

APPLICATION

The Basil 4700 Cage and Rack Washer is used for thorough efficient cleaning of cages, racks, debris pans, bottles and miscellaneous items used in the care of laboratory animals.

DESCRIPTION

The Basil 4700 Cage and Rack Washer is a heavy-duty, large capacity, hydrospray washer, equipped with a programmable logic control (PLC) system.

The washer can be programmed to process the following phases:

- pre-wash
- alkaline wash
- acid wash
- first rinse
- second rinse
- final rinse exhaust

The washer is available with double (pass-through) doors, for either floor- or pit-mounting.

Size (W x H x D)

Wash chamber:

- 46 x 85 x 92" (1168 x 2159 x 2337 mm)

Overall dimensions:*

- 86 x 114 x 98-3/4" (2184 x 2896 x 2508 mm)

**Size may vary depending on options selected.*

NOTE: Washer can be designed in any size to meet new or existing requirements.



(Typical - details may vary.)

STANDARDS

Each washer meets the applicable requirements of the following standards:

- **Underwriters Laboratories (UL) Standard UL61010-1**
- **ASME Section VIII, Division 1, Unfired Pressure Vessel Code for Steam Coils**
- **Uniform Building Code of California, Title 24 (Seismic Anchoring Requirements)**
- **Canadian Standards Association: CAN/CSA - C22.2 No. 61010-1, as certified by UL**

Selections Checked Below Apply To This Equipment

MOUNTING

- ☐ Floor
- ☐ Pit

SERVICE ACCESS

(Facing Load End)

- ☐ Right
- ☐ Left

VOLTAGE

- ☐ 208 V
- ☐ 480 V

ADD-ON OPTIONS

- ☐ Heat Exchanger to Raise Water Temperature 50-80°F (10-27°C)
- ☐ Reusable-Throwaway Acid Detergent System
- ☐ Reusable Throwaway Alkaline Detergent System

- ☐ Integral Printer
- ☐ Exhaust Fan
- ☐ Non-Recirculating Final Rinse
- ☐ Automatic Water Rack Flush System for Two Racks
- ☐ Drain Discharge Cool Down System with Side Tank and Temperature Guarantee
- ☐ Exterior Stainless-Steel Jacket
- ☐ Split Base for Special Entry into Building*
- ☐ pH Neutralization System
- ☐ Inclined Floor Grating
- ☐ Seismic Tie-Down

ACCESSORY**

- ☐ Barrier Wall Flange Assembly
 - ☐ One for Recessing One Wall
 - ☐ Two for Recessing Two Walls

* Contact STERIS Engineering Service for installation cost for this option.

**See separate product literature for material handling accessories.

Item _____

Location(s) _____

FEATURES

Automatic self-cleaning screen (in the recirculation system) filters all solutions during any phase, and automatically flushes debris to the building drain when solutions are drained.

Modular construction allows disassembly of washer into sections to facilitate entry into an existing building. Cabinet sections are flanged for bolted construction, with formed channels across the joints to prevent leakage.

Knocked down shipment. Washer is disassembled and shipped in sections that pass (uncrated) through a 3'0" x 6'8" (0.91 x 2.03 m) standard doorway.

Oscillating jet system consists of machined jets mounted on four spray trees suspended from an oscillating carriage. Carriage drive unit operates in conjunction with the programmed cycle and is equipped with a safety clutch to prevent the oscillating carriage from damaging items being washed.

Recirculated water temperature guarantee maintains all recirculated wash and rinse water temperatures for each cycle. If selected, the phase begins timing only when recirculated water temperature reaches the setpoint. Timer stops if recirculated water temperature drops below setpoint during phase, and restarts only if the operator elects to reset the timer and continue.

Automatic damper, for vertical connection to exhaust vent system, is partially open during washer operation, and fully open during exhaust phase.

