

6. Subaru Select Monitor

A: OPERATION

1. HOW TO USE SUBARU SELECT MONITOR

NOTE:

- For detailed operation procedures, refer to “PC application help for Subaru Select Monitor”.
- If communication is not possible between the parking brake control module and the Subaru Select Monitor, check the communication circuit.
<Ref. to PB(diag)-21, COMMUNICATION FOR INITIALIZING IMPOSSIBLE, INSPECTION, Subaru Select Monitor.>

2. READ CURRENT DATA

NOTE:

- For detailed operation procedures, refer to “PC application help for Subaru Select Monitor”.
- A list of the support data is shown in the following table.

Display	Contents to be displayed	Unit
FR Wheel Speed	Wheel speed detected by front ABS wheel speed sensor RH is displayed.	km/h or MPH
FL Wheel Speed	Wheel speed detected by front ABS wheel speed sensor LH is displayed.	km/h or MPH
RR Wheel Speed	Wheel speed detected by rear ABS wheel speed sensor RH is displayed.	km/h or MPH
RL Wheel Speed	Wheel speed detected by rear ABS wheel speed sensor LH is displayed.	km/h or MPH
Power Supply Voltage	The voltage supplied to the parking brake control module is displayed.	V
Engine Speed	Engine speed is displayed.	rpm
Accel. Opening Angle	Acceleration opening is displayed.	%
Reverse Signal	Input condition of reverse signal is displayed. (When reverse: ON)	ON or OFF
Force Sensor	The tension detected by the force sensor in the actuator is displayed.	N
Stroke Sensor	The parking brake cable stroke amount detected by the stroke sensor in the actuator is displayed.	mm
Clutch stroke sensor	The pedal stroke amount detected by the clutch stroke sensor is displayed.	%
Clutch engagement point	Clutch engagement position is displayed.	%
Actuator Inner Temperature(Primary)	Actuator inner temperature (PRY) is displayed.	°C
Actuator Inner Temperature(Secondary)	Actuator inner temperature (SEC) is displayed.	°C
Incline	Incline of the vehicle is displayed.	%
Total Operation Number	Total number of parking brake operation is displayed.	time
Hill Hold Operation Number	Operation number of hill hold function at uphill parking is displayed.	time
Auto Operation Number	“0” is always displayed.	time
Auto Cancel Number	Operation number of automatic accelerator interlock cancel function at starting is displayed.	time
Parking Operation Number when driving	Total number of parking brake operation while driving is displayed.	time
Engine Torque	Engine torque is displayed. (According to ECM specification, engine torque value may be displayed while engine stops.)	N·m
Manual Parking Operation	Parking brake operation condition is displayed. (At manual parking operation: 1)	1 or 0
Auto Parking Operation	Parking brake operation condition is displayed. (At automatic parking operation: 1)	1 or 0
Parking Operation when driving	Parking brake operation condition is displayed. (At parking operation when driving: 1)	1 or 0
Parking Cancel	Parking brake operation condition is displayed. (At parking cancel: 1)	1 or 0
Hill hold lamp	Hill hold indicator control condition is displayed. (When illuminating: ON)	ON or OFF
Ignition Signal	Input condition of ignition signal is displayed.	ON or OFF
Brake Warning Light	Brake warning light control condition is displayed. (When illuminating: ON)	ON or OFF

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PARKING BRAKE (DIAGNOSTICS)

Display	Contents to be displayed	Unit
Parking System Warning Light	For C6 model, electronic parking brake warning light control condition is displayed. (When illuminating: ON) For other than C6 model, brake warning light control condition is displayed. (When blinking: ON)	ON or OFF
Neutral Signal	Input condition of neutral signal is displayed. (When neutral: ON)	ON or OFF
Brake Switch	Input condition of brake pedal signal is displayed. (When depressed: ON)	ON or OFF
Engine idle flag	Engine speed condition is displayed. (When idling: ON)	ON or OFF
Door Signal	Input condition of door (four locations) open/close signal is displayed. (When at least one door is open: OPEN)	OPEN or CLOSE
Driver Seat Belt Signal	Input condition of driver's seatbelt signal is displayed.	Not in use/In use

