

# iSpring Reverse Osmosis Water Filter Systems

## INSTALLATION INSTRUCTION

Ver 2005-6



**1 2 3** **Filter.com**

iSpring Water Systems, LLC (since 2005)

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**Please keep this owner’s manual for future reference.**  
 It includes the information on how to properly operate and maintain your  
 iSpring Reverse Osmosis water filtration system.

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**Thank you for choosing the iSpring Reverse Osmosis Water Filtration System.**

It was built from quality components, and has earned **WQA GOLD SEAL** certification against NSF/ANSI STANDARD 58 for performance and material safety. Please check the attached **iSpring RO Systems WQA Gold Seal Certification** for details.



**BEFORE INSTALLATION**

***Inspect the package***

Please open the box, and take all the components and tool kit out. Inspect them to ensure that nothing is damaged during shipping. If any part is cracked or broken, please immediately contact iSpring Customer Support for replacement. Identify and get familiar with the components.

***Recommended tools list***

- Variable speed drill with two bits: ¼" (for drilling a hole on PVC drain pipe), ½" hollow diamond (for drilling a hole on countertop for drinking faucet)
- 5/8", 9/16" open-end wrench, or adjustable wrench, pliers
- Phillips screwdriver
- Scissors or utility knife

***Operating conditions***

- Maximum water pressure: 80 psi, or pressure regulator (part no. APR70) is required if there is high water pressure or water hammer)
- Minimum water pressure: 40 psi, or booster pump is needed to improve RO efficiency
- Water temperature: 40 – 100 °F (4 - 37 °C) (This RO system is NOT designed for HOT water)
- Maximum TDS: 750 ppm
- Install this RO system in a location where it is safe from hot/cold weather and direct sunlight. Avoid hitting, falling, or dragging as they may cause cracks and leaks.

## Components Identification



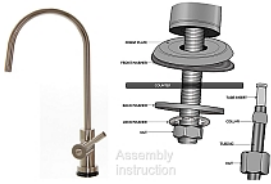
RO machine head  
(membrane not yet  
installed)



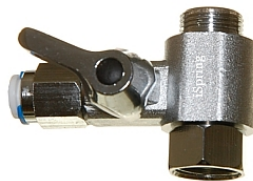
3 Pre-filter housings and  
cartridges



Storage tank



Drinking faucet with  
installation kit



Feed Water Adapter (AFW)



4-color tubing set



Drain saddle 1/4"



Tank valve



Housing wrenches



Teflon tape



Spare Housing O-rings x 3,  
Elbow Fitting x 2, Lock  
Clips



Water Detector (optional)

## Installation Tips

### How to use Quick-Connect fitting



Figure 1

### To connect:

1. See Figure 1. Check and cut the tubing end squarely and cleanly with utility knife or scissors.
2. Make a mark at the end of tubing. The length is about 1/2 inch, the depth of the fitting body.
3. Fully insert the tubing until the mark is about to disappear. This ensures that it is sealed by the O-ring near the bottom.



- To Connect: Push tubing into Lock Sleeve and reach bottom about 1/2 inch deep
- To Disconnect: Remove Lock Clip, while **PRESSING Lock Sleeve DOWN** to eliminate Gap, pull out tubing

Figure 2



**With two fingers  
PUSHING IN and PRESSING DOWN  
Lock Sleeve, pull out tubing**

Figure 3

### To disconnect:

1. See Figure 2 and 3. Remove the blue Lock Clip.
2. With two fingers **PUSHING IN and PRESSING DOWN** the Lock Sleeve to eliminate the Gap that the blue Lock Clip occupied, pull the tubing out. (Pressing down the Lock Sleeve releases the spring-loaded steel teeth that grab the tubing inside the fitting body).

### **How to use Compression fitting with brass Nut, Collar, and tube Insert**

Compression fitting is used to connect the PVC tubing to the threaded metal inlet with a tapered open end, such as the refrigerator water inlet, drinking faucet water inlet, etc.

