7. Oil Pump

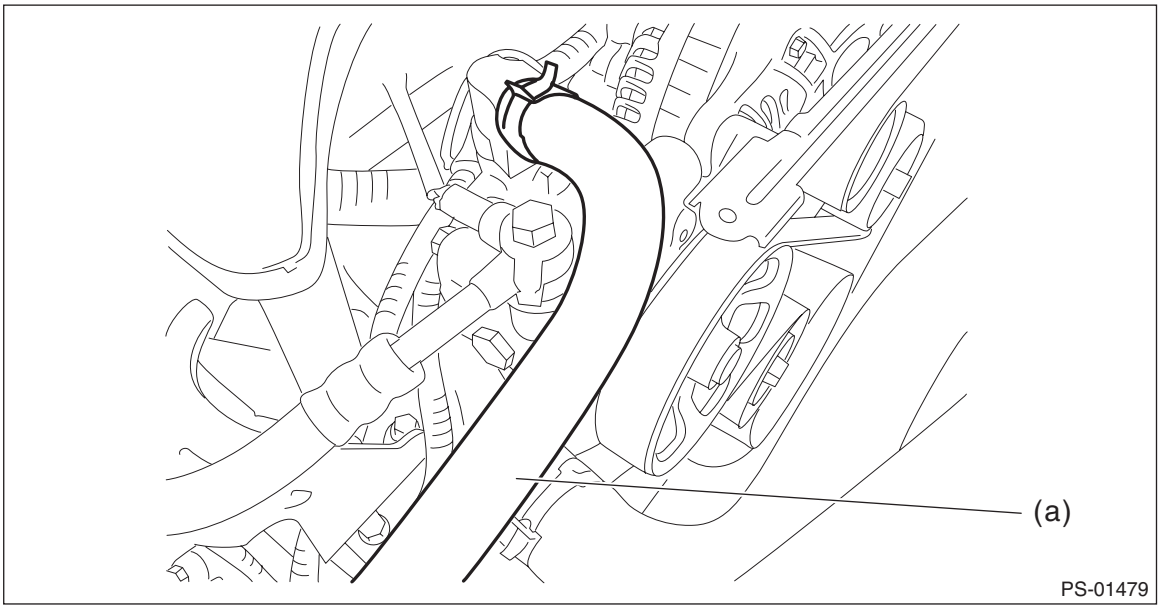
A: REMOVAL

1. PIPE ASSEMBLY

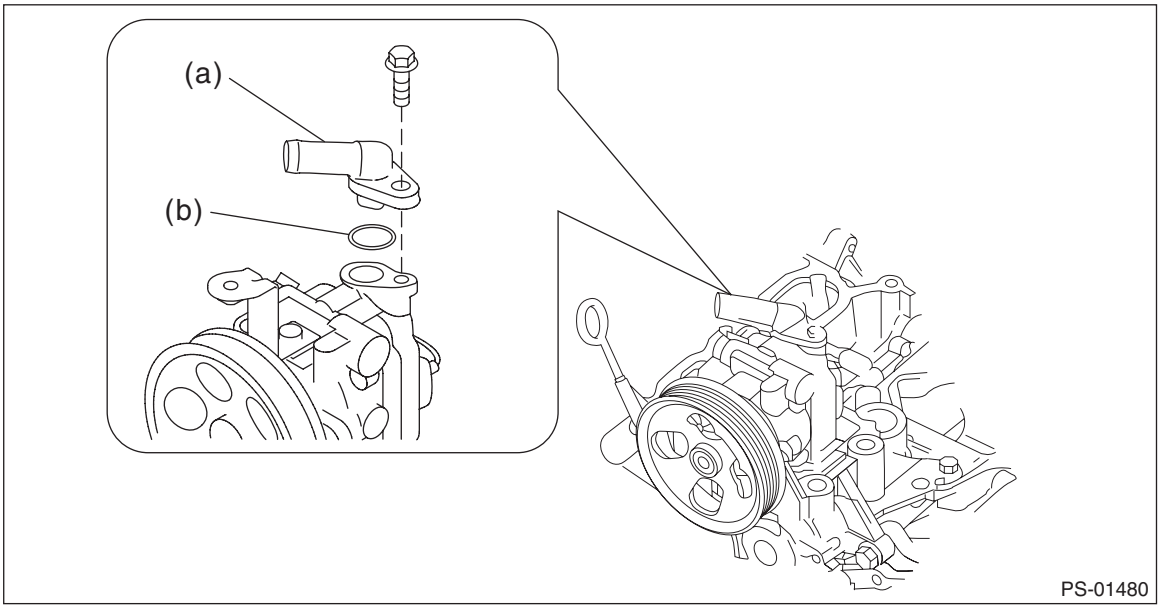
1) Remove the V-belts.
- H4 model:<Ref. to ME(H4DO)-80, REMOVAL, V-belt.>
- H6 model:<Ref. to ME(H6DO)-51, REMOVAL, V-belt.>

2) Drain the power steering fluid.
3) Remove the suction connector.
   (1) Disconnect the hose - suction (a) from the power steering oil pump.

CAUTION:
- **Do not allow the steering fluid to come into contact with the pulley belt.**
- **Plug the ends of the hose and pipe to prevent foreign matter from entering.**
- **Catch the steering fluid using cloth to prevent it from splashing.**



   (2) Remove the bolt, and remove the suction connector (a) and O-ring (b).

