

# AquaCaddy



# User Manual

Isopure Corporation

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To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and usually change with time. It is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation follow the latest revision of these codes.

At a minimum, you should follow all applicable sections of the National Fire Code, National Electrical Code, and the codes of the National Electrical Manufacturer's Association (NEMA). There may be local regulatory or government offices that can also help determine which codes and standards are necessary for safe installation and operation.

Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your application, nor do we assume any responsibility for your water treatment setup, or any components directly connected to the purchased products.

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For additional warranty and safety information, see the Terms and Conditions section of the user manual. If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call us at 1-800-280-7873.

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# AquaCaddy



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## 2. IMPORTANT INFORMATION

### 2.1 WARNINGS AND CAUTIONS



WARNING

Before operation of the AquaCaddy, read this manual in its entirety.



WARNING

Improper operation of this equipment could result in serious reactions, serious injury, or death to the end users of this equipment.



CAUTION

It is the responsibility of the governing body of the facility to ensure that all applicable regulations regarding the installation and operation of this system are observed.



CAUTION

Only authorized personnel can install, perform service, or perform maintenance to the AquaCaddy.



CAUTION

Ensure proper precautions are taken during transportation of the cart, and ensure brakes are utilized when cart is in stationary positions.

## 2.2 Safety Statements

- Before you start using this component, you must read and thoroughly understand this entire manual.
- Read the entire instruction manual before you begin installation. Failure to install and operate the system as required will void the warranty. The system will perform at maximum efficiency when installed and operated as designed.
- Obtain all the materials and tools needed for the installation before beginning. Always use the correct tools to install and maintain the system. The installation must conform to local plumbing and electrical codes. Code compliance is the responsibility of the installer or contractor.

## 3. DESIGN

### 3.1 Specifications

#### 3.1.1 *Electrical and Water Requirements*

**Water Requirements:**

Inlet Water Pressure	Maximum: 6 bar (87 psi)
Inlet Flow Requirement	340 Liter per hour/ 1.5 gallons per minute
Inlet Water Temperature	+5 to +30°C/ +41 to +86°F

*\*The booster pump option may be utilized if pressure or incoming flow is below requirements.*

#### 3.1.2 *External Connections*

**External Connections (Cart Only) See RO manual for all RO Connections**

Inlet Water Connection:	¾" Female Garden Hose Thread Connection
Softener Drain connection:	¼" Hose (Do not plumb together with RO or Dialysate Drain lines)
Power Connection*:	120VAC NEMA 5-15P Plug

*\*Only required with the booster pump option.*

#### 3.1.3 *Environmental Limitations*

**For indoor Use Only**

**Environment:**

Maximum Relative Humidity:	80% at 20°C, Non-Condensing
Minimum Ambient Temperature:	60°F (10°C)

Maximum Ambient Temperature: 85°F (32°C)

