

Component Procedures: Windows

Table of Contents

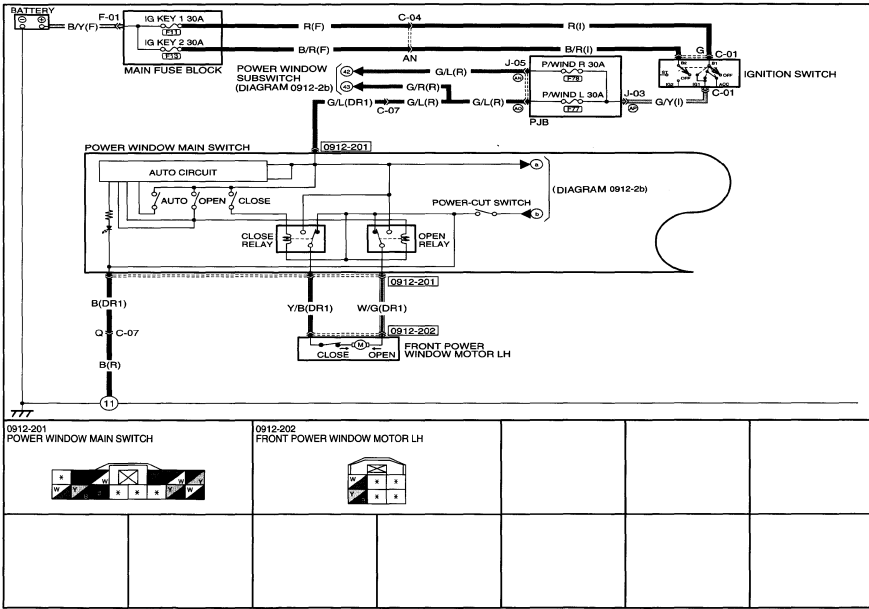
1. Power Window System (Article 1454097)
2. System Schematic (Article 1454100)
3. Power Windows (Article 10964)
4. All Technical Service Bulletins (itype_100)
5. Customer Interest Bulletins (itype_109)
6. Repair Tips (itype_110)
7. Foreword (Article 1452453)
8. Power Window System Preliminary Inspection (Article 1452454)
9. Symptom Troubleshooting Chart (Article 1452533)
10. No.1 the Auto Open Function on the Driver's Side Power Window Is Inoperative (Article 1452493)
11. No.2 the Drivers Side Power Window Is Inoperative (Article 1452772)
12. No.3 All Power Windows Other Than Driver's Side Do Not Operate Using the Power Window Subswitch (Article 1452605)
13. No.4 All Power Windows Other Than Driver's Side Do Not Operate Using the Power Window Main Switch (Article 1452606)
14. No.5 All Power Windows Are Inoperative (Article 1452607)
15. No.6 Door Glass Reverses Even Though the Glass Does Not Encounter A Foreign Object While It Is Moving Up In Automatic Mode (Article 1452712)
16. No.7 Abnormal Noise While the Door Glass Is Opening or Closing (Article 1452713)
17. Noise (itype_156)

Component Procedures: Windows

Power Window System (Article 1454097)

