

DEL:

ADVANCED SANITIZER SOLUTIONS

POOL PRODUCTS CATALOG

CMP POOL
PRODUCTS

DESIGNING A SAFE & MODERN POOL

Technology has come a long way, and so have pool sanitizers. By combining the best available technologies, every pool can be crystal clear and absolutely safe.

DESTROY CHEMICAL RESISTANT BACTERIA

Some of the most dangerous pool contaminants are also resistant to chlorine and other chemicals. Harmful organisms such as *Cryptosporidium* require long term exposure to high chlorine levels to be destroyed. AOP, Ozone and UV-C oxidize or inactivate these types of contaminants for a safer pool.

WORK WITH YOUR RESIDUAL FOR THE BEST PERFORMANCE

Chlorine and other chemicals are good at keeping pool water actively safe even when the pump is off. Advanced Sanitizers destroy contaminants, break down chloramines and create more comfortable water. Working together, a residual sanitizer and an Advanced Sanitizer system create a complete modern pool system.

REDUCE CHEMICAL DEMAND

By allowing your Advanced Sanitizer system to quickly act on pool contaminants, chlorine is free to work better. This reduces the chemical demand and greatly reduces the amount of chemicals that have to be added to the water. Every pool can experience a reduction in chemicals and a reduction in annual chemical costs.





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CHOOSING THE RIGHT SANITIZER

ADVANCED OXIDATION PROCESS (AOP)

When germicidal UV light (UV-C) and Ozone react the result is the production of hydroxyl radicals. This reaction is known as Advanced Oxidation Process, or AOP. Hydroxyl radicals have the highest oxidation potential of any residential application sanitizer.

ADVANTAGES

- The most powerful Advanced Sanitizer
- APG Ozone generation creates more ozone, resulting in more hydroxyl radicals

PRODUCTS AVAILABLE

- AOP 25 - Treats up to 25,000 Gallons
- AOP 50 - Treats up to 50,000 Gallons, NSF Certified

OZONE

Ozone (O_3) is generated with the patented APG Ozone Cell. Ozone sanitizes water as soon as ozone molecules come into contact and react with dissolved, waterborne contaminants in a series of strong oxidation reactions.

ADVANTAGES

- Compact, lightweight, wall mountable systems
- APG Ozone is not affected by bulb degradation or water clarity like UV Ozone

PRODUCTS AVAILABLE

- OZONE 25 - Treats up to 25,000 Gallons
- OZONE 50 - Treats up to 50,000 Gallons
- OZONE 100 - Treats up to 100,000 Gallons
- OZONE ABG 25 - Treats up to 25,000 Gallons, for above ground pools

GERMICIDAL ULTRAVIOLET LIGHT (UV-C)

A specially tuned lamp produces UV-C light in a chamber that is powered by electricity. It effectively inactivates harmful microorganisms, including *Cryptosporidium Parvum*. The process creates zero by-products since only light is introduced to the water.

ADVANTAGES

- Introduces zero chemical residual into the water
- Simple single unit installation

PRODUCTS AVAILABLE

- UV-C 50 - Treats up to 50,000 Gallons

ADVANCED SANITIZER TECHNOLOGY COMPARISON

	AOP	OZONE	UV-C
Oxidation Potential Oxidation Potential is the tendency for a substance to be oxidized at standard conditions.	Extreme 2.80 Electron Volts (eV)	High 2.08 Electron Volts (eV)	UV-C inactivates contaminants but does not oxidize
Chlorine Resistant Organisms <i>Cryptosporidium Parvum</i> strains can cause respiratory and gastrointestinal illness.	 Destroys 99.9% of <i>Cryptosporidium Parvum</i> on contact	 Destroys 99.9% of <i>Cryptosporidium Parvum</i> on contact	 Inactivates <i>Cryptosporidium Parvum</i> on contact
Reduces Dangerous Microorganisms	 Oxidizes 99.9% of microorganisms	 Oxidizes 99.9% of microorganisms	 UV inactivates microorganisms, preventing replication
Breaks Down Chloramines Chloramines are irritants in the water created when chlorine reacts with organics such as sweat or urine.	 Hydroxyl Radicals eliminate chloramines and destroy the contaminants that create them	 Ozone eliminates chloramines and destroy the contaminants that create them	 UV breaks down chloramines that have been created
Enhanced Filtration Undissolved granules affect water clarity and can irritate the eyes and skin of swimmers.	 Acts as a microfloculant, enhancing filter performance	 Acts as a microfloculant, enhancing filter performance	UV-C does not have a microfloculant effect
Model Aquatic Health Code (MAHC) Classification	Supplemental & Secondary Sanitizer Options	Supplemental Sanitizer	Supplemental Sanitizer
Largest Pool Size Supported	50K Gal	100K Gal	50K Gal
Maximum Flow Rate	50 GPM	50 GPM	100 GPM
Chemical Production	Hydroxyl Radicals, Ozone	Ozone	UV introduces zero residual or added chemicals to the water.
Maintenance	Replace UV bulb after 18 months. Replace ozone cell by up to 5 years	Replace ozone cell by up to 5 years	Replace UV bulb after 18 months.
Installation	Install after all equipment. Venturi or MDV are required.	Install after all equipment. Venturi, injector manifold or MDV are required.	Install after pump and filter. Plumb inline with 2" pipe using included fittings.

DEL AOP™ SANITIZERS

DEL AOP 25™

- LIGHTWEIGHT AND COMPACT DESIGN
- AOP POWER FOR SMALLER POOLS
- TREATS POOLS UP TO 25,000 GALLONS

PRODUCT DETAILS

- Patented APG Ozone Cells
- Germicidal UV-C Lamp
- 110/240 VAC Universal Voltage
- 20 GPM Max Flow Rate
- UL, cUL Certified
- CSA/NEMA 3 Metal Enclosure



DEL AOP 50™

- COMPLETE NSF CERTIFIED AOP OXIDATION
- THE ORIGINAL RESIDENTIAL AOP SOLUTION
- AOP POWER FOR POOLS UP TO 50,000 GALLONS

PRODUCT DETAILS

- Patented APG Ozone Cells
- Germicidal UV-C Lamp
- 240 VAC
- 50 GPM Max Flow Rate
- NSF, UL, cUL Certified
- CSA/NEMA 3 Metal Enclosure



ORDERING GUIDE

CMP P/N	DESCRIPTION
SEC-50	DEL AOP 25
SEC-110-26	DEL AOP 50
MDV-10-08	MDV WITH AOP 25 INSTALL KIT
MDV-100	MDV XL WITH AOP 50 INSTALL KIT

AOP: THE MOST POWERFUL ADVANCED SANITIZER

THE ADVANTAGES OF AOP

With the use of AOP microorganisms are destroyed, chloramines are broken down and chlorine dependence is significantly reduced. Non-organic contaminants are also oxidized and water clarity is fully optimized to produce crystal clear results.

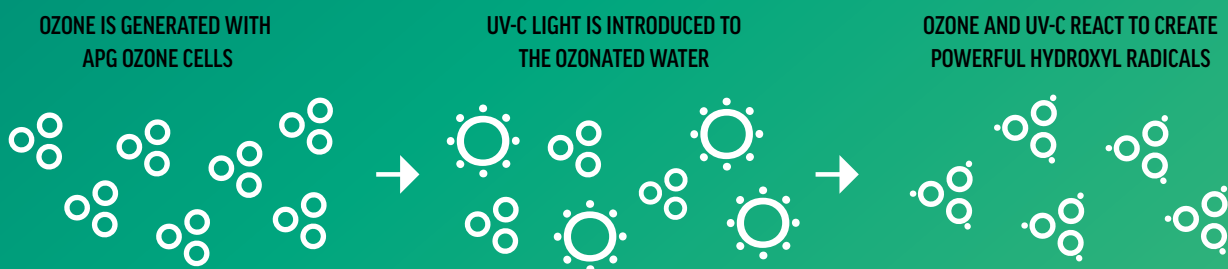
- Destroys 99.9% Of Harmful Contaminants
- Quickly Oxidizes *Crypto*, *Giardia* & Other Chlorine Resistant Microorganisms
- Dramatically Reduces Chemical Demand & Increases Effectiveness Of Residual Sanitizers
- Eliminates Chemical Odors, Irritation and Damage To Pool Systems

THE SCIENCE OF AOP

When germicidal UV light (UV-C) and ozone react, the result is the production of hydroxyl radicals. This reaction is known as Advanced Oxidation Process, or AOP.



Hydroxyl radicals ($\cdot\text{OH}$) are the most powerful oxidation agents available, quickly destroying bacteria, viruses, pathogens and other contaminants that occur in water. Hydroxyl radicals also destroy chlorine resistant microorganisms, such as *Cryptosporidium Parvum*, *Giardia* and *E.Coli*.



THE POWER OF AOP

AOP is dramatically more powerful than Chlorine and other sanitizers, and even more powerful than Ozone alone. In AOP systems, the highly unstable hydroxyl radicals react with dissolved waterborne contaminants in a series of strong oxidation reactions. This process happens *almost instantaneously*.