### 3.1.4 Weight

Dry Weight: **84kg (185lbs)**

*includes a Dry RO and Dry Softener*

Wet Weight: **161kg (355lbs)**

*Includes RO and Softener*

### 3.1.5 Dimensions

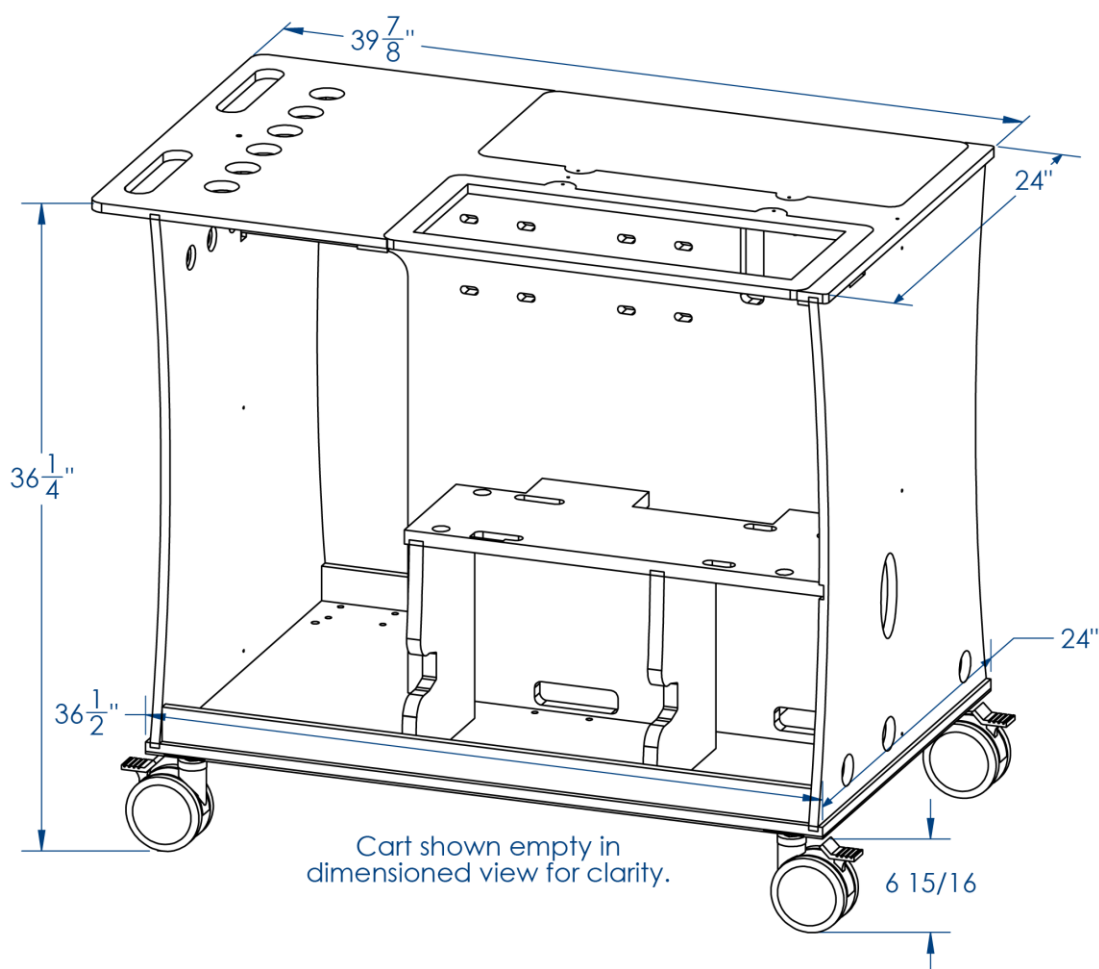


Figure 1. Dimensions of AquaCaddy

### 3.2 Model Chart

Part Number	Rating (Micron)
PTX-C-CBCB-B	AquaCaddy – Dual Carbon Block Model
PTX-C-CTCB-B	AquaCaddy – Worker Carbon Tank and Polisher Carbon Block

*Table 1: Models of AquaCaddy*

### 3.3 Theory of Operation

The AquaCaddy is an all in one system to process and ensure the absolute best water for the patients. Each system consists of five major components: Inlet Filter, Water softener, Worker Carbon, Polisher Carbon, and Pre-RO Filter. These units will provide the proper pre-treated water to allow the AquaC UNO H to produce high quality water as efficiently as possible.

**3.3.1 Inlet Filter:** The purpose of the inlet filter is to remove larger particulates that may be present in the supply water or from inlet piping. This filter is rated at 5 microns and constructed of polypropylene. All materials in this filter meet USP Class VI biological tests for plastics, FDA Listed Materials that comply with FDA Title 21 of Sections 174.5 and 177.1520, and are certified to NSF/ANSI STD 61 for materials requirements only.

**3.3.2 Dual Alternating Water Softener:** Whether supplied by Isopure or by an external vendor, the optional water softener serves the same purpose. This unit’s purpose is to remove calcium and magnesium from the supply water to protect the portable reverse osmosis unit. The goal of this component is to prevent scale, dried calcium, and magnesium, from forming on the membrane. Such prevention will extend the life of the unit between required descaling procedures and ensure the absolute highest quality water for patients.

**3.3.3 Worker and Polisher Carbon Array:** Between the two models, the carbon arrangement is the only difference. The PTX-C-CBCB-B model has two 20” x 4.5” high grade radial flow carbon blocks in series, the first functioning as the worker unit and second as the polisher unit. These carbon blocks are specifically designed for high capacity applications by sandwiching advanced granular activated carbon between a 70-micron outer shell and a polypropylene internal core. Each carbon block alone can remove a three parts per million chloramine level from a volume of 7,000 gallons of water at a flow rate of 4gpm, proving itself a top of the line filter for the system.

The PTX-C-CTCB-B has a 0.6cuft exchangeable carbon tank as the worker component and a 20” high grade carbon block as its polisher carbon unit. The worker carbon tank is comprised of



a 10" x 19" fiberglass reinforced media tank with an internal riser pipe and vertical inlet tank head. The Polisher carbon unit is the same top of the line carbon block mentioned above.