Control system monitors and automatically controls all process operations and functions. Control can retain up to 12 processing cycles in memory, programmed and named according to Customer preferences. Cycle phase times, temperatures, and other key process parameters are programmable. Once a cycle is started, the programmed cycle values are locked in and cannot be changed until cycle is complete.

The control system consists of an Allen-Bradley CompactLogix™¹ Programmable Logic Controller (PLC) with PanelView Plus 600 color operator interface(s). The system can be connected to an integral optional printer to record process parameters, or to an external printer. An Ethernet port is available for remote monitoring and troubleshooting.

Service mode is accessible through the main control panel for service and maintenance purposes.

Security access code requires entry of a four digit access code to change cycle values.

Exterior cabinet light. Two 23W fluorescent lights are provided to illuminate the wash chamber.

Acid detergent system. An acid wash phase can be programmed to occur following the alkaline wash phase. During the acid wash phase, hot water fills the chamber sump and acid detergent is injected by the supplied peristaltic pump. The detergent pump includes a pickup tube and 50' (15m) of

tubing. After acid recirculation has ended, cycle may be programmed to allow acid to work for up to 99:59 minutes; solution is then pumped through the jet system. At the end of the phase, water is sent to the drain. All components and piping in contact with the acid solution are stainless steel.

Feeder bottle washing system. The washer is equipped with an automatic coupling in the washer floor to divert recirculated solutions through a bottle washing cart.

NOTE: A bottle washing cart is required for use with this feature – see SD633.

Drain discharge cool down system with cold water

injection. Washer is equipped with a cold water inlet valve integral with the drain line. Cold water is added to the effluent as it is sent to drain.

Double door interlock system prevents load-end and unload-end doors from being opened at the same time, reducing the risk of cross-contamination. When one door is opened, the other door locks by an air-actuated piston. When both doors are shut, both pistons open to allow door safety latch operation. In case of power loss, pistons fail in the open position.

Alkaline detergent injection system provides automatic timed injection of alkaline detergent into the chamber sump during alkaline wash phase. Includes liquid detergent injection pump, detergent pickup tube, 50' (15 m) tubing.

Automatic neutralizer injection system provides timed, direct injection of neutralizer into the chamber sump after the Acid/Alkaline wash phase to neutralize the acid/alkaline wash solution. Wash solution and neutralizer recirculate through the jet system after the Acid/Alkaline wash phase and prior to draining. Includes liquid detergent injection pump, detergent pickup tube, and 50' (15.24 m) of tubing.

CYCLE DESCRIPTION

Basil Model 4700 Cage and Rack Washer features 12 programmable cycles. Each cycle can be programmed with the following phases:

- **PRE-WASH** (0-99:59 minutes) – water remaining in chamber sump from final rinse of previous cycle or fresh incoming water is recirculated through jet system under pump pressure. On completion, water is sent to the drain.
- **WASH** (0-49:59 minutes; ambient – 185°F [85°C]) – hot water fills the sump and is pumped through the jet system. Detergent is added from the detergent injection pump. At the end of the phase the detergent solution is sent to the drain.
- **FIRST RINSE** (0-49:59 minutes; ambient – 185°F [85°C]): hot water fills chamber sump and is recirculated through jet system under pump pressure. At the end of the phase, recirculated water is sent to the drain.
- **SECOND RINSE** (0-49:59 minutes; ambient – 185°F [85°C]) – hot water fills chamber sump and is recirculated through jet system under pump pressure. At the end of the phase, recirculated water is sent to the drain.

1. CompactLogix and PanelView Plus are trademarks of Allen-Bradley.

- **FINAL RINSE** (0-49:59 minutes; ambient – 185°F [85°C]) – same as first rinse, except at the end of phase, water may be retained in chamber sump for use as pre-wash water in next load.
- **EXHAUST** – washer stands idle until residual vapors are removed.

SAFETY FEATURES

NOTE: Safety features are in accordance with AAALAC Guidance, Chapter 5.

