

KSRO Series Reverse Osmosis System Installation Manual



KSRO Series Reverse Osmosis System

Overall System Connections

Hello!

ROTEK KSRO Series RO systems are specifically designed for commercial and industrial-sized RO systems.

It is designed with a fixed recovery rate of 60-65% by using ROTEK extra-large flow RO membranes that can produce 4000~6000GPD (650~1000LPH) of permeate water flow, which means it can produce more pure water at less cost.

To understand more about how KSRO systems can help your business, welcome to Contact www.rotewater.com to speak with a qualified local representative



KSRO6000



KSRO4000

Conditions

READ THIS FIRST

Please pay attention to the following installation and safety recommendations:

Read the installation manual before installing this system.

NOTE! Please make sure your installation location has enough room and access to a 220v power supply.

Incoming Water

Incoming water pressure must be between 10 PSI and 100 PSI. Test your water occasionally to make sure the system is performing. If your water is microbiologically unsafe or of unknown quality do not use this system without adequate disinfection before or after the system. Extremely hot or cold incoming water will damage the system and cannot be used. Your Untreated Water Inflow quality will determine your needs for pretreatment and filtration.

Leaks

Inspect all connections after the installation to make sure no leaks occur, wait until after the system is pressurized to inspect again. Check the system occasionally after installation or maintenance to make sure no leaks have developed. Install the system in a location with adequate drainage.

General

This KSRO System is for climate-controlled indoor use only. Exposure to overly high or low-temperature ranges will damage the unit. Follow all of your state and local laws and codes regarding plumbing even if they differ from what is stated in this manual. If your state law requires it or you prefer to we recommend using a professionally licensed installer or plumber who meets the requirements of this system. All O-Rings, fittings, filter canisters, and Teflon tape wear out after a certain period. The lifetime of your components is subject to change with the quality of the water supplied. Do not handle an unwrapped filter directly with your bare hands as this can cause early filter failure. Use appropriate eye protection when performing any drilling.

Maintenance

The owner/user is obligated to properly inspect and maintain the KSRO System when necessary, at least every 1 year. This includes the following:

The O-Ring on the filter housing, membrane vessel, booster pump, solenoid valve diaphragm, and fittings.

Replace any connectors and filter housings with proper replacement parts.

Sanitize your system as often as needed (this changes with the profile of your area's incoming water).

Always use proper replacement filter cartridges with the correct size and length replacements.

Replace the Teflon Tape on all threaded connections and fittings.

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Introduction

You have purchased the finest KSRO System available for your water purification. When properly maintained this system will provide you with years of great tasting pure drinking water and trouble-free service.

Please read the manual section regarding the proper care and maintenance of your KSRO System before proceeding with your installation. Also, please make sure to inspect the package for any missing components or shipping damages.

Simply read through the manual and complete the steps in order and you'll have your system up and running in no time. If you find any issues or have questions please contact your local distributor or visit www.rotekwater.com for filter replacements.

System Specifications

Models	KSRO4000	KSRO6000
Raw water TDS	< 1000 ppm	< 1000 ppm
Recovery Rate*	65%	65%
Vessel Array	1	1:1
Vessel Size	4040 x 1	4040 x 2
Permeate Flow Rate* (GPD/LPH)	4000 / 650	6000 / 1000
Feed Connection	3/4" FNPT	3/4" FNPT
Permeate Connection	1/2" Tube	1/2" Tube
Flush Connection	3/4" FNPT	3/4" FNPT
RO Membrane	Rotek XL-4040	Rotek XL-4040
Pump type & Motor HP	Multistage 2.5HP	Multistage 2.5HP
Power Supply	220-240VAC 50Hz or 60Hz single phase	220-240VAC 50Hz or 60Hz single phase
Gross Dimension (cm)	37.5X46X131	37.5X56X131
Gross Weight (kg)	56	58
Working Pressure	10-12 Bar	10-12 Bar
Start-Up Pressure	1.5 Bar	1.5 Bar

* KSRO system recovery rate is calculated based on the volume of flush water discharged.
 Recovery Rate = (Permeate Flow / Permeate Flow + Discharged Flush Flow)

* Permeate Flow Rate is calculated based on Rotek XL-4040 membranes. It is also possible to use other brands of membranes with KSRO units, but the flow rate may vary.

Raw Water (Feed Water) Requirements

Raw water quality, pressures, and flow rates have a significant impact on the performance of any reverse osmosis system. To ensure reliable and consistent long-term performance, it is important to supply feed water having the minimum specifications detailed below. If your raw water supply is marginal, you should consider using a raw water break tank and booster pump to supply the system.

KSRO Raw Water Specifications (minimum)			
Hardness	< 5 ppm	Hydrogen Sulphide	0 ppm
Free Chlorine	0 ppm	Manganese	< 0.05 ppm
Total Dissolved Solids	< 1000 ppm	Organics	< 1 ppm
Turbidity (SDI)	< 5	Temperature	+5 to +40°C
pH	3-11	Silica	< 1.0 ppm
Iron	< 0.01 ppm	Pressure	>240 kPa

These specifications should be met in order to have the reverse osmosis system perform optimally. All operation specifications are based on the test conditions listed below.

