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WINDSHIELD/WINDOW GLASS

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دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

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GENERAL INFORMATION

Overview

Description

1 - Front Windshield Assembly	2 - Front Left Door Glass Assembly
3 - Rear Left Door Glass Assembly	4 - Left Triangular Window Glass Assembly
5 - Front Right Door Glass Assembly	6 - Rear Right Door Glass Assembly

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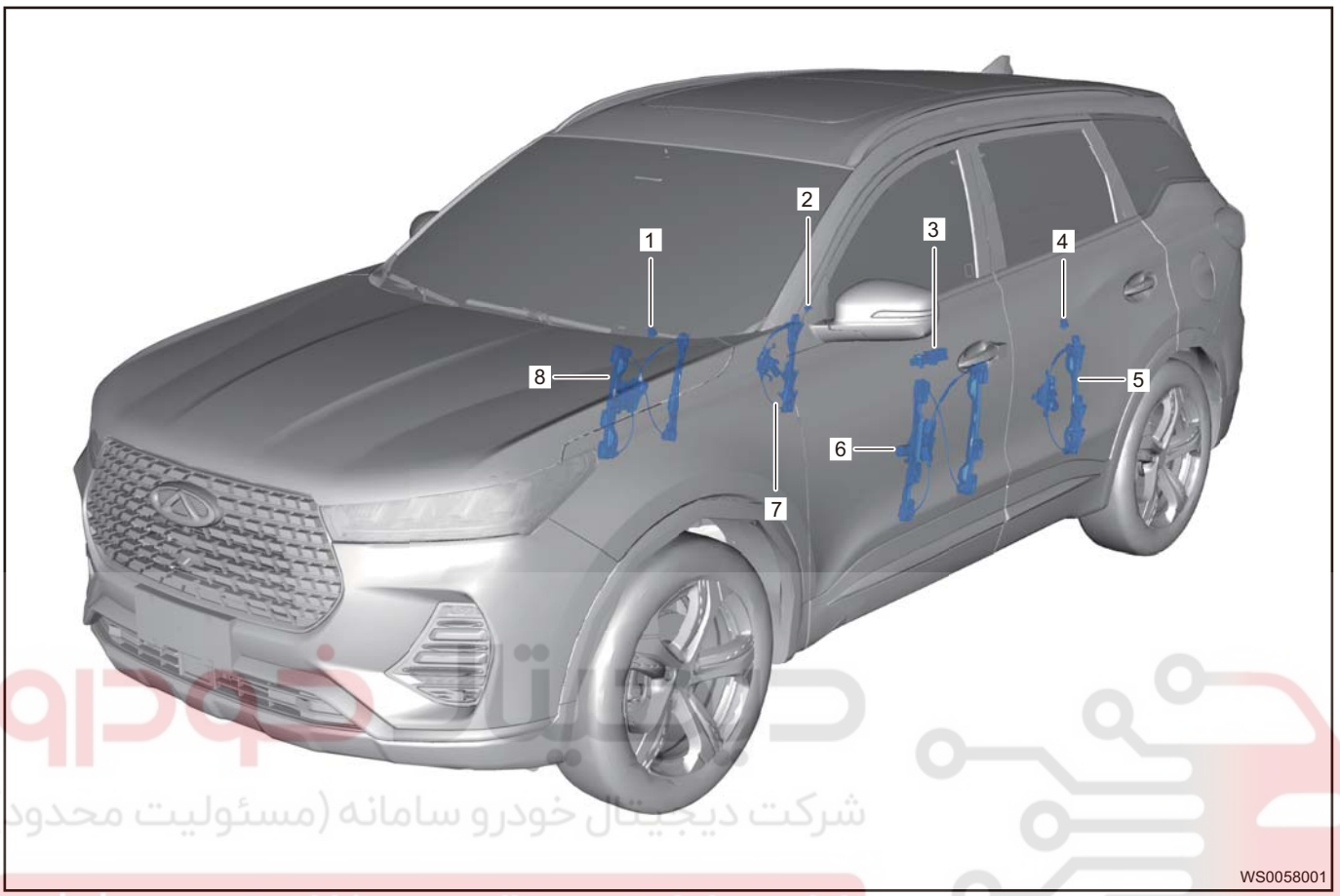
7 - Right Triangular Window Glass Assembly	8 - Rear Windshield Assembly



1 - Front Right Door Glass Regulator Switch Assembly	2 - Rear Right Door Glass Regulator Switch Assembly
3 - Front Left Door Glass Regulator Switch Assembly	4 - Rear Left Door Glass Regulator Switch Assembly
5 - Rear Left Door Glass Regulator	6 - Front Left Door Glass Regulator
7 - Rear Right Door Glass Regulator	8 - Front Right Door Glass Regulator

Power window control system controls each window glass UP/DOWN function by operating the glass regulating control switches on door inner protector assembly. Main control devices of this system include: Front left door glass regulator switch (built into driver side door) and glass regulator switches (built into front and rear passenger side doors). Press the front left door glass regulator switch or any switch on glass regulator switch, to transmit the UP/DOWN signal to corresponding power glass regulator motor, thus controlling UP/DOWN operation of corresponding power window glass.

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Operation

1. Main Component Function

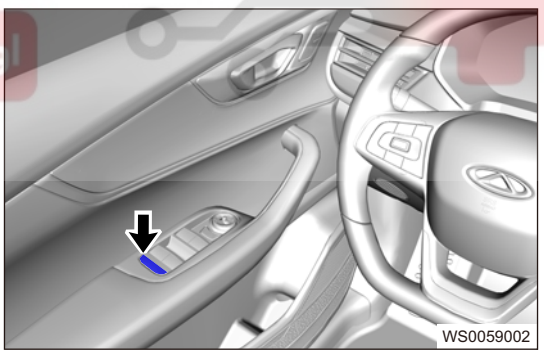
Item	Description
Power window lock switch	• Located on front left door inner protector assembly. It controls the operation of front and rear passenger side glass regulator switches. • When power window lock switch is in lock position, only driver side glass regulator switch can control UP/DOWN operation of power window glass.
Power glass regulator switch	• Located on door inner protector assembly. • Each power glass regulator switch controls UP/DOWN operation of corresponding power window glass.
Power glass regulator	• It can change position of power window glass.

2. System Function

Function	Description
Manual UP function	Power window glass goes up when glass regulator control switch is pulled up and held while it stops as the switch is released.
Manual DOWN function	Power window glass goes down when glass regulator control switch is pushed down and held while it stops as the switch is released.
Automatic DOWN function	Power window glass goes down automatically when glass regulator control switch is pressed shortly. To stop it partway, push or pull the switch again.
Power window LOCK function	Operation of corresponding power window glass is impossible with all passenger side power glass regulator switches when power window lock switch is pressed. At this time, only operation of driver side power window glass is possible. This function can be canceled only when power window lock switch is pressed again.

Operation Inspection

3. Check the power window lock switch.



(a) Check that front and rear passenger side power window glass cannot be operated with front and rear passenger power glass regulator switches, when power window lock switch is pressed.
OK: Operation of front and rear passenger side power glass regulator switches is invalid.

(b) Check that front and rear passenger side power window glass can be operated with front and rear passenger power glass regulator switches, when power window lock switch is pressed again.
OK: Operation of front and rear passenger side power glass regulator switches is possible.

4. Check the manual UP/DOWN function.

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

Condition	Front Left Door Glass Regulator Switch	Switch Operation	Power Window Glass
Turn ENGINE START STOP switch to OFF	Driver side	Pulled	UP (close)
		Pushed	DOWN (open)

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(b) Check that power window glass other than driver side power window glass operate as follows:
OK

Condition	Front Left Door Glass Regulator Switch	Switch Operation	Power Window Glass
Turn ENGINE START STOP switch to OFF and window lock switch to OFF position	Passenger side	Pulled	UP (close)
		Pushed	DOWN (open)
	Rear left side	Pulled	UP (close)
		Pushed	DOWN (open)
	Rear right side	Pulled	UP (close)
		Pushed	DOWN (open)

5. Check the remote manual UP/DOWN function.

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

Condition	Front Left Door Glass Regulator Switch	Switch Operation	Power Window Glass
Turn ENGINE START STOP switch to OFF	Driver side	Fully pulled up	UP (close)
		Fully pushed	DOWN (open)

(b) Check that power window glass other than driver side power window glass operate as follows:
OK

Condition	Front Left Door Glass Regulator Switch	Switch Operation	Power Window Glass
Turn ENGINE START STOP switch to OFF and window lock switch to OFF position	Passenger side	Pulled	UP (close)
		Pushed	DOWN (open)
	Rear left side	Pulled	UP (close)
		Pushed	DOWN (open)
	Rear right side	Pulled	UP (close)
		Pushed	DOWN (open)

Window Jam Protection System

Composition

It consists of 1 front left door glass regulator switch, 3 single glass regulator switches, 4 glass regulators and Body Control Module (BCM).

Function Description

"Jam protection" is window regulating system with jam protection function, which mainly reflects on: When operating window auto UP or remote one-button UP, and passenger is caught carelessly by window which raises automatically, jam protection control module will control glass regulator motor to reverse before motor reaches the set jam protection force, thus making window glass go down a certain distance, avoiding injury to passenger.

Jam Protection Requirement

Window regulating system with jam protection function must meet followings in performance requirements of jam protection system:

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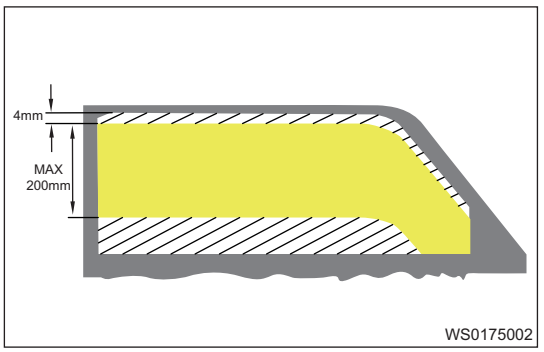
1. Jam protection area, which is within 4 mm - 200 mm range of yellow part in following illustration



2. Jam protection force is less than 100 N
3. When jam protection occurs, down distance of window reverse is 150 mm

Operation

Jam protection system achieves jam protection function by controlling rotation of motor.

When window raises automatically, if one passenger is caught, according to motor characteristics, it can be known that current increases quickly and speed decreases, jam protection system collects relevant parameters and performs calculation, which will drive motor to reverse before jam protection force reaches 100 N, thus achieving "jam protection".

Basic Function

1. General function: UP/DOWN function of normal power glass;
2. Auto window UP: Turn window regulator switch to top. If there is no obstacle, window will go up automatically until reaching top and then stop;
3. Remote one-button window UP: Press remote key lock button once, door will lock automatically and window will go up automatically until reaching top and then stop;
4. Jam protection function;
5. Ignition pause function: As engine starts, window regulating operation will pause to provide large current for assist;
6. Window DOWN by long pressing remotely;
7. Canceling jam protection: When jam protection occurs twice continuously, auto window UP will be canceled (jam protection), ensuring raising window fully when it is necessary to raise window forcibly;
8. Overload heat protection: To avoid damage caused by motor overheating, abnormal operation of window regulating frequently is not allowed;
9. Soft pausing function: To avoid impact and noise due to going down to bottom of glass driven by motor, stop going down as glass nearly reaches bottom;
10. Manual learning function: Press window switch, raise glass manually to top and make it be locked for 2 s, then operate glass to bottom manually and make it be locked for 2 s.

General Function

Do not operate window regulator switch for power window regulating until ENGINE START STOP switch is turned to ON.

Window regulator switch has delay function, that is window regulator switch can operate if front door is not opened within 120 s after turning key to a position other than ON position; within this period, once any front door is opened, glass regulating function will be disabled immediately.

Remote One-button Window UP and Auto Window UP Function

Warning:

- To protect window regulating system, window jam protection function will be canceled in some cases, and auto window UP function will also be canceled, to avoid possible potential risk, at this time window only has general regulating function, window regulating function of corresponding door will resume after jam protection learning.
- When window raises automatically or remotely, make sure that there is no obstacle within window raising range, or jam protection will be activated and the window operates in reverse direction, causing the condition that window cannot close normally.

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- Jam protection function is a kind of window safety protection function. Do not use any object and informal method to verify jam protection frequently, or it will damage system mechanism (such as motor, glass, regulator and glass guide etc).

Remote Window UP

Turn off ENGINE START STOP switch, remove key, and close four doors, and vehicle enters armed state when remote lock button or door handle switch is pressed, and four window glasses will raise automatically. If lock button, unlock button or door handle switch is pressed again as window glass raises automatically, window glass will stop raising.

Jam Protection Function

If jam protection system operates normally, jam protection function will be activated when the window meets obstacle resistance within jam protection area as window raises automatically or by one-button remotely. Max. allowable jam protection force by system is 100 N while glass will stop automatically and go back a certain distance (150 mm). If you want to close window, move away the obstacle, and operate switch again.

When window is nearly closed (within 4 mm), jam protection function will stop sensing, so extremely thin obstacle will not be seen easily during window raising.

Remote Long-press Window DOWN Function

Turn ENGINE START STOP switch to OFF and remove key with four doors closed, press and hold unlock button on remote key for at least 1.5 seconds, window glass of four doors will go down automatically. Release unlock button on remote key during going down, window glass will stop operating.

Warning:

- Press and hold unlock button on remote key as window goes down remotely. If remote signal suspends due to shaking (including hands tremble, electromagnetic interference etc), remote window DOWN operation will end.

Jam Protection Canceling Conditions

System will cancel jam protection function in following conditions:

1. When jam protection occurs twice continuously (window does not raise to top);
2. Control module cuts off power supply connection during operation or non-operation;
3. Window position calculation judged by system exceeds limit value.
   (a) If there is obstacle as window closes within 10 seconds for first jam protection rollback, jam protection function will be activated again, and window will reverse automatically. At this time, only manual window UP function operates. Window provides maximum closing force within 10 seconds, to make window be closed smoothly in some extreme cases. Please make sure there is no obstacle during closing, avoiding personal injury.
   (b) When jam protection is canceled, use the remote one-button window UP function, window will go down to bottom and then raise to the top, thus jam protection learning is completed, so that system has multiple functions.

Overload Heat Protection Function

If the window is operated repeatedly within a short time, window regulator motor will be burnt due to overheating.

To protect the motor, if window regulating operation is performed about 10 times continuously, control function of corresponding window switch will be disabled actively. After motor temperature resumes to normal, the switch will be able to operate, and this function will not affect the normal use of window regulating function.

Perform jam protection module self-learning in following conditions:

1. After locking occurs twice continuously
2. After replacing body control module
3. After replacing power glass regulator
4. After vehicle powers off

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Learning Function (Jam Protection Module Initialization)

1. When vehicle passes through bumps, hollow road surface during driving, one-button window UP operation is interrupted and window may reverse and go down because door system suffers action of gravity suddenly. Probability of rollback occurrence by mistake is low, and it is normal.
2. Learning function includes manual learning and diagnostic tester learning

   During normal use of window regulating system, such as entering "jam protection canceling" condition without auto window UP (jam protection function), jam protection window regulating system resumes to multiple functions by using manual learning.

   It is necessary to perform diagnostic tester learning when replacing door regulating system related mechanisms (such as glass regulator, glass run etc.), to make sure system parameters can be updated. After completing learning, clear the fault codes using diagnostic tester.

   Make sure there is no obstacle in window range during learning, manual learning steps are as follows:

   (a) Turn ENGINE START STOP switch to ON.
   (b) Operate window glass to raise until reaching top manually and lock it for 2 seconds.
   (c) Release the switch.
   (d) Operate window glass to go down until reaching bottom manually and keep it lock for 2 seconds.
   (e) Release the switch.
   (f) Try the auto window UP function.

Window Jam Protection Learning with Diagnostic Tester

1. Enter diagnostic interface, select "BCM (Body Control Module)" on diagnostic tester interface to enter next interface.

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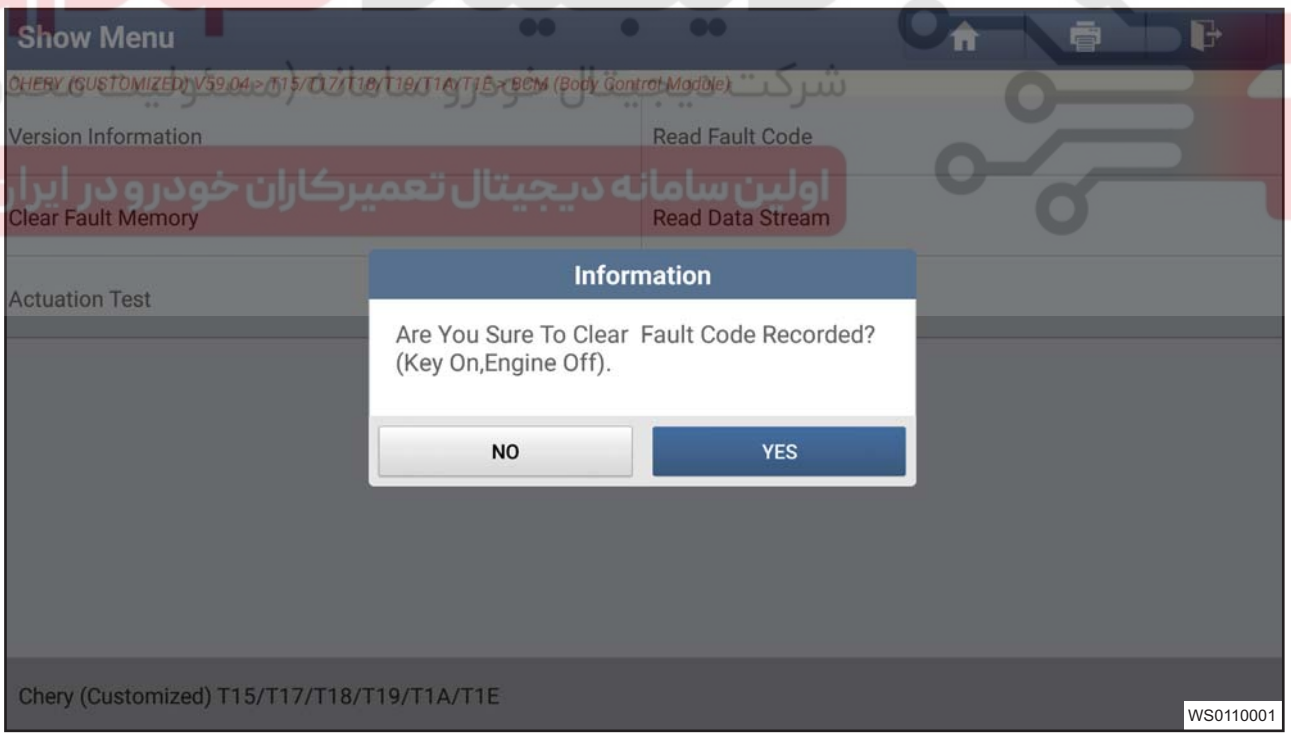
2. Click "Clean Fault Memory".

3. "Are You Sure To Clear Fault Code Recorded? (Key On, Engine Off)" is displayed on diagnostic tester screen and Click "Yes" to enter next interface.



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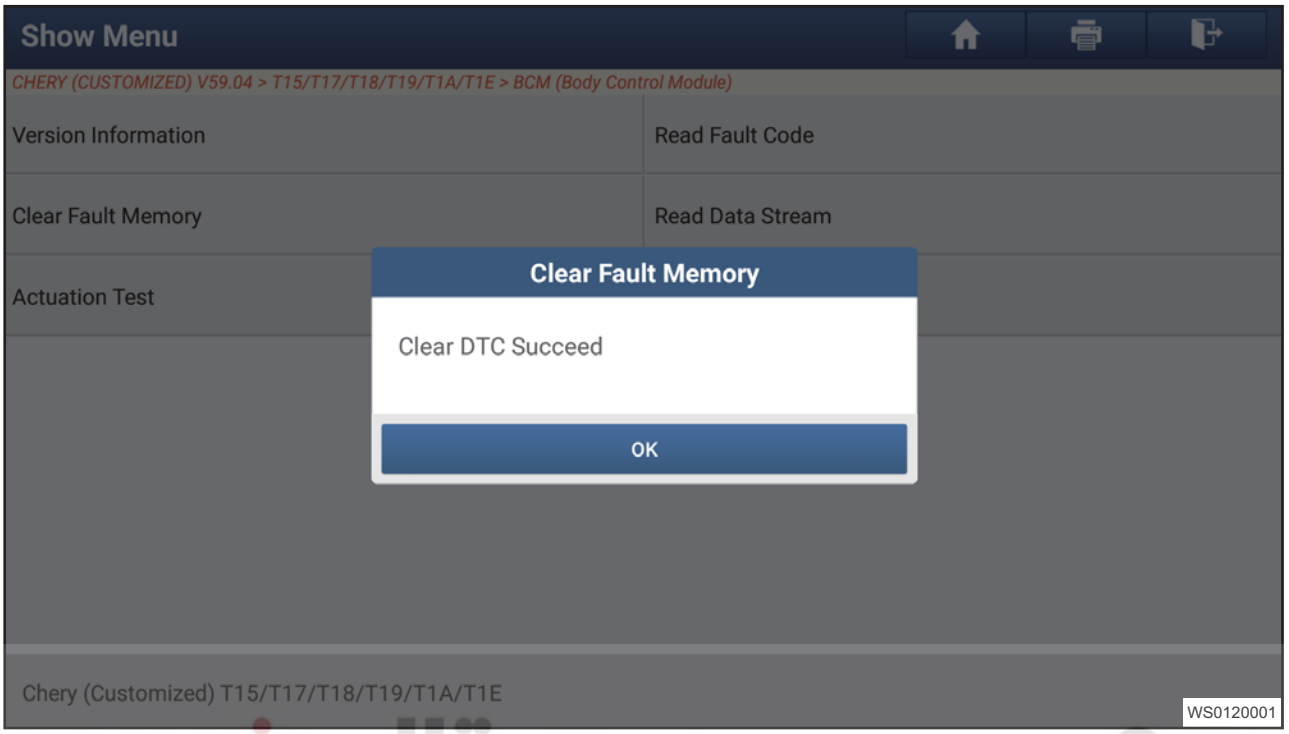
4. "Clear DTC Succeed" is displayed on diagnostic tester screen, click "OK".



5. Select "Special Function" on diagnostic tester interface and click it to enter.

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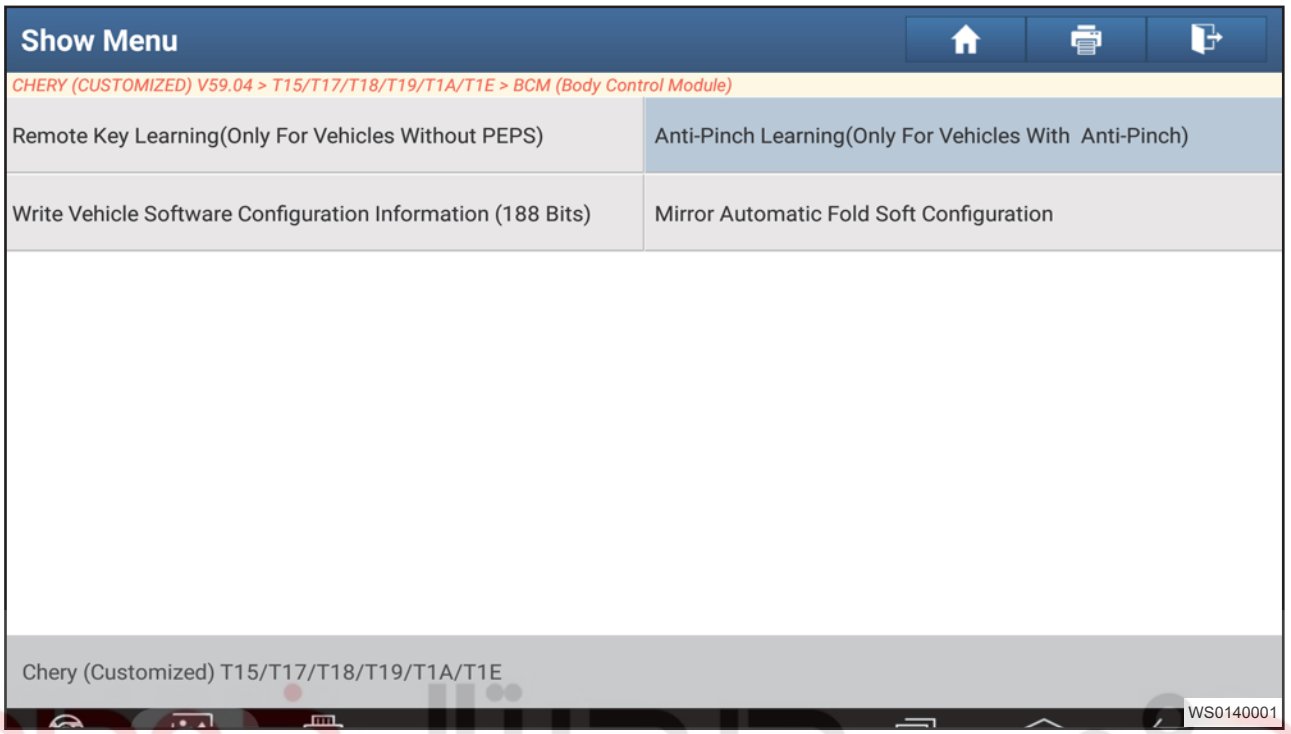
6. Select "Anti-Pinch Learning (Only For Vehicles With Anti-Pinch)" on diagnostic tester interface and click it to enter.



7. At this time, window jam protection learning will be performed.

8. Window glass self-learning is succeeded.

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Read Window Condition of Vehicle Equipped with Jam Protection with Diagnostic Tester

1. "Window UP" is displayed as window is in up condition, "Window Down" is displayed as window is in down condition, and "No Operation" is displayed as window has no operation.
   - Front left window motor operation condition: No Operation/Window UP/Window Down
   - Front right window motor operation condition: No Operation/Window UP/Window Down
   - Rear left window motor operation condition: No operation/Window UP/Window Down
   - Rear right window motor operation condition: No Operation/Window UP/Window Down
2. "Initialization finished" is displayed after the self-learning of window jam protection function is finished. Otherwise, "Initialization failed" is displayed.
   - Front left window initialization condition: Initialization failed/Initialization finished
   - Front right window initialization condition: Initialization failed/Initialization finished
   - Rear left window initialization condition: Initialization failed/Initialization finished
   - Rear right window initialization condition: Initialization failed/Initialization finished
3. If the window is operated repeatedly within a short time, window regulator motor will be burnt due to overheating. The control function of this window switch will be disabled actively to protect motor. Data stream of diagnostic tester shows: In Protection Mode; Otherwise, it shows: Not in Protection Mode.
   - Front left window motor heat protection condition: Not in Heat Protection/In Heat Protection
   - Front right window motor heat protection condition: Not in Heat Protection/In Heat Protection
   - Rear left window motor heat protection condition: Not in Heat Protection/In Heat Protection
   - Rear right window motor heat protection condition: Not in Heat Protection/In Heat Protection

Active Test

1. Enter diagnostic interface and click "BCM (Body Control Module)".

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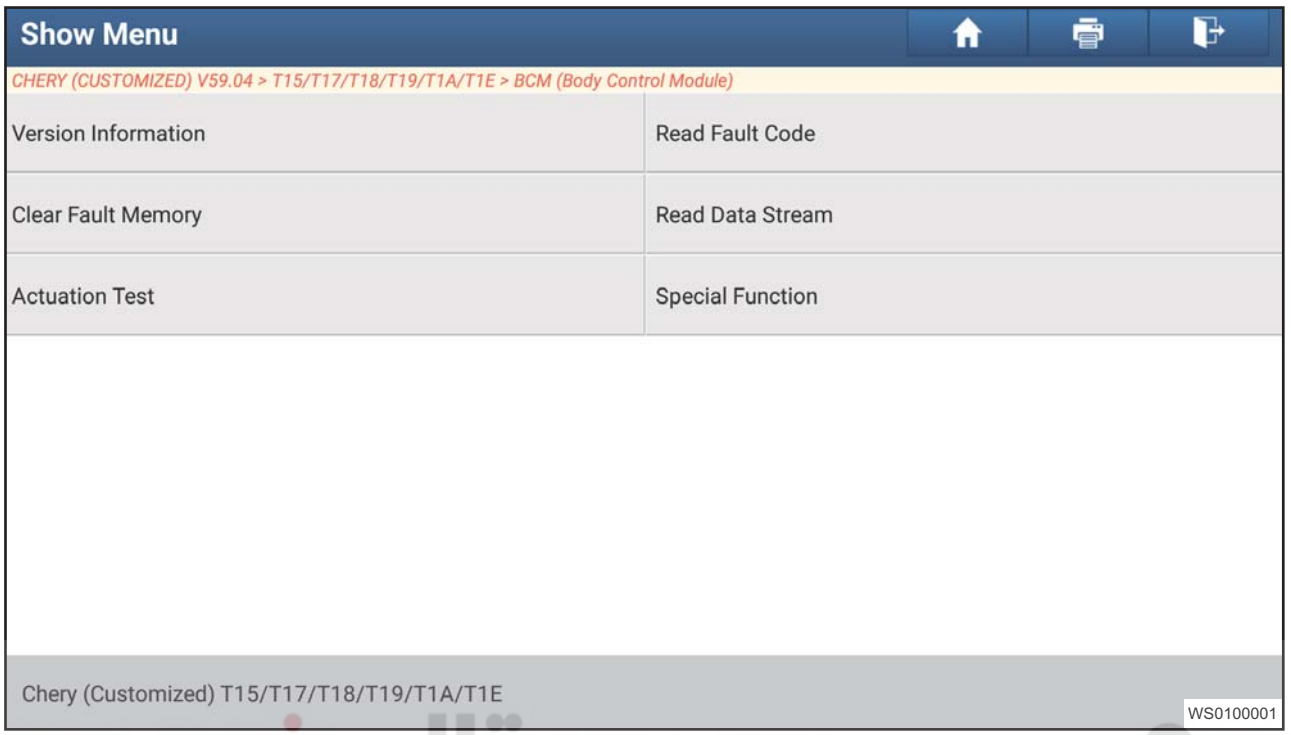
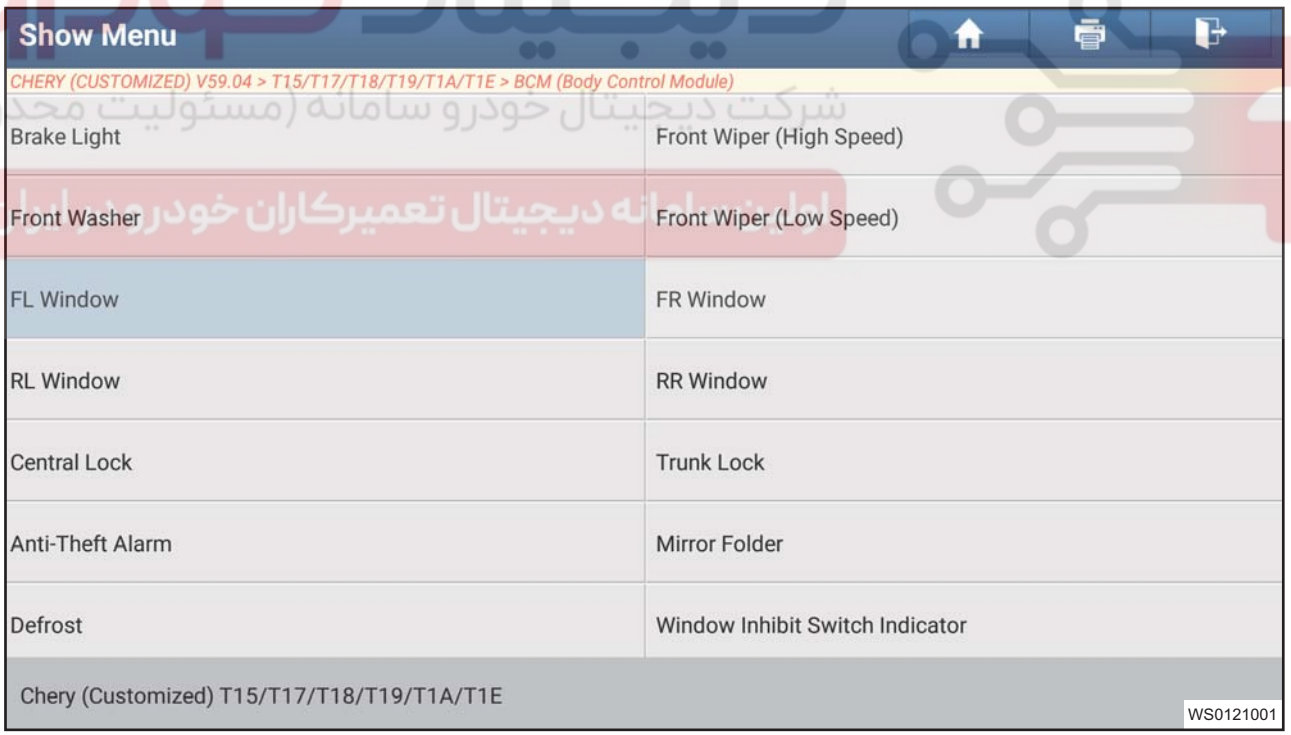
2. Enter next interface and click "Actuation Test".