**3.3.4 Pre-RO filter:** The purpose of the Pre-RO filter is to remove additional small particulates present in the water that, by virtue of size, have passed through prior filtration components. This filter is rated at 1 micron and is constructed of polypropylene. All materials in this filter meet USP Class VI biological tests for plastics, FDA Listed Materials that comply with FDA Title 21 of Sections 174.5 and 177.1520 and are certified to NSF/ANSI STD 61 for materials requirements only.

### 3.4 Basic Diagrams

#### 3.4.1 Process Drawing

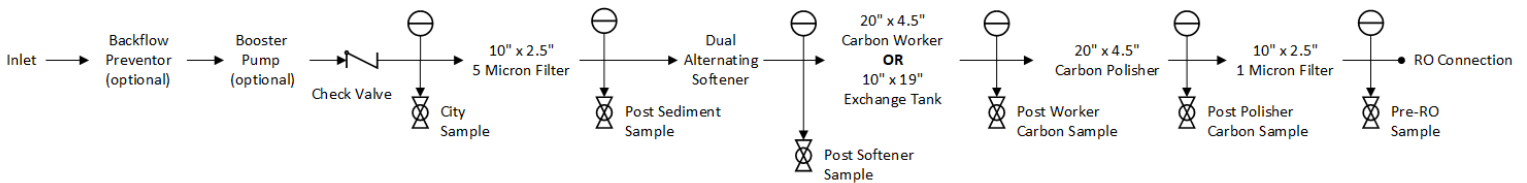


Figure 2. Process Drawing

#### 3.4.2 PTX-C-CBCB-B Diagram

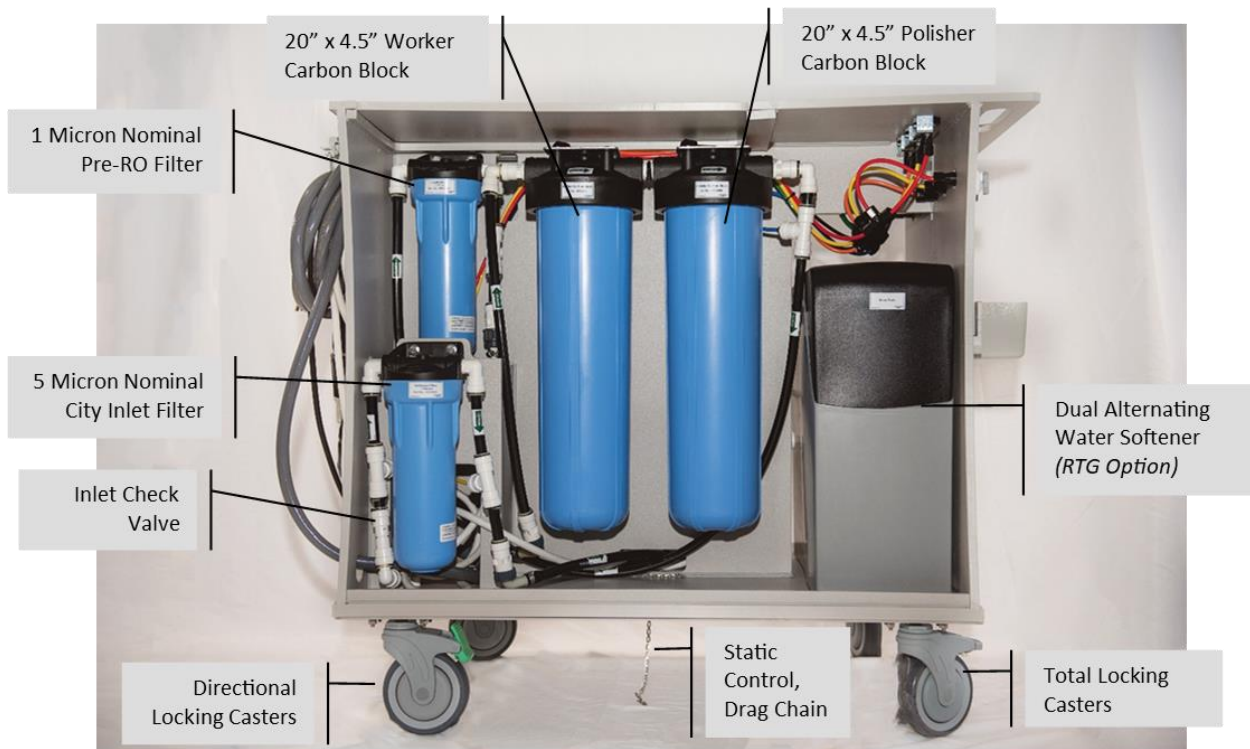


Figure 3. PTX-C-CBCB-B Diagram

**3.4.3 PTX-C-CTCB-B Diagram**



*Figure 4. PTX-C-CTCB-B Component Diagram*

## 4. OPERATION

### 4.1 Installation

The AquaCaddy will arrive in a completed assembly; however, filter bowls and filters will not be installed to ensure each system is protected during shipment.

1. Remove the solid cover from filtration side of the unit.
2. Locate the 1-micron prefilter (all white filter in a sealed clear plastic bag). This filter will have a "1" engraved in the side of the filter.
3. Place it in one of the 10" filter housings.
4. Ensure the O-Ring is properly installed.
5. Align the filter with the center of the bottom and align with the housing's top portion.
6. Slowly begin to screw the housing into place. The filter should align itself and the housing should screw flush to the top portion. Do not force the filter or filter housing into position, it should be able to hand tighten into place. Only use the supplied wrench to snug the housing or to loosen the housing.
7. Locate the 5-micron prefilter (all white filter in a sealed clear plastic bag). This filter will have a "5" engraved in the side of the filter.
8. Place it in one of the 10" filter housings.
9. Ensure the O-Ring is properly installed.
10. Align the filter with the center of the bottom and align with the housing's top portion.
11. Slowly begin to screw the housing into place. The filter should align itself and the housing should screw flush to the top portion. Do not force the filter or filter housing into position, it should be able to hand tighten into place. Only use the supplied wrench to snug the housing or to loosen the housing.
12. Locate the carbon block, packaged in a white box. This filter will be marked with ChlorPlus 20BB.
13. Ensure the carbon block's gaskets are securely on both ends.
