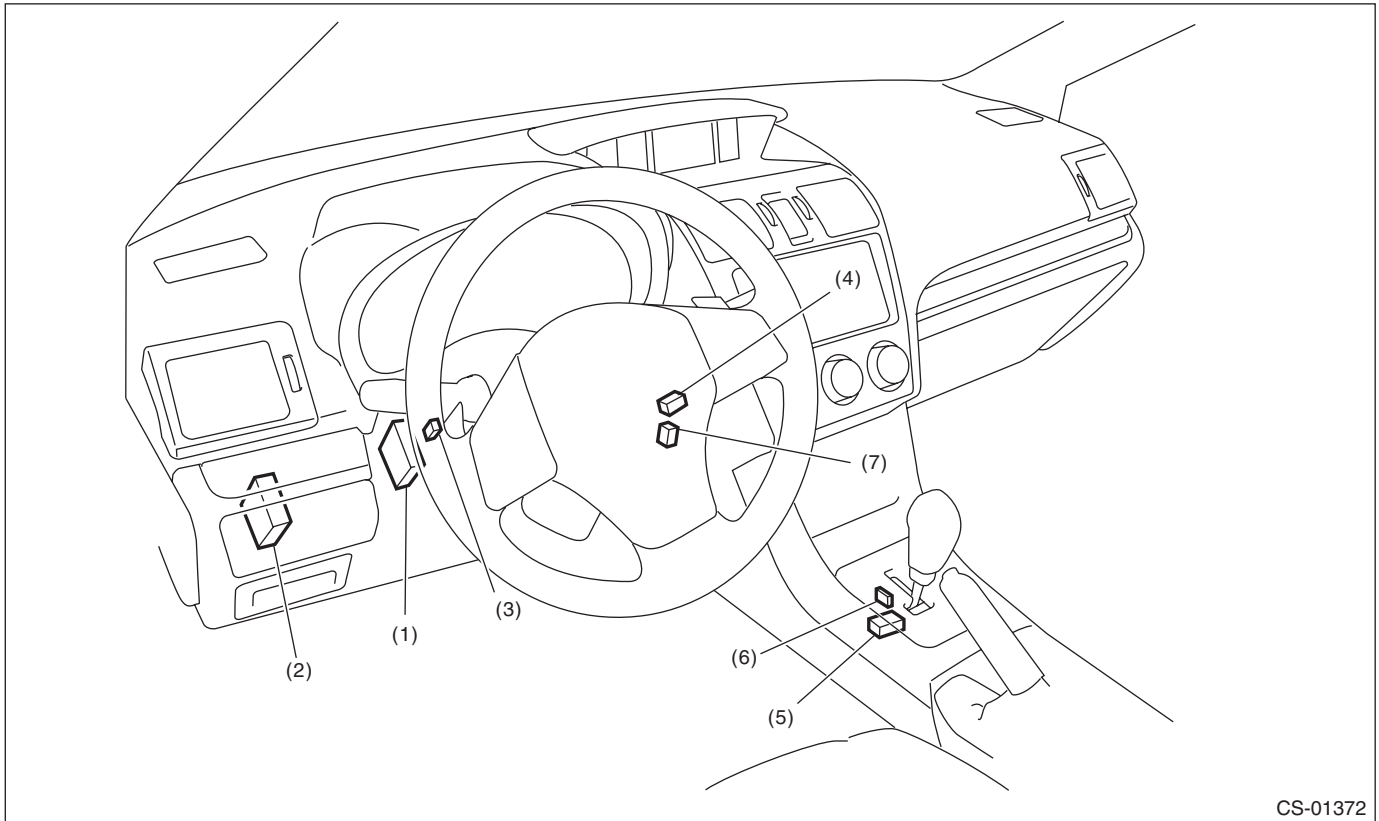


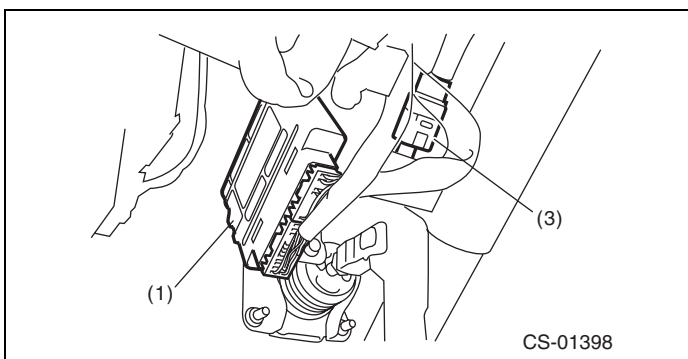
2. AT Shift Lock Control System

A: LOCATION

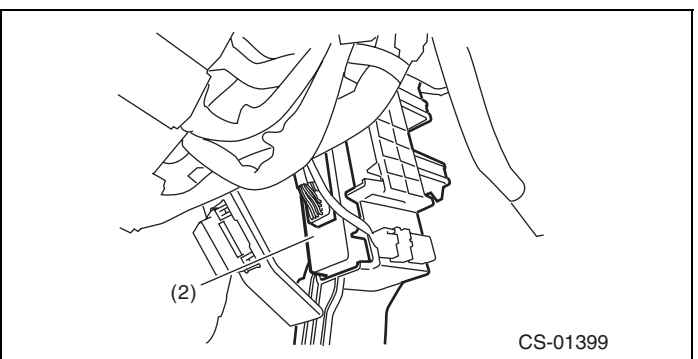


CS-01372

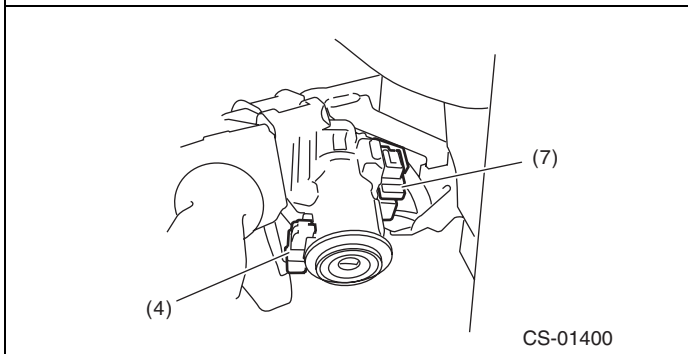
- | | | |
|---------------------------------|---|-----------------------|
| (1) TCM ("P" range) | (4) Key cylinder (with built-in key warning switch) | (6) "P" range switch |
| (2) Body integrated unit | (5) Solenoid unit | (7) Key lock solenoid |
| (3) Stop light and brake switch | | |



