Culligan®

Aquasential®
RO and Smart RO
Advanced Drinking
Water Systems

Models from 2021

Manual de Usuario Culligan Aquasential RO y Smart RO. Página 1 de 56   Pure Water Technology (2023) Todos los derechos reservados

atencion@purewater.mx   purewater.mx   81-1642-7777

Installation, Operation, and Service Instructions with Parts Lists

Aquasential®
RO and Smart RO Advanced Drinking Water Systems

Models from 2021

Contents

atencion@purewater.mx   purewater.mx   81-1642-7777

Introduction

Read this Manual First

Before you operate the Culligan® Aquasential® RO or Smart RO Advanced Drinking Water Systems, read this manual to become familiar with the device and their capabilities.

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.

The substances removed by these systems are not necessarily in the customer's untreated water. See Performance Data Sheet (located in the Owners Guide P/N 01040605) for exact capacity and percentages of contaminant reduction. Refer to your Owner's Guide and printed limited Warranties (P/N 01040605) for more specific product information.

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.

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 installation, operating, and maintenance procedures. A troubleshooting section provides a guide for quick and accurate problem solving.

In order for the water treatment systems to continue to provide high quality water, you must develop a thorough understanding of the systems and their operation. Review this manual before making any attempt to install, operate, or service the systems. Installation or maintenance done on these systems by an untrained service person can cause major damage to equipment or property damage.

Licensed plumbers know that standard industry procedures include only to hand tighten or use strap wrenches on plastic parts. Plastic piping systems must be installed, operated and maintained in accordance with accepted standards and procedures. Not adhering to the recommended service/maintenance can cause damage to equipment or property damage.

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.

NOTE! **An Owners Guide is available online; it contains answers to most questions, system operation information, suggested maintenance, and a trouble shooting section.**
www.culligan.com/support/product-information/product-manuals

Safety Instructions and Safety Definitions

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

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.

atencion@purewater.mx   purewater.mx   81-1642-7777

Attention Service Technician:

This publication is written specifically for, and is intended to be used by, trained service and maintenance personnel who are experienced in the installation, function and repair of Culligan equipment. Untrained individuals who use this manual assume the risk of any resulting property damage and/or personal injury.

NOTE! **Please send any suggestions for improving this manual to productmanuals@culligan.com**

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

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 the outlet, 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.

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.**

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.

The system and installation must comply with state and local laws and regulations. Systems are not intended to convert wastewater or raw sewage into drinking water.

Safety Precautions

- Do not install the product on a water supply with a water pressure of more than 120 psi. If the inlet water pressure exceeds 120 psi, a pressure relief valve (purchased separately) must be installed.

CAUTION!
The required temperature of the inlet water of the product is 40°-100°F. If the temperature of the inlet water exceeds 100°F, the seal may be damaged and cause water leaks. If the temperature of the inlet water is lower than 41°F, it may cause freezing, internal pipe rupture, filter cartridge housing breakage, or water leaks.

CAUTION!
Do not install the product in the vicinity of a heat source.

- Do not reverse the installation order of the filter cartridges or the normal function of the product will be affected.

- Inlet and outlet water connections must be correct so as not to affect the normal operations of the product.

- Do not plug or unplug the power adapter with wet hands to avoid the risk of electric shock. Do not pull the power cord forcibly when plugging in or unplugging the unit.

- Do not install the product in a place exposed to direct sunlight or hazardous chemicals, or a place where it may fall, be bumped, damaged, etc.

- Clean the product with water. Do not spray the product directly. Do not use steel wool, abrasive detergents or corrosive liquids to clean the product.

- Keep the drain water pipe unobstructed to avoid damage to the filter cartridges or internal components of the product.

- Regularly check the product and water pipe fittings for water leakage to prevent damage to property**.**

- Any malfunction caused by improper use will not be covered by the warranty.

Battery Instructions

WARNING!
Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Prevent unintentional starting. Ensure the RO system is not powered before connecting to optional battery pack. Disconnect the battery or power source before picking up or carrying the RO system as carrying the appliance while powered or energized invites accidents.

Recharge the optional battery only with the charging cord specified by the manufacturer. A charging cord that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.

Use only specifically designated battery packs with this RO system. Use of any other battery packs may create a risk of injury and fire.

Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.

Do not use a battery pack or the RO system appliance that is damaged or modified. Damaged or modified batteries may exhibit unpredictable behavior resulting in fire, explosion or risk of injury.

Do not expose a battery pack or the RO system appliance to fire or excessive temperature. Exposure to fire or temperature above 265°F (130°C) may cause explosion.

Follow all charging instructions and do not charge the battery pack or the RO system outside of the temperature range specified in the instructions. Charging improperly or at temperatures outside of the specified range may damage the battery and increase the risk of fire.

The recommended battery operating temperature while in a charging state is 41° F (5 °C) to 104° F (+40 °C). The recommended battery storage temperature is 77±2 °F (+25 ± 2 °C). The full battery charging cycle (6.0V to 8.2V) takes approximately 8 hours. As a safety precaution charging terminates after 12 hours.

To start charging, plug the 12V power supply in the front OR back of the system. Disconnect when charging is complete. 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.

Have servicing performed by a qualified Culligan repair person using only identical replacement parts. This will ensure that the safety of the product is maintained.

Do not modify or attempt to repair the RO system or the optional battery pack (as applicable) except as indicated in the instructions for use and care.

Battery Disposal

Lithium batteries are considered a hazardous waste requiring proper disposal by recycling at end of life. Regulations and laws pertaining to the recycling and disposal of lithium batteries vary from country to country as well as by state and local governments. Lithium-ion batteries can be recycled, but only at permitted treatment facilities. You will need to check the laws and regulations where you live and contact your local waste facility to verify the disposal requirements.

Li-ion

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, Aqua-Sensor, Tripl-Hull, and SoftMinder are trademarks of Culligan International Company or its affiliates.

<div align="center">

Culligan International Company
9399 West Higgins Road, Suite 1100
Rosemont, Illinois 60018
(847) 430-2800
www.culli•an.com

</div>

Specifications

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

Reverse Osmosis system performance is influenced by feed water conditions such as pressure, temperature, TDS levels, and hardness. The better these incoming conditions, the better the system will perform at its 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, 77°F, 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 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.
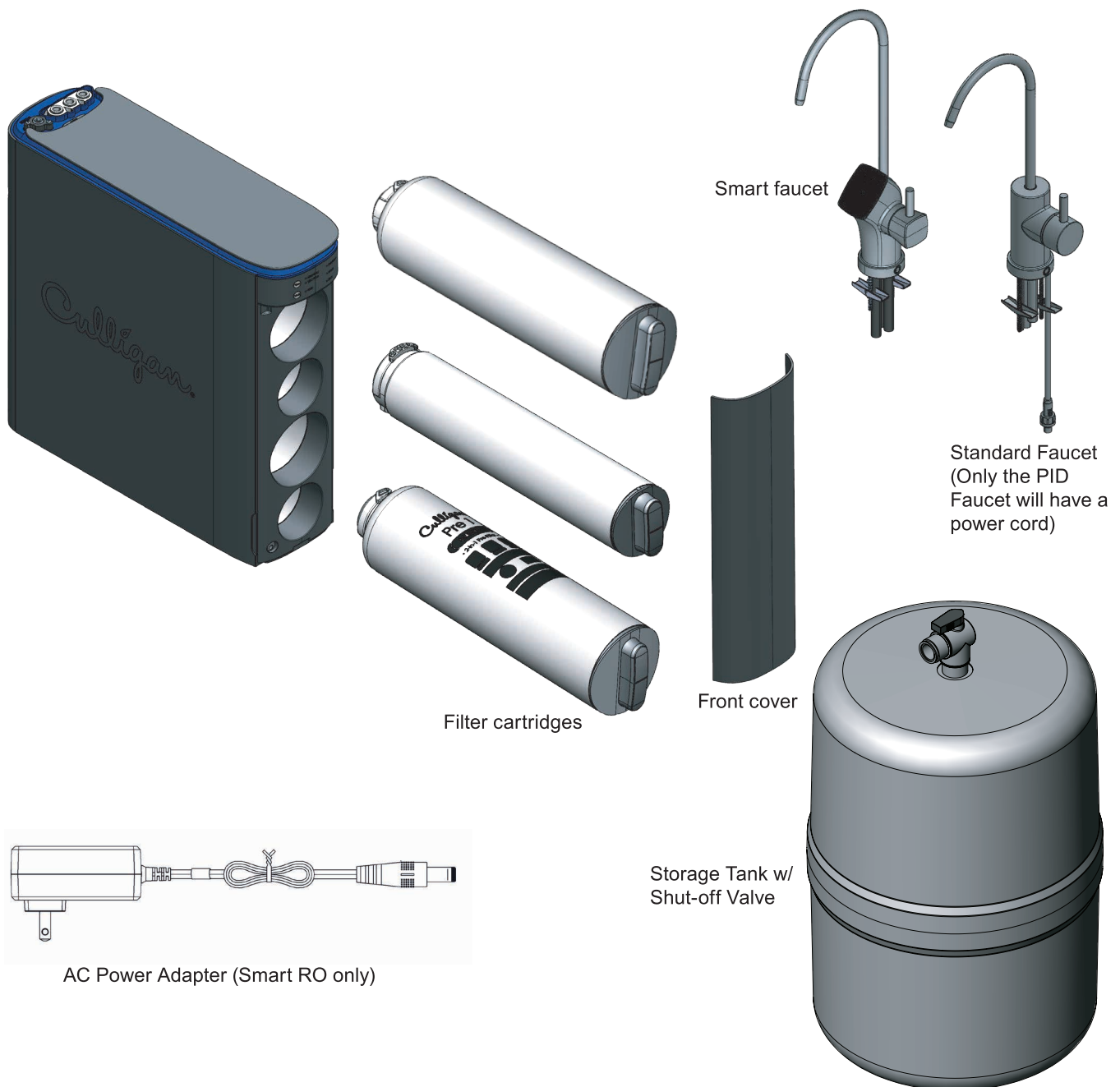
* Membrane element specification. System daily production rated to pressurized storage tank 27.8 gpd (Aquasential RO) and 34.1 gpd (Aquasential Smart RO).

atencion@purewater.mx   purewater.mx   81-1642-7777

Filter Performance

These reverse osmosis systems contain replaceable components critical to the efficiency and performance of the system. Regular replacement and maintenance of the system 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
	Specialty Arsenic[1]	AS3 1[2]	1 year or 1,000 gallons
		AS3 2[2]	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.

[2] The Arsenic cartridge must be installed after the RO membrane.

[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).

atencion@purewater.mx   purewater.mx   81-1642-7777

System Overview

When unpacking the Aquasential® RO and Smart RO the base unit will come with a prefilter, membrane, and post filter. The open port is for specialty cartridges. A faucet specific to the model type and color selection is included as well as the 2.7 gallon storage tank. Smart ROs require an AC adapter or optional battery to operate.

Cartridges are clearly marked on the handle with the position in which they go in the manifold as well as the type of cartridges they are:

1. Prefilter

2. Membrane

3. Specialty (TD, Remin, etc.)

4. Post Carbon

Smart faucet

Standard Faucet (Only the PID Faucet will have a power cord)

Filter cartridges

Front cover

Storage Tank w/ Shut-off Valve

AC Power Adapter (Smart RO only)

atencion@purewater.mx   purewater.mx   81-1642-7777

In-Plant Preparation

Cleanliness is always important in handling a drinking water system as well as preparations for a quick installation. Having clean hands and using sterile gloves is encouraged. The following steps can sanitize the system from the inlet connection to the faucet spout:

- Connect the 3/8″ feed tubing to the INLET, tubing from the TANK connection to the storage tank, and tubing from the OUTLET to the faucet.

- Before inserting the sanitizing cartridge (P/N 01038197), fill the cartridge with water to reduce the amount of air. Add 2 Tablespoons of unscented 6% household bleach and replace the cap.

- Insert the cartridge into the top of #1 housing, locking it into place with a ¼ turn.

- Turn on the water until you get flow at the faucet then close the faucet handle allowing the storage tank to fill.

- Turn off the water and allow the system to sit for 10 minutes.

NOTE! **Power is required for the Smart RO to have flow during this process. There can be a short delay before you see flow as components energize.**

Adding a small amount of silicone lube to the end of the tubing can help insertion in the double o-ring fitting.

- The cartridge can be removed, and the storage tank drained through the faucet. The faucet should be placed in a sanitary package until needed and the storage tank shut-off valve kept closed until installation.

- The system is now ready for filter cartridge flushing.

NOTE! **Check the air pre-charge on the tank is 6-8 psi before filling it for use.**
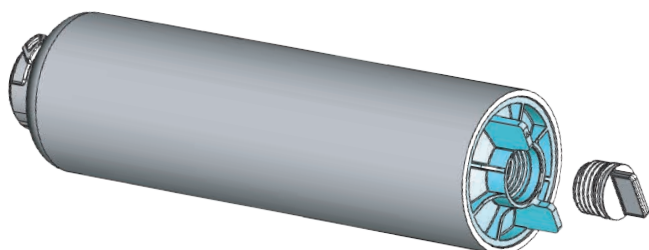
⚠️ **CAUTION!**
Protect the internal flow paths, especially for Smart RO, by using an inline filter or screen.

To Faucet   To Tank   Feed Water   Waste
(Soft or RO ideal)
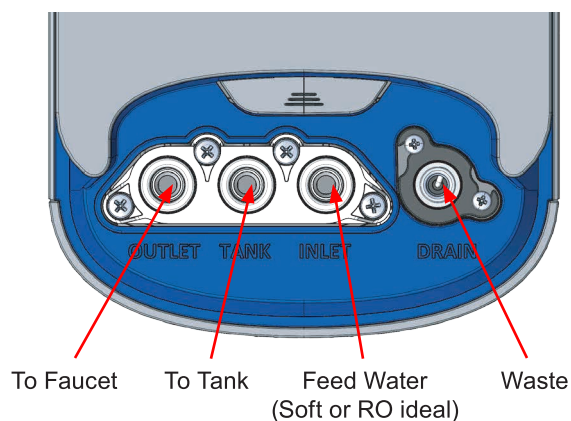
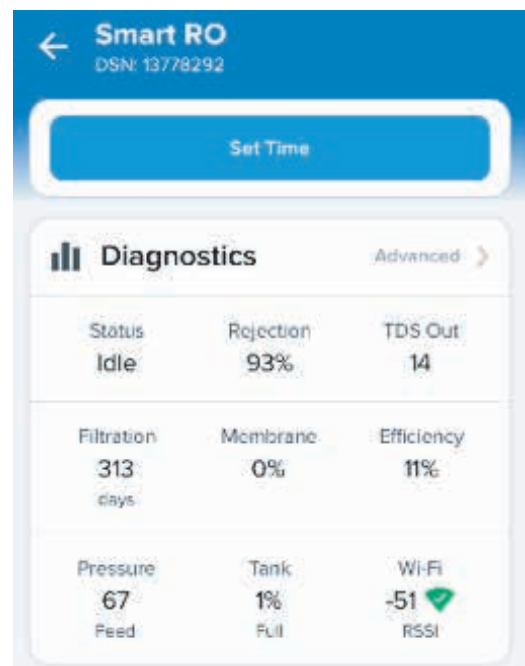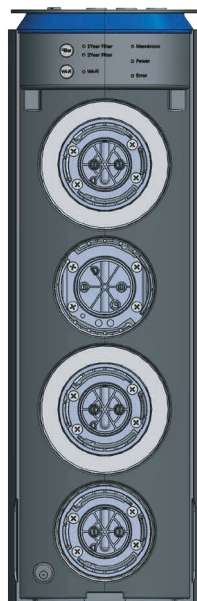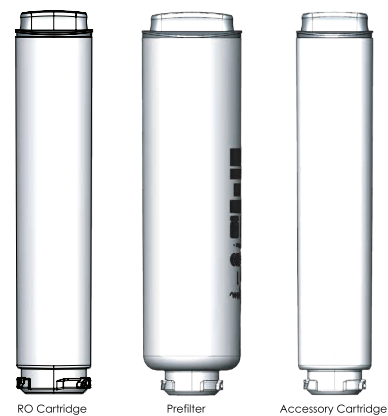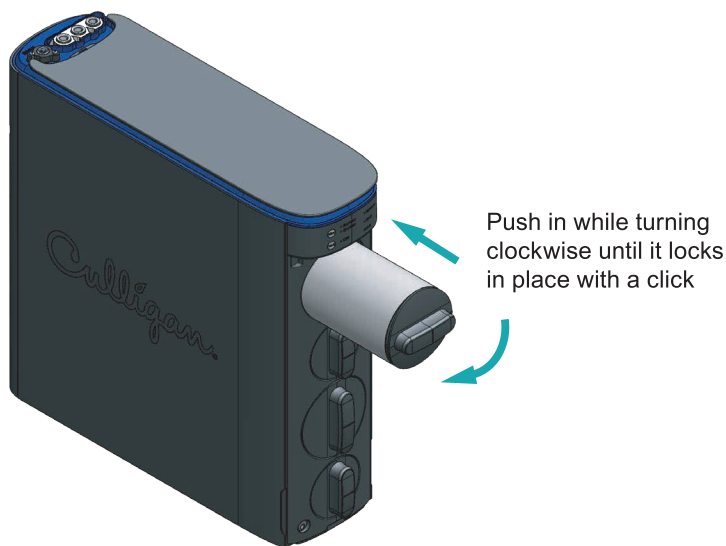Connections necessary for sanitizing process
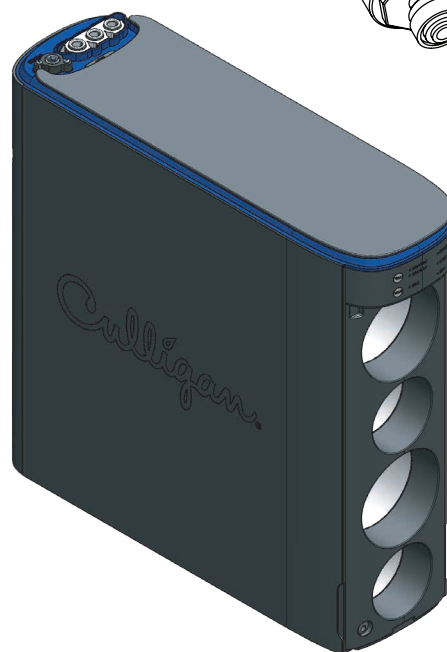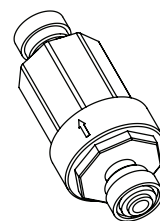
In-Plant System Flushing

Flush the filters for 10 minutes before inserting the membrane to be flushed. Insert each cartridge into its appropriate position referencing the number on the handle and the specific port size. Direct the tubing from the OUTLET and TANK connection to a suitable drain. Attach ¼″ tubing to the capillary tubing assembly and direct it to the drain also. To fully hydrate the membrane before use, allow the system to flush for approximately 24 hours.

