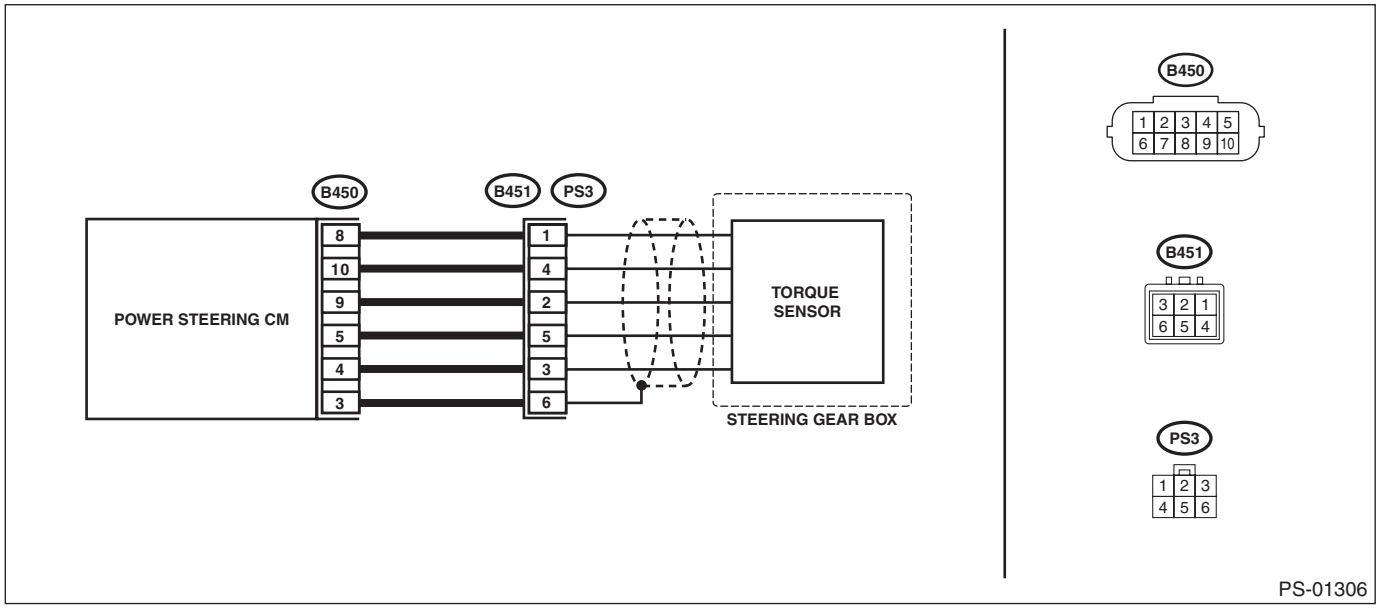
12.Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC C2511 TORQUE SENSOR FAILURE 1 (MAIN)

TROUBLE SYMPTOM:

- The steering wheel operation feels heavy.
- Steering warning light illuminates.

WIRING DIAGRAM:



Step		Check	Yes	No
1	**CHECK TORQUE SENSOR SIGNAL.** 1) Display the current data of the power steering control module using the Subaru Select Monitor. 2) Check the voltage of «Torque sensor main output», «Torque sensor sub output», «Torque sensor reference voltage» and «Torque sensor power supply voltage».	Is the voltage of the «Torque sensor main output» and «Torque sensor sub output» 2.5±0.1 V? Is the voltage of the «Torque sensor reference voltage» 3±0.1 V? Is the voltage of the «Torque sensor power supply voltage» 8±0.4 V?	Check for poor contact of the connector, and check the conditions again. If the condition recur, go to the next step. Go to step **2**. If it does not recur, complete the inspection.	Go to step **2**.
2	**CHECK HARNESS.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector (B450, B451). 3) Using a tester and test harness, check the internal resistance of the harness terminals. ***Connector & terminal*** ***(B450) No. 4 — (B451) No. 3:*** ***(B450) No. 5 — (B451) No. 5:*** ***(B450) No. 8 — (B451) No. 1:*** ***(B450) No. 9 — (B451) No. 2:*** ***(B450) No. 10 — (B451) No. 4:***	Is the resistance less than 10 Ω?	Go to step **3**.	Repair or replace the harness.