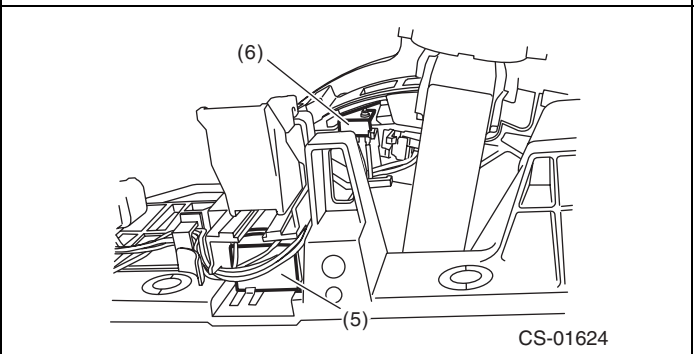
CS-01398



CS-01399



CS-01400

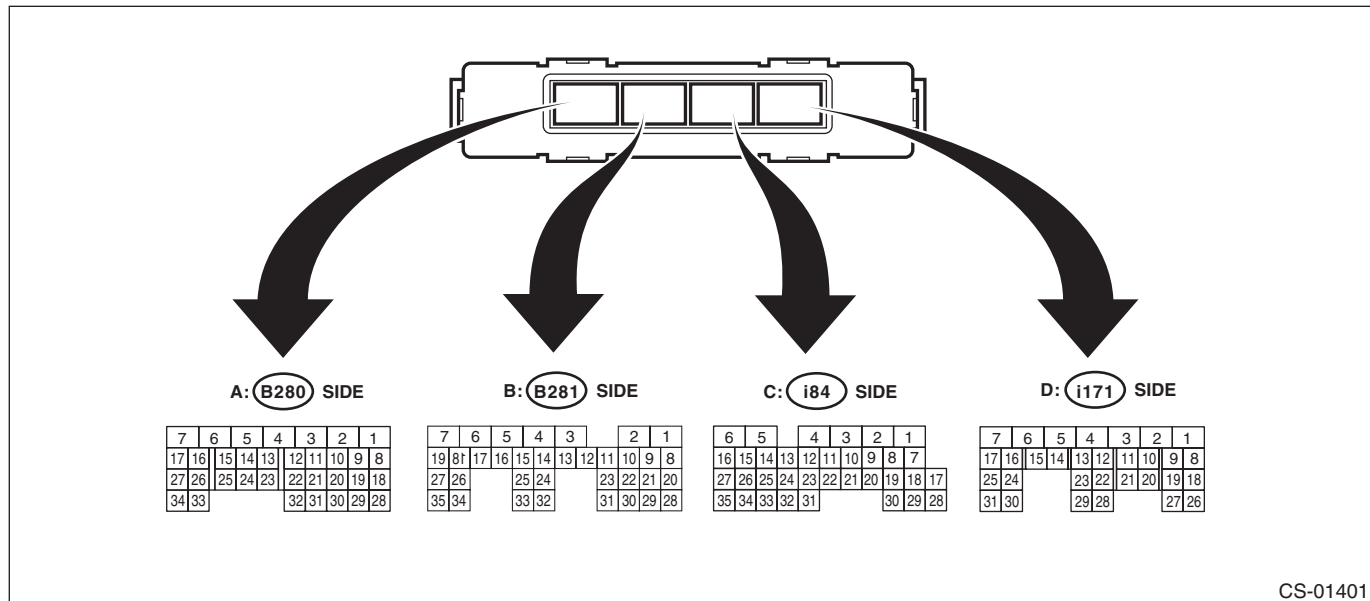


CS-01624

AT Shift Lock Control System

CONTROL SYSTEMS

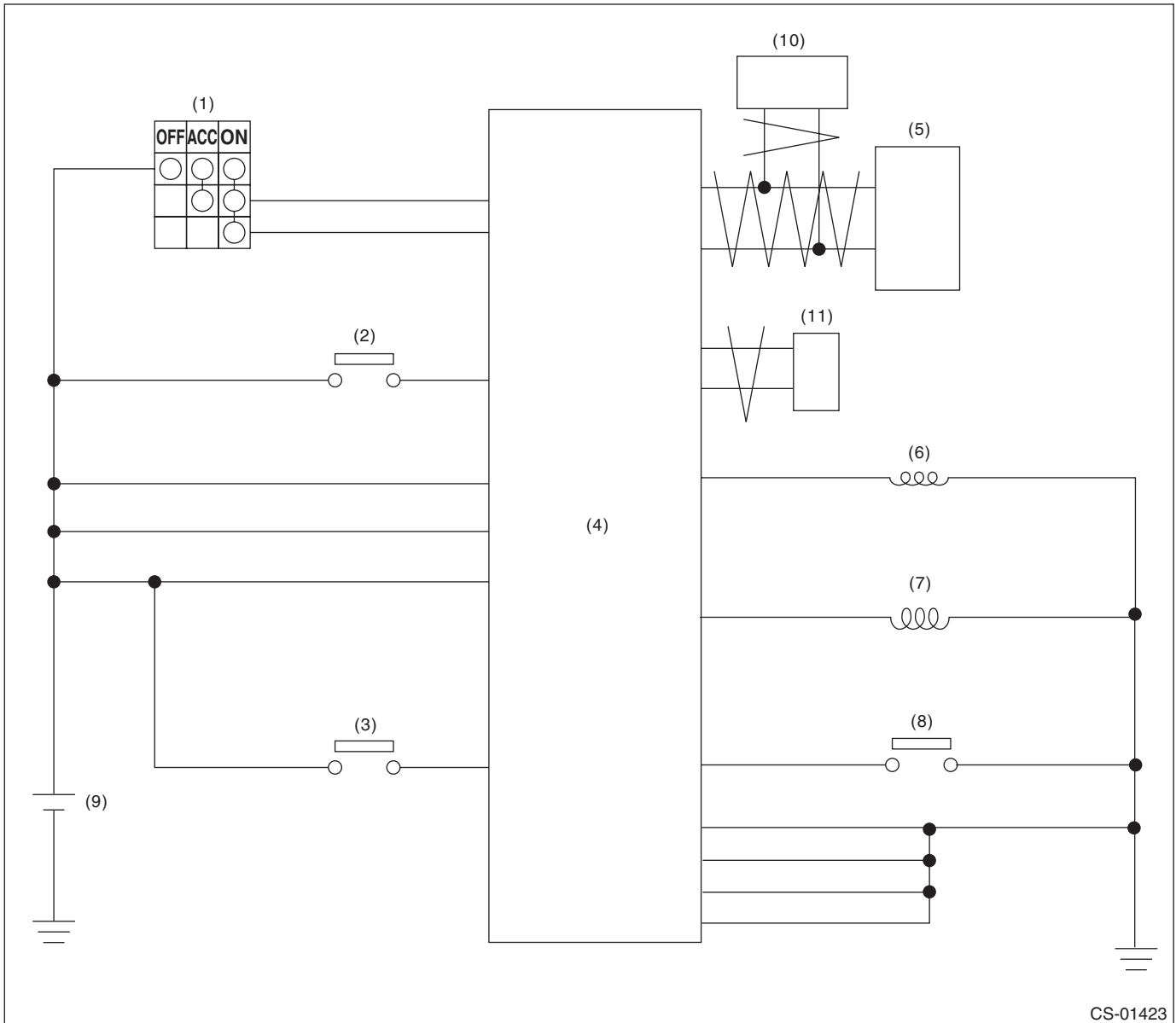
B: ELECTRICAL SPECIFICATION



CS-01401

Item	Connector No.	Terminal No.	Input/Output signal
			Measured value and measuring conditions
Battery power supply	B281	6	9 — 16 V
		7	
Ignition power supply	B280	32	10 — 15 V when ignition switch is at ACC.
	B281	3	10 — 15 V when ignition switch is at ON or START.
TCM (“P” range)	B281	20	Can not be measured because of digital communication
		28	
Stop light and brake switch	B280	10	9 — 16 V when the stop light & brake switch is ON. 0 V when the stop light & brake switch is OFF.
“P” range switch	B281	18	0 V when select lever is in “P” range. 9 — 16 V when select lever is in other positions than “P” range.
Shift lock solenoid signal	B281	5	8.5 — 16 V when shift lock is released. 0 V when shift lock is operating.
Key warning switch signal	B280	4	9 — 16 V when key is inserted. 0 V when key is removed.
Key lock solenoid signal	B281	4	7.5 — 16 V when the key is inserted with the select lever shifted in positions other than “P” range. 0 V at other conditions than above.
Ground	B280	1	—
	B281	31	
	i84	1	
	i171	29	
Delivery (test) mode signal	i84	27	Can not be measured because of digital communication
		35	

C: WIRING DIAGRAM



- | | | |
|---------------------------------|-----------------------------------|---|
| (1) Ignition switch | (5) TCM (shift range information) | (9) Battery |
| (2) Stop light and brake switch | (6) Key lock solenoid | (10) VDC CM (vehicle speed information) |
