
BODY

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GENERAL

OUTLINE OF CHANGE

The power windows with safety mechanism have been adopted. To correspond to this, the maintenance service procedures have been established.

DOOR

SERVICE SPECIFICATION

Items	Standard value
Power window operating current A	5 ± 1 (for 14 – 15 V power supply at 25°C)

TROUBLESHOOTING

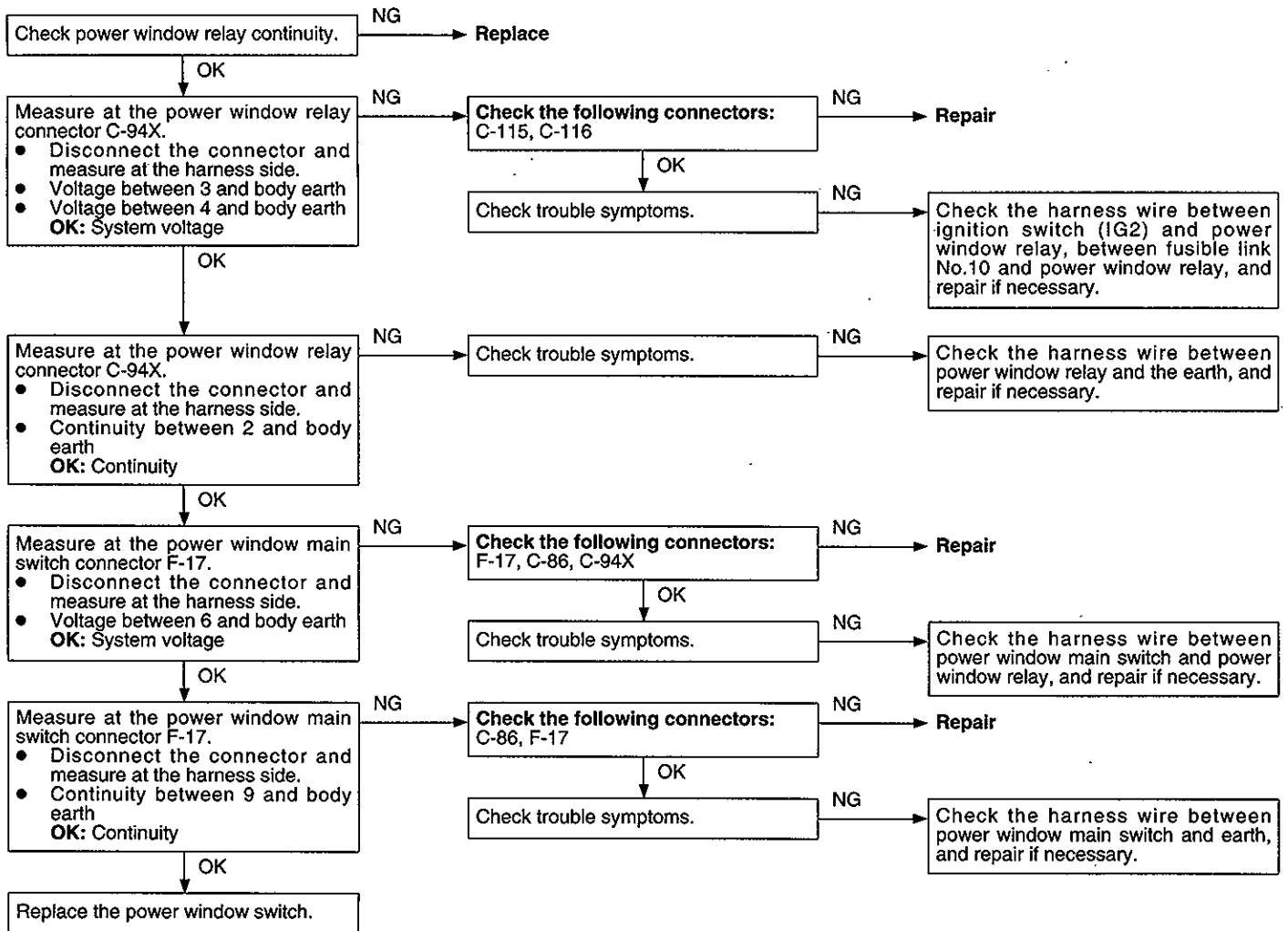
INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom		Inspection procedure	Reference page
Power windows	The power windows cannot be operated by any of the power window switches.	1	42-3
	Driver's side power window cannot be operated by the power window main switch.	2	42-4
	Passenger's side and rear power windows cannot be operated by the power window main switch. (However, they can be operated by the power window sub-switches.)	3	42-5
	Passenger's side and rear power windows cannot be operated by the power window sub-switches. (However, they can be operated by the power window main switch.)	4	42-5
	When the glass is raised, it then lowers automatically.	5	42-5
	The glass is not lowered when something is jammed in the window.	6	42-6
	When the glass is fully raised, it then lowers automatically.	7	42-6

