

Carbon Block Filtration System
Operation & Maintenance Manual



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CHAPTER ONE:

GENERAL INFORMATION

1.1 General Overview

The Carbon Block Filtration System is a filtration device designed to remove chlorine and/or chloramines for an incoming water supply. This pretreatment unit is designed specifically to be used with a portable Reverse Osmosis (RO) unit commonly found when providing water treatment for hemodialysis applications.

The Carbon Block Filtration System consists of two (2) 5" x 20" carbon block filters that are installed in series on a unique bracket, designed to hold two (2) filter housings along with pressure gauges and sampling ports. The system is etched to assist the user in easily identifying the applicable items.

The Carbon Block Filtration System can be used as an alternative to portable carbon exchange tanks commonly used on water treatment devices used for hemodialysis treatments in the acute or home setting.

The procedures found in this Manual are intended to prepare a new carbon block filter cartridge for use as RO pretreatment to effectively dechlorinate incoming supply water.

Features:

- Two (2) Carbon Block Filters, 5" x 20", to remove chlorine and/or chloramines.
- Unique bracket to house the two (2) filters, including pressure gauges and sampling ports for monitoring purposes.
- Includes special bracket piece(s) making it universal for various portable RO cart(s) types and RO machine applications.

1.2 The Operator's Manual

This manual has been prepared to provide the operator with information regarding the installation, replacement, rinsing and testing of the Carbon Block Filtration System.

CAUTION: When used as a medical device, Federal law restricts this device to sale by or on the order of a physician. Per 21 CFR 801.109(b)(1).

1.3 Symbols



Caution, Risk of Danger

CHAPTER TWO: SYSTEM INFORMATION

2.1 Safety

Read This Manual:

The operation manual should be fully read and understood prior to system operation. Use this manual for future reference or training.



Labeling:

Do not remove or cover any system labels. All labels are important and necessary for understanding system operation.

2.2 Utility Requirements

Utility requirements are not applicable for this device.

2.3 Feed Water Requirements

Flow: Maximum 1.1 gpm

Pressure: Minimum 20 PSI, Maximum 80 psi

Operating Pressure Differential: Maximum of 15 psi

Temperature: 35-100°F (2-38°C)

Inlet Connections: 3/4" Male Garden Hose Thread; Minimum 3/8" OD hose

NOTE: Consult the Operating Manual of the appropriate RO Machine for further requirements.

2.4 Storage and Shelf Life

New, unused Carbon Block filters should be stored in a cool, dry environment until ready for use. There is no designated shelf life for these filters as long as the filter remains wrapped and sealed in its original packaging.

2.5 Replacement Frequency

The Carbon Block Filters should be replaced whenever chlorine and/or chloramine breakthrough (levels higher than 0.1 mg/L) has occurred or when a 15 PSI differential drop or higher as occurred on the Filtration System.



CAUTION: If breakthrough occurs, dialysis treatments must be suspended immediately until the carbon block filter(s) have been replaced and testing verifies that it is safe to proceed with further treatment(s).

The organization recommends that the worker carbon block cartridge be replaced every three (3) months by rotating out the polisher, or more often if chlorine breakthrough occurs, to help prevent bacterial overgrowth and subsequent bacterial seeding of downstream equipment.

2.6 System Specifications

Filter Dimensions: 5-1/2" x 20-3/4"

Filter Micron Rating: 1 micron

Removal Capacity: 30,000 gallons at 1.1 gpm & 3.0 ppm of chloramine

Carbon Block Filter Weight (dry): 5lbs.

Carbon Block Filtration System Weight (operating): 60lbs.

NOTES:

CHAPTER THREE:

INITIAL SETUP

NOTE: For the complete instruction on how to install the Carbon Block Filtration System, refer to P/N W3T575913 or W3T575847 depending on the kit ordered. The following is a brief overview. If the system has already been installed, proceed to the Replacement Cartridge procedure.

NOTE: An RO Prefilter maybe necessary to help protect the RO machine. It is also possible that a Prefilter maybe required before the Carbon Block Filtration System based on incoming water conditions that may foul the carbon block filters. If not included, contact Technical Support should either of these items be required.

