Culligan®

OWNERS GUIDE

Aquasential® RO and Smart RO Advanced Drinking Water Systems

Models from 2021



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About This Manual

This manual:

- Familiarizes the operator with the equipment
- Provides basic programming information
- Explains the various modes of operation
- Provides product specifications

Read this Manual First

Before you operate the Culligan® unit, 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.

Safety Instructions and Safety Definitions

Note

NOTE! **"Note!" is used to emphasize installation, operation or maintenance information which is important, but does not present any hazard.**

Caution



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

Warning



WARNING!
"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. It must be understood 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.

NOTE! **Be sure to check and follow the applicable plumbing codes and ordinances when installing this equipment.**

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

NOTE! **This system is not intended for use with water that is microbiologically unsafe or of unknown quality without adequate disinfection either before or after the system. Systems certified for cyst reductions may be used on disinfected water that may contain filterable cysts.**

The system and installation must comply with state and local laws and regulations.

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 this Culligan product to your full satisfaction, carefully follow the instructions in this manual.

Attention Culligan Customer:

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.

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. Failure to comply with any warning or caution that results in any damage will void the warranty.

WARNING!
This device complies with Part 15 of the FCC rules subject to the two following conditions: 1) This device may not cause harmful interference, and 2) This device must accept all interference received, including interference that may cause undesired operation.

WARNING!
This equipment complies with Part 15 of the FCC rules. Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

WARNING!
Connect only to a circuit that is protected by a ground-fault circuit interrupter (GFCI).
GROUNDING INSTRUCTIONS – This appliance must be grounded. In the event of a malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current. This appliance is equipped with a cord having an appliance-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is installed and grounded in accordance with all local codes and ordinances.

WARNING!
Improper connection of the appliance-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service representative if you are in doubt whether the appliance is properly grounded. Do not modify the plug provided with the appliance; if it will not fit theoutlet, have a proper outlet installed by a qualified technician.

WARNING!
For Indoor Use Only. System is to use a Culligan P/N 01038111 (North America) or P/N 01040549 (EU) UL listed Class 2 direct 12 VDC plug-in power unit only.

WARNING!
If connection is made to a potable water system, the system shall be protected against backflow.

WARNING!
This system is to be supplied with cold water only.



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

CAUTION!
If the power cord from the power supply to the unit looks or becomes damaged, the cord and power supply should be replaced in order to avoid a hazard.

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Thank You!

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

Congratulations on selecting the Aquasential® RO and Smart RO Advanced Drinking Water Systems. 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.

If this is your first experience having filtered, conditioned water in your home, you'll love the amazing difference it makes. We promise that you'll never want to be without it again.

The Culligan® Aquasential® RO and Smart RO Advanced Drinking Water Systems are designed to meet the needs of applications for high quality water. This manual contains important information about the units, including information needed for operating and maintenance procedures.

This manual is based on information available at the time it was finalized, approved, and published. Continuing design refinement could cause changes that may not be included in this publication.

Your local independently operated Culligan dealer employs trained service and maintenance personnel who are experienced in the installation, function and repair of Culligan equipment. This publication is written specifically for these individuals and is intended for their use.

The Aquasential® RO and Smart RO Advanced Drinking Water Systems utilize 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. These systems' high capacity membrane can reduce up to 95% of substances.

The Aquasential® RO and Smart RO Advanced Drinking Water Systems are tested and certified by WQA to NSF/ANSI 58, NSF/ANSI 42, NSF/ANSI 53, NSF/ANSI 401, NSF/ANSI 372, CSA B483.1 and NSF Protocol P231 and conform to these standards for specific performance claims as verified and substantiated by test data. See performance data sheet included in this manual for specific claims.



Model: ESP32-WROOM-32D used in Aquasential Smart RO.
Contains FCC ID: 2AC7Z-ESPWROOM32D and IC: 21098-ESPWROOM32D.

This device complies with part 15 of the FCC Rules subject to the following two conditions: (1) This device may not cause harmful interference (2) This device must accept all interference received including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil nedoit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This device complies with Health Canada's Safety Code. The installer of this device should ensure that RF radiation is not emitted in excess of the Health Canada's requirement.

Cet appareil est conforme avec Santé Canada Code de sécurité 6. Le programme d'installation de cet appareil doit s'assurer que les rayonnements RF n'est pas émis au-delà de l'exigence de Santé Canada.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Les changements ou modifications non expressément approuvés par la partie responsable de la conformité pourraient annuler l'autorité de l'utilisateur à utiliser cet équipement.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not

occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

This device complies with Innovation, Science and Economic Development Canada's licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class B digital apparatus complies with Innovation, Science and Economic Development Canada ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Innovation, Sciences et Développement économique Canada.

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Not adhering to the recommended service/maintenance can cause damage to equipment or property damage.

Specifications

Culligan® Aquasential® RO and Smart RO Advanced Drinking Water Systems

Reverse Osmosis systems' performance are influenced by feed water conditions such as pressure, temperature, TDS levels, and hardness. The better these incoming conditions, the better the systems will perform at their rated specifications.

Influent Water Characteristics

Pressure	40-120 psi
Temperature	33° - 100° F
Total Dissolved Solids (TDS)[1]	0-2500 ppm (0-2500 mg/L)
pH	5 - 10
Chlorine	0-3 ppm (0-3 mg/L)
Chloramine	0-3 ppm (0-3 mg/L)
Turbidity	0-10 NTU
Hardness[3]	0-10 gpg
Iron	0-1 ppm (0-1 mg/L)
Bacterial Quality	Potable

[1] Rating at 50 psi, 77oF, 500 mg/L TDS influent, without storage tank.

[3] A softener is strongly recommended for water over 10 gpg hard. Installing a system without a softener on water with hardness higher than 10 gpg will reduce the life of the membrane. The Arsenic cartridge must be installed after the RO membrane. All specialty cartridges must have a Performance Indicator Device (PID) installed to track gallon usage.

Product Specifications

	Aquasential® RO	Aquasential® Smart RO
Length x Width x Height	19.0 in x 5.7 in x 17.8 in	
Power Specifications	N/A	12 VDC, 20W
Rated System Operating Pressure	40 - 120 psi (276 - 827 kPa)	
Inlet Water Temperature	33° - 100° F	
Daily Production Rate*	50 gpd*	75 gpd*
Recovery Rating	39.2%	52.8%
Storage Tank Capacity	3 Gallons	

* 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 systems that are available to the user as RO treated water when the systems are operated without a storage tank or when the storage tank is bypassed. The systems' recovery rating has been verified with test data.

* Membrane element specification. System daily production rated to pressurized storage tank 27.8 gpd (Aquasential RO) and 34.1 gpd (Aquasential Smart RO).

Filter Performance

These reverse osmosis systems contain replaceable components critical to the efficiency and performance of the systems. Regular replacement and maintenance of the systems should be scheduled to achieve the highest quality at the longest duration.

