Operating Instructions

Undercounter Spindle Rack Glassware Washer

Dear Customer,
Thank you for choosing this quality product from UNIVERSAL SCIENTIFIC, INC. We hope it will meet your expectations and fulfill your needs for many years to come. Our design combines clean lines, everyday functionality, and high quality. These are key characteristics of all our products and the reason they are greatly appreciated throughout laboratories in the U.S.A.

To get the most out of your new Undercounter Spindle Rack Laboratory Glassware Washer, we recommend that you read the operating instructions before using it. The operating instructions also include information on how you can help protect the environment.

5434S

Operating Instructions

Contents

Before washing for the first time

Read the operating instructions

Read through the operating instructions before using the glassware washer, especially the sections - Important Safety Instructions, Safety, and Laboratory Glassware Washing.

Be careful with certain materials

Read the section Fragile Laboratory Glassware before washing.

Checking water hardness

If you are not using a R.O. or purified water you should contact the local water utility to check the water hardness in your area. This is important to determine how much detergent and rinse aid to use.

Important Safety Instructions

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

WARNING!

This manual does not cover all possible conditions and situations that may occur. Common sense and caution should always be used when installing, operating, and maintaining any appliance.

• Read all instructions before using the laboratory glassware washer.

• Laboratory glassware washers must be electrically grounded. Read the Installation Instructions for details.

• Use the laboratory glassware washer only for its intended purpose.

• Do not run the laboratory glassware washer while you are out of the laboratory.

• Use only low sudsing laboratory glassware washer detergents and rinse agents.

• To reduce the risk of injury, keep detergents and rinse aids out of the reach of children.

• Do not load sharp items near the door; you could damage the door seal.

• Place sharp items in the small parts basket with the sharp ends down to avoid the risk of cut-type injuries.

• Do not wash plastic items unless they are marked "dishwasher safe" or the equivalent. For items not marked, check the manufacturer's recommendations. Items not "dishwasher safe" could become deformed or melt and create a potential fire hazard.

• Do not operate the laboratory glassware washer unless all enclosure panels are properly in place (i.e., guard plate, access panel, toe kick, etc.).

• Do not tamper with controls by removing or changing.

• Do not abuse, sit on, or stand on the laboratory glassware washer door or baskets.

• To reduce the risk of injury, do not allow children to play in or on a laboratory glassware washer.

• Under certain conditions, hydrogen gas may be produced in a hot water system that has not been used for two weeks or more. HYDROGEN GAS IS EXPLOSIVE. If the hot water system has not been used for two weeks, before using the laboratory glassware washer turn on all hot water faucets and let the water flow from each for several minutes. This will release any accumulated hydrogen gas. As the gas is flammable, do not smoke or use an open flame during this time.

• When removing an old laboratory glassware washer from service or discarding it, remove the door to the washing compartment.

• Do not store or use combustible materials, gasoline, or other flammable vapors and liquids in the vicinity of this or any other appliance.

• Disconnect electrical power to laboratory glassware washer before servicing.

• Repairs should be done by a qualified technician.

• Read the grounding instructions in the installation instructions.

Winter storage/Transport

• Store the laboratory glassware washer where the temperature remains above freezing.

• Avoid long transport distances in very cold weather.

• Transport the laboratory glassware washer upright or lying on its back.

Overflow guard function

The overflow protection starts pumping out the machine and turns off the water supply if the water level in the laboratory glassware washer exceeds the normal level. If the overflow protection is triggered, turn off the water supply and call the Customer Care Center.

Care and maintenance instructions

When cleaning the edge around the door, use only a slightly damp cloth. Do not spray water around the edge! Moisture can make its way into the lock, which contains electrical components.

Packing material

Please sort waste materials in accordance with local guidelines.

Disposal

• When the machine has reached the end of its service life and is to be disposed of, it should immediately be made unusable. Pull out the power cable and cut it as short as possible.

• The laboratory glassware washer is manufactured and labeled for recycling.

• Contact your municipality for information about where and how your laboratory glassware washer can be recycled correctly.

TIP!

Detergents and rinse aids are corrosive, so always keep them out of reach of children.

• Should someone swallow detergent or rinse aid, give plenty to drink immediately, i.e., one or two glasses of milk or water. Do not try to induce vomiting. Seek medical advice immediately: Call the National Capital Poison Center at 1-800-222-1222.

• Always close the door and start the glassware washer as soon as you put in the detergent.

