

SUBMITTALS IDENTIFICATION SHEET

PROJECT: <b>Canadian High Arctic Research Station</b> Cambridge Bay, Nunavut	DEPT. REP.: <b>PWGSC</b>
	Construction Manager: <b>EllisDon</b>
	O/REF.: <b>R042393.002</b> Package:
CONTRACTOR: <b>ELLISDON</b>	ARCHITECT: <b>FGMDA/NFOE Architects</b>
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Telephone: 613-688-9176	ENGINEER: <b>SNC-LAVALIN Inc.</b>
E-mail: <b>dwincey@ellisdon.com</b>	Project no.: 610920
SUBCONTRACTOR: <b>STERIS</b>	DISCIPLINE: <b>ARCHITECTURAL</b>
Address:	
	PRODUCT SUBMITTED:
Person responsible: <b>Sonia Silga</b>	<input checked="" type="checkbox"/> As Specified
Telephone: E-mail: <b>sonia_silga@steris.com</b>	<input type="checkbox"/> Alternate
SUPPLIER or MANUFACTURER: <b>SAME AS ABOVE</b>	<div style="border: 1px solid black; padding: 5px;"> <p align="center"><b>FGMDA / NFOE Architects</b></p> <hr/> <p>THIS REVIEW IS ONLY FOR GENERAL CONFORMITY WITH THE DESIGN INTENT OF THE PROJECT AND FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS. CORRECTIONS AND COMMENTS MADE ON THE SHOP DRAWINGS AND/OR SAMPLES DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, INCLUDING CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AND QUANTITIES, COORDINATION OF THIS WORK WITH THAT OF OTHER TRADES, ETC.</p> <p><input type="checkbox"/> REVIEWED</p> <p><input checked="" type="checkbox"/> REVIEWED AS NOTED</p> <p><input type="checkbox"/> REVISE &amp; RE-SUBMIT</p> <p><input type="checkbox"/> NON COMPLIANT; RE-SUBMIT</p> <p>2016-05-18 <i>OK</i></p> <p>DATE PAR</p> <p>No. of specification section <b>115317</b></p> </div>
Address:	
Person responsible:	
Telephone: E-mail:	
DESCRIPTION OF SUBMITTAL:	
<b>LABORATORY WARE WASHERS</b>	
# of pages: 37	
Reference to drawings:	
Reference to specs:	
Division: <u>11</u> Section: <u>115317</u>	
Article: <u>1.4</u> Page: <u>1</u>	
Product abbreviation:	
REMARKS:	
Review of this submission is for compliance with general intent of the contract. This review does not relieve the Sub-Contractor, Supplier or Manufacturer of responsibility for error or omissions in the submission or the responsibility of meeting all requirements of the contract documents. Any deviation from the contract documents initiated by the Sub-Contractor, Supplier or Manufacturer shall be at their sole risk. QUANTITIES AND DETAIL DIMENSIONS ARE THE SUB-CONTRACTORS OR SUPPLIERS RESPONSIBILITY. VERIFY DATA WITH FIELD DIMENSIONS.	
SUBMITTAL TRACKING No.: <b>CHARS-PK3-A-11-53-17.01</b>	Date: M 12, 2016 Rev.: 0

*For equipment services coordination:*  
*Building water supply is conditioned to water hardness of 60 - 145 mg/L*  
*Please confirm this is suitable for equipment.*

## 70033 - Canadian High Arctic Research Station

**Date:** 2016-May-12

**Page:** 1 of 1

**To:** FGMDA/NFOE

D. Ellis  
511 Place d'Armes  
Bureau 100  
Montréal, QC, H2Y 2W7

**From:** JPFortin, Services Conseils

Jean-Pierre Fortin

**Subject:** CHARS - 11 53 17-2 (r.0)

**Ref #:** CHARS PK3-A-11 53 17.01

**Work Group #:** 11

**Submission item #:** 11 53 17 – LABWARE WASHING FACILITY – LABORATORY WARE WASHERS - 2(0)

### Submitted documents:

- Submittals ID sheet;
- Steris transmittal sheet, Submittals for PO #40132-6-1121-SN/Steris Order #8735776;
- Approval form;
- Equipment detail sheet;
- Equipment specifications & option detail;
- Accessories selection & specifications sheet;
- Drawing #920-514-458-EN, 5 pages;
- General note applicable to washers' equipment drawing;

### Review:

I consider that the documents submitted reflect correctly the accepted quote and provide the necessary and expected details. They are, therefore, to be considered as fully compliant.

Moreover, upon verification of the requirement of the tender and what was quoted with the detail of the proposed accessories, it has been found that a total six (6) identical items were mistakenly requested and ordered. The catalog number is FD680 and the item's description is «KM-5XLS Spindle header kit accessory». While the proposed items do answer the need expressed in the tender, the proposed quantity will not be of any use in the context of CHARS.

The final quantity of FD680 MUST be only two (2). Accordingly, the PO must be modified to reduce the quantity from six (6) to only two (2).



# TRANSMITTAL

Total number of pages: 1 of 1  
May 11, 2016

To: ELLISDON CORPORATION  
Address: 140 THAD JOHNSON RD  
OTTAWA, ON, K1V 0R4, CA  
Attn: NORM LAUZON  
Ph: 613-565-2680 EX 9165  
Email: nlauzon@ellisdon.com

From: Sonia Silga  
5960 Heisley Rd  
Mentor OH 44060  
Ph: 440-392-7475  
FX: 440-350-7077  
Email: Sonia\_silga@steris.com

PO # 40132-6-1121-SN  
STERIS Order # 8735776

**STERIS IS TRANSMITTING:**

Copies	Date	Description	Rev.
1	05/12/16	Equipment Submittals for Approval	0

- Approval Needed
- For Reference Only
- Certified for Construction

Comments:

cc: Daniel Caron  
Jean Rioux  
Mike Palmer

**APPROVAL FORM**

Date: 5/12/16

**PROJECT: ELLISDON CORPORATION**

**PO: 40132-6-1121-SN**

**STERIS ORDER: 8735776**

STERIS®



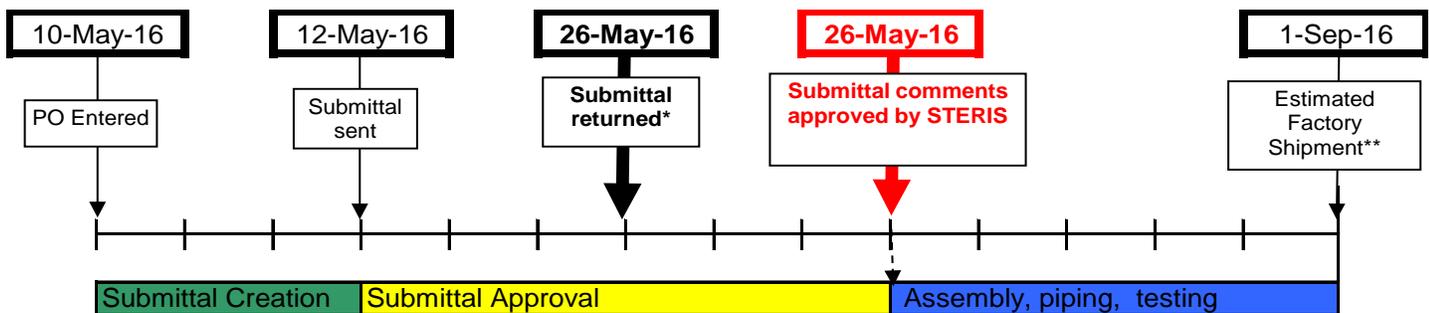
STERIS would like to thank you for your recent order. This equipment package relates to the items specified by your purchase order number referenced above. It is the intent of this package to promote a clear understanding (between all parties) of the space requirements for and mechanical details of the equipment to be furnished by STERIS Corporation.

The enclosed documents describe equipment only as it is routinely manufactured to conform to the standards cited in those documents and statutory requirements prevailing in most communities in which the equipment likely would be installed.

Unless specifically called for in your invitation for bids, request for quotations, contract, or order, the said equipment will not include any different or additional devices or appurtenances that might be required by specific local electrical, plumbing and other statutory requirements.

Key points to consider:

- ✓ This copy then will be regarded as an integral part of your order or contract.
- ✓ Fabrication of the equipment shall be in accordance with this signed, approved Equipment Submittal. **Manufacturing of the equipment will not begin until the signed submittal is returned and all submittal comments are approved by STERIS\*. The dates indicated below must be met in order to maintain the estimated factory shipment schedule.**



*\*Early return of submittal drawings does not guarantee improved factory shipment. Contact your STERIS representative to confirm if expedited shipment is possible.*

*\*\*Estimated factory shipment is based on the above schedule and the current factory capacity, however, factory shipment is subject to change based on receipt of long lead parts, receipt of approved submittals, factory capacity changes, design changes made after certified or approved drawing release, or other unforeseen circumstances. STERIS will provide schedule updates if any of these or other events occur.*

- ✓ Any and all notations made by you, the Customer, on this signed copy of the submittal must be reviewed by your STERIS Account Manager to determine any adjustments to the original contract price as well as original quoted lead-time. A revised quote and STERIS Change Acknowledgement Form will be submitted to you in order to confirm changes.
- ✓ **Sign and return one (1) copy of this submittal by May 26<sup>th</sup> either via email, fax or hard copy mail to:**

**Sonia Silga**  
**STERIS Corporation**  
**5960 Heisley Rd.**  
**Mentor, OH 44060**  
**Ph: 440-392-7475**  
**FX: 440-350-7077**  
**Email: Sonia\_silga@steris.com**

**APPROVAL FORM**

Date: 5/12/16

**PROJECT: ELLISDON CORPORATION**

**PO: 40132-6-1121-SN**

**STERIS ORDER: 8735776**

**Please check one of the boxes below:**

STERIS®



- Approved as is**
- Approved as noted**
  - Resubmittal **NOT** required

- Rejected**
- Approved as noted**
  - Resubmittal required

**Customer Approval Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Required On-Site Equipment Date:** \_\_\_\_\_

**STERIS Representative Approval Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**APPROVAL FORM**

Date: 5/12/16

**PROJECT: ELLISDON CORPORATION**

**PO: 40132-6-1121-SN**

**STERIS ORDER: 8735776**

**STERIS®**



**Comments & Clarifications** - \*Please utilize the below section to detail any comments, questions, or exceptions noted throughout this submittal package.

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TAB # \_\_\_\_\_  
ITEM # \_\_\_\_\_  
COMMENT:

**2 EA- Reliance 400XLS Glassware Washer**

FM40452

- Double Door
- Electric Heat
- 600V, 3-PH, 3-Wire

**2 EA- Universal Shelving System, Single Shelf**

FD076

- Laboratory Glassware Washers
- Accessories for Reliance 470/570 - 400/500 - 400XLS/500XLS -475/575 - 1024/1034 Glassware Washer
- 400XLS

**2 EA- Non-Recirculated Heated Pure Water Rinse System**

FQ090025

**2 EA- Drain Discharge Cool Down**

FQ090010

**2 EA- Printer**

FQ090032

**2 EA- Vented Drying System**

FQ090026

**2 EA- Additional Chemical Pumps (Pump 3 and 4)**

FD072

**2 EA- Barrier Wall Flange Kit For 400XLS Washer**

FD068

**8 EA- TTB Test Tube Basket**

FD436

**8 EA- C-666 Cover For Test Tube Basket**

FD446

**4 EA- BRS-400/500 Bottom Rotary Spray Header**

FD61200

**4 EA- GPB General Purpose Basket**

FD435

**4 EA- Cvgpb Cover For General Purpose Basket**

FD445

**2 EA- M-90 Pipette Header**

FD61600

**2 EA- KM-2XLS Spindle Header Accessory**

FD679

**2 EA- KM-5XLS Spindle Header Kit Accessory**

FD680

**4 EA- KM-5XLS Spindle Header Kit Accessory**

FD680

**4 EA- KM-8XLS Spindle Header Kit Accessory**

FD681

**4 EA- M-18 Spindle Header**

FD422

**2 EA- M-32 Spindle Header**

FD423

**2 EA- M-72 Spindle Header**

FD425

**2 EA- Transfer Cart, 2 Level, S/S (400XLS)**

FD069

- Laboratory Glassware Washers
- Accessories for Reliance 470/570 - 400/500 - 400XLS/500XLS -475/575 - 1024/1034 Glassware Washer
- 400XLS

**1 EA- Full Spare Parts Package – Reliance 400-500XLS Washer**

PPS000010

**2 EA- PM Pack – Reliance 400xls Washer Base Unit**

P764335643

**2 EA- PM Pack – Reliance 400xls Additional Pump Option**

P764335644

## APPLICATION

Reliance 400XLS and 500XLS Laboratory Glassware Washers are designed for thorough cleaning of laboratory glassware, plastic and metal goods used in research, production support and quality control laboratories.

## DESCRIPTION

Reliance 400XLS and 500XLS Laboratory Glassware Washers are cabinet-type washers equipped with Allen-Bradley® control systems.\* The washers are preprogrammed with five adjustable cycles. Five additional cycles are available for customized programming to meet specific operating requirements. Programmed descaling (considered 11th cycle) and priming cycles are also provided for routine maintenance. Washers are built to seismic building code requirements (seismic report is provided with standard documentation) and are available as single- or double-door units, for installation either as freestanding units or recessed through a barrier wall.

## Size (W x H x L)

### Chamber load capacities:

**400XLS:** 26 x 25-1/8 x 26" (660 x 638 x 660 mm)

**500XLS:** 39 x 25-1/2 x 26" (990 x 648 x 660 mm)

### Overall dimensions:

**400XLS:** 42 x 80 x 33-7/8" (1067 x 2032 x 861 mm)

**500XLS:** 56 x 80 x 33-7/8" (1422 x 2032 x 861 mm)

*NOTE: When Effluent Heat Recovery option is selected, the drain valve and outlet are located outside of the washer. Refer to equipment drawings for more details.*



Reliance 500XLS and 400XLS  
Laboratory Glassware Washers

(Typical - details may vary.)

## STANDARDS

Reliance 400XLS and 500XLS Glassware Washers meet applicable requirements of the following standards, as certified by UL:

- **Underwriters Laboratories (UL)** Standard 61010-1, 2005.
- **Canadian Standards Association (CSA):** CAN/CSA-C22.2 No. 61010.1, Second Edition.
- **International Standard EN/IEC 61010-1**, Third Edition.
- **International Standard EN/IEC 61326-1**, Second Edition.
- **Governing Directive for the Affixing of the CE Mark:** Machinery Directive 2006/42/EC.
- **Conformity to other applicable directives:**
  - » Electromagnetic Compatibility Directive 2004/108/EEC
  - » Low Voltage Directive 2006/95/EC

## Selections Checked Below Apply To This Equipment

### MODEL

- 400XLS**  **500XLS**  
 Steam-Heated Unit  **Electric-Heated Unit**

### VOLTAGE

- 208 Volt, 60 Hz, 3-Phase, 3-Wire  
 380/400/415 Volt, 50 Hz, 3-Phase, 3-Wire  
 480 Volt, 60 Hz, 3-Phase, 3-Wire  
 **600 Volt, 60 Hz, 3-Phase, 3-Wire**

### POWER DOOR CONFIGURATION<sup>1</sup>

- Single Door  **Double Door (Pass-Through)**

### OPTIONS

- Non-Recirculated Heated Pure Water Rinse<sup>2</sup>**  
 Non-Vented Vapor Condenser<sup>3, 6</sup>  
 **Vented Drying System**  
 Non-Vented Drying System<sup>4, 6</sup>

- Effluent Heat Recovery System<sup>5, 6</sup>  
 Process Monitoring Package  
 **Drain Discharge Cool Down<sup>6, 10</sup>**  
 Integrated Detergent Drawer  
 316L Stainless-Steel Washing Chamber  
 **Printer**

### ACCESSORIES<sup>7</sup>

- Additional Wash Chemical Pumps (2 Pumps)<sup>8</sup>**  
 Steam Condensate Return to Drain Kit<sup>8</sup>  
 **Universal Shelving Shelf, Single (2 Max.)**  
 Universal Shelving Shelf, Double (1 Max.)<sup>9</sup>  
 Air Compressor  
 110-115 Volt  200-240 Volt  
 **Barrier Wall Flange Assembly**  
 **400XLS**  **500XLS**

### NOTES:

1. Hinged Door(s) and Higher Chamber Available Upon Request.
2. Not Available for 208V Electric-Heated Units.
3. Only For Use with Units Without Drying System.
4. Includes Exhaust Heat Recovery System.
5. Only For Use with Steam-Heated Units.
6. Requires Cold Water Supply.
7. Refer to *SD419* for Material Handling Accessories.
8. Not Installed on Shipped Units. On-Site Installation Required.
9. Only For Use with 500XLS Models.
10. Drain Discharge Cooldown Option Is Required to Guarantee/Meet the 140°F (60°C) Maximum Drain Temperature.