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

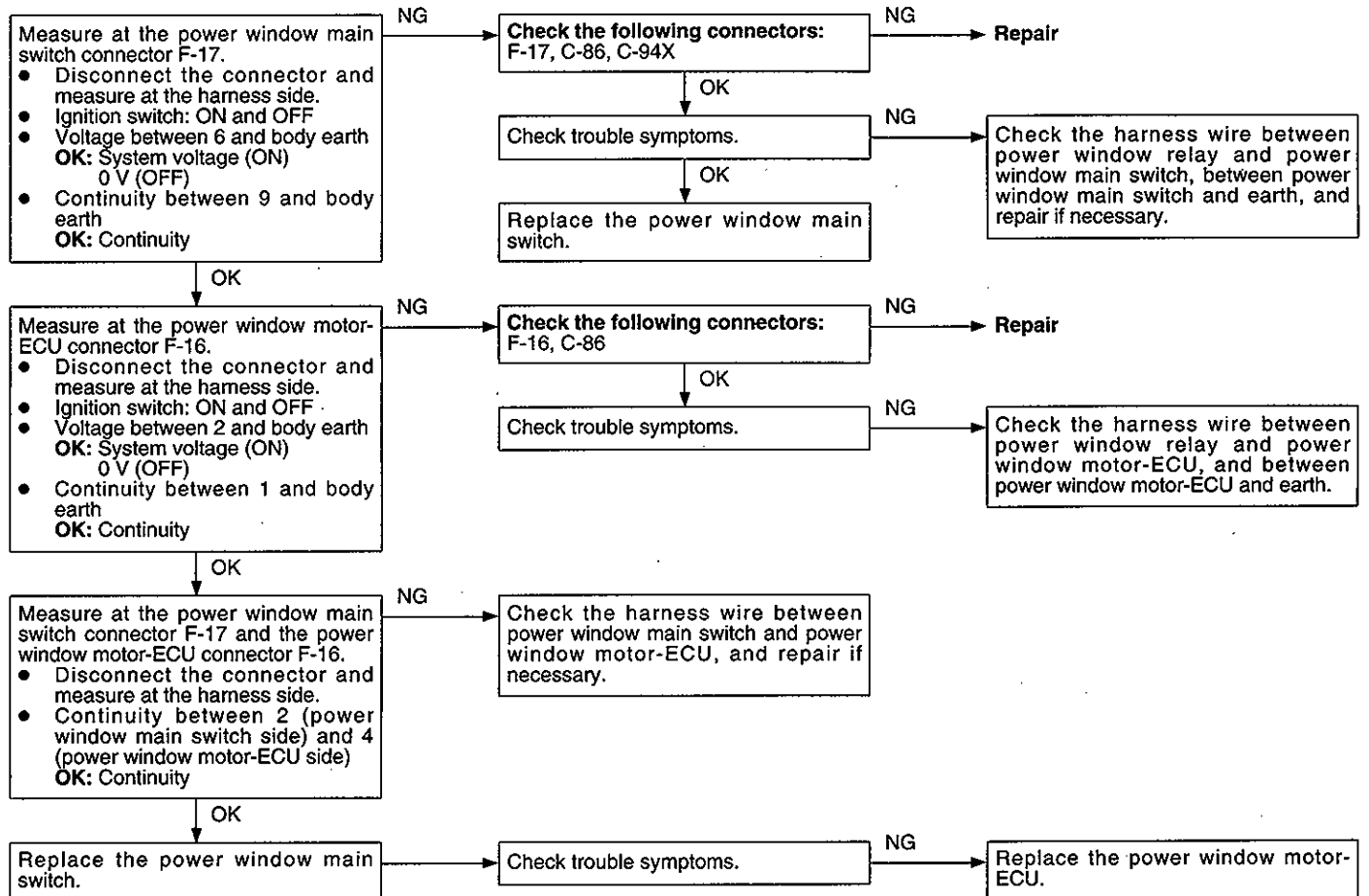
Inspection Procedure 1

The power windows cannot be operated by any of the power window switches.	Probable cause
The cause may be a malfunction of the power window relay and of the power window relay drive circuit.	<ul style="list-style-type: none"> • Malfunction of power window relay • Malfunction of wiring harness or connector



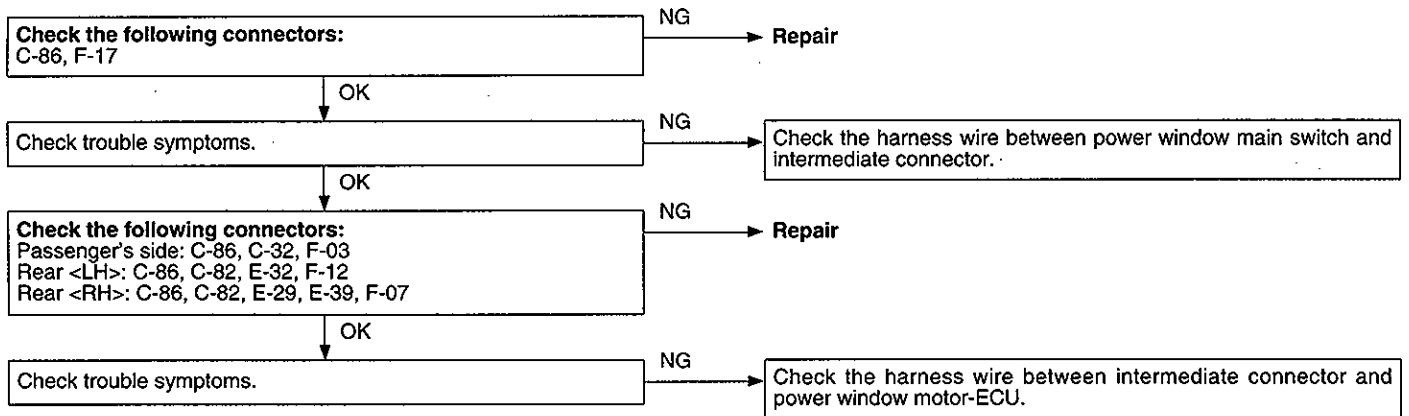
Inspection Procedure 2

Driver's side power window cannot be operated by the power window main switch.	Probable cause
The cause may be a malfunction of power window main switch, power window motor-ECU, or open circuit or short circuit in the communication line between power window main switch and power window motor-ECU.	<ul style="list-style-type: none"> • Malfunction of power window main switch • Malfunction of power window motor-ECU • Malfunction of wiring harness or connector



Inspection Procedure 3

Passenger's side and rear power windows cannot be operated by the power window main switch. (However, they can be operated by the power window sub-switches.)	Probable cause
The cause may be open circuit or short circuit in the communication line between power window main switch, passenger's side power window motor-ECU and rear power window motor-ECU.	<ul style="list-style-type: none"> Malfunction of wiring harness or connector



