

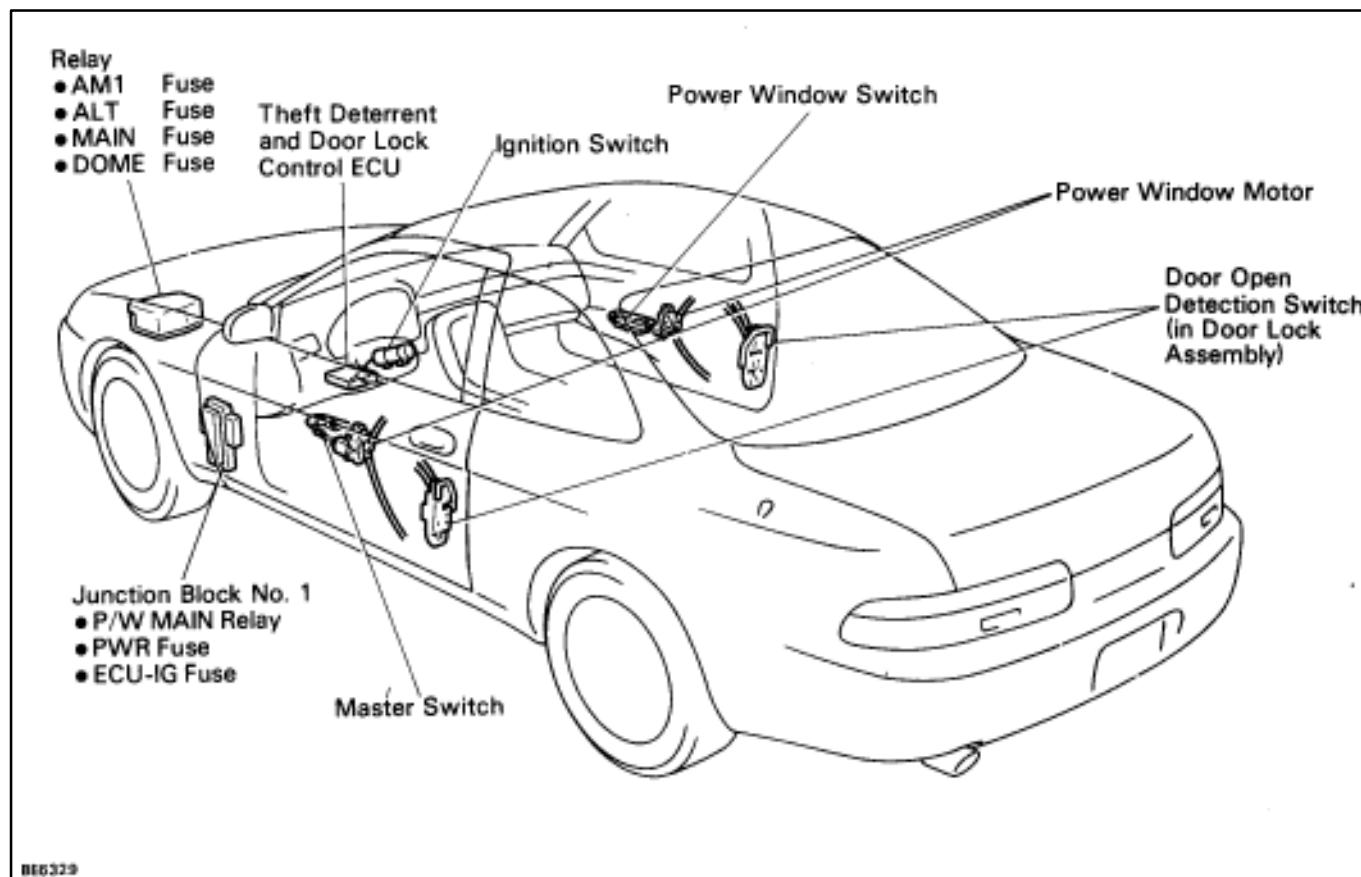
POWER WINDOW CONTROL SYSTEM

Description

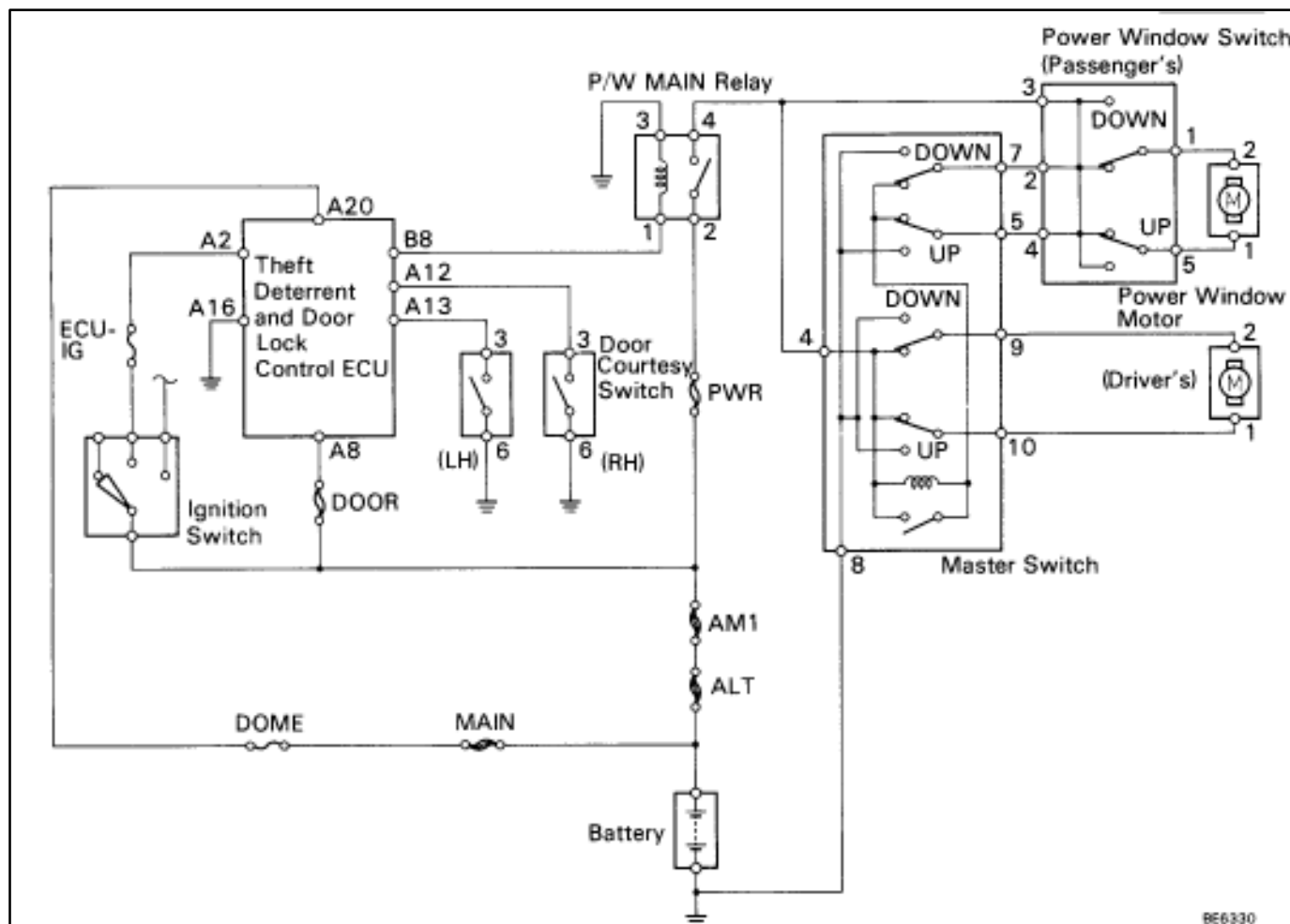
The Power Window System raises and lowers the window glass in each door using electrical power. The component parts of this system and their functions are described in the following table.

Parts Name	Function
Theft Deterrent and Door Lock Control ECU	Current is sent to the power window main relay only when the ignition switch is on or within a specified period after the ignition switch is turned off.
Power Window Main Relay	Current from the theft deterrent and door lock control ECU to the power window main relay switches large current from the master switch ON and OFF.
Master Switch	This switch turns current to each power window motor ON and OFF and switches it. It also includes a circuit for "One Touch Power Window" use of the driver's window and a built-in window lock switch which controls the operation of all power window switches.
Power Window Switch	This switch is installed on each door except on the driver's door. It is supplied with current from the master switch and turns the current to the motor ON and OFF and switches the current. This switch will not operate when the window lock switch inside the master switch is in the LOCK position.
Power Window Motor	This motor moves the window regulator directly when current is supplied to it from the master switch or power window switch. The motor has a built-in circuit breaker.

