STERIS®

BASIL® 5700LSR CAGE AND RACK WASHER

APPLICATION

The Basil 5700LSR Cage and Rack Washer is intended for use in the sanitation of soiled, reusable animal care devices such as cages, racks, debris pans, feeder bottles and other miscellaneous items by providing thorough cleaning and optional drying.

DESCRIPTION

The Basil 5700LSR Cage and Rack Washer is a mechanical washer equipped with a programmable control system. The washer is designed with five factory-set adjustable cycles: Rodents, Bottles, Rabbits, Primates and Fast. Five additional cycles are available for customized programming to meet specific operating requirements.

The Basil 5700LSR Cage and Rack Washer offers both manifolded and non-manifolded washing. The washer is available in a single- or double-door configuration.

Size (W x H x L)

Overall dimensions:

130-1/4 x 121 x 98-1/4" (includes Service Area)

(3308 x 3073 x 2495 mm).

Effective chamber load capacity:

46 x 84-1/4 x 85" (1168 x 2140 x 2159 mm).

STANDARDS

The Basil 5700LSR Cage and Rack Washer complies with the following standards:

- **American and Canadian Standards:** UL 61010-1 2nd Edition and CAN/CSA- C22.2 No 61010-1 2nd Edition, as certified by ETL.

(Typical only - some details may vary.)

- **Governing Directive for the Affixing of the CE Mark:** Machinery Directive (2006/42/EC).
- **Conformity to other applicable directives:** Electromagnetic Compatibility Directive (2004/108/EC) and amendments (91/368/EEC, 93, 44, EEC); Low Voltage Directive (2006/95/EC).
- **Standards applied to demonstrate conformity to the directives:** EN/IEC 61010-1; EN/IEC 61326-1.

FEATURES

Sumpless solution delivery system (washer cabinet base is 7-1/4" [184 mm] deep) eliminates the need for a traditional pit, which minimizes architectural challenges.

The Selections Checked Below Apply To This Equipment

VOLTAGE

- ☐ Assembled:
  - ☐ 208 V, 3-Phase, 60 Hz, 3-Wire
  - ☐ 480 V, 3-Phase, 60 Hz, 3-Wire
- ☐ Disassembled:
  - ☐ 208 V, 3-Phase, 60 Hz, 3-Wire
  - ☐ 380-415 V, 3-Phase, 50 Hz, 3-Wire
  - ☐ 480 V, 3-Phase, 60 Hz, 3-Wire

CONFIGURATION

- ☐ Single Power Door
- ☐ Double Power Door (Pass-Through)

CONTROL LOCATION (As Viewed From Service Side)

- ☐ Right
- ☐ Left

Note 1: Highly recommended if optional VHP Ready System is selected; required if Heat Recovery option is selected.

Note 2: Drying System and Heat Recovery options are highly recommended.

OPTIONS

- ☐ Dry System (See Note 1)
- ☐ Additional Wash Tank (2nd Detergent Tank)
- ☐ Drain Discharge Cool Down With Cold Water Injection System
- ☐ pH Neutralizing and Guaranteed Cool Down System:
  - ☐ With Cold Water
  - ☐ With Chilled Water
- ☐ Automatic Floor Tilting
- ☐ Exterior Stainless-Steel Jacket Package
- ☐ Flexible Utility and Quick Connection System
- ☐ VHP® Ready System (See Note 2)
- ☐ Heat Recovery System (See Note 3)
- ☐ Pure Water Rinse
- ☐ Automatic Rack Flush System

Note 3: Drying option must be selected.

ACCESSORIES*

- ☐ Leveling Legs for Mechanical Core
- ☐ Flexible Hoses for Utility Connections
- ☐ Barrier Wall Flange Assembly
  - ☐ One Set (for Recessing One Wall)
  - ☐ Two Sets (for Recessing Two Walls)
- ☐ Service Side Access Panels
- ☐ Floor Ramp (two required for double door units)
- ☐ Air Compressor
  - ☐ 208 V
  - ☐ 460 V
- ☐ Seismic Tie-Down Kit

* *Refer to SD633 for material handling accessories*

Item _____

Location(s)_____

_____

Solutions are heated by an instantaneous, in-line, stainless-steel heat exchanger.

