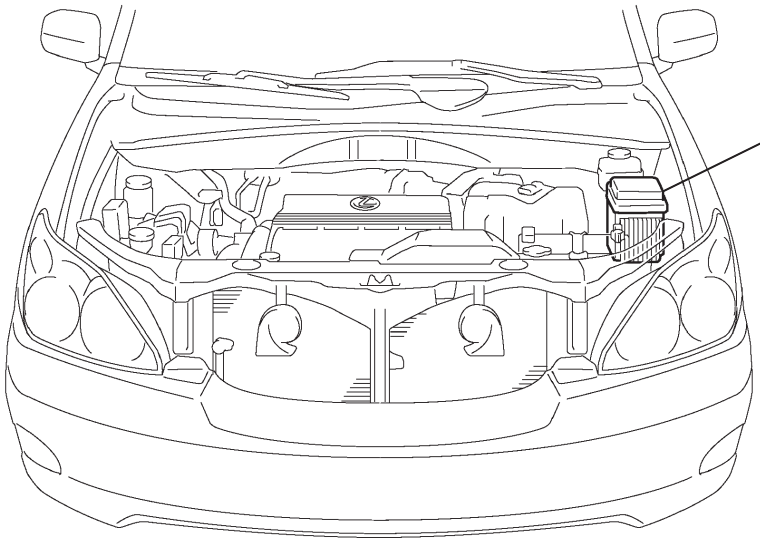
POWER WINDOW CONTROL SYSTEM

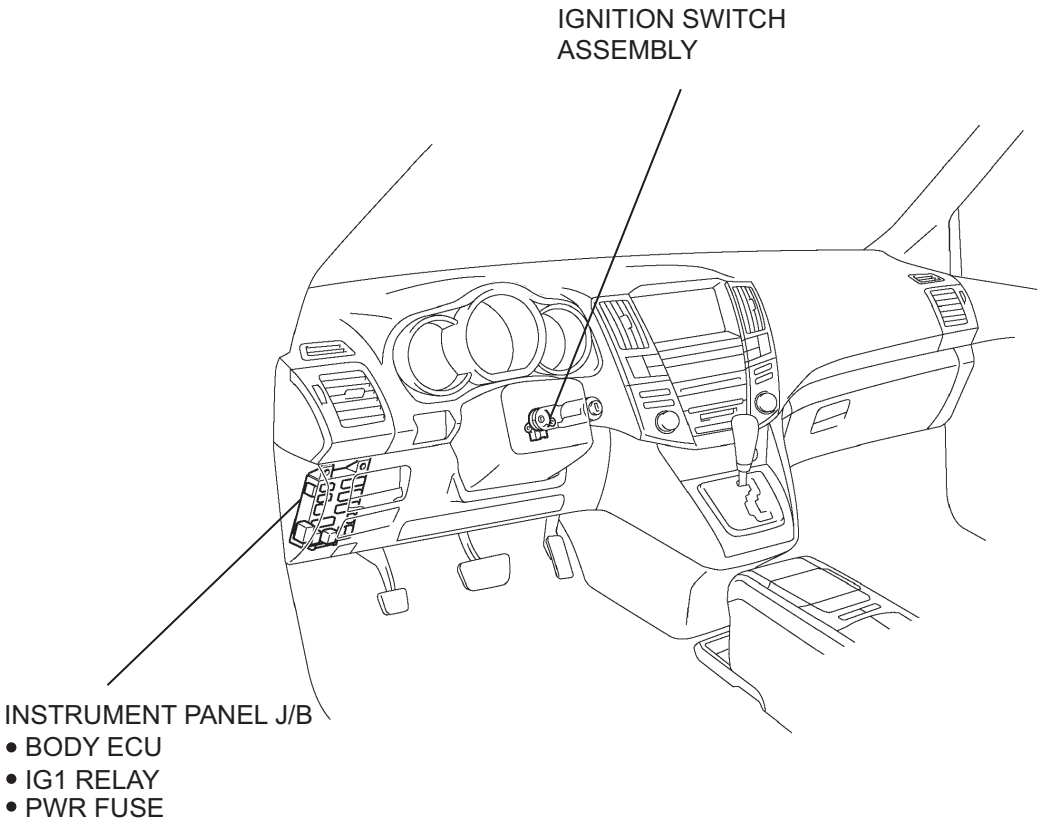
PRECAUTION

NOTICE:
When disconnecting the negative (-) battery cable, initialize the following systems after the cable is reconnected.

System Name	See Procedure
Lighting System (Adaptive Front-Lighting system)	LI-17
Sliding Roof Control	RF-22 and RF-4
Power Window Control System	WS-12
Power Back Door System	ED-33

PARTS LOCATION





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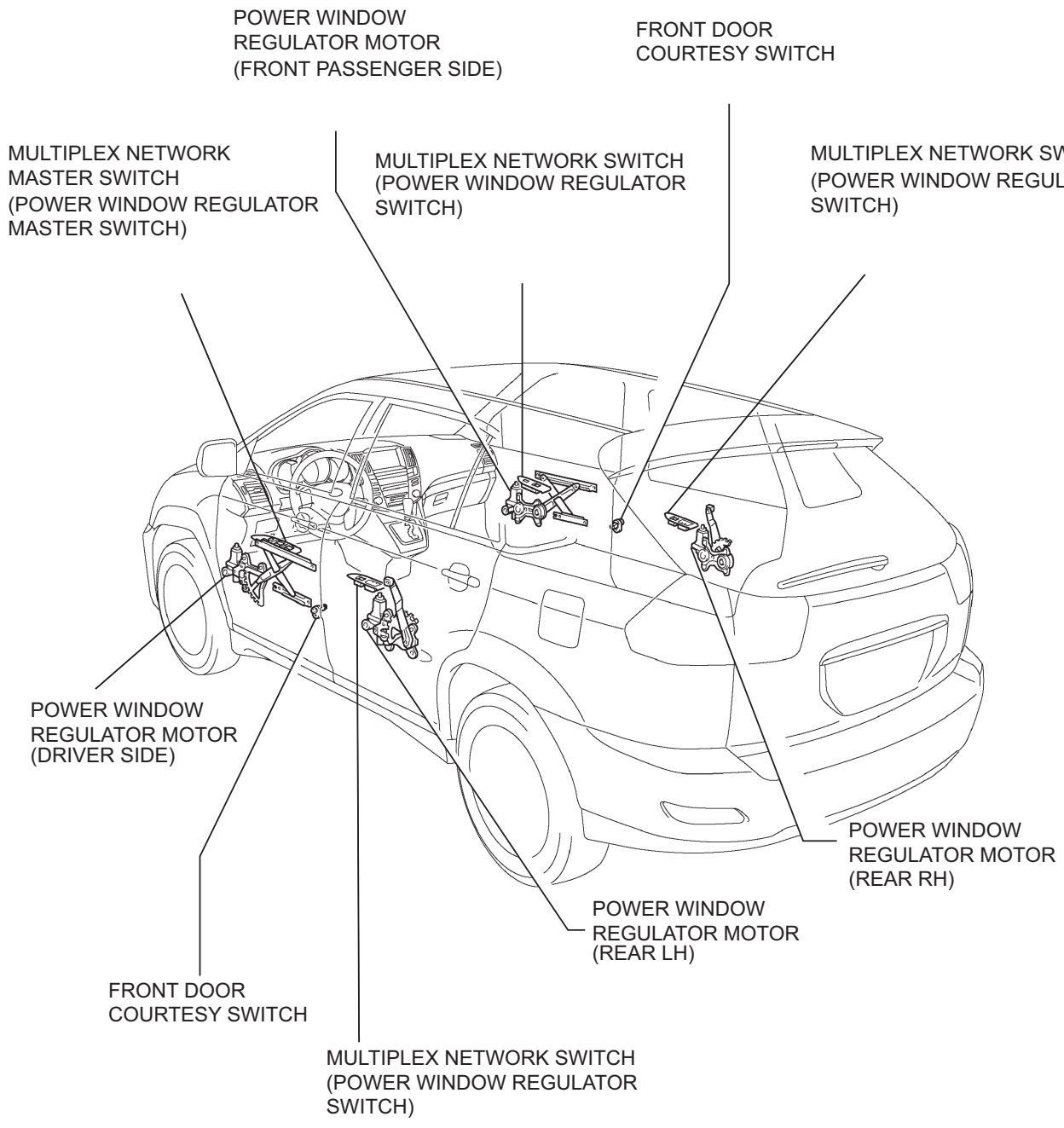
POWER WINDOW
REGULATOR MOTOR
(FRONT PASSENGER SIDE)
FRONT DOOR
COURTESY SWITCH
MULTIPLEX NETWORK
MASTER SWITCH
(POWER WINDOW REGULATOR
MASTER SWITCH)
MULTIPLEX NETWORK SWITCH
(POWER WINDOW REGULATOR
SWITCH)
MULTIPLEX NETWORK SWITCH
(POWER WINDOW REGULATOR
SWITCH)
POWER WINDOW
REGULATOR MOTOR
(DRIVER SIDE)
POWER WINDOW
REGULATOR MOTOR
(REAR RH)
POWER WINDOW
REGULATOR MOTOR
(REAR LH)
FRONT DOOR
COURTESY SWITCH
MULTIPLEX NETWORK SWITCH
(POWER WINDOW REGULATOR
SWITCH)
Y
B
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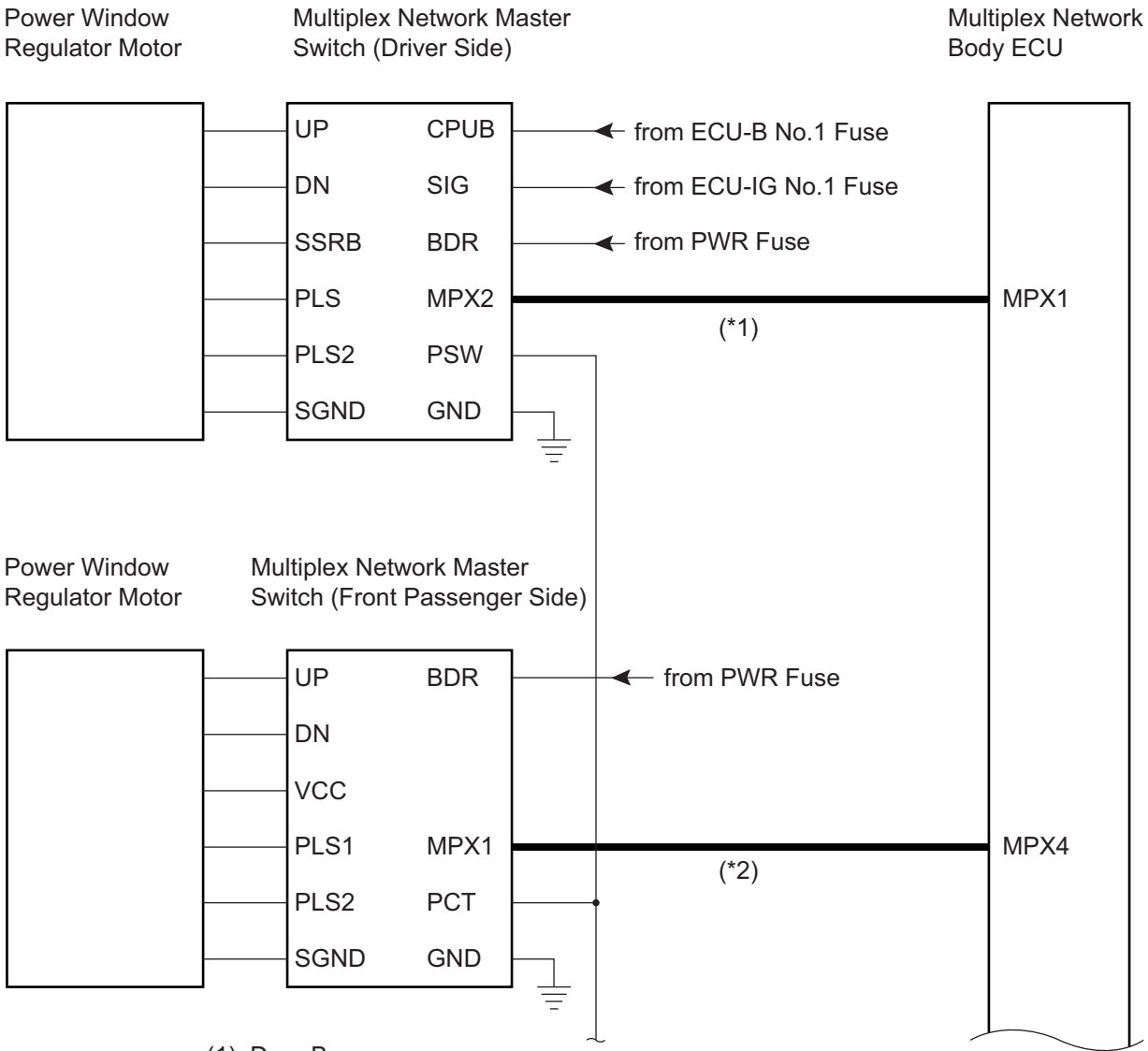
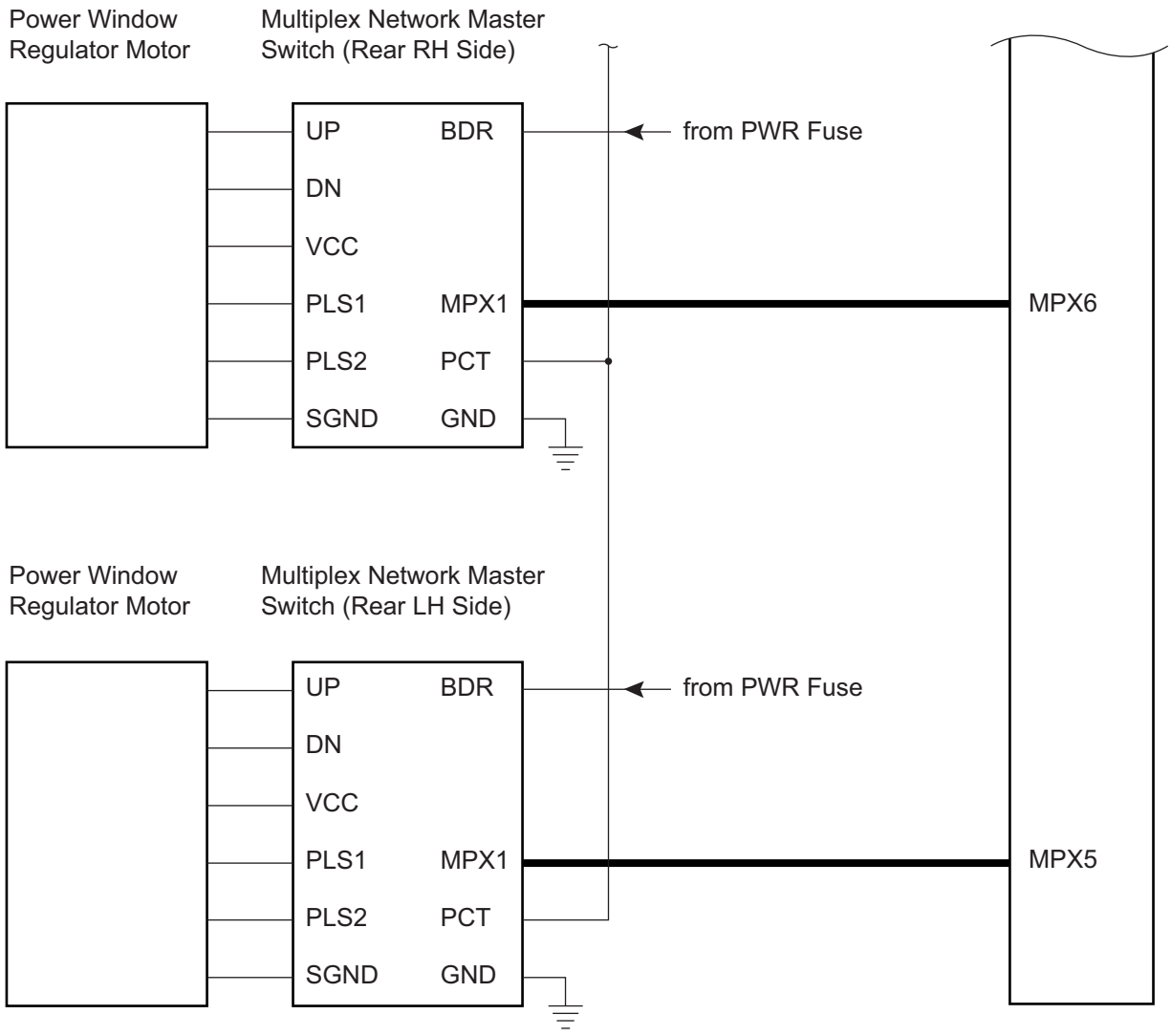
SYSTEM DIAGRAM




Power Window Regulator Motor
Multiplex Network Master Switch (Rear RH Side)
UP
DN
VCC
PLS1
PLS2
SGND
BDR
MPX1
PCT
GND
from PWR Fuse
MPX6
Power Window Regulator Motor
Multiplex Network Master Switch (Rear LH Side)
UP
DN
VCC
PLS1
PLS2
SGND
BDR
MPX1
PCT
GND
from PWR Fuse
MPX5
: BEAN (Local Protocol Unidirectional Communication)
H
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SYSTEM DESCRIPTION

1. POWER WINDOW CONTROL SYSTEM DESCRIPTION

(a) The power window control system controls the power window UP/DOWN function by using regulator motors. This system is mainly controlled by the multiplex network master switch built into the driver's door and multiplex network switches built into passenger's doors. Pressing any of these multiplex network switches or the driver side door window switch mounted on the master switch transmits an UP/DOWN signal to the regulator motor for the corresponding power window, which then operates the power window UP/DOWN. Pressing any switch for the power windows except the driver's power window mounted on the master switch transmits a remote UP/DOWN signal to the body ECU via the BEAN line. Then the body ECU transmits this remote signal to the regulator switch for the corresponding power window via the BEAN line and activates the motor to open/close the power window.

(b) The power window control system has the following functions:

Function	Outline
Manual up-and-down function	Function that causes window to go up while power window switch is being pulled halfway up and to go down while pushed halfway down. Window stops as soon as the switch is released.
All door auto up-and-down function	Function that enables window of all doors to be fully opened or closed by one press of power window switch.
Jam protection function	Function that automatically stops power window and moves it downward if a foreign object gets jammed in door window during auto-up operation.
Remote control function	Function that allows power window master switch to control AUTO and MANUAL up-and-down operations of front passenger door window and rear door windows.
Key-off operation function	Function that makes it possible to operate power window for approx. 45 seconds after ignition switch is turned to ACC or LOCK position, if either front door is not opened.
Key-linked up-and-down function	Function that causes window to go up while driver's door key is turned to lock side for more than 1.5 seconds and to go down while turned to unlock side for more than 1.5 seconds. Window stops as soon as the key is returned to original position.
Transmitter-linked down function	Function that causes window to go down while unlock switch on transmitter is pressed for more than 2.5 seconds. Window stops as soon as the switch is released.
Diagnosis	Function that allows the power window switch to make a diagnosis for failed section when power window switch detects a malfunction in power window system. Power window switch light comes on or blinks to inform driver.
Fail-safe	A fail-safe function to disable a part of power window functions if pulse sensor in power window motor has a malfunction: • All door auto up-and-down function and remote control function are disabled. • Manual operation is possible by each power window switch.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the power window control system.
- The intelligent tester should be used in steps 3 and 5.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	CUSTOMER PROBLEM ANALYSIS CHECK AND SYMPTOM CHECK

NEXT

3	CHECK COMMUNICATION FUNCTION OF MULTIPLEX COMMUNICATION SYSTEM (BEAN)

HINT:

See page MP-6

(a) Use the intelligent tester to confirm normal function of the multiplex communication system.
  (1) (ECU unconnected, communication line malfunctioning) Without code outputs, proceed to A.
  (2) (ECU unconnected, communication line malfunctioning) With code outputs, proceed to B.

B → Go to MULTIPLEX COMMUNICATION SYSTEM

A

4	PROBLEM SYMPTOMS TABLE

HINT:

See page WS-13

NEXT

5	OVERALL ANALYSIS AND TROUBLESHOOTING

(a) Data list/Active test
  HINT:
  See page WS-22
(b) Circuit inspection
(c) Terminal of ECU
  HINT:
  See page WS-14

NEXT

6	ADJUST, REPAIR OR REPLACE

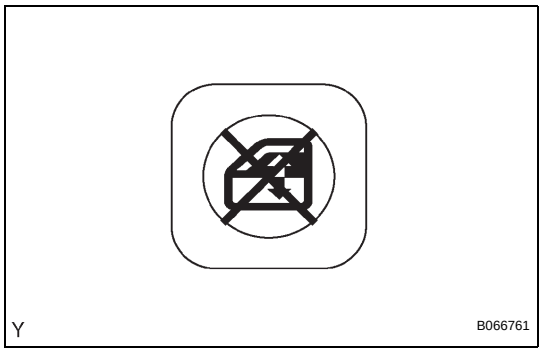
NEXT

7	RESET POWER WINDOW MOTOR

HINT:
See page WS-12

NEXT

END



OPERATION CHECK

1. CHECK WINDOW LOCK SWITCH

(a) Check that the front passenger side power window and rear power window operation is disabled when the window lock switch of the power window master switch is pressed.

standard:

Front passenger side power window and rear power window operation is disabled.

(b) Check that the front passenger side power window and rear power windows can be operated when the window lock switch is pressed again.

standard:

Front passenger side power window and rear power windows can be operated.

2. CHECK MANUAL UP/DOWN FUNCTION

(a) Check that the driver side power window operates as follows:

Standard

Condition	Master Switch	Switch Operation	Power Window
Ignition switch ON	Driver side	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)

(b) Check that the power windows except the driver side power window operates as follows:

Standard

Condition	Master Switch	Switch Operation	Power Window
• Ignition switch ON • Window lock switch OFF	Passenger side	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)
	Rear LH	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)
	Rear RH	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)

WS

3. CHECK AUTO UP/DOWN FUNCTION

(a) Check that the driver side power window operates as follows:

Standard

Condition	Master Switch	Switch Operation	Power Window
Ignition switch ON	Driver side	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)

(b) Check that the power windows except the driver side power window operate as follows:

Standard

Condition	Master Switch	Switch Operation	Power Window
• Ignition switch ON • Window lock switch OFF	Passenger side	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)
	Rear LH	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)
	Rear RH	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)

4. CHECK REMOTE MANUAL UP/DOWN FUNCTION

(a) Check that the power windows except the driver side power window operate as follows:

Standard

Condition	Master Switch	Switch Operation	Power Window
• Ignition switch ON • Window lock switch OFF	Passenger side	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)
	Rear LH	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)
	Rear RH	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)

5. CHECK REMOTE AUTO UP/DOWN FUNCTION

(a) Check that the power windows except the driver side power window operate as follows:

Standard

Condition	Master Switch	Switch Operation	Power Window
• Ignition switch ON • Window lock switch OFF	Passenger side	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)
	Rear LH	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)
	Rear RH	Pulled halfway up	UP (Closed)
		Pushed halfway down	DOWN (Open)

6. MANUAL UP/DOWN FUNCTION USING DRIVER SIDE DOOR LOCK KEY CYLINDER

(a) Check that all power windows and sliding roof (standard type only) operate as follows, when the key is inserted into the driver side door lock key cylinder:

Standard

Condition	Key Operation	Position/Operation
No key in ignition key cylinder	Turned left (LOCK) for more than 1.5 sec.	Driver and passenger side power windows/UP
	Turned left (LOCK) for more than 2.0 sec.	Rear LH and RH power windows/UP
	Turned left (LOCK) for more than 2.5 sec.	Sliding roof/CLOSE
	Turned right (UNLOCK) for more than 1.5 sec.	Driver and passenger side power windows/DOWN
	Turned right (UNLOCK) for more than 2.0 sec.	Rear LH and RH power windows/DOWN
	Turned right (UNLOCK) for more than 2.5 sec.	Sliding roof/OPEN

7. CHECK MANUAL DOWN FUNCTION USING TRANSMITTER

(a) Check that all power windows and sliding roof (standard type only) operate as follows when operating the transmitter:

Standard

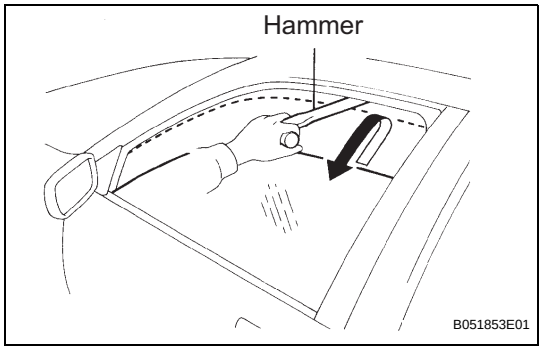
Condition	Transmitter Operation	Position/Operation
• No key in ignition key cylinder • Any door unlocked	UNLOCK switch pressed for more than 1.5 sec.	Driver and passenger side power windows/DOWN
	UNLOCK switch pressed for more than 2.0 sec.	Rear LH and RH power windows/DOWN
	UNLOCK switch pressed for more than 2.5 sec.	Sliding roof/OPEN

HINT:

For a sign for starting operation, the wireless door lock buzzer sounds once (answer-back).

8. CHECK POWER WINDOW OPERATION FUNCTION AFTER IGNITION SWITCH IS TURNED OFF

(a) When both of the following conditions are fulfilled, check that the power windows can be operated even after the ignition switch is turned off.
   (1) Within 45 seconds after the ignition switch is turned off.
   (2) The front doors are closed.



