

## O H J V [ 'O KVG'Y KJ 'F KKP UVTWE VKQPU

1) Always use extra length tubing to make your connections, you may want to move the unit to replace the filters in the future.

2) Read the push-in fitting material, make sure you push the tube completely in.

3) If a fitting is not push-in, then use moderate pressure to snug up the fittings. Modern fittings do not rely on brute strength. They rely on teflon tape, o-rings or gaskets to make the seal (just snug the fitting to make it secure ) Do not over tighten. Plastic fittings that have been screwed on to tightly are subject to splitting. Stressed fittings may take days or even months to split and leak.

6+Please, Please, Please read the installation guide before installing" the unit. This guide will answer a lot of your basic R.O. questions.

7+Ok! You installed it without reading the guide. Please read the" guide before calling or e-mailing us with any questions or problems.

8+Remember a 75GPD system makes a maximum of 3 Gallons per" hour, a slow trickle. Yes more water goes to drain than is made. All" TQ'uf ugo u'gpf 'y cvgt 'vq'f t clp'y j kg'qr gt cvpi 0'

9+P gxgt 'kpuvcmc 'TQ'uf ugo 'y j gt g'kpv'r t guwt g'gzeggf u'97'r u0'

Thanks,  
*Air, Water & Ice*

Cliff, The H2O Guru

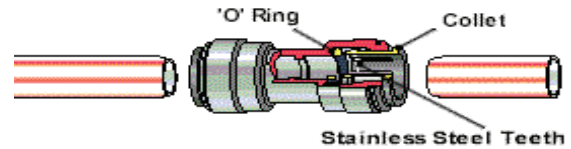
By the way this is the automatic shut off valve ASOV



## How to use Push In Fittings

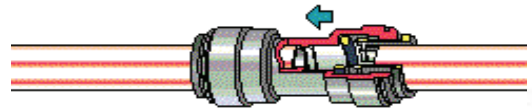
### Cut tube square

Cut the tube square. It is essential that the outside diameter be free of score marks and that burrs and sharp edges be removed before inserting into fitting.



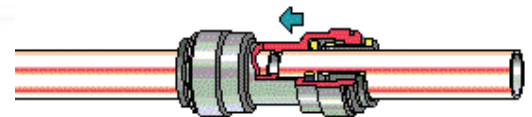
### Insert tube

Fittings grips before it seals. Make sure tube is pushed in the tube stop



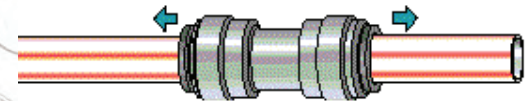
### Push up to tube stop

Push the tube into the fitting, to the tube stop. The collet (gripper) has stainless steel teeth which hold the tube firmly in position while the 'O' ring provides a permanent leak proof seal.



### Pull to check secure

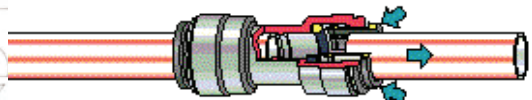
Pull on the tube to check it is secure. It is a good practice to test the system prior to considering your handy work is done. The system doesn't full pressurize until the tank is full.



## Disconnecting

### Push in Collet and remove tube

To disconnect, ensure the system is depressurized before removing fitting. Push in collet squarely against face of fitting. With the Collet held in this position, the tube can be removed. The fitting can then be re-used.



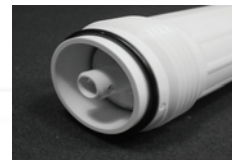
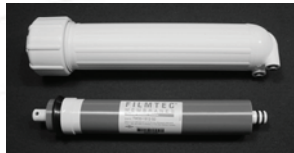
**The blue dust caps that seal the ends are removed in this manner.**

## Installation Guide for Reefkeeper RO/DI

Preparing for installation, check out the area you will be working in. Is it safe? Any electrical around that should be turned off? Do you have enough room? How about the lighting, will you be able to see what you are doing? Different areas have different requirements to meet local codes. We are presenting a generic method of installation. You will need to check out the local building codes to assure that your unit is installed in compliance with code.

Make certain that you are hooking up to the cold water line. How do you tell the hot water pipe from the cold? Well, the cold water is supposed to be located on the right side. But! The absolute best way; is to run the hot water into the sink for a while. Turn off the water reach under the sink and touch the pipes. The cool pipe is the one you want. The warm pipe is the hot water pipe. Remember you will be working with water, so a small bucket to catch drips and some rags could come in handy.