Membrane performance can be validated using a TDS meter or by using the Service Pro app connected to the system by Bluetooth.

When disconnecting tubing, be sure to allow full depressurization and lay the unit on its right side so water from the tubing doesn't run into the enclosure.

NOTE! **If water drains into the enclosure of the Smart RO, it could trip the leak sensor and prevent the system from operating.**

Plug all tubing ports for transportation to prevent leakage or contamination.

Push in while turning clockwise until it locks in place with a click

RO Cartridge   Prefilter   Accessory Cartridge

Smart RO
DSN: 13778292

Set Time

Diagnostics   Advanced >

Status	Rejection	TDS Out
Idle	93%	14

Filtration	Membrane	Efficiency
313 days	0%	11%

Pressure	Tank	Wi-Fi
67 Feed	1% Full	-51 RSSI

atencion@purewater.mx   purewater.mx   81-1642-7777
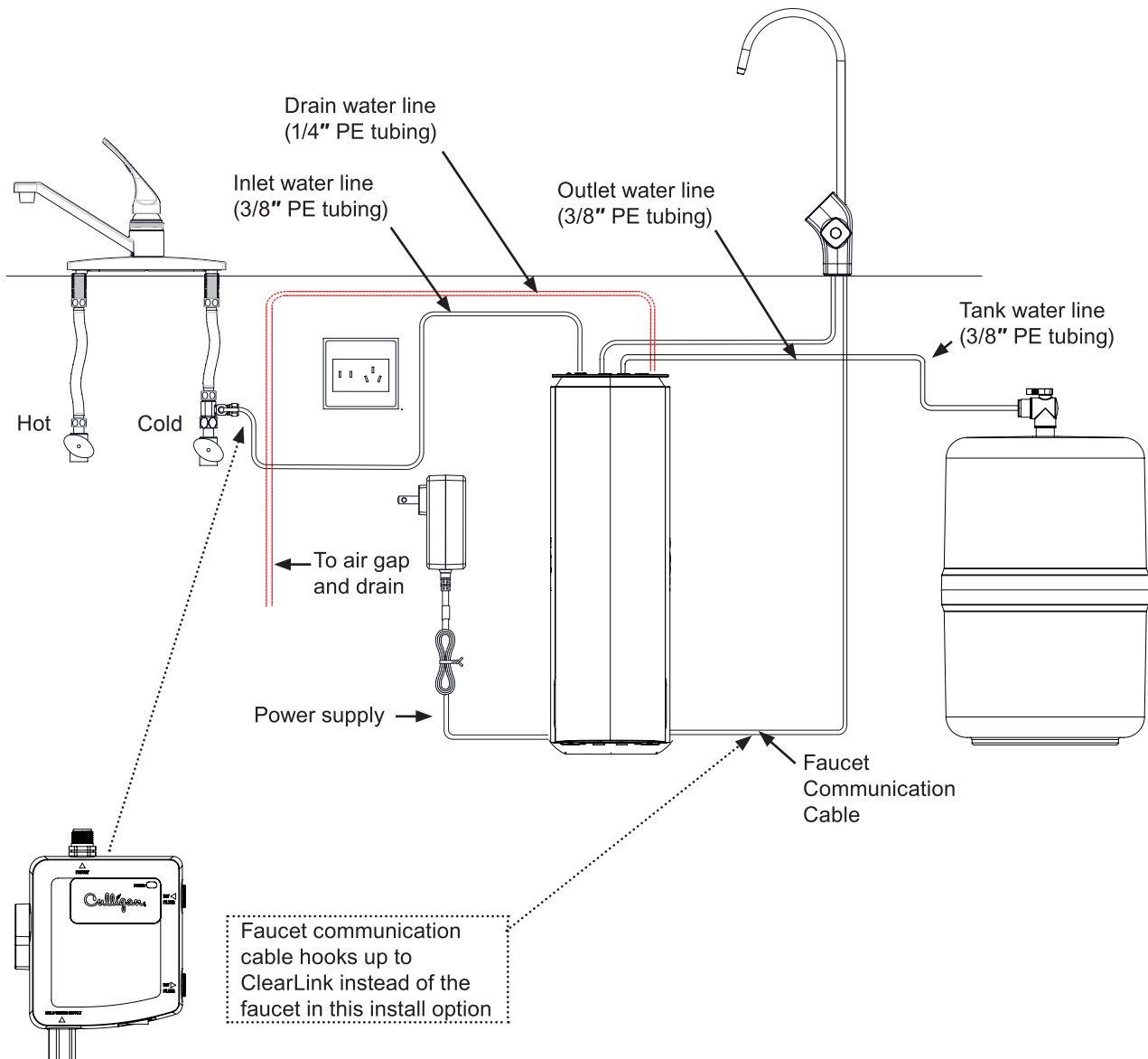
Installation

Installation Overview

The exact placement of the components will vary by installation. Although shown beneath a sink, it may be installed in a basement, crawl space, or in an adjacent cabinet. Regardless of where the system is installed, the flow sequence shown should be the same.

The Aquasential® drinking water system is designed to be mounted near cold water supply and drain line. Lengths of 1/4″ and 3/8″ OD plastic tubing will be required to make this installation.
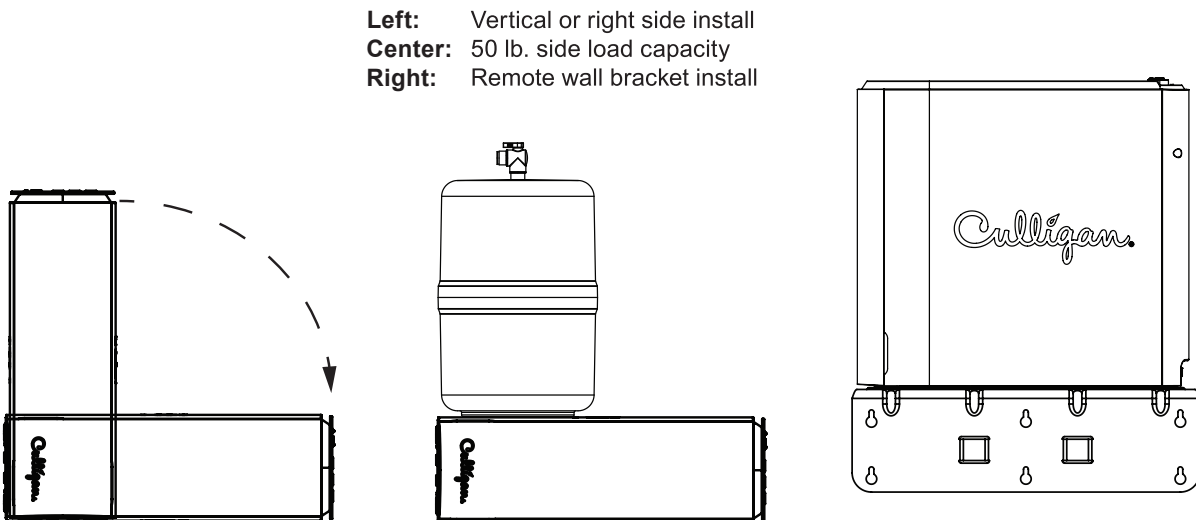
Whether in a base cabinet or mounted to a wall, placement should make it possible to replace the filters regularly without needing to move the unit from its position. Evaluate the installation site to determine the easiest path for the plumbing to follow. Take care to make the installation as neat as possible.

NOTE! **If the clearance above the system is narrow, stem elbows (P/N MS028677 for 1/4″ and MS028679 for 3/8″) can be added to prevent too much of a bend in the tubing.**

Drain water line
(1/4″ PE tubing)

Inlet water line
(3/8″ PE tubing)

Outlet water line
(3/8″ PE tubing)

Tank water line
(3/8″ PE tubing)

Hot   Cold

To air gap
and drain

Power supply

Faucet
Communication
Cable

Faucet communication
cable hooks up to
ClearLink instead of the
faucet in this install option

atencion@purewater.mx   purewater.mx   81-1642-7777

RO System Placement

• RO can be laid on its right side but not the left side if RO unit is a Smart RO for the leak sensor to work properly. Stacking on top of the enclosure isn't an issue.

• Storage tank can be standing up or laying on its side, but it needs to be placed near and on a similar elevation as the RO to prevent pressure loss in distribution because the post filter is in the unit.

• Refrigerator connections should tee off the line going to the faucet and not the line going to the storage tank and should have a shut-off valve installed.

• Basement installations should utilize the optional mounting bracket (P/N 01040556) for wall mounting and faucet cable extension cable (P/N 01040530 for Smart faucet, P/N 01041310 for Standard faucet) up to 29.5 foot (9 meter) for Smart RO.

• For an appliance provided with a cord and intended for installation under a counter or in a cabinet, the following or equivalent information shall be provided in the Installation Instructions:

   a. The power-supply receptacle for the appliance shall be installed in a cabinet or on a wall adjacent to the under counter space in which the appliance is to be installed.

   b. There shall be an opening through the partition between the compartments specified large enough for the attachment plug to pass through.

   c. The longest dimension of the opening shall not be more than 1-1/2 in (38 mm). The edges of the opening specified in (b) shall, if the partition is wood, be smooth and rounded, or, if the partition is metal, be covered with an edge protector provided for this purpose by the manufacture.

   d. Care shall be exercised, when the appliance is installed or removed, to reduce the likelihood of damage to the supply cord.

• The higher you can mount the system in the basement, the less pressure loss there will be to the faucet or refrigerator.

• It will be possible to strap the storage tank under the wall bracket when securely anchored to a wall.

Left: Vertical or right side install
Center: 50 lb. side load capacity
Right: Remote wall bracket install

NOTE! **If installed in the basement, Smart ROs or Standard ROs with the PID Kit will require the Extension Cable (P/N 01040530 for Smart and P/N 01041310 for Standard PID) to connect to the faucet.**

If a faucet is not installed, the Aquasential® ClearLink™ PRO (P/N 01040526/7/8) can be used with a Smart RO or the Standard ClearLink™ PRO and Connected ClearLink™ with the Standard RO.

atencion@purewater.mx   purewater.mx   81-1642-7777

Installation Materials

The following tools and supplies will be needed, depending on installation method.

Observe all applicable codes.

To ensure proper and efficient operation of the Culligan equipment to your full satisfaction, carefully follow the instructions in this manual.

- Sanitizing Cartridge P/N 01038197
- Safety glasses
- Tubing cutter
- Porcelain Cutter Kit, 1-1/4 inch diameter, P/N 00591625
- Greenlee Hole Punch, 1-1/4 inch diameter
- Heavy Duty Drill with speed control to 400 rpm
- Screwdriver, blade and Phillips (#1 and #2 tips)
- Tubing, Plastic, 1/4-inch, P/N MS028781 Black
- Tubing, Plastic, 3/8-inch, P/N MS028697 Black
- Drain Saddle Kit, P/N P1020515 (10pk - plastic) or 01000329 (brass)

- Silicone Lubricant, P/N 00471507
- Thread Sealing Tape
- TDS Meter
- Graduated Measuring Cylinder
- Thermometer
- Time keeping device (i.e., watch, smartphone)
- Chlorine Bleach
- Air Pressure Gauge (0-25 psi in 0.5 psi increments) with section of 1/4" OD tubing connector
- Hand air pump or air compressor
- Tee, if system will be connected to ice-maker

CAUTION!
The cuts on the PE tubing must be regular and smooth without any burrs affecting the sealing. Make sure that the PE tubing is not deformed after being cut and the O-shaped gasket is sealed well so that no water leakage occurs.

atencion@purewater.mx   purewater.mx   81-1642-7777

Faucet Assembly

The top mounted faucet assembles above the sink or counter and not underneath. The mounting ring is designed to fit a standard 1.25″ sink or counter top hole, and has a standard air gap connection inside similar to other Culligan faucets.

NOTE! **If mounting on a larger hole size, add the Spacer (see "Service Parts" on page 49) to bridge the hole and provide a mounting foundation for the mounting ring.**

Figure 1.   Installation of Faucet

1. Position the mounting ring with the rubber gasket under it so the notch is positioned to the front. The mounting ring has the word "DOWN" imprinted on it as a reminder to put that side down. Check toggle bolt positioning while tightening to allow space for tubing up to the faucet base.
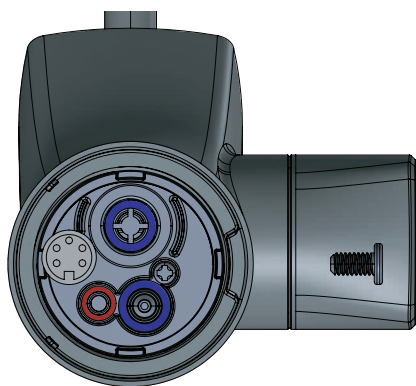
2. The 3/8″ tubing from the OUTLET port of the RO goes to the quick-connect fitting, the DRAIN on the RO goes to the ¼″ barbed fitting for the air gap, and 3/8″ gravity drain tubing attaches to the larger barbed fitting BEFORE mounting the base onto the mounting ring.

NOTE! **If the screw hole doesn't line up, recheck the bolt tightness and the ring position, don't force anything to fit.**
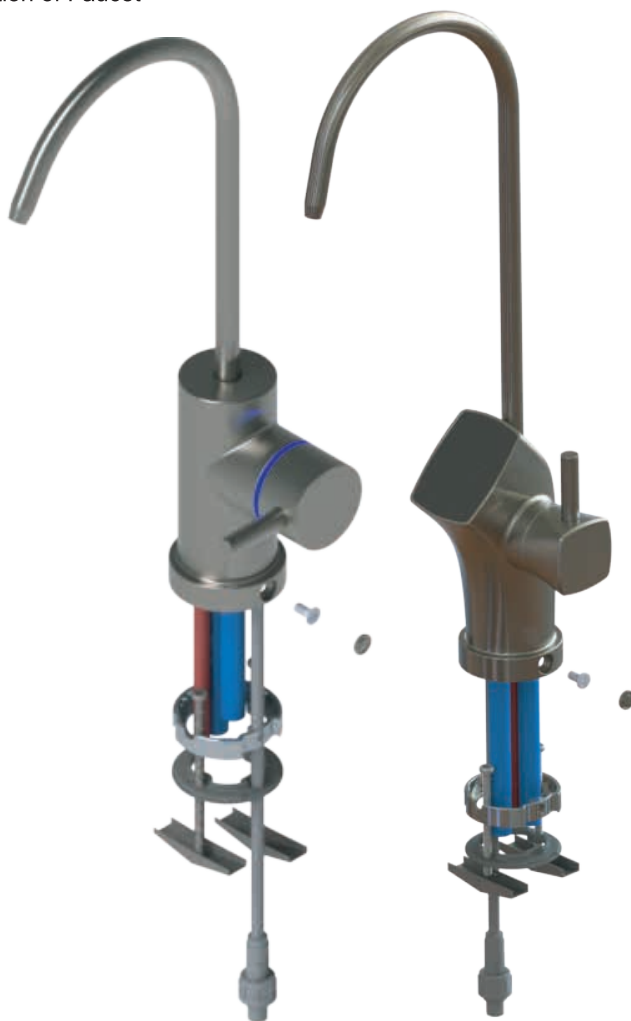
3. Line up the two keys inside the faucet base with the slots on the mounting ring. Rotate clockwise slightly until the screw hole is aligned with the opening. Tighten the mounting screw and use the screw cover to finish the installation.

NOTE! **If turning the Smart Faucet handle slowly, you may see water dispense before the screen turns on.**

⚠ **CAUTION!**
Spout is intended to be inserted into the base and not to be removed afterwards. Lube o-rings and use care to prevent damage when inserting them.

Manual de Usuario Culligan Aquasential RO y Smart RO. Página 17 de 56   Pure Water Technology (2023) Todos los derechos reservados

atencion@purewater.mx   purewater.mx   81-1642-7777

RO Drain Connection

Follow local plumbing codes requiring the drain from reverse osmosis drinking water systems be discharged through an air gap siphon break. The Aquasential® faucet incorporates an air gap into its base. The discharge from the air gap must be connected to the plumbing system for proper drainage. This connection can usually be made beneath the sink. Incorrect installation may result in overflow of the air gap or excessive noise.