9. CHECK JAM PROTECTION FUNCTION

HINT:

The jam protection function prevents any part of your body from getting caught by accident between the door frame and the door glass during power window operation.

NOTICE:

If the power window motor has been reset, raise and lower the door glass several times using MANUAL function before performing the check.

WS

(a) Check that the door glass goes down by approx. 50 mm (1.97 in.) right when something gets caught between the door frame and door glass during power window operation. However, when the opening between the door frame and the door glass is less than 200 mm (7.87 in.), the door glass continues to go down and does not stop until an opening of 200 mm (7.87 in.) is achieved. Operative conditions:
- AUTO UP
- AUTO UP function after the ignition switch is turned off
- MANUAL UP function after the ignition switch is turned off
- MANUAL UP function using the driver side door lock key cylinder

CUSTOMIZE PARAMETERS

HINT:
The following items can be customized.

NOTICE:

- **After confirming whether the items requested by the customer are applicable or not for customization, perform customize operations.**
- **Be sure to record the current settings before customizing.**
- **When troubleshooting, make sure that the item in question is not set to "OFF" as a result of customization. (Example: For the symptom "the wireless function does not operate", first check that the wireless function is not set to "OFF", then perform troubleshooting).**

POWER WINDOW

DISPLAY (ITEM)	DEFAULT CONTENTS	CONTENTS	SETTING
UP/DOOR KEY (Door key linked P/W UP)	ON	Function that enables all power windows to move up manually, via manual operation, when driver side door key cylinder is held in lock position for 1.5 seconds when ignition switch is off.	ON/OFF
DOWN/DOOR KEY (Door key linked P/W DOWN)	ON	Function that enables all power windows to move down manually, via manual operation, when driver side door key cylinder is held in unlock position for 1.5 seconds when ignition switch is off.	ON/OFF
DOWN/WIRELESS (P/W DOWN w/ transmitter)	ON	Function that enables all power windows to move down manually, via manual operation, when unlock switch on transmitter is held for 1.5 seconds when ignition switch is off.	ON/OFF
UP/WIRELESS (P/W UP w/ transmitter)	ON	Function that enables all power windows to move up manually, via manual operation, when lock switch on transmitter is held for 1.5 seconds when ignition switch is off.	ON/OFF

INITIALIZATION

1. RESET (INITIALIZE) POWER WINDOW REGULATOR MOTOR

NOTICE:

- **Resetting the power window motor (initializing the pulse sensor) is necessary when the battery terminal is disconnected; when the power window regulator master switch, power window regulator switch, wire harness, power window regulator and power window motor are replaced or removed/ installed; or when the PWR fuse, RR DOOR LH fuse, RR DOOR RH and ECU-B fuse are replaced. AUTO operation function, jam protection function and remote operation function via the power window regulator master switch do not operate without resetting.**
- **Be sure to reset the power window regulator motors using the power window switch on each door because the motors cannot be reset by remote operation using the power window master switch.**
- **In order to prevent a large amount of current from flowing in the wires, do not simultaneously reset 2 or more power window regulator motors.**
- **If the power window switch has been continuously operated for a long time, the power window regulator motor will stop so that no additional load will be applied to the motor. Continuing to operate the switch even after the motor has stopped will cause the switch to blink while restricting the AUTO UP/DOWN function and the remote UP/DOWN function. If this happens, reset the motor again after several minutes have passed.**
- **Whenever disconnecting the battery terminal, reset all the other systems besides the power window control system.**

(a) Turn the ignition switch ON.

(b) Halfway open the power window by pressing the power window switch.

(c) Fully pull up the switch until the power window is fully closed and continue to hold the switch for approx. 1 second after the power window is fully closed.

(d) Check that the AUTO UP/DOWN function operates normally.

If the AUTO UP/DOWN function operates normally, reset operations have been completed at this time.

If not normal, follow steps below.

(1) Disconnect the negative battery terminal for 10 seconds.

(2) Connect the battery terminal.

(3) Turn the ignition switch ON.

(4) Halfway open the power window by pressing the power window switch.
(5) If the AUTO UP/DOWN function operates normally, reset operations have been completed at this time.
If not normal, follow steps below.
(6) Turn the ignition switch ON.
(7) Halfway open the power window by pressing the power window switch.
(8) Fully pull up the switch until the power window is fully closed and continue to hold the switch for approx. 12 seconds after the power window is fully closed.
(9) Check that the AUTO UP/DOWN function operates normally.

PROBLEM SYMPTOMS TABLE

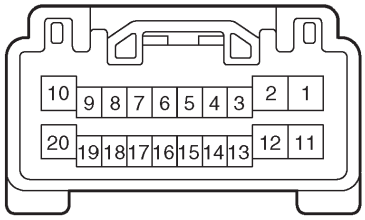
POWER WINDOW CONTROL SYSTEM

Symptom	Suspected area	See page
Power window does not operate with multiplex network master switch operation	1. ECU-B, ECU-IG, PWR fuse	-
	2. Multiplex network master switch circuit (power source)	WS-26
	3. Power window regulator motor circuit	WS-31
	4. Multiplex network master switch	-
Power window does not operate with multiplex network switch operation (front passenger side)	1. PWR fuse	-
	2. Multiplex network switch circuit (power source)	WS-28
	3. Power window regulator motor circuit (front passenger side)	WS-33
	4. Multiplex network switch (front passenger side)	-
Power window does not operate with multiplex network switch operation (rear LH side)	1. PWR fuse	-
	2. Multiplex network switch circuit (power source)	WS-29
	3. Power window regulator motor circuit (rear LH side)	WS-35
	4. Multiplex network switch (rear LH side)	-
Power window does not operate with multiplex network switch operation (rear RH side)	1. PWR fuse	-
	2. Multiplex network switch circuit (power source)	WS-30
	3. Power window regulator motor circuit (rear RH side)	WS-37
	4. Multiplex network switch (rear RH side)	-
AUTO UP/DOWN function does not operate on driver side	1. Diagnosis check	WS-20
	2. Power window regulator motor reset	WS-12
	3. Multiplex network master switch	-
	4. Wire harness	-
AUTO UP/DOWN function does not operate on any door side except driver sides	1. Diagnosis check	WS-20
	2. Power window regulator motor reset	WS-12
	3. Multiplex network master switch	-
	4. Wire harness	-
Remote UP/DOWN function does not operate	1. DATA LIST/ACTIVE TEST	WS-21
	2. Multiplex network master switch	WS-14
	3. Multiplex network body ECU	-
	4. Wire harness	-
Power window can be operated after ignition switch is turned off even if operated conditions are not met	1. Front door courtesy switch	WS-14
	2. Wire harness	-
AUTO UP operation does not fully close power window (Jam protection function is activated)	1. Power window regulator motor reset	WS-12
	2. Check & Clean Glass run	-
	3. Multiplex network master switch	-

TERMINALS OF ECU

1. MULTIPLEX NETWORK MASTER SWITCH

P22



Y

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(a) Disconnect the P22 switch connector.
(b) Measure the voltage and resistance of each terminal according to the value(s) in the table below.

Standard resistance

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (P22-2) - Body ground	W-B - Body ground	Ground	Constant	Below 1 Ω

Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BDR (P22-10) - GND (P22-2)	G - W-B	+B power supply	Constant	10 to 14 V
CPUB (P22-9) - GND (P22-2)	L-B - W-B	+B power supply	Constant	10 to 14 V
SIG (P22-20) - GND (P22-2)	BR - W-B	Ignition power supply	Ignition switch OFF → ON	0 V → 10 to 14 V

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the P22 switch connector and reset the power window motor.
(d) Measure the voltage according to the value(s) in the table below.

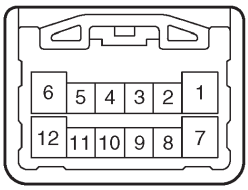
Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
UP (P22-1) - GND (P22-2)	GR - W-B	Power window motor UP output	Ignition switch ON, Driver side power window switch OFF → UP (Manual operation)	0 V → 10 to 14 V
UP (P22-1) - GND (P22-2)	GR - W-B	Power window motor UP output	Ignition switch ON, Driver side power window fully open → Driver side power window switch UP (AUTO operation) → Driver side power window fully closed	0 V → 10 to 14 V → 0 V
DN (P22-11) - GND (P22-2)	B - W-B	Power window motor DOWN output	Ignition switch ON, Driver side power window switch OFF → DOWN (Manual operation)	10 to 14 V → 0 V

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
DN (P22-11) - GND (P22-2)	B - W-B	Power window motor DOWN output	Ignition switch ON, Driver side power window fully closed → Driver side power window switch DOWN (AUTO operation) → Driver side power window fully open	10 to 14 V → 0 V
PWS (P22-6) - GND (P22-2)	O - W-B	Power window lock switch output	Ignition switch ON, Power window lock switch UNLOCK → LOCK	10 to 14 V → 0 V
VCC (P22-19) - GND (P22-2)	O - W-B	Power window motor power source	Constant	10 to 14 V

2. CHECK MULTIPLEX NETWORK SWITCH (FRONT PASSENGER SIDE)

P19



Y

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(a) Disconnect the P19 switch connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Standard resistance

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (P19-7) - Body ground	W-B - Body ground	Ground	Constant	Below 1 Ω

Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BDR (P19-12) - GND (P19-7)	G - W-B	+B power supply	Constant	10 to 14 V

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the P19 switch connector and reset power window motor.
(d) Measure the voltage according to the value(s) in the table below.

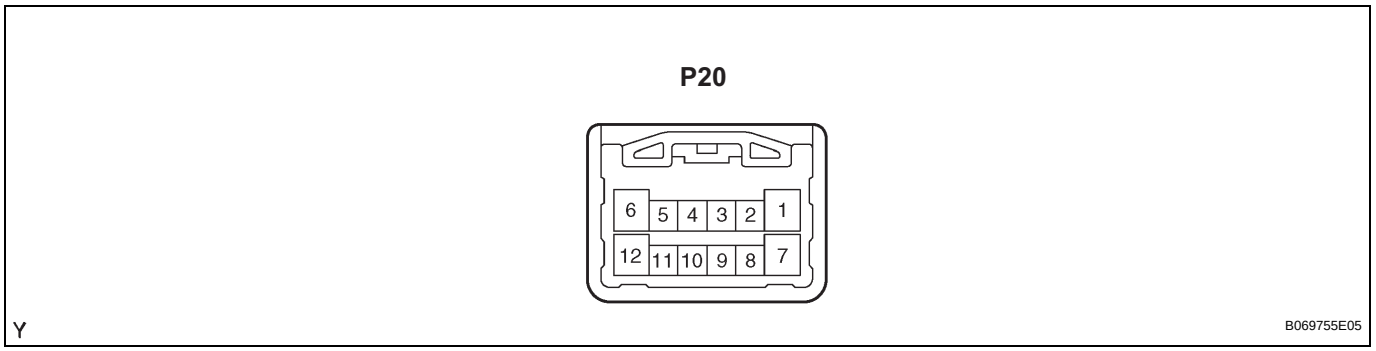
Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
UP (P19-6) - GND (P19-7)	GR - W-B	Power window motor UP output	Ignition switch ON, Regulator switch OFF → UP (Manual operation)	0 V → 10 to 14 V

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
UP (P19-6) - GND (P19-7)	GR - W-B	Power window motor UP output	Ignition switch ON, Front passenger side power window fully open → Regulator switch UP (AUTO operation) → Front passenger side power window fully closed	0 V → 10 to 14 V → 0 V
DN (P19-1) - GND (P19-7)	B - W-B	Power window motor DOWN output	Ignition switch ON, Regulator switch OFF → DOWN (Manual operation)	10 to 14 V → 0 V
DN (P19-1) - GND (P19-7)	B - W-B	Power window motor DOWN output	Ignition switch ON, Front passenger side power window fully closed → Regulator switch DOWN (AUTO operation) → Front passenger side power window fully open	10 to 14 V → 0 V
PCT (P19-11) - GND (P19-7)	O - W-B	Power window lock switch output	Ignition switch ON, Power window lock switch UNLOCK → LOCK	10 to 14 V → 0 V
VCC (P19-5) - SGND (P19-8)	LG - R	Power window motor power source	Constant	10 to 14 V

If the result is not as specified, the multiplex network switch may have a malfunction.

3. CHECK MULTIPLEX NETWORK SWITCH (REAR LH)



(a) Disconnect the P20 switch connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Standard resistance

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (P20-7) - Body ground	W-B - Body ground	Ground	Constant	Below 1 Ω
SEL2 (P20-10) - GND (P20-7)	W-B - W-B	Terminal for identification of rear LH switch	Constant	Below 1 Ω

Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BDR (P20-12) - GND (P20-7)	LG - W-B	+B power supply	Constant	10 to 14 V

(c) Reconnect the P20 switch connector and reset the power window motor.

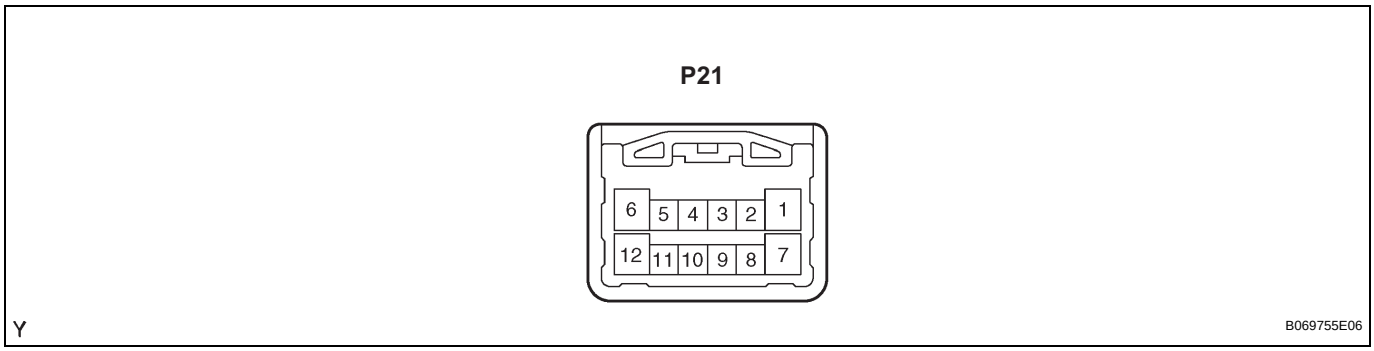
(d) Measure the voltage according to the value(s) in the table below.

Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
UP (P20-6) - GND (P20-7)	V - W-B	Power window motor UP output	Ignition switch ON, Regulator switch OFF → UP (Manual operation)	0 V → 10 to 14 V
UP (P20-6) - GND (P20-7)	V - W-B	Power window motor UP output	Ignition switch ON, Rear LH power window fully open → Regulator switch UP (AUTO operation) → Rear LH power window fully closed	0 V → 10 to 14 V → 0 V
DN (P20-1) - GND (P20-7)	W - W-B	Power window motor DOWN output	Ignition switch ON, Regulator switch OFF → DOWN (Manual operation)	10 to 14 V → 0 V
DN (P20-1) - GND (P20-7)	W - W-B	Power window motor DOWN output	Ignition switch ON, Rear LH power window fully closed → Regulator switch DOWN (AUTO operation) → Rear LH power window fully open	10 to 14 V → 0 V
PCT1 (P20-11) - GND (P20-7)	GR - W-B	Power window lock switch output	Ignition switch ON, Power window lock switch UNLOCK → LOCK	10 to 14 V → 0 V
VCC (P20-5) - SGND (P20-8)	L - BR	Power window motor power source	Constant	10 to 14 V

If the result is not as specified, the multiplex network switch may have a malfunction.

4. CHECK MULTIPLEX NETWORK SWITCH (REAR RH)



(a) Disconnect the P21 switch connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Standard resistance

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (P21-7) - Body ground	W-B - Body ground	Ground	Constant	Below 1 Ω
SEL1 (P21-9) - GND (P21-7)	W-B - W-B	Terminal for identification of rear RH switch	Constant	Below 1 Ω

Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BDR (P21-12) - GND (P21-7)	LG - W-B	+B power supply	Constant	10 to 14 V

WS

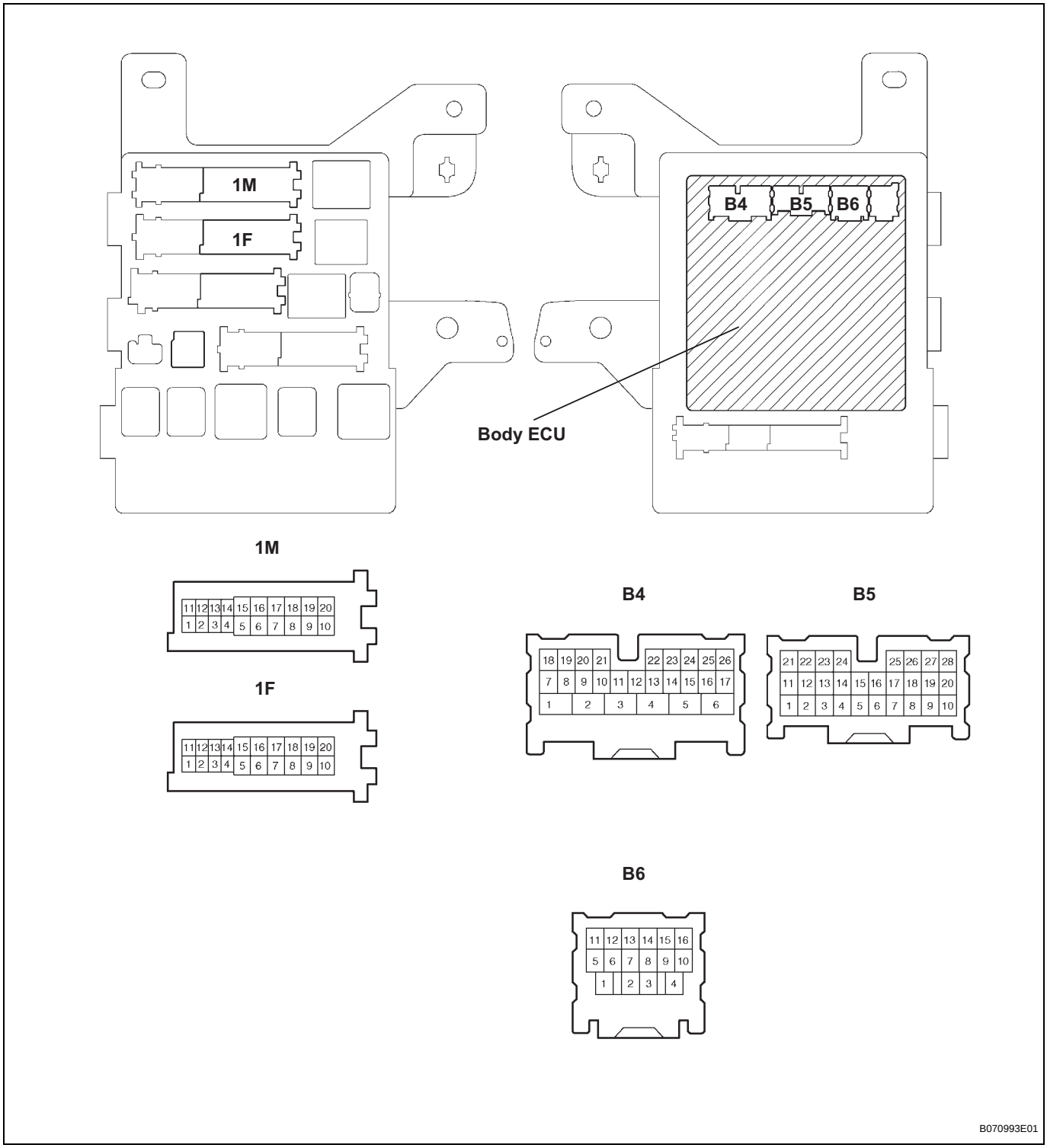
(c) Reconnect the P21 switch connector and reset the power window motor.
(d) Measure the voltage according to the value(s) in the table below.

Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
UP (P21-6) - GND (P21-7)	V - W-B	Power window motor UP output	Ignition switch ON, Regulator switch OFF → UP (Manual operation)	0 V → 10 to 14 V
UP (P21-6) - GND (P21-7)	V - W-B	Power window motor UP output	Ignition switch ON, Rear RH power window fully open → Regulator switch UP (AUTO operation) → Rear RH power window fully closed	0 V → 10 to 14 V → 0 V
DN (P21-1) - GND (P21-7)	W - W-B	Power window motor DOWN output	Ignition switch ON, Regulator switch OFF → DOWN (Manual operation)	10 to 14 V → 0 V
DN (P21-1) - GND (P21-7)	W - W-B	Power window motor DOWN output	Ignition switch ON, Rear RH power window fully closed → Regulator switch DOWN (AUTO operation) → Rear RH power window fully open	10 to 14 V → 0 V
PCT1 (P21-11) - GND (P21-7)	GR - W-B	Power window lock switch output	Ignition switch ON, Power window lock switch UNLOCK → LOCK	10 to 14 V → 0 V
VCC (P21-5) - SGND (P21-8)	L - BR	Power window motor power source	Constant	10 to 14 V

If the result is not as specified, the multiplex network switch may have a malfunction.

5. CHECK INSTRUMENT PANEL J/B (BODY ECU)



(a) Disconnect the B4, B5 and B6 ECU connectors.
(b) Disconnect the 1F and 1M J/B connectors.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
KSW (B4-21) - Body ground	B - Body ground	Key unlock warning switch input	No key in ignition key cylinder → Key inserted	10 KΩ or higher → Below 1 Ω

WS

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
PCTY (B5-23) - Body ground	L - W-B	Front passenger side courtesy switch input	Passenger side door CLOSED → OPEN	10 KΩ or higher → Below 1 Ω
DCTY (B6-14) - Body ground	L - Body ground	Driver side courtesy switch input	Driver side door CLOSED → OPEN	10 KΩ or higher → Below 1 Ω
GND1 (1F-10) - Body ground	W-B - Body ground	Ground	Constant	Below 1 Ω
GND2 (1M-9) - Body ground	W-B - Body ground	Ground	Constant	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

(d) Reconnect the B4, B5 and B6 ECU connectors.

(e) Reconnect the 1M and 1F J/B connectors.

(f) Measure the voltage according to the value(s) in the table below.

Standard voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
KSW (B4-21) - Body ground	B - Body ground	Key unlock warning switch input	No key in ignition key cylinder → Key inserted	10 to 14 V → 0 V

If the result is not as specified, the instrument panel J/B (body ECU) may have a malfunction.

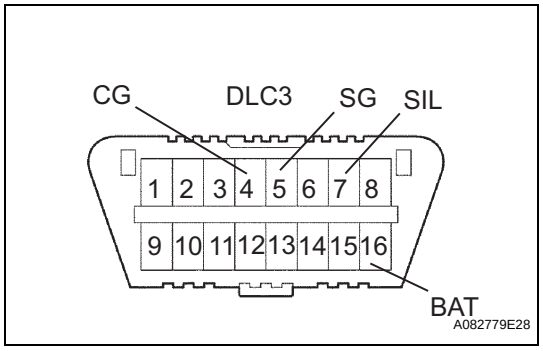
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Data of the system can be read in the Data Link Connector 3 (DLC3) of the vehicle. Therefore, when the system seems to be malfunctioning, use the intelligent tester to check for a malfunction and repair it.

2. CHECK DLC3

(a) The vehicle's ECM uses ISO 9141-2 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.



Standard

Tester Connection	Condition	Specified Condition
7 (Bus + line) - 5 (Signal ground)	During communication	Pulse generation
4 (Chassis ground) - Body ground	Constant	Below 1 Ω
5 (Signal ground) - Body ground	Constant	Below 1 Ω
16 (B+) - Body ground	Constant	9 to 14 V

HINT:

If the screen displays a communication error message after you have connected the cable of the intelligent tester to the DLC3, turned the ignition switch ON and used the intelligent tester, the problem may be on the vehicle side or tester side.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still impossible when the tester is connected to another vehicle, the problem is probably in the tester itself, so consult the Service Department listed in the tester's instruction manual.

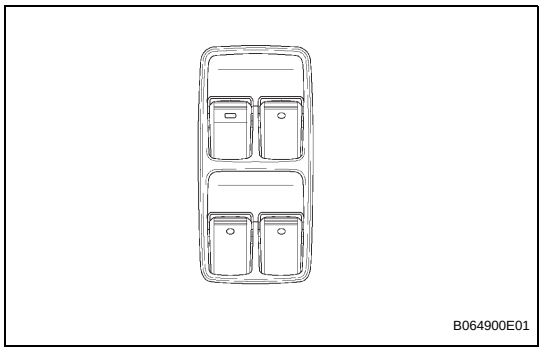
3. INSPECT BATTERY VOLTAGE

(a) Check the battery voltage.