Parts Location



Wiring and Connector Diagrams



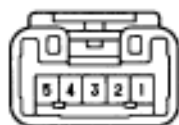
BE6330

Master Switch



e-10-2

Power Window Switch



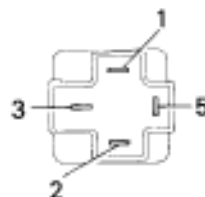
e-5-2

Power Window Motor



le-2-2-J

Power Window Main Relay



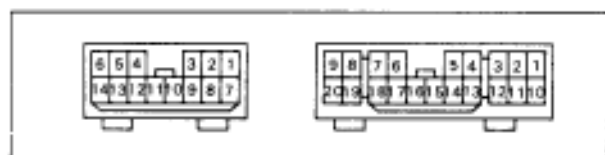
BE4049

Door open Detection Switch (in Door Lock Assembly)



le-6-2-C

Theft Deterrent and Door Lock Control ECU



Connector "B"

Connector "A"

Ignition Switch



BE5650

eg-11-2

Parts Inspection (Power Window Master Switch)

REMOVAL AND INSTALLATION OF POWER WINDOW MASTER SWITCH


(See page [BO-33](#))

INSPECTION OF POWER WINDOW MASTER SWITCH

INSPECT POWER WINDOW MASTER SWITCH

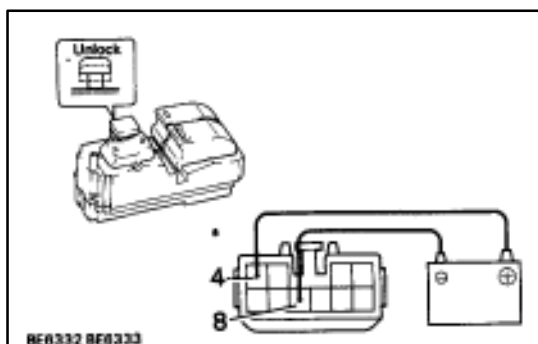
(Continuity)

Inspect the switch continuity between terminals.



BE8331 e-10-2

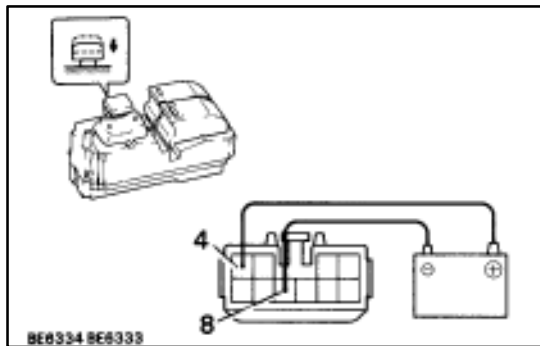
Window operation		Driver's				Passenger's			
Terminal Switch position		4	8	9	10	4	5	7	8
Window Unlock	UP	○	○	○	○	○	○	○	○
	OFF		○	○	○		○	○	○
	DOWN	○	○	○	○	○	○	○	○
Window lock	UP	○	○	○	○	○	○		
	OFF		○	○	○		○	○	
	DOWN	○	○	○	○	○	○	○	



If continuity is not as specified, replace the master switch.

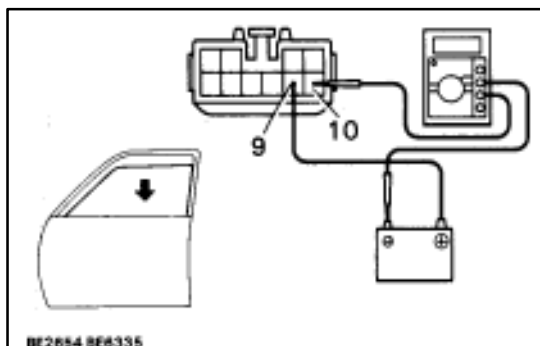
(Illumination)

- Set the window lock switch to the unlock position.
- Connect the positive (+) lead from the battery to terminal 4 and the negative (–) lead to terminal 8, check that all the illuminations light up.



- (c) Set the window lock switch to the lock position, check that all the passenger's power window switch illuminations go out.

