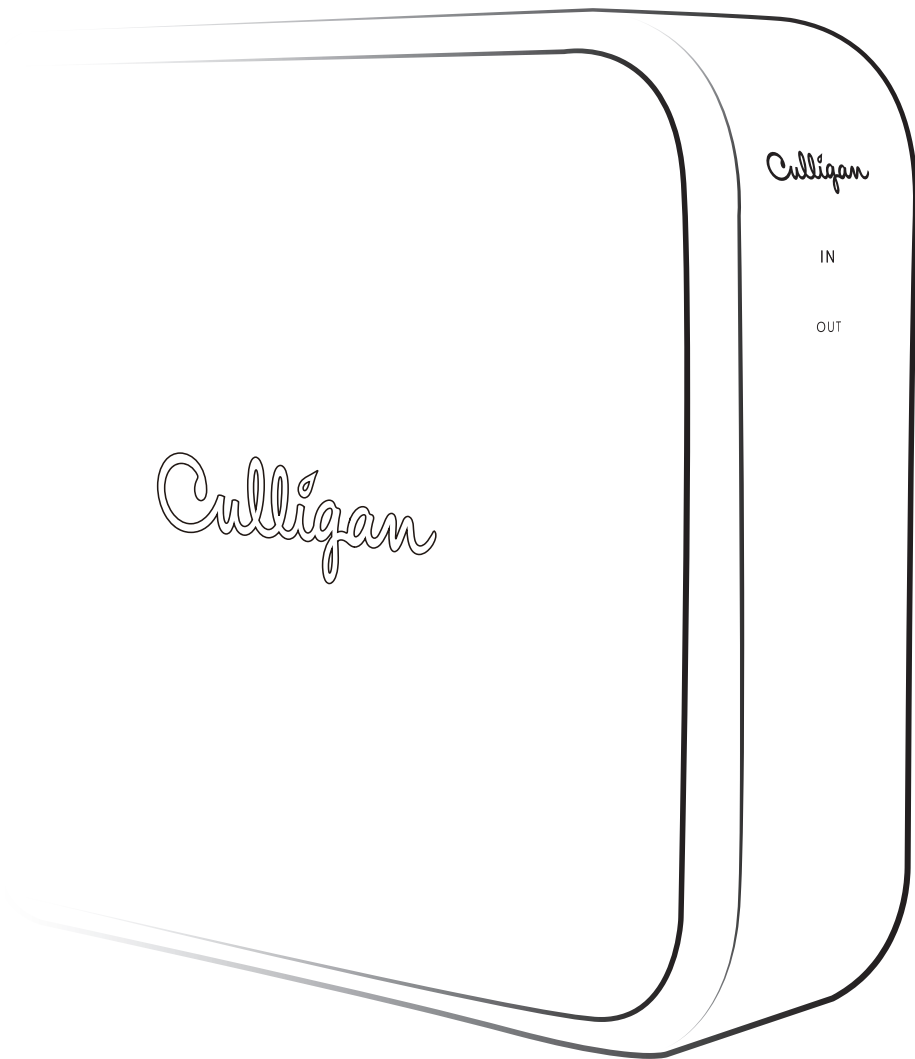


Culligan®

**Culligan®
Aquasential™
Tankless RO
Owners
Guide**





Attention Culligan Customer

The installation, service and maintenance of this equipment should be rendered by a qualified and trained service technician. Your local independently operated Culligan dealer employs trained service and maintenance personnel who are experienced in the installation, function and repair of Culligan equipment.

We encourage Culligan users to learn about Culligan products, but we believe that product knowledge is best obtained by consulting with your Culligan dealer. Untrained individuals who use this manual assume the risk of any resulting property damage or personal injury.



WARNING! Electrical shock hazard! Prior to servicing equipment, disconnect power supply to prevent electrical shock.

NOTE:

This system is not intended for use where water is microbiologically unsafe or with water of unknown quality.



WARNING! If incorrectly installed, operated or maintained, this product can cause severe injury. Those who install, operate, or maintain this product should be trained in its proper use, warned of its dangers, and should read the entire manual before attempting to install, operate, or maintain this product.



CAUTION! To reduce the risk of fire, use only No. 26 AWG or larger telecommunications line cord.



CAUTION! This product is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction.



CAUTION! Children should be instructed not to play with this appliance.



