



CBW1026 Cage and Bottle Washer

General Specifications

1.0 General Description

The Model CBW1026 Cage and Rack Washer is a high capacity spray cabinet washer capable of processing any items which can be placed inside the washing compartment. It is specifically designed to clean and sanitize animal cages, bottles, pans, and other items ancillary to the care of laboratory animals. Several sizes are available, as well as many optional features. The Model CBW1026 incorporates a large number of innovative and unique features to ensure thorough, efficient cleaning, as well as many features unique to our design.

2.0 Dimensions SIZE (W X H X L)

MODEL	DOOR CONFIGURATION	CHAMBER SIZE*	EXTERNAL OVERALL SIZE
1026	VERTICAL LIFT	48" X 32" X 34" 121.92 cm x 81.28 cm x 86.36 cm	72" X 82" X 38-1/2" 182.99 cm x 208.28 cm x 97.79 cm
1026L	VERTICAL LIFT	48" X 32" X 48" 121.92 cm x 81.28 cm x 121.92 cm	72" X 82" X 52-1/2" 182.99 cm x 208.28 cm x 133.35 cm
1026LS	LOAD SHELF	48" X 32" X 34" 212.92 cm x 81.28 cm x 86.36 cm	72" X 82" X 38-1/2" 182.99 cm x 208.28 cm x 97.79 cm
1026LLS	LOAD SHELF	48" X 32" X 48" 121.92 cm x 81.28 cm x 121.92 cm	72" X 82" X 52-1/2" 182.99 cm x 208.28 cm x 133.35 cm
1026C	CABINET	48" X 32" X 34" 121.92 cm x 81.28 cm x 86.36 cm	72" X 82" X 38-1/2" 182.99 cm x 208.28 cm x 97.79 cm
1026LC	CABINET	48" X 32" X 48" 121.92 cm x 81.28 cm x 121.92 cm	72" X 82" X 52-1/2" 182.99 cm x 208.28 cm x 133.35 cm

*Note: Dimensions are maximum chamber opening sizes. Actual load size must be smaller to allow for clearances. Custom chamber sizes can be provided as required.



3.0 Reciprocating Spray Headers

- 3.1 Vertical and horizontal headers, surrounding the load, shall be supplied and equipped with machined jets. Jets shall deliver an elliptical spray pattern for optimal impact and coverage to the load. No rotating spray arms shall be utilized.
- 3.2 Headers shall be interconnected and mounted to a carriage having non-lube Acetal plastic wheels.
- 3.3 Carriage shall be moved reciprocally from end to end within the cabinet by a non-proprietary pneumatic device. No electric motors, gearboxes or cable capstans shall be used.
- 3.4 All cable sheaves shall be Acetal plastic with Stainless Steel axles.
- 3.5 Failure of the header system to traverse the machine interior within the allotted time shall result in a Fault Condition. (Blocked Header; see par. 6.5.3)

4.0 Self-Flushing Debris Strainer

- 4.1 All treatment solutions shall be pumped through a specially designed strainer that ensures that the spray jets shall not be plugged by entrapped debris.
- 4.2 Strainer shall be designed with orifices significantly smaller than those in the jets, such that debris which is suspended in the treatment fluids and which could lodge in the jet orifices shall be trapped prior to delivery to the header system.
- 4.3 After each treatment phase any particles that have been trapped are flushed to drain.
- 4.4 Drop screens, which are subject to overflow and subsequent failure, and which continue to expose refreshed treatment fluids to previously entrained debris, shall not be acceptable.
- 4.5 Strainer shall be easily removable with no tools via a sanitary-style clamp. System shall be completely self-regulating and require routine inspection and maintenance no more than once per week.

5.0 Automatic Temperature Regulation and Guarantee

- 5.1 The Final Rinse cycle phase shall be selectable as a Guaranteed Temperature Phase.
- 5.2 Timing of a Guaranteed Temperature Phase shall not begin until the solution temperature has reached the set point (typically 180° F/ 82.22° C or higher), thus ensuring that the load has been subject to the proper temperature for the entire time set.
- 5.3 Failure of any Guaranteed Temperature Phase to reach the setpoint temperature within the allotted time shall result in a Fault Condition. (Temperature Failure; see par. 6.5.4)

6.0 Safety and Certifications

- 6.1 An OSHA-style Emergency Stop button shall be installed on the operator control panel. This switch shall be hard-wired to a safety stop relay, which when de-activated shall interrupt all power to the outputs of the machine, thus satisfying the Dept. of Labor, Occupational Safety and Health Administration standards for industrial machinery.



