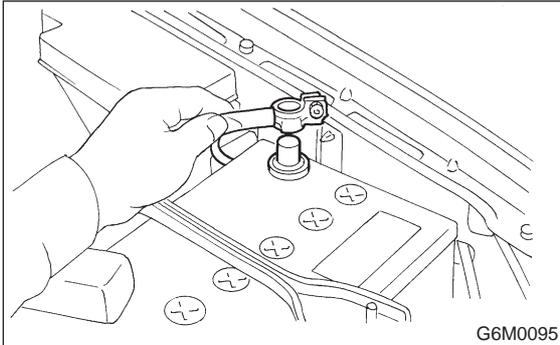


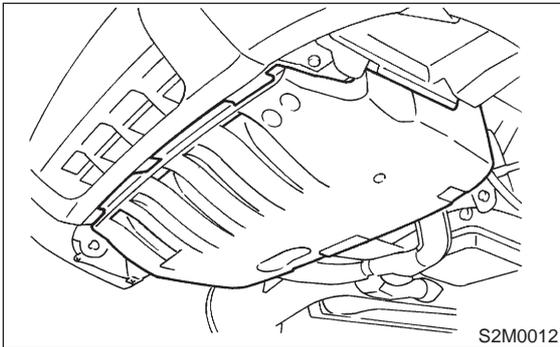
## 1. Water Pump

### A: REMOVAL

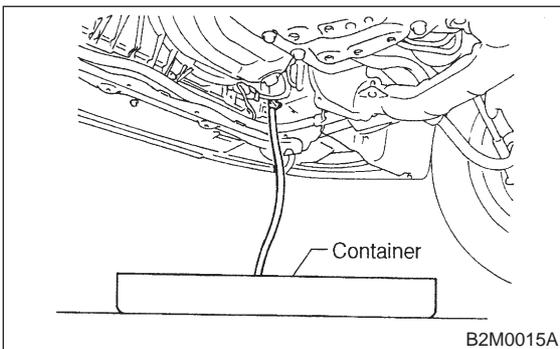
- 1) Disconnect ground cable from the battery.



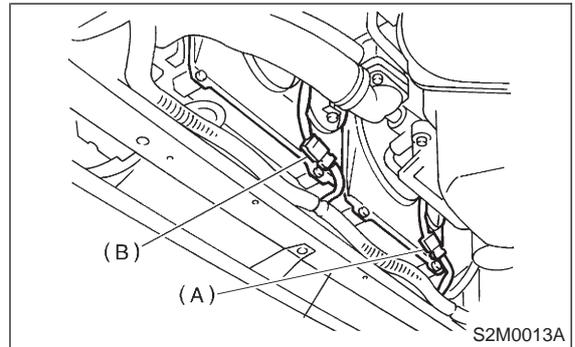
- 2) Lift-up the vehicle.  
3) Remove under cover.



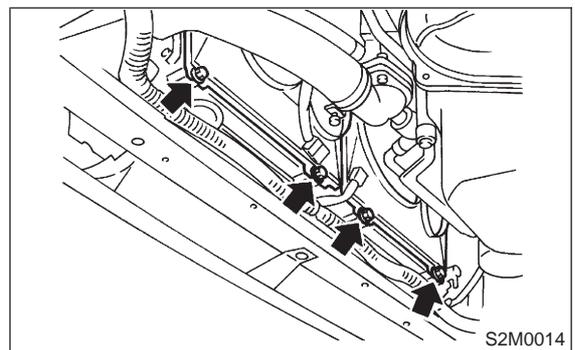
- 4) Drain engine coolant completely.  
<Ref. to 2-2 [W8A0].>



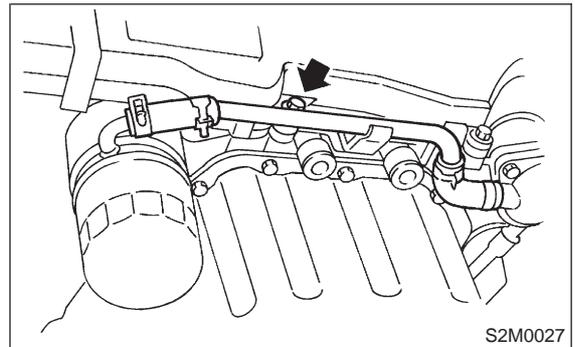
- 5) Disconnect connectors from radiator main fan (A) and sub fan (B) motors.



