

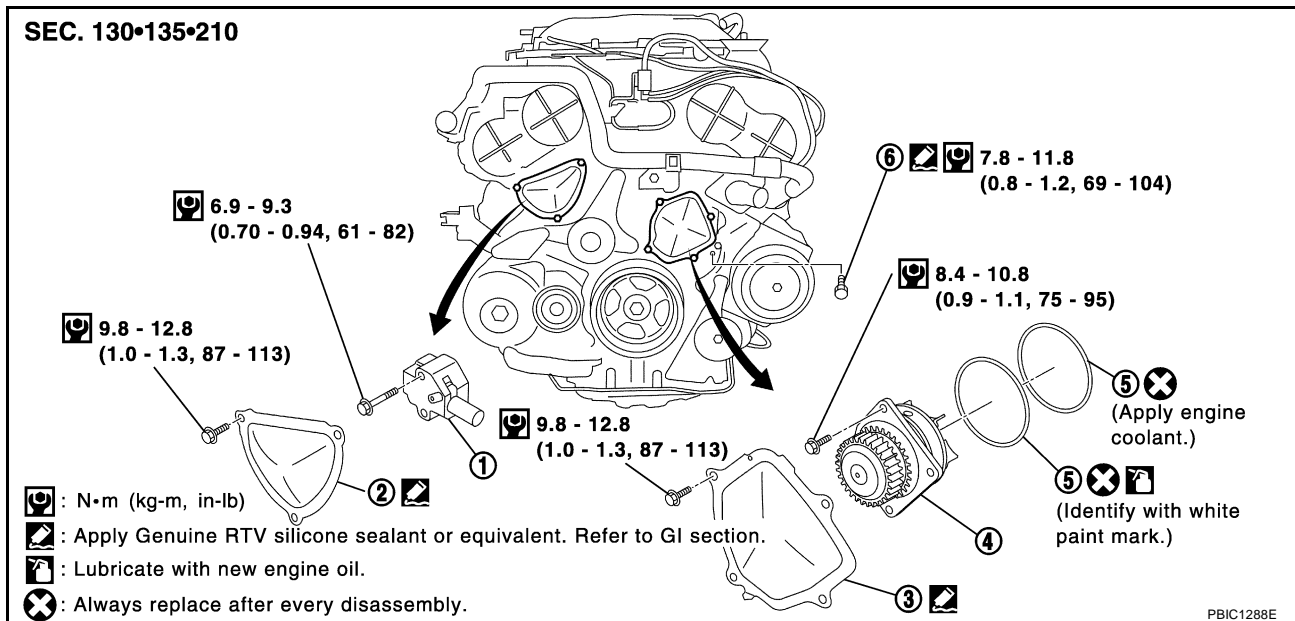
# WATER PUMP

## WATER PUMP

PFP:21020

### Removal and Installation

ABS00010



- |                    |                          |                             |
|--------------------|--------------------------|-----------------------------|
| 1. Chain tensioner | 2. Chain tensioner cover | 3. Water pump cover         |
| 4. Water pump      | 5. O - rings             | 6. Water drain plug (front) |

### 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 radiator cap tester.

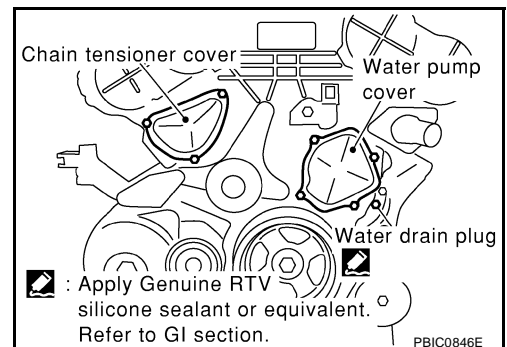
### REMOVAL

1. Remove undercover using power tools.
2. Remove drive belts. Refer to [EM-15, "Removal and Installation"](#).
3. Drain engine coolant from radiator. Refer to [CO-11, "Changing Engine Coolant"](#).

### CAUTION:

**Perform when the engine is cold.**

4. Remove air duct. Refer to [EM-16, "Removal and Installation"](#).
5. Remove radiator upper hose and lower hoses. (A/T models)
6. Remove radiator shrouds. (A/T models)
7. Remove cooling fan. Refer to [CO-22, "Removal and Installation \(Crankshaft Driven Type\) \(A/T Models\)"](#) (A/T models).
8. Radiator cooling fan assembly. Refer to [CO-24, "Removal and Installation \(Motor Driven\) \(M/T Models\)"](#) (M/T models).
9. Remove water drain plug on water pump side of cylinder block.
10. Remove chain tensioner cover and water pump cover.
  - Use seal cutter [special service tool: KV10111100 (J37228)] or equivalent tool to cut liquid gasket for remove.
11. Remove the chain tensioner assembly with the following procedure.
  - a. Pull the lever down and release the plunger stopper tab.
    - Plunger stopper tab can be pushed up to release (coaxial structure with lever).



