®

# ULTRAVIOLET WATER PURIFIERS


**Model 12 GPM**

## ADVANTAGES

### *Effective*
Virtually all microorganisms are susceptible to **MIGHTYPURE®** ultraviolet disinfection

### *Economical*
Hundreds of gallons are purified for each penny of operating cost

### *Safe*
No danger of overdosing, no addition of chemicals

### *Fast*
Water is ready for use as soon as it leaves the purifier – no further contact time required

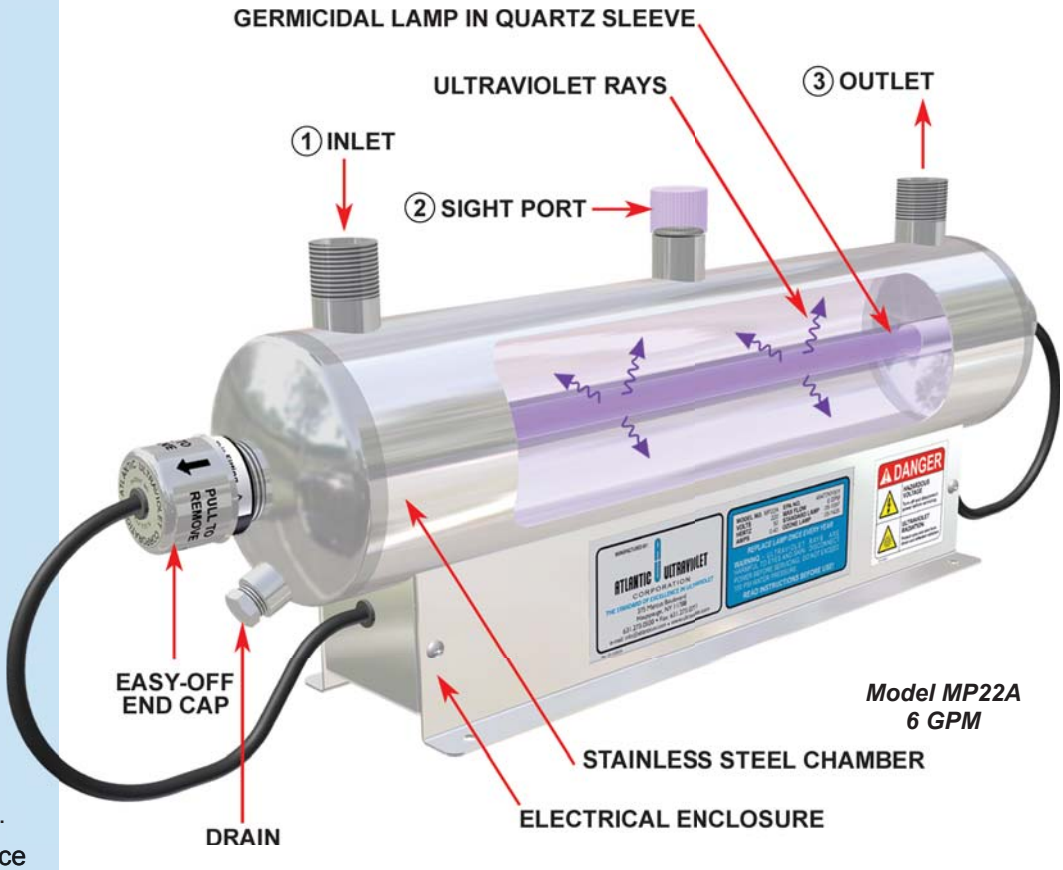
### *Easy*
Simple installation and maintenance. Compact units require minimum space