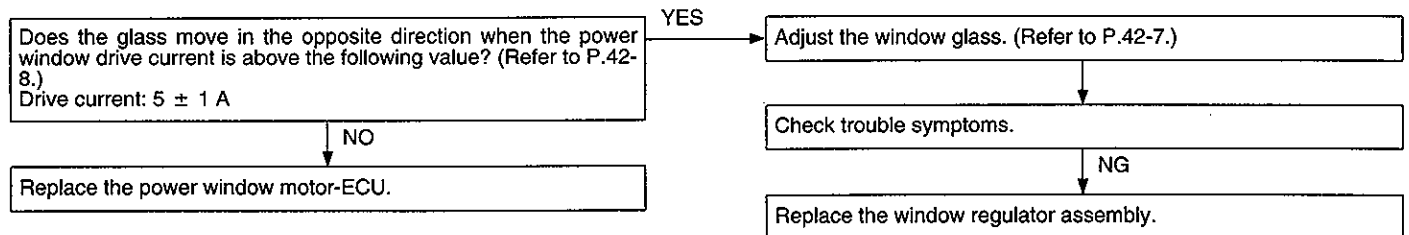
Inspection Procedure 4

Passenger's side and rear power windows cannot be operated by the power window sub-switches. (However, they can be operated by the power window main switch.)	Probable cause
The cause may be a malfunction of the power window sub-switch.	<ul style="list-style-type: none"> Malfunction of power window sub-switch

Replace the power window sub-switch.

Inspection Procedure 5

When the glass is raised, it then lowers automatically.	Probable cause
If the sliding resistance is too large when the glass is being raised, it is judged that something is jammed in the window, and the window is lowered by approximately 150 mm.	<ul style="list-style-type: none"> Incorrect window glass adjustment Glass slider is incorrectly installed or warped



Inspection Procedure 6

The glass is not lowered when something is jammed in the window.	Probable cause
The cause may be a malfunction of the revolution detection sensor in the power window motor-ECU.	<ul style="list-style-type: none">• Malfunction of power window motor-ECU

Replace the power window motor-ECU.

Inspection Procedure 7

When the glass is fully raised, it then lowers automatically.	Probable cause
When the window is within 15 mm of being fully closed, the limit switch turns off to prevent the window from being lowered. However, the above problem can occur if there is a malfunction of the limit switch in the power window motor-ECU.	<ul style="list-style-type: none">• Malfunction of the power window motor-ECU

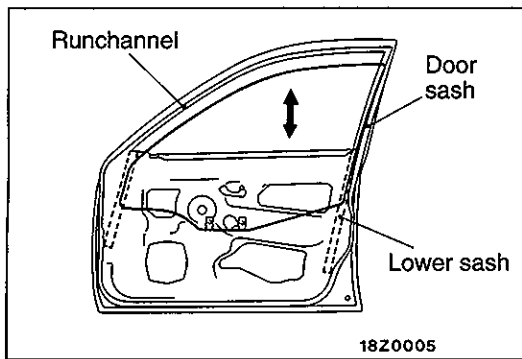
Limit switch operation position adjustment (Refer to P.42-13.)



Check trouble symptoms.

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Replace the power window motor-ECU.

**ON-VEHICLE SERVICE****ADJUSTMENT AND REPLACEMENT WHEN THERE IS A MALFUNCTION OF THE POWER WINDOWS**

If the window glass automatically starts moving downwards at the wrong time while it is being raised, carry out the following adjustment or replacement procedures.

1. Remove the door trim and waterproof film.
2. Remove the window regulator assembly from the door window glass, and then raise and lower the door window glass by hand to check the operation force.

NOTE

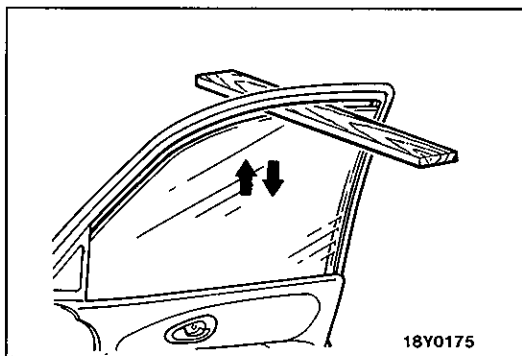
Insert a cushion or similar object to prevent damage to the glass if it should happen to fall down.

3. If the door window glass does not move up and down smoothly, check or repair the following points.
 - Check the installation condition of the runchannel.
 - Repair the twisting in the door sash.
 - Check the installation condition of the lower sash or the center sash.

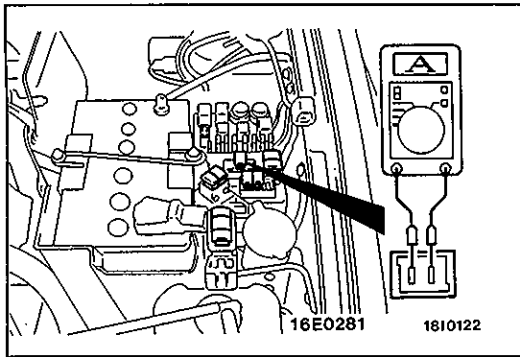
NOTE

The lower sash cannot normally be adjusted, but it may be possible to adjust the sash span slightly within the range allowed by manufacturing tolerances by pushing the lower sash outwards while re-installing it.

