

APPLICATION

For thorough, efficient cleaning of cages, debris pans, bottles, feeder bowls and miscellaneous items used in the care of laboratory animals.

DESCRIPTION

The Basil 6700 Tunnel Cage Washer is a heavy-duty, conveyORIZED, hydro-spray washer equipped with a Programmable Logic Controller (PLC) system. The Basil 6700 Washer can be programmed to process the following cycle phases: Pre-Wash, Wash, Recirculated Rinse and Final Rinse. The dry phase is available when the dryer option is selected.

Size

Overall unit (H x W):

96 x 70" (2438 x 1778 mm)

Tunnel opening (H x W):

25 x 37" (635 x 940 mm)



(Typical only - some details may vary.)

STANDARDS

The Basil 6700 Cage and Bottle Washer complies with the following standards:

American and Canadian Standards:

- ANSI/UL 61010-1
- CAN/CSA-C22.2 No 61010-1.

Governing Directive for the Affixing of the CE Mark:

- Machinery Directive (98/37/EC).

Conformity to other applicable directives:

- Electromagnetic Compatibility Directive (89/336/EEC) and amendments (92/31/EEC, 93/68/EEC)
- Low Voltage Directive (2006/95/EC).

Standards applied to demonstrate conformity to the directives:

- IEC 61010-1
- IEC 61326-1

The Selections Checked Below Apply To This Equipment

**SERVICE ACCESS
(Facing Load End)**

- Right
- Left

VOLTAGE

- 208 V, 60 Hz, 3-Phase
- 480 V, 60 Hz, 3-Phase
- 380/400/415 V, 50 Hz, 3-Phase

ACCESSORIES

- Barrier Wall Flange Assembly

OPTIONS

- Dryer With Air Knife
- Unload Gravity Roller Conveyor^{2,3}
- Bedding Disposal Station, Integrated
- pH Neutralization System
- Low Pressure Steam Piping
- Powered Unload Section^{1,3}
- Seismic Tie-Down
- Automatic Descaling System (With Pumps)
- Proportional Temperature Control on Final Rinse
- Impact Printer
- Enclosure Cabinet for Service Area

¹ Required for use with Bedding Dispenser.

² Not required when used with Basil 3600 Bedding Dispenser.

³ One of these two options must be selected.

Item _____

Location(s) _____

FEATURES

All recirculation pumps, valves, piping and other components that come in contact with recirculated solutions are constructed of **stainless steel**.

Removable spray headers have quick-disconnect couplings and O-rings for removal without tools. Jet systems for Pre-wash, Wash and Recirculated Rinse sections have machined jets fitted into headers. The jets are placed so that water bottles in baskets can be processed through the washer.

The washer includes **temperature guarantee** for both recirculation tanks. The conveyor belt temporarily stops if recirculated solution temperatures drop below the set temperature, and restarts only when the solution reaches the proper temperature.

Stainless-steel **flat wire conveyor belt** includes a safety overload clutch to prevent the belt from damaging the items being washed. A knob on the load-end control panel is used to adjust belt speed through a variable speed drive.

Stainless-steel **drawer-type solution strainer screens** in the Pre-wash, Wash and Recirculated Rinse sections are easily accessible and have perforations smaller than the machined jet orifices to filter the solutions and prevent the spray jets from clogging.

The hydraulic hold-down system feed lines contain adjustment valves to hydraulically hold down light plastic cages and steel pans on the conveyor belt.

The control system monitors and automatically controls all process operations and functions. The control system consists of an Allen-Bradley CompactLogix™ Programmable Logic Controller¹ with PanelView Plus™ 600 color operator interface². Other control system features are as follows:

- Control can keep 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, programmed cycle values are locked and cannot be changed until the cycle is complete.
- A second control panel is provided on the non-operating/unload end.
- 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.

¹ CompactLogix™ is a trademark of Allen-Bradley, a Rockwell Automation Company.

² PanelView Plus™ 600 is a trademark of Allen-Bradley, a Rockwell Automation Company.

Automatic self-cleaning screen is provided for the wash circulation pump. The fine mesh (1/16", 1.6 mm diameter holes) is automatically flushed on a regular basis, depending on the settings in the control system. The filter system is equipped with a tri-clamp connection for easy disassembly without tools. The filter cartridge end is tapered to prevent trapping debris.

Conveyor stop proximity sensor and a gate are provided at the end of the discharge conveyor to stop the conveyor drive when an item (pan, bottle basket or cage) reaches the end of the conveyor.

Automatic tank dump valves are provided to automatically open and drain each recirculation tank.