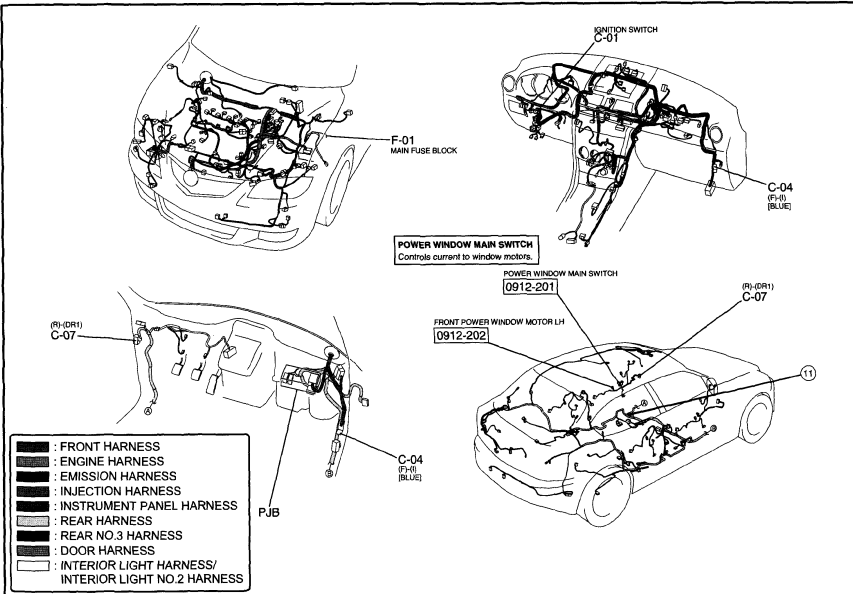
POWER WINDOW SYSTEM

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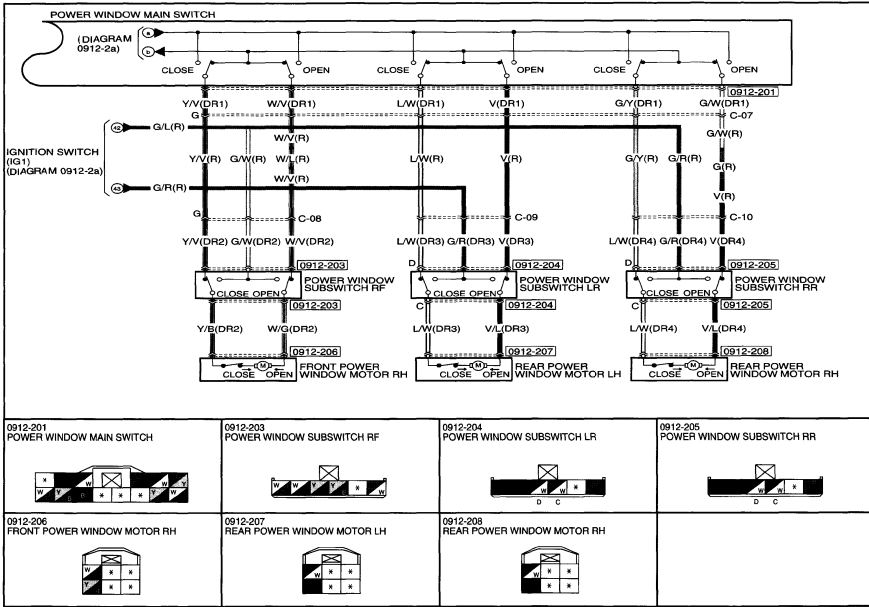
POWER WINDOW SYSTEM

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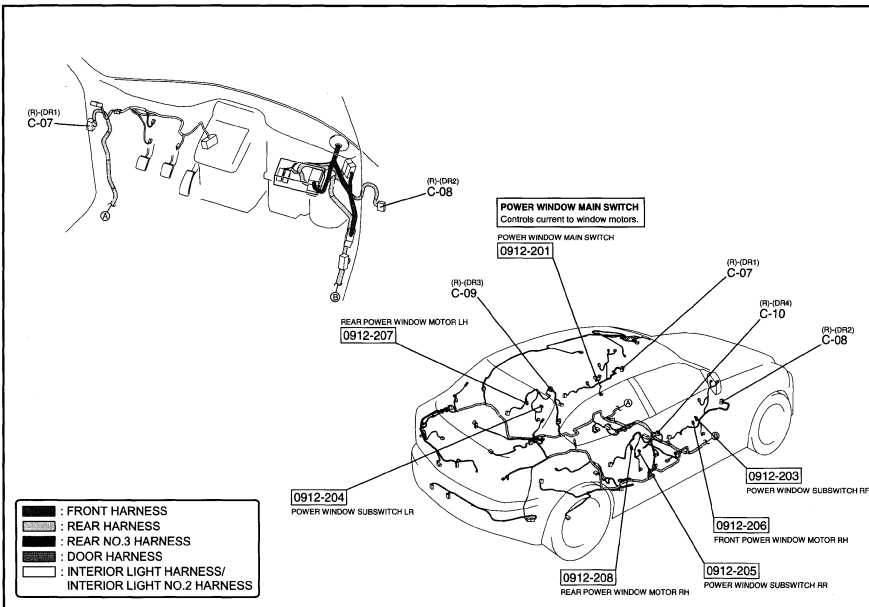
POWER WINDOW SYSTEM