14. Place it in one of the 20" Big Blue filter housings, ensuring the bottom gasket and the center of the filter are aligned with the protrusion in the bottom of the big blue housing.
15. Ensure the O-Ring of filter bowl/housing is properly installed.
16. Align the top gasket with the center of the carbon block, then align the housing with the housing's top portion.

17. Slowly begin to screw the housing into place. The filter may need a bit of help to maintain alignment with the top portion. If aligned properly, the housing should screw flush to the top portion. Do not force the filter or filter housing into position, it should be able to hand tighten into place. Only use the supplied wrench to snug the housing or to loosen the housing.
18. Repeat steps 12 – 17 for the second carbon block, if applicable.
19. Replace the solid cover of plastic over this side of the unit.
20. Install the drain hose to the RO Connection.
21. Install the inlet water hose connection.
22. Turn the water on slowly as it will purge all the air from the system.
23. Inspect the unit for leaks during this point., ensure housings are not leaking at seals. Leaks could be caused by filter misalignment, rolled or missing O-rings, or cross-threading the housings.
24. Once air is purged, flush the system for fifteen (15) minutes.
25. Check the “Post Softener Sample” and “Post Polisher Carbon Sample” conductivity with a handheld meter. The water quality should be the same. If the “Post Polisher Carbon Sample” water conductivity is higher than the “Post Softener Sample” conductivity, continue rinsing. Do not proceed until the “Post Softener Sample” conductivity and “Post Polisher Carbon Sample” conductivity readings are the same.
26. Reduce flow rate to approximately one (1) gallon per minute, then check total chlorine. If the total chlorine test is negative, system is ready to be connected to the RO.



Confirm absence of total chlorine/chloramines at the post carbon output water before operating the RO unit or patient injury and damage to the AquaC UNO H may occur.

27. Remove the plastic cover/faceplate of the AquaCaddy on the RO side.
28. Mount the AquaC UNO H portable RO unit.
  - a. All connections pull through their respective holes in the AquaCaddy cart.
    - i. Ensure all four casters have been removed from the stems on the AquaC UNO H; The RO will sit on the shelf with the casters removed, but with the caster pins in-place
    - ii. Drain Tube routes through the “RO Drain” hole.