- 6) Loosen bolts which hold lower side of radiator main fan and sub fan shrouds.

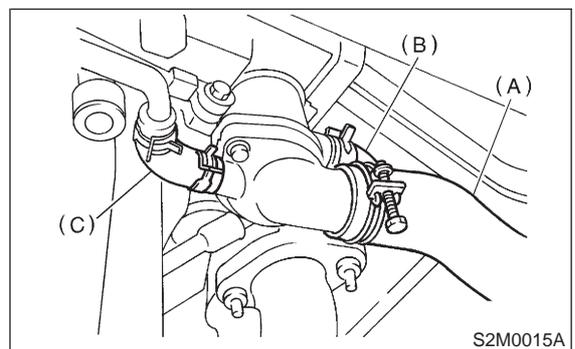


- 7) Remove bolt which installs water by-pass pipe of oil cooler onto oil pump. (AT vehicles only)

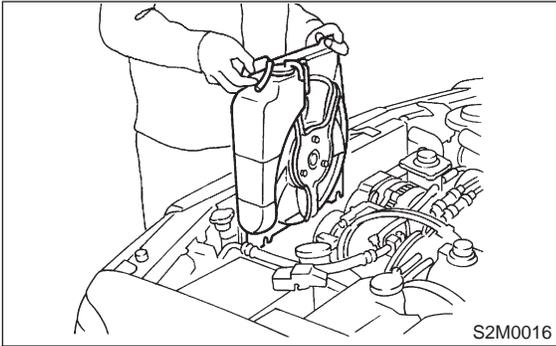


- 8) Disconnect radiator outlet hose (A) and heater hose (B) from water pump.

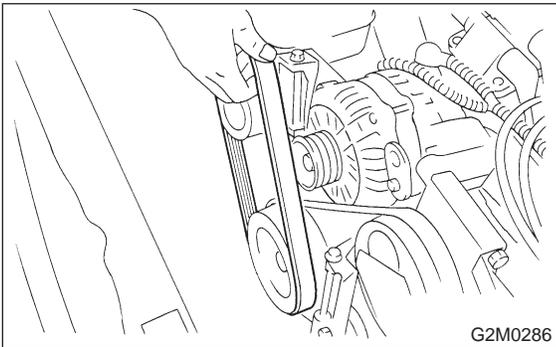
- 9) Disconnect water by-pass hose (C). (AT vehicles only)



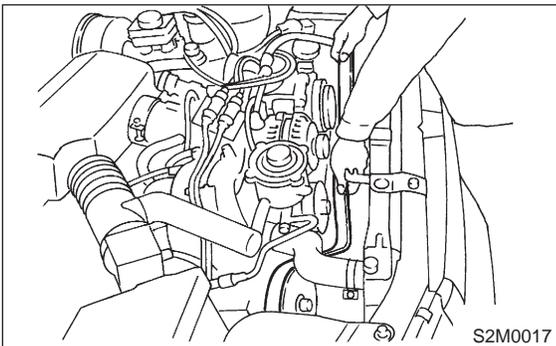
- 10) Lower the vehicle.
- 11) Remove radiator main fan and sub fan assemblies. <Ref. to 2-5 [W5A0] and [W6A0].>