| (3) Key warning switch | (7) Shift lock solenoid | (11) ECM (delivery (test) mode signal) |
| (4) Body integrated unit | (8) "P" range switch | |

AT Shift Lock Control System

CONTROL SYSTEMS

D: INSPECTION

1. SHIFT LOCK OPERATION

Step	Check	Yes	No
1 CHECK COMMUNICATION OF SUBARU SELECT MONITOR. 1) Turn the ignition switch to ON. 2) Using the Subaru Select Monitor, check whether communication to all systems can be executed normally.	Is the system name displayed?	Go to step 2.	Perform the inspection following the diagnostic procedure in BODY CONTROL SYSTEM (DIAGNOSTICS) section. <Ref. to BC(diag)-2, Basic Diagnostic Procedure.>
2 CHECK SHIFT LOCK. 1) Turn the ignition switch to ON. 2) Shift the select lever to "P" range.	While brake pedal is not depressed, is it possible to move the select lever from the "P" range to other ranges?	Perform the inspection of "SELECT LEVER CANNOT BE LOCKED OR RELEASED". <Ref. to CS-14, SELECT LEVER CANNOT BE LOCKED OR RELEASED, INSPECTION, AT Shift Lock Control System.>	Go to step 3.
3 CHECK SHIFT LOCK.	While brake pedal is depressed, is it possible to move the select lever from the "P" range to other ranges?	Go to step 4.	Perform the inspection of "SELECT LEVER CANNOT BE LOCKED OR RELEASED". <Ref. to CS-14, SELECT LEVER CANNOT BE LOCKED OR RELEASED, INSPECTION, AT Shift Lock Control System.>
4 CHECK SHIFT LOCK. Shift the select lever to "N" range.	Is it possible to move the select lever from the "N" range to the "P" range?	Go to step 5.	Perform the inspection of "SELECT LEVER CANNOT BE LOCKED OR RELEASED". <Ref. to CS-14, SELECT LEVER CANNOT BE LOCKED OR RELEASED, INSPECTION, AT Shift Lock Control System.>

