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Glassware Washer Service/Technical Manual

SteamScrubber® & FlaskScrubber® Glassware Washers

Models

44003 Series
44004 Series
44203 Series
44204 Series

FlaskScrubber® Vantage® Series Glassware Washers

Model

4540031

Protecting your laboratory environment
LABCONCO

Labconco Corporation
8811 Prospect Avenue
Kansas City, MO 64132-2696
800-821-5525, 816-333-8811
FAX 816-363-0130
E-MAIL labconco@labconco.com
HOME PAGE www.labconco.com

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Labconco SteamScrubber®, FlaskScrubber®, and FlaskScrubber® Vantage® Model Glassware Washers

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Introductory Note

The Labconco Glassware Washers were re-engineered in 2007, with the new line available in September 2007. The new generation of Glassware Washers include updated features and modifications that set itself apart from the previous generations.

Some of these updates include (but are not limited to): an interactive digital display, three separate pumps for wash, drain and pure water, a water level pressure switch, and forced air blowers for drying.

The three types of Labconco Glassware Washers are, the ***FlaskScrubber®***, ***SteamScrubber®***, and ***FlaskScrubber® Vantage®***. The ***FlaskScrubber®*** and ***SteamScrubber®*** are available in either 115 or 230 (high-heat) Volt models, and Under-Counter (UC) or Free-Standing (FS) configurations. An optional viewing window is also available on these models.

The ***FlaskScrubber®*** and ***FlaskScrubber® Vantage®*** use a direct jet manifold system for washing, rinsing and drying. They both include a Lower Spindle Rack. The spindles on this rack can be swapped out with different sizes (tall, short, and thin) or removed to create a flat rack.

The ***SteamScrubber®*** includes both an upper and lower open rack. The racks are able to accommodate a wide variety of accessories to contain specific types of lab-ware. Drying is performed through an integrated blower circulating forced, heated air through the tank.

The ***FlaskScrubber® Vantage®*** sets itself apart from the rest as Labconco's sophisticated Laboratory Glassware Washer. It has the same basic setup as the ***FlaskScrubber®*** and is available only as a high-heat 230V version. It also has a built-in side cabinet that houses HEPA filtered forced air drying, Liquid Detergent, and Acid Neutralizing Rinse Pump systems. A peristaltic pump automatically draws a programmed amount of LabSolutions Liquid Detergent or LabSolutions Neutralizing Acid Rinse for automatic dispensing during wash cycles, and shelf for holding the two bottles of detergent and rinse aid.

This document serves to provide service technicians and users with supplementary instructions for the care of their washer.

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Labconco Service Support

Labconco prides itself on the personal touch it gives to supporting our products. The customer and the product are supported by several departments. At anytime, any of these departments can be contacted to provide additional support.

For inquiries regarding the application of each washer and accessories, contact the Marketing Department's Product Specialist/Manager.

For assistance in selecting and ordering the washer and accessories that is right for you, contact the Sales Support Representative for your geographical region (which can be found by calling Labconco or visiting our website).

For help with electro-mechanical problems, service inquiries, troubleshooting help, and Warranty issues, contact the Product Services Department.

To place orders for parts or disposables, contact Labconco's Customer Service Department.

All of these Labconco departments can be reached by:

- **Calling Toll Free (800)821-5525**
- **Emailing us at Labconco@labconco.com**
- **Visiting us at www.labconco.com**

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Warranty

Labconco provides a warranty on all parts and factory workmanship. The warranty includes areas of defective material and workmanship, provided such defect results from normal and proper use of the equipment.

The warranty for all Labconco products will expire one year from date of installation or two years from date of shipment from Labconco, whichever is sooner, except the following;

- Purifier® Logic™ Biological Safety Cabinets and PuriCare® Lab Animal Research Stations carry a three-year warranty from date of installation or four years from date of shipment from Labconco, whichever is sooner.
- SteamScrubber® & FlaskScrubber® Glassware Washers carry a two-year warranty from date of installation or three years from date of shipment from Labconco, whichever is sooner.
- Blood Drawing Chairs carry a ten year warranty.
- Carts carry a lifetime warranty.
- Glassware is not warranted from breakage when dropped or mishandled.

This limited warranty covers parts and labor, but not transportation and insurance charges. In the event of a warranty claim, contact Labconco Corporation or the dealer who sold you the product. If the cause is determined to be a manufacturing fault, the dealer or Labconco Corporation will repair or replace all defective parts to restore the unit to operation. Under no circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This statement may be altered by a specific published amendment. No individual has authorization to alter the provisions of this warranty policy or its amendments. Lamps and filters are not covered by this warranty. Damage due to corrosion or accidental breakage is not covered.

Returned or Damaged Goods

Do not return goods without the prior authorization from Labconco. Unauthorized returns will not be accepted. If your shipment was damaged in transit, you must file a claim directly with the freight carrier. Labconco Corporation and its dealers are not responsible for shipping damages.

The United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within fifteen (15) days of delivery.

Limitation of Liability

The disposal and/or emission of substances used in connection with this equipment may be governed by various federal, state, or local regulations. All users of this equipment are required to become familiar with any regulations that apply in the user's area concerning the dumping of waste materials in or upon water, land, or air and to comply with such regulations. Labconco Corporation is held harmless with respect to user's compliance with such regulations.

Contacting Labconco Corporation

If you have questions that are not addressed in this manual, or if you need technical assistance, contact Labconco's Customer Service Department or Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811, between the hours of 7:00 a.m. and 6:00 p.m., Central Standard Time.

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SECTION I:
Navigating the New Labconco Glassware Washers

This section will familiarize you with the functions needed to perform various services on the washers. This includes running diagnostic tests, and a general landscape of the interior of the washer (pictures included).

Washer Menus

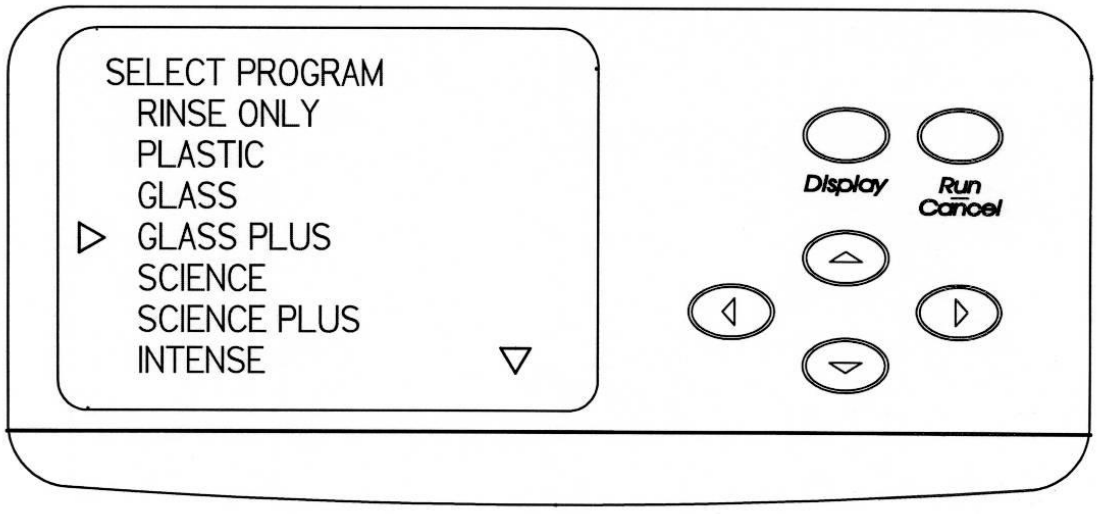
The latch serves as the on/off switch for the washer. When the latch is closed (to the right) the machine will come on. The screen will Read "LABCONCO Glassware Washer" and then a 7 digit number followed by a letter. This number is the model/part number of the logic/PC Board, and the letter is the revision of the programming logic.

The screen will then, automatically, return to the previous screen before the unit was turned off. If the washer was in the middle of a cycle, it will continue where it left off; however if the wash motor was running and the unit was turned off and back on, there is a restart delay.

If the screen displays the name of a wash cycle, pressing DISPLAY will bring you to the cycle select menu.

To program and start a wash cycle

1. Close the washer door and slide the latch to the right. This energizes the electronic control and the display will show the last program that was run.
2. Press RUN to select this program.
3. If a different program is desired, press DISPLAY. The available programs will be shown on the display.

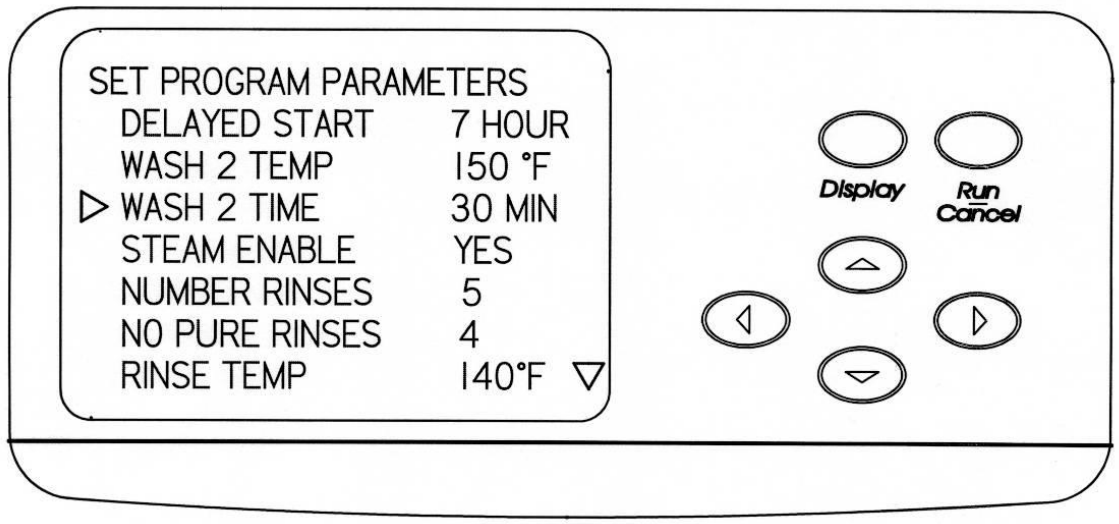


4. Press the ▲ or ▼ buttons until the desired program is indicated by the arrow on the left side. The arrow on the lower right side means that there

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are additional program selections that will be shown on the display if the ▼ button is pressed. If an arrow is visible in the upper right corner of the display, additional program selections will be displayed when the ▲ button is pressed.

5. Press RUN if no modifications to the program are necessary.
6. If modifications to the program are necessary or you want to see the parameters that are entered into the program, press DISPLAY and the elements in the program that may be altered will be displayed.



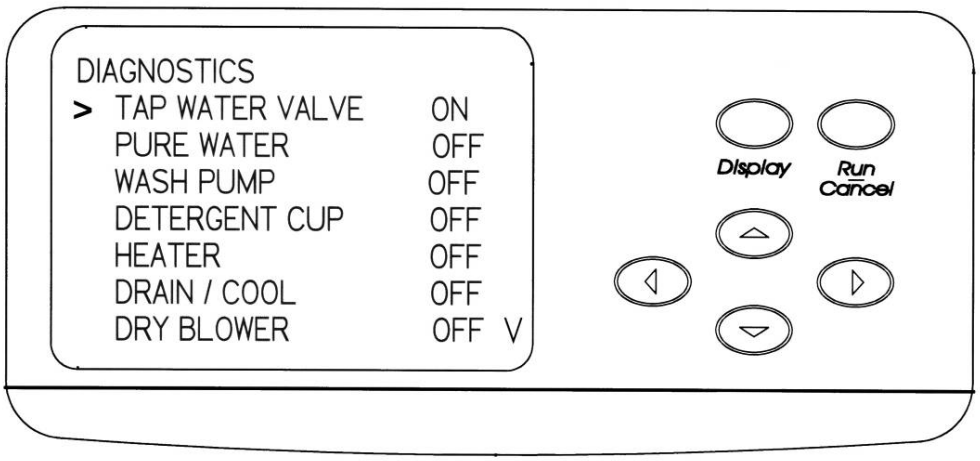
7. Press the ▲ and ▼ buttons to select the parameter that must be altered as indicated by the arrow on the left side. Press ◄ and ► buttons to select the appropriate set point. The arrow on the lower right side means that there are additional parameter selections that will be shown on the display if the ▼ button is pressed. If an arrow is visible in the upper right corner of the display, additional parameter selections will be displayed when the ▲ button is pressed.
8. Press RUN when all parameters are satisfactory.

The most helpful menu when performing service or after doing a part replacement is the DIAGNOSTIC MENU.

Diagnostics Menu

To ensure your washer is operating properly, perform the diagnostics procedure detailed below. It will take approximately 10 minutes to complete. Refer to the figure below to familiarize yourself with the control panel before you begin the procedure.

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Running the diagnostics test

1. Press the ▲ button on the control panel, close the door and slide the door latch to the right. Hold for 5 seconds.
2. The display will show the Diagnostics screen and the indicator on the left side will point to TAP WATER VALVE.
3. Press either the ► or ◄ button to turn the tap water valve ON. Tap water should enter the washer. Allow water to enter for approximately 1 minute. Press either the ► or ◄ button to turn the water off.
4. Press the ▼ button and the arrow on the display will point to PURE WATER.
5. Press either the ► or ◄ button turn the pure water pump ON and open the pure water valve. Allow pure water to enter the washer. After about 3 minutes the fill switch should cause the water flow to turn off. Should not exceed 5 minutes. **(SKIP IF NO PURE WATER IS USED)**
6. Press the ▼ button and the arrow on the display will point to WASH PUMP.
7. Press the ► or ◄ button and the wash pump should energize.
8. Press the ▼ button and the arrow on the display will point to DETERGENT CUP.
9. Press either the ► or ◄ button to energize the detergent cup. Within about 1 minute the detergent cup door should be heard to open.
10. Press the ▼ button and the arrow on the display will point to HEATER.
11. Press either the ► or ◄ button and the heater will be energized.
12. Press the ▼ button and the arrow on the display will point to DRAIN / COOL.
13. Press either the ► or ◄ button and the drain will be energized. Allow all water to be drained from the washer. The sound of the pump will change when all water is drained. This will take about 1-1/2 to 2 minutes. If the Cool Water Drain Kit accessory has been installed, cool water will mix with hot water draining from the washer.
14. Press the ▼ button and the arrow on the display will point to DRY BLOWER.
15. Press either the ► or ◄ button and the dry cycle blower will be energized.
16. The ▼ arrow in the lower right side of the display indicates that more selections may be made. Press the ▼ button to select the next function to test. The arrow on the display will point to LIQ DETERG PUMP.
17. Press the ► or ◄ button and if the liquid detergent accessory has been installed and if it was activated in the Set Up procedure, the detergent pump will operate.
18. Press the ▼ button and the arrow on the display will point to LIGHT.
19. Press either the ► or ◄ button and if the washer is equipped with a window in the door, the light inside the washer will illuminate.

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20. Press the ▼ button and the arrow on the display will point to COOL FAN.
21. Press either the ► or ◄ button, and the small fan inside the kick panel will operate.
22. This completes the check of most of the washer functions. Unlatch the door to exit from the Diagnostics mode.
23. To verify the proper operation of the overfill switch, repeat steps 1 & 2 above. Press either ► or ◄ button and allow tap water to enter the tank until the water flow turns off.
24. Press and hold the RUN button. Water will enter the washer and should turn off before it overflows.
25. Press the ▼ arrow until DRAIN/COOL is highlighted.
26. Press ► or ◄ button to drain water from the washer.
27. Unlatch the door to exit from the Diagnostics mode.

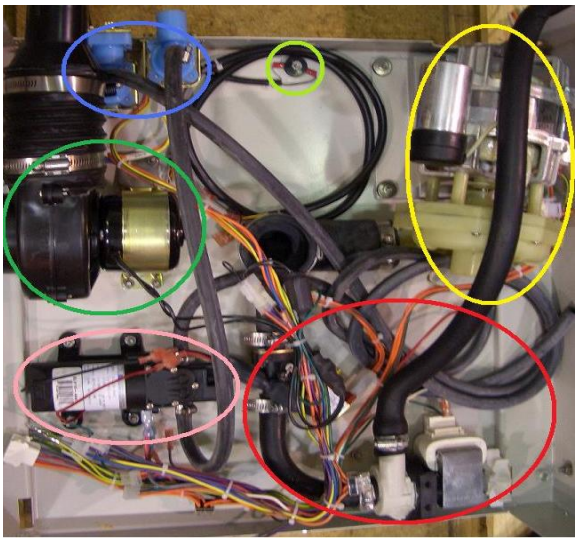
Performing a Factory Reset

Like any computer and software, sometimes it is necessary to reset the PC Board. If you experience a Lock-up on the display screen, or if your programs aren't being saved, follow the directions below to perform a FACTORY RESET.

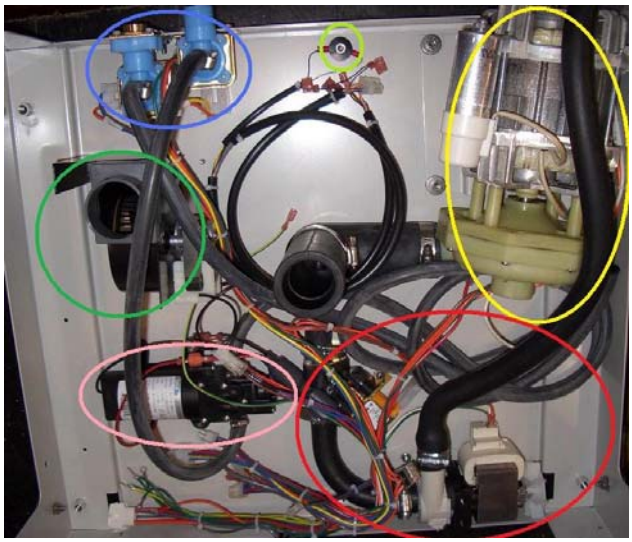
1. Open latch on door.
2. Close the latch on the door.
3. Press ▼ button as the Display reads "Labconco Glassware Washer: Version X"
4. Release ▼ button and display will show the "Set Up" screen.
5. Press ▼ until FACTORY RESET is highlighted.
6. Press ► or ◄ until "Yes" is displayed.
7. Press RUN.

Washer Layout and Landmarks

Before getting into the washer to perform service, it is important to know where the major systems and their parts are. In the field, you will not have the luxury of seeing where everything is, unimpeded. The pictures below serve as a roadmap to systems in the base of the unit.



FlaskScrubber®

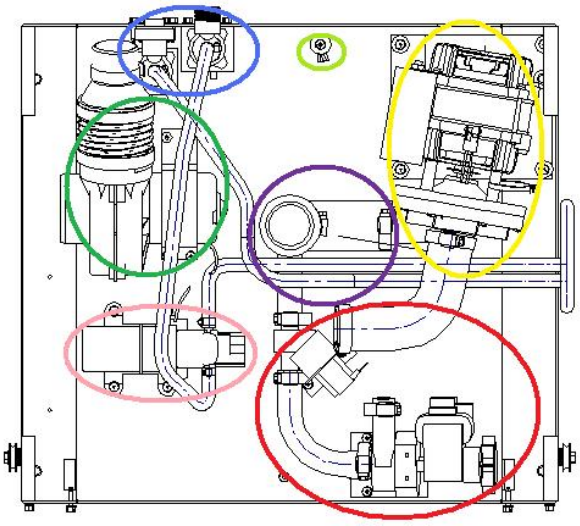


SteamScrubber®

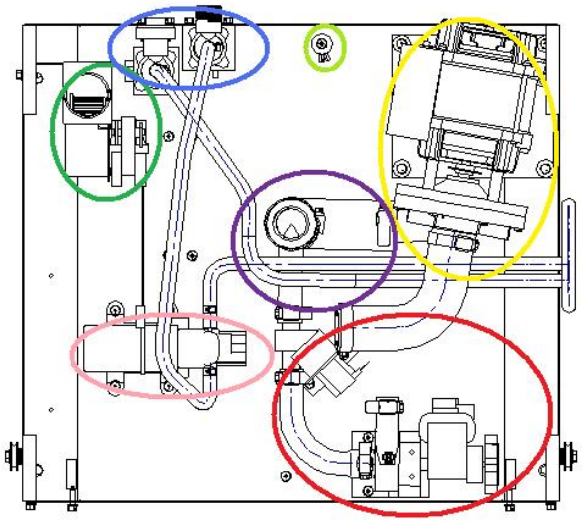
The pictures are shown in the same orientation, the front of the machines are at the bottom of the photos.

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Inlet Solenoid Valves	(Blue)	Top (rear) Left	Electrically controlled to allow water to fill the tank of the machine.
DI/Pure Water Pump	(Pink)	Bottom(front) Left	Integrated pump to allow the use of a non-pressurized Pure water source.
Wash Pump/Motor	(Yellow)	Top (rear) Right	The pump has been moved away from the sump in order to minimize the occurrences of motors being damaged by leaks.
Drain Pump & Solenoid	(Red)	Bottom(front) Right & Center	When the machine sets to drain, the Solenoid will "pop" open, three seconds later the drain pump will kick on and the water will leave the tank.
Drying Blower	(Light Green)	Left Center	The blowers are different between the FlaskScrubber® and SteamScrubber®. These blowers circulate air through the tank to dry labware after it has been washed.
Overflow Sensor	(Dark Green)	Top (rear) Center	This sensor is a set of contacts that when wet have continuity, signaling the washer that there is water in the base weldment pan.



FlaskScrubber®



SteamScrubber®

These illustrations are to be compared with the photos on the previous page and are in the same orientation with the colored circles representing the same parts. The Purple Circle in the middle represents the Pump Outlet Elbow.

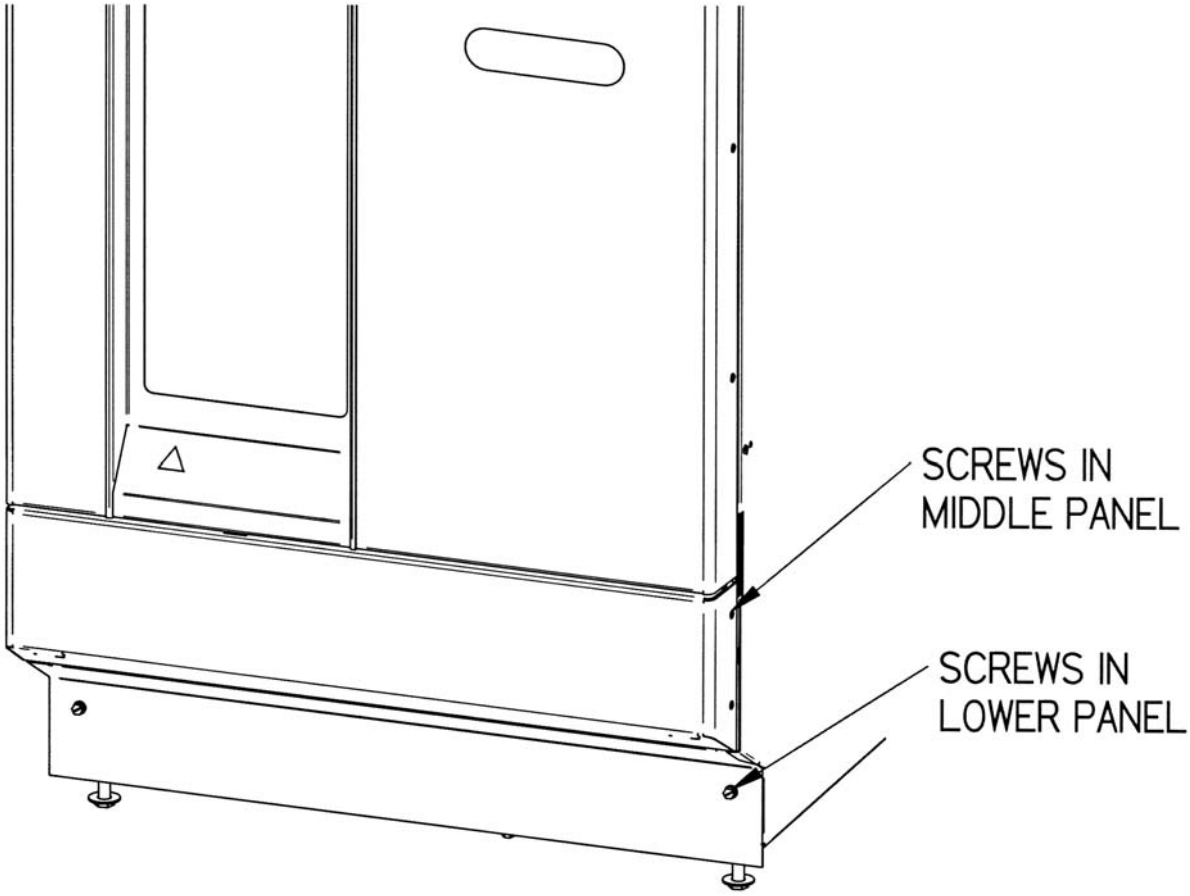
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Removing the Toe/Kick Panels & Service Panels (Under-Counter Models)

For many cleaning, maintenance and repair jobs associated with the FlaskScrubber® and/or SteamScrubber®, the toe & kick panels will need to be removed. This will help gain access to parts inside the base of the washer and is necessary for initial install of the machine.

Remove the Toe/Kick Panel

1. Remove the two screws located at the bottom of the panel.



2. Remove 2 screws on each side of the middle panel.
3. Pull the middle panel forward and remove it.
4. Remove the cover over the electrical junction box by removing the two screws, disconnecting the wiring connections for the door fan and sliding the panel out to the left side. Avoid damaging the Ribbon cable and Door Harness.

