PHASER
Pure Water System

Effective January 31, 2017

Pure Water
Window Cleaning System
Operation and Maintenance Manual

Overview

Congratulations on your purchase.

Thank you for purchasing the Time Saver Series Phaser Pure Water System. With proper care, this unit will provide you with years of trouble free service. This system was designed with professional window cleaners in mind. Bringing the latest technology & advancements to the pure water window cleaning industry, abc & Waterfed.com have produced the finest pure water window cleaning system available today. Only the highest quality parts & materials have been used to assure you years of system longevity.

The following is provided to help you understand how your system purifies water. The Phaser is a multi-stage water purification unit using carbon, reverse osmosis, and deionization filters to remove impurities from water before delivery to surfaces for cleaning. An optional boost pump module can be added for increased pressure and height achievement. General life span will vary depending on feed water TDS. Based on an average TDS of 100 in your water, approximately 10,000 gallons of water can be passed through the carbon/sediment filter before replacement. It is recommended that the carbon/sediment and DI cartridges be replaced at the same time. (A lower TDS produces more gallons, a higher TDS produces less gallons).

In The Box

Parts Check

- TS-2200 (Phaser) System
- DI Filter In Housing
- Carbon Filter In Housing
- TDS Meter
- Bypass Hose
- Quick-Connect Shut Off
- Filter Wrench
- Molykote III

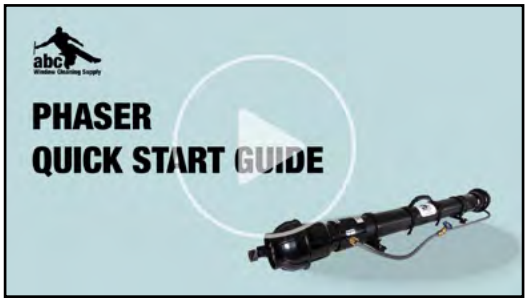
1. Unpacking/Inspecting The System

Your system is packaged to stay undamaged in transit. Please inspect all components to ensure no damage has occurred prior to continuing. Carefully remove the packaging material from around the system and discard. Inspect your Phaser for any shipping damage. If damage has occurred, notify the shipping company that made delivery to begin a damage claim.

2. Initial Setup

Refer to your quickstart guide for more complete information.

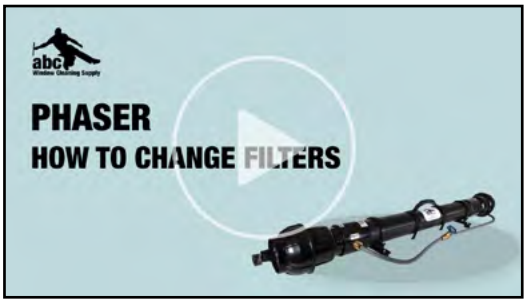
You can also watch the quickstart video at: www.abcWindowSupply.com/PhaserQuickStart



1. Attach bypass hose to the fitting on the side of the RO filter.
2. Open valve on bypass hose fully.
3. Attach DI filter to outlet end of the RO filter. **Do not overtighten.**
4. Attach quick connect shut off to the DI filter.
5. Before attaching, wash your Carbon/Sediment filter by running water through it for at least 10 minutes.
6. Attach Carbon/Sediment filter to the inlet end of the RO filter. **Do not overtighten.**
7. Attach pole to quick connect shut off and turn to open position.
8. Attach source hose to water source and the other end to the carbon filter
9. Turn on water.
10. Adjust bypass to desired level (see Bypass Valve Operation).
11. Start cleaning windows.