4. If repair or adjustment is not possible, replace the door assembly.

**POWER WINDOW SAFETY MECHANISM CHECK**

1. Place a wooden board with a thickness of approximately 10 mm as shown in the illustration, and then raise the window glass.
2. Check that the window lowers by a distance of approximately 150 mm when the window clamps the wooden board. If this doesn't happen, refer to "Troubleshooting" (P.42-2).



POWER WINDOW OPERATION CURRENT INSPECTION

1. Remove the power window fuse and connect a circuit analyser as shown in the illustration.
2. When the power window switch is pressed to the UP position, a large amount of current flows at the time the window starts to close and when it is fully closed, so measure the operation current in the interval between these two points.

Standard value:

5 ± 1 A (for 14 – 15 V power supply voltage at 25°C)

3. If the operation current is outside the standard value, refer to "Troubleshooting" (P.42-2).

CIRCUIT BREAKER (INCORPORATED IN THE POWER WINDOW MOTOR) INSPECTION

1. Press the power window switch to the UP position to fully close the window glass, and keep pressing the switch for a further 10 seconds.
2. Release the power window switch from the UP position and immediately press it to the DOWN position. The condition of the circuit breaker is good if the power window glass starts to move downwards within 60 seconds.

DOOR GLASS AND REGULATOR REMOVAL AND INSTALLATION

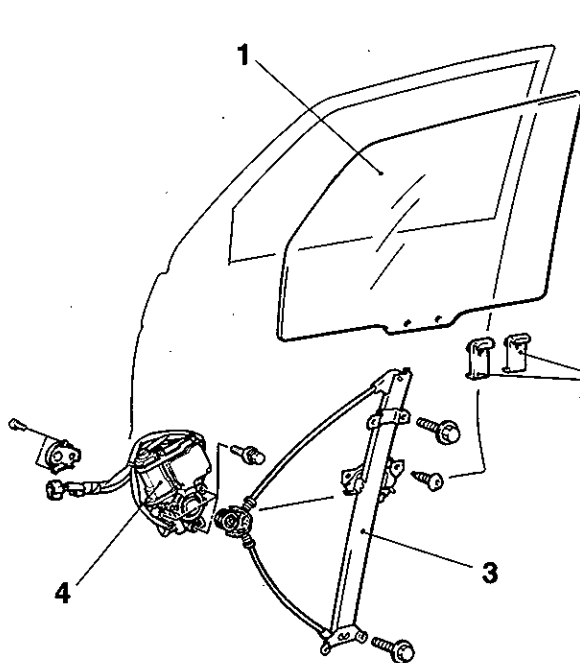
Pre-removal operation

- Door Trim and Waterproof Film Removal

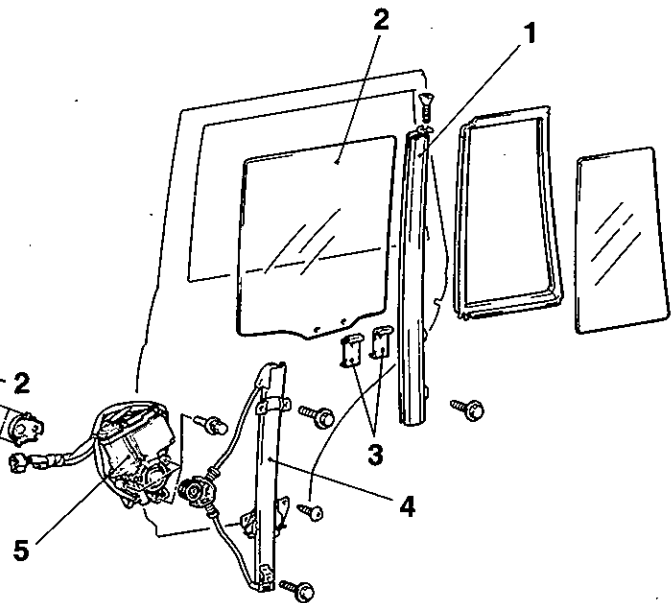
Post-installation Operation

- Door Window Glass Adjustment
- Door Trim and Waterproof Film Installation

Front door



Rear door



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Front window regulator assembly removal steps

