



# Model RW 6290 Cage and Rack Washer

## General Specifications

### 1.0 General Description

The Model RW6290 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, racks, pans, and other items ancillary to the care of laboratory animals. Several sizes are available, as well as many optional features. The Model RW6290 incorporates a large number of “state-of-the-art” 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	Chamber Size*	External Overall Size	Minimum Pit Size
<b>RW6290</b>	46" x 85" x 92" 117 x 216 x 234 cm	85" x 104" x 96" 216 x 264 x 244 cm	84" x 10" x 101" 213 x 25 x 257 cm
<b>RW6290-P</b> (with pan washing)	46" x 85" x 92" 117 x 216 x 234 cm	93" x 104" x 96" 236 x 264 x 244 cm	84" x 10" x 101" 213 x 25 x 257cm
<b>RW6290L</b>	46" x 85" x 140" 117 x 216 x 356 cm	85" x 106" x 144" 216 x 269 x 366 cm	84" x 12" x 149" 213 x 30 x 378 cm
<b>RW6290L-P</b> (with pan washing)	46" x 85" x 140" 117 x 216 x 356 cm	93" x 106" x 144" 236 x 269 x 366 cm	84" x 12" x 149" 213 x 30 x 378 cm
<b>RW6290W</b>	72" x 85" x 140" 183 x 216 x 356 cm	111" x 104" x 144" 282 x 264 x 366 cm	110" x 10" x 149" 279 x 25 x 378 cm
<b>RW6290W-P</b> (with pan washing)	72" x 85" x 140" 183 x 216 x 356 cm	119" x 104" x 144" 302 x 264 x 366 cm	110" x 10" x 149" 279 x 25 x 378 cm
<b>RW6290DL</b>	46" x 85" x 188" 117 x 216 x 478 cm	85" x 104" x 192" 216 x 264 x 488 cm	84" x 10" x 197" 213 x 25 x 500 cm
<b>RW6290DL-P</b> (with pan washing)	46" x 85" x 188" 117 x 216 x 478 cm	93" x 104" x 192" 236 x 264 x 488 cm	84" x 10" x 197" 213 x 25 x 257 cm

<b>RW6290PC1</b>	46" x 95" x 92" 117 x 216 x 234 cm	85" x 132" x 96" 216 x 335 x 366 cm	84" x 10" x 101" 213 x 25 x 378 cm
<b>RW6290PC2</b>	46" x 95" x 140" 117 x 216 x 356 cm	85" x 132" x 144" 216 x 335 x 366 cm	84" x 10" x 149" 213 x 25 x 378 cm
<b>RW6290PC3</b>	46" x 95" x 180" 117 x 216 x 457 cm	85" x 132" x 184" 216 x 335 x 467 cm	84" x 10" x 189" 213 x 25 x 480 cm
<b>Model</b>	<b>Chamber Size*</b>	<b>External Overall Size</b>	<b>Minimum Pit Size</b>

\*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 headers shall be supplied and equipped with machined jets. Jets shall deliver a flat spray pattern for optimal impact to the load. No rotating spray arms shall be utilized.
- 3.2 Headers shall be interconnected and mounted to a carriage having non-lube Delrin® homopolymer 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 Delrin® homopolymer 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. 6.7.3)

### 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 shall be flushed to drain.
- 4.4 Floor 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 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 under normal operating conditions.

### 5.0 Automatic Temperature Regulation and Guarantee

- 5.1 Any Wash or Rinse 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 180F 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. 6.7.4)

