STERIS®

OPERATOR MANUAL

Reliance® 400XLS Laboratory Glassware Washer
Reliance® 500XLS Laboratory Glassware Washer

(2014-09-04) **P920514-444**

56401-970

A WORD FROM STERIS CORPORATION

This manual contains important information on the proper use and routine maintenance of the Reliance® 400XLS Laboratory Glassware Washer and the Reliance® 500XLS Laboratory Glassware Washer. **All personnel involved in the use and maintenance of this equipment must carefully review and comply with the *Safety Precautions* and instructions contained in this manual.** These instructions are important to protect the health and safety of personnel operating this glassware washer and should be retained in a conveniently accessible area for quick reference. This equipment is specifically designed only for the uses outlined in this manual.

Complete instructions for uncrating and connecting utilities, as well as the equipment drawing, have been provided. If they are missing, contact STERIS for replacement copies, providing the serial number and model of the glassware washer.

Advisory

***IMPORTANT:** A listing of the Safety Precautions to be observed when operating and servicing this glassware washer can be found in SECTION 1 of this manual. Do not operate the equipment until you have become familiar with this information.*

Any alteration of this equipment not authorized or performed by STERIS will void the warranty. Alteration of equipment which could adversely affect its operation and efficacy may violate national, state and local regulations.

To help ensure operators are adequately trained in the safe use of this equipment, STERIS recommends:

- all personnel who operate or maintain the equipment are trained in its operation and in its safe use;
- personnel working with toxic chemicals and vapors (if applicable) have comprehensive instructions in the glassware washer process, relevant health hazards and methods to detect and avoid exposure to the escape of toxic materials;
- there is regular training of all personnel concerned with operation and maintenance of the equipment; attendance records are maintained; and evidence of understanding is demonstrated;
- current Safety Data Sheets (SDS) should be available to all users in the department. For current SDS, contact STERIS.

Printed in Canada.

Indications For Use

Reliance 400XLS and Reliance 500XLS Laboratory Glassware Washers are intended for use in cleaning of laboratory glassware, plasticware and metal goods used in research, production support and quality control laboratories. These washers are specifically designed to only process goods as outlined in this manual. If there is any doubt about a specific material or product, contact product manufacturer for recommended washing technique.

Service Information

A thorough preventive maintenance program is essential to help ensure safe and proper equipment operation. This manual contains maintenance schedules and procedures which should be followed for satisfactory equipment performance.

Customers are encouraged to contact STERIS concerning our comprehensive annual maintenance program. Under the terms of the program, preventive maintenance, adjustments and replacement of worn parts are performed on a scheduled basis to help ensure equipment performance at peak capability and to help avoid untimely and costly interruptions. STERIS maintains a global staff of well-equipped, qualified service technicians to provide this service, as well as expert repair services. Please contact STERIS for details.

STERIS provides a complete line of accessories for use with this equipment. A STERIS representative will gladly review these with you.

NOTE: Certain options may not be available in your area. Contact STERIS for product availability and ordering information.

Certification

The **Reliance 400XLS Laboratory Glassware Washer** and the **Reliance 500XLS Laboratory Glassware Washer** meet the following regulations:

- Underwriters Laboratories (UL) Standard UL 61010-1:Second Edition.
- Canadian Standards Association (CSA) CAN/CSA C22.2 No. 61010-1, 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/EC.
- Low Voltage Directive 2006/95/EC.

Standards applied to demonstrate conformity to the directives:

- International Standard IEC 61010-1, Third Edition.
- International Standard IEC 61326-1, 2005.

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

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SAFETY PRECAUTIONS

1

The following *Safety Precautions* **must** be observed when operating or servicing the Reliance® 400XLS Laboratory Glassware Washer or the Reliance® 500XLS Laboratory Glassware Washer. WARNING indicates the potential for personal injury and CAUTION indicates the potential for damage to equipment. For emphasis, certain *Safety Precautions* are repeated throughout the manual. **It is important to review ALL *Safety Precautions* before operating or servicing the glassware washer.**

WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD:

⚠ Always load baskets on appropriate loading cart or surface.

⚠ If an obstruction is present in wash chamber door, door safety sensor will detect obstruction and door will automatically stop closing. Wait until door is fully open and water flow has stopped before removing obstruction.

⚠ If an obstruction is present in wash chamber door and door is unable to raise, DO NOT attempt to remove obstruction from under door. Call a qualified service technician to safely remove an obstruction.

⚠ Regularly scheduled preventive maintenance is required for safe and reliable operation of this equipment. Contact STERIS to schedule preventive maintenance or obtain the necessary maintenance manual if preventive maintenance is performed by Customer.

⚠ Repairs and adjustments to this equipment must be made only by STERIS or STERIS-trained service personnel. Repairs and adjustments performed by unqualified personnel or installation of unauthorized parts could cause personal injury, result in improper equipment performance, void the warranty or result in costly damage. Contact STERIS regarding service options.

WARNING - PERSONAL INJURY HAZARD:

⚠ In case of power loss, power door(s) lowers slowly by gravity. Keep hands and items out of door area to avoid personal injury.

⚠ Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.

WARNING - ELECTRIC SHOCK AND/OR BURN HAZARD:

⚠ Fasteners and star washers are used to ensure protective bonding continuity. Always reinstall any star washer which may have been removed during installation or servicing.

⚠ STERIS strongly recommends service be performed only by STERIS or STERIS-trained service personnel. Service personnel must disconnect all utilities to unit before servicing. No one should service unit unless all utilities have been properly locked out. Always follow local electrical codes and safety-related work practices.

WARNING - POSSIBLE FIRE HAZARD:

⚠ When glassware washer is installed on a combustible floor, floor must be covered with a metal sheet extending to the outer edges of glassware washer.

WARNING - CHEMICAL BURN AND/OR EYE INJURY HAZARD:

⚠ Detergents are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to swallow. Read and follow the precautions and instructions on the detergent label and in the Safety Data Sheet (SDS) prior to handling the detergent, refilling the detergent container or servicing the detergent injection pump and lines. Wear appropriate Personal Protective Equipment (PPE) whenever handling the detergent or servicing the detergent injection pump and lines.

⚠ Wear gloves and eye protection when using a chemical. Avoid contact with eyes or skin. if spilled or splashed, flush with plenty of water for 15 minutes. If swallowed, DO NOT induce vomiting. Seek medical attention immediately.

WARNING - BURN HAZARD:

⚠ In an emergency, first stop cycle by pressing STOP touch pad and wait for water flow to stop. Wear appropriate Personal Protective Equipment (PPE) whenever reaching into chamber.

⚠ Wear appropriate Personal Protective Equipment (PPE) and allow piping to cool before inspecting and/or cleaning supply-line strainers.

⚠ Wear appropriate Personal Protective Equipment (PPE) before opening wash chamber door, wait until water flow stops before slowly opening door. Hot water/steam may be sprayed through door opening.

WARNING - SLIPPING HAZARD:

⚠ To prevent slips, keep floors dry. Promptly clean up any spills or drippage. For spills or drippage of detergents or other chemicals, follow safety precautions and handling procedures set forth on detergent or chemical label and/or Safety Data Sheet (SDS).

CAUTION - POSSIBLE EQUIPMENT DAMAGE:

- Always position each manifold and/or bottom rotary spray over a manifold connector before operating unit. If manifolds and/or bottom rotary sprays are not positioned correctly, damage will result and unit will be unable to effectively wash load.
- Always position each accessory header over a manifold connector before operating unit. If accessory headers are not positioned correctly, damage may result and unit will be unable to effectively wash load.
- Always select a cycle appropriate for the items being processed. Failure to do so may result in product damage.
- Once chamber door has been lowered, ensure cable is correctly aligned and routed on all six cable pulleys.
- Use nonabrasive cleaners when cleaning unit. Follow directions on containers and rub in a back-and-forth motion (in same direction as surface grain). Abrasive cleaners will damage stainless steel. Cleaners rubbed in a circular motion or applied with a wire brush or steel wool on door and chamber assemblies can be harmful to stainless steel. Do not use these cleaners on painted surfaces.
- When choosing a detergent, select one with a low-chloride content. Detergents with a high-chloride content must not be used, as such detergents may harm stainless steel.

The table below contains symbols which may be on your Reliance 400XLS or Reliance 500XLS Laboratory Glassware Washer components:

Table 1-1. Definition of Symbols

Symbol	Definition
	Protective Earth (Ground).
	Warning! Risk of Electrical Shock.
	Attention. Refer to Manual For Further Instructions.
	Transfer of Heat, Hot Surface.
	Risk of Crushing Fingers or Hands.

The table below contains symbols which may be on the identification nameplate of your Reliance 400XLS or Reliance 500XLS Laboratory Glassware Washers:

Table 1-2. Definition of Symbols

Symbol	Definition
MODEL	Model of Unit.
S/N	Serial Number of Unit.
kVA	Power Rating of Unit.
V_~	Volt, Number of Phase (3 or 1), Alternating Current.
A	Amperage Rating of Unit.
Year	Year of Manufacture of Unit.
Hz	Hertz – Frequency of Unit.
WIRE + PE	Number of Wires in Electrical Cable and Protective Ground Wire.

INSTALLATION VERIFICATION

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> ⚠ ***IMPORTANT:*** *A listing of the Safety Precautions to be observed when operating and servicing this glassware washer can be found in SECTION 1 of this manual. Do not operate the equipment until you have become familiar with this information.*

2.1 Technical Specifications

These specifications are intended to describe the technical information given on the identification nameplate of the Reliance® 400XLS Laboratory Glassware Washer or the Reliance® 500XLS Laboratory Glassware Washer and to state other relevant information. Verify equipment drawing (920-514-458 for Reliance 400XLS or 920-514-459 for Reliance 500XLS) or identification nameplate (located in right bottom corner on load side) for proper voltage and amperage.

2.1.1 Voltage, Amperage and Power Consumption

Both laboratory glassware washers operate either on:

- 208 V, 60 Hz, three-phase, three-wire, steam-heated;
- 480 V, 60 Hz, three-phase, three-wire, steam-heated;
- 380/400/415 V, 50 Hz, three-phase, three-wires, steam-heated;
- 600 V, 60 Hz, three-phase, three-wire, steam-heated;
- 208 V, 60 Hz, three-phase, three-wire, electric-heated;
- 480 V, 60 Hz, three-phase, three-wire, electric-heated;
- 380/400/415 V, 50 Hz, three-phase, three-wire, electric-heated;
- 600 V, 60 Hz, three-phase, three-wire, electric-heated.

- **Maximum currents and power consumptions** are indicated on identification nameplate (refer to Figure 3-1).
- A protective ground conductor is required (Class 1 Equipment).
- Main supply voltage fluctuation not exceeding ± 10 percent of nominal voltage.
- Installation Category: Overvoltage Category II.

  IMPORTANT: *Customer is responsible for compliance with applicable codes and regulations.*

Refer to *Uncrating/Installation Instructions* (P920514-445) for proper connection.

2.1.2 Noise Level

Equivalent Sound Pressure Level at work station, measured 36" (1.0 m) away from equipment and at 63" (1.6 m) from ground: **72 dB (A)**. Results determined according to UL 61010-1:2005.

2.1.3 Permissible Environmental Conditions

This glassware washer is designed to give optimal results under the following conditions:

- Indoor use only;
- Altitude of operation up to 6,562 ft (2,000 m);
- Temperature of 41 to 104°F (5 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.

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, Third Edition).

2.1.4 Seismic Anchorage System

A seismic anchorage system (based on California requirements) is available for high-risk seismic zones.

2.2 Installation Checklist

After installing the glassware washer according to the *Uncrating/ Installation Instructions* (P920514-445), complete the following checklist to help ensure complete and correct installation, or contact STERIS to schedule a service technician to test your installation and demonstrate proper equipment operation.

- ❑ Shutoff valves (not provided by STERIS) capable of being locked in OFF position only for maintenance purposes, installed on steam, air and water lines, and in compliance with local occupational health and safety regulations, as well as electric and plumbing codes for any special requirements that may pertain to installation of this glassware washer.
- ❑ Disconnect switches (not provided by STERIS) capable of being locked in OFF position only, installed in electrical supply lines near the glassware washer and in compliance with local occupational health and safety regulations, as well as electric and plumbing codes for any special requirements that may pertain to installation of this glassware washer.

NOTE: If unit is installed next to other equipment, shutoff valves and disconnect switches should be located so service can be shut off to one piece of equipment at a time.

- ❑ Glassware washer is positioned, as shown on equipment drawing (920-514-458 for Reliance 400XLS or 920-514-459 for Reliance 500XLS), with required clearance space and in relation to building supply lines.
- ❑ Glassware washer is level. Use leveling legs, if necessary.
- ❑ Building cold water line supplies water to glassware washer as specified on equipment drawing.
- ❑ Building hot water line supplies water to glassware washer as specified on equipment drawing.
- ❑ If glassware washer is steam-heated, building steam line provides steam to glassware washer as specified on equipment drawing.
- ❑ If glassware washer is steam-heated, building condensate return line is connected to glassware washer as specified on equipment drawing.
- ❑ Pure water line supplies water to glassware washer as specified on equipment drawing.
- ❑ Building air line supplies air to glassware washer as specified on equipment drawing.
- ❑ Building waste line is connected to glassware washer as specified on equipment drawing.
- ❑ If vented glassware washer, building ventilation system is connected to glassware washer as specified on equipment drawing.
- ❑ Electrical supply for glassware washer is as specified on equipment drawing.
- ❑ Pressure for air, water and steam (if option applies) supplies is within range specified on equipment drawing.
- ❑ Chemical injection pumps are connected to proper chemical injection lines and each chemical suction tube and float are placed in proper container.
- ❑ Chemical squeeze tubes have been lubricated.
- ❑ Floor underneath glassware washer has a noncombustible and nonslip surface or is covered with a metal sheet extending to the outer edges of the glassware washer.
- ❑ Walls surrounding glassware washer have a noncombustible surface.

IMPORTANT: *After a few weeks of operation, inspect unit for leaks. Retighten all clamps and connections.*

⚠ WARNING – POSSIBLE FIRE HAZARD: When glassware washer is installed on a combustible floor, floor must be covered with a metal sheet extending to the outer edges of glassware washer.

2.3 Detergents and Chemical Additives Specifications

Selection of chemical additives is open to Customer preference, however, to achieve optimal performance, selected chemical additives must meet as a minimum the following specifications:

Product Description	Typical pH	Available Injection Rate oz /gal [mL/L]	Other Applicable Requirements
Alkaline Detergents	9.0 -12.0	1/4 - 6 [2 - 50]	Liquid, non-foaming, high-chelating ability, free-rinsing.
Acidic Detergents	2.0 - 6.0	1/4 - 6 [2 - 50]	Liquid, non-foaming, high-chelating ability, free-rinsing.
Neutral Detergents	6.0 - 8.0	1/4 - 6 [2 - 50]	Liquid, non-foaming, high-chelating ability, free-rinsing.
Descalers	< 2.5	2 [16]	Liquid, non-foaming, phosphoric acid based, free-rinsing.

NOTE: For cleaning and descaling products, note the following:

1) *Always use a non-foaming detergent for effective cleaning and proper pump operation.*
2) *Follow detergent manufacturer's recommendations to determine the temperature of the Wash treatment. Refer to* ***Table 5-1****, Cycle Description Chart, for available temperature ranges.*
3) *Follow detergent manufacturer's recommendations for amount of detergent to use depending on water hardness.*
4) *Contact STERIS for information on specific cleaning and descaling products recommended for use with this equipment.*

To achieve maximum cleaning efficiency, select appropriate chemical cleaner to soil type being processed. STERIS recommends the following products:

- **LabKlenz 100® Alkaline Detergent** is a phosphate-free liquid, alkaline detergent. it contains corrosion inhibitors for enhanced substrate compatibility and is extremely free-rinsing to meet critical laboratory requirements.
- **LabKlenz 110® Alkaline Detergent** is a phosphate-free, liquid, alkaline detergent. It is extremely free-rinsing to meet critical laboratory requirements.
- **LabKlenz 120® Mild Alkaline Detergent** is a mild alkaline liquid detergent. It is compatible with a variety of substrates including stainless steel, mild steel, copper and aluminum. This product is extremely free-rinsing to meet critical laboratory requirements.
- **LabKlenz 200® Acid Detergent** is a phosphoric acid-based liquid detergent. It has been formulated for the removal of scale, particulate and inorganic soils.
- **LabKlenz 250® Acid Detergent** is a citric acid-based, liquid detergent. It is formulated for use as rinse aid, as well as for the removal of particulated scale and inorganic soils.
- **LabKlenz 300® Neutral pH detergent** is a surfactant-based neutral pH liquid detergent for use in manual cleaning or automated glassware washing applications.
- **ProKlenz 120® Alkaline Detergent** is a liquid detergent designed to meet the demands of the pharmaceutical, cosmetic, medical device, dietary supplement, food and beverage and other regulated industries. It is formulated with a blend of surfactants and other essential ingredients to utilize multiple cleaning mechanisms while enhancing substrate compatibility.

  NOTE: Certain products may not be available in your area. Contact STERIS for product availability and ordering information.

IMPORTANT: *STERIS does not promote, recommend or endorse the use of any other type of chemical additives in the processing of articles in this washer, such as drying agents, strong alkaline detergents (pH>12), alcohol rinses and liquid germicides including sodium hypochlorite (bleach).*

COMPONENT IDENTIFICATION

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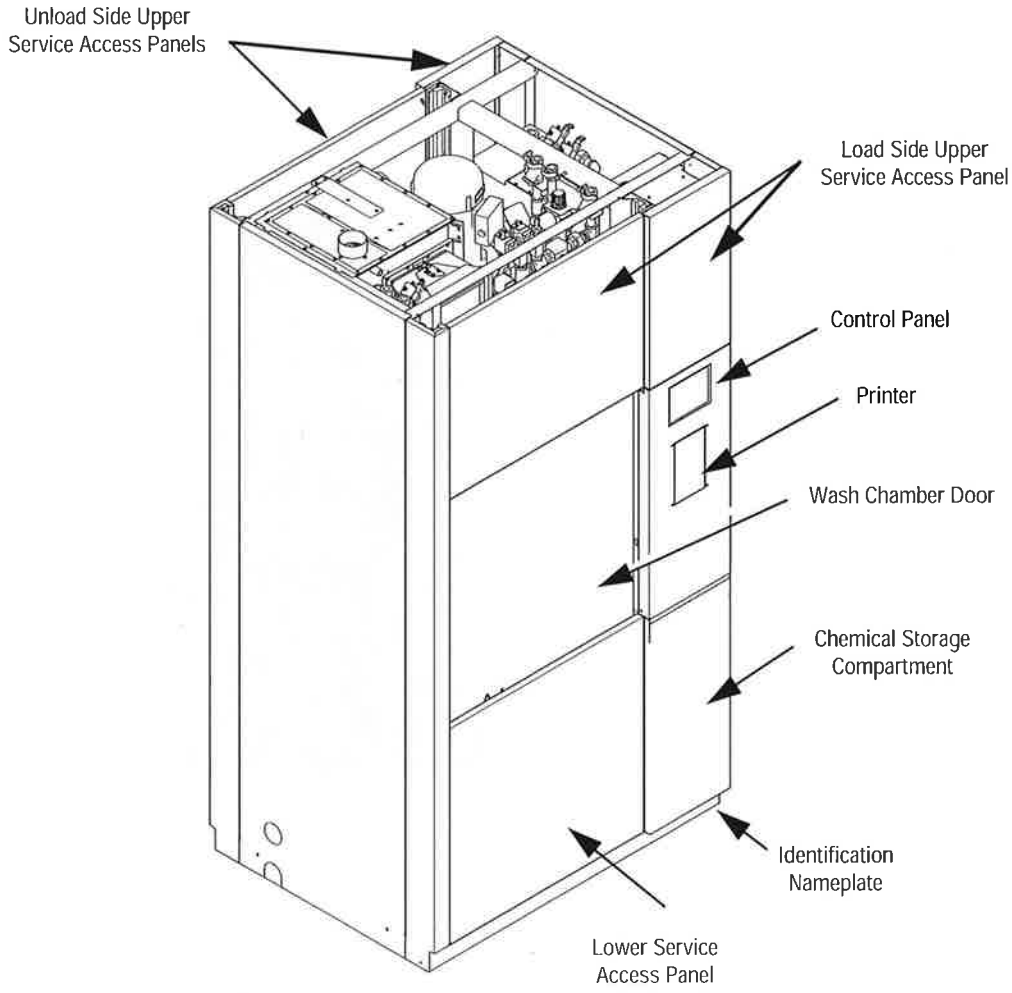
3.1 Before Operating Glassware Washer

The Reliance® 400XLS Laboratory Glassware Washer and Reliance® 500XLS Laboratory Glassware Washer are equipped with a fully-programmable PLC control system capable of storing up to eleven cycles (Cycles 1 to 6 including Descaler Cycle, are preprogrammed and Cycles 7 to 11 are available for customization) for processing a wide variety of loads. Control system monitors and automatically controls all cycle operations and functions.

Before operating either glassware washer, it is important to become familiar with the locations and functions of all major components and controls (see Figure 3-1).



Reliance 400XLS Laboratory Glassware Washer Shown

Figure 3-1. Component Identification

3.2 Operator Terminal

See Figure 3-2.

The Reliance 400XLS Laboratory Glassware Washer and Reliance 500XLS Laboratory Glassware Washer are equipped with an Allen-Bradley CompactLogix™ PLC control system[1] that features eleven cycles for processing a wide variety of loads.

System monitors and controls washer operations and functions and also monitors current status of chamber, including current chamber temperature and time remaining in phase.

Control system offers three operation modes: Supervisor, Service and Ready Mode. The first two modes are password protected. Ready Mode is always available.

Operator terminal is located on load side only.

***IMPORTANT:** On double-door units: There's no operator terminal installed on unload side. Only OPEN DOOR and CLOSE DOOR buttons are installed on unload side.*

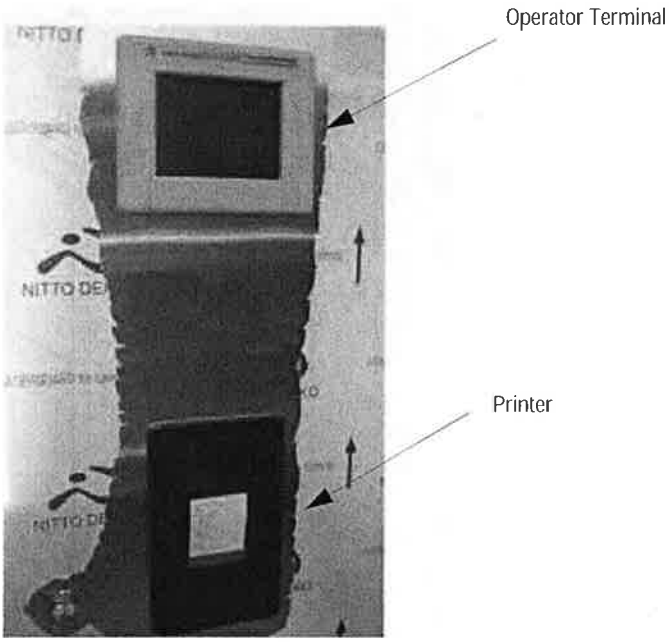


Figure 3-2. Operator Terminal and Printer

1 CompactLogix™ is a trademark of Allen-Bradley, a Rockwell Automation Company.

3.2.1 Login Names and Passwords

Supervisors and service users with appropriate passwords can access Supervisor mode.

Password is composed by four digits between 0000 and 9999.

Only a qualified service technician can access Service mode. A predefined password is required to access Service mode.

Refer to Maintenance Manual (P764334-377) for more information about Passwords.

3.2.2 Operator Terminal Touch Screen

Operator terminal screen is a touch-sensitive color graphics screen. Touch screen displays current status of chamber, including current chamber temperature and phase remaining time, cycle data and operator instructions. Touch screen also indicates any faults that may occur during a cycle.

Touch pads are displayed on touch screen and vary from one menu to another. Some values may be selected in scroll down menus using arrows displayed on touch screen.

3.2.3 Ready Mode

Ready mode is the default operating mode of the washer. No login is required to enter in Ready mode.

When washing accessories are in proper position inside wash chamber, control system automatically enters in Ready mode. Operator closes door, manually selects desired cycle on touch screen, presses **START** touch pad and selected cycle starts.

3.2.4 Supervisor Mode

Supervisor mode allows supervisor to perform chemical pumps calibration; modify cycles setup; modify chemical parameters; select temperature units; modify options within a range of factory set values such as date and time, enable printer functions and pump pressure monitoring.

Supervisor mode access is secured by password. Supervisor password is configured in Supervisor mode.

3.2.5 Service Mode

Service mode allows a qualified service technician to access Service mode menu to configure washer and to perform preventive maintenance, testing and troubleshooting. Service mode is not accessible to operator or supervisor.

A predefined password is required to access Service mode. Refer to Maintenance Manual (P764334-377) for detailed information.

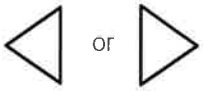
Service password can be used to enter in Supervisor mode.

3.2.6 Touch Pads:

Supervisor mode: Press **Supervisor Login** touch pad on Options screen to access 1st Supervisor Mode screen.

Service mode: Press **Service Login** on Options screen to access Service Mode Login screen.

CLOSE: Press **X** (CLOSE) on touch screen to exit a screen and return to previous screen. When **ENTER** is not present on touch screen, press **CLOSE** to save a selection and return to previous screen.



Left or Right arrow: For forward and back navigation. Press **Left** or **Right arrow** on touch screen to scroll across a screen to view all menus and/or possible selections available.

STOP: Press **STOP** on touch screen to interrupt or abort cycle.

DOOR: On Ready Mode screen, press **DOOR** touch pad to open chamber door.

NOTE: In some cases (when door alarm is triggered) pressing DOOR button will have no effect on door operation since door may be already open or closed. In such a case, press DOOR button again to activate door.

NOTE: Ready Mode screen shows name of last cycle performed.

SILENCE BUZZER: Press **SILENCE BUZZER** on touch screen to stop alarm buzzer.

