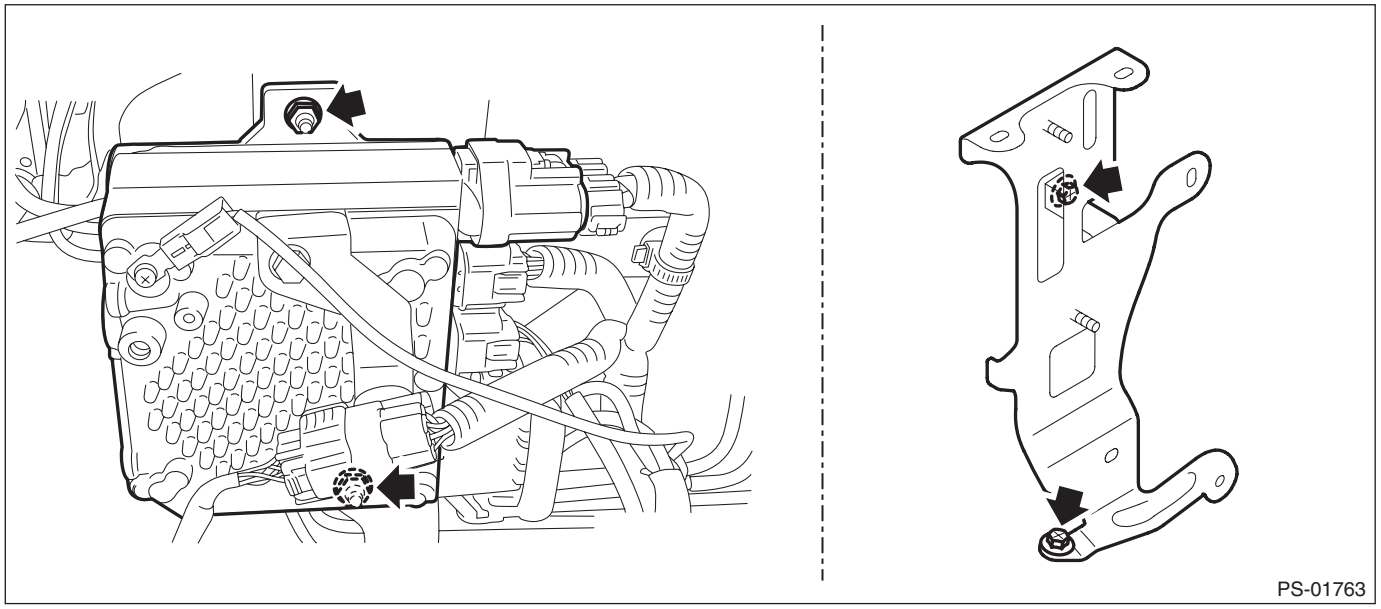
12.Power Steering Control Module

A: REMOVAL

1) Disconnect the ground cable from battery. <Ref. to NT-5, BATTERY, NOTE, Note.>

NOTE:
Disconnect the ground terminal from battery sensor.

2) Remove the power steering control module.
   (1) Disconnect the connector of the power steering control module.
   (2) Remove the nuts, and remove the power steering control module.
   (3) Remove the bracket - control module.



B: INSTALLATION

1) Attach the bracket - control module.

Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

2) Install the power steering control module.

Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

3) Connect the harness connector.

CAUTION:
Make sure that the connector is securely locked.

4) Connect the battery ground terminal. <Ref. to NT-5, BATTERY, NOTE, Note.>

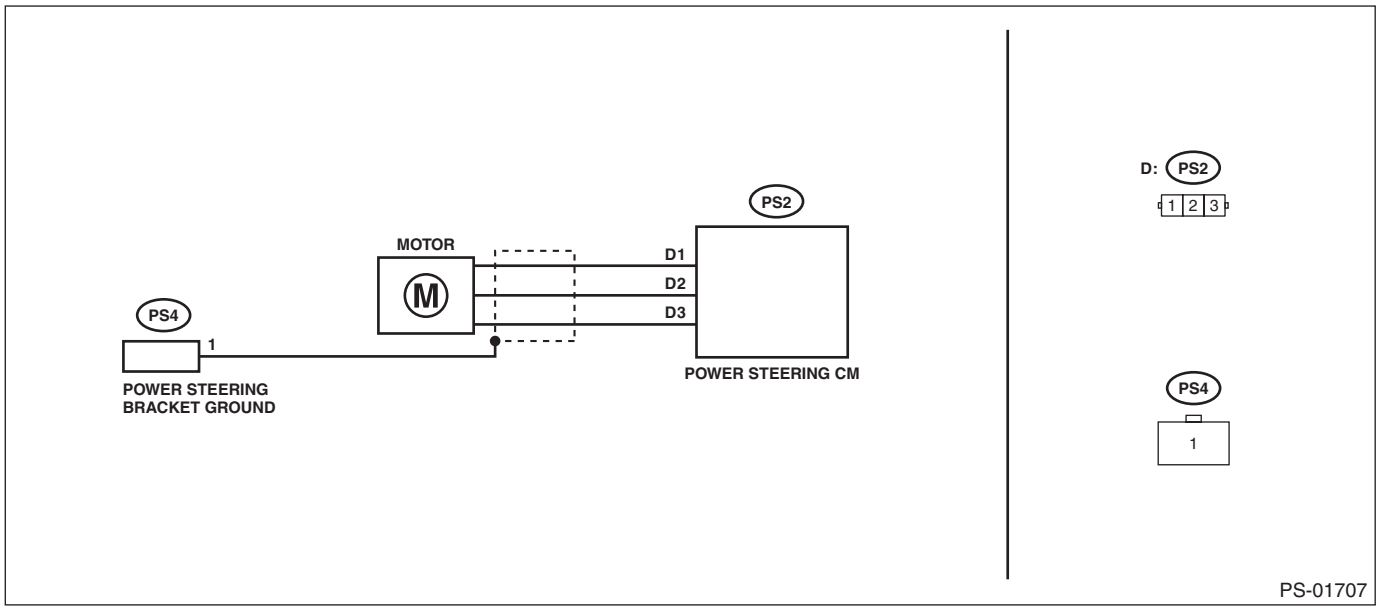
NOTE:
Connect the ground terminal to battery sensor.