Spraying system *(Patents #6257254 and #6439248 U.S.)* includes two horizontally mounted spray headers, one on each side of wash chamber, to optimize load coverage and cycle time. Spray arms alternate movement vertically. Depending on the accessory in chamber and cycle chosen, manifold connector automatically delivers wash solution to the accessory during the cycle.

Horizontal sliding doors (automatic, powered, side sliding doors) are made of approximately 1/2" (precisely 13 mm) tempered glass to minimize heat transfer to the work environment and allow for easy visual monitoring of the cleaning process. Doors are equipped with sensors that detect obstructions and prevent unit from operating if doors are not fully closed. Doors are dynamically pressed against a silicone gasket ensuring complete air and water tightness of the wash chamber.

Mobile mechanical core *(Patent #5,964,955 U.S., pending EP)* contains all major mechanical and electrical components. Mechanical core is placed on casters for easy access to system components and efficient installation. This feature permits service access between cabinet and mechanical core, adjustable up to 25" (635 mm). Mechanical core is also designed with hinged electrical and chemical dispenser boxes to further promote accessibility to all components of the system. Core is capable of fitting through a standard doorway.

Vapor removal system is provided to evacuate hot humid air and vapors from the chamber using a built-in 3 HP (2.2 kW) blower.

Fluorescent lights (two 18 W) are provided to illuminate the wash chamber.

Integral self-priming automatic chemical dispenser dispenses a predetermined amount of liquid chemical into the wash solution staging tank(s) prior to the treatment phase. Chemical flowmeters measure the amount of chemical to inject, and monitor quantity of chemical used. One peristaltic pump is included as standard.

Toolless, vertical self-cleaning filter is thoroughly flushed between each cycle phase. Cartridge is easily removed without tools for occasional maintenance by using a quick-disconnect clamp. During recirculation, solutions are filtered through a self-cleaning filter before being directed to their respective staging tank(s). Filter hole diameter is 1/32".

Wash chamber (constructed of 14 gauge, #304 stainless steel, no. 4 finish), is argon-welded and polished. Base is made of #304 stainless steel. Chamber flooring consists of three removable stainless-steel panels designed with grating running lengthwise in the chamber, allowing for quiet loading and unloading of cages. Floor grating includes easy pull up handles to facilitate removal.

High pressure pump is a 11.6 HP (8.7 kW) motor, 60 U.S. gal/min. at 125 psig (227 L/min. at 8.6 bar) head pressure delivering solution at over 100 psig (6.9 bar) from each spray jet. Pump impeller, shaft and casing (all #316 L stainless-steel construction) are fitted with a mechanical seal. Pump motor is equipped with a TEFC (drip-proof) frame, magnetic starter, overload protection and sealed bearings (requiring no lubrication).

Treatment staging tanks are equipped with an automatic solution level control, automatic hot water fill and safety overflowing piping. Tanks are made of #304 stainless steel, and are fully insulated with aluminum sheathed fiberglass (1" [25 mm] thick) to prevent heat loss and burn hazard. Bottom of tanks are sloped toward the water outlet for optimum drainability. Each solution tank includes an internal baffle that deflects solutions to tank walls to ensure self-cleaning of tank during the recirculation process. Capacity is 38 U.S. gal (143.85 L).

Wash and rinse solution tanks are equipped with a water saving system programmable from 0 to 85%.

Ventilation damper (built-in) is automatically opened during vapor removal and/or drying phases.

Sampling port is fitted in the piping system allowing operator to safely collect samples of wash or rinse water for titration purposes or verification of rinsing efficacy.

Isolation manual valves are provided on water and steam utility connections to facilitate maintenance. Connections for customer supplied water and steam pressure gauges are also included.

Integral impact printer provides an easy-to-read printed record of whether load was properly processed at the preset temperature, as well as a complete list of the alarm and abort in-cycle messages.

Manifolded coupling system in the floor of the washer is capable of diverting recirculated solution through an accessory manifold. System is interpiped for automatic operation.

Rinse water pre-heating system includes a steam coil that is added in the rinse tank to preheat the water prior to the final thermal rinse phase. Depending on cycle parameters and utility conditions, the system may reduce the total cycle time by up to two minutes.