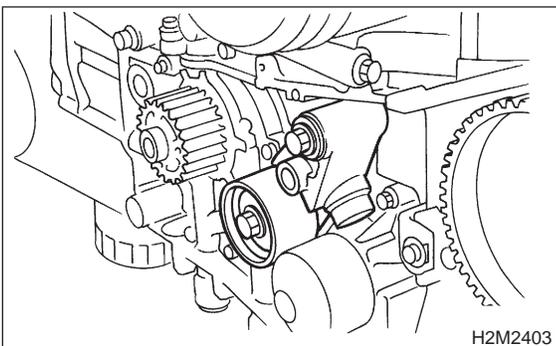
- 12) Remove V-belts. <Ref. to 1-5 [G1B0].>



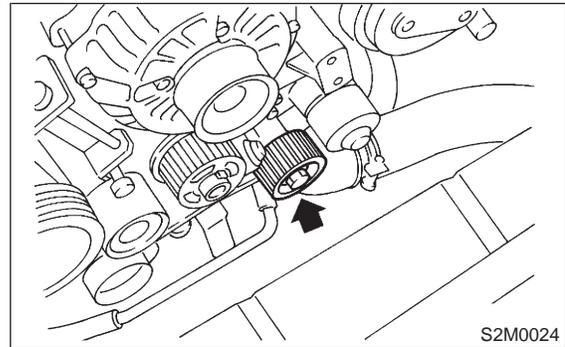
- 13) Remove timing belt. <Ref. to 2-3 [W2A0].>



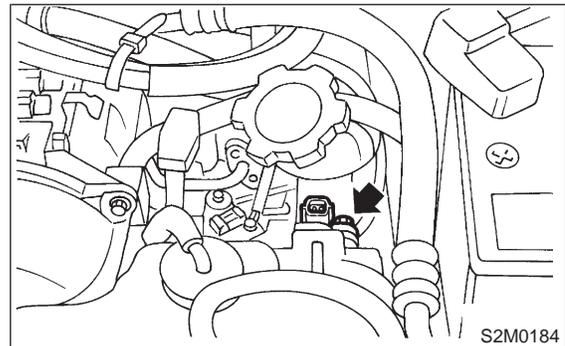
- 14) Remove automatic belt tension adjuster.



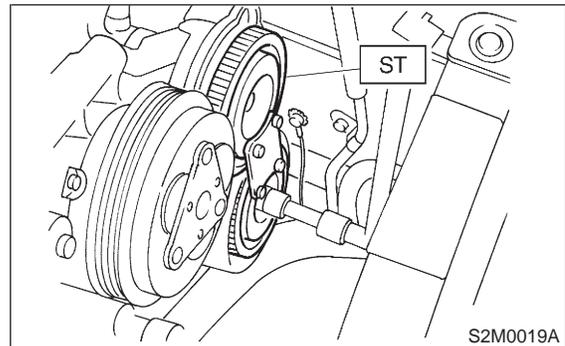
- 15) Remove belt idler No. 2.



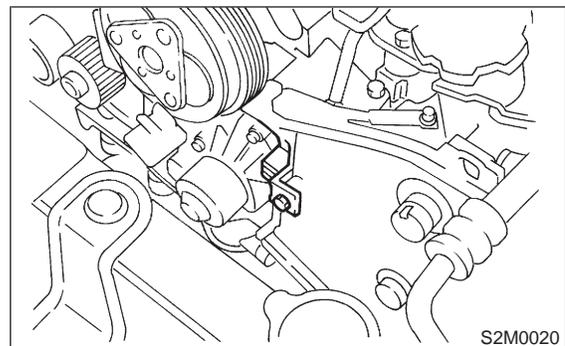
- 16) Remove camshaft position sensor. <Ref. to 2-7 [W7A0].>



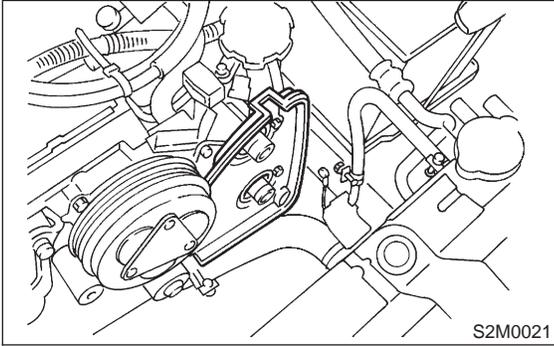
- 17) Remove left-hand camshaft sprockets by using ST.  
ST 499207300 CAMSHAFT SPROCKET WRENCH



