

# SPECIFICATIONS

## GIRTON CABINET WASHER/DRYER MODEL 80-0D-HP

Specification No. **80-0D-HP**

For Company Name

### 1. DESCRIPTION

A Girton Model 80-0D-HP Cabinet Washer/Dryer is constructed of stainless steel and utilizes a reciprocating header spray system. The spray header is suspended from a carriage riding on an overhead track. The operating cycle is entirely automatic. A PLC controls each stage of the operation.

### 2. REGULATIONS, CODES AND STANDARDS

All engineering, design, manufacture and testing conforms to all applicable sections of the latest edition of the following codes, standards and specifications in effect at the time of order:

**ASME-BPE** - American Society of Mechanical Engineers

**ANSI** - American National Standard Institute

**ASTM** - American Society for Testing and MaterialsD-

**OSHA** - Occupation Safety and Health Administration

**NEMA** - National Electrical Manufacturers Associates

**NEC** - National Electrical Code

**cGMP** - Current Good Manufacturing Practices (CFR Title 21 parts 210 and 211)

**NFPA** - National Fire Protection Association

**UL508A** – Industrial Control Panels

### 3. DIMENSIONS AND WEIGHT

#### 3.1. Compartment Size

42" wide x 88" high x 100" long     54" wide x 88" high x 100" long

42" wide x 88" high x 144" long     54" wide x 88" high x 144" long

42" wide x 88" high x 180" long     54" wide x 88" high x 180" long

48" wide x 88" high x 100" long     60" wide x 88" high x 100" long

48" wide x 88" high x 144" long     60" wide x 88" high x 144" long

48" wide x 88" high x 180" long     60" wide x 88" high x 180" long

3.2. Left Right Hand

3.3. Pit Dimensions: \_\_\_\_" wide x \_\_\_\_" long x 24" deep

3.4. Overall Height: \_\_\_\_"

3.5. Overall Width: \_\_\_\_"

3.6. Overall Depth: \_\_\_\_"

3.7. Operational Weight: 6,000 lbs.

#### 4. CONSTRUCTION

##### 4.1. Material Type and Finish:

- 4.1.1. **Washer Cabinet:** 14 gauge, T-304 T-316L stainless steel  
Interior Finish: mill finish (2B) 35Ra or better 15Ra 8.5Ra  
Exterior Finish: 35Ra or better
- 4.1.2. **Washer Tank:** 14 gauge, T-304 T-316L stainless steel  
Interior Finish: mill finish (2B) 35Ra or better 15Ra 8.5Ra  
Exterior Finish: 35Ra or better
- 4.1.3. **Insulation Jacket:** 18 gauge, T-304 stainless steel,  
Exterior Finish: 35Ra or better
- 4.1.4. **Door:** T-304 T-316L stainless steel  
Interior Finish: mill finish (2B) 35Ra or better 15Ra 8.5Ra  
Exterior Finish: 35Ra or better
- 4.1.5. **Steam Heating Coil:** T-304 T-316L stainless steel
- 4.1.6. **Steam and Condensate Piping:**  
Interior on Washer: stainless steel T-304 T-316L  
Exterior on Washer: stainless steel T-304
- 4.1.7. **Compressed Air:**  
Tubing Poly-flo T-304 stainless steel.
- 4.1.8. **Potable Water Supply Ball Valves:** stainless steel  
**Steam Supply Ball Valves:** stainless steel
- 4.1.9. **Recirculation Header and Piping:** T-316L stainless steel  
Interior Finish: 35Ra or better Electro-polished to 15 Ra finish 20Ra  
Exterior Finish: 35Ra or better
- 4.1.10. **Purified Final Rinse System:** T-316L stainless steel  
Interior Finish: 35Ra or better Electro-polished to 15 Ra finish 20Ra  
Exterior Finish: 35Ra or better
- 4.1.11. **Sanitary valves:** T-316L stainless steel diaphragm valves  
Interior Finish: 35Ra or better Electro-polished to 15 Ra finish
- 4.1.12. **Dryer System**  
Heating surface is fabricated of copper tubes with aluminum fins. Blower is fabricated of painted steel.  
Stainless steel air stream of T-304 T-316L. Blower is fabricated of T-304 T-316L stainless steel. A HEPA filter is provided on air makeup.
- 4.1.13. **Tri-Clamp Clamps:** T-304 stainless steel
- 4.1.14. **Fasteners:** T-304 stainless steel

##### 4.2. Unit Design:

The equipment is designed to be shipped and installed as a **single unit**. Some parts may be removed prior to shipping (i.e., pumps) to decrease the possibility of damages during shipping. The maximum crate size will be approximately \_\_\_\_\_" x \_\_\_\_\_" x \_\_\_\_\_" with an estimated weight of \_\_\_\_\_lbs.