C: INSPECTION

1. CHECK MOTOR UNIT

1) Turn the ignition switch to OFF.
2) Disconnect the connector from power steering unit.
3) Using a tester and test harness, check the internal resistance of the harness terminals.

Preparation tool:
Circuit tester

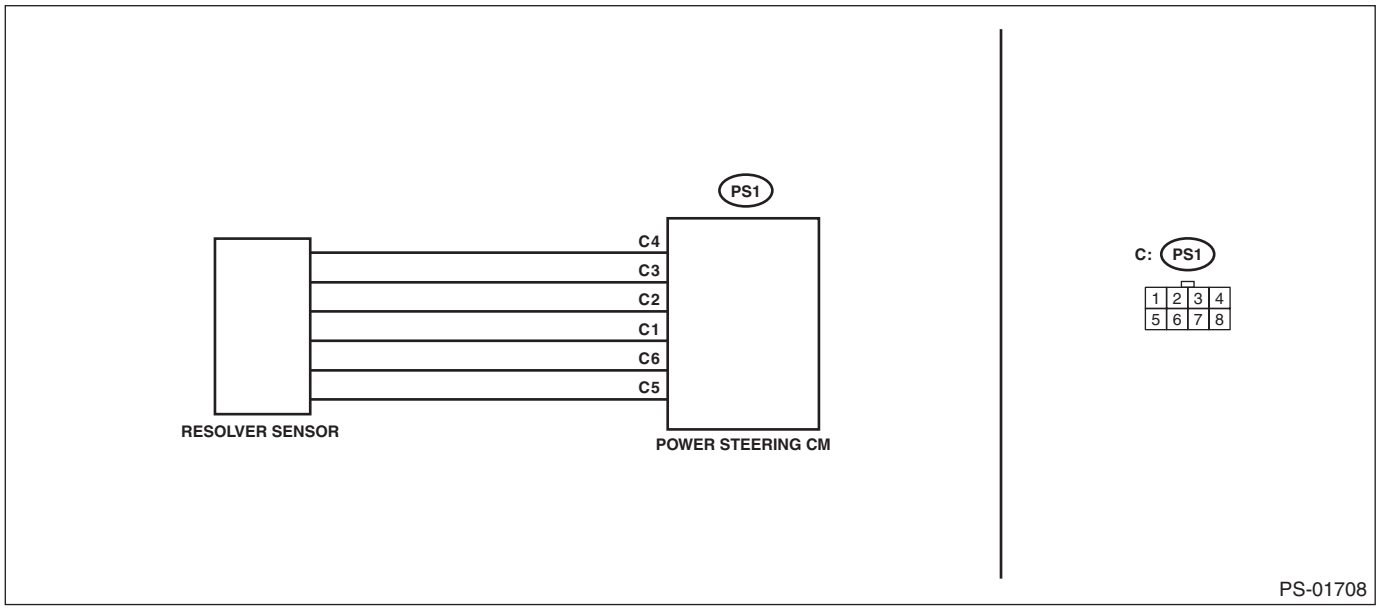


Between connector and terminal	Standard
(PS2) No. 1 — No. 2 (PS2) No. 1 — No. 3 (PS2) No. 2 — No. 3	Less than 10 Ω
(PS2) No. 1 — Steering gearbox body (PS2) No. 2 — Steering gearbox body (PS2) No. 3 — Steering gearbox body	1 MΩ or more

2. PERFORM UNIT CHECK OF RESOLVER SENSOR

1) Turn the ignition switch to OFF.
2) Disconnect the connector from power steering unit.
3) Using a tester and test harness, check the internal resistance of the harness terminals.