3. Filter Replacement

Learn how to change your filters by video: www.abcWindowSupply.com/PhaserFilter



Carbon/Sediment Filter

1. Unscrew the Carbon/Sediment filter housing from the inlet side of the unit. Unscrew the threaded cap, remove spent filter bag and sediment filters. **Do not attempt filter replacement with housing attached to the RO filter.**
2. Insert Carbon filter bag in the housing. Push down gently to compact the filter medium inside the bag.
3. Clean the o-ring at the top of the filter housing base and/or apply molykote 111 as needed.
4. Place the second sediment filter on top of the bag and screw on the new Carbon/Sediment filter housing cap by hand. Tighten the cap down until you feel the o-ring engage. **Do not overtighten.**
5. While it is still off of the RO, run water through your Carbon/Sediment filter for a minimum of 10 minutes to wash the loose carbon dust out of the filter.
6. Screw the Carbon/Sediment filter housing back onto the inlet of of the RO filter. **Do not overtighten.**

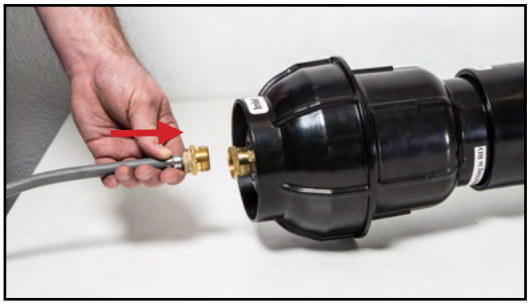
DI Filter

1. Remove quick connect shut off valve.
2. Unscrew the DI filter housing from the outlet side of the unit. Unscrew the threaded cap, remove spent filter bag and sediment filters. **Do not attempt filter replacement with housing attached to the RO filter.**
3. Put one new sediment filter on the in bottom of the housing base, so that it covers the inlet hole. Insert DI filter bag in the housing. Push down gently to compact the filter medium inside the bag.
4. Clean the o-ring at the top of the filter housing base and/or apply molykote 111 as needed.
5. Place the second Sediment filter on top of the bag and screw on the new DI filter housing cap by hand. Tighten the cap down until you feel the o-ring engage. **Do not overtighten.**
6. Screw the DI filter housing back onto the outlet of the RO filter. **Do not overtighten.**

RO Filter

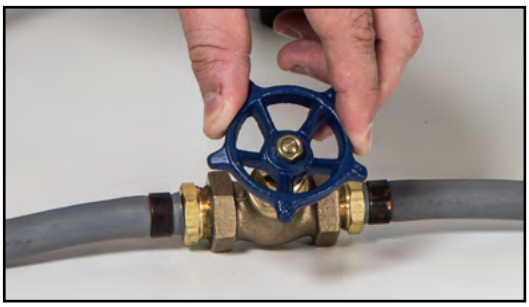
1. Remove Carbon/Sediment and DI Filters.
2. Using a 7/16” wrench, remove the clamps from the RO Membrane housing that doubles as the stabilization base for the unit. Retain for future use.
3. Remove fabric handle and install onto new RO membrane.
4. Remove bypass hose.
5. Attach handle and clamps to new RO filter.
6. Attach bypass hose to new RO Filter.
7. Attach Carbon/Sediment and DI Filters. **Do not overtighten.**

4. Hooking Up To Water Source



Locate an external water source. Attach one end of the feed hose (not supplied) to the water source. Open the faucet at the building and make sure all air is out of your source hose. Turn off water and attach to inlet of Carbon/Sediment filter. Turn water back on fully. If using a pump, wait for water to flow from brush before turning the pump on.

5. Bypass Valve Operation



The system comes with a Bypass/Pressure Regulator valve. The bypass valve controls the amount of water that your RO membrane lose as bypass discharge (called brine). The more open your bypass valve is the lower your system pressure will be (potentially resulting in lower flow of pure water out of your system) and the more input water you will lose as brine. However, your RO membrane use the brine to clean themselves itself. Thus, the more open your bypass valve, the longer your RO membrane will last and the lower the TDS of the clean water leaving the RO will be (this in turn lowers the work that your DI filter will have to do and can result in longer DI filter life). Closing your bypass until the flow of pure water and brine are roughly the same is a good place to start. **Some water must be coming from your bypass at all time when running your system!**

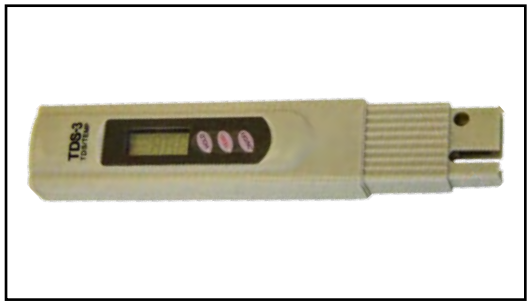
It is not recommend that you exceed 130 psi though your system as damage to your filters and connection hose could result. This should only be a concern if you supply additional pressure via a boost pump. Should your pump pressure exceed 130 psi, you can lower the system pressure by opening the bypass valve, as stated above.

