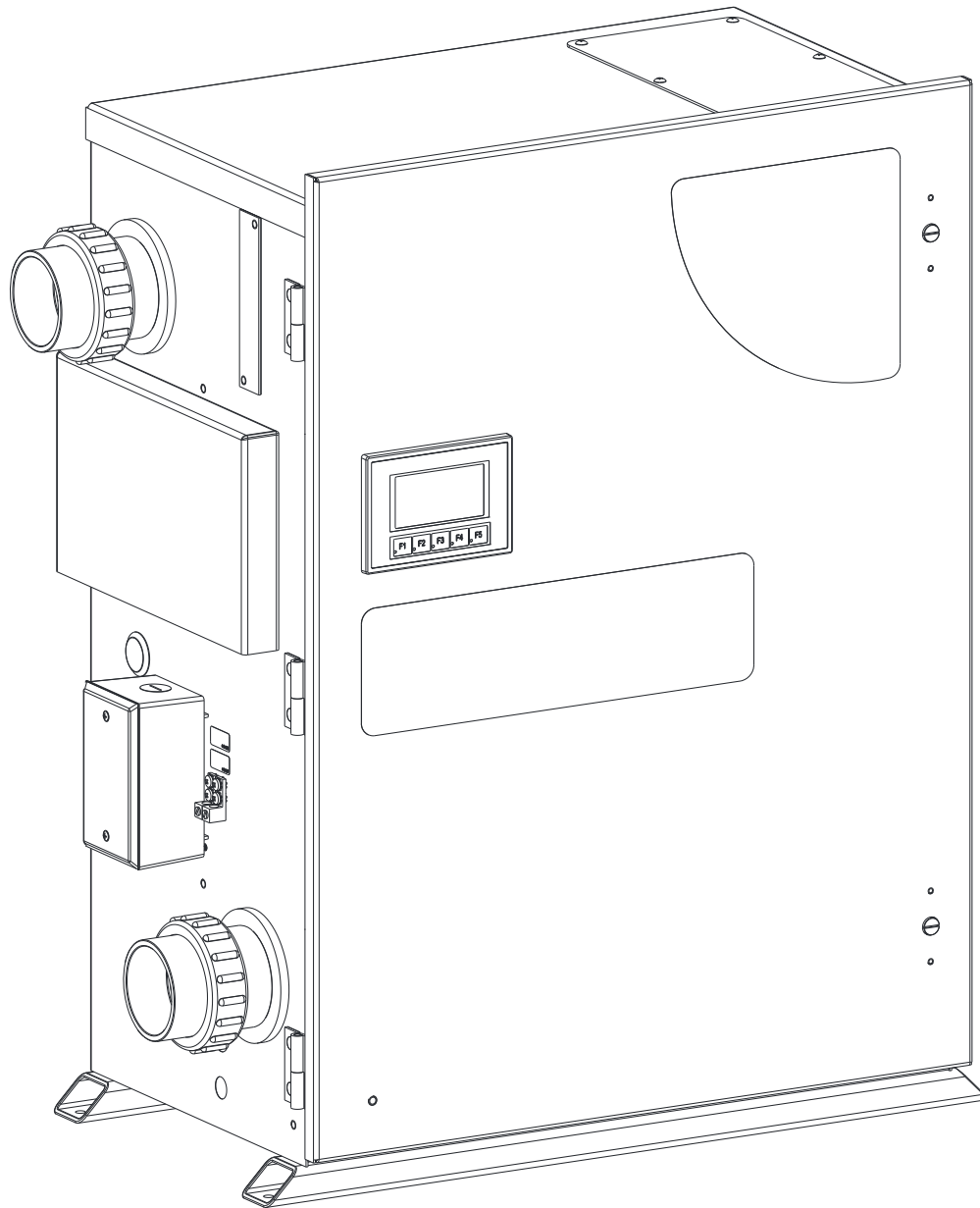




# DEL UV-C PRO (50, 100) INSTALLATION INSTRUCTIONS & PRODUCT MANUAL




**DEL:UV-C PRO**

[CMPCOMMERCIAL.COM](http://CMPCOMMERCIAL.COM)

4-2839-01 Rev.A

# IMPORTANT INFORMATION

## READ AND FOLLOW ALL INSTRUCTIONS

- Read this manual completely before attempting installation. Failure to install in accordance with the installation instructions could void warranty and result in injury or death.
- All permanent electrical connections should be made by a qualified electrician.
- A pressure wire connector, labeled bonding lugs, is provided on the outside of the unit to permit connection to a minimum No. 6 AWG (13.3 mm<sup>2</sup>) solid bonding conductor between this point and any metal equipment, metal enclosures of electrical equipment, metal water pipes, or conduit within 5 feet (1.5 meters) of the unit as needed to comply with local requirements.
- Install at least 5 feet (1.5 meters) from wall of pool.
- Follow all applicable electrical codes.
-  **DANGER** **ELECTRIC SHOCK HAZARD:** Be sure to turn power OFF and disconnect from power source before any service work is performed. Failure to do so could result in serious injury or death.
- The UV-C Pro must be installed in an outdoor location, or indoors in a forced air ventilated room, and installed so that the orientation is exactly as shown in **Figure 4**. Install to provide water drainage of generator to protect electrical components.
- Mount the UV-C Pro so that it is inaccessible to anyone in the pool. Never attempt any servicing while unit is wet.
- For your safety, do not store or use gasoline, chemicals or other flammable liquids or vapors near this or any other appliance.
- To maintain cosmetic integrity, protect this unit from direct prolonged sunlight exposure.
- To reduce the risk of injury, do not permit children to use this product, unless they are closely supervised at all times.
- **ENVIRONMENTAL NOTICE:** Hg-Lamp CONTAINS MERCURY. Manage in accordance with disposal laws.  
See: [www.lamprecycle.org](http://www.lamprecycle.org)
- If unit is not operated according to instructions, high dosages of harmful substances may potentially be released.
- Product has met the requirement of NSF/ANSI 50, Annex H.1 for supplemental disinfection and is designed for pools that are in compliance with the U.S. Model Aquatic Health Code (MAHC). Installed flow rates must not exceed max listed flow rates to maintain NSF product listing as well as ensuring proper microbial performance.
- NSF/ANSI 50, Section 13 disinfection efficacy testing for 3 log (99.9%) or greater of *Pseudomonas Aeruginosa* and *Enterococcus Faecium*. Specific residual levels of EPA registered disinfection chemicals may be required by the regulatory agency having authority. Product is designed for supplemental disinfection and should be used with registered or approved disinfection chemicals to impart residual concentrations.

