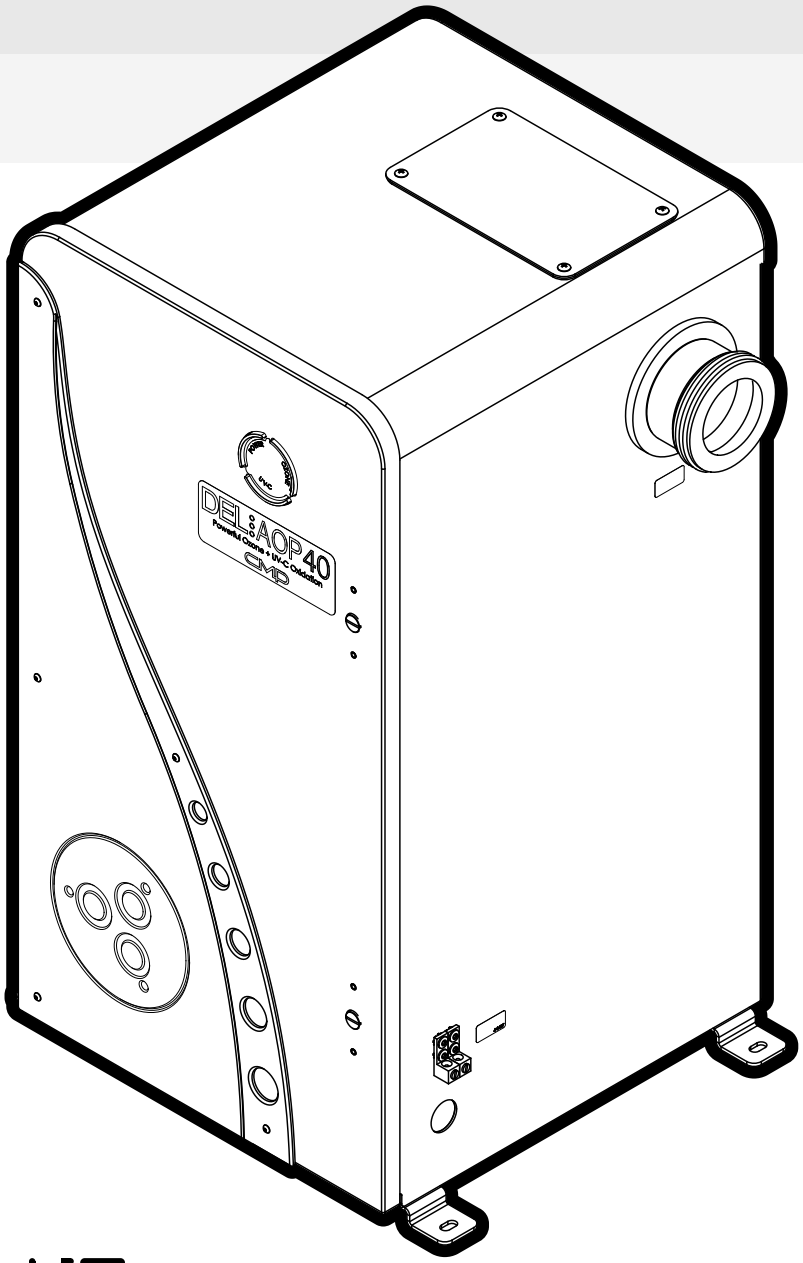
NEXT GEN AOP™
DEL AOP® 25 / DEL AOP® 40

INSTALLATION INSTRUCTIONS & PRODUCT MANUAL

53000-025-000
53000-040-000



Scan for Step-by-step instructions

OR VISIT C-M-P.COM/TECH

DEL AOP®

C-M-P.COM/DEL

4-2794-01 Rev.A

IMPORTANT WARNINGS & SAFETY INSTRUCTIONS

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^2) 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. Install in accordance with the installation instructions.
- 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 DEL AOP 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 following instructions. Install to provide water drainage of generator to protect electrical components.
- Mount the DEL AOP so that it is inaccessible to anyone in the pool. Never attempt any servicing while unit is wet.
- ⚠WARNING Short-term inhalation of high concentrations of ozone and long term inhalation of low concentrations of ozone can cause serious harmful physiological effects. DO NOT inhale ozone gas produced by this device.
- ⚠ DANGER For your safety, do not store or use gasoline, chemicals or other flammable liquids or vapors near this or any other appliance.
- *NOTICE* To maintain cosmetic integrity, protect this unit from direct prolonged sunlight exposure.
- ⚠WARNING To reduce the risk of injury, do not permit children to use this product.
- ⚠WARNING If unit is not operated according to instructions, high dosages of harmful substances may potentially be released.
- **ENVIRONMENTAL NOTICE -** Hg-Lamp CONTAINS MERCURY. Manage in accordance with disposal laws. See: www.lamprecycle.org

SAVE THESE INSTRUCTIONS!

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Covered by one or more U.S. patents or pending patent applications. See c-m-p.com/patents for details.

1. SYSTEM INFORMATION

1A. AOP 25/40 OVERVIEW

The DEL Next Gen AOP™ Sanitizer System (Figure 1) is designed to provide the benefits of ozonated and UV treated water in an environmentally safe and effective manner. The system is certified to NSF 50 as a supplemental sanitizer and tested for effectiveness to kill active microbes and bacteria. Operated according to the instructions, the DEL AOP virtually eliminates the unpleasant effects of traditional chemicals. DEL AOP products are safe and harmless to your equipment when installed properly.

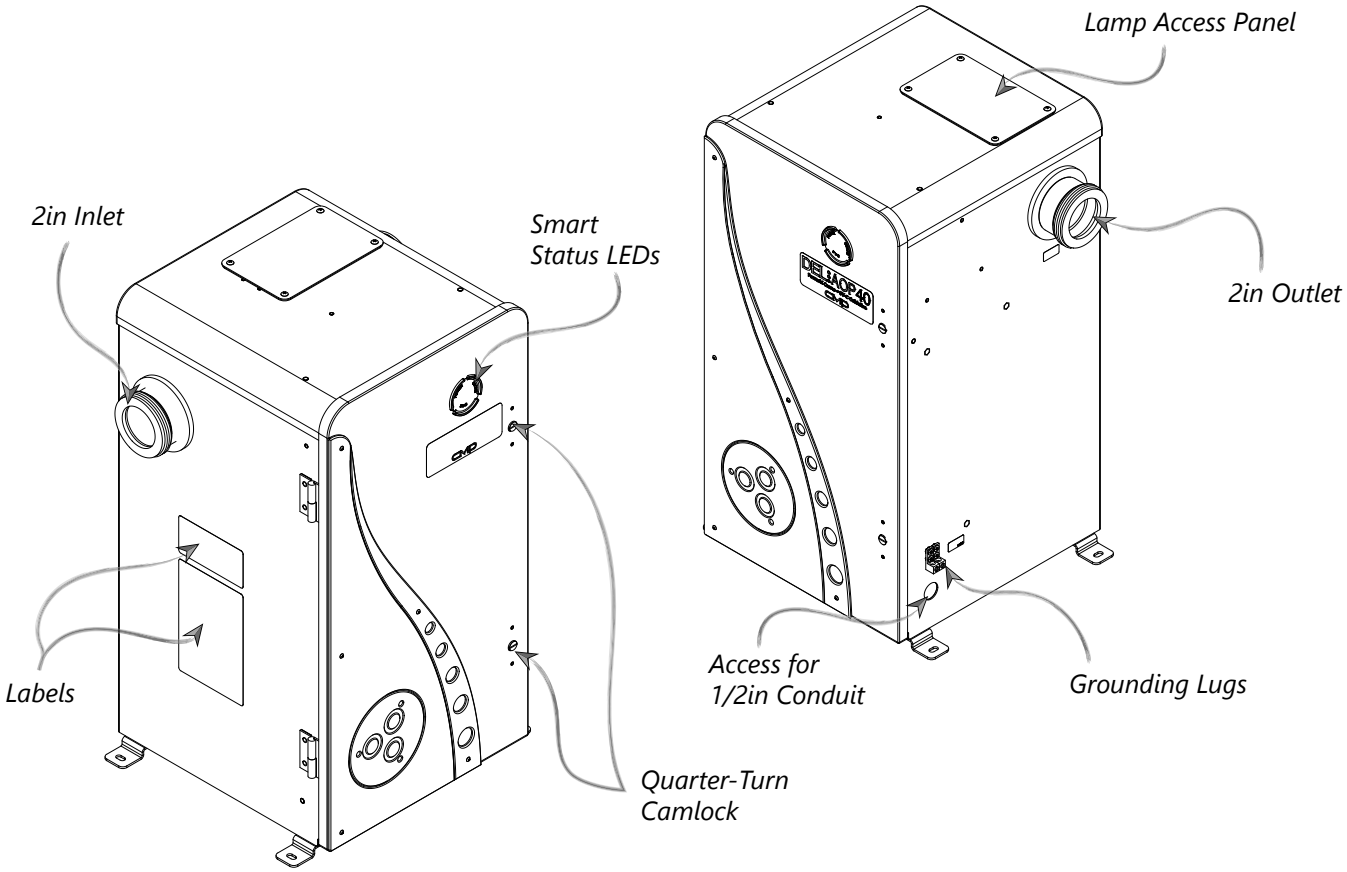


Figure 1: Next Gen AOP™ System Exterior Overview

1. SYSTEM INFORMATION

1B. SPECIFICATIONS

Power Requirements:
- 110V/ 240V
- 60 Hz / 50 Hz
- AOP 25: 0.7 Amps, AOP 40: 1.1 Amps

Weights:
- Shipping Weight: 55lbs/25kg
- Dry Weight: 50lbs/23kg
- Wet Weight: 64lbs/29kg

Location Requirements:
- Mounting: Ground or Wall mounted
- Ambient Recommended Temperature: 30°F - 120°F (0°C - 50°C)
- ⚠ **CAUTION** Water Level: Additional system back pressure created in certain applications or by certain accessories may impact the system's ability to pull vacuum properly. (Example: equipment below water level, in-floor cleaning system, spa mode, etc) This can result in water pushing back into the ozone gas line and possibly into the ozone cell(s). Please consult CMP if conditions exist that may introduce higher than normal back pressures (>3 psi).

