STERIS
Life Sciences

# VHP® VICTORY™ BIODECONTAMINATION UNIT

## APPLICATION

The VHP *VICTORY* Biodecontamination Unit is designed for mobile Biodecontamination* of clean, dry, sealed Enclosures† with volumes from 1000 - 20,000 ft³ (28 - 566 m³) using STERIS's VHP® Process Technology, featuring SmartPhase™ (US Patent No. 8007717) software and Vaprox® Hydrogen Peroxide Sterilant.

* *In this document, when referring to the use of VHP® Biodecontamination Systems with Vaprox Hydrogen Peroxide Sterilant in the United States, the term Biodecontamination is defined as sterilization of exposed porous and non-porous surfaces in a precleaned, dry, sealed Enclosure. Any reference to Biodecontamination pertaining to the use of this equipment in the United States does not, and is not intended to convey, additional claims of effectiveness beyond those contained in the Environmental Protection Agency (EPA) registered labeling of Vaprox Hydrogen Peroxide Sterilant (EPA Reg. No. 58779-4).*

† *Contained area to be Biodecontaminated (e.g., rooms, facilities and equipment).*

## DESCRIPTION

The *VICTORY* Biodecontamination Unit uses high sterilant output, shortened cycle times and ease of operation to establish a new standard for Enclosure Biodecontamination. Biodecontamination Unit is equipped with four factory-programmed cycles:

- Dryerless Cycle (12 Log Reduction)
- Dryerless Cycle (6 Log Reduction)
- Concentration Control 400 PPM (Minimum 40% Saturation)
- Concentration Control 250 PPM (Minimum 40% Saturation).

Operator uses a Programmable Logic Controller (PLC) touch screen to select a factory-programmed cycle and SmartPhase software automatically runs selected Biodecontamination Cycle. Utilizing internal tri-scale sensor (measures temperature, percent relative humidity and hydrogen peroxide vapor concentration) inputs, SmartPhase software adjusts Sterilant injection rates to Enclosure conditions to achieve bioburden control targets while eliminating need for Dehumidification Phase and Conditioning Phase found in most traditional processes and limits possibility of condensation. With 5 to 35g/min of Sterilant injection, Biodecontamination Unit is capable of Biodecontaminating single Enclosures of up to 20,000 ft³ (566 m³) and multiple units are capable of Biodecontaminating Enclosures up to 175,000 ft³ (5,000 m³) at one time.


(Typical only - some details may vary.)

The Biodecontamination Unit operates inside an Enclosure and can operate as a standalone unit or up to 10 Biodecontamination Units can be networked via Ethernet. Biodecontamination Units can be operated via the integrated B&R PLC control or over Ethernet connection using windows-based software‡.

For larger Enclosures, up to three TS1000™ Tri-Scale Sensors can be linked to a *VICTORY* Biodecontamination Unit. These additional sensors boost cycle efficiency and effectiveness ensuring Sterilant is adequately distributed.

A separate AR1200™Aerator is available for catalyzing Sterilant for applications not utilizing a facility-supplied building management air handling system. Up to two AR1200 Aerators can be linked to a *VICTORY* Biodecontamination Unit.

The *VICTORY* Biodecontamination Unit is multi-lingual (English, French, Spanish, Italian and German) and available in either 120 or 230 Vac, single phase, electrical service.

‡ *In most cases, the software is used to start, abort and monitor Biodecontamination Cycles and observe the Biodecontamination System status. All Biodecontamination Cycle data is output to the USB interface in encrypted format for data storage.*

### The Selections Checked Below Apply To This Equipment

**VOLTAGES**
- ❑ 120 Vac, 50/60 Hz
- ❑ 230 Vac, 50/60 Hz

**ACCESSORIES**
- ❑ AR1200 Aerator
- ❑ TS1000 Tri-Scale Sensor

**LANGUAGE OPTIONS**
- ❑ English
- ❑ French
- ❑ German
- ❑ Spanish
- ❑ Italian

**STERILANT DELIVERY**
- ❑ 950 mL Cartridge
- ❑ Bulk Container

**OPTIONS**
- ❑ Munters Dehumidifiers
- ❑ Drager $H_2O_2$ Sensors

Item _____

Location(s)_____

_____

To minimize exposure to liquid hydrogen peroxide during handling, the system uses specially designed 0.25 gal (950 mL) disposable cartridges or bulk containers containing approximately 5 gal (19 L) of Vaprox Hydrogen Peroxide Sterilant.

The STERIS Biodecontamination Unit is only to be operated by Trained and Certified Applicators who have successfully completed both the STERIS Training and Certification Course for Applicators of Vaprox Hydrogen Peroxide Sterilant and the *VICTORY* Biodecontamination System Operator Course. Certification must be active and in force for all Applicators of Vaprox Hydrogen Peroxide Sterilant.