3. Enter next interface, and click "FL Window".



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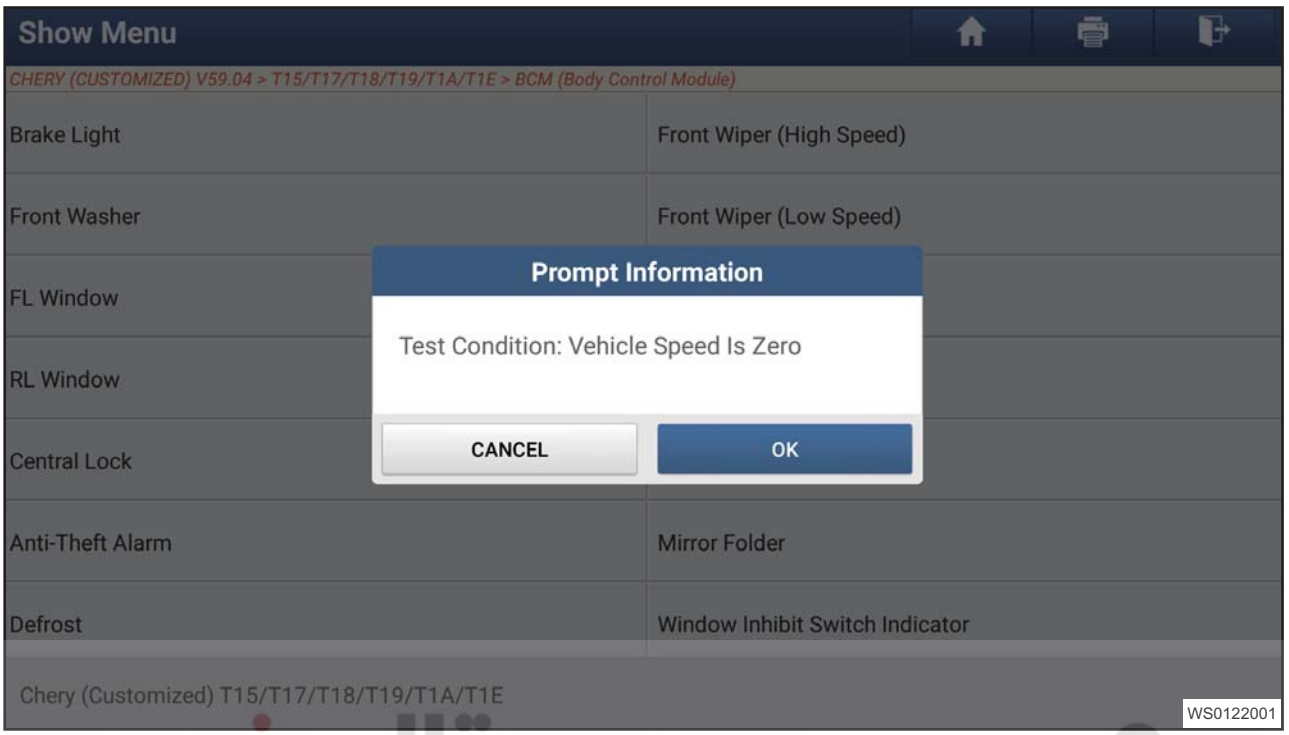
4. The diagnostic tester interface shows "Test Condition: Vehicle Speed Is Zero" and click "OK".



5. Enter next interface and click "Window Up", and front left window performs window up operation.

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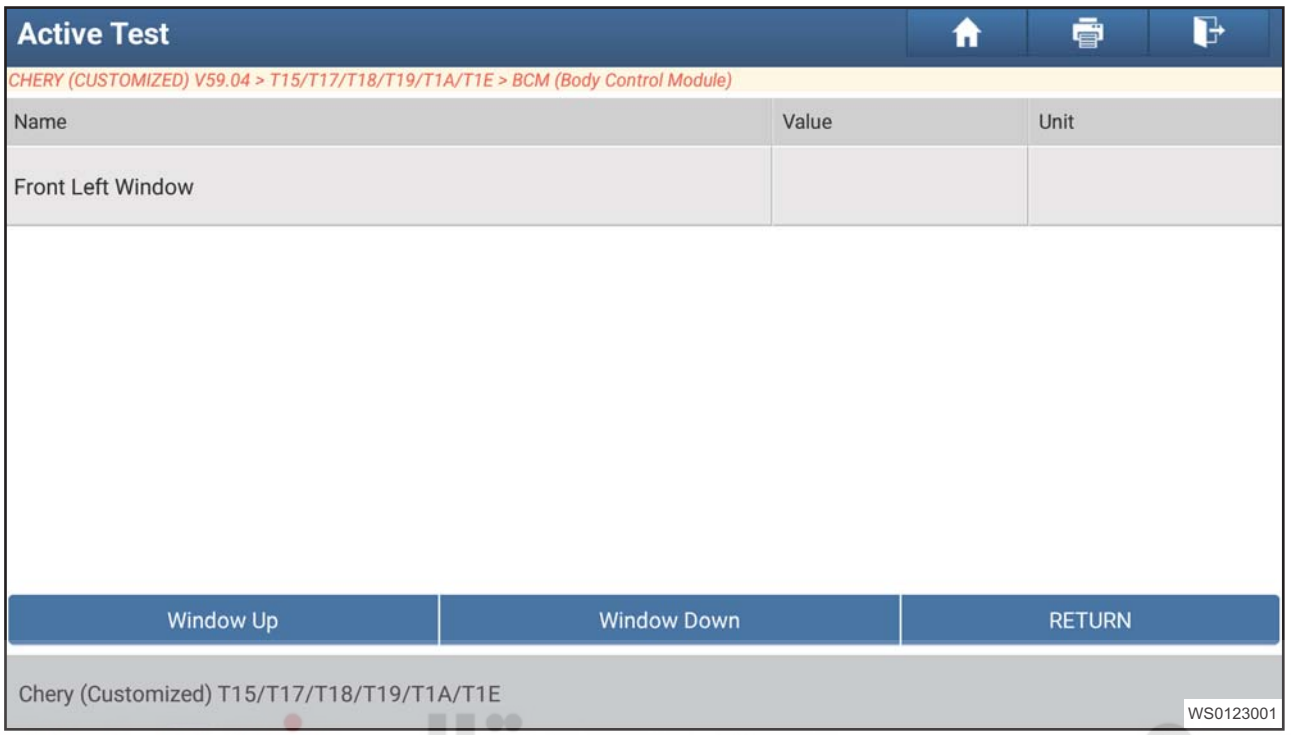
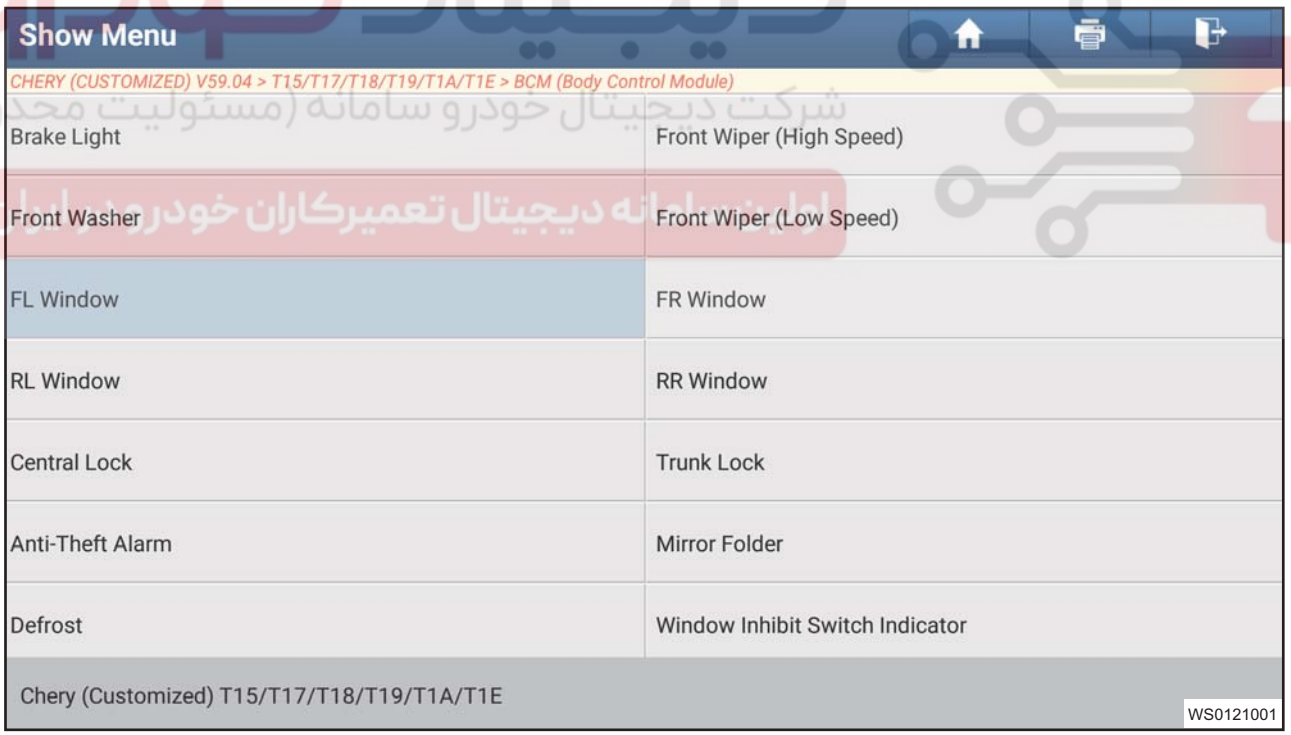
6. Click "Window Down", and front left window performs window down operation.



7. Return to the previous page and click "FR Window".



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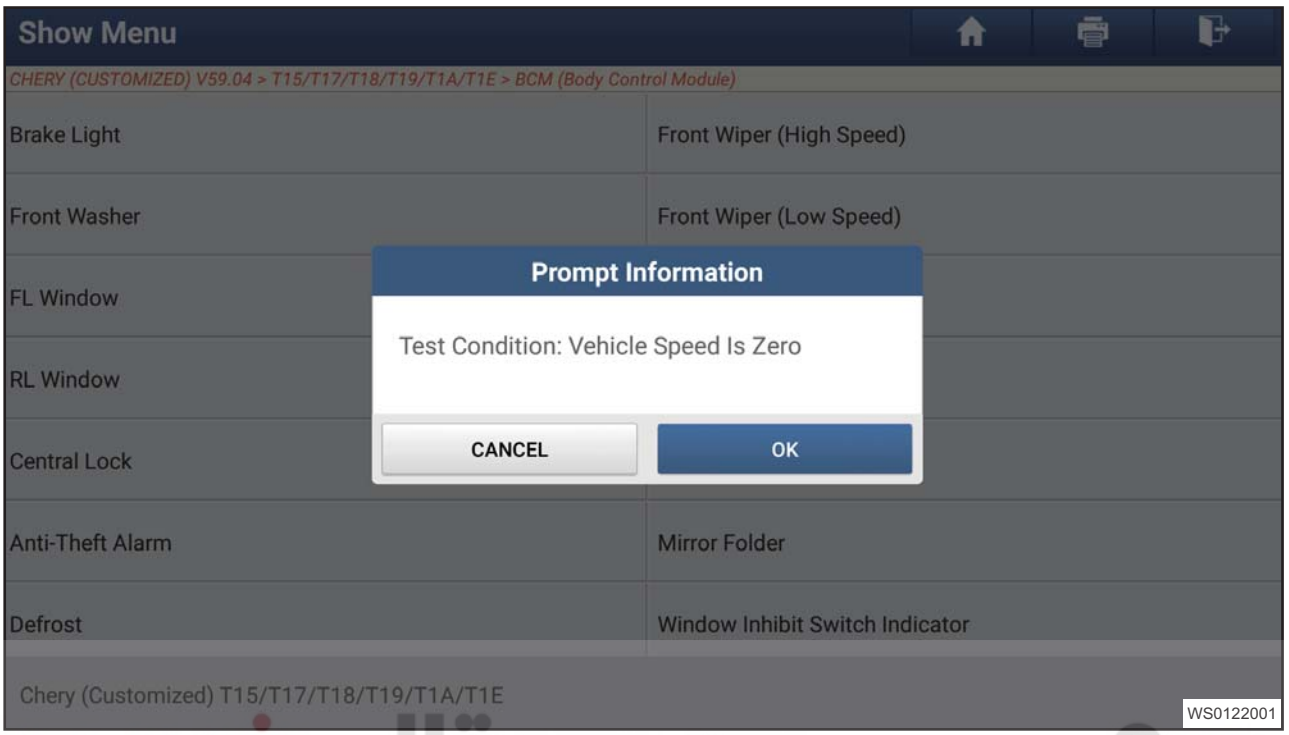
8. The diagnostic tester interface shows "Test Condition: Vehicle Speed Is Zero" and click "OK".



9. Enter next interface and click "Window Up", and front right window performs window up operation.

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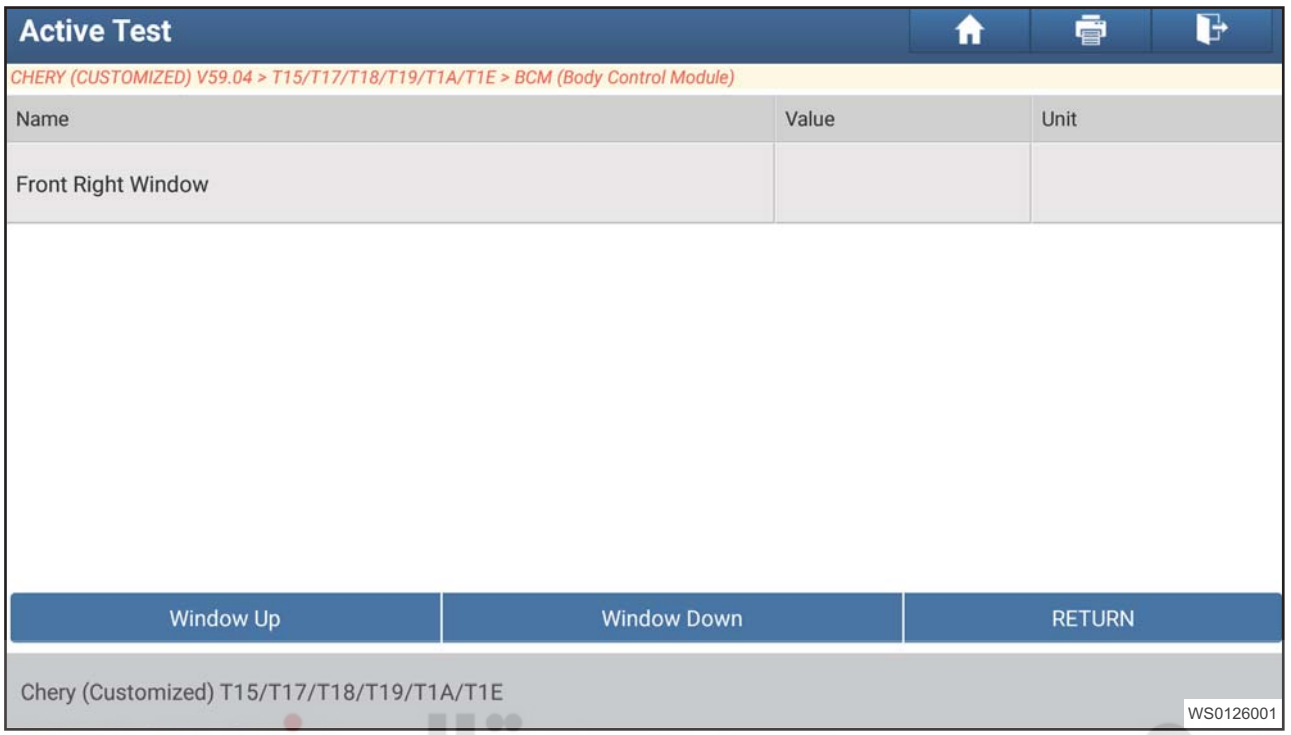
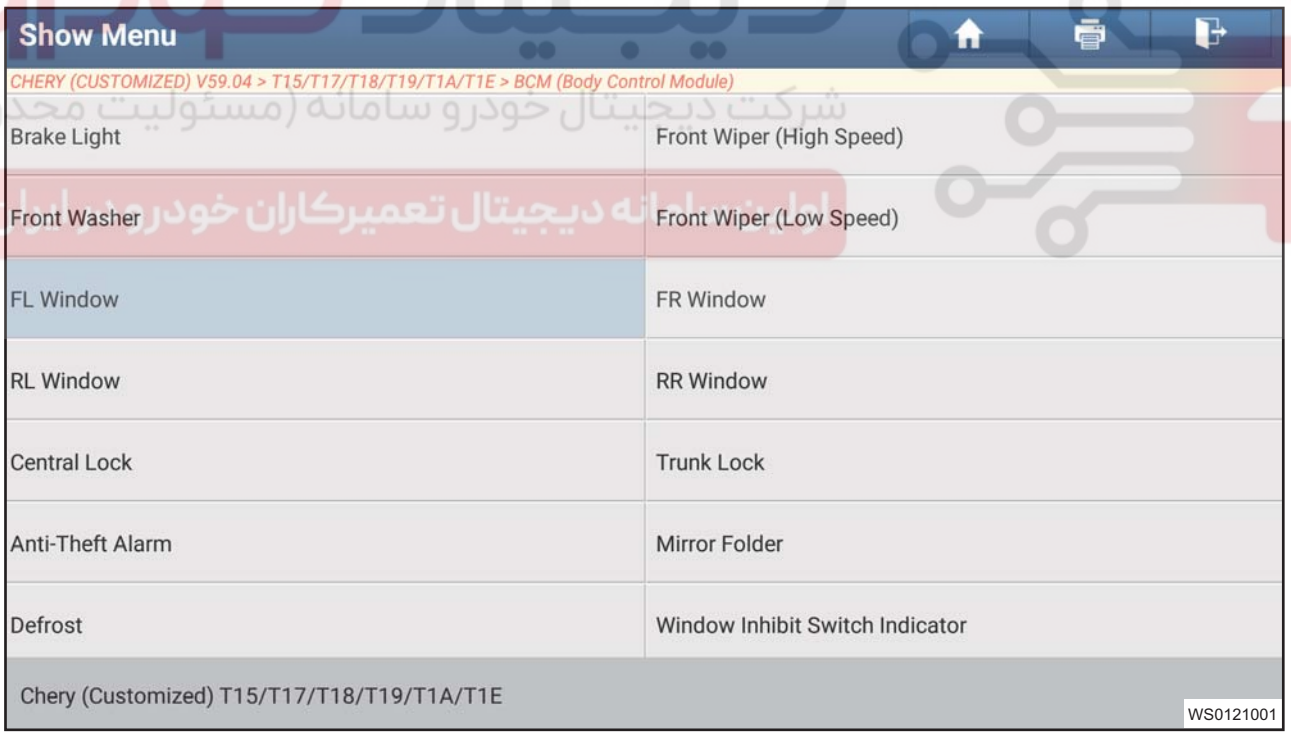
10. Click "Window Down", and front right window performs window down operation.



11. Return to the previous page and click "RL Window".



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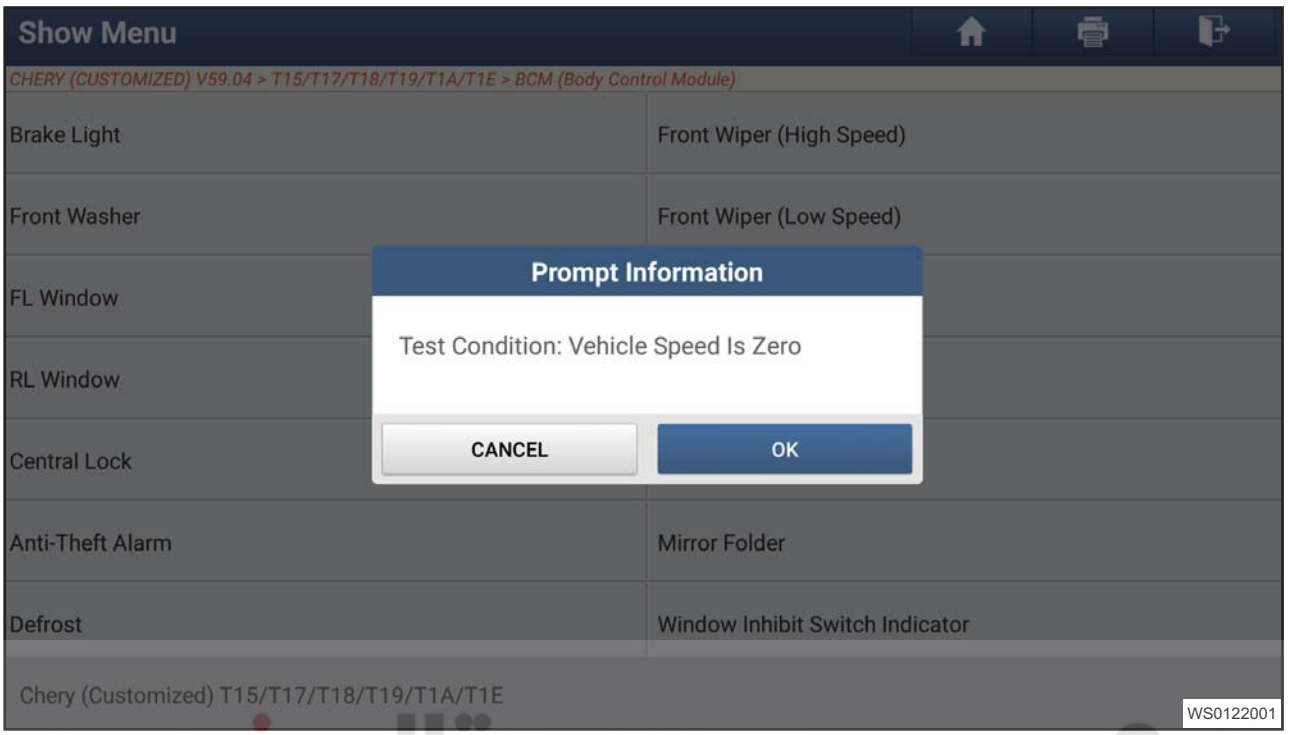
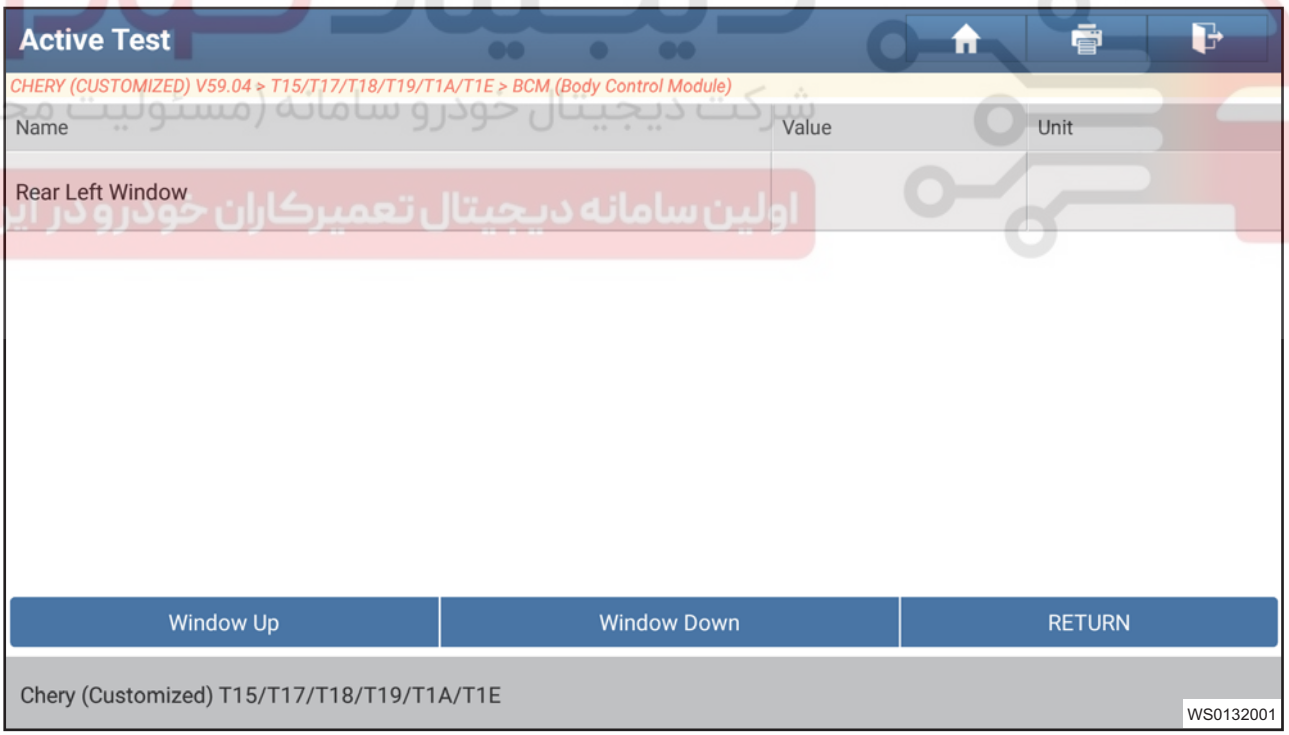
12. The diagnostic tester interface shows "Test Condition: Vehicle Speed Is Zero" and click "OK".



13. Enter next interface and click "Window Up", and rear left window performs window up operation.



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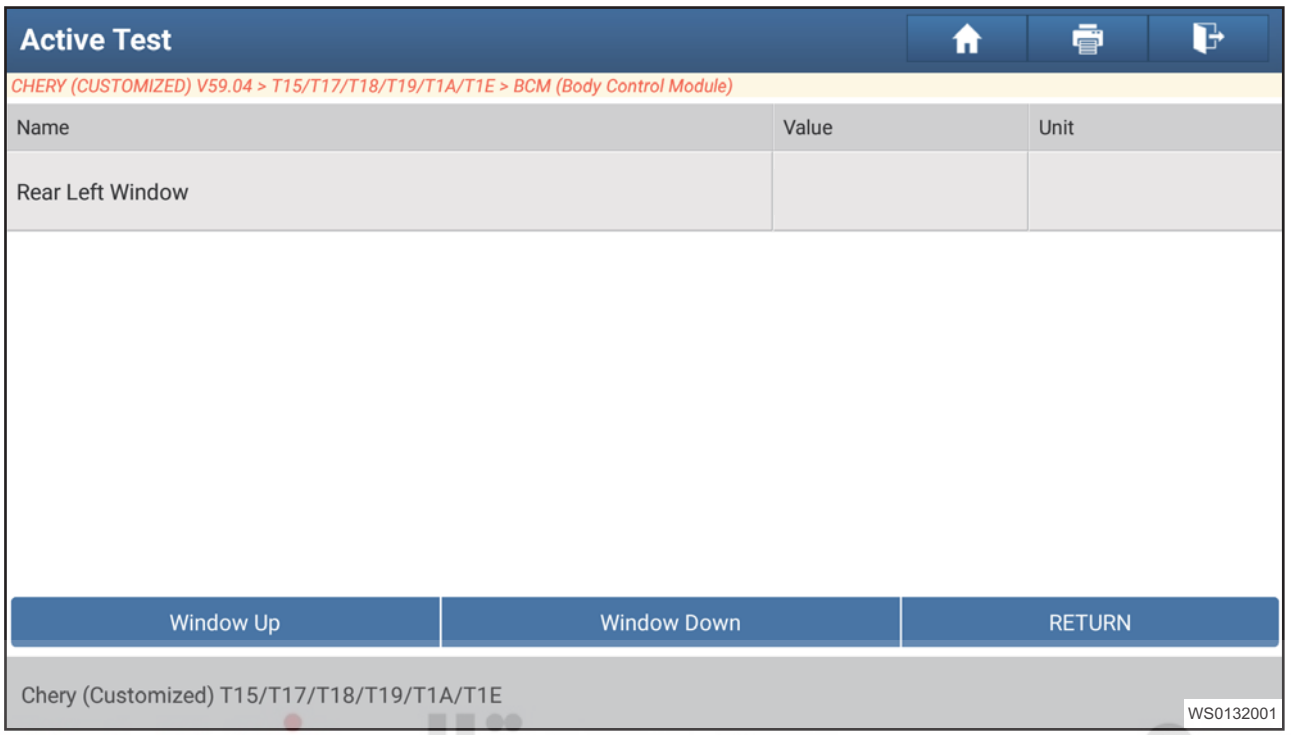
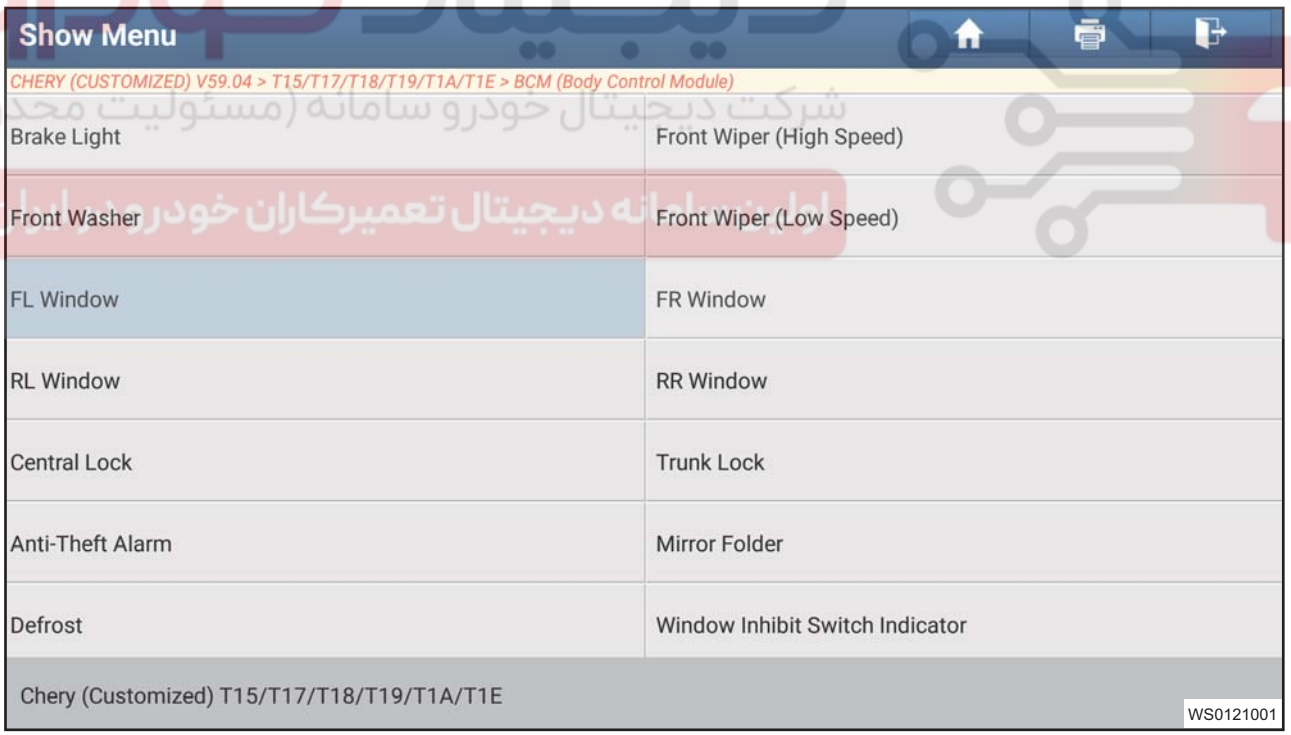
14. Click "Window Down", and rear left window performs window down operation.



