

TROUBLESHOOTING [POWER WINDOW SYSTEM]

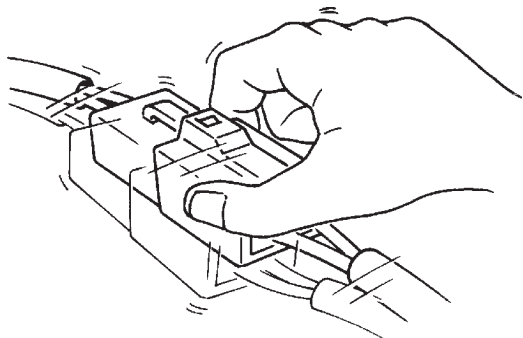
INTERMITTENT CONCERN TROUBLESHOOTING

Vibration Method

- If malfunction occurs or becomes worse while driving on a rough road or when engine is vibrating, perform the steps below.

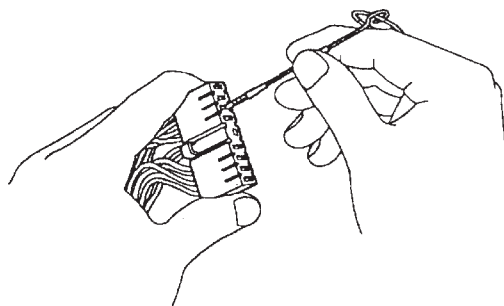
Note

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to check for:
 - Connectors not fully seated.
 - Wire harnesses not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wire harnesses pass through the firewall, body panels, etc. are the major areas to be checked.
- Check for DTCs or malfunctions by shaking harnesses and connectors that are suspected to be causing malfunction.



Connector Terminal Check Method

1. Check the connection condition of each female terminal.
2. Insert male terminal into the female terminals to check for looseness.



FOREWORD

- Always perform basic power window system inspection before troubleshooting.
- Troubleshooting gives content unique to trouble caused by problems in the automatic window return function.

TROUBLESHOOTING [POWER WINDOW SYSTEM]

BASIC POWER WINDOW SYSTEM INSPECTION

Manual Mode Function Inspection

STEP	INSPECTION	ACTION	
1	- Turn ignition switch to ON position. - Do all windows go up and down in manual mode using power window main switch?	Yes	Go to next step.
		No	- Inspect the following items: - Power window main switch power supply fuses - Power window main switch ground wiring harness - Power window main switch power supply wiring harnesses - Wiring harness between power window main switch and power window motor - Power window main switch - Power window motor - Each power window motor wire installation point - Each window installation point on its carrier plate - Each power window regulator installation point on each door - Repair or replace the problem area, then go to Step 4.
2	Does each window go up and down in manual mode using power window subswitch?	Yes	Go to next step.
		No	- Inspect the following items: - Power window main switch (power-cut switch system malfunction) - Power window subswitch - Subswitch power supply wiring harnesses - Repair or replace the problem area, then go to automatic mode function inspection.
3	- Turn power-cut switch UNLOCK. - Push/pull power window main switch (switches for all doors in manual mode). - Does only driver-side front window go up and down?	Yes	- Manual mode function is normal. - Go to automatic mode function inspection.
		No	Replace power window main switch, then go to automatic mode function inspection (power-cut switch system malfunction).

Automatic Mode Function Inspection

STEP	INSPECTION	ACTION	
1	- Turn ignition switch to ON position. - Operate power window main switch for driver-side front door in automatic mode. - Does driver-side front window go up and down?	Yes	Go to next step.
		No	Driver-side front window does not go up and down in automatic mode: - Go to Step 1 of NO. 1 DRIVER-SIDE FRONT WINDOW DOES NOT GO UP AND DOWN IN AUTOMATIC MODE. Driver-side front window go up and down in automatic mode, but driver-side front window reverses: - Go to Step 1 of NO. 3 DRIVER-SIDE FRONT WINDOW REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS GOING UP IN AUTOMATIC MODE.
2	- Gently pull the driver-side front power window switch while driver-side front window is going down in automatic mode. - Does the glass stop?	Yes	Go to next step.
		No	Replace power window main switch, then go to automatic window return function inspection.
3	- Gently press the driver-side front power window switch while driver-side front window is going up in automatic mode. - Does the glass stop?	Yes	- Automatic mode function is normal. - Go to automatic window return function inspection.
		No	Replace power window main switch, then go to automatic window return function inspection.

