

Water Pump: Removal and Replacement

Removal and Installation

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 leakage using the radiator cap tester and the radiator cap tester adapter (commercial service tool).

REMOVAL

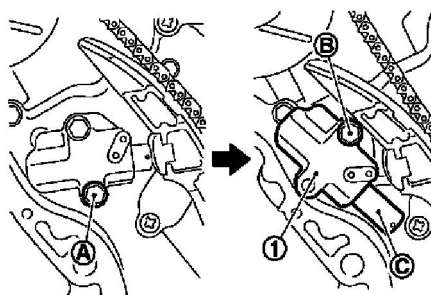
1. Remove engine cover. See: Access Cover/Service and Repair/Exploded View.
2. Release the fuel pressure. See: Tune-up and Engine Performance Checks/Fuel Pressure/Testing and Inspection.
3. Disconnect the battery cable from the negative terminal.
4. Remove air duct and air cleaner case assembly (RH and LH). See: Tune-up and Engine Performance Checks/Air Cleaner Housing/Air Cleaner Fresh Air Duct/Hose/Service and Repair/Exploded View.
5. Remove reservoir tank. See: Cooling System/Radiator/Service and Repair/Removal and Replacement/Exploded View.
6. Separate engine harness removing their brackets from front timing chain case.
7. Remove engine undercover with power tool.
8. Drain engine oil. See: Engine Lubrication/Engine Oil/Service and Repair/Draining.

CAUTION:

- Perform this step when the engine is cold.
 - Never spill engine oil on drive belt.
9. Drain engine coolant from radiator. See: Cooling System/Coolant/Service and Repair/Draining.

CAUTION:

- Perform this step when the engine is cold.
 - Never spill engine coolant on drive belt.
10. Remove radiator hose (upper and lower). See: Cooling System/Radiator/Service and Repair/Removal and Replacement/Exploded View.
 11. Remove cooling fan assembly. See: Cooling System/Radiator Cooling Fan/Service and Repair/Exploded View.
 12. Remove front timing chain case. See: Timing Components/Timing Chain/Service and Repair/Exploded View.



13. Remove timing chain tensioner (primary) (1) as follows:
 - a. Remove lower mounting bolt (A).
 - b. Loosen upper mounting bolt (B) slowly, and then turn chain tensioner (primary) on the upper mounting bolt so that plunger (C) is fully expanded.

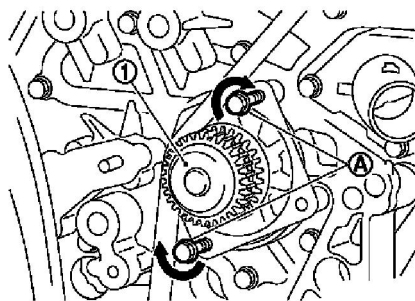
NOTE:

Even if plunger is fully expanded, it is not dropped from the body of timing chain tensioner (primary).

- c. Remove upper mounting bolt, and then remove timing chain tensioner (primary).

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 counterclockwise until timing chain looseness on water pump sprocket becomes maximum.



- b. Screw M8 bolts (A) [pitch: **1.25 mm (0.0492 in)** length: approximately **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 (1).

CAUTION:

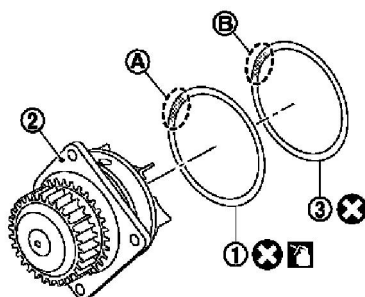
- **Pull straight out while preventing vane from contacting socket in installation area.**
- **Remove water pump without causing sprocket to contact timing chain.**
- c. Remove M8 bolts and O-rings from water pump.

CAUTION:

Never disassemble water pump.

INSTALLATION

1. Install new O-rings to water pump.



- Apply engine oil to O-ring (1) and engine coolant to O-ring (3) as shown in the figure.

2 : Water pump

- Locate O-ring with yellow paint mark (A) to front side.
- Locate O-ring with light blue paint mark (B) to rear side.

2. Install water pump.

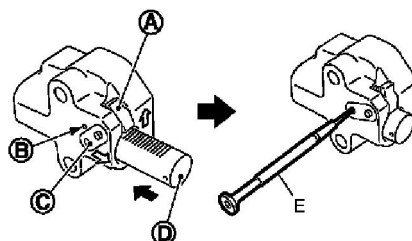
CAUTION:

Never allow cylinder block to nip O-rings when installing water pump.

- Check 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:

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



- b. Pull plunger stopper tab (A) up (or turn lever downward) so as to remove plunger stopper tab from the ratchet of plunger (D).

NOTE:

Plunger stopper tab and lever (C) are synchronized.

- c. Push plunger into the inside of tensioner body.
- d. Hold plunger in the fully compressed position by engaging plunger stopper tab with the tip of ratchet.
- e. To secure lever, insert stopper pin (E) through hole of lever into tensioner body hole (B).
- The lever parts and the tab are synchronized. Therefore, the plunger will be secured under this condition.

NOTE:

Figure shows the example of **1.2 mm (0.047 in)** diameter thin screwdriver being used as the stopper pin.

- f. Install timing chain tensioner (primary).
- Remove dust and foreign material completely from backside of timing chain tensioner (primary) and from installation area of rear timing chain case.
- g. Remove stopper pin.
- h. Check again that timing chain and water pump sprocket are engaged.
- 4. Install 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 chain tensioner. Engine may produce a rattling noise. This indicates that air still remains in the chamber and is not a matter of concern.**