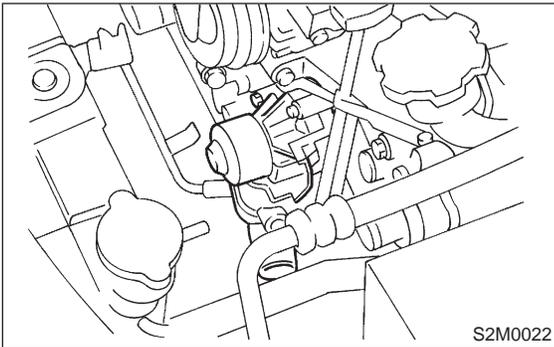
- 18) Remove tensioner bracket.



19) Remove left-hand belt cover No. 2.



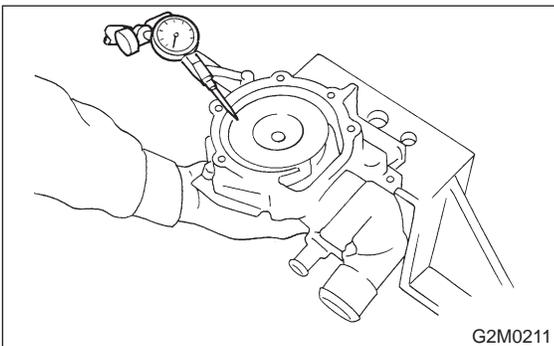
20) Remove water pump.



**B: INSPECTION**

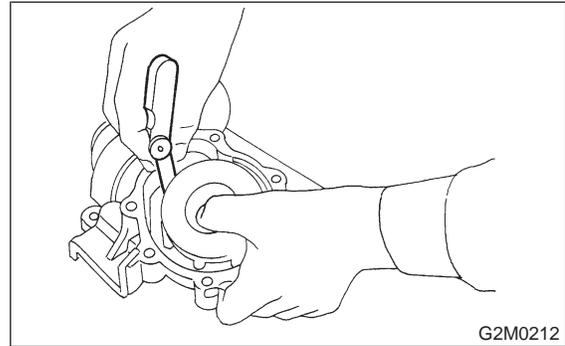
- 1) Check water pump bearing for smooth rotation.
- 2) Check water pump pulley for abnormalities.
- 3) Using a dial gauge, measure impeller runout in thrust direction while rotating the pulley.

**“Thrust” runout limit:**  
**0.5 mm (0.020 in)**



4) Check clearance between impeller and pump case.

**Clearance between impeller and pump case:**  
**Standard**  
**0.5 — 0.7 mm (0.020 — 0.028 in)**  
**Limit**  
**1.0 mm (0.039 in)**



5) After water pump installation, check pulley shaft for engine coolant leaks. If leaks are noted, replace water pump assembly.

**C: INSTALLATION**

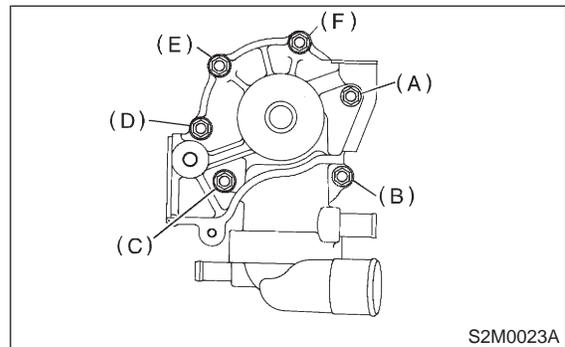
1) Install water pump onto left-hand cylinder head.