TROUBLESHOOTING [POWER WINDOW SYSTEM]

Automatic Window Return Function Inspection

STEP	INSPECTION		ACTION
1	- Turn ignition switch to ON position. - Lower driver-side front window completely. - Use power window main switch to close driver's window in automatic mode. - Does window automatically reverse even though the glass does not encounter a foreign object while it is going up in automatic mode?	Yes	Go to Step 1 of NO. 3 DRIVER-SIDE FRONT WINDOW REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS GOING UP IN AUTOMATIC MODE.
		No	Go to next step.
2	- Lower driver-side front window completely. - Take a hammer and hold it against the inside of the top of the window frame so that the window will hit its handle when it is closed. - Raise the window using automatic mode. - When the window hits the hammer handle, does it immediately reverse and go down to approximately 200 mm {7.87 in} from the completely closed position?	Yes	- Automatic window return function inspection is normal. - Go to IG OFF timer function inspection.
		No	Go to Step 1 of NO. 2 DRIVER-SIDE FRONT WINDOW DOES NOT REVERSE, EVEN WHEN ENCOUNTERING A FOREIGN OBJECT IN ITS PATH.

IG OFF Timer Function Inspection

STEP	INSPECTION		ACTION
1	- Turn ignition switch to ON position. - In automatic mode, push down power window main switch for driver-side front window. Window should go down within approximately 42 seconds from ignition switch OFF position. - In manual mode (finger continuously depressing power window main switch), window should go down within approximately 42 seconds from ignition switch OFF position. - Does driver-side front window go down?	Yes	Go to next step.
		No	Replace power window main switch, then go to next step.
2	- Turn ignition switch to ON position. - In automatic mode, pull up power window main switch for driver-side front window. Window cannot go up within approximately 4 seconds from ignition switch OFF position. - Verify that driver-side front window does not operate. - Does driver-side front window go down?	Yes	Replace power window main switch, then go to next step.
		No	Go to next step.
3	- Turn ignition switch to ON position. - Lower driver-side front window completely. - Take a hammer and hold it against the inside of the top of the window frame so that the window will hit its handle when it is closing. - Raise the window using manual mode. - When the window hits the hammer handle, does it immediately reverse and go down to approximately 200 mm {7.87 in} from the completely raised position?	Yes	Go to next step.
		No	Replace power window main switch, then go to next step.
4	- Open any door. - Turn ignition switch to ON position. - Push/pull power window main switch for driver-side front window within approximately 42 seconds from ignition switch OFF position. - Verify that driver-side front window does not go up or down. - Does driver-side front window go up or down?	Yes	- Inspect door switch and related warning harness. - If above parts are okay, replace power window main switch, then go to next step. - If above parts are incorrect, repair or replace malfunction part(s), then go to next step.
		No	Go to next step.

TROUBLESHOOTING [POWER WINDOW SYSTEM]

STEP	INSPECTION		ACTION
5	- Close all doors. - Turn ignition switch to ON position. - Push/pull power window main switch for driver-side front window after approximately 60 seconds from ignition switch OFF position. - Verify that driver-side front window does not go up or down. - Does driver-side front window go up or down?	Yes	Replace power window main switch, then go to two-step down function inspection.
		No	- IG OFF timer function is normal. - Go to two-step down function inspection.

TROUBLESHOOTING INDEX

No.	TROUBLESHOOTING ITEM	PAGE
1	Driver-side front window does not go up and down in automatic mode.	(See NO. 1 DRIVER-SIDE FRONT WINDOW DOES NOT GO UP AND DOWN IN AUTOMATIC MODE.)
2	Driver-side front window does not reverse, even when encountering a foreign object in its path.	(See NO. 2 DRIVER-SIDE FRONT WINDOW DOES NOT REVERSE, EVEN WHEN ENCOUNTERING A FOREIGN OBJECT IN ITS PATH.)
3	Driver-side front window reverses even though the glass does not encounter a foreign object while it is going up in automatic mode.	(See NO. 3 DRIVER-SIDE FRONT WINDOW REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS GOING UP IN AUTOMATIC MODE.)