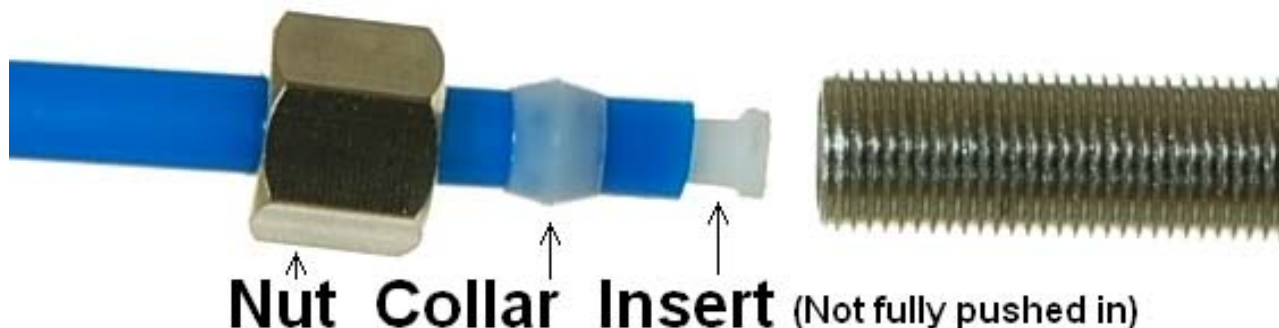


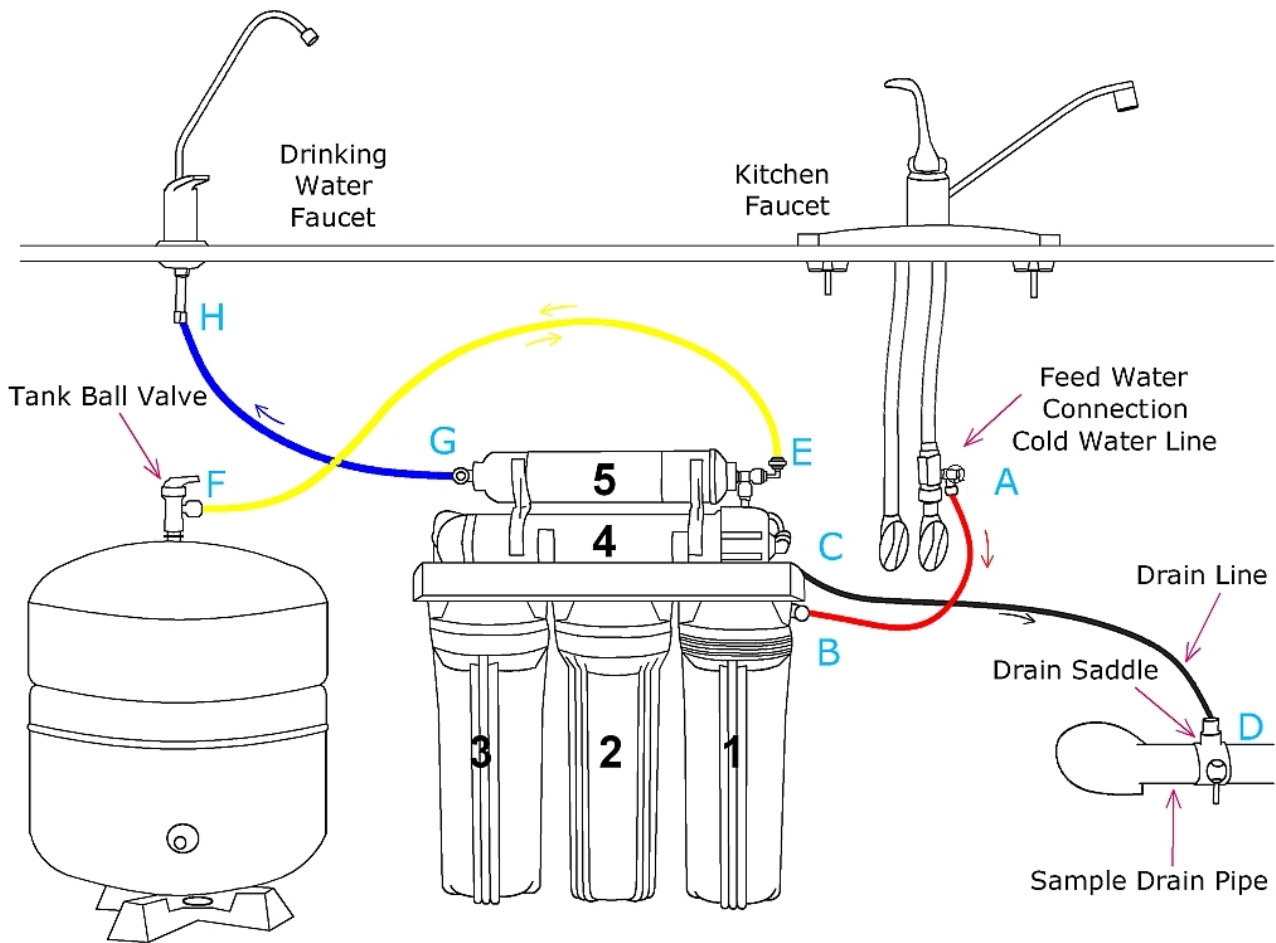
Figure 4

1. Slide the Nut, Collar onto the end of tubing
2. Fully insert the Insert into the open end of tubing
3. Slide the Collar to be close to Insert and fit into the tapered open end of the thread metal inlet.
4. Screw on the Nut and tight it up. The Nut compresses the plastic Collar onto the tapered metal surface and creates a water seal between them while the Insert hardens the tubing.

### **How to drill a hole on sink or counter-top**

1. It's highly recommended to watch the YouTube video "How To Drill Faucet Holes."
2. Choose a half inch Diamond Core Bit for granite, and a titanium drill bit for steel. Do NOT use a hammer drill on nature stone, glass, and ceramic.
3. An indent should be made with a punch on steel before drilling to help guide the bit.
4. Use caution when drilling on a Porcelain sink, as it could be easily chipped. Set drill speed on slow. Press the bit downward firmly until breaking through the slippery surface.
5. Use coolant to disperse heat. Choose water for granite, and oil for steel. Use the Water Suction Cup to hold coolant inside and prevent the drill bit from slipping.
6. Starting at slowest speed, hold the drill firmly and vertically and prevent the drill bit from slipping on the counter.
7. Once breaking through the smooth surface, swirl the drill a little to apply pressure in a circle evenly.
8. Be patient and deliberate. It can take 20 – 40 minutes to drill through one inch.

