

ULTRAVIOLET STERILIZERS

The radiation from ultraviolet light at 2537 angstroms provided inside the Lifeguard Ultraviolet Sterilizer exerts a lethal effect on micro-organisms. UV light alters genetic material within the cells, which interrupts respiration. UV light, when used properly, is extremely beneficial in destroying disease causing pathogens as they pass through the unit. UV sterilization is an effective method of disease control.

Four major factors affect the percent kill of free-floating micro-organisms by UV radiation. (1) Size of organisms. (2) Radiation level. (3) The extent to which UV rays penetrate the water and (4) Contact time in which the micro-organism is exposed to the UV radiation.

Pure hard quartz material in the bulb dramatically increases UV output compared to other conventional bulbs of equal wattage. Pure quartz material resists solarization and improves the longevity of the bulb.

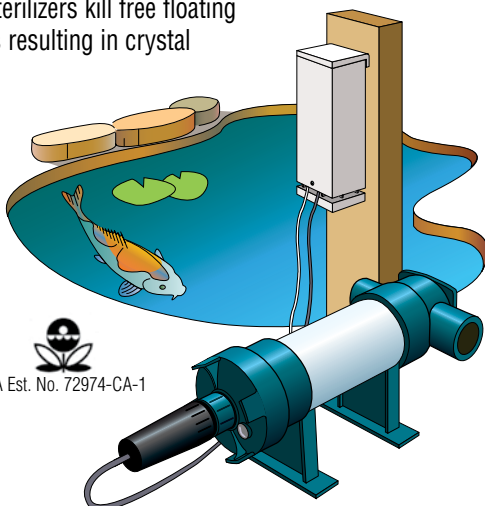
Unique test tube style pure hard quartz sleeve isolates the bulb from water contact preventing thermal shock, broken glass and mercury contamination of the aquarium. This quartz sleeve isolates the bulb to provide an optimal bulb operating temperature of 100°F (38°C). This higher bulb temperature increases UV output 35% over conventional units without sleeves. Bulb changing is the easiest in the industry. Simply slide the old bulb out and slide the new bulb in. No need to shut down the filter system or turn off the pump. Bulb and ballast connect together with a single 4 pin connector.

UV radiation levels can be increased by slowing down the flow rate or increasing the total wattage in the system.

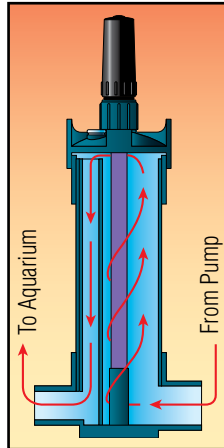
UV sterilizers are available from 15 watts up to 240 watts. Tandem mounting will provide proper wattage for any installation requirement. UV sterilization is most effective when used as the final stage of the Lifeguard filtration system.

It must be understood that micro-organisms reproduce exponentially. The goal is to reduce the micro-organism population to an acceptable level. In certain instances, the wattage may be adequate to eliminate the pathogens flowing through the Sterilizer but the flow rate is too slow to keep up with the total micro-organism population in the aquarium system. In those cases, the flow rate and total wattage must be increased.

Ultraviolet sterilizers kill free floating algae in ponds resulting in crystal clear water.



UV Sterilizer Flow



Splash Boot & Boot Cap

Creates water resistant seal around electrical connection.

Clear View Port

Solid cap features clear view port to allow visible light (no UV) to pass through and indicate bulb is operating.

Quartz Sleeve

Test tube style isolates UV bulb from water contact allowing it to operate at the optimum bulb temperature for maximum UV output. Highest quality pure hard quartz material allows maximum UV transmission.

Internal Overflow Pipe

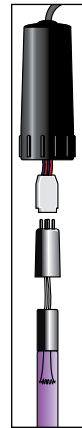
Replaceable pipe automatically vents air from chamber and directs 100% of the water flow past UV light.