- iii. Hygienic Option (Fly Loop) routes through the “Fly Loop” hole.
  - iv. RO Water inlet hose routes down through the RO support plate and through the middle plate to the RO Connection.
  - v. RO power routes through the “RO Power” hole.
- b. Align the caster stems with the associated holes in the RO’s shelf.
  - c. Ensure RO is sitting flush and none of the hoses or connections are under the RO or in compromising positions.
  - d. Replace the plastic cover/faceplate back onto the cart. Ensure Both screws are fully installed.
  - e. Follow the AquaC UNO H RO instructions for startup procedures.

## 4.2 Operation

### ***4.2.1 Connecting unit for use with the AquaC UNO H***

1. Hook up the inlet water hose connection.
2. Turn the water on slowly as it will purge all the air from the system.
3. Inspect the AquaCaddy components for leaks at this point. Ensure housings are not leaking at seals. Leaks could be caused by filter misalignment, rolled or missing O-rings, or cross-threading of the housings. Verify that tubing is not leaking at connection points.
4. Air should be purged from the system by opening the sample port valves.
5. **Follow the AquaC UNO H instructions for use to proceed with further connections and startup procedures related to dialysis use.**

### ***4.2.2 Disconnecting unit for use with the AquaC UNO H***

1. **Follow the AquaC UNO H instructions for disconnecting the unit from the dialysis machine and any other shutdown/disconnection procedures that are applicable.**
2. Turn water supply off to the system.
3. Disconnect all remaining hoses and electrical connections.
4. The check valve on the system will hold pressure on the system to ensure proper function while connected. To depressurize the system for transport or storage, open any of the sample port valves.

### 4.3 Transport

#### Risk of tilting



WARNING

- The AquaCaddy may only be used on horizontal surfaces and ramps that conform to ADA (Americans with Disabilities Act) ramp requirements.
- When moving the system across thresholds or other uneven surfaces, observe the risk of tilting or blocking.
- Do not push from the sides of the unit.
- Do not push, pull, lift, or move the unit in any way while the system is in operation.
- All wheels must be in locked position while the cart is in use.
- Operators/users, must not lean against the system, use it as support, sit on, or step on the unit.
- Do not place any objects on the system.



CAUTION

Casters with the green/teal locking mechanism are only directional locks. These casters can still roll when they are not locked in position. These casters only lock in two positions, ensure once the lock is engaged the cart is moved in a manner to get these casters to lock to either of their locking positions prior to making connections and operation of the unit.

#### ***4.3.1 Transport through facilities***

Before transporting the system, the connecting tubes and electrical connections must be disconnected. To ensure safety, the AquaCaddy must be pushed over thresholds slowly and very carefully.



### **4.3.2 Transport exterior to facilities**

Do not move the AquaCaddy on rough or uneven surfaces. Uneven pavement or flooring may contribute to additional tipping risks. Rough surfaces may affect the fittings, mounting hardware, or structural integrity of the AquaCaddy due to excessive vibrations. The cart must always be transported in the upright position. When moving the AquaCaddy in vehicles, the unit must first be appropriately prepared and protected against damage. The following actions must be taken:

1. Drain the system of any water.
2. Remove Filter bowls from each filter housing.
3. Lock the casters.
4. Strap the unit securely to prevent up/down and side/side movements. Ensure straps do not deform the frame or any non-structural frame parts.
5. Protect the unit with additional blocking to prevent movement during transport.
6. Use packing materials to prevent movement of any other parts or to prevent rubbing of straps or blocking in the event of uneven surfaces during the trip.
7. Ensure that environmental temperatures are above freezing when transporting if the unit has been previously exposed to water at any time prior in its lifetime.

Note: If the AquaC UNO H is also being transported, follow any of the defined requirements set forth by the instructions for use.

## **5. ALARMS**

There are no alarms associated with the AquaCaddy. All functional verifications are to be completed via manual calculations or manual testing of water chemistry.