### Sample Installation



**Figure 5**

- A.** Source water from Feed Water Adapter → **B.** Source water to water inlet next to 1st stage
- C.** Waste water from Flow Restrictor → **D.** Waste water to Drain Saddle
- E.** RO water from Automatic Shut-off Valve → **F.** RO water to Storage Tank
- G.** RO water from 5th stage → **H.** RO water to Drinking Faucet

An Ice Maker Kit (part# iSpring **ICEK**) can be purchased separately to feed RO water to refrigerator and get crystal clear ice cubes and great tasting water at ease. It could make Drinking Water Faucet not absolutely necessary.



**Figure 6**

## Installation Steps



Before you begin installation, it is highly recommended that you watch the video “iSpring reverse osmosis installation” on YouTube.

**Note:** Steps 1 – 7 are independent, and can be performed in any order.

### Step 1: Install Feed Water Adapter (AFW)

- 1.1 See Figure 5. Turn off the Cold Water Line via the Cold Water Supply Valve (CWSV) under the sink. Open the kitchen faucet to release pressure and make sure water has stopped before proceeding to the next step. Get a towel or bucket to catch any water drips. Disconnect Kitchen Faucet Connector (KFC) pipe from CWSV. Disconnect Kitchen Faucet Connector (KFC) pipe from CWSV.
- 1.2 (**Refer to AFW user manual**). Check O-ring inside AFW female end, and twist it onto CWSV. Tighten it up using wrench or pliers.
- 1.3 Twist KFC onto the male end of AFW. Turn the handle of AFW to cross (OFF) position. Turn on CWSV slowly, check and fix any leaks.
- 1.4 Connect the 1/4" **RED** tubing to AFW.