**Bolted and gasketed** construction allows the washer to be taken down prior to crating. There will be approximately \_\_\_\_\_ # separate pieces and the largest piece will be approximately \_\_\_\_\_" x \_\_\_\_\_" x \_\_\_\_\_" with an estimated weight of \_\_\_\_\_lbs. A minimum clearance of \_\_\_\_\_" x \_\_\_\_\_" is necessary for access into the building. It is strongly recommended Girton Manufacturing Co., Inc. be contracted to re-assemble or supervise the re-assembly of the equipment due to the custom nature of the equipment.

- 4.3. All **internal corners** have a minimum 5/16" radius.
- 4.4. All visible **welds** on the exterior of the washing compartment are thoroughly cleaned. All welds on the interior of the washing compartment are ground and polished.
- 4.5. The **cabinet interior** is constructed to permit free draining and designed not to retain any of the process solutions.
- 4.6. The **wash compartment** is sloped to drain into the pump reservoir through a large stainless steel, basket-type debris screen. The screen is easily removable without the use of tools.
- 4.7. The **washer tank capacity** is approximately \_\_\_\_\_-gallons of water, assuring effective cleaning and economy of operation. Level control is by means of a **stainless steel float switch, which is** tied into the washer control system.
- 4.8. The **door** shall be double walled and insulated with rigid foam insulation. The door shall be baffled and gasketed against water leakage from the wash chamber. Door gaskets shall be closed cell silicone. The door shall be provided with a 16" x 18" vapor-proof heat tempered glass as a viewing window. The window is sealed against water leakage by means of a silicon gasket. The door is provided with heavy duty plated hinges and breakaway latches. Door latches shall allow emergency exit from the wash chamber without the use of panic hardware. A **door safety switch** shall be provided on the door. The switch shall stop the cycle and shut down operation in the event that the door is opened.
- 4.9. The wash tank is provided with a **steam heating coil** controlled by the control system (adjustable) to maintain the wash/rinse solutions at a pre-set temperature. A line strainer is supplied on the steam supply connection as well as condensate traps, where necessary.
- 4.10. **Pumps:**
- 4.10.1. **Recirculating wash/rinse pump** is a T-316 stainless steel horizontal centrifugal type unit, powered by a 10Hp motor. It is capable of delivering 350 gallons per minute at 90 ft head pressure.
- 4.10.2. **Sanitary recirculating wash/rinse pump** is a T-316 stainless steel horizontal centrifugal type unit, powered by a 10 Hp motor. It is capable of delivering 350 gallons per minute at 90 ft head pressure.
- 4.10.3. **Recirculating wash/rinse pump** is a T-316 stainless steel horizontal centrifugal type unit, powered by a 20Hp motor. It is capable of delivering 450 gallons per minute at 90 ft head pressure.
- 4.10.4. **Sanitary recirculating wash/rinse pump** is a T-316 stainless steel horizontal centrifugal type unit, powered by a 20 Hp motor. It is capable of delivering 450 gallons per minute at 90 ft head pressure.
- 4.11. **Potable water and steam supply ball valves** are threaded connections.  
 **Steam supply ball valves** are threaded connections.
- 4.12. All **ancillary valves and equipment are positioned** on the washing machine top, rear and the side of the washer.
- 4.13. **Recirculation Headers** consist of two reciprocating loop headers, employing properly spaced, wide-angle stainless steel machined fanjets welded in place. These jets direct the process solutions from the top, and both sides, assuring 270° continuous coverage of the items being processed. The header is electrically driven and suspended on an overhead carriage. The header suspension system does not require lubrication. The header hoses are silicone braided and connect to the pumping system by means of tri-clamp connections.
- 4.14. **Purified Final Rinse Header** is a 270° loop mounted on and traveling with the recirculating loop headers. The header hose is a silicone braided and connects to the purified water supply by means of tri-clamp connections.
- 4.15. **Sanitary valves** have a **EPDM diaphragm**.
- 4.16. The **washer drains** by gravity. A pneumatically actuated two-way butterfly valve directs the discharge to the drain, resulting in a quick drain time.
- 4.17. **Tri-clamp connection** use **EPDM gaskets** and are connected by means of heavy-duty clamps with wing nuts.