Item \_\_\_\_\_  
 Location(s) \_\_\_\_\_

\* Allen-Bradley is owned by Rockwell Automation, Inc.

## FEATURES

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**Vertical sliding power door(s)** is (are) constructed of double-pane tempered glass, allowing the operator to view the chamber with the door(s) closed. While cycle is in progress, glass remains cool to the touch. Power sliding door(s) operates automatically by pneumatic cylinders when the appropriate touch pad is pressed on the touch screen. If double doors are ordered, a door interlock feature is provided to prevent cross-contamination. The door interlock system allows only one door to be opened at a time, and prevents either door from being opened when the cycle is in progress, until STOP touch pad is pressed. Door(s) is (are) dynamically pressed against a silicone gasket ensuring complete air and water tightness of wash chamber.

**NOTE:** *Hinged door(s) available upon request.*

**18-watt fluorescent light**, mounted outside the wash chamber, illuminates the wash chamber.

**Spray system** includes two (400XLS) or three (500XLS) manifold connectors positioned on the bottom of the chamber, and one (400XLS) or two (500XLS) rotary spray arms suspended from the top of the chamber. Manifold connectors automatically connect to accessory headers at the start of each cycle. Additional connectors are installed on chamber sides to accommodate optional universal shelves (used to process loads on two levels).

**Insulation** covers the outer top, sides and bottom of the washer chamber to minimize heat loss and noise. The insulation is composed of 1" (25.4 mm) thick fiberglass and includes a vapor barrier.

**Sampling valve** [installed in sump] facilitates wash and rinse water sampling.

**Removable stainless-steel debris screen**, located in the bottom of the wash chamber (sump), prevents large debris from entering the piping system and pump.

**Two adjustable peristaltic pumps** automatically dispense a selected amount of liquid chemicals (1/8 to 6.0 oz/U.S. gal [1.0 to 50 mL/L]) into the chamber sump during desired treatment. Included are 50' (15 m) of tubing and electrical wiring, pick-up tubes and low level sensors for remote location of chemical containers (5 U.S. gal [19 L]). Also note that one pump can be used to automatically neutralize solution prior to draining (timebased).

**Water saver feature** allows the operator to retain water used during the final rinse treatment for reuse during the first treatment of the next cycle. Water can be retained only if no chemicals were used during the final rinse treatment and if optional drying was not selected. If retained water is too hot for reuse in first treatment of the next cycle, water is automatically drained from the sump.

**SMART Filling System** reduces water consumption by automatically selecting the minimal quantity of water required based on the selection of accessories.

**Vapor removal fan** (1/15 HP, 50 W) is provided to remove vapor from the chamber throughout the cycle (only supplied on units without drying).

1. Allen-Bradley CompactLogix and PanelView Plus are trademarks of Rockwell Automation, Inc.

**Control System** is an Allen-Bradley CompactLogix™ controller series with a PanelView™ Plus 6 600 color touch screen.<sup>1</sup> Memory can contain up to 10 processing cycles that are fully programmable according to Customer preferences.

Cycle phase times, temperatures and other key process parameters are also programmable.

Once a cycle is started, the programmed cycle values are locked in and cannot be changed until the cycle is complete.

Control system is equipped with a **Service Mode** for preventive maintenance testing and to facilitate troubleshooting. A built-in service diagnostic program is included to permit system calibration and verification of component operations.

Washer can be programmed to automatically shut down after the completion of a cycle to conserve energy.

Total cycle remaining time is constantly displayed on the operator interface.

Visual and Audible Alarm indicates cycle completion. The alarm can be programmed to automatically shut off after a predetermined period of time.

One contact is used for external alarm. A second contact can be used to either indicate cycle complete or energize an external pure water valve (not supplied by STERIS).

RS-232 Port is used to download cycle process data to the optional integrated printer or to an external computer.

**ProConnect® Technical Support Services** maximizes operational efficiencies with secure, internet-based, real-time equipment monitoring. Data from your equipment is used by STERIS to provide pro-active Customer alert notifications, technical support, and predictive maintenance. Online parts ordering, equipment performance dashboards, and online service scheduling at [steris.com](http://steris.com) is also available. Note that an Ethernet Port is available for interfacing with ProConnect Technical Support Services. (ProConnect Technical Support Services is available in U.S. and Canada only). Refer to tech data sheet [SD983](#), [PROCONNECT TECHNICAL SUPPORT SERVICES](#), for details.

## CYCLE DESCRIPTION

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The Reliance 400XLS and 500XLS Glassware Washers feature 10 programmable cycles. Each cycle can be programmed to include up to 18 separate treatments. Possible standard treatments include: up to two pre-wash, up to three wash, up to three rinse, up to nine pure water rinse and drying (if option applies). Once a cycle is selected, the washer automatically processes the load through the programmed treatments.

The washer is programmed with five factory-set processing cycles: EXTRACare, ENVIROCare, PLASTIC, STANDARD and RINSECare. A DESCALER cycle (considered 11th cycle) is also pre-programmed to enable routine descaling procedure. All factory-set cycles can be modified by an authorized operator to create complete wash programs such as the following:

- **PRE-WASH:** Load is sprayed with recirculated water at the selected temperature (hot, optional cold or sump heated to 203°F [95°C] - see *NOTE* at end of Section) for a selected amount of time (0-15 minutes). On completion of treatment, water is sent to drain.

- **WASH 1:** Load is sprayed with recirculated solution at the selected temperature (hot, optional cold or sump heated 203°F [95°C] - see *NOTE* at end of Section) for the selected amount of time (0-15 minutes). A controlled amount of chemical detergent is automatically added to sump at the beginning of treatment. Treatment does not start until selected temperature is reached. On completion of treatment, solution is sent to drain.
- **RINSE:** Load is sprayed with recirculated water at the selected temperature (optional cold, hot or sump heated to 203°F [95°C] - see *NOTE* at end of Section) for the selected amount of time (0-15 minutes). If heated water is selected, treatment does not start until selected temperature is reached. On the completion of treatment, water is sent to drain.
- **PURE WATER RINSE:** Load is either sprayed with recirculated pure water at the selected temperature (ambient or sump heated to 203°F [95°C] - see *NOTE* at end of Section) for a selected amount of time (0-15 minutes), or sprayed with non-recirculated pure water (supplied from optional storage tank) for up to 10 seconds. If heated water is selected, treatment does not start until the selected temperature is reached. On completion of treatment, water is either sent to drain or retained for use in the first treatment of the next cycle.
- **DRYING (Option):** HEPA filtered heated air is circulated through the piping, spindles, load items and chamber for the selected time (0 to 30 minutes). Temperature can be set to High (approximately 240°F [115°C]) for regular glassware or to Heat Sensitive (approximately 180°F [82°C]) for plastic items. If SMART drying is selected, drying time automatically adjusts itself according to the size of the load.

*NOTE: Maximum water temperature obtainable is limited by altitude. At 6560 feet (2000 meters), maximum temperature is 191°F (88°C). Refer to Equipment Specification (920-514-465) for further details. Cold water can be selected for the various treatments if one of the following four options is selected:*

- *Non-Vented Vapor Condenser*
- *Drain Discharge Cool Down*
- *Non-Vented Drying*
- *Effluent Heat Recovery System*

## SAFETY FEATURES

**Safety door switch** prevents a cycle from starting if the door is not fully closed and stops the washer operation if door is opened during a cycle.

The door is equipped with a **safety sensor** to automatically retract (open) the door if obstruction is detected in the doorway.

## OPTIONAL FEATURES

**Non-recirculated heated pure water rinse** treatment can be programmed to spray the load with heated pure water. Pure water is stored in an integral electropolished 316L stainless-steel tank equipped with an automatic fill and level control. Pure water rinse treatment(s) can be programmed to use

recirculated or non-recirculated pure water. A steam or electric heating coil is located in the bottom of the storage tank to heat and maintain pure water temperature up to 203°F (95°C). This option is not available for 208V Electric-Heated Units.

*NOTE: Maximum water temperature obtainable is limited by altitude. At 6560 feet (2000 meters), maximum temperature is 191°F (88°C). Refer to Equipment Specification (920-514-465) for further details.*

**Non-vented vapor condensor** can be supplied for exhausting vapor through a cold-water condensor to the room, eliminating the need for venting the unit. To be used on units not equipped with Drying Option. Cold water must be supplied to the washer.

**Vented Drying System** treatment can be programmed to occur after the final rinse treatment of a cycle. During Drying treatment, HEPA filtered air is heated to the selected temperature and recirculated through the chamber and accessory headers, while a portion is exhausted to vent. System includes a 3 HP (2.2 kW) blower and 8.5 kW electric heaters. SMART Drying System, if selected, automatically adjusts cycle time according to size of the load.

**Non-Vented Drying System** treatment can be programmed to occur after the final rinse treatment of a cycle. During Drying treatment, HEPA filtered air is heated to the selected temperature and recirculated through the chamber and accessory headers, while a portion is exhausted to the room through a cold water condenser. Energy is recovered by using hot exhaust air to pre-heat fresh incoming air. System includes a plate heat exchanger, 3 HP (2.2 kW) blower and 8.5 kW electric heaters. SMART Drying System, if selected, automatically adjusts cycle time according to size of the load. Cold water must be supplied to the washer.

**Effluent Heat Recovery System** (steam-heated units only) includes an effluent cooling system combined to an energy recovery system that pre-heats incoming process water. Cold water is circulated through a stainless-steel coil located in the integrated stainless-steel drain tank to cool down the effluent prior to drain. The heat from the effluent is transferred to the cold water which is subsequently used for the cleaning cycle. The system eliminates the need for connecting the washer to a hot water supply line and reduces the need to send cold water to drain for cooling purpose.

*NOTE: When Effluent Heat Recovery System option is selected, the drain valve and outlet are located outside of the washer and cold water must be supplied to the washer.*

**Process Monitoring Package** includes a pump pressure sensor and conductivity system to monitor the concentration of detergent in the wash solutions and the conductivity of the water after the final rinse. A pressure sensor generates an alarm should the pressure at the circulation pump outlet fall below an adjustable set point. With this option, detergent(s) is (are) injected in the chamber until the adjustable conductivity set point has been reached to ensure the appropriate amount has been injected. Conductivity of the rinse water is also measured prior to drain. Rinses are repeated until conductivity has reached the adjustable set point, minimizing the quantity of rinse water used to meet performance criteria.

**Drain Discharge Cool Down** system, at the end of each treatment, ensures water drained to the building drain system does not exceed 140°F (60°C). If water temperature in the chamber sump is greater than 140°F (60°C), cold water is automatically added to reduce temperature of water being discharged to building drain. The system also cools down steam condensate if the condensate return to drain accessory is installed on the washer. Cold water must be supplied to the washer.

**Integrated Detergent Drawer** system capable of holding two x 1 gal containers (4L) is integrated to the washer. The system includes two pick-up tubes and low level sensors for 1 gal (4L) containers.

**Wash chamber is constructed of 316L Stainless Steel** instead of 304L.

**Printer** can be integrated to the control panel to maintain records of cycle parameters and alarms.

## CONSTRUCTION

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Wash chamber is constructed of #304 stainless steel, No. 4 finish (316L is an option), argon-welded and polished. Washer cabinet is made of #201 and #304 stainless steel (No. 2B finish). Fasteners and steam coil (if applicable) are made of #304 stainless steel. All components of the spray system (including screens, rotary spray arms and recirculation piping) are constructed of #304 stainless steel. Optional pure water tank is made of #316 stainless steel.

All treatments are under pressure of a #316L stainless-steel pump with dual-speed (7.5/1.9 HP [5.6/1.5 kW]) motor. (High speed is for use only with the Universal Shelving Accessories.) Pump impeller, shaft and casing are fitted with a mechanical seal. The pump motor is equipped with drip-proof frame, magnetic starter, overload protection and sealed bearings (requiring no periodic lubrication).

Washer is interpiped and interwired, requiring only one connection for each service and utility hook-up.

## ACCESSORIES<sup>1</sup>

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**Two Additional Chemical Pumps** can be installed on the washer for injection of different chemicals during desired treatments. For remote location of 5 gal (19L) chemical containers, 50' (15 m) of tubing and electrical wiring, pick-up tubes and low level sensors are included. Note that additional chemical pumps are not installed at the factory; and must be installed on-site. Also note that one pump can be used to automatically neutralize solution prior to draining (timebased).

**Steam Condensate Return to Drain Kit** includes piping to connect the condensate return outlet to the drain on the washer. If washer is equipped with Drain Discharge Cool Down option, condensate return is cooled down using cold water prior to entering the drain system. Note that these drain kits are not installed at the factory; and must be installed on-site.

**Universal Shelving System, Single Shelf**, can easily be removed so only a part of the wash chamber has a 2-level configuration, providing capacity to process small, medium and large glassware items simultaneously. Up to two single loading shelves can be installed by user to provide capability of processing load items on two levels.

**Universal Shelving System, One Double Shelf**, can be installed by user in a Reliance 500XLS Glassware Washer to provide capability of processing load items on two levels for two-thirds of the wash chamber capacity. The system provides capacity to process small, medium and large glassware items simultaneously. A single Universal Shelf can also be added on the 500XLS Models to provide two full levels of processing.

**Air Compressor** is complete with automatic tank drain and pressure switch. Wiring at installation is not provided by STERIS.

**Barrier Wall Flange Kit** includes six stainless-steel flanges to seal the opening between the recessed washer and wall.

## PREVENTIVE MAINTENANCE

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A global network of skilled service specialists can provide periodic inspections and adjustments to help ensure low-cost peak performance. STERIS representatives can provide information regarding annual maintenance programs.

## NOTES

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1. On 380/400/415 V units, NPT fittings are replaced by BSPT.
2. Maximum hardness for hot and cold water is 120 ppm (CaCO<sub>3</sub>).
3. Minimum specific resistivity of 0.1 MΩ·cm is recommended for pure water.
4. Pipe sizes shown indicate terminal outlets only. Building service lines (not provided by STERIS) must supply the pressures and flow rates specified in equipment drawings.
5. For all ventilation ducting from washer, STERIS recommends installation of a dedicated 3" (76 mm) ID flexible, corrosion-proof, watertight duct to exterior of building, sloped towards washer.
6. Customer must ensure washer stands on a non-combustible floor.
7. These Units are not designed to clean petroleum-based compounds.