**SAVE THESE INSTRUCTIONS!**

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# 1. GENERAL INFORMATION

## 1A. Description

DEL UV-C Pro products use UV-C light to provide superior disinfection of pool and spa water. The system utilizes low pressure (254 nm) lamps in a modular design to provide a completely integrated system. Controls and UV-C reactors are all in one cabinet.

With the use of UV-C microorganisms are destroyed, chlorine dependence is significantly reduced, and water clarity is optimized to produce crystal clear results.

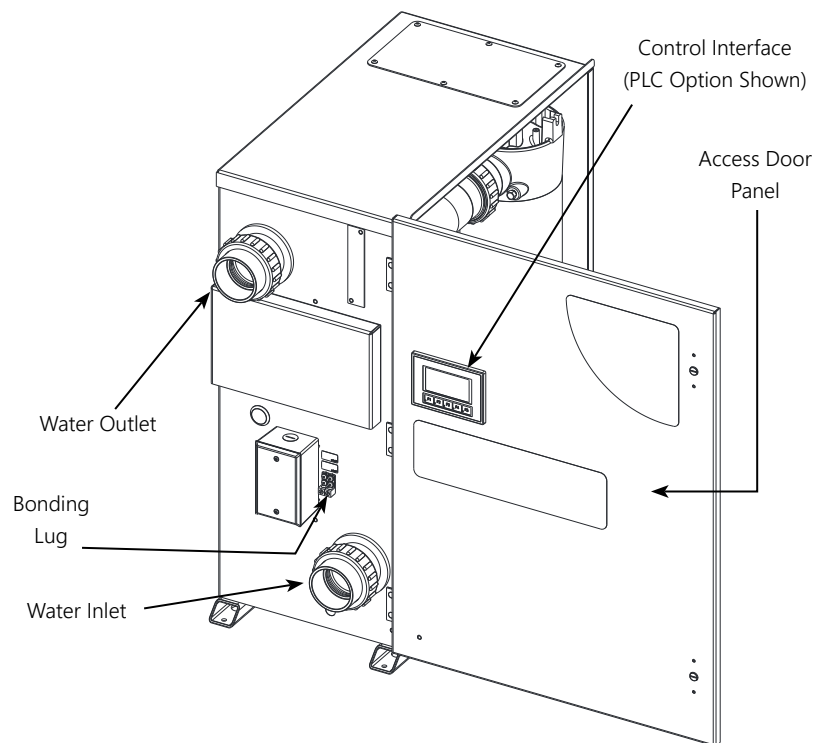
UV-C is compatible with all traditional sanitizers. These systems are cost effective to operate and maintain. UV-C Pro is NSF certified for supplemental disinfection of pools and spas.

	UV-C PRO-50	UV-C PRO-50D	UV-C PRO-100	UV-C PRO-100D
FLOW	20-50 GPM		20-100 GPM	
INLET/OUTLET	2in		2in	
UV LAMP QTY	2		4	
PLC CONTROL	No	Yes	No	Yes
VOLTAGE	120VAC		120VAC	
CURRENT	1.1A	1.6A	1.9A	2.4A

**Table 1: UV-C Pro Sizing Chart**

## 1B. Specifications

See **Table 1** for list of models and specs that apply to this manual. Images shown are model UV-C PRO-100D but manual instructions apply to all models, unless otherwise noted.



**Figure 1: UV-C Generator Overview**

## 2. INSTALLATION

### 2A. Pool Preparation

To achieve optimal performance from the system, the pool must be as clean as possible to start with.

1. Backwash or clean filters one day before starting the generator.
2. Superchlorinate pool water using a chlorine based shock treatment so the water has a sustained 1-3 ppm free chlorine level.
3. Test pool chemistry and adjust pH between 7.4 and 7.6. Adjust total alkalinity between 80 and 120 ppm.
4. Run pool filtration continuously for 24 hours prior to starting UV-C Pro.

### 2B. Location

- Ambient Temp.: 40°F - 110°F (5°C - 43°C)
- Locate the unit indoors or outdoors in a clean area protected from rain and direct sunlight.
- Locate the unit out of reach of sprinklers or drainage spouts. Allow sufficient access for maintenance (2 ft clearance above and 1 ft around the unit) and all plumbing and electrical hookups. Allow additional clearance in front of the unit to allow for door swing and lamp service.

### 2C. Mounting

- The UV-C Pro is shipped with hardware for either floor or wall mounting. Attach the mounting rails in the desired position (bottom or back of the enclosure) and secure with the screws provided.
- Mount the UV-C Pro securely using appropriate hardware or anchors for the surface and as needed to meet local building code requirements.

### 2D. Electrical

Refer to the **IMPORTANT SAFETY INSTRUCTIONS** at the beginning of this manual for important wiring information.

#### 2D-1. Main Power

- Connect the UV-C Pro so that it operates simultaneously with the pool pump.
- An electrical junction box and wires are provided on the left wall of the enclosure for a 1/2" conduit connection.
- Remove the protective plug and install electrical fittings as required to meet local codes.
- Run service wires to the box and connect to provided wiring.

