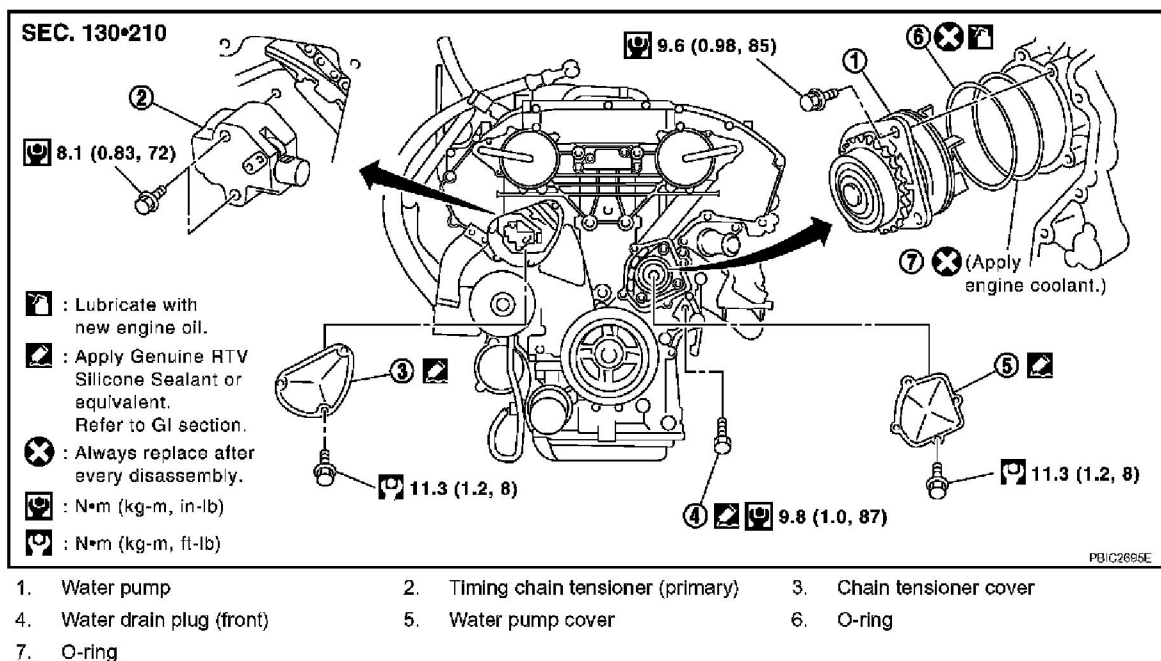


Water Pump: Service and Repair

WATER PUMP



Removal and Installation

CAUTION:

- When removing water pump assembly, be careful not to get engine coolant on drive belt.
- Water pump cannot be disassembled and should be replaced as a unit.
- After installing water pump, connect hose and clamp securely, then check for leaks using the radiator cap tester (commercial service tool) and the radiator cap tester adapter [SST: EG17650301 (333984-A)].

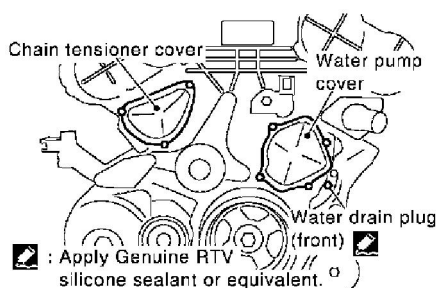
REMOVAL

1. Remove engine cover. Refer to "INTAKE MANIFOLD COLLECTOR".
2. Remove air duct (inlet) and radiator cover grills (right and left sides). Refer to "AIR CLEANER AND AIR DUCT".
3. Remove undercover and splash guard (RH).
4. Drain engine coolant from radiator. Refer to "Changing Engine Coolant".

CAUTION:

- Perform this step when the engine is cold.
- Do not spill engine coolant on drive belts.

5. Remove drive belts. Refer to "DRIVE BELTS".
6. Remove reservoir tank of radiator. Refer to "RADIATOR".
7. Remove reservoir tank of power steering oil pump with piping connected, and move it to aside. Refer to "HYDRAULIC LINE".
8. Support oil pan (lower) bottom with transmission jack.
9. Remove RH engine mounting insulator and RH engine mounting bracket. Refer to "ENGINE ASSEMBLY".