## STANDARDS

The VHP *VICTORY* Biodecontamination Unit meets the applicable requirements of the following standards:

- **Underwriters Laboratories (UL): UL61010-1 Second Edition** as certified by Intertek Testing Services NA Inc.
- **Canadian Standards Association (CSA): Standard C22.2 No. 61010-1 Second Edition**.
- **Ingress Protection Rating (IP) 21** as certified by Intertek Testing Services NA Inc.
- Governing Directives for Affixing the CE Mark:
  - » **EMC Directive (2004/108/EC, 92/31/EEC, 93/68/EEC)** as certified by Intertek Testing Services NA Inc.
  - » **Low Voltage Directive (2006/95/EC, 93/68/EEC)** as certified by Intertek Testing Services NA Inc.

## CYCLE DESCRIPTION (Typical)

The *VICTORY* Biodecontamination Unit uses STERIS's VHP® process technology. This process uses hydrogen peroxide vapor as a broad-spectrum antimicrobial without condensation of active ingredient onto surfaces. This non-condensation feature provides additional benefit of a wide range of material compatibility.

In practice, an aqueous solution of 35% $H_2O_2$ (Vaprox Hydrogen Peroxide Sterilant) vapor is atomized and a high velocity air stream disperses it throughout the Enclosure.

*NOTE: Refer to Vaprox Hydrogen Peroxide Sterilant package insert for additional information and Application instructions.*

SmartPhase software technology automatically runs the selected Biodecontamination Cycle. Basic description of example Biodecontamination Cycles:

After selecting and starting chosen Cycle at B&R Control, a two-minute countdown allows Trained and Certified Applicator to safely exit and seal Enclosure prior to Cycle start. Once time has elapsed, blower initializes and diffuser begins to heat. After diffuser reaches setpoint, injection pump primes and SmartPhase software controls Cycle as follows:

1. **Dryerless Cycle** – (Dryerless Cycle 12 Log Reduction or Dryerless Cycle 6 Log Reduction) Primary Cycle of *VICTORY* Biodecontamination Unit. Bioburden log reduction is calculated in real time once Sterilant concentration equals or is greater than 50 ppm.

   Biodecontamination Phase is completed when programmed bioburden log reduction value (usually $10^{12}$) is achieved. Cycle advances to Aeration Phase.

   During Aeration Phase, Sterilant concentration is reduced to less than or equal to one ppm. At one ppm, Biodecontamination Cycle completes and datalog is output to USB memory stick.
2. **Concentration Control Cycle** – (Concentration Control 400 ppm or Concentration Control 250 ppm) Cycle for special applications. Condition phase rapidly increases Enclosure Sterilant concentration to concentration setpoint. Biodecontamination Phase follows. Biodecontamination Phase is completed when setpoint time at Sterilant setpoint concentration is achieved. Cycle advances to Aeration Phase.

   During Aeration Phase, Sterilant concentration is reduced to less than or equal to one ppm. At one ppm, Biodecontamination Cycle completes and datalog is output to USB memory stick.

*NOTE: For Cycles with relative humidity (RH) greater than 50%, a dryer may be recommended to improve Cycle time.*

## ACCESSORIES

**AR1200 Aerator** – Portable, high capacity, Sterilant catalyzation unit designed to shorten Biodecontamination Cycles in Enclosures. AR1200 Aerator delivers 1200 cfm (2039 cmh) aeration.

**TS1000 Tri-Scale Sensor** – Sensing unit boosts Cycle efficiency and effectiveness of Enclosure Biodecontamination by ensuring Sterilant is adequately distributed. TS1000 Sensor measures Enclosure $H_2O_2$ concentration, RH% and temperature.

**RealVNC Software** – VNC[1] Client Software enabling remote operation of a single or multiple Biodecontamination Units via Ethernet.

[1] *VNC is a Registered Trademark of RealVNC Ltd.*

## OPTIONS

**Dräger $H_2O_2$ Sensors** – Hydrogen Peroxide sensors available for permanent installation and portable operation.

**Munters Dehumidifiers** – Dehumidification systems available for permanent installation and portable operation.

## STERILITY ASSURANCE PRODUCTS

**Vaprox Hydrogen Peroxide Sterilant** – 35% stabilized aqueous solution of hydrogen peroxide designed for use with VHP Biodecontamination Units and Accessories (EPA Reg. No. 58779-4). Order PB006 (950 mL) or PB027 (18.9 L/5 gal).