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POWER WINDOW SYSTEM

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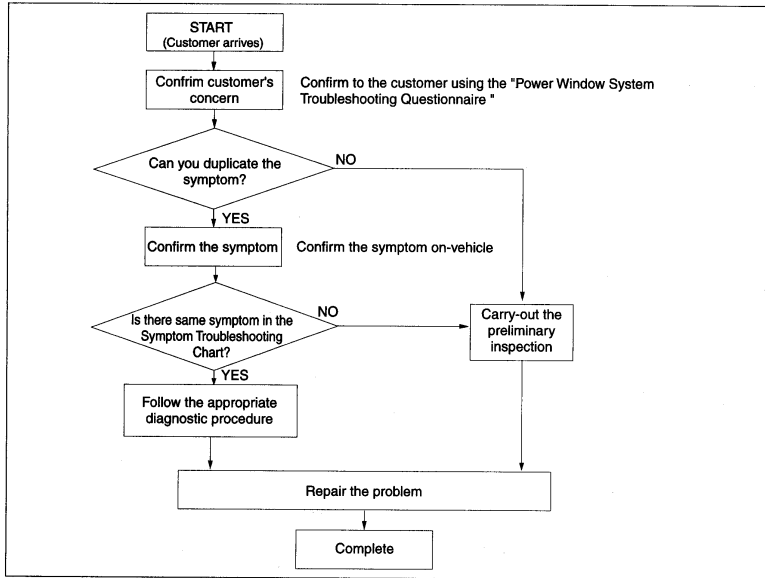


System Schematic (Article 1454100)

FOREWORD [POWER WINDOW SYSTEM]

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Troubleshooting Procedure



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POWER WINDOW SYSTEM TROUBLESHOOTING QUESTIONNAIRE [POWER WINDOW SYSTEM]

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Date : _____

When did the malfunction first occur ? _____

Weather conditions Fair weather Cloudy Rain Snow Other () Outside temperature Approx. °F _____

Driving conditions Driving Stopped (Engine is : Running Stopped)

Duplicate symptom? YES NO Frequency Always Sometimes (times/month)

Road conditions City Outer city Freeway Other () / Paved Dirt road

*Follow the appropriate diagnostic procedures shown below or perform the basic troubleshooting flow.

(No.1) The auto open function on the driver's side power window inoperative.

(No.2) The driver's side power window is inoperative.

(No.3) All power windows other than driver's side do not operate using the power window subswitch.

(No.4) All power windows other than driver's side do not operate using the power window main switch.

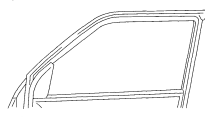
(No.5) All power windows are inoperative.

(No.6) Door glass reverses even though the glass does not encounter a foreign object while it is moving up in automatic mode.

Please clarify the position where the driver side front door glass opens automatically. Completely closed position Approx. ()mm lower than completely closed position Approx. ()mm upper than the completely open position.

(No.7) Abnormal noise while the door glass is opening or closing.

Other (Describe the symptom below if the symptom does not appear in the above list.)



Please describe the conditions when the malfunction occurs.
(Example) : When the outer mirrors are operated

Please describe the conditions under which the system returns to normal operation after malfunctioning.
(Example) : The ignition switch is turned to the ON position after inserting the ignition key into the key cylinder

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Power Window System Preliminary Inspection (Article 1452454)

POWER WINDOW SYSTEM PRELIMINARY INSPECTION [POWER WINDOW SYSTEM]

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Manual Open/close Function Inspection

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Turn the ignition switch to the ON position. Operate the power window using the manual open/close function on the power window main switch. Does the power window operate properly? 	Yes Go to the next step.
		No <ul style="list-style-type: none"> Inspect the power window main switch and the wiring harness. Repair or replace malfunctioning parts.
2	<ul style="list-style-type: none"> Set the power cut switch to the UNLOCK position. Operate the power window using the power window subswitch. Does the power window operate properly? 	Yes Go to the next step.
		No <ul style="list-style-type: none"> Inspect the power window subswitch and the wiring harness. Repair or replace malfunctioning parts.
3	<ul style="list-style-type: none"> Set the power cut switch to the LOCK position. Operate all power windows other than the driver side. Does the power window operate properly? 	Yes <ul style="list-style-type: none"> Inspect the power cut switch and the wiring harness. Replace the power window main switch.
		No <ul style="list-style-type: none"> Manual open/close function is normal. Perform the auto open/close function inspection.