<sup>1</sup>. Refer to [SD419](#) for information on material handling accessories, including accessory headers and transfer carts.

## ENGINEERING DATA

Maximum Shipping Weight lbs (kg)	Maximum Shipping Dimensions In (mm) W x H x D	Maximum Operating Weight lbs (kg)	Heat Loss*		A-weighted Equivalent Surface Sound Pressure Level† dB A	Max. Water Consumption gal (L)				Maximum Steam Consumption per Cycle‡ lbs (kg)
			(kJ/hr)			per Cycle‡		per Fill‡		
			Vented BTU/hr	Non-vented BTU/hr		Hot Water**	Pure Water	Hot Water**	Pure Water	
<b>400XLS</b> 1200 (544)	50 x 91 x 42 (1270 x 2311 x 1067)	1300 (589)	1580 (1667)	7200 (7596)	67.6	23.2 (88)	5.8 - 9.5 (22 - 36)	5.8 (22)	5.8 - 9.5 (22 - 36)	5 (2.27)
<b>500XLS</b> 1500 (680)	62 x 91 x 42 (1575 x 2311 x 1067)	1500 (680)	1580 (1667)	7200 (7596)	67.6	30 (114)	7.5 - 12.5 (28 - 47)	7.5 (28.4)	7.5 - 12.5 (28 - 47)	6.5 (2.95)

\* At 75°F (24°C), 40% RH ambient.

† Calculated as described in ISO 3746 standard.

‡ Based on 400XLS STANDARD cycle with default values, one level washing, recirculated pure water rinse. Cold Water consumption varies depending on selected options, see Equipment Drawings.

\*\* Hot water supply not required if Effluent Heat Recovery System is provided.

8.

## UTILITY REQUIREMENTS

**IMPORTANT:** Refer to [EQUIPMENT DRAWING 920-514-458 FOR 400XLS MODEL](#), [920-514-459 FOR 500XLS MODEL](#), for installation details.

### Hot Water

1/2" NPT (not required if Effluent Heat Recovery System is selected).

### Cold Water

1/2" NPT (**required for Non-Vented Vapor Condenser, Non-Vented Drying System, Effluent Heat Recovery System and Drain Discharge Cool Down options**).

### Steam (Steam-Heated Unit only)

1/2" NPT

### Condensate Return (Steam-Heated Unit only)

1/2" NPT

### Pure Water

1/2" NPT

### Air

1/8" NPT

### Vent

3" (76 mm) O.D.

(Not required if non-vented system is selected)

### Drain

1-1/2" NPT; a 3" (76 mm) O.D. floor funnel or open drain, and 3" (76 mm) O.D. floor sink is recommended.

### Electricity

3/4" (19 mm) conduit size;  
1" (25.4 mm) if over 24 Amps

208 V, 60 Hz, 3-Phase, 3-Wire; or

480 V, 60 Hz, 3-Phase, 3-Wire; or

380/400/415 V, 50 Hz, 3-Phase, 3-Wire; or

600 V, 60 Hz, 3-Phase, 3-Wire

### Requirements for ProConnect Technical Support Services

Refer to Tech Data sheet [SD983](#), [PROCONNECT TECHNICAL SUPPORT SERVICES](#). (Available in U.S. and Canada only.)

**NOTES**

**Recommended Air Compressor**

1. Enclosure must be well ventilated with a good air path to and from the ends of the compressor.
2. Inlet air temperature should be between 32 and 100°F (0 and 38°C). Locate air inlet outside of enclosed service areas. Inlet air pipe size is 1/4" (6 mm). Increase pipe diameter one size for every 10' (3048 mm) inlet filter is placed away from sink.
3. Use 3/8" (10 mm) or larger pipe between compressor and glassware washer when compressor is remotely located.
4. Electrical cord is not included.

**UTILITY REQUIREMENTS**

**Recommended Air Compressor**

**Electrical - Compressor Motor**

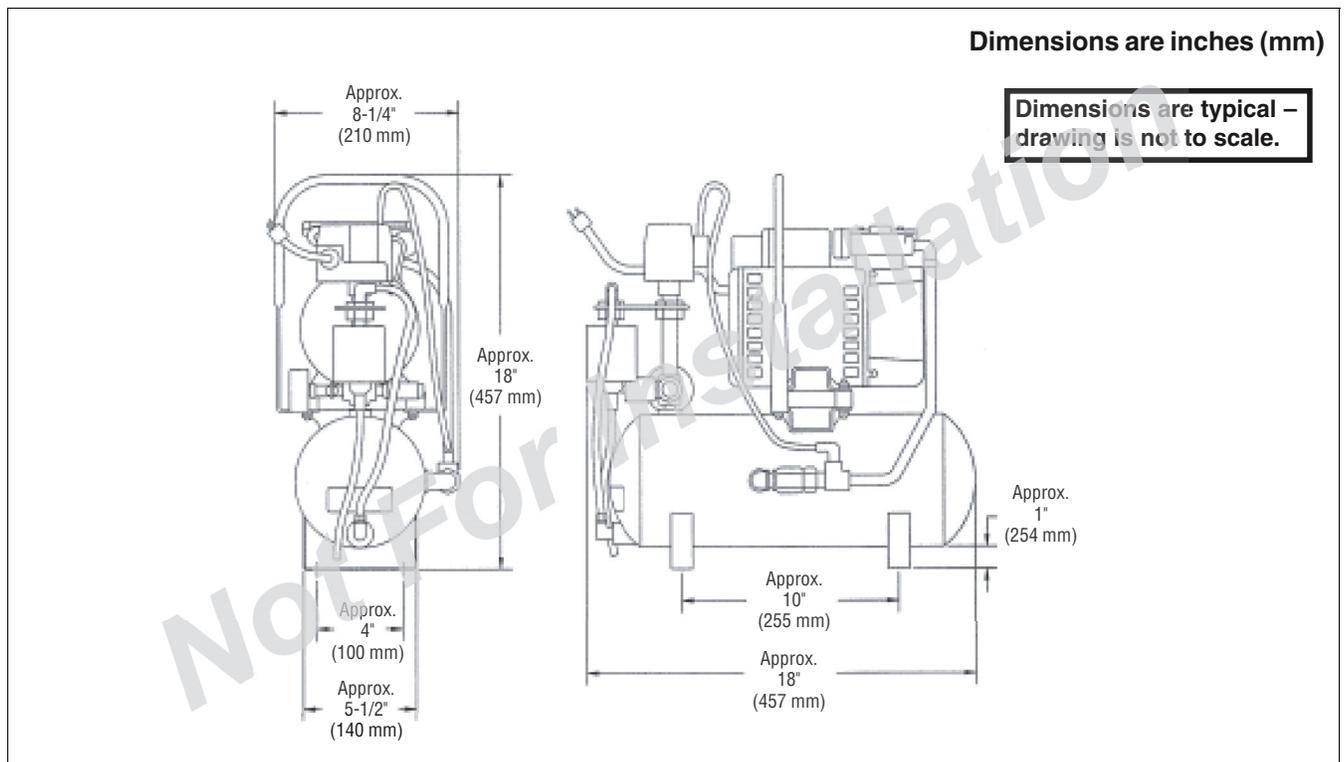
110-115 Volt, 50/60 Hz, 1-Phase, 4.4 Amps  
 or  
 200-240 Volt, 50/60 Hz, 1-Phase, 1.4 Amps

**ENGINEERING DATA - RECOMMENDED AIR COMPRESSOR WITH AUTOMATIC TANK DRAIN**

HP (kW)	CFM Open Flow (cmm)	Weight lbs (kg)	Comp. Stages	Cyl.	TANK				MOTOR	Noise Level dB
					Lubrication	Size In (mm)	Capacity US gal (L)	Max. Press psig (bar)	Operating Speed Hz (rpm)	
1/3 (0.25)	2.0 (.06)	42 (19)	1	1	Oiless	See Below	2.0 (7.6)	100 (6.9)	50 (1400) 60 (1675)	69

Reference the following equipment drawings for installation details.

Equip. Dwg. No.	Equipment Drawing Title
920-005-138EN	Air Compressor With Automatic Tank Drain, Domestic and International





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**For Further Information, contact:**



STERIS Corporation  
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Mentor, OH 44060-1834 • USA  
440-354-2600 • 800-548-4873  
[www.STERISLifeSciences.com](http://www.STERISLifeSciences.com)

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

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

**APPLICATION**

A complete line of Reliance materials handling accessories are available for use with Reliance Models 400, 500, 400XLS, 500XLS, 470 and 570 glassware washers and Models 475, 575, 1024 and 1034 glassware dryers. When used in conjunction with Reliance washers and dryers, the accessory headers provide an effective and efficient means of cleaning a wide variety of glassware, plasticware and metal goods used in research, production, quality control and hospital laboratories.

**DESIGN FEATURES**

Accessory headers are available to accommodate a wide variety of glassware including flasks, beakers, bottles, graduated cylinders and pipettes. All accessories can be interchanged to process mixed wash loads. For example, a 50 mL flask, a 500 mL beaker, and a 1 L graduated cylinder can be processed in the same load at the same time when using the correct combination of accessories.

All accessories are constructed of stainless steel for corrosion resistance and easy cleaning. The lightweight design provides easy handling, and the plastic wheels allow for easy rolling of accessory headers into and out of the chamber. Plastic tips on the spindles prevent scratching and/or breakage of glassware.

Attachment of the accessories to manifold connectors, located in the bottom of the wash chamber, dry chamber or shelf system, occurs automatically at the start of each cycle. The balanced spray system of Reliance washers holds glassware in place without the need for hold-down screens, minimizing glassware breakage.

**The Selections Checked Below Apply To This Equipment**

**ACCESSORY KITS**

- (FD67-9) KM-2XLS Kit  
Qty. \_\_\_\_
- (FD68-0) KM-5XLS Kit  
Qty. \_\_\_\_
- (FD68-1) KM-8XLS Kit  
Qty. \_\_\_\_

**SPINDLE HEADERS**

- (FD42-2) M-18 Spindle Header  
Qty. \_\_\_\_
- (FD42-3) M-32 Spindle Header  
Qty. \_\_\_\_
- (FD41-8) M-34 Spindle Header  
Qty. \_\_\_\_
- (FD42-4) M-50 Spindle Header  
Qty. \_\_\_\_
- (FD42-5) M-72 Spindle Header  
Qty. \_\_\_\_
- (FD41-9) M-85 Spindle Header  
Qty. \_\_\_\_
- (FD42-6) M-98 Spindle Header  
Qty. \_\_\_\_
- (FD48-200) Glassware Protective Mesh  
Qty. \_\_\_\_

**BOTTOM ROTARY SPRAY HEADERS**

- (FD43-0) Bottom Rotary Spray Header, BRS-470/570  
Qty. \_\_\_\_
- (FD61-200) Bottom Rotary Spray Header, BRS-400/500  
Qty. \_\_\_\_

**ACCESSORIES USED TO PROCESS BEAKERS**

- (FD43-5) General Purpose Basket, GBP  
Qty. \_\_\_\_
- (FD44s-5) General Purpose Basket Cover, CVGBP  
Qty. \_\_\_\_

**ACCESSORIES USED TO PROCESS TEST TUBES**

- (FD43-1) Test Tube Rack, TTR  
Qty. \_\_\_\_
- (FD43-6) Test Tube Basket, B-666 and (FD44-7) Basket Divider, D-666  
Qty. \_\_\_\_
- (FD44-6) Test Tube Basket Cover, C-666  
Qty. \_\_\_\_

**ACCESSORY USED TO PROCESS PETRI DISHES**

- (FD43-2) Petri Dish Rack, PDR-55  
Qty. \_\_\_\_

**ACCESSORIES USED TO PROCESS PIPETTE HEADERS**

- (FD42-7) Pipette Header, M-200  
Qty. \_\_\_\_
- (FD42-8) Flooded System Pipette Header, PFS  
Qty. \_\_\_\_
- (FD61-600) M-90  
Qty. \_\_\_\_

**RACK STORAGE SYSTEM FOR XLS ACCESSORIES**

- (FD07-9) Storage Rack  
Qty. \_\_\_\_

**TRANSFER CARTS**

- (FD41-2) Transfer Cart, TC-570  
Qty. \_\_\_\_
- (FD41-3) Transfer Cart, TC-570DS  
Qty. \_\_\_\_
- (FD61-100) Transfer Cart, TC-400\*  
Qty. \_\_\_\_
- (FD61-800) Transfer Cart, TC-400\*  
Qty. \_\_\_\_
- (FD61-400) Transfer Cart, TC-500\*  
Qty. \_\_\_\_
- (FD61-700) Universal Transfer Cart\*  
Qty. \_\_\_\_
- (FD61-900) Transfer Cart, TC-400XLS  
Qty. \_\_\_\_
- (FD06-9) Transfer Cart, TC-400XLS  
Qty. \_\_\_\_
- (FD07-1) Transfer Cart, TC-500XLS  
Qty. \_\_\_\_

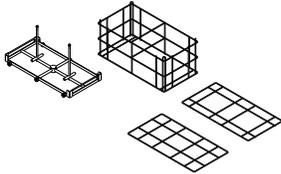
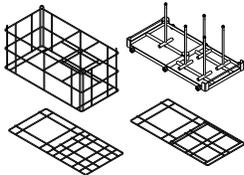
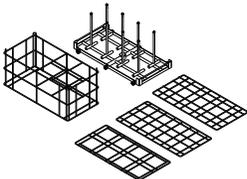
*\*Not for use with 400XLS-500XLS Models*

Item \_\_\_\_\_

Location(s) \_\_\_\_\_

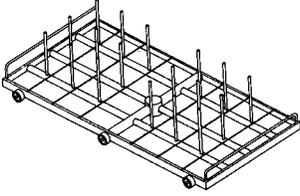
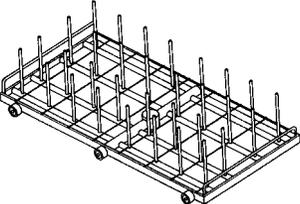
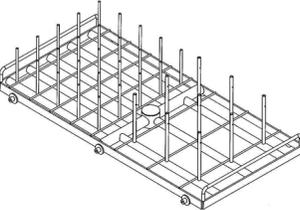
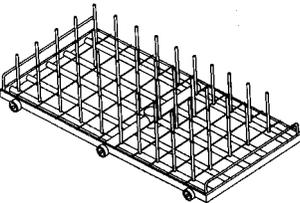
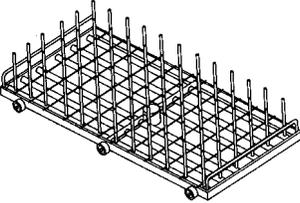
## ACCESSORY KITS

A combination of Spindle Headers, Support Baskets and Glassware Supports is recommended for processing large glassware. See individual components for technical specifications.