• Always keep small children away from the machine when it is open. There may be some detergent residue left inside the machine.

• If detergent gets in someone's eyes, rinse them with plenty of water for at least 15 minutes.

• Do not allow children to use or play in or on the glassware washer.

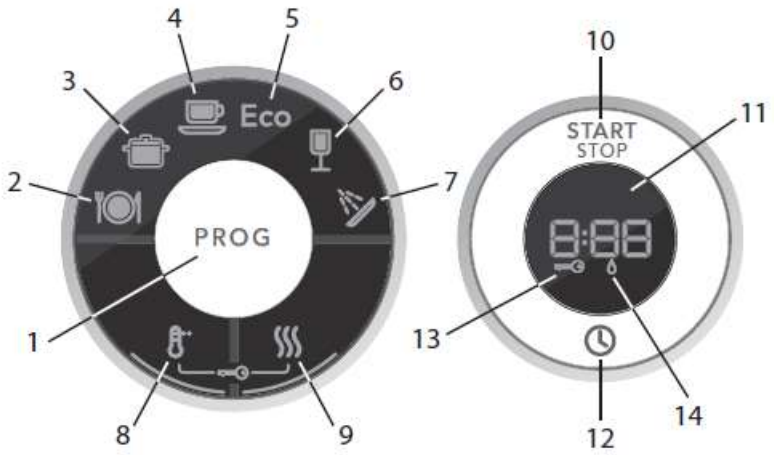
• Load sharp objects with the pointed end facing the back of the glassware washer. Sharp items loaded in the small parts basket should be loaded with pointed ends down.

Activate Button Lock

You can activate the button lock to prevent people from starting the glassware washer (see the section Settings).

Front Panel

The panel is fitted with touch buttons with audible feedback (see the chapter Settings)

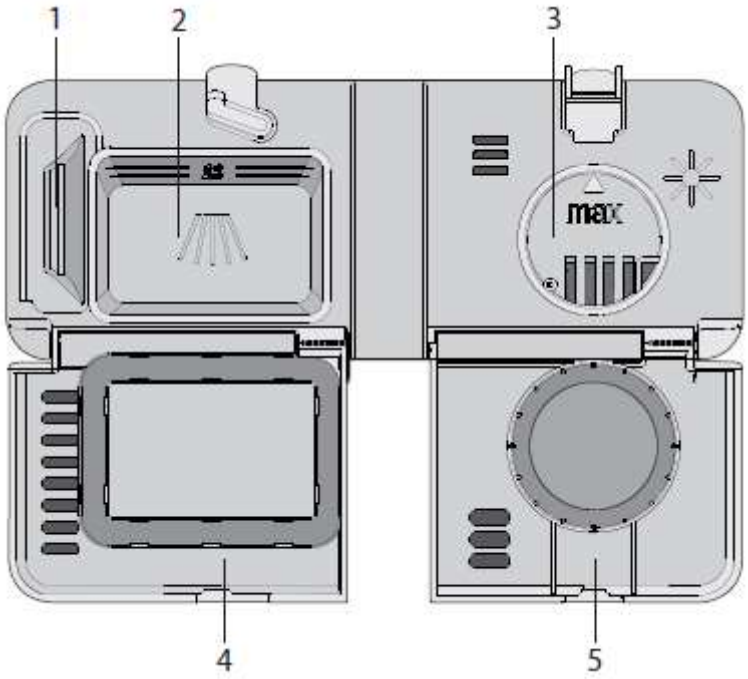


1. Program selector
2. Daily wash
3. Heavy wash
4. Normal wash
5. Eco wash
6. Quick wash
7. Rinse & Hold
8. High Temperature
9. Long Dry
10. Start/Stop
11. Display
12. Delayed Start
13. Wash Lock
14. Start/Stop

Note!

- Keep the touch buttons clean. Wipe them clean with a dry or slightly damp cloth. Never use cleaners – they can scratch the surface. Use the main power switch to turn off the laboratory glassware washer before cleaning the touch buttons to avoid activating any buttons unintentionally.

Detergent/Rinse Aid Dispenser



1. Prewash detergent compartment
2. Main wash detergent compartment
3. Rinse aid compartment
4. Detergent compartment lid
5. Rinse aid compartment lid

Washing

Below are step-by-step instructions to help you achieve the best possible laboratory glassware washing results.