Many homes are equipped with disposals and dishwashers. Special care must be taken when these appliances are present to prevent improper air gap performance. Home drain plumbing must be free of any blockage since this may cause a backup of dishwasher and disposal waste into the air gap outlet tube, thus resulting in improper air gap performance.

In all cases, the drain tubing from the air gap (RO outlet) should run downward, free of dips and loops. The air gap outlet must not be connected to the effluent side of the trap. This can vent sewer gas which will produce foul odors.

Optional Drain Line Adapter

NOTE! **Do not install the drain line downstream of a disposer or in a horizontal pipe.**

Install the drain line adapter under the sink as shown. The baffle tee shown must be installed to prevent a clog in the RO drain line. Route the drain line from the air gap to the drain line adapter, ensuring that there are no dips, loops, or low spots in the line.

The drain line adapter should be aligned vertically so the hose connection points upward (the hose connection should never be allowed to drop below 45º from this vertical position). This installation MAY result in a slight drain noise in the sink drain when the RO is operating.

Figure 2.   Proper Drain Line Adapter Orientation

atencion@purewater.mx   purewater.mx   81-1642-7777
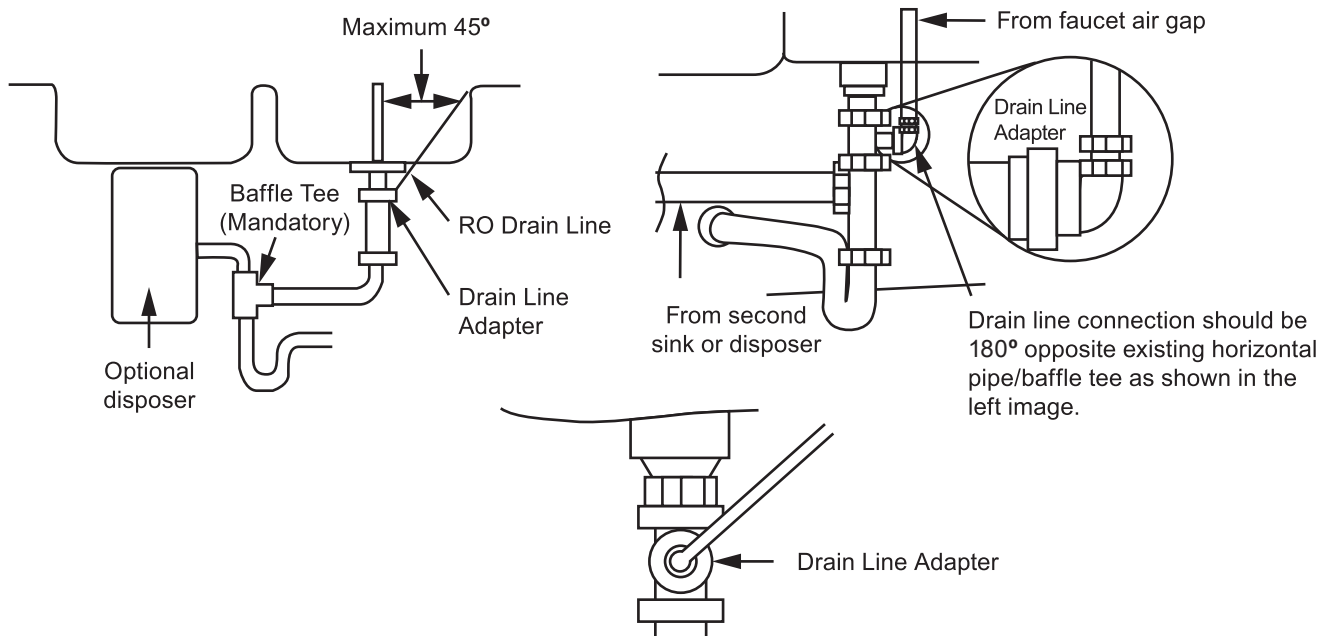
Electrical

Smart RO Electrical Connections

The Smart RO requires low voltage power to operate the on-board sensors, solenoids, and circuit board. When an 120VAC outlet is not available within 10 feet, battery operation is possible (see).

The Smart RO faucet is connected to the system with a 4-foot cable then threaded onto the back of the unit so that it won't be detached. When a greater length exists between the two components, and optional cable extension, P/N 01040530 allows an additional 24 feet for the connection.

Figure 3.   Connection on back
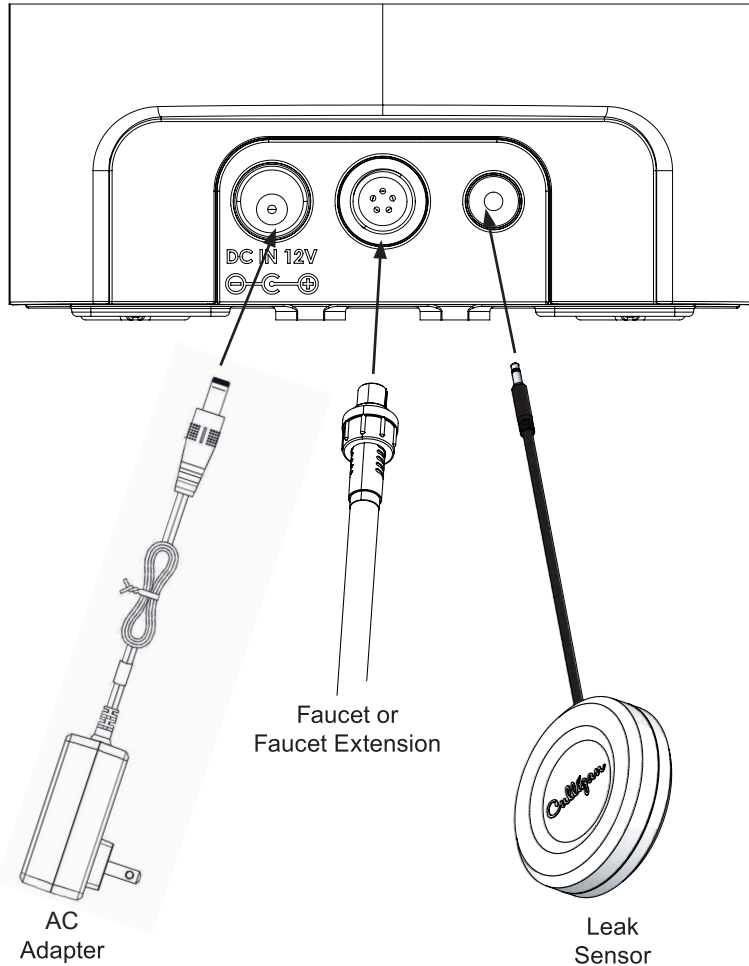
DC IN 12V

NOTE! **Press Leak Sensor connector all the way into the plug. Test operation by placing a wet finger across the sensors.**

Never connect the Smart faucet or Aquasential ClearLink data cables when the Aquasential Smart RO is powered on. Doing so can cause physical damage to PCBs as well as communication errors between the devices.

AC
Adapter

Faucet or
Faucet Extension

Leak
Sensor

Figure 5.   Connection on front

The power connection on the front, located under the cover, is generally for convenience

atencion@purewater.mx   purewater.mx   81-1642-7777

Optional Rechargeable Battery Installation (P/N 01040555)

See for instructions on removing the cover to expose the electronics compartment for adding the battery.

Figure 4.   Battery replacement

Battery storage location

Rechargeable battery

Remove power cable from RO board

Install daughter board onto RO board

NOTE! **Ensure standoff snaps into RO board mounting hole**

Remove screw to unlock battery cover mechanism, allowing access to the battery

Plug battery into daughter board

Reinstall power cable to daughter board
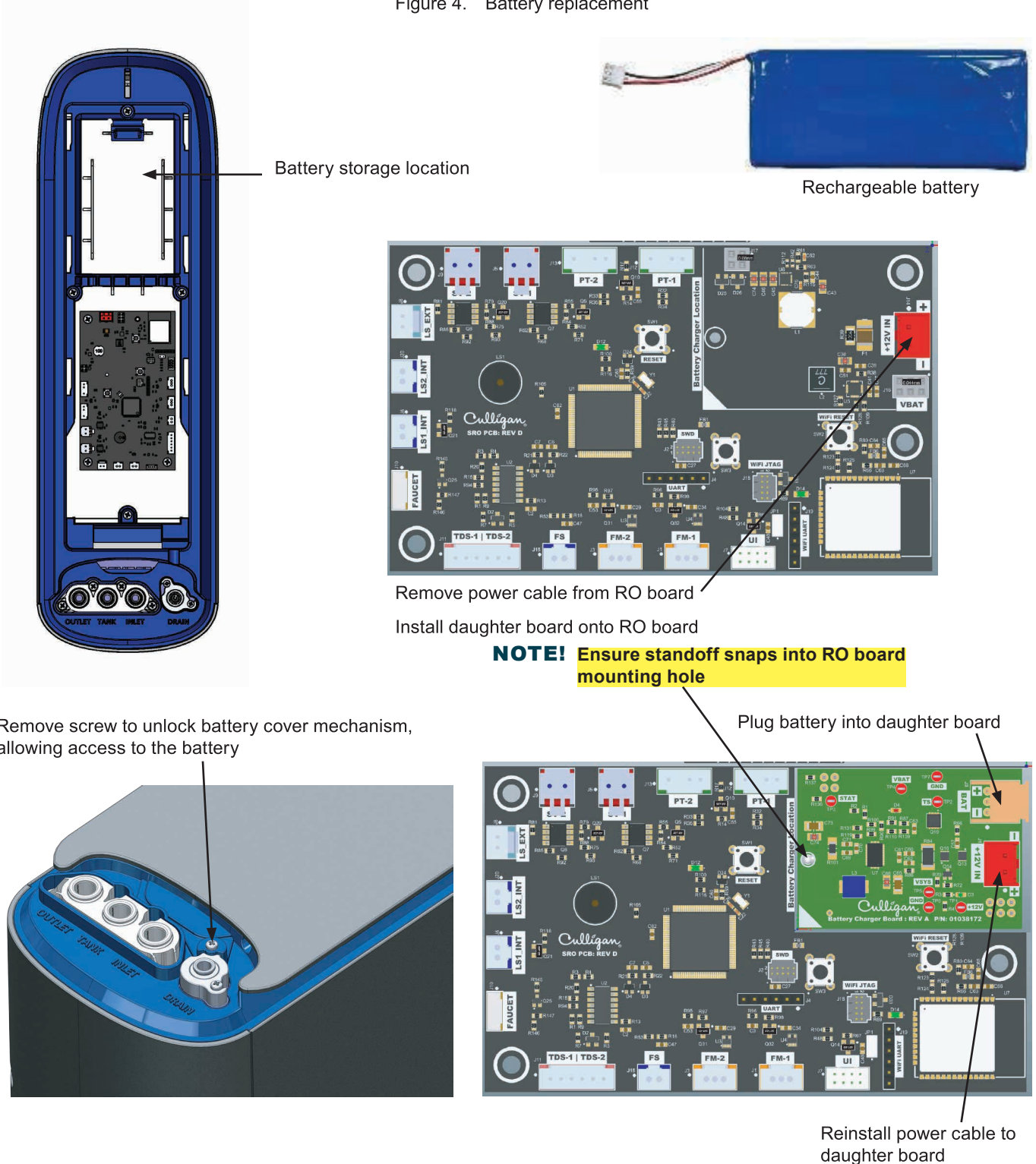
Smart RO Display Functions

Front Panel Display

Figure 6.   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 when connected to Service Pro App			Blue		
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 (See app section for information on pairing)

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)

atencion@purewater.mx   purewater.mx   81-1642-7777

Faucet Display

Indicators on the Smart RO faucet are lit only when the faucet is in use. Water will dispense prior to faucet screen turning on.

Figure 7.   Faucet LED indicators
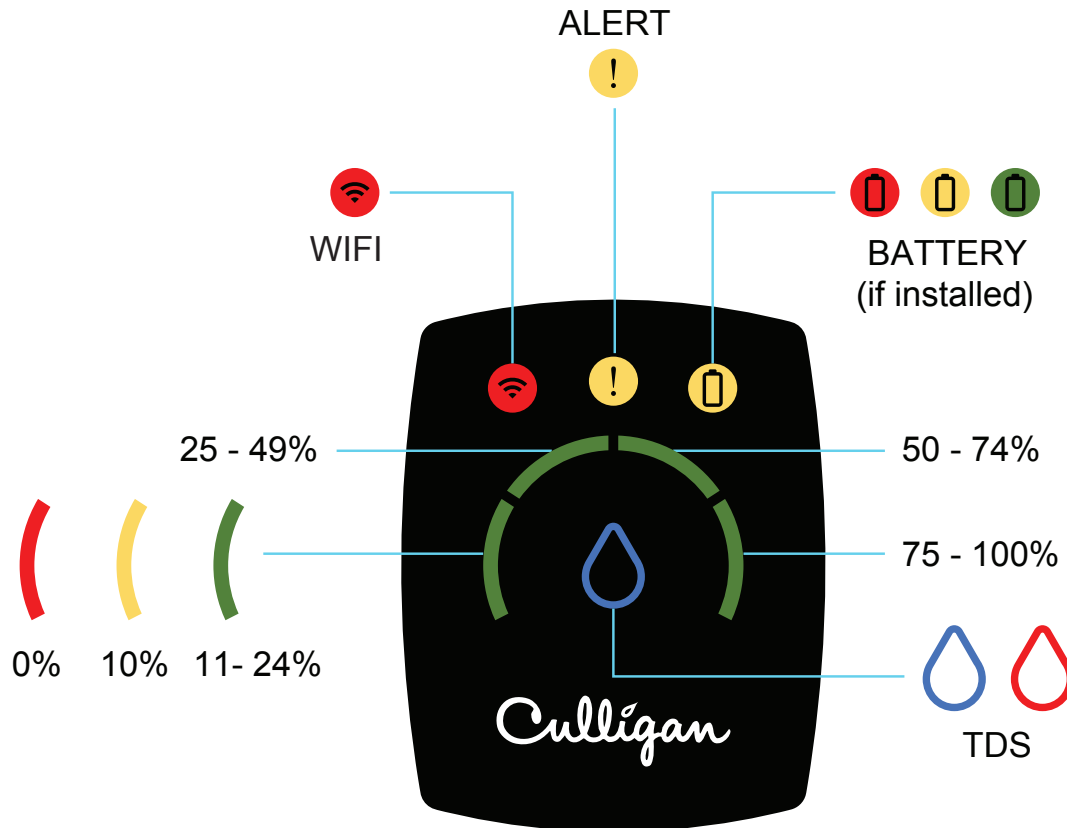
NOTE! Wi-Fi icon will only illuminate red if your device had previously been connected and can no longer connect (Router unplugged, changed Wi-Fi password, router has been moved too far to reach device)

Manual de Usuario Culligan Aquasential RO y Smart RO. Página 22 de 56   Pure Water Technology (2023) Todos los derechos reservados

atencion@purewater.mx   purewater.mx   81-1642-7777

Accessories

Aquasential® ClearLink™ PRO – Smart RO Only

P/N 01040526 Chrome Kit, P/N 01040527 Brushed Nickel Kit, P/N 01040528 Oil Rubbed Bronze Kit

If the Aquasential® ClearLink™ PRO is used instead of a faucet, leave the cap on the faucet connection to protect it from any moisture exposure.

Optional Leak Sensor (P/N 01038016) can offer additional protection around the system. Placing it on a napkin or paper towel can aid sensitivity.