## **6.0 Safety and Certifications**

- 6.1 All door hardware shall be of the 'explosion venting' type. This means that anyone inside can get out simply by pushing on the door. The design of the door shall be maintained in such a way that it shall open with less force than is required to close it, thus ensuring that no one can be trapped inside.
- 6.2 Two OSHA-type cable stops shall run on either side of the cabinet interior at a height of about 3'. Cables shall be Stainless Steel, with red covering for high visibility. Either cable when pulled shall interrupt any machine operation, requiring a reset and restart.
- 6.3 An OSHA-style Emergency Stop button shall be installed on the operator control panel, as well as on the unload end of the unit if Pass-Through Operation is selected. This switch(es) shall be inter-wired with the cable switch to a hard-wired safety stop relay, which when de-activated shall interrupt all power to the outputs of the machine, thus satisfying OSHA standards for industrial machinery.
- 6.4 Magnetic safety switches on the door(s) shall reliably ensure that all treatments stop instantly if the door(s) is opened. These switches shall be rated as Class IP67 protective devices.
- 6.5 All outputs external to the electrical box shall be low voltage DC, Intrinsically Safe by the definition of OSHA and NEC.
- 6.6 All devices and components which consume electrical power shall be UL listed and/or approved, and shall bear NEMA, IEC or other recognized International ratings appropriate for the use intended.
- 6.7 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.
- 6.7.1 Emergency Stop- Depression of the Emergency Stop Button or activation of the Emergency Stop Cable shall reset the machine and display a fault message which identifies the source of the emergency stop signal.
- 6.7.2 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.

6.7.3 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.

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

6.7.5 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 controller. The controller and all modules shall be readily available and technical support shall be available from the PLC manufacturer at no charge, without any need to pay any fee to stay in product support.

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 Screen, and 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 Control assembly(s) shall be produced by a UL Panel Shop, and shall be UL and CUL Listed.

## **9.0 Insulated Exterior**

- 9.1 The exterior of the machine shall be insulated with 2" of rigid insulation. All sides shall be 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 Positive Door Gasketing**

- 10.1 The doors shall be sealed with long-life, durable gaskets, which shall ensure that vapor leakage around the door is minimized. Labyrinthine seals or other gasket-less methods which allow vapor to escape shall not be utilized.

## **11.0 Modular Construction**

- 11.1 The machine shall be constructed in modular fashion such that each part of the machine can pass through a standard door.
- 11.2 Machine wall sections shall be designed to be bolted together in such a way as to minimize site welding. Bolted cabinet flanges shall utilize a capping channel design to eliminate cabinet joint leakage.

## **12.0 Manuals & Documentation – Non-Proprietary Parts**

- 12.1 A full set of manuals explaining machine operation and PLC operator controls shall be provided.
- 12.2 A hard copy of the PLC ladder diagram shall be available at no additional charge.
- 12.3 A complete list of purchased parts, including original equipment manufacturer part numbers, 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 at least four (4) distinct cycles, nameable by supervision, to be recalled through simple screen selections.
- 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 250 GPM @ 90 feet of head. This cycle phase shall be used to enhance the life of the detergent solution in a recycling situation and to increase the efficiency of the wash solution in all cases. 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 - Detergent solution shall be dropped from the optional detergent solution reservoir into the recirculating sump. If a non-recycling mode of operation has been chosen, 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 250 GPM @ 90 feet of head. At the end of the wash cycle, detergent solution shall be flushed to drain or returned to the detergent solution reservoir at the discretion of the operator. The self-flushing debris strainer is cleaned in the process of draining the sump, sending any entrained debris to the sewer immediately or at the next drain cycle phase.

20.3.3 Second (Acid) Wash – Wash (Acid) solution shall be dropped from the optional solution reservoir into the recirculating sump. If a non-recycling mode of operation has been chosen, 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 250 GPM @ 90 feet of head. At the end of the cycle, solution shall be flushed to drain or returned to the detergent solution reservoir at the discretion of the operator. The self-flushing debris strainer is cleaned in the process of draining the sump, sending any entrained debris to the sewer immediately or at the next drain cycle phase.

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 250 GPM @ 90 feet 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 Second 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 250 GPM @ 90 feet 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 or any other treatment cycle phase shall utilize the temperature guarantee circuitry. In this case, timing of the cycle phase does 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, thus ensuring clement washroom conditions without wasting excess time with an idle machine.