Inner Protective Sleeve

Replaceable sleeve protects outer housing from long term UV damage. Acts as an internal reflector maximizing UV efficiency.

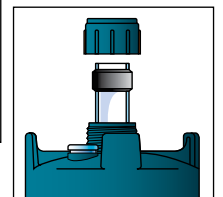
Modular Construction

Allows simple connection to any Lifeguard Modular filter system or outside canister filter.



Ease of Replacement

Unique 4-pin connector design for easy bulb replacement without shutting down the system.



Compression Coupling & Gasket

Seals quartz sleeve to cap.

Ballast

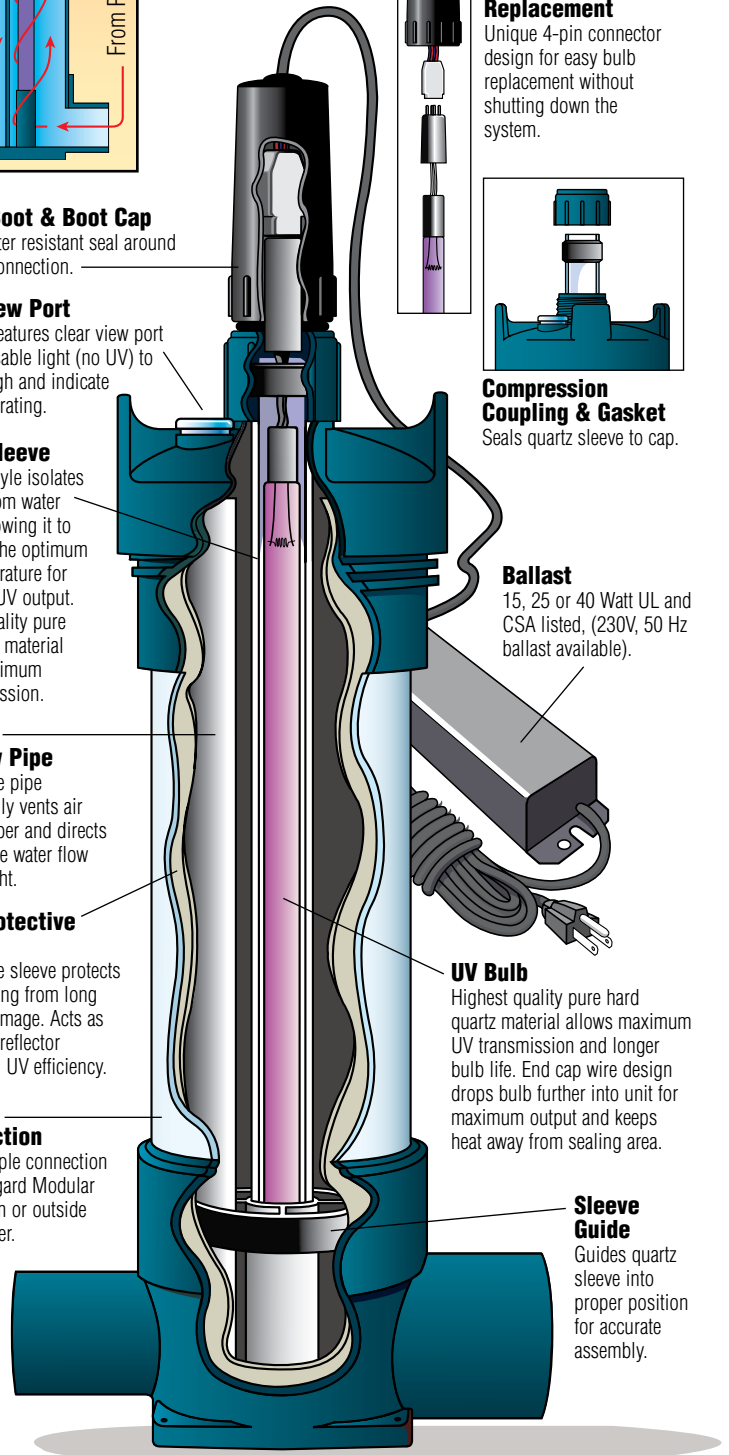
15, 25 or 40 Watt UL and CSA listed, (230V, 50 Hz ballast available).