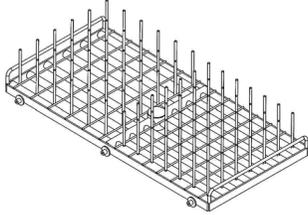
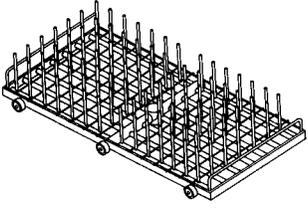
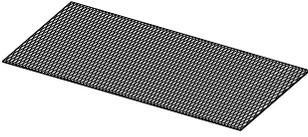
New KM Kits for Reliance 400-500-400XLS and 500XLS Washers	GLASSWARE		SPINDLES			WEIGHT	APPLICATION
	Max. Diameter per Spindle	Max. Quantity per Load	Diameter	Height	Side Spray Ports		
<b>KM-2XLS Kit (FD67-9)</b> 	12" (305 mm)	2	3/8" (9 mm), Tip 1/2" (13 mm)	10 5/8" (270 mm)	2	11.5 lbs (5.2 kg)	Includes support basket and dividers to wash large glassware in 400-500-400XLS-500XLS washers
<b>KM-5XLS Kit (FD68-0)</b> 	1 x 12" (305 mm) and 4 x 5 3/4" (146 mm)	5	3/8" (9 mm), Tip 1/2" (13 mm)	10 5/8" (270 mm)	2	13.3 lbs (6 kg)	Includes support basket and dividers to wash large and medium size glassware in 400-500-400XLS-500XLS washers
<b>KM-8XLS Kit (FD68-1)</b> 	5 3/4" (146 mm)	8	3/8" (9 mm), Tip 1/2" (13 mm)	10 5/8" (270 mm)	2	16.8 lbs (7.6 kg)	Includes support basket and dividers to wash medium size glassware in 400-500-400XLS-500XLS washers

## SPINDLE HEADERS

Individual spindles assure thorough cleaning of inside of flasks, graduated cylinders and bottles. Open bottom allows water to drain completely from inside of glassware.

	GLASSWARE		SPINDLES			WEIGHT	APPLICATION
	Max. Diameter per Spindle	Max. Quantity per Load	Diameter	Height	Side Spray Ports		
<b>M-18 Spindle Header (FD42-2)</b> 	3-3/4" (95 mm)	18	1/4" (6 mm)	4-3/4" (121 mm)	1	7.0 lbs (3.2 kg)	Refer to Glassware Processing Capacity Chart on page 10.
<b>M-32 Spindle Header (FD42-3)</b> 	3 (76 mm)	32	1/4" (6 mm)	4-3/4" (121 mm)	1	8.0 lbs (3.6 kg)	Refer to Glassware Processing Capacity Chart on page 10.
<b>M-34 Spindle Header (FD41-8)</b> 	3-3/4" (95 mm)	9	1/4" (6mm)	4-3/4" (121 mm)	1	8.25 lbs (3.8 kg)	Refer to Glassware Processing Capacity Chart on page 10.
	2-3/8" (60 mm)	25	3/16" (5 mm)	3-1/2" (89 mm)	None		Refer to Glassware Processing Capacity Chart on page 10.
<b>M-50 Spindle Header (FD42-4)</b> 	2-3/8" (60 mm)	50	3/16" (5 mm)	3-1/2" (89 mm)	None	8.5 lbs (3.9 kg)	Refer to Glassware Processing Capacity Chart on page 10.
<b>M-72 Spindle Header (FD42-5)</b> 	2" (51 mm)	72	3/16" (5 mm)	3-1/2" (89 mm)	None	9.5 lbs (4.3 kg)	Refer to Glassware Processing Capacity Chart on page 10.

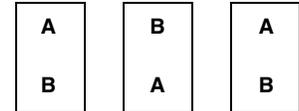
## SPINDEL HEADERS (continued)

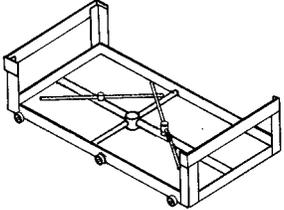
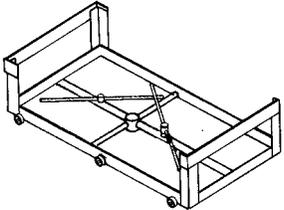
	GLASSWARE		SPINDLES			WEIGHT	APPLICATION
	Max. Diameter per Spindle	Max. Quantity per Load	Diameter	Height	Side Spray Ports		
<b>M-85 Spindle Header (FD41-9)</b> 	2" (51 mm)	36	3/16" (5 mm)	3-1/2" (89 mm)	None	10.25 lbs (4.7 kg)	Refer to Glassware Processing Capacity Chart on page 10.
	1-5/8" (41 mm)	49	3/16" (5 mm)	3-1/2" (89 mm)	None		Refer to Glassware Processing Capacity Chart on page 10.
<b>M-98 Spindle Header (FD42-6)</b> 	1-5/8" (41 mm)	98	3/16" (5 mm)	3-1/2" (89 mm)	None	11 lbs (5 kg)	Refer to Glassware Processing Capacity Chart on page 10.
<b>Glassware Protective Mesh (FD75-300)</b> 	2 X  12 x 24" (305 x 610 mm)	--	--	--	--	--	Used with spindle headers to protect glassware. Two silicone pieces included.

## BOTTOM ROTARY SPRAY HEADERS

Two spray arms mounted at different heights allow for free movement of rotary spray action and provide bottom load coverage. Spray arm/hub has holes in the center to eliminate dead spots.

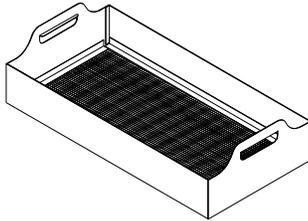
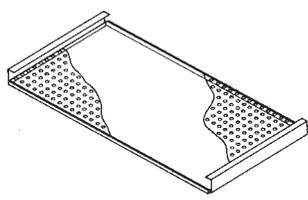
**NOTE:** To allow for free movement of spray arms when loading more than one Bottom Rotary Spray Header side-by-side in the washer/dryer, loading direction of every-other header must be reversed as shown. A and B designate the rotary spray arms.



	SPRAY ARMS			HEADER SIZE W x L	WEIGHT LBS (KG)	APPLICATION
	QUANTITY	DIAMETER	LENGTH			
<b>Bottom Rotary Spray Header, BRS-470/570 (FD43-0)</b> 	2	1/2" (13 mm)	14-3/4" (375 mm)	12-3/4 x 24-3/4" (324 x 629 mm)	11.5 lbs (5.2 kg)	For Models 470 and 570 washers only. Used with General Purpose Basket, Test Tube Rack, and Petri Dish Rack to provide load coverage from the bottom.
<b>Bottom Rotary Spray Header, BRS-400/500 (FD61-200)</b> 	2	1/2" (13 mm)	14-1/4" (362 mm)	12-3/4 x 24-3/4" (324 x 629 mm)	11.5 lbs (5.2 kg)	For Models 400/400XLS and 500/500XLS washers only. Used with General Purpose Basket, Tube Rack, and Petri Dish Rack to provide load coverage from the bottom.  Reliance 500 washer can accommodate up to 5 BRS simultaneously.

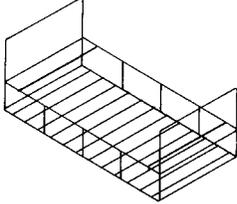
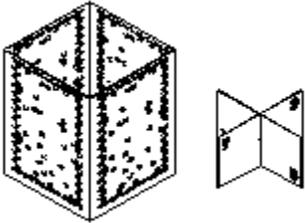
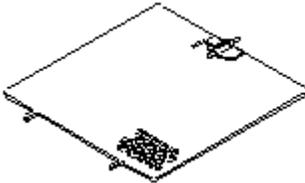
## ACCESSORIES USED TO PROCESS BEAKERS

The General Purpose Basket and Cover are used in conjunction with the Bottom Rotary Spray Header to process beakers and hold down lightweight, small miscellaneous plasticware during washing. Open wire frame design of the basket and cover allows maximum water coverage to all parts of the load. The cover has openings sized to keep plasticware in place.

	OVERALL SIZE W x L	WEIGHT	APPLICATION
<b>General Purpose Basket, GPB (FD43-5)</b> 	12-1/2 x 24-1/2" (318 x 622 mm)	8 lbs (3.6 kg)	Used with Bottom Rotary Spray Header to wash beakers and miscellaneous hardware. Beakers must be inverted when loaded in basket.
<b>General Purpose Basket Cover, CVGPB (FD44-5)</b> 	12 x 23-1/4" (305 x 591 mm)	3 lbs (1.4 kg)	Used with Bottom Rotary Spray Header and General Purpose Basket to hold down lightweight plasticware.

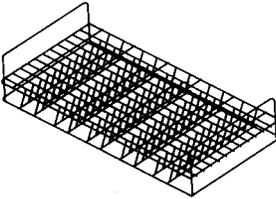
## ACCESSORIES USED TO PROCESS TEST TUBES

Test Tube Rack, Basket, Divider and Cover are used in conjunction with the Bottom Rotary Spray Header to process test tubes.

	OVERALL SIZE (W x L)	WEIGHT	APPLICATION
<b>Test Tube Rack, TTR (FD43-1)</b> 	12-1/2 x 24-1/2" (318 x 622 mm)	3.0 lbs (1.4 kg)	Used with Bottom Rotary Spray Header, Basket, Divider, and Cover to wash test tubes from 3/8 to 1-1/2" in diameter and/or beakers. Rack holds six Test Tube Baskets.
<b>Test Tube Basket, B-666 (FD43-6) &amp; Basket Divider, D-666 (FD44-7)</b> 	<b>Interior Dimensions:</b> 5-1/2 x 5-1/2" (140 x 140 mm)	<b>B-666 – 1-1/2 lbs (0.7 kg)</b> <b>D-666 – 1/2 lb (0.2 kg)</b>	<b>Basket is used with Bottom Rotary Spray Header, Test Tube Rack, Cover, and Divider to hold test tubes and small miscellaneous glassware (i.e., screw caps, stoppers, etc.) during washing. Basket Divider partitions basket into four parts to support smaller or partial loads. Each basket holds approximately 120 test tubes. Test tubes must be inverted when loaded in basket.</b>
<b>Test Tube Basket Cover, C-666 (FD44-6)</b> 	5-1/2 x 6" (140 x 152 mm)	1.2 lb (0.2 kg)	Used with Test Tube Basket to hold test tubes in place while inverted in basket.

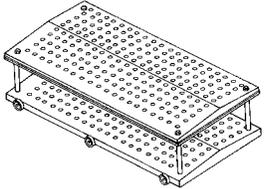
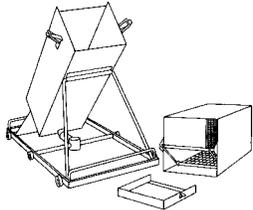
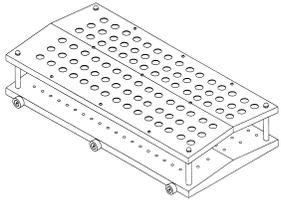
## ACCESSORY USED TO PROCESS PETRI DISHES

Petri Dish Rack is used in conjunction with the Bottom Rotary Spray Header to process petri dishes.

	OVERALL SIZE (W x L)	WEIGHT	APPLICATION
<b>Petri Dish Rack, PDR-55 (FD43-2)</b> 	12-1/2 x 24-1/2" (318 x 622 mm)	3 lbs (1.4 kg)	Used with Bottom Rotary Spray Header to wash petri dishes. Rack holds up to 55 petri dishes up to 4" (102 mm) in diameter by 5/8" (16 mm) deep.

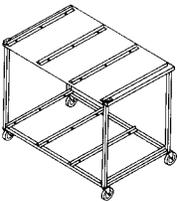
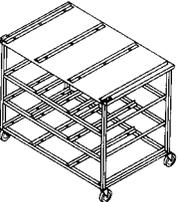
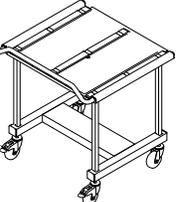
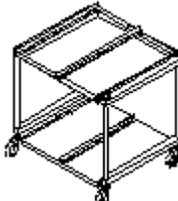
## ACCESSORIES USED TO PROCESS PIPETTE HEADERS

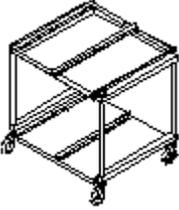
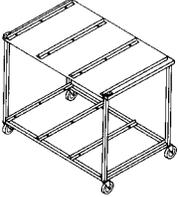
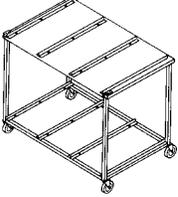
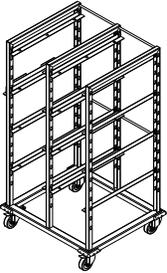
Two configurations are available. The M-90 and M-200 Pipette Headers employ individual water jet ports to process pipettes of any shape, loaded into header with pipette tip up. The Flooded System Pipette Header washes pipettes by flooding water

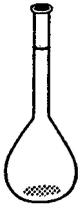
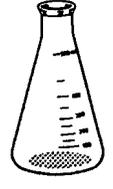
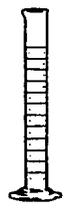
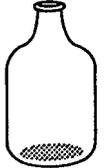
	PIPETTE SIZE Max. Diameter	SPRAY PORTS Quantity	WEIGHT	APPLICATION
<b>Pipette Header, M-200 (FD42-7)</b> 	5/8" (16 mm)	200	18.5 lbs (8.4 kg)	Used to individually wash all types of pipettes, from 0.1 to 25 mL, in any quantity up to 200. Not for use with Model 500 washer. Maximum two items can be used in 400XLS and 500XLS washers (using high water level, low pump speed)
<b>Flooded System Pipette Header, PFS (FD42-8)</b> 	N/A	None	25.5 lbs (11.6 kg)	Used to wash straight-sided pipettes of mixed sizes and lengths, up to 17" (432 mm) long. Maximum capacity is 575 one-mL pipettes. Ideal for processing large quantities of small pipettes. A longer wash time is recommended. Maximum one item can be used in 400XLS and 500XLS washers (using high water level, low pump speed)  <i>NOTE: When using this header in the Reliance 470, a second flooded system pipette header cannot be used. When using this header in the Reliance 570, a third flooded system pipette header cannot be used. When using this header in the Reliance 400, a second flooded system pipette header and the optional universal shelving cannot be used.</i>
<b>Pipette Header, M-90 (FD61-600)</b> 	5/8" (16 mm)	90	18.5 lbs (8.4 kg)	Used to individually wash all types of pipettes, from 0.1 to 25 mL, in any quantity up to 90. Maximum two items can be used in 400XLS and 500XLS washers (using high water level, low pump speed)

## TRANSFER CARTS

Stainless-steel carts are designed for transporting glassware to and from washers and dryers, as well as loading and unloading accessory headers from them. Carts can also be used to store accessory headers. Carts are available with either a single- or double-shelf capacity and lockable wheels. Loading height of 470/570 carts is 36" (914 mm); loading height of 400/500 cart is 29-3/8" (746 mm). Universal Transfer Cart features an adjustable-height shelf for use with Reliance 470/475/1021 Washers and Dryers.