Figure 8.   Aquasential® ClearLink™ PRO
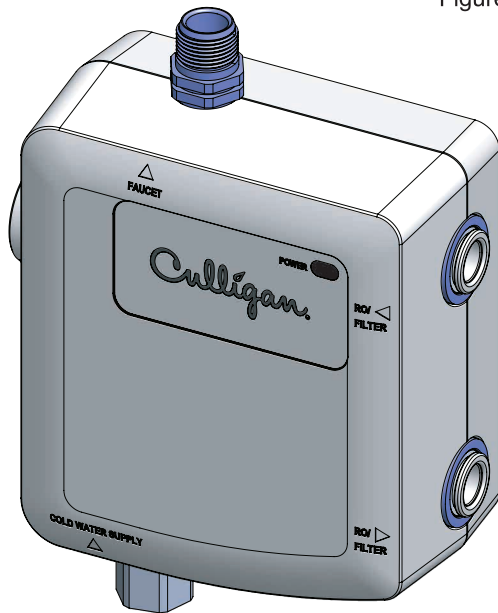
- New Aquasential ClearLink PRO only works with Smart RO
- Plug Aquasential ClearLink PRO into Smart RO faucet port
- Utilizes power and data directly from Smart RO system
- Remainder of install remains the same as ClearLink PRO

Bottom icons
- Wi-Fi and Alert icon only illuminate if there is an issue
- TDS and battery (if installed) light when the faucet is being used

atencion@purewater.mx   purewater.mx   81-1642-7777
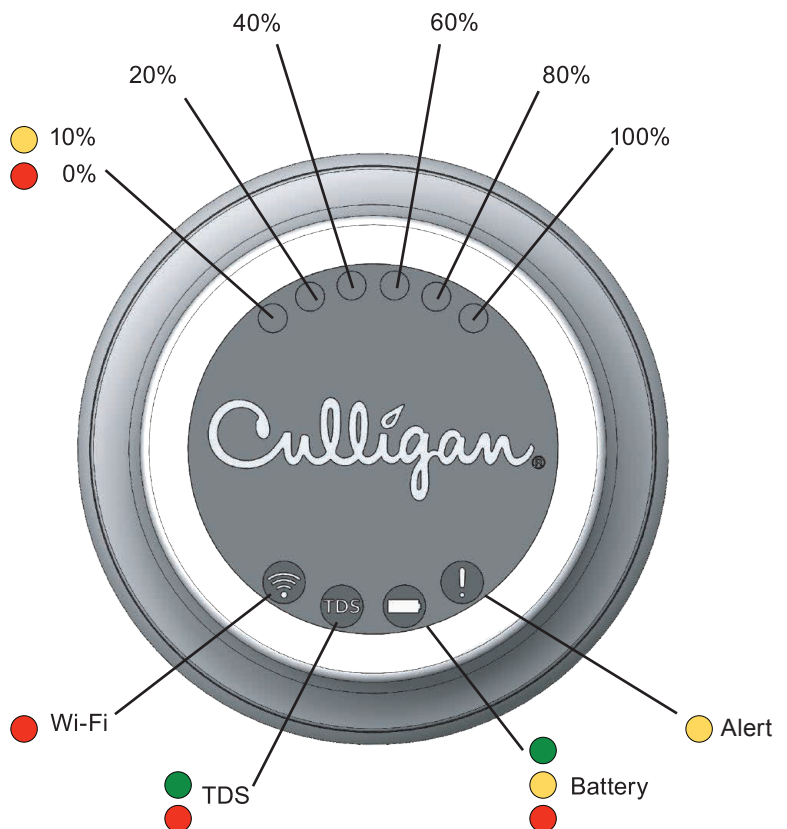
Optional Smart Faucet Extension Cable (P/N 01040530)

A 29.5 foot (9 meter) faucet extension cable is available to help with remote mounted Smart RO systems. It is designed as a two-piece cable allowing only a ½" hole to be drilled through surfaces then feeding the length of the cable without having to pass the signal converter boxes through any holes

NOTE! **Must use both sections of the extension cable for the data to transfer correctly.**
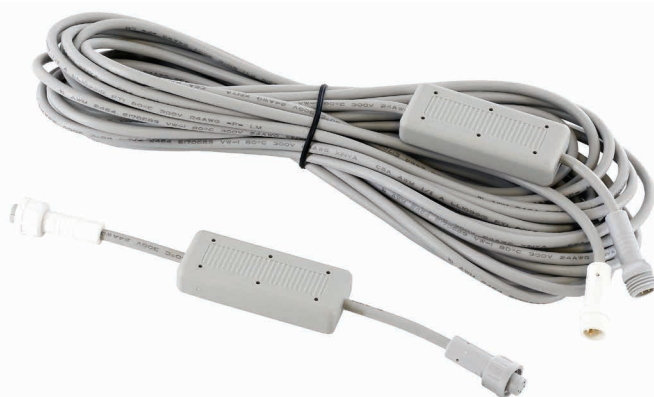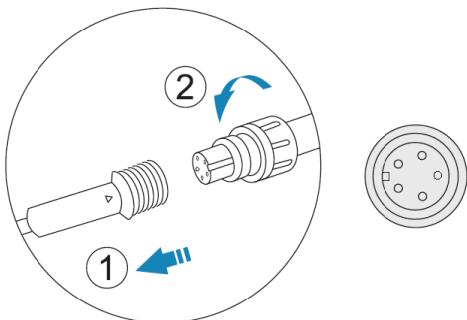
Leak Sensor (P/N 01038016)

See "Figure 3. Connection on back" for installation details.

NOTE! **Press Leak Sensor connector all the way into the plug. Test operation by placing a wet finger across the sensors.**
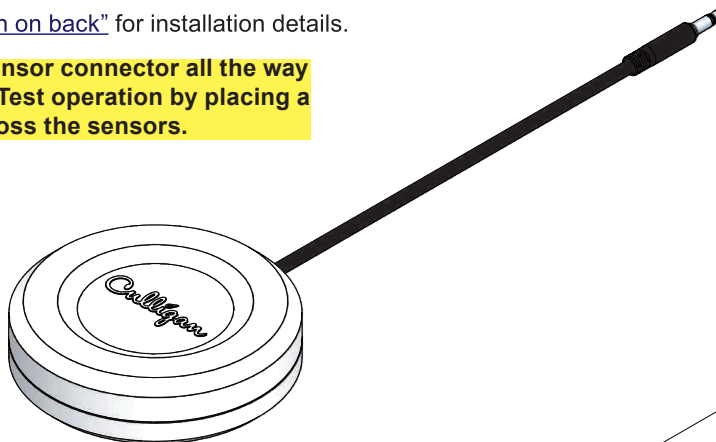
Wall Mount Bracket Kit (P/N 01040556)

NOTE! **16 inch center mounting and slots available for adding straps for positioning the tank under the bracket.**

atencion@purewater.mx   purewater.mx   81-1642-7777
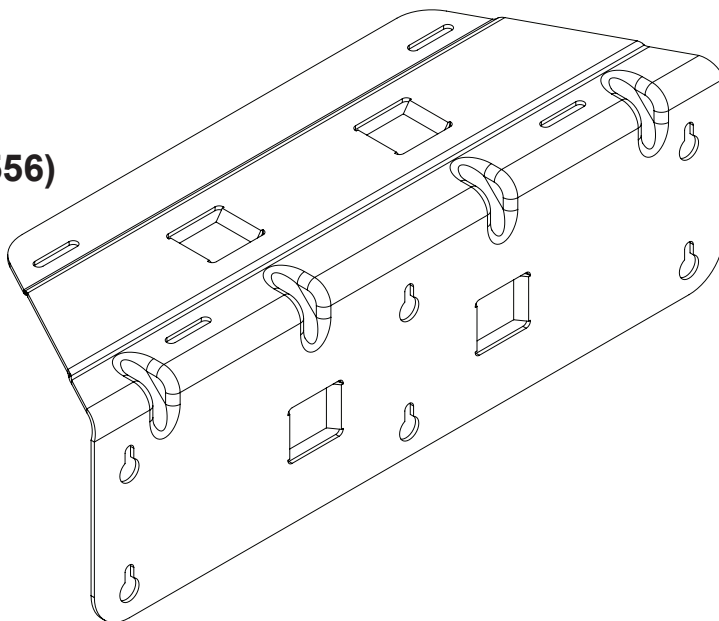
Faucet Mounting Spacer (P/N 01041379/80/81/82)

A spacer is available in each of the faucet finishes to be used under the mounting ring when the mounting hole is larger than 1.25″ or when the mounting surface is not smooth or sound. The gasket should still be used between the mounting ring and the spacer.

NOTE! **Do not overtighten the toggle bolts to prevent damage or deformity to the spacer.**

Manual de Usuario Culligan Aquasential RO y Smart RO. Página 25 de 56   Pure Water Technology (2023) Todos los derechos reservados

atencion@purewater.mx   purewater.mx   81-1642-7777

Quality Monitor Kit (P/N 01041305)

A Quality Monitor Kit is an available addition to the Aquasential RO which monitors water quality and filtered gallons.
This accessory works with the Aquasential RO Faucet with light (P/N 01038184 – 01038187) which is not included in this kit.

Figure 9.   PID Kit

Settings

Dip switch 1-2 – Set to desired life / gallon capacity

TDS dip switches 3-8 – Set the desired set-point to the up position
(at this TDS reading, the system will illuminate the handle red)

Holding reset for 5 seconds will reset the filter capacity
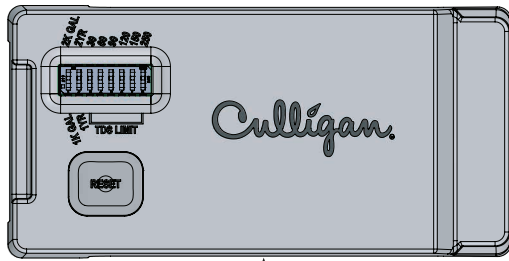
The PID control module fits in the space under the top cover.

The faucet will plug into the bottom of the unit after the cable
has been routed down the manifold behind the cover

The TDS/Flow Sensor can connect to the OUTLET tubing inline
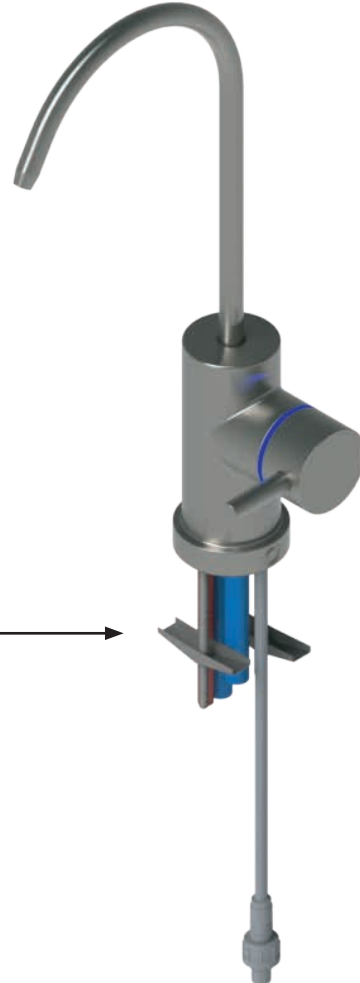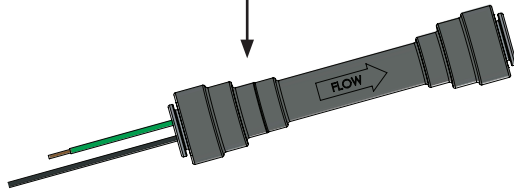
Optional Standard Faucet w/Light Extension Cable (P/N 01041310)

A 29.5 foot (9 meter) faucet extension cable is available to help with remote mounted Standard RO systems using the faucet with light.

Trim Panel Slot

Install PID Control Box with four C batteries in the front compartment

Route wires from the Flow Sensor through the trim panel slot and the top compartment. Then connect the black wire from the control box.

Ensure flow sensor is connected to outlet line of system. Note direction of flow arrow on sensor.

Route faucet cable through the opening in the enclosure, down to the center of the connector plate

Knock out center hole on the connector plate and secure plug in hole using c-clip
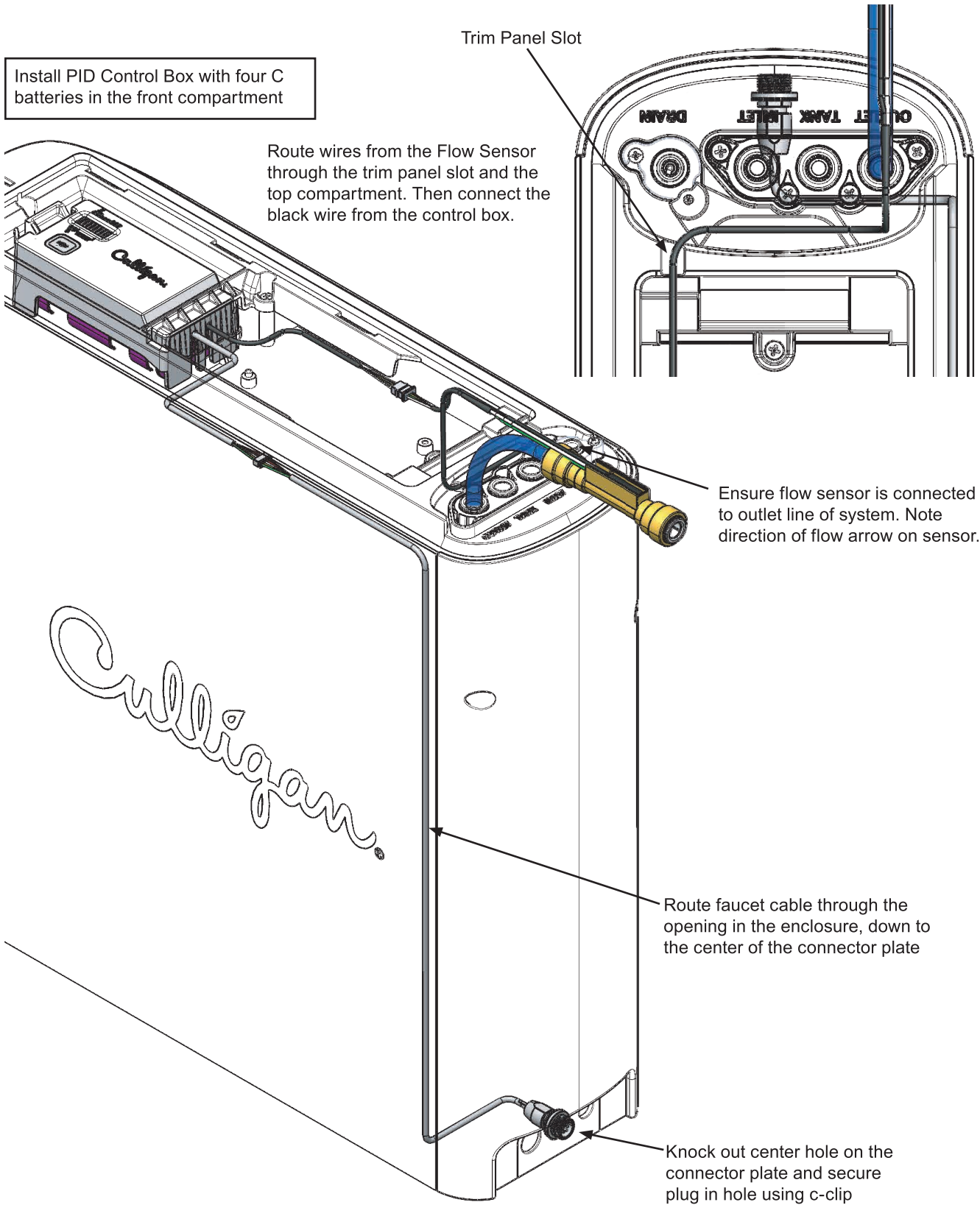
Smart RO Setup

SRO Initial Setup

> **NOTE!** **Update the Smart RO system firmware using the Service Pro App before proceeding.**

Enter Dealer ID: Should default to home dealer number. If multiple dealer locations, choose applicable one. This can be done ONLY at first time setup

Efficiency Mode: This will set how efficient the RO is running by changing how the tank is filled

- Standard: A balanced mode like a standard RO 40/60
- High Efficiency / Rejection: System will turn on when the tank is almost empty to maximize system Rejection. 30/70
- High tank pressure: System will run to ensure tank is full 100% of the time. This will be the least efficient and have a bit less TDS reduction then the other modes. 50/70

Flush Frequency: Will determine when the RO membrane will flush with RO water

- Every Cycle: Maximize membrane performance and life. Will sacrifice system efficiency
- After 2 hours idle: Default system setting: RO will do a short flush 2 minutes after the run cycle and then wait 2 hours (no interruption) and then complete a full flush. If system is turned on during the wait period, the clock will reset and wait another 2 hours.
- Every Day: System will flush once a day.
- Every Week: System will flush once a week: this is the most efficient mode but only recommended on low TDS and Softened Water

Softener Installed: Not used for function of system but will help long term tracking of membrane performance

Tank Size: Used to determine volume of water in tank

Tank Precharge Pressure: Manual entry to track precharge on tank

Manual de Usuario Culligan Aquasential RO y Smart RO. Página 28 de 56   Pure Water Technology (2023) Todos los derechos reservados

atencion@purewater.mx   purewater.mx   81-1642-7777

Start-Up

Before Leaving The Installation Site

- ❑ A complete systems check can be performed when the reservoir tank has been precharged with water.
- ❑ Move the faucet lever to the full open position. A steady stream of product water should be observed if the tank was filled earlier.
- ❑ Make a complete system check and adjust as needed to correct any leaks.
- ❑ Run product water through the faucet to flush out any remaining carbon dust from the post filter.
- ❑ Perform a final module check to verify proper product performance.
- ❑ Thoroughly clean up the equipment and the installation site.

Review Operation With Customer

- ❑ Review the operation of the Culligan drinking water system with the customer.
- ❑ Explain that the unit will require routine maintenance of the prefilters, reverse osmosis membrane filter, and the polishing filter.
- ❑ Advise the customer how often these items will need to be serviced based on your past experience.
- ❑ Discuss the product and module warranties.

Serial Numbers

The unit has a serial number located on the bottom of the RO unit. Do not remove or destroy these serial number labels.

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.

NOTE! **Do not remove or destroy the serial number; it is referenced on request for warranty repair or replacement.**

System Performance

The performance of the Aquasential® RO and Smart RO Advanced Drinking Water System can be characterized and judged by the quality and quantity of the water produced by the system. 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 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. Generally, the more water pressure, the better the performance of the system. Be careful not to go below 33 psi or exceed 120 psi, the minimum and maximum operating pressure of the Aquasential® RO and Smart RO Advanced Drinking Water System.

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.

atencion@purewater.mx   purewater.mx   81-1642-7777

Preventative Maintenance

To keep the Aquasential® RO system operating properly, it is necessary to change the filters and periodically check the systems performance. Service frequency may vary depending on local water conditions or contaminants such as high sediment, chlorine, turbidity, or hardness. Annual maintenance is the most expected, but the prefilter does have the capability of going 2 years. Use the following as a guide.