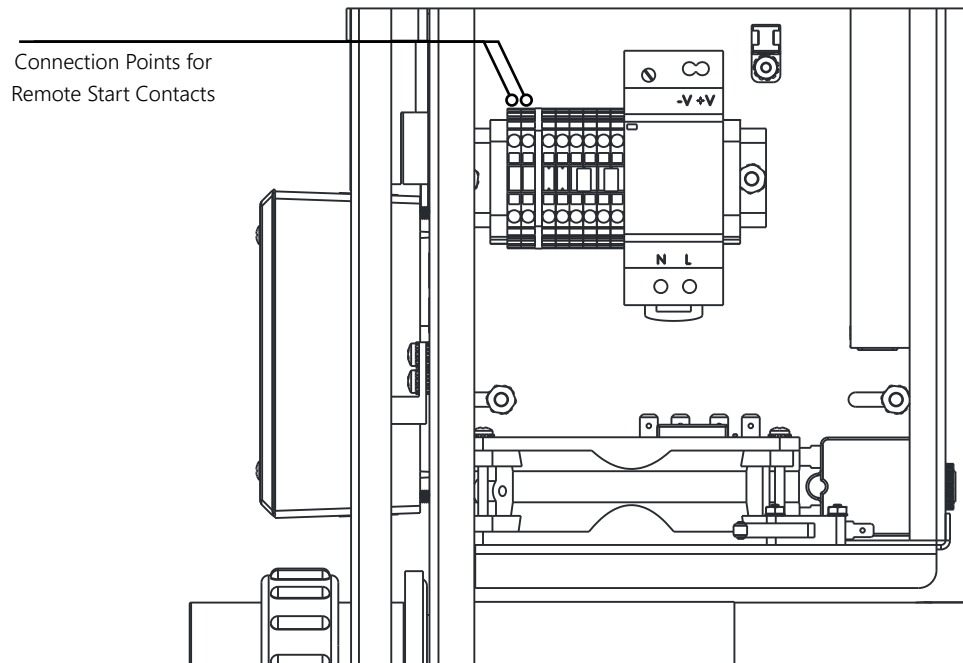
#### 2D-2. Bonding Lug

Connect a solid copper conductor to the bonding lug on the left side of the UV-C Pro to an appropriate earth contact. (Figure 1)

## 2. INSTALLATION

### 2D-3. System Control

- Remote start contacts have been provided for remote ON-OFF operation of the UV-C Pro.
- These should be wired to an external device that closes when the pool pump is ON and opens when it is OFF.
- Failure to use the remote start contacts may result in damage to the unit not covered under warranty.



**Figure 2: Remote Start Contact Locations**

### 2E. Plumbing

The UV-C Pro can easily be added into the pool's plumbing loop. All the components are contained inside the enclosure so only the water inlet and outlet need to be installed into the pool's return line.

#### 2E-1. Plumbing the UV-C Pro

- Install in the main return line of the pool immediately after the filter and preferably before the heater.
- Install cleaners such as chlorinators after the UV-C Pro.
- The outlet of the UV-C Pro must be at least 10 feet from the first return of the pool.
- Use the fittings provided in the parts kit to connect the UV-C Pro inlet and outlet to the plumbing.

# 3. OPERATION

## 3A. Initial System Start-Up

Upon completing all system connections and cleaning the pool as outlined in **SECTION 2**, you are ready to start the UV-C Pro.

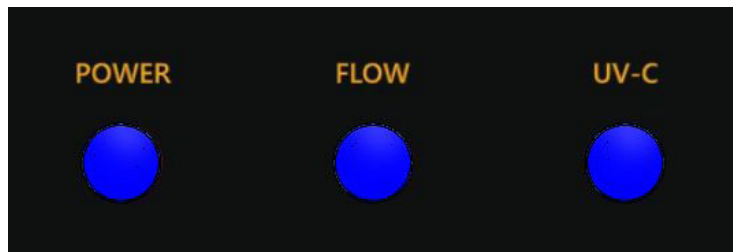
1. Ensure that power is removed from the UV-C and turn on the pool circulation system.
2. Confirm that all fittings are free of leaks both outside and inside the unit. Contact Technical Support if any leak is discovered inside the UV-C Pro.
3. Close the enclosure door and start the circulation system.
4. Apply power to the UV-C Pro.
5. The system should now run normally.

## 3B. Normal Operation

### 3B-1. Standard User Interface (for models with PLC option, skip to Section 3B-2)

Indicator lights (standard): These indicator lights inform the operator of the real-time functional conditions of the UV-C Pro.

1. POWER: This indicator will illuminate when the input power has been supplied and the remote start contacts are closed.
2. FLOW: This indicator will illuminate when water flow has been established.
3. UV-C: This indicator will illuminate when the UV system is active.



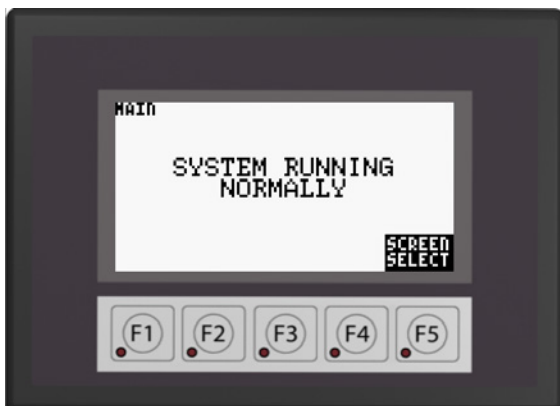
**FIGURE 3: LED Indicator Interface (Included on Standard User Interface)**

### 3B-2. HMI User Interface (included with PLC option):

The HMI (Human-Machine Interface) screen includes status indicators and text to communicate real-time system conditions as well as access to historical data. The five function buttons allow user navigation of the menus and user input. The HMI display color will also change to alert the user of certain conditions as noted below.