Recommended Flow Rates

SYSTEM	MIN FLOW	NSF TESTED MAX FLOW
AOP 25 - 53000-025-000	10 GPM	30 GPM
AOP 40 - 53000-040-000	20 GPM	40 GPM

- The unit must meet the minimum flow rate to activate the internal flow switch. Below this flow rate the system will not turn on.
- The NSF Tested max flow is the rate at which a 3-log disinfection rate is achieved to meet the supplemental sanitizer requirements.
- Operation above the NSF Tested max flow the level of undissolved ozone in the system may increase. A Mixing De-gas Vessel can be installed after the AOP system to remove excess ozone from the system.

NSF Testing
This product is designed for supplemental disinfection when operated according to these instructions, and should be used with registered or approved disinfection chemicals to impart residual concentrations. 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.

2. INSTALLATION

2A. LOCATION

2A-1. Environment

Locate the unit in a clean, protected area, either indoors or outdoors (preferably out of direct sunlight). If possible, locate the unit out of reach of sprinklers or drainage spouts.

2A-2. Clearance

Allow sufficient access for maintenance (2 ft clearance above and 1 ft on either side of the unit) and all plumbing and electrical hookups. Front clearance for door swing is approximately 14 inches.

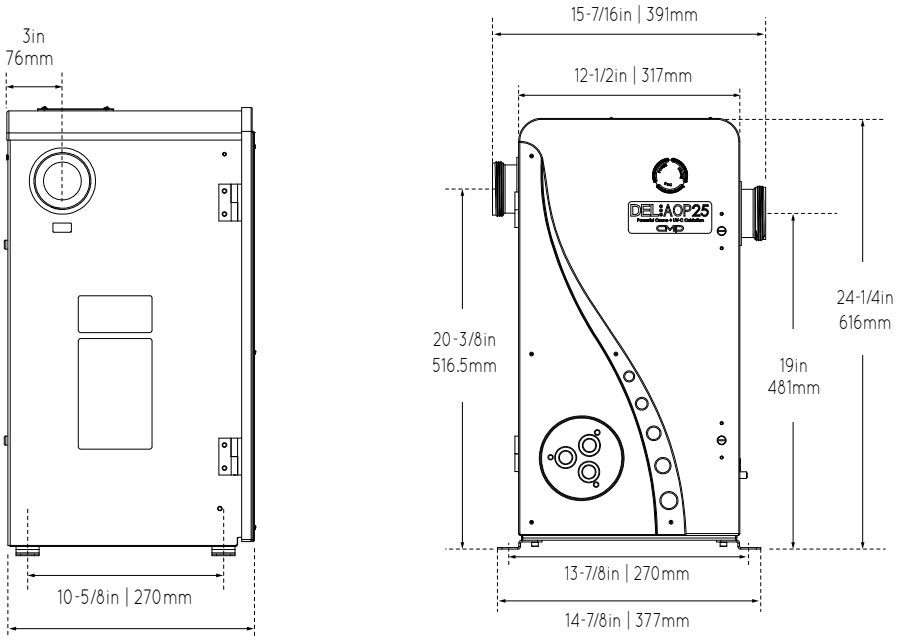


Figure 2: AOP 25 Installation Related Dimensions

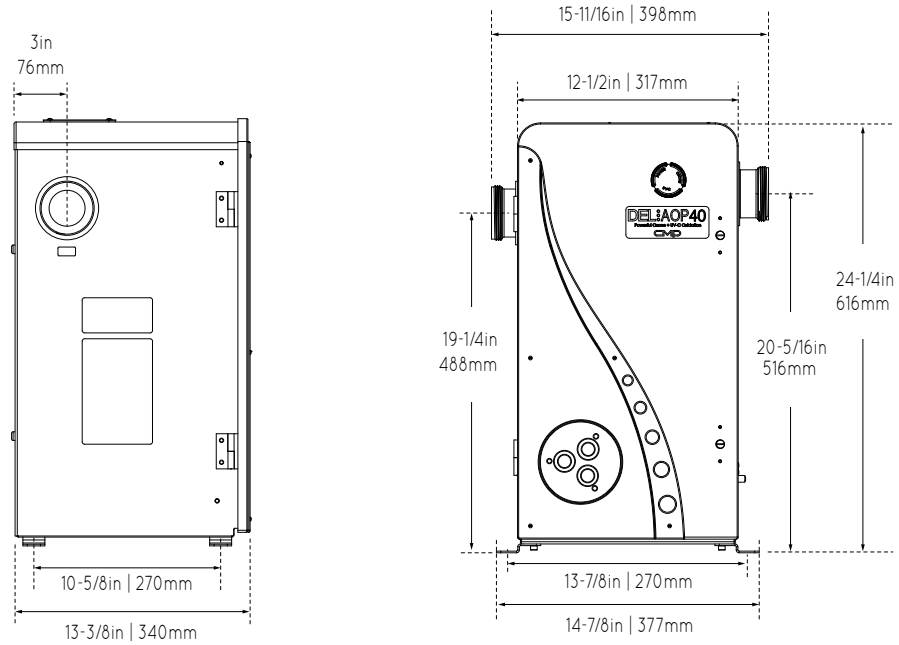


Figure 3: AOP 40 Installation Related Dimensions

2. INSTALLATION

2B. MOUNTING

2B-1. Ground Mounting
The DEL AOP is shipped with the mounting brackets installed in the ground mounting position.
Adjust the position of the bracket if necessary and tighten the screws.
Mount the unit to the equipment pad through the slots provided on bracket using appropriate hardware for the mounting surface.

2B-2. Wall Mounting
Four ¼"-20 screw holes are located on the back of enclosure for wall mounting as shown in Figure 4.

1. Remove plastic screws from back of the unit.
2. Remove mounting brackets from bottom of enclosure, re-assemble them to back of enclosure.
3. Mount unit to wall through the slots on brackets using appropriate hardware for the mounting surface.

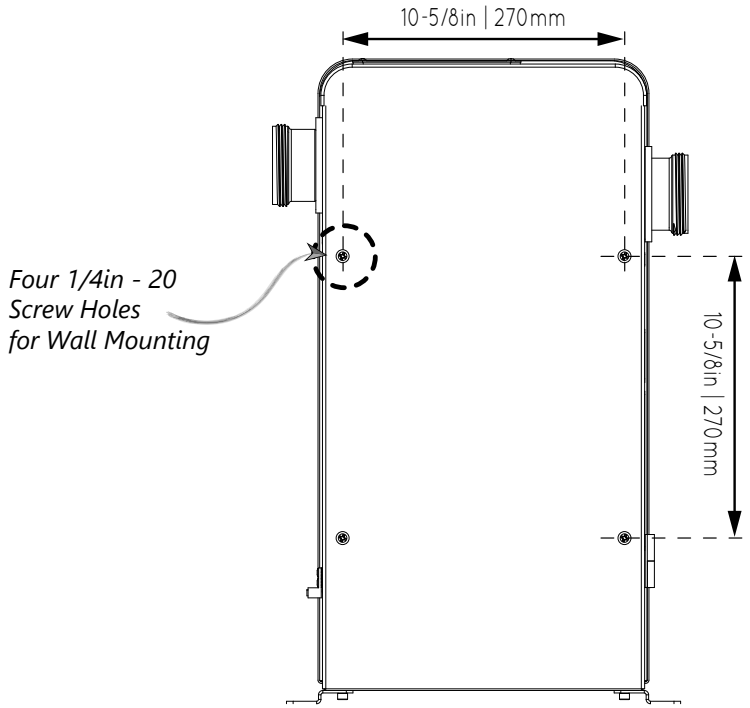


Figure 4: Wall Mounting Hole Pattern

2C. PLUMBING

The DEL AOP can easily be added into the pool plumbing loop. All system components are inside the enclosure. Only the water inlet and outlet need to be installed into the pool return line.

2C-1. Plumbing Location

- Install in the pool main return line after all other pool equipment (pump, filter, heater, and cleaner).
- The outlet must be at least 10 feet from the first return to the pool. If installing a mixing de-gas vessel (MDV), allow 10 feet from the outlet of the MDV to the first pool return.
- Use the union fittings provided to connect the DEL AOP inlet and outlet to pool plumbing as shown in Figure 5.
- For installation with additional sanitizers and pool cleaners, see Appendix A. Figures 2 & 3 show related dimensions. Figure 5 shows a simplified plumbing diagram.

2. INSTALLATION

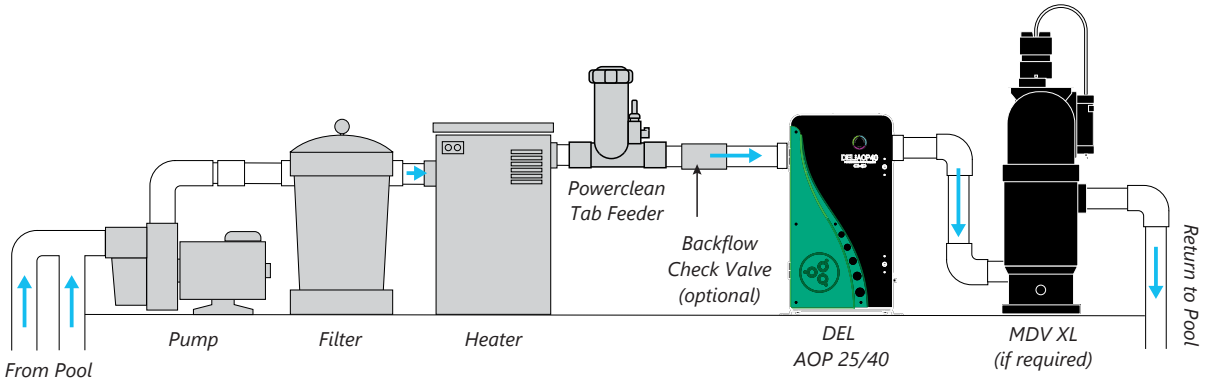


Figure 5: DEL AOP Typical Location in Pool Plumbing Loop

2C-2. About the Mixing De-gas Vessel (optional)
Under normal operation, bubbles will appear in the return flow to the pool. To remove the bubbles from the flow, an accessory Mixing De-gas Vessel, or MDV, can be installed downstream of the DEL AOP. The MDV is designed for use with the DEL AOP and is recommended on indoor, covered, or vinyl-lined pools. It should also be used if a tab feeder in installed after the AOP system. For more information, please visit c-m-p.com/support.