As needed

Clean the faucet with a soft cloth, avoid abrasive cleaners

At least once per year

Replace:
- Particle Filter
- Activated Carbon Filter
- Polishing Filter
- Mineral Boost

Check:
- RO Membranes
- Capillary Flow Restrictor
- TDS Reduction Performance
- Flow Rates (including air gap)
- Drain tubing for back-up

Sanitize the System

Materials Needed During Service Visit

- TDS Monitor
- Pressure Gauge (P/N 01004228) with needed fittings
- Graduated cylinder and/or teaspoon measure

- Thermometer
- Clean towels
- Sanitizer cartridge & bleach (if necessary)

Checking Performance

The following procedure is summarized on the Performance Worksheet. It details the measurement and evaluation of the key aspects of RO system performance:

- Quality of water produced
- Quantity of water produced and stored
- Efficiency of operation

This procedure should be used to evaluate and record the performance of a new system and to check the performance of an operational system. The results of the new system performance evaluation should be retained as a benchmark of system performance in the years to come.

NOTE! **To accurately check the RO membrane performance, water samples should be taken directly form the product line marked TANK and not from the faucet. If measured from the faucet, the tank must be turned off or drained, the product water should have been flowing for at least 10 minutes, and the post carbon filter should have been removed before sampling.**

Checking Quality

Measure and record the TDS level of both the product water and the feed water. Calculate the percent removal of TDS as follows:

$$\text{Removal} = \frac{(\text{Feed Water TDS - Product Water TDS}) \times 100\%}{(\text{Feed Water TDS})}$$

As an example, consider a system which is producing 50 mg/L product water from a 1000 mg/L source:[(1000 - 50) ÷ 1000] x 100% = 95% Removal

Checking Quantity Produced

Measure and record both the flow rate and temperature of the product water. Record the temperature correction factor from Table 1, which corresponds to the measured flow rate to the 77°F (25°C) standard as follows:

Adjusted Flow Rate = Measured Flow Rate x Temperature Correction Factor

As an example, if the above system is producing 24.15 gpd at 60°F, the Temperature Correction Factor from Table 1 is 1.26.

24.15 gpd x 1.26 = 30.43 gpd @ 77°F

Table 1. Temperature Correction Factors

Feed Water Temperature		Correction Factor	Feed Water Temperature		Correction Factor	Feed Water Temperature		Correction Factor
°F	°C		°F	°C		°F	°C	
40	4.4	1.73	54	12.2	1.38	68	20.0	1.13
42	5.6	1.67	56	13.3	1.34	70	21.1	1.10
44	6.7	1.61	58	14.4	1.30	72	22.2	1.07
46	7.8	1.56	60	15.6	1.26	74	23.3	1.04
48	8.9	1.51	62	16.7	1.22	76	24.4	1.01
50	10.0	1.46	64	17.8	1.19	78	25.6	0.99
52	11.1	1.42	66	18.9	1.16	80	26.7	0.97

Table 2. Flow Rates

50 GPD Membrane															
Temp (F) / PSI	30 PSI	35	40	45	50	55	60	65	70	75	80	85	90	95	100
40º F	15.3	17.1	19.9	22.4	25.0	27.2	29.6	32.2	34.1	36.6	39.9	41.5	44.8	48.0	49.7
45º	19.3	21.6	25.1	28.2	31.5	34.3	37.3	40.6	43.0	46.2	50.3	52.3	56.4	60.4	62.7
50º	23.3	26.1	30.3	34.0	38.1	41.4	45.0	49.0	51.9	55.7	60.7	63.2	68.1	72.9	75.6
55º	27.3	30.5	35.5	39.9	44.6	48.5	52.8	60.5	57.4	60.8	65.2	71.0	74.0	85.4	88.6
60º	31.3	35.0	40.7	45.7	51.1	55.6	60.5	65.8	69.7	74.8	81.4	84.8	91.4	97.9	101.5
65º	35.3	39.5	45.9	51.5	57.6	62.6	68.2	74.2	78.6	84.3	91.8	95.6	103.0	110.4	114.5
70º	39.2	43.9	51.1	57.3	64.1	69.7	75.9	82.6	87.5	93.8	102.2	106.4	114.7	122.8	127.4
75º	43.2	48.4	56.3	63.2	70.6	76.8	83.6	90.9	96.3	103.3	112.6	117.2	126.3	135.3	140.3
80º	47.2	52.8	61.5	69.0	77.1	83.9	91.3	99.3	105.2	112.9	122.9	128.0	138.0	147.8	153.3
85º	51.2	57.3	66.7	74.8	83.6	91.0	99.0	107.7	114.1	122.4	133.3	138.8	149.6	160.3	166.2
90º	55.2	61.8	71.8	80.6	90.1	98.1	106.7	116.1	123.0	131.9	143.7	149.6	161.3	172.8	179.2
95º	59.2	66.2	77.0	86.4	96.7	105.1	114.4	124.5	131.9	141.5	154.1	160.4	172.9	185.2	192.1
100º	63.2	70.7	82.2	92.3	103.2	112.2	122.1	132.9	140.8	151.0	164.4	171.2	184.5	197.7	205.1

NOTE! For 75GPD membranes (Smart RO), use the Service Pro app

atencion@purewater.mx   purewater.mx   81-1642-7777

Perform the following steps in the order shown.

Preliminary Steps

1. Check for any leaks that may exist from tubing connections or the faucet.

2. Check for flow to the drain. If flowing, close tank shut-off so you can check auto shut-off operation

3. Test and record product TDS from faucet. Also observe if faucet is in good working order.

4. Test and record feed TDS, then calculate rejection percentage.

5. If rejection is acceptable - Shut off storage tank, remove product supply tubing to collect and record product flow, and water temperature. Collect sample for 1 minute in a graduated cylinder.

6. Record feed pressure if needed by attaching a pressure gauge to feed line. Use the recorded feed pressure and water temperature to check product flow rate against the supplied chart () and determine if the membrane performance is acceptable. Reconnect the product line. Low production could be the result of partially plugged prefilters. If so retest after filters are changed.

7. With feed supply off begin draining storage tank. When the tank is empty, check the air pre-charge and adjust as required. Air pressure should be 6-8 PSI unless the feed pressure is above 60 PSI or you're use a booster pump then increase the pressure to be 10 PSI.

Sanitizing Steps (if needed)

1. With all filter cartridges removed and the storage tank empty, place 2 tablespoon of bleach into the sanitizer cartridge housing. Place the sanitizer cartridge in the 1st port in the manifold, then open the shut-off valve on the storage tank and open the faucet.

2. Turn on the feed line and close the faucet as soon as you get some chlorinated water from the spout, allowing the sanitizer to fill into the storage tank.

3. Solution can be drained through the faucet after 10 minutes. The faucet should be shut off when the flow stops.

Filter Cartridge Replacement and Flush Steps

Replacement filters need to be rinsed when install in the unit if they weren't already rinsed at the dealership before the service visit. This can be done in the unit following these steps:

1. Replace the pre-filter, post filter, and any specialty filter. Remove the membrane and set it aside for the flush.

2. Turn the water on and run water to the faucet, with the storage tank valve off, for 10 minutes. If the membrane needs replacement based on the quality and quantity performance check, it ideally should be rinsed for 24 hours.

3. Reinstall the membrane after flushing and re-open storage tank valve for the system to begin producing water again.

4. Check the air gap operation and the drain tubing for restriction or leaks.

5. Clean up your work area.

6. Instruct the customer (or leave instructions) to discard the first large glass of water removed from the faucet (or drain the tank once if membrane was replaced) before using the water. A waiting time isn't necessary.

7. Thoroughly check for leaks again.

Resetting filter life / Choosing 1yr or 2yr

1. Press and hold Filter button for 10 seconds to select filter life

2. Filter light will begin to blink, indicating you can now select between 1 year and 2 year filter life depending on the filters you have installed

3. Press filter button again while blinking to toggle between your two options. After 5 seconds of no activity, whatever filter LED that is currently selected will go solid and begin filter countdown.

SRO Diagnostics
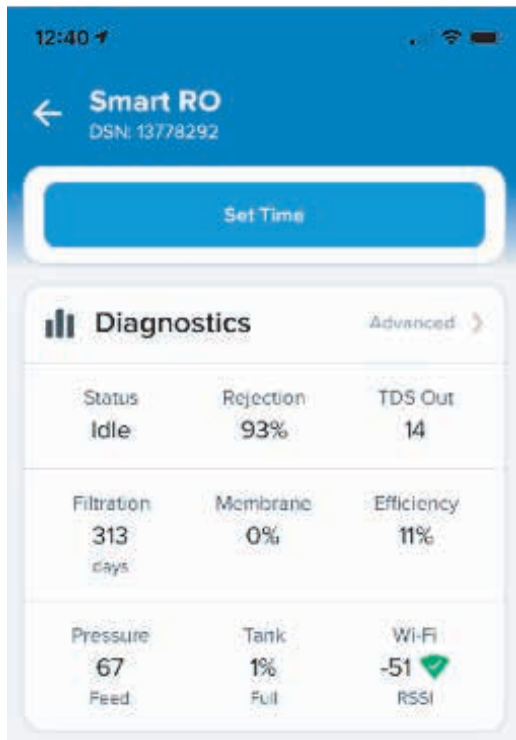
Status: Current Mode the RO is running in

- Idle: System is Off
- Running: System is producing water
- Flush: System is flushing the membrane after the RO cycle
- Dispense: Flowing to Faucet/Aquasential® CL/ or other dispense location

Rejection: TDS rejection % of the RO membrane

TDS Out: Permeate TDS

Filtration Days: Estimate in number of filtration days remaining based on historical water usage

Membrane: Estimate for how much life is left in the membrane based on historical performance

Efficiency: Real measurement of how much the water the system is wasting. 50% efficient = 1:1 permeate to waste ratio.

Feed Pressure: Input pressure in PSI

Tank %: Measure of how much water is in the tank

Wi-Fi RSSI: Wi-Fi Signal Strength from the system

Advanced: will go into secondary function

Wi-Fi Signal Strength

Excellent	**Good**	**Fair**	**Weak**
< -50 dBm	-50 to -60 dBm	-60 to -70 dBm	> -70 dBm

atencion@purewater.mx   purewater.mx   81-1642-7777
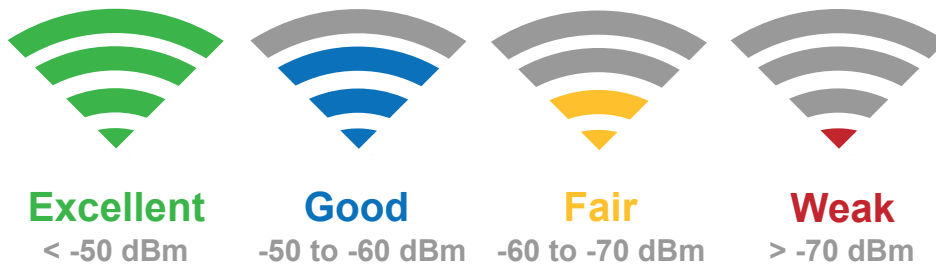
SRO Advanced Diagnostics
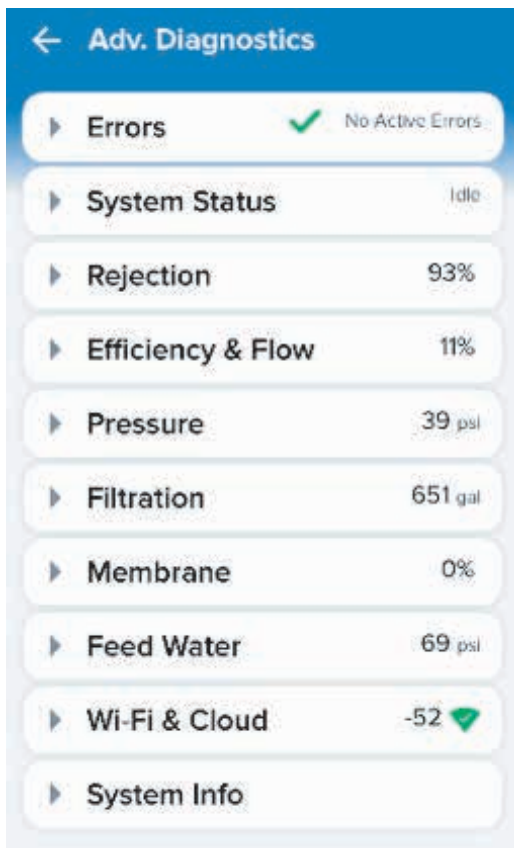
Error: Section Errors

System Status: Basic System Status

Rejection: Input, output and Rejection information

Efficiency and Flow:

Filtration Days: Estimate in number of filtration days remaining based on historical water usage

Membrane: Estimate for how much life is left in the membrane based on historical performance

Efficiency: Real measurement of how much the water the system is wasting. 50% efficient = 1:1 permeate to waste ratio.

Pressure: System Pressure Parameters

Filtration: Filter Life Capacity

Membrane: Membrane Life and Performance

Feed Water: Feed Water Characteristics

Wi-Fi & Cloud: Wi-Fi and connected characteristics

System info: General system info

Flush Trigger: Forces system to conduct flush mode

Production Trigger: Forces system to Production mode

Errors: Will display Active and historical Errors

Status: Current Mode the RO is running in

Idle: System is Off

Production: System is producing water

Flush: System is flushing the membrane after the RO cycle

Last Running Duration: How long it took to fill the RO tank last cycle

Rejection: Properties to calculate Membrane Rejection

- Rejection: Membrane rejection %
- TDS Feed: Feed TDS
- TDS Permeate: Permeate TDS

Efficiency & Flow: Properties related to system efficiency and overall flow

- Efficiency: overall system efficiency in %. Calculates over a period of time using average faucet flow / average feed flow
- Membrane Flow Performance: Measure membrane flow drop over time
- Current feed flow: Feed flow in ml/min
- Current faucet flow: Flow out of tank in gpm
- Feed flow since install: how much water has the system used since installation
- Faucet flow since install: how much permeate water has been used since install

Pressure: Properties related to system pressure

- Feed Pressure: Current feed pressure into the system
- Tank Pressure: current pressure of RO water in the tank
- Tank Precharge: current precharge pressure in tank (Manually entered)

Filtration: Properties to calculate Membrane Rejection

- Remaining Capacity: What the capacity remaining in gal
- Total Capacity: what is total capacity of the filters.
- One year or 1000gal whichever comes first
- Two year or 2000gal whichever comes first
- Days Remaining: based on average daily usage how many days are left on filters
- Days since Last Reset: how many days since the filtration last reset
- Last Reset Date: when was the last reset date on the filters

atencion@purewater.mx   purewater.mx   81-1642-7777

Membrane

Membrane Flow Performance — 0%
Current vs. initial tank fill time

Rejection — 93%

Days Since Last Reset — 7,681 days

Last Reset
Saturday, January 1, 2000

Membrane: High level membrane properties

- Membrane Flow Performance: Measure membrane flow drop over time
- Rejection: Membrane rejection %
- Days since Last Reset: how many days since the filtration last reset
- Last Reset Date: when was the last reset date on the filters

Feed Water

Temperature — 68°F

Pressure — 67 psi

Feed Water: High level feed water properties

- Temperature: current feed water temperature
- Pressure: current feed water pressure

Wi-Fi & Cloud

Connected To WiFi — No

Signal Strength (RSSI) — 0

Available in Gateway — No

Wi-Fi & Cloud: Properties related to Wi-Fi & Cloud

- Connected to Wi-Fi: is the system connected to Wi-Fi
- Signal Strength: Wi-Fi Signal Strength from the system
- Registered: is the system registered to end user in cloud. 255 = Yes
- Communicated Last 24hrs: has the system communicated to the cloud in last 24 hours.

System Info

Serial Number
DSN: 13778292

Last Power Up
Monday, January 11, 2021

Firmware Version
0.16

Battery Level
1.8v

System Info

- Serial Number: System DSN Number
- Last Power up: when was the last date the system was powered up
- Firmware Version: What is the current Firmware Version
- Battery Level: if battery is installed what the current battery level

Wi-Fi Signal Strength

Excellent	Good	Fair	Weak
< -50 dBm	-50 to -60 dBm	-60 to -70 dBm	> -70 dBm

atencion@purewater.mx   purewater.mx   81-1642-7777
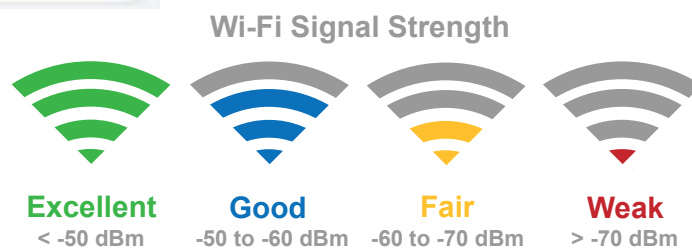
Service Pro App Settings
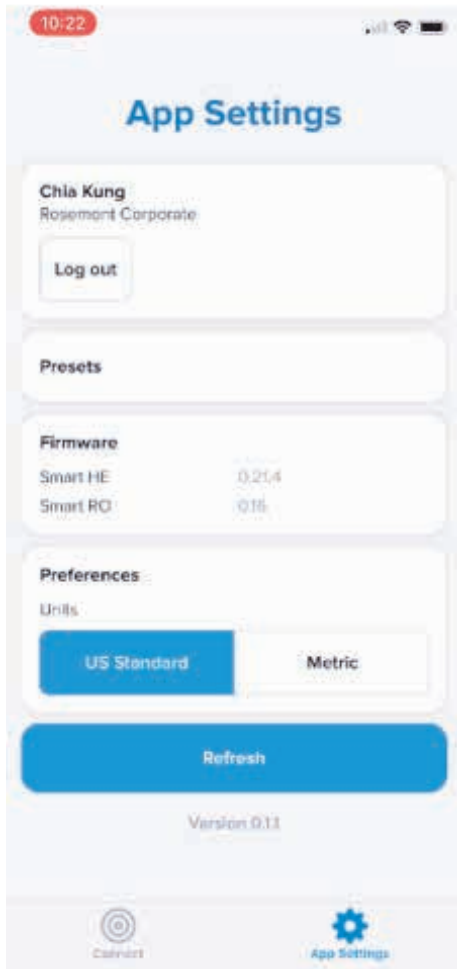
Presets: Used for GBX or when we have preset programming for SRO

Firmware: What is the latest firmware available for the system. To update connect to system and push refresh.