CAUTION! If the power cord from the transformer to the unit looks or becomes damaged, the cord and transformer should be replaced by a Culligan Service Agent or similarly qualified person in order to avoid a hazard.

Products manufactured and marketed by Culligan International Company (Culligan) and its affiliates are protected by patents issued or pending in the United States and other countries. Culligan reserves the right to change the specifications referred to in this literature at any time, without prior notice. Culligan and Aquasential™ are trademarks of Culligan International Company or its affiliates.

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About This Manual

This manual:

- Familiarizes the user with the equipment
- Explains the various types of filter media that may be used in the system
- Gives specifications and troubleshooting information

Read this Manual First

Before you operate the Culligan Aquasential™ Tankless RO, read this manual to become familiar with the device and its capabilities.

Installation or maintenance done on this system by an untrained service person can cause major damage to equipment or property damage. Not adhering to the recommended service/maintenance can cause damage to equipment or property damage.

Safe Practices

Throughout this manual there are paragraphs set off by special headings.

Notice (or Note) is used to emphasize installation, operation or maintenance information which is important, but does not present any hazard. For example,

NOTICE **The nipple must extend no more than 1 inch above the cover plate.**

Caution is used when failure to follow directions could result in damage to equipment or property.



CAUTION! **Disassembly while under water pressure can result in flooding.**

Warning is used to indicate a hazard which could cause injury or death if ignored.

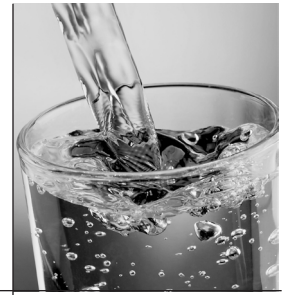
The CAUTION and WARNING paragraphs are not meant to cover all possible conditions and situations that may occur. Understand that common sense, caution, and careful attention are conditions which cannot be built into the equipment. These MUST be supplied by the personnel installing, operating, or maintaining the system.

Be sure to check and follow the applicable plumbing codes and ordinances when installing this equipment. Local codes may prohibit the discharge of sanitizing or descaling solutions to drain.

Use protective clothing and proper face or eye protection equipment when handling chemicals or tools.

NOTE: **The Culligan Aquasential™ Tankless RO is not intended for use with water that is microbiologically unsafe or of unknown quality without adequate disinfection either before or after the system.**

NOTE: **Check with your public works department for applicable local plumbing and sanitation codes. Follow local codes if they differ from the standards used in this manual. To ensure proper and efficient operation of the Culligan Aquasential™ Tankless RO to your full satisfaction, carefully follow the instructions in this manual.**



Welcome To Your New World of Better Living with Culligan Water.

Thank you for choosing a Culligan Aquasential™ Tankless Reverse Osmosis (RO) drinking water system. Your new system is designed to bring you years of deliciously crystal-clear Culligan water. The best part is it comes right from the tap. No more lugging around bottles or waiting for pitchers to slowly fill up. With your continuous supply of great tasting water, not only can you get your 8 glasses a day but you can easily use it for cooking, coffee, juice, baby formula, ice cubes, anything you use water with.

The important thing to remember is to change out your filters on a regular basis. The quality of your water is only as good as the quality of your filters. The CF and CB filters are designed to last for 4,755 gallons (roughly 12 months). RO membranes will last longer if used with pre-filtration. Filter cartridge life indicators are located on both the system faucet and main unit so that you will be alerted to change your filters and membrane at the proper intervals.

Purpose of Each Level of Filtration

Pre-filtration for this system is used to reduce large substances from the water before they reach the reverse osmosis membrane. The use of our CF pre-filtration cartridge helps extend the membrane's life. The CF filter combines both a sediment and bad taste and odor reduction filter in one. Sediment is defined as sand, dirt, silt, fine sand and or coarse sand that can be found in many water supplies. Carbon is used to reduce chlorine taste and odor. Most people often describe this taste as being slightly chemical or they equate their drinking water to that of the local pool. Municipalities use chlorine to disinfect the water on the way to your home. This is a necessary step in order to deliver safe water to your home, but depending on the level of chlorine, by the time it reaches your home the taste of your water may be unpalatable.