- 4.18. **Seals, gaskets, and bearings** are compatible with the temperatures and concentrations of cleaning agents to be used. Customer will supply information on chemicals to be used.
- 4.19. **Drying** - The tank is automatically drained prior to the start of the drying cycle. The dryer consists of a recirculated hot air system utilizing  steam coils and a high volume blower to circulate hot air over the items to be dried. A small amount of room air is drawn into the system to aid in maintaining proper humidity levels for efficient drying. The controller controls the drying cycle and temperature.
- 4.20. **A compressed air system** is supplied with a filter regulator and oiler.
- 4.21. The washer is piped and wired for **single service connection** for each utility requirement.

## 5. CONTROLS AND OPERATION

- 5.1. The control system incorporates an **Allen Bradley Compact Logix ®PLC**. This provides 512K of memory with Ethernet communication ability. The processor is aware of and controls all items on the washer. I/O cards are selected to match the control voltage. An isolated relay card is used to control high current draw items or items not operable at the control voltage. Analog cards are set to accept 4 - 20 mA inputs, unless otherwise noted.
- 5.2. The operator-machine consists of an **Allen Bradley Color Panelview Plus 6 - 600**, which incorporates a touch screen for operator control. This allows the user with proper password level to access all parameters of a wash recipe. All alarms are shown on the display, as well as announced audibly.
- 5.3. Girton control panels will be designed, manufactured and labeled as per **UL508A**.
- 5.4. The washer is provided with the ability to use a printer to record operation reports. The customer should mount the printer close to the washer. Communication to the printer will be determined during detailed design and outlined in the functional specification. The report contains the following data: machine identification, operator, date and time, step name with time, temperature (min-max), etc.
- 5.5. **A typical treatment cycle** is defined as follows:
  - Pre-Wash – Recirculated
  - Wash – Recirculated
  - Rinse – Recirculated
  - Rinse – Recirculated
  - Final Rinse – Non-Circulated
  - Dry
- 5.6. A total of **20 programs** can be stored in the PLC. Each program can be altered or developed from the OIT. Access to change or develop the programs is password protected.
- 5.7. Girton provides four levels of **password protection** to the control system:
  - Operator Level
  - Maintenance Level
  - Engineering Level
  - Administration
- 5.8. Girton's control system provides the ability to **alarm on abnormal conditions**. The washer has alarms based on each I/O point failure. This provides a comprehensive way of determining a device failure or process deviation. In general, all analog inputs to the system will have low and high alarm points settable by the customer. Also, all safety devices, such as door switches or emergency stop buttons, have alarms associated with them.
- 5.9. **Fused disconnect switch** is supplied and located in the main electrical enclosure to cut power to the entire unit. The system is designed so if the disconnect is in the "ON" position the electrical enclosure is not be able to be opened.
- 5.10. The washer is equipped with **Emergency Stop** switches located at critical points on the machine. All doors are equipped with limit switches wired directly to the output voltage. Opening any door will disconnect voltage from output cards thereby shutting down the system. These switches are also wired as inputs to the PLC so that an alarm may be generated. All services are equipped with fail-closed-valves.
- 5.11. A **stainless steel safety cable** is installed inside the wash compartment approximately 36" above the floor and runs through entire length. If the cable is pulled, the machine will immediately cease all operations. To resume operation, the power must first be turned off, then turned on again and start button depressed.

5.12. **Noise level** as measured from 3 ft. from the washer will be a **maximum of 85 dBa**.

## 6. DOCUMENTATION

6.1. **1 Hard copy and 1 electronic copy of Girton Documentation Package.** Validation requirements and considerations are playing an increasingly major role in the purchase of new equipment or systems. Validation requires documented evidence that the equipment or system will reliably perform in a manner consistent with the original design specifications. Generation of this documentation needs to be considered at the inception of the project and implemented throughout the design and manufacturing stages of the equipment. In most instances, the equipment vendor is the most qualified party to generate the majority of the required documentation.

