holes. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

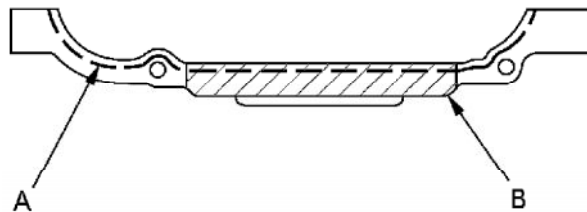
- Apply liquid gasket about 2.5 mm (0.098 in) diameter bead along the broken line (A).
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



14. Apply liquid gasket (P/N 08717-0004, 08718-0003, or 08718-0009) to the oil pan mating surface of the cam chain case and to the inside edge of the bolt holes. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

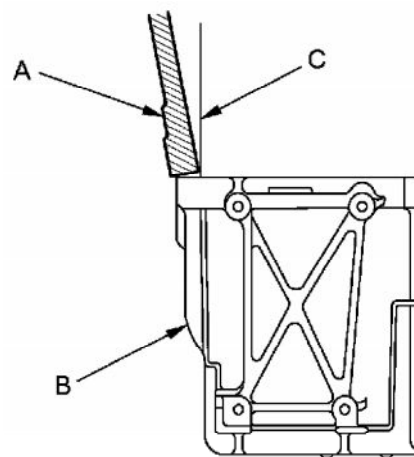
- Apply liquid gasket about 2.5 mm (0.098 in) diameter bead along the broken line (A).
- Apply liquid gasket about 5.0 mm (0.20 in) diameter bead to the shaded area (B).
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



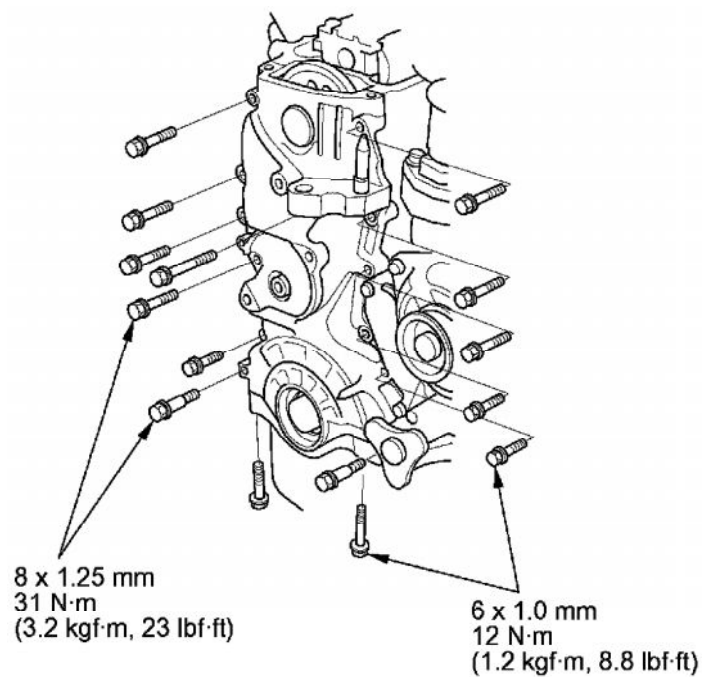
15. Set the edge of the chain case (A) to the edge of the oil pan (B), then install the chain case on the engine block (C).

NOTE:

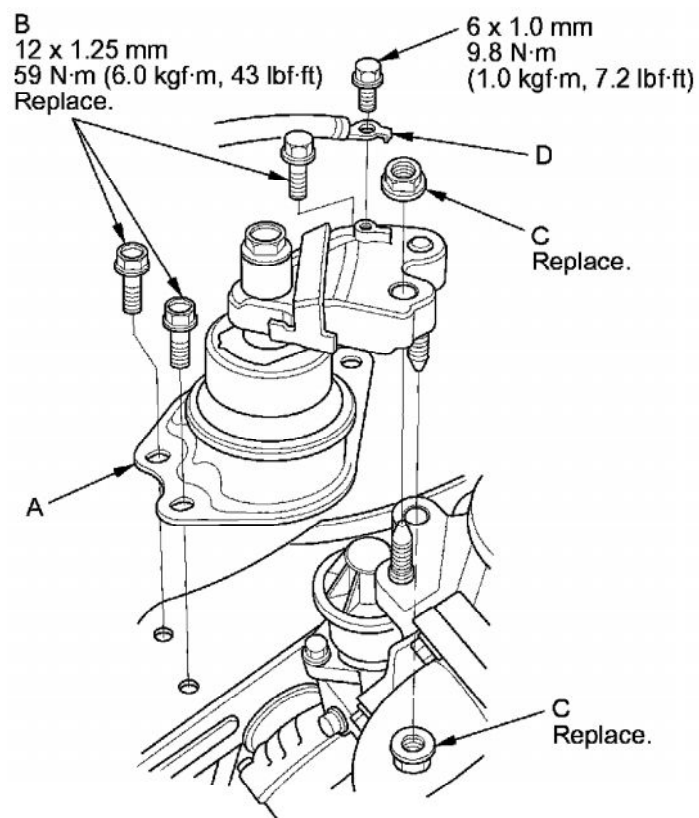
- When installing the chain case, do not slide the bottom surface onto the oil pan mounting surface.
- Wait at least 30 minutes before filling the engine with oil.
- Do not run the engine for at least 3 hours after installing the chain case.