AT Shift Lock Control System

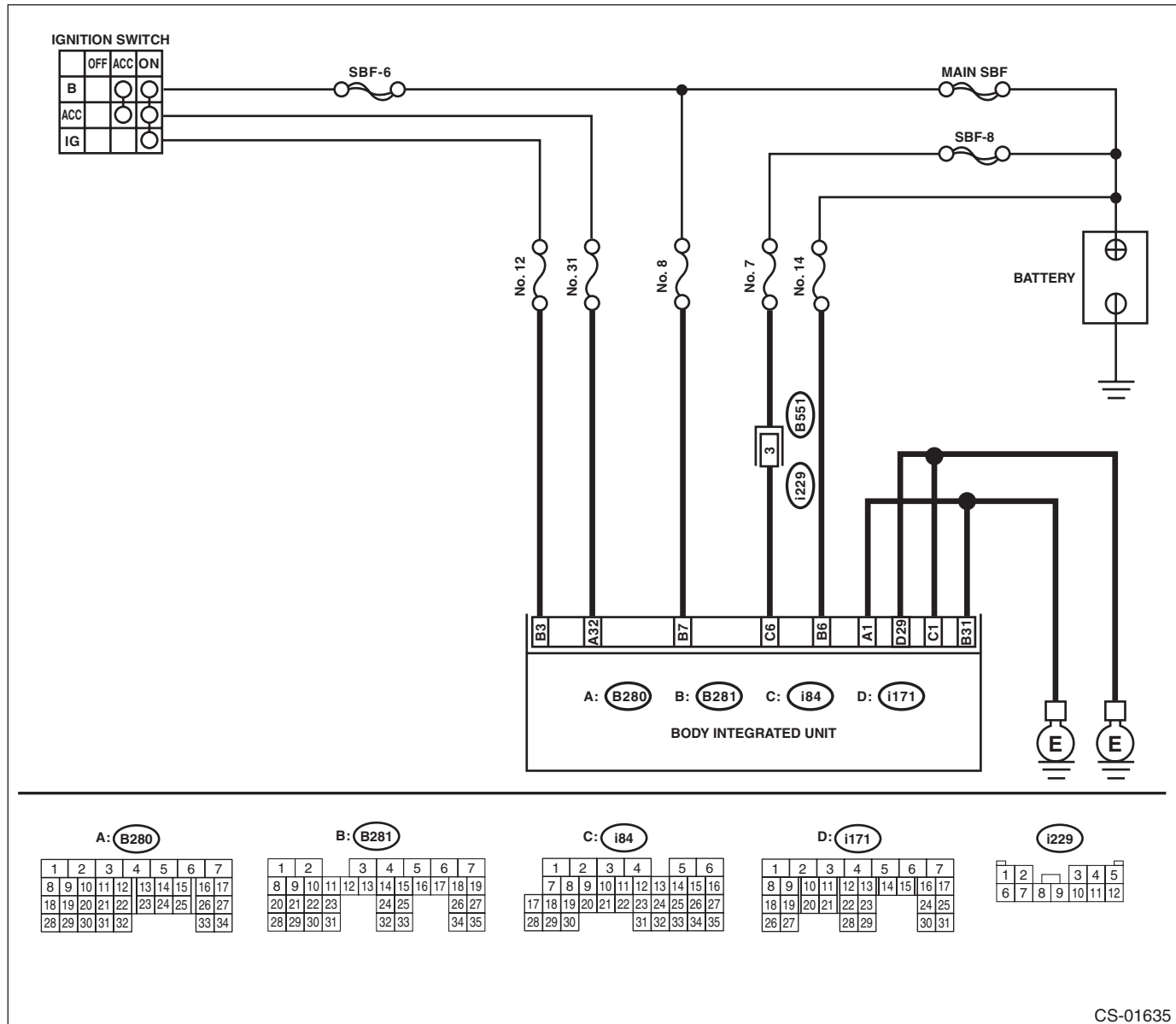
CONTROL SYSTEMS

Step	Check	Yes	No
5 CHECK SHIFT LOCK. 1) Shift the select lever to "N" range. 2) Turn the ignition switch to ACC.	While brake pedal is depressed, is it possible to move the select lever from the "N" range to the "P" range?	Go to step 6.	Perform the inspection of "SELECT LEVER CANNOT BE LOCKED OR RELEASED". <Ref. to CS-14, SELECT LEVER CANNOT BE LOCKED OR RELEASED, INSPECTION, AT Shift Lock Control System.>
6 CHECK KEY INTERLOCK. 1) Turn the ignition switch to OFF. 2) Shift the select lever to other than "P" range.	Can the ignition key be removed?	Perform the inspection of "KEY INTERLOCK CANNOT BE LOCKED OR RELEASED". <Ref. to CS-17, KEY INTERLOCK CANNOT BE LOCKED OR RELEASED, INSPECTION, AT Shift Lock Control System.>	Go to step 7.
7 CHECK KEY INTERLOCK. Shift the select lever to "P" range.	Can the ignition key be removed?	AT shift lock system is normal.	Perform the inspection of "KEY INTERLOCK CANNOT BE LOCKED OR RELEASED". <Ref. to CS-17, KEY INTERLOCK CANNOT BE LOCKED OR RELEASED, INSPECTION, AT Shift Lock Control System.>