	OXIDATION POTENTIAL: ELECTRON VOLTS (eV)
HYDROXYL RADICAL (AOP)	2.80
OZONE	2.08
HYDROGEN PEROXIDE	1.78
HYPOCHLOROUS ACID	1.49
SODIUM HYPOCHLORITE	1.36
CHLORINE DIOXIDE	0.95

AOP SPECIFICATIONS & INSTALLATION



DELIAOP25

- Wall Mount
- Only 33 Watts (110V)
- Outlet Installs After Heater
- Injector Included
- 3/4 inch PVC Socket
- MDV Recommended



DELIAOP50

- Ground or Wall Mount
- Install after Pump, Filter and Heater
- Variable Speed Check Valve and Injector Manifold are Built into the Unit
- 2" PVC Unions
- MDV XL Recommended

SPECIFICATIONS

	DEL AOP 25	DEL AOP 50
VOLTAGE	110/240VAC 50/60 HZ, 1Ø, 0.3 Amps	240 VAC, 60 HZ, 1Ø, 0.6 Amps
WATTS	33 Watt (110V), 72 Watt (240V)	144 Watt
PLUMBING	Inlet and Outlet 3/4 inch PVC Socket	Inlet and Outlet 2" PVC Unions
MAX FLOW	20 GPM	50 GPM
MOUNTING	Ground or Wall Mount	Ground Mount
ENCLOSURE	CSA/NEMA 3 Indoor/Outdoor Installation	CSA/NEMA 3 Indoor/Outdoor Installation
DIMENSIONS	16.7" H × 11.9" W × 3.2" D	17" H × 9.5" W × 13.5" D
WEIGHT	9.2lbs	45lbs
UV-C LAMP	Low Pressure/High Output UV-C Germicidal	Low Pressure/High Output UV-C Germicidal
OZONE CELLS	APG Cells; 5 Year Life Expectancy	APG Cells; 5 Year Life Expectancy
CERTIFICATIONS	UL, cUL	NSF, UL, cUL
MDV UNIT	MDV	MDV XL

ABOUT DEL PATENTED APG OZONE CELLS



ADVANCED OZONE GENERATION

DEL patented Advanced Plasma Gap™ (APG) ozone cells are the most effective and efficient way to produce ozone sanitizer systems.

Patented APG Ozone Cells are used on all DEL Ozone and DEL AOP residential pool products.

RELIABILITY

The long-lasting DELCheck® certified APG Ozone cell outlasts classic CD cell designs. Cells last up to 5 years without significant reduction in output.

PERFORMANCE

APG generates maximum ozone for cleaner water. Unlike UV type ozone generation, APG cell performance is not affected by water clarity.

TECHNOLOGY

Advanced Plasma Gap is patented DEL technology unavailable on other ozone generation systems. APG is unmatched in residential ozone production.

APG VERSUS . . .

Other Corona Discharge (CD) Systems	APG Cells have a higher ozone output than other residential CD type systems.
	APG Cells are highly resistant to corrosion and deterioration that occur in other CD systems
UV Bulb Ozone Generation	APG generates a higher concentration of ozone/watt
	APG units are more compact, taking up less space on the equipment pad
	APG Ozone saves energy on costs versus UV Ozone
	APG cells have a longer lifespan than UV bulbs
	UV Ozone bulbs deteriorate dramatically as they age, which reduces ozone output even further.

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

DEL OZONE™ SANITIZERS

DEL:OZONE™

- DESTROYS 99.9% OF VIRUSES & BACTERIA
- REDUCES CHEMICAL REQUIREMENTS BY 60-90%
- REMOVES EYE AND SKIN IRRITANTS FROM WATER

PRODUCT DETAILS

- Patented Advanced Plasma Gap Technology™ (APG)
- 110/240 Universal Voltage
- Wall Mount Installation
- UL, cUL Classified
- Injector Manifold Kit Available
- MDV Kit Available



DEL:OZONE ABG25

For above ground pools
up to 25,000 gallons

DEL:OZONE 25

For pools up to
25,000 gallons

DEL:OZONE 50

For pools up to
50,000 gallons

DEL:OZONE 100

For pools up to
100,000 gallons

ORDERING GUIDE

CMP P/N	DESCRIPTION	APPLICATION
EC-AG1U	DEL OZONE ABG 25	FOR ABOVE GROUND POOLS UP TO 25,000 GALLONS
EC-10	DEL OZONE 25	FOR POOLS UP TO 25,000 GALLONS
EC-20	DEL OZONE 50	FOR POOLS UP TO 50,000 GALLONS
EC-40	DEL OZONE 100	FOR POOLS UP TO 100,000 GALLONS
MDV-10	MDV WITH SINGLE SPEED OZONE KIT	FOR SINGLE SPEED PUMP SYSTEMS
MDV-10-04	MDV WITH VARIABLE SPEED OZONE KIT	FOR VARIABLE SPEED PUMP SYSTEMS
9-0210-11	PARTS BAG: 2" UNIVERSAL INJECTOR MANIFOLD	—
9-0210E	PARTS BAG: #978 INJECTOR, NO BYPASS	—
9-0150E	PARTS BAG: NO INJECTOR	—

DEL OZONE 25, 50, 100 PREVIOUSLY SOLD AS ECLIPSE 10, 20, 40

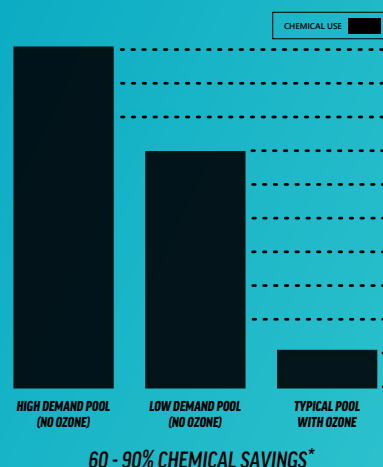
OZONE CREATES SAFER, CLEANER, CLEARER WATER

THE ADVANTAGES OF OZONE

Ozone systems provide clean, clear and safe water for your pool, as well as a significant reduction in chlorine use.

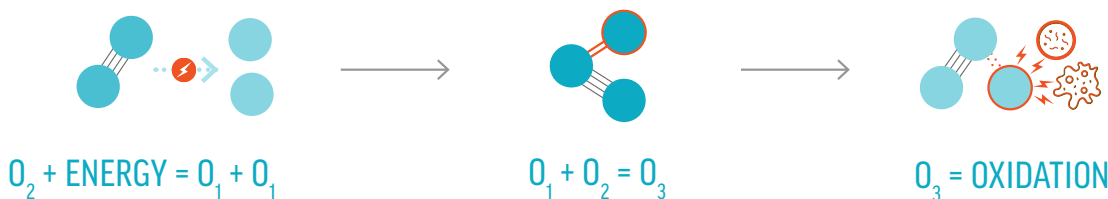
- Destroys 99.9% of Harmful Contaminants
- Quickly Oxidizes *Crypto*, *Giardia* and Other Chlorine Resistant Microorganisms
- Dramatically Reduces Chemical Demand and Increases Effectiveness of Residual Sanitizers
- Eliminates Chemical Odors, Irritation and Damage to Pool Systems
- Operate Chemical Feeders & Generators at a Lower Level While Maintaining a Safe Residual

CHEMICAL USE COMPARISON



THE SCIENCE OF OZONE

Unlike the Oxygen we breathe (O_2), Ozone is a powerful oxidant made of three oxygen atoms (O_3). The third oxygen atom in Ozone has a weak bond, which breaks off and destroys foreign bodies in the water. Ozone can safely kill pathogens, microorganisms and both organic and inorganic contaminants through oxidation.



Energy created in the patented APG cell splits molecular oxygen (O_2) into atomic oxygen (O_1)

The single oxygen atoms form a weak bond with free oxygen molecules to create ozone (O_3)

Once ozone contacts contaminants, the weak bond is broken, and the free oxygen atom destroys the foreign bodies & contaminants.

THE POWER OF OZONE

Ozone is much more powerful than chlorine and other sanitizers.

In ozone systems, the ozone molecules react with dissolved, waterborne contaminants in a series of strong oxidation reactions.

Working with a residual sanitizer, a DEL Ozone system creates a safer, cleaner pool.

OXIDATION POTENTIAL: ELECTRON VOLTS (eV)



*Chemical use data extrapolated from studies of CT performance data and commercial performance response.

DEL OZONE INSTALLATION & SPECIFICATIONS

All DEL systems are designed for easy installation on both new and existing residential pool applications. The ozone generator is easily wall mounted and connects to the pool timer. The automated system injects ozone through an Injector Manifold assembly that is installed in the return line following the filter and heater. To eliminate the potential for bubbles in the pool, an MDV Kit can be used to ensure that all ozone is removed prior to the return line re-entering the pool.



MDV KIT INSTALLATION

To install a DEL system with the Mixing De-Gas Vessel (MDV), connect the ozone generator to a regular Venturi injector included in the MDV install kit. This flows into the MDV and back out to a dedicated or main return.



INJECTOR MANIFOLD KIT INSTALLATION

The Injector Manifold Kit should be plumbed into the pool line. Ozone is injected through a venturi while the pool circulation system is operating.