### Step 2: Install Drinking Water Faucet

- 2.1 If your kitchen sink does not have an existing 1/2" hole, you will have to drill one. (Refer to *How to drill a Hole on Sink or Counter-top*). Wipe clean and dry the area. (Contact us for larger front plate and washer if the hole is too big to cover).
- 2.2 Remove blue protection film from the front plate, slip it on the faucet thread, and slip on the black rubber washer. Insert the faucet thread portion into the hole. Optional plumber glue or sealer could be used.
- 2.3 Under the sink, tighten the back rubber washer, lock washer with nut.
- 2.4 (*Refer to How to use compression fitting*). Slip the compression fitting nut and collar on the **BLUE** tubing, push the insert into the tubing, insert it into the faucet end, and tighten up the nut. Pull the tubing to check if it is secure.

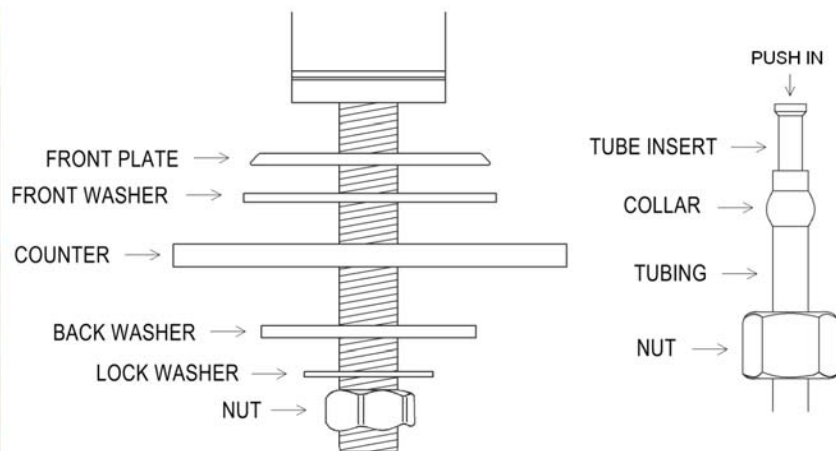
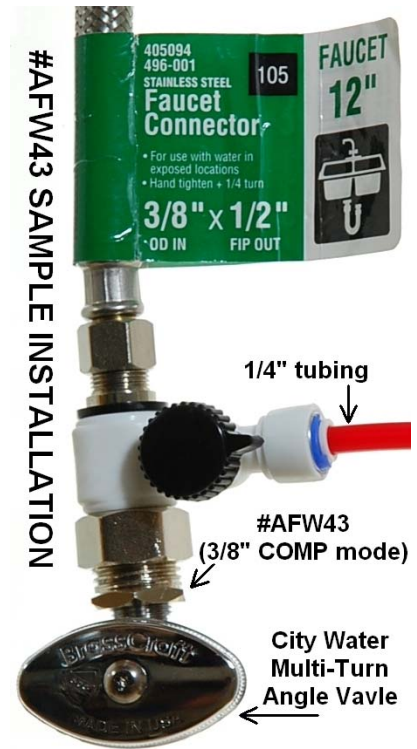


Figure 7



### Step 3: Install Drain Saddle

- 3.1 Choose a spot on the drain pipe that is convenient for installing the drain saddle and tubing. Horizontal pipe is recommended to minimize the dripping sound.
- 3.2 Drill a 1 / 4" hole on the drain pipe; paste the black sticky pad around the hole.
- 3.3 Cut the **BLACK** tubing end a bit to make a 45 degree angle. Slip the plastic nut and front plate on the tubing. Insert the tubing into the 1 / 4" hole on the drain pipe, install the back plate and tighten two screws with hex nuts while the tubing remains in the hole.
- 3.4 Tighten the nut on the Drain Saddle by hand. Pull the tubing to check if it is secure.



