

Biostat Water

Clear water Treatment Plant

Models CWPUV20 - CWPUV300



Technical Specifications

(Ultraviolet Version)

CWPUV Series Technical Specification

CLEAR WATER PLANT – BACSTOP TST - ULTRAVIOLET

CWPUV Series Applications

The Clean Water Plant (CWPUV) is designed as a water filtration and disinfection unit for use with water containing not more than background turbidity of 0.1 – 30.0 NTU* and combines ultraviolet, tetrasilver oxide (TST), activated carbon and sedimentary filtration. Electrically generated UV, erosion through agitation of TST balls in the water, Inline Solid block or bulk granular activated carbon filters (SBAC) and specifically sized sedimentary filters kills bacteria and some other pathogens, and removes some pesticides. UV does not produce any taste or odour in the water. Activated carbon filters absorb organic compounds and can remove them from the water. These filters can remove volatile organic compounds, some pesticides, radon gas, hydrogen sulphide and mercury. The sedimentary filters remove sand and other particulate material.

* Water with higher turbidity will prematurely block filters. For water with higher turbidity use DWP Series.

* Not for sewage or waste water

CWPUV Series Components

BacStop TST Dispenser

The BacStop TST technology is a method of treating water to kill bacteria and prevent the growth/re-growth of microbes harmful to humans and animals. Using metal ions, principally nano concentrations of polyvalent silver oxide. TST is released into the water by erosion of a solid balls made from silver oxide (TST). The balls are contained and dispensed from within a special inline dispenser. The system takes advantage of the oligodynamic effect provided by the addition of silver to water.

Sedimentary Filter

All machines have a cartridge filter system located after the BacStop dispenser. The filters are nominally rated at 1-10 micron (depending upon conditions), all particles larger than the specific sized filter will be removed from the inlet stream. The filter system is meant to remove large particles, which could impact upon the disinfection capabilities of the machine. The number of filter housings varies with the size of machine. Typically, other forms of filtration may precede the cartridge pre-filters.

Activated Carbon Filter

All machines utilize cartridge activated carbon (AC) filtration. AC is most effective in removing organic contaminants from water. Organic substances are composed of two basic elements, carbon and hydrogen. Because organic chemicals are often responsible for taste, odour, and colour problems, AC filtration can generally be used to improve aesthetically objectionable water. Similar to other types of water treatment, AC filtration is effective for some contaminants and not effective for others. AC filtration **does not** remove microbes, sodium, nitrates, fluoride, and hardness. Lead and other heavy metals are removed only by a very specific type of AC filter. The consumer should assume that the AC filter is not effective in removing them. Refer to the other available BWT information in the treatment of systems that do remove the contaminants listed above.

Ultraviolet

The deployment of chlorine, chlorine dioxide, oxychloride and other chemical substances to disinfect liquids is not always practical or desirable. It has been scientifically demonstrated UV technology is a suitable alternative to chlorine disinfection. The intensive research and technologically mature disinfection method with ultraviolet light is adapted from the natural action of sunlight. UV light can be deployed in a versatile fashion. It is suitable for disinfecting water, for destroying harmful microorganisms in other liquids, on surfaces and in air.

Pumps

CWPUV series machines are equipped standard with Grundfos Centrifugal pumps (Other pumps types are optional). The pumps are specifically specified to deliver constant high-pressure flow ideal for water disinfection systems operation.

Pressure Gauges

CWPUV Series Technical Specification

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CWPUV series machines include stainless steel, glycerin-filled pressure gauges mounted into various locations in the machine's piping to yield pre-filter and post-filter pressure readings. The machines typically operate at a pre-filter pressure of 100 – 300 kPa with a 20 – 40 kPa pressure drop across the plant. Depends upon model and/or condition of filter element.

CWPUV Series Specifications


Water flow requirements

The machine flow specifications listed below are based on a feed water temperature of 20°C.

| Model | Treatment Flow Rate (L/min) | Working Pressure (KPa) | Motor (kW) | Self Prime Max (M) |
|----------|-----------------------------|------------------------|------------|--------------------|
| CWPUV20 | 20 | 240 | 0.37 | 2-3 |
| CWPUV50 | 50 | 240 | 0.75 | 2-3 |
| CWPUV100 | 100 | 300 | 1.00 | 2-3 |
| CWPUV200 | 200 | 300 | 2.00 | 2-3 |
| CWPUV300 | 300 | 300 | 2.50 | 2-3 |

* Flow rates can vary $\pm 5\%$.

Feed water Requirements

| | | | |
|----------------|--------------------------|--|--------------------------|
| Temperature | Minimum: 2°C | Nominal: 4 - 40°C | Maximum: 40°C |
| Inlet Pressure | Minimum: Flooded suction | | Maximum: Flooded suction |
| Turbidity | 5.0 NTU |  | |
| Operating pH | 4 - 9 | | |
| Manganese | < 0.01 ppm | | |
| Iron | < 1.0 ppm | | |

CWPUV Series Disinfection & Filtration Specifications

Ultraviolet

| Model | Lamp power (Watt) | UV-C Output 254 nm (Watts) | Lamp life (Hours) |
|----------|-------------------|----------------------------|-------------------|
| CWPUV20 | 30 | 10.50 | 9000 |
| CWPUV50 | 60 | 16 | 9000 |
| CWPUV100 | 80 | 28 | 9000 |
| CWPUV200 | 120 | 42 | 9000 |
| CWPUV300 | 160 | 56 | 9000 |