15. Return to the previous page and click "RR Window".



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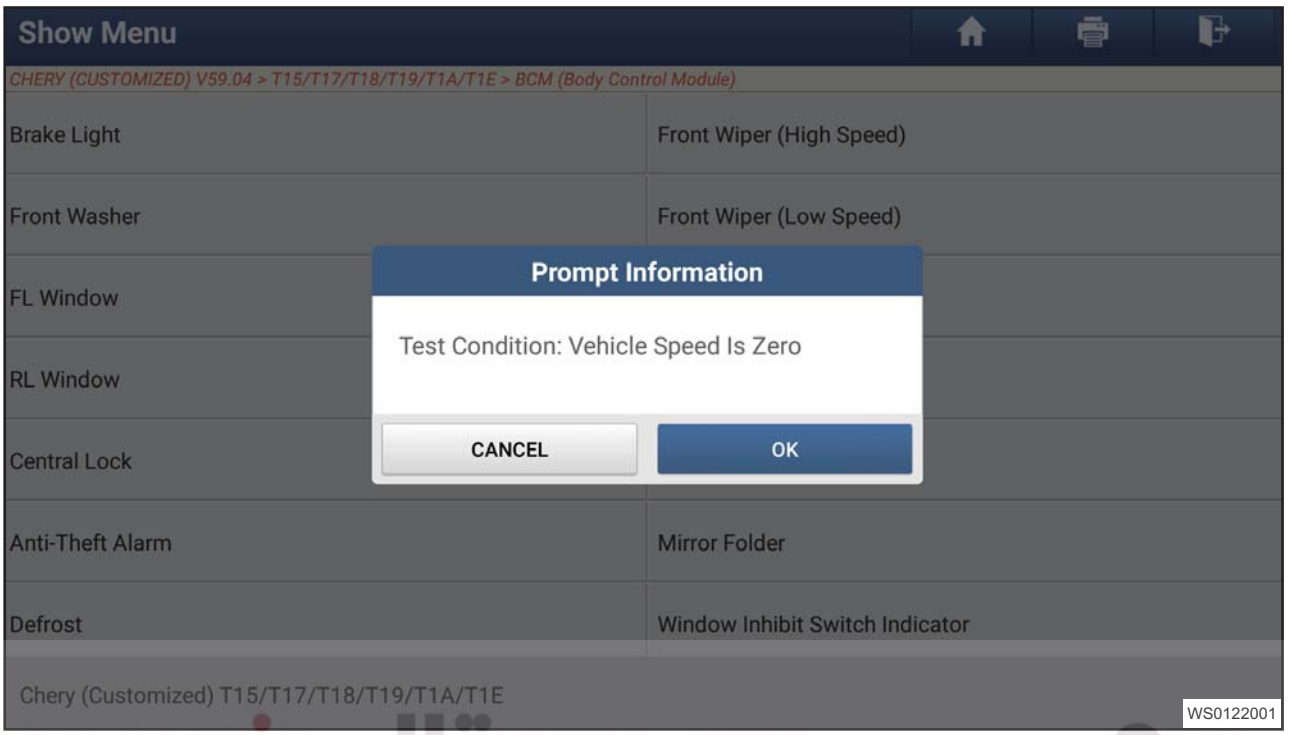
16. The diagnostic tester interface shows "Test Condition: Vehicle Speed Is Zero" and click "OK".



17. Enter next interface and click "Window Up", and rear right window performs window up operation.

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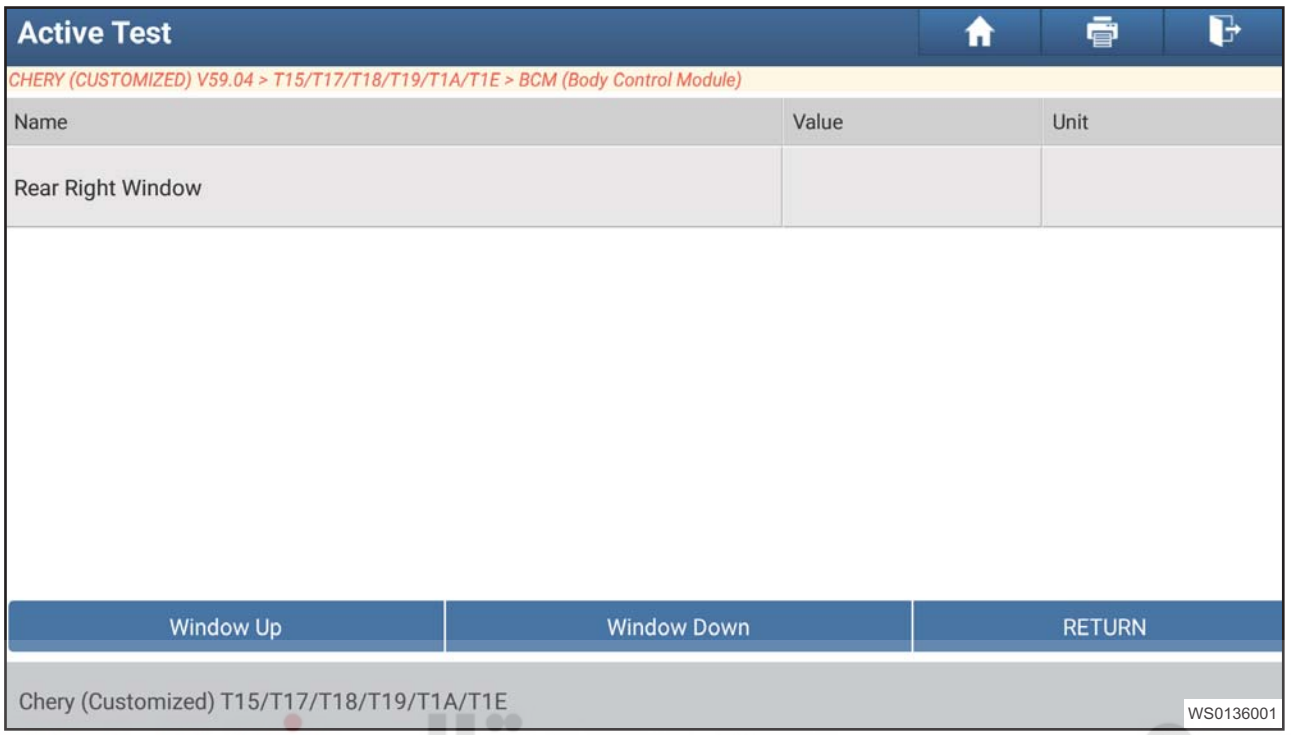
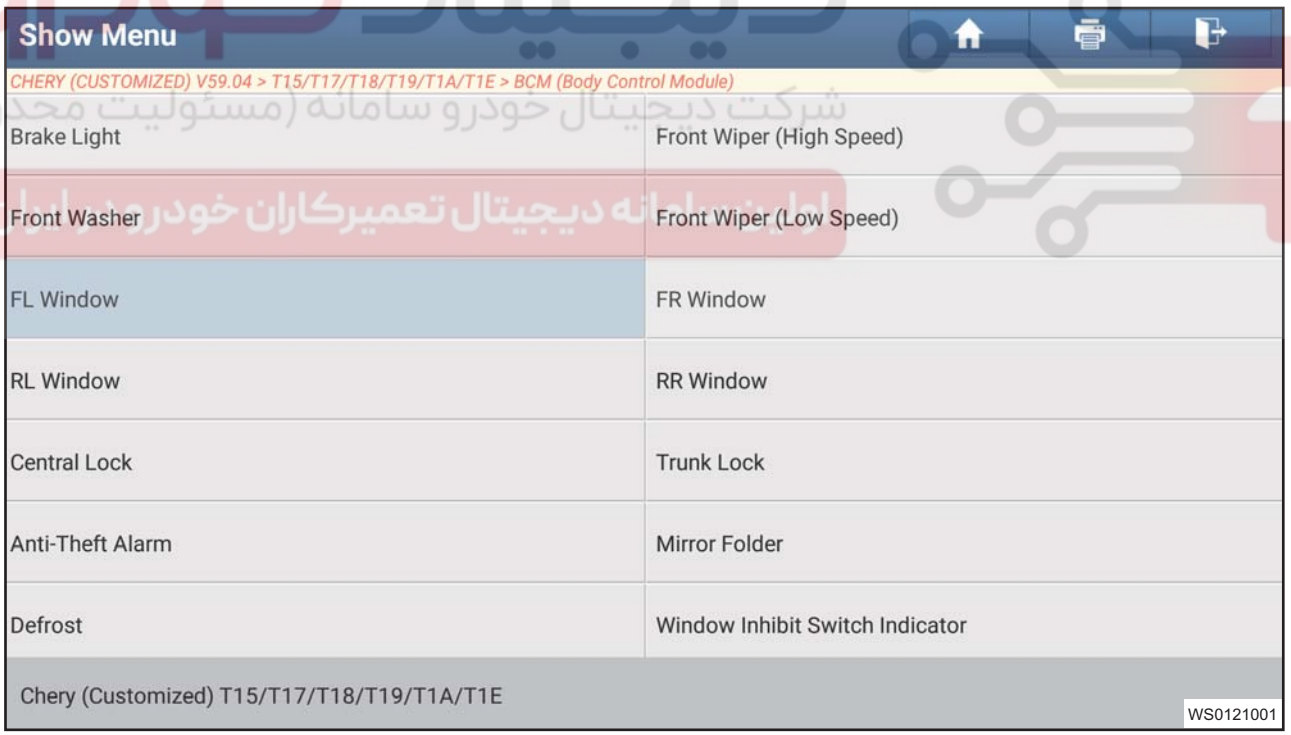
18. Click "Window Down", and rear right window performs window down operation.



19. Return to the previous page and click "Defrost".



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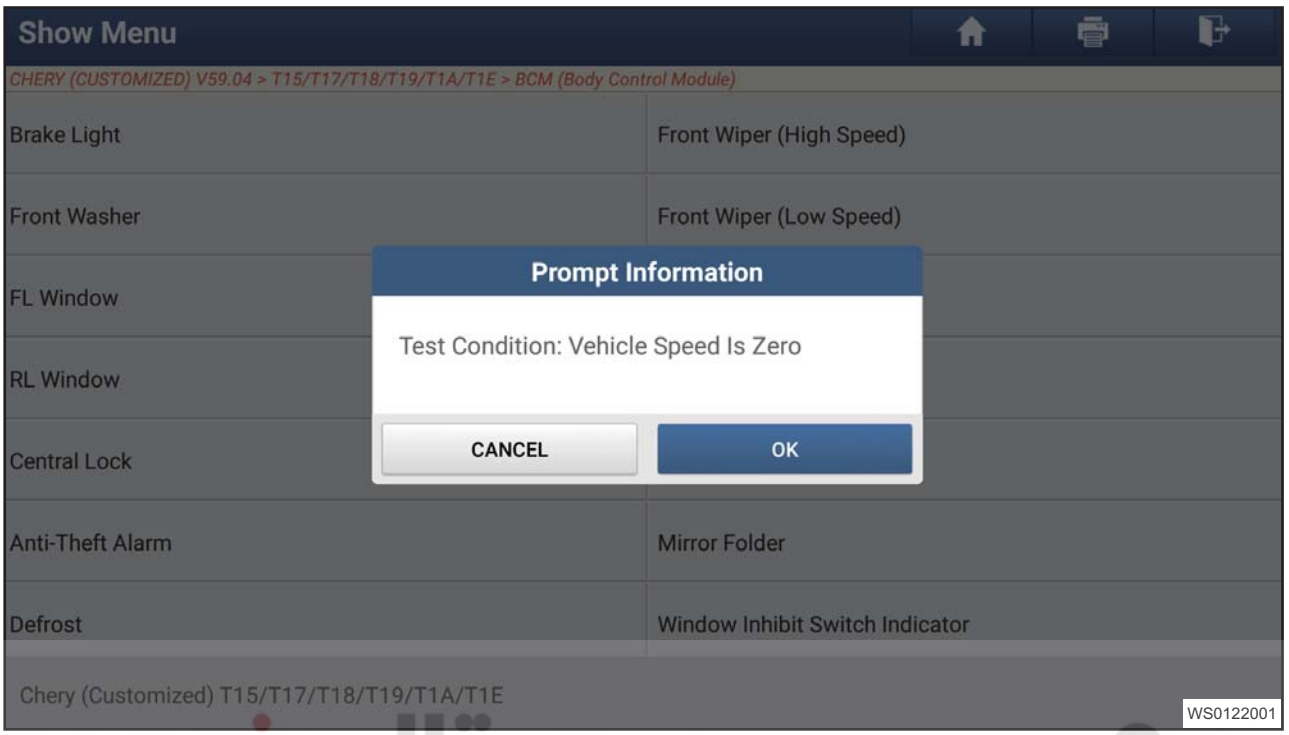
20. The diagnostic tester interface shows "Test Condition: Vehicle Speed Is Zero" and click "OK".



21. Enter next interface and click "ON", and defroster function of vehicle will be activated.

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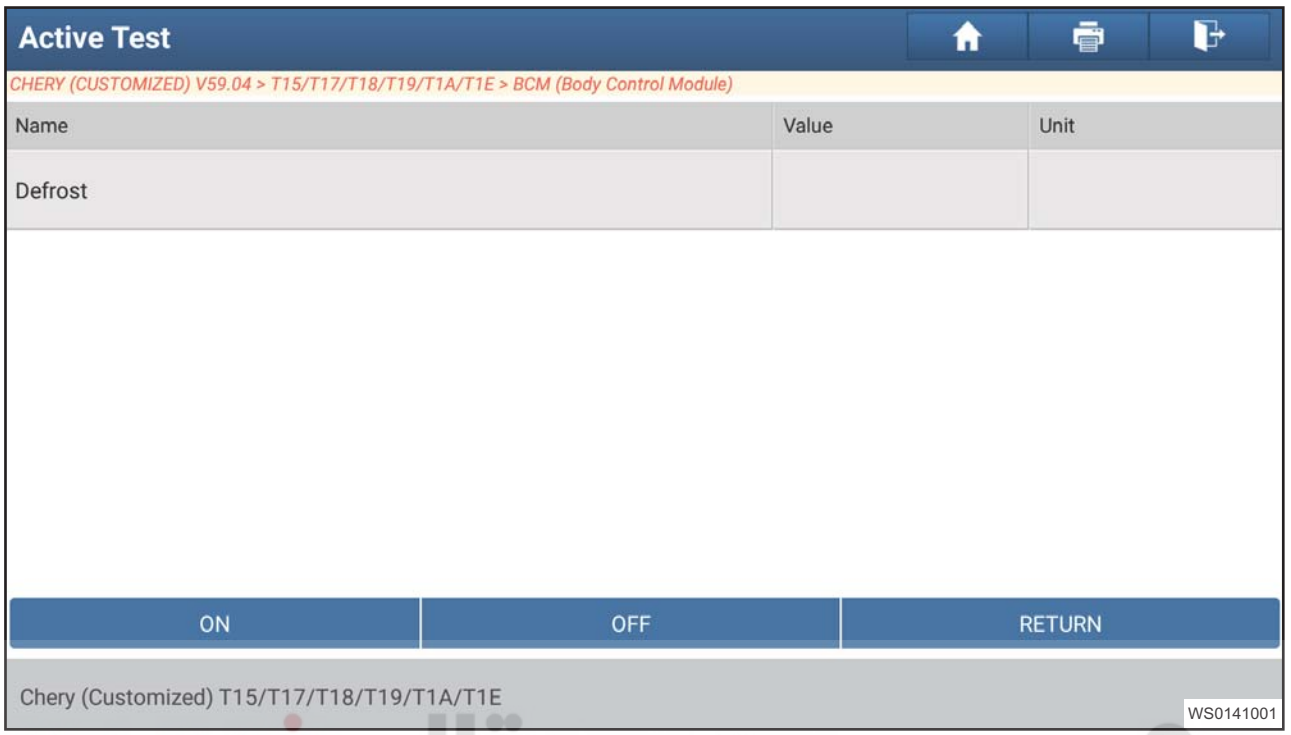
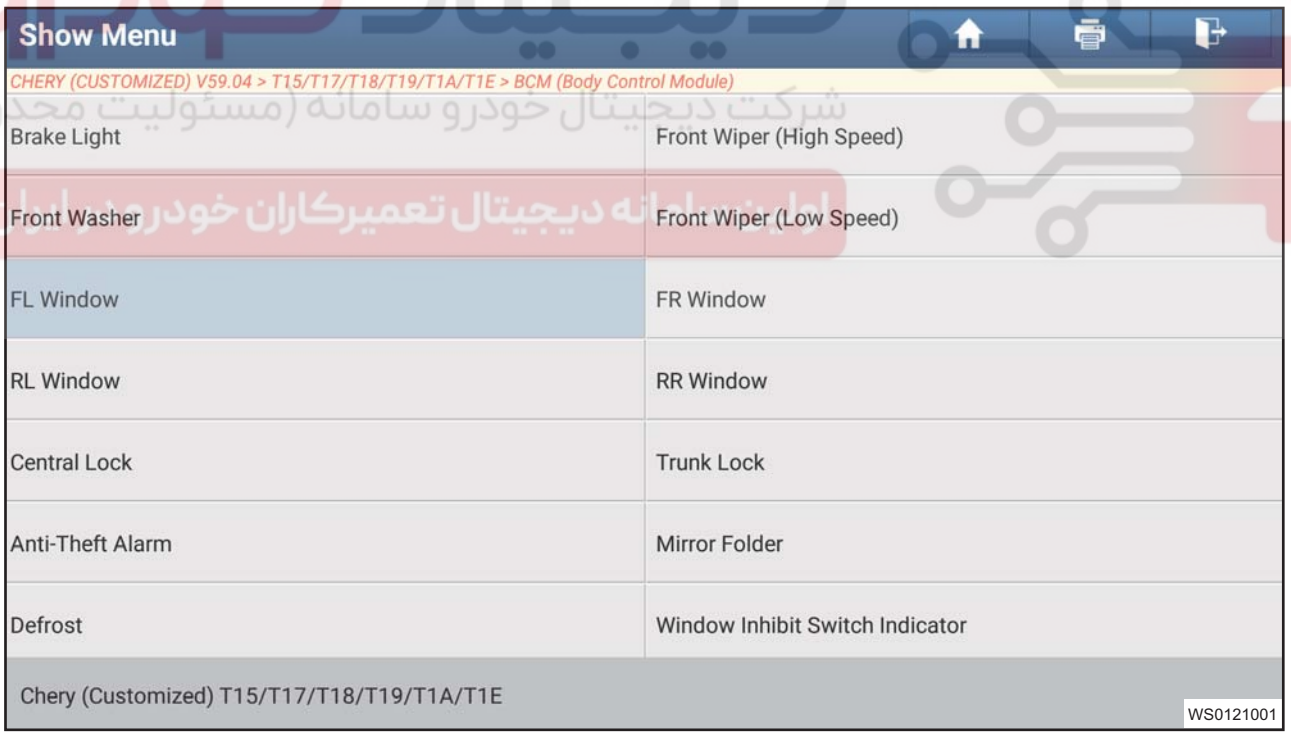
22. Click "OFF", and defroster function of vehicle will be deactivated.



23. Return to the previous page and click "Window Inhibit Switch Indicator".



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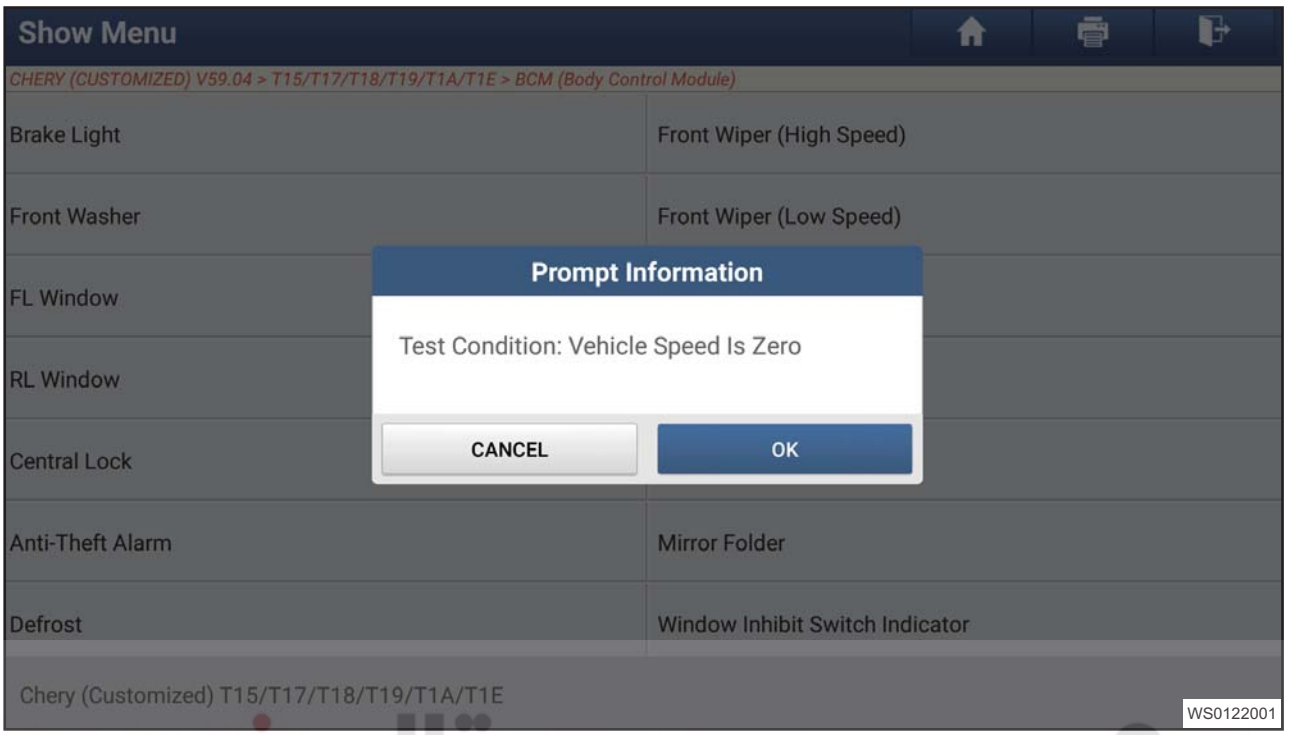
24. The diagnostic tester interface shows "Test Condition: Vehicle Speed Is Zero" and click "OK"



25. Enter next interface and click "ON", and window regulator disabled switch indicator light will be turn ON.

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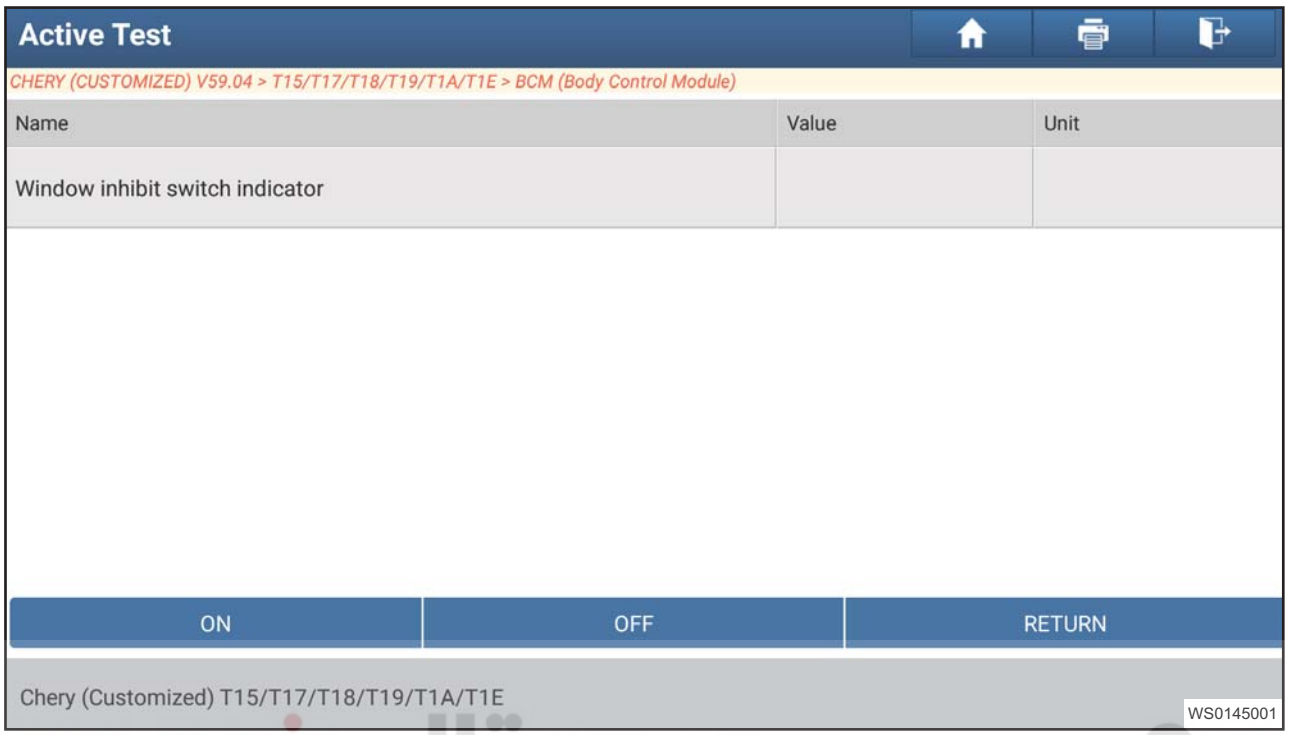
26. Click "OFF" and window regulator disabled switch indicator light will be turn OFF.



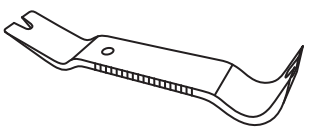
Specifications

Torque Specifications

Description	Torque (N·m)
Front Door Glass Rear Guide Rail Assembly Fixing Bolt	9 ± 1.5
Front Door Power Glass Regulator Fixing Nut and Bolt	9 ± 1.5
Rear Door Glass Guide Rail Assembly Fixing Bolt	9 ± 1.5
Rear Door Power Glass Regulator Fixing Nut and Bolt	9 ± 1.5

Tools

Special Tool

Interior Crow Plate	 RCH002506

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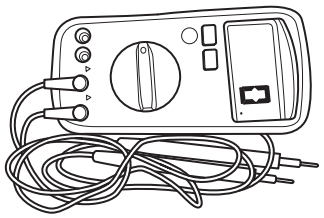
General Tool

Digital Multimeter	 RCH0002006

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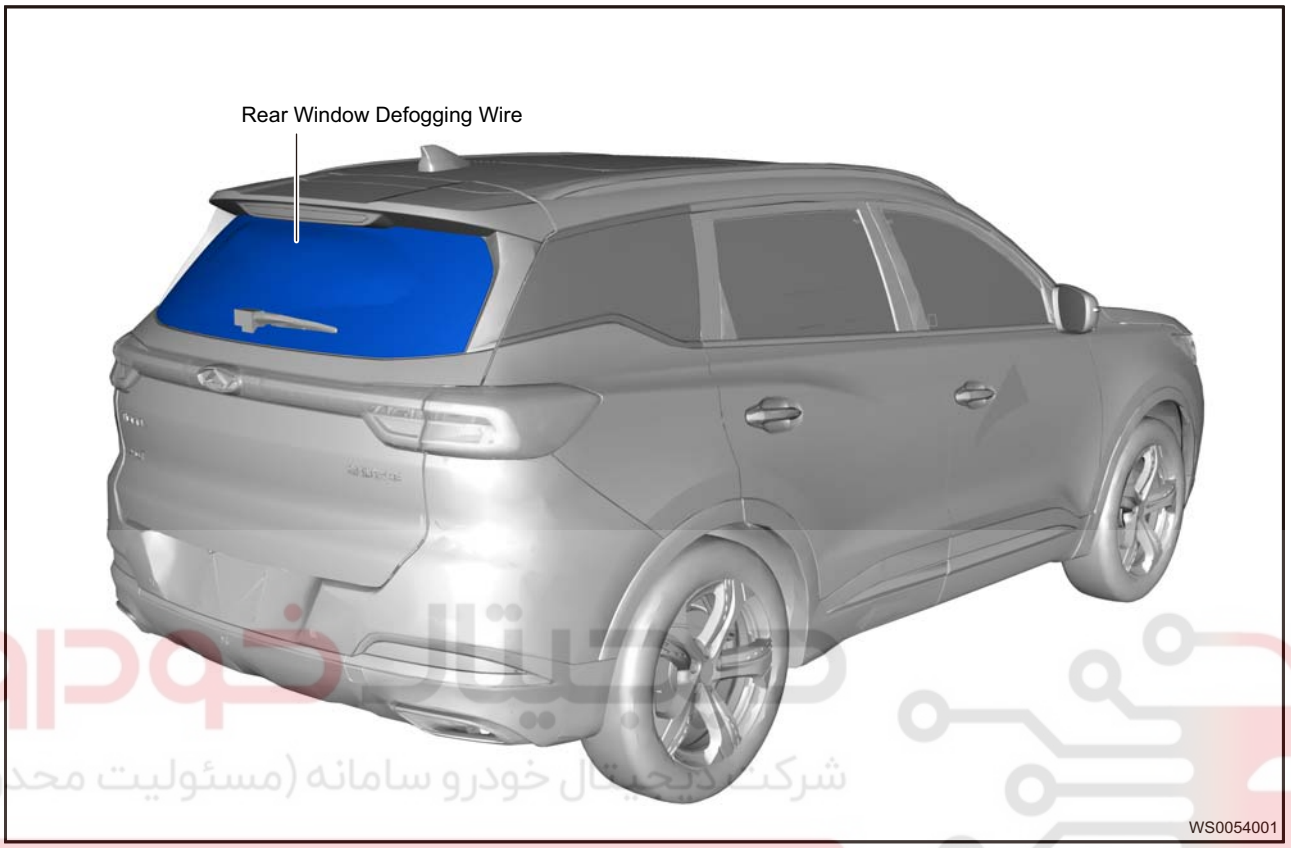
Rear Windshield

Description

Rear defroster



Turn on the rear defroster switch, heat the rear defroster heat wire to remove fog, frost or water steam on the rear windshield, gaining clear view. To turn on the rear defroster, it is necessary to turn ENGINE START STOP switch to OFF and press rear defroster switch. Rear defroster switch indicator comes on, while the indicator on rear defroster switch starts to work. Rear defroster stops operating and the indicator goes off after the rear defroster switch is pressed again.