ACK: Press **ACK** on touch screen to stop alarm buzzer and acknowledge displayed **FAULT** messages.

DETAILS: Press **DETAILS** on touch screen to view current cycle parameters.

PRINT: Press **PRINT** on touch screen to print specific information about Cycle values.

START CYCLE: Press **START CYCLE** on touch screen to start selected cycle.

- **Numeric Keyboard:**

ESC: Used on numeric keyboard screen to exit a screen and return to previous screen.

BACKSPACE: Used on numeric keyboard screens. Press **BACKSPACE** on touch screen to move one position backwards and delete the preceding space or character.

ENTER: Used on numeric keyboard screens. Press **ENTER** on touch screen to confirm a selection and/or an entry.

3.2.7 Audible Signal

An audible signal warns operator that an action must be taken.

3.2.8 Printer

See Figure 3-2.

If Printer (Option) is present, it is located on load side control panel. Printer records all cycle data and any abnormal condition during operation.

Printer allows operator to print cycle data and washer malfunction data. Specific information is printed from Cycle mode (cycle parameters, alarms).

Service mode (washer configuration values) and Supervisor mode (Calibration values and cycle parameters) can be printed.

Printer uses 2-1/4" (57mm) wide, 2" (50mm) dia. single ply paper (P117913-393) and Ink ribbon (P117026-048)

IMPORTANT: *Do not operate printer without paper or ribbon; this leads to rapid deterioration of the printer head.*

NOTE: On double-door units, printer is located on load side only.

OPERATING INSTRUCTIONS

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IMPORTANT: *A listing of the Safety Precautions to be observed when operating and servicing this glassware washer can be found in SECTION 1 of this manual. Do not operate the equipment until you have become familiar with this information.*

4.1 Before Operating Equipment

WARNING – BURN HAZARD:

- **In an emergency, first stop cycle by pressing STOP touch pad and wait for water flow to stop. Wear appropriate Personal Protective Equipment (PPE) whenever reaching into chamber.**
- **Wear appropriate Personal Protective Equipment (PPE) before opening wash chamber door, wait until water flow stops before slowly opening door. Hot water/steam may be sprayed through door opening.**

WARNING – PERSONAL INJURY HAZARD: Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.

WARNING – SLIPPING HAZARD: To prevent slips, keep floors dry. Promptly clean up any spills or drippage. For spills or drippage of detergents or other chemicals, follow safety precautions and handling procedures set forth on detergent or chemical label and/or Safety Data Sheet (SDS).

Refer to *SECTION 5, CYCLE AND CONTROL VALUE PROGRAMMING*, to change cycles, cycle values or control values.

1. Verify building electrical disconnect switch (circuit breaker) is positioned to **ON**.
2. Interior light is **ON**.
3. Verify unit supply valves are open.
4. Ensure display shows Power up screen and advances to Ready Mode.

   NOTE: The first time you start your washer display shows Power Up screen up to two minutes, followed by Door Initialization and Ready Mode screen.
   *It is necessary to press **CLOSE DOOR** touch pad to pressurize door(s) in closed position.*
5. On Ready Mode screen, press **DOOR** touch pad to open chamber door.

   NOTE: Ready Mode screen shows name of last cycle performed.
6. Verify wash chamber is empty and all packing material has been removed.
7. Verify debris screen in chamber is clean and in place.
8. Press **DOOR** touch pad to close chamber door.
9. If printer is present, open printer door and ensure sufficient amount of printer paper is available. A colored warning stripe is visible when paper roll is near end. When paper has completely run out, a blue LED lights up in the Paper Feed Button. Refer to *SECTION 6.10, CHANGING PRINTER (OPTION) PAPER ROLL*, if paper roll needs to be replaced.

   NOTE: Do not operate printer without paper.
10. Verify chemical supply at a remote location (up to 8 ft [2.40 m] off ground and 50 ft [15.3 m] from washer). Ensure suction tube(s) and low level sensor(s) are placed in container(s) (see Figure 4-1).

    If supply is low or has run out, install new container and prime associated chemical pump. Refer to *SECTION 6.6, CHEMICAL CONTAINER REPLACEMENT*, for detergent container replacement instructions and to *SECTION 4.2, PRIMING PROCEDURE*, for priming procedure.

IMPORTANT: *DO NOT insert suction tube into container without verifying it is for the proper application (refer to SECTION 2.3, DETERGENTS AND CHEMICAL ADDITIVES SPECIFICATIONS, for details).*

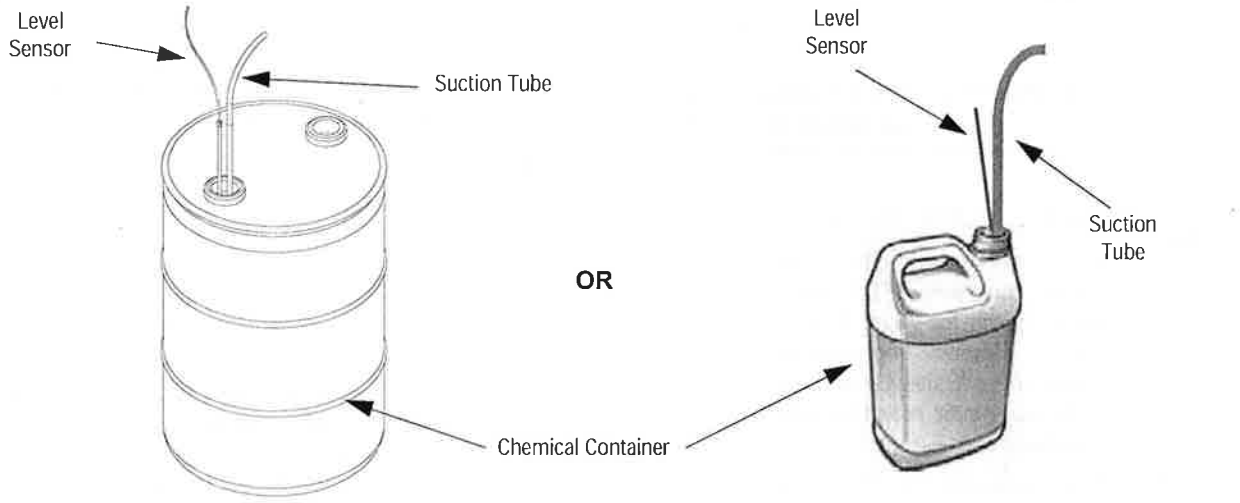


Figure 4-1. Chemical Container

To achieve maximum cleaning efficiency, select detergents appropriate to soil type being processed.

NOTE: For cleaning and descaling products, note the following:

1) *Always use a non-foaming detergent for effective cleaning and proper pump and water-level operation.*
2) *Refer to Detergent Specifications in SECTION 2.3, DETERGENTS AND CHEMICAL ADDITIVES SPECIFICATIONS, and follow detergent manufacturer's recommendations to determine the temperature of the Wash treatment. Refer to* ***Table 5-1,*** *Cycle Description Chart, for available temperature ranges.*
3) *Follow detergent manufacturer's recommendations for amount of detergent to use depending on water hardness.*
4) *Contact STERIS for information on specific cleaning and descaling products recommended for use with this equipment.*

⚠ CAUTION – POSSIBLE EQUIPMENT DAMAGE: When choosing a detergent, select one with a low-chloride content. Detergents with a high-chloride content must not be used, as such detergents may harm stainless steel.

4.2 Priming Procedure

WARNING – CHEMICAL BURN AND/OR EYE INJURY HAZARD: Detergents are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to swallow. Read and follow the precautions and instructions on the detergent label and in the Safety Data Sheet (SDS) prior to handling the detergent, refilling the detergent container or servicing the detergent injection pump and lines. Wear appropriate Personal Protective Equipment (PPE) whenever handling the detergent or servicing the detergent injection pump and lines.

Priming chemical pumps can be necessary the first time you start washer, if an alarm condition is given or if a chemical pump or squeeze tube was replaced.

1. In Ready Mode screen, press **DOOR** touch pad to open load door. Load door opens.
2. Press **SELECT CYCLE** touch pad. Screen advances to the next cycle menu.
3. In Cycle Menu, press **RIGHT** arrow until Prime Chemical Pumps touch pad is available.
4. Press **PRIME CHEMICAL PUMPS** touch pad.
5. Press on appropriate pump touch pad to prime.
6. Look at chemical injector inside chamber.
7. When a few drops of chemical product come out of the injector and no air can be seen in detergent, press the same touch pad to stop priming.
8. Repeat procedure to prime each chemical injection pump.
9. Once priming has finished, press X touch pad until screen returns to Ready Mode.

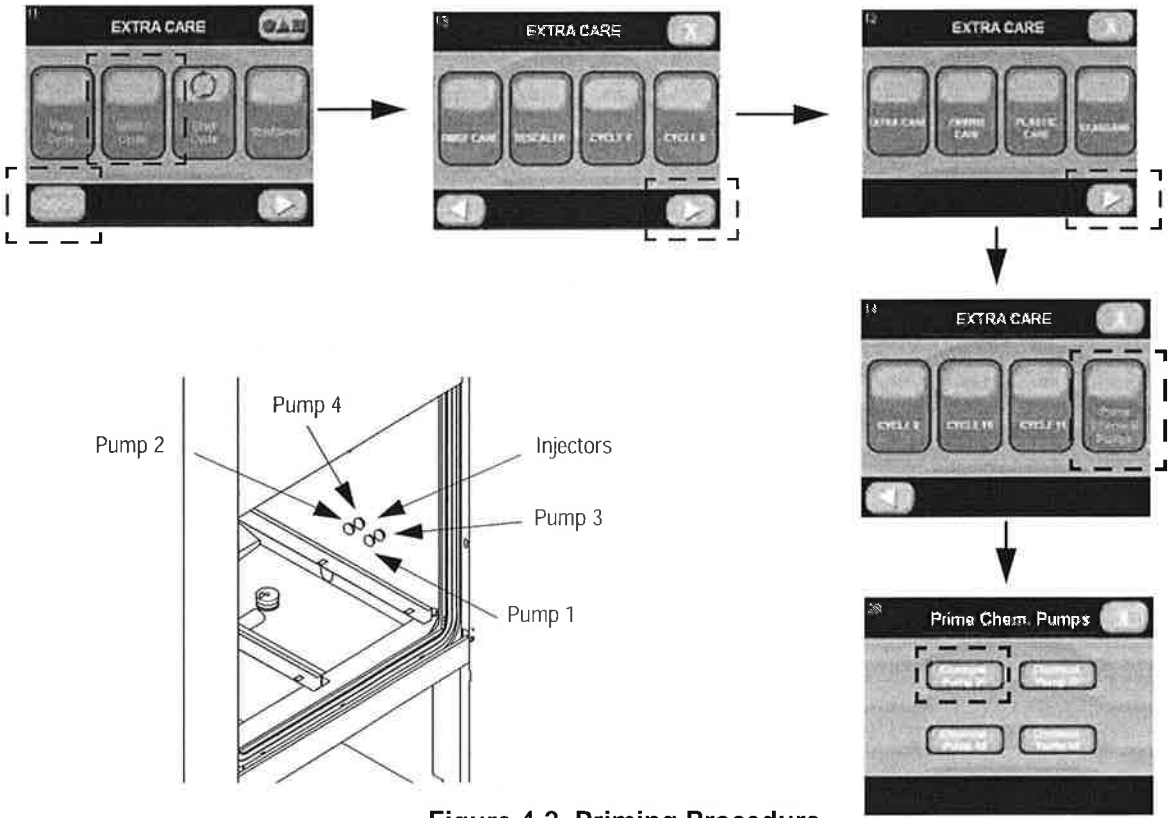


Figure 4-2. Priming Procedure

4.3 Accessories

STERIS provides a complete line of accessories for use with this equipment. Contact STERIS for more information on these products.

IMPORTANT: *Maximum total loading weight (accessory and accessory contents) inside glassware washer is 200 lb (91 kg). Maximum loading weight for each shelving accessory is 50 lb (22.67 kg).*

To properly clean items and to avoid personal injuries, always follow these general loading guidelines:

- Ensure no items stick out or hang out of the rack. Always use a rack designed to handle the appropriate type of items to be processed.
- Glassware washing accessories must be placed over every manifold connection before starting a cycle, if a manifold station is left empty, washing performances will be highly affected.
- Miscellaneous articles can be placed in a general purpose basket with or without a general purpose basket cover.

  NOTE: To avoid personal injuries, baskets and accessories must be loaded on an appropriate loading cart or surface.

- **Spindle headers**, supports baskets and glassware supports (see Figure 4-14):

  M-2XLS-Spindle Header (see Figure 4-3) used with support basket and glassware support to wash large glassware up to 12" (305 mm) in diameter;

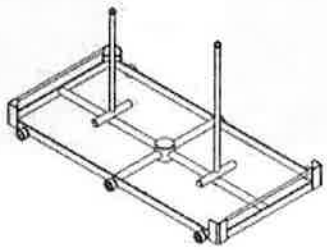


Figure 4-3. M-2XLS

M-5XLS-Spindle Header (see Figure 4-4) used to wash large glassware up to 12" (305 mm) in diameter;

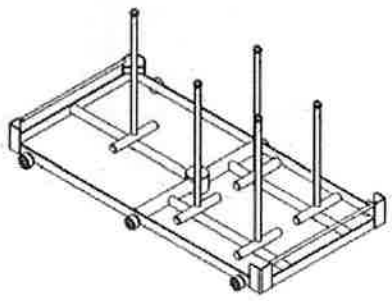


Figure 4-4. M-5XLS

M-8XLS-Spindle Header (see Figure 4-5) used with support basket and glassware support to wash large glassware up to 5-3/4" (146 mm) in diameter;

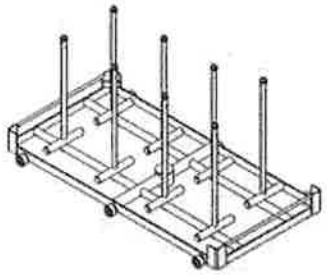


Figure 4-5. M-8XLS

M-18-Spindle Header (see Figure 4-6) used to wash glassware up to 250 mL;

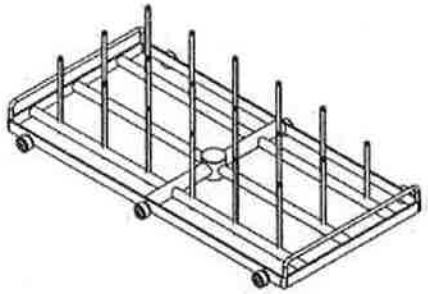


Figure 4-6. M-18

M-32-Spindle Header (see Figure 4-7) used to wash glassware up to 200 mL;

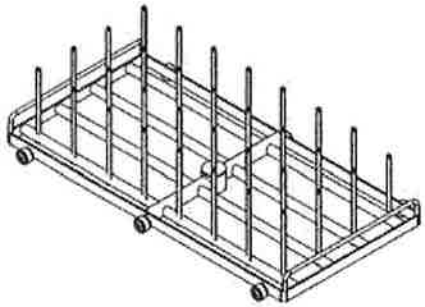


Figure 4-7. M-32

M-34-Spindle Header (see Figure 4-8) used to wash glassware between 100 mL and up to 250 mL;

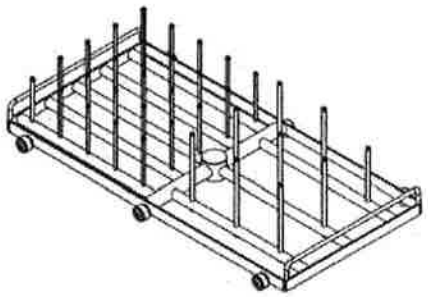


Figure 4-8. M-34

M-50-spindle header (see Figure 4-9) used to wash glassware up to 100 mL;

Figure 4-9. M-50

M-72-spindle header (see Figure 4-10) used to wash glassware up to 50 mL;

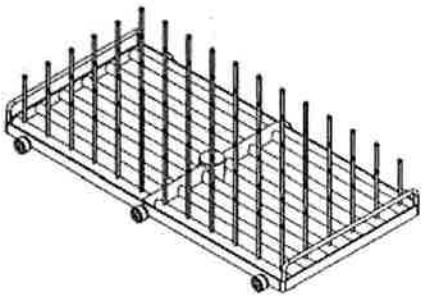


Figure 4-10. M-72

M-85-Spindle Header (see Figure 4-11), used to wash small glassware and glassware up to 50mL;

Figure 4-11. M-85

M-98-Spindle Header (see Figure 4-12) used to wash small glassware.

Figure 4-12. M-98

- **Glassware Protective Mesh** (see Figure 4-13) used in combination with spindle headers to protect glassware.

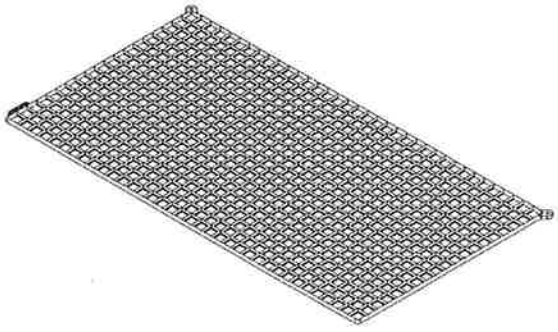


Figure 4-13. Glassware Protective Mesh

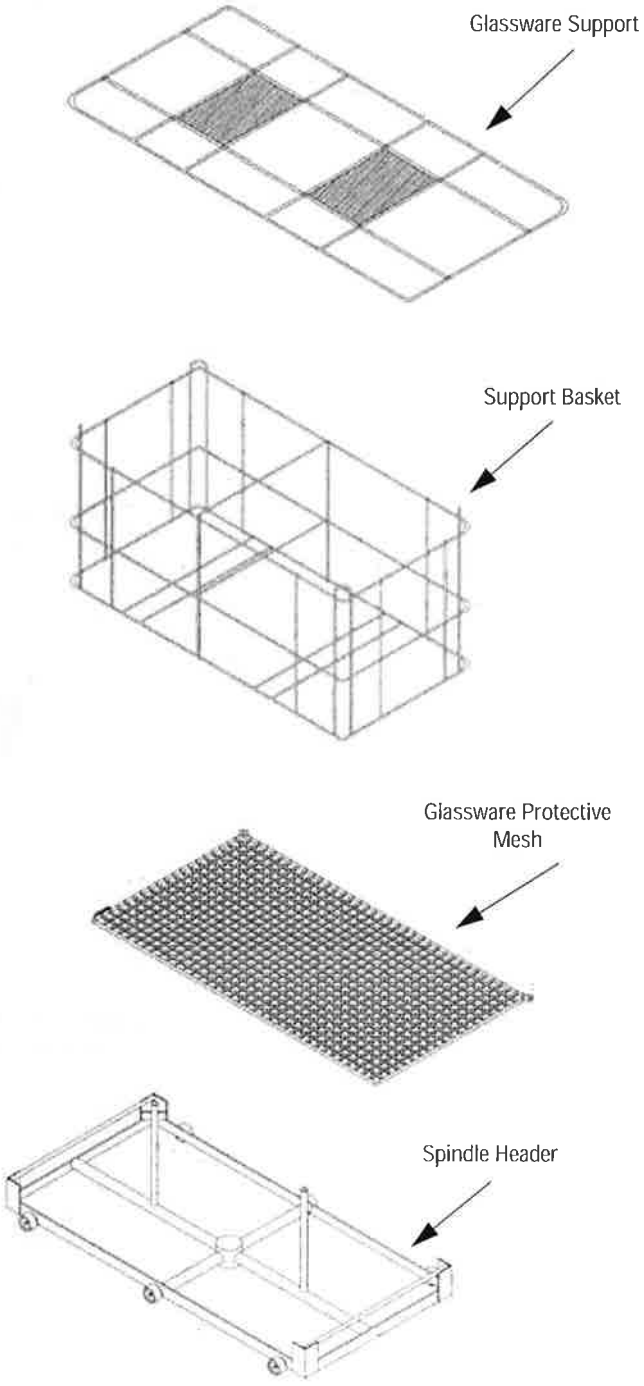


Figure 4-14. Spindle Header, Glassware Protective Mesh, Support Basket and Glassware Support

- **Bottom Rotary Spray Header** (see Figure 4-15) used with general purpose rack, test tube rack and petri dish rack to provide load coverage from bottom.

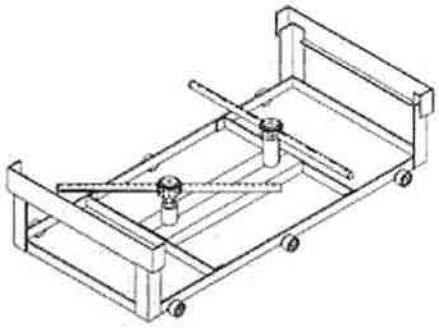


Figure 4-15. Bottom Rotary Spray Header

- **Accessories used to process miscellaneous items:**

  General Purpose Basket (see Figure 4-16) – used with bottom rotary spray header to wash beakers and miscellaneous hardware. Beakers must be inverted when loaded in basket.

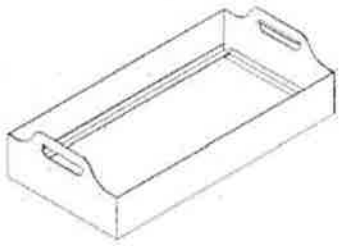


Figure 4-16. General Purpose Basket

General Purpose Basket Cover (see Figure 4-17) – Used with bottom rotary spray header and general purpose basket to hold down lightweight plasticware.

Figure 4-17. General Purpose Basket Cover

- **Accessories used to process test tubes** (see Figures 4-18 to 4-22):

  Test Tube Rack (see Figure 4-18) – used with bottom rotary spray header, basket, divider and cover to wash test tubes from 3/8 to 1-1/2" (10 to 38 mm) in diameter and/or beakers. Rack holds six test tube baskets.

Figure 4-18. Test Tube Rack

Test Tube Basket and Basket Divider (see Figure 4-19) – Basket is used with bottom rotary spray header, test tube rack, cover and divider to hold test tubes and small miscellaneous glassware 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.

Figure 4-19. Test Tube Basket and Basket Divider

Test tube basket cover (see Figure 4-20) – used with test tube basket to hold test tubes in place while inverted in basket.

Figure 4-20. Test Tube Basket Cover

- **Accessory used to process Petri Dishes** (see Figures 4-21 and 4-22):

  Petri Dish Rack (see Figure 4-21) – used with bottom rotary spray header to wash petri dishes. Rack holds up to 55 petri dishes up to 4.0" (102 mm) in diameter by 5/8" (16 mm) deep.

Figure 4-21. Petri Dish Rack

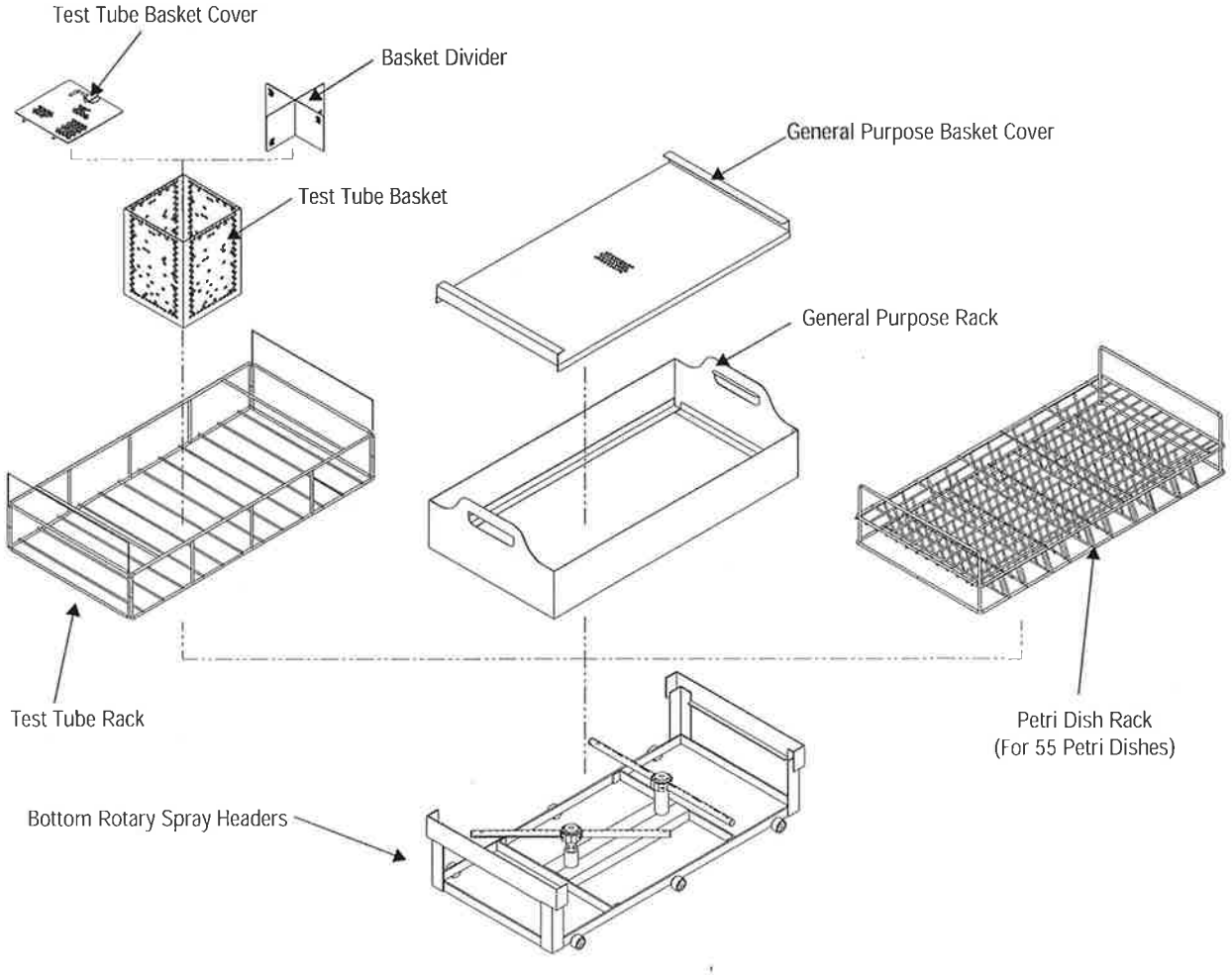


Figure 4-22. Bottom Rotary Spray Header and Accessories

- **Accessories used to process pipettes:**

  IMPORTANT:
  NO more than two pipette headers can be used at a time.
  NO optional loading shelves can be used.
  Water level has to be set at HIGH.
  Pump speed must be set at LOW SPEED (refer to SECTION 4.7, TYPICAL CYCLE OPERATION).

