



## Tired of Key Twisting

TIME TO POWER UP THOSE 30-YEAR-OLD DOOR LOCKS

BY TOM RUSSO

**If your 1978-82 Corvette is a daily driver equipped with RPO AU3 power door locks that haven't worked like you believe they should...we've got tips that will restore them to their original functionality.**

Power door locks were first introduced in 1978, offering buyers more convenience, and over 100,000 buyers picked up this option by the end of the 1982 production year. Over 90 percent of Corvettes were equipped with this feature, and today it is a standard option. But after 25-30 years, their efficiency gets sluggish, especially if it's a daily driver.

Power door locks are taken for granted in today's high-tech vehicles, but when introduced in the late '70s, protection from the elements was minimal. A vapor barrier (sheet of plastic) kept moisture from penetrating the door panel, but did little to keep water from entering the door interior and watering the door lock linkage, actuators and electrical components. After thirty years, it's not

surprising those door locks get cranky and require some TLC.

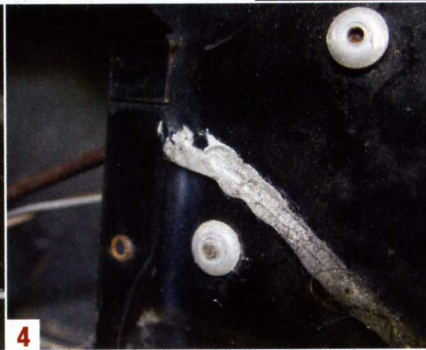
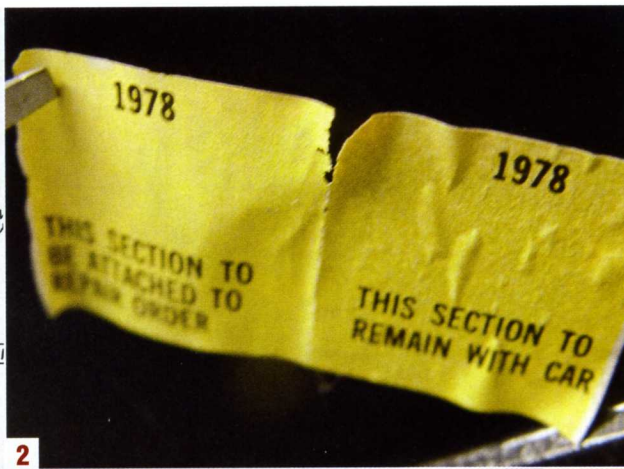
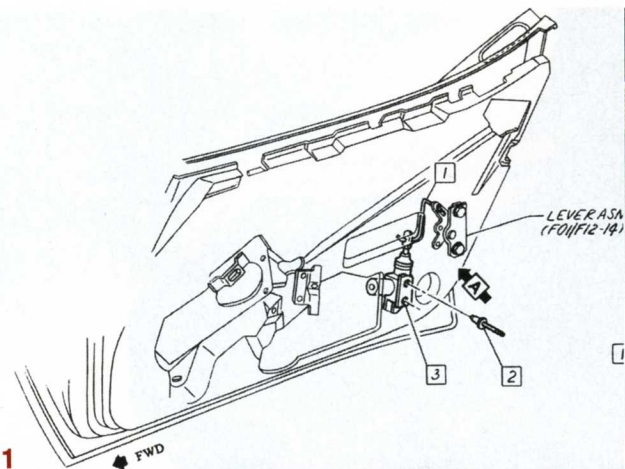
Our donor vehicle is a 1978 Pace Car that had served as a daily driver. It sports 56,000 miles, was neglected and had been subjected to the elements. Therefore, it was a perfect candidate for this power door lock repair and restoration project. The obvious problem was that the doors would not lock and the door key required much force to lock the door, to the point of fear the key would break off. The power door lock switch would only lock the door...the switch failed to unlock. Your power door locks may not be in as bad a shape as those of our pace car, but we show how the lock systems are interrelated and how best to restore the functionality of RPO AU3 power door locks to their full potential.

**ASSESSMENT IS SIMPLE:** The doors lock or they don't. By spending a few extra moments, you can get a feel for what is causing the doors to not lock. For those new to the late-model Corvette, an overview of normal operations is included to assess how best to tackle this project. But it is a DIY project – one that is quite rewarding, but does require patience.

A Corvette can be locked in one of three ways: manually from inside by pressing the door lock knob into the armrest, using the door key that works the lock mechanism from outside and the power door switch, located just below the door handle. The interior door handle unlatches the door, but once the doors are locked, will not unlatch the door. In the same fashion, the exterior door handle will open the door only when the door is not locked.

The door switch is easy to diagnose... it locks (observe the door knobs) or it doesn't! When properly functioning,





**1** Power Door Lock Actuator & Linkage. Taken from the AIM and shows the interior side of a door panel and location of the actuator.