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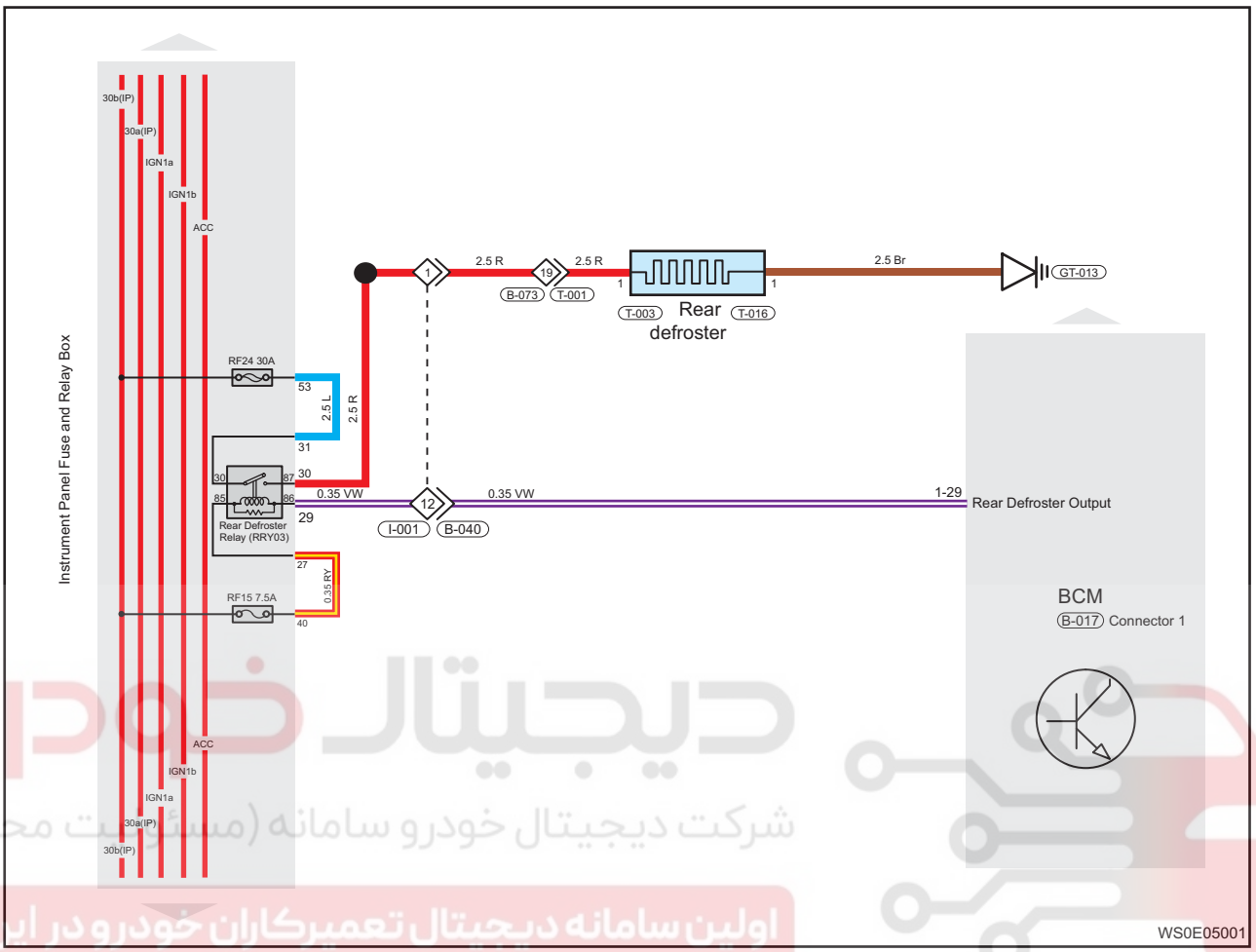
Circuit Diagram

Power Window Control System Circuit Diagram



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DIAGNOSIS & TESTING

Problem Symptoms Table

Symptom	Suspected Area
Rear defroster switch is turned on but does not operate	Fuse
	Rear defroster switch
	Rear defroster wire
	Wire harness or connector
	Ground

Diagnostic Tools

Digital Multimeter

Hint:

- Troubleshoot electrical malfunctions and wire harness system.
- Look for basic malfunction.
- Measure voltage, current and resistance.

Diagnostic Help

1. Confirm that malfunction is current, and carry out diagnostic test and repair procedures.
2. Only use a digital multimeter to measure voltage of electronic system.
3. Refer to any Technical Bulletin that may apply to this malfunction.
4. Visually check the related wire harness.

Ground Inspection

Groundings are very important to entire circuit system, which are normal or not can seriously affect the entire circuit system. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) and oxidation may increase load resistance. This case will seriously affect normal operation of circuit. Check the ground points as follows:

1. Remove ground bolt or nut.
2. Check all contact surfaces for tarnish, dirt and rust, etc.
3. Clean as necessary to ensure that contact is in good condition.
4. Reinstall ground bolt or nut securely.
5. Check if add-on accessories interfere with ground circuit.
6. If several wire harnesses are crimped into one ground terminal, check for proper crimps. Make sure that all wire harnesses are clean and securely fastened while providing a good ground path.

Diagnostic Procedure

Hint

Use following procedures to troubleshoot the window glass.

1	**Vehicle brought to workshop**

Result

Proceed to
NEXT

NEXT

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2	Check battery voltage

Check if battery voltage is normal.

OK

Standard voltage: Not less than 12V

Result

Proceed to
OK
NG

NG → **Check and repair battery**

OK

3	Customer problem analysis

Result

Proceed to
NEXT

NEXT

4	Adjust, repair or replace

Result

Proceed to
NEXT

NEXT

5	Conduct test and confirm malfunction has been repaired

Result

Proceed to
NEXT

NEXT → **End**

1	Check control circuit fuse

(a) Turn ENGINE START STOP switch to OFF.

(b) Using voltage band of multimeter, check if fuses RF24 (30 A) and RF15 (7.5 A) are normal.

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Result

Proceed to
OK
NG

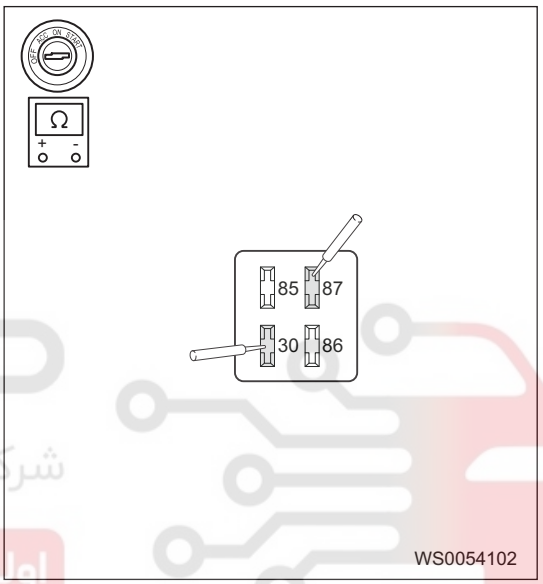
NG → **Replace fuse**

OK

2 Check rear defroster relay

(a) Remove rear defroster relay from instrument panel fuse and relay box.
(b) Check the rear defroster relay.

Multimeter Connection Terminal	Condition	Specified Condition
Terminal 30 - Terminal 87	When battery voltage is not applied between terminal 85 and terminal 86	∞
	When battery voltage is applied between terminal 85 and terminal 86	⩽ 1 Ω



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Result

Proceed to
OK
NG

NG → **Replace rear defroster relay**

OK

3 Inspect ground

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect negative battery cable, and check rear defroster and Body Control Module (BCM) ground points.

Result

Proceed to
OK
NG

NG → **Repair and replace ground point**

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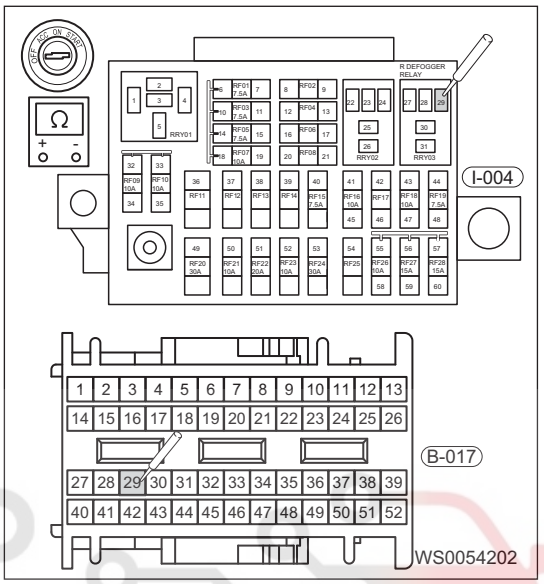
OK

4	Check rear defroster control circuit

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the instrument panel fuse and relay box connector I-004 and Body Control Module (BCM) connector B-017.
(c) Using ohm band of multimeter, check for continuity between I-004 (29) and B-017 (29).

OK

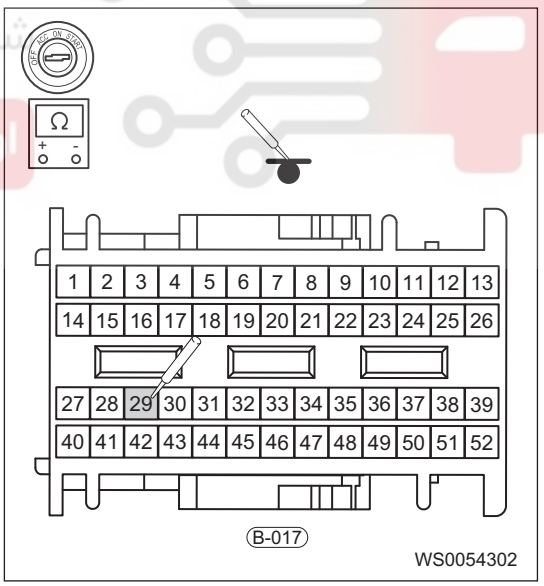
Multimeter Connection	Condition	Specified Condition
I-004 (29) - B-017 (29)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between B-017 (29) and ground.

OK

Multimeter Connection	Condition	Specified Condition
B-017 (29) - ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between B-017 (29) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
B-017 (29) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

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NG → **Repair or replace control circuit wire harness and connector**

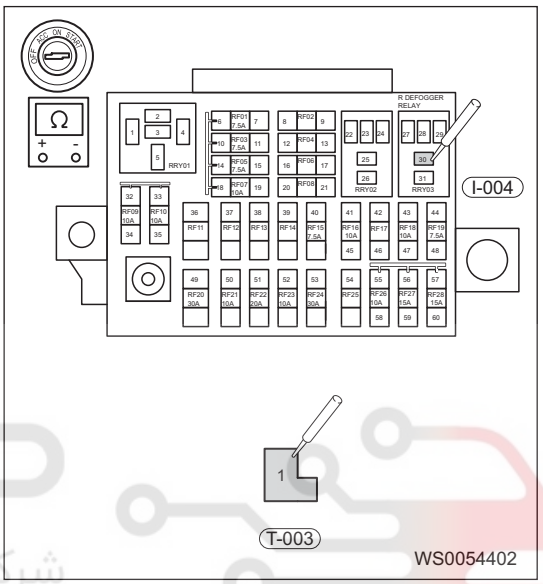
OK →

5	Check rear defroster actuation circuit

(a) Turn ENGINE START STOP switch to OFF.
(b) Remove rear defroster relay RRY03 and rear defroster connector T-003.
(c) Using ohm band of multimeter, check for continuity between instrument panel fuse and relay box I-004 (30) and T-003 (1).

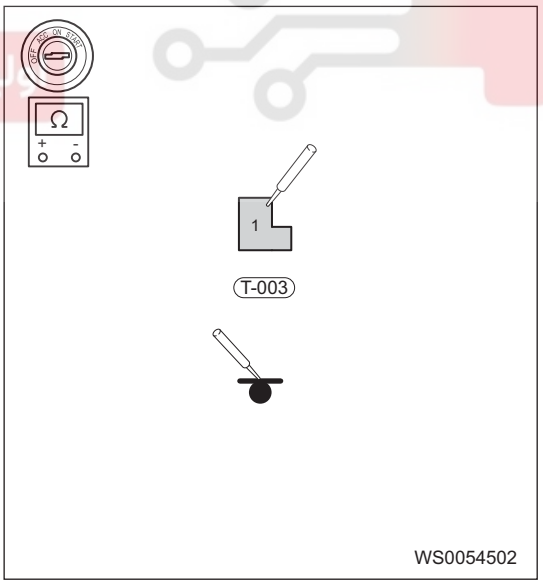
OK

Multimeter Connection	Condition	Specified Condition
I-004 (30) - T-003 (1)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between T-003 (1) and ground.

Multimeter Connection	Condition	Specified Condition
T-003 (1) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between T-003 (1) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
T-003 (1) - Battery (+)	ENGINE START STOP switch OFF	∞

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Result

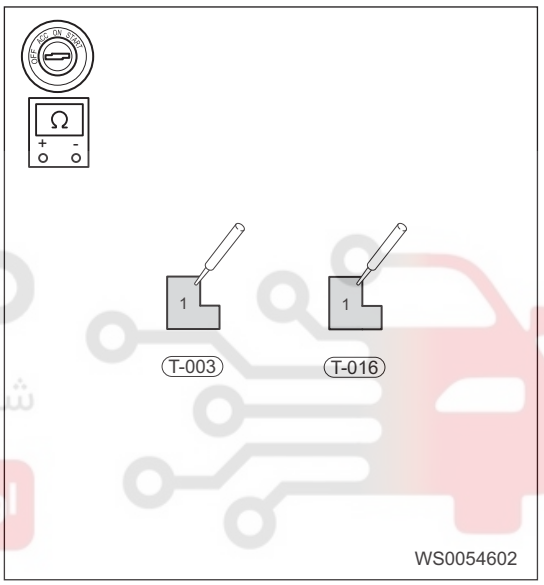
Proceed to
OK
NG

NG → **Repair or replace actuation circuit wire harness and connector**

OK

6	Check rear defroster glass

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Disconnect rear defroster connectors T-003 and T-016.
(c) Using ohm band of multimeter, check for continuity between T-003(1) and T-016 (1).



OK

Multimeter Connection	Condition	Specified Condition
T-003 (1) - T-016 (1)	ENGINE START STOP switch OFF	⩽ 1 Ω

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Result

Proceed to
OK
NG

OK → **Replace BCM assembly**

NG → **Replace rear defroster glass assembly**

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DIAGNOSIS & TESTING

Diagnostic Content

Diagnostic Trouble Code (DTC) Chart

Hint:

Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair or adjust faulty components, or replace as necessary.

Symptom	Suspected Area
Driver side/passenger side power window glass cannot be operated with driver side glass regulator switch	Power supply, fuse
	Driver side glass regulator switch
	Driver side/passenger side power glass regulator
	Wire harness or connector
	Body Control Module (BCM)
Passenger side power window glass cannot be operated with passenger side glass regulator control switch	Power supply, fuse
	Passenger side power glass regulator switch
	Passenger side power glass regulator
	Wire harness or connector
	Body Control Module (BCM)
Power window glass has intermittent problem	Ground
	Wire harness or connector

Diagnostic Tools

Diagnostic Tester

- Connect diagnostic interface for communication with vehicle.
- Diagnostic interface is located at driver side instrument panel crossmember.
- Diagnostic interface uses a trapezoidal design which can hold 16 terminals.

Digital Multimeter

- Troubleshoot electrical malfunctions and wire harness system.
- Look for basic malfunction.
- Measure voltage, current and resistance.

Diagnostic Help

- Connect diagnostic interface, and make it communicate with vehicle electronic module through data network.
- Confirm that malfunction is current, and carry out diagnostic test and repair procedures
- If DTC cannot be deleted, malfunction is current.
- Only use a digital multimeter to measure voltage of electronic system
- Refer to any Technical Bulletin that applied to the malfunction.
- Visually check the related wire harness
- Check and clean all BCM system grounds related to the latest DTC.
- If multiple trouble codes were set, use circuit diagrams and look for any common ground circuit or power supply circuit applied to DTC.

Intermittent DTC Troubleshooting

If malfunction is intermittent, perform the followings:

- Check if connector is loose.
- Check if wire harness is worn, pierced, pinched or partially broken.
- Wiggle related wire harness and connector and observe if signal in related circuit is interrupted.
- If possible, try to duplicate conditions under which DTC was set.
- Look for data that has changed or DTC to reset during wiggle test.

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- Check for broken, bent, protruded or corroded terminals.
- Inspect wheel speed sensors and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- Check and clean all wire harness connectors and ground parts related to DTC.
- If multiple trouble codes were set, refer to circuit diagrams to look for any common ground circuit or power supply circuit applied to DTC.
- Refer to any Technical Bulletin that may apply to this malfunction.

Ground Inspection

Ground points are very important to the proper operation of circuits. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) may increase load resistance. This situation may change the way in which a circuit works. Circuits are very sensitive to proper grounding. A loose or corroded ground can affect the control circuit. Check the ground points as follows:

1. Remove ground bolt or nut.
2. Check all contact surfaces for tarnish, dirt and rust, etc.
3. Clean as necessary to ensure that contact is in good condition.
4. Reinstall ground bolt or nut securely.
5. Check if add-on accessories interfere with ground circuit.
6. If several wire harnesses are crimped into one ground terminal, check for proper crimps. Make sure that all wire harnesses are clean and securely fastened while providing a good ground path.

DTC Confirmation Procedure

Confirm that battery voltage is over 12 V before performing following procedures

- Confirm that battery voltage is over 12 V before performing following procedures
- Turn ENGINE START STOP switch to OFF.
- Connect diagnostic interface, and make it communicate with vehicle electronic module through data network.
- Turn ENGINE START STOP switch to OFF.
- Use diagnostic tester to record and clear DTCs stored in BCM.
- Turn ENGINE START STOP switch to OFF and wait for several seconds.
- Turn ENGINE START STOP switch to OFF, select "Read DTC".
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnostic procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent.

Diagnostic Procedure

Hint

Use following procedures to troubleshoot the window glass.

1	**Vehicle brought to workshop**

Result

Proceed to
NEXT

NEXT

2	**Check battery voltage**

Check if battery voltage is normal.

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OK

Standard voltage: Not less than 12 V

Result

Proceed to
OK
NG

NG → **Recharge or replace battery**

OK

3	Customer problem analysis

Result

Proceed to
NEXT

NEXT

4	Check for DTCs (current DTC and history DTC)

Result

Proceed to
No DTC
Current DTC
History DTC

History DTC

5	Problem Repair (No DTC)

Result

Proceed to
NEXT

NEXT → **Go to step**

6	Troubleshoot according to Diagnostic Trouble Code (DTC) Chart

Result

Proceed to
NEXT

NEXT → **Go to step**

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7	Troubleshoot according to Problem Symptoms Table

Result

Proceed to
NEXT

NEXT

8	Adjust, repair or replace

Result

Proceed to
NEXT

NEXT

9	Conduct test and confirm malfunction has been repaired

Result

Proceed to
NEXT

NEXT End

Diagnostic Trouble Code (DTC) Chart

DTC	DTC Definition
B100C-13	Front Left Window Up Control Circuit-Circuit Open
B100C-71	Front Left Window Up Control Circuit-Actuator Stuck
B100D-13	Front Left Window Down Control Circuit-Circuit Open
B100D-71	Front Left Window Down Control Circuit-Actuator Stuck
B100E-13	Front Right Window Up Control Circuit-Circuit Open
B100E-71	Front Right Window Up Control Circuit
B100F-13	Front Right Window Down Control Circuit-Circuit Open
B100F-71	Front Right Window Down Control Circuit-Actuator Stuck
B1010-13	Rear Left Window Up Control Circuit-Circuit Open
B1010-71	Rear Left Window Up Control Circuit-Actuator Stuck
B1011-13	Rear Left Window Down Control Circuit-Circuit Open
B1011-71	Rear Left Window Down Control Circuit-Actuator Stuck
B1012-13	Rear Right Window Up Control Circuit-Circuit Open
B1012-71	Rear Right Window Up Control Circuit-Actuator Stuck
B1013-13	Rear Right Window Down Control Circuit-Circuit Open
B1013-71	Rear Right Window Down Control Circuit-Actuator Stuck
B1021-17	Anti-pinch Module Power Supply-Circuit Voltage Above Threshold
B1021-16	Anti-pinch Module Power Supply-Circuit Voltage Below Threshold
B1022-71	FL Window Button-Actuator Stuck
B1023-71	FR Window Button-Actuator Stuck

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DTC	DTC Definition
B1033-71	RL Window Button-Actuator Stuck
B1025-71	RR Window Button-Actuator Stuck
B1026-71	Passenger FR Window Button-Actuator Stuck
B1034-71	Passenger RL Window Button-Actuator Stuck
B1028-71	Passenger RR Window Button Short-Actuator Stuck
B1029-71	FL Window Relay-Actuator Stuck
B102A-71	FR Window Relay-Actuator Stuck
B102B-71	RL Window Relay-Actuator Stuck
B102C-71	RR Window Relay-Actuator Stuck
B102D-96	Anti-pinch Module Controller-Component Internal Failure
B102E-86	FL Window Motor Position Signal-Signal Invalid
B102F-86	FR Window Motor Position Signal-Signal Invalid
B1030-86	RL Window Motor Position Signal-Signal Invalid
B1031-86	RR Window Motor Position Signal-Signal Invalid
B1032-87	Lost Communication With Anti-pinch Module MCU-Missing Message

DTC Definition

DTC Type	Description
00	No Subtype Information
11	Circuit Short to Ground
12	Circuit Short to Power Supply
13	Circuit Open
15	Circuit Short to Power Supply or Open
16	Circuit Voltage Below Threshold
17	Circuit Voltage Above Threshold
18	Circuit Current Below Threshold
19	Circuit Current Above Threshold
1A	Circuit Resistance Below Threshold
1B	Circuit Resistance Above Threshold
1E	Circuit Resistance Exceed Range
29	Signal Invalid
47	System Safe Fault
49	Interior Electric Fault
54	No Calibration
55	Configuration Fault
71	Relay Stuck
86	Signal Invalid
87	Message Missing
88	Bus OFF
95	Incorrect Assembly
96	Component Internal Fault

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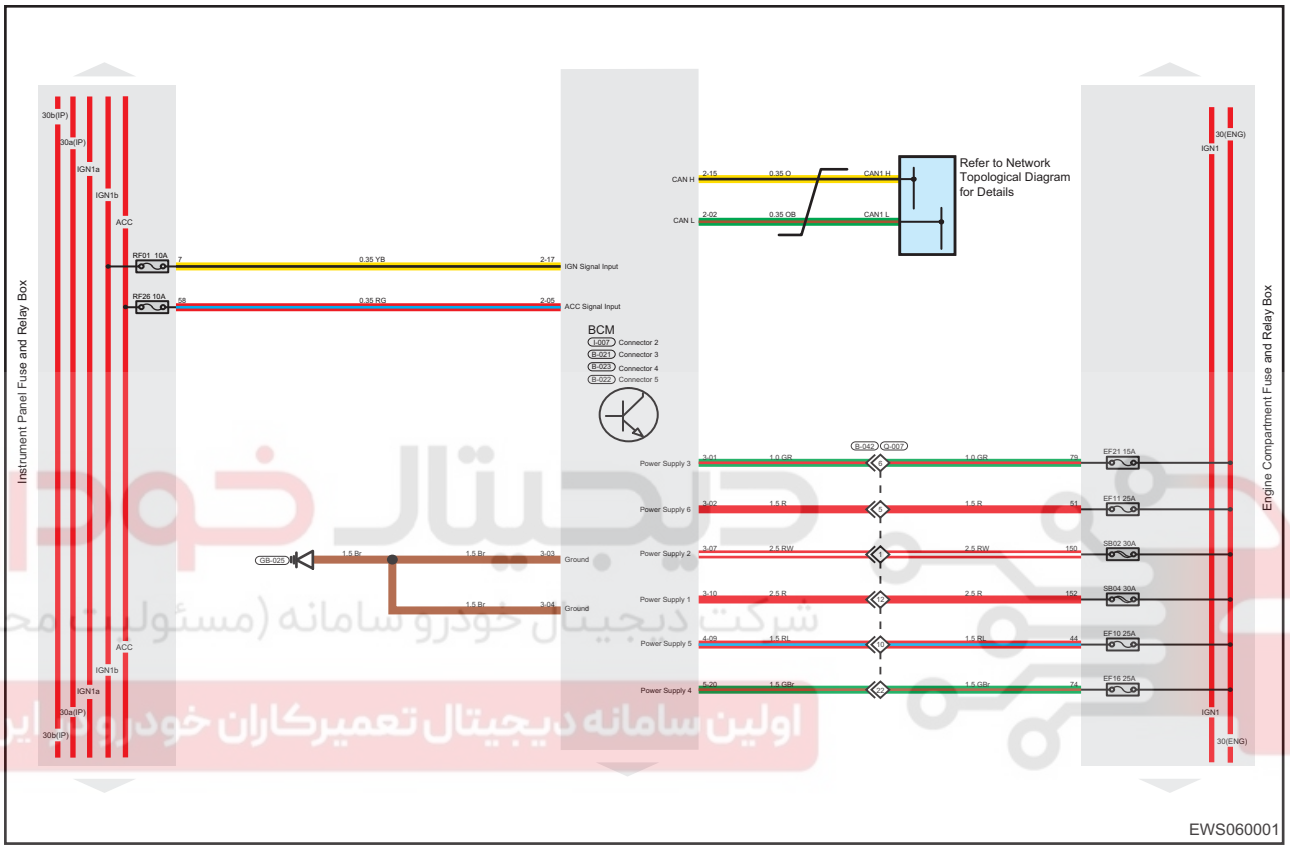
DTC	B1021-17	Anti-pinch Module Power Supply-Circuit Voltage Above Threshold

DTC	B1021-16	Anti-pinch Module Power Supply-Circuit Voltage Below Threshold

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1021-17	Anti-pinch Module Power Supply-Circuit Voltage Above Threshold	ENGINE START STOP switch OFF, engine is not running	• Circuit voltage below threshold • Circuit voltage above threshold
B1021-16	Anti-pinch Module Power Supply-Circuit Voltage Below Threshold		

Caution:
When performing circuit diagnosis and test, always refer to the circuit diagram for specific circuit and component information.

Procedure

1	Check battery voltage

(a) Connect negative battery cable, and turn ENGINE START STOP switch to ON to make engine run normally.
(b) Using voltage band of multimeter, check the power of battery.

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OK

Multimeter Connection	Condition	Specified Condition
Battery (+) - Battery (-)	ENGINE START STOP switch ON	⩾ 14.5 V

Result

Proceed to
OK
NG

NG → **Check battery charging system**

OK

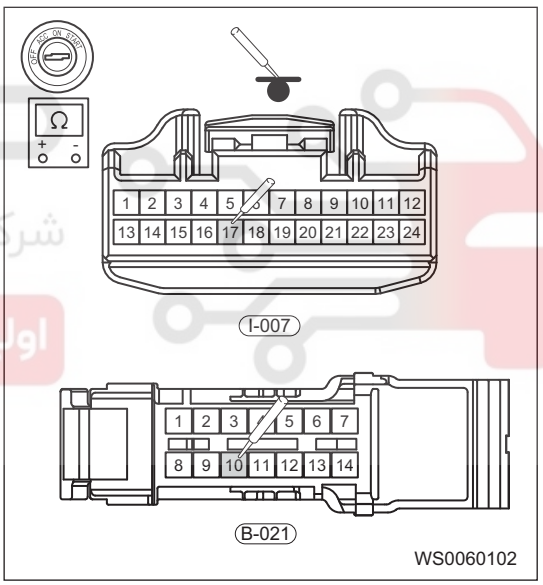
2 Check wire harness and connector

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect body control module connectors B-021 and I-007.

(c) Using ohm band of multimeter, check for continuity between B-021 (10) and ground, I-007 (17) and ground.

OK

Multimeter Connection	Condition	Specified Condition
B-021 (10) - Ground	ENGINE START STOP switch OFF	∞
I-007 (17) - Ground	ENGINE START STOP switch OFF	∞



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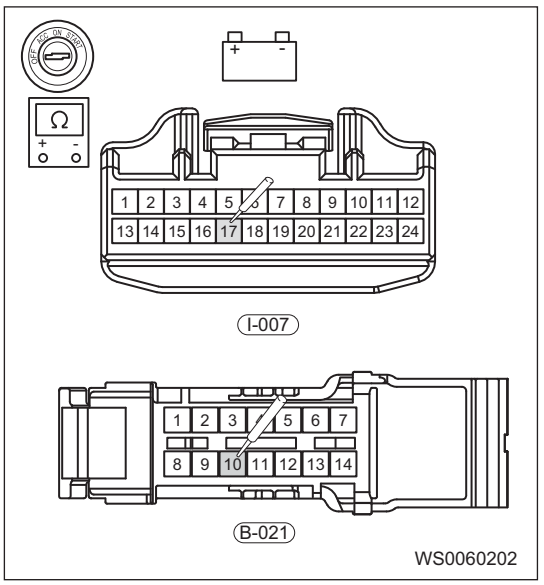
(d) Using ohm band of multimeter, check for continuity between B-021 (10) and battery (+), I-007 (17) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
B-021 (10) - Battery (+)	ENGINE START STOP switch OFF	∞
I-007 (17) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG



OK	**Replace BCM**
NG	**Replace wire harness and connector**

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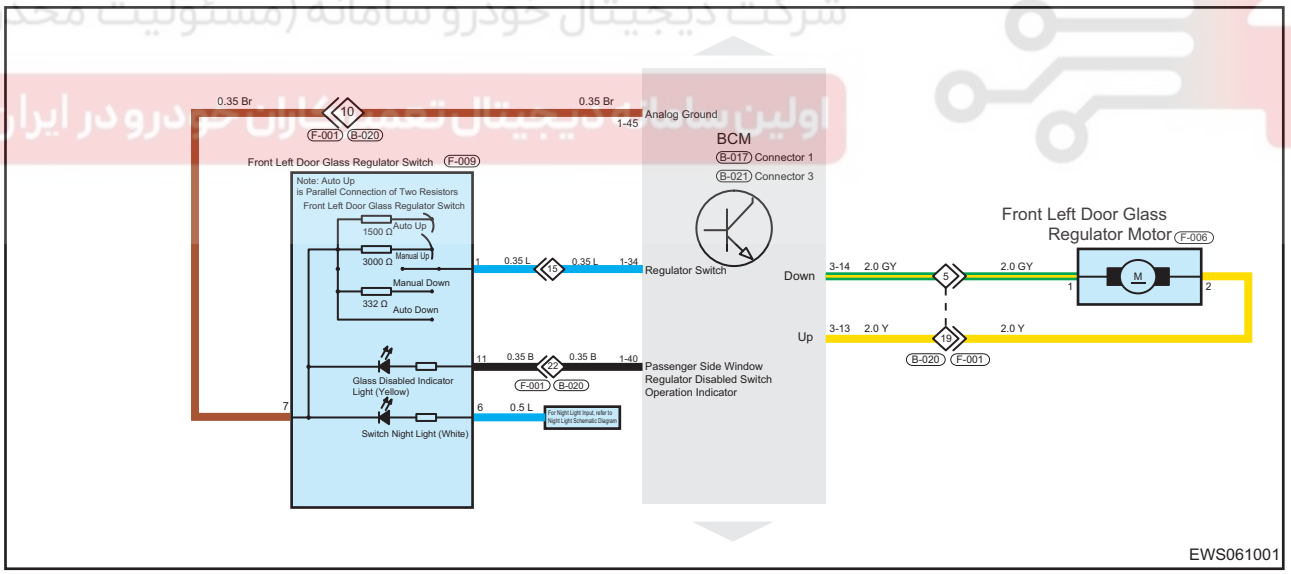
DTC	B100C-13	Front Left Window Up Control Circuit-Circuit Open
DTC	B100C-71	Front Left Window Up Control Circuit-Actuator Stuck
DTC	B100D-13	Front Left Window Down Control Circuit-Circuit Open
DTC	C006B-00	Stability System Active Too Long-No Sub Type Information
DTC	B100D-71	Front Left Window Down Control Circuit-Actuator Stuck
DTC	B1022-71	FL Window Button-Actuator Stuck
DTC	B1029-71	FL Window Relay-Actuator Stuck
DTC	B102E-86	FL Window Motor Position Signal-Signal Invalid

Circuit Diagram



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Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B100C-13	Front Left Window Up Control Circuit-Actuator Stuck	ENGINE START STOP switch OFF, engine is not running	• Ground • Line connector • Glass regulator switch • Glass regulator motor • BCM module • Jam protection learning is not performed
B100C-71	Front Left Window Up Control Circuit-Circuit Open		
B100D-13	Front Left Window Down Control Circuit-Circuit Open		
B100D-71	Front Left Window Down Control Circuit-Actuator Stuck		
B1022-71	FL Window Button-Actuator Stuck		
B1029-71	FL Window Relay-Actuator Stuck		
B102E-86	FL Window Motor Position Signal-Signal Invalid		

Caution:
When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1	**Check ground points**

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Check the BCM ground point.