Stage	Filter Cartridge	Model	Capacity
1	Sediment / Carbon Combination Prefilter	Pre 1	1 year
		Pre 2	2 year
2	RO Membrane	RO 50	50 gpd* (Aquasential® RO)
		RO 75	75 gpd* (Aquasential® Smart RO)
3	Specialty Total Defense[1]	TD 1	1 year or 1,000 gallons
		TD 2	2 year or 2,000 gallons
	Specialty Total Defense with Mineral[1]	TD/Min 1	1 year or 1,000 gallons
		TD/Min 2	2 year or 2,000 gallons
	Specialty Remineralization	Min 1[3]	1 year or 1,000 gallons
		Min 2[3]	2 year or 2,000 gallons
4	Postfilter, 1 year	Post 1	1 year or 1,000 gallons
		Post 2	2 year or 2,000 gallons
	Advanced Postfilter (P231)[1]	Post Adv 1	1 year or 1,000 gallons
		Post Adv 2	2 year or 2,000 gallons

[1] All specialty cartridges must have a Performance Indicator Device (PID) installed to track gallon usage.

[3] Cartridges not evaluated by WQA for performance reduction.

* Membrane element specification. System daily production rated to pressurized storage tank 27.8 gpd (Aquasential RO) and 34.1 gpd (Aquasential Smart RO).

Application & Operation

The performance of the Aquasential® RO and Smart RO Advanced Drinking Water Systems can be characterized and judged by the quality and quantity of the water produced by the systems. By measuring the contaminant removal performance and flow rates of the system, its operating status can be easily evaluated.

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 systems. 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. Generally, the more water pressure, the better the performance of the systems. Be careful not to go below 40 psi or exceed 120 psi, the minimum and maximum operating pressure of the Aquasential® RO and Smart RO Advanced Drinking Water Systems.

Temperature

The reverse osmosis process slows with decreasing temperature. To compensate, a temperature correction factor is used to adjust the actual performance of the RO membrane filter to the standard temperature of 77°F (25°C). This allows the performance of the unit to be accurately gauged against Culligan's published standards. Temperature does not affect the concentrate flow rate.

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 scale 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 macroporous 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.

Purpose of each level of filtration

Pre-Filtration

Pre-filtration for this system is used to reduce large contaminants from the water before they reach the reverse osmosis membrane. The use of pre-filtration helps extent the membrane's life. There are two types of filtration that come in your 2-in-1 pre-filter: sediment filtration and carbon filtration.

Sediment Filtration: Sediment is defined as sand, dirt, silt, fine sand and or coarse sand that can be found in many water supplies.

Carbon Filtration: 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 to delivering 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.

Membrane Technologies

The Aquasential® RO and Smart RO Advanced Drinking Water System reverse osmosis membranes utilize a tightly woven membrane that acts as a barrier to contaminants. Water is pushed up against this membrane at pressure. Depending on the weave of the membrane only a certain percentage of contaminants can pass through. Reverse Osmosis can reduce up to 99% of contaminants.

Advanced Filtration

The advanced filtration cartridges are specifically designed to reduce contaminants that reverse osmosis membranes are not efficient in removing.

Total Defense

The Total Defense cartridge should be added to your system to deal with lead, mercury, aesthetic chloramines*, aesthetic chlorine taste and odor, cysts, Volatile Organic Compounds (VOC) and MTBE.

- Chloramines* have a stronger taste and are more difficult to remove than chlorine.
- Mercury is a toxin that can cause kidney damage.
- Lead is a toxin that can cause kidney problems or high blood pressure in adults and developmental problems in children.
- Cysts are a common cause of health issues. They can be found in some municipal water sources but more often found in wells under the influence of surface water.
- VOC is a name given to a wide range of organic contaminants, some are known to be carcinogenic.
- MTBE was used in gasoline to reduce emissions and is considered harmful.

* Total Defense TD 1 WQA certified for chloramines only

Mineral Boost

The Mineral Boost cartridge adds healthy amounts of natural calcium minerals back into reverse osmosis water to create amazing tasting, optimally alkaline, pH balanced water. Benefits include:

- Raises RO water TDS by 20 ppm to 30 ppm
- Raises RO water pH by 1 to 2 pH

Arsenic

Arsenic (As) is found naturally in some well water. Arsenic in water has no color, taste or odor. It must be measured by a lab test. Public water utilities must have their water tested for arsenic. You can get the result from your water utility. If you have your own well, you can have the water tested by an accredited lab. The local health department or the state environmental health agency can provide a list of certified labs. Culligan International is one such lab. For more information please contact your local Culligan dealer. Additional information about the arsenic in water can be found through the EPA's website at www.epa.gov.

There are two forms of arsenic: pentavalent arsenic (As (V)) and trivalent arsenic (As (III)). Special sampling procedures are needed for a lab to determine what type and how much of each type of arsenic is in the water. In well water, arsenic may be pentavalent, trivalent, or a combination of both. Reverse osmosis membranes are effective at reducing pentavalent arsenic but not trivalent arsenic. The Arsenic specific cartridge was specifically designed to reduce trivalent arsenic.

Lights and Indicators on the Front Panel Display (Smart RO only)

Figure 1. Smart RO unit LED indicators



LED Indicators (X = ON)	Filter	Membrane	Wi-Fi	Power	Error
Filter 11% - 100%	Blue				
Filter <= 10%	Yellow				
Filter 0%	Red				
TDS Rejection 75%+		Green			
TDS Rejection <75%		Red			
Power / Battery Good				Green	
Battery Needs Charging				Yellow	
Battery Critical (charge immediately)				Red	
System Error					Red
Wi-Fi Data Upload Failure			Red		
Wi-Fi blinks during Bluetooth pairing			Blue blink		
Wi-Fi blinks during Wi-Fi pairing			Green blink		
Wi-Fi when Wi-Fi connection lost			Red blink		

LED Indicators on the RO unit:

1 Year Filter / 2 Year Filter – Indicates filter life based on flow / time since reset (Blue / Yellow / Red)

Wi-Fi – Refer to the Culligan Connect app for Wi-Fi pairing instructions

Membrane – Based on current TDS rejection of system (Green / Red)