Automatic descaler system allows the operator to automatically process a descaling cycle without having to handle strong chemicals. The system includes a chemical injection pump with flowmeter, 50' (15 m) of tubing and pick-up tube for use with remote 5 to 45 U.S. gallons (20 to 170L) chemical containers.

Other components of the wash/rinse system, including screens, spray headers and piping are constructed of #304 stainless steel. High pressure recirculating pump and 3 HP (2.2 kW) suction pump are made of #316 L stainless steel. Booster in-line heat exchanger is made of #304 stainless steel. Ball valves are constructed of Teflon®[1] and #316 L stainless steel. Unit frame, cabinet, mobile mechanical core and all fasteners are constructed of #304 stainless steel. Aluminum sheathed rigid fiberglass insulation (1" [25 mm] thick), covering top and sides of chamber exterior, reduces heat loss and noise level to work area.

[1] *Teflon is a registered trademark of DuPont.*

CYCLE DESCRIPTION

The fully automated Programmable Logic Controller (PLC) provides complete flexibility to adapt cycle parameters and accommodate various laboratory animal research applications. Depending on parameter selection, cycles can be as short as five minutes. Following is a typical cycle description:

Nonrecirculated Pre-Wash (Selectable): Fresh water from tank 2 is sprayed over the load and sent directly to the drain (cool down/neutralization tank if option is present), flushing the self-cleaning filter instead of being recirculated over the load. Selected time for this non-recirculated phase is 00:35.

Wash 1: Wash solution from tank 1 or tank 3 (if second detergent option is present) is recirculated through the spray system for the selected time period (00:00 - 10:00). Solution can be heated from 120-165°F (49-74°C). Water can be saved and reused for subsequent cycles.

Nonrecirculated Rinse (Selectable): Fresh hot water from tank 2 is sprayed over the load and sent directly to drain (cool down/neutralization tank if option is present), flushing the self-cleaning filter instead of being recirculated over the load. Selected time for this non-recirculated phase is 00:35.

Wash 2 (Optional): Wash solution from tank 1 or tank 3 (if second detergent option is present) is recirculated through the spray system for the selected time period (00:00 - 10:00). Solution can be heated from 120-165°F (49-74°C). Water can be saved and reused for subsequent cycles.

Nonrecirculated Rinse (Selectable): Fresh hot water from tank 2 is sprayed over the load and sent directly to drain (cool down/neutralization tank if option is present), flushing the self-cleaning filter instead of being recirculated over the load. Selected time for this non-recirculated phase is 00:35.

Final Rinse: Fresh hot water from tank 2 is sprayed over the load and recirculated for the selected time period (00:00 - 08:00). Solution is heated to ensure 160-185°F (71-85°C) is reached on the surface of the items. Solution can be saved for the next cycle if selected.

Vapor Exhaust: Hot humid air from the chamber is removed. Selected time for this non-recirculated phase is between 01:00 and 60:00.

Non-Recirculated, Heated Air Drying (Optional): Non-recirculated air, heated to 220°F (104°C) (approx. 149°F [65°C] in the chamber) is blown on the load, and evacuated through the vent connection. Selected time for this non-recirculated phase is between 00:00 and 60:00.

CONTROL SYSTEM

The control system consists of an Allen-Bradley CompactLogix™ Programmable Logic Controller (PLC)[1] with PanelView™ Plus 600 color operator interface[2]. Other control system features are as follows:

- **PLC** monitors and controls washer operations and functions. Cycle progresses automatically through the designated phases as programmed.
- **Integral printer** to record process parameters or an **external printer** can be connected to the control system.
- **Security access code** requires entry of a four-digit access code to change cycles, cycle values and to enter service mode.
- **Service mode** is accessible through main control panel for service and maintenance purposes.
- **Preprogrammed parameters** for each cycle. If operator selects an out-of-range setting when modifying the cycle values, the control system alerts operator with a reference message and halts further operation until the correct value is entered.
- **Ethernet port** is available for remote monitoring and troubleshooting.

TECHNICAL DATA

Resistive Temperature Detector (RTD) sensors are used to provide accurate control inputs and readouts throughout all cycles. RTD sensor is located in-line, just prior to spray jets, to ensure load temperature is reached.