AT Shift Lock Control System

CONTROL SYSTEMS

2. BODY INTEGRATED UNIT POWER SUPPLY AND GROUND CIRCUIT



CS-01635

Step	Check	Yes	No
1 CHECK DTC OF BODY INTEGRATED UNIT. Check DTC of body integrated unit. <Ref. to BC(diag)-9, Read Diagnostic Trouble Code (DTC).>	Is the DTC of power line displayed on body integrated unit?	Repair or replace it according to the DTC.	Go to step 2.
2 CHECK HARNESS BETWEEN BODY INTEGRATED UNIT AND BATTERY. 1) Turn the ignition switch to ON. 2) Measure the voltage between body integrated unit and chassis ground. Connector & terminal (B281) No. 3 (+) — Chassis ground (-): (B280) No. 32 (+) — Chassis ground (-): (B281) No. 6 (+) — Chassis ground (-): (B281) No. 7 (+) — Chassis ground (-): (i84) No. 6 (+) — Chassis ground (-):	Is the voltage 9 — 16 V?	Go to step 3.	Check harness for open circuit between the body integrated unit and the battery or a blown fuse.

AT Shift Lock Control System

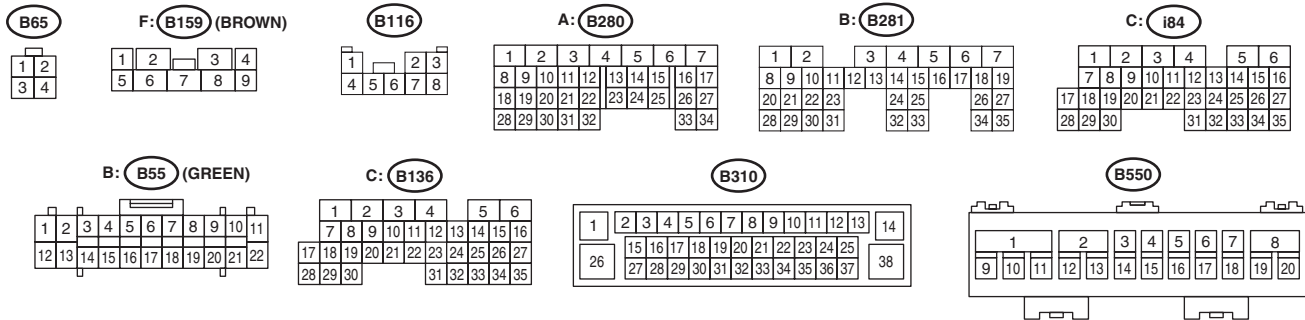
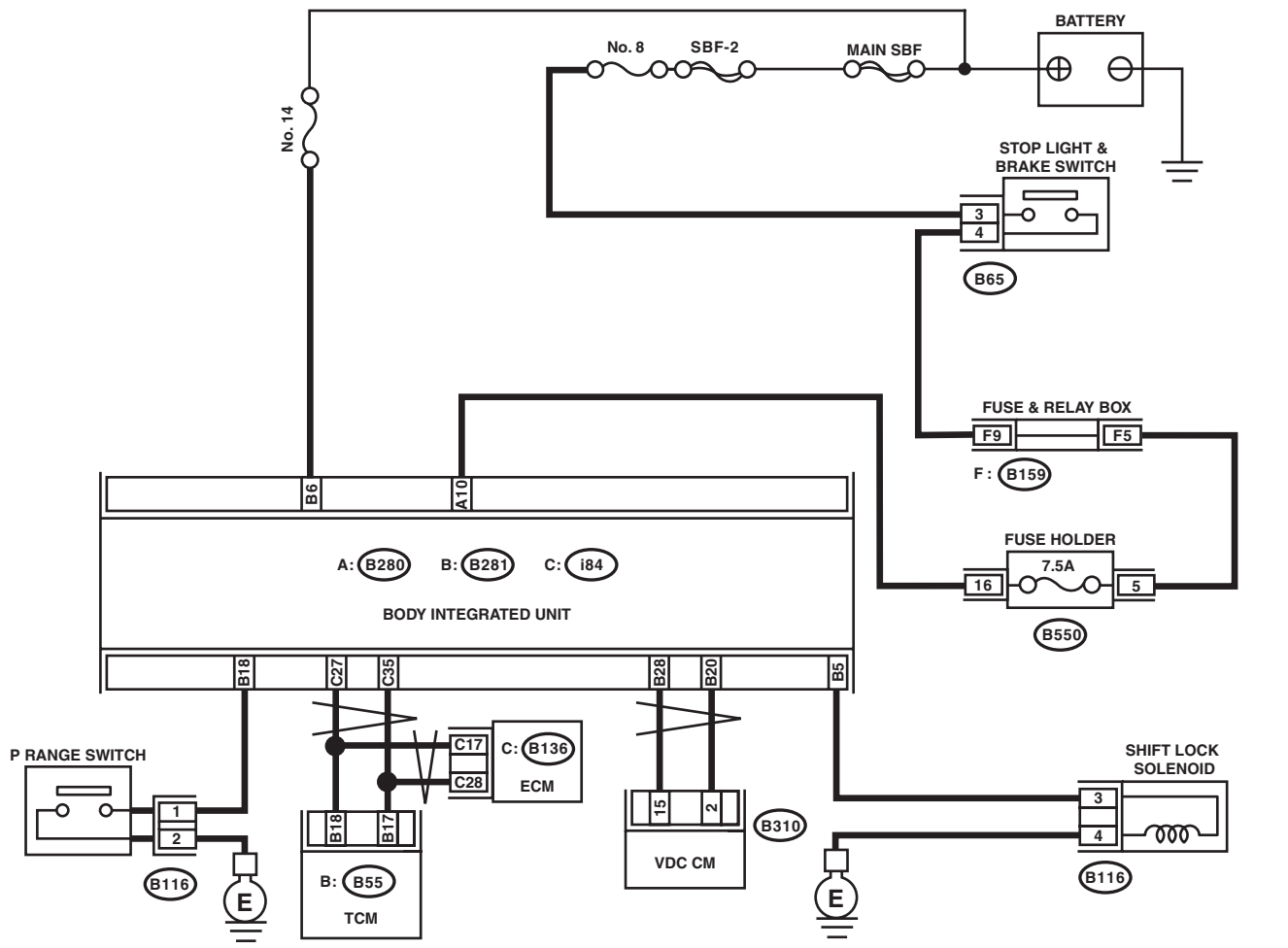
CONTROL SYSTEMS