### *Automatic*
Provides continuous disinfection without special attention or measurement

### *Chemical Free*
No chlorine taste or corrosion problems

### *Versatile*
Capacities available from 3 to 20 gallons per minute (g.p.m.)

## PRINCIPLE OF OPERATION



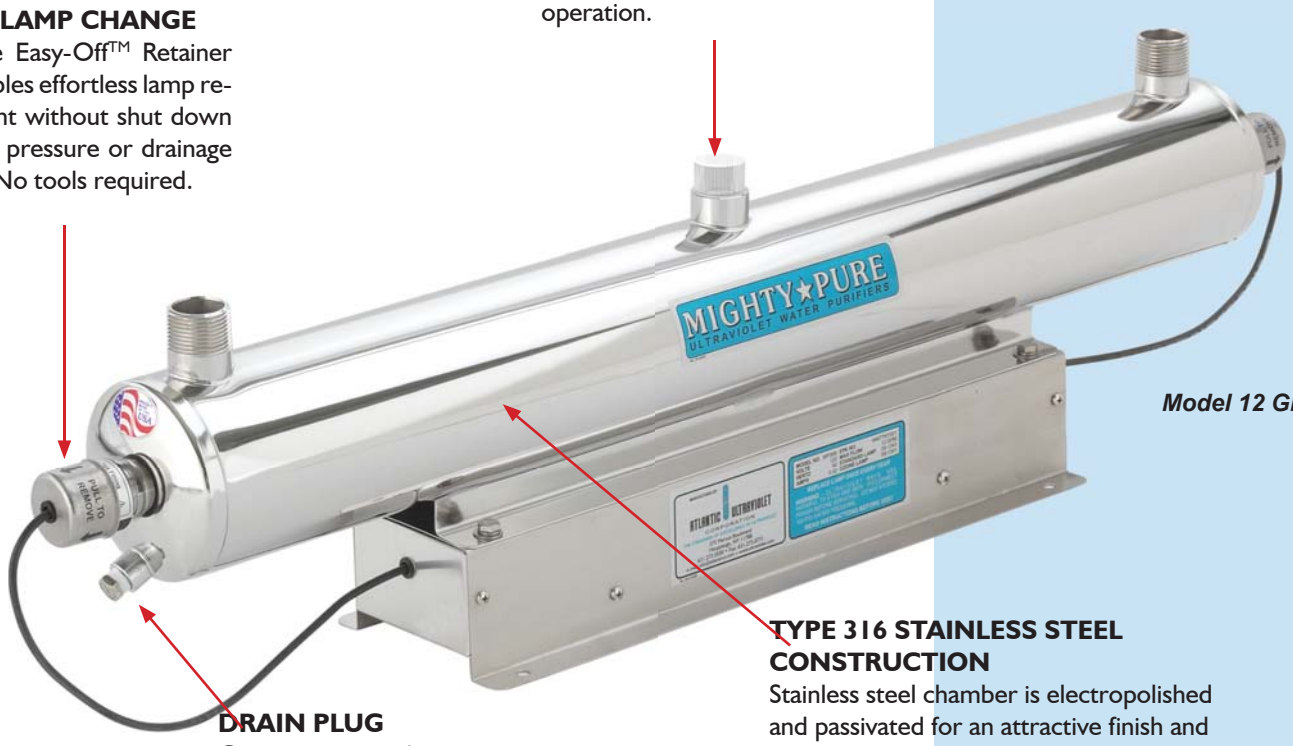

*Model MP22A*
*6 GPM*

1. The water enters the purifier and flows into the annular space between the quartz sleeve and the chamber wall.
2. Translucent sight port provides positive indication of germicidal lamp operation.
3. Water leaving the purifier is instantly ready for use.

# SPECIAL FEATURES

**SIGHT PORT PLUG**
Visible glow provides positive indication of germicidal lamp operation.

**QUICK LAMP CHANGE**
Exclusive Easy-Off™ Retainer Cap enables effortless lamp replacement without shut down of water pressure or drainage of tank. No tools required.




*Model 12 GPM*

**TYPE 316 STAINLESS STEEL CONSTRUCTION**
Stainless steel chamber is electropolished and passivated for an attractive finish and dependable service.

**DRAIN PLUG**
Convenient, in-place drainage of purifier chamber.

**FUSED QUARTZ SLEEVE**
Insures optimum lamp output at normal potable water temperatures. (See interior detail page 3.)

## INSTALLATION & MAINTENANCE

The purifier is installed horizontally as close as possible to the point of use. Connection of the inlet and outlet to water supply and insertion of power plug into 3-wire grounded GFCI outlet is all that is required.

Ordinary maintenance consists of routine cleaning of the quartz sleeve once monthly or more frequently where conditons dictate. Lamp replacement is recommended every 10,000 hours of operation (approximately 14 months of continuous service).