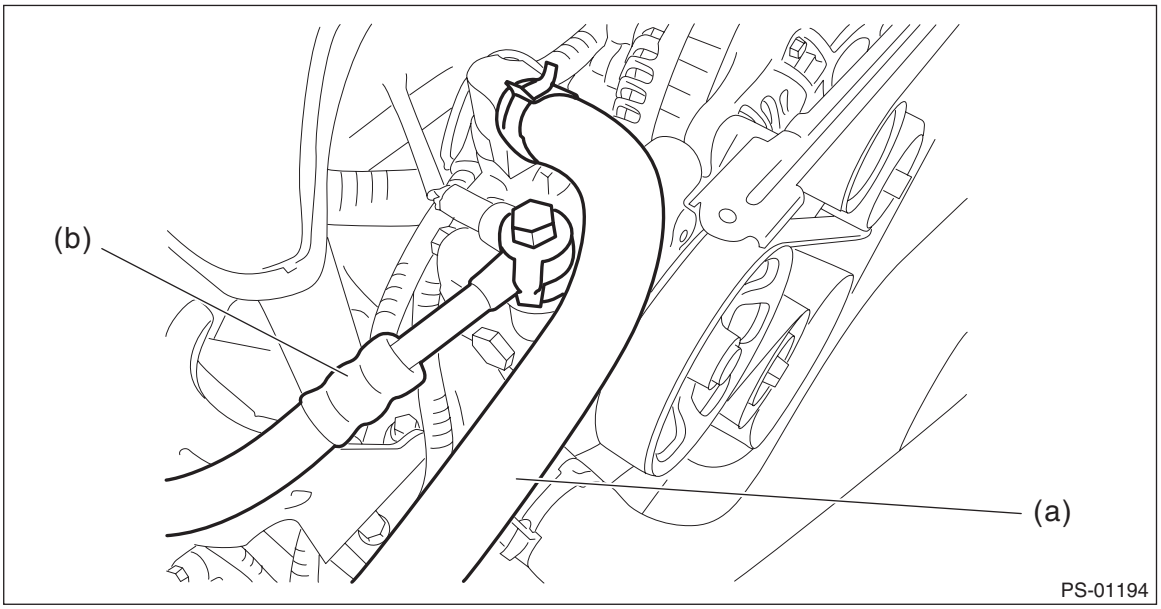


2. PUMP ASSY

1) Disconnect the ground cable from battery.
2) Remove the V-belts.
- H4 model:<Ref. to ME(H4DO)-80, REMOVAL, V-belt.>
- H6 model:<Ref. to ME(H6DO)-51, REMOVAL, V-belt.>

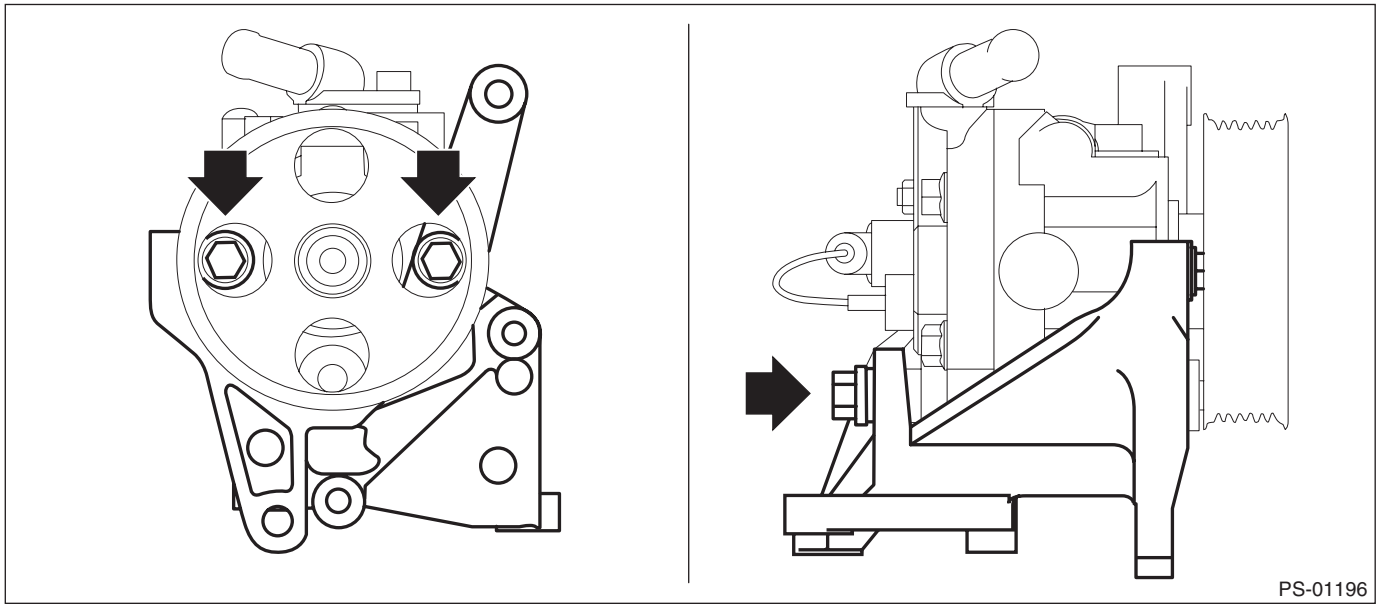
3) Drain the power steering fluid.
4) Remove the power steering oil pump assembly.
   (1) Disconnect the connector from power steering pump switch.
   (2) Disconnect the suction hose (a) and pressure hose (b) from power steering oil pump.

CAUTION:
- **Do not allow fluid to come into contact with the pulley belt.**
- **Plug the ends of the hose and pipe to prevent foreign matter from entering.**



   (3) Remove the bolts, and remove the power steering oil pump assembly.
5) Secure the oil pump bracket in a vise, and remove the bolts from both front and rear sides of the oil pump.

CAUTION:
When securing the oil pump bracket in a vice, hold the oil pump bracket with the least possible force between two pieces of wood.