Result

Proceed to
OK
NG

NG → **Repair or replace ground wire harness or ground point**

OK

2	**Use diagnostic tester to perform active test for window system**

Result

Proceed to
OK
NG

NG

3	**Check executive circuit of front left window system**

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect the front left door glass regulator motor wire harness connector F-006 and BCM connector B-021.

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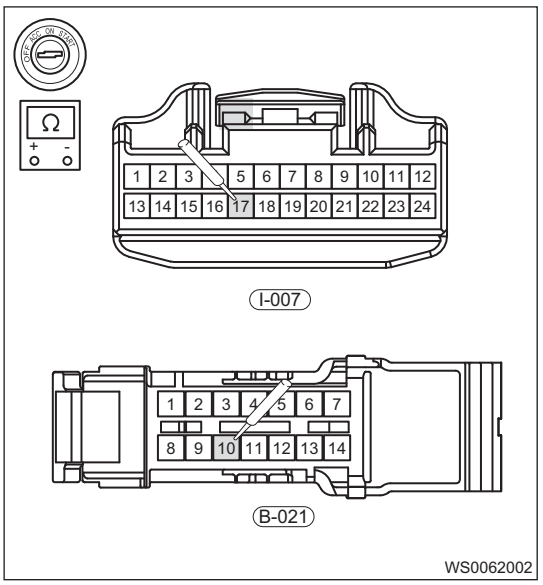
(c) Using ohm band of multimeter, check for continuity between F-006 (1) and B-021 (14), F-006 (2) and B-021 (13) separately.

OK

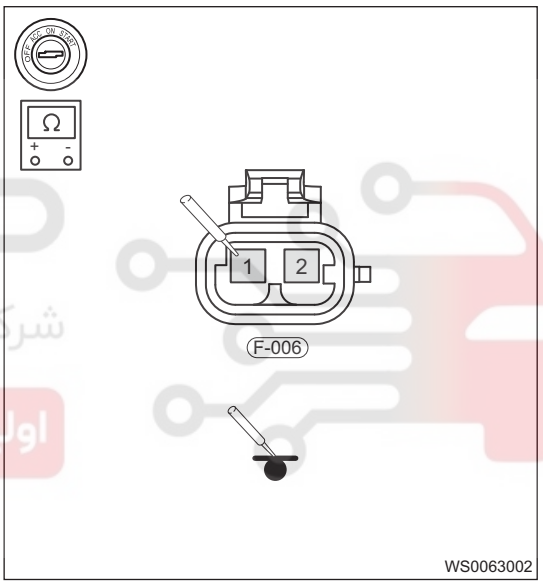
Multimeter Connection	Condition	Specified Condition
F-006 (1) - B-021 (14)	ENGINE START STOP switch OFF	⩽ 1 Ω
F-006 (2) - B-021 (13)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between F-006 (1) and ground, F-006 (2) and ground separately.

OK

Multimeter Connection	Condition	Specified Condition
F-006 (1) - Ground	ENGINE START STOP switch OFF	∞
F-006 (2) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between F-006 (1) and battery (+), F-006 (2) and battery (+) separately.

OK

Multimeter Connection	Condition	Specified Condition
F-006 (1) - Battery (+)	ENGINE START STOP switch OFF	∞
F-006 (2) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK

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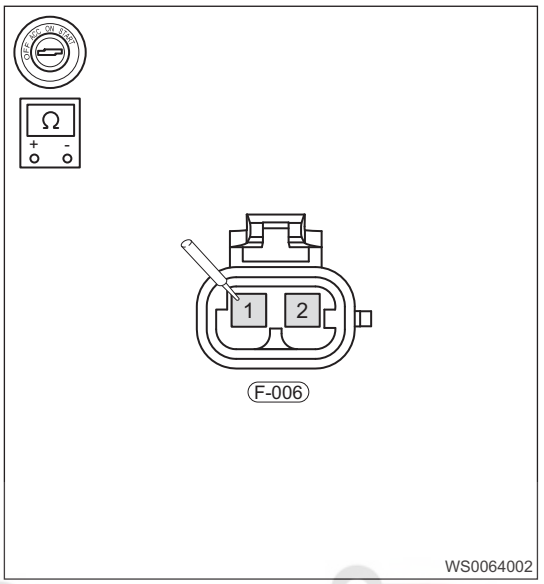
4	Check front left window regulator motor

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect the front left window regulator motor connector F-006.
(c) Using ohm band of multimeter, check resistance between F-006 (1) and F-006 (2).

OK

Multimeter Connection	Condition	Specified Condition
F-006 (1) - F-006 (2)	ENGINE START STOP switch OFF	1 Ω



(d) Apply 12 V voltage to both terminals of front left window regulator motor connector F-006, observe if operation of window regulator is faulty.

Result

Proceed to
OK
NG

OK → **Replace BCM**

NG → **Replace front left window regulator motor**

5	Check front left door glass control circuit

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Disconnect front left door glass regulator switch connector F-009 and BCM connector B-017.

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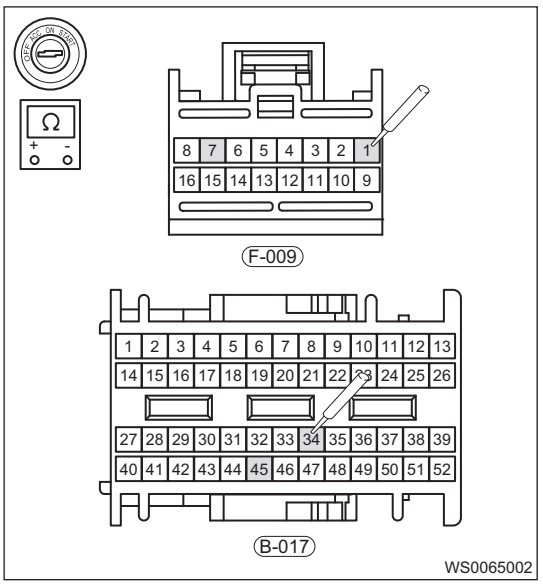
(c) Using ohm band of multimeter, check for continuity between F-009 (1) and B-017 (34), F-009 (7) and B-017 (45).

OK

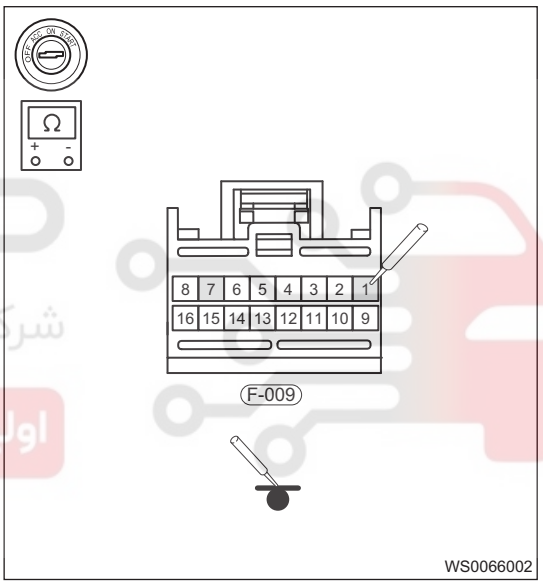
Multimeter Connection	Condition	Specified Condition
F-009 (1) - B-017 (34)	ENGINE START STOP switch OFF	⩽ 1 Ω
F-009 (7) - B-017 (45)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between F-009 (1) and ground, F-009 (7) and ground.

OK

Multimeter Connection	Condition	Specified Condition
F-009 (1) - Ground	ENGINE START STOP switch OFF	∞
F-009 (7) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between F-009 (1) and battery (+), F-009 (7) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (1) - Battery (+)	ENGINE START STOP switch OFF	∞
F-009 (7) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK

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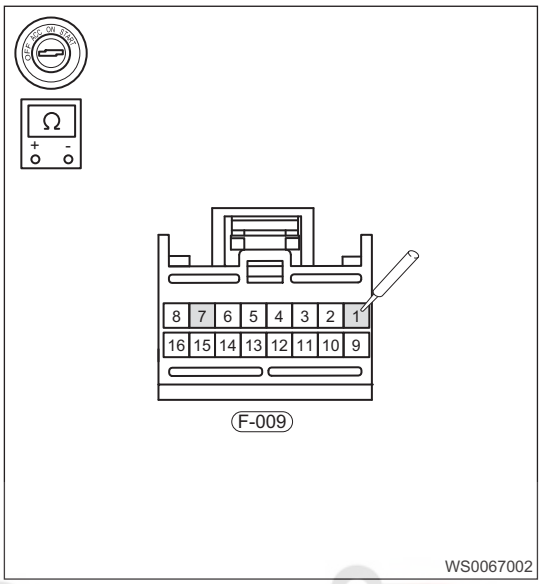
6	Check front left door power glass regulator switch

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Remove the front left door power glass regulator switch connector F-009.
(c) Using ohm band of multimeter, measure resistance between F-009 (1) and F-009 (7).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (1) - F-009 (7)	Not pushed	∞
	Pushed	325.36 Ω - 343.64 Ω
	Fully pushed	⩽ 5 Ω
	Pulled	2940 Ω - 3060 Ω
	Fully pulled up	980 Ω - 1020 Ω



(d) Check glass regulator switch for stuck and damage.

Result

Proceed to
OK
NG

NG → **Replace front left door glass regulator switch**

OK

7	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to OFF.
(d) Use diagnostic tester (the latest software) to read the DTCs stored in body control system again.

Result

Proceed to
OK
NG

OK → **System operates normally**

NG → **Replace Body Control Module (BCM)**

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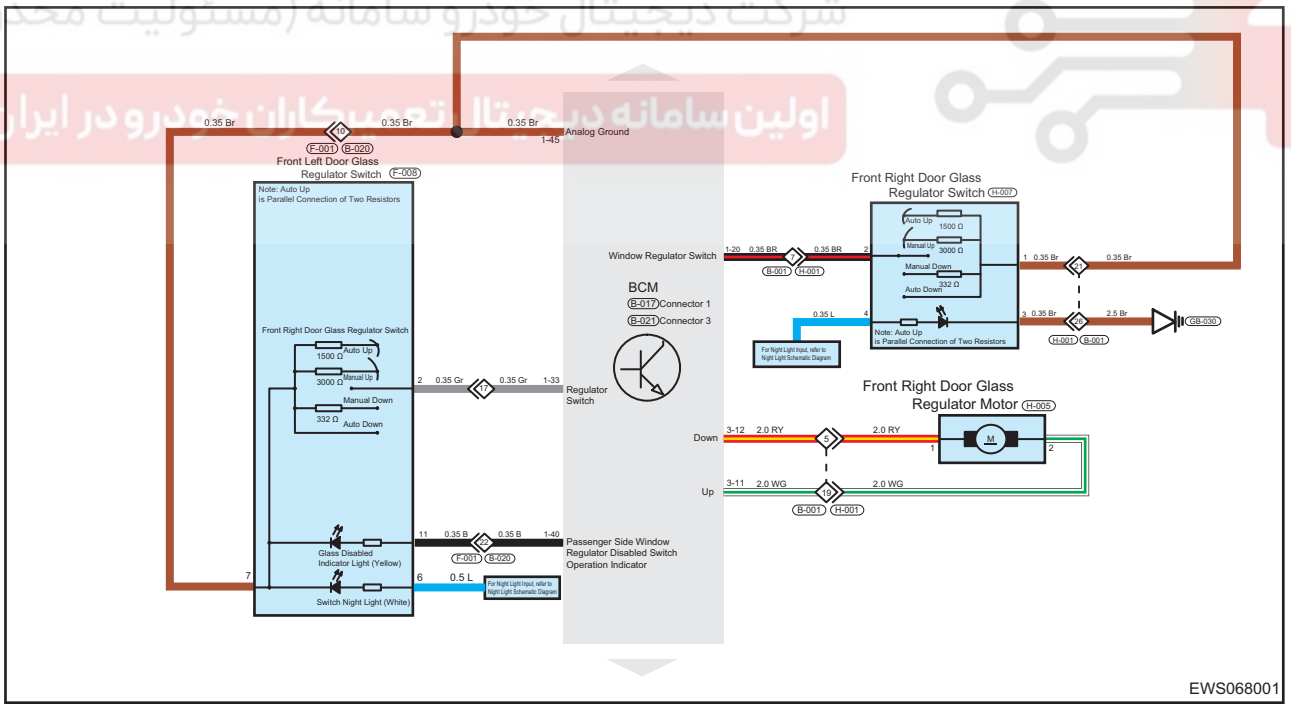
DTC	B100E-13	Front Right Window Up Control Circuit-Circuit Open
DTC	B100E-71	Front Right Window Up Control Circuit-Actuator Stuck
DTC	B100F-13	Front Right Window Down Control Circuit-Circuit Open
DTC	B100F-71	Front Right Window Down Control Circuit-Actuator Stuck
DTC	B1023-71	FR Window Button-Actuator Stuck
DTC	B1026-71	Passenger FR Window Button-Actuator Stuck
DTC	B102A-71	FR Window Relay-Actuator Stuck
DTC	B102F-86	FR Window Motor Position Signal-Signal Invalid

Circuit Diagram



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Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B100E-13	Front Right Window Up Control Circuit-Circuit Open	ENGINE START STOP switch OFF, engine is not running	• Ground • Line connector • Glass regulator switch • Glass regulator motor • BCM module • Jam protection learning is not performed
B100E-71	Front Right Window Up Control Circuit-Actuator Stuck		
B100F-13	Front Right Window Down Control Circuit-Circuit Open		
B100F-71	Front Right Window Down Control Circuit-Actuator Stuck		
B1023-71	FR Window Button-Actuator Stuck		
B1026-71	Passenger FR Window Button-Actuator Stuck		
B102A-71	FR Window Relay-Actuator Stuck		
B102F-86	FR Window Motor Position Signal-Signal Invalid		

Procedure

1	**Check ground points**

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Check the BCM ground point.

Result

Proceed to
OK
NG

NG → **Repair or replace ground wire harness or ground point**

OK

2	**Use diagnostic tester to perform active test for window system**

Result

Proceed to
OK
NG

NG

3	**Check executive circuit of front right window system**

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect front right door glass regulator motor connector H-005 and BCM connector B-021.

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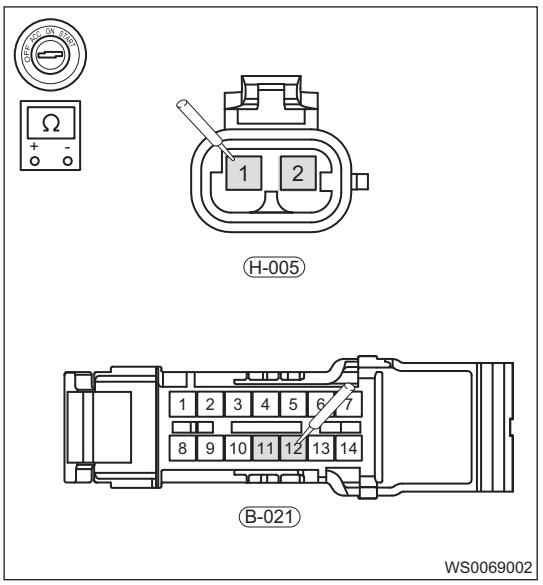
(c) Using ohm band of multimeter, check for continuity between H-005 (1) and B-021 (12), H-005 (2) and B-021 (11) separately.

OK

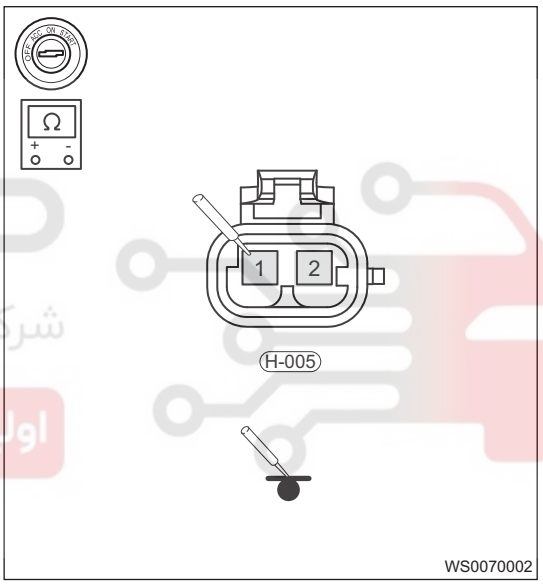
Multimeter Connection	Condition	Specified Condition
H-005 (1) - B-021 (12)	ENGINE START STOP switch OFF	⩽ 1 Ω
H-005 (2) - B-021 (11)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between H-005 (1) and ground, H-005 (2) and ground separately.

OK

Multimeter Connection	Condition	Specified Condition
H-005 (1) - Ground	ENGINE START STOP switch OFF	∞
H-005 (2) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between H-005 (1) and battery (+), H-005 (2) and battery (+) separately.

OK

Multimeter Connection	Condition	Specified Condition
H-005 (1) - Battery (+)	ENGINE START STOP switch OFF	∞
H-005 (2) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK

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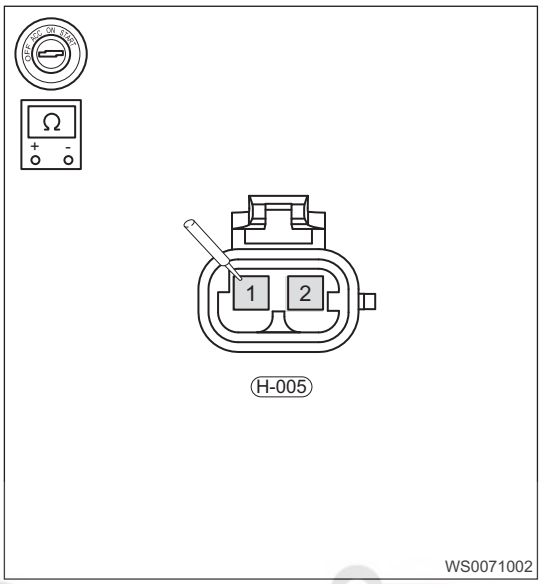
4	Check front right window regulator motor

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect the front right window regulator motor connector H-005.
(c) Using ohm band of multimeter, check resistance between H-005 (1) and H-005 (2).

OK

Multimeter Connection	Condition	Specified Condition
H-005 (1) - H-005 (2)	ENGINE START STOP switch OFF	1 Ω



(d) Apply 12 V voltage to both terminals of front right window regulator motor connector H-005, observe if operation of window regulator is faulty.

Result

Proceed to
OK
NG

OK → **Replace BCM**

NG → **Replace front left window regulator motor**

5	Check front right glass regulator control circuit

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Disconnect front left door glass regulator switch connector F-009 and BCM connector B-017.

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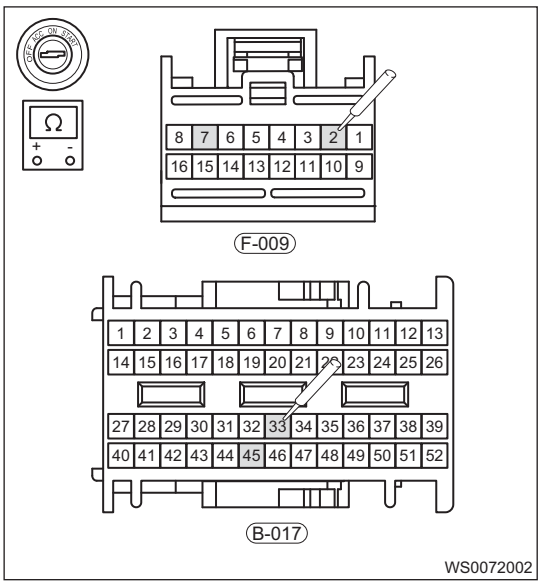
(c) Using ohm band of multimeter, check for continuity between F-009 (2) and B-017 (33), F-009 (7) and B-017 (45).

OK

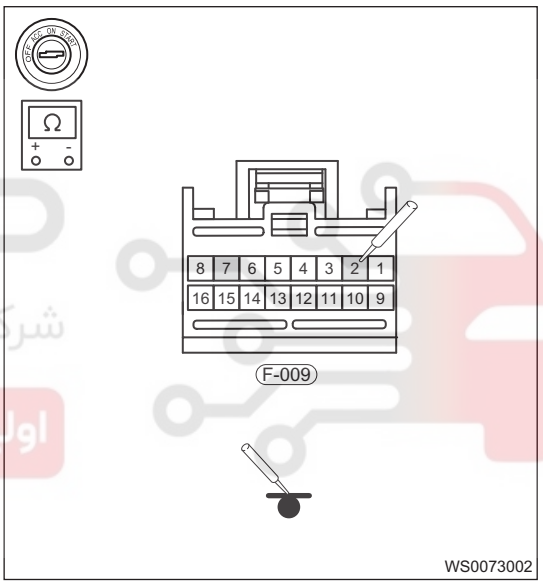
Multimeter Connection	Condition	Specified Condition
F-009 (2) - B-017 (33)	ENGINE START STOP switch OFF	⩽ 1 Ω
F-009 (7) - B-017 (45)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between F-009 (2) and ground, F-009 (7) and ground.

OK

Multimeter Connection	Condition	Specified Condition
F-009 (2) - Ground	ENGINE START STOP switch OFF	∞
F-009 (7) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between F-009 (2) and battery (+), F-009 (7) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (2) - Battery (+)	ENGINE START STOP switch OFF	∞
F-009 (7) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK

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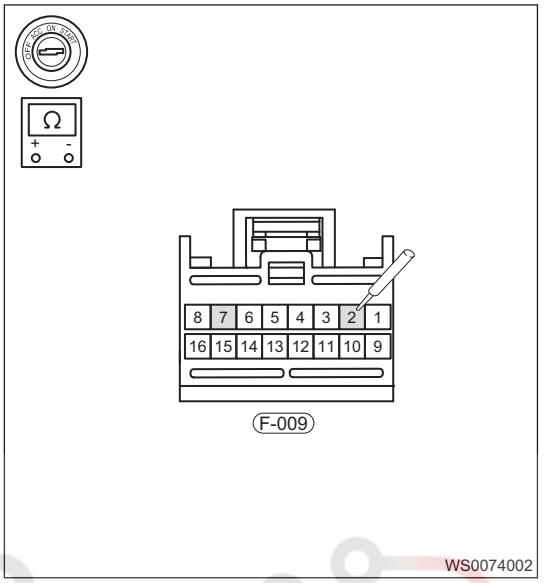
6	Check front left glass regulator switch assembly (which controls front right glass regulator)

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Remove the front left door power glass regulator switch connector F-009.
(c) Using ohm band of multimeter, measure resistance between F-009 (2) and F-009 (7).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (2) - F-009 (7)	Not pushed	∞
	Pushed	325.36 Ω - 343.64 Ω
	Fully pushed	⩽ 5 Ω
	Pulled	2940 Ω - 3060 Ω
	Fully pulled up	980 Ω - 1020 Ω



(d) Check glass regulator switch for stuck and damage.

Result

Proceed to
OK
NG

NG → **Replace front left door glass regulator switch assembly**

OK

7	Check front right door glass control circuit

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Disconnect the front right door glass regulator switch H-007 and BCM connector B-017.

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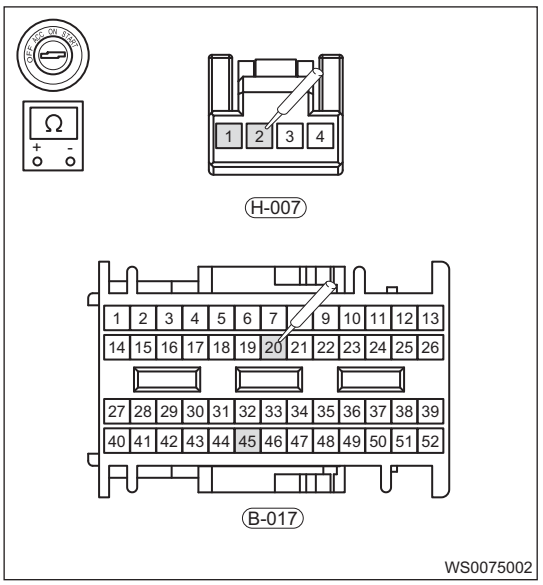
(c) Using ohm band of multimeter, check for continuity between H-007 (2) and B-017 (20), H-007 (1) and B-017 (45).

OK

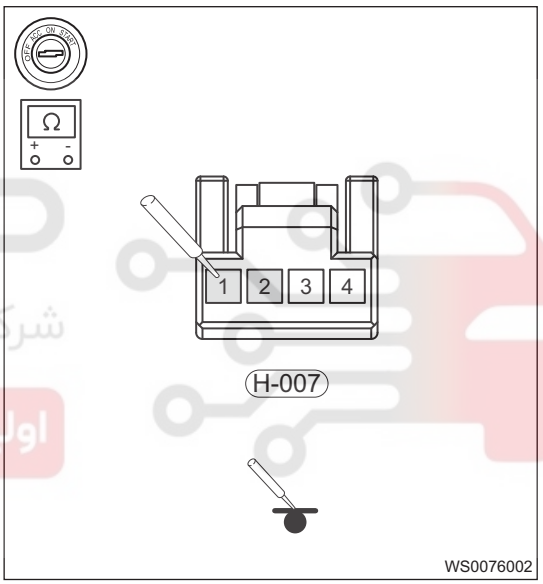
Multimeter Connection	Condition	Specified Condition
H-007 (2) - B-017 (20)	ENGINE START STOP switch OFF	⩽ 1 Ω
H-007 (1) - B-017 (45)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between H-007 (2) and ground, H-007 (1) and ground.

OK

Multimeter Connection	Condition	Specified Condition
H-007 (2) - Ground	ENGINE START STOP switch OFF	∞
H-007 (1) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between H-007 (2) and battery (+), H-007 (1) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
H-007 (2) - Battery (+)	ENGINE START STOP switch OFF	∞
H-007 (1) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK

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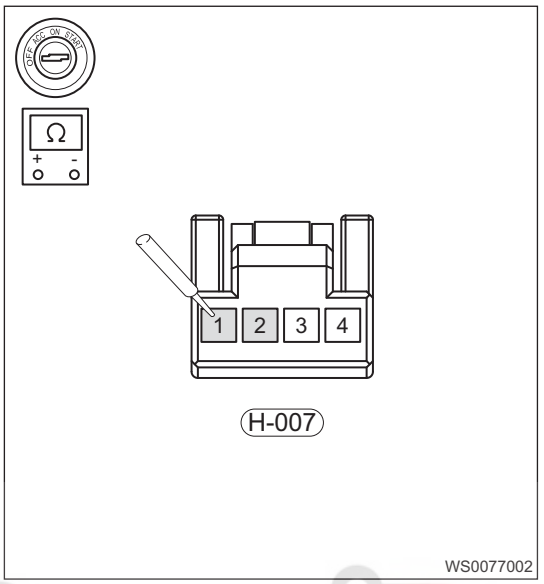
8	Check front right door power glass regulator switch

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Remove the front right door power glass regulator switch connector H-007.
(c) Using ohm band of multimeter, measure resistance between H-007 (1) and H-007 (2).

OK

Multimeter Connection	Condition	Specified Condition
H-007 (1) - H-007 (2)	Not pushed	∞
	Pushed	325.36 Ω - 343.64 Ω
	Fully pushed	⩽ 5 Ω
	Pulled	2940 Ω - 3060 Ω
	Fully pulled up	980 Ω - 1020 Ω



(d) Check glass regulator switch for stuck and damage.

Result

Proceed to
OK
NG

NG → **Replace front right door glass regulator switch**

OK

9	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to OFF.
(d) Use diagnostic tester (the latest software) to read the DTCs stored in body control system again.

Result

Proceed to
OK
NG

OK → **System is normal**

NG → **Replace Body Control Module (BCM)**

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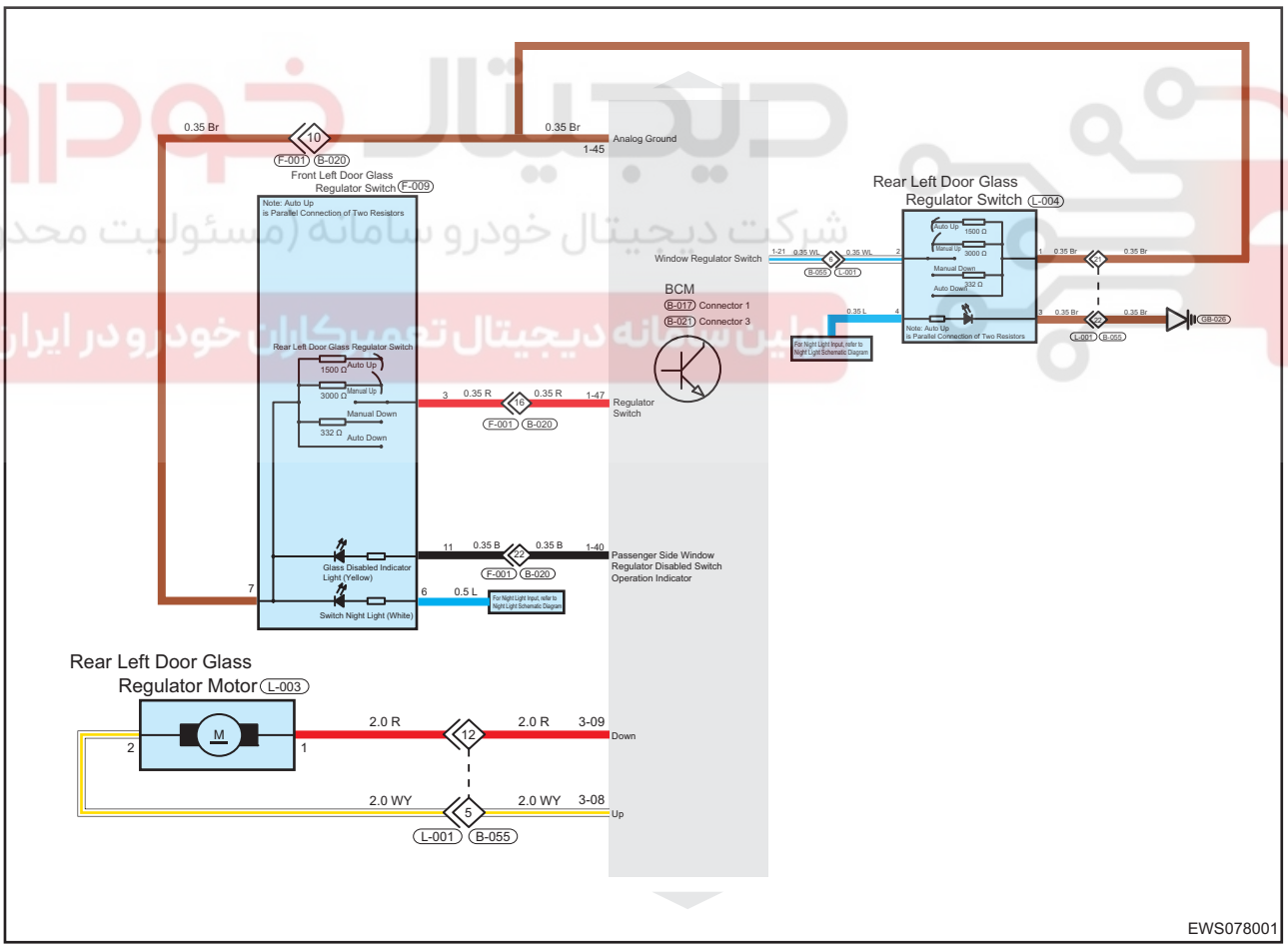
DTC	B1010-13	Rear Left Window Up Control Circuit-Circuit Open
DTC	B1010-71	Rear Left Window Up Control Circuit-Actuator Stuck
DTC	B1011-13	Rear Left Window Down Control Circuit-Circuit Open
DTC	B1011-71	Rear Left Window Down Control Circuit-Actuator Stuck
DTC	B102B-71	RL Window Relay-Actuator Stuck
DTC	B1030-86	RL Window Motor Position Signal-Signal Invalid

Circuit Diagram



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Description

DTC No.	DTC Definition	DTC Detection Condition	Possible Cause
B1010-13	Rear Left Window Up Control Circuit-Circuit Open	ENGINE START STOP switch OFF, engine is not running	Ground Line connector Glass regulator switch Glass regulator motor BCM module Jam protection learning is not performed
B1010-71	Rear Left Window Up Control Circuit-Actuator Stuck		
B1011-13	Rear Left Window Down Control Circuit-Circuit Open		
B1011-71	Rear Left Window Down Control Circuit-Actuator Stuck		
B102B-71	RL Window Relay-Actuator Stuck		
B1030-86	RL Window Motor Position Signal-Signal Invalid		

Procedure

1	Check ground points

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Check the BCM ground point.