1 Load the baskets correctly

Do not rinse labware under running water before loading them in the laboratory glassware washer. Simply scrape off large particles before loading the laboratory glassware washer.

Note!

All dirty surfaces should face in and down!

2 Check that the spray arms can rotate freely

3 Add detergent

We recommend that you use only unscented, low sudsing granular detergent. Using the wrong detergent could cause flooding and/or damage your laboratory glassware washer. Do not use detergent that has been wet and is clumped. Also, check the expiration date on the container.

The amount of detergent needed can vary due to differences in water hardness. To determine the water hardness in your area, contact your local water utility or area water softening company. The harder the water, the more detergent you may need. Refer to the chart below for the recommended detergent amounts based on water hardness. Remember, you should adjust the amount of detergent you use by small amounts until you find the correct amount. Twelve grains and higher is extremely hard water and detergent alone may not be enough. You may need to use a water softener to maximize the performance of your laboratory glassware washer. Also, in areas with hard water (9+) you may need to wash at lower temperatures to prevent hard water deposits from forming in tank and wash system. In hard water areas, both the labware and the machine can develop a white or gray film after a while. If this happens, run the Heavy program with high temperature and two tablespoons of citric acid or commercially available “dishwasher cleaner” in the detergent compartment (with no labware in the machine).

Note!

We recommend that you do not add prewash detergent for the programs Quick or Super Quick.

Note!

If you use a detergent with a rinse aid additive, you should not fill the rinse aid dispenser. This could cause a film on your labware.

Note!

Liquid hand-washing detergent must not be used as the foam that forms prevents the laboratory glassware washer from operating effectively.

Detergent Tablets

Halve the tablet if it is difficult to close the dispenser lid. There is a risk that the detergent will not be released properly if the lid is tight and cannot open correctly.

Detergent tablets are not recommended for short programs (less than 75 minutes). Use powder or liquid detergent instead.

3-in-1/ All-in-one detergent

Read through the directions for these products carefully. If anything is unclear, contact the detergent manufacturer.

Recommended detergent amounts based on water hardness	
Water hardness	**Detergent amounts**
Pure water, R.O. or Soft (0-3 grains per gallon)	Prewash 1 teaspoon Main wash 1 to 1-1/2 tablespoons
Medium (4-8 grains per gallon)	Prewash 1 teaspoon Main wash 1 to 2 tablespoons
Hard (9+ grains*)	Prewash 1 teaspoon Main wash 2 to 3 tablespoons
*12 grains and higher is extremely hard water.	

4 **Press the main power switch and close the door**

5 **Select the program**
Press the Program selector one or more times until the desired program symbol lights.

Daily Wash
A program suitable for day-to-day laboratory glassware washing. This program is for lightly soiled labware.

Heavy Wash
Program for very dirty labware. Only load labware that can withstand a Heavy wash.

Normal Wash
Use to wash normally soiled labware.

ECO Eco Wash
Use when you want to save energy. For normally soiled labware.

Quick Wash
This program is used for glasses and labware that is lightly soiled.

Rinse & Hold
Use to rinse labware while you wait for the Laboratory glassware washer to become fully loaded.

Program	Options	Pre-washes	Main wash (°F)	Number of rinses	Final rinse temperature (°F)	Consumption values[1]				
						Cold water[2]		Hot water[3]		
						Wash time (approx. hours:minutes)	Energy (approx. kWh)	Wash time (approx. hours:minutes)	Energy (approx. kWh)	Water consumption (gallon)
Daily wash	-	1	140	2	180	2:00	1.4	1:40	0.8	3.5
Heavy wash	-	2	130	3	140	3:40	1.5	3:10	0.7	5.2
Normal wash[4]	-	1	130	3	120	2:30	1.0	2:00	0.5	3.9
Normal wash		2	150	3	180	2:35	1.6	2:10	0.9	4.7
Eco Eco wash	-	1	120	2	120	2:30	0.9	2:20	0.5	3.2
Quick wash	-	0	85	2	-	0:20	0.2	0:20	0.1	2.7
Rinse & Hold	-	0	-	1	-	0:06	0.01	0:04	0.01	0.9

1) Consumption values vary depending on the water supply temperature, the ambient temperature, the size of the load, the selected options, and more.
2) Connection to cold water, approx. 50 °F (10 °C).
3) Connection to hot water, approx. 120 °F (50 °C).
4) The energy label performance figures are based on this program.