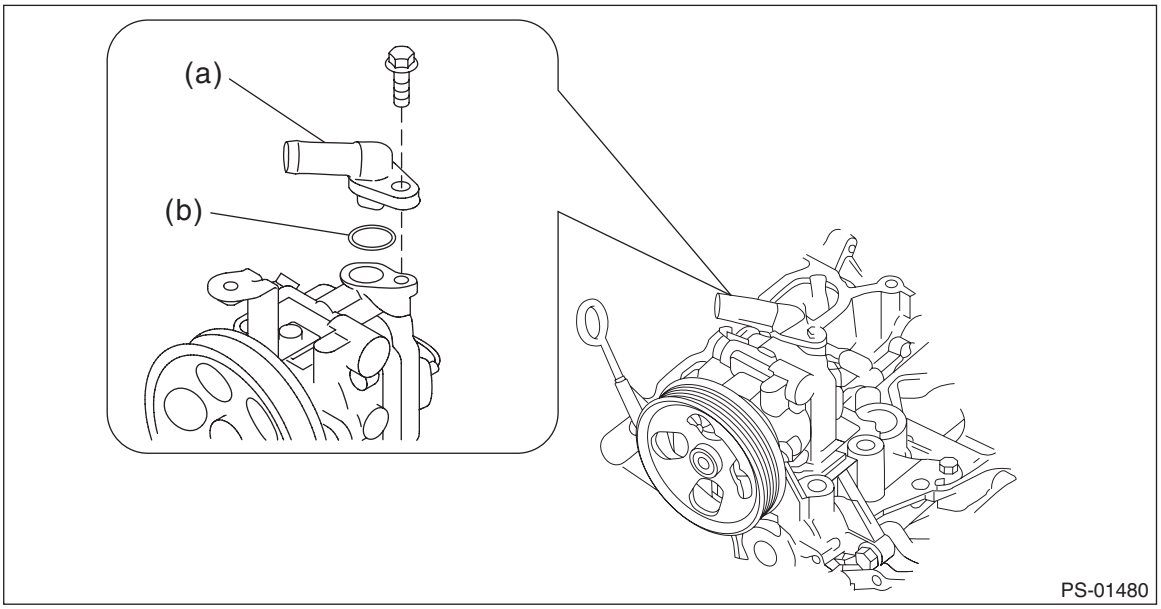


6) Remove the power steering oil pump assembly from the bracket.

B: INSTALLATION

1. PIPE ASSEMBLY

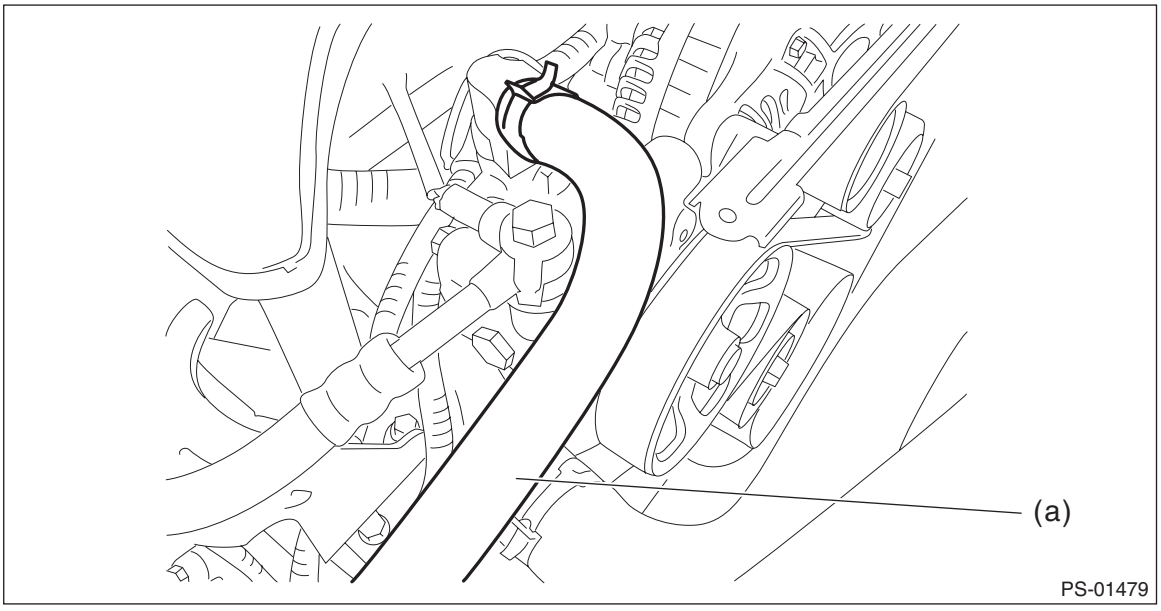
1) Install the suction connector (a) and O-ring (b) to the power steering oil pump.



Tightening torque:
11 N·m (1.12 kgf-m, 8.1 ft-lb)

2) Connect a new hose - suction (a).

CAUTION:
Be careful when installing; If the hose is twisted it may come into contact with other parts.



3) After installing the oil pump, fill the oil pump with as much fluid as possible by rotating the pulley by hand.

CAUTION:
Always fill the oil pump with the fluid to prevent abnormal noise and seizure of the oil pump.

4) Install the V-belts.