It is recommended that your run your system with the bypass valve fully open for at least 5 minutes when you finish using your system to help clean out your RO membrane and help extend their life. This is called a forward flush. When flushing out an RO, restrict the pure water outlet using the shutoff valve so that most of the source water is forced out the bypass line.

6. Producing Pure Water

Connect your WaterFed® pole to the end of the production water hose. Open the shut-off valve between the hose and the pole to allow water to flow through the pole and wash glass. **Do not drink pure water made from your system.**

7. TDS (Total Dissolved Solids) Meter



Push the “On” button on the TDS meter (included) – capture a small amount of your production water in the cap of the TDS meter to get a reading of the water. A TDS reading of 0 – 10 is acceptable for cleaning windows. Specific conditions and results may vary. Read all sections before continuing for optimal system performance.

Your TDS meter also has a thermometer which reads temperature in celsius. This can allow your to monitor the temperature of your feed water. RO membranes require more pressure to create the same amount of clean water as the temperature of the water gets colder. Running your system at feed water temperatures of less than 10 degrees celsius (50 degrees fahrenheit) could result in low flow exiting the system. When measuring the TDS coming out of an RO filter, let water run for 60 seconds before taking an RO only sample.

8. Using A WaterFed®Pole

Once your Phaser system is hooked up, and you have a WaterFed® pole connected to the unit, you're ready to clean windows.

Always begin by cleaning the top row or highest windows first, including scrubbing the frames. Work the WaterFed® pole up one side of the frames, across the top, and back down the other side. Scrub the glass in an up and down motion, moving the pole the entire length of the glass with each stroke.

Return the pole to the top of the window, and with a side to side motion, allow rinse water to flow completely down the surface of the glass. Frame rinsing may not be required. If the height of the glass and the weight of the pole allow for it, hold the brush approximately 8 inches off of the surface of the glass to rinse. If this is not possible, move the pole side to side slowly with the brush on the glass at the top, and let the water flow down the glass.

Once you have completed the top row or highest glass on one side of the building, repeat these steps for each tier or level of glass, working your way down.

Providing a good initial scrubbing on the glass, followed by a complete rinse, will ensure that the glass dries completely spot-free.

Pure water is a great natural solvent for organic soils. In some cases where there are heavy organic soils, a pre-soak or even a double scrub & rinse may be needed to achieve optimal results.

The agitation of the brush, coupled with the flow of water through the brush when scrubbing, should break down and suspend organic soils, readying them for complete removal via the rinse process.

As with any new procedure, practice in the use of your WaterFed® pole will be needed to achieve optimal results in minimal time.

9. Soap Residue

A common issue encountered when transitioning buildings from traditional window cleaning methods to pure water cleaning is soap residue. After the initial cleaning with pure water, small white or gray spots and runs will be seen on the glass after drying. Most often this is soap and or detergent residue actually left behind by previous cleanings and brought out of the pores of the glass and out from under the side gaskets and seals of the glass on commercial installations by the pure water cleaning process. This condition is generally rectified by repeating the pure water cleaning process until it is eliminated.

10. Operating Without Power

The Phaser is designed to allow the free flow of water through the system. A minimum hose bib pressure of 50 pounds is required to push the water through the system (at least 80 psi is recommended). In areas where pressure may be lacking a booster pump is recommended to supplement more pressure.

11. Shutdown

1. Close the shut off valve to the pole. Open bypass valve to fully open position and flush out the system for 5 minutes.
2. Turn supply water off.
3. Disconnect water line and tip system on end if draining is desired.