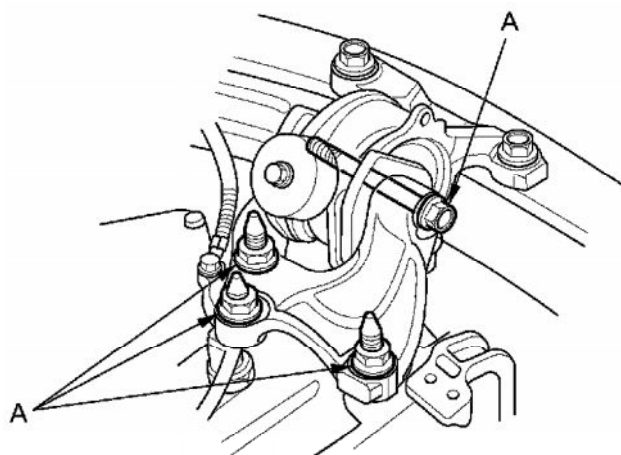
16. Tighten the chain case mounting bolts. Wipe off the excess liquid gasket on the oil pan and the chain case mating area.

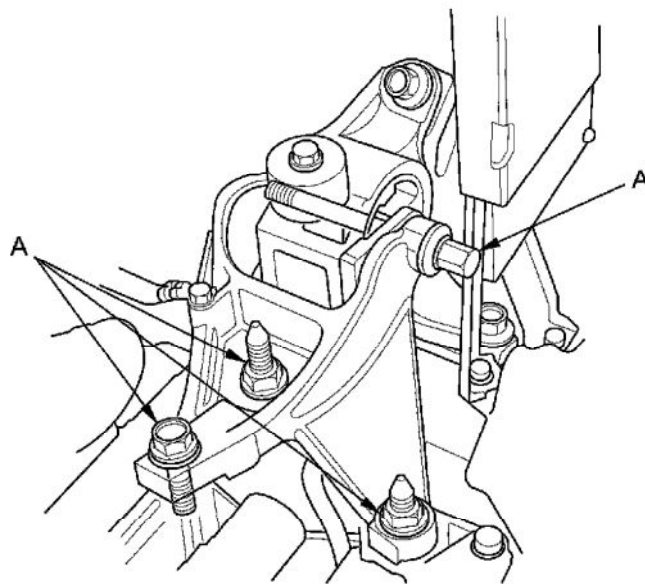


17. Install the side engine mount/bracket assembly (A), then tighten the new side engine mount/bracket assembly mounting bolts (B).



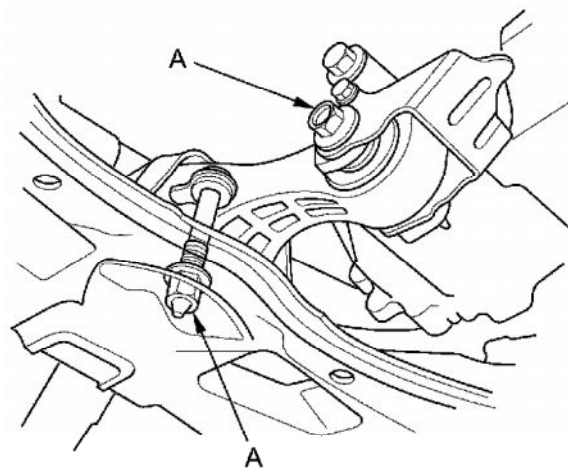
18. Loosely tighten the new side engine mount/bracket assembly mounting nuts (C).
19. Install the ground cable (D).
20. Remove the air cleaner housing assembly See: Tune-up and Engine Performance Checks/Air Cleaner Housing/Service and Repair.
21. Loosen the transmission mount bracket mounting bolts and nuts (A).