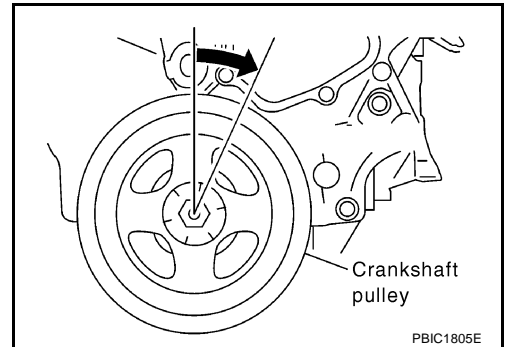
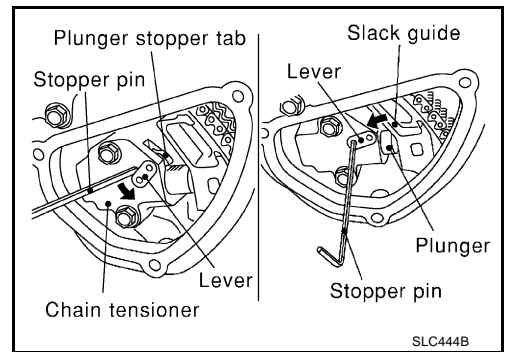
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- b. Insert the stopper pin into the tensioner body hole to hold the lever and keep the stopper tab released.

**NOTE:**

An allen wrench [2.5 mm (0.098 in)] is used for a stopper pin as an example.

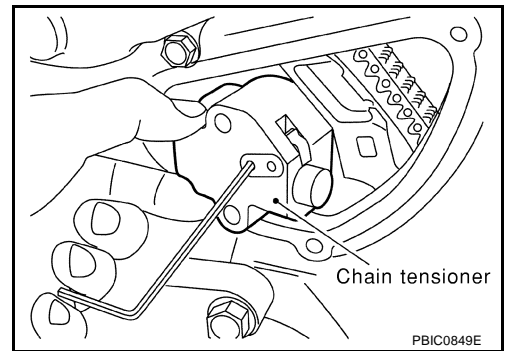
- c. Insert the plunger into the tensioner body by pressing the timing chain slack guide.
- d. Keep the slack guide pressed and hold the plunger in by pushing the stopper pin deeper through the lever and into the tensioner body hole.
- e. Turn crankshaft pulley clockwise so that the timing chain on the chain tensioner side is loose.



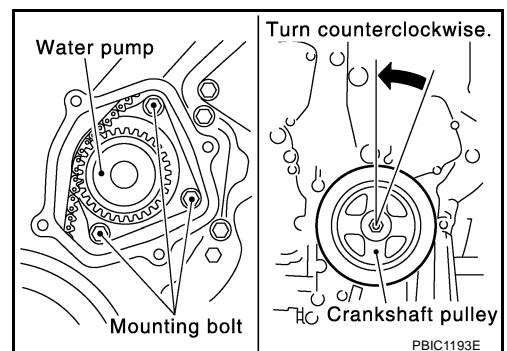
12. Remove chain tensioner.

**CAUTION:**

Be careful not to drop mounting bolts inside chain case.



13. Remove the three water pump fixing 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.



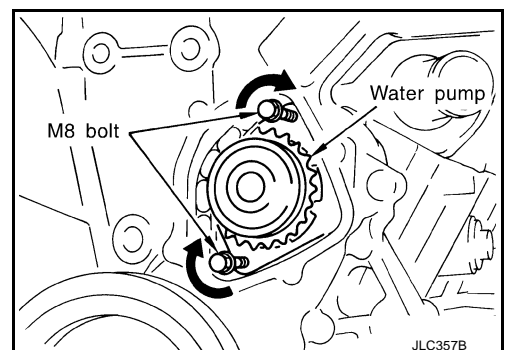
14. Screw M8 bolts [pitch: 1.25 mm (0.049 in) length: approx. 50 mm (1.97 in)] into water pumps upper and lower mounting-bolt holes until they reach timing chain case. Then, alternately tighten each bolt for a half turn, and pull out water pump.

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

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

**CAUTION:**

Do not disassemble water pump.

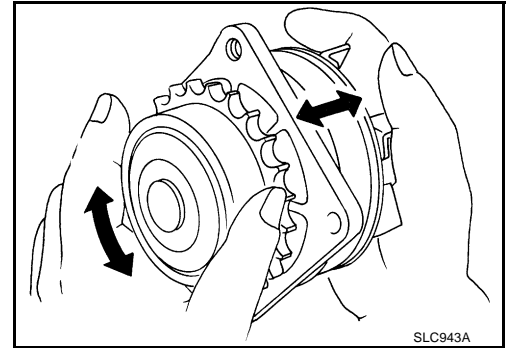


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# WATER PUMP

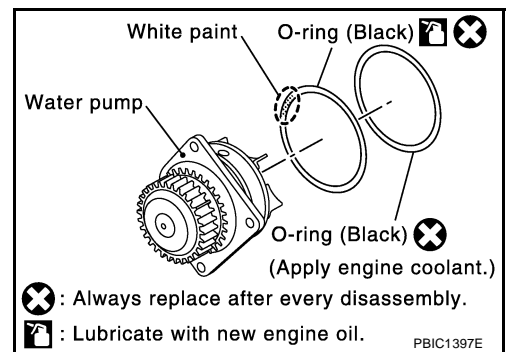
## INSPECTION AFTER REMOVAL

- Check for badly rusted or corroded water pump body assembly.
- Check for rough operation due to excessive end play.
- Replace water pump, if necessary.