### Step 4: Install the Vertical Filters: Stages 1, 2, and 3

- 4.1 Make sure that the O-ring is seated inside the groove on top of the filter housing. (Figure 10). Food-grade silicon jelly may be used to help the O-ring stay in place and seal better.
- 4.2 Filter cartridges are preserved in shrink wrap. Note the direction sign on the sticker before removing the wrap (GAC stage).
- 4.3 When placing the filter cartridge into its housing, make sure it is centered and the knob protruding from the bottom of the housing fits in the central hole of the filter.
- 4.4 Screw the housing, with filters attached, onto the housing caps (caps are pre-assembled on the machine head). The cap also has a center knob which should be inserted into the center hole of the filter cartridge. Twist the housing on in a **clockwise** direction by hand, and then use a housing wrench to tighten it up for about 1/4 – 1/2 turn. **Do not over tighten. This can cause leaks and make it difficult to unscrew the housing when replacing filters.**
- 4.5 Follow the steps 1.1 – 1.4 to install the GAC and CTO filters. \*Note\* the second stage GAC is the only filter that must go in a certain direction. Make sure that the end with the rubber washer faces up, thereby attaching to the housing cap.



### Step 5: Install Tank Shut-off Valve (TSV)

- 5.1 Wrap 10 - 15 turns of Teflon tape clockwise (looking from top) onto the metal thread at the top of the tank.
- 5.2 Screw (clockwise) the Tank Shut-off Valve on and tighten up by hand. Do not over tighten.
- 5.3 Connect the **YELLOW** tubing onto the Quick-Fitting of TSV.

## Step 6: Install Reverse Osmosis Membrane

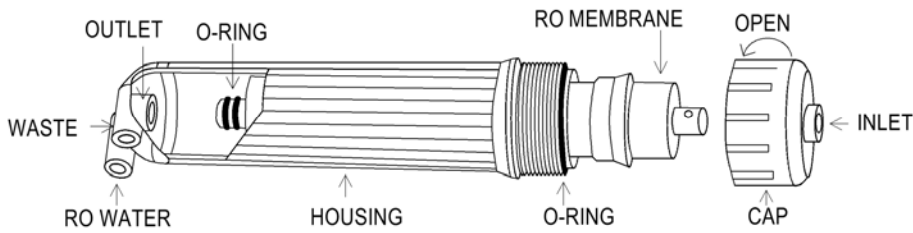


Figure 8

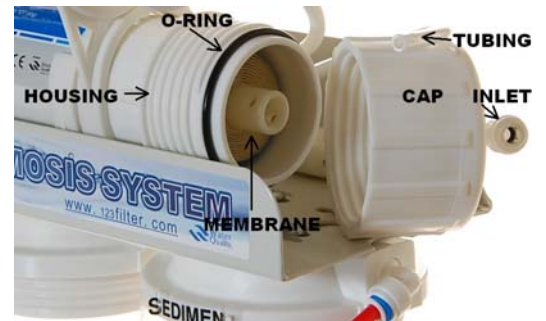


Figure 9

- 6.1 Open the membrane housing screw cap. First, you will need to disconnect the white 1 / 4” tubing from the Inlet quick-fitting on the membrane housing cap (*refer to How to Use Quick-Fitting section*), and then unscrew (counter-clockwise) the cap. A thick rubber band can be slipped on the housing body for a stronger hand hold.
- 6.2 Remove the membrane from its sealed bag. Follow the flow direction sign on the membrane, and firmly insert the membrane into the housing with the smaller end that has two black O-rings heads first until the bigger end is even with the housing opening. See Figure 8-9.
- 6.3 Before twisting the housing cap back on, check that the **O-ring is evenly snagged on the membrane housing (cap does NOT have O-ring)**. Hang tight and tighten up for about 1 / 4 – 1 / 2 turns using a small plastic housing wrench, but do not over tighten. DO NOT reconnect the tubing to inlet on cap at this point (will do it in system start up).