SPECIFICATIONS

	DEL OZONE 25	DEL OZONE 50	DEL OZONE 100
Application	Up to 25,000 Gallons	Up to 50,000 Gallons	Up to 100,000 Gallons
Ozone Output (Nominal)	0.25 g/hr	0.5 g/hr	1.0 g/hr
APG Cell Quantity	2	4	6
Standard Air Flow	15 scfh	15 scfh	15 scfh
Voltage	110/240 VAC Universal	110/240 VAC Universal	110/240 VAC Universal
Watts	12 Watts	24 Watts	38 Watts
Mounting	Wall	Wall	Wall
Dimensions	7.8" x 14.1" x 3.2"	7.8" x 14.1" x 3.2"	7.8" x 21.3" x 3.2"
Weight	8.2 lbs.	9.0 lbs.	13.2 lbs.
Plumbing Options	- Venturi Injector - MDV	- Venturi Injector - MDV	- Venturi Injector - MDV
Certifications	UL, cUL	UL, cUL	UL, cUL
Ozone Cell Life	+ 5 Years	+ 5 Years	+ 5 Years
Warranty	1 Year	1 Year	1 Year

COMPLETE THE BEST INSTALLATION WITH AN MDV

WHAT IS AN MDV?

Available exclusively with DEL products, a Mixing De-Gas Vessel is a special chamber designed to remove all excess gas from the water. This has many advantages and in most cases is the preferred way to integrate an Ozone or AOP system.

WHEN SHOULD I USE AN MDV?

- To protect a pool cover from possible damage
- To protect pool components, fittings and surfaces
- With indoor or enclosed pools
- When an "oversized" ozone unit is installed
- Any time all ozone bubbles must be removed from the water



MDV

When used with the DEL Ozone or AOP lineup, the MDV prevents ozone bubbles from returning to the pool. It prevents bubbles from gathering under the cover or inside plumbing.

In each MDV, a GAC carbon destruct cartridge destroys excess ozone as it is removed.

COMPATIBILITY

- AOP 25
- OZONE 25
- OZONE 50
- OZONE 100



MDV-XL

The MDV-XL is a high-flow Mixing De-Gas Vessel suited for larger pools and high flow rates.

To install, connect the DEL AOP 50 outlet to the DEL MDV-XL inlet. This flows into the MDV and back out to a dedicated or main return.

COMPATIBILITY

- AOP 50

ORDERING GUIDE

CMP P/N	DESCRIPTION
MDV-10	MDV WITH SINGLE SPEED OZONE INSTALL KIT
MDV-10-04	MDV WITH VARIABLE SPEED OZONE INSTALL KIT
MDV-10-08	MDV WITH AOP 25 INSTALL KIT
MDV-100	MDV XL WITH AOP 50 INSTALL KIT

DEL UV-C™ SANITIZERS

DEL:UV-C50™

- GERMICIDAL UV-C TECHNOLOGY
- HIGH FLOW RATES UP TO 100 GPM
- TREATS POOLS UP TO 50,000 GALLONS

CONVENIENT SELF-CONTAINED SYSTEM

The 100 GPM high flow housing can treat pools up to 50,000 gallons. One UV-C unit is large enough for most residential pools, and does not require a “de-gas” unit or injector manifolds.

VENTILATED GLOW RING

The integrated glow ring allows for safe, visual confirmation that the UV lamps are working. The built-in ventilation allows air in and keeps moisture out, protecting the ballast.

UNIVERSAL VOLTAGE

The energy efficient electronic ballast can operate at 120 or 240 Volts. Integrated fault protection prevents start-up if a lamp problem is detected.

PRODUCT DETAILS

- Cover-mounted green LED light indicates unit has power and is turned on
- Integrated cover interlock cuts power when the cover is removed
- Built-in valve for easy draining or winterization, with an endcap internally designed to ensure complete drainage
- Pre-heat ballast design extends the lamp life
- Heat shield protects the cover from ballast heat, secures lamp connections & protects from moisture
- Compatible for combination with DEL ozone units for Advanced Oxidation Process (AOP)



ORDERING GUIDE

CMP P/N	DESCRIPTION
EUV-01-01	DEL UV-C 50

UV-C SAFELY & EFFECTIVELY DISINFECTS POOL WATER

THE ADVANTAGES OF UV-C

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

- Destroys harmful contaminants
- Inactivates *Cryptosporidium*, *Giardia* and other chlorine resistant microorganisms
- Dramatically reduces chemical demand and increases effectiveness of residual sanitizers
- Eliminates chemical odors, irritation and damage to pool systems

THE SCIENCE OF UV-C

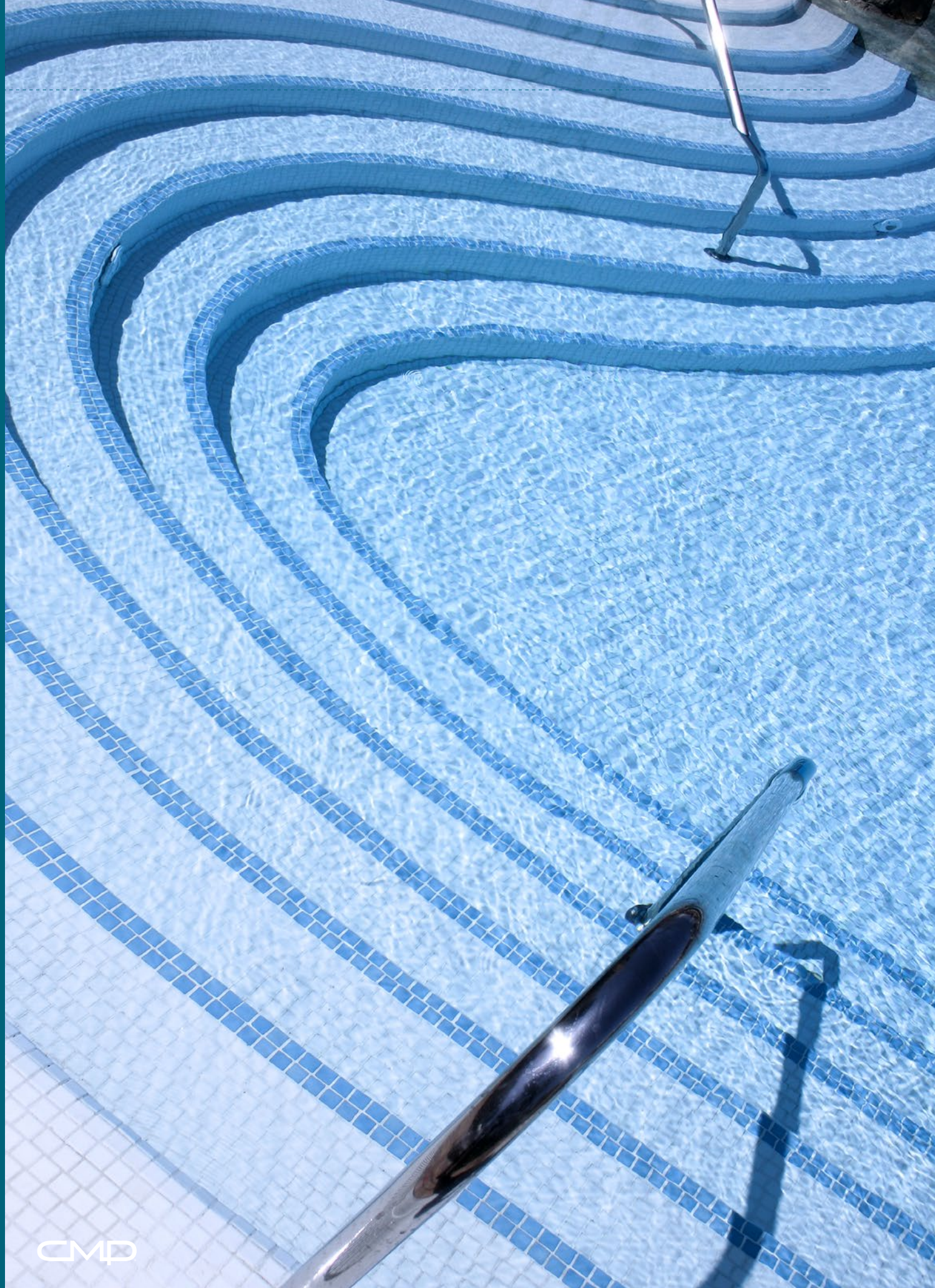
The UV-C 50 lamp emits safe, high intensity light rays tuned to germicidal 254 nanometers. Using natural rays of light, UV-C breaks apart the DNA and RNA of microorganisms, harmful bacteria, viruses, cysts and protozoa. This inactivates the contaminants to leave water safe and sanitized. UV-C does not create ozone. The highly concentrated electromagnetic energy also destroys organic matter—like urine and sweat—to eliminate the formation of harmful chlorine by-products.