KSRO RO Operation Specifications			
Min. Working Pressure	35 psi (240kPa)	Max. Pressure	250 psi (1700 kPa)
Min. NaCl % Rejection	96%	Max. NaCl % Rejection	99%
Min. Feed (lpm)	34	Max. Feed (lpm)	50
Max. Hardness	1.0 ppm	pH Range	3 – 11
Max. TDS	1,000 ppm	Max. Temperature	40°C (105°F)

TEST CONDITIONS: Permeate flow and salt rejection based on 1500 ppm NaCl, 1034kPa (150psi), 77°F (25°C), pH 6.5-7.0, and recovery of 15%.

NOTE: Higher TDS and/or lower temperatures will reduce the system's production

Pretreatment Suggestion

Please make sure that the quality of your raw water meets the aforementioned KSRO raw water requirements, otherwise, it is recommended to install pre-treatment equipment. You can install it by yourself, or suggest using ROTEK's existing standard pretreatment module, of course, it can also be customized according to your raw water conditions.

KSRO Pretreatment Unit *Optional	
1	20" filter housing x 1pcs, 5µm GAC filter cartridge
2	20" filter housing x 1pcs, 5µm CTO filter cartridge
3	20" filter housing x 1pcs, 5µm antiscalant filter



*This manual uses KSRO4000 for demonstration.

4	KSRO Pure water storage tank and water disinfection systems *Optional
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Installation Notes

▲WARNING▲

All electrical work should be performed by a licensed electrician in compliance with all relevant electrical safety regulations.

All piping works shall be performed by licensed plumbers and comply with relevant water supply and drainage piping regulations.

Installation Notes

Before installation, ensure that the power supply matches the power requirements of the system. Most units are supplied as standard for 220-240VAC 50Hz or 60Hz single phase operation.

1. Ensure that all plumbing connections for the feed water inlet, permeate and membrane flush outlets are secure and conform to relevant plumbing regulations.
2. Ensure that power lead is rated to carry the current draw of the system. A minimum electrical wire diameter of 3.5mm is recommended.
3. The external storage tank level contact switch should be connected to the blue wires labelled for tank connection and located inside the electrical cabinet. Do not apply power to these wires as the connection is designed for a simple non-powered contact type closure switch only.
4. Use an external pressure booster pump if the feedwater pressure is below 35psi.
5. If your feedwater supply is marginal, use a feedwater storage tank and booster pump to supply the RO system.

Tools Required

Before you begin please make sure you have all of the following tools ready to use:

Box Cutter / Tube Cutter

Phillips-Head Screwdriver

Power Drill : 3/8" Drill Bit (for Drain Saddle)

Adjustable Wrench / No.13 Wrench

Teflon Tape

Components List

Your new KSRO system should include the following items. **If any item is missing, please contact your local distributor.**

Please take a few moments to check all the following components:

KSRO Main Unit*



**ROTEK XL-4040
RO Membrane**



KSRO4000 w/ RO Membrane x 1,
KSRO6000 w/ RO Membrane x 2

**½" Flexible PE Tubing
(5 m)**



Filter Housing Wrench



Installation Manual



Solenoid Valve Diaphragm

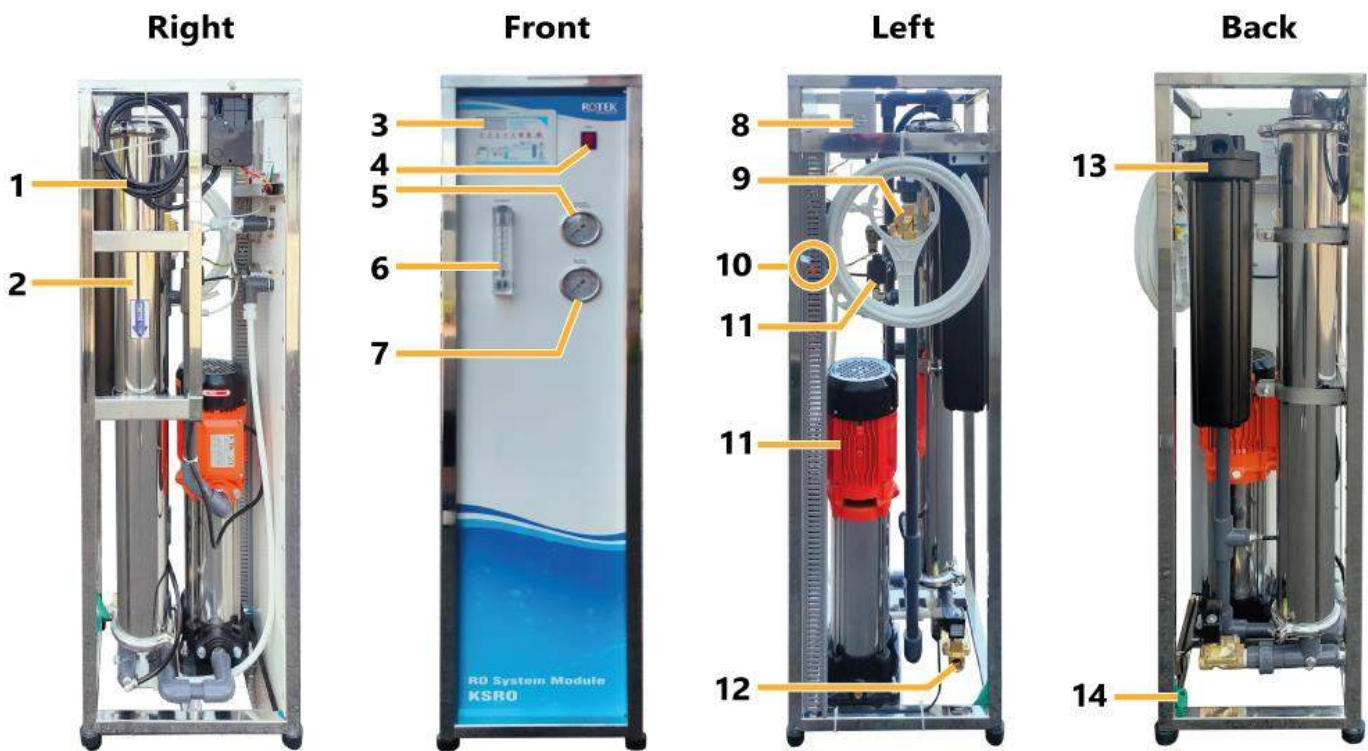


2 extra pieces for backup

*KSRO4000 and KSRO6000 have the same standard installation and operation procedures. This manual uses KSRO4000 for demonstration. The main unit in the package is subject to the model you purchased.

System Overview

1. Power Cable
2. 4040 RO Membrane Vessel with PP End Cap 3/4". * (KSRO4000 x 1, KSRO6000 x 2)
3. C-5TM RO Controller
4. Power Switch (I / O)
5. Raw Water Inlet Pressure Gauge – 7 Bar
6. RO Permeate Flow Meter – 5GPM/10GPM
7. RO Membrane Inlet Pressure Gauge – 35 Bar
8. Pump Contactor
9. 3/4" Inlet Solenoid Valve
10. LF-20 Low Pressure Switch (shut-off pressure at 1 bar)
11. LPE2-11 ROTEK High Pressure Pump
12. 3/4" Flush Solenoid Valve
13. Pre-filter: 20" KF Filter Housing + 20" PP Cartridge – 5um
14. Ground Cable



*This manual uses KSRO4000 for demonstration.

System Guide

RO Permeate
Flow Meter*
5GPM/10GPM

C-5TM RO
Controller

Power
Button

Blue Wire for
Float Level Sensor

Pure Water Outlet

This is where the system delivers your purified water, this should be routed into the treated water (permeate) storage tank.

Drain Line

This is where the impure water rejected by the Reverse Osmosis membrane is flushed out.

Raw Water
Inlet Pressure
Gauge – 7 Bar

RO Membrane
Inlet Pressure
Gauge – 35 Bar



*This manual uses KSRO4000 for demonstration. The RO Permeate Flow Meter can be 5GPM /10GPM is subject to the model you purchased.

Installation Procedure

Step 1

Use a No.13 wrench to lose the safety ring then open the PP end cap of the 4040 RO membrane vessel.

Take out the ROTEK XL-4040 membrane from the package, then insert it into the membrane vessel.

Please pay attention to the direction of the membrane (The arrow on the label should head downward).



Place back the PP end cap of the membrane vessel, and Make sure to lock the water outlet pipe and safety ring are secure.

NOTE! Do not overtighten.



Step 2

Connect the pre-treated incoming water source to the inlet filter housing using a 3/4" male thread coupling.

Use Teflon tape and leak sealant as necessary to ensure a leak-proof connection.

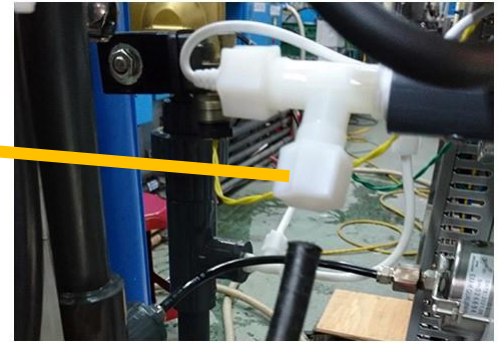


Step 3

Connect a sufficient length of 1/2" diameter hose to the fitting marked "Pure Water" on the rear of the panel.

Connect this hose to a pure water (permeated water) storage tank, to your faucet, or to any other device you need to provide pure RO water.

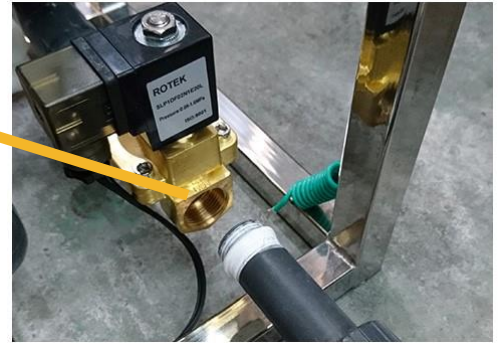
Pure Water
Outlet



Step 4

Connect a sufficient length of 3/4" diameter water tubing to the outlet of the membrane flush solenoid valve and connect it directly to the drain or to fitting on the sink pipe, a floor drain, or another design that discharges wastewater.