Standard voltage:

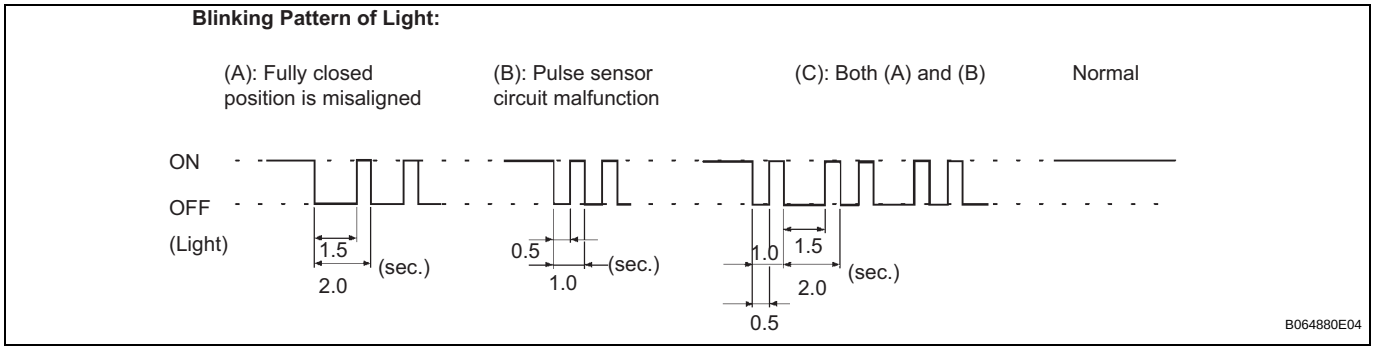
11 to 14 V

If the voltage is below 11 V, replace the battery before proceeding.



4. CHECK DIAGNOSIS

(a) Turn the ignition switch ON.
(b) Operate the driver side switch of the master switch.
(c) Check the blinking pattern of the AUTO light as shown in the illustration.



(1) If pattern (A) is displayed, reset power window regulator motor.
(2) If pattern (B) or (C) is displayed, check the wire harness.
(3) If the normal pattern is displayed, replace the multiplex network master switch.

FAIL-SAFE CHART

1. CHECK POWER WINDOW FAIL-SAFE FUNCTION

HINT:

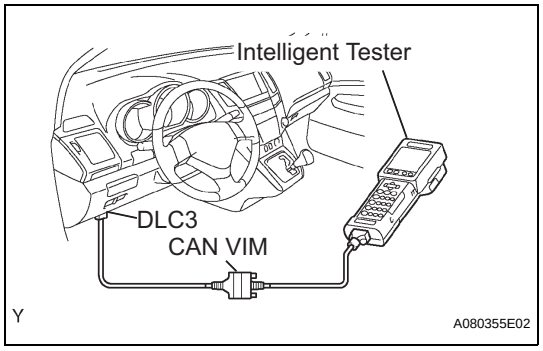
If there is a malfunction in the power window system, some of the power window functions will be disabled.

Driver side power window

Malfunctioning Part	Disabled Function	Operative Function
Pulse sensor circuit in power window motor	• AUTO UP/DOWN function • Power window operation function after ignition off	• Manual UP (fully pulled UP position) • Manual DOWN • Remote (AUTO and manual) • Remote function after ignition OFF (AUTO and manual) • MANUAL UP/DOWN function via driver side door lock key cylinder • MANUAL DOWN function via transmitter
CPU in power window master switch	• AUTO UP/DOWN function • Remote function (AUTO and manual) • MANUAL UP/DOWN function via driver side door lock key cylinder • MANUAL DOWN function via transmitter	• Manual UP (fully pulled UP position) • Manual DOWN

Power windows except driver side power window

Malfunctioning Part	Disabled Function	Operative Function
• Pulse sensor circuit in power window motor • CPU in power window master switch • Communication between master switch and each power window switch	• AUTO UP/DOWN function • Power window operation function after ignition OFF • MANUAL UP/DOWN function via driver side door lock key cylinder • MANUAL DOWN function via transmitter	• Manual UP (fully pulled UP position) • Manual DOWN



DATA LIST / ACTIVE TEST

1. USING INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.

(b) Monitor the ECU data by following the prompts on the tester screen.

HINT:

The intelligent tester has a "Snapshot" function which records the monitored data. Refer to the intelligent tester operator's manual for further details.

2. DATA LIST

HINT:

Using the DATA LIST displayed on the intelligent tester, you can read the value of the switch, sensor, actuator, etc. without parts removal. Reading the DATA LIST as the first step of troubleshooting is one way to shorten the labor time.

(a) Connect the intelligent tester to the DLC3.

(b) Turn the ignition switch ON.

(c) Read the DATA LIST according to the display on the tester.

MASTER SW:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
P/W AUTO SW	Driver door power window auto switch signal/ON or OFF	ON: Driver door power window auto switch operates OFF: Driver door power window auto switch does not operate	-
P P/W AUTO SW	Front passenger door remote power window auto switch signal/ ON or OFF	ON: Front passenger door remote power window auto switch operates OFF: Front passenger door remote power window auto switch does not operate	-
RR P/W AUTO SW	Rear RH door remote power window auto switch signal/ON or OFF	ON: Rear RH door remote power window auto switch operates OFF: Rear RH door remote power window auto switch does not operate	-
RL P/W AUTO SW	Rear LH door remote power window auto switch signal/ON or OFF	ON: Rear LH door remote power window auto switch operates OFF: Rear LH door remote power window auto switch does not operate	-
P/W UP SW	Driver door power window manual up switch signal/ON or OFF	ON: Driver door power window manual up switch operates OFF: Driver door power window manual up switch does not operate	-
P P/W UP SW	Front passenger door remote power window manual up switch signal/ON or OFF	ON: Front passenger door remote power window manual up switch operates OFF: Front passenger door remote power window manual up switch does not operate	-
RR P/W UP SW	Rear RH door remote power window manual up switch signal/ ON or OFF	ON: Rear RH door remote power window manual up switch operates OFF: Rear RH door remote power window manual up switch does not operate	-
RL P/W UP SW	Rear LH door remote power window manual up switch signal/ ON or OFF	ON: Rear LH door remote power window manual up switch operates OFF: Rear LH door remote power window manual up switch does not operate	-
P/W DOWN SW	Driver door power window manual down switch signal/ON or OFF	ON: Driver door power window manual down switch operates OFF: Driver door power window manual down switch does not operate	-
P P/W DOWN SW	Front passenger door remote power window manual down switch signal/ON or OFF	ON: Front passenger door remote power window manual down switch operates OFF: Front passenger door remote power window manual down switch does not operate	-
RR P/W DOWN SW	Rear RH door remote power window manual down switch signal/ON or OFF	ON: Rear RH door remote power window manual down switch operates OFF: Rear RH door remote power window manual down switch does not operate	-

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
RL P/W DOWN SW	Rear LH door remote power window manual down switch signal/ON or OFF	ON: Rear LH door remote power window manual down switch operates OFF: Rear LH door remote power window manual down switch does not operate	-
P/W LOCK SW	Power window lock switch signal/ ON or OFF	ON: Power window lock switch in LOCK position OFF: Power window lock switch in UNLOCK position	-
GLASS POS-1/4	Door glass position (Fully closed - 1/4 open) signal/OK or CAUTION	OK: Power window is going UP by manual operation CAUTION: CAUTION may be displayed even when no resistance is applied in each position. In this case, there must be a foreign object stuck in that position	-
GLASS POS-2/4	Door glass position (1/4 open - 2/ 4 open) signal/OK or CAUTION	OK: Power window is going UP by manual operation CAUTION: CAUTION may be displayed even when no resistance is applied in each position. In this case, there must be a foreign object stuck in that position	-
GLASS POS-3/4	Door glass position (2/4 open - 3/ 4 open) signal/OK or CAUTION	OK: Power window is going UP by manual operation CAUTION: CAUTION may be displayed even when no resistance is applied in each position. In this case, there must be a foreign object stuck in that position	-
GLASS POS-OPEN	Door glass position (3/4 open - Fully open) signal/OK or CAUTION	OK: Power window is going UP by manual operation CAUTION: CAUTION may be displayed even when no resistance is applied in each position. In this case, there must be a foreign object stuck in that position	-
DOOR KEY PW UP	Door key-linked power window UP signal/AVAIL or NOT AVL	AVAIL: Door key-linked power window UP is available NOT AVL: Door key-linked power window UP is unavailable	-
DOOR KEY PW DOWN	Door key-linked power window DOWN signal/AVAIL or NOT AVL	AVAIL: Door key-linked power window DOWN is available NOT AVL: Door key-linked power window DOWN is unavailable	-
UP/WIRELESS	Power window UP w/ transmitter signal/AVAIL or NOT AVL	AVAIL: Power window UP w/ transmitter is available NOT AVL: Power window UP w/ transmitter is unavailable	-

BODY:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
IG SW	Ignition switch signal/ ON or OFF	ON: Key is in ON or START position OFF: Key is in OFF or ACC position	-
D DOR CTY SW	Driver side door courtesy switch signal/ or OFF	ON: Driver side door is open OFF: Driver side door is closed	-

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
P DOR CYT SW	Front passenger side door courtesy switch signal/ ON or OFF	ON: Front passenger side door is open OFF: Front passenger side door is closed	-

3. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the intelligent tester allows you to operate the relay, VSV, actuator, etc. without parts removal. Performing the ACTIVE TEST as the first step of troubleshooting is one way to shorten the labor time. It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch ON.
(c) Perform the ACTIVE TEST according to the display on the tester.

MASTER SW

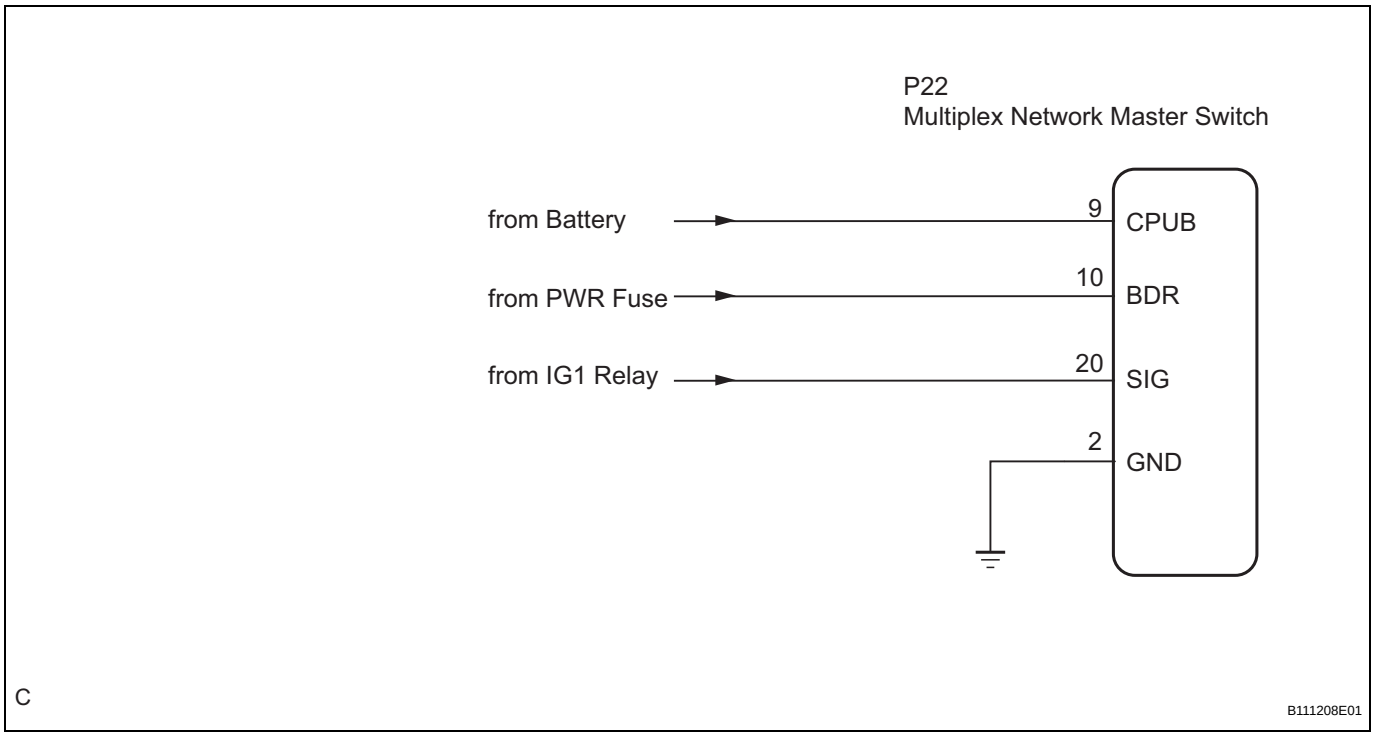
Item	Test Detail	Diagnostic Note
P/W UP/DOWN	Operates power window UP/DOWN	-

Power Window Master Switch Power Source Circuit

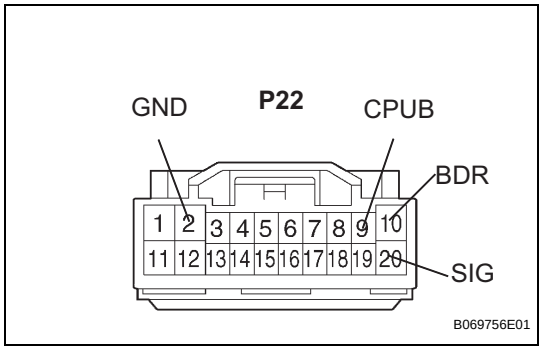
DESCRIPTION

This circuit supplies power to operate the multiplex network master switch.

WIRING DIAGRAM



1	CHECK WIRE HARNESS (MULTIPLEX NETWORK MASTER SWITCH - BATTERY AND BODY GROUND)



(a) Disconnect the P22 connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
P22-9 (CPUB) - Body ground	Always	10 to 14 V
P22-10 (BDR) - Body ground	Always	10 to 14 V
P22-20 (SIG) - Body ground	Ignition switch ON	10 to 14 V

Standard resistance

Tester Connection	Condition	Specified Condition
P22-2 (GND) - Body ground	Always	Below 1 Ω

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

WS

OK

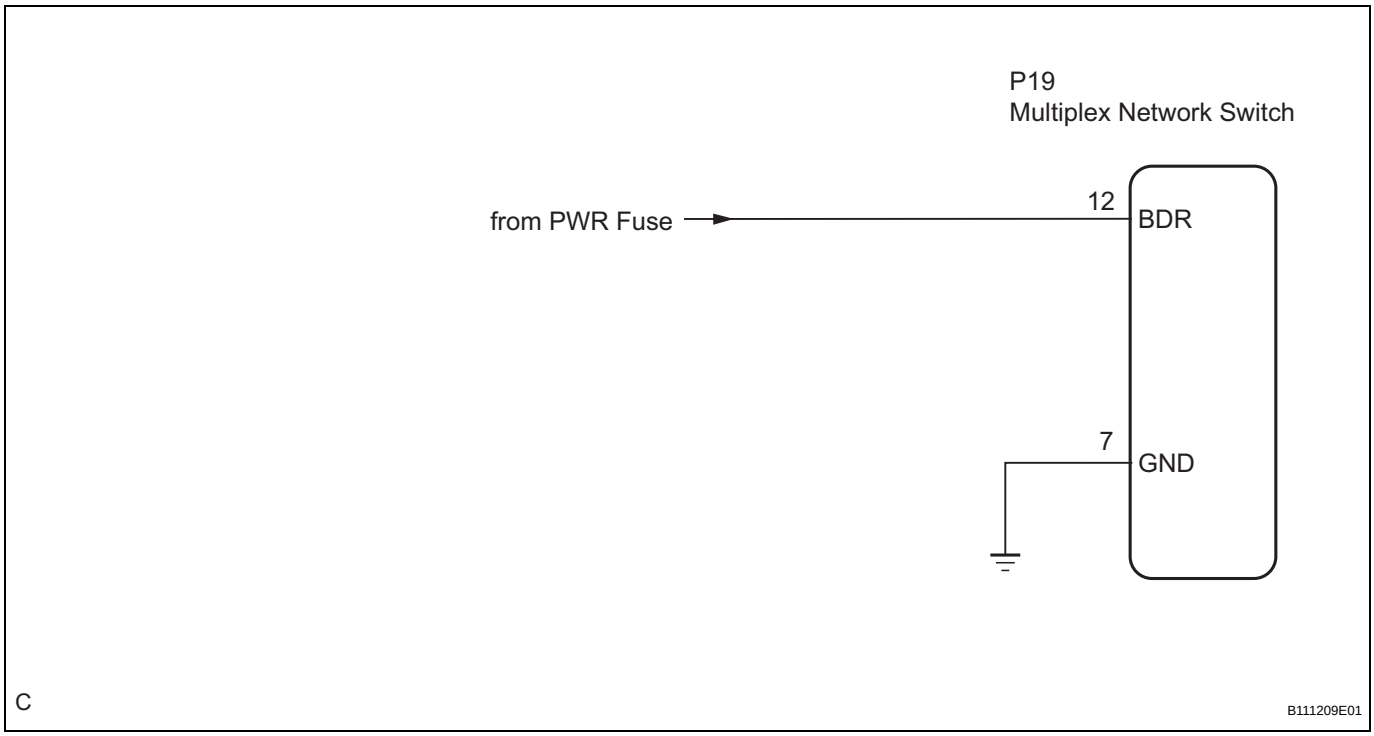
PROCEED TO NEXT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Front Passenger Side Power Window Switch Power Source Circuit

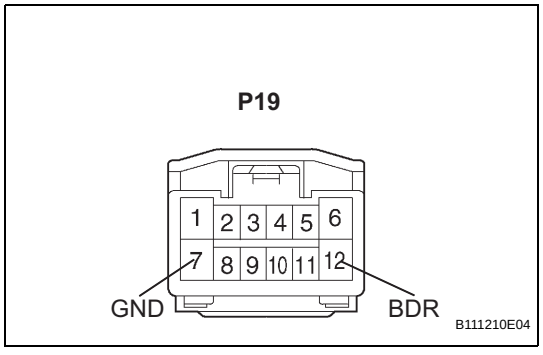
DESCRIPTION

This circuit supplies power to operate the multiplex network switch.

WIRING DIAGRAM



1	CHECK WIRE HARNESS (MULTIPLEX NETWORK SWITCH)



(a) Disconnect the P19 connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
P19-12 (BDR) - Body ground	Always	10 to 14 V

Standard resistance

Tester Connection	Condition	Specified Condition
P19-7 (GND) - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

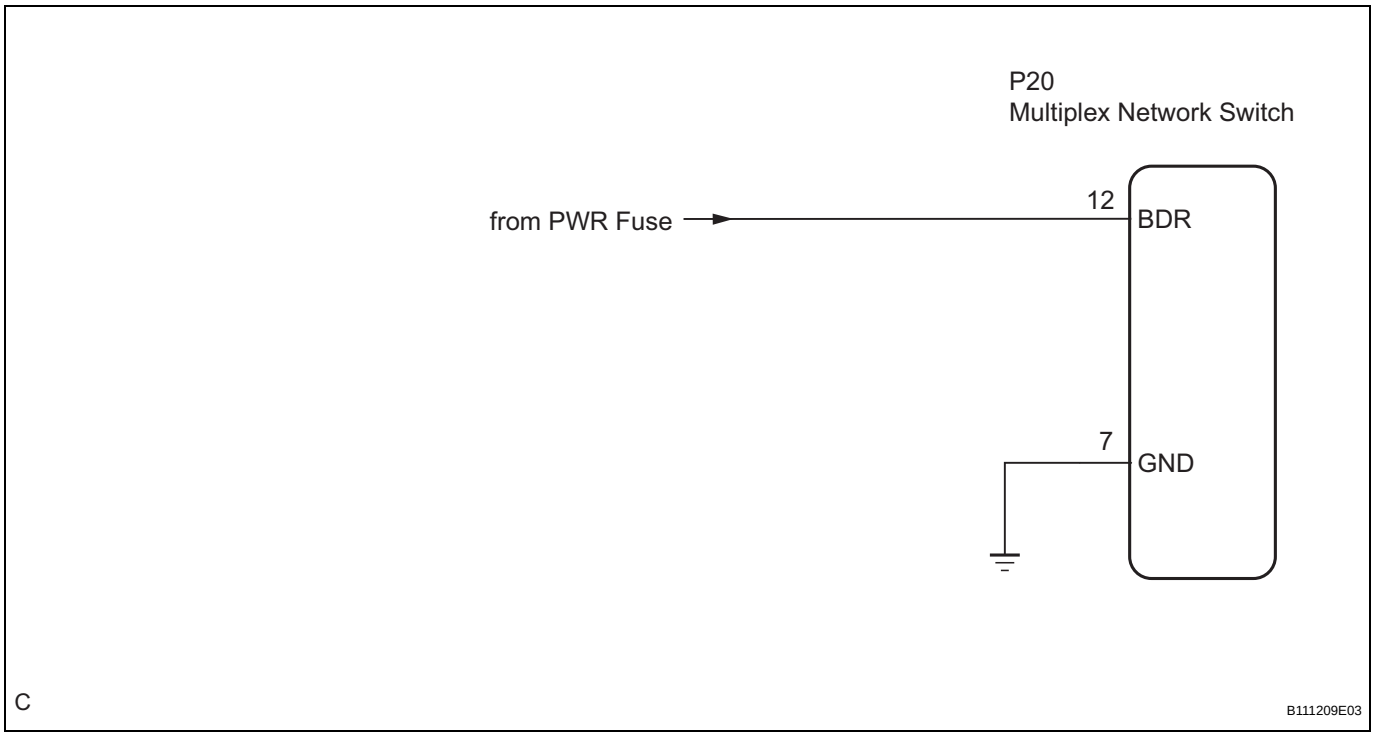
WS

Rear Power Window Switch LH Circuit

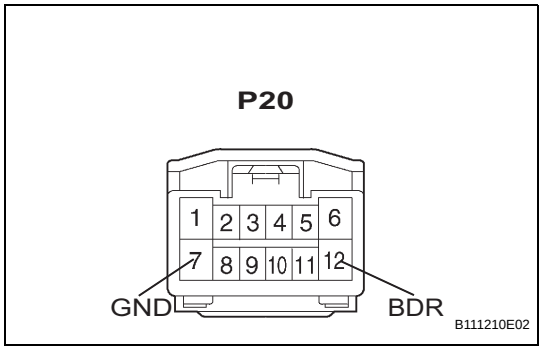
DESCRIPTION

This circuit supplies power to operate the multiplex network switch.

WIRING DIAGRAM



1	CHECK WIRE HARNESS (MULTIPLEX NETWORK SWITCH - BATTERY AND BODY GROUND)



(a) Disconnect the P20 connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
P20-12 (BDR) - Body ground	Always	10 to 14 V

Standard resistance

Tester Connection	Condition	Specified Condition
P20-7 (GND) - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

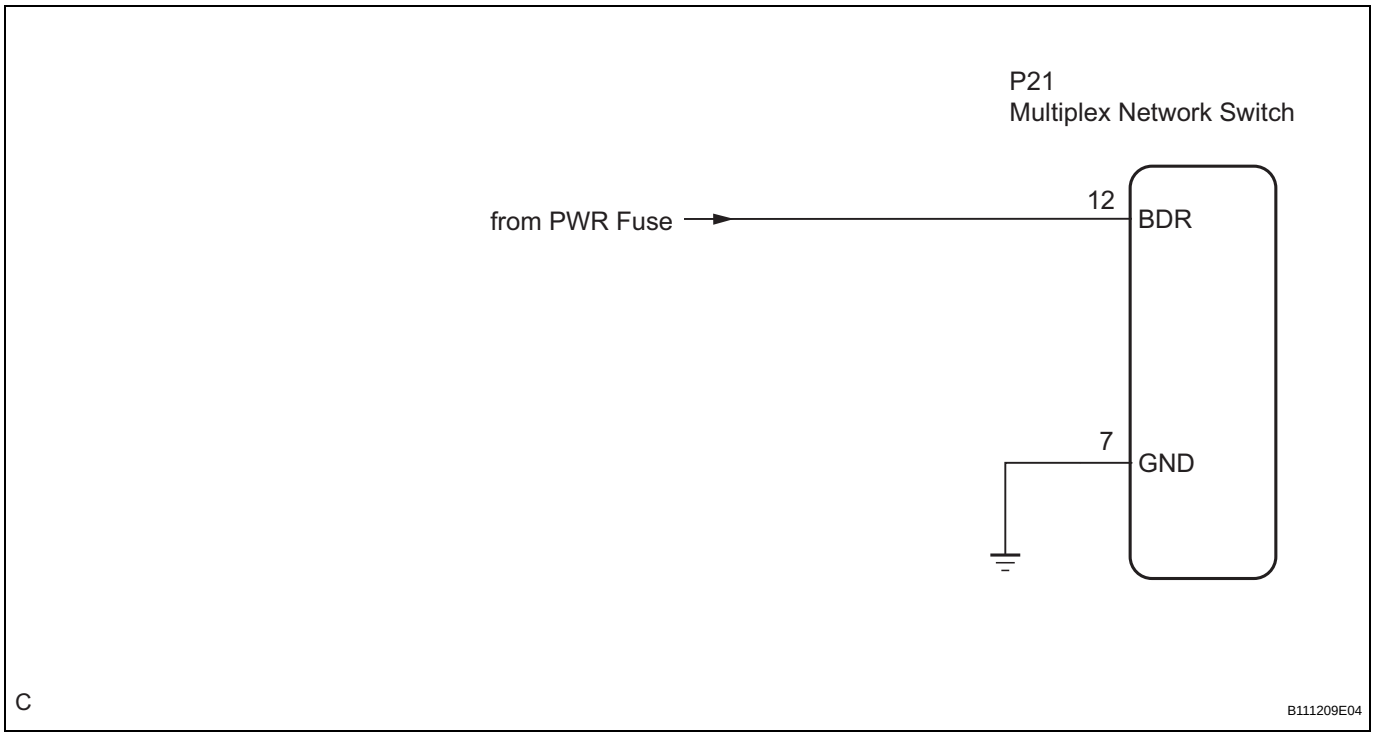
PROCEED TO NEXT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Rear Power Window Switch RH Circuit

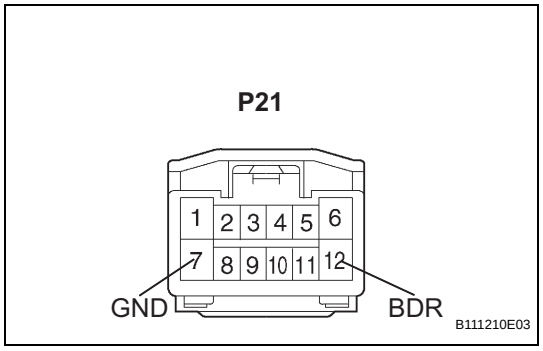
DESCRIPTION

This circuit supplies power to operate the multiplex network switch.