3. MAINTENANCE OPERATION MODE

Display	Contents of display	Index No.
Force Sensor Calibration Mode	Perform the force sensor calibration.	<Ref. to PB(diag)-18, FORCE SENSOR CALIBRATION MODE, OPERATION, Subaru Select Monitor.>
Break-in Parking Brake Drive Mode	Perform the break-in parking brake drive mode after replacing the parking brake assembly.	<Ref. to PB(diag)-19, BREAK-IN PARKING BRAKE DRIVE MODE, OPERATION, Subaru Select Monitor.>
Parking Brake Removal Mode	Release the cable tension before removing the parking brake cable.	<Ref. to PB(diag)-18, PARKING BRAKE REMOVAL MODE, OPERATION, Subaru Select Monitor.>
Parameter Initialization Mode	Perform the parameter initialization.	<Ref. to PB(diag)-19, PARAMETER INITIALIZATION MODE, OPERATION, Subaru Select Monitor.>
Clutch Sensor Calibration Mode	Perform the clutch sensor calibration.	<Ref. to PB(diag)-20, CLUTCH SENSOR CALIBRATION MODE, OPERATION, Subaru Select Monitor.>
Clutch Engagement Position Setting	Perform the clutch sensor engagement position setting.	<Ref. to PB(diag)-20, CLUTCH ENGAGEMENT POSITION SETTING, OPERATION, Subaru Select Monitor.>

4. FREEZE FRAME DATA

NOTE:

- Data stored at the time of trouble occurrence is shown on display.
- Each time a trouble occurs, the latest information is stored in the Freeze Frame Data in memory.

Display	Contents to be displayed
FR Wheel Speed	Wheel speed detected by front ABS wheel speed sensor RH is displayed.
FL Wheel Speed	Wheel speed detected by front ABS wheel speed sensor LH is displayed.
RR Wheel Speed	Wheel speed detected by rear ABS wheel speed sensor RH is displayed.
RL Wheel Speed	Wheel speed detected by rear ABS wheel speed sensor LH is displayed.
Power Supply Voltage	The voltage supplied to the parking brake control module is displayed.
Engine Speed	Engine speed is displayed.
Accel. Opening Angle	Acceleration opening is displayed.
Reverse Signal	Input condition of reverse signal is displayed. (When reverse: ON)
Brake Switch	Input condition of brake pedal signal is displayed. (When depressed: ON)
Force Sensor	The tension detected by the force sensor in the actuator is displayed.
Stroke Sensor	The parking brake cable stroke amount detected by the stroke sensor in the actuator is displayed.
Clutch stroke sensor	The pedal stroke amount detected by the clutch stroke sensor is displayed.
Clutch engagement point	Clutch engagement position is displayed.
Actuator Inner Temperature(Primary)	Actuator inner temperature (PRY) is displayed.
Actuator Inner Temperature(Secondary)	Actuator inner temperature (SEC) is displayed.
Incline	Incline of the vehicle is displayed.
Engine Torque	Engine torque is displayed.
Manual Parking Operation	Parking brake operation condition is displayed. (At manual parking operation: 1)
Auto Parking Operation	Parking brake operation condition is displayed. (At automatic parking operation: 1)
Parking Operation when driving	Parking brake operation condition is displayed. (At parking operation when driving: 1)
Parking Cancel	Parking brake operation condition is displayed. (At parking cancel: 1)
Hill hold lamp	Hill hold indicator control condition is displayed. (When illuminating: ON)
Ignition Signal	Input condition of ignition signal is displayed.
Neutral Signal	Input condition of neutral signal is displayed. (When neutral: ON)

Display	Contents to be displayed
Engine idle flag	Engine speed condition is displayed. (When idling: ON)
Door Signal	Input condition of door (4 locations) open/close signal is displayed. (When at least one door is open: OPEN)
Driver Seat Belt Signal	Input condition of driver's seatbelt signal is displayed.