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.

SAFETY FEATURES

Emergency exit. A manual door unlocking system is installed at the load end in the chamber. Once the Emergency Stop Cable is pulled, or the Emergency Stop Pushbutton is pressed, the door unlocking system can be used to manually disengage the door locking mechanism allowing the door to be easily opened from inside or outside.

Pressure transducer. Pressure is monitored inside the washing chamber to detect malfunctions.

Door switch. A microswitch prevents a cycle from starting if doors are not fully closed, and also stops the unit if doors are opened during a cycle. Doors must be closed to continue operation.

Emergency Stop Pushbutton. Washer is equipped with an external Emergency Stop Pushbutton that automatically stops operation of the washer.

Door interlock. The interlock mechanism prevents both doors from being opened simultaneously. For pass-through (double door) washers, the clean side/unload door cannot be opened until cycle has been completed.

Labeling. Washer is labeled with warning and caution pictograms to warn operator and service technicians of precautions to be taken.

Emergency stop cables. Located on each side of the interior wash chamber, instantly stops washer operation if pulled.

Interior warning light. Unit interior light flashes once prior to cycle start. Washer then waits for programmed period of time before initializing washing process.

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.*

OPTIONAL FEATURES

Nonrecirculated, vented drying system effectively dries processed load at the end of each cycle. Fresh, heated, High Efficiency Particulate Air (HEPA) filtered air is blown by a 3 HP (2.2 kW) blower at high speed through all four bottom corners of wash chamber, and to the load. Dry air is then evacuated through the chamber vent opening. This option is highly recommended if optional VHP® Ready System is selected; required if Heat Recovery option is selected.

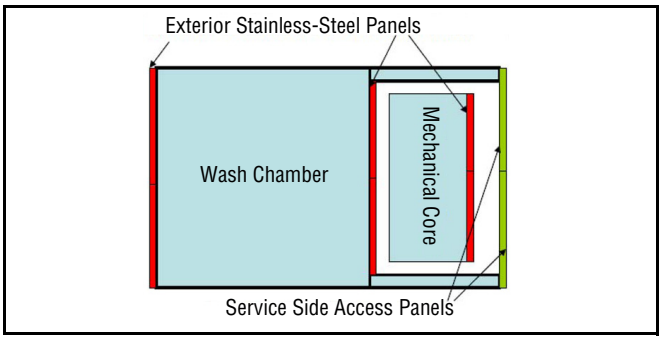
Second detergent system allows an additional detergent to be introduced to the wash cycle. Washer comes with additional staging tank, valves, chemical dispenser and flowmeter. Second detergent solution can be saved for subsequent cycles.

Drain discharge cool down by cold water injection is provided with a cold water inlet valve, integral with the drain line, to add cold water during draining for assistance in regulating the effluent temperature. Higher temperature effluent is cooled as it is being sent to drain. A cold water connection is required with this option.

pH Neutralizing and Guaranteed Drain Cool Down System with chilled water includes a #304 stainless-steel electropolished finish integral surge tank, two water level sensors and a chilled water heat exchanger to guarantee that no solution is discharged to drain if temperature is above an adjustable setpoint. If water temperature in the tank is higher than the setpoint (adjustable from 140 to 160°F [60 to 71°C]), chilled water is automatically circulated in a stainless-steel coil inside the tank, cooling down the effluent until setpoint is reached. Effluent is then discharged to the building drain system. Also included is a 3 HP (2.2 kW), 316 L stainless-steel mixing pump, a Thornton pH controller and a pH probe. This system neutralizes effluent before pumping discharge to the drain to ensure it is within a programmable pH range *(Patent #5810943 U.S.).* A chilled water connection is required with this option.

pH Neutralizing and Guaranteed Drain Cool Down System with cold water includes a #304 stainless-steel electropolished finish integral surge tank, two water level sensors and a cold tap water line to guarantee that no solution is discharged to drain if temperature is above an adjustable setpoint.If water temperature in the tank is higher than the setpoint (adjustable from 140 to 160°F [60 to 71°C]), cold water is automatically added to the effluent until setpoint is reached. Effluent is then discharged to the building drain system. Also included is a 3 HP (2.2 kW), 316 L stainless-steel mixing pump, a Thornton pH controller and a pH probe. This system neutralizes effluent before pumping discharge to the drain to ensure it is within a programmable pH range *(Patent #5810943 U.S.).*

Automatic floor tilt system slopes processed load at the beginning of the cycle to properly drain flat surfaces of caging systems. Floor is automatically returned to level at completion of cycle for smooth loading and unloading *(Patent #5,967,160 U.S., pending PCT, EP).*



Exterior #304 stainless-steel panels cover and protect the wash chamber insulation (both service and non-service sides) and the staging tanks.