2C-3. Above Water Level Installation: Water Backflow Check Valve
If the pool equipment is mounted above the water line, install a 2 inch CMP Hydroseal check valve (25830-400-000) between the pump outlet and the inlet of DEL AOP to prevent the pump from draining and losing prime when not in use.

2C-4. High Return Pressure Installation: Orifice Plate (AOP 25 ONLY)
The AOP 25 will function best when the pool equipment is above water level and there are no accessories introducing additional pressure on the return line. In cases where the return line pressure prevents proper operation, an orifice plate may be added to the inlet of the spring-loaded check valve. This can improve injector performance.

1. Flow Meter Test (Fig 6a) : If there is any question whether the injector is performing properly, a flow meter is provided in the parts kit to check for proper suction through the ozone cell.
    a. Operate the pool in the mode expected to introduce the highest return pressure.
    b. Remove the air filter from the ozone module.
    c. Attach the tubing from the flow meter to the ozone module.
    d. Hold the flow meter vertically and observe that the ball is above the "MIN" line. The ball may be bouncing but should average mostly above the line. The "MAX" marking can be ignored for this test.
    e. If the ball is not moving or is consistently below the "MIN" line, Install the orifice plate.

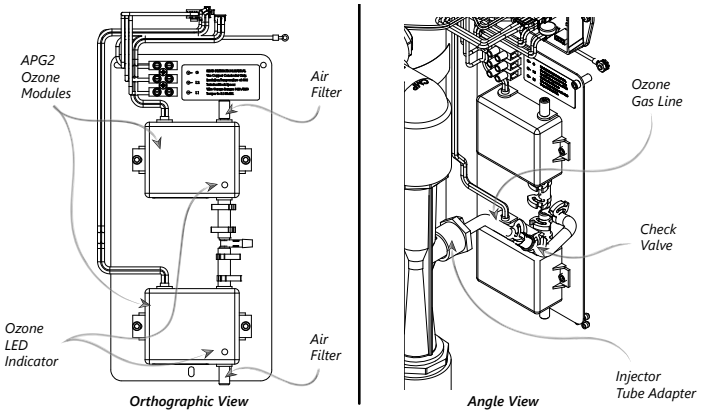


Figure 6a : Flow Meter Test

2. Orifice Plate Installation (Fig 6b).
    a. Loosen the union fittings on both the inlet and outlet of the check valve to remove it from the system.
    b. Insert the orifice plate on top of the check valve with the cone shape downward.
    c. Reinstall and tighten union fittings.

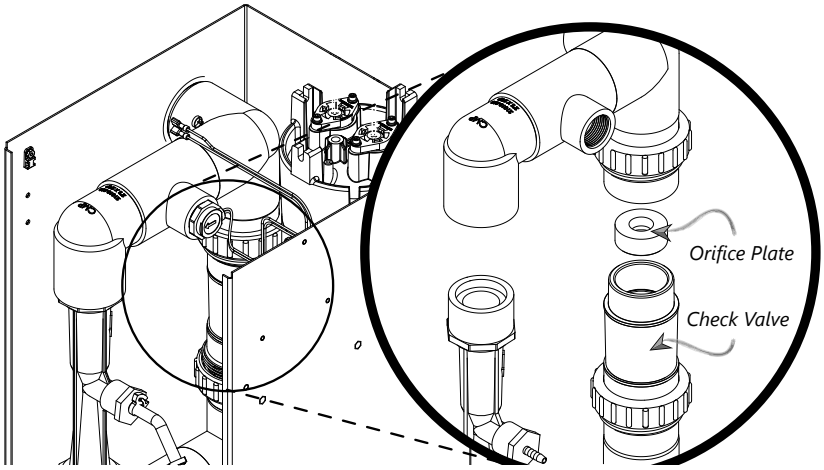


Figure 6b : Orifice Plate Installation

2C-5. Leak Test
Turn on pool circulation system and run at highest normal operating pressure. Check for leaks outside and inside of the AOP system. Correct any leaks outside of the system. If any leaks are found inside the AOP, contact Customer Service at c-m-p.com/support.

2D. ELECTRICAL

2D-1. Main Power
- Connect to the pool timing clock so that the DEL AOP operates simultaneously with the pool pump.
- An access hole is provided for a 1/2" conduit fitting. Install fitting (not provided) and run wire to terminal block inside unit.
- Connect Line 1, Line 2 or Neutral, and Ground to the terminal block as indicated by the label on the electrical panel located on the inner right side of enclosure (see Figure 7).
- If there is no timing clock or automation system available, the system can be installed on the line voltage along with the variable speed pump.

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

2D-2. Grounding Lug
Using a solid copper conductor, connect to the grounding lug on the right side of the DEL AOP to an appropriate earth contact.

3. OPERATION

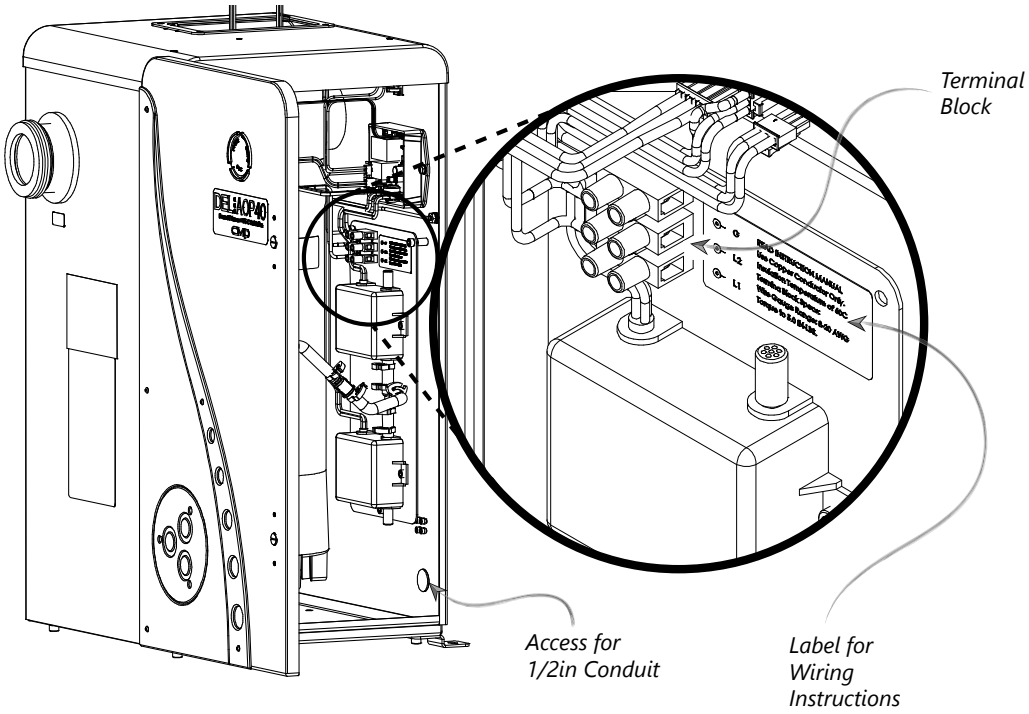


Figure 7: Terminal Block and Wiring Instructions

3A. POOL PREPARATION

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

1. Backwash or clean filters one day before starting the AOP System.
2. Raise chlorine level to APSP recommended levels 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 the AOP system.

3B. INITIAL SYSTEM START-UP

Upon completing all of the system connections and cleaning the pool as outlined in SECTIONS 2C through 3A, you are ready to start the DEL AOP.

1. Check electrical connections at breaker box.
2. Turn on pool circulation system and the Smart Status LEDs will turn on automatically.

3. OPERATION

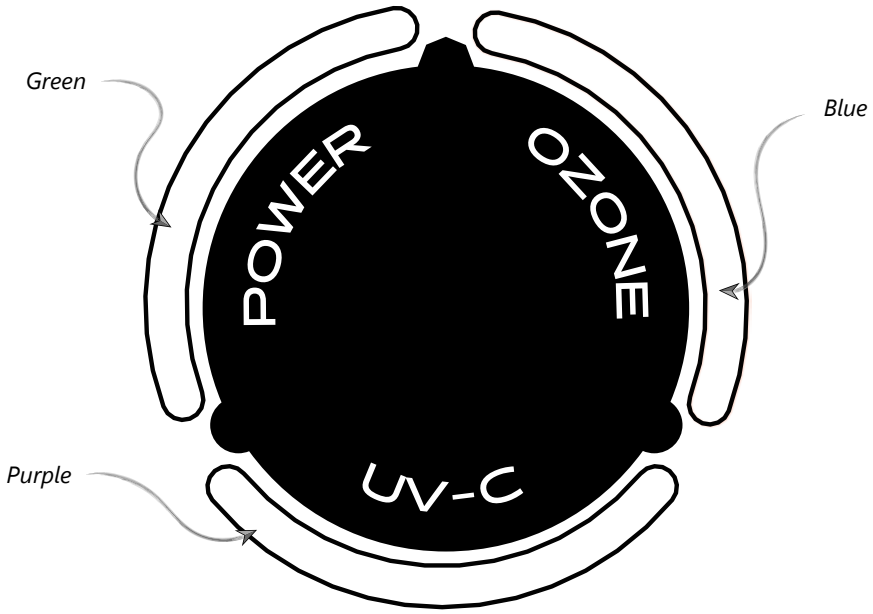


Figure 8: LED Indications at Normal Operation

3C. SMART STATUS INDICATORS

The DEL AOP has indicator lights to indicate its working condition. The lights should display the correct colors after the pump has reached steady flow (see chart on page 5). During normal operation, refer to the chart below for status information.