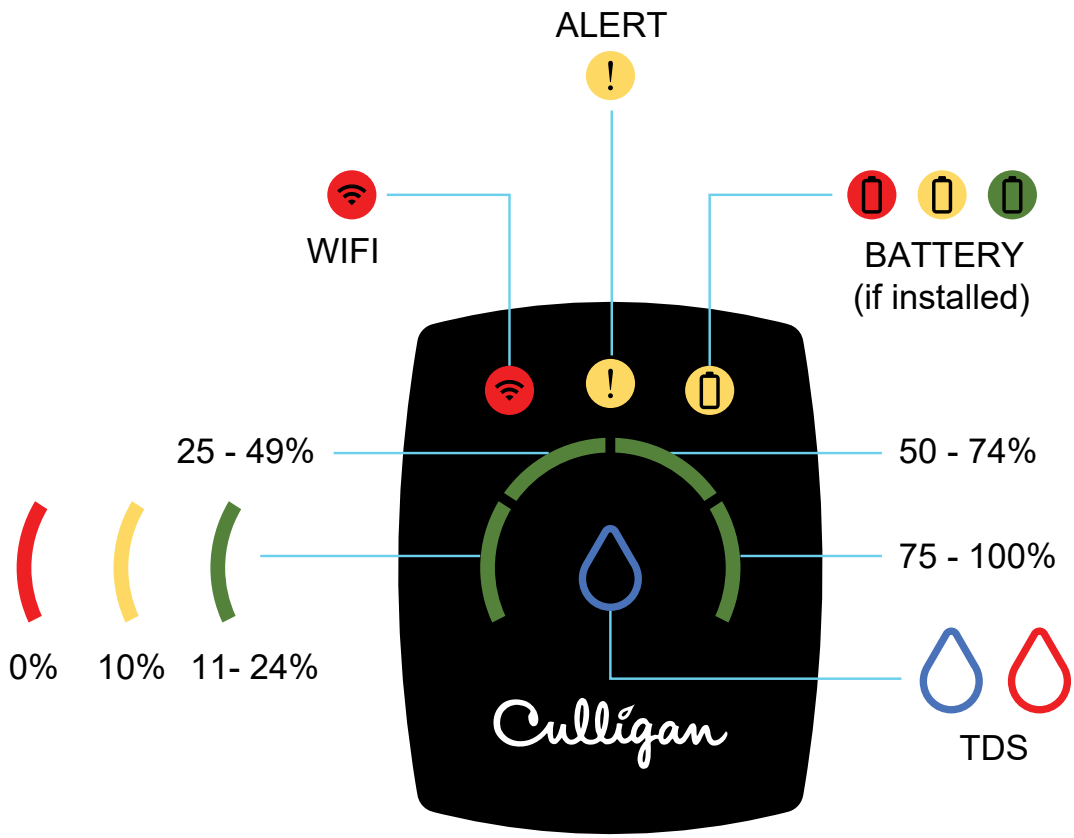
Power – Indicates power to the system as well as battery life indicator based on current charge (Green / Yellow / Red)

Error – Illuminates if an error is detected (Red)

Faucet Display (Smart RO Only)

Indicators on the Smart RO faucet are lit only when the faucet is in use.

Figure 2. Faucet LED indicators



NOTE! **Wi-Fi icon will only illuminate red if the device was previously connected, but now can no longer connect (router unplugged, changed Wi-Fi password, router has been moved too far to reach the device, etc.)**

Things to Check Before You Call

- Refer to the Culligan Connect app for diagnosis
- If using the wall power supply, confirm the correct power supply is being used.
- Check all extension cable connections if applicable.
- Check connection at the back of the system.
- If you are using battery power, make sure your battery is charged.
- Make sure you have cold water going to the unit

No Product Water

Check the water supply to the RO to make sure that it is turned on. If you have a Smart RO, it requires power, so make sure the AC adapter is plugged in or the optional battery is charged.

Not Making Enough Water

The feed water pressure may be low. The system requires a minimum of 40 psi of water pressure to make enough product water. If the pressure seem low, there won't be very much water in the storage tank. Check the shut off valve on the storage tank to be sure it is open.

Constant Running to Drain

The system should run a small amount of water to the drain while making and storing water in the storage tank. It the tank is heavy, it is likely full and the water to the drain should stop. Your Culligan dealer can check the system to correct the continual running.

Water Leak

Any time you find water around the unit or hear the leak alarm from a Smart RO, immediately shut-off the water supply and contact your local dealer.

Water Doesn't Taste Good

If the taste of the water has changed, turn on the faucet and let it run until you completely drain the storage tank. Allow a few hours for the storage tank to refill, then taste the water again. If the taste continues, call your local dealer.

Care & Cleaning

To keep your Aquasential® RO and Smart RO Advanced Drinking Water Systems operating properly, it is necessary to change the filters and sanitize the systems 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 stage 1 filter (Unless 2yr filter installed)	Check RO tank pre-charge pressure
Replace stage 3 specialty filter (Unless 2yr filter installed)	Check TDS reduction performance
Replace stage 4 filter (Unless 2yr filter installed)	Check flow rates (including air gap)
Check stage 2 RO Membrane	Check drain tubing for back-up

It is recommended to have your local Culligan dealer perform the sanitization process. Your local Culligan dealer 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.



Any time the water is going to be turned off to the unit, the power should also be turned off.

Contact your local Culligan dealer for replacement cartridges and maintenance.

Stage	Filter Cartridge	Capacity
1	Sediment / Carbon Combination Prefilter	1 year
		2 year
2	RO Membrane	50 gpd* (Aquasential® RO)
		75 gpd* (Aquasential® Smart RO)
3	Specialty Total Defense[1]	1 year or 1,000 gallons
		2 year or 2,000 gallons
	Specialty Total Defense with Mineral[1]	1 year or 1,000 gallons
		2 year or 2,000 gallons
	Specialty Remineralization	1 year or 1,000 gallons
		2 year or 2,000 gallons
4	Postfilter, 1 year	1 year or 1,000 gallons
		2 year or 2,000 gallons
	Advanced Postfilter (P231)[1]	1 year or 1,000 gallons
		2 year or 2,000 gallons

[1] All specialty cartridges must have a Performance Indicator Device (PID) installed to track gallon usage.

* Membrane element specification. System daily production rated to pressurized storage tank 27.8 gpd (Aquasential RO) and 34.1 gpd (Aquasential Smart RO).

Performance Data Sheet

Culligan® Aquasential® RO and Smart RO Advanced Drinking Water Systems

Important Notice — Read this data sheet and compare the capabilities of the unit to your actual water treatment needs. Culligan recommends that you have your water supply tested to determine these needs before purchasing a water treatment unit.

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

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Product: Culligan® Aquasential® RO and Smart RO Advanced Drinking Water Systems
Models: Aquasential RO, Aquasential RO (2yr), Aquasential Smart RO, Aquasential Smart RO (2yr)

Product Specifications

Daily Production Rate:	Aquasential RO = 27.8 gpd Aquasential Smart RO = 34.1 gpd	Electrical Requirements:	12VDC, 20W (for Smart RO only)
Operating Temp. Range:	33-100°F (0.5–38°C)		
Working Press. Range:	40–120 psi (2.8–11 kg/cm²)		

Use Guidelines:

- These systems must be installed according to local plumbing codes on the cold water line.
- These systems requires regular replacement of all filters to maintain proper operation. Depending on usage and influent water quality, the carbon, Mineral Boost, and particulate 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.

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

The Aquasential® RO and Smart RO Advanced Drinking Water Systems are tested and certified by WQA to CSA B483.1, NSF/ANSI 372, NSF/ANSI 42 for the reduction of aesthetic chlorine, taste and odor, nominal particulate class 1 and chloramine, and NSF/ANSI 53 for the reduction of cyst, lead, mercury, VOC, MTBE, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), and NSF/ANSI 58 for the reduction of cyst, TDS, turbidity, pentavalent arsenic, barium, cadmium, hexavalent and trivalent chromium, copper, lead*, nitrate/nitrite*, radium 226/228, fluoride and selenium, and NSF/ANSI 401 for the reduction of phenytoin, ibuprofen, naproxen, estrone, bisphenol A, nonylphenol, atenolol, DEET, linuron, carbamazepine, trimethoprim, metolachlor, TCEP, TCPP and meprobamate, NSF Protocol P231 for bacteria, virus and some cysts reduction, as verified and substantiated by test data.