Place the ( 4 ) cartridge filters into filter housings (some may have them installed ) see diagrams. Please remove any wrappers from the filters. Dispose of the wrappers properly. The membrane goes into the horizontal membrane housing o-rings first. Lubricate the o-rings with a little dish soap, or if you have it water-resistant silicone lubricant. Do not use Vaseline grease or oil.



I like to start with the drain saddle. It is made up of two plastic parts and a foam washer. The foam washer mounts onto the drain saddle. Remove the backing paper. Position the foam over the fitting hole in the one half of the drain saddle. This foam makes a water tight seal. The drain saddle has to mount on the drain pipe coming from the bottom of the sink. If you look at all drain pipes, they all have a bend in them. That bend is called a ( P Trap.) What is important is that you mount the saddle valve on the way down to the P-Trap not after it. You also want to mount the drain saddle at least one inch higher than the start of the bend, but not more than 4 inches higher. Note you do not want to mount the drain saddle on the garbage disposal line.



Once you have positioned the drain saddle on the pipe, leave enough room to attach the tube and for you to work. Just snug the screws. Do not crank down on them, just snug enough so that the drain saddle is secure and will not wiggle around. Now you need to drill a hole. Get you 1/4 " bit out again now drill right thru the opening in the drain saddle. Just use light pressure. Now just drill thru the one side of the pipe don't drill thru the other side. Ok, that 's done for now. Attach



tubing to the fitting. Slip the nut over the tubing, and insert tubing into the drain saddle. This waste water is the life blood of the system. If the system cannot drain correctly it will not function for long. The system self flushing and the drain should never

be blocked or restricted.

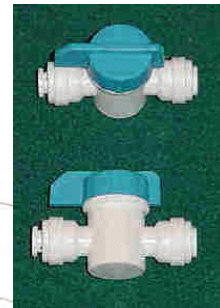
Now over to the supply valve. It's the aluminum and brass thing. This valve is self piercing. It can be used on copper, plastic piping and the grey flexible pipe found in newer homes. ( *It Is Not Designed To work on braided hose, If your home has hose you will need an adaptor. Either from us or the hardware store. The adaptor is a watts brass fitting #BPAV-664* )



Never install this valve in front of the stop valve under your sink. This valve is to be installed on the supply tube between the stop valve and the sink faucet . The stop valve is the valve that allows you to turn off the water.

If you look closely at the photo you will see a brass screw in one end. That screw is positioned to push on a block of aluminum with two profiles. If you have the normal pipes found in most homes use the block it in the position found in the photo. If your pipe is too fat for it to fit, use the other side. Please leave at least ( 3 ) inches between this valve and any other valve on the same pipe or tube. Once you have the valve in position over the cold water pipe, tighten the brass screw. You must tighten the screw enough to give the valve a firm grip on the pipe. Do not over tighten it. The valve is ready to use. We will get back to it once the system is installed.

Attach the in line ball valves included to the inlet line tube. The inlet tubing ball valve is to make filter changing easier. Now install the other valve on the pure water outlet tube. ( white valve with a blue handle).When you close the pure water valve the automatic shut-off valve will cut off the water supply to the unit.



The automatic shut-off valve is the white plastic device with four connections. It is mounted about center top of the unit next to the membrane housing .

**NEVER RESTRICT IMPEDE OR STOP WASTE WATER FLOW OF YOUR SYSTEM**

Now the drain connection, connect the tube from the drain saddle to the fast flush. Flow direction arrow on flow control points toward the drain saddle. This device is about ½ round by three inches long. If you have the D.I. bypass this device connects to drain line after the fast flush.



The operation of the unit requires that the D..I. bypass and the fast flush valves be closed . These valves are mounted on the Typhoon II & III.. Your valves may differ in looks from the picture but work the same way. When the valve handle is in line with the tubing the valve is open. When the valve handle is at a right angle to the tubing the valve is closed



Connect your tap water to the unit. At one end of the unit is fitting connected to one of the large vertical filter housing. If you look carefully at the top of that housing it actually says ( IN ). You can't miss here. It's the only connection left. Simply connect the tube from supply valve here.

### **Remember do not exceed (75) pounds of inlet pressure**

Now check your work clean up the area and remove any packing or boxes. You are ready to turn the water on. Making certain that your water supply is back on slowly close the supply valve. The little brass handle is what you are looking for, tighten it clockwise ( right ) until you feel resistance. Now tighten it a little more. It will pierce the pipe it is attached to. Now turn the handle back to the ( left ) counter clockwise fully. You should hear water entering the system. Make sure the pure water valve is open. Waste the first full hour of production. This allows the membrane preservation chemical to rinse completely out. Close the pure water valve Check for leaks ! Check again in a few minutes than check again in about half an hour. One last check of your work in about an hour and you are done.