UV Bulb

Highest quality pure hard quartz material allows maximum UV transmission and longer bulb life. End cap wire design drops bulb further into unit for maximum output and keeps heat away from sealing area.

Sleeve Guide

Guides quartz sleeve into proper position for accurate assembly.



ULTRAVIOLET STERILIZERS MODULES



A Typical LIFEGARD Commercial Filtration System

LIFEGARD UV Radiation Levels		
Wattage	Bulb Length	Average Output ($\mu\text{W} \cdot \text{s}/\text{CM}^2$)
15W	11 $\frac{1}{2}$ " (29.21 cm)	12,470
25W	17 $\frac{1}{4}$ " (43.82 cm)	15,900
40W	31 $\frac{1}{2}$ " (80.01 cm)	15,910

UV REPLACEMENT BULBS

Available in 15 Watt, 25 Watt, and 40 Watt sizes.



Killing Dose in Microwatt Seconds/CM² ($\mu\text{W} \cdot \text{s}/\text{CM}^2$)

BACTERIA	
Bacillus anthracis.....	8,700
Bacillus megatherium sp (veg).....	2,500
Bacillus megatherium (spores).....	5,200
Bacillus paratyphosus.....	6,100
Bacillus subtilis (mixed).....	11,000
Bacillus subtilis (spores).....	22,000
Clostridium tetani.....	22,000
Corynebacterium, Diphtheria.....	6,500
Dysentery bacilli.....	4,200
Eberthella typhosa.....	4,100
Escherichia coli.....	6,600
Micrococcus candidus.....	12,300
Micrococcus piltonensis.....	15,000
Micrococcus sphaeroides.....	15,400
Mycobacterium tuberculosis.....	10,000
Neisseria catarrhalis.....	8,500
Phytomonas tumefaciens.....	8,500
Proteus vulgaris.....	6,600
Pseudomonas aeruginosa.....	10,500
Pseudomonas fluorescens.....	6,600
Salmonella sp.....	10,000
Salmonella enteritidis.....	7,600
Salmonella typhimurium (ave).....	15,200
Sarcina lutea.....	26,400
Serratia marcescens.....	6,160
Shigella paradyseuterae.....	3,400
Spirillum rubrum.....	6,160
Staphylococcus albus.....	5,700
Staphylococcus aureus.....	6,600
Staphylococcus hemolyticus.....	5,500
Streptococcus lactis.....	8,800
Streptococcus viridans.....	3,800
YEAST	
Saccharomyces ellipsoideus.....	13,200
Saccharomyces sp.....	17,600
Saccharomyces cerevisiae.....	13,200
Brewer's Yeast.....	6,600
Baker's Yeast.....	8,800
Common Yeast Cake.....	13,200
MOLD SPORES	
Penicillium roqueforti.....	26,400
Penicillium expansum.....	22,000
Penicillium digitatum.....	88,000
Aspergillus glaucus.....	88,000
Aspergillus flavus.....	99,000
Aspergillus niger.....	330,000
Rhizopus nigricans.....	220,000
Mucor racemosus A.....	35,200
Mucor racemosus B.....	35,200
Oospora lactis.....	11,000
VIRUS	
Bacteriophage (E. coli).....	6,600
Tobacco Mosaic.....	440,000
Influenza.....	3,400
PROTOZOA	
Paramecium.....	200,000
Nematode Eggs.....	92,000
Chlorella vulgaris (algae).....	22,000
FUNGI	
.....	45,000