  M-90 Pipette Header (see Figure 4-23): used to individually wash all types of pipettes, from 1/10 to 25 mL. Loading capacity: 90 pipettes max.

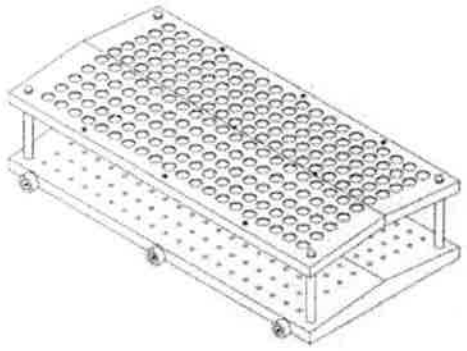


Figure 4-23. M-90 Pipette Header

M200 Pipette Header (see Figure 4-24): used to individually wash all types of pipettes, from 1/10 to 25 mL. Loading capacity: 200 pipettes max.

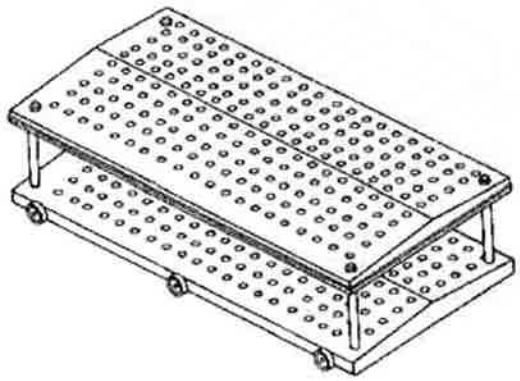


Figure 4-24. M-200 Pipette Header

Flooded System Pipette Header – used to wash straight-sided pipettes of mixed sizes and lengths, up to 17" (432 mm) long. Maximum capacity is 575 one-mL pipettes.

***IMPORTANT: Only one** flooded system pipette header can be used at a time*
NO optional loading shelves can be used.
A longer wash time is recommended.
Water level has to be set at HIGH.
Pump speed must be set at LOW SPEED (refer to SECTION 4.7, TYPICAL CYCLE OPERATION).

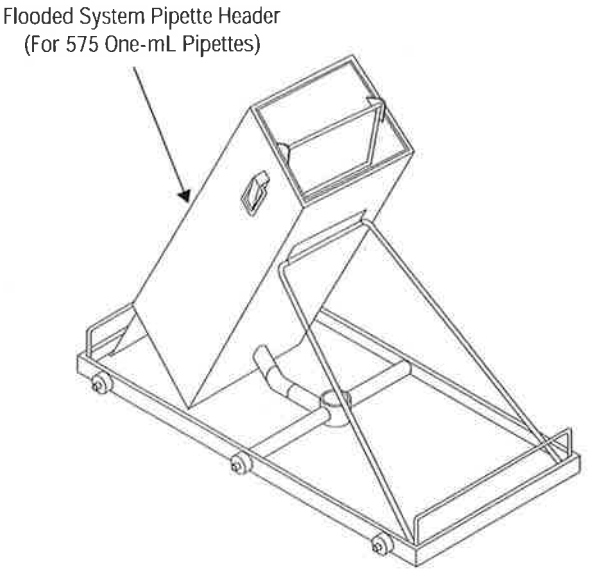


Figure 4-25. Flooded System Pipette Header

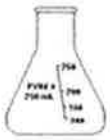
- **Transfer cart** – for loading accessory headers into and out of washer.

- **Universal transfer cart** – Height-adjustable for transferring accessories into and out of washer.

4.3.1 Choosing the Right Accessory

The following chart is a guide that can be used to determine the best accessory for the items to be processed:

Glassware Processing Capacity

Accessory	Volumetric Flasks 	Erlenmeyer Flasks 	Graduated Cylinders 	Beakers 	Carboys and Bottles 
M-2 Spindle Header	500 mL to 2 000 mL	500 mL to 6 000 mL	500 mL to 2 000 mL	--	4 L to 20 L
M-5 Spindle Header	500 mL to 2 000 mL	500 mL to 6 000 mL	250 mL to 2 000 mL	--	500 mL to 20 L
M-8 Spindle Header	500 mL to 2 000 mL	500 mL to 1 500 mL	250 mL to 2000 mL	--	500 mL to 4 L
M-18 Spindle Header	10 mL to 250 mL	250 mL to 400 mL	50 mL to 100 mL	--	200 mL to 400 mL
M-32 Spindle Header	100 mL to 250 mL	250 mL to 400 mL	50 mL to 100 mL	--	200 mL to 400 mL
M-34 Spindle Header 3x 3 section	25 mL to 250 mL	50 mL to 300 mL	10 mL to 250 mL	N/A	N/A
M-34 Spindle Header 5 x 5 section	5 mL[1,2] to 100 mL	50 mL to 125 mL	10 mL to 25 mL	400 mL to 600 mL	< 100 mL
M-50 Spindle Header	5 mL[1,2] to 100 mL	10 mL[1,2] to 125 mL	10 mL to 25 mL	400 mL to 600 mL	< 100 mL
M-72 Spindle Header	5 mL[1,2] to 100 mL[2]	10 mL[1,2] to 125 mL	10 mL to 25 mL	400 mL to 600 mL	< 100 mL
M-85 Spindle Header 6 x 6 section	5 mL[1,2] to 100 mL[2]	Not Recommended	10 mL to 25 mL	400 mL to 600 mL	< 100 mL
M-85 Spindle Header 7 x 7 section	5 mL[1,2] to 100 mL[2]	Not Recommended	10 mL to 25 mL	250 mL to 400 mL	< 100 mL
M-98 Spindle Header	5 mL[1,2] to 100 mL[2]	10 mL[1,2] to 50 mL	10 mL to 25 mL	250 mL to 400 mL	< 100 mL
General Purpose Basket	– Miscellaneous items (Spatula, glass stoppers, magnetic stir bars, etc.) – Beakers of various sizes[3]				

1. *Low speed pump rotation should be selected when cleaning small and light items (see SECTION 4.4, LOADING RECOMMENDATIONS)*
2. *Adjustable high clips should be used for optimal performance when cleaning 5 to 10 mL Volumetric flasks and 10 to 50 mL Erlenmeyer flasks (see SECTION 4.4, LOADING RECOMMENDATIONS and SECTION 8, REPLACEMENT PARTS AND PRODUCTS).*
3. *Beakers can be cleaned efficiently in the General Purpose Basket; however, drying efficiency is limited (see SECTION 4.4, LOADING RECOMMENDATIONS).*

4.3.2 Choosing the Right Glassware Baskets and Dividers

Spindle headers for large glassware, such as M-2XLS, M-5XLS and M-8XLS, must be used in conjunction with the glassware support baskets and dividers that are provided as part of the KM-2, KM-5 and KM-8 kits. This ensures glassware is positioned straight over the spindles.

Some baskets and dividers can be ordered separately.

4.4 Loading Recommendations

NOTE: To avoid personal injuries, baskets and accessories must be loaded on appropriate loading cart or surface.

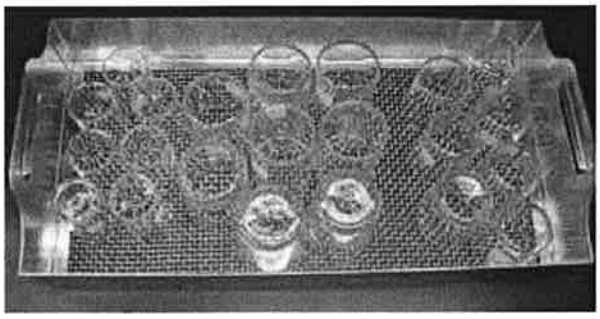
STERIS recommends to follow these general guidelines when loading accessories:

- **Light and small items:**

  Select LOW SPEED pump speed to clean small and light items

- **General Purpose Basket:**

  Beakers can be cleaned efficiently in the general purpose basket; however, drying efficiency is limited.



- **Pipette Headers:**

- Not more than two pipette headers per load,
- HIGH water level must be selected,
- LOW pump speed must be selected.

- **Flooded System Pipette Header:**

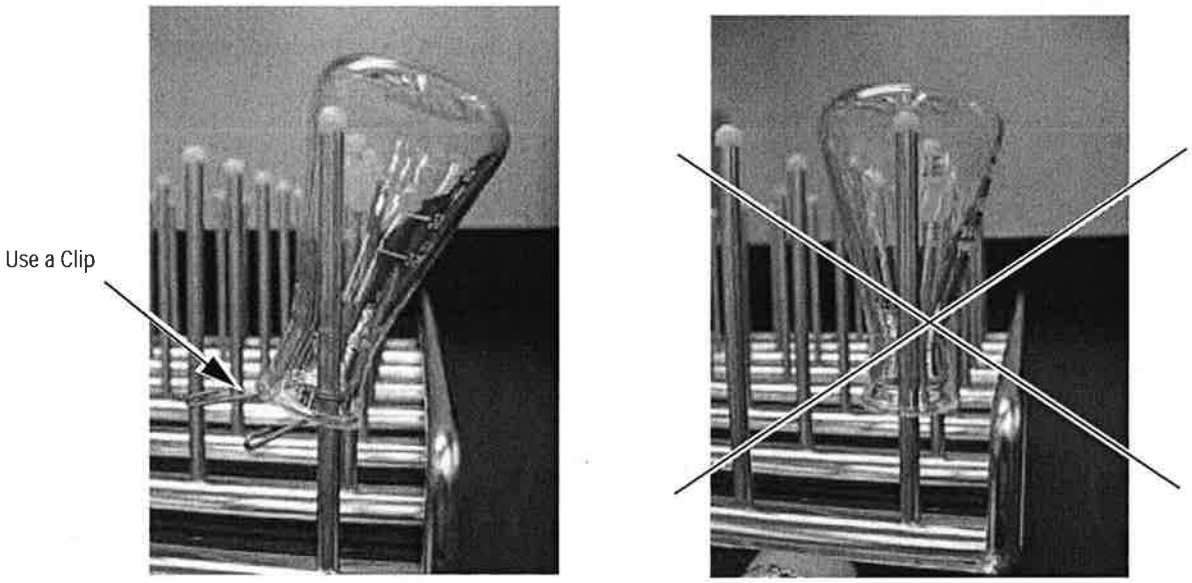
- Only one system per load,
- HIGH water level must be selected,
- LOW pump speed must be selected,
- Longer washing time must be programmed.

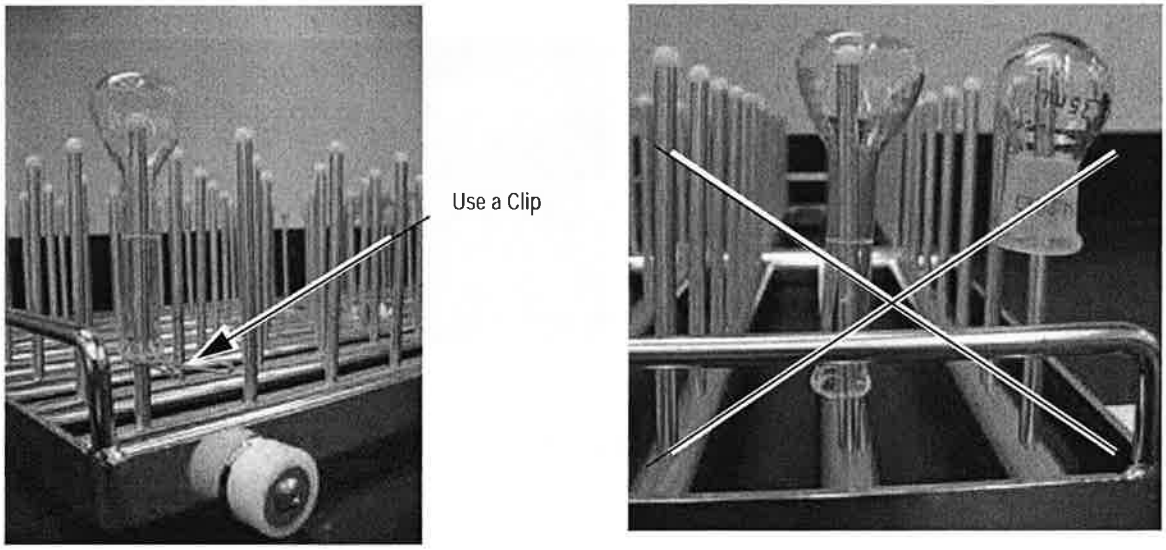
4.5 DO's and DON'Ts

Adjustable height clips should be used for optimal performances when cleaning small items.

DO's

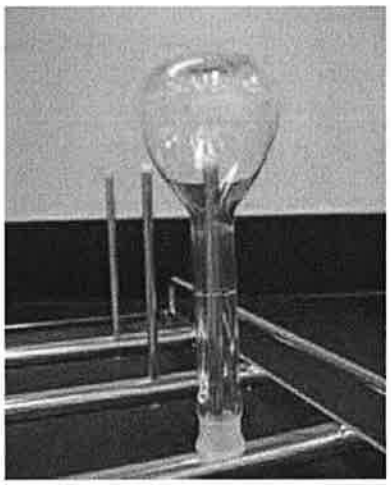
DON'Ts



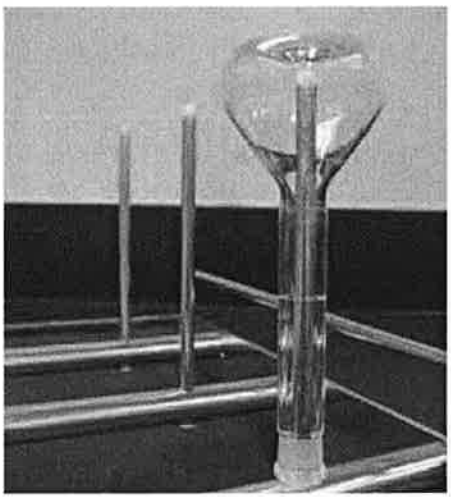


To optimize washing efficiency, spindle inside glassware must arrive at half height of glassware.

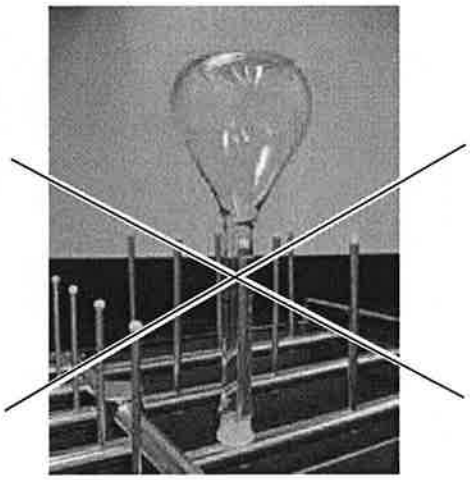
DO

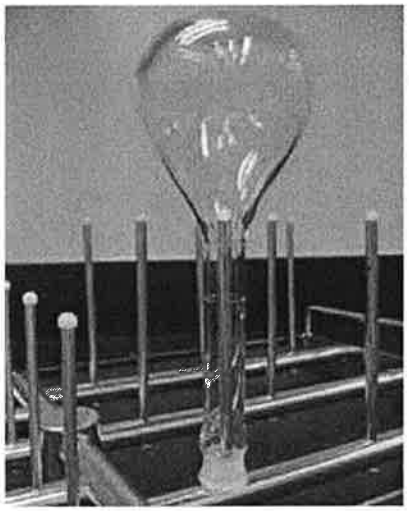


May Be Acceptable but NOT Recommended



DON'T





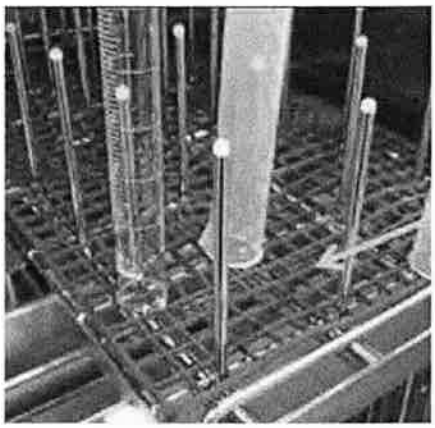
Preventing Glassware Breakage

IMPORTANT: *Refer to SECTION 8, REPLACEMENT PARTS AND PRODUCTS, for part numbers.*

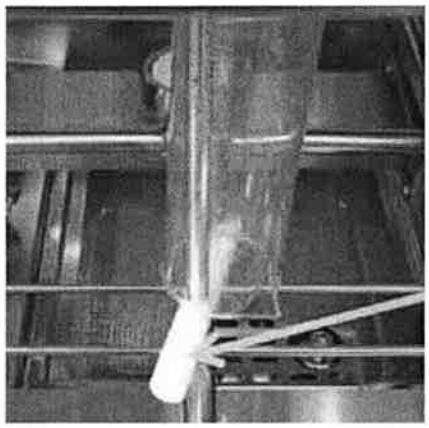
Some types of glassware are particularly fragile. If chipping occurs in the neck area, the following can be done to improve the situation:

1. Place a glassware protective mesh on top of the spindle headers. The same matting fits on all spindle headers and can also be used in the General Purpose Basket.
2. On M-2XLS, M-5XLS and M-8XLS accessories, a plastic rod can be added to protect the neck of the glassware. The plastic rod must be inserted over the accessory stainless-steel spindles.
3. The inside portion of some flasks may tend to chip during handling. Insert a plastic sleeve over the spindles to help minimizing this type of breakage. The tubing can be ordered by the foot and cut on site to appropriate length. If scratching or etching of the internal surface of larger glassware occurs, special spindle tips with silicone o-ring can be provided for M-2XSL, M-5XLS and M-8XLS. The silicone o-ring prevents glassware from being directly in contact with the tips.

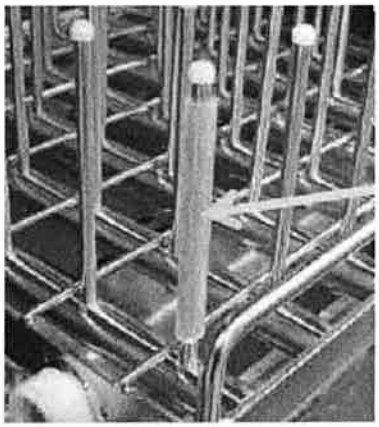
   NOTE: This system may also improve coverage for tall cylinders and large Erlenmeyer flasks.
4. Some very small or very large pieces may be more difficult to clean and require different spindles for optimal result. Below is a list of shorter and longer spindles that can be ordered as required.



Silicone Matting



Plastic Rod



Plastic Sleeve

4.6 Loading Glassware Washer

⚠ WARNING – PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: Always load baskets on appropriate loading cart or surface.

⚠ WARNING – PERSONAL INJURY HAZARD: Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.

NOTE: To avoid personal injuries, baskets and accessories must be loaded on appropriate loading cart or surface.

1. Use a transfer cart to bring fully loaded basket or rack to washer.

   IMPORTANT: *Maximum loading weight (accessory and accessory contents) inside glassware washer is 200 lb (91 kg). Maximum loading weight for each shelving accessory is 50 lb (22.67 kg).*

2. Ensure all items are correctly positioned on rack or basket.
   a. When loading a rack or basket, beakers must be placed open end down.
   b. If lightweight plasticware or metalware is being washed, use a cover to prevent items from turning.
3. Press **DOOR** touch pad to open load chamber door and slide loaded accessory headers into wash chamber. Verify each header is positioned directly over a manifold connector.
4. Press **DOOR** touch pad to close load chamber door.

Universal Shelving System (Accessory)

NOTE: Maximum loading weight for each shelving accessory is 50 lb (22.67 kg)

Universal shelving system allows processing of loads of different sizes by installing or removing shelf sections. (see Figures 4-26 to 4-29).

⚠ CAUTION – POSSIBLE EQUIPMENT DAMAGE: Always position each accessory header over a manifold connector before operating unit. If accessory headers are not positioned correctly, damage may result and unit will be unable to effectively wash load.

- **Reliance 400XLS** (see Figures 4-26 and 4-27):

  Install right or left section from shelving system to process loads lower than 10-1/2" (267 mm) high over and 10-1/8" [257 mm} high under shelving and up to 25-1/8" (638 mm) high without shelf.

- **Reliance 500XLS** (see Figures 4-28 and 4-29):

  It is possible to remove left or right section to accommodate two loads of small items of glassware (up to 10-1/2" [267 mm] high) and a load of larger items (more than 10-1/2" [267 mm] high and up to 25-1/2" [648 mm] high) in left or right side (see Figure 4-28).

  If a greater loading space is required for larger loads, it is possible to remove double right or left section.

  NOTE: Load must not exceed 25-1/2" (648 mm) high.

- **To remove a section from universal shelving system**:

  IMPORTANT: *Before removing sections from universal shelving system, unload wash chamber to avoid damaging glassware.*

  Slide shelf section upwards until it disengages from chamber connector.

- **To reinstall Shelf section:**

  a. Align shelf guides over chamber connector and slide shelf section down.

b. Push shelf section slightly over connector to lock it in place.

NOTE: Use appropriate support basket and glassware support to process larger loads when removing a shelf section.

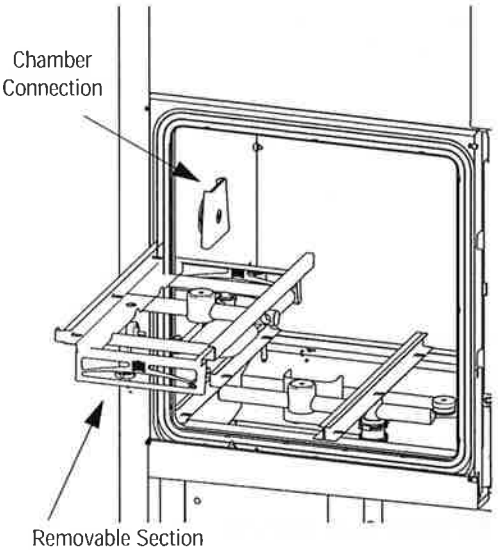


Figure 4-26. Universal Shelving System – One Section Reliance 400XLS

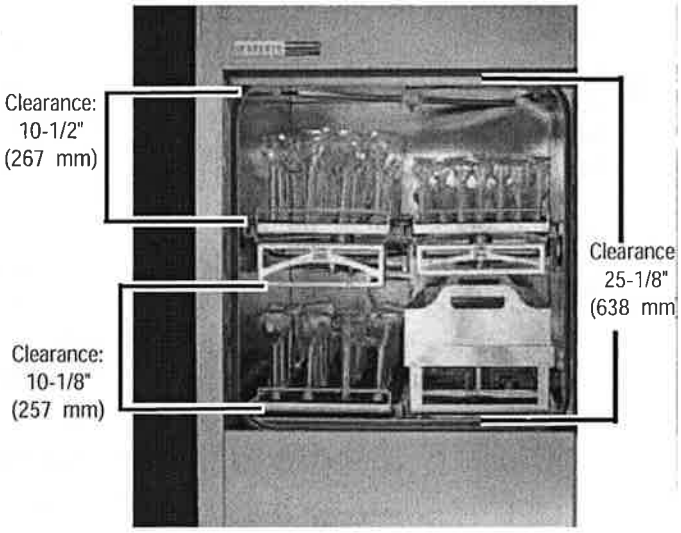


Figure 4-27. Universal Shelving System – Two Sections Reliance 400XLS

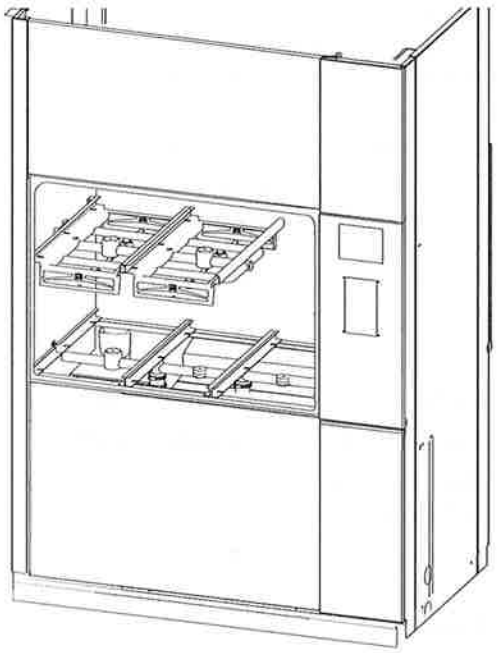


Figure 4-29.Universal Shelving System – Reliance 500XLS

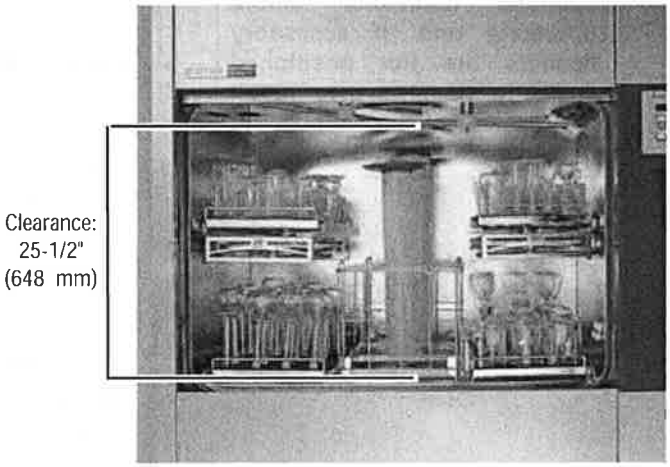


Figure 4-28. Universal Shelving System – Without Central Section Reliance 500XLS

4.7 Typical Cycle Operation

⚠ WARNING – BURN HAZARD:

- **In an emergency, first stop cycle by pressing STOP touch pad and wait for water flow to stop. Wear appropriate Personal Protective Equipment (PPE) whenever reaching into chamber.**
- **Wear appropriate Personal Protective Equipment (PPE) before opening wash chamber door, wait until water flow stops before slowly opening door. Hot water/steam may be sprayed through door opening.**

⚠ WARNING – PERSONAL INJURY HAZARD:

- **In case of power loss, power door(s) lowers slowly by gravity. Keep hands and items out of door area to avoid personal injury.**
- **Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.**

⚠ CAUTION – POSSIBLE EQUIPMENT DAMAGE: Always select a cycle appropriate for the items being processed. Failure to do so may result in product damage.