The Aquasential™ Tankless RO system utilizes a high capacity reverse osmosis membrane, which uses a tightly woven membrane that acts as a barrier to substances. Water is pushed up against this membrane at pressure. Depending on the weave of the membrane only a certain percentage of substances can pass through. This system's high capacity membrane can reduce up to 95% of substances.

The Aquasential™ Tankless RO has been tested and certified by WQA against NSF/ANSI 372, CSA B483.1 and NSF/NSF 58 for the reduction of TDS as verified and substantiated by test data.

For installations in Massachusetts, the Massachusetts Plumbing Code 248 CMR shall be adhered to. Consult your licensed plumber for installation of this system. This system and its installation must comply with state and local regulations. The use of saddle valves is not permitted.

Congratulations on selecting one of Culligan's Aquasential™ Tankless ROs. With Culligan's many years of knowledge and experience in water treatment, you can be confident that the model you selected has been designed and engineered to provide years of service with a minimum of care and attention.



Thank You



Specifications

Filter Performance

Filter Cartridge	Capacity
CF composite filter cartridge	1 year or 4,755 gallons
RO reverse osmosis filter cartridge	600 gpd
CB carbon block filter cartridge	1 year or 4,755 gallons

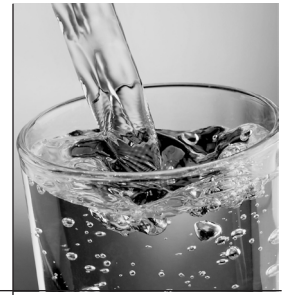
Product Specifications

Tankless RO	
Length x Width x Height	18.7 in x 5.7 in x 17.2 in
Power Specifications	Input: 120 VAC / Output: 24 VDC
Inlet Water Pressure	15 - 120 psi
Inlet Water Temperature	41° - 100° F
Outlet Flow Rate*	0.42 gpm
Rated Daily Production Rate	757.2 gpd
Culligan Part Number	01037562
Recovery Rating	69.6%

*Depending on local water quality and use environment, the actual filtered water flow rate and total filtered water volume will vary.

Recovery rating means the percentage of the influent water to the membrane portion of the system that is available to the user as RO treated water when the system is operated without a storage tank or when the storage tank is bypassed. The system's recovery rating has been verified with test data.

Daily production rate: 757.2 gpd.



Introduction

This owner's guide provides visual assembly reference only. Since specialized skills are required in the assembly of the drinking water system, we recommend that you contact your local independently operated Culligan dealer to complete this installation.

Factors Which Affect Performance

Performance of the reverse osmosis membrane is affected by several factors which must be considered when judging the condition of the system. The main factors which affect system performance are pressure, temperature, total dissolved solids level, recovery and pH.

Pressure

Water pressure affects both the quantity and quality of the water produced by the RO membrane. Be careful not to exceed 120 psi, the maximum operating pressure of the system.

Total Dissolved Solids

The minimum driving force which is necessary to stop or reverse the natural osmosis process is termed osmotic pressure. As the total dissolved solids level of the feed water increases, the amount of osmotic pressure increases and acts as back pressure against the reverse osmosis process. Osmotic pressure becomes significant at TDS levels above 500 mg/L (ppm).

Hardness

Hardness is the most common membrane foulant. If ignored, this relatively harmless component of feed water will plug a membrane over time. Use of a softener will reduce the fouling effect on a membrane. One way to detect too much hardness in the feed water is the weight of a membrane installed for a period of time. A fouled membrane (dried) will weigh significantly more than a new membrane. The increase in weight is a result of precipitated hardness inside the membrane.

Iron

Iron is another common membrane foulant. There are a variety of types of iron, some of which cannot be removed by an iron filter. Clear water iron can be removed more effectively by a softener. Particulate iron can be removed more effectively by a 1 micron filter. Organic-bound iron can be removed only by activated carbon or macro-porous anion resin. If there is enough iron to exceed the EPA secondary drinking water standard and softening the water is not an option and the iron is soluble, then an iron filter is appropriate. If none of these are an option then regular replacement of membranes will have to be accepted.