Result

Proceed to
OK
NG

NG → **Repair or replace ground wire harness or ground point**

OK

2	Use diagnostic tester to perform active test for window system

Result

Proceed to
OK
NG

NG

3	Check executive circuit of rear left window system

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect rear left door glass regulator motor connector L-003 and BCM connector B-021.

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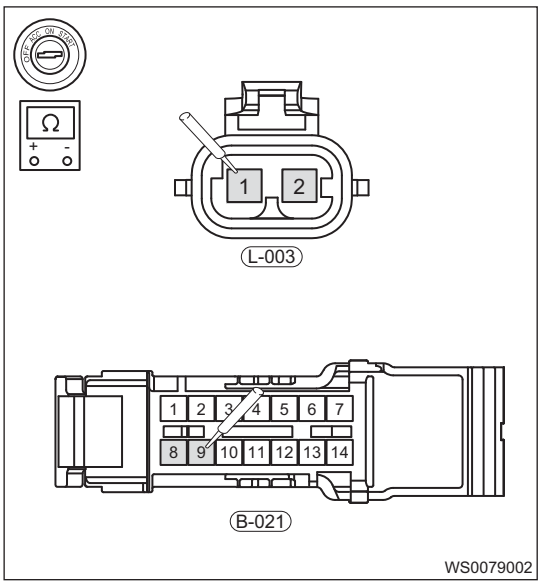
(c) Using ohm band of multimeter, check for continuity between L-003 (1) and B-021 (9), L-003 (2) and B-021 (8) separately.

OK

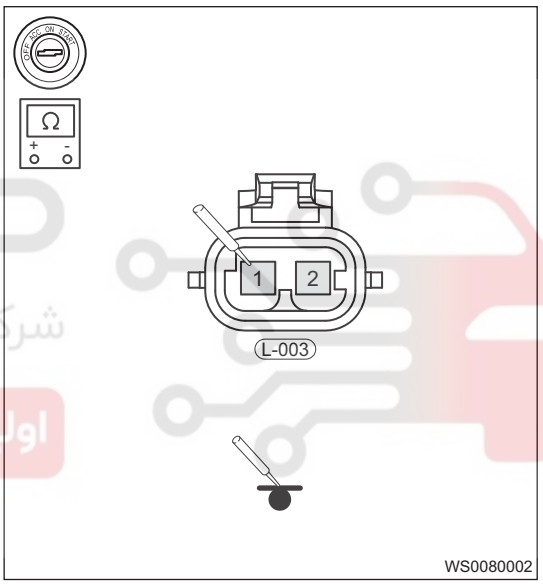
Multimeter Connection	Condition	Specified Condition
L-003 (1) - B-021 (9)	ENGINE START STOP switch OFF	⩽ 1 Ω
L-003 (2) - B-021 (8)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between L-003 (1) and ground, L-003 (2) and ground separately.

OK

Multimeter Connection	Condition	Specified Condition
L-003 (1) - Ground	ENGINE START STOP switch OFF	∞
L-003 (2) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between L-003 (1) and battery (+), L-003 (2) and battery (+) separately.

OK

Multimeter Connection	Condition	Specified Condition
L-003 (1) - Battery (+)	ENGINE START STOP switch OFF	∞
L-003 (2) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK

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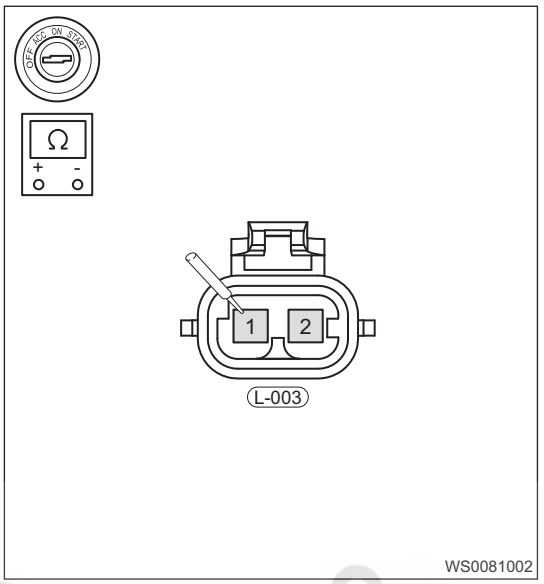
4	Check rear left window regulator motor

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect the rear left window regulator motor connector L-003.
(c) Using ohm band of multimeter, check resistance between L-003 (1) and L-003 (2).

OK

Multimeter Connection	Condition	Specified Condition
L-003 (1) - L-003 (2)	ENGINE START STOP switch OFF	1 Ω



(d) Apply 12 V voltage to both terminals of rear left window regulator motor connector L-003, observe if operation of window regulator is faulty.

Result

Proceed to
OK
NG

OK → **Replace BCM**

NG → **Replace rear left window regulator motor**

5	Check rear left glass regulator control circuit

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Disconnect front left door glass regulator switch connector F-009 and BCM connector B-017.

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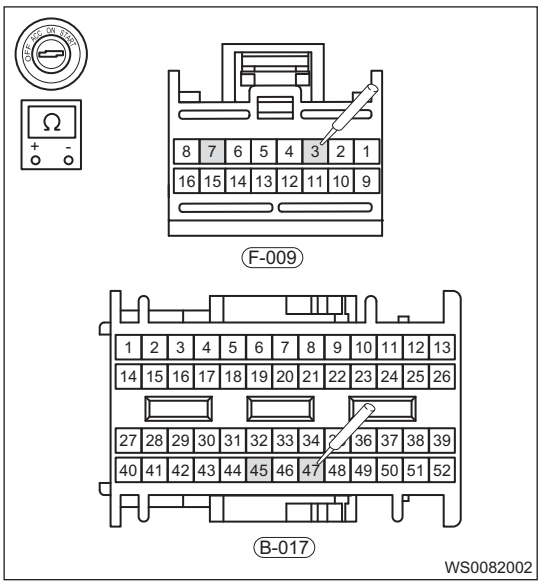
(c) Using ohm band of multimeter, check for continuity between F-009 (3) and B-017 (47), F-009 (7) and B-017 (45).

OK

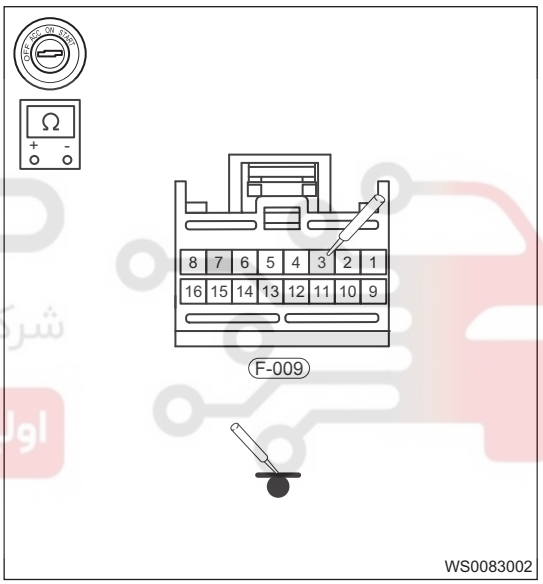
Multimeter Connection	Condition	Specified Condition
F-009 (3) - B-017 (47)	ENGINE START STOP switch OFF	⩽ 1 Ω
F-009 (7) - B-017 (45)	ENGINE START STOP switch OFF	⩽ 1 Ω



(d) Using ohm band of multimeter, check for continuity between F-009 (3) and ground, F-009 (7) and ground.

OK

Multimeter Connection	Condition	Specified Condition
F-009 (3) - Ground	ENGINE START STOP switch OFF	∞
F-009 (7) - Ground	ENGINE START STOP switch OFF	∞



دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

(e) Using ohm band of multimeter, check for continuity between F-009 (3) and battery (+), F-009 (7) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (3) - Battery (+)	ENGINE START STOP switch OFF	∞
F-009 (7) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK

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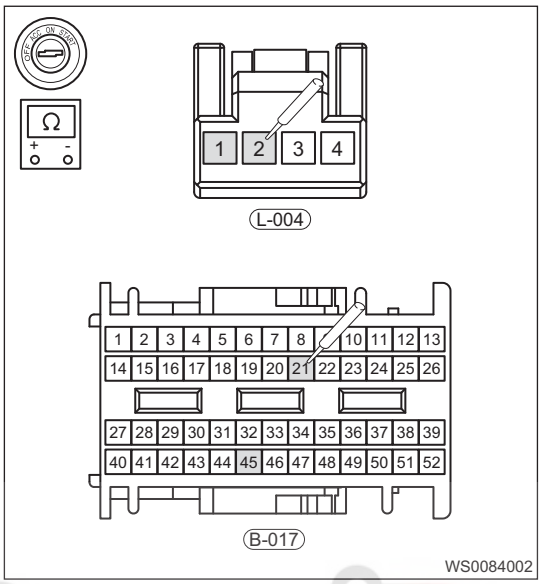
6	Check rear left door glass control circuit

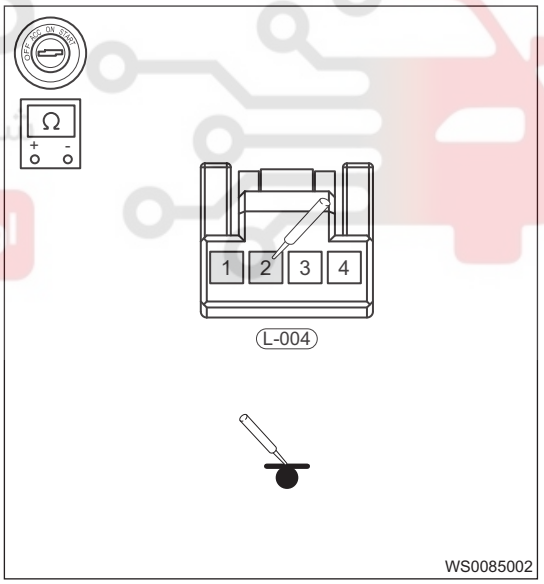
(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Disconnect rear left door glass regulator switch connector L-004 and BCM connector B-017.
(c) Using ohm band of multimeter, check for continuity between L-004 (2) and B-017 (21), and L-004 (1) and B-017 (45).



OK

Multimeter Connection	Condition	Specified Condition
L-004 (2) - B-017 (21)	ENGINE START STOP switch OFF	⩽ 1 Ω
L-004 (1) - B-017 (45)	ENGINE START STOP switch OFF	⩽ 1 Ω

(d) Using ohm band of multimeter, check for continuity between L-004 (2) and ground, L-004 (1) and ground.



Result

Multimeter Connection	Condition	Specified Condition
L-004 (2) - Ground	ENGINE START STOP switch OFF	∞
L-004 (1) - Ground	ENGINE START STOP switch OFF	∞

(e) Using ohm band of multimeter, check for continuity between L-004 (2) and battery (+), L-004 (1) and battery (+).

Result

Multimeter Connection	Condition	Specified Condition
L-004 (2) - Battery (+)	ENGINE START STOP switch OFF	∞
L-004 (1) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

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NG → **Replace wire harness and connector**

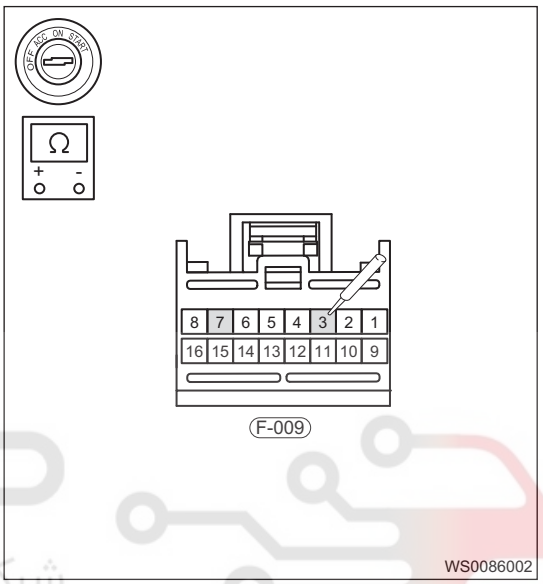
OK

7	**Check front left door glass regulator switch assembly (which controls rear left glass regulator)**

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Remove the front left door power glass regulator switch connector F-009.
(c) Using ohm band of multimeter, measure resistance between F-009 (3) and F-009 (7).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (3) - F-009 (7)	Not pushed	∞
	Pushed	325.36 Ω - 343.64 Ω
	Fully pushed	⩽ 5 Ω
	Pulled	2940 Ω - 3060 Ω
	Fully pulled up	980 Ω - 1020 Ω



(d) Check glass regulator switch for stuck and damage.

Result

Proceed to
OK
NG

NG → **Replace front left door glass regulator switch assembly**

OK

8	**Check rear left door glass regulator switch**

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Remove the rear left door power glass regulator switch L-004.

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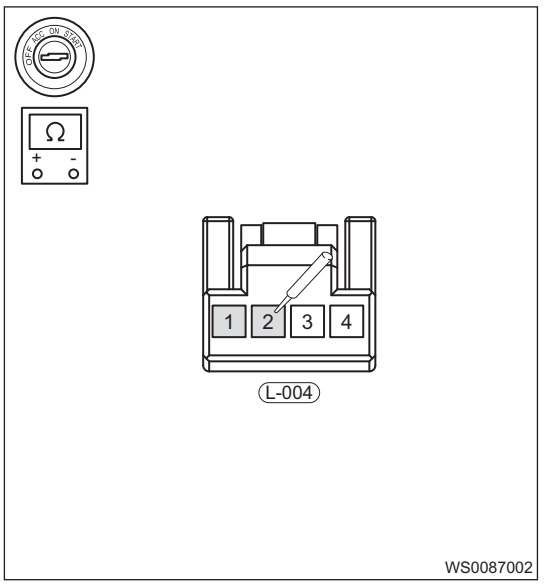
(c) Using ohm band of multimeter, measure resistance between L-004 (1) and L-004 (2).

OK

Multimeter Connection	Condition	Specified Condition
L-004 (1) - L-004 (2)	Not pushed	∞
	Pushed	325.36 Ω - 343.64 Ω
	Fully pushed	⩽ 5 Ω
	Pulled	2940 Ω - 3060 Ω
	Fully pulled up	980 Ω - 1020 Ω



(d) Check glass regulator switch for stuck and damage.

Result

Proceed to
OK
NG

NG → **Replace rear left door glass regulator switch**

OK →

9	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to OFF.
(d) Use diagnostic tester (the latest software) to read the DTCs stored in body control system again.

Result

Proceed to
OK
NG

OK → **System is normal**

NG → **Replace Body Control Module (BCM)**

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DTC	B1012-13	Rear Right Window Up Control Circuit-Circuit Open
DTC	B1012-71	Rear Right Window Up Control Circuit-Actuator Stuck
DTC	B1013-13	Rear Right Window Down Control Circuit-Circuit Open
DTC	B1013-71	Rear Right Window Down Control Circuit-Actuator Stuck
DTC	B1025-71	RR Window Button-Actuator Stuck
DTC	B1028-71	Passenger RR Window Button Short-Actuator Stuck
DTC	B102C-71	RR Window Relay-Actuator Stuck
DTC	B1031-86	RR Window Motor Position Signal-Signal Invalid

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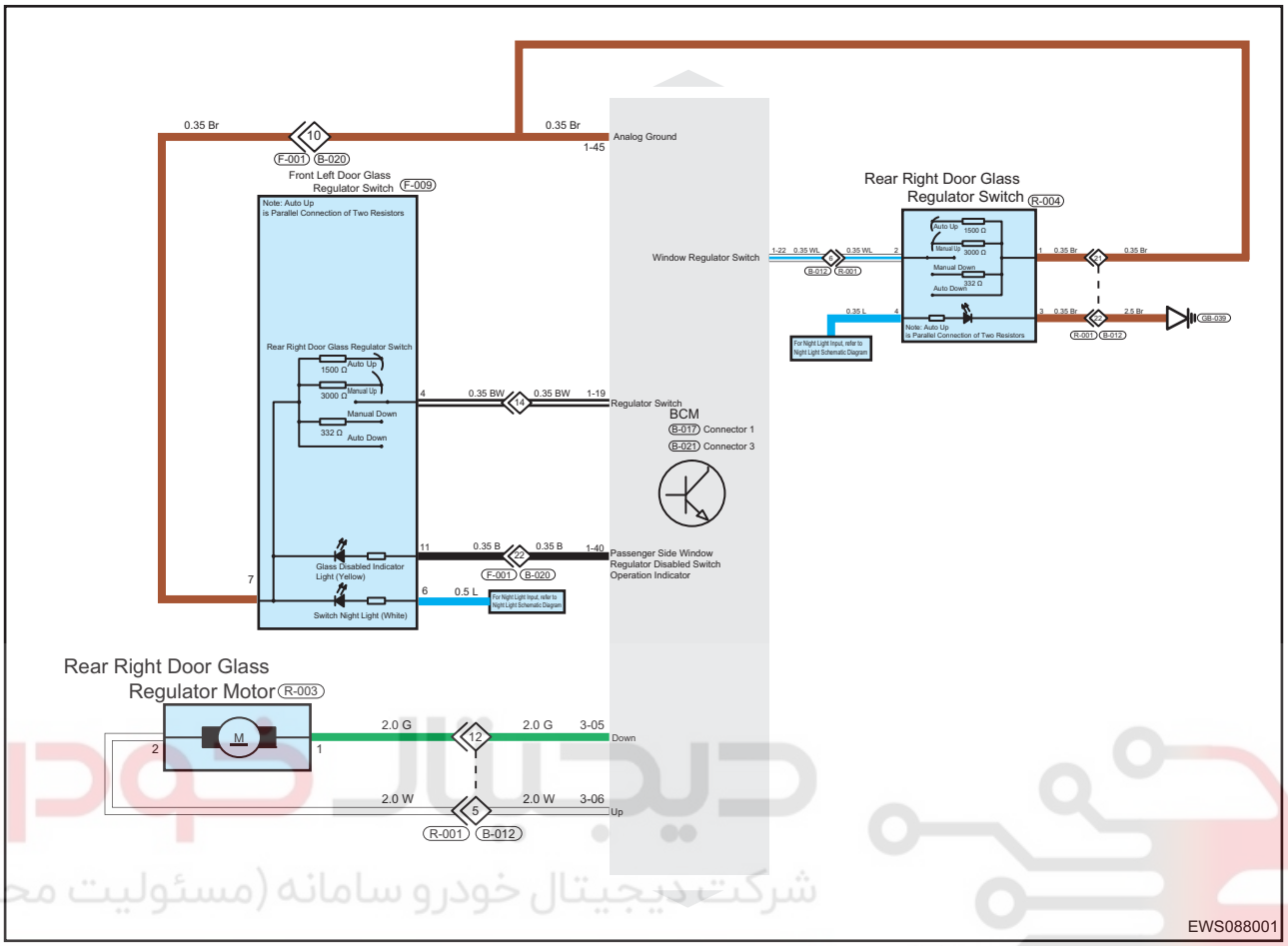
Circuit Diagram



Description

DTC No.	DTC Definition	DTC Detection Condition	Possible Cause
B1012-13	Rear Right Window Up Control Circuit-Circuit Open	ENGINE START STOP switch OFF, engine is not running	• Ground • Line connector • Glass regulator switch • Glass regulator motor • BCM module • Jam protection learning is not performed
B1012-71	Rear Right Window Up Control Circuit-Actuator Stuck		
B1013-13	Rear Right Window Down Control Circuit-Circuit Open		
B1013-71	Rear Right Window Down Control Circuit-Actuator Stuck		
B1025-71	RR Window Button-Actuator Stuck		
B1028-71	Passenger RR Window Button Short-Actuator Stuck		
B102C-71	RR Window Relay-Actuator Stuck		
B1031-86	RR Window Motor Position Signal-Signal Invalid		

1	Check ground points

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Check the BCM ground point.

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Result

Proceed to
OK
NG

NG → **Repair or replace ground wire harness or ground point**

OK

2	Use diagnostic tester to perform active test for window system

Result

Proceed to
OK
NG

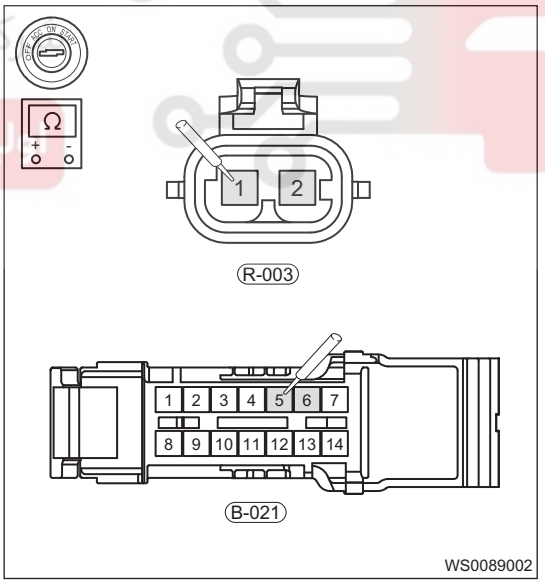
NG

3	Check executive circuit of rear right window system

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect rear right door glass regulator motor connector R-003 and BCM connector B-021.
(c) Using ohm band of multimeter, check for continuity between R-003 (1) and B-021 (5), R-003 (2) and B-021 (6) separately.

OK

Multimeter Connection	Condition	Specified Condition
R-003 (1) - B-021 (5)	ENGINE START STOP switch OFF	⩽ 1 Ω
R-003 (2) - B-021 (6)	ENGINE START STOP switch OFF	⩽ 1 Ω



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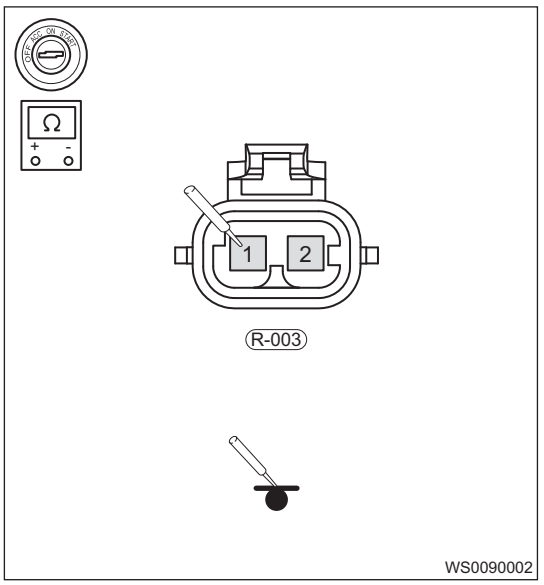
(d) Using ohm band of multimeter, check for continuity between R-003 (1) and ground, R-003 (2) and ground separately.

OK

Multimeter Connection	Condition	Specified Condition
R-003 (1) - Ground	ENGINE START STOP switch OFF	∞
R-003 (2) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between R-003 (1) and battery (+), R-003 (2) and battery (+) separately.

OK

Multimeter Connection	Condition	Specified Condition
R-003 (1) - Battery (+)	ENGINE START STOP switch OFF	∞
R-003 (2) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK →

4	Check rear right window regulator motor

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.
(b) Disconnect the rear right window regulator motor connector R-003.

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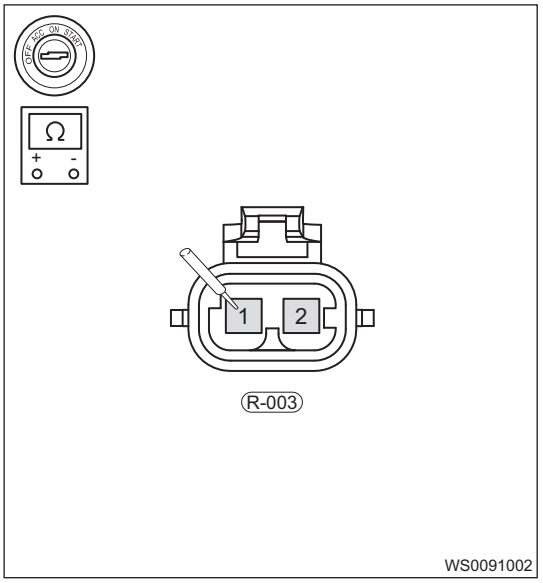
(c) Using ohm band of multimeter, check resistance between R-003 (1) and R-003 (2).

OK

Multimeter Connection	Condition	Specified Condition
R-003 (1) - R-003 (2)	ENGINE START STOP switch OFF	1 Ω



(d) Apply 12 V voltage to both terminals of rear right window regulator motor connector R-003, observe if operation of window regulator is faulty.

Result

Proceed to
OK
NG

OK → **Replace BCM**

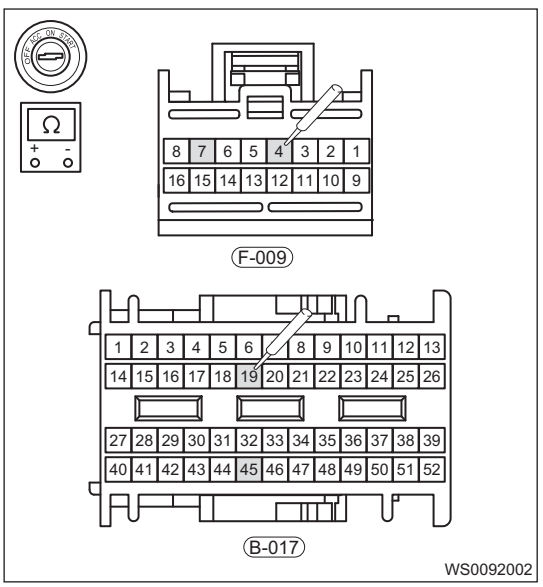
NG → **Replace rear right window regulator motor**

5	Check rear right glass regulator control circuit

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Disconnect front left door glass regulator switch connector F-009 and BCM connector B-017.
(c) Using ohm band of multimeter, check for continuity between F-009 (4) and B-017 (19), F-009 (7) and B-017 (45).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (4) - B-017 (19)	ENGINE START STOP switch OFF	⩽ 1 Ω
F-009 (7) - B-017 (45)	ENGINE START STOP switch OFF	⩽ 1 Ω



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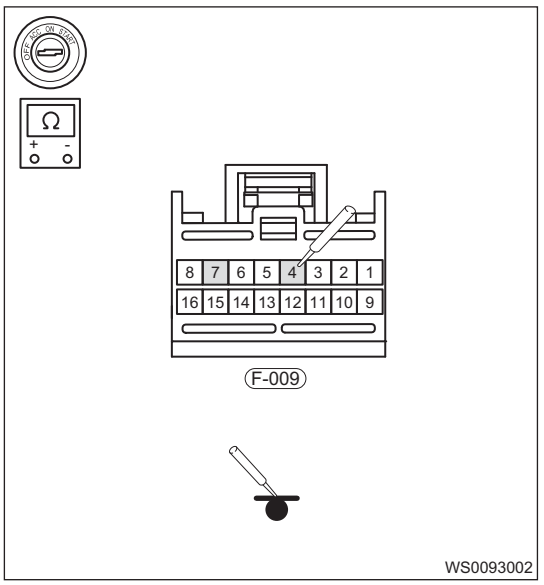
(d) Using ohm band of multimeter, check for continuity between F-009 (4) and ground, F-009 (7) and ground.

OK

Multimeter Connection	Condition	Specified Condition
F-009 (4) - Ground	ENGINE START STOP switch OFF	∞
F-009 (7) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between F-009 (4) and battery (+), F-009 (7) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (4) - Battery (+)	ENGINE START STOP switch OFF	∞
F-009 (7) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK →

6	**Check front left door glass regulator switch assembly (which controls rear right glass regulator)**

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Remove the front left door power glass regulator switch connector F-009.

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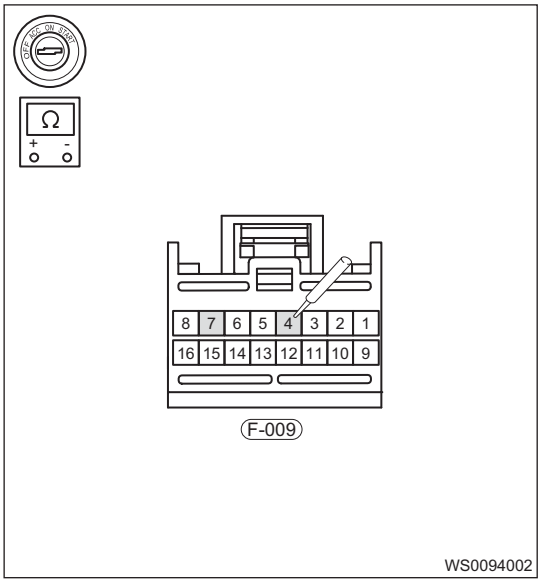
(c) Using ohm band of multimeter, measure resistance between F-009 (4) and F-009 (7).

OK

Multimeter Connection	Condition	Specified Condition
F-009 (4) - F-009 (7)	Not pushed	∞
	Pushed	325.36 Ω - 343.64 Ω
	Fully pushed	⩽ 5 Ω
	Pulled	2940 Ω - 3060 Ω
	Fully pulled up	980 Ω - 1020 Ω



(d) Check glass regulator switch for stuck and damage.

Result

Proceed to
OK
NG

NG → **Replace front left door glass regulator switch assembly**

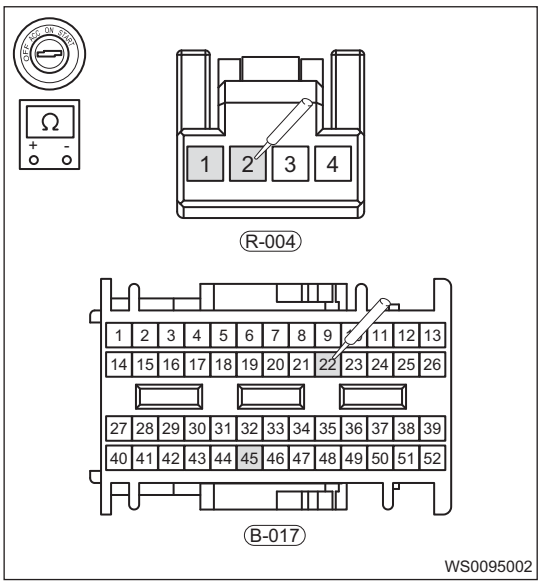
OK

7 Check rear right door glass control circuit

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Disconnect rear right door glass regulator switch connector R-004 and BCM connector B-017.
(c) Using ohm band of multimeter, check for continuity between R-004 (2) and B-017 (22), and R-004 (1) and B-017 (45).