NOTE: Not all menu items described below are available on all models.

1. Main Screen: Contains most of the information that is important to view during normal operation, including: text fields for unit operational status, alerts, and service reminders. The unit will automatically return to the main screen after five minutes of inactivity on any other screen.



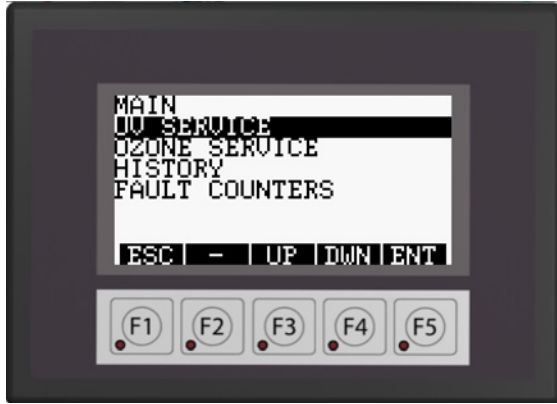
**Example with Normal Operation**



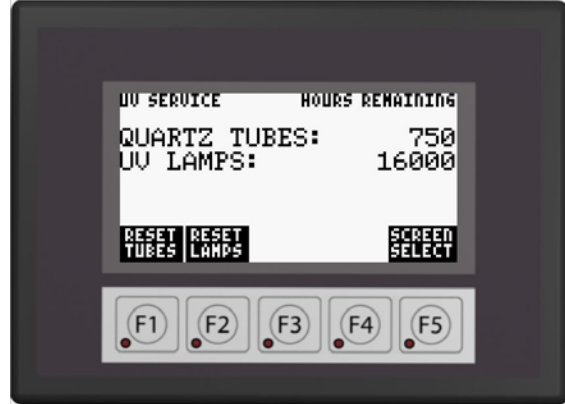
**Example with Fault Message (Flashing Amber Backlight)**

# 3. OPERATION

2. Screen Select Menu: This menu is accessed through the function button on any screen and allows navigating to the other HMI screens.

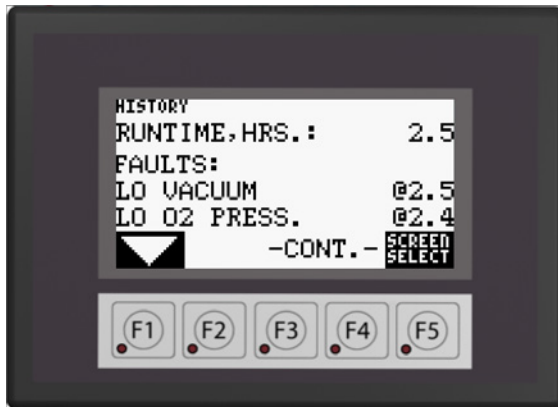


**Screen Select Menu**



**UV Service Screen**

3. UV Service Screen: Contains countdown timers that track the hours remaining until service is due on listed UV components. Once service is complete, the user will use the specific function button to reset the corresponding service countdown timer. The hours remaining on the countdown timers are used to determine service messaging and alert reminders:
- More than 10% remaining = no banner message
  - 10% remaining = "SERVICE SOON" banner message
  - 5% remaining = "SERVICE REQUIRED" banner message
  - 0% remaining = "SERVICE PAST DUE" alert banner message with yellow screen background



**History Screen**



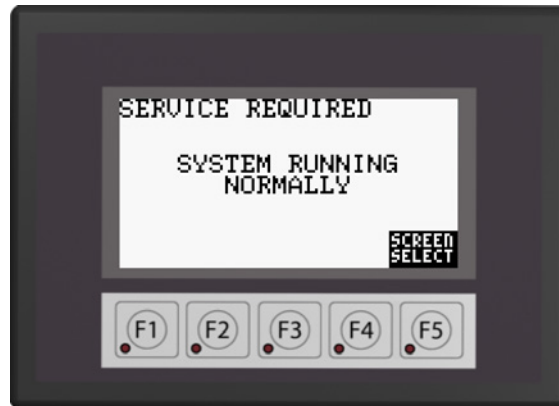
**Fault Counters Screen**

4. History Screen: Contains the runtime hour meter of the unit and the fault history table.
- The runtime hour meter indicates the actual on time of the UV system, to the closest 1/10 hour.
  - The fault history table will indicate the fault and the accompanying time stamp, which is relative to the runtime hour meter.
  - Up to ten faults are listed with the most recent at the top of the table.
  - The function buttons allow navigation through the fault history table screens.
5. Fault Counters Screen: Contains a list of possible faults for the system (model dependent) and how many faults have occurred. The fault count can be used during troubleshooting to identify common faults in the system. All fault counts can be reset through the function key.



## 3. OPERATION

6. Banner Message: Located on the top of all screens, this field will provide messages and alerts relative to the real-time operation of the unit.



**Banner Message**

### 3C. System Shut-Down

Followed for servicing or storage.

1. Shut off water flow to the unit and/or close isolation valves if available.
2. Shut off power at the breaker.
3. Open enclosure door to access internal components.

**NOTE:** Water pressure may still be present depending on system plumbing. Ensure water pressure is relieved prior to servicing any water plumbing components.

### 3D. Water Chemistry

The UV-C Pro will provide the benefits of UV-C germicidal disinfection treatment with minimal impact to other water chemistry parameters. However, chlorine or other sanitizer residual levels must be maintained as required to meet local codes. Regular residual testing must be performed as usual.