	Step	Check	Yes	No
3	**CHECK POWER STEERING CONTROL MODULE.** 1) Connect the connector (B450) to the power steering control module. 2) Turn the ignition switch to ON. 3) Short circuit between the terminals of the connector (B451). ***Terminals*** ***No. 4 — No. 3:*** ***No. 4 — No. 5:*** 4) Using the Subaru Select Monitor, check the voltage of «Torque sensor main output», «Torque sensor sub output».	Are the voltages of «Torque sensor main output», «Torque sensor sub output» before short circuit 0±0.1 V? Are the voltages of «Torque sensor main output», «Torque sensor sub output» after short circuit 3±0.1 V?	Replace the steering gearbox. <Ref. to PS-26, REMOVAL, Electric Power Steering Gearbox.>	Replace the power steering control module. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>

B: DTC C2512 TORQUE SENSOR FAILURE 2 (SUB)

NOTE:
For the diagnostic procedures, refer to “DTC 2511 TORQUE SENSOR FAILURE 1 (MAIN)”. <Ref. to PS(diag)-25, DTC C2511 TORQUE SENSOR FAILURE 1 (MAIN), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

C: DTC C2513 TORQUE SENSOR FAILURE 3 (MUCH TOLERANCE)

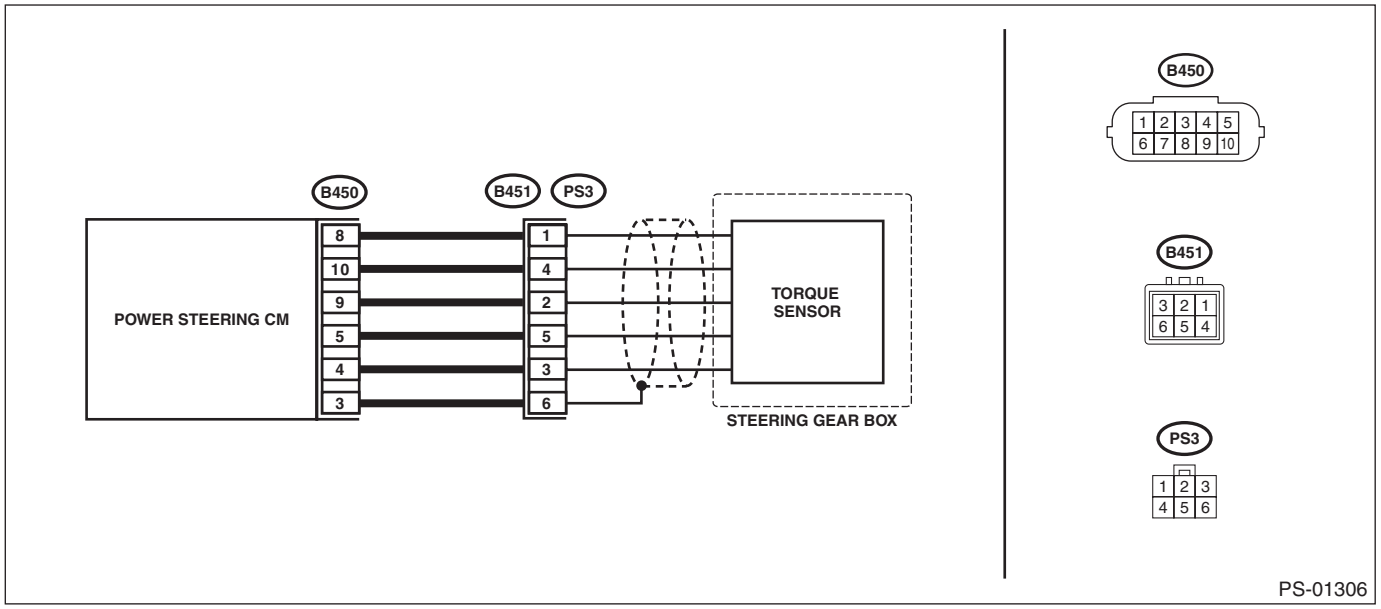
NOTE:
For the diagnostic procedures, refer to “DTC 2511 TORQUE SENSOR FAILURE 1 (MAIN)”. <Ref. to PS(diag)-25, DTC C2511 TORQUE SENSOR FAILURE 1 (MAIN), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