	OVERALL SIZE W x H x D	FOR USE WITH	LOAD CAPACITY	WEIGHT	APPLICATION
<b>Transfer Cart, TC-570 (FD41-2)</b> 	42-7/16 x 37-5/16 x 28-5/16" (1078 x 948 x 719 mm)	570 Washer, 575 Dryer and 1034 Dryer	Six Accessory Headers	73 lbs (33.1 kg)	For loading accessory headers into and out of washer and dryers.  Wheel casters can be raised or lowered up to 1" (25mm).
<b>Transfer Cart, TC-570DS (FD41-3)</b> 	42-7/16 x 37-5/16 x 28-5/16" (1078 x 948 x 719 mm)	570 Washer, 575 Dryer and 1034 Dryer	12 Accessory Headers	78 lbs (35 kg)	For loading accessory headers into and out of washer and dryers. Includes two storage shelves.  Wheel casters can be raised or lowered up to 1" (25mm).
<b>Transfer Cart, TC-400 (FD61-100)</b> 	29-7/8 x 33-1/8 x 28-3/4" (759 x 481 x 730 mm)	400 Washer	Two Accessory Headers	44 lbs (20 kg)	For loading accessory headers into and out of washer. Shipped disassembled.  Wheel casters can be raised or lowered up to 1-1/2" (38mm).
<b>Transfer Cart, TC-400XLS (FD61-900)</b> 	29-7/8 x 33-1/8 x 28-3/4" (759 x 481 x 730 mm)	400XLS Washer	Two Accessory Headers	44 lbs (20 kg)	For loading accessory headers into and out of washer. Shipped disassembled.  Wheel casters can be raised or lowered up to 1-1/2" (38mm).
<b>Transfer Cart, TC-400 (FD61-800)</b> 	30-1/4 x 30-1/2 x 27-1/4" (768 x 775 x 692 mm)	400 Washer	Four Accessory Headers	50 lbs (22.6 kg)	For loading accessory headers into and out of washer.  Wheel casters can be raised or lowered up to 1" (25mm).

	OVERALL SIZE W x H x D	FOR USE WITH	LOAD CAPACITY	WEIGHT	APPLICATION
<b>Transfer Cart, TC-400XLS</b> (FD06-9) 	<b>30-1/4 x 30-1/2</b> <b>x 27-1/4"</b>  <b>(768 x 775 x 692 mm)</b>	<b>400XLS</b> <b>Washer</b>	<b>Four Accessory</b> <b>Headers</b>	<b>50 lbs</b> <b>(22.6 kg)</b>	<b>For loading accessory headers</b> <b>into and out of washer.</b>  <b>Wheel casters can be raised or</b> <b>lowered up to 1" (25mm).</b>
<b>Transfer Cart, TC-500</b> (FD61-400) 	<b>43-3/4 x 30-1/2</b> <b>x 27-1/4"</b>  <b>(1111 x 775 x 692 mm)</b>	<b>500 Washer</b>	<b>Six Accessory</b> <b>Headers</b>	<b>75 lbs</b> <b>(34 kg)</b>	<b>For loading accessory headers</b> <b>into and out of washer.</b>  <b>Wheel casters can be raised or</b> <b>lowered up to 1" (25mm).</b>
<b>Transfer Cart, TC-500XLS</b> (FD07-1) 	<b>43-3/4 x 30-1/2</b> <b>x 27-1/4"</b>  <b>(1111 x 775 x 692 mm)</b>	<b>500XLS</b> <b>Washer</b>	<b>Six Accessory</b> <b>Headers</b>	<b>75 lbs</b> <b>(34 kg)</b>	<b>For loading accessory headers</b> <b>into and out of washer.</b>  <b>Wheel casters can be raised or</b> <b>lowered up to 1" (25mm).</b>
<b>Universal Transfer Cart</b> (FD61-700) 	<b>29-3/4 x 29-1/4" to</b> <b>37-1/2 x 30-3/4"</b>  <b>(756 x 743 mm to</b> <b>953 x 782 mm)</b>	<b>400 Washer</b> <b>and</b> <b>470 Washer,</b> <b>475 Dryer and</b> <b>1024 Dryer</b>	<b>Two 12 x 24</b> <b>Accessories</b>	<b>145 lbs</b> <b>(65 kg)</b>	<b>Height-adjustable transfer cart</b> <b>for transferring accessories into</b> <b>and out of washer and dryer.</b>
<b>Rack Storage System</b> <b>For XLS Accessories</b> (FD07-9) 	<b>34-1/2 x 59-3/4</b> <b>x 28-3/4"</b>  <b>(876 x 1518</b> <b>x 730 mm)</b>	<b>400 XLS</b> <b>500 XLS</b> <b>Washers</b>	<b>Eight</b> <b>Accessory</b> <b>Headers</b>	<b>75 lbs</b> <b>(34 kg)</b>	<b>Height-adjustable rack for</b> <b>storing up to 8 accessory</b> <b>headers. For use with Reliance</b> <b>XLS washers only.</b>

<b>GLASSWARE PROCESSING CAPACITY</b>					
<b>ACCESSORY</b>	 <b>VOLUMETRIC FLASKS (mL)</b>	 <b>ERLENMEYER FLASKS (mL)</b>	 <b>GRADUATED CYLINDERS (mL)</b>	 <b>BEAKERS (mL)</b>	 <b>CARBOYS AND BOTTLES</b>
<b>KM-2XLS Spindle Header Kit</b>	500 to 2000	500 to 6000	250 to 2000	—	4 to 20 L
<b>KM-5XLS Spindle Header Kit</b>	500 to 2000	500 to 6000	250 to 2000	—	500 mL to 20 L
<b>KM-8XLS Spindle Header Kit</b>	500 to 2000	500 to 1500	250 to 2000	—	500 mL to 4 L
<b>M-18 Spindle Header</b>	100 to 250	250 to 400	50 to 100	—	200 to 400 mL
<b>M-32 Spindle Header</b>	100 to 250	250 to 400	50 to 100	—	200 to 400 mL
<b>M-34 Spindle Header - 3 x 3 Group</b>	100 to 250	250 to 400	50 to 100	—	200 to 400 mL
<b>- 5 x 5 Group</b>	5 <sup>1,2</sup> to 100	50 to 125	10 to 25	400 to 600	<100 mL
<b>M-50 Spindle Header</b>	5 <sup>1,2</sup> to 100 <sup>2</sup>	10 <sup>1,2</sup> to 125	10 to 25	400 to 600	<100 mL
<b>M-72 Spindle Header</b>	5 <sup>1,2</sup> to 100 <sup>2</sup>	10 <sup>1,2</sup> to 125	10 to 25	400 to 600	<100 mL
<b>M-85 Spindle Header - 6 x 6 Group</b>	5 <sup>1,2</sup> to 100 <sup>2</sup>	Not Recommended	10 to 25	400 to 600	<100 mL
<b>- 7 x 7 Group</b>	5 <sup>1,2</sup> to 100 <sup>2</sup>	Not Recommended	10 to 25	250 to 400	<100 mL
<b>M-98 Spindle Header</b>	5 <sup>1,2</sup> to 100 <sup>2</sup>	10 <sup>1,2</sup> to 50	10 to 25	250 to 400	<100 mL
<b>General Purpose Basket</b>	<ul style="list-style-type: none"> <li>Miscellaneous Items (Spatula, Glass Stoppers, Magnetic Stir Bars, etc.)</li> <li>Beakers of Various Sizes<sup>3</sup></li> </ul>				

<sup>1</sup>Select low speed pump rotation when cleaning small items in Reliance 400XLS and 500XLS Washers.  
<sup>2</sup>Use adjustable high clips for optimal performance when cleaning 5 to 10 mL Volumetric Flasks and 10 to 50 mL Erlenmeyer Flasks.  
<sup>3</sup>Beakers are cleaned efficiently in the General Purpose Basket; however, drying efficiency is limited.

**NOTE:** Certain types of plastic items may be more difficult to clean and dry. Custom accessories can be designed to clean glassware/plastiware which cannot be processed using a standard STERIS accessory. Contact your STERIS sales representative for more information.

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

# Life Sciences

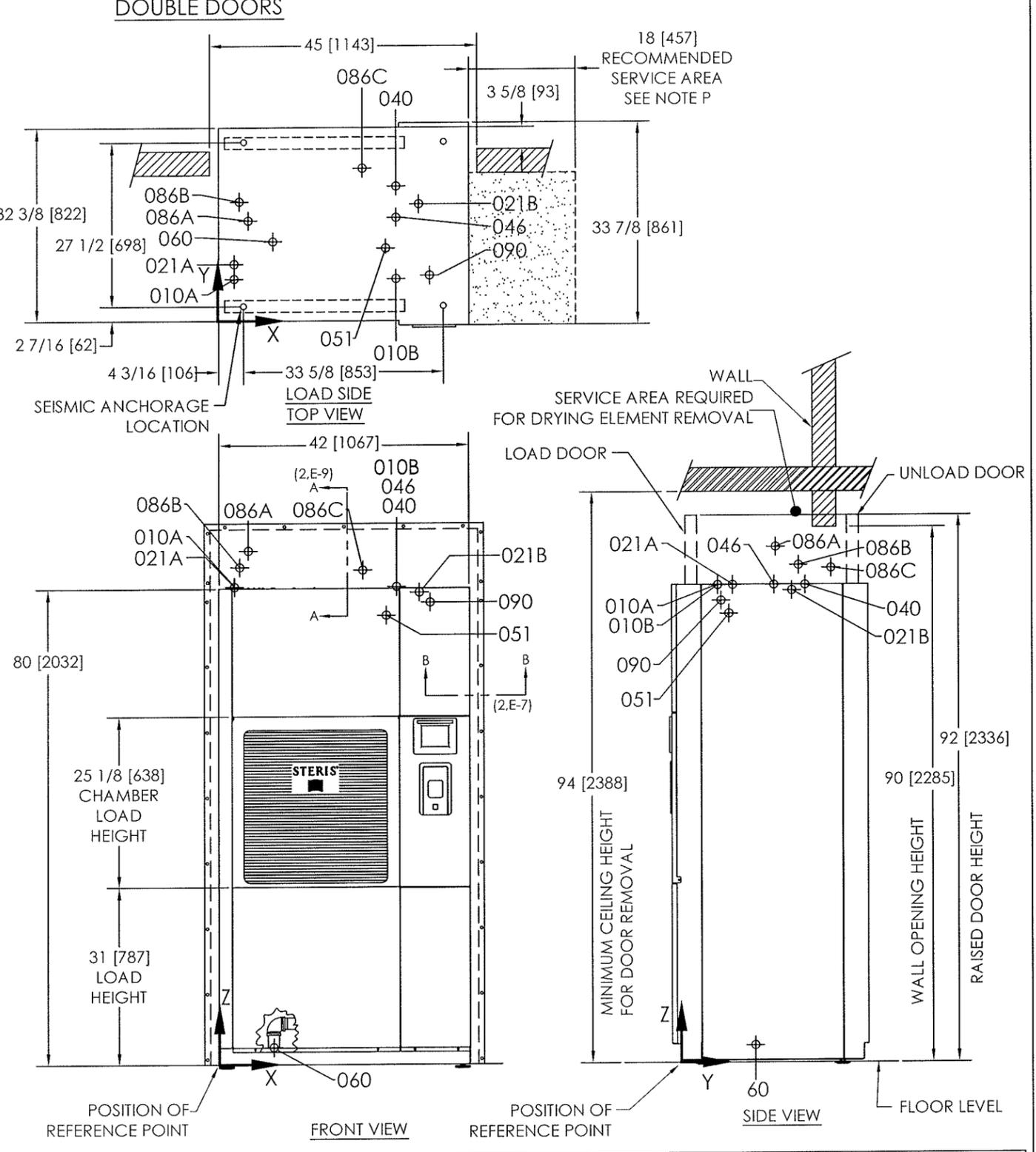
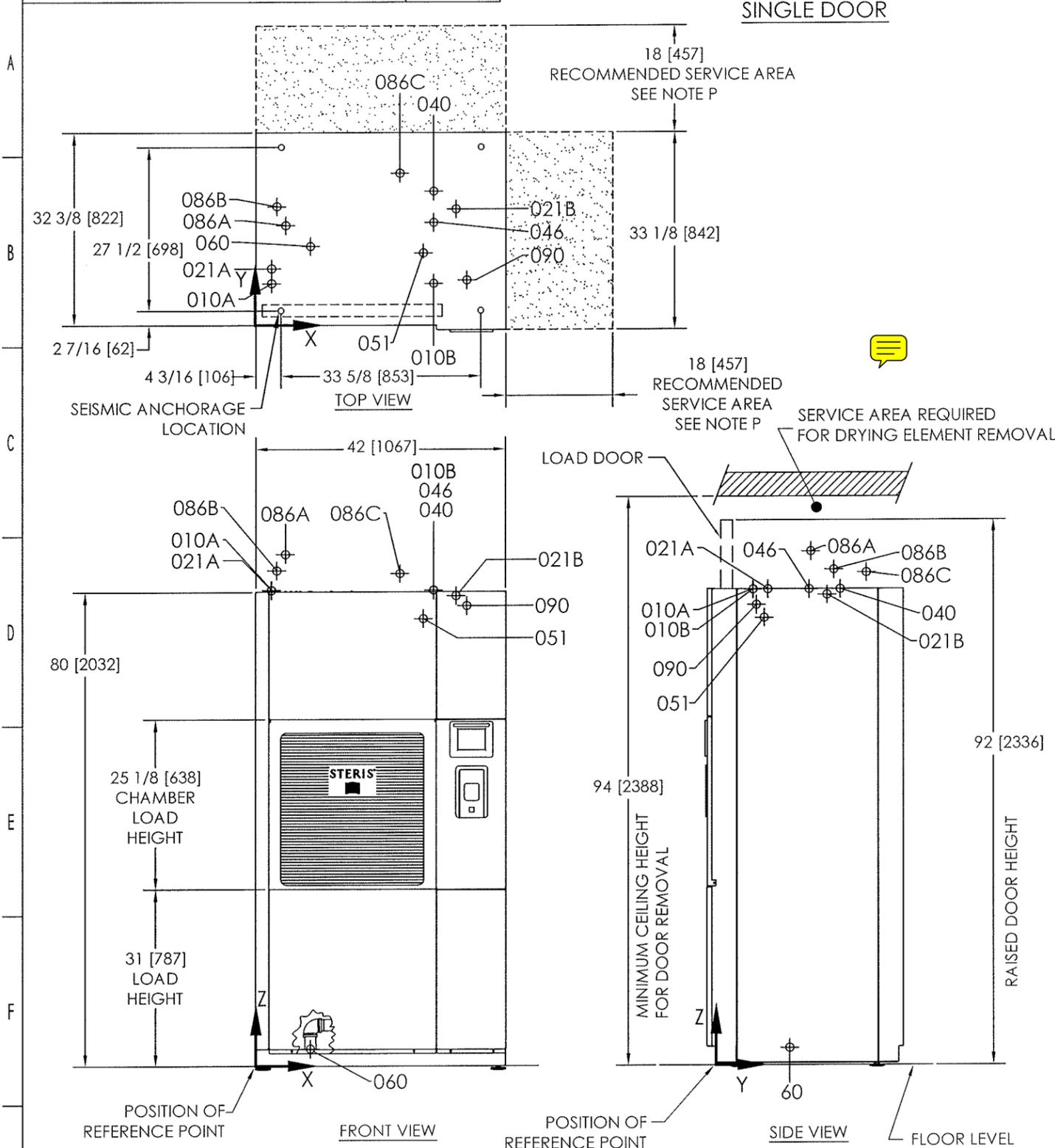
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**For Further Information, contact:**