WIRING DIAGRAM



1	CHECK WIRE HARNESS (MULTIPLEX NETWORK SWITCH - BATTERY AND BODY GROUND)



(a) Disconnect the P21 connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
P21-12 (BDR) - Body ground	Always	10 to 14 V

Standard resistance

Tester Connection	Condition	Specified Condition
P21-7 (GND) - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

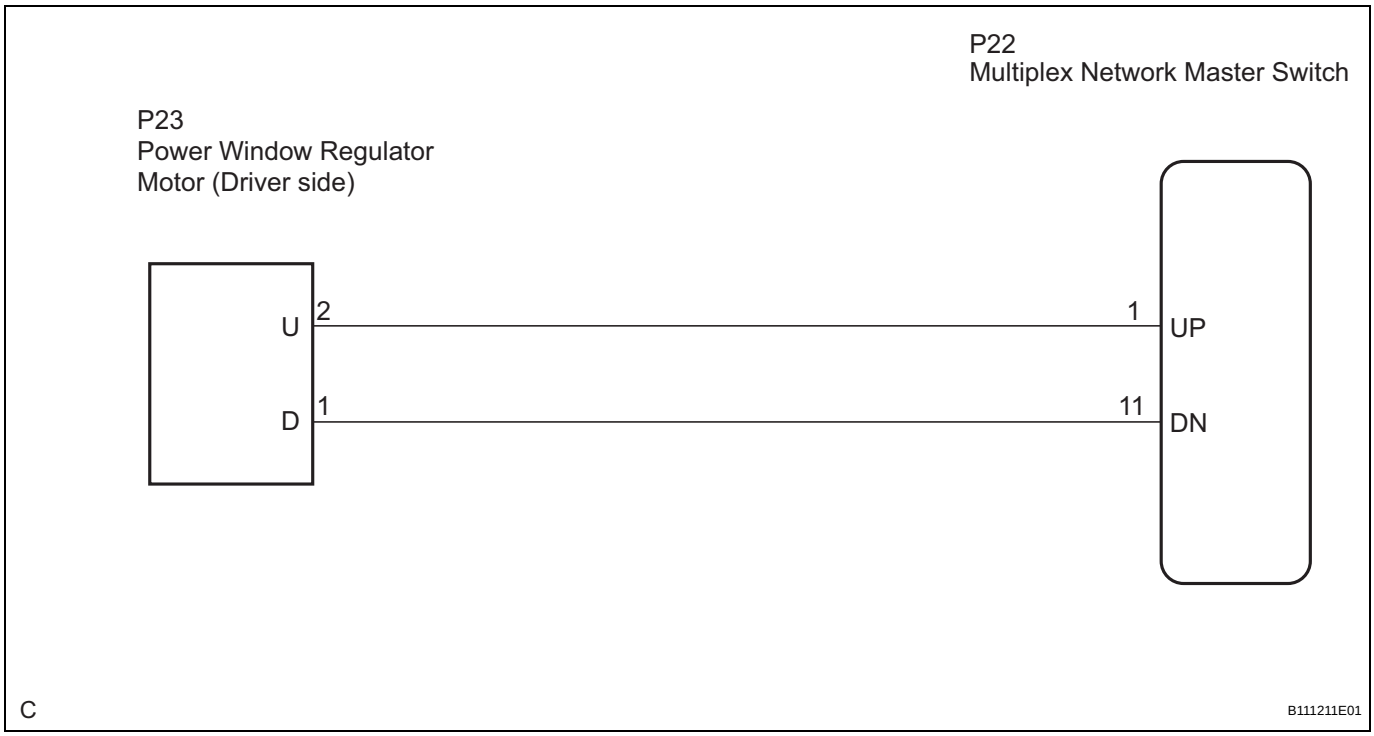
WS

Driver Side Power Window Motor Circuit

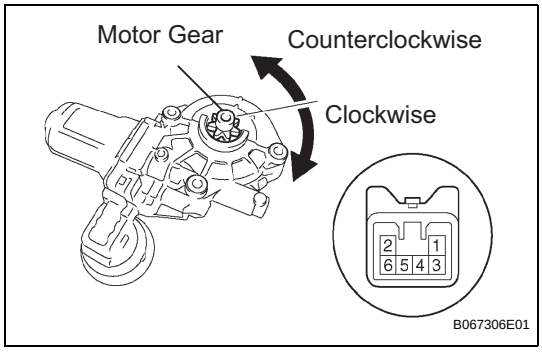
DESCRIPTION

This circuit transmits signals from the multiplex network master switch to power window regulator motor.

WIRING DIAGRAM



1	INSPECT POWER WINDOW REGULATOR MOTOR



(a) Remove the power window motor.
(b) Apply battery voltage to the motor connector according to the table below.
NOTICE:
Do not apply battery to any terminals except terminals 1 and 2.
Standard

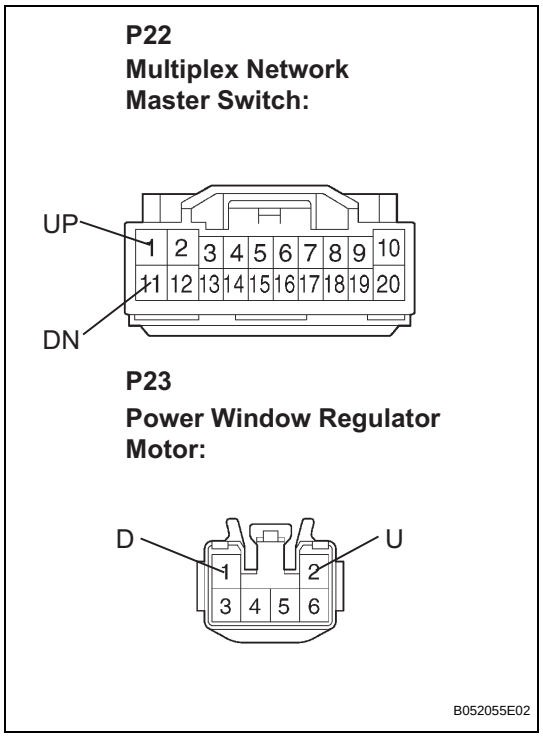
Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 (D) Battery negative (-) → Terminal 2 (U)	Motor gear rotates clockwise
Battery positive (+) → Terminal 2 (U) Battery negative (-) → Terminal 1 (D)	Motor gear rotates counterclockwise

NG → **REPLACE POWER WINDOW REGULATOR MOTOR**

OK

WS

2	**CHECK WIRE HARNESS (WINDOW REGULATOR MOTOR - MULTIPLEX NETWORK MASTER SWITCH)**



(a) Disconnect the P22 and P23 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
P22-1 (UP) - P23-2 (U)	Always	Below 1 Ω
P22-11 (DN) - P23-1 (D)	Always	Below 1 Ω
P22-1 (UP) - Body ground	Always	10 kΩ or higher
P22-11 (DN) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

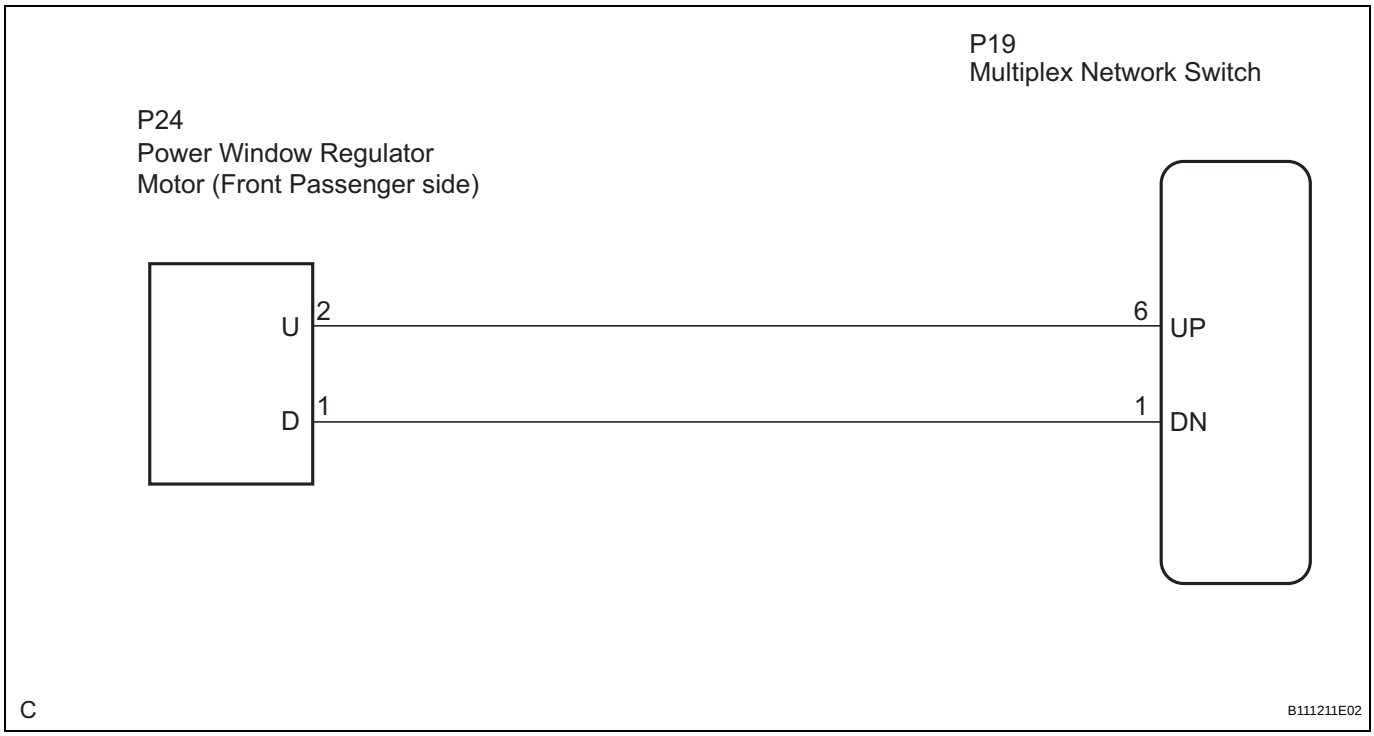
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Front Passenger Side Power Window Motor Circuit

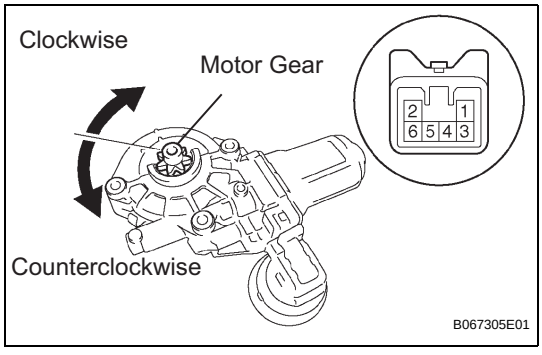
DESCRIPTION

This circuit transmits signals from the multiplex network switch to power window regulator motor.

WIRING DIAGRAM



1	INSPECT POWER WINDOW REGULATOR MOTOR



(a) Remove the power window motor.
(b) Apply battery voltage to the motor connector according to the table below.

NOTICE:
Do not apply battery to any terminals except terminals 1 and 2.

Standard

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 (D) Battery negative (-) → Terminal 2 (U)	Motor gear rotates counterclockwise
Battery positive (+) → Terminal 2 (U) Battery negative (-) → Terminal 1 (D)	Motor gear rotates clockwise

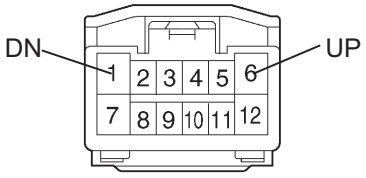
NG → **REPLACE POWER WINDOW REGULATOR MOTOR**

OK

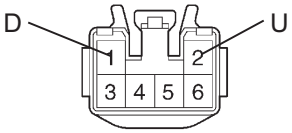
WS

2	**CHECK WIRE HARNESS (WINDOW REGULATOR MOTOR - MULTIPLEX NETWORK SWITCH)**

P19
Multiplex Network Switch:



P24
Power Window Regulator Motor:



B052056E08

(a) Disconnect the P19 and P24 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
P19-1 (DN) - P24-1 (D)	Always	Below 1 Ω
P19-6 (UP) - P24-2 (U)	Always	Below 1 Ω
P19-1 (DN) - Body ground	Always	10 kΩ or higher
P19-6 (UP) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

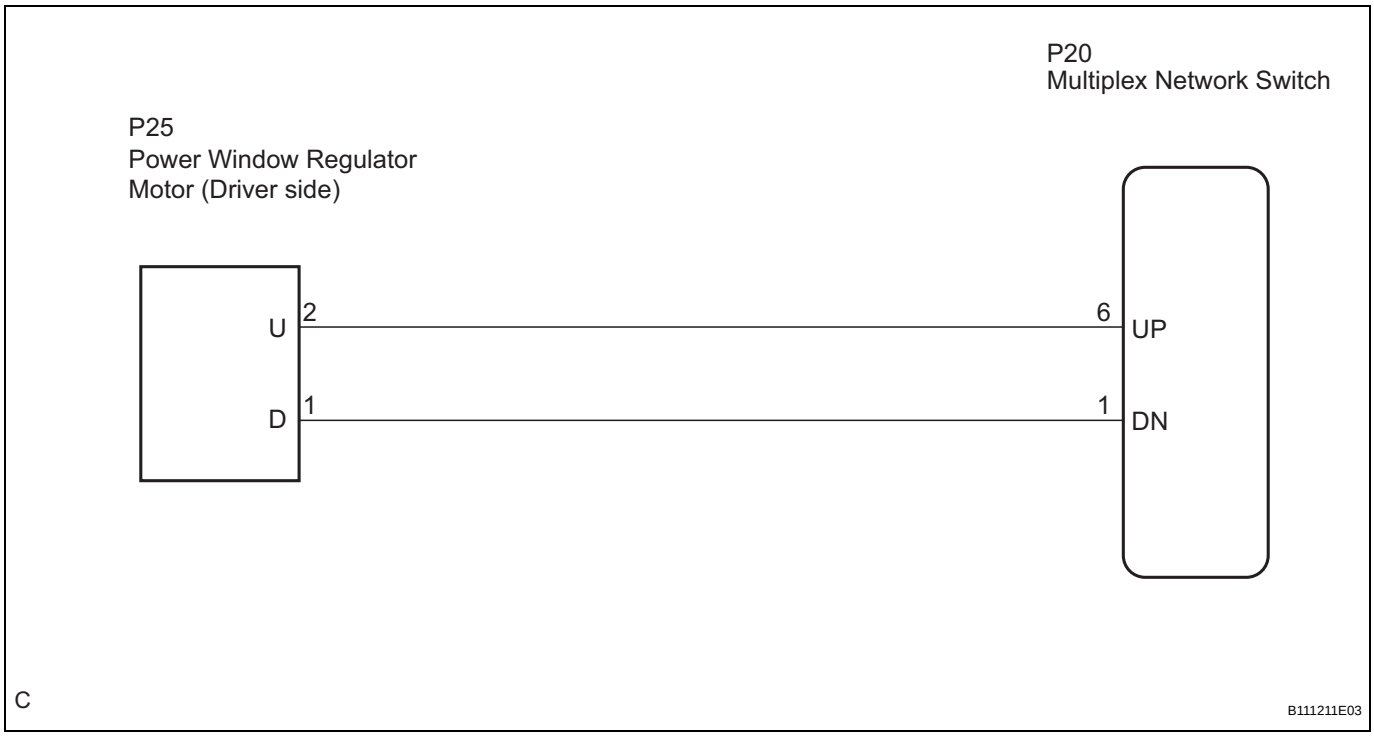
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Rear Power Window Motor LH Circuit

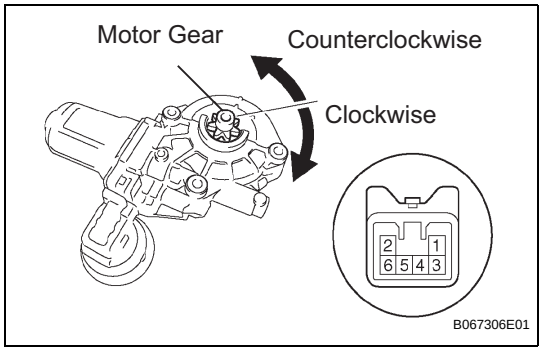
DESCRIPTION

This circuit transmits signals from the multiplex network switch to power window regulator motor.

WIRING DIAGRAM



1	INSPECT POWER WINDOW REGULATOR MOTOR



(a) Remove the power window motor.
(b) Apply battery voltage to the motor connector according to the table below.

NOTICE:
Do not apply battery to any terminals except terminals 1 and 2.

Standard

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 (D) Battery negative (-) → Terminal 2 (U)	Motor gear rotates clockwise
Battery positive (+) → Terminal 2 (U) Battery negative (-) → Terminal 1 (D)	Motor gear rotates counterclockwise

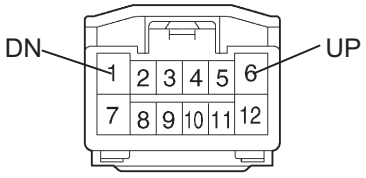
NG → **REPLACE POWER WINDOW REGULATOR MOTOR**

OK

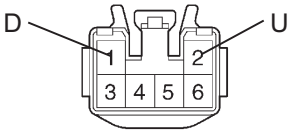
WS

2	**CHECK WIRE HARNESS (WINDOW REGULATOR MOTOR - MULTIPLEX NETWORK SWITCH)**

P20
Multiplex Network Switch:



P25
Power Window Regulator Motor:



B052056E04

(a) Disconnect the P20 and P25 connectors.
(b) Measure the resistance according to the value(s) in the table below.

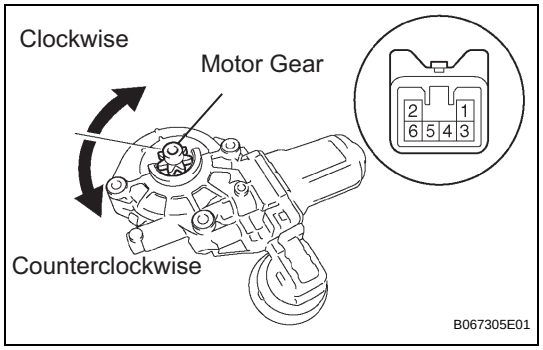
Standard resistance

Tester Connection	Condition	Specified Condition
P20-1 (DN) - P25-1 (D)	Always	Below 1 Ω
P20-6 (UP) - P25-2 (U)	Always	Below 1 Ω
P20-1 (DN) - Body ground	Always	10 kΩ or higher
P20-6 (UP) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE



POWER WINDOW REGULATOR MOTOR

INSPECTION

1. INSPECT POWER WINDOW REGULATOR MOTOR (FRONT RH)

(a) Remove the power window regulator motor.

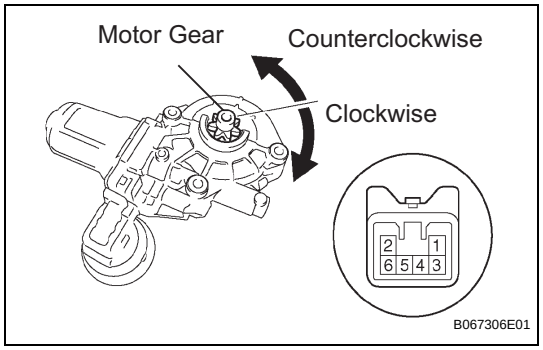
(b) Apply battery voltage to the motor connector according to the table below.

NOTICE:

Do not apply battery to any terminals except terminals 1 and 2.

Standard

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 (D) Battery negative (-) → Terminal 2 (U)	Motor gear rotates clockwise
Battery positive (+) → Terminal 2 (U) Battery negative (-) → Terminal 1 (D)	Motor gear rotates counterclockwise



2. INSPECT POWER WINDOW REGULATOR MOTOR (FRONT LH)

(a) Remove the power window regulator motor.

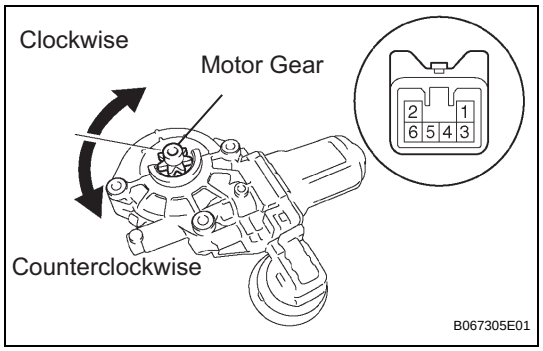
(b) Apply battery voltage to the motor connector according to the table below.

NOTICE:

Do not apply battery to any terminals except terminals 1 and 2.

Standard

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 (D) Battery negative (-) → Terminal 2 (U)	Motor gear rotates counterclockwise
Battery positive (+) → Terminal 2 (U) Battery negative (-) → Terminal 1 (D)	Motor gear rotates clockwise



3. INSPECT POWER WINDOW REGULATOR MOTOR (REAR RH)

(a) Remove the power window regulator motor.

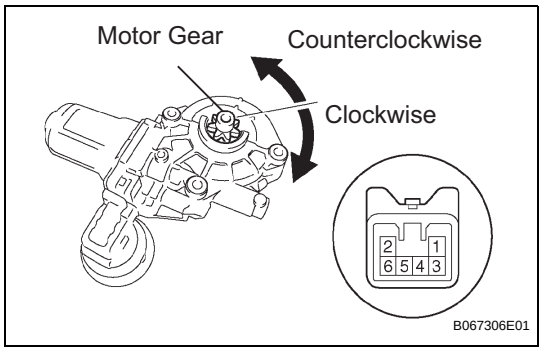
(b) Apply battery voltage to the motor connector according to the table below.

NOTICE:

Do not apply battery to any terminals except terminals 1 and 2.

Standard

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 (D) Battery negative (-) → Terminal 2 (U)	Motor gear rotates clockwise
Battery positive (+) → Terminal 2 (U) Battery negative (-) → Terminal 1 (D)	Motor gear rotates counterclockwise



4. INSPECT POWER WINDOW REGULATOR MOTOR (REAR LH)

(a) Remove the power window regulator motor.

(b) Apply battery voltage to the motor connector according to the table below.

NOTICE:

Do not apply battery to any terminals except terminals 1 and 2.

Standard

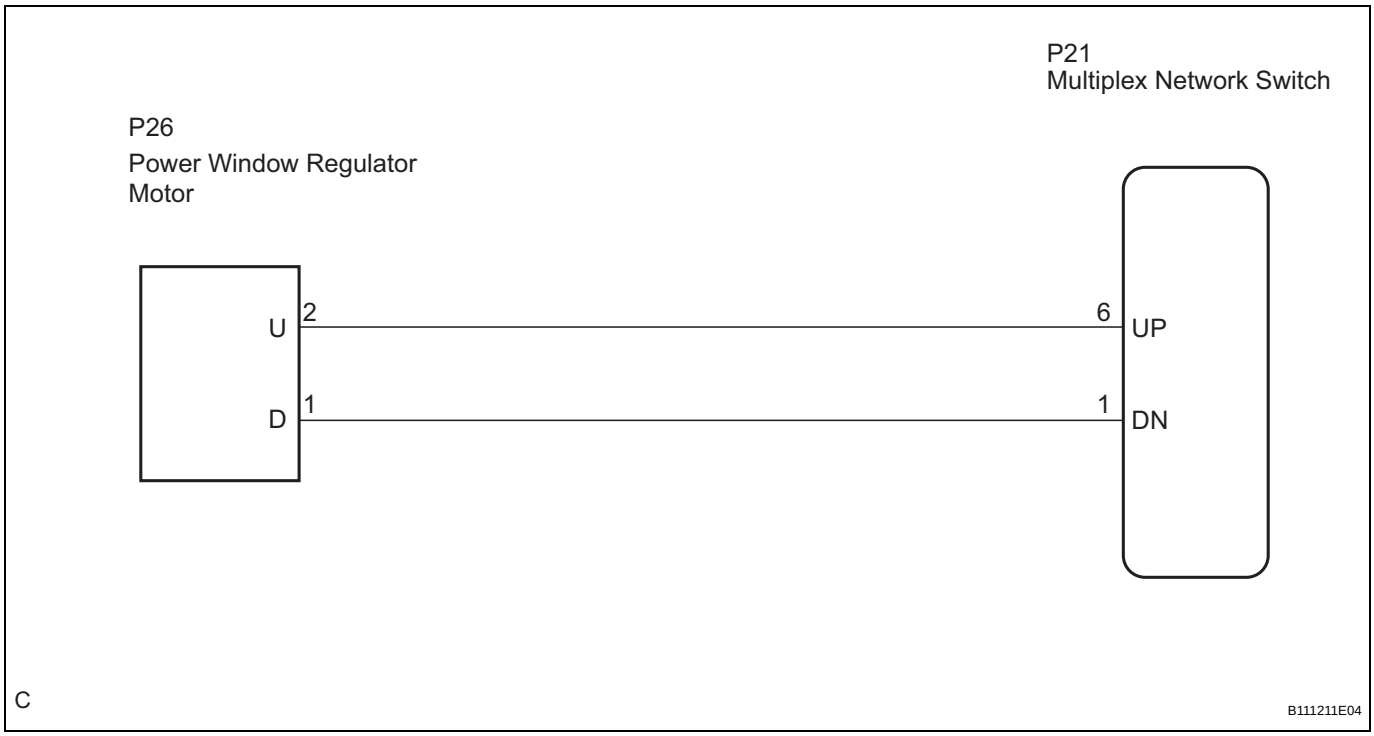
Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 (D) Battery negative (-) → Terminal 2 (U)	Motor gear rotates counterclockwise
Battery positive (+) → Terminal 2 (U) Battery negative (-) → Terminal 1 (D)	Motor gear rotates clockwise

Rear Power Window Motor RH Circuit

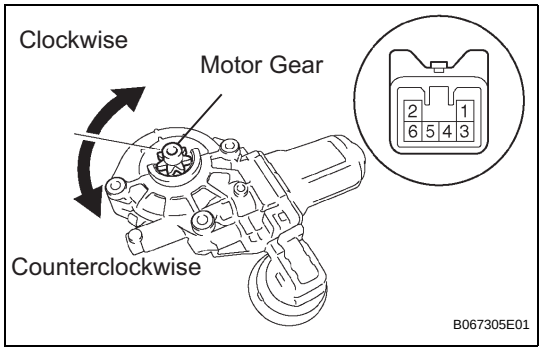
DESCRIPTION

This circuit transmits signals from the multiplex network switch to power window regulator motor.