D: DTC C2514 TORQUE SENSOR POWER SUPPLY FAILURE

TROUBLE SYMPTOM:

- The steering wheel operation feels heavy.
- Steering warning light illuminates.

WIRING DIAGRAM:



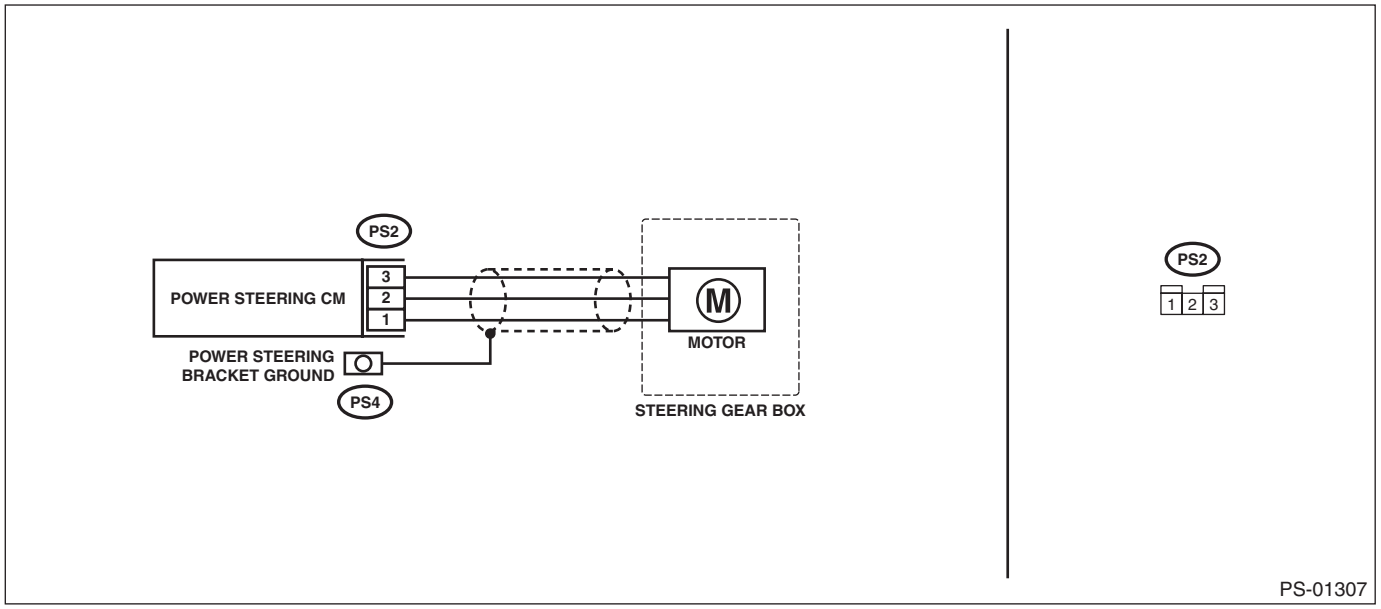
Step		Check	Yes	No
1	**CHECK TORQUE SENSOR SIGNAL.** 1) Display the current data of the power steering control module using the Subaru Select Monitor. 2) Check the voltage of «Torque sensor main output», «Torque sensor sub output», «Torque sensor reference voltage» and «Torque sensor power supply voltage».	Is the voltage of the «Torque sensor main output» and «Torque sensor sub output» 2.5±0.1 V? Is the voltage of the «Torque sensor reference voltage» 3±0.1 V? Is the voltage of the «Torque sensor power supply voltage» 8±0.4 V?	Check for poor contact of the connector, and check the conditions again. If the condition recur, go to the next step. Go to step **2**. If it does not recur, complete the inspection.	Go to step **2**.
2	**CHECK HARNESS.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector (B451). 3) Using a tester and test harness, check the internal resistance of the harness terminals. ***Connector & terminal*** ***(B450) No. 4 — (B451) No. 3:*** ***(B450) No. 5 — (B451) No. 5:*** ***(B450) No. 8 — (B451) No. 1:*** ***(B450) No. 9 — (B451) No. 2:*** ***(B450) No. 10 — (B451) No. 4:***	Is the resistance less than 10 Ω?	Replace the power steering control module. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>	Repair or replace the harness.