Removing the Back and Side Service Panels

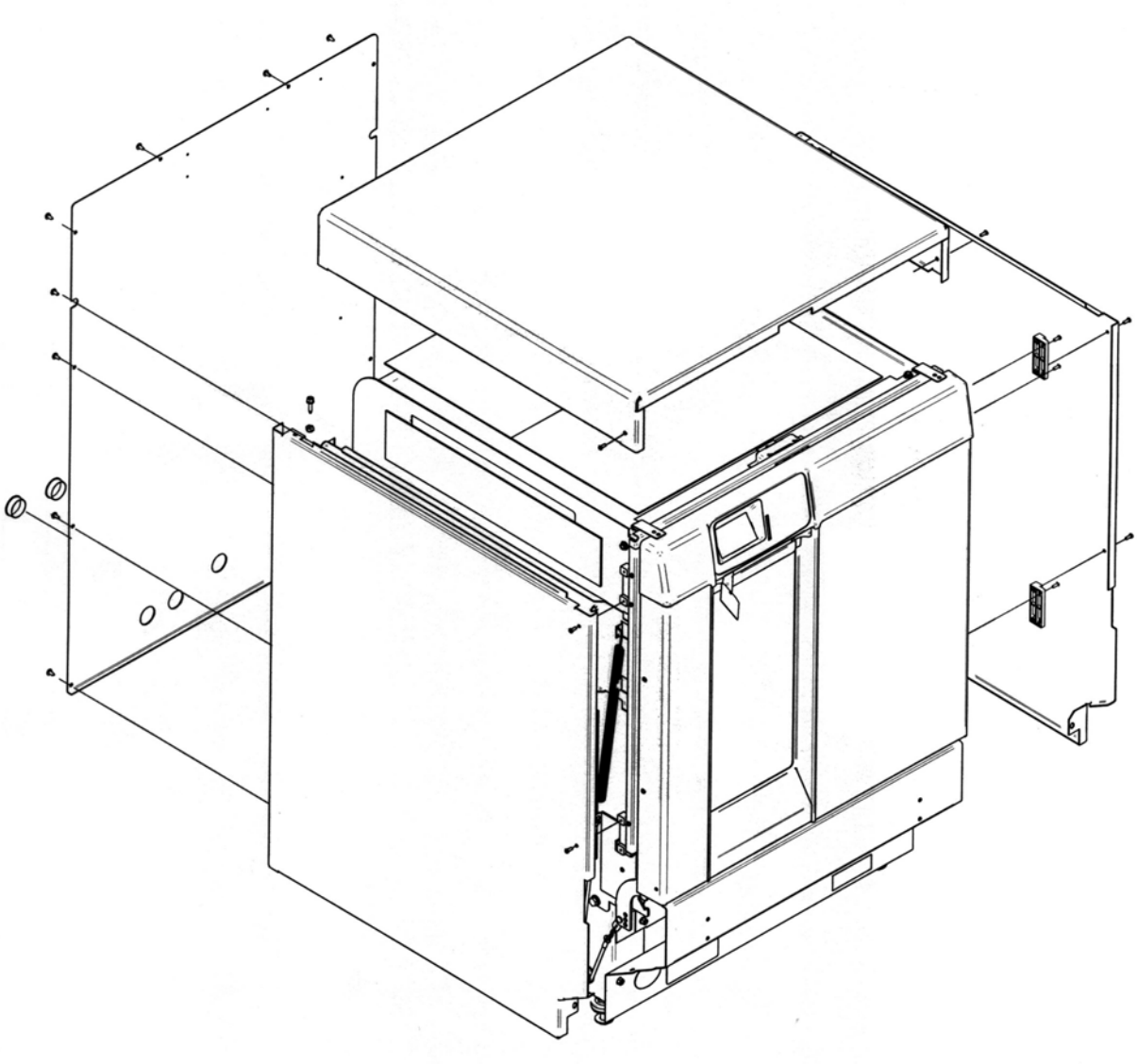
Locate each of these panels beneath the insulation jacket of the Under-Counter Models. There are four bolts holding each panel on. Simply remove the bolts and pull off the plates.

When replacing the plates, make sure they are properly aligned and in the correct orientation on the machine.

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Removing the Washer Top, Back, and Side Panels (Free-Standing models only)

To gain access to internal parts of the washer you will need to remove the washer's top, back, and side panels. This will make it possible to clean, maintain, and repair the washer. Refer to the figure below and follow the instructions to remove the top, back, and side panels of your washer.



To Remove the Cosmetic paneling of the Washer

1. Turn off electrical power to the Glassware washer.
2. Remove all of the screws from the back panel of the washer and remove the back panel.
3. Remove the 2 screws at the kick panel.
4. Remove the 2 screws at the rear that hold the sides to the top.
5. Remove the two screws from each side of the washer at the front edge.
6. Remove the side panels.
7. Remove the 2 screws that hold the top.
8. Remove the top

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SECTION II:
Maintaining and Modifying the Glassware Washers

Like any piece of laboratory equipment, the glassware washer requires some routine maintenance and, depending on the laboratory's function, some modification. Section II contains instructions on how to perform upkeep and application driven changes.

Maintenance

Maintaining the Stainless Steel Interior

The interior of the FlaskScrubber® and SteamScrubber® Glassware Washers is type 304 stainless steel. Never use metal scouring pads on the stainless steel interior. Metal scouring pads can scratch or leave metal chips that will rust.

To maintain the appearance and quality of the stainless steel interior, perform the following tasks as needed:

- Wipe the outer edges on the inside door panel to remove particles and residue that occur during loading.
- Use a sponge sprinkled with non-abrasive stainless steel cleaner to gently wipe the washer tank and door to remove surface discoloration caused by exposure to halogenated compounds or steel parts. In some cases, the finish may be slightly dulled by this action.

If the hot tap water source has a high mineral content, film or spots may develop on the washer interior. If the procedures listed above do not eliminate the film or spots, you may run your washer through the special cycle below.

To remove film or spots from the washer interior*

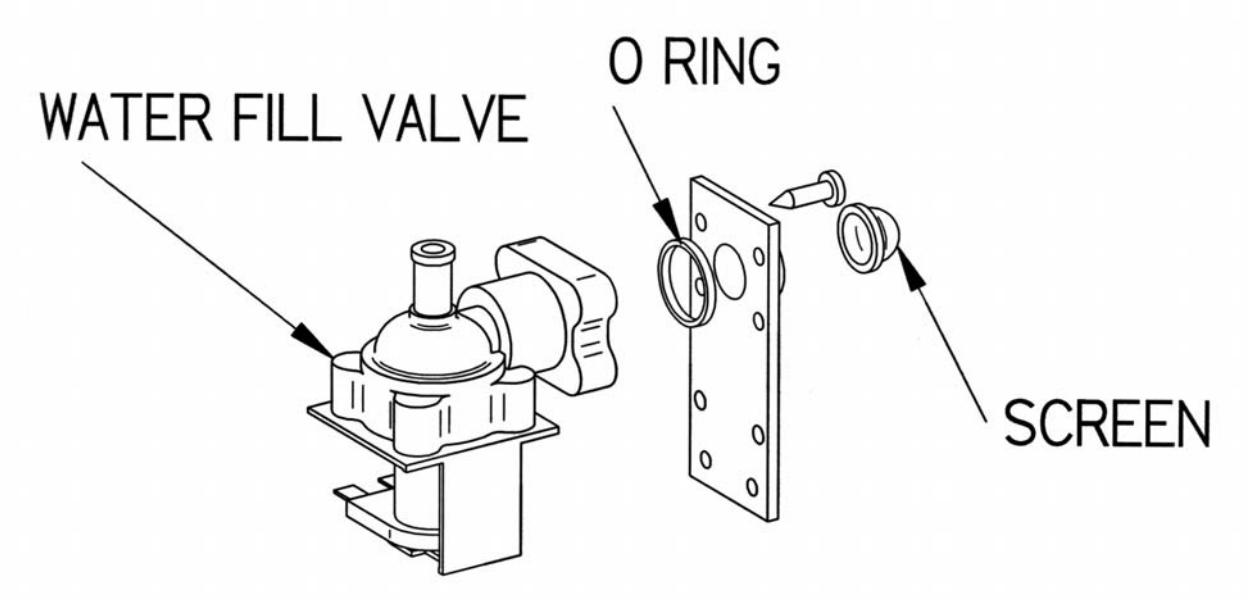
1. Remove all glassware from the washer.
2. Choose the Glass Program: Push the "Display" button. Using the arrow buttons, make sure that "steam" is off, that there are zero, "0", Pure rinses, and the drying time is set to zero.
3. After the first fill is complete, open the washer and carefully pour one cup of bleach into the bottom of the tank.
4. Close the washer door and allow the unit to wash and drain.
5. When the washer fills the second time, open the washer and add two cups of 4-8% acetic acid or white vinegar to the bottom of the tank.
6. Close the washer door and allow the unit to wash and drain without further interruption.

* If there is residue on the glassware and the washer is not utilizing the purified water for rinsing, you can also use vinegar to break up the residue during a "Rinse Only" cycle.

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Maintaining the Water Fill Valve

The filter screen of the water fill valve, illustrated below, may require periodic cleaning to remove trapped particles. A low water fill occurs if the blockage is not removed.



To Clean the Water fill valve

1. Turn off the water and electrical power to the washer. Unplug the Mobile model; turn off the circuit breaker that services the Under-Counter or Freestanding model.
2. Remove the rear panel of Free-Standing models.
3. Disconnect the water supply tube that is connected to the valve.
4. Remove the valve from the base.
5. Remove the four screws from the valve plate and separate the valve from the inlet connection.
6. Remove the valve filter screen and clean it under running water
7. Replace the screen and reassemble the valve connection. Be certain the O-ring gasket is positioned in the groove in the fill valve body.

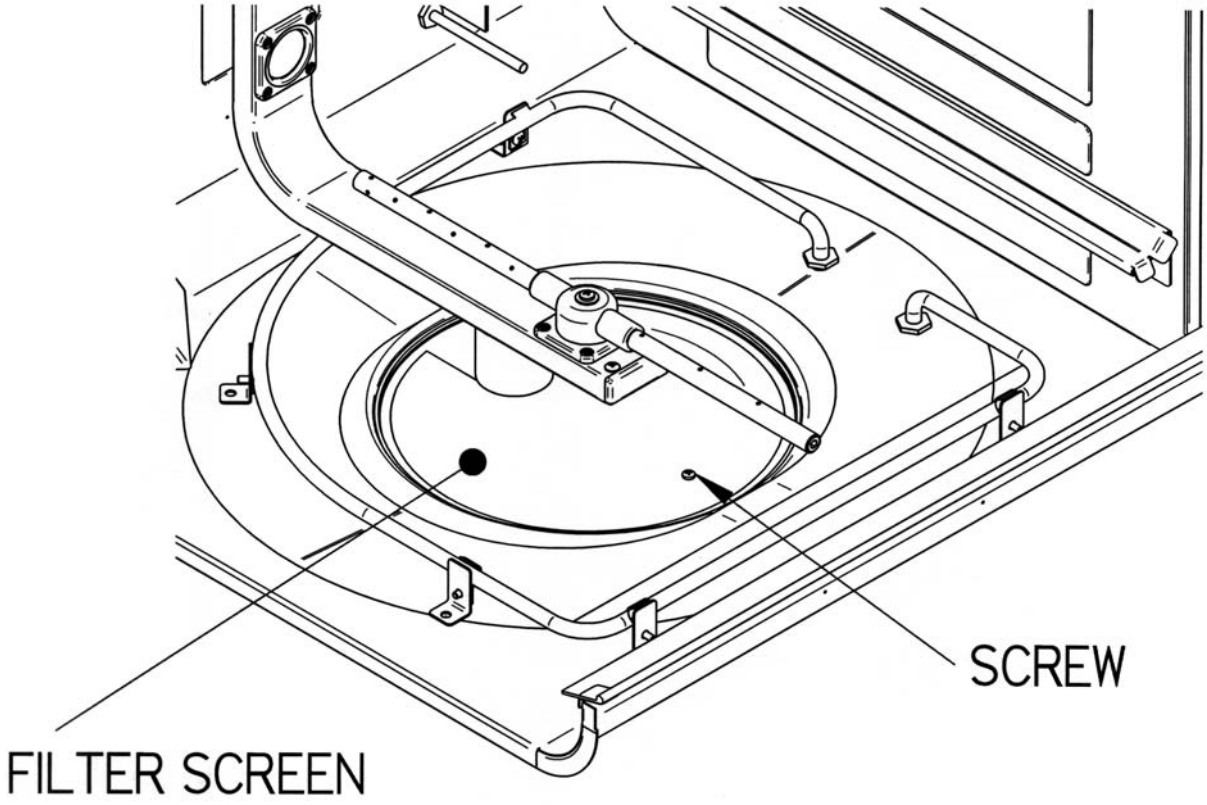
Cleaning the Sump Filter Screen

If debris has accumulated on the filter screen (located in the washer sump), you can remove and clean the screen. To clean the sump filter screen, refer to the figure and instructions below.

To clean the sump filter screen

1. Open the washer door and remove the bottom rack.
2. Remove the screw that retains the filter screen.
3. Carefully lift the screen and pull forward, using care not to drop debris into the sump.*

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* Debris that falls into the sump can damage and/or destroy the wash and drain pumps.

To Replace the Filter Screen
If the filter screen is damaged or too dirty to clean and needs to be replaced follow the instructions above to remove the original filter screen and keep the hardware. Once removed, position the new screen and insert the holding screw in place. Make sure that the 1/8" drilled hole is located below the water distribution channel.

Maintaining the Air Gap in the Drain

If the installation included an air gap (recommended) it requires periodic cleaning. The air gap is not part of the washer; therefore, it is not covered by the washer's warranty. The air gap protects the washer against water backing up in the event of a clogged drain. Check the air gap for build-up any time your washer is not draining well.

Most types of air gaps are easy to clean. Simply follow the manufacturer's directions for maintaining your air gap.

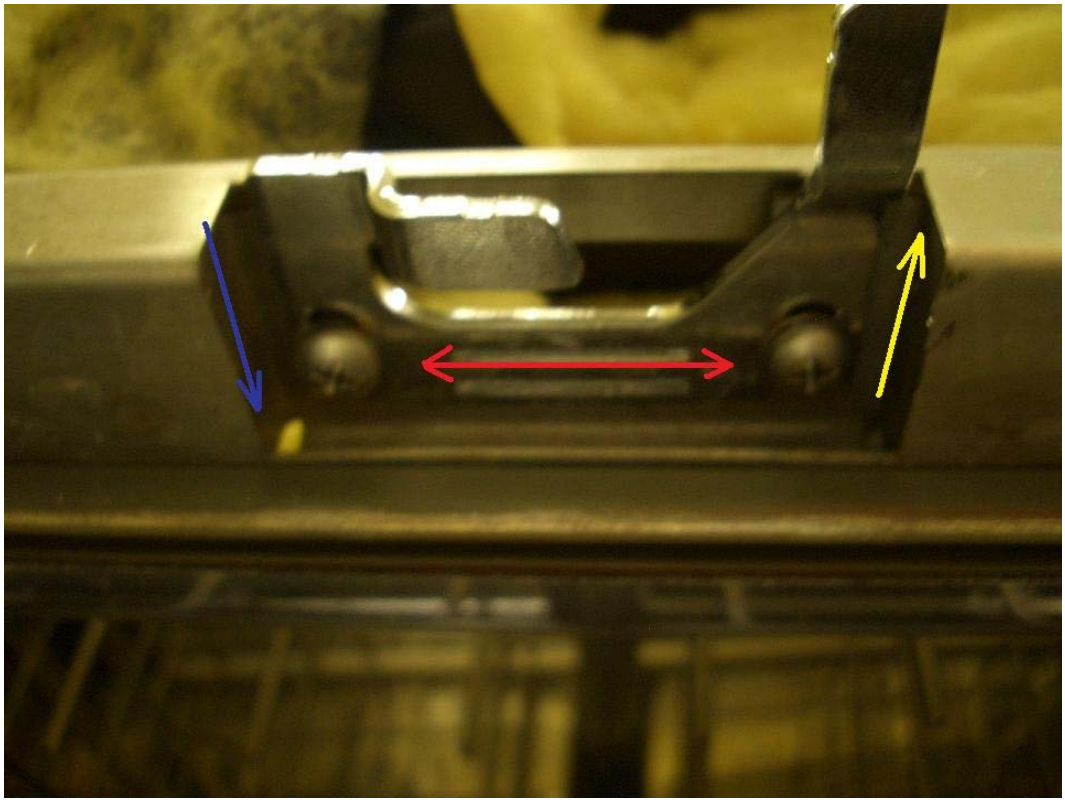
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Adjusting the Door Latch Keeper Strike Plate

If, when the door is closed and latched, the latch is loose, or the machine turns off during a cycle due to vibration or bumping, then you may need to adjust the Door Latch Keeper/Strike Plate.

Adjusting the Door Latch Keeper/Strike Plate

1. Open the door to the glassware washer.
2. Loosen the two screws indicated by the Red Arrows.



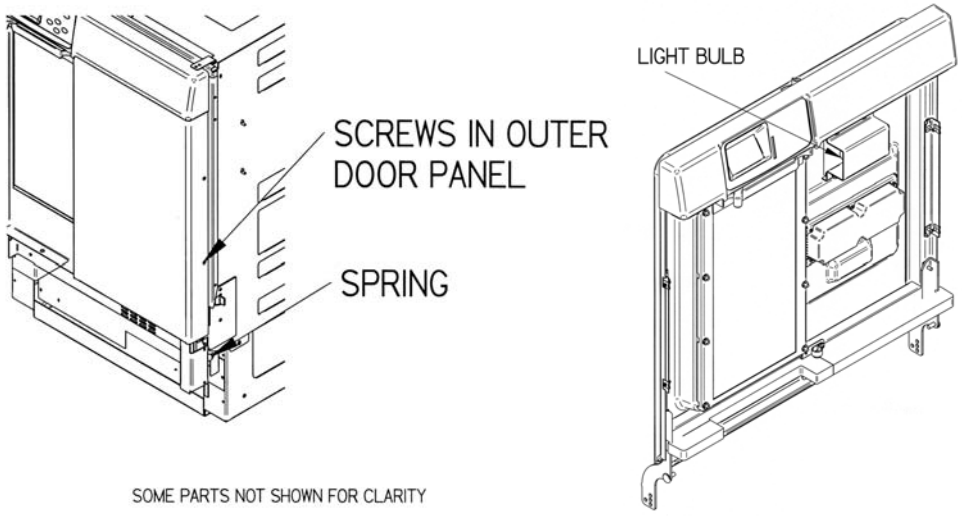
3. To ***tighten*** the latching action of the Door Latch, move the plate in the direction of the Blue Arrow.
4. To ***loosen*** the latching action of the Door Latch, move the plate in the direction of the Yellow Arrow.

NOTE: *If this fails to correct the problem, perform electrical troubleshooting on the Door Switch (located behind the plastic Control Panel). The Door Switch Assembly may need to be replaced.*

Replacing the Washer Light Bulb

If the Glassware washer is equipped with a window, you will need to periodically replace the light bulb. Refer to the figure below and follow the instructions to replace the washer light bulb.

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To replace the washer light bulb

1. Turn off electrical power to the Glassware Washer.
2. Remove the lower and middle panels as described in ***Removing the toe/kick panels***.
3. Disconnect the springs on each side that connect the pivot brackets to the washer base. Disconnect the hook on the washer base side.
4. Remove the two screws on each side of the outer door panel. Lower the panel and remove it.
5. Remove the bulb by pressing in on the bulb and rotating it counter-clockwise.
6. Insert the new bulb and rotate clockwise into place.
7. Replace the outer door panel.

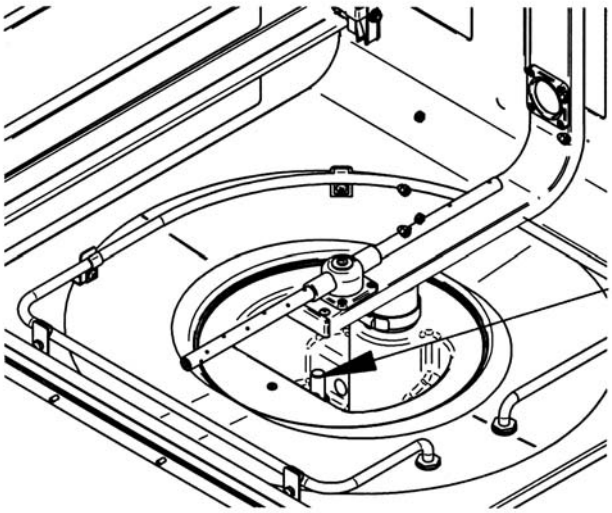
Maintaining the Conductivity Sensor (FlaskScrubber® Vantage® only)

The operation of the Conductivity Sensor may degrade if it becomes contaminated with soil from glassware that has not been rinsed prior to being placed into the washer or if it becomes coated with minerals from the water supplied to the washer. If cleaning the sensor fails to correct the problem, the sensor must be replaced. If the interior of the washer is discolored and appears to be coated with a film, there is a good possibility that the conductivity sensor is also coated. Follow the directions for removing film or spots from the washer interior described in ***Maintaining the Stainless Steel Interior.***

To clean the conductivity sensor

If the soil from unrinsed glassware has coated the sensor, the sensor may be cleaned using a solvent compatible with the soil. Remove the sump filter screw as described in ***Cleaning the Sump Filter Screen.*** Using a swab moistened with solvent, remove the soil from metal parts inside the tubular portion.

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To replace the conductivity sensor

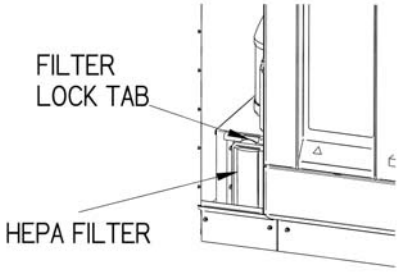
1. Turn off the electrical power to the washer. Turn off the circuit breaker that services the washer.
2. Remove the cabinet back panel.
3. Unplug the sensor from the wiring harness.
4. Unscrew the sensor from the sump housing.
5. Reverse this procedure when installing a new sensor.

*Note: When replacing the sensor, use **Teflon Tape** on pipe threading.*

Replacing the HEPA Filter (FlaskScrubber® Vantage® only)

After an extended period of time, dirt and debris may block the air flow through the HEPA filter.

1. Open the left (side cabinet) door by pressing it in the center to release the latch.
2. Press down on the lock tab on the top of the HEPA filter and pull the top of the filter outwards.



3. Lift the filter out of the bottom retainer.
4. Reverse this procedure to install the replacement HEPA Filter.

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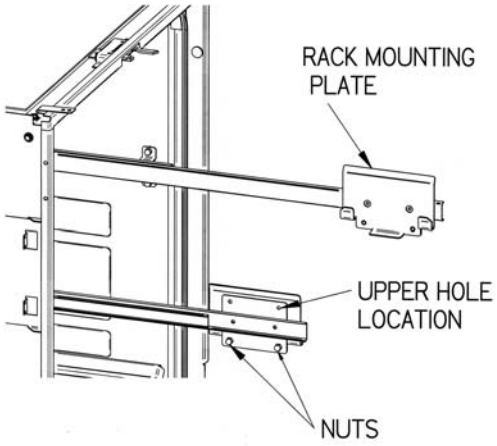
Modifications

Installing (FlaskScrubber®) & Adjusting the Upper Rack

The Upper Rack comes standard on the SteamScrubber®; however, the FlaskScrubber® has the option of adding the Upper Rack (Spindle or Basket). The Optional Upper Spindle Rack provides 30 additional spindles for washing narrow-neck glassware and is customizable by removing spindles or by installing Multi-Pin Inserts. The Open Basket allows for the washing of open mouthed glassware. The height of the upper rack may be varied to suit the heights of glassware that will be washed in the upper and lower racks.

Installing the Upper Rack

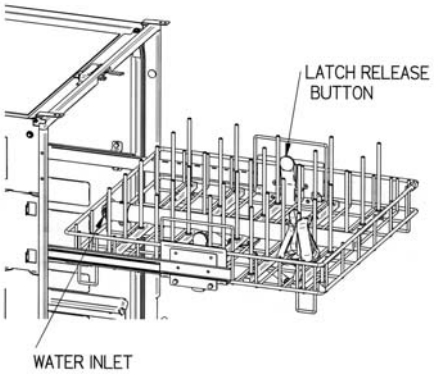
The optional upper racks for FlaskScrubbers® ship with two (2) each Slide Assemblies and Mounting Bracket Assemblies (See Figure below).



1. Remove the acorn nuts and lock washers from both upper sides using a 3/8" wrench. There are 4 on each side.

2. Position brackets on slides over the studs on the sides. The position of the rack mounting plates must be as shown. Secure the slide assemblies using lock washers and acorn nuts removed in Step 1. It may be necessary to synchronize the travel of the two slides.*

3. Install the Upper Spindle Rack by lowering the rack onto the rack mounting plates. The water inlet must have its inlet toward the rear. Make sure the latch on each side secures the rack to the rack mounting plate.



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* To synchronize the travel of the slides, attach the upper rack and pull it all the way out gently. Pull the rack out firmly several times to the maximum travel length. When you push the rack in, the door should close easily and latch smoothly.

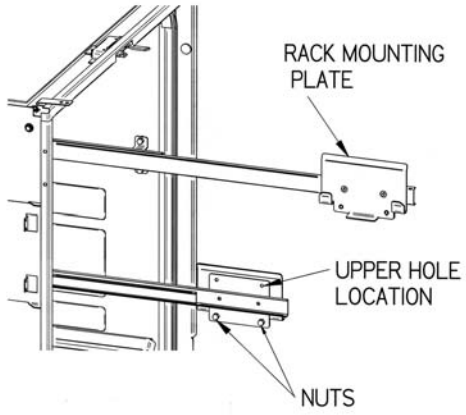
Washing Tall Glassware / Removing Upper Rack

When the Upper Rack is in place, it limits the height of the glassware that can be washed. If very tall glassware or long pipets are to be washed, remove the Upper Rack.

1. Slide the upper rack all the way out of the washer.
2. Grasp each side of the rack, placing a thumb on the release buttons of the rack clips.
3. Press each release button and lift the rack straight upward.

Adjusting the Height of the Upper Rack

1. Remove the upper rack as described above.
2. Remove the 2 nuts that retain the rack mounting plate to the slide.
3. Reposition the rack mounting plate to the slide using the other set of holes. Replace 2 nuts.
4. Repeat the procedure on the opposite slide.



Making Adjustments to the Spindle Rack

Modification of the Spindle Rack can be done through optional accessories that will customize the washer for each customer. These accessories include two Pipet Inserts, an upper (spindle) rack, and varying size spindles.