5. PARKING BRAKE REMOVAL MODE

CAUTION:

- Subaru Select Monitor is required for the parking brake removal mode.
- Make sure to perform this procedure with the vehicle lifted.
- When this mode is performed by mistake, operate and then release the parking brake.

NOTE:

When disassembling the parking brake, use this function to set the parking brake cable at the release position.

- 1) Lift up the vehicle.
- 2) Connect the Subaru Select Monitor.
- 3) On «Main Menu» display, select {Each System Check}.
- 4) On «System Selection Menu» display, select {Brake Control System}.
- 5) Click the [OK] button after {Parking Brake System} is displayed.
- 6) On «Maintenance Operation Mode» display, select {Parking Brake Removal Mode}.
- 7) The confirmation screen, “Perform parking brake removal?”, is displayed. Click the [YES] button.
- 8) The message, “Releasing parking cable until removal position.”, is displayed on the screen, and the removal mode begins.
- 9) The message, “Parking cable released until removal position.”, is displayed on the screen. Turn the ignition switch to OFF to end the removal mode.

6. FORCE SENSOR CALIBRATION MODE

CAUTION:

- Subaru Select Monitor is required for the Force Sensor Calibration Mode.
- Make sure to perform this procedure with the vehicle parked in a horizontal place and to use wheel chocks.

NOTE:

- When the following work is performed, use this function to perform calibration of force sensor in the parking brake actuator.

- Removing the parking brake assembly
- Replacing the electronic parking brake control module
- Adjusting the shoe clearance

- After replacing the electronic parking brake control module, if the calibration of the force sensor has not yet been performed, the brake warning light will blink and “Force Sensor Line (abnormal)” DTC will be detected.

- 1) Park the vehicle in a horizontal place using wheel chocks.
- 2) Connect the Subaru Select Monitor.
- 3) On «Main Menu» display, select {Each System Check}.
- 4) On «System Selection Menu» display, select {Brake Control System}.
- 5) Click the [OK] button after {Parking Brake System} is displayed.
- 6) On «Maintenance Operation Mode» display, select {Force Sensor Calibration Mode}.
- 7) The confirmation screen of vehicle parking condition and wheel chocks usage is displayed. Confirm the parking condition and wheel chocks, and click the [YES] button.
- 8) A message indicating the calibration mode in progress is displayed on the screen, and the Force Sensor Calibration Mode begins.
- 9) The message, “Force sensor calibration done. Turn Ignition Switch OFF.”, is displayed on the screen. Turn the ignition switch to OFF to end the calibration mode.

7. BREAK-IN PARKING BRAKE DRIVE MODE

CAUTION:

Subaru Select Monitor is required for the “Break-in Parking Brake Drive Mode”.

NOTE:

- When the parking brake shoe is replaced, use this function to perform parking brake lining break-in drive after adjusting the shoe clearance of the parking brake. <Ref. to PB-14, SHOE CLEARANCE, ADJUSTMENT, Parking Brake Assembly (Rear Disc Brake).>
- After performing the “Break-in Parking Brake Drive Mode”, adjust the shoe clearance of the parking brake again, and perform the “Force Sensor Calibration Mode”. <Ref. to PB(diag)-18, FORCE SENSOR CALIBRATION MODE, OPERATION, Subaru Select Monitor.>

- 1) Connect the Subaru Select Monitor.
- 2) On «Main Menu» display, select {Each System Check}.
- 3) On «System Selection Menu» display, select {Brake Control System}.
- 4) Click the [OK] button after {Parking Brake System} is displayed.
- 5) On «Maintenance Operation Mode» display, select {Break-in Parking Brake Drive Mode}.
- 6) The confirmation message, “Perform break-in parking brake drive?”, is displayed on the screen. With the vehicle parked, release the parking brake, and click the [YES] button.
- 7) Confirm the message indicating the break-in drive mode start on the screen and the blink of the brake warning light, and begin the break-in drive.
- 8) Drive the vehicle at approximately 35 km/h (22 MPH) or more.
- 9) C6 model

Drive the vehicle approximately 200 m (0.12 miles) with the parking brake switch pressed, until the brake warning light goes off.