**Steraffirm® VH2O2 Process Indicators (PCC051 and PCC060)** – Chemical indicators designed for use with hydrogen peroxide vapor. *Refer to Tech Data SD998 for further information.*

**Spordex® VH2O2 Biological Indicator** (**NA333)** – *E6 Geobacillus stearothermophilus* (12980) biological indicator designed for use with hydrogen peroxide vapor. *Refer to Tech Data SD1009 for further information.*

**Spordex® Biological Indicator Media** (**NA114)** – Tripticase Soy Bean broth (TSB) culture media designed for use with Spordex biological indicators. *Refer to Tech Data 450-100-5502 for further information.*

**Spordex® 24HR Biological Indicator Media** (**NA117)** – TSB culture media designed for use with Spordex biological indicators.

## CONTROL SYSTEM

Provides precise control of *VICTORY* Biodecontamination Unit and uses B&R Industrial Power Panel PP65 PLC control. PLC features a 5.7" QVGA color TFT display with touch screen.

B&R Control stores and displays such information as cycle time; Enclosure parameters ($H_2O_2$ concentration, RH% and temperature) in English/metric units; Sterilant injection rate; and Sterilant consumption.

Operator interface allows user to program PLC without need for a Customer-supplied PLC. **Security Codes** are used to prevent unauthorized operation or modification of preset or custom cycle parameters.

## CONSTRUCTION

**Frame** – Constructed of aluminum and stainless steel.

**Case** – Scratch and crack resistant, molded in color, ABS plastic case.

**Casters** – Mounted to body. Front swivel, back fixed, lockable and non-marking.

**Blower** – Internal 550 scfm (935 $m^3$/h) recirculation blower.

**Injection Pump** – Peristaltic pump with injection rates from 5 - 35 grams/min.

**Air Compressor** – Oil-less, 1/3 hp, 100 psi maximum, 2 scfm (3.4 $m^3$/h) open flow.

**Integrated Tri-Scale Sensor** – Measures $H_2O_2$ vapor concentration (ppm), RH% and temperature.

**Reservoir** – Internal, high capacity, 1.3 gal (5 L). Equipped with pressure transducer to track sterilant usage and permit various fill levels.

## CALIBRATION

STERIS Life Sciences Service recommends that the VHP® *VICTORY* Biodecontamination Unit be calibrated at least once every six months. STERIS Life Sciences Service representatives can provide this service to ensure validatable operation of the unit.

## PREVENTIVE MAINTENANCE

Customers are encouraged to contact STERIS Life Sciences Service concerning a maintenance program. Under the terms of the program, preventive maintenance, adjustments and replacement of worn parts are provided on a scheduled basis to help ensure optimal equipment performance and to help minimize untimely or costly schedule interruptions. STERIS Life Sciences Service maintains a worldwide staff of well-equipped, factory-trained technicians to provide these services, as well as on-site installation, training and expert repair services. Contact STERIS Life Sciences Service* for details.

* *1 (800) 444-9009 or www.sterislifesciences.com.*

## NOTES

1. STERIS Life Sciences Service recommends a dedicated, grounded electrical circuit be provided for each unit. Extension cord use is not recommended.
2. Unit should not be installed in an area not compatible with oxidizers. Consult the Safety Data Sheet (SDS) regarding hydrogen peroxide sterilant.
3. Access must be provided to power switch and hose connectors at front and side of unit.
4. Unit weighs approximately 141 lb (64 kg).
5. Enclosure size listed is recommended size. Connecting VHP *VICTORY* Biodecontamination Unit to larger volumes may increase cycle time.
6. Airflow range is measured exiting VHP *VICTORY* Biodecontamination Unit. Actual flow rates may vary from variations in local utility power output.

## ENGINEERING DATA

***IMPORTANT:** Refer to equipment drawing 136830-056 for installation details and specifications.*

**Electricity**
120 Vac, 60 Hz, 1 Phase, 13 Amp
230 Vac, 50 Hz, 1 Phase, 6.5 Amp

**Interconnecting Cable**
24 Vdc, 0.17 Amp

**Airflow**
550 scfm (935 scmh)

**Temperature**
60 - 104°F (16 - 40°C)

**Vaprox Injection Rates**
5 - 35 g/minute

**Relative Humidity (RH)**
5 - 95%

**Size (W x L x H)**
21-3/16 x 39-11/16 x 43-3/16" (538 x 1008 x 1097 mm)

## For Further Information, contact:

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***CUSTOMER IS RESPONSIBLE FOR COMPLIANCE WITH APPLICABLE LOCAL AND NATIONAL CODES AND REGULATIONS.***

**The base language of this document is ENGLISH. Any translations must be made from the base language**