Product Water Recovery

Product water recovery plays an important role in determining membrane and system performance. Recovery refers to the amount of water produced in relation to the amount of water sent to drain. The standard calculation is:

$$\% \text{ Recovery} = \frac{\text{Product Water}}{\text{Product Water} + \text{Waste Water}} \times 100$$



Lights and Indicators

Front Cover Indicator

Inlet water quality indicator

Filtered water quality indicator

Value display zone

Malfunction indicator

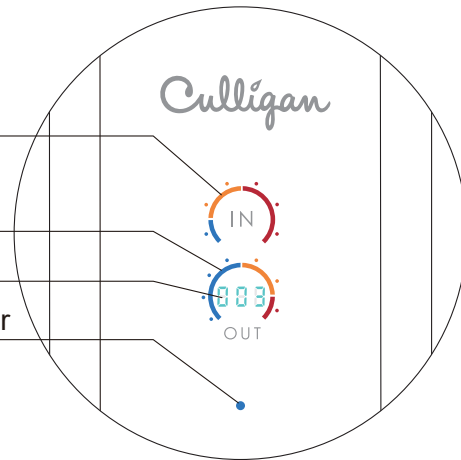


Figure 1. Front Cover Indicator Lights

Table 1. Color Descriptions

The inlet water quality indicators and corresponding filtered water quality points displays the quality of the water by the color of the lights on the front cover.

Color	Water Quality
Blue	Excellent
Orange	Normal
Red	Poor

Table 2. Digital display area description.

003	Real-time TDS monitoring of filtered product water
808	Device malfunction codes. For details, refer to “Things to Check Before You Call for Service” .
888	The device is in Flush mode

Table 3. Malfunction indicator description.

Indicator Status	Meaning
Solid Blue	Normal Operation
Blinking Blue	Insufficient Water
Solid Orange	Frequent start and stop protection
Blinking Orange	Continuous work timeout protection
Blinking Red	Water leak



Faucet Indicator

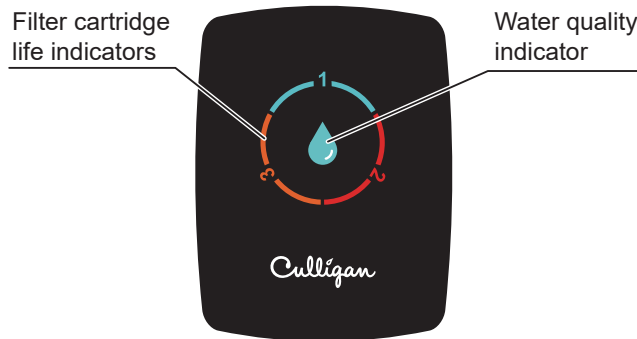






Figure 2. Filtered Water Indicator

Water Quality Indicator

The water drop-shaped water quality indicator shows the TDS value of the filtered water. The color of the indicator depends on the TDS value sent from the device.

Table 4. Faucet Indicator




Indicator Status	Water Quality
	Excellent
	Normal
	Poor
Blinking 	Device malfunction indication

Filter Cartridge Life Indicator

The filter cartridge's circular indicator on the faucet displays the filter cartridge life status designated by the color displayed. Each color corresponds to the residual life of each filter cartridge.



- 1 CF composite filter cartridge
- 2 RO reverse osmosis filter cartridge
- 3 CB carbon block filter cartridge

-  Blue—The filter cartridge life is normal
-  Orange—The filter cartridge life is going to expire
-  Red—The filter cartridge life has expired

Flush Indication

- Flush for the first time or when replacing RO membrane filter cartridges: The water quality indicator is lit red for the first 5 minutes, and then blinks the color corresponding to the measured water quality data.
- Flush when replacing filter cartridges CF and CB: The water quality indicator blinks the color corresponding to the measured water quality data. (It blinks 5 minutes for CF composite filter cartridges, or 15 minutes for CB carbon block filter cartridges).