- 10) Models other than C6 model

Drive the vehicle approximately 200 m (0.12 miles) with the parking brake switch pressed. Release a hand from the parking brake switch once to cancel. Drive the vehicle again with the parking brake switch pressed, and if brake drag is not felt, go to step 11). If brake drag is felt, repeat steps 8) and 10) again.

11) Turn the ignition switch to OFF, and wait for 5 to 10 minutes until the parking brake temperature drops.

12) Repeat steps 2) to 10) again.

13) Turn the ignition switch to OFF to end the break-in drive mode.

14) Adjust the shoe clearance of the parking brake again. <Ref. to PB-14, SHOE CLEARANCE, ADJUSTMENT, Parking Brake Assembly (Rear Disc Brake).>

15) Perform the Force Sensor Calibration Mode. <Ref. to PB(diag)-18, FORCE SENSOR CALIBRATION MODE, OPERATION, Subaru Select Monitor.>

8. PARAMETER INITIALIZATION MODE

CAUTION:

- Subaru Select Monitor is required for the Parameter Initialization Mode.
- This function can be used for replacement parts of the parking brake control module.

NOTE:

- When DTC “Parameter selection error” is detected after replacing the parking brake control module, use this function to perform parameter initialization of the parking brake control module.
- After performing Parameter Initialization Mode, perform the Force Sensor Calibration Mode and Clutch Sensor Calibration Mode. <Ref. to PB(diag)-18, FORCE SENSOR CALIBRATION MODE, OPERATION, Subaru Select Monitor.> <Ref. to PB(diag)-20, CLUTCH SENSOR CALIBRATION MODE, OPERATION, Subaru Select Monitor.>

- 1) Connect the Subaru Select Monitor.
- 2) On «Main Menu» display, select {Each System Check}.
- 3) On «System Selection Menu» display, select {Brake Control System}.
- 4) Click the [OK] button after {Parking Brake System} is displayed.
- 5) On «Maintenance Operation Mode» display, select {Parameter Initialization Mode}.
- 6) The confirmation message, “Perform parameter initialization?”, is displayed on the screen. Following the instructions on the screen, confirm the connections of all control modules, and click the [YES] button.
- 7) The message, “Parameter initialization in progress---”, is displayed on the screen, and initialization begins.
- 8) The message, “Parameter initialization done. Turn Ignition Switch OFF.”, is displayed on the screen. Turn the ignition switch to OFF to end the Parameter Initialization Mode.

9. CLUTCH SENSOR CALIBRATION MODE

CAUTION:

Subaru Select Monitor is required for Clutch Sensor Calibration Mode.

NOTE:

- When the following parts are replaced, use this function to perform clutch sensor calibration.
 - Clutch master cylinder assembly
 - Electronic parking brake control module
 - Clutch pedal
- After replacing the parts above, if the calibration of the clutch sensor has not yet been performed, "Clutch Sensor" DTC will be detected. At this time, the electronic parking brake warning light illuminates on C6 model, or the brake warning light blinks on models other than C6 model.

- 1) Connect the Subaru Select Monitor.
- 2) On «Main Menu» display, select {Each System Check}.
- 3) On «System Selection Menu» display, select {Brake Control System}.
- 4) Click the [OK] button after {Parking Brake System} is displayed.
- 5) On «Maintenance Operation Mode» display, select {Clutch Sensor Calibration Mode}.
- 6) The confirmation message, "Perform clutch sensor calibration?", is displayed on the screen. Following the instructions on the screen, click the [YES] button with the clutch pedal not depressed.
- 7) The message, "Clutch sensor calibration done. Turn Ignition switch OFF.", is displayed on the screen. Turn the ignition switch to OFF to end the calibration mode.

10. CLUTCH ENGAGEMENT POSITION SETTING

CAUTION:

Subaru Select Monitor is required for Clutch Engagement Position Setting.