# OPTIONAL ACCESSORIES

**Audio Alarm**
Activated by the Sentry™ or Guardian™- alerts user to any malfunction detected

**Elapsed Time Indicator**
Real-time, non-resettable display of accumulated operating hours

**Solenoid Valves**
Operates with the Guardian™ or Sentry™ and prevents flow during detected malfunction-available in nylon or brass

**Time Delay Mechanism**
Operates with Guardian™ or Sentry™ and solenoid valve to provide a 2-minute warm-up period for lamp to achieve full germicidal output

**Flow Control Valves**
Limits water flow to rated capacities-available in PVC and stainless steel

**Wall Mounting Kit**
Stainless steel material provides professional finish. Pre-drilled and ready for quick and easy mounting of water purifier-optimizes free air circulation to cool ballast housing

**Quantum Thermal Optimizer**
Used to help regulate the water temperature inside the purifier's chamber

# MONITORING OPTIONS

## Good

The Lamp Status Alarm monitors visible light emitted through the sight port plug of the water purifier and activates an audible alarm when visible light falls below acceptable levels.

- Easy installation, no tools required
- Mounts on the sight port plug
- Operates on a 9v battery
- Monitors the visible light emitted by the ultraviolet lamp (does not monitor the ultraviolet intensity)
- Warns of lamp or power failure
- Produces a high frequency tone, pulsed at two to three cycles per second
- Available with Remote Sounder
- Available with Dry Contact for Connection to PLC
- Optional 120v 60Hz Power Adapter available
- Available for use with all and models

## Better

The Safety Sensor provides constant monitoring of the water purifier's ballast and germicidal lamp operation to give an indication of ballast and germicidal lamp status. The Safety Sensor is capable of operating an optional audio alarm and/or solenoid valve.

- Easy installation
- Plug into an electrical outlet, then plug water purifier into
- Operates optional Solenoid Valve and/or Audio Alarm
- Easily adaptable for use with other water purifier brands
- Warns of lamp failure
- Available for 120v 50/60Hz or 220v 50/60Hz water purifiers operating with electronic ballasts
- Available for use with most models

## Best




The Ultraviolet Monitor visually indicates the level of germicidal ultraviolet energy that penetrates the quartz sleeve and the water within the disinfection chamber. The Ultraviolet Monitor is capable of operating an optional Audio Alarm and Solenoid Valve. In addition, the Ultraviolet Monitor will detect loss of ultraviolet due to lamp outage, component or power failure. Use of the Ultraviolet Monitor is recommended by the US Public Health Service "Criteria for the Acceptability of an Ultraviolet Disinfection Unit".

The Ultraviolet Monitor will detect reduction of ultraviolet levels due to:
1. Fouling or deposits on quartz sleeve.
2. Poor ultraviolet transmission through the water. (Color, turbidity, organic or other impurities in the water can reduce or interfere with the transmission of ultraviolet rays.)
3. Depreciation of lamp output due to usage or other cause. (Lamp output gradually depreciates with use. Lamp replacement is recommended once each year.)

The Ultraviolet Monitor has three models; Analog, Digital and Digital Remote. Voltage Configurations include 120V 50/60Hz, 220-240V 50/60 Hz, or 12VDC. Contact factory for special requirements. NOTE: Ultraviolet Monitor (analog, digital or digital remote) can be purchased and installed with the water purifier or at a later date for an existing installation.

The Ultraviolet Analog and Digital Monitors are mounted directly onto the water purifier. The sensor probe (included) is threaded into the sight port fitting of the ultraviolet water purifier. The aluminum collar on the bottom of the Ultraviolet Analog or Digital Monitor is secured over the sensor probe.