E: DTC C2521 MOTOR FAILURE 1 (MOTOR)

TROUBLE SYMPTOM:

- The steering wheel operation feels heavy.
- Steering warning light illuminates.

WIRING DIAGRAM:



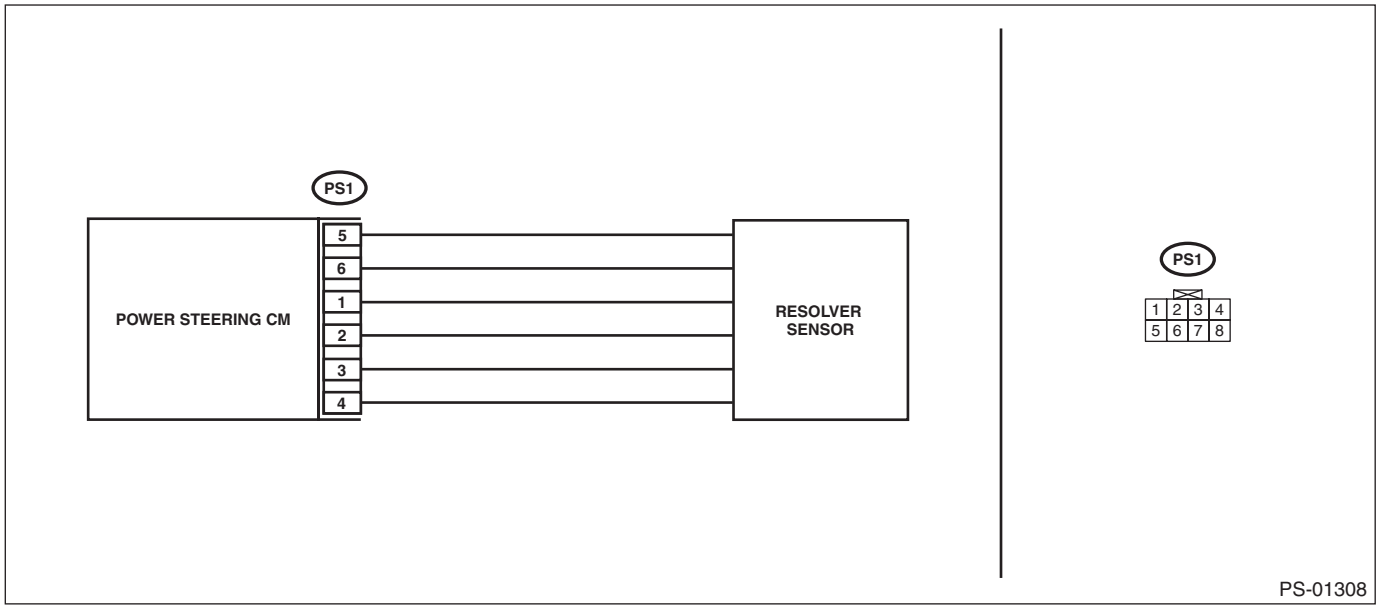
	Step	Check	Yes	No
1	**CHECK MOTOR UNIT.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector (PS2) from the power steering control module. 3) Use a tester to check for continuity in the motor. ***Connector & terminal*** ***(PS2) No. 1 — No. 2:*** ***(PS2) No. 1 — No. 3:*** ***(PS2) No. 2 — No. 3:***	Is there continuity?	Go to step **2**.	Replace the steering gearbox. <Ref. to PS-26, REMOVAL, Electric Power Steering Gearbox.>
2	**CHECK MOTOR INSULATION.** Use a tester to check for short circuits in the motor. ***Connector & terminal*** ***(PS2) No. 1 — Steering gearbox body:*** ***(PS2) No. 2 — Steering gearbox body:*** ***(PS2) No. 3 — Steering gearbox body:***	Is the resistance 1 MΩ or more?	Replace the power steering control module. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>	Replace the steering gearbox. <Ref. to PS-26, REMOVAL, Electric Power Steering Gearbox.>