Both glassware washers are preprogrammed with six processing cycles (including Descaler cycle for maintenance purposes) and are capable of retaining up to five additional cycles. Each cycle can be customized to include up to five different treatments. For instructions on programming, refer to *SECTION 5, CYCLE AND CONTROL VALUE PROGRAMMING.*

NOTE: For typical cycle operation, note the following:

*1) Washer operation can be interrupted at any time by pressing **STOP** touch pad. Pressing **STOP** touch pad halts cycle and display shows "CYCLE PAUSED" screen. Pressing **ABORT** touch pad aborts cycle. To resume cycle, press **RESUME** touch pad.*

2) When cycle is stopped due to an alarm condition, once alarm is acknowledged, RESUME button will re-appear after a delay (3 sec) if alarm is not a critical alarm. This behavior is normal.

3) After washer operation has been interrupted, load door can be opened if sump water temperature is less than 149.09°F [65.5 °C].

4) Review SECTION 7, TROUBLESHOOTING, to identify the cause of any abnormal condition during a cycle, or if unit fails to complete a cycle.

The following cycle description applies to the **preprogrammed EXTRA Care cycle**, which is the most extensive combination of preprogrammed treatments. Refer to **Table 5-1**, *Cycle Description Chart*, for default treatment values of the EXTRA Care cycle.

1. Once washer is properly loaded as explained in *SECTION 4.6, LOADING GLASSWARE WASHER,* close door by pressing **DOOR** touch pad.
2. Ready Mode screen shows name of last cycle performed. To select a cycle, press **SELECT CYCLE** touch pad to access more cycle menus. Use **RIGHT** or **LEFT** arrows to advance or return cycle screen.
3. When desired cycle is selected, display shows name of selected cycle. Press **START CYCLE** touch pad.
4. If door(s) are closed and cycle is unlocked, washer automatically progresses through the following programmed treatments:

   NOTE: For cycle treatments, note the following:

   1) For each cycle, pump speed can be set to AUTO or LOW; AUTO means that pump speed will be low speed if universal shelving system is not present. Pump speed will be High speed if at least one universal shelving system is present. LOW means that pump speed will be low speed whatever universal shelving system is present or not.

   *2) **Water level** is determined by the following: For each cycle, water level can be set to Auto or High; AUTO means that water level will be low level if universal shelving system is not present. Water level will be High speed if at least one universal shelving system is present. HIGH means that water level will be High whatever universal shelving system is present or not.*

⚠ WARNING–SLIPPING HAZARD: To prevent slips, keep floors dry. Promptly clean up any spills or drippage. For spills or drippage of detergents or other chemicals, follow safety precautions and handling procedures set forth on detergent or chemical label and/or Safety Data Sheet (SDS).

⚠ WARNING – CHEMICAL BURN AND/OR EYE INJURY HAZARD: Detergents are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to swallow. Read and follow the precautions and instructions on the detergent label and in the Safety Data Sheet (SDS) prior to handling the detergent, refilling the detergent container or servicing the detergent injection pump and lines. Wear appropriate Personal Protective Equipment (PPE) whenever handling the detergent or servicing the detergent injection pump and lines.

⚠ CAUTION – POSSIBLE EQUIPMENT DAMAGE: Always position each manifold and/or bottom rotary spray over a manifold connector before operating unit. If manifolds and/or bottom rotary sprays are not positioned correctly, damage will result and unit will be unable to effectively wash load.

3) Always use a non-foaming detergent for effective cleaning and proper pump and water-level control operation. Detergents with a high chloride content should not be used, as chlorides are harmful to stainless steel. Refer to detergent specifications in SECTION 2.3, DETERGENTS AND CHEMICAL ADDITIVES SPECIFICATIONS.

4) Sump may contain water retained from previous cycle. Refer to SECTION 5, CYCLE AND CONTROL VALUE PROGRAMMING, for information on water save feature.

The following are typical treatments for the Extracare cycle;

- **Pre-Wash:** Load is pre-washed with Hot tap water (minimum 110°F [43°C]) from building supply line for two minutes (factory-setting). Water is drained.
- **Wash:** Load is washed with detergent injected with water heated at 150°F (65°C) (factory-setting) for five minutes (factory setting). Water is drained.
- **Rinse 1:** Load is rinsed with hot tap water (minimum 110°F - maximum 150°F [43°C -65.6°C]) for one minute (factory-setting). Water is drained.
- **Rinse 2:** Load is rinsed with hot tap water (minimum 110°F [43°C]) for one minute (factory-setting). Water is drained.
- Pure Water Rinse 1:

  For optional pure water tank or Non-Recirculated final rinse:
  Load is rinsed with purified water from Pure Water Tank (single pass) (minimum 70°F maximum 180°F [15°C - 82°C] from building supply line for 10 seconds, (factory-set, non-recirculated). Water is drained or saved for next cycle (refer to *SECTION 5, CYCLE AND CONTROL VALUE PROGRAMMING*, for information on water save feature).

  For Recirculated final rinse:
  Load is rinsed with purified water from Pure Water tank (minimum 60°F [15°C] from building supply line for time set for final rinse (up to 15 min). Water is drained or saved for next cycle. (refer to *SECTION 5, CYCLE AND CONTROL VALUE PROGRAMMING*, for information on water save feature).

  Without Pure Water tank:

  Load is rinsed with purified water heated in the sump at 180°F (82°C) for one minute (factory-set, recirculated; refer to **Table 5-1,** Cycle Description Chart).

- **Drying (option):** Load is dried at 240°F (115.6°C) setpoint for 15 minutes and one minute cooling by exhaust fan (factory setting, can be adjusted in Automatic mode).

5. When cycle is complete, buzzer sounds and display shows CYCLE COMPLETE screen.
6. Alarm buzzer can be silenced by opening chamber door. Instruction remains on screen until door is opened.

7. **For single door units:** on Ready Mode screen press **DOOR** touch pad to open door.
   For double door units: on unload side, press **DOOR OPEN** button to open unload door.
8. Leave door open to allow load to cool before removing accessory and/or baskets.
9. Press **DOOR** touch pad to close door or press **CLOSE DOOR** button to close unload door.

   NOTE: When cycle is complete, door must be opened and then closed before another cycle may be started.

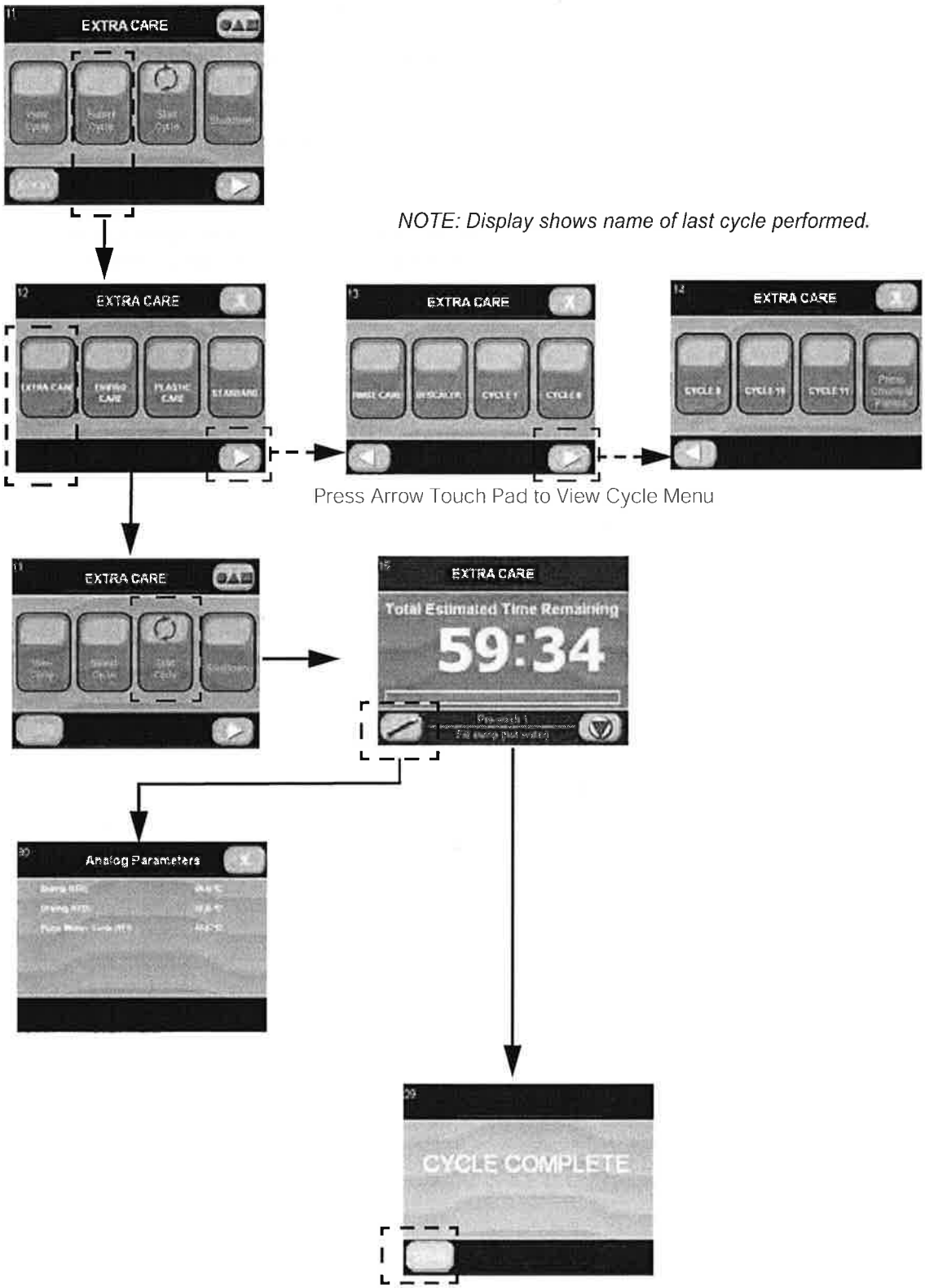


Figure 4-30. Typical Cycle Flowchart

4.8 View Cycle

The VIEW CYCLE touch pad allows operator to view the current settings of each programmable treatment value for the specific cycle selected. Press **VIEW CYCLE** touch pad; screen will display each treatment parameters sequentially, press RIGHT arrow touch pad to view all cycle treatments.

NOTE: When viewing a cycle take note of the following:

*1) The View Cycle sequence can be aborted at any point by pressing **X** touch pad until cycle screen appears.*

*2) Use **UP** or **DOWN** arrows to scroll treatments.*

3) When Up or Down arrows appear on screen parameters zone, operator can highlight values.

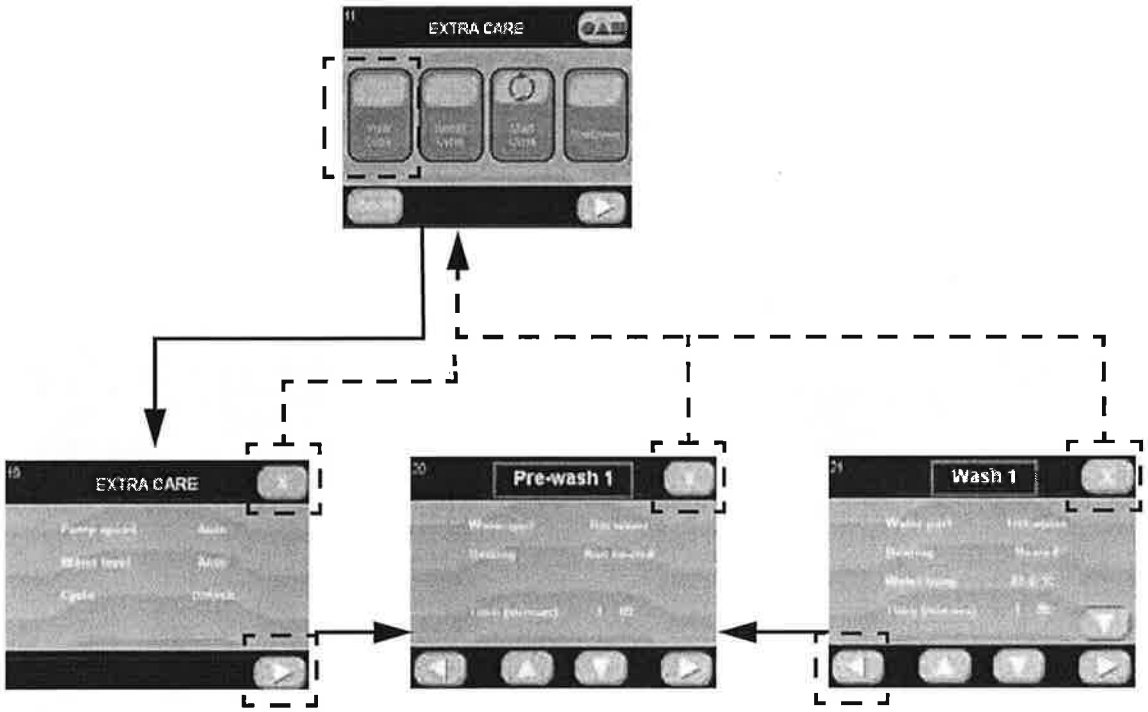


Figure 4-31. View Cycle Parameters

4.9 Acknowledge Alarm Condition

Alarm messages warn operator washer is experiencing an abnormal condition. Fault conditions can be caused by failure of utility supplies or by washer components. Refer to *SECTION 7, TROUBLESHOOTING*, for a detailed listing of fault alarms.

NOTE: Some fault conditions can be solved by operator.

When a malfunction or fault occurs before cycle is successfully completed, an alarm sounds, display shows the alarm condition and printer prints alarm message.

1. Press **SILENCE BUZZER** on touch screen to silence buzzer.

   or:

2. Press **ACK** touch pad on touch screen to acknowledge alarm and silence buzzer.
3. If alarm requires no further action, or if operator has been able to solve fault condition using *SECTION 7, TROUBLESHOOTING*, press **RESUME** on touch screen to resume cycle operation. Cycle resumes at beginning of phase where cycle was interrupted.
4. If a **CRITICAL ALARM** requires to abort cycle, press **ABORT** on touch screen to abort cycle. See *SECTION 4.11, ABORT CYCLE OPERATION*, for more details.

   NOTE: Alarm may need to be corrected prior to abort cycle otherwise alarm will be set again until alarm situation is corrected.

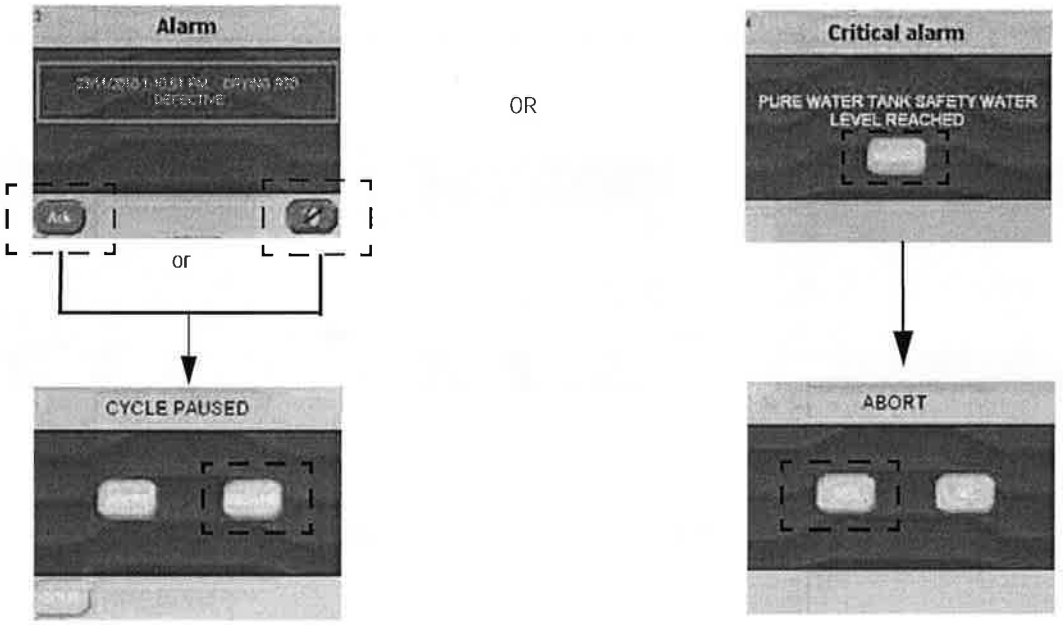


Figure 4-32. Responding to an Alarm

4.10 Pause a Cycle

WARNING – BURN HAZARD:

- **In an emergency, first stop cycle by pressing STOP touch pad and wait for water flow to stop. Wear appropriate Personal Protective Equipment (PPE) whenever reaching into chamber.**
- **Wear appropriate Personal Protective Equipment (PPE) before opening wash chamber door, wait until water flow stops before slowly opening door. Hot water/steam may be sprayed through door opening.**

If operator, for any reason, needs to pause a cycle, washer operation can be halted at any time by pressing **STOP** on touch screen. Once interrupted, cycle either can be resumed or aborted (see Figures 4-33 and 4-34).

1. To pause a cycle in progress, press **STOP** on touch screen.
2. Press **RESUME** on touch screen to resume cycle. Cycle resumes at the phase where cycle was interrupted.

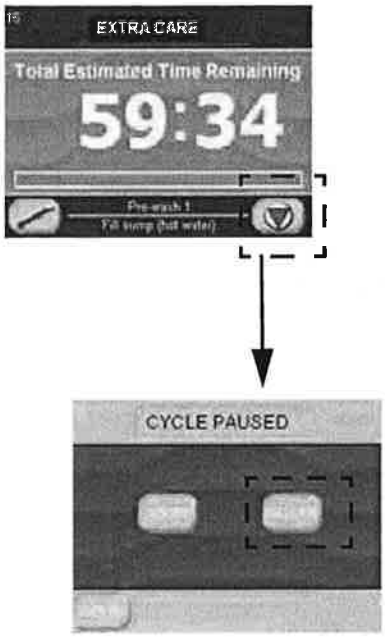


Figure 4-33. Pause a Cycle

4.11 Abort Cycle Operation

WARNING – BURN HAZARD:

- **In an emergency, first stop cycle by pressing STOP touch pad and wait for water flow to stop. Wear appropriate Personal Protective Equipment (PPE) whenever reaching into chamber.**
- **Wear appropriate Personal Protective Equipment (PPE) before opening wash chamber door, wait until water flow stops before slowly opening door. Hot water/steam may be sprayed through door opening.**

If cycle needs to be aborted for any reason, proceed as follows:

1. Press **STOP** on touch screen.
2. Press **ABORT** on touch screen.
3. Control will prompt user to press on touch pads to confirm. At the end of abort routine, screen returns to ready Mode.

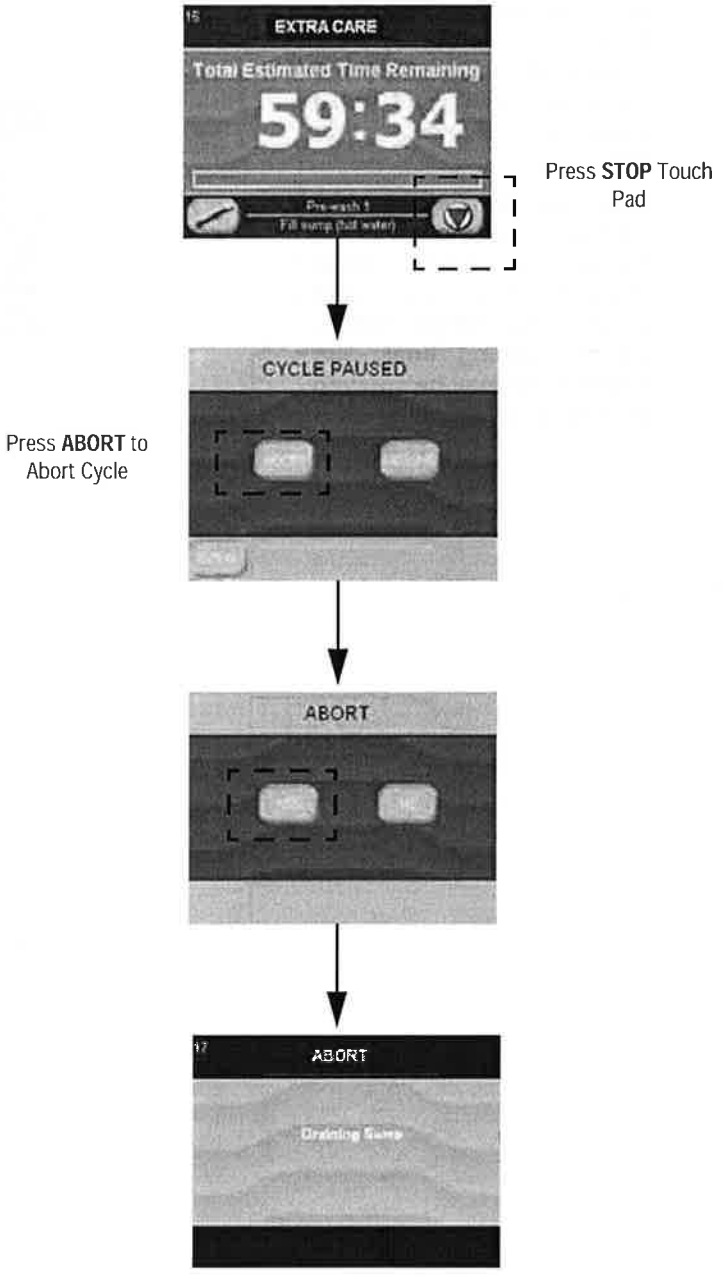


Figure 4-34. Resume or Abort a Cycle

4.12 Shutdown

At the end of a work session, Reliance 400XLS Laboratory Glassware Washer or the Reliance 500XLS Laboratory Glassware Washer should be shutdown and cleaned thoroughly. Refer to *SECTION 6, ROUTINE MAINTENANCE*, for complete cleaning instructions.

Shutdown Mode **DOES NOT** cut electric energy to washer.

- Shutdown procedure:

1. On Ready Mode, press **SHUTDOWN** touch pad.
2. Interior light turns off, pure water tank and sump drain.
3. To return into Ready Mode and start a cycle press **WAKE** touch pad.
4. Screen shows Ready Mode.

- To perform maintenance on washer:

1. Enter in Shutdown mode as indicated previously.
2. Position power switch (located under load side control, to **OFF**).
3. Position building electrical disconnect switch (circuit breaker) to **OFF** position and close building supply lines.
4. Clean unit as described in *SECTION 6.3, DAILY CLEANING*.
5. Ensure building electrical disconnect switch and power switch are positioned to **ON** after completion of cleaning.

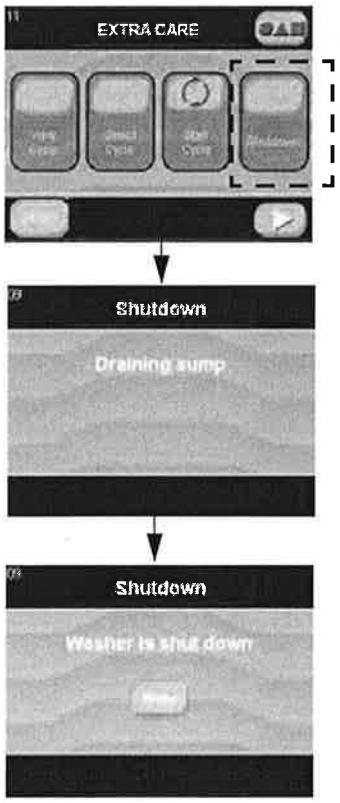


Figure 4-35. Shutdown Flowchart

4.13 Door Operation

⚠ WARNING – BURN HAZARD:

- **In an emergency, first stop cycle by pressing STOP touch pad and wait for water flow to stop. Wear appropriate Personal Protective Equipment (PPE) whenever reaching into chamber.**
- **Wear appropriate Personal Protective Equipment (PPE) before opening wash chamber door, wait until water flow stops before slowly opening door. Hot water/steam may be sprayed through door opening.**

⚠ WARNING–PERSONAL INJURY HAZARD: Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.

Load side door is controlled by touch pad located on Ready Mode screen on load side.

NOTE: When Unit is powered, door(s) shall be pressurized. On Door initialization screen, press CLOSE DOOR buttons to pressurize doors.

For double door units, unload side door is controlled by **OPEN DOOR** and **CLOSE DOOR** buttons on unload side.

1. In Ready Mode screen, press **DOOR** touch pad to automatically raise load door to open position.
2. Press **DOOR** touch pad again to automatically lower door to closed position.

NOTE: After a door alarm, pressing the DOOR button may have no effect on door since door may be already Open or Close. In such case press DOOR button again to activate door.

If unit is equipped with double door, a door-interlock safety feature allows only one door to be opened at a time to avoid cross-contamination.

Load door can be operated only from load side control panel and unload door can be operated only from unload side buttons.

Unload side door can be opened **only after completion of a cycle**.

Load side door can be opened at any time if sump water temperature is below 149.9°F [65.5°C] and following appropriate Safety Precautions.