STATUS	POWER INDICATOR	UV-C INDICATOR	OZONE INDICATOR
REGULAR OPERATION	GREEN	PURPLE	BLUE
OZONE SERVICE DUE	GREEN	PURPLE	YELLOW
UV-C SERVICE DUE	GREEN	YELLOW	BLUE
OZONE ERROR/FAULT	RED	PURPLE	RED
UV-C ERROR/FAULT	RED	RED	BLUE
OZONE SERVICE OVERDUE	YELLOW	PURPLE	BLINKING RED
UV-C SERVICE OVERDUE	YELLOW	BLINKING RED	BLUE
SYSTEM ERROR/FAULT	RED	RED	RED

For more detailed status information refer to Trouble Shooting Section (SECTION 5).

3D. SYSTEM SHUT-DOWN

The following sequence of steps must be followed for servicing or for storage.

1. Shut off power at the breaker.
2. Shut off water to the unit.

3. OPERATION

3E. WINTERIZING

If the pool will be shutting down for the winter months and the DEL AOP will remain exposed to freezing temperatures, the unit must be drained to prevent freeze damage. Follow the steps below to drain.

1. If mounted below the water level, bypass valves must all be CLOSED to prevent excess water from draining through the unit.
2. Open the enclosure door.
3. Locate the 1" NPT drain plug (Refer to Figure 9) and remove to drain the remaining water.
4. Water will drain through holes in the bottom of the unit. Alternatively a connection can be made at the 1" NPT drain to run water away from the unit.
5. Allow all the water to drain before threading the plug back into the plumbing. Be sure to clean any excess water that may have collected in the bottom of the unit.

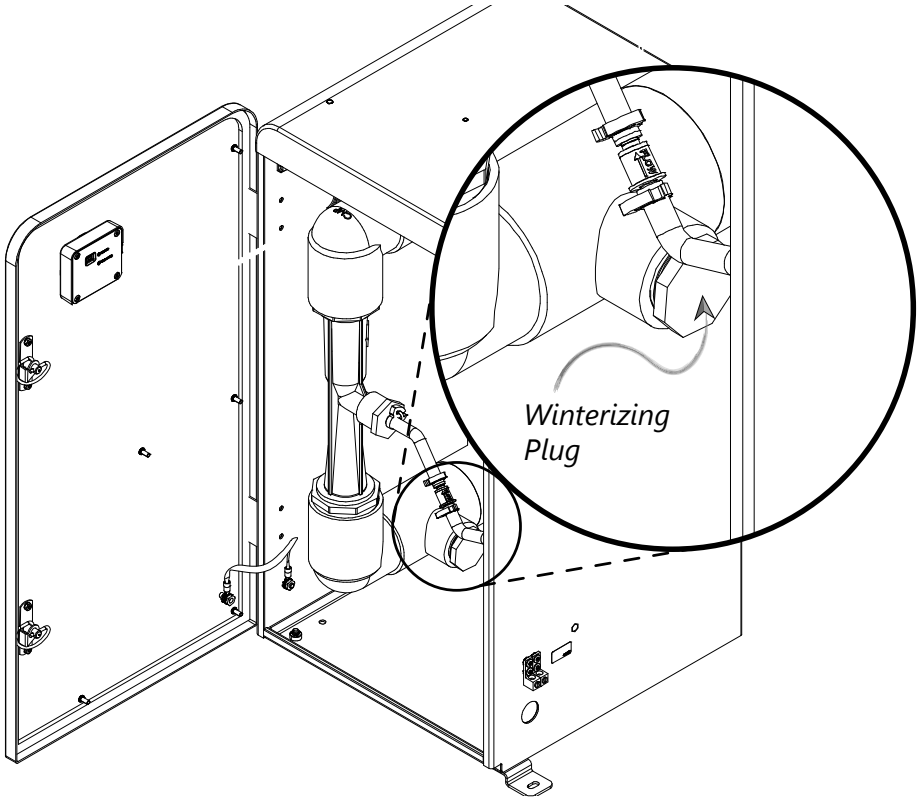


Figure 9: Winterization Plug Location

4. MAINTENANCE & SERVICE

4A. SYSTEM ELECTROMECHANICAL OVERVIEW

⚠ CAUTION Disconnect power before performing service. Refer to the IMPORTANT SAFETY INSTRUCTIONS displayed in the front of this manual.

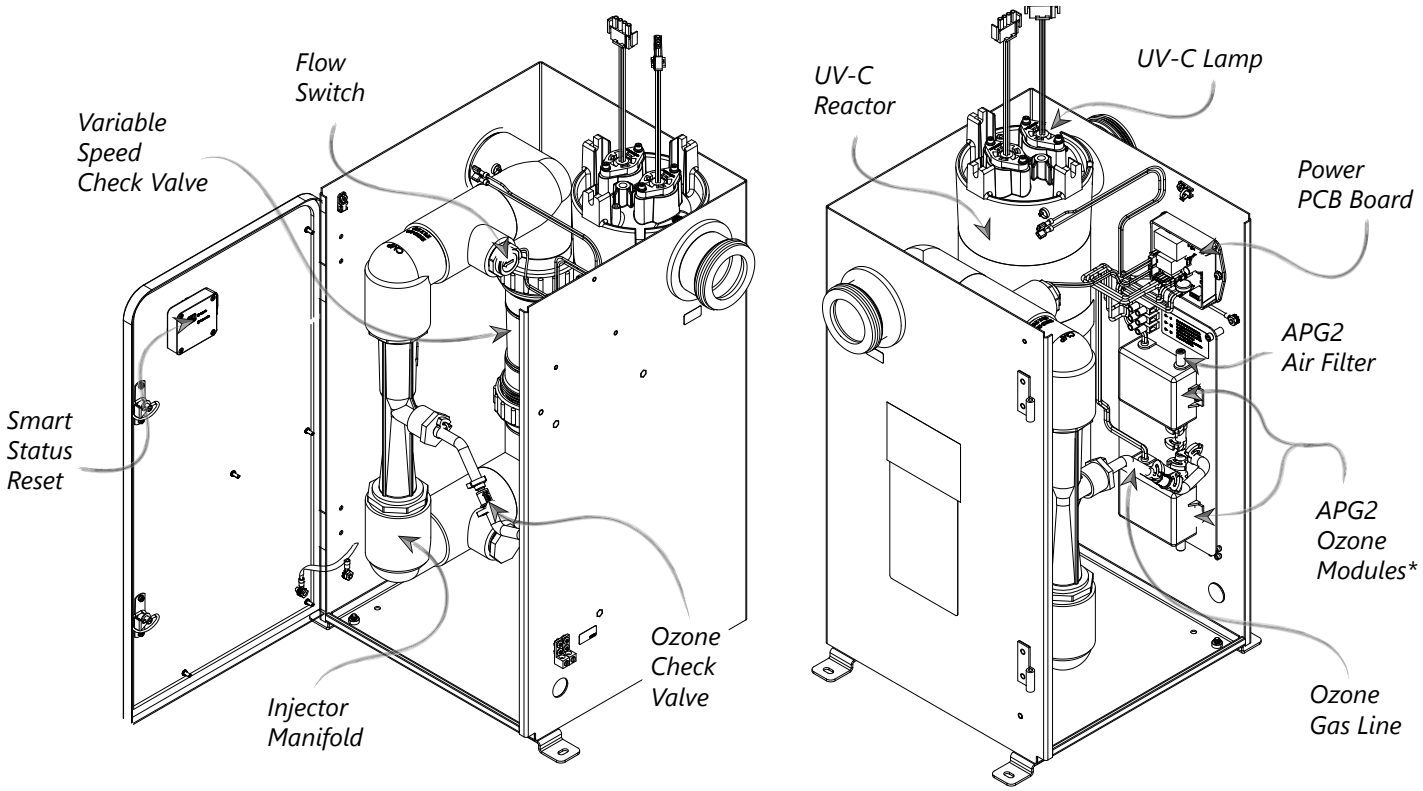


Figure 10: DEL AOP Electro-Mechanical Overview
(AOP 40 Shown)

4A-1. Ozone Module Description
*The DEL AOP is constructed with one (AOP 25) or two (AOP 40) APG2 corona discharge ozone modules. Blue ozone light on system smart status LEDs indicate ozone modules are operating properly (refer to Figure 8 for a more detailed view).

4A-2. Injector Manifold Description
Water flowing through the injector manifold generates the vacuum that draws ozone into the water. The spring-loaded valve automatically adjusts for various water flow rates to keep the DEL AOP operating over a wide range of conditions.

4A-3. Ozone Gas Line Description
Gas from the ozone modules is drawn through the ozone gas Line by the injector and into the water. The ozone check valve (refer to Figure 12) in this line prevents water from migrating back to the ozone modules when the DEL AOP is not running.

4A-4. Ozone Module Air Filter Description
The air entering the ozone modules passes through the air filter (refer to Figure 11) on each module inlet. The filter is held in place by the rubber filter cap.

4. MAINTENANCE & SERVICE

4A-5. Injector Tube Adapter Description
This component connects the ozone gas line to the injector manifold (refer to Figure 12). When servicing this component, do not tighten past 10 in-lbs torque or the component may be damaged.