## Step 7: Tubing Hook up (model specific sub-steps are marked with \*)

- 7.1 See Figure 5 and Figure 10 RCC7P & RCC7 TOP VIEW, note connection points A-B, C-D, E-F, and G-H.





**Figure 10**

- 7.2 Facing the iSpring logo up front, the pre-filter 1st stage is located on the right hand side. Connect the **RED** tubing Feed Water Adapter (AFW) (point A) to the elbow fitting (point B).
- 7.3 Connect the Flow Restrictor (point C), which is a 3-inch long cylinder with a FLOW sign laying beside the membrane housing, to the Drain Saddle (point D) with the **BLACK** tubing.
- 7.4 On the right side of the Post Carbon Filter (FT15 5<sup>th</sup> stage), connect the Tee-fitting (point E) and the Tank Valve (point F) with the **YELLOW** tubing.
- 7.5 \* Model without UV/AK/DI: at left end of FT15, insert the **BLUE** tubing (links to RO faucet) into the elbow fitting.  
 \* Model with UV/AK/DI: RO water flows out of point G at FT15 and flows into the left end of next stage. So the **BLUE** tubing (links to RO faucet) should be connected at the final end of the last stage, which could be the UV/AK/DI filter.
- 7.6 Connect the other end of the **BLUE** tubing to the RO faucet (refer to *How to use compression fitting*).
- 7.7 You may organize the tubings, but make sure to leave enough length so the filter system can be moved freely in and out of the cabinet when replacing filters.
- 7.8 You may hang the system using two 10 x 1-1/4 Phillips Flat Wood Screws. This will make replacing filter cartridges easier.



### **Step 8: System Start Up (model specific sub-steps are marked with \* )**

- \* If your model has a UV stage, do not plug in power until the system is fully flushed
- 8.1 Make sure that all tubings are not kinked. **Turn Tank Shut-off Valve OFF (cross)**. Prepare a bath towel to catch any water leak.
  - 8.2 To avoid the residual carbon in the first three stages from getting into the RO membrane, the tubing to the inlet of the RO membrane housing cap was left disconnected. Flush the first three stages into a bucket until the water turns clear, and re-connect the tubing to the RO membrane. (You may do this whenever you change the first three stages).
  - 8.3 Turn on (inline) Feed Water Adapter valve (AFW), and then slowly turn on the Cold Water Supply Valve (CWSV) and **check for leaks**. The top 3 causes of leaks are 1) the tubing was not fully inserted into the quick-connect fitting. 2) the O-ring was not in place or kinked. 3) the Housing/Cap was not tightened up or off threads.
  - 8.4 \* Plug in booster pump power if your model has one.
  - 8.5 Within 5 minutes, RO water should start dripping. Let it run for at least 10 minutes. This flushes the system except the tank. Water is black due to loose carbon from new carbon filters (step 8.2 could be taken to expedite the flush). It will turn clear with some air bubble.

- 8.6 Shut off the RO Drinking Faucet. Turn on the Tank Shut-off Valve. Wait for the tank to be filled up. It may take 1.5 hours in warm summer or 3 hours in cold winter to fill up a 3.2 gallon tank with about 2.5 gallons holding capacity.
- 8.7 After two hours, turn on the RO Drinking Faucet to flush out all the water in the tank. DO NOT use the first tank of water. The water out of the faucet should be a much stronger stream since the water pressure was built up to 35-40 psi when being filled up. When the water flow changes back to a trickle, it means the tank is empty.
- 8.8 \* Plug in the UV power and observe if the RO faucet turns the UV on/off through the Flow Sensor Switch.
- 8.9 The reverse osmosis membrane is the key part for the effective reduction of total dissolved solids (TDS) and that product water shall be tested periodically to verify that the system is performing properly. If the TDS of the source water is 100ppm, the RO water should be less than 10ppm (Rejection rate >90%).
- 8.10 Check for leaks daily for the first two weeks after installation. Furthermore, a bucket can be put under the system in case of any leaks, and a Flood Alarm can be used together for better protection.