Auto Open Function (Driver's Side) Inspection

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Turn the ignition switch to the ON position. Operate the power window using the auto open function on the power window main switch. Does the power window operate properly? 	Yes Go to the next step.
		No Go to No.1 THE AUTO OPEN FUNCTION ON THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM].
2	<ul style="list-style-type: none"> Operate the power window main switch to the close position while the power window is opening. Does the power window operation stop? 	Yes Auto open function is normal.
		No <ul style="list-style-type: none"> Replace the power window main switch (power window control unit is malfunctioning.)

Symptom Troubleshooting Chart (Article 1452533)

SYMPTOM TROUBLESHOOTING CHART [POWER WINDOW SYSTEM]

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No.	Malfunction symptom
1	No.1 THE AUTO OPEN FUNCTION ON THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM]
2	No.2 THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM]
3	No.3 ALL POWER WINDOWS OTHER THAN DRIVER'S SIDE DO NOT OPERATE USING THE POWER WINDOW SUBSWITCH [POWER WINDOW SYSTEM]
4	No.4 ALL POWER WINDOWS OTHER THAN DRIVER'S SIDE DO NOT OPERATE USING THE POWER WINDOW MAIN SWITCH [POWER WINDOW SYSTEM]
5	No.5 ALL POWER WINDOWS ARE INOPERATIVE [POWER WINDOW SYSTEM]
6	No.6 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE [POWER WINDOW SYSTEM]
7	No.7 ABNORMAL NOISE WHILE THE DOOR GLASS IS OPENING OR CLOSING [POWER WINDOW SYSTEM]

No.1 the Auto Open Function on the Driver's Side Power Window Is Inoperative (Article 1452493)

No.1 THE AUTO OPEN FUNCTION ON THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM]

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1	The auto open function on the driver's side power window is inoperative
POSSIBLE CAUSE	<ul style="list-style-type: none"> No power supply to power window main switch Power window main switch malfunction (power window control unit malfunction, auto switch malfunction)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Perform the Auto Open Function (Driver's side) Inspection in the POWER WINDOW SYSTEM PRELIMINARY INSPECTION. 	Yes	Repair or replace malfunctioning part according to inspection results.
		No	Go to NO.2 THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE.
	<ul style="list-style-type: none"> Is the malfunctioning part detected? 		

No.2 the Drivers Side Power Window Is Inoperative (Article 1452772)

No.2 THE DRIVER'S SIDE POWER WINDOW IS INOPERATIVE [POWER WINDOW SYSTEM]

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2	The driver's side power window is inoperative.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Power supply circuit or ground circuit malfunction <ul style="list-style-type: none"> Burnt fuse Open or short circuit in wiring harness between fuse and power window main switch Open or short circuit in wiring harness between power window main switch and power window motor Power window main switch malfunction Power window motor malfunction Power window regulator malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Turn the ignition switch to the ON position. Does the LED on the power window main switch illuminate? 	Yes	Go to Step 4.
		No	Go to the next step.
2	<ul style="list-style-type: none"> Operate all power windows other than the driver's side window using the power window main switch. Does the power window operate properly? 	Yes	Go to the next step.
		No	Inspect for an open or short circuit in the following wiring harnesses. Inspect the connector connections (damage/pulled-out pins, corrosion): <ul style="list-style-type: none"> PWIND L 30A fuse (at PJB)—PJB terminal AO—Power window main switch terminal E Power window main switch terminal L—ground. Repair or replace if necessary.
3	<ul style="list-style-type: none"> Is the PWIND L 30 A fuse (at PJB) normal? 	Yes	Replace the power window main switch.
		No	Inspect the following: <ul style="list-style-type: none"> Short circuit in B+ power supply wiring harness Short circuit in power window motor Repair or replace if necessary. Replace with the appropriate standard fuse.
4	<ul style="list-style-type: none"> Measure the voltage at the power window main switch. (power window motor output terminal) while operating the power window using the power window main switch. Is the voltage B+? (Open: terminal F; close: terminal N) 	Yes	Go to the next step.
		No	Replace the power window main switch.
5	<ul style="list-style-type: none"> Measure the voltage at the power window motor. (battery power supply terminal) while operating the power window using the power window motor. Is the voltage B+? (Open: terminal E; close: terminal F) 	Yes	Go to the next step.
		No	Inspect for an open or short circuit in the wiring harness between the power window main switch and the power window motor. Inspect the power window main switch and power window motor connector connections. (damage/pulled-out pins, corrosion) Repair or replace if necessary.
6	<ul style="list-style-type: none"> Operate the driver's side power window using the power window main switch. Does the power window motor operate (rotate)? <p>Caution</p> <ul style="list-style-type: none"> If the power window motor temperature is high, the motor may not rotate due to the motor internal bimetal function. Leave it untouched for about 3 min to cool it down, then reinspect. 	Yes	Go to the next step.
		No	Replace the power window motor.
7	<ul style="list-style-type: none"> Remove the door glass from the carrier plate. Make sure that the door glass moves smoothly using your hand. Does the door glass move smoothly? 	Yes	Replace the power window regulator.
		No	Inspect for a bent regulator guide or other possible malfunction. If normal, replace the door glass run-channel.