Step	Check	Yes	No
3 CHECK HARNESS BETWEEN BODY INTEGRATED UNIT AND CHASSIS GROUND. 1) Turn the ignition switch to OFF. 2) Measure the harness resistance between the body integrated unit and chassis ground. <i>Connector & terminal</i> <i>(B280) No. 1 — Chassis ground:</i> <i>(B281) No. 31 — Chassis ground:</i> <i>(i84) No. 1 — Chassis ground:</i> <i>(i171) No. 29 — Chassis ground:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness between the body integrated unit and chassis ground.
4 CHECK FOR POOR CONTACT.	Is there poor contact of connector?	Repair the poor contact.	Check body integrated unit.

AT Shift Lock Control System

CONTROL SYSTEMS

3. SELECT LEVER CANNOT BE LOCKED OR RELEASED



CS-01633

Step	Check	Yes	No
1	CHECK BODY INTEGRATED UNIT POWER SUPPLY AND GROUND CIRCUIT. <Ref. to CS-12, BODY INTEGRATED UNIT POWER SUPPLY AND GROUND CIRCUIT, INSPECTION, AT Shift Lock Control System.>	Is there any fault?	Follow the procedures to perform inspection and repair.
		Go to step 2.	

AT Shift Lock Control System

CONTROL SYSTEMS

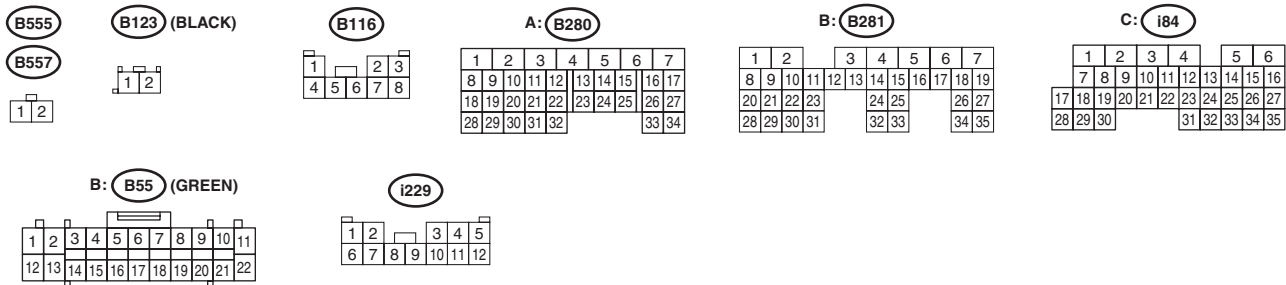
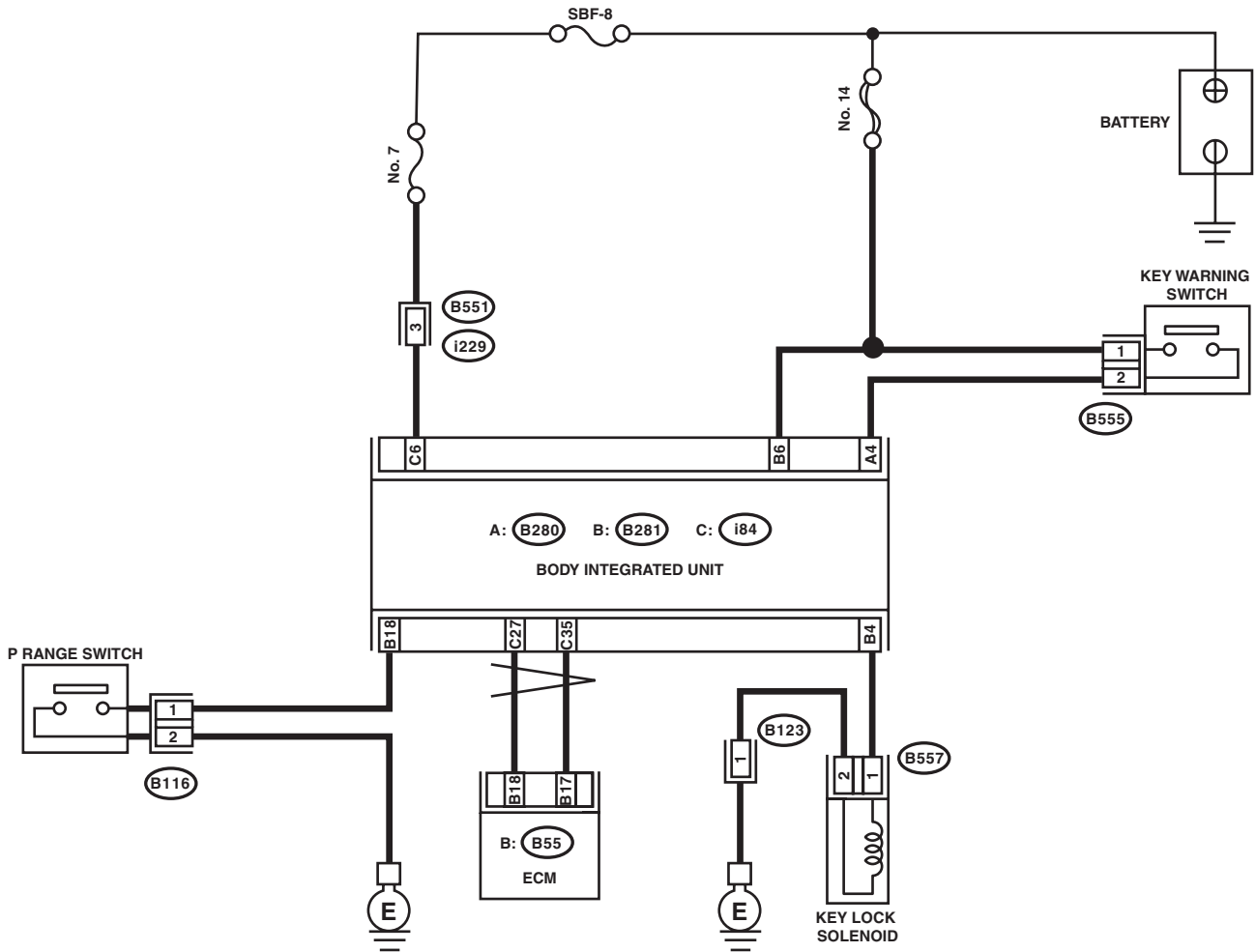
Step	Check	Yes	No
2 CHECK CURRENT DATA. 1) Connect the Subaru Select Monitor. 2) Shift the select lever to "P" range. 3) Turn the ignition switch to ON. 4) Select the current data display and display «P SW». <Ref. to BC(diag)-11, Read Current Data.>	Is the display "ON" in the P range and "OFF" in ranges other than P?	Go to step 3.	Go to step 8.
3 CHECK CURRENT DATA. Select the current data display and display «Stop Light Switch». <Ref. to BC(diag)-11, Read Current Data.>	Is "ON" displayed when the brake pedal is depressed and "OFF" displayed when the brake pedal is released?	Go to step 4.	Go to step 11.
4 CHECK BODY INTEGRATED UNIT DTC. Check the DTC of the body integrated unit when the brake pedal is pressed and when it is released. (Hold each condition for 5 seconds or more.)	Is there a DTC of a current malfunction?	Follow the DTC to perform inspection and repair.	Go to step 5.
5 CHECK CURRENT DATA. Select the current data display and display «Shift Lock Solenoid». <Ref. to BC(diag)-11, Read Current Data.>	Is "ON" displayed when the brake pedal is depressed and "OFF" displayed when the brake pedal is released?	Go to step 6.	Replace the body integrated unit.
6 CHECK CURRENT DATA. Select the current data display and display «Shift Position». <Ref. to BC(diag)-11, Read Current Data.>	Is the display "P" in the P range and other than "P" in ranges other than P?	Go to step 7.	Check the following items. <ul style="list-style-type: none"> • Inhibitor switch • Harness between inhibitor switch and TCM • TCM input signal • TCM CAN communication • Body integrated unit CAN receive