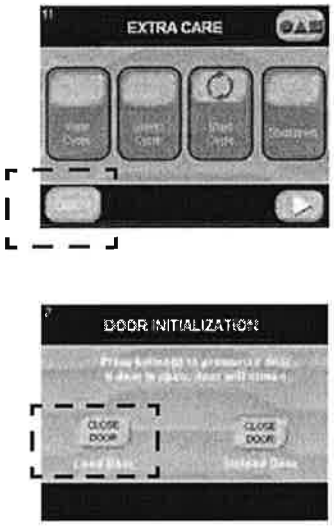


Figure 4-36. Door Touch Pads

4.13.1 Door Obstruction

⚠ WARNING – PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD:

- **If an obstruction is present in wash chamber door, door safety sensor will detect obstruction and door will automatically stop closing. Wait until door is fully open and water flow has stopped before removing obstruction.**
- **If an obstruction is present in wash chamber door and door is unable to raise, DO NOT attempt to remove obstruction from under door. Call a qualified service technician to safely remove an obstruction.**

⚠ WARNING–PERSONAL INJURY HAZARD: Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.

If an obstruction is present at bottom of wash chamber door, do not attempt to remove object. A door safety sensor detects obstruction. Door automatically stops from closing and opens completely. An alarm sounds and display shows:

***LOAD* DOOR OBSTRUCTED**

1. Press **SILENCE BUZZER** touch pad to silence buzzer

   or

   Press **ACK** touch pad to acknowledge alarm and silence buzzer. this records time at which operator acknowledged alarm.
2. Once door is completely open, carefully remove obstruction from wash chamber door.
3. Press **CLOSE DOOR** touch pad to close door.
4. Press **RESUME** touch pad to resume cycle operation.

4.13.2 Door Operation During a Power Failure

Doors should not be open unless a cycle has been successfully completed. If a power failure occurs during a cycle and it is necessary to open load door, DO NOT ATTEMPT TO MANUALLY OPEN DOOR. Call a qualified service technician.

CYCLE AND CONTROL VALUE PROGRAMMING 5

⚠ ***IMPORTANT:*** *A listing of the Safety Precautions to be observed when operating and servicing this glassware washer can be found in SECTION 1 of this manual. Do not operate the equipment until you have become familiar with this information.*

5.1 General

⚠ **CAUTION – POSSIBLE EQUIPMENT DAMAGE: Always select a cycle appropriate for the items being processed. Failure to do so may result in product damage.**

Reliance® 400XLS Laboratory Glassware Washer and Reliance® 500XLS Laboratory Glassware Washer are programmed at factory for **five operating cycles**:

- **EXTRA Care** – For processing heavily or normally soiled items.
- **ENVIRO Care** – For processing lightly soiled or delicate items.
- **PLASTIC** – For processing plastic items.
- **STANDARD** – For processing normally soiled items.
- **RINSE Care** – For rinsing needs only.

In addition, a DESCALER cycle is programmed at factory to help with routine maintenance. Refer to *SECTION 6, ROUTINE MAINTENANCE*, for more information.

Cycles include various sequences of treatments:

*NOTE: See **Table 5-1**, Cycle Description Chart, for treatment specifications.*

- Pre-Wash
- Wash
- Rinse
- Pure Water Rinse
- Drying (option)

Each treatment has time and/or temperature *values*, some of which can be modified within a range. To help ensure safe and effective operation, it is possible to restore pre-set values resetting default values.

Table 5-1. Reliance 400XLS / Reliance 500XLS Laboratory Glassware Washer – Cycle Description Chart

ADJUSTABLE DEFAULT CYCLES

CYCLE NAME	PARAMETERS	PRE-WASH	WASH			RINSE		PURE WATER RINSE (9)	DRYING (OPTION)
			WASH 1	WASH 2 (MID-RINSE)	WASH 3	RINSE 1	RINSE 2	PURE RINSE 1 (9)	
EXTRACare AUTO Speed (1) AUTO Level (1)	DRYING TYPE	-	-	-	-	-	-	-	SMART Drying
	TIME (2)	01:00	02:30	- (5)	01:00	00:30	00:30	00:30 (RECIRCULATED) (9)	-
	TEMPERATURE	NOT HEATED	150°F (65,6°C)	-	150°F (65,6°C)	NOT HEATED	NOT HEATED	122°F (50°C)	REGULAR
	INJECTION PUMP (7)	-	PUMP 1	-	PUMP 2	-	-	-	-
	INJECTION RATE	-	1/2 oz/gal (4 ml/L)	-	1/2 oz/gal (4 ml/L)	-	-	-	-
	WATER PORT	HW	HW	-	HW	HW	HW	PW	-
ENVIROCare AUTO Speed (1) AUTO Level (1)	DRYING TYPE	-	-			-	-	-	SMART Drying
	TIME (2)	-	02:00			00:15	-	00:30 (RECIRCULATED) (9)	-
	TEMPERATURE	-	130°F (54°C)			NOT HEATED	-	122°F (50°C)	HEAT SENSITIVE
	INJECTION PUMP (7)	-	PUMP 1			-	-	-	-
	INJECTION RATE	-	1/4 oz/gal (2 ml/L)			-	-	-	-
	WATER PORT	-	HW			HW	-	PW	-
PLASTIC AUTO Speed (1) AUTO Level (1)	DRYING TYPE	-	-			-	-	-	SMART Drying
	TIME (2)	02:00	02:00			00:30	-	00:30 (RECIRCULATED) (9)	-
	TEMPERATURE	NOT HEATED	120°F (54°C)			NOT HEATED	-	122°F (50°C)	HEAT SENSITIVE
	INJECTION PUMP (7)	-	PUMP 1			-	-	-	-
	INJECTION RATE	-	1/2 oz/gal (4 ml/L)			-	-	-	-
	WATER PORT	HW (3)	HW			HW	-	PW	-
STANDARD AUTO Speed (1) AUTO Level (1)	DRYING TYPE	-	-			-	-	-	STANDARD
	TIME (2)	02:00	05:00			01:00	01:00	00:30 (RECIRCULATED) (9)	15:00
	TEMPERATURE	NOT HEATED	150°F (65,6°C)			NOT HEATED	NOT HEATED	122°F (50°C)	HIGH
	INJECTION PUMP (7)	-	PUMP 1			-	-	-	-
	INJECTION RATE	-	1/2 oz/gal (4 ml/L)			-	-	-	-
	WATER PORT	HW (3)	HW			HW	HW	PW	-
RINSECare AUTO Speed (1) AUTO Level (1)	DRYING TYPE	-	-			-	-	-	STANDARD
	TIME (2)	-	-			01:00	-	00:30 (RECIRCULATED) (9)	15:00
	TEMPERATURE	-	-			NOT HEATED	-	122°F (50°C)	HIGH
	INJECTION PUMP (7)	-	-			-	-	-	-
	INJECTION RATE	-	-			-	-	-	-
	WATER PORT	-	-			HW	-	PW	-
DESCALER AUTO Speed (1) AUTO Level (1)	DRYING TYPE	-	-			-		-	-
	TIME (2)		10:00			3 x 01:00		00:30 (RECIRCULATED) (9)	-
	TEMPERATURE	-	150°F (65,6°C)			NOT HEATED		122°F (50°C)	-
	INJECTION PUMP (7)	-	PUMP 2 (4)			-		-	-
	INJECTION RATE	-	2 oz/gal (16 ml/L)			-		-	-
	WATER PORT	-	HW			HW		PW	-

ADJUSTABLE PARAMETERS RANGE (Default cycles and cycles 7 to 11)

PARAMETERS		PRE-WASH	WASH	RINSE	PURE WATER RINSE (9)	DRYING (OPTION)
	# OF PHASES	0 TO 2	0 TO 3	0 TO 3	0 TO 9	0 TO 1
	DRYING TYPE	-	-	-	-	SMART Drying or TIME -TEMPERATURE
Pump speed: AUTO or LOW (1)	TIME (2)	00:00 to 14:59	00:00 to 14:59	00:00 to 14:59	00:00 to 14:59 (9)	00:00 to 29:59
Water Level: AUTO or HIGH (1)	TEMPERATURE	NOT HEATED or HEATED 110°F-203°F (43°C-95°C) (6)	NOT HEATED or HEATED 110°F-203°F (43°C-95°C) (6)	NOT HEATED or HEATED 110°F-203°F (43°C-95°C) (6)	NOT HEATED or HEATED 110°F-203°F (43°C-95°C) (6)	SMART DRYING: REGULAR (240°F/ 115,6°C) or HEAT SENSITIVE (180°F/ 82,2°C) or STANDARD: LOW (180°F/ 82,2°C) or HIGH (240°F/ 115,6°C)
	INJECTION PUMP (7)	-	NONE - PUMP 1 - PUMP 2 PUMP 3 - PUMP 4 - MANUAL	-	-	-
	INJECTION RATE	-	1/4 - 6 oz/gal (2 - 50 ml/L)	-	-	-
	WATER PORT	CW (8) HW	CW (8) HW	CW (8) HW	PW	-

Notes

(1) Pump Speed:
AUTO: Pump speed will be HIGH if Universal Shelving System is detected or LOW if not detected.
LOW: Pump speed will be LOW even if Universal Shelving System is detected.
Water Level:
AUTO: Sump will be filled to its maximum level if Universal Shelving is detected or at its minimum level if not detected.

(2) Treatment time does not include filling, heating and draining time.

(3) Default setting is cold water if option is available.

(4) PUMP 2 must be acid detergent (see note 7).
If not, MANUAL injection can be use.

(5) The MID-RINSE is non activated by default.
" not recommended with other detergents than LABKLENZ detergents"

(7) Chemical injection pumps usage recommendation:
- Pump 1 should be used with alkaline detergent (blue injection line)
- Pump 2 should be used with acid detergent (red injection line)
- Pump 3 (option) (green injection line)
- Pump 4 (option) (neutral injection line)

(8) If cold water option is available.

(9) When pure water tank is present, Pure Water Rinse could be:
Non-recirculated with a non-adjustable time of 00:10. (Default setting)

Legend
HW = Hot tap
CW = Cold tap
PW = Pure wa

PW = Pure water

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5.2 Supervisor Mode

Supervisor mode access is secured by a password.

5.2.1 Accessing Supervisor Mode

To access Supervisor mode, proceed as follows:

1. On Ready Mode screen, press **OPTIONS** touch pad.
2. On Options screen, press **SUPERVISOR LOGIN** touch pad. A numeric keyboard appears.
3. Enter appropriate password (supervisor and service user can access Supervisor Mode).
4. Press **ENTER** touch pad.

   NOTE: If password entered is wrong, display will remain unchanged.
5. Display advances to first Supervisor Mode screen.
6. Press **RIGHT** arrow to see more supervisor menus available.

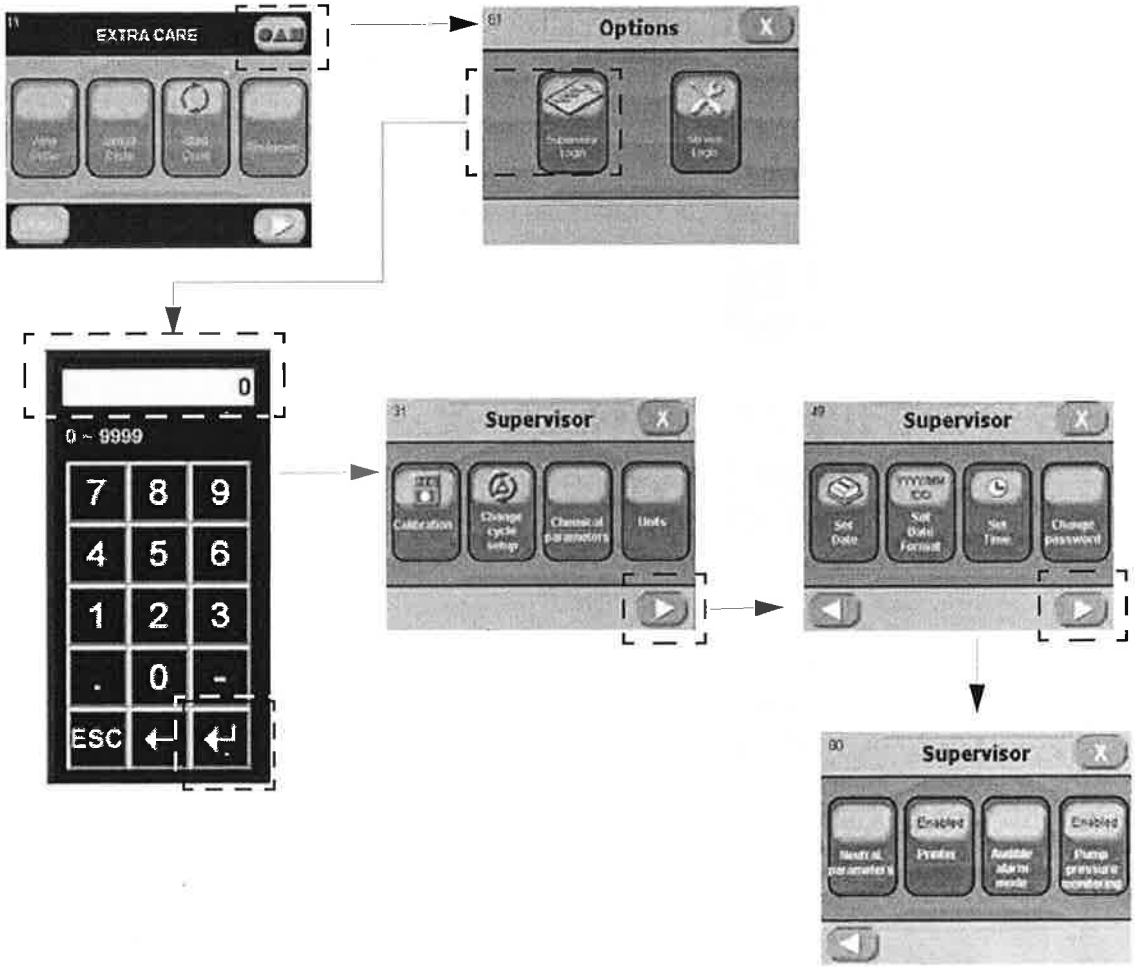


Figure 5-1. Supervisor Mode Flowchart

5.2.2 Supervisor Menus

Supervisor mode allows user to choose the following selections:

- **Calibration:**

When pressing this touch pad Calibration screen appears. Press appropriate touch pad to perform a calibration on:

- Sump RTD;
- Pure Water tank RTD;
- Drying RTD;
- Chemical Channel;
- Final Rinse Channel;
- Pressure Channel and
- Chemical Injection Pumps.

Press on desired touch pad to select element to calibrate and follow instructions on screen.

- **Change Cycle Setup:**

Change Cycle Setup allows to modify a preprogrammed or a customized cycle to adjust Customer needs (see **Table 5-1**, *CYCLE DESCRIPTION CHART*, for default values and treatment parameters).

See *SECTION 5.2.3, CHANGE CYCLE SETUP* for cycle modification procedure.

- **Chemical Parameters:**

Press this touch pad to modify chemical names, select chemical pumps and establish injection ratios.

Use UP or Down arrows to enter quantities.

- **Units:**

Press this touch pad to select temperature units (°C/°F), Concentration Units (ml/L or oz/gal) and Pressure units (psig/bar).

Press on touch pad again to return to former values.

- **Set Date:**

Press this touch pad to set washer date.

When pressing touch pad Set Date screen appears. Press appropriate touch pad to modify date, a numeric key board appears. Enter date value and press **ENTER** on numeric key board when ready. Press **OK** button when desired date is set.

Screen returns to Supervisor screen.

- **Set Date Format:**

Press this touch pad to select date format (YYYY/MM/DD, MM/DD/YYYY or DD/MM/YYYY). Press **OK** button when desired date format is set.

- **Set Time:**

  Press this touch pad to set actual time.

  When pressing touch pad Set Time screen appears. Press appropriate touch pad to modify hours, minutes or seconds. A numeric key board appears. Enter time value and press **ENTER** on numeric key board when ready. Press **OK** button when desired time is set. Screen returns to Supervisor screen.

- **Change password:**

  To set or modify supervisor password. When pressing touch pad, a numeric keyboard appears. Enter a four digit password. Press **ENTER** on numeric key board when ready. Screen returns to Supervisor screen.

- **Neutralization parameters:**

  To establish or modify chemical injection pumps ratios.

- **Printer (Option):**

  To enable or disable printer. When printer is enabled, it is possible to generate printouts for current cycle parameters.

- **Audible Alarm Mode:**

  To modify audible alarm time.

- **Pressure Pump Monitoring:**

  To enable or disable pump monitoring function. When pump monitoring is enabled, it is possible to monitor pump parameters during a cycle.

5.2.3 Change Cycle Setup

NOTE: When modifying cycle setup, take note of the following:

1) *Left and right arrow touch pads allow scrolling through current treatment parameters.*
2) *Up and Down arrows allow to rise or lower values, and to advance or return to the following or previous treatment.*
3) *Numeric key pads appear when a numeric entry is necessary.*
4) *Press **ENTER** in numeric keyboard to confirm entry.*
5) *Pressing **X** touch pad cancels modification of current treatment and returns to change cycle screen. Parameter can be changed by pressing corresponding touch pad.*

To modify a preprogrammed or a customized cycle, proceed as follows:

1. Access Supervisor Mode as explained in *SECTION 5.2.1, ACCESSING SUPERVISOR MODE*. Display shows Supervisor Mode screen.
2. Press **CHANGE CYCLE SETUP** on touch screen. Display shows Cycle Selection screen.
3. Press on appropriate touch pad to select cycle to be modified. Display advances to next screen.
4. Press on touch pad to select appropriate cycle modification.

Parameters – Pressing this touch pad allows supervisor to modify treatment parameters (Water Port, Heating Temperature and Time) for a cycle or to **Reset Default Parameters** for selected cycle.
Press on appropriate treatment touch pad to modify parameters, press SAVE to save values.
Once modifications to treatment are finished, press **X** touch pad, screen returns to **PARAMETERS**. Select next treatment to be modified

Pump Speed – Press this touch pad to select pump speed AUTO or LOW.

Water Level – Press this touch pad to select washer water level AUTO or HIGH.

Cycle Permission – Press this touch pad to Lock or unlock cycles. Locking a cycle means cycle is not available to operator.

Press **RIGHT** arrow touch pad to advance screen to next menu.

Cycle Name – Press this touch pad to change cycle name.
Use alphanumeric keyboard appearing to enter desired cycle name. Maximum 10 characters.
Once finished, press ENTER arrow in numeric keyboard.
Display returns to Change Cycle Setup screen.

5. Press **X** touch pad until screen returns to Ready Mode screen.

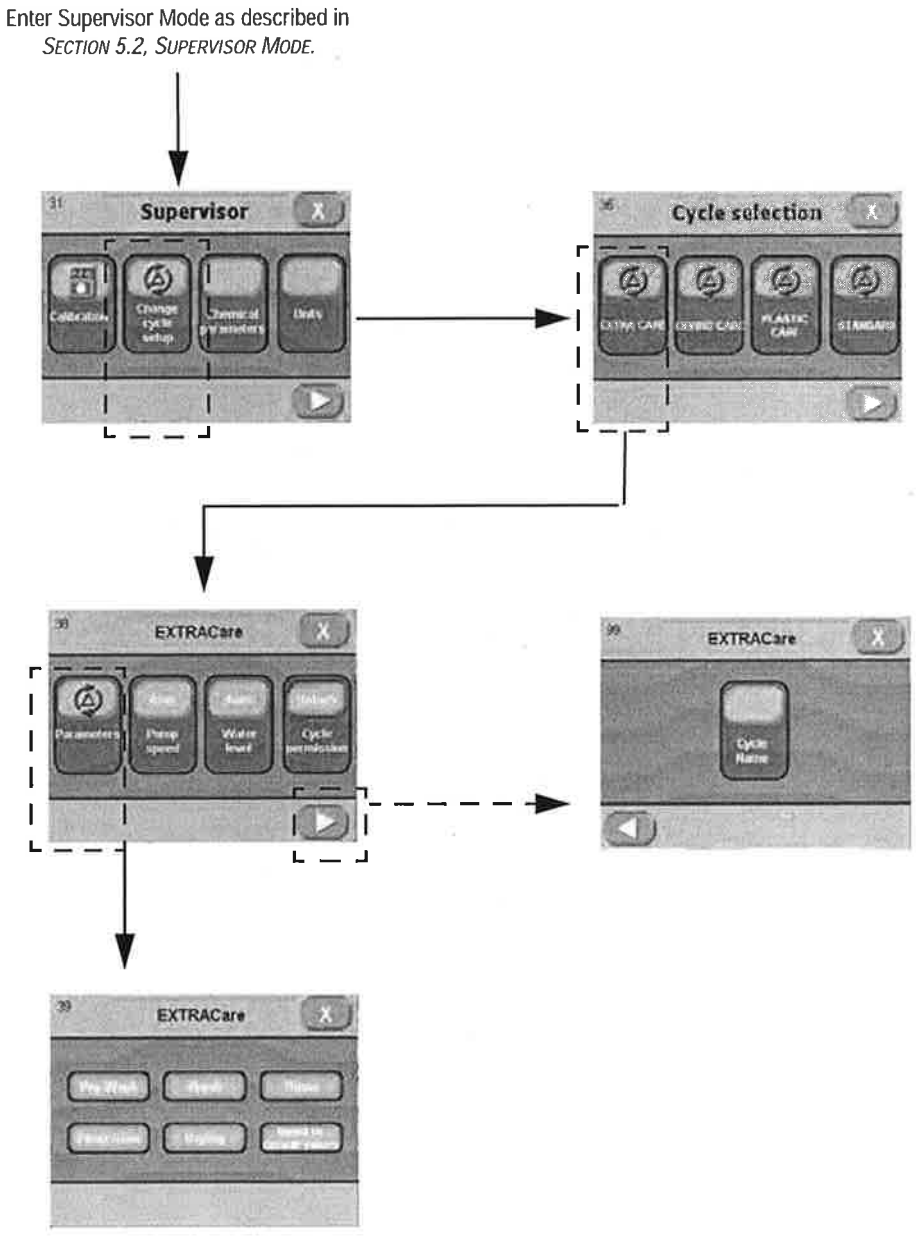


Figure 5-2. Change Cycle Setup Flowchart

5.2.4 Verifying Chemical Concentration

See Figure 5-3.

To verify or establish chemical concentration, operator may collect water from sample port located under sump.

1. Loosen screw on tip of sampling valve assembly.
2. On Ready Mode, press **SELECT CYCLE** touch pad. Select the cycle where injection time was modified. Press on corresponding touch pad.
3. Press **CYCLE START** touch pad to run cycle.
4. While cycle is running, let water recirculate and when Wash treatment starts, press **STOP** touch pad.
5. To collect a sample, place a small container under sample port and turn knob counterclockwise. To close sample port, turn knob clockwise.
6. Analyze chemical concentration from sample.
7. Press **RESUME** touch pad and let cycle run.

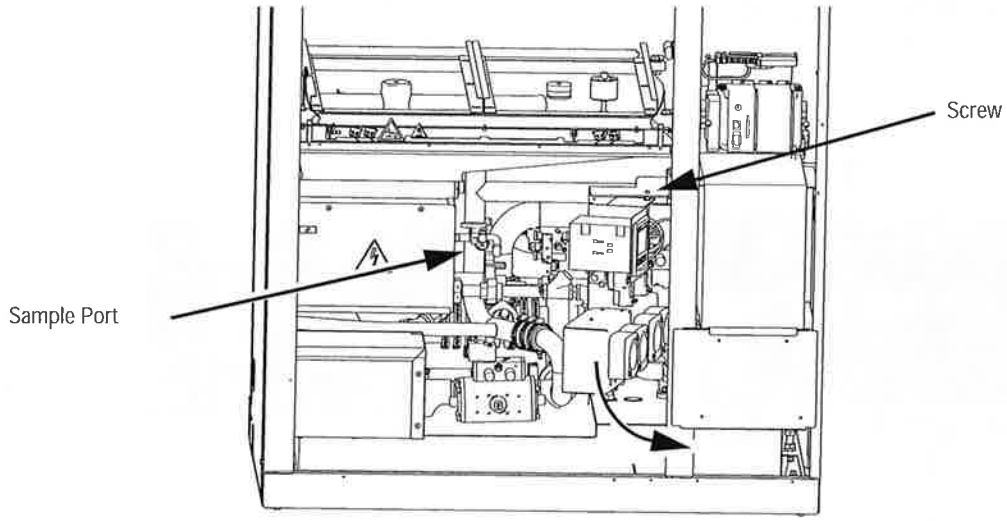


Figure 5-3. Sample Port

ROUTINE MAINTENANCE

6

⚠ *IMPORTANT: A listing of the Safety Precautions to be observed when operating and servicing this glassware washer can be found in SECTION 1 of this manual. Do not operate the equipment until you have become familiar with this information.*

6.1 General

⚠ **WARNING – PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD:**

- **Regularly scheduled preventive maintenance is required for safe and reliable operation of this equipment. Contact STERIS to schedule preventive maintenance or obtain the necessary maintenance manual if preventive maintenance is performed by Customer.**
- **Repairs and adjustments to this equipment must be made only by STERIS or STERIS-trained service personnel. Repairs and adjustments performed by unqualified personnel or installation of unauthorized parts could cause personal injury, result in improper equipment performance, void the warranty or result in costly damage. Contact STERIS regarding service options.**

⚠ **WARNING – PERSONAL INJURY HAZARD: Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.**

The sample routine maintenance guide (**Table 6-1**) included in this section should be used as a guideline for determining the frequency of maintenance. This proves useful in helping ensure proper maintenance of your glassware washer.

Maintenance procedures described in this section must be performed as required at the suggested frequency. Indicated frequencies are minimums and can be changed if glassware washer use warrants.