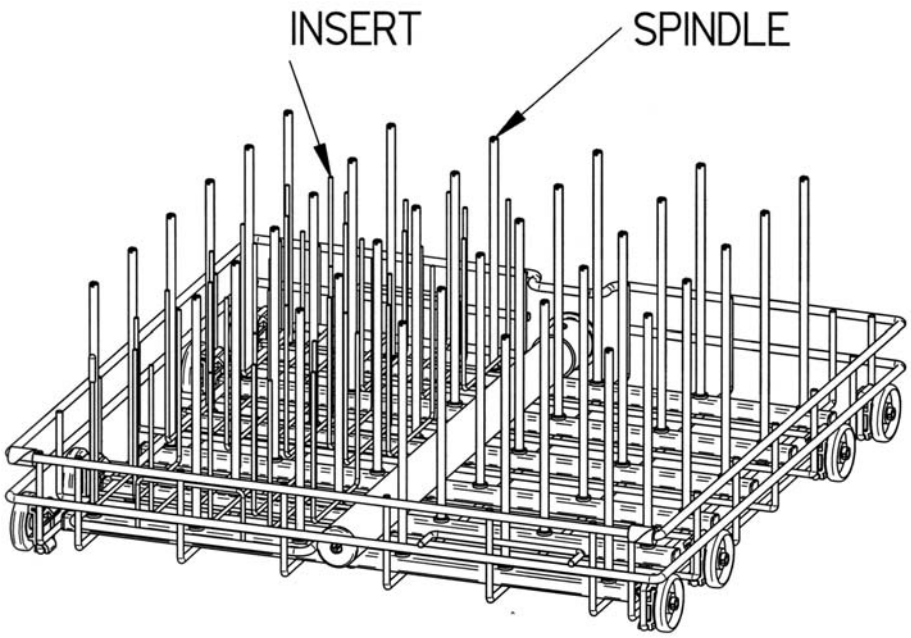
Installing Optional Inserts into the Spindle Rack

A multi-Pin insert is available that can be placed directly on the spindle racks. It can hold beakers or wide mouth glassware. The insert can be positioned either on the left side or right side.

To install an insert:

1. Remove all glassware, spring retainers and glassware holders.
2. Lower the insert down over the spindles, if necessary, spindles may be removed using the tool supplied with the Spindle Rack or a screwdriver in the slot on the top of the spindles. Be sure to replace any removed spindle with a plug supplied.

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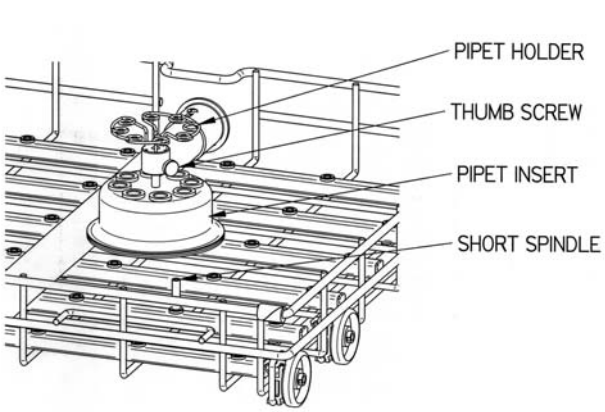


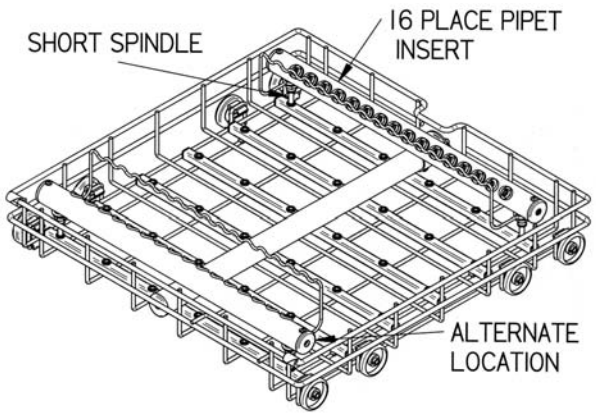
Installing Optional Pipet Inserts

Two sizes of Pipet Inserts are available. The 8-place Pipet Insert accommodates 1 mL to 10 mL pipets. Multiple Pipet Inserts may be installed, if desired.

To install an 8-place Pipet Insert (Below Left):

1. Insert the tool supplied with the Spindle Rack or a screwdriver into the top of a spindle and turn counterclockwise to remove the spindle.
2. In the position previously occupied by the spindle, thread into place the short spindle you received with the Pipet Insert.
3. Push the Pipet Insert over the short spindle.
4. If spindles other than the one used for the short spindle are removed, the holes must be plugged with plastic plugs supplied with spindle rack.





The 16-place Pipet Insert accommodates 1 ml to 50 ml pipets. Two of these inserts may be installed if desired.

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To install a 16-place Pipet Insert (Above Right):

1. Use the tool supplied with the Spindle Rack or a screwdriver to remove the six spindles on either the front or rear of the spindle rack. Remove others if necessary.
2. Replace the left and right spindles with the two short spindles that you received with the Pipet Insert.
3. Replace all other spindles with the plastic plugs that you received with your washer.
4. With the support facing the center of the spindle rack, slide the Pipet Insert over the spindles until it completely seats.
5. Push pipets into the 16 receptacles and rest them on the support.

NOTE: Lower spindle racks are shipped with 34 long spindles and 2 shorter spindles. If spindles are removed and then replaced, the shorter spindles should be located on the front row in the second and third positions from the right side. This will allow proper function of the detergent dispenser.

Installing Small Spindles

Ten small spindles are included with each Spindle Rack. Since the large volume of water which flows through the standard spindles may be great enough to force the glassware off the spindle, small spindles should be used when small pieces of glassware will be washed.

To install small spindles:

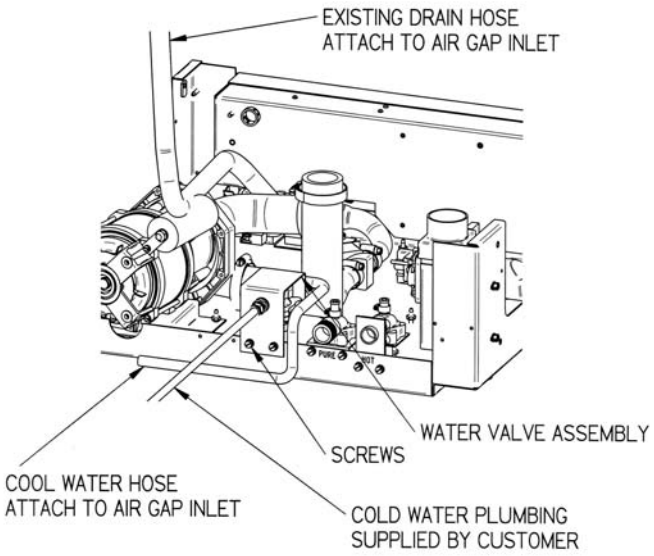
1. Remove the standard spindle by inserting the tool supplied with the Spindle Rack or a screwdriver into the slot on the top and turning counterclockwise.
2. Replace the standard spindle with a small spindle.

Installation of the Optional Cool Drain Water Kit

An optional Cool Drain Water Kit is available to reduce the water temperature of the drain water in installations where hot drain water is not permitted. It may be installed on Under-Counter (UC) or Free-Standing (FS) models. A supply of cold water must be available. It is recommended that the cold water temperature is colder than 54°F (12°C). Warmer water temperature will cause the drain temperature to be higher. The cold water supply must be capable of a flow rate of 3.5 GPM (13.2 LPM) and a pressure of 20-120 PSI (138-827 kPa). Hot drain water will be mixed with cold water during drain operations.

1. Disconnect power to the washer.
2. Remove the back panel of the washer if it is a FS model or the service panel of the UC model as described in *Removing the Washers Paneling.*
3. Attach the water valve assembly to the rear flange of the base using the screws provided.
4. Connect the wires coming from the water valve assembly to the mating connector in the wiring harness of the washer.
5. Connect the cold water supply to the water valve assembly. Do not allow the tube to kink when the washer is placed into its operational location. If necessary, replace the straight fitting on the cool water valve with the supplied elbow.

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TANK AND OTHER PARTS NOT SHOWN FOR CLARITY

6. Replace the back paneling.
7. Attach the hose from the valve to a Twin Inlet High Flow Air-gap suitable for dishwasher applications. This may be obtained from a plumbing supply store.
8. Attach the drain hose from the Glassware Washer to the other inlet of the Air-gap.
9. Attach the Air-gap to the building drain. And turn back on the electrical power.

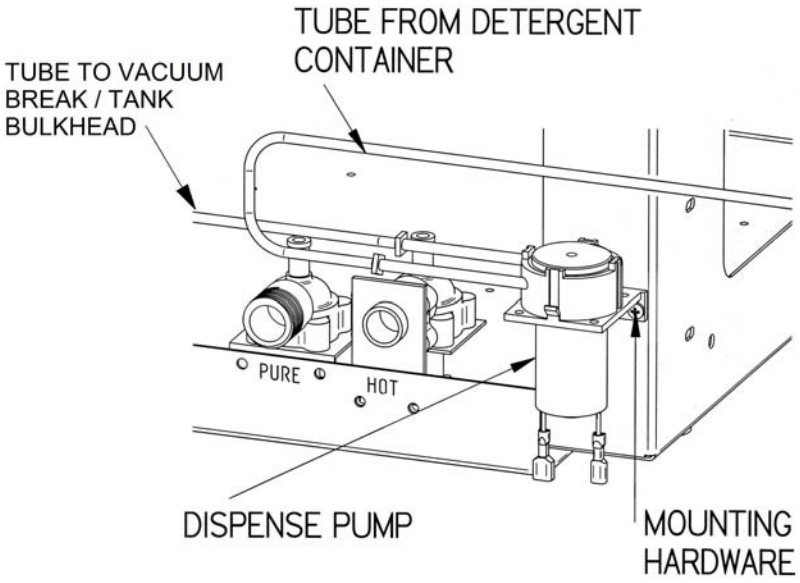
Installation of the Optional Liquid Detergent Dispenser

An optional liquid detergent dispenser is available for installation on SteamScrubbers® and FlaskScrubbers®. This permits dispensing liquid detergent from a bulk 1 gallon (3.8L) container eliminating the need to fill the detergent cup with detergent each time the washer is used.

To install the Liquid Detergent Dispenser:

1. Disconnect power to the washer.
2. Remove the back panel. Loosen the insulation jacket to provide access to the back of the washer.
3. Attach the dispense pump to the rear flange of the base using the screws and nuts provided.
4. Attach the tube from the detergent container to the inlet of the pump.
5. Loosen the hose clamp that is around the large hose on the bottom of the vacuum break. DO NOT REMOVE THE HOSE. Slip the stainless steel tube that is on the end of the clear tube coming from the detergent dispense pump into the hose on the vacuum break. Tighten the hose clamp. Secure the provided tie wrap around all 3 tubes on the top of the vacuum break being careful not to collapse any tube.
6. Locate the detergent container at a convenient location where it will not be a trip hazard.

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7. Remove the lower panel and the electrical junction box cover as described in ***Removing the toe/kick panel.***
8. Plug the supplied harness into terminal J6 on the Relay PCB and route the other end to the left rear corner of the washer base.
9. Plug the wire from the detergent container to the mating connector in the new harness in the base of the washer.
10. Plug the connectors on the pump to the mating connectors in the new harness in the base of the washer
11. Reinstall the Junction Box cover and lower paneling.
12. Reinstall the back panel if the washer is a FS model.
13. Turn on the electrical power.

Enable the liquid detergent dispenser:

1. Enter the washer set up screen on the display by holding the ▼ button on the control panel and closing the door and sliding the door latch to the right.
2. Press the ▼ button until the arrow on the left points to LIQ DETERGENT OPT.
3. Press the ◄ or ► button to activate this accessory.
4. Press RUN to save all settings.

Using the liquid detergent dispenser:

1. Remove the cap from the container and remove the tube and level switch assembly.
2. Fill the container with detergent or use a new bottle of Labconco detergent and replace the tube and switch assembly and the cap.
3. There are two methods which can be followed for filling the system with detergent
   a. Run a wash cycle with no glassware in the washer. Set the detergent dispense rate to 30 ml.
   b. Run a diagnostics test. When the display window shows DETERGENT PUMP, allow the pump to run for 30 seconds.
4. Program the quantity of detergent that will be dispensed by entering the programming screen as described in ***Chapter 4: Using Your Dishwasher*** of the User/Instructional Manual that came with your washer.

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SECTION III:
Troubleshooting and Alarms

To be effective in properly servicing laboratory equipment, it is essential to be able to troubleshoot any problem and gain a clear and concise root to the problem to accurately correct the problem. This section is split into two sections. The first is a chart dealing with Basic Troubleshooting for a wide range of issues. The second section gives detailed steps at finding the root causes of the Alarms that may be displayed due to Washer Failures.

Basic Troubleshooting

PROBLEM	CAUSE	CORRECTIVE ACTION
Poor Drying	Dry Temperature too Low	Program higher dry temperature
	Flask, beaker, or labware with concave bottoms not loaded correctly	Tilt these articles when loading so that water drains off.
	Recondensation	If clean labware is left in the washer, recondensation may occur. Open latch after completion of cycle to allow moisture-laden air to escape.
	Heater(s) disconnected or malfunctioned	Reconnect or replace heater.
	Blower disconnected or malfunctioned	Reconnect or replace blower.
	Dry time too short	Program longer time.
Poor washing results	Water is not hot enough	Check Wash 2 water temperature setting. Must be at least 120°F (49°C). Recommended temperature is 150°F (66°C).
	Improper loading	Check washer loading instructions in *Chapter 4* in this manual.
	Detergent too old or amount wrong	Replace detergent or change quantity used.
	Detergent caked in cup	Clean cup. Replace with fresh detergent. Check water inlet temperature. Must be at least 120°F

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		(49°C).
	Insufficient wash Time	Increase wash cycle time.
	Insufficient water	Check to be sure the water shut-off valve is fully open. Check to be sure the water pressure is between 20 and 120 psi (138-827 kPa) at a flow rate of 1.25 gallons per minute (4.7 liters/minute). Check water level switch.
Not draining Properly	Clogged filter	Clean sump filter.
	Drain line clogged or kinked	Disconnect drain line and clean or remove kink.
Purified water does not fill	Crimp in supply hose	Refer to installation instructions for proper purified water piping installation.
	Motor wires disconnected	Reconnect wires.
Tank and inner door have surface rust	Glassware is contaminated with mineral acids.	Pre-rinse glassware. Clean with stainless steel cleaner and soft cloth.
Washer does not run	No power to washer	Check fuse or circuit breaker, or door switch.
	Door latch is open	Latch washer door by pushing door in.
Washer door opens and closes badly	Cabinet opening is not square	Correct opening with leveling feet.
	Door hitting countertop mounting screws	Adjust mounting screws.
Washer leaks	Washer is not level	Adjust leveling feet.
	Door not sealing	Adjust door latch.
	Tank gasket loose	Check gasket and correct.
	Loose connection at hose clamps	Tighten hose clamp.
	Loose connection at fill valve	Check fill valve and correct.
	Improper detergent	Use non-foaming detergent. Use only proper amount of detergent.

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	Obstruction in drain Line	Remove obstruction.
	Washer overfilling	Check operation of fill switch.
Washer leaks around door seal	Improper installation	Check cabinet opening to see if it is aligned properly with the door. Washer must be level. Adjust feet to level unit.
	Unit not level	Adjust feet to level unit.
	Door opened during operation	Allow 4-5 seconds before opening door after unlatching.
Washer will not Drain	Clogged drain	Clean out drain.
	Blockage of air gap	Clean the air gap by lifting the cover, unscrewing the cap, and removing any accumulated material.
	Kink in drain hose	Check for a kink in the drain hose.
	Filter blocked	Check filter in washer and clean as needed.
	Drain valve or pump not operating	Check operation.
Washer will not fill	Fill valve clogged	Clean fill valve.
	Water supply turned Off	Turn on water.
	Defective fill switch	Check operation.
Washer overfills	Defective fill switch	Check operation.
Selection buttons on control panel inoperable or controls malfunction	Microprocessor memory error	Perform "Factory Reset." Open latch on door. Press ▼ button and simultaneously close door latch. Release ▼ button and display will show the set up screen. Press ▼ until FACTORY RESET is highlighted. Press ► or ◄ until "Yes" is displayed. Press RUN.
	Key pad defective	Replace key pad.
Conductivity reading "High" (>2000 µs)	Water is very conductive, detergent has dispensed	None.
	Sensor defective	Replace sensor.

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Conductivity reading "0"	Sensor not connected	Reconnect sensor wires.
	Sensor defective	Replace sensor.
	Sensor dirty	Clean sensor.
Conductivity Reading fluctuates	Washing action cause Bubbles	None.
Temp Reading Stuck or Fluctuating at 16°C	Poor Connection between Sensor and PC Board	Check Connectors between Temp Sensor and Sensor Wiring Harness. Inspect integrity of Sensor Wiring Harness. Check Connectors between Sensor Wiring Harness and Relay PC Board. Check Connectors between Relay PC Board and Ribbon Cable. Inspect integrity of the Ribbon Cable. Check Connectors between Ribbon Cable and PC Board.
Drain Fail Alarm	Drain Valve inoperable	Listen for click when washer should drain. Check for mechanical restriction of actuator arm on top of valve. Check for electrical power to valve. Check for damage to valve coil.
	Drain Pump inoperable	Check if pump fan turns when washer should drain. Check for mechanical restriction of fan. Check for electrical power to pump.
	Drain hose not routed properly	Hose from drain pump must slope upward and have no low spots or horizontal runs under washer tank. Make sure hose is attached to the back of the washer and has a high loop. Hose must be attached to building plumbing pipe ¾ inch ID or larger.

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		Hose from washer must not be attached to another hose.
		Check for kinks in hose.
		Drain hose must not be elevated more than 30 inches.
	Pump lost its prime	Remove ALL water from inside drain hose. Pump will prime when water drains from washer.
	Building plumbing defective	Check for blocked air gap.
		Check for clogged drain.
	Filter screen clogged	Clean screen in bottom of washer.
	Defective fill level Switch	Contact Labconco Product Service.
	Defective controller	Check output from PCB to drain valve and pump.
		Replace PCB. Contact Labconco Product Service.
Water High Alarm	Holes in filter screen too small	Contact Labconco Product Service.
	Defective hose to fill switch	Check for splits.
		Check for loose clamps.
	Defective fill level switch	Recalibrate switch. Contact Labconco Product Service.
		Replace switch.
	Holes in filter screen too small	Contact Labconco Product Service.
Temp Sensor Alarm	Poor Connection between Sensor and PC Board	Check Connectors between Temp Sensor and Sensor Wiring Harness.
		Inspect integrity of Sensor Wiring Harness.
		Check Connectors between Sensor Wiring Harness and Relay PC Board.
		Check Connectors between Relay PC Board and Ribbon Cable.
		Inspect integrity of the Ribbon Cable.

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		Check Connectors between Ribbon Cable and PC Board.
	Faulty Temperature Sensor	Temp Sensor Bad. Replace.
Water Low Alarm	Improper water supply	Make sure water is turned on. Tap water pressure must be at least 20 psi (138 kPa) and flow must be at least 1.25 gallons (4.7 liters)/minute. DI water supply must have flow of at least 0.9 gallons (3.4 liter)/minute. At least 3.4 gallons (13 liters) must be available for each DI rinse.
	Defective fill valves	Clean screens inside the inlet fittings of the water valves. Check voltage to valves. Replace valve if it does not operate.
	Restricted flow	Check for kinks in water hoses in base of washer to water inlet fitting on side of tank.
	Defective DI water pump	Check voltage at pump. Listen for pump operation. Replace if necessary.
	Defective hose to fill switch	Check for splits. Check for loose clamps.
	Defective fill level switch	Recalibrate switch. Contact Labconco Product Service. Replace switch.
	Defective controller	Check output from PCB to both valves and DI pump. Replace PCB. Contact Labconco Product Service.
	Holes in filter screen too small	Contact Labconco Product Service.
	Defective grommet	Replace grommet.

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Low Temp Alarm	Heater inoperative	Check electrical connections. Check voltage to heater. Check resistance of heater. If open circuit, replace heater.
	Defective controller	Check output from PCB to heater. Replace PCB. Contact Labconco Product Service.
	Defective temperature probe	Check electrical connections. Contact Labconco Product Service. Replace if necessary.
	Defective high temperature cut out switch	Check resistance of safety cut out switch. If open circuit at room temperature, replace switch.

Alarms

Throughout a wash cycle there are several abnormal events that could occur. The washer is programmed to monitor these occurrences and provide an alarm to alert the operator. Information is shown on the display to identify the alarm situation. The following messages may be displayed. Certain alarm situations are signaled with an audible sound which self cancels after 1 minute.

HOT GLASS

This displays at the end of a cycle if the temperature inside the washer is over 122˚F (50˚C). The alarm cancels when the temperature cools.

PLEASE WAIT

This displays if the door is opened and then closed during a wash or rinse segment of a cycle. The display will also show the time remaining until the operation of the washer will resume where it was interrupted.

LOW WATER

This displays if a water fill is inadequate. The washer will cancel the cycle and drain water that is in the washer. The alarm is canceled by opening the door.

WATER HIGH (OVERFILL)

This displays if the washer overfills with water. Water fill valves will be closed and the washer will cancel the cycle and drain water that is in the washer. The alarm is canceled by opening the door.

OVERFLOW

This displays if water is detected in the base of the washer. Water fill valves will be closed and the washer will cancel the cycle and

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drain water that is in the washer. The alarm is canceled by opening the door.

LIQ DETER

This displays if the level of the detergent in the dispense container is low. The alarm is disabled if the detergent dispense volume is set to "0." The alarm is canceled when detergent is added to the container.

RINSE AID

This displays if the level of the rinse aid solution in the dispenser container is low. The alarm is disabled if the rinse aid dispense volume is set to "0." The alarm is canceled when rinse aid is added to the container.

DRAIN FAIL

This displays if water fails to completely drain during a normal drain operation. Operation of the washer (at this time) is canceled. The alarm is canceled by opening the door.

LOW TEMP

This displays if the water does not reach the set point temperature within 135 minutes. Operation of the washer continues. The alarm cancels when the door is opened.

TEMP SENSOR

This displays if the PC Board, during a cycle, fails to receive a signal from the Temperature Sensor. The alarm is canceled by repairing the connection from the Temperature Sensor or by replacing the Sensor if it faulty.

Water Low Alarm

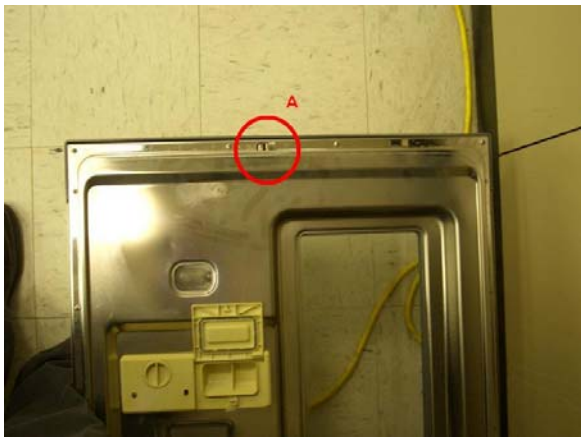
This displays if a water fill is inadequate. The washer will cancel the cycle and drain water that is in the washer. The Alarm is canceled by opening the door.

Supply Water

Verify that the supply valve is open and providing adequate pressure to the unit.

****IF the unit does not have a window to watch the water filling the tank, the switch can be tricked by pushing in on the switch located inside the rectangular hole on the inside of the door (Fig 1A). You can run all diagnostic tests this way with the door open. (Running the wash pump with the door open is not recommended)

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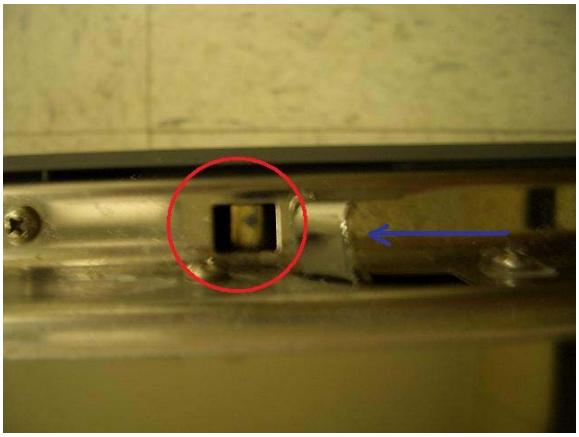


Figure 1:
Above Left: Interior Door: Door with window. Circle A indicates location of door latching mechanism and power switch to be triggered for override.

Above Right: Door Switch Override: The red circle shows the rectangular hole in the inside top of the door where the door switch can be triggered for going through prescribed diagnostic tests with the door open. The Blue Arrow is pointing to the Door Latch.

Diagnostic Fill

Water fill during cycles is timed. If the pressure switch doesn't read full in 3 minutes (tap) or 5 minutes (DI) the fill valve times out and will go into "Drain/Cancel" with Water Low Alarm. Knowing the timing of the alarm will help us diagnose what is causing the problem.

1. Go into the diagnostics menu by opening the door latch, then push and hold the ▲ button while simultaneously closing the latch. Release the ▲ button when the startup screen appears.
2. If there is water in the tank scroll down by pressing the ▼ button to "drain pump" and then use either the ◄ or the ► button to get to "yes" and drain out the remaining water.
3. Scroll back up by using the ▲ button to "tap fill" and again use either ◄ or the ► button to get to "yes" and time how long it takes for the water to fill and shut off. (the fill timer is not engaged in diagnostics)
4. Let the machine fill until it stops on its own. When it has finished filling, open the tank to check the water level. It should contact the lower half of the **Sump Heater Element (Fig 26).** (Water should not completely cover the heater)
5. The following indicates your next step.
    - If it filled appropriately but took longer than 3 minutes check the supply water pressure and the inlet valve for obstructions. **SEE "Clogged Fill Valve"**
    - If the fill stopped prior to 3 minute mark but filled above the heating element, then the pressure switch needs adjustment. **SEE "Pressure Switch Adjustment"**

Clogged Fill Valve

Both the hot tap and DI water inlet valves are located on the washer assembly base in the back left of the unit.

1. Turn off supplied water source valves.

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2. Disconnect feed tube from valves and inlets (NOTE: depending on when the alarm went off, it could be either the hot tap water valve or the DI)
3. Inspect fill valve for blockages or sticking solenoid valve plunger.
4. Test electrical functionality of valve.
5. inspect hoses for blockages
6. Replace the valve if it will not open, or if it has no resistance across the two terminals.
7. repeat diagnostic check

Pressure Switch Adjustment

The pressure switch is located on the back of the washer beneath the insulation jacket. There are four red screw sockets located on this switch, two above the row of electrical nodes and two below. The top socket on the bottom pair controls the level of fill (Fig 2B).