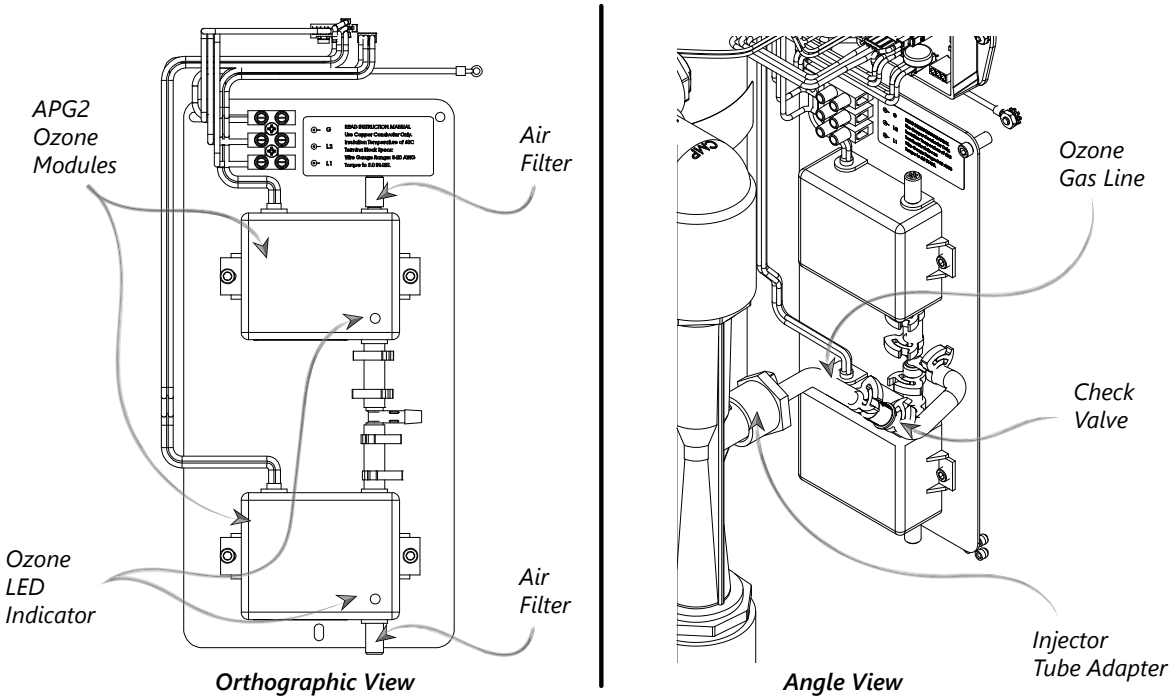


Figure 11: Ozone Generator System Overview

4A-6. Ultraviolet Lamps Description
There are two lamps in each Del AOP unit. The violet UV-C light on system smart status LEDs indicates UV lamps are operating properly (see Fig 10). If the UV lamp access panel is removed while the unit is running, the unit will be shut down automatically. (see Fig 12). The lamps are each housed in a quartz tube that protects the lamp.

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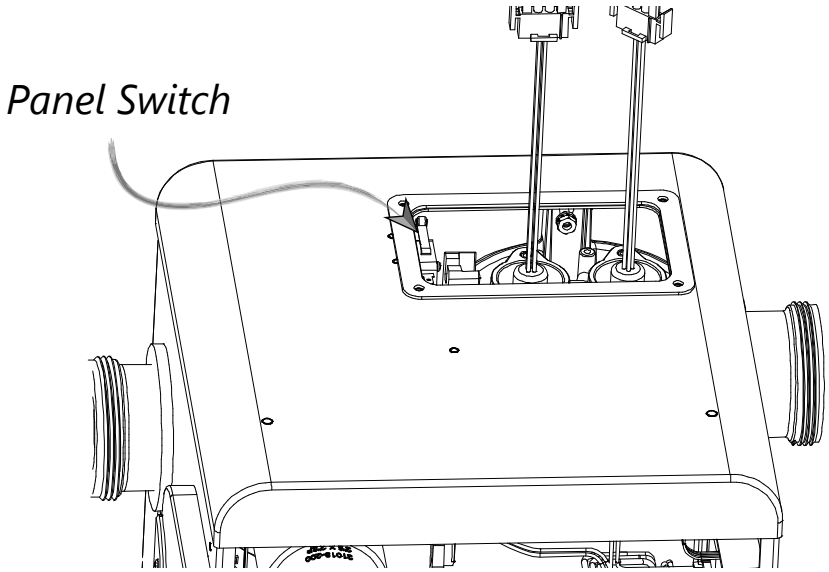


Figure 12: Panel Switch Protection for UV Lamps

4. MAINTENANCE & SERVICE

4B. OZONE SYSTEM MAINTENANCE

4B-1. Ozone Module Replacement

- Ozone module life expectancy is three (3) to five (5) years. All ozone cells should be replaced at the same time.
- The Smart Status LED for Ozone will change to yellow when it is time to replace the ozone module.
- There is also an LED indicator on the ozone module itself. However, even if the ozone module light(s) are glowing, the module should be replaced when the Smart Status indicates it is time to change. The ozone module may be producing little or no ozone after this period of time.

To replace ozone module:

1. Shut off power at the breaker.
2. Unplug the connector from power PCB board by unlatching hook Tab on connector (refer to Fig 13).
3. Take off old ozone module from ozone generator mounting panel using an Allen Wrench.
4. Disconnect air filter and tubing from old ozone module.
5. Reconnect air filter and tubing to new ozone module.
6. Mount new ozone module to the panel.
7. Plug connector of new ozone module to the mating connector on power PCB board.
8. Reset ozone indicator by pressing button on the inside door behind the Smart Status indicators. (Fig 10)

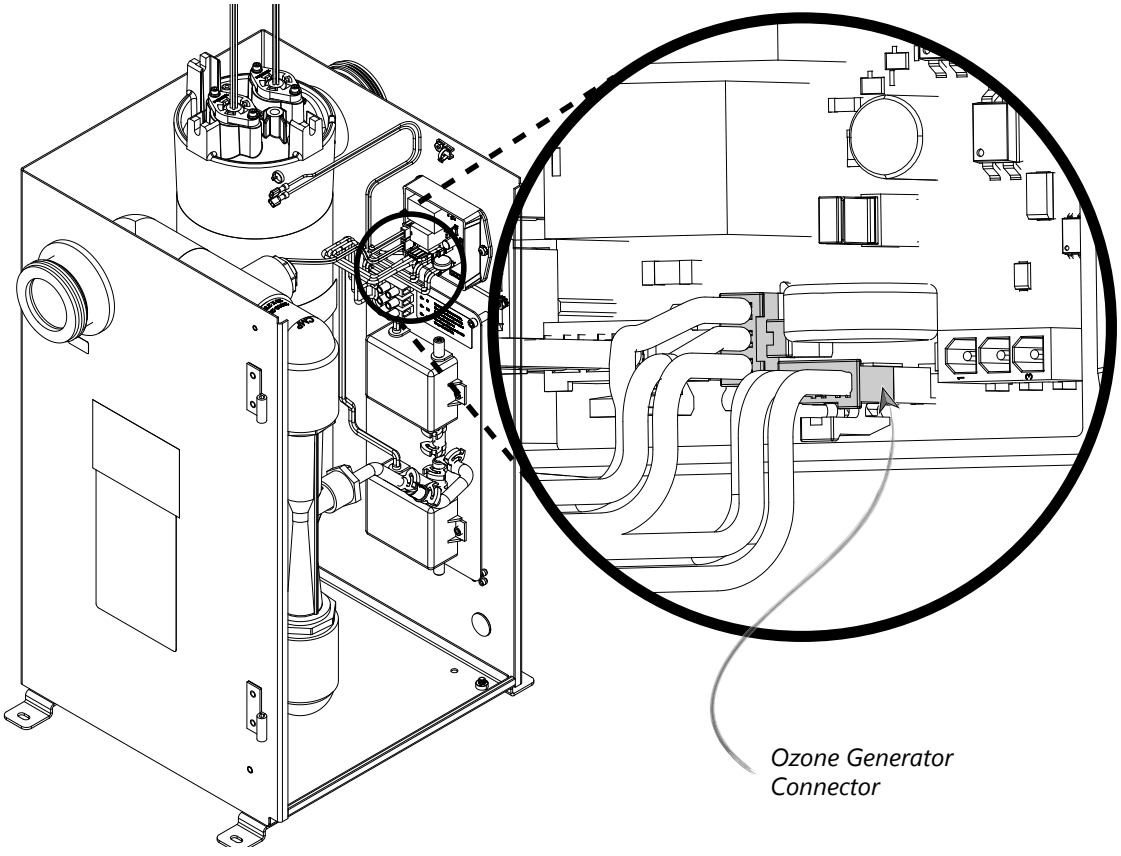


Figure 13: Ozone Generator Connector Location

4. MAINTENANCE & SERVICE

4B-2. Ozone Gas Line Replacement
Replace the ozone gas line every year or sooner, if needed. (P/N 9-1352-01) If there is evidence of water leaking past the ozone check valve toward the ozone modules, shut down the DEL AOP immediately and replace the ozone gas line.

1. Shut off power at the breaker.
2. Shut off water to the unit.
3. Loosen tubing clamps on both ends of the ozone gas line. Remove tubing assembly from air barbs of injector tube adapter and T-fitting adapter.
4. Orient ozone gas line as shown in Figure 11. Re-connect it on both ends and clamp tight.

⚠WARNING Trace amounts of nitric acid may be present in the ozone gas line. Wear proper safety equipment (gloves and eye protection) and avoid direct contact with any condensation in the line.

4B-3. Ozone Air Filter Replacement
1. Air filter should be replaced yearly.
2. Remove worn or dirty ozone air filter from air barb on ozone generator.
3. Install new ozone air filter (P/N 9-0858-01) on ozone generator air barb as show in Figure 11.

4B-4. Injector Tube Adapter Replacement
- Remove if worn or dirty
- Loosen or remove the tubing clamp. Use pliers if necessary to twist and unlock the clamp.
- Pull the tubing from injector tube adapter and unthread the adapter from the injector.
- Apply Teflon® based thread sealant and install new connector. (P/N 7-1434-01)9
- Do not tighten over 10 in*lb.

4C. UV SYSTEM MAINTENANCE

4C-1. UV Lamp Replacement
Life expectancy of UV lamp is about 16,000 hours.
- The Smart Status LED for UV-C will change to yellow when it is time to replace the lamps. It is recommended to replace all UV lamps at the same time.
- 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.

