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Bench Test for 2-Wire Window Lift Motors

Application:

All vehicles with electric windows (2-wire motor).

Problem:

Window lift motor replacement only operates in one direction.

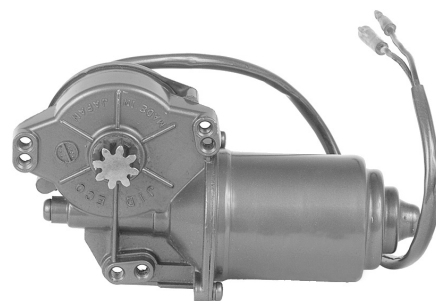
Cause:

Possible faulty wiring or control switch.

Solution:

Most 2-wire window lift motors depend on a voltage polarity change to control direction. If the motor runs in one direction but not the other, the problem is in the vehicle wiring or switching. The test below can be used on 2-wire motors (typical unit shown).

NOTE: Early tailgate window lift motors (42-11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22) use a frame grounded brush and wound field magnets. For these motors the rotation direction is controlled by which terminal has +12 volts directly applied (the other terminal is open). For this test the motor frame must always be connected to ground (battery negative). (See PT 42-0003 for frame-grounded motors & switch test).



Bench Test:

Step 1: Directly connect positive battery voltage to one motor wire and battery ground to the other motor wire. The motor should run in one direction.

Step 2: Reverse battery connections. The motor should now run in the opposite direction. If motor does not run, repeat test making sure connections and voltage source are good. After verifying proper motor operation, check the vehicle for these possible problems:

- Faulty switch circuitry or wiring
- Faulty or misadjusted window lift mechanism
- Refer to vehicle service manual for additional tests

Note:

If your window lift motor has more than 2 wires, it will be necessary to refer to the vehicle service manual for proper testing.

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Window Lift Switch Test

Application:

Vehicles with Power Windows.

Problem:

Window Lift Motor still doesn't work after being replaced.

Cause:

One common root cause is a failed control switch.

Solution:

Check the switch with a voltmeter as follows:

1. With the ignition on, depress the driver's master window lift control switch to operate any other working window. This ensures there is power to the system; correct problems as necessary. Turn off ignition.
2. Disconnect the problem window motor from its harness in the door.
3. Using a digital voltmeter set to the 12 volt DC scale, connect the meter probes to the two motor contacts in the harness connector (if more than 2 wires see Motor Test below).
4. Operate the master control switch for the problem window. The voltmeter MUST read battery voltage. With the switch still depressed, move your finger around the button checking for intermittent operation - the reading must remain unchanged.
5. Now check the switch on the door with the problem. If the voltmeter does not read battery voltage, the problem is with the vehicle wiring or switch. To verify the operation of a 2-wire motor see motor test below and refer to ProTech PT 42-0001.

Corrosion damage and/or mechanical damage to the wiring, contacts or connectors in car doors prevent power getting to the motor. Simple, but a common problem.

MOTOR TEST: Window Lift Motors with 2 wires operate by applying 12 volts in either of two polarities to the motor. To test, connect +12 volts and ground (fully charged car battery) directly to motor contacts: the motor should run in one direction. Change polarity to reverse motor (in normal use the switch changes polarity). Four wire motors (with express down) have 2 additional control wires, but the same test can be applied if the technician can identify the power wires (usually heavier gauge, refer to vehicle service manual for proper connections). Driver Controls and Child Safety Locks have added additional contact points and complexities to Window Lift Motor control wiring – one open segment disables the motor!

Note:

Early Tailgate Window Lift Motors (42-11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22) use a frame grounded brush and wound field magnets. For these motors the rotation direction is controlled by which terminal has +12 volts directly applied (the other terminal is open). For this test the motor frame must always be connected to ground (battery negative).

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Window Lift Problem Solver for Sluggish Operation

Application:

All power window lift motors.

Problem:

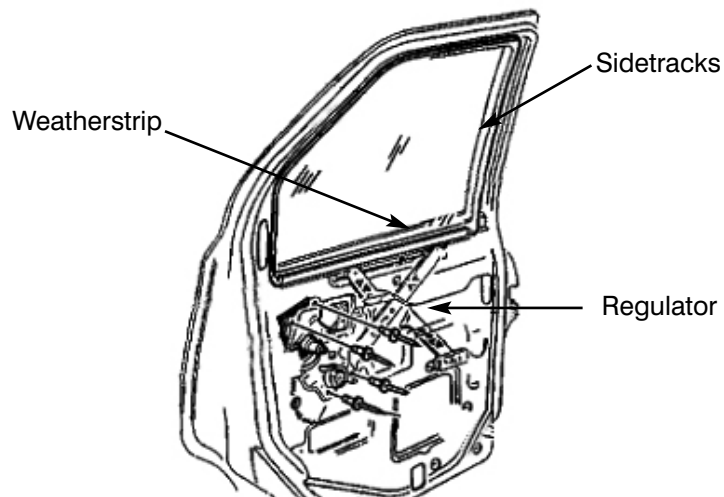
Slow moving, binding, noisy window operation.