1. Carefully remove the insulation jacket from the back of the machine.
2. Locate the pressure switch.
3. Using a Phillip's screwdriver, adjust the fill control (red socket) by giving it a ¼ to ½ turn to the left (counter clock-wise) to lower the water and right (clock-wise) to raise the level.

NOTE: *If you adjust either of the contacts also adjust the other screw the same amount of turns to keep the proper distance between them.*

4. Repeat Diagnostic check and advance accordingly.
5. Adjust/Replace Pressure switch as necessary

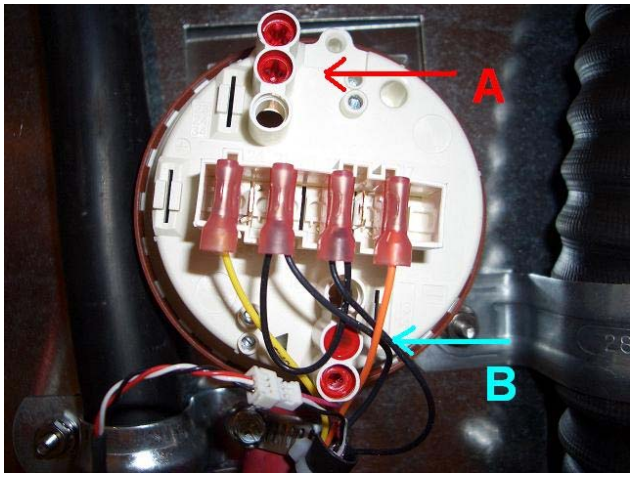


Figure 2:
Fill Pressure Switch: The pressure switch has replaced the traditional float switch.

(A) *Red Arrow:* Adjustment slot for the overflow/overfill contact. Turning it clockwise raises the level at which it switches off, counter clockwise lowers it.

(B) *Blue Arrow:* Adjustment slot for the initial fill. Turning it for changes is the same as above.

Overfill Alarm

This displays if the pressure switch's initial fill contact does not trigger. The water level will then switch the overfill contact as an emergency shut off before the tanks is flooded and leaks out the door. The Alarm will shut off the fill and message the display. The Alarm is canceled by opening the door.

Inspect the Sump Screen:

Look at the sump screen in the bottom of the tank. It should have a 1/8 inch hole drilled into it. If it doesn't, use a 1/8" drill bit and put a hole as

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close to the water distribution tower as possible. Be careful not to drill through the plastic sump underneath the screen. The drilled hole is a short-term solution.

If this must be done, contact Product Services at 1(800)821-5525 to get a replacement screen from the manufacturer.

**IF the unit does not have a window to watch the water filling the tank, the switch can be tricked by pushing in on the switch located inside the rectangular hole on the inside of the door (Fig 1A). You can run all diagnostic tests this way with the door open. (Running the wash pump with the door open is not recommended)

Diagnostic Check Overfill:

1) open the door latch
2) push and hold the ▲ button
3) While holding the ▲ button, simultaneously close the latch, and hold the button until the machine beeps.
4) Scroll down to Tap Fill and push ◄ or ► until the screen says "yes" next to Tap Fill.
    - This will allow the machine to fill with Tap water. It should take less than 3.5 minutes for it to stop.
5) Push and hold the "Run" button.
    - This causes the machine to override the initial fill contacts and continue to fill manually.
    - Hold until the machine stops filling.
6) Open the door and check the water level.
    - The water should cover the sump heater element but not be overflowing the door.

- IF the water level isn't covering the heater element or looks to overflow the door then stop diagnostics and adjust the pressure switch as appropriate.

Adjusting the Pressure Switch:
To adjust the pressure switch as necessary, follow the directions on page 29 of this manual.

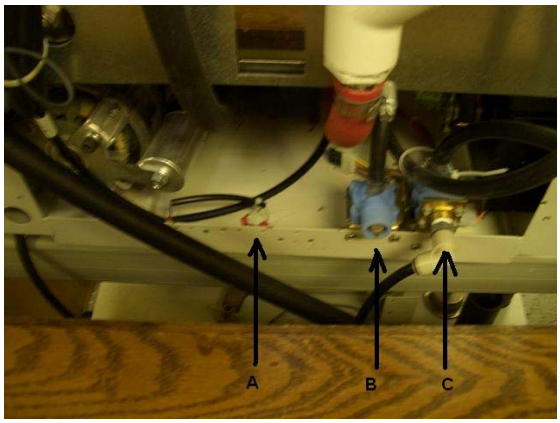
Overflow Alarm

This displays if the overflow sensor is wet, indicating free standing or residual water in the base of the unit. If the sensor becomes wet the machine will display the alarm "Overflow" and will Drain/Cancel. Once it is finished draining the unit is inoperable until the sensor is dry. The Alarm can be canceled by cleaning out the water in the base and drying off the sensor and its contacts.

Locating the Sensor

To locate the sensor, the back of the unit will need to be accessible. Once the unit is pulled out from its installed position, remove the back service panel (if under-counter) or the back cosmetic panel (if free-standing). The Overflow sensor is found by looking in through the back of the base and is near the middle of the machine, and left of the fill valves, approximately 1.5" from the rear weldment (Fig 3 & 4).

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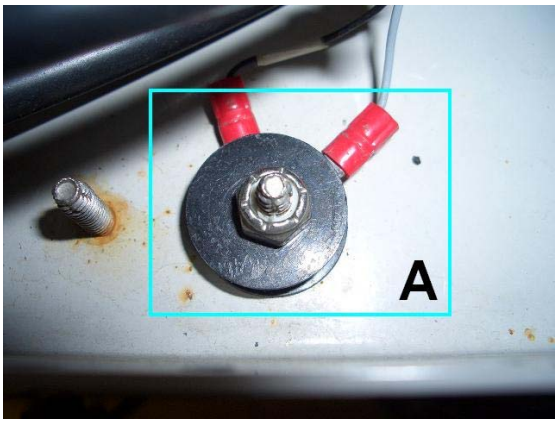


Fig 3 (above left): Looking down on the back of a unit, with the Service Panel removed. (A) Overflow Sensor. (B) Pure Water Valve. (C) Hot Tap Valve.

Fig 4 (above right): Looking through the service panel area, the Overflow Sensor (A) is bolted to a stud on the base of the unit with two red connectors with grey leads coming off of it.

Inspecting the Base

The base of the unit can be accessed by all four sides: The front of the unit is accessible by removing the kick and toe plates then lowering the relay panel. The two sides and back can be accessed by removing the service panels (held on by four bolts each) near the bottom of the unit (under-counter), or the 2 cosmetic sides and back (free-standing).

Once the base is accessible, using a flashlight, check for standing water, first near the back of the unit, where the sensor is located. Then thoroughly inspect the base of the unit from the sides to find and mop up any standing water.

Clearing the Alarm

To run the unit again, the alarm must be cleared. This is simply done by using a dry towel or rag and wiping the Overflow Sensor until dry.

Before running the washer in a new cycle, perform the following diagnostic and systems check.

1) Open the door latch
2) Push and hold the ▲ button
3) While holding the ▲ button, simultaneously close the latch, and hold the button until the machine beeps.
4) Scroll down (▼) to Tap Fill and push ◄ or ► until the screen says "yes" next to Tap Fill.
   a. This will allow the machine to fill with Tap water. It should take less than 3.5 minutes for it to stop.
5) When the tank stops filling, open the door and inspect the water level.
   a. The water level should be touching the bottom of the sump heater but not be over the top.
   b. Inspect for any leaks at this time
6) If no leak is found, Repeat steps 1-3.
7) Scroll down (▼) to "Wash Pump" and push ◄ or ► until the screen says "yes".

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8) With the wash pump ON, use a flashlight and inspect all hoses, clamps and fittings for leaks. Be sure to also inspect the fittings at the water inlet valves (Fig 3b & 3c)
9) If no leaks are found with wash pump running, proceed to Diagnostic Drain.
   a. Scroll down (▼) to "Drain/cool" and push ◄ or ► until the screen says "yes".
   b. Observe as before for leaks.

NOTE: *Correct any and all leaks as appropriate with power off to the machine.*

   c. Call Labconco Product Service (800-821-5525) if parts need to be replaced.

Inspect Overflow Sensor Contacts

If the base of the unit and the sensor contacts are dry and the Alarm is still present, inspect the terminals.

The contacts (terminals) may not be isolated from the chassis or from each other. This can be tested by checking the continuity with an Ohm meter. If there is continuity between them, check to make sure they are installed on top of each other and that they have plastic washers spaced between them and that the insulation between the rings and the studs is still in place.

If corrections are needed at this point, contact Labconco Product Service for support. Once these changes are made, restart the washer to see if the Alarm has been corrected.

Once the system is verified to be free of leaks and the base dried out, turn the unit on and verify that the alarm has been cleared and that the unit is ready for service.

LIQ DETER & RINSE AID ALARMS

The PC Boards of the new washers are programmed to dispense and measure the amount of liquid left in the detergent container. These are standard functions of the FlaskScrubber® Vantage® and can be activated on the FlaskScrubber® and SteamScrubber® when the Automatic Detergent Dispenser/Pump is purchased and installed as an accessory. When the liquid levels in these bottles are low the washer will display the LIQ DETER and/or RINSE AID ALARMS. These alarms will also show up if the PC Board is programmed with these options as "YES" when they are not present in the unit's set up. Follow the proper procedures below to clear these alarms.

For FlaskScrubber® Vantages® and FlaskScrubber and SteamScrubber with the Accessory Pump

1. Open the latch to turn off the machine.
2. Locate the container that is low, indicated by the alarm.
3. Check the level of the fluid in the bottle and either adjust the pump's feeding tube or add liquid detergent/rinse aid to the appropriate level in the dispensing bottle.
4. When the machine is turned back on the alarms should be automatically cancelled.

For FlaskScrubbers® and SteamScrubbers® without the Accessory Pump

1. Open the handle by sliding the latch to the left.

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2. Press and hold the ▼ button and close the handle of the washer by sliding the door latch knob to the right. Hold for 5 seconds.
3. The display will show the SET UP screen.
4. The > on the left side will highlight VOLTAGE.
5. Press the ▼ button until the > highlights LIQ DETERGENT OPT
6. Press the ◄ or ► buttons to select "NO" and turn off the PC Boards detergent level sensor.
7. When the machine is restarted for normal operation the Alarm(s) should have been cleared.

DRAIN FAIL ALARM

This displays if water fails to completely drain during a normal drain operation. Operation of the washer is cancelled at this time. The alarm is silenced by opening the door.



Figure 5: (left) Front view of glassware washer. Circle "4" indicates location of where the Drain Pump can be found (see Figure 4)



Figure 6: (right) Side view of glassware washer. Circle "3" indicates location of where the Drain Valve & Pump can be easily seen/found (see Figures 3 & 4).

Before undertaking these procedures please do the following preliminary check. If you look in User's Instructional Manual (pages 15 and 16), there are diagrams picturing how to plumb the drainage lines. Make sure your unit is set up according to the manual and no extra length of tubing has been added to what is supplied by Labconco.

BEFORE CALLING FOR SERVICE, DETERMINE THE FOLLOWING:

PCBoard logic revision on the display when the latch is shut:

_____

Line voltage:

_____

Cycle and Segment running when the problem occurred:

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_____

Verify that the Water Temp to the unit from the start is 120°F or GREATER for every fill.

_____

To service the Drain System, Remove the front Toe Kick Panel & Side Panel.

CHECK VALVE & PUMP

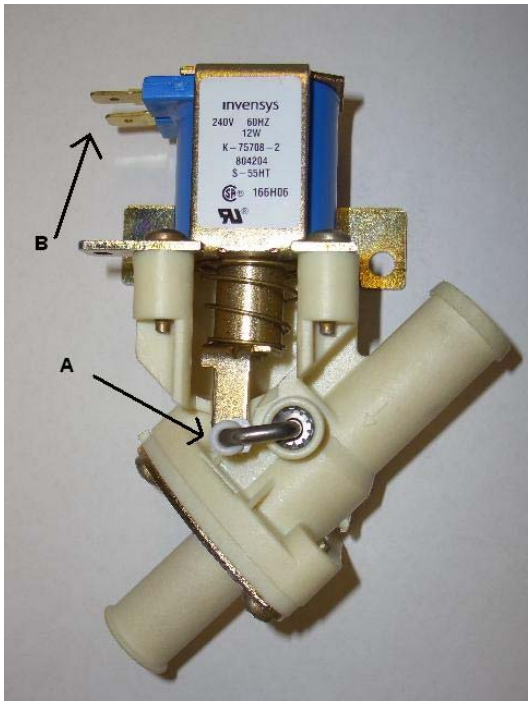
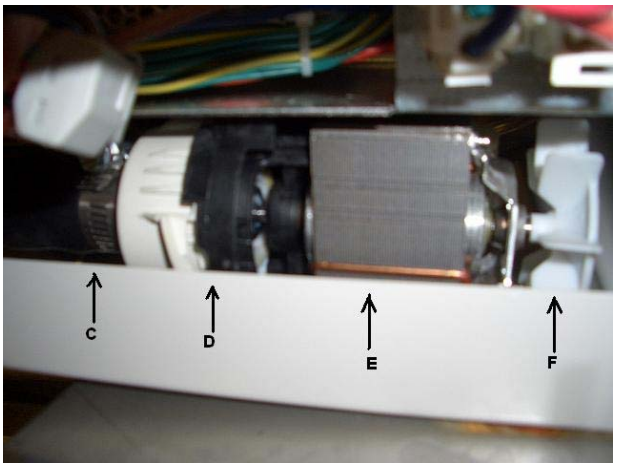


Figure 7: (left) Drain Valve. (A) Valve Actuator Lever. (B) Electrical Connector Leads.

Figure 8: (below) Front View of Drain Pump. (C) Drain Pump Inlet. (D) Drain Pump Impeller. (E) Drain Pump Motor. (F) Drain Pump Fan.



If the unit is a 230V Read the following (IF NOT Go to Valve & Pump Diagnostic)

Check the actual line voltage to the unit.

- If the line voltage is less than 207 VAC the drain valve will need to be observed for proper actuation.
    1. Go to diagnostics (described below) and select the "Drain" test.
    2. Listen for audible click/pop of valve [Fig. 7], (If you do not hear this click do the following and then go to Step 11-13 of "Valve & Pump Diagnostic" [below] for further testing and replacement instructions).
    3. Turn off and On the "Drain" test and watch the actuation lever on the valve.

Valve & Pump Diagnostic

1. Go to the Diagnostic Menu as described in **Section I** of this manual.
2. In diagnostics fill with tap until water turns off.
3. Open the door and check water level. It should be touching the heater.
4. Go back to diagnostics and push drain, verify drain is working
5. Turn off and back on several times until drain is complete. Verify water is coming out the drain hose every time.
6. If it fails on any of the start ups check valve and pump operation then skip to (11)
7. If it does not fail run the cycle that did not work.

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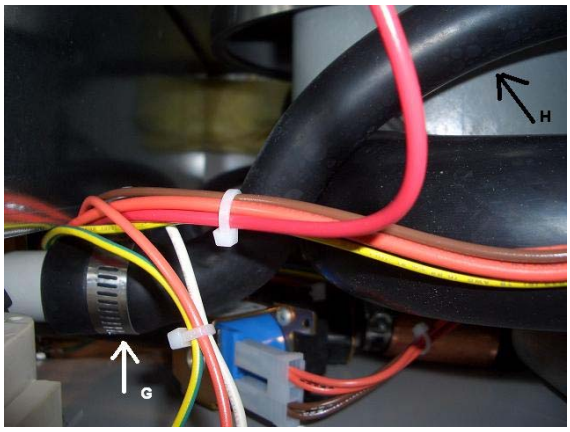
8. After wash 1 fill, open door and verify water level. Shut door and resume cycle.
9. At wash 1 drain (wash1=4 minutes) verify valve is opening, you will hear a click and the lever on top of valve will move [fig. 7A]. (Look in the left side)
10. After 3 seconds verify drain pump comes on. You can see the motor fan [fig. 8F & 9I] turning located under the electrical box, lower right side mounted to base.
11. Time the Drain. The tank and sump should be completely drained, and the pump should cavitate in under 2 minutes.
12. If this does not operate properly check for interference with the pump fan or the valve actuator lever. Make sure there are no wires interfering with the valve operation.
13. If there is no interference check the voltage to the terminals while under load (in Diagnostics).
14. If there is voltage, replace the part, if no voltage; check the wiring connections at both ends.

If you replace the pump or valve make sure the drain hose doesn't have water in it or the pump will not prime when you restart it. That includes low points in the hose between the tank and the drain/plumbing connection.

If both the valve and pump come on, verify water is coming out of the drain hose.

Hose Routing

If water is not flowing out of the hose, verify that there are no low spots in the drain hose between the pump and the high loop at the back of the washer. Also, make sure there are no kinks in the hose [fig. 10]. The drain hose must come from the drain pump up over the wash pump to the back of the unit.



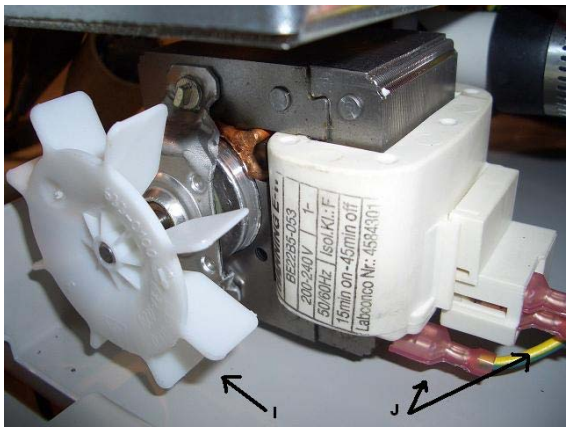


Figure 9
Above Left: Drain Hose line at pump connection. (G) Drain Hose fitting on Drain Pump. (H) Drain Hose leaving the pump and going **over** the Wash Pump Line. This configuration is necessary for the Drain Pump to prime.

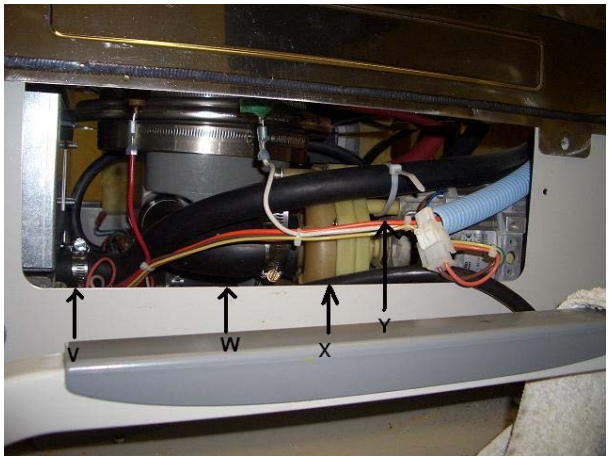
Above Right: Drain Pump viewed from the right side of the washer. (I) Drain Pump Fan. If this fan is impeded, the pump will not drain. (J) Drain Pump electrical connections.

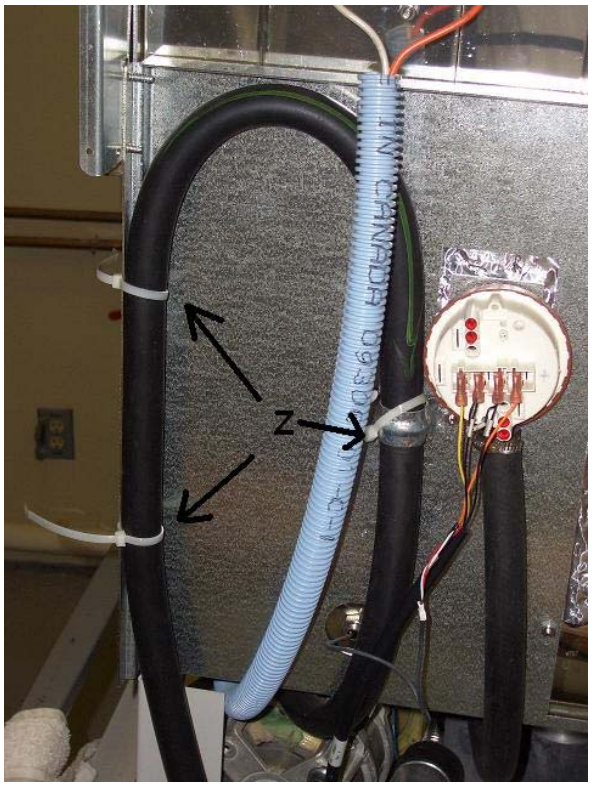
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Figure 10
Below: Drain Hose Routing. (V) Drain hose at Drain Pump. (W) Drain hose OVER Wash pump Hose. (X) Wash Pump. (Y) Zip Tie holding the Drain Hose to the outside of the Wash pump (on the housing boss).

Right: Drain hose high loop. (Z) Zip Ties holding the loop in place. Notice that the top of the loop goes up to the ledge of the back panel. Loop MUST be in place to prime the pump.





If there are no low points or kinks in the hose go to Valve & Pump Diagnostic on page 34 of this manual.

Retest by running diagnostic fill and drain.
Confirm by running cycle.

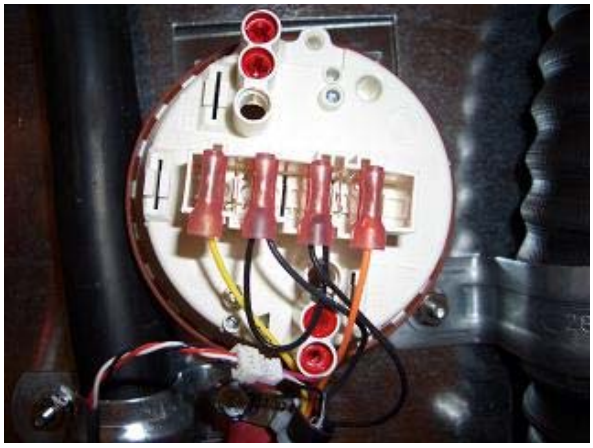
CHECK FILL SWITCH
In wash 1 drain, if the valve and pump are on and the unit does not drain, finish drain until "**DRAIN FAIL**" alarm starts, open door immediately and check water level.

If there is water in the tank shut the door and resume cycle. The unit should drain cancel, when it's done open door and check water level.

If there is no water in the tank remove the orange and black wires from the fill switch (mounted on the back of the unit) and check resistance between the two terminals on the switch to see if the switch is open or closed.
If switch closed replace wires and resume cycle [fig. 11L].
If switch is open replace switch and hose connection [fig. 11K&M].

Retest by running diagnostic fill and drain.
Confirm by running cycle.

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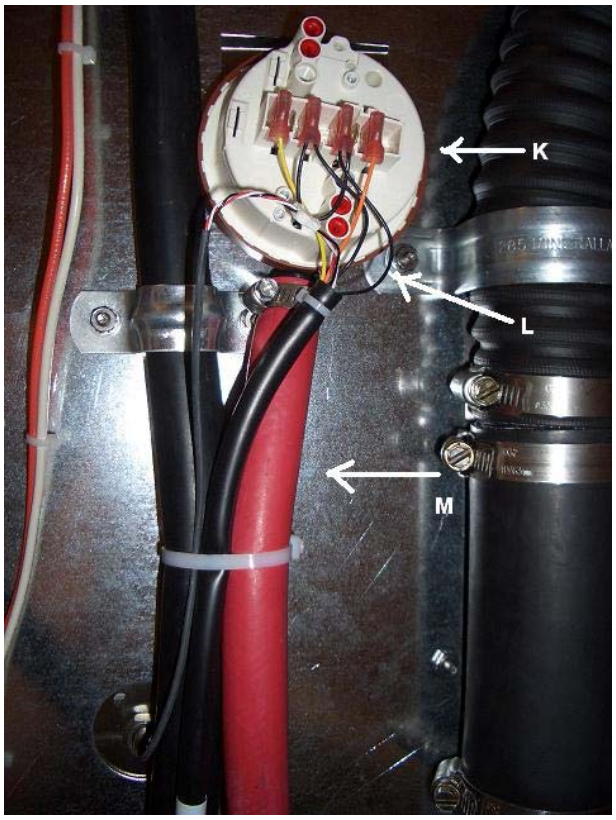


Figure 11
Above: Fill Trap Switch. Fill Switch has replaced traditional Float Switch in the new style Steam & Flask Scrubber Glassware Washers. Fill Switch may be referred to as the "pressure switch".

Right: Fill Trap Switch Assembly System. (K) Fill Trap Switch. (L) Black and Orange electrical wiring. (M) Fill Switch Pressure Hose. Hose is to be replaced if electrical check shows that the switch is open.

Low Temp Alarm, Erratic Temperature Display, & Temp Sensor Alarm

This displays if the water doesn't reach the set point temperature within 135 minutes. Operation of the washer continues. The alarm cancels when the door is opened.

This displays if the PC Board, during a cycle, fails to receive a signal from the Temperature Sensor. The alarm is canceled by repairing the connection from the Temperature Sensor or by replacing the Sensor if it faulty.

Checking the Water Temperature

When this alarm has been received and is displayed on the screen. Open the door of the washer and measure the actual temperature of the water (WATER MAY BE VERY HOT!).

- If the measured temperature agrees with the displayed temperature, GO TO "CHECKING THE FUNCTION OF THE SUMP HEATER"
- If the measured temperature is grossly different from the displayed temperature, GO TO "CHECKING THE CALIBRATION OF THE PROBE".

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Checking the function of the Sump Heater

1. Remove the front paneling as described in "Removing the Toe/Kick Panels" in Section I.
2. Locate the power supply cords and place an Ammeter around the power supply wiring.
3. Go to Diagnostics (as described in "Accessing the Diagnostic Mode" in Section I) and use the ▼ button until "HEATER" is highlighted. Press ◄ or ► button and the heater will be energized.
4. With the heater on the Amps should measure between 9.3 & 11.5 for 115V machines and 7.8 & 9.6 for the 208/230V units.
5. If the measurement is outside of these ranges, and greater than "0", check the resistance of the Heater. Replace the Heater Element as described in "Replacing the Heater Element" in Section IV.
6. Repeat steps 1-5 if you replaced the heater.
7. If the amps are correct, continue to the next section.