NO. 1 DRIVER-SIDE FRONT WINDOW DOES NOT GO UP AND DOWN IN AUTOMATIC MODE

1	Driver-side front window does not go up and down in automatic mode
POSSIBLE CAUSE	- Open or short to B+ circuit in position sensor 1 signal, ground signal from wiring harness (between power window main switch and driver-side front power window motor), inner power window main switch, or inner motor: Steps 3–6 - Open or short to B+/ground circuit in position sensor 2 signal from wiring harness (between power window main switch and driver-side front power window motor), inner power window main switch, or inner motor: Steps 7–11 Note - The automatic function and the ignition off timer function do not operate while power window main switch is in fail-safe mode. The fail-safe operates when position sensor 1, and/or position sensor 2, and/or position sensor 2 power supply malfunctions. - Position sensor 1 and/or 2 malfunction - When driver-side front window is kept up down, main switch can not sense a pulse signal from position sensor 1 during that can sense 5 pulses (2.5 cycles) from position 2. - When driver-side front window is kept up down, main switch can not sense a pulse signal from position sensor 2 during that can sense 5 pulses (2.5 cycles) from position 1. - There are 3 abnormal pulse from a pulse signal during driver-side front window is kept up or down. - There are 20 cycle pulses from a close position during driver-side front window is kept up. - There is no pulse signal during 1 sec. after down is operated.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT WHETHER POWER WINDOW MAIN SWITCH ENTERS FAIL-SAFE MODE OR NOT Did driver-side front window go up or down in automatic mode?	Yes	Recheck malfunction symptoms.
		No	Go to next step. (Power window main switch may enter fail-safe mode.)
2	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN POWER WINDOW MAIN SWITCH AND DRIVER-SIDE FRONT POWER WINDOW MOTOR) OR ELSEWHERE - Turn ignition switch ON position. - Test voltage at power window main switch connector terminal 2C (position sensor 1 signal). - Is voltage alternate between 0 V and approximately 5 V when driver-side front window is being gone up and down?	Yes	Go to Step 7.
		No	Go to next step.

TROUBLESHOOTING [POWER WINDOW SYSTEM]

STEP	INSPECTION	ACTION	
3	VERIFY POSITION SENSOR 1 OUTPUT SIGNAL - Turn ignition switch to ON position. - Test voltage at driver-side front power window motor connector terminal 1C (position sensor 1 signal). - Is voltage alternate between 0 V and approximately 12 V when driver-side front window is being gone up and down at manual mode?	Yes	Go to next step.
		No	Replace driver-side front power window motor, then go to Step 12.
4	INSPECT WIRING HARNESS BETWEEN POWER WINDOW MAIN SWITCH AND DRIVER-SIDE FRONT POWER WINDOW MOTOR FOR CONTINUITY - Turn ignition switch to LOCK position. - Disconnect power window main switch connector. - Is there continuity between the following power window main switch connector terminals and driver-side front power window motor connector terminals? — 2C–1C (position sensor 1 signal) — 2D–1D (position sensor power supply) — 2A–1A (ground signal)	Yes	Go to next step.
		No	Repair wiring harness between power window main switch and driver-side front power window motor, then go to Step 12.
5	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN POWER WINDOW MAIN SWITCH AND DRIVER-SIDE FRONT POWER WINDOW MOTOR) OR POWER WINDOW MAIN SWITCH - Turn ignition switch to ON position. - Measure voltage at the following power window main switch connector terminals: — 2C (position sensor 1 signal) — 2A (ground signal) - Is voltage approximately 12 V?	Yes	Repair wiring harness between power window main switch and driver-side front power window motor, then go to Step 12.
		No	Replace power window main switch (open or short to B in power window main switch).
6	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN POWER WINDOW MAIN SWITCH AND DRIVER-SIDE FRONT POWER WINDOW MOTOR) OR ELSEWHERE - Is continuity between following power window main switch connector terminals and ground? — 2C (position sensor 1 signal) — 2D (position sensor power supply)	Yes	Replace wiring harness between power window main switch and driver-side front power window motor, then go to Step 12.
		No	Go to next step.
7	VERIFY WHETHER MALFUNCTION IS IN POWER WINDOW MAIN SWITCH OR ELSEWHERE - Turn ignition switch to ON position. - Test voltage at power window main switch connector terminal 2B (position sensor 2 signal). - Does voltage alternate between 0 V and approximately 12 V when driver-side front window is being gone up down?	Yes	Replace power window main switch. (malfunction in power window main switch automatic mode control), then go to Step 11.
		No	Go to next step.
8	VERIFY POSITION SENSOR 2 OUTPUT SIGNAL - Turn ignition switch to ON position. - Test voltage at driver-side front power window motor connector terminal 1B (position sensor 2 signal). - Is voltage alternate between 0 V and approximately 12 V when driver-side front window is being gone up down?	Yes	Go to next step.
		No	Replace driver-side front power window motor, then go to Step 12.

TROUBLESHOOTING [POWER WINDOW SYSTEM]

