

Diagnosis and Testing

General Equipment

The Ford diagnostic equipment

For heated windows, refer to Wiring Diagram Section 056-1 for schematic and connector information.

For power windows, refer to Wiring Diagram Section 100-1 for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

VISUAL INSPECTION CHART

Mechanical	Electrical
• Window seal • Door window frame	• Fuse(s) • Electrical connector(s) • Switch(es) • Circuit(s) • Window regulator motor(s) • Heated rear window relay • Heated windshield relay • Heated rear window grid wire • Heated windshield grid wire • Auxiliary junction box (AJB) • Body control module (BCM)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

The table provides all possible Wheels and Tires symptoms. For a detailed diagnostics, proceed to the **Ford diagnostic equipment**.

Symptom	Possible Sources
All power windows are inoperative	Circuit(s)
A single power window is inoperative - driver side	Circuit(s)
	Driver power window control switch
	Window regulator motor
A single power window is inoperative - passenger side	Passenger power window control switch
	Window regulator motor
	Circuit(s)
The one-touch down window is inoperative	Driver power window control switch
	Body control module (BCM)
The defrost system is inoperative	Rear Window Heater Relay
	Body control module (BCM)
	Heated rear window grid wire
	Heated windshield grid wire
	Circuit(s)
	Heated rear window control switch
	Heated front window control switch

The defrost system will not shut off automatically	Front Window Heater Relay
	Body control module (BCM)

Component Tests

Heated Rear Window Switch

1. Remove the heated rear window switch.
2. Measure the resistance between pins 1 and 2 of the switch while operating the switch.
3. The resistance should be less than 5 ohms when the switch is in the ON position and greater than 10,000 ohms when in the OFF position.
4. If the resistances are not as specified, INSTALL a new heated rear window switch.

Heated Rear Window Grid Wire Test

1. Using a bright lamp inside the vehicle, visually inspect the wire grid from the outside. A broken grid conductor will appear as a brown spot.
2. Start the engine and set the heated rear window switch to ON, the indicator light should illuminate.
3. Work inside the vehicle with a 12 volt DC voltmeter. Contact the broad red-brown strips on the rear window, positive lead to the battery side and the negative lead to ground side. The meter reading should be 10-12 volts. A lower voltage reading indicates a loose heated rear window ground wire connection at the heated rear window ground wire screws.
4. Contact a ground point with the negative lead of the meter. The voltage reading should not change.
5. With the negative lead of the meter grounded, touch each grid line of the heated rear window at its midpoint with the positive meter lead. A reading of approximately six volts indicates that the line is good. A reading of zero volts indicates that the line is broken between the midpoint and the B+ side of the grid line. A reading of 12 volts indicates that the circuit is broken between the midpoint of the grid line and ground.
6. Install a new heated rear window using the procedures as described under the general procedures if necessary.

Window Heater Relay

1. Remove the heated rear window relay.
2. Using a jumper wire, connect one end to terminal 1 of the relay. Connect the other end to ground.
3. Using a second jumper wire, connect one end to terminal 2 of the relay.
4. Connect one lead of an ohmmeter to terminal 3 of the relay. Connect second lead to terminal 5 of the relay. Observe the resistance.
5. Momentarily tap the unconnected end of the second jumper wire to the battery power. An audible click should be heard and the resistance on the ohmmeter should drop to zero.
6. If the relay does not click and the resistance does not drop to zero, INSTALL a new relay.