Cause:

Dry or worn weatherstrip and tracks, dirty switch contacts, or damaged window regulator.

Solution:

Inspect all door weatherstripping inside and out for wear and alignment. Repair or replace as necessary. Ensure both side tracks are aligned straight, the felt inserts are lubricated, and the felt is not worn out. Replace any parts that are bent or worn. Lubricate side track felt and weatherstripping for smooth glass operation. This may require an overnight soak to allow the lubricant to penetrate (refer to your vehicle's factory service manual for approved lubricant and procedures). Check the regulator for worn, bent or binding arms, rollers, pivot points and spring. On cable-type regulators, check cables and cable tracks. **Note: A bad regulator usually results in a window that sticks or binds in some position.** Check the switch for dirty contacts and proper operation. Dirty contacts will cause excessive resistance that prevents the motor from developing full power resulting in poor performance. Clean with electrical contact cleaner if possible or replace as necessary.



Note:

Refer to ProTech 42-0001 and 42-0003 for other motor and switch test tips.

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Window Lift Noise May Not Be the Motor or Regulator

Application:

Vehicles with cable-type regulators.

Problem:

Noisy operation or popping sound diagnosed as a window lift motor or regulator problem.

Cause:

Regulator cable hold-down may be broken or missing, allowing the cable to snag on the window regulator bracket as the window is raised, producing the noise.

Solution:

Install new hold-down or suitable substitute. The graphic below shows a typical installation and the area needing the hold-down.



Typical installation and hold-down location

Note:

Refer to ProTech PT 42-0004 for additional information on noisy or binding operation.

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Power Window Lift Motors and Regulators: Top 10 Do's and Don'ts

The tips and hints below will help ensure a safe and successful installation of the replacement unit. However, for complete step-by-step installation instructions always refer to the vehicle service manual or equivalent reference and the information supplied with the unit. If you do not have the experience or proper tools to safely remove and install both units, you should seek the services of a qualified technician.

Things to DO:

1. **Do** secure the glass while working on the motor or regulator to prevent it from dropping and breaking.
2. **Do** lubricate the running surfaces of the regulator mechanism with high-temperature urethane-based grease before installing in the door.
3. **Do** install the motor so the window glass movement matches the direction selected by the window switch.
4. **Do** test all functions of the window after completing the installation:
 - 2 and 4 wire motors - check that up and down action matches switch direction.
 - 4 and 6 wire motors - check that all auto-functions work correctly.
 - 6 and more wire motors - check anti-pinch safety function reverses when encountering an obstacle in the travel path of the glass.
5. **Do** secure any wire harness or cable that may snag on the window regulator as it moves past.

Things NOT to DO:

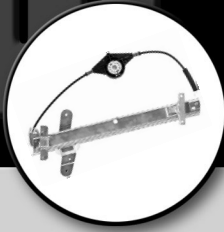
1. **Do not** operate the window mechanism with hands or any body part near the window regulator mechanism to prevent pinching or injury.
2. **Do not** install using smaller gauge wiring or connectors that may not be able to handle the electric current.
3. **Do not** remove a motor from an "unlocked" regulator with an energized spring. Clamp or secure by drilling a hole through the regulator gear and frame. Then install a bolt with a nut and washers to lock the regulator and avoid sudden release.
4. **Do not** allow children or others to play or be in the area unsupervised during the repair.
5. Tighten securely, but **do not** over-tighten clamps or brackets that hold the glass.

Safety concerns and information:

Because of original manufacturer verification and consolidation, wire color and connections must not be assumed. Before operating a window for the first time, be sure arms, hands and head are clear of the window path.

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Identifying Cardone Window Motor Part Numbers

How to identify CARDONE Select part number configuration for Window Lift Motors and Regulators:

- Part numbers without a letter as the suffix are motors without regulators.
- Part numbers ending with an "R" are motors with regulators.
- Part numbers ending with a letter other than "R" are regulator only (no motor supplied).

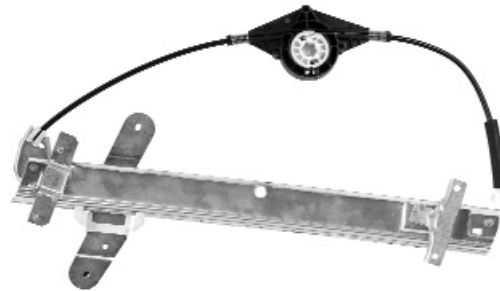
Examples:

- Part number 82-383 = motor only (no regulator).
- Part number 82-383A = regulator only (no motor).
- Part number 82-614R = motor with a regulator.
- Part number 82-153AR = motor with a regulator.

Regulator with motor



Regulator without motor



Note:

Refer to instructions supplied with the unit to complete the installation.
Refer to the vehicle service manual for detailed installation procedures.