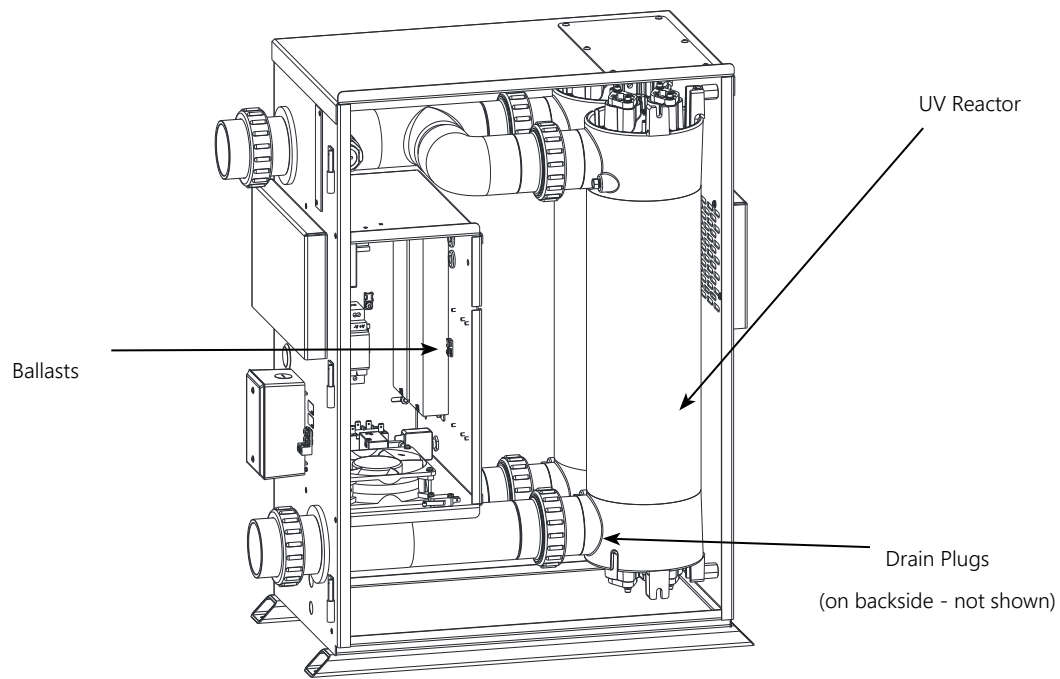
# 4. MAINTENANCE & SERVICE

## 4A. UV Reactor System Electromechanical Overview

**⚠ CAUTION** Disconnect power before performing service. Refer to the **IMPORTANT SAFETY INSTRUCTIONS** displayed in the front of this manual. Refer to **Figures 4, 5, and 6**.

**NOTE:** To replace a UV lamp, follow only **SECTIONS 4B-1 AND 4B-4**.

There are two lamps in each UV reactor of the UV-C Pro powered by an energy efficient electronic ballast. Water enters the UV reactor and is exposed to UV-C. The water exits through the top of the UV reactor and returns to the process plumbing.

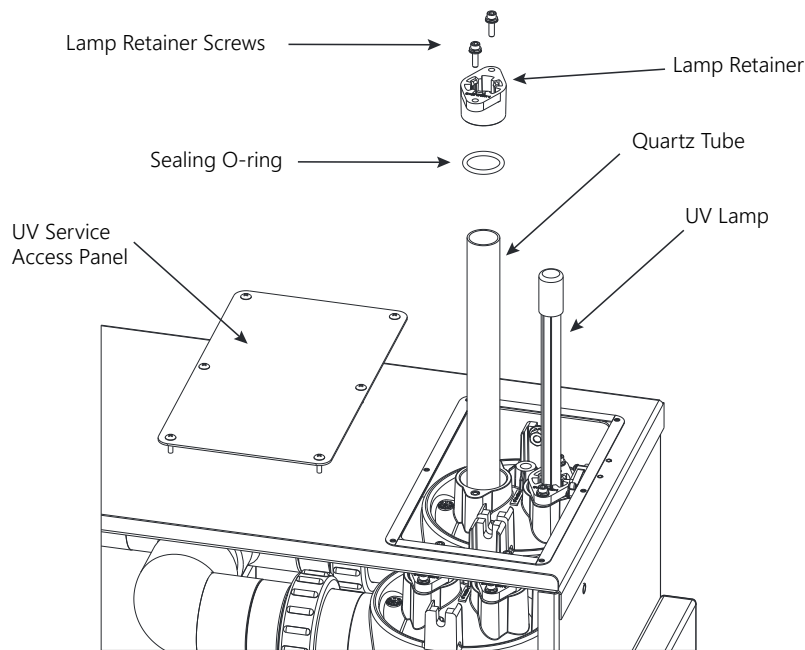


**Figure 4: UV-C Pro Electro-Mechanical Overview**

## 4B. UV Reactor Service and Maintenance

- Each UV Reactor contains two UV lamps and two quartz tubes.
- The UV lamps are designed to provide proper germicidal efficacy for 16,000 hours.
- The UV lamps may continue to glow well beyond 16,000 hours but will not provide proper intensity and must be replaced to ensure efficacy.
- The UV lamps are housed in a quartz tube. If the quartz tube becomes dirty, its ability to transmit UV rays from the lamp will be diminished.
- The service interval for the quartz tube is dependent on pool water chemistry and some pools may require more frequent cleaning than others.
- Initially, inspect the quartz tube after 750 hours of use and clean as needed. Subsequent cleaning intervals can be increased or decreased based on the condition of the quartz tubes or observed water conditions.

## 4. MAINTENANCE & SERVICE



**Figure 5: UV Lamp and Quartz Tube Removal**

CAUTION: Always disconnect power to the UV-C Pro prior to performing service.