The substances removed by these systems are not necessarily in the customer's untreated water.

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

* Smart RO is not evaluated by WQA for lead or nitrate/nitrite.

To maintain product certification and ensure uniform performance, the product is retested on a consistent basis.

These systems have been tested and shown to operate at their calculated recovery rating under standard laboratory conditions.

These reverse osmosis systems contains a replaceable component critical to the efficiency of the systems. 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 Owner's Guide and printed limited Warranties (P/N 01040605) for more specific product information. To avoid contamination from improper handling and installation, your systems 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.

Buyer Signature _____ Date _____

Seller Signature _____ Date _____

Substance Reduction[1]

Aquasential RO/Aquasential Smart RO with Post-filter (Post 1 P/N 01038123, Post 2 P/N 01038124)

These systems have been tested and certified by the Water Quality Association according to NSF/ANSI 58, NSF/ANSI 42, 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, NSF/ANSI 42, and CSA B483.1. While testing was performed under standard laboratory conditions, actual performance may vary.

Substance	Influent Challenge Concentration (mg/L)	Max. Permissible Product Water Concentration (mg/L)	Minimum Percent Removal RO & RO (2yr)	Minimum Percent Removal Aquasential Smart RO & Smart RO (2yr)	Aquasential RO	Aquasential Smart RO		Aquasential RO (2yr)	Aquasential Smart RO (2yr)	
					Flow Rate = 0.75 gpm (2.84 Lpm)*					
					Capacity 1,000 gallons (3786 L)*			Capacity 2,000 gallons (7570 L)*		
					Average Percent Removal					
Aesthetic Chlorine*	2.0 +/- 10%		>50%	>50%	94.6%	94.6%		94.6%	94.6%	
Arsenic (pentavalent)[2]	0.050 +/- 10%	0.010	99.0%	97.2%	99.0%	98.8%		99.0%	98.8%	
Barium	10.0 +/- 10%	2.0	97.8%	98.2%	99.0%	99.0%		99.0%	99.0%	
Cadmium	0.03 +/- 10%	0.005	97.5%	74.5%	98.4%	94.7%		98.4%	94.7%	
Hexavalent Chromium	0.30 +/- 10%	0.1	94.4%	92.6%	96.2%	94.4%		96.2%	94.4%	
Trivalent Chromium	0.30 +/- 10%	0.1	95.1%	73.9%	96.0%	91.3%		96.0%	91.3%	
Copper	3.00 +/- 10%	1.3	96.5%	97.6%	99.1%	99.2%		99.1%	99.2%	
Flouride	8.0 +/- 10%	1.5	96.3%	95.2%	97.6%	96.8%		97.6%	96.8%	
Radium 226/2282	25 pCi/L +/- 10%	5 pCi/L	97.8%	98.2%	99.0%	99.0%		99.0%	99.0%	
Selenium	0.10 +-/10%	0.05	98.0%	98.3%	98.5%	98.5%		98.5%	98.5%	
Turbidity	11 NTU	0.1 NTU			99.4%	99.3%		99.4%	99.3%	
Cyst[4]	>50,000 / mL				>99.99%	>99.99%		>99.99%	>99.99%	
TDS	750 +/- 5%	187	89.6%	88.5%	92.5%	91.7%		92.5%	91.7%	
Lead	0.15 +/- 10%	0.005	96.8%		98.1%			98.1%		
Nitrate[5]	27.00 +/- 10%	10.0		62.8%	72.7%			72.7%		
Nitrite	3.00 +/- 10%	1.0		65.3%	73.9%			73.9%		

* Flow rate and capacity information is applicable to aesthetic chlorine reduction.

[1] While testing was performed under standard laboratory conditions, actual performance may vary depending on water pressure, temperatures and other substances, which may be found in your water.

[2] These systems have been tested for the treatment of water containing pentavalent arsenic (also known as As(V), As(+5) or arsenate) at concentrations of 0.050 mg/L or less. This system reduces pentavalent arsenic, but may not remove other forms of arsenic. These systems are to be used on water supplies containing a detectable free chlorine residual at the system inlet or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramines (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts Sheet for further information.

[3] Based upon testing methods using Barium as a surrogate. All concentrations in pCi/L pico curie/L.

[4] Includes Giardia lamblia, Entamoeba histolyca and Cryptosporidium.

[5] Units are not certified on water supplies with a pressure less than 40 psi (280 kPa). A booster pump is strongly recommended.

Total Defense (TD 1 P/N 01038050, TD 2 P/N 01038051)

The Aquasential RO and Smart RO Advanced Drinking Water Systems have been tested and certified according to CSA B483.1, NSF/ANSI 42, 53, 372 and 401 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the systems were reduced to a concentration less than or equal to the permissible limit for water leaving the systems, as specified in NSF/ANSI 42, 53 and 401.

NSF/ANSI Standard 42

Substance	Influent Challenge Concen-tration	Maximum Permissible Product Water Concen-tration	Reduction Require-ments	Minimum Reduction	Model: TD 1			Model: TD 2		
					Aqua-sential RO	Aqua-sential Smart RO		Aqua-sential RO (2yr)	Aqua-sential Smart RO (2yr)	
					Flow Rate = 0.5 gpm (1.89 Lpm)					
					Capacity 1,000 gallons (3786 L)			Capacity 2,000 gallons (7570 L)		
					Average Reduction					
Aesthetic Chlorine	2.0 mg/L + 10%		>50%	99.0%	99.0%	99.0%		99.0%	99.0%	
Aesthetic Chloramines	3.0 mg/L + 10%	0.5 mg/L	>83%	97.3%	98.0%	98.0%				
Particulate (0.5 - < um) Class I	At least 10,000 particles/mL		>85%	99.4%	99.6%	99.6%		99.6%	99.6%	

1,000 and 2,000 gallon capacity is only for use with PID

NSF/ANSI Standard 53

Substance	Influent Challenge Concen-tration	Maximum Permissible Product Water Concen-tration	Reduction Require-ments	Minimum Reduction	Model: TD 1			Model: TD 2		
					Aqua-sential RO	Aqua-sential Smart RO		Aqua-sential RO (2yr)	Aqua-sential Smart RO (2yr)	
					Flow Rate = 0.5 gpm (1.89 Lpm)					
					Capacity 1,000 gallons (3786 L)			Capacity 2,000 gallons (7570 L)		
					Average Reduction					
MTBE	0.015 + 20%	0.005 mg/L	66.67%	81.4%	86.5%	86.5%		86.5%	86.5%	
Cyst [t]	Minimum 50,000/L		99.95%	99.99%	>99.99%	>99.99%		>99.99%	>99.99%	
Turbidity	11 mg/L + 1 NTU	0.5 NTU	95.45%	99%	>99.1%	>99.1%		>99.1%	>99.1%	
Lead (pH 6.5)	0.15 mg/L + 10%	0.005 mg/L	96.67%	99.9%	99.9%	99.9%		99.9%	99.9%	
Lead (pH 8.5)	0.15 mg/L + 10%	0.005 mg/L	96.67%	99.9%	99.9%	99.9%		99.9%	99.9%	
Mercury (pH 6.5)	0.006 mg/L + 10%	0.002 mg/L	66.7%	96.6%	96.67%	96.67%		96.67%	96.67%	
Mercury (pH 8.5)	0.006 mg/L + 10%	0.002 mg/L	66.7%	72.2%	81.4%	81.4%		81.4%	81.4%	
Chloroform (VOC surrogate chemical)	0.300 mg/L + 10%	0.015 mg/L	95%	96.7%	99.7%	99.7%		99.7%	99.7%	
Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonate (PFOS)	0.0015 mg/L ± 10%	0.00007 µg/L	95.33%	95.5%	> 95.8%	> 95.8%		> 95.8%	> 95.8%	