3.1 Installation

1. Unpack the Carbon Block Filtration Kit and remove the filter housing sumps by turning them clockwise.
2. Drill holes through each side of the vertical handle support and attach the bracket to the cart.
3. Install the pressure gauges and sample ports onto the bracket assembly.
4. Install the ball valves (brass) into the filter housing sumps. Note: Hose can be attached to each of these valves for draining purposes.
5. Unpack the carbon block cartridges. Apply O-ring lube sealant to the cartridge o-rings and to the filter housing sump O-rings.
6. Place a carbon block cartridge into each of the filter housing sumps.
7. Connect the sump into each of the filter heads (caps) on the bracket by turning them counter-clockwise.
8. Use the filter housing wrench to tighten the sump to the filter head.
9. Connect the INLET to feed water supply and the OUTLET to drain.
10. Proceed to the Initial Rinsing & Testing Procedure section listed in this manual.

3.2 Cartridge Replacement

1. Turn off the RO machine.
2. Close the feed water supply.
3. Position the filter housing sump hoses to an open floor drain.
4. Open the ball valves on the bottom of the filter housing sumps to bleed off the water pressure and drain both sumps.
5. Once water is no longer flowing to the drain, use the filter housing wrench to loosen the sump by turning the wrench clockwise.
6. Remove the carbon block cartridge from the sump. It may still be seated in the filter head (cap). If it is, firmly grasp the top portion of the cartridge and twist back and forth until it releases.
7. Discard the cartridges.

NOTE: These cartridges are not reusable nor is it possible for them to be re-bedded.

8. Unpack the carbon block cartridges. Apply O-ring lube sealant to the cartridge o-rings and to the filter housing sump O-rings.
9. Place a carbon block cartridge into each of the filter housing sumps.
10. Connect the sump into each of the filter heads (caps) on the bracket by turning them counter-clockwise.
11. Use the filter housing wrench to tighten the sump to the filter head.
12. Disconnect the RO Prefilter inlet and run to drain.
13. Proceed to the Initial Rinsing & Testing Procedure listed in this manual.

3.3 Initial Rinsing & Testing

1. With the supply water connected to the INLET and the DRAIN connection running to drain, turn on the feed water supply and slowly fill the filter housings.
2. Allow water to flow through the Carbon Block Filtration System for 2 minutes to flush the system of any contaminants.
3. Inspect the system for leaks at all thread connections and repair as necessary.
4. Check the conductivity of the supply and output water with a hand held meter. When the conductivity of both the supply water and the output water are equal, the carbon block cartridges are ready for testing.
5. With flushing completed, turn off the feed water supply.
6. Remove the OUTLET hose from the drain and connect it to the RO and/or RO Prefilter (if applicable).
7. Connect the hose from the RO Prefilter (if applicable) to the RO inlet port.
8. Slowly open the feed water supply. Bleed off any air by slightly opening the sample ports. Inspect for leaks at the hose connections.
9. Test the primary (worker) and secondary (polisher) carbon block cartridges from both sample ports to verify the absence of total chlorine. Follow the instructions in the test kit. Always confirm the absence of total chlorine from the Carbon Block Filtration System before operating the RO unit. If the total chlorine test is ≥ 0.1 mg/L, the carbon block cartridge(s) need to be replaced.
10. Proceed to the Operational Testing procedure section listed in this manual.

3.4 Operational Testing

1. Open the feed water supply.
2. Determine the water pressure by observing the pressure gauges.
3. Once adequate pressure is achieved, turn on the RO machine and allow the system to flush for 15 minutes. Operating pressure on the filter pressure worker gauge should be at 30-50 psi. A nominal, 2-3 psi, drop is anticipated across the carbon block cartridges.
4. Test the Carbon Block Filtration to verify the absence of total chlorine. Follow the instructions in the test kit. Always confirm the absence of total chlorine in the Carbon Block Filtration System before operating the RO unit. If the total chlorine test is ≥ 0.1 mg/L, the carbon block cartridge(s) need to be replaced.
5. Refer to the test kit for water testing procedure.
6. Take a water sample from the Chlorine Sample-Worker port to verify the absence of total chlorine. If this is acceptable, the Carbon Block Filtration System is ready for operation.
 - a. If this is positive, immediately take a sample from the Chlorine Sample-Polisher port to verify the absence of total chlorine.
 - b. If this is negative, then continue to sample from the Chlorine Sample-Polisher port on a more frequent basis or discontinue dialysis followed by changing out or rotating the cartridges.
 - c. If the Chlorine Sample-Polisher is positive, discontinue dialysis **IMMEDIATELY** and replace both cartridges before performing any treatments.



CAUTION: Always confirm the absence of total chlorine in the carbon block cartridges output water before operating the RO.



WARNING: Severe clinical problems can be expected if the purified water contains over 0.5 mg/L of free chlorine or over 0.1 mg/L of chloramines.