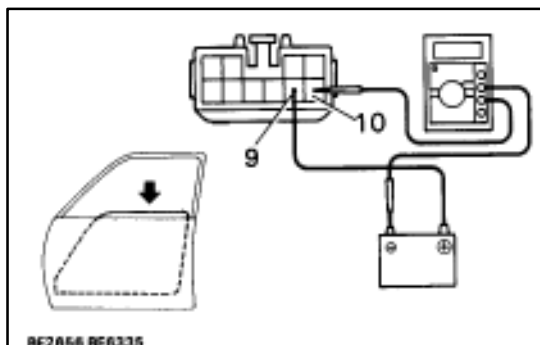
If operation is not as specified, replace the master switch.



(One Touch Power Window System/Current of Circuit)

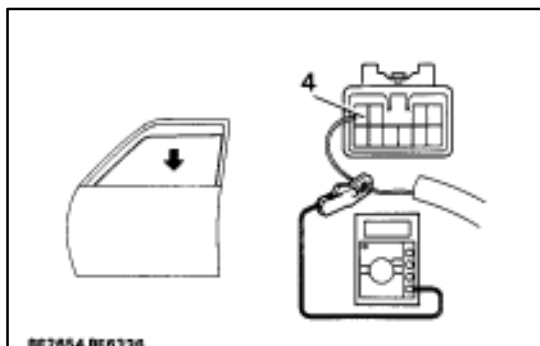
Inspection using an ammeter.

- Disconnect the connector from the master switch.
- Connect the positive (+) lead from the ammeter to terminal 9 on the wire harness side connector and the negative (–) lead to negative terminal of the battery.
- Connect the positive (+) lead from the battery to terminal 10 on the wire harness side connector.
- As the window goes down, check that the current flow is approximately 7 amperes.



- Check that the current increases approximately 14.5 amperes or more when the window stops going down.
- HINT: The circuit breaker opens some 4–40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.

If the operation is as specified, replace the master switch.

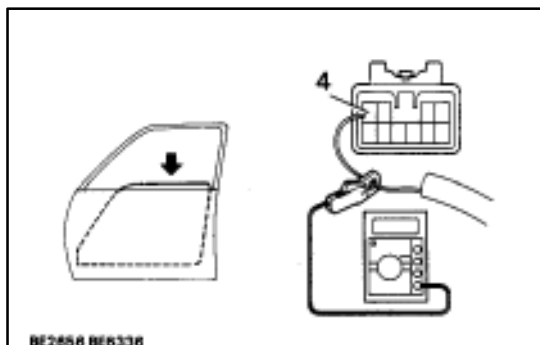


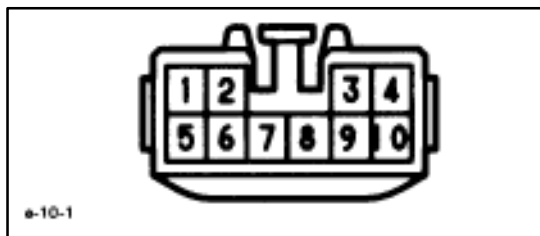
Inspection using an ammeter with a current-measuring probe.

- Remove the master switch with connector connected.
- Attach a current-measuring probe to terminal 4 of the wire harness.
- Turn the ignition switch ON and set the power window switch in the down position.
- As the window goes down, check that the current flow is approximately 7 amperes.
- Check that the current increases approximately 14.5 amperes or more when the window stops going down.

HINT: The circuit breaker opens some 4–40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.

If operation is as specified, replace the master switch.



**(Switch Circuit)**

Disconnect the connector from the master switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Voltage	9–Ground	Ignition switch turned to ON	Battery voltage
Continuity	8–Ground	Constant	Continuity

If the circuit is not as specified, refer to [BE-148](#) wiring diagram and inspect the circuits connected to other parts.

(Power Window Switch)**REMOVAL AND INSTALLATION OF POWER WINDOW SWITCH**

(See page [BO-33](#))

INSPECTION OF POWER WINDOW SWITCH**INSPECT POWER WINDOW SWITCH****(Switch Continuity)**

Inspect switch continuity between terminals.

Terminal	1	2	3	4	5
Switch position					
UP	○	○	○	○	○
OFF	○	○		○	○
DOWN	○	○	○	○	○

8E6337 e-5-2

Wire Harness Side

If continuity is not as specified, replace the switch.