7 CHECK CURRENT DATA. 1) Select the current data display and display «Front Wheel Speed». <Ref. to BC(diag)-11, Read Current Data.> 2) Start the engine. 3) Raise vehicle speed gradually up to approximately 20 km/h (12 MPH).	Is a figure equivalent to the speedometer being indicated?	Go to step 12.	Check the following items. <ul style="list-style-type: none"> • Wheel speed sensor • CAN communication by VDC unit • Body integrated unit CAN receive Replace the wheel speed sensor, VDC unit or body integrated unit, or both.
8 CHECK HARNESS BETWEEN BODY INTEGRATED UNIT AND "P" RANGE SWITCH. 1) Disconnect the connector from body integrated unit. 2) Disconnect the connector of "P" range switch. 3) Check for open circuit of harness, short circuit to battery or short circuit to ground between the body integrated unit and "P" range switch. Connector & terminal (B281) No. 18 — (B116) No. 1:	Is there any fault in the harness?	Repair or replace the harness between the body integrated unit and the "P" range switch.	Go to step 9.

AT Shift Lock Control System

CONTROL SYSTEMS

Step	Check	Yes	No
9 CHECK HARNESS BETWEEN “P” RANGE SWITCH AND CHASSIS GROUND. Measure the resistance of harness between “P” range switch and chassis ground. <i>Connector & terminal</i> <i>(B116) No. 2 — Chassis ground:</i>	Is it less than 10 Ω?	Go to step 10.	Repair the harness between the “P” range switch and chassis ground.
10 CHECK “P” RANGE SWITCH. Measure the resistance between “P” range switch connector terminals. <i>Terminals</i> <i>No. 2 — No. 1:</i>	Is it less than 10 Ω in the “P” range, and 1 MΩ or more in ranges other than “P”?	Replace the body integrated unit.	Replace the “P” range switch.
11 CHECK STOP LIGHT SWITCH INPUT SIGNAL. 1) Disconnect the connector from body integrated unit. 2) Measure the voltage between the body integrated unit connector terminal and chassis ground. <i>Connector & terminal</i> <i>(B280) No. 10 (+) — Chassis ground (-):</i>	Is the voltage 9 V to 16 V when the brake pedal is depressed, and approx. 0 V when not depressed?	Replace the body integrated unit.	Check the stop light system.
12 CHECK SOLENOID UNIT OPERATION. Connect the battery to the solenoid unit connector terminal, and operate the solenoid unit. <i>Terminals</i> <i>No. 3 (+) — No. 4 (-):</i>	Does the solenoid unit operate normally?	Check the lock mechanism of the select lever body.	Replace the solenoid unit.