NOTE: To compute chloramines, subtract the value of a free chlorine test from the value of a total chlorine test. It is safe to conclude that any difference is the chloramine.

NOTES:

CHAPTER FOUR: PREVENTIVE MAINTENANCE

There is no preventive maintenance procedures that pertain to the Carbon Block Filtration System. However, the following items are applicable and should be observed and maintained on a routine basis:

1. Routine chlorine testing should dictate when the carbon block filters need to be replaced; however, it is recommended that the instructions found in Section 2.5 be followed at a minimum.
2. Each filter housing contains an o-ring. Care should be given to these o-ring seals. Be sure to lubricate often (every exchange) and ensure that the o-ring is not pinched or damaged in any way, thus providing a good water tight seal.
3. Pressure Gauges and Sample Ports need to remain in good working order. Observe working condition and replace as necessary when no longer functioning properly.
4. Routinly check to make sure that all mounting hardware associated with the Carbon Block Filtration System is tight and secure.
5. The Carbon Block Filtration System should be wiped down with a mild cleaner and always keep free of dust and debris so that all wording is clearly visible.

CHAPTER FIVE:

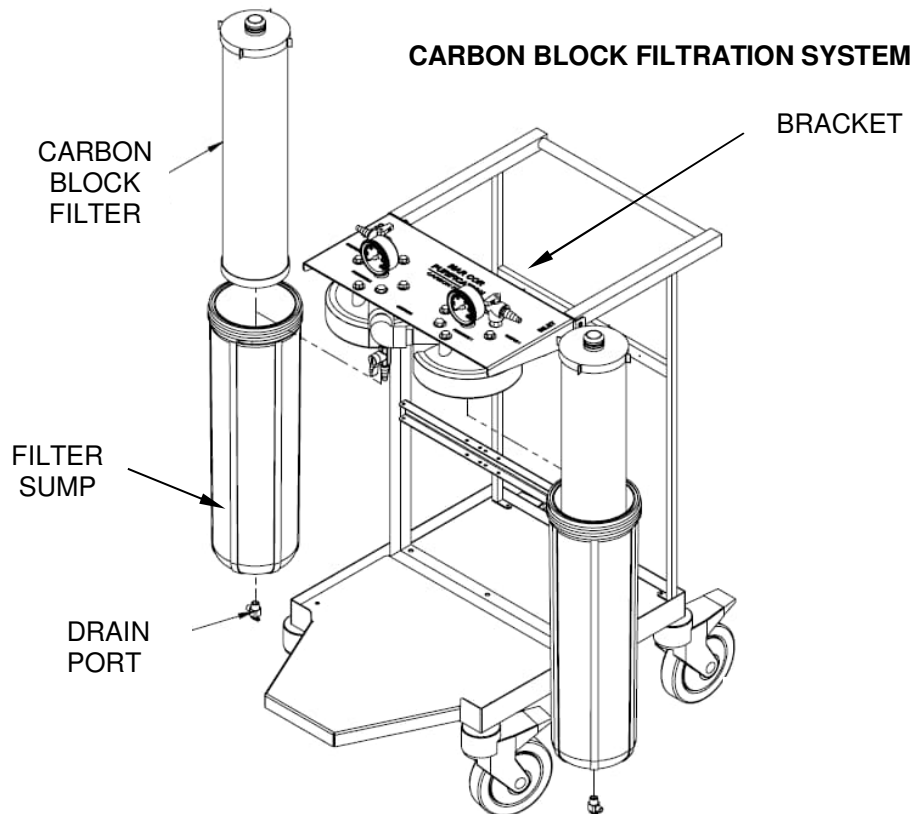
SUPPLIES/REPLACEMENT PARTS

Supplies and replacement parts are available by calling
1-800-633-3080

NOTE: Part Numbers are subject to change and should be verified when ordering spare parts.

PART NO.	DESCRIPTION
W2T912087	Filter, Carbon Block, 5"x20"
W2T913384	O-ring, Filter Housing, Buna
W2T912663	Gauge, PSI, Brass, 0-100
W2T912081	Valve, Sampling Port, PVC, 1/4" (Top)
W2T913086	Valve, Sampling Port, PVC, 1/4" (In between)
W2T148285	Wrench, Spanner, Filter Housing
W3T578280	Kit, Test, Total Chlorine, 20

CHAPTER SIX: ILLUSTRATIONS



The illustration above shows the Carbon Block Filtration System installed on an M1 Cart with the filters and filter sumps removed for illustrative purposes. An RO machine is not shown.

Call (800) 633-3080 for additional information or visit www.mcpcr.com.

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