Drain
Line



Step 5

Take the blue wire and connect this to the float level sensor in the permeate storage tank. This allows the RO to turn on and off automatically according to the treated water storage tank level.

NOTE! To enable proper water production in the KSRO unit, use a top-mounted double float level switch with the upper float at the High level, and the lower float at the Low level (positioned 1/2 in the tank). Other types, like side-mounted switches, are not suitable for KSRO.

Blue Wire
to connect
the Float
Level

Float
Level
Sensor



Step 6

Connect the power cable to a suitable plug or to the other control panel. Ensure that the available power matches the power requirements of the system and that the power cables are rated to carry the current load of the system.

Power
Requirements
220V



System Startup & Operation

System Operation Notes

1. Ensure that incoming water pressure is a minimum of 140kPa (20psi).
2. Check that your incoming water supply flow rate is sufficient for your particular model
3. Check that the available power supply matches your unit requirements.
4. Re-check all installation instructions and that all plumbing and electrical connections have been made correctly and are secure.

Step 1

Switch the power in the front side to "I" (ON). This will open the inlet solenoid valve and allow pressurized feed water to enter the filter housing and the RO system.



Step 2

Release the breather valve to close it by pressing and holding the breather valve on top of the Pre-filter cap to release any air pressure that may have built up in the system, until water springs from the breather valve. This step usually only needs to be performed at the first start-up, or when you find there may have air entering the system.

Breather
Valve



Notice! If there is air in the RO system, the long-term accumulation may easily cause damage to the pump.

Step 3

Once the system is running, it automatically initiates a 20-second start-up flush. Then it continues to produce pure water until the pure water tank is full "FUL", and the water production will stop.

Also, if the water inlet pressure is lower than the default, the system will stop water production, too.

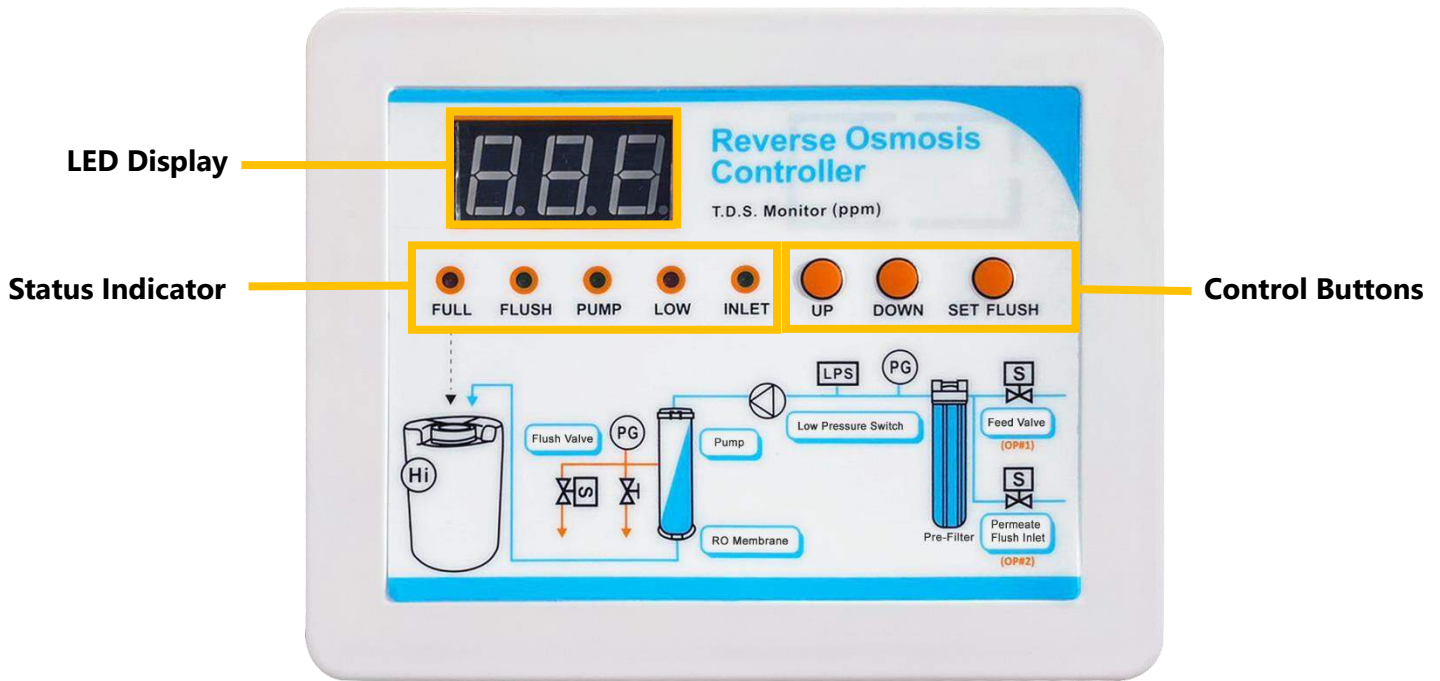
If the water inlet detects low pressure and displays "LO", the system will also enter system protection and stop water production.

Please refer to the chapter "C5TM RO Controller".