WIRING DIAGRAM



1	INSPECT POWER WINDOW REGULATOR MOTOR



(a) Remove the power window motor.
(b) Apply battery voltage to the motor connector according to the table below.

NOTICE:
Do not apply battery to any terminals except terminals 1 and 2.

Standard

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 (D) Battery negative (-) → Terminal 2 (U)	Motor gear rotates counterclockwise
Battery positive (+) → Terminal 2 (U) Battery negative (-) → Terminal 1 (D)	Motor gear rotates clockwise

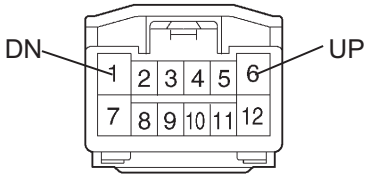
NG → **REPLACE POWER WINDOW REGULATOR MOTOR**

OK

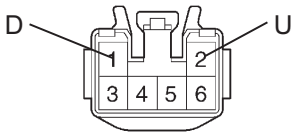
WS

2	**CHECK WIRE HARNESS (WINDOW REGULATOR MOTOR - MULTIPLEX NETWORK SWITCH)**

P21
Multiplex Network Switch:



P26
Power Window Regulator Motor:



B052056E03

(a) Disconnect the P21 and P26 connectors.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
P21-1 (DN) - P26-1 (D)	Always	Below 1 Ω
P21-6 (UP) - P26-2 (U)	Always	Below 1 Ω
P21-1 (DN) - Body ground	Always	10 kΩ or higher
P21-6 (UP) - Body ground	Always	10 kΩ or higher

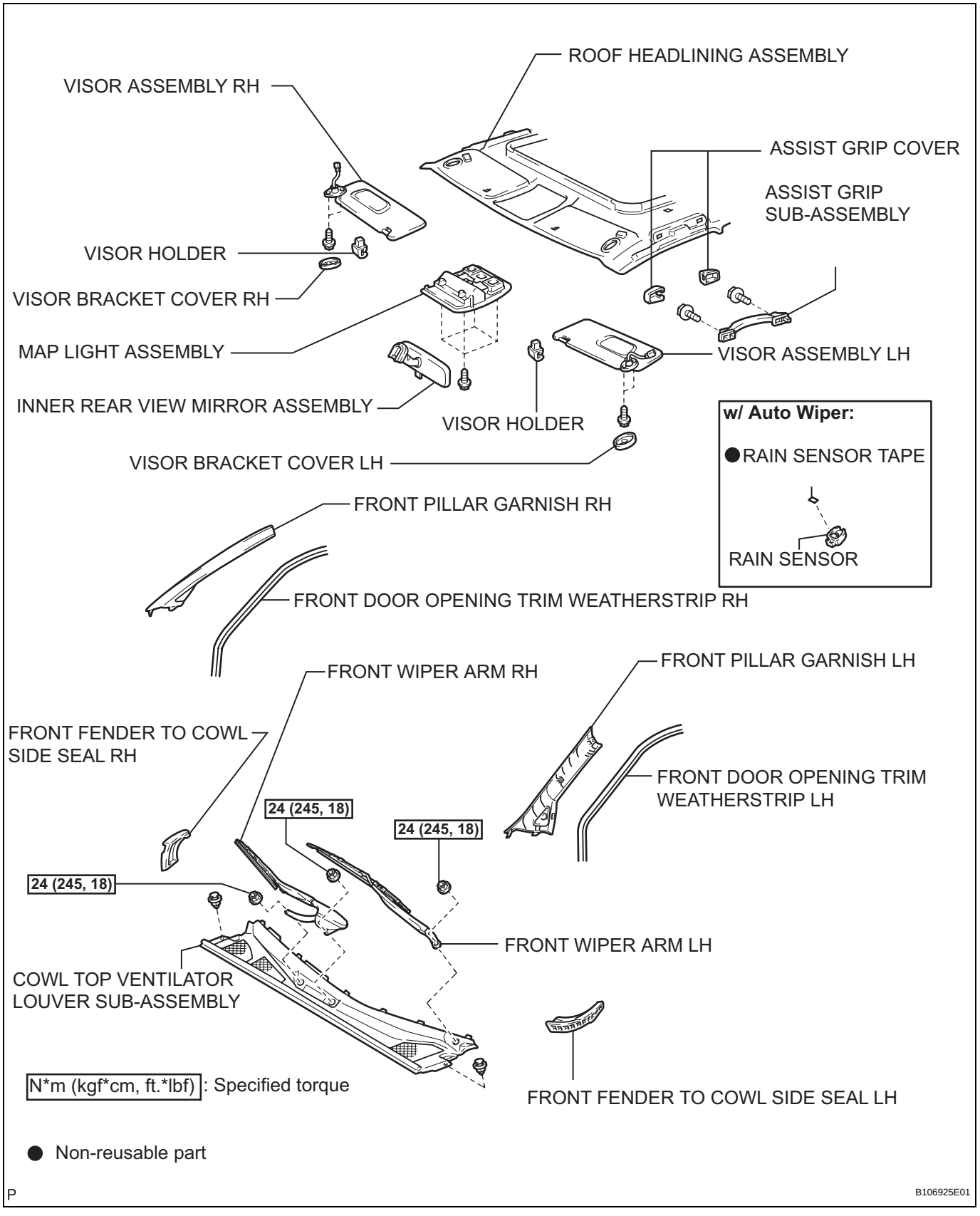
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

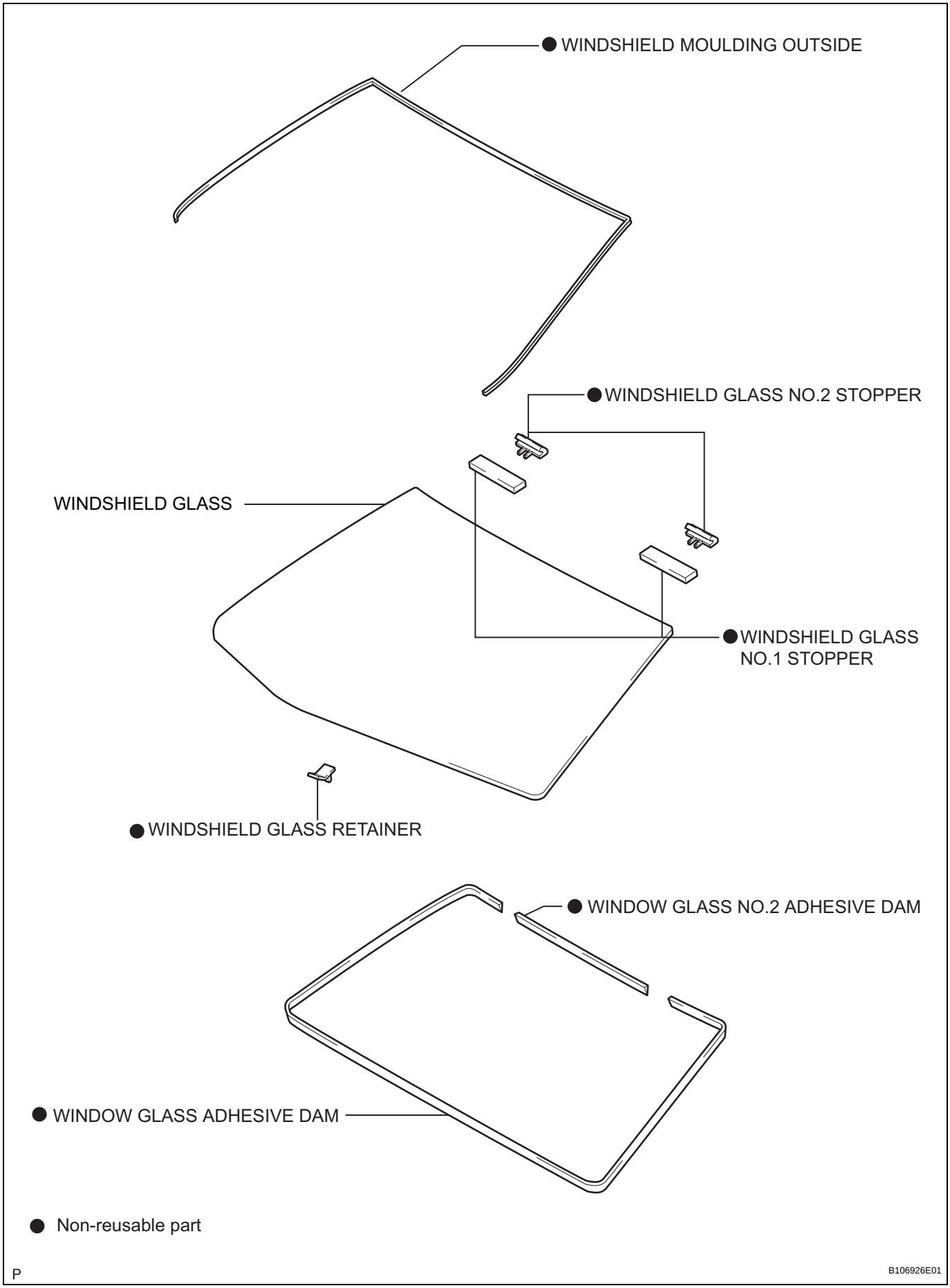
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

WINDSHIELD GLASS

COMPONENTS

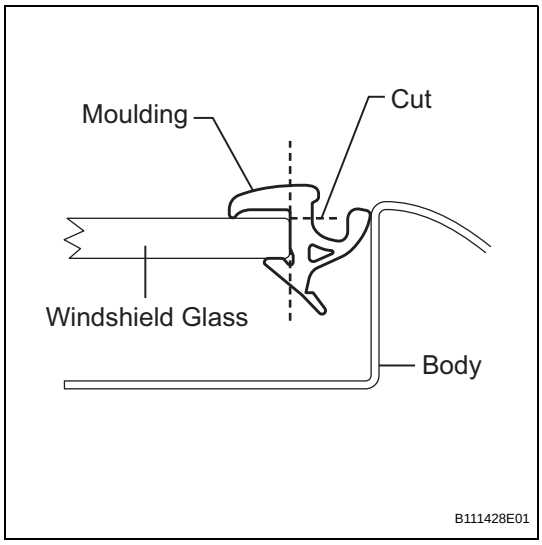


WS


● WINDSHIELD MOULDING OUTSIDE
● WINDSHIELD GLASS NO.2 STOPPER
WINDSHIELD GLASS
● WINDSHIELD GLASS NO.1 STOPPER
● WINDSHIELD GLASS RETAINER
● WINDOW GLASS NO.2 ADHESIVE DAM
● WINDOW GLASS ADHESIVE DAM
● Non-reusable part
P
B106926E01

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation (See page RS-1).
2. REMOVE FRONT WIPER ARM LH (See page WW-37)
3. REMOVE FRONT WIPER ARM RH (See page WW-37)
4. REMOVE FRONT FENDER TO COWL SIDE SEAL LH
5. REMOVE FRONT FENDER TO COWL SIDE SEAL RH
6. REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY (See page WW-37)
7. REMOVE INNER REAR VIEW MIRROR ASSEMBLY (See page MI-29)
8. REMOVE FRONT DOOR OPENING TRIM WEATHERSTRIP LH
9. REMOVE FRONT DOOR OPENING TRIM WEATHERSTRIP RH
10. REMOVE FRONT PILLAR GARNISH LH (See page IR-7)
11. REMOVE FRONT PILLAR GARNISH RH
12. REMOVE MAP LIGHT ASSEMBLY (See page IR-10)
13. REMOVE VISOR ASSEMBLY LH (See page IR-11)
14. REMOVE VISOR ASSEMBLY RH
15. REMOVE VISOR HOLDER (See page IR-11)
16. REMOVE ASSIST GRIP SUB-ASSEMBLY (See page IR-11)
17. REMOVE ROOF HEADLINING ASSEMBLY (See page IR-12)
18. REMOVE RAIN SENSOR (w/ Auto Wiper) (See page WW-67)



19. REMOVE WINDSHIELD MOULDING OUTSIDE

(a) Using a knife, cut off the moulding, as shown in the illustration.

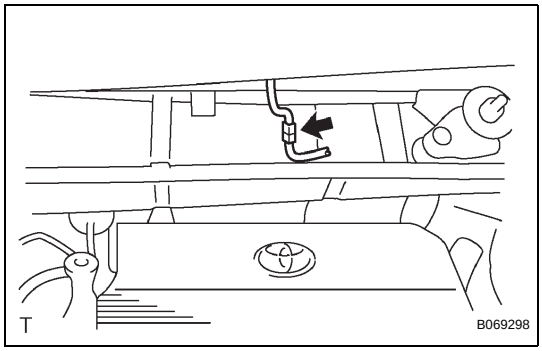
NOTICE:

Do not damage the vehicle body with the knife.

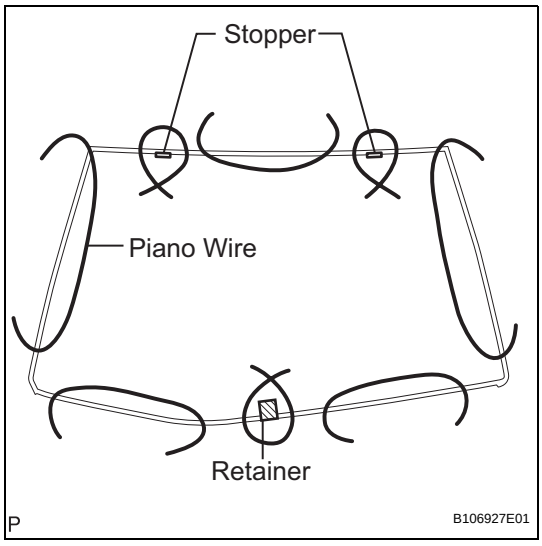
(b) Remove the remaining moulding from the vehicle body.

HINT:

When removing, make a partial cut, then pull and remove it by hand.

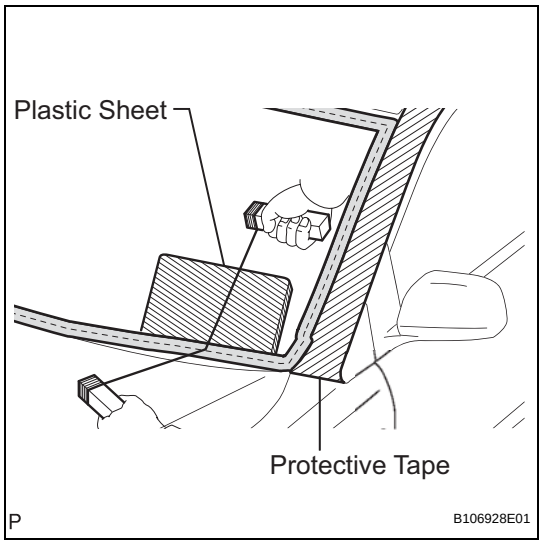


(c) Disconnect the connector as shown in the illustration (w/ Deicer).



20. REMOVE WINDSHIELD GLASS

(a) Pass a piano wire between the vehicle body and glass from the interior.



(b) Tie both wire ends to wooden blocks or similar objects.

NOTICE:

- **When separating the glass, take care not to damage the paint and the interior and exterior ornaments.**
- **To prevent the safety pad from being scratched when removing the glass, place a plastic sheet between the piano wire and safety pad.**

HINT:

Apply protective tape to the outer surface to prevent the surface from being scratched.

(c) Cut off the adhesive by pulling the piano wire around the glass.

(d) Disengage the stoppers.

(e) Using a suction cup, remove the glass.

NOTICE:

Leave as much adhesive on the vehicle body as possible when removing the glass.

21. REMOVE WINDSHIELD GLASS RETAINER

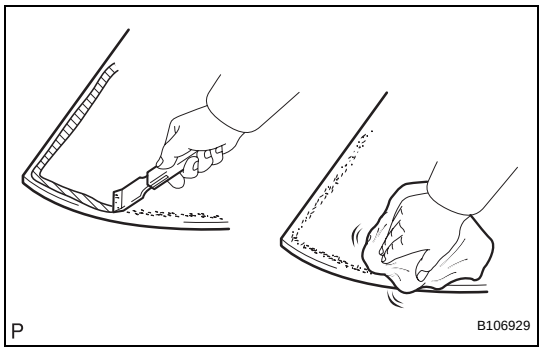
(a) Remove the windshield glass retainer.

22. REMOVE WINDSHIELD GLASS NO.2 STOPPER

(a) Using a scraper, remove the windshield glass No.2 stoppers.

23. REMOVE WINDSHIELD GLASS NO.1 STOPPER

(a) Remove the windshield glass No.1 stoppers.



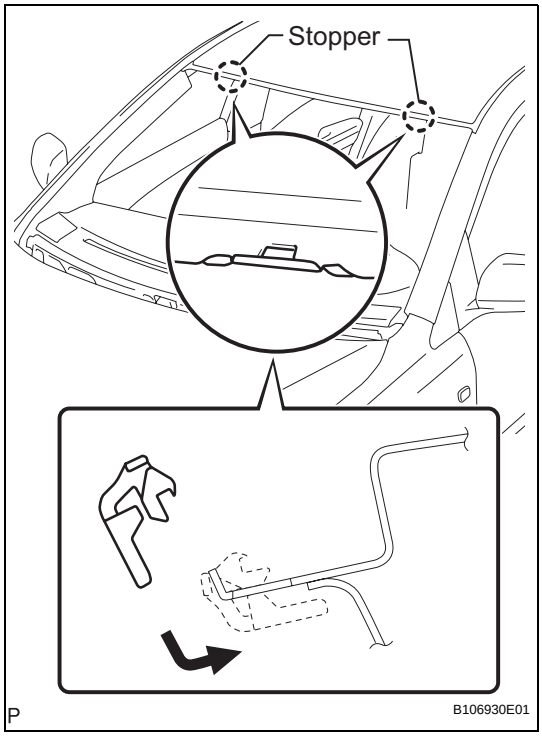
24. CLEAN WINDSHIELD GLASS

(a) Using a scraper, remove the damaged stoppers, dam and adhesive sticking to the glass.

(b) Clean the outer circumference of the glass with white gasoline.

NOTICE:

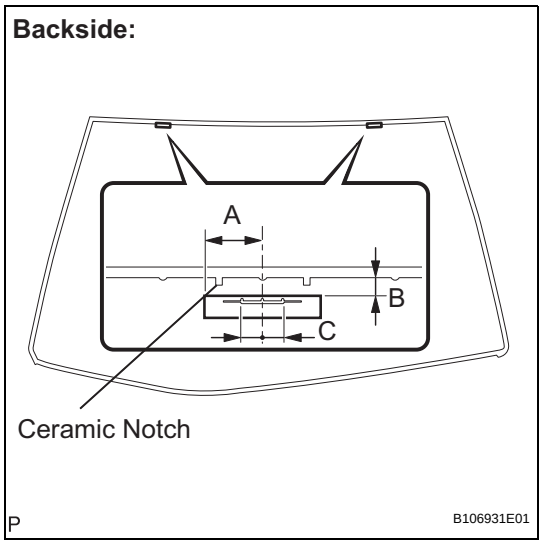
- **Do not touch the glass surface after cleaning it.**
- **Be careful not to damage the glass.**
- **Even if using a new glass, clean the glass with white gasoline.**



INSTALLATION

1. INSTALL WINDSHIELD GLASS NO.1 STOPPER

(a) Install 2 new stoppers to the vehicle body, as shown in the illustration.



2. INSTALL WINDSHIELD GLASS NO.2 STOPPER

(a) Coat the installation part of the stopper with Primer G.

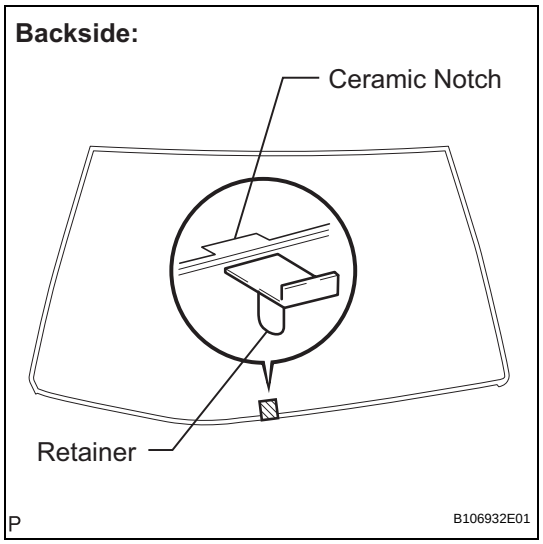
NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not keep any of the opened Primer G for later use.**
- **Do not apply too much primer.**

(b) Install 2 new windshield glass stoppers onto the glass, as shown in the illustration.

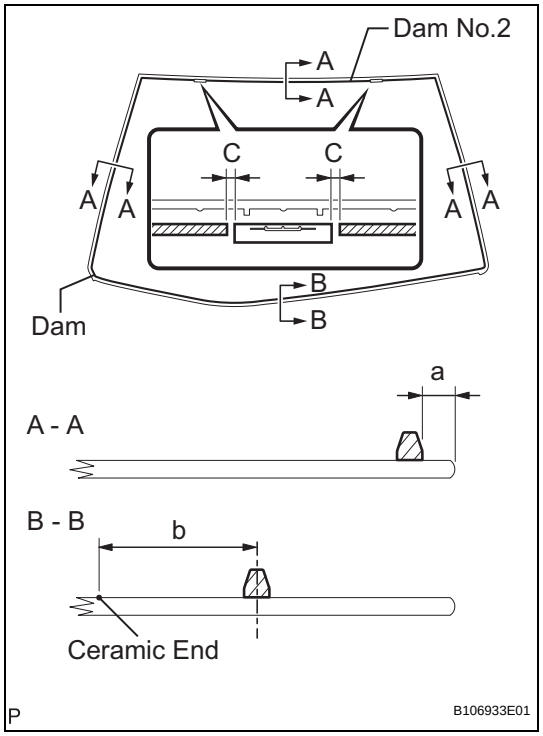
Standard dimension

Area	Dimension
A	40.0 mm (1.575 in.)
B	9.0 mm (0.354 in.)
C	15.0 mm (0.591 in.)



3. INSTALL WINDSHIELD GLASS RETAINER

(a) Install a new windshield glass retainer to the glass, as shown in the illustration.



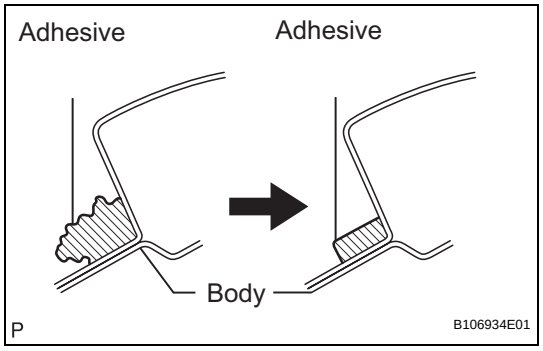
4. INSTALL WINDOW GLASS ADHESIVE DAM

(a) Coat the installation part of the dam with Primer G.
NOTICE:
- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not apply too much primer.**

(b) Install a new dam, applying double-sided tape all the way around the glass except where the dam is installed, as shown in the illustration.
Standard dimension

Area	Dimension
a	9.5 mm (0.374 in.)
b	50.0 mm (1.969 in.)
c	8.0 mm (0.315 in.)

5. INSTALL WINDOW GLASS NO.2 ADHESIVE DAM



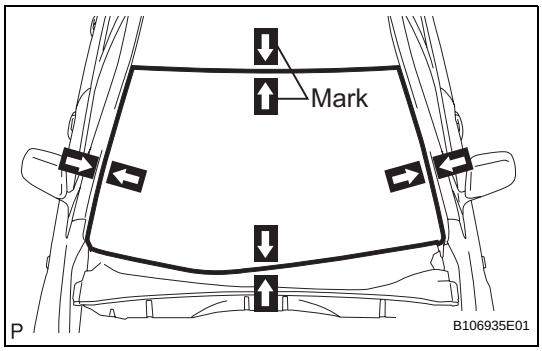
6. INSTALL WINDSHIELD GLASS

(a) Clean and shape the contact surface of the vehicle body.