CWPUV Series Technical Specification

CLEAR WATER PLANT – BACSTOP TST - ULTRAVIOLET

BacStop TST

| Model | TST Residual (Max mg/L) | Minimum Water Flow (L/min) $\pm 5\%$ | Power 220-240VAC (Amps) |
|----------|-------------------------|--------------------------------------|-------------------------|
| CWPUV20 | 0.01 | 20 | 4 |
| CWPUV50 | 0.01 | 50 | 10 |
| CWPUV100 | 0.01 | 100 | 20 |
| CWPUV200 | 0.01 | 200 | 30 |
| CWPUV300 | 0.01 | 300 | 40 |

Sediment filtration

| Model | Maximum Flow Rate (L/min) | Filter Surface area (M ²) | Micron rating (μM) |
|----------|---------------------------|---------------------------------------|---------------------------------|
| CWPUV20 | 20 | 1 | 1-5 |
| CWPUV50 | 50 | 2.3 | 1-5 |
| CWPUV100 | 100 | 4.6 | 1-5 |
| CWPUV200 | 200 | 4.6 | 1-5 |
| CWPUV300 | 300 | 6.90 | 1-5 |

Activated Carbon

| Model | Maximum Flow Rate (L/min) | Filter Volume (L) Area (M ²) | Micron rating (μM) |
|----------|---------------------------|--|---------------------------------|
| CWPUV20 | 20 | 1M | 1-10 |
| CWPUV50 | 50 | 2M | 1-10 |
| CWPUV100 | 100 | 12L | 1-10 |
| CWPUV200 | 200 | 12L | 1-10 |
| CWPUV300 | 300 | 18L* | 1-10 |

Optional 24L*

CWPUV Series Technical Specification

CLEAR WATER PLANT – BACSTOP TST - ULTRAVIOLET

Environmental Requirements

Ambient Temperature: 4 – 40°C

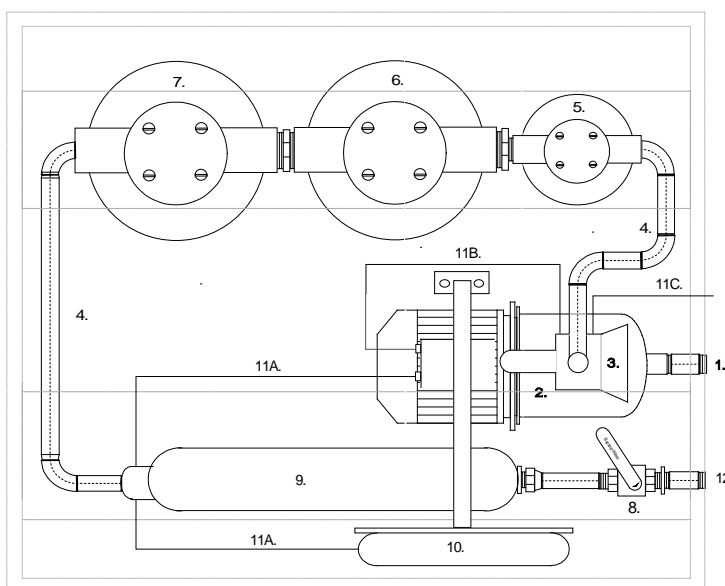
CAUTION: This machine must not be allowed to freeze. Irreparable harm to various components will occur.

NOTE: This machine is designed for weather protected operation only.

NOTE: If the UV Lamp fails, the unit should be service and/or lamp replaced immediately

Flow Description

The centrifugal pump boosts the water pressure and feeds water to the BacStop Dispenser and filters. Line pressure is measured between the pump discharge and the inlet of the BacStop housing. This measurement is the primary pressure. The feed water passes through Bacstop water disinfection device. The BacStop TST technology is a method of treating water to kill bacteria and prevent the growth/re-growth of microbes harmful to humans and animals. TST is released into the water by erosion of a solid balls made from silver oxide. Following the BacStop is two-round filter housings. The first housing(s) is/are filled with replaceable 1 or 5-micron filter cartridge or filter media, which remove bulk suspended solids. The pressure is measured before and after the cartridge filter housing(s). These readings are the pre- and post- filter pressures, displayed by the gauges on the piping before and after the filter housing(s). Filtered water flows to the inlet of the second filter housing. This housing is filled with bulk activated carbon (smaller systems may use a AC cartridge). Filtered water exiting the filter array will pass through a Ultraviolet system. When the CWPUV is turned ON, by means of the valve opening, allowing reduced water pressure to turn on the pump and Ultraviolet. When the CWPUV is turned OFF, by means of closing the valve, the pressure caused by the restricted flow will turn the pump and Ultraviolet off



Index CWPUV20 Components

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2. Water pump
3. System pressure switch
4. Plumbing
5. Bacstop BS20TST
6. 1uM Sediment filter
7. 5uM Activated carbon block
8. Isolation valve
9. Ultraviolet plant
10. UV Controller
11. Electrical
 - 11a. Ultraviolet 240VAC supply
 - 11b. Water pump 240VAC supply
 - 11c. System 240VAC Supply
12. System water outlet