The documentation provided by Girton Manufacturing Co., Inc. is designed to be a complete package including all data and checklists necessary to qualify the installation and operation of the equipment and/or system. All equipment built by Girton is completely factory assembled and tested. The documentation is used to perform Factory Acceptance Testing; witnessed and approved by the customer. All tests necessary for Installation and Operation Qualification of the equipment are performed on the equipment prior to its arrival on the job-site. Any modifications or additions required to qualify the equipment can be made at the factory prior to shipment.

Please reference Project Deliverables, attached to this specification.

## 7. SERVICE REQUIREMENTS

7.1. **Electrical:** 3 phase, 60 cycle, 230 460 volt, \_\_\_\_\_ amperes.

7.2. **Hot Water:** 180°F. Recommended minimum rate of flow of 50 gallons per minute. 1" NPT connection to the machine.

7.3. **Purified Final Rinse:** (D.I., WFI, etc.) 180°F minimum flow rate 30 gpm at 30 PSI. 1-1/2" tri-clamp connection.

7.4. **Steam:** 40 to 80 PSI. 1-1/2" NPT connection to the machine (for most efficient operations, 60 PSI is recommended). 900-lb./hr. requirement.

7.5. **Condensate:** 3/4" NPT.

7.6. **Drain:** 3" NPT from the machine to the drain.

7.7. **Ventilation:** 12" diameter vent collar is provided for connection to ventilating system. 500 CFM minimum removal required. Connection should be installed inside of vent collar to prevent leakage.

7.8. **Compressed Air:** 1/4" NPT connection, 90 PSI minimum, 5 CFM.

## 8. WARRANTY

8.1. Girton Manufacturing Co., Inc. warrants equipment of original manufacture against defect in workmanship and material for a period of one year from date of shipment. Provided; however, the equipment has been operated under normal working conditions for such said equipment, that it has been properly serviced and cared for, and that no adjustments have been made by unauthorized personnel that could adversely affect the operation or life of the equipment.

Girton Manufacturing Co., Inc. will replace or repair defective merchandise at its plant, FOB Millville, PA, if after inspection; the equipment or components that Girton manufactured are defective. Girton Manufacturing Co., Inc. extends to its customers on all purchased components parts, the warranty of the supplier of such said parts.

No expense, liability, or responsibility will be assumed by Girton for repairs outside Girton's factory, without written authority from Girton Manufacturing Co., Inc.

The foregoing warranty excludes all other warranties, guaranties, and/or representations; whether expressed, implies, or oral, INCLUDING, BUT NOT LIMITED TO, ALL CONDITIONS AND EXCLUSIONS OF IMPLIED WARRANTY OF MERCHANTABILITY AND OR FITNESS FOR THE PURPOSE, and the warrantor's liability for any direct damage arising from a legally proven breach of the warranty hereby extended is limited to the customer's invoice cost of the goods warranted.

8.2. DISCLAIMER OF CONSEQUENTIAL DAMAGES LIABILITY - Girton Manufacturing Co., Inc. shall not be liable for consequential damages of any kind, including incidental labor or other costs.

## 9. CANCELLATION

- 9.1. Any order on which work had been started may be cancelled only by consent of Girton Manufacturing Co., Inc. and by agreement on the part of the purchaser to cover whatever cost has been incurred, if any, to the date of the cancellation, including engineering, administrative, material purchases, labor, and overhead expended.

## 10. CUSTOMER TO WITNESS PRELIMINARY FACTORY ACCEPTANCE TEST (FAT)

- 10.1. Customer may witness preliminary testing performed at Girton Manufacturing Co., Inc. prior to shipment to customer's facility.

Customer will supply adequate samples of the items being washed. If customer specifies a particular chemical to be used, they shall supply it, complete with a MSDS Report. Customer shall be responsible for disposal or removal of excess chemical from premises.

- 10.2. **Factory Acceptance Test (FAT)** – Girton Manufacturing Co., Inc. will provide the necessary personnel for a maximum of 3 days to assist with the Factory Acceptance Test (FAT). The Girton Factory Technicians will work with the customer's personnel in verifying the washer is built and operates according to the FAT documentation.

## 11. DOCUMENTS

- 11.1. **Approval Documents** will be provided to the Customer in \_\_\_days weeks after receipt of order. Production work will not be initiated until these drawings are returned to Girton Manufacturing Co., Inc. with the appropriate signatures of the customer.