Completed Installation

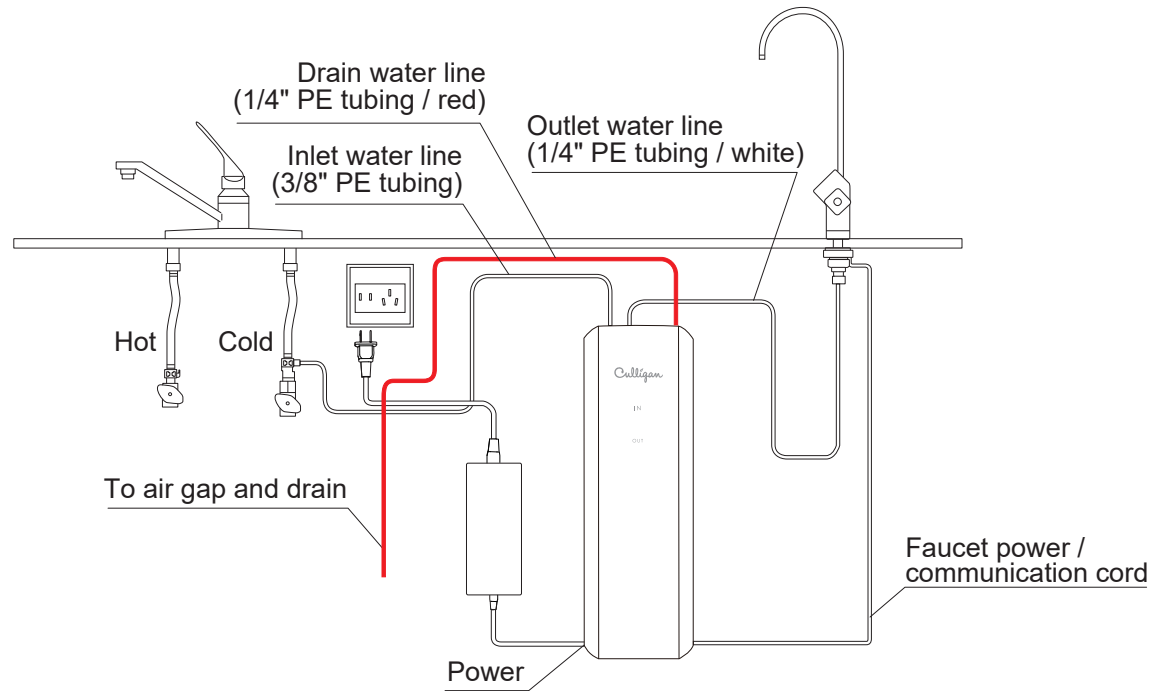
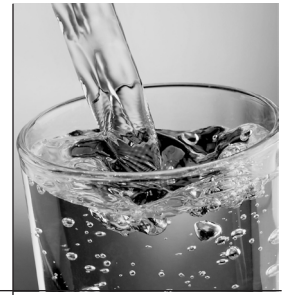


Figure 3. Complete Installation



Things to Check Before You Call for Service

How to Maintain Your System

To keep your Aquasential™ Tankless RO system operating properly, it is necessary to change the filters and sanitize the system periodically. Typically, this should be done on an annual basis. Service frequency may vary depending on local water conditions. High sediment, chlorine, turbidity, or hardness levels may require more frequent service. Use the following as a guide:

As Needed	
Clean the faucet with a soft cloth, avoid abrasive cleaners	
Annually	
Replace Composite Filter (CF)	Check TDS Reduction Performance
Replace Carbon Block Filter (CB)	Check Flow Rates (including air gap)
Check RO Membrane	Check Drain tubing for back-up

It is recommended to have your local Culligan dealer perform the sanitization process. Your local Culligan man has been specifically trained to test the water quality and efficiency of the system in order to determine when the RO membrane should be replaced and ensure the system is working properly.

Contact your local Culligan dealer for replacement cartridges and maintenance.

Troubleshooting and Handling

Malfunction	Troubleshooting	Handling
Water leak	The PE tubing is broken or not inserted in place, or the cuts are not regular and smooth	Pull out the PE tubing from the leaking connection point and check whether or not the cuts are regular and smooth.
The control panel shows nothing	Power is not connected	Check whether or not the socket is energized. Insert the plug into the socket.
	The power adapter is damaged	Contact your service provider to replace the power adapter.
	The front cover is not installed in place	Re-install the front cover.
The water purifier automatically shuts down	Booster pump work timeout	Refer to the malfunction description.
	The booster pump starts and stops frequently	Refer to the malfunction description.
	No inlet water enters the product	Open the feed water valve. Check whether or not the utility water supply is normal.
	The unit's leak detector has detected leaking water	Clean up the water in the position where the main unit is placed. If the alarm continues, please contact the service provider for checkup and repair.