Checking the Calibration of the Probe



Figure 12
Left: The Temperature Probe (A) is bolted to the tank and can be found on the lower right back panel of the glassware washer. Below that is the Sump Heater Element. It may be necessary to replace either or both of these parts depending on the findings of this diagnostic procedure.

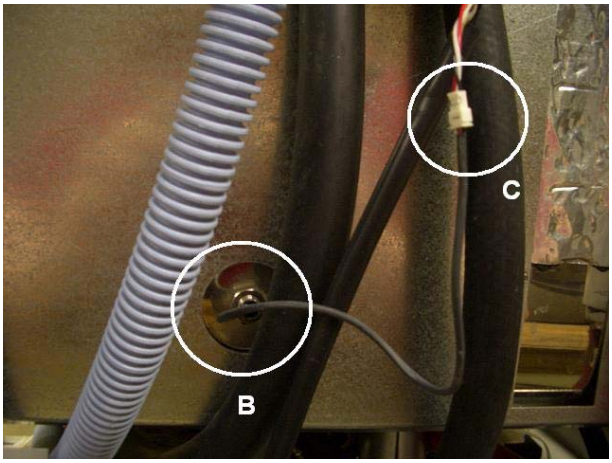
1. Open the door
2. Position a thermocouple (temperature reader) near or on the temperature probe.
3. Close the latch by sliding it to the right.
4. When the opening screen is displayed, Press and hold the ◄ button.
5. The display should agree with temperature meter ±2°C.
6. Record Readings
   a. Temperature Probe _____ Washer Probe _____
7. Proceed to the next section.

NOTE: If the temperatures do not match and the amp reading is 0, check for loose wires at the heater connection. If there is voltage to the heater, check for resistance across the heater. If open or zero, replace the heater. The theoretical resistance across the heater (not hooked up) should be around 12 ohms for the 120v and 26 ohm for 230v.

Checking the Probes Wiring

1. Lift the back flap of the Insulation Jacket and find the temperature probe [Fig 13b].
2. Follow the wire to where it connects to the red and white wire connector from the Base Wiring Harness [Fig 13c].
   a. Inspect the connection and repair or reconnect as necessary.

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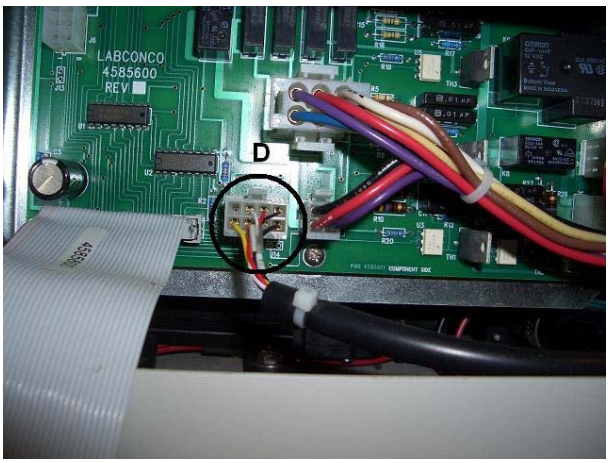


Figure 13
Above Left: Back of washer Temperature Probe (B) connection to the Base Wiring Harness (C).

Above Right: With the Toe, kick and Relay Board Cover panels removed, find the relay board on the bottom front left of the machine. The Base Wiring Harness connects to this board at Circle D.

3. Remove the front paneling as described in "Removing the Toe/Kick Panels" in Section I.
4. The Base Wiring Harness then connects to the front of the Relay Board [Fig 13d].
    a. Inspect the connection and repair or reconnect as necessary.
5. Lastly, check the door harness and ribbon cable.
    a. Remove the lower and middle panels as described in ***Removing the toe/kick panels***.
    b. Disconnect the springs on each side that connect the pivot brackets to the washer base. Disconnect the hook on the washer base side.
    c. Remove the two screws on each side of the outer door panel. Lower the panel and remove it.
6. Check these cables for any damage or pinching. Correct if necessary.

If there are no apparent problems with the wiring and the probe was found to be out of its tolerance in the "Checking the Calibration of the Probe" Section the probe should be replaced.

Replacing the Temperature Sensor

1. Separate the connecters between the Temperature Sensor and the Sensor Wiring Harness.
2. With a wrench (or two) loosen and remove the Temperature Sensor from the back wall of the tank.
3. Place the new Sensor in its place (it is recommended that new o-rings are used when replacing the Sensor) and tighten the mounting nut.
4. Reset the connections at the Sensor Wiring Harness.
5. Test the Sensor.

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SECTION IV:
Part Replacement

Once the root cause of a failure has been determined, it may be time to replace parts. When major part replacement of the various washer systems is required, use this section's various procedures for assistance.

Replacing the PC Board, Display Panel and Button Pad

The PC (timer) Board, Display Panel and Button Pad are all part of the Control Module Interface. The PC Board is where the user inputs settings and sets up a program; it's also where they get information from the timers and sensors in the washer. Use the procedures below to access the control module and replace parts when there is a control failure.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

Accessing the Control Module

1. Open the washer's door.
2. Remove the mounting screws on the door's backside that secures the grey, plastic Control Panel and the screws on the side of the door that secure the front panel (this must be removed to pull off the controls).
3. Lift the door and remove the mounting screw that holds the plastic knob to the door latch.
4. Pull the Control Panel from the door to access the Control Module.
5. Remove wiring pin connectors as necessary for the needed repairs.

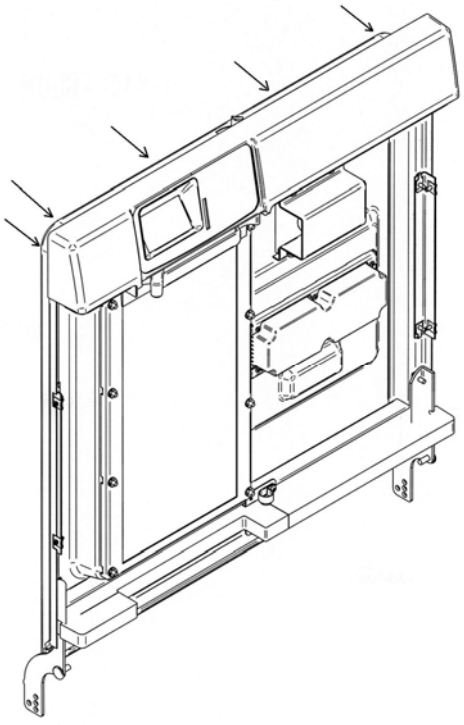


Figure 14
Left: Door Assembly. The *Arrows* point to the position of the machine screws that hold the Control Panel to the Doors Inner Frame Panel.
Below: Control Module. The *Yellow Circles* indicate the five mounting screws that hold the Control Module to the Control Panel. The *Green Circle* shows where the PC Board's Ribbon Cable is fitted between the gaskets and sealed with RTV.



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Replacing the PC Board

1. Remove the Control Module from Control Panel.
2. Remove the four screws holding the display panel onto the Control Module.
3. Pull the Display Panel to disconnect the pins from the PC Board and remove it.
4. Disconnect the pin connector of the button pad from the PC Board.
5. Disconnect the pin connector of the ribbon cable that runs up the door.
6. Remove the five (5) screws that hold the PC Board to the Control Module and remove the PC Board.

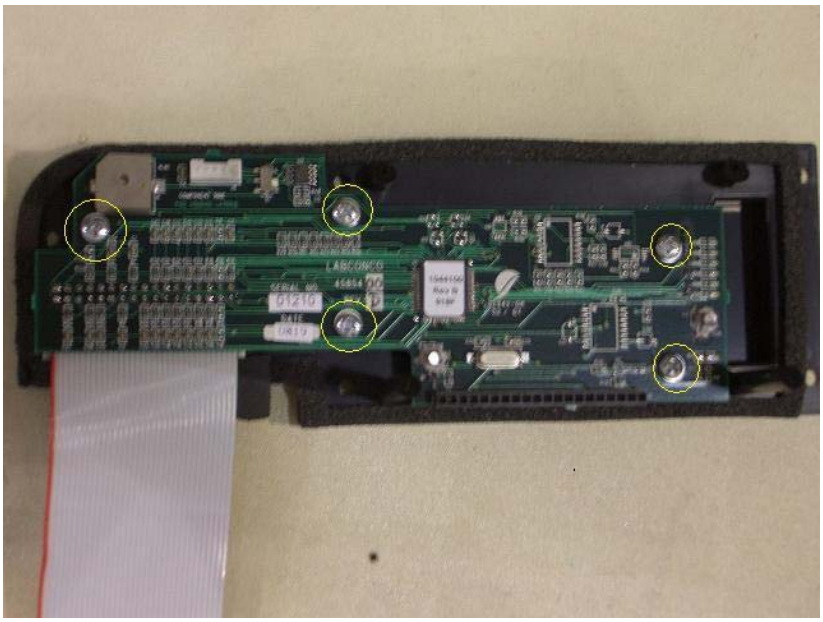


Figure 15
Left: PC Board with Ribbon Cable. The *Yellow Circles* highlight the five PC Board Mounting Screws. Below the far left screw you can see where the Ribbon Cable connects to the board.

NOTE: It his HIGHLY recommended that when changing any Printed Circuit Board that a Grounding Bracelet is worn to protect the circuitry of the equipment.

NOTE: Be careful not to over-torque the screws as it can crack the plastic backing of the PC Board.

7. Remove the new PC Board from its Anti-Static Packaging. *(IT IS HIGHLY RECOMMENDED THAT YOU USE A GROUNDING BRACELET TO PROTECT THE CIRCUITRY OF THE BOARD)*
8. Place the PC Board over the mounting pegs and secure it with the five screws.
9. Attach the pin connector of the ribbon cable; be sure to get all pegs in the right place.
10. Attach the pin connect of the button pad to the PCB; again, be sure all pins are in their proper spot.
11. Fit the Display Panel over the PCB placing the long pins in their spots.
12. Secure the Display Panel with the mounting screws.
13. Place the Display Module into its housing and secure it with the six mounting screws.

PC Board System Set UP

The Washer control system has been set at the factory to agree with the configuration of the washer as it was shipped. The control may be customized or modified if certain optional accessories are added.

1. Access the SET UP Menu as described in **Section I.**
2. The display will show the SET UP screen.
3. The > on the left side will highlight VOLTAGE.
4. Press the ◄ or ► buttons to select the correct operating voltage of the washer.

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CAUTION: The voltage selected (115V or 230V) does not change the acceptable AC mains voltage that can be connected to the washer. It only selects the programs that are suitable for the identified voltage.

5. Press the ▼ button and TEMP UNITS will highlight.
6. Press ◄ or ► buttons to select either °F or °C which will be used on the display to set and monitor temperature.
7. Press the ▼ button and DI PUMP ENABLE will highlight.
8. Press ◄ or ► buttons to YES or NO. Doing this allows the pure water valve and pump to be disabled if pure water will not be used for rinse cycles. It also prevents programming a cycle to have pure rinses if pure water is not available.

CAUTION: On PCB logic Revisions A and B, this setting MUST be YES. If the customer does not have DI water hooked up, they need to be sure that all rinses are TAP WATER RINSES!-

9. Press the ▼ button and LIGHT will be highlighted on the display.
10. Press ◄ or ► to cause the light inside the tank on window models to be turned on or off while the door is latched.
11. Press the ▼ button and LIQ DETERGENT OPT will be highlighted on the display.
12. Press ◄ or ► to activate the control for the liquid detergent dispense option if this accessory has been installed.
13. Press the ▼ button and FACTORY RESET will be highlighted on the display.
14. Press ◄ or ► to select YES to erase all program set points entered by the user and to restore all set points to the factory setting.
15. Press RUN to save all settings.

Replacing the Digital Display

1. Remove the Control Module from Control Panel.
2. Remove the four screws holding the display panel onto the Control Module.
3. Pull the Display Panel to disconnect the pins from the PC Board and remove it.

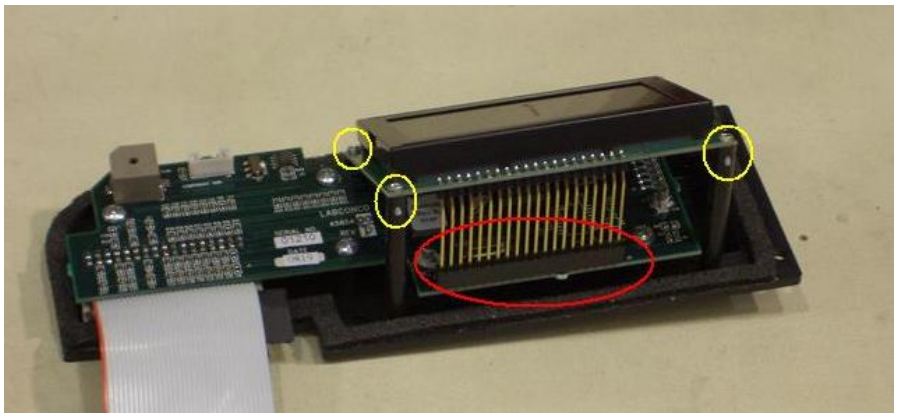


Figure 16
Left: Display Panel attached to PC Board and Control Module. The *Yellow Circles* show where the Display Panel's Mounting Screws are placed in the Control Module's bossing.

The *Red Circle* shows the pins of the Display in the PC Board's connector. When replacing the Display, be sure all pins have been placed in the PC Boards connector slots.

4. Fit the new Display Panel over the PCB placing the long pins in their spots.
5. Secure the Display Panel with the mounting screws.
6. Place the Display Module into its housing and secure it with the six mounting screws.
7. Test the unit in diagnostics.

Replacing the Button Pad

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1. Remove the Control Panel from the door.
2. Access the Control Module as described above and remove it.
3. Disconnect the Button Pad's ribbon cable from the PC Board.
4. Pull the Button Pad Sticker from the Control Panel and discard.
5. Fit the ribbon cable of the new Button Pad through the slot in the Control Panel.
6. Center and Place the Button Pad sticker on the Control Panel. (watch for air bubbles and make sure the ribbon cable is pulled all the way through)
7. Connect the ribbon cable to the PC Board.
8. Reseat the Control Module onto the Control Panel.
9. Test the unit in diagnostics.

Water Inlet Solenoid Valve Replacement

Use the following procedures to replace and install the Tap and Pure Water Inlet Solenoid Valves. These valves are important for filling the unit before each wash and rinse cycle. If they are impeded or are electrically weak, they may not open/close completely, which can cause several problems, including the Low Water Alarm.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

Replacing the Tap Water Valve

The Hot Tap Valve is regulated by the PC Board and allows the Lab water pressure to fill the tank when set to fill via tap. The Tap water valve, when fed with proper pressure, should allow the tank to fill to the appropriate level within three (3) minutes.

Removing the Tap Valve

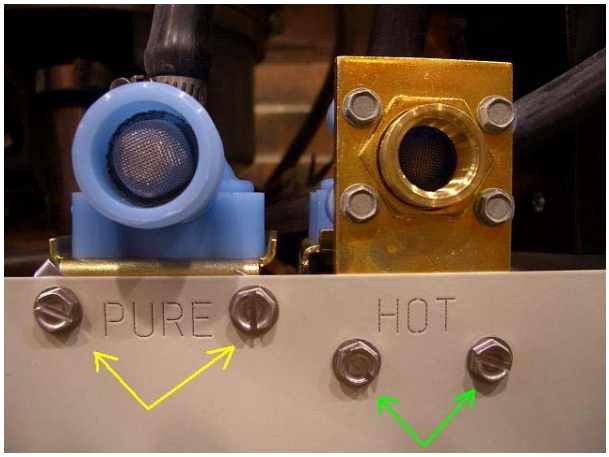
1. Pull the unit out of its installation space.
2. Locate the Hot Water Tap Valve.
3. Close the customers Supply Water valve.
4. Remove either the back cosmetic panel or the back servicer access panel and right cosmetic panel/service access panel.
5. Remove the Inlet water supply tube from the valve.
6. Loosen the clamp on the hose that goes from the valve to the Tank Inlet Port. Remove the hose.
7. Remove the electrical connector from the pins on the valve (go through the left side panel.
8. Remove the screws/nuts holding the valve to the flange of the base weldment.
    a. The two screws holding the valve to the base weldment are countered by nuts on the inner side of the valve. These will need to be held secure while removing the screws.
9. The valve should now be free.

Installing the Tap Valve

1. Remove the Tap Valve as described above.
2. Line up the valve with the drilled holes for the screws.
3. Mount the screws with the nuts.
4. Reconnect the connector to the valves pins.
5. Place the hose on the Valve connector and tighten the clamp.
6. Reconnect the user's water supply tube and turn the water on. Check for leaks.

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7. Use diagnostics to check fill times and function of the new valve.
8. Re-install the panels.



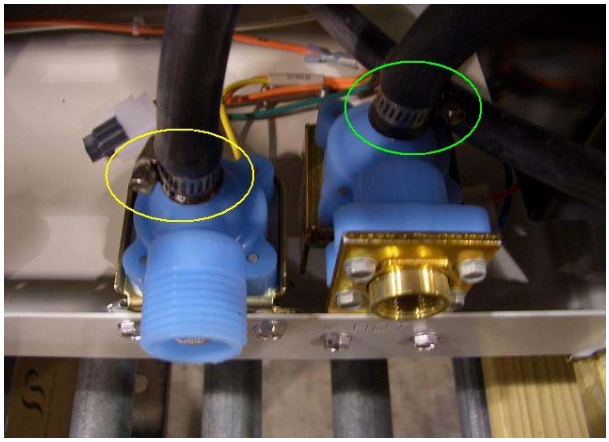


Figure 17
Above Left: Inlet Solenoid Valves (HOT Tap and PURE). The *Yellow Arrows* point to the mounting screws of the PURE water valve while the *Green Arrows* point to the mounting screws of the HOT tap water Valve. The screws are mounted with lock nuts from behind.

Above Right: Inlet Solenoid Valves with Hoses and Clamps. The *Yellow Circle* indicates the clamp and fitting of the PURE water line that leads to the DI/Pure Water Pump. The *Green Circle* indicates the clamp and fitting of the HOT tap water line that goes to the tank.

Replacing the DI/Pure Water Valve

The Hot Tap Valve is regulated by the PC Board and allows the house water pressure to fill the tank when set to fill via DI. The DI water valve, when coupled with a working DI/Pure Water Pump, should allow the tank to fill to the appropriate level within five (5) minutes.

Removing the DI/Pure Water Valve

1. Pull the unit out of its installation space.
2. Locate the DI/Pure Water Valve.
3. Close the customer supplied Supply Water valve.
4. Remove either the back cosmetic panel or the back servicer access panel and right cosmetic panel/service access panel.
5. Remove the Inlet water supply tube from the valve.
6. Loosen the clamp on the hose that goes from the Valve to the DI/Pure Water Pump. Remove the hose.
7. Remove the electrical connector from the pins on the valve (go through the back panel.
8. Remove the screws/nuts holding the valve to the flange of the base weldment.
    a. The two screws holding the valve to the base weldment are countered by nuts on the inner side of the valve. These will need to be held secure while removing the screws.
9. The valve should now be freed.

Installing the DI/Pure Water Valve

1. Remove the DI/Pure Water Valve as described above.
2. Line up the valve with the drilled holes for the screws.
3. Mount the screws with the nuts.
4. Reconnect the connector to the valves pins.
5. Place the hose on the Valve connector and tighten the clamp.
6. Reconnect the user's water supply tube and turn the water. Check for leaks.

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7. Use diagnostics to check fill times and function of the new valve.
8. Re-install the panels.

DI/Pure Water Pump Replacement

Use the following procedures to replace/install the DI/Pure Water Pump. This pump allows the user to supply the washer with non-pressurized, gravity-fed purified water. The pump works in conjunction with the DI/Pure Water solenoid valve to fill the washer when set to use Purified water (during rinses). If the pump fails, the washer will experience a Low Water Alarm during DI Rinse cycles.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.



Figure 18
Left: DI/Pure Water Pump. The Pure water pump is located in the Front Left of the machines base. The *Yellow Circles* indicate the four nuts that mount the DI Pump to the base of the unit.

The *Blue* and the *Green Circles* highlight the DI Pump's inlet and outlet hose fittings and clamps, respectively. The pump's inlet hose leaves the inlet solenoid and loops over the pump. The pump's outlet hose leaves the pump and goes to the tank's Water Inlet Port. The location of this port depends on the age of the unit; it is either on the back or the right side of the unit.

The *Magenta Circle* points out the electrical connections where the DI Water Pump's wiring hooks into the units Base Wiring Harness.

1. Remove the Left Panel or Left Service Access Panel.
2. Locate the DI/Pure Water Pump.
3. Remove the four nuts holding the pump to the Base Weldment.
4. Loosen the clamps on the pump inlet and outlet hoses.
5. Remove the hoses and place them in their appropriate fittings onto the new pump.
6. Tighten the clamps on the pump inlet and outlet.
7. When the Hoses are secured to the pump, place it over the four mounting screws.
8. Tighten down the four lock-nuts.
9. Test the pump in diagnostics.

Water Level Pressure Switch/Hose Replacement

Use the following procedures to replace/install the DI/Pure Water Pump. This pressure switch has replaced the domed float switch in older units. As the water fills the sump/tank the pressure in the tube rises actuating the first contact (initial fill). If the second

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contact (Overfill) is actuated then the washer will stop and display an "Overfill Alarm". If the first contact isn't actuated in time (3 min for tap, 5 min for DI/Pure) the washer will stop and display a "Low Water Alarm". See the Troubleshooting section for further details.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

Replacing the Pressure Switch

1. Pull the unit out of its installation space.
2. If the unit is a freestanding unit or has the cosmetic back panel, remove the back panel.
3. Pull the black insulation jacket up and secure it.
4. Locate the Pressure switch.
5. Remove the pressure switch from the back of the tank. (note: the switch is held in place by a self clamping tab its back side)
6. Remove the wiring connectors from the switch.
7. Loosen, unclamp and remove the Pressure Switch Hose.
8. Connect the pressure switch hose to the new Pressure Switch.
9. Reconnect the connections as shown on the wiring diagram.
   a. 5-yellow to 22
   b. 7BC-Black to 21
   c. 7AB-Black to 11
   d. 6-Orange to 12

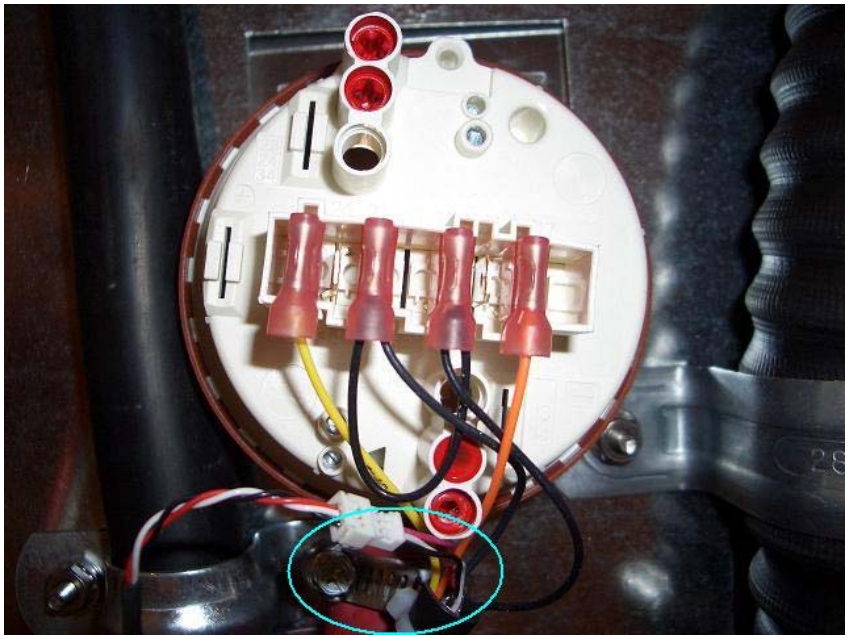


Figure 19
Left: Pressure switch with Hose Clam and Wiring Connectors. The Wiring Connectors are attached on the first, third, fourth and sixth pins (from left to right: 22, 21, 11, and 12). The two connectors on the left are the leads to the "Overfill Switch" and the leads on the right are to the "Initial fill Switch."

The *Blue Oval* encircles the Pressure Hose's clamp at the Pressure Switch. When tightening this clamp, care must be taken not to over tighten, or place angular force on the connector. Over-tightening can cause the grommet in the hose to crack. Angular force will cause the connector nipple to break, rendering the pressure switch useless.

10. Test the unit in diagnostics
    a. Fill the unit in tap and check the water level
    b. Drain
    c. Fill the unit with DI/Pure (if applicable) and check the level
    d. Drain
11. Run a single Rinse Only cycle to test for any alarms.
12. If the unit passes all tests, seat the Pressure Switch into its place.

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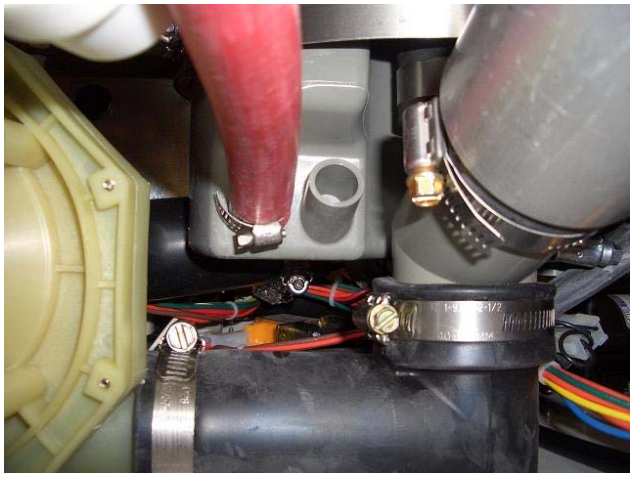
13. If the unit doesn't pass or alarms, follow the troubleshooting section for that alarm.