6 Select options

To select an option, press one of the option buttons. The field next to the button lights when the option is activated. The available options depend on the selected program. Once you have started the program, the options you selected are saved for the next time you use the same program. An exception is the Delayed start option.

High temperature

Activate this option for improved glassware washing results. The machine then uses a higher temperature for the main wash.

If you want to use the lower temperature, press until the field next to the button turns off.

You can vary the temperature as shown below:

	Heavy wash:	130 °F (55 °C)/ 160 °F (70 °C)
	Normal wash:	130 °F (55 °C)/ 180 °F (82.22 °C)
	Daily wash:	140 °F (60 °C)/ 180 °F (82.22 °C)
	Quick wash:	85 °F (30 °C)/ 140 °F (60 °C)
Eco	Eco wash:	120 °F (50 °C)/ 140 °F (60 °C)

Long dry

A higher temperature in the final rinse and a longer drying phase improves the drying result if you activate the Long dry option. This causes a slight increase in energy consumption.

If you want to use the lower temperature, press until the field next to the button turns off.

Delayed start

When you select Delayed start, the glassware washer will start 1-24 hours after you press the Start/Stop button.

1. Press the button once to activate Delayed start. Press the button several times – or hold it in – to set the desired number of hours.
2. Press Start/Stop and the glassware washer counts down 1 hour at a time and starts after the selected delay.

Press and hold Start/Stop for five seconds if you want to cancel the Delayed start option.

Note!

Remember to press the Start/Stop button to start the program.

7 Press Start/Stop

The display flashes three times with the remaining time to indicate that the program has started. Close the door properly, otherwise the glassware washer will not start. The display indicates door is open.

Note!

If the machine does not start within 2 minutes of the last button press, the display returns to showing the last program run.

Stopping or changing a program

If you want to change programs after starting the glassware washer, open the door then press and hold Start/Stop for five seconds. Add more detergent if the lid of the detergent dispenser has opened. Then choose a new program, press Start/Stop, and close the door.

Do you want to add more glassware?

Open the door. The glassware washer stops automatically. Add the glassware, close the door, and the glassware washer resumes the program.

If the glassware washer is turned off using the main power switch or due to a power failure

If the program was not finished, the interrupted program resumes when power is restored.

Note!

During drying, the program is interrupted if the power is cut or the door is open for more than 2 minutes.

8 After glassware washing

Once the program has finished, “End” appears on the display.

A buzzer also sounds at the end of the program. See the section Settings, which describes how to change this function.

Once the glassware washer has finished, it uses only standby power. Turn off the glassware washer using the main power switch if you want to completely cut the power. Turn off the water supply valve after each use.

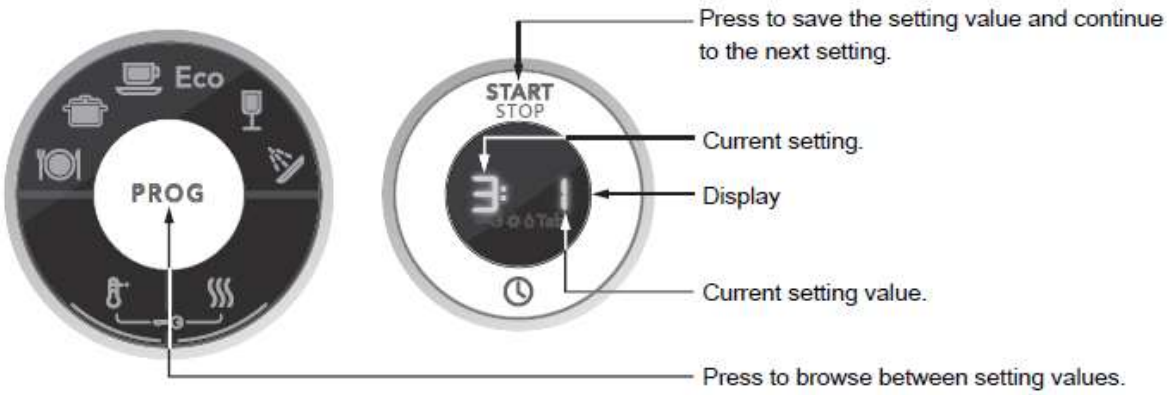
Settings

Do as follows to open the settings menu:

1. Turn off the glassware washer using the main power switch. Wait about five seconds.
2. Then press the main power switch again. Wait until the numbers appear in the right-hand display before continuing to the next step.
3. Within five seconds, press and hold the Program selector (wait for the audible signal confirming the button press) and then immediately press the Long dry button without releasing the Program selector.
4. Keep the buttons pressed until the symbols for the Daily wash and Rinse & Hold programs start to flash.