### **Enjoy your pure water.**

If you have cold water below 77F degrees, low pressure water pressure below (60 ) p.s.i. or very poor quality water your production will vary from the rated output. Each degree lower than 77 reduces the output by about 1.3%. Low water pressure or dirty filters will also reduce the production rate.

### **Things you should be aware of:**

Once installed your system should not produce a vibration or noise after the first few days of usages. In some cases if you listen for it you may hear water running to drain.

Please note: Your automatic shut off valve may not work right away .After installation your system may have air trapped in it that will confuse the auto shut off valve. Please wait 3-4 days before calling or attempting repair. The water in the system will absorb the air and the valve will begin to function normally. It is quite normal for the DI cartridge not to fill with water. In fact some have only an inch of water at the bottom of the filter sump. This condition caused no harm and has no impact on your water quality.

The normal waste to production ratio of your R.O. is 3- 4 to 1 . So yes there is more water going to drain than being made. This is normal. It is how the membrane is kept clean.

### **What is this? ASOV**



## **Reef Keeper When to change the filters**

- 1) Sediment: The sediment filter traps dirt and will become clogged. Change the sediment filter when overall production slows. The dirtier your sediment filter the less water your system will make..
- 2) Carbon filters: The carbon filters have a high capacity for chemical removal. The carbon filters that come with your unit will on average city water allow you to make about 15 gallons of water per week for one year. If you require more than this you will need to change your filters more frequently. In any case change at least annually.
- 3) DI: Replace the DI when the system TDS reaches 15ppm or if you have a color changing DI, when the color has gone from green/blue/black to a blond/rust color.
- 4) Membrane: Typically membranes last 3-5 years. Membranes are normally changed because of slow or no production. The other reason to replace the membrane is production of excessive amounts of poor quality water. Many water chemistry matters go into membrane life and we cannot accurately predict how your membrane will do.

### **Testing** the unit ;

**Testing the unit** after the first three days, start the unit up and time the filling of a gallon container. Write this down as a reference point . Under optimum conditions a ( 100 ) gallon per day system will make ( 4 ) gallons per hour.

**To test the water quality from the membrane.** Remove the tube from the D.I. cartridge filter inlet . Test the TDS of water dripping at the tube. If your unit is equipped with an RO Only valve just test at this valve.

*Thanks for reading our guide.*

**Never impede the waste water flow ! No valves on the waste water line**

*Air, Water & Ice*

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REEFKEEPER WITHOUT A STORAGE TANK RECORD

IMMEDIATELY AFTER FLUSHING THE SYSTEM:

Test Pure water after membrane ----- TDS. (should be 3-7% of tap water)

Test tap water ----- TDS

Notify us if the pure water TDS is more than 5-10% of tap water TDS

THREE DAYS AFTER INSTALLING THE SYSTEM PLEASE DO THE FOLLOWING FOR BOTH OF US.

Your new RO system is not going to be operating at full capacity for at least 3 days

How long did it take to fill?\* It took -----to fill a -----ounce container

\*Find a common container like an empty coke can. Start making pure water, and after a couple of minutes fill the container.

TDS after the DI----- TDS PPM (Should have been -0- or very close)

(Testing the DI without testing the membrane output tells you nothing)

RO membrane TDS output (after the membrane-before the DI) \_\_\_\_\_ PPM TDS

(Should be about 5%-10% of the tap water)

Tap water TDS ----- PPM TDS -----

Drain water TDS should be the highest reading of all. -----

Water temperature was -----F or C (Colder water is denser and takes longer to process)

Water pressure was ----- PSI

(Your water pressure will alert you to the need of filter changes. Your RO system will make more water in the Summer than in the Winter)

\_\_\_\_\_

If you can not answer all of these questions, answer as many as possible.

Please record your Model name \_\_\_\_\_

Any modifications made \_\_\_\_\_

\_\_\_\_\_

Purchase date \_\_\_/\_\_\_/\_\_\_ Model \_\_\_\_\_



Note-Air can confuse an ASOV for up to three days. Not longer. Also air trapped in the system can cause some interesting vibrations Questions e-mail sales@airwaterice.com

Please remember the tip of the TDS Meter and the container can get very contaminated. Start with the cleanest water (DI) and work toward the tap water. Thoroughly rinse the tip of the meter and the container 2-3 times with DI water between testing.