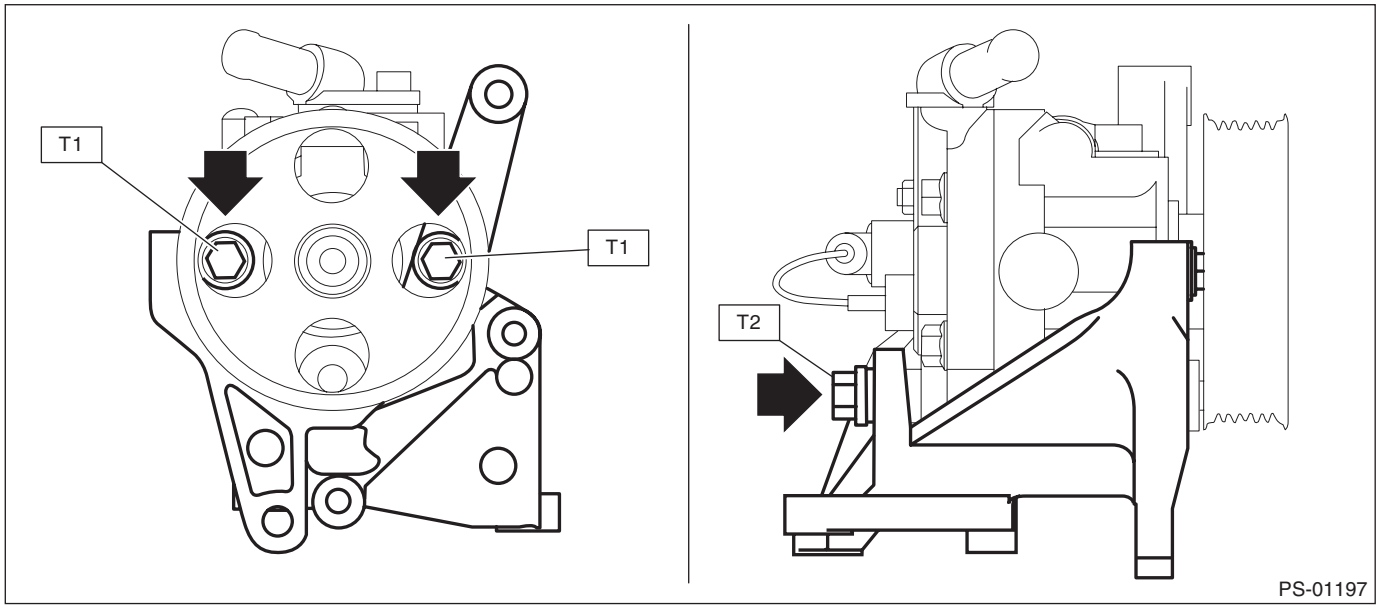
- H4 model:<Ref. to ME(H4DO)-82, INSTALLATION, V-belt.>
- H6 model:<Ref. to ME(H6DO)-51, INSTALLATION, V-belt.>

5) Fill with recommended power steering fluid and perform air bleeding. <Ref. to PS-78, Power Steering Fluid.>

CAUTION:
Never start the engine before filling with fluid; otherwise the vane pump may become seized.

2. PUMP ASSY

1) Install the bracket to the power steering oil pump.



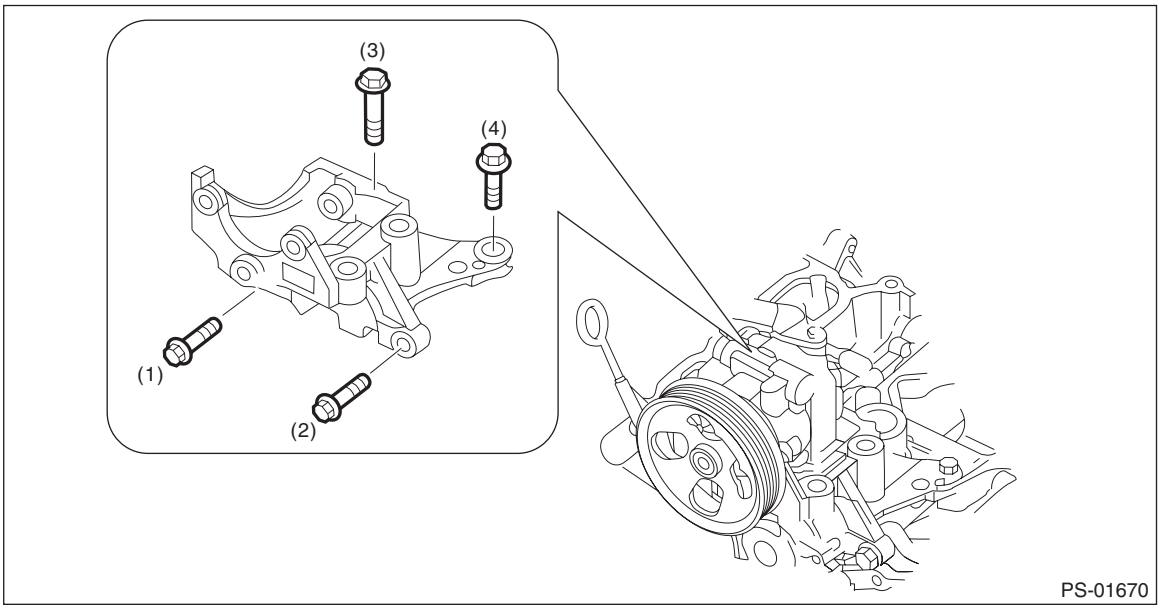
Tightening torque:
T1: 16 N·m (1.63 kgf-m, 11.8 ft-lb)
T2: 36 N·m (3.67 kgf-m, 26.6 ft-lb)

2) Tighten the bolt, and install the power steering pump bracket. (Except for H4 model)

Tightening torque:
33 N·m (3.36 kgf-m, 24.3 ft-lb)