C5TM RO Controller

RO Controller Panel







Status Indicator Description

Status Indicator	Color	Description
Full	● Red	When the permeate storage tank is full, the RO system will stop making water and stand by.
Flush	● Green	The system is running an automatic flush cycle of the RO membrane.
Pump	● Green	The RO high-pressure pump is running and making water.
Low	● Red	The inlet water pressure below default pressure.
Inlet	● Green	The water inlet solenoid valve starts and feeds water.

Display Description

LED Display	Indicator Status	Description
		When the power is on, the screen will first display "888" and the default mode "OPA", then the raw water solenoid valve starts and feeds water.
		Startup Flush: the screen displays "020~000", and the countdown is 20 seconds.
		Start the pure water production, the number displayed on the screen is the TDS value of the pure water, and the indicator "PUMP" lights up.
		Start the Timed Flush: The default setting is every 2 minutes flushing 10 seconds, and the screen displays a countdown of "A10~A00".
		When the water tank is full, start to Tank-Full flush for 30 seconds, and the system will stand by.
		When the water tank is low (below the set pressure), the display shows "LO", the indicator LOW/INLET lights up, and the system will continue to feed water. The wastewater end will continue to drain until the inlet water pressure reaches the set value. When the indicator "LO" lights off, the system will flush for 10 seconds and resumes water production.
<p>NOTE <i>If the pressure cannot reach the default value, please turn off the power and check your inlet water pressure. It is recommended to double confirm with the factory your raw water inlet pressure before installation.</i></p>		
		Start the Manual Flush: Press the SET/FLUSH button once, and the system will start a 10-second flush. Then the RO high-pressure pump resumes operation and starts to produce water.
		The default TDS range is 0 to 999 ppm, and the display flashes beyond the range of 999. (OPA mode is suitable for raw water TDS <1,000ppm)

Flow Meter and Pressure Gauges

KSRO4000 RO Permeate Flow Meter 5GPM	KSRO6000 RO Permeate Flow Meter 10GPM	RO WATER INLET PRESSURE	Raw water Inlet Pressure Gauge
 <p>After startup flushing, the system begins to produce RO pure water. You can monitor it through the RO permeate flow meter.</p> <p>Typically KSRO permeate flow rate is 2.8 GPM / 10.5 LPM.</p>	 <p>After startup flushing, the system begins to produce RO pure water. You can monitor it through the RO permeate flow meter.</p> <p>Typically KSRO permeate flow rate is 4.4 GPM / 16.7 LPM.</p>	 	<p>Displays the pressure of the raw water inlet.</p> <p>RO Membrane Inlet Pressure Gauge</p> <p>Displays the pressure of water entering the RO membrane.</p>

* Permeate Flow Rate is calculated based on Rotek XL-4040 membranes
 It is also possible to use other brands of membranes with KSRO units, but the flow rate may vary.

Troubleshooting

Why does my KSRO keep on and off??

The pressure at the raw water inlet end is insufficient, or the inlet pipe is too small. If the water supply pressure is lower than 140kPa(20psi), please use an external booster pump, please use the water supply storage tank and booster pump to supply water to the RO system and prevent the system from circulating.

Why is the output of my RO pure water getting less?




1. If the output of RO pure water becomes smaller, which is about 65% lower than your usual flow rate, and the pressure of the RO water inlet pressure gauge becomes larger, it means that the RO membrane is clogged and needs to be replaced or cleaned.
2. If the RO system is in the state of producing water, and the permeate water flow rate drops a lot (about 70-75%), It means that the pre-filter element is clogged and needs to be replaced (If the flow rate does not increase after replacement, the first point applies) .

Important Reminder Please record the values of your RO permeate flow meter and pressure gauges, and test the water quality at the same time. Those data will be of great help to quickly eliminate obstacles. Please refer to the Operation Log attached at the end of this document.

System Maintenance

These recommendations are intended for maximum efficiency of your KSRO System.

Replacements Table

Part	Model	Service Life
Filter 	20" PP Cartridge	3 Months - 6 Months
RO Membrane 	ROTEK XL-4040	6 Months - 1 Year
Solenoid Valve Diaphragm 	Custom Order Contact your local distributor for supply.	1 Year

Filter and RO Membrane Storage

1. Store unopened filters in an airtight container to prevent them from absorbing air. This prolongs the shelf life of the filters and avoids any possible odors or contamination from the air.
2. Store in a cool, dry, dark place (avoid heat and moisture contamination). Using this method it is okay to store filters for several years.

Extended System Non-Use

-If you will not be using the RO System for two weeks or more, please read the chapter "Vacation Mode".

How to Change the Pre-filter Housing

(Recommended about every 3 months, depending on water use)

1. You will need a clean cloth, dish soap, and 20" PP Cartridge – 5um filter. (The system may release water when it is disassembled.)
2. Turn off the water supply connected to the RO System, the Feed Water Adapter Valve, and the Tank Valve [if you are using a tank]. Then open your pure water outflow to release pressure,
3. Unscrew the Filter Housing using the Filter Housing Wrench. Remove old filters and dispose of them.
4. Wash the Pre-filter Housings with dish soap then proceed to rinse until all soap is removed.
5. Ensure that your hands are washed clean before unwrapping the new filter. After unwrapping, place the new filter inside the housing. Make sure the Housing has an O-Ring firmly in place in the Housing's lower groove (just below the threading). Tighten the Pre-filter Housing using the Filter Housing Wrench. Do not overtighten.
6. Restarting the system.