## 6. TROUBLESHOOTING

SYMPTOM OR ALARM CONDITION	TYPICAL CAUSES	SOLUTION
Pressure drop across either micron filter exceeds 10 PSI	<ul style="list-style-type: none"> <li>• Particulates have built up on the filters</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the filters</li> </ul>
Total Chlorine readings are elevated	<ul style="list-style-type: none"> <li>• Carbon Tank/Block has exhausted</li> </ul>	<ul style="list-style-type: none"> <li>• Replace Carbon Tank/Block</li> </ul>
	<ul style="list-style-type: none"> <li>• If after a carbon block replacement, filter may be installed incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure both O-rings are properly installed. One should be centered on top and one centered on bottom</li> </ul>
	<ul style="list-style-type: none"> <li>• If after Carbon Tank is replaced</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure carbon was replaced correctly, ensure riser pipe and tank head are installed correctly</li> <li>• If damaged, order a new tank</li> </ul>
Elevated Conductivity on RO inlet	<ul style="list-style-type: none"> <li>• Insufficient Rinse of Carbon Block</li> </ul>	<ul style="list-style-type: none"> <li>• Disconnect RO, Rinse System until pre and post carbon conductivities are the same</li> </ul>
	<ul style="list-style-type: none"> <li>• Improperly installed micron filter(s)</li> </ul>	<ul style="list-style-type: none"> <li>• Replace or ensure current micron filters are installed properly and have not been damaged</li> </ul>
Static build-up or static discharge	<ul style="list-style-type: none"> <li>• Drag Chain is tangled or stuck preventing it from conducting static to the ground</li> </ul>	<ul style="list-style-type: none"> <li>• Detangle the chain</li> </ul>
	<ul style="list-style-type: none"> <li>• Drag Chain has build-up from floor varnish, polish, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean the chain with a degreaser or abrasive cleaner to remove floor polish buildup that is effectively insulating the chain</li> </ul>



## 7. REPLACEMENT PARTS LIST

### 7.1 Consumables

PART DESCRIPTION	ISOPURE PART NUMBER
Carbon Block Filter Cartridge	FE52000
9.75" 1 Micron Filter	FE52005
9.75" 5 Micron Filter	FE52010
Softener Salt, Iron Out	CH90414
RPC Ultra Low Chlorine Test Strips	HW10125
RPC Standard Water Hardness Test Strips, 5 - 120 ppm	HW10120
RPC High Range Water Test Strip, 25 - 425 ppm	HW10002
RPC pH Test Strips, 4.5 – 10pH with 0.5 increments	HW10105
RPC Micro-X® Peroxide / Peracetic Acid Residual, 100 Test Strips	HW10110
RPC Micro-X® / Peracetic Acid Potency, 100 Test Strips, no sample dilution required	HW100115
Water Treatment Testing Kit: Includes Standard Range Water Hardness Test Strips, Ultra Low Chlorine Test Strips, pH Test Strips (4.5-10 pH range), and a set of 5 sample cups.	ZI10120

### 7.2 Replacement Parts

PART DESCRIPTION	ISOPURE PART NUMBER
O-ring for Big Blue Filter Housing, EPDM	GS10011
O-ring for 10" 3G Series Micron Filter Housing, EPDM	GS10021
Sample Cup set, 0-120mL	HW10100
Complete Exchange Carbon Tank – Tank, Riser, Head, Media	ZS93006
Empty Exchange Carbon Tank – Tank, Riser, Head	ZS93009
Spanner Wrench #SW-1A for 1/4", 3/8", 1/2" Slim Line Housing	HD12015
Spanner Wrench #SW-4 for 20" Big Blue Housing	HD12020
AquaLock Drop Ear Elbow - 1/2 CTS x 1/2 NPT	HT32000
AquaLock Union Elbow - 1/2 CTS x 1/2 CTS	HT32005
AquaLock Male Adapter 1/2" CTS x 3/4" NPT	HT96000
AquaLock 1/2" CTS Stackable Elbow	HT96005
AquaLock 1/2" CTS X 1/2" Male NPT Elbow	HT96010
AquaLock Plastic Reducing Tee 1/2 IN CTS x 1/2 IN CTS x 1/4 IN OD	HT96020
AquaLock 1/2" CTS Plastic Check Valve	HT96025
AquaLock 1/2" Collet Clip	HT96030
White Body / Grey Handle Sample Port Valve, 1/4" OD Tube x 1/4" NPT	VL96508

Visit [www.isopure.com](http://www.isopure.com), email [Orders@Isopure.com](mailto:Orders@Isopure.com), or call 502-267-7873 to order replacement parts.

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## 8. PREVENTATIVE MAINTENANCE

It is recommended by Isopure that filters be changed at a terminal differential pressure value. Filter life can be maximized by starting out with a low initial differential, thereby allowing more of a buildup to reach terminal differential. Isopure recommends that the filters be changed when the differential pressure exceeds 10 PSI from the initial starting pressure or when they impede flow to the RO unit resulting in “Low-Incoming Pressure” or “Run Dry” errors. Before beginning a filter change, be sure to have the appropriate quantity and correct micron rating of the filters in the housing. See the chart in [Section 7](#).