



3M™ Water Filtration Products

RO Membrane Cartridge Change-out Instructions (HFRO-500)

FOR ScaleGard™ HP Reverse Osmosis System

Explanation of Signal Word Consequences

 WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and/or property damage.
NOTICE	Indicates hazardous situation which, if not avoided, may result in property damage.

WARNING

Read entire manual. Failure to follow all guide and rules could cause personal injury or property damage.

- Check with your local public works department for plumbing codes. You must follow their guidelines as you install the water filtration system.
- Your water filtration system will withstand up to 125 pounds per square inch (psi) water pressure.

To reduce the risk associated with choking:

- DO NOT allow children under 3 years of age to have access to small parts during the installation of this product.

To reduce the risk of serious injury associated with the potential ingestion of chemicals or contaminants:

- Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- Flush RO Cartridge: Before use, you must flush the RO cartridge as specified in the installation instructions, and discard any water generated until flush is complete. Failure to do so could cause serious injury from exposure to chemicals that can be extracted from the RO membrane during this initial flush.
- Sanitize and Flush Tank: Before use, you must sanitize and flush the hold tank as specified in the installation instructions. Sanitizing the hold tank minimizes the risk for exposure to contaminants. Failure to flush the hold with water after sanitizing could cause serious injury from exposure to sanitizer present.

NOTICE

To reduce the risk associated with property damage due to water leakage or flooding:

- Read and follow Use Instructions provided with the original system prior to use of this replacement cartridge.
- The pre-filter and post-filter cartridges MUST be changed every 12 months, or sooner if the rated capacity is achieved or a noticeable reduction in flow occurs.
- The RO membrane cartridge MUST be changed every 24 months, or sooner if a noticeable reduction in flow occurs.
- Failure to replace the filters and RO membrane cartridges at recommended intervals may lead to reduced filter performance and failure, causing property damage from water leakage or flooding.
- Protect from freezing, remove all cartridges when temperatures are expected to drop below 40°F (4.4°C).
- DO NOT install systems in areas where ambient temperatures may go above 100°F (37.8°C).
- DO NOT install on hot water supply lines. The maximum operating water temperature of this filter system is 100°F (37.8°C).
- DO NOT install if water pressure exceeds 125 psi (862 kPa). Contact a plumbing professional if you are uncertain how to check your water pressure.

IMPORTANT NOTE:

The RO membrane cartridges have green labels and will only fit into the head on the right side of the manifold (head has a green 3M label).

Shut Off Procedure:

RO membrane cartridge MUST be changed every 24 months or sooner. The pre-filter and post filter cartridges MUST be changed every 12 months or sooner.

1. Unplug system from the electrical outlet, which will shutoff feedwater to RO unit.
2. Confirm the operating pressure gauge (left) decreases to 0 psi. Note: Tank pressure gauge (right) will not decrease from the observed pressure.

RO Membrane Cartridge (green label) Replacement:

1. Remove the reject tubing from the RO membrane cartridge. (See Figure 1).
2. Push and hold yellow tab to release RO membrane cartridge locking mechanism while simultaneously rotating RO membrane cartridge to the left.
3. Using both hands and holding the RO membrane cartridge from the bottom, rotate the RO membrane cartridge a quarter turn to the left and gently pull down. NOTE: A small amount of water will drain from manifold as cartridge is removed.
4. Remove sanitary cap from new RO membrane cartridge. Ensure o-rings are seated into their grooves. Remove drain fitting plug from new RO membrane cartridge. Install with a quarter turn to the right until RO membrane cartridge comes to a complete stop. NOTE: RO membrane cartridges are keyed to fit in proper location only.
5. Insert new flow control into the elbow (included with new RO membrane cartridge). Install this sub assembly into the drain fitting (cartridge bottom) See Figure 3.
6. Connect reject line into elbow.
7. **IMPORTANT:** Complete System Start Up and Membrane Flushing procedure before system is brought back into use. See page 2.

Instructions continued on next page.