NOTE:

- When the clutch master cylinder assembly is replaced, use this function to set the engagement position for the clutch stroke sensor.
- When the customer requested a change of the accelerator interlocking release timing, use this function to change the engagement position of the clutch stroke sensor in order to change the accelerator interlocking release timing.
- The clutch engagement position can be set between 50 — 80%.

- 1) Park the vehicle on a safe level surface without obstacles.
- 2) Start the engine to warm up.
- 3) Connect the Subaru Select Monitor.
- 4) On «Main Menu» display, select {Each System Check}.
- 5) On «System Selection Menu» display, select {Brake Control System}.
- 6) Click the [OK] button after {Parking Brake System} is displayed.
- 7) On «Maintenance Operation Mode» display, select {Clutch Engagement Position Setting}.
- 8) Release the parking brake. Shift the gear to 1st, then slowly release the clutch pedal, and read "Clutch position current value" on the screen when the vehicle starts to move.
- 9) Enter the reading to "Engagement position input value", and press the [Execution] button.
- 10) Turn the ignition switch to OFF to end the clutch engagement position setting.
- 11) Drive the vehicle, and check the accelerator interlocking release timing.

CAUTION:

If the clutch engagement position is not set correctly, early release or release delay of the parking brake may occur at the accelerator interlocking release. After completing the setting, check the accelerator interlocking timing in a safe place, and confirm that neither early release nor release delay occurs.

NOTE:

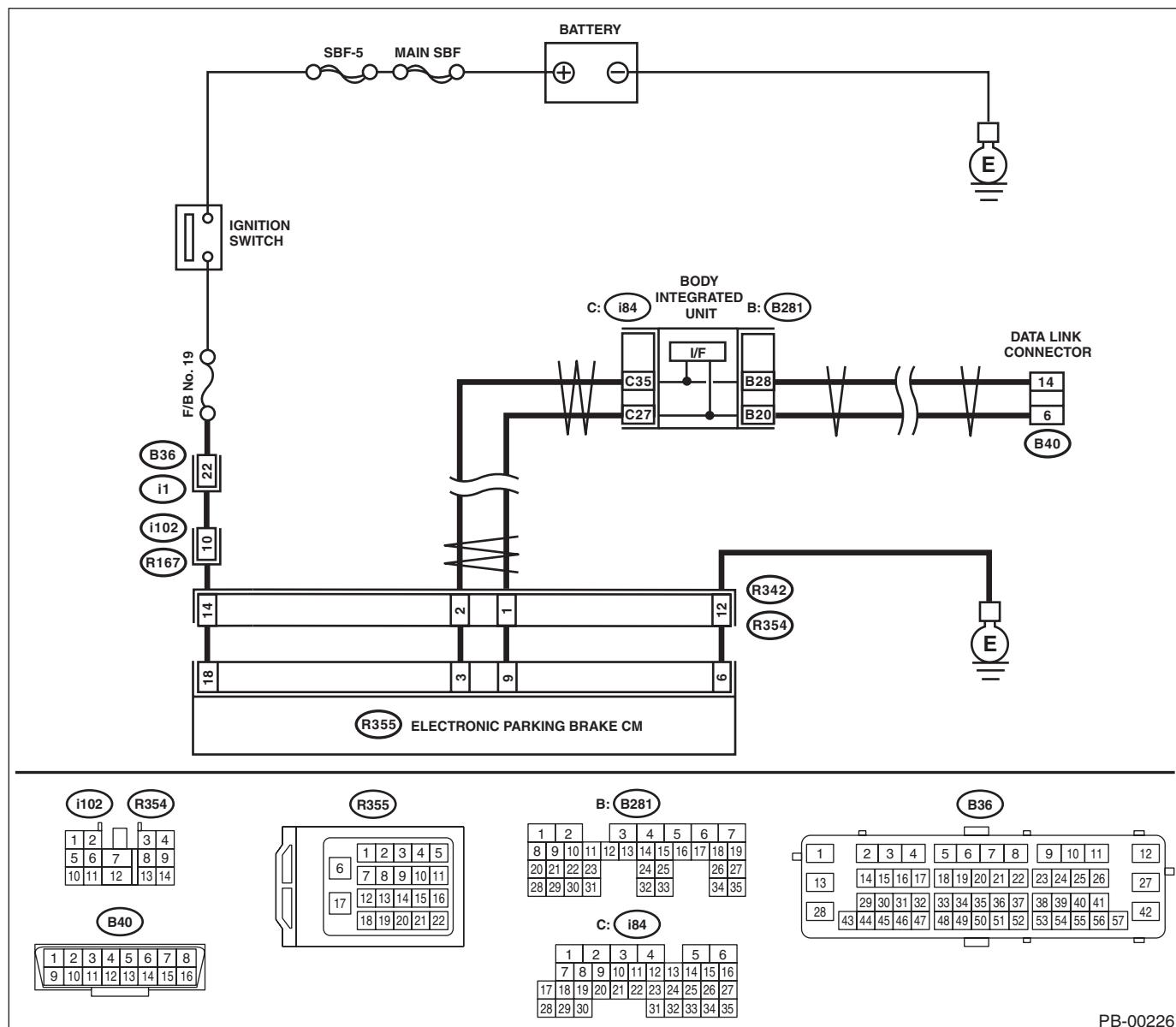
- When a smaller value than "Engagement position learning value" is entered in "Engagement position input value", the parking brake release timing delays.
- When a larger value than "Engagement position learning value" is entered in "Engagement position input value", the parking brake release timing becomes early.