1,000 and 2,000 gallon capacity is only for use with PID

[t] Based on the use of microspheres or Cryptosporidium parvum oocysts

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

NSF/ANSI Standard 401

Substance	Common Name	Influent Challenge Concentration	Maximum Permissible Product Water Concentration	Reduction Requirements	Minimum Reduction	Model: TD 1			Model: TD 2		
						Aquasential RO	Aquasential Smart RO		Aquasential RO (2yr)	Aquasential Smart RO (2yr)	
						Flow Rate = 0.5 gpm (1.89 Lpm)					
						Capacity 1,000 gallons (3786 L)			Capacity 2,000 gallons (7570 L)		
						Average Reduction					
Phenytoin	Dilantin[1]	200 ng/L ± 20%	30 ng/L	85.0%	95.5%	>95.6%	>95.6%		>95.6%	>95.6%	
Ibuprofen	Motrin[1]	400 ± 20%	60 ng/L	85.0%	95.3%	>95.4%	>95.4%		>95.4%	>95.4%	
Naproxen	Aleve[1]	140 ± 20%	20 ng/L	85.71%	96.3%	>96.4%	>96.4%		>96.4%	>96.4%	
Estrone	Estrogen	140 ± 20%	20 ng/L	85.71%	96.3%	>96.5%	>96.5%		>96.5%	>96.5%	
Bisphenol A	BPA	2,000 ± 20%	300 ng/L	85.0%	98.8%	>98.9%	>98.9%		>98.9%	>98.9%	
Nonylphenol	Nonylphenol	1,400 ± 20%	200 ng/L	85.71%	97.5%	>97.5%	>97.5%		>97.5%	>97.5%	
Atenolol	Tenormin[1]	200 ng/L ± 20%	30 ng/L	85.0%	94.2%	>94.2%	>94.2%		>94.2%	>94.2%	
DEET	DEET	1,400 ± 20%	200 ng/L	85.71%	98.7%	>98.7%	>98.7%		>98.7%	>98.7%	
Linuron	Linuron	140 ± 20%	20 ng/L	85.71%	96.6%	>96.6%	>96.6%		>96.6%	>96.6%	
Carbamazepine	Tegretol[1]	1,400 ± 20%	200 ng/L	85.71%	98.6%	>98.6%	>98.6%		>98.6%	>98.6%	
Trimethoprim	Trimethoprim	140 ± 20%	20 ng/L	85.71%	96.7%	>96.7%	>96.7%		>96.7%	>96.7%	
Metolachlor	Metolachlor	1,400 ± 20%	200 ng/L	85.71%	98.6%	>98.6%	>98.6%		>98.6%	>98.6%	
TCEP	TCEP	5,000 ± 20%	700 ng/L	86.0%	98.0%	>98.0%	>98.0%		>98.0%	>98.0%	
TCPP	TCPP	5,000 ± 20%	700 ng/L	86.0%	97.8%	>97.8%	>97.8%		>97.8%	>97.8%	
Meprobamate	Meprobamate	400 ± 20%	60 ng/L	85.0%	94.7%	>95.1%	>95.1%		>95.1%	>95.1%	

1,000 and 2,000 gallon capacity is only for use with PID

NSF/ANSI Standard 401 are considered incidental contaminants and emerging compounds.

[1]Dilantin is a registered trademark of Pfizer Inc. Motrin is a registered trademark of Johnson & Johnson Consumer Inc. Aleve is a registered trademark of Bayer. Tenormin registered trademark of the AstraZeneca UK Ltd Tenormin is a registered trademark of Novartis Pharmaceuticals Corporation.

Total Defense + Mineral Boost (TD/Min 1 P/N 01038060, TD/Min 2 P/N 01038061)

The Total Defense has been tested according to NSF/ANSI 42, 53 and 401 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the systems were reduced to a concentration less than or equal to the permissible limit for water leaving the systems, as specified in NSF/ANSI 42, 53 and 401.

NSF/ANSI Standard 42

Substance	Influent Challenge Concentration	Maximum Permissible Product Water Concentration	Reduction Requirements	Minimum Reduction	Model: TD/Min 1			Model: TD/Min 2		
					Aquasential RO	Aquasential Smart RO		Aquasential RO (2yr)	Aquasential Smart RO (2yr)	
					Flow Rate = 0.5 gpm (1.89 Lpm)					
					Capacity 1,000 gallons (3786 L)			Capacity 2,000 gallons (7570 L)		
					Average Reduction					
Aesthetic Chlorine	2.0 mg/L + 10%		>50%	99.0%	99.0%	99.0%		99.0%	99.0%	
Aesthetic Chloramines	3.0 mg/L + 10%	0.5 mg/L		96.0%	98.0%	98.0%				
Particulate (0.5 - < um) Class I	At least 10,000 particles/mL		>85%	99.4%	99.6%	99.6%		99.6%	99.6%	

1,000 and 2,000 gallon capacity is only for use with PID

NSF/ANSI Standard 53

Substance	Influent Challenge Concen-tration	Maximum Permissible Product Water Concentration	Reduction Requirements	Minimum Reduction	Model: TD/Min 1			Model: TD/Min 2		
					Aquasential RO	Aquasential Smart RO		Aquasential RO (2yr)	Aquasential Smart RO (2yr)	
					Flow Rate = 0.5 gpm (1.89 Lpm)					
					Capacity 1,000 gallons (3786 L)			Capacity 2,000 gallons (7570 L)		
					Average Reduction					
MTBE	0.015 + 20%	0.005 mg/L	66.67%	81.4%	86.5%	86.5%		86.5%	86.5%	
Cyst [t]	Minimum 50,000/L		99.95%	99.99%	>99.99%	>99.99%		>99.99%	>99.99%	
Turbidity	11 mg/L + 1 NTU	0.5 NTU	95.45%	99%	>99.1%	>99.1%		>99.1%	>99.1%	
Lead (pH 6.5)	0.15 mg/L + 10%	0.005 mg/L	96.67%	99.9%	99.9%	99.9%		99.9%	99.9%	
Lead (pH 8.5)	0.15 mg/L + 10%	0.005 mg/L	96.67%	99.9%	99.9%	99.9%		99.9%	99.9%	
Mercury (pH 6.5)	0.006 mg/L + 10%	0.002 mg/L	66.7%	96.6%	96.67%	96.67%		96.67%	96.67%	
Mercury (pH 8.5)	0.006 mg/L + 10%	0.002 mg/L	66.7%	72.2%	81.4%	81.4%		81.4%	81.4%	
Chloroform (VOC surrogate chemical)	0.300 mg/L + 10%	0.015 mg/L	95%	96.7%	99.7%	99.7%		99.7%	99.7%	
Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonate (PFOS)	0.0015 mg/L ± 10%	0.00007 µg/L	95.33%	95.5%	> 95.8%	> 95.8%		> 95.8%	> 95.8%	