SPECIFICATIONS

VOLTAGE	120/240 VAC, 50-60Hz, 0.8 Amps
WATTS	96 W
DIMENSIONS	11.5" Diameter × 33.8" Height
ENCLOSURE RATING	NEMA 3
LAMPS	Two 540mm, 58 Watt UV-C Lamps
LAMP LIFE	18 Months
PRESSURE	50 psi
FLOW	100 GPM
REGULATORY	UL, cUL

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



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DEL + POWERCLEAN = THE MODERN POOL™

	ADVANCED SANITIZER SYSTEM	CHLORINE SYSTEM	COMPLETE SYSTEM: THE MODERN POOL™
Destroys or Inactivates Chlorine Resistant Organisms	✓		✓
Residual Sanitation in Pool		✓	✓
High Oxidation Potential*	✓		✓
Continues Sanitizing When the Pump is Off		✓	✓

ADVANCED SANITIZERS ARE POWERFUL

Advanced Sanitizers are excellent for destroying or inactivating dangerous contaminants that can be present in any backyard pool. They are effective on microorganisms, viruses, bacteria and other pathogens. Chlorine can also be slow to work, and its effectiveness is lowered by the presence of chloramines and unbalanced pool water. Advanced Sanitizers break down chloramines and work in a wide pH range.

THE IMPORTANCE OF A RESIDUAL

Chlorine has a long history of use in pool sanitization, and it has one great trick. It is excellent for maintaining an active residual in the water itself. That means the moment a contaminant enters the water chlorine gets to work. Chlorine is also just as effective when the pump is off, as long as a proper residual level is maintained in the water.

THE COMPLETE MODERN POOL

The goal when designing a sanitizing system for a backyard pool is to create the best possible installation. Every tool has strengths and weaknesses—the key is to choose components that work together to achieve the best result!



+



COMBINE DEL WITH THE BEST LINE OF POOL CHLORINATORS

Modern pools are also more efficient pools. More pools are taking advantage of energy-saving Variable Speed (VS) pumps. Most chlorine feeders can't perform at low flow rates, but Powerclean VS Chlorinators can maintain chlorine flow with system flow as low as 20 GPM. Combining DEL Systems with the energy-saving efficiency of Powerclean VS is the way to build a safe and effective modern pool.

*UV-C systems inactivate microorganisms, but do not fully oxidize

MODEL AQUATIC HEALTH CODE

The Model Aquatic Health Code (MAHC) is a guidance document that helps local and state authorities make pools healthier and safer. States and localities can use the MAHC to create or update existing pool codes to reduce risk for outbreaks, drowning and pool-chemical injuries. Specific to DEL products, the MAHC guidelines set standards for water health and sanitization. The code recommends the use of another sanitizer in addition to the traditional residual chlorine in a pool. The secondary or supplemental sanitizer can address areas not treated—or poorly treated—by traditional sanitizers.

SECONDARY VS SUPPLEMENTAL DISINFECTION

The MAHC defines the difference between secondary disinfection and supplemental disinfection systems.

The 2016 Model Aquatic Health Code defines the two as follows:

- “Secondary disinfection systems shall be designed to achieve a minimum 3-log (99.9 percent) reduction in the number of infective *Cryptosporidium parvum* OOCYSTS per pass through the secondary disinfection system.” These systems must be validated by a third party, such as NSF.
- “Aquatic venues that do not require secondary disinfection systems may install supplemental treatment systems for the purpose of enhancing overall system performance and improving water quality.”

What does that all mean?

The MAHC recommends that every pool has some type of effective sanitizer in place besides chlorine. It recognizes that chlorine alone will not create the safest pool. The goal is to fill in the gap for areas that chlorine does not address very well.

Secondary systems can be used in residential and commercial applications. The AOP 50 meets the secondary disinfection standard. All other DEL residential pool systems are supplemental and meet the MAHC requirements for residential pools.

ADVANCED SANITIZER FAQ

CAN OZONE OR AOP BE USED TO CREATE A TRULY "CHLORINE FREE" POOL?

Ozone and AOP systems from DEL can be classified as a secondary sanitizer per the Model Aquatic Health Code (MAHC). While certified for microbial kill, these types of sanitizers must be used in conjunction with a residual sanitizer (chlorine feed, salt generator). In residential systems, ozone and AOP do not maintain a high residual in the water that is required for a pool to remain safe.

However, Ozone and AOP and greatly reduce the chlorine required to maintain a safe residual level. These Advanced Sanitizers are so effective at oxidizing, they free up chlorine to be more effective. This means the amount of chlorine you need to add to maintain the typical 1-3ppm level in a pool is greatly reduced.

WHAT IS CRYPTOSPORIDIUM PARVUM? IS IT A PROBLEM FOR RESIDENTIAL POOLS?

Cryptosporidium Parvum is dangerous parasite that can lead to serious illness. It can be ingested by swallowing water or even touching your mouth with contaminated hands. *Cryptosporidium* parasites are found in every region of the United States and throughout the world. "Crypto" and other dangerous pathogens – such as *Giardia* – are highly resistant to chlorine. Advanced Sanitizer products destroy or inactivate these potential hazards, keeping pools safe.

These pathogens can be found in any body of water. They are introduced through human or animal feces. It can be uncomfortable to think about, but it is very common for feces to be introduced into a residential pool. This is why we use sanitizers to keep the pool safe! The greatest danger is to children, elderly or anyone with a suppressed immune system.

ARE OZONE AND AOP "OVERKILL" FOR A BACKYARD POOL?

Advanced Sanitizers can make any pool safer and also improve the effectiveness of chlorine. Chloramines can occur in all residential pools and make chlorine less effective. Ozone and AOP can break down chloramines. Any pool can be in danger of microorganisms from animals, children and outdoor contamination. Even well-meaning adults can unintentionally contaminate a pool. These problems are not just restricted to commercial pools.

While Ozone and AOP were originally conceived for large commercial applications over 30 years ago, technology has advanced. It's very much like how computers used to be the size of a room and require a scientist to operate, but now we carry a computer in our pocket. In the same ways, modern "backyard" pools now benefit from the commercial technology of the past.

CAN DEL EQUIPMENT BE WINTERIZED?

YES! Damage can occur if water inside our equipment or plumbing is allowed to freeze. Winterizing our equipment includes draining all water from our machine and plumbing. Drain plugs are provided on DEL systems which allow the UV housing to be completely drained of water.

ABOUT ADVANCED OXIDATION PROCESS TECHNOLOGY

There are many forms of AOP, but the most common one – and the one available in the pool and spa industry – is made through a combination of ozone and germicidal UV (UV-C). In an AOP system, ozone is dissolved in water and then passes through a chamber with a UV-C lamp. When UV-C energy is combined with ozone, it creates a chemical reaction that results in hydroxyl radicals.

Hydroxyl radicals are short-lived but very powerful oxidizers that kill pathogens and microorganisms, and destroy inorganic contaminants in the water. They are more powerful oxidizers than ozone alone.

To achieve AOP, Ozone and UV-C are needed. As water flows through the system, hydroxyl radicals are being formed continuously. This cannot occur without ozone. DEL products produce ozone with patented APG cells. APG cells last longer and produce more ozone than traditional corona discharge or UV ozone generation. This is important! The more ozone molecules in the system, the more hydroxyl radicals are created.

After the hydroxyl radicals oxidize contaminants in the water they quickly convert back to oxygen. AOP is a safe, sustainable and green technology. It also provides the cleanest pool water with the greatest reduction in chemical demand.



AOP IN A NUTSHELL

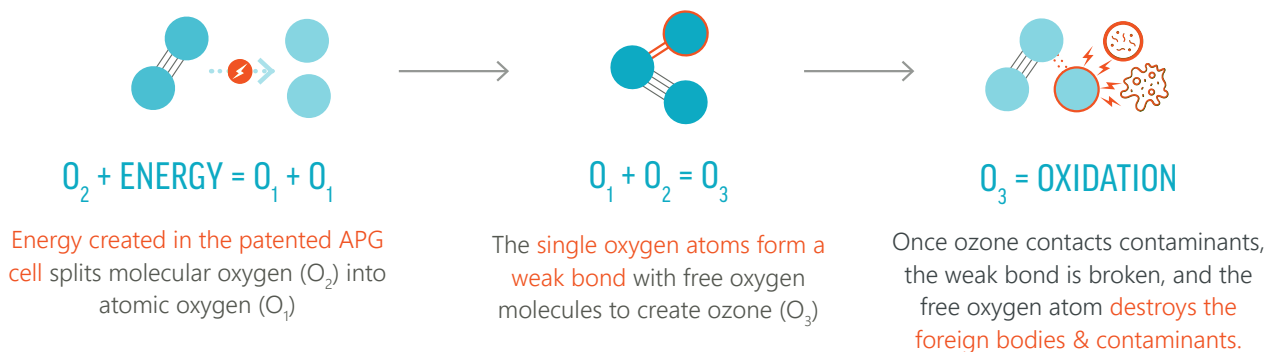
When germicidal UV light (UV-C) and Ozone react the result is the production of hydroxyl radicals. This reaction is known as Advanced Oxidation Process, or AOP. Hydroxyl radicals have the highest oxidation potential of any residential application sanitizer.

ABOUT OZONE TECHNOLOGY

Ozone (O_3) is a gas that can be created inside a chamber by passing oxygen through either a light energy field (UV ozone) or an electrical energy field (CD ozone). The only difference between ozone generated by light energy and electrical energy is the quantity. Electrical generation used in APG Ozone Cells produces higher ozone output.