- If update is available: system dashboard will have notification to update.

NOTE!　　　　**Update will take approximately 10minutes.
Do not move mobile device or power off system during this time**
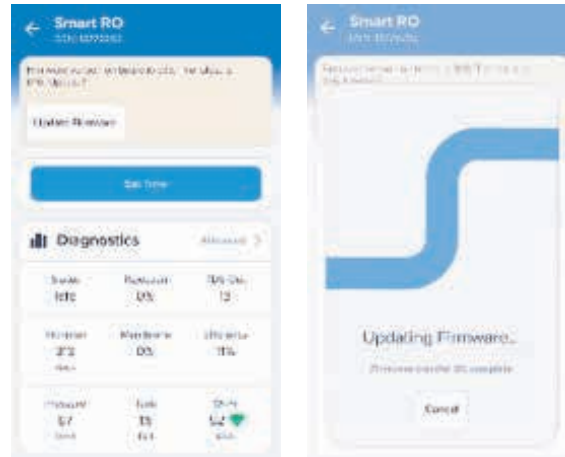

Preferences: Can change units from US Standard to Metric

atencion@purewater.mx   purewater.mx   81-1642-7777

Service

Top Cover Removal

- Press down on button at rear of unit just ahead of the tubing manifold.

NOTE! **On Smart systems with the rechargeable battery installed, remove the locking plate by removing the single screw holding it in place to access the button.**

- Slide cover forward to clear "L" clips and lift off.

Figure 10.   Top Cover Removal
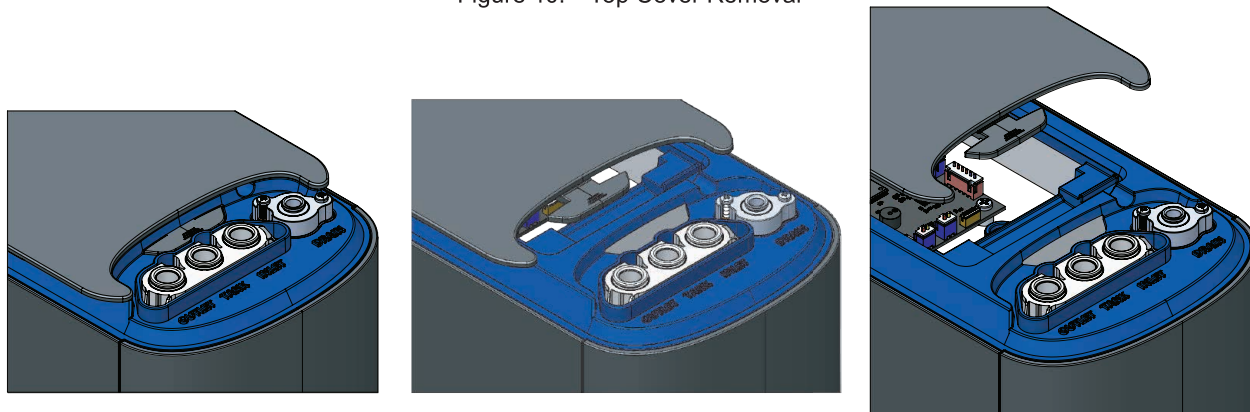
Rear Cover Removal

- Loosen two captive screws (they stay in the cover) on rear of device.
- Tilt back slightly and lift up to clear lower positioning tabs.

Figure 11.   Rear Cover Removal

Smart RO Components

Figure 12.   Standard & Smart RO Components

Inlet Pressure Transducer (PT-1)

Inlet TDS Meter (TDS-1)

Tank Pressure Transducer (PT-2)

Permeate TDS Meter (TDS-2)

Tank Check Valve (CHV-2)
(for both models)

Outlet Flow Meter (FM-2)

Inlet Solenoid (SV-1)

ASO for Standard Only

Inlet Flow Meter (FM-1)

Permeate Flush
Check Valve (CHV-1)

Permeate Flush
Solenoid (SV-2)

Outlet Flow Switch (FS)

Power Supply
Connection

Smart Faucet
Connection

External Leak
Sensor Connection

atencion@purewater.mx   purewater.mx   81-1642-7777

Electrical Components Repairs for Aquasential® Smart RO

The components below are all remove & replace with the exception of the solenoids. These have 4 screws each.
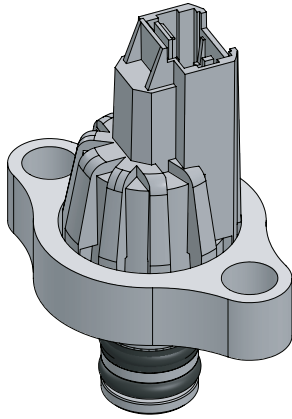
Pressure Transducer
(2 qty, Inlet & Tank)
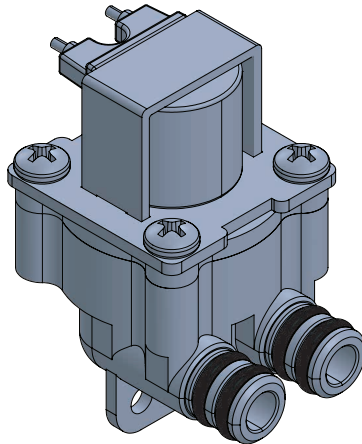
Solenoid
(2 qty, Inlet & Permeate Flush)
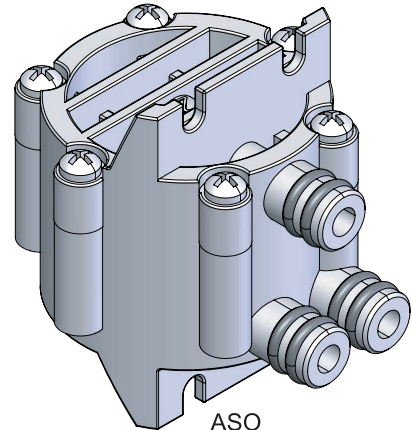
ASO
(for Standard only)
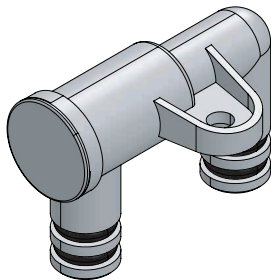
Check Valve
(2 qty, Permeate Flush & Tank)
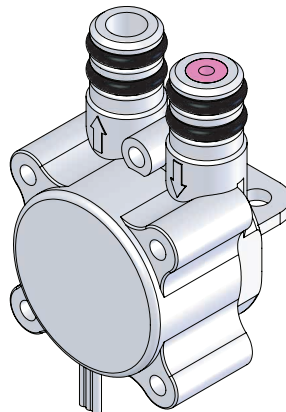
Permeate Flow Meter
(2 qty, Inlet & Outlet.
Outlet has smaller orifice)
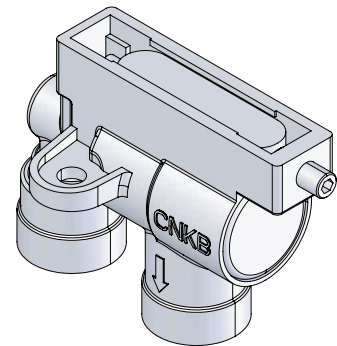
Outlet Flow Switch
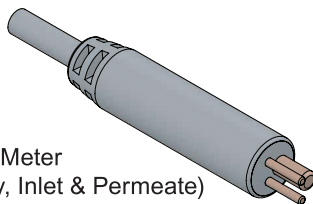
TDS Meter
(2 qty, Inlet & Permeate)

atencion@purewater.mx   purewater.mx   81-1642-7777
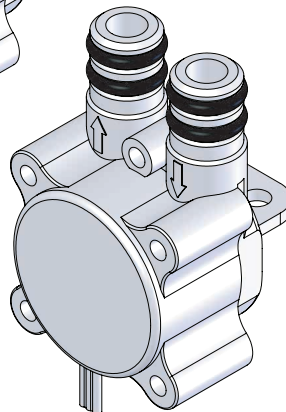
Solenoid Operation

- The solenoids in the Aquasential® Smart RO are latching solenoids that use a magnetic coil and diaphragm to control flow. Differences in water pressure on either side of the diaphragm open and close the pathway to the outlet port.

- Short pulses of a voltage signal are sent to the solenoid to change the polarity of the coil's magnetic field. These types of solenoids do not require a constant electric current to maintain the open or closed state and therefore utilize less power.

- The change in magnetic field allows the piston to open or close the pilot port which controls the amount of water pressure on each side of the diaphragm.

- The diaphragm separates the solenoid body into two chambers and a small hole in the diaphragm allows water to pass between the two.

Coil — Core Spring
Piston — Diaphragm Spring
Pilot Port — Diaphragm Orifice
— Diaphragm
Outlet Port — Inlet Port
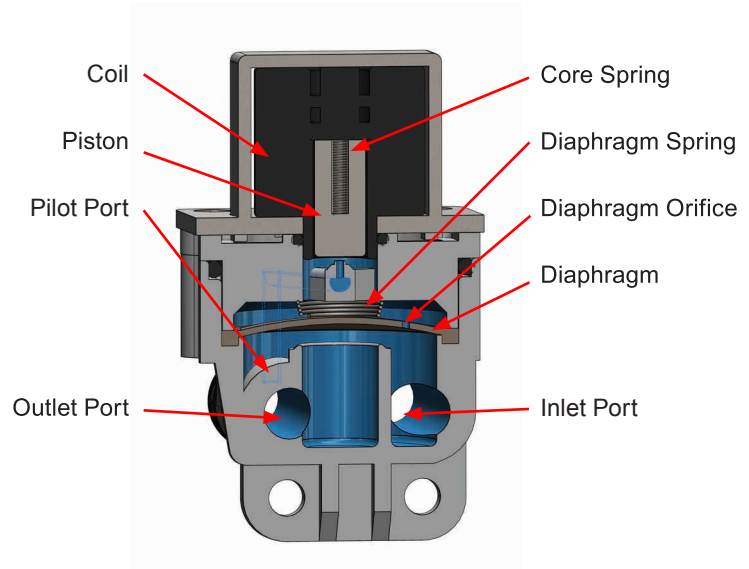
Closed State

- In the closed state, the pathway to the outlet port is sealed, blocking water flow.

- The diaphragm separates an upper chamber and lower chamber and a small hole in the diaphragm allows water to pass between the two.

- With the piston sealing the pilot port, the water pressure can equalize between inlet and outlet chambers.

- However, the upper side of the diaphragm has a larger surface area than the bottom side and therefore provides a greater force which pushes the diaphragm down, sealing the outlet port.
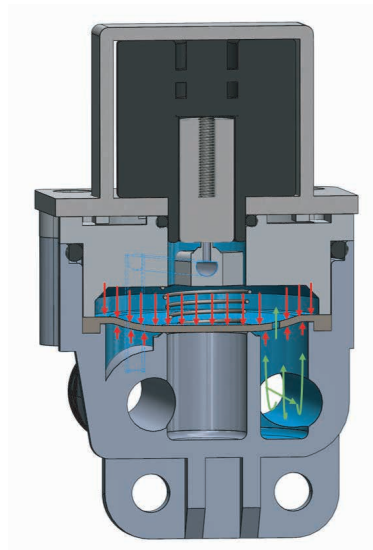
Open State

- In the open state, water can pass through the solenoid to the outlet port.

- With the piston retracted, the pilot port is opened, which relieves pressure in the upper chamber.

- Since there is now a greater amount of pressure in the lower chamber, the diaphragm is pushed up allowing water to flow to the outlet port.
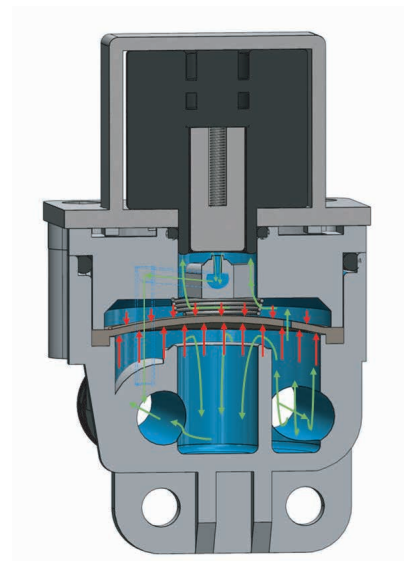
Error and Alert Messaging

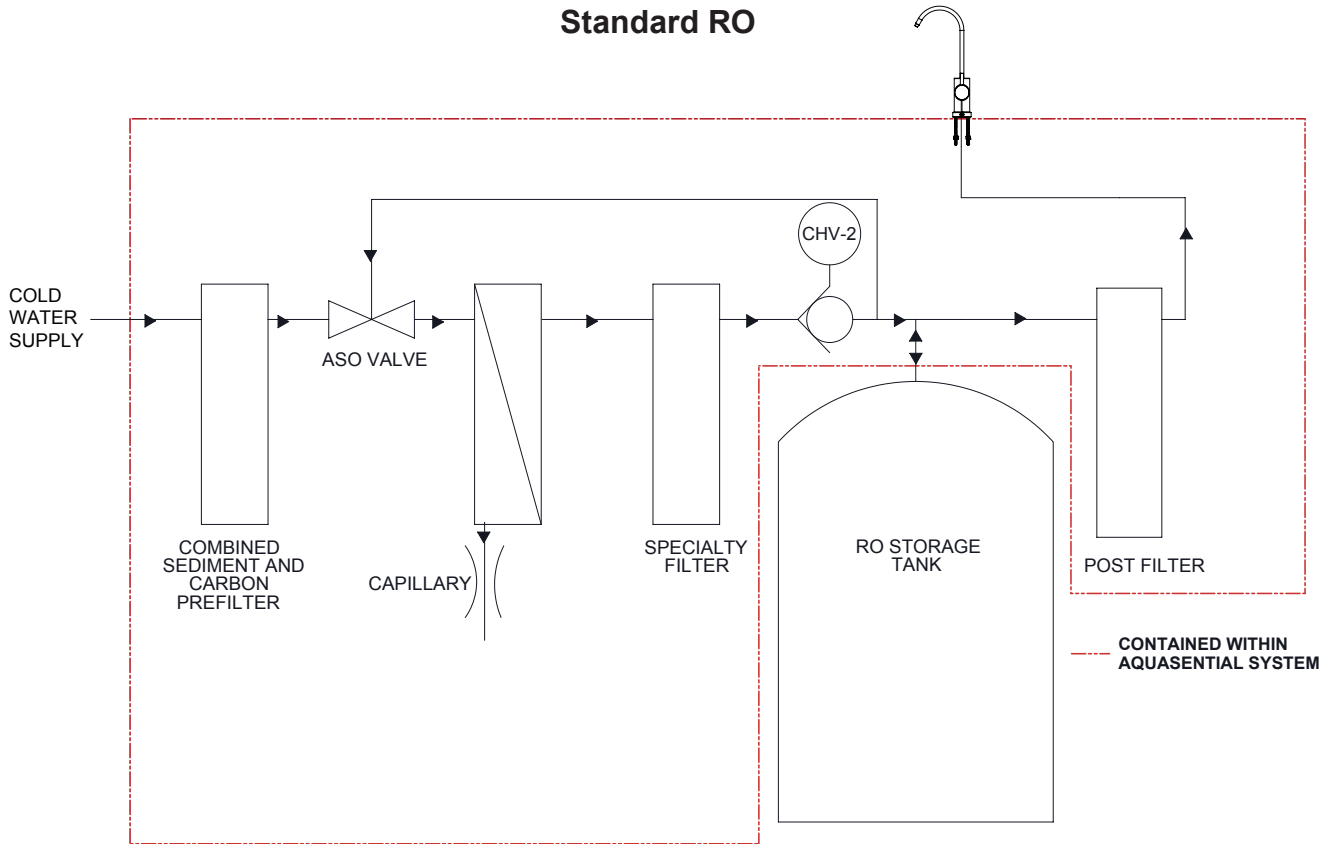| Error Name	Reason For Error	Service Pro Message	Culligan Connect Message
Filter Life Warning	Filters will need to be replaced soon	Filter Life Warning	Filter/Membrane
Filter Life Expired	Filters in System have reached capacity and need to be replaced	Filter Life Expired	Filter/Membrane
Replace Membrane	RO membrane has reached end of life and will need to be replaced	High TDS Error	Filter/Membrane
No WiFi Signal	The WiFi router is offline, the signal strength is too weak, or the password has been changed	No WiFi Signal	WiFi
No Feed Water Pressure	Insufficient water pressure is reaching device	No Feed Water Pressure	System Run Error
Low Feed Water Pressure	Insufficient water pressure is reaching device	Low Feed Water Pressure	
High Pressure Warning	Pressure to system above safe levels	High Pressure Warning	
High TDS Warning	Feed TDS above optimal system parameters	High TDS Warning	
Low Temperature	Freezing water temperature detected	Low Temperature	
High Temperature	High water temperature detected	High Temperature	
Permeate TDS Sensor Error	Faulty TDS Sensor detected	Permeate TDS Sensor Error	
Feed TDS Sensor Error	Faulty TDS Sensor detected	Feed TDS Sensor Error	
Temperature Sensor Error	Faulty Temperature Sensor detected	Temperature Sensor Error	
Tank Pressure Sensor Error	Faulty Pressure Sensor detected	Tank Pressure Sensor Error	Sensor Error
Feed Solenoid Close Error	Faulty Solenoid Sensor detected	Feed Solenoid Close Error	Sensor Error
Feed Solenoid Open Error	Faulty Solenoid Sensor detected	Feed Solenoid Open Error	Sensor Error
No Feed Flow	No flow detected into the system during production	No Feed Flow	System Run Error
No Faucet Flow	RO Tank is currently empty with faucet open	No Faucet Flow	System Run Error
Tank Fill Error	Tank did took very long time to fill, check inlet pressure, flow, filters, and membrane	Tank Fill Error	
Battery Low	The battery in system is low and will need to be recharged soon	Battery Low	Low Battery
Critical Battery Error	Battery level critical and about to turn off system	Critical Battery Error	Critical Battery
Internal Water Leak	Leak Sensor has detected an internal water leak and has shut down system	Internal Water Leak	Leak Detected
External Water Leak	External Leak Sensor has detected water leak and has shut down system	External Water Leak	Leak Detected