12. Maintenance

Your Phaser system requires little maintenance to operate at peak performance. As stated above, forward flushing of the ROs is essential to achieving maximum RO lifespan.

Periodically check TDS coming out of DI outlet to ensure that you have good readings. Replace the Carbon and DI filter together once readings reach 10 parts per million.

13. Storage

Storage - Short Term (2-4 Weeks)

DO NOT ALLOW DI or RO Cartridges to DRY OUT. Dry DI resin loses its charge (and thus its ability to attract contaminants). Dry RO membranes tend to develop cracks which allow more dissolved solids to pass through the membrane. abc recommends that you run water through your Phaser system once every 2 weeks or so, not only to help keep your filters moist, but to also wash out any microorganisms that might try to grow in your filters.

Storage - Long Term (Winterizing)

abc recommends that you run water through your Phaser system once every 2 weeks or so, not only to help keep your filters moist, but to also wash out any microorganisms that might try to grow in your filters. When possible flush every two weeks through the winter to ensure optimal RO performance. If this is not feasible, follow instructions below.

Drain the system as fully as possible.

Wrap cartridges tightly in plastic wrap or plastic bags, seal with tape. **Do not allow to freeze.** Failure to do so will destroy your filters.

Doing a 10 minute forward flush may be necessary to clean the filters out before using again.

14. Troubleshooting

Low pure water flow out of the brush

1. Low tap pressure is one of the most common causes of low flow of pure water. Source water pressure is the primary driver of system performance. Even sources that appear to have plenty of flow out of the tap may not have enough PSI to push water through the RO membrane. Ensure that the tap pressure is sufficient using a pressure gauge. Trying a different source may lead to better performance. Also check all hoses (incoming and outflowing) for kinks or blockages, especially hose reels that are wound too tight. Trying a larger diameter hose (½" or more) or a shorter hose length between the system and the tap can also improve flow. Adding a pump, such as the abc boost pump, can help compensate for low source pressure. **Do not exceed 130 PSI** when using a pump.
2. Membranes can become clogged over time for a variety of reasons. The most common are running the RO membrane without enough bypass flow or running the system on source water that is unusually high in TDS (both of these can be avoided by running more bypass water). Even allowing the membrane to sit too long without running any water through it can allow microorganisms like bacteria and algae to clog a filter. In these cases, running a series of long forward flushes will often return the RO membrane to working order. Open your bypass valve all the way and then shut off your system's pure water outlet at the DI filter. Run it like this for 10 minutes and then open your pure water outlet and restrict your bypass to its normal running setting. Doing this 2 or 3 times may be required to fully flush your membrane.
3. Expect decreased production rates when running your RO with colder than normal source water. Water temperature greatly affects the efficiency of the RO membrane. You lose around 2% of your flow production for every degree fahrenheit that you go below 77. So for example, you can expect around half the flow for water at 50 degrees that you would get at 75 degrees, even if both sources are at the same PSI. Use your TDS meter to measure the temperature of your source water.
4. Leaks in the system and the pole can release pressure or take flow away from your brush. If you begin to see less flow out of your jets, checking all your connections for loose fitting can ensure that all the water your system purifies gets onto the glass.
5. Over tightening the Carbon filter housing can lead to a reduction of water flowing through the filter. Remove from RO and loosen housing top to allow more water.

High TDS

1. When you first get a higher than expected reading on your handheld TDS meter, it can be a good idea to use the water you are testing to wash out both the measuring lid and the measuring prongs of the meter itself. Do not get the body of the meter wet, it is not waterproof. Residual solids can stay on surfaces from other measurements that can make the sample appear to have a higher TDS than it actually does.
2. High TDS coming out of the system indicates that the DI filter is spent. Replace the filter bag as soon as possible (P/N TC-BAG-DI).
3. In addition to spent DI resin, High TDS can also indicated a problem with the RO filter. The best way to test your RO is to use your handheld TDS meter to measure the water coming out of the RO and compare that number to the source water. Remove the DI housing from the RO filter and turn on the source water. Allow the water to flow out the RO outlet for

two minutes to allow the RO to get over its initial TDS spike and then take a TDS reading. Compare the TDS reading of the RO to the TDS of the source water to get your rejection rate. You rejection rate is [Source TDS-RO TDS]*100%/Source TDS. Your RO should have a rejection rate of over 90%.