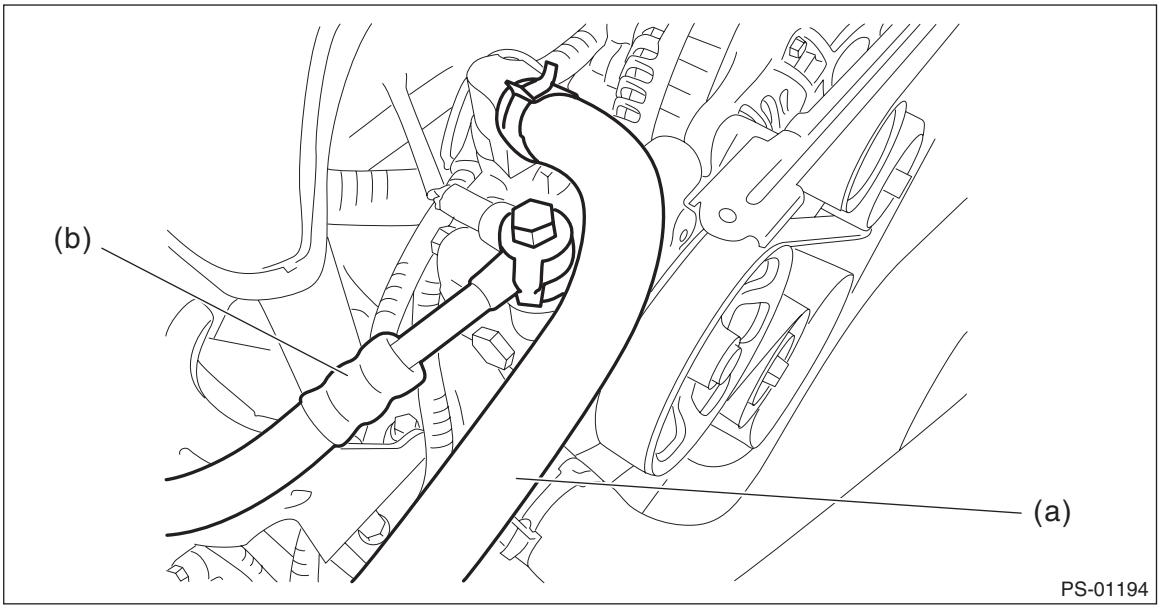
3) Gradually tighten the bolts in order of (1) through (4), and install the power steering pump bracket. (H4 model)

Tightening torque:
36 N·m (3.67 kgf-m, 26.6 ft-lb)



4) Connect the suction hose (a) and pressure hose (b).

CAUTION:
Be careful when installing; If the hose is twisted it may come into contact with other parts.



Tightening torque:
Eyebolt: 40 N·m (4.08 kgf-m, 29.5 ft-lb)

5) Connect the power steering pump switch to the connector.
6) After installing the oil pump, fill the oil pump with as much fluid as possible by rotating the pulley by hand.

CAUTION:
Always fill the oil pump with the fluid to prevent abnormal noise and seizure of the oil pump.

7) Install the V-belts.
- H4 model:<Ref. to ME(H4DO)-82, INSTALLATION, V-belt.>
- H6 model:<Ref. to ME(H6DO)-51, INSTALLATION, V-belt.>

8) Connect the battery ground terminal.
9) Fill with recommended power steering fluid and perform air bleeding. <Ref. to PS-78, Power Steering Fluid.>

CAUTION:
Never start the engine before filling with fluid; otherwise the vane pump may become seized.

C: INSPECTION

1. BASIC INSPECTION

Perform the following inspection procedures and replace any faulty parts.

No.	Parts	Inspection	Corrective action
1	Oil pump (exterior)	(1) Crack, damage or oil leakage	Replace the oil pump with a new part.
		(2) Play of pulley shaft	Measure the radial play and axial play. If any of these exceeds the service limit, replace the oil pump with a new part.
2	Pulley	(1) Damage	Replace with a new part.
		(2) Bend	Measure the V groove deflection. If it exceeds the service limit, replace the oil pump with a new part.
3	Oil pump (interior)	(1) Faulty or seized of vane pump	Check the rotating resistance of pulley. If it exceeds the service limit, replace the oil pump with a new part.
		(2) Bend in the shaft or damage to bearing	If the a string is wrapped on the pulley and rotated, and the oil pump emits a noise that is markedly different in tone and loudness from a sound of a new oil pump, replace the oil pump with a new part.
4	O-ring	Cracking or deterioration	Replace with a new part.
5	Bracket	Cracks	Replace with a new part.

2. SERVICE LIMIT

Make a measurements as follows. If it exceeds the service limit, replace with a new part.

CAUTION:

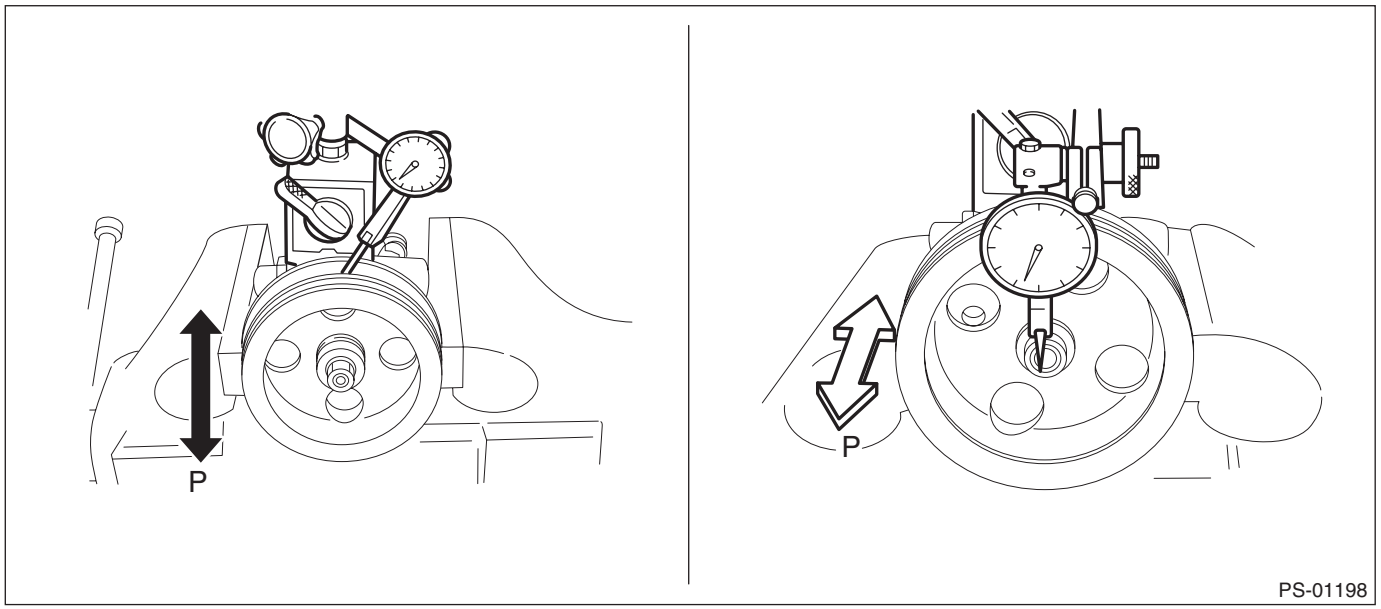
• When securing the oil pump on a vise, hold the oil pump with the least possible force between two pieces of wood.