6.2 Magnetic safety switch(es) on the door(s) shall reliably ensure that all treatments stop instantly if the door(s) is opened. Switch(es) shall be equipped with an internal fail-safe fuse and circuitry, such that if the door is opened and the internal reed switch does not disconnect, the switch will fail open and prevent the operation of the machine.

6.3 All outputs external to the electrical box shall be low voltage DC, Intrinsically Safe by the definition of OSHA and National Electrical Code (NEC).

6.4 All devices and components which consume electrical power shall be UL listed and/or approved, and shall bear NEMA (US Standards), IEC (International Standards) or other recognized International ratings appropriate for the use intended.

6.5 Fault Conditions shall be annunciated on the operator interface screen, and shall be sent to the RS232 interface port for printing or data acquisition. At least five (5) fault conditions shall be so identified.

6.5.1 Emergency Stop - Depression of the Emergency Stop Button shall reset the machine and display a fault message which identifies the source of the emergency stop signal.

6.5.2 Door Open - Lack of positive door closure shall cause the machine to enter Pause mode, from where the current cycle can be recovered. Fault message shall indicate which door is at fault, if the machine is so equipped.

6.5.3 Drive Blocked - Failure of the drive to traverse the cabinet in the time allowed shall cause the machine to enter Pause mode and shall cause the screen to display the Drive Blocked message.

6.5.4 Sump Heat - Failure of the sump to reach the desired temperature in the expected time shall cause the machine to enter pause mode and shall cause the screen to display the Sump Heat Fault message.

6.5.5 Fill Fault - Fill Fault message shall be displayed and Pause mode shall be entered whenever the sump fails to fill in the allotted time.

7.0 Pneumatically Operated Valves

7.1 All automatic ball valves shall be controlled by pneumatic operators. Electric-motor-operated ball valves shall not be acceptable.

7.2 All automatic water and steam control valves shall be direct-operated pneumatic types. Pilot-operated solenoid valves or any valve which incorporates a diaphragm-type sealing system shall not be acceptable.

8.0 Microprocessor Control

8.1 The treatment schedule and all other machine functions shall be controlled by a readily available, non-proprietary, industrial style modular Programmable Logic Controller equal to that manufactured by Koyo and sold throughout the United States by PLC Direct.

8.2 Module replacement for the I/O system shall be easily accomplished with no tools and no wiring disconnection or connection.

8.3 The control system shall be programmed in simple ladder logic.



8.4 A Color Touch Screen shall provide complete operator interface, diagnostic and programming capability. No special skills or knowledge shall be necessary to set up and control all machine functions.

8.5 Diagnostics shall be available from the Color Touch Screen which will allow direct access to all I/O points for complete diagnosis of all machine systems.

8.6 Treatment schedules and cycle phase selections shall be programmable from the Color Touch Screen. PIN screens shall be available at the discretion of the supervisor to lock out access to the cycle phase programming functions. All timers in the program, as well as all cycle phase temperatures, shall be accessible and settable through the operator interface screen, with no necessity for the connection of either an auxiliary programming device or a modem/telephone line connection.

8.7 All controls shall be of industrial design and type, in order to resist the extreme environmental demands of the washroom. All electrical wiring, operator interface controls and circuits shall be protected in accordance with NEMA, UL and NEC standards.

9.0 Insulated Exterior

9.1 The exterior of the machine shall be fully insulated with 2" of rigid insulation covered by a Stainless Steel jacket for protection. This insulation shall be an integral part of the machine, designed to maintain the high temperatures required in the washing chamber and to limit radiation loss to the surrounding air.