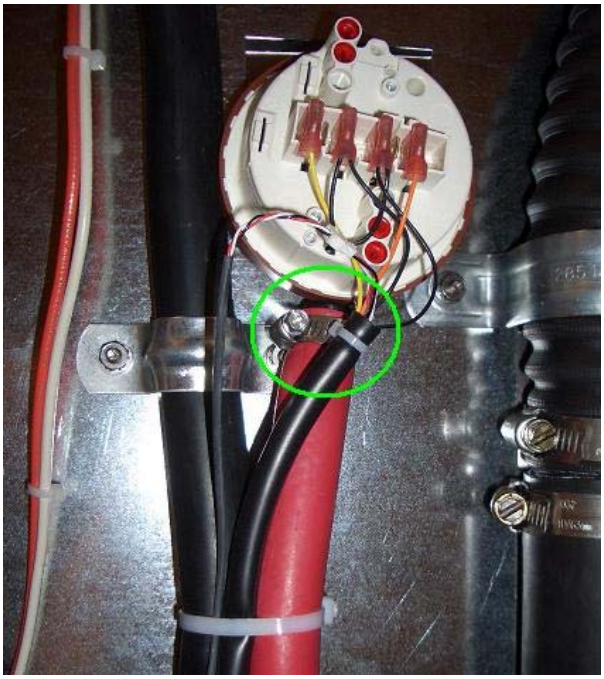
Replacing the Pressure Switch Hose

1. Pull the unit away from the wall so that you have access to the backside of the washer.
2. Remove the cosmetic back panel or the back service access panel.
3. Pull the black insulation jacket up and secure it.
4. Locate the Pressure Switch Hose. (Fig 20)
5. Loosen the clamp and remove the hose from the Sump connection.
6. Loosen the clamp and remove the hose from the pressure switch.
7. Place the new hose over the connection on the Sump and tighten down the clamp.
8. Place the hose end with the grommet over the nipple of the Pressure switch and tighten the clamp over the hose. Be careful not to crush the grommet or snap the connector on the pressure switch!
9. Test the unit in diagnostics
   a. Fill the unit in tap and check the water level and for leaks
   b. Drain
   c. Fill the unit with DI/Pure (if applicable) and check the level
   d. Drain
10. Run a Rinse Only cycle to test for any alarms.
11. If the unit passes all tests, seat the Pressure Switch into its place.
12. If the unit doesn't pass or alarms, follow the troubleshooting section for that alarm.

Figure 20
Bottom: Pressure Hose on Sump. The Hose fills with water from the sump to actuate the pressure switches contacts.

Right: Pressure Hose at Switch. The hose transfers the pressure of the filling sump to the switches actuator so long as the system remains sealed. This is accomplished by air tight clamping on the pressure hose connectors.





Replacing the Wash Pump

The wash pump has been relocated in models manufactured after Sept. 2007. Previously, it has been located directly under the tank's sump. If diagnosis leads to replacing the wash pump, use the steps below to guide your way.

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**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

1. Pull the unit away from it's installation space.
2. Remove the back and right cosmetic panels or service access panels and pull up the black insulation jacket and secure it.
3. Locate the Wash pump in the back right corner of the machine.
4. Loosen the clamps holding the two hoses to the pump connections and remove the hoses from the pump.

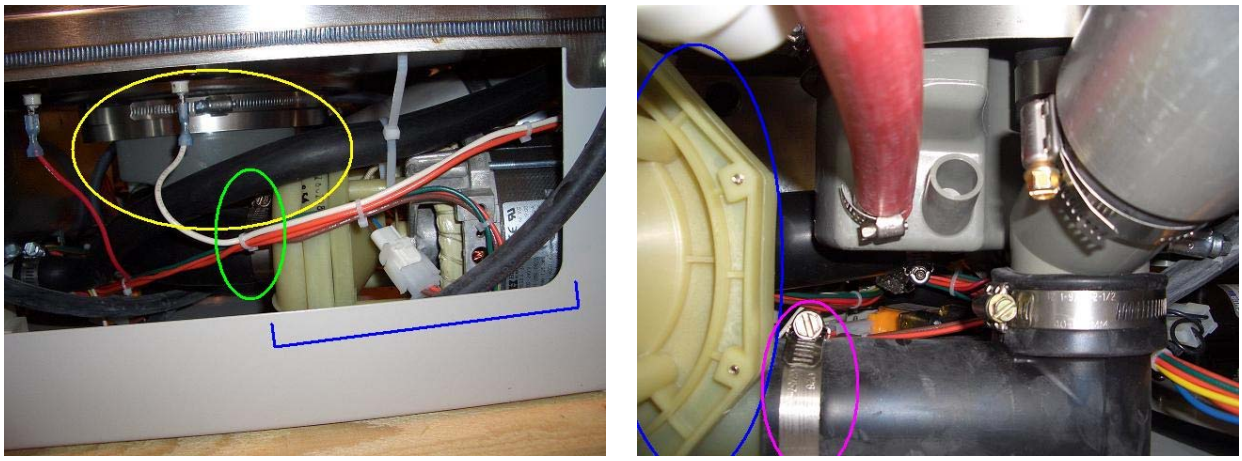


Figure 21
Above Left: Wash Pump from Right Side. The *Blue Bracket* is the Drain Pump/Motor Assembly. The *Green Circle* indicates where the Wash Pump Inlet hose is clamped to the pump. The *Yellow Circle* highlights the tank's sump which feeds the pump.

Above Right: Wash Pump and Pump Outlet Elbow from Rear. The *Blue Circle* is a view of the Wash Pump from the rear at the point where it connects to the Pump Outlet Elbow back to the sump where it then goes into the water circulation loop. The *Magenta Circle* indicates the clamp that needs to be loosened and removed in order to remove the Wash Pump/Motor Assembly.

5. Remove the four nuts that hold the motor's mounting bracket to the base weldment. Use the photos below for access points. ***(you may need to elevate the back of the machine for better access at the screws underneath the base)***

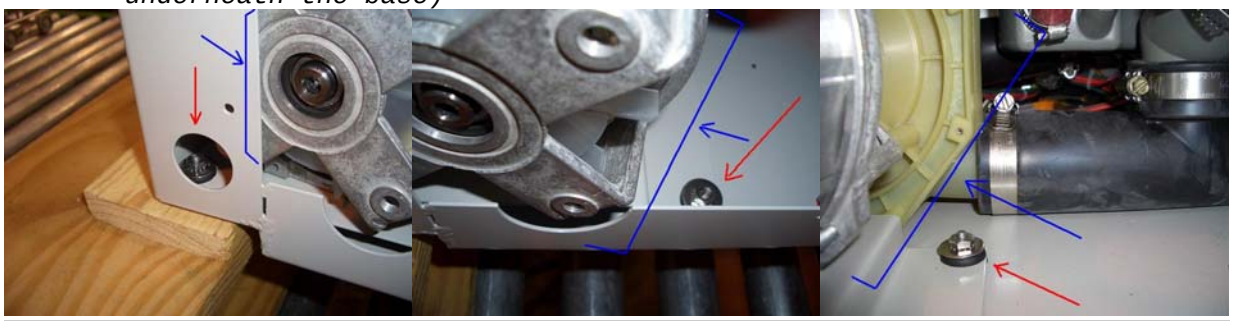


Figure 22
Above Left, Middle, & Right: (From left to right) Wash Pump Corner Screw, Back Screw, and Internal Screw. In all three pictures, the *Blue Arrows and Brackets* point out the location of the Wash Pump motor in relation to the highlighted, by the *Red Arrows*, Screws/Nuts. The best way to remove them is to clamp onto the nuts with a wrench or pliers and then to loosen and remove the screws from below the base weldment of the washer. Do this by laying the washer on its back or tilting it forward.

6. Lift and rotate the pump/motor out of base of the unit.
7. Remove the pump from the mounting bracket.
8. Place the new pump/motor on the bracket and mount it into the base of the unit.
9. Secure the motor/bracket to the base assembly.
10. Connect the hoses to the new pump.

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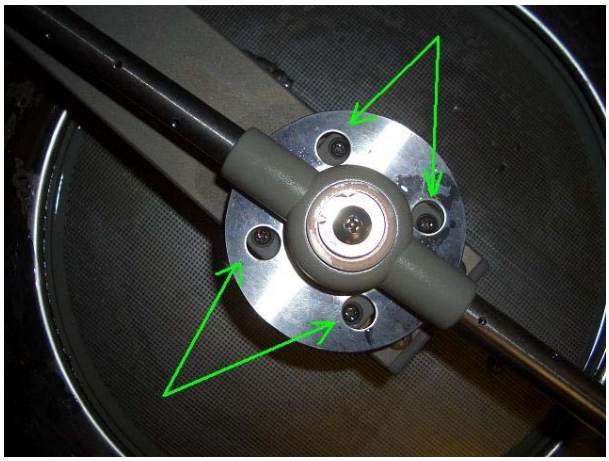
11. Test the unit in diagnostics.

Replacing the Wash Arms

The wash arms are responsible for distributing the water throughout the tank and 'scrubbing' the glassware clean. If they become deteriorated or clogged or need to be replaced for any other reason, follow the instructions below for their replacement.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

1. Open the door and remove any racks that are inside the tank of the washer.
2. Each wash arm has four corner screws holding the assembly in place.
3. Remove these screws to pull free the Wash Arm Assembly.
4. Place the replacement assembly over the corresponding distribution outlet.
5. Secure the assembly to the distribution manifold with the four screws.



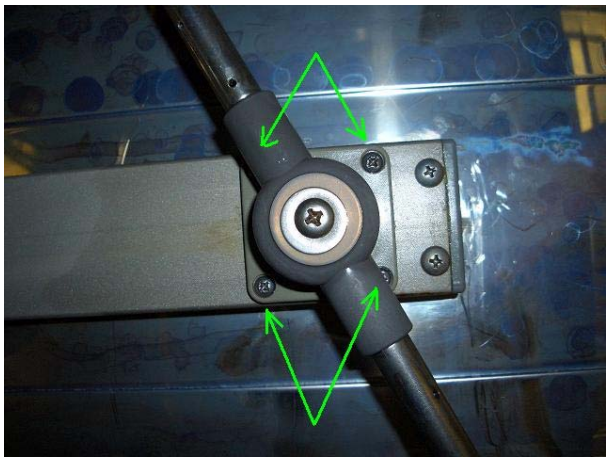


Figure 23
Above Left: Bottom Wash Arm Assembly. The *Green Arrows* point out the four corner screws that secure the Wash Arm Assembly.

Above Right: Top Wash Arm Assembly. The *Green Arrows* point out the four corner screws that secure the Wash Arm Assembly.

NOTE: *Also use this procedure for replacing the wash arm assembly found on the Upper Basket and Spindle Racks.*

Replacing the Detergent Cup

The Detergent Cup is operated by a wax motor that is signaled by the PC Board and is slowly reset. In the FlaskScrubber® and the FlaskScrubber® Vantage®, the spindles on the lower rack in front of the Detergent Cup must be short spindles; long spindles will not allow the Cup's door to open fully, and the detergent will crust and solidify in the cup, potentially causing damage over time as well as not cleaning the lab ware. It will also prevent optimal cleaning of the labware. Use the procedure below to replace the Detergent Cup.

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**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

1. Open the Washer's door and remove the screws that hold the door's outer cosmetic panel in place.
2. To remove the panel, pull down slightly as you pull away from the door to dislodge it.
3. Locate the Detergent Cup.
4. Disconnect the Cup's wires from the Door Wiring Harness.
5. Remove the six mounting screws in the Detergent Cup Mounting Brackets holding the Cup to the door.

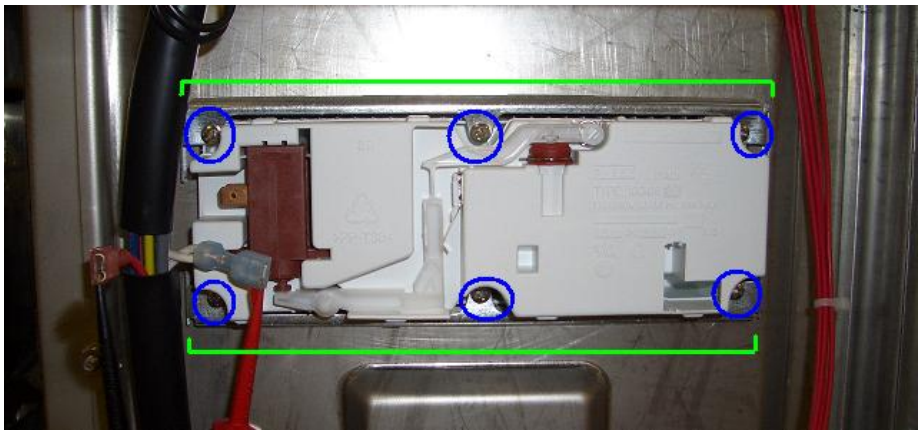


Figure 24
Left: Detergent Cup. The black cable to the left of the Detergent Cup is the Door Wiring Harness.

The *Blue Circles* indicate the six screws that mount the Detergent Cup to the Door's Interior Panel.

The *Green Brackets* highlight the Detergent Cup's Mounting Brackets that seal the Cup's gasket.

6. Pull the Detergent Cup from the door.
7. Fit the new Detergent Cup into the door. (NOTE: the Detergent Cup has a built in gasket).
8. Place the Mounting Brackets in position and secure them with the mounting screws.
9. Connect the Detergent Cup's wires to the Door Wiring Harness.
10. Test the Detergent Cup in Diagnostics.

Replacing the Sump Screen

The Sump Screen that covers the sump is designed to keep medium to large particulates (glass shards, beads, boiling rocks, etc…) from getting into the Wash and Drain Pumps. These particulates have the potential to chew up and destroy the pumps necessary for operation of the glassware washer. If this screen is bent, has visible damage or rust, replace immediately.

****IMPORTANT****

The sump screen should have a 1/8 inch hole drilled into it behind the seating screw. If you do not see a larger hole bored into the screen, use a 1/8 drill bit and place a hole in the screen. Put the hole far enough back that it is going into the bowl of the sump. **BE CAREFUL NOT TO DRILL A HOLE THROUGH THE FIBERGLASS/PLASTIC OF THE SUMP!**

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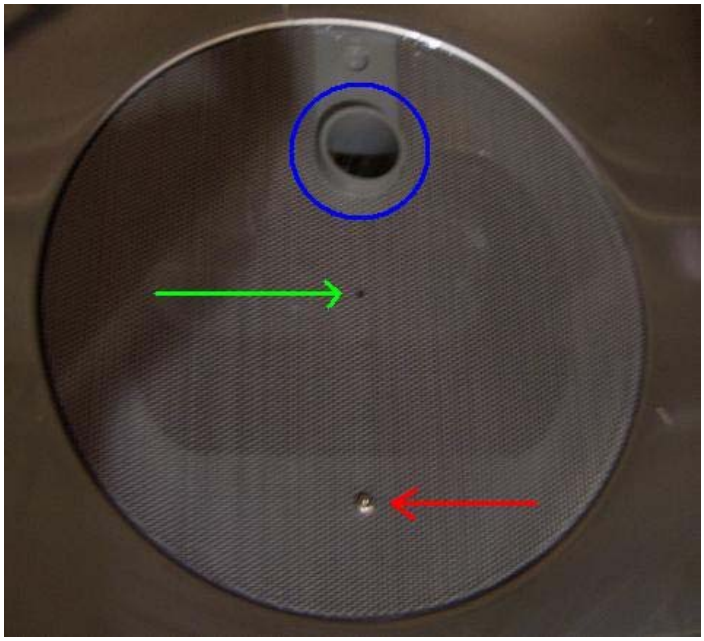


Figure 25
Left: Sump Screen (before the Water Distribution Channel has been connected).

The *Red Arrow* shows the single screw that holds the sump screen down to the sump below. This must be pulled out to remove the Sump Screen.

The *Green Arrow* points to the 1/8" hole drilled in the sump screen that is designed to break hard water's surface tension without allowing large shards of glass, debris, or rogue labware from getting into the sump.

The *Blue Circle* indicates the Water Distribution Channel's supply fitting. This is where the connection tubes and clamps will combine the Wash Pump (via the sump) to Water Distribution Channel and to the Wash Arms.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

1. Remove the seating screw from the sump/sump screen.
2. Pull the screen towards you to remove the screen.
3. When replacing the new or cleaned screen, make sure the screen goes back in its notch around the water distribution hub.
4. Replace the seating screw.
5. Run Diagnostics test.

Replacing the Sump Heating Element

The Heating Element is responsible for heating the water in the sump to preset levels and for producing steam if required. It does this by drawing current. If the heater is not operational, follow the directions below to replace it.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

1. Remove the cosmetic Right Panel or the right service access panel.
2. Locate the wiring connectors and pins of the Sump Heating Element.

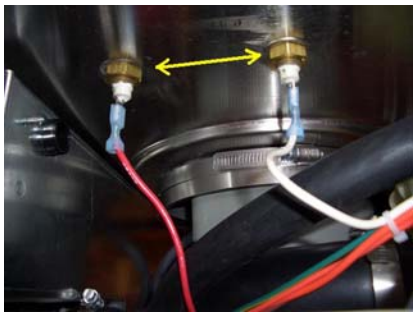
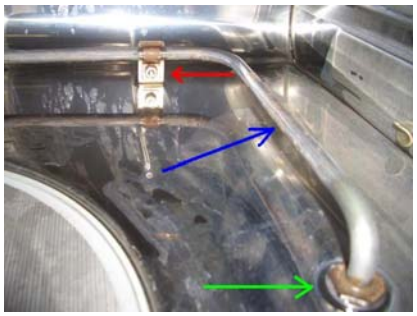


Figure 26
Left: Sump Heater Electric pins and Securing Nuts. The Electrical connections to the red and white wires pull off. The *Yellow Arrows* show the nuts that are to be removed to remove the sump heater.

Right: Sump Heater. The Sump Heater is indicated by the *Blue Arrow*. The *Green Arrow* shows the tank side of the element bulkhead. The element is secured by several clamps, indicated by the *Red Arrow*.



3. Disconnect the wire

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4. Loosen and remove nuts on the underside of the tank that hold the sump in place.
5. Open the door of the washer and remove any racks inside the tank.
6. Locate the element clamps.
7. Using a screw driver, loosen the jaws of the clamps.
8. Pull the Element up and out of the tank.
9. Replace the new element, tighten the clamp jaws and secure with the original nuts and attach the wiring connections. (The Seal Washers are to be replaced when the heater is.)
10. Test the heater in diagnostics checking for the prescribed current. (See the corresponding testing procedures with the unit being worked on)

Replacing the Blower

Each of Labconco's glassware washers has an integrated blower for drying glassware at the end of a cycle. The SteamScrubber's® blower pushes air into the tank through the blower shroud (found in the rear left of the tank). The FlaskScrubber® uses the water manifold of the washer to circulate hot air that is directly injected into narrow neck glassware. The FlaskScrubber® Vantage® models use the same blower set up as the FlaskScrubber®; however, the air fed to the blower is pulled through a HEPA filter before being circulated through the tank. Use the procedure below to replace the blower of the unit you are working on.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

Replacing the Blower on a Labconco SteamScrubber®

The Blower is mounted on the left back corner post of the base weldment. The coupler from the blower into the blower shroud is not sealed and once disconnected can be freed by pulling down on the blower/coupler.

1. Pull the unit away from walls/cabinets so that you have access to the back and left sides of the washer.
2. Remove the back and left cosmetic panels or service access panels and pull up the black insulation jacket and secure it.
3. Locate the Blower mounted on the back left corner post of the base weldment.
4. Remove the two screws securing the blower to the corner post.
5. Firmly, grasp the blower's coupler (connecting the blower to the blower shroud in the tank) and pull down to free it from the tank.
6. Remove the electrical connections to the blower.
7. Reconnect the wires to the new Blower
8. Reseat the new blower's coupler into the blower shroud in the tank through the bottom.
9. Using the original hardware, secure the blower to the corner post.
10. Test the unit blower in diagnostics.

Replacing the Blower on a Labconco FlaskScrubber®

The blower is mounted to the base of the unit and is clamped to flexible ducting that transfers the air to the manifolds.

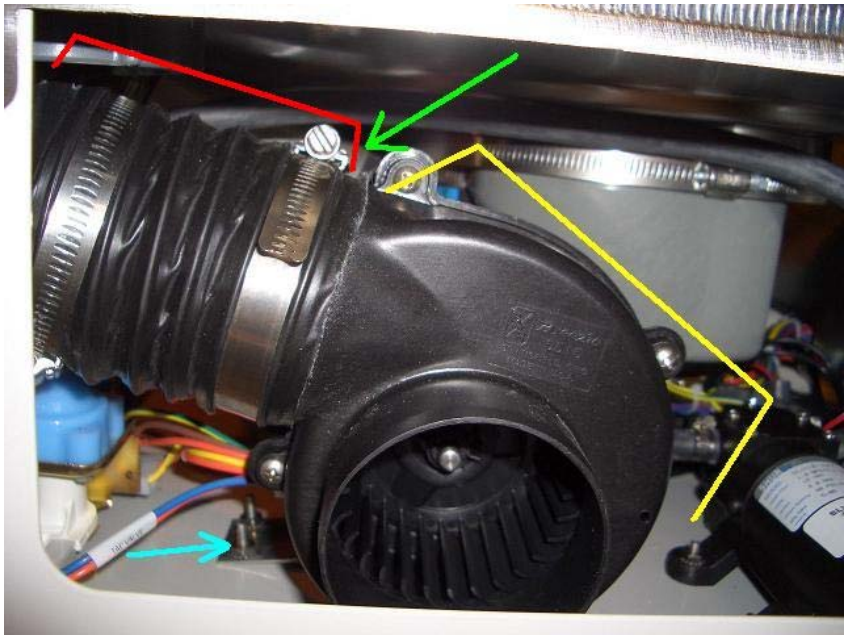
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1. Pull the unit away from walls/cabinets so that you have access to the back and left sides of the washer.
2. Remove the back and left cosmetic panels or service access panels and pull up the black insulation jacket and secure it.
3. Locate the Blower mounted to the floor of the base weldment.

Figure 27
Right: FlaskScrubber ® Blower. The Blower, indicated by the *Yellow Bracket*, takes in room air and blows it through flex tubing into the circulation manifold.

The *Red Bracket* indicates the blower's flexible duct work. The clamp that holds this ducting to the blower pointed out by the *Green Arrow.*

On opposite side of the blower (not pictured) is the Blower's mounting bracket. The mounting bracket is secured to the base weldment by four screws, two of which are designated by the *Light Blue Arrow.*



4. Loosen the clamp and remove the flex duct from the blowers exhaust collar.
5. Remove the four nuts holding the blower's mounting bracket to the base of the unit.
6. Pull the blower out of the side of the unit and disconnect the wiring at the harness.
7. Connect the new blower's wiring to the harness.
8. Seat the new blower on the mounting screws and secure with the nuts removed from the old blower.
9. Fit the flexible ducting sleeve over the exhaust collar of the new blower and tighten down the clamp.
10. Test the blower in diagnostics.

Replacing the blower on a Labconco FlaskScrubber® Vantage®

The blower is mounted to the base of the unit and is clamped to flexible ducting that transfers the air to the manifolds. The blower is fed air through the HEPA filter found in the side cabinet.

1. Pull the unit away from walls/cabinets so that you have access to the back and front of the washer.
2. Remove the back cosmetic panel or service access panel and the front kick, toe and relay panels, pull up the black insulation jacket and secure it.
3. Locate the Blower mounted to the floor of the base weldment.
4. Through the back access panel, loosen the clamp and remove the flex ducting from the Blower's inlet collar.
5. Loosen the clamp and remove the flex duct from the Blower's exhaust collar.

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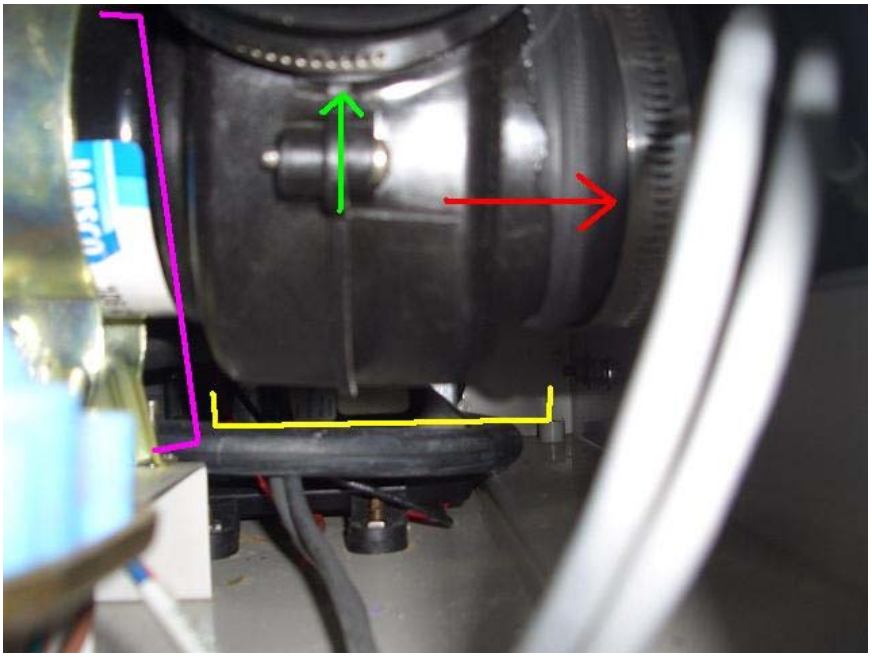


Figure 28
Left: FlaskScrubber® Vantage® Blower. Just like the Blower in the FlaskScrubber® the blower (indicated by the *Yellow Bracket*) is held to the base weldment by a mounting Bracket, *Magenta Bracket.*

The *Green Arrow* shows the clamp that holds the flexible ducting that leads to the manifold, to the Blower.

The *Red Arrow* points to the clamp that secures the Flex Ducting that comes from the HEPA filter in the left Side Cabinet to the Vantage's® Blower.

6. Through the front, remove the two nuts on the front side of the blower mounting bracket.
7. Through the back, remove the two nuts on the back side of the blower mounting bracket.
8. Pull the blower out through either the back or front (whatever is easier).
9. Disconnect the blower's wiring from the base wiring harness.
10. Connect the new blower's wiring to the base wiring harness.
11. Seat the new blower's bracket over the mounting screws and tighten it with the nuts removed earlier.
12. Attach the Flex Ducting from the Side Cabinet to the blower's inlet collar and tighten the clamp over the fitting.
13. Attach the Flex Ducting from the drying manifold to the blower's exhaust collar and tighten the clamp.
14. Test the blower in diagnostics.

Drain System Replacement/Installation

Use the following procedures to replace/install different parts of the Drain System. IF THE MACHINE IS DISPLAYING "DRAIN FAIL ALARM" FIRST READ AND GO THROUGH THE ***DRAIN FAIL ALARM TROUBLESHOOTING*** CHAPTER. The parts listed below do not include every part critical to the drain system; however, those not listed will be mentioned here for reference in their own sections.