- ▶B◀ 1. Door window glass
 ▶A◀ 2. Door window glass holder
 ▶A◀ 3. Window regulator assembly
 ◀A▶ 4. Power window motor

Rear window regulator assembly removal steps

- ▶B◀ 1. Rear door center sash
 ▶A◀ 2. Door window glass
 ▶A◀ 3. Door window glass holder
 ▶A◀ 4. Window regulator assembly
 ◀A▶ 5. Power window motor

REMOVAL SERVICE POINT

◀A▶ POWER WINDOW MOTOR ASSEMBLY

Caution

Be careful when handling the power window motor assembly, as the force of the spring may cause the wires to pull out of the drum.

INSTALLATION SERVICE POINTS

▶A◀ POWER WINDOW MOTOR ASSEMBLY/WINDOW REGULATOR ASSEMBLY

POWER WINDOW MOTOR ASSEMBLY AND WINDOW REGULATOR ASSEMBLY INSTALLATION PROCEDURE

1. Connect the power window motor assembly to the harness connector of body side, and then turn the ignition switch to the ON position.
2. Hold the UP side of power window switch for 10 seconds to drive the power window motor.

NOTE

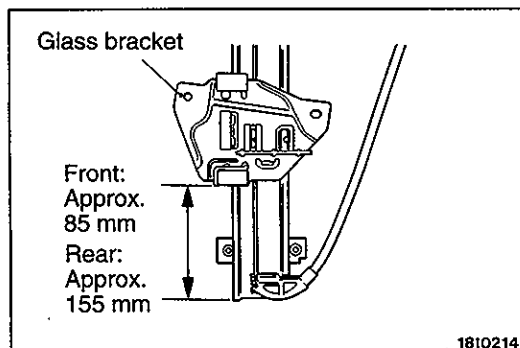
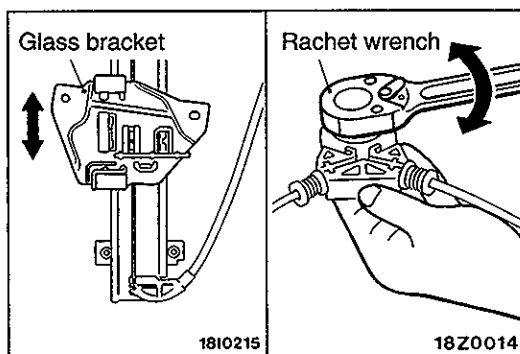
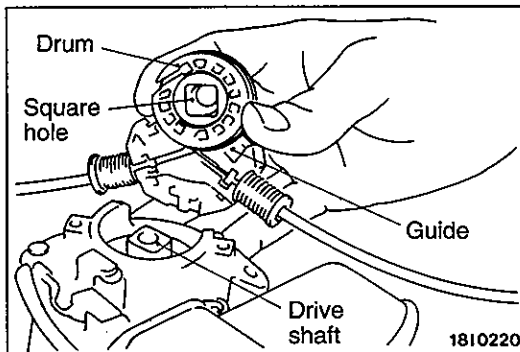
The motor stops automatically after 10 seconds, and the limit switch within the power window motor will be reset.

Caution

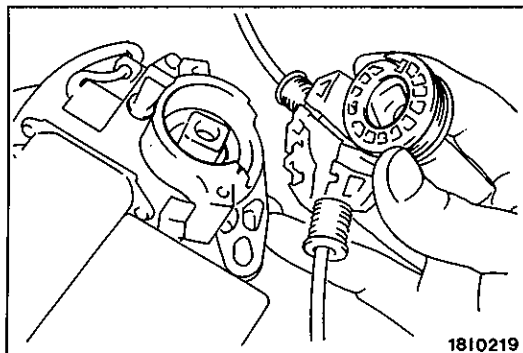
Do not drive the power window motor assembly until the door window glass installation is completed.