How to Change the RO-4040 Membrane

(Recommended about 1 year. Lifespan varies based on quality of incoming water.)

NOTE! Make sure you have shut down the KSRO System, the Feed Water Adapter Valve, Water Supply, and the Tank Valve [if you are using a tank]

1. Power off the KSRO and wait about 10 minutes. Use a No.13 wrench to lose the ring then open the PP End Cap of the 4040 RO Membrane Vessel.
2. Pull out the RO membrane with a pair of Needle-nose pliers.
3. Unwrap the new 4040 RO Membrane, and insert the new RO Membrane in the Membrane Housing in the correct direction you noted earlier.
4. Make sure to push the Membrane in firmly, then close the vessel by tightening the safety ring with a No. 13 wrench.
5. Restart the System.

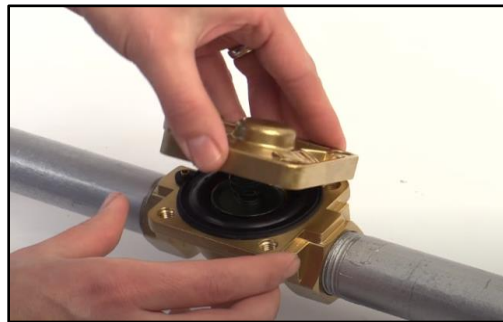
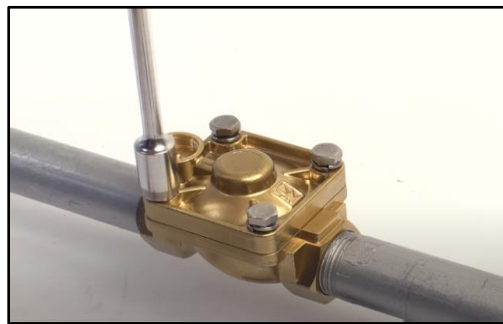
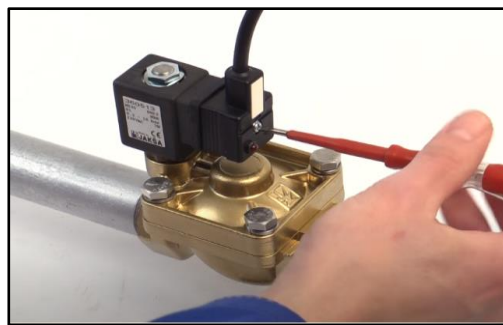


How to Change the Solenoid Valve Diaphragm

(Recommended about 1 year. Lifespan varies based on quality of incoming water.)

NOTE! Make sure you have shut down the KSRO System, Make sure the Feed Water Adapter Valve is fully close.

1. Disassemble all the parts of the top.
2. Release the screws of Solenoid Valve, and open it.
3. Replacing a new Solenoid Valve Diaphragm.



RO Membrane Cleaning

(Recommended about every 6 months to 1 year.)

Periodic cleaning of the membrane(s) can improve system performance. In normal operation, mineral scale, biological matter, colloidal particles, and organic substances can foul the membranes and reduce performance. The best prevention is to use a well-designed pre-treatment system incorporating efficient sediment removal, de-chlorination (if chlorine-based sanitisers are present), and softening or chemical dosing for the removal of scale forming minerals.

WARNING: Cleaning chemicals are dangerous and can cause injury and damage to the environment. It is the user's responsibility to comply with all applicable federal, state, and local regulations.

General Safety Precautions

When using any chemical indicated here in subsequent sections, follow accepted safety practices. Consult the chemical manufacturer for detailed information about safety, handling and disposal.

1. When preparing cleaning solutions, ensure that all chemicals are dissolved and well mixed before circulating the solutions through the membrane elements.
2. It is recommended the membrane elements be flushed with good-quality chlorine-free water after cleaning. Permeate water is recommended; but a de-chlorinated potable supply or pre-filtered incoming water may be used, provided that there are no corrosion problems in the piping system. Operate initially at reduced flow and pressure to flush the bulk of the cleaning solution from the elements before resuming normal operating pressures and flows. Despite this precaution, cleaning chemicals will be present on the permeate side following cleaning so divert the permeate stream to drain for at least 10 minutes or until the water is clear when starting up after cleaning.
3. During recirculation of cleaning solutions, the temperatures must not exceed 50°C at pH 2-10, 35°C at pH 1-11, and 30°C at pH 1-12.

Cleaning Procedures for organic fouling

1. Prepare the cleaning solution as listed below

- * Preferred 0.1% (wt) Soda Ash
pH 12, 30°C maximum
- * Alternative solution 0.1% (wt) NaOH 0.025% (wt)
pH 12, 30°C maximum

NOTE!

- (wt) Denotes weight percent of active ingredient.
- Cleaning chemical symbols in order used: NaOH is sodium hydroxide.