Tip!

Be sure to press right on the symbols, so as not to inadvertently activate any other button. Try again if you fail to open the settings menu the first time.



Button press	Options	Settings	Description
PROG	(Off)	**Protective lock** (button lock)	You can activate the protective lock (button lock) option to prevent people from starting the glassware washer. Press the High temperature and Long dry buttons simultaneously to temporarily deactivate the button lock when you want to start the glassware washer. The button lock is automatically reactivated after 2 minutes.
	(On)		
START STOP	Press Start/Stop to save the setting value and continue to the next setting. If you do not want to change any other settings, keep pressing Start/Stop to step through the entire settings menu.		

Settings (continued)

Button press	Options	Settings	Description
PROG	2: 0 (Off)	**Buzzer volume**	The glassware washer uses a buzzer to indicate when a program is finished or when a fault has occurred.
	2: 1 (Low)		
	2: 2		
	2: 3		
	2: 4 (High)		
START STOP	Press Start/Stop to save the setting value and continue to the next setting.		
PROG	3: 0 (Off)	**Operation volume**	This sound is used to confirm each button press.
	3: 1 (Low)		
	3: 2		
	3: 3		
	3: 4 (High)		
START STOP	Press Start/Stop to save the setting value and continue to the next setting.		
PROG	4: 1 (Low)	**LCD contrast**	For adjusting the contrast of the display.
	4: 0		
	4: 1		
	4: 2		
	4: 3 (High)		
START STOP	Press Start/Stop to save the setting value and continue to the next setting.		
PROG	5: 0 (Off)	**Rinse aid**	Rinse aid dosage setting.
	5: 1 (Low dosage)		
	5: 2		
	5: 3		
	5: 4		
	5: 5		
	5: 6 (High dosage)		
START STOP	Press Start/Stop to exit the settings menu.		

Time remaining

Once you have selected a program and options, the display indicates how long the program took the last time it was used. Once you have started the glassware washer, the display indicates how much program time remains. The remaining time is updated after the water for the final rinse has been heated.

This may differ somewhat from time to time depending on the temperature of the water supply, the amount of glassware, and other factors.

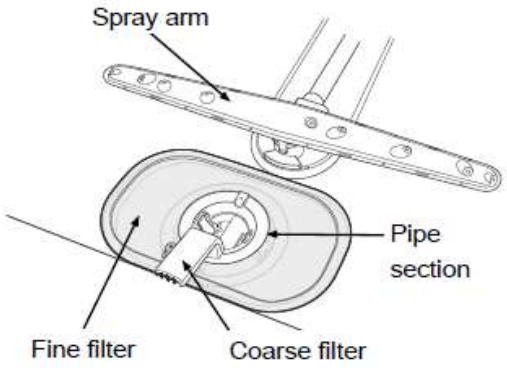
While the program is running, the time counts down and the remaining program time is shown on the display. The remaining time is shown, for example, as 1:15 which means the program will run for another 1 hour and 15 minutes.

Note!

During the first run of each program, the remaining time displayed can be slightly misleading, as the glassware washer is estimating the time. When you run the program a second time, the glassware washer will calculate the remaining time based on the previous duration of the program.

Care and maintenance instructions

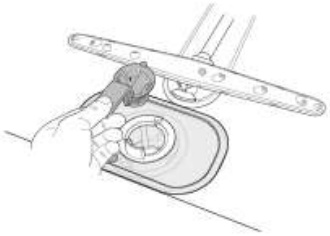
The glassware washer tub is made of stainless steel and is kept clean through normal use. However, if you have hard water, lime scale deposits may form in the glassware washer. If this happens, run the Heavy wash program with high temperature and two tablespoons of citric acid or commercially available glassware washer cleaner in the detergent compartment (with no glassware in the machine).



Coarse filter

The coarse filter traps larger particles, which cannot get past the drain pump. Empty the coarse filter as necessary.

