

# ALLEGION EL SOLENOID ELECTRIC LATCH RETRACTION TROUBLESHOOTING GUIDE

*Product should be serviced by a qualified technician.*

## WARNING

To avoid risk of electric shock, turn off AC power before servicing the power supply or option board.

**IF DEVICE LATCH IS NOT RETRACTING PROPERLY WHEN POWERED, FOLLOW THESE STEPS IN ORDER.**

### 1. USE CORRECT POWER SUPPLY, OPTION BOARD, AND INPUT CONTACT

- EL solenoid power requirements: 24VDC +/- 10%; **16 amp** inrush (.3 seconds), .25 amp holding
- Required Power Supply x Option Board: PS914 (green mother board) x 900-2RS or 900-4RL (or may use discontinued PS873)
- Input from Access Control to be Normally Open dry contact.
- *Power supplies manufactured by third parties have not been tested and may not allow for proper performance of the EL solenoid.*

### 2. VERIFY CORRECT WIRE GAUGE AND DISTANCE

- 14AWG - 100 feet maximum; 12AWG - 200 feet maximum
- Wire lengths are measured one way, between power supply and frame.
- Wires from power supply to exit device are not polarized.
- The above generalized values will vary slightly depending on type of device and generation of potted module used.
- **The use of 18AWG is not adequate and is the most common cause of retraction problems;** if 18AWG is being used and cannot be changed, the Von Duprin QEL or Falcon MEL (motorized latch retraction) could be used in lieu of EL for many applications.
- The power transfer will have smaller gauge wire; this is acceptable. EPT, electrified hinges and pivots, and door loops may be used.

### 3. CHECK VOLTAGE AT POWER SUPPLY

- Verify 120VAC green light is present on top left side of PS914 mother board.
- Ensure mother board DC voltage jumper is securely set for 24VDC.
- At DC output terminals on lower right of mother board, check for red light and meter 24VDC output.
- With device and access control wires attached to option board per the instructions, provide input signal (e.g., card swipe) to power supply, then verify 24VDC at power supply option board output terminal.
  - If 24VDC is not present, jumper the input terminals on option board (as a test) to bypass possible defective input product.
  - If power supply DC light goes out and fuse resets, there may be an overload due to a short in the wiring, inadequate wire gauge, defective pulse width module (PWM), or devices being activated simultaneously. (They must sequence to allow proper performance.)

### 4. ELIMINATE MECHANICAL ISSUES

- Verify that the device is not mechanically dogged or in a bind, and that latches retract and extend fully when mechanically operated. See device instructions and videos for adjustment details.
- If needed, disconnect device from vertical rods/cables or mortise lock to isolate mechanical from electrical issues.

### 5. TEST ONE DEVICE AT A TIME

- To isolate the source of a problem, if multiple devices are being powered, disconnect all but one device from the power source, and test each device individually. Keep in mind that if one device works fine, but another does not, power supply option board output terminals and/or pulse width modules (PWM) can be exchanged to see if symptoms follow.

### 6. CHECK VOLTAGE AT SOLENOID

- Disconnect pulse width module (PWM) from solenoid. Current version of PWM is yellow; older version is black.
- While providing input signal to power supply, measure voltage from PWM (LED on PWM should flash once).
- Approximate readings for yellow module should be (for accuracy, do not touch meter probes):
  - Green/Yellow: 22.6VDC (older black modules should measure 0VDC after .3 seconds)
  - Green/Orange: 24VDC (older black modules should measure same)
- If voltage reading is improper, use a different PWM (part number 050534) and/or continue metering connection points (e.g., power transfer) to determine if there is a faulty connection.

### 7. ADJUST SOLENOID PLUNGER (VON DUPRIN DEVICES ONLY). NOTE: THIS OFTEN IMPROVES PERFORMANCE.

- After completing steps 1-6, adjust plunger if it will not remain seated in solenoid when powered. Loosen black 3/32" socket head cap screw on plunger. Back out brass threaded bushing (with 3/8" wrench) until plunger holds when power is applied. Then test with device cover plate installed since it can impact operation. Details: [Electrical Options Booklet, document #24228413](#)

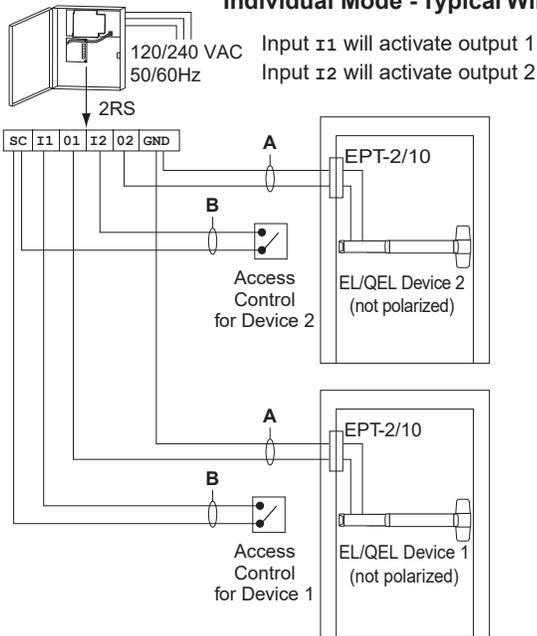
### 8. TEST RESISTANCE OF SOLENOID WIRES. NOTE: THE SOLENOID IS RARELY THE CAUSE OF ISSUES.