10.0 Manuals & Documentation

10.1 A full set of manuals explaining machine operation and PLC operator controls shall be provided.

10.2 A hard copy of the PLC ladder diagram shall be available at no additional charge.

10.3 A complete list of purchased parts including original part numbers, where the parts were purchased, and the nearest local distributor where the parts can be purchased shall be provided as a standard part of the manual. All purchased machine components such as jets, valves, PLC modules, pneumatic system parts, etc., shall be entirely non-proprietary and available for purchase freely and widely through normal industrial supply outlets.

20.0 Machine Operation

20.1 Items to be cleaned shall be placed inside the cabinet by the operator. The door shall be closed and the pre-programmed treatment cycle phase options chosen. Treatment shall commence and continue automatically to the end of the cycle. Once the treatment cycle is complete, the operator shall open the door and remove the cleaned items.

20.2 All cycle phase selections and other cycle options shall be available for selection from the Color Touch Screen, with optional supervisory PIN screens preserving security of standard cycle phases. Machine memory shall allow storage of a minimum of four(4) distinct cycles, to be recalled through simple screen selections. Additional cycle selections shall be easily customized from the Screen.

20.3 Standard cycle phases shall include at least the following general treatment options:

20.3.1 Pre-rinse - Water retained in the sump from the last rinse shall be used to remove heavy soil, flushing any easily removed matter to drain in order to ensure that the detergent solution stays as clean as possible. Treatment shall be under pressure from the main treatment pump at 230 GPM (870.64 LPM) @ 80 feet (24.38 m) of head. At



the end of this cycle phase, debris entrapped by the self-flushing strainer shall be sent to drain with the used treatment water.

20.3.2 Wash - Fresh hot water from the customer's supply shall be used to fill the sump, with detergent being introduced by dispenser or manually during filling. When the sump is full, heating shall begin in order to bring the wash solution up to the desired temperature. The wash treatment shall be under pressure from the main treatment pump at 230 GPM @ 80 feet of head. At the end of the wash cycle, detergent solution shall be flushed to drain. The self-flushing debris strainer shall be cleaned in the process of draining the sump, sending any entrained debris to the sewer immediately.

20.3.3 First Rinse - Fresh hot water from the customer's hot water supply shall fill the sump, and shall be circulated through the jet system by the main treatment pump at 230 GPM (870.64 LPM) @ 80 feet (24.38 m) of head. The heating system shall be active during this cycle, maintaining the temperature of the rinse water. At completion, the used water shall be conducted to drain, flushing the strainer in the process.

20.3.4 Final Rinse - Fresh hot water from the customer's hot water supply shall fill the sump, and shall be circulated through the jet system by the main treatment pump at 230 GPM (870.64 LPM) @ 80 feet (24.38 m) of head. The heating system shall be active during this cycle, maintaining the temperature of the rinse water. At the election of the operator, this treatment cycle phase shall utilize the temperature guarantee circuitry. In this case, timing of the cycle phase shall not begin until the rinse water is recirculating at the setpoint temperature, thus guaranteeing appropriate sanitation. At completion, this rinse water shall be retained in the sump for use as pre-wash water for the next load.

20.3.5 Exhaust - When all wet cycle phase treatments are complete, the automatic exhaust damper shall open and any residual vapor in the cabinet shall be vented to the customer's air handling system. The time allowed for this ventilation shall be determined by experience with the specific application and subsequent adjustment of the user program through the operator touch screen.

30.0 Details of Construction

30.1 General

30.1.1 All wetted parts shall be of Type 304 Stainless Steel or appropriate polymeric materials.

30.1.2 All electrical assemblies, piping assemblies and mechanical apparatus shall be designed for, and be appropriate for use in, a high temperature sanitary wash-down environment. All components shall be selected for their ability to perform for long periods of time in the adverse and high production environment of the laboratory washroom. Each purchased part and each engineered part and sub-assembly shall be scrutinized and all specific design decisions shall be made in the light of these basic criteria.

30.1.3 All purchased components shall be un-modified, off-of-the-shelf items available to the owner in his locality, should he need them.

30.1.4 Original manufacturers' part numbers and descriptive information for all purchased parts shall be made an integral part of the service manual information provided at time of installation. Every effort shall be made throughout the life of the machine to assist the owner in acquiring any parts needed.

30.2 The door(s) of the washer shall be of double-walled stainless steel construction, filled with insulation. Door safety switches shall ensure that the machine cannot operate with the door(s) open.