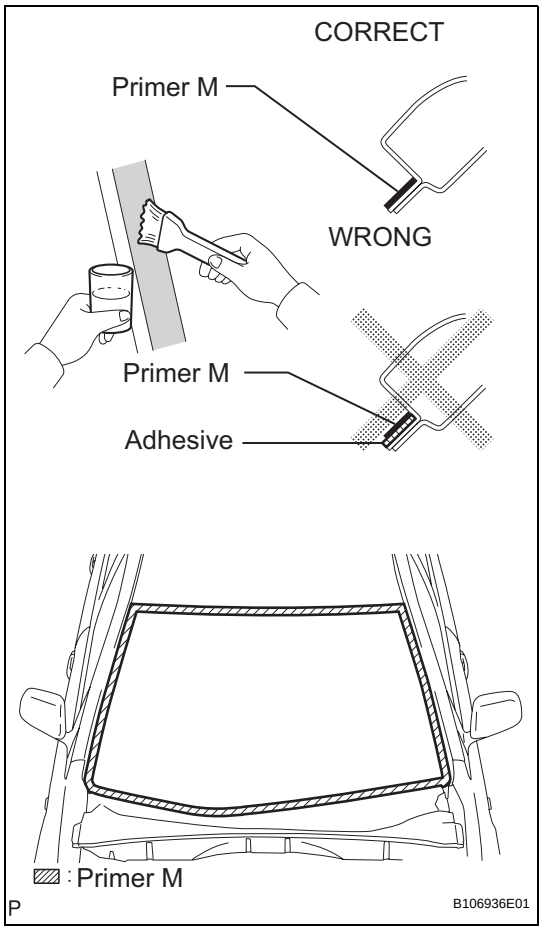
(1) Using a knife, cut away any rough adhesive on the contact surface of the vehicle body to ensure the appropriate surface shape.
NOTICE:
Be careful not to damage the vehicle body.
HINT:
Leave as much adhesive on the vehicle body as possible.

(2) Clean the contact surface of the vehicle body with a piece of shop rag saturated with cleaner.
HINT:
Even if all the adhesive has been removed, clean the vehicle body.

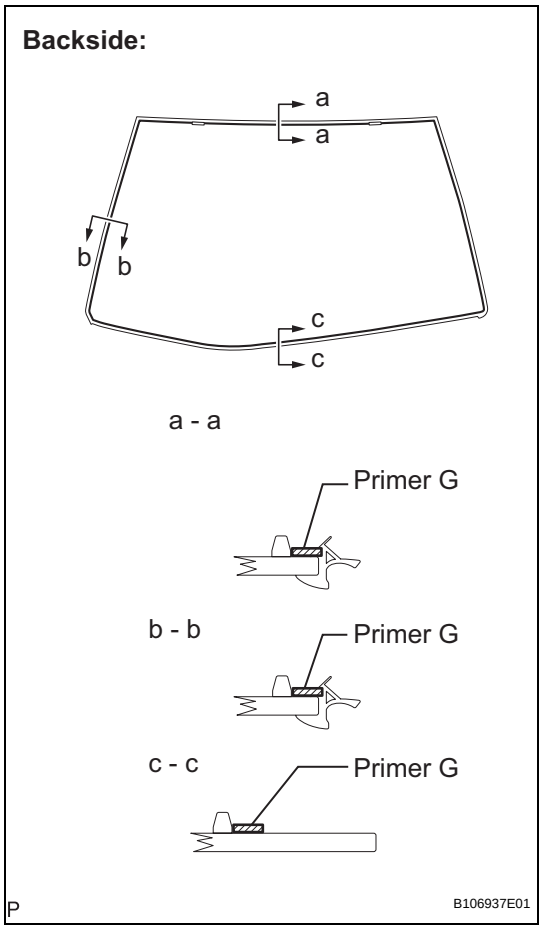
WS



(b) Position the glass.
  (1) Using a suction cup, place the glass in the correct position.
  (2) Check that the whole contact surface of the glass rim is perfectly even.
  (3) Place reference marks between the glass and vehicle body.
  NOTICE:
  Check that the stoppers are attached to the vehicle body correctly.
  HINT:
  When reusing the glass, check and correct the reference mark positions.
  (4) Remove the glass.



(c) Using a brush, coat the exposed part of the vehicle body on the vehicle side with Primer M.
NOTICE:
- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not coat the adhesive with Primer M.**
- **Do not keep any of the opened Primer M for later use.**



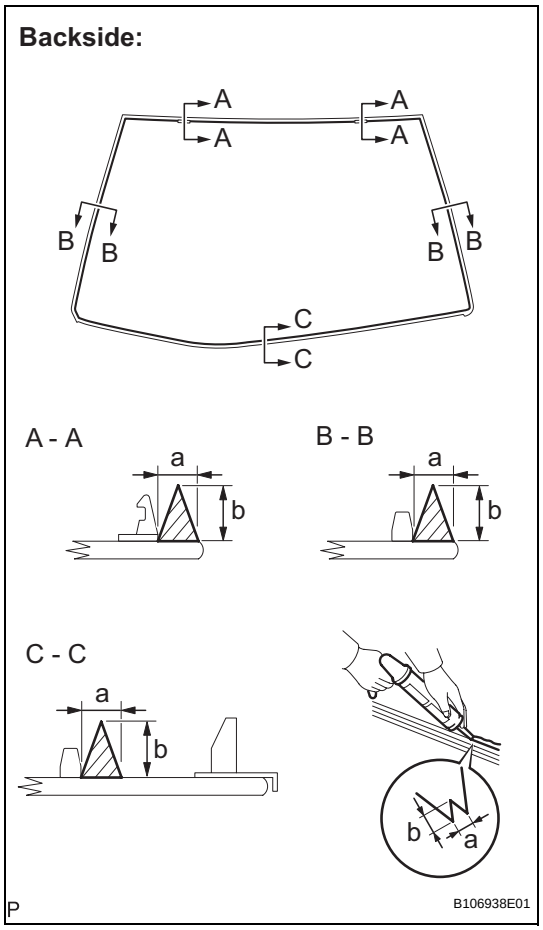
(d) Using a brush or sponge, coat the edge of the glass and the contact surface with Primer G.

NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not keep any of the opened Primer G for later use.**

HINT:

If an area other than that specified is coated by accident, wipe off the primer with a clean shop rag before it dries.



(e) Apply adhesive (Adhesive: Part No. 08850-00801 or equivalent).

(1) Cut off the tip of the cartridge nozzle, as shown in the illustration.

HINT:

After cutting off the tip, use all adhesive within the time described in the table below.

Tackfree time

Temperature	Tackfree Time
35°C (95°F)	15 minutes
20°C (68°F)	1 hour 40 minutes
5°C (41°F)	8 hours

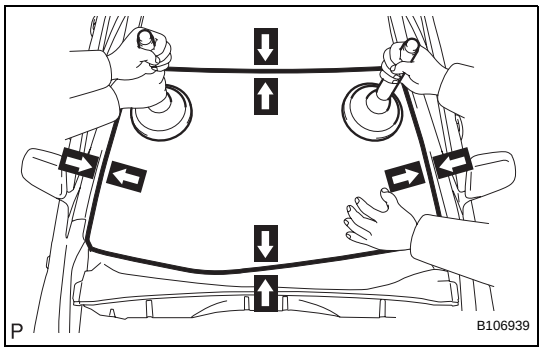
(2) Load the sealer gun with the cartridge.

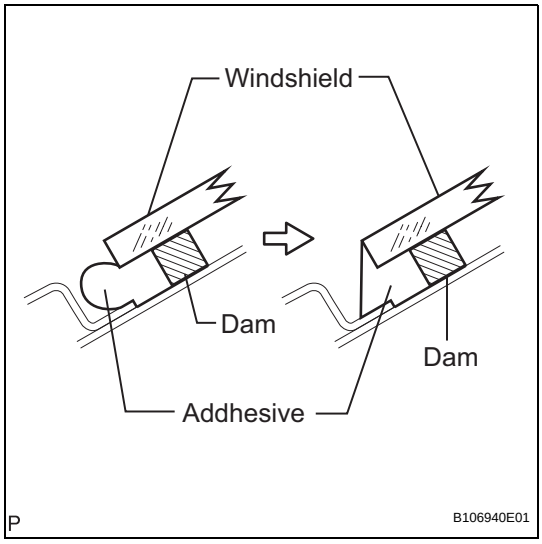
(3) Coat the glass with adhesive, as shown in the illustration.

Standard dimension

Area	Dimension
a	8.0 mm (0.315 in.)
b	12.0 mm (0.472 in.)

WS





(f) Install the glass.

(1) Using a suction cup, position the glass so that the reference marks are aligned, and press it in gently along the rim.

NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Check that the stoppers are attached to the vehicle body correctly.**
- **Check the clearance between the vehicle body and glass.**

(2) Lightly press the front surface of the glass to ensure a close fit.

(3) Using a scraper, remove any excess or protruding adhesive.

NOTICE:

Take care not to drive the vehicle for the time described in the table below.

Minimum time

Temperature	Minimum time prior to driving vehicle
35°C (95°F)	1 hour 30 minutes
20°C (68°F)	5 hours
5°C (41°F)	24 hours

HINT:

Apply adhesive onto the glass rim.

7. INSTALL WINDSHIELD MOULDING OUTSIDE

(a) Using a brush or sponge, coat the edge of the glass and the contact surface with Primer G.

NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not coat the adhesive with Primer G.**
- **Do not keep any of the opened Primer G for later use.**

(b) Install the windshield moulding.

8. CHECK FOR LEAKS AND REPAIR

(a) Conduct a leak test after the adhesive has completely hardened.

(b) Seal any leaks with auto glass sealer.

9. INSTALL RAIN SENSOR (w/ Auto Wiper) (See page WW-67)

10. INSTALL ROOF HEADLINING ASSEMBLY (See page IR-13)

11. INSTALL ASSIST GRIP SUB-ASSEMBLY

12. INSTALL VISOR HOLDER

13. INSTALL VISOR ASSEMBLY LH

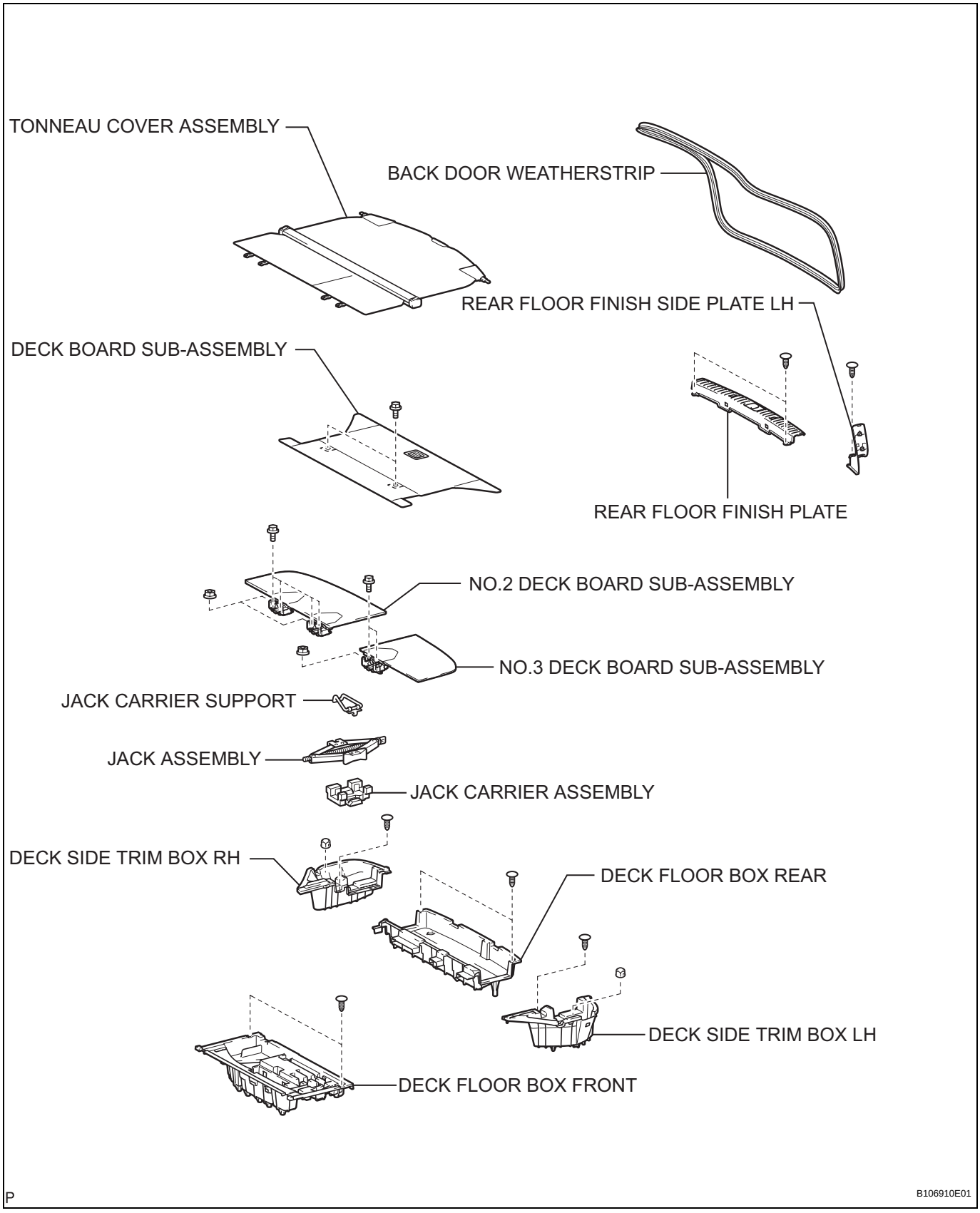
14. INSTALL VISOR ASSEMBLY RH

15. INSTALL MAP LIGHT ASSEMBLY

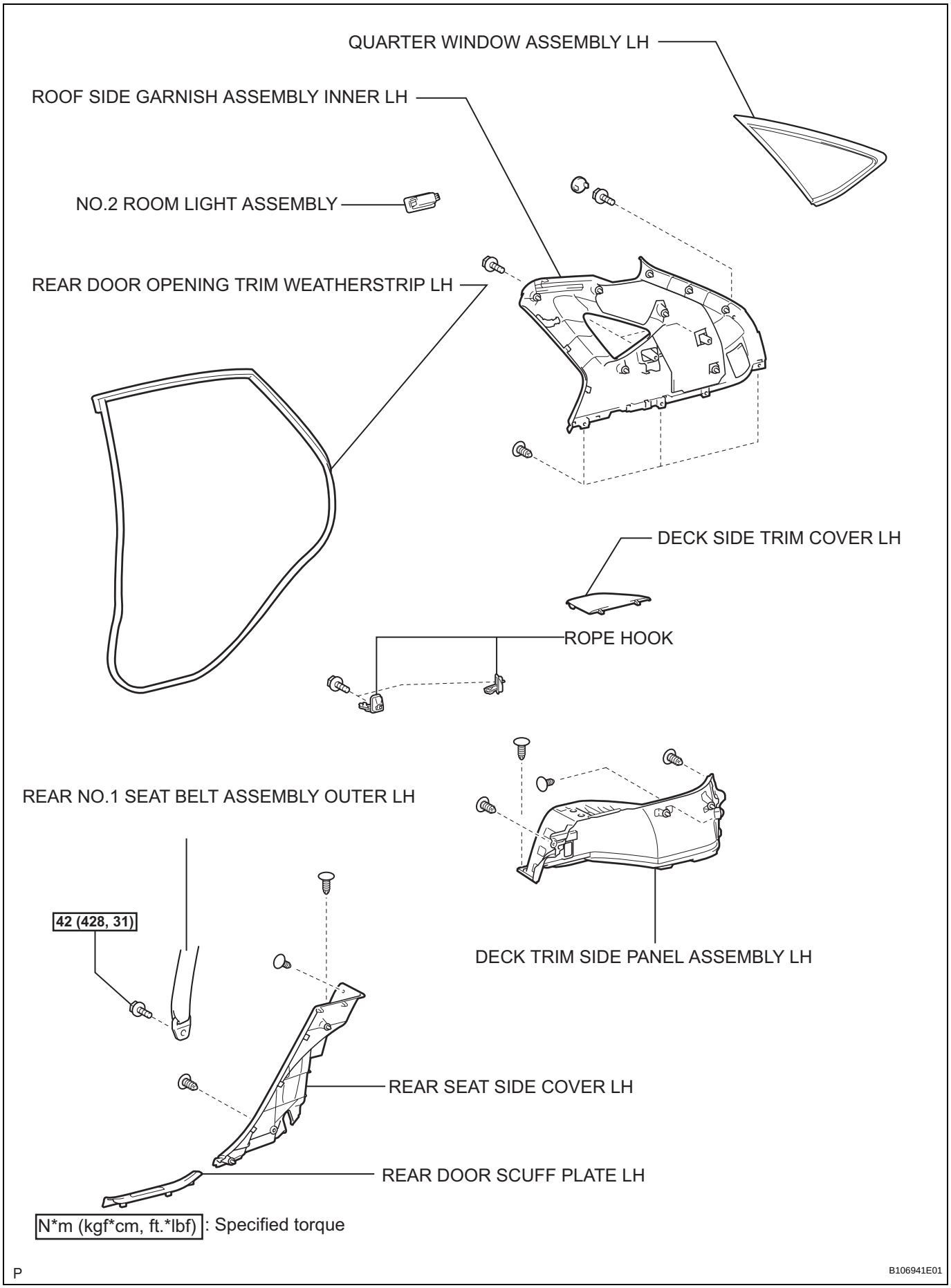
16. **INSTALL FRONT PILLAR GARNISH LH**
17. **INSTALL FRONT PILLAR GARNISH RH**
18. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP LH**
19. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP RH**
20. **INSTALL INNER REAR VIEW MIRROR ASSEMBLY (See page MI-30)**
21. **INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY**
22. **INSTALL FRONT FENDER TO COWL SIDE SEAL LH**
23. **INSTALL FRONT FENDER TO COWL SIDE SEAL RH**
24. **INSTALL FRONT WIPER ARM LH (See page WW-39)**
25. **INSTALL FRONT WIPER ARM RH (See page WW-40)**
26. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
27. **PERFORM INITIALIZATION**
    NOTICE:
    Some systems need initialization when disconnecting the cable from the negative (-) battery terminal.

REAR QUARTER WINDOW GLASS

COMPONENTS



WS


QUARTER WINDOW ASSEMBLY LH
ROOF SIDE GARNISH ASSEMBLY INNER LH
NO.2 ROOM LIGHT ASSEMBLY
REAR DOOR OPENING TRIM WEATHERSTRIP LH
DECK SIDE TRIM COVER LH
ROPE HOOK
REAR NO.1 SEAT BELT ASSEMBLY OUTER LH
DECK TRIM SIDE PANEL ASSEMBLY LH
42 (428, 31)
REAR SEAT SIDE COVER LH
REAR DOOR SCUFF PLATE LH
N*m (kgf*cm, ft.*lbf): Specified torque
P
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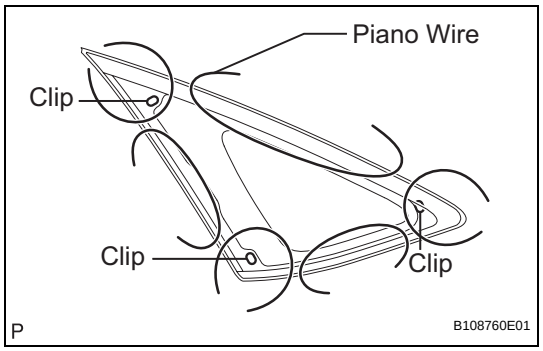
WS

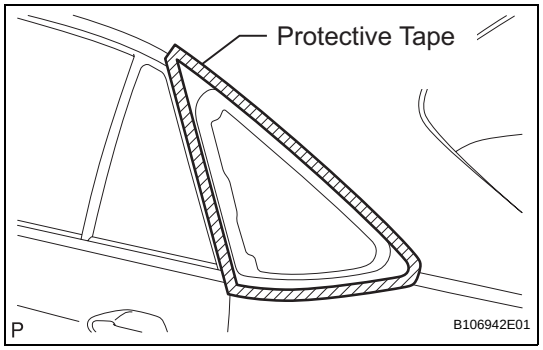
REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation (See page RS-1).
2. REMOVE REAR DOOR SCUFF PLATE LH (See page IR-6)
3. REMOVE REAR DOOR OPENING TRIM WEATHERSTRIP LH
4. REMOVE DECK BOARD SUB-ASSEMBLY (See page IR-7)
5. REMOVE TONNEAU COVER ASSEMBLY
6. REMOVE DECK FLOOR BOX FRONT (See page IR-8)
7. REMOVE DECK FLOOR BOX REAR (See page IR-8)
8. REMOVE NO.2 DECK BOARD SUB-ASSEMBLY (See page IR-8)
9. REMOVE NO.3 DECK BOARD SUB-ASSEMBLY (See page IR-8)
10. REMOVE BACK DOOR WEATHERSTRIP
11. REMOVE JACK CARRIER ASSEMBLY
12. REMOVE DECK SIDE TRIM BOX RH
13. REMOVE DECK SIDE TRIM BOX LH (See page IR-8)
14. REMOVE REAR FLOOR FINISH PLATE (See page IR-8)
15. REMOVE REAR FLOOR FINISH SIDE PLATE LH (See page IR-8)
16. REMOVE DECK SIDE TRIM COVER LH (See page IR-8)
17. SEPARATE REAR NO.1 SEAT BELT ASSEMBLY OUTER LH
18. REMOVE REAR SEAT SIDE COVER LH (See page IR-9)
19. REMOVE ROPE HOOK (See page IR-9)
20. REMOVE DECK TRIM SIDE PANEL ASSEMBLY LH (See page IR-9)
21. REMOVE NO.2 ROOM LIGHT ASSEMBLY (See page IR-9)
22. REMOVE ROOF SIDE GARNISH ASSEMBLY INNER LH (See page IR-8)



23. REMOVE QUARTER WINDOW ASSEMBLY LH

(a) Pass a piano wire between the vehicle body and glass from the interior.



(b) Tie both wire ends to wooden blocks or similar objects.

NOTICE:

When separating the glass, take care not to damage the paint and the interior and exterior ornaments.

HINT:

Apply protective tape to the outer surface to prevent the surface from being scratched.

(c) Cut off the adhesive by pulling the piano wire around the glass.

(d) Using a suction cup, remove the glass.

NOTICE:

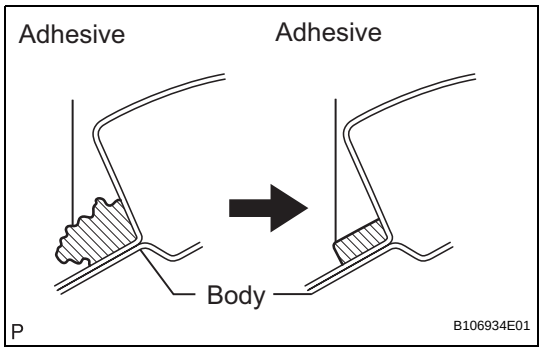
Leave as much adhesive on the vehicle body as possible when removing the glass.

24. CLEAN QUARTER WINDOW ASSEMBLY LH

(a) Clean the outer circumference of the glass with white gasoline.

NOTICE:

- **Do not touch the glass surface after cleaning it.**
- **Be careful not to damage the glass.**



INSTALLATION

1. INSTALL QUARTER WINDOW ASSEMBLY LH

(a) Clean and shape the contact surface of the vehicle body.

(1) Using a knife, cut away any rough adhesive on the contact surface of the vehicle body to ensure the appropriate surface shape.

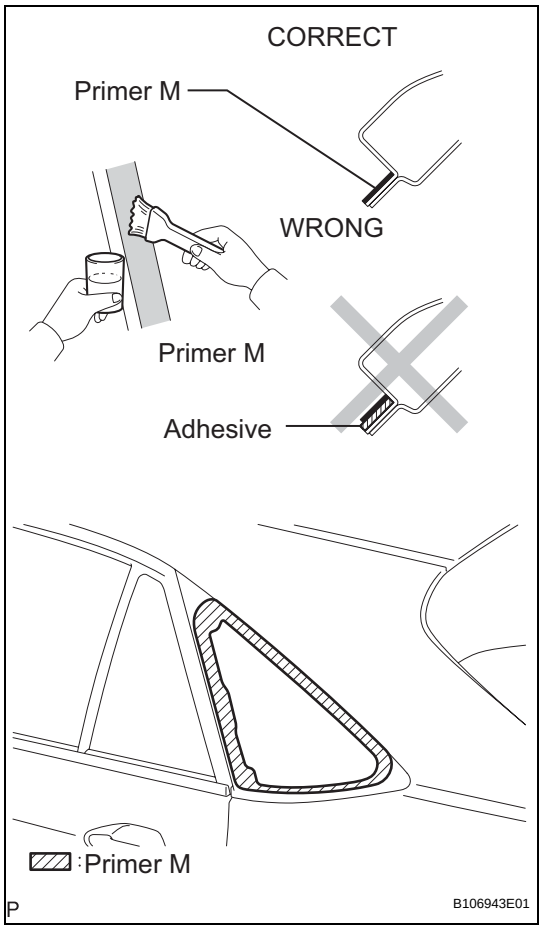
HINT:

Leave as much adhesive on the vehicle body as possible.