• Do not set the outside of flow control valve or pulley on a vise; otherwise outside or pulley might be deformed. Select properly sized wood pieces.

1) Play of the pulley shaft

Condition:
P: When applying a force of 9.8 N (1.0 kgf, 2.2 lbf)

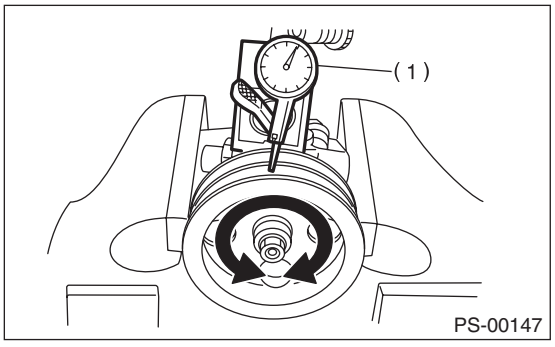
Service limit:
Play in the radial direction (Direction ⬅ ➡):
0.2 mm (0.008 in) or less
Axial play (Direction ⇦ ⇨):
0.9 mm (0.035 in) or less



2) Deflection of the pulley groove

Service limit:
1.0 mm (0.039 in) or less

NOTE:
Read the value on one surface of V groove, set the dial gauge on the other surface, and read the value of the dial gauge.

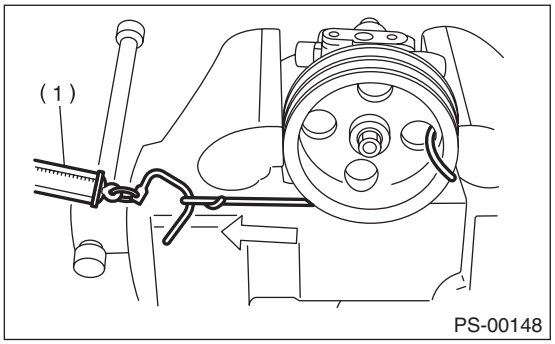


(1) Dial gauge

3) Rotating resistance of pulley

Service limit:
Maximum load: 9.22 N (0.94 kgf, 2.07 lbf) or less

NOTE:
- A rather higher value may be indicated when pulley starts turning.
- Measure the load during rotation to make a judgment.



(1) Spring scale

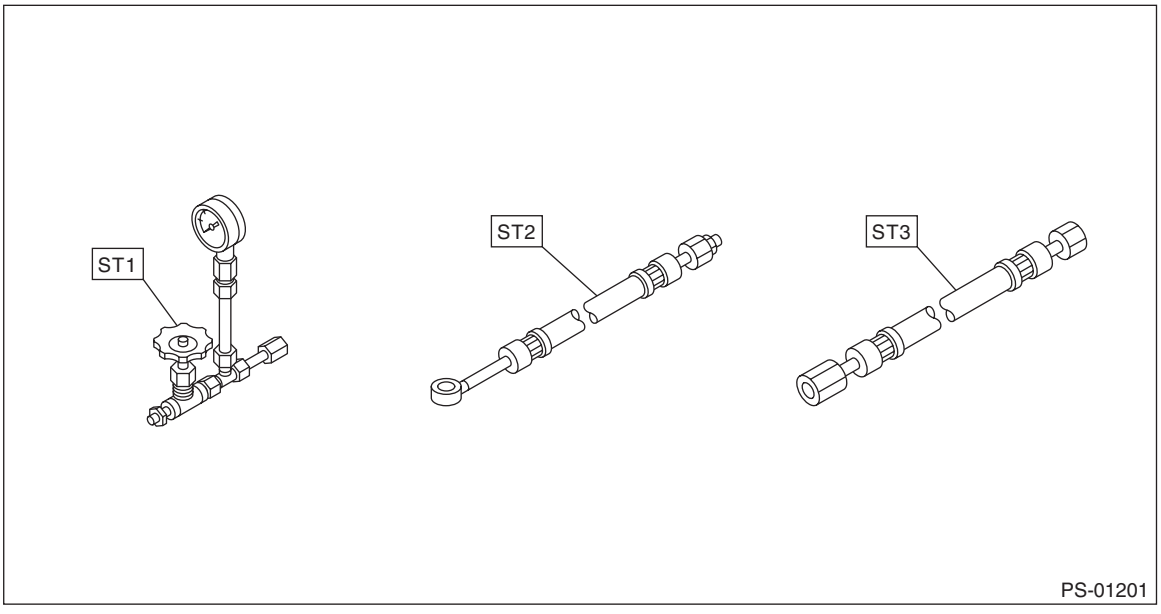
3. HYDRAULIC PRESSURE

CAUTION:
• To measure hydraulic pressure correctly, be sure to complete all the items in "INSPECTION", prior to performing the measurement. <Ref. to PS-79, INSPECTION, General Diagnostic Table.>
• Do not leave the valve of pressure gauge closed or hold the steering wheel at lock for 5 seconds or more in any case, this can damage the oil pump.
• Before attaching a pressure gauge, place cloth at locations where fluid is expected to spill. Wipe off any spilt fluid completely after the measurement.