30.3 A stainless steel load grid shall be supplied to support all loads.



30.4 The recirculating sump shall be equipped with a stainless steel steam coil, fully welded in accordance with ASME Section VIII and fabricated from Stainless Steel materials designed to carry steam at the rated pressures. No structural-style parts will be acceptable. The coil shall be easily removed for cleaning or maintenance. Under no circumstances shall the coil be welded into place.

30.5 Temperature shall be controlled directly by the PLC. Temperature sensor(s) shall be Type J Thermocouples, connected directly to the analog inputs of the PLC.

30.6 Steam controls shall be included for 30-80 psi (206.84 - 551.58 kPa) dry steam. No diaphragm-type steam valves shall be acceptable. Condensate trap(s) shall be disc/thermodynamic type only.

30.7 Water level shall be maintained by an electronic level control with removable and easily cleaned probes. Probes shall be removable for cleaning with no tools required, such as with a sanitary-type clamp fitting.

30.8 The treatment pump shall be a horizontal, close coupled, cast-volute pump equal to a Worthington Model D824 centrifugal pump capable of delivering at least 230 GPM (870.64 LPM) at 80 feet(24.38 m) of pressure head. Mechanical seals shall be carbon ceramic and Stainless Steel. No vertical or seal-less pumps shall be acceptable. No pumps having a stamped or deep-drawn volute or wet end will be acceptable.

30.9 Spray jets shall be elliptical spray jets equal to Spraying Systems Co. 1/4USS8030. No proprietary jets shall be acceptable.

30.10 Washer programmable control shall provided by a modular industrial-type programmable logic controller, programmed in ladder logic and replaceable and programmable by the customer's own personnel if necessary. No proprietary control will be acceptable. All wiring and control shall be per National Electric Code and all devices utilized shall be UL, NEMA and/or IEC-rated. All operator controls or devices shall be of standard industrial NEMA-rated types, chosen for their ability to operate over the long haul in the tough and corrosive environment of the washroom.



30.11 MATERIALS OF CONSTRUCTION

Item	Material
base and sump	12 gauge, 304 SS - #3 finish
door panels	16 gauge, 304 SS - #3 finish
side and top panels	14 gauge, 304 SS - #3 finish
recirculating piping	304 SS
spray header and jets	304 SS
recirculating pump housing and impeller	Cast iron*
recirculating valves	brass*
external water piping	copper
steam coils	Sch 40. 304 SS - #2B finish
internal steam piping	stainless steel
external steam piping	schedule 40 black iron
temperature booster	304 SS
drain piping	304 SS and Sch 80 (C)PVC
barrier walls	20 gauge, 304 SS - #3 finish

* Shall be constructed of 304 stainless steel when Acid Detergent Ready option is selected (see par. 40.14).

40.0 Optional Features

40.1 Knock-Down Shipment - Machine shall be provided in knocked-down condition, all pieces to pass through a standard man-door, for reassembly at the customer's site. Design shall allow for minimal welding; cabinet panels shall be flanged and bolted together. No special lifting equipment of any kind shall be required.