**2** Door panel tag: When an inspector identified repairs, the tag was removed by the repairman and attached to the repair order inspection sheet.

locking should ring with an assertive “pop!” Using the key to lock and unlock the door is a better gauge for the condition of the linkage. The key should slide easily until it engages the internal latch, at which time it will latch smartly. If there is any sluggishness, either the linkage or the actuator needs servicing.

**DOOR PANEL REMOVAL:** The loss of power door lock functionality can be attributed to any one or a combination of all three problems: electrical (switch and wiring), electro-mechanical (failed actuator) or mechanical (linkage gummed up). Buried inside the door panel is the power door lock actuator.

Begin by setting the window in the closed position and removing the door panel. Remove the three screws in the armrest and a fourth at the back end of the panel. Remove the door handle bezel (one screw) and unscrew the door lock knob. Lift the panel up, disconnect

According to John Hinckley, Chevrolet used the tags on all vehicles and required dealer service departments to attach it to warranty work claims when the claim was for window adjustment. The tag proved that the technician was inside the door panel, and Chevrolet didn’t pay claims unless the tag was on the warranty work claim.

the connector from the door switch and gently slide it off the doorknob linkage. The passenger side is easier to work with than the driver’s side, due to the side mirror adjustment cable. Peel back the plastic vapor barrier. The vapor barrier is brittle, and if you’re not careful, you’ll have to replace it.

Take a moment and study both the inside of the door panel and the interior side of the door. Look for date codes and stickers and then determine if the interior of the door has been accessed prior to entry. The door switch has a connector on its back side with wires that run back to the power door lock actuator and the other door switch. The driver’s side will include a cable harness that runs to a switch on the key cylinder for anti-theft operation. So, unless you have a problem with it, leave it alone.

**ACTUATOR:** The actuator is an electro-mechanical device that once charged,

**3** Interior side of door with interior panel removed.

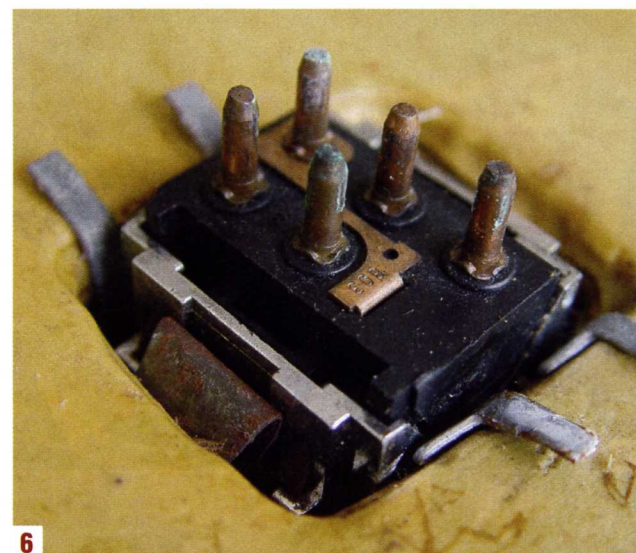
**4** Two rivets secure actuator in place. Drill or grind to remove.

**5** Service replacement actuator & original actuator. Note the brittle, broken plastic boot on the original actuator.

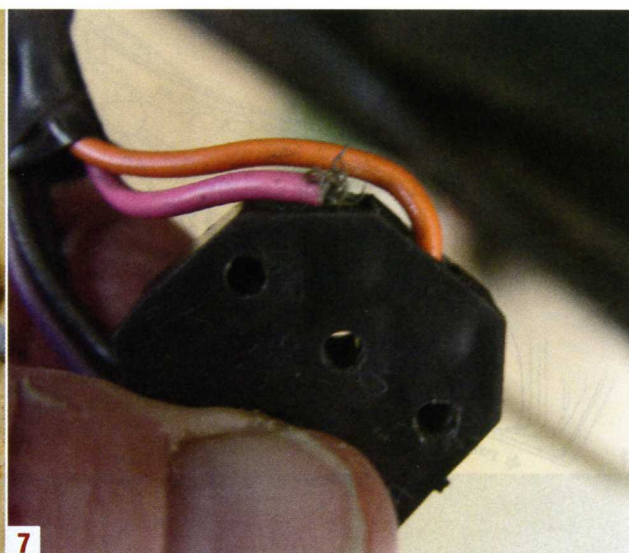
will cause the plunger to move the linkage hooked to the plunger end. With the door panel removed, locate the access cover at the lower center and remove the sheet metal screws. The back side of this cover will have a gasket, lift carefully to preserve and recycle the gasket. Once this cover is removed, you can access either the power window motor or the power door lock actuator. Locate the two rivets that secure the actuator to the door panel and remove them. With the actuator loose, reach up and unhook the linkage from the actuator plunger. Then you can remove the actuator and disconnect the gray/tan wiring harness.

The actuator has a plunger on one end that is covered by a plastic boot. Over the years, the plastic deteriorates and exposes the plunger to moisture, which eventually will corrode and lock up. The actuators are riveted in place. Drill out the rivet or grind off its head, but be careful





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not to grind into the support bracket. Once removed, you can use a 1/4-20 nut and bolt to install its replacement. Before re-installing the actuator, proceed with linkage maintenance, as its absence will provide more space to work inside the door panel compartment.