No.3 All Power Windows Other Than Driver's Side Do Not Operate Using the Power Window Subswitch (Article 1452605)

No.3 ALL POWER WINDOWS OTHER THAN DRIVER'S SIDE DO NOT OPERATE USING THE POWER WINDOW SUBSWITCH [POWER WINDOW SYSTEM]

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3	All power windows other than driver's side do not operate using the power window subswitch.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in power window subswitch wiring harness (battery power supply circuit). • Power window subswitch malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Set the power cut-switch to the UNLOCK position. • Measure the voltage at power window subswitch terminal A. • Is the voltage B+? 	Yes	Replace the power window subswitch.
		No	Inspect for an open or short circuit in the wiring harness between PJM terminal AO (left rear), terminal AN (right front, right rear) and the power window subswitch. Inspect the power window subswitch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary.

No.4 All Power Windows Other Than Driver's Side Do Not Operate Using the Power Window Main Switch (Article 1452606)

No.4 ALL POWER WINDOWS OTHER THAN DRIVER'S SIDE DO NOT OPERATE USING THE POWER WINDOW MAIN SWITCH [POWER WINDOW SYSTEM]

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4	All power windows other than driver's side do not operate using the power window main switch
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in wiring harness between ignition switch (IG1) and power window main switch (IG1). • Power window main switch malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Set the power cut-switch to the UNLOCK position. • Operate all power windows other than the driver's side using the power window main switch. • Do any power windows operate? 	Yes	Replace the power window main switch.
		No	Inspect for an open or short circuit in the power window main switch wiring harness (battery power supply). Inspect the power window main switch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary.

No.5 All Power Windows Are Inoperative (Article 1452607)

No.5 ALL POWER WINDOWS ARE INOPERATIVE [POWER WINDOW SYSTEM]

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5	All power windows are inoperative.	
	<ul style="list-style-type: none"> Power supply circuit or ground circuit malfunction <ul style="list-style-type: none"> Burnt fuse Open or short circuit in wiring harness between ignition switch and power window main switch Open or short circuit in wiring harness between power window main switch and power window subswitch Open or short circuit in wiring harness between power window main switch and power window motor <ul style="list-style-type: none"> Open or short circuit in wiring harness between power window main switch and ground Power window main switch malfunction (power cut-off switch malfunction, switch malfunction) Power window subswitch malfunction Power window motor malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Turn the ignition switch to the ON position. Set the power cut-off switch to the UNLOCK position. Inspect the power window system operation again. Does the system operate properly? 	Yes System is now normal (power cut-off switch is not set properly).
		No Go to the next step.
2	<ul style="list-style-type: none"> Operate all power windows other than driver's side window using the power window main switch. Does any power window operate? 	Yes Go to Step 5.
		No Go to the next step.
3	<ul style="list-style-type: none"> Operate the driver's side power window using the power window main switch. Does the power window operate? 	Yes Go to the next step.
		No Inspect for an open circuit in the wiring harness between the power window main switch and the body ground. Inspect the power window main switch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary.
4	<ul style="list-style-type: none"> Are P/WIND L 30A fuse and P/WIND R 30A fuse (at PJB) normal? 	Yes Replace the power window main switch.
		No Replace with the appropriate standard fuse. If the fuse is melted, inspect the wiring harness for a short to ground. Repair or replace the wiring harness, then replace the fuse.
5	<ul style="list-style-type: none"> Identify the inoperative power window. Measure the voltage at the suspect power window motor (battery power supply) while operating the power window motor using the suspect power window subswitch. Is the voltage B+? (Open: terminal E; close: terminal F) 	Yes Go to the next step.
		No Go to Step 8.
6	<ul style="list-style-type: none"> Operate the power window using the power window subswitch. Does the power window motor operate (rotate)? Caution If the power window motor temperature is high, the motor may not rotate due to the motor internal bimetal function. Leave it untouched for about 3 min to cool it down, then reinspect. 	Yes Go to the next step.
		No Replace the power window motor.
7	<ul style="list-style-type: none"> Remove the door glass from the carrier plate. Make sure that the door glass moves smoothly using your hand. Does the door glass move smoothly? 	Yes Replace the power window regulator guide.
		No Inspect for a bent regulator guide or other possible malfunction. If normal, replace the glass run channel.