- 40.2 Printer - A tractor-feed printer shall be supplied to document each cycle, phase, time, temperature and alarm. At the discretion of the customer, this printer may be remotely mounted and connected by a serial interface.
- 40.3 Exhaust Fan - A tube-axial-type exhaust fan shall be provided to work in concert with the automatic damper and provide adequate ventilation in applications where the existing building air handling systems are inadequate. Fan construction shall be of 100% corrosion-free materials.
- 40.4 Automatic Exhaust Damper - An automatic, pneumatically-operated exhaust damper shall be provided to work with the cycle program in order to reduce exhaust during the wet phases and maximize exhaust during the exhaust and resting phases of machine operation. This feature shall operate to increase thermal efficiency, thus saving heating dollars, and shall reduce water load on the building exhaust system.
- 40.5 Pass-Through Operation - Machine shall be provided with a door at each end for operation within a clean/dirty room environment.
- 40.6 Windows - Tempered Safety Glass windows shall be provided in any doors to allow visual inspection of the interior with the door(s) closed.
- 40.7 Illuminated Interior - Machine shall be equipped with a fluorescent strip light assembly which shall be mounted outside the machine above the roof. A tempered glass window shall be placed in the roof panel to allow light from the fixture to enter the machine. Lights mounted interior to the machine shall not be acceptable.
- 40.8 Door Interlocks - Doors shall be provided with pneumatically-operated door locks arranged such that the two doors can never be open at the same time, thus preventing passage of contaminated material from one side to the other.
- 40.9 Steam/Hot Water Temperature Booster – A stainless steel plate-type steam heat exchanger shall be provided to boost the customer's water temperature from 120° F (48.89°C). to 180° F (82.2 °C). This option shall decrease the amount of time required for in-ump heating of temperature-guaranteed rinse water. Cast iron, helical coil or shell-and-tube type heat exchangers, or any design utilizing non-stainless steel parts, shall not be acceptable.
- 40.10 Discharge Cooling: Non Monitored - Washer shall be provided with an integral cool-down apparatus which shall ensure that all effluent is cooled to 140° F (60° C). or less before gravity conduction to the customer's drain. This shall be accomplished by mixing the effluent with cold water from the owner's supply.
- 40.11 Discharge Cooling: Monitored - Washer effluent shall be conducted to a stainless steel holding tank. A probe shall sense the discharge temperature and add the required amount of cold water from the owner's supply to lower the discharge temperature to below 140° F (60° C). before discharging to the building drain system. The entire system shall be under the supervision of the machine PLC control.
- 40.12 Automatic Alkaline Agent Injection System : Time Based - A non-monitored, time based, volumetric type injection system shall be provided to automatically meter user supplied liquid cleaning agent into the sump. Time settings for the feed pump shall be settable from the operator control screen, behind a supervisory PIN screen.
- 40.13 Automatic Alkaline Agent Injection System: Monitored - A monitored automatic proportional injection system shall be provided to inject user supplied alkaline agent into the sump. The concentration of the treatment solution shall be sensed with a probe and a proportional amount of agent shall be injected to attain and maintain the desired selected agent concentration. A low agent reservoir level shall be annunciated to the operator.



40.14 Acid Detergent Treatment Ready - All wetted components including valves, pump, and piping, which come into contact with recirculating treatment solution, shall be 304 stainless steel to ensure reliable and maintenance-free operation and long life. (This option shall be chosen whenever acid wash agents are to be used)

40.15 Automatic Acid Agent Injection System: Time Based - A non-monitored, time based, volumetric type injection system shall be provided to automatically meter user supplied liquid cleaning agent into the sump. Time settings for the feed pump shall be settable from the operator control screen, behind a supervisory PIN screen.

40.16 Automatic Acid Agent Injection System: Monitored - A monitored automatic proportional injection system shall be provided to inject user supplied alkaline agent into the sump. The concentration of the treatment solution shall be sensed with a probe and a proportional amount of agent shall be injected to attain and maintain the desired selected agent concentration. A low agent reservoir level shall be annunciated to the operator.

40.17 Barrier Flanges for Recessing Through One Wall - Stainless Steel Flanges shall be provided to fully enclose the recessed end of the unit from wall to wall and floor to finished ceiling.

40.18 Barrier Flanges for Recessing Through Two Walls - Stainless Steel Flanges shall be provided to fully enclose the "clean" and "soiled" ends of the unit from wall to wall and floor to finished ceiling.

40.19 Aesthetic Side Enclosure - A stainless steel enclosure with access door(s) shall be provided to enclose the service and component side of the unit from the floor to the top of the unit. This enclosure shall be type 304 stainless steel, with #3 finish, and shall be fully insulated.

40.20 Treatment Solution pH Neutralization System: Time Based - A non-monitored, time based, volumetric type injection system shall be provided to automatically meter user supplied neutralization agent into the sump to neutralize acidic solutions before discharge to drain to conform to plumbing code requirements. Time settings for the feed pump shall be settable from the operator control screen, behind a supervisory PIN screen.

40.21 Treatment Solution pH Neutralization System: Monitored - A monitored proportional system shall be provided to automatically inject user supplied neutralization agent into the sump to neutralize acidic solutions before discharge to drain to conform to plumbing code requirements. A probe shall sense the pH of the treatment solution and a proportional amount of agent shall be injected to attain a neutral pH. A low agent reservoir level shall be annunciated to the operator.