Door open safety feature automatically stops washer operation if doors are opened during cycle. To resume operation, doors must be closed, alarm acknowledged, and START CYCLE button pressed.

Two **red safety cables** inside wash chamber (one on each side) immediately stop washer operation if either one is pulled. To resume operation, alarm must be acknowledged and START CYCLE button pressed.

Doors are equipped with spring-loaded, explosion-relief type **safety latches** that readily open when pushed from inside chamber.

Emergency stop button(s). Washer is equipped with an external emergency stop pushbutton at each end that automatically stops operation of washer when pressed.

OPTIONAL FEATURES

Heat exchanger. An in-line, steam-to-water type heat exchanger can be provided to automatically raise hot water supply temperature by approximately 50-80°F. In Celsius, the temperature increase will be approximately 27.7-44.4°C.

Reusable-Throwaway alkaline detergent system – Provides automatic injection of alkaline detergent in chamber and conductivity monitoring during alkaline wash phase. Washer is equipped with stainless steel alkaline solution reservoir with steam coil. Alkaline wash phase can be programmed to automatically return alkaline solution to reservoir on completion of phase. Includes conductivity control and probe.

Reusable-throwaway acid detergent system. Provides automatic injection of acid detergent in chamber and conductivity monitoring during acid wash phase. Washer is equipped with stainless-steel acid solution reservoir with steam coil. Acid wash phase can be programmed to automatically return acid solution to reservoir on completion of phase. With this option, washer width is increased by 15" (381 mm). Includes conductivity control and probe.

Exhaust fan. Washer can be provided with a fan to remove residual vapors from wash chamber. Includes 3-phase, 60 Hz motor and magnetic starter with overload protection.

Non-recirculated final rinse. During final rinse phase, hot water can be sprayed through a separate set of jets. The water is not recirculated. With this option, the temperature of the last recirculated rinse is guaranteed.

Automatic water rack flush system. Washer can be designed to flush two automatic watering racks with fresh, hot water during final rinse phase. Option includes two quick-disconnect hoses, and a pressure reducing station for the hot water line.

Drain discharge cool down system with side tank and temperature guarantee. A cool-down tank can be integrally mounted to the side of the washer to accept all pumped drain discharges. By mixing with cold water, effluent is cooled to below 140°F (60°C), then gravity-drained. System is controlled by an automatically actuated ball valve and temperature probe, and drains only when effluent is cooled to proper temperature. With this option, washer width is increased by 15" (381 mm) and a cold water connection is required.

Integral impact printer with automatic paper take-up provides a record of all cycle program and in-process performance data.

Split base for special entry into building. Washer base can be constructed of two parts, for welding together on-site during installation.

pH Neutralization System – Equipped with a pH probe to monitor/control the pH level of drain discharge after the acid/alkaline treatments. The pH level is checked each time the washer drains. If pH is within pre-set range, washer drains; if not, proper neutralizing agent is injected and solution is recirculated and tested again. If process still fails after nine tries, an alarm sounds to indicate a problem with the system. If washer is equipped with optional drain discharge cool down system with side tank and temperature guarantee, wash solution is first pumped to the side tank, where pH level is checked. In this case, a 4th chemical injection pump is added to also neutralize the alkaline solution. The pump includes a pickup tube and 50' (15.24 m) of tubing.

Inclined floor grating. Chamber floor sections can be pitched 1.0" (25 mm) at the unload end to assist in draining cages, racks or other items.

Seismic tie-down. Washer can be built to seismic zone 3 and 4 requirements.

Exterior stainless-steel jacketing, includes stainless-steel panels to cover insulation on service and non-service side of the wash chamber.

CONSTRUCTION

Base, wash chamber, chamber sump and steam coils are constructed of #304 stainless steel (No. 2B finish). Base contains integral door gutters and supports to accommodate floor grating.