4. If your RO rejection is lower than expected, you can try running a 10 minute forward flush. Open you bypass valve all the way and then shut off your system's pure water outlet at the DI filter. Run it like this for 10 minutes and then open your pure water outlet and restrict your bypass to its normal running setting. Check your RO TDS to see if it is dropping to more acceptable levels. Repeat the forward flush 2-3 times if necessary to drop the RO TDS.
5. If you RO TDS does not drop, you can continue to use the faulty RO, however you will use up your DI resin faster than normal. Replace the faulty RO filter as soon as possible.

Water coming out of discharge hose

This is normal during system operation. This water is the discharge water and it contains a very high TDS. This water is not potable but is not harmful to plants or surrounding areas. **Do Not Drink Discharge Water.**

DI/CSC filter housing leaking through the threads

1. Remove housing from the RO filter and open filter housing.
2. Check o-ring for dirt, debris or damage.
3. Apply molykote 111 to outer surface of o-ring.
4. Insure new filter bag and Sediment filter are not getting caught on the o-ring.
5. Re-assemble housing, tighten down until o-ring fully engages. **Do not over tighten.**

Leak between brass garden hose fitting and plastic housing

1. Unscrew leaky brass fitting.
2. Check brass fittings for damage or deformation. If necessary replace brass fittings. Replacement parts can be ordered from abc or bought from a local store. The plastic hole size is ½" national pipe thread and the Brass fitting connection are a standard ¾" Garden hose thread.
3. Fittings should be attached with an adhesive to prevent leaks. We recommend Liquid Nails Perfect Glue from Home Depot.
4. If leak persists replace housing.

Leak between brass garden hose fittings on multi-housing system

1. With the source water off, check that fitting is properly tightened. Tighten until you feel the gasket engage. **Do not over tighten.**
2. Unscrew the leaky connection.
3. Check gasket in the female fitting for damage or deformation. Replace gasket if necessary.
4. Check brass fittings for damage or deformation. If necessary replace brass fittings. Replacement parts can be ordered from abc or bought from a local store. The plastic hole size is ½" national pipe thread and the Brass fitting connection are a standard ¾" Garden hose thread.
5. Fittings should be attached with an adhesive to prevent leaks. We recommend Liquid Nails Perfect Glue from Home Depot.

Expressed Warranty

abc Window Cleaning Supply warrants new water purification systems against manufacturing defects under normal use to the original purchaser.

abcWindow Cleaning warrants new equipment for one year from the original purchase date to be free from manufacture defect. Any parts sent out for warranty are warranted from the original purchase date of the machine.

The customer must first contact abc Window Cleaning to notify them of the problem. abc may require the merchandise to be shipped back to them at the customer's expense to evaluate the warranty claim. If the equipment is found to be a manufacture defect abc Window Cleaning will reimburse shipping expense and parts will be sent out at no charge including standard ground shipping. Rush shipping will be the sole responsibility of the customer.

Wear items exempt from warranty include filters and membranes.

This warranty does not apply to misuse or abuse causing failure of the system. The customer must contact abc Window cleaning before attempting any repairs or modification to the system. Failure to do so will void your warranty.

abc Window cleaning holds no responsibility for loss of labor, time or any costs associated with using the equipment. abc Window Cleaning holds the sole discretion of whether a claim falls under warranty.

Returns

If for any reason the customer wishes to return the system they may do so at anytime within 30 days of the original purchase date.

The customer must first contact abc Window cleaning supply to notify them of their intent to return the merchandise.

The customer is responsible for the return of all merchandise and insuring that the product is properly packaged to arrive in a new resellable condition. The customer is responsible for all costs associated with returning damaged merchandise to a new resellable condition.

The customer is also responsible for a 20% restocking fee, in addition to any costs associated with shipping and repairing the merchandise to a new resellable condition. abc Window cleaning supply will issue a refund to the credit card on file once all repairs are completed.