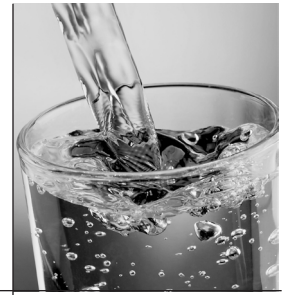


Malfunction	Troubleshooting	Handling
The booster pump runs loudly	Inlet water pressure is low	Check whether or not the water pressure meets the requirements for the operating pressure of the product.
	The product is performing flush (power-up for the first time, long run, filter cartridge replacement)	The running sound will return to normal when the flush is finished.
Less water runs from the faucet	The filtered water flow is slow when the faucet is initially is turned on, and then returns to normal.	When the water is dispensed for long intervals, it is normal that the water flow is slow the next time that water is dispensed from the faucet.
	The faucet maintains a low water flow	Please contact the service provider to check whether or not the filter cartridge needs to be replaced. Check distance to faucet and tubing diameter. There may be excessive vertical height difference between system and outlet. Check whether or not the water pressure meets the requirements for the operating pressure of the product.
High TDS coming from faucet	Inlet water pressure is low.	Check whether or not the water pressure meets the requirements for the operating pressure of the product.
	Feed TDS is higher than 1000ppm	Please contact the service provider to check if RO membrane is performing properly..

Malfunctions and Descriptions

In the event of a malfunction, the following indications will be shown on the front cover.

	Malfunction Type	Malfunction codes	Indicator	Buzzer Status	Recovery Method
1	Prompt of insufficient water	E01	Blinking blue	Beeps 3 times	The inlet water pressure returns to normal and the prompt of insufficient water is automatically cleared. The product resumes working normally.
2	Water leak protection	E02	Blinking red	Beeps constantly	The water leak is eliminated and the product automatically returns to the normal state.
3	Booster pump work timeout protection	E03	Blinking orange	Beeps for 3 minutes	The product needs to be powered up again before returning to the normal state.
4	Protection of frequent starts and stops of the booster pump	E04	Solid orange	Beeps 5 times	The product needs to be powered up again before returning to the normal state.
5	Low temperature protection	E05	Solid red	Beeps constantly	The product needs to be powered up again before returning to the normal state.



Performance Data Sheet

Culligan knows the more informed you are about your water treatment systems, the more confident you will be about its performance. It's because of this and more than seventy years of commitment to customer satisfaction that Culligan is providing this Performance Data Sheet to its customers.

NOTICE Read this Performance Data Sheet and compare the capabilities of this unit with your actual water treatment needs. It is recommended that before purchasing a water treatment unit, you have your water supply tested to determine your actual water treatment needs.

Manufacturer: Culligan International Company
 9399 W. Higgins Rd., Suite 1100, Rosemont, IL 60018 USA
 (847) 430-2800
www.culligan.com

Product: Culligan Aquasential™ Tankless RO

These systems must be installed according to local plumbing codes on the cold water line.

This system requires regular replacement of all filters to maintain proper operation. Depending on usage and influent water quality, the carbon filters should be changed at least annually and the reverse osmosis membrane should be replaced every 3-5 years. Varying chlorine, sediment, or TDS levels may affect replacement frequency.

Product Specifications:

Daily Production Rate:	757.2 gpd	Recovery Rating ¹ :	69.6%
Operating Temp. Range:	40-100°F (5-38°C)	Electrical Requirements:	120VAC, 50/60 Hz, 1 Amp
Working Press. Range:	15-120 psi (1-11 kg/cm ²)		

Testing Conditions:

Temperature:	77 ± 2°F (25°C)	pH:	7.5 ± 0.5
Pressure:	50 psi (345 kg/cm)	Turbidity:	<1 NTU

Substance Reduction:

This system has been tested and certified by the Water Quality Association according to NSF/ANSI 58 and CSA B483.1 for the reduction of the substances listed below. The concentration of the indicated substances in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified by NSF/ANSI 58 and CSA B483.1.

While testing was performed under standard laboratory conditions, actual performance may vary.

Substance Concentration	Influent Challenge Water Concentration (mg/L)	Max. Permissible Water Concentration (mg/L):	Average Percent Reduction
Total Dissolved Solids	750 ± 40	187	95.8

The Aquasential™ Tankless RO has been tested and certified by WQA against NSF/ANSI 372, CSA B483.1 and NSF/ANSI 58 for the reduction of TDS as verified and substantiated by test data.