The Ultraviolet Digital Remote Monitor is intended for use in a location away from the water purifier that is being monitored. In all other respects, the remote behaves the same as the standard Mounted on the back of the remote monitor is a socket into which the lead from an ultraviolet sensor is connected. Instead of being mounted inside the monitor housing, this sensor is contained within the remote probe. A standard length for the connecting cable supplied with the probe is 50 ft., but the lead length may be extended if desired. Please contact the factory for additional lengths.
- Available for use with all models

Options may be obtained when purchase of unit is made or added at a later date. For further details visit our website at **www.msecompany.net**

# ULTRAVIOLET DOSAGE

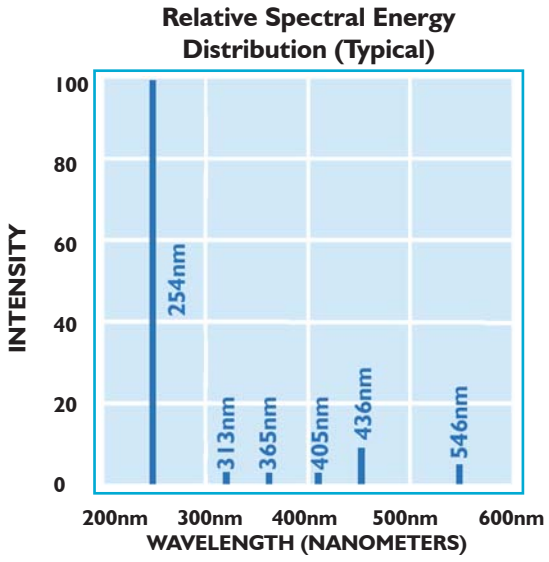
Germicidal lamps provide effective protection against microorganisms. A small cross-section is shown below.

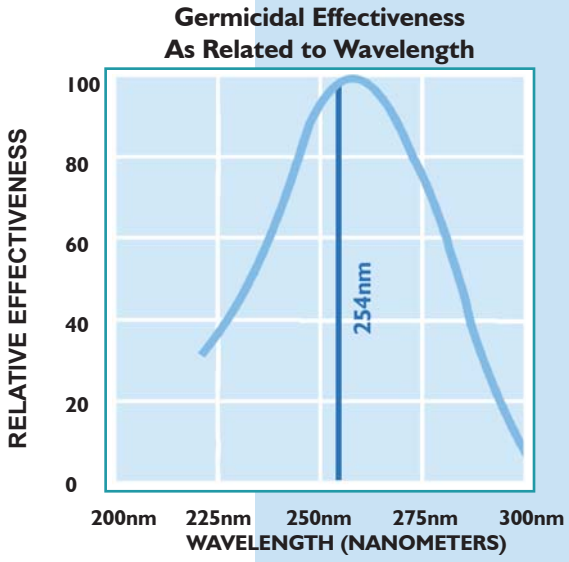
| ORGANISM | ALTERNATE NAME | TYPE | DISEASE | DOSE* |
|---|---|---|---|---|
| *Bacillus subtilis spores* | *B. subtilis* | Bacteria | ———— | 22,000 |
| Bacteriophage | Phage | Virus | ———— | 6,600 |
| Coxsackie virus | ———— | Virus | Intestinal infection | 6,300 |
| *Shigella spores* | ———— | Bacteria | Bacterial Dysentery | 4,200 |
| *Escherichia coli* | *E. coli* | Bacteria | Food poisoning | 6,600 |
| Fecal coliform | ———— | Bacteria | Intestinal infection | 6,600 |
| Hepatitis A virus | Infectious Hepatitis virus | Virus | Hepatitis of the liver | 8,000 |
| Influenza virus | Flu virus | Virus | Influenza | 6,600 |
| *Legionella pneumophila* | ———— | Bacteria | Legionnaires' Disease | 12,300 |
| *Salmonella typhi* | ———— | Bacteria | Typhoid Fever | 7,000 |
| *Staphylococcus aureus* | Staph | Bacteria | Food poisoning, Toxic Shock Syndrome, etc. | 6,600 |
| *Streptococcus spores* | Strep | Bacteria | Strep throat | 3,800 |

When used as directed to disinfect clear water, Water Purifiers provide an ultraviolet dosage in excess of 30,000 microwatt seconds per square centimeter (µWSec/cm2).

* Nominal Ultraviolet dosage (µWSec/cm2) necessary to inactivate better than 99% of specific microorganism. Consult factory for more complete listing.

## OPERATING CHARACTERISTICS




Approximately 95% of the ultraviolet energy emitted from **STER-L-RAY**™ germicidal lamps is at the mercury resonance line of 254 nanometers, the region of germicidal effectiveness most destructive to bacteria, mold and virus.