**CAUTION:**

- Replace gasket with a new one.
- When installing water pump, tighten bolts in two stages in alphabetical sequence as shown in figure.

**Tightening torque:**

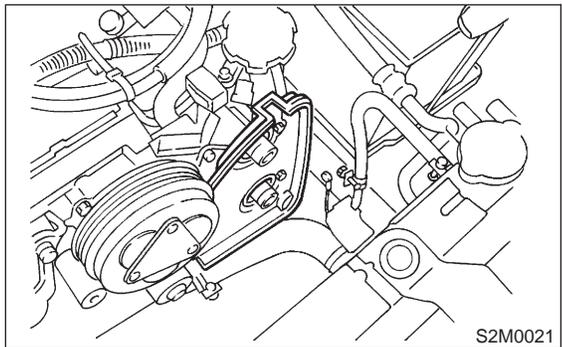
**$10^{+4}/_{-0} N\cdot m$  ( $1.0^{+0.4}/_{-0} kg\cdot m$ ,  $7.2^{+2.9}/_{-0} ft\cdot lb$ )**



2) Install left-hand belt cover No. 2.

**Tightening torque:**

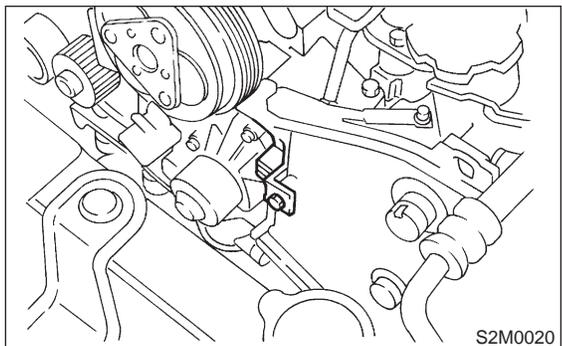
**$4.9 \pm 0.5 \text{ N-m}$  ( $0.5 \pm 0.05 \text{ kg-m}$ ,  $3.6 \pm 0.4 \text{ ft-lb}$ )**



3) Install tensioner bracket.

**Tightening torque:**

**$25 \pm 2 \text{ N-m}$  ( $2.5 \pm 0.2 \text{ kg-m}$ ,  $18.1 \pm 1.4 \text{ ft-lb}$ )**

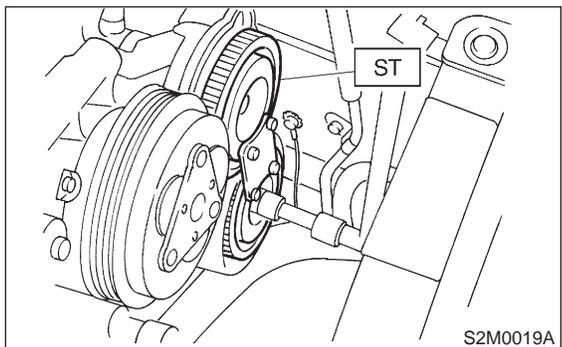


4) Install left-hand camshaft sprockets by using ST.