After passing through this energy field, regular oxygen molecules (O_2) are split into two individual oxygen atoms when this energy is added. The unstable O_1 atoms unite with other oxygen molecules (O_2), which produces O_3 .

When dissolved in water, ozone will kill pathogens and microorganisms, destroy organics and inorganics and break down chloramines through oxidation. The effectiveness of Ozone greatly reduces chlorine consumption. The oxidation reaction happens when an ozone molecule collides with an oxidizable substance, such as algae, bacteria, sweat, urine, mold spores and protozoa. This causes the weakly bonded third oxygen atom to split off. During this reaction organic molecules are destroyed and dissolved metals become insoluble. The only leftover by-product is breathable oxygen (O_2).



OZONE IN A NUTSHELL

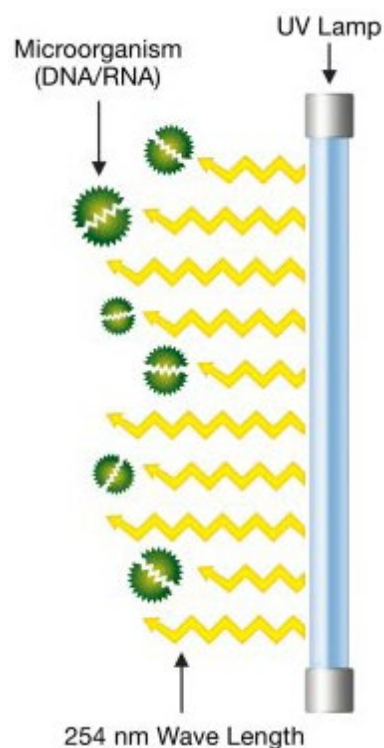
Ozone sanitizes water as soon as the ozone molecules come into contact and react with dissolved, waterborne contaminants in a series of strong oxidation reactions.

ABOUT UV-C TECHNOLOGY

Germicidal UV-C systems (also known as Ultraviolet Sterilizers) pass water through a chamber and expose it to light, which "inactivates" microorganisms and breaks down chloramines using light energy. In order to sanitize water, specific UV-C light rays must be used. UV-C is not the same as UV light used to generate ozone.

The germicidal light alters the DNA or RNA of microorganisms such as algae, bacteria, viruses, mold spores, and protozoa. 254 nm has the greatest germicidal effect.

A UV-C lamp produces UV-C light in a chamber that is powered by electricity. It effectively inactivates harmful microorganisms, including cryptosporidium parvum. The process leaves no harmful by-products and is able to reduce chlorine consumption.



UV-C COMPARED TO OZONE

Ozone and UV-C are both EPA approved water sanitizing methods. Both are compatible with chlorine, reduce chloramines and environmentally friendly. However, ozone is able to oxidize and UV is not. UV-C rays disrupt DNA or RNA of microorganisms. UV-C produces zero by-products in the water. UV-C does not oxidize the contaminants. They are rendered harmless and unable to reproduce. The inactive organisms are filtered out or oxidized by another sanitizer.



UV-C IN A NUTSHELL

Highly concentrated electromagnetic energy inactivates microorganisms and destroys organic matter to eliminate the formation of harmful chlorine by-products.

BASIC INSTALLATION INSTRUCTIONS

LOCATION

Install the DEL sanitizer system in a clean, protected area, either indoors or outdoors (preferably out of direct sunlight). Locate out of reach of sprinklers or drainage spouts. Allow sufficient access to all tubing, and electrical wires for maintenance.

MOUNTING LOCATION

DEL OZONE: Wall Mount
DEL AOP 25: Wall Mount
DEL AOP 50: Floor Mount
DEL UV-C: Floor Mount

PLUMBING

All DEL sanitizer systems must be installed in the pool return line and located after the pool filter. Ensure that DEL Ozone or AOP return lines are installed after the chlorine feeder or booster pump line.

OZONE SYSTEMS

Ozone gas is introduced to the pool circulation line using a venturi injector. Suction developed by the venturi allows the DEL Ozone generator to operate safely under vacuum.

AOP SYSTEMS

The DEL AOP 50 must be installed in the main return line after all other pool equipment (pump, filter, heater and cleaner line). The outlet of the unit or MDV must be at least ten feet from the first return to the pool.

UV-C SYSTEMS

Install in the main return line using included 2" union connections. It is preferred to install after the filter but before the heater.

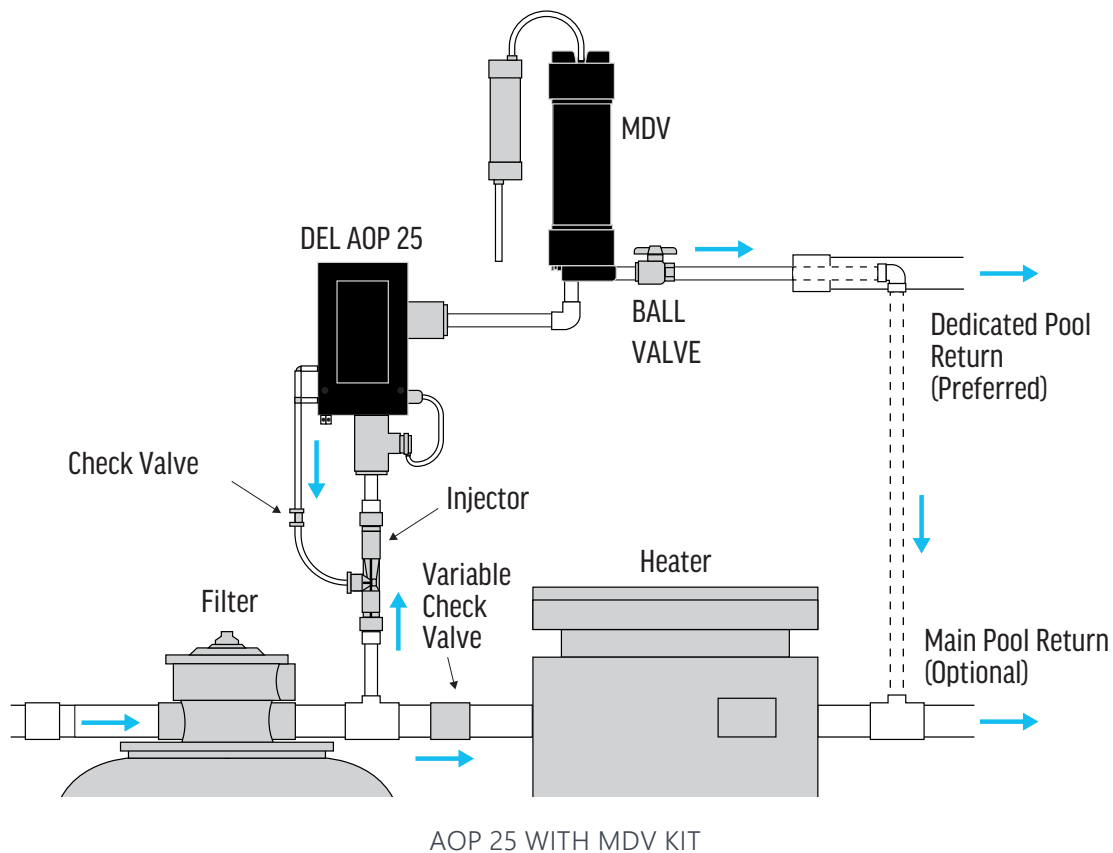
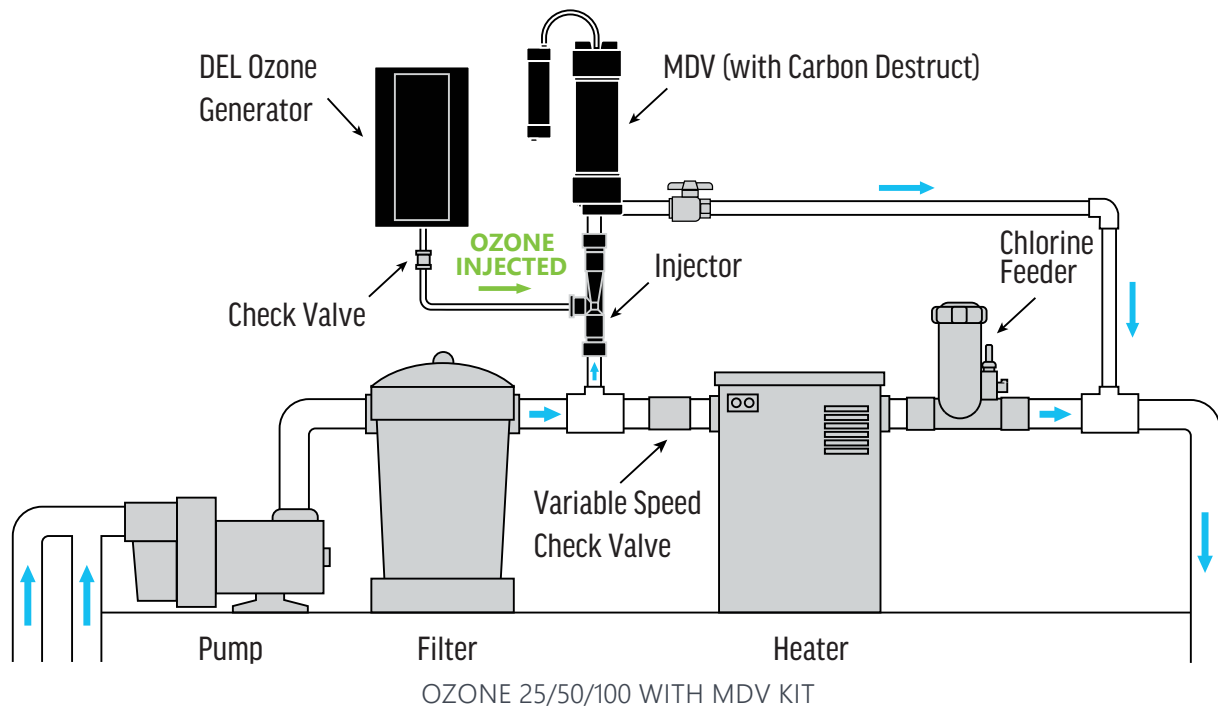
ELECTRICAL

Connect to the pool timing clock so that the unit operates simultaneously with the pool pump. Connect power to an appropriate outlet. The circuit must be protected by a Ground Fault Circuit Interrupter (G.F.C.I.) installed in accordance to electrical code.