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Mentor, OH 44060-1834 • USA  
440-354-2600 • 800-444-9009  
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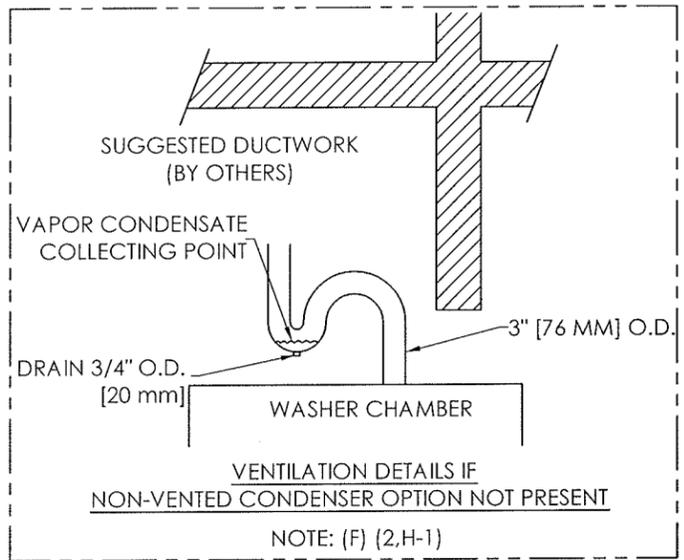
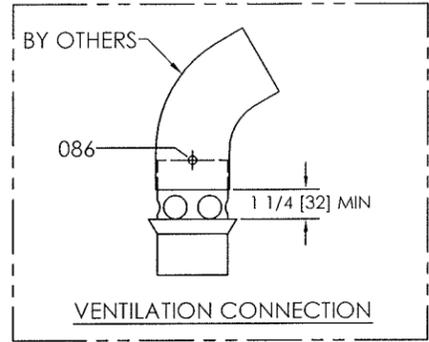
QUANTITY	PART NUMBER	ITEM NO.	MODEL	ENGINEERING CHANGE	REV. NO.	REVISION DATE
	920-514-458		400XLS	ECN14-4623	8.3	2013-08-06



FROM MASTER  
REV: 8.3

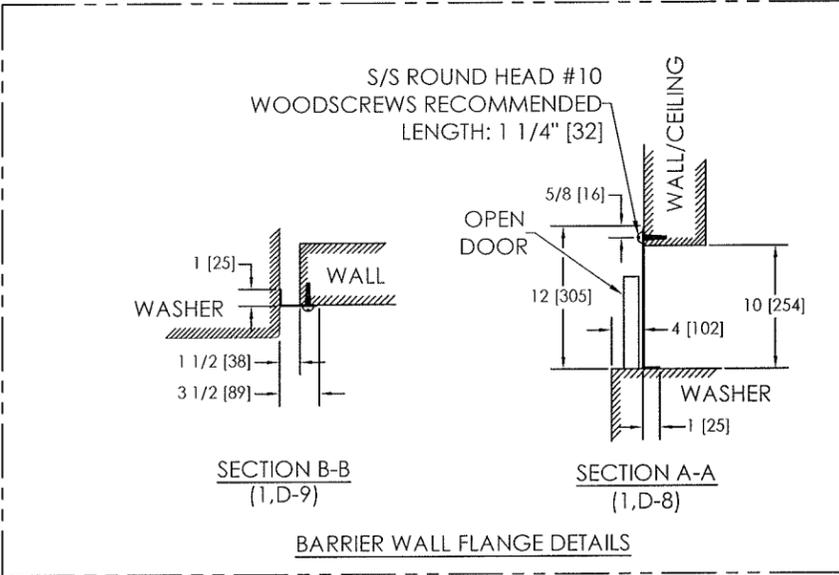
	STERIS Canada Corporation	TITLE	Reliance® 400XLS Glassware Washer 50 Hz / 60 Hz
	<small>This document contains confidential and proprietary information of STERIS Corporation. Neither this document nor the information herein are to be reproduced, distributed, used or disclosed, either in part or in whole, except as specifically authorized by STERIS Corporation.</small>	FIRST MADE FOR:	400XLS
DWN. C1	CRD. <i>ms</i>	ENG. <i>ST</i>	DWG. NO. 920-514-458 EN
DATE 2010-10-15	DATE 2013-08-06	DATE 2013-08-06	1 SHEET OF 5

AUTOCAD.DWG



SINGLE DOOR AND DOUBLE DOORS  
 CONNECTION POSITION WITH REFERENCE POINT (SEE PAGE 1/5)

400XLS				
	DESCRIPTION	X	Y	Z
010A	HOT WATER <sup>(A)</sup>	2-5/8 [66.7]	7 [178]	80 [2032]
010B	COLD WATER <sup>(B)</sup>	29-7/8 [757]	7 [178]	80 [2032]
021A	PURE WATER <sup>(C)</sup>	2-5/8 [66.7]	9-1/2 [241]	80 [2032]
021B	PURE WATER <sup>(C)</sup>	33-5/8 [854]	19-1/2 [495]	79 [2007]
040	STEAM <sup>(D)</sup>	29-7/8 [757]	22-1/2 [572]	80 [2032]
051	AIR	28-1/8 [714]	12-1/8 [308]	75-1/2 [1918]
086A	VENTILATION <sup>(E)</sup>	5 [127]	16-3/4 [426]	86-3/8 [2194]
086B	VENTILATION <sup>(E)</sup>	3-5/8 [92]	20 [508]	83-5/8 [2124]
086C	VENTILATION <sup>(E)</sup>	24-1/4 [616]	25-7/16 [646]	83-1/8 [2111]
060	DRAIN CONNECTION <sup>(F)</sup>	9-1/8 [232]	13-1/4 [337]	2-7/8 [73]
046	CONDENSATE RETURN <sup>(D)</sup>	29-7/8 [757]	17-1/4 [438]	80 [2032]
090	ELECTRICAL	35-1/2 [900]	7-1/2 [192]	77-3/8 [1965]



NOTES:  
 (A) NOT REQUIRED IF EFFLUENT HEAT RECOVERY SYSTEM OPTION IS PROVIDED.  
 (B) REQUIRED IF DRAIN DISCHARGE COOL DOWN, NON-VENTED DRYING, NON-VENTED CONDENSER OR EFFLUENT HEAT RECOVERY SYSTEM OPTION IS SELECTED.  
 (C) USE 021A WITHOUT NON-RECIRCULATED HEATED PURE WATER RINSE OPTION  
 USE 021B WITH NON-RECIRCULATED HEATED PURE WATER RINSE OPTION  
 (D) CONNECTION NOT PRESENT IF ELECTRIC-HEATED UNIT.  
 (E) USE 086A WITH UNITS WITH NON-VENTED DRYING SYSTEM WITH CONDENSER DEACTIVATED.  
 USE 086B WITH VENTED UNITS W/O DRYING SYSTEM.  
 USE 086C WITH UNITS WITH VENTED DRYING SYSTEM.  
 NOT REQUIRED FOR UNITS WITH NON VENTED VAPOR CONDENSER W/O DRYING SYSTEM.  
 (F) W/O EFFLUENT HEAT RECOVERY SYSTEM, WITH OPTION, SEE P.3

INTERFACE LEGEND

	CONNECTION
	PHASE

**STERIS**  
 STERIS Canada Corporation  
 TITLE Reliance® 400XLS Glassware Washer 50 Hz / 60 Hz  
 FIRST MADE FOR: 400XLS  
 DWG. NO. 920-514-458EN 2 SHEET OF 5  
 DATE 2010-10-15 DATE 2013-08-06 DATE 2013-08-06

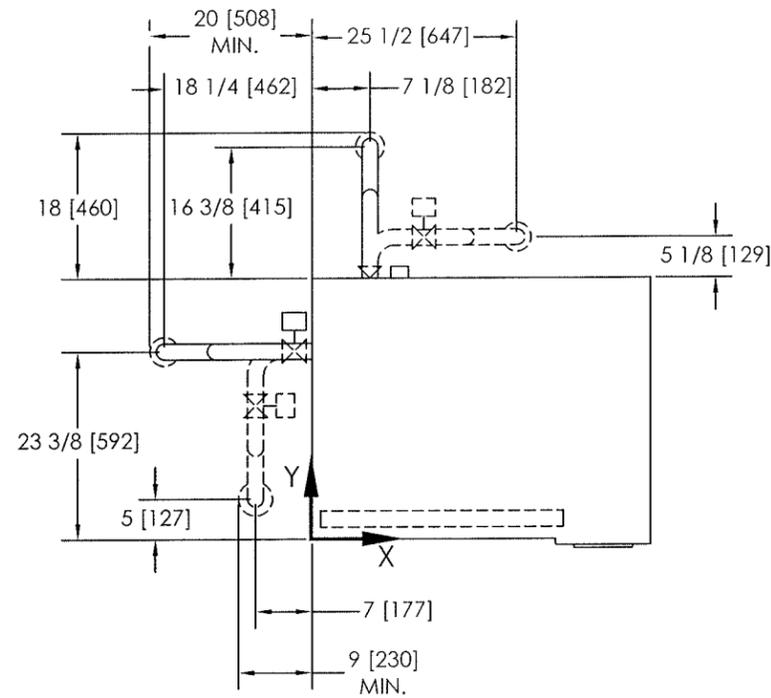
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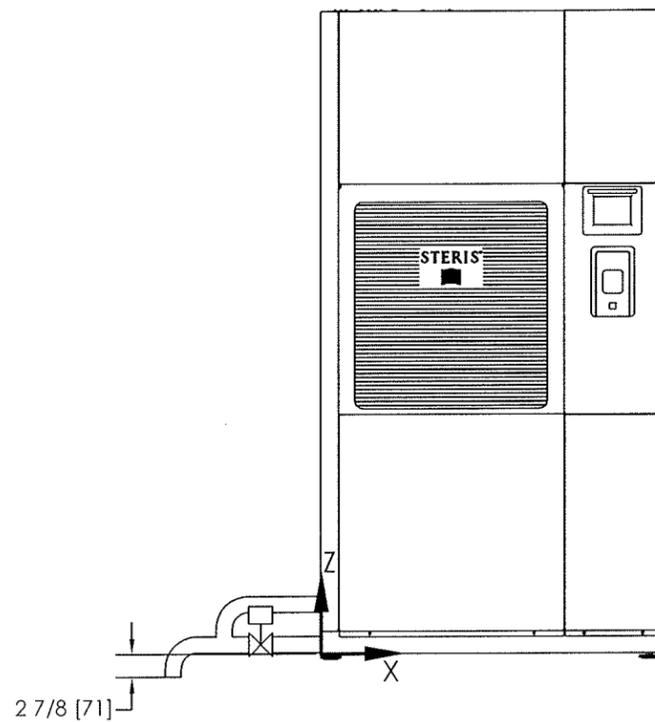
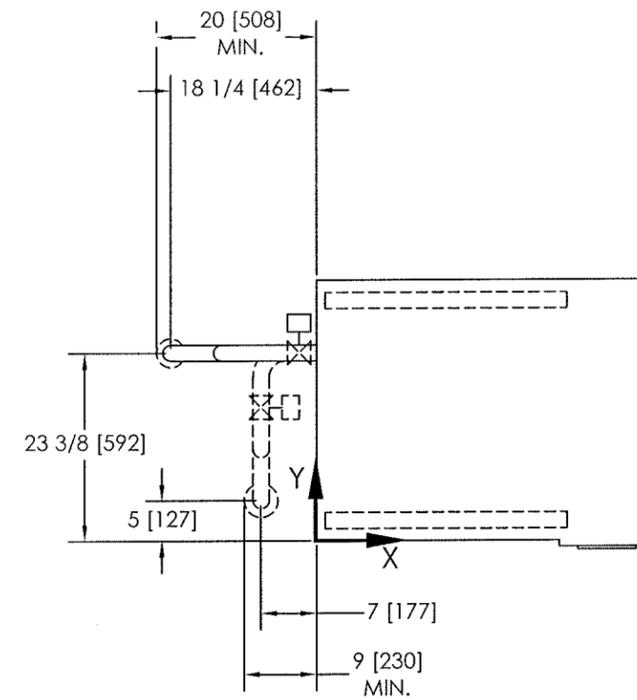
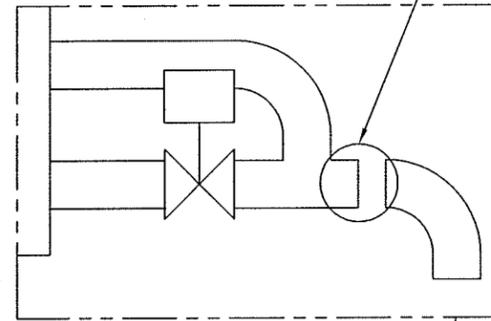
OPTIONAL EFFLUENT HEAT RECOVERY SYSTEM DRAIN LOCATION

A  
B  
C  
D  
E  
F  
H

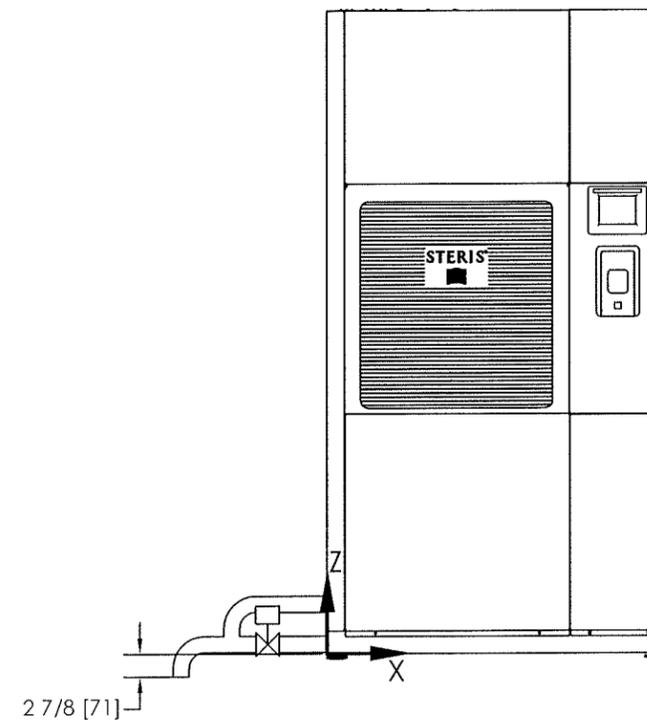
AUTOCAD.DWG



PIPING CAN BE EXTENDED UP TO 4ft [1.2M] IF A 1/4" [6] SLOPE PER FOOT IS RESPECTED. (SEE NOTE 3)



SINGLE DOOR



DOUBLE DOORS

- GENERAL NOTES:
- HEAT RECOVERY TANK CAN BE DRAINED FROM THE BACK OR THE SIDE OF THE UNIT.
  - DRAIN CAN BE STRAIGHT OR AT A 90° ANGLE.
  - FLEXIBLE TUBING 1-1/2 I.D. CAN BE USED TO EXTEND (UP TO 4ft [1.2M]) THE DRAIN LOCATION. TUBING MUST BE KINK RESISTANT AND MUST WITHSTAND ACID AND ALKALINE DETERGENT AND A TEMPERATURE UP TO 180°F [82.2°C].