Automatic drain discharge cool down system uses cold water from the pre-wash to automatically cool effluent from the Pre-Wash section. A cold water system mounted in-line to the drain line cools spent recirculated treatments when draining treatment tank(s).

Automatic alkaline detergent injection system provides automatic conductivity monitoring and direct injection of alkaline detergent into the wash tank. This system includes a liquid detergent injection pump, detergent pickup tube, 50' (15.24 m) of tubing, conductivity controller and conductivity probe.

Automatic acid detergent injection system provides automatic conductivity monitoring and direct injection of acid detergent into the wash tank. This system includes a liquid detergent injection pump, detergent pickup tube, 50' (15.24 m) of tubing, conductivity controller and conductivity probe.

Bedding dispenser controls are provided for use with the Basil® 3600 Series Bedding Dispenser (refer to SD533). Power supply to the bedding dispenser is not provided by STERIS.

SAFETY FEATURE

The Basil 6700 Series Tunnel Cage Washer contains the following safety features:

- Both load- and unload-ends are equipped with an EMERGENCY STOP button that when activated stops all operations.
- Control panel equipped with a button allowing stop/start of conveyor belt.
- Conveyor belt is equipped with a safety clutch that stops belt in event of obstruction.
- Chamber access doors are equipped with sensors that stop machine operation when a door is opened.

CYCLE DESCRIPTION

The Basil 6700 Series Tunnel Cage Washer features 12 programmable cycles. Each cycle can be programmed with the following phases:

- **Pre-Wash.** Water is diverted from the recirculated rinse tank, under pump pressure, to the pre-wash jet system. An additional set of nozzles is used to spray facility cold water at high pressure to efficiently remove gross debris. To save resources, the same water is used to cool the effluent.
- **Wash.** Hot detergent solution recirculates through the wash jet system under pump pressure. Temperature is adjustable 70-185°F (21-85°C). The detergent solution is refreshed with the rinse water.
- **Recirculated Rinse.** Hot water recirculates through the rinse jet system under pump pressure. Temperature is adjustable 70-185°F (21-85°C). The rinse water is refreshed with the final rinse water.
- **Final Rinse.** Hot water from building supply is heated through a steam heat exchanger and sprayed through the final rinse jet system. Spent solution flows to the recirculated wash and rinse tanks. Temperature is manually adjustable from 149-185°F (65-85°C).

OPTIONAL FEATURES

Dryer With Air Knife. A Dry phase can be programmed to start after the Final Rinse phase with this option. During the Dry phase, most of the water is removed by an air knife blow-off system (1.5 HP [1.1 kW], 800 cfm [23 m³/min]). Air knife system height is easily adjusted from side of unit. Hot air is recirculated throughout the chamber to help dry items. An insulated, stainless-steel, hot-air type 6.0' (1.83 m) long dryer with single-blower system includes one steam-heated radiator, a plenum system, and a 5-HP (3.7 kW) air blower capable of 2200 CFM (62.30 m³/min.) air flow under recirculation at 210°F (99°C). The dryer interior design allows complete draining. The conveyor belt is continuous through the washer and dryer sections.

Unload gravity roller conveyor. A 4.0' (1.22 m) long conveyor for the discharge/unload end is available with 2.0" (51 mm) diameter, LPVC and PVC rollers, stainless-steel conveyor supports and legs. Rollers have 3.0" (76 mm) end-collars and corrosion-free bearings and shafts. A stainless-steel drain pan with 2.0" (51 mm) drain connection is installed under the entire length of the discharge conveyor.

pH neutralization system. This option monitors and controls the solution pH level of the drain discharge each time the washer drains. If necessary, the proper neutralizing agent is injected and the solution is recirculated and tested again. If the process fails after nine tries, an alarm sounds to indicate a problem with the system. The system includes a pH probe and controls.

NOTE: Chemical used in the rinse chamber for the "automatic descaling system" option is neutralized on a time basis and is not monitored.

Low pressure steam piping. This option allows the washer to operate with 10 psi (69 kPa) dynamic steam pressure.

Unload powered section. This option extends the unload end of the washer by 3.0' (0.91 m) to allow the operator to remove items before they enter a Basil 3600 Series Bedding Dispenser (see SD533).

Seismic tie-down. The washer can be built to Seismic Zones 3 and 4 requirements.

Bedding disposal station, integrated. A bedding disposal unit is integrated on the load side of the conveyor. Used bedding is mixed with cold water, going through a pulverizer before being sent to the drain.

The integral impact printer. This option provides a record of all cycle programs and in-process performance data.