Preparation tool:
Circuit tester



Between connector and terminal	Standard
(PS1) No. 1 — No. 2 (PS1) No. 3 — No. 4 (PS1) No. 5 — No. 6	Less than 10 Ω
(PS1) No. 1 — Steering gearbox body (PS1) No. 2 — Steering gearbox body (PS1) No. 3 — Steering gearbox body (PS1) No. 4 — Steering gearbox body (PS1) No. 5 — Steering gearbox body (PS1) No. 6 — Steering gearbox body	1 MΩ or more

13.General Diagnostic Table

A: INSPECTION

• Hydraulic type

Trouble	Possible cause	Corrective action
• Steering effort is heavy in all ranges. • Steering effort is heavy at stand still. • Steering wheel vibrates when turning.	1. Pulley belt • Unequal length of pulley belts • Contact with oil or grease • Looseness or damage of the pulley belt • Poor uniformity of the pulley belt cross section • Pulley belt touches to pulley bottom • Poor revolution of pulleys (except oil pump pulley) • Poor revolution of oil pump pulley	Adjust or replace the faulty parts.
	2. Tire and wheel • Improper tire out of specifications*1 • Improper wheel out of specifications*1 • Tires not properly inflated	Replace or reinflate the tire and wheel. Instruct customers.
	3. Fluid • Low fluid level • Air entry in fluid • Dust entry in fluid • Fluid deterioration • Inadequate warm up of fluid*2	Refill the fluid, bleed air, replace or instruct customer.
	4. Idle speed • Lower idle speed • Excessive drop of idle speed at start or when turning the steering wheel*3	Adjust the idle speed or instruct customer.
	5. Measure the hydraulic pressure. <Ref. to PS-79, INSPECTION, Oil Pump.>	Replace the faulty parts.
	6. Measure the steering wheel effort. <Ref. to PS-91, MEASUREMENT OF STEERING EFFORT (HYDRAULIC TYPE), INSPECTION, General Diagnostic Table.>	Adjust or replace.
	7. Fluid line • Fluid leakage from fluid line	Repair or replace.
• Vehicle leads to one side or the other. • Returning force of steering wheel to center is poor. • Steering wheel vibrates when turning.	1. Tire and wheel • Flat tire • Mixed use of different tires • Mixed use of different wheels • Abnormal wear of tire • Unequal tread remaining • Unequal pressure of tire	Adjust, repair or replace the tire and wheel.
	2. Front alignment • Improper or unequal caster • Improper or unequal toe-in • Loose suspension connections	Adjust or retighten.
	3. Others • Damaged joint assembly • Unbalance of ground clearance • Unbalance of load	Replace or adjust the faulty parts, or instruct customer.
	4. Measure the steering wheel effort. <Ref. to PS-91, MEASUREMENT OF STEERING EFFORT (HYDRAULIC TYPE), INSPECTION, General Diagnostic Table.>	Adjust or replace the faulty parts.

*1 If the tires or wheels are wider than standard, the load to power steering system is increased. Accordingly, in a condition, for example before fluid warms-up, relief valve may work before reaching maximum turning angle. In this situation, steering effort may become relatively heavy. When the measured hydraulic pressure is normal, there is no abnormal thing.
*2 In cold weather, steering effort may be heavy due to increased flow resistance of cold fluid. After warming-up engine, turn the steering wheel from stop to stop several times to warm up fluid. If steering effort reduces normally, function is normal.
*3 In cold weather or with insufficient warm up of the engine, steering effort may be heavy due to excessive drop of idling when turning the steering wheel. Start the vehicle with increasing engine speed than usual. If the steering effort returns to normal, the function operates normally.

- Electric type

Trouble	Possible cause	Corrective action
• Steering effort is heavy in all ranges. • Steering effort is heavy at stand still. • Steering wheel vibrates when turning.	1. Tire and wheel • Improper tire out of specifications • Improper wheel out of specification • Tires not properly inflated	Replace or reinflate the tire and wheel.
	2. Measure the steering wheel effort. <Ref. to PS-92, MEASUREMENT OF STEERING EFFORT (ELECTRIC TYPE), INSPECTION, General Diagnostic Table.>	Adjust or replace the faulty parts.
• Vehicle leads to one side or the other. • Returning force of steering wheel to center is poor. • Steering wheel vibrates when turning.	1. Tire and wheel • Flat tire • Mixed use of different tires • Mixed use of different wheels • Abnormal wear of tire • Unequal tread remaining • Unequal pressure of tire	Adjust, repair or replace the tire and wheel.
	2. Front wheel alignment • Improper or unequal caster • Improper or unequal toe-in • Loose suspension connections	Adjust or retighten.
	3. Measure the steering wheel effort. <Ref. to PS-92, MEASUREMENT OF STEERING EFFORT (ELECTRIC TYPE), INSPECTION, General Diagnostic Table.>	Adjust or replace the faulty parts.

NOTE:
When performing repeated steering operation with the vehicle at standstill, the steering effort may be temporarily heavy because the heat generated in the system activates the power steering protection control. This is not a malfunction caused by the steering system. After a while, it will return to normal steering effort. (In this case, the steering warning light will not come on and there will be no DTC.)