F: DTC C2522 MOTOR FAILURE 2 (ANGLE ABNORMAL)

TROUBLE SYMPTOM:

- The steering wheel operation feels heavy.
- Steering warning light illuminates.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK MOTOR UNIT.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector (PS1) from the power steering control module. 3) Use a tester to check for continuity in the resolver sensor. ***Connector & terminal*** ***(PS1) No. 1 — No. 2 :*** ***(PS1) No. 3 — No. 4 :*** ***(PS1) No. 5 — No. 6 :***	Is there continuity?	Go to step **2**.	Replace the steering gearbox. <Ref. to PS-26, REMOVAL, Electric Power Steering Gearbox.>
2	**CHECK RESOLVER SENSOR INSULATION.** Using a tester, check for short circuits in the resolver sensor. ***Connector & terminal*** ***(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:***	Is the resistance 1 MΩ or more?	Replace the power steering control module. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>	Replace the steering gearbox. <Ref. to PS-26, REMOVAL, Electric Power Steering Gearbox.>

G: DTC C2531 ECU FAILURE 1 (CPU FAILURE)

TROUBLE SYMPTOM:

- The steering wheel operation feels heavy.
- Steering warning light illuminates.

NOTE:
When this code is displayed, replace the power steering control module with new parts. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>

H: DTC C2532 ECU FAILURE 2 (PERIPHERAL CIRCUIT FAILURE)

TROUBLE SYMPTOM:

- The steering wheel operation feels heavy.
- Steering warning light illuminates.

NOTE:
When this code is displayed, replace the power steering control module with new parts. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>

I: DTC C2533 ECM FAILURE 3 (BOARD TEMPERATURE SENSOR FAILURE)

TROUBLE SYMPTOM:
The steering wheel operation feels heavy.

NOTE:
When this code is displayed, replace the power steering control module with new parts. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>

J: DTC C2541 VEHICLE SPEED IS ABNORMAL

TROUBLE SYMPTOM:
The steering wheel operation feels heavy.

	Step	Check	Yes	No
1	**CHECK DTC.** Read all DTCs using the Subaru Select Monitor.	Are VDC CM or vehicle speed-related DTCs detected?	Perform the diagnosis according to the DTC.	Go to step **2**.
2	**CHECK LAN SYSTEM.** Perform the diagnosis for LAN system using the Subaru Select Monitor. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>	Is a DTC of the body integrated unit displayed?	Perform the diagnosis according to the DTC. <Ref. to LAN(diag)-43, List of Diagnostic Trouble Code (DTC).>	Go to step **3**.
3	**CHECK VEHICLE SPEED SIGNAL.** 1) Use the Subaru Select Monitor, display the current data [Vehicle Speed] of the power steering control module. 2) Lift up the vehicle (so that the wheels turn freely), start the engine, and raise engine speed in gear. **CAUTION:** **Be careful that no one is near the spinning tires and nothing gets caught in them.** 3) Check for whether the data changes according to vehicle speed.	Is the data in sync with the vehicle speed?	It is possible that temporary poor communication occurs. Perform memory clear.	Replace the power steering control module. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>

K: DTC C2543 ERROR PASSIVE STATUS

TROUBLE SYMPTOM:
The steering wheel operation feels heavy.