STEP	INSPECTION	ACTION
9	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN POWER WINDOW MAIN SWITCH AND DRIVER-SIDE FRONT POWER WINDOW MOTOR) OR ELSEWHERE - Turn ignition switch to LOCK position. - Disconnect power window main switch connector and driver-side front power window motor connector. - Is there continuity between power window main switch connector terminal 2B (position sensor 2 signal) and driver-side front power window motor connector terminal 1B (position sensor 2 signal)?	Yes Go to next step.
		No Repair wiring harness between power window main switch and driver-side front power window motor, then go to Step 12.
10	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN POWER WINDOW MAIN SWITCH AND DRIVER-SIDE FRONT POWER WINDOW MOTOR) OR ELSEWHERE Is there continuity between power window main switch connector terminal 2B (position sensor 2 signal) and ground?	Yes Repair wiring harness between power window main switch and driver-side front power window motor, then go to Step 12.
		No Go to next step.
11	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN POWER WINDOW MAIN SWITCH AND DRIVER-SIDE FRONT POWER WINDOW MOTOR) OR POWER WINDOW MAIN SWITCH - Turn ignition switch to ON position. - Measure voltage at power window main switch connector terminal 2B (position sensor 2 signal). - Is voltage approximately 12 V?	Yes Repair wiring harness between power window main switch and front driver-side power window motor, then go to next step.
		No Replace power window main switch (open or short to B+/ground in power window main switch), then go to next step.
12	RECHECK MALFUNCTION SYMPTOM AFTER REPAIR Did malfunction disappear?	Yes - Troubleshooting completed. - Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO. 2 DRIVER-SIDE FRONT WINDOW DOES NOT REVERSE, EVEN WHEN ENCOUNTERING A FOREIGN OBJECT IN ITS PATH

2	Driver-side front window does not reverse, even when encountering a foreign object in its path.
POSSIBLE CAUSE	Automatic window return range did not reset after battery disconnect: Step 2

Diagnostic procedure

STEP	INSPECTION	ACTION
1	CHECK FOR CUSTOMER COMPLAINT Did customer complain that driver-side front window did not reverse when nearing complete close?	Yes - System normal. - Explain to customer that automatic window return power window system does not operate when nearing of complete close.
		No Go to next step.
2	RESET REVERSE AREA STORED IN DRIVER-SIDE FRONT WINDOW MOTOR - Reset the main switch to recognize driver-side front window fully closed position. - Did malfunction disappear?	Yes - Troubleshooting completed. - Explain to customer that misadjustment of automatic window return range was the problem.
		No Replaced power window main switch.

TROUBLESHOOTING [POWER WINDOW SYSTEM]

NO. 3 DRIVER-SIDE FRONT WINDOW REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS GOING UP IN AUTOMATIC MODE

3	Driver-side front window reverses even though the glass does not encounter a foreign object while it is going up in automatic mode.
POSSIBLE CAUSE	- Too much driver-side front window friction resistance: Steps 1–5 - Short to ground in position sensor 1 signal from wiring harness (between power window main switch and driver-side front power window motor), inner driver-side front power window motor, or inner power window main switch: Steps 6, 7

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT FOR FOREIGN OBJECT IN DRIVER-SIDE FRONT WINDOW Is there a foreign object in driver-side front window?	Yes	Remove the object.
		No	Go to next step.
2	INSPECT ACRYLIC VISOR BRACKET INSTALLATION Is acrylic visor bracket properly installed?	Yes	Go to next step.
		No	Reinstall acrylic visor bracket properly.
3	INSPECT TO SEE IF GLASS RUN CHANNEL INTERFERES WITH DRIVER-SIDE FRONT WINDOW - Remove driver-side front door trim. - Does glass run channel interfere with driver-side front window?	Yes	Repair or replace glass run channel, then go to Step 9.
		No	Go to next step.
4	INSPECT LUBRICANT ON DRIVER-SIDE CARRIER PLATE Is there lubricant on driver-side carrier plate?	Yes	Go to next step.
		No	Apply lubricant (mineral oil).
5	INSPECT INSTALLATION OF DRIVER-SIDE FRONT POWER WINDOW SYSTEM COMPONENTS - Are the following parts properly installed? - Driver-side front door glass - Driver-side power window motor wire - Driver-side power window motor - Driver-side power window regulator frame - Driver-side carrier plate - Driver-side glass run channel	Yes	Go to next step.
		No	Reinstall part(s) properly, then go to Step 9.
6	VERIFY POSITION SENSOR 1 OUTPUT SIGNAL - Turn ignition switch to ON position. - Test voltage at driver-side front power window motor connector terminal 1C (position sensor 1 signal). - Is voltage alternate between 0 V and approximately 12 V when driver-side front window is being gone up and down at manual mode?	Yes	Go to next step.
		No	Replace driver-side front power window motor, then go to Step 8.
7	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN POWER WINDOW MAIN SWITCH AND DRIVER-SIDE FRONT POWER WINDOW MOTOR) OR POWER WINDOW MAIN SWITCH - Turn ignition switch to LOCK position. - Disconnect power window main switch. - Is there continuity between power window main switch connector terminal 2C (position sensor 1 signal) and ground?	Yes	Repair wiring harness between power window main switch and driver-side front power window motor, then go to next step.
		No	Replace power window main switch (short to ground in power window main switch), then go to next step.
8	RECHECK MALFUNCTION SYMPTOM AFTER REPAIR Did malfunction disappear?	Yes	- Troubleshooting completed. - Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.