(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Voltage	2–Ground	Ignition switch ON and master switch position	DOWN
			OFF
	3–Ground	Ignition switch ON	Battery voltage
	4–Ground	Ignition switch ON and master switch position	UP
			OFF

If the circuit is not as specified, refer to [BE-148](#) wiring diagram and inspect the circuits connected to other parts.

(Power Window Main Relay) REMOVAL AND INSTALLATION OF POWER WINDOW MAIN RELAY

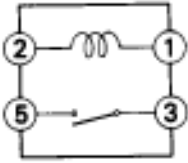
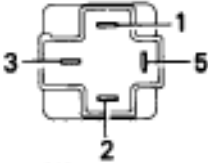
(See page BE-16)

INSPECTION OF POWER WINDOW MAIN RELAY



INSPECT POWER WINDOW MAIN RELAY

(Continuity)

Inspect relay continuity between terminals.



BE4049 BE1840

Terminal	1	2	3	5
Condition				
Constant				
Apply battery voltage to terminals 1 and 2.				

If continuity is not as specified, replace the relay.

(Relay Circuit)

(See page BE-20)

(Power Window Motor)

REMOVAL AND INSTALLATION OF POWER WINDOW MOTOR

1. REMOVE POWER WINDOW MOTOR

(a) Remove window regulator.

(See page BO-35)

2. INSTALL POWER WINDOW MOTOR

For installation follow the removal procedure in reverse.

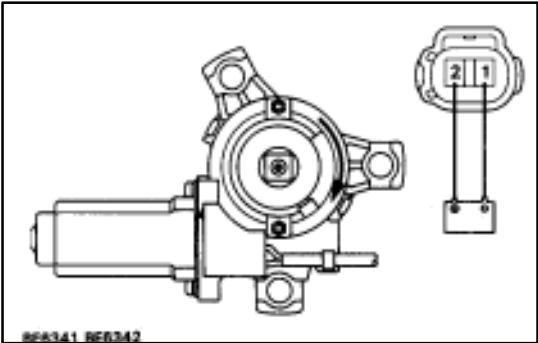
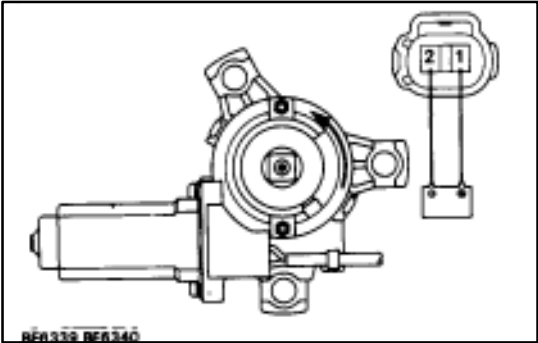
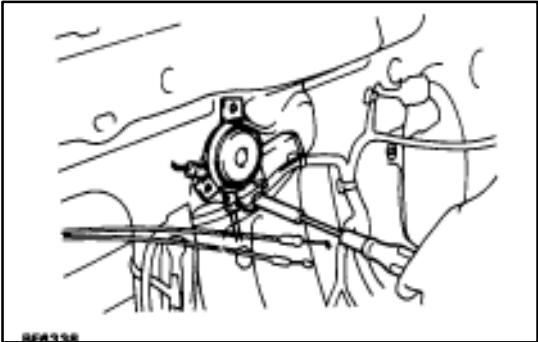
INSPECTION OF POWER WINDOW MOTOR