If a problem occurs, refer to *SECTION 7, TROUBLESHOOTING.*

For complete replacement parts listing, refer to *Section 8. Replacement Parts.*

6.2 Routine Maintenance

NOTE: Routine maintenance procedures included in **Table 6-1** are to be performed by the Operator at indicated frequencies. For detailed preventive maintenance procedures to be performed by a STERIS-trained service technician, refer to Preventive Maintenance Checklist included in *Maintenance Manual (P764334-377).*

Table 6-1. Routine Maintenance Check List

Recommended frequency of inspection is indicated in the right column. Usage and utility conditions may require more or less frequent inspections.		**Suggested Frequency**
1.0	**PREPARATION FOR ROUTINE MAINTENANCE**	
1.1	Discuss equipment operation with department personnel.	4 X/year
1.2	Inspect printouts for signs of trouble.	4 X/year
1.3	When required by procedure, shut off all building services and drain all lines.	As required
2.0	**PLC CONTROL AND PRINTER**	
2.1	Inspect printer for proper operation.	4 X/year
2.2	Verify printout for darkness, missing dots, etc.	4 X/year
2.3	Verify proper date and time are displayed; if not, reset.	4 X/year
2.4	Verify paper take up is working properly.	4 X/year
3.0	**DOOR ASSEMBLY**	
3.1	Verify operation of door obstruction switches.	2 X/year
3.2	Verify door gasket for wear and tear. Verify gasket is properly inserted in door frame. If gasket needs to be replaced, call STERIS.	1 X/month
3.3	Clean each door gasket by brushing them. Disinfect gaskets using a germicidal detergent.*	1 X/month

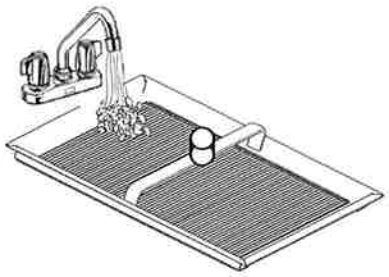
Table 6-1. Routine Maintenance Check List (Cont'd)

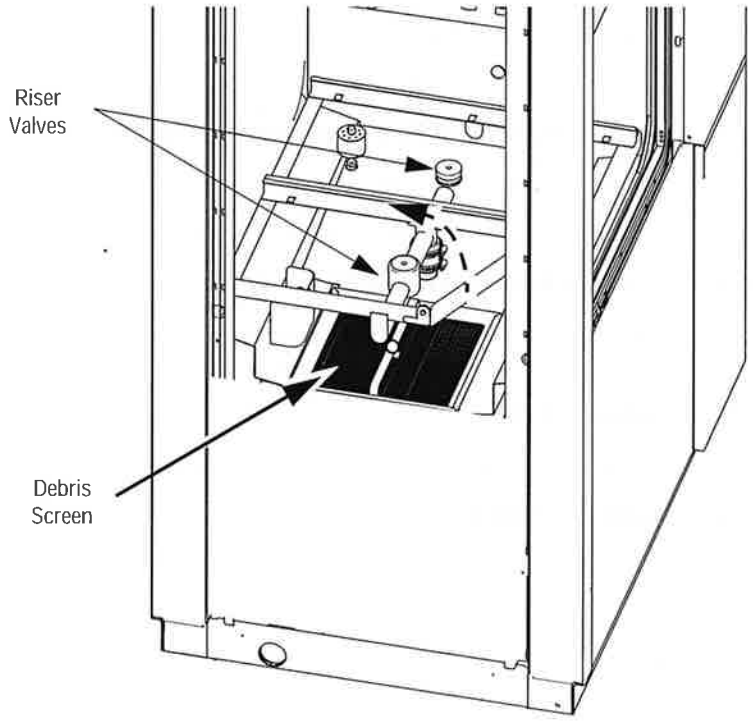
Recommended frequency of inspection is indicated in the right column. Usage and utility conditions may require more or less frequent inspections.		**Suggested Frequency**
4.0	**CHAMBER COMPONENTS**	
4.1	Inspect rotary spray arm assemblies for free movement and no clogged holes (see *SECTION 6.4, WEEKLY CLEANING*).	1 X/week
4.2	Verify bushings are in good condition and properly installed over and under rotary spray arm hub (see *SECTION 6.4, WEEKLY CLEANING*).	1 X/week
4.3	Clean debris screens in wash chamber (see *SECTION 6.3, DAILY CLEANING*).	every day
4.4	Remove hard water deposits from interior of chamber (use DESCALER cycle; (see *SECTION 6.5.1, REMOVE HARD WATER DEPOSITS*).	1 X/month
4.5	Clean glassware washer exterior (see *SECTION 6.4, WEEKLY CLEANING*).	1 X/week
4.6	Clean water outlet connection in chamber (see *SECTION 6.3, DAILY CLEANING*).	1 X/week
5.0	**SUPPLY-LINE STRAINERS AND HEPA FILTER**	
5.1	Verify suction tube is not clogged, cracked or distorted. If damaged, call STERIS.	4 X/year
5.2	Verify operation of chemical low-level switches.	4 X/year
6.0	**CHEMICALS AND INJECTION PUMPS**	
	Visually inspect chemical containers to verify quantity of chemical remaining (see *SECTION 6.6, CHEMICAL CONTAINER REPLACEMENT*).	every day
7.0	**FINAL TEST**	
	Verify glassware washer has proper labels (caution, warning, etc.).	4 X/year
8.0	**ACCESSORIES**	
	Visually Inspect plastic spindle tips and wheels from accessories. Replace as needed to prevent damage to glassware (see *SECTION 6.9, PLASTIC SPINDLE TIPS AND WHEELS INSPECTION*).	1 X/week

6.3 Daily Cleaning

WARNING – SLIPPING HAZARD: To prevent slips, keep floors dry. Promptly clean up any spills or drippage. For spills or drippage of detergents or other chemicals, follow safety precautions and handling procedures set forth on detergent or chemical label and/or Safety Data Sheet (SDS).

1. After last cycle of day, allow unit to cool. Remove debris screen as follows:
   a. Raise left portion of loading guide in a 90° angle; unscrew debris screen handle; then, remove debris screen and suction filter from bottom of wash chamber.
   b. Clean debris screen and filter under running water. Always clean screens while they are still wet, before foreign matter dries.
2. Remove riser valves (two on Reliance 400XLS, three on Reliance 500XLS) and inspect for debris. Brush and rinse under tap water if necessary.





Reliance 400XLS Shown

Figure 6-1. Debris Screen

6.4 Weekly Cleaning

WARNING – SLIPPING HAZARD: To prevent slips, keep floors dry. Promptly clean up any spills or drippage. For spills or drippage of detergents or other chemicals, follow safety precautions and handling procedures set forth on detergent or chemical label and/or Safety Data Sheet (SDS).

CAUTION – POSSIBLE EQUIPMENT DAMAGE: Use nonabrasive cleaners when cleaning unit. Follow directions on containers and rub in a back-and-forth motion (in same direction as surface grain). Abrasive cleaners will damage stainless steel. Cleaners rubbed in a circular motion or applied with a wire brush or steel wool on door and chamber assemblies can be harmful to stainless steel. Do not use these cleaners on painted surfaces.

On a weekly basis, perform the following routine cleaning procedures:

1. Clean washer exterior as follows: Using a general cleaner for general stains, a stainless-steel stain remover for stubborn stains and a stainless-steel polish to keep equipment looking like new.
   a. Using a damp cloth or sponge, apply cleaner in a back-and-forth motion, rubbing in same direction as surface grain.
   b. Thoroughly wipe off cleaner.
   c. Polish surface with a clean, dry, lint-free cloth.
2. Clean wash chamber rotary spray arm assemblies as follows:

   NOTE: There are two loose bushings, one under and one over rotary spray hub. When lowering rotary spray assembly, bushings fall. Ensure to hold on to bushings while removing rotary spray assembly.

   a. Remove screw securing rotary spray arm assembly on top of chamber and lower rotary spray arm assembly.
   b. Remove locking pin securing each spray arm on rotary spray arm hub.
   c. Use fine wire (approximately wire gauge of paper clip) to clean sediment from spray nozzles. Rinse under running water.
   d. Reinstall locking pin to secure both spray arms.
   e. Place bushings on rotary spray arm hub and reattach rotary spray arm assembly to top of wash chamber.

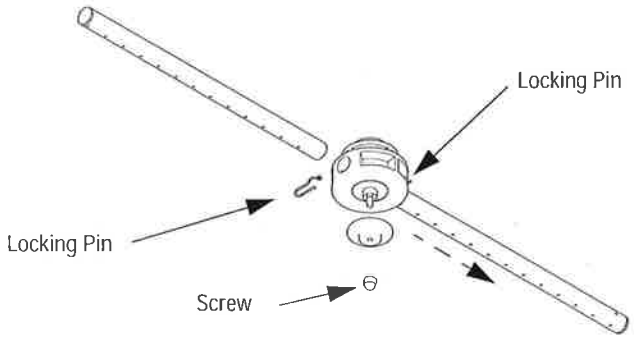


Figure 6-2. Rotary Spray Arms

3. Clean Shelving System Rotary Spray Arms as follows (see Figure 6-3):
   a. Remove shelf from inside wash chamber.
   b. Place shelf upside down on a flat surface to remove rotary spray arms.
   c. Remove screw and washer holding hub in place. Remove bushing and spray arms assembly.

d. Remove set screw to remove one arm from the assembly.

NOTE: There are two set screws holding each spray arm in place.

e. Use a fine wire (approximately wire gauge of paper clip) to clean sediment from spray nozzles. Rinse under running water.

f. Reinstall spray arm and install screw previously removed.

g. Reinstall spray arm assembly on shelf. Secure using washer and screw previously removed.

h. Repeat for the other assembly.

NOTE: Shelf is turned upside down

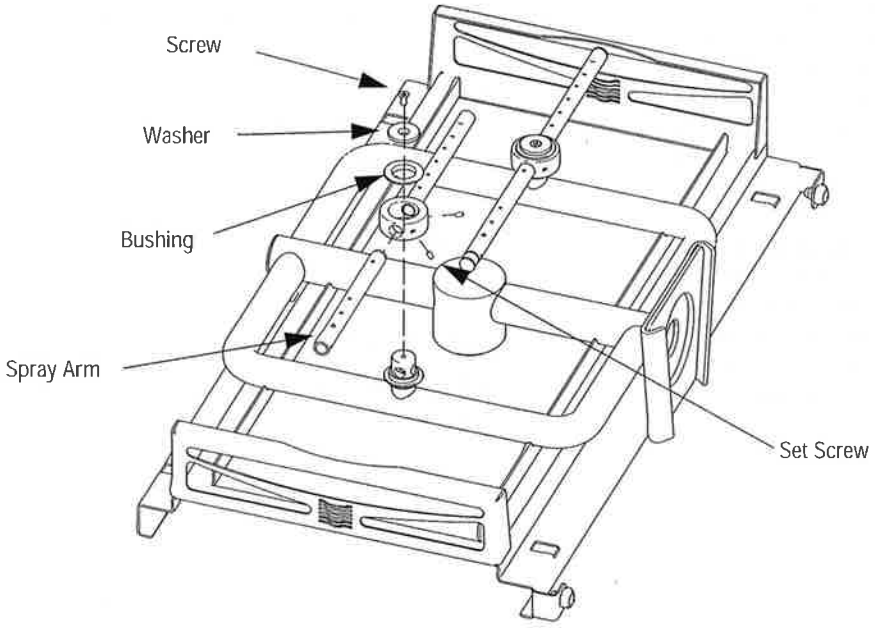


Figure 6-3. Remove Spray Arms from Shelving System

6.5 Monthly Cleaning

6.5.1 Remove Hard Water Deposits

⚠ WARNING – CHEMICAL BURN AND/OR EYE INJURY HAZARD:

- **Detergents are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to swallow. Read and follow the precautions and instructions on the detergent label and in the Safety Data Sheet (SDS) prior to handling the detergent, refilling the detergent container or servicing the detergent injection pump and lines. Wear appropriate Personal Protective Equipment (PPE) whenever handling the detergent or servicing the detergent injection pump and lines.**
- **Wear appropriate Personal Protective Equipment (PPE) when using a descaling product. Avoid contact with the eyes or skin. If a descaling product spills or splashes on you, flush the affected area with water for 15 minutes. If swallowed, DO NOT induce vomiting. Administer an alkali with plenty of water. Seek medical attention immediately.**

NOTE: Depending on hardness of water being used, it may be necessary to remove hard water deposits more often. Remove deposits from chamber and accessories whenever deposits become visible.

Remove hard water deposits from chamber and loading accessories as follows, using DESCALER cycle especially designed for this purpose:

1. In Ready Mode screen, press **DOOR** touch pad to open load door.
2. Place empty rack in wash chamber over manifold connector.
3. Press **DOOR** touch pad to close door.
4. In Ready Mode screen, press **SELECT CYCLE** touch pad. Display advances to Cycle menu; Press **RIGHT** arrow touch pad to scroll cycle menus until DESCALER cycle is available.
5. Press **DESCALER** touch pad to select DESCALER, cycle starts processing.
6. Descaler cycle will be performed automatically.
7. When cycle is completed, press **DOOR** touch pad or (if double door units) **DOOR OPEN** button on unload side to open door and allow wash chamber to cool down.
8. Verify sump filters in bottom of sump for debris. If debris is present, rinse filters under running water to clean. Display returns to Ready Mode screen.

IMPORTANT: *If an alarm occurs during Descaler, respond to the alarm and try to repair the bad condition. Press STOP touch pad; then, press ABORT to abort cycle. Restart a new DESCALER cycle.*

⚠ CAUTION – POSSIBLE EQUIPMENT DAMAGE: When choosing a detergent, select one with a low-chloride content. Detergents with a high-chloride content must not be used, as such detergents may harm stainless steel.

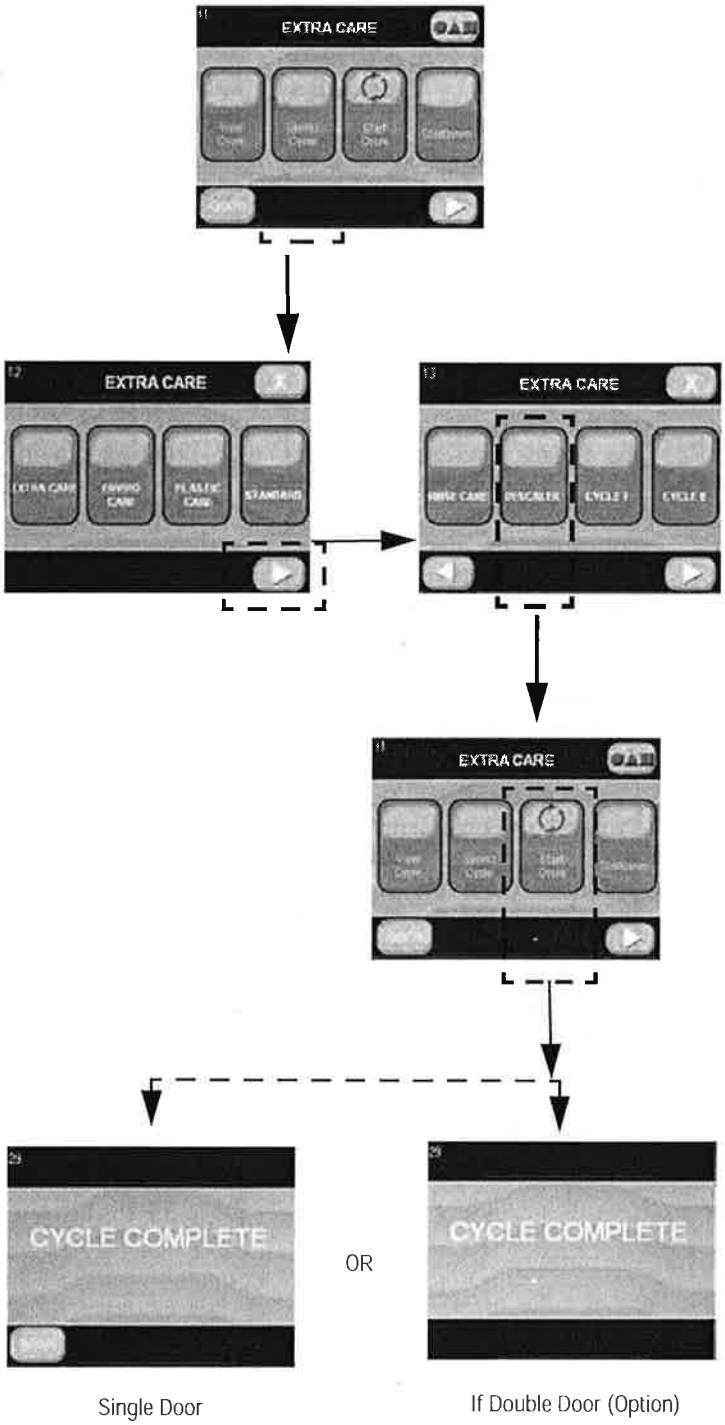


Figure 6-4. DESCALER Flow Chart

6.5.2 Clean Building Supply-Line Strainers

⚠ WARNING – BURN HAZARD: Wear appropriate Personal Protective Equipment (PPE) and allow piping to cool before inspecting and/or cleaning supply-line strainers.

NOTE: Piping tools are required. Contact facility maintenance technician for this procedure.

Clean building supply-line strainers as follows:

1. Lockout/tagout building electrical disconnect switch (circuit breaker) to **OFF** position.
2. Close building supply-lines: hot water, cold water, pure water and steam (if option applies).
3. Remove upper access panels.
4. Remove and clean strainers under running water.
5. Reinstall strainers.
6. Reinstall access panels.
7. Open building supply lines.
8. Restore power to unit.

6.6 Chemical Container Replacement

⚠ WARNING – CHEMICAL BURN AND/OR EYE INJURY HAZARD: Detergents are caustic and can cause adverse effects to exposed tissues. Do not get in eyes, on skin or attempt to swallow. Read and follow the precautions and instructions on the detergent label and in the Safety Data Sheet (SDS) prior to handling the detergent, refilling the detergent container or servicing the detergent injection pump and lines. Wear appropriate Personal Protective Equipment (PPE) whenever handling the detergent or servicing the detergent injection pump and lines.

⚠ CAUTION – POSSIBLE EQUIPMENT DAMAGE: When choosing a detergent, select one with a low-chloride content. Detergents with a high-chloride content must not be used, as such detergents may harm stainless steel.

NOTE: For cleaning and descaling products, note the following:

1) Contact STERIS for information on specific cleaning and descaling products recommended for use with this equipment.

2) Always use a non-foaming detergent for effective cleaning and proper pump operation. Detergents with a high chloride content should not be used, as chlorides are harmful to stainless steel. Refer to detergent specifications in SECTION 2.3, DETERGENTS AND CHEMICAL ADDITIVES SPECIFICATIONS, and follow detergent manufacturer's recommendations for amount of detergent to be used.

1. If detergent is low or has run out, install a new container.
2. Place low level sensor upright in container (refer to Figure 6-5).
3. Insert color-coded pickup tube into new corresponding container. Ensure pickup tube is upright.
4. Refer to *SECTION 4.2, PRIMING PROCEDURE*, to fill tubing with detergent if chemical line needs priming.

IMPORTANT: *DO NOT insert suction tube into container without verifying it is for the proper application (refer to SECTION 2.3, DETERGENTS AND CHEMICAL ADDITIVES SPECIFICATIONS, for details).*

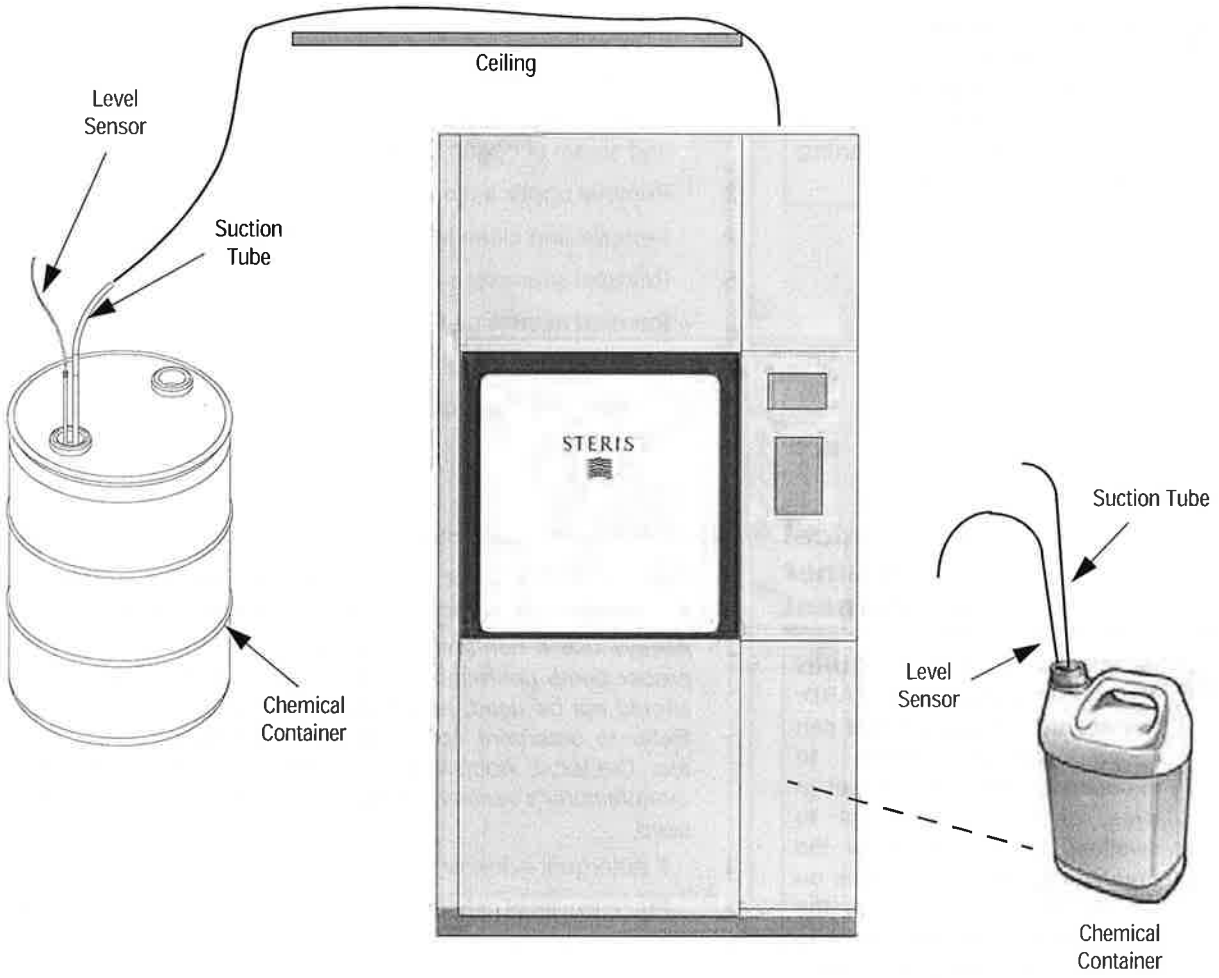


Figure 6-5. Chemical Container Replacement

6.7 Door Safety Test (Limit Switch)

⚠ WARNING – BURN HAZARD: Wear appropriate Personal Protective Equipment (PPE) before opening wash chamber door, wait until water flow stops before slowly opening door. Hot water/steam may be sprayed through door opening.

⚠ WARNING – PERSONAL INJURY HAZARD: Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.

Every 180 days, a door safety check is required on door bottom limit switches. There are four door switches to verify inside each door.

1. After 180 days, at the end of a cycle display shows:

   DOOR OBSTRUCTION SWITCH TEST DUE

2. Press **YES** to perform test.
3. A numeric keyboard appears.
4. Enter supervisor password and press **ENTER** touch pad. Display advances to open load door sequence.

   NOTE: Pressing NO touch pad will return screen to ready mode. it will be possible to perform a cycle and warning Door Maintenance message will appear immediately after cycle.

5. Press **OPEN** touch pad to open load door. Door starts opening and screen advances to obstruction switch test.
6. Press on the touch pad corresponding to the first door switch to activate switch. Touch pad is highlighted to indicate door switch is activated.
7. When door is completely open, insert an insulated screwdriver (shaft length of at least 2" [51 mm] and shaft diameter of 1/10" [3 mm] or less) into right hole of protection bar on door bottom.
8. A beep sounds to indicate limit switch is working properly. If no beep is heard, reinsert insulated screwdriver, if there is no sound, limit switch is defective, call STERIS.
9. Press touch pad again to deactivate door switch.
10. Proceed to next door switch. Repeat **Steps 6** to **9** until all door switches have been tested.

    NOTE: Door switch can be cancelled at any time during process. If test is cancelled, warning Door Maintenance message will appear immediately after performing a cycle and will be repeated until test is completed.

11. **If double door unit**, screen advances to unload door and prompts operator to open unload door.
12. Once unload door is open, repeat **Steps 6** to **10** on unload door.
13. At the end of test, **DOOR SAFETY TEST COMPLETED** appears on display; then, screen advances automatically to Ready Mode screen.