To remove the UV lamp from UV reactor, follow below steps.
1. Shut off power at the breaker.
2. Locate the UV lamp access Panel on the top of the DEL AOP. Remove the 4 screws with a Phillips head screwdriver, and remove the panel.
3. After allowing adequate time for the lamps to cool, disconnect the lamp connectors from ballast wire connector.
4. Grasp the UV lamp wires and gently pull until the top of the UV lamp has pulled past the lamp retainer tabs.
5. While holding the UV lamp white ceramic cap, slowly pull the UV lamp until the bottom has pulled past the lamp retainer tabs. (Twisting the lamp may help facilitate removal.) Do not touch glass, as oils on your hands will damage the bulb.

4. MAINTENANCE & SERVICE

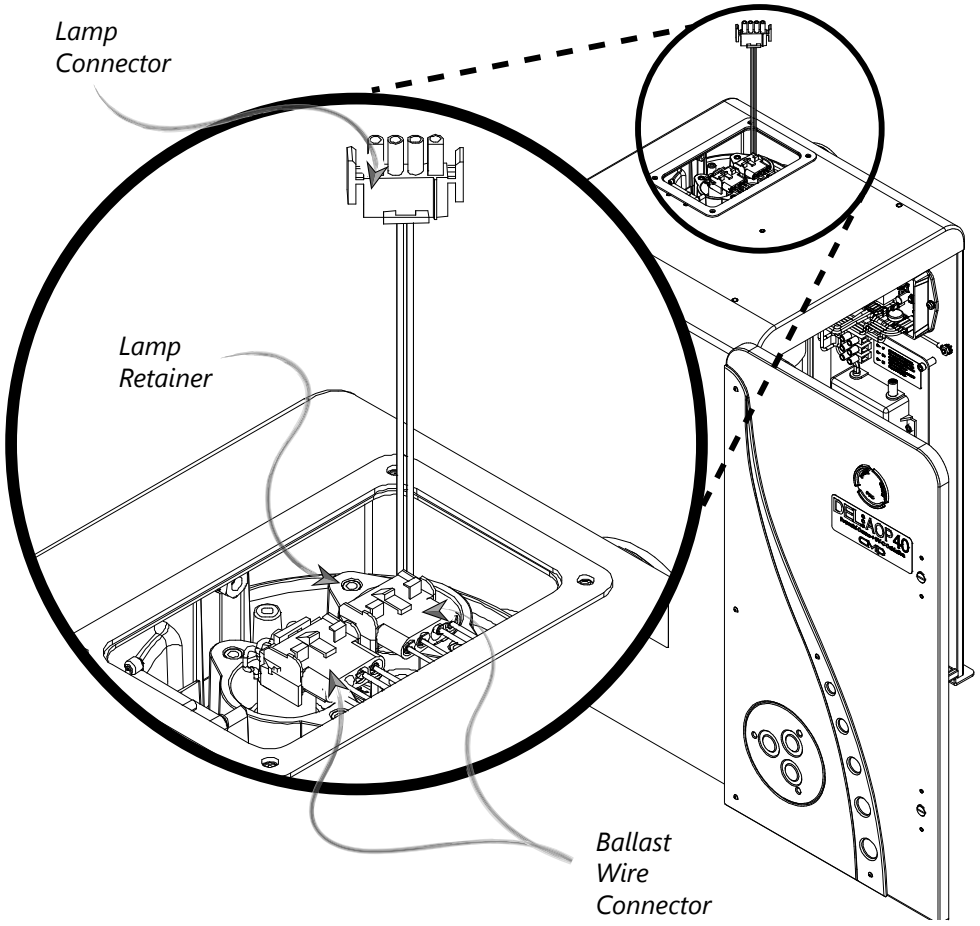


Figure 14: UV Lamp Replacement

To re-install the UV lamp:

1. Confirm power is off at the breaker.
2. Do not touch glass, as oils on your hands will damage the bulb. By holding the UV lamp white ceramic cap, 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 tube.
3. Connect the lamp connector to the connector on the ballast.
4. Install UV lamp access panel.
5. Reset UV indicator by pressing button on the inside door behind the Smart Status indicators. (Fig 10)

4C-2. Quartz Tube Removal and Cleaning (Every Six Months)

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 quartz tube(s) should be removed from the UV reactor every six (6) months and cleaned if necessary.

Note: For instructions on cleaning without mechanical disassembly, see Appendix C.
Note: If the DEL AOP is installed below water level, the bypass valves must all be CLOSED to prevent excess pool water from draining into the open unit when a quartz tube is removed.

4. MAINTENANCE & SERVICE

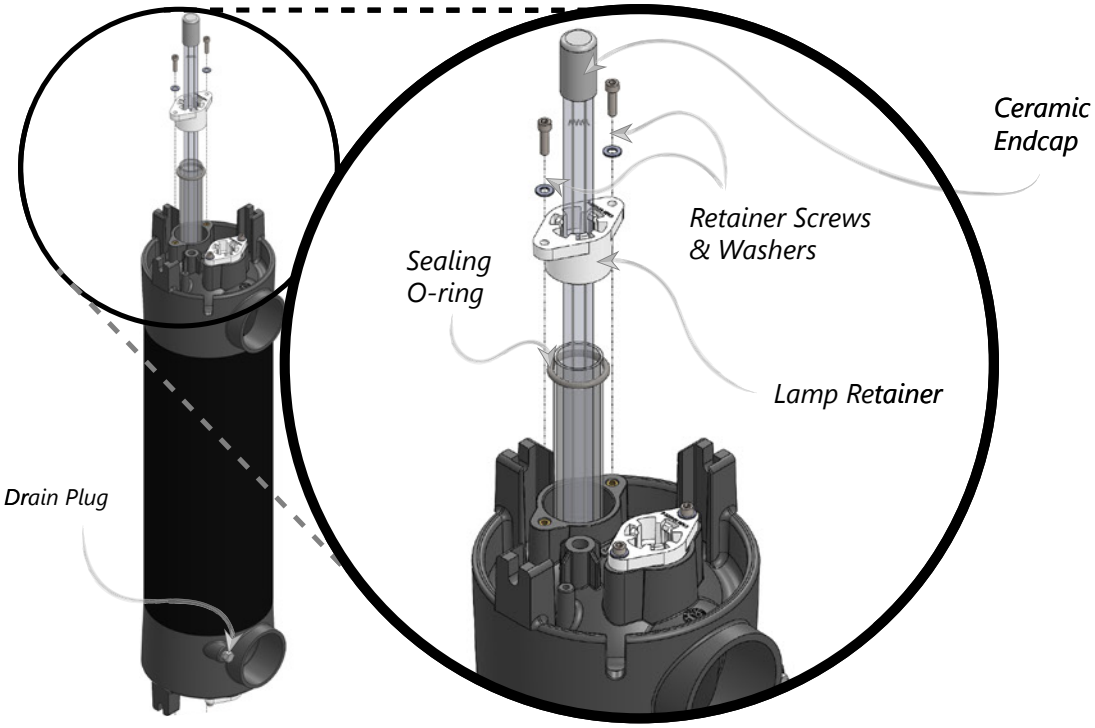


Figure 15: UV Reactor Subassembly

1. Before continuing, allow adequate time for the quartz tubes to cool. Drain the water from the UV reactor by removing the drain plug. Replace the plug once water has stopped exiting the UV reactor.
2. After removing the lamps, remove the top lamp retainer screws using the hex key included in the parts bag. Place the lamp retainer screws, washers and the lamp retainer aside in a safe place.
3. Using the hex key included in the parts bag, loosen the bottom lamp retainer screws two full rotations.
4. Grasp the quartz tube from the top of the UV reactor. Pull to remove it from the UV reactor.
5. Remove the sealing O-ring from the top of the quartz tube. Set aside in a safe place. NOTE: O-Rings in the bottom endcap of the reactor do not need to be removed for quartz tube service.
6. Clean the quartz tube exterior with a mild solution of muriatic acid (available at all pool supply stores) and water in a ratio of four parts water to one part acid (4:1). If lime or hard water calcium deposits are encountered, use a household tub and shower lime remover.
7. 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).

⚠ CAUTION Follow the directions for use and handling of muriatic acid on the acid bottle label, being careful to protect your eyes, wear rubber gloves, and avoid breathing acid fumes.
Note: DO NOT USE ABRASIVE CLEANERS as they can scratch the high quality quartz glass. Note: DAMAGE CAUSED BY BROKEN QUARTZ TUBES ARE NOT COVERED UNDER YOUR LIMITED WARRANTY.

4C-3 Quartz Tube Installation

1. Holding the quartz tube so it is oriented straight up and down. 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 16.
2. Place a sealing o-ring approximately 1/2in (12.5mm) from the end of the quartz tube protruding from the top of the UV reactor.

3. Place the lamp retainer over the quartz tube. Use the hex key included in the parts bag to attach the lamp retainer to the UV reactor, using the lamp retainer screws and washers as shown in Figure 15. Make sure the lamp retainer flanges are fully seated against the UV reactor.
4. Turn the circulation pump ON and check the quartz tube seal for leaks.
5. Turn the circulation pump OFF once you have confirmed that the quartz tube is not leaking.

⚠CAUTION Wear proper eye and skin protection for servicing glass components. If broken glass is trapped in the pool system, do not operate the pool. Contact a service professional to have the glass removed.