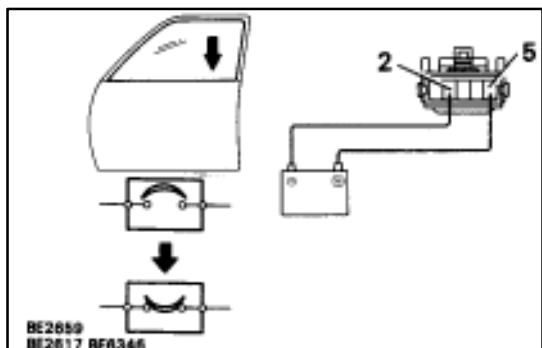
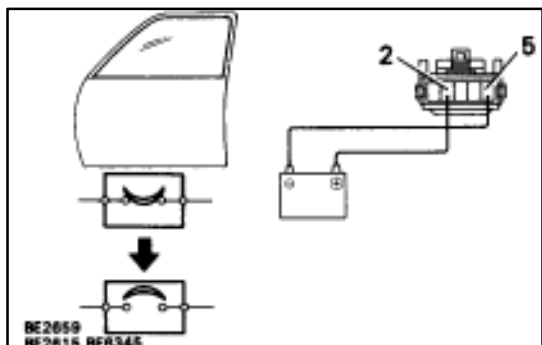
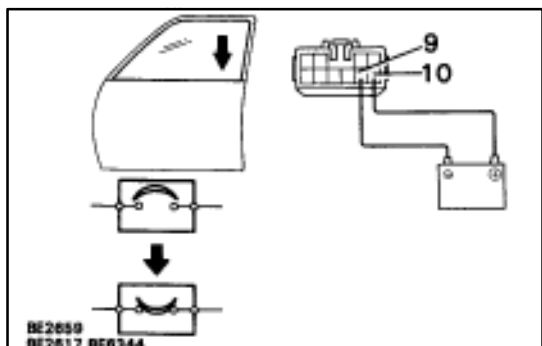
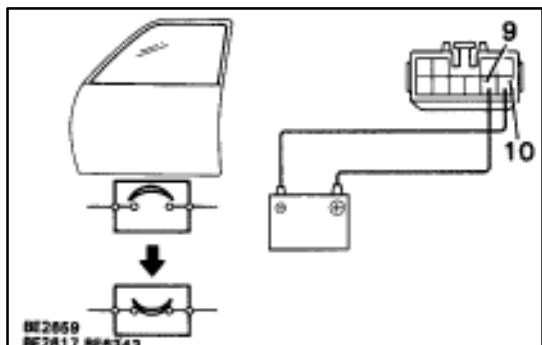
INSPECT POWER WINDOW MOTOR

(Left Side Door Motor/Motor Operation)

- (a) Connect the Positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns counterclockwise.
- (b) Reverse the polarity, check that the motor turns clockwise.

If operation is not as specified, replace the motor.





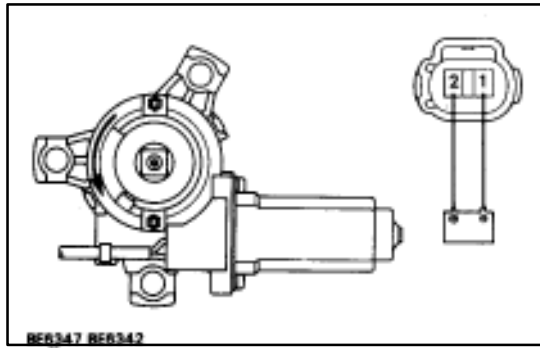
(Left Side Motor/Circuit Breaker Operation)

Driver's Door

- Disconnect the connector from the master switch.
 - Connect the positive (+) lead from the battery to terminal 9 and the negative (–) lead to terminal 10 on the wire harness side connector and raise the window to full closed position.
 - Continue to apply voltage, check that there is a circuit breaker operation noise within approximately 4 to 40 seconds.
 - Reverse the polarity, check that the window begins to descend within approximately 60 seconds.
- If operation is not as specified, replace the motor.

Passenger's Door

- Disconnect the connector from the power window switch.
 - Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 5 on the wire harness side connector, and raise the window to full closed position.
 - Continue to apply voltage, check that there is a circuit breaker operation noise within approximately 4 to 40 seconds.
 - Reverse the polarity, check that the window begins to descend within approximately 60 seconds.
- If operation is not as specified, replace the motor.

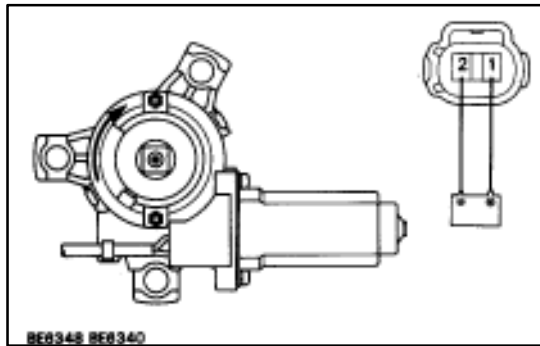
**(Right Side Door Motor/Motor Operation)**

- (a) Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 2, check that the motor turns clockwise.
- (b) Reverse the polarity, check that the motor turns counterclockwise.

If operation is not as specified, replace the motor.

(Right Side Door Motor/Circuit Breaker Operation)

See Step of Left Side Motor on page [BE-153](#).



