

# TBEP Glassware Washer (Reliance 500 Lab Glassware Washer)

## 1. Definition:

- a. The glassware washer is used to thoroughly clean glassware.
- b. The glassware washer area has chemicals and heat. The floor can be slippery, and there may be broken glass.

## 2. Training and Use:

- a. Before using the autoclave, new users must be trained by a Steris service technician or by a previously trained and experienced user in TBEP. Contact [admin.tbep@utoronto.ca](mailto:admin.tbep@utoronto.ca) to arrange a training session.
- b. Book your timeslot in Google calendar under the account [bookhere.equipment@gmail.com](mailto:bookhere.equipment@gmail.com), and indicate your name and the lab to which you belong.

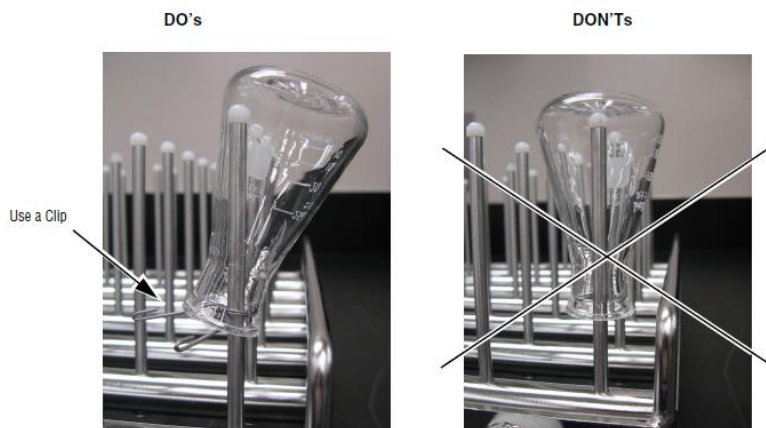
## 3. Precaution:

- a. This equipment uses hot water and chemicals to wash glassware; and hot air to dry items.
- b. Always use personal protective equipment (PPE) – heat resistant gloves, eye protection, lab coat, and closed-toe shoes – when operating the glasswasher. Refer to the Health & Safety Ontario document “Working in the Dishwashing Area” for an overview of hazards [https://ehs.utoronto.ca/wp-content/uploads/2015/10/Working-in-Dishwashing-Areas.pdf]
  - Hazard: Chemicals
    - Powerful chemicals are used to clean the glassware.
    - Threat: Serious injury to your lungs, skin, and eyes.
    - Know where to find the Material Safety Data Sheets (MSDS), and know where the closest first-aid kit and emergency eyewash station are.
    - Wash your hands after handling chemicals, even if you were wearing gloves.
  - Hazard: Heat
    - Dishes coming out of the dishwasher are hot.
    - Threat: Scalded or burned hands.
    - Allow glassware to cool before retrieving. Use heat resistant gloves and a lab coat as PPE against heat.
  - Hazard: Slippery Floors
    - Slippery floors may result from spills on the floor.
    - Threat: Serious injury from a fall
    - If you spill something, follow clean-up procedures immediately. If you find a spill that someone else has left, clean it up immediately. You can also contact MaRS Tenant Services at 416-673-8200 to report the spill.
    - Use signage to indicate that there is a spill in the area.

#### 4. Single Level Washing:

**IMPORTANT:** For the glassware you are going to wash, remove all lab stickers and tapes. Wash the glassware in your lab first until there is no visible debris or deposit inside.

- a. Press “Door” on the display panel to open the door of the glassware washer.
- b. At the bottom-left corner, lift rail to access the **grill/screen**. Unscrew the grill/screen and remove from the machine for cleaning as required.
  - Clean the grill/screen with water. You may need to take the grill/screen into the lab to scrub down.
- c. Re-insert the grill/screen. Do not over-tighten the screw. Relock the rail.
- d. Determine the **accessories** you need based on the size of your glassware and the number of each type. The chart for the appropriate accessory is located at the end of this SOP. The number associated with each accessory name indicates the number of **spindles** (slots available).
- e. For glassware between 5 mL and 10 mL (i.e., small beakers) and bottle caps, you should use the **baskets** instead of a spindled accessory.
- f. If you do not need a second level, remove it if it is installed in the machine. If you do not remove it, the machine will use significantly more water. If you do require the second level, see below, 5. Two-Level Washing.
- g. Attach the **loading table/cart** to the washer, and place the **accessory** onto the loading table/cart. Load the glassware onto the platforms. Ensure the glassware is tilted on its edge as shown (clips are optional):



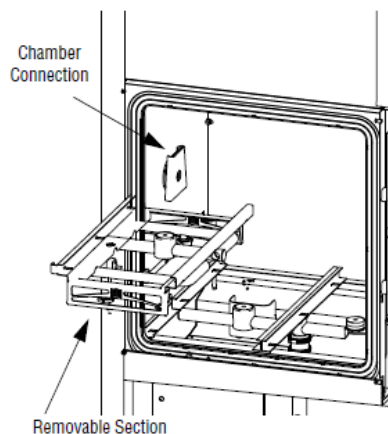
- h. Once loaded, push the accessories into the machine from the loading table. The wheels on the accessories should fall into the slots in the rails. Double check to make sure the inlet of the accessory lines up with the outlets of the machine.