1,000 and 2,000 gallon capacity is only for use with PID

[t] Based on the use of microspheres or Cryptosporidium parvum oocysts

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

NSF/ANSI Standard 401

Substance	Common Name	Influent Challenge Concentration	Maximum Permissible Product Water Concentration	Reduction Requirements	Minimum Reduction	Model: TD/Min 1			Model: TD/Min 2		
						Aquasential RO	Aquasential Smart RO		Aquasential RO (2yr)	Aquasential Smart RO (2yr)	
						Flow Rate = 0.5 gpm (1.89 Lpm)					
						Capacity 1,000 gallons (3786 L)			Capacity 2,000 gallons (7570 L)		
						Average Reduction					
Phenytoin	Dilantin[1]	200 ng/L ± 20%	30 ng/L	85.0%	95.5%	>95.6%	>95.6%		>95.6%	>95.6%	
Ibuprofen	Motrin[1]	400 ± 20%	60 ng/L	85.0%	95.3%	>95.4%	>95.4%		>95.4%	>95.4%	
Naproxen	Aleve[1]	140 ± 20%	20 ng/L	85.71%	96.3%	>96.4%	>96.4%		>96.4%	>96.4%	
Estrone	Estrogen	140 ± 20%	20 ng/L	85.71%	96.3%	>96.5%	>96.5%		>96.5%	>96.5%	
Bisphenol A	BPA	2,000 ± 20%	300 ng/L	85.0%	98.8%	>98.9%	>98.9%		>98.9%	>98.9%	
Nonylphenol	Nonylphenol	1,400 ± 20%	200 ng/L	85.71%	97.5%	>97.5%	>97.5%		>97.5%	>97.5%	
Atenolol	Tenormin[1]	200 ng/L ± 20%	30 ng/L	85.0%	94.2%	>94.2%	>94.2%		>94.2%	>94.2%	
DEET	DEET	1,400 ± 20%	200 ng/L	85.71%	98.7%	>98.7%	>98.7%		>98.7%	>98.7%	
Linuron	Linuron	140 ± 20%	20 ng/L	85.71%	96.6%	>96.6%	>96.6%		>96.6%	>96.6%	
Carbamazepine	Tegretol[1]	1,400 ± 20%	200 ng/L	85.71%	98.6%	>98.6%	>98.6%		>98.6%	>98.6%	
Trimethoprim	Trimethoprim	140 ± 20%	20 ng/L	85.71%	96.7%	>96.7%	>96.7%		>96.7%	>96.7%	
Metolachlor	Metolachlor	1,400 ± 20%	200 ng/L	85.71%	98.6%	>98.6%	>98.6%		>98.6%	>98.6%	
TCEP	TCEP	5,000 ± 20%	700 ng/L	86.0%	98.0%	>98.0%	>98.0%		>98.0%	>98.0%	
TCPP	TCPP	5,000 ± 20%	700 ng/L	86.0%	97.8%	>97.8%	>97.8%		>97.8%	>97.8%	
Meprobamate	Meprobamate	400 ± 20%	60 ng/L	85.0%	94.7%	>95.1%	>95.1%		>95.1%	>95.1%	

1,000 and 2,000 gallon capacity is only for use with PID

NSF/ANSI Standard 401 are considered incidental contaminants and emerging compounds.

[1]Dilantin is a registered trademark of Pfizer Inc. Motrin is a registered trademark of Johnson & Johnson Consumer Inc. Aleve is a registered trademark of Bayer. Tenormin registered trademark of the AstraZeneca UK Ltd Tenormin is a registered trademark of Novartis Pharmaceuticals Corporation.

Organic Chemicals Included in Surrogate Testing:

Applies to Total Defense (TD) only.

Substance	Influent Challenge Concentration mg/L	Maximum permissible product water concentration mg/L
Alachor	0.050	0.001
Atrazine	0.100	0.003
Benzene	0.081	0.001
Carbofuran	0.190	0.001
Carbon Tetrachloride	0.078	0.002
Chlorbenzene	0.077	0.001
Chlorpicrin	0.015	0.000
2,4-d	0.110	0.002
Dibromochloropropane (Dbcp)	0.052	0.000
O-Dichlorobenzene	0.080	0.001
P-Dichlorobenzene	0.040	0.001
1,2-Dichloroethane	0.088	0.005
1,1-Dichloroethylene	0.083	0.001
Cis-1,2-Dichloroethylene	0.170	0.001
Trans-1,2-Dichloroethylene	0.086	0.001
1,2-Dichloropropane	0.080	0.001
Cis-1,3-Dichloropropylene	0.079	0.001
Dinoseb	0.170	0.000
Endrin	0.053	0.001
Ethylbenzene	0.088	0.001
Ethylene Dibromide (Edb)	0.044	0.000
Haloacetonitriles (Han):	-	-
Bromochloroacetonitrile	0.022	0.001
Dibromoacetonitrile	0.024	0.001
Dichloroacetonitrile	0.001	0.000
Trichloracetonitrile	0.015	0.000
Haloketones (Hk):	-	-
1,1-Dichloro-2-propane	0.007	0.000
1,1,1-Trichloro-2-propane	0.008	0.000
Heptachlor	0.250	0.000
Heptachlor Epoxide	0.011	0.000
Hexachlorobutadiene	0.044	0.001
Hexachlorocyclopentadiene	0.060	0.000
Lindane	0.055	0.000
Methoxychlor	0.050	0.000

Substance	Influent Challenge Concentration mg/L	Maximum permissible product water concentration mg/L
Pentachloophenol	0.096	0.001
Simazine	0.120	0.004
Styrene	0.150	0.001
1,1,2,2-Tetrachloroethane	0.081	0.001
Tetrachloroethylene	0.081	0.001
Toluene	0.078	0.001
2,4,5-tp (Silvex)	0.270	0.002
Tribromoacetic Acid	0.042	0.001
1,2,4-Trichlorobenzene	0.160	0.001
1,1,1-Trichloroethane	0.084	0.005
1,1,2-Trichloroethane	0.150	0.001
Trichloroethylene	0.180	0.001
Trihalomethanes (Includes):	-	-
Chloroform (Surrogate Chemical)	-	-
Bromoform	0.300	0.015
Bromodichloromethane	-	-
Chlorodibromomethane	-	-
Xylenes (Total)	0.070	0.001

Advance Post-Tank (Post Adv 1 P/N 01038060 and Post Adv 2 P/N 01038061)

The Aquasential RO and Smart RO Advanced Drinking Water Systems with Advance Post-Tank Filter have been tested according to CSA B483.1, NSF/ANSI 372, and NSF Protocol P231 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the systems were reduced to a concentration less than or equal to the permissible limit for water leaving the systems, as specified in NSF Protocol P231. Systems are not intended to convert wastewater or raw sewage into drinking water.