**Congratulations! You have successfully installed the  
iSpring Reverse Osmosis Water Filtration System!  
Start enjoying the cleanest water right from your tap!**

## SYSTEM MAINTENANCE

This RO system is designed with ease of use and low maintenance in mind. If you change the filter cartridges as suggested below, and check TDS level periodically, the system will work properly for many years.

### Filter Cartridge Replacement Schedule



Note: stage 6 or 7 only exists in certain models. For a filter pack supply, visit [123Filter.com](http://123Filter.com) or Google “Model replacement filter” online, in which “Model” is the model number of the system, e.g. RCC7

### **Stages 1 – 3 pre-filters: Replace every 6 – 12 months, or sooner if water flow gets slow.**

The frequency depends on the source water quality and water usage. They could last longer in city water, and shorter in well water. Different areas have good or bad water. Some customers reported they had to replace the 1st stage every 1-3 months when they saw through the clear housing where heavy sediments and particles turned the white cartridge into dark brown. Some customers reported they could replace them every 12 months. To protect the RO membrane in the 4th stage, it is **required** to replace the pre-filters **at least every 12 months**.

### **How to change in-housing cartridges in 1st – 3rd pre-filter stages**

1. Shut off the water supply valve and tank valve, open the faucet to depressurize. Place a bucket or towel under the unit to catch water spills.
2. If there is enough room under the sink and filter system is hung on wall, it could be easier to twist the filter housing off without taking the unit off the wall. Otherwise, it could be easier to pull the system out, lay it down and work towards the housing bottom. Please be careful with tubing connections when pulling the system out.
3. Twist off the filter housing in a counter-clockwise direction when looking from the bottom. Use a housing wrench (the bigger one) if necessary.
4. Refer to Installation Step 1.1 to install a new vertical filter cartridges and twist the housings back on. Remember not to over tighten or it will be hard to open next time.

## **Stage 4 RO membrane: Replace every 2 – 3 years or sooner if TDS level starts increasing.**

Check the TDS level at least once a month to monitor the system performance. The rejection rate should be above 90% (NSF/ASIN STANDARD 58 for RO water filter).