M/T model**A/T model**

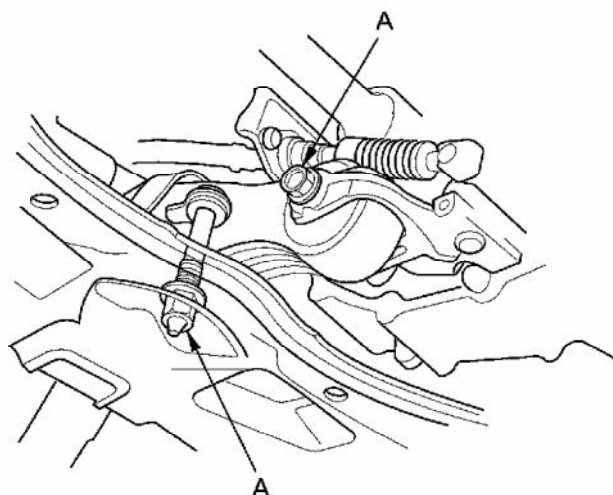


- 22. Raise the vehicle on the lift to full height.
- 23. Loosen the torque rod mounting bolt and nut (A).

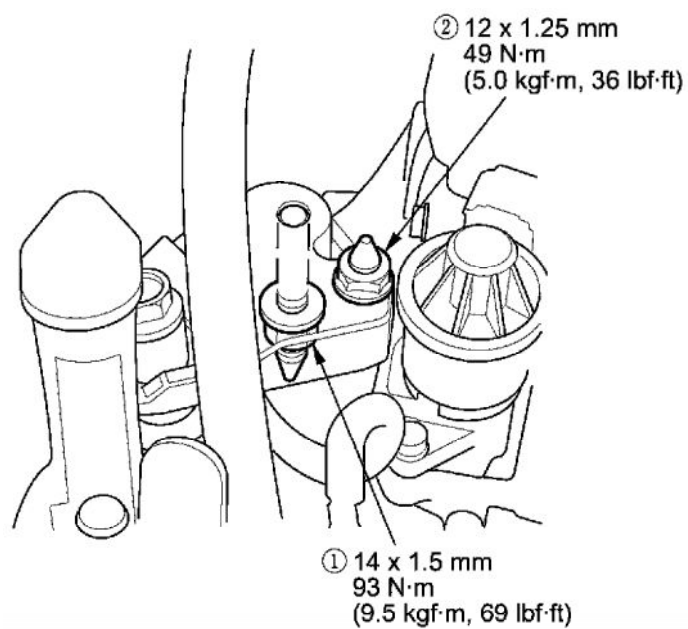
M/T model



A/T model

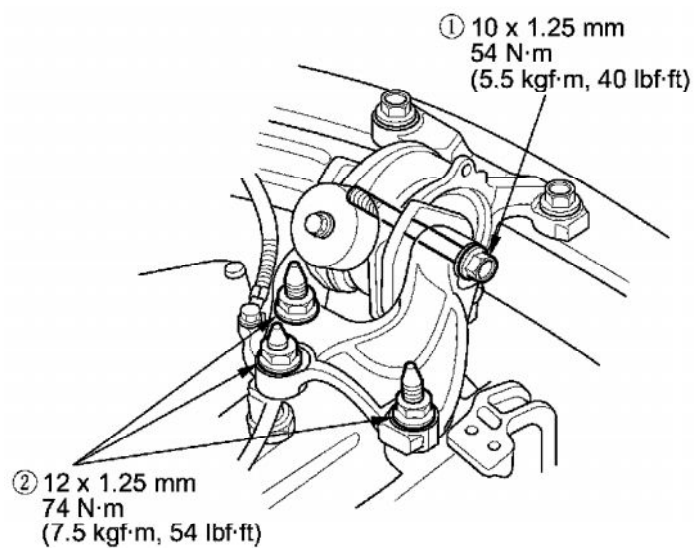


- 24. Lower the vehicle on the lift.
- 25. Tighten the side engine mount/bracket assembly mounting nuts in the numbered sequence shown.