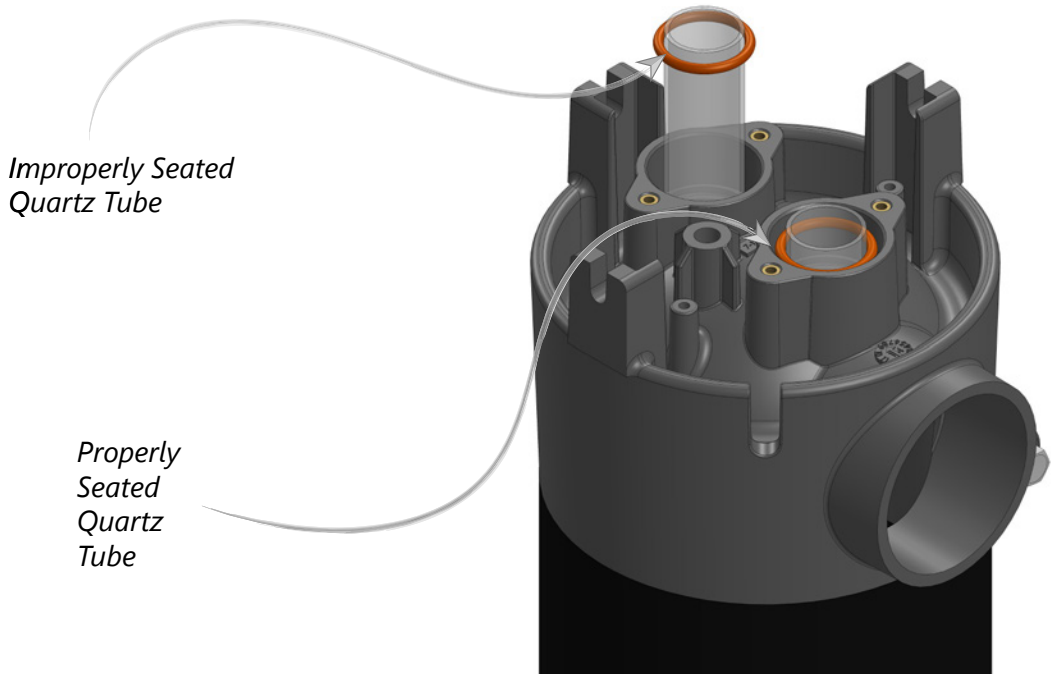


Figure 16: UV Quartz Tube Installation

4D. TECHNICAL CONTACT INFORMATION:

For technical assistance call: 1 (800) 733-9060 or visit our website: www.c-m-p.com/support

Be prepared with the following information:

- Name
- Address
- Model #
- Date Purchased

Scan for Step-by-step instructions

OR VISIT C-M-P.COM/TECH

4. MAINTENANCE & SERVICE

4E. ORDERING INFORMATION:

To locate a dealer nearest you call 1 (800) 733-9060 or visit www.c-m-p.com.

4F. STANDARD REPLACEMENT PARTS LIST

DESCRIPTION	AOP 25	AOP 40
UV-C LAMPS	9-1626-02	9-1626-01
OZONE GAS LINE	9-1352-01	
OZONE CELL	9-1565-01 (ONE PER UNIT)	9-1565-01 (TWO PER UNIT)
INJECTOR TUBE ADAPTER	7-1434-01	
AIR FILTER	9-0858-01	

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

5. TROUBLESHOOTING & FAQS

NOTICE: Knowledge of electrical applications is required for some 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

5A. SMART STATUS SYSTEM INDICATOR TROUBLESHOOTING

POWER INDICATOR COLOR	OZONE INDICATOR COLOR	UV-C INDICATOR COLOR	CAUSE	CORRECTIVE ACTION
Green	**Blue**	**Purple**	All systems are operating correctly	N/A
Green	**Blue**	**Yellow**	UV-C Lamps are due for replacement	Order new UV-C Lamps. See Section 4C
Yellow	**Blue**	**Red Blinking**	UV-C overdue for service	Replace UV-C Lamps. See Section 4C
Green	**Yellow**	**Purple**	Ozone Cells are due for replacement	Order new APG2 ozone cells. See Section 4B
Yellow	**Red Blinking**	**Purple**	Ozone overdue for service	Replace ozone cells. See Section 4B
Red	**Blue**	**Red**	Error with UV-C system	Check lamp connections Check connection to ballast UV lamp failure: Replace UV lamps Ballast failure: Contact CMP Technical Support Incorrect wiring: confirm unit is connected to the output side of the pool time clock
Red	**Red**	**Purple**	Error with ozone system	Check power connections to ozone cell. Replace ozone cell. See Section 4B.
Red	**Red Blinking**	**Red Blinking**	Ozone and UV-C are both overdue for service.	Replace ozone cells and UV-C Lamps. See Section 4.
Red	**Red**	**Red**	Flow problem	Insufficient Flow: Verify that pump is running properly and that filters/skimmers are clean. Flow switch failure: Replace flow switch Flow switch relay failure: Replace flow switch
			UV Panel Switch Error	UV access door is not properly closed Panel switch has failed.. Contact CMP Tech Support
			Multiple System Failure	Ozone and UV system both have failed. See Section 4

5. TROUBLESHOOTING & FAQS

POWER INDICATOR COLOR	OZONE INDICATOR COLOR	UV-C INDICATOR COLOR	CAUSE	CORRECTIVE ACTION
OFF	**OFF**	**OFF**	No power to system from power source	Check circuit breaker at distribution box
				Check for loose connections or wiring breaks in the lines leading to the terminal block
			LED indicators malfunction	Loose or missing connections to LED indicators. Check power connection to the back of the LED indicators inside the unit door.
				LED Indicators have failed: Contact CMP Technical Support

5B. SYSTEM TROUBLESHOOTING

SYMPTOM	CAUSE	CORRECTIVE ACTION
Green ozone module light is not illuminated while the system is running	Error or failure with ozone cell.	Check power connections to ozone cell.
		Replace ozone cell. See Section 4B.
One or more UV lamps are not lit when the unit is running.	Bad connection	Check lamp connector plug
	Water fouling has shorted lamp connections	Replace UV-C Lamps. See Section 4C
	Bad UV lamp	Replace UV-C Lamps. See Section 4C
	Ballast Failure	Contact CMP Technical Support

Scan for Step-by-step instructions

OR VISIT C-M-P.COM/TECH

5. TROUBLESHOOTING & FAQS

5C. FREQUENTLY ASKED QUESTIONS

1. How often does the UV lamp need to be replaced?
    a. UV lamps should be replaced after 16000 hours of operation, typically around 18 months.
    b. The Smart Status UV-C indicators on the front of the unit will change to yellow when UV lamp replacement is due. This is when you should order new UV lamps or schedule service. The indicator will change to flashing red when service is overdue.

2. How often does the ozone module need to be replaced?
    a. Ozone modules should be typically be replaced every 3-5 years for optimal performance.
    b. The Smart Status ozone indicators on the front of the unit will change to yellow when ozone module replacement is due. This is when you should order new ozone modules or schedule service. The indicator will change to flashing red when service is overdue.

3. When should other components be replaced?
    a. The ozone gas line assembly should be replaced yearly to best performance.
    b. The air filter or injector tube should be replaced if worn are dirty.
    c. The quartz tube should be replaced if it is scratched or damaged. It should be cleaned every six (6) months.

3. Where can I learn more about Next Gen AOP™?
    a. CMP has many resources online for education about AOP and other sanitizers. You can find everything available at c-m-p.com/resource center. For technical support you can visit c-m-p.com/tech.

4. What do I do about bubbles in the pool from the AOP unit?
    a. It is normal for bubbles to appear from one or more return lines coming from the AOP unit.
    b. If you prefer to stop all bubbles or have a vinyl liner pool, a Mixing De-gas Vessel (MDV) can be installed to eliminate all bubbles

5. Will this system work with an in-floor cleaning system?
    a. In-floor cleaning systems create high back-pressure for all equipment on the pad. To prevent back-pressure from effecting the DEL AOP unit, it should be installed on a separate return line from the in-floor cleaning system. See Appendix A for details.

APPENDIX A

DEL AOP INSTALLATION - SYSTEM PLUMBING

The DEL AOP works under vacuum. The injector draws the ozone/air gas mixture from the ozone cells and mixes it into the water leaving behind some undissolved gas bubbles. These bubbles can affect certain pool system components, so care must be taken when installing the DEL AOP.

The diagrams below cover common plumbing configurations. For other configurations or installation questions, please call Technical Support at 1 (800) 733-9060, or email: support@c-m-p.com

1. **Pool Cleaners:** (i.e. Polaris 360): Always plumb the cleaner T-fitting before the DEL AOP to prevent gas from affecting the operation of the cleaner.
2. **Chlorine Generator:** A salt chlorine generator should be plumbed after the AOP system to prevent the trapped accumulation of hydrogen gas, a safety hazard.
3. **Chlorine Tab/Mineral Erosion Feeder:** Always plumb the DEL AOP after any erosion feeder to avoid gas accumulating in the feeder. If installing as a retrofit and a tab feeder cannot be relocated, and MDV unit is recommended in between the AOP system and the tab feeder.
4. **Water Features:** Avoid plumbing the DEL AOP into any leg with excessive back pressure such as those going to fountains, restrictive wall fittings, etc.
5. **In-Floor Cleaning System:** The DEL AOP must be on a different pool return leg than any In-Floor Cleaning system to avoid excess back pressure on the DEL AOP. This will also prevent gas intrusion and high oxidizer levels in zone valve and cleaner heads.
6. **DEL AOP:** The goal is for back pressure on the DEL AOP to be minimal.