Automatic Descaling System. This option allows the operator to automatically process a descaling cycle without having to handle strong chemicals. The system includes two chemical injection pumps (wash and rinse) with 50' (15 m) of tubing and a pick-up tube for use with remote 5-45 U.S. gallons (20-170 L) chemical containers.

Proportional temperature control on final rinse. This option provides a proportionally controlled steam valve to compensate for fluctuating steam pressure and water temperature supplies. The system ensures constant final rinse water temperature and prevents the conveyor belt from stopping frequently, enhancing overall productivity.

Enclosure Cabinet for Service Area. A 304L stainless steel cabinet provided to cover entire service area. Access doors are supplied to facilitate access to components for servicing and maintenance.

CONSTRUCTION

Washer is disassembled and shipped in sections that pass (uncrated) through a 6'6" W x 8' H (2.00 x 2.44 m) opening.

Washer frame, recirculation tanks and cabinet are of one-piece welded stainless-steel construction. The frame is equipped with adjustable legs and supports for the pumps, steam heat exchanger and drive mechanism. Load and unload tables are covered by 304L stainless-steel cabinets.

Splash proof doors are provided for access to jet systems and the washer interior. The doors have 2.0" (51 mm) thick rigid fiberglass insulation and are removable for cleaning. Each access door includes a safety switch to stop all washer operations if the door is opened during processing.

Each recirculation tank includes an automatic solution level control, overflow piping, automatic drain valve and stainless-steel steam coil heating for recirculated treatment solutions. Tanks are sloped to ensure proper drainage and prevent debris accumulation.

Stainless-steel steam coil heating system in Wash and Recirculated Rinse tanks includes condensate return, steam traps and strainers. Steam coils are designed to ASME Section VIII, Div. 1, Unfired Pressurized Vessel Code, and are removable for cleaning or maintenance.

Wash and Recirculated Rinse solutions are under pressure from centrifugal type pumps with mechanical seals and direct read pressure gauges. Both wash and rinse pumps are 7.5 HP [5.6 kW].

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

Final Rinse jet system includes a steam heat exchanger to raise the building hot water supply temperature to approximately 60-80°F (16-26°C).

The drive system includes a 1/3-HP (0.25 kW) dc motor, gear reducer, automatic safety overload clutch and variable speed drive.

The washer includes stainless-steel baffles and 1/8" (3.0 mm) thick silicone rubber curtains between each section, and at both ends, to minimize water carryover.

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

Electrical dry contacts are provided for alarm signals and ventilation system.

ACCESSORIES

Barrier wall flange assembly. Stainless-steel trim flanges enclose the opening between one end of the washer and the wall opening. The flange assembly can be installed at the load or unload end, or between Rinse section, and optional Dryer section.

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 programs.

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

UTILITY REQUIREMENTS

IMPORTANT: Refer to equipment drawing 920-508-744 for details.

Hot Water

1.0" (25 mm)

Cold Water

1.0" (25 mm)

Cold Water (Bedding Disposal, Integrated)

1.0" (25 mm)

Steam

1-1/2" (38 mm) NPT

10 psi (69 kPa) dynamic with low pressure steam piping

Steam

1-1/2" (38 mm) NPT

10 psi (69 kPa) dynamic with low pressure steam piping

Compressed Air

1/8" (3.2 mm) NPT

Condensate Return

1.0" (25 mm) NPT

Condensate Return (Dryer With Air Knife)

1.0" (25 mm) NPT

Drain

4.0" (102 mm) NPT, open

Drain (If Bedding Disposal option is selected)

4.0" (102 mm) NPT, open

Vent*

12" (305 mm) ID corrosion-resistant duct. Saturated vapor at 165-185°F (74-85°C)

Electricity

(See Table 2)

*The ventilation requirement is for the complete unit (four vents). The proper flow rate for each chamber is to be adjusted with manual dampers (provided by Customer) to meet the optimal operating conditions.

NOTE: Recommended air compressor: For unit with low pressure steam piping option refer to SD911. For units without low pressure piping option refer to SD574.

NOTE: BSPT fittings available upon request.

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

Table 1. ENGINEERING DATA

Approximate Shipping Weight	Maximum Shipping Weight Per Crate	Maximum Shipping Dimensions (W x H x D)	Maximum Operating Weight	A-Weighted Equivalent Surface Sound Pressure Level	Heat Loss:
11,000 lb (4,990 kg)	2,030 lb (921 kg)	87 x 102 x 85" (2,210 x 2,591 x 2,159 mm)	11,500 lb (5,216 kg)	73 bBA	Load Side – 5,000 BTU/Hr (1,465 Wh) Wash Chamber (sides and top) – 20,000 BTU/Hr (5,860 Wh) Rinse/Dry/Unload – 60,000 BTU/Hr (17,584 Wh) Total – 85,000 BTU/Hr (24,911 Wh) approx.