NSF Protocol P231

Substance	Influent Challenge Concentration	Maximum Permissible Product Water Concentration	Reduction Requirements	Minimum Reduction	Model: Aquasential RO = Pre 1, RO 50 and Post Adv 1 Aquasential Smart RO = Pre 1, RO 75 and Post Adv 1			Model: Aquasential RO (2yr) = Pre 2, RO 50 and Post Adv 2 Model: Aquasential Smart RO (2yr) = Pre 2, RO 75 and Post Adv 2		
					Aquasential RO	Aquasential Smart RO		Aquasential RO (2yr)	Aquasential Smart RO (2yr)	
					Average Reduction					
Cyst (microspheres)	>1,000,000/L		>99.9%	>99.9%	>99.9%	>99.9%		>99.9%	>99.9%	
Virus	>10,000,000 PFU/L		>99.99%	>99.99%	>99.99%	>99.99%		>99.99%	>99.99%	
Bacteria	>10,000,000 CFU/100mL		>99.9999%	>99.9999%	>99.9999%	>99.9999%		>99.9999%	>99.9999%	

1,000 and 2,000 gallon capacity is only for use with PID

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

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RO 50 (P/N 01038040)

Aquasential RO Drinking Water Systems with RO 50 have been tested according to CSA B483.1, NSF/ANSI 372, and NSF/ANSI 58 for the reduction of the substances listed below. The concentration of the indicated substances in water entering the systems were reduced to a concentration less than or equal to the permissible limit for water leaving the systems, as specified in NSF/ANSI 58.

These systems are acceptable for treatment of influent concentrations of no more than 27 mg/L nitrate and 3 mg/L nitrite in combination measured as N and are certified for nitrate/nitrite reduction only for water supplies with a pressure of 280 kPa (40 psig) or greater.

Substance Reduction[1]

Contaminant	Average Influent Concentration mg/L	Average Effluent Concentration mg/L	Maximum Effluent Concentration mg/L	Model: RO 50	
				Aquasential RO	Aquasential RO (2yr)
				Average Percent Reduction	
Arsenic (Pentavalent)[2]	0.0483	0.0005	0.0005	99.0%	99.0%
Barium	9.7	0.1	0.210	99.0%	99.0%
Cadmium	0.0325	0.0005	0.000806	98.4%	98.4%
Hexavalent Chromium	0.291	0.0111	0.0162	96.2%	96.2%
Trivalent Chromium	0.293	0.0118	0.0145	96.0%	96.0%
Copper	2.823	0.0252	0.1	99.1%	99.1%
Fluoride	8.2	0.2	0.30	97.6%	97.6%
Lead	0.16	0.003	0.005	98.1%	98.1%
Nitrate[5]	27.0 +/- 10%	10.0		72.7%	72.7%
Nitrite	3.0 +/- 10%	1.0		73.9%	73.9%
Radium 226/228[3]	25pCi/L	5pCi/L	5pCi/L	99.0%	99.0%
Selenium	0.104	0.0016	0.00205	98.5%	98.5%
Cyst[4]	>50,000/mL			99.99%	99.99%
Turbidity	11 NTU	0.1 NTU	0.1 NTU	99.4%	99.4%

[1] While testing was performed under standard laboratory conditions, actual performance may vary depending on water pressure, temperatures and other substances, which may be found in your water.

[2] Thes systems have been tested for the treatment of water containing pentavalent arsenic (also known as As(V), As(+5) or arsenate) at concentrations of 0.050 mg/L or less. These systems reduce pentavalent arsenic, but may not remove other forms of arsenic. These systems are to be used on water supplies containing a detectable free chlorine residual at the system inlet or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramines (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts Sheet for further information.

[3] Based upon testing methods using Barium as a surrogate. All concentrations in pCi/L pico curie/L.

[4] Includes Giardia lamblia, Entamoeba histolyca and Cryptosporidium.

[5] Units are not certified on water supplies with a pressure less than 40 psi (280 kPa). A booster pump is strongly recommended.

RO 75 (P/N 01038041)

Aquasential Smart RO Advanced Drinking Water Systems with RO 75 have been tested according to CSA B483.1, NSF/ANSI 372, and NSF/ANSI 58 for the reduction of the substances listed below. The concentration of the indicated substances in water entering the systems were reduced to a concentration less than or equal to the permissible limit for water leaving the systems, as specified in NSF/ANSI 58.

These systems are acceptable for treatment of influent concentrations of no more than 27 mg/L nitrate and 3 mg/L nitrite in combination measured as N and are certified for nitrate/nitrite reduction only for water supplies with a pressure of 280 kPa (40 psig) or greater.

Substance Reduction[1]

Contaminant	Average Influent Concentration mg/L	Average Effluent Concentration mg/L	Maximum Effluent Concentration mg/L	Model: RO 75	
				Aquasential Smart RO	Aquasential Smart RO (2yr)
				Average Percent Reduction	
Arsenic (Pentavalent)[2]	0.0483	0.006	0.00134	98.8%	98.8%
Barium	9.7	0.1	0.170	99.0%	99.0%
Cadmium	0.0325	0.0014	0.0083	94.7%	94.7%
Hexavalent Chromium	0.291	0.0163	0.0216	94.4%	94.4%
Trivalent Chromium	0.293	0.0256	0.0766	91.3%	91.3%
Copper	2.823	0.0225	0.068	99.2%	99.2%
Fluoride	8.2	0.3	0.039	96.8%	96.8%
Radium 226/228[3]	25pCi/L	5pCi/L	5pCi/L	99.0%	99.0%
Selenium	0.104	0.0016	0.00182	98.5%	98.5%
Cyst[4]	>50,000/mL			99.99%	99.99%
Turbidity	11 NTU	0.1 NTU	0.1 NTU	99.3%	99.3%

[1] While testing was performed under standard laboratory conditions, actual performance may vary depending on water pressure, temperatures and other substances, which may be found in your water.

[2] This system has been tested for the treatment of water containing pentavalent arsenic (also known as As(V), As(+5) or arsenate) at concentrations of 0.050 mg/L or less. This system reduces pentavalent arsenic, but may not remove other forms of arsenic. This system is to be used on water supplies containing a detectable free chlorine residual at the system inlet or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramines (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts Sheet for further information.

[3] Based upon testing methods using Barium as a surrogate. All concentrations in pCi/L pico curie/L.

[4] Includes Giardia lamblia, Entamoeba histolyca and Cryptosporidium.

[5] Units are not certified on water supplies with a pressure less than 40 psi (280 kPa). A booster pump is strongly recommended.