**Completely drain and disconnect electrical power to the unit before proceeding with any of these instructions.

Replacing the Drain Valve

The drain valve is regulated by the PC Board and allows the water to leave the tank when the unit is set to drain. The Plastic Solenoid housing for the 115V valve is RED; the 230V valve is GOLD/ORANGE. If it is discovered that

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the unit has a BLUE 230V valve and the unit is running on 208V, call Labconco for the Engineering Upgrade (Gold valve).

1. Remove the right side service panel (or right side Panel if Free Standing) and the Toe/Kick Panels. See ***Removing the Toe/Kick Panels and Service Panels*** and/or ***Removing the Washer's Paneling.***
2. Locate the Drain Solenoid valve.
3. Loosen and remove the hose clamp on the "Drain Pump Inlet Tube" at the Drain Pump. (This will give you more room to remove the clamp below)
4. Loosen and remove the hose clamp on the back side of the Valve going to the "Wash Pump Outlet Tube"
5. Remove the nuts that secure the Drain Valve to the base weldment.
6. Remove the Drain valve.
7. Seat the new drain valve over the studs in the base weldment.
8. Tighten down the nuts that secure the Drain Valve to the base weldment.
9. Place the drain valve side of the "Wash Pump Outlet Tube" onto the valve. Position and tighten down the hose clamp.
10. Reconnect the "Drain Pump Inlet Tube" on the Drain Pump and tighten the hose clamp.

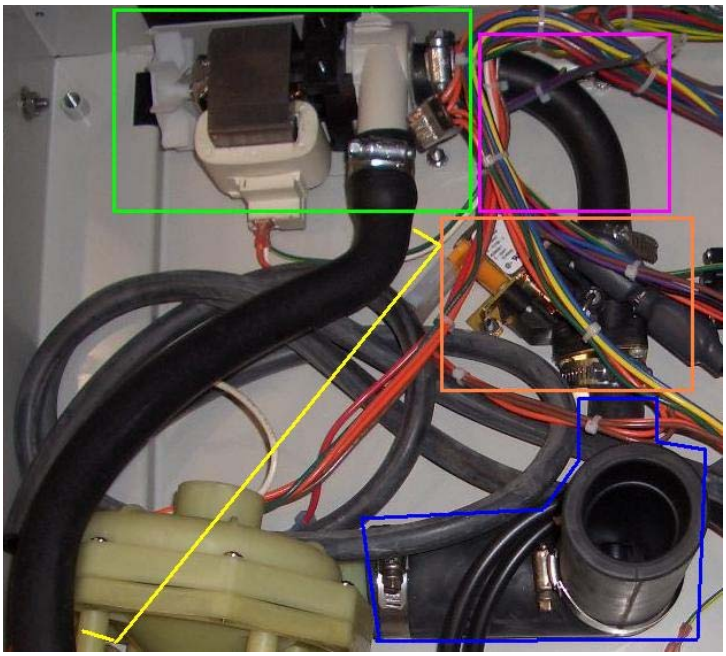


Figure 29
Left: Drain System. The Drain system is made up of the Wash Pump Outlet Elbow, the Drain Solenoid Valve, the Drain Pump Inlet Tube, the Drain Pump, and the Drain Hose. The top leg of the Wash Pump Outlet Elbow is secured to the Sump.

The Wash Pump Outlet Elbow is highlighted in *Blue.* During DRAIN, the water moves through this tube through the Drain Solenoid, *Orange Box,* and into the Drain Pump Inlet Tube (*Magenta Box).*

When the unit goes to DRAIN, the Valve will "pop" open and three seconds later the Drain Pump, in the *Green Box*. The pump does not self-prime, and utilized the water left over in the Drain Hose's high loop to prime.

Replacing the Drain Pump

The drain pump is responsible for draining the tank and sump after a wash or rinse cycle. The pump is located behind the electrical board in the front right corner of the machine. The best way to access this pump is by removing the relay board/electrical panel and the right side service access panel.

1. Remove access paneling.
2. Locate the Drain Pump.
3. Loosen and remove the clamp on the Drain Pump Inlet Hose at the Drain Pump.
4. Loosen and remove the hose clamp on the Drain Tube.
5. Remove the nuts that secure the Drain Pump to the base weldment.
6. Remove the Drain Pump.

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7. Seat the new drain valve over the studs in the base weldment.
8. Tighten down the nuts that secure the Drain Pump to the base weldment.
9. Place the pump side of the "Drain Pump Inlet Tube" on the Drain Pump and tighten the clamp.
10. Using a compressed air source, eliminate the water from the drain tube or remove it from the drain plumbing and drain it out all the way before connecting it to the new pump.
11. Place the drain tube over the connection at the Drain Pump and tighten the clamp.
12. Make sure the Drain Hose is routed properly through the machine.

Replacing the Drain Hose

1. Loosen and remove the hose clamp on the Drain Tube.
2. Cut the zip ties holding the drain hose onto the Wash Pump boss and those on the back of the tank holding the loop in position.
3. Place the drain tube over the connection at the Drain Pump and tighten the clamp.
4. Replace the zip ties removed in the same locations.
5. Make sure the Drain Hose is routed properly through the machine. (See Figures below).

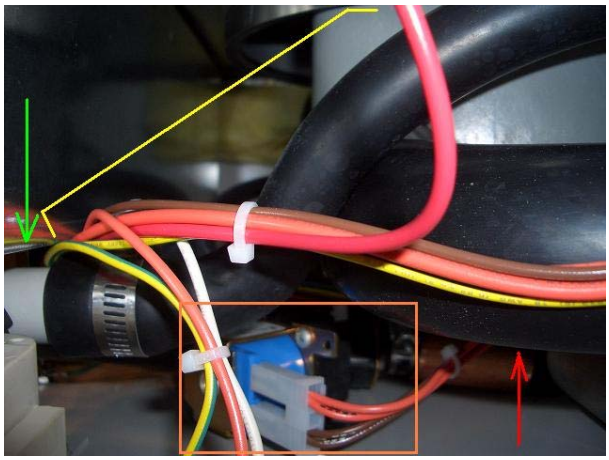
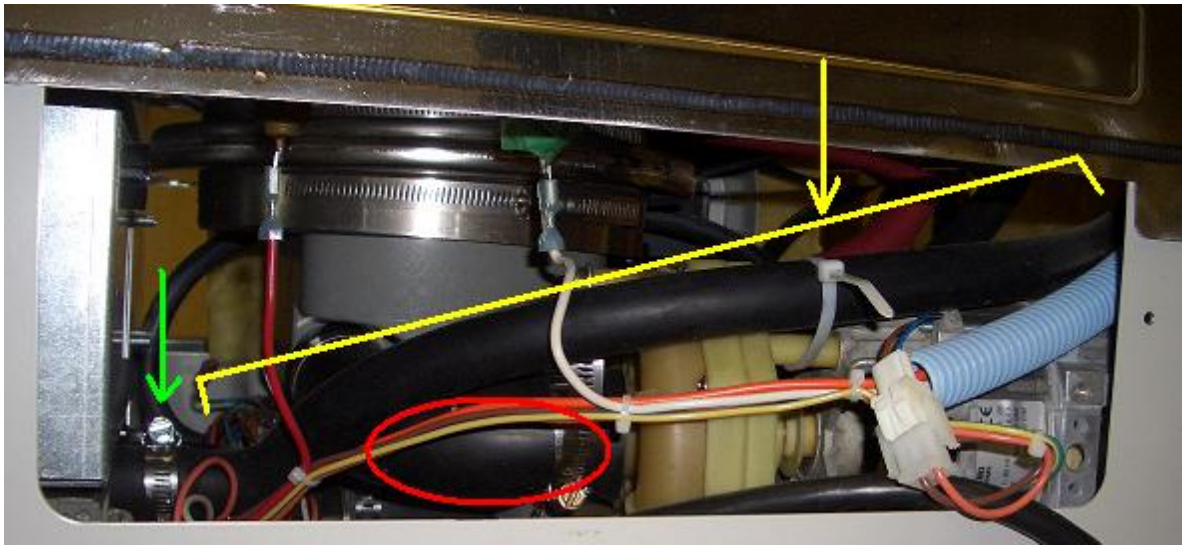


Figure 30
Left: Drain Hose leaving the Drain Pump. The Drain Hose is bracketed in *Yellow*. From the point where the Drain Hose leaves the pump (at the *Green Arrow)* it should rise above the Wash Pump Inlet Hose (*Red Arrow).* Behind the hoses, you can see the Drain Solenoid Valve and its electrical connections.

Below: Drain Hose under the Washer Tank. Like the picture to the left, the *Green Arrow* indicates the clamped end of the Drain Hose at the Drain Pump. From this point, the Drain Hose slopes upwards over the Wash Pump and electrical conduit. There should be no level places or sumping below the tank as the water in this hose is used to prime the pump. The *Yellow Arrow* shows where a zip tie should be placed to hold the Drain Hose in place, use the bossing on the Wash Pump/Motor Assembly.

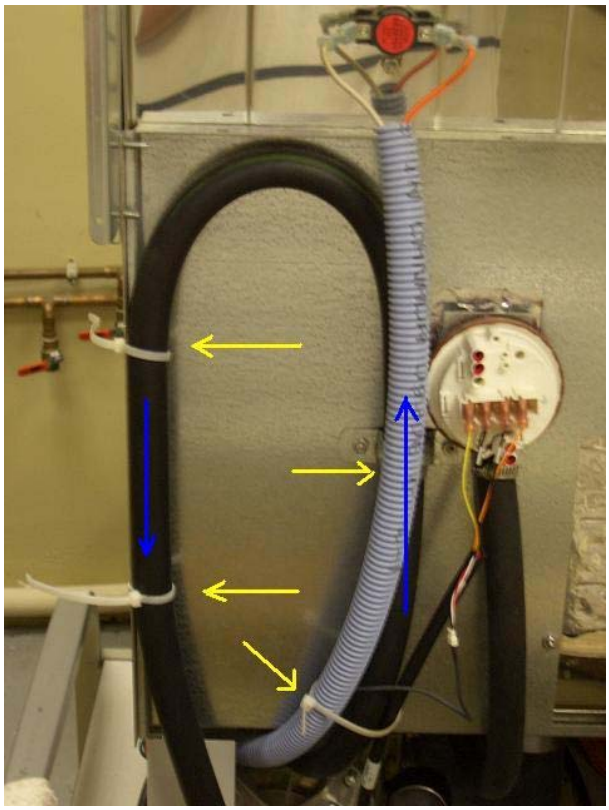


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Figure 31
Right: Drain Hose back High Loop. After the Drain Hose exits the base of the unit, it arches up into a high loop where it clamped and zip tied to the outer shell of the tank. This loop holds the water used to prime the pump for each drain sequence. The *Blue Arrows* indicate the direction that water flows when the Drain Pump is on. The water leaving the sump goes up the right side of the loop (facing the back of the machine) and down the left side.

When replacing the Drain Hose, place zip ties in the locations indicated by the *Yellow Arrows.*

***Note**: During shipping, it is possible that the hose may slack and sump. This can be corrected by pulling the sump and adding extra ties.*



Replacing the Door Fan

The small fan located behind the Kick (middle) panel is situated so that it blow steam out away from the unit and up the outer door panel so as to keep condensation from forming in the door of the unit.

To remove the Door Fan

1. Disconnect/turn off power to the unit.
2. Remove the toe and kick panels.
3. Remove the Relay Board Cover Panel.
4. Locate the door fan on the Relay Board Cover Panel.
5. Remove the four screws in each corner of the fan housing.
6. Pull the fan away from the panel from the back.

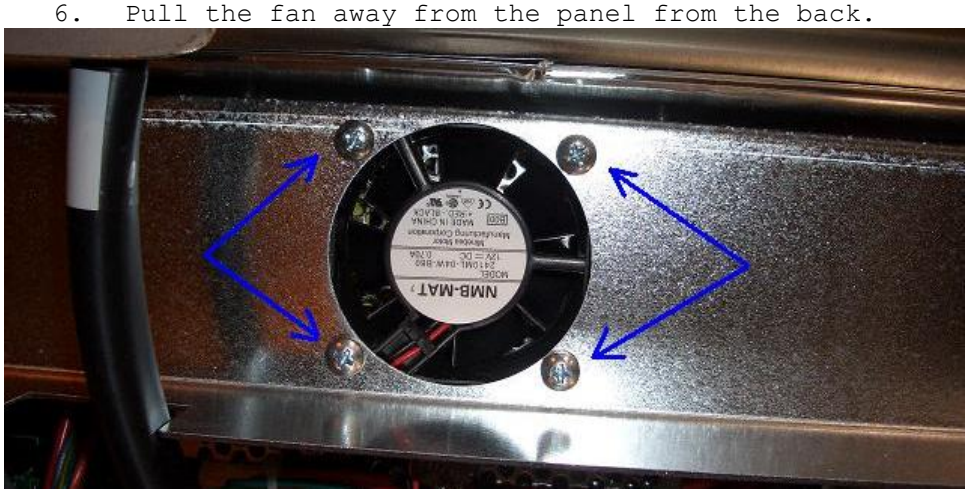


Figure 32
Left: Door Fan on Panel. The Cooling/Door fan is set up to keep condensation from forming inside the door and allowing steam from damaging the PC Board. The *Blue Arrows* show the four screws that need to be removed in order to replace a faulty Door Fan.

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7. Position the new door fan at the holes, making sure the air flow is correct (out), and then insert the holding screws.
8. Connect the wires from the door fan to the Wiring Harness.
9. Reconnect/turn on power to the unit.
10. Using Diagnostics check the function of the Door "cooling" fan.

Gasket Replacement

Door Removal

Before the two gaskets (baffle gasket and door gasket) can be removed and replaced the washer's door must be removed.

1. Remove the door, as described in ***Chapter 3: Getting Started, Connecting the Power Supply*** in the Instructional Users Manual.

CAUTION: Be careful not to release the cable hooks before you have unloaded the door spring or the side panels may have to be removed to reattach the door cables.

2. With the door cables off, lower the door to its opened position and lift to pull it out.
3.

Tank Gasket

1. Remove the bad/damaged gasket by pulling it from its housing around the outer edge of the tank.

NOTE: *The unit may or may not have clips holding the two gaskets into place Fig 1A). If it DOES, then those clips will need to be removed, saved, and reinstalled when the new gasket is put into place.*

2. The replacement rubber gasket will be cut longer than necessary. Place one end of the gasket at the far bottom ledge of the washer (Fig 1C) and push the new gasket firmly into place up one side, across the top and then down the other side.
3. When the bottom of the second side is reached, the gasket will need to be trimmed so that the new edge rests snuggly at the bottom of its housing (Fig 1C).



Figure 33: Bottom front left corner of washer tank. With the door off you can find the clips and RTV application used to hold the gaskets into place. **Circle A**: There may or may not be a clip holding the door gasket in place. If there is, this must be taken out to remove the damaged gasket.

Circle B: The baffle gasket is held in place by two clips on the outside edges of the baffle/water deflector and then sealed at the sides with RTV. These measures must be removed to replace the washer and then reinstalled/reapplied in order to form a water tight seal.

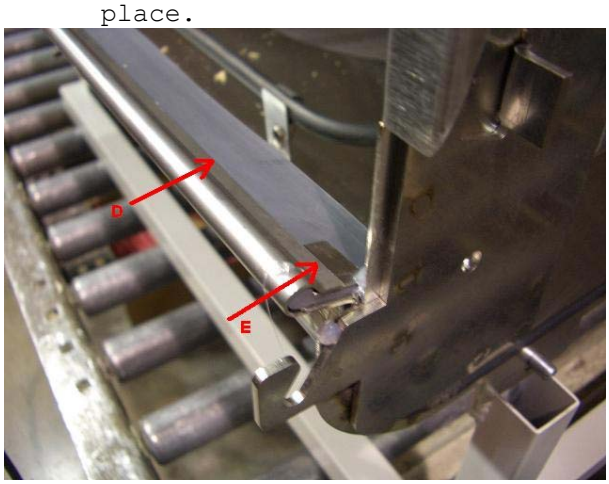
C: When replacing the door gasket, make sure that the gasket goes to all the way to the bottom of the tank on both sides. The gasket will be cut long, and must be trimmed back at the end of installation.

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Baffle Gasket

Remove the damaged gasket (fig 2D) by pulling it from its housing at the tank's baffle (fig 3H). The unit may or may not have clips holding the two gaskets into place (fig 1B). If it DOES, then those clips will need to be removed, saved, and reinstalled when the new gasket is put into place.

1. Remove the clips and the silicon holding the gasket into place at the baffle/water deflector.
2. Slide the gasket out of its fitting along the front side of the washer and install the new gasket.
3. Replace the clips and use RTV Silicon to seat and seal the gasket into place.



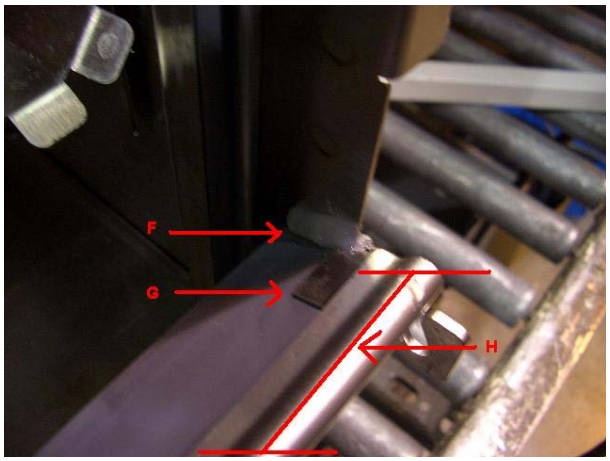


Figure 34
Above Left: Baffle Gasket and Clip. D) The baffle gasket seated in its housing. **E)** The original gasket can be removed after the clips holding it are taken out of the baffle.

Above Right: Baffle, Gasket Clip & RTV. F) RTV seals the outer edge of the baffle gasket to the interior of the tank, must be removed and reapplied when replacing the baffle gasket. **G)** Both the Clips must be removed and reinserted to hold the gasket into place. **H)** The baffle weldment deflects water and holds the gasket in place.

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SECTION V:
Testing Procedures

For Reference Purposes this manual includes Labconco's testing procedures. These are the same documents used for testing the units' quality as they come off the manufacturing line. There are two Testing Procedures; one for the 115V and 230V SteamScrubber® and FlaskScrubber®, and one for the FlaskScrubber® Vantage®.

115/230V SteamScrubber® and FlaskScrubber®



FINAL INSPECTION PROCEDURE

FOR

STEAMSCRUBBER AND FLASKSCRUBBER

Rev.	Date	By	Description	ECO#
-	2/5/07	LLK	Release	D533
A	2/12/07	LLK	Drawing Provided	E151
B	5/8/07	LLK	Set Up #8,C,2) was °F Self Test #3 Deleted Cool Drain Valve Added Temperature Test Added Overflow Test Drying time was 30 minutes	E318
C	7/16/07	LLK	Added Overfill Test	E419
D	8/2/07	LLK	Clarified Verbiage No change to tests	E459
E	12/21/07	DKT	Dry temp tol. Was +/- 5 deg.	E665

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Glassware Washer/Test Report

MODEL NUMBER	VOLTS/HZ	M.O. NUMBER	SERIAL NUMBER	INSP/TECH/	DATE	QTY/OF

INSP/TESTS	No.	CONDITIONS AND REQUIREMENTS	INST/LCC#	RESULTS	PASS
Set-Up	1	Connect tap and pure water.			
	2	Connect drain.			
	3	Connect proper electrical power. (Use 115V, 60 Hz or 230V, 50 Hz)			
	4	Connect current probe to power line.			
	5	Close detergent cup door			
	6	Connect computer via RS232			
	7	Set up washer control			
		A. Open door			
		B. Press and hold ▼ button- Simultaneously close and latch door.			
		C. Press ▼ button to select function. Press ◄ or ► to actuate function.			
		1) Set proper voltage			
		2) Set Temp Units - °C			
		3) Set DI Pump to Enable- YES			
		4) Set Light - ON- (window models only)			
		5) Set Liquid Deter Opt- NO			
		6) Set Factory Reset – YES			
		D. Press RUN			
Hi-Pot	1	1000V for 1 minute.	Hi Pot Tester		
Temperature Test	1	Position thermocouple near temperature probe.			
	2	Press and hold ◄ button - simultaneously close and latch door.			
	3	Display must agree with temperature meter ±2°C.	Temperature Meter		
Self Test	1	Open door			
	2	Press & hold ▲ button – Simultaneously close and latch door.			
	3	Press ▼ button to select function. Press ◄ or ► to actuate function.			
		TAP WATER	Visual		
		PURE WATER	Visual		
		Continue in this mode until Float Switch shuts off water flow.	Visual		
		Open door to check water level. Bottom of heater must be partially wetted. Top of heater must be partially unwetted. Close door and resume DIAGNOSTICS.			
		WASH PUMP	Visual		

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INSP/TESTS	No.	CONDITIONS AND REQUIREMENTS			INST/LCC#	RESULTS	PASS
			115 V	230 V			
		DETERGENT CUP			Audible		
		HEATER	9.3 – 11.5 Amp	7.8 – 9.6 Amp	Ammeter _____	_____	
		Return to TAP – Allow water to fill washer until it turns off. Press and hold RUN – Water must turn off before it overflows.			Visual		
		DRAIN / COOL – Allow all water to drain			Visual		
		DRY BLOWER			Audible		
		LIQ DETERG PUMP (No test)					
		LIGHT (Window models only)			Visual		
		FAN			Aubile		
Run Test	1	Fill Detergent Cup with Detergent. Close Door					
	2	Scroll through Programs					
		Confirm Display Information			Visual		
	3	115V Models – Select Glass Plus		230V Models- Select Glass Plus			
			Wash 2 Temp 82°C	Wash 2 Temp 93°C			
			Wash 2 Time 10 min	Wash 2 Time 10 min			
			Steam Yes	Steam Yes			
			No. Rinses 3	No. Rinses 3			
			No. Pure Rinses 1	No. Pure Rinses 1			
			Final Rinse Temp 60°C	Final Rinse Temp 60°C			
			Dry Temp 60°C	Dry Temp 60°C			
			Dry Time 20 minutes	Dry Time 20 minutes			
		Start Data Acquisition Computer – Identify file with washer serial number and date					
		Press RUN					
		Confirm operation of washer, temperatures and times			Visual-		
		Acceptance Criteria:			RS232		
		Wash 2 and Final Rinse Temp +/- 3°C					
		Dry Temp +/- 8°C once reached					
		Wash 1, Steam, Rinses 1 & 2, Dry Time +/- 1 minute					
		Wash 2, Final Rinse Time after reaching SP +/- 1 minute					
	4	All Window Models					
		Observe Wash Action					
		FlaskScrubbers – Water Hits Top of Tank from spindles			Visual		
		SteamScrubbers – Lower Wash – Arm Rotates at least 45 RPM			Stop Watch _____	_____	
	5	Run rinse only to wet surfaces.			Visual		
		After wash pump starts, place a wet towel across the overflow contacts. Wash pump should stop and the washer should drain. Display should show ALARM OVERFLOW.					