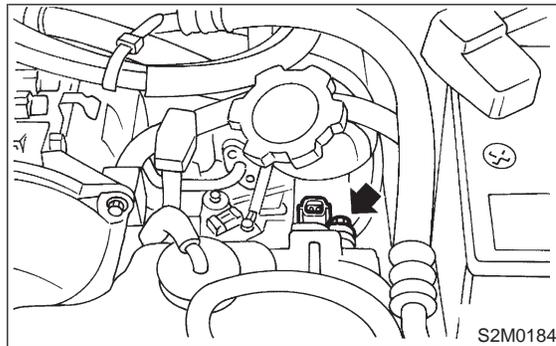
ST 4992707300 CAMSHAFT SPROCKET WRENCH

**Tightening torque:**

**$78 \pm 5 \text{ N-m}$  ( $8.0 \pm 0.5 \text{ kg-m}$ ,  $57.9 \pm 3.6 \text{ ft-lb}$ )**



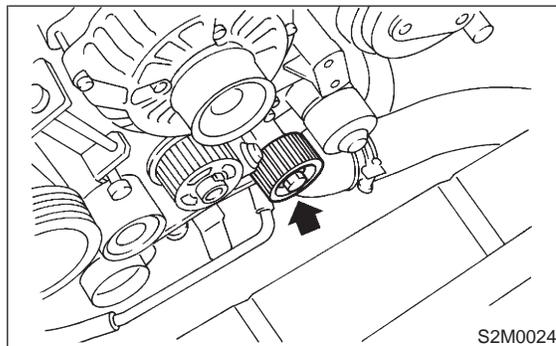
5) Install camshaft position sensor. <Ref. to 2-7 [W7A0].>



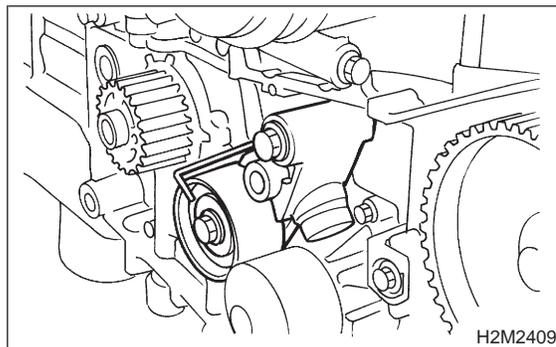
6) Install belt idler No. 2.

**Tightening torque:**

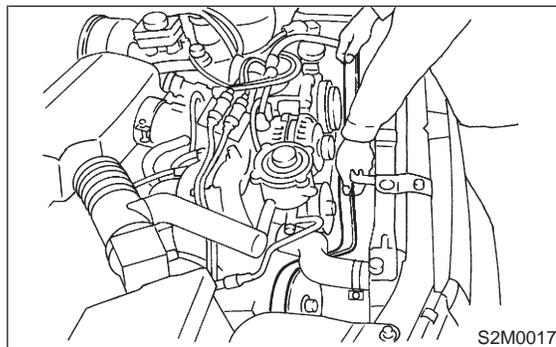
**$39 \pm 4 \text{ N-m}$  ( $4.0 \pm 0.4 \text{ kg-m}$ ,  $28.9 \pm 2.9 \text{ ft-lb}$ )**



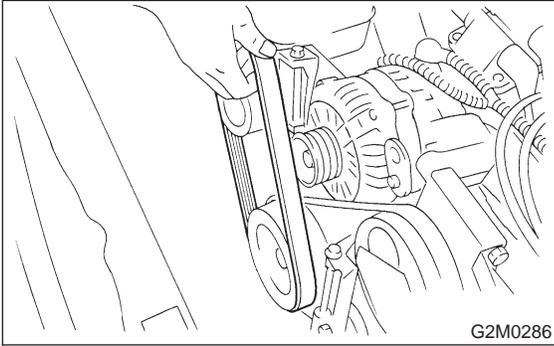
7) Install automatic belt tension adjuster which tension rod is held with pin.



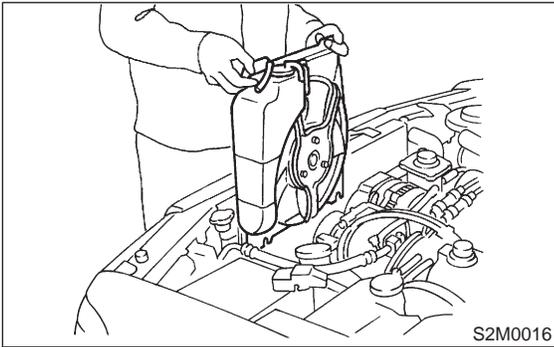
8) Install timing belt. <Ref. to 2-3 [W2C0].>