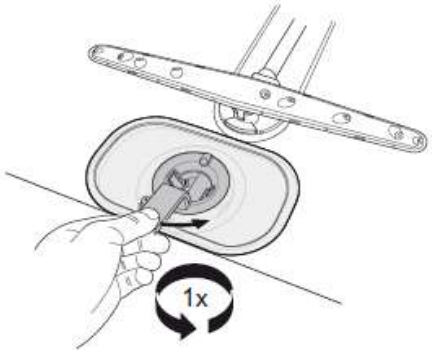
1. Lift the coarse filter by the handle.
2. Empty the coarse filter. Remember to replace it!



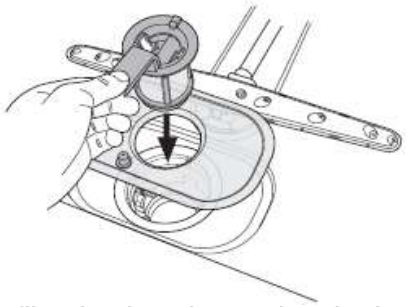
Fine filter

Debris that collects on the fine filter is automatically rinsed away during each wash. However, the fine filter and its pipe section should be cleaned a couple of times a year.

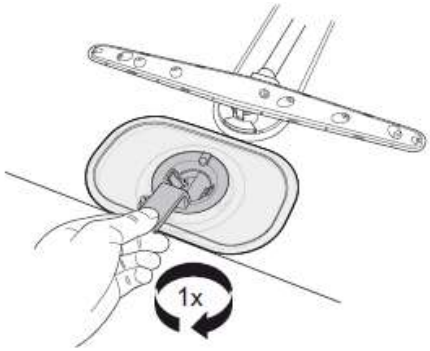
1. Turn the handle counterclockwise once.



2. Lift the pipe section straight up by the handle. Free the coarse filter to clean the pipe section.
3. Remove and clean the fine filter.
4. Replace in reverse order. Check that the edges seal properly when replacing the fine filter.



5. Lock the filter in place by turning the handle clockwise to the stop position. The handle should point straight out from the glassware washer.



Note!

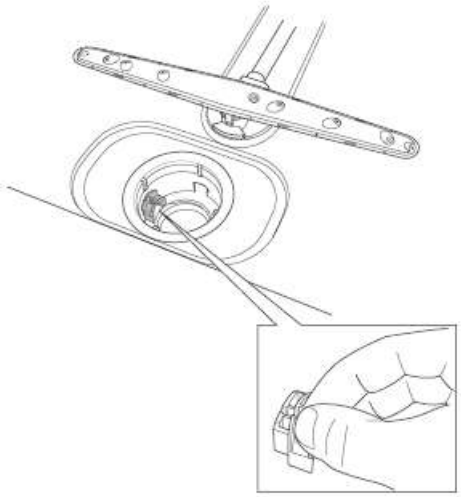
The glassware washer must not be used without the filter in place!

Glassware washing efficiency can be affected if the coarse filter is incorrectly fitted.

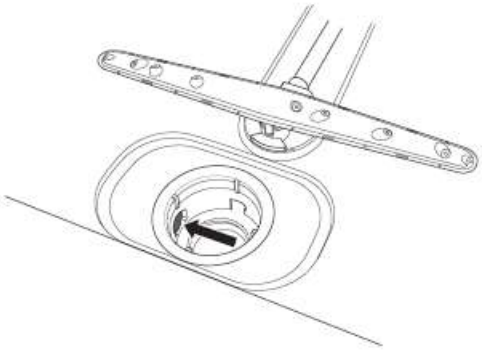
Drain pump

The pump can be accessed from inside the glassware washer.

1. Cut the power to the glassware washer by unplugging the unit from the power outlet.
2. Remove the coarse filter and pipe section.
3. Remove the small yellow drain pump access cover at the left of the bottom drain (see illustration below).



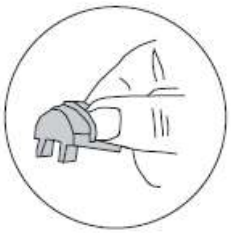
4. By inserting your finger into the hole, you can turn the pump blades to release anything blocking the pump.
5. Reinstall the success cover and filters.
6. Plug the machine in again.



If the glassware washer still does not start and a whirring sound is heard, the overflow protection has been triggered.

- Shut off the water.
- Unplug the unit from the power outlet.
- Call Universal Scientific, Inc.