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INSP/TESTS	No.	CONDITIONS AND REQUIREMENTS		INST/LCC#	RESULTS	PASS
Hi-Pot	1	1000V for 1 minute.	Hi Pot Tester			
Final	1	Check for Leaks		Visual		
	2	Unit must be Clean and Dry		Visual		
	3	All parts in place in good condition		Visual		
	4	Verify that thermostat on back of tank is installed properly.		Visual		
	5	Make sure drain hose is routed over top of wash pump.		Visual		
	6	Perform FACTORY RESET		Visual		

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Protecting your laboratory environment
LABCONCO®

INSPECTION PROCEDURE

FOR

VANTAGE GLASSWARE WASHER

Rev.	Date	By	Description	ECO#
-	5/8/07	LLK	Release	E318
A	7/16/07	LLK	Added Overfill Test	E419
B	8/2/07	LLK	Clarified Verbiage No Change to Tests	E459
C	12/21/07	DKT	Dry temp tol. Was +/- 5 deg.	E665

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Glassware Washer/Test Report

MODEL NUMBER	VOLTS/HZ	M.O. NUMBER	SERIAL NUMBER	INSP/TECH/	DATE	QTY/OF

INSP/TESTS	No.	CONDITIONS AND REQUIREMENTS	INST/LCC#	RESULTS	PASS
Set-Up	1	Connect tap and pure water.			
	2	Connect drain.			
	3	Connect electrical power. (230V, 50 Hz)			
	4	Connect current probe to power line.			
	5	Close detergent cup door			
	6	Connect computer via RS232			
	7	Connect test dispense bottles to the detergent & acid supply lines.			
	8	Set up washer control A. Open door B. Press and hold ▼ button- Simultaneously close and latch door. C. Press ▼ button to select function. Press ◄ or ► to actuate function. 1) Set Temp Units - °C 2) Set DI Pump to Enable- YES 3) Set Light - ON 4) Set Factory Reset – YES D. Press RUN			_____
Hi-Pot	1	1000V for 1 minute.	Hi Pot Tester _____	_____	_____
Temperature Test	1	Position thermocouple near temperature probe.			
	2	Press and hold ◄ button - simultaneously close and latch door.			
	3	Display must agree with temperature meter ±2°C.	Temperature Meter _____	_____	_____
Self Test	1	Open door			
	2	Press & hold ▲ button – Simultaneously close and latch door.			
	3	Press ▼ button to select function. Press ◄ or ► to actuate function.			
		TAP WATER	Visual		_____
		PURE WATER	Visual		_____
		Continue in this mode until Float Switch shuts off water flow.	Visual		_____
		Open door to check water level. Bottom of heater must be			

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INSP/TESTS	No.	CONDITIONS AND REQUIREMENTS		INST/LCC#	RESULTS	PASS
		partially wetted. Top of heater must be partially unwetted. Close door and resume DIAGNOSTICS				
		WASH PUMP		Visual		
		DETERGENT CUP		Audible		
		HEATER	7.8 - 9.6 Amp	Ammeter		
		Return to TAP – Allow water to fill washer until it turns off. Press and hold RUN – Water must turn off before it overflows.		Visual		
		DRAIN / COOL – Allow all water to drain		Visual		
		DRY BLOWER		Audible		
		LIQ DETERG PUMP	.1 - .2 Amp	Ammeter		
		LIGHT		Visual		
		FAN		Audible		
		RINSE AID PUMP	.1 - .2 Amp	Ammeter		
Run Test	1	Close Detergent Cup Door				
	2	Scroll through Programs				
		Confirm Display Information		Visual		
	3	Place known amount of water in test dispense bottles				
	4	Select Glass Plus				
		Wash 2 Temp 93°C				
		Wash 2 Time 10 min				
		Steam Yes				
		No. Rinses 3				
		No. Pure Rinses 1				
		Final Rinse Temp 60°C				
		Dry Temp 60°C				
		Dry Time 20 minutes				
		Detergent Dispense 20 ml				
		Rinse Aid Dispense 6 ml				
		Start Data Acquisition Computer – Identify file with washer serial number and date				
		Press RUN				
		Confirm operation of washer, temperatures and times				
		Acceptance Criteria:		Visual-RS232		
		Wash 2 and Final Rinse Temp +/- 3°C				
		Dry Temp +/- 8°C once reached				

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		Wash 1, Steam, Rinses 1 & 2, Dry Time +/- 1 minute				
		Wash 2, Final Rinse Time after reaching SP +/- 1 minute				
		Conductivity varies between 100 - 1200				
		Confirm operation of low detergent and acid rinse monitor				
		Detergent Dispense 18 - 22 ml				
		Rinse Aid Dispense 5 - 7 ml				
	5	Observe Wash Action – Water hits top of tank from spindles				
INSP/TESTS	**No.**	**CONDITIONS AND REQUIREMENTS**		**INST/LCC#**	**RESULTS**	**PASS**
	6	Run rinse only to wet surfaces. After wash pump starts, place a wet towel across the overflow contacts. Wash pump should stop and the washer should drain. Display should show ALARM OVERFLOW.		Visual		
Hi-Pot	1	1000V for 1 minute.	Hi Pot	Tester _____		
Final	1	Check for Leaks		Visual		
	2	Unit must be Clean and Dry		Visual		
	3	All parts in place in good condition		Visual		
	4	Verify that thermostat on back of tank is installed properly.		Visual		
	5	Make sure drain hose is routed over top of wash pump.		Visual		
	6	Perform FACTORY RESET		Visual		

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SECTION VI:
Wiring Schematics

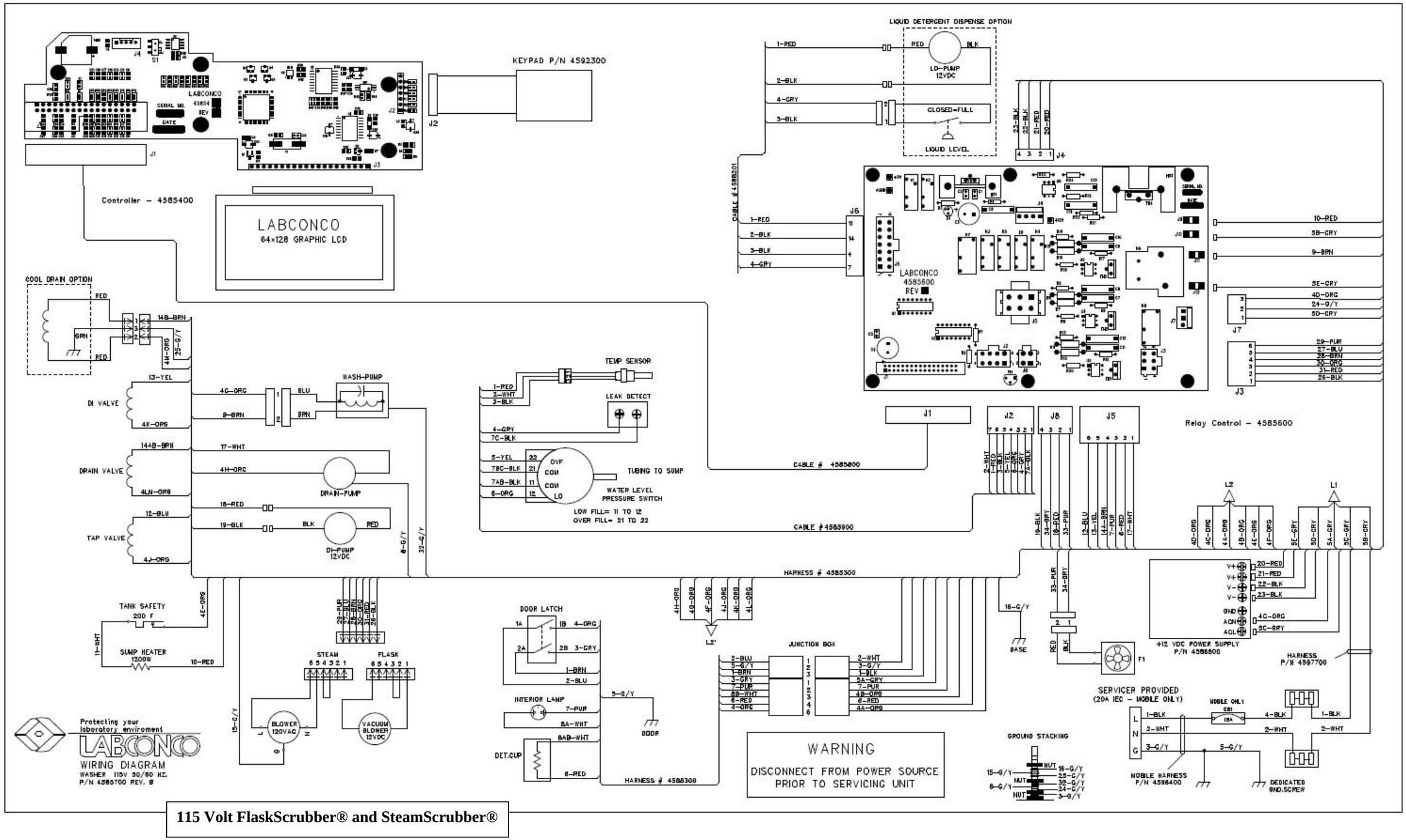
Each unit comes with a built-in Wiring Schematic/Diagram. This diagram can be found on the internal side of the door's outer skin panel. There is not one included in the User's Instructional Manual. For the purposes of Electrical Troubleshooting, all three Wiring Schematics have been included in this Service Manual.

A note on Electrical Troubleshooting

Due to the extensive nature of electrical troubleshooting, there will not be any detailed instructions on how to perform step-by-step electrical testing of systems.

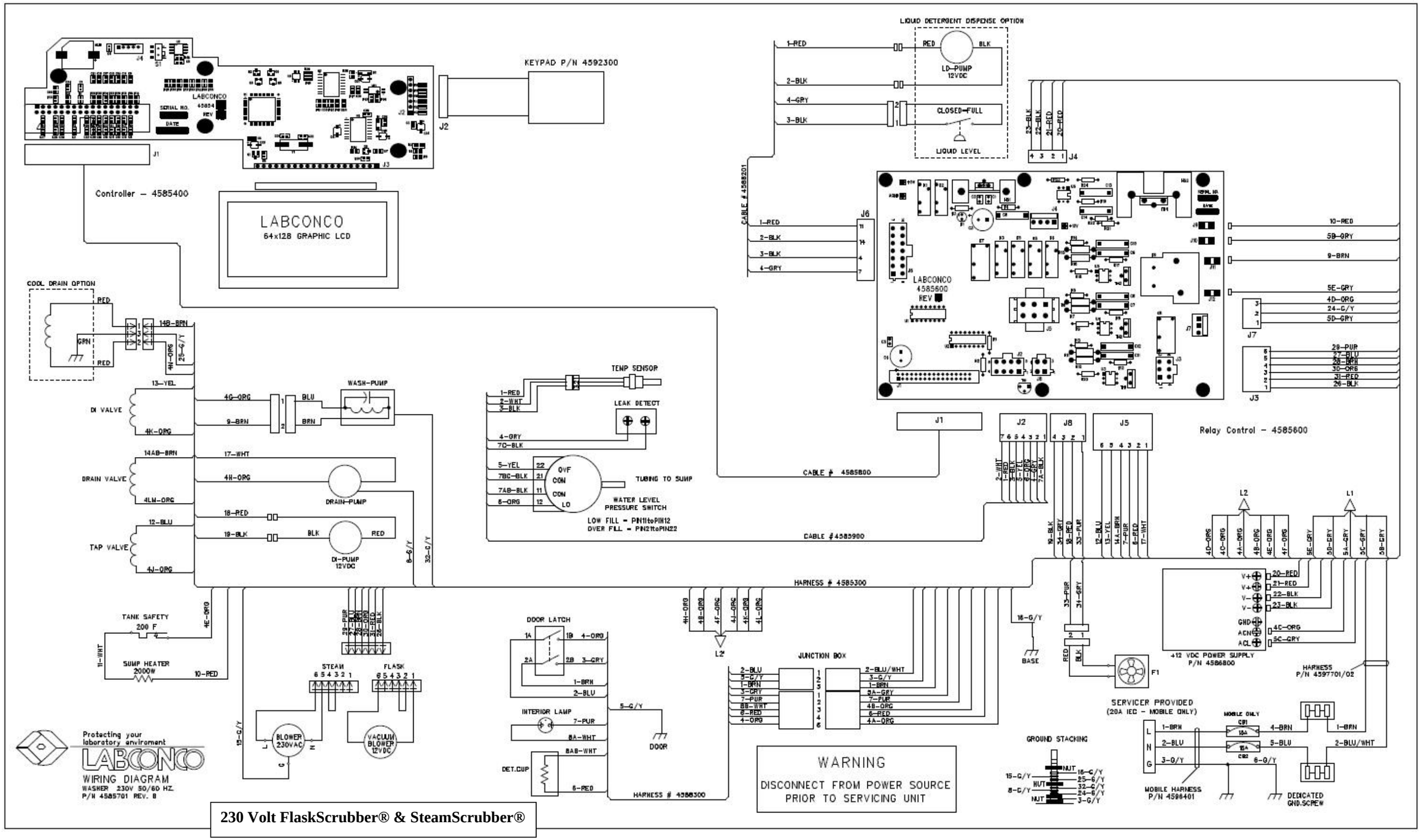
The wiring schematics can aid you through this process of testing specific parts of the circuit as dictated by the symptoms of a problem. If at any point you require assistance or wish to get a second opinion, feel free to contact Labconco's Product Service Department at 1(800)821-5525, at labconco@labconco.com, or at www.labconco.com.

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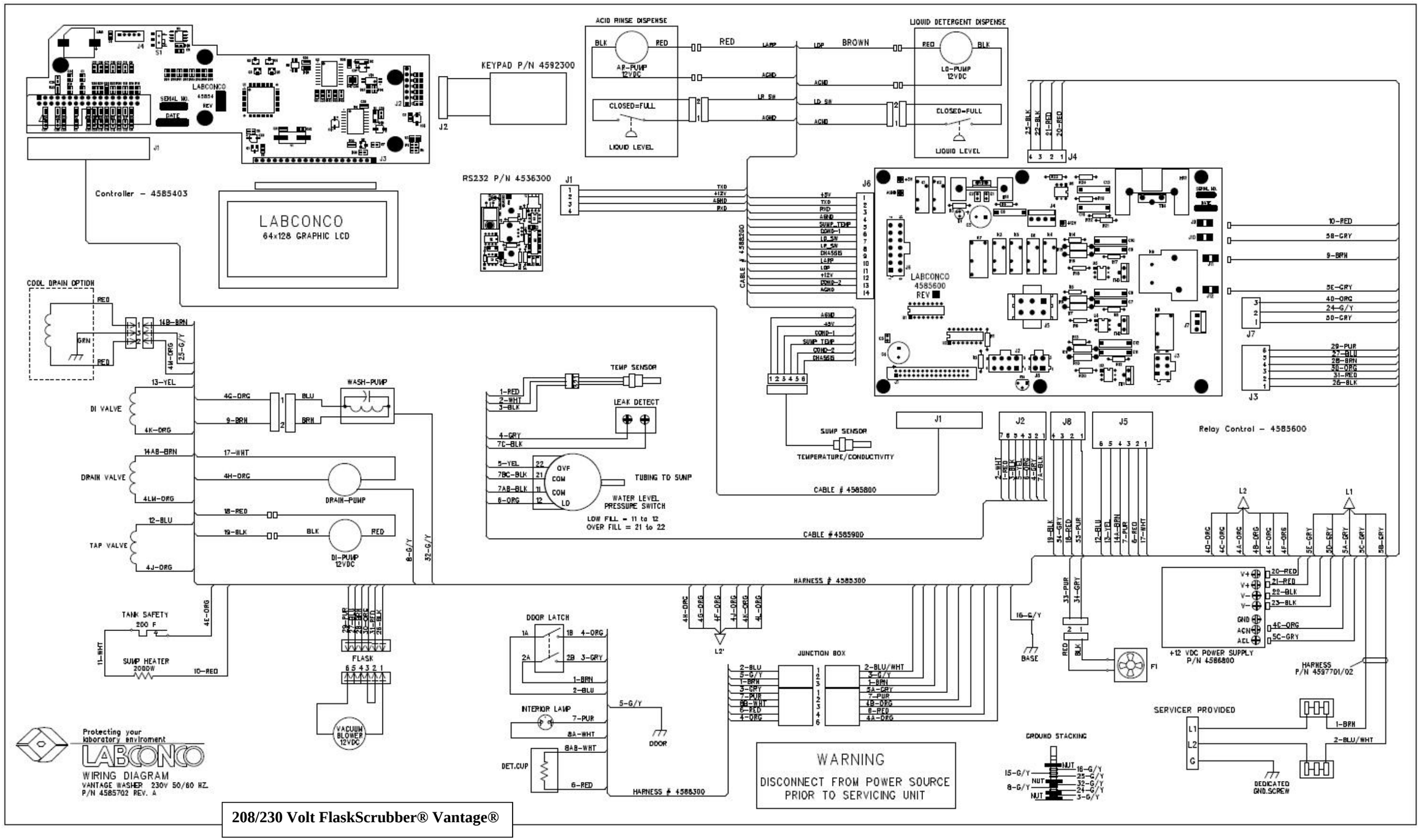
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208/230 Volt FlaskScrubber® Vantage®

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SECTION VII:
Parts List

The parts list included in this section is not all inclusive, but contains a rather cumulative list of parts needed for any service and maintenance. If there is ever any question about parts and part numbers, contact Labconco Product Services at 1(800)821-5525, at labconco@labconco.com, or www.labconco.com.

NEW STYLE FLASKSCRUBBER & STEAMSCRUBBER (9/07 to Present)

Models: 44200-20 to 44204-31
44000-20 to 44004-31

45917-00	Toe Plate Panel
45978-00	Toe Kick
45128-00	Door Spring (2)
45059-00	Tank Insulation Blanket
45992-00	Door Cable (2)
44911-00	Door Spring Hook (2)
44291-00	Door Spring Pin (2)
19719-00	Door "S" Hook (2)
18798-01	Leveler Leg (4)
14888-00	Drain Hose Clamp
14487-00	DI Inlet Hose Coupling and Sleeve
14107-00	Tap Water Inlet Brass Connector
45819-00	Drain Hose

Tank Assembly

45913-00	Temperature Probe
16457-04	Temp Probe O-Ring
45899-00	Pressure Switch
46002-00	Level Switch Hose
46003-00	Bushing, Switch Hose
45849-00	Sump Screen
45848-00	Sump/Blower Inlet (FS)
45847-04	Upper Basket Bracket Assy (SS)
45845-00	Slide Assy
45841-00	Heater, 115 Volt
45841-01	Heater, 230 Volt
45834-00	Heater Clamp
45833-00	Heater Mounting Base
45181-01	Door Clip, LH
45181-00	Door Clip, RH
45832-00	Vacuum Break
45820-00	Sump
45831-00	Sump Coupler
45830-00	Supply Tube Assy
45829-00	Blower Hose Bushing (FS)
45822-00	Blower Valve Seat (FS)
45821-00	Blower Valve Body (FS)
45817-00	Valve Support Bracket
45297-01	Tank Thermostat, 200 Deg
45186-00	Seal Clip Bottom
45151-00	Seal Clip
45064-00	Latch Keeper
45148-01	Fill Trap Assy, w/ Baffle
44826-00	Fill Trap Gasket
44827-00	Fill Trap Nut
45990-00	Air Gap Assy
44885-00	Door Seal
45015-00	Bottom Door Seal
44831-00	Corner Seal
44363-00	Blower Shroud Assy
44366-00	Shroud Cap
44367-00	Gasket
18948-08	Screw (1)
44365-00	Shroud Cover-Blower
44364-00	Blower Shroud Housing
44362-00	Blower Housing Nut
44054-00	Blower Seal
44345-00	Door Space Plug
44054-00	Washer Blower Seal
19656-00	Clove Port Clamp
45991-00	Air Gap Mounting Bracket
14840-00	Clamp, $^{3}/_{8}$ to 1 $^{1}/_{16}$ x $^{5}/_{16}$ Hose
14888-00	Clamp, .56-1.25 SStl Hose
45830-00	Supply Tube Assembly
45712-00	Wash Arm Assy (T & B)
45826-00	Rack Valve Plug
45825-00	Rack Valve Bushing
45830-02	Supply Tube
45983-00	Washer Arm Bearing
45872-00	Tube End Cap
45909-00	Comp. Spring
14404-00	SStl Pipe Plug
45823-00	Sump Outlet Coupler
45986-00	Tube 1.38x035x1' SStl
19676-00	Hose Clamp 1.31-2.25

Base Assembly

45934-00	Motor Blower Assy 115V (SS)
45934-01	Motor Blower Assy 230V (SS)
45278-00	Motor Blower Assy (FS)

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45415-00	Clamp, Blower to mount (FS)
45277-00	Duct Reducer, 3" to 2" (FS)
19686-00	Clamp, Motor Blower to 3"(FS)
16245-01	Hose, 3" (Motor Blower)(FS)
19676-00	Clamp, Reducer to 2" (FS)
16245-00	Hose, 2" from Blower (FS)
45881-00	Relay Board Assy
45880-00	Pump Inlet Elbow
45869-00	Drain Valve, 115V
45869-01	Drain Valve, 230V
45867-00	DI Fill Valve, 115V
45867-01	DI Fill Valve, 230V
45859-00	I/O Sensor Cable
45853-00	Main Wiring Harness
45843-00	Drain Pump 115V
45843-01	Drain Pump 230V
45842-00	Circulation Pump 115V
45842-01	Circulation Pump 230V
45839-00	Pump Mount
45936-00	Pump Outlet Tube (SS)
45824-00	Pump Outlet Tube (FS)
45864-00	Hollow Ball (FS)
45996-00	Tube, Clamp
45819-00	Drain Hose
14888-00	Drain Hose Clamp
45818-00	Drain Pump Inlet Hose
45279-00	DI Pump Assy
44373-00	Blower Adaptor
44115-00	Fill Valve 115V
90816-00	Fill Valve 230V
45932-00	Drain Pump Bracket
18614-00	Ball Bearing Pulley (door)
19113-16	Washer (4)
18810-16	CapScrew
19373-21	HexNut
16239-00	Rubber Tubing, .31 I.D.
14900-00	Tubing Clamp, .25-.63
45977-00	Inlet Power Harness 115V
45977-01	Inlet Power Harness 230V
45985-00	Door Fan Assy
45866-00	Relay Board Cover
45994-00	Blower Filter Assy 230V
45995-00	Blower Filter Bracket 230V
45859-00	Wiring Harness, T Sensor & Switch

Door Assembly

45862-06	Switch Assy
45862-03	Baffle Seal
45862-02	Lens Assy
45862-00	Electrical Enclosure Cover
45861-01	Water Deflector Baffle Assy
45861-03	PCBoard Enclosure Gasket
45861-00	Control Panel
45854-00	PC Board Assy
45854-03	PC Board Assy
45162-00	Soap Dispenser Mounting Bracket (2)
44981-00	Soap dispenser (110V/240V)
45123-00	Light Assy
45094-00	Bulb 115V
45094-01	Bulb 230V
45062-00	Latch Knob
45040-00	Hinge Assy LH
45040-01	Hinge Assy RH
45855-00	LCD Display
45075-00	Light Window
16474-02	Light Window Gasket (2)
45862-01	Door Window
16474-03	L/R Door Window Gasket (2)
16474-04	T/B Door Window Gasket (2)
45923-00	Control Label
45883-00	Door Harness, 115V/230V
45858-00	Flat IDC Control Cable
45929-08	Latch Mechanism

Lower Rack Assembly (SteamScrubber)

44277-08	Carton Assy
44254-00	Roller (8)
44457-00	Roller Clip (8)
44492-00	Basket Bumper (4)
45846-01	Lower Basket

Upper Rack Assembly (SteamScrubber)

44492-00	Basket Bumper (2)
14404-00	Wash Arm Pipe Plug (2)
45909-01	Distrib. Tube Spring
45810-02	Distrib. Tube Cap
45870-02	Distrib. Tube
45870-01	Distrib. Tube Bracket
45847-09	Water Inlet Adapter
45847-05	Upper Basket Latch
45847-01	Upper Basket
45712-02	Wash Arm Assy (Middle)

Lower Spindle Rack Assy (FlaskScrubber)

45918-00	Spindle, Short
45918-01	Spindle, Long
45847-08	Spindle Tool
44254-00	Roller
44457-00	Roller Clip
44251-01	Manifold Plug
44492-00	Basket Bumper
45960-00	Small Spindle w/ Clip (10pk)
45846-01	Lower Basket
45847-09	Water Inlet Adapter
45852-00	Glassware Holder
45852-02	Glassware Holder Clip
45846-07	Tube Cap
45846-02	Lower Spindle Weldment

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Accessories

45956-00 Upper Spindle Rack
- 45845-00 Slides
- 45712-01 Wash Arm Assy (Middle)

45958-00 Upper Spindle Rack (w/o Slides)
- 45712-01 Wash Arm Assy (Middle)

44942-00 8 Place Pipet Washer 1-10 mL
- 44775-00 Very Short Spindles

45952-00 16 Place Pipet Washer 1-50 mL
44246-00 Glassware Holder (Tulip) Small
44248-00 Glassware Holder (Tulip) Large
45960-00 Small Spindles w/ Clips
45957-00 Lower Spindle Rack
- 45918-01 Spindle – Long
- 45918-00 Spindle – Short

44020-01 Culture/Test Tube Insert 15-18mm
44021-01 Culture/Test Tube Insert 20-25mm
44013-01 Culture/Test Tube Insert 10-12mm
- 44014-01 Retainer Top

44015-01 10-Pin Insert
44018-01 32-Pin Insert
- 44019-01 Retainer Top

45897-01 Petri Dish Insert
45892-01 BOD/Beaker/Erlenmeyer Insert
45984-01 Tray Holder
44022-01 Utensil Basket
- 44038-01 Drop-in Cover

45916-01 48-Pin Insert
45870-00 Top Rack (incl.SteamScrubber)
45959-00 Top Rack (Opt. FlaskScrubber)
- 45845-00 Slide Assembly (2)

45885-00 Bottom Rack
45915-00 DNA Sequencing Plate Insert
45425-00 Utensil Holder
45421-00 Bulk Tube Insert
45954-00 Stand
- 45970-05 Door Latch Bracket
- 45325-00 Door Latch, Cabinet
- 45404-00 Washer Base Stand Crate
- 18798-01 Leveler Leg

45919-00 Cool Water Drain Kit 115V
- 90380-03 Inner Braided Tubing .83'
- 45919-06 Water Valve Bracket
- 50777-00 Solenoid Valve SubAssy
- 14201-02 90Deg Brass Elbow
- 14107-00 Male Connector

45919-01 Cool Water Drain Kit 230V
- 50777-03 Solenoid Valve SubAssy

45875-00 Liquid Detergent Dispense Kit
- 45914-00 Wire Assembly
- 45878-00 Cap Assembly
- 45875-02 Pump Assembly

45961-00 Mobile Conversion Kit 115V
- 45965-00 Hose Assembly
- 45964-00 Harness 115V
- 45963-00 Electric Panel Assy 115V
- 45962-00 Retainer Hose Assy
- 44882-01 Caster (4)
- 14107-00 Male Connector
- 13364-00 Power Cord, 115V/20A

45961-01 Mobile Conversion Kit 230V
- 45964-01 Harness 230V
- 45963-01 Electric Panel Assy 230V
- 13421-00 Power Cord, 230V/20A

45922-00 Connection Kit (DI Valve - tube)
12337-00 Power Boost Transformer (208V)
44220-00 Powder Detergent 10 lb
44221-00 Powder Detergent 27.5 lb
45220-00 Liquid Detergent 1 Gal
45222-00 Neut. Acid Rinse 1 L
45225-00 Powder Detergent Sample
C0022-00 Silicone (rubber) Caps

FLASKSCRUBBER VANTAGE SERIES
Model 45400 (parts unique to Vantage)

Use FlaskScrubber 230V Parts if unlisted

45941-00 Cabinet Back Panel
45893-00 Back Panel
45945-00 Cabinet Door Assy
45939-00 Top Panel
45938-00 Cabinet Panel Left Side
45891-00 RH Exterior Side Panel
18798-01 Leveler Leg (6)
45820-01 Sump
45360-00 Washer Temp Sensor Assy
45882-00 I/O Sensor Cable
45863-07 Inner Door Panel
45862-07 Door Window Retainer
45862-01 Door Window
45854-03 PC Board Assy
45123-00 Light Assy
45094-01 Bulb 230V
45075-00 Light Window
45973-00 HEPA Filter
45951-00 Acid Rinse Bottle Assy
45981-00 Liquid Detergent Dispenser
45944-00 Lower Shelf
45363-00 PCBoard Assy – RS 232
45331-01 Acid Rinse Pump Assy
45331-00 Detergent Pump Assy
45325-00 Cabinet Door Latch
16245-01 Hose, 3" Rubber

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New Style Washer Conversion Parts: Under Counter to Free Standing

Cat #	Description	Qty
45891-00	Right Panel	1
45891-01	Left Panel	1
45893-00P	Back Panel	1
45894-00*	Top Panel	1
45975-00	Panel Spacer	4
18981-12	Screw	14
18983-06	Screw	12
44680-00	Plug	2
19302-00	Nut	2
46038-00**	Conversion Kit	1

***Top Panel is required when adding any combination of the back or side paneling.

****For a complete conversion of an Under-counter unit to a Free Standing unit, the parts are now sold as a Complete Kit.

NOTE: *For best results and for rigidity, the back panel should also be installed with side panels.*

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