- Green/Yellow: 1.2-2.2 ohms
- Green/Orange:
  - Von Duprin 33A/35A/98/99: 112-130 ohms
  - Von Duprin Inpact 94/95 (EL is discontinued): 45-55 ohms
  - Falcon 24/25: 98 ohms
  - Falcon 1490/1590/1690/1790/2390: 112-130 ohms

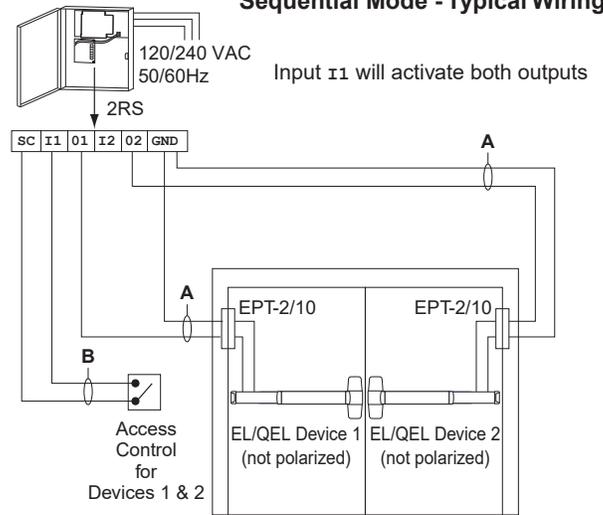
ADDITIONAL RESOURCES ARE AVAILABLE AT [US.ALLEGION.COM/EL-SUPPORT](http://US.ALLEGION.COM/EL-SUPPORT)

## BASIC PS914 x 900-2RS WIRING (use jumper to select mode)

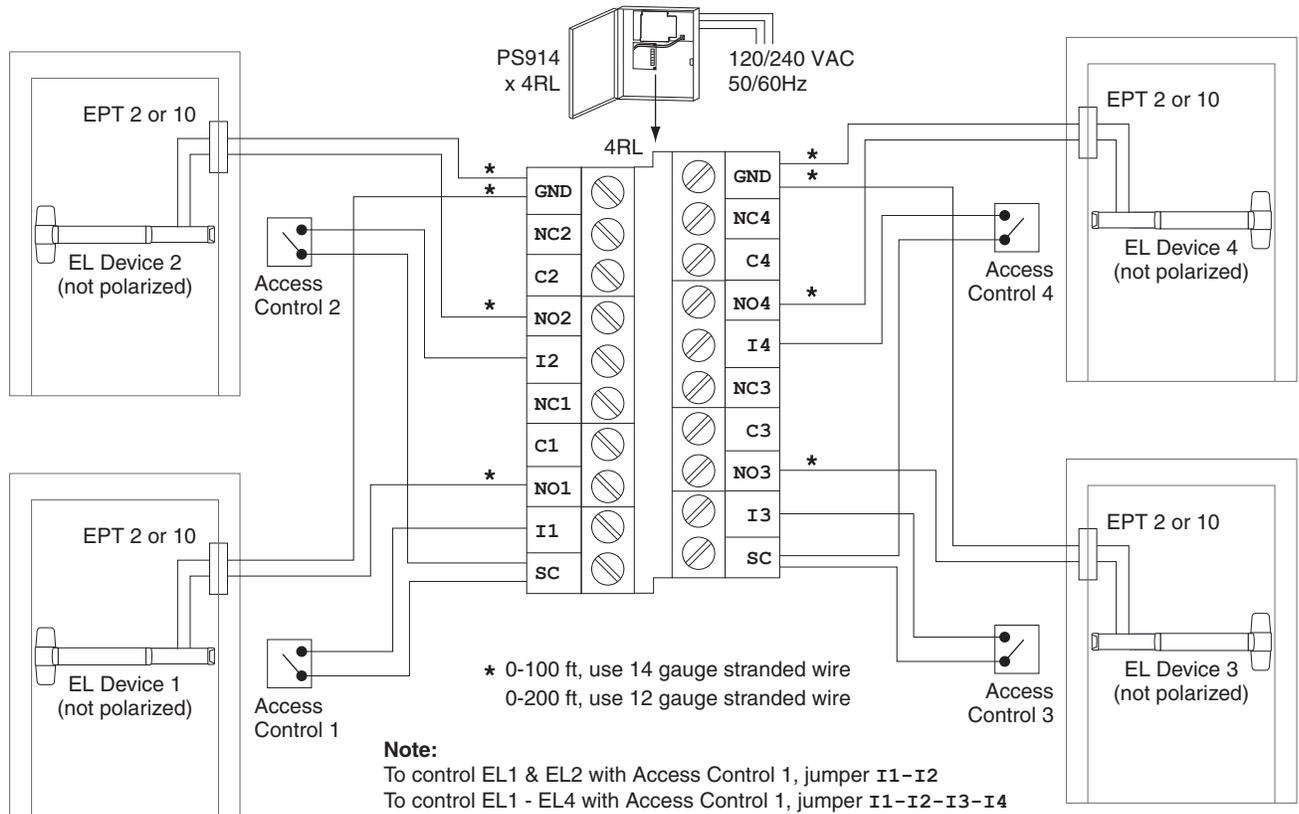
### Individual Mode - Typical Wiring



### Sequential Mode - Typical Wiring



## BASIC PS914 x 900-4RL-4TD WIRING



Customer Service

1-877-671-7011 www.allegion.com/us



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