### 4B-1. UV Lamp Removal

1. Remove the UV service access panel from the top of the enclosure.  
**NOTE:** The UV-C Pro will not operate while the panel is removed.
2. After allowing adequate time for the UV lamps to cool, disconnect the UV lamp from the connector on the ballast.
3. Grasp the UV lamp wires and gently pull until the top of the UV lamp has pulled past the lamp retainer tabs.
4. Pull slowly on the white ceramic end of the UV lamp until the bottom has pulled past the lamp retainer tabs. If the UV lamp is difficult to remove, use a slight twisting motion or remove the lamp retainer. **AVOID TOUCHING THE UV LAMP GLASS WITH YOUR BARE HANDS.** Oils on your hands can cause hot spots on the UV lamp and shorten its life. Use a soft clean cotton cloth or clean cotton gloves to handle the UV lamp. Carefully place the UV lamp in a clean, dry, and safe location. Clean the UV lamp if necessary with alcohol and repeat this process for the other UV lamps.

### 4B-2 Quartz Tube Removal and Cleaning

**NOTE:** For instructions on cleaning without mechanical disassembly, see *Appendix*.

1. If the UV-C Pro is mounted below the water level, system isolation valves must all be CLOSED to prevent excess water from draining into the unit.
2. Loosen main inlet and outlet fittings on the UV-C Pro, this should allow sufficient water to drain from the UV reactor(s).
3. Before continuing, allow adequate time for the UV lamps and quartz tubes to cool.
4. Remove the UV lamps as described in Section 4B-1.
5. Remove the top lamp retainer screws using the hex key included in the parts kit and remove the lamp retainer.
6. Grasp the quartz tube from the top of the UV reactor, and pull to remove it from the UV reactor.
7. Remove the sealing O-ring from the top of the quartz tube and set aside.
8. Wipe all residue from the quartz tube. If calcium deposits are encountered, use a mild solution (4:1) of water and muriatic acid (available at pool supply stores), or household calcium/lime remover.

**CAUTION** Follow the directions for use and handling of muriatic acid on the acid bottle label. Use proper eye and skin protection and avoid breathing acid fumes.

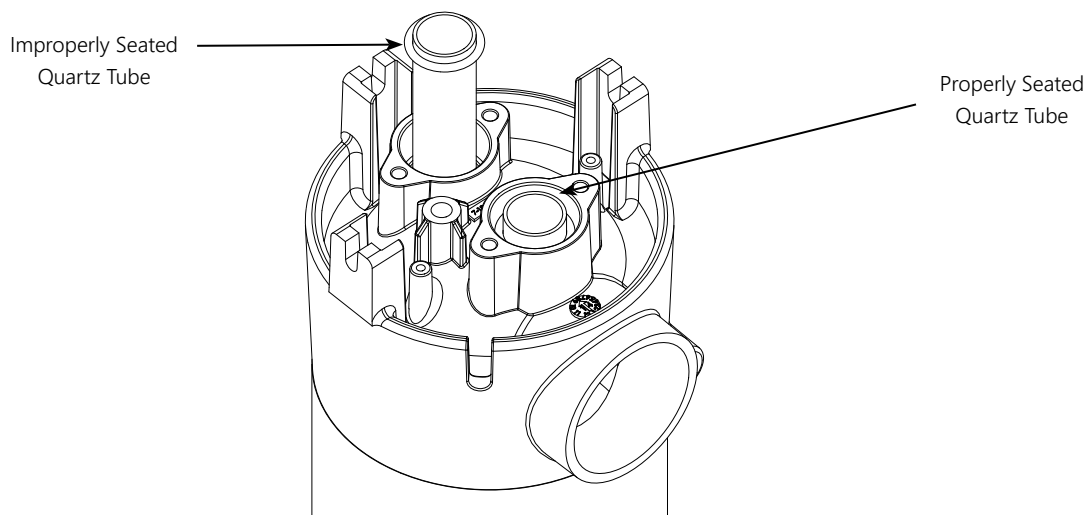
**NOTE: DO NOT USE ABRASIVE CLEANERS** as they can scratch the high quality quartz glass. After cleaning the quartz tube, wash it off and wipe dry. Inspect the quartz tube for cracks. Replace if cracks are found. Make sure the inside of the quartz tube is dry before replacing the UV lamp(s).

## 4. MAINTENANCE & SERVICE

**NOTE:** DAMAGES CAUSED BY BROKEN QUARTZ TUBES ARE NOT COVERED UNDER THE LIMITED WARRANTY.

### 4B-3 Quartz Tube Installation

1. Place a sealing O-ring approximately 1/2in (12.7mm) from the end of the quartz tube. Insert the quartz tube into the UV reactor until it is fully seated in the bottom of the UV reactor.  
**NOTE:** If the end of the quartz tube is protruding from the UV reactor, the alignment is off. Remove and re-insert the quartz tube to seat it properly as shown in **Figure 6**.
2. Place the lamp retainer over the quartz tube and attach the lamp retainer using the lamp retainer screws and washers as shown in **Figure 6**. Make sure the lamp retainer flanges are fully seated against the UV reactor.
3. Tighten main inlet and outlet fittings on the UV-C Pro.
4. Turn the circulation pump ON and check the quartz tube seals for leaks.
5. Turn the circulation pump OFF once you have confirmed that the quartz tubes are not leaking.