STEP	INSPECTION	ACTION
8	<ul style="list-style-type: none"> Measure the voltage at the power window subswitch (power window motor output) while operating the power window subswitch. Is the voltage B+? (Open: terminal F; close: terminal C) 	Yes Inspect for an open or short circuit in the wiring harness between the power window subswitch and power window motor. Inspect the power window subswitch and power window motor connector connections. (damage/pulled-out pins, corrosion) Repair or replace if necessary.
		No Go to the next step.
9	<p>Note</p> <ul style="list-style-type: none"> Do not operate the power window subswitch during the following inspection. Inspect the continuity between power window subswitch terminal D (vehicle harness-side) and ground. Is there continuity? 	Yes Go to the next step.
		No Inspect for an open or short circuit in the power window subswitch wiring harness. Inspect the power window subswitch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary. Then go to Step 12.
10	<p>Note</p> <ul style="list-style-type: none"> Do not operate the power window subswitch during the following inspection. Inspect the continuity between power window subswitch terminal E and ground. Is there continuity? 	Yes Replace the power window subswitch.
		No Inspect for an open or short circuit in the power window subswitch wiring harness. Inspect the power window subswitch connector connection. (damage/pulled-out pins, corrosion) Repair or replace if necessary. Then go to the next step.
11	<p>Note</p> <ul style="list-style-type: none"> Do not operate the power window main switch during the following inspection. Inspect the continuity between the power window main switch terminal (up-side A, D, K) and ground. Is there continuity? 	Yes Go to the next step.
		No Replace the power window main switch.
12	<p>Note</p> <ul style="list-style-type: none"> Do not operate the power window main switch during the following inspection. Inspect the continuity between the power window main switch terminal (down-side B, C, M) and ground. Is there continuity? 	Yes Inspect for an open or short circuit in the wiring harness between the power window main switch and power window subswitch. Inspect the power window main switch and subswitch connector connections. (damage/pulled-out pins, corrosion) Repair or replace if necessary.
		No Replace the power window main switch.

No.6 Door Glass Reverses Even Though the Glass Does Not Encounter A Foreign Object While It Is Moving Up In Automatic Mode (Article 1452712)

No.6 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE [POWER WINDOW SYSTEM]

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Note

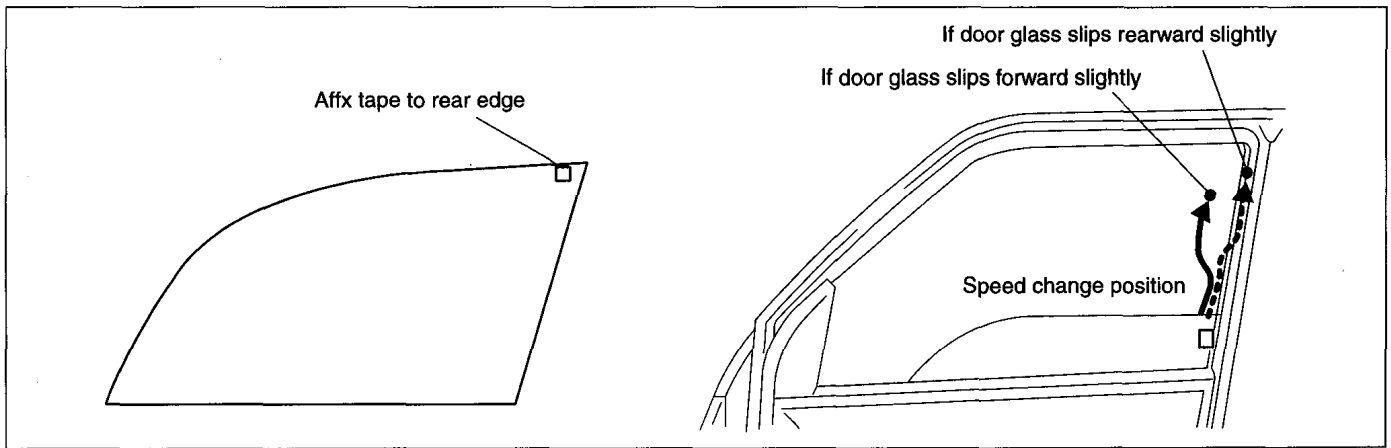
- Perform the following inspection for the power window system component parts of windows where the door glass reverses even though the glass does not encounter a foreign object while it is moving up in automatic mode.