9) Install V-belts. <Ref. to 1-5 [G1B0].>

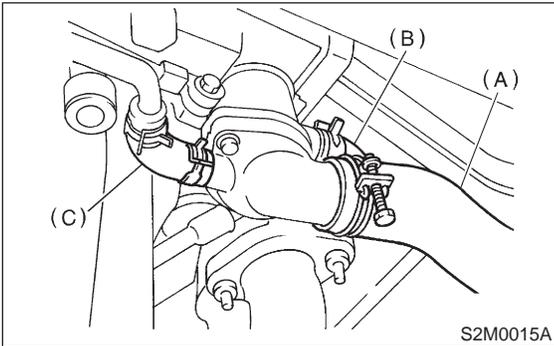


10) Install radiator main fan and sub fan motor assemblies. <Ref. to 2-5 [W5A0] and [W6A0].>

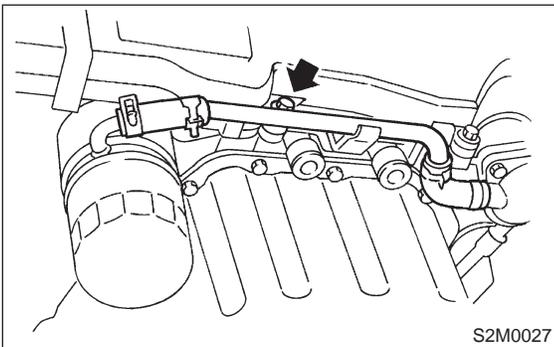


11) Connect radiator outlet hose (A) and heater hose (B) to water pump.

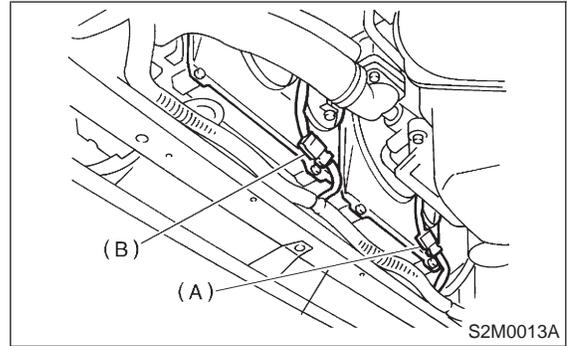
12) Connect water by-pass hose (C). (AT vehicles only)



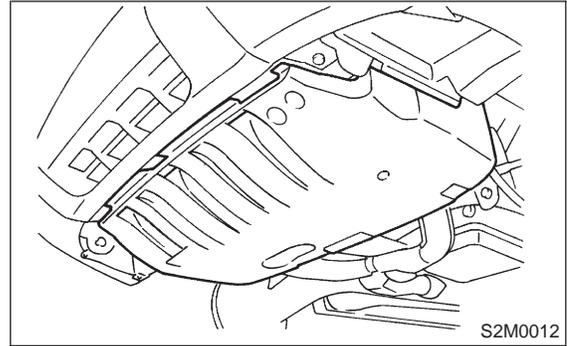
13) Install bolt which installs water by-pass pipe onto oil pump. (AT vehicles only)



14) Connect connectors to radiator main fan (A) and sub fan (B) motors.

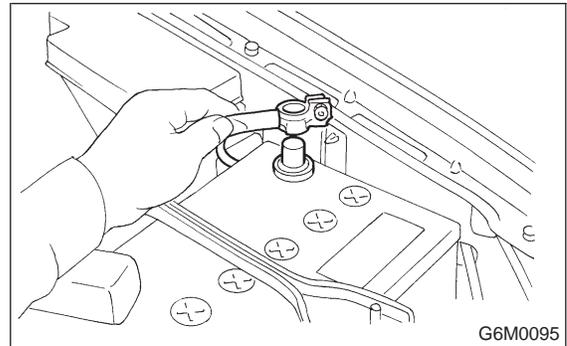


15) Install under cover.



16) Lower the vehicle.

17) Connect battery ground cable.



18) Fill coolant. <Ref. to 2-2 [W8B0].>