40.22 Fresh Water Final Rinse - A separate header and jets shall be provided to allow for an additional final rinse of fresh water, Reverse Osmosis Water or other hot, pure water from the owner's supply. This option may be used with the instantaneous hot water heat exchanger option (see par. 40.9) to provide a temperature guarantee on this final rinse in addition to the normal temperature guarantees.

40.23 Descaling System: Interior Chamber - A programmable descaling system shall be provided which when operated will remove scale buildup from the interior surfaces of the wash chamber and recirculating piping systems.

40.24 Seismic Restraints - Properly designed and attached seismic restraints shall be provided to comply with local codes.

40.25 High Altitude Inducer - An inducer designed to provide for optimal pumping efficiency at high elevation and reduced atmospheric pressure installations shall be provided as part of the pump package.



40.26 Remote Access Programming Capable (DFAP) - A modem shall be included in the modular PLC package to provide for Direct Factory Accessible Programming (DFAP). This option shall allow trained SMC technicians to directly access the programming of the machine from a remote location for changes or diagnostic purposes. A dedicated phone line shall be provided by the owner if this option is selected.

40.27 Integral Air Compressor - An integral air compressor shall be provided to operate the drive and pneumatic valves. This option shall be chosen whenever compressed air is not available from building utilities.

40.28 Steam and Water Pressure Gauges – Glycerin-Filled Gauges shall be installed to visually monitor both steam and water pressure.

40.29 Fused Electrical Disconnect Switch - A NEMA 4X Listed fuseable disconnect switch of appropriate size and capacity shall be provided and mounted exterior to the machine control cabinet.

40.30 Special Spray Configurations - Sprays shall be provided in various special configurations in order to adequately clean any troublesome items in the owner's inventory.

40.31 Special Cabinet Size - Cabinet shall be supplied in the exact shape and size specified to suit the owner's special needs.

40.32 Low Steam Pressure - The unit shall be designed for a steam pressure below 30 PSI (206.84 kPa). All coils, valves, pipes and other devices shall be sized to operate under the conditions specified.

40.33 Vent Condenser - A condensing apparatus shall be provided to remove most of the vapor from the exhaust, in the event that the owner's air-handling system cannot accept the saturated air, which must be removed from the cabinet. This condenser shall cool the effluent vapors by utilizing customer-supplied cold water.

40.34 Electric Heat - Stainless Steel electric immersion heaters shall be installed in the machine sump to provide temperature boost in lieu of steam heat. A separate electrical service shall be supplied by the owner if this option is selected (see utility requirements).

40.35 Cabinet-Style Door(s) - Cabinet-style, horizontally opening door(s) shall be provided in lieu of the standard guillotine-type door(s). Door(s) shall be 2" (5.08 cm) thick, filled with insulation, and shall be gasketed and sealed to prevent leakage of treatment solutions or vapor. This option shall be chosen when available heights will not accommodate the standard doors in the open position.

40.36 Load Shelf Type Door(s) - Load Shelf Type door(s) shall be provided in order to match owner's existing operation and work flow. Doors shall be 2" (5.08 cm) thick and fully insulated, complete with outrigger supports.

50.0 Available Accessories

50.1 General Purpose Wash Basket - A wire mesh basket, 20" x 20" x 5" (50.8 cm x 50.8 cm x 12.7 cm) shall be provided to allow small items to be washed safely and efficiently. This basket shall be suitable for sipper tubes.

50.2 Cage Processing Rack - Stainless steel rack shall be provided to process cages of any size or shape. Samples shall be provided by the owner at time of order. The rack shall be provided as a two-rack system to allow easier loading and handling.



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50.3 Transfer Cart - A Stainless Steel cart with a plastic top shall be provided to assist in the loading and unloading of the machine and the cage processing racks. Cart shall have soft non-marking tires on stainless steel casters.