2. Low-flow rate pumping. Pump mixed, preheated cleaning solution into the housing at a low flow rate of 5-10 litres per minute at low pressure (<120kPa) to displace the process water. Use only enough pressure to compensate for the pressure drop from feed to concentrate. The pressure should be low enough so that little to no permeate is produced. A low pressure minimizes re-deposition of dirt on the membrane. Dump the concentrate, as necessary, to prevent dilution of the cleaning solution.

3. Re-circulate. After the process water is displaced, cleaning solution will be present in the concentrate stream and this can be recycled to the cleaning solution tank. Recycle the cleaning solution for 15 minutes or until there is no visible colour change. If a colour change occurs, dispose of the cleaning solution and prepare a new solution as described in step 2.

4. Soak. Turn the recirculation pump off and allow the elements to soak for 1-15 hours (soaking overnight will give best results). To maintain temperature during an extended soak period, use a slow recirculation rate (2-5 litres per minute). Soak time will vary depending on the severity of the fouling. For lightly fouled systems, a soak time of 1-2 hours is sufficient.

5. High-flow pumping. Recirculate the cleaning solution through the membranes at 15-20 litres per minute for 45 minutes. This high flow rate flushes out the foulants removed from the membrane surface by the cleaning. If the elements are heavily fouled, using a higher flow rate is possible up to the maximum pressure drop across the membrane permissible (check with membrane manufacturer's data sheets). With higher flow rates, excessive pressure drop may be a problem. The maximum recommended pressure drops for most common membranes are 100kPa per element or 340 kPa per multi-element housing, whichever value is more limiting.

6. Flush out. Clean RO permeate water is preferred for this stage. If clean RO permeate water is not available, pre-filtered raw water can be used for flushing out the cleaning solution unless there will be corrosion problems (e.g., stagnant seawater will corrode stainless steel piping). To prevent precipitation of any remaining contaminants, the minimum flush out temperature is 20°C. The system should be flushed for 1 hour.

7. Re-start the system. The RO elements and the system need to stabilize before taking any performance data. The stabilization or normalisation period will vary depending on the severity of the fouling. To regain optimum performance, it may take several cleaning and soak cycles. RO Membrane

Cleaning Procedures for inorganic material fouling

1. Prepare the cleaning solution as listed below

- * Preferred 2.0% (wt) Citric Acid PH 2, 45°C maximum
- * Alternate Muriatic Acid
- * Alternative 1.0% Na₂S₂O₄

NOTE!

- (wt) Denotes weight percent of active ingredient.
- Cleaning chemical symbols in order used: HCl is hydrochloric acid (Muriatic Acid).

2. Low-flow rate pumping. Pump mixed, preheated cleaning solution into the vessel at a low flow rate of 5-10 litres per minute at low pressure (<120kPa) to displace the process water. Use only

enough pressure to compensate for the pressure drop from feed to concentrate. The pressure should be low enough so that little to no permeate is produced. A low pressure minimizes re-deposition of dirt on the membrane. Dump the concentrate, as necessary, to prevent dilution of the cleaning solution.

3. Re-circulate. After the process water is displaced, cleaning solution will be present in the concentrate stream that can be recycled to the cleaning solution tank. Recycle the cleaning solution for 10 minutes or until there is no visible colour change. If at any time during the circulation process there is a change in pH or a colour change, dispose of the solution and prepare a new solution as described in step 2. A pH of 2 must be maintained for the cleaning to be effective.

4. Soak. Turn the pump off and allow the elements to soak. Soak the elements for 1-15 hours (soaking overnight will give best results). To maintain temperature during an extended soak period, use a slow recirculation rate (2-5 litres per minute). Soak time will vary depending on the severity of the scaling. For lightly scaled systems, a soak time of 1-2 hours is sufficient.

5. High-flow pumping. Feed the cleaning solution at 15-20 litres per minute for 45 minutes. The high flow rate flushes out the foulants removed from the membrane surface by the cleaning. If the elements are heavily fouled, using a higher flow rate is possible up to the maximum pressure drop across the membrane permissible (check with membrane manufacturer's data sheets). With higher flow rates, excessive pressure drop may be a problem. The maximum recommended pressure drops for most common membranes are 100kPa per element or 340 kPa per multi-element vessel, whichever value is more limiting.

6. Flush out. Clean RO permeate water is preferred for this stage. If clean RO permeate water is not available, pre-filtered raw water can be used for flushing out the cleaning solution unless there will be corrosion problems (e.g., stagnant seawater will corrode stainless steel piping). To prevent precipitation of any remaining contaminants, the minimum flush out temperature is 20°C. The system should be flushed for 1 hour

7. Re-start the system. The RO elements and the system need to stabilize before taking any performance data. The stabilization or normalisation period will vary depending on the severity of the fouling. To regain optimum performance, it may take several cleaning and soak cycles.

Additional Information

Never recirculate the cleaning solution for longer than 20 minutes. With longer recirculation, the carbonate scale can re-precipitate and end up back on the membrane surface, making it more difficult to clean. Carbonate scale reacts with HCl releasing carbon dioxide gas. Depending on the severity of the fouling, it may take repeated cleanings to remove all the scale. Cleaning severe scale may not be economical and element replacement may be the best choice.