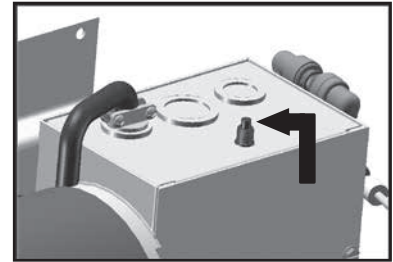
System Start Up

1. Turn on the feedwater supply.
2. Open unit inlet shutoff valve.
3. Power the unit by plugging into electrical outlet.
4. Open Pre-Filter flush valve to vent air from system and flush for 10 gallons (approximately 5 minutes).
5. Close Pre-Filter flush valve. The unit operating pressure gauge (left gauge) should read between 110-120 psi. (See Operating Pressure instructions to adjust)
6. Complete blending valve adjustment procedure below. (See instructions below)
7. Close the blend line shut off valve. (Figure 2, #1)
8. Allow storage tank to fill until the RO system turns OFF on full tank (See chart). Tank operating pressure for the 110-120VAC version is ON at 40 psi (276 kPa, 2.76 bar) and OFF at 60 psi (414 kPa, 4.14 bar) (right gauge). Tank operating pressure for the 220-240VAC is ON at 50 psi (345 kPa, 3.45 bar) and OFF at 70 psi (483 kPa, 4.83 bar).
9. Flush membrane by opening tank line sample valve and empty storage tank to drain. Operate the system for at least 24 hours to flush the RO membrane. Discharge all water generated during the flushing procedure to drain. Close the tank line sample valve after flushing is complete.
10. Sanitize the storage tank and RO system according to the storage tank and RO system sanitizing instructions on page 3.
11. Open the blend line shut off valve (if product water blending is desired). Allow storage tank to refill. System is now ready for use.

Required (Sold Separately)

Part Number	Pressure Volume	Approximate Time to Fill
5598408	20 gallons (76 liters)	0.6 hours
5598409	40 gallons (151 liters)	1.2 hours

Figure 1 (Reset Button)



Start Up Test Checklist

Close the tank shut off valve, open the tank line sample valve.

- Pump turns on ✓
- Water will flow thru the tank line sample valve and drain line ✓

Keep the tank shut off valve closed and close the tank line sample valve.

- Pump turns off ✓
- Water will stop flowing from the drain line. ✓
- The operating pressure gauge will read 0 psi (0 kPa) at this point. ✓
- Tank pressure gauge will read 60 psi (414 kPa, 4.14 bar) for 110-120 VAC systems and 70 psi (483 kPa, 4.83 bar) for 220-240 VAC systems ✓

Open the tank line sample valve.

- Pump will turn on. ✓
- Tank pressure gauge will read 0 psi (0 kPa). ✓
- Permeate being rinsed for first 25 seconds ✓
- After 30 seconds of operation, check production rate. ✓
- After 30 seconds of operation, check operating pressure. The operating pressure gauge should read 110-120 psi. ✓
- After 30 seconds of operation, check TDS reductions. ✓

Close the tank line sample valve and open the tank shut off valve. Allow storage tank to fill.

- Verify the tank pressure gauge increases to 60 psi (414 kPa, 4.14 bar) for 110-120 VAC systems and 70 psi (483 kPa, 4.83 bar) for 220-240 VAC systems ✓
- Verify the pump turns off and the drain line flow stops. ✓

Blending Valve Adjustment Instructions:

IMPORTANT NOTES:

- Typical TDS (Total Dissolved Solids) values for coffee are 80-200 ppm (parts per million) and occasionally lower for espresso, depending upon taste preference. Typical TDS values for steam and combi ovens are less than 50ppm.
- The blending valve should be set at start-up and checked periodically. This valve is a precision metering valve that has a lock nut.
- To set blending valve use TDS monitor set in the "out" position.

1. Open the blend line shut off valve.
2. Allow the unit to run for 2 minutes.
3. To adjust blending, rotate the blending valve to the left (counterclockwise) to increase the product water TDS and to the right (clockwise) to decrease the product water TDS (See Figure 2 item #2 below). The blending valve should be opened intermittently a quarter turn at a time. Check the TDS after each incremental adjustment and again two (2) minutes after the desired TDS value is reached. Re-adjust and check, as needed. (See Figure 2-item #2 below)
4. Lock the blending valve using the lock nut.
5. After product water TDS is set, it should be checked periodically during operation to confirm it is at the desired level.

IMPORTANT NOTE: The TDS Monitor is push-button operated and requires two (2) 357A batteries. (Included in TDS meter)

Membrane Flushing Instructions:

WARNING:

Flush RO Membrane Cartridge: Before use this cartridge must be flushed as specified in the Installation Instructions. Discard any water generated before the flush procedure is completed. Failure to do so could cause serious injury from exposure to chemicals that can be extracted from the RO membrane during this initial flush.