**Note: ALL three bottom slots must be used. You cannot leave a slot uncovered as this will cause errors in the machine.**
- i. Close the door by pressing “Door” on the display.
- j. Select the procedure you need under “Select Cycle”. “**Extracare**” for heavy duty; “**Standard**” for regular duty; “**Rinse**” for rinsing off detergent; “**Adhesive**” if there is adhesive stuck to your glassware that you were unable to remove prior to using the glassware washer.

- k. Press "Start Cycle" to begin wash.
- l. If an error occurs during the wash, an alarm will sound. It is recommended that you abort the process if this occurs.
- m. When finished, get ready to unload the glassware and wear heat resistant gloves, lab coat, and goggles. Stand off to the side to avoid the steam, and press "Door" to open the wash chamber. It is recommended you wait a sufficient amount of time before taking out the accessories because the chamber can be very hot.
- n. Slide out the accessories onto the loading table. Unload the glassware.
- o. Clean the grill/screen of the machine when it is still wet. Also, check to make sure no broken glass has fallen to the bottom of the wash chamber.**
- p. Close the door to the wash chamber

### 5. Two-Level Washing:

- a. A second level can be added to the wash chamber if needed.
- b. There are two platforms for the second level: The single-slotted one is more preferable. **The double slotted platform can be used only when it is absolutely necessary. In the latter condition, extra effort is needed for installing the heavy platform into the machine and large glassware should not be placed on this platform or bottom level below it. The latter condition is not recommended**
- c. Follow steps 4a to 4e above.
- d. **Carefully add the second level into the machine before loading any glassware or the bottom level into the machine.** To add the level, carefully slot the device onto the **trapezoidal connector** at the side of the machine. Note that there are connectors on each side of the machine so you can add both the single slot and the double slot devices/racks. These platforms are heavy, please ask for assistance if needed.



- e. Place the accessories that will go onto the second level onto the loading table. Load the glassware onto the accessories.

- f. Very carefully lift the accessories and slot them into the machine. The wheels on the accessories should fall into the gaps in the rails. **Ensure the platform's outlet is aligned with the inlet of the accessory.**

**NOTE:** If you are using the DOUBLE SLOTTED level, DO NOT place any accessory used for large glassware (> 500 mL; for graduated cylinders > 250 mL) on the 2nd level or directly underneath it. If you do, the rotary arms will collide with the glassware on these accessories.

- g. Follow step 4h to 4p above.

**NOTE:** When finished, it is **NOT** advised you remove the top levels too quickly, because the system will take a while to cool down.

## 6. Changing Detergent

- a. Detergent can run out during a cycle, and if it does, abort the current cycle.  
b. Remove the old container by gently removing the **Level Sensor** and the **Suction Tube**  
c. Open the new container and place the Level Sensor and Suction Tube into the opening. Ensure they are both upright.

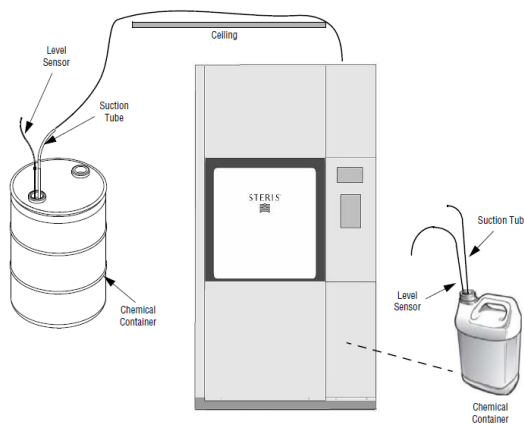


Figure 6-5. Chemical Container Replacement

- d. To prime the system, press Door on the touch pad to open the chamber. Press "Select Cycle" and cycle through using the arrow button (bottom right hand corner) until you see "**Prime Chemical Pumps**". Select "Prime Chemical Pumps" and select the Chemical Pump #1.  
e. Look at the injectors on the side of the wash chamber. They will inject drops of the detergent. Allow the machine to inject detergent until you see no air bubbles in the injected detergent.  
f. Press Chemical Pump #1 to stop injection.  
g. Repeat above steps for all four pumps available.  
h. Once complete, press the "**X**" button to exit the priming cycle, and close the door of the chamber.