4. KEY INTERLOCK CANNOT BE LOCKED OR RELEASED



CS-01634

Step	Check	Yes	No
1	CHECK D CHECK FUSE. Check that the D check fuse is disconnected.	Go to step 2.	Remove the D check fuse and then turn the ignition switch to ON.

AT Shift Lock Control System

CONTROL SYSTEMS

Step	Check	Yes	No
2 CHECK BODY INTEGRATED UNIT POWER SUPPLY AND GROUND CIRCUIT. <Ref. to CS-12, BODY INTEGRATED UNIT POWER SUPPLY AND GROUND CIRCUIT, INSPECTION, AT Shift Lock Control System.>	Is there any fault?	Follow the procedures to inspect and repair.	Go to step 3.
3 CHECK CURRENT DATA. 1) Connect the Subaru Select Monitor. 2) Shift the select lever to "P" range. 3) Turn the ignition switch to ON. 4) Select the current data display and display «P SW». <Ref. to BC(diag)-11, Read Current Data.>	Is the display "ON" in the P range and "OFF" in ranges other than P?	Go to step 4.	Go to step 7.
4 CHECK CURRENT DATA. 1) Select the current data display and display the «key-lock warning SW». <Ref. to BC(diag)-11, Read Current Data.> 2) Turn the ignition switch to OFF.	Does the display change from "ON" ↔ "OFF" when the key is inserted and removed?	Go to step 5.	Go to step 10.
5 CHECK CURRENT DATA. 1) Turn the ignition switch to ON. 2) Select the current data display and display «Key locking output». <Ref. to BC(diag)-11, Read Current Data.>	Is the display "OFF" in the P range and "ON" in ranges other than P?	Go to step 11.	Go to step 6.
6 CHECK DTC OF BODY INTEGRATED UNIT. 1) Set the select lever to other than "P" range. 2) Check DTC of body integrated unit.	Is B1105 (key interlock circuit abnormal) a current malfunction?	Follow the DTC to perform inspection and repair.	Go to step 11.
7 CHECK HARNESS BETWEEN BODY INTEGRATED UNIT AND "P" RANGE SWITCH. 1) Disconnect the connector from body integrated unit. 2) Disconnect the connector of "P" range switch. 3) Check for open circuit of harness, short circuit to battery or short circuit to ground between the body integrated unit and "P" range switch. <i>Connector & terminal (B281) No. 18 — (B116) No. 1:</i>	Is there any fault in the harness?	Repair or replace the harness between the body integrated unit and the "P" range switch.	Go to step 8.
8 CHECK HARNESS BETWEEN "P" RANGE SWITCH AND CHASSIS GROUND. Measure the resistance of harness between "P" range switch and chassis ground. <i>Connector & terminal (B116) No. 2 — Chassis ground:</i>	Is it less than 10 Ω?	Go to step 9.	Repair the harness between the "P" range switch and chassis ground.
9 CHECK "P" RANGE SWITCH. Measure the resistance between "P" range switch connector terminals. <i>Terminals No. 2 — No. 1:</i>	Is it less than 10 Ω in the "P" range, and 1 MΩ or more in ranges other than "P"?	Replace the body integrated unit.	Replace the "P" range switch.
10 CHECK HARNESS BETWEEN BATTERY AND KEY WARNING SWITCH AND BODY INTEGRATED UNIT. 1) Disconnect the connector from body integrated unit. 2) Measure the voltage between body integrated unit and chassis ground. <i>Connector & terminal (B280) No. 4 (+) — Chassis ground (-):</i>	Is the display 9 V or more when the key is inserted, and less than 1.5 V with the key removed?	Replace the body integrated unit.	Check the following items. • Key warning switch • Harness/fuse • Ignition circuit

AT Shift Lock Control System

Step	Check	Yes	No
11 CHECK HARNESS BETWEEN BODY INTEGRATED UNIT AND KEY LOCK SOLENOID. 1) Disconnect the connector from body integrated unit. 2) Disconnect the connector of key lock solenoid. 3) Check for open circuit of harness, short circuit to battery or short circuit to ground between the body integrated unit and key lock solenoid. <i>Connector & terminal</i> <i>(B281) No. 4 — (B557) No. 1:</i>	Is there any fault in the harness?	Repair or replace the harness between the body integrated unit and the key lock solenoid.	Go to step 12.
12 CHECK HARNESS BETWEEN KEY LOCK SOLENOID AND CHASSIS GROUND. Measure the resistance of harness between key lock solenoid and chassis ground. <i>Connector & terminal</i> <i>(B557) No. 2 — Chassis ground:</i>	Is it less than 10 Ω?	Go to step 13.	Repair or replace the harness between the key lock solenoid and chassis ground.
13 CHECK KEY LOCK SOLENOID OPERATION. Connect the battery to the key lock solenoid connector terminal, and operate the solenoid. <i>Terminals</i> <i>No. 2 (+) — No. 1 (-):</i>	Does the key lock solenoid operate normally?	Go to step 14.	Replace the key lock solenoid.
14 CHECK OUTPUT OF BODY INTEGRATED UNIT. 1) Connect all connectors. 2) Insert the key. 3) Measure the voltage between body integrated unit and chassis ground. <i>Connector & terminal</i> <i>(B281) No. 4 — Chassis ground:</i>	Is it 7.5 V to 16 V in ranges other than "P", and 0 V in the "P" range?	Check the lock mechanism of the steering lock body.	Replace the body integrated unit.