## 12. INSTALLATION

- 12.1. Installation will be **done by others**.

**Supervision of installation by Girtons** - Girton Manufacturing Co., Inc. will provide a technician for \_\_\_\_\_ (# of days) who will work with the customer's in-house personnel or with an outside contractor. The technician(s) will provide instructions for all phases of re-assembly including moving the equipment, leveling, re-assembly, and connection to utilities for an additional fee.

**Set-in-place installation by Girtons -**

Girton Manufacturing Co., Inc. will provide the necessary non-union labor to re-assemble the equipment and make it ready for utility connections at the customer's site. The customer will be responsible for receiving the equipment, unloading and moving it to the area where it is to be installed prior to Girton's arrival and for connecting the utilities.

Girton Manufacturing Co., Inc. will provide the necessary union labor to re-assemble the equipment and make it ready for utility connections at the customer's site. The customer will be responsible for receiving the equipment, unloading and moving it to the area where it is to be installed prior to Girton's arrival and for connecting the utilities.

**Complete installation by Girtons**

Girton Manufacturing Co., Inc. will provide the necessary non-union labor and material to perform a complete installation of the equipment. This includes receiving the equipment at the customer's site, unloading, uncrating, move in place, re-assembly and connection to existing utilities. The utilities must be within 4 feet from the equipment.

Girton Manufacturing Co., Inc. will provide the necessary union labor and material to perform a complete installation of the equipment. This includes receiving the equipment at the customer's site, unloading, uncrating, move in place, re-assembly and connection to existing utilities. The utilities must be within 4 feet from the equipment.

### 13. TERMS AND CONDITIONS

- 13.1.  Payment Terms:  
25% Down  
65% Upon shipment  
10% Upon successful start-up, not to exceed 60 days from shipment.
- 13.2. The 6% PA sales tax will be assessed on all sales. If you believe the products covered by this proposal are exempt from this tax, please send to Girton Manufacturing Co., Inc. your PA sales tax exemption certificate.

### 14. SHIPPING

- 14.1. Freight terms:  
 Collect  
 Prepaid  by customer  and add to Invoice  
 Third Party Billing
- 14.2. Shipment will be provided by  transportation arranged by Girton Manufacturing Co., Inc.  
 customer.
- 14.3. Shipment from Millville, PA \_\_\_ to \_\_\_ weeks, after receipt of Approved Drawings by Girton Manufacturing Co., Inc.

### 15. TOTAL COST PER SPECIFICATION, CONSULT FACTORY

### 16. OPTIONS

- 16.1. The Human Machine Interface (HMI), mounted on the washer, consists of a PC based display, which will be programmed using RSView SE software, which incorporates a touch screen for operator control and monitoring. This allows the user with proper password level to access all parameters of a wash recipe. All alarms are shown on the display, as well as announced audibly. Use of this system complies with CFR21 Part 11.
- 16.2. **Pass-Through Operation:** Each door is double walled and insulated with rigid foam insulation. The doors are baffled and gasketed against water leakage from the wash chamber. Door gaskets are closed cell silicone. The doors are provided with a 16" x 18" vapor-proof heat tempered glass as a viewing window. The window is sealed against water leakage by means of a silicone gasket. A **door safety switch** is provided on each door. The switch shall stop the cycle and shut down the washer operation in the event that either door is opened.
- 16.3. **Door interlocks** prevent the load and unload door from being opened simultaneously.
- Operation shall be as follows:  
Load door open - unload door is locked.  
Unload door open - load door is locked.  
Washer operating or idle - both doors are unlocked.
- 16.4. Front of washer is designed with **facia and concealment panels** providing a flush appearance when installed through one wall. Height of facia will exceed height of any permanently mounted component of washer system located on top of washer, except where it can be removed for installation.
- 16.5. A 75 gallon **Final Rinse Water tank** shall be mounted on the washer with a stainless steel **booster pump** providing pressure for final rinse cycle. The system is complete with all controls to cause the tank to fill approximately 15 minutes prior to the final rinse cycle. Final rinse water is not retained from one cycle to the next.
- Final Rinse Water Tank is insulated with 1" rigid foam with a stainless steel outer jacket.
- Final Rinse Tank will include a stainless steel steam heating coil that raises the incoming final rinse water temperature from 70°F to 180°F.
- 16.6. **Service-side shroud** is provided to enclose the service side of the washer. Shroud is easily removable for service access.
- 16.7. **T-316L construction** on all wetted surfaces with the exception of distribution hoses.