# GENUINE *STER-L-RAY*® GERMICIDAL LAMPS

***STER-L-RAY***® Germicidal Lamps are shortwave, low pressure mercury vapor discharge tubes that produce ultraviolet wavelengths lethal to microorganisms.

***STER-L-RAY***® Germicidal Lamps are well suited to applications requiring high ultraviolet intensity such as water sterilization.

***STER-L-RAY***® Slimline Germicidal Lamps are instant starting and utilize a coil filament on each end which operates hot. Lamp life is governed by the life of the electrodes and is affected by the frequency of starting.

***STER-L-RAY***® Preheat Germicidal Lamps are operated by a preheat-start circuit that employs a compact and economical ballast. The preheat circuit requires four electrical connections per lamp and a slight to moderate delay is needed to start the lamp.

***Slimline Germicidal Lamps***


***Preheat Germicidal Lamps***




CAUTION: Exposure to direct or reflected germicidal ultraviolet rays will cause painful eye irritation and reddening of the skin. Personnel subject to such exposure must wear suitable faceshield, gloves and protective clothing.

Hg - LAMP CONTAINS MERCURY, manage in accord with disposal laws, see: www.lamprecycle.org.

## GERMICIDAL LAMP DATA

| Lamp Number | Purifier Model No. | Nominal Lamp Length | Power Consumption [1] | Ultraviolet Output [2] | Rated Effective Life |
|---|---|---|---|---|---|
| 05-1098-R | MP16A | 11⅞" (302mm) | 14 Watts | 4.0 Watts | 10,000 Hrs. |
| 05-1097-R | MP22A | 17¾" (451mm) | 21 Watts | 7.3 Watts | 10,000 Hrs. |
| 05-1343-R | MP36C | 33⅞" (860mm) | 41 Watts | 15.0 Watts | 10,000 Hrs. |
| 05-1334-R | MP49C | 45⅞" (1165mm) | 55 Watts | 21.0 Watts | 10,000 Hrs. |

1 Wattage is lamp watts only and does not include ballast loss (approximate).
2 Maximum rated output at 254 nanometers.

The lamps listed above have been especially developed and are recommended for use with Water Purifiers.

All ***STER-L-RAY***® lamps used in these units are low pressure type which afford the maximum efficiency in producing the required germicidal rays. In addition, has advantage of high efficiency and low power requirements.

# STANDARD MODELS


**Model MP36C**
**12 GPM**

# WATER QUALITY RECOMMENDATIONS

**Maximum Concentration Levels Before Ultraviolet**

| | |
|---|---|
| *Turbidity* | *5 NTU* |
| *Suspended Solids* | *10 mg/L* |
| *Color* | *None* |
| *Iron* | *0.3 mg/L* |
| *Manganese* | *0.05 mg/L* |
| *pH* | *6.5 - 9.5* |
| *Hardness* | *6 gpg* |

Effectively treating water with higher concentration levels than listed above can be accomplished, but may require added measures to improve water quality to treatable levels.

| Model | Gallons per Minute | Gallons per Hour | ① Inlet and Outlet | Replacement Lamps | ② Power Consumption | Unit Dimensions (Inches) | | | Shipping Data (lbs.) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Length | Width | Height | Gross Wt. | Net Wt. |
| MP16A | 3 | 180 | 3/4” NPT | 05-1098-R | 18 Watts | 16 ½ | 4 5/16 | 8 3/8 | 10 | 9 |
| MP22A | 6 | 360 | 3/4” NPT | 05-1097-R | 25 Watts | 22 ½ | 4 5/16 | 8 3/8 | 13 | 11 |
| * MP36C | 12 | 720 | 1” NPT | 05-1343-R | 48 Watts | 36 ½ | 5 11/16 | 9 ½ | 30 | 25 |
| MP49C | 20 | 1,200 | 1-1/2” NPT | 05-1334-R | 65 Watts | 49 ½ | 5 11/16 | 9 ½ | 34 | 29 |

① All inlets and outlets are male pipe threads.
② Total power consumption including ballast loss (approximate).