6	<p>Door glass reverses even though the glass does not encounter a foreign object while it is moving up in automatic mode:</p> <ul style="list-style-type: none"> Extreme change in the sliding resistance of the glass while the door glass is closing. <ul style="list-style-type: none"> Improper installation of the acrylic door visor. Power window motor malfunction Object caught between the glass run channel and the door glass. Insufficient tightening of the door glass to the carrier plate. Glass run channel malfunction. Glass guide related malfunction.
POSSIBLE CAUSE	<p>Note</p> <ul style="list-style-type: none"> The auto-reverse pinch protection function is a mechanism that automatically reverses (opens) the door glass while it is closing when the power window main switch detects the signal from the power window motor indicating that an object is obstructing the door glass movement. The auto-reverse pinch protection function may operate if the sliding resistance of the door glass increases causing the closing speed to decrease. If the door glass closing speed has changed, concentrate the inspection on the following locations: (Slip occurrence) <ul style="list-style-type: none"> If the door glass is slipping forward, inspect the front side of the glass guide or glass run channel. If the door glass is slipping rearward, inspect the rear side of the glass guide or glass run channel.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<p>INSPECT MALFUNCTION SYMPTOM</p> <ul style="list-style-type: none"> Does the malfunction symptom occur only under the following special conditions? <ul style="list-style-type: none"> Driving over railroad tracks Driving on bumpy roads. Opening/closing the door. 	<p>Yes The system is normal. (Explain to the customer that this does not indicate a malfunction because the system is designed to reverse the door glass while it is closing if it receives vibration when the vehicle is crossing railroad tracks, driving on a bumpy road, or when the door is opened/closed.)</p> <p>No Go to the next step.</p>
2	<p>INSPECT ACRYLIC DOOR VISOR INSTALLATION CONDITION</p> <ul style="list-style-type: none"> Is the acrylic door visor normal? 	<p>Yes Go to the next step.</p> <p>No Install the side visor properly, then go to the next step.</p>
3	<p>INSPECT DOOR GLASS CLOSING SPEED</p> <ul style="list-style-type: none"> Affix tape to the rear edge of the door glass as shown in the figure for placing marks (to facilitate seeing the door glass movement) Start the engine and slide it to ensure a stabilized operational voltage). Does the door glass hesitate only once while its closing? 	<p>Yes Mark the point where the door glass closing speed changed, then go to Step 5.</p> <p>No Go to the next step.</p>
4	<p>REINSPECT DOOR GLASS CLOSING SPEED</p> <ul style="list-style-type: none"> Does the door glass hesitate periodically (5-6 times) while it is closing? 	<p>Yes Replace the power window motor, then go to Step 8</p> <p>No Go to Step 8.</p>
5	<p>INSPECT GLASS RUN CHANNEL AND DOOR GLASS SLIDING SURFACE</p> <ul style="list-style-type: none"> Is there an object caught between the glass run channel and the door glass, or is there roughness on the sliding surface (rubber surface)? 	<p>Yes Object is caught between glass run channel and door glass: <ul style="list-style-type: none"> Remove the object. Roughness on the sliding surface (rubber surface): <ul style="list-style-type: none"> Replace the glass run channel. After performing one of the above actions, reinspect. If the malfunction is not corrected, go to Step 3.</p> <p>No Go to the next step.</p>

STEP	INSPECTION	ACTION
6	<p>INSPECT TIGHTENING OF DOOR GLASS TO CARRIER PLATE</p> <ul style="list-style-type: none"> Is it normal? 	Yes Go to the next step.
		No After tightening correctly, reinspect. If the malfunction is not corrected, go to Step 3.
7	<p>INSPECT CONDITION OF GLASS RUN CHANNEL AND DOOR GLASS</p> <ul style="list-style-type: none"> Is it normal? 	Yes Go to the next step.
		No Assemble the glass run channel and door glass securely, and reinspect. If the malfunction is not corrected, go to Step 3.
8	<p>INSPECT DOOR GLASS CLOSING SPEED</p> <ul style="list-style-type: none"> Does the door glass hesitate at any location? 	Yes Repeat the inspection from Step 3.
		No Troubleshooting completed.