	Step	Check	Yes	No
1	**CHECK LAN SYSTEM.** Perform the diagnosis for LAN system using the Subaru Select Monitor. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>	Is a DTC of the CAN communication displayed?	Perform the diagnosis according to the DTC. <Ref. to LAN(diag)-43, List of Diagnostic Trouble Code (DTC).>	Check for poor contact of the connector, and check the conditions again. If the condition recurs, perform the diagnosis according to the DTC. <Ref. to LAN(diag)-43, List of Diagnostic Trouble Code (DTC).> If it does not recur, complete the inspection.

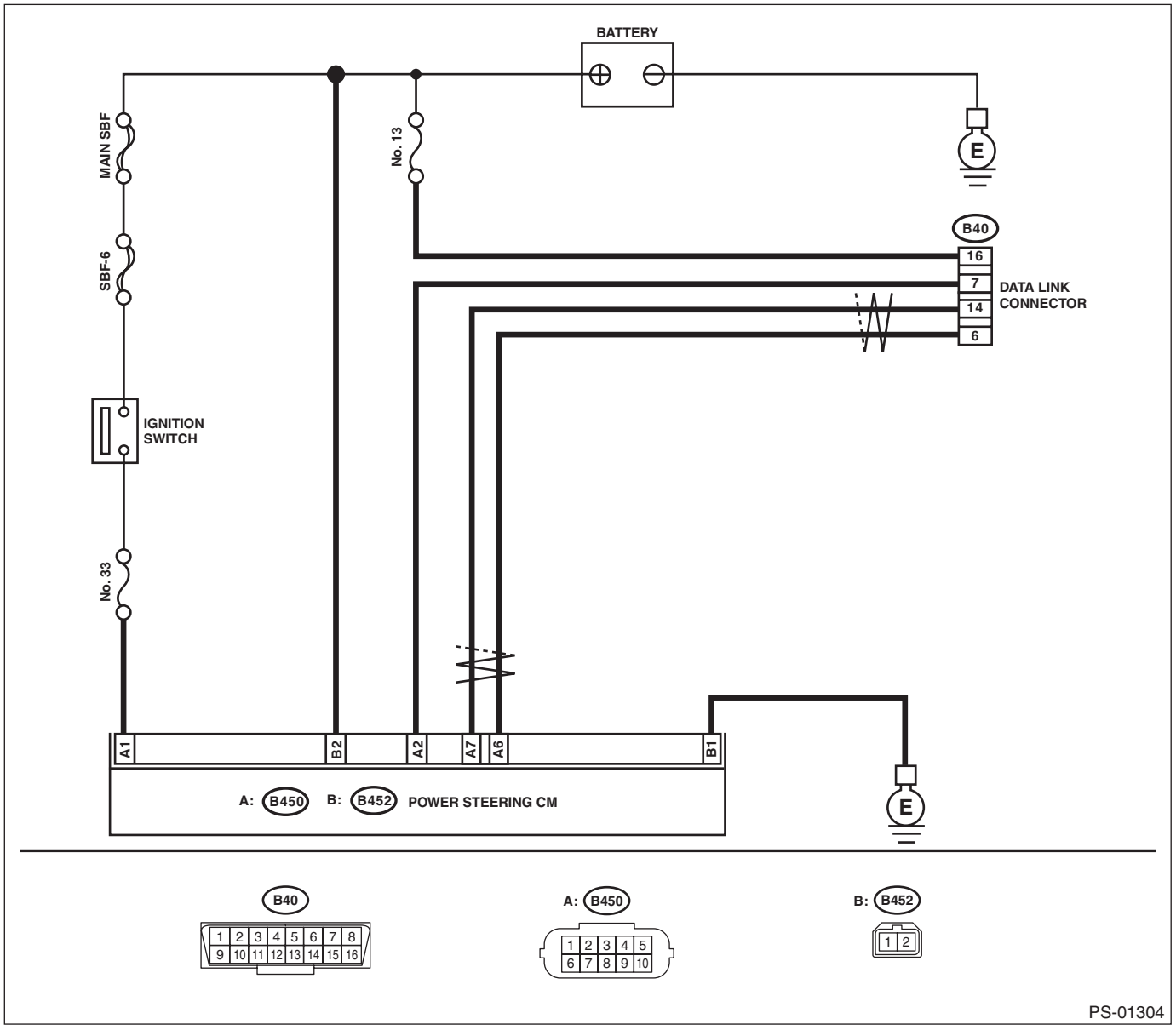
L: DTC C2551 POWER SUPPLY RELAY FAILURE

TROUBLE SYMPTOM:

- The steering wheel operation feels heavy.
- Steering warning light illuminates.

NOTE:
If power supply voltage failure exists at the vehicle side, the warning light goes off if the normal voltage returns.

WIRING DIAGRAM:



Step		Check	Yes	No
1	**CHECK BATTERY.** 1) Measure the battery voltage. 2) Measure the battery specific gravity.	Is the voltage 12 V or more? Is the specific gravity 1.260 or more?	Go to step **2**.	Charge or replace the battery.

	Step	Check	Yes	No
2	**CHECK WIRING HARNESS.** 1) Disconnect the connector of the power steering control module. 2) Turn the ignition switch to ON. 3) Using a tester and test harness, check the voltage between terminals. ***Connector & terminal*** ***(B452) No. 2 (+) — Chassis ground (–):***	Is the voltage 12 V or more?	Go to step **3**.	Repair the open circuit of harness or the poor contact of connector between the power steering control module and the battery.