OK

Multimeter Connection	Condition	Specified Condition
R-004 (2) - B-017 (22)	ENGINE START STOP switch OFF	⩽ 1 Ω
R-004 (1) - B-017 (45)	ENGINE START STOP switch OFF	⩽ 1 Ω



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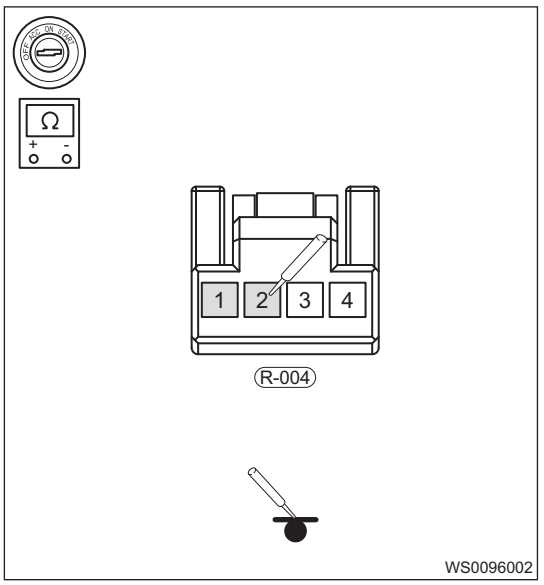
(d) Using ohm band of multimeter, check for continuity between R-004 (2) and ground, R-004 (1) and ground.

OK

Multimeter Connection	Condition	Specified Condition
R-004 (2) - Ground	ENGINE START STOP switch OFF	∞
R-004 (1) - Ground	ENGINE START STOP switch OFF	∞



(e) Using ohm band of multimeter, check for continuity between R-004 (2) and battery (+), R-004 (1) and battery (+).

OK

Multimeter Connection	Condition	Specified Condition
R-004 (2) - Battery (+)	ENGINE START STOP switch OFF	∞
R-004 (1) - Battery (+)	ENGINE START STOP switch OFF	∞

Result

Proceed to
OK
NG

NG → **Replace wire harness and connector**

OK →

8	Check rear right door power glass regulator switch

(a) Turn ENGINE START STOP switch to OFF, disconnect the negative battery cable.
(b) Remove the rear right door power glass regulator switch connector R-004.

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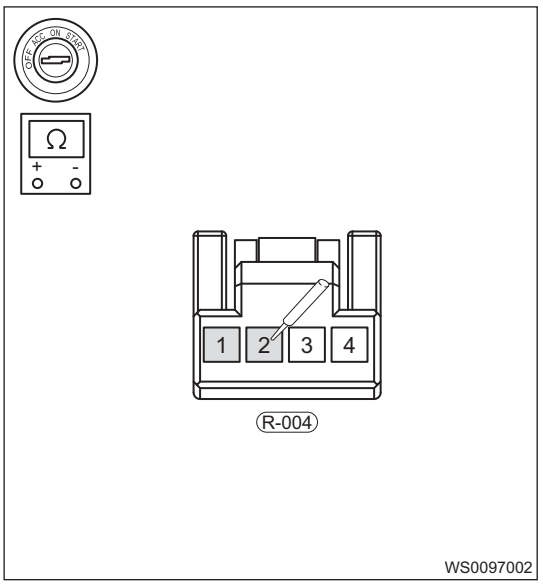
(c) Using ohm band of multimeter, measure resistance between R-004 (1) and R-004 (2).

OK

Multimeter Connection	Condition	Specified Condition
R-004 (1) - R-004 (2)	Not pushed	∞
	Pushed	325.36 Ω - 343.64 Ω
	Fully pushed	⩽ 5 Ω
	Pulled	2940 Ω - 3060 Ω
	Fully pulled up	980 Ω - 1020 Ω



(d) Check glass regulator switch for stuck and damage.

Result

Proceed to
OK
NG

NG → **Replace rear right door glass regulator switch**

OK

9 Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to OFF.
(d) Use diagnostic tester (the latest software) to read the DTCs stored in body control system again.

Result

Proceed to
OK
NG

OK → **System is normal**

NG → **Replace Body Control Module (BCM)**

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ON-VEHICLE SERVICE
Front Left Door Power Glass Regulator Switch

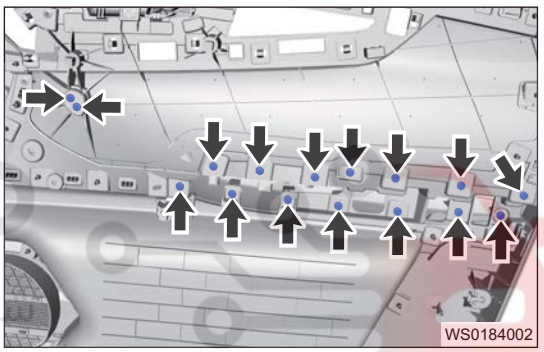
Removal

Warning/Caution/Hint
Caution:

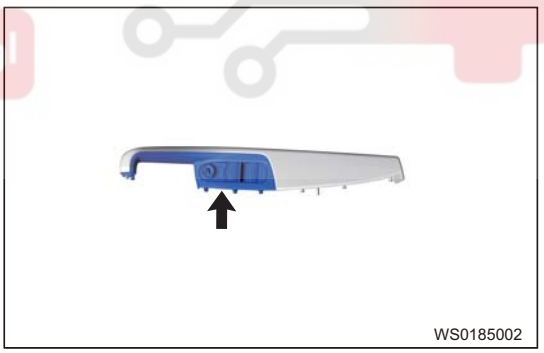
- Be sure to wear safety equipment to prevent accidents, when removing front left door power glass regulator switch.
- Appropriate force should be applied when removing front left door glass regulator switch. Be careful not to operate roughly.
- Try to prevent door inner protector assembly from being scratched, when removing front left door glass regulator switch.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front left door inner protector assembly.
4. Remove the front left door glass regulator switch.

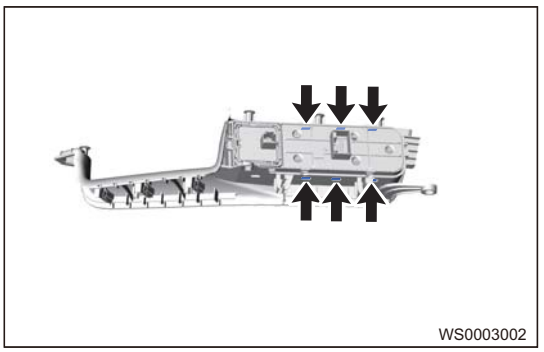
(a) Remove 16 fixing screws (arrow) of power glass regulator switch that fixed on door protector assembly.



(b) Separate the power glass regulator switch (arrow).



(c) Using a screwdriver wrapped with protective tape, detach claws (arrow) from front left door glass regulator switch assembly and remove front left door glass regulator switch.



Inspection

1. Check the front left door glass regulator switch.

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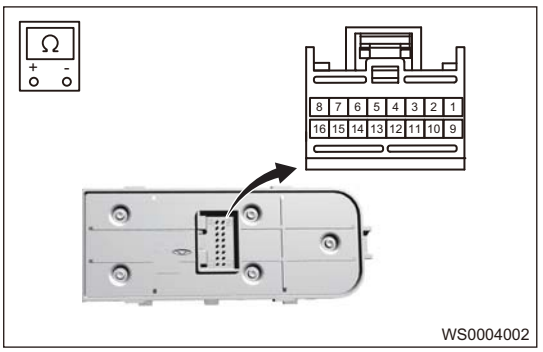
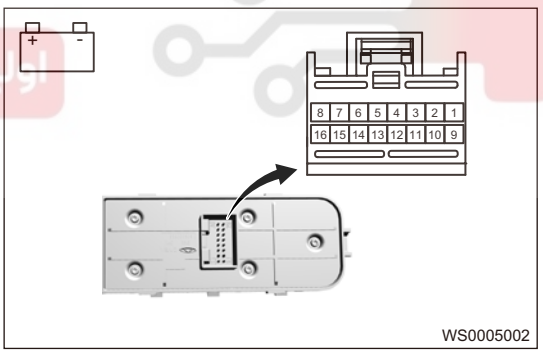
(a) Using a digital multimeter, check for continuity between terminals of front left door glass regulator switch according to table below.



Part	Multimeter Connection	Switch Condition	Specified Condition
Front left door glass regulator switch	1 - 7	Pushed	325.36 Ω - 343.64 Ω
		Fully pushed	⩽ 5 Ω
	1 - 7	Pulled	2940 Ω - 3060 Ω
		Fully pulled up	980 Ω - 1020 Ω
Front right door glass regulator switch	2 - 7	Pushed	325.36 Ω - 343.64 Ω
		Fully pushed	⩽ 5 Ω
	2 - 7	Pulled	2940 Ω - 3060 Ω
		Fully pulled up	980 Ω - 1020 Ω
Rear left door glass regulator switch	4 - 7	Pushed	325.36 Ω - 343.64 Ω
		Fully pushed	⩽ 5 Ω
	4 - 7	Pulled	2940 Ω - 3060 Ω
		Fully pulled up	980 Ω - 1020 Ω
Rear right door glass regulator switch	3 - 7	Pushed	325.36 Ω - 343.64 Ω
		Fully pushed	⩽ 5 Ω
	3 - 7	Pulled	2940 Ω - 3060 Ω
		Fully pulled up	980 Ω - 1020 Ω

2. Check the front left door glass regulator switch illumination light.

(a) Apply battery voltage to terminals of front left door glass regulator switch connector, and check operation of front left door glass regulator switch according to table below.



Battery positive (+)	Battery negative (-)	Specified Condition
6	7	Background light illuminates

If result is not as specified, replace front left door glass regulator switch.

Installation

1. Installation is in the reverse order of removal.

Caution:

- Check if connector is correctly installed, when installing front left door glass regulator switch.
- Check if front left door glass regulator switch can be operated normally after installation.

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Front Door Weather Bar

Removal

Warning/Caution/Hint

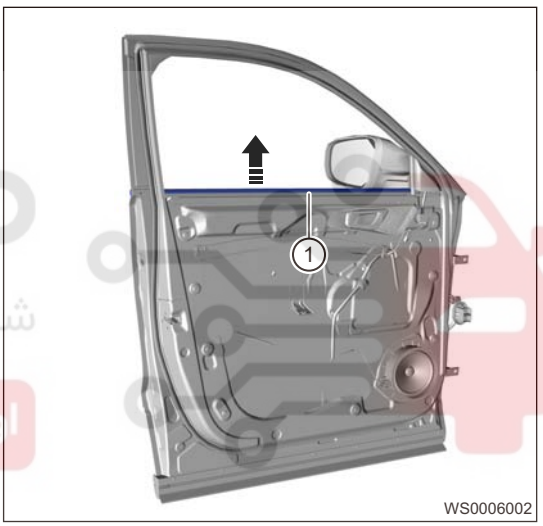
Hint:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

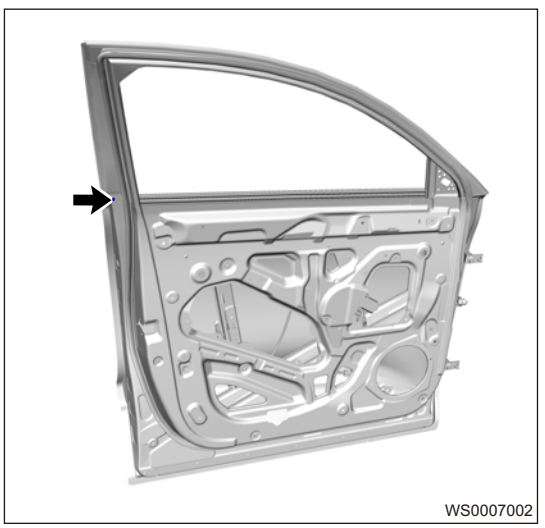
Caution:

- Be sure to wear safety equipment to prevent accidents, when removing front door weather bars.
- Appropriate force should be applied when removing front door weather bars. Be careful not to operate roughly.
- Try to prevent body paint surface from being scratched, when removing front door weather bars.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front left door inner weather bar.
   (a) Remove the front left door inner protector assembly.
   (b) Using an interior crow plate, remove front door inner weather bar (1) in direction of arrow.



4. Remove the front left door outer weather bar.
   (a) Remove the outside rear view mirror assembly.
   (b) Remove the fixing screw (arrow).



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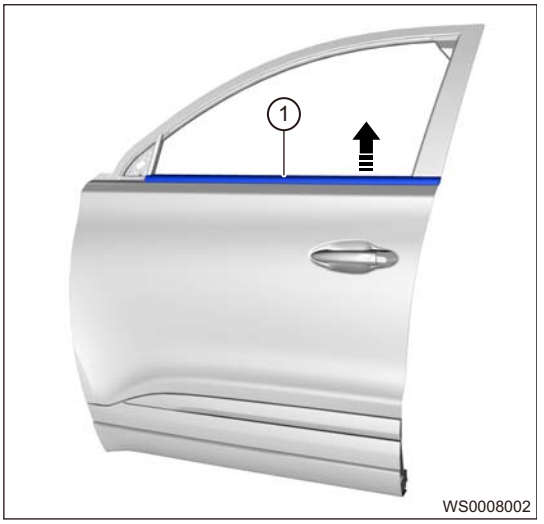
(c) Using an interior crow plate, remove front door outer weather bar (1) in direction of arrow.



Installation

1. Installation is in the reverse order of removal.

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Front Door Upper Glass Run

Removal

Warning/Caution/Hint

Hint:

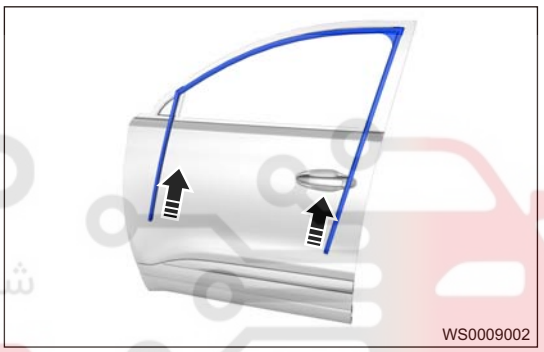
- Use same procedures for right and left sides.
- Procedures listed below are for left side.

Caution:

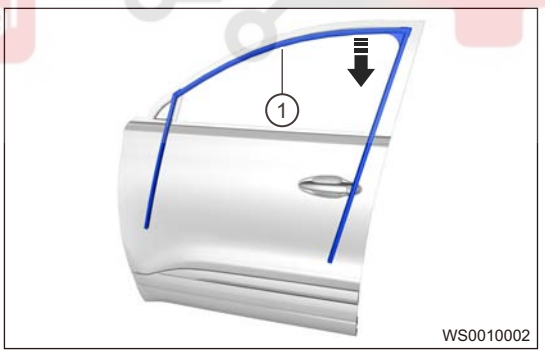
- Be sure to wear safety equipment to prevent accidents, when removing front door glass assembly.
- Appropriate force should be applied when removing front door glass assembly. Be careful not to operate roughly.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front left door inner protector assembly.
4. Remove the left outside rear view mirror assembly.
5. Remove the front left door weather bar.
6. Release and remove front left door glass upper run.

   (a) Lower the front door glass assembly and pull the lower part of front door glass upper run out from slot in direction of arrow.



   (b) Remove front left door glass upper run (1) from slot in direction of arrow as shown in illustration.



Installation

1. Installation is in the reverse order of removal.

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Front Door Glass Assembly

Removal

Warning/Caution/Hint

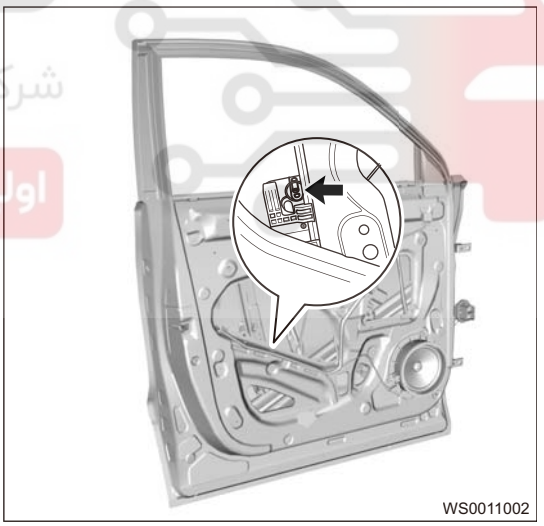
Hint:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

Caution:

- Be sure to wear safety equipment to prevent accidents, when removing front door glass assembly.
- Appropriate force should be applied when removing front door glass assembly. Be careful not to operate roughly.
- Prevent window glass from dropping which will cause damage, when removing front door glass assembly.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front left door inner protector assembly.
4. Remove the rear left door metal bracket.
5. Remove the front left door protective film assembly.
6. Remove the left outside rear view mirror assembly.
7. Remove the front left door weather bar.
8. Remove the front left door glass assembly.
   (a) Raise front door glass assembly to a proper position.
   (b) Using a screwdriver wrapped with protective tape, detach the fixing clip (arrow) from front door glass assembly and remove the front left door glass assembly.



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Installation

1. Installation is in the reverse order of removal.

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Front Door Rear Glass Guide Rail Assembly

Removal

Warning/Caution/Hint

Hint:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

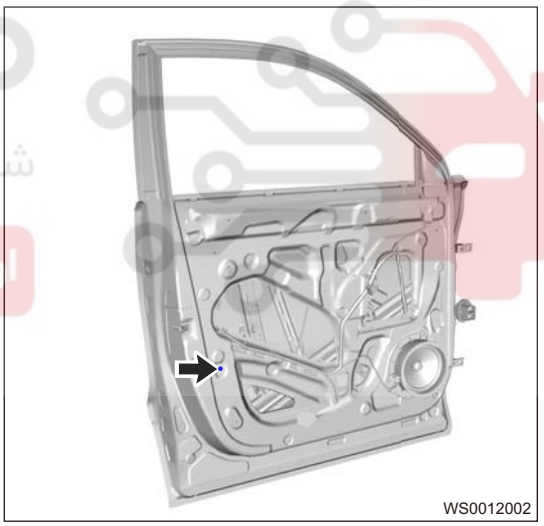
Caution:

- Be sure to wear safety equipment to prevent accidents, when removing front door rear glass guide rail assembly.
- Appropriate force should be applied when removing front door rear glass guide rail assembly. Be careful not to operate roughly.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front left door inner protector assembly.
4. Remove the rear left door metal bracket.
5. Remove the front left door protective film assembly.
6. Remove the left outside rear view mirror assembly.
7. Remove the front left door weather bar.
8. Remove the front left door rear glass assembly.

   (a) Remove fixing bolt (arrow) from front door rear glass guide rail assembly, and remove front left door rear glass guide rail assembly.

   Tightening torque
   9 ± 1.5 N·m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Installation

1. Installation is in the reverse order of removal.

   Caution:

   - After installing front door rear glass guide rail assembly, make sure that window glass can go up and down smoothly and freely without any vibration, chattering or shock loading, etc.

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Front Door Power Glass Regulator

Removal

Warning/Caution/Hint

Hint:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

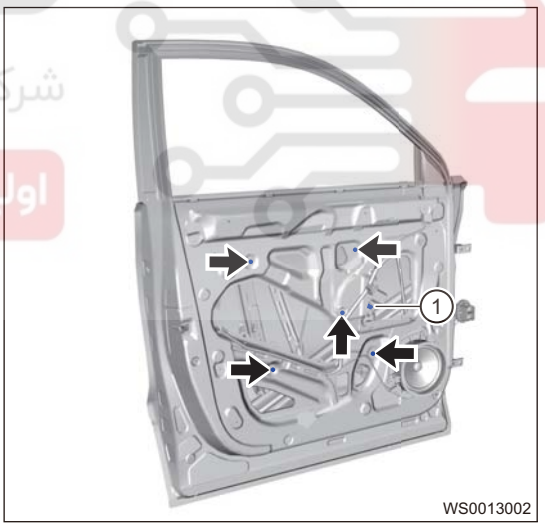
Caution:

- Be sure to wear safety equipment to prevent accidents, when removing front door power glass regulator.
- Appropriate force should be applied when removing front door power glass regulator. Be careful not to operate roughly.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front left door inner protector assembly.
4. Remove the rear left door metal bracket.
5. Remove the front left door protective film assembly.
6. Remove the left outside rear view mirror assembly.
7. Remove the front left door weather bar.
8. Remove the front left door glass assembly.
9. Remove the front left door power glass regulator.
   (a) Disconnect connector (1) from front door power glass regulator.
   (b) Remove 2 fixing nuts and 3 fixing bolts (arrow) from front door power glass regulator, and remove front left door power glass regulator assembly.

Tightening torque

9 ± 1.5 N·m

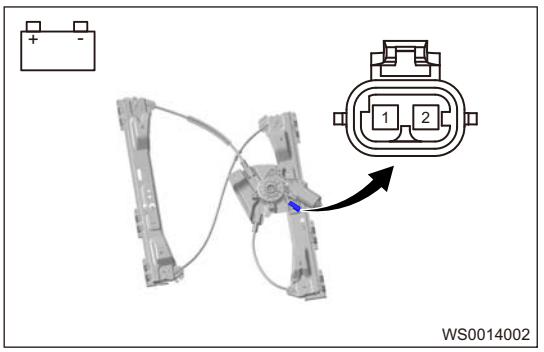


Inspection

1. Check the front door power glass regulator.
   (a) Apply battery voltage to the terminals of power glass regulator motor connector, and check the operation of front door power glass regulator motor according to table below.

Battery positive (+)	Battery negative (-)	Specified Condition
2	1	UP smoothly
1	2	DOWN smoothly

If result is not as specified, replace front door power glass regulator.



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Installation

1. Installation is in the reverse order of removal.

   Caution:

   - After installing front door power glass regulator is installed, make sure that window glass can go up and down smoothly and freely without any vibration, chattering or shocking, etc.

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Rear Left Door Power Glass Regulator Switch

Removal

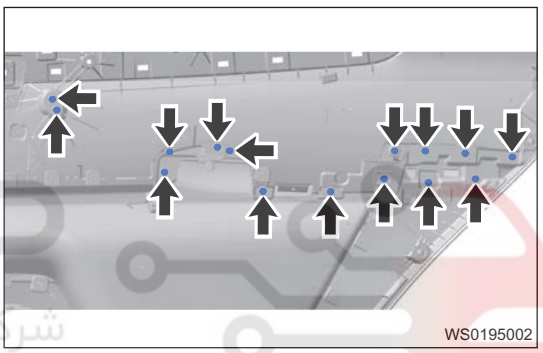
Warning/Caution/Hint

Hint:

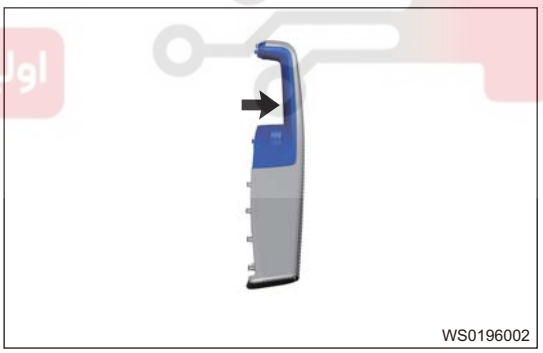
- Use same procedures for front right, rear right and rear left sides.
- Procedures listed below are for rear left side.
- Be sure to wear safety equipment to prevent accidents, when removing power glass regulator switch.
- Appropriate force should be applied when removing power door glass regulator switch. Be careful not to operate roughly.
- Try to prevent door inner protector assembly from being scratched, when removing power glass regulator switch.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the rear left door inner protector assembly.
4. Remove the rear left power glass regulator switch.

(a) Remove 15 fixing screws (arrow) of power glass regulator switch that fixed on door protector assembly.



(b) Separate the power glass regulator switch.



(c) Using a screwdriver wrapped with protective tape, detach 4 claws (arrow) from power glass regulator switch and remove the power glass regulator switch.

Inspection

1. Check the power glass regulator switch.

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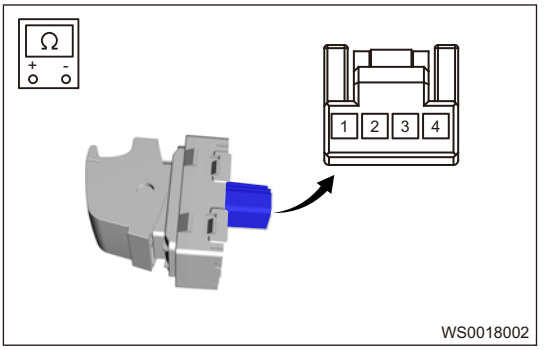
(a) Using a digital multimeter, check for continuity between terminals of other three power glass regulator switches according to table below.

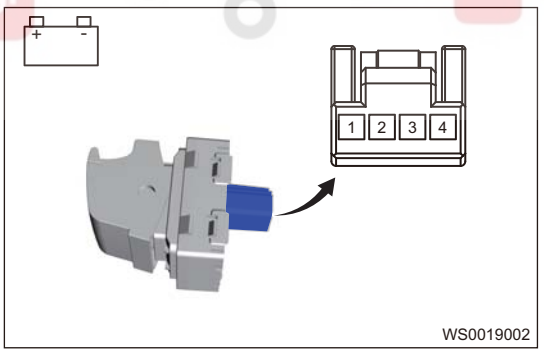


Part	Multimeter Connection	Switch Condition	Specified Condition
Front right door glass regulator switch	2 - 1	Pushed	325.36 Ω - 343.64 Ω
		Fully pushed	⩽ 5 Ω
		Pulled	2940 Ω - 3060 Ω
		Fully pulled up	980 Ω - 1020 Ω
Front left door glass regulator switch	2 - 1	Pushed	325.36 Ω - 343.64 Ω
		Fully pushed	⩽ 5 Ω
		Pulled	2940 Ω - 3060 Ω
		Fully pulled up	980 Ω - 1020 Ω
Rear left door glass regulator switch	2 - 1	Pushed	325.36 Ω - 343.64 Ω
		Fully pushed	⩽ 5 Ω
		Pulled	2940 Ω - 3060 Ω
		Fully pulled up	980 Ω - 1020 Ω
Rear right door glass regulator switch	2 - 1	Pushed	325.36 Ω - 343.64 Ω
		Fully pushed	⩽ 5 Ω
		Pulled	2940 Ω - 3060 Ω
		Fully pulled up	980 Ω - 1020 Ω

If result is not as specified, replace power glass regulator switch.

2. Check the power glass regulator switch illumination (for rear left door side).

(a) Apply battery voltage to the terminals of power glass regulator switch connector, and check the operation of power glass regulator switch according to table below.



Battery positive (+)	Battery negative (-)	Specified Condition
4	3	Background light illuminates

If result is not as specified, replace power glass regulator switch.

Installation

1. Installation is in the reverse order of removal.

Caution:

- Check if connector is installed in place, when installing power glass regulator switch.
- Check if power glass regulator switch can be operated normally after installation.

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Rear Door Weather Bar

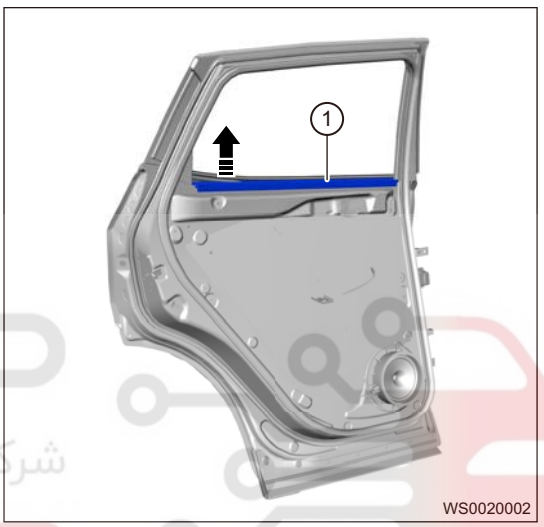
Removal

Warning/Caution/Hint

Hint:

- Be sure to wear safety equipment to prevent accidents, when removing rear door weather bars.
- Appropriate force should be applied when removing rear door weather bars. Be careful not to operate roughly.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the rear left inner weather bar.
   (a) Remove the rear left door inner protector assembly.
   (b) Using an interior crow plate, remove rear door inner weather bar (1) from slot in direction of arrow.



4. Remove the rear left door outer weather bar.
   (a) Remove 2 fixing screws (arrow).

   (b) Using an interior crow plate, remove rear door outer weather bar (1) from slot in direction of arrow.

Installation

1. Installation is in the reverse order of removal.

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Rear Door Upper Glass Run

Removal

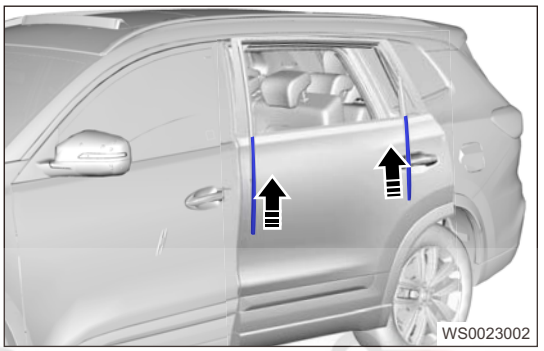
Warning/Caution/Hint

Hint:

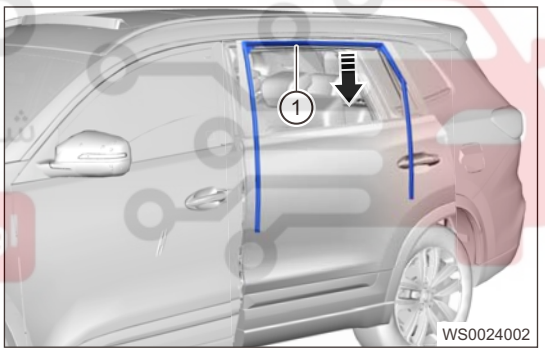
- Use same procedures for right and left sides.
- Procedures listed below are for left side.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the rear left door weather bar.
4. Remove the rear left door upper glass run.

   (a) Lower rear door glass assembly and pull lower part of rear door glass upper run out from slot.



   (b) Remove rear left door glass upper run (1) in direction of arrow as shown in illustration.



Installation

1. Installation is in the reverse order of removal.

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Rear Door Glass Assembly

Removal

Warning/Caution/Hint

Hint:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

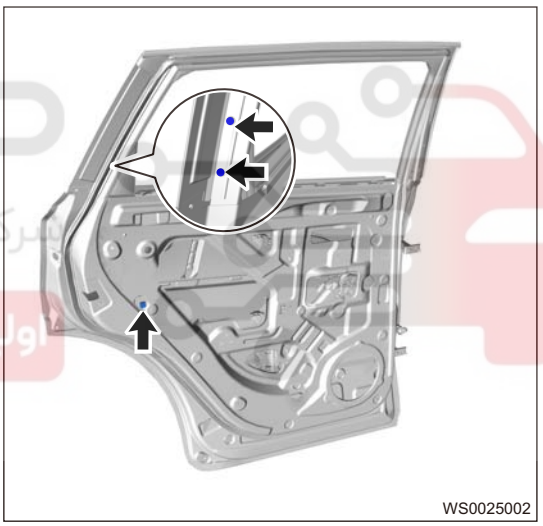
1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the rear left door inner protector assembly.
4. Remove the rear left door metal bracket.
5. Remove the rear left door protective film assembly.
6. Remove the rear left door weather bar.
7. Remove the rear left door upper glass run.
8. Remove the rear left door glass rear guide rail assembly.