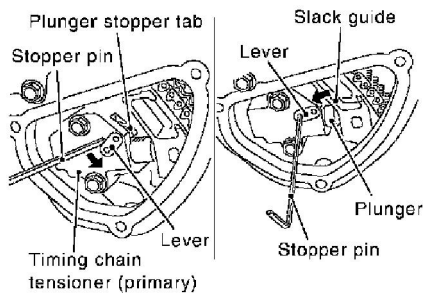


10. Remove water drain plug (front) on water pump side of cylinder block to drain engine coolant from engine inside.
11. Remove chain tensioner cover and water pump cover from front timing chain case.

- Use the seal cutter [SST: KV10111100 (J37228)] to cut liquid gasket for removal.

12. Remove idler pulley and bracket. Refer to "TIMING CHAIN".

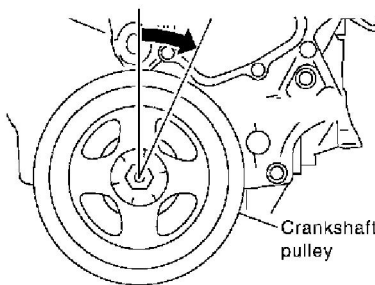
13. Remove timing chain tensioner (primary) as follows:



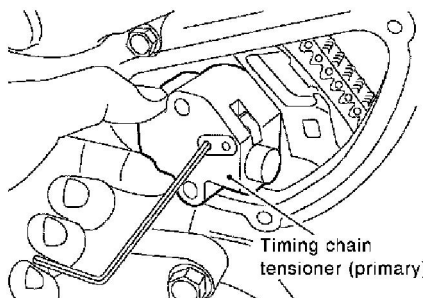
- a. Pull lever down and release plunger stopper tab.
 - Plunger stopper tab can be pushed up to release (coaxial structure with lever).
- b. Insert stopper pin into tensioner body hole to hold lever, and keep tab released.

NOTE: An allen wrench [2.5 mm (0.098 inch)] is used for the stopper pin as an example.

- c. Insert plunger into tensioner body by pressing slack guide.
- d. Keep slack guide pressed and hold plunger in by pushing stopper pin through the lever hole and tensioner body hole.



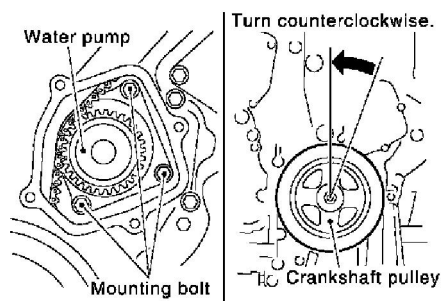
- e. Turn crankshaft pulley clockwise so that timing chain on the timing chain tensioner (primary) side is loose.



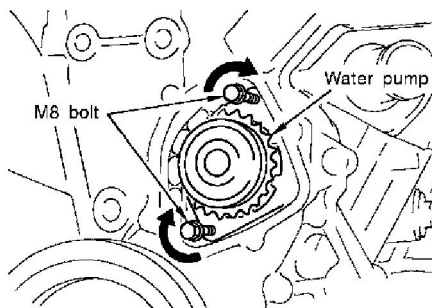
- f. Remove mounting bolts and remove timing chain tensioner (primary).

CAUTION: Be careful not to drop mounting bolts inside timing chain case.

14. Remove water pump as follows:



- a. Remove three water pump mounting bolts. Secure a gap between water pump gear and timing chain, by turning crankshaft pulley counterclockwise until timing chain looseness on water pump sprocket becomes maximum.



- b. Screw M8 bolts [pitch: **1.25 mm (0.049 inch)** length: **approximately 50 mm (1.97 inch)**] into water pumps upper and lower mounting bolt holes until they reach timing chain case. Then, alternately tighten each bolt for a half turn, and pull out water pump.

CAUTION:

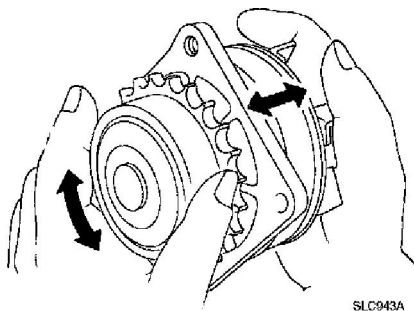
- Pull straight out while preventing vane from contacting socket in installation area.
- Remove water pump without causing sprocket to contact timing chain.

- c. Remove M8 bolts and O-rings from water pump.

CAUTION: Do not disassemble water pump.