Table 2. ELECTRICITY

Voltage	Nominal Amperage	Base Unit	Bedding Disposal Station	Dryer With Air Knife
208 V, 60 Hz	40 A	X		
	45 A	X	X	
	45 A	X		X
	50 A	X	X	X
480 V, 60 Hz	20 A	X		
	25 A	X	X	
	25 A	X		X
	30 A	X	X	X
380/400/415 V, 50 Hz	11 A	X		
	15 A	X	X	
	17 A	X		X
	20 A	X	X	X

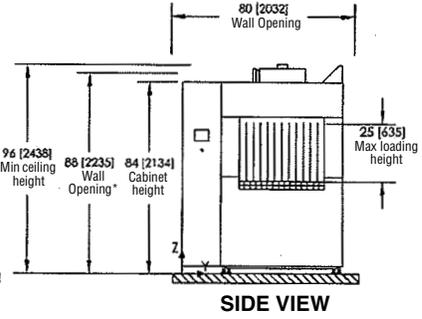
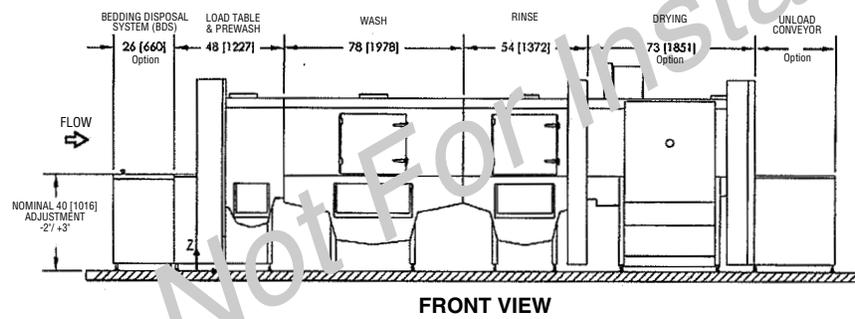
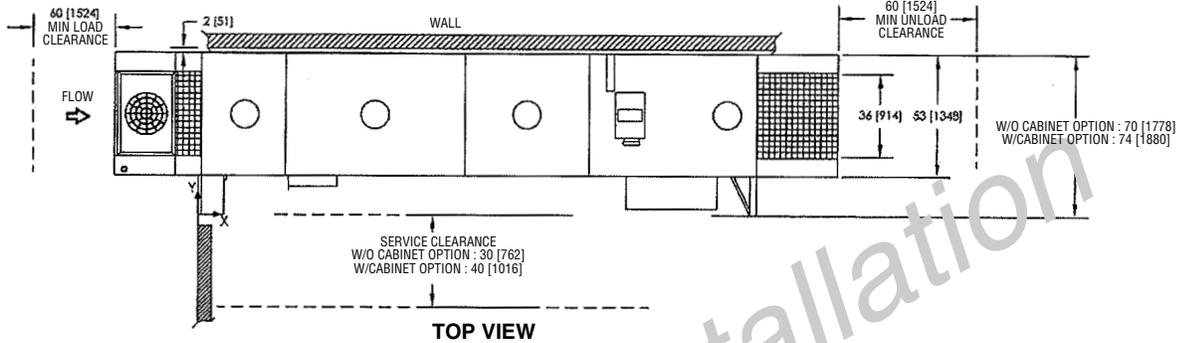
Reference the following equipment drawing for installation details.

Equip. Dwg. No.	Equipment Drawing Title
920-508-744	BASIL 6700 TUNNEL CAGE WASHER

Dimensions are inches [mm]

Dimensions are typical – drawing is not to scale

RIGHT HAND CONFIGURATION



DIMENSION FOR CONFIGURATION					
#	BDS (WU04-0054)	Drying Chamber (WU04-0060)	3' Unload Powered Section (WU04-0051)	4' Unload Gravity Roller Conveyor (WU04-0013)	TOTAL LENGTH
1			X		216 [5486]
2				X	247 [6274]
3		X	X		289 [7341]
4		X		X	320 [8128]
5	X		X		242 [6147]
6	X			X	273 [6934]
7	X	X	X		315 [8001]
8	X	X		X	346 [8789]

* Recommended wall opening for proper installation of barrier wall flange (accessory). A minimum ceiling height of 96" is required to locate the unit prior to install.

Life Sciences

For Further Information, contact:

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