Ozone and AOP units have knockouts available for a 1/2 inch conduit fitting. Remove only the ideal knockout and install the proper conduit fitting.

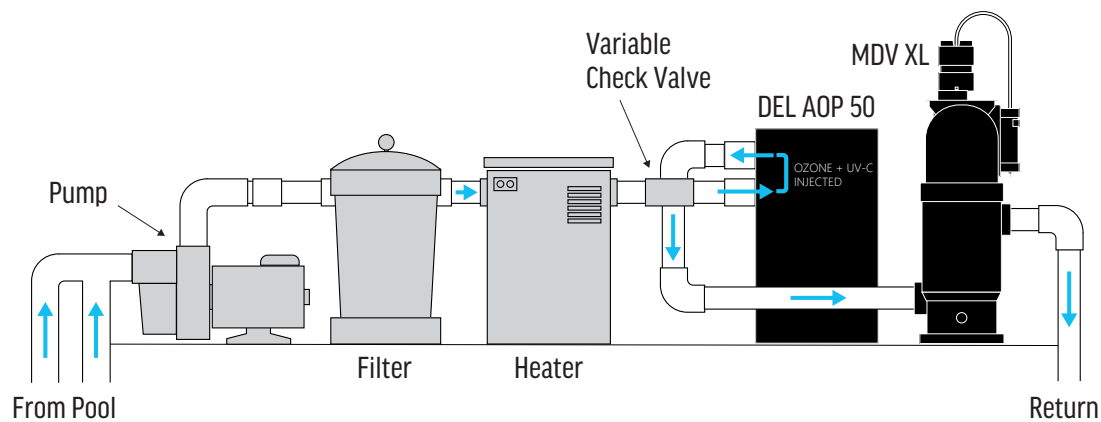
Using a solid copper conductor, connect the Grounding Lug to an appropriate earth contact.

OZONE & AOP 25 MDV INSTALL DIAGRAMS

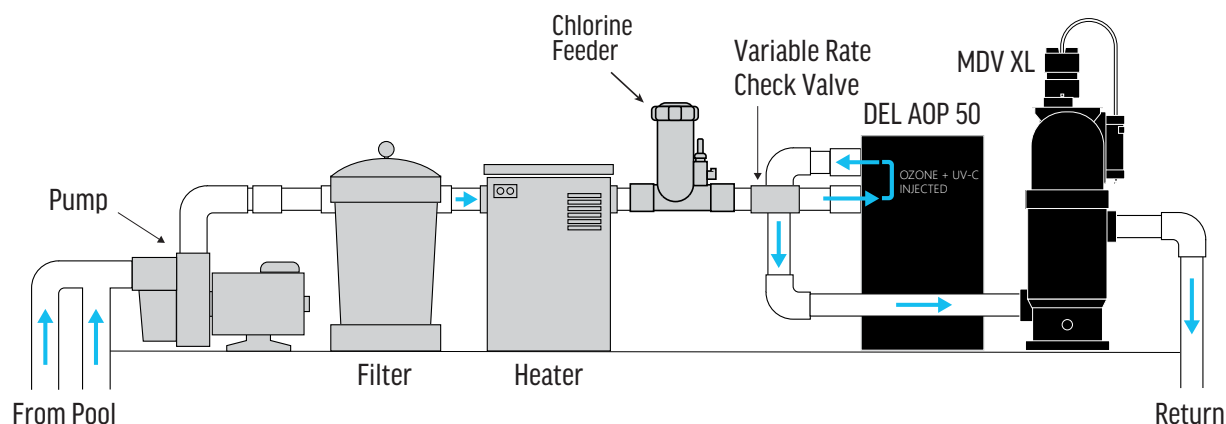


Installation diagrams are for quick reference only. For details consult product manuals or contact tech support.