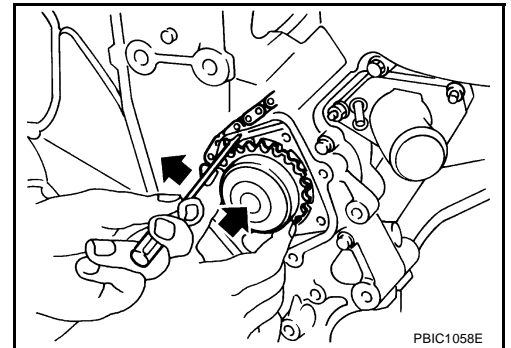


## INSTALLATION

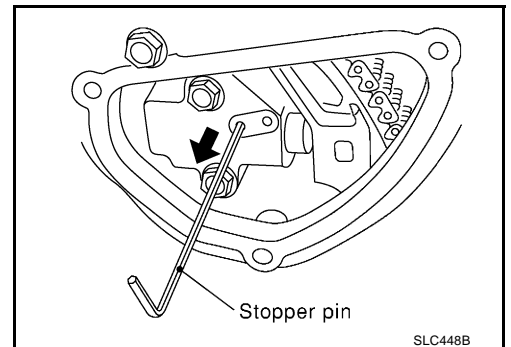
1. Install new O-rings to water pump.
  - Apply engine oil and engine coolant to the O-rings as shown.
  - Locate the O-ring with white paint mark to engine front side.



2. Install the water pump.
  - **Do not allow cylinder block to nip the O-rings when installing the water pump.**
  - Check that timing chain and water pump sprocket are engaged.
  - Insert water pump by tightening mounting bolts alternately and evenly.



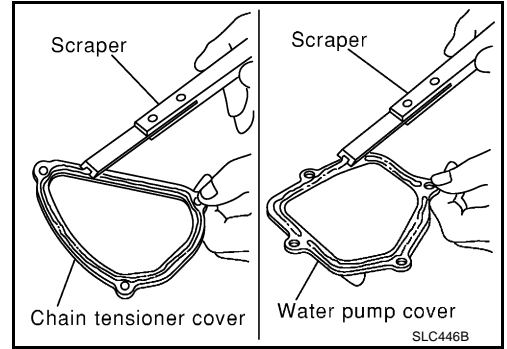
3. Remove dust and foreign material completely from backside of chain tensioner and from installation area of rear timing chain case.
4. Turn the crankshaft pulley clockwise so that the timing chain on the timing chain tensioner side is loose.
  - **When installing the timing chain tensioner, engine oil should be applied to the oil hole and tensioner.**
5. Install the timing chain tensioner.
6. Remove the stopper pin.



7. Install chain tensioner cover and water pump cover.

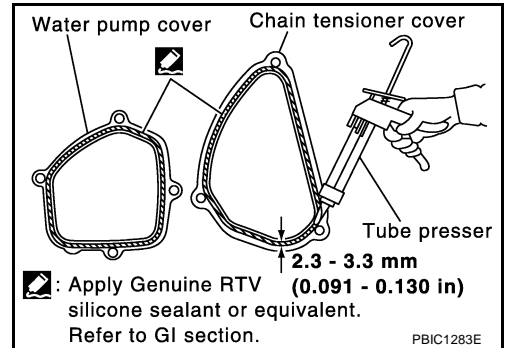
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- a. Before installing, remove all traces of liquid gasket from mating surface of water pump cover and chain tensioner cover using a scraper. Also remove traces of liquid gasket from the mating surface of the front cover.

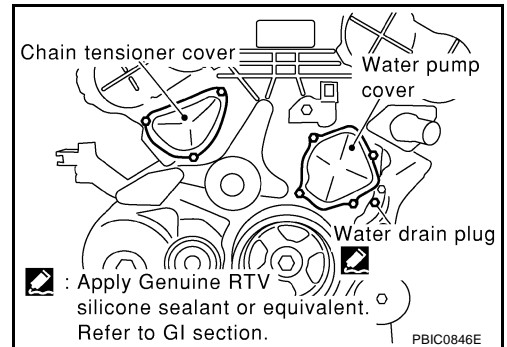


- b. Apply a continuous bead of liquid gasket using tube presser [special service tool: WS39930000 ( — )] to mating surface of chain tensioner cover and water pump cover.

**Use Genuine RTV Silicon Sealant or equivalent. Refer to [GI-45. "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS"](#).**



8. Install water drain plug on water pump side of cylinder block.



9. Installation is in the reverse order of removal for remaining parts.
- **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 the chain tensioner. The 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 radiator cap tester adapter [special service tool: EG17650301 (J33984-A)] and radiator cap tester (commercial service tool). Refer to [CO-11. "LEAK CHECK"](#).
- Start and warm up engine. Visually make sure that there is no leaks of engine coolant and A/T fluid (A/T models).