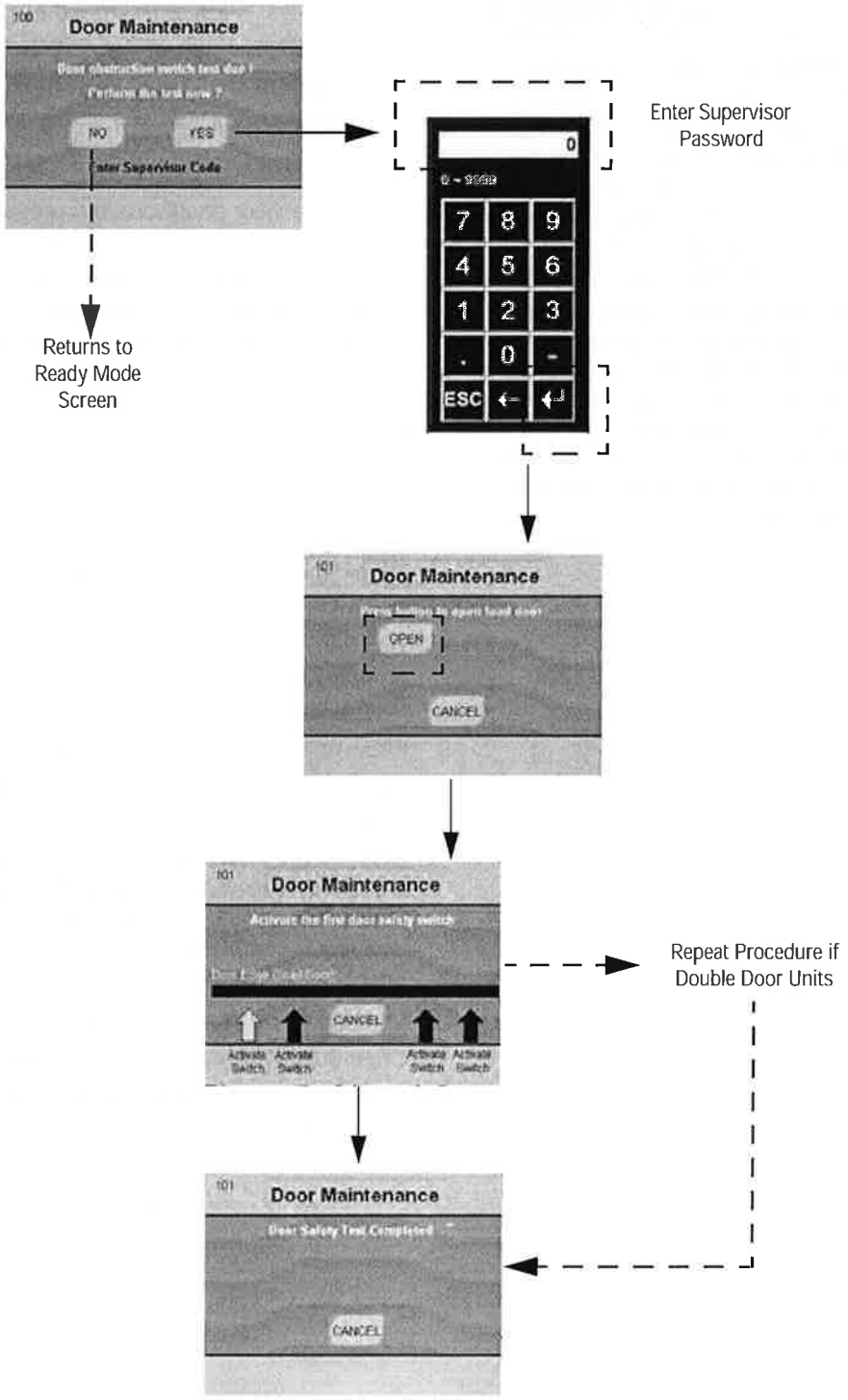


Figure 6-6. Door Safety Test Flowchart

6.8 Verify Door Automatic Stop

Verify operation of vertical sliding doors. Verify door operates smoothly. Refer to *SECTION 7, TROUBLESHOOTING,* if door does not operate smoothly.

Verify operation of each door safety switch as follows:

1. Wearing appropriate Personal Protective Equipment (PPE), Press **DOOR** to open door and attempt to initiate a cycle with load side door open.
2. Close door and start a cycle. Wearing appropriate Personal Protective Equipment (PPE), press **DOOR** to verify operation of automatic stop.
3. **For double door units:** repeat for unload side door. Use **OPEN DOOR** and **CLOSE DOOR** buttons.

6.9 Plastic Spindle Tips and Wheels Inspection

Plastic spindle tips and wheels from accessories must be inspected regularly (once every three months) and replaced as needed to prevent damage to glassware.

Refer to *SECTION 8, REPLACEMENT PARTS AND PRODUCTS,* for a list of replacement parts.

6.10 Changing Printer (Option) Paper Roll

See Figure 6-7.

The printer paper roll should be changed whenever a colored stripe is visible on one or both edges of the printout paper or if paper feed button LED is ON.

NOTE: When changing paper roll, take note of the following:

1) Use a paper that meets the printer specifications.

2) Do not use a paper that is glued to the core.

3) Do not fold leading edge of paper when you use a new roll.

4) Do not operate the printer without paper or ribbon; this leads to rapid deterioration of the print head.

5) Do not use any sharp object to remove paper jams.

6) Do not pull on the paper while the printer is printing.

7) Do not operate printer without paper.

1. Press on the dots on printer cover to release latch; pull cover out towards you to completely disengage cover; then, gently swing it down 180° until it rests against equipment panel (see Figure 6-7).
2. If LED is ON, press paper feed button so paper clears the ink cartridge area.
3. Tear paper between take-up spool and printer.
4. Remove take-up spool from drive by inserting fingers in cavity and lifting slightly to pull take-up spool out.
5. Remove used paper from spindle.
6. Press on the indentation on the right side wall of paper cover, pull gently to release and swing door to the left until it is open (see Figure 6-8).
7. Remove any remaining paper out of printer roller mechanism.
8. Cut leading edge of paper roll straight and square with the sides as shown on Figure 6-9.
9. Mount paper roll on paper-roll-holder (the two plastic protrusions shaped like domes, inside paper compartment). Paper must curl up as shown (see Figure 6-10). Paper roll core must properly align with paper-roll-holder. Make sure paper-roll-holder fits inside paper core and paper roll can turn freely.
10. Hold both edges of paper and insert it straight into paper slot of printer mechanism. Printer feeds paper automatically.
11. Press **FEED** Button to get desired length of paper fed through mechanism. Do not pull paper in either direction through printer mechanism.
12. Remove take-up spool and insert leading edge of paper into slit on its shaft. Wrap paper around spool two or three times tightly and install take-up spool in printer. First make sure that gear on take-up spool aligns with gear on printer and then press the other end of shaft so it snaps in on metal frame.

13. Close paper cover and then close front cover.
14. Check paper feed button LED light. It should be OFF.

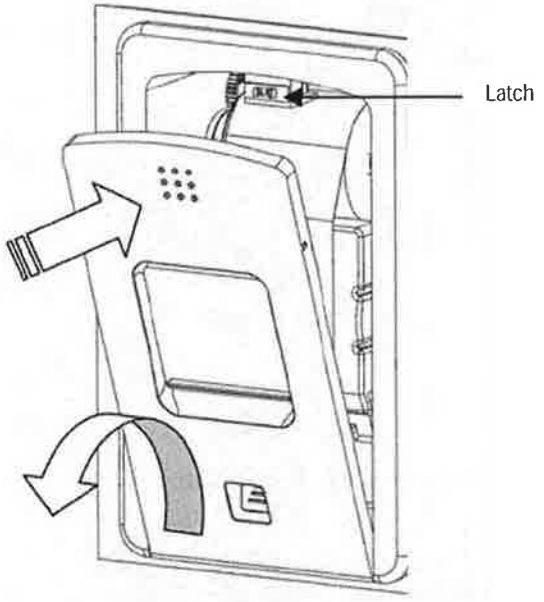


Figure 6-7. Open Printer Cover

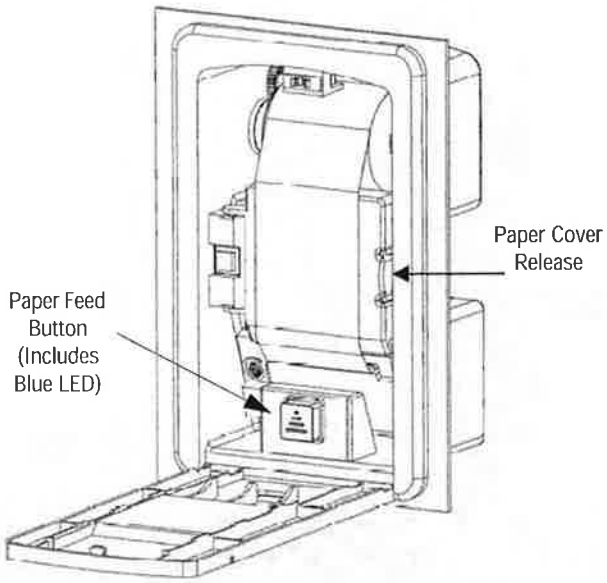


Figure 6-8. Open Paper Cover Compartment

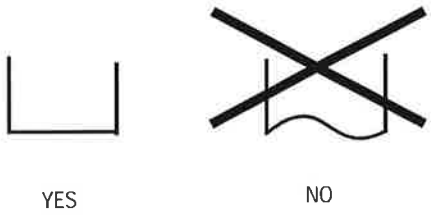
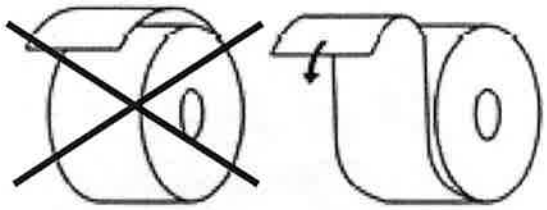


Figure 6-9. Cut Paper Edge



NO YES

Figure 6-10. Install Paper Roll

6.11 Changing Printer (Option) Ribbon Cartridge

See Figure 6-11.

1. Open printer front cover.
2. Remove paper inside printer mechanism. Do not pull paper out. Use a pair of scissors to cut paper, where it is being fed inside mechanism and use Paper Feed Button to remove paper remaining in printer.
3. Remove old cartridge by pressing cartridge, where marked "PUSH", on right side.
4. Turn Ink Cartridge Knob in direction of arrow to take up any slack in ribbon.
5. Place new cartridge on mechanism so ribbon aligns between print head and platen. Push down until it clicks in.
6. Turn Ink Cartridge Knob in direction of arrow a few times to take up any slack and make sure ribbon is installed properly without wrinkles or creases.

NOTE: When changing ribbon cartridge, take note of the following:

1) Make sure power is turned off when replacing ribbon cartridge.

2) Replace ribbon cartridge before it is completely worn out and dry.

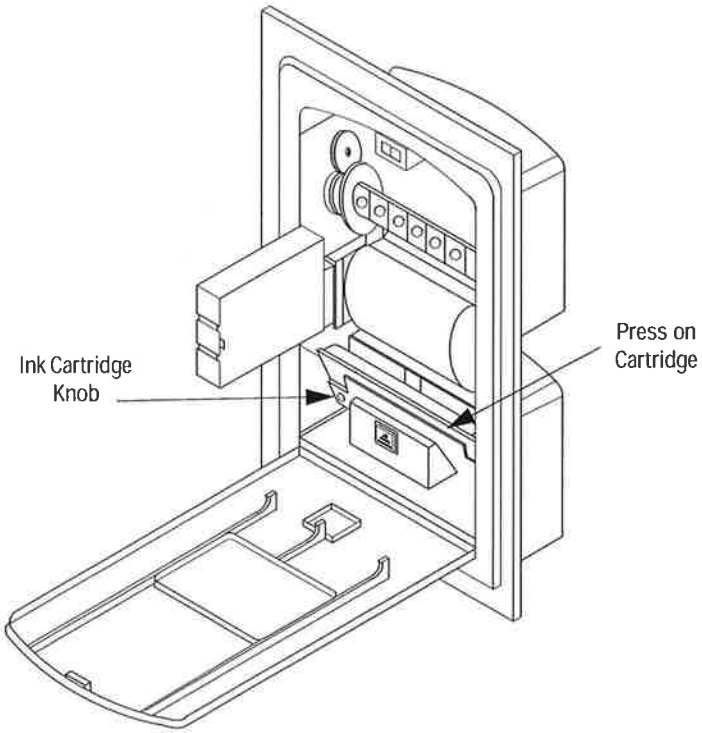


Figure 6-11. Changing Printer Ribbon Cartridge

TROUBLESHOOTING

7

IMPORTANT: *A listing of the Safety Precautions to be observed when operating and servicing this glassware washer can be found in Section 1 of this manual. Do not operate the equipment until you have become familiar with this information.*

WARNING – PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: Repairs and adjustments to this equipment must be made only by STERIS or STERIS-trained service personnel. Repairs and adjustments performed by unqualified personnel or installation of unauthorized parts could cause personal injury, result in improper equipment performance, void the warranty or result in costly damage. Contact STERIS regarding service options.

WARNING – ELECTRIC SHOCK AND/OR BURN HAZARD:

- **STERIS strongly recommends service be performed only by STERIS or STERIS-trained service personnel. Service personnel must disconnect all utilities to unit before servicing. No one should service unit unless all utilities have been properly locked out. Always follow local electrical codes and safety-related work practices.**
- **Fasteners and star washers are used to ensure protective bonding continuity. Always reinstall any star washer which may have been removed during installation or servicing.**

This section describes the types of washer malfunctions which may occur and indicates probable causes and corrective actions.

If unable to correct problem with use of Troubleshooting Charts (**Table 7-1** and **Table 7-2**), or if a problem occurs that is not described on the charts, please call STERIS. Service charges may be incurred. Consult your warranty for details. **NEVER PERMIT UNQUALIFIED PERSONS TO SERVICE THE GLASSWARE WASHER.**

Table Descriptions:

Table 7-1 – Problems where NO alarm screen and printout occur.

Table 7-2 – Problems where alarm screen and/or printout occur.

WARNING – PERSONAL INJURY HAZARD: Risk of pinch point between door and upper panel. Do not push on top portion of doors; do not push on door when door is rising; do not push on door when door is jammed.

WARNING – SLIPPING HAZARD: To prevent slips, keep floors dry. Promptly clean up any spills or drippage. For spills or drippage of detergents or other chemicals, follow safety precautions and handling procedures set forth on detergent or chemical label and/or Safety Data Sheet (SDS).

Table 7-1. Troubleshooting Chart – No Alarm Screen nor Printout

PROBLEM	POSSIBLE CAUSE AND CORRECTION
1. Interior light does not turn on.	1. Breaker tripped – call STERIS.* 2. Defective lamp – call STERIS.* 3. Defective Power supply – call STERIS.* 4. Washer is in Shutdown mode – press **WAKE** touch pad.
2. If washer is equipped with double door, unload door fails to open.	1. Unload door does not open until washer has run one complete cycle.
3. Control panel assembly (printer/display) does not operate. Display is blank when building electrical supply disconnect switch is ON.	1. Breaker tripped – call STERIS.* 2. Defective Power supply – call STERIS.* 3. Display defective – call STERIS.* 4. Printer defective – call STERIS.*
4. Printer (option) does not operate (display is blank) when building electrical supply disconnect switch is ON.	1. Cable unplugged - verify cable is plugged. 2. Printer is defective - call STERIS.*
5. Cycle does not start when **CYCLE/ START** touch pad is pressed or pump does not start during a treatment.	1. Chamber door open. Close door and press **START CYCLE** touch pad. 2. Cycle locked – unlock cycle in Supervisor mode. 3. If condition reoccurs, call STERIS.*
6. Generated printout is light or blank, or parts of characters are missing on printout.	1. Printer paper installed backward. Reinstall paper roll with paper feeding downward from back of roll (refer to *SECTION 6.10, CHANGING PRINTER (OPTION) PAPER ROLL*). 2. Incorrect printer paper used – use recommended products. Use only STERIS paper (P387352-558). 3. Replace ink ribbon (P150825-440). 4. Printer head is dirty – call STERIS.* 5. Printer is defective – call STERIS.*
7. Insufficient or no water entering chamber through rotary spray arm assemblies and/ or washing accessories manifolds.	1. Accessory header(s) incorrectly positioned in chamber. Ensure each accessory header is positioned directly over a manifold connector. 2. Rotary spray arms clogged. Clean spray arms (refer to *SECTION 6.4, WEEKLY CLEANING*). 3. Chamber debris screens clogged. Clean screens (refer to *SECTION 6.3, DAILY CLEANING*). 4. If condition reoccurs, call STERIS.*
8. Water leaks from unit.	1. Tighten all clamps and connections. 2. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-1. Troubleshooting Chart – No Alarm Screen nor Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
9. Pump starts before appropriate chamber water level is reached.	1. Verify water level sensor float moves freely. Clean as necessary. 2. If condition reoccurs, call STERIS.*
10. Pressure pump does not run during the recirculation phase	Call STERIS.*
11. Foam in chamber.	1. Wrong type of detergent. Refer to detergent specifications in *SECTION 2.3, DETERGENTS AND CHEMICAL ADDITIVES SPECIFICATIONS*, and follow detergent manufacturer's recommendations for amount of detergent to be used. 2. Too much chemical is injected during treatment. Verify chemical concentration in Automatic mode. 3. If condition reoccurs, call STERIS.*
12. Insufficient or no water entering chamber during treatment.	1. Supply valves not fully open. Open building and washer supply valves. Supply line pressure must be as specified on equipment drawing (920-514-458 for Reliance 400XLS or 920-514-459 for Reliance 500XLS). 2. If condition reoccurs, call STERIS.*
13. Chamber does not drain completely.	1. Chamber debris screens clogged. Clean screens (refer to *SECTION 6.3, DAILY CLEANING*). 2. Drain line plugged. Flush out drain line. 3. Building piping obstructed. Verify piping and flush out if necessary. 4. If condition reoccurs, call STERIS.*
14. Chemical pump(s) malfunction	1. Verify pump squeeze tubes for damage or wear - Replace squeeze tubes. 2. Lubricate pump and squeeze tubes. 3. Defective chemical injection pump - Call STERIS.*
15. Loads come out dirty.	1. Empty chemical supply. Install new supply as explained in *SECTION 6.6, CHEMICAL CONTAINER REPLACEMENT.* 2. Wrong type of detergent used. Refer to detergent specifications in *SECTION 2.3, DETERGENTS AND CHEMICAL ADDITIVES SPECIFICATIONS* and follow detergent manufacturer's recommendations for amount of detergent to be used. 3. Rotary spray arms clogged. Clean spray arms (refer to *SECTION 6.4, WEEKLY CLEANING*). 4. Call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-1. Troubleshooting Chart – No Alarm Screen nor Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
16. Loads come out wet	1. Increase drying time duration. 2. Check if glassware is properly loaded (see *SECTION 4.6, LOADING GLASSWARE WASHER*). 3. Spindles and spray arms are clogged - Check and clean if necessary (see *SECTION 6.4, WEEKLY CLEANING*). 4. Check accessory or rack is properly aligned with wash chamber manifolds. 5. Call STERIS.*
17. Abnormal amount of vapor coming out of the exhaust connection (vented unit)	External fan supplied by Customer: Verify and replace as necessary.
18. Pump runs at low speed when universal loading shelf installed.	1. Universal shelving accessory misplaced. Remove universal shelving system and replace it correctly (refer to *SECTION , UNIVERSAL SHELVING SYSTEM (ACCESSORY)*). 2. Low speed forced in supervisor cycle parameters. 3. If condition reoccurs, call STERIS.*
19. If option is present, printer is not working.	1. There's no paper inside printer compartment - Verify and replace a printer roll if necessary. 2. Paper jammed in printer - Verify and clear out jam as necessary. 3. Printer function has been disabled in Supervisor mode - Enable printer in Service mode. 4. Printer is defective - Call STERIS.*
20. Shelving connection leaking.	Remove and clean connection and u-cup blue silicone seal.
21. PROPLUS water connection leaking.	Remove and clean connection and u-cup blue silicone seal.

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout

PROBLEM	POSSIBLE CAUSE AND CORRECTION
1. Sump water level not reached within the allowed time (adjustable parameter). Alarm sounds and display shows: **SUMP TOO LONG TO FILL** Printout message: YYYY-MM-DDHH:MM:SS ALARM: SUMP TOO LONG TO FILL	Possible causes: • Insufficient amount of water entering sump; • Control malfunction; • Defective water level sensors, fill valve or drain valve. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Verify unit water supply line shut-off valve is fully open – open if necessary. 3. Verify water supply line pressure meets equipment drawing specifications. 4. Press **RESUME** touch pad to resume operation. 5. If condition reoccurs, call STERIS.*
2. Once drain is completed, sump low level or sump high level switches are still activated. Alarm sounds and display shows: **SUMP DRAIN TOO LONG** Printout message: YYYY-MM-DDHH:MM:SS ALARM: SUMP DRAIN TOO LONG	Possible causes: • Obstruction in drain line; • Defective water level sensor; • Defective drain valve; • Defective filling valve; • Defective transfer valve. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Check for obstruction in drain line. 3. Press **RESUME** touch pad to resume operation. 4. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
3. When heating sump, control waits 60 seconds and then monitors the temperature rise. Temperature rise must be more than 1°C within the SUMP HEATING ALARM INTERVAL (Default SUMP HEATING ALARM INTERVAL is 20 seconds). Alarm sounds and display shows: **SUMP TOO LONG TO HEAT** Printout message: YYYY-MM-DDHH:MM:SS ALARM: SUMP TOO LONG TO HEAT	Possible cause: • Steam pressure too low; • Condensate return line pressure too high; • Clogged steam trap; • Clogged steam inlet strainer; • Steam inlet valve defective; • Transfer valve fail close. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Check if isolation valve on steam line and condensate return are open. 3. Check if steam supply line pressure meets equipment drawings requirements. 4. Check if condensate return line pressure meets equipment drawing requirements (maximum pressure). 5. Steam line strainer may be clogged. Check strainer and clean as necessary. 6. Press **RESUME** touch pad to resume operation. 7. If conditions reoccurs, call STERIS.*
4. RTD signal is disconnected or shorted. Alarm sounds and display shows: **SUMP RTD DEFECTIVE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: SUMP RTD DEFECTIVE	Possible cause: • Sump RTD or RTD cable broken. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad to abort cycle operation and call STERIS.*

**Service charge may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
5. Sump water temperature reaches a temperature >= BOILING TEMPERATURE -2°C. Alarm sounds and display shows: **SUMP TEMPERATURE TOO HIGH** Printout message: YYYY-MM-DDHH:MM:SS ALARM: SUMP TEMPERATURE TOO HIGH	Possible cause: • Steam valve failed open; • Sump RTD defective. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad to abort cycle operation and call STERIS.*
6. **If washer is equipped with heated pure water tank option**, pure water tank set temperature is not reached within allowed time (adjustable parameter). Alarm sounds and display shows: **PURE WATER TANK TOO LONG TO HEAT** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK TOO LONG TO HEAT	Possible cause: • Steam pressure too low; • Condensate return line pressure too high; • Clogged steam trap; • Clogged steam inlet strainer; • Steam inlet valve defective; • Pure water tank RTD or RTD cable broken. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Check if steam supply line shut-off valve is open. 3. Check the isolation valve on steam line and condensate return is open. 4. Check if steam supply line pressure meets equipment drawing requirements (minimum pressure). 5. Check if condensate return line pressure meets equipment drawing requirements (maximum pressure). 6. Press **RESUME CYCLE** touch pad to resume operation. 7. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
7. **If washer is equipped with heated pure water tank option**, pure water tank RTD is unplugged or shorted. Alarm sounds and display shows: **PURE WATER TANK RTD DEFECTIVE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK RTD DEFECTIVE	Possible cause: • Pure water tank RTD or pure water RTD cable broken. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad to abort cycle operation and call STERIS.*
8. **If washer is equipped with pure water tank option**, pure water tank level switch is not reached within allowed time (adjustable parameter). Alarm sounds and display shows: **PURE WATER TANK TOO LONG TO FILL** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK TOO LONG TO FILL	Possible causes: • Supply pure water pressure too low; • Defective pure water filling valve; • Defective water level sensor; • Pure water tank outlet valve failed to open. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Verify water supply line meets equipment drawing specifications. 3. Press **RESUME** touch pad to resume operation. 4. If condition reoccurs, call STERIS.*
9. **If washer is equipped with pure water tank option**, Pure water tank temperature reaches a temperature <= BOILING TMEPERATURE -2°C. Alarm sounds and display shows: **PURE WATER TANK TEMPERATURE TOO HIGH** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK TEMPERATURE TOO HIGH	Possible cause: • Defective pure water tank steam valve; • Defective pure water tank RTD. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad to abort cycle operation and call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
10. **If washer is equipped with pure water tank option**, pure water tank level switch is still activated after a non-recirculated rinse or water transfer to sump have been performed. Alarm sounds and display shows: PURE WATER TANK FAILED TO DUMP Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK FAILED TO DUMP	Possible cause: • Defective/jammed pure water tank level switch; • Defective pure water tank outlet valve. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad to abort cycle operation and call STERIS.*
11. **If washer is equipped with drying system option**, drying RTD is disconnected or shorted. Alarm sounds and display shows: **DRYING RTD DEFECTIVE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: DRYING RTD DEFECTIVE	Possible cause: • Drying RTD or drying RTD cable broken. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad to abort cycle operation and call STERIS.*
12. **If washer is equipped with drying system option**, drying set temperature (smart mode) is not reached within allowed time (adjustable parameter). Alarm sounds and display shows: **DRYING TEMPERATURE NOT REACHED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: DRYING TEMPERATURE NOT REACHED	Possible cause: • Chamber has taken too long to reach drying alarm setpoint in SMART drying mode only; • Drying heaters defective. • Drying RTD defective. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **RESUME** touch pad to resume operation. 3. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
13. Recirculation pump motor and/or drying fan motor overload is tripped. Alarm sounds and display shows: **MOTOR OVERLOAD DETECTED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: MOTOR OVERLOAD DETECTED	Possible cause: • Motor contactor MSP tripped. Could be recirculation pump or drying fan motor MSP. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad to abort cycle operation and call STERIS.*
14. Chemical container is empty. Alarm sounds and display shows: **CHEMICAL CONTAINER __ EMPTY** Printout message: YYYY-MM-DDHH:MM:SS ALARM: CHEMICAL CONTAINER _#_ EMPTY _#_ 1, 2, 3 or 4.	Possible cause: • Chemical low level sensor does not detect any chemical in container. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Replace empty chemical container with a new one. 3. Reinsert chemical low level sensor in container. 4. Press **RESUME** touch pad to resume operation. 5. If condition reoccurs, call STERIS.*
15. Load door is open on start up. Alarm sounds and display shows: **LOAD DOOR OPEN** Printout message: YYYY-MM-DDHH:MM:SS ALARM: LOAD DOOR OPEN	Possible causes: • Load door is open - Press **CLOSE DOOR** touch pad. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **RESUME** touch pad to resume operation. 3. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
16. Load door closed switches are not deactivated within the allowed time (10 seconds). Alarm sounds and display shows: **LOAD DOOR DID NOT OPEN** Printout message: YYYY-MM-DDHH:MM:SS ALARM: LOAD DOOR DID NOT OPEN	Possible cause: • Check air pressure supply valve is open; • Door speed misadjusted. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **RESUME** touch pad to resume operation. 3. If condition reoccurs, call STERIS.*
17. Load door close switches are not activated within allowed time (10 seconds). Alarm sounds and display shows: **LOAD DOOR DID NOT CLOSE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: LOAD DOOR DID NOT CLOSE	Possible cause: • Check air pressure supply valve is open; • Door speed misadjusted. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **RESUME** touch pad to resume operation. 3. If condition reoccurs, call STERIS.*
18. **If washer is equipped with double doors:** unload door is open on a start up. Alarm sounds and display shows: **UNLOAD DOOR OPEN** Printout message: YYYY-MM-DDHH:MM:SS ALARM: UNLOAD DOOR OPEN	Possible cause: • Unload door is open. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **RESUME** touch pad to resume operation. 3. Press **CLOSE DOOR** touch pad. 4. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
19. **If washer is equipped with double doors:** door close switches are not deactivated within the allowed time (10 seconds). Alarm sounds and display shows: **UNLOAD DOOR DID NOT OPEN** Printout message: YYYY-MM-DDHH:MM:SS ALARM: UNLOAD DOOR DID NOT OPEN	Possible cause: • Unload door closed sensor on unload side detects a closed door 12 seconds after **OPEN** button has been pressed on unload side. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **RESUME** touch pad to resume operation. 3. If condition reoccurs, call STERIS.*
20. **If washer is equipped with double doors:** Door close switches are not activated within allowed time (10 seconds). Alarm sounds and display shows: **UNLOAD DOOR DID NOT CLOSE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: UNLOAD DOOR DID NOT CLOSE	Possible cause: • Unload door closed sensor on unload side does not detect a closed door 12 seconds after **CLOSE** button has been pressed on unload side. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **RESUME** touch pad to resume operation. 3. If condition reoccurs, call STERIS.*
21. Date or number of cycles set for maintenance in Service mode has been reached. Alarm sounds and display shows: **MAINTENANCE DUE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: MAINTENANCE DUE!	Possible cause: • Date or number of cycles set for maintenance in Service Mode has been reached. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Maintenance due, call STERIS.* 3. Press **RESUME** touch pad to resume operation. 4. Maintenance Due alarm will be shown every 10th cycle until maintenance is performed.