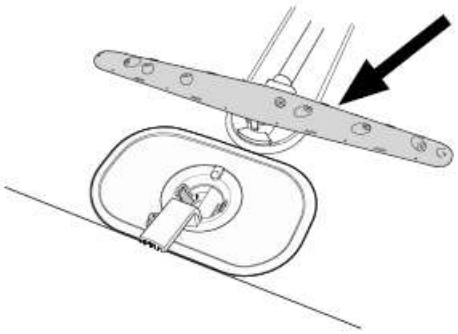
Do not forget to reinstall the drain pump access cover.



Lower spray arm

Holes and bearings can sometimes become blocked.

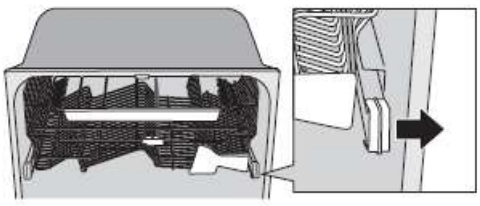
1. Pull the lower spray arm straight up to release it.
2. Remove any debris using a needle, toothpick, or some other similar pointed device. The spray arms also have holes underneath.



Upper spray arm

The upper basket must be removed before the upper spray arm can be released.

1. Pull out the upper basket and turn the basket catch on each runner outward (see illustration). The basket can now be removed.



2. Loosen the upper spray arm in the same manner as the lower spray arm and clean it.

Door

When cleaning the edge around the door, use only a slightly damp cloth (with a little cleaner if necessary).

WARNING!

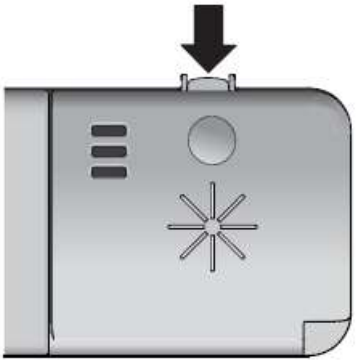
Do not use a spray bottle or the like around the door lock. This is to ensure that water does not penetrate the door catch and come into contact with the electrical components.

Drying is faster if you use rinse aid. When the rinse aid needs topping up, the above symbol lights on the display.

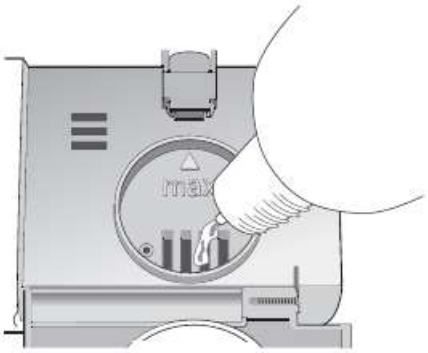
Top up with rinse aid

Top up with rinse aid as follows:

1. Open the rinse aid compartment lid.



2. Carefully top up with rinse aid. Only add rinse aid to the level marked **max**.



3. Wipe up any spilled rinse aid around the compartment.
4. Close the lid firmly.

Note!

After topping up, it may take a while before the symbol goes out.

Select dosage

The rinse aid dispenser can be adjusted between 0 (off) and 6.

Increase the rinse aid dosage:

- If the glassware has water marks.

Reduce the rinse aid dosage:

- If the glassware has a sticky white/blue film.
- If the glassware is streaked.
- Heavy foaming. If you have very soft water, the rinse aid can be diluted 50:50 with water.

Set the dosage

The section Settings describes how to set the rinse aid dosage.

Error messages

Display	Type of fault	Action
F: 10	Overfilling	Call Universal Scientific, Inc.
F: 11	Water outlet fault	See “Possible causes” in the chapter Troubleshooting.
F: 12	Water inlet fault	Check that the water supply valve is on.
F:40	Inlet valve leakage	Turn off the water supply valve and call Universal Scientific, Inc.

Turn off the machine with the main power switch and then turn it on again to clear the error message from the display.