INSPECTION AFTER REMOVAL

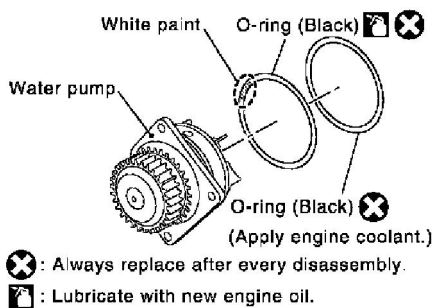
- Check for badly rusted or corroded water pump body assembly.



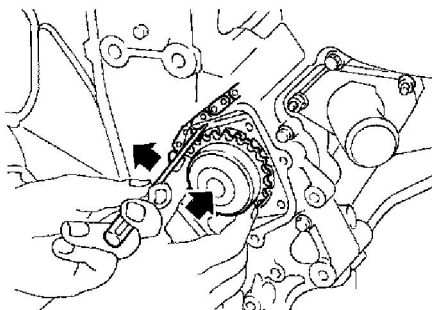
- Check for rough operation due to excessive end play.
- If anything is found, replace water pump.

INSTALLATION

1. Install new O-rings to water pump.



- Apply engine oil and engine coolant to O-rings as shown in the figure.
- Locate O-ring with white paint mark to engine front side.



2. Install water pump.

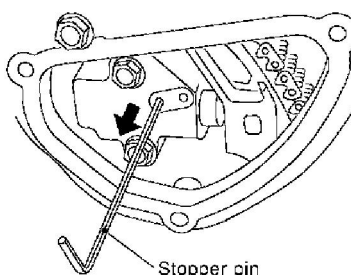
CAUTION: Do not allow cylinder block to nip O-rings when installing water pump.

- Check that timing chain and water pump sprocket are engaged.
- Insert water pump by tightening mounting bolts alternately and evenly.

3. Install timing chain tensioner (primary) as follows:

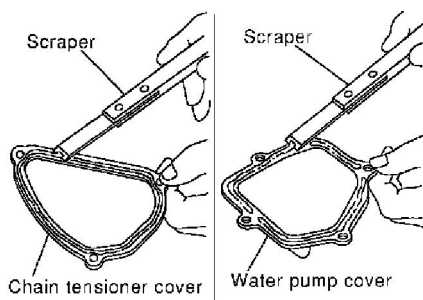
- Remove dust and foreign material completely from backside of timing chain tensioner (primary) and from installation area of rear timing chain case.
- Turn crankshaft pulley clockwise so that timing chain on the timing chain tensioner (primary) side is loose.
- Install timing chain tensioner (primary) with its stopper pin attached.

CAUTION: Be careful not to drop mounting bolts inside timing chain case.

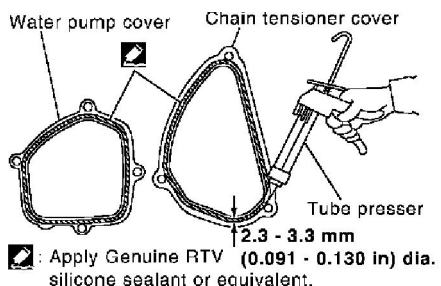


- Remove stopper pin.
- Make sure again that timing chain and water pump sprocket are engaged.

4. Install chain tensioner cover and water pump cover as follows:



- a. Before installing, remove all traces of old liquid gasket from mating surface of water pump cover and chain tensioner cover using scraper. Also remove traces of old liquid gasket from the mating surface of front timing chain case.



- b. Apply a continuous bead of liquid gasket with the tube presser [SST: WS39930000 (-)] to mating surface of chain tensioner cover and water pump cover.
Use Genuine RTV Silicone Sealant or equivalent. Refer to "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS"

CAUTION: Attaching should be done within 5 minutes after coating.

- c. Tighten mounting bolts.

5. Install water drain plug (front) on water pump side of cylinder block.
- Apply liquid gasket to the thread of water drain plug (front). Use Genuine RTV Silicone Sealant or equivalent. Refer to. Refer to "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS"
6. Install in the reverse order of removal after this step.
- After starting engine, let idle for three minutes, then rev engine up to 3,000 rpm under no load to purge air from the high-pressure chamber of chain tensioner. Engine may produce a rattling noise. This indicates that air still remains in the chamber and is not a matter of concern.

INSPECTION AFTER INSTALLATION

- Check for leaks of engine coolant using the radiator cap tester adapter [SST: EG17650301 (J33984-A)] and the radiator cap tester (commercial service tool). Refer to "LEAK CHECK".
- Start and warm up the engine. Visually make sure that there is no leaks of engine coolant.