Chamber sump includes a mechanical float switch level control, automatic rinse water fill and stainless-steel steam heating coil for the recirculated solutions. Sump capacity is 45 U.S. gallons (170 L). Steam coil surface area is 20 square feet (1.85 m²), and is easily removable for cleaning or maintenance.

Optional wash solution reservoirs are 100 U.S. gallon (378 L) capacity and are heated by a stainless-steel steam coil. Steam coil surface area is 9.0 square feet (0.84 m²), and is easily removable for cleaning or maintenance.

Chamber floor has heavy-duty stainless-steel grating covering the entire load area. Grating sections are removable for cleaning or maintenance.

Chamber doors are #304 stainless steel, double-wall construction, insulated with 2.0" (51 mm) thick rigid fiberglass

insulation. Doors are equipped with double-bulb sealing gasket, safety exit hardware, heavy duty hinges and a 12 x 12" (305 x 305 mm) tempered glass observation window.

Washer is insulated with 2.0" (51 mm) thick rigid fiberglass insulation.

All phases are under pressure from a 10-HP Monobloc type pump (300 gal/min at 80' [1136L/min at 24 m]) with a mechanical seal. Pump is equipped with a direct reading, liquid-filled pressure gauge.

Washer includes automatically actuated ball valves to control the output of the pump to the jet system, drain or detergent solution return system.

Drain piping, internal piping and steam recirculating piping are constructed of #304 stainless steel. Recirculating valves and components, drain valve and components, external water piping and spray jets are also constructed of #304 stainless steel.

Washer includes a transformer for the 120 V ac control circuit, magnetic starters with overload protection for all motors, and all other electrical components required for washer operation.

One dry electrical contact is provided for use with optional or Customer-supplied exhaust fan.

Drive system includes 1/3-HP dc motor, gear reducer, automatic safety overload clutch and variable speed drive.

An internal battery backs-up all cycle memory for up to two years. Should the internal battery fail, default values are saved on a built-in flash card.

Washer is inter-piped and inter-wired, requiring only one connection for each service and utility hook-up.

ACCESSORY*

Barrier wall flange assembly includes stainless-steel trim flange to enclose the opening between one end of the washer and the masonry wall opening.

* See SD633 for information on material handling accessories.

PREVENTIVE MAINTENANCE

A global network of skilled service specialists can provide periodic inspections and adjustments to help ensure low-cost peak performance. STERIS representatives can provide information regarding annual maintenance agreements.

UTILITY REQUIREMENTS

Refer to equipment drawing 920-509-921 for further details.

NOTE: Pipe sizes in utility requirements indicate terminal outlets only. Building service lines (not provided by STERIS) must supply the specified pressures and flow rates.

Hot Water: 1.0" NPT

Cold Water:

- Standard unit: 1-1/2" NPT
- When drain discharge cool down system with side tank and temperature guarantee option is supplied, cold water inlet is 1.0" NPT.

Steam: 1-1/2" NPT

Condensate Return: 1.0" NPT

Drain: 3.0" NPT

Minimum 4.0" (≈102 mm) floor drain pipe required

Vent: 12" (≈305 mm) ID corrosion-resistant duct

Air: 3/8" NPT

Electricity

- 208 V, 60 Hz, 3-Phase, 25 Amps; or
- 480 V, 60 Hz, 3-Phase, 15 Amps

Recommended Air Compressor:

Equipment number CK00-000-000-006 115 V, 2 cfm.
Refer to SD574 for details.

ENGINEERING DATA

Maximum Shipping Weight (total): 10,700 lb (4850 kg)

Maximum Shipping Dimensions (W x H x D):

49 x 83 x 100" (1245 x 2108 x 2540 mm) (3 crates)

Heat Loss:

- Load and Unload Door Sides: 9,000 BTU/Hr
- Service, Non-Service Sides, and Top: 15,000 BTU/Hr
- Total (approximately): 33,000 BTU/Hr

Noise Level: 84 dB maximum

Request Equipment Drawing 920-509-921 for Installation Details.

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

For Further Information, contact:



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