## **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. All controls assemblies shall be produced by a UL Panel Shop and UL/CUL Listed according to UL 508(A). 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, and 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, 2" thick, and filled with insulation. The door hardware shall permit emergency exit of any personnel from the washer interior under any circumstances whatsoever. In addition, door safety switches shall ensure that the machine cannot operate with the doors open. A safety cable shall be installed in the machine so that all functions can be terminated from inside at any time.

30.3 A stainless steel floor grid shall cover the entire floor of the wash chamber, leaving no open space for an individual to come in contact with the hot solutions in the sump.

30.4 The recirculating sump shall be equipped with a stainless steel steam coil, fully welded and fabricated in accordance with ASME Section VIII Unfired Pressure Vessel Code. No structural parts will be acceptable. The coil shall be easily removed for cleaning or maintenance.

30.5 Temperature shall be controlled directly by the PLC. Temperature sensors shall be Type J Thermocouples, connected directly to the analog inputs of the PLC. No separate temperature controllers shall be acceptable. No RTD's, which require periodic calibration, shall be acceptable.

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

- 30.7 Water level shall be maintained by an electronic level control with removable and easily cleaned probe(s). Probe(s) 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 Stainless Steel, horizontal, close coupled pump equal to a Worthington Model D824 centrifugal pump and capable of delivering 250 GPM at 90 feet of pressure head. Mechanical seals shall be carbon ceramic and Stainless Steel. No vertical or seal-less pumps shall be acceptable.
- 30.9 Spray jets shall be flat spray jets equal to Spraying Systems Co. 3/8P5060. 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 Interior illumination shall be provided by easily replaced fluorescent tubes complete with electronic ballast mounted atop the unit. Tempered safety glass windows shall allow illumination of the interior through the roof panels.
- 30.12 A pneumatically-operated exhaust damper shall be provided. Damper operation shall be controlled by the machine PLC.
- 30.13 Discharge Cooling: Non Monitored Washer shall be provided with an integral cool-down apparatus which shall ensure that all effluent is cooled to 140 degrees F. or less before conduction to the customer's drain. This shall be accomplished by mixing the effluent with cold water from the owner's supply.

**30.14 MATERIALS OF CONSTRUCTION**

<b>Item</b>	<b>Material</b>
base and sump	12 gauge, 304 SS - #2B finish
door panels	16 gauge, 304 SS - #3 finish
side and top panels	14 gauge, 304 SS - #3 finish
recirculating piping	Stainless
spray header and jets	Stainless
recirculating pump housing and impeller	Stainless
recirculating valves	Stainless
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

## 40.0 Optional Features

- 40.1 Printer A panel-mount printer shall be provided in the door of the control assembly to record all cycle phase parameters and alarms and all real-time data relating to operation of the unit. The printer shall use inexpensive and readily available thermal paper and shall include paper take-up.
- 40.2 Stainless Steel Exhaust Fan A Stainless Steel 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 air handling systems are inadequate or over-taxed.
- 40.3 Pass-Through Operation Machine shall be provided with a door at each end for operation within a clean/dirty room environment.
- 40.4 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. Interlocks shall be constructed in such a way that operation of the interlocks cannot prevent personnel from opening either door from inside the machine.
- 40.5 Alkaline Detergent Recycling System A detergent tank shall be mounted on the service side of the Model 6290 to hold the washing solution, ready to be dropped into the recirculating sump. A stainless steel heating coil, constructed of the same materials and of similar design to the sump coil, shall maintain solution temperature at 180 degrees F. or any selected temperature. At the option of the operator or supervisor, after the wash cycle is complete, solution shall be pumped through the integral self-flushing debris strainer and back into the reservoir tank. Solutions can be re-used as many times as desired, greatly reducing the use of detergents and reducing the heating load on the machine.
- 40.6 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 degrees F. to 190 degrees F. This option shall decrease the amount of time required for in-sump heating of temperature-guaranteed rinse water. Cast iron, helical coil or shell-and-tube type heat exchangers shall not be acceptable.
- 40.7 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 before discharging to the building drain system. The entire system shall be under the supervision of the machine PLC control.
- 40.8 Acid Detergent Recycling System A solution tank shall be mounted on the service side of the Model 6290 to hold the acid washing solution, ready to be dropped into the recirculating sump. A stainless steel heating coil, constructed of the same materials and of similar design to the sump coil, shall maintain solution temperature at 180 degrees F. or any selected temperature. At the option of the operator or supervisor, after the acid wash cycle is complete, solution shall be pumped through the integral self-flushing debris strainer