- Maximum recommended operating pressure for all purifiers is 100 PSI
- Pressure drop at maximum recommended flow rate is 5 PSI or less
- Flow rates are based on Maximum Concentration Levels
- All data shown reflects 120 Volt 50/60 Hz operation
- Units are also available in 220 Volt 50/60 Hz and 12 and 24 Volt DC
- Available for operation on public power supplied throughout the world
- Consult factory with specific power requirements

*** CE Compliant version available.**

# APPLICATIONS FOR ULTRAVIOLET WATER PURIFICATIONS

**Residential & Recreational...**
- point of use installation
- under the sink
- water vending machines
- whole house purification
- well water disinfection
- water cistern sterilizers
- rural water systems
- recreational vehicles
- motor homes & trailers
- airplanes
- boats
- hot tubs & spas
- swimming pools
- fish ponds
- koi ponds
- water gardens
- lakes
- ornamental ponds
- fountain water features
- aquariums
- hatcheries
- rainwater collection
- water dispensing appliances

**Institution systems...**
- laboratories
- hospital
- clinics
- maternity areas
- labor & delivery areas
- pathology labs
- kidney dialysis labs
- nursing homes
- universities
- schools
- veterinary clinics

**Transient systems...**
- resorts, hotels, & motels
- ships, yachts, boats
- campgrounds
- restaurants
- water parks
- amusement parks
- golf course water holes

**Community systems...**
- apartment complexes
- condominium complexes
- trailer parks
- rural water
- villages, towns, cities
- farms & ranches
- animal husbandry

**Industry systems...**
- pharmaceutical mfg.
- electronic production
- cosmetic production
- cooling tower
- power generation
- nurseries
- food industry
- ice makers
- pulp & paper production
- -water vending machines
- laundry water
- pure wash water
- bottled water
- beer, wine
- soft drinks
- fruit juices
- bottling facilities
- edible oils
- liquid sugar
- sweeteners
- water based lubricants
- dairy processing
- cistern applications
- mollusk hatcheries
- water preserves

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- TOC Reduction
- Ozone Reduction

# APPLICATIONS FOR ULTRAVIOLET WATER PURIFICATIONS

The unique advantage of the UV method of sterilization of water is that nothing is added to the water. When chemical methods of treatment are used there may be handling problems, taste and odor problems, and undesirable chemical reactions with substances present in the water.

This difference is most significant when producing water for drinking or swimming, processing foods and bottled beverages, manufacturing cosmetics or pharmaceuticals, use in hospitals and research institutions, and tertiary treatment of municipal or industrial wastewater.

**The versatility of UV purif cation includes:**

**UV purif cation produces germ-free potable water for home, institutional and municipal use.**

- for application to water wells; bacterial contamination of wells is unpredictable and may occur from seepage of surface water or sewage.
- for installation on outlet side of water cisterns, most cisterns foster the proliferation of bacteria in untreated water.
- for swimming pools; to control bacteria, algae and slime formation. It avoids the undesirable effects of heavily chlorinated swimming pool water by allowing substantial reduction of the use of chlorine.

**It provides bacteria-free food process water without the use of germicides, oxidants, algaecides or chemical precipitants; particularly applicable where chlorine adversely affects f avor.**

- for the brewery, winery, soft drink, and water bottling industries, where biological purity of the water must be absolutely maintained in order to insure product quality.
- for safeguarding against spoilage of dairy products, e.g., cottage cheese and butter; certain psycrophilic bacteria are resistant to chlorine treatment.
- for sterile washwater; to guard against waterborne bacteria spoilage where vegetable, fruits, meats, fish and other products must be washed in water before packaging.

**UV purif cation is particularly useful in applications where chlorine-free, de-ionized and/or carbon f ltered water are extensively employed. Unattended carbon f lters and ion-exchange tanks act as incubators for bacteria accumulation.**

- for electronics; in conjunction with de-ionized and high purity water systems.
- for pharmaceuticals and cosmetics; strict water treatment standards are necessary for strict maintenance of product's quality control.
- for biological laboratories; sterile water is required for testing and research work.
- for hospitals; provides ultra-pure water on demand for maternity labor and delivery areas, pathology labs, etc.

**In industrial pollution control, it affords an excellent end-treatment for positive protection in wastewater control systems.**

- for selective use as a tertiary treatment for bacteria destruction after removal of chemicals and other objectionable ingredients