PHASER
Pure Water System

Effective July, 2023

Pure Water Window Cleaning System Operation and Maintenance Manual

Overview

Congratulations On Your Purchase

Thank you for purchasing the 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. The Phaser will help you clean faster, safer, and better than ever before, leaving spot free results that you and your customers will love!

The following is provided to help you understand how your system purifies water. The Phaser is a multi-stage water purification unit using Carbon/Sediment, Reverse Osmosis (RO), and Deionization (DI) to remove impurities from water before delivery to surfaces for cleaning. General lifespan of the filters will vary depending on feed water TDS (Total Dissolved Solids). Based on an average TDS of 100 ppm (parts per million) in your water, approximately 10,000 gallons of water can be passed through the Carbon/Sediment and DI filters before replacement filters are needed. Lower TDS levels in the source water will allow for a longer lifespan, while a higher TDS source levels will lead to a shorter lifespan. It is recommended that the Carbon/Sediment and DI filters be replaced at the same time. The RO membrane is rated to process 100,000 gallons under ideal conditions. Failure to properly maintain the RO membranes will reduce the life of the filter.

In The Box

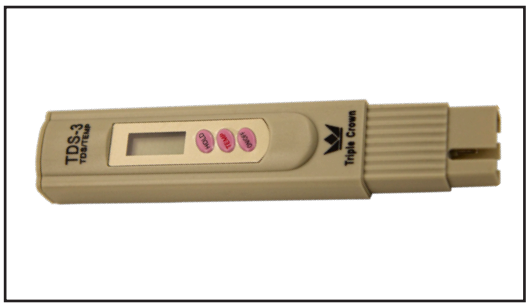
Parts Check

- TS2200 System
    - RO Membrane
    - DI Filter
    - Carbon Filter
- TDS Meter
- Bypass Hose
- Quick-Connect Shut Off

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 abc as soon as possible to begin a damage claim.

2. TDS (Total Dissolved Solids) Meter



Total Dissolved Solids are the minerals and salts within source water that lead to spotting on glass as the water evaporates. Your TDS meter measures the amount of dissolved solids using the conductivity of the water. The meter can test water before and after individual filters or the entire system to determine how they are performing. TDS levels are measured in parts per million (ppm).

Push the “On” button on the handheld TDS meter to get a TDS reading of the water sample. A TDS reading of 0 – 10 is acceptable for cleaning most windows, though specific conditions and results may vary.

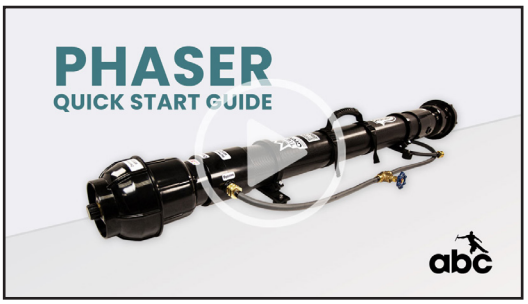
Remove the cap from the TDS meter and fill with the sample you wish to test. When measuring source water before pure water TDS levels, it is important to rinse out any source water with pure water to ensure accurate readings. Even a single drop of source water will cause the pure water TDS reading to appear higher than it actually is. Gather multiple readings, rinsing each time, to ensure accurate readings.

Your TDS meter also has a thermometer which reads temperature. This can allow you to monitor the temperature of your feed water. Running your system at feed water temperatures of less than 10 °C (50 °F) will result in low flow exiting the system. RO membranes require more pressure to create the same amount of clean water as the temperature of the water gets colder. A pump can help to compensate for low source water temperatures. Do not let the system or any filter freeze when operating in lower temperatures.

3. Initial Setup

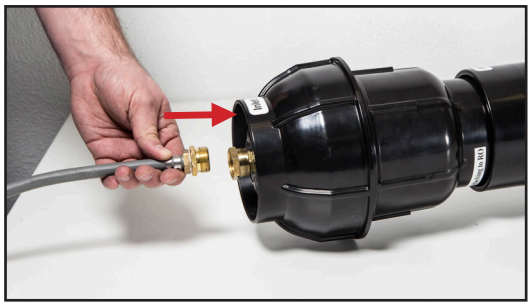
You can also watch the quickstart video at:
www.window-cleaning-supply.com/
PhaserQuickStart

Ver el vídeo de início rápido:
www.window-cleaning-supply.com/
PhaserQuickStartSpanish