Troubleshooting

Problem	Possible causes	Action
The glassware is not clean.	The spray arms do not rotate.	Remove the arms and clean.
		Check that the glassware is not blocking the spray arms.
	Detergent is too old. Detergent is a perishable product.	Avoid large packages.
	Incorrect detergent dosage.	Dose according to water hardness. Far too much or far too little detergent.
	Glassware washing program too weak	Select a higher temperature or a more powerful program.
	Glassware loaded incorrectly.	Do not cover glassware. Avoid placing very tall glasses in the corners of the baskets.
	Glassware has toppled over during the program.	Load the glassware securely.
	The filter is not correctly fitted.	Screw the filter firmly into place. See the section Care and maintenance instructions.
Spots or films on the glassware.	Incorrect rinse aid dosage setting.	See the sections Rinse aid and Settings.
	Too high temperature and/or too much detergent can cause etching on crystal.	Wash crystal at a low temperature and with a conservative amount of detergent. Contact the detergent manufacturer.
The glassware has a sticky white/blue film.	Rinse aid dosage setting too high.	Reduce the amount. See the sections Rinse aid and Settings. You may want to dilute the rinse aid 50:50 with water.
Spots on stainless steel or silver.	Some types of chemicals can cause spots on stainless steel if left for too long.	Rinse off chemicals if not starting the glassware washer. Or why not run the Rinse & Hold program?
	Some metals can cause spots on other metals if they come into contact during glassware washing.	Silver and stainless steel items should not come into contact during glassware washing.
Spots left after washing.	Lipstick and tea can be difficult to wash off.	Use a detergent with a bleaching agent.
Rattling sound when glassware washing.	The glassware is not correctly placed or the spray arms are not rotating.	Check that the glassware is secure. Spin the spray arms to make sure they can rotate.

Troubleshooting (continued)

Problem	Possible causes	Action
The glassware washer does not start.	You have forgotten to turn on the main power switch.	Pressing the main power switch.
	The door is not properly closed.	Check.
	A fuse/circuit breaker has been tripped.	Check.
	The plug is not plugged into the power outlet.	Check.
	Water supply valve is turned off.	Check.
	Overflow/leaks.	Check.
	A whirring sound is heard from the glassware washer and does not stop when the main power switch is turned off.	Turn off the water supply valve. Pull out the plug and call Universal Scientific, Inc.
	Check that the Delayed start option has not been selected.	Press and hold Start/Stop for five seconds to cancel the Delayed start option.
1 minute appears on the display.	The program is taking longer than estimated.	None. The correct time will be displayed the next time it runs.
Water remains in the glassware above the filters.	Blocked drain hose.	Loosen the drain hose from where it terminates. Check that no debris has clogged the hose. Is the cone-shaped part of the drain boot cut to the maximum size of the fitting where it attaches?
	Kink in drain hose.	Check that the hose is free from kinks and sharp bends.
	The filters are blocked.	Clean the coarse and fine filters.
	Debris in the drain pump.	Clean the drain pump. See the section Care and maintenance.
Bad odor in the glassware washer.	Dirt around the seals and in corners.	Clean with brush and low foaming cleaner.
	Low temperature settings have been selected for a long duration.	Run a program with a higher temperature about once a month.
The glassware is not dry enough.	Drying power too low.	Activate the Long dry option.
	The washer is not fully loaded.	Fully load the glassware washer.
	Rinse aid needs topping up or dosage is set too low.	Top up with rinse aid or increase the rinse aid dosage. See the sections Rinse aid and Settings.
		Open the door a little once the program has finished.

Troubleshooting (continued)

Problem	Possible causes	Action
Cannot close door.	The baskets are not correctly positioned.	Check that the baskets are correctly positioned horizontally.
		Check that the glassware is not blocking the baskets from sliding properly into place.
The touch buttons do not react when pressed.	The touch buttons were pressed too soon after opening the door.	Wait a moment then try again.
	Dirt on the touch buttons.	Clean with a dry or damp cloth.
	The button lock is activated.	See the section Settings.

Technical information

Technical data

Height:	34 3/8” – 36”
Width:	24”
Depth:	26”
Weight:	195 lbs.
Water pressure:	18-176 psi
Electrical:	120 V, 60 Hz, 15 Amp
Rated power:	See serial number tag and rating plate.

Warranty Information

Universal Scientific Inc. provides a full one (1) year warranty on all parts and factory workmanship. It expires one (1) year from the date of installation.

We have the option to void the warranty if:

- Non-authorized service group provides service work.
- Accident of abuse.
- Not following operating instructions
- Running the D.I. system without water.
- Product failures caused by the use of highly corrosive chemicals or materials.
- Installation does not comply with local codes.
- Washer is installed on a single circuit with other washers, appliances, and or outlets on that circuit.

SERVICE

Your Universal Scientific Inc. Laboratory glassware washer is backed by a nationwide network of factory authorized service companies. If you need service please call us at 440-428-7800 and ask for the service department.