B: INSPECTION**1. COMMUNICATION FOR INITIALIZING IMPOSSIBLE****DETECTING CONDITION:**

Defective harness connector

TROUBLE SYMPTOM:

Communication is impossible between the parking brake control module and Subaru Select Monitor.

WIRING DIAGRAM:

Step	Check	Yes	No
1 CHECK IGNITION SWITCH.	Is the ignition switch ON?	Go to step 2.	Turn the ignition switch to ON, and select {Parking Brake System} using the Subaru Select Monitor.
2 CHECK BATTERY. 1) Turn the ignition switch to OFF. 2) Measure the battery voltage.	Is the voltage 11 V or more?	Go to step 3.	Charge or replace the battery.

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Step	Check	Yes	No
3 CHECK BATTERY TERMINAL.	Is there poor contact at battery terminal?	Repair or tighten the battery terminal.	Go to step 4.
4 CHECK LAN SYSTEM. Perform the diagnosis for LAN system. <Ref. to LAN(diag)-10, OPERATION, Read Diagnostic Trouble Code (DTC).>	Is there any fault in LAN system?	Perform the diagnosis according to DTC for LAN system. <Ref. to LAN(diag)-32, List of Diagnostic Trouble Code (DTC).>	Go to step 5.
5 CHECK SUBARU SELECT MONITOR COMMUNICATION. 1) Press the parking brake switch once. 2) Check whether communication with the parking brake system can be executed normally.	Is the system name displayed on Subaru Select Monitor?	Check DTC of the parking brake system. <Ref. to PB(diag)-23, Read Diagnostic Trouble Code (DTC).>	Go to step 6.
6 CHECK INSTALLATION OF ELECTRONIC PARKING BRAKE CM CONNECTOR. Turn the ignition switch to OFF.	Is the electronic parking brake CM connector inserted into the electronic parking brake CM until the clamp locks onto it?	Go to step 7.	Insert the electronic parking brake CM connector into the electronic parking brake CM.
7 CHECK HARNESS CONNECTOR BETWEEN ELECTRONIC PARKING BRAKE CM AND CHASSIS GROUND. Measure the resistance of harness between electronic parking brake CM connector and chassis ground. <i>Connector & terminal (B355) No. 6 — Chassis ground:</i>	Is the resistance less than 10 Ω ?	Go to step 8.	Repair the open circuit of the electronic parking brake CM ground circuit and poor contact of connector.
8 CHECK POOR CONTACT OF CONNECTOR.	Is there poor contact of control module power supply, ground circuit and data link connector?	Repair the connector.	Replace the electronic parking brake CM. <Ref. to PB-5, Parking Brake Actuator.>