NOTE! These recommendations are specific for the ROTEK membrane elements used in these reverse osmosis systems and may not be compatible with other brands of membrane elements. It is your responsibility to ensure the suitability of these recommendations and procedures if they are applied to membrane elements other than those which come with your system.

FAQ's

Do you need a tank?

No, you can directly use water as the KSRO system produces it, however, for immediacy you may wish to use a tank as this will increase your supply of instantly available water.

Does this system filter Fluoride, Lead, Pharmaceuticals, and Arsenic?

Yes, as well as Cyanide, Phosphate, Pesticides, Sodium, Cadmium, Sulfates, and many other contaminants up to certain levels. You may need other changes to media for high levels of these substances.

What PSI do I need? What is the operating pressure?

The minimum feed water PSI for the system is 20 and the maximum PSI is 60. If your PSI is too high you can purchase a Pressure Regulator to reduce your pressure to acceptable levels. Please get in touch with a qualified local representative or contact www.rotewater.com, who can give you more information based on your situation.

Does this unit soften water?

Your KSRO System will soften water. However, hard water does reduce the lifespan of your filters.

Can I install this system in the basement? If so, will it affect the efficiency of the RO System?

Yes, the KSRO System can be installed in a basement or other locations that are indoors with adequate water pressure, drainage, and power supply.

What is the discharge rate?

The typical discharge rate of KSRO is 0.35 gallons of wastewater for each gallon of pure water produced. Your water pressure, incoming water quality, and water temperature will affect your RO System discharge rate. **How often do I change Filters? Is there an indicator?**

The Sediment and Carbon Block Filters should be changed every 6 months. The RO Membrane and Post Activated Carbon Filter should be changed every one year at the same time as the second change of the 6 month filters. There is no direct indicator for filter changes. However, if you notice a drop in water quality before the 6 months or 1 year mark this may mean that due to your water quality your filter has degraded. If you reach 6 months or 1 year without noticing a change in taste you should still change your filter at this point as they are no longer viable.

Can I reuse discharge water?

Never consume discharge water. With proper installation, it is possible to utilize your discharge water. Please get in touch with a qualified local representative who can give you more information based on your situation.

What if I need to produce more water?

There are a lot of solutions to this problem, it's possible to upgrade your water system with some specialty equipment or we can help you with other solutions. Just contact us and we can help you find the solution that best fits your project.

Vacation Mode

When you plan to not use your KSRO System for 2 weeks to 1 month it should be Turned Off.

Turn Off System: Turn off the Power of KSRO.

Turn On System: Turn On the Power of KSRO.

For deactivation of 1 month or more:

1. Shut the incoming water supply and drain the entire system of water through your Pure Water Outflow.
2. Remove each filter and place vertically on a clean surface until dry.
3. Place each filter individually in a sealed air tight plastic wrap and place in the refrigerator for the duration (if filter is reusable and less than 3 months old).
4. You may leave the System and Filter Housings disassembled to ensure it stays dry to prevent bacteria growth.
5. You should wash the filter housings before replacing the filters, when you are ready to restart the system.

NOTE! Depending on your area's water you may not be able to reuse some or all of your filters. Please contact us if you need more information.

Year Limited Warranty



We Cover

This warranty covers any defects in the parts or manufacturing of your Rotek Water Reverse Osmosis Water Filtration System. We will give you new replacement parts in exchange for any defective parts.

What to Do

Please contact your qualified local representative who can give you information based on your situation. Be sure to have a copy of your purchase confirmation email or receipt. They will verify that the product and problem are under warranty and help you arrange to send your defective part back to Rotek Water with your receipt and contact information (name, address, phone number, and email address). They will help arrange to send the defective part, and the delivery of your replacement part, as well as guide you through the installation..

Time Covered

This warranty is effective for 1 full year from the date of the original purchase.

Not Covered

This warranty does not cover labor for removal or installation, accumulation of dirt or grime (you are responsible for your own cleaning), systems with the serial number removed or altered, damage from improper storage (high or low temperature, sun damage, etc), damage from a system not installed as instructions directed, anyone other than the original purchaser, damage from system abuse or unintended operation of the system, acts of God, improper water source, modification, negligence, use of the system beyond recommended specifications, Filters, RO Membrane, incidental damages from system failure, systems used with parts not provided by Rotek Water (including tanks, filters, faucets, pumps, diverter valves), or cosmetic damages..

Your State

Some states has further regulation on damages and warranty coverage. You may have other rights depending on your state.

Email us: sales@rotekwater.com

Operation Log

Operator							Start-up date
Site location							cleaning date
Model							Cleaning fluid Type 1
System Serial Number							Cleaning fluid Type 2
Observation	Range	Date	Date	Date	Date	Date	Date
operating hours							
Water inlet pressure (kPa) 140-650							
Membrane inlet pressure (kPa) 700-1400							
Pure water flow rate (lpm) 3-5lpm/Membrane							
Feed Water Conductivity or TDS							
Pure Water Conductivity or TDS							
Salt rejection rate (%) 95-98							
Dosing system							
Antiscalant Feed Settings							
acid feed setting							
flooded							
Last Influent Analysis Date							
Inlet water temperature							
Feed Water Conductivity or TDS							
Water hardness							