Flexible utility and quick connection system with flexible hoses allows the mechanical core to be moved up to 25" (635 mm) away from the chamber without the need to disconnect the utilities, facilitating access for servicing. Quick connectors and purge valves are also provided for easier and safer connections and disconnections of water and steam utility lines should it be required to move the mechanical core farther away for servicing.

VHP® Ready System (see **NOTE 6**) requires washer to be equipped with injection ports, exhaust fan, catalytic converter, isolation valves and electrical connections to interface with either a STERIS VHP® M100-X* Biodecontamination System or VHP® 1000-ARD* Biodecontamination System (both sold separately). With this system the wash chamber is used as a pass-through biodecontamination chamber utilizing vaporized Vaprox® Hydrogen Peroxide Sterilant for biodecontamination of heat-sensitive items. Camlock connectors and quick-connect electrical connectors are conveniently located on the load side fascia panel for easy connection to the Biodecontamination System. A special exhaust fan evacuates the vaporized Vaprox Hydrogen Peroxide Sterilant from the chamber through a catalytic converter decomposing the sterilant vapor into oxygen and water vapor. An electrical outlet (120V, 60 Hz or 230V, 50 Hz) is available inside the chamber to connect a ventilated rack blower, or a customer provided auxiliary fan to enhance sterilant dispersion. A pressure transducer monitors the pressure in the chamber. The Drying System and the Heat Recovery options are highly recommended if this option is selected.

** See tech data SD776 and SD840 for information on these systems.*

Heat Recovery System allows for pre-heating the incoming fresh air with the heated drying air, thus reducing the energy required to heat the air during the drying phase (62,000 BTUs/hr typical). Drying option must be included.

Pure water final rinse is performed with purified water instead of the regular hot tap water. Water supply line is constructed of 316 stainless steel. This option reduces the level of mineral deposits on the load.

Automatic Rack Flush System enables the washer 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.

ACCESSORIES

Service side #304 stainless-steel access panels are provided to enclose the mechanical core when unit is not installed between two barrier walls. The panels can easily be removed for access to the mechanical core and service area.

Remote oilless air compressor, complete with tank and pressure switch, is available only for North America. Wiring at installation is not provided by STERIS.

Barrier wall flange kit consists of stainless-steel side, top and bottom flanges, to seal openings between unit, walls, floor and ceiling.

Leveling legs for mechanical core are threaded and provide up to 2-1/2" (63 mm) of adjustment. These are supplied to facilitate leveling of the mechanical core.

Flexible hoses for utility connections includes flexible hoses for water and steam utility supply lines, allowing the core to be moved up to 25" (635 mm) away from the chamber without the need to disconnect the utilities, thus providing easier access for servicing.

Seismic tie-down kit (unit is designed to comply with Seismic Zone 3 and 4 requirements) includes hardware for properly securing the washer to the building floor.

Floor ramp, used to facilitate loading/unloading inside floor mounted units. Quantity of two required for double door units.

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.

NOTES

1. Machine is shipped in three crates if disassembled, two crates if assembled. Add one crate if drying option is selected.
2. STERIS recommends shutoff valves and vacuum breakers (not provided by STERIS) be installed on service lines, and disconnect switches (with lockout in OFF position [not provided by STERIS]) be installed in electric supply lines near the equipment.
3. Pipe sizes shown indicate terminal outlets only. Building service lines (not provided by STERIS) must supply the specified pressures and flow rates.
4. For all ventilation ducting from the washer, STERIS recommends installation of a dedicated corrosion-proof, watertight duct to the exterior of the building, sloped toward the washer with condensate drain connection. Duct must be rated to operate at a temperature of 210°F (99°C), or higher.
5. STERIS recommends illumination of the service area (if applicable), along with provision of a convenience outlet for maintenance.
6. The VHP® options are to be used 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 VHP® pertinent Biodecontamination System Operator Course. Certification must be active and in force for all Applicators of Vaprox Hydrogen Peroxide Sterilant.