- 16.8. **Sprayball assembly**, which lowers into the tote interior thereby, processes the interior of the tote. This assembly delivers all necessary treatments to the tote.
- 16.9. **Spray bottom jets** are mounted underneath the floor grid provide extra coverage to the bottom of items in wash chamber.
- 16.10. **Process piping** and **purified final rinse** will be **electro polished** to a 15Ra finish on the interior. OD will be 35Ra or better finish.
- 16.11. **Interior finish** to be a 35Ra or better finish.
- 16.12. A **light fixture** mounted on the exterior of the unit illuminates the wash chamber during operation.
- 16.13. The discharge pressure of the main circulation pump is monitored using a **sanitary pressure transmitter**. This pressure is recorded and alarmed by the control. The diaphragm of the sensor is attached in the wash pump discharge line using a tri-clamp connection. Girton's standard range for measuring pump pressure is 0 to 100 psi.
- 16.14. A **Y-strainer with manual drain valves** tied into the main drain is supplied with the steam and potable water lines. Piping and valves shall be T-304 stainless steel and have NPT connections.
- 16.15. All **compressed air lines** are T-304 stainless steel with Swagelok compression split ferrule type fittings.
- 16.16. A **sample port** in the recirculation sump allows sampling of the water. The sample port is attach via tri-clamp with connecting piping to have sufficient pitch in order to drain back into the washer recirculation tank, thus eliminating the possibility of dead legs.
- 16.17. A **drain tempering system** cools the process wash and rinse solutions from 180° F to 140° F prior to entering the customer's drain. This system consists of a temperature control with a probe located in drain line for on-off control of cold water supply valve.
- 16.18. The **conductivity** of any wash solution where a reagent is added is monitored, recorded and, if needed, alarmed by the control. A sensor is attached either in the wash pump discharge or directly into the sump. Both are inserted into a sanitary tri-clamp connection. Girton's standard range for measuring wash solution conductivity is 0 to 100 milli-siemens.
- 16.19. The **conductivity** of the final rinse with the customer's designated water will be monitored, recorded and, if needed, alarmed by the control. The sensor is attached in or near the drain line with a sanitary tri-clamp connection. Girton's standard range for measuring final rinse conductivity is 0 to 100 micro-siemens.
- 16.20. **Girton neutralization system** will be provided for the purpose of neutralizing the wash solution before going to drain. This system will include a **chemical pump** to inject the neutralizing solution and the necessary divert valves to stop the flow of water from going to the headers and direct it back to the washer sump to mix the neutralizing solution.
- 16.21. **Girton neutralization system with pH monitor** will be provided for the purpose of neutralizing the wash solution before going to drain. This system will include a **chemical pump** to inject the neutralizing solution and the necessary divert valves to stop the flow of water from going to the headers and direct it back to the washer sump to mix the neutralizing solution. The pH sensor will signal the washer PLC when the solution had reached the desired level so the drain valve can open.
- 16.22. **Automatic detergent dispensing system** is provided with the control system. One (1) diaphragm pump is used to charge the wash solution with the desired reagent. The customer sets the amount of time that each dispenser will run for the wash cycle.
- 16.23. For each reagent reservoir, Girton supplies a **level monitor**. The monitor will consist of an ultrasonic sensor that will switch a PLC input when the reagent reaches the specified level. The control can then either trigger an alarm or a status message based on the input. The sensor has threads allowing it to be mounted into the lid of the customer's detergent reservoir.
- 16.24. A **sanitary pressure switch** is located in the recirculation pump discharge. To sense and alarm when the pump pressure drops below set point. The pressure switch is attached to piping via tri-clamp connections.
- 16.25. A **remote mounted printer** will be provided so that a printed record of each cycle can be obtained.
- 16.26. The washer is specified to be in a **Class I Division 2 Group D area**. All wiring, conduit, instruments, and other devices conform to the NEC and NFPA regulations for the class and division of the washer. If required, purged enclosures will be provided as well as explosion resistant conduit.