**Figure 6: UV Quartz Tube Installation**

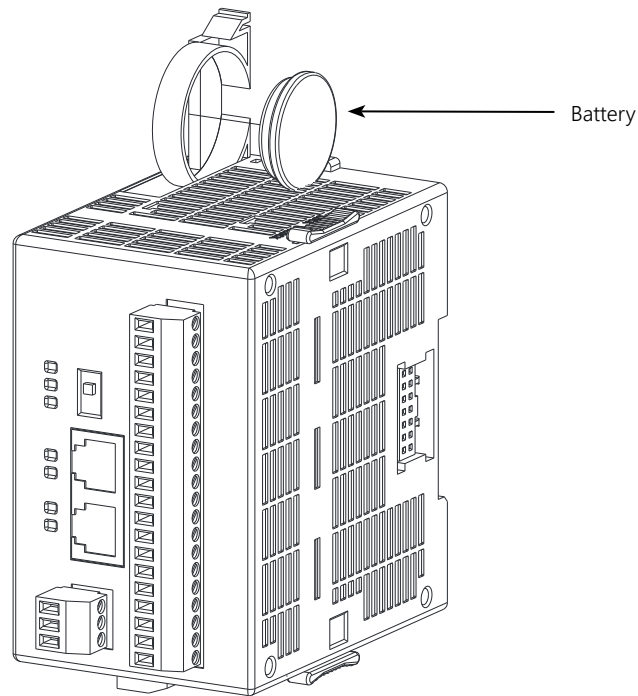
### 4B-4 Re-installing the UV Lamp(s)

**NOTE:** Make sure to handle the UV lamp as described in **SECTION 4B-1**.

1. TURN OFF YOUR PUMP IF YOU HAVE NOT DONE SO.
2. Slowly press the UV lamp fully past the lamp retainer tabs and into the quartz tube until it is seated on the lamp cushion in the bottom of the quartz tube.
3. Connect the UV lamp connector to the connector on the ballast.

**ENVIRONMENTAL NOTICE:** Hg-Lamp CONTAINS MERCURY. Manage in accordance with disposal laws. See: [www.lamprecycle.org](http://www.lamprecycle.org)

## 4. MAINTENANCE & SERVICE



**Figure 7: Battery Replacement**

### **4C. PLC Memory Backup Battery Replacement** (included with PLC option only)

1. On the top of the PLC, press the retaining clip on the battery door and swing the battery door open.
2. Remove the old battery from right side of the coin-type slot.
3. Install the new battery with the +, or flat, side out.
4. Close the battery door so that it locks securely.
5. Make note of the date the battery was replaced (it must be performed annually).

### **4D. Winterizing**

If the pool will be shutting down for the winter months and the UV-C Pro will remain exposed to freezing temperatures, the unit must be drained to prevent freeze damage to the wetted components. To drain the UV-C Pro, see the following steps.

1. If the UV-C Pro is mounted below the water level, isolation valves must all be CLOSED to prevent excess water from draining into the unit.
2. Loosen main inlet and outlet fittings on the UV-C-Pro, this should allow most water to drain from the UV reactor(s).
3. Open the door and locate the drain plug(s) (Refer to Figure 4 ) and remove to drain the remaining water in the UV reactor(s).

# 5. TROUBLESHOOTING & RESOURCES

## 5A. Troubleshooting

Knowledge of electrical applications is required for troubleshooting. Contact a certified electrician if you are unsure of your ability to service the equipment. Improper servicing will void generator warranty. If any condition persists contact CMP Technical Support (see **Section 5B**).

Models with an HMI screen provide immediate text notification of all system alerts. Other alert messages may occur that are not listed below. The HMI also includes alarm history and fault counters that may be accessed for further help as described above.

**Symptom:** HMI screen or POWER indicator not lit when pool system is on.

1. No power to the UV-C Pro:
  - a. Check circuit breaker at the power distribution box.
  - b. Check for loose connections or wiring breaks in the main power wiring leading to the UV-C Pro.
  - c. Check internal circuit breaker.
  - d. POWER indicator is not functioning.
  - e. For units with an HMI screen, screen may be faulty.
2. Remote Start contacts are open ("SYSTEM WAITING ON REMOTE START..." message on HMI). Verify that Remote Start contacts are wired and operating properly.

**Symptom:** "WAITING ON SYSTEM FLOW" message on HMI screen or FLOW indicator not lit.

1. Insufficient flow through UV-C Pro.
  - a. Verify that the main system pump is running properly and that filter and skimmers are clean.
  - b. Verify that pool valves have not been adjusted to limit flow below the minimum requirement.
2. Clear any blockages in return line.
3. Verify proper operation of flow switch.

**Symptom:** "LOW SYSTEM PRODUCTION..." message on HMI screen or UV-C indicator not lit.

1. Check UV lamp connector plug for complete connection.
2. Bad UV lamp. Replace UV lamp(s)
3. Bad ballast. Replace ballast(s).

# 5. TROUBLESHOOTING & RESOURCES

## 5B. Contact Information:

### For technical assistance:

- Call: 1-800-733-9060
- Email: support@c-m-p.com
- Visit: www.cmpcommercial.com

Be prepared with the following information:

- Name
- Address
- Model #
- Date Purchased

## 5C. Ordering Information:

To locate a dealer nearest you call 1-800-733-9060 or visit [www.cmpcommercial.com](http://www.cmpcommercial.com).