atencion@purewater.mx   purewater.mx   81-1642-7777

Troubleshooting Guide

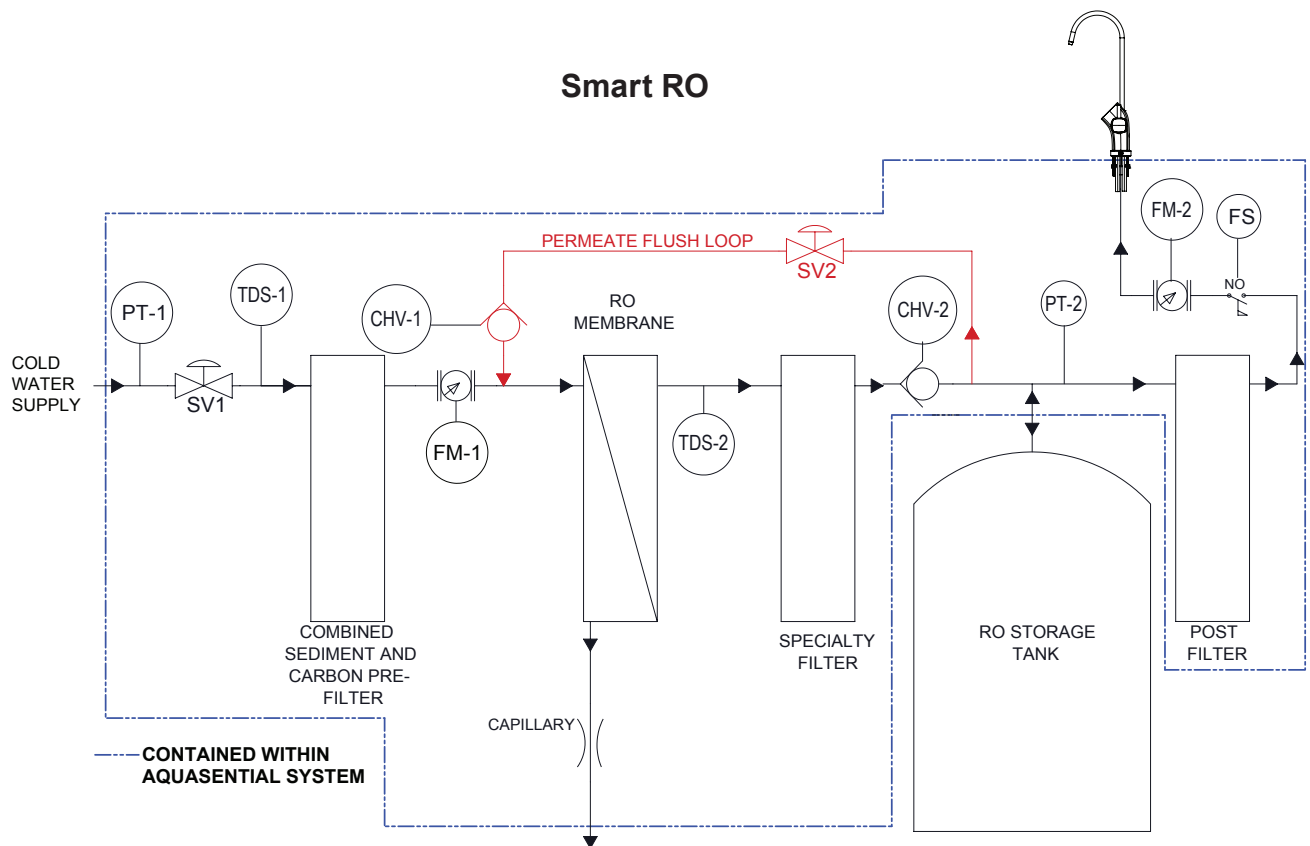| System		Malfunction	Troubleshooting	Handling
Standard	**Smart**			
	✳	System error	Error light is illuminated on unit or faucet, error notification appears in app	See "Front Panel Display" on page 21. Remove, inspect and replace instruments as appropriate based on error code.
✳	✳	Low water pressure at dispense point	Inadequate pre-charge pressure in storage tank	Check storage tank pre-charge pressure and adjust as needed. As a general guide, for feed pressures of 40-60psi, use a pre-charge pressure between 6 and 8psi. If a booster pump is used or feed pressure is above 60psi, increase the pre-charge to 10psi.
			Clogged post-filter	Replace post-filter
			Leak in tubing or flow path post-tank	Re-cut tubing and re-insert, replace O-rings at quick connect locations, replace instruments causing leaks.
			System too far from point of dispense	With the post filter inside the system, the main unit as well as the tank must be as close as possible to the dispense point to prevent pressure loss.
	✳	Lights not working on Smart Faucet and/or on system	All lights on faucet are red immediately after install or reset	If using an extension cable, ensure both extension pieces are used. The boxes on either end of the cable are what are needed to boost the data signals. Only one extension cable should be used; do not string multiple extension cables together.
			Intermittent faucet operation	Check connection at the back of the system.
				Check all extension cable connections if applicable.
			No lights illuminated on system UI	If using the wall power supply, confirm the correct power supply is being used: Input: 120VAC 50/60Hz at 1.0A Output: 12VDC at the 2A = 24W (Max)
				If using the rechargeable battery, check battery charge level. A minimum voltage of 6.6V is required to power the system. Recharge battery or replace if not charging or discharging as expected.
✳		Quality monitor faucet lights not working	Dip switches set incorrectly	Check dip switch settings on the quality monitor control box and adjust as needed.
			Low or depleted batteries in control box	Replace batteries.
	✳	Water running to drain when system is idle	Newly installed filters may still have some amount of air in them that prevents the drain line from hydro-locking once the solenoids are both shut. Any water in the prefilter and RO will then drain out which can take up to 35-40 minutes.	After multiple production cycles, the pre-filter should be saturated enough to create a hydraulic lock.
			Inlet or permeate solenoid may not have fully closed.	Confirm operation of each solenoid by forcing the system into production, flush and idle using the Service Pro app. Check the faulty solenoid for debris and clean as off as needed.

atencion@purewater.mx   purewater.mx   81-1642-7777

System		Malfunction	Troubleshooting	Handling
Standard	Smart			
❋		Water continuously running to drain	ASO valve malfunction	Replace ASO valve
	❋	TDS in app does not match manually tested TDS	Manually tested water does not match reading in Service Pro	Run TDS calibration using the Service Pro app. Remove TDS meters and check for debris or scaling.
			Complaint of poor tasting water	Check for frayed or damaged wires on TDS harnesses.
❋	❋	Poor RO membrane performance; poor output water quality	Low efficiency, low rejection	Check for leaks at tubing connections, instrument mounts and all other manifold connection points. Insufficient feed water pressure; install booster pump. Increase in feed water TDS. Plugged pre-filter or fouled RO membrane; replace. Plugged or defective capillary (fast flow too drain); replace capillary assembly. If a plugged capillary is found on a Smart unit, consider increasing the frequency of the permeate flush cycle.
			Bad tasting or smelling product water	See above handling related to decrease in performance. Foreign matter in storage tank or unit needs disinfection; sanitize and flush tank and system. Storage tank bladder ruptured; replace tank.
	❋	External leak sensor not signaling alarm	Water on floor and no alarm, check plug connection	Ensure plug on rear of unit is fully inserted. There are two "stages" with the second being more difficult to press past. This tight fit ensures the leak sensor does not accidentally come unplugged while under the sink. Be sure plug is being tested with a wet paper towel or similar rather than a damp surface. A sufficient amount of water is required to set off the alarm. Check for frayed or damaged wires, both internal and external.
❋	❋	Overflow at faucet air gap	Gurgling sounds	Concentrate line/air gap inlet plugged; clear of debris. Air gap plugged; clean with vinegar and/or soap.
			Water leaking out onto counter top	Concentrate tubing not in a continuous downward slope; eliminate loops. Obstructed home drain pipe: clear obstruction."
❋	❋	Black specks in product water	Carbon fines	Flush filters

atencion@purewater.mx   purewater.mx   81-1642-7777

Process Flow Diagram

Standard RO

Standard RO diagram labels:
COLD WATER SUPPLY
ASO VALVE
COMBINED SEDIMENT AND CARBON PREFILTER
CAPILLARY
SPECIALTY FILTER
CHV-2
RO STORAGE TANK
POST FILTER
CONTAINED WITHIN AQUASENTIAL SYSTEM

Smart RO

Smart RO diagram labels:
PERMEATE FLUSH LOOP
SV2
FM-2
FS
NO
PT-1
TDS-1
CHV-1
RO MEMBRANE
CHV-2
PT-2
COLD WATER SUPPLY
SV1
FM-1
TDS-2
COMBINED SEDIMENT AND CARBON PRE-FILTER
CAPILLARY
SPECIALTY FILTER
RO STORAGE TANK
POST FILTER
CONTAINED WITHIN AQUASENTIAL SYSTEM

atencion@purewater.mx   purewater.mx   81-1642-7777

Electrical Diagram

Figure 13.   Plug-in locations for circuit board
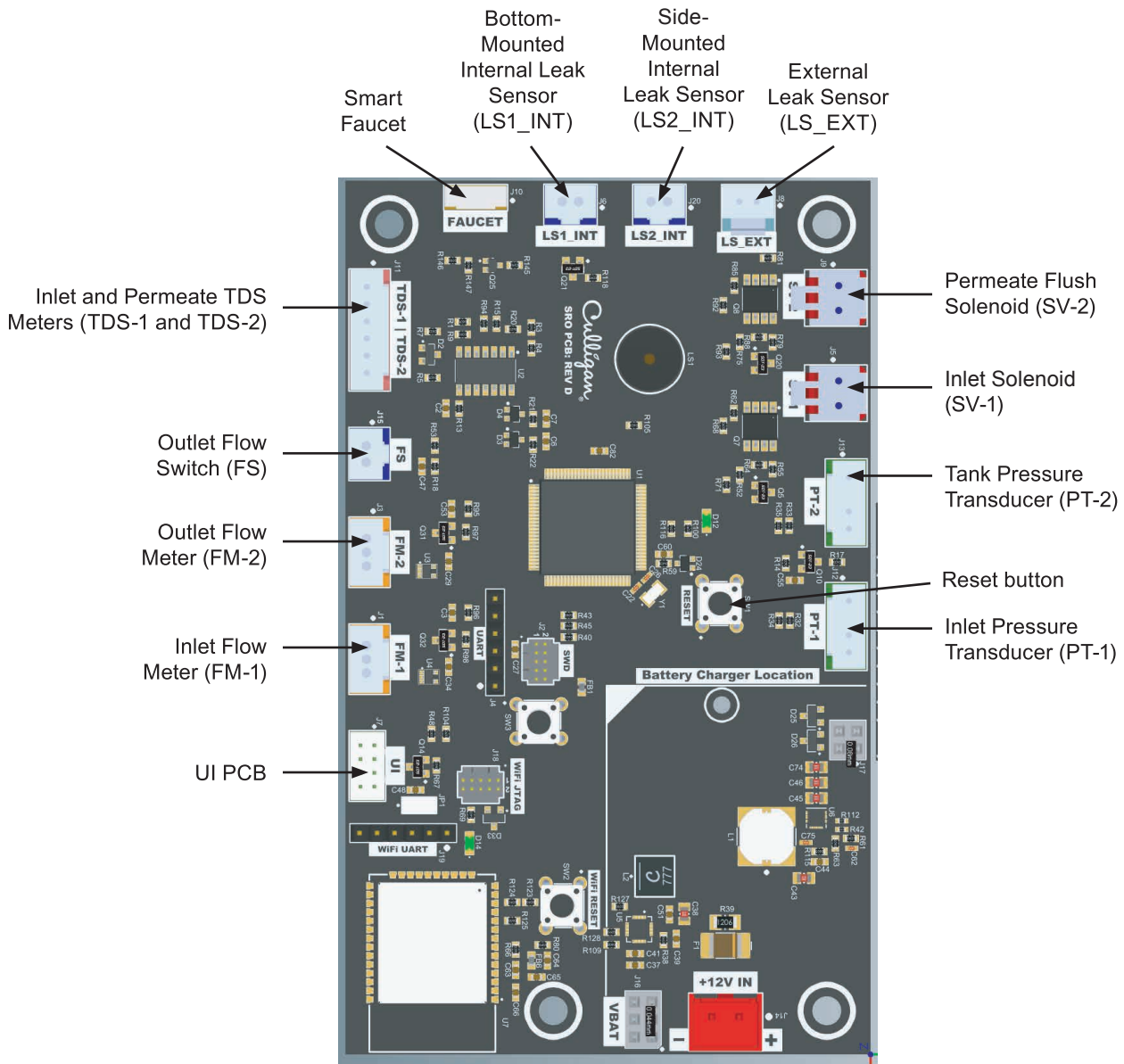
Parts List

Service Parts
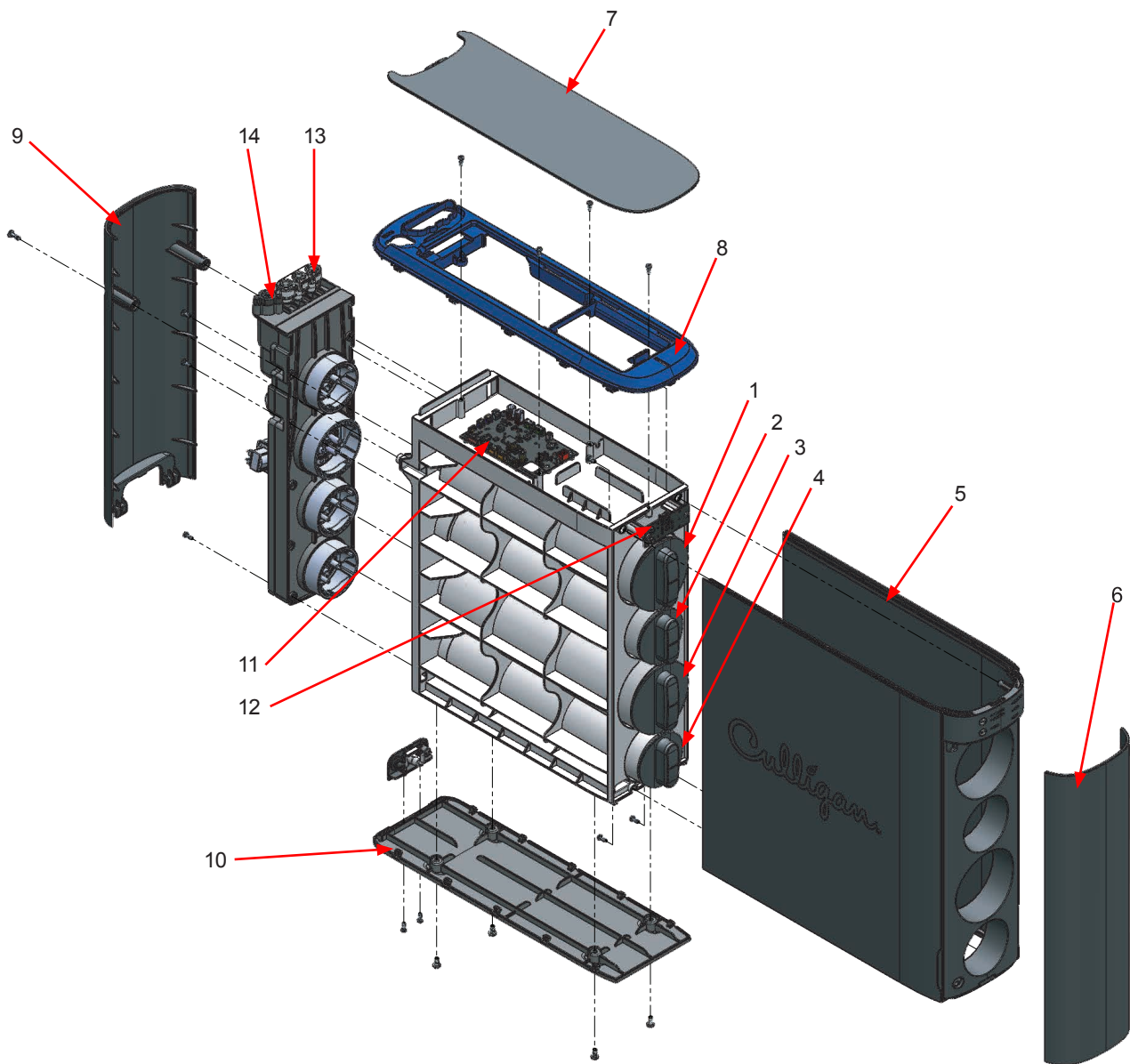
Item	Part Number	Description
Filter Kits		
1‡	P1038030	Prefilter, 1 yr, 12/Case
1‡	P1038031	Prefilter, 2 yr, 12/Case
2‡	P1038040	RO Membrane, 50 GPD, 12/Case
2‡	P1038041	RO Membrane, 75 GPD, 12/Case
3‡	P1038050	Specialty, Total Defense, 1 yr, 12/Case
3‡	P1038051	Specialty, Total Defense, 2 yr, 12/Case
3‡	P1038160	Specialty, Total Defense with Remin, 1 yr, 6/Case
3‡	P1038161	Specialty, Total Defense with Remin, 2 yr, 6/Case
3‡	P1038140	Specialty, Remin, 1 yr, 6/Case
3‡	P1038141	Specialty, Remin, 2 yr, 6/Case
3	P1038150	Specialty, Arsenic, 1 yr, 6/Case
3	P1038151	Specialty, Arsenic, 2 yr, 6/Case
4	P1038123	Postfilter, 1 yr, 12/Case
4	P1038124	Postfilter, 2 yr, 12/Case
4	P1038060	Postfilter Advanced, 1 yr, 12/Case
4	P1038061	Postfilter Advanced, 2 yr, 12/Case
	01038197	Sanitization Kit
Accessories		
	01038188	Faucet, Chrome, Smart RO
	01038189	Faucet, Brushed Nickel, Smart RO
	01038190	Faucet, Matte Black, Smart RO
	01038191	Faucet, Oil Rubbed Bronze, Smart RO
	01038180	Faucet, Chrome, RO
	01038181	Faucet, Brushed Nickel, RO
	01038182	Faucet, Matte Black, RO
	01038183	Faucet, Oil Rubbed Bronze, RO
	01038184	Faucet W/Light, Chrome, RO
	01038185	Faucet W/Light, Brushed Nickel, RO
	01038186	Faucet W/Light, Matte Black, RO
	01038187	Faucet W/Light, Oil Rubbed Bronze, RO
	01040516	Storage Tank, Jacketed, 2.7 Gallon
	01041305	Quality Monitor
41	01040526	Aquasential ClearLink PRO Kit,Chrome
41	01040527	Aquasential ClearLink PRO Kit,BN
41	01040528	Aquasential ClearLink PRO Kit,ORB
39	01040556	Mounting Bracket Kit
40	01040530	Smart Faucet/ClearLink Extension Cable,24ft
	01038021	Power Supply,12VDC
	01038023	Power Supply Extension Cable, 10ft
38	01038016	External Leak Sensor
43	01041310	Standard Faucet w/Light,Extension Cable