3. Turn the ignition switch to the OFF position, and then disconnect the power window motor assembly from the harness connector of body side.
4. Align the power window motor drive shaft and the square hole in the drum while using the guide and the opening in the motor housing as a reference for the installation position.

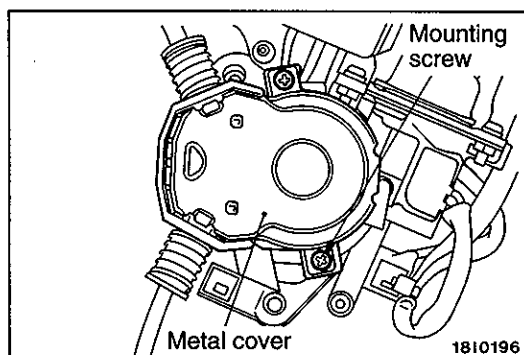
- (1) Align the square hole with the drive shaft by sliding the glass bracket (glass mounting section) or by turning the drum using a ratchet wrench (with a socket diameter of 12.7 mm).



- (2) Support the drum and the guide with your hand while turning the drum, otherwise the wires may pull out of the drum.
- (3) If the wires pull out of the drum, re-insert them by following the drum and regulator wire installation procedure.



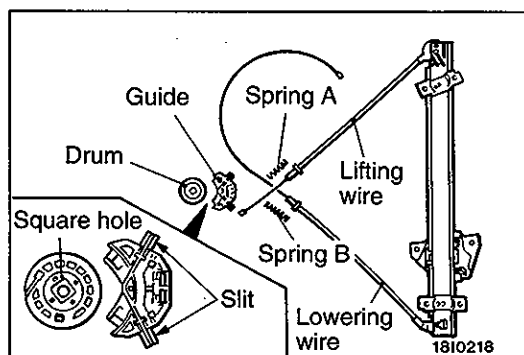
5. Align the guide and the opening of the motor housing, and slide the guide into the motor housing while holding the guide and drum.



6. Install the metal cover securely to the housing.

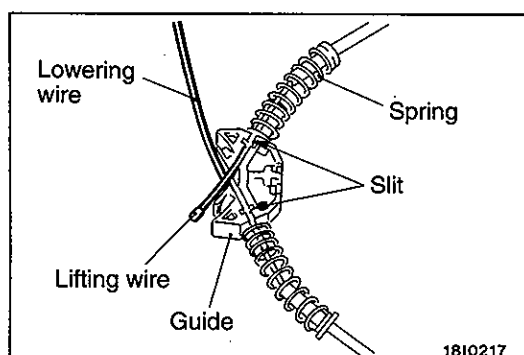
Caution

Make sure that the metal cover is installed securely and does not move, in order to stop the drum from vibrating. If the drum vibrates, the glass may not slide up and down smoothly, or it may fall down.