UTILITY REQUIREMENTS

***IMPORTANT:** Refer to equipment drawing 920-513-586 for details.*

Hot Water
1" (25 mm) NPT

Cold Water
1" (25 mm) NPT

Steam
1-1/2" (38 mm) NPT

Air
1/2" (13 mm) NPT

Ventilation
6" (203 mm) OD vent connection.

Drain
3" (75 mm) OD A 4" (100 mm) OD floor drain and a floor sink is recommended for floor-mounted or pit-mounted units.

Condensate Return
1" (25 mm) NPT

Chilled Water (if Option Installed)
1" (25 mm) NPT

Electricity
- » 208 V, 60 Hz, 3-Phase, 37.0 Amps
- » 480 V, 60 Hz, 3-Phase, 18.0 Amps
- » 380-415 V, 50 Hz, 3-Phase,18.0 Amps

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 document.

Table 1. ENGINEERING DATA

Shipping Weight (max.)		Operating Weight		Hot Water Consumption** per cycle	Steam Consumption** per cycle (with hot tap water heated at 140°F [60°C])	Noise Level (enclosed)	Heat Loss
Chamber	Mechanical Core	Washer	Mechanical Core				
4,000 lb (1814 kg)	2,000 lb (907 kg)	2,800 lb (1270 kg)	2,640 lb (1197 k)	12 U.S. gal (45.4 L)	39 lb (17.7 kg)	76.6 dBa	12,000 BTU/hr (3540 W)

** Calculated as described in ISO-3746 standard.*

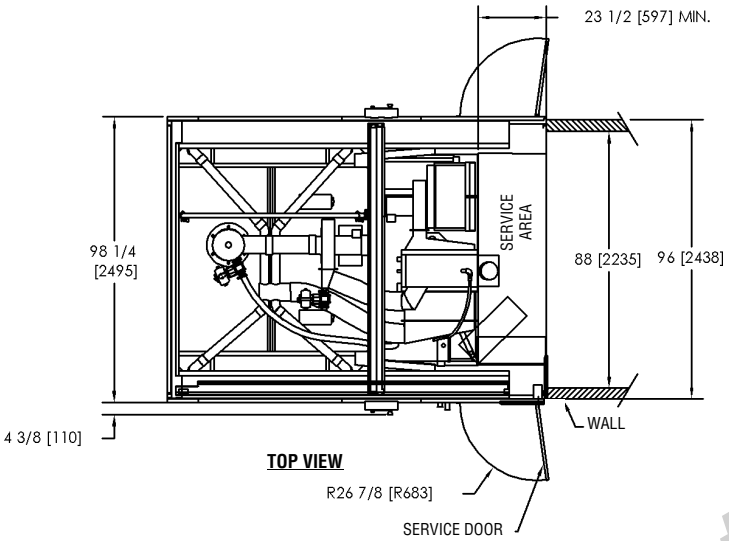
*** Default for Fast cycle, including drying.*

Reference the following equipment drawings for installation details.

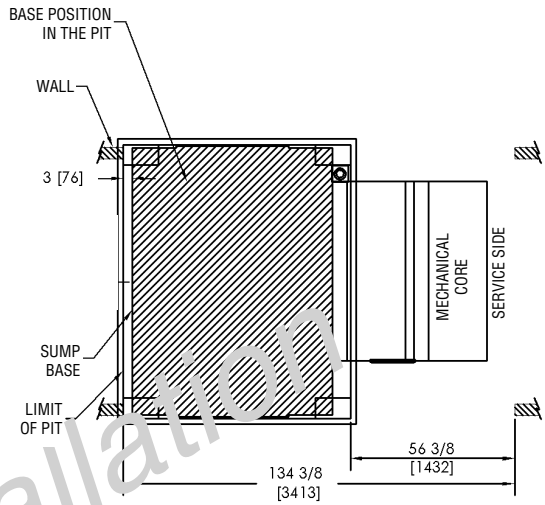
Equip. Dwg. No.	Equipment Drawing Title
920-512-757	BASIL 5700LSR CAGE AND RACK WASHER