Regular pressure measurement

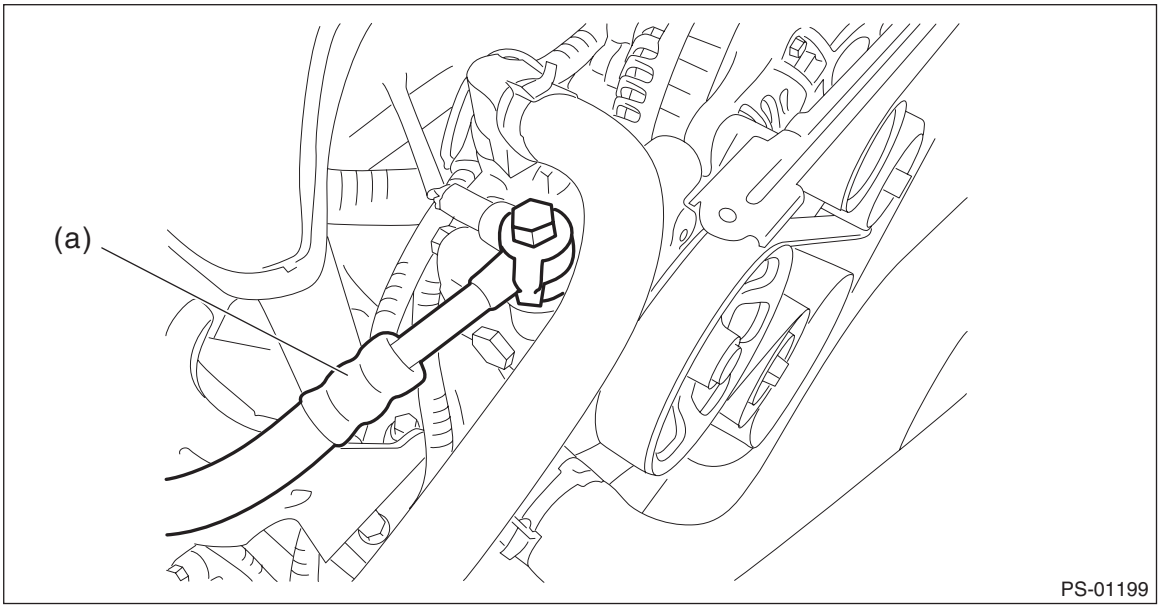
1) Connect the ST1, ST2 and ST3.

Preparation tool:
ST1: PRESSURE GAUGE (925711000)
ST2: ADAPTER HOSE B (34099AC020)
ST3: ADAPTER HOSE A (34099AC010)

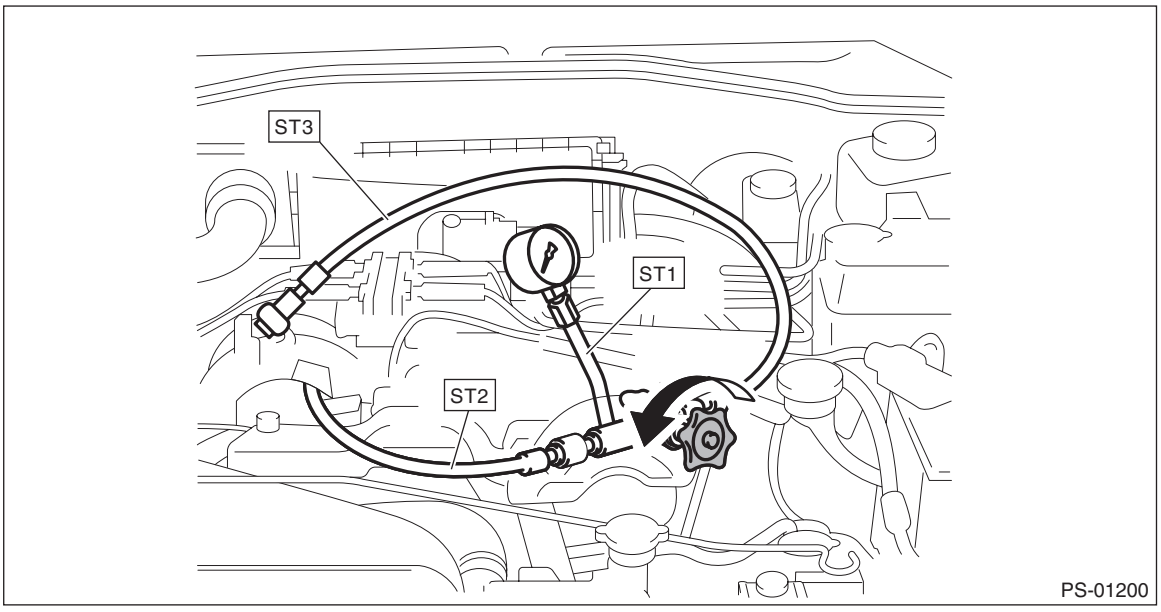


2) Remove the air intake duct.

3) Disconnect the pressure hose (a) from the pump.
4) Using the gasket (Part No. 34621AC024) and bolt (Part No. 34620AC010), install the ST2 to pump instead of pressure hose (a).



5) Attach the ST3 to the end of pressure hose which is removed from pump.
6) Replenish power steering fluid up to the specified level.
7) Open the valve, and start the engine.