- 16.27. All **conduit** on the machine are PVC coated rigid. Fittings and conduits are PVC coated as well. Liquid tight flexible conduit is used to connect the washer's devices. Lengths of flexible conduit do not exceed 3 feet. All marks on conduit are painted with PVC paint. All conduit installation meets the current NEC requirements.
- 16.28. All controls are rated at **24VDC**, if possible. Items not able to operate at 24VDC have a control relay that will provide contacts usable at 120VAC.
- 16.29. Each motor under control have a locally mounted **HAND-OFF-AUTO** switch and a "Run" light. In HAND position, the motor runs; in OFF position, the motor stops; in AUTO position, the motor is under PLC control.
- 16.30. An **exhaust fan**, wired and mounted on machine, including manual damper, is provided. The fan will exhaust 800 CFM to the ventilating system or to the outside. A 12" diameter vent collar is also provided. The connection is installed inside of vent collar to prevent leakage.
- 16.30.1.  Epoxy painted air-steam.
- 16.30.2.  T-304  T-316L stainless steel air-steam.
- 16.31. An **automatic vent damper** is interwired with washer control system. The damper travel is adjustable and is set once unit is installed in the customer's facility.
- 16.32. A **pass-through heat exchanger** raises the incoming potable water temperature from 140°F to 180°F. This option is required when fast cycle times are required and ample hot water is not available from the facility supply.
- 16.33. **Sanitary pump liquid filled pressure gauge** with tri-clamp connections are supplied and located in the pump discharge piping to allow visual inspection of actual pump pressure.
- 16.34. **Additional copies of our Documentation Package** (reference item # \_\_\_\_\_ of this specification) may be purchased.
- 16.35. **Optional Documentation:**
- 16.35.1. Surface Finish Map and Certificate of Compliance
- 16.35.2. Slope Map of Process Contact Tubing and Certificate of Compliance
- 16.35.3. Video Weld Logs
- 16.35.4. Sound Level Certificate of Conformance

## GIRTON MODEL 80-0D-HP VENDOR LIST

<b><u>COMPONENT</u></b>	<b><u>VENDOR</u></b>
Controller	Allen Bradley
Limit Switches	Allen Bradley
Temperature Transmitter	Weed Instrument
Level Switch	Madison Inc.
Jets	Spraying Systems
Transformer	Square D
Motor Starters	Allen Bradley
Fuses and Fuse Holder	Cooper Bussmann
Header Drive	Allen Bradley
<input type="checkbox"/> Recirculation Pump	Ampco
<input type="checkbox"/> Sanitary Recirculation Pump	Ampco
Header Hoses	St. Gobain or Equal
Ball Valves - Pneumatic Actuators	Duravalue
Compressed Air Filter Regulator	SMC
Drain Valve	Sharpe
<input type="checkbox"/> Valve (For Steam)	Duravalue
Solenoid Valve (For Pneumatic Actuators)	SMC
<input type="checkbox"/> Condensate Traps	Sarco
Sanitary Diaphragm Valve	Gemu or Equal
Disconnect Switch	Allen Bradley
Emergency Stop Switch	Allen Bradley
Drying System	
A. Blower	Girton
B. Steam Coils	Super Radiator Coil
C. Steam Control Valve	Duravalue
D. Condensate Trap	Sarco
Dryer HEPA Filter	Air Guard
 <b><u>OPTIONS</u></b>	
Final Rinse Tank & Pump	
A. Pump	Ampco
B. Level Switch	Madison Inc.
C. Steam Valve	Duravalue
D. Condensate Trap	Sarco
Differential Pressure Switch	Dwyer Instruments
Indicating Pressure Transmitter	Endress + Hauser
Manual Valves for Y-Strainers	Duravalue

Stainless Steel Compressed Air Fittings

Sample Port

Drain Tempering System

A. Cold Water Control Valve

B. Manual Throttling Valve

Conductivity Sensors

Detergent Dispenser

Chemical Container Level Sensors

Pressure Switch

Exhaust Fan

Auto Vent Damper Motor

Heat Exchanger for Potable Washer

A. Steam Regulating Control Valve

Pump Pressure Gauge

Pneumatic Door Seal

pH Analyzer

Compressed Air Dump Valve

Swagelok

Sentinel

Duravalue

Duravalue

Mettler-Toledo Thornton

Wilden

IFM

Tri Clover

Girton

Honeywell

Graham

Sarco

Ashcroft

Pawling

Mettler-Toledo Thornton

Ross Controls