Wire Harness Side

le-2-1-j

(Circuit)

- (a) Disconnect the connector from the motor.
- (b) Connect the connector to the master switch and power window switch.
- (c) Inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	1–Ground	Ignition switch ON and master switch position	DOWN	Battery voltage
			UP or OFF	No voltage
		* Ignition switch ON and power window switch position	DOWN	Battery voltage
			UP or OFF	No voltage
	2–Ground	Ignition sw ON and master switch position	UP	Battery voltage
			DOWN or OFF	No voltage
		* Ignition switch ON and power window switch position	UP	Battery voltage
			DOWN or OFF	No voltage

*: Set the window lock switch to the unlock position.

If the circuit is not as specified, refer to [BE-148](#) wiring diagram and inspect the circuits connected to other parts.

(Theft Deterrent and Door Lock Control ECU)

REMOVAL AND INSTALLATION OF THEFT DETERRENT AND DOOR LOCK CONTROL ECU

1. REMOVE THEFT DETERRENT AND DOOR LOCK CONTROL ECU

- (a) Remove following parts.

(See page [BO-112](#) and 113)

- Instrument No. 1 Under Cover.
- Instrument No. 1 lower finish panel.

- (b) Disconnect the connector and remove the ECU

2. INSTALL THEFT DETERRENT AND DOOR LOCK CONTROL ECU

For installation, follow the removal procedure in reverse.

INSPECTION OF THEFT DETERRENT AND DOOR LOCK CONTROL ECU

INSPECT THEFT DETERRENT AND DOOR LOCK CONTROL ECU

(Circuit)

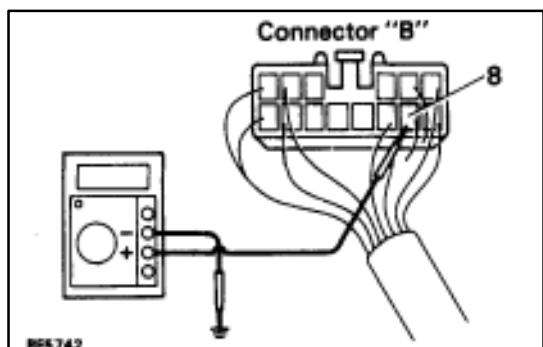
- (a) Inspect ECU Power Source Circuit.
(See page [BE-362](#))
- (b) Inspect Actuator Power Source Circuit.
(See page [BE-364](#))
- (c) Inspect Ignition Switch Circuit.
(See page [BE-25](#))
- (d) Inspect Door Open Detection Switch Circuit.
(See page [BE-378](#))

If circuit is as specified, inspect ECU operation.

(Operation)

- (a) With the connectors connected, shut all doors.
- (b) Check that there is 10 V ~ 14 V between terminal B8 and ground when the ignition switch is turned on.
- (c) After turning the ignition switch off, check within 60 seconds that there is battery voltage between terminal B8 and ground.
- (d) Turn the ignition switch on then off, and check that there is 10 V ~ 14 V between terminal B8 and ground when the ignition is switched off.
- (e) Open the front door within 60 seconds of turning the ignition off and check that there is no voltage between terminal B8 and ground.
- (f) Close all the doors and turn the ignition switch on.
- (g) When a front door is opened, check that there is battery voltage between terminal B8 and ground.
- (h) Check that there is no voltage between terminal B8 and ground when the ignition switch is turned to off.

If operation is not as specified, replace the ECU.



Troubleshooting

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

See page	BE-4, 21	BE-4, 21	BE-4, 20	BE-4, 20	BE-156	BE-152	BE-149	BE-151	BE-152	BE-26	BE-378	BE-4, 20	-
Part name	AM1 Fuse	DOME Fuse	DOOR Fuse	POWER Fuse	Theft Deterrent and Door Lock Control ECU	Power Window Main Relay	Power Window Master Switch	Power Window Switch	Power Window Motor	Ignition Switch	Door Open Detection Switch	ECU-IG Fuse	Wire Harness
Trouble													
*1 Power window does not operate.	1		2		3								4
*2 Power window does not operate.			3	5	4	6	7			2		1	8
"One Touch Power Window System" does not operate.							1						
Only one window glass does not move.							1	2	3				4
"Window Lock System" does not operate.							1						
"Window Lock Illumination" does not light up.							1						
Key-off power window does not operate.		1			2					4	5	3	6

*1: Door Lock does not operate.

*2: Door Lock is normal.