(2) Clean the contact surface of the vehicle body with a piece of shop rag saturated with cleaner.

HINT:

Even if all the adhesive has been removed, clean the vehicle body.



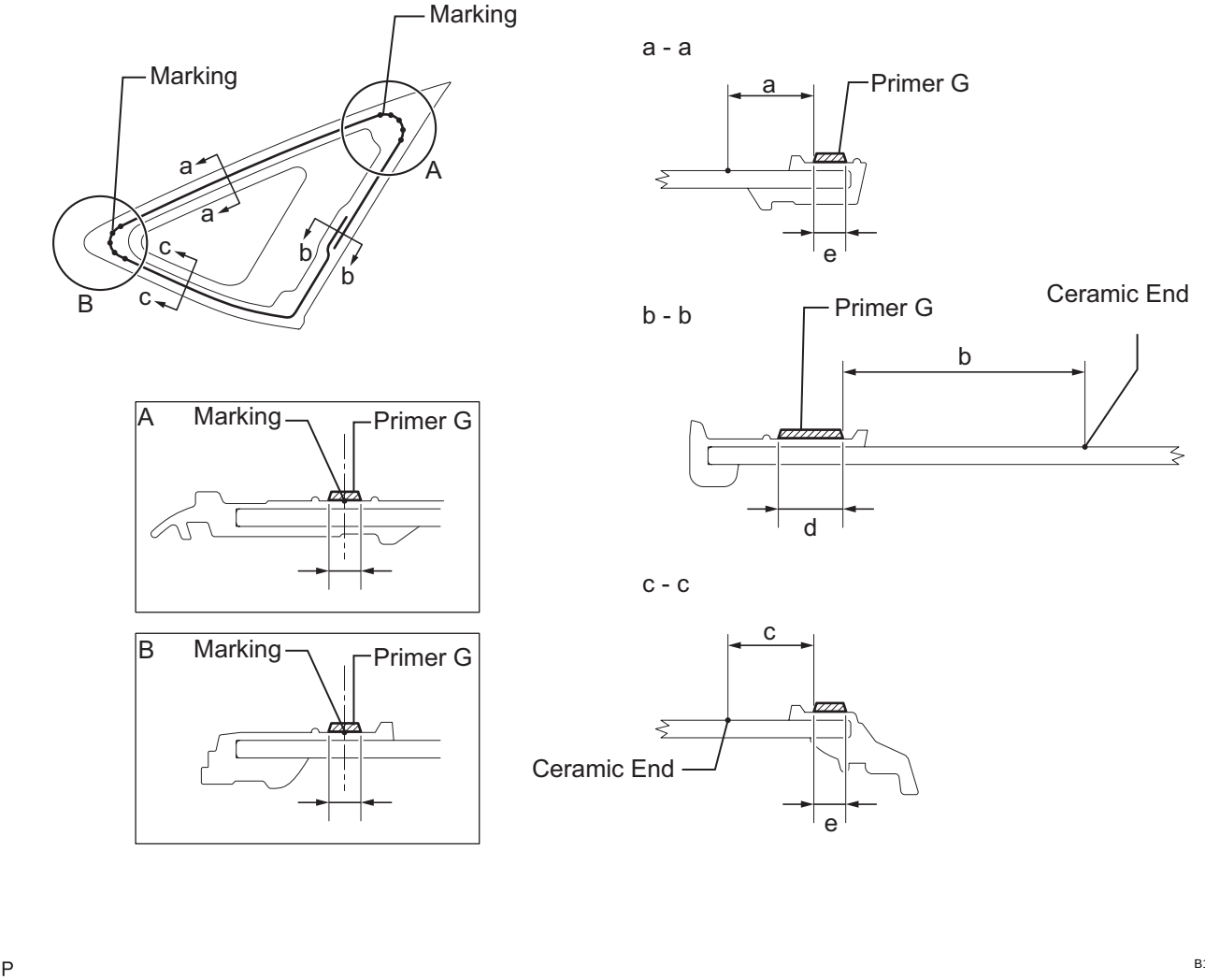
(b) Using a brush, coat the exposed part of the vehicle body with Primer M.

NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not coat the adhesive with Primer M.**
- **Do not keep any of the opened Primer M for later use.**

(c) Using a brush or sponge, coat the edge of the glass and the contact surface with Primer G.

Backside:



NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not keep any of the opened Primer G for later use.**

Standard dimension

Area	Dimension
a	9.0 mm (0.354 in.)
b	52.0 mm (2.047 in.)
c	17.0 mm (0.669 in.)
d	12.0 mm (0.472 in.)
e	6.0 mm (0.236 in.)

HINT:

If an area other than that specified is coated by accident, wipe off the primer with a clean shop rag before it dries.

WS

(d) Apply adhesive (Adhesive: Part No. 08850-00801 or equivalent).

(1) Cut off the tip of the cartridge nozzle, as shown in the illustration.

HINT:

After cutting off the tip, use all adhesive within the time described in the table below.

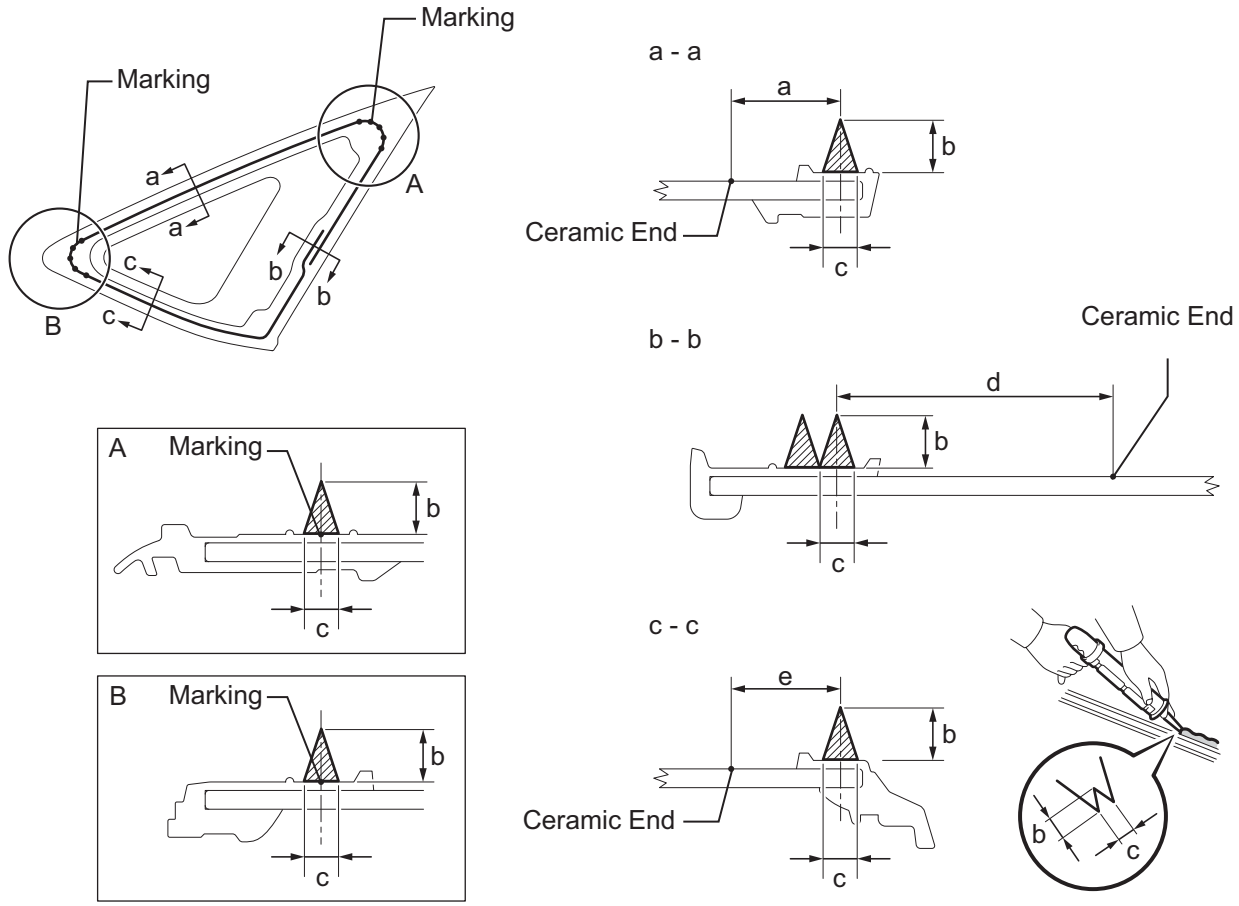
Tackfree time

Temperature	Tackfree Time
35°C (95°F)	15 minutes
20°C (68°F)	1 hour 40 minutes
5°C (41°F)	8 hours

(2) Load the sealer gun with the cartridge.

(3) Coat the glass with adhesive, as shown in the illustration.

Backside:



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Standard dimension

Area	Dimension
a	12.0 mm (0.472 in.)
b	8.0 mm (0.315 in.)
c	6.0 mm (0.236 in.)

WS

Area	Dimension
d	550 mm (21.654 in.)
e	20 mm (0.787 in.)

(e) Install the glass to the vehicle body.

(1) Hold the glass in place securely with tape or equivalent to the vehicle body until the adhesive has hardened.

NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Check that the clips are attached to the vehicle body correctly.**
- **Check the clearance between the vehicle body and glass.**

(2) Lightly press the front surface of the glass to ensure a close fit.

(3) Using a scraper, remove any excess or protruding adhesive.

NOTICE:

Take care not to drive the vehicle for the time described in the table below.

Minimum time

Temperature	Minimum time prior to driving vehicle
35°C (95°F)	1 hour 30 minutes
20°C (68°F)	5 hours
5°C (41°F)	24 hours

2. CHECK FOR LEAKS AND REPAIR

(a) Conduct a leak test after the adhesive has completely hardened.

(b) Seal any leaks with auto glass sealer.

3. INSTALL ROOF SIDE GARNISH ASSEMBLY INNER LH

4. INSTALL ROOM LIGHT ASSEMBLY NO.2

5. INSTALL DECK TRIM SIDE PANEL ASSEMBLY LH

6. INSTALL ROPE HOOK

7. INSTALL REAR SEAT SIDE COVER LH

8. INSTALL REAR NO.1 SEAT BELT ASSEMBLY OUTER LH

9. INSTALL DECK SIDE TRIM COVER LH

10. INSTALL REAR FLOOR FINISH SIDE PLATE LH

11. INSTALL REAR FLOOR FINISH PLATE

12. INSTALL DECK SIDE TRIM BOX LH

13. INSTALL DECK SIDE TRIM BOX RH

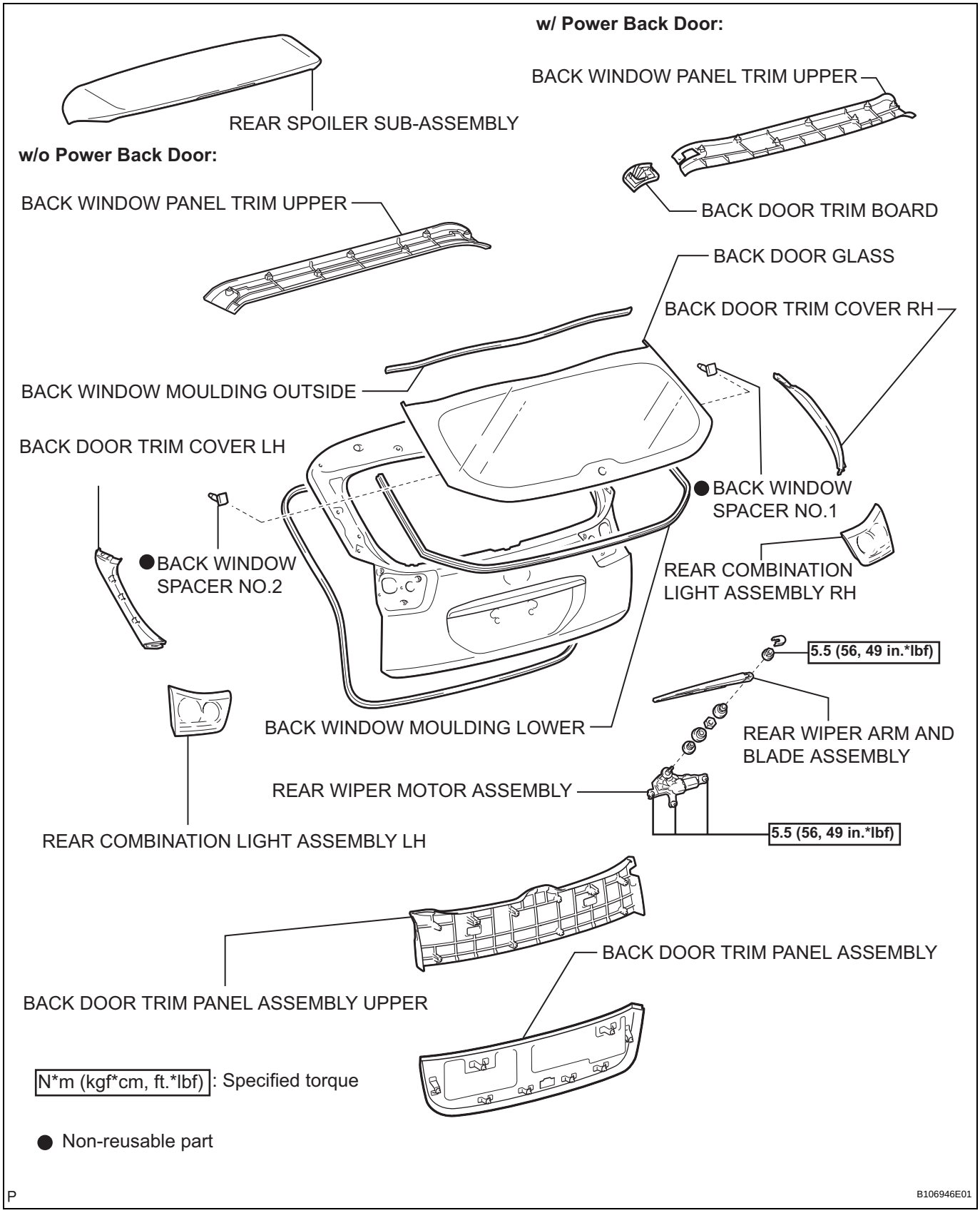
14. INSTALL JACK CARRIER ASSY

15. INSTALL BACK DOOR WEATHERSTRIP

16. **INSTALL NO.2 DECK BOARD SUB-ASSEMBLY**
17. **INSTALL NO.3 DECK BOARD SUB-ASSEMBLY**
18. **INSTALL DECK FLOOR BOX REAR**
19. **INSTALL DECK FLOOR BOX FRONT**
20. **INSTALL TONNEAU COVER ASSEMBLY**
21. **INSTALL DECK BOARD SUB-ASSEMBLY**
22. **INSTALL REAR DOOR OPENING TRIM WEATHERSTRIP LH**
23. **INSTALL REAR DOOR SCUFF PLATE LH**
24. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
25. **PERFORM INITIALIZATION**
    NOTICE:
    Some systems need initialization when disconnecting the cable from the negative (-) battery terminal.

BACK DOOR GLASS

COMPONENTS



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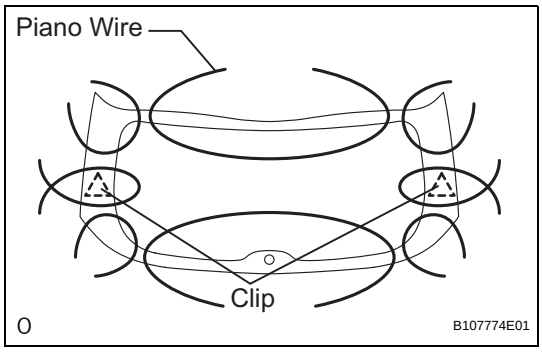
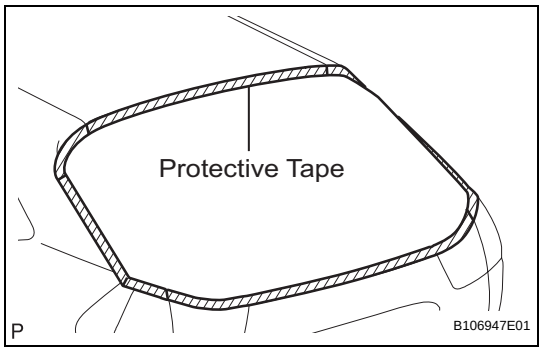
REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation (See page RS-1).
2. **REMOVE REAR WIPER ARM AND BLADE ASSEMBLY (See page WW-44)**
3. **REMOVE BACK DOOR TRIM BOARD (w/ Power Back Door)**
4. **REMOVE BACK WINDOW PANEL TRIM UPPER (w/ Power Back Door)**
5. **REMOVE BACK WINDOW PANEL TRIM UPPER (w/o Power Back Door)**
6. **REMOVE BACK DOOR TRIM PANEL ASSEMBLY UPPER**
7. **REMOVE BACK DOOR TRIM PANEL ASSEMBLY**
8. **REMOVE BACK DOOR TRIM COVER RH**
9. **REMOVE BACK DOOR TRIM COVER LH**
10. **REMOVE REAR SPOILER SUB-ASSEMBLY**
11. **REMOVE REAR WIPER MOTOR ASSEMBLY (See page WW-44)**
12. **REMOVE REAR COMBINATION LIGHT ASSEMBLY LH (See page LI-206)**
13. **REMOVE REAR COMBINATION LIGHT ASSEMBLY RH**
14. **REMOVE BACK DOOR GLASS**
    (a) Disconnect the connector.
    (b) Pass a piano wire between the vehicle body and glass from the interior, as shown in the illustration.



WS



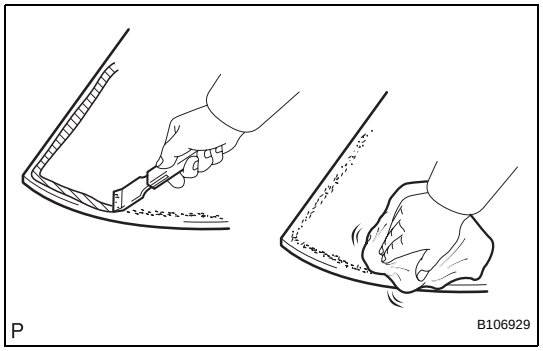
(c) Tie both wire ends to wooden blocks or similar objects.
NOTICE:
When separating the glass, take care not to damage the paint and interior and exterior ornaments.
HINT:
Apply protective tape to the outer surface to prevent the surface from being scratched.

(d) Cut off the adhesive by pulling the piano wire around the glass.
NOTICE:
If the back door glass will be reused, be careful not to damage the clip attached to the glass when you cut off the adhesive.

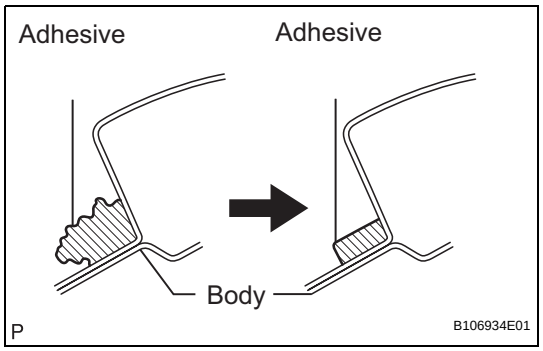
(e) Using a suction cup, remove the glass.
NOTICE:
Leave as much adhesive on the vehicle body as possible when removing the glass.

15. CLEAN BACK DOOR GLASS

(a) Using a scraper, remove the damaged stoppers, dam and adhesive sticking to the glass.



(b) Clean the outer circumference of the glass with white gasoline.
NOTICE:
- **Do not touch the glass surface after cleaning it.**
- **Be careful not to damage the glass.**
- **Even if using a new glass, clean the glass with white gasoline.**



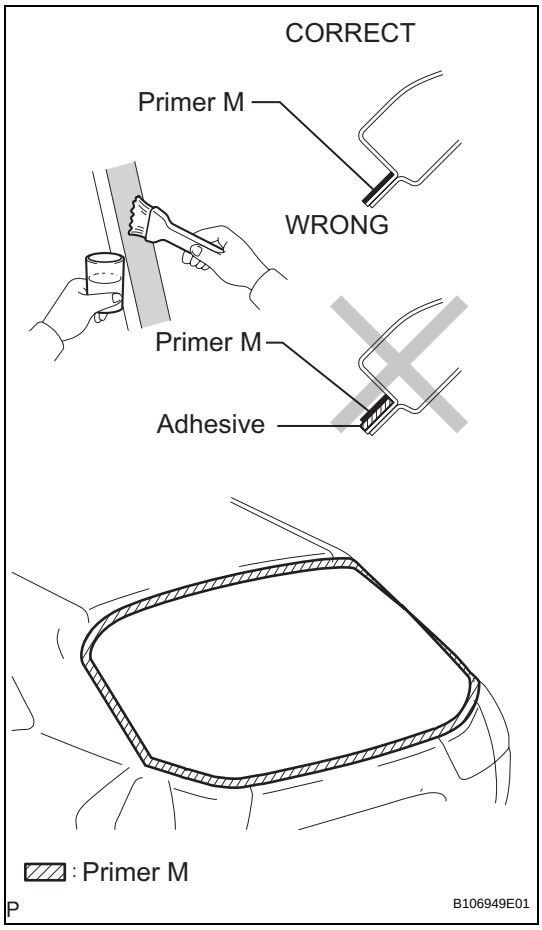
INSTALLATION

1. INSTALL BACK DOOR GLASS

(a) Clean and shape the contact surface of the vehicle body.

(1) Using a knife, cut away any rough adhesive on the contact surface of the vehicle body to ensure the appropriate surface shape.
HINT:
Leave as much adhesive on the vehicle body as possible.

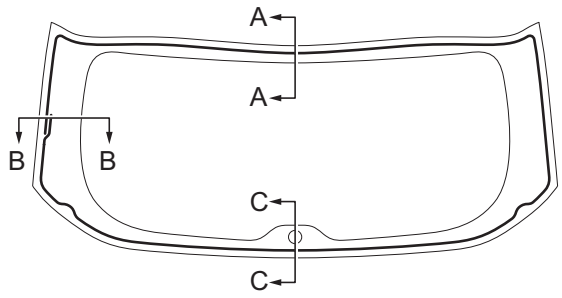
(2) Clean the contact surface of the vehicle body with a piece of shop rag saturated with cleaner.
HINT:
Even if all the adhesive has been removed, clean the vehicle body.



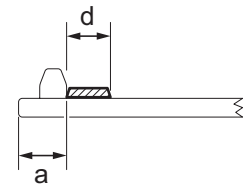
(b) Using a brush, coat the exposed part of the vehicle body with Primer M.
NOTICE:
- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not coat the adhesive with Primer M.**
- **Do not keep any of the opened Primer M for later use.**

(c) Using a brush or sponge, coat the edge of the glass and the contact surface with Primer G.

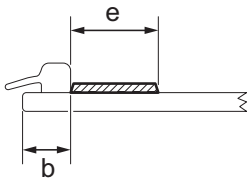
Backside:



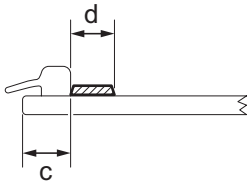
A - A



B - B



C - C



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NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not keep any of the opened Primer G for later use.**

Standard dimension

Area	Dimension
a	8.0 mm (0.315 in.)
b	9.2 mm (0.362 in.)
c	9.2 mm (0.362 in.)
d	8.0 mm (0.315 in.)
e	16.0 mm (0.630 in.)

HINT:
If an area other than that specified is coated by accident, wipe off the primer with a clean shop rag before it dries.

(d) Apply adhesive (Adhesive: Part No. 08850-00801 or equivalent).