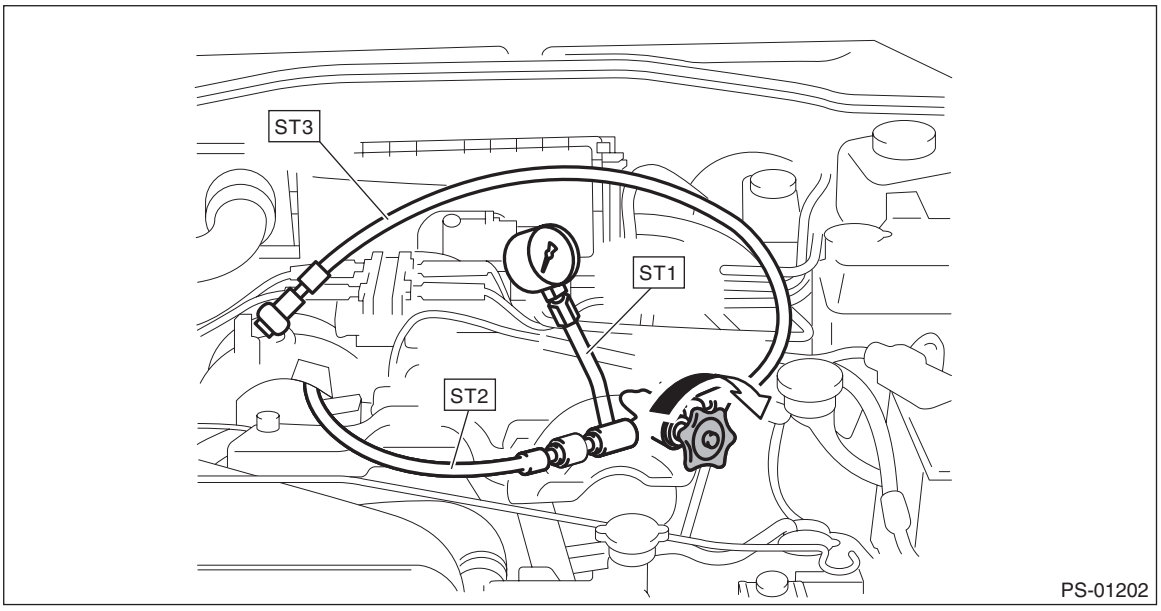
8) Measure the regular pressure.

Service limit:
981 kPa (10 kgf/cm^2, 142 psi) or less
9) If it is not within the specification, replace the faulty part for the following problems. (Pipe or hose clogged, leaks from fluid line, and mixture of foreign matter in fluid line)

Relief pressure measurement

1) Attach ST1, ST2 and ST3 to the vehicle body in the same way as for regular pressure measurement.

Preparation tool:
ST1: PRESSURE GAUGE (925711000)
ST2: ADAPTER HOSE B (34099AC020)
ST3: ADAPTER HOSE A (34099AC010)



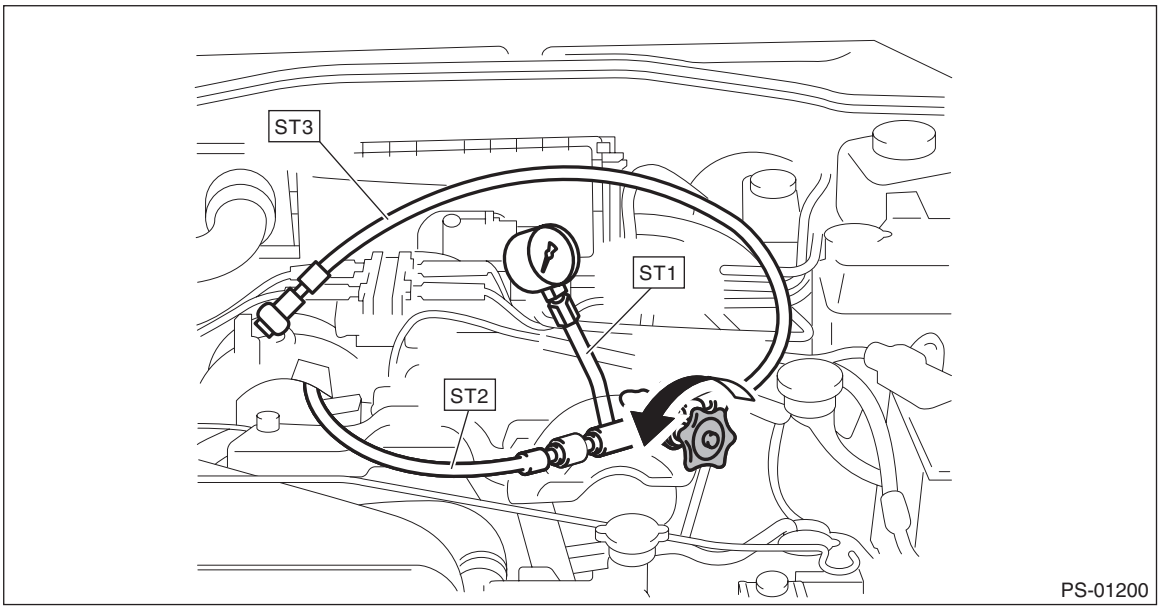
2) Close the valve.
3) Measure the relief pressure.

Service limit:
H4 model:
8,300 — 9,000 kPa (85 — 92 kgf/cm^2, 1,203 — 1,305 psi)
H6 model:
8,900 — 9,600 kPa (91 — 98 kgf/cm^2, 1,290 — 1,392 psi)
4) If the torque is not within specified range, replace the oil pump.

Working pressure measurement

1) Attach ST1, ST2 and ST3 to the vehicle body in the same way as for regular pressure measurement.

Preparation tool:
ST1: PRESSURE GAUGE (925711000)
ST2: ADAPTER HOSE B (34099AC020)
ST3: ADAPTER HOSE A (34099AC010)



2) Open the valve.
3) Measure the working pressure of control valve by turning steering wheel from stop to stop.

Service limit:
H4 model:
8,300 — 9,000 kPa (85 — 92 kgf/cm^2, 1,203 — 1,305 psi)
H6 model:
8,900 — 9,600 kPa (91 — 98 kgf/cm^2, 1,290 — 1,392 psi)
4) If it is out of specification, measure the steering effort. <Ref. to PS-82, MEASUREMENT OF STEERING EFFORT, INSPECTION, General Diagnostic Table.>
If the steering wheel effort is not within specification, replace the control valve itself or control valve and pinion as a single unit, using new parts.