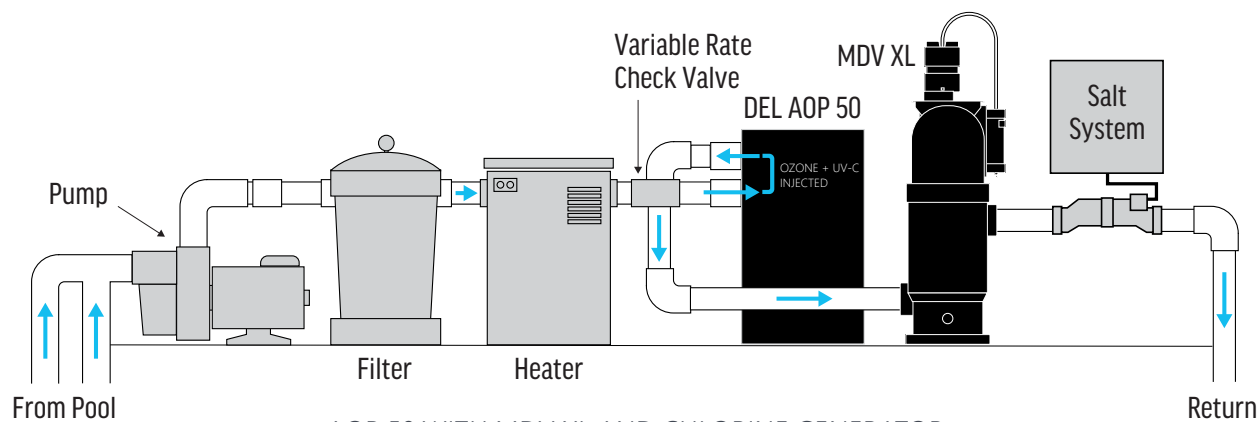
AOP 50 WITH MDV-XL INSTALL DIAGRAMS



AOP 50 WITH MDV XL



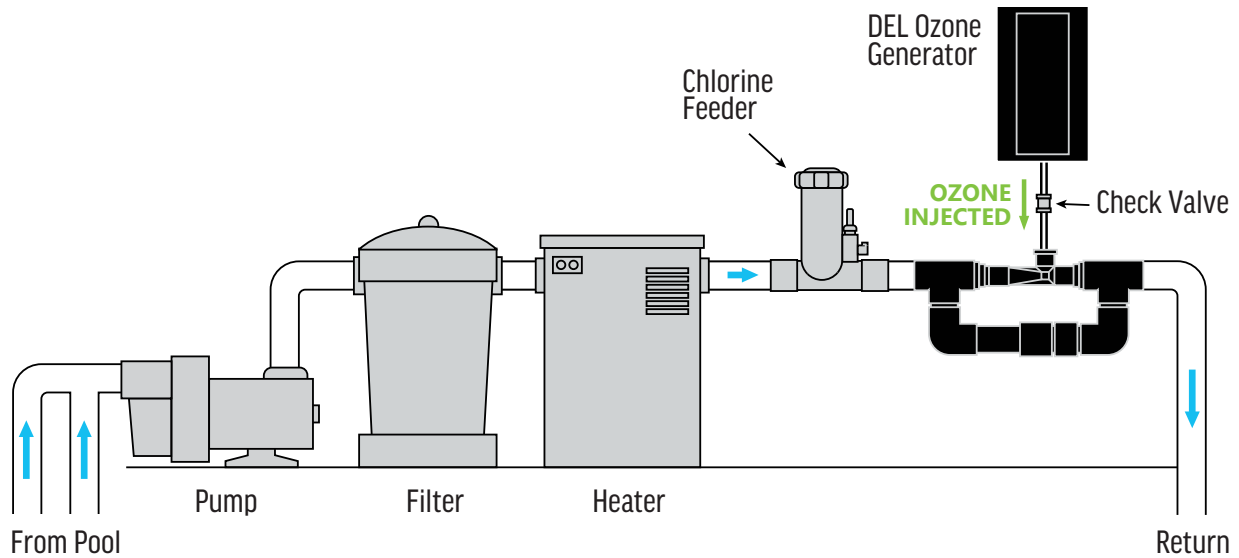
AOP 50 WITH MDV XL AND CHLORINE FEEDER



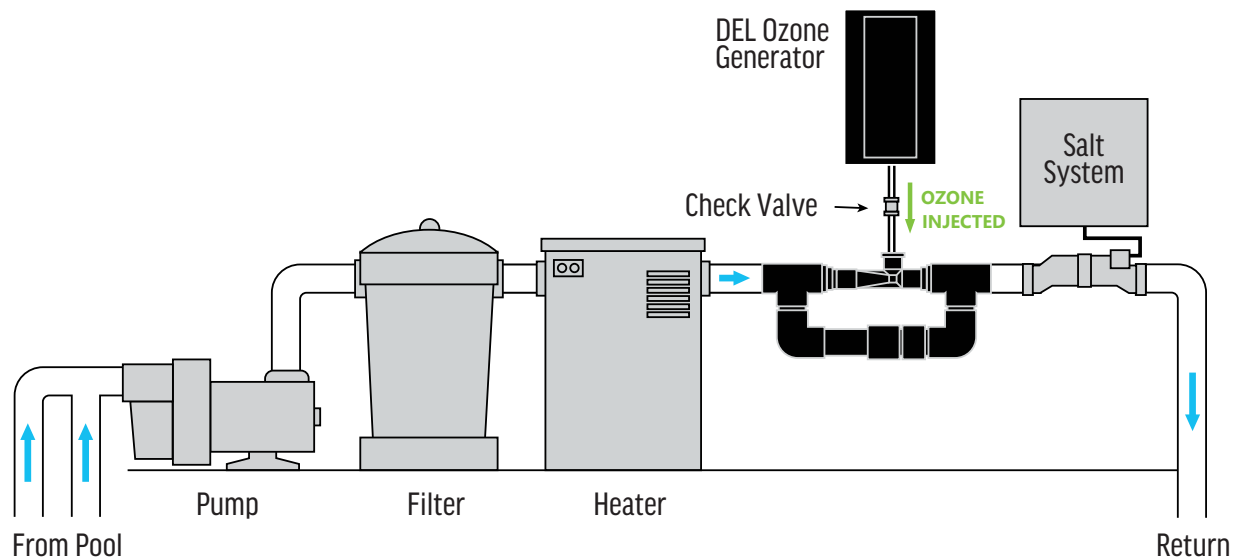
AOP 50 WITH MDV XL AND CHLORINE GENERATOR

Installation diagrams are for quick reference only. For details consult product manuals or contact tech support.

DEL OZONE WITH INJECTOR INSTALLATION DIAGRAMS



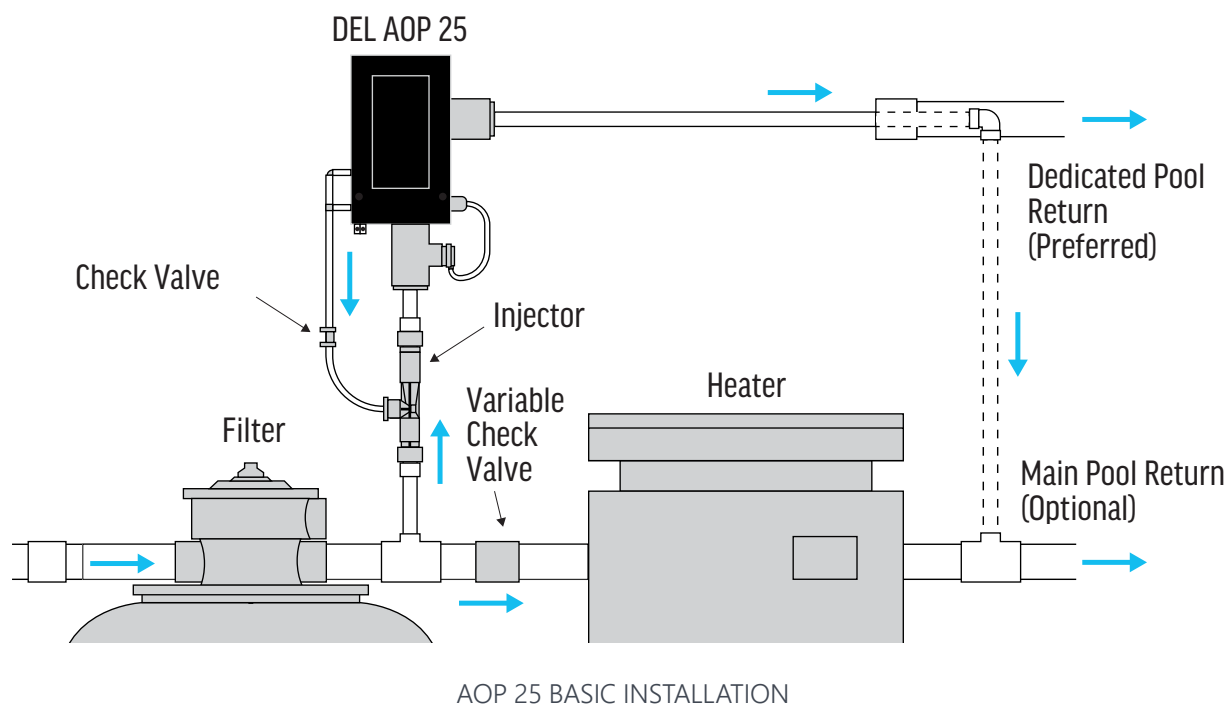
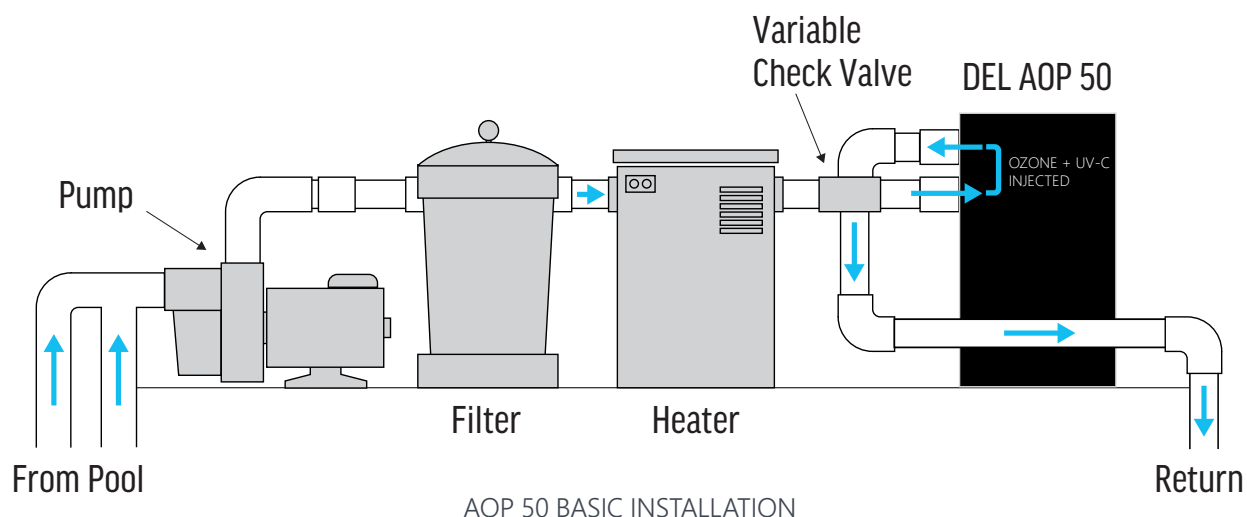
OZONE 25/50/100 WITH INJECTOR MANIFOLD KIT



OZONE 25/50/100 WITH SALT SYSTEM & INJECTOR MANIFOLD KIT,
(Ensure salt system is two feet from ozone generator)

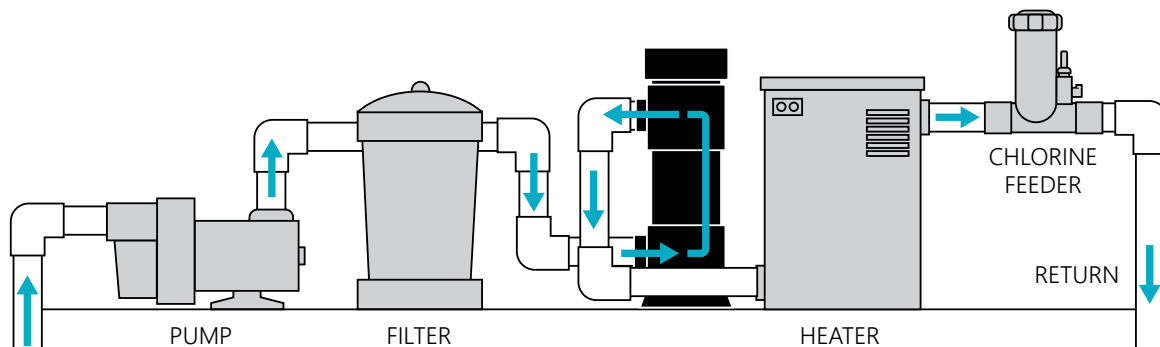
Installation diagrams are for quick reference only. For details consult product manuals or contact tech support.