and back into the reservoir tank. Solutions can be re-used as many times as desired, greatly reducing the use of detergents and reducing the heating load on the machine.

- 40.9 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 finish ceiling.
- 40.10 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 finish ceiling.
- 40.11 Aesthetic Side Enclosure      A stainless steel enclosure with sliding access doors 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.
- 40.12 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.
- 40.13 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.
- 40.14 Fresh Water Final Rinse      A separate header and jets shall be provided to allow for an additional final rinse of fresh water from the owner's hot water supply. This option may be used with the instantaneous hot water heat exchanger to provide a temperature guarantee on this final rinse in addition to the normal temperature guarantees.
- 40.15 Interior Ramp for Rack Tilting      Stainless Steel appliance(s) shall be provided to tilt racks and therefore provide for more efficient draining and cleaning of large horizontal surfaces. The appliance(s) shall be light and easily removable, using no tools whatsoever to install or remove.
- 40.16 Automatic Alkaline Tank Drain      The alkaline tank shall be provided with an automatic programmable valve located at the low point on the tank. When the valve is activated, the tank solution shall be automatically dumped to gravity drain. The drain valve shall operate at the pleasure of the operator.
- 40.17 Descaling System: Alkaline Tank & Interior Chamber      A programmable descaling system shall be provided which when operated will remove scale buildup from the interior surfaces of the alkaline detergent tank and the wash chamber.
- 40.18 Automatic Acid Tank Drain System      The acid tank shall be provided with an automatic programmable valve located at the low point on the tank.

When the valve is activated, the tank solution shall be automatically dumped to gravity drain. The drain valve shall operate at the pleasure of the operator.

- 40.19 Floor Sprays Stationary jets shall be mounted in the floor of the inner chamber to ensure complete exposure of the under side of the load to the treatment solution.
- 40.20 Automatic Water Rack Flush System Two quick-disconnect hoses with automatic valves and flow reducers shall be provided to flush the watering lines of automatic watering type racks with fresh hot water during machine operation.
- 40.21 Seismic Restraints Properly designed and attached seismic restraints shall be provided to comply with local codes.
- 40.22 Floor Mount with Exterior Ramps Machine shall be provided with exterior Stainless Steel ramps, with a non-skid surface coating, which shall allow the machine to be floor mounted. If this option is chosen, no pit shall be required.
- 40.23 Integral Pan Washing Additional outward spray jets shall be installed on the oscillating spray headers and a wall mounted pan rack shall be provided to simultaneously wash debris from pans on one side wall of the inner chamber. This option shall increase the overall width of the washer by Eight inches (8").
- 40.24 Remote Access Programming Capable A modem shall be included in the modular PLC package to provide for Direct Factory Accessible Programming. 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 analog phone line shall be provided by the owner if this option is selected.
- 40.25 Integral Air Compressor An 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.
- 40.26 Special Spray Configurations Sprays shall be provided in various special configurations in order to adequately clean any troublesome items in the owner's inventory.
- 40.27 Special Cabinet Size Cabinet shall be supplied in the exact shape and size specified to suit the owner's special needs.
- 40.28 Low Steam Pressure The unit shall be designed for a steam pressure below 30 PSI. All coils, valves, pipes and other devices shall be sized to operate under the conditions specified.
- 40.29 Vent Condenser A condensing apparatus shall be provided to remove much 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.