# CHANGING FILTERS

## Caution

- \*Do not attempt to open a filter that is under pressure.
- \*Have a sponge and perhaps a small pail handy. You will spill some water.
- \*Turn off any close electrical systems.
- \*The floor might become wet and slippery.
- \*Please take out the blue “plug” from the horizontal filters before installing tubing.

## The Process

- Turn off the water supply to the unit.
- Open the unit faucet/valve to relieve the unit of water pressure.

## When to change filters, DI and membrane:

1. At least once a year or if your water production slows down, you need to replace the pre-filters!
2. Sediment filters need replacement when volume output drops. Normal life is one year. If you are on well water, you will have more sediment in your water and will need to replace this filter more often. Every case is different, watch for production slow down.
3. Carbon filter life depends on the chlorine content of your water. Normal life is one year. If you have typical city water you can process over 3,000 gallons of water per carbon block before needing to replace the pre-filters. The in-line carbon filters will last about half as long as the vertical carbon block filters.
4. In units with a DI filter, when the DI resin is exhausted it will smell (fishy?). The best way to tell is to use a TDS meter.
5. Membranes need replacement if you observe poor taste or have high TDS. Membranes last 3 to 5 years. Chlorine exposure or inadequate carbon filter replacements are usually to blame. Low pressure can also cause a membrane to foul prematurely.

## Replacing the Filters

The standard drinking water system has three to six filter housings across the bottom; the first three filters are the pre-filters to clean the water before it goes into the membrane. These three filters are: a 10 micron sediment filter (string like filter), a 5 micron carbon (Red capped) and a 1 micron carbon (White Capped). These filters should be replaced annually. (The Extreme TPack has an upgraded granular activated catalytic carbon filter which replaces one of the carbon block filters.)

1. Unscrew the filter housing and remove the filter. (Use the housing wrench)
2. Clean the housing with soap and water, rinse thoroughly and then install the new filters.
3. Make sure the O-ring is in place and properly seated. (Re-attach the housing hand tighten only, do not use the wrench).
4. For drinking water systems there is a horizontal, inline carbon filter labeled GAC or “taste and odor.” Please pay attention to the flow arrow. NOTE: Remove the blue “plugs” before trying to install the tubing into this filter.
5. The larger horizontal cartridge with the cap and also has three elbow fittings is the RO membrane housing. Membranes last 3-5 years.
6. The Compact ReefKeeper has the same 3 filters on the bottom, but the membrane and smaller DI are horizontal. Note the flow direction arrows. Note the blue “plugs” on each end of the filter, please remove blue plug before installing tubing into this filter.
7. The Dual Home Reef is a standard drinking water unit, plus it has a horizontal DI. NOTE: This filter has blue “plugs” on each end that need to be removed before inserting the tubing on each end.
8. Horizontal filters all have quick-connect fittings, just remove & discard. Please note the directional water flow. The Mini Ro System, the Max 50 system and the Mighty Mite system all come with quick connect horizontal disposable filters.



## DI Filter Change

In units with in-line, horizontal DI, the DI is the second cartridge and has our blue label. In our typhoon units we use a color changing DI Resin that starts out as either green or blue and changes color to a dull orange/brown color as it exhausts. It is time to change the DI cartridge when you start getting readings of more than 3 PPM.

When exhausted, the water will have a strange (fishy?) odor. Please note flow direction. The in-line DI filter has about 50% of the amount of DI resin as is in the vertical refillable cartridge. Large RODI water users should buy the 5 pound bag of DI resin which makes over three DI cartridge refills.

ReefKeepers, like the Typhoon, have 4 filters on the bottom; the last is the DI cartridge housing (the membrane is horizontal on the top). The DI resin is color changing and if it is significantly discolored it is time for a change. Note that even though you may see good color on the outside of the cartridge the resin inside can be fully exhausted. Test the TDS with a TDS meter!

A rough mathematical equation to determine the number of ZERO TDS RODI water that a DI cartridge will process is as follows: Divide 1,200 by the PPM reading on your TDS meter of your RO water coming out of your membrane. For example: if your tap water is 200, the PPM of your RO water from a 75 GPD filmtec membrane will be about 5 PPM. So then divide 1,200 by 5 for a result of 240 gallons of pure RODI water that can be produced from each cartridge.