Dimensions are inches [mm]

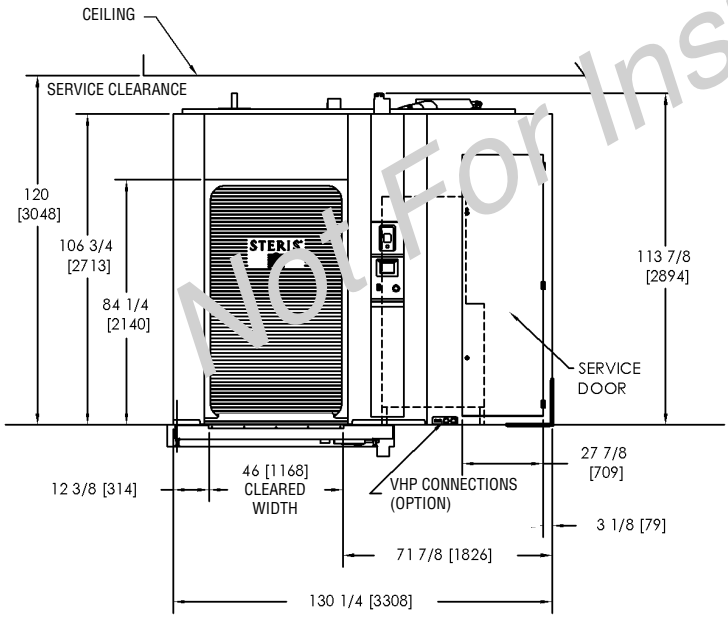
Dimensions are typical - drawing is not to scale.



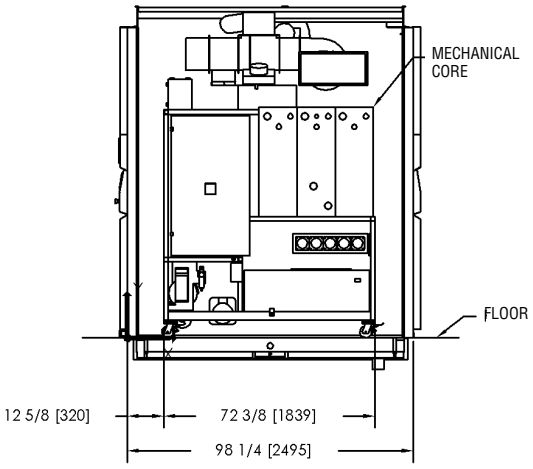
TOP VIEW



TOP VIEW
PIT-MOUNTED UNIT



FRONT VIEW



SIDE VIEW

NOTES

1. On 380/415 V units, NPT fittings are replaced by BSPT.
2. Utility pressure requirements are minimum dynamic, maximum static.
3. Building duct must be scaled up to 10" (254 mm) O.D. minimum as close as possible to washer duct connection.

Recommended Air Compressor

1. Rotary scroll air compressor must be located in a clean, well lit and ventilated area.
2. Never install the compressor where the ambient temperature is higher than 105°F (40°C), or where humidity is high. Clearance must allow for safe, effective inspection and maintenance. Minimum clearances required: above, 24" (610 mm); drive belt side, 12" (300 mm); and other sides, 20" (510 mm).
3. Never use any piping smaller than the compressor connection.

