



TWIN FLOW Pure Water System

Effective February 2018

Pure Water Window Cleaning System Operation and Maintenance Manual



Overview

Congratulations On Your Purchase.

Thank you for purchasing the Twin Flow 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 Twin Flow 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 Twin Flow 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 20,000 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. Each 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

- Twin Flow System
- TDS Meter
- Shutoff Valve
- Owner's Manual
- Bypass Regulator Tube

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. Your Twin Flow comes with all filters installed. Inspect your Twin Flow unit for any shipping damage. If damage has occurred notify the shipping company that made delivery to begin a damage claim. Check all fittings and retaining bolts to ensure that they are connected tightly, as they may loosen during shipping.

2. Initial Setup

Refer to your quickstart guide for more information.

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



1. Open both valves on brass wye valve (both will remain open during normal operation).
2. Detach the bypass regulator tube from the bottom of the Carbon/Sediment filter.
3. Attach feed hose (not included) to carbon inlet on system and to source water.
4. (optional) Attach a standard garden hose (not included) to other end of the bypass regulator tube to control where bypass water will flow.
5. Thread shut off valve onto DI outlet and connect pole tubing. The push in connector on the pole tubing goes in easier with the valve in the off position. Ensure valve is in open position before turning on water.
6. Turn on source water.
7. Start cleaning windows.

3. Hooking Up To Water Source



Your Twin Flow is designed so that it can be operated while standing up or laying flat on its handle. Locate an external water source. Attach one end of the supply hose (not included) to the water source. A 3/4" garden hose is preferred for supplying the unit. Open the faucet at the building and make sure all air is out of your supply hose. Turn off water and attach to the female connection on the Carbon/Sediment filter. Turn water back on fully. Make sure that all the air has left the system before turning on any kind of pump. **Do not drink pure water made from your system.**

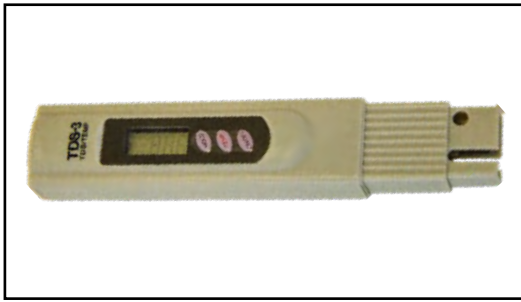
4. Bypass Operation



The system comes with a bypass regulator tube. This is of a proper diameter to allow the right amount of water to flow out of your bypass under normal tap pressure. **There should always be water flowing out of the bypass regulator tube.** RO membrane filters use the bypass flow to keep the filter clean.

The main source of restriction on the TS2800 bypass regulator tube is the brass male garden hose fitting located at the end of the tube and this restriction can be removed by disconnecting it at the blue and black push to fit connector. Removing the end of the bypass regulator tube will allow more water to flow out of your bypass tube. **It is recommended that you run your system with the brass garden hose fitting on the bypass regulator tube removed and the flow of pure water shut off on the DI for a few minutes each time you finish using your system** to flush out your RO membranes and help extend their life.

5. TDS (Total Dissolved Solids) Meter



Total Dissolved Solids (TDS) 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).

Remove the cap from the TDS meter and fill with the sample you wish to test. 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.

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.

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.

6. Using A WaterFed® Pole



Once your Twin Flow system is hooked up, and you have a WaterFed® pole connected to the hose, 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. 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 many soils. In some cases where there are 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. Shut off flow of pure water coming out of the DI filter.
2. Let water flow through system (leaving through the bypass hose) for 3-5 minutes to flush out ROs.
3. Turn supply water off and disconnect sources hose.
4. (optional) Let water drain from filters before lifting system into vehicle. Removing the hose from the wye valve at the top of the ROs and removing the bypass regulator tube from the bottom of the ROs is the quickest way to drain the system.

9. Maintenance

Your Twin Flow system requires little maintenance to operate a peak performance. As stated above, flushing the RO membranes of your system after each use will help maximize the life of the RO membrane.

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/Sediment filter regularly can lead to chlorine reaching your RO filters 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 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. You can test each filter individually by shutting off the valves on the wye located at the inlet of the RO membranes.

The lifespan of your DI filter depends on the TDS of the water entering the filter. 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 how to change your filters by video:
www.abcWindowSupply.com/TFFilter



Learn when to change your filters with this guide:
www.abcWindowSupply.com/FilterTime



Carbon/Sediment Filter

Unscrew brass fitting on top of the Carbon/Sediment filter (P/N WF2CSC-21). Unscrew the wingnut at the top of the Carbon/Sediment filter cartridge. Remove the Carbon/Sediment filter by first pulling top of the filter away from the frame removing it from top bolt. Next, lift up to remove the filter from the clip at the bottom. Discard used filter. Slide the end of the new filter with the swivel female fitting into the clip at the bottom of the frame so that the fitting is pointed forward. Swing the top so that the bolt is inserted in the hole on the cap of the filter labeled “**SG1&2**”. Tighten the wingnut on the bolt to secure the filter (checking to make sure that the filter is seated in the bottom clip. Attach your connection hose (still attached to the RO membranes) to the new Carbon/Sediment filter. Fittings should be tight enough to avoid leaks, but over tightening could result in damage to the brass fittings.