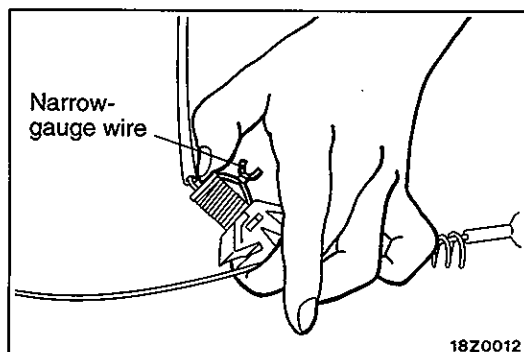


DRUM AND REGULATOR WIRE INSTALLATION PROCEDURE

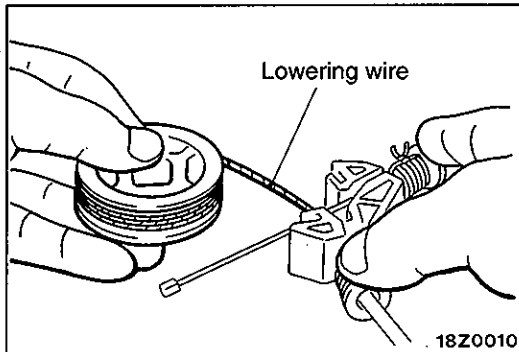
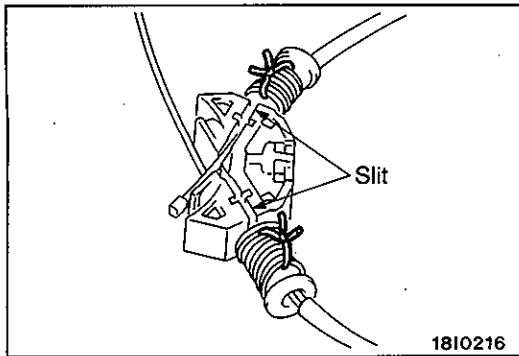
1. Place the drum, guide and regulator on a work bench as shown in the illustration.
 - (1) Place the drum so that the square hole is facing upward.
 - (2) Place the guide so that the slits are facing upward.
 - (3) Place the regulator so that the glass bracket is facing downward. Position the glass bracket so that glass is in the fully-open position.



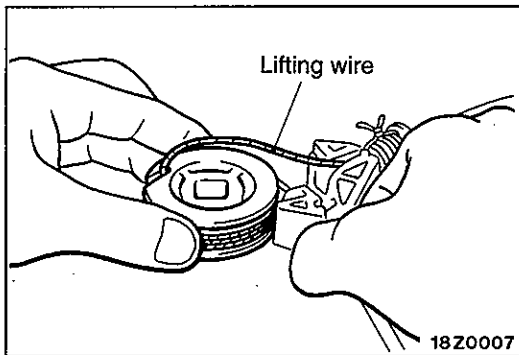
2. Pass the springs over the wires, and then install the lowering wire to the guide first, followed by the lifting wire. (The lifting wire should be on top of the lowering wire.)



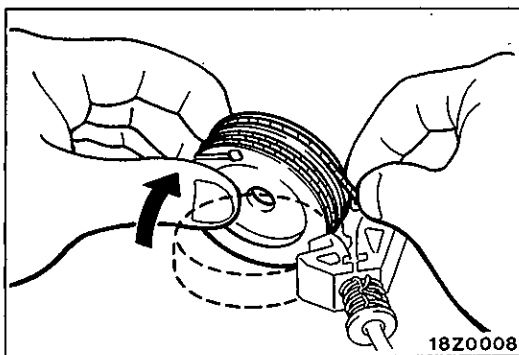
3. Use some narrow-gauge wire (approx. 0.5 mm diameter) to compress the springs, and tie the narrow-gauge wires to the slits in the guide.



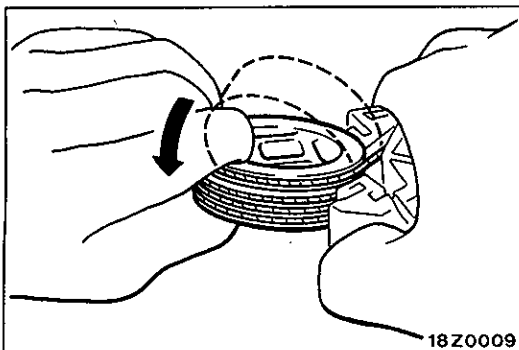
4. Insert the end of the lowering wire into the wire hole at the bottom of the drum, and then wrap the wire securely around the groove of the drum from the bottom so that there is no slackness in the wire.



5. Install the lifting wire to the drum as follows:
 - (1) Insert the end of the lifting wire into the wire hole at the top of the drum.



- (2) Raise the front of the drum until the drum is vertical, and then position the lifting wire in the groove of the drum.



- (3) Return the drum to its original position while holding the wires to make sure that they do not pull out.
6. After installing the power window motor assembly to the window regulator assembly, cut and remove the wires which are compressing the springs.

OPERATION CHECK

1. Install the door window glass to the window regulator assembly.

Caution

Do not drive the window regulator assembly before installing the door window glass; otherwise limit switch will be set.

2. Fully raise the door window glass.

NOTE

- (1) Fully raising the door window glass will complete the limit switch learning.
 - (2) When fully raising the glass at first time, the power window safety mechanism do not operate.
3. After fully raising the door window glass, check that the glass operates correctly.

►B◄ DOOR WINDOW GRASS INSTALLATION

1. Provisionally secure the door window glass to the window regulator assembly.
2. After raising the door window glass as far as it will go, fully secure the door window glass to the window regulator assembly.

NOTES