C US

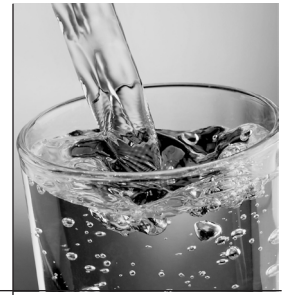


CAUTION! Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. Systems certified for cyst reduction may be used on disinfected water that may contain filterable cysts.

¹Recovery rating means the percentage of the influent water to the membrane portion of the system that is available to the user as reverse osmosis treated water when the system is operated without a storage tank or when the storage tank is bypassed. This system has been tested and shown to operate at its calculated recovery rating under standard laboratory conditions.

This reverse osmosis system contains a replaceable component critical to the efficiency of the system. Replacement of the reverse osmosis component should be with one of identical specifications, as defined by the manufacturer, to assure the same efficiency and contaminant reduction performance.

Refer to your Installation and Operating Instructions and written limited Warranties for more specific product information. To avoid contamination from improper handling and installation, your system should only be installed and serviced by your Culligan dealer. Performance will vary based on local water conditions. The substances reduced by these systems are not necessarily in your water.



Culligan Limited Warranty

Culligan Aquasential™ Tankless RO Reverse Osmosis Systems

You have just purchased one of the finest reverse osmosis water conditioning units made. As an expression of our confidence in Culligan International Company products, your reverse osmosis water conditioning unit is warranted to the original end-user, when installed in accordance with Culligan specifications, against defects in material and workmanship from the date of original installation, as follows:

For a period of ONE YEAR*	The entire reverse osmosis water conditioning unit
For a period of TWO YEARS	System faucet
For a period of FIVE YEARS	Internal plastic components including system manifold and fittings

*The CF and CB filters are only warranted until the end of their useful life which is 4,755 gallons or one year. Once the filters have been used for 4,755 gallons, they are no longer covered under the one year system warranty.

The product label contains the product's serial number. Please do not tear or damage this label, otherwise the product warranty may be affected.

If a part described above is found defective within the specified period, you should notify your independently operated Culligan dealer and arrange a time during normal business hours for the dealer to inspect the water conditioner on your premises. Any part found defective within the terms of this warranty will be repaired or replaced by the dealer. You pay only freight from our factory and local dealer charges.

We are not responsible for damage caused by accident, fire, flood, freezing, Act of God, misuse, misapplication, neglect, oxidizing agents (such as chlorine, ozone, chloramines and other related components), alteration, installation or operation contrary to our written instructions, or by the use of accessories or components which do not meet Culligan specifications, is not covered by this warranty. Refer to the specifications section in the Installation and Operating manual for application parameters.

Our product performance specifications are furnished with each water conditioning unit. TO THE EXTENT PERMITTED BY LAW, CULLIGAN DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE; TO THE EXTENT REQUIRED BY LAW, ANY SUCH IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE PERIOD SPECIFIED ABOVE FOR THE ENTIRE CONDITIONER. As a manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing a water conditioner. The quality of water supplies may vary seasonally or over a period of time, and your water usage rate may vary as well. Water characteristics can also differ considerably if your water conditioner is moved to a new location. For these reasons, we assume no liability for the determination of the proper equipment necessary to meet your requirements, and we do not authorize others to assume such obligations for us. Further, we assume no liability and extend no warranties, express or implied, for the use of this product with a non-potable water source. OUR OBLIGATIONS UNDER THIS WARRANTY ARE LIMITED TO THE REPAIR OR REPLACEMENT OF THE FAILED PARTS OF THE WATER CONDITIONER, AND WE ASSUME NO LIABILITY WHATSOEVER FOR DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, GENERAL, OR OTHER DAMAGES.

The product and major parts are not covered by this warranty under any of the following circumstances: aging, bumping, scratching, etc. of the product during normal maintenance and use, the warranty period has expired, proof of purchase in the form of customer receipt or invoice cannot be found, any damage caused by installation or disassembly of the product by a non-authorized professional, the consumer has made a warranty claim but no quality problems can be found after testing by Culligan personnel.

Some states do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Similarly, some states do not allow the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Consult your telephone directory for your local independently operated Culligan dealer, or write Culligan International Company for warranty and service information.

Culligan International Company

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Notes