40.30 **Drying System** The unit shall include an integral drying system consisting of automatic damper(s), fan and steam-to-air heat exchanger. The system shall be programmable through the unit Color Touch Screen and shall allow for drying periods of up to 16 minutes. Drying will be accomplished by forcing hot air into and through the cabinet, to be exhausted through the machine exhaust.

40.31 **QuickWash™** The unit shall be equipped with the SMC **QuickWash™** system, which will allow full loads to be processed in a programmable time period that may be less than 10 minutes. Treatment shall consist of a wash, using partially re-used wash solution, and a rinse using fresh hot water from the Owner's supply, conducted through an on-board heating system and a completely separate piping and spray header system. The system shall include PID technology such that the rinse water can be applied and maintained at an arbitrarily high temperature up to 205F (96C). Total water usage shall be 25 gallons (95L) or less per load.

## **50.0 Available Accessories**

50.1 **Universal Wash Rack** Stainless Steel Wash Rack shall accommodate 5" – 8" height cages as well as all pans with a maximum depth of 3". The rack dimensions shall be 32" wide, 70" high and 72" long. Rack shall incorporate stainless steel casters with washdown roller bearings for easy transportation.

50.2 **Cage Processing Rack** Custom Stainless steel rack shall provided to process cages. The rack dimensions shall vary depending upon the Owner's cages. Rack shall incorporate stainless steel casters with washdown roller bearings for easy transportation.

50.3 **Pan Processing Rack** Stainless steel rack shall be provided to process pans with a maximum depth of 3". The rack dimensions shall be 32" wide, 70" high and 72" long. Rack shall incorporate stainless steel casters with washdown roller bearings for easy transportation.

50.4 **Feeder Bottle Processing Rack - Six (6) Baskets** A stainless steel cart shall be provided to wash six (6) baskets of feeder bottles. The cart shall be equipped with a quick disconnect which mates with a connection inside of the machine. Bottle processing shall be fully programmed and selectable from the operator interface screen.

50.5 **Feeder Bottle Baskets** Stainless Steel bottle baskets shall be provided for processing 8, 16, or 32 ounce bottles. Baskets shall be configured in a 4 X 6 or 5 X 5 pattern.

## 60.0 Utility Requirements

	RW6290/6290PC1	RW6290L/6290PC2	RW6290W	RW6290DL/6290PC3
<b>Electrical</b>	3ph, 60hz, 12 HP 8.95 kW	3ph, 60hz, 17 HP 12.68 kW	3ph, 60hz, 22 HP 16.41 kW	3ph, 60hz, 22 HP 16.41 kW
<b>Steam</b>	2" FPT 5.08 cm FPT	2" FPT 5.08 cm FPT	2" FPT 5.08 cm FPT	2" FPT 5.08 cm FPT
	30-80 PSI 206-551 kPa	30-80 PSI 206-551 kPa	30-80 PSI 206-551 kPa	30-80 PSI 206-551 kPa
	600#/hr 272 kg/Hr Max Flow	800#/hr 362 kg/hr Max Flow	900#/Hr 408 kg/hr Max Flow	900#/hr 408 kg/hr Max Flow
	400#/hr 181.44 kg/hr Avg Flow	600#/hr 272.16 kg/hr Avg Flow	700#/hr 317.52 kg/hr Avg Flow	700#/hr 317.52 kg/hr Avg Flow
<b>Condensate</b>	1" (2.54 cm) FPT	1" (2.54 cm) FPT	1 1/2" (3.81 cm) FPT	1 1/2" (3.81 cm) FPT
<b>Hot Water</b>	1 1/2" (3.81 cm) FPT, 35 PSI 241 kPa	1 1/2" (3.81 cm) FPT 35 PSI 241 kPa	1 1/2"(3.81 cm) FPT 35 PSI 241 kPa	1 1/2" (3.81 cm) FPT 35 PSI 241 kPa
	120-180 Deg. F. 48.9-82.22 Deg. C.	120-180 Deg. F. 48.9-82.22 Deg. C.	120-180 Deg. F. 48.9-82.22 Deg. C.	120-180 Deg. F. 48.9-82.22 Deg. C.
	200 Gal/Load Max 757 L/Load	240 Gal/Load Max 908 L/Load	340 Gal/Load Max 1287 L/Load	380 Gal/Load Max 1438 L/Load
<b>Drain</b>	2" (5.08 cm) FPT	2" (5.08 cm) FPT	2" (5.08 cm) FPT (2 Places)	2" (5.08 cm) FPT (2 Places)
	140 Deg. F. Max 60 Deg. C Max	140 Deg. F. Max 60 Deg. C Max	140 Deg. F. Max 60 Deg. C Max	140 Deg. F. Max 60 Deg. C Max
	120 GPM Max 454 LPM Max	180 GPM Max 681 LPM Max	120 GPM Max 454 LPM Max	120 GPM Max 454 LPM Max
<b>Exhaust</b>	12" (30.48 cm) Dia.	12" (30.48 cm) Dia.	12" (30.48 cm) Dia (2 places)	12" (30.48 cm) Dia (2 places)
	600 SCFM	800 SCFM	600 SCFM	600 SCFM