60.0 Utility Requirements

	<u>CBW1026, 1026LS, 1026C</u>	<u>CBW1026L,1026LLS, 1026C</u>
Electrical	3ph, 60hz, 8 HP 5.97 KW	3ph, 60hz, 11 HP 8.20 KW
<i>Add for Elec Heat Option</i>	3ph, 60hz, 24 KW	3ph, 60hz, 36 KW
Steam	1 ½" (3.81 cm) FPT 30-80 PSI 206.84-551.58 kPa 350#/hr (158.76 kg/hr) Max Flow 250#/hr (113.40kg/hr) Avg Flow	1 ½" (3.81) FPT 30-80 PSI 206.84-551.58 kPa 400#/hr (181.44 kg/hr) Max Flow 300#/hr (136.08 kg/hr) Avg Flow
Condensate	1" (2.54 cm) FPT	1" (2.54 cm)FPT
Hot Water	1" (2.54 cm) FPT 35 PSI (241.32 kPa) 140-180 Deg. F. 60-82.22 Deg. C 140 Gal (529.96 L) Per Load Max	1" (2.54 cm) FPT 35 PSI (241.32 kPa) 140-180 Deg. F. 60-82.22 Deg. C 140 Gal (529.96 L) Per Load Max
Drain	1 ½" (3.81 cm) FPT 180 Deg. F (82.22 Deg. C) Max 60 GPM Max	1 ½" (3.81 cm) FPT 180 Deg. F (82.22) Deg. C 60 GPM Max
Exhaust	6" (2.88 cm) Dia. 200 (5.66 CMM) SCFM 180 Deg. F (82.22 Deg. C) Saturated 1/2" (1.27 cm) FPT	6" (2.88 cm) Dia. 200 (5.66 CMM) SCFM 180 Deg. F (82.22 Deg. C) Saturated 1/2" (1.27 cm) FPT



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Compressed Air	80 PSI (551.58 kPa) 4 SCFM (.11 CMM)	80 PSI (551.58 kPa) 4 SCFM (.11 CMM)
Cold Water (Optional)	3/4" (1.91 cm) FPT 35 PSI (241.32 kPa) 15 GPM (56.78 LPM) Avg Flow	3/4" (1.91 cm) FPT 35 PSI (241.32 kPa) 15 GPM (56.78 LPM) Avg Flow

60.1 Notes to Utilities Table

- 60.1.1 A disconnect switch shall be installed by others than SMC in accordance with all NEC and local electrical codes.
- 60.1.2 Condensate shall be connected by others than SMC to a non-pressurized gravity main. The maximum condensate lift shall not exceed 15' (4.57 m).
- 60.1.3 Steam pressure shall not exceed 80 PSI (551.58 kPa). Factory shall be consulted for steam pressures below 30 psi dynamic.
- 60.1.4 Hot water temperatures of less than 180°F (82.22°C) may impact treatment cycle times. Factory shall be consulted for recommendations if 180°F (82.22°C) water is not available.
- 60.1.5 Cold water shall be a required utility only when the Vent Condenser (par. 40.33) or Discharge Cool-Down (pars. 40.10, 40.11) are chosen.
- 60.1.6 Drain shall be installed by others than SMC such that there is an air gap between the discharge point and the floor drain, or otherwise in strict accordance with local plumbing codes.
- 60.1.7 Exhaust connection shall be made by others than SMC using non-corroding materials, and all ductwork shall be sealed and pitched towards the machine. Any low points shall have individual drains lines installed. Effluent vapor is 180°F (82.22°C), 100% saturated air.



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70.0 Additional Engineering Information

	<u>CBW1026, 1026LS, 1026C</u>	<u>CBW1026L, 1026LLS, 1026LC</u>
Shipping Wgt.	2100# (952.55 kg)	2300# (1043.27 kg)
Dynamic Wgt. as Installed	2200# (997.91 kg)	2400# (1088.63 kg)
Cage Capacity		
Std. Mouse	32	48
Std. Rat	12	16
Sump Capacity	34 Gals. (128.70 Liters)	34 Gals. (128.70 Liters)
Heat Radiation		
(typ. door end)	3000 btu/hr 3167.61 kJ/hr	3000 btu/hr 3167.61 kJ/hr
(typ. svce. side)	12000 btu/hr 12670.44 kJ/hr	12000 btu/hr 12670.44 kJ/hr
(typ. blank side)	2000 btu/hr 2111.74 kJ/hr	2000 btu/hr 2111.74 kJ/hr