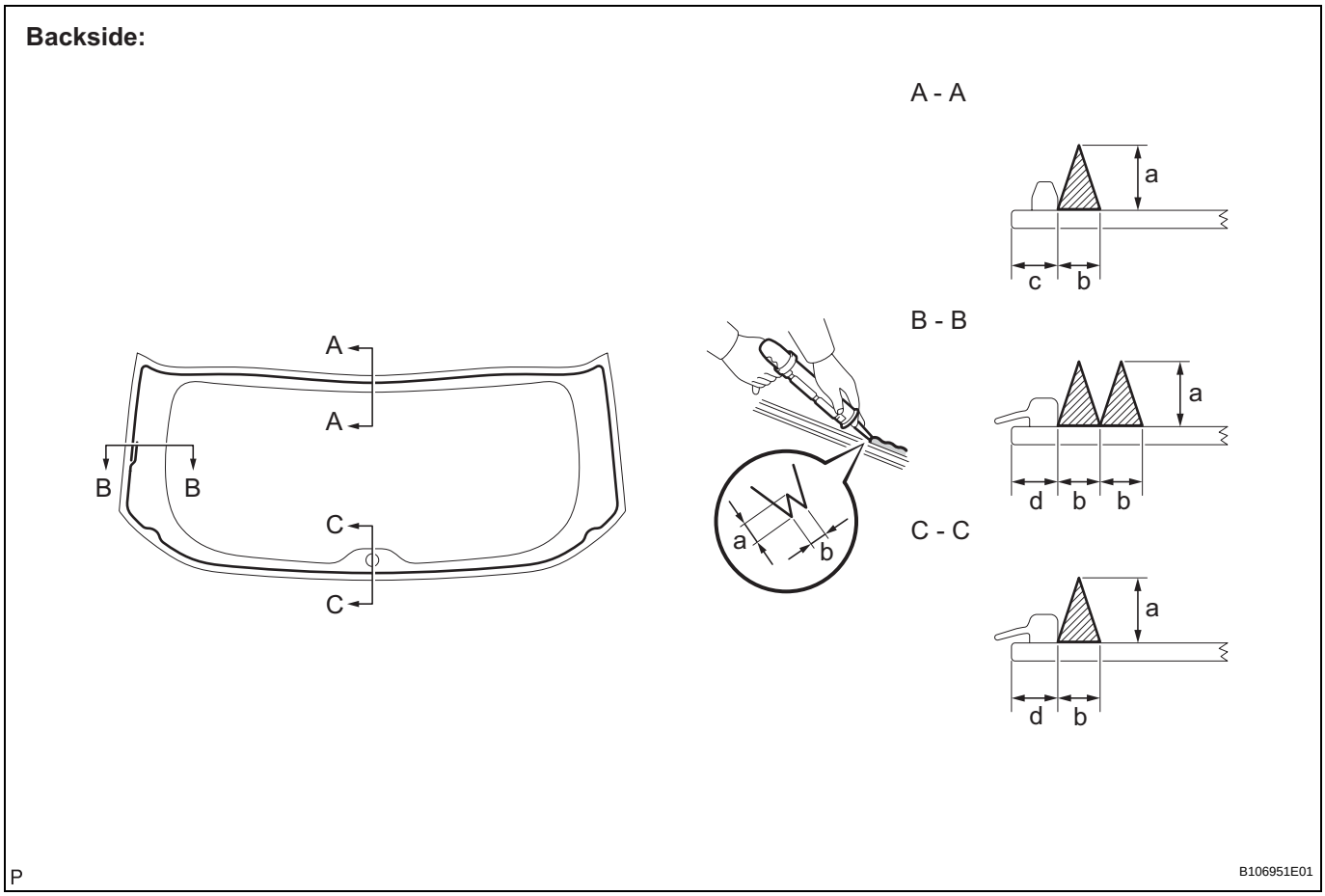
(1) Cut off the tip of the cartridge nozzle, as shown in the illustration.
HINT:
After cutting off the tip, use all adhesive within the time described in the table below.

(2) Load the sealer gun with the cartridge.

Tackfree time

Temperature	Tackfree Time
35°C (95°F)	15 minutes
20°C (68°F)	1 hour 40 minutes
5°C (41°F)	8 hours

(3) Coat the glass with adhesive, as shown in the illustration.



Standard dimension

Area	Dimension
a	12.0 mm (0.472 in.)
b	8.0 mm (0.315 in.)
c	8.0 mm (0.315 in.)
d	9.2 mm (0.362 in.)

(e) Install the glass to the vehicle body.

(1) Hold the back window glass in place securely with tape or equivalent to the vehicle body until the adhesive has hardened.

NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Check that the clips are attached to the vehicle body correctly.**
- **Check the clearance between the vehicle body and glass.**

(2) Lightly press the front surface of the glass to ensure a close fit.

(3) Using a scraper, remove any excess or protruding adhesive.

NOTICE:

Take care not to drive the vehicle for the time described in the table below.

WS

Minimum time

Temperature	Minimum time prior to driving vehicle
35°C (95°F)	1 hour 30 minutes
20°C (68°F)	5 hours
5°C (41°F)	24 hours

2. INSTALL BACK WINDOW MOULDING OUTSIDE

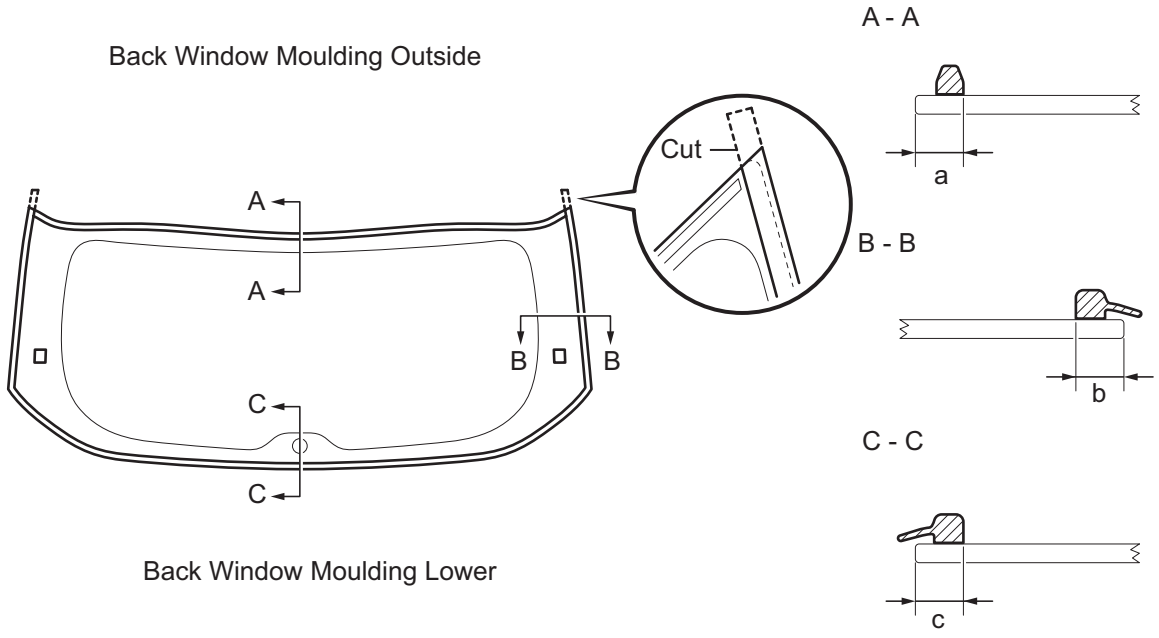
(a) Coat the installation part of the mouldings with Primer G.

NOTICE:

- **Allow the primer coating to dry for 3 minutes or more.**
- **Do not apply too much primer.**

(b) Install a new mouldings, applying double-sided tape all the way around the glass except where the mouldings is installed, as shown in the illustration.

Backside:



Standard dimension

Area	Dimension
a	8.0 mm (0.315 in.)
b	9.2 mm (0.362 in.)
c	9.2 mm (0.362 in.)

(c) Connect the connector.

3. INSTALL BACK WINDOW MOULDING LOWER

WS

4. **CHECK FOR LEAKS AND REPAIR**
   (a) Conduct a leak test after the adhesive has completely hardened.
   (b) Seal any leaks with auto glass sealer.
5. **INSTALL REAR COMBINATION LIGHT ASSEMBLY LH (See page LI-207)**
6. **INSTALL REAR COMBINATION LIGHT ASSEMBLY RH**
7. **INSTALL REAR WIPER MOTOR ASSEMBLY (See page WW-45)**
8. **INSTALL REAR SPOILER SUB-ASSEMBLY (See page ET-12)**
9. **INSTALL BACK DOOR TRIM COVER LH**
10. **INSTALL BACK DOOR TRIM COVER RH**
11. **INSTALL BACK DOOR TRIM PANEL ASSEMBLY**
12. **INSTALL BACK DOOR TRIM PANEL ASSEMBLY UPPER**
13. **INSTALL BACK WINDOW PANEL TRIM UPPER (w/o Power Back Door)**
14. **INSTALL BACK WINDOW PANEL TRIM UPPER (w/ Power Back Door)**
15. **INSTALL BACK DOOR TRIM BOARD (w/ Power Back Door)**
16. **INSTALL REAR WIPER ARM AND BLADE ASSEMBLY (See page WW-46)**
17. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
18. **PERFORM INITIALIZATION**
    NOTICE:
    Some systems need initialization when disconnecting the cable from the negative (-) battery terminal (See page IN-1).

WINDOW DEFOGGER SYSTEM

PRECAUTION

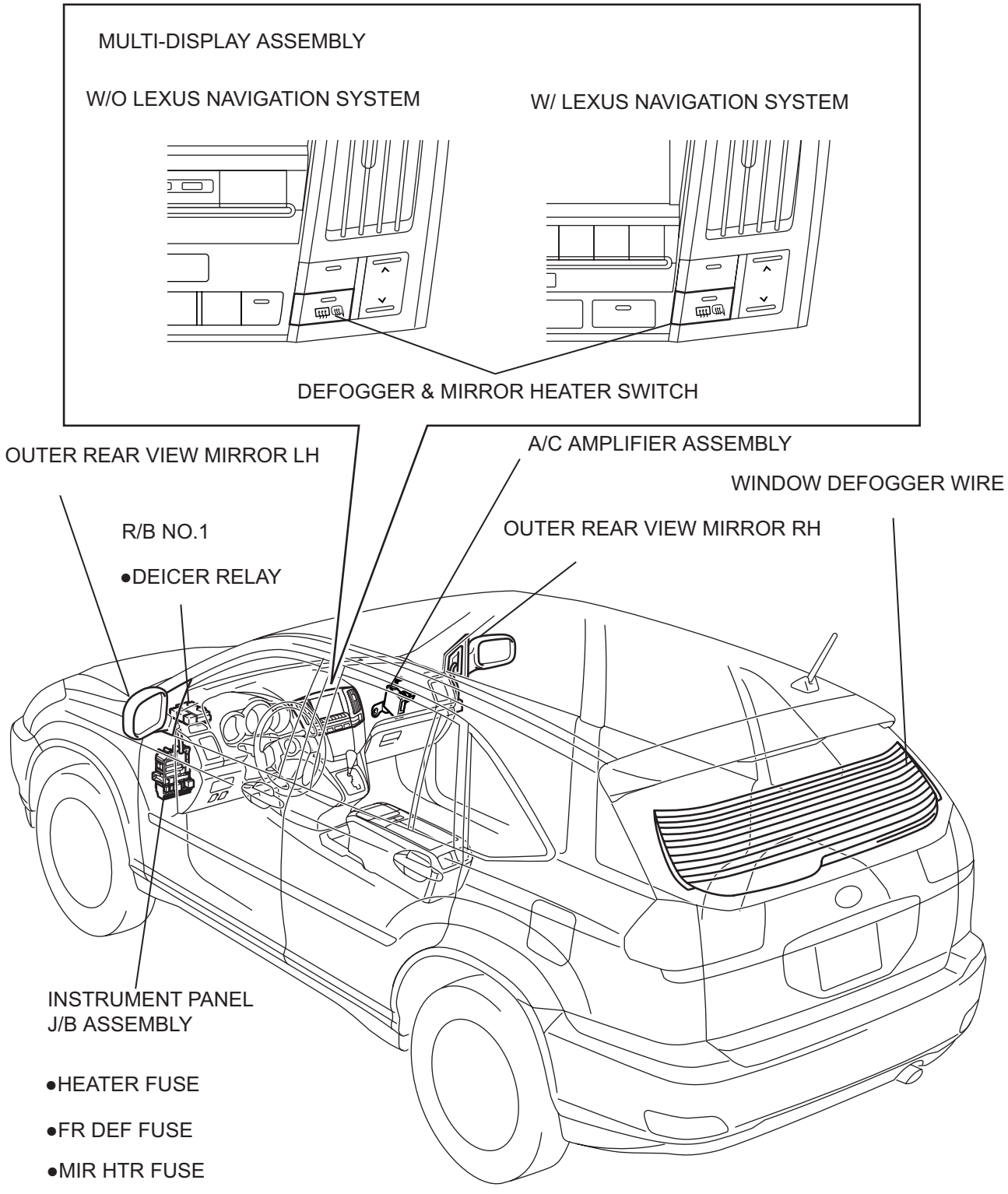
1. INITIALIZATION

NOTICE:

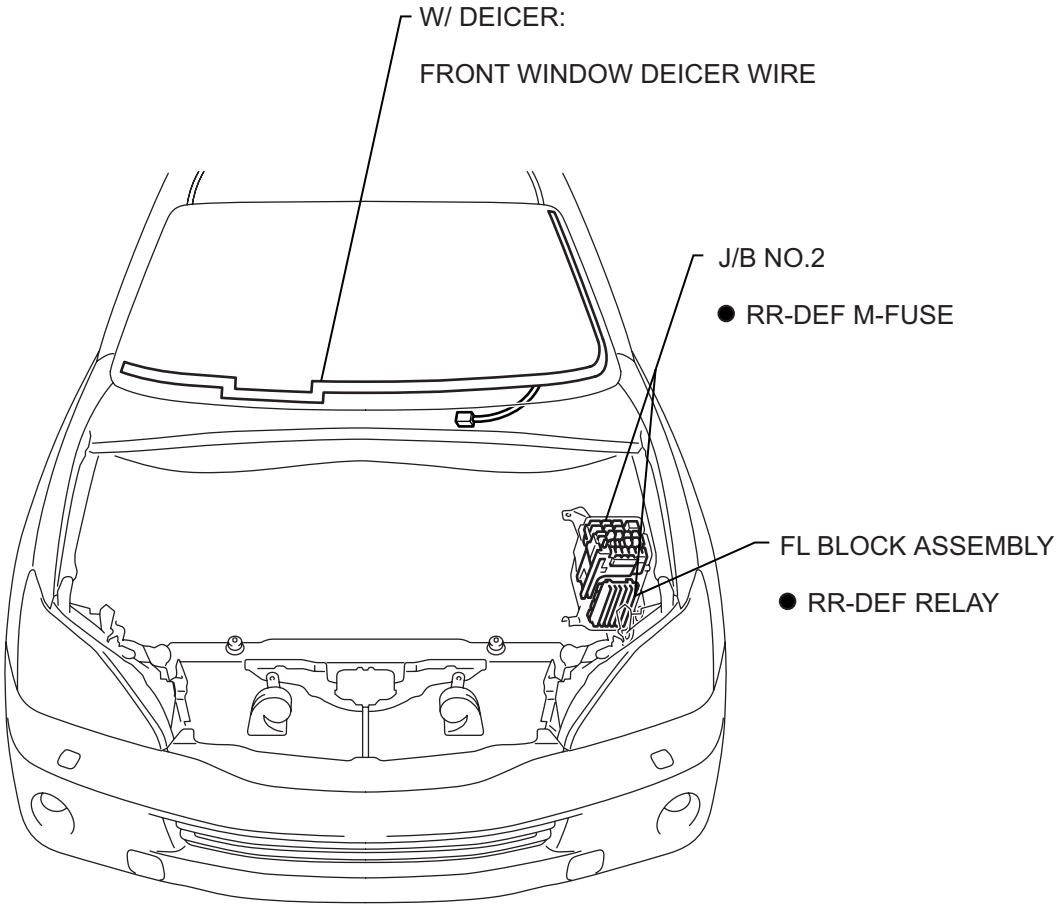
When disconnecting the cable from the negative (-) battery terminal, initialize the following systems after the cable is reconnected.

System Name	See Procedure
Lighting System (Adaptive Front-Lighting system)	LI-17
Sliding Roof Control System	RF-22 and RF-4
Power Window Control System	WS-12
Power Back Door System	ED-33

PARTS LOCATION



WS


W/ DEICER:
FRONT WINDOW DEICER WIRE
J/B NO.2
● RR-DEF M-FUSE
FL BLOCK ASSEMBLY
● RR-DEF RELAY
H
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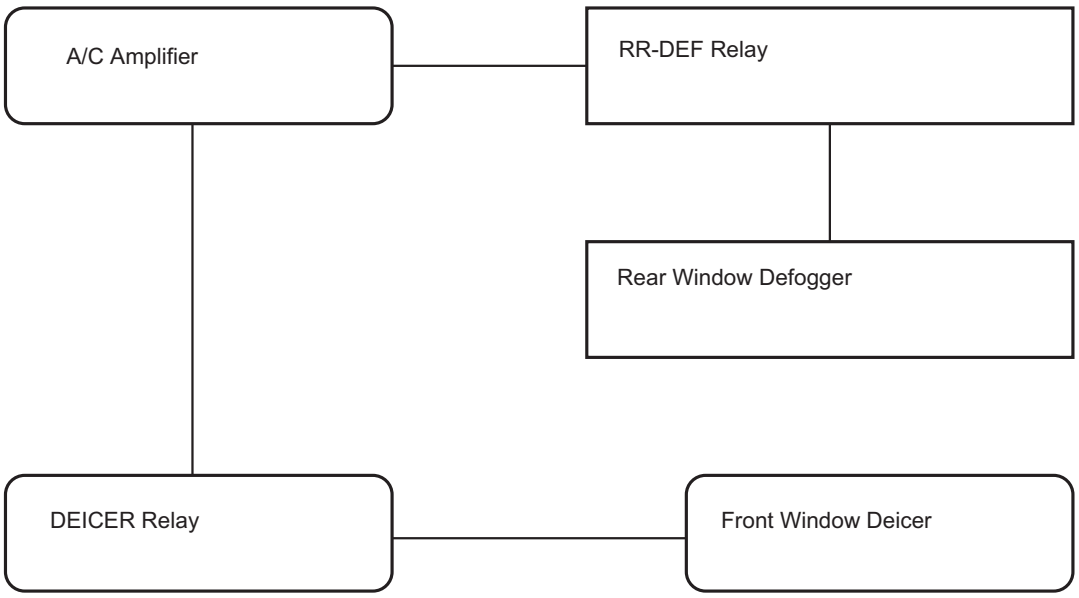
SYSTEM DIAGRAM



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SYSTEM DESCRIPTION

1. GENERAL

The defogger system's thin heater wires are attached to the inside of the rear window and defog the window surface quickly. The indicator light illuminates while the system is operating. The system automatically turns off after approximately 15 minutes.

HINT:

The rear window defogger is linked with the mirror defogger.

2. FUNCTION OF MAIN COMPONENT

Component	Outline
RR-DEF Relay	Receives rear defogger activation request signals from A/C amplifier assembly (A/C ECU) and supplies power to rear window defogger.
Rear Window Defogger	Receives power from DEFOG relay and heats defogger wire.
w/ Deicer Deicer Relay	Receives front deicer activation request signals from A/C amplifier assembly (A/C ECU) and supplies power to front window deicer.
w/ Deicer Front Window Deicer	Receives power from DEICER relay and heats deicer wire.

3. DESCRIPTION

Function	Outline
Defogs the rear window surface	• Receives rear defogger activation request signals from A/C amplifier assembly (A/C ECU) and supplies power to rear window defogger. • Receives power from DEFOG relay and heats defogger wire.
Defogs the front window surface	• Receives front deicer activation request signals from A/C amplifier assembly (A/C ECU) and supplies power to front window deicer. • Receives power from DEICER relay and heats deicer wire.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the procedure to troubleshoot the defogger system.
- The intelligent tester should be used in steps 4 and 6.

1 VEHICLE BROUGHT TO WORKSHOP

NEXT

2 INSPECT BATTERY VOLTAGE

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

3 PROBLEM SYMPTOMS TABLE

Result

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B → **Go to step 6**

A

4 OVERALL ANALYSIS AND TROUBLESHOOTING

(a) Terminals of ECU (See page WS-75)
(b) Data List/Active Test (See page WS-76)
(c) On-vehicle inspection (See page WS-77)
(d) Inspection (See page WS-88)

NEXT

5 REPAIR OR REPLACE

NEXT

6	**CONFIRMATION TEST**

NEXT

END

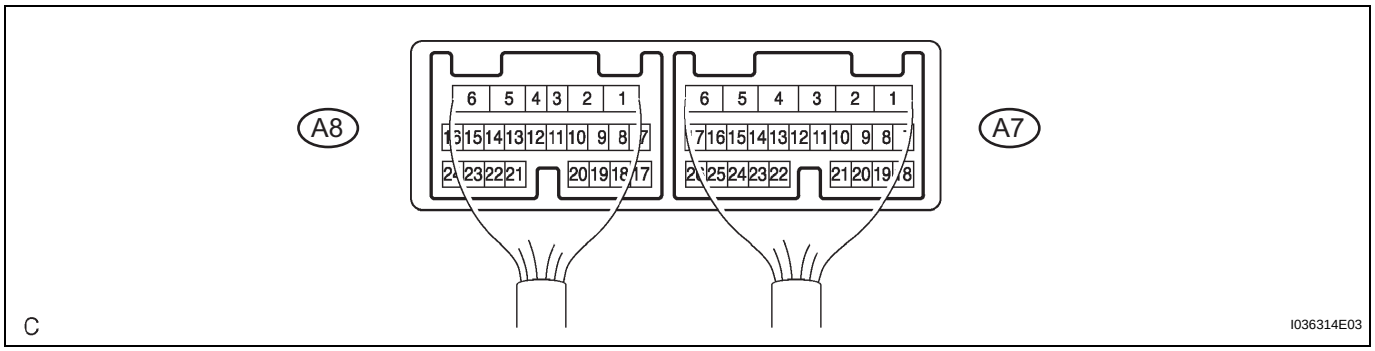
PROBLEM SYMPTOMS TABLE

WINDOW DEFOGGER SYSTEM

Symptom	Suspected area	See page
w/ Deicer: Front window deicer does not operate (Indicator ON)	1. FR DEF fuse	WS-70
	2. HEATER fuse	WS-70
	3. DEICER relay	WS-70
	4. Front window deicer wire	WS-89
	5. Wire harness	-
w/ Deicer: Front window deicer does not operate (Indicator OFF)	1. FR DEF fuse	WS-70
	2. HEATER fuse	WS-70
	3. DEICER relay	WS-70
	4. Front window deicer wire	WS-89
	5. Multi-display assembly	AC-185
	6. Wire harness	-
Rear window defogger does not operate (Indicator ON)	1. RR DEF M-fuse	WS-70
	2. HEATER fuse	WS-70
	3. RR-DEF relay	WS-70
	4. Rear window defogger wire	WS-89
	5. Wire harness	-
Rear window defogger does not operate (Indicator OFF)	1. RR DEF M-fuse	WS-70
	2. HEATER fuse	WS-70
	3. RR-DEF relay	WS-70
	4. Multi-display assembly	AC-185
	5. Rear window defogger wire	WS-89
	6. Wire harness	-

TERMINALS OF ECU

1. CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY



(a) Measure the voltage and resistance of each terminal of the connectors.

. Symbols (Terminal No)	Wire Color	Terminal Description	Condition	Specified Condition
A8-8 (FDEF) - A8-6 (GND)	B - W-B	Front Deicer Signal	Engine switch on (IG) Front deicer switch ON	Below 1 V
A8-8 (FDEF) - A8-6 (GND)	B - W-B	Front Deicer Signal	Engine switch on (IG) Front deicer switch OFF	10 to 14 V
A8-19 (DFG) - A8-6 (GND)	G - W-B	Rear Defogger Signal	Engine switch on (IG) Rear defogger switch OFF	10 to 14 V
A8-19 (DFG) - A8-6 (GND)	G - W-B	Rear Defogger Signal	Engine switch on (IG) Rear defogger switch ON	Below 1 V
E1 (E7-7) - Body ground	BR - Body ground	Ground	Always	Below 1 Ω
E02 (E6-1) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
E01 (E6-2) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
EC (A6-2) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

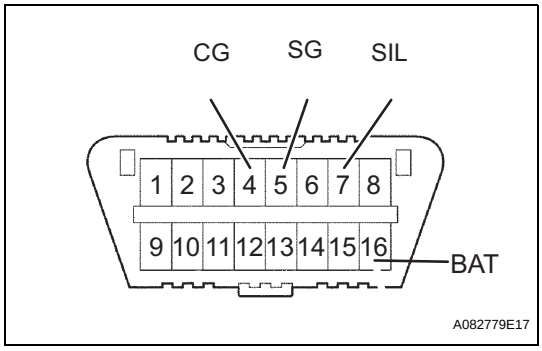
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) The defogger system data can be read in the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the intelligent tester to check for malfunctions and perform repairs.

2. CHECK DLC3

(a) The vehicle uses the ISO 15765-4 for communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



Standard voltage

Symbol (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
BAT (16) - Body ground	Battery positive	Always	10 to 14 V

Standard resistance

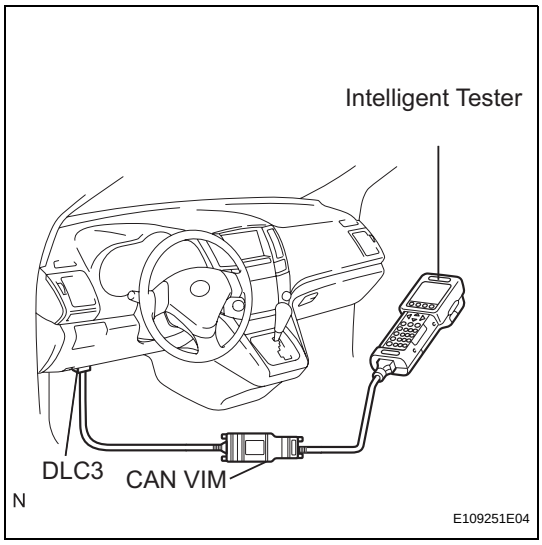
Symbol (Terminal No.)	Terminal Description	Condition	Specified Condition
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
CANH (6) - CANL (14)	HIGH-level CAN bus line	Engine switch off	54 to 67 Ω
CANH (6) - Body positive (+)	HIGH-level CAN bus line	Engine switch off	1 MΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Engine switch off	3 MΩ or higher
CANL (14) - Body positive (+)	LOW-level CAN bus line	Engine switch off	1 MΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Engine switch off	3 MΩ or higher

If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the engine switch on (IG) and attempt to use the intelligent tester. If the display indicates that a communication error has occurred, there is a problem either with the vehicle or with the intelligent tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem may be in the intelligent tester itself. Consult the Service Department listed in the tester's instruction manual.



WS

3. CHECK BATTERY VOLTAGE

Standard voltage:

11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.