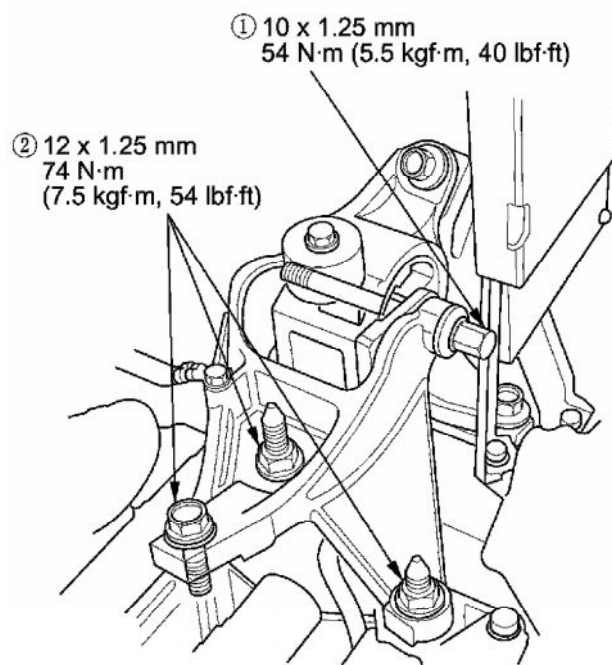


26. Tighten the transmission mount mounting bolts and nuts in the numbered sequence shown.

M/T model

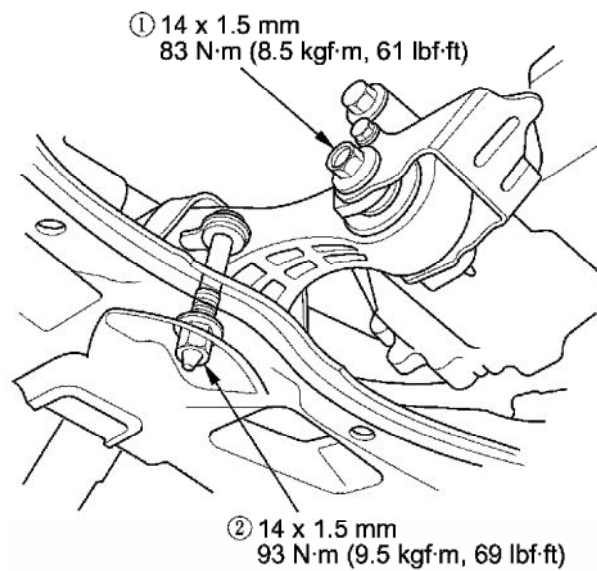


A/T model

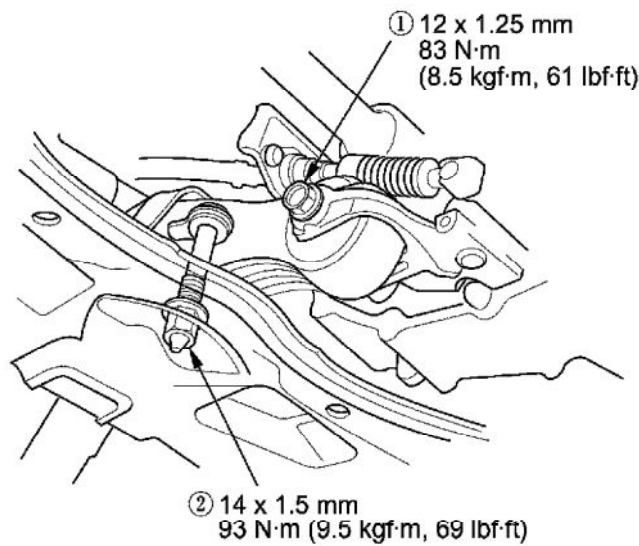


27. Raise the vehicle on the lift to full height.
28. Tighten the torque rod mounting bolt and nut in the numbered sequence shown.

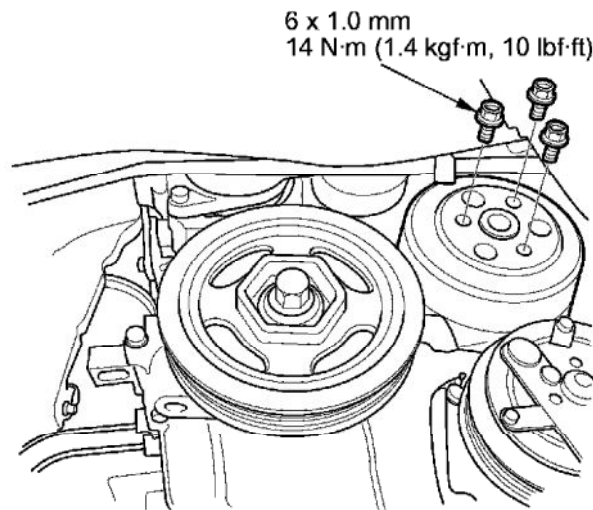
M/T model



A/T model



29. Lower the vehicle on the lift.
30. Install the air cleaner housing assembly See: Tune-up and Engine Performance Checks/Air Cleaner Housing/Service and Repair.
31. Install the cylinder head cover See: Cylinder Head Assembly/Valve Cover/Service and Repair/Cylinder Head Cover Installation.
32. Install the drive belt auto-tensioner See: Drive Belts, Mounts, Brackets and Accessories/Drive Belt Tensioner/Service and Repair/Drive Belt Auto-Tensioner Removal/Installation.
33. Install the crankshaft pulley See: Cylinder Block Assembly/Harmonic Balancer - Crankshaft Pulley/Service and Repair.
34. Install the water pump pulley.



35. Install the drive belt See: Drive Belts, Mounts, Brackets and Accessories/Drive Belt/Service and Repair.
36. Tighten the water pump pulley mounting bolts.
37. Install the splash shield.
38. Install the right front wheel.
39. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure See: Powertrain Management/Computers and Control Systems/Testing and Inspection/Initial Inspection and Diagnostic Overview.