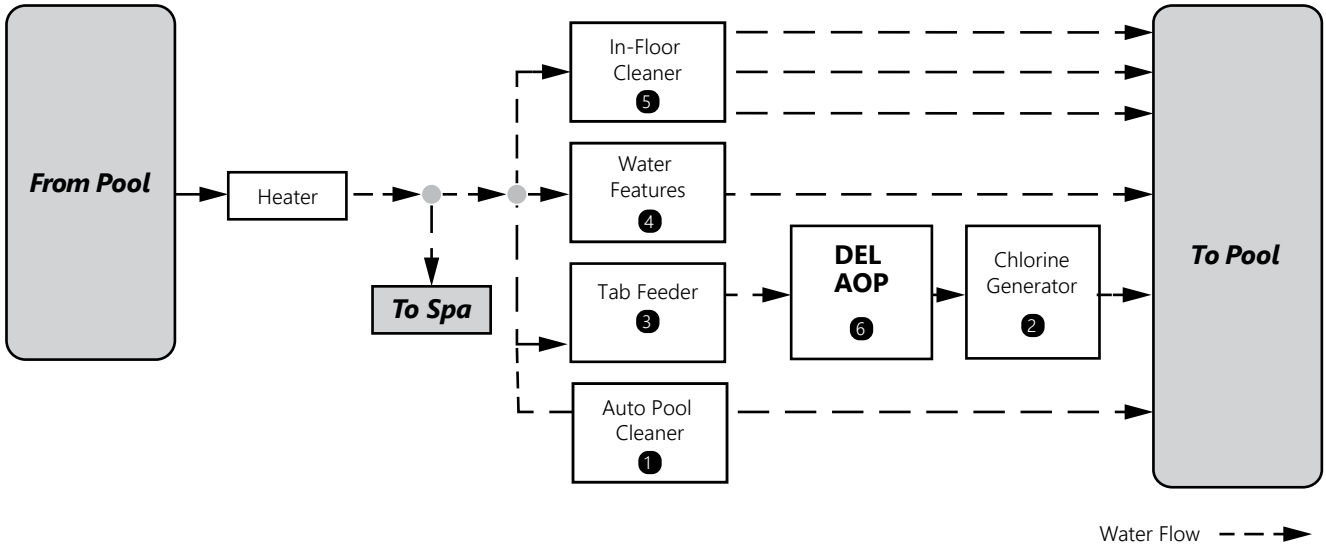


FIGURE 17: System Diagram

APPENDIX B

DEL AOP PRESSURE DROP CHARACTERIZATION

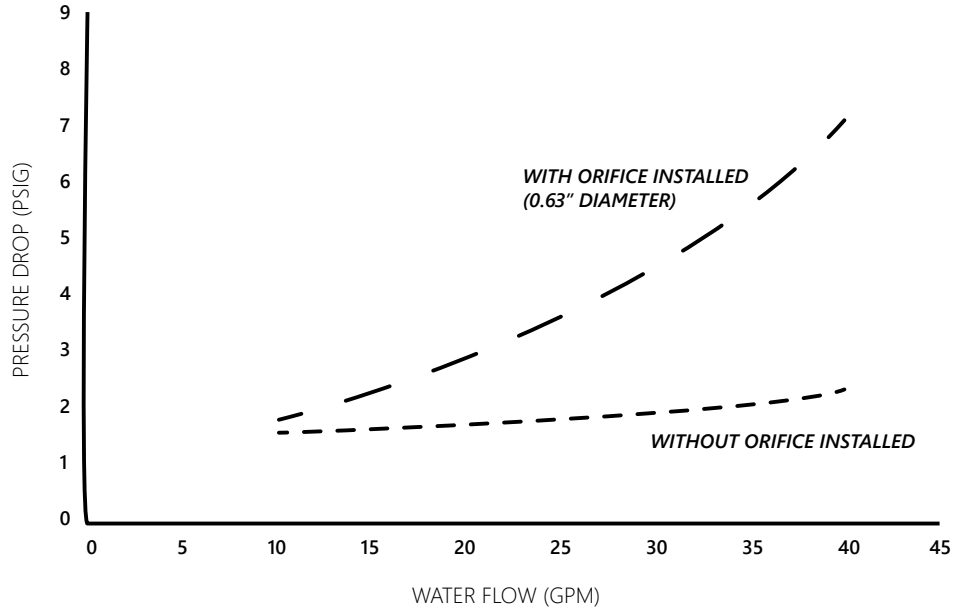


FIGURE 19: AOP 25 Pressure Drop Over a Range of Flows (With and Without Orifice Plate)

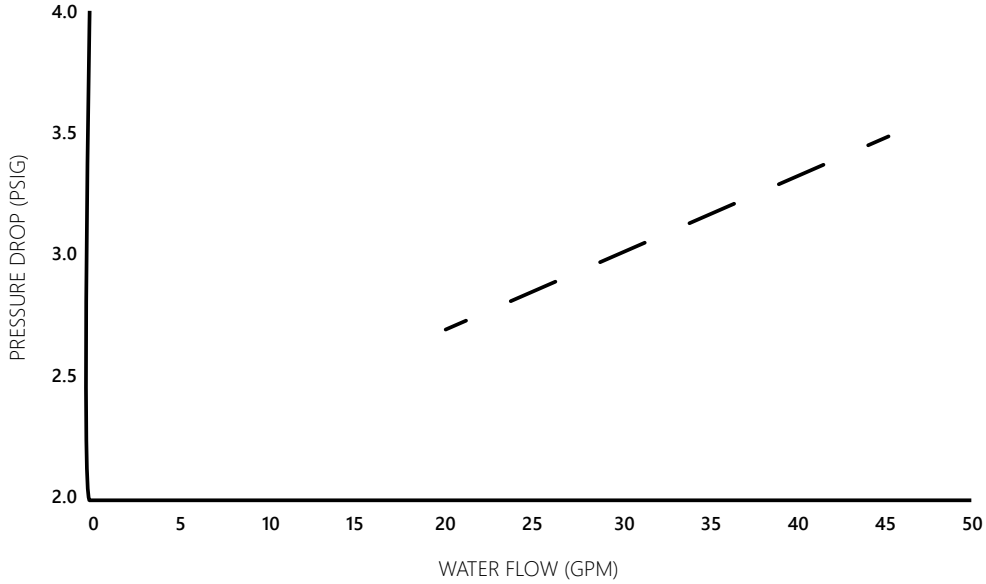


FIGURE 18: AOP 40 Pressure Drop Over a Range of Flows

NOTE: Tested on simulated recirculation system using a Pentair Intelliflo variable speed pump. No back pressure added. Back pressure will raise the inlet pressure (filter pressure) but reduce the pressure drop slightly. Actual results will vary depending on pump and plumbing variables.

APPENDIX C

OPTIONAL IN-PLACE QUARTZ TUBE CLEANING

For regular cleaning, it is recommended to clean the quartz tube following the procedure in section 4-C. If necessary, the DEL AOP quartz tubes may alternatively be cleaned without removing them from the vessel by following the procedure below.

1. Ensure that the DEL AOP is isolated from the rest of the pool system with shut-off valves at the inlet and outlet.
2. Disconnect the union from the outlet port on the right side of the unit and remove the winterizing cap inside the unit. (FIG 21)
3. Create an acidic cleaning solution of muriatic acid (available at all pool supply stores) and water in a ratio of four parts water to one part acid (4:1). Always observe all safety precautions as specified by on the acid container
4. Pour the cleaning solution in the winterizing port to flow from bottom to top. This may require creating a simple plumbing fixture to facilitate pouring in the winterizing port and filling to the top of the quartz tubes.
5. Allow the solution to soak as needed to remove any mineral build-up from the quartz tube. When cleaning is complete, drain the unit completely and clean any acidic cleaning solution that has collected in the bottom of the unit.
6. Run the pool system immediately for an extended period to fully rinse the internal components. Special considerations may apply depending on the cleaning system. Contact Customer Service if there is any question about compatibility with the DEL AOP components.

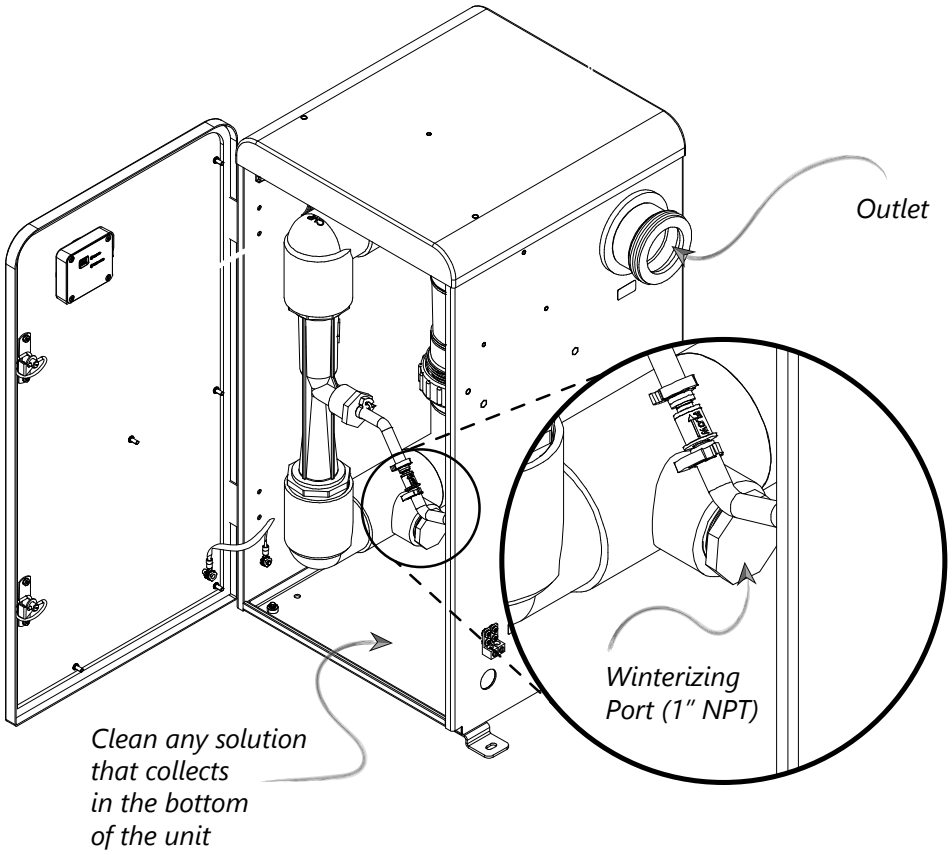


FIGURE 19: In-place Quartz Tube Cleaning

NOTES

SAVE THESE INSTRUCTIONS

Record Information on this System Below & Keep for Your Records

Installer _____

System Purchased From _____

Installation Date _____

Serial Number _____

CMP, LLC
36 HERRING ROAD, NEWNAN, GA 30265
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