   Caution:

   - It is not necessary to remove all rear left door weather bars. There are 2 fixing screws hidden in rear door weather bar to fix rear door guide rail.

   (a) Remove 2 fixing screws and fixing bolt (arrow) from rear left door guide rail, and remove rear left door glass guide rail.

   Tightening torque
   9 ± 1.5 N·m



9. Remove the rear left door glass assembly.

   Caution:

   - Prevent window glass from dropping which will cause damage, when removing rear door glass assembly.

   (a) Raise front door glass assembly to a proper position.

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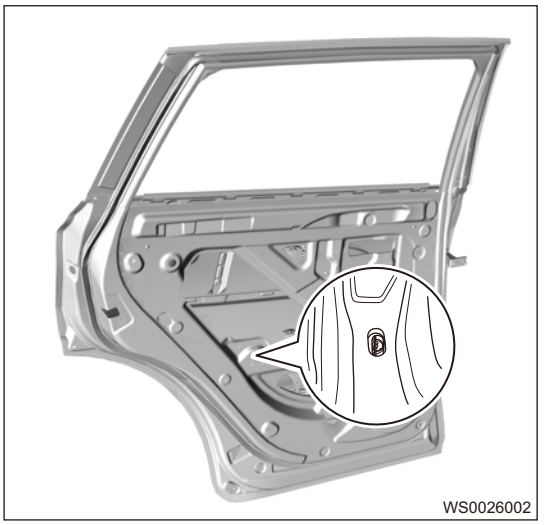
(b) Detach snap pin from rear door glass assembly, and remove rear left door glass assembly.



Installation

1. Installation is in the reverse order of removal.

   Caution:

   - Prevent window glass from dropping which will cause damage, when installing rear door glass assembly.

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Rear Door Power Glass Regulator

Removal

Warning/Caution/Hint

Hint:

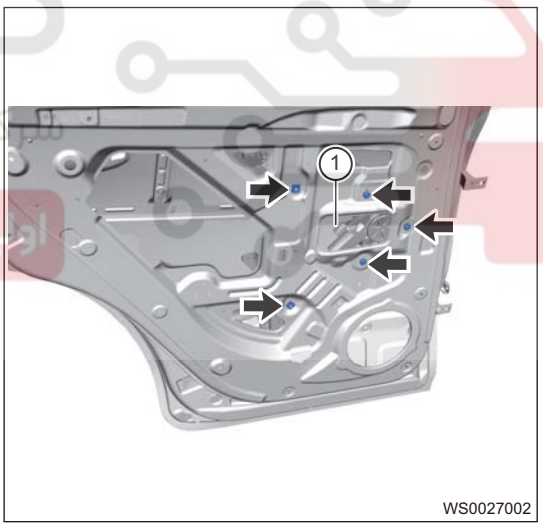
- Use same procedures for right and left sides.
- Procedures listed below are for left side.

Caution:

- Be sure to wear safety equipment to prevent accidents, when removing rear door power glass regulator.
- Appropriate force should be applied when removing rear door power glass regulator. Be careful not to operate roughly.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the rear left door inner protector assembly.
4. Remove the rear left door metal bracket.
5. Remove the rear left door protective film assembly.
6. Remove the rear left door weather bar.
7. Remove the rear left door glass assembly.
8. Remove the rear left door power glass regulator.
   (a) Disconnect the rear door power glass regulator connector (1).
   (b) Remove 2 fixing nuts and 3 fixing bolts (arrow) from rear door power glass regulator.

   Tightening torque
   9 ± 1.5 N·m



Installation

1. Installation is in the reverse order of removal.

   Caution:

   - After installing rear door power glass regulator, make sure that window glass can go up and down smoothly and freely without any vibration, chattering or shocking, etc.

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Front Windshield Assembly

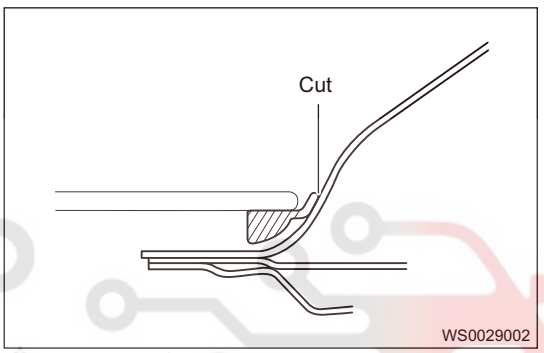
Removal

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the roof assembly (See page 62-25).

   Caution:
   - It is not necessary to completely remove the roof assembly. Lower the front part of roof assembly, so that front windshield assembly can be removed.
4. Remove the inside rear view mirror assembly.
5. Remove the wiper arm assembly.
6. Remove the front windshield lower support assembly (See page 61-18).
7. Remove the front windshield weatherstrip.
8. Remove the front windshield assembly

   (a) Using a knife, cut off the adhesive.

   Caution:
   - Try to prevent body paint surface from being scratched, when cutting off the adhesive.



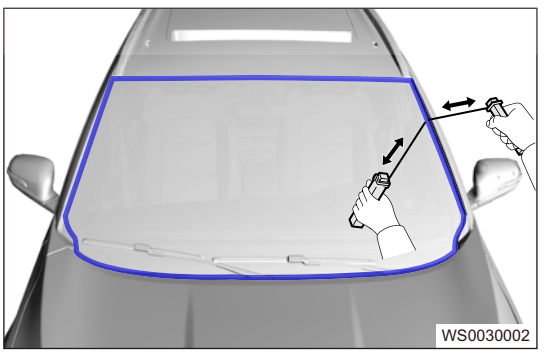
   (b) Apply protective tape to the outer surface of body to prevent scratches.

   Caution:
   - To prevent instrument panel upper body assembly from being scratched, place a plastic sheet between piano wire and instrument panel upper body assembly.

   (c) Pass a piano wire through the seam between body and front windshield assembly.

   (d) Tie wooden blocks or similar objects to both piano wire ends, cut off the adhesive by pulling the piano wire around front windshield assembly, and remove the front windshield assembly.

   Caution:
   - When removing front windshield assembly, an assistant is needed.
   - When removing front windshield assembly, prevent it from dropping.
   - Leave as much adhesive on the body as possible when cutting off the adhesive.
   - When separating front windshield assembly from vehicle, be careful not to damage body paint, interior and exterior ornaments.



9. Clean the vehicle body.

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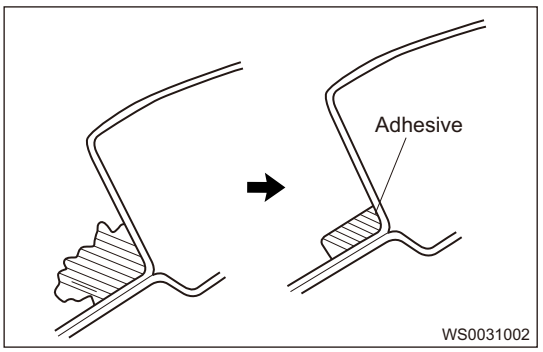
(a) Using a knife, cut off any excess adhesive on the contact surface of vehicle body as shown in illustration.

Caution:
- Try to prevent body paint surface from being scratched, when cutting off the adhesive.
- Leave as much adhesive on the body as possible, when cutting off the adhesive.

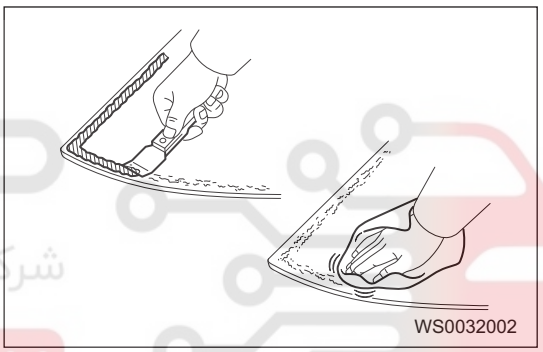


(b) Clean the contact surface of vehicle body with cleaner.
Caution:
- Even if all adhesive has been removed, cleaning of vehicle would be necessary.

10. Clean the removed glass.
Caution:
- DO NOT touch the glass after cleaning it.
- Even if a new glass is used, it is necessary to clean it with glass cleaner.

(a) Using a scraper, remove the adhesive sticking to glass.

(b) Clean the outer edges of glass with cleaner.



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اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

Installation

Installation condition

- Before assembling, check the number of accessories and whether stopper is lost and whether small cracks or bubbles exist around windshield. Never install unqualified windshield to vehicle.
- Check if gum application surface on the sheet metal is flat before assembly.
- After glass is applied with gum, check if the glass gum is applied uniformly, especially at the corner of glass. Never load the glass of which gum is not applied uniformly.

1. Wipe the sheet metal primer area matched with the windshield with alcohol cloth and make sure width is 20 - 24 mm.
2. Apply sheet metal primer A11-4105013 and make sure application width is 19 - 21 mm; Do not expose it in the air before applying the sheet metal primer.
3. Using cleaner A11-4105017 (accelerant), clean the area around gum application and make sure cleaning width is 15 - 17 mm.
4. Apply A11-4105015 windshield primer (tolerance ± 1mm) along the glue line on the glass. Make sure application width is 13 - 15 mm. Apply gum A11-4105011 along the glue line in the center of the glue line at the lower part of the windshield. Make sure the gum width is 7 - 9 mm, height is 11 - 13 mm and the height after being compressed is 5 - 7 mm. There should be no uneven gum and gum deviation from application line. There also no gum leakage or fluid overflowing; if gum overflowing from glass occurs, it is necessary to remove it.

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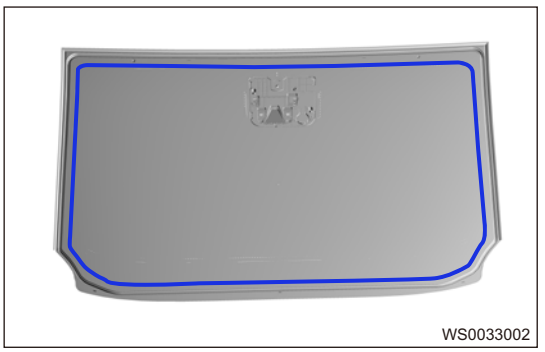
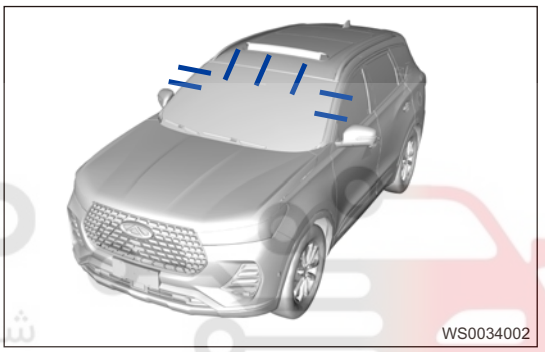
5. Align dowel pins of front windshield with corresponding set holes for windshield installation on sheet metal of tonneau cover. Install the windshield, make sure to fix the upper end first and then make it contact the lower end (be careful to avoid impact to the glass and wrinkles to weatherstrips during assembly, and weatherstrips is matching with sheet metal well).
6. Fine tuning glass left and right to make sure clearance between glass edges and tonneau cover and quarter is uniform and meets the requirements of DTS.
   (a) Slightly tap four sides of glass (within 100 - 200 mm from coil to outside edge of glass as shown in illustration) to install glass into place (height after being compressed is 5 - 7 mm).


WS0033002

   (b) Apply tape (7 positions, length of tape is 150 - 200 mm) to prevent glass from sliding.
   Hint:
   In order to avoid blocking the wiper blade after tape is applied, it is required that the length of adhesive tape remaining on the glass shall not exceed 100 mm on the top of glass, and the length of quarter part shall be between 40 and 60.


WS0034002

7. Install the front windshield lower trim board assembly.
8. Install the rear wiper arm assembly (See page 45-25).
9. Install the inside rear view mirror assembly.
10. Install the roof assembly (See page 62-25).
11. Connect the negative battery cable.

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Triangular Window Assembly

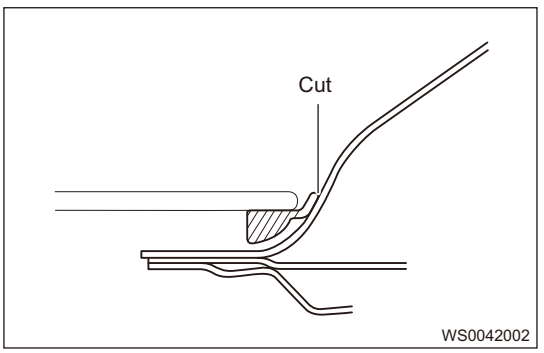
Removal

Warning/Caution/Hint

- Try to prevent body paint surface from being scratched, when cutting off the adhesive.

1. Remove the triangular window assembly.

(a) Using a knife, cut off the adhesive.



(b) Apply protective tape to the outer surface of body to prevent scratches.
(c) Pass a piano wire through the seam between body and triangular window glass assembly.
(d) Tie wooden blocks or similar objects to both piano wire ends, cut off the adhesive by pulling the piano wire around triangular window glass assembly, and remove the triangular window glass assembly.

Warning:

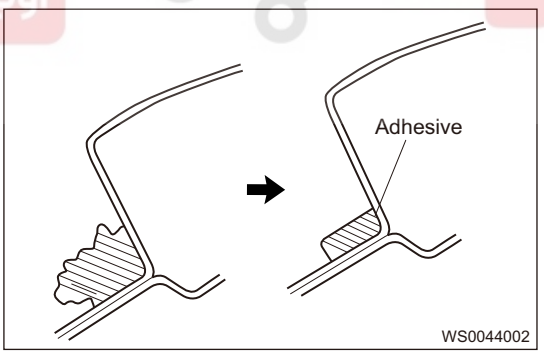
- When removing the assembly, an assistant is needed.
- When removing triangular window glass assembly, prevent it from dropping.
- Leave as much adhesive on the body as possible when cutting off the adhesive.
- When separating triangular window glass assembly from vehicle, be careful not to damage body paint, interior and exterior ornaments.

2. Clean the vehicle body.

(a) Using a knife, cut off any excess adhesive on the contact surface of vehicle body.

Warning:

- Try to prevent body paint surface from being scratched, when cutting off the adhesive. Leave as much adhesive on the body as possible, when cutting off the adhesive.



(b) Clean the contact surface of vehicle body with cleaner.

Warning:

- Even if all adhesive has been removed, cleaning of vehicle would be necessary.

3. Clean the removed triangular window glass assembly

(a) Using a scraper, remove the adhesive sticking to glass.

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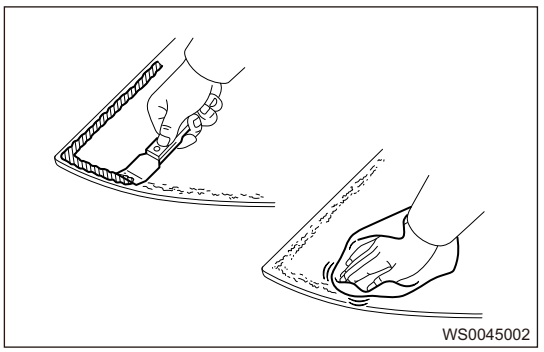
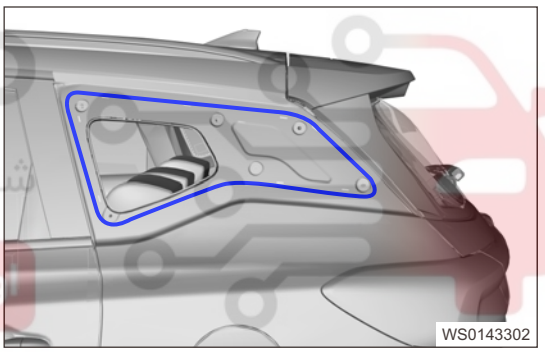
(b) Clean the outer edges of glass with glass cleaner.

Warning:
- DO NOT touch the glass after cleaning it.


WS0045002

Installation

1. Installation condition
   (a) Before assembling, check if there are scratches on glass and strip and if 4 positioning clips are lost. Never install unqualified glass to vehicle.
   (b) Check if gum application surface on the sheet metal is flat before assembly.
   (c) After glass is applied with gum, check if the glass gum is applied uniformly, especially at the corner of glass. Never load the glass of which gum is not applied uniformly.
2. Assembly order
   (a) Wipe the primer area with alcohol cloth and width is 20 - 24 mm.
   (b) Apply sheet metal primer A11-4105013 to the center position of sheet metal installation area and make sure application width is 19 - 21 mm; Do not expose it in the air before applying the sheet metal primer. (Sheet metal primer application area is shown in illustration)


WS0143302

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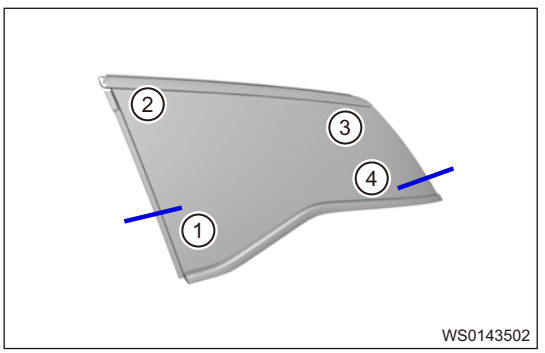
   (c) Using cleaner A11-4105017 (accelerant), clean the area around gum application and make sure cleaning width is 15 - 17 mm.
   (d) Apply A11-4105015 (windshield primer) on the application position around left and right sides of rear windshield. Make sure application width is 13 - 15 mm and apply gum along application line. Make sure the gum width is 7 - 9 mm, height is 11 - 13 mm and the height after being compressed is 5 - 7 mm. There should be no uneven gum and gum deviation from application line and also no gum leakage or fluid overflowing after assembling.
   (e) After applying the gum, align 4 clips of glass with sheet metal holes of quarter, and tighten the clips in order of 1-2-3-4. Finally, apply tape on four sides of glass and sheet metal to prevent glass from moving. At 2 positions, the length of tape is 150 - 200 mm. (As shown in illustration)

Warning:
- When apply tape, it is necessary to press the glass onto the body, to prevent glass from jacked up by adhesive and cannot be installed in place.



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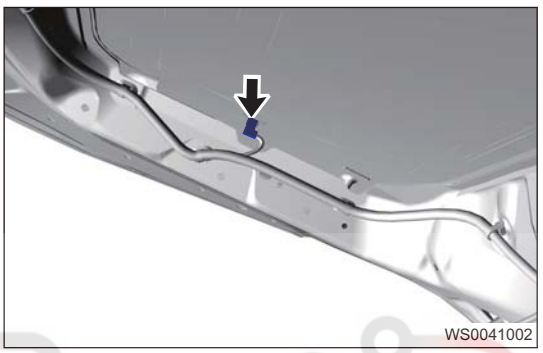
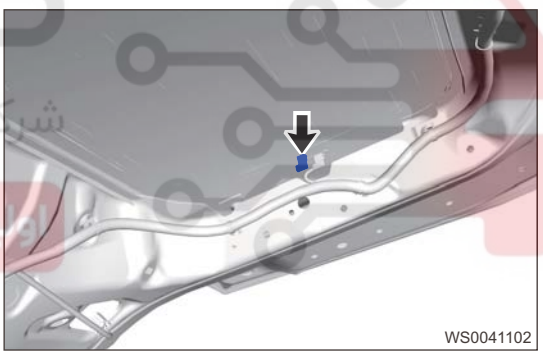
Rear Windshield Assembly

Removal

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the rear door protector assembly.
4. Remove the rear wiper arm assembly (See page 45-25).
5. Remove the rear wiper motor assembly.
6. Remove the rear spoiler assembly.
7. Remove the spoiler assembly.
8. Remove the defroster wire harness assembly.
   (a) Remove the left defroster connector (arrow).

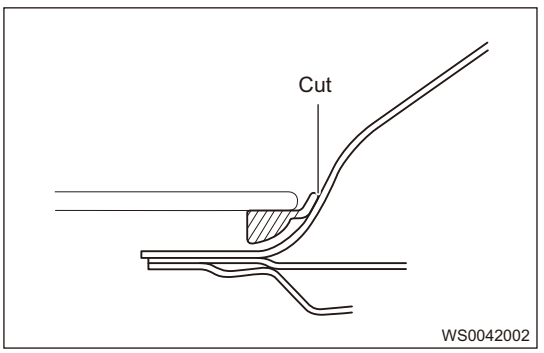


   (b) Remove the right defroster connector (arrow).



9. Remove the rear windshield weatherstrip.
10. Remove the rear windshield assembly.
    (a) Using a knife, cut off the adhesive.

Caution:
- Try to prevent body paint surface from being scratched, when cutting off the adhesive.



    (b) Apply protective tape to the outer surface of body to prevent scratches.
    (c) Pass a piano wire through the seam between body and rear windshield assembly.

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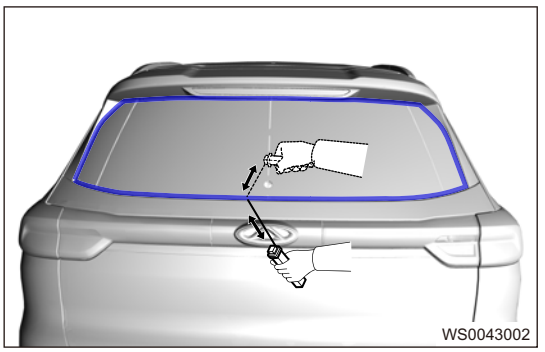
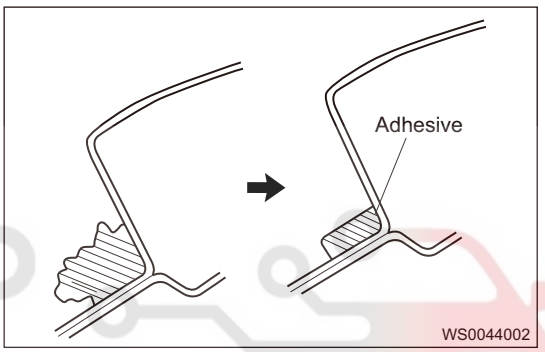
(d) Tie wooden blocks or similar objects to both piano wire ends, cut off the adhesive by pulling the piano wire around rear windshield assembly, and remove the rear windshield assembly.



Caution:
- When removing rear windshield assembly, an assistant is needed.
- When removing rear windshield assembly, prevent it from dropping.
- Leave as much adhesive on the body as possible when cutting off the adhesive.
- When separating rear windshield assembly from vehicle, be careful not to damage body paint, interior and exterior ornaments.

11. Clean the vehicle body.

(a) Using a knife, cut off any excess adhesive on the contact surface of vehicle body as shown in illustration.



Caution:
- Try to prevent body paint surface from being scratched, when cutting off the adhesive.
- Leave as much adhesive on the body as possible, when cutting off the adhesive.

(b) Clean the contact surface of vehicle body with cleaner.

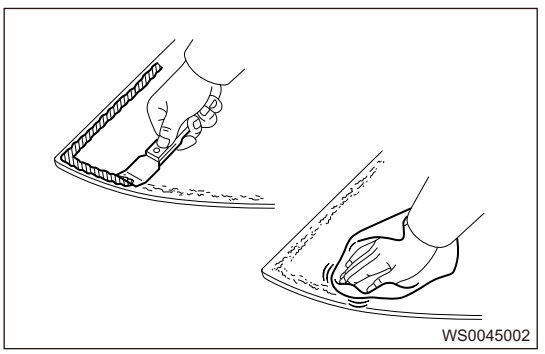
Caution:
- Even if all adhesive has been removed, cleaning of vehicle would be necessary.

12. Clean the removed glass.

Caution:
- DO NOT touch the glass after cleaning it.
- DO NOT touch the glass after cleaning it.

(a) Using a scraper, remove the adhesive sticking to glass.

(b) Clean the outer edges of glass with glass cleaner.



Installation

1. Detailed description and technology requirements during assembly.
   (a) Before assembling, check the number of accessories and whether stopper is lost and whether small cracks or bubbles exist around windshield. Never install unqualified windshield to vehicle.
   (b) Check if gum application surface on the sheet metal is flat before assembly.

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(c) After glass is applied with gum, check if the glass gum is applied uniformly, especially at the corner of glass. Never load the glass of which gum is not applied uniformly.

2. Assembly order

(a) Wipe the primer area with alcohol cloth and width is 20 - 24 mm.

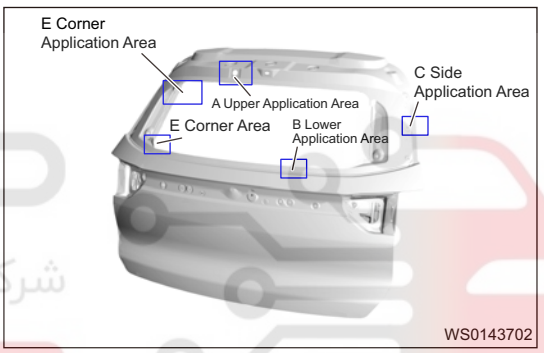
(b) Apply sheet metal primer A11-4105013 to the center position of sheet metal installation area and make sure application width is 19 - 21 mm; Do not expose it in the air before applying the sheet metal primer.

(c) Using cleaner A11-4105017 (accelerant), clean the area around gum application and make sure cleaning width is 15 - 17 mm.

(d) Apply A11-4105015 windshield primer (tolerance ± 1mm) on the application position around rear windshield. Make sure application width is 13 - 15 mm. Apply gum A11-4105011 from center lower position along application line. Make sure the gum width is 7 - 9 mm, height is 11 - 13 mm and the height after being compressed is 5 - 7 mm. There should be no uneven gum and gum deviation from application line. There also no gum leakage or fluid overflowing; if gum overflowing from glass occurs, it is necessary to remove it.

(e) Align dowel pins of rear back door with corresponding set holes for windshield installation on sheet metal of back door outside panel. Install the windshield (be careful to avoid impact to the glass during assembly).

(f) Fine tuning glass to make sure clearance between glass edges is uniformly. Slightly tap four sides of glass to install glass into place (height after being compressed is 5 - 7 mm) and apply tape (length of tape is 150 - 200 mm) to prevent glass from shaking.



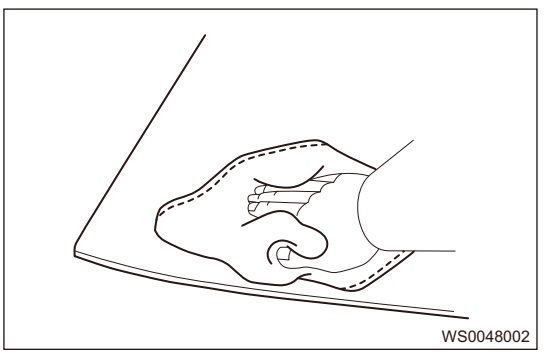
(g) After installation, connect wire harness connector and tongue on the glass, and confirm the installing condition.

3. Clean the contact surface of rear windshield.

Caution:

- DO NOT touch the surface of rear windshield after cleaning it.

(a) Remove any residue on the contact surface of rear windshield with a clean, lint-free cloth soaked with cleaner.



4. Apply a coat of primer to the contact surface of rear windshield assembly.

Caution:

- Allow primer to dry for at least 3 minutes.
- DO NOT apply primer to the adhesive.
- DO NOT apply too much primer.
- DO NOT keep any opened primer for later use.

(a) Using a brush, apply a coat of primer to the contact surface of vehicle body.

(b) Wipe off any excess primer with a clean cloth before drying.

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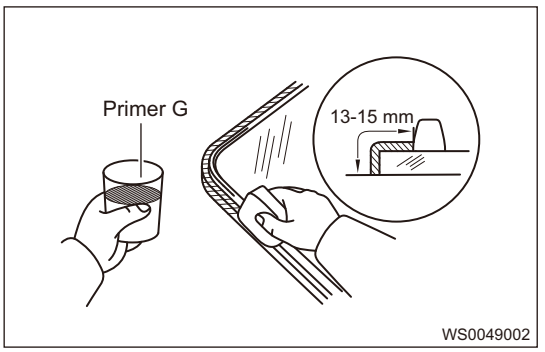
(c) Width of primer is 13 to 15 mm.



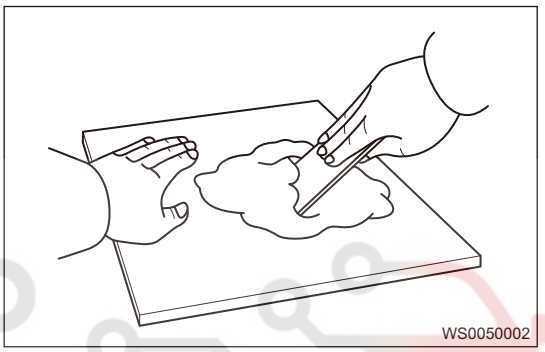
5. Mix the adhesive.

Caution:

- Adhesive should be mixed thoroughly within 5 minutes.

(a) Using a solvent, thoroughly clean the mixing board and scraper.

(b) Using a scraper, thoroughly mix 500 g main adhesive and 75 g hardener on the mixing board.

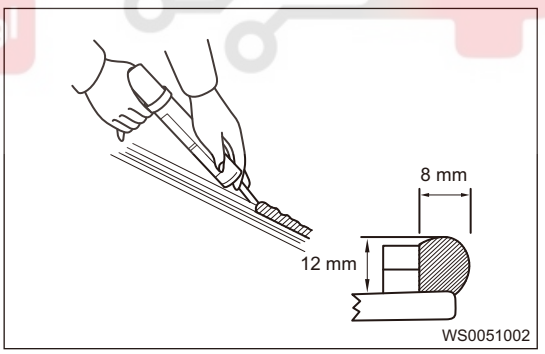


6. Apply the adhesive.

(a) Cut off the tip of cartridge nozzle and add adhesive.

(b) Install the cartridge to sealer gun.

(c) Apply adhesive evenly to rear windshield assembly as shown in illustration.
Adhesive width: 8 mm
Adhesive height: 12 mm



7. Install the rear windshield assembly.

Caution:

- Check that upper-and-lower clearance and right-and-left clearance of rear windshield assembly are uniform, to ensure good fitting with weatherstrips all around.

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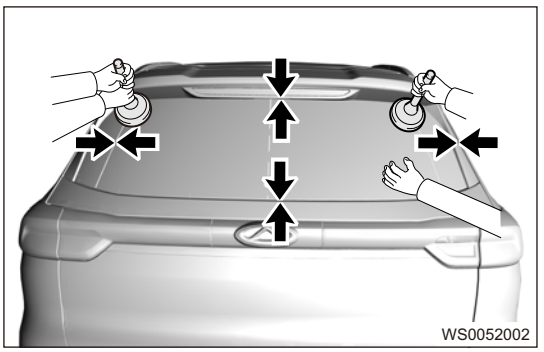
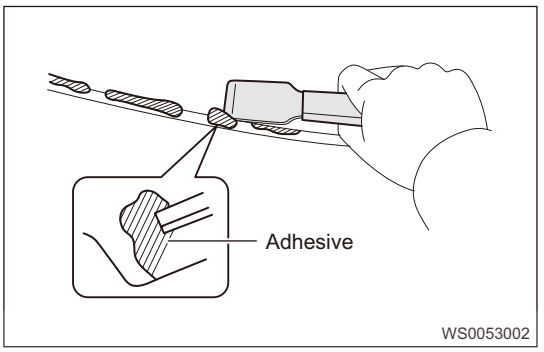
(a) Align the matchmarks on glass and vehicle body, and gently press in glass along the edge.



(b) Using a scraper, uniformly apply adhesive to the glass edge.



(c) Remove any excess or spilled adhesive with the scraper.
(d) Apply tape all the way around, and do not remove them until the adhesive hardens.

8. Check and repair the sealing of glass.
(a) Check the glass for leakage after adhesive has completely hardened.
(b) If it leaks, seal the leaks by adding adhesive.

9. Connect the negative battery cable.

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