## 5D. Standard Replacement Parts List

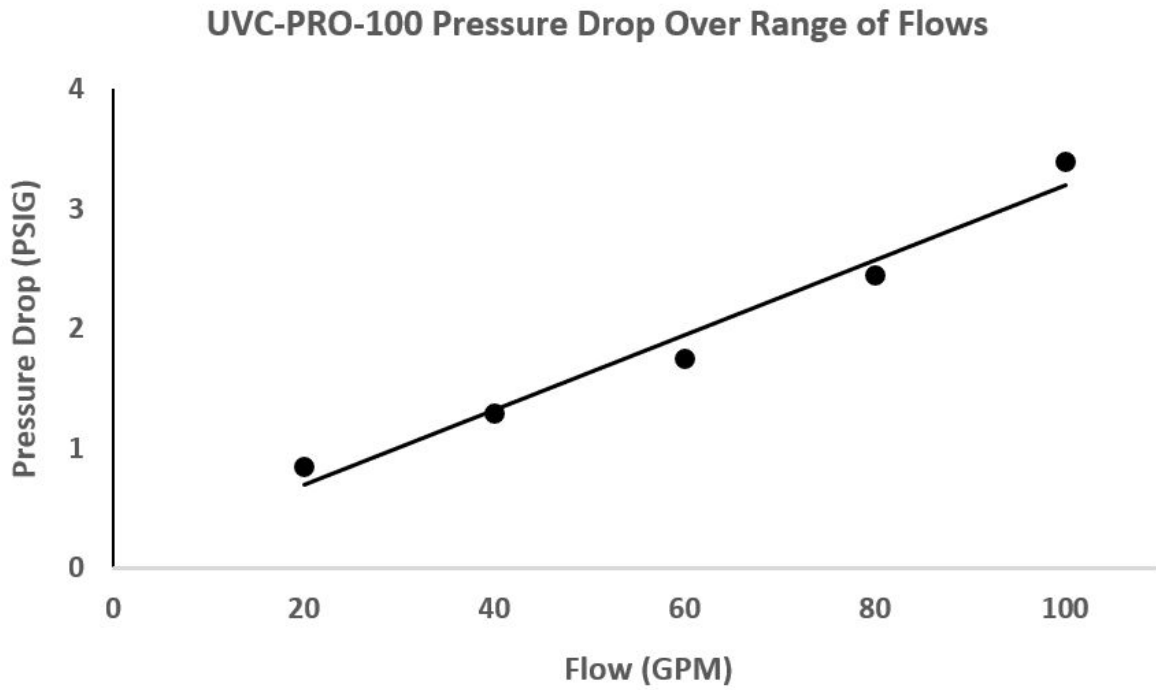
DESCRIPTION	PART NUMBER	REPLACEMENT INTERVAL
UV LAMP REPLACEMENT KIT	9-1226-01 (EA)	16,000 Hours
QUARTZ TUBE REPLACEMENT KIT	9-1701-01 (EA)	As Needed
PLC MEMORY BACKUP BATTERY (included with PLC option only)	5-1402	Yearly

**Table 2: Replacement Parts**

**NOTE:** The warranty is void if the parts listed above are not replaced at recommended intervals.

# APPENDIX A

## UV-C Pro Pressure Drop Characterization

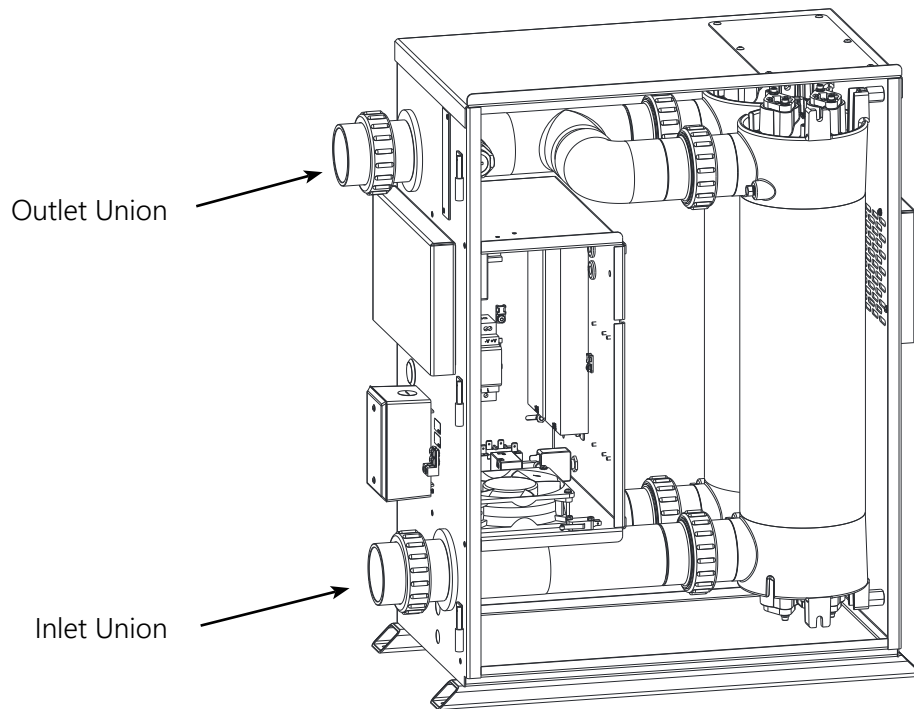


**NOTE:** Tested on simulated recirculation system using a variable speed pump. No back pressure added. Actual results will vary depending on pump and plumbing variables.



# APPENDIX B

## In-Place Quartz Tube Cleaning



The UV-C Pro quartz tubes may be cleaned without removing them from the vessel.

1. Ensure that the UV-C Pro is isolated from the rest of the pool system with valves at the inlet and outlet.
  - a. Connect to the inlet/outlet unions.
  - b. Flow the cleaning solution from bottom to top.
2. When cleaning is complete, drain the UV-C Pro completely from the inlet union and run the pool system immediately for an extended period to fully rinse the internal components.
  - a. Special considerations may apply depending on the cleaning system.
  - b. Contact Customer Service if there is any question about compatibility with the UV-C Pro components.

## SAVE THESE INSTRUCTIONS

**Record Information on this System Below & Keep for Your Records**

Installer \_\_\_\_\_

System Purchased From \_\_\_\_\_

Installation Date \_\_\_\_\_

Serial Number \_\_\_\_\_



CMP, LLC  
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[WWW.CMPCOMMERCIAL.COM](http://WWW.CMPCOMMERCIAL.COM)

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