	17 CMM	22.65 CMM	17 CMM	17 CMM
	180 Deg F 82.22 Deg C Saturated	180 Deg F 82.22 Deg C Saturated	180 Deg F 82.22 Deg C Saturated	180 Deg F 82.22 Deg C Saturated
<b>Compressed Air</b>	1/2" (1.27 cm) FPT 80 PSI 551 kPa	1/2" (1.27 cm) FPT 80 PSI 551 kPa	1/2" (1.27 cm)FPT 80 PSI 551 kPa	1/2" (1.27 cm) FPT 80 PSI 551 kPa
	4 SCFM .11 CMM	4 SCFM .11 CMM	6 SCFM .17 CMM	6 SCFM .17 CMM
<b>Cold Water (Optional)</b>	1" (2.54 cm) FPT 35 PSI (241 kPa) 25 GPM (95 LPM)	1" (2.54 cm) FPT 35 PSI (241 kPa) 25 GPM (95 LPM)	1" (2.54 cm) FPT 35 PSI (241 kPa) 25 GPM (95 LPM)	1" (2.54 cm) FPT 35 PSI (241 kPa) 25 GPM (95 LPM)

## 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'.
- 60.1.3 Steam pressure shall not exceed 80 psi. Factory shall be consulted for steam pressures below 30 psi dynamic.
- 60.1.4 Hot water temperatures of less than 120 degrees F may impact treatment cycle times. Factory shall be consulted for recommendations if 120 degree F water is not available.
- 60.1.5 Cold water shall be a required utility only when the Vent Condenser or Discharge Cool-Down is 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 degree F, 100% saturated air.



## 70.0 Additional Engineering Information

	<u>RW6290/6290PC1</u>	<u>RW6290L/6290PC2</u>	<u>RW6290W</u>	<u>RW6290DL/6290PC3</u>
<b>Shipping Wgt.</b>	6000#	6500#	7200#	7360#
<b>Dynamic Wgt. as Installed</b>	4800#	5200#	6800#	6900#
<b>Cage Capacity</b>				
<b>Std. Mouse</b>	100	140	140	160
<b>Std. Rat</b>	56	60	60	80
<b>Primate (PC )</b>	1	2	n/a	3
<b>Sump Capacity</b>	50 Gals.	60 Gals.	85 Gals.	95 Gals.
<b>Tank Capacity (opt. Det. Tank)</b>	125 Gals	150 Gals.	210 Gals.	240 Gals.
<b>Heat Radiation</b>				
<b>(typ. door end)</b>	9000 btu/hr	9000 btu/hr	12000 btu/hr	9000 btu/hr
<b>(typ. svce. side)</b>	25000 btu/hr	30000 btu/hr	25000 btu/hr	45000 btu/hr
<b>(typ. blank side)</b>	2000 btu/hr	2000 btu/hr	2000 btu/hr	3000 btu/hr