Output (Total Dissolved Solids (TDS) Reduction and Output Production)[1] – RO 50

Tank Size	3 gallons
Product System Daily Prod. Rate To Pressurized Storage Tank	27.8 gpd
Prod. Rate without Storage Tank To Atmosphere	28.0 gpd
Efficiency Rating[2]	23.2%
Recovery Rating[3]	39.2%
Influent Challenge Concentration (Mg/L)	737
Max. Permissible Product Water Concentration (Mg/L)	187
Minimum Percent Removal	89.6%
Average Percent Removal	92.5%

[1] These systems have been tested under standard laboratory conditions. Actual production rate and TDS rejection will depend on temperature, water pressure, TDS level, membrane variation and usage pattern.

[2] Efficiency rating means the percentage of the influent water to the system that is available to the user are reverse osmosis treated water under operating conditions that approximate daily usage.

[3] Recovery 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 systems are operated without a storage tank or when the storage tank is bypassed.

Output (Total Dissolved Solids (TDS) Reduction and Output Production)[1] – RO 75

Tank Size	3 gallons
Product System Daily Prod. Rate To Pressurized Storage Tank	34.1 gpd
Prod. Rate without Storage Tank To Atmosphere	34.1 gpd
Efficiency Rating[2]	54.7%
Recovery Rating[3]	52.8%
Influent Challenge Concentration (Mg/L)	737
Max. Permissible Product Water Concentration (Mg/L)	187
Minimum Percent Removal	88.5%
Average Percent Removal	90.4%

[1] These systems have been tested under standard laboratory conditions. Actual production rate and TDS rejection will depend on temperature, water pressure, TDS level, membrane variation and usage pattern.

[2] Efficiency rating means the percentage of the influent water to the system that is available to the user are reverse osmosis treated water under operating conditions that approximate daily usage.

[3] Recovery 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.

Testing Conditions (Complete System)

Temperature:	77 F + 2 F
Pressure:	50 psi
pH:	7.5 + 0.5
Turbidity:	<1 NTU

These systems have been tested and shown to operate at their calculated recovery rating under standard laboratory conditions.

These reverse osmosis systems contain a replaceable component critical to the efficiency of the systems. 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.

Arsenic Fact Sheet

Arsenic (abbreviated As) is found naturally in some well water. Arsenic in water has no color, taste or odor. It must be measured by a lab test. Public water utilities must have their water tested for arsenic. You can get the results from your water utility. If you have your own well, you can have the water tested. The local health department or the state environmental health agency can provide a list of certified labs. The cost is typically $15 - $30. Information about arsenic in water can be found on the internet at the US Environmental Protection Agency website: www.epa.gov/safewater/arsenic.html.

There are two forms of arsenic: pentavalent arsenic (also called As (v), As (+5), and arsenate) and trivalent arsenic (also called As (III), As (+3), and arsenite). In well water, arsenic may be pentavalent, trivalent, or a combination of both. Special sampling procedures are needed for a lab to determine what type and how much of each type of arsenic is in the water. Check with the labs in your area to see if they can provide this type of service.

Reverse osmosis (RO) water treatment systems do not remove trivalent arsenic from water very well. RO systems are very effective at removing pentavalent arsenic. A free chlorine residual will rapidly convert trivalent arsenic to pentavalent arsenic. Other water treatment chemicals such as ozone and potassium permanganate will also change trivalent arsenic to pentavalent arsenic. A combined chlorine residual (also called chloramine) may not convert all the trivalent arsenic. If you get water from a public water utility, contact the utility to find out if free chlorine or combined chlorine is used in the water systems.

The Aquasential RO and Smart RO Advanced Drinking Water Systems are designed to remove pentavalent arsenic. They will not convert trivalent arsenic to pentavalent arsenic. The systems were tested in a lab. Under those conditions, the systems reduced 0.050 mg/L (ppm) pentavalent arsenic to 0.010 mg/L (ppm) (the USEPA standard for drinking water) or less. The performance of the systems may be different at your installation. Have the treated water tested for arsenic to check if the systems are working properly.

The RO component of the Aquasential RO and Smart RO Advanced Drinking Water Systems system must be replaced every 3-5 years to ensure the systems will continue to remove pentavalent arsenic. The component identification and locations where you can purchase the component are listed in the installation/operation manual.

The systems have been tested for the treatment of water containing pentavalent arsenic (also known as As (V), As (III), or arsenate) at concentrations of 0.050 mg/L or less. These systems reduce pentavalent arsenic, but may not remove other forms of arsenic. These systems are to be used on water supplies containing a detectable free chlorine residual or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramine (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Fact section of the Performance data Sheet for further information.

Arsenic (As) is a naturally occurring contaminant found in many ground waters. It generally occurs in two forms (valences or oxidation states): pentavalent arsenic (also known as As(V), As(+5), and arsenate) and trivalent arsenic (also known as As(III), As(+3), and arsenite). In natural ground water, arsenic may exist as trivalent arsenic, pentavalent arsenic, or a combination of both. More information about arsenic and its toxicity can be found at the Agency for Toxic Substances and Disease Registry Toxicological Profile on Arsenic website at http://www.atsdr.cdc.gov/toxprofiles/phs2.html, and at the U.S. Environmental Protection Agency website at http://www.epa.gov/safewater/arsenic.html.

Arsenic does not generally impart color, taste, or smell to water; therefore, it can only be detected by a chemical analytical test. Public water supplies are required to monitor delivered water for arsenic (trivalent arsenic plus pentavalent arsenic) and the results are available to the public from the utility. Consumers using private water sources will need to make arrangements for testing. An arsenic test usually costs about $15-30, and it is recommended that the test be conducted by a certified laboratory. Local health departments or environmental protection agencies can help provide consumers with a list of certified laboratories. Some laboratories may also be able to analyze specifically for (speciate) the form(s) of arsenic present in a water sample if requested.

Records & Data

Model: _____ Serial No: _____

Date Installed: _____

For Service Call Culligan at: _____

Date Serviced	Cartridge(s) Changed				Feed TDS	Product TDS
	#1 Port – Prefilter	#2 Port – RO Membrane	#3 Port – Specialty Filter	#4 Port – Postfilter		

Culligan®

Culligan Limited Warranty

Culligan Water Treatment System

You have just purchased one of the finest reverse osmosis water treatment systems made. As an expression of our confidence in Culligan International Company products, your water treatment system 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 the LIFETIME of the system	• Molded system manifold
For a period of TEN YEARS	• Faucet (Standard RO) • RO tank (Standard & Smart RO) • All other parts of the RO system (Standard & Smart RO)
For a period of FIVE YEARS	• Faucet w/display (Smart RO) • Rechargeable battery pack (Smart RO) • PCBs & associated LEDs & displays (Smart RO)
For a period of ONE YEAR	• Filters & Membranes (Standard & Smart RO)

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 treatment unit 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 treatment system. 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 one-year 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 treatment system. 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 treatment system 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. Warranty is void if system is installed outside a building without being rated for outdoor use. Our obligations under this warranty are limited to the repair or replacement of the failed parts of the water treatment system, 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.

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1-800-CULLIGAN or 1-847-430-2800

www.culligan.com