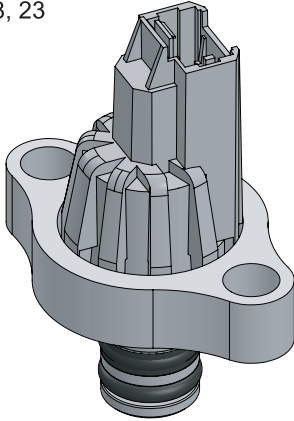| Item	Part Number	Description
Service		
31-37‡	01040577	Faucet Small Parts Pack
31	P1040578	Faucet Set Screw 5pk
30	P1040579	Faucet Set Screw Cover 5pk,Chrome
30	P1040580	Faucet Set Screw Cover 5pk,Brushed Nickel
30	P1040581	Faucet Set Screw Cover 5pk,Matte Black
30	P1040582	Faucet Set Screw Cover 5pk,Bronze
36-37	P1040583	Smart Faucet Spout Parts Pack,5pk
36-37	P1040584	Standard Faucet Spout Parts Pack,5pk
	MS041152	Valve,Ball,1/4NPTIx3/8T,Parker
5-10	01041311‡	Standard Re-Skin Kit
21	01041312	Standard ASO Kit
14	01041313	Standard Capillary Assembly Kit
5	01041314	Standard U Panel
5-10	01041315	Smart Re-skin Kit
5	01041316	Smart U Panel
14	01041317‡	Smart Capillary Assembly Kit
18,23	01041318	Smart Pressure Transducer Kit
20,25	01041319	Smart TDS Probe Kit
19,26	01041320	Smart Solenoid Kit
22, 28,29	01041321	Smart Flow Meter Kit
	01041322	Smart Internal Leak Sensor Kit
11	01041323	Smart PCB Kit
12	01041324	Smart UI PCB Kit
	01041325	Smart Faucet To PCB Wiring
	01041326	Smart External Leak To PCB Wiring
15	01041327	Smart Power Connector Kit
	01041328	Smart UI PCB To PCB Wiring
16	01041329	Smart Faucet Connector
17	01041330	Smart Leak Connector
6	01041331	Front Cover
7	01041332	Top panel
13	01041333	In / Out Manifold Kit
24,27	01041334	Check Valve 2pk Kit
	MS041309	In-Line Strainer,3/8 Quick-Connect
42	P1041379	Aquasential Faucet Adapter Plate 5pk,Chrome
42	P1041380	Aquasential Faucet Adapter Plate 5pk,Bushed Nickel
42	P1041381	Aquasential Faucet Adapter Plate 5pk,Matte Black
42	P1041382	Aquasential Faucet Adapter Plate 5pk,Oil Rubbed Bronze

‡ Recommended spare parts

19

20

21

Accessories

22

23

38   24

25   26

27

28

29   39

15   16   17   40

43

41

42

See manual
01033136
AQ ClearLink
PRO IOM for
a listing of
replacement
parts

37
36
31
30
33
34   32
35

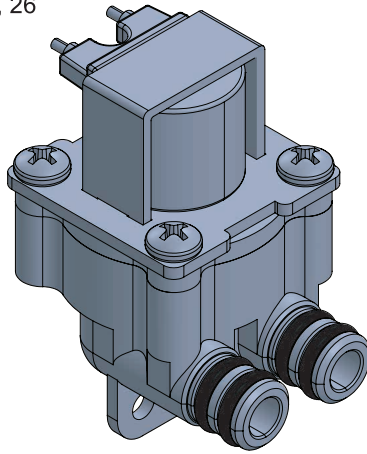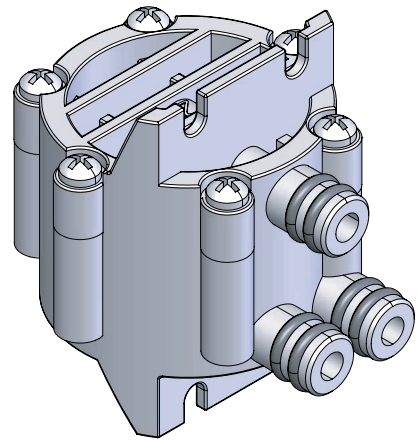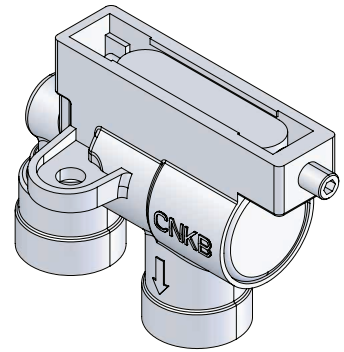atencion@purewater.mx   purewater.mx   81-1642-7777
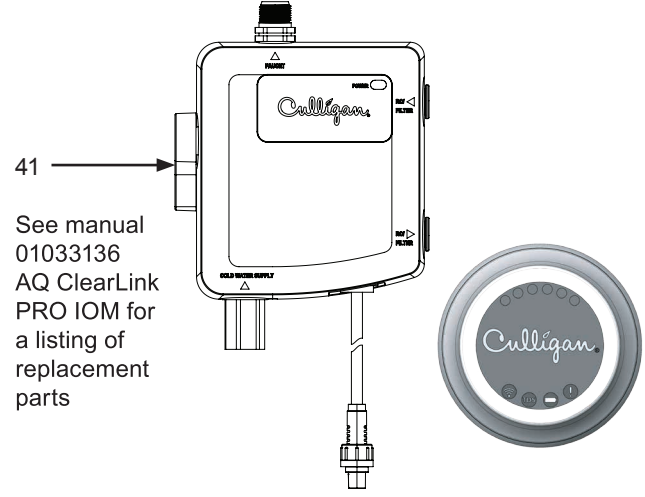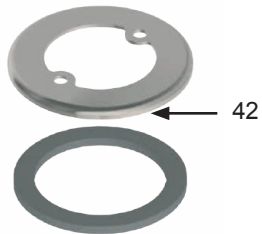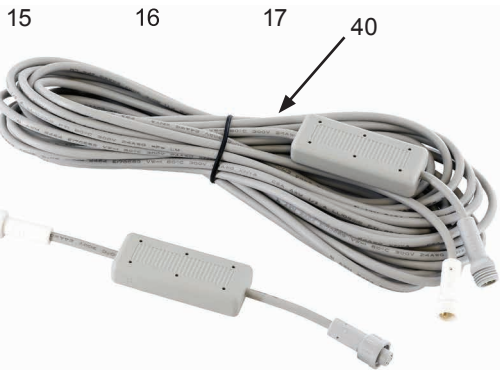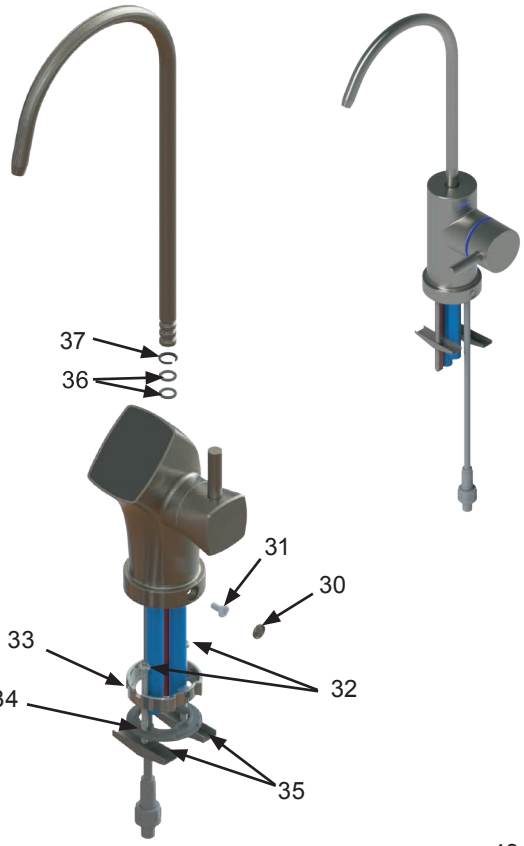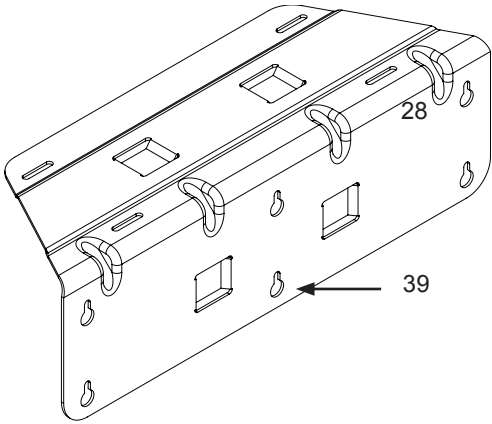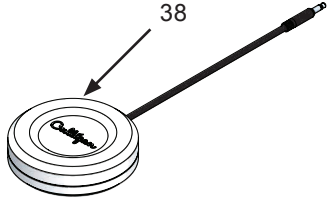
Electronic Components

18, 23

19, 26

21

24, 27

29,22

28

20, 25

atencion@purewater.mx   purewater.mx   81-1642-7777
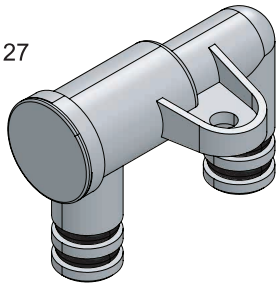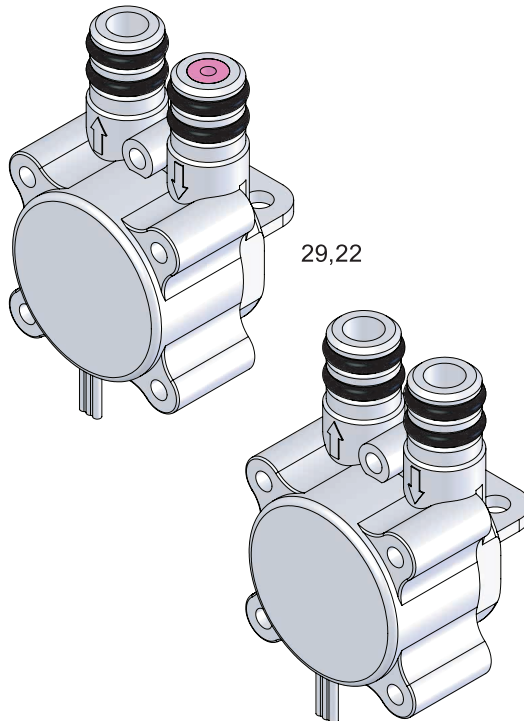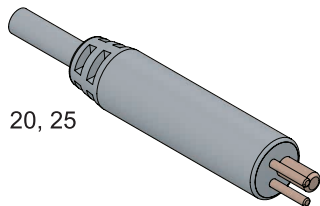
Appendix A - Service Pro App

Service Pro App Installation

Service Pro Smart Device Operating System Requirements

iPhone/iPad — iOS 11 or newer
Android Devices — Android 9 Pie or newer (preferably Android 11)

iOS/iPadOS App Installation

- Search the Apple App Store for "Culligan Service Pro" and download the app

- Open the app and log in using your CPort credentials (you will need to know your username and password)

Android App Installation

- Search the Google Play Store for "Culligan Service Pro" and download the app

- Open the app and log in using your CPort credentials (you will need to know your username and password)

Once Logged In

- Smart RO: Hold Wi-Fi button for 3 seconds and release after you hear one audible beep (blue blinking light)

- In the Service Pro app, press scan to find your unit and connect.

Service Pro Menu and Functions – SRO First Time Setup

Enter Dealer ID: Should default to home dealer number. If multiple dealer location, choose applicable one. This can be done ONLY during first time setup.

Efficiency Mode: This will set how efficient the RO is running by changing how the tank if filled
  – Standard: A balanced mode like a standard RO 40/60

  – Low water usage: System will turn on when the tank is almost empty to maximize system efficiency. 30/50

  – High rejection: System will turn on when the tank is almost empty to maximize system Rejection. 30/70

  – High tank pressure: System will run to ensure tank is full 100% of the time. This will be the least efficient and have a bit less TDS reduction then the other modes. 50/70

Flush Frequency: Will determine when the RO membrane will flush with RO water
  – Every Cycle: Maximize membrane performance and life. Will sacrifice system efficiency

  – After 2 hours idle: Default system setting: RO will do a short flush 2 minutes after the run cycle and then wait 2 hours (no interruption) and then complete a full flush. If system is turned on during the wait period, the clock will reset and wait another 2 hours.

  - Every Day: System will flush once a day.

  – Every Week: System will flush once a week: this is the most efficient mode but only recommended on low TDS and Softened Water

Softener Installed: Not used for function of system but will help long term tracking of membrane performance

Tank Size: Used to determine volume of water in tank

Tank Precharge Pressure: Manual entry to track precharge on tank

Appendix B - Culligan Connect App

Culligan Connect App Installation (End User–Consumer)

Culligan Connect Smart Device Operating System Requirements

iPhone/iPad — iOS 13 or newer
Android Devices — Android 6 Marshmallow or newer (preferably Android 11)

Culligan Connect App Installation

- Apple iPhone iOS / iPadOS Operating System - Search the App Store for "Culligan Connect"

- Android Operating System - Search the Google Play Store for "Culligan Connect"

Delete your old Connect app if a previous iteration was installed (it can be identified by the older Culligan Connect icons). The current app can be identified by the icon pictured on this page.

Wi-Fi / Bluetooth Requirements

- Culligan Service Pro requires Bluetooth to connect to the system

- Culligan Connect (Consumer) requires Wi-Fi Connectivity to function properly

- Smart Products require 2.4 GHz Wi-Fi frequency. 5 GHz networks will **not** work with the system.

Smart RO:

Hold Wi-Fi button for > 10 seconds and release after you hear an audible double beep (Green blinking). This will put system into Wi-Fi pairing mode and follow prompts on the app.

NOTE! **If Bluetooth is still active (it would be if you used Service Pro to set it up), cycle power. This disables Bluetooth to give you the best chance of a trouble-free onboarding experience.**

iOS/iPadOS: If there are other Culligan Connect devices broadcasting an SSID, turn them off so there is only the device you want to onboard.

Manual de Usuario Culligan Aquasential RO y Smart RO. Página 54 de 56   Pure Water Technology (2023) Todos los derechos reservados

atencion@purewater.mx   purewater.mx   81-1642-7777

Index

Este producto está sujeto a cambios sin previo aviso.
Por favor, conserve este manual.

SERVICIO DE REPARACIÓN Y POST-VENTA
TEL. (81) 1642-7777

Pure Water Technology

Av. las Huertas 116, La Aurora, Santa Catarina, N.L.,
Bodega 7
www.purewater.mx
Tel. (81) 1642-7777

atencion@purewater.mx   purewater.mx   81-1642-7777