UTILITY REQUIREMENTS

Recommended Air Compressor

Electrical - Compressor Motor

208 V (8.4 Amps) or 460 V (4.2 Amps)
Other voltages available upon request.

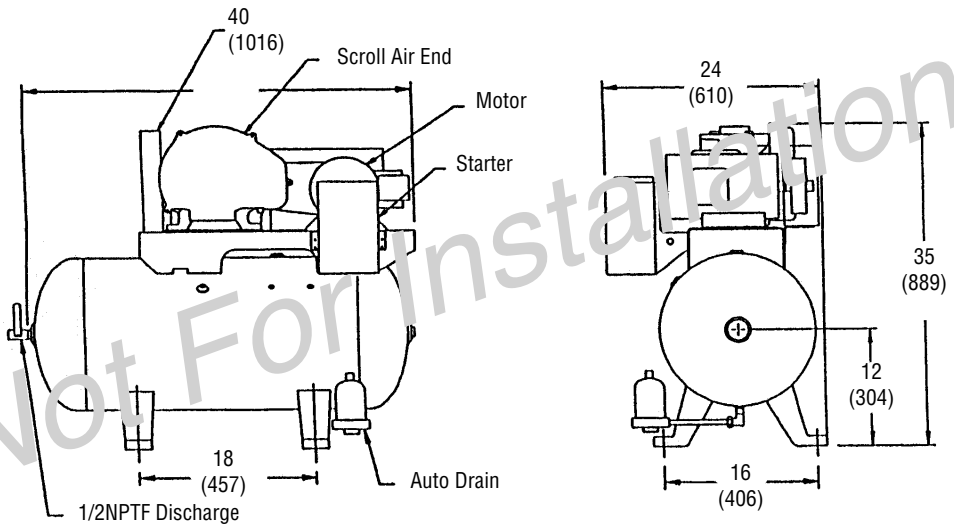
Table 2. ENGINEERING DATA – RECOMMENDED AIR COMPRESSOR WITH AUTOMATIC TANK DRAIN

CFM Open Flow (m^3/min)	Weight lb (kg)	Comp. Stages	Tank				
			Lubrication	Size in (mm)	Capacity U.S. gal (L)	Max. press psig (kPa)	Noise Level dBa
7.7 (0.22)	240 (108)	1	Oilless	See Below	30 (114)	100 (690)	59

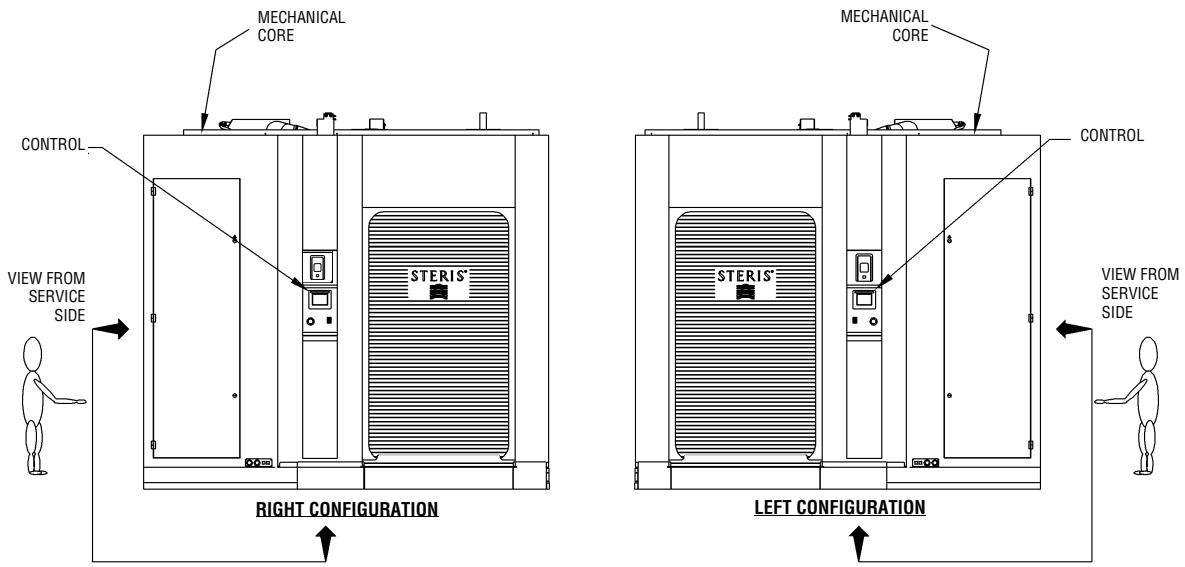
Dimensions are inches [mm]

Recommended Air Compressor

Dimensions are typical - drawing is not to scale.



DOOR CONFIGURATION



For Further Information, contact:

STERIS®

STERIS Corporation
5960 Heisley Road
Mentor, OH 44060-1834 • USA
440-354-2600 • 800-548-4873
www.steris.com