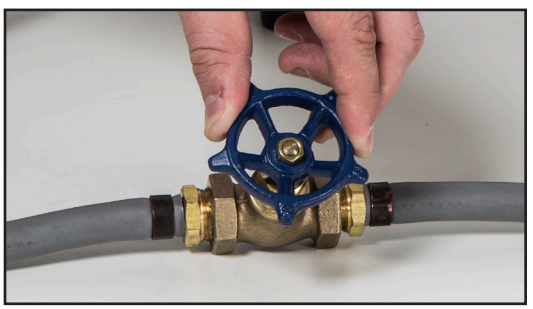
1. Attach bypass hose to the fitting on the side of the RO membrane.
2. Open valve on bypass hose fully.
3. Attach Carbon/Sediment filter to the inlet end of the RO membrane. **Do not overtighten.**
4. Attach DI filter to outlet end of the RO membrane. **Do not overtighten.**
5. Attach shut-off valve to the DI filter.
6. Attach pole tubing to quick connect shut off and turn to open position.
7. Attach source hose to water source and the other end to the Carbon/Sediment filter.
8. Turn on water.
9. Elevate the outlet side of the unit and rotate so bypass is facing upward until air has been purged from the RO housing through the bypass line. Failure to bleed the air out of the system can result in lower production and possible damage to the filter housings. Trapped air may also result in the plastic overheating and pressure rating of the RO housing dropping. Setting up your system up out of direct sunlight on hot days will also help protect the plastic RO housing from heat damage.
10. Once the air has been purged out of the filters, close the bypass valve partially to begin producing pure water. **Do not close off flow through the bypass line while usingthe system** (some bypass water should always be flowing out). Your bypass hose assembly (WF2200-BHA) is manufactured so that it can’t be completely closed. Never plug the end of your bypass while in operation. See Bypass Valve Operation section below for more information.
11. Start cleaning windows.

4. Hooking Up To Water Source



Locate an external water source. Attach one end of the feed hose (sold separately) 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. A ½" garden hose is preferred. Attach the other end of the feed hose to the female connection on the Carbon/Sediment filter. Open bypass valve fully and turn on source water. Elevate the outlet side of the unit and rotate so bypass is facing upward until air has been purged from the RO housing through the bypass line. Once the air in the filters has left the bypass line, adjust valve to desired flow rate. 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.** If using a pump, wait for water to flow from brush before turning the pump on. **Do not exceed 120 PSI.**

5. Bypass Valve Operation



The system comes with a bypass hose and valve that control the amount of water leaving the RO filter. RO membrane filters use the bypass flow to remove concentrated dissolved solids from the filter. **There should always be water flowing out of the bypass hose.** Inadequate bypass flow will result in fouling and possibly damage the RO filter.

The water coming out of the bypass hose may initially appear milky. This milky appearance is actually small air bubbles being pushed out of the filter housing through the bypass line.

The bypass valve is also the primary way you can control the pressure of your system. Opening the bypass valve more will reduce the amount of pressure that is used to produce pure water resulting in lower flow rates at the brush. Slightly closing the bypass valve will increase the amount of pressure which will lead to higher flow rates at the brush. Slightly closing your valve so that the flow of the bypass is roughly equal to the flow of pure water exiting the system is a good place to start. When using a pump, open the bypass valve fully to start then reduce flow for optimal pressure. **Do not exceed 120 PSI on your filters.**

Flushing water through the RO filter after use will remove excess minerals from the membrane. **It is recommended that you run your system with the bypass valve fully open for 3-5 minutes each time you finish using your system** to help clean out your RO membranes and extend their life. See Shutdown section of this manual for more details.

6. 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 if possible. 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 slightly 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 to rinse.

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. 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 many soils. In some cases, such as heavy soils, a pre-soak or even a double scrub and 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 most soils, readying them for complete removal via the rinse step.

As with any new procedure, practicing the use of your WaterFed® pole is the best way to achieve optimal results. Learn more about basic technique at www.abcWindowSupply.com/StartingWF.

7. Soap Residue

Getting spotting when your TDS levels are below 10? 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 may be seen on the glass after drying. Most often this is soap and or detergent residue left behind by previous traditional cleanings and brought out of the pores of the glass by the pure water cleaning process. The soap can take up to 30 minutes to dissolve if it has been baked on or pushed into seals and frames. Soaking the glass 15-20 minutes before performing a normal agitation and rinse cycle will remove soap spotting. Repeat agitation and rinse if the spots persist.

8. Shutdown

1. If using a pump, shut off the pump before turning off supply water.
2. Close the shut off valve to the pole. Open bypass valve to fully open position and flush out the system for 3-5 minutes.
3. Turn supply water off.
4. Disconnect water line. Make system water tight by connecting bypass hose to inlet and closing the shut-off valve.