		STERIS Canada Corporation <small>This document contains confidential and proprietary information of STERIS Corporation. Neither this document nor the information herein are to be reproduced, distributed, used or disclosed, either in part or in whole, except as specifically authorized by STERIS Corporation.</small>	TITLE Reliance® 400XLS Glassware Washer 50 Hz / 60 Hz
DWG. NO. 920-514-458EN DATE 2013-08-06	CKD. mm DATE 2013-08-06	ENG. [Signature] DATE 2013-08-06	FIRST MADE FOR: 400XLS DWG. NO. 920-514-458EN 3 SHEET OF 5

UTILITY REQUIREMENTS CHART - MIN. DYNAMIC TO MAX. STATIC PRESSURE (M)

DESCRIPTION	CONNECTION		PRESSURE RANGE	OPERATING REQUIREMENTS		NOMINAL TEMP.	AIR QUALITY	WATER QUALITY
	TYPE	SIZE		400XLS - STEAM-HEATED UNIT FLOW - US GPM [L/MIN]	400XLS - ELECTRIC HEATED UNIT FLOW - US GPM [L/MIN]			
010A HOT WATER (A) (M) (OPTION)	NPT BSPT	1/2 (N) (Q) 1/2	15-50 PSIG [103-345 kPa] DYNAMIC MAX. 90 PSIG [620 kPa] STATIC	11.0 US GPM [42 L/MIN] TO 19.7 US GPM [75 L/MIN]	11.0 US GPM [42 L/MIN] TO 19.7 US GPM [75 L/MIN]	110°F [43°C] MIN. 150°F [66°C] MAX.		120 PPM
010B COLD WATER (B) (M)(L) (OPTION)	NPT BSPT	1/2 (N) (Q) 1/2	30-50 PSIG [206-345 kPa] DYNAMIC MAX. 90 PSIG [620 kPa] STATIC	15.8 US GPM [60 L/MIN] TO 19.7 US GPM [75 L/MIN]	15.8 US GPM [60 L/MIN] TO 19.7 US GPM [75 L/MIN]	70°F [21°C] MAX.		120 PPM
021 PURE WATER (M) (R)	NPT BSPT	1/2 (N) (Q) 1/2	1-10 PSIG [7-69 kPa] DYNAMIC MAX. 90 PSIG [620 kPa] STATIC	2 US GPM [7.6 L/MIN] TO 14.6 US GPM [55 L/MIN]	2 US GPM [7.6 L/MIN] TO 14.6 US GPM [55 L/MIN]	70°F [21°C] MIN. 180°F [82°C] MAX.		0.1 megaOhm.cm
040 STEAM (D) (G)	NPT BSPT	1/2 (N) 1/2	30-80 PSIG [206-550 kPa] DYNAMIC MAX. 90 PSIG [620 kPa] STATIC	400 LB/H AT 80 PSIG [136 KG/H AT 550 kPa] 200 LB/HR AT 30 PSIG [90 KG/H AT 207 kPa]				
051 AIR (H)	FEMALE NPT BSPT	1/8 (N) 1/8	MIN 80 PSIG [550 kPa] DYNAMIC MAX. 125 PSIG [860 kPa] STATIC	1.2 SCFM [0.036 M³/MIN]	1.2 SCFM [0.036 M³/MIN]		AS PER (H) ISO-8573-1 CLASS 5	
086 VENTILATION (E) (I)		3 [76] O.D. (N)	NEGATIVE 1/4" H2O DUCT PRESSURE REQUIRED	60 SCFM [1.70 M³/MIN]	60 SCFM [1.70 M³/MIN]			
060 DRAIN (J)	NPT	1 1/2 (N)		GRAVITY DRAIN 50 US GPM [189.3 L/MIN]	GRAVITY DRAIN 50 US GPM [189.3 L/MIN]			
046 CONDENSATE RETURN (D)	NPT BSPT	1/2 (N) 1/2	MAX. 10 PSIG [69 kPa] (O)	PEAK: 0.80 US GPM [3.0 L/MIN]				
090 ELECTRICAL (K)	CONDUIT CONDUIT	3/4 [19] 1 [25] -IF OVER 24 A						
SHIPPING DIMENSION W x H x L AND WEIGHT				50 X 91 X 42 [1270 X 2311 X 1067] 1200 LBS [544 KG]				
OPERATING WEIGHT MAX W/LOAD				1300 LBS [590 KG]				

NOTES CONTINUED FROM P.2:

- (G) CLEAN AND DRY STEAM RECOMMENDED.
- (H) AIR SPECIFICATIONS:  
 MAX. PARTICLE SIZE 40 MICRONS  
 MAX. PARTICULATE DENSITY 10 MG/M³  
 MAX. DEW POINT FOR WATER CONTENT 45° F (7°C)  
 MAX. OIL CONCENTRATION FOR THE OIL CONTENT 25 MG/M³  
 A REFRIGERATED AIR DRYER IS RECOMMENDED WHERE ENVIRONMENTAL DEW POINT CONDITIONS ARE HIGHER THAN RECOMMENDED (CONTACT STERIS SALES REPRESENTATIVE).
- (I) NOT REQUIRED WITH NON-VENTED OPTION. FOR ALL VENTILATION DUCTING FROM WASHER, STERIS RECOMMENDS INSTALLATION OF A DEDICATED CORROSION-PROOF AND WATER-TIGHT DUCT RATED TO AN OPERATING TEMPERATURE OF 240°F (115.6°C) OR MORE TO THE EXTERIOR OF THE BUILDING, SLOPED TOWARDS THE WASHER AND FREE OF DEAD LEGS. A DRAINING PORT SHOULD BE INSTALLED AT THE LOWEST POINT OF THE VENTILATION DUCT NEAR THE WASHER. (I, B-10).
- (J) A 3" [76] FLOOR FUNNEL OR 3" [76] OPEN DRAIN SINK IS RECOMMENDED.
- (K) SEE OPERATING VOLTAGE BOARD (P.5).
- (L) BACK FLOW PREVENTER AGAINST BACK SIPHONAGE MAY BE REQUIRED ON COLD WATER LINE ACCORDING TO LOCAL PLUMBING CODE. FOR HOT AND PURE WATER, BACK FLOW PREVENTER IS NOT REQUIRED.
- (M) INSTALLATION OF A WATER HAMMER ARRESTOR (NOT PROVIDED BY STERIS) IS RECOMMENDED.
- (N) PIPE SIZE SHOWN.
- (O) THE MAXIMUM CONDENSATE LINE PRESSURE IS BASED ON THE MINIMUM STEAM INLET PRESSURE. THE MAXIMUM CONDENSATE LINE PRESSURE CAN BE INCREASE AS THE STEAM INLET PRESSURE RISE UP TO A MAXIMUM OF 15 PSIG.
- (P) UNITS EQUIPPED WITH NON-RECIRCULATED HEATED PURE WATER RINSE OPTION: 18" SERVICE ACCESS REQUIRED ON THE SIDE AND MINIMUM 8" REQUIRED (18" RECOMMENDED) AT THE BACK. UNITS WITHOUT NON-RECIRCULATED HEATED PURE WATER RINSE OPTION: 18" CLEARANCE REQUIRED ON THE SIDE OR AT THE BACK. IF SIDE CLEARANCE IS CHOSEN, SEISMIC ANCHORAGES LOCATED AT THE BACK MAY BE DIFFICULT TO INSTALL.
- (Q) IT IS RECOMMENDED TO BRING A LINE ONE SIZE LARGER THAN THE CONNECTION POINT.
- (R) LOW FLOW RATE WILL IMPACT CYCLE TIME. CYCLE TIME IS REDUCED WITH "NON-RECIRCULATED HEATED PURE WATER RINSE" OPTION (FQ10-0025), SINCE TANK FILLING OCCURS UPON CYCLE START.

		STERIS Canada Corporation <small>This document contains confidential and proprietary information of STERIS Corporation. Neither this document nor the information herein are to be reproduced, distributed, used or disclosed, either in part or in whole, except as specifically authorized by STERIS Corporation.</small>	TITLE Reliance® 400XLS Glassware Washer 50 Hz / 60 Hz
DWG. NO. 920-514-458EN		FIRST MADE FOR: 400XLS	
DATE 2010-10-15	DATE 2013-08-06	DATE 2013-08-06	SHEET OF 5

AUTOCAD.DWG.

UTILITIES	CONSUMPTION PER PHASE							
	STANDARD CYCLE (S) with shelving	STANDARD CYCLE (T) without shelving	PRE-WASH	WASH	RINSE	RINSE	FINAL RINSE (RECIRCULATED)	DRYING
HOT WATER (SUMP)	(U) (V) US GAL [L]	9.5 [36.0] 5.8 [22.0]	9.5 [36.0] 5.8 [22.0]	9.5 [36.0] 5.8 [22.0]	9.5 [36.0] 5.8 [22.0]	—	—	38.0 [144.0] 23.2 [88.0]
COLD WATER FOR NON-VENTED W/O DRYING (OPTION)	(U) US GAL [L]	—	—	—	—	—	—	32.5 [123]
COLD WATER FOR NON-VENTED WITH DRYING (OPTION)	(U) US GAL [L]	—	—	—	—	—	13.5 [51.0]	13.5 [51.0]
COLD WATER FOR DRAIN DISCHARGE COOL DOWN (OPTION)	(U) US GAL [L]	—	7.1 [26.9] 4.5 [17.0]	—	—	—	—	7.1 [26.9] 4.5 [17.0]
COLD WATER FOR CONDENSATE COOL DOWN (OPTION)	(U) US GAL [L]	—	2.0 [7.7] 1.7 [6.3]	—	—	1.8 [6.7] 1.3 [4.8]	—	3.8 [14.4] 3.0 [11.1]
PURE WATER	(U) US GAL [L]	—	—	—	—	9.5 [36.0] 5.8 [22.0]	—	9.5 [36.0] 5.8 [22.0]
STEAM	(D)(U) LB [KG]	—	6.0 [2.7] 4.9 [2.2]	—	—	5.2 [2.4] 3.7 [1.7]	—	11.2 [5.1] 8.6 [3.9]
DETERGENT	OZ [ML]	—	4.8 [140] 2.9 [86]	—	—	—	—	4.8 [140] 2.9 [86]

HEAT LOSS - BTU/H AT 75°F [24°C]	
VENTED	NON-VENTED
1580 BTU/H [1667 KJ/H]	7200 BTU/H [7596 KJ/H]

NOTES CONTINUED FROM P.4:  
 (S) BASED ON STANDARD CYCLE WITH SHELVING (DEFAULT VALUES)  
 (T) BASED ON STANDARD CYCLE WITHOUT SHELVING (DEFAULT VALUES)  
 (U) UTILITIES CONDITIONS:  
 COLD WATER: 30 Psig DYNAMIC  
 STEAM: 50 Psig DYNAMIC  
 HOT WATER TEMP: 110°F  
 COLD WATER TEMP: 60°F  
 PURE WATER TEMP: 70°F  
 (V) HOT WATER IS REPLACED BY COLD WATER IF EFFLUENT HEAT RECOVERY SYSTEM IS PROVIDED.  
 (W) NEUTRAL WIRE IS NOT REQUIRED.

- GENERAL NOTES CONTINUED FROM P.3:
- CUSTOMER MUST BE SURE THAT MACHINE STANDS ON A NON-COMBUSTIBLE FLOOR.
  - STERIS RECOMMENDS AN ILLUMINATION IN SERVICE AREA (IF APPLICABLE) ALONG WITH PROVISION OF A CONVENIENCE OUTLET FOR MAINTENANCE.
  - STEAM OVERPRESSURE PROTECTION, ISOLATION VALVES AND FUSED DISCONNECT SWITCH ON UTILITY LINES TO WASHER AS REQUIRED ARE BY OTHERS.
  - PIPE SIZES SHOWN INDICATE TERMINAL OUTLET ONLY FOR THE EQUIPMENT.
  - WEIGHTED EQUIVALENT SURFACE SOUND PRESSURE LEVEL: TBD dB(A) CALCULATED AS DESCRIBED IN ISO 3746.
  - ALWAYS FOLLOW LOCAL ELECTRICAL CODES AND SAFETY-RELATED WORK PRACTICES FOR WIRING.
  - THE MINIMUM INLET STEAM PRESSURE TAKES INTO ACCOUNT THE NATURAL PRESSURE LOSSES AS IN THE STEAM PLUMBING OF THE WASHER AS WELL AS A CONDENSATE RETURN MAXIMUM RISE OF 17' [5.2m] MEASURED FROM THE BASE OF THE WASHER OR AN EQUIVALENT PRESSURE LOSS. ANY ADDITIONAL PRESSURE LOSS WILL HAVE TO BE COMPENSATED EITHER BY INCREASING THE INLET STEAM PRESSURE, BEING CAREFUL NOT TO EXCEED THE ALLOWABLE MAXIMUM, OR BY ENSURING THAT THE STEAM SYSTEM OF THE CUSTOMER TAKES CHARGE OF THE CONDENSATE RETURN AT THE LOCATION INDICATED BEFOREHAND.
  - PERMISSIBLE ENVIRONMENTAL CONDITIONS. THIS EQUIPMENT IS DESIGNED TO GIVE OPTIMAL RESULTS UNDER THE FOLLOWING CONDITIONS:
    - INDOOR USE ONLY;
    - ALTITUDE OF OPERATION UP TO 6562 ft (2000 m);
    - TEMPERATURE OF 41°F TO 104°F (5°C TO 40°C);
    - MAXIMUM RELATIVE HUMIDITY IS 80% FOR TEMPERATURES UP TO 88°F (31°C), DECREASING LINEARLY TO 50% RELATIVE HUMIDITY AT 104°F (40°C);
    - POLLUTION DEGREE 2: EQUIPMENT MUST BE INSTALLED IN AN ENVIRONMENT WHERE NORMALLY ONLY NON-CONDUCTIVE POLLUTION OCCURS BUT WHERE OCCASIONAL, TEMPORARY CONDUCTIVITY CAUSED BY CONDENSATION CAN BE EXPECTED (AS DETERMINED ACCORDING TO INTERNATIONAL STANDARD EN/IEC 61010-1, SECOND EDITION).
  - REMOTE MONITORING AVAILABLE.

OPERATING VOLTAGE	STEAM-HEATED UNIT (UNIT WITH DRYING OPTION)				ELECTRIC-HEATED UNIT (UNIT WITH DRYING OPTION)			
	208 V, 60Hz	380 V/400 V/ 415 V, 50 Hz	480 V, 60Hz	600 V 60Hz	208 V 60Hz	380 V/400 V/ 415 V, 50 Hz	480 V, 60Hz	600 V, 60Hz
3~ SUPPLY REQUIRED/MAX. PROTECTION (W)	11A/20A (27.5A/40)	6.5A/15A (13.5A/20A)	7.5A/15A (13A/20A)	6.5A/15A (10.5A/15A)	22A/30A (27.5A/40)	26A/40A (26A/40A)	25.5A/40A (25.5A/40A)	20A/30A (20A/30A)

	STERIS Canada Corporation	TITLE	Reliance® 400XLS Glassware Washer 50 Hz / 60 Hz
	<small>This document contains confidential and proprietary information of STERIS Corporation. Neither this document nor the information herein are to be reproduced, distributed, used or disclosed, either in part or in whole, except as specifically authorized by STERIS Corporation.</small>	FIRST MADE FOR:	400XLS
DWG. NO. 920-514-458EN	5 SHEET OF 5		

## INTRODUCTION

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Each equipment drawing (enclosed) pertains to the sterilizing equipment as specified or purchased by you. These general notes and recommendations are intended to complement the equipment drawing(s) and thereby further assist you in achieving satisfactory installation of the equipment. The information on this and the enclosed drawing(s) is based upon the design and construction of the equipment as of the date of the drawing.

## SPACE CONSIDERATIONS

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### Clearances

The clearance dimensions shown on each drawing are the minimum considered necessary to allow space for servicing and operating the equipment.

Clearance in front of sterilizer, for comfortable loading and unloading operations, should equal about twice the inside length of the sterilizer chamber unless otherwise specified on Equipment Drawing.

### Dimensions

Attention must be given to all *printed dimensions* shown on each drawing, since no attempt has been made to hold these drawings to any specific scale.

## MOUNTING DETAILS

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### Wall Thickness – Recessed Sterilizer

STERIS must be advised of the total finished thickness of the wall or walls through which the sterilizer will extend.

### Wall Thickness – Amsco® Modular Wall

If the drawing pertains to an **Amsco Modular Wall**, STERIS must be advised of the overall width and height of the wall opening that the modular wall is to cover.