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
22. Load door obstruction bar switches are deactivated. Alarm sounds and display shows: **LOAD DOOR OBSTRUCTED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: LOAD DOOR OBSTRUCTED	Possible cause: • Load door safety switch detects an obstruction while load door is closing. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Remove obstruction from doorway, press **DOOR CLOSE** touch pad and press **RESUME** touch pad to resume operation. 3. If condition reoccurs, call STERIS.*
23. **If unit is equipped with double door:** Unload door obstruction bar switches are deactivated. Alarm sounds and display shows: **UNLOAD DOOR OBSTRUCTED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: UNLOAD DOOR OBSTRUCTED	Possible cause: • Unload door safety switch detects an obstruction while unload door is closing. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Remove obstruction from doorway, press **DOOR CLOSE** button on unload side and press **RESUME** touch pad to resume operation. 3. If condition reoccurs, call STERIS.*
24. **If unit is equipped with double door:** Load and unload doors are open on a start up. Alarm sounds and display shows: **BOTH DOORS OPEN** Printout message: YYYY-MM-DDHH:MM:SS ALARM: BOTH DOORS OPEN	Possible cause: • Load and unload doors are open. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **DOOR CLOSE** touch pad for load side door; then, press **DOOR CLOSE** touch pad for unload side door. Screens returns to Ready Mode. 3. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
25. Sump safety level switch is activated with a debounce time of 1 second. Alarm sounds and display shows: **SUMP SAFETY WATER LEVEL REACHED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: SUMP SAFETY WATER LEVEL REACHED	Possible cause: • Defective sump filling valve (failed open); • Supply cold water pressure too high (when drain cooldown is on). Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Check water supply line meets equipment drawing requirements. 3. Press **ABORT** touch pad to abort cycle operation. 4. Start a new cycle. 5. If condition reoccurs, call STERIS.*
26. Pure water tank safety level switch is activated with a debounce time of 1 second. Alarm sounds and display shows: **PURE WATER TANK SAFETY WATER LEVEL REACHED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK SAFETY WATER LEVEL REACHED	Possible cause: • Pure water tank filling valve defective; • Pure water supply pressure too high. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad on load side to abort cycle operation 3. Check if water supply line pressure meets equipment drawing requirements. 4. If condition reoccurs, call STERIS.*
27. Once drain is completed pure water tank level switch is still activated. Alarm sounds and display shows: **PURE WATER TANK DRAIN TOO LONG** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK DRAIN TOO LONG	Possible cause: • Defective water level sensor; • Defective pure water outlet valve. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Check for obstruction in drain line 3. Press **RESUME** touch pad to resume operation. 4. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
28. Conductivity setpoint has not been reached within allowed injection time set in Service mode. Alarm sounds and display shows: **CHEMICAL INJECTION CONDUCTIVITY SETPOINT NOT REACHED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: CHEMICAL INJECTION CONDUCTIVITY SETPOINT NOT REACHED	Possible cause: • Conductivity probe incorrectly calibrated/defective; • Chemical injection pump does not operate properly; • Detergent container may be empty; • Detergent low level stuck/defective. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Chemical injection pump does not operate properly. Inspect squeeze tube. Replace if necessary. 3. Detergent container may be empty. Replace detergent container. 4. Clean detergent low level sensor. 5. Press **RESUME** touch pad to resume operation. 6. If condition reoccurs, call STERIS.*
29. Conductivity setpoint has not been reached within allowed number of rinses set in Service mode. Alarm sounds and display shows: **FINAL RINSE CONDUCTIVITY SETPOINT NOT REACHED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: FINAL RINSE CONDUCTIVITY SETPOINT NOT REACHED	Possible cause: • Spindles and spray arms are clogged; • Sump filters may be clogged; • Glassware isn't properly loaded; • Pure water supply conductivity too high. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Verify pure water supply conductivity. 3. Check and clean spray arms if necessary (see *SECTION 6.4*) 4. Check if glassware is properly loaded (see *SECTION 4.6*). 5. Press **RESUME** touch pad to resume operation. 6. If condition reoccurs, call STERIS.*

**Service charges may be incurred. Consult your warranty for details.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
30. Final rinse conductivity probe is shorted or disconnected. Alarm sounds and display shows: **FINAL RINSE CONDUCTIVITY SYSTEM DEFECTIVE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: FINAL RINSE CONDUCTIVITY SYSTEM DEFECTIVE	Possible cause: • Cable shorted or disconnected. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad on load side. 3. Start a new cycle, if condition reoccurs, call STERIS.* 4. Reading out of range during final rinse phase - Try to resume cycle. 5. Check final rinse conductivity analog input for open/short circuit (check wiring).
31. Chemical conductivity probe is shorted or disconnected. Alarm sounds and display shows: **CHEMICAL CONDUCTIVITY SYSTEM DEFECTIVE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: CHEMICAL CONDUCTIVITY SYSTEM DEFECTIVE	Possible cause: • Cable shorted or disconnected. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad on load side and call STERIS.*
32. Alarm sounds and display shows: **PRESSURE TRANSMITTER DEFECTIVE** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PRESSURE TRANSMITTER DEFECTIVE	Possible cause: • Pressure transmitter cable is broken or unplugged. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad on load side and call STERIS.*

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
33. Alarm sounds and display shows: **PUMP PRESSURE TOO LOW** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PUMP PRESSURE TOO LOW	Condition: • Low recirculation pump pressure detected during recirculation phase. Pump pressure reading is below pump pressure low alarm setpoint set in Service mode. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad on load side. 3. Check accessory or rack is properly aligned with wash chamber manifolds. 4. Chemical is foaming – Use non-foaming chemicals recommended by STERIS. 5. Start a new cycle. If condition reoccurs, call STERIS.*
34. Over temperature switches have tripped (Drying or electrical sump heating system). Alarm sounds and display shows: **MASTER CONTROL RELAY DEACTIVATED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: MASTER CONTROL RELAY DEACTIVATED	Condition: • Heating element burned (sump, drying or pure water tank); • Drying fan rotation; • Defective sump drain valve; • Defective pure water outlet valve. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad on load side and call STERIS.*
35. **If washer is equipped with pure water tank option**, alarm sounds and display shows: **PURE WATER TANK TEMPERATURE ABOVE TEMPERATURE RANGE ALLOWED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK TEMPERATURE ABOVE TEMPERATURE RANGE ALLOWED	Possible cause: • Final rinses are performed using Pure Water Tank and system is ready to transfer water from Pure Water Tank into the sump; however, Pure Water Tank temperature exceeds sump temperature (temperature of sump water from previous drain) by 15.0 ° C; • Cycle is started and cycle begins with a final rinse treatment and temperature of the final rinse treatment exceeds 60.0 °C. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad on load side and call STERIS.* 3. Modify cycle parameters to avoid temperature difference.

Table 7-2. Troubleshooting Chart – Alarm Screen and/or Printout (Cont'd)

PROBLEM	POSSIBLE CAUSE AND CORRECTION
36. **If washer is equipped with pure water tank option**, alarm sounds and display shows: **PURE WATER TANK TEMPERATURE BELOW TEMPERATURE RANGE ALLOWED** Printout message: YYYY-MM-DDHH:MM:SS ALARM: PURE WATER TANK TEMPERATURE BELOW TEMPERATURE RANGE ALLOWED	Possible cause: • Final rinses are performed using Pure Water Tank and system is ready to transfer water from Pure Water Tank into the sump; however, sump temperature (temperature of sump water from previous drain) exceeds Pure Water Tank temperature by 20.0 ° C. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Press **ABORT** touch pad on load side and call STERIS.* 3. Modify cycle parameters to avoid temperature difference.
37. Control battery is low. Alarm sounds and display shows: **BATTERY LOW**	Possible cause: • Control battery needs to be replaced. Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Call STERIS.*
38. Alarm sounds and display shows: **I/O COMMUNICATION HAS BEEN LOST** Printout message: YYYY-MM-DDHH:MM:SS ALARM: I/O COMMUNICATION HAS BEEN LOST	Corrective action: 1. Press **ACK** touch pad to acknowledge alarm. 2. Call STERIS.*

REPLACEMENT PARTS AND PRODUCTS

8

IMPORTANT: *A listing of the Safety Precautions to be observed when operating and servicing this glassware washer can be found in SECTION 1 of this manual. Do not operate the equipment until you have become familiar with this information.*

WARNING – PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: Repairs and adjustments to this equipment must be made only by STERIS or STERIS-trained service personnel. Repairs and adjustments performed by unqualified personnel or installation of unauthorized parts could cause personal injury, result in improper equipment performance, void the warranty or result in costly damage. Contact STERIS regarding service options.

To order replacement parts and/or supply products, proceed as follows:

1. Include description and part/order number as listed in **Table 8-1**.
2. Include model and serial numbers of the unit on your order.
3. Send your order directly to STERIS.

Contact STERIS for recommendations on cleaning products or parts that are not listed below.

NOTE: Use only STERIS authorized parts on this equipment. Use of unauthorized parts will void the warranty.

Table 8-1. Replacement Parts for Washer

Description	Part Number
Consumables	
PAPER, Roll, Printer (if Printer option)	P764330-673
CARTRIDGE, Ink Ribbon (if Printer option)	P150828-440
LUBRICANT, Silicone, For Squeeze Tubes	P117950-599
PRE-FILTER (Option)	P117005-940
FILTER, HEPA, 8 x 8 x 5-7/8" (Option)	P117021-203
Replacement Parts	
TUBE, Peristaltic Pump	P117069-008
CHECK VALVE, Polypropylene, 1/4" Barbed	P117011-637
FOOT VALVE, Small, For Polyflow Tube 3/8"	P117052-100
BUSHING, Rotary Spray Arm, Bottom	P117988-267
HUB, Top, Without Spray Arm Assembly	P117916-193
HUB, Spray Header	P117035-822
ADAPTOR, Spray Header	P117035-823
LOCKWASHER, Spray Header	P117035-824
TUBING, Air, 5/32", Nylon, Red, 1A-201-05	P117902-322

Table 8-1. Replacement Parts for Washer (Cont'd)

Description	Part Number
Replacement Parts (Cont'd)	
TUBING, Air, 5/32", Nylon, Blue, 1A-201-07	P117902-323
TUBING, Air, 1/4", Nylon, Red	P117903-348
TUBING, Air, 1/4", Nylon, Blue	P117904-128
CUP, ProPlus	P117008-559
ELASTIC, ProPlus	P117008-496

The following illustrates replacement parts and shows part number list for the standard accessories.

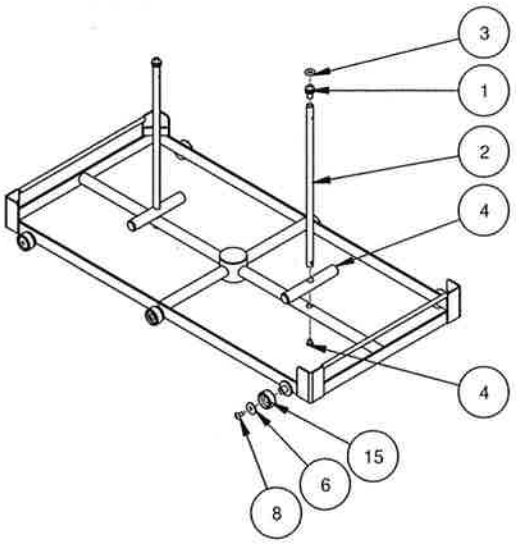
Refer to *MAINTENANCE MANUAL* (P764334-377) for a complete list and illustrations of replacement parts.

Table 8-2. Replacement Parts for Glassware Racks

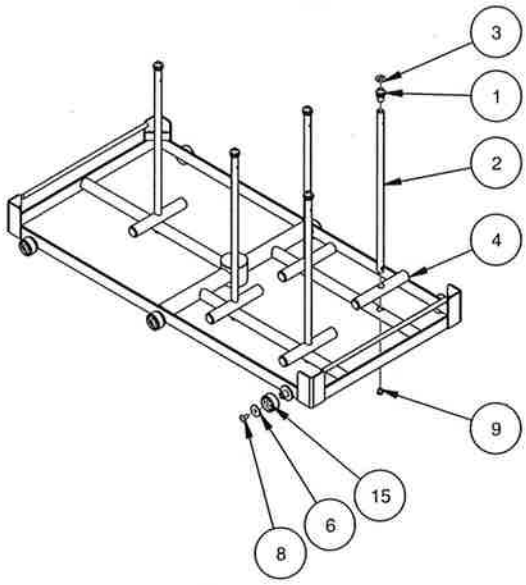
Item #	Part Number	Description	For Glassware Rack Models...
1	117-951-296 - *or* - 117-099-938	NOZZLE, 3/32" X 5/16"-24 NOZZLE, 5 Holes, Accessory	KM-2XLS, KM-5XLS, KM-8XLS KM-2XLS, KM-5XLS, KM-8XLS
2	117-013-132 - *or* - 117-017-661	SPINDLE, Large Glassware, EPO SPINDLE, 11.5" x 3/8", for Taller Cylinder	KM-2XLS, KM-5XLS, KM-8XLS
3	117-013-464	O-RING, Silicon, 9/16"OD X 5/16"ID	KM-2XLS, KM-5XLS, KM-8XLS
4	117-045-265	PROTECTOR, M-2/M-8 Glassware Accessory	KM-2XLS, KM-5XLS, KM-8XLS
5	117-069-030	SPINDLE, Micro Glassware, M-85/M-98	M-85, M-98
6	117-901-914	WASHER, 316 /S, 11/16" OD X 3/16" ID	All Models
7	117-914-973	SCREW, Truss Head, S/S, 6-32 X 1/4", for Spindles 117-069-030,117-951-303, 117-016-190, 117-989-488 and 117-006-927	M-34, M-50, M-72, M-85, M-98
8	117-914-975	SCREW, Truss Head, S/S, 8-32 X 3/8"	All Models
9	117-951-256	SCREW, Round Head, S/S,10-32 X 1/4", for Spindles 117-951-302, 117-002-160, 117-019-670, 117-002-762, 117-006-929, 117-019-661	M-5XLS, M-8XLS, M-18, M-32, M-34
10	117-951-297	NOZZLE, 5/64" X 10-32	M-18, M-32
11	117-951-298	NOZZLE,1/16" X 8-32	M-50, M-72, M-85
12	117-951-299	NOZZLE, 0.052" X 8-32	M-85, M-98

Table 8-2. Replacement Parts for Glassware Racks (Cont'd)

Item #	Part Number	Description	For Glassware Rack Models...
13	117-951-302 *- or -* 117-002-160 *- or -* 117-019-670 *- or -* 117-002-762 *- or -* 117-006-929	SPINDLE, 5-1/4" x 1/4" SPINDLE, 3" x 1/4" for Short Glassware SPINDLE, 9" x 1/4" for Taller Cylinders SPINDLE, 14" x 1/4" for Taller Cylinders SPINDLE, 19" x 1/4" for Taller Cylinders	M-18, M-32, M-34 M-18, M-32 M-18, M-32 M-18, M-32 M-18, M-32
14	117-951-303 *- or -* 117-016-190 *- or -* 117-989-488 *- or -* 117-006-927	SPINDLE, 3-7/8" x 3/16", for Micro-Glassware SPINDLE, 3 x 3/16", 316L S/S, for Micro-Glassware SPINDLE, 7 x 3/16", S/S, for Taller Cylinders SPINDLE, 9 x 3/16", for Taller Cylinder	M-50, M-72, M-85, M-98
15	117-951-310	WHEEL, ProPlus Accessories	All Models
Not Shown	117-913-772	Tubing, 3/4" OD, For Glassware Protection	KM-2XLS, KM-5XLS, KM-8XLS
Not Shown	117-909-365	Tubing, 7/16" OD, For Glassware Protection	M-18, M-5XLS, M-32
Not Shown	117-910-430	Tubing, 5/16" OD, For Glassware Protection	M-50, M-72, M-85, M-98
Not Shown	117-910-405	Spring Stopper, For 3/16" Spindles	M-34 (3/16" Spindles Only), M-50, M-72, M-85, M-98



M-2XLS Spindle Header



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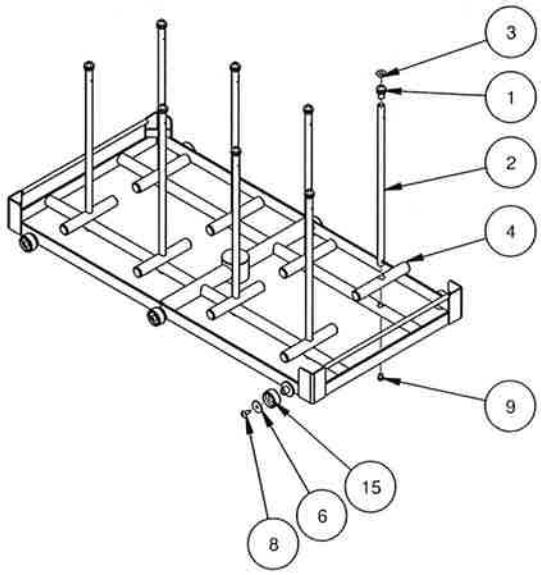

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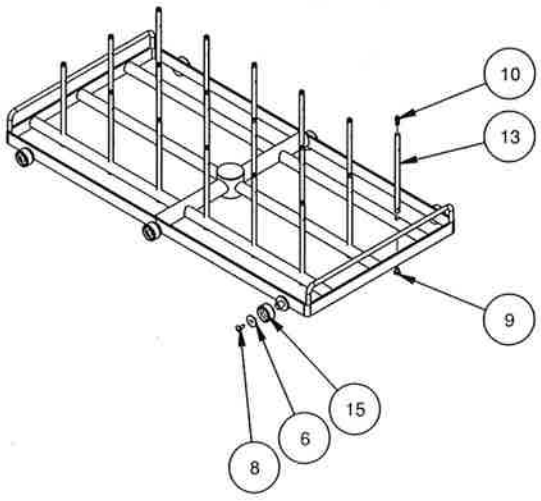

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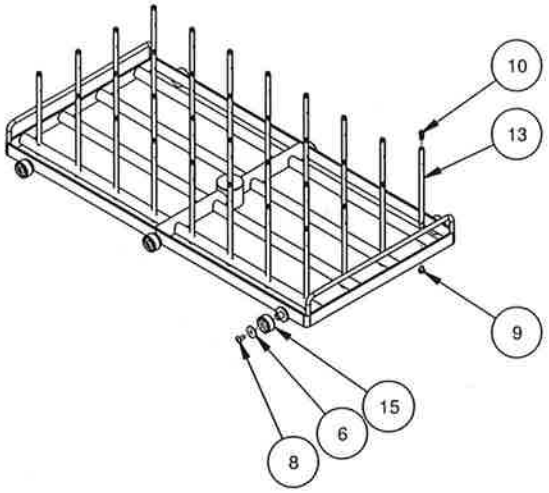

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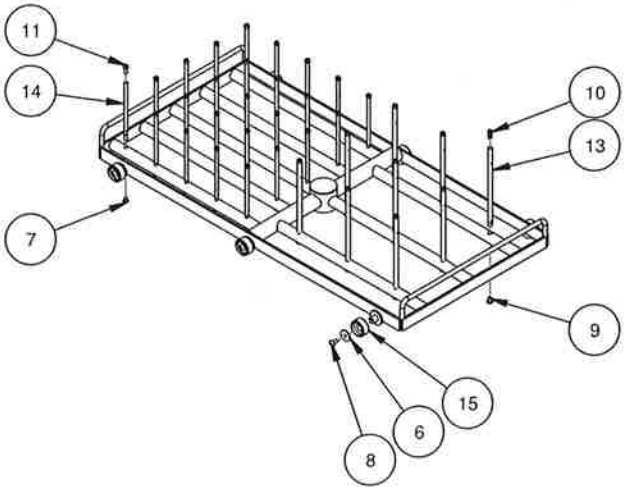

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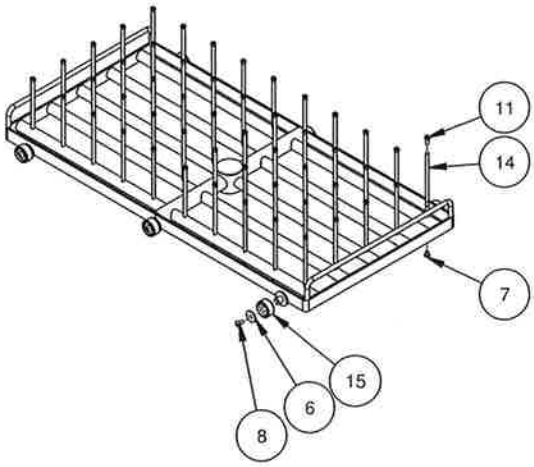

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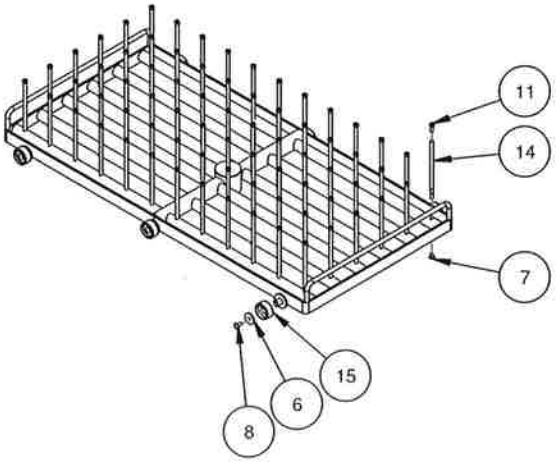

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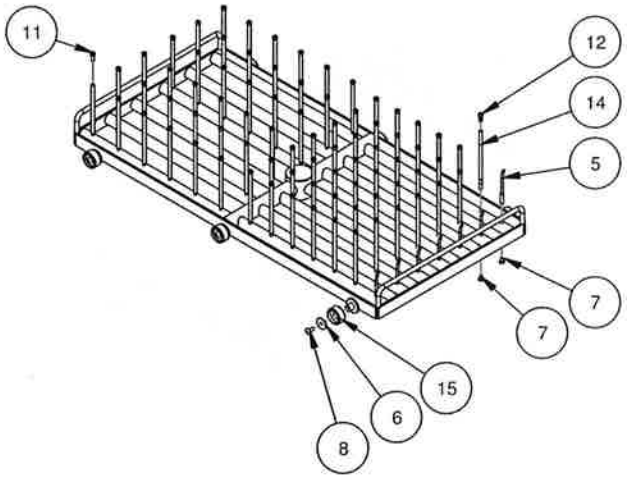

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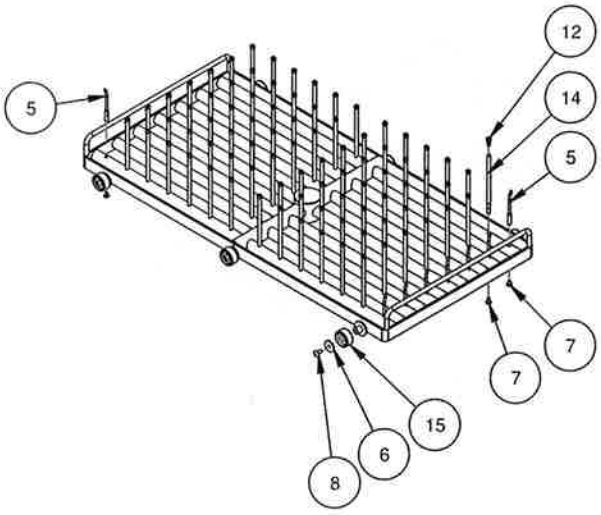

M-98 Spindle Header

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