9. Maintenance

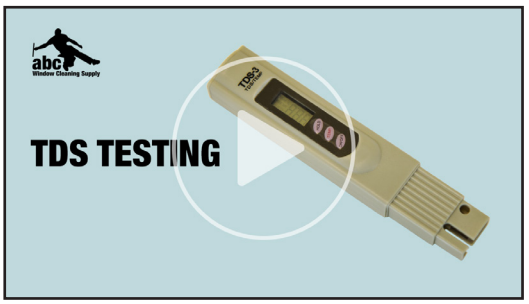
The Carbon/Sediment Filter should be replaced every 6 months with frequent use and should not be kept in service for more than a year. Failure to replace the carbon filter regularly can lead to chlorine reaching your RO filter and result in damage to the membrane. We often recommend that users should replace both their Carbon/Sediment and DI filters at the same time as this usually ensures that the Carbon/sediment filter is kept fresh without having to track service dates.

RO membranes have the potential to process 100,000 gallons of water when properly maintained. To test the health of your RO membrane, remove your DI filter and compare the TDS levels of the source water to the level of pure water leaving the RO filter. For example, 100 TDS source water with 10 TDS leaving the RO indicates 90% rejection. When RO rejection rates drop below 80% it is generally time to replace the RO filter canister. As stated above, bleeding the RO at the beginning of each use and flushing the RO at the end of each use are essential to achieving maximum RO lifespan. Trapped air can result in the plastic overheating and pressure rating of the RO housing dropping. Setting up your system out of direct sunlight on hot days will also help protect the plastic RO housing from heat damage.

The lifespan of your DI filter depends on the TDS of the water entering the filter. As your RO membrane nears end of life your DI filter will exhaust much faster. Periodically check the TDS of the purified water leaving the DI filter with the provided hand held meter. When the TDS levels reach unacceptable levels for your application (abc suggests 10ppm or less for window cleaning and 40ppm or less for cleaning opaque surfaces) the DI filter is completely exhausted and should be replaced. See troubleshooting section below for more information on high TDS levels coming from the system.

10. Filter Replacement

Learn when to change your filters with this guide: www.window-cleaning-supply.com/FilterGuide



Learn how to change your filters by video:
www.window-cleaning-supply.com/PhaserFilter

Carbon/Sediment Filter

1. Unscrew the Carbon/Sediment filter housing (P/N WF2CSC-6) from the inlet side of the unit.
2. Screw the Carbon/Sediment filter housing back onto the inlet of the RO filter. **Do not overtighten.**

DI Filter

1. Remove quick connect shut off valve.
2. Unscrew the DI filter housing (P/N WF2CDI-6) from the outlet side of the unit.
3. Screw the DI filter housing back onto the outlet of the RO filter. **Do not overtighten.**
4. Replace quick connect shut off valve.

RO Membrane

1. Remove Carbon/Sediment and DI Filters.
2. Using a 7/16” wrench, remove the clamps from the RO Membrane filter (P/N WF2CRO-40) 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.**

11. Storage

Storage - Short Term (2-4 Weeks)

Do not allow the filters or system to freeze. Failure to do so could result in damage to your filters and Phaser system. Do not allow DI or RO filters to dry out. Dry DI resin will lose its charge and therefore become unable to remove dissolved solids from the water. Dry RO membranes will develop cracks which allow more dissolved solids to pass through the membrane. This will deplete the downstream DI filters at a faster rate. abc recommends that you run water through your Carbon and RO membrane filters 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. RO and DI filters need to stay moist but do not need to be full of water. Always run your source water through the Carbon filter before the RO membrane when flushing the filter.

Storage - Long Term (Winterizing)

abc strongly recommends flushing out the RO membrane filter once every 2-4 weeks to ensure the maximum lifespan of the filters. When flushing the RO membrane filter, the source water should always be passing through the Carbon/Sediment filter before the RO membrane. This will prevent damage to the membranes from chlorine and chloramine. Periodic flushing will ensure that the filter membrane does not dry out and will reduce the chance that biological growth will foul the filter elements while in storage.

If periodic flushing is not feasible, we recommend that users wrap filters tightly in plastic wrap or plastic bags and then seal with tape. This will reduce the chance that the filter dries out when in storage. Do not allow DI or RO filters to dry out. Dry DI resin will lose its charge and therefore become unable to remove dissolved solids from the water. Dry RO membranes will develop cracks which allow more dissolved solids to pass through the membrane. RO and DI filters need to stay moist but do not need to be full of water.

Store filters indoors over the winter. **Do not allow the filters or system to freeze.** Failure to do so could result in damage to your filters and Phaser system. After filters have been stored this way, they will need to be flushed thoroughly before use.

12. 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 (TA-PG Sold Separately). 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 a shorter hose length between the system and the tap can also improve flow. Adding a pump, such as the ABC boost pump (WF1000-BP Sold Separately), can help compensate for low source pressure. **Do not exceed 120 PSI** when using a pump.