### **How to change reverse osmosis membrane**

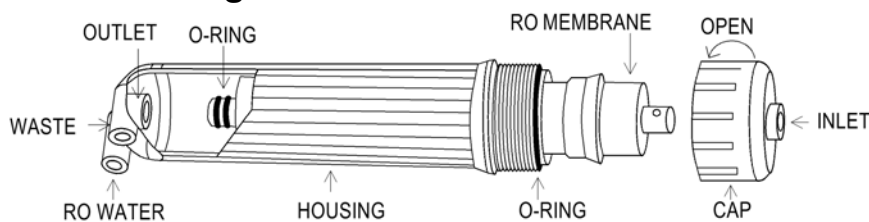


Figure 11

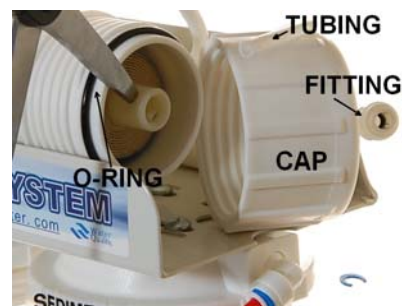


Figure 12

1. Reverse osmosis membrane usually last about 2 – 3 years, depending on the source water quality and the replacement schedule of the three pre-filters.
2. To ensure system performance and water purity, filter cartridges must be replaced on schedule. Use the TDS meter periodically to check water purity
3. Shut off the water supply valve and tank valve, open the faucet to depressurize
4. Place a bucket or towel under the unit to catch water spills.
5. Remove the tubing from the inlet fitting on the membrane housing cap. Use a housing wrench or by hand to twist off the housing cap in a counter-clockwise direction looking from inlet.
6. Pull out the old membrane. Use scissors or pliers to apply leverage if necessary.
7. Clean the housing using hot water and optional scent-free dish soap. Rinse thoroughly. Cut open the small end of the sealed bag of a new RO membrane, hold the new membrane with the bag, and insert it into housing without touching the membrane with your bare hand, which may contaminate it.
8. Check the O-ring on the open end of the membrane housing. It is recommended to replace it every 3 years to prevent leaks.
9. Twist the membrane housing cap back on by hand. Use a wrench for a final ¼ turn if necessary. DO NOT over tighten.

## **Stage 5 T33 fine carbon: Replace every 12 months**

Unscrew the elbow fittings on both ends, put them on the new cartridge, and use new Teflon if necessary.

### **How to change inline cartridges in 5th – 7th stages**

1. Please note that the 5th - 7th stages (model specific) have directions and each end may have a different kind of fitting.
2. Disconnect the tubing from the Quick-Connect fitting, unscrew the fitting, unwrap a new cartridge, replace the Teflon tape on the fitting threads if necessary, follow the → sign on the label to screw the correct fitting on each end, and reconnect the tubing.

## **O-rings: Replace every 3 years or sooner if leak happens at O-ring.**

The package comes with 3 spare O-rings for the pre-filter housing, and 1 spare O-ring for the membrane housing. Please save them with this manual.

## Extra Installation

### UV Lamp (part# iSpring UVB11) and Ice maker kit (part# iSpring ICEK)

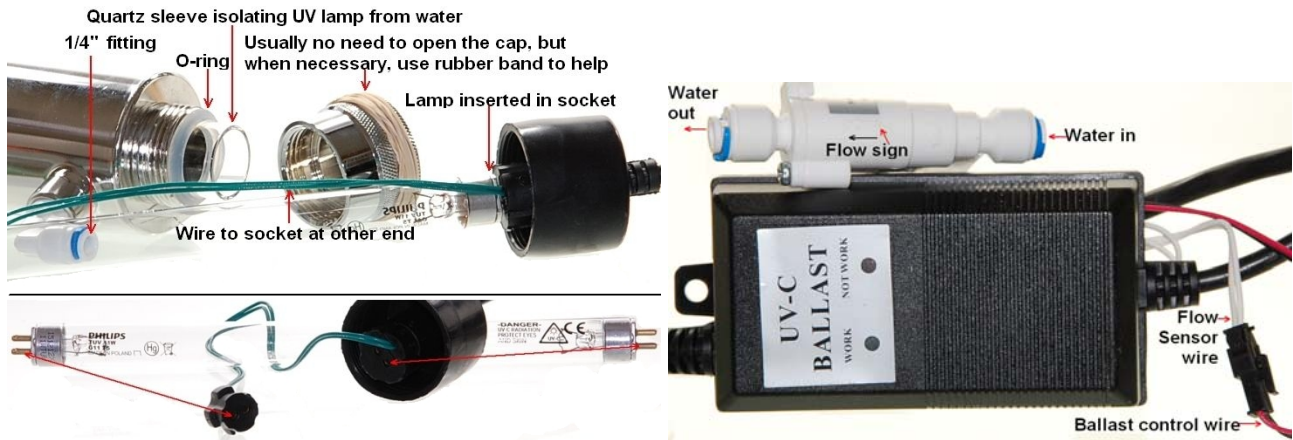


Figure 13 Flow Sensor Switch for UV lamp

The models with a UV stage have a “U” letter in model number, such as **RCC7U**, **RCCA-K-UV**, **RCC1UP-AK**.

The UV module comes pre-installed on the models with UV. It should function out of the box. The photos above are for a better understanding about how the components are assembled and work together.

The Ice Maker Kit (model#: iSpring **ICEK**) can be purchased separately to feed RO water to a refrigerator and get crystal clear ice cubes and great tasting water. It would make a Drinking Water Faucet not absolutely necessary.