### Recessing Cubicle

- **Ventilation** – It is recommended that a louvered, grilled opening be provided in the curtain wall above the sterilizer(s) to dispel excess vapor by negative pressure behind the wall. If **Amsco Modular Wall** has been specified, this opening will not be required.  
The recessing cubicle should be adequately ventilated to maintain maximum temperature in the range of 80° to 90°F (27° to 32°C) when the equipment is in operation. 10% to 90% Relative Humidity – non-condensing
- **Access** – Access to recessed service area from control end of the sterilizer is recommended.
- **Illumination** – Illumination designed to afford 50 to 100 footcandles of total illumination, evenly distributed in principal areas of the recessing cubicle, should be provided.
- **Service Power Requirement** – One convenience outlet (110-120 Volts) is required for power tools.

- **Drainage** – A floor drain or floor sink is recommended for each cubicle and should be provided within confines of sterilizer framework.

### Space Between Recessed Sterilizers

For a multiple (composite) sterilizer installation through a constructed wall (not Amsco Modular Wall), a minimum of 10" (254 mm) clearance between the front panels is recommended.

### Cabinet-enclosed Sterilizer

Cabinet-enclosed units should be located in a well-ventilated room from which heat and steam vapors may be dispelled rapidly. A separate floor drain is recommended for each cabinet-enclosed sterilizer, to be located within the confines of the sterilizer framework.

## UTILITY SERVICE REQUIREMENTS

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### Roughing-in

All lines should be short-stubbed through the floor, wall or ceiling, far enough to permit coupling with stop valves. Provisions must be made for short-swing connections to equipment terminals. Piping outlets (stubbing) for multiple units (composite installations) should be combined in one common set, usually at rear of the equipment.

It is recommended that pipes and conduit *not* be stubbed through the floor under the chamber of a recessed sterilizer. This recommendation would not preclude the stubbing of pipes and conduit through the floor within the confines of the *panels* on a cabinet-enclosed sterilizer.

### Terminal Fittings

Unless otherwise specified in the contract or purchase order, piping and other appurtenances between terminal fittings on the equipment and wall or floor outlets (stubbing) are not furnished by STERIS.

### Pipe Sizes

Pipe sizes listed on equipment drawing indicate the equipment termination sizes only. Size of supply piping is dependent on length of pipe run from pressure regulating station for steam line and main water headers, to ensure adequate supply service pressure and demand flow at equipment terminals. Effect of coincident draw of multiple unit installations must also be considered.

### Pressure Relief Valves

Any piping installed to a pressure vessel relief valve must not reduce the discharge capacity of the relief valve. Plumbing must be such that removal of sterilizer parts, including relief valve, does not require unsoldering or cutting of new piping. Recommended piping practices for relief valve piping can be found in ASME Boiler and Pressure Vessel Code (Section VIII, Para. UG-135).

## Backflow Preventer

If local codes require a reduced pressure principle device on water supply line, it shall be provided by others.

## Blow Down Valve

Recommend provisions of blow down valve at each facility steam and water strainer to enable strainer clean out.

Blow down building steam and water supply lines before final connection to equipment.

## Shutoff Valves

Provide piping shutoff valve, pipe plugged tee and union in steam and water supply connections between each piece of equipment and stub outs, so that the unit can be serviced without interruptions of supply to other equipment. Plugged tee can be used later for test pressure gauge connection. Arrange connection piping to allow access to machine components and electrical control panel.

## Steam and Water Pressures

Steam and water pressures indicated on each drawing are to be dynamic at the sterilizer.

Steam should be condensate free and between 97 and 100% saturated vapor to ensure proper goods drying.

Sterilizer is adequately equipped to operate on the pressures listed in the equipment drawing. If supply line pressure exceeds those shown, provide reducing valves. These are not furnished by STERIS unless specifically called for in the contract or purchase order.

## Water Quality

- **Water Supply to Sterilizer** – Water is used for ejectors, heat exchangers and trap cooling. Refer to Table 1 for recommended water quality. Use of feed water within the nominal conditions will optimize equipment performance and reduce maintenance.
- **Carbon Steel Steam Generator Feed Water** – Refer to Table 2 for required water quality. Use of feed water within the nominal conditions will optimize equipment performance and reduce maintenance.
- **Stainless Steel Steam Generator Feed Water** – Requires deionized, distilled or reverse osmosis water with minimum resistivity of 1 MΩ·cm.

### NOTES:

1. Do not connect tap water to stainless steel generator. Use of water not meeting the required feed water quality will invalidate the warranty, and is a violation of ASME boiler codes.
2. Failure to provide correct utility pressure and steam quality will result in reduced equipment performance which may affect overall equipment performance.

**Table 1. Recommended Feed Water Quality for Sterilizers**

Condition	Nominal Conditions	Maximum Conditions
Temperature	40°-60°F (4°-16°C)	70°F (21°C)
Total Hardness as CaCO <sub>3</sub> <sup>a</sup>	50-120 ppm	171 ppm
Total Dissolved Solids	100-200 ppm	500 ppm
Total Alkalinity as CaCO <sub>3</sub>	70-120 ppm	180 ppm
pH	6.8-7.5	6.5-8.5
Total Silica	0.1 - 1.0 ppm	2.5 ppm
Chlorides	1.0 – 8.0 ppm	10.0 ppm
Cu	0.0 – 0.08 ppm	0.1 ppm
Fe	0.0 – 0.08 ppm	0.1 ppm
Zn	0.0 – 0.08 ppm	0.1 ppm
Al	0.0 – 0.08 ppm	0.1 ppm
Mg	0.0 – 0.08 ppm	0.1 ppm

a. 17.1 ppm = 1.0 grain hardness

**Table 2. Required Feed Water Quality for Carbon-Steel Steam Generators**

Condition	Nominal Conditions	Maximum Conditions
Temperature	40-140°F (4-60°C)	150°F (66°C)
Total Hardness as CaCO <sub>3</sub> <sup>a</sup>	0-17 ppm	130 ppm
Total Dissolved Solids	50-150 ppm	250 ppm
Total Alkalinity as CaCO <sub>3</sub>	50-100 ppm	180 ppm
pH	6.8-7.5	6.5-8.5
Total Silica	0.1 - 1.0 ppm	2.5 ppm
Resistivity - Ω·cm <sup>b</sup>	2000-6000	26000
Chlorides	1.0 – 8.0 ppm	10.0 ppm
Cu	0.0 – 0.08 ppm	0.1 ppm
Fe	0.0 – 0.08 ppm	0.1 ppm
Zn	0.0 – 0.08 ppm	0.1 ppm
Al	0.0 – 0.08 ppm	0.1 ppm
Mg	0.0 – 0.08 ppm	0.1 ppm

a. 17.1 ppm = 1.0 grain hardness

b. **WARNING – BURN HAZARD:** Sterilizer operator may be severely burned by scalding water if the water level control malfunctions. The steam generator level control may malfunction if the supply water exceeds 26,000 Ω·cm (38.5 micro-ohms conductivity min.). Do not connect to treated water (e.g., distilled, reverse osmosis, deionized) unless water resistivity is determined to be acceptable. If water exceeds 26,000 Ω·cm, contact STERIS Service Engineering for information concerning modifications required to the generator control system.

## Venting Sterilizer To Atmosphere

If sterilizer has an atmospheric vent fitting (in lieu of a condenser), it should be connected to a vertical, unrestricted atmospheric vent stack. When more than one sterilizer is connected to a single vent stack, a self-draining header may be used. At no time should any riser from the sterilizer exhaust terminal to the header or vent stack be less than 45° to the horizontal. If more than one sterilizer is connected by header to riser, header is to drain toward sterilizer at 45° angle. Header and riser are to increase in size accordingly.

## Wiring Terminals

Wiring on the equipment terminates at a junction box or boxes as shown on each drawing. Wiring and other appurtenances between junction box (or boxes) and building service lines are not furnished by STERIS.

## Disconnect Switches

Each piece of equipment must have a dedicated disconnect switch to allow servicing. Disconnect switches with off position lockout only must be furnished and installed by the Customer in electric supply lines near the equipment.

## Steam Return Lines

Steam return lines from the sterilizer jacket should be connected to a gravity system piped to a vented receiver. Avoid any piping arrangement that could cause back pressure in the return line. (This would not apply if steam return lines were specified to be piped into the sterilizer condenser system or waste line.) Pressurized steam condensate return lines can cause reduced equipment performance.

## Motors

In providing electric service for motors, conductors should be sized to conform to the National Electrical Code specifications for rated motor current and motor branch circuit capacity, adjusted for ambient temperature conditions (for 3/4 HP and over) and voltage drop.

## Drains

Equipment drains must be properly sized to handle peak water usage. Sterilizer funnels supplied by STERIS have an integrated, internal air gap.

**Table 3. Recommended Cold Feed Water Quality for Washers (Ref., AAMI TIR 34)**

Condition	Nominal conditions	Maximum Conditions
Temperature	40 - 60°F (4° - 16°C)	70°F (16°C)
Total Dissolved Hardness as CaCo3	50 - 80 ppm	120 ppm
Total Dissolved Solids	100-200 ppm	500 ppm
Total Alkalinity as CaCo3	70 -120 ppm	180 ppm
pH	6.8 - 7.0	7.5
Total Silica	0.1 - 0.5 ppm	1.0 ppm
Chlorides	1.0 – 8.0 ppm	10.0 ppm
Cu	0.0 – 0.08 ppm	0.1 ppm
Fe	0.0 – 0.08 ppm	0.1 ppm
Zn	0.0 – 0.08 ppm	0.1 ppm
Al	0.0 – 0.08 ppm	0.1 ppm
Mg	0.0 – 0.08 ppm	0.1 ppm

**Table 4. Recommended Hot Feed Water Quality for Washers (Ref., AAMI TIR 34)**

Conditions	Nominal Conditions	Maximum Conditions
Temperature	110°F (43°C)	150°F (66°C)
Total Dissolved Hardness as CaCo3	50 - 80 ppm	120 ppm
Total Dissolved Solids	100-200 ppm	500 ppm
Total Alkalinity as CaCo3	70 -120 ppm	180 ppm
pH	6.8 - 7.0	7.5
Total Silica	0.1 - 0.5 ppm	1.0 ppm
Chlorides	1.0 – 8.0 ppm	10.0 ppm
Cu	0.0 – 0.08 ppm	0.1 ppm
Fe	0.0 – 0.08 ppm	0.1 ppm
Zn	0.0 – 0.08 ppm	0.1 ppm
Al	0.0 – 0.08 ppm	0.1 ppm
Mg	0.0 – 0.08 ppm	0.1 ppm

**Table 5. Recommended Pure Water Feed Water Quality for Washers (Ref., AAMI TIR 34)**

Conditions	Nominal Conditions	Maximum Conditions
Temperature	60°F (16°C)	140°F (60°C)
pH	7.0	6.8 - 7.5
Resistivity – MΩ-cm	0.5 MΩ-cm	0.1 MΩ-cm

**Table 6. Recommended Clean Dry Compressed Air Quality for Washers (Ref., ISO 8573-1 Class 5)**

Condition	Nominal Conditions	Maximum Conditions
Maximum Particle Size	20 Micron	40 Micron
Particulate Density	5.0 ppm	8.3 ppm
Dew Point	37°F (3°C)	45°F (7°C)
Oil Concentration	10 mg/cubic-m	25 mg/cubic-m
Air Pressure	80 -100 PSIG Dynamic	125 PSIG Dynamic

**Water Quality Supplied to Washer**

- **Cold Water Supply to Washer** – Cold water is used for pre-wash, chamber steam vapor condensing, and for cooling hot water or steam condensate going to the drain. Use of feed water quality within the nominal conditions will improve pre-wash of instruments or utensils, optimize equipment performance, and reduce maintenance.
- **Hot Water Supply to Washer** – Hot water is used for wash phase and rinse phase. Use of feed water quality within the nominal conditions will improve detergent performance, reduce chamber scale build-up, optimize equipment performance, and reduce maintenance.
- **Pure Water Supply to Washer** – Pure water is used during the final rinse phase. Use of feed water quality within the nominal conditions will reduce spotting on instruments, reduce chamber scale build-up, optimize equipment performance, and reduce maintenance.

**Compressed Air Supplied to Washer**

Compressed air is used for operating pneumatically controlled water or steam valves, operating opening and closing of doors, and operating conveyor mechanisms. Use of compressed air quality within the nominal conditions will provide optimal pneumatic device performance, prevent internal pneumatic device corrosion, and reduce maintenance.

**Steam Condensate Return from Washer**

Steam condensate is the by product from heating water and from drying circulated air within the washer. The steam heating process is done through means of heat exchanger coils whereby the steam supply does not make direct contact with the media processed within the washer. The steam condensate from the process will be of equivalent water quality in the facility steam boiler whereby it may be recycled. If the steam condensate is not to be recycled, it may be directed to the floor

drain through use of optional steam condensate cool down equipment modification packages. For best washer heating and drying

For best washer heating and drying performance, it is required to direct the steam condensate return to a non-pressurized vented enclosure\* to prevent back pressure against the incoming steam supply to the washer. Steam condensate return piping vertical rises in excess of 17 feet can also create excess back pressure which can hinder the heating process.

*NOTE: Typical vented condensate return enclosures or sumps have internal float mechanisms that activate a water pump to return the condensate to the facility boiler.*

**IMPORTANT**

STERIS assumes no responsibility for changes made necessary through failure to explicitly observe these instructions and recommendations. In all instances, local, county, state, and national regulations should be observed.

**For Further Information, contact:****STERIS®**

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### **PREPARATION FOR SHIPMENT**

Each unit of equipment shall be placed in a substantial shipping container or crate complying with applicable rules of the I.C.C. Uniform Freight Classification to ensure acceptance by the common or other carrier for safe transportation to final destination at the lowest rate. The shipping crate or container for heavy equipment (such as sterilizers and water stills) shall be of skid construction to facilitate handling by lift equipment.

The exterior of each container shall be clearly and legibly marked with the room, floor and item number (if available), shipping address, and brief description of the contents. A packing list and complete instructions for uncrating the equipment and setting it in place shall be fastened to the outside of the container or crate; such information shall be protected by a waterproof envelope. Packaging, packing, and marking differing from that above shall be provided, if specified.

### **INSTALLATION INSTRUCTIONS**

Unless additional copies are specified, one set of complete installation instructions, including prints showing all utility service requirements, space requirements and wiring diagrams (if not affixed to the equipment) shall be furnished with each unit of equipment.

### **OPERATING AND MAINTENANCE INSTRUCTIONS**

Instructions for operating and performing periodic preventive maintenance on each unit of equipment, including a list of the service parts and quantity of each required for this purpose, shall be furnished. Unless otherwise specified, one copy of this material shall be furnished.

### **SERVICE AFTER INSTALLATION\***

After installation of each assembly, STERIS shall provide a factory-trained technician to perform repair service as required by the customer. This service shall be on a time and material basis unless the equipment is still within the manufacturer's warranty.

If specified, STERIS shall provide a factory-trained technician to perform preventive maintenance services on each assembly following its test and demonstration.

\* *These services are available from the STERIS Corporation within the continental United States, Alaska, and Hawaii.*

*NOTICE: As used in this specification, the terms "if specified", "is specified", "as specified", "when specified", and "unless otherwise specified" are understood to mean that the article, type of article, arrangement, component, material or finish to which any of these terms may relate in the specification will be neither quoted nor furnished by the STERIS Corporation except at the customer's option as stated by him on invitations for bids, requests for price quotations, requests for proposals, contracts, purchase orders or sales orders. STERIS assumes no obligation to supply any of the said affected types, articles, arrangements, components, finishes or materials solely because they are described in this publication.*

### **For further information, please contact:**



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