2. Mineral fouling of the RO membrane will lead to reduced pure water production from your system. Processing water through the RO membrane without enough (or any) bypass flow will lead to increasing mineral concentration within the RO housing. In minor cases, this will result in a temporary drop in production from the RO membrane. Flushing the excess minerals from the housing will return the filter to normal production rates if no fouling has occurred. In extreme cases the mineral buildup will permanently reduce the flow rate of the filter. These cases can only be fixed by replacing the filter.

3. Biologic fouling is another potential cause of reduced pure water production from the RO filter. Algae, bacteria and fungi can land and grow on the surface of the RO membranes. These organisms eventually block off pores in the membrane leading to reduced production levels. Letting filters sit for long periods of time without running any water through them increases the chances of biological fouling. After long term storage, running a series of long flushes will often return the RO membrane to normal production levels. Fully open the bypass hose 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. We recommend removing the DI filter after the extended flush. Test the water coming out of the RO (not the bypass water). If levels are as expected, put the DI filter back on and use the system like normal. Doing this flushing process 2 or 3 times may be required to return to normal production levels.

4. Expect decreased production rates when running your RO with colder source water. The ideal temperature for source water is 77°F. 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 to determine if this is the cause of lowered flow rates.

5. Leaks in the system and the pole tubing can release pressure and take flow away from the jets in your brush. A couple of small leaks in the pure water lines can cut pressure to the jets in half. Read the "leaks" section below for more information on eliminating leaks in the system.

High TDS

1. Retest your water sample. When you get a higher than expected reading on your handheld TDS meter, it is 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. Minerals can stay in the cup from other measurements and can make the sample appear to have a higher TDS than it actually does. Taking multiple samples ensures maximum accuracy.

2. Elevated TDS levels coming from the RO membrane can indicate that both the RO and DI need to be replaced. First, remove the DI filter from the end of the RO filter. Use your handheld TDS meter to measure the TDS water coming out of the RO and compare that to the TDS levels of the source water. Your RO should have a rejection rate of over 80%. If the rejection rates are below normal, follow the step below to ensure that the RO filter needs to be replaced.

3. High TDS coming out of the system usually indicates that the DI filter is spent. Testing before and after the DI filter will verify that there is not another issue. Remove the DI filter and test water coming out of the RO (not the bypass water) to get the before reading. Then, return the DI filter and test water coming out of the DI filter for the after reading. If the TDS levels before and after the DI filter are the same, the filter is completely depleted. Replace the DI filter (WF2CDI-6) once depleted. If water coming from the RO filter has high TDS levels, check the RO performance as well.

4. If your RO rejection is lower than expected, you can try running a 10 minute flush. Increasing flow through the filter housing will help the flushing process. Fully open the bypass hose 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. Remove the DI filter and test water coming out of the RO (not the bypass water) to get the before reading. Then, return the DI filter and test water coming out of the DI filter for the after reading. 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 your RO TDS does not drop, your RO probably needs to be replaced. You can continue to use the spent RO, however you will use up your DI resin faster than normal. Replace the spent RO filter (WF2CRO-40) as soon as possible.

Water Coming Out Of Bypass Hose

1. Strong bypass flow is normal during system operation. This water is the bypass water and it contains a very high TDS. This water is non-potable but is also not harmful to plants. **Do not drink bypass water.**

2. Milky white bypass flow is a common occurrence when starting up the system or using a new RO membrane. It is trapped air being pushed out of the filter housing and will stop once the air is gone.

13. Leaks

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 (NPT) and the Brass fitting connection is a standard ¾" Garden hose thread (GHT).
3. Fittings should be attached with an adhesive to prevent leaks. We recommend Liquid Nails Perfect Glue from Home Depot. If damaged, use Gorilla Glue Two-Part Epoxy to help seal cracks.
4. If leak persists, replace the filter.

Leak Between Brass Garden Hose Fittings

1. With the source water off, check that the fitting is properly tightened. Tighten until you feel the gasket engage. All fittings are leak free hand tightened. **Do not overtighten.**
2. Unscrew the leaky connection. Check the gasket in the female fitting for damage or deformation. Replace gasket if necessary. Replace gasket before tightening fitting. Wrench can cause damage if over tightened.
3. 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 (NPT) and the Brass fitting connection is a standard ¾" Garden hose thread (GHT). 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.

abc Window Cleaning warrants new equipment for one year from the original purchase date to be free from manufacturer 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 manufacturer 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 ensuring 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.

Replacement Parts

RO Membrane
WF2CRO-40

Carbon Filter
WF2CSC-6

DI Filter
WF2CDI-6

Shut-off Valve
WF601311

Bypass Hose
WF2200-BHA

Saddle Clamp
TA-2200-FOOT

Rubber Feet
WF7000-RF

TDS Meter
HMTDS-3

Optional Upgrades

Booster Pump
WF1000-BP

Pressure Gauge
TA-PG

10’ Source Hose
WF612010

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