DEL AOP BASIC INSTALLATION DIAGRAMS

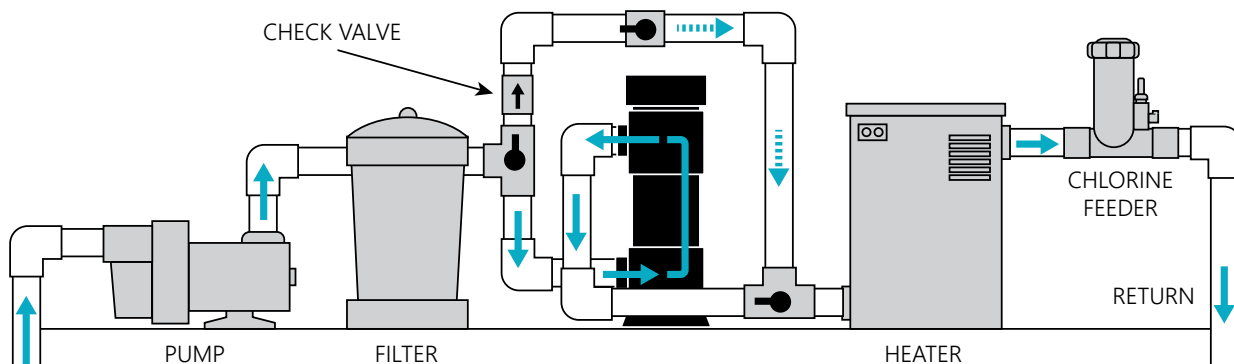


Installation diagrams are for quick reference only. For details consult product manuals or contact tech support.

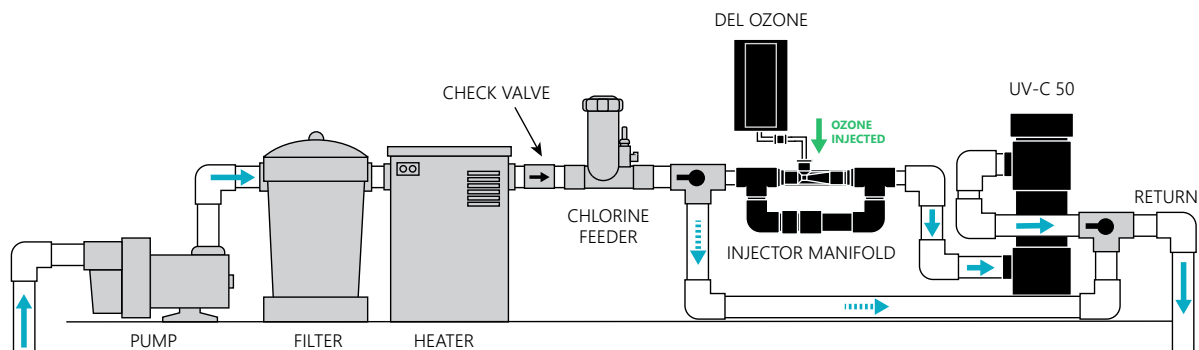
DEL UV-C INSTALLATION DIAGRAMS



UV-C 50 INLINE PLUMBING LOCATION



UV-C 50 WITH BYPASS VALVE



UV-C 50 WITH BYPASS VALVE & OZONE GENERATOR

Installation diagrams are for quick reference only. For details consult product manuals or contact tech support.

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

TERMS & CONDITIONS

- CONTACT** For written communication, including payment of invoices, please send to:
Custom Molded Products, LLC
36 Herring Road
Newnan, GA 30265
Phone: 770-632-7112 Fax: 770-632-7115
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Custom Molded Products warrants its products to be free of defects in material and workmanship for a period of one (1) year from the date of original purchase of the Custom Molded Products product unless otherwise noted. This Limited Warranty will be applicable only if the product manufactured by Custom Molded Products is the sole and exclusive cause of a defect which is covered by this Limited Warranty. Your sole and exclusive remedy against Custom Molded Products, LLC, arising from the purchase or use of a product manufactured by Custom Molded Products, LLC is limited to the repair or supply of a replacement product in substitution of the product which is determined to be defective (after examination, verification and approval by Custom Molded Products, LLC) with a product of equivalent quality. All other compensation of whatever nature is hereby expressly excluded. This Limited Warranty begins on the date of first purchase of a product from Custom Molded Products, LLC.

The Limited Warranty is extended to the party making the original purchase of products from Custom Molded Products, LLC and no warranty is made nor authorized to be made assignable on resale by the original purchaser of products from Custom Molded Products, LLC. The repair or replacement product issued by Custom Molded Products, LLC pursuant to this Limited Warranty shall be warranted for only the unexpired portion of the original Limited Warranty.

This Limited Warranty does not apply to component parts manufactured by others or for damage to products manufactured by Custom Molded Products, LLC if such damage is caused by component parts manufactured by others. For component products manufactured by others the warranty established by that respective manufacturer, if any, will be applicable.

THIS LIMITED WARRANTY DOES NOT COVER:

- Costs incurred in the shipment or cartage, removal and/or reinstallation (including but not limited to labor costs) with respect to the replacement product made available by Custom Molded Products, LLC pursuant to this Limited Warranty.
- Damage or improper operation of a product governed by this Limited Warranty to the extent same is caused by customer abuse, misuse, negligence, or failure to follow installation or operation instructions.
- Use for which the product is not designed.
- Fire, explosion, weather conditions or natural disasters.
- Faulty or improper installation.
- Ordinary wear and tear.
- Damage caused by negligent or improper maintenance procedures and other causes not specified, by beyond the control of Custom Molded Products, LLC.
- Improper packaging, repackaging or damage incurred in shipping.

In order for this Limited Warranty to be effective you must:

- Be the original purchaser of the product from Custom Molded Products, LLC.
- Have not structurally modified, misused or misapplied the product manufactured by Custom Molded Products.
- Have maintained the Custom Molded Products product in accordance with the instructions from Custom Molded Products, LLC or as described in maintenance materials provided by Custom Molded Products, LLC to you.
- Have complied with all terms for the payment of the Custom Molded Products product.
- Made your claim in writing to Custom Molded Products within the time provided and in accordance with the terms of this Limited Warranty.

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CUSTOM MOLDED PRODUCTS SHALL HAVE NO LIABILITY TO THE BUYER AND SHALL HAVE NO RESPONSIBILITY FOR THE COSTS OF LABOR, TRANSPORTATION OR OTHER COST INCURRED IN THE REMOVAL AND/OR INSTALLATION OF PRODUCTS MANUFACTURED BY CUSTOM MOLDED PRODUCTS COVERED BY THIS WARRANTY.

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This warranty is valid only in the United States of America.

TIME LIMIT ON COMMENCING LEGAL ACTION

It is agreed that you have 30 days from the accrual of a claim to inform CUSTOM MOLDED PRODUCTS, LLC. by registered mail with acknowledgement of receipt. It is agreed that you have one year from the accrual of a claim to commence any legal action arising from the purchase of a product manufactured by CUSTOM MOLDED PRODUCTS, LLC.

This Limited Warranty shall be governed by and construed in accordance with laws of the State of Georgia, except as to its principles of conflicts of laws, and CUSTOM MOLDED PRODUCTS, LLC and you irrevocably submit to the jurisdiction of the State of Georgia and the venue of Coweta County in any action brought by the parties hereto concerning this Limited Warranty or the performance by CUSTOM MOLDED PRODUCTS, LLC thereunder.

For communication related to replacement products or other issues respecting this Limited Warranty, please contact:

Custom Molded Products, LLC.
36 Herring Road, Newnan, Georgia 30265
Phone: 770.632.7112 FAX: 770.632.7115

NEW PRODUCT NAMES CROSS REFERENCE

To better communicate the different DEL Advanced Sanitizer technologies, our product names have been updated. The new product names are simple and easy to understand.

Each product is now named after the technology inside. The number indicates that the system is appropriate for pools up to the specified gallonage.

For example, the DEL AOP 25 is our AOP system designed for pools up to 25,000 gallons.

AOP SYSTEMS

DEL  AOP

Solar Eclipse 50	DEL AOP 25
Solar Eclipse	DEL AOP 50

OZONE SYSTEMS

DEL  ozone

Eclipse 10	DEL OZONE 25
Eclipse 20	DEL OZONE 50
Eclipse 40	DEL OZONE 100
Big Dipper	DEL OZONE ABG 25

UV SYSTEMS

DEL  UV-C

Eclipse UV	DEL UV-C 50
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DEL PRODUCT GUARANTEES



DEL products are environmentally friendly, reduce dependence on chemicals and are safe for every pool. DEL products go through significant quality checks to ensure chemical requirements are reduced and energy is efficiently optimized. UV-C has no by-products and the only by-product of AOP and Ozone is pure oxygen.



The DELCHECK® program warrants that all DEL products follow an established and consistent quality control program to ensure seamless operation and complete customer satisfaction. We follow these practices and apply these principles everyday as we continually innovate and improve as an organization. When you're looking for a superior water sanitation product, always look for the DELCHECK® stamp for your complete peace of mind.

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1-800-733-9060

ORDERS: CS@c-m-p.com

PRODUCT INFO: PoolSales@c-m-p.com

36 HERRING ROAD, NEWNAN, GA 30265