**ELECTRICAL:** The actuator was targeted first for replacement when we began the project, but once installed, we discovered that it would only lock the door. The door switch would fail to activate the actuator in the unlock position. At that point, we tested electrical connections with an ohmmeter.

Reconnect the door switch cable harness to the door panel connector, but first check the door switch terminals. If they look corroded or dirty, use emery paper and clean them up. With the panel connected to the cable, test

each contact with an ohmmeter to confirm continuity. When you activate the door lock switch, you should see a voltage spike at each connection, except ground. We discovered with our pace car that one contact was bad and failed to unlock the door. Wire colors on each switch will differ because each side operates the other. The power lead comes in orange (both sides), and the passenger side provides ground (black). Therefore, both sides must be connected to operate the door locks.

Inspect the wires that feed into the connector. We discovered that one of the leads was frayed. We replaced the connector, as well as the door switches on both sides of our pace car. When replacing wires, solder the wires and use shrink-wrap tubing to secure the connection. Take all measures to eliminate moisture penetration of the electrical connections and wiring.

**6** Door switch terminals show thirty years of corrosion.

**7** Door switch connector and frayed wire.

**8** Lock linkage that activates plunger and doorknob. Note the spring clip that secures rod to lever.

**9** Linkage lever assembly: Shows lubricant discharge from a large rivet.

**10** Plunger linkage rod.

Finally, the anti-theft system is armed from the driver-side key lock, and you may recall, this was moved from the driver-side front fender in 1977. Before you begin this project, you may wish to test the functionality of your anti-theft system. While you have the panel off and the space to work inside the door, now would be the time to test the continuity of the wiring that leads to the key cylinder.



**LINKAGE MAINTENANCE:** Unless you plan a major overhaul to window channels and linkage by removal of all hardware, the most efficient means to remove accumulated "gum" from the linkage is to use an aerosol cleaner like brake cleaner. The nozzle extension helps to target the fluid, and the force will be sufficient to clean up the linkage and improve its movement. Target your cleaning toward the linkage assemblies at the lock mechanism. Also inspect that spring clips (Figure 8) secure linkage rods to levers and the lock mechanism. Spring clips are both right hand and left hand, and they secure all rods to levers, except the actuator plunger rod.

Use a screwdriver tip or your finger to activate the door lock linkage. This will activate the linkage as it runs to the actuator and door lock knob. It will also activate the linkage as it runs up to the key. Binding occurs where the three sets of linkage connect at the lock mechanism. Also, clean up the latch mechanism that captures the striker bolt. Once cleaned to your satisfaction, use a lubricant that restores the lubricating qualities to your linkage.

Work the interior door handle and observe the linkage mechanism. In 1978, Chevrolet introduced a plastic guard to prevent water from moisturizing the door lock linkage and latch mechanism. Ensure when you operate the door handle that the linkage isn't bound up on the guard. If it's in the way, bend it back.

An additional part to clean and lubricate is the linkage lever assembly. This assembly is equipped on both power and non-power lock cars. The oval slot on the lever is used for the actuator linkage when AU3 is specified and serves as a fulcrum for the actuator linkage. When the door switch is activated, the plunger pushes or pulls the linkage, and the fulcrum activates the linkage up through the door handle. While cleaning and lubricating the linkage, don't forget the lever assembly. You may find that once the actuator is removed, this plunger linkage falls off the fulcrum. Locate the slot on the fulcrum and insert the linkage into the slot. You'll learn why you don't want the actuator installed yet!

If after testing you find the ease of movement unsatisfactory, you can take it a step further and isolate the upper part of the lock and the lock cylinder linkage. To do this maintenance, the window



**11** Removal of plastic guard reveals anti-theft lock cylinder & lock mechanism. Note the yellow and light-blue wire from the lock. Also note the film residue (yellowish) after cleaning.

must be down, and you must loosen the plastic guard. Two screws hold it in place. Remove the screws and work the guard down into the window channel. It won't fall down, but will allow enough room that you can view with a flashlight and small mirror the lock cylinder, its linkage and the exterior door-adjusting rod.

**THE BOTTOM LINE:** Before buttoning up both door panels, test your restoration using both manual and power door lock systems. Door lock switches should "pop" the door locks from either side in both lock and unlock position.

Next, conduct a manual test of the linkage using both the door key and the door lock knob. Check for ease of movement by using your key to lock and unlock the door. The key should slide easily in both positions, but with an assertive "click" as it catches and locks or unlocks the door. Any force to overcome resistance should be diagnosed as a linkage that requires additional cleaning.

Finally, as you secure those arm rests, double check to make sure the word LOCK on the door switch bezel is upright and reads correctly. You don't want to show off your handiwork to other Corvette guys (or girls), and they point out the lock switch is upside down. This would blow the glow of self-satisfaction for restoring your RPO AU3 power door locks. It will also ready you for that next "testy" Bloomington Gold or NCRS Top Flight operations judge! ■