DI Filter

Unscrew the hose from the bottom of the Deionization (DI) filter (P/N WF2CDI-21) and any hoses or valves attached to the top of the filter cartridge. Unscrew the wingnut at the top of the DI filter cartridge. Remove the DI filter by first pulling the top of the filter away from the frame pulling it off of the bolt at the top. Next, lift up to remove the filter from the clip at the bottom. Discard used filter. Slide the bottom of the new filter into the clip at the bottom of the frame and swing the top so that the bolt is inserted in the hole on the top cap of the filter. Tighten the wingnut on the bolt to secure the filter, checking to make sure that the filter is seated in the bottom clip. Attach your brass fitting to the bottom DI filter. Fittings should be tight enough to avoid leaks, but over tightening could result in damage to the brass fittings.

RO Filter

Unscrew the pure water outlet fitting from the center of the bottom of the RO filter (P/N WF3CRO-40). Using a 7/16 socket, unscrew the clamp holding the center of the filter. Remove the 5/16” bypass regulator tube from the RO filters by pushing down on the retaining ring of the port while pulling on the tubing in the opposite direction. Unscrew the top inlet wye. Pull spent filter out of hook on bottom. Put new RO filter into hook on bottom so that the bypass and outlet fittings are down. Thread the water inlet onto the top wye. Reattach the clamps holding the filter in place. Re-attach the pure water outlet fitting to the bottom center of the filter. Reattach bypass line by inserting both tubes into the push to fit connectors on each RO filter.

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 Twin Flow 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/Sediment 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/Sediment 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 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 Twin Flow system. After filters have been stored this way, they will need to be flushed thoroughly before use. Leaving filters wrapped for extended periods of time can lead to biological fouling, which is why we recommend periodic flushing.

12. Troubleshooting

1. Low Pure Water Flow Out Of The Brush:

1. Low tap pressure is the most common cause of low pure water production from multifilter style units. Source water pressure is the primary driver of system performance for RO filters. Even sources that appear to have plenty of flow out of the tap may not have enough pressure to push water through the RO membranes. 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 (1/2" 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 (WF1000-BP), can help compensate for low source pressure. **Do not exceed 130 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 membranes without enough (or any) bypass flow will lead to increasing mineral concentration within the RO filters. 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. 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. Remove the bypass regulator tube and place the shut off valve on the bottom of the problem filter in the off position. Run it like this for 10 minutes and then open the shut off valve and plug in your bypass regulator tube. Test the clean water out flow. 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 ROs 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.

2. High TDS Coming From The System:

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. 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. If the TDS levels before and after the DI filter are the same, the filter is completely depleted. Replace the DI filter (P/N WF2CDI-21) once depleted. If water coming from the RO filter has high TDS levels, check the RO performance as well.

3. In addition to spent DI resin, High TDS can also indicate a problem with one or both of the RO filters. The best way to test your ROs is to use your handheld TDS meter to measure the water coming out of the ROs and compare that number to the source water. Disconnect the hose from the bottom of the DI filter and turn on the source water. Allow the water to flow out the hose from the RO filters for two minutes to allow the ROs to get over its initial TDS spike and then take a TDS reading. Compare the TDS reading of the ROs to the TDS of the source water to get your rejection rate. 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.

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. Remove the bypass regulator tube from the bottom of the filter and then shut off your system's pure water outlet at the DI filter. Water should be flowing out of the now open push to fit connector at the bottom of the RO 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 the TDS levels coming from the RO membrane do not drop, your RO is faulty. You can continue to use the faulty RO, however you will use up your DI resin faster than

normal. Replace the faulty RO filter (WF3CRO-40) as soon as possible.

3. Leaks:

Leak between brass 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 Window Cleaning Supply or bought from a local store. The plastic hole size is ½” national pipe thread (NPT) 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 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. **DO NOT OVER TIGHTEN**
2. Unscrew the leaky connection. Check gasket in the female fitting for damage or deformation. Replace gasket if necessary.
3. Check brass fittings for damage or deformation.
4. If necessary replace brass fittings. Replacement parts can be ordered from abc Window Cleaning Supply or bought from a local store. The plastic hole size is ½” national pipe thread (NPT) and the Brass fitting connection are 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.

Leak on push to fit connection

1. Make sure that the bypass regulator tube is properly inserted into fitting. Inserting the tube part way into the fittings will cause leaks.
2. Bending the tube as it enters the push to fit connection can also cause leaks. Reduce strain on the tube to prevent this.
3. Damage to the tube, such as scratched or cracking, will interfere with the sealing elements. Cut off any damaged tube and reinsert into the fitting.

4. Water coming out of bypass regulator tube:

1. Strong bypass flow 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.**
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.

Expressed Warranty

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

abc Window Cleaning Supply 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 Supply 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. It is the responsibility of the customer to package the product properly so that it arrives for evaluation undamaged. If the equipment is found to be a manufacture defect abc Window Cleaning Supply 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 Supply before attempting any repairs or modification to the system. Failure to do so will void your warranty.

abc Window Cleaning Supply holds no responsibility for loss of labor, time or any costs associated with using the equipment. abc Window Cleaning Supply 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.

Replacement Parts



RO Filter
WF3CRO-40



Wheel
WF65000-WH



Replacement Feet
WF7000-RF



Carbon Filter
WF2CSC-21



DI Filter
WF2CDI-21



Shut-off Valve
WF601311



TDS Meter
HMTDS-3

Replacement Hoses available upon request. 1-800-989-4003



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