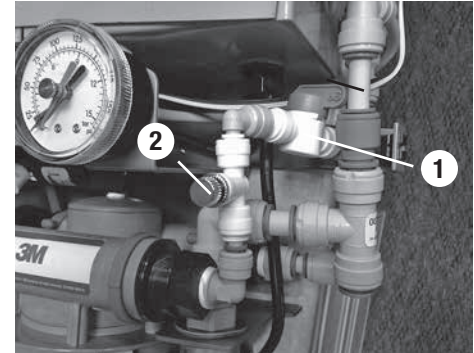
1. Open the tank line sample valve.
2. Close the blend line shut off valve. (Figure 2, #1)
3. Operate the unit for 24 hours minimum to flush the RO membrane.
Discharge all water generated during the flushing procedure to drain.
4. Close the tank line sample valve.
5. Open the blend line shut off valve if required for the application.
6. Allow unit to operate and fill the storage tank.

Storage Tank and RO System Sanitizing Instructions:

Sanitizing the storage tank requires:

- Common household bleach (5.25% non-scented) or sanitizing agent
 - Eye dropper or plastic oral syringe
- a.) Unplug the unit from the electrical outlet.
 - b.) Connect a length of tubing to the tank line sample valve and route this line to drain.
 - c.) Open the tank line sample valve and empty the storage tank.
 - d.) Close the tank line sample valve
 - e.) Disconnect the 1/2" line from marked "Tank Outlet" to storage tank.
 - f.) Insert 15ml (0.5 ounces) of bleach or sanitizing agent into 1/2" line to storage tank.
 - g.) Reconnect the 1/2" line to storage tank.
 - h.) Plug the unit into the electrical outlet and operate the unit for 10 minutes.
 - i.) Unplug unit from the electrical outlet.
 - j.) Wait 4-5 hours.
 - k.) Open the tank line sample valve and empty the storage tank.
 - l.) Close tank line sample valve and remove drain tube.
 - m.) Plug the unit into the electrical outlet. Operate system until storage tank is full.
 - n.) Sanitizing is now complete.
 - o.) If there is any residual chlorine/bleach taste, drain storage tank completely a second time.

Figure 2



- 1 - blend line shutoff valve
2 - blending valve

Cartridge Installation

Figure 3 — Flow Control Installation



Remove RO Membrane Cartridge Drain Plug



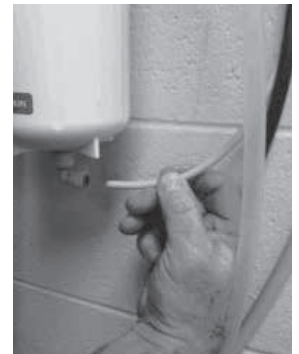
Insert RO Membrane Cartridge into right manifold head



Insert Flow Control Into Elbow



Insert elbow into RO Membrane Cartridge drain fitting



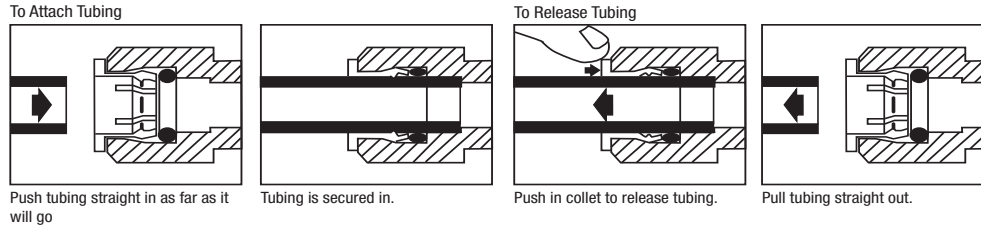
Insert reject line into elbow.
Flow control installation is now complete.

Figure 4 (How to Use “Push-in” Connectors)

This product is outfitted with a user friendly ‘Push In’ connector at the vent valve. Proper use of the connectors is shown in the figure below. It is most important that the tubing selected for use with these connectors be of high quality, exact size and roundness, and with no surface nicks or scratches. If it is necessary to cut the tubing, use a plastic tubing cutter or sharp razor knife. Make a clean square cut. Should a leak occur at a “Push-In” connector, the cause is usually a problem with the tubing.

To Fix:

1. Relieve pressure
2. Release tubing
3. Cut off at least 1/4” from end
4. Reattach tubing
5. Confirm connection is leak free



Product Use:

Many factors beyond 3M Purification Inc.'s (3M's) control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. User is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Warranty, Limited Remedy, and Disclaimer:

3M warrants that this product will be free from defects in material and manufacture for the period of (1) year from the date of purchase. No warranty is given as to the service life of any filter cartridge or membrane as it will vary with local water conditions and water consumption. **3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE.**

If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

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