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No.7 Abnormal Noise While the Door Glass Is Opening or Closing (Article 1452713)

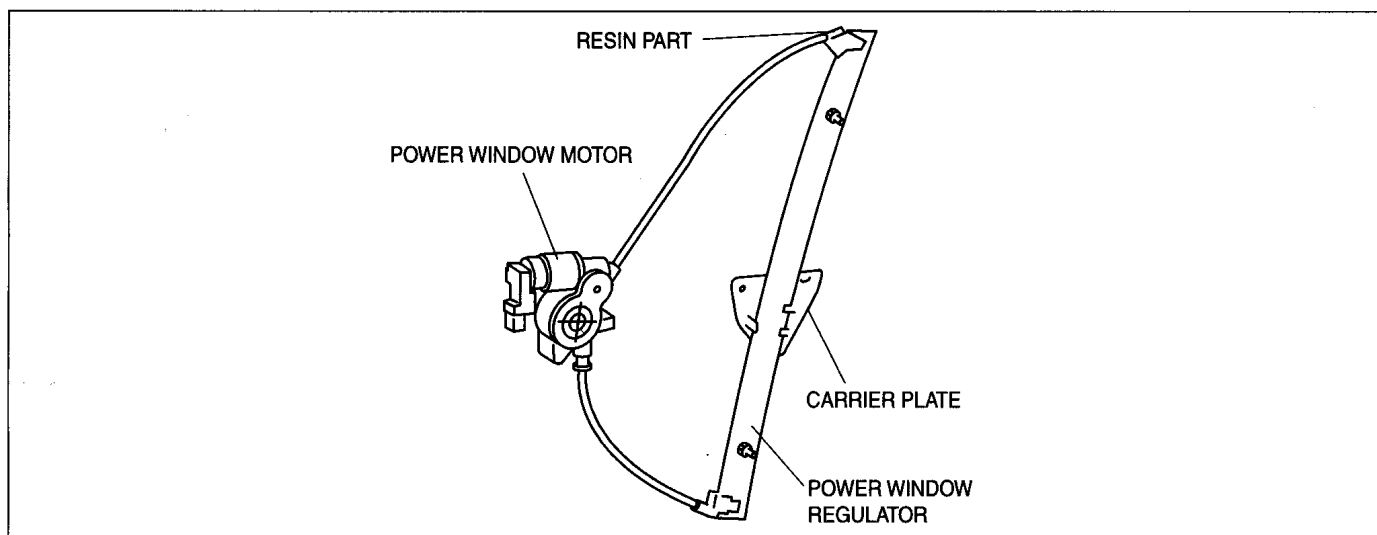
No.7 ABNORMAL NOISE WHILE THE DOOR GLASS IS OPENING OR CLOSING [POWER WINDOW SYSTEM]

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7	Abnormal noise while the door glass is opening or closing
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Installation screw is loose between the door glass and carrier plate. • Deformity in the power window regulator plastic part due to use. <ul style="list-style-type: none"> — Scratching, wear marks to the power window regulator resin part due to twisting of the cable. — Gear deformity in the power window motor. <p>Note</p> <ul style="list-style-type: none"> • Identify the location of the noise using a stethoscope or similar device.

Diagnostic procedure

Noise type	Time of occurrence	Possible cause	Location of noise	Action
Clanking noise	Door glass begins to move	Insufficiently tightened installation screw between the door glass and carrier plate.	Between door glass lower edge and carrier plate.	Securely tighten the installation screw.
Roaning noise (Sound increases due to use)	While door glass is operating	Vibration caused by wear on the resin part from cable twisting due to use of the power window regulator. Note • Noise does not occur if a roller is equipped to power window regulator resin part.	Power window regulator	Replace the power window regulator
Whining noise		Gear inside power window motor is deformed due to use.	Gear in power window motor	Replace the power window motor
Clicking noise (Periodic noise)				



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Noise (itype_156)

Tsbs

- Body - Front Door Power Window Motor Noise (0907809, 2009/12/03)