## Membrane Replacement

Open the housing and pull on the small, plastic tube that is the center of the membrane. You can use pliers or a small screwdriver to remove the membrane, after about an inch, the membrane will pull free. The new membrane will come to you with the O-rings already lubricated with silicone lubricant. After replacement, flush the system by allowing it to fill and empty completely. If you have a ReefKeeper, just waste the first 3-5 gallons.

## Final Step ... Fast Flush Your System

Now that you have replaced your filters and/or your membrane, please fast flush your system for 3 to 5 minutes. What this will do is to wash the preservative off of the membrane and wash any small dust particles off of the new filters. You are now good to go. Fast flushing your system is a great way to keep your membrane clean and preserve its life. Always fast flushing your system before you make any RODI water will also help preserve the life of your DI resin, because this will waste the stale water in your unit before you start making pure RO water.

Air, Water & Ice LLC

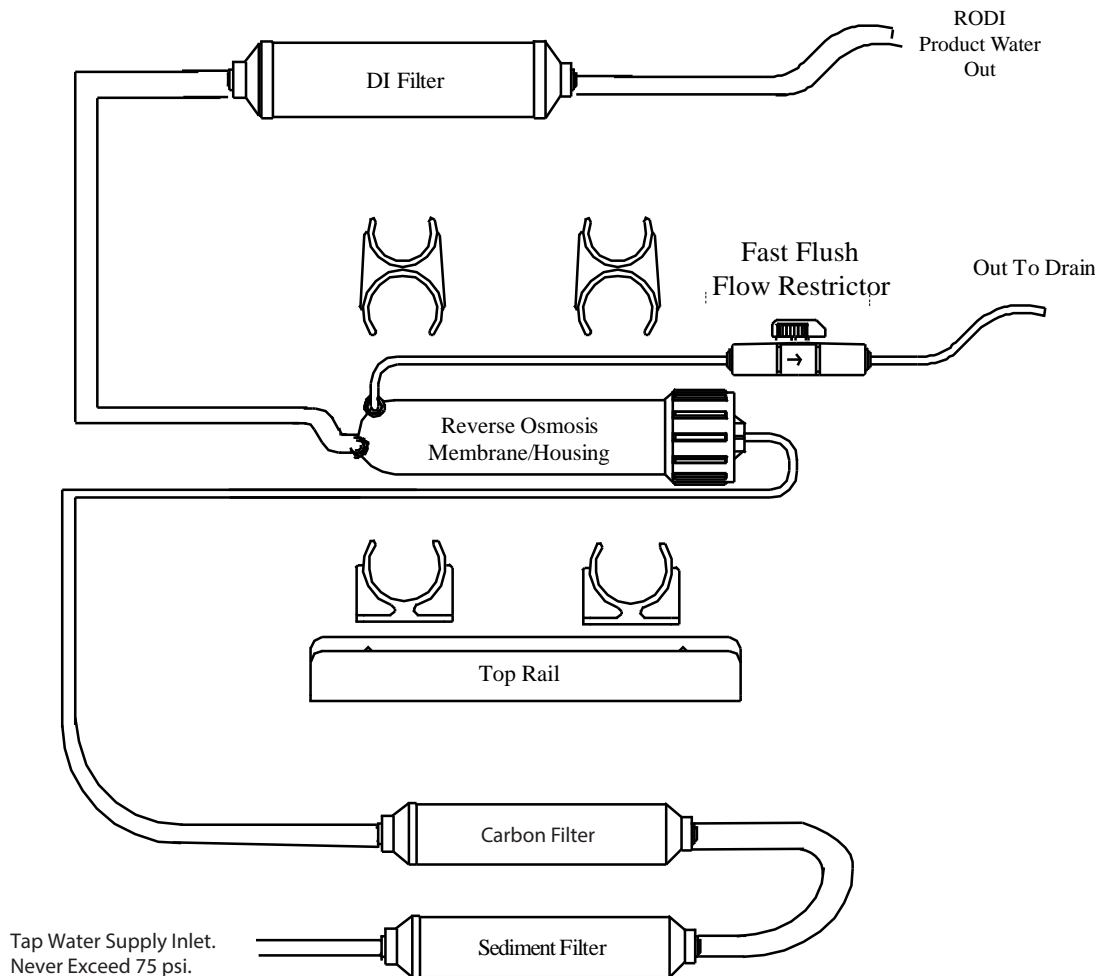
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# AIR WATER ICE, LLC Installation Diagram Mighty Mite with DI



~Basic home reverse osmosis system layout~  
\*\*Your unit's assembly may differ slightly\*\*