ULTRAVIOLET STERILIZER MODULE Specifications

PART NO.	MODEL NO.	DESCRIPTION	PORT SIZE		FILTER DIMENSIONS			MAINT. CLEAR.	STD. CART.	SHIPPING WEIGHT	MAX. FLOW RATE	
			INLET	OUTLET	HEIGHT	WIDTH	DEPTH				GPH	L/HR
R177080	QL-15	15 Watt UV Module	1 $\frac{1}{4}$ " Slip (3.18 cm)	1" Slip (2.54 cm)	17" (43.18 cm)	7" (17.78 cm)	4 $\frac{3}{4}$ " (12.07 cm)	27" (68.58 cm)	4	24 lbs.(10.80 kg)	Up to 240	912
R177250	QL-25	25 Watt UV Module	1 $\frac{1}{4}$ " Slip (3.18 cm)	1" Slip (2.54 cm)	26 $\frac{3}{4}$ " (67.95 cm)	7" (17.78 cm)	4 $\frac{3}{4}$ " (12.07 cm)	42 $\frac{3}{4}$ " (108.59 cm)	1	7 lbs.(3.15 kg)	Up to 760	2888
R177300	QL-40	40 Watt UV Module	1 $\frac{1}{4}$ " Slip (3.18 cm)	1" Slip (2.54 cm)	34 $\frac{1}{2}$ " (87.63 cm)	7" (17.78 cm)	4 $\frac{3}{4}$ " (12.07 cm)	64 $\frac{1}{2}$ " (163.83 cm)	1	8 lbs.(3.60 kg)	Up to 1500	5700
R177300C	QL-80	80 Watt UV Module	1 $\frac{1}{4}$ " FPT (3.18 cm)	1 $\frac{1}{4}$ " FPT (3.18 cm)	45 $\frac{1}{4}$ " (114.94 cm)	6" (15.24 cm)	15 $\frac{1}{4}$ " (38.74 cm)	75 $\frac{1}{4}$ " (191.14 cm)	1	22 lbs.(9.90 kg)	Up to 3000	11,400
R177300B	QL-120	120 Watt UV Module	1 $\frac{1}{2}$ " FPT (3.81 cm)	1 $\frac{1}{2}$ " FPT (3.81 cm)	45 $\frac{1}{4}$ " (114.94 cm)	6" (15.24 cm)	22" (55.88 cm)	75 $\frac{1}{4}$ " (191.14 cm)	1	34 lbs.(15.30 kg)	Up to 4500	17,100
R177304A	QL-160	160 Watt UV Module	2" Slip (5.08 cm)	2" Slip (5.08 cm)	45 $\frac{1}{4}$ " (114.94 cm)	11 $\frac{3}{4}$ " (29.85 cm)	18" (45.72 cm)	75 $\frac{1}{4}$ " (191.14 cm)	1	39 lbs.(17.55 kg)	Up to 6000	22,800
R177305A	QL-240	240 Watt UV Module	2" Slip (5.08 cm)	2" Slip (5.08 cm)	45 $\frac{1}{4}$ " (114.94 cm)	11 $\frac{3}{4}$ " (29.85 cm)	24" (60.96 cm)	75 $\frac{1}{4}$ " (191.14 cm)	1	54 lbs.(24.30 kg)	Up to 9000	34,200

* Higher flows will result in reduced effectiveness; however, this reduction is not directly proportional to the increased flow. For example, the QL-40 was tested at 1500 GPH and produced a 99.33% reduction in bacteria (E. coli). Increasing the flow 25% to 2000 GPH decreased the effectiveness to 97%, a reduction of only 2.33%.

NOTES: 230V 50Hz models available on special request (add "E" after part no.).

SLIP = PVC solvent socket type fittings

** Port size dimensions listed are pipe size. All slip models of Lifegard Mechanical, Chemical, Heater, and UV Sterilizers include 3/4" threaded reducing bushings in the package if threaded installation is desired.