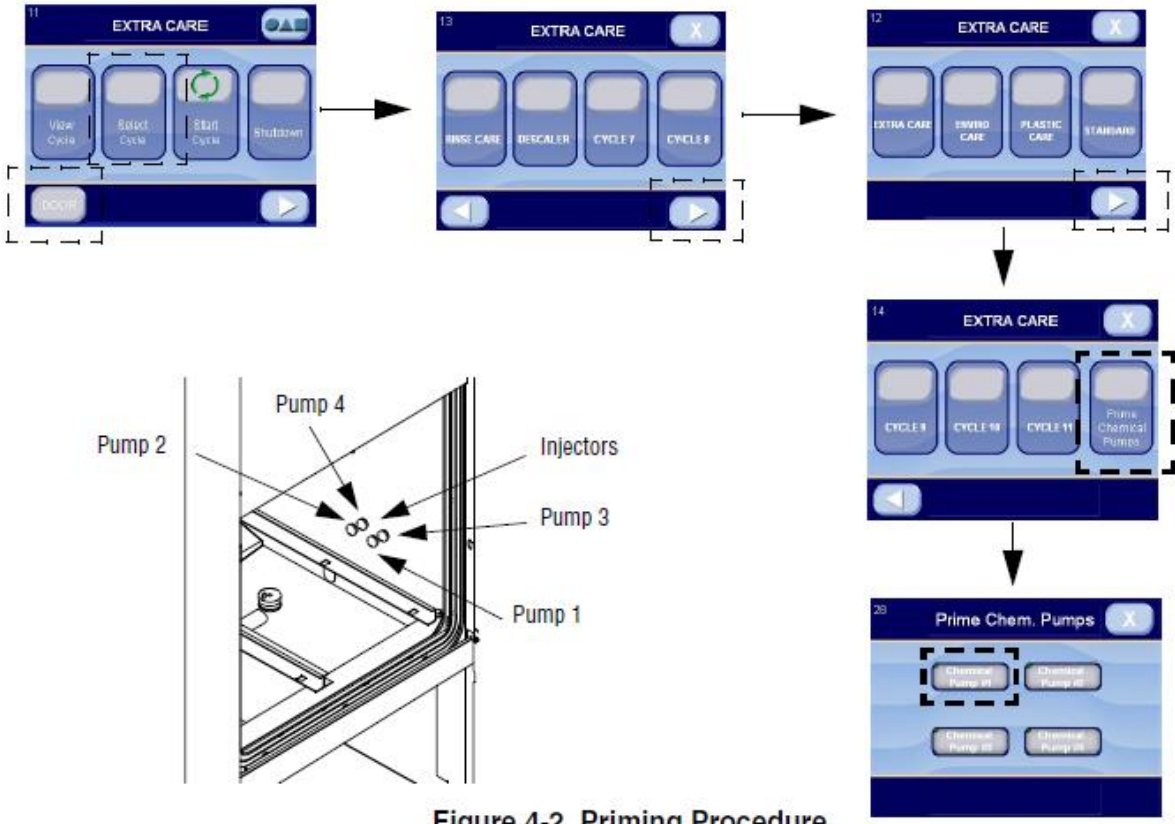


Figure 4-2. Priming Procedure

**7. References:**






- a. <https://ehs.utoronto.ca/wp-content/uploads/2015/10/Working-in-Dishwashing-Areas.pdf>

## 8. Appendix: Accessory Selection

### 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
	5 x 5 section	5 mL <sup>1 2</sup> 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 <sup>1 2</sup> to 100 mL	10 mL <sup>1 2</sup> to 125 mL	10 mL to 25 mL	400 mL to 600 mL	< 100 mL
M-72 Spindle Header		5 mL <sup>1 2</sup> to 100 mL <sup>2</sup>	10 mL <sup>1 2</sup> 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 <sup>1 2</sup> to 100 mL <sup>2</sup>	Not Recommended	10 mL to 25 mL	400 mL to 600 mL	< 100 mL
	7 x 7 section	5 mL <sup>1 2</sup> to 100 mL <sup>2</sup>	Not Recommended	10 mL to 25 mL	250 mL to 400 mL	< 100 mL
M-98 Spindle Header		5 mL <sup>1 2</sup> to 100 mL <sup>2</sup>	10 mL <sup>1 2</sup> to 50 mL	10 mL to 25 mL	250 mL to 400 mL	< 100 mL
General Basket	Purpose	– Miscellaneous items (Spatula, glass stoppers, magnetic stir bars, etc.) – Beakers of various sizes <sup>3</sup>				