3	**CHECK GROUND CIRCUIT.** 1) Turn the ignition switch to OFF. 2) Using a tester and test harness, check the resistance between terminals. ***Connector & terminal*** ***(B452) No. 1 — Chassis ground:***	Is the resistance less than 1 Ω?	Check for poor contact of terminals in the power steering control module, and if there are no malfunctions, replace the power steering control module. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>	Repair the open circuit or poor contact of the harness between the power steering control module and chassis ground.

M: DTC C2552 MOTOR RELAY ABNORMAL

TROUBLE SYMPTOM:

- The steering wheel operation feels heavy.
- Steering warning light illuminates.

NOTE:
When this code is displayed, replace the power steering control module with new parts. <Ref. to PS-41, REMOVAL, Power Steering Control Module.>

N: DTC U0073 CONTROL MODULE COMMUNICATION BUS “A” OFF

NOTE:
Refer to “LAN SYSTEM (DIAGNOSTICS)” for diagnostic procedures. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

O: DTC U0122 LOST COMMUNICATION WITH VEHICLE DYNAMICS CONTROL MODULE

NOTE:
Refer to “LAN SYSTEM (DIAGNOSTICS)” for diagnostic procedures. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

P: DTC U0416 INVALID DATA RECEIVED FROM VEHICLE DYNAMICS CONTROL MODULE

NOTE:
Refer to “LAN SYSTEM (DIAGNOSTICS)” for diagnostic procedures. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

Q: DTC U1120 LOST COMMUNICATION WITH AUTOSTART STOP CONTROL MODULE

NOTE:
Refer to “LAN SYSTEM (DIAGNOSTICS)” for diagnostic procedures. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

BODY SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

BODY SECTION

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

AC